APPENDIX A

STANDARD OPERATING PROCEDURES

Appendix A
Lower Genesee River
Standard Operating Procedures (SOPs)

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STANDARD OPERATING PROCEDURES (SOP)

SOP Number	SOP Name
1	Sampling Containers, Preservation, Handling, and Tracking
2	In-River Drilling Operations
3	Decontamination
4	Investigation-Derived Waste
5	Sediment Sampling
6	Surface Water Sampling
7	Data Management
8	*(Not used)*
9	Sediment Sampling in Shallow Waters
10	Sediment Sampling for Geochronological Measurements
11	Depth-Integrated Surface Water Sampling
12	Surface Water Flow Measurements
13	Fish Collection and Processing

STANDARD OPERATING PROCEDURE 1

CONTAINERS, PRESERVATION, HANDLING AND TRACKING OF SAMPLES FOR ANALYSIS

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STANDARD OPERATING PROCEDURE 1: CONTAINERS, PRESERVATION, PROCESSING AND TRACKING OF SAMPLES FOR ANALYSIS

1.0 PURPOSE AND SCOPE

The purpose of this document is to define the standard operating procedure (SOP) for containment, preserving, handling and shipping samples collected for analysis. Samples are defined as sediment or water samples collected or generated at the site for chemical or geotechnical analysis. This procedure describes the essential steps that could affect tracking, documentation, or integrity of samples and is intended to provide sufficient instructions for sampling personnel to follow reliably, and consistently.

This procedure is to be followed, and any substantive modification to the procedure shall be approved and documented by the Field Sampling Manager.

2.0 RESPONSIBILITIES AND QUALIFICATIONS

The Field Sampling Manager is responsible for assigning field personnel to handle samples at the site. Field personnel assigned to handle samples for laboratory analysis are responsible for completing their tasks according to this and other appropriate procedures. Field personnel are responsible for reporting deviations from the procedure to the Field Sampling Manager.

Only qualified personnel shall be allowed to perform this procedure. Qualifications will be based on previous experience and appropriate health and safety training. These considerations are discussed in more detail in the project Health and Safety Plan (HASP).

3.0 SAMPLE HANDLING PROCEDURES

3.1 EQUIPMENT LIST

- Inert packing material;
- Sample containers (glass jars, plastic bottles, Encore samplers, preservatives and temperature blanks (as specified in the QAPP);
- Sample labels;
- Chain of Custody (COC)/Analytical Request Forms;
- Ice chest(s);
- Custody seals;
- Marking pens (permanent markers and black ballpoint pens);
- Hacksaw and linoleum or carpet knives, spare blades;
- Electric shears;
- Plastic sheeting and/or aluminum foil;
- Processing table(s);
- Stainless steel spoons;
- Stainless steel spatulas;

- Paddle for homogenization/mixing;
- Shipping tape;
- Sealable plastic bags;
- Field logbook;
- Wet ice (frozen H_2O);
- Food grade plastic lining material;
- Shipping forms for selected carrier;
- Sampling Plan;
- Disposable cloth and/or paper towel; and
- Clean plastic and/or aluminum foil.
- Spatulas large enough for Shelby tube, at least 5 inch blade.

3.1.1 Documentation

All sample identification information (i.e., sampling location, sample number/designation, sample time, and analysis) will be written into a bound, paginated field logbook. Sampling locations and samples collected will be named in general conformance with the convention outlined below. Information will also be maintained electronically with data management software discussed in detail in SOP 7. If the samples are taken from a core or boring the sample ID will also be recorded on the boring log.

3.1.2 Sample Labeling

Each bottle used for sampling will have a label attached. The sample coordinator will have the project name, location ID, field sample ID (see below), matrix, preservative, analysis requested, sampler's initials, laboratory designation, sample data and time printed onto the label in the field. Alternatively, the sample container will be hand labeled at the time of collection and a complete label will be affixed before packing for shipment. The label will be protected from water and solvents with clear label protection tape.

3.1.2.1 Management of COC Data

Sample Nomenclature System

A sample nomenclature system has been developed to ensure consistency in field sample ID assignment and compatibility with EQUIS. Two identification labels will be associated with field samples: the Location ID, and Field Sample ID.

<u>Location ID:</u> The Location ID will represent the physical location where samples are collected, such as a surface water location or sediment boring. Each unique field sample will be associated with a Location ID, which will be identified prior to fieldwork or at the time of sampling. The Location ID will consist of a description of the site (site ID), the sample location type (such as a boring), and a three-digit sample location number:

- # # # - # # # #

Site ID - Location type - Location number

The first part of the Location ID is the Site ID, which will be LGR, for Lower Genesee River, for all the sample locations. The second part of the Location ID is the Location Type. The location type will be based on what activity(s) will occur at the location, based on a predetermined list of database specific options. The list of location types is as follows:

- SB: sediment or soil boring;
- SW: surface water;
- PW: porewater;
- SED: surface sediment

At locations where more than one activity will take place the location type is STA for station. The third part of the sample label corresponds to the location number. For example, a Sediment boring = LGR-SB-001. A list of valid site IDs, Sample Types, and Sample Numbers will be available to the field team from the Data Manager.

Field Sample ID

The Field Sample ID is the unique label assigned to each individual sample. The Field Sample ID will consist of the site description abbreviation (site ID), the COC #, and a COC sample number.

- # # # # - #

Site ID - COC # - COC sample #

During the selection of samples the COC will be kept on hand, or in the database within the sampling computer. As the samples are generated and the database is updated, the field sample ID will be created. For further details on the procedures of the database see SOP 7: Data Management Program.

Upon collection of the sample(s), a field team member will affix an identification label to the sample container(s). In the case of failure of the database or other circumstances where the database is not available a label provided by the laboratory may be used or any other label that includes the information provided herein. This label must contain, as a minimum, the following information:

- Client Name – NYSDEC;
- Project Name – Lower Genesee River;
- Location ID - *The unique number that identifies the sample location;*
- Field Sample ID - *The unique number that identifies the sample;*
- Date of sample collection - *use six digit date (mm/dd/yy);*
- Time of sample collection - *use 24-hour format (hh:mm);*
- Sample Medium - Water, Sediment, sediment, sludge, leachate, *etc*.;
- Sample Type - Grab *or* Composite;
- Preservation - *Type of preservation added*;
- Analyses - *use the method reference from the COC, (such as VOCs Part 375); and*

- Initials - *The initials of the sample collector.*

"RB" will be used to indicate a rinse blank, and "TB" will be used to designate a trip blank. . "MS or MSD" will be included at the end of the sample designation to indicate samples to be used for QA/QC purposes, "FD" will be used in the purpose code to indicate a duplicate sample to be used for QA/QC purposes. The lab will not be able to associate this duplicate with a particular sample.

The field team leader will be responsible for verifying that information on the COC is consistent with the information recorded in the field book, on the sample log sheets, and on the bottle labels. The COC will be printed, signed and included in the sample shipment cooler.

The Data Manager will track receipt of preliminary data and EDDs against the sample receipt date indicated by the laboratory for compliance with contract terms. The Data Manager will issue weekly reports of any data not received within contract terms and elevate any occurrence of non-compliance to the attention of the Field Team Leader or Project Manager.

3.2 SEDIMENT HOMOGENIZATION / PROCESSING

Sediment compositing will be conducted if multiple containers or cores of sediment are collected from a single location, or samples from different locations require compositing for a particular test.

1. If analysis of volatile organic compounds (VOCs) is required from the sample the material will be collected prior to homogenization. For samples that are across a predetermined interval (for example 0-2 ft below the sediment water interface) the VOC sample will be taken from five equally-spaced intervals within each core (i.e., five sub-samples from each 2-ft section of core), and placed in a sample jar.
2. If recoverable non-aqueous phase liquid (NAPL) is observed, it will be collected and placed in a sample jar, separate from other chemical analysis samples.
3. The sample requiring homogenization will be thoroughly composited by thorough stirring and mixing. Properly decontaminated or dedicated spoons or paddles made of stainless steel (or other material wrapped in aluminum foil) will be used to composite the sample. Care during mixing must be taken to ensure thorough homogenization without polyethylene container liners being torn and incorporated into the sample. After the sample is homogenized, equal portions will be collected from different parts of the sampling bowl, and placed in a sample jar.
4. The homogenization process will be conducted using an appropriate implement (spoon or paddle of appropriate composition including stainless steel or other inert material appropriate to the media). The implement will be used to bring the material from the bottom of the mixing container to the top of the mixing container using a circular motion similar to the motion used in food preparation (e.g., mixing cake batter) combined with a bottom to top folding. The mixing, stirring and folding process will be repeated/continued until the sediment has an even texture and color throughout from top to bottom.
5. Compositing will be completed as thoroughly but as efficiently as possible to avoid particle-size distribution alteration and excessive aeration.

6. The thoroughly mixed sample will be transferred to the appropriate pre-labeled laboratory-provided containers for shipment to the geotechnical or analytical laboratories.
7. Excess materials will be containerized and disposed of following the guidelines in SOP 4
8. Equipment and used containers will be decontaminated as described in SOP 3.

3.3 SEDIMENT PROCESSING AND SAMPLING

3.3.1 General Sediment Core (Vibracore) Processing

1. Vibracore samples will be stored vertically until processing. Vibracores will be processed horizontally.
2. Surficial samples collected in using gravity cores will be processed vertically, to minimize disturbance of the relatively thin sample interval. Cores collected for porewater analysis will be sealed and sent to the laboratory for processing and analysis.
3. While sampling, material from the inner section of core will be collected for chemical analysis. A flat stainless steel spatula or knife will be used to cut or scrape off the outer 1/8 to ¼-inch of the core. This portion will be retained in a sealable container for geotechnical analysis, or discarded. The remaining inner portion of the core will be utilized for chemical analysis. This process will eliminate the potential of introducing contaminants from a shallower zone through smearing near the sediment/sample tube interface.
4. The core will be laid on a sample processing table that has been covered with clean plastic or aluminum foil. The core tube will be cut along its length twice allowing approximately 35 to 50 percent of the core tube to be removed, thus exposing the sediment core. If VOCs are to be sampled from the core, they will be collected first. After sampling the VOCs (if required) and prior to homogenization or other sampling, a boring log will be completed following sample description procedures in SOP 5. Pre-decontaminated implements made of stainless steel, glass, Teflon coated, or other inert material will be used to slice and transfer samples. Semicircular spatulas or knives will be used to slice the core segments, one segment at a time. The semicircular spatula will be left in place to hold back the rest of the sediment core and associated water. A second semicircular spatula will be inserted at the next sample interval and held in place. The first semicircular spatula will be removed and the new sediment slice will be transferred to a sample container. This process will be continued until all proposed sample intervals have been collected.
5. If more material is needed for the sample than can be obtained from a single core, multiple cores will be composited. Additional cores will be processed as described in steps 3 and 4 above. VOC samples will be taken prior to homogenization.
6. The contents of the core tube will be placed in an appropriate mixing container and will be thoroughly homogenized using the procedure as described in Section 3.3. The homogenized sample will be placed in the appropriate pre-labeled laboratory-provided containers. All sample material will be homogenized before being placed

in pre-labeled laboratory-provided containers so the contents of each container is as similar as possible.

7. If a sample from a **smaller interval** is needed for analysis, the core may be processed vertically. The top of the core will be capped. The bottom of the sample interval will be identified and marked on the side of the core. A saw will be used to cut the sediment core at the bottom of the sample interval. The desired core segment will be placed in a stainless steel bowl or other container for processing.
8. If a **whole core or multiple cores** (for undisturbed cores see methods below) will make up one sample, the contents of the core liner(s) will be emptied into an appropriate sized mixing container. The whole sample will then be homogenized as described in Section 3.3. After compositing, the sample will be placed in pre-labeled laboratory-provided containers as described in Section 3.5.
9. Where **undisturbed samples** are needed, the sediment cores will be minimally processed in the field. The processing will consist of cutting and capping the core liner at the upper end of the sample interval followed by cutting and capping the lower end of the sample interval. Care will be taken to have zero head space within the sectioned core.
10. Where **Terra core® samplers** are specified for VOCs, the sediment core will be laid out and split on the sample processing table (see SOP 13 for details). The sediment core will be quickly screened and examined. The section of the core most closely matching the sampling criteria will be sampled using the terracore samplers. If the samples are to be collected from a specific depth, the sample will be collected before screening. After the VOC samples are collected, the remaining material will be placed in sample jars for the other specified parameters following the appropriate processing protocols. For further details regarding the terra core® sampler see the Terra core® Sample Techniques section below.
11. A physical description of each core section will be made by examining the horizontally sectioned core segments. The core descriptions will include color, primary and secondary constituents, grain sizes and distribution, layering, odor, stain, and sheen. See SOP 5 for details regarding sediment descriptions.
12. Unused cores may be discarded or archived as specified in the Work Plan. Cores to be archived may be capped in the core liner or sectioned and placed in jars. The archived core label will include location and core number, collection date and time, and depth range. Core tubes will also contain this information. The core orientation will also be marked on the side of the core liner (labeled TOP). Archived cores will be stored in a vertical orientation (top up). The core liners should be cut as to eliminate any headspace.
13. Waste sediment cores will be separated from the used core liners and transferred into drums for proper disposal as described in SOP 4. The used core liners will also be collected for proper disposal as described in SOP 3 and SOP 4.

3.3.2 Terra core® Sample Techniques

Terra core® sampling techniques are designed to preserve VOCs in sediment samples. The Terra core® samplers are mini coring tubes that are inserted directly into the sediment sample. The filled sampler is then immediately placed in a VOA vial. The following is a procedure for collecting sediment samples in an Encore sampler.

- Have a 40mL glass VOA vial containing the appropriate preservative.
- With the plunger seated in the handle, push the Terra Core® into freshly exposed soils/sediment until the sample chamber is filled. A filled chamber will deliver approximately 5 to 10 grams of soil/sediment.
- Wipe all soil or debris from the outside of the Terra Core® sampler. The soil/sediment plug should be flush with the mouth of the sampler.
- Remove any excess soil that extends beyond the mouth of the sampler.
- Rotate the plunger that was seated in the handle top 90° until it is aligned with the slots in the body.
- Place the mouth of the sampler into the 40mL VOA vial containing the appropriate preservative and extrude the sample by pushing the plunger down.
- Quickly place the lid back on the 40mL VOA Vial. When capping the vial, be sure to remove any soil/sediment or debris from the top and/or threads of the vial.
- Discard the Terra Core® sampler (terra core® are a single use device. It cannot be cleaned and/or reused).

3.4 SAMPLE CONTAINERS AND PRESERVATION

3.4.1 Sample Containers

Certified, pre-cleaned containers will be supplied from commercial suppliers or laboratories for the collection of all sediment and water samples. Certification of sample container quality will be provided by the laboratory if requested. Bulk sediment and water samples will also be placed in containers provided by the laboratory. Food grade plastic liners may be used inside 5-gallon buckets or various sized drums to minimize impacts from phthalates or other residual compounds that may be present in the plastic buckets or drums during mixing or storage and shipment. .

3.4.2 Sample Preservation

The sample preservation methods for samples for chemical analysis to be used are summarized in the QAPP. Samples requiring preservation will be collected in sample containers provided by the analytical laboratory that already contain sufficient quantities of the appropriate preservative(s) to ensure that the sample is preserved in accordance with the method requirements. The laboratory must provide an adequate amount of pre-preserved bottles with traceable high-purity preservatives, and additional preservative for use if the added amount is not sufficient, based on request by the Field Team Leader and on an as-needed basis if additional bottleware is needed during the field activities. Documentation of equipment and methods used

in the field for treating the samples, such as filtering equipment (if used), will be maintained in the field logbooks. The brand name, pore size, and number of filters (if used) used will be recorded. If refrigeration is necessary, samples will be placed on ice or in a refrigerated trailer after collection, and shipping containers will be packed with additional ice, if needed, prior to transfer.

3.4.2.1 Preservation of Aqueous Samples

Preservatives required for aqueous samples will be added to the pre-labeled laboratory-provided containers prior to shipment to the site and sampling. For aqueous samples including field rinsate blanks, the field sampler will ensure that nitric acid (i.e., for metals) or other appropriate preservative has been added to the sample containers by the analytical laboratory.

3.5 SAMPLE HANDLING AND SHIPPING

Sample packaging and shipping will be performed as follows:

- After filling, securely seal sample bottle caps. Affix the completed sample labels to the bottles if they were not affixed before the bottle was filled. VOC vials for aqueous samples (including blanks) will be checked for headspace prior to shipment. If headspace is present, collect a new sample, if practical. If not, the presence of headspace should be recorded on the COC, and the QAO should be notified.
- Wipe off any sediment, water, etc. from the outside of the sample containers with a cloth or paper towel.
- Transfer the samples to an ice chest that will be used as a shipping container. For samples leaving the site, use inert packaging material to cushion the samples and minimize potential breakage.
- Place the samples and the laboratory-provided temperature blank upright in the sample cooler. The temperature blank should be placed in the center (horizontally and vertically) with the samples surrounding it.
- If refrigeration is necessary, ice chests will contain sufficient ice or similar chilling sources to maintain approximately 4 degrees C (but not frozen) inside cooler during transport. The bags of ice will be double bagged to prevent leaking of liquid during shipment.
- Complete sample tracking documentation as described in this SOP and data management SOP.
- Place the documents in a sealable plastic bag inside the ice chest. Prior to sealing for shipment, the list of samples will be checked against the container contents to verify the presence of each sample listed on the COC.
- Secure chest top and seal the top and the drain spout (if present) with tape and affix custody seals to the cooler.
- Arrange for sample pickups at the site by an approved courier or shipper or hand deliver sample coolers to an approved courier service or overnight delivery service such as FedEx or UPS. .

- For international shipments, an International Air Waybill and a packaging list form for customs must be filled out and attached to the package or sample cooler. FedEx or other shippers can provide these blank forms and may offer assistance in completing the paperwork.

3.6 SAMPLE TRACKING

All samples collected for analysis will be continuously tracked in the field and in transit to the laboratory as follows:

- Individual sample bottles will be properly labeled and securely sealed before being placed in the container for shipment to the laboratory.
- All pertinent information (see requirements in next bullet) will be entered on the COC form in the field. Assignment of the matrix spike/matrix spike duplicate/laboratory duplicates (MS/MSD/LD) and all of the analyses requested for each sample will be made on the COC form. Blind duplicates that are to be collected will be identified in the field logbook but will be assigned a fictitious name on the COC. A notation will be added to the third copy (pink copy) that will be retained by the sampler. The notation will indicate which sample the duplicate correlates to.
- COC forms must include the following, as required by guidance in SW-846, Test Methods for Evaluating Solid Waste (USEPA, Third Edition, including Promulgated Update IIIB, June 2005, Chapter One): 1) the project name; 2) signatures of samplers; 3) the sample number, date and time of collection, and grab or composite sample designation; 4) signatures of individuals involved in sample transfer; and 5) if applicable, the air bill or other shipping number.
- The completed COC form will be signed, dated, enclosed in a sealable plastic bag and placed in the shipping container prior to shipment. A copy of the COC form will be retained by field personnel.
- A copy of the COC form shall be returned from the laboratory to the Parsons QAO or the officer's designee(s). The original shall be retained by the laboratory's sample custodian.

4.0 DOCUMENTATION

4.1 FIELD NOTES

The Sample Manager or the manager's designee is responsible for documenting sample handling activities. Observations and data will be recorded with waterproof ink in a hardbound field logbook with consecutively numbered pages. Incomplete lines and pages will be lined out with a single line and initialed. Changes will be lined out with a single line, dated, and initialed. The information in the field logbook will include the following as a minimum:

- Site name;
- Date;
- Brief report of weather conditions and lake conditions (if working on the lake);
- Responsible person's name;

- Date and time of activity;
- Information coordinating container numbers with sample numbers;
- Information coordinating sample handling activities with the appropriate field activities and COC documentation;
- Equipment and methods used for field preparation of samples; and
- Field measurements of samples (e.g., pH, ORP, temperature).

5.0 REFERENCES

United States Environmental Protection Agency (USEPA). 1980. Office of Emergency and Remedial Response, OSWER Directive # 9240.0-05A, "Specifications and Guidance for Contaminant-Free Sample Containers." EPA 540/R-93/051. Washington, D.C.

United States Environmental Protection Agency (USEPA). 2005. SW-846, Test Methods for Evaluating Solid Waste, Third Edition, including Promulgated Update IIIB, Chapter One.

United States Environmental Protection Agency (USEPA). 2003. Methods for Collection, Storage, and Manipulation of Sediment for Chemical and Toxicological Analyses: Technical Manual, Office of Water 4305, EPA-823-F-01-023, October 2001, last update December 2003.

STANDARD OPERATING PROCEDURE 2: DRILLING OPERATIONS FOR IN-RIVER GEOTECHNICAL TESTING AND SEDIMENT SAMPLING

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STANDARD OPERATING PROCEDURE 2: DRILLING OPERATIONS FOR IN-RIVER GEOTECHNICAL TESTING AND SEDIMENT SAMPLING

1.0 INTRODUCTION

The purpose of this document is to define the SOP for conducting offshore borings for the collection of sediment samples and geotechnical testing. Offshore borings will be conducted to determine the geotechnical properties of the sediments by conducting Standard Penetration Tests (ASTM D 1586-84 reapproved 1992) and by collecting undisturbed samples for geotechnical analysis (Shelby tube and piston tube samples using ASTM D1587-00). Shelby tubes will be used as the primary means of collecting undisturbed samples. Piston samplers will be considered for use, when recovery with Shelby tubes is unacceptable. Offshore borings and sampling will be conducted using a truck mounted drill rig or a skid mounted drill rig set, which will be secured on a floating barge. The drill rig will be of sufficient size (CME 55, CME 45B, or equivalent) and capacity to reach the proposed depths. The barge will be sized to accommodate the drill rig and associated equipment and personnel. The barge may be self propelled or may be moved by a support boat or tug. Vessel positioning will be conducted as described in SOP 8. See SOP 14, Data Management Program, for list of field measurements and field data collection and recording requirements.

The purpose of this SOP is to describe the equipment and procedures to conduct borings into the sediments in the Lower Genesee River to meet the project objectives. This SOP describes the needed equipment, field procedures, materials, and documentation procedures needed during drilling operations. This procedure is to be followed, and any substantive modification to the procedure shall be approved in advance by the Field Sampling Manager.

2.0 RESPONSIBILITIES AND QUALIFICATIONS

The Field Sampling Manager is responsible for assigning field personnel to be responsible for the site activities. The Field Sampling Manager is also responsible for assuring that this and any other appropriate procedures are followed by field personnel. Field personnel assigned to this activity are responsible for completing their task according to this and other applicable SOPs. Field personnel are responsible for reporting deviations from the procedure or nonconformance to the Field Sampling Manager. Only qualified field personnel are allowed to perform this procedure. Qualifications will be based on previous experience and health and safety training. These considerations are discussed in more detail in the project HASP.

3.0 PROCEDURES

3.1 EQUIPMENT LIST

The following equipment list contains materials that may be needed to carry out the offshore borings described in this SOP. Since multiple procedures or alternate methods may be employed to achieve the objectives, not all materials and equipment included on the list may be necessary to complete the task. The following items may be necessary to complete the offshore borings, testing, and sampling according to this SOP:

- Floating platform (barge) with moon pool.

- Protected area out of weather for documentation and sample management work.
- Propulsion system or tug to move floating platform/barge from location to location.
- Floating platform/barge, tug, and support/work boats will meet all US Coast Guard requirements for the type of vessel including all required safety equipment (including but not limited to navigation lights, day signals, personal floatation devices, throw rings, VHF radio-communications, anchors, emergency signaling devices, etc.).
- Floating platform/barge, tug, and support/work boats will have pipe, chain, or rope hand rails around the perimeter or sufficient freeboard to prevent personnel from falling overboard.
- GPS receiver to position the barge.
- Drill rig mounted on the barge to conduct drilling, sampling, and testing.
- Communications (marine VHF radio and cell phone).
- Drill tools and supplies (flush joint casing, drill rods, water pump, hoses, fittings, 140 pound hydraulic hammer or cathead with hammer and rope, pipe wrenches, chain vises, clamps, mud tub, split spoon samplers, Shelby tube samplers, piston tube samplers, weighted measuring tape, drums, absorbent booms, etc.). High pressure flushing or jetting will not be conducted.
- Portable generator to run computer, printer, lights.
- Appropriate decontamination equipment.
- Personal protective equipment (gloves, protective clothing, protective and non-slip footwear).
- Field log book and digital or disposable camera to document field activities.

3.2 GENERAL DRILLING METHODS

The general drilling methods described below pertain to all the drilled borings. Sediment borings will be conducted from a floating platform/barge outfitted with a moon pool and drill rig. The following methods will be used to conduct the borings:

- A two-person drill crew provided by the drilling subcontractor will operate the drill rig. A third person from the drilling contractor may be present to operate the support boat and support the drilling work. Additional oversight personnel may be present to direct the drilling operations and to describe, collect, process, and document samples and tests.
- All personnel working on the water will follow the HASP requirements for PPE and PFDs.
- Depending on the configuration of the drill barge, a tug or other work boat, captain, and mate, may be needed to move the barge between locations.
- Utilities will be cleared before drilling and testing is commenced. This may be accomplished through a combination of notifying Dig Safely New York (811), off-shore geophysical results, hand probing or flushing a tremie pipe into the sediment,

and conducting pre-work reconnaissance including noting the presence of any pipeline crossing signs or markers and scanning the near shore for any visible obstructions.

- The barge contractor or driller (depending on the configuration of the barge) will navigate the floating work platform to each boring location and anchor/stabilize it in place with the moon pool centered over the proposed boring location. The captain will be responsible for safely navigating to each location. If weather, water conditions, water depth, or conditions of the vessel are determined to be unsafe, work will be delayed until the unsafe conditions pass or appropriate repairs are completed.
- Equipment will be decontaminated before the commencement of work and between samples or locations, following SOP 3.
- If the Work Plan calls for a surface sample or shallow core sample starting at the sediment/water interface, lower the sampler from the barge to the top of the sediment and collect a sample as discussed in SOP 5.
- The drillers will then lower a flush joint casing to the top of the mud line. The casing diameter shall be sufficient to accommodate all sampling tools
- Connect the top of the casing to a water pump. Connect the water pump to a water source. Flush the casing down through the sediment to the top of the next proposed sampling interval. Use only as much water pressure as needed to advance the casing and clear the hole. Excess pressure may disturb the proposed sample interval below the casing. Drilling may be required to clean loose material from the inside of the drill casing. Maintain water levels within the casing when drilling and sampling below the water table.
- The sampler (split spoon, Shelby tube, piston tube sampler) will then be lowered through the casing to the top of the sample interval. The sampler will be driven (split spoon sampler for SPT [ASTM D1586]) or pushed (Shelby tube or piston tube sampler [ASTM D1587]) into the sediment the full length of the sampler, to the end of the proposed sampling interval, or to refusal.
- Retrieve the sampler. Process the sample as described in SOP 5 and SOP 1. Recover the sample from the sampler or cap and seal the sample in the sample tube as specified in the Work Plan. Repeat the process as the boring continues.
- Decontaminate the sampler as described in SOP 3.
- Flush casing down to the top of the next proposed sampling interval and repeat the sampling process.
- Continue washing the casing down and sampling until the proposed penetration depth or refusal has been reached.
- When all sampling and testing has been completed, withdraw the flush joint casing and allow the borehole to collapse.
- Decontaminate the casing and other tools following SOP 3.
- Pull up the anchors and move the barge with drill rig to the next boring location.

3.3 STANDARD PENETRATION TEST PROCEDURE

Standard penetration tests (SPT) are conducted to provide subsurface sediment/sediment and sediment samples for chemical and certain geotechnical analyses (those tests that do not require undisturbed samples) and to provide a measurement of the resistance of the soil/sediment to penetration. The SPT blow count results (N-values) are used to predict the engineering behavior of earthworks and foundations. This discussion is based on ASTM method D 1586-92.

Apparatus

- A drilling rig capable of providing a clean open borehole that will accommodate the split spoon sampler and Shelby Tubes apparatus. Disturbance from drilling should not extend beyond the bottom of the borehole.
- Sampling rods will be used to connect the drive hammer used to advance the split spoon sampler. The rods are flush joint steel drill rods of 1 5/8-inch outside diameter and 1 1/8-inch inside diameter. The rods usually come in 2, 5, and 10–foot lengths.
- Split-barrel samplers are usually comprised of five pieces, the threaded shoe (1-2 inches long), the catcher basket, the two halves of the sample barrel (18 to 30 inches long, 24-inch split barrel samplers are most commonly used) and the head (with ball check valve). Standard split barrel samplers are 2-inches outside diameter and 1.5-inches inside diameter. A liner will not be used inside the barrel. Refer to ASTM D 1586 for additional split barrel sampler specifications.
- Drive weight assemblies are comprised of a 140 pound drop hammer and an anvil that transmits the blow energy from the hammer to the drill rods and split barrel sampler. The hammer has a drop guide to guide the hammer onto the anvil without impeding the freefall of the hammer. Where possible, the same hammer system and casing sizes will be utilized throughout the field work, for consistency.
- Hammer drop systems vary depending on the make, age, and configuration of the drill rig being used to conduct the tests. Hammer drop systems can be rope-cathead (manual with mechanical assistance from the cathead), trip, semi-automatic, or automatic drop systems (hydraulically assisted hammer lift systems).

Drill Procedures

- Advance the boring incrementally to the next sample point (each 2 ft for continuous sampling or 5 ft or as specified in the work plan for interval sampling) by flushing as described above.
- The water level within the boring should be maintained at or above the static water table level during drilling activities, which include drilling, removal of drill rods, and sampling.

Sampling and Testing Procedures

- Lower the sampling apparatus consisting of an assembled split barrel sampler on “A” rods to the top of the sample depth. Do not allow the sampler to free fall or impact into the sediment.

- Attach the hammer-anvil apparatus to the top of the "A" rods. (This can be done prior to lowering rods and sampler into borehole)
- Allow the sample string to rest on the bottom of the borehole. Mark the drill rods in three successive six-inch increments starting at a fixed reference point, prior to pounding.
- Begin pounding in the sampler string using the 140 pound hammer apparatus. Each hammer drop should be 30 inches in length. Rope-cathead, trip, semi-automatic, and automatic hammers may be used. See ASTM D 1586 for detailed specifications for hammer apparatus.
- Count the number of blows it takes to advance the sampling apparatus in each 6-inch increment.
- Discontinue hammering when one of the following occurs: the length of the sampler has been reached, the sampling apparatus does not advance after 10 blows, a total of 50 blows have been administered within any of the 3 six-inch intervals, or a total of 100 blows have been applied. Record the penetration achieved for the 50 blows (i.e. 50 blows/4 inches, etc.).
- The N-value of the material is determined by adding the number of blow counts from the second and third six-inch intervals. The first 6-inch interval is considered as a seating drive.
- Bring the sampler to the surface.
- Remove the drive shoe and head from the split barrel sampler by unscrewing them. Wrenches may be needed to remove the shoe and head from the split barrel.
- Open the split barrel length wise. Record the percent recovery or length of sample recovered/present. Also describe the sample using the methods as presented in Section 4.5 of SOP 5, including the Unified Soil Classification system symbols. Descriptions should include depth interval sampled, sample composition, sample color, stratification, condition, visual and field screening evidence of contamination (PID, etc.).
- Transfer the sample or representative portion to sealable moisture-proof containers. If there is more than one distinctive type of material, collect more than one sample for each stratum and note the location in the sampler barrel. Do not force the samples into the container. Maintain the natural stratification and structure of the sample. Label the container with site name, boring number, database ID, sample depth, date, and blow counts.

3.4 THIN WALLED TUBE SAMPLING (SHELBY TUBE SAMPLING)

The following sampling method is based on ASTM Method D1587-00. Thin walled tube samples are used to collect relatively undisturbed sediment samples suitable for geotechnical laboratory tests of strength, compressibility, permeability, and density. Thin walled tube sampling is suitable for soft sediments. It is not suitable for sediments containing gravel, larger sediment particles, cemented sediments, and very hard sediments (like till). Refer to the PSP for health and safety issues related to drilling and sampling. Shelby tubes will be used as the

primary means of collecting undisturbed samples. Piston samplers will be considered for use, when recovery with Shelby tubes is unacceptable.

Apparatus

The following apparatus and equipment are required to push a thin-walled sampler for the collection of undisturbed samples:

- Drilling equipment capable of providing a relatively clean borehole with minimal disturbance at the bottom of the hole where the thin-walled sampler will be pushed. The depth of the borehole will be checked prior to sampling, and the quality of the sample examined by visually inspecting the ends of the tubes. These steps will assist in ensuring that the sample is from undisturbed material. The borehole diameter may not be greater than 3.5 times the outer diameter of the thin-walled sampler.
- Sampler insertion equipment shall provide a relatively rapid continuous penetration force. For harder formations, it may be necessary to drive the sampler in. Although, the sampler may be damaged or the sediments may experience more disturbance than in the continuous push.
- Sampler dimensions may vary but should be proportional to the tube designs presented in ASTM D 1587. Tubes may have an outside diameter between 2 and 5 inches. The tubes clean and constructed of metal with no surface irregularities or weld seams. The tubes may be coated to prevent corrosion.
- Inside clearance ratio is the difference between the cutting head on the end of the tube and the rest of the tube. In general the difference between the cutting head and the rest of the tube is less than 1%.
- Sampler heads are used to connect the thin-walled tube with the drill rods used to lower and push the sampler. The thin walled sampler is connected to the head with two to four screws. The head is equipped with a venting area that avoids sample compression. The head may be equipped with a ball check valve to prevent washout or sample disturbance.

Advancement Procedures

- Clean loose material from the inside of the drill casing taking care not to disturb sediments below the casing. Maintain water levels within the casing when drilling and sampling below the water table.
- Lower the sampling apparatus (thin walled sampler and rods) to the bottom of the cleaned borehole. Keep the apparatus centered in the casing so the thin walled sampler and especially the cutting edge does not scrape the inside of the drill casing.
- Record the depth to the bottom of the sample tube from a known point (barge deck, ground level). Record the depth of water at that drill location if it has not already been done.
- Mark the length of the sampler on the drill rods starting with a fixed reference point such as the barge deck or ground level so the sampler may be pushed the full length of the sampler without over-pushing it.

- Advance the sampler without rotating the drill string using a continuous smooth push. The thin walled sampler should not be advanced more than the equivalent of 5 to 10 diameters of the sampler in sands and 10 to 15 diameters in clay. Allow 3 inches for residual sludge and cuttings that may be present in the bottom of the drill casing plus the length of the sampler head inside the thin walled sampler.
- If the casing must be driven due to stiff or hard formations, record the driving method, number of blow counts, weight of hammer, and penetration achieved. Label the outside of the sample indicating the sampler was "driven".
- Slowly rotate the drill string and thin-walled sampler to shear off the sample at the base of the sampler and to relieve water and/or suction pressures to improve recovery. Slowly withdraw the sampler. Recovery may be improved in soft materials if the sample is allowed to sit between 5 and 30 minutes before retrieval.

Sample Measurement, Sealing, Labeling, Storage, and Transport

- Upon retrieval of the thin wall sampler, examine (describe the sample composition and recovery) the bottom end of the sample without disturbing it. Seal the lower end of the sample with a packing material such as wax, then cap it (same as for upper end of sample, as described below).
- Remove the sampler head from the thin walled sampler.
- Measure the distance from the top of the sampler to the top of the sample. Calculate the total sample recovered.
- Visually describe the top of the sample without disturbing the sample.
- Seal the upper end of the sample. If there is void space in the tube, place a packer or packing material in the tube to provide proper confinement of the sample. Packing material must be inert material that will not absorb water from the sample or add water to the sample. Melted bees-wax is often used to seal the ends of the sample.
- Allow the inner wax seal to harden. Cap the upper end of the sample tube. Tape the two end caps on to the tube to keep them from slipping off. The ends of the tube are then sealed with more wax.
- Label the outside of the sample using a label or indelible marker. Label sample ID, date, and recovery. Use clear tape to cover and protect the tube label. Also label the top of the tube and put an "up" arrow in the outside of the tube.
- Store and transport the thin-walled tube samples in an upright position and minimize disturbance (banging, bumping, dropping, vibration).

4.0 QUALITY CONTROL AND QUALITY ASSURANCE

Accurate and repeatable geotechnical data are needed throughout the study area. This will be accomplished through consistent application of the drilling and sampling methods. The drilling contractor will follow the guidance of the SAP and QAPP. The drilling contractor will consistently follow their internal standard operating procedures and QA/QC plans in addition to ASTM D1586-99 and ASTM D1587-00.

5.0 SAMPLE CLASSIFICATION AND PROCESSING

Each sample will be classified per SOP 5 – Collection and Description of Sediment Grab and Core Samples.

6.0 DATA AND RECORDS MANAGEMENT

Any electronic data will be backed up daily or more frequently as needed. Backup data will be stored separately from the field computer to protect the data from corruption, physical damage, loss, or theft. Electronic field notes must also be backed up daily. Hand written notes will be entered in a bound field notebook.

7.0 REPORTING

Boring and sample information will be compiled on boring log forms. An example boring log form is attached at the end of SOP 5.

8.0 REFERENCES

ASTM 2004a, Standard Test Method for Penetration Test and Split-Barrel Sampling of Soils, D 1586-99, Annual Book of ASTM Standards 2004, Section 4, Construction Vol. 04.09. Soil and Rock (II).

ASTM 2004b, Standard Practice for Thin-Walled Tube Sampling of Soils for Geotechnical Purposes, D 1587-00, Annual Book of ASTM Standards 2004, Section 4, Construction, Vol. 04.09. Soil and Rock (II).

STANDARD OPERATING PROCEDURE 3: DECONTAMINATION

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STANDARD OPERATING PROCEDURE 3: DECONTAMINATION

1.0 PURPOSE AND SCOPE

The purpose of this document is to define the SOP for decontamination of equipment, instruments and other materials. Decontamination is the process of neutralization, washing, and rinsing exposed outer equipment surfaces and any equipment surfaces that may contact the sampled media to minimize the potential for contaminant migration and/or cross-contamination. This SOP does not apply to personnel decontamination which is described in the HASP.

The overall objective of the sampling program is to obtain samples that accurately depict the chemical and physical conditions at the sampling site. Extraneous contaminant materials can be brought to a sampling location and/or introduced into the medium of interest during the sampling program (e.g., by coring sediments) with equipment previously used at another sampling site or location. Trace quantities of these materials may introduce concentrations into other samples and lead to false positive analytical results and, ultimately, to an incorrect assessment of site conditions. Decontamination of sampling equipment (e.g., core tubes, water bottles, and other sampling equipment) and field support equipment (e.g., coring barge) is required so that sampling cross-contamination is prevented and on-site contaminants are not carried off the site.

The decontamination procedures described herein are to be followed. Substantive modifications to the procedure shall be approved in advance by the Field Sampling Manager.

2.0 RESPONSIBILITIES AND QUALIFICATIONS

The Field Sampling Manager is responsible for assigning appropriate field personnel to be responsible for the various site activities. The Field Sampling Manager is also responsible for assuring that this and any other appropriate procedures are followed by field personnel. Field personnel assigned to the various site activities are responsible for completing their tasks according to this and other appropriate procedures. Field personnel are responsible for reporting deviations from the procedure or nonconformance to the Field Sampling Manager. Only qualified field personnel shall be allowed to perform this procedure. Qualifications will be based on previous experience and health and safety training. These considerations are discussed in more detail in the project HASP.

3.0 DECONTAMINATION PROCEDURES

3.1 EQUIPMENT LIST

The following equipment list contains materials that may be needed in carrying out the procedures contained in this SOP. Since multiple procedures may be contained in the SOP, not all of which are necessarily conducted when using the SOP, not all materials on the equipment list may be required for a specific activity.

- Bristle brushes;

- Wash/rinse tubs;
- Low phosphate detergent;
- potable water
- Nitric acid rinse (10%)
- Distilled or de-ionized water;
- Aluminum foil;
- Polyethylene sheeting;
- Tap water (from any treated municipal water supply);
- Containers for collection and storage of decontamination fluids;
- Appropriate health and safety equipment;
- Sample container(s) for rinsate blank; and
- Field logbook and pen.

3.2 SAMPLING EQUIPMENT DECONTAMINATION

Sampling equipment will be decontaminated prior to use in the field to minimize cross-contamination. While performing the decontamination procedure, "phthalate-free gloves", such as nitrile or butyl rubber, must be used in order to prevent phthalate contamination of the sampling equipment or the samples. The equipment will be decontaminated in a designated area for decontamination.

Decontamination procedures will be implemented prior to each sampling event for all non-dedicated sampling equipment that will come in contact with the media to be sampled as summarized in the following sections.

Not all sampling equipment will require the full decontamination procedures listed above. For instance, gross decontamination of boat decks and large equipment that will not directly contact samples may be conducted using river water. In locations where drilling tools have NAPL, the equipment will be decontaminated with river water, and the rinse water will be containerized. Decontamination fluids from non-dedicated sampling equipment will be held in buckets or other containers, and transferred to drums in the waste handling area for proper disposal. New disposable equipment (sampling spoons, liners, tubes, catchers, etc.) that was delivered pre-cleaned and in sealed containers will not be decontaminated at the site before use. Specific decontamination will be performed based on the usage of the sampling equipment as defined below.

3.2.1 Small Sampling Equipment Decontamination

The following steps will be used to decontaminate small sampling equipment that will come in contact with media designated for potential chemical analysis (e.g., re-used sampling equipment) and materials which have come in contact with media and that may be destined for disposal at a municipal waste facility (e.g., used or damaged stainless steel or aluminum core tubes, or used and returned sample containers):

- Personnel will dress in suitable safety equipment to reduce personal exposure (see HASP).
- Gross contamination on equipment will be scraped off at the sampling location and collected according to residuals management procedures outlined in SOP 4.
- Equipment that will not be damaged by water will be placed in a wash tub or bucket containing Alconox (or other low-phosphate detergent) along with tap water, and scrubbed with a bristle brush or similar utensil. Solvent rinses are not needed, as the rinse procedures described above are sufficient for removal of organics prior to sampling.
- This rinse shall utilize sufficient amounts of water to flush rather than just wet the surface.
- Next the equipment will be rinsed with tap water then DI water in a second wash tub
- Next the equipment will be rinsed with 10% nitric acid (when samples are being analyzed for metals).
- Next the equipment will be rinsed with DI water.
- The various rinse fluids will be collected in a bucket for subsequent disposal.
- Following decontamination, equipment will be placed in a clean area and allowed to air dry to the extent practicable. Following air-drying, the equipment that will be used for sampling will be wrapped in aluminum foil, if it is not planned to used in the near future.
- Rinsate waste and detergent water will be replaced with new solutions daily, when visibly impacted by residuals, or between sampling areas or changes in operations. Used decontamination water will be collected and handled in accordance with residuals management protocols as outlined in the SOP 4.

3.2.2 Vessels and Large Sample Equipment Decontamination

The following steps will be used to decontaminate vessels, boat equipment such as boat anchors, lines, ropes, buoy marker weights, and large sampling equipment such as submersible pump and hose, clam shell and box core samplers, Vibracoring head, and stainless steel outer tubes:

- Personnel will dress in suitable safety equipment to reduce personal exposure (see PSP).
- Decontamination of the decks of the vessels will consist of river water washing of all sediment, residues, and associated water. Decontamination will be conducted daily, or between sampling locations, whichever is more frequent.
- Large sampling equipment and boat equipment that has directly contacted sediments or wastes shall be decontaminated between sampling locations, and prior to leaving the site. The sampling equipment will be scrubbed with a bristle brush and detergent, and rinsed with river water. General boat equipment will be rinsed with river water.
- Rinse water will be allowed to return to the river.

3.3 FIELD INSTRUMENTS AND EQUIPMENT

Instrumentation should be cleaned as per manufacturer's instructions. Probes such as those used in pH, ORP and specific conductivity meters will be carefully wiped clean using a sponge and detergent water and rinsed with deionized water. Care will be taken to prevent damage to equipment. When necessary, instruments which are difficult to decontaminate, such as cameras and logging instruments, may be protectively wrapped to reduce or eliminate the need for decontamination.

3.4 EQUIPMENT LEAVING THE SITE

All sampling equipment leaving the site will be decontaminated according to this SOP.

4.0 DOCUMENTATION

The field personnel are responsible for documenting decontamination activities related to their on-site activities. Observations and data will be recorded with ink in a field logbook with consecutively numbered pages. The information in the field logbook will include the following as a minimum:

- See documentation notes in SOP 1;
- Responsible person's name;
- Date and time of activity;
- Information concerning items decontaminated and the procedure(s) utilized; and
- Information related to the collection of blank samples.

STANDARD OPERATING PROCEDURE 4
HANDLING REQUIREMENTS FOR INVESTIGATION DERIVED WASTE (IDW)

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STANDARD OPERATING PROCEDURE 4: HANDLING REQUIREMENTS FOR INVESTIGATION DERIVED WASTE (IDW)

1.0 PURPOSE AND SCOPE

Site Investigations conducted at the Lower Genesee River Site mayresult in the generation of Investigation Derived Waste (IDW) that includes soil, sediment, decontamination water, and Personal Protective Equipment (PPE).. The IDW is classified as hazardous or non-hazardous based on generator knowledge or more often on the analytical results obtained pursuant to the investigation or, if necessary, by specific waste characterization samples. Until this determination is made, all IDW will be managed as if it is hazardous in accordance with this SOP and all applicable federal and state regulations and guidance. Management of these materials will comply with DER-10.

2.0 RESPONSIBILITIES AND QUALIFICATIONS

Contractors performing investigations and other activities generating waste at the site will be responsible for implementing this procedure while waste generating activities are ongoing.

3.0 SOILS GENERATED FROM ONSITE ACTIVITIES

Drill cuttings and other soils generated on-site will be presumed to be contaminated in accordance with DER-10. If these soils are to be left on ground at the end of the work day, they must be placed on protective sheeting and covered with protective sheeting in a manner that does not allow rainwater or snow melt to contact the soils thus potentially causing transport of contaminants. These soils may be disposed of within the borehole from which they were generated to within 12 inches of the ground surface, or if the site is a residential site, backfilled to within 24 inches of the ground surface. These soils will not be used as backfill if:

- they contain free-product, NAPL, or are otherwise grossly contaminated;
- the borehole is to be used for monitoring well installation;
- the borehole has penetrated an aquitard, aquiclude, or other confining layer, or has been advanced into bedrock;
- backfilling the borehole will create a significant pathway for vertical movement of contaminants. Bentonite can be added to reduce permeability.
- Soils that are not used for backfill will be containerized and characterized for disposal. If the soil is considered characteristic hazardous waste, or a solid waste, it must be managed and disposed at a properly permitted treatment, storage or disposal facility.
- Soils that are not characterized as a solid or hazardous waste may be placed at the site, or returned to the off-site location where it originated.

3.1 WATER

Water generated during an investigation must be initially containerized upon production. Liquids generated during field activities that exhibit visible staining, sheen, discernable odors, or free product will remain containerized for off-site disposal. These containers will be stored in a staging area designated by the NYSDEC Project Manager. The staging area will have secondary containment.

Water that does not exhibit any of these characteristics may be discharged to an unpaved area of the site as approved by the NYSDEC Project Manager.

3.2 DISPOSABLE SAMPLING EQUIPMENT AND PERSONAL PROTECTIVE EQUIPMENT

Dedicated sampling equipment (soil sample liners, disposable polyethylene bailer, polypropylene line, sample tubing) and personal protective equipment (PPE) will be handled and managed as solid waste

4.0 WASTE ACCUMULATION

All IDW generated during investigations will be logged utilizing Figure 1. The IDW Inventory Logs must be maintained on-site as long as the contractor is generating IDW.

4.1 WASTE CONTAINERS

It is preferable to accumulate waste in the containers that will be used to ship the waste to a disposal facility (except for bulk liquid waste that will be transported in tank trucks). As a result, these containers must meet both Department of Transportation (DOT) and United States Environmental Protection Agency (USEPA) requirements. Contractor should select containers that are authorized by DOT and meet United Nations (UN) performance-oriented packaging standards for the waste that will be shipped.

At a minimum, the following EPA requirements will be adhered to:

- Containers used to accumulate waste must be in good condition (e.g. no severe rusting or apparent structural defects).
- A container that begins to leak must immediately have its contents transferred to another container, or the leaking container must be overpacked in a salvage drum. The preference is to transfer the contents if the equipment is readily available, as it is generally less cost effective to dispose of waste in salvage drums. However, if transferring the contents cannot be readily accomplished, the leaking container will be immediately overpacked.
- The waste placed in the container must be compatible with it.
- Do not completely fill a container. Liquids expand in containers as temperature increases and the pressure created by expansion can cause bulging heads and damage the container.
- Protect containers from freezing. During changing weather conditions, many materials go through a freeze/thaw cycle that causes material stress and can result in leaking containers.
- Handle drums and other containers with equipment designed for the task. Drum grappler attachments are available for forklifts to securely grab and move containers. Never balance containers on the forks of a forklift or dangle from the bucket of an excavator with a rope or chain. Secure containers to pallets before moving the pallets. Use drum carts designed for the types of containers being used to reduce the likelihood of dropping a container during handling.
- Containers holding ignitable or reactive wastes must be located at least 50 ft within the site property boundary. These containers must also be kept away from sparks, open flames, extreme heat, static electricity, or other sources of ignition.

- Hazardous chemical reactions must be prevented by not mixing incompatible chemicals or materials in the same container or tank. Hazardous waste must not be placed in an unwashed container that previously held an incompatible waste material. If uncertain whether a waste is compatible with waste already in a container or with the container itself, contact a qualified individual for advice.
- Should contractor elect to accumulate liquid waste in tanks as defined in 40 CFR 260.10, the tank installation shall be in full compliance with 40 CFR 265, Subpart J. (Note: per 40 CFR 260.10, container means any portable device in which a material is stored, transported, treated, disposed of, or otherwise handled. A "tank" is defined as a stationary device, and a portable tank is defined as a container).

4.2 CONTAINER LABELING

Proper labeling of waste containers is the most critical step to allow for efficient handling of IDW. All other steps included in this SOP are dependent upon correct labeling on the containers (i.e., 3-day rule, 90-day rule, inspections, etc.). When a container is first brought to the site, it must be affixed with a properly filled out IDW label (Figure 2). At this time, do not mark a date on the container.

Additional labeling and dating will be required when the containers are filled, moved, and characterized, as described in Sections 3.3, and 3.4.

4.3 SATELLITE ACCUMULATION POINTS

IDW will typically be collected in containers at the site of the sample location on a daily basis. Under RCRA regulations, this collection point can be classified as a "Satellite Accumulation Point" and up to 55 gallons of hazardous waste may be accumulated at each location. The Contractor shall manage IDW in this area in accordance with all applicable federal and state requirements for satellite accumulation points. At a minimum, the following requirements will be adhered to:

- The satellite accumulation point must be under the control of the operator of the process that generates the waste[1]
- Containers must be in good condition.
- The waste being placed in the container must be compatible with the container.
- Containers must be marked with the words "IDW (Pending Analysis)" <u>and</u> with the identity of the contents of the container (e.g. drill cuttings, purge water, etc.).
- Containers holding hazardous waste must always be kept closed during accumulation except when necessary to add or remove waste ("Closed" is not clearly defined in the regulations. However, containers should be maintained such that none of their contents would be released if they were tipped over).
- Storage containers holding a hazardous waste that is incompatible with any other waste or materials stored nearby must be physically separated from the other materials by means of a dike, berm, or wall.

[1] Per 40 CFR 260.10, "Operator" means the person responsible for the overall operation of a facility and "person" means an individual, trust, firm, joint stock company, federal agency, corporation (including a government corporation), partnership, association, state, municipality, commission, political subdivision of a state, or any interstate body.

There is no limit on how many containers are stored at a satellite accumulation point or on how long those containers are stored there. However, when the volume of waste reaches 55 gallons at a satellite accumulation point, the excess waste must be marked with the date and moved to the central accumulation point or disposed on-site within 72 hours.

In addition to regulatory requirements, weather conditions must be considered. Containers of IDW should not be left at satellite accumulation points when there is a danger that the contents may freeze.

4.4 CENTRAL ACCUMULATION POINT

The contractor will be responsible for setting up and managing the central accumulation point in accordance with all applicable federal and state regulations. At a minimum, the following requirements will be adhered to:

- Hazardous Waste accumulation Points must clearly be posted with the words "Hazardous Waste."
- Aisle space must be maintained to allow unobstructed movement of emergency equipment and personnel into areas where waste is accumulated or stored. Adequate aisle space is determined based on types of emergency equipment necessary to respond to fires, spills, releases, or explosions of the IDW on site.
- When placing containers in the central accumulation area, they should be placed such that each drum is accessible from an aisle.
- Contractor may not accumulate over 8,800 gallons of liquid hazardous waste in the accumulation area unless secondary containment is provided.
- Contractor may not accumulate over 20,000 gallons in tanks at the accumulation point.
- Containers must be in good condition (e.g., no severe rusting or apparent structural defects).
- Containers holding hazardous waste must always be kept closed during accumulation except when necessary to add or remove waste ("Closed" is not clearly defined in the regulations. However, containers should be maintained such that none of their contents would be released if they were tipped over).
- Storage containers holding a hazardous waste that is incompatible with any other waste or materials stored nearby must be physically separated from the other materials by means of a dike, berm, or wall.
- The date upon which upon which each period of accumulation begins must be marked on each container and be visible for inspection. Additionally, each container must be clearly marked with the words "IDW (Pending Analysis)" until the waste classification has been confirmed.
- When a container of waste has been determined to be hazardous, cover the "IDW (Pending Analysis)" label with a Hazardous Waste label (Figure 3) properly filled out. When a container of waste has been determined to be non-hazardous, cover the "IDW (Pending Analysis)" label with a "non-hazardous waste" label (Figure 4) properly filled out.

4.5 INSPECTIONS

To ensure that accumulation points are kept in good condition, RCRA regulations require these points be inspected weekly. The *contractor* must inspect areas where containers are stored for leaks and deterioration caused by corrosion or other factors, using the attached inspection checklist (Figure 5). Inspection records must be maintained on-site as long as the contractor is utilizing the accumulation point.

5.0 WASTE CHARACTERIZATION

The IDW will be classified as hazardous or non-hazardous based on generator knowledge, the analytical results obtained pursuant to the investigation or, by specific waste characterization samples.

5.1 SPECIFIC WASTE CHARACTERIZATION SAMPLES

In some situations (e.g. geotechnical studies) environmental samples are not analyzed or environmental samples indicate the presence of contaminants at levels that could make the waste characteristically hazardous. In those situations, samples will need to be collected and analyzed for specific parameters to determine the waste classification.

6.0 NON-CONVENTIONAL IDW

During the course of an investigation, Contractors will need to manage IDW other than contaminated media such as soil or groundwater. This non-conventional IDW will include PPE, lexan sample tubes, unused samples in bottles, and other unusual items. The procedures for managing these items will depend on the nature of the IDW.

6.1 PPE

In general, PPE used for various activities at the site does not become covered with a sufficient quantity of a contaminated media to fail a TCLP test, and would therefore not be hazardous by characteristic. Therefore in most cases, PPE will be handled and be disposed as non-hazardous waste.

The only exception to this will be when there is potential for the PPE to come in contact with contaminated media. In these situations, PPE will be bagged and managed separately from the other IDW generated and waste classification will be determined using one of the analytical techniques described in Section 4.

6.2 RETURNED SAMPLE BOTTLES

Many laboratories return unused samples to the generator in the original sample bottles for disposal. Disposal of intact sample bottles requires special handling as “lab packs”. This adds unnecessary complexity and requirements to the management of this waste. Whenever sample bottles are returned after an investigation, the environmental sample results will be used to determine disposition. Non-hazardous sample bottles may be disposed intact as non-hazardous waste, hazardous waste samples should be crushed and consolidated based on site and media and disposed as hazardous waste.

6.3 OTHER NON-CONVENTIONAL IDW

Whenever unusual IDW is encountered during an investigation (e.g. pipe full of soil, concrete rubble, spent carbon, etc), the Contractor should notify the NYSDEC Project Manager as soon as possible. These materials will be addressed on a case-by-case basis.

7.0 PREPAREDNESS AND PREVENTION

7.1 REQUIRED EQUIPMENT

The contractor should be equipped with the emergency equipment listed below. The equipment should be near enough to the IDW area to make it convenient and easy to get to in the event of an emergency, but not so close that it cannot be approached or could be damaged in the event of a spill or fire. Required equipment consists of:

- A device capable of summoning emergency assistance from emergency responders.
- An internal communication or alarm system capable of providing immediate emergency instruction to site personnel whom can be affected by the emergency incident.
- Portable fire extinguishers, fire control equipment, spill control equipment, and decontamination equipment, as needed.
  - A document providing the following information:
  - Name and telephone number of the emergency coordinator
  - Location of spill and fire control equipment, and fire alarm (if applicable)
  - Telephone number of the local fire department.

All site communications or alarm systems, fire protection equipment, spill control equipment, and decontamination equipment that have been deemed necessary at the IDW area must be tested and maintained as frequently as necessary to assure its proper operation in the event of an emergency. A periodic inspection schedule should be established, and inspections should be documented.

7.2 SITE CONTINGENCY PLAN

EPA requires generators of hazardous waste to develop procedures to respond to emergencies and in many cases incorporate those into a contingency plan. The requirements for contingency plans include:

- The contingency plan must be designed to minimize hazards to human health or the environment from fires, explosions, or any unplanned sudden or gradual release of hazardous waste into the air, soil, or water
- The procedures that will be followed in response to emergencies must be detailed in the contingency plan
- A copy of the current contingency plan must be kept on-site
- A copy of the plan and all revisions to the plan must be submitted to all local police departments, fire departments, hospitals, and state and local emergency response teams that might be called upon to provide emergency services.

Contingency plans must include the following information:

- Emergency procedures
- Emergency assistance agreements
- Emergency coordinator list
- Emergency equipment list
- Evacuation plan

If contractor has already prepared a Project HASP for the work to be conducted at the site, it most likely covers many of the requirements of a hazardous waste contingency plan. Contractor should verify that the HASP meets the above requirements. If not, the HASP should be amended to incorporate hazardous waste provisions that are sufficient to comply with these requirements and all applicable state and federal regulations.

7.3 INCIDENT REPORTING

RCRA regulations require reporting to an outside agency (i.e. on-scene coordinator with jurisdiction over the site or the National Response Center @ 800-424-8802) if there is a release, fire, or explosion that could threaten human health or the environment outside the facility. CERCLA Section 101(14) and SARA Title III section 304 also require immediate reporting of releases of reportable quantities of CERCLA hazardous substances and extremely hazardous substances to the National Response Center, state emergency response commission, and local emergency planning committee. New York State also requires that any release, fire, or explosion, which could threaten human health or the environment outside the facility to be reported to the NYS Department of Environmental Conservation at (800) 457-7362.

FIGURE 1
IDW INVENTORY LOG

Identifier [1]	Drum Contents [2]	Depth Interval [3]	Date Generated	Environmental Sample ID [4]	Central Accumulation Point Management [5]

Notes:
1. Containers used to collect IDW at satellite accumulation points should be marked with an identifier that includes location where container was generated, and a sequential number whenever more than one container of IDW is generated at that single location.
2. Indicate soil, water, sediment, PPE, etc. Include all media present in container.
3. If multiple containers of drill cuttings are obtained from a single boring, indicate the depth interval associated with the waste in the container. Also mark depth interval on drum.
4. Indicate environmental sample numbers for samples associated with IDW in drum for characterization purposes.
5. Indicate whether IDW was placed in the Central Accumulation Area in the same container that it was collected in or if the contents were emptied into a bulk container. If applicable, indicate ID number of bulk container.

FIGURE 2
IDW (Pending Analysis) LABEL

Investigation Derived Waste (Pending Analysis)

Site Name	
Container Identifier	
Container Contents	
Depth Interval	
Environmental Sample ID	
Date Container Transferred to Central Accumulation Point	
Date Characterization Sample Collected	

Generator Information:

Name _____

Address _____

City _____ State_____ Zip_____

FIGURE 3
HAZARDOUS WASTE LABEL

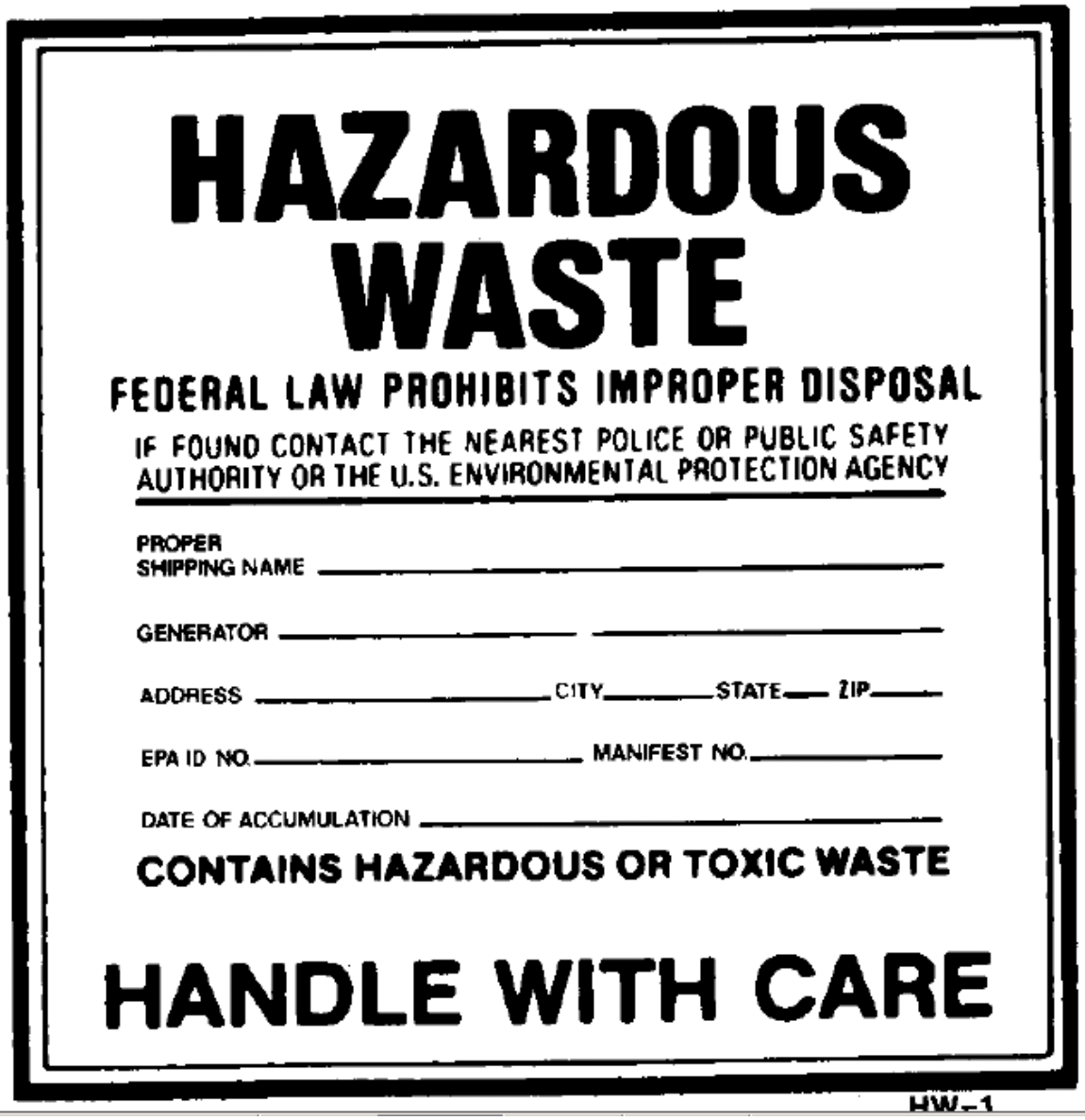

FIGURE 4
NON-HAZARDOUS WASTE LABEL

FIGURE 5
IDW COLLECTION AREA INSPECTION LOG

Location: _____ **Organization:** _____

Inspected by: _____ **Date:** _____ **No. of Containers:** _____

Signature: _____ **Accumulation Point No./Location:** _____

Date of Reinspection: _____ **Inspector:** _____

Hazardous Waste Containers			
Container Condition		Yes	No
	Are any open?		
	Are any severely rusted?		
	Are any container heads bulging?		
	Are any leaking?		
If any of these questions was marked YES, comment: _____			
Describe actions taken to correct situation: _____			
Container Marking		Complete	
	Accumulation start date marked on container(s)		
	Hazardous waste warning marked on container(s)		
	Contents marked on container(s)		

Accumulation Point		
	Yes	No
Is the accumulation point free of severe structural deterioration?		
Is adequate aisle space present between drums to allow unobstructed movement for emergency response?		
If any of these questions was marked NO, comment: _____		
Describe actions taken to correct situation: _____		

Emergency Response Equipment			
		Yes	No
Telephone	Is it easily accessible in case of emergency?		
	Is it in working order?		
Spill Control	Is an empty salvage drum nearby?		
	Is unused absorbent material nearby?		
	Is all personal protective equipment nearby? Gloves Boots Apron Goggles Respirator		
Fire Protection	Is a fire extinguisher readily accessible?		
	Is the fire extinguisher fully charged?		
	Is the fire extinguisher seal intact?		
If any of these questions was marked NO, comment: _____			
Describe actions taken to correct situation: _____			

STANDARD OPERATING PROCEDURE 5: COLLECTION AND DESCRIPTION OF SEDIMENT GRAB AND CORE SAMPLES

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STANDARD OPERATING PROCEDURE 5: COLLECTION AND DESCRIPTION OF SEDIMENT GRAB AND CORE SAMPLES

1.0 SCOPE

The river bottom will be sampled using a grab sampler that is capable of obtaining a surface grab or shallow core sample (Ponar dredge, gravity core sampler, push core sampler, or other). A Vibracore will be used to collect deeper sediment cores for testing and analysis. See SOP 7, Data Management Program, for list of field measurements and field data collection and recording requirements. Methods for holding the sampling vessel over the sample location, sampling techniques, and sample processing are described below. Details related to sample processing are contained in SOP 1 (Containers, Preservation, Handling, and Tracking of Samples for Analysis).

2.0 HEALTH AND SAFETY CONSIDERATIONS

A safety briefing will be held at the beginning of each cruise and at each shift in personnel. The designated safety officer on the vessel shall be responsible for ensuring the safety of personnel and will be contacted immediately in the event of an emergency. The standard safety considerations for marine sampling – caution deploying and retrieving heavy equipment, keeping hands and clothing out of winches and A-frame supports, and stepping in the bight of lines or cables – apply to the field crew during sampling. Winches, lifts, cables, and lines will be used within their designed limits to avoid injury from equipment failures. Appropriate PPE will be donned prior to the start of work as described in the HASP. These considerations are discussed in more detail in the project HASP.

3.0 EQUIPMENT

The following equipment list contains materials that may be needed to carry out the procedures contained in this SOP. Since multiple procedures or alternate methods may be employed to achieve the objectives, not all materials and equipment included on the list may be necessary to complete the task.

- Sediment sampler (Ponar dredge, gravity core sampler, push core sampler, Vibracore sampler(s), probing equipment or instruments). Samplers will be selected that are compatible with the objectives of each task, as described below in this SOP.
- Winch (if necessary);
- Boom arm or A-frame;
- Sediment core sampler (Vibracore, piston tube, Wildco tube sampler, etc.);
- Core liners, core catchers, liner caps, etc.;
- Saw, knife, cutters to open or split core liners;
- Sampling vessel or floating platform;
- Propulsion method for sampling vessel or floating platform;

- Containers, buckets, tubs;
- Small trays;
- Calibration bucket;
- Wash box;
- Glassware;
- Log book, indelible pens/markers;
- Labels;
- Coolers;
- Duct tape;
- Spoons;
- Gloves; and
- Meter wheel/measuring device (tape measure, yard stick/meter stick);
- Hanna HI9025C portable meter with HI1230 and HI3230 probes, or equivalent;
- Photoionization detector.

3.1 FIELD INSTRUMENT CALIBRATION

A Hanna HI9025C portable meter with HI1230 and HI3230 probes, or equivalent, may be used to measure the pH and oxidation-reduction potential (ORP) of the sediment samples in conjunction with a temperature probe. Photoionization detectors (MiniRAE 2000 or equivalent) may be used to screen for the presence of volatile organic compounds (VOCs). Calibration will be performed daily before field measurements are conducted and will be carried out according to the manufacturer's instructions. Below is a summary of the calibration procedures required prior to field measurements. These methods are based on those provided in the Hanna HI9025 meter manual.

pH

A one-point calibration will be conducted using pH 7.01 standard solution as follows:

1. Immerse the pH electrode into pH 7.01 buffer solution and stir briefly.
2. Press the CAL key. The "CAL" and "BUF" indicators will be displayed. The secondary LCD will display "4.01".
3. Press the up degrees C key twice. The secondary display will change to "7.01".
4. When the electrode is submerged in the buffer solution, the meter will notify the user that the reading is not stable. If the readings fluctuate the LCD will blink "NOT READY" and the "CON" symbol will blink.
5. Press the CFM key to confirm the calibration. If the reading is not close to the selected buffer, "WRONG BUF" will blink alternatively. If the reading is close to the selected buffer, the meter stores the reading (and adjusts the offset point). The buffer

value is then displayed on the primary LCD and the secondary LCD will display "4.01".

6. Press the CAL key and the calibration process is ended with only the offset of the meter calibrated. For best accuracy, a two-point calibration should be performed as described below.

A two-point calibration will be conducted using pH 7.01 and pH 4.01 or pH 10.01 as follows:

1. Follow the "One-point calibration at pH 7.01" procedure as described above, but do not end calibration by pressing the CAL key.
2. After the first calibration point is confirmed, immerse the pH electrode into the second buffer solution (pH 4.01 or pH 10.01) and stir briefly.
3. Select the second buffer value on the secondary display by pressing the up or down degrees C keys.
4. When the "READY" and "CON" symbols blink on the display, the reading is stable and the calibration can be confirmed.
5. Press the CFM key. If the reading is not close to the selected buffer solution, "WRONG BUF" will blink alternatively. If the reading is close to the selected buffer, the slope and the offset are calibrated. The values will be stored in the memory and the meter will return to operation mode.
   - NOTE: the meter will automatically skip over the buffer used on the first calibration point to avoid erroneous calibration.

ORP

The Hanna HI9025C uses a gel-filled HI3230 combination platinum ORP electrode and should be calibrated as follows:

1. Replace the pH probe with the ORP probe.
2. Turn on the meter.
3. Push the RANGE key until the display changes to mV.
4. Insert the probe into the calibration check solution.
5. Verify that meter is measuring close to the calibration solution.
6. If the meter is close to the calibration solution, begin conducting field measurements.
7. If the meter is not close to the calibration solution, shut the meter off. Repower the meter and recheck measurement of the calibration solution. If the meter is not close to the calibration solution, replace the meter or the faulty parts of the meter.
8. To normalize ORP readings to the hydrogen electrode, 204 mV should be subtracted from the mV reading indicated by the instrument. This is because the reference electrode is 3.5M Ag/AgCl.

PID

The MiniRAE 2000 PID or equivalent will be calibrated daily or more frequently if needed following these procedures

1. Turn on the meter by pressing and holding the mode button.
2. Allow it to warm up for approximately 30 seconds
3. Press the Y key to begin sampling mode.
4. Allow the PID to run for 3-5 minutes to warm up and stabilize.
5. While the unit is warming up, set up the calibration gas (100 ppm Isobutylene) for use by attaching a regulator to the gas bottle.
6. Transfer the calibration gas from the calibration bottle to an empty Tedlar bag through a rubber or plastic tube.
7. Set the PID to Calibration Mode by simultaneously pushing and holding the MODE and N/- keys until the display displays Calibrate/select Gas.
8. Follow the instructions on the screen. The unit will scroll through screens showing current default settings. Verify the correction factor is 1 and the calibration range is 100 ppm Isobutylene.
9. When prompted, select the fresh air/zero calibration. Let the PID go through the fresh air calibration.
10. When prompted Span Cal?, choose Y, verify the screen says Cal gas = Isobutylene and the Span value – 0100.0.
11. Apply the bag of 100 ppm Isobutylene gas to the tip of the PID through the plastic or rubber hose.
12. Let the PID run through the calibration.
13. When the calibration is complete the PID screen will indicate the calibration is complete.
14. Press the Y key to start sampling.

4.0 PROCEDURE

4.1 VESSEL PROCEDURES FOR SEDIMENT GRAB SAMPLING

1. Once in position and position is identified and recorded, lower the sampler to the sediment surface, and ensure that the suspending cable is vertical. If wind and currents push the vessel off position, it may be necessary to anchor the boat to hold the position.

2. After the sample is collected, the sampling device should be lifted slowly off the bottom and then steadily raised to the surface at a speed of about 30 cm/s (1 ft/s). Minimal leakage of the sampler indicates that the sample was collected in its entirety.
3. At end of sampling and between locations, conduct decontamination procedures as described in SOP 3.

4.2 VESSEL PROCEDURES FOR SEDIMENT CORE SAMPLING

1. Set anchors or lines to secure structures as required to hold the vessel over the sample location
2. If multiple cores are to be collected, the position of the sampling vessel will be changed between cores by adjusting the length/tension on the anchor lines. This ensures that each core is collected within a few feet of the previous core but in an undisturbed location.
3. The speed of descent of the coring devices should be controlled, especially during the initial penetration of the sediment, to avoid disturbance of the surface and to minimize compression due to frictional drag from the sides of the core liner.
4. At the end of sampling and between locations, conduct decontamination procedures as described in SOP 3.

4.3 SEDIMENT GRAB SAMPLING PROCEDURES (PONAR DREDGE)

The following methods will be used to collect sediment grab samples at locations specified in the work plan. Sample handling will be conducted as defined in SOP 1, equipment decontamination will be conducted as described in SOP 3, and management of the investigation derived waste (sediment residuals, water, etc.) will be conducted as described in SOP 4. Personal protective equipment (PPE) appropriate for the known contaminants of concern will be donned prior to the commencement of sampling as specified in the PSP.

1. Navigate the sampling vessel to the target location; use spuds or anchors to maintain vessel position.
2. Securely attach a decontaminated Ponar Dredge sampler to a winch with cable or line of sufficient strength to accommodate the weight of the sampler and sample.
3. Set the mechanism on the sampler so the jaws are held in the open position.
4. Slowly lower the sampler using a winch and A-frame or boom arm through a moon pool or over the side of the vessel. Maintain tension on the sampler to keep the jaw mechanism from prematurely closing.
5. After the sampler contacts the sediments on the bottom, relax the tension on the sampler to allow the jaw locking mechanism to release.
6. Place tension on the cable/line and slowly lift. This should cause the sampler jaws to close trapping the sample inside.
7. Slowly and steadily retrieve the sampler.

8. Hang the sampler above a pre-cleaned container of suitable size and composition (an inert material that will not interfere with or cause cross contamination). For some samples, multiple gallons of sediment will need to be collected and homogenized.
9. Siphon off free water from the top of the sediment sample in a manner that avoids loss of sediment.
10. Once a sufficient volume of sample has been collected, manually homogenize the sediment with a large, long-handled, clean stainless steel spoon. The mixing should be done quickly to minimize oxidation within the sample.
11. Place contents of sampler into suitable container. Visually examine the sample to determine whether it is acceptable.
12. Pick large objects such as wood debris, vegetation, and living organisms (clams etc.) from the sediment and discard.
13. Measure the pH and ORP of the sediment (if required) by inserting the instrument probe into the soft sediment. Record the readings in a field notebook and in the database, after the meter has stabilized.
14. Record all required fields in the field database at each sampling location in accordance with SOP 7, in addition to recording in a field notebook.
15. Repeat the process until sufficient sample quantity has been recovered.
16. Transfer the sediments to a designated container(s) or keep the sediment in the original container(s), seal the container(s) in a manner that minimizes headspace, and transport the sample(s) to the onshore sample processing area.
17. Process the sediment as described in SOP 1, Sections 3.2 and 3.3.1.

4.4 GENERAL GRAB SAMPLING PROCEDURES (PUSH CORING)

The following methods will be used to collect short (12 inch) sediment core sample locations. Sample handling will be conducted as defined in SOP 1, equipment decontamination will be conducted as described in SOP 3, and management of the investigation derived waste (sediment residuals, water, etc.) will be conducted as described in SOP 4. Personal protective equipment appropriate to the known contaminates of concern will be donned prior to the commencement of sampling as specified in the HASP.

1. Navigate the sampling vessel to the target location; use spuds or anchors to maintain vessel position.
2. Place a new lexane (or equivalent) core tube in the push core sampler.
3. Determine the water depth and add an appropriate number of extensions to the push core sampler to reach the sediment.
4. Lower the push core sampler with the check valve in the open position slowly until the sediment water interface is encountered. Apply sufficient force on the top of the sampler to penetrate the sediment 18-24 inches.
5. Close the check valve (if equipped) and slowly lift the sampler out of the sediment. Place a cap over the bottom of the core tube just prior to lifting it out of the water.

6. Remove the core tube from the push core sampler. If the recovery is 12 inches or more, place a cap on the top of the core tube, and use duct tape to secure both caps in place. Label the core tube with the sample ID, date, time, and initials.
7. Record all required fields in the field database at each sampling location in accordance with SOP 7.
8. Core samples will be stored vertically until delivered to the processing areas at the end of the work day.
9. Sediment samples will be kept refrigerated or on ice at the processing area until processed. Sample processing will include extruding the top 12 inches of sediment for subsequent testing, in accordance with SOP 1 (Sections 3.2 and 3.3.1) within 24 hours of delivery to the processing area. Samples collected on Fridays will be processed the following Monday.

4.5 GENERAL GRAB SAMPLING PROCEDURES (GRAVITY CORING)

The following methods will be used to collect short sediment core samples. Sample handling will be conducted as defined in SOP 1, equipment decontamination will be conducted as described in SOP 3, and management of the investigation derived waste (sediment residuals, water, etc.) will be conducted as described in SOP 4. Personal protective equipment appropriate to the known contaminants of concern will be donned prior to the commencement of sampling, as specified in the HASP.

1. Place a new lexane core tube (or equivalent) in the gravity core sampler. Insert a core catcher in the bottom of the tube, and secure in place using the nose cone. Make sure the weights on the sampler are secure.
2. Attach the gravity core sampler to the winch cable. Determine the water depth and lower sampler slowly to within approximately 5 ft. of the sediment/water interface.
3. Allow the sampler to free fall into the sediment. When the sampler meets refusal, slowly lift the sampler to the surface and place on the deck of the sampling vessel. Remove the nose cone and place a cap on the bottom of the core tube. Remove the core tube from the sampler and measure the recovery of the core. If the recovery is less than 0.5 ft in length, discard the sediment, rinse the core tube with river water to remove visible sediment, and reattempt to collect the core.
4. If an acceptable core is collected (at least 0.5 ft in length), place a cap on the top of the core, and use duct tape to secure both caps in place. Label the core tube with the sample ID, date, time, and initials.
5. Record all required fields in the field database at each sampling location in accordance with SOP 14.
6. Core samples will be stored in a vertical position until delivered to the processing areas at the end of the work day.
7. Sediment samples will be kept refrigerated or on ice at the processing area until processed. Sample processing will include extruding the top 2 cm for analysis, in

accordance with SOP 1 (Sections 3.2 and 3.3.1), within 24 hours of delivery to the processing area. Samples collected on Fridays will be processed the following Monday. See Section 4.7 below for details on collection and processing of cores for collection of the top 2 cm.

4.6 SEDIMENT CORE SAMPLING

4.6.1 General Coring and Sampling

The following methods will be used to collect sediment core samples up to ~20 ft in length.

1. Select a sediment core sampler (Vibracore, piston tube, Wildco tube sampler, etc.) suitable for the bottom conditions/sediment characteristics, water depth expected, the volume of material needed, and the planned depth of sampling, and possible physical restrictions affecting deployment (e.g., vessel size, lifting capacity, etc.).
2. Select sediment coring tools of sufficient diameter and length to obtain the needed sample volume and depth of penetration. Multiple sediment cores may need to be pushed depending on the volume of sediment needed. Predetermine the number of cores required to avoid having to return to a location for additional cores/sample volume.
3. Set up the sediment coring tool and install the core liner tube, drive head, drive shoe, and/or core catcher, piston, and piston line, as appropriate for the specific sampler chosen and the proposed depth of sample/penetration.
4. Securely attach the core sampler to a winch with a cable or line of sufficient strength to accommodate the weight of the sampler (Vibracore) or other sampler (piston tube or Wildco tube sampler).
5. Slowly lower the sampler through the moon pool or over the side of the vessel until the sampler reaches the water/sediment interface. The sampler will be lowered on a winch cable (Vibracore) or with the assistance of an A-frame or boom to carry/control the weight of the sampler. Note the depth to the top of sediment.
6. Advance the sediment core sampler into the sediment to the proposed penetration depth or to refusal, whichever occurs first. If refusal is encountered, the sampling location should be moved slightly and the sample attempted again. The location where refusal was encountered should be noted. Three attempts should be made at a station. If a sample cannot be collected after three attempts, the field crew should notify the field team leader. If unable to contact the field team leader then the crew will move the next location.
7. The Vibracore sampler will be advanced by the vibrating head. The Vibracore sampler will continue to be attached to the winch line and the rate of descent will be controlled during penetration into the sediment. The piston tube or Wildco tube samplers will be advanced manually. If necessary, the piston tube or Wildco tube sampler may be advanced by tapping the top of the sampler conductance pipe with a

rubber mallet. These samplers are intended for soft sediment and will not tolerate heavy abuse.

8. Upon reaching the target penetration depth (or refusal), slowly retrieve the sediment-coring tool. As soon as possible, cap the bottom of the sample tube to prevent loss of sample. Secure the sampling apparatus.
9. Remove the sediment core liner from the sampling apparatus.
10. Cap the bottom end of the core tube if it was not capped previously.
11. Allow the core to drain by decanting the water off the top of the core, without disturbing the surface of the sediment. Decanting of water will be accomplished by either sawing/cutting a slot or drilling a hole in the core tube below the sediment/water interface, and allowing free-standing water above the interface to drain out. After decanting, the hole will be sealed with duct tape or other material. For shorter cores, such as push tubes or Wildco samples, decanting can be conducted either on the boat, or in the sample processing area. At the first sign of sediment in the drained water sample, cease draining and tie or cap the sample liner to ensure that the sediment "fluff" layer is retained in the sample.
12. Cap the top of the core tube. Measure core recovery. The criterion for an acceptable core recovery is of 70% or greater of the coring depth given in the work plan. If less than 70% recovery is obtained, take additional cores as described below in Step 21.
13. The cores will be cut into appropriate lengths to facilitate transport and handling. Cores will be cut by laying the cores horizontally on the deck, and marking the core tube intervals starting from the top of the sediment. The core tubes will then be cut with an appropriate saw. The sections will be separated using a broad knife, and capped at each end. The caps will be secured with duct tape.
14. Secure caps using tape caps so that the caps do not leak or slip off during transport or storage.
15. Record all required fields in the field database at each sampling location in accordance with SOP 7.
16. Write the location ID, orientation (up arrow) and depth on the outside of the core tube and on the core cap with a permanent marker.
17. Store the core vertically on the vessel in a safe area where minimal disturbance to the sample will occur.
18. Transport sediment cores to the onshore processing area throughout the day. Cores tubes should be secured in an upright position until core samples can be processed.
19. Decontaminate the sediment coring apparatus as described in SOP 3.
20. Repeat the process at an offset location until sufficient sample quantity has been recovered. The number of cores per location is specified in the work plan. Additional cores may need to be obtained if many different analyses will be run on thin layers or bulk samples are required for settling tests or bench scale tests.

21. If insufficient core sample recovery (less than 70%) or refusal is encountered before reaching the proposed depth, reposition the vessel in the vicinity of the prior attempt, and repeat the process up to two more times in an attempt to obtain better recovery or better penetration. Select the core with the best percent recovery and penetration for sampling and analysis. The coordinates for each core should be obtained and documented.
22. Process the core samples as described in SOP 1 (Sections 3.2 and 3.3.1).

4.6.2 Coring for Collection of Bulk Samples

The following methods will be used to collect sediment bulk samples:

1. Prepare the sample containers. Check the sample volumes. Ensure sample container lids are available.
2. Bulk sampling procedures are generally similar to coring for other samples except for the handling of the core once brought to the deck. Therefore the first 11 steps from the procedures discussed in Section 4.6.1 should be followed.
3. For all bulk samples the cores will be cut on the boats. Composite the sediments by placing the selected interval from each core directly into a clean 5-gallon bucket (or equivalent) with gasketed lid until the bucket is full, while minimizing sample handling and aeration as much as possible.
4. All samples should not be homogenized and care should be made to minimize disturbance.
5. Record all required fields in the field database and field forms/notebook at each sampling location in accordance with SOP 7.
6. Process the samples as described in SOP 1 (Sections 3.2 and 3.3.1).

4.7 SEDIMENT SAMPLING FOR POREWATER ANALYSIS

The following methods will be used to collect undisturbed sediment samples from the river sediment for porewater analysis.

1. Collect sediment samples using procedures outlined in Section 4.4 through 4.6.
2. The water above the sample will be left in place until preparation at the laboratory. This will maintain the sediment in a fully hydrated state. The cores should be kept upright until sample preparation by the laboratory at which time the free water will be decanted. .
3. Label the core as described in SOP 1 (Containers, Preservation, Handling and Tracking of Samples for Analysis);
4. After ensuring both ends are tightly capped and taped, ship to the laboratory in a cool, dark container. Shipping containers are to be properly marked to minimize disturbance. Other details regarding porewater sample collection, handling, processing, and analysis are contained in SOP 9, Porewater Sampling Program.

4.8 SAMPLE DESCRIPTION

Sediment core and grab samples, split spoon samples, and Shelby tube samples (only what can be seen at the ends without disturbing the sample) will be described using the Burmister Classification System and given a Unified Soil Classification System designation. Descriptions will be entered on the attached boring log form. The Burmister Classification System and Unified Soil Classifications are based primarily on grain size. In addition, visual indications of contamination and field screening results are included in environmental soil descriptions. The following discussion is adapted from the Burmister and Unified Soil Classification systems.

4.8.1 Burmister Classification System

Samples descriptions based on the Burmister Classification System (ASTM, 1958) include the following components and are reported in the order shown below:

- Moisture content;
- Consistency;
- Color; and
- Sediment Class (beginning with the most predominant grain size, followed by the second, third, etc. The predominant grain size constituent is capitalized for emphasis.)

An example sample description might be: wet, medium dense, brown, fine to medium SAND, some fine gravel, trace clay. Each of these components is discussed further below.

1. MOISTURE CONTENT

The relative moisture content of the Sediment at the time of sampling shall be designated as: “dry”, “moist”, or “wet”.

2. CONSISTENCY

The consistency of the soil/sediment sample shall be described as follows:

Fine Grained Soils (Silts and Clays): “Stiff”, Medium Stiff”, or “Soft” and whether the soil/sediment is “plastic” or “non-plastic”

Coarse Grained Soils (Sands and Gravels): “Loose”, “Medium Dense”, or “Soft” and degree of cementation. The description will also include the shape of the grains (“Flat”, “angular”, “rounded”) and the grading (“Well Graded, “Poorly Graded”, or “Uniform”). The penetration rate while conducting Standard Penetration Tests with split spoons is also an indication of the compaction/density of the material. The following table is a penetration guide.

The penetration rate while conducting Standard Penetration Tests (SPT) with split spoons is also an indication of the compaction/density of the material. The table shown below is a penetration guide and will be used to determine the consistency of the material. The SPT values across the middle of the 2-ft split spoon will be used to select from the penetration guide below. SPT values are typically recoded in 6-inch intervals, so for example: a 2-ft spoon has values four, three, six, nine. The SPT value used to determine consistency is 9. If the material was sand the

consistency from the table is "Medium Dense", if the material was Clay the consistency is Stiff. For materials that are dominantly silt the "Clay" section of the guide will be used.

PENETRATION GUIDE

SAND		CLAY	
Very Loose	0-4 Blows per ft.	Very Soft	<2 Blows per ft.
Loose	4-10 Blows per ft.	Soft	2-4 Blows per ft.
Medium Dense	10-30 Blows per ft.	Medium Stiff	4-8 Blows per ft.
Dense	30-50 Blows per ft.	Stiff	8-15 Blows per ft
Very Dense	50+ Blows per ft.	Very Stiff	15-30 Blows per ft.
		Hard	30+ Blows per ft.

3. COLOR

The predominant color of the soil/sediment sample in the natural state shall be designated as: "White", "Brown, "Yellow", "Red", "Gray", "Blue", or "Black". In some cases the sample may be "Mottled" (a combination of colors such as red/gray, blue/gray, etc.).

4. GRAIN SIZE

Soils are predominantly classified based on grain size. The four main grain sizes are: "Gravel", "Sand", "Silt", and "Clay". Sands are further described as coarse, medium, or fine and gravels are described as coarse or fine. The following table lists the breakdown of grain sizes and sieve numbers for each category (modified Burmister system).

GRAIN SIZE AND SIEVES

SOIL	FROM SIEVE NUMBER	TO SIEVE NUMBER	FROM MM	TO MM
Gravel-coarse	3-inches	¾-inches	75	19.0
Gravel-fine	¾ inches	#4	19.0	4.75
Sand-coarse	#4	#10	4.75	2.0
Sand-medium	#10	#40	2.0	0.425
Sand-fine	#40	#200	0.420	0.075
Silt	#200	Material passing the No. 200 sieve which is usually non-plastic in character and exhibits little or not strength when air dried.		
Clay	#200	Material passing the No. 200 sieve which can be made to		

		exhibit plasticity within a certain range of moisture contents and which exhibit considerable strength when air dried.

Grain Size Description: Grain size description is listed in order of predominance starting with the most predominant.

First Entry: Most predominant grain size in the sample. The entry is fully capitalized (SAND, SILT, CLAY, and GRAVEL), if it comprises 50% or more of the sample. Otherwise, the predominant fraction is listed first, with only an initial capital.

Second Entry: The second, third etc. most predominant grain size materials in order of predominance. The percentages of the constituents are indicated by the following descriptors:

"and"	50-35%
"some"	35-20%
"little"	20 to 10%
"trace"	10 to 1%

A soil/sediment description may be SILT, some fine sand, trace clay (mostly silt with 20-35% fine sand, trace of clay). Other common descriptions may be fine SAND, some silt and clay; SILT, trace of fine sand and clay; SILT, some coarse sand and gravel, trace clay.

5. OTHER DESIGNATIONS

Vegetable, Muck and Peat

Vegetable mucks and peats are soil/sediment mixtures with varying percentages of organic and vegetable matter formed by decomposition of leaves, grasses, and other fibrous materials. The color ranges from light brown to black. The soil/sediment content of the mixture should be identified and an estimate should be made of the amount of vegetable material present. The vegetable matrix comprising the peat should be identified as "fibrous" or "woody". The sample composition should be further described with respect to texture, as "cake-like", "spongy" or predominantly "granular".

Miscellaneous

Certain materials may be incorporated which do not fall under foregoing classifications and require further qualification for proper identification. Additional terms may be used, but should not replace the basic description. These additional terms may be used specifically to designate materials as "rock fragments", stones", "cobbles", "rock flour", or other qualifying descriptions.

Field Observations to Identify Silt and Clay Characteristics

The field test listed in the table below may be used to distinguish between structural characteristics of a silt or clay soil/sediment. For mixtures of silt and clay, the tests indicate the predominant constituent.

FIELD OBSERVATIONS OF SILT AND CLAY CHARACTERISTICS

CHARACTERISTICS	SILT	CLAY
Plasticity in the moist state	Very little or no plasticity	Plastic and sticky and can be rolled.
Cohesiveness in dry state	Little or no cohesive strength dry state and will slake readily.	Has a high dried strength. Crumbles with difficulty, slakes slowly in water.
Visual inspection and feel	Coarse silt grains can be seen. Silt feels gritty when rubbed between fingers.	Clay grains cannot be observed by visual inspection. They feel smooth and greasy when rubbed between fingers.
Settlement in water	Will settle out of suspension within one hour.	Will stay in suspension in water for several days unless it flocculates.
Movement of water in the voids	When a small quantity of silt is shaken in the palm of a hand, water will appear in the surface of the soil/sediment. When shaking is stopped, water will gradually disappear.	When a small quantity is shaken in the palm of the hand, it will show no signs of water moving out of the voids.

4.8.2 Unified Soil Classification System

The Unified Soil Classification system is based on textural characteristics. Soils fall into one of fifteen groups, where each group is defined by a two letter symbol. In general, soils are classified as one of two broad categories:

1. Coarse-grained soils: Group symbols start with either G - gravel or gravelly soil or S-sand or sandy soil.
2. Fine-grained soils: Group symbols start with M-non plastic or low plasticity fines (inorganic silt), C-plastic fines (inorganic clay), O-organic silts and clays, or Pt-peat, muck, humus, swamp soils, and other highly organic soils.

A complete list of symbols is provided below.

UNIFIED SOIL CLASSIFICATION SYSTEM

MAJOR DIVISIONS			GROUP SYMBOLS	TYPICAL NAMES
COARSE GRAINED SOILS (More than 50% of material is LARGER than No. 200 sieve size).	GRAVELS (More than 50% of coarse fraction is LARGER than the NO. 4 sieve size).	CLEAN GRAVELS (Little or no fines)	GW	Well graded gravels, gravel-sand mixtures, little or no fines.
			GP	Poorly graded gravels or gravel-sand mixtures, little or no fines.
		GRAVELS WITH FINES (Appreciable amt. of fines).	GM	Silty gravels, gravel-sand-silt mixtures.
			GC	Clayey gravels, gravel-sand-clay mixtures.
	SANDS (More than 50% of coarse fraction is SMALLER	CLEAN SANDS (Little or no fines)	SW	Well graded sands, gravelly sands little or no fines.
			SP	Poorly graded sands or gravelly sands, little or no fines.
		SANDS	SM	Silty sands, sand-silt mixtures.

	than the No. 4 sieve size).	WITH FINES (Appreciable amt. of fines).	SC	Clayey sands, sand-clay mixtures.
FINE GRAINED SOILS (More than 50% of material is SMALLER than No. 200 sieve size).	SILTS AND CLAYS (Liquid limit LESS than 50)		ML	Inorganic silts and very fine sands, rock flour, silty or clayed fine sands or clayey silts with slight plasticity
			CL	Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays, lean clays.
			OL	Organic silts and organic silty clays of low plasticity.
	SILTS AND CLAYS (Liquid limit GREATER than 50)		MH	Inorganic silts, micaceous or diatomaceous fine sandy or silty soils, elastic silts.
			CH	Inorganic clays of high plasticity, fat clays.
			OH	Organic clays of medium to high plasticity, organic silts.
HIGHLY ORGANIC SOILS			Pt	Peat and other highly organic soils.
BOUNDARY CLASSIFICATIONS: Soils possessing characteristics of two groups are designated by combinations of group symbols.				
PARTICLE SIZE LIMITS – see particle size limits in Burmister table in Section 4.5.1.				

4.9 SAMPLE HANDLING AND TRACKING

Samples will be handled, preserved, shipped, and tracked as described in SOP 1.

4.9.1 Field Observations of Contamination or Site Specific Character.

Environmental samples are also screened for visual evidence of contamination. Descriptions of these observations and screening results should be added to the physical descriptions of samples including:

Stain

Stains are discoloration and coatings potentially of non-native materials, on or in the soil/sediment sample. The stains can range from light tan to black. When handled, the staining material in the soil/sediments may transfer to fingers or gloves.

Sheens

Sheens are films floating on the water in saturated samples. The films may have rainbow colors, an oily appearance, or a silvery appearance.

Odor

Anthropogenic materials may have a distinctive odor. While describing the soil/sediment characteristics, note any odors present in the samples. Understand that odor classification is a subjective measure; therefore avoid making conclusions about specific chemical character of the soil/sediment or water.

Screening

Samples may be screened with a photo ionization detector (PID) for volatile organic compounds, Jerome meter for mercury vapors, and various Dragger tubes for other contaminants.

5.0 PERSONNEL

The captain and cruise leader shall be the primary persons responsible for ensuring the safety of personnel and following procedural guidelines. The field crew will be informed of boat rules and shall follow the captain's and cruise leader's guidelines.

6.0 REFERENCES

ASTM, 1958, Suggested methods of test for identification of soils, Procedures for Testing Soils, pp. 199-211.

Boring Log Form

Contractor: _____ **Driller:** _____ **Inspector:** _____ **Rig Type:** _____	**PARSONS** **DRILLING RECORD** **PROJECT NAME:** _____ **PROJECT NUMBER:** _____	**BORING/** Sheet ____ of ____ **WELL NO.** **Location Description:**

WATER OBSERVATIONS			
Water Level or depth		**Weather:** _____	**Location Plan**
		Lake contionions _____	
Date		**Date/Time Start:** _____	
Time			
Measured from		**Date/Time Finish:** _____	

Sample Depth	Sample I.D.	SPT	Rec. %	PID (ppm)	FIELD IDENTIFICATION OF MATERIAL	USC	SCHEMATIC	COMMENTS

SAMPLING METHOD
GP = GEOPROBE - DIRECT PUSH
SS = STAINLESS STEEL SPLIT SPOON SAMPLER

COMMENTS:

STANDARD OPERATING PROCEDURE 6

SURFACE WATER SAMPLING

1.0 PURPOSE AND SCOPE

The purpose of this document is to define the standard operating procedures (SOP) for surface water sampling at Genesee River. This SOP describes the necessary equipment, field procedures, materials, and documentation procedures necessary to conduct the surface water sampling. Low level mercury via Method 1631 using "clean hands" technique are also described in the SOP in Section 4.0. These procedures are to be followed, and any substantive modifications to the procedures shall be approved by the Field Sampling Manager in consultation with NYSDEC.

2.0 HEALTH AND SAFETY CONSIDERATIONS

A safety briefing will be held at the beginning of each day and as new activities are conducted. The designated safety officer shall be responsible for ensuring the safety of personnel and will be contacted immediately in the event of an emergency. The standard safety considerations for near-water and in-creek sampling include: slips, trips, and falls; and the proper use of PFDs and PPE.

3.0 EQUIPMENT LIST

Equipment needed for collection of water samples includes:

- Appropriate, pre-cleaned sample bottles will be provided by the analytical laboratory
- Horiba U-10 (or equivalent), water quality instrument
- Peristaltic pump and dedicated tubing
- disposable gloves
- plastic (polyethylene) resealable food storage bags
- plastic (polyethylene) trash bags
- dedicated, clean cooler with ice
- boat and motor (if necessary)
- waders
- field log
- PFDs
- digital camera
- field notebook
- labels

4.0 SAMPLE COLLECTION PROCEDURES

4.1 Water Quality Sampling

1. Before collecting any data, calibrate water quality meters according to manufacturer's instructions.
2. Place sample probe into the water at each sample location and record readings in the field notebook.
3. Record water depth at each sample location to the nearest inch.

4.2 Sample Collection

1. Slowly submerge dedicated polyurethane tubing into water surface and pump water through tubing into preserved laboratory provided sample bottles utilizing a peristaltic pump. Follow this method until all sample bottles have been filled with the exception of low level mercury and dissolved metals. Low level mercury sample procedures are described in Section 4.3, while dissolved metals sample procedures are described below
2. For collection of dissolved metals, run water through a 0.45 micron (um) filter utilizing dedicated polyurethane tubing and a peristaltic pump into a preserved sample bottle.
3. Repeat the above procedures until all sample bottles are filled. Bottles designated for VOCs should be capped ensuring there is no headspace in the vials.
4. Seal and label and then place sample bottle into a cooler with ice.

4.3 Mercury Sample Procedures

1. One member of the two-person sampling team will be designated to perform duties that may result in contact with potential contaminants, and will not perform any tasks that result in direct contact with samples ("dirty hands"). The second member will perform all activities that may result in contact with the sample containers or transfer of the sample ("clean hands"). Sampling personnel are required to wear clean gloves at all times when handling sampling equipment and containers.
2. Sample handling procedures will follow USEPA's "clean hands/dirty hands" protocols whenever handling materials that may come in contact with the sample. One person of the two person sampling crew will be designated to perform the "clean hands" duties, while the other will perform the "dirty hands" duties.
3. Both sampling personnel will put on two pairs of disposable gloves. The outer pair of gloves will be changed any time there is potential for the outer gloves coming in contact with potential contaminants.
4. Pre-cleaned sample containers will be pre-labeled and double bagged using resealable food storage bags, and placed in a clean, dedicated cooler. Sample containers will be labeled in accordance with the QAPP.
5. "Dirty hands" will open the cooler and the outer plastic bag containing the appropriate sample container (both should change gloves after handling the sampler and prior to opening the outer and inner bags). "Clean hands" will then open the inner plastic bag.

6. At locations where water depth is less than 2 ft., “clean hands” will immerse the sample container into the lake without disturbing the sediment. The sample will be collected from the top 12 inches of the water column.
7. At locations where water depth is greater than 2 ft., “dirty hands” will obtain the water sample using the dedicated Teflon bailer. “Clean hands” will transfer the water from the bailer into the sample container.
8. “Clean hands” will then place the cap back on the container, and place it inside the inner bag, and then place the inner bag inside the outer bag, held by “dirty hands”. “Dirty hands” will then close the outer bag, and place the double bagged container back in the cooler. This process will be repeated at each location.

5.0 SAMPLE HANDLING AND PRESERVATION

Sample containers will be labeled prior to sample collection. Samples will be collected in accordance with the procedures described in Section 4 above. The samples will be chilled with ice to approximately 4°C. A temperature blank will be placed in each cooler for use by the laboratory to measure the temperature of samples upon submittal. Samples will be shipped by overnight delivery to the laboratory at the end of each day. Chain-of-custody procedures will be followed.

6.0 QUALITY CONTROL AND QUALITY ASSURANCE (QA/QC)

QA/QC procedures include the collection of field QA/QC samples. Field QA/QC samples to be collected are blind duplicate samples, equipment blank samples, and matrix spike samples. One set of field QA/QC samples will be collected for each sampling event. Blind duplicate samples and matrix spike samples will be prepared by filling additional appropriately marked containers at pre-selected sampling stations (both samples will not be collected at the same station). The station where these samples are collected will be rotated randomly for each sampling event. Equipment blank samples will be prepared as follows:

1. Prepare for “clean hands/dirty hands” procedures (put on new disposable gloves).
2. “Clean hands” will pour the dilute acid solution out into a carboy container designated for waste storage.
3. “Clean hands” will then slowly pour laboratory supplied reagent water into a clean sample container while “dirty hands” hold the container stable.
4. After collection, handle equipment blank samples in a manner that is consistent with all other environmental samples.

7.0 PERSONNEL

The Field Sampling Manager is responsible for assigning appropriate field personnel to be responsible for the various site activities. The Field Sampling Manager is also responsible for assuring that this and any other appropriate procedures are followed by field personnel. Field personnel assigned to the various site activities are responsible for completing their tasks according to this and other appropriate procedures. Field personnel are responsible for reporting deviations from the procedure or nonconformance to the Field Sampling Manager. Only qualified field personnel shall be allowed to perform this procedure. Qualifications will be based

on previous experience and health and safety training. These considerations are discussed in more detail in the QEA project safety plan.

8.0 REFERENCES

USEPA. 1996. Method 1669. Sampling Ambient Water for Trace Metals at EPA Water Quality Criteria Levels. U.S. Environmental Protection Agency. Office of Water Engineering and Analysis Division (4303). July, 1996.

STANDARD OPERATING PROCEDURE 7: DATA MANAGEMENT PROGRAM

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STANDARD OPERATING PROCEDURE 7: DATA MANAGEMENT PROGRAM

1.0 INTRODUCTION

To automate the collection of field data, a customized electronic field data entry system may be developed. The data entry system manages field information and creates electronic chain-of-custody (COC) forms, field logs, and sample labels. Data collected and entered in the field data entry system will be converted to an electronic data deliverable (EDD) and subsequently uploaded to the project data management system, EQUIS®.

Custom-designed forms developed in Microsoft® Access® can be used to facilitate the entry and management of field data. The primary purpose of these forms is to reduce the possibility of transcription errors during sample collection and processing. The data entry system will act as a guide for field personnel and reduce the accidental omission of data. The following subsections provide an overview of the field data entry system process.

2.0 DATA ENTRY PROCEDURES

During sample collection and processing, various types of information may be collected and entered into the data entry system by field personnel. When the data entry system is initiated (i.e., the MS® Access® file is opened), the user will be directed to the main menu. From this main menu, the user can navigate to the data entry forms for the various components of the field program. At the start of each day the Field Data Manager will assign to each field team valid COC numbers that must also be entered on the main menu. Pre-printed COCs and other required forms will be available to the sampling team, in case of any down time associated with the electronic data management system.

2.1 Data Entry into the Database

The sample data entry form used during the collection of samples will require both location- and sample-specific information. Various visual cues are used to guide the user throughout the form. A white background indicates fields that require user input. A gray background indicates fields containing data that are automatically supplied and cannot be modified by the user. Fields with a red background are those for which the control is locked, meaning that the user cannot modify these without manually unlocking the control – this feature is included to avoid inadvertent overwriting of data. Drop-down menus are used to limit the values entered in certain fields to pre-determined lists of valid values. In addition, some fields updated by the user contain constraints to avoid data entry errors. For example, if an unrealistic water depth is entered, an information box will notify the user and require a corrected value to be entered before data can be entered into another field. Note that the all Vibracores and drill borings and will be logged on a boring sheet as outline in previous SOPs.

An example of a sediment sample data entry for would include:

1. Location Information. The field crew begins data entry for a sample location by selecting a Location ID from the drop-down menu. After the field personnel select a sample Location ID, the database will automatically record the collection date and time, type of sample, and target depth. Required information such as northing and

easting coordinates, water depth, sample type, penetration depth, and recovery depth must be entered by the field team during sampling. Northing and easting coordinates will be compared against target coordinates to confirm that the field personnel are on the location selected. Core recovery percentage is calculated by the system and is displayed automatically once the core recovery depth is entered. Refusal is an optional checkbox the field team can select if refusal is reached before the target penetration depth. Note that if multiple cores are collected for a single sample, only a single location and sample ID will be generated. Information on individual cores will be recorded in the field log book.

2. Core Recovery Information. Once the recovery depth is entered, the Sample Information portion of the form is activated (see 3 below). This section may be filled in by the field team on the sampling vessel at the time of core collection, or by the field team in the on-shore field processing laboratory. Based on the location sampled, samples and the relevant section-specific information (i.e., depths interval(s) and required analyte list) for each depth interval will be generated automatically and stored in the table at the bottom of the form. The user can edit these sample entries by pressing the 'Edit' button above the table. This will populate the controls above the table for editing. The user must click 'Enter' for the changes to be saved. The user can also generate samples manually.
3. Sample Information. This portion of the data entry form facilitates creation of samples from a previously collected sample location. The information can be entered at the time the sample is collected, or at a later time (i.e., in the on-shore sample processing facility) by entering the Location ID of an existing sample location. The user first must select the type of sample; by default, the QA/QC field is set to "REG" for a regular sample. To create a field duplicate sample, rinse blank, or trip blank, the field team changes QA/QC in the drop-down menu to "FD", "RB", or "TB," respectively. The field team can select from predefined sample depths using the drop-down menu, or type in values when sample depths are determined in the field. For environmental samples and field blanks, the field team must then select a COC number. Once a COC number is selected, a unique Sample ID is created automatically. Alternatively, if the user is generating a duplicate sample, the depth interval and COC number will be disabled, and the parent sample ID control will be enabled. Once the user selects a parent sample ID (a sample previously generated from that location), the unique Sample ID for the field duplicate is created automatically. Processing date and time are automatically updated at the time the sample ID is created. The user then has the option to select MS/MSD and porewater for tests that apply to any given sample.

Once the individual samples are created, the check boxes associated with the pre-defined chemical analyses and geotechnical parameters for that location are populated, and those that are not required at the selected location will be disabled to prevent selection errors.

Before the field team can advance to the next record (i.e., another coring location), the data entry system checks that all required location-specific information has been entered. In the case

that not all information has been entered, the system will post a warning, and the field team must complete the form before proceeding.

Once the individual sediment samples from a core are generated, a message box will appear to summarize the size and counts of sample containers necessary at that location, and auto-generated labels can be printed at this time.

STANDARD OPERATING PROCEDURE 9: COLLECTION OF SEDIMENT SAMPLES IN SHALLOW WATERS

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STANDARD OPERATING PROCEDURE 9: COLLECTION AND DESCRIPTION OF SEDIMENT GRAB AND CORE SAMPLES

1.0 SCOPE

This SOP was developed for modified sediment sampling approaches to collect sediment samples in shallow waters that are not accessible by boat. The actual sample collection procedures will be done in accordance with sediment sampling procedures outlined in SOPs 2 and 5. See SOP 7, Data Management Program, for list of field measurements and field data collection and recording requirements. Modified sample collection methods without use of a boat are described below. Details related to sample processing are contained in SOP 1 (Containers, Preservation, Handling, and Tracking of Samples for Analysis).

2.0 HEALTH AND SAFETY CONSIDERATIONS

A safety briefing will be held at the beginning of each shift. The designated safety officer shall be responsible for monitoring the safety of personnel, ensuring that appropriate health and safety procedures are implemented, and will be contacted immediately in the event of an emergency. The standard safety considerations for marine sampling (i.e., caution deploying and retrieving heavy equipment, keeping hands and clothing out of winches and A-frame supports, and stepping in the bight of lines or cables), as well as safety considerations specific to shoreline and in-water sampling (i.e., stable work surfaces, poor footing visibility, and sudden changes in lake bottom surface) apply to the field crew during sampling. Winches, lifts, cables, and lines will be used within their designed limits to avoid injury from equipment failures. Appropriate PPE will be donned prior to the start of work as described in the HASP.

3.0 EQUIPMENT

The following equipment list contains additional materials that may be needed to carry out the procedures contained in this SOP (materials in addition to those listed in SOPs 2 and 5). Since multiple procedures or alternate methods may be employed to achieve the objectives, not all materials and equipment included on the list may be necessary to complete the task.

- Tripod for “water-edge” and shallow water vibracore sampling;
- Excavator for near-shore vibracore sampling;
- Modified floating dock for Shelby tube sampling;

3.1 FIELD INSTRUMENT CALIBRATION

Refer to SOPs 2 and 5.

4.0 PROCEDURE

4.1 VIBRACORE SAMPLING USING A TRIPOD

This procedure may be used for shore-line locations not readily accessible by land and shallow water locations not accessible by barge. This operation would be conducted using a vibrahead attached to a standard tripod system typically used for advancing soil borings with a

cathead system. Support operations (including power supply from a three-phase generator) would be from a barge. Sampling equipment and supplies would be transported from the barge by a small shallow draft boat. A review of potential locations where this technique could be required should be completed prior to employing this sample collection method. Setup procedures would be as follows:

1. Locate support barge as close as possible to sample location. Preference will be to locate the power source as close to the sample location as practical to avoid the power cord being in water (i.e., on shore or on shallow draft watercraft).
2. Assess the area in the vicinity of the sample location for safe working conditions.
3. Transport sampling equipment to sample location using a shallow-draft watercraft (e.g., Jon boat or floating dock section).
4. Setup tripod with cathead. Ensure that the tripod is level and has stable footing. Use plywood or other materials as necessary to provide stable footing if surface conditions warrant.
5. Use pallet systems (pallets fastened together and covered with plywood) and/or mats, as needed for equipment staging and a stable/level working surfaces.
6. Transport and raise vibrahead on tripod. Lifting of the vibrahead will be done using the cathead. Cathead operations require that the rope be kept dry. Therefore, the rope used will be only be as long as necessary for lifting and lowering the vibrahead. Additional rope shall be available if the rope gets wet.
7. All electrical wiring and equipment used shall be a type listed by a nationally-recognized testing laboratory for the specific application for which it used. All electrical cords used in over-water work shall be marine-grade with water-tight connections. The vibrahead power line shall be inspected before each use. Check GFCI and other electrical tripping mechanisms to make sure they are in working order. Defective or damaged equipment or lines must not be used.
8. Proceed with vibracore operations in accordance with SOP 5.

4.2 VIBRACORE SAMPLING USING AN EXCAVATOR

This procedure may be used for near-shore locations with land access by an excavator and where land areas in the vicinity are stable and level enough for safe operation of heavy equipment. This operation would be conducted using a vibrahead attached to the bucket of the excavator.

Setup procedures would be as follows:

1. Inspect work area for safe ground surface conditions (i.e., stable soils and acceptable slope) and safe overhead conditions (i.e., power lines).
2. Locate excavator at an appropriate work distance from sample location.
3. Attach vibrahead to excavator bucket lifting ring with cable and clevise.
4. Lift vibracore setup into place and proceed with vibracore procedures as described in SOP 5.

4.3 SHELBY TUBE SAMPLING

This procedure may be used for shore-line locations not readily accessible by land and shallow lake areas not accessible by barge. The operation would be conducted using a hydraulic system from a drill rig tower mounted on the end of a floating dock platform. A water tank mounted on the platform will be used for ballast as needed. Water will be pumped in or out of the tank as required to provide the necessary counter-weight force for the Shelby tube operation, as well as to minimize water depth requirements for access. Support operations would be from a barge that would need to be within approximately 50-ft of the Shelby tube setup (limits of the hydraulic line). It is anticipated that Shelby tube sampling using this method would be limited to a maximum depth of 3 to 4 ft. Setup procedures would be as follows:

1. Assess the area in the vicinity of the sample location for safe working conditions.
2. Locate support barge as close as possible to the sample location. Barge will need to be within approximately 50-ft of the sample location because of limits of the hydraulic line length.
3. Transport sampling equipment to the sample location using the float platform.
4. Use pallet systems (pallets fastened together and covered with plywood) and/or mats, as needed for equipment staging and a safe working surface.
5. Connect the Shelby tube sampler to the hydraulic cylinder. Inspect the hydraulic lines prior to use.
6. Proceed with Shelby tube sampling in accordance with SOP 2.

4.4 SPLIT SPOON SAMPLING USING A TRIPOD

This procedure may be used for shore-line locations not readily accessible by land and shallow water locations not accessible by barge. This operation would be conducted using flush joint casings and split spoon sampler attached to a standard tripod system typically used for advancing soil borings with a cathead system. Support operations would be from a barge or shore. Sampling equipment and supplies would be transported from the barge or shore by a small shallow draft boat. A review of potential locations where this technique could be required should be completed before this sampling technique is employed. Setup procedures would be as follows:

1. If support barge is used, locate the barge as close as possible to sample location.
2. Assess the area in the vicinity of the sample location for safe working conditions.
3. Transport sampling equipment to sample location using a shallow-draft watercraft (e.g., Jon boat or floating dock section).
4. Setup tripod with cathead. Ensure that the tripod is level and has stable footing. Use plywood, mats, or other materials as necessary to provide stable footing if river bottom conditions warrant.
5. Use pallet systems (pallets fastened together and covered with plywood) and/or mats, as needed for equipment staging and a stable/level working surfaces.
6. Transport and raise the flush joint casings, sampling rods, and split spoon sampler on tripod. Lifting of the casings, rods, and split spoon sampler will be done using the

cathead. Cathead operations require that the rope be kept dry. Therefore, the rope used will be only as long as necessary for lifting and lowering the equipments. Additional rope shall be available if the rope gets wet.

7. The flush joint casings will be lowered to the top of the mud line.
8. Proceed with standard penetration test operations in accordance with SOP 2 to take the first split spoon sample.
9. After the split spoon sample is taken, the casings will be driven into the lake bottom using the drop hammer to the next sampling depth. The sediment in the casings will be cleared out by flushing with water.
10. Repeat steps 8 and 9 until refusal is reached.

5.0 PERSONNEL

For barge operations, the captain shall be the primary person responsible for ensuring the safety of personnel and following procedural guidelines. For in-water and land operations, the field team leader will be the primary persons responsible for ensuring the safety of personnel and following procedural guidelines. Field crews will be informed of boat rules and safety requirements for in-water and near-shore work.

6.0 REFERENCES

None.

SOP 10 Direct Push Coring and Core Segmentation Procedures for Geochronological Measurements

1. PURPOSE

This technical procedure summary provides guidelines for collecting and segmenting floodplain soil cores for geochronological analysis of Cesium-137 and Lead-210, to support vertical dating of floodplain sediment and estimation of accumulation rates. Because of the complexity of factors that affect sediment transport in floodplains, and the potential mobility of Cesium-137 in sandy soils, the method may not be successful at all locations. Thus, the geochronological investigation described here may be complemented with dendrogeomorphic measurements as needed and where trees are present (see SAP for dendrogeomorphic measurements).

2. SCOPE AND APPLICABILITY

The method described is applicable to positioning and segmentation of cores from the surface to the water table (estimated to be approximately 4 ft below ground surface). The cores are extracted with a Geoprobe following the procedures in *SOP 2.3, Drilling and Sampling Using Direct Push Techniques*. The cores are sectioned into smaller intervals in the field for transport to the laboratory where they will be sliced for analysis of the appropriate depth intervals.

3. EXAMPLE EQUIPMENT / MATERIALS

- Coring equipment: refer to SOP 2.3
- Stainless steel field knife
- 10 Teflon® caps per core
- 5 zip-type, clear bags per core
- Cooler and ice

4. PROCEDURES / GUIDELINES

A. Field Procedures:

1. Wear appropriate personal protective equipment, as required by the health and safety plan. Change gloves between samples.
2. Identify location of existing claypads and mark them. Avoid disrupting clay pads and the area near them.
3. Using GPS equipment (differential GPS with sub-meter accuracy), identify core location (near trees marked for dendrogeomorphic measurements or if no such trees present, ca. 10 feet north-west of clay pads).
4. Retrieve a 5-ft soil core with the Geoprobe, following methods described in SOP 2.3.
5. While in the field, cut the Lexan tube containing the core into five 1-foot lengths.
6. Seal the open ends of the tube with a Teflon® cap and use Teflon tape to seal the cap to the liner.
7. Apply the sample labels to each length of tube.
8. Put each capped tube section in a zip-bag and seal the bag. Immediately place the samples in a cooler with ice in a vertical position. Do not leave the sample exposed to the sun or extreme temperatures. The cores must maintain the vertical position during shipment to avoid disruption of the vertical layering of the cores.
9. Determine final GPS coordinates for core location.

B. Laboratory Segmentation and Analytical Procedure:

The cores will be segmented in the laboratory according to the sub-sampling and analysis plan depicted in Figure 1. In the top foot of the core, the first 4 inches will be sliced into eight 0.5-inch segments, followed by eight 1-inch segments. Each of these segments will be analyzed. From the remaining 4 feet, a 1-inch segment will be analyzed every 5 inches. As analytical data is obtained from the lab, additional core sections may be identified for analysis in order to improve the representation of geochronological tracer distribution as required (example in Figure 1).

C. Siting and Locations:

A total of 15 cores will be retrieved from the following three sites (number of cores in parenthesis):

1) Pilot Test Area 1 (5)
2) Imerman Park (5)
3) Dow Property near Caldwell Boat Launch (5)

Where trees are marked for dendrogeomorphic sampling, these trees will be determined first, and geochronologic cores will be placed near the marked trees. Otherwise, the cores will be taken approximately 10 feet north-west of the existing clay pads. Individual core locations are shown on the attached maps.

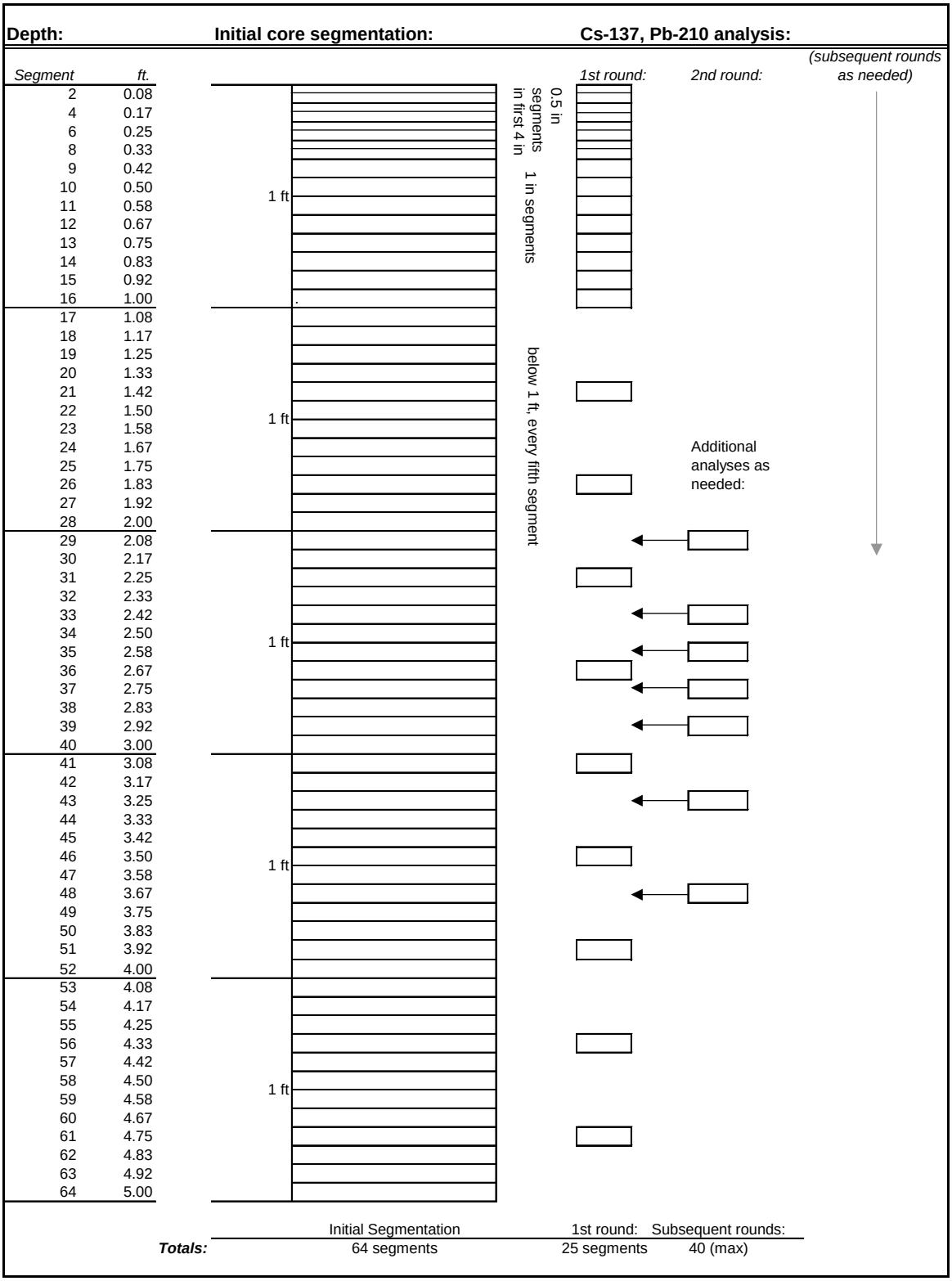


Figure 1. Proposed Core Segmentation and Analytical Procedure

I. INTRODUCTION

This standard operating procedure (SOP) is applicable to the collection of isokinetic, depth-integrated, aqueous samples from streams and rivers not more than 15 feet in depth. These typically applicable procedures have been adapted from the U.S.G.S. National Field Manual for the Collection of Water-Quality Data, Chapter A4, dated 9/99. These procedures may be varied or changed as required, dependent upon site conditions or equipment and procedural limitiations. The actual procedures used should be documented in the field notes, especially if changes are made.

An Isokinetic depth-integrating sampler is designed to accumulate a representative water sample continuously and isokinetically (that is, stream water approaching and entering the sampler intake does not change in velocity) from a vertical section of the stream while transiting the vertical at a uniform rate (ASTM, 1999; see NFM 4, Appendix A-4-A). LTI uses two types of isokinetic depth integrated samplers:

- US DH-48
- US DH-76

II. DEPTH-INTEGRATED, ISOKINETIC SAMPLE PROCEDURE

The US DH-48 is a lightweight (9 pound) sampler used for the collection of isokinetic depth-integrated samples where wading rod suspension can be used. The US DH-48 will collect acceptable flow-weighted samples in streams with velocities from 1 to 9 ft/sec.

To use the sampler correctly, orient it into the current and hold it in a horizontal position while the sampler is lowered at a uniform rate from the water surface to the bottom of the stream. Upon contact with the bottom, instantly begin raising the sampler again to the water surface. The sampler continues to take its sample throughout the time of submergence. The target volume for the round pint bottle is 395 ml, though acceptable fill volumes range from 300ml to 420ml.

The US DH-76 is a 25-pound sampler used for the collection of isokinetic depth-integrated samples where bridge suspension is necessary. Using a ¼" nozzle, the US DH-76 will collect acceptable flow-weighted samples in streams with velocities from 1 to 9 ft/sec.
To use the sampler correctly, orient it into the current and hold it in a horizontal position while the sampler is lowered at a uniform rate from the water surface to the bottom of the stream. Upon contact with the bottom, instantly begin raising the sampler again to the water surface. The sampler continues to take its sample throughout the time of submergence. The target volume for the quart bottle is 700ml, though acceptable fill volumes range from 665ml to 730ml.

III. EQUIPMENT

The following materials shall be available, as required, during depth-integrated sampling. Back-up equipment should be available, if required.

- Personal protective equipment (as required by the Health and Safety Plan);
- Cleaning equipment (as required in the Standard Operating Procedure for Equipment Cleaning);
- Appropriate sampling apparatus and accessories (e.g., US DH-48 or US DH-76, extra nozzles, extra line);
- Appropriate sample bottles and sample bottle labels;
- Insulated coolers, ice, and appropriate packing material;

- Chain of Custody records and custody seals;
- Field data sheets, field log book, waterproof pen, camera;
- Decontamination equipment;
- Maps/plot plan, survey stakes/flags/buoys and anchors;
- Appropriate traffic safety equipment when working on bridges (e.g., traffic vests, signs, cones);

IV. PREPARATIONS

The following tasks should be completed when applicable prior to initiating sampling procedure;

- Decontaminate or pre-clean equipment and ensure that it is in working order.
- Prepare scheduling and coordinate with staff, clients, and regulatory agency, if appropriate.
- Perform a general site survey prior to site entry, in accordance with the site specific Health and Safety Plan.
- Use stakes, flagging, or buoys to identify and mark all sampling locations. If required, the proposed locations may be adjusted based on site access, property boundaries, and surface obstructions. If also collecting sediment samples, this procedure may disturb the bottom and cause interferences with collection of representative water samples.

V. SAMPLE COLLECTION

1. Record pertinent data on the field log.
2. Label all sample containers with the date, time, site location, sampling personnel, and other requested information.
3. Don appropriate personal protective equipment (as required by the Health and Safety Plan).
4. Clean all sampling equipment prior to sample collection according to the procedures in the Standard Operating Procedure for Equipment Cleaning.
6. If field preservation is required, place appropriate preservative into the sample container prior to sample collection. Note the preservative on the sample container and sampling log.
7. If any quality control samples are specified in the work plan, they will be collected in the following manner:

- Duplicate samples should be collected at the same time or immediately following one another in accordance with the above procedures. If blind duplicate samples are specified in the work plan, one of the duplicate samples should be labeled so that it does not identify the other sample of the duplicate pair to the laboratory on the chain-of-custody (COC). For example, one sample of the duplicate pair would be labeled following the normal protocol, while the second would be labeled with a sample ID of “DUPLICATE” and a blank line placed in the location, date and time boxes of the sample label. It is important that the duplicate pair samples are identified separately in the field notes with information including location, sample ID (as entered on the sample container label and COC), sample date and time so that analytical results can be paired after received from the laboratory.
- Trip blanks should be prepared by the laboratory and shipped with the sample bottles. Trip blanks are not to be opened at any time, except by the laboratory for analysis, and must accompany the other samples/sample bottles at all times. Be

sure to log the trip blank samples on the COC before shipping samples back to the laboratory.

- Rinse (or equipment) blanks should be collected from a final distilled/deionized water rinse of the specified sampling equipment after that piece of equipment has been cleaned in accordance with appropriate specified cleaning procedures.
- Field blanks, such as samples of water or reagents used to clean sampling equipment, should be collected directly into the sample bottle from the appropriate source container.

8. Record sample collection information on the field log and store the samples in an iced cooler as described in the Standard Operating Procedure for the Shipping and Handling of Samples.
9. Handle, pack, and ship samples according to the procedures in Standard Operating Procedure for the Shipping and Handling of Samples.

DH-76 Suspended Sediment Sampler

DH-48 Suspended Sediment Sampler

1. INTRODUCTION

This standard operating procedure (SOP) is applicable to the collection of representative data (stream dimensions and water velocity) for use in determining discharge in streams and open channels. These typically applicable procedures have been adapted from the USGS *Techniques in Water Resources Investigations*, Book 3, Chapter A8: Discharge Measurements at Gaging Stations (http://water.usgs.gov/pubs/twri/twri3a8/pdf/TWRI_3-A8.pdf) and the *Open Channel Profiling Handbook*, January 1989 (Rev. May 1, 1990), Marsh-McBirney, Inc. The procedures herein may be varied or changed as required, dependent upon site conditions or equipment and procedural limitiations. The actual procedures used should be employed in consultation of the more detailed procedures found in the USGS discharge measurement guidance document and the actual procedures used should be documented in the field notes, especially any changes made.

2. MATERIALS

The following materials shall be available, as required, during collection of surface water flow data. Back-up field instruments/equipment should be available, if required.

- Personal protective equipment (as required by the Health and Safety Plan);
- Boat and/or waders;
- Cleaning equipment (see the Standard Operating Procedure for Equipment Cleaning);
- Flowmeter/velocimeter and appropriate accessories (e.g., Marsh-McBirney Flo-Mate 2000, Pigmy-Gurly velocimeter, profiling/wading rod, boat/bridge board with suspension cable and weight, operation manuals);
- Protractor and compass;
- Measuring tape and/or measuring wheel;
- Field data sheets, field log book, waterproof pen, camera and film;
- Maps/plot plan, survey stakes/flags/buoys and anchors;

3. PREPARATIONS

- Determine the extent of the sampling effort, the methods to be employed, and the types and amounts of equipment and supplies needed.
- Obtain the necessary sampling and monitoring equipment to suit the task. Consider stream morphometrics (width, depths, channels) and deployment circumstances (bridges, shoreline, wading, boats, obstructions, currents).
- Decontaminate or pre-clean equipment and ensure that it is in working order.
- Prepare scheduling and coordinate with staff, clients, and regulatory agency, if appropriate.
- Perform a general site survey prior to site entry, in accordance with the site specific Health and Safety Plan.
- Use stakes, flagging, or buoys to identify and mark all sampling locations. If required, the proposed locations may be adjusted based on site access, property boundaries, and surface obstructions.

4. FLOW MEASUREMENT PROCEDURES

The methods of determining cross-sectional area and velocity must be selected prior to the field event. Data required for use in calculation of stream flow includes measurements of cross-sectional area (water depth and transect segment width), water velocity, flow angle, and transect angle. The mid-section method of computing cross-sectional area for discharge measurements is recommended by USGS and there are a number of different methods for measuring velocity. The two methods of velocity measurement that follow are frequently used for normal stream conditions:

- Six tenths Depth Method (0.6 depth below the water surface) uses observed velocity at this depth as the mean velocity in the vertical. This method gives extremely reliable results whenever the water depth is between 0.3 and 2.5 feet. It is also quicker to measure so is good for times of rapidly changing water level (stage).
- Two Point Method (0.2 and 0.8 depth below the water surface) averages velocities observed at these relative depths at each location and this average is used as the same mean velocity in the vertical. This method gives more consistent and accurate results than any of the other methods except the vertical-velocity curve method. The two point method is generally not used at depths less than 2.5 feet because the current meter settings would be too close to the water surface and stream bed for dependable results.

Flow measurement data collection using wading techniques are preferred by USGS, if conditions permit. Wading measurements offer the advantage over measurements from bridges (or other techniques such as cableways, not discussed herein) in that it is usually possible to select the best of serveral available cross-sections for the measurement.

When a stream cannot be waded, bridges may be used to obtain flow measurements (though cableway measurements are usually better, if available). No set rule can be given for choosing between the upstream or downstream side of the bridge to collect flow data. The advantages of using the upstream side of the bridge are:

- Hydraulic characteristics at the upstream side of bridge openings usually are more favorable.
- Approaching drift can be seen and be more easily avoided.
- The streambed at the upstream side of the bridge is not likely to scour as badly as at the downstream side.

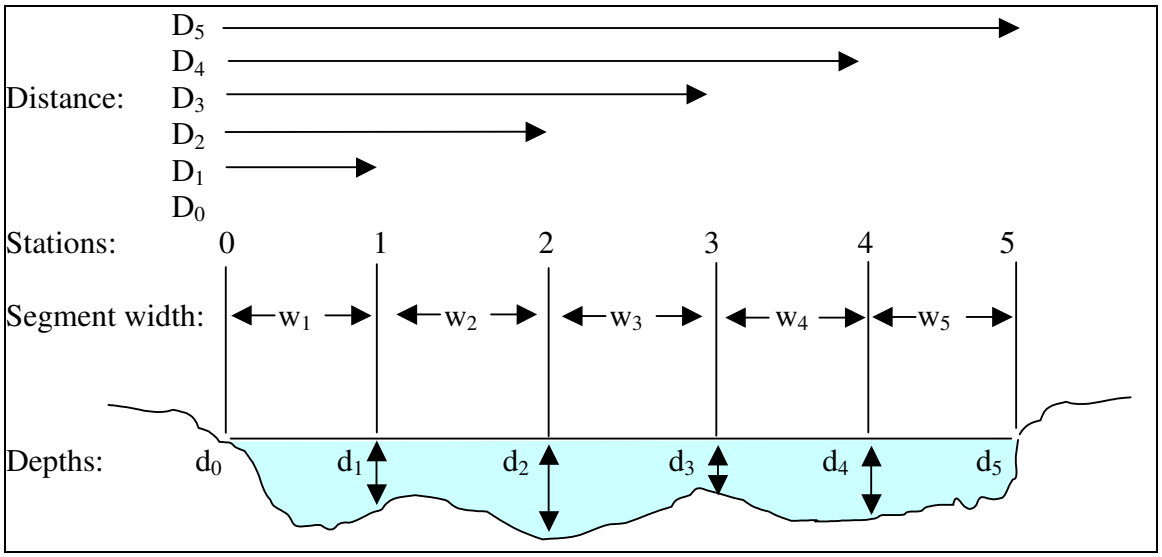
The advantages of using the downstream side of the bridge are:

- Vertical angles are more easily measured because the sounding line will move away from the bridge.
- The flow lines of the stream may be straightened out by passing through a bridge opening with piers (see points under step 2 below).

To accomplish flow data collection using the methods selected, a transect of measurement stations across a stream is setup and marked before collecting section depth, width, and velocity data using the following steps:

1. Follow appropriate safety procedures and use personal protective equipment as required by the Health and Safety Plan.
2. Select the transect site location following as many of the following considerations as possible:
   - The channel should have as much straight run as possible – at least such that the length upstream from the profile should be twice the downstream length.
   - The channel should be free of flow disturbances. Look for protruding pipe joints, sudden changes in diameter, contributing sidestreams, outgoing sidestreams, or obstructions.
   - The flow should be free of swirls, eddies, vortices, backward flow, or dead zones.
   - Avoid areas immediately downstream from sharp bends or obstructions
   - Avoid converging or diverging flow (approach to a flume) and vertical drops.
   - Avoid areas immediately downstream from a sluice gate or where the channel empties into a body of stationary water.
3. Determine the width of the stream starting and ending at the stream's edges. Use a measuring wheel on a bridge or string a measuring tape between stakes if wading or in a boat.
4. Record the angle of the transect with respect to the stream channel and direction of flow.The transect should most preferably be at right angles to the direction of flow to avoid having to correct for the angle of the transect when calculating discharge.
5. Mark/record the partial section locations (measurement recording stations) of the measurement transect. These should be spaced so that no partial section contains more than 10 percent of the total flow. The ideal measurement would have less than 5 percent of the flow in any one partial section. Equal width partial sections across the transect are not recommended. Make the width of the partial sections less as depths and velocities become greater.
6. Assemble the appropriate equipment for the velocity and depth measurements.
7. Prepare the measurement note sheets to include the following information:
   - Name of stream and exact location of transect site.
   - Date, party, type of meter suspension, type of meter.
   - Measurement data (depth, width, position location, velocity, flow angle, time measurements were started and ended).
   - Bank of stream that was the starting point. Identify the stream bank by either LEW or REW (left edge of water or right edge of water, respectively) when facing downstream.
   - Gage height measurement and corresponding times.
   - Other pertinent information regarding site conditions and accuracy of the measurement.
8. Begin recording depth, width (transect distance) and velocity measurements at each station of the transect, successively,

according to the remaining steps below and in reference to the figure that follows.



w = width of segment
D = distance from stream's edge
d = depth of water

9. Record distance (D1, D2, D3 …) from steam's edge at initial station (measurement point 0) to each successive station (1, 2, 3, …).
10. Record the water depth (d0, d1, d2, d3, …) at each measurement point, including the edge of the water at each end of the transect.
11. Measure velocity (0.2 depth & 0.8 depth – or – 0.6 depth below water surface) at each station and record the reading and associated meter depth position (0.2, 0.6, 0.8). Follow manufacturer instructions for operation of the meter.

    Note: If wading, stand in a position that least affects the velocity of the water passing the meter sensor (sufficiently downstream or to the side of the sensor – approximately an arm's lengh). Avoid standing in the water if feet and legs would occupy a considerable percentage of the cross section of a narrow stream (use a plank or other support). Keep the wading rod in a vertical position and the velocity sensor parallel to the direction of flow.
12. Measure and record the angle of flow with respect to the transect and direction of flow, especially if the flow is not at right angles to the transect.

5. DISCHARGE CALCULATION

The USGS-preferred midpoint method of determining discharge uses the products of the partial areas of the stream cross-section (segment) and their respective average velocities (Q = A * V). It is assumed that the velocity measurement at each station represents the mean velocity in a partial rectangular area. The area extends laterally from half the distance from the preceding station to half the distance to the next and vertically from the water surface to the

sounded depth. The cross-section is defined by depths at the station locations (d_1, d_2, …, d_n). There are two cases in the calculation, as follows:

For segments in the middle of the transect:

$$Q_{middle\text{-}segment} = (D_{n+1} - D_{n-1})/2 * d_n * V_n$$

For segments at the end of the transect:

$$Q_{first\text{-}end\text{-}segment} = (D_{n+1} - D_n)/2 * d_n * V_n$$

$$Q_{last\text{-}end\text{-}segment} = (D_n - D_{n-1})/2 * d_n * V_n$$

- $Q = A * V$ (discharge = area * velocity; where)
- $A = w * d$ (area = width * depth; where)
- $w = D_{n-1} - D_{n+1}$ or $D_{n+1} - D_n$ or $D_n - D_{n-1}$ (segment width = distance between alternate or adjacent stations)

Another method used by USGS prior to 1950 and considered slightly less accurate is the mean-section method. Partial discharges are computed for partial sections between successive locations. The velocities and depths at successive locations are each average and the section extends laterally from one observation point to the next. Discharge is the product of the average of two mean velocities, the average of two depths, and the distance between locations, as follows:

$$Q_{segment} = [D_n - D_{n-1}] * [(d_n + d_{n-1})/2] * [(V_n + V_{n-1})/2]$$

- $Q = V * A$ (discharge = velocity * area; where)
- $V = (V_n + V_{n-1})/2$ (velocity = average velocity in segment; and)
- $A = w * d$ (area = width * depth; where)
- $w = D_n - D_{n-1}$ (segment width = distance between stations; and)
- $d = (d_n + d_{n-1})/2$ (depth = average depth in segment)

Sum the segment discharges to get the total discharge for the river at a particular location.

6. OTHER CONSIDERATIONS FOR LESS THAN IDEAL SITE CONDITIONS:

Non-perpendicularity:

Ideally, the cross-section is perpendicular to the stream channel, which has a straight run of sufficient length, and the sream flow is perpendicular to the cross-section. However, this is not always possible in the real world.

Angle of flow measurements should be collected and incorporated into the discharge calculation when flow is not perpendicular to the stream cross-section (insufficient straight run length of channel, presence of swirls, eddies, etc.).

Calculation of discharge should consider only the velocity component vector that is parallel to the stream channel (perpendicular to the ideal cross-section). This can be obtained by multiplying the velocity reading by the cosine of the flow angle ($V * \cos(a)$). If the cross-section measurements are taken from a bridge that is not perpendicular to the stream channel, then correction for the angle of the bridge is also necessary.

Backwater and reverse flow:

Backwater areas or areas to shallow to measure are usually assigned a velocity of zero. Velocity values in areas of flow reversal (from eddies, or lake seiche effects near river mouths) must be assigned the

opposite sign (if downstream velocities are positive, upstream velocities are negative).

Flow Monitoring Datasheet

Site: _____

Crew: _____ Date: _____

Staff Gage Reading (ft): _____ Begin Time: _____

Tape Down (ft): _____ End Time: _____

Equipment Used:

Transect Starting Point is on (circle one): left bank facing downstream right bank facing downstream

Bridge measurements are from (circle one): upstream side downstream side

Distance Starting Point to Nearest Edge of Water (ft): _____

Distance Ending Point to Nearest Edge of Water (ft): _____

Depth at Left Edge of Water (facing downstream): _____

Depth at Right Edge of Water (facing downstream): _____

Observations:

Transect Point No.	Transect Tape Reading (ft)	Water Depth (ft)	0.8D Velocity (ft/s) (if Depth >2.5 ft)	0.2D Velocity (ft/s) (if Depth >2.5 ft)	0.6D Velocity (ft/s) (if Depth <2.5 ft)	Angle coeff.	Notes

STANDARD OPERATING PROCEDURE 13:

FISH COLLECTION AND PROCESSING

A. SCOPE

These procedures are to be followed; any substantive modifications to the procedures shall be approved by the Field Team Leader.

Several methods may be used to collect fish for the program. This SOP includes procedures to collect fish by gillnetting, seining, trap netting, and electrofishing. Use of each method will be dependent on species and life stages being targeted; a combination of methods likely will be necessary to obtain the required species.

B. HEALTH AND SAFETY CONSIDERATIONS

A safety briefing will be held at the beginning of each day and as new activities are conducted. The designated safety officer shall be responsible for ensuring the safety of personnel and will be contacted immediately in the event of an emergency. The standard safety considerations for near-water and lake sampling include: caution deploying and retrieving heavy equipment, stepping in the sight of lines or cables, slips, trips, falls, and the proper use of personal flotation devices (PFDs) and personal protective equipment (PPE). Do not overload any vessel and load vessels evenly so they are not prone to capsizing. These safety considerations apply to the vessel and sampling crews whenever working on the water.

The use of electrofishing equipment involves potential hazards related to the high voltage output. Because water is an excellent conductor of electricity, the operator of the electrofishing equipment must observe certain precautions to avoid injury. For example, the acceptable voltage range for electroshocking is 300 to 400 volts, and the acceptable current range is 19 to 23 amps based on experience from previous investigations.

C. FISH SAMPLE COLLECTION EQUIPMENT LIST

The following equipment list contains materials that may be needed to carry out the procedures contained in this SOP. Since multiple procedures or alternate methods may be employed to achieve the objectives, not all materials and equipment included on the list may be necessary to complete the task.

- Anchors with approximately one meter of rope attached for gill net (2 per net)
- Buoys with rope attached for gill net (3 per net)
- Trap net
- Sampling vessel
- Electroshocking boat
- High voltage gloves
- PFDs

- Waders
- Measuring board
- Weight scale
- Small and large baskets for weighing fish
- Fish holding tub
- Large dip nets
- Long handled nets
- Water quality meter
- Digital camera
- Field notebook
- GPS unit
- Cellular phone

D. FISH SAMPLING PROCEDURES

D.1 Trap Net Sampling

A trap net is used as a passive sampling device to capture fish as they swim along the shoreline. Samples will be collected in the trap net for tissue analysis and population studies. A trap net consists of a leader line (23 m [75.4 ft] length), two wings (11.5 m [37.7 ft] each), and a series of hoops; the entire net consists of 0.635 cm [0.25 in.] stretch mesh. The net is set perpendicular to and facing the shoreline. When fish encounter the leader line, they are directed offshore into the mouth of the net, through the hoops, and into the end of the net. As fish move through the series of hoops, escape becomes increasingly difficult. Fish may be attracted to the net by other fish that are already captured in it.

<u>Station selection:</u>

1. Proceed to the appropriate station and record in field log (Figure 2).
2. Record water quality data (temperature, pH, dissolved oxygen, conductivity) at the near surface where net will be located.

<u>Setting the net:</u>

1. Anchor the shoreward end of the leader line near the shoreline or attach it to the shoreline by tying it to a fixed object on shore (e.g., tree).
2. Extend the leader line out into the water and perpendicular to shore, until it is taut.
3. Extend each wing at a 45 to 90 degree angle to the leader line. This can be done either by boat or by wading, depending on the water depth and substrate characteristics.
4. Anchor the lower ends of both wings with anchors and attach buoys to the upper ends of the wings. Adjust the buoy lines so that the buoys are floating and the lines are relatively taut.
5. Extend the hoops of the trap away from shore in line with the leader line and pull on the end of the net until all of the hoops are upright.

6. Close the end of the net with a piece of line.
7. Attach an anchor to the end of the net to keep it submerged and attach a buoy to the anchor to mark the location of the end of the net. Record the depth below the water surface of the car end of the net.
8. Allow the net to soak (i.e., fish) for the prescribed sampling period (e.g., 24 to 48 hours).

Sample Collection:

1. Arrive at the buoy at the end of the net and pull the buoy and its anchor into the boat.
2. Retrieve the hoops in sequence, while moving toward shore.
3. Starting at the mouth of the net, shake the captured fish into the closed end of the net.
4. Once all captured fish are in the end of the net, remove the piece of line from the end of the net and empty fish into the collection buckets.
5. If sampling will continue at the collection site, reset the trap according to steps 3 through 8 above for setting a trap net.
6. Process fish according to procedures in Section 6.0 herein. Fish not required for other analyses will be released.

D.2 Electrofishing

Electrofishing uses electrical currents to immobilize fish for capture. Electrofishing is less effective in deeper waters, where fish can swim and avoid the current, so this method will be limited to areas that are less than approximately 14 ft of water depth. The following outlines the procedures for electrofishing:

1. Personnel performing the electroshocking will wear appropriate health and safety gear (rubber boots, rubber gloves, PFD).
2. Position the electrofishing boat in the water.
3. Optional use of a “fish finder” may increase efficiency and aid in targeting locations for sampling.
4. Measure the water conductivity and temperature to determine the appropriate operating voltage and amperage.
5. Adjust the output voltage and amperage dials until the desired output setting is obtained without harming fish. Use pulsed output to reduce stress on fish.
6. Maintain the output for a predetermined amount of time or sampling area.
7. Collect the fish with dip nets and place in bucket of water for processing.
8. Release all unselected fish following processing.
9. Process fish retained for analysis according to the procedures described in the Biota Tissue Processing SOP.

E. SAMPLING PERSONNEL

The Project Manager is responsible for assigning appropriate field personnel to be responsible for the various site activities. The Project Manager is also responsible for assuring

that this and any other appropriate procedures are followed by field personnel. Field personnel assigned to the various site activities are responsible for completing their tasks according to this and other appropriate procedures. Field personnel are responsible for reporting deviations from the procedure or nonconformance to the Project Manager. Only qualified field personnel shall be allowed to perform this procedure. Qualifications will be based on previous experience and health and safety training. A certified fisheries professional will oversee the QA/QC for the various activities.

F. FISH SAMPLE PROCESSING PRIOR TO LABORATORY RECEIPT

Equipment List

- measuring board
- balance for weighing samples
- small and large baskets for weighing fish
- knife with a retractable blade
- sample vials
- foil
- sample labels
- resealable plastic bags
- wet ice
- coolers
- cellular phone
- digital camera
- field notebook

Fish Sample Processing Procedure

1. Samples of the following fish will be collected for tissue analysis at a sampling location as reasonably available using the listed collection methods:
   - Largemouth bass (minimum length based on NYS regulation applicable at the time of sample collection)
   - Common carp or channel catfish (no minimum length but similar lengths as largemouth bass will be sought)
   - Prey fish in the minnow family (excluding carp and goldfish)
2. For each species, record the total length and weight on the field log.. Adult game fish will be collected as individual samples; while prey fish will include a composite of 10 to 15 individuals of the same species (grouping fish by size to the extent possible).
3. Wrap fish in clean foil (shiny side out) and attach an identification label that includes the fish tag number, date, sample type, and location sampled.
4. Place the entire sample into a resealable plastic bag and place in a cooler on wet ice.

5. Prior to shipping the samples, print the chain of custody form and include with the shipment. Print the field collection log and retain a hard copy of the log.

Sample Transport to Laboratory

Store fish at a temperature below 4 degrees Celsius and ship immediately on wet ice to the analytical laboratory. Provide Fish Collection Records, Chain of Custody, and Analysis Request documents with the fish shipment.

Tissue Preparation at the Laboratory

Fillets will be prepared at the laboratory for collected adult sport fish. The adult fish fillets will be prepared in accordance with the recently revised NYSDEC filleting procedure (NYSDEC 2014). Prey fish will be processed as whole body composites following analytical laboratory protocols.

G. REFERENCES

Connolly R.M. 1994. Comparison of Fish Catches From a Buoyant Pop Net and Beach Seine in a Shallow Sea Grass Habitat. Marine Ecology Progress Series. 90:305-309.

Devries and Frie. 1996. Determination of Age and Growth. Pages 483-512 in B.R. Murphy and E.W Willis (editors) Fisheries Techniques, Second Edition. American Fisheries Society, Bethesda, MD.

New York State Department of Environmental Conservation. 1989. Guidelines for the Collection, Analysis, and Interpretation of Fisheries Data by Units of the NYSDEC Division of Fish and Wildlife.

New York State Department of Environmental Conservation. 2014. SOP PrepLab4 (5-28-2014) Prep Lab Standard Operating Procedure. Hale Creek Field Station. Division of Fish, Wildlife and Marine Resources.

Peterson, S.A., J. Van Sickle, R.M. Hughes, J.A. Schacher, and S.F. Echols. 2005. A biopsy procedure for determining filet and predicting whole-fish mercury concentration. Arch. Environ. Contam. Toxicol. 48:99-107.

Zippin, C. 1958. The removal method of population estimation. J. Wildlife Management 22:82-90.

APPENDIX B

SITE-SPECIFIC HEALTH AND SAFETY PLAN

Lower Genesee River
Site-Specific Health and Safety Plan
Tables and Attachments

Prepared For:

New York State
Department of Environmental Conservation
625 Broadway, 12th floor
Albany, NY 12233-7012

Prepared By:

PARSONS
301 Plainfield Road, Suite 350
Syracuse, NY 13212

REVIEWED AND APPROVED BY:

Project Manager:_____Date:__4/1/2015_____

Safety Manager:_____Date: _____7/30/14_____

April 2015

SECTION 1 – INTRODUCTION

A *Generic Health and Safety Plan* (HASP) was completed and approved as part of the Master Services Agreement with the NYSDEC. The generic HASP is intended to be used as a template for all HASPs written for Standby Contract D007623 and includes blanks and TBD to provide the site specific details for each assigned project. The site specific tables and attachments included herein addresses the site specific hazard that may be encountered during work activities associated with Standby Contracts No. D007623-017 the Lower Genesee River site.

This document is designed to be utilized in tandem with the approved generic HASP to form a complete Site Specific Health and Safety Plan under 29 CFR 1910.120. Subcontractors shall be required to submit individual Health and Safety Plans with respect to the work to be performed on the site.

TABLES

Table 1 Management of Change (MOC)

HASP Section	SSO Initials	Date	Comments
Section 1			Updated Introduction
2			Updated CSE Evaluation Dates
3			Updated Training Dates
5			Updated Medical Surveillance & Training Programs

Table 2 Hired Subcontractors

SUBCONTRACTOR	WORK ACTIVITIES	DATE OF EVALUATION	GRADE
TBD			

Table 3 Site Personnel Training

Employee	CPR/AED Expiration Date	First Aid Expiration Date	Bloodborne Pathogens Expiration Date	HAZWOPER Training Expiration Date
TBD				

Attachment 1
WORK ASSIGNMENT SCOPING DOCUMENT

Attachment 2
Responsibility/Identification Of Key Line Personnel

Performing Office: Parsons Syracuse
Address: 301 Plainfield Road, Suite 350
Syracuse, NY 13212

Parsons Project Manager **David Babcock**	Contact No. **315-552- 9674**
Deputy Parsons Project Manager **Matthew Vetter**	Contact No. **315-552- 9742**
Parsons Program Safety Representative **Greg Ertel**	Contact No. **585-353-2574**
Parsons Field Team Leader **TBD**	Contact No.
Client - Project Manager/Representative **Larry Thomas**	Contact No. **518-402-9813**

ATTACHMENT 3
MEDICAL SERVICES AND PANEL OF PHYSICIANS

The Project Manager in conjunction with the Parsons Workers Compensation Analyst establishes a panel of medical providers/facilities for the project and selects two (2) facilities to treat non-emergency work-related injuries and illnesses. The primary facility must be an occupational clinic, and the secondary facility must be able to provide treatment for all types of injuries and during all hours of operations (i.e. hospital). The facilities are listed below:

Facility Name	*Address*	*Phone Number*
Riverfront Medical Services	*120 Erie Canal Drive Suite 300* *Rochester, NY 14626*	*585.325.3002*
Rochester General Hospital	*1425 Portland Ave* *Rochester, NY 14621*	*585.922.4000*

NOTE: Transportation of an injured worker to a medical facility for non-emergency treatment must be done by at least two (2) individuals (i.e. driver and observer).

The route to Rochester General Hospital and Riverfront Medical Services is on the following pages. In the event of a work related injury/illness in NY, Parsons may not direct an injured worker's medical care. The injured worker may undeniably select a medical provider. However, in the event an employee is not familiar with a provider or prefers otherwise, Parsons may suggest s/he see a particular medical provider from those listed above. *If the injured worker agrees to see a Parsons' designated provider, before seeing the provider, the injured worker must first complete a C3 form (attached).* NY also requires (2) wc posting notices. One of these, the NY Stmt of Rights, is attached below and will be posted at the job site and is also provided on the Parshare link below:

http://parsharesites.parsons.com/corp/HLTHSAFE/Health_and_Safety/Forms/AllItems.aspx?RootFolder=%2Fcorp%2FHLTHSAFE%2FHealth%5Fand%5FSafety%2FWorkers%5FCompensation%2FMedical%20Providers%2FNEW%20YORK

ATTACHMENT 4
EMERGENCY RESPONSE PROCEDURES/EMERGENCY ACTION PLAN

The project shall display posters/signs in visible locations throughout the project area (including subcontractor facilities if the same phone numbers are used) with a description of emergency response procedures, including but not limited to evacuation routes, assembly points, alarm notification system and communication procedures. Examples of visible locations include common areas such as a copier/fax/printer, microwave, coffee maker, vehicle dashboard, etc.

- *Evacuation Route – TBD*
- *Assembly Point –TBD*
- *Alarm Notification System – 3 quick blows of a vehicle horn.*
- *Medical – Facility Name: Rochester General Hospital, Phone number 585.922.4000 OR Facility Name: Riverfront Medical Services, Phone number 585.325.3002 OR 911*
- *Fire: Rochester Fire Dept Phone Number 585.663.1113 OR 911*
- *Police: Rochester Police Dept Phone Number 585.428.6717 OR 911.*
- *US Coast Guard Phone Number 585.633.7115 OR 911*

If EMS cannot respond to the project in less than 15 minutes (or 4 minutes for activities that can be expected to result in an accident involving suffocation, severe bleeding, or other life threatening or permanently disabling injury or illness), then the project will require at least one individual on site at all times that work is being performed to have a valid certificate in CPR and first aid. The response time for Emergency Medical Services (EMS) when dialing 911 has been determined to be less than 4 minutes. Based on the activities provided in the Scope of Work (Section 2.1) and the list of Activity Hazard Analysis (AHA) included in Section 6.3, the project does not expect to have an accident involving suffocation, severe bleeding, or other life threatening or permanently disabling injury or illness. The employee(s) listed in the PSP Training-Medical Records spreadsheet (Appendix) are assigned to the project on a full time basis and will have a valid certificate in AED, CPR, first aid and bloodborne pathogens.

If the incident that occurred is serious/life threatening or requires emergency response, first summons medical attention before contacting your GBU Safety Director, filing the IndustrySafe Online Incident Report, or involving WorkCare.

To coordinate the WorkCare triage process, it is imperative that Parsons employees report all work-related injuries immediately to their supervisors.

For work-related injuries or illnesses that may require physician direction on appropriate treatment, Parsons employees should then promptly contact WorkCare, ideally before seeking medical care, as this will provide the greatest opportunity for appropriate intervention.

If an injured employee requires medical care for a work related injury/illness, the Order for Treatment of Work-Related Injury/Illness Form MUST be sent with the injured worker and/or faxed to the occupational medicine clinic at the time of the initial evaluation. Here is the link to the document on ParShare: Order for Treatment of Work-Related Injury or Illness.

WorkCare's Incident Intervention is available 24 hours a day, 7 days a week (24/7), and 365 days per year.

WorkCare Incident Intervention contact number is 1-888-449-7787.

Be prepared to provide the following:

Injured employee's name
Injured employee's contact number
Injured employee's location (at a minimum include the city and state)
Employee ID number
Employee's GBU
Employee's project or office location
Functional manager's name

ATTACHMENT 5
MEDICAL SURVEILLANCE AND/OR MONITORING PROGRAMS

All personnel engaged in activities that results in the exposure to chemicals at or above the OSHA Permissible Exposure Limit (PEL) or wear a respirator for more than 30 days in a year, must comply with 29 CFR 1910.120(f) – Medical Surveillance. All personnel who wear a respirator must be medically qualified by a physician, trained and fit-tested on an annual basis, even if they are not required to participate in a medical surveillance program under 29 CFR 1910.120(f).

Based on the activities listed in Attachment 1, the following hazards or activities are associated with this project, which may result in an exposure that requires an individual to participate in a medical surveillance program. Exposures are not expected to be exceeded for this scope of work, medical monitoring is not anticipated.

Work Activity	Hazard	Medical Surveillance/Training
Drilling/Vibracore Activities	Noise	If noise exposures exceed 85 decibels over an 8-hour time weighted average, an employee must participate in a Hearing Conservation Program.
Level C Operations	Exposure to various COCs as outlined in this HASP.	For respirator use, medical qualification, training and fit-testing must be received on an annual basis. If an individual is exposed at or above the PEL or wears a respirator more than 30 days per year, then participation in a Medical Surveillance Program is required.

Gregory H. Beck, Division Safety Manager, (908) 887-1973 administers the medical surveillance program.

ATTACHMENT 6
SITE RISK ANALYSIS

Before work begins, Work Assignment Project Managers lead a team that performs a risk analysis at each work site to identify hazards that require specific control measures in accordance with Section 23 of the SHARP Management manual. Potential hazards are listed below.

- **Marine Operations – working on or around water, drowning, hypothermia. Operating a boat in a congested waterway with significant traffic.**
- Biological – viruses, medical waste, or toxins (hepatitis, Lyme disease, anthrax, West Nile Virus, malaria, typhus, dengue fever)
- Chemical exposures – if soil and/or water analysis data, or air monitoring data indicates the need for Level C respiratory protection, then action levels (based on OSHA PELs) and corrective action(s) must be provided. NOTE: A respirator cartridge change-out schedule must be developed and included in Section 6.2 (5) - use the Wood Math Model Table based on the anticipated levels of chemical exposure.
- Environmental – cold/heat related illnesses, animals, insects, poisonous plants/vegetation. See Section 9.2 for information related to Environmental hazards.
- *Falls – working at heights greater than six feet*
- *Fires – reference CSHM-12*
- *Hazardous material handling – reference CSHM-17*
- *Heavy equipment operation*
- Lightning - personnel shall follow the 30/30 rule - stop field activities and seek shelter when the time between seeing the lightning and hearing the thunder is less than 30 seconds. When the lightning has subsided for 30 minutes, work activities can resume.
- *Noise – reference CSHM-7*
- *Overhead utility lines or obstructions*
- Underground utilities or obstructions - if subsurface soil disturbance more than 6” below grade surface will occur, then the Parsons Subsurface Soil Disturbance Protocol must be followed (included in the Appendix).
- *Traffic – using a trailer and boating in congested area*

See Table 6.1 for Health Hazard Qualities of Hazardous Substances of Concern and Table 6.2 for Action Levels for Changes in Respiratory Protection.

ATTACHMENT 7
FIVE HAZARD CONTROL MEASURES – ORDER OF PRECEDENCE

Site hazards and hazards resulting from investigation and remediation activities are controlled using one or more of the control measures listed below. The order of precedence is as follows:

1. **Engineer/design to eliminate or minimize hazards.** A major component of the design phase is to select appropriate safety features to eliminate a hazard and render it fail-safe or provide redundancy using backup components.

2. **Guard the hazard.** Hazards that cannot be eliminated by design must be reduced to an acceptable risk level by safety guards or isolation devices that render them inactive.

3. **Provide warnings.** Hazards that cannot be totally eliminated by design or guarding are controlled through using a warning or alarm device.

Exclusion Zone

The exclusion zone at this site will be limited to the area immediately surrounding the work activity, the building, or designated by the Project Supervisor or SSO. Caution tape or other visible marker may be used to delineate this zone. Unprotected onlookers should be located 50 ft. upwind of decommissioning, or demolition activities. In the event that action levels are exceeded in the breathing zone, then all personnel in the exclusion zone must stop work, evacuate, and evaluate the situation. If the actions levels continue to exceed recommended limits, then an upgrade to the level of personal protective equipment is required on properly trained and certified crew members to continue work.

Decontamination Zone

A decontamination area will be set up for equipment decontamination. Equipment decontamination will consist of dry removal of material followed by water washing of the equipment. Personnel decontamination must take place prior to leaving the decontamination area and prior to entering any support zone, personnel hygiene facilities, or before eating, drinking, or smoking. Any decontamination water will be staged on-site for appropriate disposal. The site decontamination area(s) is yet to be delineated and presently undecided if the area will be a fixed station or 'mobile'.

Support Zone

The support zone will be located upwind to both the exclusion zone and the decontamination zone. Break areas, operational direction and support facilities (to include supplies, equipment storage, and maintenance areas) will be located in this area. No equipment or personnel will be permitted to enter the support zone from the exclusion zone without passing through the personnel or equipment decontamination zone first. The work zones (Exclusion & CRZ) will be setup and delineated prior to the needed work task(s) commencing; the support zone will be outlined & discussed at that appropriate time.

4. **Provide special procedures or training.** When design, guarding, or warnings cannot eliminate hazards, subcontractors must develop procedures, training, and audits to ensure safe completion of work. Training cannot be a substitute for hazard elimination when life-threatening hazards are present.

Decontamination Procedure

Level D or Modified Level D protection will be worn for initial entry on-site and initially for all activities. If air concentrations exceed action levels, workers will employ engineering controls first before upgrading the level of protection. Personal decontamination may be necessary for activities involving the use of Level C or Level B PPE. Exhibit A-7 includes the proper decontamination procedures that may be implemented if chemical contamination is present and PPE protection greater than Level D is used. The SSO will determine the proper procedures for decontamination based on the work activities and amount of contamination. All site personnel engaging in intrusive activities will have their breathing zones monitored in accordance with Attachment 9.

Provide personal protective equipment. To protect workers from injury, the last method in the order of precedence is the use of personal protective equipment, such as hard hats, gloves, eye protection, life jackets, and other protective equipment with the understanding that bulky, cumbersome, and heavy personal protective equipment is often discarded or not used, rendering this method ineffective without proper controls.

Table 7.1
Decontamination Procedure

* Decontamination procedures can be modified by the PSM or SSO based on work activities and potential contamination.

STATION	NAME	DESCRIPTION
Station 1	Segregated Equipment Drop	Deposit equipment used on the site (tools, sampling devices and containers, monitoring instruments, clipboards, etc.) on plastic drop cloths or in different containers with plastic liners. Each will be contaminated to a different degree. Segregation at the drop reduces the probability of cross-contamination.
Station 2	Suit, Safety Boots, and Outer Glove Wash	Thoroughly wash chemically resistant suit, safety boots and outer-gloves. Scrub with long-handle, soft-bristle scrub brush and copious amounts of Alconox/water solution. Necessary equipment includes: • Wash tub (30 gallon or large enough for person to stand in) • Alconox/water solution • Long-handle soft-bristle scrub brushes
Station 3	Suit, Safety Boots, and Outer Glove Rinse	Rinse off Alconox/water solution using copious amounts of water. Repeat as many times as necessary. Necessary equipment includes: • Wash tub (30 gallon or large enough for person to stand in) • Spray unit • Water • Long-handle, soft-bristle scrub brushes
Station 4	Outer Gloves Removal	Remove the outer gloves and deposit in individually marked plastic bags. Necessary equipment includes: • Plastic bag
Station 5	Canister, Air Tank, or Mask Change	If a worker leaves the exclusion zone to change a canister, mask or air tank, this is the last step in the decontamination procedures. The worker's canisters or tank are exchanged, new outer glove donned, and joints taped. Worker returns to duty. Otherwise the worker proceeds to Station 6. Necessary equipment includes: • Canisters, air tanks, or mask • Tape • Gloves
Station 6	Removal of Chemically Resistant Suit	With assistance of helper, remove suit. Deposit in container with plastic liner. Necessary equipment includes: • Container with plastic liner
Station 7	Inner-Glove Wash	Wash inner gloves with Alconox/water solution that will not harm skin. Repeat as many times as necessary. Necessary equipment includes: • Alconox/water solution • Wash tub • Long-handle, soft-bristle brushes
Station 8	Inner-Glove Rinse	Rinse inner-gloves with water. Repeat as many times as necessary. Necessary equipment includes: • Water • Wash tub
Station 9	Respirator Removal	Remove face-piece. Avoid touching face. Wash respirator in clean, sanitized solution, allow to dry and deposit face-piece in plastic bag. Store in clean area. Necessary equipment includes: • Plastic bags • Sanitizing solution • Cotton
Station 10	Inner-Glove Removal	Remove inner gloves and deposit in container with plastic liner. Necessary equipment includes: • Container with plastic liner

Table 7.1 (Continued)
Decontamination Procedure

STATION	NAME	DESCRIPTION
Station 11	Field Wash	Wash hands and face. Necessary equipment includes: • Water • Soap • Tables • Wash basins or buckets • Clean towels
Station 12	Redress	If re-entering Exclusion Zone put on clean field clothes (e.g., Tyvek, gloves, etc.). Necessary equipment includes: • Table • Clothing The SSO will monitor the decontamination system for effectiveness.

ATTACHMENT 8
ACTIVITY HAZARD ANALYSES

PROJECT: Lower Genesee River RFI-CMS

Activity Hazard Analysis (AHA)

AHA #: 001

Activity/Work Task:	General Field Work	**Overall Risk Assessment Code (RAC) (Use highest code)**	**M**
		Risk Assessment Code (RAC) Matrix	
Date Prepared:	06/10/2013		
Prepared by:	Heather Philip		
Reviewed by:	Natalia Cagide and Mark Arrigo		
Employer:	Parsons		

Severity	Probability: Frequent-F	Likely-L	Occasional-O	Seldom-S	Unlikely -U
Catastrophic (C)	E	E	H	H	M
Critical (Cr)	E	H	H	M	L
Marginal (M)	H	M	M	L	L
Negligible (N)	M	L	L	L	L

Step 1: Review each "Hazard" with identified safety "Controls" and determine RAC (See above).
The RAC is developed after correctly identifying all the hazards and fully implementing all controls.

P "Probability" is the likelihood to cause an incident, near miss, or accident and identified as: Frequent, Likely, Occasional, Seldom or Unlikely.

S "Severity" is the outcome/degree if an incident, near miss, or accident did occur and identified as: Catastrophic, Critical, Marginal, or Negligible

Step 2: Identify the RAC (Probability/Severity) as E, H, M, or L for each "Hazard" on AHA. Annotate the overall highest RAC at the top of AHA.

RAC Chart

- E = Extremely High Risk
- H = High Risk
- M = Moderate Risk
- L = Low Risk

Notes: (Field Notes, Review Comments, etc.)
References :
Parsons CSHM, July 2010

Job Steps	Hazards	Controls	P	S	RAC
General Outdoor Work	Heat Stress Injuries – Heat rash, Heat exhaustion, Heat cramps, Heat stroke	Hydration, proper clothing, training, environmental monitoring, personnel monitoring, implement work / rest regimens, provide cool shelter. CSHM-36	U	Cr	L
	Cold Stress Injuries - Frost Bite, Hypothermia	Hydration, proper clothing, training, environmental monitoring, personnel monitoring, implement work / rest regimens, provide warm shelter. CSHM-36	U	Cr	L
	Biological Hazards – Insects, Animals, Vegetation, Microbial, Bloodborne Pathogens	Inspection of work area prior to entering, Stop Work Authority, training on biological hazard recognition, extermination, repellant use, proper contaminated material handling, including all soils & sediments. Qualified personnel only to perform FA / ER. CSHM-02	S	Cr	M

Job Steps	Hazards	Controls	P	S	RAC
General Outdoor Work (con't)	Slips Trips Falls (Struck By, Caught between)	100% Fall protection when working at elevations >6' or >4' from any fixed platform. Choose travel path, utilize 3 points of contact when ascending or descending anything. Select proper PPE for the task, foot wear, and gloves. Ensure equipment operators are aware of your location & intentions, never position yourself between any movable & movable or movable & immovable object. Never enter travel path or line of fire. Maintain proper communications. CSHM-22	S	Cr	**M**
	Electrocution – Electrical Equipment, Overhead Power Lines, Lightning	Maintain safe distance for all mobile equipment, All outdoor electrical equipment must be equipped with GFCI protection – CSHM-24	U	Cr	**L**
	Fire – Equipment, vegetation, fuel, spoils.	Where the possibility of fire exists, fire protection is required available IAW CSHM-12. An ABC Fire Extinguisher of adequate size will be maintained in all work areas where flammables are stored or utilized.	S	Cr	**M**
	Drowning Protection	Parsons selects personal flotation devices (PFDs) and requires employees to wear them when work is conducted in areas where the danger of drowning exists, IAW CSHM 5.6	U	Cr	**L**
	Hand Injuries/Pinch Points	Parsons Corporate Safety Policy states "Gloves must be worn 100% of the time by personnel when present in the field, regardless of whether a work task is being performed (i.e. using tools or repairing equipment). This includes walking a job site for inspections or audit purposes, and site tours." The Parsons Nitrate team has approved a waiver to this policy where personnel must wear suitable gloves unless there is more risk not to do so. If no operation or maintenance-related work is being conducted and use of one's hands is limited to office type functions such as preparing documentation, then for those times use of gloves is not needed.	S	Cr	**M**

Equipment to be Used	Training Requirements / Competent or Qualified Personnel	Inspection Requirements
Level D PPE Minimum. Task Dependant – PFD, Face Shield, Goggles, Proper Gloves (Insulated, leather palm, cut resistant, chemical resistant), Ring Buoy, PFDs, Repellent, Sunscreen, Potable Water, GFCIs, Rain Gear, Ice Cleats, ABC Fire Extinguishers, One Charged functional site radio per field team.	All personnel performing work onsite must have received the site specific orientation. All personnel must be trained on this AHA prior to performing any work onsite. Competent FA / CPR / AED responder onsite while all work is occurring at all times. <u>STOP WORK AUTHORITY</u> **Right, Obligation and Responsibility** Every single employee has the responsibility and the authority to STOP WORK at any time necessary to protect the safety or health of themselves, others, and the environment. Anyone can execute this responsibility without repercussions. We believe that the GOAL OF ZERO is possible with everyone's support and commitment.	Ongoing environmental condition inspection (weather, wind, heat, cold). Ongoing personnel inspection (buddy system) Inspection of work area for general hazards as covered under this AHA prior to beginning any task.

ACTIVITY HAZARDS ANALYSIS TRAINING ACKNOWLEDGEMENT AND SIGN OFF

Read Carefully Before Signing Below

This is to acknowledge that I have had a chance to review a copy of the "AHA-001 - General Field Work" and have been trained on its contents. I understand a copy will be provided to me upon request. I will read and abide by all requirements of the aforementioned AHA and any additional rules and regulations of my job. I understand that working safely, complying with and obeying any and all Company and NYSDEC safety rules, regulations or standards is a condition of my employment. Should I not comply with Company and/or NYSDEC safety rules, regulations or standards, I am subject to disciplinary action including removal from the site and possible termination of employment.

NAME	SIGNATURE	COMPANY	DATE	CRAFT	TRAINER	TRAINER SIGNATURE
1.						
2.						
3.						
4.						
5.						
6.						
7.						
8.						
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12.						
13.						
14.						
15.						

Activity Hazard Analysis (AHA)

PROJECT: Lower Genesee River RFI-CMS

AHA #: 002

Activity/Work Task:	Activities-Barge or Boat	**Overall Risk Assessment Code (RAC) (Use highest code)**	**M**
		Risk Assessment Code (RAC) Matrix	
Date Prepared:	06/10/13	**Prepared by:** Heather Philip	**Reviewed by:** Natalia Cagide and Mark Arrigo
Employer:	Parsons		

Severity	Probability: Frequent-F	Likely-L	Occasional-O	Seldom-S	Unlikely-U
Catastrophic (C)	E	E	H	H	M
Critical (Cr)	E	H	H	M	L
Marginal (M)	H	M	M	L	L
Negligible (N)	M	L	L	L	L

Step 1: Review each "Hazard" with identified safety "Controls" and determine RAC (See above).
The RAC is developed after correctly identifying all the hazards and fully implementing all controls.

P "Probability" is the likelihood to cause an incident, near miss, or accident and identified as: Frequent, Likely, Occasional, Seldom or Unlikely.

S "Severity" is the outcome/degree if an incident, near miss, or accident did occur and identified as: Catastrophic, Critical, Marginal, or Negligible

Step 2: Identify the RAC (Probability/Severity) as E, H, M, or L for each "Hazard" on AHA. Annotate the overall highest RAC at the top of AHA.

RAC Chart

- E = Extremely High Risk
- H = High Risk
- M = Moderate Risk
- L = Low Risk

Notes: (Field Notes, Review Comments, etc.)
References :
Parsons CSHM, July 2010

Job Steps	Hazards	Controls	P	S	RAC
Boarding and debarking boat	Slips, trips and falls	Use proper footing and handrails. Be aware of any tripping hazards. Assure that boat is firmly grounded. Check for wet or icy surfaces. Maintain three points of contact at all times. Be cautious when boarding vessel. With one hand on the boat, quickly lower straight down into the center of the craft. Never jump into or onto a vessel. If others are boarding, have them step along the fore-and aft centerline of the boat while the boat is held in place along the pier. Use ramp if step is greater than 1 ft up or down	S	Cr	**M**
Load equipment onto vessel	General	Avoid directly carrying anything aboard. Load the items off the pier or have someone hand them to you one by one. Never overload the vessel. Do NOT exceed maximum weight capacity. Keep weight toward center of the boat and center of gravity as low as possible. Distribute equipment evenly on vessel.	U	M	**L**

Job Steps	Hazards	Controls	P	S	RAC
Load equipment onto vessel (con't)	Slips, Trips, Falls- fall off boat	Workers will be aware of potentially slippery surfaces and tripping hazards. Wear personal floatation device when working on or near water. Wear footwear that has sufficient traction to reduce risk of slipping. Workers will keep all areas clean and free of debris to deter any unnecessary trips and falls. Clean up all spills immediately. Be aware of obstacles on deck. Personnel will notify the **SSO** of any unsafe conditions. Proceed carefully on floating docks and ramps. Never run!	S	Cr	**M**
	Muscle strain/injuries from improper lifting	Personnel will use the toe test to determine heaviness of load (If you can't move it with your toe, use a dolly or ask for help.).	U	M	**L**
	Marine Operation Hazards	Personnel will follow the Marine Safety Standard Operating Procedures when working near or on the water.	U	Cr	**L**
	Slips, Trips, Falls- fall off boat	Workers will be aware of potentially slippery surfaces and tripping hazards. Wear personal floatation device when working on or near water. Wear footwear that has sufficient traction to reduce risk of slipping. Workers will keep all areas clean and free of debris to deter any unnecessary trips and falls. Clean up all spills immediately. Be aware of obstacles on deck. Personnel will notify the **SSO** of any unsafe conditions. Proceed carefully on floating docks and ramps. Never run!	S	Cr	**M**
Unloading equipment	Slip, Trips and Falls	Secure boat. Step carefully off boat. Use rails or assistance from someone on the dock. Avoid carrying anything off the boat.	U	Cr	**L**
	Muscle strain/injuries from improper lifting	Personnel will use the toe test to determine heaviness of load (If you can't move it you're your toe, use a dolly or ask for help.) Load items off from the boat or have someone hand them to you one by one.	U	M	**L**
	Fatigue	Do not let fatigue or tiredness associated with the day's activity compromise attention to proper health and safety. Team Leader will periodically query employees as to their alertness/ fatigue level and rest them as appropriate. Follow Marine Safety Standard Operating Procedures.	U	M	**L**
Nitrate System Operations- Startup and Shutdown	System failures/pipe breaks	Personnel should communicate all startup and shutdown procedures with ALL crew members onboard prior to proceeding. Water dilution pumps and chemical feed pumps must be shut off entirely before values in the system are closed. If two members are shutting down one system both verbal communication and eye contact/signaling should occur before items are turned on or shutoff	S	M	**L**

Equipment to be Used	Training Requirements / Competent or Qualified Personnel	Inspection Requirements
Level D PPE Minimum. Task Dependant – PFD, Face Shield, Goggles, Proper Gloves (Insulated, leather palm, cut resistant, chemical resistant), Ring Buoy, PFDs, Repellent, Sunscreen, Potable Water, GFCIs, Rain Gear, Ice Cleats, Fire Extinguishers, One Charged functional site radio per field team.	All personnel performing work onsite must have received the site specific orientation. All personnel must be trained on this AHA prior to performing any work onsite. Competent FA / CPR / AED responder onsite while all work is occurring at all times. <u>STOP WORK AUTHORITY</u> **Right, Obligation and Responsibility** Every single employee has the responsibility and the authority to STOP WORK at any time necessary to protect the safety or health of themselves, others, and the environment. Anyone can execute this responsibility without repercussions. We believe that the GOAL OF ZERO is possible with everyone's support and commitment.	Ongoing environmental condition inspection (weather, wind, heat, cold). Ongoing personnel inspection (buddy system) Inspection of work area for general hazards as covered under this AHA prior to beginning any task.

ACTIVITY HAZARDS ANALYSIS TRAINING ACKNOWLEDGEMENT AND SIGN OFF

Read Carefully Before Signing Below

This is to acknowledge that I have had a chance to review a copy of the "AHA-002 – Activities-Barge or Boat" and have been trained on its contents. I understand a copy will be provided to me upon request. I will read and abide by all requirements of the aforementioned AHA and any additional rules and regulations of my job. I understand that working safely, complying with and obeying any and all Company and NYSDEC safety rules, regulations or standards is a condition of my employment. Should I not comply with Company and/or NYSDEC safety rules, regulations or standards, I am subject to disciplinary action including removal from the site and possible termination of employment.

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Activity Hazard Analysis (AHA)

PROJECT: Lower Genesee River RFI-CMS

AHA #: 003

Activity/Work Task:	Portable Gas Generator Operation	**Overall Risk Assessment Code (RAC) (Use highest code)**	**M**
		Risk Assessment Code (RAC) Matrix	
Date Prepared:	06/10/13	**Prepared by:** Heather Philip	
Reviewed by:	Natalia Cagide and Mark Arrigo		
Employer:	Parsons		

Severity	Probability				
	Frequent-F	Likely-L	Occasional-O	Seldom-S	Unlikely-U
Catastrophic (C)	E	E	H	H	M
Critical (Cr)	E	H	H	M	L
Marginal (M)	H	M	M	L	L
Negligible (N)	M	L	L	L	L

Step 1: Review each "Hazard" with identified safety "Controls" and determine RAC (See above).
The RAC is developed after correctly identifying all the hazards and fully implementing all controls.

P "Probability" is the likelihood to cause an incident, near miss, or accident and identified as: Frequent, Likely, Occasional, Seldom or Unlikely.

S "Severity" is the outcome/degree if an incident, near miss, or accident did occur and identified as: Catastrophic, Critical, Marginal, or Negligible

Step 2: Identify the RAC (Probability/Severity) as E, H, M, or L for each "Hazard" on AHA. Annotate the overall highest RAC at the top of AHA.

RAC Chart

- E = Extremely High Risk
- H = High Risk
- M = Moderate Risk
- L = Low Risk

Notes: (Field Notes, Review Comments, etc.)
References :
Parsons CSHM, July 2010

Job Steps	Hazards	Controls	P	S	RAC
Moving/transporting portable generator	Back/muscle strain	Use two person lift or, use a dolly to transport over long distances.	S	Cr	**M**
Portable Generator Operation	Asphyxiation/Carbon Monoxide Poisoning	Never use the generator inside an enclosed area. Carbon Monoxide is both invisible and odorless. Ensure that the generator exhausts to a well ventilated/open area. Keep generators from operating near open windows or spaces so deadly vapors cannot enter an area and collect in a space, building, or home. When running on a vessel with any type of a closed cab use a CO monitor to validate that you have good ventilation	S	Cr	**M**

Job Steps	Hazards	Controls	P	S	RAC
Portable Generator Operation (con't)	Fire/explosion during operation or re-fueling	Gasoline and its vapors are extremely flammable. Allow the generator to cool at least 10minutes before refueling and always use the appropriate fuel. For fuel storage, use only an approved metal safety can equipped with a spring-closing lid and spout cover, a means to relieve internal pressure, and a flash arresting screen. Ensure fuel cans are secured (tied down) when not in use and are stored away from work activities where they can be damaged. Avoid spills during refueling. Use a funnel. If fuel is spilled on or around the generator, ensure it is cleaned prior to re-starting. Never operate the generator near combustible liquids or materials. Most portable gas powered generators are passive air cooled. Always allow sufficient space and air supply around the generator during operation. Always have a Fire Extinguisher of sufficient size with a classification of A, B, C and labeled as Marine Type Coast Guard Approved for the potential fire hazard available nearby when the generator is in use. Ensure that the Fire Extinguisher is currently inspected and ready for use.	S	Cr	**M**
	Electrical shock/electrocution	Always plug electrical tools and appliances directly into the generator using the manufacturers supplied cord. Use heavy-duty extension cords that contain a grounding conductor (3-wire flexible cord and 3-prong cord connectors). Ensure that cords are of the appropriate rating for the electrical load. Never use electrical tools or cords that are frayed, missing ground prongs, or have damaged or cracked housings. Never operate the generator in wet conditions. Take precautions to protect the generator from exposure to rain and snow. Always use ground-fault circuit interrupters (GFCIs) as per the manufacturer's instructions. For the use of non UL approved double insulated portable hand tools. The use of Portable Pumps may be used without being plugged into a GFCI outlet providing that pump is UL approved and the cord is double insulated with no damage or known repairs, providing that cord is a direct plug into the generator and is not being used with an extension cord. Test GFCIs periodically to ensure they will function properly. Each generator has a rated wattage of no less than 5KW which provides a limit on the equipment it will safely power. Follow the manufacturer's recommendations for proper use and capacity. Overloading the generator can result in damage to overheating or damage to equipment it is powering. Ensure that the generator supplies only equipment mounted on the generator and/or cord and plug-connected equipment through receptacles mounted on the generator. Ensure that the noncurrent carrying metal parts of equipment (such as the fuel tank, the internal combustion engine, and the generator's housing) are bonded to the generator frame, and the equipment grounding conductor terminals of the power receptacles are bonded to the generator frame. Always visually inspect the generator before use. Do not use it and remove it from service if it appears damaged or has defective components. Mark or tag it as unsafe for use.	S	Cr	**M**

Equipment to be Used	Training Requirements / Competent or Qualified Personnel	Inspection Requirements
Level D PPE Minimum. Task Dependant – PFD, Face Shield, Goggles, Proper Gloves (Insulated, leather palm, cut resistant, chemical resistant), Ring Buoy, PFDs, Repellent, Sunscreen, Potable Water, GFCIs, Rain Gear, Ice Cleats, Fire Extinguishers, One Charged functional site radio per field team.	All personnel performing work onsite must have received the site specific orientation. All personnel must be trained on this AHA prior to performing any work onsite. Competent FA / CPR / AED responder onsite while all work is occurring at all times. STOP WORK AUTHORITY **Right, Obligation and Responsibility** Every single employee has the responsibility and the authority to STOP WORK at any time necessary to protect the safety or health of themselves, others, and the environment. Anyone can execute this responsibility without repercussions. We believe that the GOAL OF ZERO is possible with everyone's support and commitment.	Ongoing environmental condition inspection (weather, wind, heat, cold). Ongoing personnel inspection (buddy system) Inspection of work area for general hazards as covered under this AHA prior to beginning any task.

ACTIVITY HAZARDS ANALYSIS TRAINING ACKNOWLEDGEMENT AND SIGN OFF

Read Carefully Before Signing Below

This is to acknowledge that I have had a chance to review a copy of the "AHA-003 - Portable Gas Generator Operation" and have been trained on its contents. I understand a copy will be provided to me upon request. I will read and abide by all requirements of the aforementioned AHA and any additional rules and regulations of my job. I understand that working safely, complying with and obeying any and all Company and NYSDEC safety rules, regulations or standards is a condition of my employment. Should I not comply with Company and/or NYSDEC safety rules, regulations or standards, I am subject to disciplinary action including removal from the site and possible termination of employment.

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PROJECT: Lower Genesee River RFI-CMS

Activity Hazard Analysis (AHA)

AHA #: 004

Activity/Work Task:	Operation-Barge or Boat	**Overall Risk Assessment Code (RAC) (Use highest code)**	**H**
		Risk Assessment Code (RAC) Matrix	
Date Prepared:	06/10/13		
Prepared by:	Heather Philip		
Reviewed by:	Natalia Cagide and Mark Arrigo		
Employer:	Parsons		

Severity	Probability				
	Frequent-F	Likely-L	Occasional-O	Seldom-S	Unlikely-U
Catastrophic (C)	E	E	H	H	M
Critical (Cr)	E	H	H	M	L
Marginal (M)	H	M	M	L	L
Negligible (N)	M	L	L	L	L

Step 1: Review each "Hazard" with identified safety "Controls" and determine RAC (See above).
The RAC is developed after correctly identifying all the hazards and fully implementing all controls.

Notes: (Field Notes, Review Comments, etc.)
References :
Parsons CSHM, July 2010

P "Probability" is the likelihood to cause an incident, near miss, or accident and identified as: Frequent, Likely, Occasional, Seldom or Unlikely.

S "Severity" is the outcome/degree if an incident, near miss, or accident did occur and identified as: Catastrophic, Critical, Marginal, or Negligible

Step 2: Identify the RAC (Probability/Severity) as E, H, M, or L for each "Hazard" on AHA. Annotate the overall highest RAC at the top of AHA.

RAC Chart

- E = Extremely High Risk
- H = High Risk
- M = Moderate Risk
- L = Low Risk

Job Steps	Hazards	Controls	P	S	RAC
Boarding and Deboarding Boat	Slips, Trips, and Falls	Use proper footing and handrails for boarding and deboarding of boat. Be aware of any objects on the boat and dock that may present a tripping hazard. Assure that boat is firmly grounded before attempting to exit boat. Assure ground is firm before stepping out of boat. Check for wet or icy surfaces before stepping into or out of boat. Maintain three points of contact when boarding or deboarding boat. Do not board or deboard boat while carrying a load. Always transfer loads from barge or boat using assistance. Always place foot on flat, stable surfaces when boarding or deboarding. Step to center of boat when entering. Never step on sidewalls. Wear footwear that has sufficient traction to reduce risk of slipping. Be aware of any obstacles on deck. Personnel will work to keep all on deck equipment organized in an efficient manner to minimize risks. Use assistance from other personnel when needed.	L	M	**M**

Job Steps	Hazards	Controls	P	S	RAC
Working on or near deep water	Falling overboard: Drowning, Hypothermia (can be rapid in cold water)	Wear personal flotation device whenever on the water within 6 ft of the water when on shore. If a person falls in the water, call for help, use flotation device and retrieval rope to assist the person. Field crews should administer practicing tossing the floatation rig with retrieval rope to ensure they can properly use the safety equipment in the event of a man overboard. Control of the rope and ring is necessary when you are tossing the ring. Also, knowing where your footing is vs. the rope so your feet don't get tangled. Once persons are onboard, move person to shore immediately and allow to dry off and warm up. Stand by to assist the victim and observe for signs of hypothermia. If air temperature is below 50 deg F and/or water temperature is below 50 deg F, either don survival suits or conduct activities close to shore where victim can easily be transported to support area within 15 minutes. Steps, ladder or other retrieval device must be readily available.	O	C	**H**
Navigation	Boat traffic and obstructions	Maintain a safe operating distance from shoreline, other vessels, shallow water, obstructions, etc.	S	M	**L**
	Marine Operation Hazards	Personnel will follow the Marine Safety Operations Standards (Nitrate PSHEP – Attachment F) when working near or on the water. Follow all posted waterway speed limits. Operator will be aware of all buoys, shoal markers and other indications of potentially dangerous locations. Vessel will be equipped with all USCG and project required safety equipment. A properly completed Daily Float Plan provided to the appropriate shore support personnel will be completed daily. Personnel will acknowledge and react accordingly to any Coast Guard Water Craft Warnings.	S	M	**L**
	Anchor Lights	Power-driven vessels and sailing vessels at anchor must display anchor lights. An anchor light for a vessel less than 50 meters in length is an all-around white light visible for 2 miles exhibited where it can best be seen and 2 all-round white lights for greater than 50 meters. During daytime hours, Vessels at anchor shall exhibit forward where best seen, a ball shape. More direction can be found at : http://www.auxetrain.org/lights2.html	S	M	**L**
General Barge Activities	Heat and Cold Stress	Implement the cold/heat stress control program as appropriate to conditions. Workers will wear appropriate clothing to protect against cold or heat.	L	M	**M**
	Slips, Trips, Falls on Barge	Workers will be aware of potentially slippery surfaces and tripping hazards. Workers will keep all areas clean and free of debris to deter any unnecessary trips and falls. Clean up all spills immediately. Be aware of obstacles on deck. Personnel will notify the SSO of any unsafe conditions	L	N	**L**
	Noise exposure	Hearing protection will be worn in hazardous noise areas or working around heavy machinery or equipment. Wear earplugs when noise level from equipment exceeds 90 decibels (dBA) averaged over an eight-hour day. Personnel should rotate working locations on the barge to minimize periods of maximum noise exposure.	U	Cr	**L**

Job Steps	Hazards	Controls	P	S	RAC
General Barge Activities (con't)	Struck by Pinch Points	Maintain awareness of procedures underway and be attentive of sampling operations.	U	Cr	**L**
	Muscle strain/injuries from improper lifting	Personnel will utilize proper lifting techniques or ask for assistance with moving/lifting objects.	U	M	**L**
	Ingestion of contaminants Skin/eye contact with contaminated materials	If exposure to contaminated materials occurs, promptly wash contaminated skin using soap or mild detergent and water. Wash hands prior to eating or touching face/mouth. Flush eyes with eyewash solution. Wear appropriate safety equipment (i.e., goggles, gloves, boots) as appropriate for reducing risk of contamination.	U	Cr	**L**
	Waves, surges, currents.	Be aware of sudden surges caused by incoming waves, unstable waters, and currents.	O	M	**M**
	Rain/Snow	Have proper PPE (i.e. rain gear, footwear, etc) available. Be aware of slip hazards, puddles, etc.	O	M	**M**
	Sunshine	Have sunscreen available for ultraviolet protection. Provide shaded areas when possible.	O	M	**M**
	Severe Weather	A weather radio must be available for severe weather alerts. Weather reports must be checked prior to work each day.	O	C	**H**
	Lightning	Immediately cease all work and take shelter on shore when lightning is within 20 miles. Do not begin or continue work until lightning subsides for 20 minutes.	O	C	**H**
	High winds	Wear goggles if dust/debris is visible. Consider alteration or termination of activities if high winds are forecasted or suddenly appear. Weather reports must be checked prior to each work day. If sustained winds are forecasted at or above 20mph, work will be suspended. If sustained winds are forecasted to be below 20 mph, caution will be used and stop work authority will be implemented if the need arises.	O	Cr	**H**
	Pollen	Take medication to minimize allergic reaction to pollen. Care should be taken if using medication that may cause drowsiness. Wear dust mask, if necessary.	O	N	**L**
Position vessel over sample location	Boat traffic	Maintain a safe operating distance from shoreline, other vessels, shallow water, obstructions, debris, etc.	O	M	**M**
	Waves, surges, currents.	Be aware of sudden surges caused by incoming waves, unstable waters, and currents.	O	M	**M**
	Slips, Trips, Falls- fall off boat	Wear footwear that has sufficient traction to reduce risk of slipping. Wear personal flotation device, fastened shut, at all times onboard. Be aware of any obstacles on deck.	O	M	**M**

Equipment to be Used	Training Requirements/Competent or Qualified Personnel	Inspection Requirements
Level D PPE Minimum. Task Dependant – PFD, Face Shield, Goggles, Proper Gloves (Insulated, leather palm, cut resistant, chemical resistant), Ring Buoy, PFDs, Insect Repellent, Sunscreen, Potable Water, GFCIs, Rain Gear, Ice Cleats, Fire Extinguishers, One Charged functional site radio per field team. Lightning Detector	All personnel performing work onsite must have received the site specific orientation. All necessary certification and permits will be provided prior to the start of work. **Note: No hot work will be performed on board vessels or away from shore - this task will be covered by separate AHA.** All personnel must be trained on this AHA prior to performing any work onsite. Competent FA / CPR / AED responder onsite while all work is occurring at all times. Daily Float Plan will be completed prior to any on-water operations. STOP WORK AUTHORITY **Right, Obligation and Responsibility** Every single employee has the responsibility and the authority to STOP WORK at any time necessary to protect the safety or health of themselves, others, and the environment. Anyone can execute this responsibility without repercussions. We believe that the GOAL OF ZERO is possible with everyone's support and commitment.	Ongoing environmental condition inspection (weather, wind, heat, cold). Ongoing personnel inspection (buddy system) Inspection of work area for general hazards as covered under this AHA prior to beginning any task.

ACTIVITY HAZARDS ANALYSIS TRAINING ACKNOWLEDGEMENT AND SIGN OFF

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This is to acknowledge that I have had a chance to review a copy of the "AHA-004 – Operation-Barge or Boat MMA" and have been trained on its contents. I understand a copy will be provided to me upon request. I will read and abide by all requirements of the aforementioned AHA and any additional rules and regulations of my job. I understand that working safely, complying with and obeying any and all Company and NYSDEC safety rules, regulations or standards is a condition of my employment. Should I not comply with Company and/or NYSDEC safety rules, regulations or standards, I am subject to disciplinary action including removal from the site and possible termination of employment.

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Activity Hazard Analysis (AHA)

PROJECT: Lower Genesee River RFI-CMS

AHA #: 005

Activity/Work Task:	Fuel Barge or Boat and Diesel Operations	**Overall Risk Assessment Code (RAC) (Use highest code)**	**M**
		Risk Assessment Code (RAC) Matrix	
Date Prepared:	06/10/13	**Severity**	**Probability**
Prepared by:	Heather Philip		
Reviewed by:	Natalia Cagide and Mark Arrigo		
Employer:	Parsons		

Severity	Frequent-F	Likely-L	Occasional-O	Seldom-S	Unlikely-U
Catastrophic (C)	E	E	H	H	M
Critical (Cr)	E	H	H	M	L
Marginal (M)	H	M	M	L	L
Negligible (N)	M	L	L	L	L

Step 1: Review each "Hazard" with identified safety "Controls" and determine RAC (See above).
The RAC is developed after correctly identifying all the hazards and fully implementing all controls.

P "Probability" is the likelihood to cause an incident, near miss, or accident and identified as: Frequent, Likely, Occasional, Seldom or Unlikely.

S "Severity" is the outcome/degree if an incident, near miss, or accident did occur and identified as: Catastrophic, Critical, Marginal, or Negligible

Step 2: Identify the RAC (Probability/Severity) as E, H, M, or L for each "Hazard" on AHA. Annotate the overall highest RAC at the top of AHA.

RAC Chart

- E = Extremely High Risk
- H = High Risk
- M = Moderate Risk
- L = Low Risk

Notes: (Field Notes, Review Comments, etc.)
References :
Parsons CSHM, July 2010

Job Steps	Hazards	Controls	P	S	RAC
Transportation of fuel for pontoon	Explosion	No smoking or open flame within 50 feet.	U	Cr	L
	Spill	Check for security of fuel storage can. Ensure all openings on fuel can are closed tightly	U	Cr	L
Fueling pontoon boat	Overflow/Spills of fuel in or onto boat or water	Ensure that fuel pumps have a UL listed automatic closing valve. Use approved safety containers Workers will be aware capacity of fuel tank/container. Have spill sorbents or other spill containing/absorbing items available.	S	Cr	M
	Explosion	Ensure that all fuel is in approved safety containers. No smoking or open flame within 50 feet. Equipment/Motors that use flammable fuel shall be shut down during fueling, servicing, or maintenance Ensure nozzle to can or fuel neck contact while fueling	U	Cr	L

Job Steps	Hazards	Controls	P	S	RAC
Fueling pontoon boat (con't)	Spill on clothing	Workers should be aware of capacity of fuel tank. Wear gloves while fueling. Change clothing if saturated with fuel.	S	Cr	**M**
	Fire	Ensure that boat has a 20 pound, fully charged, A-B-C fire extinguisher maintained in the work area.	U	Cr	**L**
Fuel transfer from tender barge to nitrate barge	Explosion	No smoking or open flame within 50 feet. Equipment/Motors that use flammable fuel shall be shut down during fueling, servicing, or maintenance Ensure nozzle to can or fuel neck contact while fueling	U	Cr	**L**
	Spill on clothing	Workers should be aware of capacity of fuel tank. Wear gloves while fueling. Change clothing if saturated with fuel. Use spill pads when necessary.	S	Cr	**M**
	Fire	Ensure that boat has a 20 pound, fully charged, A-B-C fire extinguisher maintained in the work area.	U	Cr	**L**

Equipment to be Used	Training Requirements / Competent or Qualified Personnel	Inspection Requirements
Level D PPE Minimum. Task Dependant – PFD, Face Shield, Goggles, Proper Gloves (Insulated, leather palm, cut resistant, chemical resistant), Ring Buoy, PFDs, Repellent, Sunscreen, Potable Water, GFCIs, Rain Gear, Ice Cleats, Fire Extinguishers, One Charged functional site radio per field team. Properly stocked petroleum spill containment kit to include: sorbent diapers, sorbent floatable booms, granular sorbent media.	All personnel performing work onsite must have received the site specific orientation. All personnel must be trained on this AHA prior to performing any work onsite. Competent FA / CPR / AED responder onsite while all work is occurring at all times. All personnel need to be trained on proper reporting procedures when certain releases of pollutants, petroleum and other hazardous materials occur in accordance with NYSDEC guidelines. STOP WORK AUTHORITY **Right, Obligation and Responsibility** Every single employee has the responsibility and the authority to STOP WORK at any time necessary to protect the safety or health of themselves, others, and the environment. Anyone can execute this responsibility without repercussions. We believe that the GOAL OF ZERO is possible with everyone's support and commitment.	Ongoing environmental condition inspection (weather, wind, heat, cold). Ongoing personnel inspection (buddy system) Inspection of work area for general hazards as covered under this AHA prior to beginning any task.

ACTIVITY HAZARDS ANALYSIS TRAINING ACKNOWLEDGEMENT AND SIGN OFF

Read Carefully Before Signing Below

This is to acknowledge that I have had a chance to review a copy of the "AHA-005 – Fuel Barge or Boat and Diesel Operations" and have been trained on its contents. I understand a copy will be provided to me upon request. I will read and abide by all requirements of the aforementioned AHA and any additional rules and regulations of my job. I understand that working safely, complying with and obeying any and all Company and NYSDEC safety rules, regulations or standards is a condition of my employment. Should I not comply with Company and/or NYSDEC safety rules, regulations or standards, I am subject to disciplinary action including removal from the site and possible termination of employment.

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Activity Hazard Analysis (AHA)

PROJECT: Lower Genesee River RFI-CMS

AHA #: 006

Activity/Work Task:	Operation of General Hand Tools	**Overall Risk Assessment Code (RAC) (Use highest code)**	**M**
		Risk Assessment Code (RAC) Matrix	
Date Prepared:	06/10/13	**Prepared by:** Paul Roth	
Reviewed by:	Natalia Cagide and Mark Arrigo		
Employer:	Parsons		

Severity	Probability: Frequent-F	Likely-L	Occasional-O	Seldom-S	Unlikely-U
Catastrophic (C)	E	E	H	H	M
Critical (Cr)	E	H	H	M	L
Marginal (M)	H	M	M	L	L
Negligible (N)	M	L	L	L	L

Step 1: Review each "Hazard" with identified safety "Controls" and determine RAC (See above).
The RAC is developed after correctly identifying all the hazards and fully implementing all controls.

P "Probability" is the likelihood to cause an incident, near miss, or accident and identified as: Frequent, Likely, Occasional, Seldom or Unlikely.

S "Severity" is the outcome/degree if an incident, near miss, or accident did occur and identified as: Catastrophic, Critical, Marginal, or Negligible

Step 2: Identify the RAC (Probability/Severity) as E, H, M, or L for each "Hazard" on AHA. Annotate the overall highest RAC at the top of AHA.

RAC Chart

- E = Extremely High Risk
- H = High Risk
- M = Moderate Risk
- L = Low Risk

Notes: (Field Notes, Review Comments, etc.)
References :
Parsons CSHM, July 2010

Job Steps	Hazards	Controls	P	S	RAC
Operation of general hand tools	General	▪ When operating any tool one must be aware of what's around them including objects and other people. ▪ Clear other persons away from the "line of fire." ▪ Group instruction will be given on the proper use of each tool. ▪ All portable power tools will be inspected, and maintained in accordance with manufacturer's instructions and recommendations, and will be only used for the purpose for which designed. ▪ Portable power tools will be inspected, tested, and determined to be in safe operating condition before use. Portable power tools will be in good repair and with all required safety devices installed and properly adjusted. ▪ Portable power tools having defects that will impair their strength or render them unsafe will be removed from service. ▪ Ensure all portable power tools will use ground fault circuit interrupters.	U	Cr	L

Job Steps	Hazards	Controls	P	S	RAC
Operation of general hand tools (con't)	Pinch Points	▪ Everyone will be aware of where possible pinch points are. ▪ Portable power tools with guards will be equipped with such guards; ensure guards are in place and operational at pinch and nip points and control loose clothing, gloves, jewelry and hair.	U	Cr	**L**
	Eye injury	▪ Safety glasses with side shields or safety goggles will be worn at all times. ▪ Depending on type of task and hand tool being used, additional eye and face protection (face shield) may be required.	U	Cr	**L**
	Noise	▪ If the noise created makes it difficult for normal conversation then hearing protection will be worn. Notify Site Safety Officer to validate hearing protection NRR requirements. ▪ Hearing protection will be worn in hazardous noise areas (85dBA or greater).	U	Cr	**L**
	Cuts/ Abrasions	▪ During operation of hand tools, work gloves will be worn. Gloves will be cut resistant if the work involves sharp items or items that could cut an employee.	U	Cr	**L**

Equipment to be Used	Training Requirements / Competent or Qualified Personnel	Inspection Requirements
Level D PPE Minimum. Task Dependant – PFD, Face Shield, Goggles, Proper Gloves (Insulated, leather palm, cut resistant, chemical resistant), Ring Buoy, PFDs, Repellent, Sunscreen, Potable Water, GFCIs, Rain Gear, Ice Cleats, Fire Extinguishers, One Charged functional site radio per field team.	All personnel performing work onsite must have received the site specific orientation. All personnel must be trained on this AHA prior to performing any work onsite. Competent FA / CPR / AED responder onsite while all work is occurring at all times. STOP WORK AUTHORITY **Right, Obligation and Responsibility** Every single employee has the responsibility and the authority to STOP WORK at any time necessary to protect the safety or health of themselves, others, and the environment. Anyone can execute this responsibility without repercussions. We believe that the GOAL OF ZERO is possible with everyone's support and commitment.	Ongoing environmental condition inspection (weather, wind, heat, cold). Ongoing personnel inspection (buddy system) Inspection of work area for general hazards as covered under this AHA prior to beginning any task.

ACTIVITY HAZARDS ANALYSIS TRAINING ACKNOWLEDGEMENT AND SIGN OFF

Read Carefully Before Signing Below

This is to acknowledge that I have had a chance to review a copy of the "AHA-006 - Operation of General Hand Tools" and have been trained on its contents. I understand a copy will be provided to me upon request. I will read and abide by all requirements of the aforementioned AHA and any additional rules and regulations of my job. I understand that working safely, complying with and obeying any and all Company and NYSDEC safety rules, regulations or standards is a condition of my employment. Should I not comply with Company and/or NYSDEC safety rules, regulations or standards, I am subject to disciplinary action including removal from the site and possible termination of employment.

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PROJECT: Lower Genesee River RFI-CMS

Activity Hazard Analysis (AHA)

AHA #: 007

Activity/Work Task:	Sampling-Water	**Overall Risk Assessment Code (RAC) (Use highest code)**	**M**
		Risk Assessment Code (RAC) Matrix	
Date Prepared:	06/10/13		
Prepared by:	Heather Philip		
Reviewed by:	Natalia Cagide and Mark Arrigo		
Employer:	Parsons		

Severity	Probability				
	Frequent-F	Likely-L	Occasional-O	Seldom-S	Unlikely-U
Catastrophic (C)	E	E	H	H	M
Critical (Cr)	E	H	H	M	L
Marginal (M)	H	M	M	L	L
Negligible (N)	M	L	L	L	L

Notes: (Field Notes, Review Comments, etc.)
References :
Parsons CSHM, July 2010

Step 1: Review each "Hazard" with identified safety "Controls" and determine RAC (See above).
The RAC is developed after correctly identifying all the hazards and fully implementing all controls.

P "Probability" is the likelihood to cause an incident, near miss, or accident and identified as: Frequent, Likely, Occasional, Seldom or Unlikely.

S "Severity" is the outcome/degree if an incident, near miss, or accident did occur and identified as: Catastrophic, Critical, Marginal, or Negligible

Step 2: Identify the RAC (Probability/Severity) as E, H, M, or L for each "Hazard" on AHA. Annotate the overall highest RAC at the top of AHA.

RAC Chart

- E = Extremely High Risk
- H = High Risk
- M = Moderate Risk
- L = Low Risk

Job Steps	Hazards	Controls	P	S	RAC
Water Sampling	Marine Operation Hazards	▪ Personnel will follow the Marine Safety Operations Standards when working near or on the water.	U	Cr	L
	▪ Inhalation of contaminated dust Inhalation of volatile contaminants ▪ Ingestion of contaminants ▪ Skin/eye contact with contaminated materials	▪ If exposure to contaminated materials occurs, promptly wash contaminated skin using soap or mild detergent and water. ▪ Wash eyes with large amounts of water. ▪ If a person breathes in a large amount of organic vapor, move the exposed person to fresh air, rinse mouth. Perform artificial respiration if breathing stops. ▪ Keep the affected person warm and at rest. Obtain medical treatment for all of these situations as required. ▪ Wear appropriate safety equipment (i.e., goggles, gloves, boots, etc.) as appropriate for reducing risk of contamination.	U	Cr	L

Job Steps	Hazards	Controls	P	S	RAC
Water Sampling (con't)	Working on the water - trip, slip, fall off boat Drowning	▪ Wear footwear that has sufficient traction to reduce risk of slipping. ▪ Wear personal flotation device. ▪ Be aware of any obstacles on deck.	S	Cr	**M**
	Noise exposure	▪ Hearing protection will be worn in hazardous noise areas or working around heavy machinery or equipment. ▪ Wear earplugs when noise level from equipment exceeds 90 decibels (dBA) averaged over an eight-hour day.	U	Cr	**L**
	Struck by / Pinch Points	▪ Maintain awareness of procedures underway and be attentive of sampling operations.	S	Cr	**M**
	Cold/Heat Stress	▪ Implement the cold/heat stress control program.	U	M	**L**
	Muscle strain / injuries from improper lifting	▪ Personnel will utilize proper lifting techniques or ask for assistance with moving/lifting objects.	U	Cr	**L**
	Rain	▪ Have proper PPE (i.e. rain gear, footwear, etc) available. Be aware of slip hazards, puddles, etc.	U	M	**L**
	Sunshine	▪ Have sunscreen available for ultraviolet protection. Have water for dehydration.	U	M	**L**
	Snow	▪ Have warm clothes available for cold temperatures.	U	M	**L**
	Lightning	▪ Do not begin or continue work until lightning subsides for 20 minutes.	U	Cr	**L**

Equipment to be Used	Training Requirements / Competent or Qualified Personnel	Inspection Requirements
Level D PPE Minimum. Task Dependant – PFD, Face Shield, Goggles, Proper Gloves (Insulated, leather palm, cut resistant, chemical resistant), Ring Buoy, PFDs, Repellent, Sunscreen, Potable Water, GFCIs, Rain Gear, Ice Cleats, Fire Extinguishers, One Charged functional site radio per field team.	All personnel performing work onsite must have received the site specific orientation. All personnel must be trained on this AHA prior to performing any work onsite. Competent FA / CPR / AED responder onsite while all work is occurring at all times.	Ongoing environmental condition inspection (weather, wind, heat, cold). Ongoing personnel inspection (buddy system) Inspection of work area for general hazards as covered under this AHA prior to beginning any task.

	STOP WORK AUTHORITY **Right, Obligation and Responsibility** Every single employee has the responsibility and the authority to STOP WORK at any time necessary to protect the safety or health of themselves, others, and the environment. Anyone can execute this responsibility without repercussions. We believe that the GOAL OF ZERO is possible with everyone's support and commitment.	

ACTIVITY HAZARDS ANALYSIS TRAINING ACKNOWLEDGEMENT AND SIGN OFF

Read Carefully Before Signing Below

This is to acknowledge that I have had a chance to review a copy of the "AHA-007 - Sampling-Water" and have been trained on its contents. I understand a copy will be provided to me upon request. I will read and abide by all requirements of the aforementioned AHA and any additional rules and regulations of my job. I understand that working safely, complying with and obeying any and all Company and NYSDEC safety rules, regulations or standards is a condition of my employment. Should I not comply with Company and/or NYSDEC safety rules, regulations or standards, I am subject to disciplinary action including removal from the site and possible termination of employment.

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Activity Hazard Analysis (AHA)

PROJECT: Lower Genesee River RFI-CMS

AHA #: 008

Activity/Work Task:	Sampling / Processing	**Overall Risk Assessment Code (RAC) (Use highest code)**	**M**
		Risk Assessment Code (RAC) Matrix	
Date Prepared:	06/10/13		
Prepared by:	Heather Philip		
Reviewed by:	Natalia Cagide and Mark Arrigo		
Employer:	Parsons		

Severity	Probability				
	Frequent-F	Likely-L	Occasional-O	Seldom-S	Unlikely-U
Catastrophic (C)	E	E	H	H	M
Critical (Cr)	E	H	H	M	L
Marginal (M)	H	M	M	L	L
Negligible (N)	M	L	L	L	L

Step 1: Review each "Hazard" with identified safety "Controls" and determine RAC (See above).
The RAC is developed after correctly identifying all the hazards and fully implementing all controls.

P "Probability" is the likelihood to cause an incident, near miss, or accident and identified as: Frequent, Likely, Occasional, Seldom or Unlikely.

S "Severity" is the outcome/degree if an incident, near miss, or accident did occur and identified as: Catastrophic, Critical, Marginal, or Negligible

Step 2: Identify the RAC (Probability/Severity) as E, H, M, or L for each "Hazard" on AHA. Annotate the overall highest RAC at the top of AHA.

RAC Chart

- E = Extremely High Risk
- H = High Risk
- M = Moderate Risk
- L = Low Risk

Notes: (Field Notes, Review Comments, etc.)
References :
Parsons CSHM, July 2010

Job Steps	Hazards	Controls	P	S	RAC
Packing sample for off-site shipment to lab	Accidental breakage of glass bottles	▪ Wear cut-resistant gloves during packaging of glass bottles. ▪ Immediate clean-up of spills.	S	Cr	M
	Back Injury, muscle strain/stress	▪ Use a buddy if a heavier lift must be made. Use good body mechanics keeping load close in and lifting with legs not lower back Use a dolly for moving multiple coolers.	U	Cr	L
	Hazardous Material Exposure	▪ Training and safety awareness of potential exposure to contaminates at the site and decontamination procedure. ▪ Appropriate PPE will be worn (e.g., safety glasses, gloves, etc.). ▪ Personnel will follow decontamination procedure. ▪ Screen for COCs with PID and mercury meter analyzer over samples and in workers breathing zone. ▪ Ventilate work area with fans or vents	U	Cr	L

Job Steps	Hazards	Controls	P	S	RAC
Packing sample for off-site shipment to lab (con't)	Slips, Trips, Falls	▪ Workers will be aware of potentially slippery surfaces and tripping hazards. ▪ Workers will keep all areas clean and free of debris to deter any unnecessary trips and falls. ▪ Personnel will clean up all spills immediately. ▪ Personnel will notify the SSO of any unsafe conditions	S	Cr	**M**
	Heat and Cold Stress	▪ The SSO will implement the cold/heat stress control program as appropriate to conditions. ▪ SSO will monitor workers for heat/cold stress symptoms.	U	Cr	**L**
	Eye Injury	▪ PPE (safety glasses, etc.) will be worn.	U	Cr	**L**
	Accidental breakage of glass bottles	▪ Wear cut-resistant gloves during packaging of glass bottles. ▪ Immediate clean-up of spills.	S	Cr	**M**
	Back Injury, muscle strain/stress	▪ Use a buddy if a heavier lift must be made. Use good body mechanics keeping load close in and lifting with legs not lower back Use a dolly for moving multiple coolers.	U	Cr	**L**
	Hazardous Material Exposure	▪ Training and safety awareness of potential exposure to contaminates at the site and decontamination procedure. ▪ Appropriate PPE will be worn (e.g., safety glasses, gloves, etc.). ▪ Personnel will follow decontamination procedure. ▪ Screen for COCs with PID and mercury meter analyzer over samples and in workers breathing zone. ▪ Ventilate work area with fans or vents	U	Cr	**L**

Equipment to be Used	Training Requirements / Competent or Qualified Personnel	Inspection Requirements
Level D PPE Minimum. Task Dependant – PFD, Face Shield, Goggles, Proper Gloves (Insulated, leather palm, cut resistant, chemical resistant), Ring Buoy, PFDs, Repellent, Sunscreen, Potable Water, GFCIs, Rain Gear, Ice Cleats, Fire Extinguishers, One Charged functional site radio per field team.	All personnel performing work onsite must have received the site specific orientation. All personnel must be trained on this AHA prior to performing any work onsite. Competent FA / CPR / AED responder onsite while all work is occurring at all times.	Ongoing environmental condition inspection (weather, wind, heat, cold). Ongoing personnel inspection (buddy system) Inspection of work area for general hazards as covered under this AHA prior to beginning any task.

	STOP WORK AUTHORITY **Right, Obligation and Responsibility** Every single employee has the responsibility and the authority to STOP WORK at any time necessary to protect the safety or health of themselves, others, and the environment. Anyone can execute this responsibility without repercussions. We believe that the GOAL OF ZERO is possible with everyone's support and commitment.	

ACTIVITY HAZARDS ANALYSIS TRAINING ACKNOWLEDGEMENT AND SIGN OFF

Read Carefully Before Signing Below

This is to acknowledge that I have had a chance to review a copy of the "AHA-009 - Sampling-Processing" and have been trained on its contents. I understand a copy will be provided to me upon request. I will read and abide by all requirements of the aforementioned AHA and any additional rules and regulations of my job. I understand that working safely, complying with and obeying any and all Company and NYSDEC safety rules, regulations or standards is a condition of my employment. Should I not comply with Company and/or NYSDEC safety rules, regulations or standards, I am subject to disciplinary action including removal from the site and possible termination of employment.

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Activity Hazard Analysis (AHA)

PROJECT: Lower Genesee River RFI-CMS

AHA #: 009

Activity/Work Task:	Knife and Blade Use	**Overall Risk Assessment Code (RAC) (Use highest code)**	**M**
		Risk Assessment Code (RAC) Matrix	
Date Prepared:	06/10/13	**Prepared by:** Heather Philip	
Reviewed by:	Natalia Cagide and Mark Arrigo		
Employer:	Parsons		

Severity	Probability: Frequent-F	Likely-L	Occasional-O	Seldom-S	Unlikely-U
Catastrophic (C)	E	E	H	H	M
Critical (Cr)	E	H	H	M	L
Marginal (M)	H	M	M	L	L
Negligible (N)	M	L	L	L	L

Step 1: Review each "Hazard" with identified safety "Controls" and determine RAC (See above).
The RAC is developed after correctly identifying all the hazards and fully implementing all controls.

P "Probability" is the likelihood to cause an incident, near miss, or accident and identified as: Frequent, Likely, Occasional, Seldom or Unlikely.

S "Severity" is the outcome/degree if an incident, near miss, or accident did occur and identified as: Catastrophic, Critical, Marginal, or Negligible

Step 2: Identify the RAC (Probability/Severity) as E, H, M, or L for each "Hazard" on AHA. Annotate the overall highest RAC at the top of AHA.

RAC Chart

- E = Extremely High Risk
- H = High Risk
- M = Moderate Risk
- L = Low Risk

Notes: (Field Notes, Review Comments, etc.)
References :
Parsons CSHM, July 2010

Job Steps	Hazards	Controls	P	S	RAC
Utility knife use	Cuts from knife	▪ Use only self-retracting utility knives to cut materials. ▪ Always use a sharp blade when cutting. Dispose used blades in a provided "sharps container." ▪ Always wear cut resistant gloves when using a knife.	S	Cr	**M**
Cutting with saw or drill	Cuts and Abrasions	▪ Use tool in proper body positioning, keep hand, legs feet and body away. ▪ Unplug tool when servicing. ▪ Keep cord away from cutting plane. ▪ Wear safety glasses and cut resistant work gloves.	S	Cr	**M**
	Injury from Hand Tool Operation	▪ Personnel awareness of potential hazards from hand tool operation. ▪ SSO will ensure that all tools used onsite are in proper working order and are in good condition. ▪ Personnel to inform SSO or Project Manger if tools require repair or replacement.	S	Cr	**M**

Job Steps	Hazards	Controls	P	S	RAC
Cutting with saw or drill (con't)	Injury from Power Tool Operation	▪ All tools will be in good working order. ▪ No damaged equipment will be issued until repaired or replaced. ▪ When power operated tools are designed to accommodate guards, the guard must be in place on the tool. ▪ Fuel powered tools may be refueled, serviced, or maintained only while the tools are stopped and not operating.	S	Cr	**M**

Equipment to be Used	Training Requirements / Competent or Qualified Personnel	Inspection Requirements
Level D PPE Minimum. Task Dependant – PFD, Face Shield, Goggles, Proper Gloves (Insulated, leather palm, cut resistant, chemical resistant), Ring Buoy, PFDs, Repellent, Sunscreen, Potable Water, GFCIs, Rain Gear, Ice Cleats, Fire Extinguishers, One Charged functional site radio per field team.	All personnel performing work onsite must have received the site specific orientation. All personnel must be trained on this AHA prior to performing any work onsite. Competent FA / CPR / AED responder onsite while all work is occurring at all times. STOP WORK AUTHORITY **Right, Obligation and Responsibility** Every single employee has the responsibility and the authority to STOP WORK at any time necessary to protect the safety or health of themselves, others, and the environment. Anyone can execute this responsibility without repercussions. We believe that the GOAL OF ZERO is possible with everyone's support and commitment.	Ongoing environmental condition inspection (weather, wind, heat, cold). Ongoing personnel inspection (buddy system) Inspection of work area for general hazards as covered under this AHA prior to beginning any task.

ACTIVITY HAZARDS ANALYSIS TRAINING ACKNOWLEDGEMENT AND SIGN OFF

Read Carefully Before Signing Below

This is to acknowledge that I have had a chance to review a copy of the "AHA-009 – Knife and Blade Use" and have been trained on its contents. I understand a copy will be provided to me upon request. I will read and abide by all requirements of the aforementioned AHA and any additional rules and regulations of my job. I understand that working safely, complying with and obeying any and all Company and NYSDEC safety rules, regulations or standards is a condition of my employment. Should I not comply with Company and/or NYSDEC safety rules, regulations or standards, I am subject to disciplinary action including removal from the site and possible termination of employment.

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PROJECT: Lower Genesee River RFI-CMS

Activity Hazard Analysis (AHA)

AHA #: 010

Activity/Work Task:	Transporting/Launching Support Boat	**Overall Risk Assessment Code (RAC) (Use highest code)**	**L**
		Risk Assessment Code (RAC) Matrix	
Date Prepared:	06/11/13	**Severity**	**Probability**
Prepared by:	Heather Philip		
Reviewed by:	Natalia Cagide and Mark Arrigo		
Employer:	Parsons		

Severity	Frequent-F	Likely-L	Occasional-O	Seldom-S	Unlikely-U
Catastrophic (C)	E	E	H	H	M
Critical (Cr)	E	H	H	M	L
Marginal (M)	H	M	M	L	L
Negligible (N)	M	L	L	L	L

Step 1: Review each "Hazard" with identified safety "Controls" and determine RAC (See above).
The RAC is developed after correctly identifying all the hazards and fully implementing all controls.

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Step 2: Identify the RAC (Probability/Severity) as E, H, M, or L for each "Hazard" on AHA. Annotate the overall highest RAC at the top of AHA.

RAC Chart

- E = Extremely High Risk
- H = High Risk
- M = Moderate Risk
- L = Low Risk

Notes: (Field Notes, Review Comments, etc.)
References :
Parsons CSHM, July 2010

Job Steps	Hazards	Controls	P	S	RAC
Transporting Boat on Trailer	Trailer in inadequate condition for transport of the boat	Ensure trailer is in good operating condition. Conduct inspection of trailer before loading boat and going on the highway.	U	Cr	L
	Inadequate vehicle for towing	Ensure the tow vehicle and load bearing hitch are capable of handling the weight of the trailer boat and equipment.	U	Cr	L
Trailering boat on the highway	Boat slipping off trailer or losing control of trailer on the highway	Check trailer wheels while hitching trailer so it can't inadvertently roll. Make sure personnel are clear while backing up. Use a spotter to assist in backing up to hitch. Ensure that the latching mechanism is completely over the tow ball and locked. Make sure the manual roller stand has been raised to a safe height. Use a tie down(s) on the stern portion of the boat to hold it secure and prevent it from bouncing off the bolsters during transport. Ensure that the safety chains are attached crisscrossing under the coupler to the frame of the tow vehicle.	U	Cr	L

Job Steps	Hazards	Controls	P	S	RAC
Trailering boat on the Highway (con't)		Connect lights and visually verify that they are functioning properly. Ensure motor is in a raised and locked position so it will not hit the surface. **Towing precautions:** Allow more time to brake, accelerate, pass, and stop. Remember turning radius is much greater, allow wider berth for turning corners. Prior to operating on the open road, practice turning, backing up, etc. on a level uncongested area. Ensure persons have a level of competency for trailering a boat on the highway.			
Launching the boat	Falling out of boat or losing control of boat during launching. Backing over or boat falling on individuals	If tow vehicle is a four wheel drive, lock in four wheel drive for better traction during launching activities. Set the parking brake and use wheel chocks behind the rear wheels prior to persons going between tow vehicle and trailer for light disconnection and bow eye connection. Remove tie downs and make sure the winch is properly attached to the bow eye and locked in position. Put the drain plug in securely. Disconnect trailer lights to prevent shorting of electrical system during submersion. Attach a line to the bow eye so it can't drift away after launching. Use a spotter while backing the trailer into the water. Ensure persons are clear during backing. Keep exhaust pipes of the tow vehicle out of the water, if they become immersed, the engine may stall. With someone holding the line to the boat, back the trailer to a sufficient depth where the boat can be off loaded with a light shove following disconnection of the winch line	U	Cr	**L**

Equipment to be Used	Training Requirements / Competent or Qualified Personnel	Inspection Requirements
Level D PPE Minimum. Task Dependant – PFD, Face Shield, Goggles, Proper Gloves (Insulated, leather palm, cut resistant, chemical resistant), Ring Buoy, PFDs, Repellent, Sunscreen, Potable Water, GFCIs, Rain Gear, Ice Cleats, Fire Extinguishers, One Charged functional site radio per field team.	All personnel performing work onsite must have received the site specific orientation. All personnel must be trained on this AHA prior to performing any work onsite. Competent FA / CPR / AED responder onsite while all work is occurring at all times. <u>STOP WORK AUTHORITY</u> **Right, Obligation and Responsibility** Every single employee has the responsibility and the authority to STOP WORK at any time necessary to protect the safety or health of themselves, others, and the environment. Anyone can execute this responsibility without repercussions. We believe that the GOAL OF ZERO is possible with everyone's support and commitment.	Ongoing environmental condition inspection (weather, wind, heat, cold). Ongoing personnel inspection (buddy system) Inspection of work area for general hazards as covered under this AHA prior to beginning any task.

ACTIVITY HAZARDS ANALYSIS TRAINING ACKNOWLEDGEMENT AND SIGN OFF

Read Carefully Before Signing Below

This is to acknowledge that I have had a chance to review a copy of the "AHA-010 – Transporting and Launching Support Boat" and have been trained on its contents. I understand a copy will be provided to me upon request. I will read and abide by all requirements of the aforementioned AHA and any additional rules and regulations of my job. I understand that working safely, complying with and obeying any and all Company and NYSDEC safety rules, regulations or standards is a condition of my employment. Should I not comply with Company and/or NYSDEC safety rules, regulations or standards, I am subject to disciplinary action including removal from the site and possible termination of employment.

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Activity Hazard Analysis (AHA)

PROJECT: Lower Genesee River RFI-CMS

AHA #: 011

Activity/Work Task:	Man Overboard	**Overall Risk Assessment Code (RAC) (Use highest code)**	**L**
		Risk Assessment Code (RAC) Matrix	
Date Prepared:	06/11/13		
Prepared by:	Heather Philip		
Reviewed by:	Natalia Cagide and Mark Arrigo		
Employer:	Parsons		

Severity	Probability				
	Frequent-F	Likely-L	Occasional-O	Seldom-S	Unlikely-U
Catastrophic (C)	E	E	H	H	M
Critical (Cr)	E	H	H	M	L
Marginal (M)	H	M	M	L	L
Negligible (N)	M	L	L	L	L

Step 1: Review each "Hazard" with identified safety "Controls" and determine RAC (See above).
The RAC is developed after correctly identifying all the hazards and fully implementing all controls.

P "Probability" is the likelihood to cause an incident, near miss, or accident and identified as: Frequent, Likely, Occasional, Seldom or Unlikely.

S "Severity" is the outcome/degree if an incident, near miss, or accident did occur and identified as: Catastrophic, Critical, Marginal, or Negligible

Step 2: Identify the RAC (Probability/Severity) as E, H, M, or L for each "Hazard" on AHA. Annotate the overall highest RAC at the top of AHA.

RAC Chart

- E = Extremely High Risk
- H = High Risk
- M = Moderate Risk
- L = Low Risk

Notes: (Field Notes, Review Comments, etc.)
References :
Parsons CSHM, July 2010

Job Steps	Hazards	Controls	P	S	RAC
Boat/Barge Activities	Marine Operation Hazards	Follow the Marine Safety Standard Operating Procedures and all posted waterway speed limits. Operator will be aware of all buoys, shoal markers and other indications of potentially dangerous locations. Vessel will be equipped with all USCG and project required safety equipment.	U	Cr	L
Man Overboard	Falling into Water/Knocked Unconscious/Drowning/Hypothermia	Always wear a USCG approved personal flotation device. Use buddy system at all times. At least one person should stay in the boat/barge. One person should keep an eye on the victim while the driver focuses on obstructions. Avoid running engine when in close proximity to the victim Toss a life ring with plenty of rope to the victim or use a pole to pull a conscious victim to the boat. Maneuver boat to the leeward side of an unconscious victim and let the wind/current bring the victim close enough to the boat to pull in. Grab victim under the arms for rescue. DO NOT use PFD to pull into boat. It may be impossible to pull an unconscious victim into the boat in which case the victim will need to be secured to the boat until help arrives or the boat can travel to the support marina for assistance.	U	Cr	L

Job Steps	Hazards	Controls	P	S	RAC
Man Overboard (con't)		Call shore support immediately to report man overboard. Radio emergency on Ch. 16 on marine radio. DO NOT go into the water to rescue victim. Only the Coast Guard or someone trained in water rescue should enter the water and only as a last resort when other rescue attempts have failed. NOTE: In cooler temperatures, hypothermia becomes an issue. Get victim into the boat as quickly as possible and treat for possible hypothermia.			

Equipment to be Used	Training Requirements / Competent or Qualified Personnel	Inspection Requirements
Level D PPE Minimum. Task Dependant – PFD, Face Shield, Goggles, Proper Gloves (Insulated, leather palm, cut resistant, chemical resistant), Ring Buoy, PFDs, Repellent, Sunscreen, Potable Water, GFCIs, Rain Gear, Ice Cleats, Fire Extinguishers, One Charged functional site radio per field team.	All personnel performing work onsite must have received the site specific orientation. All personnel must be trained on this AHA prior to performing any work onsite. Competent FA / CPR / AED responder onsite while all work is occurring at all times. <u>STOP WORK AUTHORITY</u> **Right, Obligation and Responsibility** Every single employee has the responsibility and the authority to STOP WORK at any time necessary to protect the safety or health of themselves, others, and the environment. Anyone can execute this responsibility without repercussions. We believe that the GOAL OF ZERO is possible with everyone's support and commitment.	Ongoing environmental condition inspection (weather, wind, heat, cold). Ongoing personnel inspection (buddy system) Inspection of work area for general hazards as covered under this AHA prior to beginning any task.

ACTIVITY HAZARDS ANALYSIS TRAINING ACKNOWLEDGEMENT AND SIGN OFF

Read Carefully Before Signing Below

This is to acknowledge that I have had a chance to review a copy of the "AHA-011 – Man Overboard" and have been trained on its contents. I understand a copy will be provided to me upon request. I will read and abide by all requirements of the aforementioned AHA and any additional rules and regulations of my job. I understand that working safely, complying with and obeying any and all Company and NYSDEC safety rules, regulations or standards is a condition of my employment. Should I not comply with Company and/or NYSDEC safety rules, regulations or standards, I am subject to disciplinary action including removal from the site and possible termination of employment.

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PROJECT: Lower Genesee River RFI-CMS

Activity Hazard Analysis (AHA)

AHA #: 012

Activity/Work Task:	Misc. Fabrication	**Overall Risk Assessment Code (RAC) (Use highest code)**	**M**
		Risk Assessment Code (RAC) Matrix	
Date Prepared:	06/11/13		
Prepared by:	Heather Philip		
Reviewed by:	Natalia Cagide and Mark Arrigo		
Employer:	Parsons		

Severity	Probability				
	Frequent-F	Likely-L	Occasional-O	Seldom-S	Unlikely-U
Catastrophic (C)	E	E	H	H	M
Critical (Cr)	E	H	H	M	L
Marginal (M)	H	M	M	L	L
Negligible (N)	M	L	L	L	L

Step 1: Review each "Hazard" with identified safety "Controls" and determine RAC (See above).
The RAC is developed after correctly identifying all the hazards and fully implementing all controls.

P "Probability" is the likelihood to cause an incident, near miss, or accident and identified as: Frequent, Likely, Occasional, Seldom or Unlikely.

S "Severity" is the outcome/degree if an incident, near miss, or accident did occur and identified as: Catastrophic, Critical, Marginal, or Negligible

Step 2: Identify the RAC (Probability/Severity) as E, H, M, or L for each "Hazard" on AHA. Annotate the overall highest RAC at the top of AHA.

RAC Chart

- E = Extremely High Risk
- H = High Risk
- M = Moderate Risk
- L = Low Risk

Notes: (Field Notes, Review Comments, etc.)
References :
Parsons CSHM, July 2010

Job Steps	Hazards	Controls	P	S	RAC
General Equipment Use	Equipment Maintenance	The equipment must be maintained in a proper functioning condition. All motors must be shut off. Electrical, mechanical and hydraulic components locked when making repairs. Safety shut off system must be tested daily and not disabled. Bleed off pressure on hydraulic lines before undoing fittings. Do not leave tools or parts loose on the equipment after maintenance has been performed.	U	Cr	L
	General Use	All equipment must be inspected daily prior to use. Equipment must be operated and maintained in accordance to manufacturer's guidelines. Any equipment that is unattended must be immobilized and secured against accidental movement. All heavy equipment will have a back up alarm	U	Cr	L
	Fire Hazard	All motors must be shut off during refueling. An A-B-C fire extinguisher must be maintained in the shop.	U	Cr	L

Job Steps	Hazards	Controls	P	S	RAC
General Equipment Use (con't)	Slip/Trip or fall on uneven wet ground	Watch footing, identify wet or uneven terrain. Keep good housekeeping around the shop	U	Cr	**L**
	Lifting hazard	Bend at the knees and lift with the legs. Use a partner when necessary Use mechanical means to lift whenever possible	U	M	**L**
	Pinch points	All personnel will be aware of moving machinery and parts and wear appropriate PPE when near machinery (e.g., hard hat, safety glasses, gloves etc.).	U	Cr	**L**
	Noise Exposure	Wear earplugs when noise level from equipment exceeds 90 decibels (dBA) averaged over an eight-hour day.	U	M	**L**
Piping/Parts Assembly	Exposure to hazardous chemicals/compounds	All employees will be trained on the hazards of any chemicals to which they may be exposed and their right to information contained on material safety data sheets for those chemicals. All affected employees will be trained to understand the information contained in the MSDSs. MSDSs will be readily available for review at the jobsite.	U	M	**L**
Welding	Sharp Edges on cut metal	Wear cut-resistant gloves. Identify work area and notify personnel within work area of the sharp edges.	S	Cr	**M**
	Frayed wires (electrical shock)	Inspect welder including cable before plugging in. Use GFCI outlets.	U	Cr	**L**
	Ultra violet radiation damage to eyes	Wear appropriate welding visor for the work being performed Weld behind a welding curtain with access only from authorized personnel	U	Cr	**L**
	Burn Hazard	Wear appropriate gloves Wear flame resistant long sleeve shirt Maintain an ABC fire extinguisher within the welding area	S	Cr	**M**
	Welding Fumes	Weld in ventilated area.	U	Cr	**L**

Equipment to be Used	Training Requirements / Competent or Qualified Personnel	Inspection Requirements
Level D PPE Minimum. Task Dependant – PFD, Face Shield, Goggles, Proper Gloves (Insulated, leather palm, cut resistant, chemical resistant), Ring Buoy, PFDs, Repellent, Sunscreen, Potable Water, GFCIs, Rain Gear, Ice Cleats, Fire Extinguishers, One Charged functional site radio per field team.	All personnel performing work onsite must have received the site specific orientation. All personnel must be trained on this AHA prior to performing any work onsite. Competent FA / CPR / AED responder onsite while all work is occurring at all times. STOP WORK AUTHORITY **Right, Obligation and Responsibility** Every single employee has the responsibility and the authority to STOP WORK at any time necessary to protect the safety or health of themselves, others, and the environment. Anyone can execute this responsibility without repercussions. We believe that the GOAL OF ZERO is possible with everyone's support and commitment.	Ongoing environmental condition inspection (weather, wind, heat, cold). Ongoing personnel inspection (buddy system) Inspection of work area for general hazards as covered under this AHA prior to beginning any task.

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ATTACHMENT 9
SITE-SPECIFIC PROJECT SAFETY PLAN ORIENTATION

Project Name: Lower Genesee River

Project Location: Eastman Business Park, 1669 Lake Avenue, Rochester New York in Monroe County.

Names of personnel responsible for site safety and health:

- Project Manager- Dave Babcock
- Field Manager – TBD
- Project Safety Manager – TBD

Site specific safety plan orientation must be conducted with all new site workers prior to beginning any work. The orientation will be conducted by any of the above mentioned responsible personnel or their designees. Orientation will consist of a review of the *Syracuse Office Safety Plan and the* site-specific PSP.

Emergencies - Call 911 and/or your supervisor for emergencies. In the event of an evacuation, the assembly point is TBD. The sound indicating an evacuation is three short vehicle horn blasts.

Incidents – Report all incidents (any unplanned or unexpected event that results in personal injury, property damage, or environmental release) and near-miss incidents to your supervisor and the SSO. Near-miss incidents COULD HAVE been an incident, but didn't because of a slight change in conditions or luck. Near misses have the same causal factors as an incident, so it is just important to investigate them for identifying solutions to prevent recurrence and share lessons learned. Both incidents and near misses will be reported according to both NYSDEC and Parsons/O'Brien & Gere procedural protocol.

Communications – The response for anyone from the general public (e.g. media, workers from adjacent properties, etc.) inquiring about the project is: "I'm sorry, but I'm not the right person to answer your question. If you contact Matthew Vetter, the Parsons project manager at (315) 552-9742; he will be able to help you."

Personal Protective Equipment (PPE)

Minimum PPE:

- USCG approved Personal Floatation Device when working on or near water and when on boat, a throwable rescue device with retrieval line must be available
- Safety glasses with side shields (tinted safety glasses are not permitted during overcast weather, after sundown or inside buildings)
- Hard hat

- Steel toe work boots
- Long sleeve shirt
- Long pants
- High-visibility vest

In areas of elevated exposure potential, additional PPE requirements may include:

- Tyvek coveralls and/or inner latex and outer rubber gloves when the potential for contact with contaminated soil and/or groundwater exists
- Face shield –When using pressure washer
- Nomex coveralls –Required in conjunction with hot work permitting
- Hearing protection – When working in an area where decibel level exceeds 85 for an 8 hour period
- High-visibility vest/coat (with reflective stripes if working after dusk) is required when regularly exposed to vehicular traffic. Any high visibility vest/coat other than a traditional traffic vest must be pre-approved by the PSM.

Additional Site-Specific Health and Safety Hazards

Identify all activities on-site as being dangerous and having a possibility for an accident. Review with all workers the activities they are here to perform. Then, identify all possible hazards and safeguards for those activities. Next, have workers review all AHAs associated with those activities.

Site Access Control –Personnel reporting to the site must park in the designated parking areas. Only vehicles approved by the site safety officer may enter the work zone. Site speed limits in the work zone are 5 mph and 10 mph on roadways.

Training – Copies of the PSHEP/HASP and material safety data sheets (MSDS) are available to all personnel. Daily safety meetings shall be documented and reviewed by all personnel working at the site, regardless of what time they arrive on-site. Prior to entering the site, general site workers must provide the SSO with valid documentation of the following:

- HAZWOPER certification (40-hr, 24-hr, and/or 8-hr refresher)
- Negative drug test documentation from within the past 2 weeks (if applicable)

Mobile equipment – Use horns to alert others. Mirrors and back-up/travel alarm must be functional on all heavy equipment. Use a spotter when backing vehicles with blind spots and/or around equipment (i.e. pipe lines, etc).

Work Practices – Use the “Buddy System” and maintain two-way radio/mobile phone for communicating and reporting emergencies.

Work permits - Certain types of work are not to be started until approval is given in the form of a signed permit. A written, properly authorized permit listed below may be required before you

begin any specific high risk activities. Appropriate work permits for the below listed activities can be found in the Parsons Corporate Health and Safety Manual.

Line Breaking Permit (CHSM-27-01) – Required before breaking screwed, flanged, welded, or other type joints on pipelines or vessels containing hazardous materials, or breaking into (disconnecting, drilling, sawing, etc.) non-hazardous materials under pressure.

Confined Space or Vessel Entry Permit (CHSM-15-02) – Required before entering tanks, vessels, manholes, or similar confined spaces that have been in service or connected to operating process equipment and may contain potentially hazardous atmospheric conditions.

Lockout/Tagout Permit (CHSM-23-03) – Required for the service and maintenance of machines and equipment in which the *unexpected* energizing or start up of the machines or equipment, or release of stored energy could cause injury to workers.

Excavation/Drilling Permit (CHSM-33-01) – Required to minimize hazards during excavation/ drilling work and ground breaking operations, specifically when a machine or hand tools are used at a depth greater than 1 ft. Before the start of excavation or drilling activities, Parsons/O'Brien & Gere or the subcontractor will contact the utility companies or owners within the established or customary local response times, advise them of the proposed work, and ask them to locate the underground utility installation. In New York State (outside New York City and Long Island) the contact number is 1-800-962-7962 or 811.

Hot Work Permit (CHSM-28-01) –Required before any flame or spark producing activity can begin in any production, operating, or some construction areas of the plant. This includes, but is not limited to:

- Welding/repair of pipe lines under pressure greater than 5 PSI
- Welding/repair of pipe lines containing hazardous or flammable materials
- Welding/repair on any pressure vessel, fired or unfired, under pressure or in the presence of hazardous or flammable materials
- Work on energized circuits
- Cutting/burning of pipe lines, vessels, equipment, etc. that may have contained any hazardous material
- Grinding
- Any hot work on carbon steel pipe lines, vessels, equipment, etc. that may have contained sulfuric acid will not be permitted without extensive review with project and plant personnel due to the possible generation of hydrogen gas

Each plant may have permits that are required for other specific work procedures. Check with your supervisor for these permits.

<u>Contamination</u> - Eating, smoking, and applying cosmetics are not permitted in the work zone. Drinking water may be permitted in the work zone depending on site-specific conditions and the possibility of heat exhaustion.

Decontamination Procedures -

- Equipment and PPE (e.g. coveralls, gloves, footwear) used in work zones must be decontaminated or disposed before leaving the exclusion zone.
- Tyvek coveralls and gloves cannot be worn outside the exclusion zone, even if they are clean.
- Personal decontamination may be necessary for activities involving the use of Level C or Level B PPE. Exhibit 6-1 includes the proper decontamination procedures that must be implemented if chemical contamination is present and PPE protection greater than Level D is used.
- Use boot wash stations when appropriate.
- Exclusion zones exist around the perimeter of intrusive activities. Support zones are at the perimeter of the exclusion zone.
- Equipment decontamination will be required for tools and machinery used during intrusive activities. These decontamination activities may include manual washing and/or steam/pressure washing. All liquids generated during personal or equipment decontamination must be collected and containerized for testing and appropriate disposal.
- The SSO will determine the proper procedures for personal and equipment decontamination based on the work activities and amount of contamination.

Proper Hygiene – Wash hands and face before eating, drinking, and smoking.

ACTION LEVELS

Monitoring –All site personnel engaging in intrusive activities will have their breathing zones monitored for the following air quality parameters:

A. Chemicals of concern and associated hazards
   a. Perchloroethylene (PCE) or Tetrachloroethylene
      i. Colorless liquid with a mild chloroform odor. Eye, nose, skin and throat irritant.
      ii. It is a colorless liquid widely used for dry cleaning of fabrics, hence it is sometimes called "dry-cleaning fluid."
      iii. Causes nausea, flushed face and neck, vertigo,dizziness, headaches, hallucinations, in coordination, drowsiness, coma, pulmonary changes, and skin redness. Cumulative liver, kidney ,and CNS damage. In animals, causes liver tumors. Mutagen,experimental teratogen, and carcinogen.
      iv. A PID will be utilized to screen for VOCs emitted during drilling or sampling activities. The VOC action level is sustained readings of 1 ppm. Above 1 ppm, draeger tubes will be utilized to screen for benzene. If sustained VOC readings exceed 5 ppm, or benzene levels exceed 1 ppm, Level C PPE will be donned. Prior to donning level C

PPE, a cartridge change-out schedule will be developed and reviewed by the Parsons Division Safety Manager for acceptance.

Action Levels:

The following action levels are as per possible site contaminants:

ACTION LIMITS

Monitoring –All site personnel engaging in intrusive activities will have their breathing zones monitored for the following air quality parameters:

Action Limits:

The following action limits are as per possible site contaminants:

Level D

- PID readings < 5 ppm

and

- Benzene <1 ppm as indicated by benzene 0.5/a Drager Tube

and

and

- MIE personal DataRam® Real-Time Aerosol Monitor, or equivalent, readings ≤ 0.025 mg/m^3 total particulates (lead PEL 0.050 mg/m3)

and

- The absence of sustained visible fugitive dust from site soils

Level C

- PID readings ≥ 5 and ≤ 25 ppm

or

- Benzene between 1 and 25 ppm

or

- The presence of sustained visible fugitive dust from site soils. (Upgrade is based on judgment of site health and safety officer and MIE personal DataRam Real-Time Aerosol Monitor, or equivalent, readings ≥ 0.025 mg/m^3 total particulates (lead PEL 0.050 mg/m3)

Level B (or retreat)

- PID readings > 25 ppm.

or

- MIE personal DataRam Real-Time Aerosol Monitor, or equivalent, readings ≥ 0.250 mg/m^3 total particulates

Note: All readings that will be used to determine the appropriateness of an upgrade in PPE shall be taken from the worker's breathing zone. Photo ionization detector (PID) readings shall be sustained readings of 30 seconds or more.

THE BELOW LISTED ACUTE EFFECTS OF HAZARDS ARE PROVIDED AS AN EXAMPLE

Acute Effects of Hazards at this Site

Tetrachloroethylene (Perchloroethylene) (PCE)

Exposure Routes - Inhalation, skin absorption, ingestion, skin and/or eye contact

Symptoms - Irritation eyes, skin, nose, throat, respiratory system; nausea; flush face, neck; dizziness, incoordination; headache, drowsiness; skin erythema (skin redness); liver damage; [potential occupational carcinogen]

Target Organs - Eyes, skin, respiratory system, liver, kidneys, central nervous system

Benzene

Exposure Routes - Inhalation, ingestion, skin and/or eye contact

Symptoms – Irritation eyes, skin, nose, respiratory system; dizziness; headache, nausea, staggered gait; anorexia, lassitude (weakness, exhaustion); dermatitis; bone marrow depression; [potential occupational carcinogen]

Target Organs - Eyes, skin, respiratory system, blood, central nervous system, bone marrow

Lead

Exposure Routes - Inhalation, ingestion, skin and/or eye contact

Symptoms - Lassitude (weakness, exhaustion), insomnia; facial pallor; anorexia, weight loss, malnutrition; constipation, abdominal pain, colic; anemia; gingival lead line; tremor; paralysis wrist, ankles; encephalopathy; kidney disease; irritation eyes; hypertension

Target Organs - Eyes, gastrointestinal tract, central nervous system, kidneys, blood, gingival tissue

APPENDIX C

QUALITY ASSURANCE PROJECT PLAN

Lower Genesee River Quality Assurance Project Plan (QAPP)

Prepared For:

NEW YORK STATE

DEPARTMENT OF ENVIRONMENTAL CONSERVATION

625 Broadway, 12th floor
Albany, NY 12233-7012

Prepared By:

PARSONS

301 Plainfield Road, Suite 350
Syracuse, NY 13212

and

O'BRIEN & GERE

333 W. Washington Street
Syracuse, NY 13202

REVIEWED AND APPROVED BY:

Program Manager: _____ 4/1/15
Date

April 2015

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LIST OF ACRONYMS

ASTM	American Society for Testing and Materials
BFB	4-Bromofluorobenzene
ºC	Degrees Celsius
CAR	Corrective Action Request
CCV	Continuing Calibration Verification
CERCLA	Comprehensive Emergency Response, Compensation, Liability Act
CFR	Code of Federal Regulations
CLP	Contract Laboratory Program
cm/s	centimeter per second
COC	Chain-of-Custody
CPOI	Chemical Parameter of Interest
CVAA	Cold Vapor Atomic Absorption
cy	cubic yards
DFTPP	decafluorotriphenylphosphine
DOT	Department of Transportation
DQO	Data Quality Objective
DUO	Data Use Objective
DUSR	Data Usability Summary Report
EDD	Electronic Data Deliverable
FS	Feasibility Study
GC	Gas Chromatography
GC/ECD	Gas Chromatography/Electron Capture Detection

LIST OF ACRONYMS
(CONTINUED)

GC/MS	Gas Chromatography/Mass Spectroscopy
HSC	Health and Safety Coordinator
ICP	Inductively Coupled Plasma
ICV	Initial Calibration Verification
IDL	Instrument Detection Limit
ICP/AES	Inductively Coupled Plasma/Atomic Emission Spectroscopy
LCS	Laboratory Control Sample
LIMS	Laboratory Information Management System
LNAPL	Light Non-aqueous Phase Liquid
LPM	Laboratory Project Manager
MD	Matrix Duplicate
mg/kg	milligram per kilogram
mL	milliliter
MS	Matrix Spike
MSB	Matrix Spike Blank
MS/MD	Matrix Spike/Matrix Duplicate
MS/MSD	Matrix Spike/Matrix Spike Duplicate
MSD	Matrix Spike Duplicate
NCM	Nonconformance Memo
ng	nanograms
NIOSH	National Institute of Safety and Health
NIST	National Institute of Standards and Technology
NYSDEC	New York State Department of Environmental Conservation
OM	Operations Manager
OSHA	Occupational Safety and Health Administration
PARCCS	Precision, Accuracy, Representativeness, Completeness, Comparability, and Sensitivity
PCB	Polychlorinated Biphenyl

LIST OF ACRONYMS
(CONTINUED)

PE	Performance Evaluation
PID	Photoionization Detector
PRL	Project Quantitation Limit
PT	Performance Testing
QA	Quality Assurance
QA/QC	Quality Assurance/Quality Control
QAO	Quality Assurance Officer
QAPP	Quality Assurance Project Plan
QC	Quality Control
QL	Quantitation Limit
RL	Reporting Limit
ROD	Record of Decision
RPD	Relative Percent Difference
SAP	Sampling and Analysis Plan
SDG	Sample Delivery Group
SMU	Sediment Management Unit
SOP	Standard Operating Procedure
SVOC	Semivolatile Organic Compound
TAL	Target Analyte List
TCL	Target Compound List
ug	Micrograms
USEPA	Unites States Environmental Protection Agency
VOC	Volatile Organic Compound

SECTION 1

PROJECT DESCRIPTION

1.1 INTRODUCTION

This Quality Assurance Project Plan (QAPP) has been prepared to support activities and specifies the quality assurance/quality control (QA/QC) procedures for field and laboratory sampling and measurements for the Resource Conservation and Recovery Act (RCRA) facility investigation (RFI) and corrective measures study (CMS) to be conducted for the Lower Genesee River located in Rochester, NY. The specific objectives of the QAPP are:

- Foster data quality that is sufficient to meet the investigation objectives and to support the decision-making process
- Provide a standard for control and review of measurement data to confirm that the data are scientifically sound, representative, comparable, defensible, and of known quality.

This QAPP has been prepared in accordance with USEPA guidance (USEPA, 2000a, 2002b) and supports the following elements of the RFI and CMS:

- Sampling of river sediment, wetland and floodplain soils, river surface water and river-wetland-floodplain biota to further assess the nature and extent of contamination;
- Use of tools to further assess environmental impacts from river sediment including sediment toxicity testing, analysis of acid volatile sulfides-simultaneously extractable metals, and analysis of chemicals of potential concern in porewater extracted from river sediment;
- Analysis of hydrodynamics and bed sediment transport to assess potential future movement of sediment within the river and floodplain;
- Assessing impacts on fish and wildlife including food web dynamics and river-floodplain habitat;
- Assessing potential impacts to human health;
- Assessing potential impacts to existing cultural resources (including archaeological and historical resources) (as warranted), and
- Assessing forms and sources of chemical parameters of potential concern.
- Identifying, screening and evaluating potential remedial alternatives for addressing contamination identified that warrants remediation.

Additional project scope and descriptions of the work assignment are provided in the Work Assignment Scoping Documents and Field Activities Plan (FAP).

Laboratory-specific information will be added to this QAPP later in 2015 when the laboratory(ies) that will perform the analyses is(are) identified.

SECTION 2

PROJECT ORGANIZATION

2.1 PROJECT AND TEAM ORGANIZATION

The project organization and the function and responsibility of each group affected by the QAPP are presented in the Work Assignment Scoping Documents for each assignment. The project organization is designed to promote the exchange of information and for efficient project operation. Key contact information is also summarized in the Work Assignment Scoping Documents.

2.1.1 Analytical Services

The analytical laboratory (or laboratories) will analyze environmental samples collected for the specified project. Laboratory operations will be conducted under the supervision of a general manager or laboratory director and a quality assurance manager. A project manager and alternate will be assigned to each project. The project manager will be the primary point of contact and will be responsible for coordination and quality of all laboratory activities associated with the project. The laboratory's project manager will manage project sample receipt, analysis scheduling, and data reporting. In case of temporary absence, the direct supervisor will assume the responsibilities of the absent employee or delegate the responsibility to qualified personnel. Sample Management Staff is responsible for receiving, logging, and maintaining internal custody of samples during the sample's residence in the laboratory. In addition, the laboratory will ensure that project analytical requirements are met; monitor project analytical compliance and immediately notify Parsons if conflict or discrepancies arise; initiate and implement appropriate corrective actions; ensure adequate quality review of deliverables prior to release; and participate in coordination meetings.

2.2 SPECIAL TRAINING/CERTIFICATION

Management and field personnel must review the requirements of this QAPP to make certain that persons assigned to specific tasks have appropriate credentials and experience. The Field Team Leaders will check that all onsite personnel have read and understood the QAPP.

Field personnel will be required to adhere to the generic Health and Safety Plan (HASP) and FAP. They must also follow applicable task-specific health and safety plans that project subcontractors develop before they begin investigation activities.

Laboratories will have trained and experienced staff capable of performing the analyses specified in this QAPP. Laboratories will have New York State Department of Health (NYSDOH) Environmental Laboratory Accreditation Program (ELAP) certification for all analyses pertaining to solid and hazardous waste categories. Additionally, the laboratories must be able to demonstrate that they have analyzed performance-evaluation or proficiency-testing samples within 12 months of beginning the analyses.

All personnel independent of the laboratory generating the data who are performing data validation and verification must have experience in data validation, quality assurance oversight,

and auditing. The data validator must have a Bachelors degree in chemistry or natural sciences with a minimum of 20 credit hours in chemistry; one year experience in the implementation and application of analytical laboratory methodologies; and one year experience evaluating data packages of all matrices (e.g., soil, water, air, tissue) for compliance and usability with respect to the NYSDEC Analytical Services Protocol (ASP) and the USEPA National Functional Guidelines with regional modifications.

SECTION 3

DATA QUALITY OBJECTIVES AND CRITERIA

3.1 INTRODUCTION

A systematic planning process will develop site-specific data quality objective (DQOs). These DQOs will clarify study objectives, define the appropriate type of data, and specify tolerable levels of potential errors. These parameters, in turn, will be the basis for establishing the quality and quantity of data needed to support the utility of the data. This section was prepared in accordance with USEPA Guidance for the Data Quality Objectives Process (USEPA, August 2000).

Data quality objectives specify the underlying reason for collecting the data and the data type, quality, quantity, and uses needed to make decision, and they provide the basis for designing data collection activities. DQOs and quality assurance objectives are related data quality planning and evaluation tools for all sampling and analysis tools.

The purpose of this QAPP is to provide a standard for control and review of measurement data to ensure they are scientifically sound, representative, comparable, defensible, and of known quality. The data will be used to evaluate the physical and chemical attributes of samples collected. The project objective for analytical testing is to characterize the physical characteristics and chemical constituents and to provide data to support the decision-making process.

The data produced during sampling activities will be compared with the defined QA objectives and criteria for precision, accuracy, representativeness, completeness, comparability, and sensitivity (PARCCS) to see that the data reported are representative of actual conditions at the site.

This data assessment activity is an on-going coordinated process with data production and is intended to assure that data produced during the project are acceptable for use in subsequent evaluations. Both statistical and qualitative evaluations will be used to assess the quality of the data. The primary evaluation of the data will be based upon the field quality control samples described in Section 8.1.1 and the laboratory quality control samples described in Section 8.1.2. The “blank” samples (laboratory QC blank samples and field QC blank samples) will be used to evaluate whether or not the laboratory and/or field sample handling represent a possible source of sample contamination. Laboratory duplicate sample results will be used to evaluate analytical precision. Field duplicate sample results will be used to evaluate the overall precision of the sampling and analysis process, as well as sample representativeness and site heterogeneity. Laboratory control samples will be used to evaluate the accuracy of analytical results, as will other analysis-specific criteria, such as surrogate compound recoveries for VOCs, SVOCs, pesticides, PCBs and herbicides. Matrix spike/matrix spike duplicate (MS/MSD) analysis of project samples will be used to evaluate potential sample matrix effects on the analytical results (both of the sample utilized for MS/MSD and of other samples collected from the site). For all sample results, the impact of sample-specific, analysis-specific, and site-specific factors will be

evaluated and an assessment will be made as to their impact, if any, on the data. Duplicate sample (field and laboratory QC samples) results will be used to evaluate data precision.

3.1.1 Data Use Objectives

Data use objectives define why analyses are being conducted and how ultimately the data will be used to meet the overall project objectives. For the work assignment activities, these project objectives are stated in the Work Assignment Scoping Documents.

3.2 DATA QUALITY OBJECTIVES (PARCCS PARAMETERS)

3.2.1 Introduction

DQOs are based on the premise that different data uses require different levels of data quality. The term *data quality* refers to a degree of uncertainty with respect to PARCCS data quality indicators. Specific objectives are established to develop sampling protocols and identify applicable documentation, sample handling procedures, and measurement system procedures. These DQOs are established by onsite conditions, objectives of the project, and knowledge of available measurement systems. Overall work assignment DQOs are presented and discussed in detail in this QAPP. A wide range of data quality is achieved through the use of various analytical methods. The following data quality levels are widely accepted as descriptions of the different kinds of data that can be generated for various purposes:

- **Level I, Field screening or analysis using portable instruments (e.g., photoionization detector [PID]):** Results are often not compound-specific but results are available in real time. Depending on the analysis being performed and the instrumentation used, the results may be considered qualitative, semi-quantitative, or quantitative.
- **Level II, Field analysis using more sophisticated portable analytical instruments (e.g., on-site mobile laboratory):** There is a wide range in the quality of data that can be generated depending on the use of suitable calibration standards, reference materials, and sample preparation equipment. Results are available in real-time or typically within hours of sample collection.
- **Level III, All analyses performed in an off-site analytical laboratory using methods other than USEPA-approved analytical methods**: These data generally do not include the level of formal documentation required under Level IV and are not subject to formal data validation. These data are typically used for engineering studies (e.g., treatability testing), site investigations and remedial design.
- **Level IV, Data generated using USEPA methods and enhanced by a rigorous QA program, supporting documentation, and data validation procedures:** These data are typically used for engineering studies (e.g., treatability testing), risk assessment, site investigations, and remedial design, and may be suitable for litigation/enforcement activities. Results are both qualitative and quantitative.

3.2.2 PARCCS Parameters (Data Quality Indicators)

3.2.2.1 Precision

Precision is an expression of the reproducibility of measurements of the same parameter under a given set of conditions. Specifically, it is a quantitative measurement of the variability of a group of measurements compared to their average value (USEPA, 1987). Precision is usually stated in terms of standard deviation, but other estimates such as the coefficient of variation (relative standard deviation), absolute difference (D), range (maximum value minus minimum value), relative range, and relative percent difference (RPD) are common.

The objectives for precision for each chemical are based on the capabilities of the approved EPA analytical method with respect to laboratory performance. For this project, field-sampling precision will be determined by analyzing coded (blind) duplicate samples for the same parameters, and then, during data validation, calculating the %RPD for duplicate sample results. The laboratory will determine analytical precision by calculating the %RPD or %D, as applicable to the analytical method being used, e.g., pH will be evaluated using %D.

The laboratory will determine analytical precision by calculating the RPD for the results of the analysis of the laboratory duplicates and matrix spike duplicates. The formula for calculating %RPD is as follows:

$$\%RPD = \frac{|V1-V2|}{(V1+V2)/2}$$

where:

RPD	=	Relative percent difference
V1, V2	=	Values to be compared
|V1 - V2|	=	Absolute value of the difference between the two values
(V1 + V2)/2	=	Average of the two values

For data evaluation purposes, in instances where both sample concentrations are less than five times (<5x) the RL, duplicate precision will be evaluated using the calculated %D result. In this instance, the applicable precision criterion will be two times the RL (2xRL). If a value is not detected, the %RPD criterion will be considered to be not applicable and the %RPD will not be calculated (i.e. precision will not be quantitatively determined). For the evaluation of field duplicate precision, soil, sediment, and biota samples will be evaluated using a 50%RPD QC limit and aqueous samples will be evaluated using a 30%RPD QC limit.

3.2.2.2 Accuracy

Accuracy is a measure of the degree of agreement of a measured value with the true or expected value of the quantity of concern (Taylor, 1987) or the difference between a measured value and the true or accepted reference value. The accuracy of an analytical procedure is best

determined by the analysis of a sample containing a known quantity of material and is expressed as the percent of the known quantity that is recovered or measured. The recovery of a given analyte depends on the sample matrix, method of analysis, and the specific compound or element being determined. The concentration of the analyte relative to the detection limit of the analytical method is also a major factor in determining the accuracy of the measurement. Concentrations of analytes that are less than the reporting limits are less accurate because they are more affected by such factors as instrument "noise." Higher concentrations will not be as affected by instrument noise or other variables and, thus, will be more accurate.

The objectives for accuracy for each chemical are based on the capabilities of the approved USEPA analytical method with respect to laboratory performance. Analytical accuracy is typically assessed by examining the percent recoveries of surrogate compounds that are added to each sample (organic analyses only), the percent recoveries of matrix spike compounds added to selected samples, and the percent recoveries of spike compounds added to laboratory control samples (LCS), or matrix spike blanks (MSB). An LCS (or MSB) will be analyzed to provide additional information on analytical accuracy. Additionally, initial and continuing calibrations must be performed and accomplished within the established method control limits to define the instrument accuracy before analytical accuracy can be determined for any sample set.

Accuracy is normally measured as the percent recovery (%R) of a known amount of analyte, called a *spike*, added to a sample (matrix spike or laboratory control). The accuracy on a per sample basis will be measured using surrogates for the organics analyses. Positive detects from the PCB analysis will be confirmed using second column confirmation. The laboratory will report the lower of the two values with respect to the dual GC column analysis performed. When the percent difference (%D) between the results for the two columns exceeds 25%, the laboratory will qualify the reported result with the *P* qualifier. The %R is calculated as follows:

Matrix Spike Recovery:

$$\%\,Recovery = \frac{SSR - SR}{SA} \times 100$$

where:

% Recovery	=	Percent recovery
SSR	=	Spike sample result: concentration of analyte obtained by analyzing the sample with the spike added
SR	=	Sample result: the background value; *i.e.,* the concentration of the analyte obtained by analyzing the sample
SA	=	Spiked analyte: concentration of the analyte spike added to the sample

Surrogate Recovery: $\% \text{ Recovery} = \frac{\text{Concentration (or amount) found}}{\text{Concentration (or amount) spiked}} \times 100$

LCS (or MSB) Recovery: $\% \text{ Recovery} = \frac{\text{Concentration (or amount) found}}{\text{Concentration (or amount) spiked}} \times 100$

3.2.2.3 Representativeness

Representativeness expresses the degree to which sample data accurately and precisely represent a characteristic of a population, parameter variations at a sampling point or an environmental condition. Representativeness is a qualitative parameter and is most concerned with the proper design of the sampling program (USEPA, 1987). Samples must be representative of the environmental media being sampled. An important factor in the selection of sample locations and sampling procedures will be obtaining representative samples.

Field and laboratory procedures will be performed in such a manner as to ensure, to the degree technically possible, that the data derived represents the in-place quality of the material sampled. Care will be exercised to see that chemical compounds are not introduced to the sample from sample containers, handling, and analysis. Field blanks, trip blanks, and laboratory method/prep blanks will be analyzed to monitor for potential sample contamination from field and laboratory procedures.

The assessment of representativeness also must consider the degree of heterogeneity in the material from which the samples are collected. Sampling heterogeneity will be evaluated during data validation through the analysis of coded (blind) field duplicate samples. The analytical laboratory will also follow acceptable procedures to assure the samples are adequately homogenized prior to taking aliquots for analysis such that the reported results are representative of the sample received. Chain-of-custody procedures will be followed to document the possession of sample containers from the time of container preparation through sample collection and receipt back at the laboratory. Field QC samples will be collected and analyzed to provide information to evaluate sample representativeness. Details of field QC sample collection (rinse blanks, trip blanks, temperature blanks, field duplicates) and chain-of-custody procedures are presented in Section 4.2 and Section 8.1.1.

3.2.2.4 Completeness

Completeness is defined as the percentage of measurements that meet the project's data quality objectives (USEPA, 1987). Completeness is calculated for each method (or analyte) and sample matrix for an assigned group of samples. Completeness for a data set represents the results usable for data interpretation and decision making. The completeness objective for the analytical and field data is 90%. Completeness is defined as follows for all sample measurements:

$$\% \, C = \frac{V}{T} \times 100$$

where:

%C = Percent completeness

V = Number of measurements judged valid (not rejected during data validation)

T = Total number of measurements

Completeness, which is expressed as a percentage, is calculated by subtracting the number of rejected and unreported results from the total planned results and dividing by the total number of results. Results rejected because of out-of-control analytical conditions, severe matrix effects, broken or spilled samples, or samples that could not be analyzed for any other reason, negatively affect influence completeness and are subtracted from the total number of results to calculate completeness.

3.2.2.5 Comparability

Comparability expresses the degree of confidence with which one data set can be compared to another (USEPA, 1987). The comparability of all data collected for this project will be managed by:

- Using identified standard methods (including laboratory standard operating procedures) for both sampling and analysis phases of this project
- Requiring traceability of all analytical standards and/or source materials to the USEPA or National Institute of Standards and Technology (NIST)
- Requiring that calibrations be verified with an independently prepared standard from a source other than that used for calibration (if applicable)
- Using standard reporting units and reporting formats including the reporting of QC data
- Performing data validation on the analytical results, including the use of data qualifiers in all cases where appropriate
- Evaluating the sample collection information and analytical QC sample results
- Requiring that the significance of all validation qualifiers be assessed any time an analytical result is used for any purpose.

By taking these steps during the investigation, future users of either the data or the conclusions drawn from them will be able to judge the comparability of these data and conclusions.

3.2.2.6 Detection and Reporting Limits

When selecting an analytical method during the DQO process, the achievable detection limit (MDL) and method reporting limit (RL) must be evaluated to verify that the method will meet the project reporting limits necessary to support project decision making requirements. This process ensures that the analytical method sensitivity has been considered and that the methods used can produce data that satisfy users' needs while making the most effective use of resources. The concentration of any one target compound that can be detected and/or quantified is a measure of sensitivity for that compound. Sensitivity is instrument-, compound-, method-, and

matrix-specific and achieving the required project reporting limit (RL) and/or method detection limit (MDL) objectives depends on instrument sensitivity and potential matrix effects. With regard to instrument sensitivity, it is important to monitor the instrument performance to ensure consistent instrument performance at the low end of the calibration range. Instrument sensitivity will be monitored through the analysis of method/prep blanks, calibration check samples, and low standard evaluations.

Laboratories generally establish limits that are reported with the analytical results; these results may be called reporting limits, detection limits, reporting limits, or other terms. These laboratory-specific limits, apply undiluted analyses and must be less than or equal to the project RLs. The RL represents the concentration of an analyte that can be routinely measured in the sampled matrix within stated limits and with confidence in both identification and quantitation. The RLs are established based on specific knowledge about the analyte, sample matrix, project specific requirements, and regulatory requirements. The RL is typically established by the laboratory at the level of the lowest calibration standard and is generally in the range of two to ten times the MDL.

The method detection limit (MDL) is defined as "the minimum concentration of a substance that can be measured and reported with 99% confidence that the analyte concentration is greater than zero" (40 CFR 136 Appendix B). The MDL is the lowest concentration at which a specific analyte in a matrix can be measured and reported with 99% confidence that the analyte concentration is greater than zero. MDLs are experimentally determined and verified for each target analyte of the methods in the sampling program. The laboratory will determine MDLs for each analyte and matrix type prior to analysis of project samples. In addition, when multiple instruments are employed for the analysis of the same method, each individual instrument will maintain a current MDL study. MDLs are based on the results of seven matrix spikes at the estimated MDL, and are statistically calculated in accordance with the Title 40, Code of Federal Regulations Part 136 (40 CFR 136) Appendix B. The standard deviation of the seven replicates is determined and multiplied by 3.14 (i.e., the 99% confidence interval from the one-sided student t-test). If risk-based project objectives are developed, then where practicable, MDLs must be lower than the risk-based criteria determined for the project.

The MDLs to be used are intended to allow that both nondetected and detected target compound results will be usable to the fullest extent possible for the project. An MDL check sample an (interference-free MS with all method target compounds) must be analyzed following the MDL study to determine if reasonable MDL concentrations have been achieved. The MDL check sample should be at a concentration in the range of two to four times the MDL. If any target compound is not recovered, the MDL study must be repeated. In this case, the repeated MDL should be performed with a higher concentration, based on the analyst's judgment, of the target compounds that failed in the MDL check sample. MDLs must be determined annually at a minimum, and verified by analyzing an MDL check sample on each instrument used for the applicable method.

Laboratory RLs and MDLs for all analyses will meet at a minimum the standards criteria specified in the NYSDEC 6 NYCRR Part 375 Soil Cleanup Objectives for Unrestricted Use or the NYSDEC Division of Water Technical and Operational Guidance Series (TOGS) “Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations” or the

NYSDEC Division of Fish, Wildlife, and Marine Resources, "Screening and Assessment of Contaminated Sediment," 6/24/2014.

Analytical results will be reported to the MDL. Analytical results below the MDL will be flagged with a *U* at the RL for organics and MDL for metals to indicate the data are non-detect. However, the laboratory will flag analytes detected at a level less than the RL but greater than the MDL (or the laboratory's determined minimum reportable concentration) with a *J* to denote an estimated concentration.

When results are corrected for dry weight, the reporting limits are then elevated accordingly. To compensate for the low solids, modifications are made either to increase the initial volume extracted/digested or to reduce the final volume of extract/digestate.

For samples that do not meet the project-specified RLs or MDLs, (taking into consideration elevated detection limits due to percent solids or percent moisture and aliquots used for the designated analysis), the laboratory must make available compelling documentation (e.g., screening data) and a justifiable explanation for its inability to meet the specified limits using the project protocols. It must also provide an appropriate, justifiable explanation of the issues and resolution in the analytical report/data package (dilution factor, interference, etc.). Excessive, unnecessary dilutions on any sample for a project are unacceptable. The laboratory will analyze all samples initially undiluted, unless for GC/MS analyses (i.e., SW8260C and SW8270D), a preliminary GC-screen is performed and indicates that GC/MS instrument damage or compromise may occur if the sample is not analyzed initially at dilution. In this instance, the sample will be analyzed at the lowest possible dilution factor. If multiple extractions/ analyses are performed (such as undiluted and diluted analyses), resulting in several data sets for the same sample, the laboratory will report all data and results from each of the multiple analyses in the data package.

TABLE 3.1

QUALITY CONTROL LIMITS FOR WATER SAMPLES

Analytical Parameter	Analytical Method (a)	Matrix Spike (MS) Compounds	MS/MSD (b) % Recovery	Duplicate RPD (c)	LCS (d) % Recovery	Surrogate	Surrogate % Recovery
Dioxins and Furans	8290A	All target dioxins/furans	50-150	≤25	50-150		NA
PCB Aroclors	8082A	AR 1016 AR 1260	50-150 50-150	≤50 ≤50	50-150 50-150	TCX DCB	30-150 30-150
PAHs	8270D-SIM	All target PAH compounds	Laboratory determined QC limits	≤50	Laboratory determined QC limits		Laboratory Determined QC Limits
Pesticides	8081B	All target Pesticide compounds	Laboratory determined QC limits	≤50	50-120	TCX DCB	30-150 30-150
Herbicides	8151A	All target Herbicide compounds	Laboratory determined QC limits	≤50	Laboratory determined QC limits		Laboratory determined QC limits
TPH (DRO/ORO)	8015B	DRO ORO	Laboratory determined QC limits	≤50	Laboratory determined QC limits		Laboratory determined QC limits
Total and Dissolved Metals	6010C	All target metals	70-130 for all analytes except Ag (50-150)	≤20	70-130 for all analytes except Ag (50-150)		NA
Total and Dissolved Mercury (low level)	1631	Mercury	75-125	≤20	75-125		NA
Ammonia (NH3)	350.2	NA	NA	≤30	NA		NA

(a) Analytical Methods: USEPA SW-846, 3rd edition, revised March 2009; subsequent revisions supersede this information
(b) Matrix Spike/Matrix Spike Duplicate
(c) Relative Percent Difference
(d) Laboratory Control Sample
NA - Not Applicable

TABLE 3.2

QUALITY CONTROL LIMITS FOR SOIL/SEDIMENT SAMPLES

Analytical Parameter	Analytical Method (a)	Matrix Spike (MS) Compounds	MS/MSD (b) % Recovery	Duplicate RPD (c)	LCS (d) % Recovery	Surrogates	Surrogate % Recovery
Dioxins and Furans	8290A	All target Dioxins/Furans	50-150	≤25	50-150		NA
PCB Aroclors	8082A	Aroclor 1016 Aroclor 1260	50-150 50-150	≤50 ≤50	50-150 50-150	TCX DCB	30-150 30-150
PAHs	8270D-SIM	All target PAH compounds	Laboratory determined QC limits	≤50	Laboratory determined QC limits		Laboratory determined QC limits
Pesticides	8081B	All target Pesticide compounds	Laboratory determined QC limits	≤50	50-120	TCX DCB	30-150 30-150
Herbicides	8151A	All target Herbicide compounds	Laboratory determined QC limits	≤50	Laboratory determined QC limits		Laboratory determined QC limits
TPH (DRO/ORO)	8015B	DRO ORO	Laboratory determined QC limits	≤50	Laboratory determined QC limits		Laboratory determined QC limits
Total Metals	6010C	TAL Metals	70-130 for all analytes except Ag (50-150)	≤35	70-130 for all analytes except Ag (50-150)		NA
Total Mercury	7471B	Mercury	75-125	≤20	75-125		NA
Sediment Toxicity	EPA 600/R-01/020	*L-plumulosus* 28-d survival	NA	Refer to the method	≥80% survival		NA
Total Organic Carbon	Lloyd Kahn	Total Organic Carbon	75-125	≤20	75-125		NA

(a) Analytical Methods: USEPA SW-846, 3rd edition, revised March 2009, subsequent revisions supersede this information
(b) Matrix Spike/Matrix Spike Duplicate
(c) Relative Percent Difference
(d) Laboratory Control Sample
NA - Not Applicable

TABLE 3.3

QUALITY CONTROL LIMITS FOR BIOTA SAMPLES

Analytical Parameter	Analytical Method (a)	Matrix Spike (MS) Compounds	MS/MSD (b) % Recovery	Duplicate RPD (c)	LCS (d) % Recovery	Surrogates	Surrogate % Recovery
Dioxins and Furans	8290A	All target Dioxins/Furans	50-150	≤25	50-150		NA
PCB Aroclors	8082A	Aroclor 1016 Aroclor 1260	Laboratory determined QC limits	≤50	Laboratory determined QC limits	TCX DCB	30-150 30-150
Pesticides and Herbicides	8081B	All target Pesticide single component compounds	Laboratory determined QC limits	≤50	Laboratory determined QC limits	TCX DCB	30-150 30-150
Five metals: arsenic, cadmium, lead, mercury and silver	7000 series or method to reach lower reporting limit as warranted (see tables in Section 7)	Metal of interest	75-125	≤20	75-125		NA
Lipids	MSCL SOP 1.264[e]	% Lipids	NA	≤50	NA		NA

(a) Analytical Methods: USEPA SW-846, 3rd edition, revised March 2009, subsequent revisions supersede this information
(b) Matrix Spike/Matrix Spike Duplicate
(c) Relative Percent Difference
(d) Laboratory Control Sample
(e) See attachment 2
NA - Not Applicable

SECTION 4

DATA ACQUISITION

4.1 SAMPLING METHODS

Any non-disposable sampling equipment used for chemical sampling will be cleaned and decontaminated prior to use to prevent potential cross-contamination between each use. Additionally, this QAPP describes management, handling, and tracking procedures for investigation-derived waste, including solid and liquid materials, and personal protective equipment.

The special precautions described here will be taken to confirm that each sample collected is representative of the conditions at that location and that the sampling and handling procedures neither alter nor contaminate the sample. If failure in the sampling or measurement system occurs, the procedures specified in Section10.3 of this QAPP will be followed to identify who is responsible for implementing the appropriate corrective action. This section presents sample container preparation procedures, sample preservation procedures, and sample holding times.

For this program, the laboratory will purchase and distribute certified clean sample containers with chemical preservatives. The sample containers used for chemical analysis must be virgin bottleware, I-Chem™ Series 300 (or equivalent). Vendors are required to provide documentation of analysis for each lot of containers, and the documentation will be kept on file at the laboratory. Alternatively, the laboratory may perform testing to certify that the sample containers are not contaminated. Since the containers supplied by the laboratory will be certified clean, the bottles will not be rinsed in the field prior to use.

Laboratory-supplied sample kits (coolers containing field chain-of-custody forms, custody seals, sample containers, preservatives, and packing material) will be prepared by the laboratory's Sample Management Staff and shipped to the Field Team Leader. The type of containers, required sample volumes, preservation techniques, and holding times for specific analyses are presented in the NYSDEC ASP.

Samples requiring chemical preservation will be collected in sample containers provided by the analytical laboratory that already contain sufficient quantities of the appropriate preservative(s) to ensure that the sample is kept in accordance with the method requirements. The laboratory must provide an adequate amount of pre-preserved bottles with traceable high-purity preservatives, and additional preservative for use if the added amount is not sufficient, based on request by the Field Team Leader and on an as-needed basis if additional bottleware is needed during the field activities. The field team must verify that the preservative has been added appropriately.

4.2 SAMPLE HANDLING AND CUSTODY

This section presents sample handling and custody procedures for both the field and laboratory. Implementation of proper handling and custody procedures for samples generated in the field is the responsibility of field personnel. Both laboratory and field personnel involved in

the chain of custody and transfer of samples will be trained as to the purpose and procedures prior to implementation. For transfer of samples within the laboratory, an internal chain of custody will be required.

4.2.1 Sample Handling

Samples to be collected for each work assignment will be specified in the Work Assignment Scoping Documents and FAP. After the samples are collected, they will be split as necessary among preserved containers appropriate to the parameters to be analyzed. Each container will be provided with a sample label that will be filled out at the time of collection. The sampler will print label information, specified below, on each label either before or immediately after collecting the sample with an indelible writing instrument. The label will be protected from water and solvents with clear label packing tape.

The following information, at a minimum, is required on each sample label (note: the location ID and the sample ID as described in the Data Management section below inherently identify some of this information, see below):

- Client
- Project name
- Sampling location
- Sample number
- Date and time of sample collection
- Parameters to be analyzed
- Preservative(s) added, if any
- Initials of the sampler.

Following sample collection, excess soil, water, etc., will be wiped from the outside of the sample containers with a paper towel and the lids will be checked to verify they are tightly closed. Each glass container will be wrapped with bubble wrap to minimize breakage during transport. Bottles containing soil, sediment, and water samples will be placed in separate Ziploc® bags (one bag) and set on ice (ice bath not necessary). Documentation of equipment and methods used in the field for treating the samples will be maintained in the field logbooks, and a chain of custody will be initiated to document transfer of the samples from the field team to the laboratory. In preparation for shipment to the analytical laboratory, the shipment cooler will be packaged as follows:

- Fill a dry shipment cooler with inert cushioning to a depth of 1 inch to prevent bottle breakage.
- Place the bagged samples and the laboratory-provided temperature blank upright in the sample cooler. The temperature blank should be placed in the center (horizontally and vertically) with the samples surrounding.
- Place additional cushioning material around the sample bottles as necessary.
- Place bags of ice in the remaining void space to keep the samples cooled to 4°C.

- Complete the chain-of-custody form (see Section 4.2.2). Place the chain-of-custody form in a polyethylene, sealable bag (such as a 1-gal Ziploc® bag or equivalent) and tape the bag to the interior of the cooler lid. Field personnel retain a copy of the chain-of-custody form; another copy is transmitted to the QAO and the Project Manager specified in the Work Assignment Scoping Documents.
- Prior to sealing for shipment, the list of samples will be checked against the container contents to verify the presence of each sample listed on the chain-of-custody record including the temperature blank.
- Affix a custody seal to the cooler.
- Seal the cooler securely with packing tape, taking care not to cover labels if already present.
- Label the cooler appropriately in accordance with the Department of Transportation (DOT) regulations (49 CFR 171 through 179).
- Ship the samples in accordance with the DOT requirements outlined in 49 CFR 171 through 179. Complete the carrier bill of lading, and retain a copy on file.
- Samples will be delivered to the laboratory by the most expedient means to meet holding times. Whenever practicable, samples will be shipped on the day of collection for delivery to the laboratory the morning of the day after collection. The laboratory will be required to adhere to the holding times as stated in the NYSDEC ASP for sample analyses. Laboratory performance requirements for analysis turnaround time will be established using the validated time of sample receipt (VTSR) in accordance to NYSDEC requirements. The field team will carefully coordinate sampling activities with the laboratory to see that holding times are met.

The required holding times must be adhered to for the initial sample preparation/analysis. If subsequent reanalysis or re-extraction becomes necessary because of method requirements or additional requirements stated here, the laboratory will make every effort to perform those re-extractions and/or reanalysis within the primary holding times. Any holding time that is exceeded will be reported immediately to the Project Manager and the QAO by the laboratory QA manager.

4.2.2 Field Sample Custody

The primary objective of sample custody procedures is to create an accurate written record that can be used to trace the possession and handling of samples from the moment of their collection through analysis until their final disposition. A sample (or sample container) will be considered under custody if:

- In a person's possession
- Maintained in view after possession is accepted and documented
- Locked and tagged with custody seals placed on the sample cooler so that no one can tamper with it after having been in physical custody
- In a secured area that is restricted to authorized personnel.

The sample custody flowchart is shown in Figure 4.1.

DATA REQUIRED ON CHAIN-OF-CUSTODY*
Project name and client Signatures of samplers Sample number, date and time of collection, and grab or composite sample designation Signatures of individuals involved in sample transfer If applicable, the air bill or other shipping number
ADDITIONAL ITEMS THAT SHOULD BE INCLUDED:
Sample matrix Number of sample containers Analyses to be performed, Preservative(s) Name of the analytical laboratory to which the samples are sent Method of sample shipment Project number.
*Required by guidance in SW846 Test Methods for Evaluating Solid Waste, Physical and Chemical (USEPA, 1997)

A chain-of-custody record will accompany the samples from the time the samples leave the original sampler's possession through the sample shipments' receipt at the laboratory. Triplicate copies of the chain-of-custody record must be completed for each sample set collected. See chart for data requirements.

If samples are split and sent to different laboratories, a copy of the chain-of-custody record is sent with each sample.

The REMARKS space on the chain-of-custody form is used to indicate if the sample is a matrix spike/matrix spike duplicate (MS/MSD) or matrix spike/matrix duplicate (MS/MD), or any other sample information for the laboratory. Since they are not specific to any one-sample point, blanks are indicated on separate rows. Immediately prior to sealing the sample cooler, the sampler will sign the chain-of-custody form and write the date and time on the first RELINQUISHED BY space. The sampler will also write the method of shipment, the shipping cooler identification number, and the shipper air bill number on the top of the chain-of-custody form. Mistakes will be crossed out with a single line in ink and initialed by the author.

Sampling personnel will retain one copy of the chain-of-custody form, and the other two copies are put into a sealable plastic bag and taped inside the lid of the shipping cooler. The cooler lid is closed, custody seals provided by the laboratory are affixed to the latch and across the back and front lids of the cooler, and the person relinquishing the samples signs his or her name across the seal. The seal is taped, and the cooler is wrapped tightly with clear packing tape. Field personnel then relinquish the cooler to personnel responsible for shipment, typically an overnight carrier.

The chain-of-custody seal must be broken to open the sample cooler. Breakage of the seals before receipt at the laboratory may indicate tampering. If tampering is apparent, the laboratory will contact the Field Team Leader for direction on whether to proceed with the analyses.

Sampling personnel record the information placed on the chain-of-custody record in the field logbook. They also include in the log book a detailed description of the exact locations from which the samples were collected, any pertinent conditions under which the samples were obtained, and the lot number of the containers used.

4.2.3 Laboratory Sample Management

The laboratory has a designated Sample Management Staff responsible for receiving samples in the laboratory, opening the coolers, checking the sample integrity and custody seals, logging samples into the laboratory information management system (LIMS), and controlling the handling and storage of samples while in the laboratory. The laboratory is a secure facility and only authorized laboratory personnel are allowed to handle active samples. The laboratory maintains an SOP for sample management.

4.2.4 Sample Receipt and Logging

Upon receipt at the laboratory, sample-receiving personnel inspect the samples for integrity of the custody seal, check the shipment against the chain-of-custody form, and note any discrepancies. Specifically, the sample-receiving personnel note any damaged or missing sample containers. At this time, the field chain-of-custody record is completed and signed by the Sample Management Staff.

Using the temperature blank in each cooler, the temperature of each incoming sample cooler is measured and recorded during the sample receipt and log-in procedures before samples are placed in laboratory cold storage. Similarly, the laboratory documents that its cold storage facilities are being maintained through daily (at a minimum) documented temperature measurements using a thermometer.

Upon receipt, Sample Management Staff measure and record on the preservation documentation sheet the pH of acid- or base-preserved aqueous samples. Any problems observed during sample receipt must be communicated to the Field Team Leader and/or the QAO verbally and either by fax transmission or email within 24 hr (preferably 3 hr beginning with the normal business day or immediately following for problems noted during second shifts or weekends) after discovery and before samples are released to the laboratory for analysis. Problems may include but are not limited to broken bottles, errors or ambiguities in paper work, insufficient sample volume or weight, inappropriate pH, and elevated temperature.

When the shipment is inspected and the chain-of-custody record agree, the sample receiving personnel enter the sample and analysis information into the LIMS and assign each sample a unique laboratory number. This number is affixed to each sample bottle.

4.2.5 Sample Storage Security

While in the laboratory, the samples and aliquots that require cold storage will be stored and will be maintained in a secured refrigerator unless they are being used for preparation and/or analysis. All of the refrigerators in the laboratory used for storage of samples have restricted access and are numbered. In addition, dedicated refrigerators are designated for extracts and analytical standards. The sample storage areas are in the laboratory, and access is limited to laboratory personnel. Specific requirements for sample storage are described below:

- Samples will be removed from the shipping container and stored in their original containers unless damaged.
- Damaged samples will be disposed in an appropriate manner, and the disposal will be documented or repacked as necessary and appropriate.
- Samples and extracts will be stored in a secure area designed to comply with the storage method(s) defined in the contract.
- The storage area will be kept secure at all times. The sample custodian or designated personnel will monitor access to the storage area.
- Standards or reagents will not be stored with samples or sample extracts.

The following standard operating procedures for laboratory sample security will be implemented to confirm that the laboratory satisfies sample chain-of-custody requirements:

- Samples will be stored in a secure area.
- Access to the laboratory will be through a monitored area. Other outside access doors to the laboratory will be kept locked.
- Visitors must sign a visitor's log and will be escorted while in the laboratory.
- Refrigerators, freezers, and other sample storage areas will be securely maintained.

Storage blanks will be initiated and analyzed on a weekly basis for each cold storage unit used to hold samples submitted for the analysis of VOCs. Field QC samples must be stored in the same cold storage units as the samples that they are associated with (even if the matrices are different). All soil samples must undergo thorough sample homogenization (stirred within the original sample container) using inert utensils and mixing platforms that will not interfere with the target analytes being requested for analysis with the exception of soil samples submitted for the analysis of VOCs. Samples for VOC determinations will be stored in a secure refrigerator separate from other samples, sample extracts, reagents, and standards.

4.2.6 Retention and Disposal of Samples

The laboratory must retain all excess samples within their original sample bottles for a minimum of 30 days in cold storage (below 4 degrees Celsius) following submission of the validated data to NYSDEC. At that time, the laboratory must contact the Field Team Leader for authorization for responsible disposal or further storage instructions. At the point at which the laboratory is provided authorization to dispose of the samples, the laboratory will be responsible, and will assume all liability for proper characterization and disposal of samples and bottleware in accordance with all local, state, and federal regulations.

FIGURE 4.1

SAMPLE CUSTODY FLOW CHART

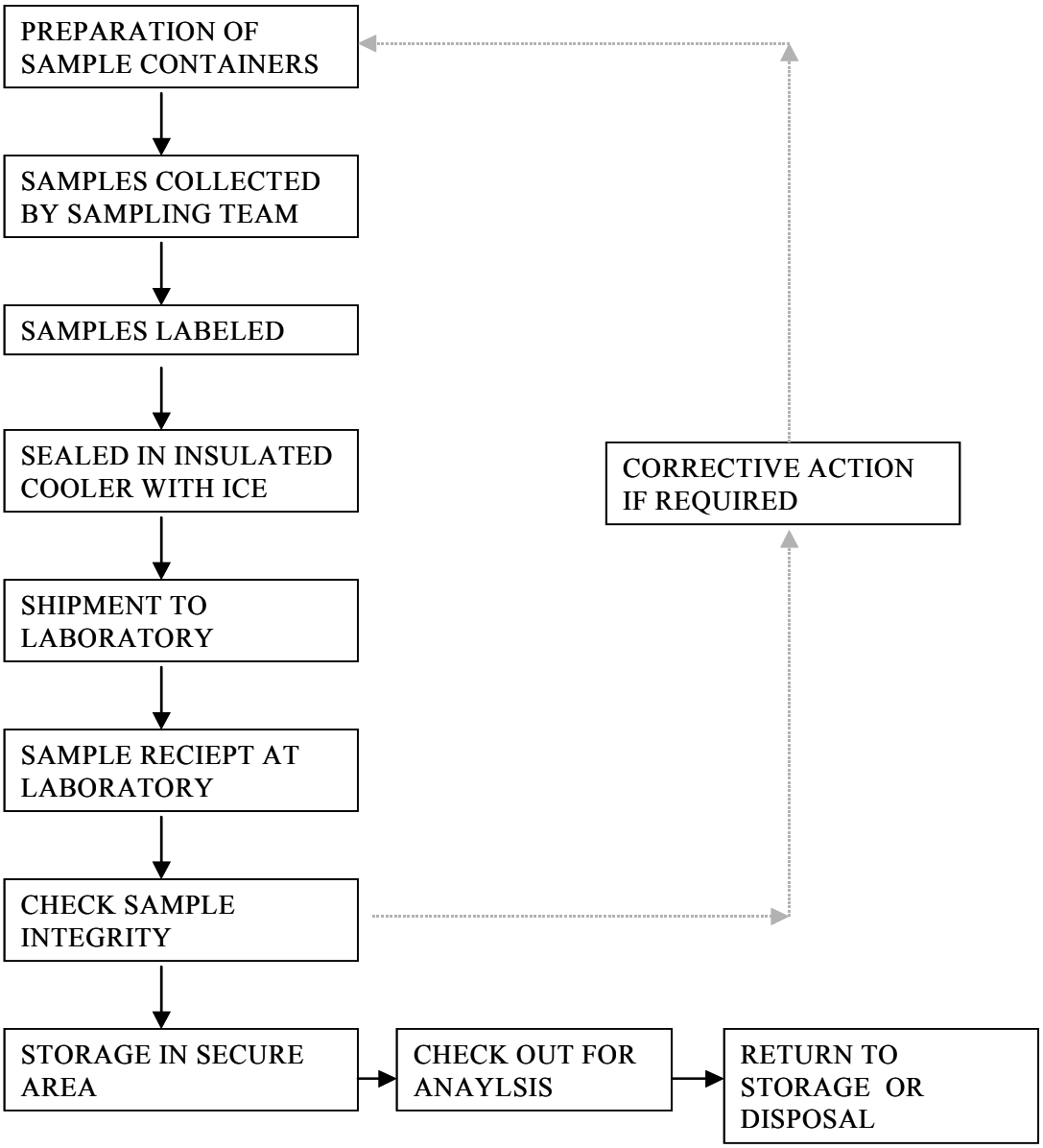

FIGURE 4.2 EXAMPLE CHAIN-OF-CUSTODY RECORD

Submitted to:

Chain Of Custody / Analysis Request

AESI Ref:
COC #:
Lab Use Only
Lab Proj #
Lab ID

Privileged & Confidential
EDD To:
Site Name:
Location of Site:

Client Contact: (name, co., address)

Sampler:
P O #
Analysis Turnaround Time:
Standard - Y
2 weeks -
1 week -
Next Day -

Hardcopy Report To:
Invoice To:

Job No.
Column Study Sediment

Preservative: 0 0 2

Sample Identification

	Location ID	Start Depth (ft)	End Depth (ft)	Field Sample ID	Sample Date	Sample Time	Sample Type	Sample Matrix	Sample Purpose	# of Cont.	Grab/Composite	Field Filtered Sample ?	Units												
1																									
2																									
3																									
4																									
5																									
6																									
7																									
8																									
9																									
10																									
11																									
12																									

Special Instructions:

Notes:

Relinquished by	Company		Received by	Company		Condition		Custody Seals Intact	
	Date/Time			Date/Time		Cooler Temp.			
Relinquished by	Company		Received by	Company		Condition		Custody Seals Intact	
	Date/Time			Date/Time		Cooler Temp.			

Preservatives: 0 = None; [1 = HCL]; [2 = HNO3]; [3 = H2SO4]; [4 = NaOH]; [5 = Zn. Acetate]; [6 = MeOH]; [7 = NaHSO4]; 8 = Other (specify):

TABLE 4.1

WATER SAMPLE CONTAINERS, PRESERVATION, AND HOLDING TIMES

Analysis	Bottle Type	Preservation[a]	Holding Time[b]
Dioxins and Furans Aroclors PAHs Pesticides Herbicides TPH (DRO/ORO)	2 1-Liter amber glass containers with Teflon-lined lid for **each analysis** (an additional 2 1-Liter containers required every 20 samples for MS/MSD for **each analysis**.)	Cool to 4±2°C	7 days for extraction 40 days for analysis
Metals (except Mercury)	1000 ml plastic bottle	Nitric Acid to pH<2. Cool to 4±2°C	6 months
Mercury	1000 ml plastic bottle	Nitric Acid to pH<2. Cool to 4±2°C	28 days
Hardness	100 ml plastic bottle	Nitric Acid to pH<2. Cool to 4±2°C	6 months
NH_3	1000 ml plastic bottle	Sulfuric Acid to pH <2. Cool to 4±2°C	28 days

[a]All samples to be preserved in ice during collection and transport.

[b]Days from date sampled.

TABLE 4.2

SOIL/SEDIMENT SAMPLE CONTAINERS, PRESERVATION, AND HOLDING TIMES

Analysis	Bottle Type	Preservation[a]	Holding Time[b]
Dioxins and Furans Aroclors PAHs Pesticides Herbicides TPH (DRO/ORO)	250-ml wide-mouth amber glass container with Teflon-lined lid. (2 additional 250-ml wide-mouth glass containers every 20 samples for MS/MSD).	Cool to 4±2°C	14 days for extraction 40 days for analysis (Soxhlet extraction must be completed within 14 days from date sampled.)
Metals (except Mercury)	250-ml wide-mouth plastic or glass container.	Cool to 4±2°C	6 months
Mercury	250-ml wide-mouth plastic or glass container.	Cool to 4±2°C	28 days
TOC	250-ml wide-mouth amber glass container with Teflon-lined lid.	Cool to 4±2°C	28 days
Sediment Toxicity	250-ml wide-mouth amber glass container.	Cool to 4±2°C	8 weeks

[a]All samples to be preserved in ice during collection and transport.

[b]Days from date sampled.

TABLE 4.3

TISSUE SAMPLE CONTAINERS, PRESERVATION, AND HOLDING TIMES

Analysis	Bottle Type	Preservation[a]	Holding Time[b]
Dioxins and Furans Aroclors Pesticides	Appropriate sized wide-mouth glass container with Teflon-lined lid	Cool to 4±2°C then freeze to < -18°C	1 Year to extraction, 40 days to analysis
Mercury	Aluminum foil and resealable bags	Cool to 4±2°C then freeze to < -18°C	6 months
Percent Lipids	Appropriate sized wide-mouth glass container with Teflon-lined lid	Cool to 4±2°C then freeze to < -18°C	1 Year to extraction, 40 days to analysis

[a]All samples to be preserved in ice during collection and transport.

[b]Days from date sampled.

SECTION 5

DATA MANAGEMENT

5.1 INTRODUCTION

The electronic data management systems for each work assignment will be implemented to process the information effectively without loss or alteration. As of April 1, 2011, the New York State Division of Environmental Remediation (DER) has implemented an Environmental Information Management System (EIMS). The EIMS uses the database software application EQuIS$_{TM}$ from EarthSoft® Inc. In an effort to improve the management of environmental data and reduce paper quantities, all laboratory analytical data minus instrument raw data must be submitted in the DEC-approved Electronic Data Deliverable (EDD).

Data providers must download and install the EQuIS Data Processor (EDP) to check their properly formatted EDD as well as the NYSDEC DER Format file. The EDP performs a series of formatting checks on the EDD and identifies any errors in the data file prior to submission. All EDDs are to be error free when submitted. It is important that the most recent version of the EDP and NYSDEC format file are employed since the valid values used by EIMS are periodically updated for the EDP.

5.2 FIELD DATA MANAGEMENT

The Field Team Leader will manage data generated in the field. He or his designee will be responsible for recording and documenting sampling activities in the field logbook, on sampling records (as appropriate), and on chain-of-custody forms (when samples are collected) as described in Section 4.2.2. The records may be photocopied and stored in the project file along with the original.

A sample nomenclature system will be coordinated with the Data Management Team. Each sample name will be unique to include location ID and field sample ID. The Database Manager will add data to EIMS through the input module of the system.

DATA INPUT TO EIMS MAY INCLUDE:
–Sample planning information (e.g., sample depth) –Chain-of-custody data –Sediment coring logs –Geotechnical data –Location and geographic data –Field measurements –Meteorological data –Waste characterization data –Groundwater levels –Radiodating data –Laboratory analytical data

5.3 LABORATORY DATA MANAGEMENT

Laboratory data management involves several important stages that include data transformation, review, verification, and validation, as well as data storage, retrieval, and security. The laboratory will implement a data management system to manage the data from its generation in the laboratory to its final reporting and storage. The data management system will include, but not be limited to, the use of standard record-keeping practices, standard document control systems, and the electronic data management system.

The laboratory data reduction, verification, validation, and reporting procedures and project data management activities, data/information exchange procedures ensure that complete documentation is maintained, transcription and reporting errors are minimized, and data are properly review.

Specific laboratory data management requirements and procedures are discussed in Sections 6 and 9 of this QAPP.

SECTION 6

DOCUMENTS AND RECORDS

6.1 INTRODUCTION

Records will be maintained to document accurately the data generation process during investigation in the field, sample analysis in the lab, and during data validation. Project documentation will be maintained in general accordance with guidelines in the National Enforcement Investigation Center Policies and Procedures (USEPA, 1986). A project file will be maintained that will contain appropriate project documentation; see components in chart. Some of this documentation may be retained electronically in lieu of paper copies. Table 6.1 summarizes the types of project documents and records.

MINIMUM COMPONENTS OF PROJECT FILE
- Project plans and specifications - Field logbooks and data records - Photographs, maps, and drawings - Sample identification documents - Chain-of-custody records - Data review notes - Report notes and calculations - Progress and technical reports and - Correspondence and other pertinent information - Full analytical data deliverables package provided by the lab, including QC documentation and electronic data deliverable

6.2 FIELD RECORDS

Field personnel are responsible for documenting sample handling activities, observations, and data in field sampling records including field logbooks, chain-of-custody records, photographs, and pre-design investigation records. The Field Team Leader is responsible for maintaining these documents. Each record is described below.

6.2.1 Field Logbook

A Field Logbook will be used to document pre-design investigation activities. The field logbook will have consecutively numbered pages, and documentation will be recorded using waterproof ink. Incomplete lines, pages, and changes in the logbook will be lined out with a single line, dated, and initialed. More detailed procedures for documenting investigation

activities (such as field sampling records and boring log forms) and type of information to include in the field logbook may be developed.

MINIMUM REQUIREMENT FOR INFORMATION IN FIELD LOG
- Responsible person's name - Date and time of activity - Equipment and methods used for field preparation of samples - Field measurements of samples (*e.g.,* pH, temperature) - Information coordinating sample handling activities with appropriate field activities and chain-of-custody documentation *Daily calibration activities:* Calibrator's name Instrument name and model Date and time of calibration Standards used and their source Temperature (if appropriate) Results of calibration Corrective actions taken (if any)

6.2.2 Electronic Field Data Management

The field sampling program will have an electronic data management component. The system will be designed to specify the necessary samples taken at any given location and to provide the ability to be updated and amended in the field. This will provide a management system that efficiently tracks the needs of the sampling scope. As the samples are taken, log entries are put in the database, and sample labels are printed. At any given time a chain-of-custody record can be printed as well.

6.2.3 Chain-of-Custody Record

The chain of custody record establishes the documentation necessary to trace sample possession from the date and time of sample collection, through sample shipment, to the date and time of arrival at the laboratory designated to perform analysis. The ability to trace the history of a sample is essential to show that the sample collected was, indeed, the sample analyzed and that the sample was not subjected to biasing influences. Evidence of sample traceability and integrity is provided by chain-of-custody procedures. These procedures are necessary to support the validity of the data and will accompany each shipping container.

A copy of the chain-of-custody record will be detached and kept with the field logbook or placed in the project file; the original record will accompany the shipment.

6.3 LABORATORY RECORDS

Laboratories providing analytical support for this project must maintain records to ensure that all aspects of the analytical processes are adequately documented to ensure legal defensibility of the data.

When a mistake is made, the wrong entry is crossed out with a single line, initialed, and dated by the person making the entry, and the correct information recorded. Obliteration of an incorrect entry or writing over it is not allowed, nor is the use of correction tape or fluid on any laboratory records.

Overwriting or disposal of any electronic media prior to a 5-yr expiration period is strictly prohibited. All electronic and hardcopy data must be stored in an easily accessible climate-controlled environment. The laboratory will exercise "best practices" in terms of frequent, redundant electronic backup procedures on proper long-term storage media to assure that all electronic data representing sample analyses will be maintained for the 5-yr storage period. Electronic data must be stored in a secure, limited-access area with redundant copies stored in fireproof vaults and/ or stored off-site of the laboratory facilities.

Sample preparation in the laboratory must be fully documented and include sample preparation conditions (such as digestion temperatures). In addition, documentation must allow complete traceability to all prepared or purchased reagents, acids and solvents, and reference solutions. All spike solutions and calibration standards must be used prior to labeled expiration dates and stored in accordance with manufacturers recommended conditions. Complete and unequivocal documentation must exist to enable traceability of all prepared spike solutions, calibration standards, and prepared reagents back to the reference materials utilized. Organic extracts must be stored in the same type of vials (amber or clear) as the associated standards at the appropriate storage temperatures.

The unit conventions set forth in the figures for reported data will be consistent with standard laboratory procedures. Reporting units used are those commonly used for the analyses performed. Concentrations in soil and sediment samples will be expressed in terms of weight per unit dry weight, with moisture content reported for each sample.

Laboratory records used to document analytical activities in the laboratory will include reagent and titrant preparation records, standard preparation logs, sample preparation logs, bench data sheets, instrument run logs, and strip chart recordings/chromatograms/computer output. Additional records will include calibration records, maintenance records, nonconformance memos, and Corrective Action Request (CAR) forms.

LAB RECORDS SHOULD CONVEY:
- What was done - When it was done - Who did it and - What was found

REQUIREMENTS FOR LAB RECORDKEEPING
- Data entries must be made in indelible water-resistant ink - Date of each entry and observer must be clear - Observer uses his or her full name or initials - Initial and signature log is maintained so the recorder of every entry can be identified - Information must be recorded in notebook or on other records when the observations are made - Recording information on loose pieces of paper not allowed

6.3.1 Operational Calibration Records

Operational calibration records will document the calibration of instruments and equipment that are corrected on an operational basis. Such calibration generally consists of determining instrumental response against compounds of known composition and concentration or the preparation of a standard response curve of the same compound at different concentrations. Records of these calibrations are maintained in the following documents:

- Standard preparation information, to trace the standards to the original source solution of neat compound, is maintained in LIMS or laboratory standard preparation logs.
- Instrument logbook provides an ongoing record of the calibration for a specific instrument. The logbook should be indexed in the laboratory operations records and should be maintained at the instrument by the chemist. The chemist must sign and date all entries, and the QM or his designee must review them.
- For Level IV data packages, copies of the raw calibration data will be kept with the analytical sample data so the results can readily be processed and verified as one complete data package. If samples from several projects are processed together, the calibration data is copied and included with each group of data. The laboratory will maintain all calibration, analysis, and corrective action documentation (both hard copy and electronic data) for a minimum of 7 years. The documentation maintained must be sufficient to show all factors used to derive the final (reported) value for each sample. Documentation must include all calculation factors such as dilution factor, sample aliquot size, and dry-weight conversion for solid samples. The individual who performs hand calculations must sign and date them. This documentation must be stored with the raw data. Calculations performed by the data system will be documented and stored as electronic and hard copy data. The instrument printouts will be kept on file, and the electronic data will be stored by the laboratory for a minimum of 7 years

6.3.2 Maintenance Records

Maintenance records will be used to document maintenance activities, service procedures, and schedules. They must be traceable to each analytical instrument, tool, or gauge. The individual responsible for the instrument must review, maintain, and file these records. These records may be audited by the QAO to verify compliance. Logs must be established to record and control maintenance and service procedures and schedules.

6.3.3 Nonconformance Memos

Nonconformance Memos (NCM) may be either a hard copy record or an electronic database record. In either case, review and release of the record must be documented by the initiator, the analytical group leader where appropriate, the laboratory project manager, and the laboratory QA manager. All internal laboratory nonconformance documentation will be communicated to the Field Team Leader by the laboratory project manager verbally and summarized in the report narrative. The NCM will be used to document equipment that fails calibration and will identify any corrective actions taken.

6.3.4 Corrective Action Request (CAR) Forms

The laboratory must use CAR forms to document any incidents requiring corrective action. The CAR form will be issued to the personnel responsible for the affected item or activity. A copy will also be submitted to the laboratory project manager. The individual to whom the CAR is addressed will return the requested response promptly to the QA personnel and will affix his or her signature and date to the corrective action block after stating the cause of the conditions and corrective action to be taken. QA personnel will maintain a log for status of CAR forms to confirm the adequacy of the intended corrective action and to verify its implementation. CARs will be retained in the project record file.

6.3.5 Analytical Data Reports

Analytical data will be reported as an Electronic Data Deliverable (EDD) and as an analytical data package (two copies on CD-Rom and one hard copy). The analytical laboratories are required to submit all data, preliminary and final, in formatted EDDs in accordance with NYSDEC's requirements. The laboratory must meet 100% compliance with these requirements. The Parsons Database Manager will submit written requests dictating the requirements and appropriate files to be supplied by the laboratory. The specifications of the EDD are presented in Section 5.

Analytical data reports will be provided by the laboratory within 28 calendar days following receipt of a complete Sample Delivery Group (SDG) and will include the specifications identified in Attachment 1. An SDG is considered to include all samples received for the same project or site, to a maximum of twenty investigative samples not to exceed 5 consecutive days of sampling. The data package provided by the laboratory will be Level IV, unless an alternative requirement is specified in a laboratory statement of work (SOW) and will contain all information to support the data validation in accordance with the USEPA Region II Standard Operating Procedures (SOP) as described in Section 9. Additionally, the completed copies of the chain-of-custody records, accompanying each sample from the time of initial bottle preparation to completion of analysis, must be attached to the analytical reports.

6.4 DATA VALIDATION AND AUDIT RECORDS

Data validation personnel are responsible for documenting validation procedures and results in the form of a data usability summary report (DUSR). The QAO will be responsible for maintaining this report and the QAO will be responsible for its distribution. Additionally, audit reports will be prepared and distributed by the QAO. A brief description of each record is described below.

6.4.1 Data Usability Summary Reports

The DUSR will be prepared as required by NYSDEC DER-10 Technical Guidance for Site Investigation and Remediation, Appendix 2B, May, 2010. The DUSR will summarize the impacts of using data that do not achieve overall data quality objectives or that do not meet PARCC and sensitivity criteria identified in Section 3.3. Additionally, the report will be used to identify, assess and present issues associated with the overall data.

6.4.2 Audit Reports

Among other QA audit reports, which may be generated during the conduct of activities, a final audit report for this project may be prepared by the QAO. The report will include:

- Periodic assessment of measurement data accuracy, precision, and completeness
- Results of performance audits and/or system audits
- Significant QA problems and recommended solutions for future projects
- Status of solutions to any problems previously identified

TABLE 6.1
SUMMARY OF FIELD, LABORATORY, AND DATA MANAGEMENT RECORDS

-	PERSON RESPONSIBLE FOR		
REPORT	**MAINTENANCE**	**DISTRIBUTION**	**STORAGE**
PROJECT FILES AND FIELD SAMPLING RECORDS			
Field Logbook	Field Team Leader	Project Manager	Job File at Primary Contractor's Location
Photographs	Field Team Leader	Project Manager	Job File at Primary Contractor's Location
Chain-of-Custody	Field Team Leader	Project Manager	Job File at Primary Contractor's Location
Field Sampling Records	Field Team Leader	Project Manager	Job File at Primary Contractor's Location
LABORATORY RECORDS			
Reagent and Titrant Preparation Records	Quality Assurance Manager	Laboratory Project Manager	Job File at Laboratory
Standards Preparation Logs	Quality Assurance Manager	Laboratory Project Manager	Job File at Laboratory
Sample Preparation Logs	Quality Assurance Manager	Laboratory Project Manager	Job File at Laboratory
Bench Data Sheets	Quality Assurance Manager	Laboratory Project Manager	Job File at Laboratory
Instrument Run Logs	Quality Assurance Manager	Laboratory Project Manager	Job File at Laboratory

TABLE 6.1
SUMMARY OF FIELD, LABORATORY, AND DATA MANAGEMENT RECORDS (CONT.)

REPORT	PERSON RESPONSIBLE FOR		STORAGE
	MAINTENANCE	DISTRIBUTION	
Strip Chart Recordings/ Chromatograms/Computer Output	Quality Assurance Manager	Laboratory Project Manager	Job File at Laboratory
Analytical Data Reports	Quality Assurance Manager	Laboratory Project Manager	Job File at Laboratory
Log-in Sheets	Quality Assurance Manager	Laboratory Project Manager	Job File at Laboratory
Maintenance Records	Quality Assurance Manager	Laboratory Project Manager	Instrument Maintenance Logbook at Laboratory
Periodic Calibration Records	Quality Assurance Manager	Laboratory Project Manager	QA Files at Laboratory
Operational Calibration Records	Quality Assurance Manager	Laboratory Project Manager	Job File at Laboratory
Nonconformance Memos	Quality Assurance Manager	Laboratory Project Manager	Maintained in Datbase File at Laboratory
Corrective Action Request Forms	Quality Assurance Manager	Laboratory Project Manager	Client Correspondence Records at Laboratory
DATA VALIDATION AND AUDIT RECORDS			
Data Validation Reports	Quality Assurance Officer	Quality Assurance Officer	Job File at Primary Contractor's Location
Audit Reports	Quality Assurance Officer	Quality Assurance Officer	Job File at Primary Contractor's Location

SECTION 7

ANALYTICAL PROCEDURES

7.1 INTRODUCTION

To meet program specific regulatory requirements for chemicals of concern, all methods will be followed as stated, with some specific requirements noted below. Chemical analyses for inorganics, organics, and wet chemistry parameters will be conducted in accordance with the QAPP, the Work Assignment Scoping Documents, NYSDEC ASP, laboratory's SOPs (maintained "on-file" at the laboratory), and with referenced analytical methods including USEPA SW846 Test Methods for Evaluating Solid Waste, Physical, and Chemical (USEPA, 1997), and Methods for Chemical Analysis of Water and Wastes (USEPA, 1983). Where requirements conflict, the technical and QA/QC requirements in this QAPP take precedence over requirements specified in standardized methods. Tables in this section present analytical procedures and project quantitation limits. Laboratory method detection limits and reporting limits will be added once the laboratory to conduct each type of analysis is selected. One of the considerations for laboratory selection will be ability of the laboratory to provide results that meet project quantitation limits.

7.2 STANDARD OPERATING PROCEDURES

Standard Operating Procedures (SOPs) are a written step-by-step description of laboratory operating procedures exclusive of analytical methods. Laboratories providing analytical support for this project will be required to document all procedures in SOPs. The SOPs must address the following areas:

- Storage containers and sample preservatives
- Sample receipt and logging
- Sample custody
- Sample handling procedures
- Sample transportation
- Glassware cleaning
- Laboratory security
- QC procedures and criteria
- Equipment calibration and maintenance
- Documentation
- Safety
- Data handling procedures
- Document control
- Personnel training and documentation

- Sample and extract storage
- Preventing sample contamination
- Traceability of standards
- Data reduction and validation
- Maintaining instrument records and logbooks
- Nonconformance
- Corrective actions
- Records management

TABLE 7.1
PROJECT QUANTITATION LIMITS (PQLs) – METALS IN SURFACE WATER/ GROUNDWATER

Analyte	CAS No	Method	Laboratory		PQLs	
			Method Detection Limit (ug/L)	Lab Reporting Limit (ug/L)	NYSDEC Surface Water Class B Standards (ug/L)[1,2]	NYSDEC Groundwater Class GA Standards (ug/L)
Aluminum	7429-90-5	6010C			100	None
Antimony	7440-36-0	6010C			None	3
Arsenic	7440-38-2	6010C			150 (Dissolved)	25
Barium	7440-39-3	6010C			None	1000
Beryllium	7440-41-7	6010C			11	3
Cadmium	7440-43-9	6010C			1.2	5
Calcium	7440-70-2	6010C			None	None
Chromium	7440-47-3	6010C			42	50
Cobalt	7440-48-4	6010C			5	None
Copper	7440-50-8	6010C			5	200
Iron	7439-89-6	6010C			None	300
Lead	7439-92-1	6010C			1.8	25
Magnesium	7439-95-4	6010C			None	None
Manganese	7439-96-5	6010C			None	300
Nickel	7440-02-0	6010C			29	100
Potassium	7440-09-7	6010C			None	None
Selenium	7782-49-2	6010C			4.6 (dissolved)	10
Silver	7440-22-4	6010C			0.1 (ionic)	50
Sodium	7440-23-5	6010C			None	20000
Thallium	7440-28-0	6010C			8	None
Vanadium	7440-62-2	6010C			14	None
Zinc	7440-66-6	6010C			43 (dissolved)	2000
Mercury	7439-97-6	7470A			.0007 (dissolved)	0.7

[1] Surface water samples must be filtered through a 0.45-micron filter before analyzing the remaining water (filtrate) for all metals.
[2] Limits presented for Beryllium, Cadmium, Chromium, Copper, Lead, nickel, and Zinc are based on a hardness of 50 ppm.

TABLE 7.2
PROJECT QUANTITATION LIMITS (PQLs) – VOLATILE ORGANIC COMPOUNDS (VOCs) IN SURFACE WATER/ GROUNDWATER

Analyte	CAS No	Method	Laboratory		PQLs	
			Method Detection Limit (ug/L)	Lab Reporting Limit (ug/L)	NYSDEC Surface Water Class B Standards (ug/L)	NYSDEC Groundwater Class GA Standards (ug/L)
Dichlorodifluoromethane	75-71-8	8260C			None	5
Chloromethane	74-87-3	8260C			None	5
Vinyl chloride	75-01-4	8260C			None	2
Bromomethane	74-83-9	8260C			None	5
Chloroethane	75-00-3	8260C			None	5
Trichlorofluoromethane	75-69-4	8260C			None	5
1,1-Dichloroethene	75-35-4	8260C			None	5
1,1,2-Trichloro-1,2,2-trifluoroethane	76-13-1	8260C			None	None
Acetone	67-64-1	8260C			None	50
Carbon disulfide	75-15-0	8260C			None	60
Methyl acetate	79-20-9	8260C			None	None
Methylene chloride	75-09-2	8260C			200	5
trans-1,2-Dichloroethene	156-60-5	8260C			None	5
Methyl tert-butyl ether	1634-04-4	8260C			None	10
1,1-Dichloroethane	75-34-3	8260C			None	5
cis-1,2-Dichloroethene	156-59-2	8260C			None	5
2-Butanone	78-93-3	8260C			None	50
Bromochloromethane	74-97-5	8260C			None	None
Chloroform	67-66-3	8260C			None	7
1,1,1-Trichloroethane	71-55-6	8260C			None	5
Cyclohexane	110-82-7	8260C			None	None
Carbon tetrachloride	56-23-5	8260C			None	5
Benzene	71-43-2	8260C			10	1
1,2-Dichloroethane	107-06-2	8260C			None	0.6
Trichloroethene	79-01-6	8260C			40	5
Methylcyclohexane	108-87-2	8260C			None	None
1,2-Dichloropropane	78-87-5	8260C			None	1
Bromodichloromethane	75-27-4	8260C			None	50

TABLE 7.2
PROJECT QUANTITATION LIMITS (PQLs) – VOLATILE ORGANIC COMPOUNDS (VOCs) IN SURFACE WATER/ GROUNDWATER

Analyte	CAS No	Method	Laboratory		PQLs	
			Method Detection Limit (ug/L)	Lab Reporting Limit (ug/L)	NYSDEC Surface Water Class B Standards (ug/L)	NYSDEC Groundwater Class GA Standards (ug/L)
cis-1,3-Dichloropropene	10061-01-5	8260C			None	0.4
4-Methyl-2-pentanone	108-10-1	8260C			None	None
Toluene	108-88-3	8260C			100	5
trans-1,3-Dichloropropene	10061-02-6	8260C			None	0.4
1,1,2-Trichloroethane	79-00-5	8260C			None	1
Tetrachloroethene	127-18-4	8260C			1	5
2-Hexanone	591-78-6	8260C			None	50
Dibromochloromethane	124-48-1	8260C			None	50
1,2-Dibromoethane	106-93-4	8260C			None	5
Chlorobenzene	108-90-7	8260C			5	5
Ethylbenzene	100-41-4	8260C			17	5
o-Xylene	95-47-6	8260C			65 (total)	5
m,p-Xylene	179601-23-1	8260C			65 (total)	5
Styrene	100-42-5	8260C			None	5
Bromoform	75-25-2	8260C			None	50
Isopropylbenzene	98-82-8	8260C			2.6	5
1,1,2,2-Tetrachloroethane	79-34-5	8260C			None	5
1,3-Dichlorobenzene	541-73-1	8260C			5	3
1,4-Dichlorobenzene	106-46-7	8260C			5	3
1,2-Dichlorobenzene	95-50-1	8260C			5	3
1,2-Dibromo-3-chloropropane	96-12-8	8260C			None	None
1,2,4-Trichlorobenzene	120-82-1	8260C			5	5
1,2,3-Trichlorobenzene	87-61-6	8260C			5	5

TABLE 7.3
PROJECT QUANTITATION LIMITS (PQLs) – SEMIVOLATILE ORGANIC COMPOUNDS (SVOCs) IN SURFACE WATER/ GROUNDWATER

			Laboratory		PQLs	
Analyte	**CAS No**	**Method**	**Method Detection Limit (ug/L)**	**Lab Reporting Limit (ug/L)**	**NYSDEC Surface Water Class B Standards (ug/L)**	**NYSDEC Groundwater Class GA Standards (ug/L)**
1.4-Dioxane	123-91-1	8270D			None	None
Benzaldehyde	100-52-7	8270D			None	None
Phenol	108-95-2	8270D			5 (total unchlorinated phenols)	1 (total phenols)
Bis(2-chloroethyl) ether	111-44-4	8270D			None	1
2-Chlorophenol	95-57-8	8270D			1 (total chlorinated phenols)	1 (total phenols)
2-Methylphenol	95-48-7	8270D			5 (total unchlorinated phenols)	1 (total phenols)
3-Methylphenol	108-39-4	8270D			5 (total unchlorinated phenols)	1 (total phenols)
2,2'-Oxybis(1-choloropropane)	108-60-1	8270D			None	None
Acetophenone	98-86-2	8270D			None	None
4-Methylphenol	106-44-5	8270D			5 (total unchlorinated phenols)	1 (total phenols)
N-Nitroso-di-n propylamine	621-64-7	8270D			None	None
Hexachloroethane	67-72-1	8270D			0.6	5
Nitrobenzene	98-95-3	8270D			None	0.4
Isophorone	78-59-1	8270D			None	50
2-Nitrophenol	88-75-5	8270D			5 (total unchlorinated phenols)	1 (total phenols)
2,4-Dimethylphenol	105-67-9	8270D			5 (total unchlorinated phenols)	1 (total phenols)
Bis(2-chloroethoxy) methane	111-91-1	8270D			None	5

TABLE 7.3
PROJECT QUANTITATION LIMITS (PQLs) – SEMIVOLATILE ORGANIC COMPOUNDS (SVOCs) IN SURFACE WATER/ GROUNDWATER

			Laboratory		PQLs	
Analyte	CAS No	Method	Method Detection Limit (ug/L)	Lab Reporting Limit (ug/L)	NYSDEC Surface Water Class B Standards (ug/L)	NYSDEC Groundwater Class GA Standards (ug/L)
2,4-Dichlorophenol	120-83-2	8270D			1 (total chlorinated phenols)	1 (total phenols)
Naphthalene	91-20-3	8270D			13	10
4-Chloroaniline	106-47-8	8270D			None	5
Hexachlorobutadiene	87-68-3	8270D			0.01	0.5
Caprolactam	105-60-2	8270D			None	None
4-Chloro-3-methylphenol	59-50-7	8270D			1 (total chlorinated phenols)	1 (total phenols)
2-Methylnaphthalene	91-57-6	8270D			4.7	None
Hexachlorocyclopentadiene	77-47-4	8270D			0.45	5
2,4,6-Trichlorophenol	88-06-2	8270D			1 (total chlorinated phenols)	1 (total phenols)
2,4,5-Trichlorophenol	95-95-4	8270D			1 (total chlorinated phenols)	1 (total phenols)
1,1'-Biphenyl	92-52-4	8270D			None	None
2-Chloronaphthalene	91-58-7	8270D			None	10
2-Nitroaniline	88-74-4	8270D			None	5
Dimethylphthalate	131-11-3	8270D			None	50
2,6-Dinitrotoluene	606-20-2	8270D			None	5
Acenaphthylene	208-96-8	8270D			None	None
3-Nitroaniline	99-09-2	8270D			None	5
Acenaphthene	83-32-9	8270D			5.3	20
2,4-Dinitrophenol	51-28-5	8270D			5 (total unchlorinated phenols)	1 (total phenols)
4-Nitrophenol	100-02-7	8270D			5 (total unchlorinated phenols)	1 (total phenols)

TABLE 7.3
PROJECT QUANTITATION LIMITS (PQLs) – SEMIVOLATILE ORGANIC COMPOUNDS (SVOCs) IN SURFACE WATER/ GROUNDWATER

			Laboratory		PQLs	
Analyte	CAS No	Method	Method Detection Limit (ug/L)	Lab Reporting Limit (ug/L)	NYSDEC Surface Water Class B Standards (ug/L)	NYSDEC Groundwater Class GA Standards (ug/L)
Dibenzofuran	132-64-9	8270D			None	None
2,4-Dinitrotoluene	121-14-2	8270D			None	5
Diethylphthalate	84-66-2	8270D			None	50
Fluorene	86-73-7	8270D			0.54	50
4-Chlorophenyl-phenyl ether	7005-72-3	8270D			None	5
4-Nitroaniline	100-01-6	8270D			None	5
4,6-Dinitro-2-methylphenol	534-52-1	8270D			5 (total unchlorinated phenols)	1 (total phenols)
N-Nitrosodiphenylamine	86-30-6	8270D			None	50
1,2,4,5-Tetrachlorobenzene	95-94-3	8270D			None	None
4-Bromophenyl-phenylether	101-55-3	8270D			None	5
Hexachlorobenzene	118-74-1	8270D			0.00003	0.04
Atrazine	1912-24-9	8270D			None	None
Pentachlorophenol	87-86-5	8270D			1 (total chlorinated phenols)	1 (total phenols)
Phenanthrene	85-01-8	8270D			5	50
Anthracene	120-12-7	8270D			3.8	50
Carbazole	86-74-8	8270D			None	None
Di-n-butylphthalate	84-74-2	8270D			None	50
Fluoranthene	206-44-0	8270D			None	50
Pyrene	129-00-0	8270D			4.6	50
Butylbenzylphthalate	85-68-7	8270D			None	50
3,3'-Dicholorobenzidine	91-94-1	8270D			None	None
Benzo(a)anthracene	56-55-3	8270D			0.03	0.002
Chrysene	218-01-9	8270D			None	0.002

TABLE 7.3
PROJECT QUANTITATION LIMITS (PQLs) – SEMIVOLATILE ORGANIC COMPOUNDS (SVOCs) IN SURFACE WATER/ GROUNDWATER

			Laboratory		PQLs	
Analyte	**CAS No**	**Method**	**Method Detection Limit (ug/L)**	**Lab Reporting Limit (ug/L)**	**NYSDEC Surface Water Class B Standards (ug/L)**	**NYSDEC Groundwater Class GA Standards (ug/L)**
Bis(2-ethylhexyl) phthalate	117-81-7	8270D			0.6	5
Di-n-octylphthalate	117-84-0	8270D			None	50
Benzo(b) fluoranthene	205-99-2	8270D			None	0.002
Benzo(k) fluoranthene	207-08-9	8270D			None	0.002
Benzo(a) pyrene	50-32-8	8270D			0.0012	None
Indeno(1,2,3,-cd) pyrene	193-39-5	8270D			None	0.002
Dibenzo(a,h) anthracene	53-70-3	8270D			None	None
Benzo(g,h,i) perylene	191-24-2	8270D			None	None
2,3,4,6-Tetrachlorophenol	58-90-2	8270D			1 (total chlorinated phenols)	1 (total phenols)

TABLE 7.4
PROJECT QUANTITATION LIMITS (PQLs) – PCB AROCLORS IN SURFACE WATER/ GROUNDWATER

			Laboratory		PQLs	
Analyte	**CAS No**	**Method**	**Method Detection Limit (ug/L)**	**Lab Reporting Limit (ug/L)**	**NYSDEC Surface Water Class B Standards (ug/L)**	**NYSDEC Groundwater Class GA Standards (ug/L)**
Aroclor 1016	12674-11-2	8082A			0.000001	0.09
Aroclor 1221	11104-28-2	8082A			0.000001	0.09
Aroclor 1232	11141-16-5	8082A			0.000001	0.09
Aroclor 1242	53469-21-9	8082A			0.000001	0.09
Aroclor 1248	12672-29-6	8082A			0.000001	0.09
Aroclor 1254	11097-69-1	8082A			0.000001	0.09
Aroclor 1260	11096-82-5	8082A			0.000001	0.09
Aroclor 1262	37324-23-5	8082A			0.000001	0.09
Aroclor 1268	11100-14-4	8082A			0.000001	0.09

TABLE 7.5
PROJECT QUANTITATION LIMITS (PQLs) – OTHER ANALYTES IN SURFACE WATER/ GROUNDWATER

Analyte	CAS No	Method	Laboratory		PQLs	
			Method Detection Limit (mg/L)	Lab Reporting Limit (mg/L)	NYSDEC Surface Water Class C Standards (mg/L)	NYSDEC Groundwater Class GA Standards (mg/L)
Diesel Range Organics	NA	8015B			None	None
Residual Range Organics	NA	8015B			None	None
NH3	7664-41-7	350.2			None	2
TOC	NA				None	None
DOC	NA				None	None
Total Organic halides	NA				None	None
TSS	NA				None	None
TDS	NA				None	None
Hardness	NA	130.2			None	None
Alkalinity	NA				None	None
Sulfate	NA				None	250
Nitrate	NA				None	10
Chloride	NA				None	250

TABLE 7.6
PROJECT QUANTITATION LIMITS (PQLs) – METALS IN SOIL/SEDIMENT

Analyte	CAS No	Method	Laboratory		PQLs	
			Method Detection Limit (mg/Kg)	Lab Reporting Limit (mg/Kg, dry weight)	NYSDEC Sediment Guidance Values (mg/Kg)	NYSDEC Unrestricted Use Soil Cleanup Objectives (mg/Kg)
Aluminum	7429-90-5	6010C			None	None
Antimony	7440-36-0	6010C			None	None
Arsenic	7440-38-2	6010C			10	13
Barium	7440-39-3	6010C			None	350
Beryllium	7440-41-7	6010C			None	7.2
Cadmium	7440-43-9	6010C			1	2.5
Calcium	7440-70-2	6010C			None	None
Chromium	7440-47-3	6010C			43	30
Cobalt	7440-48-4	6010C			None	None
Copper	7440-50-8	6010C			32	50
Iron	7439-89-6	6010C			None	None
Lead	7439-92-1	6010C			36	63
Magnesium	7439-95-4	6010C			None	None
Manganese	7439-96-5	6010C			None	1600
Mercury	7439-97-6	7471			0.2	0.18
Nickel	7440-02-0	6010C			23	30
Potassium	2023695	6010C			None	None
Selenium	7782-49-2	6010C			None	3.9
Silver	7440-22-4	6010C			1	2
Sodium	7440-23-5	6010C			None	None
Thallium	7440-28-0	6010C			None	None
Vanadium	7440-62-2	6010C			None	None
Zinc	7440-66-6	6010C			120	109

TABLE 7.7
PROJECT QUANTITATION LIMITS (PQLs) – VOLATILE ORGANIC COMPOUNDS (VOCs) IN SOIL/ SEDIMENT

			Laboratory		PQLs	
Analyte	**CAS No**	**Method**	**Method Detection Limit (ug/Kg)**	**Lab Reporting Limit (ug/Kg, dry weight)**	**NYSDEC Sediment Guidance Values (ug/Kg)**	**NYSDEC Unrestricted Use Soil Cleanup Objectives (ug/Kg)**
Dichlorodifluoromethane	75-71-8	8260C			None	100000
Chloromethane	74-87-3	8260C			None	100000
Vinyl chloride	75-01-4	8260C			None	20
Bromomethane	74-83-9	8260C			None	100000
Chloroethane	75-00-3	8260C			None	100000
Trichlorofluoromethane	75-69-4	8260C			None	100000
1,1-Dichloroethene	75-35-4	8260C			520	330
1,1,2-Trichloro-1,2,2-trifluoroethane	76-13-1	8260C			None	100000
Acetone	67-64-1	8260C			None	50
Carbon disulfide	75-15-0	8260C			None	100000
Methyl acetate	79-20-9	8260C			None	100000
Methylene chloride	75-09-2	8260C			None	50
trans-1,2-Dichloroethene	156-60-5	8260C			1,200	190
Methyl tert-butyl ether	1634-04-4	8260C			None	930
1,1-Dichloroethane	75-34-3	8260C			None	270
cis-1,2-Dichloroethene	156-59-2	8260C			None	250
2-Butanone (Methyl ethyl ketone)	78-93-3	8260C			None	120
Bromochloromethane	74-97-5	8260C			None	100000
Chloroform	67-66-3	8260C			None	370
1,1,1-Trichloroethane	71-55-6	8260C			None	680
Cyclohexane	110-82-7	8260C			None	100000
Carbon tetrachloride	56-23-5	8260C			1,070	760
Benzene	71-43-2	8260C			530	60
1,2-Dichloroethane	107-06-2	8260C			None	20
Trichloroethene	79-01-6	8260C			1,800	470
Methylcyclohexane	108-87-2	8260C			None	100000
1,2-Dichloropropane	78-87-5	8260C			None	100000

TABLE 7.7
PROJECT QUANTITATION LIMITS (PQLs) – VOLATILE ORGANIC COMPOUNDS (VOCs) IN SOIL/ SEDIMENT

			Laboratory		PQLs	
Analyte	**CAS No**	**Method**	**Method Detection Limit (ug/Kg)**	**Lab Reporting Limit (ug/Kg, dry weight)**	**NYSDEC Sediment Guidance Values (ug/Kg)**	**NYSDEC Unrestricted Use Soil Cleanup Objectives (ug/Kg)**
Bromodichloromethane	75-27-4	8260C			None	100000
cis-1,3-Dichloropropene	10061-01-5	8260C			None	100000
4-Methyl-2-pentanone	108-10-1	8260C			None	100000
Toluene	108-88-3	8260C			930	700
trans-1,3-Dichloropropene	10061-02-6	8260C			None	100000
1,1,2-Trichloroethane	79-00-5	8260C			None	100000
Tetrachloroethene	127-18-4	8260C			16,000	1300
2-Hexanone	591-78-6	8260C			None	100000
Dibromochloromethane	124-48-1	8260C			None	100000
1,2-Dibromoethane	106-93-4	8260C			None	100000
Chlorobenzene	108-90-7	8260C			200	1100
Ethylbenzene	100-41-4	8260C			430	100000
o-Xylene	95-47-6	8260C			820	260 (total)
m,p-Xylene	179601-23-1	8260C			480	260 (total)
Styrene	100-42-5	8260C			None	100000
Bromoform	75-25-2	8260C			None	100000
Isopropylbenzene	98-82-8	8260C			None	100000
1,1,2,2-Tetrachloroethane	79-34-5	8260C			None	100000
1,3-Dichlorobenzene	541-73-1	8260C			None	2400
1,4-Dichlorobenzene	106-46-7	8260C			None	1800
1,2-Dichlorobenzene	95-50-1	8260C			None	1100
1,2-Dibromo-3-chloropropane	96-12-8	8260C			None	100000
1,2,4-Trichlorobenzene	120-82-1	8260C			35000	100000
1,2,3-Trichlorobenzene	87-61-6	8260C			230	100000

Note: The NYSDEC sediment guidance values presented in this table are based on a sediment organic carbon content of 2 percent.

TABLE 7.8
PROJECT QUANTITATION LIMITS (PQLs) – SEMIVOLATILE ORGANIC COMPOUNDS (SVOCs) IN SOIL/ SEDIMENT

			Laboratory		PQLs	
Analyte	**CAS No**	**Method**	**Method Detection Limit (ug/Kg)**	**Lab Reporting Limit (ug/Kg, dry weight)**	**NYSDEC Sediment Guidance Values (ug/Kg)**	**NYSDEC Unrestricted Use Soil Cleanup Objectives (ug/Kg)**
1.4-Dioxane	123-91-1	8270D			None	100000
Benzaldehyde	100-52-7	8270D			None	100000
Phenol	108-95-2	8270D			None	330
Bis(2-chloroethyl) ether	111-44-4	8270D			None	100000
2-Chlorophenol	95-57-8	8270D			None	100000
2-Methylphenol	95-48-7	8270D			None	330
3-Methylphenol	108-39-4	8270D			None	330
2,2'-Oxybis(1-choloropropane)	108-60-1	8270D			None	100000
Acetophenone	98-86-2	8270D			None	100000
4-Methylphenol	106-44-5	8270D			None	330
N-Nitroso-di-n propylamine	621-64-7	8270D			None	100000
Hexachloroethane	67-72-1	8270D			None	100000
Nitrobenzene	98-95-3	8270D			None	100000
Isophorone	78-59-1	8270D			None	100000
2-Nitrophenol	88-75-5	8270D			None	100000
2,4-Dimethylphenol	105-67-9	8270D			None	100000
Bis(2-chloroethoxy) methane	111-91-1	8270D			None	100000
2,4-Dichlorophenol	120-83-2	8270D			None	100000
Naphthalene	91-20-3	8270D			4000[(a)]	12000
4-Chloroaniline	106-47-8	8270D			None	100000
Hexachlorobutadiene	87-68-3	8270D			None	100000
Caprolactam	105-60-2	8270D			None	100000
4-Chloro-3-methylphenol	59-50-7	8270D			None	100000
2-Methylnaphthalene	91-57-6	8270D			None	100000
Hexachlorocyclopentadiene	77-47-4	8270D			None	100000
2,4,6-Trichlorophenol	88-06-2	8270D			None	100000

TABLE 7.8
PROJECT QUANTITATION LIMITS (PQLs) – SEMIVOLATILE ORGANIC COMPOUNDS (SVOCs) IN SOIL/ SEDIMENT

			Laboratory		PQLs	
Analyte	CAS No	Method	Method Detection Limit (ug/Kg)	Lab Reporting Limit (ug/Kg, dry weight)	NYSDEC Sediment Guidance Values (ug/Kg)	NYSDEC Unrestricted Use Soil Cleanup Objectives (ug/Kg)
2,4,5-Trichlorophenol	95-95-4	8270D			None	100000
1,1'-Biphenyl	92-52-4	8270D			None	100000
2-Chloronaphthalene	91-58-7	8270D			None	100000
2-Nitroaniline	88-74-4	8270D			None	100000
Dimethylphthalate	131-11-3	8270D			None	100000
2,6-Dinitrotoluene	606-20-2	8270D			None	100000
Acenaphthylene	208-96-8	8270D			4000[(a)]	100000
3-Nitroaniline	99-09-2	8270D			None	100000
Acenaphthene	83-32-9	8270D			4000	20000
2,4-Dinitrophenol	51-28-5	8270D			None	100000
4-Nitrophenol	100-02-7	8270D			None	100000
Dibenzofuran	132-64-9	8270D			None	100000
2,4-Dinitrotoluene	121-14-2	8270D			None	100000
Diethylphthalate	84-66-2	8270D			None	100000
Fluorene	86-73-7	8270D			4000[(a)]	30000
4-Chlorophenyl-phenyl ether	7005-72-3	8270D			None	100000
4-Nitroaniline	100-01-6	8270D			None	100000
4,6-Dinitro-2-methylphenol	534-52-1	8270D			None	100000
N-Nitrosodiphenylamine	86-30-6	8270D			None	100000
1,2,4,5-Tetrachlorobenzene	95-94-3	8270D			None	100000
4-Bromophenyl-phenylether	101-55-3	8270D			None	100000
Hexachlorobenzene	118-74-1	8270D			None	100000
Atrazine	1912-24-9	8270D			None	100000
Pentachlorophenol	87-86-5	8270D			None	800
Phenanthrene	85-01-8	8270D			4000[(a)]	100000
Anthracene	120-12-7	8270D			4000[(a)]	100000
Carbazole	86-74-8	8270D			None	100000

TABLE 7.8
PROJECT QUANTITATION LIMITS (PQLs) – SEMIVOLATILE ORGANIC COMPOUNDS (SVOCs) IN SOIL/ SEDIMENT

			Laboratory		PQLs	
Analyte	**CAS No**	**Method**	**Method Detection Limit (ug/Kg)**	**Lab Reporting Limit (ug/Kg, dry weight)**	**NYSDEC Sediment Guidance Values (ug/Kg)**	**NYSDEC Unrestricted Use Soil Cleanup Objectives (ug/Kg)**
Di-n-butylphthalate	84-74-2	8270D			None	100000
Fluoranthene	206-44-0	8270D			4000[(a)]	100000
Pyrene	129-00-0	8270D			4000[(a)]	100000
Butylbenzylphthalate	85-68-7	8270D			None	100000
3,3'-Dicholorobenzidine	91-94-1	8270D			None	100000
Benzo(a)anthracene	56-55-3	8270D			4000[(a)]	1000
Chrysene	218-01-9	8270D			4000[(a)]	1000
Bis(2-ethylhexyl) phthalate	117-81-7	8270D			None	100000
Di-n-octylphthalate	117-84-0	8270D			None	100000
Benzo(b) fluoranthene	205-99-2	8270D			4000[(a)]	1000
Benzo(k) fluoranthene	207-08-9	8270D			4000[(a)]	800
Benzo(a) pyrene	50-32-8	8270D			None	100000
Indeno(1,2,3,-cd) pyrene	193-39-5	8270D			4000[(a)]	500
Dibenzo(a,h) anthracene	53-70-3	8270D			4000[(a)]	330
Benzo(g,h,i) perylene	191-24-2	8270D			4000[(a)]	100000
2,3,4,6-Tetrachlorophenol	58-90-2	8270D			None	100000

Note: [(a)] - 4,000 ug/Kg is the NYSDEC Class A sediment guidance value for total PAHs.

TABLE 7.9
PROJECT QUANTITATION LIMITS (PQLs) – PESTICIDES IN SOIL/ SEDIMENT

Analyte	CAS No	Method	Laboratory		PQLs	
			Method Detection Limit (ug/Kg)	Lab Reporting Limit (ug/Kg, dry weight)	NYSDEC Sediment Guidance Values (ug/Kg)	NYSDEC Unrestricted Use Soil Cleanup Objectives (ug/Kg)
alpha-BHC	319-84-6	8081			None	20
beta-BHC	319-85-7	8081			None	36
delta-BHC	319-86-8	8081			None	40
gamma-BHC (Lindane)	58-89-9	8081			47	100
Heptachlor	76-44-8	8081			75	42
Aldrin	309-00-2	8081			None	5
Heptachlor epoxide	1024-57-3	8081			15	None
Endosulfan I	959-98-8	8081			1 (total)	2400
Dieldrin	60-57-1	8081			180	5
4,4'-DDE	72-55-9	8081			3.2	3.3
Endrin	72-20-8	8081			2.2	14
Endosulfan II	33213-65-9	8081			1 (total)	2400
4,4'-DDD	72-54-8	8081			4.9	3.3
Endosulfan sulfate	1031-07-8	8081			None	2400
4,4'-DDT	50-29-3	8081			4.2	3.3
Methoxychlor	72-43-5	8081			59	None
Endrin ketone	53494-70-5	8081			None	None
Endrin aldehyde	7421-93-4	8081			None	None
cis-Chlordane	5103-71-9	8081			68 (total)	94
trans-Chlordane	5103-74-2	8081			68 (total)	94
Toxaphene	8001-35-2	8081			6	None

Note: The NYSDEC sediment guidance values presented in this table are based on a sediment organic carbon content of 2 percent.

TABLE 7.10
PROJECT QUANTITATION LIMITS (PQLs) – HERBICIDES IN SOIL/SEDIMENT

Analyte	CAS No	Method	Laboratory		PQLs	
			Method Detection Limit (ug/Kg)	Lab Reporting Limit (ug/Kg, dry weight)	NYSDEC Sediment Guidance Values (ug/Kg)	NYSDEC Unrestricted Use Soil Cleanup Objectives (ug/Kg)
2,4,5-T	93-76-5	8151A			None	None
2,4,5-TP (Silvex)	93-72-1	8151A			None	None
2,4-D	94-75-7	8151A			None	None
2,4-DB	94-82-6	8151A			None	None
Dalapon	75-99-0	8151A			None	None
Dicamba	1918-00-9	8151A			180	None
Dichlorprop	120-36-5	8151A			None	None
Dinoseb	88-85-7	8151A			None	None
MCPA	94-74-6	8151A			None	None
MCPP	93-65-2	8151A			None	None

TABLE 7.11
PROJECT QUANTITATION LIMITS (PQLs) – PCB AROCLORS IN SOIL/ SEDIMENT

			Laboratory		PQLs	
Analyte	**CAS No**	**Method**	**Method Detection Limit (ug/Kg)**	**Lab Reporting Limit (ug/Kg, dry weight)**	**NYSDEC Sediment Guidance Values (ug/Kg)**	**NYSDEC Unrestricted Use Soil Cleanup Objectives (ug/Kg)**
Aroclor 1016	12674-11-2	8082A			100	100
Aroclor 1221	11104-28-2	8082A			100	100
Aroclor 1232	11141-16-5	8082A			100	100
Aroclor 1242	53469-21-9	8082A			100	100
Aroclor 1248	12672-29-6	8082A			100	100
Aroclor 1254	11097-69-1	8082A			100	100
Aroclor 1260	11096-82-5	8082A			100	100
Aroclor 1262	37324-23-5	8082A			100	100
Aroclor 1268	11100-14-4	8082A			100	100

Note: The NYSDEC sediment guidance value presented in this table is for total PCBs.

TABLE 7.12
PROJECT QUANTITATION LIMITS (PQLs) – DIOXINS AND FURANS IN SOIL/ SEDIMENT

Analyte	CAS No	Method	Laboratory		PQLs	
			Method Detection Limit (ug/Kg)	Lab Reporting Limit (ug/Kg, dry weight)	NYSDEC Sediment Guidance Values (ug/Kg)	NYSDEC Unrestricted Use Soil Cleanup Objectives (ug/Kg)
2,3,7,8-TCDD	1746-01-6	8290A			0.0005	None
1,2,3,7,8-PeCDD	40321-76-4	8290A			None	None
1,2,3,4,7,8-HxCDD	39227-28-6	8290A			None	None
1,2,3,6,7,8-HxCDD	57653-85-7	8290A			None	None
1,2,3,7,8,9-HxCDD	19408-74-3	8290A			None	None
1,2,3,4,6,7,8-HpCDD	35822-46-9	8290A			None	None
OCDD	3268-87-9	8290A			None	None
2,3,7,8-TCDF	51207-31-9	8290A			None	None
1,2,3,7,8-PeCDF	57117-41-6	8290A			None	None
2,3,4,7,8-PeCDF	57117-31-4	8290A			None	None
1,2,3,4,7,8-HxCDF	70648-26-9	8290A			None	None
1,2,3,6,7,8-HxCDF	57117-44-9	8290A			None	None
1,2,3,7,8,9-HxCDF	72918-21-9	8290A			None	None
2,3,4,6,7,8-HxCDF	60851-34-5	8290A			None	None
1,2,3,4,6,7,8-HpCDF	67562-39-4	8290A			None	None
1,2,3,4,7,8,9-HpCDF	55673-89-7	8290A			None	None
OCDF	39001-02-0	8290A			None	None

Note: The NYSDEC sediment guidance value presented in this table is based on a sediment organic carbon content of 2 percent.

TABLE 7.13
PROJECT QUANTITATION LIMITS (PQLs) – OTHER ANALYTES IN SOIL/ SEDIMENT

Analyte	CAS No	Method	Laboratory		PQLs	
			Method Detection Limit (mg/Kg)	Lab Reporting Limit (mg/Kg, dry weight)	NYSDEC Sediment Guidance Values (mg/Kg)	NYSDEC Unrestricted Use Soil Cleanup Objectives (mg/Kg)
Diesel Range Organics	NA	8015B			None	None
Residual Range Organics	NA	8015B			None	None
TOC	NA	Lloyd Kahn			None	None
pH	NA	9045D			None	None
Sediment Toxicity Survival %	NA	EPA 600/R-01/020			80%	None

TABLE 7.14
PROJECT QUANTITATION LIMITS (PQLs) – METALS IN BENTHIC MACROINVERTEBRATES/ FISH

Analyte	CAS No	Method	Laboratory		PQLs
			Method Detection Limit (mg/Kg)	Lab Reporting Limit (mg/Kg, dry weight)	NYSDEC Minimum Reporting Level (mg/Kg)
Arsenic	7440-38-2	6010C			1.0
Cadmium	7440-43-9	6010C			0.5
Copper	7440-50-8	6010C			2.5
Lead	7439-92-1	6010C			0.5
Nickel	7440-02-0	6010C			4.0
Silver	7440-22-4	6010C			None
Mercury	7439-97-6	7471			0.033
Zinc	7440-66-6	6010C			2.0

Note: Minimum reporting levels are from NYSDEC SOP 208-14 (April 18, 2014).

TABLE 7.15
PROJECT QUANTITATION LIMITS (PQLs) – PAHs IN BENTHIC MACROINVERTEBRATES

Analyte	CAS No	Method	Laboratory		PQLs
			Method Detection Limit (ug/Kg)	Lab Reporting Limit (ug/Kg, dry weight)	NYSDEC Minimum Reporting Level (ug/Kg)
Acenaphthene	83-32-9	8270D			None
Acenaphthylene	208-96-8	8270D			None
Anthracene	120-12-7	8270D			None
Benzo(a)anthracene	56-55-3	8270D			0.6
Benzo(a)pyrene	50-32-8	8270D			None
Benzo(b)fluoranthene	205-99-2	8270D			None
Benzo(g,h,i)perylene	191-24-2	8270D			None
Benzo(k)fluoranthene	207-08-9	8270D			None
Chrysene	218-01-9	8270D			0.6
Dibenz(a,h)anthracene	53-70-3	8270D			None
Fluoranthene	206-44-0	8270D			2.4
Fluorene	86-73-7	8270D			None
Indeno(1,2,3-cd) pyrene	193-39-5	8270D			None
Naphthalene	91-20-3	8270D			None
Phenanthrene	85-01-8	8270D			12.0
Pyrene	129-00-0	8270D			1.8

Note: Minimum reporting levels are from NYSDEC SOP 208-14 (April 2014).

TABLE 7.16
PROJECT QUANTITATION LIMITS (PQLs) – PESTICIDES IN BENTHIC MACROINVERTEBRATES/FISH

Analyte	CAS No	Method	Laboratory		PQLs
			Method Detection Limit (ug/Kg)	Lab Reporting Limit (ug/Kg, dry weight)	NYSDEC Minimum Reporting Level (ug/Kg)
alpha-BHC	319-84-6	8081			None
beta-BHC	319-85-7	8081			None
delta-BHC	319-86-8	8081			None
gamma-BHC (Lindane)	58-89-9	8081			75
Heptachlor	76-44-8	8081			90
Aldrin	309-00-2	8081			40
Heptachlor epoxide	1024-57-3	8081			90
Endosulfan I	959-98-8	8081			None
Dieldrin	60-57-1	8081			None
4,4'-DDE	72-55-9	8081			90
Endrin	72-20-8	8081			40
Endosulfan II	33213-65-9	8081			None
4,4'-DDD	72-54-8	8081			90
Endosulfan sulfate	1031-07-8	8081			90
4,4'-DDT	50-29-3	8081			90
Methoxychlor	72-43-5	8081			900
Endrin ketone	53494-70-5	8081			None
Endrin aldehyde	7421-93-4	8081			None
cis-Chlordane	5103-71-9	8081			None
trans-Chlordane	5103-74-2	8081			None
Toxaphene	8001-35-2	8081			1,800

Note: Minimum reporting levels are from NYSDEC SOP 208-14 (April 2014).

TABLE 7.17
PROJECT QUANTITATION LIMITS (PQLs) – PCB AROCLORS IN BENTHIC MACROINVERTEBRATES/FISH

Analyte	CAS No	Method	Laboratory		PQLs
			Method Detection Limit (ug/Kg)	Lab Reporting Limit (ug/Kg, dry weight)	NYSDEC Minimum Reporting Level (ug/Kg)
Aroclor 1016	12674-11-2	8082A			90
Aroclor 1221	11104-28-2	8082A			90
Aroclor 1232	11141-16-5	8082A			90
Aroclor 1242	53469-21-9	8082A			90
Aroclor 1248	12672-29-6	8082A			90
Aroclor 1254	11097-69-1	8082A			90
Aroclor 1260	11096-82-5	8082A			90
Aroclor 1262	37324-23-5	8082A			90
Aroclor 1268	11100-14-4	8082A			90

Note: Minimum reporting levels are from NYSDEC SOP 208-14 (April 2014).

TABLE 7.18
PROJECT QUANTITATION LIMITS (PQLs) – HERBICIDES IN BENTHIC MACROINVERTEBRATES/FISH

Analyte	CAS No	Method	Laboratory		PQLs
			Method Detection Limit (ug/Kg)	Lab Reporting Limit (ug/Kg, dry weight)	NYSDEC Minimum Reporting Level (ug/Kg)
2,4,5-T	93-76-5	8151A			None
2,4,5-TP (Silvex)	93-72-1	8151A			None
2,4-D	94-75-7	8151A			None
2,4-DB	94-82-6	8151A			None
Dalapon	75-99-0	8151A			None
Dicamba	1918-00-9	8151A			None
Dichlorprop	120-36-5	8151A			None
Dinoseb	88-85-7	8151A			None
MCPA	94-74-6	8151A			None
MCPP	93-65-2	8151A			None

TABLE 7.19
PROJECT QUANTITATION LIMITS (PQLs) – DIOXINS AND FURANS IN FISH

Analyte	CAS No	Method	Laboratory		PQLs
			Method Detection Limit (ug/Kg)	Lab Reporting Limit (ug/Kg, dry weight)	NYSDEC Minimum Reporting Level (ug/Kg)
2,3,7,8-TCDD	1746-01-6	8290A			None
1,2,3,7,8-PeCDD	40321-76-4	8290A			None
1,2,3,4,7,8-HxCDD	39227-28-6	8290A			None
1,2,3,6,7,8-HxCDD	57653-85-7	8290A			None
1,2,3,7,8,9-HxCDD	19408-74-3	8290A			None
1,2,3,4,6,7,8-HpCDD	35822-46-9	8290A			None
OCDD	3268-87-9	8290A			None
2,3,7,8-TCDF	51207-31-9	8290A			None
1,2,3,7,8-PeCDF	57117-41-6	8290A			None
2,3,4,7,8-PeCDF	57117-31-4	8290A			None
1,2,3,4,7,8-HxCDF	70648-26-9	8290A			None
1,2,3,6,7,8-HxCDF	57117-44-9	8290A			None
1,2,3,7,8,9-HxCDF	72918-21-9	8290A			None
2,3,4,6,7,8-HxCDF	60851-34-5	8290A			None
1,2,3,4,6,7,8-HpCDF	67562-39-4	8290A			None
1,2,3,4,7,8,9-HpCDF	55673-89-7	8290A			None
OCDF	39001-02-0	8290A			None

TABLE 7.20
PROJECT QUANTITATION LIMITS (PQLs) – OTHER ANALYTES IN BENTHIC MACROINVERTEBRATES/ FISH

Analyte	CAS No	Method	Laboratory		PQLs
			Method Detection Limit (ug/Kg)	Lab Reporting Limit (ug/Kg, dry weight)	NYSDEC Guidance Values (mg/Kg)
pH	NA				None
Lipids	NA				None

SECTION 8

QUALITY CONTROL

8.1 INTRODUCTION

A QC program is a systematic process that controls the validity of analytical results by measuring the accuracy and precision of method and matrix, developing expected control limits, using these to detect anomalous events, and requiring corrective action techniques to prevent or minimize the recurrence of these events. QC measurements for analytical protocols are designed to evaluate laboratory performance, and measurement biases resulting from the sample matrix and field performance.

- **Field performance:** QC samples are used to evaluate the effectiveness of the sampling program to obtain representative samples, eliminating any cross contamination. These samples will include trip blanks, field duplicates and rinse blanks.
- **Sample performance:** Factors associated with sample preparation and analysis influence accuracy and precision. Such factors are monitored by the use of internal QC samples. QC field samples are analyzed to evaluate measurement bias due to the sample matrix based on evaluation of matrix spike (MS), matrix spike duplicate (MSD), and/or matrix duplicate (MD) samples. If acceptance criteria are not met, matrix interferences are confirmed either by reanalysis or by inspection of the LCS (or MSB) results to verify that laboratory method performance is in control. Data are reported with appropriate qualifiers or discussion.
- **Laboratory method performance:** All QC criteria for method performance should be met for all target analytes for data to be reported. These criteria generally apply to instrument detector assessment (such as, tunes, ICP interference check sample), calibration, method blanks, and LCS (or MSB). Variances will be documented and noted in the case narrative of the report.

8.1.1 Field Quality Control Samples

QC samples will be collected in the field as part of the sampling program to allow evaluation of data quality. Field QA/QC samples will consist of the collection and analysis of rinse blanks, field duplicates, and “extra volume samples”, to be used for matrix spike/matrix spike duplicate (MS/MSD) samples, at a frequency of 1:20 for each sample media (sediment, porewater, and soil borings). Temperature blanks will accompany each sample shipment container (cooler) shipped to the laboratory for sample analysis. A rinse blank will be collected from disposable sampling equipment at a frequency of once per lot. Standard sample identifiers will identify field QA/QC samples and they may provide no indication of their nature as QA/QC samples.

A summary of the type and collection frequency of field QC sample to be collected respective to the sampling programs specified in this QAPP, is included in Table 8.1. A description of each QC sample is included below.

8.1.1.1 Equipment Rinse Blanks

To assess field sampling and decontamination performance, rinse blanks will be used to evaluate the effectiveness of the decontamination procedures for chemical sampling equipment. Rinse blanks will be collected as part of all chemical sampling programs, except for waste characterization. An equipment rinse blank (rinse blank) is a sample of deionized water provided by the laboratory that is poured over or through the sampling equipment (such as split spoon, wipe template), into the sample container. A rinse blank will be collected at a frequency of 1:20 samples per type of sample collection activity using non-disposable sampling equipment. A rinse blank will be collected from disposable sampling equipment at a frequency of once per lot.

8.1.1.2 Field Duplicates

Coded (blind) field duplicates will be used to assess the precision of field sampling procedures. Precision of a sample is calculated by quantifying the RPD between two sample measurements (Section 3.2.2.1). If the RPD of field duplicate results is greater than the precision criterion, environmental results for the field duplicate pair will be qualified as estimated. The Field Leader responsible for sample collection and processing should be notified to identify the source of variability (if possible), and corrective action should be taken (Section 10.3).

Coded (blind) field duplicates will be collected to evaluate the representativeness and effectiveness of homogenization and proper mixing for soil and aqueous samples. The field duplicate will be analyzed for all of the parameters for which the associated samples are being analyzed. The samples will be labeled in such a manner that the laboratory will not be able to identify the sample as a duplicate sample. This will eliminate bias that could arise by laboratory personnel.

8.1.1.3 Trip Blanks

During field sampling and sample shipping, contamination may be introduced to the samples that could affect the accuracy of analysis results. Trip blanks will be used during sample shipment to detect cross-contamination. Each cooler of aqueous samples sent to the laboratory for analysis of VOCs will contain one trip blank. Trip blanks are prepared only when VOCs samples are taken and are analyzed for VOCs analytes. The trip blank consists of a VOC sample vial filled in the laboratory with ASTM Type II reagent grade water, transported to the sampling site, handled like an environmental sample, and returned to the laboratory for analysis. Trip blanks are not opened in the field.

8.1.1.4 Temperature Blank

The temperature blank is used to indicate the temperature of the sample cooler upon receipt at the laboratory. A temperature blank consists of laboratory reagent in a 40-ml glass vial sealed with a Teflon® septum. Any cooler temperature exceeding the allowable 4 ± 2 degrees Celsius (°C) must be noted and the QAO notified prior to sample analyses.

8.1.2 Laboratory Quality Control Samples

QC data from the laboratory are necessary to determine precision and accuracy of the analyses and to demonstrate the absence of interferences and contamination of glassware and reagents. The laboratory will analyze QC samples routinely as part of the laboratory QC

procedures. Laboratory QC results will consist of analysis of MS/MSD or MS/MD, LCS (or MSB), method/preparation blanks, and surrogate spikes. The frequency of the analysis of laboratory QC is summarized in Table 8.2. QC samples will be prepared and analyzed utilizing the same preparation and analysis procedures as the field samples. These laboratory QC sample analyses will be run independently of the field QC samples. Results of these analyses will be reported with the sample data and kept in the project QC data file. The QC checks, their frequency, acceptance criteria, and corrective actions for noncompliance are summarized for each analytical method in the NYSDEC ASP.

QC samples will be prepared and analyzed utilizing the same preparation and analysis procedures as the field samples. Re-preparation and/or reanalysis of the laboratory QC samples due to a failing recovery and/or precision failure without the re-preparation and reanalysis of the associated samples is prohibited. In all events, QC failures, holding time exceedances, or any other non-standard occurrence must be communicated immediately to the QAO and prior to reporting and then, with approval to report the data, summarized in the case narrative. If the criteria are not met, appropriate corrective action must be taken as specified in Section 9.1 and Section 10.

8.1.2.1 Matrix Spike/Matrix Spike Duplicate/ Matrix Duplicates

MS/MSD, or matrix duplicates (MD) for methods not requiring MS/MSD, samples for organics, metals, and wet chemistry parameters will be taken at a frequency of 1 per 20 field samples (per SDG) per matrix per method. MD samples will be analyzed by the laboratory at frequency required by the analytical method. A “batch” is considered up to twenty samples from the same matrix, of the same extraction/digestion type, prepared and/or analyzed by a given analyst, within 12-hr, within an extraction/digestion event, whichever is more frequent. These samples are used to assess the effect of the sample matrix on the recovery of target compounds or target analytes by spiking a normal field sample with a known concentration of the analyte of interest. Samples identified as rinse blanks will not be used for the MS/MSD or MS/MD preparation or analysis.

Spiked samples will be analyzed, and the percent recovery will be calculated. Results of the analysis will be used to evaluate accuracy and precision of the actual sample matrix. For MS/MSD or MD, the result will be compared and used to evaluate the precision of the actual sample matrix. The percent recovery for each analyte in the MS and MSD should fall within the limits established by laboratory QC protocol. The percent recovery and RPD control limits between the MS and MSD and the sample and the duplicate concentrations are provided in the NYSDEC ASP.

The original sample, MS/MSD, and MD sample aliquots will be treated exactly the same throughout the sample preparation and analysis and will not be homogenized more than any other project sample (either in the field or at the laboratory). The spike samples will be analyzed for the same parameters as the sample. Field personnel must indicate on the chain-of-custody form which sample(s) are designated as MS/MSD (or MS/MD). If samples are not designated for these QC purposes and/or insufficient sample is available the Project Manager and/or QAO will be notified for resolution.

8.1.2.2 Laboratory Control Samples

Laboratory Control Samples (LCS), or matrix spike blanks (MSB) are designed to check the accuracy of the analytical procedure by measuring a known concentration of an analyte of interest. An LCS (or MSB) will be analyzed for each analytical batch requested for sample preparation and analysis. LCSs (or MSBs) must be prepared at a frequency of one per batch for all analytical methods. If high LCS (or MSB) recoveries are observed and the associated samples are reported as "not detected" for the requested target analytes, no action is necessary other than to note the issue in the case narrative of the final analytical report. LCS (or MSB) recoveries must meet the criteria specified in NYSDEC ASP.

8.1.2.3 Method and Preparation Blanks

Laboratory blank samples (also referred to as method or preparation blanks) are designed to detect contamination resulting from the laboratory environment or sample preparation procedure. Method blanks verify that method interferences caused by contaminants in solvents, reagents, glassware, or in other sample processing hardware, are known. Method blanks will be analyzed for each analytical batch using similar preparation techniques (separatory funnel and liquid/liquid extraction) to assess possible contamination and evaluate which corrective measures may be taken, if necessary.

Method blanks associated with field samples must undergo all of the processes performed on investigative samples, including but not limited to pre-filtration and sample cleanups. The blank will be deionized water for water samples or a purified solid matrix such as sodium sulfate for extractable soil samples. Where all the field samples in a batch do not require an additional cleanup procedure, an additional blank may be prepared to check the performance of the additional cleanup and will be associated with the field samples getting the specific additional cleanup. Where this is done, both blanks will be reported, and the procedure described in the case narrative. Method blanks must be prepared at a frequency of one per analytical batch.

8.1.2.4 Surrogate Spike Analyses

Surrogate spikes (applicable to organic analysis only) are used to determine the efficiency of analyte recovery in sample preparation and analysis. Calculated percent recovery of the spikes is used to measure the accuracy of the analytical method. A surrogate spike is prepared by adding a known amount of a compound similar in type to the analytes of interest. Surrogate compounds will be added to all samples analyzed by USEPA Methods, including method blanks, MS/MSDs, project environmental samples, and duplicate samples in accordance with the method. Surrogate spike recoveries should fall within the limits established by laboratory QC protocol and the NYSDEC ASP.

8.2 INSTRUMENT/EQUIPMENT TESTING, INSPECTION, AND MAINTENANCE

8.2.1 Field Equipment

Equipment failure will be minimized by routinely inspecting all field equipment to ensure that it is operational and by performing preventative maintenance procedures. Field sampling equipment will be inspected prior to sample collection activities, and repairs will be made prior to decontamination and reuse of the sampling equipment. Equipment, instruments, tools, gauges, and other items requiring preventive maintenance will be serviced in accordance with the

manufacturer's specified recommendations and written procedure, based on the manufacturer's instructions or recommendations. Maintenance will be performed in accordance with the schedule specified by the manufacturer to minimize the downtime of the measurement system. Qualified personnel must perform maintenance work.

MINIMUM ROUTINE PREVENTIVE MAINTENANCE
Removal of foreign debris from exposed surfaces
Storage in a cool dry place protected from the elements
Daily inspections
Verification of instrument calibrations (Section 8.3.1)

A list of critical spare parts will be developed prior to the initiation of fieldwork. Field personnel will have ready access to critical spare parts to minimize downtime while fieldwork is in progress. A service contract for rapid instrument repair or backup instruments may be substituted for the spare part inventory.

Non-routine maintenance procedures require field equipment to be inspected prior to initiation of fieldwork to determine whether or not it is operational. If it is not operational, it will be serviced or replaced. Batteries will be fully charged or fresh, as applicable.

8.2.2 Laboratory Instrumentation

Periodic preventive maintenance is required for all sensitive equipment. Instrument manuals will be kept on file for reference if equipment needs repair. The troubleshooting section of factory manuals may be used in assisting personnel in performing maintenance tasks.

Major instruments in the laboratory are covered by annual service contracts with manufacturers or other qualified personnel (internal or external). Under these agreements, trained service personnel make regular preventive maintenance visits. Maintenance is documented and maintained in permanent records by the individual responsible for each instrument.

The laboratory manager is responsible for preparation, documentation, and implementation of the program. The laboratory QA manger reviews implementation to verify compliance during scheduled internal audits.

Written procedures will establish the schedule for servicing critical items to minimize the downtime of the measurement system. The laboratory will adhere to the maintenance schedule and arrange any necessary and prompt service. Qualified personnel will perform required service.

8.3 INSTRUMENT/EQUIPMENT CALIBRATION AND FREQUENCY

Instruments (field and laboratory) used to perform chemical measurements will be properly calibrated prior to use to obtain valid and usable results. The requirement to properly calibrate instruments prior to use applies equally to field instruments as it does to fixed laboratory instruments to generate appropriate data to meet DQOs.

8.3.1 Field Instruments

All field analytical equipment will be calibrated immediately prior to each day's use. The calibration procedures of field instruments (such as PID, pH, temperature), will conform to manufacturer's standard instructions to ensure that the equipment functions within the allowable tolerances established by the manufacturer and required by the project. Personnel performing instrument calibrations must be trained in its proper operation and calibration. Records of all instrument calibration will be maintained by the Field Team Leader in the field logbook (Section 6.2) and will be subject to audit by the QAO or authorized personnel. The Field Team Leader will maintain copies of all the instrument manuals on the site.

8.3.2 Laboratory Instruments

A formal calibration program will control instruments and equipment used in the laboratory. The program will verify that equipment is of the proper type, range, accuracy, and precision to provide data compatible with specified requirements. Instruments and equipment that measure a quantity or whose performance is expected at a stated level will be subject to calibration. Laboratory personnel or external calibration agencies or equipment manufacturers will calibrate the instruments using reference standards. Upon request, the laboratory will provide all data and information to demonstrate that the analytical system was properly calibrated at the time of analysis including calibration method, frequency, source of standards, concentration of standards, response factors, linear range, check standards, and all control limits. This data will be documented in a calibration record (Section 6.3.1). Calibration records will be prepared and maintained for each piece of equipment subject to calibration.

This section provides an overview of the practices used by the laboratory to implement a calibration program. Detailed calibration procedures, calibration frequencies, and acceptance criteria are specified in the laboratory’s analytical method SOPs. The requirements for the calibration of instruments and equipment depend on the type and expected performance of individual instruments and equipment. Therefore, the laboratory will use the guidelines provided here to develop a calibration program.

Two types of calibration are described in this section: periodic calibration and operational calibration. The results of the calibration activities will be documented in the analytical data package and the calibration records (Section 6.3.1).

- **Periodic calibration:** Performed at prescribed intervals for equipment, such as balances and thermometers. In general, equipment which can be calibrated periodically is a distinct, singular purpose unit and is relatively stable in performance.
- **Operational calibration:** routinely performed as part of an analytical procedure or test method, such as the development of a standard curve for use with an atomic absorption spectrophotometer. Operational calibration is generally performed for instrument systems.

Equipment that cannot be calibrated or becomes inoperable will be removed from service. Such equipment must be repaired and satisfactorily recalibrated before reuse. For equipment that fails calibration, analysis cannot proceed until appropriate corrective action is taken, and the

analyst achieves an acceptable calibration. This type of failure will be documented in an NCM (Section 10).

8.3.3 Calibration System

The calibration system includes calibration procedures, equipment identification, calibration frequency, calibration reference standards, calibration failure, and calibration records. These elements are described next.

8.3.3.1 Calibration Procedures

Written procedures will be used by the laboratory for all instruments and equipment subject to calibration. Whenever possible, recognized procedures, such as those published by ASTM or USEPA, will be adopted. If established procedures are not available, a procedure will be developed considering the type of equipment, stability characteristics of the equipment, required accuracy, and the effect of operational error on the quantities measured. Calibration procedure established by the laboratory must, at a minimum, meet the calibration requirements of the method on which the SOP is based.

MINIMUM CALIBRATION PROCEDURES
Equipment to be calibrated
Reference standards used for calibration
Calibration technique and sequential actions
Acceptable performance tolerances
Frequency of calibration
Calibration documentation format

8.3.3.2 Equipment Identification

Equipment that is subject to calibration is identified by a unique number assigned by the laboratory. Calibration records reference the specific instrument identification.

8.3.3.3 Calibration Frequency

Instruments and equipment will be calibrated at prescribed intervals and/or as part of the operational use of the equipment. Calibration frequency will be based on the type of equipment, inherent stability, manufacturer's recommendations, values provided in recognized standards, intended data use, specified analytical methods, effect of error upon the measurement process, and prior experience.

8.3.3.4 Calibration Reference Standards

Two types of reference standards will be used by the laboratory for calibration:

- **Physical standards**, such as weights for calibrating balances and certified thermometers for calibrating working thermometers, refrigerators and ovens, are generally used for periodic calibration. Physical reference standards that have known relationships to nationally recognized standards (such as NIST) or accepted values of natural physical constants will be used whenever possible. If national standards do not

exist, the basis for the reference will be documented. Physical reference standards will be used only for calibration and will be stored separately from equipment used in analyses. In general, physical standards will be recalibrated annually by a certified external agency, and documentation will be maintained. Balances will be calibrated against class "S" weights by an outside source annually. Physical standards such as the laboratory's class "S" weights will be recertified annually.

- **Chemical standards,** such as vendor certified stock solutions and neat compounds, will generally be used for operational calibration. The laboratory, to provide traceability for all standards used for calibration and QC samples, will document standard preparation activities.

8.3.4 Operational Calibration

Operational calibration will generally be performed as part of the analytical procedure and will refer to those operations in which instrument response (in its broadest interpretation) is related to analyte concentration. Formulas used for calibration are listed in Table 8.3.

8.3.4.1 Preparation of a Calibration Curve

Preparation of a standard calibration curve will be accomplished by analyzing calibration standards that are prepared by adding the analyte(s) of interest to the solvent that is introduced into the instrument. The concentrations of the calibration standards will be chosen to cover the working range of the instrument or method. All sample measurements will be made within this working range. Average response factors will be used or a calibration curve will be prepared by plotting or regressing the instrument responses versus the analyte concentrations. Where appropriate a best-fit curve may be used for nonlinear curves and the concentrations of the analyzed samples will be back-calculated from the calibration curve.

8.3.4.2 Periodic Calibration

Periodic calibrations are performed for equipment (such as balances and thermometers), that is required in the analytical method, but that is not routinely calibrated as part of the analytical procedure. Table 8.4 lists the periodic calibration requirements used by the laboratories.

8.4 INSPECTION/ACCEPTANCE OF SUPPLIES AND CONSUMABLES

In the laboratory, personnel qualifying reagents and standards must be trained to perform the associated instrumental analysis, including instrument calibration, calculations, and data interpretation. Laboratory personnel must document the purchase, receipt, handling, storage, and tracking of supplies and consumables used during analysis. For example, analytical standards, source materials, and reference materials used for instrumental calibration/tunes/checks must be certified and traceable to the USEPA or NIST through reference numbers documented directly in each analytical sequence. Calibration for all requested analyses must be verified by an independent second source reference. Adhering to these procedures precludes the use of expired supplies and consumables or supplies and consumables that do not meet standard acceptance criteria.

Records must be maintained on reagent and standard preparation in the LIMS reagent system or laboratory standard preparation logs. The records should indicate traceability of the

standards to their original source solution or neat compound, the name of the material, concentration, the method and date of preparation, the expiration date, storage conditions, and the preparer's initials. Each prepared reagent or standard should be labeled with a unique identifier that links the solution to the preparation documentation that specifies an expiration and/or re-evaluation date for the solution.

TABLE 8.1

SUMMARY OF FIELD QC SAMPLE TYPES AND COLLECTION FREQUENCY

Field QC Sample Type	Sample Type	Collection Frequency
Rinse	Soil/sediment, Water	Once per week for non-disposable sampling equipment. Once per lot for disposable sampling equipment.
Field Duplicates	Soil/sediment, Water	1:20 Samples
Extra Volume Sample (collected for MS/MSD)	Soil/sediment, Water, Biota	1:20 Samples

Field QA/QC samples will be identified by using standard sample identifiers that will provide no indication of their nature as QA/QC samples.

TABLE 8.2

LABORATORY QUALITY CONTROL SAMPLE FREQUENCY

QC Sample	Frequency
Method/prep Blanks	1 per analytical batch of 1-20 samples, per preparation event
Laboratory Control Sample	1 per analytical batch of 1-20 samples, per preparation event
Surrogates	Spiked into all field and QC samples (Organic Analyses)
Matrix Spike/Matrix Spike Duplicate or Matrix (Laboratory) Duplicate	1 per batch of 1-20 samples

TABLE 8.3

OPERATIONAL CALIBRATION FORMULAS

Application	Formula	Symbols
Linear calibration curves	$C = (R - a_0)/a_1$	C = analytical concentration R = instrument response a_0 = intercept of regression curve (instrument response when concentration is zero) a_1 = slope of regression curve (change in response per change in concentration)
Calibration factors [1]	$CF = A_x / C$	C = concentration (µg/L) CF = calibration factor Ax = peak size of target compound in sample extract
Response factors [2]	$RF = C_{is} A_x / C A_{is}$	C = concentration (µg/L) RF = internal standard response factor Cis = concentration of the internal standard (µg/L) Ax = area of the characteristic ion for the target compound Ais = area of the characteristic ion for the internal standard

1. Used for quantitation by the external standard technique
2. Used for quantitation by the internal standard technique

Note: For organic analysis, the laboratory will make efforts to use the best curve technique for each analyte. This practice is described in detail in the laboratory calibration criteria documents for GC analysis. This may require the use of a quadratic curve for some compounds.

TABLE 8.4

PERIODIC CALIBRATION REQUIREMENTS

Instrument	Calibration Frequency		Corrective Actions
Analytical Balances	Daily:	Sensitivity (with a Class S-verified weight)	Adjust sensitivity
	Annually:	Calibrated by outside vendor against certified Class S weights	Service balance
Thermometers	Annually:	Calibrated against certified NIST thermometers	Tag and remove from service
Automatic Pipettors	Quarterly:	Gravimetric check	Service or replacement

TABLE 8.5

SAMPLE CONCENTRATION CALCULATION FORMULAS

Application	Formula	Symbols
Linear regression calibration curves	$C = (R - a_0)/a_1$	C = analytical concentration R = instrument response a_0 = intercept of regression curve (instrument response when concentration is zero) a_1 = slope of regression curve (change in response per change in concentration)
Calibration factors [1]	$C = A_x V_f / CF V_i$	C = concentration (µg/L) CF = calibration factor A_x = peak size of target compound in sample extract V_f = final volume of extracted sample (mL) V_i = initial volume of sample extracted (mL)
Response factors [2]	$C = C_{is} A_x V_f / RF A_{is} V_I$	C = concentration (µg/L) RF = internal standard response factor C_{is} = concentration of the internal standard (µg/L) A_x = area of the characteristic ion for the target compound V_f = final volume of extracted sample (mL) A_{is} = area of the characteristic ion for the internal standard V_i = initial volume of sample extracted (mL)
Residues [3]	R = (W – T)/V x 1,000,000	R^6 = residue concentration (mg/L) W = weight of dried residue + container (g) T = tare weight of container (g) V = volume of sample used (mL)
Solid samples [4]	K = C V D / W (%S/100)	K = dry-weight concentration (mg/kg) C = analytical concentration (mg/L) V = final volume (mL) of processed sample solution D = dilution factor W = wet weight (g) of as-received sample taken for analysis %S = percent solids of as-received sample

1. Used for quantitation by the external standard technique
2. Used for quantitation by the internal standard technique
3. Used for total, filterable, nonfilterable, and volatile residues as well as gravimetric oil and grease
4. Used to calculate the dry-weight concentration of a solid sample from the analytical concentration of the processed sample.
5. Conversion factor to convert g/mL to mg/L:

$$\frac{mg}{L} = \frac{g}{mL} \times \frac{10^3 mL}{L} \times \frac{10^3 mg}{g}$$

SECTION 9

DATA VALIDATION AND USABILITY ELEMENTS

9.1 DATA REVIEW, VERIFICATION, AND VALIDATION

The data collected during this project will undergo a systematic review for compliance with the DQOs and performance objectives as stated in Section 3. In particular, field, laboratory, and data management activities will be reviewed to confirm compliance with the method QC criteria for performance and accuracy and to show that data were collected in a manner that is appropriate for accomplishing the project objectives. These data will be evaluated as to their usability during data verification. In particular, data outside QC criteria, but not rejected, will be reviewed for possible high and low bias. All data will be validated following verification and reduction.

Qualified data validation personnel will assess and verify data; they will review the data against QC criteria, DQOs (Sections 3 and 9.2.2), NYSDEC ASP, and USEPA Region 2 SOPs for data review to identify outliers or errors and to flag suspect values. Field and laboratory activities that should be reviewed include, at a minimum, sample collection, handling, and processing techniques; field documentation records; verification of proper analytical methods; analytical results of QC samples; and calibration records for laboratory instruments and field equipment. A review of such elements is necessary to demonstrate whether the DQOs outlined in 3 were met. Samples that deviate from the experimental design and affect the project objectives must be reported to the QAO and data validation personnel.

Departures from standard procedures (in the FAP, this QAPP, or the laboratory SOPs, may lead to exclusion of that data from the project database or validation process, based on discussions with and approval of the NYSDEC. However, routine field audits involving thorough reviews of sample collection procedures and sample documentation should preclude such deviations from occurring. Additionally, routine laboratory audits will be used to document proper sample receipt, storage, and analysis; instrument calibration; use of the proper analytical methods; and use of QC samples specified in Section 8 to assist in appropriately qualifying the data.

The laboratory's analytical report for each sample delivery group (SDG) will be assembled by collecting and incorporating all the data for each analysis associated with the reported samples; the analytical narratives; and other report-related information such as copies of chain-of-custody forms, communication records, and nonconformance forms. The information included in the analytical data report is summarized in Attachment 1.

Before the laboratory submits data, the laboratory's data review process will include a full first level "technical" review by the laboratory's analyst during sample analysis and data generation. The review must include a check of all QC data for errors in transcription, calculations, and dilution factors and for compliance with QC requirements. Failure to meet method performance QC criteria may result in the reanalysis of the sample or analytical batch.

After the initial review is completed, the data will be collected from summary sheets, workbooks, or computer files and assembled into a data package.

The laboratory's first review will be followed by a second-level technical review of the data package. The second level review may be performed by a peer trained in the procedures being reviewed or by the appropriate analytical group supervisor. The reviewer will check the data packages for completeness and compliancy with the project requirements and will certify that the report meets the DQOs for PARCCS specifications. The report narrative will be generated at this stage of the data review. Any problems discovered during the review and the corrective actions necessary to resolve them will be communicated to the responsible individual, who will discuss the findings with the laboratory QA manager for resolution.

The first and second review will be conducted throughout sample analysis and data generation to validate data integrity during collection and reporting of analytical data. Data review checklists will be used to document the performance and review of the QC and analytical data.

Before the laboratory's final release to the client, the data will undergo a final review by the laboratory's QA officer or his/her designee. This third level review is to confirm that the report is complete and meets project requirements for performance and documentation. The laboratory's QA officer must review reports involving non-conforming data issues. A summary of all non-conformances will be included in the case narrative. The report will then be released to the client for data validation, and a copy will be archived by the laboratory for a period of 7 yrs.

The laboratory analytical data will be validated using project-specific data validation procedures to confirm that data meet the applicable data quality objectives. Depending on the type of data and the intended data uses, the data validation process for a given SDG (or a specific percentage of sample analyses) or analytical method may be performed following an EPA Level IV protocol (full validation), or an EPA Level III protocol (sample plus QC summary data only, no raw data review). The project-specific Level III data validation protocol will provide a level of review resulting in the generation of a data usability summary report (DUSR), as defined by NYSDEC. Level III validation will be performed on all DQO Level III and all DQO Level IV data. Ten percent (10%) of the DQO Level IV Data for each analytical method will undergo a Level IV validation. Certain geotechnical and field screening data may be evaluated in a manner suitable for the intended data uses.

A data validation report will be issued and reviewed by the QAO before finalization. The data validation report will present the results of data validation, including a summary assessment of laboratory data packages, sample preservation and chain-of-custody procedures, and a summary assessment of PARCCS criteria for each analytical method. The validation criteria are objective and are not sample dependent, except for consideration of sample matrix effects. The criteria specify performance requirements that should be under the control of the field-sampling contractor or analytical laboratory. This QAPP will be the primary reference for evaluating the data.

After data validation, the data will be evaluated for consistency with site conditions and developed conceptual models. Data validation personnel will prepare a project DUSR that summarizes the implications of the use of any data out of criteria. In addition, the data usability

report will include the percentage of sample completeness for critical and non-critical samples and a discussion of any issues in representativeness of the data that may develop as a result of validation. The data usability report will address overall data quality and achievement of PARCCS criteria and assess issues associated with the overall data and data quality for all validated Level III and Level IV data.

9.2 VERIFICATION AND VALIDATION METHODS

9.2.1 Laboratory

The laboratory will verify and assess analytical data against the stated requirements on the chain-of-custody record, the sample handling procedures (Section 4), and the QC parameters. The laboratory data reviewers will also check that transcriptions of raw or final data and calculations were performed correctly and are verified.

Following data verification, analytical data generated by the laboratory will be reduced and managed based on the procedures specified in this QAPP and analytical methodologies. Data reduction includes all processes that change either the values or numbers of data items. The data reduction processes used in the laboratory includes establishment of calibration curves, calculation of sample concentrations from instrument responses, and computation of QC parameters. Table 8.5 lists the formulas used to calculate sample concentrations.

The reduction of instrument responses to sample concentrations takes different forms for different types of methods. For most analyses, the sample concentrations are calculated from the measured instrument responses using a calibration curve. The sample concentrations can be back-calculated from a regression equation fitted to calibration data. For gravimetric and titrimetric analyses, the calculations are performed according to equations given in the method. For chromatographic analyses, the unknown concentrations are determined using either calibration factors (external standard procedure) or relative response factors (internal standard procedure). GC analyses are generally quantitated using the external standard technique; GC/MS analyses are quantitated using the internal standard technique. These calculations are generally performed by the associated computerized data systems.

Validated analytical data will be loaded into a database and reported in tabular format. Database fields will include the field sample identification, laboratory sample identification, blinded sample number, analytical results, detection limits, and validation qualifiers. The usability of the data will be evaluated by the QAO or designee.

9.2.2 Analytical Data Validation

The data review process is performed in two phases:

1. **Initial phase, contract compliance screening (CCS)**: Review of sample data deliverables for completeness. Completeness is evaluated by ensuring that all required data deliverables are received in a legible format with all required information. The CCS process also includes a review of the chain-of-custody forms, case narratives, and RLs. Sample resubmission requests, documentation of nonconformances with respect to data deliverable completeness, and corrective actions often are initiated during the CCS review. The results of the CCS process are incorporated into the data validation process.

2. **Second phase, data validation:** A project-specific data validation procedure based on a "Level III" or the "Level IV" validation protocol will be performed on the analytical results from the fixed-base laboratory or laboratories, with the exception of the bench-scale testing data. The EPA Level III validation protocol includes a review of summary information to determine adherence to analytical holding times, results from analysis of field duplicates, method blanks, field blanks, surrogate spikes, MS/MSDs, LCSs (or MSBs), sample temperatures during shipping and storage, initial and continuing calibration forms, internal standard area count forms, and any other QC forms. Data qualifiers are applied to analytical results during the data validation process based on adherence to method protocols and laboratory-specific QA/QC limits. The EPA Level IV validation protocol incorporates the Level III validation protocol and adds calculation checks from the raw data of reported and summarized sample data and QC results.

FULL VALIDATION (USEPA LEVEL IV EQUIVALENT)	
Organic Analytical Methods	**Inorganic Constituents, Wet Chemistry Parameters**
Percentage of solids	Percentage of solids
Sample preservation and holding times	Sample preservation and holding times
Instrument tuning	Calibrations
Instrument calibrations	Blank results
Blank results	Interference check samples (inorganics only)
System monitoring compounds or surrogate recovery compounds (as applicable)	LCSs
Internal standard recovery results	Project Required Reporting Limit (PRRL) standard check samples
MS and MSD (or MD) results	Duplicates
LCS (or MSB) results	MSs (pre-digestions and post-digestions for inorganics only)
Target compound identification	ICP serial dilutions and
Chromatogram quality	Results verification and reported detection limits
Duplicate results	
Compound reporting limits (RLs)	
System performance and	
Results verification	

The laboratory will send the required analytical data package deliverables, consisting of CD-ROM and hardcopy versions and the EDD, following completion of the laboratory's validation process (Section 9.2.2). Data validation will be performed in accordance with the USEPA Region 2 Data Validation SOPs for organic and inorganic data review (USEPA, 2012a, 2012b, 2012c, 2013c, 2013d, 2013e, 2013f). In addition, Parsons will refer to this QAPP and the Work Assignment Scoping Documents to verify that DQOs were met. If problems are identified during data validation, the QAO and the laboratory QA manager will be alerted, and corrective actions

will be requested. The LPM and data validation chemists will maintain close contact with the QAO to ensure all nonconformance issues are acted upon prior to data manipulation and assessment routines.

Data validation will be conducted using the USEPA guidelines (USEPA, 2008, 2010, 2013a, 2013b, 2013g, 2013h) as supplementary guidelines. Where CLP guidelines and SW-846 disagree, this QAPP and data validation professional judgment will prevail.

Trained and experienced data validation chemists will perform the data validation work. The QAO will review the data validation report before it is finalized. The data validation report will present the results of data validation, including a summary assessment of laboratory data packages, sample preservation and chain-of-custody procedures, and a summary assessment of PARCCS criteria for each analytical method. A detailed assessment of each SDG will follow. Based on the results of data validation, the validated analytical results reported will be assigned a usability flag (see chart below).

USABILITY FLAGS FOR VALIDATED RESULTS	
U	The analyte was analyzed for, but was not detected above the level of the reporting limit.
UJ	Analyte was analyzed for, but was not detected. The reporting limit is approximate and may be inaccurate or imprecise.
J	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
J+	The result is an estimated quantity, but the result may be biased high.
J-	The result is an estimated quantity, but the result may be biased low.
NJ	The analysis indicates the presence of an analyte that has been "tentatively identified" and the associated numerical value represents its approximate concentration.
R	The data are unusable. The sample results are rejected due to serious deficiencies in meeting Quality Control (QC) criteria. The analyte may or may not be present in the sample.
C	This qualifier applies to GC results when the identification has been confirmed by Gas Chromatograph/Mass Spectrometer (GC/MS)
X	This qualifier applies to results when GC/MS analysis was attempted by unsuccessful.
No flag	Result accepted without qualification

9.3 RECONCILIATION WITH USER REQUIREMENTS

Following data validation by qualified personnel, the data will be evaluated by the QAO and the project manager as to consistency with site conditions and developed conceptual models to determine whether field and analytical data meet the requirements for decision making. Specifically, the results of the measurements will be compared to the DQOs (Section 3).

The DQOs will be considered complete and satisfied if the data are identified as usable and if no major data gaps are identified. For example, the objective for data collected under the characterization program is to further refine the limits of dredging and/or capping. If the collected data sufficiently characterizes these limits in a manner that is acceptable for remedial action, then the DQO is satisfied. In cases where data may be considered not usable (for example, rejected during data validation), resampling may be required at a specific location. If resampling is not possible, the data will be identified and noted in the project database to make data users aware of its limitations.

SECTION 10

ASSESSMENT AND OVERSIGHT

10.1 ASSESSMENTS AND RESPONSE ACTIONS

Performance and system audits of both field and laboratory activities may be performed. Any such audits will be performed at a frequency to be determined to ensure that sampling and analysis activities are completed in accordance with the procedures specified in the FAP and this QAPP.

Quality assurance audits will be carried out under the direction of the QAO on field activities, including sampling and field measurements. They will be implemented to verify that established procedures are being followed and to evaluate the capability and performance of project and subcontractor personnel, items, activities, and documentation of the measurement system(s).

The QAO will plan, schedule, and approve system and performance audits based on procedures customized to the project requirements. If required, the QAO may request additional personnel with specific expertise from company and/or project groups to assist in conducting performance audits. Quality auditing personnel will not have responsibility for field or laboratory project work.

10.2 PROJECT-SPECIFIC AUDITS

Project-specific audits include system and performance audits of sampling and analysis procedures, and of associated recordkeeping and data management procedures. Project-specific audits will be performed on a discretionary basis at a frequency determined by the project manager.

10.2.1 System Audits

The QAO may perform system audits. Such audits will encompass a qualitative evaluation of measurement system components to ascertain their appropriate selection and application. In addition, field and laboratory QC procedures and associated documentation may be system-audited including the field logbook, field sampling records, laboratory analytical records, sample handling, processing, and packaging in compliance with the established procedures, maintenance of QA procedures, and chain-of-custody procedures. These audits may be carried out during execution of the project to confirm that sampling crews employ consistent procedures. However, if conditions adverse to quality are detected additional audits may occur.

Findings from the audit will be summarized and provided to the PM and/or designated personnel so that necessary corrective action can be monitored from initiation to closure.

10.2.2 Performance Audits

The laboratory may be required to conduct an analysis of PE samples or provide proof that PE samples were submitted by an approved USEPA or NYSDEC performance testing provider

within the past 12 months. If necessary, proof that applicable PE samples have been analyzed at the laboratory within the past 12 months will be included in the laboratory procurement package.

10.2.3 Formal Audits

Formal audits are any system or performance audit that the QAO documents and implements. These audits encompass documented activities performed by qualified lead auditors to a written procedure or checklist to verify objectively that QA requirements have been developed, documented, and instituted in accordance with contractual and project criteria. At the discretion of the project manager, the QAO or designated personnel may conduct formal audits on project and subcontractor work during the course of the project.

Auditors who have performed the site audit after gathering and evaluating all data will write audit reports. Items, activities, and documents determined by lead auditors to be in noncompliance must be identified at exit interviews conducted with the involved management. Noncompliance will be logged and documented through audit findings. These findings will be attached to and become part of the integral audit report. These audit-finding forms are directed to management to resolve satisfactorily the noncompliance in a specified and timely manner.

The QAO has overall responsibility to see that all corrective actions necessary to resolve audit findings are acted upon promptly and satisfactorily. Audit reports will be submitted to the PM after completion of the audit. Serious deficiencies will be reported to the PM on an expedited basis. Audit checklists, audit reports, audit findings, and acceptable resolutions will be approved by the QAO prior to issue. Verification of acceptable resolutions may be determined by re-audit or documented surveillance of the item or activity. Upon verification acceptance, the QAO will close out the audit report and findings.

10.2.4 Laboratory Audits

Internal laboratory audits will be performed routinely to review and evaluate the adequacy and effectiveness of the laboratory's performance and QA program, to ascertain if the QAPP is being completely and uniformly implemented, to identify nonconformances, and to verify that identified deficiencies are corrected. The laboratory QA manager is responsible for such audits and will perform them according to a schedule planned to coincide with appropriate activities on the project schedule and sampling plans. Such scheduled audits may be supplemented by additional audits for one or more of the following reasons:

- When significant changes are made in the QAPP
- When necessary to verify that corrective action has been taken on a nonconformance reported in a previous audit
- When requested by the laboratory's project manager or QA manager.

10.2.4.1 Laboratory Performance Audits

Performance audits are independent sample checks made by a supervisor or auditor to arrive at a quantitative measure of the quality of the data produced by one section or the entire measurement process. Performance audits are conducted by introducing control samples, in addition to those used routinely, into the data production process. These control samples include PE samples of known concentrations. The results of performance audits will be evaluated against

acceptance criteria. The results will be summarized and maintained by the laboratory QA manager and distributed to the supervisors who must investigate and respond to any results that are outside control limits.

10.2.4.2 Laboratory Internal Audits

The laboratory QA manager conducts routine internal audits of each laboratory section for completeness, accuracy, and adherence to SOPs. The laboratory audit team will verify that the laboratory's measurement systems are operated within specified acceptable control criteria and that a system is in place to confirm that out-of-control conditions are efficiently identified and corrected.

10.2.4.3 Laboratory Data Audits

The laboratory will maintain raw instrument data for sample analyses on magnetic tape media or optical media in a secured fireproof safe. During routine audits, the audit team will verify the processing of the raw data file by reviewing randomly selected electronic data files and comparing the results with the hardcopy report. Tapes will be archived for a period of 7 yr. Tapes will be also available for audit by the QAO upon request.

10.2.4.4 Laboratory Audit Procedures

Prior to an audit, the designated lead auditor will prepare an audit checklist. During an audit and upon its completion, the auditor will discuss the findings with the individuals audited and discuss and agree on corrective actions to be initiated. The auditor will prepare and submit an audit report to the designated responsible individual of the audited group, the PM, and the QAO. Minor administrative findings that can be resolved to the satisfaction of the auditor during an audit need not be cited as items requiring corrective action. Findings that are not resolved during the course of the audit and findings affecting the overall quality of the project will be included in the audit report.

The designated responsible individual of the audited group will prepare and submit to the QAO a reply to the audit. This reply will include, at a minimum, a plan for implementing the corrective action to be taken on nonconformances indicated in the audit report, the date by which such corrective action will be completed, and actions taken to prevent reoccurrence. If the corrective action has been completed, supporting documentation should be attached to the reply. The auditor will ascertain (by re-audit or other means) if appropriate and timely corrective action has been implemented.

Records of audits will be maintained in the project files. Audit files will include, as a minimum, the audit report, the reply to the audit, and any supporting documents. It is the responsibility of the designated responsible individual of the audited group to conform to the established procedures, particularly as to development and implementation of such corrective action.

10.2.4.5 Laboratory Documentation

To confirm that the previously defined scope of the individual audits is accomplished and that the audits follow established procedures, a checklist will be completed during each audit.

The checklist will detail the activities to be executed and ensure that the auditing plan is accurate. Audit checklists will be prepared in advance and will be available for review.

AUDIT CHECKLIST (AT MINIMUM)
Date and type of audit
Name and title of auditor
Description of group, task, or facility being audited
Names of lead technical personnel present at audit
Checklist of audit items according to scope of audit
Deficiencies or non-conformances

Following each system, performance, and data audit, the QAO or his designee will prepare a report to document the findings of the specific audit. The report will be submitted to the designated individual of the audited group to ensure that objectives of the QA program are met.

MINIMUM CONTENT OF AUDIT REPORT
Description and date of audit
Name of auditor
Copies of completed, signed, and dated audit form and/or checklist
Summary of findings including any nonconformance or deficiencies
Date of report and appropriate signatures
Description of corrective actions

The QAO will maintain a copy of the signed and dated report for each audit. If necessary, a second copy will be placed in project files.

10.3 CORRECTIVE ACTIONS

Corrective action procedures have been established to ensure that conditions adverse to quality, such as malfunctions, deficiencies, deviations, and errors, are promptly investigated, documented, evaluated, and corrected. Corrective action enables significant conditions adverse to quality to be noted promptly at the site, laboratory, or subcontractor location. Additionally, it allows for the cause of the condition to be identified and corrective action to be taken to rectify the problem and to minimize the effect on the data set. Further, corrective action is intended to minimize the possibility of repetition.

Condition identification, cause, reference documents, and corrective action planned to be taken will be documented and reported to the QAO, PM, FTL, and involved subcontractor management, at a minimum. Implementation of corrective action is verified by documented follow-up action. Any project personnel may identify noncompliance issues; however, the designated QA personnel are responsible for documenting, numbering, logging, and verifying the close out action. The designated responsible individual of the audited group will be responsible for ensuring that all recommended corrective actions are implemented, documented, and approved.

Events that trigger corrective actions
When predetermined acceptance standards are not attained
When a deviation from SOP is required or observed
When procedure or data compiled are determined to be deficient
When equipment or instrumentation is found to be faulty
When samples and analytical test results are not clearly traceable
When QA requirements have been violated
When designated approvals have been circumvented
As a result of system and performance audits
As a result of a management assessment
As a result of laboratory/field comparison studies
As required by analytical method

All project personnel have the responsibility, as part of normal work duties, to promptly identify, solicit approved correction, and report conditions adverse to quality. Specifically, the laboratory must designate the assigned individual to act as the primary laboratory contact responsible for timely identification and resolution of any and all issues including contract and administrative issues. Any phone calls initiated by personnel or designated representatives to the laboratory with respect to corrective actions must be returned in a timely manner on a normal business day if the designate individual (or alternate) is not available at the initiation of the phone call.

Project management and related staff, including field investigation teams, remedial design planning personnel, and laboratory groups will monitor on-going work performance as part of daily responsibilities. Work may be audited at the site, the laboratories, or subcontractor locations. Activities or documents ascertained to be noncompliant with QA requirements will be documented. Corrective actions will be mandated through audit finding sheets attached to the audit report. Audit findings are logged, maintained, and controlled by the QAO, PM, or designated personnel.

Personnel assigned to QA functions will have the responsibility to issue and control CAR forms (Figure 10.1). The CAR identifies the out-of-compliance condition, reference document(s), and recommended corrective action(s) to be administered.

Similar to the CAR, the laboratory will record and report nonconformances internally using the laboratory's nonconformance documentation tracking system in the form of an NCM. Each NCM is traceable so that it can be cross-referenced with its resolution to the associated project records. The laboratory QA manager summarizes critical nonconformances, such as reissued reports and client complaints, in a monthly report to the laboratory management staff. Management of the NCM is described in Section 6.3. Corrective action procedures applicable to QC requirements that do not meet the criteria of this QAPP are described in the following

sections. Consistent, frequent contacts between laboratory personnel, the QAO, or designated personnel are required.

TYPICAL CONTENT OF NCM FORMS
Problem description and root cause
Corrective action
Client notification summary
QA verification
Approval history action

FIGURE 10.1

CORRECTIVE ACTION REQUEST FORM

CORRECTIVE ACTION REQUEST

Number _____ Date:_____

TO: _____

You are hereby requested to take corrective actions indicated below and as otherwise determined by you (a) to resolve the noted conditions and (b) to prevent it from recurring. Your written response is to be returned to the Project quality assurance manager by _____.

Condition:

Reference Documents:

_____	_____	_____	_____	_____
Originator	Date	Approval	Date	Approval Date

Response

Cause of Condition:

Corrective Action

Resolution:

(B) Prevention

(B2) Affected Documents

Signature_____ Date_____

CA Follow-up

Corrective Action verified by:_____ Date _____

SECTION 11

REPORTS TO MANAGEMENT

11.1 QA REPORTS

Management personnel receive QA reports appropriate to their level of responsibility. The PM receives copies of all QA documentation. QC documentation is retained within the department that generated the product or service except where this documentation is a deliverable for a specific contract. QC documentation is also submitted to the project QAO for review and approval. Previous sections detailed the QA activities and the reports, which they generate. Among other QA audit reports that may be generated during the conduct of activities, a final audit report for this project will be prepared by the QAO. The report will include:

- Periodic assessment of measurement data accuracy, precision, and completeness
- Results of performance audits and/or system audits
- Significant QA problems and recommended solutions for future projects
- Status of solutions to any problems previously identified.

Additionally, any incidents requiring corrective action will be fully documented.

SECTION 12

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ATTACHMENT 1

SUMMARY OF ANALYTICAL DATA PACKAGE

(DQO Level IV)

1.0 INTRODUCTION

In order for data to be used for decision-making purposes it is essential that it be of known and documented quality. Verification and validation of data requires that appropriate quality assurance and quality control (QA/QC) procedures be followed, and that adequate documentation be included for all data generated both in the laboratory and in the field.

The QA/QC documentation provided by any laboratory, in conjunction with sample results, allows for evaluation of the following indicators of data quality:

- Integrity and stability of samples;
- Instrument performance during sample analysis;
- Possibility of sample contamination;
- Identification and quantitation of analytes;
- Analytical precision; and
- Analytical accuracy.

General laboratory documentation requirements discussed in this document are formatted into two sections, organic and inorganic analyses. These specifications are intended to establish general, analytical documentation requirements that laboratories should meet when generating data for this project.

2.0 GENERAL DOCUMENTATION REQUIREMENTS

2.1 Data Package Format

Each data package for Level IV data submitted will consist of five sections:

- Case narrative;
- Chain-of-custody documentation
- Summary of results for environmental samples;
- Summary of QA/QC results; and
- Raw data.

Level II data packages will not contain the raw data.

Data packages will be consistent with, and will supply the data and documentation required for NYSDEC ASP-defined deliverables (i.e. Category B and Category A). Summaries of data and results may be presented in a Contract Laboratory Program (CLP) type format or an equivalent format that supplies the required information as stated below. All laboratory data qualifiers shall be defined in the deliverable. Final data packaqes for the Lower Genesee River project will be NYSDEC ASP Category B packages.

In cases where the laboratory has varied from established methodologies, they will be required to provide the Standard Operating Procedures (SOPs) for those methods and added as an attachment to the Work Assignment Scoping Documents or as variances to this QAPP. Inclusion of these SOPs will aid in final review of the data by data reviewers and users.

2.2 Case Narrative

The case narrative will be written on laboratory letterhead and the release of data will be authorized by the laboratory manager or their designee. The Case Narrative will consist of the following information:

- Client's sample identification and the corresponding laboratory identification;
- Parameters analyzed for each sample and the methodology used. EPA method numbers should be cited when applicable;
- Whether the holding times were met or exceeded;
- Detailed description of all analytical and/or sample receipt problems encountered;
- Discussion of reasons for any QA/QC sample result exceedances; and
- Observations regarding any occurrences which may adversely impact sample integrity or data quality.

2.3 Chain-of-Custody

Legible copies of all Chain-of-Custody forms for each sample shall be submitted in the data package. Copies of any internal laboratory tracking documents should also be included. It is anticipated that Chain-of-Custody forms and/or internal laboratory tracking documents will include the following information:

- Date and time of sampling and shipping;
- Sampler and shipper names and signatures;
- Type of sample (grab or composite);
- Analyses requested;
- Project, site, and sampling station names;
- Date and time of sample receipt;
- Laboratory sample receiver name and signature;
- Observed sample condition at time of receipt;
- Sample and/or cooler temperatures at time of receipt;
- Air bill numbers;
- Custody seal; and
- Sample numbers.

3.0 ORGANIC ANALYSES DOCUMENTATION REQUIREMENTS

These requirements are applicable to organic methods (e.g., VOCs, SVOCs, pest/PCBs).

3.1 Summary of Environmental Sample Results

The following information is to be included in the summary of sample results for each environmental sample.

- Client's sample identifications and corresponding laboratory identifications;

- Sample collection dates;
- Dates and times of sample extraction and/or analysis;
- Weights or volumes of sample used for extraction and/or analysis;
- Identification of instruments used for analysis;
- Gas Chromatography (GC) column and detector specifications;
- Dilution or concentration factor for the sample;
- Percent Difference between columns, if applicable;
- Percent Moisture or Percent Solids for soil samples;
- Method Detection Limits (MDLs) or sample Reporting Limits (RLs);
- Analytical results and associated units;
- Discussion of any manual integrations; and
- Definitions for any laboratory data qualifiers used.

3.2 Summary of QA/QC Sample Results (as applicable)

The following QA/QC sample results shall be presented on QC summary forms. They shall also include the date and time of analysis. Additional summary forms may be required for some methods. Therefore, when reporting data, laboratories should defer to specific method requirements.

All summary forms should, at a minimum, include in the header:

- Form Title;
- Project Identifier (e.g., Batch QC ID, Site Name, Case Number, Sample Delivery Group);
- Laboratory Name; and
- Sample Matrix.

3.2.1 Instrument Calibration (for each instrument used)

- **GC/MS Tuning**. Report mass listings, ion abundance criteria, and percent relative abundances. List the instrument identification (ID) and the date and time of analysis. Ensure that all ion abundances have been appropriately normalized.
- **Initial Calibration**. Report analyte concentrations of initial calibration standards and the date and time of analysis. List the instrument identification (ID), response factors (RF), relative response factors (RRF), or calibration factors (CF), percent relative standard deviation (%RSD), and retention time (RT) for each analyte. The initial calibration (IC) report must also include a sample identifier (ID), associated injection volume or quantity of sample analyzed, the acceptance criteria, such as minimum RF values, and associated maximum %RSD values.
- **Continuing Calibration**. Report the concentration of the calibration standard used for the continuing calibration and for the mid-level standard, and the date and time of analysis. List the ID, RF, RRF, CF, percent difference (%D), and RT for each analyte.

- Project Required Reporting Limit (RL) Verification (if applicable). Report results for standards that are used to verify instrument sensitivity. Report the source for the verification standards. Report the concentration for the true value, the concentration found, the percent recovery, and control limits for each analyte analyzed. The date and time of analysis must also be reported.

3.2.2 Method Blank Analysis

List environmental samples and QC analyses associated with each method blank. Report concentrations of any analytes found in method blanks above the instrument detection limit.

3.2.3 Surrogate Standard Recovery

Report the name and concentration of each surrogate compound added. List percent recoveries of all surrogates in the samples, method blanks, matrix spike/matrix spike duplicates and other QC analyses. Also include acceptance ranges that the laboratory used for the analysis.

3.2.4 Internal Standard Summary

Report internal standard area counts of the associated calibration standard and retention times, include upper and lower acceptance limits. List internal standard area counts and retention times for all samples, method blanks, matrix spike/matrix spike duplicates and other QC analyses. Include the ID and the date and time of analysis.

3.2.5 Compound Confirmation

Report retention times of each compound on both columns as well as retention time windows of the associated standard. In addition, report determined concentrations from each column and percent differences between results. List the ID and the date and time of analysis. A summary should be generated for each sample, including dilutions and reanalyses, blanks, MSs, and MSDs.

3.2.6 Peak Resolution Summary

For primary and secondary columns report retention times of any target compounds and/or surrogates that coelute in the standards (ie. the Performance Evaluation Mixture for Contract Laboratory Program pesticides). Calculate and report the percent resolution between each pair of compounds which coelute. Include the ID, column ID, and the date and time of analysis.

3.2.7 Matrix Spike/Matrix Spike Duplicate (MS/MSD) Analysis

Report the name and concentration of each spiking compound. Samples are to be spiked with specified compounds of potential concern. List sample results, spiked sample results, duplicate spiked sample results, percent recovery (%R) and the relative percent difference (RPD) between the MS and MSD (if applicable). Acceptance criteria that the laboratory used for the analysis must also be presented.

3.2.8 Laboratory Duplicate Analysis

When performed, report the RPD between duplicate analyses, along with the associated acceptance criteria.

3.2.9 Laboratory QC Check Sample Analysis

Also known as the Laboratory Control Sample (LCS) or Matrix Spike Blank (MSB). Report the name and concentration of each spiking compound. List the QC check sample and duplicate (if applicable) results, %R, and RPD, if performed in duplicate. The acceptance criteria that the laboratory used for the analysis must also be presented.

3.2.10 Other QC Criteria

- **Retention time windows determination**. Report the retention time window for each analyte, for both primary and confirmation analyses.
- **Compound identification**. Report retention times and concentrations of each analyte detected in samples.
- **MDL determination**. List most recent method detection limits, with dates determined maintained in laboratory file. MDL summary forms may be submitted at start of project and not included in individual data packages.
- **Additional method suggested QC parameters, if required**.
- **Any Performance Evaluation (PE) samples** (if identified) associated with the environmental samples.

3.3 Raw Data

Legible copies of the raw data shall be organized systematically, each page shall be numbered, and a table of contents must be included with each package. Raw data for compound identification and quantitation must be sufficient to verify each result.

3.3.1 Gas Chromatographic (GC) Analyses

This section shall include legible copies of raw data for the following:

- Environmental samples arranged in sequential order by laboratory sample number, include dilutions and reanalyses;
- Instrument calibrations; and
- QC analyses (i.e., method blanks, LCS, etc.).

Raw data for both primary and confirmation analyses are to be included. Raw data for each analysis shall include the following:

- Appropriately scaled chromatograms (label all analyte peaks, internal standards and surrogate standards with chemical names). All chromatograms shall be scaled such that individual peaks can be readily resolved from any neighboring peaks;
- Appropriately scaled before and after manual integrations;
- Area print-outs or quantitation reports;
- Instrument analysis logs for each instrument used;
- Sample extraction and cleanup logs;
- Standards preparation logs and manufacturer certificates of analyses for standards, if applicable, sufficient to document traceability of all standards (including surrogates,

internal standards, and spike solutions) maintained in "job file" in laboratory, unless otherwise requested;

- Percent Moisture or Percent Solids for soil samples; and
- GC/MS confirmation, as applicable.

Note: Additional raw data may be required for some methods. Therefore, when reporting data, laboratories should defer to specific method requirements.

3.3.2 Gas Chromatographic / Mass Spectrometric (GC/MS) Analyses

This section shall include legible copies of raw data for the following:

- Environmental samples arranged in sequential order by laboratory sample number, include dilutions and reanalyses;
- Mass spectrometer tuning and mass calibration (BFB, DFTPP);
- Initial and continuing instrument calibrations; and
- QC analyses (i.e., method blanks, LCS, etc.).

Raw data for each analysis shall include the following:

- Appropriately scaled chromatograms (label all analyte peaks, internal standards and surrogate standards with chemical names). All chromatograms shall be scaled such that individual peaks can be readily resolved from any neighboring peaks;
- Appropriately scaled before and after manual integrations;
- Ion scans and enhanced spectra of target analytes and tentatively identified compounds (TICs), with the associated best-match spectra;
- Area print-outs and quantitation reports;
- Instrument analysis logs for each instrument used;
- Sample extraction and cleanup logs;
- Standards preparation logs and manufacturer certificates of analyses for standards, if applicable, sufficient to document traceability of all standards (including surrogates, internal standards, and spike solutions) maintained in "job file" in laboratory, unless otherwise requested; and
- Moisture Content (Percent Moisture) for sediment samples.

Note: Additional raw data may be required for some methods. Therefore, when reporting data, laboratories should defer to specific method requirements.

4.0 INORGANIC ANALYSES DOCUMENTATION REQUIREMENTS

4.1 Summary of Environmental Sample Results

The following information is to be included in the summary of sample results for each environmental sample:

- Client's sample identifications and corresponding laboratory identifications;
- Sample collection dates;

- Dates and times of sample digestion and/or analysis;
- Weights or volumes of sample used for digestion and/or analysis;
- Identification of instruments and analytical techniques used for analysis;
- Instrument specifications;
- Dilution or concentration factor for the sample;
- Percent Moisture or Percent Solids for soil samples;
- Detection Limits: MDLs, RLs;
- Analytical results and associated units; and
- Definitions for any laboratory data qualifiers used.

4.2 Summary of QA/QC Results

The following QA/QC sample results shall be presented on QC summary forms. They shall also include the date and time of analysis. Additional summary forms may be required for some methods. Therefore, when reporting data, laboratories should defer to specific method requirements.

All summary forms shall, at a minimum, include in the header:

- Form Title;
- Project Identifier (e.g., Batch QC ID, Site Name, Case Number, Sample Delivery Group);
- Laboratory Name; and
- Sample Matrix.

4.2.1 Instrument Calibration Verification (if applicable)

The order for reporting of calibration verifications for each analyte must follow the chronological order in which the standards were analyzed.

- **Initial Calibration Verification.** Report the source for the calibration verification standards. Report the concentration for the true value, the concentration found, the percent recovery, and control limits for each element analyzed. The date and time of analysis must also be reported.
- **Continuing Calibration Verification**. Report the source for calibration verification standards. Report the concentration for the true value, the concentration found, the percent recovery, and control limits for each element analyzed. The date and time of analysis must also be reported.
- **Reporting Limit.** Verification (if applicable). Report results for standards that are used to verify instrument sensitivity. Report the source for the verification standards. Report the concentration for the true value, the concentration found, the percent recovery, and control limits for each element analyzed. The date and time of analysis must also be reported.

4.2.2 Blank Analysis

Report analyte concentrations above the instrument detection limits found in the initial calibration blanks (ICBs), continuing calibration blanks (CCBs), and in method/ preparation blanks. The date and time of analysis must also be reported. The order for reporting ICB and CCB results for each analyte must follow the chronological order in which the blanks were analyzed.

4.2.3 Matrix Spike (MS) Analysis

Report concentrations of the unspiked sample result, the spiked sample result and the concentration of the spiking solution added to the pre-digestion spike for each analyte. Calculate and report the %R and list control limits. If performed in duplicate, provide the %R for the MSD and the RPD.

4.2.4 Post Digestion Spike Analysis (if applicable)

In addition to matrix spikes, post-digestion spikes are often required by the method. Report concentrations of the unspiked sample results, spiked sample results, and the concentration of the spiking solution added. Calculate and report the %R and list control limits.

4.2.5 Laboratory Duplicate Analysis

Report concentrations of original and duplicate sample results. Calculate and report the RPD and list control limits.

4.2.6 Laboratory Control Sample

Identify the source for the LCS. Report the found concentration of the laboratory control sample and the true concentration for all analytes. Calculate and report the %R and list control limits.

4.2.7 Other QC Criteria (if applicable)

- **Method of Standard Additions (MSA)**. This summary must be included if MSA analyses are performed. Report absorbance values with corresponding concentration values. Report the final analyte concentration and list the associated correlation coefficient and control limits.
- **ICP-AES Serial Dilution**. Report initial and serial dilution results, associated %D, and control limits.
- **ICP-AES Linear Dynamic Ranges.** For each instrument and wavelength used, report the date on which linear ranges were established, the integration time, and the upper limit concentration.
- **MDL Determination**. List most recent method detection limits, with dates determined maintained in laboratory file. MDL summary forms may be submitted at start of project and not included in individual data packages.
- **Any Performance Evaluation (PE) Samples** (if identified) associated with the environmental samples.

4.3 Raw Data

Legible copies of the raw data shall be organized systematically, each page shall be numbered, and a table of contents must be included with each package. Data should be organized sequentially by method and analysis date. Raw data for compound identification and quantitation must be sufficient to verify each result.

4.3.1 Atomic Absorption (AA) and Atomic Emission (AE) Spectrometric Analyses

This section shall include legible copies of raw data for the following:

- Environmental sample results, include dilutions and reanalyses;
- Instrument calibrations; and
- QC analyses (i.e., method blanks, LCS, etc.).
- Measurement print-outs for all instruments used or copies of logbook pages for analyses that do not provide instrument print-outs;
- Absorbance units, emission intensities, or other measurements for all analyses;
- Sample preparation and digestion logs that include reagents used, standards referenced to standards preparation logs, volumes of reagents, digestion times, etc.;
- Instrument analysis logs for each instrument used or summary of sample analyses;
- Standards preparation logs and manufacturer certificates of analyses for standards, if applicable, sufficient to document traceability of all standards (including spike solutions) maintained in "job file" in laboratory, unless otherwise requested;
- Wavelengths used for the analyses; and
- Percent Moisture or Percent Solids for soil samples.

Note: Additional raw data may be required for some methods. Therefore, when reporting data, laboratories should defer to specific method requirements.

4.3.2 Titrimetric and Colorimetric Analyses

This section shall include legible copies of raw data for the following:

- Environmental sample results, include dilutions and reanalyses;
- Calibrations; and
- QC analyses (i.e., method blanks, LCS, etc.).

Raw data for each analysis shall include the following:

- Copies of logbook pages for analyses that do not provide instrument print-outs and calculations used to derive reported sample concentrations;
- Titrant volumes, titration end-points, absorbance units, or other measurements for all analyses;
- Sample preparation and digestion logs that include reagents used, standards referenced to standards preparation logs, volumes of reagents, digestion times, sample volumes, solution normalities, etc.;

- Standards preparation logs and manufacturer certificates of analyses for standards, if applicable, sufficient to document traceability of all standards (including spike solutions) maintained in "job file" in laboratory, unless otherwise requested; and
- Wavelengths used for the analyses.

Note: Additional raw data may be required for some methods. Therefore, when reporting data, laboratories should defer to specific method requirements.

4.3.3 Gravimetric Analyses

This section shall include legible copies of raw data for the following:

- Environmental sample results, include dilutions and reanalyses;
- Calibrations; and
- QC analyses (i.e., method blanks, LCS, etc.).

Raw data for each analysis shall include the following:

- Copies of logbook pages for analyses that do not provide instrument print-outs and calculations used to derive reported sample concentrations;
- Weights, sample volumes, or other measurements for all analyses;
- Sample preparation and digestion logs that include reagents used, standards referenced to standards preparation logs, volumes of reagents, drying times, drying temperatures, etc.; and
- Standards preparation logs and manufacturer certificates of analyses for standards, if applicable, sufficient to document traceability of all standards maintained in "job file" in laboratory, unless otherwise requested.

Note: Additional raw data may be required for some methods. Therefore, when reporting data, laboratories should defer to specific method requirements.

SUMMARY OF REQUIRED LABORATORY DELIVERABLES FOR LEVEL IV DQO DATA PACKAGE (REQUIREMENTS WILL VARY BY METHOD)

Method Requirements	Laboratory Deliverables
Requirements for all methods:	
Parsons project identification number	Case narrative
Discussion of unusual circumstances or problems	Case narrative
Analytical method description and reference citation	Case narrative
Field sample identification	Signed chain-of-custody forms and sample results form
Laboratory assigned sample number	Signed chain-of-custody forms and sample results form
Sample matrix description	Signed chain-of-custody forms and sample results form
Date of sample collection	Signed chain-of-custody forms and sample results form
Date of sample receipt at laboratory	Signed chain-of-custody forms
Analytical method description and reference citation	Signed chain-of-custody forms and case narrative
Sample analysis results	USEPA CLP form or equivalent sample analysis results summary form (e.g., ASP Form I-VOA)
Dates of sample preparation and analysis (including first run and any subsequent runs)	Specific deliverable depends on type of analysis
Laboratory analytical QC batch info and sample analysis associations	Specific deliverable depends on type of analysis
Instrument analysis sequence log	Specific deliverable depends on type of analysis
Analytical holding times compliance	USEPA CLP form or equivalent holding time summary form
Method detection limit (MDL) determination	USEPA CLP form or equivalent MDL summary form
Method reporting limits (RLs) achieved	Specific deliverable depends on type of analysis (see below)
Dilution or concentration factors	Specific deliverable depends on type of analysis
Discussion of unusual circumstances or problems	Case narrative
Laboratory Control Sample (LCS) results	USEPA CLP form or equivalent LCS results summary form
"Raw" analytical data sufficient to recreate and check analysis results for all calibrations, QC sample results, and sample results	Sequentially numbered pages with tabulated index

REQUIRED LABORATORY DELIVERABLES (Continued)

Method Requirements	Laboratory Deliverables
Matrix spike / matrix spike duplicate	USEPA CLP form or equivalent MS/MSD summary form (e.g., NYSDEC ASP Form III-SV
Method blank analysis	USEPA CLP form or equivalent method blank summary form (e.g., NYSDEC ASP Form IV-SV)
GC/MS instrument performance check. Tuning and mass calibration (abundance) using 4-bromofluorobenzene (BFB) for method SW8260C and decafluoro-triphenyphosphine (DFTPP) for method SW8270D	USEPA CLP form or equivalent instrument tuning/performance check summary form
Internal Standard Area Counts and Retention Time, as applicable	USEPA CLP form or equivalent internal standard summary form (e.g., NYSDEC ASP Form VIII-SV)
GC/MS initial calibration data	USEPA CLP form or equivalent initial calibration summary form (e.g., NYSDEC ASP Form VI-SV)
GC/MS continuing calibration data.	USEPA CLP form or equivalent continuing calibration summary form (e.g., NYSDEC ASP Form VII-SV)
GC/MS calibration verification (initial and continuing)/2nd source calibration verification (ICV/CCV)	USEPA CLP form or equivalent calibration verification summary form
GC continuing calibration data for volatile and semivolatile analyses. If calibration factors are used, calibration factors and their percent differences from the initial calibration must be reported. Retention time windows and analyte retention times must be included in this form	USEPA CLP form or equivalent calibration verification summary form
GC/MS internal standard area and retention time summary data	USEPA CLP form or equivalent internal standard summary form
GC second column confirmation, as applicable. To be done for all compounds that are detected above method detection limits	Chromatograms of all confirmations of all samples and the standard laboratory form for all positive results
Surrogate Compound percent recovery summary	USEPA form or equipment percent recovery summary form (e.g., NYSDEC ASP Form II-SV)
"Raw" analytical data sufficient to recreate and check analysis results for all calibrations, QC sample results, and sample results	Sequentially numbered pages with tabulated index
Requirements for inorganic analytical methods:	
Initial and Continuing Calibration Verification	USEPA CLP form or equivalent calibration verification summary form(s) (e.g., NYSDEC ASP Form II-IN)

REQUIRED LABORATORY DELIVERABLES (Continued)

Method Requirements	Laboratory Deliverables
ICP Interference Check Sample (ICS), as applicable	USEPA CLP form or equivalent ICS standard summary form (e.g., NYSDEC ASP Form IV-IN)
ICP Interelement Correction Factors, as applicable	USEPA CLP form or equivalent internal standard summary form (e.g., NYSDEC ASP Form XII-IN
IDL or MDL determination	USEPA CLP form or equivalent IDL or MDL summary form(s)
Post-digestion spike, as applicable	USEPA CLP form or equivalent post-digestion spike summary form(s) (e.g., NYSDEC ASP Form V-IN)
ICP linear range	USEPA CLP form or equivalent linear range summary form(s) (e.g., NYSDEC ASP Form XII-IN)
ICP serial dilution, as applicable	USEPA CLP form or equivalent serial dilution summary form(s) (e.g., NYSDEC ASP Form IX-IN)
Method of standard addition (MSA), as applicable	USEPA CLP form or equivalent MSA summary form(s)
Laboratory duplicate results, as applicable	USEPA CLP form or equivalent duplicate analysis summary form(s) (e.g., NYSDEC ASP Form VI-IN)
Requirements for other methods:	
Preparation and analysis logs	No format
Sample results	No format
MS/MSD results	No format
Lab duplicate sample results	No format
Laboratory control sample	Control limits
Method blank results	No format
Initial calibration results	No format
Continuing calibration check (calibration verification)	No format. Report percent relative standard deviation or percent difference from initial calibration

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Laboratory Director Earl H. Colley 5/19/97

Effective Date: May 16, 1997

Purpose: To provide instructions for the determination of lipid specified in the methods currently used for enviromental residue analyses.

SOP No. 1.264
Determination of Lipid
Revision No: 0
Date 5-16-97
Page No: 1 of 2

Standard Operating Procedures for Determination of Lipid

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Quality Assurance Officer: Paul Bregnac 5/19/97

Laboratory Director Earl H. Colley 5/19/97

Effective Date: May 16, 1997

Purpose: To provide instructions for the determination of lipid specified in the methods currently used for enviromental residue analyses.

TITLE: Determination of Lipid

PURPOSE
To provide instructions for the determination of lipid specified in the methods currently used for environmental residue analyses.

SCOPE
These directions will be followed when preparing samples for environmental residue analyses.

PROCEDURE
The weight of a PRQ numbered tube is recorded for each sample. The concentrated sample extract is transferred into the tube and evaporated to dryness under a stream of nitrogen. The outside of each tube is wiped with acetone and petroleum ether remove fingerprints. Tubes are placed in a drying rack at room temperature overnight. The tubes are weighted daily until the weight stabilizes. The lipid is calculated by the following formulas.

weight of tube & lipid – weight of tube = lipid weight

$$\frac{\text{lipid weight}}{\text{sample weight}} \times 100 = \%\ \text{lipid}$$

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APPENDIX D

HISTORICAL DATA SUMMARY TABLES

TABLE D-1a
HISTORICAL SEDIMENT METALS DATA SUMMARY
CLASS A STANDARDS COMPARISON

NYSDEC-Lower Genesee River Historical Sediment Data Metals Summary Class A Standards Comparison		Class A Freshwater Sediment Guidance	Location ID: Sample ID: Lab Sample Id: Depth: Source: SDG: Matrix: Sampled: Validated:	1 01A 0 - 2.76 ft NYSDEC SE 7/15/2002	1 RE02-01P - NYSDEC SE 7/15/2002	2 02A 0 - 2.78 ft NYSDEC SE 7/15/2002	2 02B 2.78 - 5.55 ft NYSDEC SE 7/15/2002	2 02C 5.55 - 8.33 ft NYSDEC SE 7/15/2002	2 RE02-02P - NYSDEC SE 7/15/2002	3 03A 0 - 3.12 ft NYSDEC SE 7/15/2002	3 03B 3.12 - 6.23 ft NYSDEC SE 7/15/2002
CAS NO.	COMPOUND	Value	UNITS:								
	METALS										
7429-90-5	Aluminum	NS	mg/kg	6790	7200	7520	9630	10600	7490	6960	9000
7440-36-0	Antimony	NS	mg/kg	UN	UN	0.83 BN	UN	UN	UN	UN	UN
7440-38-2	Arsenic	10	mg/kg	4.5	5	6.3	9.3	18.8	5	6.4	15.6
7440-39-3	Barium	NS	mg/kg	39.2	42.1	398	1120	5450	44.7	149	1010
7440-41-7	Beryllium	NS	mg/kg	0.34	0.37	0.39	0.53	0.63 B	0.37	0.36	0.57
7440-42-8	Boron	NS	mg/kg								
7440-43-9	Cadmium	1	mg/kg	0.28 B	0.23 B	11.5	19.7	14.6	0.27 B	0.97	3.2
7440-70-2	Calcium	NS	mg/kg	9370	10200	11500	17200	28300	10800	8330	11200
7440-47-3	Chromium, Total	43	mg/kg	10.8	10.5	21.1	44.1	50.1	10.5	11.8	23.6
7440-48-4	Cobalt	NS	mg/kg	6.4	6.6	6.8	8.6	8.8	6.8	6.4	8.2
7440-50-8	Copper	32	mg/kg	16.2	16.2	35.8	72.5	98.7	17.7	22.3	45.8
7439-89-6	Iron	NS	mg/kg	16000	16800	16900	21200	24300	16900	16700	22900
7439-92-1	Lead	36	mg/kg	14.5	11.9	44.3	87.4	86.7	11.4	18	53.2
7439-93-2	Lithium	NS	mg/kg								
7439-95-4	Magnesium	NS	mg/kg	4730	5060	4890	6330	6420	5180	4480	5150
7439-96-5	Manganese	NS	mg/kg	319	362	336	442	645	372	330	436
7439-97-6	Mercury	0.2	mg/kg	0.03	0.02 B	0.17 N	0.53 N	1.1 N	0.026 BN*	0.17	0.6
7439-98-7	Molybdenum	NS	mg/kg								
7440-02-0	Nickel	23	mg/kg	15.1	15.4	17.9	29.8	39.8	15.8	15.6	23.6
7440-09-7	Potassium	NS	mg/kg	825 N	905 N	978 N	1260 N	1270 N	947 N	828 N	1070 N
7782-49-2	Selenium	NS	mg/kg	U	U	U	0.75 B	U	U	U	U
7440-22-4	Silver	1	mg/kg	0.58	U	29.7	58.2	151	1.6	5.8	22.9
7440-23-5	Sodium	NS	mg/kg	107 B	104 B	465	726	502 B	110 B	99.9 B	150 B
7440-24-6	Strontium	NS	mg/kg								
7440-28-0	Thallium	NS	mg/kg	U	U	U	U	0.23	U	U	0.21
7440-31-5	Tin	NS	mg/kg								
7440-32-6	Titanium	NS	mg/kg								
7440-62-2	Vanadium	NS	mg/kg	11.9	12.2	13	17.5	19.3	12.3	12	16.7
7440-66-6	Zinc	120	mg/kg	58	55.3	252	465	399	55.4	73	141

TABLE D-1a
HISTORICAL SEDIMENT METALS DATA SUMMARY
CLASS A STANDARDS COMPARISON

NYSDEC-Lower Genesee River Historical Sediment Data Metals Summary Class A Standards Comparison		Class A Freshwater Sediment Guidance	Location ID: Sample ID: Lab Sample Id: Depth: Source: SDG: Matrix: Sampled: Validated:	3 03C 6.23 - 9.35 ft NYSDEC SE 7/15/2002	3 RE02-03P - NYSDEC SE 7/15/2002	4 04A 0 - 2.97 ft NYSDEC SE 7/16/2002	4 04B 2.97 - 5.95 ft NYSDEC SE 7/16/2002	4 04C 5.95 - 8.92 ft NYSDEC SE 7/16/2002	4 RE02-04P - NYSDEC SE 7/16/2002	5 05A 0 - 3.39 ft NYSDEC SE 7/16/2002	5 05B 3.39 - 6.78 ft NYSDEC SE 7/16/2002
CAS NO.	COMPOUND	Value	UNITS:								
	METALS										
7429-90-5	Aluminum	NS	mg/kg	9440	7700	9290	10700	11200	9710	9660	11800
7440-36-0	Antimony	NS	mg/kg	UN	0.27 BN	0.41 BN	UN	0.37 BN	0.54 BN	UN	UN
7440-38-2	Arsenic	10	mg/kg	10	4.8	6.8	8	9.8	6	7.9	8.6
7440-39-3	Barium	NS	mg/kg	541	95.7	223	350	551	60.8	93.7	115
7440-41-7	Beryllium	NS	mg/kg	0.53	0.38	0.47	0.55	0.61	0.48	0.5	0.6
7440-42-8	Boron	NS	mg/kg								
7440-43-9	Cadmium	1	mg/kg	0.81	2.5	14.8	13.4	7.7	0.45 B	2.4	3.5
7440-70-2	Calcium	NS	mg/kg	10700	10200	11400	11200	12100	13200	12000	13800
7440-47-3	Chromium, Total	43	mg/kg	15.6	13.6	25	30.7	31.7	14.3	19.4	25.5
7440-48-4	Cobalt	NS	mg/kg	9.5	6.8	8.2	9.7	9.9	8.3	9	10.2
7440-50-8	Copper	32	mg/kg	30.7	19.8	34.6	44	59	22.7	32.9	37.8
7439-89-6	Iron	NS	mg/kg	23400	17300	10900	24000	25900	21400	21600	26300
7439-92-1	Lead	36	mg/kg	36.7	16.5	38.6	43.2	55.8	14.3	28.5	39.9
7439-93-2	Lithium	NS	mg/kg								
7439-95-4	Magnesium	NS	mg/kg	5380	5270	5770	6320	6710	6490	6110	7220
7439-96-5	Manganese	NS	mg/kg	479	318	389	446	489	472	451	618
7439-97-6	Mercury	0.2	mg/kg	0.33	0.04	0.3	0.28	0.33	0.04	0.08	0.11
7439-98-7	Molybdenum	NS	mg/kg								
7440-02-0	Nickel	23	mg/kg	21.9	16.5	21.3	25.7	27.5	20	22.3	26
7440-09-7	Potassium	NS	mg/kg	1070 N	966 N	1090 N	1240 N	1270 N	1210 N	1110 N	1350 N
7782-49-2	Selenium	NS	mg/kg	0.31 B	U	U	U	0.34 B	U	U	0.38 B
7440-22-4	Silver	1	mg/kg	8.2	9.7	16.3	17.2	26.1	12.5	8.5	5.9
7440-23-5	Sodium	NS	mg/kg	131 B	107 B	132 B	140 B	153 B	135 B	125 B	129 B
7440-24-6	Strontium	NS	mg/kg								
7440-28-0	Thallium	NS	mg/kg	U	U	U	0.17	0.21	U	U	U
7440-31-5	Tin	NS	mg/kg								
7440-32-6	Titanium	NS	mg/kg								
7440-62-2	Vanadium	NS	mg/kg	16.7	12.9	15.9	17.8	19.2	16	16.6	19.7
7440-66-6	Zinc	120	mg/kg	104	88.4	278	249	224	73.3	101	125

TABLE D-1a
HISTORICAL SEDIMENT METALS DATA SUMMARY
CLASS A STANDARDS COMPARISON

NYSDEC-Lower Genesee River Historical Sediment Data Metals Summary Class A Standards Comparison		Class A Freshwater Sediment Guidance	Location ID: Sample ID: Lab Sample Id: Depth: Source: SDG: Matrix: Sampled: Validated:	5 05C 6.78 - 10.2 ft NYSDEC SE 7/16/2002	5 17A 0 - 2.53 ft NYSDEC SE 7/16/2002	5 17B 2.53 - 5.05 ft NYSDEC SE 7/16/2002	5 17C 5.05 - 7.58 ft NYSDEC SE 7/16/2002	5 RE02-05P - NYSDEC SE 7/16/2002	5 RE02-17P - NYSDEC SE 7/16/2002	GR-01 LA-001 K1108643-001 0 - 0.5 ft BAT SE 9/12/2011 16:53	GR-01 LA-107 K1108656-007 0 - 3 ft BAT SE 9/12/2011 16:45
CAS NO.	COMPOUND	Value	UNITS:								
	METALS										
7429-90-5	Aluminum	NS	mg/kg	8500	9180	11100	9300	12900	11600	12000 J	9960
7440-36-0	Antimony	NS	mg/kg	UN	UN	UN	UN	0.63 BN	0.29 BN		
7440-38-2	Arsenic	10	mg/kg	5.4	6	8.1	6	8.4	7.3	7.4	6.1
7440-39-3	Barium	NS	mg/kg	105	67	112	174	103	82.1		
7440-41-7	Beryllium	NS	mg/kg	0.42	0.45	0.55	0.46	0.65	0.57		
7440-42-8	Boron	NS	mg/kg								
7440-43-9	Cadmium	1	mg/kg	3.5	1.1	3.4	9.1	1.8	1	0.33	1.33
7440-70-2	Calcium	NS	mg/kg	10600	11800	13700	11300	15200	13900		
7440-47-3	Chromium, Total	43	mg/kg	17.7	14.8	22.6	24.4	21.6	18.5	16.6	17.3
7440-48-4	Cobalt	NS	mg/kg	7.5	8	9.5	7.9	10.9	9.6		
7440-50-8	Copper	32	mg/kg	26.8	27.2	35.1	34.3	35.6	31	23.6	25.8
7439-89-6	Iron	NS	mg/kg	19100	19900	24300	19900	27300	24000		
7439-92-1	Lead	36	mg/kg	29.1	21.6	37.3	40	28.1	22	17	24
7439-93-2	Lithium	NS	mg/kg								
7439-95-4	Magnesium	NS	mg/kg	5530	5800	6860	5690	7570	6810		
7439-96-5	Manganese	NS	mg/kg	399	454	564	420	661	572	561	409
7439-97-6	Mercury	0.2	mg/kg	0.12	0.051 N	0.32 N	0.21 N	0.07	0.062 N	0.038	0.105 J
7439-98-7	Molybdenum	NS	mg/kg								
7440-02-0	Nickel	23	mg/kg	19	19.5	23.9	20.6	26.9	23.6	25.4	22.4
7440-09-7	Potassium	NS	mg/kg	1030 N	1110 N	1300 N	1170 N	1650 N	1540 N		
7782-49-2	Selenium	NS	mg/kg	U	0.29 B	U	U	U	U	0.6 J	0.7 U
7440-22-4	Silver	1	mg/kg	4.6	7	5.7	9.3	12.7	12.4	2	5.4
7440-23-5	Sodium	NS	mg/kg	120 B	120 B	125 B	124 B	167 B	136 B		
7440-24-6	Strontium	NS	mg/kg								
7440-28-0	Thallium	NS	mg/kg	U	0.17	0.23	0.22	0.2	U		
7440-31-5	Tin	NS	mg/kg								
7440-32-6	Titanium	NS	mg/kg								
7440-62-2	Vanadium	NS	mg/kg	14.3	15	18.4	15.9	21.2	18.7		
7440-66-6	Zinc	120	mg/kg	131	88	128	230	114	94.8	82.4	101

TABLE D-1a
HISTORICAL SEDIMENT METALS DATA SUMMARY
CLASS A STANDARDS COMPARISON

NYSDEC-Lower Genesee River Historical Sediment Data Metals Summary Class A Standards Comparison		Class A Freshwater Sediment Guidance	Location ID: Sample ID: Lab Sample Id: Depth: Source: SDG: Matrix: Sampled: Validated:	GR-01 LA-108 K1108656-008 3 - 6 ft BAT SE 9/12/2011 16:45	GR-01 LA-109 K1108656-009 6 - 9 ft BAT SE 9/12/2011 16:45	GR-01 LA-110 K1108656-010 9 - 12 ft BAT SE 9/12/2011 16:45	GR-01 LA-111 K1108656-011 12 - 14.9 ft BAT SE 9/12/2011 16:45	GR-02 2 1307007-01 0 - 0.5 FT USEPA B307044 SE 7/9/2013 16:57	GR-02 LA-002 K1108643-002 0 - 0.5 ft BAT SE 9/12/2011 16:00	GR-02 LA-104 K1108656-004 0 - 3 ft BAT SE 9/12/2011 15:51	GR-02 LA-105 K1108656-005 3 - 6 ft BAT SE 9/12/2011 15:51
CAS NO.	COMPOUND	Value	UNITS:								
	METALS										
7429-90-5	Aluminum	NS	mg/kg	11400	10800	11000	9130	14000	14800 J	16400	15600
7440-36-0	Antimony	NS	mg/kg					2.2 U			
7440-38-2	Arsenic	10	mg/kg	10.5	15.2	10	8.7	9.2	8.3	14.9	13.6
7440-39-3	Barium	NS	mg/kg					97			
7440-41-7	Beryllium	NS	mg/kg					0.65			
7440-42-8	Boron	NS	mg/kg					5.6 U			
7440-43-9	Cadmium	1	mg/kg	2.91	2.03	0.74	0.31	0.48	0.52	2.28	0.85
7440-70-2	Calcium	NS	mg/kg					14000			
7440-47-3	Chromium, Total	43	mg/kg	25.9	25	23	17.9	21	21.4	32.3	26.2
7440-48-4	Cobalt	NS	mg/kg					12			
7440-50-8	Copper	32	mg/kg	43.3	43.3	45	33.2	55	44.3	60.4	47.6
7439-89-6	Iron	NS	mg/kg					34000			
7439-92-1	Lead	36	mg/kg	46	60	82	49	22	23	55	70
7439-93-2	Lithium	NS	mg/kg					33			
7439-95-4	Magnesium	NS	mg/kg					9200			
7439-96-5	Manganese	NS	mg/kg	466	445	490	482	670	683	587	450
7439-97-6	Mercury	0.2	mg/kg	0.333 J	0.371 J	0.478 J	0.339 J		0.089	0.542 J	0.764 J
7439-98-7	Molybdenum	NS	mg/kg					1.5			
7440-02-0	Nickel	23	mg/kg	26.6	25.2	25.1	22.4	30	31	34.6	32.8
7440-09-7	Potassium	NS	mg/kg					1300 L			
7782-49-2	Selenium	NS	mg/kg	0.7 U	1 J	0.7 U	0.9 J	1.1 U	0.7 J	1.4 J	0.7 J
7440-22-4	Silver	1	mg/kg	15.1	16.1	19.3	14.5	3	3.1	14.3	11.5
7440-23-5	Sodium	NS	mg/kg					120 L			
7440-24-6	Strontium	NS	mg/kg					49			
7440-28-0	Thallium	NS	mg/kg					3.3 U			
7440-31-5	Tin	NS	mg/kg					2.2 U			
7440-32-6	Titanium	NS	mg/kg					49			
7440-62-2	Vanadium	NS	mg/kg					22			
7440-66-6	Zinc	120	mg/kg	171	152	175	144	130	109	173	164

TABLE D-1a
HISTORICAL SEDIMENT METALS DATA SUMMARY
CLASS A STANDARDS COMPARISON

NYSDEC-Lower Genesee River Historical Sediment Data Metals Summary Class A Standards Comparison		Class A Freshwater Sediment Guidance	Location ID: Sample ID: Lab Sample Id: Depth: Source: SDG: Matrix: Sampled: Validated:	GR-02 LA-106 K1108656-006 6 - 7.4 ft BAT SE 9/12/2011 15:51	GR-03 3 1307007-02 0 - 0.5 FT USEPA B307044 SE 7/9/2013 17:13	GR-03 LA-003 K1108840-005 0 - 0.5 ft BAT SE 9/15/2011 11:28	GR-03 LA-003D K1108840-006 0 - 0.5 ft BAT SE 9/15/2011 11:31	GR-03 LA-159 K1108838-019 0 - 3 ft BAT SE 9/15/2011 11:22	GR-03 LA-160 K1108843-017 3 - 6 ft BAT SE 9/15/2011 11:22	GR-03 LA-161 K1108837-013 6 - 9.4 ft BAT SE 9/15/2011 11:22	GR-03 LA-162 K1108843-018 0 - 3 ft BAT SE 9/15/2011 11:15
CAS NO.	COMPOUND	Value	UNITS:								
	METALS										
7429-90-5	Aluminum	NS	mg/kg	12000	11000	8650 J	7610 J	11400 J	9170	11500	9590
7440-36-0	Antimony	NS	mg/kg		2.3 U						
7440-38-2	Arsenic	10	mg/kg	7.7	7.3	6.2	5	7.3	7.5	8.4	7
7440-39-3	Barium	NS	mg/kg		72						
7440-41-7	Beryllium	NS	mg/kg		0.51						
7440-42-8	Boron	NS	mg/kg		5.7						
7440-43-9	Cadmium	1	mg/kg	0.26	0.23 U	0.14	0.06 J	0.28	2.34	5.54	0.43
7440-70-2	Calcium	NS	mg/kg		16000						
7440-47-3	Chromium, Total	43	mg/kg	18.7	15	11.8	10.3	15.8	18.1	26.8	15.1
7440-48-4	Cobalt	NS	mg/kg		9.3						
7440-50-8	Copper	32	mg/kg	26.5	24	20.9	17.9	27.7	32.2	40	28.4
7439-89-6	Iron	NS	mg/kg		27000						
7439-92-1	Lead	36	mg/kg	27	15	15	12	20	33	39	21
7439-93-2	Lithium	NS	mg/kg		25						
7439-95-4	Magnesium	NS	mg/kg		7900						
7439-96-5	Manganese	NS	mg/kg	400	750	438	400	586	452	551	477
7439-97-6	Mercury	0.2	mg/kg	0.246 J		0.029	0.021	0.041	0.068	0.115	0.043
7439-98-7	Molybdenum	NS	mg/kg		1.4 U						
7440-02-0	Nickel	23	mg/kg	25.6	23	19	17.4	24.2	23	25.2	22.2
7440-09-7	Potassium	NS	mg/kg		950 L						
7782-49-2	Selenium	NS	mg/kg	0.8 J	1.1 U	1 J	1.4 J	0.7 U	1.5 J	0.7 U	0.7 U
7440-22-4	Silver	1	mg/kg	3.4	1.6	4.4	0.7	7.1	12.2	9.1	11.2
7440-23-5	Sodium	NS	mg/kg		91 L						
7440-24-6	Strontium	NS	mg/kg		50						
7440-28-0	Thallium	NS	mg/kg		3.4 U						
7440-31-5	Tin	NS	mg/kg		2.3 U						
7440-32-6	Titanium	NS	mg/kg		48						
7440-62-2	Vanadium	NS	mg/kg		16						
7440-66-6	Zinc	120	mg/kg	88.9	91	68.8	58.2	91.8	119	145	91.6

TABLE D-1a
HISTORICAL SEDIMENT METALS DATA SUMMARY
CLASS A STANDARDS COMPARISON

NYSDEC-Lower Genesee River Historical Sediment Data Metals Summary Class A Standards Comparison		Class A Freshwater Sediment Guidance	Location ID: Sample ID: Lab Sample Id: Depth: Source: SDG: Matrix: Sampled: Validated:	GR-03 LA-163 K1108843-019 3 - 6 ft BAT SE 9/15/2011 11:15	GR-03 LA-164 K1108837-014 6 - 8.7 ft BAT SE 9/15/2011 11:15	GR-04 LA-004 K1108643-003 0 - 0.5 ft BAT SE 9/12/2011 15:10	GR-04 LA-101 K1108656-001 0 - 3 ft BAT SE 9/12/2011 14:59	GR-04 LA-102 K1108656-002 3 - 6 ft BAT SE 9/12/2011 14:59	GR-04 LA-103 K1108656-003 6 - 9.8 ft BAT SE 9/12/2011 14:59	GR-05 LA-005 K1108840-007 0 - 0.5 ft BAT SE 9/16/2011 8:23	GR-05 LA-181 K1108838-008 0 - 3 ft BAT SE 9/16/2011 8:20
CAS NO.	COMPOUND	Value	UNITS:								
	METALS										
7429-90-5	Aluminum	NS	mg/kg	9440	11300	11400 J	11900	11700	12200	10900 J	11500 J
7440-36-0	Antimony	NS	mg/kg								
7440-38-2	Arsenic	10	mg/kg	7.9	8.3	7.8	7.9	5.8	5.2	7.7	8.3
7440-39-3	Barium	NS	mg/kg								
7440-41-7	Beryllium	NS	mg/kg								
7440-42-8	Boron	NS	mg/kg								
7440-43-9	Cadmium	1	mg/kg	3.25	5.45	0.3	5.47	2.75	0.2	0.2	5.12
7440-70-2	Calcium	NS	mg/kg								
7440-47-3	Chromium, Total	43	mg/kg	18.3	27.8	16.2	24.2	19.9	18	14.7	22.9
7440-48-4	Cobalt	NS	mg/kg								
7440-50-8	Copper	32	mg/kg	31.8	40.2	24.5	33.9	27.6	22.2	28.8	38.6
7439-89-6	Iron	NS	mg/kg								
7439-92-1	Lead	36	mg/kg	31	42	16	32	25	13	17	34
7439-93-2	Lithium	NS	mg/kg								
7439-95-4	Magnesium	NS	mg/kg								
7439-96-5	Manganese	NS	mg/kg	435	552	596	512	326	233	515	544
7439-97-6	Mercury	0.2	mg/kg	0.069	0.261	0.032	0.126 J	0.057 J	0.015 J	0.035	0.117
7439-98-7	Molybdenum	NS	mg/kg								
7440-02-0	Nickel	23	mg/kg	23.3	25.2	25.3	26.7	25.4	29.7	24.1	26.1
7440-09-7	Potassium	NS	mg/kg								
7782-49-2	Selenium	NS	mg/kg	0.8 J	0.7 U	0.6 J	1.1 J	0.7 U	1.2 J	0.8 J	0.7 U
7440-22-4	Silver	1	mg/kg	7.8	8.3	1.3	8.9	4	0.2 U	1.6	8.7
7440-23-5	Sodium	NS	mg/kg								
7440-24-6	Strontium	NS	mg/kg								
7440-28-0	Thallium	NS	mg/kg								
7440-31-5	Tin	NS	mg/kg								
7440-32-6	Titanium	NS	mg/kg								
7440-62-2	Vanadium	NS	mg/kg								
7440-66-6	Zinc	120	mg/kg	118	144	76.8	164	116	71.6	83.1	187

TABLE D-1a
HISTORICAL SEDIMENT METALS DATA SUMMARY
CLASS A STANDARDS COMPARISON

NYSDEC-Lower Genesee River Historical Sediment Data Metals Summary Class A Standards Comparison		Class A Freshwater Sediment Guidance	Location ID: Sample ID: Lab Sample Id: Depth: Source: SDG: Matrix: Sampled: Validated:	GR-05 LA-182 K1108838-015 3 - 6 ft BAT SE 9/16/2011 8:20	GR-05 LA-183 K1108838-016 6 - 8 ft BAT SE 9/16/2011 8:20	GR-06 LA-006 K1108840-008 0 - 0.5 ft BAT SE 9/15/2011 17:44	GR-06 LA-173 K1108840-004 0 - 1.5 ft BAT SE 9/15/2011 17:40	GR-07 LA-007 K1108840-009 0 - 0.5 ft BAT SE 9/15/2011 17:07	GR-07 LA-184 K1108837-015 0 - 3 ft BAT SE 9/15/2011 16:58	GR-07 LA-185 K1108837-016 3 - 6 ft BAT SE 9/15/2011 16:58	GR-07 LA-186 K1108837-017 6 - 9 ft BAT SE 9/15/2011 16:58
CAS NO.	COMPOUND	Value	UNITS:								
	METALS										
7429-90-5	Aluminum	NS	mg/kg	11300 J	12400 J	10700 J	9600 J	10500 J	10600	8570	10800
7440-36-0	Antimony	NS	mg/kg								
7440-38-2	Arsenic	10	mg/kg	6.2	5.5	6.9	6.9	7.3	7.3	6	8.9
7440-39-3	Barium	NS	mg/kg								
7440-41-7	Beryllium	NS	mg/kg								
7440-42-8	Boron	NS	mg/kg								
7440-43-9	Cadmium	1	mg/kg	2.57	0.14	0.32	1.84	0.14	0.35	0.88	6.97
7440-70-2	Calcium	NS	mg/kg								
7440-47-3	Chromium, Total	43	mg/kg	17.9	16.5	16.5	17.3	14.2	16.4	15.8	28.6
7440-48-4	Cobalt	NS	mg/kg								
7440-50-8	Copper	32	mg/kg	32.5	24.5	31.8	30.7	29.1	29.7	28.4	46.5
7439-89-6	Iron	NS	mg/kg								
7439-92-1	Lead	36	mg/kg	201	16	21	35	17	20	21	60
7439-93-2	Lithium	NS	mg/kg								
7439-95-4	Magnesium	NS	mg/kg								
7439-96-5	Manganese	NS	mg/kg	364	207	474	427	625	660	459	506
7439-97-6	Mercury	0.2	mg/kg	0.104	0.02	0.037	0.074	0.036	0.049	0.048	0.186
7439-98-7	Molybdenum	NS	mg/kg								
7440-02-0	Nickel	23	mg/kg	23.9	27.9	23.4	22.3	23.7	21.7	19.1	25
7440-09-7	Potassium	NS	mg/kg								
7782-49-2	Selenium	NS	mg/kg	0.8 J	0.7 U	1.6 J	0.8 J	1.3 J	0.8 J	0.7 U	0.9 J
7440-22-4	Silver	1	mg/kg	2.6	0.2 U	12	10.5	2.1	6	9.6	15.8
7440-23-5	Sodium	NS	mg/kg								
7440-24-6	Strontium	NS	mg/kg								
7440-28-0	Thallium	NS	mg/kg								
7440-31-5	Tin	NS	mg/kg								
7440-32-6	Titanium	NS	mg/kg								
7440-62-2	Vanadium	NS	mg/kg								
7440-66-6	Zinc	120	mg/kg	123	77.3	94.9	113	82.5	80.2	82	198

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HISTORICAL SEDIMENT METALS DATA SUMMARY
CLASS A STANDARDS COMPARISON

NYSDEC-Lower Genesee River Historical Sediment Data Metals Summary Class A Standards Comparison		Class A Freshwater Sediment Guidance	Location ID: Sample ID: Lab Sample Id: Depth: Source: SDG: Matrix: Sampled: Validated:	GR-07 LA-187 K1108837-018 9 - 12 ft BAT SE 9/15/2011 16:58	GR-07 LA-188 K1108837-019 12 - 14.4 ft BAT SE 9/15/2011 16:58	GR-08 LA-008 K1108840-010 0 - 0.5 ft BAT SE 9/15/2011 16:28	GR-08 LA-189 K1108838-009 0 - 3 ft BAT SE 9/15/2011 16:18	GR-08 LA-190 K1108838-010 3 - 6 ft BAT SE 9/15/2011 16:18	GR-08 LA-191 K1108837-020 6 - 9 ft BAT SE 9/15/2011 16:18	GR-08 LA-192 K1108838-011 9 - 12 ft BAT SE 9/15/2011 16:18	GR-08 LA-193 K1108838-001 12 - 13.8 ft BAT SE 9/15/2011 16:18
CAS NO.	COMPOUND	Value	UNITS:								
	METALS										
7429-90-5	Aluminum	NS	mg/kg	10100	8850	8140 J	10500 J	9710 J	11900	9780 J	10400 J
7440-36-0	Antimony	NS	mg/kg								
7440-38-2	Arsenic	10	mg/kg	11.8	12.6	6.1	7.7	8.9	18.7	6.3	5.3
7440-39-3	Barium	NS	mg/kg								
7440-41-7	Beryllium	NS	mg/kg								
7440-42-8	Boron	NS	mg/kg								
7440-43-9	Cadmium	1	mg/kg	2.83	1.63	0.06 J	0.22	6.02	3.1	0.4	0.1
7440-70-2	Calcium	NS	mg/kg								
7440-47-3	Chromium, Total	43	mg/kg	25.8	29	11	14.8	28.2	38.2	16.1	14.4
7440-48-4	Cobalt	NS	mg/kg								
7440-50-8	Copper	32	mg/kg	47.6	40.9	19.9	28.7	71.5	89.1	28.5	21.5
7439-89-6	Iron	NS	mg/kg								
7439-92-1	Lead	36	mg/kg	48	40	13	21	84	87	29	16
7439-93-2	Lithium	NS	mg/kg								
7439-95-4	Magnesium	NS	mg/kg								
7439-96-5	Manganese	NS	mg/kg	423	391	420	592	407	505	396	353
7439-97-6	Mercury	0.2	mg/kg	0.303	0.314	0.028	0.033	0.208	0.463	0.084	0.015 J
7439-98-7	Molybdenum	NS	mg/kg								
7440-02-0	Nickel	23	mg/kg	24.3	20.9	18.4	23.5	25.2	27.6	23.2	25
7440-09-7	Potassium	NS	mg/kg								
7782-49-2	Selenium	NS	mg/kg	0.8 J	0.7 U	0.7 U	0.7 U	1.4 J	0.9 J	1.2 J	1.1 J
7440-22-4	Silver	1	mg/kg	21.7	18.7	0.5	5	19.7	29.4	4.9	0.2 U
7440-23-5	Sodium	NS	mg/kg								
7440-24-6	Strontium	NS	mg/kg								
7440-28-0	Thallium	NS	mg/kg								
7440-31-5	Tin	NS	mg/kg								
7440-32-6	Titanium	NS	mg/kg								
7440-62-2	Vanadium	NS	mg/kg								
7440-66-6	Zinc	120	mg/kg	143	108	60.4	85.4	227	198	86.2	68.8

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HISTORICAL SEDIMENT METALS DATA SUMMARY
CLASS A STANDARDS COMPARISON

NYSDEC-Lower Genesee River Historical Sediment Data Metals Summary Class A Standards Comparison		Class A Freshwater Sediment Guidance	Location ID: Sample ID: Lab Sample Id: Depth: Source: SDG: Matrix: Sampled: Validated:	GR-09 LA-009 K1108840-011 0 - 0.5 ft BAT SE 9/15/2011 15:53	GR-09 LA-194 K1108838-002 0 - 3 ft BAT SE 9/15/2011 15:45	GR-09 LA-195 K1108838-003 3 - 6 ft BAT SE 9/15/2011 15:45	GR-09 LA-196 K1108838-004 6 - 9 ft BAT SE 9/15/2011 15:45	GR-09 LA-197 K1108838-012 9 - 12 ft BAT SE 9/15/2011 15:45	GR-09 LA-198 K1108838-005 12 - 13.8 ft BAT SE 9/15/2011 15:45	GR-10 LA-010 K1108840-012 0 - 0.5 ft BAT SE 9/15/2011 14:35	GR-10 LA-165 K1108843-020 0 - 3 ft BAT SE 9/15/2011 14:21
CAS NO.	COMPOUND	Value	UNITS:								
	METALS										
7429-90-5	Aluminum	NS	mg/kg	9300 J	10100 J	11400 J	10200 J	9120 J	11900 J	8490 J	8250
7440-36-0	Antimony	NS	mg/kg								
7440-38-2	Arsenic	10	mg/kg	5.7	6.9	9.5	12.6	13.2	13	5.7	6.3
7440-39-3	Barium	NS	mg/kg								
7440-41-7	Beryllium	NS	mg/kg								
7440-42-8	Boron	NS	mg/kg								
7440-43-9	Cadmium	1	mg/kg	0.18	1.74	9.99	3.5	1.6	0.92	0.14	1.57
7440-70-2	Calcium	NS	mg/kg								
7440-47-3	Chromium, Total	43	mg/kg	12.9	16.9	36.4	28	23.8	28.3	12.3	15.4
7440-48-4	Cobalt	NS	mg/kg								
7440-50-8	Copper	32	mg/kg	25.3	33.2	56.3	52	41.1	49.9	21.4	28.1
7439-89-6	Iron	NS	mg/kg								
7439-92-1	Lead	36	mg/kg	15	24	53	51	45	70	15	25
7439-93-2	Lithium	NS	mg/kg								
7439-95-4	Magnesium	NS	mg/kg								
7439-96-5	Manganese	NS	mg/kg	447	448	451	400	370	460	440	383
7439-97-6	Mercury	0.2	mg/kg	0.029	0.086	0.245	0.31	0.249	0.368	0.03	0.052
7439-98-7	Molybdenum	NS	mg/kg								
7440-02-0	Nickel	23	mg/kg	21.2	23.6	29.5	26.5	23	27.5	19.1	20
7440-09-7	Potassium	NS	mg/kg								
7782-49-2	Selenium	NS	mg/kg	0.7 U	0.9 J	0.9 J	1.4 J	1.2 J	1.3 J	0.8 J	0.9 J
7440-22-4	Silver	1	mg/kg	1.7	9.2	24.2	23.4	16.5	22.7	3.2	12.4
7440-23-5	Sodium	NS	mg/kg								
7440-24-6	Strontium	NS	mg/kg								
7440-28-0	Thallium	NS	mg/kg								
7440-31-5	Tin	NS	mg/kg								
7440-32-6	Titanium	NS	mg/kg								
7440-62-2	Vanadium	NS	mg/kg								
7440-66-6	Zinc	120	mg/kg	74	114	276	172	120	166	68.1	102

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HISTORICAL SEDIMENT METALS DATA SUMMARY
CLASS A STANDARDS COMPARISON

NYSDEC-Lower Genesee River Historical Sediment Data Metals Summary Class A Standards Comparison		Class A Freshwater Sediment Guidance	Location ID: Sample ID: Lab Sample Id: Depth: Source: SDG: Matrix: Sampled: Validated:	GR-10 LA-166 K1108844-001 3 - 6 ft BAT SE 9/15/2011 14:21	GR-10 LA-167 K1108844-002 6 - 6.9 ft BAT SE 9/15/2011 14:21	GR-11 11 1307007-03 0 - 0.5 FT USEPA B307044 SE 7/9/2013 16:20	GR-11 LA-011 K1108837-001 0 - 0.5 ft BAT SE 9/15/2011 9:09	GR-11 LA-152 K1108837-009 0 - 0.9 ft BAT SE 9/15/2011 9:01	GR-12 12 1307007-04 0 - 0.5 FT USEPA SE 7/9/2013 16:06	GR-12 LA-012 K1108837-002 0 - 0.5 ft BAT SE 9/15/2011 13:46	GR-12 LA-199 K1108838-013 0 - 3 ft BAT SE 9/15/2011 13:22
CAS NO.	COMPOUND	Value	UNITS:								
	METALS										
7429-90-5	Aluminum	NS	mg/kg	10700	10500	8000	13600	9160	9600	11600	8660 J
7440-36-0	Antimony	NS	mg/kg			2.3 U			2.2 UL		
7440-38-2	Arsenic	10	mg/kg	8.8	10.4	5.3	6.9	5.5	6.9	9.1	6.7
7440-39-3	Barium	NS	mg/kg			48			100		
7440-41-7	Beryllium	NS	mg/kg			0.35			0.42		
7440-42-8	Boron	NS	mg/kg			5.6 U			5.4 U		
7440-43-9	Cadmium	1	mg/kg	4.94	3.1	0.24	0.72	2.47	2.1	10.5	0.31
7440-70-2	Calcium	NS	mg/kg			11000			13000		
7440-47-3	Chromium, Total	43	mg/kg	26	21.4	12	20.5	18.8	16	35.2	13.1
7440-48-4	Cobalt	NS	mg/kg			7.2			8.4		
7440-50-8	Copper	32	mg/kg	37.7	36.6	19	31.8	29.9	27	53.3	24.3
7439-89-6	Iron	NS	mg/kg			20000			23000		
7439-92-1	Lead	36	mg/kg	42	38	12	29	27	18	49	17
7439-93-2	Lithium	NS	mg/kg			18			22		
7439-95-4	Magnesium	NS	mg/kg			6000			7000		
7439-96-5	Manganese	NS	mg/kg	463	458	440	406	395	520	502	475
7439-97-6	Mercury	0.2	mg/kg	0.151	0.195		0.043	0.081		0.2	0.096
7439-98-7	Molybdenum	NS	mg/kg			1.4 U			1.3 U		
7440-02-0	Nickel	23	mg/kg	27	26.7	17	26.7	20.4	21	27.6	20.6
7440-09-7	Potassium	NS	mg/kg			680 L			810 L		
7782-49-2	Selenium	NS	mg/kg	1.4 J	1.3 J	1.1 U	1.1 J	0.7 U	1.1 U	0.7 U	1 J
7440-22-4	Silver	1	mg/kg	10.3	11.7	1.8	17.9	14.3	7.4	25.3	6.8
7440-23-5	Sodium	NS	mg/kg			66 L			77 L		
7440-24-6	Strontium	NS	mg/kg			33			38		
7440-28-0	Thallium	NS	mg/kg			3.4 U			3.3 U		
7440-31-5	Tin	NS	mg/kg			2.3 U			2.2 U		
7440-32-6	Titanium	NS	mg/kg			46			48		
7440-62-2	Vanadium	NS	mg/kg			12			15		
7440-66-6	Zinc	120	mg/kg	155	150	70	107	111	110	255	76.4

TABLE D-1a
HISTORICAL SEDIMENT METALS DATA SUMMARY
CLASS A STANDARDS COMPARISON

NYSDEC-Lower Genesee River Historical Sediment Data Metals Summary Class A Standards Comparison		Class A Freshwater Sediment Guidance	Location ID: Sample ID: Lab Sample Id: Depth: Source: SDG: Matrix: Sampled: Validated:	GR-12 LA-200 K1108838-014 3 - 6 ft BAT SE 9/15/2011 13:22	GR-12 LA-201 K1108843-011 6 - 9 ft BAT SE 9/15/2011 13:22	GR-12 LA-202 K1108843-012 9 - 12 ft BAT SE 9/15/2011 13:22	GR-12 LA-203 K1108843-013 12 - 15 ft BAT SE 9/15/2011 13:22	GR-12 LA-204 K1108843-014 15 - 16.4 ft BAT SE 9/15/2011 13:22	GR-13 LA-013 K1108837-003 0 - 0.5 ft BAT SE 9/14/2011 9:09	GR-13 LA-013D K1108840-013 0 - 0.5 ft BAT SE 9/14/2011 9:10	GR-13 LA-126 K1108643-011 0 - 3 ft BAT SE 9/14/2011 8:47
CAS NO.	COMPOUND	Value	UNITS:								
	METALS										
7429-90-5	Aluminum	NS	mg/kg	10100 J	9870	8440	9320	8590	13000	12700 J	13500 J
7440-36-0	Antimony	NS	mg/kg								
7440-38-2	Arsenic	10	mg/kg	8.2	9.2	5	5.5	5	8.2	8.9	8.5
7440-39-3	Barium	NS	mg/kg								
7440-41-7	Beryllium	NS	mg/kg								
7440-42-8	Boron	NS	mg/kg								
7440-43-9	Cadmium	1	mg/kg	5.45	1.99	0.04 U	0.04 U	0.04 U	0.53	0.42	1.49
7440-70-2	Calcium	NS	mg/kg								
7440-47-3	Chromium, Total	43	mg/kg	24.1	18.8	11.5	12.6	12	29	28.2	28.1
7440-48-4	Cobalt	NS	mg/kg								
7440-50-8	Copper	32	mg/kg	42.1	36.5	17.3	18.6	17.8	69.8	65.7	68.3
7439-89-6	Iron	NS	mg/kg								
7439-92-1	Lead	36	mg/kg	46	39	11	11	10	41	46	69
7439-93-2	Lithium	NS	mg/kg								
7439-95-4	Magnesium	NS	mg/kg								
7439-96-5	Manganese	NS	mg/kg	473	410	363	366	378	477	443	491
7439-97-6	Mercury	0.2	mg/kg	0.196	0.165	0.015 J	0.013 J	0.012 J	0.082	0.071	0.122
7439-98-7	Molybdenum	NS	mg/kg								
7440-02-0	Nickel	23	mg/kg	25.1	24.1	21	23.1	21.4	25.5	27	29.8
7440-09-7	Potassium	NS	mg/kg								
7782-49-2	Selenium	NS	mg/kg	1 J	1.4 J	0.7 U	0.7 U	1.3 J	0.8 J	1.1 J	0.8 J
7440-22-4	Silver	1	mg/kg	17.3	8.5	0.2 U	0.2 U	0.2 U	3.2	3.3	10.5
7440-23-5	Sodium	NS	mg/kg								
7440-24-6	Strontium	NS	mg/kg								
7440-28-0	Thallium	NS	mg/kg								
7440-31-5	Tin	NS	mg/kg								
7440-32-6	Titanium	NS	mg/kg								
7440-62-2	Vanadium	NS	mg/kg								
7440-66-6	Zinc	120	mg/kg	183	124	56.7	61.8	57.6	196	211	224

TABLE D-1a
HISTORICAL SEDIMENT METALS DATA SUMMARY
CLASS A STANDARDS COMPARISON

NYSDEC-Lower Genesee River Historical Sediment Data Metals Summary Class A Standards Comparison		Class A Freshwater Sediment Guidance	Location ID: Sample ID: Lab Sample Id: Depth: Source: SDG: Matrix: Sampled: Validated:	GR-13 LA-127 K1108643-012 3 - 6 ft BAT SE 9/14/2011 8:47	GR-13 LA-128 K1108643-013 6 - 9 ft BAT SE 9/14/2011 8:47	GR-13 LA-129 K1108643-014 9 - 11.9 ft BAT SE 9/14/2011 8:47	GR-13 LA-130 K1108737-001 0 - 3 ft BAT SE 9/14/2011 9:00	GR-13 LA-131 K1108737-002 3 - 6 ft BAT SE 9/14/2011 9:00	GR-13 LA-132 K1108737-003 6 - 9 ft BAT SE 9/14/2011 9:00	GR-13 LA-133 K1108737-004 9 - 12 ft BAT SE 9/14/2011 9:00	GR-13 LA-134 K1108737-005 12 - 13.1 ft BAT SE 9/14/2011 9:00
CAS NO.	COMPOUND	Value	UNITS:								
	METALS										
7429-90-5	Aluminum	NS	mg/kg	13200 J	9870 J	12800 J	15100	13900	10700	11800	11600
7440-36-0	Antimony	NS	mg/kg								
7440-38-2	Arsenic	10	mg/kg	8.4	7.6	7	10.3	9.9	10.6	6.2	6.9
7440-39-3	Barium	NS	mg/kg								
7440-41-7	Beryllium	NS	mg/kg								
7440-42-8	Boron	NS	mg/kg								
7440-43-9	Cadmium	1	mg/kg	5.07	0.19	0.16	1.71	5.37	0.45	0.38	0.36
7440-70-2	Calcium	NS	mg/kg								
7440-47-3	Chromium, Total	43	mg/kg	28.9	14.9	18.8	28.6	28.3	14.9	15.8	15.2
7440-48-4	Cobalt	NS	mg/kg								
7440-50-8	Copper	32	mg/kg	51.1	18.8	21.8	73.4	54.1	20.1	19.4	20.1
7439-89-6	Iron	NS	mg/kg								
7439-92-1	Lead	36	mg/kg	165	12	13	71.8	166	19.7	14.5	12.5
7439-93-2	Lithium	NS	mg/kg								
7439-95-4	Magnesium	NS	mg/kg								
7439-96-5	Manganese	NS	mg/kg	444	204	266	482	461	217	238	236
7439-97-6	Mercury	0.2	mg/kg	0.162	0.021	0.019	0.107	0.19	0.035	0.022	0.02
7439-98-7	Molybdenum	NS	mg/kg								
7440-02-0	Nickel	23	mg/kg	29.7	23.9	30.6	29.4	28.9	22.7	24.6	24.4
7440-09-7	Potassium	NS	mg/kg								
7782-49-2	Selenium	NS	mg/kg	0.8 J	1.3 U	1.1 U	0.7 U	0.7 U	1.2 J	0.7 U	0.7 U
7440-22-4	Silver	1	mg/kg	7.6	0.4 U	0.3 U	9.8	7.4	0.3 U	0.2 U	0.2 U
7440-23-5	Sodium	NS	mg/kg								
7440-24-6	Strontium	NS	mg/kg								
7440-28-0	Thallium	NS	mg/kg								
7440-31-5	Tin	NS	mg/kg								
7440-32-6	Titanium	NS	mg/kg								
7440-62-2	Vanadium	NS	mg/kg								
7440-66-6	Zinc	120	mg/kg	238	58.9	72.7	242	248	65.7	67.2	65

TABLE D-1a
HISTORICAL SEDIMENT METALS DATA SUMMARY
CLASS A STANDARDS COMPARISON

NYSDEC-Lower Genesee River Historical Sediment Data Metals Summary Class A Standards Comparison		Class A Freshwater Sediment Guidance	Location ID: Sample ID: Lab Sample Id: Depth: Source: SDG: Matrix: Sampled: Validated:	GR-14 LA-014 K1108837-004 0 - 0.5 ft BAT SE 9/14/2011 17:25	GR-14 LA-014D K1108837-005 0 - 0.5 ft BAT SE 9/14/2011 17:27	GR-14 LA-153 K1108843-015 0 - 3 ft BAT SE 9/14/2011 17:10	GR-14 LA-154 K1108837-010 3 - 6 ft BAT SE 9/14/2011 17:10	GR-14 LA-155 K1108838-018 6 - 8.2 ft BAT SE 9/14/2011 17:10	GR-14 LA-156 K1108843-016 0 - 3 ft BAT SE 9/14/2011 17:22	GR-14 LA-157 K1108837-011 3 - 6 ft BAT SE 9/14/2011 17:22	GR-14 LA-158 K1108837-012 6 - 7.7 ft BAT SE 9/14/2011 17:22
CAS NO.	COMPOUND	Value	UNITS:								
	METALS										
7429-90-5	Aluminum	NS	mg/kg	6780	7750	7740	10600	10900 J	7580	11100	11300
7440-36-0	Antimony	NS	mg/kg								
7440-38-2	Arsenic	10	mg/kg	4	4.3	5.5	8.8	19.4	6.3	10.3	19.2
7440-39-3	Barium	NS	mg/kg								
7440-41-7	Beryllium	NS	mg/kg								
7440-42-8	Boron	NS	mg/kg								
7440-43-9	Cadmium	1	mg/kg	0.24	0.28	1.85	8.31	3.65	1.68	8.1	3.81
7440-70-2	Calcium	NS	mg/kg								
7440-47-3	Chromium, Total	43	mg/kg	10.9	12.5	14.9	35	43	14.8	36.1	38.7
7440-48-4	Cobalt	NS	mg/kg								
7440-50-8	Copper	32	mg/kg	15.3	18.4	25.9	52.8	72	26.5	59.1	71.5
7439-89-6	Iron	NS	mg/kg								
7439-92-1	Lead	36	mg/kg	11	13	23	48	67	23	53	62
7439-93-2	Lithium	NS	mg/kg								
7439-95-4	Magnesium	NS	mg/kg								
7439-96-5	Manganese	NS	mg/kg	429	371	352	420	409	355	437	460
7439-97-6	Mercury	0.2	mg/kg	0.027	0.026	0.062	0.284	0.587	0.051	0.315	0.466
7439-98-7	Molybdenum	NS	mg/kg								
7440-02-0	Nickel	23	mg/kg	14.2	16.5	19.2	25.8	27.5	19.5	26.7	26.8
7440-09-7	Potassium	NS	mg/kg								
7782-49-2	Selenium	NS	mg/kg	0.6 U	0.7 U	1.4 J	0.7 U	1.3 J	0.8 J	1.3 J	1.2 J
7440-22-4	Silver	1	mg/kg	2.4	5.8	10.9	25.4	35.2	9.6	27.6	34.7
7440-23-5	Sodium	NS	mg/kg								
7440-24-6	Strontium	NS	mg/kg								
7440-28-0	Thallium	NS	mg/kg								
7440-31-5	Tin	NS	mg/kg								
7440-32-6	Titanium	NS	mg/kg								
7440-62-2	Vanadium	NS	mg/kg								
7440-66-6	Zinc	120	mg/kg	51.9	63.3	95.4	238	177	95.2	243	164

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HISTORICAL SEDIMENT METALS DATA SUMMARY
CLASS A STANDARDS COMPARISON

NYSDEC-Lower Genesee River Historical Sediment Data Metals Summary Class A Standards Comparison		Class A Freshwater Sediment Guidance	Location ID: Sample ID: Lab Sample Id: Depth: Source: SDG: Matrix: Sampled: Validated:	GR-15 LA-015 K1108837-006 0 - 0.5 ft BAT SE 9/14/2011 16:33	GR-15 LA-168 K1108844-003 0 - 3 ft BAT SE 9/14/2011 16:24	GR-15 LA-169 K1108838-020 3 - 6 ft BAT SE 9/14/2011 16:24	GR-15 LA-170 K1108840-001 6 - 9 ft BAT SE 9/14/2011 16:24	GR-15 LA-171 K1108840-002 9 - 12 ft BAT SE 9/14/2011 16:24	GR-15 LA-172 K1108840-003 12 - 13.2 ft BAT SE 9/14/2011 16:24	GR-16 LA-016 K1108837-007 0 - 0.5 ft BAT SE 9/14/2011 15:44	GR-16 LA-144 K1108764-004 0 - 3 ft BAT SE 9/14/2011 15:40
CAS NO.	COMPOUND	Value	UNITS:								
	METALS										
7429-90-5	Aluminum	NS	mg/kg	9580	11900	9760 J	10900 J	10400 J	8910 J	6560	9210
7440-36-0	Antimony	NS	mg/kg								
7440-38-2	Arsenic	10	mg/kg	5.5	8.2	6.8	8.9	8.8	5.7	4.5	6.6
7440-39-3	Barium	NS	mg/kg								
7440-41-7	Beryllium	NS	mg/kg								
7440-42-8	Boron	NS	mg/kg								
7440-43-9	Cadmium	1	mg/kg	0.25	0.64	0.81	4.27	8.86	2.53	0.1	0.08 J
7440-70-2	Calcium	NS	mg/kg								
7440-47-3	Chromium, Total	43	mg/kg	15	17.1	16.5	24.5	28.5	16.8	10.2	13.1
7440-48-4	Cobalt	NS	mg/kg								
7440-50-8	Copper	32	mg/kg	23.1	24.4	28.9	44.8	50	28	15.9	21.7
7439-89-6	Iron	NS	mg/kg								
7439-92-1	Lead	36	mg/kg	17	20	25	58	56	23	10	14.7
7439-93-2	Lithium	NS	mg/kg								
7439-95-4	Magnesium	NS	mg/kg								
7439-96-5	Manganese	NS	mg/kg	487	538	537	580	534	365	364	461
7439-97-6	Mercury	0.2	mg/kg	0.031	0.035	0.057	0.105	0.194	0.081	0.02	0.025
7439-98-7	Molybdenum	NS	mg/kg								
7440-02-0	Nickel	23	mg/kg	20.2	26.5	22.7	27.2	27.8	22.8	14.3	19.2
7440-09-7	Potassium	NS	mg/kg								
7782-49-2	Selenium	NS	mg/kg	0.7 J	0.7 U	1.4 J	1.7 J	0.7 U	0.7 J	0.7 U	1.1 J
7440-22-4	Silver	1	mg/kg	4.9	7.8	16	26.1	19.8	6.6	1	5.9
7440-23-5	Sodium	NS	mg/kg								
7440-24-6	Strontium	NS	mg/kg								
7440-28-0	Thallium	NS	mg/kg								
7440-31-5	Tin	NS	mg/kg								
7440-32-6	Titanium	NS	mg/kg								
7440-62-2	Vanadium	NS	mg/kg								
7440-66-6	Zinc	120	mg/kg	74.6	91.1	105	174	218	109	48.9	66.3

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HISTORICAL SEDIMENT METALS DATA SUMMARY
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NYSDEC-Lower Genesee River Historical Sediment Data Metals Summary Class A Standards Comparison		Class A Freshwater Sediment Guidance	Location ID: Sample ID: Lab Sample Id: Depth: Source: SDG: Matrix: Sampled: Validated:	GR-16 LA-145 K1108764-005 3 - 6 ft BAT SE 9/14/2011 15:40	GR-16 LA-146 K1108764-006 6 - 9 ft BAT SE 9/14/2011 15:40	GR-16 LA-147 K1108764-007 9 - 12 ft BAT SE 9/14/2011 15:40	GR-16 LA-148 K1108764-008 12 - 15 ft BAT SE 9/14/2011 15:40	GR-16 LA-149 K1108764-009 15 - 18 ft BAT SE 9/14/2011 15:40	GR-16 LA-150 K1108764-010 18 - 19.9 ft BAT SE 9/14/2011 15:40	GR-17 LA-017 K1108840-014 0 - 0.5 ft BAT SE 9/14/2011 14:54	GR-17 LA-151 K1108838-017 0 - 3.1 ft BAT SE 9/14/2011 14:48
CAS NO.	COMPOUND	Value	UNITS:								
	METALS										
7429-90-5	Aluminum	NS	mg/kg	8930	9480	9530	10800	10100	10100	8530 J	8640 J
7440-36-0	Antimony	NS	mg/kg								
7440-38-2	Arsenic	10	mg/kg	6.8	8.1	14.3	14	6.2	6.6	5.4	6.6
7440-39-3	Barium	NS	mg/kg								
7440-41-7	Beryllium	NS	mg/kg								
7440-42-8	Boron	NS	mg/kg								
7440-43-9	Cadmium	1	mg/kg	0.28	6.47	2.74	1.16	0.04 U	0.04 J	0.12	3.31
7440-70-2	Calcium	NS	mg/kg								
7440-47-3	Chromium, Total	43	mg/kg	13.7	26	23.9	21.5	13.5	13.9	11.8	18.9
7440-48-4	Cobalt	NS	mg/kg								
7440-50-8	Copper	32	mg/kg	23.2	40.9	44.6	43.5	20.7	20.5	20.6	29
7439-89-6	Iron	NS	mg/kg								
7439-92-1	Lead	36	mg/kg	15.5	38.6	45.7	51.3	14.1	12.4	14	27
7439-93-2	Lithium	NS	mg/kg								
7439-95-4	Magnesium	NS	mg/kg								
7439-96-5	Manganese	NS	mg/kg	479	420	437	452	402	363	406	406
7439-97-6	Mercury	0.2	mg/kg	0.032	0.171	0.353	0.222	0.029	0.027	0.027	0.086
7439-98-7	Molybdenum	NS	mg/kg								
7440-02-0	Nickel	23	mg/kg	19.1	22.4	22.6	23.4	22.1	22.4	19.4	21.7
7440-09-7	Potassium	NS	mg/kg								
7782-49-2	Selenium	NS	mg/kg	1.2 J	0.9 J	1.2 J	0.9 J	1 J	0.7 U	0.7 J	1.3 J
7440-22-4	Silver	1	mg/kg	13.5	22.9	17.4	16.4	0.2 U	0.2 U	3.3	7
7440-23-5	Sodium	NS	mg/kg								
7440-24-6	Strontium	NS	mg/kg								
7440-28-0	Thallium	NS	mg/kg								
7440-31-5	Tin	NS	mg/kg								
7440-32-6	Titanium	NS	mg/kg								
7440-62-2	Vanadium	NS	mg/kg								
7440-66-6	Zinc	120	mg/kg	76.3	188	140	122	61.5	61.8	66.4	107

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HISTORICAL SEDIMENT METALS DATA SUMMARY
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NYSDEC-Lower Genesee River Historical Sediment Data Metals Summary Class A Standards Comparison		Class A Freshwater Sediment Guidance	Location ID: Sample ID: Lab Sample Id: Depth: Source: SDG: Matrix: Sampled: Validated:	GR-18 LA-018 K1108837-008 0 - 0.5 ft BAT SE 9/14/2011 11:51	GR-18 LA-135 K1108737-006 0 - 3 ft BAT SE 9/14/2011 11:38	GR-18 LA-136 K1108737-007 3 - 6 ft BAT SE 9/14/2011 11:38	GR-18 LA-137 K1108737-008 6 - 9 ft BAT SE 9/14/2011 11:38	GR-18 LA-138 K1108737-009 9 - 12.7 ft BAT SE 9/14/2011 11:38	GR-19 LA-019 K1108643-004 0 - 0.5 ft BAT SE 9/13/2011 12:00	GR-19 LA-117 K1108656-017 0 - 3 ft BAT SE 9/13/2011 11:46	GR-19 LA-118 K1108656-018 3 - 6 ft BAT SE 9/13/2011 11:46
CAS NO.	COMPOUND	Value	UNITS:								
	METALS										
7429-90-5	Aluminum	NS	mg/kg	9470	8910	11100	13300	10500	9420 J	9460	8340
7440-36-0	Antimony	NS	mg/kg								
7440-38-2	Arsenic	10	mg/kg	5.4	5.8	8.1	9.5	8.5	6.1	6	6.4
7440-39-3	Barium	NS	mg/kg								
7440-41-7	Beryllium	NS	mg/kg								
7440-42-8	Boron	NS	mg/kg								
7440-43-9	Cadmium	1	mg/kg	0.22	1.28	9.09	15.1	11.1	0.22	0.39	1.4
7440-70-2	Calcium	NS	mg/kg								
7440-47-3	Chromium, Total	43	mg/kg	14.8	14.7	24.7	37.7	34.3	13.1	13.7	16.7
7440-48-4	Cobalt	NS	mg/kg								
7440-50-8	Copper	32	mg/kg	23.2	23	33.2	51.7	51.3	19.1	21.1	25.8
7439-89-6	Iron	NS	mg/kg								
7439-92-1	Lead	36	mg/kg	17	18.4	34.1	58.7	55.8	13	16	26
7439-93-2	Lithium	NS	mg/kg								
7439-95-4	Magnesium	NS	mg/kg								
7439-96-5	Manganese	NS	mg/kg	431	391	480	498	421	484	509	521
7439-97-6	Mercury	0.2	mg/kg	0.033	0.05	0.128	0.275	0.313	0.029	0.034 J	0.055 J
7439-98-7	Molybdenum	NS	mg/kg								
7440-02-0	Nickel	23	mg/kg	19.9	18.8	24.2	30.5	25.4	20.3	21.2	21.8
7440-09-7	Potassium	NS	mg/kg								
7782-49-2	Selenium	NS	mg/kg	0.7 J	0.8 J	0.7 U	0.7 U	0.7 U	0.5 U	0.7 U	0.7 U
7440-22-4	Silver	1	mg/kg	9.4	15.5	10.2	29.8	34.1	0.8	3.4	8.4
7440-23-5	Sodium	NS	mg/kg								
7440-24-6	Strontium	NS	mg/kg								
7440-28-0	Thallium	NS	mg/kg								
7440-31-5	Tin	NS	mg/kg								
7440-32-6	Titanium	NS	mg/kg								
7440-62-2	Vanadium	NS	mg/kg								
7440-66-6	Zinc	120	mg/kg	74.3	88.9	194	317	273	62.7	71	92.2

TABLE D-1a
HISTORICAL SEDIMENT METALS DATA SUMMARY
CLASS A STANDARDS COMPARISON

NYSDEC-Lower Genesee River Historical Sediment Data Metals Summary Class A Standards Comparison		Class A Freshwater Sediment Guidance	Location ID: Sample ID: Lab Sample Id: Depth: Source: SDG: Matrix: Sampled: Validated:	GR-19 LA-119 K1108656-019 6 - 9 ft BAT SE 9/13/2011 11:46	GR-19 LA-120 K1108656-020 9 - 12 ft BAT SE 9/13/2011 11:46	GR-19 LA-121 K1108643-015 12 - 15 ft BAT SE 9/13/2011 11:46	GR-19 LA-122 K1108643-016 15 - 18.2 ft BAT SE 9/13/2011 11:46	GR-20 20 1307007-05 0 - 0.5 FT USEPA B307044 SE 7/9/2013 15:44	GR-20 LA-020 K1108840-015 0 - 0.5 ft BAT SE 9/14/2011 10:58	GR-20 LA-139 K1108737-010 0 - 3 ft BAT SE 9/14/2011 10:52	GR-20 LA-140 K1108737-011 3 - 6 ft BAT SE 9/14/2011 10:52
CAS NO.	COMPOUND	Value	UNITS:								
	METALS										
7429-90-5	Aluminum	NS	mg/kg	9390	8610	10600 J	11700 J	8900	9290 J	9250	12500
7440-36-0	Antimony	NS	mg/kg					2.2 U			
7440-38-2	Arsenic	10	mg/kg	7.5	6.8	7.7	8.4	6.5	6.2	6.8	8.4
7440-39-3	Barium	NS	mg/kg					110			
7440-41-7	Beryllium	NS	mg/kg					0.4			
7440-42-8	Boron	NS	mg/kg					5.5 U			
7440-43-9	Cadmium	1	mg/kg	2.65	2.1	1.55	2.44	6.1	0.6	11.1	11
7440-70-2	Calcium	NS	mg/kg					12000			
7440-47-3	Chromium, Total	43	mg/kg	18.2	16	17.2	20.5	21	16	25.9	26.9
7440-48-4	Cobalt	NS	mg/kg					8.1			
7440-50-8	Copper	32	mg/kg	28.7	24.7	26.5	31.1	29	31.2	32	36.8
7439-89-6	Iron	NS	mg/kg					22000			
7439-92-1	Lead	36	mg/kg	29	23	26	29	27	23	39.1	41.6
7439-93-2	Lithium	NS	mg/kg					21			
7439-95-4	Magnesium	NS	mg/kg					6700			
7439-96-5	Manganese	NS	mg/kg	484	458	557	629	500	470	402	534
7439-97-6	Mercury	0.2	mg/kg	0.069 J	0.054 J	0.067	0.1		0.046	0.16	0.178
7439-98-7	Molybdenum	NS	mg/kg					1.3 U			
7440-02-0	Nickel	23	mg/kg	22.6	20.9	24.5	27.3	20	21.9	20.3	26.8
7440-09-7	Potassium	NS	mg/kg					730 L			
7782-49-2	Selenium	NS	mg/kg	0.8 J	0.9 J	0.8 J	0.8 U	1.1 U	1 J	1 J	0.8 J
7440-22-4	Silver	1	mg/kg	10.7	6.8	3.6	6.4	6.9	23.9	11.5	12.3
7440-23-5	Sodium	NS	mg/kg					71 L			
7440-24-6	Strontium	NS	mg/kg					39			
7440-28-0	Thallium	NS	mg/kg					3.3 U			
7440-31-5	Tin	NS	mg/kg					3			
7440-32-6	Titanium	NS	mg/kg					44			
7440-62-2	Vanadium	NS	mg/kg					14			
7440-66-6	Zinc	120	mg/kg	98.3	82.5	87	102	170	114	228	222

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CLASS A STANDARDS COMPARISON

NYSDEC-Lower Genesee River Historical Sediment Data Metals Summary Class A Standards Comparison		Class A Freshwater Sediment Guidance	Location ID: Sample ID: Lab Sample Id: Depth: Source: SDG: Matrix: Sampled: Validated:	GR-20 LA-141 K1108764-001 6 - 9 ft BAT SE 9/14/2011 10:52	GR-20 LA-142 K1108764-002 9 - 12 ft BAT SE 9/14/2011 10:52	GR-20 LA-143 K1108764-003 12 - 14.9 ft BAT SE 9/14/2011 10:52	GR-21 LA-021 K1108643-005 0 - 0.5 ft BAT SE 9/13/2011 11:07	GR-21 LA-112 K1108656-012 0 - 3 ft BAT SE 9/13/2011 11:05	GR-21 LA-113 K1108656-013 3 - 6 ft BAT SE 9/13/2011 11:05	GR-21 LA-114 K1108656-014 6 - 9 ft BAT SE 9/13/2011 11:05	GR-21 LA-115 K1108656-015 9 - 12 ft BAT SE 9/13/2011 11:05
CAS NO.	COMPOUND	Value	UNITS:								
	METALS										
7429-90-5	Aluminum	NS	mg/kg	11100	10000	10800	7340 J	8420	8660	9900	10900
7440-36-0	Antimony	NS	mg/kg								
7440-38-2	Arsenic	10	mg/kg	9.2	9.5	10.5	5.4	6.4	6.6	7	8.9
7440-39-3	Barium	NS	mg/kg								
7440-41-7	Beryllium	NS	mg/kg								
7440-42-8	Boron	NS	mg/kg								
7440-43-9	Cadmium	1	mg/kg	12.1	10.2	5.62	0.17	0.27	4.93	13	12.7
7440-70-2	Calcium	NS	mg/kg								
7440-47-3	Chromium, Total	43	mg/kg	33.4	35	26.9	10.1	13.4	22.4	27.2	36.3
7440-48-4	Cobalt	NS	mg/kg								
7440-50-8	Copper	32	mg/kg	51.7	57.5	53.5	15.1	20.7	29	34.5	49.4
7439-89-6	Iron	NS	mg/kg								
7439-92-1	Lead	36	mg/kg	55.4	57.7	55.3	11	15	31	40	56
7439-93-2	Lithium	NS	mg/kg								
7439-95-4	Magnesium	NS	mg/kg								
7439-96-5	Manganese	NS	mg/kg	474	457	561	394	516	456	439	479
7439-97-6	Mercury	0.2	mg/kg	0.29	0.332	0.243	0.018	0.035 J	0.106 J	0.199 J	0.33 J
7439-98-7	Molybdenum	NS	mg/kg								
7440-02-0	Nickel	23	mg/kg	27.8	26.8	26.1	16.3	20.2	20.7	23.8	28.7
7440-09-7	Potassium	NS	mg/kg								
7782-49-2	Selenium	NS	mg/kg	1.4 J	1.3 J	1.1 J	0.6 J	0.7 J	0.7 U	0.8 J	0.8 J
7440-22-4	Silver	1	mg/kg	28.6	34.6	23.2	0.6	9.1	9.4	13	29
7440-23-5	Sodium	NS	mg/kg								
7440-24-6	Strontium	NS	mg/kg								
7440-28-0	Thallium	NS	mg/kg								
7440-31-5	Tin	NS	mg/kg								
7440-32-6	Titanium	NS	mg/kg								
7440-62-2	Vanadium	NS	mg/kg								
7440-66-6	Zinc	120	mg/kg	276	282	190	51.2	71.5	135	238	287

TABLE D-1a
HISTORICAL SEDIMENT METALS DATA SUMMARY
CLASS A STANDARDS COMPARISON

NYSDEC-Lower Genesee River Historical Sediment Data Metals Summary Class A Standards Comparison		Class A Freshwater Sediment Guidance	Location ID: Sample ID: Lab Sample Id: Depth: Source: SDG: Matrix: Sampled: Validated:	GR-21 LA-116 K1108656-016 12 - 14.2 ft BAT SE 9/13/2011 11:05	GR-22 22 1307007-06 0 - 0.5 FT USEPA B307044 SE 7/9/2013 15:26	GR-22 LA-022 K1108840-016 0 - 0.5 ft BAT SE 9/14/2011 10:00	GR-22 LA-174 K1108838-006 0 - 3 ft BAT SE 9/14/2011 9:57	GR-22 LA-175 K1108838-007 3 - 6 ft BAT SE 9/14/2011 9:57	GR-22 LA-176 K1108843-007 6 - 9 ft BAT SE 9/14/2011 9:57	GR-22 LA-177 K1108843-008 9 - 12 ft BAT SE 9/14/2011 9:57	GR-22 LA-178 K1108843-009 12 - 15 ft BAT SE 9/14/2011 9:57
CAS NO.	COMPOUND	Value	UNITS:								
	METALS										
7429-90-5	Aluminum	NS	mg/kg	10900	8000	7420 J	9970 J	11400 J	10600	6210	7800
7440-36-0	Antimony	NS	mg/kg		2.2 U						
7440-38-2	Arsenic	10	mg/kg	9.4	5.4	7.1	7	8.5	7.5	6.7	8.3
7440-39-3	Barium	NS	mg/kg		46						
7440-41-7	Beryllium	NS	mg/kg		0.37						
7440-42-8	Boron	NS	mg/kg		5.5 U						
7440-43-9	Cadmium	1	mg/kg	9.04	0.22 U	0.08 J	4.33	7.74	1.25	4.71	7.28
7440-70-2	Calcium	NS	mg/kg		12000						
7440-47-3	Chromium, Total	43	mg/kg	31.1	12	11.4	19.7	27.7	17.4	16.7	24.8
7440-48-4	Cobalt	NS	mg/kg		7						
7440-50-8	Copper	32	mg/kg	45.9	17	19.2	33.3	47.1	29.1	30.4	41.3
7439-89-6	Iron	NS	mg/kg		20000						
7439-92-1	Lead	36	mg/kg	53	13	15	30	51	26	41	58
7439-93-2	Lithium	NS	mg/kg		18						
7439-95-4	Magnesium	NS	mg/kg		6000						
7439-96-5	Manganese	NS	mg/kg	532	420	330	562	512	469	264	376
7439-97-6	Mercury	0.2	mg/kg	0.269 J		0.029	0.088	0.205	0.115	0.183	0.363
7439-98-7	Molybdenum	NS	mg/kg		1.3 U						
7440-02-0	Nickel	23	mg/kg	29.3	17	18.2	24.1	28.2	24.2	20.7	21.2
7440-09-7	Potassium	NS	mg/kg		610 L						
7782-49-2	Selenium	NS	mg/kg	0.7 U	1.1 U	1.4 J	0.7 U	1.1 J	1.5 J	1.3 J	1.1 J
7440-22-4	Silver	1	mg/kg	30.3	4.2	6.1	9.9	18.8	5	7.4	12.6
7440-23-5	Sodium	NS	mg/kg		60 L						
7440-24-6	Strontium	NS	mg/kg		35						
7440-28-0	Thallium	NS	mg/kg		3.3 U						
7440-31-5	Tin	NS	mg/kg		2.2 U						
7440-32-6	Titanium	NS	mg/kg		41						
7440-62-2	Vanadium	NS	mg/kg		12						
7440-66-6	Zinc	120	mg/kg	241	73	66.5	160	223	101	153	234

TABLE D-1a
HISTORICAL SEDIMENT METALS DATA SUMMARY
CLASS A STANDARDS COMPARISON

NYSDEC-Lower Genesee River Historical Sediment Data Metals Summary Class A Standards Comparison		Class A Freshwater Sediment Guidance	Location ID: Sample ID: Lab Sample Id: Depth: Source: SDG: Matrix: Sampled: Validated:	GR-22 LA-179 K1108843-010 15 - 16.2 ft BAT SE 9/14/2011 9:57	GR-23 LA-023 K1108643-006 0 - 0.5 ft BAT SE 9/13/2011 10:31	GR-23 LA-124 K1108643-009 0 - 2.2 ft BAT SE 9/13/2011 10:22	GR-23M LA-123 K1108643-008 0 - 1.1 ft BAT SE 9/13/2011 9:56	GR-24 LA-024 K1108643-007 0 - 0.5 ft BAT SE 9/13/2011 8:57	GR-24 LA-125 K1108643-010 0 - 2.3 ft BAT SE 9/13/2011 8:50	GR-25 LA-025 K1108840-017 0 - 0.5 ft BAT SE 9/16/2011 10:56	GR-26 LA-026 K1108840-018 0 - 0.5 ft BAT SE 9/16/2011 10:44
CAS NO.	COMPOUND	Value	UNITS:								
	METALS										
7429-90-5	Aluminum	NS	mg/kg	9280	8310 J	5200 J	4240 J	3920 J	4800 J	4680 J	8350 J
7440-36-0	Antimony	NS	mg/kg								
7440-38-2	Arsenic	10	mg/kg	10.8	5.6	3.5	4.1	4.2	4.2	4.9	5.2
7440-39-3	Barium	NS	mg/kg								
7440-41-7	Beryllium	NS	mg/kg								
7440-42-8	Boron	NS	mg/kg								
7440-43-9	Cadmium	1	mg/kg	1.27	0.27	0.13	0.07 J	0.04 J	0.34	0.04 U	0.26
7440-70-2	Calcium	NS	mg/kg								
7440-47-3	Chromium, Total	43	mg/kg	17.2	13.1	10.6	7.7	6.1	7.9	7.3	13
7440-48-4	Cobalt	NS	mg/kg								
7440-50-8	Copper	32	mg/kg	41.5	17.5	10	11.1	7.8	16.6	12.1	22.3
7439-89-6	Iron	NS	mg/kg								
7439-92-1	Lead	36	mg/kg	85	18	12	17	10	22	14	16
7439-93-2	Lithium	NS	mg/kg								
7439-95-4	Magnesium	NS	mg/kg								
7439-96-5	Manganese	NS	mg/kg	403	490	198	216	232	198	271	471
7439-97-6	Mercury	0.2	mg/kg	0.241	0.032	0.021	0.024	0.012 J	0.02 J	0.019	0.034
7439-98-7	Molybdenum	NS	mg/kg								
7440-02-0	Nickel	23	mg/kg	23.1	19.2	14.5	12.1	10.8	14	13.5	19.6
7440-09-7	Potassium	NS	mg/kg								
7782-49-2	Selenium	NS	mg/kg	0.7 U	0.5 U	0.6 J	0.6 U	0.5 U	0.7 U	0.7 U	0.7 U
7440-22-4	Silver	1	mg/kg	8.3	2.6	0.2 J	0.5	0.4	0.6	0.9	3.9
7440-23-5	Sodium	NS	mg/kg								
7440-24-6	Strontium	NS	mg/kg								
7440-28-0	Thallium	NS	mg/kg								
7440-31-5	Tin	NS	mg/kg								
7440-32-6	Titanium	NS	mg/kg								
7440-62-2	Vanadium	NS	mg/kg								
7440-66-6	Zinc	120	mg/kg	163	63.5	46.7	43.2	37.8	54.8	47.7	73.8

TABLE D-1a
HISTORICAL SEDIMENT METALS DATA SUMMARY
CLASS A STANDARDS COMPARISON

NYSDEC-Lower Genesee River Historical Sediment Data Metals Summary Class A Standards Comparison		Class A Freshwater Sediment Guidance	Location ID: Sample ID: Lab Sample Id: Depth: Source: SDG: Matrix: Sampled: Validated:	GR-27 LA-027 K1108840-019 0 - 0.5 ft BAT SE 9/16/2011 10:34	GR-28 LA-028 K1108840-020 0 - 0.5 ft BAT SE 9/16/2011 10:24	GR-29 LA-029 K1108843-001 0 - 0.5 ft BAT SE 9/16/2011 10:16	GR-30 LA-030 K1108843-002 0 - 0.5 ft BAT SE 9/16/2011 10:00	GR-31 31 1307007-07RE1 0 - 0.5 FT USEPA B307047 SE 7/9/2013 14:59	GR-31 LA-031 K1108843-003 0 - 0.5 ft BAT SE 9/16/2011 9:46	GR-32 32 1307007-08 0 - 0.5 FT USEPA B307044 SE 7/9/2013 14:35	GR-32 LA-032 K1108843-004 0 - 0.5 ft BAT SE 9/16/2011 9:27
CAS NO.	COMPOUND	Value	UNITS:								
	METALS										
7429-90-5	Aluminum	NS	mg/kg	5570 J	4130 J	5060	4210	5000	4940	5800	5160
7440-36-0	Antimony	NS	mg/kg					2.4 UL		2.1 U	
7440-38-2	Arsenic	10	mg/kg	6	4.3	5.2	5.5	7.2 J	6.2	6	5.9
7440-39-3	Barium	NS	mg/kg					75		31	
7440-41-7	Beryllium	NS	mg/kg					0.31		0.29	
7440-42-8	Boron	NS	mg/kg					8		5.1 U	
7440-43-9	Cadmium	1	mg/kg	0.04 U	0.04 U	0.04 J	0.1	0.24 U	0.1	0.21 U	0.04 U
7440-70-2	Calcium	NS	mg/kg					59000 H		5400	
7440-47-3	Chromium, Total	43	mg/kg	8.8	7.9	8.3	8.1	11 J	8.8	8.2	8.2
7440-48-4	Cobalt	NS	mg/kg					4.2		7	
7440-50-8	Copper	32	mg/kg	13.6	13.2	15	14	25 J	22.4	11	13.7
7439-89-6	Iron	NS	mg/kg					20000 J		17000	
7439-92-1	Lead	36	mg/kg	13	31	27	26	32 J	44	10	19
7439-93-2	Lithium	NS	mg/kg					9.8		14	
7439-95-4	Magnesium	NS	mg/kg					11000 H		3600	
7439-96-5	Manganese	NS	mg/kg	330	283	317	280	330 J	300	360	355
7439-97-6	Mercury	0.2	mg/kg	0.017 J	3.32	0.022	0.029		0.353		0.016
7439-98-7	Molybdenum	NS	mg/kg					1.4 UJ		1.2 U	
7440-02-0	Nickel	23	mg/kg	15.1	12.4	14	10.7	10	12.8	15	14.7
7440-09-7	Potassium	NS	mg/kg					880 L		480 L	
7782-49-2	Selenium	NS	mg/kg	1.2 J	0.7 U	1.2 J	0.7 U	1.2 U	0.8 J	1 U	0.8 J
7440-22-4	Silver	1	mg/kg	1.7	1.1	1.8	1.1	0.6 U	1.5	0.51 U	0.2 U
7440-23-5	Sodium	NS	mg/kg					330 J		45 L	
7440-24-6	Strontium	NS	mg/kg					160 J		22	
7440-28-0	Thallium	NS	mg/kg					3.6 U		3.1 U	
7440-31-5	Tin	NS	mg/kg					19 J		2.1 U	
7440-32-6	Titanium	NS	mg/kg					81 J		28	
7440-62-2	Vanadium	NS	mg/kg					8.9		9.8	
7440-66-6	Zinc	120	mg/kg	50	46.7	50.9	46	55	55.2	54	50.8

TABLE D-1a
HISTORICAL SEDIMENT METALS DATA SUMMARY
CLASS A STANDARDS COMPARISON

NYSDEC-Lower Genesee River Historical Sediment Data Metals Summary Class A Standards Comparison		Class A Freshwater Sediment Guidance	Location ID: Sample ID: Lab Sample Id: Depth: Source: SDG: Matrix: Sampled: Validated:	GR-32 LA-032D K1108843-005 0 - 0.5 ft BAT SE 9/16/2011 9:30	GR-33 LA-033 K1108843-006 0 - 0.5 ft BAT SE 9/16/2011 9:15
CAS NO.	COMPOUND	Value	UNITS:		
	METALS				
7429-90-5	Aluminum	NS	mg/kg	4880	6860
7440-36-0	Antimony	NS	mg/kg		
7440-38-2	Arsenic	10	mg/kg	5.2	7.1
7440-39-3	Barium	NS	mg/kg		
7440-41-7	Beryllium	NS	mg/kg		
7440-42-8	Boron	NS	mg/kg		
7440-43-9	Cadmium	1	mg/kg	0.04 U	0.04 U
7440-70-2	Calcium	NS	mg/kg		
7440-47-3	Chromium, Total	43	mg/kg	8.5	10.8
7440-48-4	Cobalt	NS	mg/kg		
7440-50-8	Copper	32	mg/kg	18.8	29.7
7439-89-6	Iron	NS	mg/kg		
7439-92-1	Lead	36	mg/kg	14	24
7439-93-2	Lithium	NS	mg/kg		
7439-95-4	Magnesium	NS	mg/kg		
7439-96-5	Manganese	NS	mg/kg	345	513
7439-97-6	Mercury	0.2	mg/kg	0.02	0.022
7439-98-7	Molybdenum	NS	mg/kg		
7440-02-0	Nickel	23	mg/kg	14.4	18.7
7440-09-7	Potassium	NS	mg/kg		
7782-49-2	Selenium	NS	mg/kg	0.7 U	0.7 J
7440-22-4	Silver	1	mg/kg	0.2 J	0.2 U
7440-23-5	Sodium	NS	mg/kg		
7440-24-6	Strontium	NS	mg/kg		
7440-28-0	Thallium	NS	mg/kg		
7440-31-5	Tin	NS	mg/kg		
7440-32-6	Titanium	NS	mg/kg		
7440-62-2	Vanadium	NS	mg/kg		
7440-66-6	Zinc	120	mg/kg	79.1	63.4

Table D-1b
HISTORICAL SEDIMENT METALS DATA SUMMARY
CLASS C STANDARDS COMPARISON

NYSDEC-Lower Genesee River Historical Sediment Data Metals Summary Class C Standards Comparison		Class C Freshwater Sediment Guidance	Location ID: Sample ID: Lab Sample Id: Depth: Source: SDG: Matrix: Sampled: Validated:	1 01A 0 - 2.76 ft NYSDEC SE 7/15/2002	1 RE02-01P - NYSDEC SE 7/15/2002	2 02A 0 - 2.78 ft NYSDEC SE 7/15/2002	2 02B 2.78 - 5.55 ft NYSDEC SE 7/15/2002	2 02C 5.55 - 8.33 ft NYSDEC SE 7/15/2002	2 RE02-02P - NYSDEC SE 7/15/2002	3 03A 0 - 3.12 ft NYSDEC SE 7/15/2002	3 03B 3.12 - 6.23 ft NYSDEC SE 7/15/2002
CAS NO.	COMPOUND	Value	UNITS:								
	METALS										
7429-90-5	Aluminum	NS	mg/kg	6790	7200	7520	9630	10600	7490	6960	9000
7440-36-0	Antimony	NS	mg/kg	UN	UN	0.83 BN	UN	UN	UN	UN	UN
7440-38-2	Arsenic	33	mg/kg	4.5	5	6.3	9.3	18.8	5	6.4	15.6
7440-39-3	Barium	NS	mg/kg	39.2	42.1	398	1120	5450	44.7	149	1010
7440-41-7	Beryllium	NS	mg/kg	0.34	0.37	0.39	0.53	0.63 B	0.37	0.36	0.57
7440-42-8	Boron	NS	mg/kg								
7440-43-9	Cadmium	5	mg/kg	0.28 B	0.23 B	11.5	19.7	14.6	0.27 B	0.97	3.2
7440-70-2	Calcium	NS	mg/kg	9370	10200	11500	17200	28300	10800	8330	11200
7440-47-3	Chromium, Total	110	mg/kg	10.8	10.5	21.1	44.1	50.1	10.5	11.8	23.6
7440-48-4	Cobalt	NS	mg/kg	6.4	6.6	6.8	8.6	8.8	6.8	6.4	8.2
7440-50-8	Copper	150	mg/kg	16.2	16.2	35.8	72.5	98.7	17.7	22.3	45.8
7439-89-6	Iron	NS	mg/kg	16000	16800	16900	21200	24300	16900	16700	22900
7439-92-1	Lead	130	mg/kg	14.5	11.9	44.3	87.4	86.7	11.4	18	53.2
7439-93-2	Lithium	NS	mg/kg								
7439-95-4	Magnesium	NS	mg/kg	4730	5060	4890	6330	6420	5180	4480	5150
7439-96-5	Manganese	NS	mg/kg	319	362	336	442	645	372	330	436
7439-97-6	Mercury	1	mg/kg	0.03	0.02 B	0.17 N	0.53 N	1.1 N	0.026 BN*	0.17	0.6
7439-98-7	Molybdenum	NS	mg/kg								
7440-02-0	Nickel	49	mg/kg	15.1	15.4	17.9	29.8	39.8	15.8	15.6	23.6
7440-09-7	Potassium	NS	mg/kg	825 N	905 N	978 N	1260 N	1270 N	947 N	828 N	1070 N
7782-49-2	Selenium	NS	mg/kg	U	U	U	0.75 B	U	U	U	U
7440-22-4	Silver	2.2	mg/kg	0.58	U	29.7	58.2	151	1.6	5.8	22.9
7440-23-5	Sodium	NS	mg/kg	107 B	104 B	465	726	502 B	110 B	99.9 B	150 B
7440-24-6	Strontium	NS	mg/kg								
7440-28-0	Thallium	NS	mg/kg	U	U	U	U	0.23	U	U	0.21
7440-31-5	Tin	NS	mg/kg								
7440-32-6	Titanium	NS	mg/kg								
7440-62-2	Vanadium	NS	mg/kg	11.9	12.2	13	17.5	19.3	12.3	12	16.7
7440-66-6	Zinc	460	mg/kg	58	55.3	252	465	399	55.4	73	141

Data Sources:
NYSDEC, 2007. Contamination Analysis in the Rochester Embayment Area of Concern. May 2007.
USEPA, 2012. TASK 6: Final Summary Report for Site Characterization at the Genesee River Site, Rochester Embayment Area of Concern, Rochester, NY. June 2012.
USEPA, 2013. Technical Report: Genesee River Sediment Sampling under the Great Lakes Legacy Act - Rochester Embayment Area of Concern. September 2013.

Notes:
1. Sample locations can be found on Figure 5.

Table D-1b
HISTORICAL SEDIMENT METALS DATA SUMMARY
CLASS C STANDARDS COMPARISON

NYSDEC-Lower Genesee River Historical Sediment Data Metals Summary Class C Standards Comparison		Class C Freshwater Sediment Guidance	Location ID: Sample ID: Lab Sample Id: Depth: Source: SDG: Matrix: Sampled: Validated:	3 03C 6.23 - 9.35 ft NYSDEC SE 7/15/2002	3 RE02-03P - NYSDEC SE 7/15/2002	4 04A 0 - 2.97 ft NYSDEC SE 7/16/2002	4 04B 2.97 - 5.95 ft NYSDEC SE 7/16/2002	4 04C 5.95 - 8.92 ft NYSDEC SE 7/16/2002	4 RE02-04P - NYSDEC SE 7/16/2002	5 05A 0 - 3.39 ft NYSDEC SE 7/16/2002	5 05B 3.39 - 6.78 ft NYSDEC SE 7/16/2002
CAS NO.	COMPOUND	Value	UNITS:								
	METALS										
7429-90-5	Aluminum	NS	mg/kg	9440	7700	9290	10700	11200	9710	9660	11800
7440-36-0	Antimony	NS	mg/kg	UN	0.27 BN	0.41 BN	UN	0.37 BN	0.54 BN	UN	UN
7440-38-2	Arsenic	33	mg/kg	10	4.8	6.8	8	9.8	6	7.9	8.6
7440-39-3	Barium	NS	mg/kg	541	95.7	223	350	551	60.8	93.7	115
7440-41-7	Beryllium	NS	mg/kg	0.53	0.38	0.47	0.55	0.61	0.48	0.5	0.6
7440-42-8	Boron	NS	mg/kg								
7440-43-9	Cadmium	5	mg/kg	0.81	2.5	14.8	13.4	7.7	0.45 B	2.4	3.5
7440-70-2	Calcium	NS	mg/kg	10700	10200	11400	11200	12100	13200	12000	13800
7440-47-3	Chromium, Total	110	mg/kg	15.6	13.6	25	30.7	31.7	14.3	19.4	25.5
7440-48-4	Cobalt	NS	mg/kg	9.5	6.8	8.2	9.7	9.9	8.3	9	10.2
7440-50-8	Copper	150	mg/kg	30.7	19.8	34.6	44	59	22.7	32.9	37.8
7439-89-6	Iron	NS	mg/kg	23400	17300	10900	24000	25900	21400	21600	26300
7439-92-1	Lead	130	mg/kg	36.7	16.5	38.6	43.2	55.8	14.3	28.5	39.9
7439-93-2	Lithium	NS	mg/kg								
7439-95-4	Magnesium	NS	mg/kg	5380	5270	5770	6320	6710	6490	6110	7220
7439-96-5	Manganese	NS	mg/kg	479	318	389	446	489	472	451	618
7439-97-6	Mercury	1	mg/kg	0.33	0.04	0.3	0.28	0.33	0.04	0.08	0.11
7439-98-7	Molybdenum	NS	mg/kg								
7440-02-0	Nickel	49	mg/kg	21.9	16.5	21.3	25.7	27.5	20	22.3	26
7440-09-7	Potassium	NS	mg/kg	1070 N	966 N	1090 N	1240 N	1270 N	1210 N	1110 N	1350 N
7782-49-2	Selenium	NS	mg/kg	0.31 B	U	U	U	0.34 B	U	U	0.38 B
7440-22-4	Silver	2.2	mg/kg	8.2	9.7	16.3	17.2	26.1	12.5	8.5	5.9
7440-23-5	Sodium	NS	mg/kg	131 B	107 B	132 B	140 B	153 B	135 B	125 B	129 B
7440-24-6	Strontium	NS	mg/kg								
7440-28-0	Thallium	NS	mg/kg	U	U	U	0.17	0.21	U	U	U
7440-31-5	Tin	NS	mg/kg								
7440-32-6	Titanium	NS	mg/kg								
7440-62-2	Vanadium	NS	mg/kg	16.7	12.9	15.9	17.8	19.2	16	16.6	19.7
7440-66-6	Zinc	460	mg/kg	104	88.4	278	249	224	73.3	101	125

Data Sources:
NYSDEC, 2007. Contamination Analysis in the Rochester Embayment Area of C
USEPA, 2012. TASK 6: Final Summary Report for Site Characterization at the G
USEPA, 2013. Technical Report: Genesee River Sediment Sampling under the Gr

Notes:
1. Sample locations can be found on Figure 5.

Table D-1b
HISTORICAL SEDIMENT METALS DATA SUMMARY
CLASS C STANDARDS COMPARISON

NYSDEC-Lower Genesee River Historical Sediment Data Metals Summary Class C Standards Comparison		Class C Freshwater Sediment Guidance	Location ID: Sample ID: Lab Sample Id: Depth: Source: SDG: Matrix: Sampled: Validated:	5 05C 6.78 - 10.2 ft NYSDEC SE 7/16/2002	5 17A 0 - 2.53 ft NYSDEC SE 7/16/2002	5 17B 2.53 - 5.05 ft NYSDEC SE 7/16/2002	5 17C 5.05 - 7.58 ft NYSDEC SE 7/16/2002	5 RE02-05P - NYSDEC SE 7/16/2002	5 RE02-17P - NYSDEC SE 7/16/2002	GR-01 LA-001 K1108643-001 0 - 0.5 ft BAT SE 9/12/2011 16:53	GR-01 LA-107 K1108656-007 0 - 3 ft BAT SE 9/12/2011 16:45
CAS NO.	COMPOUND	Value	UNITS:								
	METALS										
7429-90-5	Aluminum	NS	mg/kg	8500	9180	11100	9300	12900	11600	12000 J	9960
7440-36-0	Antimony	NS	mg/kg	UN	UN	UN	UN	0.63 BN	0.29 BN		
7440-38-2	Arsenic	33	mg/kg	5.4	6	8.1	6	8.4	7.3	7.4	6.1
7440-39-3	Barium	NS	mg/kg	105	67	112	174	103	82.1		
7440-41-7	Beryllium	NS	mg/kg	0.42	0.45	0.55	0.46	0.65	0.57		
7440-42-8	Boron	NS	mg/kg								
7440-43-9	Cadmium	5	mg/kg	3.5	1.1	3.4	9.1	1.8	1	0.33	1.33
7440-70-2	Calcium	NS	mg/kg	10600	11800	13700	11300	15200	13900		
7440-47-3	Chromium, Total	110	mg/kg	17.7	14.8	22.6	24.4	21.6	18.5	16.6	17.3
7440-48-4	Cobalt	NS	mg/kg	7.5	8	9.5	7.9	10.9	9.6		
7440-50-8	Copper	150	mg/kg	26.8	27.2	35.1	34.3	35.6	31	23.6	25.8
7439-89-6	Iron	NS	mg/kg	19100	19900	24300	19900	27300	24000		
7439-92-1	Lead	130	mg/kg	29.1	21.6	37.3	40	28.1	22	17	24
7439-93-2	Lithium	NS	mg/kg								
7439-95-4	Magnesium	NS	mg/kg	5530	5800	6860	5690	7570	6810		
7439-96-5	Manganese	NS	mg/kg	399	454	564	420	661	572	561	409
7439-97-6	Mercury	1	mg/kg	0.12	0.051 N	0.32 N	0.21 N	0.07	0.062 N	0.038	0.105 J
7439-98-7	Molybdenum	NS	mg/kg								
7440-02-0	Nickel	49	mg/kg	19	19.5	23.9	20.6	26.9	23.6	25.4	22.4
7440-09-7	Potassium	NS	mg/kg	1030 N	1110 N	1300 N	1170 N	1650 N	1540 N		
7782-49-2	Selenium	NS	mg/kg	U	0.29 B	U	U	U	U	0.6 J	0.7 U
7440-22-4	Silver	2.2	mg/kg	4.6	7	5.7	9.3	12.7	12.4	2	5.4
7440-23-5	Sodium	NS	mg/kg	120 B	120 B	125 B	124 B	167 B	136 B		
7440-24-6	Strontium	NS	mg/kg								
7440-28-0	Thallium	NS	mg/kg	U	0.17	0.23	0.22	0.2	U		
7440-31-5	Tin	NS	mg/kg								
7440-32-6	Titanium	NS	mg/kg								
7440-62-2	Vanadium	NS	mg/kg	14.3	15	18.4	15.9	21.2	18.7		
7440-66-6	Zinc	460	mg/kg	131	88	128	230	114	94.8	82.4	101

Data Sources:
NYSDEC, 2007. Contamination Analysis in the Rochester Embayment Area of C
USEPA, 2012. TASK 6: Final Summary Report for Site Characterization at the G
USEPA, 2013. Technical Report: Genesee River Sediment Sampling under the Gr

Notes:
1. Sample locations can be found on Figure 5.

Table D-1b
HISTORICAL SEDIMENT METALS DATA SUMMARY
CLASS C STANDARDS COMPARISON

NYSDEC-Lower Genesee River Historical Sediment Data Metals Summary Class C Standards Comparison		Class C Freshwater Sediment Guidance	Location ID: Sample ID: Lab Sample Id: Depth: Source: SDG: Matrix: Sampled: Validated:	GR-01 LA-108 K1108656-008 3 - 6 ft BAT SE 9/12/2011 16:45	GR-01 LA-109 K1108656-009 6 - 9 ft BAT SE 9/12/2011 16:45	GR-01 LA-110 K1108656-010 9 - 12 ft BAT SE 9/12/2011 16:45	GR-01 LA-111 K1108656-011 12 - 14.9 ft BAT SE 9/12/2011 16:45	GR-02 2 1307007-01 0 - 0.5 FT USEPA B307044 SE 7/9/2013 16:57	GR-02 LA-002 K1108643-002 0 - 0.5 ft BAT SE 9/12/2011 16:00	GR-02 LA-104 K1108656-004 0 - 3 ft BAT SE 9/12/2011 15:51	GR-02 LA-105 K1108656-005 3 - 6 ft BAT SE 9/12/2011 15:51
CAS NO.	COMPOUND	Value	UNITS:								
	METALS										
7429-90-5	Aluminum	NS	mg/kg	11400	10800	11000	9130	14000	14800 J	16400	15600
7440-36-0	Antimony	NS	mg/kg					2.2 U			
7440-38-2	Arsenic	33	mg/kg	10.5	15.2	10	8.7	9.2	8.3	14.9	13.6
7440-39-3	Barium	NS	mg/kg					97			
7440-41-7	Beryllium	NS	mg/kg					0.65			
7440-42-8	Boron	NS	mg/kg					5.6 U			
7440-43-9	Cadmium	5	mg/kg	2.91	2.03	0.74	0.31	0.48	0.52	2.28	0.85
7440-70-2	Calcium	NS	mg/kg					14000			
7440-47-3	Chromium, Total	110	mg/kg	25.9	25	23	17.9	21	21.4	32.3	26.2
7440-48-4	Cobalt	NS	mg/kg					12			
7440-50-8	Copper	150	mg/kg	43.3	43.3	45	33.2	55	44.3	60.4	47.6
7439-89-6	Iron	NS	mg/kg					34000			
7439-92-1	Lead	130	mg/kg	46	60	82	49	22	23	55	70
7439-93-2	Lithium	NS	mg/kg					33			
7439-95-4	Magnesium	NS	mg/kg					9200			
7439-96-5	Manganese	NS	mg/kg	466	445	490	482	670	683	587	450
7439-97-6	Mercury	1	mg/kg	0.333 J	0.371 J	0.478 J	0.339 J		0.089	0.542 J	0.764 J
7439-98-7	Molybdenum	NS	mg/kg					1.5			
7440-02-0	Nickel	49	mg/kg	26.6	25.2	25.1	22.4	30	31	34.6	32.8
7440-09-7	Potassium	NS	mg/kg					1300 L			
7782-49-2	Selenium	NS	mg/kg	0.7 U	1 J	0.7 U	0.9 J	1.1 U	0.7 J	1.4 J	0.7 J
7440-22-4	Silver	2.2	mg/kg	15.1	16.1	19.3	14.5	3	3.1	14.3	11.5
7440-23-5	Sodium	NS	mg/kg					120 L			
7440-24-6	Strontium	NS	mg/kg					49			
7440-28-0	Thallium	NS	mg/kg					3.3 U			
7440-31-5	Tin	NS	mg/kg					2.2 U			
7440-32-6	Titanium	NS	mg/kg					49			
7440-62-2	Vanadium	NS	mg/kg					22			
7440-66-6	Zinc	460	mg/kg	171	152	175	144	130	109	173	164

Data Sources:
NYSDEC, 2007. Contamination Analysis in the Rochester Embayment Area of C
USEPA, 2012. TASK 6: Final Summary Report for Site Characterization at the G
USEPA, 2013. Technical Report: Genesee River Sediment Sampling under the Gr

Notes:
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Table D-1b
HISTORICAL SEDIMENT METALS DATA SUMMARY
CLASS C STANDARDS COMPARISON

NYSDEC-Lower Genesee River Historical Sediment Data Metals Summary Class C Standards Comparison		Class C Freshwater Sediment Guidance	Location ID: Sample ID: Lab Sample Id: Depth: Source: SDG: Matrix: Sampled: Validated:	GR-02 LA-106 K1108656-006 6 - 7.4 ft BAT SE 9/12/2011 15:51	GR-03 3 1307007-02 0 - 0.5 FT USEPA B307044 SE 7/9/2013 17:13	GR-03 LA-003 K1108840-005 0 - 0.5 ft BAT SE 9/15/2011 11:28	GR-03 LA-003D K1108840-006 0 - 0.5 ft BAT SE 9/15/2011 11:31	GR-03 LA-159 K1108838-019 0 - 3 ft BAT SE 9/15/2011 11:22	GR-03 LA-160 K1108843-017 3 - 6 ft BAT SE 9/15/2011 11:22	GR-03 LA-161 K1108837-013 6 - 9.4 ft BAT SE 9/15/2011 11:22	GR-03 LA-162 K1108843-018 0 - 3 ft BAT SE 9/15/2011 11:15
CAS NO.	COMPOUND	Value	UNITS:								
	METALS										
7429-90-5	Aluminum	NS	mg/kg	12000	11000	8650 J	7610 J	11400 J	9170	11500	9590
7440-36-0	Antimony	NS	mg/kg		2.3 U						
7440-38-2	Arsenic	33	mg/kg	7.7	7.3	6.2	5	7.3	7.5	8.4	7
7440-39-3	Barium	NS	mg/kg		72						
7440-41-7	Beryllium	NS	mg/kg		0.51						
7440-42-8	Boron	NS	mg/kg		5.7						
7440-43-9	Cadmium	5	mg/kg	0.26	0.23 U	0.14	0.06 J	0.28	2.34	5.54	0.43
7440-70-2	Calcium	NS	mg/kg		16000						
7440-47-3	Chromium, Total	110	mg/kg	18.7	15	11.8	10.3	15.8	18.1	26.8	15.1
7440-48-4	Cobalt	NS	mg/kg		9.3						
7440-50-8	Copper	150	mg/kg	26.5	24	20.9	17.9	27.7	32.2	40	28.4
7439-89-6	Iron	NS	mg/kg		27000						
7439-92-1	Lead	130	mg/kg	27	15	15	12	20	33	39	21
7439-93-2	Lithium	NS	mg/kg		25						
7439-95-4	Magnesium	NS	mg/kg		7900						
7439-96-5	Manganese	NS	mg/kg	400	750	438	400	586	452	551	477
7439-97-6	Mercury	1	mg/kg	0.246 J		0.029	0.021	0.041	0.068	0.115	0.043
7439-98-7	Molybdenum	NS	mg/kg		1.4 U						
7440-02-0	Nickel	49	mg/kg	25.6	23	19	17.4	24.2	23	25.2	22.2
7440-09-7	Potassium	NS	mg/kg		950 L						
7782-49-2	Selenium	NS	mg/kg	0.8 J	1.1 U	1 J	1.4 J	0.7 U	1.5 J	0.7 U	0.7 U
7440-22-4	Silver	2.2	mg/kg	3.4	1.6	4.4	0.7	7.1	12.2	9.1	11.2
7440-23-5	Sodium	NS	mg/kg		91 L						
7440-24-6	Strontium	NS	mg/kg		50						
7440-28-0	Thallium	NS	mg/kg		3.4 U						
7440-31-5	Tin	NS	mg/kg		2.3 U						
7440-32-6	Titanium	NS	mg/kg		48						
7440-62-2	Vanadium	NS	mg/kg		16						
7440-66-6	Zinc	460	mg/kg	88.9	91	68.8	58.2	91.8	119	145	91.6

Data Sources:
NYSDEC, 2007. Contamination Analysis in the Rochester Embayment Area of C
USEPA, 2012. TASK 6: Final Summary Report for Site Characterization at the G
USEPA, 2013. Technical Report: Genesee River Sediment Sampling under the Gr

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Table D-1b
HISTORICAL SEDIMENT METALS DATA SUMMARY
CLASS C STANDARDS COMPARISON

NYSDEC-Lower Genesee River Historical Sediment Data Metals Summary Class C Standards Comparison		Class C Freshwater Sediment Guidance	Location ID: Sample ID: Lab Sample Id: Depth: Source: SDG: Matrix: Sampled: Validated:	GR-03 LA-163 K1108843-019 3 - 6 ft BAT SE 9/15/2011 11:15	GR-03 LA-164 K1108837-014 6 - 8.7 ft BAT SE 9/15/2011 11:15	GR-04 LA-004 K1108643-003 0 - 0.5 ft BAT SE 9/12/2011 15:10	GR-04 LA-101 K1108656-001 0 - 3 ft BAT SE 9/12/2011 14:59	GR-04 LA-102 K1108656-002 3 - 6 ft BAT SE 9/12/2011 14:59	GR-04 LA-103 K1108656-003 6 - 9.8 ft BAT SE 9/12/2011 14:59	GR-05 LA-005 K1108840-007 0 - 0.5 ft BAT SE 9/16/2011 8:23	GR-05 LA-181 K1108838-008 0 - 3 ft BAT SE 9/16/2011 8:20
CAS NO.	COMPOUND	Value	UNITS:								
	METALS										
7429-90-5	Aluminum	NS	mg/kg	9440	11300	11400 J	11900	11700	12200	10900 J	11500 J
7440-36-0	Antimony	NS	mg/kg								
7440-38-2	Arsenic	33	mg/kg	7.9	8.3	7.8	7.9	5.8	5.2	7.7	8.3
7440-39-3	Barium	NS	mg/kg								
7440-41-7	Beryllium	NS	mg/kg								
7440-42-8	Boron	NS	mg/kg								
7440-43-9	Cadmium	5	mg/kg	3.25	5.45	0.3	5.47	2.75	0.2	0.2	5.12
7440-70-2	Calcium	NS	mg/kg								
7440-47-3	Chromium, Total	110	mg/kg	18.3	27.8	16.2	24.2	19.9	18	14.7	22.9
7440-48-4	Cobalt	NS	mg/kg								
7440-50-8	Copper	150	mg/kg	31.8	40.2	24.5	33.9	27.6	22.2	28.8	38.6
7439-89-6	Iron	NS	mg/kg								
7439-92-1	Lead	130	mg/kg	31	42	16	32	25	13	17	34
7439-93-2	Lithium	NS	mg/kg								
7439-95-4	Magnesium	NS	mg/kg								
7439-96-5	Manganese	NS	mg/kg	435	552	596	512	326	233	515	544
7439-97-6	Mercury	1	mg/kg	0.069	0.261	0.032	0.126 J	0.057 J	0.015 J	0.035	0.117
7439-98-7	Molybdenum	NS	mg/kg								
7440-02-0	Nickel	49	mg/kg	23.3	25.2	25.3	26.7	25.4	29.7	24.1	26.1
7440-09-7	Potassium	NS	mg/kg								
7782-49-2	Selenium	NS	mg/kg	0.8 J	0.7 U	0.6 J	1.1 J	0.7 U	1.2 J	0.8 J	0.7 U
7440-22-4	Silver	2.2	mg/kg	7.8	8.3	1.3	8.9	4	0.2 U	1.6	8.7
7440-23-5	Sodium	NS	mg/kg								
7440-24-6	Strontium	NS	mg/kg								
7440-28-0	Thallium	NS	mg/kg								
7440-31-5	Tin	NS	mg/kg								
7440-32-6	Titanium	NS	mg/kg								
7440-62-2	Vanadium	NS	mg/kg								
7440-66-6	Zinc	460	mg/kg	118	144	76.8	164	116	71.6	83.1	187

Data Sources:
NYSDEC, 2007. Contamination Analysis in the Rochester Embayment Area of C
USEPA, 2012. TASK 6: Final Summary Report for Site Characterization at the G
USEPA, 2013. Technical Report: Genesee River Sediment Sampling under the Gr

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HISTORICAL SEDIMENT METALS DATA SUMMARY
CLASS C STANDARDS COMPARISON

NYSDEC-Lower Genesee River Historical Sediment Data Metals Summary Class C Standards Comparison		Class C Freshwater Sediment Guidance	Location ID: Sample ID: Lab Sample Id: Depth: Source: SDG: Matrix: Sampled: Validated:	GR-05 LA-182 K1108838-015 3 - 6 ft BAT SE 9/16/2011 8:20	GR-05 LA-183 K1108838-016 6 - 8 ft BAT SE 9/16/2011 8:20	GR-06 LA-006 K1108840-008 0 - 0.5 ft BAT SE 9/15/2011 17:44	GR-06 LA-173 K1108840-004 0 - 1.5 ft BAT SE 9/15/2011 17:40	GR-07 LA-007 K1108840-009 0 - 0.5 ft BAT SE 9/15/2011 17:07	GR-07 LA-184 K1108837-015 0 - 3 ft BAT SE 9/15/2011 16:58	GR-07 LA-185 K1108837-016 3 - 6 ft BAT SE 9/15/2011 16:58	GR-07 LA-186 K1108837-017 6 - 9 ft BAT SE 9/15/2011 16:58
CAS NO.	COMPOUND	Value	UNITS:								
	METALS										
7429-90-5	Aluminum	NS	mg/kg	11300 J	12400 J	10700 J	9600 J	10500 J	10600	8570	10800
7440-36-0	Antimony	NS	mg/kg								
7440-38-2	Arsenic	33	mg/kg	6.2	5.5	6.9	6.9	7.3	7.3	6	8.9
7440-39-3	Barium	NS	mg/kg								
7440-41-7	Beryllium	NS	mg/kg								
7440-42-8	Boron	NS	mg/kg								
7440-43-9	Cadmium	5	mg/kg	2.57	0.14	0.32	1.84	0.14	0.35	0.88	6.97
7440-70-2	Calcium	NS	mg/kg								
7440-47-3	Chromium, Total	110	mg/kg	17.9	16.5	16.5	17.3	14.2	16.4	15.8	28.6
7440-48-4	Cobalt	NS	mg/kg								
7440-50-8	Copper	150	mg/kg	32.5	24.5	31.8	30.7	29.1	29.7	28.4	46.5
7439-89-6	Iron	NS	mg/kg								
7439-92-1	Lead	130	mg/kg	201	16	21	35	17	20	21	60
7439-93-2	Lithium	NS	mg/kg								
7439-95-4	Magnesium	NS	mg/kg								
7439-96-5	Manganese	NS	mg/kg	364	207	474	427	625	660	459	506
7439-97-6	Mercury	1	mg/kg	0.104	0.02	0.037	0.074	0.036	0.049	0.048	0.186
7439-98-7	Molybdenum	NS	mg/kg								
7440-02-0	Nickel	49	mg/kg	23.9	27.9	23.4	22.3	23.7	21.7	19.1	25
7440-09-7	Potassium	NS	mg/kg								
7782-49-2	Selenium	NS	mg/kg	0.8 J	0.7 U	1.6 J	0.8 J	1.3 J	0.8 J	0.7 U	0.9 J
7440-22-4	Silver	2.2	mg/kg	2.6	0.2 U	12	10.5	2.1	6	9.6	15.8
7440-23-5	Sodium	NS	mg/kg								
7440-24-6	Strontium	NS	mg/kg								
7440-28-0	Thallium	NS	mg/kg								
7440-31-5	Tin	NS	mg/kg								
7440-32-6	Titanium	NS	mg/kg								
7440-62-2	Vanadium	NS	mg/kg								
7440-66-6	Zinc	460	mg/kg	123	77.3	94.9	113	82.5	80.2	82	198

Data Sources:
NYSDEC, 2007. Contamination Analysis in the Rochester Embayment Area of C
USEPA, 2012. TASK 6: Final Summary Report for Site Characterization at the G
USEPA, 2013. Technical Report: Genesee River Sediment Sampling under the Gr

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NYSDEC-Lower Genesee River Historical Sediment Data Metals Summary Class C Standards Comparison		Class C Freshwater Sediment Guidance	Location ID: Sample ID: Lab Sample Id: Depth: Source: SDG: Matrix: Sampled: Validated:	GR-07 LA-187 K1108837-018 9 - 12 ft BAT SE 9/15/2011 16:58	GR-07 LA-188 K1108837-019 12 - 14.4 ft BAT SE 9/15/2011 16:58	GR-08 LA-008 K1108840-010 0 - 0.5 ft BAT SE 9/15/2011 16:28	GR-08 LA-189 K1108838-009 0 - 3 ft BAT SE 9/15/2011 16:18	GR-08 LA-190 K1108838-010 3 - 6 ft BAT SE 9/15/2011 16:18	GR-08 LA-191 K1108837-020 6 - 9 ft BAT SE 9/15/2011 16:18	GR-08 LA-192 K1108838-011 9 - 12 ft BAT SE 9/15/2011 16:18	GR-08 LA-193 K1108838-001 12 - 13.8 ft BAT SE 9/15/2011 16:18
CAS NO.	COMPOUND	Value	UNITS:								
	METALS										
7429-90-5	Aluminum	NS	mg/kg	10100	8850	8140 J	10500 J	9710 J	11900	9780 J	10400 J
7440-36-0	Antimony	NS	mg/kg								
7440-38-2	Arsenic	33	mg/kg	11.8	12.6	6.1	7.7	8.9	18.7	6.3	5.3
7440-39-3	Barium	NS	mg/kg								
7440-41-7	Beryllium	NS	mg/kg								
7440-42-8	Boron	NS	mg/kg								
7440-43-9	Cadmium	5	mg/kg	2.83	1.63	0.06 J	0.22	6.02	3.1	0.4	0.1
7440-70-2	Calcium	NS	mg/kg								
7440-47-3	Chromium, Total	110	mg/kg	25.8	29	11	14.8	28.2	38.2	16.1	14.4
7440-48-4	Cobalt	NS	mg/kg								
7440-50-8	Copper	150	mg/kg	47.6	40.9	19.9	28.7	71.5	89.1	28.5	21.5
7439-89-6	Iron	NS	mg/kg								
7439-92-1	Lead	130	mg/kg	48	40	13	21	84	87	29	16
7439-93-2	Lithium	NS	mg/kg								
7439-95-4	Magnesium	NS	mg/kg								
7439-96-5	Manganese	NS	mg/kg	423	391	420	592	407	505	396	353
7439-97-6	Mercury	1	mg/kg	0.303	0.314	0.028	0.033	0.208	0.463	0.084	0.015 J
7439-98-7	Molybdenum	NS	mg/kg								
7440-02-0	Nickel	49	mg/kg	24.3	20.9	18.4	23.5	25.2	27.6	23.2	25
7440-09-7	Potassium	NS	mg/kg								
7782-49-2	Selenium	NS	mg/kg	0.8 J	0.7 U	0.7 U	0.7 U	1.4 J	0.9 J	1.2 J	1.1 J
7440-22-4	Silver	2.2	mg/kg	21.7	18.7	0.5	5	19.7	29.4	4.9	0.2 U
7440-23-5	Sodium	NS	mg/kg								
7440-24-6	Strontium	NS	mg/kg								
7440-28-0	Thallium	NS	mg/kg								
7440-31-5	Tin	NS	mg/kg								
7440-32-6	Titanium	NS	mg/kg								
7440-62-2	Vanadium	NS	mg/kg								
7440-66-6	Zinc	460	mg/kg	143	108	60.4	85.4	227	198	86.2	68.8

Data Sources:
NYSDEC, 2007. Contamination Analysis in the Rochester Embayment Area of C
USEPA, 2012. TASK 6: Final Summary Report for Site Characterization at the G
USEPA, 2013. Technical Report: Genesee River Sediment Sampling under the Gr

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HISTORICAL SEDIMENT METALS DATA SUMMARY
CLASS C STANDARDS COMPARISON

NYSDEC-Lower Genesee River Historical Sediment Data Metals Summary Class C Standards Comparison		Class C Freshwater Sediment Guidance	Location ID: Sample ID: Lab Sample Id: Depth: Source: SDG: Matrix: Sampled: Validated:	GR-09 LA-009 K1108840-011 0 - 0.5 ft BAT SE 9/15/2011 15:53	GR-09 LA-194 K1108838-002 0 - 3 ft BAT SE 9/15/2011 15:45	GR-09 LA-195 K1108838-003 3 - 6 ft BAT SE 9/15/2011 15:45	GR-09 LA-196 K1108838-004 6 - 9 ft BAT SE 9/15/2011 15:45	GR-09 LA-197 K1108838-012 9 - 12 ft BAT SE 9/15/2011 15:45	GR-09 LA-198 K1108838-005 12 - 13.8 ft BAT SE 9/15/2011 15:45	GR-10 LA-010 K1108840-012 0 - 0.5 ft BAT SE 9/15/2011 14:35	GR-10 LA-165 K1108843-020 0 - 3 ft BAT SE 9/15/2011 14:21
CAS NO.	COMPOUND	Value	UNITS:								
	METALS										
7429-90-5	Aluminum	NS	mg/kg	9300 J	10100 J	11400 J	10200 J	9120 J	11900 J	8490 J	8250
7440-36-0	Antimony	NS	mg/kg								
7440-38-2	Arsenic	33	mg/kg	5.7	6.9	9.5	12.6	13.2	13	5.7	6.3
7440-39-3	Barium	NS	mg/kg								
7440-41-7	Beryllium	NS	mg/kg								
7440-42-8	Boron	NS	mg/kg								
7440-43-9	Cadmium	5	mg/kg	0.18	1.74	9.99	3.5	1.6	0.92	0.14	1.57
7440-70-2	Calcium	NS	mg/kg								
7440-47-3	Chromium, Total	110	mg/kg	12.9	16.9	36.4	28	23.8	28.3	12.3	15.4
7440-48-4	Cobalt	NS	mg/kg								
7440-50-8	Copper	150	mg/kg	25.3	33.2	56.3	52	41.1	49.9	21.4	28.1
7439-89-6	Iron	NS	mg/kg								
7439-92-1	Lead	130	mg/kg	15	24	53	51	45	70	15	25
7439-93-2	Lithium	NS	mg/kg								
7439-95-4	Magnesium	NS	mg/kg								
7439-96-5	Manganese	NS	mg/kg	447	448	451	400	370	460	440	383
7439-97-6	Mercury	1	mg/kg	0.029	0.086	0.245	0.31	0.249	0.368	0.03	0.052
7439-98-7	Molybdenum	NS	mg/kg								
7440-02-0	Nickel	49	mg/kg	21.2	23.6	29.5	26.5	23	27.5	19.1	20
7440-09-7	Potassium	NS	mg/kg								
7782-49-2	Selenium	NS	mg/kg	0.7 U	0.9 J	0.9 J	1.4 J	1.2 J	1.3 J	0.8 J	0.9 J
7440-22-4	Silver	2.2	mg/kg	1.7	9.2	24.2	23.4	16.5	22.7	3.2	12.4
7440-23-5	Sodium	NS	mg/kg								
7440-24-6	Strontium	NS	mg/kg								
7440-28-0	Thallium	NS	mg/kg								
7440-31-5	Tin	NS	mg/kg								
7440-32-6	Titanium	NS	mg/kg								
7440-62-2	Vanadium	NS	mg/kg								
7440-66-6	Zinc	460	mg/kg	74	114	276	172	120	166	68.1	102

Data Sources:
NYSDEC, 2007. Contamination Analysis in the Rochester Embayment Area of C
USEPA, 2012. TASK 6: Final Summary Report for Site Characterization at the G
USEPA, 2013. Technical Report: Genesee River Sediment Sampling under the Gr

Notes:
1. Sample locations can be found on Figure 5.

Table D-1b
HISTORICAL SEDIMENT METALS DATA SUMMARY
CLASS C STANDARDS COMPARISON

NYSDEC-Lower Genesee River Historical Sediment Data Metals Summary Class C Standards Comparison		Class C Freshwater Sediment Guidance	Location ID: Sample ID: Lab Sample Id: Depth: Source: SDG: Matrix: Sampled: Validated:	GR-10 LA-166 K1108844-001 3 - 6 ft BAT SE 9/15/2011 14:21	GR-10 LA-167 K1108844-002 6 - 6.9 ft BAT SE 9/15/2011 14:21	GR-11 11 1307007-03 0 - 0.5 FT USEPA B307044 SE 7/9/2013 16:20	GR-11 LA-011 K1108837-001 0 - 0.5 ft BAT SE 9/15/2011 9:09	GR-11 LA-152 K1108837-009 0 - 0.9 ft BAT SE 9/15/2011 9:01	GR-12 12 1307007-04 0 - 0.5 FT USEPA SE 7/9/2013 16:06	GR-12 LA-012 K1108837-002 0 - 0.5 ft BAT SE 9/15/2011 13:46	GR-12 LA-199 K1108838-013 0 - 3 ft BAT SE 9/15/2011 13:22
CAS NO.	COMPOUND	Value	UNITS:								
	METALS										
7429-90-5	Aluminum	NS	mg/kg	10700	10500	8000	13600	9160	9600	11600	8660 J
7440-36-0	Antimony	NS	mg/kg			2.3 U			2.2 UL		
7440-38-2	Arsenic	33	mg/kg	8.8	10.4	5.3	6.9	5.5	6.9	9.1	6.7
7440-39-3	Barium	NS	mg/kg			48			100		
7440-41-7	Beryllium	NS	mg/kg			0.35			0.42		
7440-42-8	Boron	NS	mg/kg			5.6 U			5.4 U		
7440-43-9	Cadmium	5	mg/kg	4.94	3.1	0.24	0.72	2.47	2.1	10.5	0.31
7440-70-2	Calcium	NS	mg/kg			11000			13000		
7440-47-3	Chromium, Total	110	mg/kg	26	21.4	12	20.5	18.8	16	35.2	13.1
7440-48-4	Cobalt	NS	mg/kg			7.2			8.4		
7440-50-8	Copper	150	mg/kg	37.7	36.6	19	31.8	29.9	27	53.3	24.3
7439-89-6	Iron	NS	mg/kg			20000			23000		
7439-92-1	Lead	130	mg/kg	42	38	12	29	27	18	49	17
7439-93-2	Lithium	NS	mg/kg			18			22		
7439-95-4	Magnesium	NS	mg/kg			6000			7000		
7439-96-5	Manganese	NS	mg/kg	463	458	440	406	395	520	502	475
7439-97-6	Mercury	1	mg/kg	0.151	0.195		0.043	0.081		0.2	0.096
7439-98-7	Molybdenum	NS	mg/kg			1.4 U			1.3 U		
7440-02-0	Nickel	49	mg/kg	27	26.7	17	26.7	20.4	21	27.6	20.6
7440-09-7	Potassium	NS	mg/kg			680 L			810 L		
7782-49-2	Selenium	NS	mg/kg	1.4 J	1.3 J	1.1 U	1.1 J	0.7 U	1.1 U	0.7 U	1 J
7440-22-4	Silver	2.2	mg/kg	10.3	11.7	1.8	17.9	14.3	7.4	25.3	6.8
7440-23-5	Sodium	NS	mg/kg			66 L			77 L		
7440-24-6	Strontium	NS	mg/kg			33			38		
7440-28-0	Thallium	NS	mg/kg			3.4 U			3.3 U		
7440-31-5	Tin	NS	mg/kg			2.3 U			2.2 U		
7440-32-6	Titanium	NS	mg/kg			46			48		
7440-62-2	Vanadium	NS	mg/kg			12			15		
7440-66-6	Zinc	460	mg/kg	155	150	70	107	111	110	255	76.4

Data Sources:
NYSDEC, 2007. Contamination Analysis in the Rochester Embayment Area of C
USEPA, 2012. TASK 6: Final Summary Report for Site Characterization at the G
USEPA, 2013. Technical Report: Genesee River Sediment Sampling under the Gr

Notes:
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Table D-1b
HISTORICAL SEDIMENT METALS DATA SUMMARY
CLASS C STANDARDS COMPARISON

NYSDEC-Lower Genesee River Historical Sediment Data Metals Summary Class C Standards Comparison		Class C Freshwater Sediment Guidance	Location ID: Sample ID: Lab Sample Id: Depth: Source: SDG: Matrix: Sampled: Validated:	GR-12 LA-200 K1108838-014 3 - 6 ft BAT SE 9/15/2011 13:22	GR-12 LA-201 K1108843-011 6 - 9 ft BAT SE 9/15/2011 13:22	GR-12 LA-202 K1108843-012 9 - 12 ft BAT SE 9/15/2011 13:22	GR-12 LA-203 K1108843-013 12 - 15 ft BAT SE 9/15/2011 13:22	GR-12 LA-204 K1108843-014 15 - 16.4 ft BAT SE 9/15/2011 13:22	GR-13 LA-013 K1108837-003 0 - 0.5 ft BAT SE 9/14/2011 9:09	GR-13 LA-013D K1108840-013 0 - 0.5 ft BAT SE 9/14/2011 9:10	GR-13 LA-126 K1108643-011 0 - 3 ft BAT SE 9/14/2011 8:47
CAS NO.	COMPOUND	Value	UNITS:								
	METALS										
7429-90-5	Aluminum	NS	mg/kg	10100 J	9870	8440	9320	8590	13000	12700 J	13500 J
7440-36-0	Antimony	NS	mg/kg								
7440-38-2	Arsenic	33	mg/kg	8.2	9.2	5	5.5	5	8.2	8.9	8.5
7440-39-3	Barium	NS	mg/kg								
7440-41-7	Beryllium	NS	mg/kg								
7440-42-8	Boron	NS	mg/kg								
7440-43-9	Cadmium	5	mg/kg	5.45	1.99	0.04 U	0.04 U	0.04 U	0.53	0.42	1.49
7440-70-2	Calcium	NS	mg/kg								
7440-47-3	Chromium, Total	110	mg/kg	24.1	18.8	11.5	12.6	12	29	28.2	28.1
7440-48-4	Cobalt	NS	mg/kg								
7440-50-8	Copper	150	mg/kg	42.1	36.5	17.3	18.6	17.8	69.8	65.7	68.3
7439-89-6	Iron	NS	mg/kg								
7439-92-1	Lead	130	mg/kg	46	39	11	11	10	41	46	69
7439-93-2	Lithium	NS	mg/kg								
7439-95-4	Magnesium	NS	mg/kg								
7439-96-5	Manganese	NS	mg/kg	473	410	363	366	378	477	443	491
7439-97-6	Mercury	1	mg/kg	0.196	0.165	0.015 J	0.013 J	0.012 J	0.082	0.071	0.122
7439-98-7	Molybdenum	NS	mg/kg								
7440-02-0	Nickel	49	mg/kg	25.1	24.1	21	23.1	21.4	25.5	27	29.8
7440-09-7	Potassium	NS	mg/kg								
7782-49-2	Selenium	NS	mg/kg	1 J	1.4 J	0.7 U	0.7 U	1.3 J	0.8 J	1.1 J	0.8 J
7440-22-4	Silver	2.2	mg/kg	17.3	8.5	0.2 U	0.2 U	0.2 U	3.2	3.3	10.5
7440-23-5	Sodium	NS	mg/kg								
7440-24-6	Strontium	NS	mg/kg								
7440-28-0	Thallium	NS	mg/kg								
7440-31-5	Tin	NS	mg/kg								
7440-32-6	Titanium	NS	mg/kg								
7440-62-2	Vanadium	NS	mg/kg								
7440-66-6	Zinc	460	mg/kg	183	124	56.7	61.8	57.6	196	211	224

Data Sources:
NYSDEC, 2007. Contamination Analysis in the Rochester Embayment Area of C
USEPA, 2012. TASK 6: Final Summary Report for Site Characterization at the G
USEPA, 2013. Technical Report: Genesee River Sediment Sampling under the Gr

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CLASS C STANDARDS COMPARISON

NYSDEC-Lower Genesee River Historical Sediment Data Metals Summary Class C Standards Comparison		Class C Freshwater Sediment Guidance	Location ID: Sample ID: Lab Sample Id: Depth: Source: SDG: Matrix: Sampled: Validated:	GR-13 LA-127 K1108643-012 3 - 6 ft BAT SE 9/14/2011 8:47	GR-13 LA-128 K1108643-013 6 - 9 ft BAT SE 9/14/2011 8:47	GR-13 LA-129 K1108643-014 9 - 11.9 ft BAT SE 9/14/2011 8:47	GR-13 LA-130 K1108737-001 0 - 3 ft BAT SE 9/14/2011 9:00	GR-13 LA-131 K1108737-002 3 - 6 ft BAT SE 9/14/2011 9:00	GR-13 LA-132 K1108737-003 6 - 9 ft BAT SE 9/14/2011 9:00	GR-13 LA-133 K1108737-004 9 - 12 ft BAT SE 9/14/2011 9:00	GR-13 LA-134 K1108737-005 12 - 13.1 ft BAT SE 9/14/2011 9:00
CAS NO.	COMPOUND	Value	UNITS:								
	METALS										
7429-90-5	Aluminum	NS	mg/kg	13200 J	9870 J	12800 J	15100	13900	10700	11800	11600
7440-36-0	Antimony	NS	mg/kg								
7440-38-2	Arsenic	33	mg/kg	8.4	7.6	7	10.3	9.9	10.6	6.2	6.9
7440-39-3	Barium	NS	mg/kg								
7440-41-7	Beryllium	NS	mg/kg								
7440-42-8	Boron	NS	mg/kg								
7440-43-9	Cadmium	5	mg/kg	5.07	0.19	0.16	1.71	5.37	0.45	0.38	0.36
7440-70-2	Calcium	NS	mg/kg								
7440-47-3	Chromium, Total	110	mg/kg	28.9	14.9	18.8	28.6	28.3	14.9	15.8	15.2
7440-48-4	Cobalt	NS	mg/kg								
7440-50-8	Copper	150	mg/kg	51.1	18.8	21.8	73.4	54.1	20.1	19.4	20.1
7439-89-6	Iron	NS	mg/kg								
7439-92-1	Lead	130	mg/kg	165	12	13	71.8	166	19.7	14.5	12.5
7439-93-2	Lithium	NS	mg/kg								
7439-95-4	Magnesium	NS	mg/kg								
7439-96-5	Manganese	NS	mg/kg	444	204	266	482	461	217	238	236
7439-97-6	Mercury	1	mg/kg	0.162	0.021	0.019	0.107	0.19	0.035	0.022	0.02
7439-98-7	Molybdenum	NS	mg/kg								
7440-02-0	Nickel	49	mg/kg	29.7	23.9	30.6	29.4	28.9	22.7	24.6	24.4
7440-09-7	Potassium	NS	mg/kg								
7782-49-2	Selenium	NS	mg/kg	0.8 J	1.3 U	1.1 U	0.7 U	0.7 U	1.2 J	0.7 U	0.7 U
7440-22-4	Silver	2.2	mg/kg	7.6	0.4 U	0.3 U	9.8	7.4	0.3 U	0.2 U	0.2 U
7440-23-5	Sodium	NS	mg/kg								
7440-24-6	Strontium	NS	mg/kg								
7440-28-0	Thallium	NS	mg/kg								
7440-31-5	Tin	NS	mg/kg								
7440-32-6	Titanium	NS	mg/kg								
7440-62-2	Vanadium	NS	mg/kg								
7440-66-6	Zinc	460	mg/kg	238	58.9	72.7	242	248	65.7	67.2	65

Data Sources:
NYSDEC, 2007. Contamination Analysis in the Rochester Embayment Area of C
USEPA, 2012. TASK 6: Final Summary Report for Site Characterization at the G
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CLASS C STANDARDS COMPARISON

NYSDEC-Lower Genesee River Historical Sediment Data Metals Summary Class C Standards Comparison		Class C Freshwater Sediment Guidance	Location ID: Sample ID: Lab Sample Id: Depth: Source: SDG: Matrix: Sampled: Validated:	GR-14 LA-014 K1108837-004 0 - 0.5 ft BAT SE 9/14/2011 17:25	GR-14 LA-014D K1108837-005 0 - 0.5 ft BAT SE 9/14/2011 17:27	GR-14 LA-153 K1108843-015 0 - 3 ft BAT SE 9/14/2011 17:10	GR-14 LA-154 K1108837-010 3 - 6 ft BAT SE 9/14/2011 17:10	GR-14 LA-155 K1108838-018 6 - 8.2 ft BAT SE 9/14/2011 17:10	GR-14 LA-156 K1108843-016 0 - 3 ft BAT SE 9/14/2011 17:22	GR-14 LA-157 K1108837-011 3 - 6 ft BAT SE 9/14/2011 17:22	GR-14 LA-158 K1108837-012 6 - 7.7 ft BAT SE 9/14/2011 17:22
CAS NO.	COMPOUND	Value	UNITS:								
	METALS										
7429-90-5	Aluminum	NS	mg/kg	6780	7750	7740	10600	10900 J	7580	11100	11300
7440-36-0	Antimony	NS	mg/kg								
7440-38-2	Arsenic	33	mg/kg	4	4.3	5.5	8.8	19.4	6.3	10.3	19.2
7440-39-3	Barium	NS	mg/kg								
7440-41-7	Beryllium	NS	mg/kg								
7440-42-8	Boron	NS	mg/kg								
7440-43-9	Cadmium	5	mg/kg	0.24	0.28	1.85	8.31	3.65	1.68	8.1	3.81
7440-70-2	Calcium	NS	mg/kg								
7440-47-3	Chromium, Total	110	mg/kg	10.9	12.5	14.9	35	43	14.8	36.1	38.7
7440-48-4	Cobalt	NS	mg/kg								
7440-50-8	Copper	150	mg/kg	15.3	18.4	25.9	52.8	72	26.5	59.1	71.5
7439-89-6	Iron	NS	mg/kg								
7439-92-1	Lead	130	mg/kg	11	13	23	48	67	23	53	62
7439-93-2	Lithium	NS	mg/kg								
7439-95-4	Magnesium	NS	mg/kg								
7439-96-5	Manganese	NS	mg/kg	429	371	352	420	409	355	437	460
7439-97-6	Mercury	1	mg/kg	0.027	0.026	0.062	0.284	0.587	0.051	0.315	0.466
7439-98-7	Molybdenum	NS	mg/kg								
7440-02-0	Nickel	49	mg/kg	14.2	16.5	19.2	25.8	27.5	19.5	26.7	26.8
7440-09-7	Potassium	NS	mg/kg								
7782-49-2	Selenium	NS	mg/kg	0.6 U	0.7 U	1.4 J	0.7 U	1.3 J	0.8 J	1.3 J	1.2 J
7440-22-4	Silver	2.2	mg/kg	2.4	5.8	10.9	25.4	35.2	9.6	27.6	34.7
7440-23-5	Sodium	NS	mg/kg								
7440-24-6	Strontium	NS	mg/kg								
7440-28-0	Thallium	NS	mg/kg								
7440-31-5	Tin	NS	mg/kg								
7440-32-6	Titanium	NS	mg/kg								
7440-62-2	Vanadium	NS	mg/kg								
7440-66-6	Zinc	460	mg/kg	51.9	63.3	95.4	238	177	95.2	243	164

Data Sources:
NYSDEC, 2007. Contamination Analysis in the Rochester Embayment Area of C
USEPA, 2012. TASK 6: Final Summary Report for Site Characterization at the G
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NYSDEC-Lower Genesee River Historical Sediment Data Metals Summary Class C Standards Comparison		Class C Freshwater Sediment Guidance	Location ID: Sample ID: Lab Sample Id: Depth: Source: SDG: Matrix: Sampled: Validated:	GR-15 LA-015 K1108837-006 0 - 0.5 ft BAT SE 9/14/2011 16:33	GR-15 LA-168 K1108844-003 0 - 3 ft BAT SE 9/14/2011 16:24	GR-15 LA-169 K1108838-020 3 - 6 ft BAT SE 9/14/2011 16:24	GR-15 LA-170 K1108840-001 6 - 9 ft BAT SE 9/14/2011 16:24	GR-15 LA-171 K1108840-002 9 - 12 ft BAT SE 9/14/2011 16:24	GR-15 LA-172 K1108840-003 12 - 13.2 ft BAT SE 9/14/2011 16:24	GR-16 LA-016 K1108837-007 0 - 0.5 ft BAT SE 9/14/2011 15:44	GR-16 LA-144 K1108764-004 0 - 3 ft BAT SE 9/14/2011 15:40
CAS NO.	COMPOUND	Value	UNITS:								
	METALS										
7429-90-5	Aluminum	NS	mg/kg	9580	11900	9760 J	10900 J	10400 J	8910 J	6560	9210
7440-36-0	Antimony	NS	mg/kg								
7440-38-2	Arsenic	33	mg/kg	5.5	8.2	6.8	8.9	8.8	5.7	4.5	6.6
7440-39-3	Barium	NS	mg/kg								
7440-41-7	Beryllium	NS	mg/kg								
7440-42-8	Boron	NS	mg/kg								
7440-43-9	Cadmium	5	mg/kg	0.25	0.64	0.81	4.27	8.86	2.53	0.1	0.08 J
7440-70-2	Calcium	NS	mg/kg								
7440-47-3	Chromium, Total	110	mg/kg	15	17.1	16.5	24.5	28.5	16.8	10.2	13.1
7440-48-4	Cobalt	NS	mg/kg								
7440-50-8	Copper	150	mg/kg	23.1	24.4	28.9	44.8	50	28	15.9	21.7
7439-89-6	Iron	NS	mg/kg								
7439-92-1	Lead	130	mg/kg	17	20	25	58	56	23	10	14.7
7439-93-2	Lithium	NS	mg/kg								
7439-95-4	Magnesium	NS	mg/kg								
7439-96-5	Manganese	NS	mg/kg	487	538	537	580	534	365	364	461
7439-97-6	Mercury	1	mg/kg	0.031	0.035	0.057	0.105	0.194	0.081	0.02	0.025
7439-98-7	Molybdenum	NS	mg/kg								
7440-02-0	Nickel	49	mg/kg	20.2	26.5	22.7	27.2	27.8	22.8	14.3	19.2
7440-09-7	Potassium	NS	mg/kg								
7782-49-2	Selenium	NS	mg/kg	0.7 J	0.7 U	1.4 J	1.7 J	0.7 U	0.7 J	0.7 U	1.1 J
7440-22-4	Silver	2.2	mg/kg	4.9	7.8	16	26.1	19.8	6.6	1	5.9
7440-23-5	Sodium	NS	mg/kg								
7440-24-6	Strontium	NS	mg/kg								
7440-28-0	Thallium	NS	mg/kg								
7440-31-5	Tin	NS	mg/kg								
7440-32-6	Titanium	NS	mg/kg								
7440-62-2	Vanadium	NS	mg/kg								
7440-66-6	Zinc	460	mg/kg	74.6	91.1	105	174	218	109	48.9	66.3

Data Sources:
NYSDEC, 2007. Contamination Analysis in the Rochester Embayment Area of C
USEPA, 2012. TASK 6: Final Summary Report for Site Characterization at the G
USEPA, 2013. Technical Report: Genesee River Sediment Sampling under the Gr

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NYSDEC-Lower Genesee River Historical Sediment Data Metals Summary Class C Standards Comparison		Class C Freshwater Sediment Guidance	Location ID: Sample ID: Lab Sample Id: Depth: Source: SDG: Matrix: Sampled: Validated:	GR-16 LA-145 K1108764-005 3 - 6 ft BAT SE 9/14/2011 15:40	GR-16 LA-146 K1108764-006 6 - 9 ft BAT SE 9/14/2011 15:40	GR-16 LA-147 K1108764-007 9 - 12 ft BAT SE 9/14/2011 15:40	GR-16 LA-148 K1108764-008 12 - 15 ft BAT SE 9/14/2011 15:40	GR-16 LA-149 K1108764-009 15 - 18 ft BAT SE 9/14/2011 15:40	GR-16 LA-150 K1108764-010 18 - 19.9 ft BAT SE 9/14/2011 15:40	GR-17 LA-017 K1108840-014 0 - 0.5 ft BAT SE 9/14/2011 14:54	GR-17 LA-151 K1108838-017 0 - 3.1 ft BAT SE 9/14/2011 14:48
CAS NO.	COMPOUND	Value	UNITS:								
	METALS										
7429-90-5	Aluminum	NS	mg/kg	8930	9480	9530	10800	10100	10100	8530 J	8640 J
7440-36-0	Antimony	NS	mg/kg								
7440-38-2	Arsenic	33	mg/kg	6.8	8.1	14.3	14	6.2	6.6	5.4	6.6
7440-39-3	Barium	NS	mg/kg								
7440-41-7	Beryllium	NS	mg/kg								
7440-42-8	Boron	NS	mg/kg								
7440-43-9	Cadmium	5	mg/kg	0.28	6.47	2.74	1.16	0.04 U	0.04 J	0.12	3.31
7440-70-2	Calcium	NS	mg/kg								
7440-47-3	Chromium, Total	110	mg/kg	13.7	26	23.9	21.5	13.5	13.9	11.8	18.9
7440-48-4	Cobalt	NS	mg/kg								
7440-50-8	Copper	150	mg/kg	23.2	40.9	44.6	43.5	20.7	20.5	20.6	29
7439-89-6	Iron	NS	mg/kg								
7439-92-1	Lead	130	mg/kg	15.5	38.6	45.7	51.3	14.1	12.4	14	27
7439-93-2	Lithium	NS	mg/kg								
7439-95-4	Magnesium	NS	mg/kg								
7439-96-5	Manganese	NS	mg/kg	479	420	437	452	402	363	406	406
7439-97-6	Mercury	1	mg/kg	0.032	0.171	0.353	0.222	0.029	0.027	0.027	0.086
7439-98-7	Molybdenum	NS	mg/kg								
7440-02-0	Nickel	49	mg/kg	19.1	22.4	22.6	23.4	22.1	22.4	19.4	21.7
7440-09-7	Potassium	NS	mg/kg								
7782-49-2	Selenium	NS	mg/kg	1.2 J	0.9 J	1.2 J	0.9 J	1 J	0.7 U	0.7 J	1.3 J
7440-22-4	Silver	2.2	mg/kg	13.5	22.9	17.4	16.4	0.2 U	0.2 U	3.3	7
7440-23-5	Sodium	NS	mg/kg								
7440-24-6	Strontium	NS	mg/kg								
7440-28-0	Thallium	NS	mg/kg								
7440-31-5	Tin	NS	mg/kg								
7440-32-6	Titanium	NS	mg/kg								
7440-62-2	Vanadium	NS	mg/kg								
7440-66-6	Zinc	460	mg/kg	76.3	188	140	122	61.5	61.8	66.4	107

Data Sources:
NYSDEC, 2007. Contamination Analysis in the Rochester Embayment Area of C
USEPA, 2012. TASK 6: Final Summary Report for Site Characterization at the G
USEPA, 2013. Technical Report: Genesee River Sediment Sampling under the Gr

Notes:
1. Sample locations can be found on Figure 5.

Table D-1b
HISTORICAL SEDIMENT METALS DATA SUMMARY
CLASS C STANDARDS COMPARISON

NYSDEC-Lower Genesee River Historical Sediment Data Metals Summary Class C Standards Comparison		Class C Freshwater Sediment Guidance	Location ID: Sample ID: Lab Sample Id: Depth: Source: SDG: Matrix: Sampled: Validated:	GR-18 LA-018 K1108837-008 0 - 0.5 ft BAT SE 9/14/2011 11:51	GR-18 LA-135 K1108737-006 0 - 3 ft BAT SE 9/14/2011 11:38	GR-18 LA-136 K1108737-007 3 - 6 ft BAT SE 9/14/2011 11:38	GR-18 LA-137 K1108737-008 6 - 9 ft BAT SE 9/14/2011 11:38	GR-18 LA-138 K1108737-009 9 - 12.7 ft BAT SE 9/14/2011 11:38	GR-19 LA-019 K1108643-004 0 - 0.5 ft BAT SE 9/13/2011 12:00	GR-19 LA-117 K1108656-017 0 - 3 ft BAT SE 9/13/2011 11:46	GR-19 LA-118 K1108656-018 3 - 6 ft BAT SE 9/13/2011 11:46
CAS NO.	COMPOUND	Value	UNITS:								
	METALS										
7429-90-5	Aluminum	NS	mg/kg	9470	8910	11100	13300	10500	9420 J	9460	8340
7440-36-0	Antimony	NS	mg/kg								
7440-38-2	Arsenic	33	mg/kg	5.4	5.8	8.1	9.5	8.5	6.1	6	6.4
7440-39-3	Barium	NS	mg/kg								
7440-41-7	Beryllium	NS	mg/kg								
7440-42-8	Boron	NS	mg/kg								
7440-43-9	Cadmium	5	mg/kg	0.22	1.28	9.09	15.1	11.1	0.22	0.39	1.4
7440-70-2	Calcium	NS	mg/kg								
7440-47-3	Chromium, Total	110	mg/kg	14.8	14.7	24.7	37.7	34.3	13.1	13.7	16.7
7440-48-4	Cobalt	NS	mg/kg								
7440-50-8	Copper	150	mg/kg	23.2	23	33.2	51.7	51.3	19.1	21.1	25.8
7439-89-6	Iron	NS	mg/kg								
7439-92-1	Lead	130	mg/kg	17	18.4	34.1	58.7	55.8	13	16	26
7439-93-2	Lithium	NS	mg/kg								
7439-95-4	Magnesium	NS	mg/kg								
7439-96-5	Manganese	NS	mg/kg	431	391	480	498	421	484	509	521
7439-97-6	Mercury	1	mg/kg	0.033	0.05	0.128	0.275	0.313	0.029	0.034 J	0.055 J
7439-98-7	Molybdenum	NS	mg/kg								
7440-02-0	Nickel	49	mg/kg	19.9	18.8	24.2	30.5	25.4	20.3	21.2	21.8
7440-09-7	Potassium	NS	mg/kg								
7782-49-2	Selenium	NS	mg/kg	0.7 J	0.8 J	0.7 U	0.7 U	0.7 U	0.5 U	0.7 U	0.7 U
7440-22-4	Silver	2.2	mg/kg	9.4	15.5	10.2	29.8	34.1	0.8	3.4	8.4
7440-23-5	Sodium	NS	mg/kg								
7440-24-6	Strontium	NS	mg/kg								
7440-28-0	Thallium	NS	mg/kg								
7440-31-5	Tin	NS	mg/kg								
7440-32-6	Titanium	NS	mg/kg								
7440-62-2	Vanadium	NS	mg/kg								
7440-66-6	Zinc	460	mg/kg	74.3	88.9	194	317	273	62.7	71	92.2

Data Sources:
NYSDEC, 2007. Contamination Analysis in the Rochester Embayment Area of C
USEPA, 2012. TASK 6: Final Summary Report for Site Characterization at the G
USEPA, 2013. Technical Report: Genesee River Sediment Sampling under the Gr

Notes:
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Table D-1b
HISTORICAL SEDIMENT METALS DATA SUMMARY
CLASS C STANDARDS COMPARISON

NYSDEC-Lower Genesee River Historical Sediment Data Metals Summary Class C Standards Comparison		Class C Freshwater Sediment Guidance	Location ID: Sample ID: Lab Sample Id: Depth: Source: SDG: Matrix: Sampled: Validated:	GR-19 LA-119 K1108656-019 6 - 9 ft BAT SE 9/13/2011 11:46	GR-19 LA-120 K1108656-020 9 - 12 ft BAT SE 9/13/2011 11:46	GR-19 LA-121 K1108643-015 12 - 15 ft BAT SE 9/13/2011 11:46	GR-19 LA-122 K1108643-016 15 - 18.2 ft BAT SE 9/13/2011 11:46	GR-20 20 1307007-05 0 - 0.5 FT USEPA B307044 SE 7/9/2013 15:44	GR-20 LA-020 K1108840-015 0 - 0.5 ft BAT SE 9/14/2011 10:58	GR-20 LA-139 K1108737-010 0 - 3 ft BAT SE 9/14/2011 10:52	GR-20 LA-140 K1108737-011 3 - 6 ft BAT SE 9/14/2011 10:52
CAS NO.	COMPOUND	Value	UNITS:								
	METALS										
7429-90-5	Aluminum	NS	mg/kg	9390	8610	10600 J	11700 J	8900	9290 J	9250	12500
7440-36-0	Antimony	NS	mg/kg					2.2 U			
7440-38-2	Arsenic	33	mg/kg	7.5	6.8	7.7	8.4	6.5	6.2	6.8	8.4
7440-39-3	Barium	NS	mg/kg					110			
7440-41-7	Beryllium	NS	mg/kg					0.4			
7440-42-8	Boron	NS	mg/kg					5.5 U			
7440-43-9	Cadmium	5	mg/kg	2.65	2.1	1.55	2.44	6.1	0.6	11.1	11
7440-70-2	Calcium	NS	mg/kg					12000			
7440-47-3	Chromium, Total	110	mg/kg	18.2	16	17.2	20.5	21	16	25.9	26.9
7440-48-4	Cobalt	NS	mg/kg					8.1			
7440-50-8	Copper	150	mg/kg	28.7	24.7	26.5	31.1	29	31.2	32	36.8
7439-89-6	Iron	NS	mg/kg					22000			
7439-92-1	Lead	130	mg/kg	29	23	26	29	27	23	39.1	41.6
7439-93-2	Lithium	NS	mg/kg					21			
7439-95-4	Magnesium	NS	mg/kg					6700			
7439-96-5	Manganese	NS	mg/kg	484	458	557	629	500	470	402	534
7439-97-6	Mercury	1	mg/kg	0.069 J	0.054 J	0.067	0.1		0.046	0.16	0.178
7439-98-7	Molybdenum	NS	mg/kg					1.3 U			
7440-02-0	Nickel	49	mg/kg	22.6	20.9	24.5	27.3	20	21.9	20.3	26.8
7440-09-7	Potassium	NS	mg/kg					730 L			
7782-49-2	Selenium	NS	mg/kg	0.8 J	0.9 J	0.8 J	0.8 U	1.1 U	1 J	1 J	0.8 J
7440-22-4	Silver	2.2	mg/kg	10.7	6.8	3.6	6.4	6.9	23.9	11.5	12.3
7440-23-5	Sodium	NS	mg/kg					71 L			
7440-24-6	Strontium	NS	mg/kg					39			
7440-28-0	Thallium	NS	mg/kg					3.3 U			
7440-31-5	Tin	NS	mg/kg					3			
7440-32-6	Titanium	NS	mg/kg					44			
7440-62-2	Vanadium	NS	mg/kg					14			
7440-66-6	Zinc	460	mg/kg	98.3	82.5	87	102	170	114	228	222

Data Sources:
NYSDEC, 2007. Contamination Analysis in the Rochester Embayment Area of C
USEPA, 2012. TASK 6: Final Summary Report for Site Characterization at the G
USEPA, 2013. Technical Report: Genesee River Sediment Sampling under the Gr

Notes:
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Table D-1b
HISTORICAL SEDIMENT METALS DATA SUMMARY
CLASS C STANDARDS COMPARISON

NYSDEC-Lower Genesee River Historical Sediment Data Metals Summary Class C Standards Comparison		Class C Freshwater Sediment Guidance	Location ID: Sample ID: Lab Sample Id: Depth: Source: SDG: Matrix: Sampled: Validated:	GR-20 LA-141 K1108764-001 6 - 9 ft BAT SE 9/14/2011 10:52	GR-20 LA-142 K1108764-002 9 - 12 ft BAT SE 9/14/2011 10:52	GR-20 LA-143 K1108764-003 12 - 14.9 ft BAT SE 9/14/2011 10:52	GR-21 LA-021 K1108643-005 0 - 0.5 ft BAT SE 9/13/2011 11:07	GR-21 LA-112 K1108656-012 0 - 3 ft BAT SE 9/13/2011 11:05	GR-21 LA-113 K1108656-013 3 - 6 ft BAT SE 9/13/2011 11:05	GR-21 LA-114 K1108656-014 6 - 9 ft BAT SE 9/13/2011 11:05	GR-21 LA-115 K1108656-015 9 - 12 ft BAT SE 9/13/2011 11:05
CAS NO.	COMPOUND	Value	UNITS:								
	METALS										
7429-90-5	Aluminum	NS	mg/kg	11100	10000	10800	7340 J	8420	8660	9900	10900
7440-36-0	Antimony	NS	mg/kg								
7440-38-2	Arsenic	33	mg/kg	9.2	9.5	10.5	5.4	6.4	6.6	7	8.9
7440-39-3	Barium	NS	mg/kg								
7440-41-7	Beryllium	NS	mg/kg								
7440-42-8	Boron	NS	mg/kg								
7440-43-9	Cadmium	5	mg/kg	12.1	10.2	5.62	0.17	0.27	4.93	13	12.7
7440-70-2	Calcium	NS	mg/kg								
7440-47-3	Chromium, Total	110	mg/kg	33.4	35	26.9	10.1	13.4	22.4	27.2	36.3
7440-48-4	Cobalt	NS	mg/kg								
7440-50-8	Copper	150	mg/kg	51.7	57.5	53.5	15.1	20.7	29	34.5	49.4
7439-89-6	Iron	NS	mg/kg								
7439-92-1	Lead	130	mg/kg	55.4	57.7	55.3	11	15	31	40	56
7439-93-2	Lithium	NS	mg/kg								
7439-95-4	Magnesium	NS	mg/kg								
7439-96-5	Manganese	NS	mg/kg	474	457	561	394	516	456	439	479
7439-97-6	Mercury	1	mg/kg	0.29	0.332	0.243	0.018	0.035 J	0.106 J	0.199 J	0.33 J
7439-98-7	Molybdenum	NS	mg/kg								
7440-02-0	Nickel	49	mg/kg	27.8	26.8	26.1	16.3	20.2	20.7	23.8	28.7
7440-09-7	Potassium	NS	mg/kg								
7782-49-2	Selenium	NS	mg/kg	1.4 J	1.3 J	1.1 J	0.6 J	0.7 J	0.7 U	0.8 J	0.8 J
7440-22-4	Silver	2.2	mg/kg	28.6	34.6	23.2	0.6	9.1	9.4	13	29
7440-23-5	Sodium	NS	mg/kg								
7440-24-6	Strontium	NS	mg/kg								
7440-28-0	Thallium	NS	mg/kg								
7440-31-5	Tin	NS	mg/kg								
7440-32-6	Titanium	NS	mg/kg								
7440-62-2	Vanadium	NS	mg/kg								
7440-66-6	Zinc	460	mg/kg	276	282	190	51.2	71.5	135	238	287

Data Sources:
NYSDEC, 2007. Contamination Analysis in the Rochester Embayment Area of C
USEPA, 2012. TASK 6: Final Summary Report for Site Characterization at the G
USEPA, 2013. Technical Report: Genesee River Sediment Sampling under the Gr

Notes:
1. Sample locations can be found on Figure 5.

Table D-1b
HISTORICAL SEDIMENT METALS DATA SUMMARY
CLASS C STANDARDS COMPARISON

NYSDEC-Lower Genesee River Historical Sediment Data Metals Summary Class C Standards Comparison		Class C Freshwater Sediment Guidance	Location ID: Sample ID: Lab Sample Id: Depth: Source: SDG: Matrix: Sampled: Validated:	GR-21 LA-116 K1108656-016 12 - 14.2 ft BAT SE 9/13/2011 11:05	GR-22 22 1307007-06 0 - 0.5 FT USEPA B307044 SE 7/9/2013 15:26	GR-22 LA-022 K1108840-016 0 - 0.5 ft BAT SE 9/14/2011 10:00	GR-22 LA-174 K1108838-006 0 - 3 ft BAT SE 9/14/2011 9:57	GR-22 LA-175 K1108838-007 3 - 6 ft BAT SE 9/14/2011 9:57	GR-22 LA-176 K1108843-007 6 - 9 ft BAT SE 9/14/2011 9:57	GR-22 LA-177 K1108843-008 9 - 12 ft BAT SE 9/14/2011 9:57	GR-22 LA-178 K1108843-009 12 - 15 ft BAT SE 9/14/2011 9:57
CAS NO.	COMPOUND	Value	UNITS:								
	METALS										
7429-90-5	Aluminum	NS	mg/kg	10900	8000	7420 J	9970 J	11400 J	10600	6210	7800
7440-36-0	Antimony	NS	mg/kg		2.2 U						
7440-38-2	Arsenic	33	mg/kg	9.4	5.4	7.1	7	8.5	7.5	6.7	8.3
7440-39-3	Barium	NS	mg/kg		46						
7440-41-7	Beryllium	NS	mg/kg		0.37						
7440-42-8	Boron	NS	mg/kg		5.5 U						
7440-43-9	Cadmium	5	mg/kg	9.04	0.22 U	0.08 J	4.33	7.74	1.25	4.71	7.28
7440-70-2	Calcium	NS	mg/kg		12000						
7440-47-3	Chromium, Total	110	mg/kg	31.1	12	11.4	19.7	27.7	17.4	16.7	24.8
7440-48-4	Cobalt	NS	mg/kg		7						
7440-50-8	Copper	150	mg/kg	45.9	17	19.2	33.3	47.1	29.1	30.4	41.3
7439-89-6	Iron	NS	mg/kg		20000						
7439-92-1	Lead	130	mg/kg	53	13	15	30	51	26	41	58
7439-93-2	Lithium	NS	mg/kg		18						
7439-95-4	Magnesium	NS	mg/kg		6000						
7439-96-5	Manganese	NS	mg/kg	532	420	330	562	512	469	264	376
7439-97-6	Mercury	1	mg/kg	0.269 J		0.029	0.088	0.205	0.115	0.183	0.363
7439-98-7	Molybdenum	NS	mg/kg		1.3 U						
7440-02-0	Nickel	49	mg/kg	29.3	17	18.2	24.1	28.2	24.2	20.7	21.2
7440-09-7	Potassium	NS	mg/kg		610 L						
7782-49-2	Selenium	NS	mg/kg	0.7 U	1.1 U	1.4 J	0.7 U	1.1 J	1.5 J	1.3 J	1.1 J
7440-22-4	Silver	2.2	mg/kg	30.3	4.2	6.1	9.9	18.8	5	7.4	12.6
7440-23-5	Sodium	NS	mg/kg		60 L						
7440-24-6	Strontium	NS	mg/kg		35						
7440-28-0	Thallium	NS	mg/kg		3.3 U						
7440-31-5	Tin	NS	mg/kg		2.2 U						
7440-32-6	Titanium	NS	mg/kg		41						
7440-62-2	Vanadium	NS	mg/kg		12						
7440-66-6	Zinc	460	mg/kg	241	73	66.5	160	223	101	153	234

Data Sources:
NYSDEC, 2007. Contamination Analysis in the Rochester Embayment Area of C
USEPA, 2012. TASK 6: Final Summary Report for Site Characterization at the G
USEPA, 2013. Technical Report: Genesee River Sediment Sampling under the Gr

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Table D-1b
HISTORICAL SEDIMENT METALS DATA SUMMARY
CLASS C STANDARDS COMPARISON

NYSDEC-Lower Genesee River Historical Sediment Data Metals Summary Class C Standards Comparison		Class C Freshwater Sediment Guidance	Location ID: Sample ID: Lab Sample Id: Depth: Source: SDG: Matrix: Sampled: Validated:	GR-22 LA-179 K1108843-010 15 - 16.2 ft BAT SE 9/14/2011 9:57	GR-23 LA-023 K1108643-006 0 - 0.5 ft BAT SE 9/13/2011 10:31	GR-23 LA-124 K1108643-009 0 - 2.2 ft BAT SE 9/13/2011 10:22	GR-23M LA-123 K1108643-008 0 - 1.1 ft BAT SE 9/13/2011 9:56	GR-24 LA-024 K1108643-007 0 - 0.5 ft BAT SE 9/13/2011 8:57	GR-24 LA-125 K1108643-010 0 - 2.3 ft BAT SE 9/13/2011 8:50	GR-25 LA-025 K1108840-017 0 - 0.5 ft BAT SE 9/16/2011 10:56	GR-26 LA-026 K1108840-018 0 - 0.5 ft BAT SE 9/16/2011 10:44
CAS NO.	COMPOUND	Value	UNITS:								
	METALS										
7429-90-5	Aluminum	NS	mg/kg	9280	8310 J	5200 J	4240 J	3920 J	4800 J	4680 J	8350 J
7440-36-0	Antimony	NS	mg/kg								
7440-38-2	Arsenic	33	mg/kg	10.8	5.6	3.5	4.1	4.2	4.2	4.9	5.2
7440-39-3	Barium	NS	mg/kg								
7440-41-7	Beryllium	NS	mg/kg								
7440-42-8	Boron	NS	mg/kg								
7440-43-9	Cadmium	5	mg/kg	1.27	0.27	0.13	0.07 J	0.04 J	0.34	0.04 U	0.26
7440-70-2	Calcium	NS	mg/kg								
7440-47-3	Chromium, Total	110	mg/kg	17.2	13.1	10.6	7.7	6.1	7.9	7.3	13
7440-48-4	Cobalt	NS	mg/kg								
7440-50-8	Copper	150	mg/kg	41.5	17.5	10	11.1	7.8	16.6	12.1	22.3
7439-89-6	Iron	NS	mg/kg								
7439-92-1	Lead	130	mg/kg	85	18	12	17	10	22	14	16
7439-93-2	Lithium	NS	mg/kg								
7439-95-4	Magnesium	NS	mg/kg								
7439-96-5	Manganese	NS	mg/kg	403	490	198	216	232	198	271	471
7439-97-6	Mercury	1	mg/kg	0.241	0.032	0.021	0.024	0.012 J	0.02 J	0.019	0.034
7439-98-7	Molybdenum	NS	mg/kg								
7440-02-0	Nickel	49	mg/kg	23.1	19.2	14.5	12.1	10.8	14	13.5	19.6
7440-09-7	Potassium	NS	mg/kg								
7782-49-2	Selenium	NS	mg/kg	0.7 U	0.5 U	0.6 J	0.6 U	0.5 U	0.7 U	0.7 U	0.7 U
7440-22-4	Silver	2.2	mg/kg	8.3	2.6	0.2 J	0.5	0.4	0.6	0.9	3.9
7440-23-5	Sodium	NS	mg/kg								
7440-24-6	Strontium	NS	mg/kg								
7440-28-0	Thallium	NS	mg/kg								
7440-31-5	Tin	NS	mg/kg								
7440-32-6	Titanium	NS	mg/kg								
7440-62-2	Vanadium	NS	mg/kg								
7440-66-6	Zinc	460	mg/kg	163	63.5	46.7	43.2	37.8	54.8	47.7	73.8

Data Sources:
NYSDEC, 2007. Contamination Analysis in the Rochester Embayment Area of C
USEPA, 2012. TASK 6: Final Summary Report for Site Characterization at the G
USEPA, 2013. Technical Report: Genesee River Sediment Sampling under the Gr

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HISTORICAL SEDIMENT METALS DATA SUMMARY
CLASS C STANDARDS COMPARISON

NYSDEC-Lower Genesee River Historical Sediment Data Metals Summary Class C Standards Comparison		Class C Freshwater Sediment Guidance	Location ID: Sample ID: Lab Sample Id: Depth: Source: SDG: Matrix: Sampled: Validated:	GR-27 LA-027 K1108840-019 0 - 0.5 ft BAT SE 9/16/2011 10:34	GR-28 LA-028 K1108840-020 0 - 0.5 ft BAT SE 9/16/2011 10:24	GR-29 LA-029 K1108843-001 0 - 0.5 ft BAT SE 9/16/2011 10:16	GR-30 LA-030 K1108843-002 0 - 0.5 ft BAT SE 9/16/2011 10:00	GR-31 31 1307007-07RE1 0 - 0.5 FT USEPA B307047 SE 7/9/2013 14:59	GR-31 LA-031 K1108843-003 0 - 0.5 ft BAT SE 9/16/2011 9:46	GR-32 32 1307007-08 0 - 0.5 FT USEPA B307044 SE 7/9/2013 14:35	GR-32 LA-032 K1108843-004 0 - 0.5 ft BAT SE 9/16/2011 9:27
CAS NO.	COMPOUND	Value	UNITS:								
	METALS										
7429-90-5	Aluminum	NS	mg/kg	5570 J	4130 J	5060	4210	5000	4940	5800	5160
7440-36-0	Antimony	NS	mg/kg					2.4 UL		2.1 U	
7440-38-2	Arsenic	33	mg/kg	6	4.3	5.2	5.5	7.2 J	6.2	6	5.9
7440-39-3	Barium	NS	mg/kg					75		31	
7440-41-7	Beryllium	NS	mg/kg					0.31		0.29	
7440-42-8	Boron	NS	mg/kg					8		5.1 U	
7440-43-9	Cadmium	5	mg/kg	0.04 U	0.04 U	0.04 J	0.1	0.24 U	0.1	0.21 U	0.04 U
7440-70-2	Calcium	NS	mg/kg					59000 H		5400	
7440-47-3	Chromium, Total	110	mg/kg	8.8	7.9	8.3	8.1	11 J	8.8	8.2	8.2
7440-48-4	Cobalt	NS	mg/kg					4.2		7	
7440-50-8	Copper	150	mg/kg	13.6	13.2	15	14	25 J	22.4	11	13.7
7439-89-6	Iron	NS	mg/kg					20000 J		17000	
7439-92-1	Lead	130	mg/kg	13	31	27	26	32 J	44	10	19
7439-93-2	Lithium	NS	mg/kg					9.8		14	
7439-95-4	Magnesium	NS	mg/kg					11000 H		3600	
7439-96-5	Manganese	NS	mg/kg	330	283	317	280	330 J	300	360	355
7439-97-6	Mercury	1	mg/kg	0.017 J	3.32	0.022	0.029		0.353		0.016
7439-98-7	Molybdenum	NS	mg/kg					1.4 UJ		1.2 U	
7440-02-0	Nickel	49	mg/kg	15.1	12.4	14	10.7	10	12.8	15	14.7
7440-09-7	Potassium	NS	mg/kg					880 L		480 L	
7782-49-2	Selenium	NS	mg/kg	1.2 J	0.7 U	1.2 J	0.7 U	1.2 U	0.8 J	1 U	0.8 J
7440-22-4	Silver	2.2	mg/kg	1.7	1.1	1.8	1.1	0.6 U	1.5	0.51 U	0.2 U
7440-23-5	Sodium	NS	mg/kg					330 J		45 L	
7440-24-6	Strontium	NS	mg/kg					160 J		22	
7440-28-0	Thallium	NS	mg/kg					3.6 U		3.1 U	
7440-31-5	Tin	NS	mg/kg					19 J		2.1 U	
7440-32-6	Titanium	NS	mg/kg					81 J		28	
7440-62-2	Vanadium	NS	mg/kg					8.9		9.8	
7440-66-6	Zinc	460	mg/kg	50	46.7	50.9	46	55	55.2	54	50.8

Data Sources:
NYSDEC, 2007. Contamination Analysis in the Rochester Embayment Area of C
USEPA, 2012. TASK 6: Final Summary Report for Site Characterization at the G
USEPA, 2013. Technical Report: Genesee River Sediment Sampling under the Gr

Notes:
1. Sample locations can be found on Figure 5.

Table D-1b
HISTORICAL SEDIMENT METALS DATA SUMMARY
CLASS C STANDARDS COMPARISON

NYSDEC-Lower Genesee River Historical Sediment Data Metals Summary Class C Standards Comparison		Class C Freshwater Sediment Guidance	Location ID: Sample ID: Lab Sample Id: Depth: Source: SDG: Matrix: Sampled: Validated:	GR-32 LA-032D K1108843-005 0 - 0.5 ft BAT SE 9/16/2011 9:30	GR-33 LA-033 K1108843-006 0 - 0.5 ft BAT SE 9/16/2011 9:15
CAS NO.	COMPOUND	Value	UNITS:		
	METALS				
7429-90-5	Aluminum	NS	mg/kg	4880	6860
7440-36-0	Antimony	NS	mg/kg		
7440-38-2	Arsenic	33	mg/kg	5.2	7.1
7440-39-3	Barium	NS	mg/kg		
7440-41-7	Beryllium	NS	mg/kg		
7440-42-8	Boron	NS	mg/kg		
7440-43-9	Cadmium	5	mg/kg	0.04 U	0.04 U
7440-70-2	Calcium	NS	mg/kg		
7440-47-3	Chromium, Total	110	mg/kg	8.5	10.8
7440-48-4	Cobalt	NS	mg/kg		
7440-50-8	Copper	150	mg/kg	18.8	29.7
7439-89-6	Iron	NS	mg/kg		
7439-92-1	Lead	130	mg/kg	14	24
7439-93-2	Lithium	NS	mg/kg		
7439-95-4	Magnesium	NS	mg/kg		
7439-96-5	Manganese	NS	mg/kg	345	513
7439-97-6	Mercury	1	mg/kg	0.02	0.022
7439-98-7	Molybdenum	NS	mg/kg		
7440-02-0	Nickel	49	mg/kg	14.4	18.7
7440-09-7	Potassium	NS	mg/kg		
7782-49-2	Selenium	NS	mg/kg	0.7 U	0.7 J
7440-22-4	Silver	2.2	mg/kg	0.2 J	0.2 U
7440-23-5	Sodium	NS	mg/kg		
7440-24-6	Strontium	NS	mg/kg		
7440-28-0	Thallium	NS	mg/kg		
7440-31-5	Tin	NS	mg/kg		
7440-32-6	Titanium	NS	mg/kg		
7440-62-2	Vanadium	NS	mg/kg		
7440-66-6	Zinc	460	mg/kg	79.1	63.4

Data Sources:
NYSDEC, 2007. Contamination Analysis in the Rochester Embayment Area of C
USEPA, 2012. TASK 6: Final Summary Report for Site Characterization at the G
USEPA, 2013. Technical Report: Genesee River Sediment Sampling under the Gr

Notes:
1. Sample locations can be found on Figure 5.

TABLE D-2
HISTORICAL SEDIMENT PAH DATA SUMMARY
CLASS B STANDARDS COMPARISON

NYSDEC-Lower Genesee River Historical Sediment Data PAH Summary Class B Standards Comparison		SGV	Location ID: Sample ID: Depth: Source: Sampled:	1 01A 0 - 2.76 ft NYSDEC 7/15/2002	1 RE02-01P - NYSDEC 7/15/2002	2 02A 0 - 2.78 ft NYSDEC 7/15/2002	2 02B 2.78 - 5.55 ft NYSDEC 7/15/2002	2 02C 5.55 - 8.33 ft NYSDEC 7/15/2002	2 RE02-02P - NYSDEC 7/15/2002	3 03A 0 - 3.12 ft NYSDEC 7/15/2002	3 03B 3.12 - 6.23 ft NYSDEC 7/15/2002	3 03C 6.23 - 9.35 ft NYSDEC 7/15/2002
CAS NO.	COMPOUND	ug/gOC	UNITS:									
	SEMIVOLATILES											
90-12-0	1-Methylnaphthalene		ug/kg									
		444	ug/gOC									
91-57-6	2-Methylnaphthalene		ug/kg	9.2	8.2	42	52	57	42	18	330	540
		444	ug/gOC	15	14	35	44	60	54	26	254	491
83-32-9	Acenaphthene		ug/kg	16	11	37	31	43	37	20	210	370
		491	ug/gOC	26	18	31	26	46	47	29	162	337
208-96-8	Acenaphthylene		ug/kg	24	7.2	48	35	24	48	11	50	51
		452	ug/gOC	39	12	40	30	26	61	16	39	47
120-12-7	Anthracene		ug/kg	34	20	88	56	77	88	21	200	280
		594	ug/gOC	55	32	74	47	82	112	30	154	255
56-55-3	Benzo(A)Anthracene		ug/kg	94	49	240	120	110	240	44	190	92
		841	ug/gOC	152	78	200	100	116	304	62	147	84
50-32-8	Benzo(A)Pyrene		ug/kg	84	43	220	130	110	220	42	190	75
		965	ug/gOC	136	69	184	109	116	279	60	147	69
205-99-2	Benzo(B)Fluoranthene		ug/kg	77	61	260	140	170	260	38	180	U
		979	ug/gOC	125	97	217	117	179	330	54	139	
191-24-2	Benzo(G,H,I)Perylene		ug/kg	45	20	67	43	49	67	26	70	33
		1095	ug/gOC	73	32	56	36	52	85	37	54	30
207-08-9	Benzo(K)Fluoranthene		ug/kg	44	19	140	89	64	140	34	100	U
		981	ug/gOC	71	31	117	75	68	178	48	77	
218-01-9	Chrysene		ug/kg	81	46	200	110	110	200	39	170	83
		844	ug/gOC	131	74	167	92	116	254	55	131	76
53-70-3	Dibenz(A,H)Anthracene		ug/kg	U	U	U	U	U	U	U	U	U
206-44-0	Fluoranthene		ug/kg	150	100	450	180	170	450	88	330	270
		707	ug/gOC	242	159	375	150	179	570	124	254	246
86-73-7	Fluorene		ug/kg	23	13	69	41	48	69	19	210	330
		538	ug/gOC	38	21	58	35	51	88	27	162	300
91-20-3	Naphthalene		ug/kg	6.9	5.8	30	23	130	30	29	250	320
		385	ug/gOC	12	10	25	20	137	38	41	193	291
85-01-8	Phenanthrene		ug/kg	110	73	330	200	200	330	75	660	970
		596	ug/gOC	178	116	275	167	211	418	106	508	882
129-00-0	Pyrene		ug/kg	150	75	400	200	210	400	71	380	280
		697	ug/gOC	242	120	334	167	222	507	100	293	255
	Total PAHs	4000		982.1	574.5	2706	1499	1636	2706	604.3	3627	3778
	OTHER											
TOC	Total Organic Carbon		%	0.62	0.63	1.2	1.2	0.95	0.79	0.71	1.3	1.1
TOC	Total Organic Carbon		mg/kg	6200	6300	12000	12000	9500	7900	7100	13000	11000

Data Sources:
NYSDEC, 2007. Contamination Analysis in the Rochester Embayment Area of Concern. May 2007.
USEPA, 2012. TASK 6: Final Summary Report for Site Characterization at the Genesee River Site, Rochester Embayment Area of Concern, Rochester, NY. June 2012.
USEPA, 2013. Technical Report: Genesee River Sediment Sampling under the Great Lakes Legacy Act - Rochester Embayment Area of Concern. September 2013.

Notes:
1. Sample locations can be found on Figure 5.
2. Highlighted results indicate an exceedenc of sediment guidance value (SGV).

TABLE D-2
HISTORICAL SEDIMENT PAH DATA SUMMARY
CLASS B STANDARDS COMPARISON

NYSDEC-Lower Genesee River Historical Sediment Data PAH Summary Class B Standards Comparison			Location ID: Sample ID: Depth: Source: Sampled:	3 RE02-03P - NYSDEC 7/15/2002	4 04A 0 - 2.97 ft NYSDEC 7/16/2002	4 04B 2.97 - 5.95 ft NYSDEC 7/16/2002	4 04C 5.95 - 8.92 ft NYSDEC 7/16/2002	4 RE02-04P - NYSDEC 7/16/2002	5 05A 0 - 3.39 ft NYSDEC 7/16/2002	5 05B 3.39 - 6.78 ft NYSDEC 7/16/2002	5 05C 6.78 - 10.2 ft NYSDEC 7/16/2002	5 17A 0 - 2.53 ft NYSDEC 7/16/2002
CAS NO.	COMPOUND	SGV ug/gOC	UNITS:									
	SEMIVOLATILES											
90-12-0	1-Methylnaphthalene		ug/kg									
		444	ug/gOC									
91-57-6	2-Methylnaphthalene		ug/kg	18	13	22	48	13	U	13	18	U
		444	ug/gOC	19	11	19	32	14		10	45	
83-32-9	Acenaphthene		ug/kg	20	12	13	29	12	20	57	18	8.1
		491	ug/gOC	21	10	11	20	13	20	44	45	10
208-96-8	Acenaphthylene		ug/kg	11	15	16	33	15	7.8	10	17	U
		452	ug/gOC	12	13	14	22	16	8	8	43	
120-12-7	Anthracene		ug/kg	21	27	29	57	27	21	51	39	7.7
		594	ug/gOC	22	23	25	38	28	21	40	98	9
56-55-3	Benzo(A)Anthracene		ug/kg	44	71	59	100	71	39	69	90	26
		841	ug/gOC	46	60	50	67	74	39	54	225	31
50-32-8	Benzo(A)Pyrene		ug/kg	42	72	64	120	72	36	49	86	U
		965	ug/gOC	44	60	54	80	75	36	38	215	
205-99-2	Benzo(B)Fluoranthene		ug/kg	38	95	81	140	95	45	74	100	41
		979	ug/gOC	40	80	68	94	98	45	57	250	48
191-24-2	Benzo(G,H,I)Perylene		ug/kg	26	27	26	77	27	16	U	51	U
		1095	ug/gOC	28	23	22	52	28	16		128	
207-08-9	Benzo(K)Fluoranthene		ug/kg	34	39	32	61	39	25	41	39	U
		981	ug/gOC	36	33	27	41	41	25	32	98	
218-01-9	Chrysene		ug/kg	39	71	60	100	71	35	79	81	30
		844	ug/gOC	41	60	50	67	74	35	61	203	35
53-70-3	Dibenz(A,H)Anthracene		ug/kg	U	U	U	U	U	U	U	U	U
206-44-0	Fluoranthene		ug/kg	88	130	110	210	130	150	290	180	54
		707	ug/gOC	92	109	92	140	135	150	224	450	63
86-73-7	Fluorene		ug/kg	19	18	20	39	18	28	95	26	11
		538	ug/gOC	20	15	17	26	19	28	74	65	13
91-20-3	Naphthalene		ug/kg	29	U	14	50	U	U	6.2	13	U
		385	ug/gOC	31		12	34			5	33	
85-01-8	Phenanthrene		ug/kg	75	100	110	180	100	130	430	140	45
		596	ug/gOC	79	84	92	120	104	130	331	350	53
129-00-0	Pyrene		ug/kg	71	130	120	250	130	84	240	150	45
		697	ug/gOC	74	109	100	167	135	84	185	375	53
	Total PAHs	4000		604.3	848	783.1	1571	848	658.1	1541.2	1097.6	267.8
	OTHER											
TOC	Total Organic Carbon		%	0.96	1.2	1.2	1.5	0.97	1	1.3	0.4	0.86
TOC	Total Organic Carbon		mg/kg	9600	12000	12000	15000	9700	10000	13000	4000	8600

Data Sources:
NYSDEC, 2007. Contamination Analysis in the Rochester Embayment Area of C
USEPA, 2012. TASK 6: Final Summary Report for Site Characterization at the G
USEPA, 2013. Technical Report: Genesee River Sediment Sampling under the G

Notes:
1. Sample locations can be found on Figure 5.
2. Highlighted results indicate an exceedenc of sediment guidance value (SGV).

TABLE D-2
HISTORICAL SEDIMENT PAH DATA SUMMARY
CLASS B STANDARDS COMPARISON

NYSDEC-Lower Genesee River Historical Sediment Data PAH Summary Class B Standards Comparison			Location ID: Sample ID: Depth: Source: Sampled:	5 17B 2.53 - 5.05 ft NYSDEC 7/16/2002	5 17C 5.05 - 7.58 ft NYSDEC 7/16/2002	5 RE02-05P - NYSDEC 7/16/2002	5 RE02-17P - NYSDEC 7/16/2002	GR-01 LA-107 0 - 3 ft BAT 9/12/2011 16:45	GR-01 LA-108 3 - 6 ft BAT 9/12/2011 16:45	GR-01 LA-109 6 - 9 ft BAT 9/12/2011 16:45	GR-01 LA-110 9 - 12 ft BAT 9/12/2011 16:45	GR-01 LA-111 12 - 14.9 ft BAT 9/12/2011 16:45
CAS NO.	COMPOUND	SGV ug/gOC	UNITS:									
	SEMIVOLATILES											
90-12-0	1-Methylnaphthalene		ug/kg					87	57	110	410	580
		444	ug/gOC					39	33	73	209	363
91-57-6	2-Methylnaphthalene		ug/kg	25	9.2	U	U	140	86	140	320	340
		444	ug/gOC	30	11			63	50	93	163	213
83-32-9	Acenaphthene		ug/kg	130	12	20	8.1	130	110	190	390	470
		491	ug/gOC	152	14	11	10	58	64	125	198	294
208-96-8	Acenaphthylene		ug/kg	14	11	7.8	U	24	53	80	150	140
		452	ug/gOC	17	13	5		11	31	53	77	88
120-12-7	Anthracene		ug/kg	150	19	21	7.7	150	160	280	740	850
		594	ug/gOC	175	22	12	9	67	92	185	376	532
56-55-3	Benzo(A)Anthracene		ug/kg	190	51	39	26	380	310	500	1100 J	1100
		841	ug/gOC	221	57	21	30	169	179	329	559	688
50-32-8	Benzo(A)Pyrene		ug/kg	100	57	36	U	350	290	430	910	840
		965	ug/gOC	117	64	19		156	167	283	462	525
205-99-2	Benzo(B)Fluoranthene		ug/kg	190	81	45	41	520	360	530	1000	840
		979	ug/gOC	221	90	24	48	232	207	349	508	525
191-24-2	Benzo(G,H,I)Perylene		ug/kg	34	27	16	U	240	160	230	410	370
		1095	ug/gOC	40	30	9		107	92	152	209	232
207-08-9	Benzo(K)Fluoranthene		ug/kg	85	36	25	U	180	120	170	320	270
		981	ug/gOC	99	40	14		80	69	112	163	169
218-01-9	Chrysene		ug/kg	230	50	35	30	430	310	450	1100	1000
		844	ug/gOC	268	56	19	35	192	179	297	559	625
53-70-3	Dibenz(A,H)Anthracene		ug/kg	U	U	U	U	U	42	65	130	100
206-44-0	Fluoranthene		ug/kg	700	120	150	54	1100	650	1000	2400 DJ	2100 D
		707	ug/gOC	814	134	79	63	489	374	658	1219	1313
86-73-7	Fluorene		ug/kg	270	18	28	11	130	120	220	450	520
		538	ug/gOC	314	20	15	13	58	69	145	229	325
91-20-3	Naphthalene		ug/kg	8.5	6.3	U	U	110	100	210	510	590
		385	ug/gOC	10	7			49	58	139	259	369
85-01-8	Phenanthrene		ug/kg	830	110	130	45	540	570	960	2700 DJ	2800 D
		596	ug/gOC	966	123	69	52	240	328	632	1371	1750
129-00-0	Pyrene		ug/kg	670	100	84	45	860	680	1000	2700 DJ	2500 D
		697	ug/gOC	780	112	45	52	383	391	658	1371	1563
	Total PAHs	4000		3778.5	738.3	658.1	267.8	5641	4358	6835	16220	15850
	OTHER											
TOC	Total Organic Carbon		%	0.86	0.9	1.9	0.87	2.25	1.74	1.52	1.97	1.6
TOC	Total Organic Carbon		mg/kg	8600	9000	19000	8700					

Data Sources:
NYSDEC, 2007. Contamination Analysis in the Rochester Embayment Area of C
USEPA, 2012. TASK 6: Final Summary Report for Site Characterization at the G
USEPA, 2013. Technical Report: Genesee River Sediment Sampling under the G

Notes:
1. Sample locations can be found on Figure 5.
2. Highlighted results indicate an exceedenc of sediment guidance value (SGV).

TABLE D-2
HISTORICAL SEDIMENT PAH DATA SUMMARY
CLASS B STANDARDS COMPARISON

NYSDEC-Lower Genesee River Historical Sediment Data PAH Summary Class B Standards Comparison		SGV	Location ID: Sample ID: Depth: Source: Sampled:	GR-02 LA-104 0 - 3 ft BAT 9/12/2011 15:51	GR-02 LA-105 3 - 6 ft BAT 9/12/2011 15:51	GR-02 LA-106 6 - 7.4 ft BAT 9/12/2011 15:51	GR-03 LA-159 0 - 3 ft BAT 9/15/2011 11:22	GR-03 LA-160 3 - 6 ft BAT 9/15/2011 11:22	GR-03 LA-161 6 - 9.4 ft BAT 9/15/2011 11:22	GR-03 LA-162 0 - 3 ft BAT 9/15/2011 11:15	GR-03 LA-163 3 - 6 ft BAT 9/15/2011 11:15	GR-03 LA-164 6 - 8.7 ft BAT 9/15/2011 11:15
CAS NO.	COMPOUND	ug/gOC	UNITS:									
	SEMIVOLATILES											
90-12-0	1-Methylnaphthalene		ug/kg	20	18	6.2	5.1	9.1	14	7.8	12	17
		444	ug/gOC	13	7	7	5	10	14	9	14	17
91-57-6	2-Methylnaphthalene		ug/kg	31	32	9.2	6.3	13	21	10	18	25
		444	ug/gOC	21	12	10	6	15	21	11	21	24
83-32-9	Acenaphthene		ug/kg	81	37	42	9.7	15	18	11	22	21
		491	ug/gOC	53	14	43	9	17	18	12	26	20
208-96-8	Acenaphthylene		ug/kg	37	31	8.7	7	26	31	11	28	34
		452	ug/gOC	25	12	9	7	29	31	12	33	33
120-12-7	Anthracene		ug/kg	100	76	21	27	43	60	35	56	67
		594	ug/gOC	65	28	22	25	48	60	38	66	64
56-55-3	Benzo(A)Anthracene		ug/kg	200	220	71	110	160	160	120	160	170
		841	ug/gOC	130	80	72	101	176	159	128	187	162
50-32-8	Benzo(A)Pyrene		ug/kg	200	200	63	130	180	170	140	170	170
		965	ug/gOC	130	72	64	120	198	169	149	198	162
205-99-2	Benzo(B)Fluoranthene		ug/kg	290	250	83	210	220	200	220	200	210
		979	ug/gOC	189	90	84	193	242	199	234	233	200
191-24-2	Benzo(G,H,I)Perylene		ug/kg	130	110	42	110	110	110	110	110	110
		1095	ug/gOC	85	40	43	101	121	109	117	129	105
207-08-9	Benzo(K)Fluoranthene		ug/kg	95	93	26	71	72	69	74	67	69
		981	ug/gOC	62	34	27	66	79	69	79	78	66
218-01-9	Chrysene		ug/kg	250	240	80	160	180	190	130	170	190
		844	ug/gOC	163	87	81	147	198	189	138	198	181
53-70-3	Dibenz(A,H)Anthracene		ug/kg	29	29	10	23	33	29	30	28	29
206-44-0	Fluoranthene		ug/kg	570	450	150	290	340	320	330	320	340
		707	ug/gOC	371	162	152	267	373	317	350	373	324
86-73-7	Fluorene		ug/kg	79	51	23	15	26	38	19	35	41
		538	ug/gOC	52	19	24	14	29	38	21	41	40
91-20-3	Naphthalene		ug/kg	34	42	13	7	12	12	9.8	13	16
		385	ug/gOC	23	16	14	7	14	12	11	16	16
85-01-8	Phenanthrene		ug/kg	280	230	88	120	160	220	130	200	250
		596	ug/gOC	182	83	89	111	176	218	138	233	239
129-00-0	Pyrene		ug/kg	560	440	150	240	290	340	260	310	360
		697	ug/gOC	364	159	152	221	318	337	276	361	343
	Total PAHs	4000		3136	2669	931.1	1661.1	2009.1	2112	1767.6	2029	2229
	OTHER											
TOC	Total Organic Carbon		%	1.54	2.78	0.992	1.09	0.912	1.01	0.943	0.859	1.05
TOC	Total Organic Carbon		mg/kg									

Data Sources:
NYSDEC, 2007. Contamination Analysis in the Rochester Embayment Area of C
USEPA, 2012. TASK 6: Final Summary Report for Site Characterization at the G
USEPA, 2013. Technical Report: Genesee River Sediment Sampling under the G

Notes:
1. Sample locations can be found on Figure 5.
2. Highlighted results indicate an exceedenc of sediment guidance value (SGV).

TABLE D-2
HISTORICAL SEDIMENT PAH DATA SUMMARY
CLASS B STANDARDS COMPARISON

NYSDEC-Lower Genesee River Historical Sediment Data PAH Summary Class B Standards Comparison		SGV	Location ID: Sample ID: Depth: Source: Sampled:	GR-04 LA-101 0 - 3 ft BAT 9/12/2011 14:59	GR-04 LA-102 3 - 6 ft BAT 9/12/2011 14:59	GR-04 LA-103 6 - 9.8 ft BAT 9/12/2011 14:59	GR-05 LA-181 0 - 3 ft BAT 9/16/2011 8:20	GR-05 LA-182 3 - 6 ft BAT 9/16/2011 8:20	GR-05 LA-183 6 - 8 ft BAT 9/16/2011 8:20	GR-06 LA-173 0 - 1.5 ft BAT 9/15/2011 17:40	GR-07 LA-184 0 - 3 ft BAT 9/15/2011 16:58	GR-07 LA-185 3 - 6 ft BAT 9/15/2011 16:58
CAS NO.	COMPOUND	ug/gOC	UNITS:									
	SEMIVOLATILES											
90-12-0	1-Methylnaphthalene		ug/kg	8.7	15	1.2 J	8.9	22	0.72 J	9.9	14	7.8
		444	ug/gOC	8	7	1	8	14	1	11	9	6
91-57-6	2-Methylnaphthalene		ug/kg	13	23	0.85 J	13	45	0.64 J	13	16	11
		444	ug/gOC	12	10	1	12	28	1	14	10	8
83-32-9	Acenaphthene		ug/kg	24	27	U	17	41	U	24	20	13
		491	ug/gOC	21	12		15	26		25	13	9
208-96-8	Acenaphthylene		ug/kg	19	14	U	17	8.7	U	21	11	20
		452	ug/gOC	17	7		15	6		22	7	14
120-12-7	Anthracene		ug/kg	49	43	U	45	27	U	59	40	38
		594	ug/gOC	43	19		39	17		61	25	26
56-55-3	Benzo(A)Anthracene		ug/kg	120	130	U	120	76	3.2 J	310	120	140
		841	ug/gOC	105	57		102	47	3	317	73	93
50-32-8	Benzo(A)Pyrene		ug/kg	120	130	U	120	70	U	320	130	140
		965	ug/gOC	105	57		102	43		328	79	93
205-99-2	Benzo(B)Fluoranthene		ug/kg	180	170	1.9 J	190	95	1.4 J	460	210	200
		979	ug/gOC	157	74	2	162	59	1	471	127	133
191-24-2	Benzo(G,H,I)Perylene		ug/kg	86	84	1.6 J	89	51	1.1 J	240	110	95
		1095	ug/gOC	75	37	1	76	32	1	246	67	63
207-08-9	Benzo(K)Fluoranthene		ug/kg	57	61	U	63	35	U	160	67	65
		981	ug/gOC	50	27		54	22		164	41	44
218-01-9	Chrysene		ug/kg	170	150	8.7	180	86	U	380	160	170
		844	ug/gOC	148	65	5	153	53		389	97	113
53-70-3	Dibenz(A,H)Anthracene		ug/kg	19	22	U	21	13	U	52	25	25
206-44-0	Fluoranthene		ug/kg	390	330	1.9 J	350	210	1.8 J	760	310	300
		707	ug/gOC	340	143	2	297	129	2	778	187	199
86-73-7	Fluorene		ug/kg	35	32	1.1 J	31	43	U	22	28	24
		538	ug/gOC	31	14	1	27	27		23	17	16
91-20-3	Naphthalene		ug/kg	9.4	18	1 J	7.3	21	1.2 J	11	19	10
		385	ug/gOC	9	8	1	7	13	1	12	12	7
85-01-8	Phenanthrene		ug/kg	180	190	3.9 J	180	180	2.3 J	310	180	150
		596	ug/gOC	157	83	3	153	111	2	317	109	100
129-00-0	Pyrene		ug/kg	330	270	3 J	310	180	2.5 J	710	270	270
		697	ug/gOC	287	117	2	263	111	2	726	163	179
	Total PAHs	4000		1901.1	1800	25.15	1857.2	1255.7	14.86	4111.9	1850	1778.8
	OTHER											
TOC	Total Organic Carbon		%	1.15	2.31	1.77	1.18	1.63	1.54	0.978	1.66	1.51
TOC	Total Organic Carbon		mg/kg									

Data Sources:
NYSDEC, 2007. Contamination Analysis in the Rochester Embayment Area of C
USEPA, 2012. TASK 6: Final Summary Report for Site Characterization at the G
USEPA, 2013. Technical Report: Genesee River Sediment Sampling under the G

Notes:
1. Sample locations can be found on Figure 5.
2. Highlighted results indicate an exceedenc of sediment guidance value (SGV).

TABLE D-2
HISTORICAL SEDIMENT PAH DATA SUMMARY
CLASS B STANDARDS COMPARISON

NYSDEC-Lower Genesee River Historical Sediment Data PAH Summary Class B Standards Comparison			Location ID:	GR-07	GR-07	GR-07	GR-08	GR-08	GR-08	GR-08	GR-08	GR-09
			Sample ID:	LA-186	LA-187	LA-188	LA-189	LA-190	LA-191	LA-192	LA-193	LA-194
			Depth:	6 - 9 ft	9 - 12 ft	12 - 14.4 ft	0 - 3 ft	3 - 6 ft	6 - 9 ft	9 - 12 ft	12 - 13.8 ft	0 - 3 ft
			Source:	BAT	BAT	BAT	BAT	BAT	BAT	BAT	BAT	BAT
		SGV	Sampled:	9/15/2011 16:58	9/15/2011 16:58	9/15/2011 16:58	9/15/2011 16:18	9/15/2011 16:18	9/15/2011 16:18	9/15/2011 16:18	9/15/2011 16:18	9/15/2011 15:45
CAS NO.	COMPOUND	ug/gOC	UNITS:									
	SEMIVOLATILES											
90-12-0	1-Methylnaphthalene		ug/kg	38	89	140	3.7 J	24	94	140	0.88 J	8.9
		444	ug/gOC	27	70	85	4	23	62	139	2	7
91-57-6	2-Methylnaphthalene		ug/kg	61	120	190	4	41	140	280	0.92 J	12
		444	ug/gOC	43	94	116	5	38	91	278	2	9
83-32-9	Acenaphthene		ug/kg	49	150	190	4.3	28	120	180	0.77 J	55
		491	ug/gOC	34	118	116	5	26	78	179	2	40
208-96-8	Acenaphthylene		ug/kg	57	64	72	5.5	28	82	81	U	11
		452	ug/gOC	40	50	44	6	26	54	81		8
120-12-7	Anthracene		ug/kg	130	240	300	13	55	200	410	1.6 J	130
		594	ug/gOC	90	188	182	14	51	130	406	3	93
56-55-3	Benzo(A)Anthracene		ug/kg	330	390	480	54	140	380	510	1.5 J	340
		841	ug/gOC	228	305	291	55	130	247	505	3	242
50-32-8	Benzo(A)Pyrene		ug/kg	310	390	420	66	150	370	450	1.5 J	320
		965	ug/gOC	214	305	255	67	139	241	446	3	227
205-99-2	Benzo(B)Fluoranthene		ug/kg	380	440	470	100	190	450	370	2.5 J	460
		979	ug/gOC	263	344	285	102	176	293	367	5	327
191-24-2	Benzo(G,H,I)Perylene		ug/kg	180	220	220	56	98	220	190	2.9 J	210
		1095	ug/gOC	125	172	134	57	91	143	189	5	149
207-08-9	Benzo(K)Fluoranthene		ug/kg	130	150	160	35	67	150	140	U	160
		981	ug/gOC	90	118	97	36	63	98	139		114
218-01-9	Chrysene		ug/kg	330	390	460	83	170	400	440	2.3 J	380
		844	ug/gOC	228	305	279	84	158	260	436	4	270
53-70-3	Dibenz(A,H)Anthracene		ug/kg	53	60	63	12	25	U	54	0.83 J	52
206-44-0	Fluoranthene		ug/kg	660	750	980	150	300	760	810	3.9	830
		707	ug/gOC	456	586	594	152	278	494	802	7	589
86-73-7	Fluorene		ug/kg	74	140	200	7.4	39	140	210	1.1 J	70
		538	ug/gOC	52	110	122	8	37	91	208	2	50
91-20-3	Naphthalene		ug/kg	58	80	250	3.9	39	190	160	1.3 J	19
		385	ug/gOC	40	63	152	4	37	124	159	3	14
85-01-8	Phenanthrene		ug/kg	430	680	930	56	200	640	1100	5.8	510
		596	ug/gOC	297	532	564	57	186	416	1090	10	362
129-00-0	Pyrene		ug/kg	640	890	1100	120	330	990	1300	6.6	650
		697	ug/gOC	442	696	667	122	306	643	1288	11	461
	Total PAHs	4000		4110	5473	6865	832.8	2024	5546	7025	35.8	4447.9
	OTHER											
TOC	Total Organic Carbon		%	1.45	1.28	1.65	0.99	1.08	1.54	1.01	0.603	1.41
TOC	Total Organic Carbon		mg/kg									

Data Sources:
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USEPA, 2012. TASK 6: Final Summary Report for Site Characterization at the G
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Notes:
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CLASS B STANDARDS COMPARISON

NYSDEC-Lower Genesee River Historical Sediment Data PAH Summary Class B Standards Comparison		SGV	Location ID: Sample ID: Depth: Source: Sampled:	GR-09 LA-195 3 - 6 ft BAT 9/15/2011 15:45	GR-09 LA-196 6 - 9 ft BAT 9/15/2011 15:45	GR-09 LA-197 9 - 12 ft BAT 9/15/2011 15:45	GR-09 LA-198 12 - 13.8 ft BAT 9/15/2011 15:45	GR-10 LA-165 0 - 3 ft BAT 9/15/2011 14:21	GR-10 LA-166 3 - 6 ft BAT 9/15/2011 14:21	GR-10 LA-167 6 - 6.9 ft BAT 9/15/2011 14:21	GR-11 LA-152 0 - 0.9 ft BAT 9/15/2011 9:01	GR-12 LA-199 0 - 3 ft BAT 9/15/2011 13:22
CAS NO.	COMPOUND	ug/gOC	UNITS:									
	SEMIVOLATILES											
90-12-0	1-Methylnaphthalene		ug/kg	17	45	240 J	120	6.9	34	55	6.7	6.4
		444	ug/gOC	15	32	127	56	8	31	47	8	6
91-57-6	2-Methylnaphthalene		ug/kg	29	73	150 J	170	9	58	92	10	7.8
		444	ug/gOC	25	52	79	80	11	52	78	12	8
83-32-9	Acenaphthene		ug/kg	24	51	230 J	180	11	44	66	7.1	9.3
		491	ug/gOC	21	36	122	84	13	40	56	9	9
208-96-8	Acenaphthylene		ug/kg	26	42	67 J	130	22	44	48	26	11
		452	ug/gOC	23	30	36	61	25	40	41	31	11
120-12-7	Anthracene		ug/kg	54	120	330 J	420	36	120	180	36	22
		594	ug/gOC	46	85	174	196	41	108	152	43	21
56-55-3	Benzo(A)Anthracene		ug/kg	140	210	420 J	820	140	220	260	150	90
		841	ug/gOC	119	148	222	382	157	197	219	179	85
50-32-8	Benzo(A)Pyrene		ug/kg	140	220	370 J	680	160	220	270	150	97
		965	ug/gOC	119	155	195	317	180	197	227	179	91
205-99-2	Benzo(B)Fluoranthene		ug/kg	180	260	360 J	710	200	250	290	190	140
		979	ug/gOC	153	184	190	331	224	224	244	226	131
191-24-2	Benzo(G,H,I)Perylene		ug/kg	88	130	180 J	310	110	130	160	97	71
		1095	ug/gOC	75	92	95	145	124	117	135	116	67
207-08-9	Benzo(K)Fluoranthene		ug/kg	61	86	140 J	240	67	84	95	65	50
		981	ug/gOC	52	61	74	112	76	75	80	78	47
218-01-9	Chrysene		ug/kg	170	220	430 J	840	170	220	250	160	110
		844	ug/gOC	145	155	227	391	191	197	211	191	103
53-70-3	Dibenz(A,H)Anthracene		ug/kg	24	34	43 J	95	31	34	43	26	17
206-44-0	Fluoranthene		ug/kg	320	440	840 J	1300	280	430	470	240	190
		707	ug/gOC	272	310	443	605	314	384	395	286	178
86-73-7	Fluorene		ug/kg	35	65	230 J	230	19	64	89	9.7	14
		538	ug/gOC	30	46	122	107	22	58	75	12	14
91-20-3	Naphthalene		ug/kg	22	89	150 J	240	9.2	54	87	9.6	9.9
		385	ug/gOC	19	63	79	112	11	49	74	12	10
85-01-8	Phenanthrene		ug/kg	200	330	1000 J	1200	120	360	490	57	90
		596	ug/gOC	170	233	527	559	135	322	412	68	85
129-00-0	Pyrene		ug/kg	340	530	1200 J	1900 D	270	500	650	340	180
		697	ug/gOC	289	374	632	884	303	447	547	404	169
	Total PAHs	4000		1960	3075	6560	9935	1781.1	2996	3755	1680.1	1191.4
	OTHER											
TOC	Total Organic Carbon		%	1.18	1.42	1.9	2.15	0.893	1.12	1.19	0.842	1.07
TOC	Total Organic Carbon		mg/kg									

Data Sources:
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USEPA, 2012. TASK 6: Final Summary Report for Site Characterization at the G
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CLASS B STANDARDS COMPARISON

NYSDEC-Lower Genesee River Historical Sediment Data PAH Summary Class B Standards Comparison		SGV	Location ID: Sample ID: Depth: Source: Sampled:	GR-12 LA-200 3 - 6 ft BAT 9/15/2011 13:22	GR-12 LA-201 6 - 9 ft BAT 9/15/2011 13:22	GR-12 LA-202 9 - 12 ft BAT 9/15/2011 13:22	GR-12 LA-203 12 - 15 ft BAT 9/15/2011 13:22	GR-12 LA-204 15 - 16.4 ft BAT 9/15/2011 13:22	GR-13 LA-126 0 - 3 ft BAT 9/14/2011 8:47	GR-13 LA-127 3 - 6 ft BAT 9/14/2011 8:47	GR-13 LA-128 6 - 9 ft BAT 9/14/2011 8:47	GR-13 LA-129 9 - 11.9 ft BAT 9/14/2011 8:47
CAS NO.	COMPOUND	ug/gOC	UNITS:									
	SEMIVOLATILES											
90-12-0	1-Methylnaphthalene		ug/kg	12	31	1.1 J	0.94 J	0.51 J	20	20	1.8 J	1.3 J
		444	ug/gOC	12	23	2	2	1	9	7	1	1
91-57-6	2-Methylnaphthalene		ug/kg	22	53	0.97 J	0.73 J	U	28	30	1.6 J	0.98 J
		444	ug/gOC	22	40	2	2		12	10	1	1
83-32-9	Acenaphthene		ug/kg	16	30	U	U	U	95	81	1.5 J	U
		491	ug/gOC	16	23				39	26	1	
208-96-8	Acenaphthylene		ug/kg	18	34	U	U	U	78	76	U	U
		452	ug/gOC	18	26				32	24		
120-12-7	Anthracene		ug/kg	38	65	0.79 J	U	U	270	240	2.9 J	0.84 J
		594	ug/gOC	38	49	2			109	76	1	1
56-55-3	Benzo(A)Anthracene		ug/kg	94	130	0.93 J	4.7	3.1 J	1800	1000	11	U
		841	ug/gOC	94	97	2	8	5	726	316	1	
50-32-8	Benzo(A)Pyrene		ug/kg	100	140	U	U	U	2300 D	1100 D	12	U
		965	ug/gOC	100	104				928	348	1	
205-99-2	Benzo(B)Fluoranthene		ug/kg	140	170	1.9 J	1.3 J	U	4000 D	1800	21	2.5 J
		979	ug/gOC	139	126	3	3		1613	568	2	1
191-24-2	Benzo(G,H,I)Perylene		ug/kg	72	88	1.2 J	1 J	U	1700	870	11	1.7 J
		1095	ug/gOC	72	66	2	2		686	275	1	1
207-08-9	Benzo(K)Fluoranthene		ug/kg	46	60	U	U	U	1200	590	5.7 J	U
		981	ug/gOC	46	45				484	187	1	
218-01-9	Chrysene		ug/kg	130	150	1.4 J	0.92 J	U	2900 D	1400	12	1.6 J
		844	ug/gOC	129	112	2	2		1170	442	1	1
53-70-3	Dibenz(A,H)Anthracene		ug/kg	18	27	U	U	U	430	230	U	U
206-44-0	Fluoranthene		ug/kg	230	280	2.4 J	1 J	U	5700 D	2900 D	32	2.6 J
		707	ug/gOC	228	208	4	2		2299	915	3	1
86-73-7	Fluorene		ug/kg	25	42	0.85 J	U	U	180	130	3.1 J	0.99 J
		538	ug/gOC	25	32	2			73	42	1	1
91-20-3	Naphthalene		ug/kg	15	47	0.99 J	0.7 J	U	30	31	1.9 J	0.85 J
		385	ug/gOC	15	35	2	2		13	10	1	1
85-01-8	Phenanthrene		ug/kg	140	210	3.4	2.3 J	U	1800	1100	17	3.1 J
		596	ug/gOC	139	156	5	4		726	348	2	1
129-00-0	Pyrene		ug/kg	230	280	3.3	1.9 J	1.1 J	4500 D	2500 D	26	3.5 J
		697	ug/gOC	228	208	5	4	2	1815	789	3	1
	Total PAHs	4000		1419	1928	19.23	15.49	4.71	29131	15098	172.5	20.89
	OTHER											
TOC	Total Organic Carbon		%	1.01	1.35	0.735	0.602	0.663	2.48	3.17	12.6	4.45
TOC	Total Organic Carbon		mg/kg									

Data Sources:
NYSDEC, 2007. Contamination Analysis in the Rochester Embayment Area of C
USEPA, 2012. TASK 6: Final Summary Report for Site Characterization at the G
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NYSDEC-Lower Genesee River Historical Sediment Data PAH Summary Class B Standards Comparison		SGV	Location ID: Sample ID: Depth: Source: Sampled:	GR-13 LA-130 0 - 3 ft BAT 9/14/2011 9:00	GR-13 LA-131 3 - 6 ft BAT 9/14/2011 9:00	GR-13 LA-132 6 - 9 ft BAT 9/14/2011 9:00	GR-13 LA-133 9 - 12 ft BAT 9/14/2011 9:00	GR-13 LA-134 12 - 13.1 ft BAT 9/14/2011 9:00	GR-14 LA-153 0 - 3 ft BAT 9/14/2011 17:10	GR-14 LA-154 3 - 6 ft BAT 9/14/2011 17:10	GR-14 LA-155 6 - 8.2 ft BAT 9/14/2011 17:10	GR-14 LA-156 0 - 3 ft BAT 9/14/2011 17:22
CAS NO.	COMPOUND	ug/gOC	UNITS:									
	SEMIVOLATILES											
90-12-0	1-Methylnaphthalene		ug/kg	21 D	22 D	5.2 J	3.3 J	1.2 J	6.8	39	120	5.6
		444	ug/gOC	9	4	1	1	1	9	30	68	8
91-57-6	2-Methylnaphthalene		ug/kg	28 D	34 D	7 J	3.9 J	0.81 J	10	66	190	8.5
		444	ug/gOC	12	6	1	1	1	14	51	107	12
83-32-9	Acenaphthene		ug/kg	100 D	98 D	4.2 J	1.1 J	U	14	51	200	12
		491	ug/gOC	40	15	1	1		19	40	113	17
208-96-8	Acenaphthylene		ug/kg	47 D	49 D	14 J	7.8	U	21	39	120	18
		452	ug/gOC	19	8	1	2		28	30	68	25
120-12-7	Anthracene		ug/kg	310 D	270 D	13 J	5 J	0.61 J	39	120	260	29
		594	ug/gOC	124	42	1	2	1	52	93	147	41
56-55-3	Benzo(A)Anthracene		ug/kg	2100 D	1200 D	52 J	22	1.4 J	130	220	500	100
		841	ug/gOC	837	183	3	5	1	172	170	281	139
50-32-8	Benzo(A)Pyrene		ug/kg	2700 D	1400 D	91 J	39	U	140	230	470	110
		965	ug/gOC	1076	213	6	8		185	177	265	152
205-99-2	Benzo(B)Fluoranthene		ug/kg	5000 D	2100 D	120 J	51	4.3 J	170	270	510	130
		979	ug/gOC	1993	320	7	11	2	224	208	287	180
191-24-2	Benzo(G,H,I)Perylene		ug/kg	2400 D	1100 D	63 J	30	2.3 J	91	130	250	72
		1095	ug/gOC	957	168	4	7	1	120	100	141	100
207-08-9	Benzo(K)Fluoranthene		ug/kg	1600 D	800 D	39 J	17	U	59	90	190	50
		981	ug/gOC	638	122	3	4		78	70	107	70
218-01-9	Chrysene		ug/kg	3900 D	1800 D	58 J	25	2.3 J	140	240	470	120
		844	ug/gOC	1554	274	4	6	1	185	185	265	166
53-70-3	Dibenz(A,H)Anthracene		ug/kg	530 D	250 D	13 J	6.5	1.2 J	25	37	70	20
206-44-0	Fluoranthene		ug/kg	7100 D	3600 D	120 J	46	4.1 J	280	460	910	200
		707	ug/gOC	2829	548	7	10	2	369	354	512	277
86-73-7	Fluorene		ug/kg	190 D	160 D	9.2 J	4.2 J	1 J	22	66	170	18
		538	ug/gOC	76	25	1	1	1	29	51	96	25
91-20-3	Naphthalene		ug/kg	32 D	34 D	11 J	5.2 J	0.87 J	8.5	63	270	8.3
		385	ug/gOC	13	6	1	2	1	12	49	152	12
85-01-8	Phenanthrene		ug/kg	2100 D	1500 D	52 J	22	4.2 J	130	360	750	94
		596	ug/gOC	837	228	3	5	2	172	277	422	130
129-00-0	Pyrene		ug/kg	6400 D	3300 D	110 J	47	4.6 J	260	550	1100	200
		697	ug/gOC	2550	502	7	10	2	343	424	618	277
	Total PAHs	4000		37258	19017	848.6	367	30.29	1643.3	3171	6810	1271.4
	OTHER											
TOC	Total Organic Carbon		%	2.51	6.58	17.6	4.89	3.57	0.76	1.3	1.78	0.724
TOC	Total Organic Carbon		mg/kg									

Data Sources:
NYSDEC, 2007. Contamination Analysis in the Rochester Embayment Area of C
USEPA, 2012. TASK 6: Final Summary Report for Site Characterization at the G
USEPA, 2013. Technical Report: Genesee River Sediment Sampling under the G

Notes:
1. Sample locations can be found on Figure 5.
2. Highlighted results indicate an exceedenc of sediment guidance value (SGV).

TABLE D-2
HISTORICAL SEDIMENT PAH DATA SUMMARY
CLASS B STANDARDS COMPARISON

NYSDEC-Lower Genesee River Historical Sediment Data PAH Summary Class B Standards Comparison		SGV	Location ID: Sample ID: Depth: Source: Sampled:	GR-14 LA-157 3 - 6 ft BAT 9/14/2011 17:22	GR-14 LA-158 6 - 7.7 ft BAT 9/14/2011 17:22	GR-15 LA-168 0 - 3 ft BAT 9/14/2011 16:24	GR-15 LA-169 3 - 6 ft BAT 9/14/2011 16:24	GR-15 LA-170 6 - 9 ft BAT 9/14/2011 16:24	GR-15 LA-171 9 - 12 ft BAT 9/14/2011 16:24	GR-15 LA-172 12 - 13.2 ft BAT 9/14/2011 16:24	GR-16 LA-144 0 - 3 ft BAT 9/14/2011 15:40	GR-16 LA-145 3 - 6 ft BAT 9/14/2011 15:40
CAS NO.	COMPOUND	ug/gOC	UNITS:									
	SEMIVOLATILES											
90-12-0	1-Methylnaphthalene		ug/kg	42	110	6.8	8.2	28	21	36	7.8	5.3
		444	ug/gOC	31	63	7	9	20	18	36	10	4
91-57-6	2-Methylnaphthalene		ug/kg	73	180	7.4	9	39	35	43	8.7	5.5
		444	ug/gOC	53	103	8	10	28	29	43	11	4
83-32-9	Acenaphthene		ug/kg	54	170	6.3	13	32	33	110	6.3	9.6
		491	ug/gOC	40	97	7	15	23	28	108	8	6
208-96-8	Acenaphthylene		ug/kg	47	93	7.1	19	33	42	31	5.9	7.2
		452	ug/gOC	35	53	8	21	24	35	31	8	5
120-12-7	Anthracene		ug/kg	130	300	17	53	76	72	240	19	27
		594	ug/gOC	95	171	18	58	55	60	236	24	16
56-55-3	Benzo(A)Anthracene		ug/kg	250	490	66	150	230	190	380	66	98
		841	ug/gOC	182	279	68	164	165	158	373	82	57
50-32-8	Benzo(A)Pyrene		ug/kg	250	470	80	160	230	190	340	78	96
		965	ug/gOC	182	268	82	175	165	158	334	97	56
205-99-2	Benzo(B)Fluoranthene		ug/kg	300	550	130	210	300	220	400	120	140
		979	ug/gOC	218	313	133	229	215	182	393	149	81
191-24-2	Benzo(G,H,I)Perylene		ug/kg	150	250	66	100	160	120	210	63	67
		1095	ug/gOC	109	143	68	109	115	100	206	78	39
207-08-9	Benzo(K)Fluoranthene		ug/kg	100	170	46	79	100	72	140	41	47
		981	ug/gOC	73	97	47	87	72	60	138	51	28
218-01-9	Chrysene		ug/kg	250	470	82	170	280	220	340	70	110
		844	ug/gOC	182	268	84	186	200	182	334	87	64
53-70-3	Dibenz(A,H)Anthracene		ug/kg	42	74	16	24	36	30	46	15	17
206-44-0	Fluoranthene		ug/kg	490	930	180	340	510	370	770	180	220
		707	ug/gOC	356	529	184	371	365	306	755	223	128
86-73-7	Fluorene		ug/kg	69	180	12	27	50	45	130	12	16
		538	ug/gOC	50	103	13	30	36	38	128	15	10
91-20-3	Naphthalene		ug/kg	70	250	4.2	7.2	22	29	89	4.6	4.8
		385	ug/gOC	51	143	5	8	16	24	88	6	3
85-01-8	Phenanthrene		ug/kg	380	790	80	170	320	270	720	81	130
		596	ug/gOC	276	449	82	186	229	224	706	101	76
129-00-0	Pyrene		ug/kg	600	1100	150	280	520	410	680	140	200
		697	ug/gOC	435	625	153	306	372	339	667	174	116
	Total PAHs	4000		3447	6847	1027.8	1929.4	3126	2479	4945	986.3	1273.4
	OTHER											
TOC	Total Organic Carbon		%	1.38	1.76	0.983	0.918	1.4	1.21	1.02	0.809	1.73
TOC	Total Organic Carbon		mg/kg									

Data Sources:
NYSDEC, 2007. Contamination Analysis in the Rochester Embayment Area of C
USEPA, 2012. TASK 6: Final Summary Report for Site Characterization at the G
USEPA, 2013. Technical Report: Genesee River Sediment Sampling under the G

Notes:
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TABLE D-2
HISTORICAL SEDIMENT PAH DATA SUMMARY
CLASS B STANDARDS COMPARISON

NYSDEC-Lower Genesee River Historical Sediment Data PAH Summary Class B Standards Comparison			Location ID:	GR-16	GR-16	GR-16	GR-16	GR-16	GR-17	GR-18	GR-18	GR-18
			Sample ID:	LA-146	LA-147	LA-148	LA-149	LA-150	LA-151	LA-135	LA-136	LA-137
			Depth:	6 - 9 ft	9 - 12 ft	12 - 15 ft	15 - 18 ft	18 - 19.9 ft	0 - 3.1 ft	0 - 3 ft	3 - 6 ft	6 - 9 ft
			Source:	BAT	BAT	BAT	BAT	BAT	BAT	BAT	BAT	BAT
		SGV	Sampled:	9/14/2011 15:40	9/14/2011 15:40	9/14/2011 15:40	9/14/2011 15:40	9/14/2011 15:40	9/14/2011 14:48	9/14/2011 11:38	9/14/2011 11:38	9/14/2011 11:38
CAS NO.	COMPOUND	ug/gOC	UNITS:									
	SEMIVOLATILES											
90-12-0	1-Methylnaphthalene		ug/kg	170	110	760 J	6.1	1.5 J	9.3	5	24	53
		444	ug/gOC	156	68	559	8	2	11	6	25	33
91-57-6	2-Methylnaphthalene		ug/kg	120	150	750 J	4.4	1.3 J	14	6.2	34	82
		444	ug/gOC	111	93	552	6	2	16	8	36	51
83-32-9	Acenaphthene		ug/kg	150	190	760 J	4.8	U	18	14	21	39
		491	ug/gOC	138	117	559	6		21	17	22	25
208-96-8	Acenaphthylene		ug/kg	24	75	200	1 J	U	30	11	21	40
		452	ug/gOC	23	47	148	2		35	14	22	25
120-12-7	Anthracene		ug/kg	110	250	1300 J	6.5	1.2 J	48	24	50	93
		594	ug/gOC	101	154	956	8	2	55	29	52	58
56-55-3	Benzo(A)Anthracene		ug/kg	100	410	1400 DJ	7.6	0.9 J	120	88	110	190
		841	ug/gOC	92	252	1030	9	1	138	106	114	119
50-32-8	Benzo(A)Pyrene		ug/kg	110	360	1200 J	6	0.79 J	120	95	100	180
		965	ug/gOC	101	221	883	7	1	138	114	104	112
205-99-2	Benzo(B)Fluoranthene		ug/kg	130	420	1000 J	7	2.5 J	130	150	130	210
		979	ug/gOC	120	258	736	9	3	149	180	135	131
191-24-2	Benzo(G,H,I)Perylene		ug/kg	72	190	480 J	4.1	1.5 J	76	76	68	110
		1095	ug/gOC	67	117	353	5	2	87	91	71	69
207-08-9	Benzo(K)Fluoranthene		ug/kg	52	150	340	2.1 J	U	46	47	42	70
		981	ug/gOC	48	93	250	3		53	57	44	44
218-01-9	Chrysene		ug/kg	120	400	1200 J	7.3	8.3	130	120	130	220
		844	ug/gOC	111	246	883	9	9	149	144	135	137
53-70-3	Dibenz(A,H)Anthracene		ug/kg	20	61	160	0.93 J	U	18	16	15	26
206-44-0	Fluoranthene		ug/kg	280	840	2600 DJ	15	4.2	220	240	240	400
		707	ug/gOC	257	516	1912	18	5	252	288	248	249
86-73-7	Fluorene		ug/kg	190	170	730 J	5.6	1.9 J	22	17	39	64
		538	ug/gOC	175	105	537	7	2	26	21	41	40
91-20-3	Naphthalene		ug/kg	190	180	390	3.3 J	1.5 J	7.7	5.7	14	35
		385	ug/gOC	175	111	287	4	2	9	7	15	22
85-01-8	Phenanthrene		ug/kg	550	810	4200 DJ	24	6.3	130	96	220	360
		596	ug/gOC	505	497	3089	28	7	149	115	228	224
129-00-0	Pyrene		ug/kg	270	860	4200 DJ	22	4.6	260	210	290	510
		697	ug/gOC	248	528	3089	26	5	298	252	300	317
	Total PAHs	4000		2729	5826	22180	131.33	36.49	1472	1298.9	1613	2792
	OTHER											
TOC	Total Organic Carbon		%	1.09	1.63	1.36	0.86	1.03	0.875	0.836	0.968	1.61
TOC	Total Organic Carbon		mg/kg									

Data Sources:
NYSDEC, 2007. Contamination Analysis in the Rochester Embayment Area of C
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TABLE D-2
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CLASS B STANDARDS COMPARISON

NYSDEC-Lower Genesee River Historical Sediment Data PAH Summary Class B Standards Comparison			Location ID: Sample ID: Depth: Source: Sampled:	GR-18 LA-138 9 - 12.7 ft BAT 9/14/2011 11:38	GR-19 LA-117 0 - 3 ft BAT 9/13/2011 11:46	GR-19 LA-118 3 - 6 ft BAT 9/13/2011 11:46	GR-19 LA-119 6 - 9 ft BAT 9/13/2011 11:46	GR-19 LA-120 9 - 12 ft BAT 9/13/2011 11:46	GR-19 LA-121 12 - 15 ft BAT 9/13/2011 11:46	GR-19 LA-122 15 - 18.2 ft BAT 9/13/2011 11:46	GR-20 LA-139 0 - 3 ft BAT 9/14/2011 10:52	GR-20 LA-140 3 - 6 ft BAT 9/14/2011 10:52
CAS NO.	COMPOUND	SGV ug/gOC	UNITS:									
	SEMIVOLATILES											
90-12-0	1-Methylnaphthalene		ug/kg	43	6.9	11	15	11	19	40	22	32
		444	ug/gOC	30	8	12	14	12	20	37	26	31
91-57-6	2-Methylnaphthalene		ug/kg	62	9.9	16	21	15	26	44	32	49
		444	ug/gOC	43	11	17	20	16	28	40	38	48
83-32-9	Acenaphthene		ug/kg	58	10	18	20	17	33	25	23	26
		491	ug/gOC	40	12	19	19	18	35	23	27	25
208-96-8	Acenaphthylene		ug/kg	34	9.7	21	35	16	22	41	25	27
		452	ug/gOC	24	11	22	33	17	24	38	30	26
120-12-7	Anthracene		ug/kg	120	24	51	66	48	74	73	59	57
		594	ug/gOC	83	27	53	62	51	78	67	69	55
56-55-3	Benzo(A)Anthracene		ug/kg	250	69	150	180	110	140	150	140	130
		841	ug/gOC	173	76	154	167	115	147	137	164	125
50-32-8	Benzo(A)Pyrene		ug/kg	230	84	160	190	110	130	160	130	120
		965	ug/gOC	159	93	164	176	115	137	146	152	116
205-99-2	Benzo(B)Fluoranthene		ug/kg	280	110	200	230	140	150	170	160	150
		979	ug/gOC	194	122	205	213	147	158	155	187	145
191-24-2	Benzo(G,H,I)Perylene		ug/kg	140	57	100	120	67	74	92	88	82
		1095	ug/gOC	97	63	103	112	71	78	84	103	79
207-08-9	Benzo(K)Fluoranthene		ug/kg	100	38	69	76	48	54	60	54	48
		981	ug/gOC	69	42	71	71	51	57	55	63	47
218-01-9	Chrysene		ug/kg	270	94	170	200	120	150	170	160	150
		844	ug/gOC	187	104	175	186	126	158	155	187	145
53-70-3	Dibenz(A,H)Anthracene		ug/kg	35	12	23	26	15	17	20	19	19
206-44-0	Fluoranthene		ug/kg	550	160	330	380	240	270	290	270	280
		707	ug/gOC	380	177	338	352	251	284	264	315	270
86-73-7	Fluorene		ug/kg	69	17	33	39	29	48	48	38	46
		538	ug/gOC	48	19	34	37	31	51	44	45	45
91-20-3	Naphthalene		ug/kg	45	7.2	9.9	11	10	15	13	16	20
		385	ug/gOC	32	8	11	11	11	16	12	19	20
85-01-8	Phenanthrene		ug/kg	410	88	200	230	160	250	250	250	260
		596	ug/gOC	283	97	205	213	168	263	228	292	250
129-00-0	Pyrene		ug/kg	560	140	300	350	210	260	310	320	310
		697	ug/gOC	387	155	308	325	220	273	282	373	299
	Total PAHs	4000		3406	1001.7	1981.9	2319	1439	1815	2054	1889	1885
	OTHER											
TOC	Total Organic Carbon		%	1.45	0.909	0.977	1.08	0.957	0.953	1.1	0.858	1.04
TOC	Total Organic Carbon		mg/kg									

Data Sources:
NYSDEC, 2007. Contamination Analysis in the Rochester Embayment Area of C
USEPA, 2012. TASK 6: Final Summary Report for Site Characterization at the G
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CLASS B STANDARDS COMPARISON

NYSDEC-Lower Genesee River Historical Sediment Data PAH Summary Class B Standards Comparison		SGV	Location ID: Sample ID: Depth: Source: Sampled:	GR-20 LA-141 6 - 9 ft BAT 9/14/2011 10:52	GR-20 LA-142 9 - 12 ft BAT 9/14/2011 10:52	GR-20 LA-143 12 - 14.9 ft BAT 9/14/2011 10:52	GR-21 LA-112 0 - 3 ft BAT 9/13/2011 11:05	GR-21 LA-113 3 - 6 ft BAT 9/13/2011 11:05	GR-21 LA-114 6 - 9 ft BAT 9/13/2011 11:05	GR-21 LA-115 9 - 12 ft BAT 9/13/2011 11:05	GR-21 LA-116 12 - 14.2 ft BAT 9/13/2011 11:05	GR-22 LA-174 0 - 3 ft BAT 9/14/2011 9:57
CAS NO.	COMPOUND	ug/gOC	UNITS:									
	SEMIVOLATILES											
90-12-0	1-Methylnaphthalene		ug/kg	50	36	31	8.9	20	30	64	40	10
		444	ug/gOC	64	27	25	9	14	31	44	23	8
91-57-6	2-Methylnaphthalene		ug/kg	84	58	48	9.4	28	56	110	62	15
		444	ug/gOC	107	43	38	9	19	58	75	35	12
83-32-9	Acenaphthene		ug/kg	50	31	33	16	27	34	59	57	15
		491	ug/gOC	64	23	26	16	19	35	41	32	12
208-96-8	Acenaphthylene		ug/kg	39	28	32	9.8	41	35	50	31	18
		452	ug/gOC	50	21	25	10	28	36	35	18	15
120-12-7	Anthracene		ug/kg	100	65	68	30	77	85	120	92	41
		594	ug/gOC	127	48	54	29	52	88	82	52	33
56-55-3	Benzo(A)Anthracene		ug/kg	200	150	180	100	220	160	220	170	120
		841	ug/gOC	253	109	141	96	148	164	150	95	94
50-32-8	Benzo(A)Pyrene		ug/kg	190	140	180	110	220	160	220	150	120
		965	ug/gOC	241	102	141	105	148	164	150	84	94
205-99-2	Benzo(B)Fluoranthene		ug/kg	220	180	220	170	240	180	250	200	170
		979	ug/gOC	279	131	172	162	162	185	171	112	133
191-24-2	Benzo(G,H,I)Perylene		ug/kg	110	92	110	82	120	91	120	93	86
		1095	ug/gOC	140	67	86	79	81	94	82	52	68
207-08-9	Benzo(K)Fluoranthene		ug/kg	87	59	79	57	85	59	90	69	53
		981	ug/gOC	110	43	62	55	58	61	62	39	42
218-01-9	Chrysene		ug/kg	220	170	200	140	220	170	240	180	140
		844	ug/gOC	279	124	157	134	148	175	164	101	110
53-70-3	Dibenz(A,H)Anthracene		ug/kg	30	25	30	17	28	23	28	22	21
206-44-0	Fluoranthene		ug/kg	430	330	340	280	410	340	470	410	250
		707	ug/gOC	544	240	266	267	276	349	320	230	196
86-73-7	Fluorene		ug/kg	72	45	45	22	48	54	83	67	25
		538	ug/gOC	92	33	36	21	33	56	57	38	20
91-20-3	Naphthalene		ug/kg	44	36	37	8.8	13	31	64	40	9.4
		385	ug/gOC	56	27	29	9	9	32	44	23	8
85-01-8	Phenanthrene		ug/kg	400	240	250	130	290	300	410	320	150
		596	ug/gOC	506	174	196	124	195	308	279	179	118
129-00-0	Pyrene		ug/kg	500	360	380	220	410	360	510	390	240
		697	ug/gOC	633	261	297	210	276	369	347	218	188
	Total PAHs	4000		2936	2138	2373	1505.9	2627	2261	3238	2493	1571.4
	OTHER											
TOC	Total Organic Carbon		%	0.791	1.38	1.28	1.05	1.49	0.977	1.47	1.79	1.28
TOC	Total Organic Carbon		mg/kg									

Data Sources:
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USEPA, 2012. TASK 6: Final Summary Report for Site Characterization at the G
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NYSDEC-Lower Genesee River Historical Sediment Data PAH Summary Class B Standards Comparison			Location ID: Sample ID: Depth: Source: Sampled:	GR-22 LA-175 3 - 6 ft BAT 9/14/2011 9:57	GR-22 LA-176 6 - 9 ft BAT 9/14/2011 9:57	GR-22 LA-177 9 - 12 ft BAT 9/14/2011 9:57	GR-22 LA-178 12 - 15 ft BAT 9/14/2011 9:57	GR-22 LA-179 15 - 16.2 ft BAT 9/14/2011 9:57	GR-23 LA-124 0 - 2.2 ft BAT 9/13/2011 10:22	GR-23M LA-123 0 - 1.1 ft BAT 9/13/2011 9:56	GR-24 LA-125 0 - 2.3 ft BAT 9/13/2011 8:50	GR-25 LA-025 0 - 0.5 ft BAT 9/16/2011 10:56
CAS NO.	COMPOUND	SGV ug/gOC	UNITS:									
	SEMIVOLATILES											
90-12-0	1-Methylnaphthalene		ug/kg	20	20	90	110	180	1.7 J	27	10	1.1 J
		444	ug/gOC	19	17	53	49	26	5	10	48	5
91-57-6	2-Methylnaphthalene		ug/kg	35	36	100	120	210	1.6 J	25	7.8	1.1 J
		444	ug/gOC	33	30	58	53	30	5	9	37	5
83-32-9	Acenaphthene		ug/kg	25	22	160	120	260	9.2	30	61	2.2 J
		491	ug/gOC	24	19	93	53	38	24	11	288	10
208-96-8	Acenaphthylene		ug/kg	31	20	65	56	130	1.1 J	40	3.6 J	1.4 J
		452	ug/gOC	29	17	38	25	19	3	15	17	6
120-12-7	Anthracene		ug/kg	46	45	220	180	540	17	170	130	7
		594	ug/gOC	43	38	128	79	78	45	61	614	30
56-55-3	Benzo(A)Anthracene		ug/kg	120	84	470	310	770	52	310	260	32
		841	ug/gOC	112	70	272	136	110	135	110	1227	136
50-32-8	Benzo(A)Pyrene		ug/kg	130	87	450	290	640	47	260	230	35
		965	ug/gOC	121	72	261	128	92	122	92	1085	149
205-99-2	Benzo(B)Fluoranthene		ug/kg	160	110	500	330	700	72	310	290	69
		979	ug/gOC	149	91	290	145	100	187	110	1368	293
191-24-2	Benzo(G,H,I)Perylene		ug/kg	85	54	240	160	280	26	120	130	35
		1095	ug/gOC	79	45	139	71	40	68	43	614	149
207-08-9	Benzo(K)Fluoranthene		ug/kg	51	33	170	110	250	26	120	99	22
		981	ug/gOC	48	28	99	49	36	68	43	467	94
218-01-9	Chrysene		ug/kg	140	100	450	330	690	70	270	240	58
		844	ug/gOC	130	83	261	145	99	182	96	1133	246
53-70-3	Dibenz(A,H)Anthracene		ug/kg	23	18	76	51	100	7.7	31	25	5.6
206-44-0	Fluoranthene		ug/kg	250	190	980	700	1600 D	160	680	680	100
		707	ug/gOC	232	158	567	308	229	415	241	3208	424
86-73-7	Fluorene		ug/kg	35	29	160	130	310	8.4	100	43	2.2 J
		538	ug/gOC	33	24	93	58	45	22	36	203	10
91-20-3	Naphthalene		ug/kg	21	36	86	110	810	1.6 J	27	8.3	1.4 J
		385	ug/gOC	20	30	50	49	116	5	10	40	6
85-01-8	Phenanthrene		ug/kg	180	150	780	610	1600 D	74	590	470	28
		596	ug/gOC	167	124	451	268	229	192	209	2217	119
129-00-0	Pyrene		ug/kg	270	210	890	700	1300	140	540	540	92
		697	ug/gOC	250	174	515	308	186	363	191	2548	390
	Total PAHs	4000		1708	1300	6157	4587	10720	742.3	3800	3377.7	528
	OTHER											
TOC	Total Organic Carbon		%	1.08	1.21	1.73	2.28	7.01	0.386	2.83	0.212	0.236
TOC	Total Organic Carbon		mg/kg									

Data Sources:
NYSDEC, 2007. Contamination Analysis in the Rochester Embayment Area of C
USEPA, 2012. TASK 6: Final Summary Report for Site Characterization at the G
USEPA, 2013. Technical Report: Genesee River Sediment Sampling under the G

Notes:
1. Sample locations can be found on Figure 5.
2. Highlighted results indicate an exceedenc of sediment guidance value (SGV).

TABLE D-2
HISTORICAL SEDIMENT PAH DATA SUMMARY
CLASS B STANDARDS COMPARISON

NYSDEC-Lower Genesee River Historical Sediment Data PAH Summary Class B Standards Comparison			Location ID:	GR-26	GR-27	GR-28	GR-29	GR-30	GR-31	GR-32	GR-32	GR-33
			Sample ID:	LA-026	LA-027	LA-028	LA-029	LA-030	LA-031	LA-032	LA-032D	LA-033
			Depth:	0 - 0.5 ft	0 - 0.5 ft	0 - 0.5 ft	0 - 0.5 ft	0 - 0.5 ft	0 - 0.5 ft	0 - 0.5 ft	0 - 0.5 ft	0 - 0.5 ft
			Source:	BAT	BAT	BAT	BAT	BAT	BAT	BAT	BAT	BAT
		SGV	Sampled:	9/16/2011 10:44	9/16/2011 10:34	9/16/2011 10:24	9/16/2011 10:16	9/16/2011 10:00	9/16/2011 9:46	9/16/2011 9:27	9/16/2011 9:30	9/16/2011 9:15
CAS NO.	COMPOUND	ug/gOC	UNITS:									
	SEMIVOLATILES											
90-12-0	1-Methylnaphthalene		ug/kg	3.4 J	2.2 J	1.6 J	3.3 J	4.2	11	2.2 J	15	4
		444	ug/gOC	5	7	7	8	7	10	7	38	7
91-57-6	2-Methylnaphthalene		ug/kg	3.7 J	3.6	1.6 J	3.9	5.2	13	2.5 J	14	4.2
		444	ug/gOC	5	12	7	10	9	12	8	36	7
83-32-9	Acenaphthene		ug/kg	4.8	2.7 J	2.8 J	7.1	12	67	9.9	81	9.2
		491	ug/gOC	6	9	12	17	19	60	28	206	15
208-96-8	Acenaphthylene		ug/kg	5.9	1.7 J	1.5 J	6.2	5.8	25	2.7 J	13	4.9
		452	ug/gOC	8	6	6	15	10	23	8	33	8
120-12-7	Anthracene		ug/kg	14	7.2	6.3	17	34	410	27	180	25
		594	ug/gOC	18	23	25	40	53	367	77	456	39
56-55-3	Benzo(A)Anthracene		ug/kg	73	43	39	130	180	1400 D	150	1100	120
		841	ug/gOC	91	137	155	303	280	1250	424	2785	186
50-32-8	Benzo(A)Pyrene		ug/kg	98	53	42	150	230	1300	190	1200	170
		965	ug/gOC	122	169	167	349	358	1161	537	3038	264
205-99-2	Benzo(B)Fluoranthene		ug/kg	180	100	81	220	370	1700 D	310	1800 D	290
		979	ug/gOC	224	318	321	512	575	1518	876	4557	449
191-24-2	Benzo(G,H,I)Perylene		ug/kg	100	58	46	120	190	750	170	840	170
		1095	ug/gOC	125	185	182	280	296	670	481	2127	264
207-08-9	Benzo(K)Fluoranthene		ug/kg	57	33	27	75	120	610	110	610	100
		981	ug/gOC	71	105	107	175	187	545	311	1545	155
218-01-9	Chrysene		ug/kg	130	80	64	160	270	1500 D	220	1500 D	150
		844	ug/gOC	162	254	253	373	420	1340	622	3798	233
53-70-3	Dibenz(A,H)Anthracene		ug/kg	18	9.8	7.5	29	45	220	42	230	39
206-44-0	Fluoranthene		ug/kg	220	120	100	280	540	3700 D	470	3300 D	370
		707	ug/gOC	274	381	396	652	839	3304	1328	8355	573
86-73-7	Fluorene		ug/kg	6.3	3.4 J	2.9 J	7	13	94	12	96	11
		538	ug/gOC	8	11	12	17	21	84	34	244	18
91-20-3	Naphthalene		ug/kg	3.8 J	7.3	3.4	5.4	8.9	33	4.6	16	6.1
		385	ug/gOC	5	24	14	13	14	30	13	41	10
85-01-8	Phenanthrene		ug/kg	68	42	32	80	180	1300	180	1300	110
		596	ug/gOC	85	134	127	187	280	1161	509	3292	171
129-00-0	Pyrene		ug/kg	200	110	99	230	400	2700 D	350	2400 D	290
		697	ug/gOC	249	350	392	535	622	2411	989	6076	449
	Total PAHs	4000		1285.9	733.9	605.6	1653.9	2818.1	16763	2432.9	15685	2053.4
	OTHER											
TOC	Total Organic Carbon		%	0.805	0.315	0.253	0.43	0.644	1.12	0.354	0.395	0.646
TOC	Total Organic Carbon		mg/kg									

Data Sources:
NYSDEC, 2007. Contamination Analysis in the Rochester Embayment Area of C
USEPA, 2012. TASK 6: Final Summary Report for Site Characterization at the G
USEPA, 2013. Technical Report: Genesee River Sediment Sampling under the G

Notes:
1. Sample locations can be found on Figure 5.
2. Highlighted results indicate an exceedenc of sediment guidance value (SGV).

TABLE 3a
HISTORICAL SEDIMENT PESTICIDE/HERBICIDE/PCB DATA
CLASS A STANDARDS COMPARISON

NYSDEC-Lower Genesee River Historical Sediment Data Pesticide/Herbicide Class A Standards Comparison		Class A Freshwater Sediment Guidance		Location ID: Sample ID: Lab Sample Id: Depth: Source: SDG: Matrix: Sampled: Validated:	1 01A 0 - 2.76 ft NYSDEC SE 7/15/2002	1 RE02-01P - NYSDEC SE 7/15/2002	2 02A 0 - 2.78 ft NYSDEC SE 7/15/2002	2 02B 2.78 - 5.55 ft NYSDEC SE 7/15/2002	2 02C 5.55 - 8.33 ft NYSDEC SE 7/15/2002	2 RE02-02P - NYSDEC SE 7/15/2002
CAS NO.	COMPOUND	Values	Derivation	UNITS:						
	PESTICIDES									
959-98-8	Alpha Endosulfan	1 0.041	2	ug/kg ug/gOC						
33213-65-9	Beta Endosulfan	1 0.041	2	ug/kg ug/gOC						
57-74-9	Chlordane	3.2	1	ug/kg	U	U		U	U	U
2921-88-2	Chlorpyrifos	12 0.594	2	ug/kg ug/gOC						
53-19-0	O,P'-DDD	4.9	1	ug/kg						
72-54-8	P,P'-DDD	4.9	1	ug/kg						
3424-82-6	O,P'-DDE	3.2	1	ug/kg						
72-55-9	P,P'-DDE	3.2	1	ug/kg						
789-02-6	O,P'-DDT	4.2	1	ug/kg						
50-29-3	P,P'-DDT	4.2	1	ug/kg						
1918-00-9	Dicamba	180 9.079	2	ug/kg ug/gOC						
60-57-1	Dieldrin	1.9	1	ug/kg	U	U		4.7 *P	U	U
72-20-8	Endrin	2.2	1	ug/kg	U	U		2.4 J*P	2.6 J*P	U
58-89-9	Gamma Bhc (Lindane)	2.4	1	ug/kg						
1024-57-3	Heptachlor Epoxide	2.5	1	ug/kg	U	U		U	U	U
87-68-3	Hexachlorobutadiene	1200 57.539	2	ug/kg ug/gOC						
72-43-5	Methoxychlor	59 2.958	2	ug/kg ug/gOC	U	U		5.7 * 4.75	U	U
2385-85-5	Mirex	120 5.931	2	ug/kg ug/gOC	U	U		U	U	U
8001-35-2	Toxaphene	6 0.289	2	ug/kg ug/gOC	U	U		U	U	U

TABLE 3a
HISTORICAL SEDIMENT PESTICIDE/HERBICIDE/PCB DATA
CLASS A STANDARDS COMPARISON

NYSDEC-Lower Genesee River Historical Sediment Data Pesticide/Herbicide Class A Standards Comparison		Class A Freshwater Sediment Guidance		Location ID: Sample ID: Lab Sample Id: Depth: Source: SDG: Matrix: Sampled: Validated:	1 01A 0 - 2.76 ft NYSDEC SE 7/15/2002	1 RE02-01P - NYSDEC SE 7/15/2002	2 02A 0 - 2.78 ft NYSDEC SE 7/15/2002	2 02B 2.78 - 5.55 ft NYSDEC SE 7/15/2002	2 02C 5.55 - 8.33 ft NYSDEC SE 7/15/2002	2 RE02-02P - NYSDEC SE 7/15/2002
	PCBs									
12672-29-6	PCB-1248 (Aroclor 1248)			ug/kg	U	U	U	U	U	U
11097-69-1	PCB-1254 (Aroclor 1254)			ug/kg	U	U	U	U	U	U
11096-82-5	PCB-1260 (Aroclor 1260)			ug/kg	12 J	U	13 J	160	230	U
11100-14-4	PCB-1268 (Aroclor 1268)			ug/kg						
	Total PCBs	100	5	ug/Kg	12	0	13	160	230	0
	DIOXINS									
	Total TCDDs			ng/kg	1.36	0.614	45	269	434	0.438
	Total TCDDs	0.0045	1	ug/Kg	0.00136	0.000614	0.045	0.269	0.434	0.000438
1746-01-6	2,3,7,8-Tetrachlorodibenzo-P-Dioxin			ng/kg						
	2,3,7,8-Tetrachlorodibenzo-P-Dioxin	0.0045	1	ug/Kg						
	OTHER									
TOC	Total Organic Carbon			%	0.62	0.63	1.2	1.2	0.95	0.79
TOC	Total Organic Carbon			mg/kg	6200	6300	12000	12000	9500	7900

TABLE 3a
HISTORICAL SEDIMENT PESTICIDE/HERBICIDE/PCB DATA
CLASS A STANDARDS COMPARISON

NYSDEC-Lower Genesee River Historical Sediment Data Pesticide/Herbicide Class A Standards Comparison		Class A Freshwater Sediment Guidance		Location ID: Sample ID: Lab Sample Id: Depth: Source: SDG: Matrix: Sampled: Validated:	3 03A 0 - 3.12 ft NYSDEC SE 7/15/2002	3 03B 3.12 - 6.23 ft NYSDEC SE 7/15/2002	3 03C 6.23 - 9.35 ft NYSDEC SE 7/15/2002	3 RE02-03P - NYSDEC SE 7/15/2002	4 04A 0 - 2.97 ft NYSDEC SE 7/16/2002	4 04B 2.97 - 5.95 ft NYSDEC SE 7/16/2002
CAS NO.	COMPOUND	Values	Derivation	UNITS:						
	PESTICIDES									
959-98-8	Alpha Endosulfan	1 0.041	2	ug/kg ug/gOC						
33213-65-9	Beta Endosulfan	1 0.041	2	ug/kg ug/gOC						
57-74-9	Chlordane	3.2	1	ug/kg	U		U	U	U	U
2921-88-2	Chlorpyrifos	12 0.594	2	ug/kg ug/gOC						
53-19-0	O,P'-DDD	4.9	1	ug/kg						
72-54-8	P,P'-DDD	4.9	1	ug/kg						
3424-82-6	O,P'-DDE	3.2	1	ug/kg						
72-55-9	P,P'-DDE	3.2	1	ug/kg						
789-02-6	O,P'-DDT	4.2	1	ug/kg						
50-29-3	P,P'-DDT	4.2	1	ug/kg						
1918-00-9	Dicamba	180 9.079	2	ug/kg ug/gOC						
60-57-1	Dieldrin	1.9	1	ug/kg	U		U	U	1.7 J*P	2 J*
72-20-8	Endrin	2.2	1	ug/kg	U		U	U	0.89 J*P	U
58-89-9	Gamma Bhc (Lindane)	2.4	1	ug/kg						
1024-57-3	Heptachlor Epoxide	2.5	1	ug/kg	U		U	U	U	U
87-68-3	Hexachlorobutadiene	1200 57.539	2	ug/kg ug/gOC						
72-43-5	Methoxychlor	59 2.958	2	ug/kg ug/gOC	U		U	U	U	U
2385-85-5	Mirex	120 5.931	2	ug/kg ug/gOC	U		U	U	U	U
8001-35-2	Toxaphene	6 0.289	2	ug/kg ug/gOC	U		U	U	U	U

TABLE 3a
HISTORICAL SEDIMENT PESTICIDE/HERBICIDE/PCB DATA
CLASS A STANDARDS COMPARISON

NYSDEC-Lower Genesee River Historical Sediment Data Pesticide/Herbicide Class A Standards Comparison		Class A Freshwater Sediment Guidance		Location ID: Sample ID: Lab Sample Id: Depth: Source: SDG: Matrix: Sampled: Validated:	3 03A 0 - 3.12 ft NYSDEC SE 7/15/2002	3 03B 3.12 - 6.23 ft NYSDEC SE 7/15/2002	3 03C 6.23 - 9.35 ft NYSDEC SE 7/15/2002	3 RE02-03P - NYSDEC SE 7/15/2002	4 04A 0 - 2.97 ft NYSDEC SE 7/16/2002	4 04B 2.97 - 5.95 ft NYSDEC SE 7/16/2002
	PCBs									
12672-29-6	PCB-1248 (Aroclor 1248)			ug/kg	U	U	U	U	U	U
11097-69-1	PCB-1254 (Aroclor 1254)			ug/kg	U	U	U	U	U	U
11096-82-5	PCB-1260 (Aroclor 1260)			ug/kg	19 J	69	22 JP	59	49 J	47 J
11100-14-4	PCB-1268 (Aroclor 1268)			ug/kg						
	Total PCBs	100	5	ug/Kg	19	69	22	59	49	47
	DIOXINS									
	Total TCDDs			ng/kg	18.4	5.54	5.52	18.3	14.2	28.4
	Total TCDDs	0.0045	1	ug/Kg	0.0184	0.00554	0.00552	0.0183	0.0142	0.0284
1746-01-6	2,3,7,8-Tetrachlorodibenzo-P-Dioxin			ng/kg						
	2,3,7,8-Tetrachlorodibenzo-P-Dioxin	0.0045	1	ug/Kg						
	OTHER									
TOC	Total Organic Carbon			%	0.71	1.3	1.1	0.96	1.2	1.2
TOC	Total Organic Carbon			mg/kg	7100	13000	11000	9600	12000	12000

TABLE 3a
HISTORICAL SEDIMENT PESTICIDE/HERBICIDE/PCB DATA
CLASS A STANDARDS COMPARISON

NYSDEC-Lower Genesee River Historical Sediment Data Pesticide/Herbicide Class A Standards Comparison		Class A Freshwater Sediment Guidance		Location ID: Sample ID: Lab Sample Id: Depth: Source: SDG: Matrix: Sampled: Validated:	4 04C 5.95 - 8.92 ft NYSDEC SE 7/16/2002	4 RE02-04P - NYSDEC SE 7/16/2002	5 05A 0 - 3.39 ft NYSDEC SE 7/16/2002	5 05B 3.39 - 6.78 ft NYSDEC SE 7/16/2002	5 05C 6.78 - 10.2 ft NYSDEC SE 7/16/2002	5 17A 0 - 2.53 ft NYSDEC SE 7/16/2002
CAS NO.	COMPOUND	Values	Derivation	UNITS:						
	PESTICIDES									
959-98-8	Alpha Endosulfan	1 0.041	2	ug/kg ug/gOC						
33213-65-9	Beta Endosulfan	1 0.041	2	ug/kg ug/gOC						
57-74-9	Chlordane	3.2	1	ug/kg	U	U	U	U	U	U
2921-88-2	Chlorpyrifos	12 0.594	2	ug/kg ug/gOC						
53-19-0	O,P'-DDD	4.9	1	ug/kg						
72-54-8	P,P'-DDD	4.9	1	ug/kg						
3424-82-6	O,P'-DDE	3.2	1	ug/kg						
72-55-9	P,P'-DDE	3.2	1	ug/kg						
789-02-6	O,P'-DDT	4.2	1	ug/kg						
50-29-3	P,P'-DDT	4.2	1	ug/kg						
1918-00-9	Dicamba	180 9.079	2	ug/kg ug/gOC						
60-57-1	Dieldrin	1.9	1	ug/kg	3.5 P	U	U	U	U	U
72-20-8	Endrin	2.2	1	ug/kg	0.47 J*	U	U	U	U	U
58-89-9	Gamma Bhc (Lindane)	2.4	1	ug/kg						
1024-57-3	Heptachlor Epoxide	2.5	1	ug/kg	U	U	U	U	U	U
87-68-3	Hexachlorobutadiene	1200 57.539	2	ug/kg ug/gOC						
72-43-5	Methoxychlor	59 2.958	2	ug/kg ug/gOC	U	U	U	U	U	1.4 J*P 1.627907
2385-85-5	Mirex	120 5.931	2	ug/kg ug/gOC	U	U	U	U	U	U
8001-35-2	Toxaphene	6 0.289	2	ug/kg ug/gOC	U	U	U	U	U	U

TABLE 3a
HISTORICAL SEDIMENT PESTICIDE/HERBICIDE/PCB DATA
CLASS A STANDARDS COMPARISON

NYSDEC-Lower Genesee River Historical Sediment Data Pesticide/Herbicide Class A Standards Comparison		Class A Freshwater Sediment Guidance		Location ID: Sample ID: Lab Sample Id: Depth: Source: SDG: Matrix: Sampled: Validated:	4 04C 5.95 - 8.92 ft NYSDEC SE 7/16/2002	4 RE02-04P - NYSDEC SE 7/16/2002	5 05A 0 - 3.39 ft NYSDEC SE 7/16/2002	5 05B 3.39 - 6.78 ft NYSDEC SE 7/16/2002	5 05C 6.78 - 10.2 ft NYSDEC SE 7/16/2002	5 17A 0 - 2.53 ft NYSDEC SE 7/16/2002
	PCBs									
12672-29-6	PCB-1248 (Aroclor 1248)			ug/kg	U	U	U	U	U	U
11097-69-1	PCB-1254 (Aroclor 1254)			ug/kg	U	U	U	U	U	U
11096-82-5	PCB-1260 (Aroclor 1260)			ug/kg	36 JP	U	U	31 J	42	U
11100-14-4	PCB-1268 (Aroclor 1268)			ug/kg						
	Total PCBs	100	5	ug/Kg	36	0	0	31	42	0
	DIOXINS									
	Total TCDDs			ng/kg	85.7	2.28	7.79	12	3.08	0.375 K
	Total TCDDs	0.0045	1	ug/Kg	0.0857	0.00228	0.00779	0.012	0.00308	0.000375 K
1746-01-6	2,3,7,8-Tetrachlorodibenzo-P-Dioxin			ng/kg						
	2,3,7,8-Tetrachlorodibenzo-P-Dioxin	0.0045	1	ug/Kg						
	OTHER									
TOC	Total Organic Carbon			%	1.5	0.97	1	1.3	0.4	0.86
TOC	Total Organic Carbon			mg/kg	15000	9700	10000	13000	4000	8600

TABLE 3a
HISTORICAL SEDIMENT PESTICIDE/HERBICIDE/PCB DATA
CLASS A STANDARDS COMPARISON

NYSDEC-Lower Genesee River Historical Sediment Data Pesticide/Herbicide Class A Standards Comparison		Class A Freshwater Sediment Guidance		Location ID: Sample ID: Lab Sample Id: Depth: Source: SDG: Matrix: Sampled: Validated:	5 17B 2.53 - 5.05 ft NYSDEC SE 7/16/2002	5 17C 5.05 - 7.58 ft NYSDEC SE 7/16/2002	5 RE02-05P - NYSDEC SE 7/16/2002	5 RE02-17P - NYSDEC SE 7/16/2002	GR-01 LA-001 E1100911-002 0 - 0.5 ft BAT SE 9/12/2011	GR-01 LA-107 K1108656-007 0 - 3 ft BAT SE 9/12/2011
CAS NO.	COMPOUND	Values	Derivation	UNITS:						
	PESTICIDES									
959-98-8	Alpha Endosulfan	1	2	ug/kg						0.086 UJ
		0.041		ug/gOC						0.0382222
33213-65-9	Beta Endosulfan	1	2	ug/kg						0.14 U
		0.041		ug/gOC						0.0622222
57-74-9	Chlordane	3.2	1	ug/kg	U	U	U	U		1.9 U
2921-88-2	Chlorpyrifos	12	2	ug/kg						0.74 UJ
		0.594		ug/gOC						0.3288889
53-19-0	O,P'-DDD	4.9	1	ug/kg						1.5 NJ
72-54-8	P,P'-DDD	4.9	1	ug/kg						3.7
3424-82-6	O,P'-DDE	3.2	1	ug/kg						0.74 UJ
72-55-9	P,P'-DDE	3.2	1	ug/kg						2.1
789-02-6	O,P'-DDT	4.2	1	ug/kg						0.092 UJ
50-29-3	P,P'-DDT	4.2	1	ug/kg						0.74 UJ
1918-00-9	Dicamba	180	2	ug/kg						4.4 UJ
		9.079		ug/gOC						1.9555556
60-57-1	Dieldrin	1.9	1	ug/kg	U	U	U	U		0.14 U
72-20-8	Endrin	2.2	1	ug/kg	U	1.2 J*P	U	U		0.094 U
58-89-9	Gamma Bhc (Lindane)	2.4	1	ug/kg						0.25 UJ
1024-57-3	Heptachlor Epoxide	2.5	1	ug/kg	U	U	U	U		0.084 U
87-68-3	Hexachlorobutadiene	1200	2	ug/kg						0.21 U
		57.539		ug/gOC						0.0933333
72-43-5	Methoxychlor	59	2	ug/kg	2.9 *	3.4 *P	U	U		0.9 J
		2.958		ug/gOC	3.372093	3.7777778				0.4
2385-85-5	Mirex	120	2	ug/kg	U	U	U	U		0.74 UJ
		5.931		ug/gOC						0.3288889
8001-35-2	Toxaphene	6	2	ug/kg	U	U	U	U		37 UJ
		0.289		ug/gOC						16.444444

TABLE 3a
HISTORICAL SEDIMENT PESTICIDE/HERBICIDE/PCB DATA
CLASS A STANDARDS COMPARISON

NYSDEC-Lower Genesee River Historical Sediment Data Pesticide/Herbicide Class A Standards Comparison		Class A Freshwater Sediment Guidance		Location ID: Sample ID: Lab Sample Id: Depth: Source: SDG: Matrix: Sampled: Validated:	5 17B 2.53 - 5.05 ft NYSDEC SE 7/16/2002	5 17C 5.05 - 7.58 ft NYSDEC SE 7/16/2002	5 RE02-05P - NYSDEC SE 7/16/2002	5 RE02-17P - NYSDEC SE 7/16/2002	GR-01 LA-001 E1100911-002 0 - 0.5 ft BAT SE 9/12/2011	GR-01 LA-107 K1108656-007 0 - 3 ft BAT SE 9/12/2011
	PCBs									
12672-29-6	PCB-1248 (Aroclor 1248)			ug/kg	U	U	U	U		50
11097-69-1	PCB-1254 (Aroclor 1254)			ug/kg	U	U	U	U		65
11096-82-5	PCB-1260 (Aroclor 1260)			ug/kg	26 J	78	U	U		33
11100-14-4	PCB-1268 (Aroclor 1268)			ug/kg						2.1 U
	Total PCBs	100	5	ug/Kg	26	78	0	0		148
	DIOXINS									
	Total TCDDs			ng/kg	0.832 U	3.51	4.79	0.258		
	Total TCDDs	0.0045	1	ug/Kg	0.000832 U	0.00351	0.00479	0.000258		
1746-01-6	2,3,7,8-Tetrachlorodibenzo-P-Dioxin			ng/kg					0.325 U	
	2,3,7,8-Tetrachlorodibenzo-P-Dioxin	0.0045	1	ug/Kg					0.000325 U	
	OTHER									
TOC	Total Organic Carbon			%	0.86	0.9	1.9	0.87	1.21	2.25
TOC	Total Organic Carbon			mg/kg	8600	9000	19000	8700	12100	22500

TABLE 3a
HISTORICAL SEDIMENT PESTICIDE/HERBICIDE/PCB DATA
CLASS A STANDARDS COMPARISON

NYSDEC-Lower Genesee River Historical Sediment Data Pesticide/Herbicide Class A Standards Comparison		Class A Freshwater Sediment Guidance		Location ID: Sample ID: Lab Sample Id: Depth: Source: SDG: Matrix: Sampled: Validated:	GR-01 LA-108 K1108656-008 3 - 6 ft BAT SE 9/12/2011	GR-01 LA-109 K1108656-009 6 - 9 ft BAT SE 9/12/2011	GR-01 LA-110 K1108656-010 9 - 12 ft BAT SE 9/12/2011	GR-01 LA-111 E1100910-003 12 - 14.9 ft BAT SE 9/12/2011	GR-02 LA-002 E1100911-003 0 - 0.5 ft BAT SE 9/12/2011	GR-02 LA-104 K1108656-004 0 - 3 ft BAT SE 9/12/2011
CAS NO.	COMPOUND	Values	Derivation	UNITS:						
	PESTICIDES									
959-98-8	Alpha Endosulfan	1	2	ug/kg	0.75 UJ	0.36 UJ	0.063 U	0.063 U		0.2 UJ
		0.041		ug/gOC	0.4310345	0.2368421	0.0319797	0.039375		0.1298701
33213-65-9	Beta Endosulfan	1	2	ug/kg	0.14 U	0.14 U	0.14 U	0.14 U		0.14 U
		0.041		ug/gOC	0.0804598	0.0921053	0.071066	0.0875		0.0909091
57-74-9	Chlordane	3.2	1	ug/kg	7.3 UJ	6.3 UJ	4.5 UJ	1.9 U		1.9 U
2921-88-2	Chlorpyrifos	12	2	ug/kg	0.15 U	0.15 U	0.15 U	0.15 U		0.84 U
		0.594		ug/gOC	0.0862069	0.0986842	0.0761421	0.09375		0.5454545
53-19-0	O,P'-DDD	4.9	1	ug/kg	3.2 UJ	1.6 NJ	0.42 J	0.31 UJ		0.84 U
72-54-8	P,P'-DDD	4.9	1	ug/kg	6.2 J	3.2	0.11 U	0.11 U		1.5
3424-82-6	O,P'-DDE	3.2	1	ug/kg	0.73 UJ	0.73 UJ	0.33 UJ	0.16 U		0.84 UJ
72-55-9	P,P'-DDE	3.2	1	ug/kg	4.1	2.2	0.11 U	0.11 U		0.84 UJ
789-02-6	O,P'-DDT	4.2	1	ug/kg	0.6 UJ	0.076 UJ	0.058 U	0.058 U		0.1 UJ
50-29-3	P,P'-DDT	4.2	1	ug/kg	0.17 U	0.73 UJ	0.17 U	0.17 U		0.17 U
1918-00-9	Dicamba	180	2	ug/kg	4.4 UJ	4.4 UJ	15 UJ	4.4 UJ		4.4 UJ
		9.079		ug/gOC	2.5287356	2.8947368	7.6142132	2.75		2.8571429
60-57-1	Dieldrin	1.9	1	ug/kg	0.14 U	0.14 U	0.14 U	0.14 U		0.14 U
72-20-8	Endrin	2.2	1	ug/kg	0.094 U	0.094 U	0.094 U	0.094 U		0.094 U
58-89-9	Gamma Bhc (Lindane)	2.4	1	ug/kg	0.73 U	0.73 UJ	0.74 U	0.47 J		0.33 UJ
1024-57-3	Heptachlor Epoxide	2.5	1	ug/kg	0.084 U	0.084 U	0.084 U	0.13 UJ		0.084 U
87-68-3	Hexachlorobutadiene	1200	2	ug/kg	0.21 U	0.21 U	0.21 U	0.21 U		0.21 U
		57.539		ug/gOC	0.1206897	0.1381579	0.106599	0.13125		0.1363636
72-43-5	Methoxychlor	59	2	ug/kg	2.3 UJ	1.1 UJ	0.19 U	0.19 U		0.76 UJ
		2.958		ug/gOC	1.3218391	0.7236842	0.0964467	0.11875		0.4935065
2385-85-5	Mirex	120	2	ug/kg	0.73 UJ	0.73 UJ	0.74 UJ	0.68 U		0.099 U
		5.931		ug/gOC	0.4195402	0.4802632	0.3756345	0.425		0.0642857
8001-35-2	Toxaphene	6	2	ug/kg	120 UJ	38 UJ	43 UJ	34 UJ		42 UJ
		0.289		ug/gOC	68.965517	25	21.827411	21.25		27.272727

TABLE 3a
HISTORICAL SEDIMENT PESTICIDE/HERBICIDE/PCB DATA
CLASS A STANDARDS COMPARISON

NYSDEC-Lower Genesee River Historical Sediment Data Pesticide/Herbicide Class A Standards Comparison		Class A Freshwater Sediment Guidance		Location ID: Sample ID: Lab Sample Id: Depth: Source: SDG: Matrix: Sampled: Validated:	GR-01 LA-108 K1108656-008 3 - 6 ft BAT SE 9/12/2011	GR-01 LA-109 K1108656-009 6 - 9 ft BAT SE 9/12/2011	GR-01 LA-110 K1108656-010 9 - 12 ft BAT SE 9/12/2011	GR-01 LA-111 E1100910-003 12 - 14.9 ft BAT SE 9/12/2011	GR-02 LA-002 E1100911-003 0 - 0.5 ft BAT SE 9/12/2011	GR-02 LA-104 K1108656-004 0 - 3 ft BAT SE 9/12/2011
	PCBs									
12672-29-6	PCB-1248 (Aroclor 1248)			ug/kg	130 J	2.1 U	2.1 U	2.1 U		27
11097-69-1	PCB-1254 (Aroclor 1254)			ug/kg	110	45 J	2.4 UJ	2.1 U		25 J
11096-82-5	PCB-1260 (Aroclor 1260)			ug/kg	81	59	3 UJ	2.1 U		33
11100-14-4	PCB-1268 (Aroclor 1268)			ug/kg	2.1 U	2.1 U	2.1 U	2.1 U		2.1 U
	Total PCBs	100	5	ug/Kg	321	104	0	0		85
	DIOXINS									
	Total TCDDs			ng/kg						
	Total TCDDs	0.0045	1	ug/Kg						
1746-01-6	2,3,7,8-Tetrachlorodibenzo-P-Dioxin			ng/kg				0.0499 U	0.226 J	
	2,3,7,8-Tetrachlorodibenzo-P-Dioxin	0.0045	1	ug/Kg				0.0000499 U	0.000226 J	
	OTHER									
TOC	Total Organic Carbon			%	1.74	1.52	1.97	1.6	1.46	1.54
TOC	Total Organic Carbon			mg/kg	17400	15200	19700	16000	14600	15400

TABLE 3a
HISTORICAL SEDIMENT PESTICIDE/HERBICIDE/PCB DATA
CLASS A STANDARDS COMPARISON

NYSDEC-Lower Genesee River Historical Sediment Data Pesticide/Herbicide Class A Standards Comparison		Class A Freshwater Sediment Guidance		Location ID: Sample ID: Lab Sample Id: Depth: Source: SDG: Matrix: Sampled: Validated:	GR-02 LA-105 K1108656-005 3 - 6 ft BAT SE 9/12/2011	GR-02 LA-106 E1100910-002 6 - 7.4 ft BAT SE 9/12/2011	GR-03 LA-003 E1100918-001 0 - 0.5 ft BAT SE 9/15/2011	GR-03 LA-003D E1100918-002 0 - 0.5 ft BAT SE 9/15/2011	GR-03 LA-159 K1108838-019 0 - 3 ft BAT SE 9/15/2011	GR-03 LA-160 K1108843-017 3 - 6 ft BAT SE 9/15/2011
CAS NO.	COMPOUND	Values	Derivation	UNITS:						
	PESTICIDES									
959-98-8	Alpha Endosulfan	1	2	ug/kg	0.063 U	0.063 U			0.063 U	0.063 U
		0.041		ug/gOC	0.0226619	0.0635081			0.0577982	0.0690789
33213-65-9	Beta Endosulfan	1	2	ug/kg	0.14 U	0.14 U			0.14 U	0.14 U
		0.041		ug/gOC	0.0503597	0.141129			0.1284404	0.1535088
57-74-9	Chlordane	3.2	1	ug/kg	1.9 U	1.9 U			1.9 U	7 UJ
2921-88-2	Chlorpyrifos	12	2	ug/kg	0.15 U	0.15 U			0.15 U	0.7 U
		0.594		ug/gOC	0.0539568	0.1512097			0.1376147	0.7675439
53-19-0	O,P'-DDD	4.9	1	ug/kg	0.2 J	0.13 U			0.26 J	0.74 UJ
72-54-8	P,P'-DDD	4.9	1	ug/kg	0.11 U	0.11 U			0.76 U	1 J
3424-82-6	O,P'-DDE	3.2	1	ug/kg	0.16 U	0.16 U			0.16 U	0.16 U
72-55-9	P,P'-DDE	3.2	1	ug/kg	0.11 U	0.11 U			0.76 UJ	1.7
789-02-6	O,P'-DDT	4.2	1	ug/kg	0.058 U	0.058 U			0.058 U	0.093 UJ
50-29-3	P,P'-DDT	4.2	1	ug/kg	0.17 U	0.17 U			0.76 U	0.7 UJ
1918-00-9	Dicamba	180	2	ug/kg	4.4 UJ	4.4 UJ			4.4 U	4.4 U
		9.079		ug/gOC	1.5827338	4.4354839			4.0366972	4.8245614
60-57-1	Dieldrin	1.9	1	ug/kg	0.79 UJ	0.14 U			0.2 UJ	1.2 UJ
72-20-8	Endrin	2.2	1	ug/kg	0.094 U	0.094 U			0.094 U	0.094 U
58-89-9	Gamma Bhc (Lindane)	2.4	1	ug/kg	0.79 U	0.08 U			0.76 UJ	0.7 UJ
1024-57-3	Heptachlor Epoxide	2.5	1	ug/kg	0.084 U	0.084 U			0.084 U	0.084 U
87-68-3	Hexachlorobutadiene	1200	2	ug/kg	0.21 U	0.21 U			0.21 U	0.21 U
		57.539		ug/gOC	0.0755396	0.2116935			0.1926606	0.2302632
72-43-5	Methoxychlor	59	2	ug/kg	0.19 U	0.19 U			0.19 U	0.2 UJ
		2.958		ug/gOC	0.0683453	0.1915323			0.1743119	0.2192982
2385-85-5	Mirex	120	2	ug/kg	0.15 UJ	0.099 U			0.099 U	0.099 U
		5.931		ug/gOC	0.0539568	0.0997984			0.0908257	0.1085526
8001-35-2	Toxaphene	6	2	ug/kg	23 UJ	5.9 UJ			7.7 UJ	26 UJ
		0.289		ug/gOC	8.2733813	5.9475806			7.0642202	28.508772

TABLE 3a
HISTORICAL SEDIMENT PESTICIDE/HERBICIDE/PCB DATA
CLASS A STANDARDS COMPARISON

NYSDEC-Lower Genesee River Historical Sediment Data Pesticide/Herbicide Class A Standards Comparison		Class A Freshwater Sediment Guidance		Location ID: Sample ID: Lab Sample Id: Depth: Source: SDG: Matrix: Sampled: Validated:	GR-02 LA-105 K1108656-005 3 - 6 ft BAT SE 9/12/2011	GR-02 LA-106 E1100910-002 6 - 7.4 ft BAT SE 9/12/2011	GR-03 LA-003 E1100918-001 0 - 0.5 ft BAT SE 9/15/2011	GR-03 LA-003D E1100918-002 0 - 0.5 ft BAT SE 9/15/2011	GR-03 LA-159 K1108838-019 0 - 3 ft BAT SE 9/15/2011	GR-03 LA-160 K1108843-017 3 - 6 ft BAT SE 9/15/2011
	PCBs									
12672-29-6	PCB-1248 (Aroclor 1248)			ug/kg	2.1 U	2.1 U			2.3 UJ	18 UJ
11097-69-1	PCB-1254 (Aroclor 1254)			ug/kg	2.1 U	2.1 U			4.4 UJ	30
11096-82-5	PCB-1260 (Aroclor 1260)			ug/kg	6 J	2.1 U			2.8 J	20
11100-14-4	PCB-1268 (Aroclor 1268)			ug/kg	2.1 U	2.1 U			2.1 U	2.1 U
	Total PCBs	100	5	ug/Kg	6	0			2.8	50
	DIOXINS									
	Total TCDDs			ng/kg						
	Total TCDDs	0.0045	1	ug/Kg						
1746-01-6	2,3,7,8-Tetrachlorodibenzo-P-Dioxin			ng/kg		0.0632 U	0.0945 J	0.0403 U		
	2,3,7,8-Tetrachlorodibenzo-P-Dioxin	0.0045	1	ug/Kg		0.0000632 U	0.0000945 J	0.0000403 U		
	OTHER									
TOC	Total Organic Carbon			%	2.78	0.992	0.827	0.68	1.09	0.912
TOC	Total Organic Carbon			mg/kg	27800	9920	8270	6800	10900	9120

TABLE 3a
HISTORICAL SEDIMENT PESTICIDE/HERBICIDE/PCB DATA
CLASS A STANDARDS COMPARISON

NYSDEC-Lower Genesee River Historical Sediment Data Pesticide/Herbicide Class A Standards Comparison		Class A Freshwater Sediment Guidance		Location ID: Sample ID: Lab Sample Id: Depth: Source: SDG: Matrix: Sampled: Validated:	GR-03 LA-161 E1100919-005 6 - 9.4 ft BAT SE 9/15/2011	GR-03 LA-162 K1108843-018 0 - 3 ft BAT SE 9/15/2011	GR-03 LA-163 K1108843-019 3 - 6 ft BAT SE 9/15/2011	GR-03 LA-164 E1100919-006 6 - 8.7 ft BAT SE 9/15/2011	GR-04 LA-004 E1100911-004 0 - 0.5 ft BAT SE 9/12/2011	GR-04 LA-101 K1108656-001 0 - 3 ft BAT SE 9/12/2011
CAS NO.	COMPOUND	Values	Derivation	UNITS:						
	PESTICIDES									
959-98-8	Alpha Endosulfan	1	2	ug/kg	0.078 UJ	0.063 U	0.063 U	0.075 UJ		0.14 UJ
		0.041		ug/gOC	0.0772277	0.0668081	0.0733411	0.0714286		0.1217391
33213-65-9	Beta Endosulfan	1	2	ug/kg	0.14 U	0.14 U	0.14 U	1.4 UJ		0.14 U
		0.041		ug/gOC	0.1386139	0.1484624	0.1629802	1.3333333		0.1217391
57-74-9	Chlordane	3.2	1	ug/kg	6.4 UJ	7 UJ	6.9 UJ	7.1 UJ		7.8 UJ
2921-88-2	Chlorpyrifos	12	2	ug/kg	0.71 U	0.15 U	0.15 U	0.39 J		0.78 U
		0.594		ug/gOC	0.7029703	0.1590668	0.1746217	0.3714286		0.6782609
53-19-0	O,P'-DDD	4.9	1	ug/kg	1.1 NJ	0.93 J	1.1 NJ	1.3 NJ		1.7 NJ
72-54-8	P,P'-DDD	4.9	1	ug/kg	1.6	0.87 J	1.2 J	1.7		1.6
3424-82-6	O,P'-DDE	3.2	1	ug/kg	0.71 UJ	0.7 UJ	0.69 UJ	0.71 UJ		0.78 UJ
72-55-9	P,P'-DDE	3.2	1	ug/kg	2.5	1.8 UJ	1.8	3		2.5
789-02-6	O,P'-DDT	4.2	1	ug/kg	0.71 UJ	0.058 U	0.13 UJ	0.17 UJ		0.3 UJ
50-29-3	P,P'-DDT	4.2	1	ug/kg	0.71 UJ	0.7 UJ	0.69 UJ	0.71 UJ		0.17 U
1918-00-9	Dicamba	180	2	ug/kg	4.4 U	4.4 U	4.4 U	4.4 U		4.4 UJ
		9.079		ug/gOC	4.3564356	4.6659597	5.1222352	4.1904762		3.826087
60-57-1	Dieldrin	1.9	1	ug/kg	0.14 U	1 UJ	1.2 UJ	0.71 UJ		0.14 U
72-20-8	Endrin	2.2	1	ug/kg	0.094 U	0.094 U	0.094 U	0.094 U		0.094 U
58-89-9	Gamma Bhc (Lindane)	2.4	1	ug/kg	0.08 U	0.7 UJ	0.69 UJ	0.71 UJ		0.19 UJ
1024-57-3	Heptachlor Epoxide	2.5	1	ug/kg	0.084 U	0.084 U	0.084 U	0.084 U		0.084 U
87-68-3	Hexachlorobutadiene	1200	2	ug/kg	0.22 J	3.7 U	0.21 U	0.21 U		0.21 U
		57.539		ug/gOC	0.2178218	3.9236479	0.2444703	0.2		0.1826087
72-43-5	Methoxychlor	59	2	ug/kg	0.72	0.26 J	0.69 U	0.65 J		0.59 UJ
		2.958		ug/gOC	0.7128713	0.2757158	0.8032596	0.6190476		0.5130435
2385-85-5	Mirex	120	2	ug/kg	0.099 U	23 UJ	0.099 U	0.71 UJ		0.099 U
		5.931		ug/gOC	0.0980198	24.390244	0.1152503	0.6761905		0.086087
8001-35-2	Toxaphene	6	2	ug/kg	44 UJ	12 UJ	16 UJ	31 UJ		39 UJ
		0.289		ug/gOC	43.564356	12.725345	18.62631	29.52381		33.913043

TABLE 3a
HISTORICAL SEDIMENT PESTICIDE/HERBICIDE/PCB DATA
CLASS A STANDARDS COMPARISON

NYSDEC-Lower Genesee River Historical Sediment Data Pesticide/Herbicide Class A Standards Comparison		Class A Freshwater Sediment Guidance		Location ID: Sample ID: Lab Sample Id: Depth: Source: SDG: Matrix: Sampled: Validated:	GR-03 LA-161 E1100919-005 6 - 9.4 ft BAT SE 9/15/2011	GR-03 LA-162 K1108843-018 0 - 3 ft BAT SE 9/15/2011	GR-03 LA-163 K1108843-019 3 - 6 ft BAT SE 9/15/2011	GR-03 LA-164 E1100919-006 6 - 8.7 ft BAT SE 9/15/2011	GR-04 LA-004 E1100911-004 0 - 0.5 ft BAT SE 9/12/2011	GR-04 LA-101 K1108656-001 0 - 3 ft BAT SE 9/12/2011
	PCBs									
12672-29-6	PCB-1248 (Aroclor 1248)			ug/kg	35 UJ	7.5 UJ	21 UJ	40 UJ		48
11097-69-1	PCB-1254 (Aroclor 1254)			ug/kg	48	15	35	54		62
11096-82-5	PCB-1260 (Aroclor 1260)			ug/kg	36	9.2 J	24	40		53
11100-14-4	PCB-1268 (Aroclor 1268)			ug/kg	2.1 U	2.1 U	2.1 U	2.1 U		2.1 U
	Total PCBs	100	5	ug/Kg	84	24.2	59	94		163
	DIOXINS									
	Total TCDDs			ng/kg						
	Total TCDDs	0.0045	1	ug/Kg						
1746-01-6	2,3,7,8-Tetrachlorodibenzo-P-Dioxin			ng/kg	0.189 J			0.478 J	0.0646 U	
	2,3,7,8-Tetrachlorodibenzo-P-Dioxin	0.0045	1	ug/Kg	0.000189 J			0.000478 J	0.0000646 U	
	OTHER									
TOC	Total Organic Carbon			%	1.01	0.943	0.859	1.05	1.16	1.15
TOC	Total Organic Carbon			mg/kg	10100	9430	8590	10500	11600	11500

TABLE 3a
HISTORICAL SEDIMENT PESTICIDE/HERBICIDE/PCB DATA
CLASS A STANDARDS COMPARISON

NYSDEC-Lower Genesee River Historical Sediment Data Pesticide/Herbicide Class A Standards Comparison		Class A Freshwater Sediment Guidance		Location ID: Sample ID: Lab Sample Id: Depth: Source: SDG: Matrix: Sampled: Validated:	GR-04 LA-102 K1108656-002 3 - 6 ft BAT SE 9/12/2011	GR-04 LA-103 E1100910-001 6 - 9.8 ft BAT SE 9/12/2011	GR-05 LA-005 E1100918-003 0 - 0.5 ft BAT SE 9/16/2011	GR-05 LA-181 K1108838-008 0 - 3 ft BAT SE 9/16/2011	GR-05 LA-182 K1108838-015 3 - 6 ft BAT SE 9/16/2011	GR-05 LA-183 E1100919-011 6 - 8 ft BAT SE 9/16/2011
CAS NO.	COMPOUND	Values	Derivation	UNITS:						
	PESTICIDES									
959-98-8	Alpha Endosulfan	1	2	ug/kg	0.15 UJ	0.063 U		0.072 UJ	0.063 U	0.063 U
		0.041		ug/gOC	0.0649351	0.0355932		0.0610169	0.0386503	0.0409091
33213-65-9	Beta Endosulfan	1	2	ug/kg	0.14 U	0.14 U		0.14 U	0.14 U	0.14 U
		0.041		ug/gOC	0.0606061	0.079096		0.1186441	0.0858896	0.0909091
57-74-9	Chlordane	3.2	1	ug/kg	8 UJ	1.9 U		7.7 UJ	5.2 UJ	1.9 U
2921-88-2	Chlorpyrifos	12	2	ug/kg	0.15 U	0.15 U		0.15 U	0.15 U	0.15 U
		0.594		ug/gOC	0.0649351	0.0847458		0.1271186	0.0920245	0.0974026
53-19-0	O,P'-DDD	4.9	1	ug/kg	1.5 UJ	0.13 U		1.3 NJ	2.5 J	0.13 U
72-54-8	P,P'-DDD	4.9	1	ug/kg	2.8	0.11 U		1.8 J	7.9	0.11 U
3424-82-6	O,P'-DDE	3.2	1	ug/kg	0.8 UJ	0.16 U		0.16 U	0.16 U	0.16 U
72-55-9	P,P'-DDE	3.2	1	ug/kg	1.6	0.11 U		2.3	2.7	0.11 U
789-02-6	O,P'-DDT	4.2	1	ug/kg	0.064 UJ	0.058 U		0.77 UJ	0.74 UJ	0.058 U
50-29-3	P,P'-DDT	4.2	1	ug/kg	0.17 U	0.17 U		0.17 U	0.74 UJ	0.17 U
1918-00-9	Dicamba	180	2	ug/kg	4.4 UJ	4.4 UJ		4.4 U	4.4 U	4.4 U
		9.079		ug/gOC	1.9047619	2.4858757		3.7288136	2.6993865	2.8571429
60-57-1	Dieldrin	1.9	1	ug/kg	0.8 UJ	0.14 U		1.7 UJ	0.74 UJ	0.14 U
72-20-8	Endrin	2.2	1	ug/kg	0.094 U	0.094 U		0.094 U	0.094 U	0.094 U
58-89-9	Gamma Bhc (Lindane)	2.4	1	ug/kg	0.18 UJ	0.097 UJ		0.77 UJ	0.08 U	0.08 U
1024-57-3	Heptachlor Epoxide	2.5	1	ug/kg	0.084 U	0.084 U		0.084 U	0.084 U	0.084 U
87-68-3	Hexachlorobutadiene	1200	2	ug/kg	0.21 U	0.21 U		0.21 U	0.21 U	0.21 U
		57.539		ug/gOC	0.0909091	0.1186441		0.1779661	0.1288344	0.1363636
72-43-5	Methoxychlor	59	2	ug/kg	2.3 UJ	0.34 UJ		1.4 NJ	1.1	0.19 U
		2.958		ug/gOC	0.995671	0.1920904		1.1864407	0.6748466	0.1233766
2385-85-5	Mirex	120	2	ug/kg	0.8 UJ	0.099 U		0.099 U	0.099 U	0.099 U
		5.931		ug/gOC	0.3463203	0.0559322		0.0838983	0.0607362	0.0642857
8001-35-2	Toxaphene	6	2	ug/kg	47 UJ	4.8 U		130 UJ	37 UJ	4.8 U
		0.289		ug/gOC	20.34632	2.7118644		110.16949	22.699387	3.1168831

TABLE 3a
HISTORICAL SEDIMENT PESTICIDE/HERBICIDE/PCB DATA
CLASS A STANDARDS COMPARISON

NYSDEC-Lower Genesee River Historical Sediment Data Pesticide/Herbicide Class A Standards Comparison		Class A Freshwater Sediment Guidance		Location ID: Sample ID: Lab Sample Id: Depth: Source: SDG: Matrix: Sampled: Validated:	GR-04 LA-102 K1108656-002 3 - 6 ft BAT SE 9/12/2011	GR-04 LA-103 E1100910-001 6 - 9.8 ft BAT SE 9/12/2011	GR-05 LA-005 E1100918-003 0 - 0.5 ft BAT SE 9/16/2011	GR-05 LA-181 K1108838-008 0 - 3 ft BAT SE 9/16/2011	GR-05 LA-182 K1108838-015 3 - 6 ft BAT SE 9/16/2011	GR-05 LA-183 E1100919-011 6 - 8 ft BAT SE 9/16/2011
	PCBs									
12672-29-6	PCB-1248 (Aroclor 1248)			ug/kg	51	2.1 U		44	2.1 U	2.1 U
11097-69-1	PCB-1254 (Aroclor 1254)			ug/kg	59	2.1 U		60	38	2.1 U
11096-82-5	PCB-1260 (Aroclor 1260)			ug/kg	28	2.1 U		43	19	2.1 U
11100-14-4	PCB-1268 (Aroclor 1268)			ug/kg	2.1 U	2.1 U		2.1 U	2.1 U	2.1 U
	Total PCBs	100	5	ug/Kg	138	0		147	57	0
	DIOXINS									
	Total TCDDs			ng/kg						
	Total TCDDs	0.0045	1	ug/Kg						
1746-01-6	2,3,7,8-Tetrachlorodibenzo-P-Dioxin			ng/kg		0.196 U	0.0389 U			0.0379 U
	2,3,7,8-Tetrachlorodibenzo-P-Dioxin	0.0045	1	ug/Kg		0.000196 U	0.0000389 U			0.0000379 U
	OTHER									
TOC	Total Organic Carbon			%	2.31	1.77	1.2	1.18	1.63	1.54
TOC	Total Organic Carbon			mg/kg	23100	17700	12000	11800	16300	15400

TABLE 3a
HISTORICAL SEDIMENT PESTICIDE/HERBICIDE/PCB DATA
CLASS A STANDARDS COMPARISON

NYSDEC-Lower Genesee River Historical Sediment Data Pesticide/Herbicide Class A Standards Comparison		Class A Freshwater Sediment Guidance		Location ID: Sample ID: Lab Sample Id: Depth: Source: SDG: Matrix: Sampled: Validated:	GR-06 LA-006 E1100918-004 0 - 0.5 ft BAT SE 9/15/2011	GR-06 LA-173 E1100919-009 0 - 1.5 ft BAT SE 9/15/2011	GR-07 LA-007 E1100918-005 0 - 0.5 ft BAT SE 9/15/2011	GR-07 LA-184 K1108837-015 0 - 3 ft BAT SE 9/15/2011	GR-07 LA-185 K1108837-016 3 - 6 ft BAT SE 9/15/2011	GR-07 LA-186 K1108837-017 6 - 9 ft BAT SE 9/15/2011
CAS NO.	COMPOUND	Values	Derivation	UNITS:						
	PESTICIDES									
959-98-8	Alpha Endosulfan	1	2	ug/kg		0.55 UJ		0.76 UJ	0.063 U	1.2 UJ
		0.041		ug/gOC		0.5623722		0.4578313	0.0417219	0.8275862
33213-65-9	Beta Endosulfan	1	2	ug/kg		0.14 U		0.14 U	0.14 U	0.14 U
		0.041		ug/gOC		0.1431493		0.0843373	0.0927152	0.0965517
57-74-9	Chlordane	3.2	1	ug/kg		11 UJ		2.6 UJ	3.2 UJ	11 UJ
2921-88-2	Chlorpyrifos	12	2	ug/kg		0.15 U		0.17 J	0.7 U	0.72 UJ
		0.594		ug/gOC		0.1533742		0.1024096	0.4635762	0.4965517
53-19-0	O,P'-DDD	4.9	1	ug/kg		2.3 UJ		0.68 J	0.7 U	7.3 NJ
72-54-8	P,P'-DDD	4.9	1	ug/kg		4.6 J		0.76 U	0.75 J	16 J
3424-82-6	O,P'-DDE	3.2	1	ug/kg		0.72 UJ		0.16 U	0.16 U	0.16 U
72-55-9	P,P'-DDE	3.2	1	ug/kg		4.1		1.2	1.3	7.7
789-02-6	O,P'-DDT	4.2	1	ug/kg		2.4 UJ		0.76 UJ	0.7 UJ	0.72 UJ
50-29-3	P,P'-DDT	4.2	1	ug/kg		0.72 UJ		1.3	0.7 UJ	0.8 UJ
1918-00-9	Dicamba	180	2	ug/kg		4.4 U		4.4 U	4.4 U	4.4 U
		9.079		ug/gOC		4.4989775		2.6506024	2.9139073	3.0344828
60-57-1	Dieldrin	1.9	1	ug/kg		3.7 UJ		0.51 UJ	0.62 UJ	0.72 UJ
72-20-8	Endrin	2.2	1	ug/kg		2.5 UJ		0.094 U	0.17 UJ	0.094 U
58-89-9	Gamma Bhc (Lindane)	2.4	1	ug/kg		0.72 UJ		0.78 UJ	0.08 U	0.72 UJ
1024-57-3	Heptachlor Epoxide	2.5	1	ug/kg		0.26 UJ		0.084 U	0.084 U	0.084 U
87-68-3	Hexachlorobutadiene	1200	2	ug/kg		0.21 U		0.76 UJ	0.21 U	0.21 U
		57.539		ug/gOC		0.2147239		0.4578313	0.1390728	0.1448276
72-43-5	Methoxychlor	59	2	ug/kg		2.7 NJ		0.76 U	0.25 J	2.2 UJ
		2.958		ug/gOC		2.7607362		0.4578313	0.1655629	1.5172414
2385-85-5	Mirex	120	2	ug/kg		0.099 U		0.76 UJ	0.099 U	0.72 UJ
		5.931		ug/gOC		0.101227		0.4578313	0.0655629	0.4965517
8001-35-2	Toxaphene	6	2	ug/kg		81 UJ		13 UJ	17 UJ	56 UJ
		0.289		ug/gOC		82.822086		7.8313253	11.258278	38.62069

TABLE 3a
HISTORICAL SEDIMENT PESTICIDE/HERBICIDE/PCB DATA
CLASS A STANDARDS COMPARISON

NYSDEC-Lower Genesee River Historical Sediment Data Pesticide/Herbicide Class A Standards Comparison		Class A Freshwater Sediment Guidance		Location ID: Sample ID: Lab Sample Id: Depth: Source: SDG: Matrix: Sampled: Validated:	GR-06 LA-006 E1100918-004 0 - 0.5 ft BAT SE 9/15/2011	GR-06 LA-173 E1100919-009 0 - 1.5 ft BAT SE 9/15/2011	GR-07 LA-007 E1100918-005 0 - 0.5 ft BAT SE 9/15/2011	GR-07 LA-184 K1108837-015 0 - 3 ft BAT SE 9/15/2011	GR-07 LA-185 K1108837-016 3 - 6 ft BAT SE 9/15/2011	GR-07 LA-186 K1108837-017 6 - 9 ft BAT SE 9/15/2011
	PCBs									
12672-29-6	PCB-1248 (Aroclor 1248)			ug/kg		160		8.2 UJ	9.6 UJ	120
11097-69-1	PCB-1254 (Aroclor 1254)			ug/kg		150		12	16	170
11096-82-5	PCB-1260 (Aroclor 1260)			ug/kg		100		6.8 J	11	90
11100-14-4	PCB-1268 (Aroclor 1268)			ug/kg		2.1 U		2.1 U	2.1 U	2.1 U
	Total PCBs	100	5	ug/Kg		410		18.8	27	380
	DIOXINS									
	Total TCDDs			ng/kg						
	Total TCDDs	0.0045	1	ug/Kg						
1746-01-6	2,3,7,8-Tetrachlorodibenzo-P-Dioxin			ng/kg	0.0817 U	0.152 J	0.137 J			
	2,3,7,8-Tetrachlorodibenzo-P-Dioxin	0.0045	1	ug/Kg	0.0000817 U	0.000152 J	0.000137 J			
	OTHER									
TOC	Total Organic Carbon			%	1.09	0.978	1.73	1.66	1.51	1.45
TOC	Total Organic Carbon			mg/kg	10900	9780	17300	16600	15100	14500

TABLE 3a
HISTORICAL SEDIMENT PESTICIDE/HERBICIDE/PCB DATA
CLASS A STANDARDS COMPARISON

NYSDEC-Lower Genesee River Historical Sediment Data Pesticide/Herbicide Class A Standards Comparison		Class A Freshwater Sediment Guidance		Location ID: Sample ID: Lab Sample Id: Depth: Source: SDG: Matrix: Sampled: Validated:	GR-07 LA-187 K1108837-018 9 - 12 ft BAT SE 9/15/2011	GR-07 LA-188 E1100919-012 12 - 14.4 ft BAT SE 9/15/2011	GR-08 LA-008 E1100918-006 0 - 0.5 ft BAT SE 9/15/2011	GR-08 LA-189 K1108838-009 0 - 3 ft BAT SE 9/15/2011	GR-08 LA-190 K1108838-010 3 - 6 ft BAT SE 9/15/2011	GR-08 LA-191 K1108837-020 6 - 9 ft BAT SE 9/15/2011
CAS NO.	COMPOUND	Values	Derivation	UNITS:						
	PESTICIDES									
959-98-8	Alpha Endosulfan	1	2	ug/kg	0.44 UJ	0.28 UJ		0.063 U	0.23 UJ	0.96 UJ
		0.041		ug/gOC	0.34375	0.169697		0.0636364	0.212963	0.6233766
33213-65-9	Beta Endosulfan	1	2	ug/kg	0.14 U	0.14 U		0.14 U	0.14 U	0.14 UJ
		0.041		ug/gOC	0.109375	0.0848485		0.1414141	0.1296296	0.0909091
57-74-9	Chlordane	3.2	1	ug/kg	17 UJ	11 UJ		1.9 U	6.9 UJ	9.8 UJ
2921-88-2	Chlorpyrifos	12	2	ug/kg	0.69 UJ	0.15 U		0.15 U	0.15 U	0.15 UJ
		0.594		ug/gOC	0.5390625	0.0909091		0.1515152	0.1388889	0.0974026
53-19-0	O,P'-DDD	4.9	1	ug/kg	6.8 UJ	2.1 J		0.21 J	2.2 UJ	2.9 NJ
72-54-8	P,P'-DDD	4.9	1	ug/kg	5 J	4.9		0.73 U	4.4 J	4.4 J
3424-82-6	O,P'-DDE	3.2	1	ug/kg	0.69 UJ	0.16 U		0.16 U	0.16 U	0.16 UJ
72-55-9	P,P'-DDE	3.2	1	ug/kg	3.4 J	2.4		0.73 UJ	4.4	3.6 J
789-02-6	O,P'-DDT	4.2	1	ug/kg	0.66 UJ	0.41 J		0.058 U	1.3 UJ	0.71 UJ
50-29-3	P,P'-DDT	4.2	1	ug/kg	0.96 UJ	2.1 UJ		0.18 J	0.17 U	0.17 UJ
1918-00-9	Dicamba	180	2	ug/kg	4.4 U	4.4 U		4.4 U	4.4 U	6 UJ
		9.079		ug/gOC	3.4375	2.6666667		4.4444444	4.0740741	3.8961039
60-57-1	Dieldrin	1.9	1	ug/kg	0.14 U	0.14 U		0.14 U	5.2 UJ	3.3 UJ
72-20-8	Endrin	2.2	1	ug/kg	0.094 U	0.094 U		0.094 U	0.094 U	0.96 UJ
58-89-9	Gamma Bhc (Lindane)	2.4	1	ug/kg	0.69 UJ	0.68 UJ		0.73 UJ	0.96 UJ	0.96 UJ
1024-57-3	Heptachlor Epoxide	2.5	1	ug/kg	0.084 U	0.084 U		0.084 U	0.32 UJ	0.084 UJ
87-68-3	Hexachlorobutadiene	1200	2	ug/kg	0.21 U	0.21 U		0.21 U	0.21 U	0.21 UJ
		57.539		ug/gOC	0.1640625	0.1272727		0.2121212	0.1944444	0.1363636
72-43-5	Methoxychlor	59	2	ug/kg	2.3 NJ	2.7		0.19 U	1.9 UJ	3.4 J
		2.958		ug/gOC	1.796875	1.6363636		0.1919192	1.7592593	2.2077922
2385-85-5	Mirex	120	2	ug/kg	0.69 UJ	0.68 UJ		0.099 U	0.099 U	0.98 UJ
		5.931		ug/gOC	0.5390625	0.4121212		0.1	0.0916667	0.6363636
8001-35-2	Toxaphene	6	2	ug/kg	93 UJ	34 UJ		7.3 UJ	65 UJ	55 UJ
		0.289		ug/gOC	72.65625	20.606061		7.3737374	60.185185	35.714286

TABLE 3a
HISTORICAL SEDIMENT PESTICIDE/HERBICIDE/PCB DATA
CLASS A STANDARDS COMPARISON

NYSDEC-Lower Genesee River Historical Sediment Data Pesticide/Herbicide Class A Standards Comparison		Class A Freshwater Sediment Guidance		Location ID: Sample ID: Lab Sample Id: Depth: Source: SDG: Matrix: Sampled: Validated:	GR-07 LA-187 K1108837-018 9 - 12 ft BAT SE 9/15/2011	GR-07 LA-188 E1100919-012 12 - 14.4 ft BAT SE 9/15/2011	GR-08 LA-008 E1100918-006 0 - 0.5 ft BAT SE 9/15/2011	GR-08 LA-189 K1108838-009 0 - 3 ft BAT SE 9/15/2011	GR-08 LA-190 K1108838-010 3 - 6 ft BAT SE 9/15/2011	GR-08 LA-191 K1108837-020 6 - 9 ft BAT SE 9/15/2011
	PCBs									
12672-29-6	PCB-1248 (Aroclor 1248)			ug/kg	96 UJ	22 UJ		2.1 U	170	2.1 U
11097-69-1	PCB-1254 (Aroclor 1254)			ug/kg	95 J	53		3.1 UJ	160	82 J
11096-82-5	PCB-1260 (Aroclor 1260)			ug/kg	97	92		2.1 U	92	100
11100-14-4	PCB-1268 (Aroclor 1268)			ug/kg	2.1 U	2.1 U		2.1 U	2.1 U	40
	Total PCBs	100	5	ug/Kg	192	145		0	422	222
	DIOXINS									
	Total TCDDs			ng/kg						
	Total TCDDs	0.0045	1	ug/Kg						
1746-01-6	2,3,7,8-Tetrachlorodibenzo-P-Dioxin			ng/kg		0.268 J	0.0286 U			
	2,3,7,8-Tetrachlorodibenzo-P-Dioxin	0.0045	1	ug/Kg		0.000268 J	0.0000286 U			
	OTHER									
TOC	Total Organic Carbon			%	1.28	1.65	0.958	0.99	1.08	1.54
TOC	Total Organic Carbon			mg/kg	12800	16500	9580	9900	10800	15400

TABLE 3a
HISTORICAL SEDIMENT PESTICIDE/HERBICIDE/PCB DATA
CLASS A STANDARDS COMPARISON

NYSDEC-Lower Genesee River Historical Sediment Data Pesticide/Herbicide Class A Standards Comparison		Class A Freshwater Sediment Guidance		Location ID: Sample ID: Lab Sample Id: Depth: Source: SDG: Matrix: Sampled: Validated:	GR-08 LA-192 K1108838-011 9 - 12 ft BAT SE 9/15/2011	GR-08 LA-193 E1100919-013 12 - 13.8 ft BAT SE 9/15/2011	GR-09 LA-009 E1100918-007 0 - 0.5 ft BAT SE 9/15/2011	GR-09 LA-194 K1108838-002 0 - 3 ft BAT SE 9/15/2011	GR-09 LA-195 K1108838-003 3 - 6 ft BAT SE 9/15/2011	GR-09 LA-196 K1108838-004 6 - 9 ft BAT SE 9/15/2011
CAS NO.	COMPOUND	Values	Derivation	UNITS:						
	PESTICIDES									
959-98-8	Alpha Endosulfan	1	2	ug/kg	0.063 U	0.063 U		0.063 U	0.72 UJ	0.39 UJ
		0.041		ug/gOC	0.0623762	0.1044776		0.0446809	0.6101695	0.2746479
33213-65-9	Beta Endosulfan	1	2	ug/kg	0.14 U	0.14 U		0.14 U	3.5 UJ	0.14 U
		0.041		ug/gOC	0.1386139	0.2321725		0.0992908	2.9661017	0.0985915
57-74-9	Chlordane	3.2	1	ug/kg	1.9 U	2.3 UJ		1.9 U	7.2 UJ	1.9 U
2921-88-2	Chlorpyrifos	12	2	ug/kg	0.15 U	0.15 U		0.26 J	0.15 U	0.15 U
		0.594		ug/gOC	0.1485149	0.2487562		0.1843972	0.1271186	0.1056338
53-19-0	O,P'-DDD	4.9	1	ug/kg	0.51 J	0.13 U		0.74 U	5.7 NJ	1.9 UJ
72-54-8	P,P'-DDD	4.9	1	ug/kg	0.69 U	0.11 U		0.44 J	9.7 J	3.4 J
3424-82-6	O,P'-DDE	3.2	1	ug/kg	0.16 U	0.16 U		0.16 U	0.74 UJ	0.7 UJ
72-55-9	P,P'-DDE	3.2	1	ug/kg	0.23 J	0.11 U		1.2 UJ	6.9	3.2
789-02-6	O,P'-DDT	4.2	1	ug/kg	0.058 U	0.058 U		0.058 U	0.72 UJ	1.7 UJ
50-29-3	P,P'-DDT	4.2	1	ug/kg	1.1	0.17 U		0.17 U	4.4 NJ	0.7 UJ
1918-00-9	Dicamba	180	2	ug/kg	4.4 U	40 UJ		4.4 U	4.4 U	5.3 UJ
		9.079		ug/gOC	4.3564356	66.334992		3.1205674	3.7288136	3.7323944
60-57-1	Dieldrin	1.9	1	ug/kg	0.14 U	0.14 U		0.14 U	2.5 UJ	2.7 UJ
72-20-8	Endrin	2.2	1	ug/kg	0.13 UJ	0.094 U		0.094 U	1.1 UJ	1.9 UJ
58-89-9	Gamma Bhc (Lindane)	2.4	1	ug/kg	0.69 UJ	0.08 U		0.74 UJ	0.72 UJ	0.7 UJ
1024-57-3	Heptachlor Epoxide	2.5	1	ug/kg	0.084 U	0.084 U		0.084 U	0.32 UJ	0.18 UJ
87-68-3	Hexachlorobutadiene	1200	2	ug/kg	0.21 U	0.21 U		0.21 U	0.21 U	0.21 U
		57.539		ug/gOC	0.2079208	0.3482587		0.1489362	0.1779661	0.1478873
72-43-5	Methoxychlor	59	2	ug/kg	0.69 U	0.19 U		0.19 U	2.3 UJ	2.1 NJ
		2.958		ug/gOC	0.6831683	0.3150912		0.1347518	1.9491525	1.4788732
2385-85-5	Mirex	120	2	ug/kg	0.69 UJ	0.099 U		0.099 U	0.099 U	0.099 U
		5.931		ug/gOC	0.6831683	0.1641791		0.0702128	0.0838983	0.0697183
8001-35-2	Toxaphene	6	2	ug/kg	48 UJ	4.8 U		14 UJ	140 UJ	59 UJ
		0.289		ug/gOC	47.524752	7.960199		9.929078	118.64407	41.549296

TABLE 3a
HISTORICAL SEDIMENT PESTICIDE/HERBICIDE/PCB DATA
CLASS A STANDARDS COMPARISON

NYSDEC-Lower Genesee River Historical Sediment Data Pesticide/Herbicide Class A Standards Comparison		Class A Freshwater Sediment Guidance		Location ID: Sample ID: Lab Sample Id: Depth: Source: SDG: Matrix: Sampled: Validated:	GR-08 LA-192 K1108838-011 9 - 12 ft BAT SE 9/15/2011	GR-08 LA-193 E1100919-013 12 - 13.8 ft BAT SE 9/15/2011	GR-09 LA-009 E1100918-007 0 - 0.5 ft BAT SE 9/15/2011	GR-09 LA-194 K1108838-002 0 - 3 ft BAT SE 9/15/2011	GR-09 LA-195 K1108838-003 3 - 6 ft BAT SE 9/15/2011	GR-09 LA-196 K1108838-004 6 - 9 ft BAT SE 9/15/2011
	PCBs									
12672-29-6	PCB-1248 (Aroclor 1248)			ug/kg	5.9 UJ	2.1 U		12 UJ	160	100
11097-69-1	PCB-1254 (Aroclor 1254)			ug/kg	9.4 UJ	2.1 U		17 J	160	89
11096-82-5	PCB-1260 (Aroclor 1260)			ug/kg	17	2.1 U		12 J	100	75
11100-14-4	PCB-1268 (Aroclor 1268)			ug/kg	2.1 U	2.1 U		2.1 U	2.1 U	2.1 U
	Total PCBs	100	5	ug/Kg	17	0		29	420	264
	DIOXINS									
	Total TCDDs			ng/kg						
	Total TCDDs	0.0045	1	ug/Kg						
1746-01-6	2,3,7,8-Tetrachlorodibenzo-P-Dioxin			ng/kg		0.0629 U	0.0593 U			
	2,3,7,8-Tetrachlorodibenzo-P-Dioxin	0.0045	1	ug/Kg		0.0000629 U	0.0000593 U			
	OTHER									
TOC	Total Organic Carbon			%	1.01	0.603	0.902	1.41	1.18	1.42
TOC	Total Organic Carbon			mg/kg	10100	6030	9020	14100	11800	14200

TABLE 3a
HISTORICAL SEDIMENT PESTICIDE/HERBICIDE/PCB DATA
CLASS A STANDARDS COMPARISON

NYSDEC-Lower Genesee River Historical Sediment Data Pesticide/Herbicide Class A Standards Comparison		Class A Freshwater Sediment Guidance		Location ID: Sample ID: Lab Sample Id: Depth: Source: SDG: Matrix: Sampled: Validated:	GR-09 LA-197 K1108838-012 9 - 12 ft BAT SE 9/15/2011	GR-09 LA-198 E1100919-014 12 - 13.8 ft BAT SE 9/15/2011	GR-10 LA-010 E1100918-008 0 - 0.5 ft BAT SE 9/15/2011	GR-10 LA-165 K1108843-020 0 - 3 ft BAT SE 9/15/2011	GR-10 LA-166 K1108844-001 3 - 6 ft BAT SE 9/15/2011	GR-10 LA-167 E1100919-007 6 - 6.9 ft BAT SE 9/15/2011
CAS NO.	COMPOUND	Values	Derivation	UNITS:						
	PESTICIDES									
959-98-8	Alpha Endosulfan	1	2	ug/kg	0.17 UJ	0.063 U		0.063 U	0.26 UJ	0.44 UJ
		0.041		ug/gOC	0.0894737	0.0293023		0.0705487	0.2321429	0.3697479
33213-65-9	Beta Endosulfan	1	2	ug/kg	0.14 U	0.14 U		0.14 U	0.14 U	0.14 U
		0.041		ug/gOC	0.0736842	0.0651163		0.1567749	0.125	0.1176471
57-74-9	Chlordane	3.2	1	ug/kg	6.7 UJ	1.9 U		1.9 U	5.2 UJ	6.5 UJ
2921-88-2	Chlorpyrifos	12	2	ug/kg	0.15 U	0.15 U		0.18 J	0.15 U	0.15 U
		0.594		ug/gOC	0.0789474	0.0697674		0.2015677	0.1339286	0.1260504
53-19-0	O,P'-DDD	4.9	1	ug/kg	1.7 J	0.42 J		0.73 U	1.5 UJ	1.9 NJ
72-54-8	P,P'-DDD	4.9	1	ug/kg	1.8 J	0.21 UJ		0.48 J	2.7	3.6 J
3424-82-6	O,P'-DDE	3.2	1	ug/kg	0.67 UJ	0.72 U		0.16 U	0.7 UJ	0.16 U
72-55-9	P,P'-DDE	3.2	1	ug/kg	1.3	0.11 U		1.3	2.8	2.7
789-02-6	O,P'-DDT	4.2	1	ug/kg	0.69 UJ	0.058 U		0.058 U	0.11 UJ	0.65 UJ
50-29-3	P,P'-DDT	4.2	1	ug/kg	0.67 UJ	0.22 UJ		0.73 UJ	2.9 NJ	0.17 U
1918-00-9	Dicamba	180	2	ug/kg	4.4 U	4.4 U		4.4 U	4.4 U	4.4 U
		9.079		ug/gOC	2.3157895	2.0465116		4.9272116	3.9285714	3.697479
60-57-1	Dieldrin	1.9	1	ug/kg	1.8 UJ	0.14 U		0.69 UJ	0.14 U	0.65 UJ
72-20-8	Endrin	2.2	1	ug/kg	0.094 U	0.094 U		0.094 U	0.094 U	0.094 U
58-89-9	Gamma Bhc (Lindane)	2.4	1	ug/kg	0.67 UJ	0.08 U		0.73 UJ	0.7 UJ	0.65 UJ
1024-57-3	Heptachlor Epoxide	2.5	1	ug/kg	0.084 U	0.084 U		0.084 U	0.084 U	0.084 U
87-68-3	Hexachlorobutadiene	1200	2	ug/kg	0.21 U	0.21 U		0.21 U	0.21 U	0.21 U
		57.539		ug/gOC	0.1105263	0.0976744		0.2351624	0.1875	0.1764706
72-43-5	Methoxychlor	59	2	ug/kg	3.1 J	0.62 J		0.19 U	1.4 J	1.8 J
		2.958		ug/gOC	1.6315789	0.2883721		0.212766	1.25	1.512605
2385-85-5	Mirex	120	2	ug/kg	0.67 UJ	0.15 UJ		0.099 U	0.7 UJ	0.099 U
		5.931		ug/gOC	0.3526316	0.0697674		0.1108623	0.625	0.0831933
8001-35-2	Toxaphene	6	2	ug/kg	34 UJ	86 UJ		13 UJ	35 UJ	33 UJ
		0.289		ug/gOC	17.894737	40		14.557671	31.25	27.731092

TABLE 3a
HISTORICAL SEDIMENT PESTICIDE/HERBICIDE/PCB DATA
CLASS A STANDARDS COMPARISON

NYSDEC-Lower Genesee River Historical Sediment Data Pesticide/Herbicide Class A Standards Comparison		Class A Freshwater Sediment Guidance		Location ID: Sample ID: Lab Sample Id: Depth: Source: SDG: Matrix: Sampled: Validated:	GR-09 LA-197 K1108838-012 9 - 12 ft BAT SE 9/15/2011	GR-09 LA-198 E1100919-014 12 - 13.8 ft BAT SE 9/15/2011	GR-10 LA-010 E1100918-008 0 - 0.5 ft BAT SE 9/15/2011	GR-10 LA-165 K1108843-020 0 - 3 ft BAT SE 9/15/2011	GR-10 LA-166 K1108844-001 3 - 6 ft BAT SE 9/15/2011	GR-10 LA-167 E1100919-007 6 - 6.9 ft BAT SE 9/15/2011
	PCBs									
12672-29-6	PCB-1248 (Aroclor 1248)			ug/kg	18 UJ	3.4 UJ		11 UJ	49	45
11097-69-1	PCB-1254 (Aroclor 1254)			ug/kg	38 UJ	4.1 UJ		18	71	68 J
11096-82-5	PCB-1260 (Aroclor 1260)			ug/kg	67	11		12	57	76
11100-14-4	PCB-1268 (Aroclor 1268)			ug/kg	2.1 U	2.1 U		2.1 U	2.1 U	2.1 U
	Total PCBs	100	5	ug/Kg	67	11		30	177	189
	DIOXINS									
	Total TCDDs			ng/kg						
	Total TCDDs	0.0045	1	ug/Kg						
1746-01-6	2,3,7,8-Tetrachlorodibenzo-P-Dioxin			ng/kg		0.0556 U	0.0362 U			0.482 J
	2,3,7,8-Tetrachlorodibenzo-P-Dioxin	0.0045	1	ug/Kg		0.0000556 U	0.0000362 U			0.000482 J
	OTHER									
TOC	Total Organic Carbon			%	1.9	2.15	0.909	0.893	1.12	1.19
TOC	Total Organic Carbon			mg/kg	19000	21500	9090	8930	11200	11900

TABLE 3a
HISTORICAL SEDIMENT PESTICIDE/HERBICIDE/PCB DATA
CLASS A STANDARDS COMPARISON

NYSDEC-Lower Genesee River Historical Sediment Data Pesticide/Herbicide Class A Standards Comparison		Class A Freshwater Sediment Guidance		Location ID: Sample ID: Lab Sample Id: Depth: Source: SDG: Matrix: Sampled: Validated:	GR-11 LA-011 E1100918-009 0 - 0.5 ft BAT SE 9/15/2011	GR-11 LA-152 E1100919-002 0 - 0.9 ft BAT SE 9/15/2011	GR-12 LA-012 E1100918-010 0 - 0.5 ft BAT SE 9/15/2011	GR-12 LA-199 K1108838-013 0 - 3 ft BAT SE 9/15/2011	GR-12 LA-200 K1108838-014 3 - 6 ft BAT SE 9/15/2011	GR-12 LA-201 K1108843-011 6 - 9 ft BAT SE 9/15/2011
CAS NO.	COMPOUND	Values	Derivation	UNITS:						
	PESTICIDES									
959-98-8	Alpha Endosulfan	1	2	ug/kg		0.063 U		0.063 U	0.7 UJ	0.75 UJ
		0.041		ug/gOC		0.0748219		0.0588785	0.6930693	0.5555556
33213-65-9	Beta Endosulfan	1	2	ug/kg		0.14 U		0.14 U	0.14 U	2.5 UJ
		0.041		ug/gOC		0.1662708		0.1308411	0.1386139	1.8518519
57-74-9	Chlordane	3.2	1	ug/kg		1.9 U		1.9 U	7 UJ	7.1 UJ
2921-88-2	Chlorpyrifos	12	2	ug/kg		0.23 J		0.15 U	0.15 U	0.15 U
		0.594		ug/gOC		0.2731591		0.1401869	0.1485149	0.1111111
53-19-0	O,P'-DDD	4.9	1	ug/kg		0.82 NJ		0.51 J	2.6 UJ	3.1 NJ
72-54-8	P,P'-DDD	4.9	1	ug/kg		1.2		0.37 J	5.3 J	11
3424-82-6	O,P'-DDE	3.2	1	ug/kg		0.16 U		0.16 U	0.7 UJ	0.71 UJ
72-55-9	P,P'-DDE	3.2	1	ug/kg		1.7		1.1	4.9	4.5
789-02-6	O,P'-DDT	4.2	1	ug/kg		0.72 UJ		0.058 U	0.7 UJ	0.4 UJ
50-29-3	P,P'-DDT	4.2	1	ug/kg		0.72 UJ		0.18 UJ	0.17 U	5.3 J
1918-00-9	Dicamba	180	2	ug/kg		4.4 U		4.4 U	4.4 U	4.4 U
		9.079		ug/gOC		5.2256532		4.1121495	4.3564356	3.2592593
60-57-1	Dieldrin	1.9	1	ug/kg		1.3 UJ		0.39 UJ	1.3 UJ	0.71 UJ
72-20-8	Endrin	2.2	1	ug/kg		0.094 U		0.094 U	0.7 UJ	0.094 U
58-89-9	Gamma Bhc (Lindane)	2.4	1	ug/kg		0.13 U		0.73 UJ	0.7 UJ	0.71 UJ
1024-57-3	Heptachlor Epoxide	2.5	1	ug/kg		0.084 U		0.084 U	0.18 UJ	0.11 UJ
87-68-3	Hexachlorobutadiene	1200	2	ug/kg		0.21 U		0.21 U	0.21 U	0.21 U
		57.539		ug/gOC		0.2494062		0.1962617	0.2079208	0.1555556
72-43-5	Methoxychlor	59	2	ug/kg		0.57 J		0.19 U	1.6 UJ	1.5 UJ
		2.958		ug/gOC		0.6769596		0.1775701	1.5841584	1.1111111
2385-85-5	Mirex	120	2	ug/kg		0.099 U		0.099 U	0.7 UJ	0.71 UJ
		5.931		ug/gOC		0.1175772		0.0925234	0.6930693	0.5259259
8001-35-2	Toxaphene	6	2	ug/kg		24 UJ		16 UJ	64 UJ	36 UJ
		0.289		ug/gOC		28.503563		14.953271	63.366337	26.666667

TABLE 3a
HISTORICAL SEDIMENT PESTICIDE/HERBICIDE/PCB DATA
CLASS A STANDARDS COMPARISON

NYSDEC-Lower Genesee River Historical Sediment Data Pesticide/Herbicide Class A Standards Comparison		Class A Freshwater Sediment Guidance		Location ID: Sample ID: Lab Sample Id: Depth: Source: SDG: Matrix: Sampled: Validated:	GR-11 LA-011 E1100918-009 0 - 0.5 ft BAT SE 9/15/2011	GR-11 LA-152 E1100919-002 0 - 0.9 ft BAT SE 9/15/2011	GR-12 LA-012 E1100918-010 0 - 0.5 ft BAT SE 9/15/2011	GR-12 LA-199 K1108838-013 0 - 3 ft BAT SE 9/15/2011	GR-12 LA-200 K1108838-014 3 - 6 ft BAT SE 9/15/2011	GR-12 LA-201 K1108843-011 6 - 9 ft BAT SE 9/15/2011
	PCBs									
12672-29-6	PCB-1248 (Aroclor 1248)			ug/kg		20 UJ		5.8 UJ	100	61
11097-69-1	PCB-1254 (Aroclor 1254)			ug/kg		28 J		8.6 UJ	120	93
11096-82-5	PCB-1260 (Aroclor 1260)			ug/kg		21		5.7 J	72	58
11100-14-4	PCB-1268 (Aroclor 1268)			ug/kg		2.1 U		2.1 U	2.1 U	2.1 U
	Total PCBs	100	5	ug/Kg		49		5.7	292	212
	DIOXINS									
	Total TCDDs			ng/kg						
	Total TCDDs	0.0045	1	ug/Kg						
1746-01-6	2,3,7,8-Tetrachlorodibenzo-P-Dioxin			ng/kg	0.092 U	0.298 J	1.5 J			
	2,3,7,8-Tetrachlorodibenzo-P-Dioxin	0.0045	1	ug/Kg	0.000092 U	0.000298 J	0.0015 J			
	OTHER									
TOC	Total Organic Carbon			%	1.08	0.842	1.16	1.07	1.01	1.35
TOC	Total Organic Carbon			mg/kg	10800	8420	11600	10700	10100	13500

TABLE 3a
HISTORICAL SEDIMENT PESTICIDE/HERBICIDE/PCB DATA
CLASS A STANDARDS COMPARISON

NYSDEC-Lower Genesee River Historical Sediment Data Pesticide/Herbicide Class A Standards Comparison		Class A Freshwater Sediment Guidance		Location ID: Sample ID: Lab Sample Id: Depth: Source: SDG: Matrix: Sampled: Validated:	GR-12 LA-202 K1108843-012 9 - 12 ft BAT SE 9/15/2011	GR-12 LA-203 K1108843-013 12 - 15 ft BAT SE 9/15/2011	GR-12 LA-204 E1100919-015 15 - 16.4 ft BAT SE 9/15/2011	GR-13 LA-013 E1100911-005 0 - 0.5 ft BAT SE 9/14/2011	GR-13 LA-013D E1100911-006 0 - 0.5 ft BAT SE 9/14/2011	GR-13 LA-126 K1108643-011 0 - 3 ft BAT SE 9/14/2011
CAS NO.	COMPOUND	Values	Derivation	UNITS:						
	PESTICIDES									
959-98-8	Alpha Endosulfan	1	2	ug/kg	0.063 U	0.063 U	0.063 U			0.063 U
		0.041		ug/gOC	0.0857143	0.1046512	0.0950226			0.0254032
33213-65-9	Beta Endosulfan	1	2	ug/kg	0.14 U	0.14 U	0.14 U			0.14 U
		0.041		ug/gOC	0.1904762	0.2325581	0.2111614			0.0564516
57-74-9	Chlordane	3.2	1	ug/kg	1.9 U	2.1 UJ	1.9 U			19
2921-88-2	Chlorpyrifos	12	2	ug/kg	0.15 U	0.15 U	0.15 U			0.89 J
		0.594		ug/gOC	0.2040816	0.2491694	0.2262443			0.358871
53-19-0	O,P'-DDD	4.9	1	ug/kg	0.13 U	0.13 U	0.13 U			1.4
72-54-8	P,P'-DDD	4.9	1	ug/kg	0.11 U	0.11 U	0.11 U			2.3
3424-82-6	O,P'-DDE	3.2	1	ug/kg	0.16 U	0.16 U	0.16 U			2.1 UJ
72-55-9	P,P'-DDE	3.2	1	ug/kg	0.11 U	0.11 U	0.11 U			4.9
789-02-6	O,P'-DDT	4.2	1	ug/kg	0.058 U	0.058 U	0.058 U			0.9 UJ
50-29-3	P,P'-DDT	4.2	1	ug/kg	0.17 U	0.17 U	0.17 U			1.5
1918-00-9	Dicamba	180	2	ug/kg	4.4 U	4.4 U	4.4 U			4.8 U
		9.079		ug/gOC	5.9863946	7.3089701	6.6365008			1.9354839
60-57-1	Dieldrin	1.9	1	ug/kg	0.14 U	0.14 U	0.14 U			0.9 UJ
72-20-8	Endrin	2.2	1	ug/kg	0.094 U	0.094 U	0.094 U			0.094 U
58-89-9	Gamma Bhc (Lindane)	2.4	1	ug/kg	0.08 U	0.08 U	0.08 U			2.9
1024-57-3	Heptachlor Epoxide	2.5	1	ug/kg	0.084 U	0.084 U	0.084 U			0.084 U
87-68-3	Hexachlorobutadiene	1200	2	ug/kg	0.21 U	0.21 U	0.21 U			0.43 U
		57.539		ug/gOC	0.2857143	0.3488372	0.3167421			0.1733871
72-43-5	Methoxychlor	59	2	ug/kg	0.19 U	0.19 U	0.19 U			0.94 UJ
		2.958		ug/gOC	0.2585034	0.3156146	0.2865762			0.3790323
2385-85-5	Mirex	120	2	ug/kg	0.099 U	0.099 U	0.099 U			0.099 U
		5.931		ug/gOC	0.1346939	0.1644518	0.1493213			0.0399194
8001-35-2	Toxaphene	6	2	ug/kg	7.6 UJ	6.5 UJ	5.4 UJ			53 UJ
		0.289		ug/gOC	10.340136	10.797342	8.1447964			21.370968

TABLE 3a
HISTORICAL SEDIMENT PESTICIDE/HERBICIDE/PCB DATA
CLASS A STANDARDS COMPARISON

NYSDEC-Lower Genesee River Historical Sediment Data Pesticide/Herbicide Class A Standards Comparison		Class A Freshwater Sediment Guidance		Location ID: Sample ID: Lab Sample Id: Depth: Source: SDG: Matrix: Sampled: Validated:	GR-12 LA-202 K1108843-012 9 - 12 ft BAT SE 9/15/2011	GR-12 LA-203 K1108843-013 12 - 15 ft BAT SE 9/15/2011	GR-12 LA-204 E1100919-015 15 - 16.4 ft BAT SE 9/15/2011	GR-13 LA-013 E1100911-005 0 - 0.5 ft BAT SE 9/14/2011	GR-13 LA-013D E1100911-006 0 - 0.5 ft BAT SE 9/14/2011	GR-13 LA-126 K1108643-011 0 - 3 ft BAT SE 9/14/2011
	PCBs									
12672-29-6	PCB-1248 (Aroclor 1248)			ug/kg	2.1 U	2.1 U	2.1 U			18 UJ
11097-69-1	PCB-1254 (Aroclor 1254)			ug/kg	2.1 U	2.1 U	2.1 U			23
11096-82-5	PCB-1260 (Aroclor 1260)			ug/kg	2.1 U	2.1 U	2.1 U			15
11100-14-4	PCB-1268 (Aroclor 1268)			ug/kg	2.1 U	2.1 U	2.1 U			2.1 U
	Total PCBs	100	5	ug/Kg	0	0	0			38
	DIOXINS									
	Total TCDDs			ng/kg						
	Total TCDDs	0.0045	1	ug/Kg						
1746-01-6	2,3,7,8-Tetrachlorodibenzo-P-Dioxin			ng/kg			0.0416 U	0.623 J	0.463 J	
	2,3,7,8-Tetrachlorodibenzo-P-Dioxin	0.0045	1	ug/Kg			0.0000416 U	0.000623 J	0.000463 J	
	OTHER									
TOC	Total Organic Carbon			%	0.735	0.602	0.663	2.76	2.95	2.48
TOC	Total Organic Carbon			mg/kg	7350	6020	6630	27600	29500	24800

TABLE 3a
HISTORICAL SEDIMENT PESTICIDE/HERBICIDE/PCB DATA
CLASS A STANDARDS COMPARISON

NYSDEC-Lower Genesee River Historical Sediment Data Pesticide/Herbicide Class A Standards Comparison		Class A Freshwater Sediment Guidance		Location ID: Sample ID: Lab Sample Id: Depth: Source: SDG: Matrix: Sampled: Validated:	GR-13 LA-127 K1108643-012 3 - 6 ft BAT SE 9/14/2011	GR-13 LA-128 K1108643-013 6 - 9 ft BAT SE 9/14/2011	GR-13 LA-129 E1100910-009 9 - 11.9 ft BAT SE 9/14/2011	GR-13 LA-130 K1108737-001 0 - 3 ft BAT SE 9/14/2011	GR-13 LA-131 K1108737-002 3 - 6 ft BAT SE 9/14/2011	GR-13 LA-132 K1108737-003 6 - 9 ft BAT SE 9/14/2011
CAS NO.	COMPOUND	Values	Derivation	UNITS:						
	PESTICIDES									
959-98-8	Alpha Endosulfan	1	2	ug/kg	0.26 UJ	0.11 U	0.067 U	0.063 U	0.21 UJ	0.14 UJ
		0.041		ug/gOC	0.0820189	0.0087302	0.0150562	0.0250996	0.0319149	0.0079545
33213-65-9	Beta Endosulfan	1	2	ug/kg	0.14 U	0.23 U	0.15 U	0.14 U	2.1 UJ	0.3 UJ
		0.041		ug/gOC	0.044164	0.018254	0.0337079	0.0557769	0.3191489	0.0170455
57-74-9	Chlordane	3.2	1	ug/kg	31 J	3.1 U	2.1 U	25 J	28 J	4.1 UJ
2921-88-2	Chlorpyrifos	12	2	ug/kg	0.86 J	0.24 U	0.16 U	0.95 J	0.77 J	0.32 UJ
		0.594		ug/gOC	0.2712934	0.0190476	0.0359551	0.3784861	0.1170213	0.0181818
53-19-0	O,P'-DDD	4.9	1	ug/kg	2.2 NJ	0.21 U	0.14 U	2	2.2 NJ	2.2 UJ
72-54-8	P,P'-DDD	4.9	1	ug/kg	5.8	0.18 U	0.12 U	2.8	5.9	2 J
3424-82-6	O,P'-DDE	3.2	1	ug/kg	3.7 UJ	0.26 U	0.17 U	3 UJ	2.7 UJ	0.34 UJ
72-55-9	P,P'-DDE	3.2	1	ug/kg	6.8	0.18 U	0.12 U	6.4	6.7	0.57 J
789-02-6	O,P'-DDT	4.2	1	ug/kg	0.9 UJ	0.093 U	0.062 U	0.89 UJ	0.95 UJ	0.13 UJ
50-29-3	P,P'-DDT	4.2	1	ug/kg	0.9 UJ	0.28 U	0.18 U	2 J	1.9 UJ	0.37 UJ
1918-00-9	Dicamba	180	2	ug/kg	4.8 U	8.4 U	5.6 U	4.7 U	5 U	12 UJ
		9.079		ug/gOC	1.5141956	0.6666667	1.258427	1.87251	0.7598784	0.6818182
60-57-1	Dieldrin	1.9	1	ug/kg	0.9 UJ	0.23 U	0.15 U	1.2 UJ	1.3 UJ	0.36 UJ
72-20-8	Endrin	2.2	1	ug/kg	0.094 U	0.15 U	0.1 U	0.094 U	0.094 U	0.2 UJ
58-89-9	Gamma Bhc (Lindane)	2.4	1	ug/kg	1.1 UJ	0.13 U	0.085 U	3.3 NJ	0.95 UJ	0.35 UJ
1024-57-3	Heptachlor Epoxide	2.5	1	ug/kg	0.084 U	0.14 U	0.089 U	0.084 U	0.084 U	0.18 UJ
87-68-3	Hexachlorobutadiene	1200	2	ug/kg	0.54 UJ	0.34 U	0.23 U	0.89 UJ	0.45 J	0.45 UJ
		57.539		ug/gOC	0.170347	0.0269841	0.0516854	0.3545817	0.0683891	0.0255682
72-43-5	Methoxychlor	59	2	ug/kg	0.9 UJ	0.48 UJ	0.27 UJ	0.19 U	0.78 UJ	0.41 UJ
		2.958		ug/gOC	0.2839117	0.0380952	0.0606742	0.0756972	0.118541	0.0232955
2385-85-5	Mirex	120	2	ug/kg	0.099 U	0.16 U	0.11 U	0.099 U	0.95 UJ	0.22 UJ
		5.931		ug/gOC	0.0312303	0.0126984	0.0247191	0.0394422	0.1443769	0.0125
8001-35-2	Toxaphene	6	2	ug/kg	65 UJ	21 UJ	8.7 UJ	65 UJ	79 UJ	15 UJ
		0.289		ug/gOC	20.504732	1.6666667	1.9550562	25.896414	12.006079	0.8522727

TABLE 3a
HISTORICAL SEDIMENT PESTICIDE/HERBICIDE/PCB DATA
CLASS A STANDARDS COMPARISON

NYSDEC-Lower Genesee River Historical Sediment Data Pesticide/Herbicide Class A Standards Comparison		Class A Freshwater Sediment Guidance		Location ID: Sample ID: Lab Sample Id: Depth: Source: SDG: Matrix: Sampled: Validated:	GR-13 LA-127 K1108643-012 3 - 6 ft BAT SE 9/14/2011	GR-13 LA-128 K1108643-013 6 - 9 ft BAT SE 9/14/2011	GR-13 LA-129 E1100910-009 9 - 11.9 ft BAT SE 9/14/2011	GR-13 LA-130 K1108737-001 0 - 3 ft BAT SE 9/14/2011	GR-13 LA-131 K1108737-002 3 - 6 ft BAT SE 9/14/2011	GR-13 LA-132 K1108737-003 6 - 9 ft BAT SE 9/14/2011
	PCBs									
12672-29-6	PCB-1248 (Aroclor 1248)			ug/kg	54 UJ	3.4 U	2.3 U	22 UJ	61 UJ	4.5 UJ
11097-69-1	PCB-1254 (Aroclor 1254)			ug/kg	67	3.4 U	2.3 U	28 UJ	74 UJ	4.5 UJ
11096-82-5	PCB-1260 (Aroclor 1260)			ug/kg	41	3.4 U	2.3 U	21 J	55 0	4.5 UJ
11100-14-4	PCB-1268 (Aroclor 1268)			ug/kg	2.1 U	3.4 U	2.3 U	2.1 U	2.1 U	4.5 UJ
	Total PCBs	100	5	ug/Kg	108	0	0	21	55	0
	DIOXINS									
	Total TCDDs			ng/kg						
	Total TCDDs	0.0045	1	ug/Kg						
1746-01-6	2,3,7,8-Tetrachlorodibenzo-P-Dioxin			ng/kg			0.0659 U			
	2,3,7,8-Tetrachlorodibenzo-P-Dioxin	0.0045	1	ug/Kg			0.0000659 U			
	OTHER									
TOC	Total Organic Carbon			%	3.17	12.6	4.45	2.51	6.58	17.6
TOC	Total Organic Carbon			mg/kg	31700	126000	44500	25100	65800	176000

TABLE 3a
HISTORICAL SEDIMENT PESTICIDE/HERBICIDE/PCB DATA
CLASS A STANDARDS COMPARISON

NYSDEC-Lower Genesee River Historical Sediment Data Pesticide/Herbicide Class A Standards Comparison		Class A Freshwater Sediment Guidance		Location ID: Sample ID: Lab Sample Id: Depth: Source: SDG: Matrix: Sampled: Validated:	GR-13 LA-133 E1100910-010 9 - 12 ft BAT SE 9/14/2011	GR-13 LA-134 K1108737-005 12 - 13.1 ft BAT SE 9/14/2011	GR-14 LA-014 E1100911-007 0 - 0.5 ft BAT SE 9/14/2011	GR-14 LA-014D E1100911-008 0 - 0.5 ft BAT SE 9/14/2011	GR-14 LA-153 K1108843-015 0 - 3 ft BAT SE 9/14/2011	GR-14 LA-154 K1108837-010 3 - 6 ft BAT SE 9/14/2011
CAS NO.	COMPOUND	Values	Derivation	UNITS:						
	PESTICIDES									
959-98-8	Alpha Endosulfan	1	2	ug/kg	0.07 U	0.063 U			0.075 UJ	1.1 UJ
		0.041		ug/gOC	0.0143149	0.0176471			0.0986842	0.8461538
33213-65-9	Beta Endosulfan	1	2	ug/kg	0.16 U	0.14 U			0.14 U	3.7 UJ
		0.041		ug/gOC	0.0327198	0.0392157			0.1842105	2.8461538
57-74-9	Chlordane	3.2	1	ug/kg	2.1 U	1.9 U			2.6 UJ	7.1 UJ
2921-88-2	Chlorpyrifos	12	2	ug/kg	0.17 U	0.15 U			0.15 U	0.71 UJ
		0.594		ug/gOC	0.0347648	0.0420168			0.1973684	0.5461538
53-19-0	O,P'-DDD	4.9	1	ug/kg	0.15 U	0.13 U			0.81 NJ	3 UJ
72-54-8	P,P'-DDD	4.9	1	ug/kg	1.2 U	0.11 U			1.2	6 J
3424-82-6	O,P'-DDE	3.2	1	ug/kg	0.18 U	0.16 U			0.16 U	0.16 U
72-55-9	P,P'-DDE	3.2	1	ug/kg	0.13 U	0.11 U			1.7	5.4
789-02-6	O,P'-DDT	4.2	1	ug/kg	0.064 U	0.058 U			0.67 UJ	1.9 UJ
50-29-3	P,P'-DDT	4.2	1	ug/kg	0.19 U	0.17 U			1.5 J	1.4 UJ
1918-00-9	Dicamba	180	2	ug/kg	5.9 U	5 U			4.4 U	4.4 U
		9.079		ug/gOC	1.206544	1.4005602			5.7894737	3.3846154
60-57-1	Dieldrin	1.9	1	ug/kg	0.16 U	0.14 U			1.2 UJ	0.72 UJ
72-20-8	Endrin	2.2	1	ug/kg	0.11 U	0.094 U			0.094 U	0.094 U
58-89-9	Gamma Bhc (Lindane)	2.4	1	ug/kg	0.089 U	0.08 U			0.67 UJ	0.71 UJ
1024-57-3	Heptachlor Epoxide	2.5	1	ug/kg	0.093 U	0.084 U			0.084 U	0.084 U
87-68-3	Hexachlorobutadiene	1200	2	ug/kg	0.24 U	0.21 U			0.21 U	0.36 J
		57.539		ug/gOC	0.0490798	0.0588235			0.2763158	0.2769231
72-43-5	Methoxychlor	59	2	ug/kg	0.21 U	0.19 U			0.48 UJ	2.5 NJ
		2.958		ug/gOC	0.0429448	0.0532213			0.6315789	1.9230769
2385-85-5	Mirex	120	2	ug/kg	0.11 U	0.099 U			0.099 U	0.099 U
		5.931		ug/gOC	0.0224949	0.0277311			0.1302632	0.0761538
8001-35-2	Toxaphene	6	2	ug/kg	5.3 U	4.8 U			30 UJ	60 UJ
		0.289		ug/gOC	1.0838446	1.3445378			39.473684	46.153846

TABLE 3a
HISTORICAL SEDIMENT PESTICIDE/HERBICIDE/PCB DATA
CLASS A STANDARDS COMPARISON

NYSDEC-Lower Genesee River Historical Sediment Data Pesticide/Herbicide Class A Standards Comparison		Class A Freshwater Sediment Guidance		Location ID: Sample ID: Lab Sample Id: Depth: Source: SDG: Matrix: Sampled: Validated:	GR-13 LA-133 E1100910-010 9 - 12 ft BAT SE 9/14/2011	GR-13 LA-134 K1108737-005 12 - 13.1 ft BAT SE 9/14/2011	GR-14 LA-014 E1100911-007 0 - 0.5 ft BAT SE 9/14/2011	GR-14 LA-014D E1100911-008 0 - 0.5 ft BAT SE 9/14/2011	GR-14 LA-153 K1108843-015 0 - 3 ft BAT SE 9/14/2011	GR-14 LA-154 K1108837-010 3 - 6 ft BAT SE 9/14/2011
	PCBs									
12672-29-6	PCB-1248 (Aroclor 1248)			ug/kg	2.4 U	2.1 U			21 UJ	210
11097-69-1	PCB-1254 (Aroclor 1254)			ug/kg	2.4 U	2.1 U			32	200
11096-82-5	PCB-1260 (Aroclor 1260)			ug/kg	2.4 U	2.1 U			21 J	120
11100-14-4	PCB-1268 (Aroclor 1268)			ug/kg	2.4 U	2.1 U			2.1 U	2.1 U
	Total PCBs	100	5	ug/Kg	0	0			53	530
	DIOXINS									
	Total TCDDs			ng/kg						
	Total TCDDs	0.0045	1	ug/Kg						
1746-01-6	2,3,7,8-Tetrachlorodibenzo-P-Dioxin			ng/kg	0.0917 U		0.0547 U	0.0442 U		
	2,3,7,8-Tetrachlorodibenzo-P-Dioxin	0.0045	1	ug/Kg	0.0000917 U		0.0000547 U	0.0000442 U		
	OTHER									
TOC	Total Organic Carbon			%	4.89	3.57	1.09	0.83	0.76	1.3
TOC	Total Organic Carbon			mg/kg	48900	35700	10900	8300	7600	13000

TABLE 3a
HISTORICAL SEDIMENT PESTICIDE/HERBICIDE/PCB DATA
CLASS A STANDARDS COMPARISON

NYSDEC-Lower Genesee River Historical Sediment Data Pesticide/Herbicide Class A Standards Comparison		Class A Freshwater Sediment Guidance		Location ID: Sample ID: Lab Sample Id: Depth: Source: SDG: Matrix: Sampled: Validated:	GR-14 LA-155 E1100919-003 6 - 8.2 ft BAT SE 9/14/2011	GR-14 LA-156 K1108843-016 0 - 3 ft BAT SE 9/14/2011	GR-14 LA-157 K1108837-011 3 - 6 ft BAT SE 9/14/2011	GR-14 LA-158 E1100919-004 6 - 7.7 ft BAT SE 9/14/2011	GR-15 LA-015 E1100911-009 0 - 0.5 ft BAT SE 9/14/2011	GR-15 LA-168 K1108844-003 0 - 3 ft BAT SE 9/14/2011
CAS NO.	COMPOUND	Values	Derivation	UNITS:						
	PESTICIDES									
959-98-8	Alpha Endosulfan	1	2	ug/kg	0.51 UJ	0.063 U	0.83 UJ	0.47 UJ		0.75 UJ
		0.041		ug/gOC	0.2865169	0.0870166	0.6014493	0.2670455		0.7629705
33213-65-9	Beta Endosulfan	1	2	ug/kg	3.9 UJ	0.14 U	4.7 UJ	3.4 UJ		0.14 U
		0.041		ug/gOC	2.1910112	0.1933702	3.4057971	1.9318182		0.1424212
57-74-9	Chlordane	3.2	1	ug/kg	7.2 UJ	1.9 U	7.4 UJ	7.1 UJ		1.9 U
2921-88-2	Chlorpyrifos	12	2	ug/kg	0.15 U	0.15 U	0.15 U	0.15 U		0.15 U
		0.594		ug/gOC	0.0842697	0.2071823	0.1086957	0.0852273		0.1525941
53-19-0	O,P'-DDD	4.9	1	ug/kg	2.4 NJ	0.64 U	2.7 UJ	2.5 NJ		0.34 J
72-54-8	P,P'-DDD	4.9	1	ug/kg	4.8 J	0.67	5.6 J	5.2 J		0.27 J
3424-82-6	O,P'-DDE	3.2	1	ug/kg	0.72 UJ	0.16 U	0.16 U	0.71 UJ		0.75 UJ
72-55-9	P,P'-DDE	3.2	1	ug/kg	3.7	0.93 UJ	5.2	4.1		0.95 U
789-02-6	O,P'-DDT	4.2	1	ug/kg	1.7 J	0.058 U	0.74 UJ	1.6 J		0.75 UJ
50-29-3	P,P'-DDT	4.2	1	ug/kg	0.72 UJ	1.9 J	2.1 UJ	0.71 UJ		0.17 U
1918-00-9	Dicamba	180	2	ug/kg	4.4 U	4.4 U	4.4 U	4.4 U		4.4 U
		9.079		ug/gOC	2.4719101	6.0773481	3.1884058	2.5		4.4760936
60-57-1	Dieldrin	1.9	1	ug/kg	4.8 UJ	0.14 U	0.74 UJ	0.14 U		0.14 U
72-20-8	Endrin	2.2	1	ug/kg	0.094 U	0.094 U	0.094 U	0.094 U		0.094 U
58-89-9	Gamma Bhc (Lindane)	2.4	1	ug/kg	0.72 UJ	0.64 UJ	0.74 UJ	0.71 UJ		0.75 UJ
1024-57-3	Heptachlor Epoxide	2.5	1	ug/kg	0.084 U	0.084 U	0.084 U	0.084 U		0.084 U
87-68-3	Hexachlorobutadiene	1200	2	ug/kg	0.21 U	0.21 U	0.21 U	0.21 U		0.21 U
		57.539		ug/gOC	0.1179775	0.2900552	0.1521739	0.1193182		0.2136317
72-43-5	Methoxychlor	59	2	ug/kg	3.5 UJ	0.35 UJ	2.1 UJ	2.7 UJ		0.75 UJ
		2.958		ug/gOC	1.9662921	0.4834254	1.5217391	1.5340909		0.7629705
2385-85-5	Mirex	120	2	ug/kg	0.72 UJ	0.099 U	0.099 U	0.71 UJ		0.75 UJ
		5.931		ug/gOC	0.4044944	0.1367403	0.0717391	0.4034091		0.7629705
8001-35-2	Toxaphene	6	2	ug/kg	64 UJ	19 UJ	110 UJ	97 UJ		8.6 UJ
		0.289		ug/gOC	35.955056	26.243094	79.710145	55.113636		8.7487284

TABLE 3a
HISTORICAL SEDIMENT PESTICIDE/HERBICIDE/PCB DATA
CLASS A STANDARDS COMPARISON

NYSDEC-Lower Genesee River Historical Sediment Data Pesticide/Herbicide Class A Standards Comparison		Class A Freshwater Sediment Guidance		Location ID: Sample ID: Lab Sample Id: Depth: Source: SDG: Matrix: Sampled: Validated:	GR-14 LA-155 E1100919-003 6 - 8.2 ft BAT SE 9/14/2011	GR-14 LA-156 K1108843-016 0 - 3 ft BAT SE 9/14/2011	GR-14 LA-157 K1108837-011 3 - 6 ft BAT SE 9/14/2011	GR-14 LA-158 E1100919-004 6 - 7.7 ft BAT SE 9/14/2011	GR-15 LA-015 E1100911-009 0 - 0.5 ft BAT SE 9/14/2011	GR-15 LA-168 K1108844-003 0 - 3 ft BAT SE 9/14/2011
	PCBs									
12672-29-6	PCB-1248 (Aroclor 1248)			ug/kg	2.1 U	14 UJ	190	2.1 U		4.8 UJ
11097-69-1	PCB-1254 (Aroclor 1254)			ug/kg	96 J	19 UJ	180	92 J		7.4 UJ
11096-82-5	PCB-1260 (Aroclor 1260)			ug/kg	120	12	110	120		4.7 J
11100-14-4	PCB-1268 (Aroclor 1268)			ug/kg	2.1 U	2.1 U	2.1 U	2.1 U		2.1 U
	Total PCBs	100	5	ug/Kg	216	12	480	212		4.7
	DIOXINS									
	Total TCDDs			ng/kg						
	Total TCDDs	0.0045	1	ug/Kg						
1746-01-6	2,3,7,8-Tetrachlorodibenzo-P-Dioxin			ng/kg	0.57 J			0.505 J	0.0555 U	
	2,3,7,8-Tetrachlorodibenzo-P-Dioxin	0.0045	1	ug/Kg	0.00057 J			0.000505 J	0.0000555 U	
	OTHER									
TOC	Total Organic Carbon			%	1.78	0.724	1.38	1.76	0.989	0.983
TOC	Total Organic Carbon			mg/kg	17800	7240	13800	17600	9890	9830

TABLE 3a
HISTORICAL SEDIMENT PESTICIDE/HERBICIDE/PCB DATA
CLASS A STANDARDS COMPARISON

NYSDEC-Lower Genesee River Historical Sediment Data Pesticide/Herbicide Class A Standards Comparison		Class A Freshwater Sediment Guidance		Location ID: Sample ID: Lab Sample Id: Depth: Source: SDG: Matrix: Sampled: Validated:	GR-15 LA-169 K1108838-020 3 - 6 ft BAT SE 9/14/2011	GR-15 LA-170 K1108840-001 6 - 9 ft BAT SE 9/14/2011	GR-15 LA-171 K1108840-002 9 - 12 ft BAT SE 9/14/2011	GR-15 LA-172 E1100919-008 12 - 13.2 ft BAT SE 9/14/2011	GR-16 LA-016 E1100911-010 0 - 0.5 ft BAT SE 9/14/2011	GR-16 LA-144 K1108764-004 0 - 3 ft BAT SE 9/14/2011
CAS NO.	COMPOUND	Values	Derivation	UNITS:						
	PESTICIDES									
959-98-8	Alpha Endosulfan	1	2	ug/kg	0.063 U	0.14 UJ	0.5 UJ	0.087 UJ		0.063 U
		0.041		ug/gOC	0.0686275	0.1	0.4132231	0.0852941		0.0778739
33213-65-9	Beta Endosulfan	1	2	ug/kg	0.14 U	0.14 U	0.14 U	0.14 U		0.14 U
		0.041		ug/gOC	0.1525054	0.1	0.1157025	0.1372549		0.1730532
57-74-9	Chlordane	3.2	1	ug/kg	1.9 U	3 UJ	7 UJ	2 UJ		1.9 U
2921-88-2	Chlorpyrifos	12	2	ug/kg	0.15 U	0.17 UJ	0.7 UJ	0.15 U		0.15 U
		0.594		ug/gOC	0.1633987	0.1214286	0.5785124	0.1470588		0.1854141
53-19-0	O,P'-DDD	4.9	1	ug/kg	0.55 J	1.3 NJ	3.2 NJ	1.3 NJ		0.73 U
72-54-8	P,P'-DDD	4.9	1	ug/kg	0.71 J	1.9	6.7	2.5		0.24 J
3424-82-6	O,P'-DDE	3.2	1	ug/kg	0.16 U	0.74 UJ	0.74 UJ	0.16 U		0.16 U
72-55-9	P,P'-DDE	3.2	1	ug/kg	1.1 UJ	2.9	4.5	1.1		0.87 UJ
789-02-6	O,P'-DDT	4.2	1	ug/kg	0.058 U	0.16 UJ	0.56 UJ	0.065 UJ		0.065 UJ
50-29-3	P,P'-DDT	4.2	1	ug/kg	0.87 J	1.2 UJ	0.82 UJ	0.17 U		0.49 J
1918-00-9	Dicamba	180	2	ug/kg	4.4 U	4.4 U	4.4 U	4.4 U		4.4 U
		9.079		ug/gOC	4.7930283	3.1428571	3.6363636	4.3137255		5.4388133
60-57-1	Dieldrin	1.9	1	ug/kg	0.62 UJ	2 UJ	0.14 U	0.14 U		0.14 U
72-20-8	Endrin	2.2	1	ug/kg	0.094 U	0.094 U	0.094 U	0.094 U		0.094 U
58-89-9	Gamma Bhc (Lindane)	2.4	1	ug/kg	0.69 UJ	0.74 UJ	0.73 UJ	0.65 UJ		0.73 UJ
1024-57-3	Heptachlor Epoxide	2.5	1	ug/kg	0.084 U	0.084 U	0.084 U	0.084 U		0.084 U
87-68-3	Hexachlorobutadiene	1200	2	ug/kg	0.21 U	0.21 U	0.21 U	0.21 U		0.21 U
		57.539		ug/gOC	0.2287582	0.15	0.1735537	0.2058824		0.2595797
72-43-5	Methoxychlor	59	2	ug/kg	0.19 U	0.74 UJ	2.5	0.65 U		0.19 U
		2.958		ug/gOC	0.2069717	0.5285714	2.0661157	0.6372549		0.2348578
2385-85-5	Mirex	120	2	ug/kg	0.099 U	51 UJ	12 UJ	0.099 U		0.73 UJ
		5.931		ug/gOC	0.1078431	36.428571	9.9173554	0.0970588		0.9023486
8001-35-2	Toxaphene	6	2	ug/kg	17 UJ	23 UJ	50 UJ	33 UJ		5.7 UJ
		0.289		ug/gOC	18.518519	16.428571	41.322314	32.352941		7.0457355

TABLE 3a
HISTORICAL SEDIMENT PESTICIDE/HERBICIDE/PCB DATA
CLASS A STANDARDS COMPARISON

NYSDEC-Lower Genesee River Historical Sediment Data Pesticide/Herbicide Class A Standards Comparison		Class A Freshwater Sediment Guidance		Location ID: Sample ID: Lab Sample Id: Depth: Source: SDG: Matrix: Sampled: Validated:	GR-15 LA-169 K1108838-020 3 - 6 ft BAT SE 9/14/2011	GR-15 LA-170 K1108840-001 6 - 9 ft BAT SE 9/14/2011	GR-15 LA-171 K1108840-002 9 - 12 ft BAT SE 9/14/2011	GR-15 LA-172 E1100919-008 12 - 13.2 ft BAT SE 9/14/2011	GR-16 LA-016 E1100911-010 0 - 0.5 ft BAT SE 9/14/2011	GR-16 LA-144 K1108764-004 0 - 3 ft BAT SE 9/14/2011
	PCBs									
12672-29-6	PCB-1248 (Aroclor 1248)			ug/kg	8 UJ	27 UJ	95	28		2.1 UJ
11097-69-1	PCB-1254 (Aroclor 1254)			ug/kg	16 UJ	44 J	130	41		2.1 UJ
11096-82-5	PCB-1260 (Aroclor 1260)			ug/kg	9.3	33	73	25		2.1 UJ
11100-14-4	PCB-1268 (Aroclor 1268)			ug/kg	2.1 U	2.1 U	2.1 U	2.1 U		2.1 UJ
	Total PCBs	100	5	ug/Kg	9.3	77	298	94		0
	DIOXINS									
	Total TCDDs			ng/kg						
	Total TCDDs	0.0045	1	ug/Kg						
1746-01-6	2,3,7,8-Tetrachlorodibenzo-P-Dioxin			ng/kg				0.544 J	0.0574 U	
	2,3,7,8-Tetrachlorodibenzo-P-Dioxin	0.0045	1	ug/Kg				0.000544 J	0.0000574 U	
	OTHER									
TOC	Total Organic Carbon			%	0.918	1.4	1.21	1.02	0.537	0.809
TOC	Total Organic Carbon			mg/kg	9180	14000	12100	10200	5370	8090

TABLE 3a
HISTORICAL SEDIMENT PESTICIDE/HERBICIDE/PCB DATA
CLASS A STANDARDS COMPARISON

NYSDEC-Lower Genesee River Historical Sediment Data Pesticide/Herbicide Class A Standards Comparison		Class A Freshwater Sediment Guidance		Location ID: Sample ID: Lab Sample Id: Depth: Source: SDG: Matrix: Sampled: Validated:	GR-16 LA-145 K1108764-005 3 - 6 ft BAT SE 9/14/2011	GR-16 LA-146 K1108764-006 6 - 9 ft BAT SE 9/14/2011	GR-16 LA-147 K1108764-007 9 - 12 ft BAT SE 9/14/2011	GR-16 LA-148 K1108764-008 12 - 15 ft BAT SE 9/14/2011	GR-16 LA-149 K1108764-009 15 - 18 ft BAT SE 9/14/2011	GR-16 LA-150 E1100911-001 18 - 19.9 ft BAT SE 9/14/2011
CAS NO.	COMPOUND	Values	Derivation	UNITS:						
	PESTICIDES									
959-98-8	Alpha Endosulfan	1	2	ug/kg	0.063 U	0.71 UJ	0.85 UJ	0.22 UJ	0.063 U	0.063 U
		0.041		ug/gOC	0.0364162	0.6513761	0.5214724	0.1617647	0.0732558	0.061165
33213-65-9	Beta Endosulfan	1	2	ug/kg	0.14 U	0.14 U	0.14 U	0.14 U	0.14 U	0.14 U
		0.041		ug/gOC	0.0809249	0.1284404	0.0858896	0.1029412	0.1627907	0.1359223
57-74-9	Chlordane	3.2	1	ug/kg	1.9 U	1.9 U	28 UJ	8.8 UJ	1.9 U	1.9 U
2921-88-2	Chlorpyrifos	12	2	ug/kg	0.15 U	0.15 U	0.15 U	0.15 U	0.15 U	0.15 U
		0.594		ug/gOC	0.0867052	0.1376147	0.0920245	0.1102941	0.1744186	0.1456311
53-19-0	O,P'-DDD	4.9	1	ug/kg	0.36 J	1.7 UJ	2.9 UJ	1.2 J	0.13 U	0.13 U
72-54-8	P,P'-DDD	4.9	1	ug/kg	0.41 J	6.3 J	8.2 J	1.2	0.11 U	0.11 U
3424-82-6	O,P'-DDE	3.2	1	ug/kg	0.16 U	0.16 U	0.69 UJ	0.52 UJ	0.16 U	0.16 U
72-55-9	P,P'-DDE	3.2	1	ug/kg	1.3 UJ	6.3 NJ	4.2 J	0.62 J	0.11 U	0.11 U
789-02-6	O,P'-DDT	4.2	1	ug/kg	0.058 U	0.066 UJ	0.87 UJ	0.23 UJ	0.058 U	0.058 U
50-29-3	P,P'-DDT	4.2	1	ug/kg	0.27 UJ	0.17 U	1.4 UJ	0.84 UJ	0.17 U	0.17 U
1918-00-9	Dicamba	180	2	ug/kg	4.4 U	4.4 U	4.4 U	4.4 U	4.4 U	4.4 U
		9.079		ug/gOC	2.5433526	4.0366972	2.6993865	3.2352941	5.1162791	4.2718447
60-57-1	Dieldrin	1.9	1	ug/kg	0.14 U	0.71 UJ	0.14 U	1.2 UJ	0.14 U	0.14 U
72-20-8	Endrin	2.2	1	ug/kg	0.094 U	0.094 U	0.094 U	0.094 U	0.094 U	0.094 U
58-89-9	Gamma Bhc (Lindane)	2.4	1	ug/kg	0.7 UJ	0.71 UJ	0.69 UJ	0.7 UJ	0.08 U	0.08 U
1024-57-3	Heptachlor Epoxide	2.5	1	ug/kg	0.084 U	0.084 U	0.084 U	0.084 U	0.084 U	0.084 U
87-68-3	Hexachlorobutadiene	1200	2	ug/kg	0.21 U	0.23 J	0.21 U	0.21 U	0.21 U	0.21 U
		57.539		ug/gOC	0.1213873	0.2110092	0.1288344	0.1544118	0.244186	0.2038835
72-43-5	Methoxychlor	59	2	ug/kg	0.19 U	1.6 UJ	3 J	1.6 UJ	0.19 U	0.19 U
		2.958		ug/gOC	0.1098266	1.4678899	1.8404908	1.1764706	0.2209302	0.184466
2385-85-5	Mirex	120	2	ug/kg	0.099 U	0.099 U	0.69 UJ	0.7 UJ	0.099 U	0.099 U
		5.931		ug/gOC	0.0572254	0.0908257	0.4233129	0.5147059	0.1151163	0.0961165
8001-35-2	Toxaphene	6	2	ug/kg	12 UJ	48 UJ	90 UJ	35 UJ	5.3 UJ	13 UJ
		0.289		ug/gOC	6.9364162	44.036697	55.214724	25.735294	6.1627907	12.621359

TABLE 3a
HISTORICAL SEDIMENT PESTICIDE/HERBICIDE/PCB DATA
CLASS A STANDARDS COMPARISON

NYSDEC-Lower Genesee River Historical Sediment Data Pesticide/Herbicide Class A Standards Comparison		Class A Freshwater Sediment Guidance		Location ID: Sample ID: Lab Sample Id: Depth: Source: SDG: Matrix: Sampled: Validated:	GR-16 LA-145 K1108764-005 3 - 6 ft BAT SE 9/14/2011	GR-16 LA-146 K1108764-006 6 - 9 ft BAT SE 9/14/2011	GR-16 LA-147 K1108764-007 9 - 12 ft BAT SE 9/14/2011	GR-16 LA-148 K1108764-008 12 - 15 ft BAT SE 9/14/2011	GR-16 LA-149 K1108764-009 15 - 18 ft BAT SE 9/14/2011	GR-16 LA-150 E1100911-001 18 - 19.9 ft BAT SE 9/14/2011
	PCBs									
12672-29-6	PCB-1248 (Aroclor 1248)			ug/kg	5.6 UJ	100 UJ	170	23 UJ	2.1 U	2.1 U
11097-69-1	PCB-1254 (Aroclor 1254)			ug/kg	7.9 UJ	98	130	29 UJ	2.1 U	2.1 U
11096-82-5	PCB-1260 (Aroclor 1260)			ug/kg	6.1 J	56	92	62	2.1 U	2.1 U
11100-14-4	PCB-1268 (Aroclor 1268)			ug/kg	3 UJ	26 UJ	2.1 U	25 UJ	2.1 U	2.1 U
	Total PCBs	100	5	ug/Kg	6.1	154	392	62	0	0
	DIOXINS									
	Total TCDDs			ng/kg						
	Total TCDDs	0.0045	1	ug/Kg						
1746-01-6	2,3,7,8-Tetrachlorodibenzo-P-Dioxin			ng/kg						0.0539 U
	2,3,7,8-Tetrachlorodibenzo-P-Dioxin	0.0045	1	ug/Kg						0.0000539 U
	OTHER									
TOC	Total Organic Carbon			%	1.73	1.09	1.63	1.36	0.86	1.03
TOC	Total Organic Carbon			mg/kg	17300	10900	16300	13600	8600	10300

TABLE 3a
HISTORICAL SEDIMENT PESTICIDE/HERBICIDE/PCB DATA
CLASS A STANDARDS COMPARISON

NYSDEC-Lower Genesee River Historical Sediment Data Pesticide/Herbicide Class A Standards Comparison		Class A Freshwater Sediment Guidance		Location ID: Sample ID: Lab Sample Id: Depth: Source: SDG: Matrix: Sampled: Validated:	GR-17 LA-017 E1100911-011 0 - 0.5 ft BAT SE 9/14/2011	GR-17 LA-151 E1100919-001 0 - 3.1 ft BAT SE 9/14/2011	GR-18 LA-018 E1100911-012 0 - 0.5 ft BAT SE 9/14/2011	GR-18 LA-135 K1108737-006 0 - 3 ft BAT SE 9/14/2011	GR-18 LA-136 K1108737-007 3 - 6 ft BAT SE 9/14/2011	GR-18 LA-137 K1108737-008 6 - 9 ft BAT SE 9/14/2011
CAS NO.	COMPOUND	Values	Derivation	UNITS:						
	PESTICIDES									
959-98-8	Alpha Endosulfan	1	2	ug/kg		0.063 U		0.063 U	0.66 UJ	1.8 UJ
		0.041		ug/gOC		0.072		0.0753589	0.6818182	1.1180124
33213-65-9	Beta Endosulfan	1	2	ug/kg		0.14 U		0.14 U	2.4 UJ	4.2 UJ
		0.041		ug/gOC		0.16		0.1674641	2.4793388	2.6086957
57-74-9	Chlordane	3.2	1	ug/kg		1.9 U		1.9 U	6.8 UJ	18 UJ
2921-88-2	Chlorpyrifos	12	2	ug/kg		0.15 U		0.15 U	0.15 U	0.75 UJ
		0.594		ug/gOC		0.1714286		0.1794258	0.1549587	0.4658385
53-19-0	O,P'-DDD	4.9	1	ug/kg		0.71 U		0.71 U	9.5 J	9 NJ
72-54-8	P,P'-DDD	4.9	1	ug/kg		0.56 J		0.47 J	18	19
3424-82-6	O,P'-DDE	3.2	1	ug/kg		0.16 U		0.16 U	0.94 UJ	1.7 UJ
72-55-9	P,P'-DDE	3.2	1	ug/kg		1.2		1.3 UJ	5.5	8.8 J
789-02-6	O,P'-DDT	4.2	1	ug/kg		0.058 U		0.058 U	0.22 UJ	0.2 UJ
50-29-3	P,P'-DDT	4.2	1	ug/kg		0.17 U		0.71 UJ	0.8 UJ	0.17 U
1918-00-9	Dicamba	180	2	ug/kg		4.4 U		4.4 U	4.4 U	4.4 U
		9.079		ug/gOC		5.0285714		5.2631579	4.5454545	2.7329193
60-57-1	Dieldrin	1.9	1	ug/kg		0.65 UJ		0.14 U	0.68 UJ	0.75 UJ
72-20-8	Endrin	2.2	1	ug/kg		0.094 U		0.094 U	0.094 U	0.094 U
58-89-9	Gamma Bhc (Lindane)	2.4	1	ug/kg		0.71 UJ		0.71 UJ	0.68 UJ	0.75 UJ
1024-57-3	Heptachlor Epoxide	2.5	1	ug/kg		0.084 U		0.084 U	0.084 U	0.11 UJ
87-68-3	Hexachlorobutadiene	1200	2	ug/kg		0.21 U		0.21 U	0.21 U	0.21 U
		57.539		ug/gOC		0.24		0.2511962	0.2169421	0.1304348
72-43-5	Methoxychlor	59	2	ug/kg		1.4 J		0.71 U	1.2 J	2.6 NJ
		2.958		ug/gOC		1.6		0.8492823	1.2396694	1.6149068
2385-85-5	Mirex	120	2	ug/kg		0.099 U		0.099 U	0.68 UJ	0.75 UJ
		5.931		ug/gOC		0.1131429		0.1184211	0.7024793	0.4658385
8001-35-2	Toxaphene	6	2	ug/kg		14 UJ		14 UJ	160 UJ	49 UJ
		0.289		ug/gOC		16		16.746411	165.28926	30.434783

TABLE 3a
HISTORICAL SEDIMENT PESTICIDE/HERBICIDE/PCB DATA
CLASS A STANDARDS COMPARISON

NYSDEC-Lower Genesee River Historical Sediment Data Pesticide/Herbicide Class A Standards Comparison		Class A Freshwater Sediment Guidance		Location ID: Sample ID: Lab Sample Id: Depth: Source: SDG: Matrix: Sampled: Validated:	GR-17 LA-017 E1100911-011 0 - 0.5 ft BAT SE 9/14/2011	GR-17 LA-151 E1100919-001 0 - 3.1 ft BAT SE 9/14/2011	GR-18 LA-018 E1100911-012 0 - 0.5 ft BAT SE 9/14/2011	GR-18 LA-135 K1108737-006 0 - 3 ft BAT SE 9/14/2011	GR-18 LA-136 K1108737-007 3 - 6 ft BAT SE 9/14/2011	GR-18 LA-137 K1108737-008 6 - 9 ft BAT SE 9/14/2011
	PCBs									
12672-29-6	PCB-1248 (Aroclor 1248)			ug/kg		17		12	77	230
11097-69-1	PCB-1254 (Aroclor 1254)			ug/kg		23		17 UJ	99 J	230
11096-82-5	PCB-1260 (Aroclor 1260)			ug/kg		19		16	58	110
11100-14-4	PCB-1268 (Aroclor 1268)			ug/kg		2.1 U		2.1 U	2.1 U	2.1 U
	Total PCBs	100	5	ug/Kg		59		28	234	570
	DIOXINS									
	Total TCDDs			ng/kg						
	Total TCDDs	0.0045	1	ug/Kg						
1746-01-6	2,3,7,8-Tetrachlorodibenzo-P-Dioxin			ng/kg	0.0413 U	0.439 J	0.0351 U			
	2,3,7,8-Tetrachlorodibenzo-P-Dioxin	0.0045	1	ug/Kg	0.0000413 U	0.000439 J	0.0000351 U			
	OTHER									
TOC	Total Organic Carbon			%	0.696	0.875	0.902	0.836	0.968	1.61
TOC	Total Organic Carbon			mg/kg	6960	8750	9020	8360	9680	16100

TABLE 3a
HISTORICAL SEDIMENT PESTICIDE/HERBICIDE/PCB DATA
CLASS A STANDARDS COMPARISON

NYSDEC-Lower Genesee River Historical Sediment Data Pesticide/Herbicide Class A Standards Comparison		Class A Freshwater Sediment Guidance		Location ID: Sample ID: Lab Sample Id: Depth: Source: SDG: Matrix: Sampled: Validated:	GR-18 LA-138 E1100910-011 9 - 12.7 ft BAT SE 9/14/2011	GR-19 LA-019 E1100911-013 0 - 0.5 ft BAT SE 9/13/2011	GR-19 LA-117 K1108656-017 0 - 3 ft BAT SE 9/13/2011	GR-19 LA-118 K1108656-018 3 - 6 ft BAT SE 9/13/2011	GR-19 LA-119 K1108656-019 6 - 9 ft BAT SE 9/13/2011	GR-19 LA-120 K1108656-020 9 - 12 ft BAT SE 9/13/2011
CAS NO.	COMPOUND	Values	Derivation	UNITS:						
	PESTICIDES									
959-98-8	Alpha Endosulfan	1	2	ug/kg	0.86 UJ		0.063 U	0.063 U	0.063 U	0.063 U
		0.041		ug/gOC	0.5931034		0.0693069	0.0644831	0.0583333	0.0658307
33213-65-9	Beta Endosulfan	1	2	ug/kg	3.6 UJ		0.14 U	0.14 U	0.9 UJ	0.14 U
		0.041		ug/gOC	2.4827586		0.1540154	0.1432958	0.8333333	0.1462905
57-74-9	Chlordane	3.2	1	ug/kg	12 UJ		1.9 U	1.9 U	2 UJ	1.9 U
2921-88-2	Chlorpyrifos	12	2	ug/kg	0.15 U		0.15 U	0.15 U	0.15 U	0.15 U
		0.594		ug/gOC	0.1034483		0.1650165	0.1535312	0.1388889	0.1567398
53-19-0	O,P'-DDD	4.9	1	ug/kg	3.4 UJ		0.72 U	0.71 U	0.89 NJ	0.68 U
72-54-8	P,P'-DDD	4.9	1	ug/kg	8.1 J		0.31 J	0.57 J	1.2 J	0.81 J
3424-82-6	O,P'-DDE	3.2	1	ug/kg	0.73 UJ		0.16 U	0.16 U	0.7 UJ	0.16 U
72-55-9	P,P'-DDE	3.2	1	ug/kg	7.7		0.87	1.1	1.8	1.2
789-02-6	O,P'-DDT	4.2	1	ug/kg	0.21 UJ		0.058 U	0.058 U	0.09 UJ	0.058 U
50-29-3	P,P'-DDT	4.2	1	ug/kg	0.17 U		1.4	0.71 U	0.7 UJ	0.45 UJ
1918-00-9	Dicamba	180	2	ug/kg	4.4 U		4.4 U	4.4 U	4.4 U	4.4 U
		9.079		ug/gOC	3.0344828		4.840484	4.5035824	4.0740741	4.5977011
60-57-1	Dieldrin	1.9	1	ug/kg	1.1 UJ		0.25 UJ	0.14 U	1.7 UJ	0.78 UJ
72-20-8	Endrin	2.2	1	ug/kg	0.094 U		0.094 U	0.094 U	0.094 U	0.094 U
58-89-9	Gamma Bhc (Lindane)	2.4	1	ug/kg	0.7 UJ		0.2 UJ	0.08 U	0.08 U	0.68 U
1024-57-3	Heptachlor Epoxide	2.5	1	ug/kg	0.084 U		0.084 U	0.084 U	0.084 U	0.084 U
87-68-3	Hexachlorobutadiene	1200	2	ug/kg	0.21 U		0.21 U	0.21 U	0.21 U	0.21 U
		57.539		ug/gOC	0.1448276		0.2310231	0.2149437	0.1944444	0.2194357
72-43-5	Methoxychlor	59	2	ug/kg	2.4 UJ		0.19 U	0.19 U	0.19 U	0.2 UJ
		2.958		ug/gOC	1.6551724		0.2090209	0.1944729	0.1759259	0.2089864
2385-85-5	Mirex	120	2	ug/kg	0.7 UJ		0.099 U	0.099 U	0.099 U	0.099 U
		5.931		ug/gOC	0.4827586		0.1089109	0.1013306	0.0916667	0.1034483
8001-35-2	Toxaphene	6	2	ug/kg	35 UJ		8.7 UJ	19 UJ	15 UJ	14 UJ
		0.289		ug/gOC	24.137931		9.5709571	19.447288	13.888889	14.629049

TABLE 3a
HISTORICAL SEDIMENT PESTICIDE/HERBICIDE/PCB DATA
CLASS A STANDARDS COMPARISON

NYSDEC-Lower Genesee River Historical Sediment Data Pesticide/Herbicide Class A Standards Comparison		Class A Freshwater Sediment Guidance		Location ID: Sample ID: Lab Sample Id: Depth: Source: SDG: Matrix: Sampled: Validated:	GR-18 LA-138 E1100910-011 9 - 12.7 ft BAT SE 9/14/2011	GR-19 LA-019 E1100911-013 0 - 0.5 ft BAT SE 9/13/2011	GR-19 LA-117 K1108656-017 0 - 3 ft BAT SE 9/13/2011	GR-19 LA-118 K1108656-018 3 - 6 ft BAT SE 9/13/2011	GR-19 LA-119 K1108656-019 6 - 9 ft BAT SE 9/13/2011	GR-19 LA-120 K1108656-020 9 - 12 ft BAT SE 9/13/2011
	PCBs									
12672-29-6	PCB-1248 (Aroclor 1248)			ug/kg	220		3.6 J	6.6 J	15	10 J
11097-69-1	PCB-1254 (Aroclor 1254)			ug/kg	210		6.4 J	11	29	16
11096-82-5	PCB-1260 (Aroclor 1260)			ug/kg	96		4.5 J	9.6	24	13
11100-14-4	PCB-1268 (Aroclor 1268)			ug/kg	2.1 U		2.1 U	2.1 U	2.1 U	2.1 U
	Total PCBs	100	5	ug/Kg	526		14.5	27.2	68	39
	DIOXINS									
	Total TCDDs			ng/kg						
	Total TCDDs	0.0045	1	ug/Kg						
1746-01-6	2,3,7,8-Tetrachlorodibenzo-P-Dioxin			ng/kg	2.05	0.0367 U				
	2,3,7,8-Tetrachlorodibenzo-P-Dioxin	0.0045	1	ug/Kg	0.00205	0.0000367 U				
	OTHER									
TOC	Total Organic Carbon			%	1.45	1.2	0.909	0.977	1.08	0.957
TOC	Total Organic Carbon			mg/kg	14500	12000	9090	9770	10800	9570

TABLE 3a
HISTORICAL SEDIMENT PESTICIDE/HERBICIDE/PCB DATA
CLASS A STANDARDS COMPARISON

NYSDEC-Lower Genesee River Historical Sediment Data Pesticide/Herbicide Class A Standards Comparison		Class A Freshwater Sediment Guidance		Location ID: Sample ID: Lab Sample Id: Depth: Source: SDG: Matrix: Sampled: Validated:	GR-19 LA-121 K1108643-015 12 - 15 ft BAT SE 9/13/2011	GR-19 LA-122 E1100910-005 15 - 18.2 ft BAT SE 9/13/2011	GR-20 LA-020 E1100911-014 0 - 0.5 ft BAT SE 9/14/2011	GR-20 LA-139 K1108737-010 0 - 3 ft BAT SE 9/14/2011	GR-20 LA-140 K1108737-011 3 - 6 ft BAT SE 9/14/2011	GR-20 LA-141 K1108764-001 6 - 9 ft BAT SE 9/14/2011
CAS NO.	COMPOUND	Values	Derivation	UNITS:						
	PESTICIDES									
959-98-8	Alpha Endosulfan	1	2	ug/kg	0.063 U	0.14 UJ		0.7 UJ	0.84 UJ	0.82 UJ
		0.041		ug/gOC	0.066107	0.1272727		0.8158508	0.8076923	1.0366625
33213-65-9	Beta Endosulfan	1	2	ug/kg	0.14 U	0.14 U		3.9 UJ	2.8 UJ	0.14 U
		0.041		ug/gOC	0.1469045	0.1272727		4.5454545	2.6923077	0.1769912
57-74-9	Chlordane	3.2	1	ug/kg	1.9 U	7.2 UJ		7 UJ	7.3 UJ	21 UJ
2921-88-2	Chlorpyrifos	12	2	ug/kg	0.15 U	0.15 U		0.7 UJ	0.15 U	0.73 UJ
		0.594		ug/gOC	0.1573977	0.1363636		0.8158508	0.1442308	0.9228824
53-19-0	O,P'-DDD	4.9	1	ug/kg	0.83 J	1.2 J		3.1 NJ	22 D	5 NJ
72-54-8	P,P'-DDD	4.9	1	ug/kg	1.5	2.1		2.3 J	41 D	8.7 J
3424-82-6	O,P'-DDE	3.2	1	ug/kg	0.16 U	0.72 UJ		0.7 UJ	1.6 UJ	0.87 UJ
72-55-9	P,P'-DDE	3.2	1	ug/kg	1.5	2.1		3	6.5 J	7.7
789-02-6	O,P'-DDT	4.2	1	ug/kg	0.12 UJ	0.21 UJ		0.23 UJ	0.12 UJ	0.54 UJ
50-29-3	P,P'-DDT	4.2	1	ug/kg	0.5 UJ	0.72 UJ		0.17 U	0.17 U	0.17 U
1918-00-9	Dicamba	180	2	ug/kg	4.4 U	4.4 U		4.4 U	4.4 U	4.4 U
		9.079		ug/gOC	4.616999	4		5.1282051	4.2307692	5.562579
60-57-1	Dieldrin	1.9	1	ug/kg	0.9 UJ	1.2 UJ		0.7 UJ	0.73 UJ	0.73 UJ
72-20-8	Endrin	2.2	1	ug/kg	0.094 U	0.094 U		0.094 U	0.094 U	0.094 U
58-89-9	Gamma Bhc (Lindane)	2.4	1	ug/kg	0.32 J	0.57 J		0.7 UJ	0.73 UJ	0.73 UJ
1024-57-3	Heptachlor Epoxide	2.5	1	ug/kg	0.084 U	0.084 U		0.084 U	0.2 UJ	0.084 U
87-68-3	Hexachlorobutadiene	1200	2	ug/kg	0.21 U	0.21 U		0.21 U	0.21 U	0.47 J
		57.539		ug/gOC	0.2203568	0.1909091		0.2447552	0.2019231	0.5941846
72-43-5	Methoxychlor	59	2	ug/kg	0.19 U	0.44 UJ		1.8	1.6	2.2 UJ
		2.958		ug/gOC	0.1993704	0.4		2.0979021	1.5384615	2.7812895
2385-85-5	Mirex	120	2	ug/kg	0.7 UJ	0.72 UJ		0.7 UJ	0.099 U	0.73 UJ
		5.931		ug/gOC	0.7345226	0.6545455		0.8158508	0.0951923	0.9228824
8001-35-2	Toxaphene	6	2	ug/kg	16 UJ	36 UJ		46 UJ	37 UJ	43 UJ
		0.289		ug/gOC	16.789087	32.727273		53.613054	35.576923	54.361568

TABLE 3a
HISTORICAL SEDIMENT PESTICIDE/HERBICIDE/PCB DATA
CLASS A STANDARDS COMPARISON

NYSDEC-Lower Genesee River Historical Sediment Data Pesticide/Herbicide Class A Standards Comparison		Class A Freshwater Sediment Guidance		Location ID: Sample ID: Lab Sample Id: Depth: Source: SDG: Matrix: Sampled: Validated:	GR-19 LA-121 K1108643-015 12 - 15 ft BAT SE 9/13/2011	GR-19 LA-122 E1100910-005 15 - 18.2 ft BAT SE 9/13/2011	GR-20 LA-020 E1100911-014 0 - 0.5 ft BAT SE 9/14/2011	GR-20 LA-139 K1108737-010 0 - 3 ft BAT SE 9/14/2011	GR-20 LA-140 K1108737-011 3 - 6 ft BAT SE 9/14/2011	GR-20 LA-141 K1108764-001 6 - 9 ft BAT SE 9/14/2011
	PCBs									
12672-29-6	PCB-1248 (Aroclor 1248)			ug/kg	11 UJ	15 UJ		82	89	200 J
11097-69-1	PCB-1254 (Aroclor 1254)			ug/kg	21 J	21 UJ		110	120 J	190 J
11096-82-5	PCB-1260 (Aroclor 1260)			ug/kg	16	24		90	75	90 J
11100-14-4	PCB-1268 (Aroclor 1268)			ug/kg	2.1 U	2.1 U		2.1 U	2.1 U	2.1 UJ
	Total PCBs	100	5	ug/Kg	37	24		282	284	480
	DIOXINS									
	Total TCDDs			ng/kg						
	Total TCDDs	0.0045	1	ug/Kg						
1746-01-6	2,3,7,8-Tetrachlorodibenzo-P-Dioxin			ng/kg		0.233 J	0.11 J			
	2,3,7,8-Tetrachlorodibenzo-P-Dioxin	0.0045	1	ug/Kg		0.000233 J	0.00011 J			
	OTHER									
TOC	Total Organic Carbon			%	0.953	1.1	0.892	0.858	1.04	0.791
TOC	Total Organic Carbon			mg/kg	9530	11000	8920	8580	10400	7910

TABLE 3a
HISTORICAL SEDIMENT PESTICIDE/HERBICIDE/PCB DATA
CLASS A STANDARDS COMPARISON

NYSDEC-Lower Genesee River Historical Sediment Data Pesticide/Herbicide Class A Standards Comparison		Class A Freshwater Sediment Guidance		Location ID: Sample ID: Lab Sample Id: Depth: Source: SDG: Matrix: Sampled: Validated:	GR-20 LA-142 K1108764-002 9 - 12 ft BAT SE 9/14/2011	GR-20 LA-143 E1100910-012 12 - 14.9 ft BAT SE 9/14/2011	GR-21 LA-021 E1100911-015 0 - 0.5 ft BAT SE 9/13/2011	GR-21 LA-112 K1108656-012 0 - 3 ft BAT SE 9/13/2011	GR-21 LA-113 K1108656-013 3 - 6 ft BAT SE 9/13/2011	GR-21 LA-114 K1108656-014 6 - 9 ft BAT SE 9/13/2011
CAS NO.	COMPOUND	Values	Derivation	UNITS:						
	PESTICIDES									
959-98-8	Alpha Endosulfan	1	2	ug/kg	0.69 UJ	0.58 UJ		0.063 U	0.21 UJ	0.6 UJ
		0.041		ug/gOC	0.5	0.453125		0.06	0.1409396	0.6141249
33213-65-9	Beta Endosulfan	1	2	ug/kg	0.14 U	0.14 U		0.14 U	0.14 U	0.14 U
		0.041		ug/gOC	0.1014493	0.109375		0.1333333	0.0939597	0.1432958
57-74-9	Chlordane	3.2	1	ug/kg	28 UJ	7.1 UJ		1.9 U	7 UJ	7.1 UJ
2921-88-2	Chlorpyrifos	12	2	ug/kg	0.15 U	0.15 U		0.15 U	0.15 U	0.71 UJ
		0.594		ug/gOC	0.1086957	0.1171875		0.1428571	0.1006711	0.7267144
53-19-0	O,P'-DDD	4.9	1	ug/kg	2.7 UJ	2.7 UJ		0.31 J	1.6 NJ	5.7 J
72-54-8	P,P'-DDD	4.9	1	ug/kg	6.7 J	9.1 J		0.73 U	1.8	9.2
3424-82-6	O,P'-DDE	3.2	1	ug/kg	0.72 UJ	0.71 UJ		0.16 U	0.7 UJ	0.91 UJ
72-55-9	P,P'-DDE	3.2	1	ug/kg	10	6		0.82 UJ	2.4	3.6 J
789-02-6	O,P'-DDT	4.2	1	ug/kg	0.7 UJ	0.74 UJ		0.058 U	0.12 J	0.36 UJ
50-29-3	P,P'-DDT	4.2	1	ug/kg	0.17 U	8.5 J		0.55 J	0.17 U	0.17 U
1918-00-9	Dicamba	180	2	ug/kg	4.4 U	4.4 U		4.4 UJ	4.4 UJ	4.4 UJ
		9.079		ug/gOC	3.1884058	3.4375		4.1904762	2.9530201	4.5035824
60-57-1	Dieldrin	1.9	1	ug/kg	0.8 UJ	0.71 UJ		0.14 U	0.14 U	0.71 UJ
72-20-8	Endrin	2.2	1	ug/kg	0.094 U	0.094 U		0.094 U	0.094 U	0.094 U
58-89-9	Gamma Bhc (Lindane)	2.4	1	ug/kg	0.72 UJ	0.71 UJ		0.3 UJ	0.7 UJ	0.28 UJ
1024-57-3	Heptachlor Epoxide	2.5	1	ug/kg	0.084 U	0.084 U		0.084 U	0.084 U	0.084 U
87-68-3	Hexachlorobutadiene	1200	2	ug/kg	0.72 U	0.21 U		0.21 U	0.21 U	0.21 U
		57.539		ug/gOC	0.5217391	0.1640625		0.2	0.1409396	0.2149437
72-43-5	Methoxychlor	59	2	ug/kg	9.4 UJ	1.7 UJ		0.19 U	1.6 J	2 J
		2.958		ug/gOC	6.8115942	1.328125		0.1809524	1.0738255	2.0470829
2385-85-5	Mirex	120	2	ug/kg	0.72 UJ	0.71 UJ		0.73 UJ	0.7 UJ	0.71 UJ
		5.931		ug/gOC	0.5217391	0.5546875		0.6952381	0.4697987	0.7267144
8001-35-2	Toxaphene	6	2	ug/kg	77 UJ	57 UJ		17 UJ	49 UJ	130 UJ
		0.289		ug/gOC	55.797101	44.53125		16.190476	32.885906	133.06039

TABLE 3a
HISTORICAL SEDIMENT PESTICIDE/HERBICIDE/PCB DATA
CLASS A STANDARDS COMPARISON

NYSDEC-Lower Genesee River Historical Sediment Data Pesticide/Herbicide Class A Standards Comparison		Class A Freshwater Sediment Guidance		Location ID: Sample ID: Lab Sample Id: Depth: Source: SDG: Matrix: Sampled: Validated:	GR-20 LA-142 K1108764-002 9 - 12 ft BAT SE 9/14/2011	GR-20 LA-143 E1100910-012 12 - 14.9 ft BAT SE 9/14/2011	GR-21 LA-021 E1100911-015 0 - 0.5 ft BAT SE 9/13/2011	GR-21 LA-112 K1108656-012 0 - 3 ft BAT SE 9/13/2011	GR-21 LA-113 K1108656-013 3 - 6 ft BAT SE 9/13/2011	GR-21 LA-114 K1108656-014 6 - 9 ft BAT SE 9/13/2011
	PCBs									
12672-29-6	PCB-1248 (Aroclor 1248)			ug/kg	240 J	140		3.1 UJ	50	98
11097-69-1	PCB-1254 (Aroclor 1254)			ug/kg	230 J	160		4.9 UJ	71	120
11096-82-5	PCB-1260 (Aroclor 1260)			ug/kg	94 J	65 J		3.7 UJ	49	85
11100-14-4	PCB-1268 (Aroclor 1268)			ug/kg	2.1 UJ	2.1 UJ		2.1 U	2.1 U	2.1 U
	Total PCBs	100	5	ug/Kg	564	365		0	170	303
	DIOXINS									
	Total TCDDs			ng/kg						
	Total TCDDs	0.0045	1	ug/Kg						
1746-01-6	2,3,7,8-Tetrachlorodibenzo-P-Dioxin			ng/kg		3.22	0.0439 U			
	2,3,7,8-Tetrachlorodibenzo-P-Dioxin	0.0045	1	ug/Kg		0.00322 0	0.0000439 U			
	OTHER									
TOC	Total Organic Carbon			%	1.38	1.28	0.733	1.05	1.49	0.977
TOC	Total Organic Carbon			mg/kg	13800	12800	7330	10500	14900	9770

TABLE 3a
HISTORICAL SEDIMENT PESTICIDE/HERBICIDE/PCB DATA
CLASS A STANDARDS COMPARISON

NYSDEC-Lower Genesee River Historical Sediment Data Pesticide/Herbicide Class A Standards Comparison		Class A Freshwater Sediment Guidance		Location ID: Sample ID: Lab Sample Id: Depth: Source: SDG: Matrix: Sampled: Validated:	GR-21 LA-115 K1108656-015 9 - 12 ft BAT SE 9/13/2011	GR-21 LA-116 E1100910-004 12 - 14.2 ft BAT SE 9/13/2011	GR-22 LA-022 E1100911-016 0 - 0.5 ft BAT SE 9/14/2011	GR-22 LA-174 K1108838-006 0 - 3 ft BAT SE 9/14/2011	GR-22 LA-175 K1108838-007 3 - 6 ft BAT SE 9/14/2011	GR-22 LA-176 K1108843-007 6 - 9 ft BAT SE 9/14/2011
CAS NO.	COMPOUND	Values	Derivation	UNITS:						
	PESTICIDES									
959-98-8	Alpha Endosulfan	1	2	ug/kg	0.99 UJ	0.71 UJ		0.063 U	1.4 UJ	0.16 UJ
		0.041		ug/gOC	0.6734694	0.396648		0.0492188	1.2962963	0.1322314
33213-65-9	Beta Endosulfan	1	2	ug/kg	0.14 U	0.14 U		1.5 UJ	3.1 UJ	0.14 U
		0.041		ug/gOC	0.0952381	0.0782123		1.171875	2.8703704	0.1157025
57-74-9	Chlordane	3.2	1	ug/kg	11 UJ	7.1 UJ		1.9 U	7.2 UJ	7.1 UJ
2921-88-2	Chlorpyrifos	12	2	ug/kg	0.74 UJ	0.15 U		0.73 U	0.15 U	0.15 U
		0.594		ug/gOC	0.5034014	0.0837989		0.5703125	0.1388889	0.1239669
53-19-0	O,P'-DDD	4.9	1	ug/kg	4.3 UJ	2.2 UJ		1.2 NJ	35 D	1.2 NJ
72-54-8	P,P'-DDD	4.9	1	ug/kg	8.5	4.7 J		1.1 J	72 D	3.4
3424-82-6	O,P'-DDE	3.2	1	ug/kg	1.2 UJ	0.71 UJ		0.73 UJ	0.16 UJ	0.16 U
72-55-9	P,P'-DDE	3.2	1	ug/kg	7.3	3.3		1.9 J	14 J	1.6
789-02-6	O,P'-DDT	4.2	1	ug/kg	0.66 J	0.42 UJ		0.73 UJ	0.44 UJ	0.71 UJ
50-29-3	P,P'-DDT	4.2	1	ug/kg	0.17 U	1.8 UJ		0.73 UJ	0.95 UJ	0.17 U
1918-00-9	Dicamba	180	2	ug/kg	4.4 UJ	4.4 U		4.4 U	4.4 U	4.7 UJ
		9.079		ug/gOC	2.9931973	2.4581006		3.4375	4.0740741	3.8842975
60-57-1	Dieldrin	1.9	1	ug/kg	1.2 UJ	0.71 UJ		0.71 UJ	0.65 UJ	0.71 UJ
72-20-8	Endrin	2.2	1	ug/kg	0.094 U	0.094 U		0.094 U	0.094 U	0.16 UJ
58-89-9	Gamma Bhc (Lindane)	2.4	1	ug/kg	0.74 UJ	0.71 UJ		0.73 UJ	0.72 UJ	0.71 U
1024-57-3	Heptachlor Epoxide	2.5	1	ug/kg	0.084 U	0.084 U		0.084 U	0.084 U	0.084 U
87-68-3	Hexachlorobutadiene	1200	2	ug/kg	0.21 U	0.21 J		0.21 U	0.21 U	0.21 U
		57.539		ug/gOC	0.1428571	0.1173184		0.1640625	0.1944444	0.1735537
72-43-5	Methoxychlor	59	2	ug/kg	3 NJ	1.2 UJ		1 J	2 UJ	0.86 J
		2.958		ug/gOC	2.0408163	0.6703911		0.78125	1.8518519	0.7107438
2385-85-5	Mirex	120	2	ug/kg	0.74 UJ	0.71 UJ		0.099 U	0.72 UJ	0.71 UJ
		5.931		ug/gOC	0.5034014	0.396648		0.0773438	0.6666667	0.5867769
8001-35-2	Toxaphene	6	2	ug/kg	150 UJ	80 UJ		37 UJ	36 UJ	11 UJ
		0.289		ug/gOC	102.04082	44.692737		28.90625	33.333333	9.0909091

TABLE 3a
HISTORICAL SEDIMENT PESTICIDE/HERBICIDE/PCB DATA
CLASS A STANDARDS COMPARISON

NYSDEC-Lower Genesee River Historical Sediment Data Pesticide/Herbicide Class A Standards Comparison		Class A Freshwater Sediment Guidance		Location ID: Sample ID: Lab Sample Id: Depth: Source: SDG: Matrix: Sampled: Validated:	GR-21 LA-115 K1108656-015 9 - 12 ft BAT SE 9/13/2011	GR-21 LA-116 E1100910-004 12 - 14.2 ft BAT SE 9/13/2011	GR-22 LA-022 E1100911-016 0 - 0.5 ft BAT SE 9/14/2011	GR-22 LA-174 K1108838-006 0 - 3 ft BAT SE 9/14/2011	GR-22 LA-175 K1108838-007 3 - 6 ft BAT SE 9/14/2011	GR-22 LA-176 K1108843-007 6 - 9 ft BAT SE 9/14/2011
	PCBs									
12672-29-6	PCB-1248 (Aroclor 1248)			ug/kg	230	130		33	110	2.1 U
11097-69-1	PCB-1254 (Aroclor 1254)			ug/kg	230	120		45	120 NJ	46
11096-82-5	PCB-1260 (Aroclor 1260)			ug/kg	110	60		34	79	30
11100-14-4	PCB-1268 (Aroclor 1268)			ug/kg	2.1 U	2.1 U		2.1 U	2.1 U	2.1 U
	Total PCBs	100	5	ug/Kg	570	310		112	309	76
	DIOXINS									
	Total TCDDs			ng/kg						
	Total TCDDs	0.0045	1	ug/Kg						
1746-01-6	2,3,7,8-Tetrachlorodibenzo-P-Dioxin			ng/kg		3.37	0.0463 U			
	2,3,7,8-Tetrachlorodibenzo-P-Dioxin	0.0045	1	ug/Kg		0.00337	0.0000463 U			
	OTHER									
TOC	Total Organic Carbon			%	1.47	1.79	1.03	1.28	1.08	1.21
TOC	Total Organic Carbon			mg/kg	14700	17900	10300	12800	10800	12100

TABLE 3a
HISTORICAL SEDIMENT PESTICIDE/HERBICIDE/PCB DATA
CLASS A STANDARDS COMPARISON

NYSDEC-Lower Genesee River Historical Sediment Data Pesticide/Herbicide Class A Standards Comparison		Class A Freshwater Sediment Guidance		Location ID: Sample ID: Lab Sample Id: Depth: Source: SDG: Matrix: Sampled: Validated:	GR-22 LA-177 K1108843-008 9 - 12 ft BAT SE 9/14/2011	GR-22 LA-178 K1108843-009 12 - 15 ft BAT SE 9/14/2011	GR-22 LA-179 E1100919-010 15 - 16.2 ft BAT SE 9/14/2011	GR-23 LA-023 E1100911-017 0 - 0.5 ft BAT SE 9/13/2011	GR-23 LA-124 E1100910-007 0 - 2.2 ft BAT SE 9/13/2011	GR-23M LA-123 E1100910-006 0 - 1.1 ft BAT SE 9/13/2011
CAS NO.	COMPOUND	Values	Derivation	UNITS:						
	PESTICIDES									
959-98-8	Alpha Endosulfan	1	2	ug/kg	0.66 UJ	0.75 UJ	0.063 U		0.063 U	0.063 U
		0.041		ug/gOC	0.3815029	0.3289474	0.0089872		0.1632124	0.0222615
33213-65-9	Beta Endosulfan	1	2	ug/kg	0.14 U	5.3 UJ	0.14 U		0.14 U	0.14 U
		0.041		ug/gOC	0.0809249	2.3245614	0.0199715		0.3626943	0.04947
57-74-9	Chlordane	3.2	1	ug/kg	11 UJ	38 J	6.5 UJ		1.9 U	1.9 U
2921-88-2	Chlorpyrifos	12	2	ug/kg	0.66 UJ	0.75 UJ	0.15 U		0.15 U	0.15 U
		0.594		ug/gOC	0.3815029	0.3289474	0.021398		0.388601	0.0530035
53-19-0	O,P'-DDD	4.9	1	ug/kg	5.4 NJ	5.7 NJ	2.3		0.4 J	0.7 J
72-54-8	P,P'-DDD	4.9	1	ug/kg	12	11	0.39 J		0.36 J	0.68
3424-82-6	O,P'-DDE	3.2	1	ug/kg	0.68 UJ	1.6 UJ	0.92 UJ		0.16 U	0.23 U
72-55-9	P,P'-DDE	3.2	1	ug/kg	4.2 J	6	0.29 UJ		0.11 U	0.25 UJ
789-02-6	O,P'-DDT	4.2	1	ug/kg	0.73 UJ	1.2 UJ	0.058 U		0.058 U	0.058 U
50-29-3	P,P'-DDT	4.2	1	ug/kg	0.68 UJ	0.17 U	0.49 UJ		0.17 U	0.17 U
1918-00-9	Dicamba	180	2	ug/kg	40 UJ	45 UJ	4.4 U		4.4 U	4.4 U
		9.079		ug/gOC	23.121387	19.736842	0.6276748		11.398964	1.5547703
60-57-1	Dieldrin	1.9	1	ug/kg	1.4 UJ	0.75 UJ	1.5 UJ		0.14 U	0.14 U
72-20-8	Endrin	2.2	1	ug/kg	0.094 U	0.094 U	0.094 U		0.094 U	0.094 U
58-89-9	Gamma Bhc (Lindane)	2.4	1	ug/kg	0.67 UJ	0.08 U	0.86 UJ		0.14 J	0.63 UJ
1024-57-3	Heptachlor Epoxide	2.5	1	ug/kg	0.084 U	0.084 U	0.084 U		0.084 U	0.084 U
87-68-3	Hexachlorobutadiene	1200	2	ug/kg	0.66 U	0.21 U	0.21 U		0.21 U	0.21 U
		57.539		ug/gOC	0.3815029	0.0921053	0.0299572		0.5440415	0.0742049
72-43-5	Methoxychlor	59	2	ug/kg	1.8 UJ	3.1	0.88 UJ		0.19 U	0.27 UJ
		2.958		ug/gOC	1.0404624	1.3596491	0.125535		0.492228	0.0954064
2385-85-5	Mirex	120	2	ug/kg	0.66 UJ	0.75 UJ	0.6 UJ		0.099 U	0.099 U
		5.931		ug/gOC	0.3815029	0.3289474	0.085592		0.2564767	0.0349823
8001-35-2	Toxaphene	6	2	ug/kg	38 UJ	66 UJ	58 UJ		4.8 U	4.8 U
		0.289		ug/gOC	21.965318	28.947368	8.2738944		12.435233	1.6961131

TABLE 3a
HISTORICAL SEDIMENT PESTICIDE/HERBICIDE/PCB DATA
CLASS A STANDARDS COMPARISON

NYSDEC-Lower Genesee River Historical Sediment Data Pesticide/Herbicide Class A Standards Comparison		Class A Freshwater Sediment Guidance		Location ID: Sample ID: Lab Sample Id: Depth: Source: SDG: Matrix: Sampled: Validated:	GR-22 LA-177 K1108843-008 9 - 12 ft BAT SE 9/14/2011	GR-22 LA-178 K1108843-009 12 - 15 ft BAT SE 9/14/2011	GR-22 LA-179 E1100919-010 15 - 16.2 ft BAT SE 9/14/2011	GR-23 LA-023 E1100911-017 0 - 0.5 ft BAT SE 9/13/2011	GR-23 LA-124 E1100910-007 0 - 2.2 ft BAT SE 9/13/2011	GR-23M LA-123 E1100910-006 0 - 1.1 ft BAT SE 9/13/2011
	PCBs									
12672-29-6	PCB-1248 (Aroclor 1248)			ug/kg	110 UJ	130 UJ	3.9 UJ		3.7 UJ	6 UJ
11097-69-1	PCB-1254 (Aroclor 1254)			ug/kg	140	200	7.2 UJ		6.1 J	7.7 UJ
11096-82-5	PCB-1260 (Aroclor 1260)			ug/kg	80	120	13 UJ		3.6 J	7.1
11100-14-4	PCB-1268 (Aroclor 1268)			ug/kg	2.1 U	2.1 U	4.2 UJ		2.1 U	2.1 U
	Total PCBs	100	5	ug/Kg	220	320	0		9.7	7.1
	DIOXINS									
	Total TCDDs			ng/kg						
	Total TCDDs	0.0045	1	ug/Kg						
1746-01-6	2,3,7,8-Tetrachlorodibenzo-P-Dioxin			ng/kg			0.111 J	0.0363 U	0.0671 U	0.0485 J
	2,3,7,8-Tetrachlorodibenzo-P-Dioxin	0.0045	1	ug/Kg			0.000111 J	0.0000363 U	0.0000671 U	0.0000485 J
	OTHER									
TOC	Total Organic Carbon			%	1.73	2.28	7.01	0.656	0.386	2.83
TOC	Total Organic Carbon			mg/kg	17300	22800	70100	6560	3860	28300

TABLE 3a
HISTORICAL SEDIMENT PESTICIDE/HERBICIDE/PCB DATA
CLASS A STANDARDS COMPARISON

NYSDEC-Lower Genesee River Historical Sediment Data Pesticide/Herbicide Class A Standards Comparison		Class A Freshwater Sediment Guidance		Location ID: Sample ID: Lab Sample Id: Depth: Source: SDG: Matrix: Sampled: Validated:	GR-24 LA-024 E1100911-018 0 - 0.5 ft BAT SE 9/13/2011	GR-24 LA-125 E1100910-008 0 - 2.3 ft BAT SE 9/13/2011	GR-25 LA-025 E1100918-011 0 - 0.5 ft BAT SE 9/16/2011	GR-26 LA-026 E1100918-012 0 - 0.5 ft BAT SE 9/16/2011	GR-27 LA-027 E1100918-013 0 - 0.5 ft BAT SE 9/16/2011	GR-28 LA-028 E1100918-014 0 - 0.5 ft BAT SE 9/16/2011
CAS NO.	COMPOUND	Values	Derivation	UNITS:						
	PESTICIDES									
959-98-8	Alpha Endosulfan	1	2	ug/kg		0.063 U	0.063 U	0.063 U	0.063 U	0.063 U
		0.041		ug/gOC		0.2971698	0.2669492	0.0782609	0.2	0.2490119
33213-65-9	Beta Endosulfan	1	2	ug/kg		0.14 U	0.14 U	0.14 U	0.14 U	0.14 U
		0.041		ug/gOC		0.6603774	0.5932203	0.173913	0.4444444	0.5533597
57-74-9	Chlordane	3.2	1	ug/kg		1.9 U	1.9 U	1.9 U	1.9 U	1.9 U
2921-88-2	Chlorpyrifos	12	2	ug/kg		0.15 U	0.15 U	0.15 U	0.15 U	0.15 U
		0.594		ug/gOC		0.7075472	0.6355932	0.1863354	0.4761905	0.5928854
53-19-0	O,P'-DDD	4.9	1	ug/kg		1 J	0.49 J	0.42 J	0.27 J	0.47 J
72-54-8	P,P'-DDD	4.9	1	ug/kg		0.91	0.45 J	0.87 U	0.17 J	0.36 J
3424-82-6	O,P'-DDE	3.2	1	ug/kg		0.55 UJ	0.16 U	0.16 U	0.16 U	0.16 U
72-55-9	P,P'-DDE	3.2	1	ug/kg		0.26 U	0.51 J	0.75 J	0.4 J	0.45 J
789-02-6	O,P'-DDT	4.2	1	ug/kg		0.058 U	0.07 UJ	0.058 U	0.058 U	0.058 U
50-29-3	P,P'-DDT	4.2	1	ug/kg		0.17 U	0.17 U	0.87 U	0.17 U	0.17 U
1918-00-9	Dicamba	180	2	ug/kg		4.4 U	4.4 U	4.6 U	4.4 U	4.4 U
		9.079		ug/gOC		20.754717	18.644068	5.7142857	13.968254	17.391304
60-57-1	Dieldrin	1.9	1	ug/kg		0.14 U	0.14 U	0.14 U	0.14 U	0.14 U
72-20-8	Endrin	2.2	1	ug/kg		0.094 U	0.094 U	0.094 U	0.094 U	0.094 U
58-89-9	Gamma Bhc (Lindane)	2.4	1	ug/kg		0.08 U	0.55 UJ	0.87 UJ	0.54 UJ	0.67 UJ
1024-57-3	Heptachlor Epoxide	2.5	1	ug/kg		0.084 U	0.084 U	0.084 U	0.084 U	0.084 U
87-68-3	Hexachlorobutadiene	1200	2	ug/kg		0.21 U	0.21 U	0.21 U	0.21 U	0.21 U
		57.539		ug/gOC		0.990566	0.8898305	0.2608696	0.6666667	0.8300395
72-43-5	Methoxychlor	59	2	ug/kg		0.19 U	0.19 U	0.19 U	0.19 U	0.19 U
		2.958		ug/gOC		0.8962264	0.8050847	0.2360248	0.6031746	0.7509881
2385-85-5	Mirex	120	2	ug/kg		0.099 U	0.099 U	0.099 U	0.099 U	0.099 U
		5.931		ug/gOC		0.4669811	0.4194915	0.1229814	0.3142857	0.3913043
8001-35-2	Toxaphene	6	2	ug/kg		6.5 UJ	13 UJ	12 UJ	7.5 UJ	11 UJ
		0.289		ug/gOC		30.660377	55.084746	14.906832	23.809524	43.478261

TABLE 3a
HISTORICAL SEDIMENT PESTICIDE/HERBICIDE/PCB DATA
CLASS A STANDARDS COMPARISON

NYSDEC-Lower Genesee River Historical Sediment Data Pesticide/Herbicide Class A Standards Comparison		Class A Freshwater Sediment Guidance		Location ID: Sample ID: Lab Sample Id: Depth: Source: SDG: Matrix: Sampled: Validated:	GR-24 LA-024 E1100911-018 0 - 0.5 ft BAT SE 9/13/2011	GR-24 LA-125 E1100910-008 0 - 2.3 ft BAT SE 9/13/2011	GR-25 LA-025 E1100918-011 0 - 0.5 ft BAT SE 9/16/2011	GR-26 LA-026 E1100918-012 0 - 0.5 ft BAT SE 9/16/2011	GR-27 LA-027 E1100918-013 0 - 0.5 ft BAT SE 9/16/2011	GR-28 LA-028 E1100918-014 0 - 0.5 ft BAT SE 9/16/2011
	PCBs									
12672-29-6	PCB-1248 (Aroclor 1248)			ug/kg		8.7 UJ	4.4 UJ	5.2 UJ	2.3 UJ	3.4 UJ
11097-69-1	PCB-1254 (Aroclor 1254)			ug/kg		11 J	7.1 UJ	7.6 UJ	3.2 UJ	6.3 UJ
11096-82-5	PCB-1260 (Aroclor 1260)			ug/kg		7.8	3.8 J	5.4 J	2.1 J	3.7 J
11100-14-4	PCB-1268 (Aroclor 1268)			ug/kg		2.1 U	2.1 U	2.1 U	2.1 U	2.1 U
	Total PCBs	100	5	ug/Kg		18.8	3.8	5.4	2.1	3.7
	DIOXINS									
	Total TCDDs			ng/kg						
	Total TCDDs	0.0045	1	ug/Kg						
1746-01-6	2,3,7,8-Tetrachlorodibenzo-P-Dioxin			ng/kg	0.0452 U	0.0989 J	0.0459 U	0.0979 J	0.0463 U	0.0821 J
	2,3,7,8-Tetrachlorodibenzo-P-Dioxin	0.0045	1	ug/Kg	0.0000452 U	0.0000989 J	0.0000459 U	0.0000979 J	0.0000463 U	0.0000821 J
	OTHER									
TOC	Total Organic Carbon			%	0.17	0.212	0.236	0.805	0.315	0.253
TOC	Total Organic Carbon			mg/kg	1700	2120	2360	8050	3150	2530

TABLE 3a
HISTORICAL SEDIMENT PESTICIDE/HERBICIDE/PCB DATA
CLASS A STANDARDS COMPARISON

NYSDEC-Lower Genesee River Historical Sediment Data Pesticide/Herbicide Class A Standards Comparison		Class A Freshwater Sediment Guidance		Location ID: Sample ID: Lab Sample Id: Depth: Source: SDG: Matrix: Sampled: Validated:	GR-29 LA-029 E1100918-015 0 - 0.5 ft BAT SE 9/16/2011	GR-30 LA-030 E1100918-016 0 - 0.5 ft BAT SE 9/16/2011	GR-31 LA-031 E1100918-017 0 - 0.5 ft BAT SE 9/16/2011	GR-32 LA-032 E1100918-018 0 - 0.5 ft BAT SE 9/16/2011	GR-32 LA-032D E1100918-019 0 - 0.5 ft BAT SE 9/16/2011	GR-33 LA-033 E1100918-020 0 - 0.5 ft BAT SE 9/16/2011
CAS NO.	COMPOUND	Values	Derivation	UNITS:						
	PESTICIDES									
959-98-8	Alpha Endosulfan	1	2	ug/kg	0.063 U	0.063 U	0.063 U	0.063 U	0.063 U	0.063 U
		0.041		ug/gOC	0.1465116	0.0978261	0.05625	0.1779661	0.1594937	0.0975232
33213-65-9	Beta Endosulfan	1	2	ug/kg	0.14 U	0.14 U	0.14 U	0.14 U	0.14 U	0.14 U
		0.041		ug/gOC	0.3255814	0.2173913	0.125	0.3954802	0.3544304	0.2167183
57-74-9	Chlordane	3.2	1	ug/kg	1.9 U	2.3 UJ	1.9 U	2.1 UJ	8.6 UJ	1.9 U
2921-88-2	Chlorpyrifos	12	2	ug/kg	0.15 U	0.15 U	0.15 U	0.24 UJ	0.68 UJ	0.15 U
		0.594		ug/gOC	0.3488372	0.2329193	0.1339286	0.6779661	1.721519	0.2321981
53-19-0	O,P'-DDD	4.9	1	ug/kg	0.64 J	0.66 J	0.61 J	0.64 J	0.68 U	0.49 J
72-54-8	P,P'-DDD	4.9	1	ug/kg	0.48 J	0.66 U	0.41 J	0.65 U	0.68 U	0.73 U
3424-82-6	O,P'-DDE	3.2	1	ug/kg	0.28 UJ	0.25 UJ	0.69 UJ	0.16 U	0.68 UJ	0.35 UJ
72-55-9	P,P'-DDE	3.2	1	ug/kg	0.53 J	0.49 J	0.52 J	0.62 J	0.68 UJ	0.68 J
789-02-6	O,P'-DDT	4.2	1	ug/kg	0.058 U	0.058 U	0.058 U	0.058 U	0.058 U	0.058 U
50-29-3	P,P'-DDT	4.2	1	ug/kg	0.7 U	0.17 U	0.23 UJ	0.65 U	0.34 J	0.73 U
1918-00-9	Dicamba	180	2	ug/kg	4.4 U	4.4 U	4.4 U	4.4 U	4.4 U	4.4 U
		9.079		ug/gOC	10.232558	6.8322981	3.9285714	12.429379	11.139241	6.8111455
60-57-1	Dieldrin	1.9	1	ug/kg	0.14 U	0.14 U	0.69 UJ	0.14 U	0.14 U	0.14 U
72-20-8	Endrin	2.2	1	ug/kg	0.094 U	0.094 U	0.094 U	0.094 U	0.094 U	0.094 U
58-89-9	Gamma Bhc (Lindane)	2.4	1	ug/kg	0.7 UJ	1.9 UJ	2.1 UJ	0.65 U	1.2 UJ	0.77 J
1024-57-3	Heptachlor Epoxide	2.5	1	ug/kg	0.084 U	0.084 U	0.084 U	0.084 U	0.084 U	0.084 U
87-68-3	Hexachlorobutadiene	1200	2	ug/kg	0.21 U	0.21 U	0.21 U	0.21 U	0.21 U	0.21 U
		57.539		ug/gOC	0.4883721	0.326087	0.1875	0.5932203	0.5316456	0.3250774
72-43-5	Methoxychlor	59	2	ug/kg	0.19 U	0.24 J	0.22 UJ	0.19 U	0.81 J	0.19 U
		2.958		ug/gOC	0.4418605	0.3726708	0.1964286	0.5367232	2.0506329	0.2941176
2385-85-5	Mirex	120	2	ug/kg	0.099 U	0.099 U	0.099 U	0.099 U	0.099 U	0.099 U
		5.931		ug/gOC	0.2302326	0.1537267	0.0883929	0.279661	0.2506329	0.1532508
8001-35-2	Toxaphene	6	2	ug/kg	4.8 U	9 UJ	13 UJ	4.8 U	23 UJ	4.8 U
		0.289		ug/gOC	11.162791	13.975155	11.607143	13.559322	58.227848	7.4303406

TABLE 3a
HISTORICAL SEDIMENT PESTICIDE/HERBICIDE/PCB DATA
CLASS A STANDARDS COMPARISON

NYSDEC-Lower Genesee River Historical Sediment Data Pesticide/Herbicide Class A Standards Comparison		Class A Freshwater Sediment Guidance		Location ID: Sample ID: Lab Sample Id: Depth: Source: SDG: Matrix: Sampled: Validated:	GR-29 LA-029 E1100918-015 0 - 0.5 ft BAT SE 9/16/2011	GR-30 LA-030 E1100918-016 0 - 0.5 ft BAT SE 9/16/2011	GR-31 LA-031 E1100918-017 0 - 0.5 ft BAT SE 9/16/2011	GR-32 LA-032 E1100918-018 0 - 0.5 ft BAT SE 9/16/2011	GR-32 LA-032D E1100918-019 0 - 0.5 ft BAT SE 9/16/2011	GR-33 LA-033 E1100918-020 0 - 0.5 ft BAT SE 9/16/2011
	PCBs									
12672-29-6	PCB-1248 (Aroclor 1248)			ug/kg	4.3 UJ	4.2 UJ	5.2 UJ	4.1 UJ	4.2 UJ	3.5 UJ
11097-69-1	PCB-1254 (Aroclor 1254)			ug/kg	5.3 UJ	7.5	9.5	7.7	6 J	5.7 J
11096-82-5	PCB-1260 (Aroclor 1260)			ug/kg	3.5 J	7.5 J	5.7 J	3.6 J	3.8 J	4 J
11100-14-4	PCB-1268 (Aroclor 1268)			ug/kg	2.1 U	2.1 U	2.1 U	2.1 U	2.1 U	2.1 U
	Total PCBs	100	5	ug/Kg	3.5	15	15.2	11.3	9.8	9.7
	DIOXINS									
	Total TCDDs			ng/kg						
	Total TCDDs	0.0045	1	ug/Kg						
1746-01-6	2,3,7,8-Tetrachlorodibenzo-P-Dioxin			ng/kg	0.105 J	0.101 J	0.0699 U	0.0909 J	0.189 J	0.0378 U
	2,3,7,8-Tetrachlorodibenzo-P-Dioxin	0.0045	1	ug/Kg	0.000105 J	0.000101 J	0.0000699 U	0.0000909 J	0.000189 J	0.0000378 U
	OTHER									
TOC	Total Organic Carbon			%	0.43	0.644	1.12	0.354	0.395	0.646
TOC	Total Organic Carbon			mg/kg	4300	6440	11200	3540	3950	6460

NYSDEC-Lower Genesee River Historical Sediment Data Pesticide/Herbicide Class C Standards Comparison		Class C Freshwater Sediment Guidance		Location ID: Sample ID: Lab Sample Id: Depth: Source: SDG: Matrix: Sampled: Validated:	1 01A 0 - 2.76 ft NYSDEC SE 7/15/2002	1 RE02-01P - NYSDEC SE 7/15/2002	2 02A 0 - 2.78 ft NYSDEC SE 7/15/2002	2 02B 2.78 - 5.55 ft NYSDEC SE 7/15/2002	2 02C 5.55 - 8.33 ft NYSDEC SE 7/15/2002	2 RE02-02P - NYSDEC SE 7/15/2002
CAS NO.	COMPOUND	Values	Derivation	UNITS:						
	PESTICIDES									
959-98-8	Alpha Endosulfan	20 1.008	2	ug/kg ug/gOC						
33213-65-9	Beta Endosulfan	1 1.008	2	ug/kg ug/gOC						
57-74-9	Chlordane	18	1	ug/kg	U	U		U	U	U
2921-88-2	Chlorpyrifos	63 3.157	2	ug/kg ug/gOC						
53-19-0	O,P'-DDD	28	1	ug/kg						
72-54-8	P,P'-DDD	28	1	ug/kg						
3424-82-6	O,P'-DDE	31	1	ug/kg						
72-55-9	P,P'-DDE	31	1	ug/kg						
789-02-6	O,P'-DDT	63	1	ug/kg						
50-29-3	P,P'-DDT	63	1	ug/kg						
1918-00-9	Dicamba	13000 654.881	2	ug/kg ug/gOC						
60-57-1	Dieldrin	62	1	ug/kg	U	U		4.7 *P	U	U
72-20-8	Endrin	210	1	ug/kg	U	U		2.4 J*P	2.6 J*P	U
58-89-9	Gamma Bhc (Lindane)	5	1	ug/kg						
1024-57-3	Heptachlor Epoxide	16	1	ug/kg	U	U		U	U	U
87-68-3	Hexachlorobutadiene	12000 575.395	2	ug/kg ug/gOC						
72-43-5	Methoxychlor	NS		ug/kg ug/gOC	U	U		5.7 * 4.75	U	U
2385-85-5	Mirex	120 5.931	2	ug/kg ug/gOC	U	U		U	U	U
8001-35-2	Toxaphene	250 12.46	2	ug/kg ug/gOC	U	U		U	U	U

NYSDEC-Lower Genesee River Historical Sediment Data Pesticide/Herbicide Class C Standards Comparison		Class C Freshwater Sediment Guidance		Location ID: Sample ID: Lab Sample Id: Depth: Source: SDG: Matrix: Sampled: Validated:	1 01A 0 - 2.76 ft NYSDEC SE 7/15/2002	1 RE02-01P - NYSDEC SE 7/15/2002	2 02A 0 - 2.78 ft NYSDEC SE 7/15/2002	2 02B 2.78 - 5.55 ft NYSDEC SE 7/15/2002	2 02C 5.55 - 8.33 ft NYSDEC SE 7/15/2002	2 RE02-02P - NYSDEC SE 7/15/2002
	PCBs									
12672-29-6	PCB-1248 (Aroclor 1248)			ug/kg	U	U	U	U	U	U
11097-69-1	PCB-1254 (Aroclor 1254)			ug/kg	U	U	U	U	U	U
11096-82-5	PCB-1260 (Aroclor 1260)			ug/kg	12 J	U	13 J	160	230	U
11100-14-4	PCB-1268 (Aroclor 1268)			ug/kg						
	Total PCBs	1000	5	ug/Kg	12	0	13	160	230	0
	DIOXINS									
	Total TCDDs			ng/kg	1.36	0.614	45	269	434	0.438
	Total TCDDs	0.05	1	ug/Kg	0.00136	0.000614	0.045	0.269	0.434	0.000438
1746-01-6	2,3,7,8-Tetrachlorodibenzo-P-Dioxin			ng/kg						
	2,3,7,8-Tetrachlorodibenzo-P-Dioxin	0.05	1	ug/Kg						
	OTHER									
TOC	Total Organic Carbon			%	0.62	0.63	1.2	1.2	0.95	0.79
TOC	Total Organic Carbon			mg/kg	6200	6300	12000	12000	9500	7900

Data Sources:
NYSDEC, 2007. Contamination Analysis in the Rochester Embayment Area of Concern. May 2007.
USEPA, 2012. TASK 6: Final Summary Report for Site Characterization at the Genesee River Site, Rochester Embayment Area of Concern, Rochester, NY. June 2012.
USEPA, 2013. Technical Report: Genesee River Sediment Sampling under the Great Lakes Legacy Act - Rochester Embayment Area of Concern. September 2013.

Notes:
1. Sample locations can be found on Figure 5.
2. Highlighted results indicate an exceedenc of sediment guidance value (SGV).

SGV Derivations:
1. TEC/PEC derived from MacDonald et al., 2000 (values rounded to two significant digits)
2. Equilibrium partitioning based on 2% TOC (values rounded to two significant digits)
3. Value from Long and Morgan (1991) (values rounded to two significant digits)
5. DoW TOGS 5.

NYSDEC-Lower Genesee River Historical Sediment Data Pesticide/Herbicide Class C Standards Comparison		Class C Freshwater Sediment Guidance		Location ID: Sample ID: Lab Sample Id: Depth: Source: SDG: Matrix: Sampled: Validated:	3 03A 0 - 3.12 ft NYSDEC SE 7/15/2002	3 03B 3.12 - 6.23 ft NYSDEC SE 7/15/2002	3 03C 6.23 - 9.35 ft NYSDEC SE 7/15/2002	3 RE02-03P - NYSDEC SE 7/15/2002	4 04A 0 - 2.97 ft NYSDEC SE 7/16/2002	4 04B 2.97 - 5.95 ft NYSDEC SE 7/16/2002
CAS NO.	COMPOUND	Values	Derivation	UNITS:						
	PESTICIDES									
959-98-8	Alpha Endosulfan	20 1.008	2	ug/kg ug/gOC						
33213-65-9	Beta Endosulfan	1 1.008	2	ug/kg ug/gOC						
57-74-9	Chlordane	18	1	ug/kg	U		U	U	U	U
2921-88-2	Chlorpyrifos	63 3.157	2	ug/kg ug/gOC						
53-19-0	O,P'-DDD	28	1	ug/kg						
72-54-8	P,P'-DDD	28	1	ug/kg						
3424-82-6	O,P'-DDE	31	1	ug/kg						
72-55-9	P,P'-DDE	31	1	ug/kg						
789-02-6	O,P'-DDT	63	1	ug/kg						
50-29-3	P,P'-DDT	63	1	ug/kg						
1918-00-9	Dicamba	13000 654.881	2	ug/kg ug/gOC						
60-57-1	Dieldrin	62	1	ug/kg	U		U	U	1.7 J*P	2 J*
72-20-8	Endrin	210	1	ug/kg	U		U	U	0.89 J*P	U
58-89-9	Gamma Bhc (Lindane)	5	1	ug/kg						
1024-57-3	Heptachlor Epoxide	16	1	ug/kg	U		U	U	U	U
87-68-3	Hexachlorobutadiene	12000 575.395	2	ug/kg ug/gOC						
72-43-5	Methoxychlor	NS		ug/kg ug/gOC	U		U	U	U	U
2385-85-5	Mirex	120 5.931	2	ug/kg ug/gOC	U		U	U	U	U
8001-35-2	Toxaphene	250 12.46	2	ug/kg ug/gOC	U		U	U	U	U

NYSDEC-Lower Genesee River Historical Sediment Data Pesticide/Herbicide Class C Standards Comparison		Class C Freshwater Sediment Guidance		Location ID: Sample ID: Lab Sample Id: Depth: Source: SDG: Matrix: Sampled: Validated:	3 03A 0 - 3.12 ft NYSDEC SE 7/15/2002	3 03B 3.12 - 6.23 ft NYSDEC SE 7/15/2002	3 03C 6.23 - 9.35 ft NYSDEC SE 7/15/2002	3 RE02-03P - NYSDEC SE 7/15/2002	4 04A 0 - 2.97 ft NYSDEC SE 7/16/2002	4 04B 2.97 - 5.95 ft NYSDEC SE 7/16/2002
	PCBs									
12672-29-6	PCB-1248 (Aroclor 1248)			ug/kg	U	U	U	U	U	U
11097-69-1	PCB-1254 (Aroclor 1254)			ug/kg	U	U	U	U	U	U
11096-82-5	PCB-1260 (Aroclor 1260)			ug/kg	19 J	69	22 JP	59	49 J	47 J
11100-14-4	PCB-1268 (Aroclor 1268)			ug/kg						
	Total PCBs	1000	5	ug/Kg	19	69	22	59	49	47
	DIOXINS									
	Total TCDDs			ng/kg	18.4	5.54	5.52	18.3	14.2	28.4
	Total TCDDs	0.05	1	ug/Kg	0.0184	0.00554	0.00552	0.0183	0.0142	0.0284
1746-01-6	2,3,7,8-Tetrachlorodibenzo-P-Dioxin			ng/kg						
	2,3,7,8-Tetrachlorodibenzo-P-Dioxin	0.05	1	ug/Kg						
	OTHER									
TOC	Total Organic Carbon			%	0.71	1.3	1.1	0.96	1.2	1.2
TOC	Total Organic Carbon			mg/kg	7100	13000	11000	9600	12000	12000

Data Sources:
NYSDEC, 2007. Contamination Analysis in the Rochester Embayment Area of Concern. Ma
USEPA, 2012. TASK 6: Final Summary Report for Site Characterization at the Genesee Rive
USEPA, 2013. Technical Report: Genesee River Sediment Sampling under the Great Lakes L

Notes:
1. Sample locations can be found on Figure 5.
2. Highlighted results indicate an exceedenc of sediment guidance value (SGV).

SGV Derivations:
1. TEC/PEC derived from MacDonald et al., 2000 (values rounded to two significant digits)
2. Equilibrium partitioning based on 2% TOC (values rounded to two significant digits)
3. Value from Long and Morgan (1991) (values rounded to two significant digits)
5. DoW TOGS 5.

NYSDEC-Lower Genesee River Historical Sediment Data Pesticide/Herbicide Class C Standards Comparison		Class C Freshwater Sediment Guidance		Location ID: Sample ID: Lab Sample Id: Depth: Source: SDG: Matrix: Sampled: Validated:	4 04C 5.95 - 8.92 ft NYSDEC SE 7/16/2002	4 RE02-04P - NYSDEC SE 7/16/2002	5 05A 0 - 3.39 ft NYSDEC SE 7/16/2002	5 05B 3.39 - 6.78 ft NYSDEC SE 7/16/2002	5 05C 6.78 - 10.2 ft NYSDEC SE 7/16/2002	5 17A 0 - 2.53 ft NYSDEC SE 7/16/2002
CAS NO.	COMPOUND	Values	Derivation	UNITS:						
	PESTICIDES									
959-98-8	Alpha Endosulfan	20 1.008	2	ug/kg ug/gOC						
33213-65-9	Beta Endosulfan	1 1.008	2	ug/kg ug/gOC						
57-74-9	Chlordane	18	1	ug/kg	U	U	U	U	U	U
2921-88-2	Chlorpyrifos	63 3.157	2	ug/kg ug/gOC						
53-19-0	O,P'-DDD	28	1	ug/kg						
72-54-8	P,P'-DDD	28	1	ug/kg						
3424-82-6	O,P'-DDE	31	1	ug/kg						
72-55-9	P,P'-DDE	31	1	ug/kg						
789-02-6	O,P'-DDT	63	1	ug/kg						
50-29-3	P,P'-DDT	63	1	ug/kg						
1918-00-9	Dicamba	13000 654.881	2	ug/kg ug/gOC						
60-57-1	Dieldrin	62	1	ug/kg	3.5 P	U	U	U	U	U
72-20-8	Endrin	210	1	ug/kg	0.47 J*	U	U	U	U	U
58-89-9	Gamma Bhc (Lindane)	5	1	ug/kg						
1024-57-3	Heptachlor Epoxide	16	1	ug/kg	U	U	U	U	U	U
87-68-3	Hexachlorobutadiene	12000 575.395	2	ug/kg ug/gOC						
72-43-5	Methoxychlor	NS		ug/kg ug/gOC	U	U	U	U	U	1.4 J*P 1.627907
2385-85-5	Mirex	120 5.931	2	ug/kg ug/gOC	U	U	U	U	U	U
8001-35-2	Toxaphene	250 12.46	2	ug/kg ug/gOC	U	U	U	U	U	U

NYSDEC-Lower Genesee River Historical Sediment Data Pesticide/Herbicide Class C Standards Comparison		Class C Freshwater Sediment Guidance		Location ID: Sample ID: Lab Sample Id: Depth: Source: SDG: Matrix: Sampled: Validated:	4 04C 5.95 - 8.92 ft NYSDEC SE 7/16/2002	4 RE02-04P - NYSDEC SE 7/16/2002	5 05A 0 - 3.39 ft NYSDEC SE 7/16/2002	5 05B 3.39 - 6.78 ft NYSDEC SE 7/16/2002	5 05C 6.78 - 10.2 ft NYSDEC SE 7/16/2002	5 17A 0 - 2.53 ft NYSDEC SE 7/16/2002
	PCBs									
12672-29-6	PCB-1248 (Aroclor 1248)			ug/kg	U	U	U	U	U	U
11097-69-1	PCB-1254 (Aroclor 1254)			ug/kg	U	U	U	U	U	U
11096-82-5	PCB-1260 (Aroclor 1260)			ug/kg	36 JP	U	U	31 J	42	U
11100-14-4	PCB-1268 (Aroclor 1268)			ug/kg						
	Total PCBs	1000	5	ug/Kg	36	0	0	31	42	0
	DIOXINS									
	Total TCDDs			ng/kg	85.7	2.28	7.79	12	3.08	0.375 K
	Total TCDDs	0.05	1	ug/Kg	0.0857	0.00228	0.00779	0.012	0.00308	0.000375 K
1746-01-6	2,3,7,8-Tetrachlorodibenzo-P-Dioxin			ng/kg						
	2,3,7,8-Tetrachlorodibenzo-P-Dioxin	0.05	1	ug/Kg						
	OTHER									
TOC	Total Organic Carbon			%	1.5	0.97	1	1.3	0.4	0.86
TOC	Total Organic Carbon			mg/kg	15000	9700	10000	13000	4000	8600

Data Sources:
NYSDEC, 2007. Contamination Analysis in the Rochester Embayment Area of Concern. Ma
USEPA, 2012. TASK 6: Final Summary Report for Site Characterization at the Genesee Rive
USEPA, 2013. Technical Report: Genesee River Sediment Sampling under the Great Lakes L

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1. Sample locations can be found on Figure 5.
2. Highlighted results indicate an exceedenc of sediment guidance value (SGV).

SGV Derivations:
1. TEC/PEC derived from MacDonald et al., 2000 (values rounded to two significant digits)
2. Equilibrium partitioning based on 2% TOC (values rounded to two significant digits)
3. Value from Long and Morgan (1991) (values rounded to two significant digits)
5. DoW TOGS 5.

NYSDEC-Lower Genesee River Historical Sediment Data Pesticide/Herbicide Class C Standards Comparison		Class C Freshwater Sediment Guidance		Location ID: Sample ID: Lab Sample Id: Depth: Source: SDG: Matrix: Sampled: Validated:	5 17B 2.53 - 5.05 ft NYSDEC SE 7/16/2002	5 17C 5.05 - 7.58 ft NYSDEC SE 7/16/2002	5 RE02-05P - NYSDEC SE 7/16/2002	5 RE02-17P - NYSDEC SE 7/16/2002	GR-01 LA-001 E1100911-002 0 - 0.5 ft BAT SE 9/12/2011	GR-01 LA-107 K1108656-007 0 - 3 ft BAT SE 9/12/2011
CAS NO.	COMPOUND	Values	Derivation	UNITS:						
	PESTICIDES									
959-98-8	Alpha Endosulfan	20 1.008	2	ug/kg ug/gOC						0.086 UJ 0.0382222
33213-65-9	Beta Endosulfan	1 1.008	2	ug/kg ug/gOC						0.14 U 0.0622222
57-74-9	Chlordane	18	1	ug/kg	U	U	U	U		1.9 U
2921-88-2	Chlorpyrifos	63 3.157	2	ug/kg ug/gOC						0.74 UJ 0.3288889
53-19-0	O,P'-DDD	28	1	ug/kg						1.5 NJ
72-54-8	P,P'-DDD	28	1	ug/kg						3.7
3424-82-6	O,P'-DDE	31	1	ug/kg						0.74 UJ
72-55-9	P,P'-DDE	31	1	ug/kg						2.1
789-02-6	O,P'-DDT	63	1	ug/kg						0.092 UJ
50-29-3	P,P'-DDT	63	1	ug/kg						0.74 UJ
1918-00-9	Dicamba	13000 654.881	2	ug/kg ug/gOC						4.4 UJ 1.9555556
60-57-1	Dieldrin	62	1	ug/kg	U	U	U	U		0.14 U
72-20-8	Endrin	210	1	ug/kg	U	1.2 J*P	U	U		0.094 U
58-89-9	Gamma Bhc (Lindane)	5	1	ug/kg						0.25 UJ
1024-57-3	Heptachlor Epoxide	16	1	ug/kg	U	U	U	U		0.084 U
87-68-3	Hexachlorobutadiene	12000 575.395	2	ug/kg ug/gOC						0.21 U 0.0933333
72-43-5	Methoxychlor	NS		ug/kg ug/gOC	2.9 * 3.372093	3.4 *P 3.7777778	U	U		0.9 J 0.4
2385-85-5	Mirex	120 5.931	2	ug/kg ug/gOC	U	U	U	U		0.74 UJ 0.3288889
8001-35-2	Toxaphene	250 12.46	2	ug/kg ug/gOC	U	U	U	U		37 UJ 16.444444

NYSDEC-Lower Genesee River Historical Sediment Data Pesticide/Herbicide Class C Standards Comparison		Class C Freshwater Sediment Guidance		Location ID: Sample ID: Lab Sample Id: Depth: Source: SDG: Matrix: Sampled: Validated:	5 17B 2.53 - 5.05 ft NYSDEC SE 7/16/2002	5 17C 5.05 - 7.58 ft NYSDEC SE 7/16/2002	5 RE02-05P - NYSDEC SE 7/16/2002	5 RE02-17P - NYSDEC SE 7/16/2002	GR-01 LA-001 E1100911-002 0 - 0.5 ft BAT SE 9/12/2011	GR-01 LA-107 K1108656-007 0 - 3 ft BAT SE 9/12/2011
	PCBs									
12672-29-6	PCB-1248 (Aroclor 1248)			ug/kg	U	U	U	U		50
11097-69-1	PCB-1254 (Aroclor 1254)			ug/kg	U	U	U	U		65
11096-82-5	PCB-1260 (Aroclor 1260)			ug/kg	26 J	78	U	U		33
11100-14-4	PCB-1268 (Aroclor 1268)			ug/kg						2.1 U
	Total PCBs	1000	5	ug/Kg	26	78	0	0		148
	DIOXINS									
	Total TCDDs			ng/kg	0.832 U	3.51	4.79	0.258		
	Total TCDDs	0.05	1	ug/Kg	0.000832 U	0.00351	0.00479	0.000258		
1746-01-6	2,3,7,8-Tetrachlorodibenzo-P-Dioxin			ng/kg					0.325 U	
	2,3,7,8-Tetrachlorodibenzo-P-Dioxin	0.05	1	ug/Kg					0.000325 U	
	OTHER									
TOC	Total Organic Carbon			%	0.86	0.9	1.9	0.87	1.21	2.25
TOC	Total Organic Carbon			mg/kg	8600	9000	19000	8700	12100	22500

Data Sources:
NYSDEC, 2007. Contamination Analysis in the Rochester Embayment Area of Concern. Ma
USEPA, 2012. TASK 6: Final Summary Report for Site Characterization at the Genesee Rive
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Notes:
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SGV Derivations:
1. TEC/PEC derived from MacDonald et al., 2000 (values rounded to two significant digits)
2. Equilibrium partitioning based on 2% TOC (values rounded to two significant digits)
3. Value from Long and Morgan (1991) (values rounded to two significant digits)
5. DoW TOGS 5.

NYSDEC-Lower Genesee River Historical Sediment Data Pesticide/Herbicide Class C Standards Comparison		Class C Freshwater Sediment Guidance		Location ID: Sample ID: Lab Sample Id: Depth: Source: SDG: Matrix: Sampled: Validated:	GR-01 LA-108 K1108656-008 3 - 6 ft BAT SE 9/12/2011	GR-01 LA-109 K1108656-009 6 - 9 ft BAT SE 9/12/2011	GR-01 LA-110 K1108656-010 9 - 12 ft BAT SE 9/12/2011	GR-01 LA-111 E1100910-003 12 - 14.9 ft BAT SE 9/12/2011	GR-02 LA-002 E1100911-003 0 - 0.5 ft BAT SE 9/12/2011	GR-02 LA-104 K1108656-004 0 - 3 ft BAT SE 9/12/2011
CAS NO.	COMPOUND	Values	Derivation	UNITS:						
	PESTICIDES									
959-98-8	Alpha Endosulfan	20	2	ug/kg	0.75 UJ	0.36 UJ	0.063 U	0.063 U		0.2 UJ
		1.008		ug/gOC	0.4310345	0.2368421	0.0319797	0.039375		0.1298701
33213-65-9	Beta Endosulfan	1	2	ug/kg	0.14 U	0.14 U	0.14 U	0.14 U		0.14 U
		1.008		ug/gOC	0.0804598	0.0921053	0.071066	0.0875		0.0909091
57-74-9	Chlordane	18	1	ug/kg	7.3 UJ	6.3 UJ	4.5 UJ	1.9 U		1.9 U
2921-88-2	Chlorpyrifos	63	2	ug/kg	0.15 U	0.15 U	0.15 U	0.15 U		0.84 U
		3.157		ug/gOC	0.0862069	0.0986842	0.0761421	0.09375		0.5454545
53-19-0	O,P'-DDD	28	1	ug/kg	3.2 UJ	1.6 NJ	0.42 J	0.31 UJ		0.84 U
72-54-8	P,P'-DDD	28	1	ug/kg	6.2 J	3.2	0.11 U	0.11 U		1.5
3424-82-6	O,P'-DDE	31	1	ug/kg	0.73 UJ	0.73 UJ	0.33 UJ	0.16 U		0.84 UJ
72-55-9	P,P'-DDE	31	1	ug/kg	4.1	2.2	0.11 U	0.11 U		0.84 UJ
789-02-6	O,P'-DDT	63	1	ug/kg	0.6 UJ	0.076 UJ	0.058 U	0.058 U		0.1 UJ
50-29-3	P,P'-DDT	63	1	ug/kg	0.17 U	0.73 UJ	0.17 U	0.17 U		0.17 U
1918-00-9	Dicamba	13000	2	ug/kg	4.4 UJ	4.4 UJ	15 UJ	4.4 UJ		4.4 UJ
		654.881		ug/gOC	2.5287356	2.8947368	7.6142132	2.75		2.8571429
60-57-1	Dieldrin	62	1	ug/kg	0.14 U	0.14 U	0.14 U	0.14 U		0.14 U
72-20-8	Endrin	210	1	ug/kg	0.094 U	0.094 U	0.094 U	0.094 U		0.094 U
58-89-9	Gamma Bhc (Lindane)	5	1	ug/kg	0.73 U	0.73 UJ	0.74 U	0.47 J		0.33 UJ
1024-57-3	Heptachlor Epoxide	16	1	ug/kg	0.084 U	0.084 U	0.084 U	0.13 UJ		0.084 U
87-68-3	Hexachlorobutadiene	12000	2	ug/kg	0.21 U	0.21 U	0.21 U	0.21 U		0.21 U
		575.395		ug/gOC	0.1206897	0.1381579	0.106599	0.13125		0.1363636
72-43-5	Methoxychlor			ug/kg	2.3 UJ	1.1 UJ	0.19 U	0.19 U		0.76 UJ
		NS		ug/gOC	1.3218391	0.7236842	0.0964467	0.11875		0.4935065
2385-85-5	Mirex	120	2	ug/kg	0.73 UJ	0.73 UJ	0.74 UJ	0.68 U		0.099 U
		5.931		ug/gOC	0.4195402	0.4802632	0.3756345	0.425		0.0642857
8001-35-2	Toxaphene	250	2	ug/kg	120 UJ	38 UJ	43 UJ	34 UJ		42 UJ
		12.46		ug/gOC	68.965517	25	21.827411	21.25		27.272727

NYSDEC-Lower Genesee River Historical Sediment Data Pesticide/Herbicide Class C Standards Comparison		Class C Freshwater Sediment Guidance		Location ID: Sample ID: Lab Sample Id: Depth: Source: SDG: Matrix: Sampled: Validated:	GR-01 LA-108 K1108656-008 3 - 6 ft BAT SE 9/12/2011	GR-01 LA-109 K1108656-009 6 - 9 ft BAT SE 9/12/2011	GR-01 LA-110 K1108656-010 9 - 12 ft BAT SE 9/12/2011	GR-01 LA-111 E1100910-003 12 - 14.9 ft BAT SE 9/12/2011	GR-02 LA-002 E1100911-003 0 - 0.5 ft BAT SE 9/12/2011	GR-02 LA-104 K1108656-004 0 - 3 ft BAT SE 9/12/2011
	PCBs									
12672-29-6	PCB-1248 (Aroclor 1248)			ug/kg	130 J	2.1 U	2.1 U	2.1 U		27
11097-69-1	PCB-1254 (Aroclor 1254)			ug/kg	110	45 J	2.4 UJ	2.1 U		25 J
11096-82-5	PCB-1260 (Aroclor 1260)			ug/kg	81	59	3 UJ	2.1 U		33
11100-14-4	PCB-1268 (Aroclor 1268)			ug/kg	2.1 U	2.1 U	2.1 U	2.1 U		2.1 U
	Total PCBs	1000	5	ug/Kg	321	104	0	0		85
	DIOXINS									
	Total TCDDs			ng/kg						
	Total TCDDs	0.05	1	ug/Kg						
1746-01-6	2,3,7,8-Tetrachlorodibenzo-P-Dioxin			ng/kg				0.0499 U	0.226 J	
	2,3,7,8-Tetrachlorodibenzo-P-Dioxin	0.05	1	ug/Kg				0.0000499 U	0.000226 J	
	OTHER									
TOC	Total Organic Carbon			%	1.74	1.52	1.97	1.6	1.46	1.54
TOC	Total Organic Carbon			mg/kg	17400	15200	19700	16000	14600	15400

Data Sources:
NYSDEC, 2007. Contamination Analysis in the Rochester Embayment Area of Concern. Ma
USEPA, 2012. TASK 6: Final Summary Report for Site Characterization at the Genesee Rive
USEPA, 2013. Technical Report: Genesee River Sediment Sampling under the Great Lakes L

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1. TEC/PEC derived from MacDonald et al., 2000 (values rounded to two significant digits)
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5. DoW TOGS 5.

NYSDEC-Lower Genesee River Historical Sediment Data Pesticide/Herbicide Class C Standards Comparison		Class C Freshwater Sediment Guidance		Location ID: Sample ID: Lab Sample Id: Depth: Source: SDG: Matrix: Sampled: Validated:	GR-02 LA-105 K1108656-005 3 - 6 ft BAT SE 9/12/2011	GR-02 LA-106 E1100910-002 6 - 7.4 ft BAT SE 9/12/2011	GR-03 LA-003 E1100918-001 0 - 0.5 ft BAT SE 9/15/2011	GR-03 LA-003D E1100918-002 0 - 0.5 ft BAT SE 9/15/2011	GR-03 LA-159 K1108838-019 0 - 3 ft BAT SE 9/15/2011	GR-03 LA-160 K1108843-017 3 - 6 ft BAT SE 9/15/2011
CAS NO.	COMPOUND	Values	Derivation	UNITS:						
	PESTICIDES									
959-98-8	Alpha Endosulfan	20	2	ug/kg	0.063 U	0.063 U			0.063 U	0.063 U
		1.008		ug/gOC	0.0226619	0.0635081			0.0577982	0.0690789
33213-65-9	Beta Endosulfan	1	2	ug/kg	0.14 U	0.14 U			0.14 U	0.14 U
		1.008		ug/gOC	0.0503597	0.141129			0.1284404	0.1535088
57-74-9	Chlordane	18	1	ug/kg	1.9 U	1.9 U			1.9 U	7 UJ
2921-88-2	Chlorpyrifos	63	2	ug/kg	0.15 U	0.15 U			0.15 U	0.7 U
		3.157		ug/gOC	0.0539568	0.1512097			0.1376147	0.7675439
53-19-0	O,P'-DDD	28	1	ug/kg	0.2 J	0.13 U			0.26 J	0.74 UJ
72-54-8	P,P'-DDD	28	1	ug/kg	0.11 U	0.11 U			0.76 U	1 J
3424-82-6	O,P'-DDE	31	1	ug/kg	0.16 U	0.16 U			0.16 U	0.16 U
72-55-9	P,P'-DDE	31	1	ug/kg	0.11 U	0.11 U			0.76 UJ	1.7
789-02-6	O,P'-DDT	63	1	ug/kg	0.058 U	0.058 U			0.058 U	0.093 UJ
50-29-3	P,P'-DDT	63	1	ug/kg	0.17 U	0.17 U			0.76 U	0.7 UJ
1918-00-9	Dicamba	13000	2	ug/kg	4.4 UJ	4.4 UJ			4.4 U	4.4 U
		654.881		ug/gOC	1.5827338	4.4354839			4.0366972	4.8245614
60-57-1	Dieldrin	62	1	ug/kg	0.79 UJ	0.14 U			0.2 UJ	1.2 UJ
72-20-8	Endrin	210	1	ug/kg	0.094 U	0.094 U			0.094 U	0.094 U
58-89-9	Gamma Bhc (Lindane)	5	1	ug/kg	0.79 U	0.08 U			0.76 UJ	0.7 UJ
1024-57-3	Heptachlor Epoxide	16	1	ug/kg	0.084 U	0.084 U			0.084 U	0.084 U
87-68-3	Hexachlorobutadiene	12000	2	ug/kg	0.21 U	0.21 U			0.21 U	0.21 U
		575.395		ug/gOC	0.0755396	0.2116935			0.1926606	0.2302632
72-43-5	Methoxychlor			ug/kg	0.19 U	0.19 U			0.19 U	0.2 UJ
		NS		ug/gOC	0.0683453	0.1915323			0.1743119	0.2192982
2385-85-5	Mirex	120	2	ug/kg	0.15 UJ	0.099 U			0.099 U	0.099 U
		5.931		ug/gOC	0.0539568	0.0997984			0.0908257	0.1085526
8001-35-2	Toxaphene	250	2	ug/kg	23 UJ	5.9 UJ			7.7 UJ	26 UJ
		12.46		ug/gOC	8.2733813	5.9475806			7.0642202	28.508772

NYSDEC-Lower Genesee River Historical Sediment Data Pesticide/Herbicide Class C Standards Comparison		Class C Freshwater Sediment Guidance		Location ID: Sample ID: Lab Sample Id: Depth: Source: SDG: Matrix: Sampled: Validated:	GR-02 LA-105 K1108656-005 3 - 6 ft BAT SE 9/12/2011	GR-02 LA-106 E1100910-002 6 - 7.4 ft BAT SE 9/12/2011	GR-03 LA-003 E1100918-001 0 - 0.5 ft BAT SE 9/15/2011	GR-03 LA-003D E1100918-002 0 - 0.5 ft BAT SE 9/15/2011	GR-03 LA-159 K1108838-019 0 - 3 ft BAT SE 9/15/2011	GR-03 LA-160 K1108843-017 3 - 6 ft BAT SE 9/15/2011
	PCBs									
12672-29-6	PCB-1248 (Aroclor 1248)			ug/kg	2.1 U	2.1 U			2.3 UJ	18 UJ
11097-69-1	PCB-1254 (Aroclor 1254)			ug/kg	2.1 U	2.1 U			4.4 UJ	30
11096-82-5	PCB-1260 (Aroclor 1260)			ug/kg	6 J	2.1 U			2.8 J	20
11100-14-4	PCB-1268 (Aroclor 1268)			ug/kg	2.1 U	2.1 U			2.1 U	2.1 U
	Total PCBs	1000	5	ug/Kg	6	0			2.8	50
	DIOXINS									
	Total TCDDs			ng/kg						
	Total TCDDs	0.05	1	ug/Kg						
1746-01-6	2,3,7,8-Tetrachlorodibenzo-P-Dioxin			ng/kg		0.0632 U	0.0945 J	0.0403 U		
	2,3,7,8-Tetrachlorodibenzo-P-Dioxin	0.05	1	ug/Kg		0.0000632 U	0.0000945 J	0.0000403 U		
	OTHER									
TOC	Total Organic Carbon			%	2.78	0.992	0.827	0.68	1.09	0.912
TOC	Total Organic Carbon			mg/kg	27800	9920	8270	6800	10900	9120

Data Sources:
NYSDEC, 2007. Contamination Analysis in the Rochester Embayment Area of Concern. Ma
USEPA, 2012. TASK 6: Final Summary Report for Site Characterization at the Genesee Rive
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NYSDEC-Lower Genesee River Historical Sediment Data Pesticide/Herbicide Class C Standards Comparison		Class C Freshwater Sediment Guidance		Location ID: Sample ID: Lab Sample Id: Depth: Source: SDG: Matrix: Sampled: Validated:	GR-03 LA-161 E1100919-005 6 - 9.4 ft BAT SE 9/15/2011	GR-03 LA-162 K1108843-018 0 - 3 ft BAT SE 9/15/2011	GR-03 LA-163 K1108843-019 3 - 6 ft BAT SE 9/15/2011	GR-03 LA-164 E1100919-006 6 - 8.7 ft BAT SE 9/15/2011	GR-04 LA-004 E1100911-004 0 - 0.5 ft BAT SE 9/12/2011	GR-04 LA-101 K1108656-001 0 - 3 ft BAT SE 9/12/2011
CAS NO.	COMPOUND	Values	Derivation	UNITS:						
	PESTICIDES									
959-98-8	Alpha Endosulfan	20	2	ug/kg	0.078 UJ	0.063 U	0.063 U	0.075 UJ		0.14 UJ
		1.008		ug/gOC	0.0772277	0.0668081	0.0733411	0.0714286		0.1217391
33213-65-9	Beta Endosulfan	1	2	ug/kg	0.14 U	0.14 U	0.14 U	1.4 UJ		0.14 U
		1.008		ug/gOC	0.1386139	0.1484624	0.1629802	1.3333333		0.1217391
57-74-9	Chlordane	18	1	ug/kg	6.4 UJ	7 UJ	6.9 UJ	7.1 UJ		7.8 UJ
2921-88-2	Chlorpyrifos	63	2	ug/kg	0.71 U	0.15 U	0.15 U	0.39 J		0.78 U
		3.157		ug/gOC	0.7029703	0.1590668	0.1746217	0.3714286		0.6782609
53-19-0	O,P'-DDD	28	1	ug/kg	1.1 NJ	0.93 J	1.1 NJ	1.3 NJ		1.7 NJ
72-54-8	P,P'-DDD	28	1	ug/kg	1.6	0.87 J	1.2 J	1.7		1.6
3424-82-6	O,P'-DDE	31	1	ug/kg	0.71 UJ	0.7 UJ	0.69 UJ	0.71 UJ		0.78 UJ
72-55-9	P,P'-DDE	31	1	ug/kg	2.5	1.8 UJ	1.8	3		2.5
789-02-6	O,P'-DDT	63	1	ug/kg	0.71 UJ	0.058 U	0.13 UJ	0.17 UJ		0.3 UJ
50-29-3	P,P'-DDT	63	1	ug/kg	0.71 UJ	0.7 UJ	0.69 UJ	0.71 UJ		0.17 U
1918-00-9	Dicamba	13000	2	ug/kg	4.4 U	4.4 U	4.4 U	4.4 U		4.4 UJ
		654.881		ug/gOC	4.3564356	4.6659597	5.1222352	4.1904762		3.826087
60-57-1	Dieldrin	62	1	ug/kg	0.14 U	1 UJ	1.2 UJ	0.71 UJ		0.14 U
72-20-8	Endrin	210	1	ug/kg	0.094 U	0.094 U	0.094 U	0.094 U		0.094 U
58-89-9	Gamma Bhc (Lindane)	5	1	ug/kg	0.08 U	0.7 UJ	0.69 UJ	0.71 UJ		0.19 UJ
1024-57-3	Heptachlor Epoxide	16	1	ug/kg	0.084 U	0.084 U	0.084 U	0.084 U		0.084 U
87-68-3	Hexachlorobutadiene	12000	2	ug/kg	0.22 J	3.7 U	0.21 U	0.21 U		0.21 U
		575.395		ug/gOC	0.2178218	3.9236479	0.2444703	0.2		0.1826087
72-43-5	Methoxychlor			ug/kg	0.72	0.26 J	0.69 U	0.65 J		0.59 UJ
		NS		ug/gOC	0.7128713	0.2757158	0.8032596	0.6190476		0.5130435
2385-85-5	Mirex	120	2	ug/kg	0.099 U	23 UJ	0.099 U	0.71 UJ		0.099 U
		5.931		ug/gOC	0.0980198	24.390244	0.1152503	0.6761905		0.086087
8001-35-2	Toxaphene	250	2	ug/kg	44 UJ	12 UJ	16 UJ	31 UJ		39 UJ
		12.46		ug/gOC	43.564356	12.725345	18.62631	29.52381		33.913043

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	PCBs									
12672-29-6	PCB-1248 (Aroclor 1248)			ug/kg	35 UJ	7.5 UJ	21 UJ	40 UJ		48
11097-69-1	PCB-1254 (Aroclor 1254)			ug/kg	48	15	35	54		62
11096-82-5	PCB-1260 (Aroclor 1260)			ug/kg	36	9.2 J	24	40		53
11100-14-4	PCB-1268 (Aroclor 1268)			ug/kg	2.1 U	2.1 U	2.1 U	2.1 U		2.1 U
	Total PCBs	1000	5	ug/Kg	84	24.2	59	94		163
	DIOXINS									
	Total TCDDs			ng/kg						
	Total TCDDs	0.05	1	ug/Kg						
1746-01-6	2,3,7,8-Tetrachlorodibenzo-P-Dioxin			ng/kg	0.189 J			0.478 J	0.0646 U	
	2,3,7,8-Tetrachlorodibenzo-P-Dioxin	0.05	1	ug/Kg	0.000189 J			0.000478 J	0.0000646 U	
	OTHER									
TOC	Total Organic Carbon			%	1.01	0.943	0.859	1.05	1.16	1.15
TOC	Total Organic Carbon			mg/kg	10100	9430	8590	10500	11600	11500

Data Sources:
NYSDEC, 2007. Contamination Analysis in the Rochester Embayment Area of Concern. Ma
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3. Value from Long and Morgan (1991) (values rounded to two significant digits)
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NYSDEC-Lower Genesee River Historical Sediment Data Pesticide/Herbicide Class C Standards Comparison		Class C Freshwater Sediment Guidance		Location ID: Sample ID: Lab Sample Id: Depth: Source: SDG: Matrix: Sampled: Validated:	GR-04 LA-102 K1108656-002 3 - 6 ft BAT SE 9/12/2011	GR-04 LA-103 E1100910-001 6 - 9.8 ft BAT SE 9/12/2011	GR-05 LA-005 E1100918-003 0 - 0.5 ft BAT SE 9/16/2011	GR-05 LA-181 K1108838-008 0 - 3 ft BAT SE 9/16/2011	GR-05 LA-182 K1108838-015 3 - 6 ft BAT SE 9/16/2011	GR-05 LA-183 E1100919-011 6 - 8 ft BAT SE 9/16/2011
CAS NO.	COMPOUND	Values	Derivation	UNITS:						
	PESTICIDES									
959-98-8	Alpha Endosulfan	20	2	ug/kg	0.15 UJ	0.063 U		0.072 UJ	0.063 U	0.063 U
		1.008		ug/gOC	0.0649351	0.0355932		0.0610169	0.0386503	0.0409091
33213-65-9	Beta Endosulfan	1	2	ug/kg	0.14 U	0.14 U		0.14 U	0.14 U	0.14 U
		1.008		ug/gOC	0.0606061	0.079096		0.1186441	0.0858896	0.0909091
57-74-9	Chlordane	18	1	ug/kg	8 UJ	1.9 U		7.7 UJ	5.2 UJ	1.9 U
2921-88-2	Chlorpyrifos	63	2	ug/kg	0.15 U	0.15 U		0.15 U	0.15 U	0.15 U
		3.157		ug/gOC	0.0649351	0.0847458		0.1271186	0.0920245	0.0974026
53-19-0	O,P'-DDD	28	1	ug/kg	1.5 UJ	0.13 U		1.3 NJ	2.5 J	0.13 U
72-54-8	P,P'-DDD	28	1	ug/kg	2.8	0.11 U		1.8 J	7.9	0.11 U
3424-82-6	O,P'-DDE	31	1	ug/kg	0.8 UJ	0.16 U		0.16 U	0.16 U	0.16 U
72-55-9	P,P'-DDE	31	1	ug/kg	1.6	0.11 U		2.3	2.7	0.11 U
789-02-6	O,P'-DDT	63	1	ug/kg	0.064 UJ	0.058 U		0.77 UJ	0.74 UJ	0.058 U
50-29-3	P,P'-DDT	63	1	ug/kg	0.17 U	0.17 U		0.17 U	0.74 UJ	0.17 U
1918-00-9	Dicamba	13000	2	ug/kg	4.4 UJ	4.4 UJ		4.4 U	4.4 U	4.4 U
		654.881		ug/gOC	1.9047619	2.4858757		3.7288136	2.6993865	2.8571429
60-57-1	Dieldrin	62	1	ug/kg	0.8 UJ	0.14 U		1.7 UJ	0.74 UJ	0.14 U
72-20-8	Endrin	210	1	ug/kg	0.094 U	0.094 U		0.094 U	0.094 U	0.094 U
58-89-9	Gamma Bhc (Lindane)	5	1	ug/kg	0.18 UJ	0.097 UJ		0.77 UJ	0.08 U	0.08 U
1024-57-3	Heptachlor Epoxide	16	1	ug/kg	0.084 U	0.084 U		0.084 U	0.084 U	0.084 U
87-68-3	Hexachlorobutadiene	12000	2	ug/kg	0.21 U	0.21 U		0.21 U	0.21 U	0.21 U
		575.395		ug/gOC	0.0909091	0.1186441		0.1779661	0.1288344	0.1363636
72-43-5	Methoxychlor			ug/kg	2.3 UJ	0.34 UJ		1.4 NJ	1.1	0.19 U
		NS		ug/gOC	0.995671	0.1920904		1.1864407	0.6748466	0.1233766
2385-85-5	Mirex	120	2	ug/kg	0.8 UJ	0.099 U		0.099 U	0.099 U	0.099 U
		5.931		ug/gOC	0.3463203	0.0559322		0.0838983	0.0607362	0.0642857
8001-35-2	Toxaphene	250	2	ug/kg	47 UJ	4.8 U		130 UJ	37 UJ	4.8 U
		12.46		ug/gOC	20.34632	2.7118644		110.16949	22.699387	3.1168831

NYSDEC-Lower Genesee River Historical Sediment Data Pesticide/Herbicide Class C Standards Comparison		Class C Freshwater Sediment Guidance		Location ID: Sample ID: Lab Sample Id: Depth: Source: SDG: Matrix: Sampled: Validated:	GR-04 LA-102 K1108656-002 3 - 6 ft BAT SE 9/12/2011	GR-04 LA-103 E1100910-001 6 - 9.8 ft BAT SE 9/12/2011	GR-05 LA-005 E1100918-003 0 - 0.5 ft BAT SE 9/16/2011	GR-05 LA-181 K1108838-008 0 - 3 ft BAT SE 9/16/2011	GR-05 LA-182 K1108838-015 3 - 6 ft BAT SE 9/16/2011	GR-05 LA-183 E1100919-011 6 - 8 ft BAT SE 9/16/2011
	PCBs									
12672-29-6	PCB-1248 (Aroclor 1248)			ug/kg	51	2.1 U		44	2.1 U	2.1 U
11097-69-1	PCB-1254 (Aroclor 1254)			ug/kg	59	2.1 U		60	38	2.1 U
11096-82-5	PCB-1260 (Aroclor 1260)			ug/kg	28	2.1 U		43	19	2.1 U
11100-14-4	PCB-1268 (Aroclor 1268)			ug/kg	2.1 U	2.1 U		2.1 U	2.1 U	2.1 U
	Total PCBs	1000	5	ug/Kg	138	0		147	57	0
	DIOXINS									
	Total TCDDs			ng/kg						
	Total TCDDs	0.05	1	ug/Kg						
1746-01-6	2,3,7,8-Tetrachlorodibenzo-P-Dioxin			ng/kg		0.196 U	0.0389 U			0.0379 U
	2,3,7,8-Tetrachlorodibenzo-P-Dioxin	0.05	1	ug/Kg		0.000196 U	0.0000389 U			0.0000379 U
	OTHER									
TOC	Total Organic Carbon			%	2.31	1.77	1.2	1.18	1.63	1.54
TOC	Total Organic Carbon			mg/kg	23100	17700	12000	11800	16300	15400

Data Sources:
NYSDEC, 2007. Contamination Analysis in the Rochester Embayment Area of Concern. Ma
USEPA, 2012. TASK 6: Final Summary Report for Site Characterization at the Genesee Rive
USEPA, 2013. Technical Report: Genesee River Sediment Sampling under the Great Lakes L

Notes:
1. Sample locations can be found on Figure 5.
2. Highlighted results indicate an exceedenc of sediment guidance value (SGV).

SGV Derivations:
1. TEC/PEC derived from MacDonald et al., 2000 (values rounded to two significant digits)
2. Equilibrium partitioning based on 2% TOC (values rounded to two significant digits)
3. Value from Long and Morgan (1991) (values rounded to two significant digits)
5. DoW TOGS 5.

NYSDEC-Lower Genesee River Historical Sediment Data Pesticide/Herbicide Class C Standards Comparison		Class C Freshwater Sediment Guidance		Location ID: Sample ID: Lab Sample Id: Depth: Source: SDG: Matrix: Sampled: Validated:	GR-06 LA-006 E1100918-004 0 - 0.5 ft BAT SE 9/15/2011	GR-06 LA-173 E1100919-009 0 - 1.5 ft BAT SE 9/15/2011	GR-07 LA-007 E1100918-005 0 - 0.5 ft BAT SE 9/15/2011	GR-07 LA-184 K1108837-015 0 - 3 ft BAT SE 9/15/2011	GR-07 LA-185 K1108837-016 3 - 6 ft BAT SE 9/15/2011	GR-07 LA-186 K1108837-017 6 - 9 ft BAT SE 9/15/2011
CAS NO.	COMPOUND	Values	Derivation	UNITS:						
	PESTICIDES									
959-98-8	Alpha Endosulfan	20	2	ug/kg		0.55 UJ		0.76 UJ	0.063 U	1.2 UJ
		1.008		ug/gOC		0.5623722		0.4578313	0.0417219	0.8275862
33213-65-9	Beta Endosulfan	1	2	ug/kg		0.14 U		0.14 U	0.14 U	0.14 U
		1.008		ug/gOC		0.1431493		0.0843373	0.0927152	0.0965517
57-74-9	Chlordane	18	1	ug/kg		11 UJ		2.6 UJ	3.2 UJ	11 UJ
2921-88-2	Chlorpyrifos	63	2	ug/kg		0.15 U		0.17 J	0.7 U	0.72 UJ
		3.157		ug/gOC		0.1533742		0.1024096	0.4635762	0.4965517
53-19-0	O,P'-DDD	28	1	ug/kg		2.3 UJ		0.68 J	0.7 U	7.3 NJ
72-54-8	P,P'-DDD	28	1	ug/kg		4.6 J		0.76 U	0.75 J	16 J
3424-82-6	O,P'-DDE	31	1	ug/kg		0.72 UJ		0.16 U	0.16 U	0.16 U
72-55-9	P,P'-DDE	31	1	ug/kg		4.1		1.2	1.3	7.7
789-02-6	O,P'-DDT	63	1	ug/kg		2.4 UJ		0.76 UJ	0.7 UJ	0.72 UJ
50-29-3	P,P'-DDT	63	1	ug/kg		0.72 UJ		1.3	0.7 UJ	0.8 UJ
1918-00-9	Dicamba	13000	2	ug/kg		4.4 U		4.4 U	4.4 U	4.4 U
		654.881		ug/gOC		4.4989775		2.6506024	2.9139073	3.0344828
60-57-1	Dieldrin	62	1	ug/kg		3.7 UJ		0.51 UJ	0.62 UJ	0.72 UJ
72-20-8	Endrin	210	1	ug/kg		2.5 UJ		0.094 U	0.17 UJ	0.094 U
58-89-9	Gamma Bhc (Lindane)	5	1	ug/kg		0.72 UJ		0.78 UJ	0.08 U	0.72 UJ
1024-57-3	Heptachlor Epoxide	16	1	ug/kg		0.26 UJ		0.084 U	0.084 U	0.084 U
87-68-3	Hexachlorobutadiene	12000	2	ug/kg		0.21 U		0.76 UJ	0.21 U	0.21 U
		575.395		ug/gOC		0.2147239		0.4578313	0.1390728	0.1448276
72-43-5	Methoxychlor			ug/kg		2.7 NJ		0.76 U	0.25 J	2.2 UJ
		NS		ug/gOC		2.7607362		0.4578313	0.1655629	1.5172414
2385-85-5	Mirex	120	2	ug/kg		0.099 U		0.76 UJ	0.099 U	0.72 UJ
		5.931		ug/gOC		0.101227		0.4578313	0.0655629	0.4965517
8001-35-2	Toxaphene	250	2	ug/kg		81 UJ		13 UJ	17 UJ	56 UJ
		12.46		ug/gOC		82.822086		7.8313253	11.258278	38.62069

NYSDEC-Lower Genesee River Historical Sediment Data Pesticide/Herbicide Class C Standards Comparison		Class C Freshwater Sediment Guidance		Location ID: Sample ID: Lab Sample Id: Depth: Source: SDG: Matrix: Sampled: Validated:	GR-06 LA-006 E1100918-004 0 - 0.5 ft BAT SE 9/15/2011	GR-06 LA-173 E1100919-009 0 - 1.5 ft BAT SE 9/15/2011	GR-07 LA-007 E1100918-005 0 - 0.5 ft BAT SE 9/15/2011	GR-07 LA-184 K1108837-015 0 - 3 ft BAT SE 9/15/2011	GR-07 LA-185 K1108837-016 3 - 6 ft BAT SE 9/15/2011	GR-07 LA-186 K1108837-017 6 - 9 ft BAT SE 9/15/2011
	PCBs									
12672-29-6	PCB-1248 (Aroclor 1248)			ug/kg		160		8.2 UJ	9.6 UJ	120
11097-69-1	PCB-1254 (Aroclor 1254)			ug/kg		150		12	16	170
11096-82-5	PCB-1260 (Aroclor 1260)			ug/kg		100		6.8 J	11	90
11100-14-4	PCB-1268 (Aroclor 1268)			ug/kg		2.1 U		2.1 U	2.1 U	2.1 U
	Total PCBs	1000	5	ug/Kg		410		18.8	27	380
	DIOXINS									
	Total TCDDs			ng/kg						
	Total TCDDs	0.05	1	ug/Kg						
1746-01-6	2,3,7,8-Tetrachlorodibenzo-P-Dioxin			ng/kg	0.0817 U	0.152 J	0.137 J			
	2,3,7,8-Tetrachlorodibenzo-P-Dioxin	0.05	1	ug/Kg	0.0000817 U	0.000152 J	0.000137 J			
	OTHER									
TOC	Total Organic Carbon			%	1.09	0.978	1.73	1.66	1.51	1.45
TOC	Total Organic Carbon			mg/kg	10900	9780	17300	16600	15100	14500

Data Sources:
NYSDEC, 2007. Contamination Analysis in the Rochester Embayment Area of Concern. Ma
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1. TEC/PEC derived from MacDonald et al., 2000 (values rounded to two significant digits)
2. Equilibrium partitioning based on 2% TOC (values rounded to two significant digits)
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NYSDEC-Lower Genesee River Historical Sediment Data Pesticide/Herbicide Class C Standards Comparison		Class C Freshwater Sediment Guidance		Location ID: Sample ID: Lab Sample Id: Depth: Source: SDG: Matrix: Sampled: Validated:	GR-07 LA-187 K1108837-018 9 - 12 ft BAT SE 9/15/2011	GR-07 LA-188 E1100919-012 12 - 14.4 ft BAT SE 9/15/2011	GR-08 LA-008 E1100918-006 0 - 0.5 ft BAT SE 9/15/2011	GR-08 LA-189 K1108838-009 0 - 3 ft BAT SE 9/15/2011	GR-08 LA-190 K1108838-010 3 - 6 ft BAT SE 9/15/2011	GR-08 LA-191 K1108837-020 6 - 9 ft BAT SE 9/15/2011
CAS NO.	COMPOUND	Values	Derivation	UNITS:						
	PESTICIDES									
959-98-8	Alpha Endosulfan	20	2	ug/kg	0.44 UJ	0.28 UJ		0.063 U	0.23 UJ	0.96 UJ
		1.008		ug/gOC	0.34375	0.169697		0.0636364	0.212963	0.6233766
33213-65-9	Beta Endosulfan	1	2	ug/kg	0.14 U	0.14 U		0.14 U	0.14 U	0.14 UJ
		1.008		ug/gOC	0.109375	0.0848485		0.1414141	0.1296296	0.0909091
57-74-9	Chlordane	18	1	ug/kg	17 UJ	11 UJ		1.9 U	6.9 UJ	9.8 UJ
2921-88-2	Chlorpyrifos	63	2	ug/kg	0.69 UJ	0.15 U		0.15 U	0.15 U	0.15 UJ
		3.157		ug/gOC	0.5390625	0.0909091		0.1515152	0.1388889	0.0974026
53-19-0	O,P'-DDD	28	1	ug/kg	6.8 UJ	2.1 J		0.21 J	2.2 UJ	2.9 NJ
72-54-8	P,P'-DDD	28	1	ug/kg	5 J	4.9		0.73 U	4.4 J	4.4 J
3424-82-6	O,P'-DDE	31	1	ug/kg	0.69 UJ	0.16 U		0.16 U	0.16 U	0.16 UJ
72-55-9	P,P'-DDE	31	1	ug/kg	3.4 J	2.4		0.73 UJ	4.4	3.6 J
789-02-6	O,P'-DDT	63	1	ug/kg	0.66 UJ	0.41 J		0.058 U	1.3 UJ	0.71 UJ
50-29-3	P,P'-DDT	63	1	ug/kg	0.96 UJ	2.1 UJ		0.18 J	0.17 U	0.17 UJ
1918-00-9	Dicamba	13000	2	ug/kg	4.4 U	4.4 U		4.4 U	4.4 U	6 UJ
		654.881		ug/gOC	3.4375	2.6666667		4.4444444	4.0740741	3.8961039
60-57-1	Dieldrin	62	1	ug/kg	0.14 U	0.14 U		0.14 U	5.2 UJ	3.3 UJ
72-20-8	Endrin	210	1	ug/kg	0.094 U	0.094 U		0.094 U	0.094 U	0.96 UJ
58-89-9	Gamma Bhc (Lindane)	5	1	ug/kg	0.69 UJ	0.68 UJ		0.73 UJ	0.96 UJ	0.96 UJ
1024-57-3	Heptachlor Epoxide	16	1	ug/kg	0.084 U	0.084 U		0.084 U	0.32 UJ	0.084 UJ
87-68-3	Hexachlorobutadiene	12000	2	ug/kg	0.21 U	0.21 U		0.21 U	0.21 U	0.21 UJ
		575.395		ug/gOC	0.1640625	0.1272727		0.2121212	0.1944444	0.1363636
72-43-5	Methoxychlor			ug/kg	2.3 NJ	2.7		0.19 U	1.9 UJ	3.4 J
		NS		ug/gOC	1.796875	1.6363636		0.1919192	1.7592593	2.2077922
2385-85-5	Mirex	120	2	ug/kg	0.69 UJ	0.68 UJ		0.099 U	0.099 U	0.98 UJ
		5.931		ug/gOC	0.5390625	0.4121212		0.1	0.0916667	0.6363636
8001-35-2	Toxaphene	250	2	ug/kg	93 UJ	34 UJ		7.3 UJ	65 UJ	55 UJ
		12.46		ug/gOC	72.65625	20.606061		7.3737374	60.185185	35.714286

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	PCBs									
12672-29-6	PCB-1248 (Aroclor 1248)			ug/kg	96 UJ	22 UJ		2.1 U	170	2.1 U
11097-69-1	PCB-1254 (Aroclor 1254)			ug/kg	95 J	53		3.1 UJ	160	82 J
11096-82-5	PCB-1260 (Aroclor 1260)			ug/kg	97	92		2.1 U	92	100
11100-14-4	PCB-1268 (Aroclor 1268)			ug/kg	2.1 U	2.1 U		2.1 U	2.1 U	40
	Total PCBs	1000	5	ug/Kg	192	145		0	422	222
	DIOXINS									
	Total TCDDs			ng/kg						
	Total TCDDs	0.05	1	ug/Kg						
1746-01-6	2,3,7,8-Tetrachlorodibenzo-P-Dioxin			ng/kg		0.268 J	0.0286 U			
	2,3,7,8-Tetrachlorodibenzo-P-Dioxin	0.05	1	ug/Kg		0.000268 J	0.0000286 U			
	OTHER									
TOC	Total Organic Carbon			%	1.28	1.65	0.958	0.99	1.08	1.54
TOC	Total Organic Carbon			mg/kg	12800	16500	9580	9900	10800	15400

Data Sources:
NYSDEC, 2007. Contamination Analysis in the Rochester Embayment Area of Concern. Ma
USEPA, 2012. TASK 6: Final Summary Report for Site Characterization at the Genesee Rive
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5. DoW TOGS 5.

NYSDEC-Lower Genesee River Historical Sediment Data Pesticide/Herbicide Class C Standards Comparison		Class C Freshwater Sediment Guidance		Location ID: Sample ID: Lab Sample Id: Depth: Source: SDG: Matrix: Sampled: Validated:	GR-08 LA-192 K1108838-011 9 - 12 ft BAT SE 9/15/2011	GR-08 LA-193 E1100919-013 12 - 13.8 ft BAT SE 9/15/2011	GR-09 LA-009 E1100918-007 0 - 0.5 ft BAT SE 9/15/2011	GR-09 LA-194 K1108838-002 0 - 3 ft BAT SE 9/15/2011	GR-09 LA-195 K1108838-003 3 - 6 ft BAT SE 9/15/2011	GR-09 LA-196 K1108838-004 6 - 9 ft BAT SE 9/15/2011
CAS NO.	COMPOUND	Values	Derivation	UNITS:						
	PESTICIDES									
959-98-8	Alpha Endosulfan	20	2	ug/kg	0.063 U	0.063 U		0.063 U	0.72 UJ	0.39 UJ
		1.008		ug/gOC	0.0623762	0.1044776		0.0446809	0.6101695	0.2746479
33213-65-9	Beta Endosulfan	1	2	ug/kg	0.14 U	0.14 U		0.14 U	3.5 UJ	0.14 U
		1.008		ug/gOC	0.1386139	0.2321725		0.0992908	2.9661017	0.0985915
57-74-9	Chlordane	18	1	ug/kg	1.9 U	2.3 UJ		1.9 U	7.2 UJ	1.9 U
2921-88-2	Chlorpyrifos	63	2	ug/kg	0.15 U	0.15 U		0.26 J	0.15 U	0.15 U
		3.157		ug/gOC	0.1485149	0.2487562		0.1843972	0.1271186	0.1056338
53-19-0	O,P'-DDD	28	1	ug/kg	0.51 J	0.13 U		0.74 U	5.7 NJ	1.9 UJ
72-54-8	P,P'-DDD	28	1	ug/kg	0.69 U	0.11 U		0.44 J	9.7 J	3.4 J
3424-82-6	O,P'-DDE	31	1	ug/kg	0.16 U	0.16 U		0.16 U	0.74 UJ	0.7 UJ
72-55-9	P,P'-DDE	31	1	ug/kg	0.23 J	0.11 U		1.2 UJ	6.9	3.2
789-02-6	O,P'-DDT	63	1	ug/kg	0.058 U	0.058 U		0.058 U	0.72 UJ	1.7 UJ
50-29-3	P,P'-DDT	63	1	ug/kg	1.1	0.17 U		0.17 U	4.4 NJ	0.7 UJ
1918-00-9	Dicamba	13000	2	ug/kg	4.4 U	40 UJ		4.4 U	4.4 U	5.3 UJ
		654.881		ug/gOC	4.3564356	66.334992		3.1205674	3.7288136	3.7323944
60-57-1	Dieldrin	62	1	ug/kg	0.14 U	0.14 U		0.14 U	2.5 UJ	2.7 UJ
72-20-8	Endrin	210	1	ug/kg	0.13 UJ	0.094 U		0.094 U	1.1 UJ	1.9 UJ
58-89-9	Gamma Bhc (Lindane)	5	1	ug/kg	0.69 UJ	0.08 U		0.74 UJ	0.72 UJ	0.7 UJ
1024-57-3	Heptachlor Epoxide	16	1	ug/kg	0.084 U	0.084 U		0.084 U	0.32 UJ	0.18 UJ
87-68-3	Hexachlorobutadiene	12000	2	ug/kg	0.21 U	0.21 U		0.21 U	0.21 U	0.21 U
		575.395		ug/gOC	0.2079208	0.3482587		0.1489362	0.1779661	0.1478873
72-43-5	Methoxychlor			ug/kg	0.69 U	0.19 U		0.19 U	2.3 UJ	2.1 NJ
		NS		ug/gOC	0.6831683	0.3150912		0.1347518	1.9491525	1.4788732
2385-85-5	Mirex	120	2	ug/kg	0.69 UJ	0.099 U		0.099 U	0.099 U	0.099 U
		5.931		ug/gOC	0.6831683	0.1641791		0.0702128	0.0838983	0.0697183
8001-35-2	Toxaphene	250	2	ug/kg	48 UJ	4.8 U		14 UJ	140 UJ	59 UJ
		12.46		ug/gOC	47.524752	7.960199		9.929078	118.64407	41.549296

NYSDEC-Lower Genesee River Historical Sediment Data Pesticide/Herbicide Class C Standards Comparison		Class C Freshwater Sediment Guidance		Location ID: Sample ID: Lab Sample Id: Depth: Source: SDG: Matrix: Sampled: Validated:	GR-08 LA-192 K1108838-011 9 - 12 ft BAT SE 9/15/2011	GR-08 LA-193 E1100919-013 12 - 13.8 ft BAT SE 9/15/2011	GR-09 LA-009 E1100918-007 0 - 0.5 ft BAT SE 9/15/2011	GR-09 LA-194 K1108838-002 0 - 3 ft BAT SE 9/15/2011	GR-09 LA-195 K1108838-003 3 - 6 ft BAT SE 9/15/2011	GR-09 LA-196 K1108838-004 6 - 9 ft BAT SE 9/15/2011
	PCBs									
12672-29-6	PCB-1248 (Aroclor 1248)			ug/kg	5.9 UJ	2.1 U		12 UJ	160	100
11097-69-1	PCB-1254 (Aroclor 1254)			ug/kg	9.4 UJ	2.1 U		17 J	160	89
11096-82-5	PCB-1260 (Aroclor 1260)			ug/kg	17	2.1 U		12 J	100	75
11100-14-4	PCB-1268 (Aroclor 1268)			ug/kg	2.1 U	2.1 U		2.1 U	2.1 U	2.1 U
	Total PCBs	1000	5	ug/Kg	17	0		29	420	264
	DIOXINS									
	Total TCDDs			ng/kg						
	Total TCDDs	0.05	1	ug/Kg						
1746-01-6	2,3,7,8-Tetrachlorodibenzo-P-Dioxin			ng/kg		0.0629 U	0.0593 U			
	2,3,7,8-Tetrachlorodibenzo-P-Dioxin	0.05	1	ug/Kg		0.0000629 U	0.0000593 U			
	OTHER									
TOC	Total Organic Carbon			%	1.01	0.603	0.902	1.41	1.18	1.42
TOC	Total Organic Carbon			mg/kg	10100	6030	9020	14100	11800	14200

Data Sources:
NYSDEC, 2007. Contamination Analysis in the Rochester Embayment Area of Concern. Ma
USEPA, 2012. TASK 6: Final Summary Report for Site Characterization at the Genesee Rive
USEPA, 2013. Technical Report: Genesee River Sediment Sampling under the Great Lakes L

Notes:
1. Sample locations can be found on Figure 5.
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SGV Derivations:
1. TEC/PEC derived from MacDonald et al., 2000 (values rounded to two significant digits)
2. Equilibrium partitioning based on 2% TOC (values rounded to two significant digits)
3. Value from Long and Morgan (1991) (values rounded to two significant digits)
5. DoW TOGS 5.

NYSDEC-Lower Genesee River Historical Sediment Data Pesticide/Herbicide Class C Standards Comparison		Class C Freshwater Sediment Guidance		Location ID: Sample ID: Lab Sample Id: Depth: Source: SDG: Matrix: Sampled: Validated:	GR-09 LA-197 K1108838-012 9 - 12 ft BAT SE 9/15/2011	GR-09 LA-198 E1100919-014 12 - 13.8 ft BAT SE 9/15/2011	GR-10 LA-010 E1100918-008 0 - 0.5 ft BAT SE 9/15/2011	GR-10 LA-165 K1108843-020 0 - 3 ft BAT SE 9/15/2011	GR-10 LA-166 K1108844-001 3 - 6 ft BAT SE 9/15/2011	GR-10 LA-167 E1100919-007 6 - 6.9 ft BAT SE 9/15/2011
CAS NO.	COMPOUND	Values	Derivation	UNITS:						
	PESTICIDES									
959-98-8	Alpha Endosulfan	20	2	ug/kg	0.17 UJ	0.063 U		0.063 U	0.26 UJ	0.44 UJ
		1.008		ug/gOC	0.0894737	0.0293023		0.0705487	0.2321429	0.3697479
33213-65-9	Beta Endosulfan	1	2	ug/kg	0.14 U	0.14 U		0.14 U	0.14 U	0.14 U
		1.008		ug/gOC	0.0736842	0.0651163		0.1567749	0.125	0.1176471
57-74-9	Chlordane	18	1	ug/kg	6.7 UJ	1.9 U		1.9 U	5.2 UJ	6.5 UJ
2921-88-2	Chlorpyrifos	63	2	ug/kg	0.15 U	0.15 U		0.18 J	0.15 U	0.15 U
		3.157		ug/gOC	0.0789474	0.0697674		0.2015677	0.1339286	0.1260504
53-19-0	O,P'-DDD	28	1	ug/kg	1.7 J	0.42 J		0.73 U	1.5 UJ	1.9 NJ
72-54-8	P,P'-DDD	28	1	ug/kg	1.8 J	0.21 UJ		0.48 J	2.7	3.6 J
3424-82-6	O,P'-DDE	31	1	ug/kg	0.67 UJ	0.72 U		0.16 U	0.7 UJ	0.16 U
72-55-9	P,P'-DDE	31	1	ug/kg	1.3	0.11 U		1.3	2.8	2.7
789-02-6	O,P'-DDT	63	1	ug/kg	0.69 UJ	0.058 U		0.058 U	0.11 UJ	0.65 UJ
50-29-3	P,P'-DDT	63	1	ug/kg	0.67 UJ	0.22 UJ		0.73 UJ	2.9 NJ	0.17 U
1918-00-9	Dicamba	13000	2	ug/kg	4.4 U	4.4 U		4.4 U	4.4 U	4.4 U
		654.881		ug/gOC	2.3157895	2.0465116		4.9272116	3.9285714	3.697479
60-57-1	Dieldrin	62	1	ug/kg	1.8 UJ	0.14 U		0.69 UJ	0.14 U	0.65 UJ
72-20-8	Endrin	210	1	ug/kg	0.094 U	0.094 U		0.094 U	0.094 U	0.094 U
58-89-9	Gamma Bhc (Lindane)	5	1	ug/kg	0.67 UJ	0.08 U		0.73 UJ	0.7 UJ	0.65 UJ
1024-57-3	Heptachlor Epoxide	16	1	ug/kg	0.084 U	0.084 U		0.084 U	0.084 U	0.084 U
87-68-3	Hexachlorobutadiene	12000	2	ug/kg	0.21 U	0.21 U		0.21 U	0.21 U	0.21 U
		575.395		ug/gOC	0.1105263	0.0976744		0.2351624	0.1875	0.1764706
72-43-5	Methoxychlor			ug/kg	3.1 J	0.62 J		0.19 U	1.4 J	1.8 J
		NS		ug/gOC	1.6315789	0.2883721		0.212766	1.25	1.512605
2385-85-5	Mirex	120	2	ug/kg	0.67 UJ	0.15 UJ		0.099 U	0.7 UJ	0.099 U
		5.931		ug/gOC	0.3526316	0.0697674		0.1108623	0.625	0.0831933
8001-35-2	Toxaphene	250	2	ug/kg	34 UJ	86 UJ		13 UJ	35 UJ	33 UJ
		12.46		ug/gOC	17.894737	40		14.557671	31.25	27.731092

NYSDEC-Lower Genesee River Historical Sediment Data Pesticide/Herbicide Class C Standards Comparison		Class C Freshwater Sediment Guidance		Location ID: Sample ID: Lab Sample Id: Depth: Source: SDG: Matrix: Sampled: Validated:	GR-09 LA-197 K1108838-012 9 - 12 ft BAT SE 9/15/2011	GR-09 LA-198 E1100919-014 12 - 13.8 ft BAT SE 9/15/2011	GR-10 LA-010 E1100918-008 0 - 0.5 ft BAT SE 9/15/2011	GR-10 LA-165 K1108843-020 0 - 3 ft BAT SE 9/15/2011	GR-10 LA-166 K1108844-001 3 - 6 ft BAT SE 9/15/2011	GR-10 LA-167 E1100919-007 6 - 6.9 ft BAT SE 9/15/2011
	PCBs									
12672-29-6	PCB-1248 (Aroclor 1248)			ug/kg	18 UJ	3.4 UJ		11 UJ	49	45
11097-69-1	PCB-1254 (Aroclor 1254)			ug/kg	38 UJ	4.1 UJ		18	71	68 J
11096-82-5	PCB-1260 (Aroclor 1260)			ug/kg	67	11		12	57	76
11100-14-4	PCB-1268 (Aroclor 1268)			ug/kg	2.1 U	2.1 U		2.1 U	2.1 U	2.1 U
	Total PCBs	1000	5	ug/Kg	67	11		30	177	189
	DIOXINS									
	Total TCDDs			ng/kg						
	Total TCDDs	0.05	1	ug/Kg						
1746-01-6	2,3,7,8-Tetrachlorodibenzo-P-Dioxin			ng/kg		0.0556 U	0.0362 U			0.482 J
	2,3,7,8-Tetrachlorodibenzo-P-Dioxin	0.05	1	ug/Kg		0.0000556 U	0.0000362 U			0.000482 J
	OTHER									
TOC	Total Organic Carbon			%	1.9	2.15	0.909	0.893	1.12	1.19
TOC	Total Organic Carbon			mg/kg	19000	21500	9090	8930	11200	11900

Data Sources:
NYSDEC, 2007. Contamination Analysis in the Rochester Embayment Area of Concern. Ma
USEPA, 2012. TASK 6: Final Summary Report for Site Characterization at the Genesee Rive
USEPA, 2013. Technical Report: Genesee River Sediment Sampling under the Great Lakes L

Notes:
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SGV Derivations:
1. TEC/PEC derived from MacDonald et al., 2000 (values rounded to two significant digits)
2. Equilibrium partitioning based on 2% TOC (values rounded to two significant digits)
3. Value from Long and Morgan (1991) (values rounded to two significant digits)
5. DoW TOGS 5.

NYSDEC-Lower Genesee River Historical Sediment Data Pesticide/Herbicide Class C Standards Comparison		Class C Freshwater Sediment Guidance		Location ID: Sample ID: Lab Sample Id: Depth: Source: SDG: Matrix: Sampled: Validated:	GR-11 LA-011 E1100918-009 0 - 0.5 ft BAT SE 9/15/2011	GR-11 LA-152 E1100919-002 0 - 0.9 ft BAT SE 9/15/2011	GR-12 LA-012 E1100918-010 0 - 0.5 ft BAT SE 9/15/2011	GR-12 LA-199 K1108838-013 0 - 3 ft BAT SE 9/15/2011	GR-12 LA-200 K1108838-014 3 - 6 ft BAT SE 9/15/2011	GR-12 LA-201 K1108843-011 6 - 9 ft BAT SE 9/15/2011
CAS NO.	COMPOUND	Values	Derivation	UNITS:						
	PESTICIDES									
959-98-8	Alpha Endosulfan	20	2	ug/kg		0.063 U		0.063 U	0.7 UJ	0.75 UJ
		1.008		ug/gOC		0.0748219		0.0588785	0.6930693	0.5555556
33213-65-9	Beta Endosulfan	1	2	ug/kg		0.14 U		0.14 U	0.14 U	2.5 UJ
		1.008		ug/gOC		0.1662708		0.1308411	0.1386139	1.8518519
57-74-9	Chlordane	18	1	ug/kg		1.9 U		1.9 U	7 UJ	7.1 UJ
2921-88-2	Chlorpyrifos	63	2	ug/kg		0.23 J		0.15 U	0.15 U	0.15 U
		3.157		ug/gOC		0.2731591		0.1401869	0.1485149	0.1111111
53-19-0	O,P'-DDD	28	1	ug/kg		0.82 NJ		0.51 J	2.6 UJ	3.1 NJ
72-54-8	P,P'-DDD	28	1	ug/kg		1.2		0.37 J	5.3 J	11
3424-82-6	O,P'-DDE	31	1	ug/kg		0.16 U		0.16 U	0.7 UJ	0.71 UJ
72-55-9	P,P'-DDE	31	1	ug/kg		1.7		1.1	4.9	4.5
789-02-6	O,P'-DDT	63	1	ug/kg		0.72 UJ		0.058 U	0.7 UJ	0.4 UJ
50-29-3	P,P'-DDT	63	1	ug/kg		0.72 UJ		0.18 UJ	0.17 U	5.3 J
1918-00-9	Dicamba	13000	2	ug/kg		4.4 U		4.4 U	4.4 U	4.4 U
		654.881		ug/gOC		5.2256532		4.1121495	4.3564356	3.2592593
60-57-1	Dieldrin	62	1	ug/kg		1.3 UJ		0.39 UJ	1.3 UJ	0.71 UJ
72-20-8	Endrin	210	1	ug/kg		0.094 U		0.094 U	0.7 UJ	0.094 U
58-89-9	Gamma Bhc (Lindane)	5	1	ug/kg		0.13 U		0.73 UJ	0.7 UJ	0.71 UJ
1024-57-3	Heptachlor Epoxide	16	1	ug/kg		0.084 U		0.084 U	0.18 UJ	0.11 UJ
87-68-3	Hexachlorobutadiene	12000	2	ug/kg		0.21 U		0.21 U	0.21 U	0.21 U
		575.395		ug/gOC		0.2494062		0.1962617	0.2079208	0.1555556
72-43-5	Methoxychlor			ug/kg		0.57 J		0.19 U	1.6 UJ	1.5 UJ
		NS		ug/gOC		0.6769596		0.1775701	1.5841584	1.1111111
2385-85-5	Mirex	120	2	ug/kg		0.099 U		0.099 U	0.7 UJ	0.71 UJ
		5.931		ug/gOC		0.1175772		0.0925234	0.6930693	0.5259259
8001-35-2	Toxaphene	250	2	ug/kg		24 UJ		16 UJ	64 UJ	36 UJ
		12.46		ug/gOC		28.503563		14.953271	63.366337	26.666667

NYSDEC-Lower Genesee River Historical Sediment Data Pesticide/Herbicide Class C Standards Comparison		Class C Freshwater Sediment Guidance		Location ID: Sample ID: Lab Sample Id: Depth: Source: SDG: Matrix: Sampled: Validated:	GR-11 LA-011 E1100918-009 0 - 0.5 ft BAT SE 9/15/2011	GR-11 LA-152 E1100919-002 0 - 0.9 ft BAT SE 9/15/2011	GR-12 LA-012 E1100918-010 0 - 0.5 ft BAT SE 9/15/2011	GR-12 LA-199 K1108838-013 0 - 3 ft BAT SE 9/15/2011	GR-12 LA-200 K1108838-014 3 - 6 ft BAT SE 9/15/2011	GR-12 LA-201 K1108843-011 6 - 9 ft BAT SE 9/15/2011
	PCBs									
12672-29-6	PCB-1248 (Aroclor 1248)			ug/kg		20 UJ		5.8 UJ	100	61
11097-69-1	PCB-1254 (Aroclor 1254)			ug/kg		28 J		8.6 UJ	120	93
11096-82-5	PCB-1260 (Aroclor 1260)			ug/kg		21		5.7 J	72	58
11100-14-4	PCB-1268 (Aroclor 1268)			ug/kg		2.1 U		2.1 U	2.1 U	2.1 U
	Total PCBs	1000	5	ug/Kg		49		5.7	292	212
	DIOXINS									
	Total TCDDs			ng/kg						
	Total TCDDs	0.05	1	ug/Kg						
1746-01-6	2,3,7,8-Tetrachlorodibenzo-P-Dioxin			ng/kg	0.092 U	0.298 J	1.5 J			
	2,3,7,8-Tetrachlorodibenzo-P-Dioxin	0.05	1	ug/Kg	0.000092 U	0.000298 J	0.0015 J			
	OTHER									
TOC	Total Organic Carbon			%	1.08	0.842	1.16	1.07	1.01	1.35
TOC	Total Organic Carbon			mg/kg	10800	8420	11600	10700	10100	13500

Data Sources:
NYSDEC, 2007. Contamination Analysis in the Rochester Embayment Area of Concern. Ma
USEPA, 2012. TASK 6: Final Summary Report for Site Characterization at the Genesee Rive
USEPA, 2013. Technical Report: Genesee River Sediment Sampling under the Great Lakes L

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1. TEC/PEC derived from MacDonald et al., 2000 (values rounded to two significant digits)
2. Equilibrium partitioning based on 2% TOC (values rounded to two significant digits)
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5. DoW TOGS 5.

NYSDEC-Lower Genesee River Historical Sediment Data Pesticide/Herbicide Class C Standards Comparison		Class C Freshwater Sediment Guidance		Location ID: Sample ID: Lab Sample Id: Depth: Source: SDG: Matrix: Sampled: Validated:	GR-12 LA-202 K1108843-012 9 - 12 ft BAT SE 9/15/2011	GR-12 LA-203 K1108843-013 12 - 15 ft BAT SE 9/15/2011	GR-12 LA-204 E1100919-015 15 - 16.4 ft BAT SE 9/15/2011	GR-13 LA-013 E1100911-005 0 - 0.5 ft BAT SE 9/14/2011	GR-13 LA-013D E1100911-006 0 - 0.5 ft BAT SE 9/14/2011	GR-13 LA-126 K1108643-011 0 - 3 ft BAT SE 9/14/2011
CAS NO.	COMPOUND	Values	Derivation	UNITS:						
	PESTICIDES									
959-98-8	Alpha Endosulfan	20	2	ug/kg	0.063 U	0.063 U	0.063 U			0.063 U
		1.008		ug/gOC	0.0857143	0.1046512	0.0950226			0.0254032
33213-65-9	Beta Endosulfan	1	2	ug/kg	0.14 U	0.14 U	0.14 U			0.14 U
		1.008		ug/gOC	0.1904762	0.2325581	0.2111614			0.0564516
57-74-9	Chlordane	18	1	ug/kg	1.9 U	2.1 UJ	1.9 U			19
2921-88-2	Chlorpyrifos	63	2	ug/kg	0.15 U	0.15 U	0.15 U			0.89 J
		3.157		ug/gOC	0.2040816	0.2491694	0.2262443			0.358871
53-19-0	O,P'-DDD	28	1	ug/kg	0.13 U	0.13 U	0.13 U			1.4
72-54-8	P,P'-DDD	28	1	ug/kg	0.11 U	0.11 U	0.11 U			2.3
3424-82-6	O,P'-DDE	31	1	ug/kg	0.16 U	0.16 U	0.16 U			2.1 UJ
72-55-9	P,P'-DDE	31	1	ug/kg	0.11 U	0.11 U	0.11 U			4.9
789-02-6	O,P'-DDT	63	1	ug/kg	0.058 U	0.058 U	0.058 U			0.9 UJ
50-29-3	P,P'-DDT	63	1	ug/kg	0.17 U	0.17 U	0.17 U			1.5
1918-00-9	Dicamba	13000	2	ug/kg	4.4 U	4.4 U	4.4 U			4.8 U
		654.881		ug/gOC	5.9863946	7.3089701	6.6365008			1.9354839
60-57-1	Dieldrin	62	1	ug/kg	0.14 U	0.14 U	0.14 U			0.9 UJ
72-20-8	Endrin	210	1	ug/kg	0.094 U	0.094 U	0.094 U			0.094 U
58-89-9	Gamma Bhc (Lindane)	5	1	ug/kg	0.08 U	0.08 U	0.08 U			2.9
1024-57-3	Heptachlor Epoxide	16	1	ug/kg	0.084 U	0.084 U	0.084 U			0.084 U
87-68-3	Hexachlorobutadiene	12000	2	ug/kg	0.21 U	0.21 U	0.21 U			0.43 U
		575.395		ug/gOC	0.2857143	0.3488372	0.3167421			0.1733871
72-43-5	Methoxychlor			ug/kg	0.19 U	0.19 U	0.19 U			0.94 UJ
		NS		ug/gOC	0.2585034	0.3156146	0.2865762			0.3790323
2385-85-5	Mirex	120	2	ug/kg	0.099 U	0.099 U	0.099 U			0.099 U
		5.931		ug/gOC	0.1346939	0.1644518	0.1493213			0.0399194
8001-35-2	Toxaphene	250	2	ug/kg	7.6 UJ	6.5 UJ	5.4 UJ			53 UJ
		12.46		ug/gOC	10.340136	10.797342	8.1447964			21.370968

NYSDEC-Lower Genesee River Historical Sediment Data Pesticide/Herbicide Class C Standards Comparison		Class C Freshwater Sediment Guidance		Location ID: Sample ID: Lab Sample Id: Depth: Source: SDG: Matrix: Sampled: Validated:	GR-12 LA-202 K1108843-012 9 - 12 ft BAT SE 9/15/2011	GR-12 LA-203 K1108843-013 12 - 15 ft BAT SE 9/15/2011	GR-12 LA-204 E1100919-015 15 - 16.4 ft BAT SE 9/15/2011	GR-13 LA-013 E1100911-005 0 - 0.5 ft BAT SE 9/14/2011	GR-13 LA-013D E1100911-006 0 - 0.5 ft BAT SE 9/14/2011	GR-13 LA-126 K1108643-011 0 - 3 ft BAT SE 9/14/2011
	PCBs									
12672-29-6	PCB-1248 (Aroclor 1248)			ug/kg	2.1 U	2.1 U	2.1 U			18 UJ
11097-69-1	PCB-1254 (Aroclor 1254)			ug/kg	2.1 U	2.1 U	2.1 U			23
11096-82-5	PCB-1260 (Aroclor 1260)			ug/kg	2.1 U	2.1 U	2.1 U			15
11100-14-4	PCB-1268 (Aroclor 1268)			ug/kg	2.1 U	2.1 U	2.1 U			2.1 U
	Total PCBs	1000	5	ug/Kg	0	0	0			38
	DIOXINS									
	Total TCDDs			ng/kg						
	Total TCDDs	0.05	1	ug/Kg						
1746-01-6	2,3,7,8-Tetrachlorodibenzo-P-Dioxin			ng/kg			0.0416 U	0.623 J	0.463 J	
	2,3,7,8-Tetrachlorodibenzo-P-Dioxin	0.05	1	ug/Kg			0.0000416 U	0.000623 J	0.000463 J	
	OTHER									
TOC	Total Organic Carbon			%	0.735	0.602	0.663	2.76	2.95	2.48
TOC	Total Organic Carbon			mg/kg	7350	6020	6630	27600	29500	24800

Data Sources:
NYSDEC, 2007. Contamination Analysis in the Rochester Embayment Area of Concern. Ma
USEPA, 2012. TASK 6: Final Summary Report for Site Characterization at the Genesee Rive
USEPA, 2013. Technical Report: Genesee River Sediment Sampling under the Great Lakes L

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1. TEC/PEC derived from MacDonald et al., 2000 (values rounded to two significant digits)
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NYSDEC-Lower Genesee River Historical Sediment Data Pesticide/Herbicide Class C Standards Comparison		Class C Freshwater Sediment Guidance		Location ID: Sample ID: Lab Sample Id: Depth: Source: SDG: Matrix: Sampled: Validated:	GR-13 LA-127 K1108643-012 3 - 6 ft BAT SE 9/14/2011	GR-13 LA-128 K1108643-013 6 - 9 ft BAT SE 9/14/2011	GR-13 LA-129 E1100910-009 9 - 11.9 ft BAT SE 9/14/2011	GR-13 LA-130 K1108737-001 0 - 3 ft BAT SE 9/14/2011	GR-13 LA-131 K1108737-002 3 - 6 ft BAT SE 9/14/2011	GR-13 LA-132 K1108737-003 6 - 9 ft BAT SE 9/14/2011
CAS NO.	COMPOUND	Values	Derivation	UNITS:						
	PESTICIDES									
959-98-8	Alpha Endosulfan	20	2	ug/kg	0.26 UJ	0.11 U	0.067 U	0.063 U	0.21 UJ	0.14 UJ
		1.008		ug/gOC	0.0820189	0.0087302	0.0150562	0.0250996	0.0319149	0.0079545
33213-65-9	Beta Endosulfan	1	2	ug/kg	0.14 U	0.23 U	0.15 U	0.14 U	2.1 UJ	0.3 UJ
		1.008		ug/gOC	0.044164	0.018254	0.0337079	0.0557769	0.3191489	0.0170455
57-74-9	Chlordane	18	1	ug/kg	31 J	3.1 U	2.1 U	25 J	28 J	4.1 UJ
2921-88-2	Chlorpyrifos	63	2	ug/kg	0.86 J	0.24 U	0.16 U	0.95 J	0.77 J	0.32 UJ
		3.157		ug/gOC	0.2712934	0.0190476	0.0359551	0.3784861	0.1170213	0.0181818
53-19-0	O,P'-DDD	28	1	ug/kg	2.2 NJ	0.21 U	0.14 U	2	2.2 NJ	2.2 UJ
72-54-8	P,P'-DDD	28	1	ug/kg	5.8	0.18 U	0.12 U	2.8	5.9	2 J
3424-82-6	O,P'-DDE	31	1	ug/kg	3.7 UJ	0.26 U	0.17 U	3 UJ	2.7 UJ	0.34 UJ
72-55-9	P,P'-DDE	31	1	ug/kg	6.8	0.18 U	0.12 U	6.4	6.7	0.57 J
789-02-6	O,P'-DDT	63	1	ug/kg	0.9 UJ	0.093 U	0.062 U	0.89 UJ	0.95 UJ	0.13 UJ
50-29-3	P,P'-DDT	63	1	ug/kg	0.9 UJ	0.28 U	0.18 U	2 J	1.9 UJ	0.37 UJ
1918-00-9	Dicamba	13000	2	ug/kg	4.8 U	8.4 U	5.6 U	4.7 U	5 U	12 UJ
		654.881		ug/gOC	1.5141956	0.6666667	1.258427	1.87251	0.7598784	0.6818182
60-57-1	Dieldrin	62	1	ug/kg	0.9 UJ	0.23 U	0.15 U	1.2 UJ	1.3 UJ	0.36 UJ
72-20-8	Endrin	210	1	ug/kg	0.094 U	0.15 U	0.1 U	0.094 U	0.094 U	0.2 UJ
58-89-9	Gamma Bhc (Lindane)	5	1	ug/kg	1.1 UJ	0.13 U	0.085 U	3.3 NJ	0.95 UJ	0.35 UJ
1024-57-3	Heptachlor Epoxide	16	1	ug/kg	0.084 U	0.14 U	0.089 U	0.084 U	0.084 U	0.18 UJ
87-68-3	Hexachlorobutadiene	12000	2	ug/kg	0.54 UJ	0.34 U	0.23 U	0.89 UJ	0.45 J	0.45 UJ
		575.395		ug/gOC	0.170347	0.0269841	0.0516854	0.3545817	0.0683891	0.0255682
72-43-5	Methoxychlor			ug/kg	0.9 UJ	0.48 UJ	0.27 UJ	0.19 U	0.78 UJ	0.41 UJ
		NS		ug/gOC	0.2839117	0.0380952	0.0606742	0.0756972	0.118541	0.0232955
2385-85-5	Mirex	120	2	ug/kg	0.099 U	0.16 U	0.11 U	0.099 U	0.95 UJ	0.22 UJ
		5.931		ug/gOC	0.0312303	0.0126984	0.0247191	0.0394422	0.1443769	0.0125
8001-35-2	Toxaphene	250	2	ug/kg	65 UJ	21 UJ	8.7 UJ	65 UJ	79 UJ	15 UJ
		12.46		ug/gOC	20.504732	1.6666667	1.9550562	25.896414	12.006079	0.8522727

NYSDEC-Lower Genesee River Historical Sediment Data Pesticide/Herbicide Class C Standards Comparison		Class C Freshwater Sediment Guidance		Location ID: Sample ID: Lab Sample Id: Depth: Source: SDG: Matrix: Sampled: Validated:	GR-13 LA-127 K1108643-012 3 - 6 ft BAT SE 9/14/2011	GR-13 LA-128 K1108643-013 6 - 9 ft BAT SE 9/14/2011	GR-13 LA-129 E1100910-009 9 - 11.9 ft BAT SE 9/14/2011	GR-13 LA-130 K1108737-001 0 - 3 ft BAT SE 9/14/2011	GR-13 LA-131 K1108737-002 3 - 6 ft BAT SE 9/14/2011	GR-13 LA-132 K1108737-003 6 - 9 ft BAT SE 9/14/2011
	PCBs									
12672-29-6	PCB-1248 (Aroclor 1248)			ug/kg	54 UJ	3.4 U	2.3 U	22 UJ	61 UJ	4.5 UJ
11097-69-1	PCB-1254 (Aroclor 1254)			ug/kg	67	3.4 U	2.3 U	28 UJ	74 UJ	4.5 UJ
11096-82-5	PCB-1260 (Aroclor 1260)			ug/kg	41	3.4 U	2.3 U	21 J	55 0	4.5 UJ
11100-14-4	PCB-1268 (Aroclor 1268)			ug/kg	2.1 U	3.4 U	2.3 U	2.1 U	2.1 U	4.5 UJ
	Total PCBs	1000	5	ug/Kg	108	0	0	21	55	0
	DIOXINS									
	Total TCDDs			ng/kg						
	Total TCDDs	0.05	1	ug/Kg						
1746-01-6	2,3,7,8-Tetrachlorodibenzo-P-Dioxin			ng/kg			0.0659 U			
	2,3,7,8-Tetrachlorodibenzo-P-Dioxin	0.05	1	ug/Kg			0.0000659 U			
	OTHER									
TOC	Total Organic Carbon			%	3.17	12.6	4.45	2.51	6.58	17.6
TOC	Total Organic Carbon			mg/kg	31700	126000	44500	25100	65800	176000

Data Sources:
NYSDEC, 2007. Contamination Analysis in the Rochester Embayment Area of Concern. Ma
USEPA, 2012. TASK 6: Final Summary Report for Site Characterization at the Genesee Rive
USEPA, 2013. Technical Report: Genesee River Sediment Sampling under the Great Lakes L

Notes:
1. Sample locations can be found on Figure 5.
2. Highlighted results indicate an exceedenc of sediment guidance value (SGV).

SGV Derivations:
1. TEC/PEC derived from MacDonald et al., 2000 (values rounded to two significant digits)
2. Equilibrium partitioning based on 2% TOC (values rounded to two significant digits)
3. Value from Long and Morgan (1991) (values rounded to two significant digits)
5. DoW TOGS 5.

NYSDEC-Lower Genesee River Historical Sediment Data Pesticide/Herbicide Class C Standards Comparison		Class C Freshwater Sediment Guidance		Location ID: Sample ID: Lab Sample Id: Depth: Source: SDG: Matrix: Sampled: Validated:	GR-13 LA-133 E1100910-010 9 - 12 ft BAT SE 9/14/2011	GR-13 LA-134 K1108737-005 12 - 13.1 ft BAT SE 9/14/2011	GR-14 LA-014 E1100911-007 0 - 0.5 ft BAT SE 9/14/2011	GR-14 LA-014D E1100911-008 0 - 0.5 ft BAT SE 9/14/2011	GR-14 LA-153 K1108843-015 0 - 3 ft BAT SE 9/14/2011	GR-14 LA-154 K1108837-010 3 - 6 ft BAT SE 9/14/2011
CAS NO.	COMPOUND	Values	Derivation	UNITS:						
	PESTICIDES									
959-98-8	Alpha Endosulfan	20	2	ug/kg	0.07 U	0.063 U			0.075 UJ	1.1 UJ
		1.008		ug/gOC	0.0143149	0.0176471			0.0986842	0.8461538
33213-65-9	Beta Endosulfan	1	2	ug/kg	0.16 U	0.14 U			0.14 U	3.7 UJ
		1.008		ug/gOC	0.0327198	0.0392157			0.1842105	2.8461538
57-74-9	Chlordane	18	1	ug/kg	2.1 U	1.9 U			2.6 UJ	7.1 UJ
2921-88-2	Chlorpyrifos	63	2	ug/kg	0.17 U	0.15 U			0.15 U	0.71 UJ
		3.157		ug/gOC	0.0347648	0.0420168			0.1973684	0.5461538
53-19-0	O,P'-DDD	28	1	ug/kg	0.15 U	0.13 U			0.81 NJ	3 UJ
72-54-8	P,P'-DDD	28	1	ug/kg	1.2 U	0.11 U			1.2	6 J
3424-82-6	O,P'-DDE	31	1	ug/kg	0.18 U	0.16 U			0.16 U	0.16 U
72-55-9	P,P'-DDE	31	1	ug/kg	0.13 U	0.11 U			1.7	5.4
789-02-6	O,P'-DDT	63	1	ug/kg	0.064 U	0.058 U			0.67 UJ	1.9 UJ
50-29-3	P,P'-DDT	63	1	ug/kg	0.19 U	0.17 U			1.5 J	1.4 UJ
1918-00-9	Dicamba	13000	2	ug/kg	5.9 U	5 U			4.4 U	4.4 U
		654.881		ug/gOC	1.206544	1.4005602			5.7894737	3.3846154
60-57-1	Dieldrin	62	1	ug/kg	0.16 U	0.14 U			1.2 UJ	0.72 UJ
72-20-8	Endrin	210	1	ug/kg	0.11 U	0.094 U			0.094 U	0.094 U
58-89-9	Gamma Bhc (Lindane)	5	1	ug/kg	0.089 U	0.08 U			0.67 UJ	0.71 UJ
1024-57-3	Heptachlor Epoxide	16	1	ug/kg	0.093 U	0.084 U			0.084 U	0.084 U
87-68-3	Hexachlorobutadiene	12000	2	ug/kg	0.24 U	0.21 U			0.21 U	0.36 J
		575.395		ug/gOC	0.0490798	0.0588235			0.2763158	0.2769231
72-43-5	Methoxychlor			ug/kg	0.21 U	0.19 U			0.48 UJ	2.5 NJ
		NS		ug/gOC	0.0429448	0.0532213			0.6315789	1.9230769
2385-85-5	Mirex	120	2	ug/kg	0.11 U	0.099 U			0.099 U	0.099 U
		5.931		ug/gOC	0.0224949	0.0277311			0.1302632	0.0761538
8001-35-2	Toxaphene	250	2	ug/kg	5.3 U	4.8 U			30 UJ	60 UJ
		12.46		ug/gOC	1.0838446	1.3445378			39.473684	46.153846

NYSDEC-Lower Genesee River Historical Sediment Data Pesticide/Herbicide Class C Standards Comparison		Class C Freshwater Sediment Guidance		Location ID: Sample ID: Lab Sample Id: Depth: Source: SDG: Matrix: Sampled: Validated:	GR-13 LA-133 E1100910-010 9 - 12 ft BAT SE 9/14/2011	GR-13 LA-134 K1108737-005 12 - 13.1 ft BAT SE 9/14/2011	GR-14 LA-014 E1100911-007 0 - 0.5 ft BAT SE 9/14/2011	GR-14 LA-014D E1100911-008 0 - 0.5 ft BAT SE 9/14/2011	GR-14 LA-153 K1108843-015 0 - 3 ft BAT SE 9/14/2011	GR-14 LA-154 K1108837-010 3 - 6 ft BAT SE 9/14/2011
	PCBs									
12672-29-6	PCB-1248 (Aroclor 1248)			ug/kg	2.4 U	2.1 U			21 UJ	210
11097-69-1	PCB-1254 (Aroclor 1254)			ug/kg	2.4 U	2.1 U			32	200
11096-82-5	PCB-1260 (Aroclor 1260)			ug/kg	2.4 U	2.1 U			21 J	120
11100-14-4	PCB-1268 (Aroclor 1268)			ug/kg	2.4 U	2.1 U			2.1 U	2.1 U
	Total PCBs	1000	5	ug/Kg	0	0			53	530
	DIOXINS									
	Total TCDDs			ng/kg						
	Total TCDDs	0.05	1	ug/Kg						
1746-01-6	2,3,7,8-Tetrachlorodibenzo-P-Dioxin			ng/kg	0.0917 U		0.0547 U	0.0442 U		
	2,3,7,8-Tetrachlorodibenzo-P-Dioxin	0.05	1	ug/Kg	0.0000917 U		0.0000547 U	0.0000442 U		
	OTHER									
TOC	Total Organic Carbon			%	4.89	3.57	1.09	0.83	0.76	1.3
TOC	Total Organic Carbon			mg/kg	48900	35700	10900	8300	7600	13000

Data Sources:
NYSDEC, 2007. Contamination Analysis in the Rochester Embayment Area of Concern. Ma
USEPA, 2012. TASK 6: Final Summary Report for Site Characterization at the Genesee Rive
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Notes:
1. Sample locations can be found on Figure 5.
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SGV Derivations:
1. TEC/PEC derived from MacDonald et al., 2000 (values rounded to two significant digits)
2. Equilibrium partitioning based on 2% TOC (values rounded to two significant digits)
3. Value from Long and Morgan (1991) (values rounded to two significant digits)
5. DoW TOGS 5.

NYSDEC-Lower Genesee River Historical Sediment Data Pesticide/Herbicide Class C Standards Comparison		Class C Freshwater Sediment Guidance		Location ID: Sample ID: Lab Sample Id: Depth: Source: SDG: Matrix: Sampled: Validated:	GR-14 LA-155 E1100919-003 6 - 8.2 ft BAT SE 9/14/2011	GR-14 LA-156 K1108843-016 0 - 3 ft BAT SE 9/14/2011	GR-14 LA-157 K1108837-011 3 - 6 ft BAT SE 9/14/2011	GR-14 LA-158 E1100919-004 6 - 7.7 ft BAT SE 9/14/2011	GR-15 LA-015 E1100911-009 0 - 0.5 ft BAT SE 9/14/2011	GR-15 LA-168 K1108844-003 0 - 3 ft BAT SE 9/14/2011
CAS NO.	COMPOUND	Values	Derivation	UNITS:						
	PESTICIDES									
959-98-8	Alpha Endosulfan	20	2	ug/kg	0.51 UJ	0.063 U	0.83 UJ	0.47 UJ		0.75 UJ
		1.008		ug/gOC	0.2865169	0.0870166	0.6014493	0.2670455		0.7629705
33213-65-9	Beta Endosulfan	1	2	ug/kg	3.9 UJ	0.14 U	4.7 UJ	3.4 UJ		0.14 U
		1.008		ug/gOC	2.1910112	0.1933702	3.4057971	1.9318182		0.1424212
57-74-9	Chlordane	18	1	ug/kg	7.2 UJ	1.9 U	7.4 UJ	7.1 UJ		1.9 U
2921-88-2	Chlorpyrifos	63	2	ug/kg	0.15 U	0.15 U	0.15 U	0.15 U		0.15 U
		3.157		ug/gOC	0.0842697	0.2071823	0.1086957	0.0852273		0.1525941
53-19-0	O,P'-DDD	28	1	ug/kg	2.4 NJ	0.64 U	2.7 UJ	2.5 NJ		0.34 J
72-54-8	P,P'-DDD	28	1	ug/kg	4.8 J	0.67	5.6 J	5.2 J		0.27 J
3424-82-6	O,P'-DDE	31	1	ug/kg	0.72 UJ	0.16 U	0.16 U	0.71 UJ		0.75 UJ
72-55-9	P,P'-DDE	31	1	ug/kg	3.7	0.93 UJ	5.2	4.1		0.95 U
789-02-6	O,P'-DDT	63	1	ug/kg	1.7 J	0.058 U	0.74 UJ	1.6 J		0.75 UJ
50-29-3	P,P'-DDT	63	1	ug/kg	0.72 UJ	1.9 J	2.1 UJ	0.71 UJ		0.17 U
1918-00-9	Dicamba	13000	2	ug/kg	4.4 U	4.4 U	4.4 U	4.4 U		4.4 U
		654.881		ug/gOC	2.4719101	6.0773481	3.1884058	2.5		4.4760936
60-57-1	Dieldrin	62	1	ug/kg	4.8 UJ	0.14 U	0.74 UJ	0.14 U		0.14 U
72-20-8	Endrin	210	1	ug/kg	0.094 U	0.094 U	0.094 U	0.094 U		0.094 U
58-89-9	Gamma Bhc (Lindane)	5	1	ug/kg	0.72 UJ	0.64 UJ	0.74 UJ	0.71 UJ		0.75 UJ
1024-57-3	Heptachlor Epoxide	16	1	ug/kg	0.084 U	0.084 U	0.084 U	0.084 U		0.084 U
87-68-3	Hexachlorobutadiene	12000	2	ug/kg	0.21 U	0.21 U	0.21 U	0.21 U		0.21 U
		575.395		ug/gOC	0.1179775	0.2900552	0.1521739	0.1193182		0.2136317
72-43-5	Methoxychlor			ug/kg	3.5 UJ	0.35 UJ	2.1 UJ	2.7 UJ		0.75 UJ
		NS		ug/gOC	1.9662921	0.4834254	1.5217391	1.5340909		0.7629705
2385-85-5	Mirex	120	2	ug/kg	0.72 UJ	0.099 U	0.099 U	0.71 UJ		0.75 UJ
		5.931		ug/gOC	0.4044944	0.1367403	0.0717391	0.4034091		0.7629705
8001-35-2	Toxaphene	250	2	ug/kg	64 UJ	19 UJ	110 UJ	97 UJ		8.6 UJ
		12.46		ug/gOC	35.955056	26.243094	79.710145	55.113636		8.7487284

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	PCBs									
12672-29-6	PCB-1248 (Aroclor 1248)			ug/kg	2.1 U	14 UJ	190	2.1 U		4.8 UJ
11097-69-1	PCB-1254 (Aroclor 1254)			ug/kg	96 J	19 UJ	180	92 J		7.4 UJ
11096-82-5	PCB-1260 (Aroclor 1260)			ug/kg	120	12	110	120		4.7 J
11100-14-4	PCB-1268 (Aroclor 1268)			ug/kg	2.1 U	2.1 U	2.1 U	2.1 U		2.1 U
	Total PCBs	1000	5	ug/Kg	216	12	480	212		4.7
	DIOXINS									
	Total TCDDs			ng/kg						
	Total TCDDs	0.05	1	ug/Kg						
1746-01-6	2,3,7,8-Tetrachlorodibenzo-P-Dioxin			ng/kg	0.57 J			0.505 J	0.0555 U	
	2,3,7,8-Tetrachlorodibenzo-P-Dioxin	0.05	1	ug/Kg	0.00057 J			0.000505 J	0.0000555 U	
	OTHER									
TOC	Total Organic Carbon			%	1.78	0.724	1.38	1.76	0.989	0.983
TOC	Total Organic Carbon			mg/kg	17800	7240	13800	17600	9890	9830

Data Sources:
NYSDEC, 2007. Contamination Analysis in the Rochester Embayment Area of Concern. Ma
USEPA, 2012. TASK 6: Final Summary Report for Site Characterization at the Genesee Rive
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NYSDEC-Lower Genesee River Historical Sediment Data Pesticide/Herbicide Class C Standards Comparison		Class C Freshwater Sediment Guidance		Location ID: Sample ID: Lab Sample Id: Depth: Source: SDG: Matrix: Sampled: Validated:	GR-15 LA-169 K1108838-020 3 - 6 ft BAT SE 9/14/2011	GR-15 LA-170 K1108840-001 6 - 9 ft BAT SE 9/14/2011	GR-15 LA-171 K1108840-002 9 - 12 ft BAT SE 9/14/2011	GR-15 LA-172 E1100919-008 12 - 13.2 ft BAT SE 9/14/2011	GR-16 LA-016 E1100911-010 0 - 0.5 ft BAT SE 9/14/2011	GR-16 LA-144 K1108764-004 0 - 3 ft BAT SE 9/14/2011
CAS NO.	COMPOUND	Values	Derivation	UNITS:						
	PESTICIDES									
959-98-8	Alpha Endosulfan	20	2	ug/kg	0.063 U	0.14 UJ	0.5 UJ	0.087 UJ		0.063 U
		1.008		ug/gOC	0.0686275	0.1	0.4132231	0.0852941		0.0778739
33213-65-9	Beta Endosulfan	1	2	ug/kg	0.14 U	0.14 U	0.14 U	0.14 U		0.14 U
		1.008		ug/gOC	0.1525054	0.1	0.1157025	0.1372549		0.1730532
57-74-9	Chlordane	18	1	ug/kg	1.9 U	3 UJ	7 UJ	2 UJ		1.9 U
2921-88-2	Chlorpyrifos	63	2	ug/kg	0.15 U	0.17 UJ	0.7 UJ	0.15 U		0.15 U
		3.157		ug/gOC	0.1633987	0.1214286	0.5785124	0.1470588		0.1854141
53-19-0	O,P'-DDD	28	1	ug/kg	0.55 J	1.3 NJ	3.2 NJ	1.3 NJ		0.73 U
72-54-8	P,P'-DDD	28	1	ug/kg	0.71 J	1.9	6.7	2.5		0.24 J
3424-82-6	O,P'-DDE	31	1	ug/kg	0.16 U	0.74 UJ	0.74 UJ	0.16 U		0.16 U
72-55-9	P,P'-DDE	31	1	ug/kg	1.1 UJ	2.9	4.5	1.1		0.87 UJ
789-02-6	O,P'-DDT	63	1	ug/kg	0.058 U	0.16 UJ	0.56 UJ	0.065 UJ		0.065 UJ
50-29-3	P,P'-DDT	63	1	ug/kg	0.87 J	1.2 UJ	0.82 UJ	0.17 U		0.49 J
1918-00-9	Dicamba	13000	2	ug/kg	4.4 U	4.4 U	4.4 U	4.4 U		4.4 U
		654.881		ug/gOC	4.7930283	3.1428571	3.6363636	4.3137255		5.4388133
60-57-1	Dieldrin	62	1	ug/kg	0.62 UJ	2 UJ	0.14 U	0.14 U		0.14 U
72-20-8	Endrin	210	1	ug/kg	0.094 U	0.094 U	0.094 U	0.094 U		0.094 U
58-89-9	Gamma Bhc (Lindane)	5	1	ug/kg	0.69 UJ	0.74 UJ	0.73 UJ	0.65 UJ		0.73 UJ
1024-57-3	Heptachlor Epoxide	16	1	ug/kg	0.084 U	0.084 U	0.084 U	0.084 U		0.084 U
87-68-3	Hexachlorobutadiene	12000	2	ug/kg	0.21 U	0.21 U	0.21 U	0.21 U		0.21 U
		575.395		ug/gOC	0.2287582	0.15	0.1735537	0.2058824		0.2595797
72-43-5	Methoxychlor			ug/kg	0.19 U	0.74 UJ	2.5	0.65 U		0.19 U
		NS		ug/gOC	0.2069717	0.5285714	2.0661157	0.6372549		0.2348578
2385-85-5	Mirex	120	2	ug/kg	0.099 U	51 UJ	12 UJ	0.099 U		0.73 UJ
		5.931		ug/gOC	0.1078431	36.428571	9.9173554	0.0970588		0.9023486
8001-35-2	Toxaphene	250	2	ug/kg	17 UJ	23 UJ	50 UJ	33 UJ		5.7 UJ
		12.46		ug/gOC	18.518519	16.428571	41.322314	32.352941		7.0457355

NYSDEC-Lower Genesee River Historical Sediment Data Pesticide/Herbicide Class C Standards Comparison		Class C Freshwater Sediment Guidance		Location ID: Sample ID: Lab Sample Id: Depth: Source: SDG: Matrix: Sampled: Validated:	GR-15 LA-169 K1108838-020 3 - 6 ft BAT SE 9/14/2011	GR-15 LA-170 K1108840-001 6 - 9 ft BAT SE 9/14/2011	GR-15 LA-171 K1108840-002 9 - 12 ft BAT SE 9/14/2011	GR-15 LA-172 E1100919-008 12 - 13.2 ft BAT SE 9/14/2011	GR-16 LA-016 E1100911-010 0 - 0.5 ft BAT SE 9/14/2011	GR-16 LA-144 K1108764-004 0 - 3 ft BAT SE 9/14/2011
	PCBs									
12672-29-6	PCB-1248 (Aroclor 1248)			ug/kg	8 UJ	27 UJ	95	28		2.1 UJ
11097-69-1	PCB-1254 (Aroclor 1254)			ug/kg	16 UJ	44 J	130	41		2.1 UJ
11096-82-5	PCB-1260 (Aroclor 1260)			ug/kg	9.3	33	73	25		2.1 UJ
11100-14-4	PCB-1268 (Aroclor 1268)			ug/kg	2.1 U	2.1 U	2.1 U	2.1 U		2.1 UJ
	Total PCBs	1000	5	ug/Kg	9.3	77	298	94		0
	DIOXINS									
	Total TCDDs			ng/kg						
	Total TCDDs	0.05	1	ug/Kg						
1746-01-6	2,3,7,8-Tetrachlorodibenzo-P-Dioxin			ng/kg				0.544 J	0.0574 U	
	2,3,7,8-Tetrachlorodibenzo-P-Dioxin	0.05	1	ug/Kg				0.000544 J	0.0000574 U	
	OTHER									
TOC	Total Organic Carbon			%	0.918	1.4	1.21	1.02	0.537	0.809
TOC	Total Organic Carbon			mg/kg	9180	14000	12100	10200	5370	8090

Data Sources:
NYSDEC, 2007. Contamination Analysis in the Rochester Embayment Area of Concern. Ma
USEPA, 2012. TASK 6: Final Summary Report for Site Characterization at the Genesee Rive
USEPA, 2013. Technical Report: Genesee River Sediment Sampling under the Great Lakes L

Notes:
1. Sample locations can be found on Figure 5.
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SGV Derivations:
1. TEC/PEC derived from MacDonald et al., 2000 (values rounded to two significant digits)
2. Equilibrium partitioning based on 2% TOC (values rounded to two significant digits)
3. Value from Long and Morgan (1991) (values rounded to two significant digits)
5. DoW TOGS 5.

NYSDEC-Lower Genesee River Historical Sediment Data Pesticide/Herbicide Class C Standards Comparison		Class C Freshwater Sediment Guidance		Location ID: Sample ID: Lab Sample Id: Depth: Source: SDG: Matrix: Sampled: Validated:	GR-16 LA-145 K1108764-005 3 - 6 ft BAT SE 9/14/2011	GR-16 LA-146 K1108764-006 6 - 9 ft BAT SE 9/14/2011	GR-16 LA-147 K1108764-007 9 - 12 ft BAT SE 9/14/2011	GR-16 LA-148 K1108764-008 12 - 15 ft BAT SE 9/14/2011	GR-16 LA-149 K1108764-009 15 - 18 ft BAT SE 9/14/2011	GR-16 LA-150 E1100911-001 18 - 19.9 ft BAT SE 9/14/2011
CAS NO.	COMPOUND	Values	Derivation	UNITS:						
	PESTICIDES									
959-98-8	Alpha Endosulfan	20	2	ug/kg	0.063 U	0.71 UJ	0.85 UJ	0.22 UJ	0.063 U	0.063 U
		1.008		ug/gOC	0.0364162	0.6513761	0.5214724	0.1617647	0.0732558	0.061165
33213-65-9	Beta Endosulfan	1	2	ug/kg	0.14 U	0.14 U	0.14 U	0.14 U	0.14 U	0.14 U
		1.008		ug/gOC	0.0809249	0.1284404	0.0858896	0.1029412	0.1627907	0.1359223
57-74-9	Chlordane	18	1	ug/kg	1.9 U	1.9 U	28 UJ	8.8 UJ	1.9 U	1.9 U
2921-88-2	Chlorpyrifos	63	2	ug/kg	0.15 U	0.15 U	0.15 U	0.15 U	0.15 U	0.15 U
		3.157		ug/gOC	0.0867052	0.1376147	0.0920245	0.1102941	0.1744186	0.1456311
53-19-0	O,P'-DDD	28	1	ug/kg	0.36 J	1.7 UJ	2.9 UJ	1.2 J	0.13 U	0.13 U
72-54-8	P,P'-DDD	28	1	ug/kg	0.41 J	6.3 J	8.2 J	1.2	0.11 U	0.11 U
3424-82-6	O,P'-DDE	31	1	ug/kg	0.16 U	0.16 U	0.69 UJ	0.52 UJ	0.16 U	0.16 U
72-55-9	P,P'-DDE	31	1	ug/kg	1.3 UJ	6.3 NJ	4.2 J	0.62 J	0.11 U	0.11 U
789-02-6	O,P'-DDT	63	1	ug/kg	0.058 U	0.066 UJ	0.87 UJ	0.23 UJ	0.058 U	0.058 U
50-29-3	P,P'-DDT	63	1	ug/kg	0.27 UJ	0.17 U	1.4 UJ	0.84 UJ	0.17 U	0.17 U
1918-00-9	Dicamba	13000	2	ug/kg	4.4 U	4.4 U	4.4 U	4.4 U	4.4 U	4.4 U
		654.881		ug/gOC	2.5433526	4.0366972	2.6993865	3.2352941	5.1162791	4.2718447
60-57-1	Dieldrin	62	1	ug/kg	0.14 U	0.71 UJ	0.14 U	1.2 UJ	0.14 U	0.14 U
72-20-8	Endrin	210	1	ug/kg	0.094 U	0.094 U	0.094 U	0.094 U	0.094 U	0.094 U
58-89-9	Gamma Bhc (Lindane)	5	1	ug/kg	0.7 UJ	0.71 UJ	0.69 UJ	0.7 UJ	0.08 U	0.08 U
1024-57-3	Heptachlor Epoxide	16	1	ug/kg	0.084 U	0.084 U	0.084 U	0.084 U	0.084 U	0.084 U
87-68-3	Hexachlorobutadiene	12000	2	ug/kg	0.21 U	0.23 J	0.21 U	0.21 U	0.21 U	0.21 U
		575.395		ug/gOC	0.1213873	0.2110092	0.1288344	0.1544118	0.244186	0.2038835
72-43-5	Methoxychlor			ug/kg	0.19 U	1.6 UJ	3 J	1.6 UJ	0.19 U	0.19 U
		NS		ug/gOC	0.1098266	1.4678899	1.8404908	1.1764706	0.2209302	0.184466
2385-85-5	Mirex	120	2	ug/kg	0.099 U	0.099 U	0.69 UJ	0.7 UJ	0.099 U	0.099 U
		5.931		ug/gOC	0.0572254	0.0908257	0.4233129	0.5147059	0.1151163	0.0961165
8001-35-2	Toxaphene	250	2	ug/kg	12 UJ	48 UJ	90 UJ	35 UJ	5.3 UJ	13 UJ
		12.46		ug/gOC	6.9364162	44.036697	55.214724	25.735294	6.1627907	12.621359

NYSDEC-Lower Genesee River Historical Sediment Data Pesticide/Herbicide Class C Standards Comparison		Class C Freshwater Sediment Guidance		Location ID: Sample ID: Lab Sample Id: Depth: Source: SDG: Matrix: Sampled: Validated:	GR-16 LA-145 K1108764-005 3 - 6 ft BAT SE 9/14/2011	GR-16 LA-146 K1108764-006 6 - 9 ft BAT SE 9/14/2011	GR-16 LA-147 K1108764-007 9 - 12 ft BAT SE 9/14/2011	GR-16 LA-148 K1108764-008 12 - 15 ft BAT SE 9/14/2011	GR-16 LA-149 K1108764-009 15 - 18 ft BAT SE 9/14/2011	GR-16 LA-150 E1100911-001 18 - 19.9 ft BAT SE 9/14/2011
	PCBs									
12672-29-6	PCB-1248 (Aroclor 1248)			ug/kg	5.6 UJ	100 UJ	170	23 UJ	2.1 U	2.1 U
11097-69-1	PCB-1254 (Aroclor 1254)			ug/kg	7.9 UJ	98	130	29 UJ	2.1 U	2.1 U
11096-82-5	PCB-1260 (Aroclor 1260)			ug/kg	6.1 J	56	92	62	2.1 U	2.1 U
11100-14-4	PCB-1268 (Aroclor 1268)			ug/kg	3 UJ	26 UJ	2.1 U	25 UJ	2.1 U	2.1 U
	Total PCBs	1000	5	ug/Kg	6.1	154	392	62	0	0
	DIOXINS									
	Total TCDDs			ng/kg						
	Total TCDDs	0.05	1	ug/Kg						
1746-01-6	2,3,7,8-Tetrachlorodibenzo-P-Dioxin			ng/kg						0.0539 U
	2,3,7,8-Tetrachlorodibenzo-P-Dioxin	0.05	1	ug/Kg						0.0000539 U
	OTHER									
TOC	Total Organic Carbon			%	1.73	1.09	1.63	1.36	0.86	1.03
TOC	Total Organic Carbon			mg/kg	17300	10900	16300	13600	8600	10300

Data Sources:
NYSDEC, 2007. Contamination Analysis in the Rochester Embayment Area of Concern. Ma
USEPA, 2012. TASK 6: Final Summary Report for Site Characterization at the Genesee Rive
USEPA, 2013. Technical Report: Genesee River Sediment Sampling under the Great Lakes L

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1. TEC/PEC derived from MacDonald et al., 2000 (values rounded to two significant digits)
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NYSDEC-Lower Genesee River Historical Sediment Data Pesticide/Herbicide Class C Standards Comparison		Class C Freshwater Sediment Guidance		Location ID: Sample ID: Lab Sample Id: Depth: Source: SDG: Matrix: Sampled: Validated:	GR-17 LA-017 E1100911-011 0 - 0.5 ft BAT SE 9/14/2011	GR-17 LA-151 E1100919-001 0 - 3.1 ft BAT SE 9/14/2011	GR-18 LA-018 E1100911-012 0 - 0.5 ft BAT SE 9/14/2011	GR-18 LA-135 K1108737-006 0 - 3 ft BAT SE 9/14/2011	GR-18 LA-136 K1108737-007 3 - 6 ft BAT SE 9/14/2011	GR-18 LA-137 K1108737-008 6 - 9 ft BAT SE 9/14/2011
CAS NO.	COMPOUND	Values	Derivation	UNITS:						
	PESTICIDES									
959-98-8	Alpha Endosulfan	20	2	ug/kg		0.063 U		0.063 U	0.66 UJ	1.8 UJ
		1.008		ug/gOC		0.072		0.0753589	0.6818182	1.1180124
33213-65-9	Beta Endosulfan	1	2	ug/kg		0.14 U		0.14 U	2.4 UJ	4.2 UJ
		1.008		ug/gOC		0.16		0.1674641	2.4793388	2.6086957
57-74-9	Chlordane	18	1	ug/kg		1.9 U		1.9 U	6.8 UJ	18 UJ
2921-88-2	Chlorpyrifos	63	2	ug/kg		0.15 U		0.15 U	0.15 U	0.75 UJ
		3.157		ug/gOC		0.1714286		0.1794258	0.1549587	0.4658385
53-19-0	O,P'-DDD	28	1	ug/kg		0.71 U		0.71 U	9.5 J	9 NJ
72-54-8	P,P'-DDD	28	1	ug/kg		0.56 J		0.47 J	18	19
3424-82-6	O,P'-DDE	31	1	ug/kg		0.16 U		0.16 U	0.94 UJ	1.7 UJ
72-55-9	P,P'-DDE	31	1	ug/kg		1.2		1.3 UJ	5.5	8.8 J
789-02-6	O,P'-DDT	63	1	ug/kg		0.058 U		0.058 U	0.22 UJ	0.2 UJ
50-29-3	P,P'-DDT	63	1	ug/kg		0.17 U		0.71 UJ	0.8 UJ	0.17 U
1918-00-9	Dicamba	13000	2	ug/kg		4.4 U		4.4 U	4.4 U	4.4 U
		654.881		ug/gOC		5.0285714		5.2631579	4.5454545	2.7329193
60-57-1	Dieldrin	62	1	ug/kg		0.65 UJ		0.14 U	0.68 UJ	0.75 UJ
72-20-8	Endrin	210	1	ug/kg		0.094 U		0.094 U	0.094 U	0.094 U
58-89-9	Gamma Bhc (Lindane)	5	1	ug/kg		0.71 UJ		0.71 UJ	0.68 UJ	0.75 UJ
1024-57-3	Heptachlor Epoxide	16	1	ug/kg		0.084 U		0.084 U	0.084 U	0.11 UJ
87-68-3	Hexachlorobutadiene	12000	2	ug/kg		0.21 U		0.21 U	0.21 U	0.21 U
		575.395		ug/gOC		0.24		0.2511962	0.2169421	0.1304348
72-43-5	Methoxychlor			ug/kg		1.4 J		0.71 U	1.2 J	2.6 NJ
		NS		ug/gOC		1.6		0.8492823	1.2396694	1.6149068
2385-85-5	Mirex	120	2	ug/kg		0.099 U		0.099 U	0.68 UJ	0.75 UJ
		5.931		ug/gOC		0.1131429		0.1184211	0.7024793	0.4658385
8001-35-2	Toxaphene	250	2	ug/kg		14 UJ		14 UJ	160 UJ	49 UJ
		12.46		ug/gOC		16		16.746411	165.28926	30.434783

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	PCBs									
12672-29-6	PCB-1248 (Aroclor 1248)			ug/kg		17		12	77	230
11097-69-1	PCB-1254 (Aroclor 1254)			ug/kg		23		17 UJ	99 J	230
11096-82-5	PCB-1260 (Aroclor 1260)			ug/kg		19		16	58	110
11100-14-4	PCB-1268 (Aroclor 1268)			ug/kg		2.1 U		2.1 U	2.1 U	2.1 U
	Total PCBs	1000	5	ug/Kg		59		28	234	570
	DIOXINS									
	Total TCDDs			ng/kg						
	Total TCDDs	0.05	1	ug/Kg						
1746-01-6	2,3,7,8-Tetrachlorodibenzo-P-Dioxin			ng/kg	0.0413 U	0.439 J	0.0351 U			
	2,3,7,8-Tetrachlorodibenzo-P-Dioxin	0.05	1	ug/Kg	0.0000413 U	0.000439 J	0.0000351 U			
	OTHER									
TOC	Total Organic Carbon			%	0.696	0.875	0.902	0.836	0.968	1.61
TOC	Total Organic Carbon			mg/kg	6960	8750	9020	8360	9680	16100

Data Sources:
NYSDEC, 2007. Contamination Analysis in the Rochester Embayment Area of Concern. Ma
USEPA, 2012. TASK 6: Final Summary Report for Site Characterization at the Genesee Rive
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NYSDEC-Lower Genesee River Historical Sediment Data Pesticide/Herbicide Class C Standards Comparison		Class C Freshwater Sediment Guidance		Location ID: Sample ID: Lab Sample Id: Depth: Source: SDG: Matrix: Sampled: Validated:	GR-18 LA-138 E1100910-011 9 - 12.7 ft BAT SE 9/14/2011	GR-19 LA-019 E1100911-013 0 - 0.5 ft BAT SE 9/13/2011	GR-19 LA-117 K1108656-017 0 - 3 ft BAT SE 9/13/2011	GR-19 LA-118 K1108656-018 3 - 6 ft BAT SE 9/13/2011	GR-19 LA-119 K1108656-019 6 - 9 ft BAT SE 9/13/2011	GR-19 LA-120 K1108656-020 9 - 12 ft BAT SE 9/13/2011
CAS NO.	COMPOUND	Values	Derivation	UNITS:						
	PESTICIDES									
959-98-8	Alpha Endosulfan	20	2	ug/kg	0.86 UJ		0.063 U	0.063 U	0.063 U	0.063 U
		1.008		ug/gOC	0.5931034		0.0693069	0.0644831	0.0583333	0.0658307
33213-65-9	Beta Endosulfan	1	2	ug/kg	3.6 UJ		0.14 U	0.14 U	0.9 UJ	0.14 U
		1.008		ug/gOC	2.4827586		0.1540154	0.1432958	0.8333333	0.1462905
57-74-9	Chlordane	18	1	ug/kg	12 UJ		1.9 U	1.9 U	2 UJ	1.9 U
2921-88-2	Chlorpyrifos	63	2	ug/kg	0.15 U		0.15 U	0.15 U	0.15 U	0.15 U
		3.157		ug/gOC	0.1034483		0.1650165	0.1535312	0.1388889	0.1567398
53-19-0	O,P'-DDD	28	1	ug/kg	3.4 UJ		0.72 U	0.71 U	0.89 NJ	0.68 U
72-54-8	P,P'-DDD	28	1	ug/kg	8.1 J		0.31 J	0.57 J	1.2 J	0.81 J
3424-82-6	O,P'-DDE	31	1	ug/kg	0.73 UJ		0.16 U	0.16 U	0.7 UJ	0.16 U
72-55-9	P,P'-DDE	31	1	ug/kg	7.7		0.87	1.1	1.8	1.2
789-02-6	O,P'-DDT	63	1	ug/kg	0.21 UJ		0.058 U	0.058 U	0.09 UJ	0.058 U
50-29-3	P,P'-DDT	63	1	ug/kg	0.17 U		1.4	0.71 U	0.7 UJ	0.45 UJ
1918-00-9	Dicamba	13000	2	ug/kg	4.4 U		4.4 U	4.4 U	4.4 U	4.4 U
		654.881		ug/gOC	3.0344828		4.840484	4.5035824	4.0740741	4.5977011
60-57-1	Dieldrin	62	1	ug/kg	1.1 UJ		0.25 UJ	0.14 U	1.7 UJ	0.78 UJ
72-20-8	Endrin	210	1	ug/kg	0.094 U		0.094 U	0.094 U	0.094 U	0.094 U
58-89-9	Gamma Bhc (Lindane)	5	1	ug/kg	0.7 UJ		0.2 UJ	0.08 U	0.08 U	0.68 U
1024-57-3	Heptachlor Epoxide	16	1	ug/kg	0.084 U		0.084 U	0.084 U	0.084 U	0.084 U
87-68-3	Hexachlorobutadiene	12000	2	ug/kg	0.21 U		0.21 U	0.21 U	0.21 U	0.21 U
		575.395		ug/gOC	0.1448276		0.2310231	0.2149437	0.1944444	0.2194357
72-43-5	Methoxychlor			ug/kg	2.4 UJ		0.19 U	0.19 U	0.19 U	0.2 UJ
		NS		ug/gOC	1.6551724		0.2090209	0.1944729	0.1759259	0.2089864
2385-85-5	Mirex	120	2	ug/kg	0.7 UJ		0.099 U	0.099 U	0.099 U	0.099 U
		5.931		ug/gOC	0.4827586		0.1089109	0.1013306	0.0916667	0.1034483
8001-35-2	Toxaphene	250	2	ug/kg	35 UJ		8.7 UJ	19 UJ	15 UJ	14 UJ
		12.46		ug/gOC	24.137931		9.5709571	19.447288	13.888889	14.629049

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	PCBs									
12672-29-6	PCB-1248 (Aroclor 1248)			ug/kg	220		3.6 J	6.6 J	15	10 J
11097-69-1	PCB-1254 (Aroclor 1254)			ug/kg	210		6.4 J	11	29	16
11096-82-5	PCB-1260 (Aroclor 1260)			ug/kg	96		4.5 J	9.6	24	13
11100-14-4	PCB-1268 (Aroclor 1268)			ug/kg	2.1 U		2.1 U	2.1 U	2.1 U	2.1 U
	Total PCBs	1000	5	ug/Kg	526		14.5	27.2	68	39
	DIOXINS									
	Total TCDDs			ng/kg						
	Total TCDDs	0.05	1	ug/Kg						
1746-01-6	2,3,7,8-Tetrachlorodibenzo-P-Dioxin			ng/kg	2.05	0.0367 U				
	2,3,7,8-Tetrachlorodibenzo-P-Dioxin	0.05	1	ug/Kg	0.00205	0.0000367 U				
	OTHER									
TOC	Total Organic Carbon			%	1.45	1.2	0.909	0.977	1.08	0.957
TOC	Total Organic Carbon			mg/kg	14500	12000	9090	9770	10800	9570

Data Sources:
NYSDEC, 2007. Contamination Analysis in the Rochester Embayment Area of Concern. Ma
USEPA, 2012. TASK 6: Final Summary Report for Site Characterization at the Genesee Rive
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3. Value from Long and Morgan (1991) (values rounded to two significant digits)
5. DoW TOGS 5.

NYSDEC-Lower Genesee River Historical Sediment Data Pesticide/Herbicide Class C Standards Comparison		Class C Freshwater Sediment Guidance		Location ID: Sample ID: Lab Sample Id: Depth: Source: SDG: Matrix: Sampled: Validated:	GR-19 LA-121 K1108643-015 12 - 15 ft BAT SE 9/13/2011	GR-19 LA-122 E1100910-005 15 - 18.2 ft BAT SE 9/13/2011	GR-20 LA-020 E1100911-014 0 - 0.5 ft BAT SE 9/14/2011	GR-20 LA-139 K1108737-010 0 - 3 ft BAT SE 9/14/2011	GR-20 LA-140 K1108737-011 3 - 6 ft BAT SE 9/14/2011	GR-20 LA-141 K1108764-001 6 - 9 ft BAT SE 9/14/2011
CAS NO.	COMPOUND	Values	Derivation	UNITS:						
	PESTICIDES									
959-98-8	Alpha Endosulfan	20	2	ug/kg	0.063 U	0.14 UJ		0.7 UJ	0.84 UJ	0.82 UJ
		1.008		ug/gOC	0.066107	0.1272727		0.8158508	0.8076923	1.0366625
33213-65-9	Beta Endosulfan	1	2	ug/kg	0.14 U	0.14 U		3.9 UJ	2.8 UJ	0.14 U
		1.008		ug/gOC	0.1469045	0.1272727		4.5454545	2.6923077	0.1769912
57-74-9	Chlordane	18	1	ug/kg	1.9 U	7.2 UJ		7 UJ	7.3 UJ	21 UJ
2921-88-2	Chlorpyrifos	63	2	ug/kg	0.15 U	0.15 U		0.7 UJ	0.15 U	0.73 UJ
		3.157		ug/gOC	0.1573977	0.1363636		0.8158508	0.1442308	0.9228824
53-19-0	O,P'-DDD	28	1	ug/kg	0.83 J	1.2 J		3.1 NJ	22 D	5 NJ
72-54-8	P,P'-DDD	28	1	ug/kg	1.5	2.1		2.3 J	41 D	8.7 J
3424-82-6	O,P'-DDE	31	1	ug/kg	0.16 U	0.72 UJ		0.7 UJ	1.6 UJ	0.87 UJ
72-55-9	P,P'-DDE	31	1	ug/kg	1.5	2.1		3	6.5 J	7.7
789-02-6	O,P'-DDT	63	1	ug/kg	0.12 UJ	0.21 UJ		0.23 UJ	0.12 UJ	0.54 UJ
50-29-3	P,P'-DDT	63	1	ug/kg	0.5 UJ	0.72 UJ		0.17 U	0.17 U	0.17 U
1918-00-9	Dicamba	13000	2	ug/kg	4.4 U	4.4 U		4.4 U	4.4 U	4.4 U
		654.881		ug/gOC	4.616999	4		5.1282051	4.2307692	5.562579
60-57-1	Dieldrin	62	1	ug/kg	0.9 UJ	1.2 UJ		0.7 UJ	0.73 UJ	0.73 UJ
72-20-8	Endrin	210	1	ug/kg	0.094 U	0.094 U		0.094 U	0.094 U	0.094 U
58-89-9	Gamma Bhc (Lindane)	5	1	ug/kg	0.32 J	0.57 J		0.7 UJ	0.73 UJ	0.73 UJ
1024-57-3	Heptachlor Epoxide	16	1	ug/kg	0.084 U	0.084 U		0.084 U	0.2 UJ	0.084 U
87-68-3	Hexachlorobutadiene	12000	2	ug/kg	0.21 U	0.21 U		0.21 U	0.21 U	0.47 J
		575.395		ug/gOC	0.2203568	0.1909091		0.2447552	0.2019231	0.5941846
72-43-5	Methoxychlor			ug/kg	0.19 U	0.44 UJ		1.8	1.6	2.2 UJ
		NS		ug/gOC	0.1993704	0.4		2.0979021	1.5384615	2.7812895
2385-85-5	Mirex	120	2	ug/kg	0.7 UJ	0.72 UJ		0.7 UJ	0.099 U	0.73 UJ
		5.931		ug/gOC	0.7345226	0.6545455		0.8158508	0.0951923	0.9228824
8001-35-2	Toxaphene	250	2	ug/kg	16 UJ	36 UJ		46 UJ	37 UJ	43 UJ
		12.46		ug/gOC	16.789087	32.727273		53.613054	35.576923	54.361568

NYSDEC-Lower Genesee River Historical Sediment Data Pesticide/Herbicide Class C Standards Comparison		Class C Freshwater Sediment Guidance		Location ID: Sample ID: Lab Sample Id: Depth: Source: SDG: Matrix: Sampled: Validated:	GR-19 LA-121 K1108643-015 12 - 15 ft BAT SE 9/13/2011	GR-19 LA-122 E1100910-005 15 - 18.2 ft BAT SE 9/13/2011	GR-20 LA-020 E1100911-014 0 - 0.5 ft BAT SE 9/14/2011	GR-20 LA-139 K1108737-010 0 - 3 ft BAT SE 9/14/2011	GR-20 LA-140 K1108737-011 3 - 6 ft BAT SE 9/14/2011	GR-20 LA-141 K1108764-001 6 - 9 ft BAT SE 9/14/2011
	PCBs									
12672-29-6	PCB-1248 (Aroclor 1248)			ug/kg	11 UJ	15 UJ		82	89	200 J
11097-69-1	PCB-1254 (Aroclor 1254)			ug/kg	21 J	21 UJ		110	120 J	190 J
11096-82-5	PCB-1260 (Aroclor 1260)			ug/kg	16	24		90	75	90 J
11100-14-4	PCB-1268 (Aroclor 1268)			ug/kg	2.1 U	2.1 U		2.1 U	2.1 U	2.1 UJ
	Total PCBs	1000	5	ug/Kg	37	24		282	284	480
	DIOXINS									
	Total TCDDs			ng/kg						
	Total TCDDs	0.05	1	ug/Kg						
1746-01-6	2,3,7,8-Tetrachlorodibenzo-P-Dioxin			ng/kg		0.233 J	0.11 J			
	2,3,7,8-Tetrachlorodibenzo-P-Dioxin	0.05	1	ug/Kg		0.000233 J	0.00011 J			
	OTHER									
TOC	Total Organic Carbon			%	0.953	1.1	0.892	0.858	1.04	0.791
TOC	Total Organic Carbon			mg/kg	9530	11000	8920	8580	10400	7910

Data Sources:
NYSDEC, 2007. Contamination Analysis in the Rochester Embayment Area of Concern. Ma
USEPA, 2012. TASK 6: Final Summary Report for Site Characterization at the Genesee Rive
USEPA, 2013. Technical Report: Genesee River Sediment Sampling under the Great Lakes L

Notes:
1. Sample locations can be found on Figure 5.
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SGV Derivations:
1. TEC/PEC derived from MacDonald et al., 2000 (values rounded to two significant digits)
2. Equilibrium partitioning based on 2% TOC (values rounded to two significant digits)
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NYSDEC-Lower Genesee River Historical Sediment Data Pesticide/Herbicide Class C Standards Comparison		Class C Freshwater Sediment Guidance		Location ID: Sample ID: Lab Sample Id: Depth: Source: SDG: Matrix: Sampled: Validated:	GR-20 LA-142 K1108764-002 9 - 12 ft BAT SE 9/14/2011	GR-20 LA-143 E1100910-012 12 - 14.9 ft BAT SE 9/14/2011	GR-21 LA-021 E1100911-015 0 - 0.5 ft BAT SE 9/13/2011	GR-21 LA-112 K1108656-012 0 - 3 ft BAT SE 9/13/2011	GR-21 LA-113 K1108656-013 3 - 6 ft BAT SE 9/13/2011	GR-21 LA-114 K1108656-014 6 - 9 ft BAT SE 9/13/2011
CAS NO.	COMPOUND	Values	Derivation	UNITS:						
	PESTICIDES									
959-98-8	Alpha Endosulfan	20	2	ug/kg	0.69 UJ	0.58 UJ		0.063 U	0.21 UJ	0.6 UJ
		1.008		ug/gOC	0.5	0.453125		0.06	0.1409396	0.6141249
33213-65-9	Beta Endosulfan	1	2	ug/kg	0.14 U	0.14 U		0.14 U	0.14 U	0.14 U
		1.008		ug/gOC	0.1014493	0.109375		0.1333333	0.0939597	0.1432958
57-74-9	Chlordane	18	1	ug/kg	28 UJ	7.1 UJ		1.9 U	7 UJ	7.1 UJ
2921-88-2	Chlorpyrifos	63	2	ug/kg	0.15 U	0.15 U		0.15 U	0.15 U	0.71 UJ
		3.157		ug/gOC	0.1086957	0.1171875		0.1428571	0.1006711	0.7267144
53-19-0	O,P'-DDD	28	1	ug/kg	2.7 UJ	2.7 UJ		0.31 J	1.6 NJ	5.7 J
72-54-8	P,P'-DDD	28	1	ug/kg	6.7 J	9.1 J		0.73 U	1.8	9.2
3424-82-6	O,P'-DDE	31	1	ug/kg	0.72 UJ	0.71 UJ		0.16 U	0.7 UJ	0.91 UJ
72-55-9	P,P'-DDE	31	1	ug/kg	10	6		0.82 UJ	2.4	3.6 J
789-02-6	O,P'-DDT	63	1	ug/kg	0.7 UJ	0.74 UJ		0.058 U	0.12 J	0.36 UJ
50-29-3	P,P'-DDT	63	1	ug/kg	0.17 U	8.5 J		0.55 J	0.17 U	0.17 U
1918-00-9	Dicamba	13000	2	ug/kg	4.4 U	4.4 U		4.4 UJ	4.4 UJ	4.4 UJ
		654.881		ug/gOC	3.1884058	3.4375		4.1904762	2.9530201	4.5035824
60-57-1	Dieldrin	62	1	ug/kg	0.8 UJ	0.71 UJ		0.14 U	0.14 U	0.71 UJ
72-20-8	Endrin	210	1	ug/kg	0.094 U	0.094 U		0.094 U	0.094 U	0.094 U
58-89-9	Gamma Bhc (Lindane)	5	1	ug/kg	0.72 UJ	0.71 UJ		0.3 UJ	0.7 UJ	0.28 UJ
1024-57-3	Heptachlor Epoxide	16	1	ug/kg	0.084 U	0.084 U		0.084 U	0.084 U	0.084 U
87-68-3	Hexachlorobutadiene	12000	2	ug/kg	0.72 U	0.21 U		0.21 U	0.21 U	0.21 U
		575.395		ug/gOC	0.5217391	0.1640625		0.2	0.1409396	0.2149437
72-43-5	Methoxychlor			ug/kg	9.4 UJ	1.7 UJ		0.19 U	1.6 J	2 J
		NS		ug/gOC	6.8115942	1.328125		0.1809524	1.0738255	2.0470829
2385-85-5	Mirex	120	2	ug/kg	0.72 UJ	0.71 UJ		0.73 UJ	0.7 UJ	0.71 UJ
		5.931		ug/gOC	0.5217391	0.5546875		0.6952381	0.4697987	0.7267144
8001-35-2	Toxaphene	250	2	ug/kg	77 UJ	57 UJ		17 UJ	49 UJ	130 UJ
		12.46		ug/gOC	55.797101	44.53125		16.190476	32.885906	133.06039

NYSDEC-Lower Genesee River Historical Sediment Data Pesticide/Herbicide Class C Standards Comparison		Class C Freshwater Sediment Guidance		Location ID: Sample ID: Lab Sample Id: Depth: Source: SDG: Matrix: Sampled: Validated:	GR-20 LA-142 K1108764-002 9 - 12 ft BAT SE 9/14/2011	GR-20 LA-143 E1100910-012 12 - 14.9 ft BAT SE 9/14/2011	GR-21 LA-021 E1100911-015 0 - 0.5 ft BAT SE 9/13/2011	GR-21 LA-112 K1108656-012 0 - 3 ft BAT SE 9/13/2011	GR-21 LA-113 K1108656-013 3 - 6 ft BAT SE 9/13/2011	GR-21 LA-114 K1108656-014 6 - 9 ft BAT SE 9/13/2011
	PCBs									
12672-29-6	PCB-1248 (Aroclor 1248)			ug/kg	240 J	140		3.1 UJ	50	98
11097-69-1	PCB-1254 (Aroclor 1254)			ug/kg	230 J	160		4.9 UJ	71	120
11096-82-5	PCB-1260 (Aroclor 1260)			ug/kg	94 J	65 J		3.7 UJ	49	85
11100-14-4	PCB-1268 (Aroclor 1268)			ug/kg	2.1 UJ	2.1 UJ		2.1 U	2.1 U	2.1 U
	Total PCBs	1000	5	ug/Kg	564	365		0	170	303
	DIOXINS									
	Total TCDDs			ng/kg						
	Total TCDDs	0.05	1	ug/Kg						
1746-01-6	2,3,7,8-Tetrachlorodibenzo-P-Dioxin			ng/kg		3.22	0.0439 U			
	2,3,7,8-Tetrachlorodibenzo-P-Dioxin	0.05	1	ug/Kg		0.00322 0	0.0000439 U			
	OTHER									
TOC	Total Organic Carbon			%	1.38	1.28	0.733	1.05	1.49	0.977
TOC	Total Organic Carbon			mg/kg	13800	12800	7330	10500	14900	9770

Data Sources:
NYSDEC, 2007. Contamination Analysis in the Rochester Embayment Area of Concern. Ma
USEPA, 2012. TASK 6: Final Summary Report for Site Characterization at the Genesee Rive
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SGV Derivations:
1. TEC/PEC derived from MacDonald et al., 2000 (values rounded to two significant digits)
2. Equilibrium partitioning based on 2% TOC (values rounded to two significant digits)
3. Value from Long and Morgan (1991) (values rounded to two significant digits)
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NYSDEC-Lower Genesee River Historical Sediment Data Pesticide/Herbicide Class C Standards Comparison		Class C Freshwater Sediment Guidance		Location ID: Sample ID: Lab Sample Id: Depth: Source: SDG: Matrix: Sampled: Validated:	GR-21 LA-115 K1108656-015 9 - 12 ft BAT SE 9/13/2011	GR-21 LA-116 E1100910-004 12 - 14.2 ft BAT SE 9/13/2011	GR-22 LA-022 E1100911-016 0 - 0.5 ft BAT SE 9/14/2011	GR-22 LA-174 K1108838-006 0 - 3 ft BAT SE 9/14/2011	GR-22 LA-175 K1108838-007 3 - 6 ft BAT SE 9/14/2011	GR-22 LA-176 K1108843-007 6 - 9 ft BAT SE 9/14/2011
CAS NO.	COMPOUND	Values	Derivation	UNITS:						
	PESTICIDES									
959-98-8	Alpha Endosulfan	20	2	ug/kg	0.99 UJ	0.71 UJ		0.063 U	1.4 UJ	0.16 UJ
		1.008		ug/gOC	0.6734694	0.396648		0.0492188	1.2962963	0.1322314
33213-65-9	Beta Endosulfan	1	2	ug/kg	0.14 U	0.14 U		1.5 UJ	3.1 UJ	0.14 U
		1.008		ug/gOC	0.0952381	0.0782123		1.171875	2.8703704	0.1157025
57-74-9	Chlordane	18	1	ug/kg	11 UJ	7.1 UJ		1.9 U	7.2 UJ	7.1 UJ
2921-88-2	Chlorpyrifos	63	2	ug/kg	0.74 UJ	0.15 U		0.73 U	0.15 U	0.15 U
		3.157		ug/gOC	0.5034014	0.0837989		0.5703125	0.1388889	0.1239669
53-19-0	O,P'-DDD	28	1	ug/kg	4.3 UJ	2.2 UJ		1.2 NJ	35 D	1.2 NJ
72-54-8	P,P'-DDD	28	1	ug/kg	8.5	4.7 J		1.1 J	72 D	3.4
3424-82-6	O,P'-DDE	31	1	ug/kg	1.2 UJ	0.71 UJ		0.73 UJ	0.16 UJ	0.16 U
72-55-9	P,P'-DDE	31	1	ug/kg	7.3	3.3		1.9 J	14 J	1.6
789-02-6	O,P'-DDT	63	1	ug/kg	0.66 J	0.42 UJ		0.73 UJ	0.44 UJ	0.71 UJ
50-29-3	P,P'-DDT	63	1	ug/kg	0.17 U	1.8 UJ		0.73 UJ	0.95 UJ	0.17 U
1918-00-9	Dicamba	13000	2	ug/kg	4.4 UJ	4.4 U		4.4 U	4.4 U	4.7 UJ
		654.881		ug/gOC	2.9931973	2.4581006		3.4375	4.0740741	3.8842975
60-57-1	Dieldrin	62	1	ug/kg	1.2 UJ	0.71 UJ		0.71 UJ	0.65 UJ	0.71 UJ
72-20-8	Endrin	210	1	ug/kg	0.094 U	0.094 U		0.094 U	0.094 U	0.16 UJ
58-89-9	Gamma Bhc (Lindane)	5	1	ug/kg	0.74 UJ	0.71 UJ		0.73 UJ	0.72 UJ	0.71 U
1024-57-3	Heptachlor Epoxide	16	1	ug/kg	0.084 U	0.084 U		0.084 U	0.084 U	0.084 U
87-68-3	Hexachlorobutadiene	12000	2	ug/kg	0.21 U	0.21 J		0.21 U	0.21 U	0.21 U
		575.395		ug/gOC	0.1428571	0.1173184		0.1640625	0.1944444	0.1735537
72-43-5	Methoxychlor			ug/kg	3 NJ	1.2 UJ		1 J	2 UJ	0.86 J
		NS		ug/gOC	2.0408163	0.6703911		0.78125	1.8518519	0.7107438
2385-85-5	Mirex	120	2	ug/kg	0.74 UJ	0.71 UJ		0.099 U	0.72 UJ	0.71 UJ
		5.931		ug/gOC	0.5034014	0.396648		0.0773438	0.6666667	0.5867769
8001-35-2	Toxaphene	250	2	ug/kg	150 UJ	80 UJ		37 UJ	36 UJ	11 UJ
		12.46		ug/gOC	102.04082	44.692737		28.90625	33.333333	9.0909091

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	PCBs									
12672-29-6	PCB-1248 (Aroclor 1248)			ug/kg	230	130		33	110	2.1 U
11097-69-1	PCB-1254 (Aroclor 1254)			ug/kg	230	120		45	120 NJ	46
11096-82-5	PCB-1260 (Aroclor 1260)			ug/kg	110	60		34	79	30
11100-14-4	PCB-1268 (Aroclor 1268)			ug/kg	2.1 U	2.1 U		2.1 U	2.1 U	2.1 U
	Total PCBs	1000	5	ug/Kg	570	310		112	309	76
	DIOXINS									
	Total TCDDs			ng/kg						
	Total TCDDs	0.05	1	ug/Kg						
1746-01-6	2,3,7,8-Tetrachlorodibenzo-P-Dioxin			ng/kg		3.37	0.0463 U			
	2,3,7,8-Tetrachlorodibenzo-P-Dioxin	0.05	1	ug/Kg		0.00337	0.0000463 U			
	OTHER									
TOC	Total Organic Carbon			%	1.47	1.79	1.03	1.28	1.08	1.21
TOC	Total Organic Carbon			mg/kg	14700	17900	10300	12800	10800	12100

Data Sources:
NYSDEC, 2007. Contamination Analysis in the Rochester Embayment Area of Concern. Ma
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NYSDEC-Lower Genesee River Historical Sediment Data Pesticide/Herbicide Class C Standards Comparison		Class C Freshwater Sediment Guidance		Location ID: Sample ID: Lab Sample Id: Depth: Source: SDG: Matrix: Sampled: Validated:	GR-22 LA-177 K1108843-008 9 - 12 ft BAT SE 9/14/2011	GR-22 LA-178 K1108843-009 12 - 15 ft BAT SE 9/14/2011	GR-22 LA-179 E1100919-010 15 - 16.2 ft BAT SE 9/14/2011	GR-23 LA-023 E1100911-017 0 - 0.5 ft BAT SE 9/13/2011	GR-23 LA-124 E1100910-007 0 - 2.2 ft BAT SE 9/13/2011	GR-23M LA-123 E1100910-006 0 - 1.1 ft BAT SE 9/13/2011
CAS NO.	COMPOUND	Values	Derivation	UNITS:						
	PESTICIDES									
959-98-8	Alpha Endosulfan	20	2	ug/kg	0.66 UJ	0.75 UJ	0.063 U		0.063 U	0.063 U
		1.008		ug/gOC	0.3815029	0.3289474	0.0089872		0.1632124	0.0222615
33213-65-9	Beta Endosulfan	1	2	ug/kg	0.14 U	5.3 UJ	0.14 U		0.14 U	0.14 U
		1.008		ug/gOC	0.0809249	2.3245614	0.0199715		0.3626943	0.04947
57-74-9	Chlordane	18	1	ug/kg	11 UJ	38 J	6.5 UJ		1.9 U	1.9 U
2921-88-2	Chlorpyrifos	63	2	ug/kg	0.66 UJ	0.75 UJ	0.15 U		0.15 U	0.15 U
		3.157		ug/gOC	0.3815029	0.3289474	0.021398		0.388601	0.0530035
53-19-0	O,P'-DDD	28	1	ug/kg	5.4 NJ	5.7 NJ	2.3		0.4 J	0.7 J
72-54-8	P,P'-DDD	28	1	ug/kg	12	11	0.39 J		0.36 J	0.68
3424-82-6	O,P'-DDE	31	1	ug/kg	0.68 UJ	1.6 UJ	0.92 UJ		0.16 U	0.23 U
72-55-9	P,P'-DDE	31	1	ug/kg	4.2 J	6	0.29 UJ		0.11 U	0.25 UJ
789-02-6	O,P'-DDT	63	1	ug/kg	0.73 UJ	1.2 UJ	0.058 U		0.058 U	0.058 U
50-29-3	P,P'-DDT	63	1	ug/kg	0.68 UJ	0.17 U	0.49 UJ		0.17 U	0.17 U
1918-00-9	Dicamba	13000	2	ug/kg	40 UJ	45 UJ	4.4 U		4.4 U	4.4 U
		654.881		ug/gOC	23.121387	19.736842	0.6276748		11.398964	1.5547703
60-57-1	Dieldrin	62	1	ug/kg	1.4 UJ	0.75 UJ	1.5 UJ		0.14 U	0.14 U
72-20-8	Endrin	210	1	ug/kg	0.094 U	0.094 U	0.094 U		0.094 U	0.094 U
58-89-9	Gamma Bhc (Lindane)	5	1	ug/kg	0.67 UJ	0.08 U	0.86 UJ		0.14 J	0.63 UJ
1024-57-3	Heptachlor Epoxide	16	1	ug/kg	0.084 U	0.084 U	0.084 U		0.084 U	0.084 U
87-68-3	Hexachlorobutadiene	12000	2	ug/kg	0.66 U	0.21 U	0.21 U		0.21 U	0.21 U
		575.395		ug/gOC	0.3815029	0.0921053	0.0299572		0.5440415	0.0742049
72-43-5	Methoxychlor			ug/kg	1.8 UJ	3.1	0.88 UJ		0.19 U	0.27 UJ
		NS		ug/gOC	1.0404624	1.3596491	0.125535		0.492228	0.0954064
2385-85-5	Mirex	120	2	ug/kg	0.66 UJ	0.75 UJ	0.6 UJ		0.099 U	0.099 U
		5.931		ug/gOC	0.3815029	0.3289474	0.085592		0.2564767	0.0349823
8001-35-2	Toxaphene	250	2	ug/kg	38 UJ	66 UJ	58 UJ		4.8 U	4.8 U
		12.46		ug/gOC	21.965318	28.947368	8.2738944		12.435233	1.6961131

NYSDEC-Lower Genesee River Historical Sediment Data Pesticide/Herbicide Class C Standards Comparison		Class C Freshwater Sediment Guidance		Location ID: Sample ID: Lab Sample Id: Depth: Source: SDG: Matrix: Sampled: Validated:	GR-22 LA-177 K1108843-008 9 - 12 ft BAT SE 9/14/2011	GR-22 LA-178 K1108843-009 12 - 15 ft BAT SE 9/14/2011	GR-22 LA-179 E1100919-010 15 - 16.2 ft BAT SE 9/14/2011	GR-23 LA-023 E1100911-017 0 - 0.5 ft BAT SE 9/13/2011	GR-23 LA-124 E1100910-007 0 - 2.2 ft BAT SE 9/13/2011	GR-23M LA-123 E1100910-006 0 - 1.1 ft BAT SE 9/13/2011
	PCBs									
12672-29-6	PCB-1248 (Aroclor 1248)			ug/kg	110 UJ	130 UJ	3.9 UJ		3.7 UJ	6 UJ
11097-69-1	PCB-1254 (Aroclor 1254)			ug/kg	140	200	7.2 UJ		6.1 J	7.7 UJ
11096-82-5	PCB-1260 (Aroclor 1260)			ug/kg	80	120	13 UJ		3.6 J	7.1
11100-14-4	PCB-1268 (Aroclor 1268)			ug/kg	2.1 U	2.1 U	4.2 UJ		2.1 U	2.1 U
	Total PCBs	1000	5	ug/Kg	220	320	0		9.7	7.1
	DIOXINS									
	Total TCDDs			ng/kg						
	Total TCDDs	0.05	1	ug/Kg						
1746-01-6	2,3,7,8-Tetrachlorodibenzo-P-Dioxin			ng/kg			0.111 J	0.0363 U	0.0671 U	0.0485 J
	2,3,7,8-Tetrachlorodibenzo-P-Dioxin	0.05	1	ug/Kg			0.000111 J	0.0000363 U	0.0000671 U	0.0000485 J
	OTHER									
TOC	Total Organic Carbon			%	1.73	2.28	7.01	0.656	0.386	2.83
TOC	Total Organic Carbon			mg/kg	17300	22800	70100	6560	3860	28300

Data Sources:
NYSDEC, 2007. Contamination Analysis in the Rochester Embayment Area of Concern. Ma
USEPA, 2012. TASK 6: Final Summary Report for Site Characterization at the Genesee Rive
USEPA, 2013. Technical Report: Genesee River Sediment Sampling under the Great Lakes L

Notes:
1. Sample locations can be found on Figure 5.
2. Highlighted results indicate an exceedenc of sediment guidance value (SGV).

SGV Derivations:
1. TEC/PEC derived from MacDonald et al., 2000 (values rounded to two significant digits)
2. Equilibrium partitioning based on 2% TOC (values rounded to two significant digits)
3. Value from Long and Morgan (1991) (values rounded to two significant digits)
5. DoW TOGS 5.

NYSDEC-Lower Genesee River Historical Sediment Data Pesticide/Herbicide Class C Standards Comparison		Class C Freshwater Sediment Guidance		Location ID: Sample ID: Lab Sample Id: Depth: Source: SDG: Matrix: Sampled: Validated:	GR-24 LA-024 E1100911-018 0 - 0.5 ft BAT SE 9/13/2011	GR-24 LA-125 E1100910-008 0 - 2.3 ft BAT SE 9/13/2011	GR-25 LA-025 E1100918-011 0 - 0.5 ft BAT SE 9/16/2011	GR-26 LA-026 E1100918-012 0 - 0.5 ft BAT SE 9/16/2011	GR-27 LA-027 E1100918-013 0 - 0.5 ft BAT SE 9/16/2011	GR-28 LA-028 E1100918-014 0 - 0.5 ft BAT SE 9/16/2011
CAS NO.	COMPOUND	Values	Derivation	UNITS:						
	PESTICIDES									
959-98-8	Alpha Endosulfan	20	2	ug/kg		0.063 U	0.063 U	0.063 U	0.063 U	0.063 U
		1.008		ug/gOC		0.2971698	0.2669492	0.0782609	0.2	0.2490119
33213-65-9	Beta Endosulfan	1	2	ug/kg		0.14 U	0.14 U	0.14 U	0.14 U	0.14 U
		1.008		ug/gOC		0.6603774	0.5932203	0.173913	0.4444444	0.5533597
57-74-9	Chlordane	18	1	ug/kg		1.9 U	1.9 U	1.9 U	1.9 U	1.9 U
2921-88-2	Chlorpyrifos	63	2	ug/kg		0.15 U	0.15 U	0.15 U	0.15 U	0.15 U
		3.157		ug/gOC		0.7075472	0.6355932	0.1863354	0.4761905	0.5928854
53-19-0	O,P'-DDD	28	1	ug/kg		1 J	0.49 J	0.42 J	0.27 J	0.47 J
72-54-8	P,P'-DDD	28	1	ug/kg		0.91	0.45 J	0.87 U	0.17 J	0.36 J
3424-82-6	O,P'-DDE	31	1	ug/kg		0.55 UJ	0.16 U	0.16 U	0.16 U	0.16 U
72-55-9	P,P'-DDE	31	1	ug/kg		0.26 U	0.51 J	0.75 J	0.4 J	0.45 J
789-02-6	O,P'-DDT	63	1	ug/kg		0.058 U	0.07 UJ	0.058 U	0.058 U	0.058 U
50-29-3	P,P'-DDT	63	1	ug/kg		0.17 U	0.17 U	0.87 U	0.17 U	0.17 U
1918-00-9	Dicamba	13000	2	ug/kg		4.4 U	4.4 U	4.6 U	4.4 U	4.4 U
		654.881		ug/gOC		20.754717	18.644068	5.7142857	13.968254	17.391304
60-57-1	Dieldrin	62	1	ug/kg		0.14 U	0.14 U	0.14 U	0.14 U	0.14 U
72-20-8	Endrin	210	1	ug/kg		0.094 U	0.094 U	0.094 U	0.094 U	0.094 U
58-89-9	Gamma Bhc (Lindane)	5	1	ug/kg		0.08 U	0.55 UJ	0.87 UJ	0.54 UJ	0.67 UJ
1024-57-3	Heptachlor Epoxide	16	1	ug/kg		0.084 U	0.084 U	0.084 U	0.084 U	0.084 U
87-68-3	Hexachlorobutadiene	12000	2	ug/kg		0.21 U	0.21 U	0.21 U	0.21 U	0.21 U
		575.395		ug/gOC		0.990566	0.8898305	0.2608696	0.6666667	0.8300395
72-43-5	Methoxychlor			ug/kg		0.19 U	0.19 U	0.19 U	0.19 U	0.19 U
		NS		ug/gOC		0.8962264	0.8050847	0.2360248	0.6031746	0.7509881
2385-85-5	Mirex	120	2	ug/kg		0.099 U	0.099 U	0.099 U	0.099 U	0.099 U
		5.931		ug/gOC		0.4669811	0.4194915	0.1229814	0.3142857	0.3913043
8001-35-2	Toxaphene	250	2	ug/kg		6.5 UJ	13 UJ	12 UJ	7.5 UJ	11 UJ
		12.46		ug/gOC		30.660377	55.084746	14.906832	23.809524	43.478261

NYSDEC-Lower Genesee River Historical Sediment Data Pesticide/Herbicide Class C Standards Comparison		Class C Freshwater Sediment Guidance		Location ID: Sample ID: Lab Sample Id: Depth: Source: SDG: Matrix: Sampled: Validated:	GR-24 LA-024 E1100911-018 0 - 0.5 ft BAT SE 9/13/2011	GR-24 LA-125 E1100910-008 0 - 2.3 ft BAT SE 9/13/2011	GR-25 LA-025 E1100918-011 0 - 0.5 ft BAT SE 9/16/2011	GR-26 LA-026 E1100918-012 0 - 0.5 ft BAT SE 9/16/2011	GR-27 LA-027 E1100918-013 0 - 0.5 ft BAT SE 9/16/2011	GR-28 LA-028 E1100918-014 0 - 0.5 ft BAT SE 9/16/2011
	PCBs									
12672-29-6	PCB-1248 (Aroclor 1248)			ug/kg		8.7 UJ	4.4 UJ	5.2 UJ	2.3 UJ	3.4 UJ
11097-69-1	PCB-1254 (Aroclor 1254)			ug/kg		11 J	7.1 UJ	7.6 UJ	3.2 UJ	6.3 UJ
11096-82-5	PCB-1260 (Aroclor 1260)			ug/kg		7.8	3.8 J	5.4 J	2.1 J	3.7 J
11100-14-4	PCB-1268 (Aroclor 1268)			ug/kg		2.1 U	2.1 U	2.1 U	2.1 U	2.1 U
	Total PCBs	1000	5	ug/Kg		18.8	3.8	5.4	2.1	3.7
	DIOXINS									
	Total TCDDs			ng/kg						
	Total TCDDs	0.05	1	ug/Kg						
1746-01-6	2,3,7,8-Tetrachlorodibenzo-P-Dioxin			ng/kg	0.0452 U	0.0989 J	0.0459 U	0.0979 J	0.0463 U	0.0821 J
	2,3,7,8-Tetrachlorodibenzo-P-Dioxin	0.05	1	ug/Kg	0.0000452 U	0.0000989 J	0.0000459 U	0.0000979 J	0.0000463 U	0.0000821 J
	OTHER									
TOC	Total Organic Carbon			%	0.17	0.212	0.236	0.805	0.315	0.253
TOC	Total Organic Carbon			mg/kg	1700	2120	2360	8050	3150	2530

Data Sources:
NYSDEC, 2007. Contamination Analysis in the Rochester Embayment Area of Concern. Ma
USEPA, 2012. TASK 6: Final Summary Report for Site Characterization at the Genesee Rive
USEPA, 2013. Technical Report: Genesee River Sediment Sampling under the Great Lakes L

Notes:
1. Sample locations can be found on Figure 5.
2. Highlighted results indicate an exceedenc of sediment guidance value (SGV).

SGV Derivations:
1. TEC/PEC derived from MacDonald et al., 2000 (values rounded to two significant digits)
2. Equilibrium partitioning based on 2% TOC (values rounded to two significant digits)
3. Value from Long and Morgan (1991) (values rounded to two significant digits)
5. DoW TOGS 5.

NYSDEC-Lower Genesee River Historical Sediment Data Pesticide/Herbicide Class C Standards Comparison		Class C Freshwater Sediment Guidance		Location ID: Sample ID: Lab Sample Id: Depth: Source: SDG: Matrix: Sampled: Validated:	GR-29 LA-029 E1100918-015 0 - 0.5 ft BAT SE 9/16/2011	GR-30 LA-030 E1100918-016 0 - 0.5 ft BAT SE 9/16/2011	GR-31 LA-031 E1100918-017 0 - 0.5 ft BAT SE 9/16/2011	GR-32 LA-032 E1100918-018 0 - 0.5 ft BAT SE 9/16/2011	GR-32 LA-032D E1100918-019 0 - 0.5 ft BAT SE 9/16/2011	GR-33 LA-033 E1100918-020 0 - 0.5 ft BAT SE 9/16/2011
CAS NO.	COMPOUND	Values	Derivation	UNITS:						
	PESTICIDES									
959-98-8	Alpha Endosulfan	20	2	ug/kg	0.063 U	0.063 U	0.063 U	0.063 U	0.063 U	0.063 U
		1.008		ug/gOC	0.1465116	0.0978261	0.05625	0.1779661	0.1594937	0.0975232
33213-65-9	Beta Endosulfan	1	2	ug/kg	0.14 U	0.14 U	0.14 U	0.14 U	0.14 U	0.14 U
		1.008		ug/gOC	0.3255814	0.2173913	0.125	0.3954802	0.3544304	0.2167183
57-74-9	Chlordane	18	1	ug/kg	1.9 U	2.3 UJ	1.9 U	2.1 UJ	8.6 UJ	1.9 U
2921-88-2	Chlorpyrifos	63	2	ug/kg	0.15 U	0.15 U	0.15 U	0.24 UJ	0.68 UJ	0.15 U
		3.157		ug/gOC	0.3488372	0.2329193	0.1339286	0.6779661	1.721519	0.2321981
53-19-0	O,P'-DDD	28	1	ug/kg	0.64 J	0.66 J	0.61 J	0.64 J	0.68 U	0.49 J
72-54-8	P,P'-DDD	28	1	ug/kg	0.48 J	0.66 U	0.41 J	0.65 U	0.68 U	0.73 U
3424-82-6	O,P'-DDE	31	1	ug/kg	0.28 UJ	0.25 UJ	0.69 UJ	0.16 U	0.68 UJ	0.35 UJ
72-55-9	P,P'-DDE	31	1	ug/kg	0.53 J	0.49 J	0.52 J	0.62 J	0.68 UJ	0.68 J
789-02-6	O,P'-DDT	63	1	ug/kg	0.058 U	0.058 U	0.058 U	0.058 U	0.058 U	0.058 U
50-29-3	P,P'-DDT	63	1	ug/kg	0.7 U	0.17 U	0.23 UJ	0.65 U	0.34 J	0.73 U
1918-00-9	Dicamba	13000	2	ug/kg	4.4 U	4.4 U	4.4 U	4.4 U	4.4 U	4.4 U
		654.881		ug/gOC	10.232558	6.8322981	3.9285714	12.429379	11.139241	6.8111455
60-57-1	Dieldrin	62	1	ug/kg	0.14 U	0.14 U	0.69 UJ	0.14 U	0.14 U	0.14 U
72-20-8	Endrin	210	1	ug/kg	0.094 U	0.094 U	0.094 U	0.094 U	0.094 U	0.094 U
58-89-9	Gamma Bhc (Lindane)	5	1	ug/kg	0.7 UJ	1.9 UJ	2.1 UJ	0.65 U	1.2 UJ	0.77 J
1024-57-3	Heptachlor Epoxide	16	1	ug/kg	0.084 U	0.084 U	0.084 U	0.084 U	0.084 U	0.084 U
87-68-3	Hexachlorobutadiene	12000	2	ug/kg	0.21 U	0.21 U	0.21 U	0.21 U	0.21 U	0.21 U
		575.395		ug/gOC	0.4883721	0.326087	0.1875	0.5932203	0.5316456	0.3250774
72-43-5	Methoxychlor			ug/kg	0.19 U	0.24 J	0.22 UJ	0.19 U	0.81 J	0.19 U
		NS		ug/gOC	0.4418605	0.3726708	0.1964286	0.5367232	2.0506329	0.2941176
2385-85-5	Mirex	120	2	ug/kg	0.099 U	0.099 U	0.099 U	0.099 U	0.099 U	0.099 U
		5.931		ug/gOC	0.2302326	0.1537267	0.0883929	0.279661	0.2506329	0.1532508
8001-35-2	Toxaphene	250	2	ug/kg	4.8 U	9 UJ	13 UJ	4.8 U	23 UJ	4.8 U
		12.46		ug/gOC	11.162791	13.975155	11.607143	13.559322	58.227848	7.4303406

NYSDEC-Lower Genesee River Historical Sediment Data Pesticide/Herbicide Class C Standards Comparison		Class C Freshwater Sediment Guidance		Location ID: Sample ID: Lab Sample Id: Depth: Source: SDG: Matrix: Sampled: Validated:	GR-29 LA-029 E1100918-015 0 - 0.5 ft BAT SE 9/16/2011	GR-30 LA-030 E1100918-016 0 - 0.5 ft BAT SE 9/16/2011	GR-31 LA-031 E1100918-017 0 - 0.5 ft BAT SE 9/16/2011	GR-32 LA-032 E1100918-018 0 - 0.5 ft BAT SE 9/16/2011	GR-32 LA-032D E1100918-019 0 - 0.5 ft BAT SE 9/16/2011	GR-33 LA-033 E1100918-020 0 - 0.5 ft BAT SE 9/16/2011
	PCBs									
12672-29-6	PCB-1248 (Aroclor 1248)			ug/kg	4.3 UJ	4.2 UJ	5.2 UJ	4.1 UJ	4.2 UJ	3.5 UJ
11097-69-1	PCB-1254 (Aroclor 1254)			ug/kg	5.3 UJ	7.5	9.5	7.7	6 J	5.7 J
11096-82-5	PCB-1260 (Aroclor 1260)			ug/kg	3.5 J	7.5 J	5.7 J	3.6 J	3.8 J	4 J
11100-14-4	PCB-1268 (Aroclor 1268)			ug/kg	2.1 U	2.1 U	2.1 U	2.1 U	2.1 U	2.1 U
	Total PCBs	1000	5	ug/Kg	3.5	15	15.2	11.3	9.8	9.7
	DIOXINS									
	Total TCDDs			ng/kg						
	Total TCDDs	0.05	1	ug/Kg						
1746-01-6	2,3,7,8-Tetrachlorodibenzo-P-Dioxin			ng/kg	0.105 J	0.101 J	0.0699 U	0.0909 J	0.189 J	0.0378 U
	2,3,7,8-Tetrachlorodibenzo-P-Dioxin	0.05	1	ug/Kg	0.000105 J	0.000101 J	0.0000699 U	0.0000909 J	0.000189 J	0.0000378 U
	OTHER									
TOC	Total Organic Carbon			%	0.43	0.644	1.12	0.354	0.395	0.646
TOC	Total Organic Carbon			mg/kg	4300	6440	11200	3540	3950	6460

Data Sources:
NYSDEC, 2007. Contamination Analysis in the Rochester Embayment Area of Concern. Ma
USEPA, 2012. TASK 6: Final Summary Report for Site Characterization at the Genesee Rive
USEPA, 2013. Technical Report: Genesee River Sediment Sampling under the Great Lakes L

Notes:
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SGV Derivations:
1. TEC/PEC derived from MacDonald et al., 2000 (values rounded to two significant digits)
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3. Value from Long and Morgan (1991) (values rounded to two significant digits)
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NYSDEC-Lower Genesee River Historical Sediment Data Pesticide/Herbicide Class C Standards Comparison		Class C Freshwater Sediment Guidance		Location ID: Sample ID: Lab Sample Id: Depth: Source: SDG: Matrix: Sampled: Validated:	Analyses	Detections	Delete?	Max	
CAS NO.	COMPOUND	Values	Derivation	UNITS:					
	PESTICIDES								0
959-98-8	Alpha Endosulfan	20	2	ug/kg	113	0	TRUE	1.8	113
		1.008		ug/gOC				1.2962963	0
33213-65-9	Beta Endosulfan	1	2	ug/kg	113	0	TRUE	5.3	113
		1.008		ug/gOC				4.5454545	0
57-74-9	Chlordane	18	1	ug/kg	144	36	FALSE	38	139
2921-88-2	Chlorpyrifos	63	2	ug/kg	113	9	FALSE	0.95	104
		3.157		ug/gOC				1.721519	0
53-19-0	O,P'-DDD	28	1	ug/kg	113	68	FALSE	35	45
72-54-8	P,P'-DDD	28	1	ug/kg	113	86	FALSE	72	27
3424-82-6	O,P'-DDE	31	1	ug/kg	113	0	TRUE	3.7	113
72-55-9	P,P'-DDE	31	1	ug/kg	113	79	FALSE	14	34
789-02-6	O,P'-DDT	63	1	ug/kg	113	5	FALSE	2.4	108
50-29-3	P,P'-DDT	63	1	ug/kg	113	16	FALSE	8.5	97
1918-00-9	Dicamba	13000	2	ug/kg	113	0	TRUE	45	113
		654.881		ug/gOC				66.334992	0
60-57-1	Dieldrin	62	1	ug/kg	144	31	FALSE	5.2	139
72-20-8	Endrin	210	1	ug/kg	144	31	FALSE	2.6	138
58-89-9	Gamma Bhc (Lindane)	5	1	ug/kg	113	7	FALSE	3.3	106
1024-57-3	Heptachlor Epoxide	16	1	ug/kg	144	31	TRUE	0.32	144
87-68-3	Hexachlorobutadiene	12000	2	ug/kg	113	6	FALSE	3.7	107
		575.395		ug/gOC				3.9236479	0
72-43-5	Methoxychlor			ug/kg	144	64	FALSE	16	106
		NS		ug/gOC				17.204301	0
2385-85-5	Mirex	120	2	ug/kg	144	31	FALSE	51	143
		5.931		ug/gOC				36.428571	0
8001-35-2	Toxaphene	250	2	ug/kg	144	31	TRUE	160	144
		12.46		ug/gOC				165.28926	0

NYSDEC-Lower Genesee River Historical Sediment Data Pesticide/Herbicide Class C Standards Comparison		Class C Freshwater Sediment Guidance		Location ID: Sample ID: Lab Sample Id: Depth: Source: SDG: Matrix: Sampled: Validated:	Analyses	Detections	Delete?	Max	
	PCBs								
12672-29-6	PCB-1248 (Aroclor 1248)			ug/kg	146	73	FALSE		
11097-69-1	PCB-1254 (Aroclor 1254)			ug/kg	146	105	FALSE		
11096-82-5	PCB-1260 (Aroclor 1260)			ug/kg	146	126	FALSE		
11100-14-4	PCB-1268 (Aroclor 1268)			ug/kg	113	1	FALSE		
	Total PCBs	1000	5	ug/Kg					
	DIOXINS								0
	Total TCDDs			ng/kg				434	2
	Total TCDDs	0.05	1	ug/Kg	33	31	FALSE	0.434	2
1746-01-6	2,3,7,8-Tetrachlorodibenzo-P-Dioxin			ng/kg	65	30	FALSE	3.37	35
	2,3,7,8-Tetrachlorodibenzo-P-Dioxin	0.05	1	ug/Kg				0.00337	35
	OTHER							0	0
TOC	Total Organic Carbon			%	173	173	FALSE	17.6	0
TOC	Total Organic Carbon			mg/kg	33	33	FALSE	176000	0

Data Sources:
NYSDEC, 2007. Contamination Analysis in the Rochester Embayment Area of Concern. Ma
USEPA, 2012. TASK 6: Final Summary Report for Site Characterization at the Genesee Rive
USEPA, 2013. Technical Report: Genesee River Sediment Sampling under the Great Lakes L

Notes:
1. Sample locations can be found on Figure 5.
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SGV Derivations:
1. TEC/PEC derived from MacDonald et al., 2000 (values rounded to two significant digits)
2. Equilibrium partitioning based on 2% TOC (values rounded to two significant digits)
3. Value from Long and Morgan (1991) (values rounded to two significant digits)
5. DoW TOGS 5.

TABLE D-4
HISTORICAL SURFACE WATER DATA
CLASS B SURFACE WATER STANDARDS COMPARISON

NYSDEC-Lower Genesee River Historical Data Surface Water Class B Surface Water Standards Comparison		NYSDEC Class B Surface Water Standards/Guidance Values (1)	Location ID:	4010003	4010003	4010003	4010003	4010003	4010003	4010003	Dup of 04010003_05282 013_WS 4010003	4010003	4010003	4010003	4010003	4010003	4010003
			Sample ID:	04010003_04162 013_WS	04010003_04172 012_WS	04010003_04282 010_WS	04010003_05072 013_WS	04010003_052020 10_WS	04010003_05222 012_WS	04010003_05282 013_WS	04010003_05282 013_WSDUP	04010003_06132 012_WS	04010003_06162 010_WS	04010003_07022 013_WS	04010003_07172 012_WS	04010003_07192 010_WS	04010003_08112 011_WS
			Lab Sample Id:	R1302536-018	R1202394-008		R1303137-020		R1203244-016	R1303752-001	R1303752-001D	R1203706-023		R1304771-024	R1204549-010		
			Source:	NYSDEC	NYSDEC	NYSDEC	NYSDEC	NYSDEC	NYSDEC	NYSDEC	NYSDEC	NYSDEC	NYSDEC	NYSDEC	NYSDEC	NYSDEC	NYSDEC
			SDG:	R1302536	R1202394		R1303137		R1203244	R1303752	R1303752	R1203706		R1304771	R1204549		
			Matrix:	WS	WS	WS	WS	WS	WS	WS	WS	WS	WS	WS	WS	WS	WS
			Sampled:	4/16/2013 10:40	4/17/2012	4/28/2010 15:25	5/7/2013 11:00	5/20/2010 13:00	5/22/2012 11:00	5/28/2013 10:50	5/28/2013 10:50	6/13/2012 10:30	6/16/2010 11:45	7/2/2013 10:30	7/17/2012 10:45	7/19/2010 12:15	8/11/2011 11:00
			Validated:														
CAS NO.	COMPOUND		UNITS:														
	VOLATILES																
75-27-4	Bromodichloromethane	NS	ug/l	ND	ND			ND	ND	ND		ND	ND	ND	ND	ND	ND
121-48-1	Chlorodibromomethane	NS	ug/l														
67-66-3	Chloroform	NS	ug/l	ND	ND			ND	ND	ND		ND	ND	ND	ND	ND	ND
74-87-3	Chloromethane	NS	ug/l	ND	ND			ND	ND	ND		ND	ND	ND	ND	ND	0.65
75-09-2	Methylene Chloride	200	ug/l	ND	ND			ND	ND	ND		ND	ND	ND	ND	ND	0.86
	METALS																
7429-90-5	Aluminum	100	ug/l	8050	1010	1310	1050	2830	867	1030		1570 E	5400	2810 E	932 E	2770	880 N
7440-38-2	Arsenic	150	ug/l	4.3	ND	0.573 J	0.925 J	1.8	0.914 J	0.711 J	0.65 J	1.1	2.7	0.761 J	2.2	1.5	0.639 J
7440-43-9	Cadmium	1.1	ug/l	0.826 J	0.113 J	ND	0.15 J	0.24 J	0.136 J	0.307 J	0.33 J	0.166 J	0.198 J	0.175 J	0.208 J	0.117 J	0.07 J
7440-70-2	Calcium	NS	ug/l	44600	70000	74800	75900	57300	66800	76400		68300	60200	76500 E	55100	60100	84100
7440-50-8	Copper	4.6	ug/l	10.5	2.4	3.9	3.2	5.6	3.4	2.6	2.57	3.7	7.8	5	2.8	4.2	4.3
7439-89-6	Iron	300	ug/l	10400	1360	2020	1690	4510	1220	1190		2040	8360	3700 NE	1220	2670	1180
7439-92-1	Lead	1.6	ug/l	8.9	1.2	1.2	1.4	2.6	1.6	1.2	1.18	4.1	4.9	2.3	2.1	2.1	1.7 *
7439-95-4	Magnesium	NS	ug/l	11400	16700	18000	16500	13000	14000	15000		14900	14000	16400 E	13500	13000	17900
7439-96-5	Manganese	NS	ug/l	206	81.9	98.5	94.2	134	95.5	76.6		134	269	130 E	192	108	105 E
7439-97-6	Mercury	0.0007	ug/l	0.0101	0.0011 N	ND	0.0032	ND		0.0031		0.0011	ND	0.0021	0.0011	ND	0.019 J
7440-02-0	Nickel	27	ug/l	15	2.6	5.1	3.4	5.1	3.6	3.2	3.36	3.4	8.4	5	2.8	3.8	3.1
7440-09-7	Potassium	NS	ug/l	4480	2310	2740	2680	2910	2610	2770 E		2780	3910	4040 E	2470 E	3460	2990
7440-22-4	Silver	0.1	ug/l	0.322 J	0.204 J	0.364 J	0.2 J	0.334 J	0.211 J	0.077 J	0.09 J	0.272 J	0.959 J	0.138 J	0.073 J	0.225 J	0.228 J
7440-23-5	Sodium	NS	ug/l	20200	32300	37800	34300	27200	30700	34700		31400	28200	30000 E	33800	42900	41700
7440-66-6	Zinc	27	ug/l	39.3	6.1 J	9.7 J	7.6 J	21.4	7.1 J	9.2		15	28.4	14.8 E	10	11.1	7.6 J
	METALS - Dissolved																
7429-90-5	Aluminum	100	ug/l	322	57.9	ND	ND	10.5 J	22 J	7.2 J		26 J	96.2	2300 E	48.9 J	35.9 J	ND
7440-43-9	Cadmium	1.1	ug/l	0.057 J	0.048 J	ND	0.038 J	0.085 J	0.06 J	0.105 J	0.11 J	0.056 J	0.12 J	0.159 J	0.052 J	ND	0.022 J
7440-50-8	Copper	4.6	ug/l	1.9	1.5	1.9	1.9	2.5	2.4	1.7	1.7	2	2	3.8	1.8	2.8	2.7
7439-92-1	Lead	1.6	ug/l	0.273 J	0.126 J	ND	0.099 J	ND	0.206 J	0.076 J	0.07 J	0.175 J	0.461 J	1.5	0.217 J	0.398 J	0.27 J
7440-02-0	Nickel	27	ug/l	1.6	2.1	3.3	2.3	2	3.1	2.9	3.36	2.2	2.3	3.9	2.3	2.6	2.3
7440-66-6	Zinc	27	ug/l	3.7 J	3.3 J		5.4 J		3.2 J	5 J		3.9 J		15.9 E	9.5 J		9 J
	OTHER																
ALK	Alkalinity, Total (As CaCO3)	NS	ug/l	96000	156000	173000	160000	130000	150000	157000		136000	134000	178000	116000	128000	150000
16887-00-6	Chloride (As Cl)	NS	ug/l	32300	53800	65300	58200	49400	50000	43900		51800	44300	54700	47200	73800	68900
DOC	Dissolved Organic Carbon	NS	ug/l	5000	3500		4200		6100	3800		3700		6100	4100		
16984-48-8	Fluoride	1,050	ug/l	ND	120	160	ND	150	130	ND		160	170	150	190	180	180
HARD	Hardness (As CaCO3)	NS	ug/l	172000	264000	74300	260000	202000	232000	248000		240000	226000	270000	204000	216000	308000
7664-41-7	Nitrogen, Ammonia (As N)		ug/l	37	81	51	30	95	12	41		80	91	92	166	131	96
KN	Nitrogen, Kjeldahl, Total	NS	ug/l	830	400	480	780	770	660	560		680	960	660	710	510	640
NO3NO2N	Nitrogen, Nitrate-Nitrite	NS	ug/l	963	1140	870	659	571	562	664		750	952	1830	247	655	713
14797-55-8	Nitrogen, Nitrate (As N)	NS	ug/l	905	1120	852	642	559	501	636		716	933	1800	221	633	693
14797-65-0	Nitrogen, Nitrite	20	ug/l	58	18	18	16	12	61	27		34	19	32	26	22	19
PHWATER	pH (Water)	NS	ph units														
PHWATER	pH (Water)	NS	ph units														
TOTPHEN	Phenolics, Total Recoverable	NS	ug/l	2.1	ND			ND	ND	ND		ND	ND	ND	2.3	ND	ND
14265-44-2	Phosphate Ion	NS	ug/l	13	8.6	10.5	ND	47.9	8.6	ND		8.9	58.2	42.7	7.5	29.9	15.6
7723-14-0	Phosphorus	20 (G)	ug/l	213	47	64.2	89	115	61.3	60.3		93	234	143	70.3	96.3	60.3
14808-79-8	Sulfate (As SO4)	NS	ug/l	33000	88400	73500	76600	64500	76000	72100		89700	57800	83000	79600	79900	129000
TDS	Total Dissolved Solids (Residue, Filterable)	NS	ug/l	214000	400000	388000	400000	296000	368000	395000		408000	326000	419000	316000	365000	477000
TOC	Total Organic Carbon	NS	ug/l	4900	3200	4100	4400	4400	5900	3700		3900	4400	5900	3500	4500	3400
TOC	Total Organic Carbon - Dissolved	NS	ug/l			3700		4200					5100			4600	3300
TSO	Total Solids	NS	ug/l	449000	434000	451000	459000	390000	411000	481000		460000	528000	518000	373000	427000	541000
TSS	Total Suspended Solids	NS	ug/l	230000	25400	35000	39400	69500	30900	23400		51600	144000	64100	31200	38400	24800
TVS	Total Volatile Solids	NS	ug/l	78000	78000	72000	91000	62000	87000	114000		84000	102000	92000	71000	73000	139000

Data Source:
NYSDEC Department of Water EQuIS RIBS database.

Notes:
1. Sample locations can be found on Figure 5
2. Highlighted results indicate an exceedenc of NYSDEC Class B Surface Water Standard/Guidance Value.

TABLE D-4
HISTORICAL SURFACE WATER DATA
CLASS B SURFACE WATER STANDARDS COMPARISON

NYSDEC-Lower Genesee River Historical Data Surface Water Class B Surface Water Standards Comparison		NYSDEC Class B Surface Water Standards/Guidance Values [1]	Location ID:	4010003	4010003	4010003	4010003	4010003	4010003	Dup of 04010003_10082 013_WS	4010003	4010003	4010003	4010003	4010003	4010003	4010003
			Sample ID:	04010003_09042 012_WS	04010003_09132 010_WS	04010003_09182 013_WS	04010003_09282 011_WS	04010003_10062 010_WS	04010003_10082 013_WS	04010003_10082 013_WSDUP	04010003_10162 012_WS	04010003_10252 011_WS	04010003-04172006-WS	04010003-04202004-WS	04010003-04232001-WS	04010003-04232002-WS	04010003-04232003-WS
			Lab Sample Id:	R1205769-001		R1306797-028			R1307463-019	R1307463-019D	R1206990-005						
			Source:	NYSDEC	NYSDEC	NYSDEC	NYSDEC	NYSDEC	NYSDEC	NYSDEC	NYSDEC	NYSDEC	NYSDEC	NYSDEC	NYSDEC	NYSDEC	NYSDEC
			SDG:	R1205769		R1306797			R1307463	R1307463	R1206990						
			Matrix:	WS	WS	WS	WS	WS	WS	WS	WS	WS	WS	WS	WS	WS	WS
			Sampled:	9/4/2012 10:00	9/13/2010 11:45	9/18/2013 9:45	9/28/2011 11:00	10/6/2010 11:10	10/8/2013 11:00	10/8/2013 11:00	10/16/2012 11:00	10/25/2011 10:40	4/17/2006 11:00	4/20/2004 10:00	4/23/2001 12:00	4/23/2002 12:00	4/23/2003 12:00
			Validated:														
CAS NO.	COMPOUND		UNITS:														
	VOLATILES																
75-27-4	Bromodichloromethane	NS	ug/l	ND		ND	ND	ND	ND		ND	ND	ND	ND	ND	ND	ND
121-48-1	Chlorodibromomethane	NS	ug/l										ND	ND	ND	ND	ND
67-66-3	Chloroform	NS	ug/l	0.34		ND	ND	ND	ND		ND	ND	ND	ND	ND	0.1	ND
74-87-3	Chloromethane	NS	ug/l	ND		ND	ND	ND	ND		ND	ND	ND	ND	ND	ND	ND
75-09-2	Methylene Chloride	200	ug/l	ND		ND	ND	ND	ND		ND	ND	ND	ND	ND	0.6	ND
	METALS																
7429-90-5	Aluminum	100	ug/l	1110 NE	1070	829 E	563 NE	1960	969		1330 E	2590	1270	9040 *	4140	1070	4600
7440-38-2	Arsenic	150	ug/l	1.6	1	1.3	0.7 J	1.6	0.396 J		0.775 J	1.6					
7440-43-9	Cadmium	1.1	ug/l	0.116 J	0.267 J	0.101 J	0.047 J	0.088 J	0.268 J		0.104 J	0.141 J	ND	0.416	ND	0.24	0.3
7440-70-2	Calcium	NS	ug/l	60400	69900	76000	71200	53200	84100	85100	74900	44000	55800	55900	30900	68800	35900
7440-50-8	Copper	4.6	ug/l	3.1	4.2	2.6	4.4	5.6	3.3		3.3	4.5	2.7	10.1	9.1	8 *	5.4
7439-89-6	Iron	300	ug/l	1450	1410	1100	783	2540	1140	1220	1950	3800	1230	9120 *	6770	1110	5120
7439-92-1	Lead	1.6	ug/l	2.4	1.3	1.2	0.861 J	1.9	1.4		2	2	1.2	5.6	4.4	1.7	3.7
7439-95-4	Magnesium	NS	ug/l	13800	15000	16800	15600	11300	17100	17300	15500	9990	13100	15100	7030	14500	8430
7439-96-5	Manganese	NS	ug/l	98.9	75.9	87.3	70.4 E	79.5	90.1	91.9	132	101	52.6	174	156	66.8	92.4
7439-97-6	Mercury	0.0007	ug/l	0.0011	ND	0.0033	ND	ND	0.0079		0.000693 N	ND	0.019 J	0.022	0.04	ND	ND
7440-02-0	Nickel	27	ug/l	3.3	3.5	5.1	3.1	3.7	5.2		3.5	3.8	2.7	9.9	7.5	2.3	5
7440-09-7	Potassium	NS	ug/l	2470 E	2860	2930	2810	3490	3330	3450	2930	3250	2430	5450 E	2690	2750	3200
7440-22-4	Silver	0.1	ug/l	0.29 J	0.539 J	0.126 J	0.492 J	0.586 J	0.138 J		0.388 J	0.134 J					
7440-23-5	Sodium	NS	ug/l	34900	31700	43300	37200	21600	38000	38200	35400	18800	24600	25300	10500	29100	15900
7440-66-6	Zinc	27	ug/l	7.9 J	8.4 J	8.1 E	7.2 J	11.5	9.4 *E	9.89	9.5 J	12	6.7 J	28.5	27.1	10.5	19.8
	METALS - Dissolved																
7429-90-5	Aluminum	100	ug/l	20.2 J	22.1 J	26 J	59.5 N	273	18.5 J		161	205	14.6 J	62.5	38	18.9	35.1
7440-43-9	Cadmium	1.1	ug/l	0.026 J	0.073 J	0.027 J	0.018 J	ND	0.103 J		0.041 J	0.077 J	ND	ND	ND	0.11	0.08
7440-50-8	Copper	4.6	ug/l	1.8	2.3	1.7	4.2	2.2	1.9		1.6	2.1	1.8	2.2	2.8	3.7	1.9
7439-92-1	Lead	1.6	ug/l	0.188 J	ND	0.122 J	0.214 J	0.333 J	0.092 J		0.281 J	0.276 J	0.066 J	0.089	ND	0.62	0.19
7440-02-0	Nickel	27	ug/l	2.7	2.5	3.9	3.3	1.8	5.4		2.6	1.5 *	2.2	2.6	ND	1.3	1.2
7440-66-6	Zinc	27	ug/l	11		2.9 J	7 J		4.1 J	4.84 J	5.2 J	3.8 J					
	OTHER																
ALK	Alkalinity, Total (As CaCO3)	NS	ug/l	114000	132000	152000	135000	99200	149000		131000	100000	127000	131000	70700	137000	73700
16887-00-6	Chloride (As Cl)	NS	ug/l	59900	49200	69500	60600	35100	64800		58000	30500	43600	47900	18500	52100	32800
DOC	Dissolved Organic Carbon	NS	ug/l	5100		3100			4300		3100						
16984-48-8	Fluoride	1,050	ug/l	160	180	130	170	150	170		190	ND	ND	145	ND	135	ND
HARD	Hardness (As CaCO3)	NS	ug/l	216000	259000	264000	248000	172000	297000		240000	156000	200000	185000	121000	220000	129000
7664-41-7	Nitrogen, Ammonia (As N)		ug/l	122	24	49	96	69	68		55	40	13.6	73.5	44.2	88	38.7
KN	Nitrogen, Kjeldahl, Total	NS	ug/l	590	550	550	320	720	560		590	430	433	974	494	458	532
NO3NO2N	Nitrogen, Nitrate-Nitrite	NS	ug/l	572	557	732	649	633	695		632	767	837	1230	899	1090	1360
14797-55-8	Nitrogen, Nitrate (As N)	NS	ug/l	543	557	715	602	633	678		618	736	837	1140	881	1070	1300
14797-65-0	Nitrogen, Nitrite	20	ug/l	29	ND	17	47	ND	17		14	30	ND	90	18.1	18.3	62
PHWATER	pH (Water)	NS	ph units										8.12	8.04	7.97	7.98	8.13
PHWATER	pH (Water)	NS	ph units										7.9	7.9	7.1	8.2	7.7
TOTPHEN	Phenolics, Total Recoverable	NS	ug/l	ND		ND	ND	ND	6.8		ND	ND	ND	2.16	ND	ND	ND
14265-44-2	Phosphate Ion	NS	ug/l	5.9	16.3	15.5	10.3	48.8	18.6		17.7	53.9	26.6				
7723-14-0	Phosphorus	20 (G)	ug/l	69.9	74.6	59.9	48.5	86.8	73.1		87.9	76	41.5	208	183	51	171
14808-79-8	Sulfate (As SO4)	NS	ug/l	93000	98500	108000	107000	63500	133000		97500	44400	54400	46800	26400	82400	38000
TDS	Total Dissolved Solids (Residue, Filterable)	NS	ug/l	384000	381000	439000	388000	271000	439000		386000	225000	303000	465000	354000	387000	297000
TOC	Total Organic Carbon	NS	ug/l	3900	3400	2900	3500	5400	4200		2900	4500					
TOC	Total Organic Carbon - Dissolved	NS	ug/l		3300		3400	5400				4400					
TSO	Total Solids	NS	ug/l	419000	438000	512000	454000	338000	513000		439000	299000	278000	295000	165000	342000	186000
TSS	Total Suspended Solids	NS	ug/l	30000	28200	26500	18700	47000	25300		42900	59700	22700	176000	210000	26200	90200
TVS	Total Volatile Solids	NS	ug/l	86000	87000	126000	122000	59000	93000		69000	38000	43000	68000	31000	60000	53000

Data Source:
NYSDEC Department of Water EQuIS RIBS database.

Notes:
1. Sample locations can be found on Figure 5
2. Highlighted results indicate an exceedenc of NYSDEC Class B Surface Water Standard/Guidance Value.

TABLE D-4
HISTORICAL SURFACE WATER DATA
CLASS B SURFACE WATER STANDARDS COMPARISON

NYSDEC-Lower Genesee River Historical Data Surface Water Class B Surface Water Standards Comparison		NYSDEC Class B Surface Water Standards/Guidance Values (1)	Location ID: Sample ID: Lab Sample Id: Source: SDG: Matrix: Sampled: Validated:	4010003 04010003-04232008-WS NYSDEC WS 4/23/2008 11:00	4010003 04010003-04232009-WS NYSDEC WS 4/23/2009 14:00	4010003 04010003-05032005-WS NYSDEC WS 5/3/2005 13:00	4010003 04010003-05082006-WS NYSDEC WS 5/8/2006 10:00	4010003 04010003-05102004-WS NYSDEC WS 5/10/2004 11:00	4010003 04010003-05132003-WS NYSDEC WS 5/13/2003 12:00	4010003 04010003-05132009-WS NYSDEC WS 5/13/2009 11:00	4010003 04010003-05142007-WS NYSDEC WS 5/14/2007 11:00	4010003 04010003-05142008-WS NYSDEC WS 5/14/2008 11:00	4010003 04010003-05152002-WS NYSDEC WS 5/15/2002 11:00	4010003 04010003-05222001-WS NYSDEC WS 5/22/2001 11:00	4010003 04010003-05222012-WS NYSDEC R1203248 WS 5/22/2012 11:00	4010003 04010003-05232005-WS NYSDEC WS 5/23/2005 13:00	4010003 04010003-06222006-WS NYSDEC WS 6/22/2006 10:00
CAS NO.	COMPOUND		UNITS:														
	VOLATILES																
75-27-4	Bromodichloromethane	NS	ug/l	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND		ND	ND
121-48-1	Chlorodibromomethane	NS	ug/l			ND	ND	ND	ND		ND		ND	ND		ND	0.22
67-66-3	Chloroform	NS	ug/l	ND	ND	ND	ND	ND	0.1	ND	ND	ND	ND	0.2		ND	0.21
74-87-3	Chloromethane	NS	ug/l	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND		ND	ND
75-09-2	Methylene Chloride	200	ug/l	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.1		ND	2.7
	METALS																
7429-90-5	Aluminum	100	ug/l	983	328	1880	655 *	2550 E	810	700	255 *	384	6240 E	459		438	865 *
7440-38-2	Arsenic	150	ug/l		0.487 B					1							
7440-43-9	Cadmium	1.1	ug/l	ND	0.023 B	0.061 J	0.097 J	0.11	0.21	ND	0.046 J	0.072 B	0.09	0.05		0.051 J	0.076 J
7440-70-2	Calcium	NS	ug/l	66100	71600	53000	75100	57200	72500	74000	66700	63100	60100	74900		79600	57300
7440-50-8	Copper	4.6	ug/l	3.9	3	4.2	3.3	4	3.2	3.6	3	4	10.8	4.2		3.3	5.7
7439-89-6	Iron	300	ug/l	1210	605	1830	696	2430 E	884	1030	513 *	549	7390	854		474	784
7439-92-1	Lead	1.6	ug/l	1.1	0.607	1.3	0.699 J	1.7	1.2	1.2	0.719 J	0.943 B	5.4	1		0.423 J	1.6
7439-95-4	Magnesium	NS	ug/l	14400	16000	12100	15600	12800	15600	15800	14700	13100	15100	14900		17400	12400
7439-96-5	Manganese	NS	ug/l	73.4	61.4	56	61.6	67.1	42.7	61.7	45.2	50.1	210	69.9		57.6	62.3
7439-97-6	Mercury	0.0007	ug/l	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.03	ND	0.000954	ND	0.02 J
7440-02-0	Nickel	27	ug/l	3.8	3.1	3.6	2.8	4.1	3.3	4	3.4	3.3	8.8	1.4		2.9	3
7440-09-7	Potassium	NS	ug/l	2380	2130	2530	2470	2960	2760	2450	2100	2070	4380 E	2670		2460	2440
7440-22-4	Silver	0.1	ug/l		0.597 B					0.673 B							
7440-23-5	Sodium	NS	ug/l	27600	30000	22100	35100	26200	35400	36800	30500	30900	28100	30800		33500	28300
7440-66-6	Zinc	27	ug/l	7.9 B	5.2 B	10.6	8	8.5	9.1	7 B	9.4	5.2 B	30.1 E	15.4		6.2 J	9.7
	METALS - Dissolved																
7429-90-5	Aluminum	100	ug/l	ND	44.6	19.5 J	22.7 J	81.5	ND	29.4 B	ND	ND	27.6	11.8		18.9 J	0.017 J
7440-43-9	Cadmium	1.1	ug/l	ND	ND	ND	ND	ND	0.11	ND	ND	0.031 B	ND	ND		ND	ND
7440-50-8	Copper	4.6	ug/l	2.6	3	2.4	3.2	2.5	2.3	2.7	2.2	3.2	3	3.1		2.7	2.7
7439-92-1	Lead	1.6	ug/l	0.088 B	0.133 B	0.136 J	0.085 J	0.136	0.13	0.122 B	0.056 J	0.183 B	1.1	ND		ND	0.458 J
7440-02-0	Nickel	27	ug/l	3	2.8	2.9	2.3	2.6	2.7	3.5	4	2.8	1.7	ND		2.7	2.9
7440-66-6	Zinc	27	ug/l														
	OTHER																
ALK	Alkalinity, Total (As CaCO3)	NS	ug/l	144000	152000	128000	147000	128000	147000	154000	159000	144000	142000	157000		162000	126000
16887-00-6	Chloride (As Cl)	NS	ug/l	49400	57500	37600	56800	49400	69000	57100	51900	57000	47800	57200		55700	47100
DOC	Dissolved Organic Carbon	NS	ug/l														
16984-48-8	Fluoride	1,050	ug/l	ND	160	ND	142	124	155	120	172	ND	128	198		107	124
HARD	Hardness (As CaCO3)	NS	ug/l	351000	252000	188000	270000	190000	260000	270000	250000	236000	212000	271000		265000	219000
7664-41-7	Nitrogen, Ammonia (As N)		ug/l	54	65	38.7	22.4	36.9	71.6	49	17.6	26.8	68.1	182		48.7	175
KN	Nitrogen, Kjeldahl, Total	NS	ug/l	481	410	335	505	454	641	490	488	ND	1040	558		495	786
NO3NO2N	Nitrogen, Nitrate-Nitrite	NS	ug/l	918	1300	986	967	924	1020	603	1040	688	1440	1210		1110	829
14797-55-8	Nitrogen, Nitrate (As N)	NS	ug/l	907	1290	973	951	904	1020	589	1030	674	1360	1190		1100	786
14797-65-0	Nitrogen, Nitrite	20	ug/l	10.9	ND	13.3	15.9	19.8	17.7	14	13.1	13.6	76	22.9		13.8	43.2
PHWATER	pH (Water)	NS	ph units		8.31	8.1	7.9	8.07	8	8.3	8.09		8.19	8.04		8.17	8.14
PHWATER	pH (Water)	NS	ph units				8.1	7.9			7.9		8	7.6		8	8.1
TOTPHEN	Phenolics, Total Recoverable	NS	ug/l	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND		ND	2.08
14265-44-2	Phosphate Ion	NS	ug/l	17.7	5.8		4.41			2.4	5.02	3.34					18.2
7723-14-0	Phosphorus	20 (G)	ug/l	45.1	27.3	54.8	29.5	71.6	53.6	44.6	37	41.1	290	47.6		52.6	74.7
14808-79-8	Sulfate (As SO4)	NS	ug/l	76400	91900	48400	90000	57200	89400	93300	78000	84400	46900	109000		90600	73200
TDS	Total Dissolved Solids (Residue, Filterable)	NS	ug/l	323000	394000	315000	413000	382000	445000	397000	388000	352000	549000	452000		429000	359000
TOC	Total Organic Carbon	NS	ug/l	3050	3300					4600	4140	3510					
TOC	Total Organic Carbon - Dissolved	NS	ug/l	3280	3100					4400	3840	4200					
TSO	Total Solids	NS	ug/l	373000	405000	273000	372000	309000	380000	441000	348000	409000	305000	408000		404000	323000
TSS	Total Suspended Solids	NS	ug/l	27600	13200	36200	15200	50000	21800	24300	17200	14700	234000	24000		10000	20000
TVS	Total Volatile Solids	NS	ug/l	55000	56000	49000	75000	68000	106000	70000	67000	82000	88000	67000		74000	61000

Data Source:
NYSDEC Department of Water EQuIS RIBS database.

Notes:
1. Sample locations can be found on Figure 5
2. Highlighted results indicate an exceedenc of NYSDEC Class B Surface Water Standard/Guidance Value.

TABLE D-4
HISTORICAL SURFACE WATER DATA
CLASS B SURFACE WATER STANDARDS COMPARISON

NYSDEC-Lower Genesee River Historical Data Surface Water Class B Surface Water Standards Comparison		NYSDEC Class B Surface Water Standards/Guidance Values (1)	Location ID: Sample ID: Lab Sample Id: Source: SDG: Matrix: Sampled: Validated:	4010003 04010003-06232004-WS NYSDEC WS 6/23/2004 11:00	4010003 04010003-06232008-WS NYSDEC WS 6/23/2008 10:00	4010003 04010003-06242002-WS NYSDEC WS 6/24/2002 10:00	4010003 04010003-06242009-WS NYSDEC WS 6/24/2009 10:00	4010003 04010003-06252003-WS NYSDEC WS 6/25/2003 11:00	4010003 04010003-06262001-WS NYSDEC WS 6/26/2001 11:00	4010003 04010003-06272007-WS NYSDEC WS 6/27/2007 12:00	4010003 04010003-07122005-WS NYSDEC WS 7/12/2005 14:00	4010003 04010003-07162008-WS NYSDEC WS 7/16/2008 11:00	4010003 04010003-07172006-WS NYSDEC WS 7/17/2006 11:00	4010003 04010003-07242007-WS NYSDEC WS 7/24/2007 11:00	4010003 04010003-07312001-WS NYSDEC WS 7/31/2001 11:00	4010003 04010003-08062002-WS NYSDEC WS 8/6/2002 11:00	4010003 04010003-08092005-WS NYSDEC WS 8/9/2005
CAS NO.	COMPOUND		UNITS:														
	VOLATILES																
75-27-4	Bromodichloromethane	NS	ug/l	ND	ND	ND	ND	ND	ND		ND	ND	ND	ND	ND	0.2	ND
121-48-1	Chlorodibromomethane	NS	ug/l	ND		ND		ND	ND		ND		ND	0.11	ND	0.2	0.11
67-66-3	Chloroform	NS	ug/l	ND	ND	0.2	ND	0.15	0.1		0.22	ND	ND	0.31	0.2	0.5	ND
74-87-3	Chloromethane	NS	ug/l	ND	ND	ND	ND	ND	ND		ND	ND	ND	ND	ND	ND	ND
75-09-2	Methylene Chloride	200	ug/l	ND	ND	ND	ND	ND	1.6		ND	ND	ND	ND	ND	ND	ND
	METALS																
7429-90-5	Aluminum	100	ug/l	2100	1160	778	4910	2100	928	454	1740	1030	1230 *	371	1150 *	1060 *	296
7440-38-2	Arsenic	150	ug/l				2.4										
7440-43-9	Cadmium	1.1	ug/l	0.101	0.101 B	0.1	0.059 J	0.16	ND	0.07	0.1 J	0.043 B	0.087 J	0.046 J	0.12	0.21	0.045 J
7440-70-2	Calcium	NS	ug/l	65500	63900	57100	39400	51000	72500	59400	53500	71200	56100	67700	53800	61900	58300
7440-50-8	Copper	4.6	ug/l	3.6	4.3	6.9	6.4	4.7 *	5.2	4.3	6.8	3.9	4.8	3	5.8	4.7	3.2
7439-89-6	Iron	300	ug/l	2050	1630	937	4580	2500	1460	877	1670	1430	1330	365	1970	1220 *	285
7439-92-1	Lead	1.6	ug/l	1.7	1.9	1.1	3.2	2.2	1.8	1.5	2.6	1.9	1.3	1	3	2.7	1
7439-95-4	Magnesium	NS	ug/l	13800	13700	11200	9330	11000	14800	14200	12200	14700	12100	15600	12000	12400	13700
7439-96-5	Manganese	NS	ug/l	64.3	142	60	110	75	79.9	90.2	64.9	147	78.1	79.2	149	92.2	41.1
7439-97-6	Mercury	0.0007	ug/l	0.028	ND	0.02	ND	ND	ND	ND	ND	ND	0.015 J	ND	ND	0.02	ND
7440-02-0	Nickel	27	ug/l	4.2	3.5	1.6	5.8	3.8	2.5	3.1	4.1	3.6	3.7	3.3	2.9	2.1	3.4
7440-09-7	Potassium	NS	ug/l	3120	2540	2350	3560	2900	2740	2700	3260	2560	3130	2580	2450	3060	2620
7440-22-4	Silver	0.1	ug/l				0.396 J										
7440-23-5	Sodium	NS	ug/l	28200	34500	22700	17500	27000	33600	36900	38200	46400	24500	36400	27200	35300	33300
7440-66-6	Zinc	27	ug/l	11.9	12.2	5.9	14	13	28.7	11.1	12.7	8.5	9.6	7.3 J	18.4	13.4	10.1
	METALS - Dissolved																
7429-90-5	Aluminum	100	ug/l	16.5	ND	25.8 *	62.1	24	20.8	ND	28.9 J	ND	17.2 J	ND	22.5	22.1	ND
7440-43-9	Cadmium	1.1	ug/l	ND	0.035 B	0.04	ND	0.06	ND	ND	0.044 J	ND	ND	ND	ND	0.03	0.055 J
7440-50-8	Copper	4.6	ug/l	2.2	2.6	3.2	3.1	2.9	2.5	3.1 *	5.4	2.1	5	2.4	4	4.7	2.8
7439-92-1	Lead	1.6	ug/l	0.142	0.235 B	1.2	0.184 J	0.23	ND	0.255	0.938 J	0.154 B	0.317 J	0.126 J	0.46	0.59	
7440-02-0	Nickel	27	ug/l	3	2.2	0.72	2.3	1.9	0.54	2.2	2.4	2.3	2.7	3	0.81	0.96	3.2
7440-66-6	Zinc	27	ug/l														
	OTHER																
ALK	Alkalinity, Total (As CaCO3)	NS	ug/l	145000	132000	125000	96000	112000	151000		124000	140000	123000	144000	108000	125000	122000
16887-00-6	Chloride (As Cl)	NS	ug/l	48400	58000	38600	28500	45600	66600		59300	78000	39400	60000	46100	63200	48800
DOC	Dissolved Organic Carbon	NS	ug/l														
16984-48-8	Fluoride	1,050	ug/l	147	158	113	140	ND	190		ND	130	110	162	129	160	160
HARD	Hardness (As CaCO3)	NS	ug/l	218000	234000	193000	136000	175000	278000		185000	260000	195000	240000	200000	238000	210000
7664-41-7	Nitrogen, Ammonia (As N)		ug/l	124	52.1	141	108	154	161		87.1	16.7	74	175	176	236	62.8
KN	Nitrogen, Kjeldahl, Total	NS	ug/l	660	591	512	930	608	477		709	662	678	775	440	611	672
NO3NO2N	Nitrogen, Nitrate-Nitrite	NS	ug/l	1180	591	1020	1150	849	774		1500	454	910	396	359	539	770
14797-55-8	Nitrogen, Nitrate (As N)	NS	ug/l	1160	576	1000	1130	829 C	747		1470	444	889	380	339	522	756
14797-65-0	Nitrogen, Nitrite	20	ug/l	21.2	14.8	14.8	14	20.4	27		30.5	ND	21	15.9	19.8	17.3	14.4
PHWATER	pH (Water)	NS	ph units	8.13		8.03	7.98	7.98	8.15		7.94		7.98		7.97	7.98	8.13
PHWATER	pH (Water)	NS	ph units	7.8		7.8		7.76	7.6		7.8		8.3		7.3	7.7	8
TOTPHEN	Phenolics, Total Recoverable	NS	ug/l	2.45	ND	1.47	ND	ND	ND		ND	ND	2.9	ND	ND	ND	2.84
14265-44-2	Phosphate Ion	NS	ug/l		8.15		24					4.43	35.5	7.27			
7723-14-0	Phosphorus	20 (G)	ug/l	78.5	85.7	55.9	128	98.1	84.2		110	125	97	59.4	141	100	75.5
14808-79-8	Sulfate (As SO4)	NS	ug/l	73700	85300	66500	40700	56600	110000		60400	94700	62500	84600	78200	88700	81700
TDS	Total Dissolved Solids (Residue, Filterable)	NS	ug/l	425000	375000	351000	216000	363000	487000		378000	418000	351000	426000	366000	436000	367000
TOC	Total Organic Carbon	NS	ug/l		3600		6100					2640		4030			
TOC	Total Organic Carbon - Dissolved	NS	ug/l		3260		6400					3580		3270			
TSO	Total Solids	NS	ug/l	325000	468000	296000	335000	275000	422000		326000	504000	298000	382000	321000	355000	349000
TSS	Total Suspended Solids	NS	ug/l	43300	41800	25000	90000	54400	44200		33900	40000	24500	13600	51000	32000	6400
TVS	Total Volatile Solids	NS	ug/l	95000	92000	76000	75000	67000	78000		49000	111000	52000	78000	67000	99000	63000

Data Source:
NYSDEC Department of Water EQuIS RIBS database.

Notes:
1. Sample locations can be found on Figure 5
2. Highlighted results indicate an exceedenc of NYSDEC Class B Surface Water Standard/Guidance Value.

TABLE D-4
HISTORICAL SURFACE WATER DATA
CLASS B SURFACE WATER STANDARDS COMPARISON

NYSDEC-Lower Genesee River Historical Data Surface Water Class B Surface Water Standards Comparison		NYSDEC Class B Surface Water Standards/Guidance Values (1)	Location ID:	4010003	4010003	4010003	4010003	4010003	4010003	4010003	4010003	4010003	4010003	4010003	4010003	4010003	4010003
			Sample ID:	04010003-08182004-WS	04010003-08192003-WS	04010003-09102001-WS	04010003-09132006-WS	04010003-09152003-WS	04010003-09172002-WS	04010003-09182007-WS	04010003-09232009-WS	04010003-09272005-WS	04010003-0932008-WS	04010003-10052004-WS	04010003-10182005-WS	04010003-10202008-WS	04010003-10242006-WS
			Lab Sample Id:														
			Source:	NYSDEC	NYSDEC	NYSDEC	NYSDEC	NYSDEC	NYSDEC	NYSDEC	NYSDEC	NYSDEC	NYSDEC	NYSDEC	NYSDEC	NYSDEC	NYSDEC
			SDG:														
			Matrix:	WS	WS	WS	WS	WS	WS	WS	WS	WS	WS	WS	WS	WS	WS
			Sampled:	8/18/2004 10:00	8/19/2003 10:00	9/10/2001 12:00	9/13/2006 14:00	9/15/2003 10:00	9/17/2002 10:00	9/18/2007 11:00	9/23/2009 10:00	9/27/2005 14:00	9/3/2008 11:00	10/5/2004 10:00	10/18/2005 13:00	10/20/2008 12:00	10/24/2006 11:00
			Validated:														
CAS NO.	COMPOUND		UNITS:														
	VOLATILES																
75-27-4	Bromodichloromethane	NS	ug/l	ND	ND	0.2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
121-48-1	Chlorodibromomethane	NS	ug/l	ND	ND	ND	ND	0.19	0.2	0.15		ND		ND	ND		ND
67-66-3	Chloroform	NS	ug/l	ND	ND	0.3	ND	ND	0.5	ND	ND	ND	ND	ND	ND	ND	ND
74-87-3	Chloromethane	NS	ug/l	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
75-09-2	Methylene Chloride	200	ug/l	6.5	ND	8.2	ND	ND	0.5	ND	ND	1	ND	ND	ND	ND	ND
	METALS																
7429-90-5	Aluminum	100	ug/l	867 *	11400	152	1630	1830	356	170 *	397	568	521	942	963	689	10300 *
7440-38-2	Arsenic	150	ug/l								ND						
7440-43-9	Cadmium	1.1	ug/l	0.081	0.305	0.13	ND	0.17	0.07	0.085 J	0.06 J	0.103 J	ND	0.062	0.084 J	0.124 B	0.19 J
7440-70-2	Calcium	NS	ug/l	73200	34400	58700	48600	53500	65000	49900	63300	68200	64600	78400	66700	63200	50900
7440-50-8	Copper	4.6	ug/l	3.9 *	10.9	3.1	4.5	3.6	4.4	3.3	3.2	3.7	3.3	2.6	2.8	4.3	11.2
7439-89-6	Iron	300	ug/l	907	11700	233	1560	1610	478	336 *	590	711	663	976 *	965	852	11900
7439-92-1	Lead	1.6	ug/l	1.1	7.3	1.5	1.4	1.3	1.1	1.1	1	1.3	0.919 B	1.1	1.2	0.876 B	6.8
7439-95-4	Magnesium	NS	ug/l	15200	8880	12600	10000	12100	14000	11300	13900	13600	13300	15500	14400	13800	14100
7439-96-5	Manganese	NS	ug/l	55.5	215	56.6	60.2	66.7	54.4	57.9	57.9	64.5	61.4	60.9	64	47.2	233
7439-97-6	Mercury	0.0007	ug/l	0.019	0.028	ND	0.016 J	ND	0.03	ND	ND	ND	ND	ND	ND	ND	0.036 J
7440-02-0	Nickel	27	ug/l	4.67	10	1.3	3.4	2.7	1.4	2.7	3.1	3.1	2.8	3.3	3.3	2.8	13.6
7440-09-7	Potassium	NS	ug/l	2880	6130	2890	3450	2820	3090	2370	2600	3770	2430	3170	3110	3110	6880
7440-22-4	Silver	0.1	ug/l								0.362 J						
7440-23-5	Sodium	NS	ug/l	33200	12900	37200	22300	26300	32300	25800	30500	33300	31400	29400	30900	32000	17400
7440-66-6	Zinc	27	ug/l	13.6	34.6	8.2	11.3	13.2	7.8	ND	5.9 J	9.1	5 B	15.9	7.2 J	8.4	38
	METALS - Dissolved																
7429-90-5	Aluminum	100	ug/l	62.2	229	23.2	27.3 J	23.9	24.8	ND	41.2	14.1 J	ND	175	ND	184	49.8
7440-43-9	Cadmium	1.1	ug/l	ND	0.065	0.1	ND	ND	ND	0.262 J	0.043 J	ND	ND	ND	ND	0.029 B	ND
7440-50-8	Copper	4.6	ug/l	4.5 *	3.5	2.9	3.4	2.5	2.6	3.4	3.1	2.7	2.9	2.2	1.6	3.4	2.9
7439-92-1	Lead	1.6	ug/l	0.431	0.383	0.66	0.157 J	ND	0.4	0.096 J	0.39 J		0.141 B	0.544		0.321 B	0.18 J
7440-02-0	Nickel	27	ug/l	3.3	1.4	1	2.2	1.5	1.1	2.2	3.1	2.5	2.1	2.9	2.5	2.3	3.5
7440-66-6	Zinc	27	ug/l														
	OTHER																
ALK	Alkalinity, Total (As CaCO3)	NS	ug/l	145000	81000	124000	217000	112000	238000	127000	132000	126000	136000	160000	139000	144000	121000
16887-00-6	Chloride (As Cl)	NS	ug/l	48800	18000	67200	33800	40500	46800	40200	45000	51900	55800	49600	52900	60300	28300
DOC	Dissolved Organic Carbon	NS	ug/l														
16984-48-8	Fluoride	1,050	ug/l	156	ND	265	ND	147	136	151	140	130	ND	153	143	ND	ND
HARD	Hardness (As CaCO3)	NS	ug/l	224000	115000	200000	168000	178000	219000	161000	219000	230000	226000	250000	241000	237000	176000
7664-41-7	Nitrogen, Ammonia (As N)		ug/l	135	52.3	159	87.1	103	243	79.4	95	160	75.5	51.3	143	56.8	19.4
KN	Nitrogen, Kjeldahl, Total	NS	ug/l	571	918	432	654	438	671	719	560	662	518	405	567	436	880
NO3NO2N	Nitrogen, Nitrate-Nitrite	NS	ug/l	914	581	822	838	706	649	571	597	956	621	1090	756	738	571
14797-55-8	Nitrogen, Nitrate (As N)	NS	ug/l	914	581 C	799	813	691	631	556	584	935	594	1070	756	728	571
14797-65-0	Nitrogen, Nitrite	20	ug/l	ND	ND	22.7	24.9	15	18.4	15.2	13	20.6	26.8	17.9	16.9	ND	ND
PHWATER	pH (Water)	NS	ph units	8.2	8.01	7.96	7.94	8.16	7.99		8.22	7.97		8.14	8.03		8.03
PHWATER	pH (Water)	NS	ph units	8.1	7.9	7.7	7.4	8	7.7			8		8	8		6.6
TOTPHEN	Phenolics, Total Recoverable	NS	ug/l	ND	ND	1.38	2.35	ND	2	ND	ND	ND	ND	ND	ND	ND	4.24
14265-44-2	Phosphate Ion	NS	ug/l				35.7	35.1		49.4	7.3		11.4			43	33.6
7723-14-0	Phosphorus	20 (G)	ug/l	50	234	52.4	84.5	69.8	61	75.5	51.8	95.4	51	57.7	67.7	56.9	250
14808-79-8	Sulfate (As SO4)	NS	ug/l	76800	24000	99800	50600	57900	96800	58800	76000	101000	85800	87900	87100	84300	32000
TDS	Total Dissolved Solids (Residue, Filterable)	NS	ug/l	422000	393000	382000	313000	341000	393000	322000	339000	441000	355000	413000	406000	365000	491000
TOC	Total Organic Carbon	NS	ug/l							2230	2900		3780			3890	
TOC	Total Organic Carbon - Dissolved	NS	ug/l							3760	3000		3600			3960	
TSO	Total Solids	NS	ug/l	381000	200000	360000	263000	278000	353000	258000	376000	375000	375000	378000	374000	399000	257000
TSS	Total Suspended Solids	NS	ug/l	16900	206000	6500	30400	33400	12000	19200	14000	15100	15800	16600	20700	19000	210000
TVS	Total Volatile Solids	NS	ug/l	98000	48000	56000	62000	60000	86000	91000	57000	96000	365000	84000	72000	56000	62000

Data Source:
NYSDEC Department of Water EQuIS RIBS database.

Notes:
1. Sample locations can be found on Figure 5
2. Highlighted results indicate an exceedenc of NYSDEC Class B Surface Water Standard/Guidance Value.

TABLE D-4
HISTORICAL SURFACE WATER DATA
CLASS B SURFACE WATER STANDARDS COMPARISON

NYSDEC-Lower Genesee River Historical Data Surface Water Class B Surface Water Standards Comparison		NYSDEC Class B Surface Water Standards/Guidance Values [1]	Location ID: Sample ID: Lab Sample Id: Source: SDG: Matrix: Sampled: Validated:	4010003 04010003-10262004-WS NYSDEC WS 10/26/2004 11:00	4010003 04010003-10262009-WS NYSDEC WS 10/26/2009 13:15	4010003 04010003-10282002-WS NYSDEC WS 10/28/2002 11:00	4010003 04010003-10282003-WS NYSDEC WS 10/28/2003 11:00	4010003 04010003-10292001-WS NYSDEC WS 10/29/2001 11:00	4010003 04010003-11012007-WS NYSDEC WS 11/1/2007 10:00
CAS NO.	COMPOUND		UNITS:						
	VOLATILES								
75-27-4	Bromodichloromethane	NS	ug/l	ND	ND	ND	ND	ND	ND
121-48-1	Chlorodibromomethane	NS	ug/l	ND		ND	ND	ND	ND
67-66-3	Chloroform	NS	ug/l	ND	ND	0.2	ND	0.1	ND
74-87-3	Chloromethane	NS	ug/l	ND	ND	ND	ND	ND	ND
75-09-2	Methylene Chloride	200	ug/l	0.52	ND	ND	1.2	ND	ND
	METALS								
7429-90-5	Aluminum	100	ug/l	1390 *	797	3610	517	195	764
7440-38-2	Arsenic	150	ug/l		1.1				
7440-43-9	Cadmium	1.1	ug/l	0.119	ND	0.14	0.1	0.07	0.083
7440-70-2	Calcium	NS	ug/l	74200	51700	63400	67500	59100	48900
7440-50-8	Copper	4.6	ug/l	2.8	2.9	8.4	2.9	2.4	3.1
7439-89-6	Iron	300	ug/l	1470	1240	4560	653	353	633
7439-92-1	Lead	1.6	ug/l	1.1	1.2	4.4	0.883	0.88	0.942
7439-95-4	Magnesium	NS	ug/l	16700	10200	12800	13800	11700	9490
7439-96-5	Manganese	NS	ug/l	68.9	52.4	122	44.9	44.5	40.8
7439-97-6	Mercury	0.0007	ug/l	ND	ND	ND	ND	ND	ND
7440-02-0	Nickel	27	ug/l	2.9	3.6	5.1	2.5	1	2.7
7440-09-7	Potassium	NS	ug/l	3510	2450	4230	2960	2440	2630
7440-22-4	Silver	0.1	ug/l		0.484 J				
7440-23-5	Sodium	NS	ug/l	30100	20800	30600	30200	28500	21400
7440-66-6	Zinc	27	ug/l	5.9	6 J	20.6	9.4	5.6 *	ND
	METALS - Dissolved								
7429-90-5	Aluminum	100	ug/l	13.1	7.3 J	16	17.8	15.6	ND
7440-43-9	Cadmium	1.1	ug/l	ND	ND	ND	ND	ND	0.047
7440-50-8	Copper	4.6	ug/l	2.3	1.6	1.6	2	2.3	5.8
7439-92-1	Lead	1.6	ug/l	0.096	0.106 J	ND	0.169	0.3	0.163
7440-02-0	Nickel	27	ug/l	2.2	3.2	0.52	1.7	0.74	2.2
7440-66-6	Zinc	27	ug/l						
	OTHER								
ALK	Alkalinity, Total (As CaCO3)	NS	ug/l	168000	119000	114000	132000	111000	104000
16887-00-6	Chloride (As Cl)	NS	ug/l	43700	33700	43100	50400	53500	38000
DOC	Dissolved Organic Carbon	NS	ug/l						
16984-48-8	Fluoride	1,050	ug/l	128	ND	111	140	221	ND
HARD	Hardness (As CaCO3)	NS	ug/l	235000	190000	204000	211000	212000	153000
7664-41-7	Nitrogen, Ammonia (As N)		ug/l	116	39	214	104	ND	86.9
KN	Nitrogen, Kjeldahl, Total	NS	ug/l	514	530	450	440	427	378
NO3NO2N	Nitrogen, Nitrate-Nitrite	NS	ug/l	1050	494	638	763	656	796
14797-55-8	Nitrogen, Nitrate (As N)	NS	ug/l	1020	494	624	753	656	796
14797-65-0	Nitrogen, Nitrite	20	ug/l	25.3	ND	13.9	ND	ND	ND
PHWATER	pH (Water)	NS	ph units	8.05	5.89	7.92	8.12	7.96	8.11
PHWATER	pH (Water)	NS	ph units	7.9		7.9	7.9	7.8	8.62
TOTPHEN	Phenolics, Total Recoverable	NS	ug/l	ND	ND	ND	ND	ND	ND
14265-44-2	Phosphate Ion	NS	ug/l		16.1				25.4
7723-14-0	Phosphorus	20 (G)	ug/l	75.6	53.1	267	41.9	43	47.6
14808-79-8	Sulfate (As SO4)	NS	ug/l	59400	57200	74700	81200	97500	62000
TDS	Total Dissolved Solids (Residue, Filterable)	NS	ug/l	404000	279000	419000	359000	362000	290000
TOC	Total Organic Carbon	NS	ug/l		3400				3050
TOC	Total Organic Carbon - Dissolved	NS	ug/l		3600				3440
TSO	Total Solids	NS	ug/l	369000	319000	288000	323000	339000	263000
TSS	Total Suspended Solids	NS	ug/l	30400	28400	113000	13200	9400	16200
TVS	Total Volatile Solids	NS	ug/l	59000	40000	42000	72000	55000	44000

Data Source:
NYSDEC Department of Water EQuIS RIBS database.

Notes:
1. Sample locations can be found on Figure 5
2. Highlighted results indicate an exceedenc of NYSDEC Class B Surface Water Standard/Guidance Value.