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SAMPLING_WORKPLAN. pdf

FLUOR DANIEL GTI

SEDIMENT SAMPLING WORK PLAN
FORMER MOBIL PLANT
MACEDON, NEW YORK

Fluor Daniel GTI Project: 105794

July 17, 1998

Submitted To:

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1.0 INTRODUCTION

1.1 Background

Mobil Chemical Company (Mobil) formerly owned and operated the current Tenneco Packaging Plant (Tenneco) which is located in the Town of Macedon, New York (**Figure 1**). On October 31, 1996, Tenneco's environmental consultant performed a sediment sampling investigation in the Erie Canal adjacent to the plant. Tenneco's consultant analyzed these samples for volatile organic compounds (VOCs), semivolatile organic compounds (SVOCs), and RCRA inorganics/metals. The following **Table 1** presents the analytical results from Tenneco's October 1996 sediment sampling event for specific analytes.

Table 1

Analyte	MA-11 6 (adjacent to Outfall ~~#7~~)	MA-12 3 4 5 (adjacent to Outfall ~~#8~~)	MA-13 2 (Adjacent to Outfalls ~~3 4 &5~~)
Arsenic	ND (>1.23)	2.26	4.18
Barium	35.5	30.2	89.2
Cadmium	ND (<0.613)	1.56	ND(<0.929)
Chromium	7.97	200	24.7
Lead	6.53	991	59.7
Mercury	ND (<0.186)	0.177	0.699
Selenium	1.99	1.26	4.29
Silver	ND (<1.23)	ND (<1.14)	ND(<1.86)
measurements in ug/g or ppm			

Organic compounds were also detected in the stream sediments during the 1996 sampling event. Acetone was found in sample MA-13 at a concentration of .061 ppm, while several SVOCs were detected in the direct analysis of sample MA-12 (benzo(b)flouranthene - .400 ppm; bis(2-ethylhexyl)phthalate - 1.80 ppm; fluoranthene - 0.59 ppm; and pyrene - 0.59 ppm). This isolated occurrence of acetone can be dismissed as likely being attributable to laboratory error. The other detected concentrations of SVOCs are all below recommended cleanup objectives as provided in NYSDEC Technical and Administrative Guidance Memorandum HWR-94-4046, January 24, 1994. Further, due to the relative insolubility of the SVOCs, their effects on the quality of the pore space water in the canal sediments is assumed to be minimal. Therefore, based on the physical properties of the SVOCs encountered in the sediment samples and the

low observed total concentrations of the compounds on the sediment, no volatile organic compound or SVOC analyses are recommended for the proposed sampling plan.

This document (*Sediment Sampling Work Plan*, SSWP) contains a proposed scope for additional sediment sampling within the Erie Canal. The purpose of the additional sediment analyses is to further delineate the horizontal and vertical extent of elevated concentrations of specific inorganic compounds within the Erie Canal sediments.

1.2 Site Location, Description and History of Operation

The former Mobil facility is located in the Town of Macedon, New York (**Figure 2**). The former Mobil facility borders the Erie Canal, located adjacent to the northern boundary of the property. Historically Mobil and presently Tenneco plant operations consisted of plastic sheet manufacturing.

2.0 WORK PLAN OVERVIEW

This document identifies the resources and procedures to be employed to obtain data of sufficient quality and quantity to support the project objectives, and to ensure that work is completed in a manner protective of sampling personnel, plant employees, and the general public. The resources to be assigned to this project are identified in this section. Project-specific sampling and safety planning elements are described elsewhere in this document.

2.1 Project Organization

The sampling and investigation of the Erie Canal immediately adjacent to the plant will be completed under the direction of Mobil and Tenneco personnel by Fluor Daniel GTI, Inc. (Fluor Daniel GTI) and its subcontractors, if necessary. A listing of key project personnel and their roles is presented below:

- Mobil Representative: Greg Hill
- Tenneco Representative: Dick St. James
- Fluor Daniel GTI Representative: Thomas D. Antonoff
- Analytical Laboratory: Lancaster Laboratories

2.2 Project Objectives

The purpose of this additional sediment sampling investigation is to confirm data collected in October 1996 and to delineate the extent of elevated concentrations of specific inorganic compounds in sediments within the Erie Canal. The data generated during the project must be of sufficient quality to determine if concentrations of inorganics in canal sediments are representative of a greater linear extent in the canal. Field and laboratory procedures are described in the following sections of the report to ensure that the data collected during the project is consistent with these objectives.

3.0 SAMPLING PLAN

3.1 Sampling Collection and Analysis Procedures

3.1.1 Sediment Borings

Sediment boring locations were selected to confirm levels of inorganics in canal sediments (**Figure 2**). The locations of the borings were selected to meet the project objectives listed in a previous section of this document. The rationale for boring locations are as follows:

Boring Number	Rationale
B-2 through B-10	Staggered 50 foot linear grid to delineate horizontal and vertical extent of potential elevated inorganic concentrations.
B-1 and B-11	One up and down canal flow sample location to confirm the potential inorganics impact to sediment away from the initially metal detections recorded during the October 1997 investigation (MA-12 and MA13).

The sediment sampling rationale discussed above is subject to change based on actual canal dimensions and sediment presence at the time of sampling.

At each boring location a manual sampling device (stainless steel hand auger or equivalent) will be advanced. This device was selected due to the access restrictions posed by the work area and the shallow sample collection intervals desired. Sediment samples will be retrieved at the surface and 2 to 3 feet below the surface. Sampling procedures are described in detail in **Appendix A**. The sampling program will be executed in late-fall or winter when the New York State Thruway Authority/Canal Corporation (NYSTA/CC) drains the canal section. Mobil will be responsible for gaining access on Tenneco and NYSTA/CC property.

Sediment samples will be immediately transferred to laboratory supplied containers (generally glass bottles with septa lids). Analytical procedures are further described in a following section of the work plan.

3.1.2 Field and Laboratory Analytical Procedures

Field and laboratory analyses will be performed in a manner consistent with project data quality objectives, as displayed below. This section summarizes the field and laboratory analyses to be completed for the project.

Analytical Parameter	Method Reference	Data Objective
Inorganics/Metals	RCRA 8 Short List	Confirm presence and concentrations of these substances in canal sediments.

One shallow (0 feet/surface to 6 inches) and one deeper (2 feet to 3 feet) sediment samples will be collected from each of the eleven sediment borings (total of 22 samples). These vertical sample intervals were chosen to delineate the surficial and slightly deeper sediment quality in the canal.

Lancaster Laboratories is a New York State Department of Health (NYSDOH) and NYSDEC approved laboratory and will be used by Fluor Daniel GTI on this project.

Each sample submitted to the laboratory will be analyzed for eight RCRA-list inorganics. This method was selected to get the most accurate representation and confirmation of each sampling point. Method detection limit selection is based on the real assessment and analytical characterization data quality objectives. The method selected specifies the frequency and acceptance criteria for all associated quality control samples.

3.1.3 Decontamination Procedures

Sampling equipment (stainless steel hand augers, stainless steel bowls, trowels, etc.) used during the project will be decontaminated using multiple scrubs/rinses with approved cleaning agents and deionized water (**Appendix B**). When necessary disposable items (gloves, Tyvek suits, etc.) will be used.

3.2 Quality Control/Quality Assurance

3.2.1 Field Custody

A sample is the physical evidence collected from the site on the environment. An important part of Fluor Daniel GTI's investigation is the control and tracking of the collected evidence. This includes the ability to trace the possession and handling of samples from the time of collection through analysis and final disposition. This documentation of the history of the sample is referred to as the chain-of-custody. All field personnel must keep detailed records of all site activities and review all site notes prior to leaving the site. Fluor Daniel GTI will maintain strict control over possession of the samples by the following procedures designed to ensure the following:

- Integrity of all sample containers to be used for the sampling tasks to be conducted.
- Establishing and maintaining the record of custody.

- Ensuring that each sample is protected and preserved properly during shipment.
- Checking laboratory handling procedures and samples information systems.

Detailed custody and handling procedures are listed in **Appendix C**.

3.2.2 Field Quality Control Checks

The intent of the internal quality control program is to detect potential problems at the source and if necessary, trace the sample's analytical pathways for introduction of contamination. The quality control data generated in the field will be used to monitor sampling technique reproducibility and cleanliness. Quality control data generated by the laboratory will not only monitor reproducibility (precision) in laboratory methods and cleanliness, but accuracy in analyzed samples submitted for analysis.

The field quality control checks monitor the data quality as it is affected by field procedures and conditions. The degree of effort (number of check samples per total samples taken) is stated in this section for each category. The acceptability criteria are outlined in **Appendix D**. All field quality control samples are submitted blind to the laboratory.

The function of each quality control sample is described as follows:

Rinsate blank:

A sample of rinse water from final decontamination of sampling equipment (stainless steel tools, etc) will be collected and forwarded to the laboratory for analyses. This sample will provide a measure of the degree of sampling equipment decontamination and possible cross-contamination between locations. One rinsate blank will be submitted for RCRA inorganics analyses.

Duplicate:

Blind field duplicates (as opposed to duplicate containers full of sample intended as backup) are sequential or collocated grab samples collected to monitor field precision (actually entire measurement system precision). One duplicate will be taken and submitted per matrix type.

3.2.3 Laboratory Quality Control

Quality control data generated by the laboratory will not only monitor reproducibility (precision) in laboratory methods and cleanliness, but accuracy in analyzed samples submitted for analysis.

The internal quality control checks to be routinely implemented by the laboratory include the replicates, matrix-spiked samples, matrix spike duplicates, surrogate spikes, and method blanks.

3.3 Data Reduction and Reporting

3.3.1 Field Data Collection and Reduction

Fluor Daniel GTI field personnel will log all field measurements, observations, and field instrument calibrations in bound, waterproof field notebooks. Notebook entries will be dated, legible, and contain accurate and inclusive documentation of an individual's project activities and all other pertinent information. Each individual making an entry into the field notebook will date and sign their entry.

It is anticipated that the data reduction for this investigation will be minimal and will consist primarily of tabulating analytical results.

3.3.2 Laboratory Data Collection and Reduction

The data reduction scheme used in the laboratory for each of the measurement parameters, including the formulas used for calculating concentrations for sediments, will be that stated in the standard operating procedure for the analytical method used. All analyses will utilize a bound notebook into which will be recorded the following items, at a minimum:

- analyst,
- date,
- sample number (laboratory #), and
- analysis set-up conditions, e.g., dilutions, auto-sampler position number, or other instrument specifics not covered by an SOP.

For instrumental analysis, this analysis notebook will be instrument-specific and referred to as an instrument log. For other types of analysis, this analysis logbook will also contain all raw data collected by the analyst. The metal analyses involves electronic data handling.

For all analyses, the data will not be blank-corrected and will be flagged if blanks do not meet acceptability criteria. Additionally, any result that is less than ten times the value of the blank will be considered suspect.

Chemists and technicians will be responsible for the measurement/analysis of each specified laboratory quality control parameter, and for calculations associated with the determination of parameter concentrations. The chemists and their supervisors will review analytical results, applying calculation checks on a minimum of 10 percent of the results on each report. These individuals will determine whether or not the results are acceptable, though the ultimate authority to determine acceptability will be with the laboratory's Director of Quality Assurance. The laboratory section manager will be responsible for the final review of all data and for the proofing of reports prior to submittal of the reports to Fluor Daniel GTI.

Final reports will be typed from the in-process report forms approved by the supervisor after the review of all supporting data. The in-process forms along with all hard copy data output and other case records will be stored together in a single secure location indexed by project number for at least five years. This location will be in Fluor Daniel GTI's Schenectady, New York office.

All data will be cross-checked for correctness by GTEL's QA Director for reported values, detection limits, percent moisture and dilution factors (if applicable), after data has been reduced and transcribed into the final reporting format. The procedure to be used in the final cross-check of the data in the final report format will be as follows:

- obtain the laboratory data or field notebooks and final reports
- compare the sample numbers and description
- compare the sample date and time (if provided)
- compare all positive results with those reported in the laboratory report, and
- laboratory data will be checked for corrections with mathematical calculations.

3.3.3 Reporting of Data and Outliers

The laboratory will report metal data as delineated in the RCRA metal (8) Method. This data package will include:

- A Blank report
- Surrogate recovery data
- MS/MSD/Duplicate performance
- Laboratory Control Standard report
- A Nonconformance summary.

Outliers will be identified at the data validation stage by the Project Manager. Outliers are unusually large or unusually small values in a population of observations. It is necessary to eliminate outliers during QC data review because of the skewing effect which can destroy the effectiveness of the QC data.

When any particular value is suspected to be an outlier, the following steps will be taken:

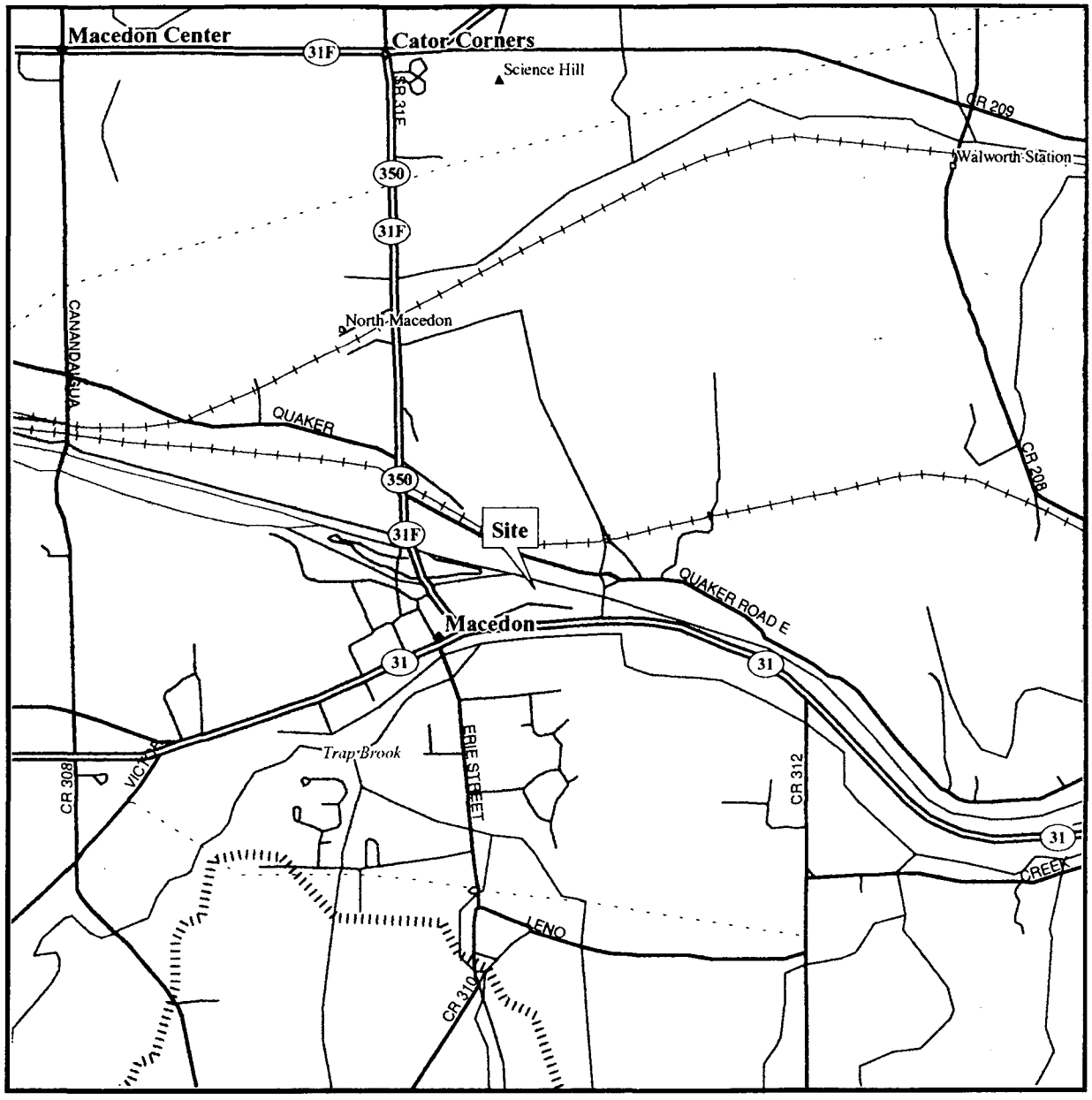
- Other data from the same sample will be checked to see if they are also anomalous.
- The Project Manager will interrogate any individuals involved in generating the anomalous value. This will include questioning the field crew and the analyst(s).
- If samplers demonstrate standard competency in the sampling procedure used at the time the sample with the anomalous value was obtained, then sampling error will be dismissed as a possible cause of the outlier.
- The analyst(s) will be asked to examine his notes and calculations and, if possible, to rerun the sample for the specific parameter in question. The sample will be rerun even if the holding time has been exceeded, but the rerun value will be used for purposes of comparison only.

All analytical data (field and laboratory) will then be summarized in the Report with appropriate qualifications as indicated by review of field and laboratory performance. Unusable data will be identified by the process described above.

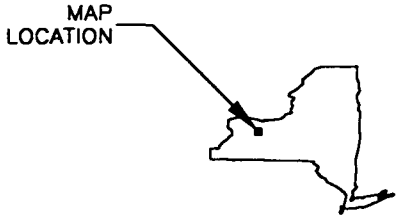
Analytical data will be compared to NYSDEC Guidance Values for sediment, so that recommendations may be submitted for monitoring or corrective action.

4.0 HEALTH AND SAFETY PLANNING

A site-specific Health and Safety Plan (HSP) has been prepared which establishes policies and procedures to protect workers, Tenneco and potentially Mobil employees, and the general public from potential hazards associated with the sampling work in the old canal area. The HSP has been prepared in accordance with the Occupational Safety and Health Administration (OSHA) "Hazardous Waste Operations and Emergency Responses" regulations cited in 29 CFR 1910.120. The HSP will be reviewed and signed by all personnel who are involved or may be observing in the sampling activities. A copy of the HSP will remain on site during the field activities.



MAP FROM DELORME'S MAP EXPERT, FREEPORT, MAINE



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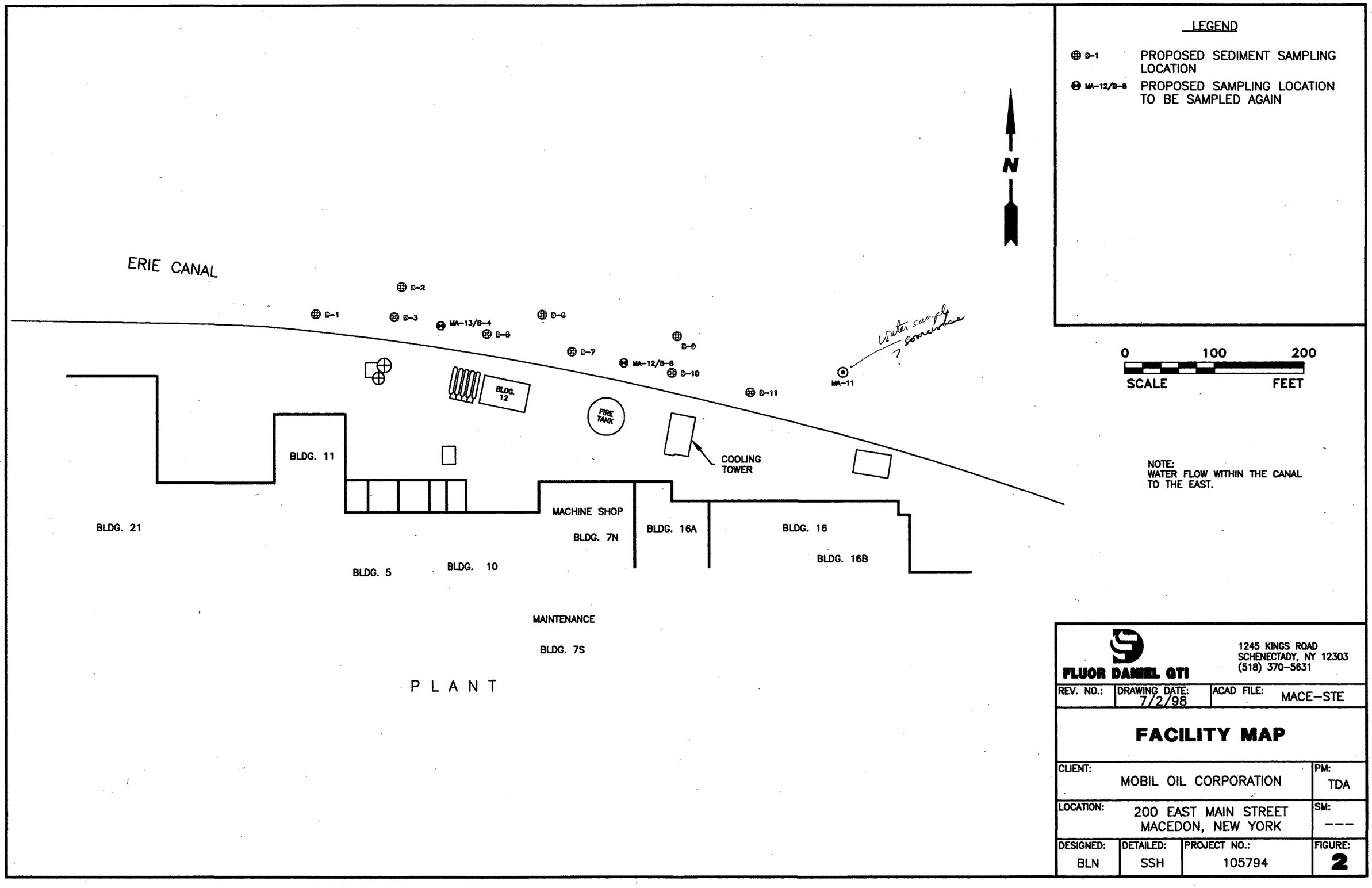
		CLIENT: MOBIL OIL CORPORATION	DRAWING DATE: 7/2/98
		LOCATION: 200 EAST MAIN STREET MACEDON, NEW YORK	FIGURE: 1



FLUOR DANIEL GTI
1245 KINGS ROAD
SCHENECTADY, NY 12303
(518) 370-5831

REV. NO.:	DRAWING DATE:	ACAD FILE:
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FACILITY MAP

CLIENT:	PM:
MOBIL OIL CORPORATION	TDA
LOCATION: 200 EAST MAIN STREET MACEDON, NEW YORK	SM: ---

DESIGNED:	DETAILED:	PROJECT NO.:	FIGURE:
BLN	SSH	105794	2

APPENDIX A

SAMPLING PROCEDURES

APPENDIX A-1: SEDIMENT SAMPLING

Work steps to be followed while performing the sampling of sediment are as follows:

1. Obtain appropriate sampling containers.

2. Determine the appropriate level of Health and Safety according to the approved Health and Safety Plan.

3. Decontaminate the stainless steel tools (hand augers, bowls, trowel, etc.).

4. Put on disposable latex sampling gloves.

5. If specified in the Sampling Plan, sediment samples for inorganics/metals may be composited at the locations and depth intervals specified in the plan.

6. Place composited sediment in the appropriate sampling containers (see Table A-1).

7. Fill out sampling labels with the appropriate information, affix to the sample container and place the jar in the iced down cooler. Cooler temperature must not exceed 4°C.

8. Repeat steps 1-7 until all locations have been sampled.

9. Fill out chain-of-custody form. Be sure to indicate sample id, matrix type, preservative, date and time of sample collection, and analysis method. Courier name and air bill number must also be included under the remarks section.

10. Obtain the appropriate blanks and duplicates at the frequency specified in the Sampling Plan.

11. Enter into the bound log book, at a minimum, the following:
    - location where the sample was obtained
    - date and time of sample collection
    - depths of sample collected
    - all pertinent information concerning the sediment conditions
    - weather conditions during the operation
    - site name
    - designation of the sample as a grab or composite
    - type of analysis to be performed

12. indicate sampling location on the site map.

13. Once all samples have been collected, affix all samples with custody seals and pack the sample container in a bubble pack. Place container in the cooler and add a sufficient amount of ice to maintain cooler temperature below 4°C. Affix a custody seal to the cooler and seal with packing tape. Affix courier label and ship samples to approved laboratory. All samples must be shipped to the laboratory within 24 hours of their collection.

14. Check with the laboratory to insure that the samples were received.

TABLE A-1
RECOMMENDED CONTAINERS, PRESERVATION, STORAGE AND HOLDING TIMES FOR SAMPLES

Parameter	Analysis Method	Matrix	Sample Container	Volume	Number of Containers	Preservation	Holding Time
Inorganics/ Metals	RCRA Short List (8 metals)	Sed.	G (Acid Washed)	8 oz jar	1	None	6 Months

[1] 7 days from sampling, 40 days from extraction date for analysis of extract.

APPENDIX B

DECONTAMINATION PROCEDURES

APPENDIX B-1: DECONTAMINATION PROCEDURES

Equipment used for sampling purposes will be decontaminated according to the following procedures:

1. wash and scrub with a Liquinox® and water solution;
2. tap water rinse;
3. rinse with 1% $HNO0_3$ ultrapure (10% for stainless steel tools);
4. tap water rinse;
5. thoroughly rinse with demonstrated analyte free water. The volume of water during this rinse must be at least five times the volume of the solvents used;
6. air dry; and
7. wrap in aluminum foil for transport.
8. Used solvents and water draining from decontamination procedures will be collected, containerized and disposed of properly.

APPENDIX C

FIELD CUSTODY PROCEDURES

APPENDIX C-1: FIELD CUSTODY PROCEDURES

The following procedures will be employed to ensure proper handling of the samples:

1. Sample bottles will be shipped by the laboratory.

2. The Staff Geologist will check the integrity of the bottles and assured that the proper bottles had been assigned to the task to be conducted.

3. The Staff Geologist will also check to make sure that all documentation concerning the decontamination of the sample containers is in accordance with the procedures outlined described as follows in this document.

4. Immediately after sample collection, each sample bottle will be sealed with an individual custody seal. The samples will then placed into an insulated cooler for shipment to the laboratory.

5. Groundwater Technology field chain-of-custody records will be completed at the time of sample collection will be placed inside the cooler in a zip-lock bag.

6. The cooler will then be sealed for shipment to the laboratory.

7. The samples will be properly relinquished on the field chain-of-custody record by the sampling team.

8. Each cooler will contain sufficient ice and/or ice packs to insure proper temperature is maintained, and will be packed in a manner to prevent damage to sample containers.

9. All samples will be shipped to the laboratory within 24 hours after they were collected via an overnight courier.

10. Upon receipt of samples, the Sample Custodian will remove the chain-of-custody from the sealed cooler and sign the shipping report accompanying each sample and records the date and time.

11. Samples received will be verified to match those listed on the chain-of-custody, and the custody seals will be inspected.

12. A copy of this record will be included in each laboratory report.

13. The samples will then be secured under lock and key in refrigerated storage.

14. After each extraction or analysis of a sample fraction, the custody record will be signed by the analyst, indicating the date and time of completion, which samples were used, and to which location they were returned.

15. The laboratory will maintain sample information records in a LIMS (Laboratory Information Management System) computer system. The sample receipt and data entry activity (called "login") is reflected in a daily report, which is immediately entered into the master logbook. This chronological file contains all samples.

16. Each laboratory manager gets a report of pertinent analyses not yet completed including the daily update from the login activity. The tracking continues until the LIMS registers the completion of the report and invoice mailing.

APPENDIX D

FIELD QUALITY CONTROL CHECKS

TABLE D-1 OBJECTIVES FOR FIELD DUPLICATE PRECISION AND FIELD QUALITY CONTROL FREQUENCY			
Parameter	**Water: Duplicate Precision (%RPD)**	**Sediment: Duplicate Precision (%RPD)**	**Quality Control Frequency (All Parameters)**
Inorganics	50 %	100%	1 Rinsate Blank 1 Matrix Spike/matrix Spike Duplicates 1 Field Duplicate