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September 19, 2005

VIA ELECTRONIC & US MAIL

Ms. Alice Yeh
Remedial Project Manager
US Environmental Protection Agency Region II (USEPA)
290 Broadway
New York, New York 10007-1866

Mr. Scott Nicholson
New York Distgrict
US Army Corps of Engineers (USACE)
26 Federal Plaza
CENAN-PPH
New York, New York 10278

Re: Passaic River Estuary Management Information System (PREmis) Database Questions

Dear Ms. Yeh and Mr. Nicholson:

On behalf of the Lower Passaic River Study Area Cooperating Parties Group (CPG), de maximis, inc. is writing to resolve two questions arising from a review of the PREmis database that is available on the ourPassaic.org web site maintained by Malcolm Pirnie, Inc (MPI).

Sample Location Re-Designation in the PREmis database

The CPG's review of the PREmis database indicates that sampling locations that were part of the 6-mile Passaic River Study Area (PRSA) Remedial Investigation conducted by Tierra Solutions (Tierra) in the 1990s appear to have been re-designated with new sampling location identifiers in the PREmis database (Table 1, Figures 1 & 2 – please note both the identical Cs-137 profiles and collection dates for PREmis Location 222 and PRSA Location 235). Re-designated PREmis locations are linked to the NBSA Sample Location ID (Table 1). The CPG's understanding is that these data were also made available via the Newark Bay Study Area Remedial Investigation Work Plan database submitted by Tierra in June 2004. This has caused some confusion because MPI's re-designation, in many instances, used location identifiers that were previously

used by Tierra in designating locations during the PRSA investigation. By way of example;

> *Tierra Location 235 was a boring that was advanced in the Harrison Reach of the Lower Passaic River on May 18, 1995 to a depth of approximately 7 ft. MPI has re-designated this location as PREmis location 222. However, Tierra advanced a boring in Harrison Reach on April 27,1995 to a depth of approximately 13.5 ft on April 27, 1995 which was designated as Tierra Location 222.*

This is but one of numerous instances where this type of re-designation may have occurred in the PREmis database representing Passaic River, Newark Bay, and connected waterways.

The CPG has reviewed the following project documents to find documentation of this re-designation, including an explanation or the justification for such changes, or a table that would lay out the re-designation of the historic data (i.e., some sort of cross-reference table):

- LPRRP Work Plan (MPI August 2005; specifically Section 6.0 Data Presentation)
- Technical Memorandum – Preliminary Geochemical Review (MPI August 2005; specifically Section 2.1 - Available Sediment Data)
- ourPassaic.org web site – Contaminant Page (maintained by MPI)
- PREmis database (PREmisDownload.mdb)

The CPG can not find any discussion or reference in these documents to re-designating PRSA sampling locations in the PREmis data base from their original designations. This appears to be contrary to standard practices of data management as the CPG members understand them. The CPG questions the wisdom of re-designating sample locations except in instances where there may be conflicts with other historic data and then it should include the original identifier. Further, to re-designate using location identifiers that have been previously utilized in the same or overlapping study area(s) is adding a level of complexity and confusion that will only create questions and misunderstandings. The CPG acknowledges MPI's statement in Section 2.1 (page 3, para 3) of the Preliminary Geochemical Evaluation:

> *"A direct comparison of the Newark Bay database and PREmis database yielded several discrepancies between the data sets whose origin are still being investigated. Reconciliation of the database was beyond the scope of this effort. As a result, Malcolm Pirnie relied exclusively on the PREmis database to avoid duplicates."*

The acknowledgement by MPI that it has identified a discrepancy in a project database for which it is responsible for maintaining, but has taken no steps to rectify, is troublesome. Appropriate database management requires that MPI investigate discrepancies and not simply assume that the PREmis database was authoritative in this instance.

Finally, for MPI to execute this re-designation without memorializing it in the cited public documents indicates a significant lack of care on their part and warrants a severe admonishment by the USEPA Region II and USACE New York District.

Geographic Coordinate Discrepancy Between PREmis and NBSA databases

The CPG have identified a second significant issue regarding MPI's PREmis database. When the CPG compares sampling locations within the Passaic River, Newark Bay, and connected waterways between the NBSA RIWP database and the PREmis database, the CPG finds that many of the re-designated PREmis locations are offset approximately 100-120 ft west-southwest of the NBSA database locations (Table 1; Figures 3 & 4). This difference will have little bearing on the analyses of contaminant distribution within the LPR river sediments that has been conducted. However, there may be a serious impact on the both high resolution and low resolution coring programs, specifically in the portions of the LPRRP study where confirmation borings of the historic PRSA borings are planned. . This may result in MPI and its contractors not coring in the desired proximity to Tierra's historic locations that they intended. It is the CPG's understanding that MPI is relying on the radiochemistry data collected from Tierra's historic borings in evaluating and selecting locations for the current fieldwork (Figures 1 and 2). Thus, PREmis locations that are not consistent with the NBSA database locations may result in borings that are not advanced in the correct location. Due to the heterogeneity of the contaminant patterns in the Passaic River, the current field investigation may not, therefore provide the anticipated information

Proposed Response Actions

The CPG requests an immediate opportunity for its representatives to meet and discuss these questions with the EPA RPM and USACE Project Manager.

The CPG requests that USEPA Region II and USACE NY District immediately investigate and review these questions regarding the PREmis database situation. Further, this investigation should be conducted by agency personnel with database and GIS expertise who can objectively evaluate and resolve the questions that the CPG has raised. It would be inappropriate for MPI, Earthtech/TAMS, Hydroqual, or Battelle to perform such an investigation. Based on a limited CPG review, the data analyses and evaluations appear to have been done correctly in LPRRP documents with the possible exception of sample location selection for the high resolution boring program. It is not clear to the CPG, however, if the geotechnical boring program was affected by the geographic coordinate discrepancy since the CPG has not been provided with any data resulting from this program. Other LPRRP studies will need to be evaluated as to whether they have been impacted, such as the Pathways Analysis/Risk Assessments, Ecological Restoration, and the Dredging Pilot.

An immediate review of the selected high resolution boring locations within the PRSA portion of the LPRRP study area should be conducted. The CPG requests that our representatives be present and included in this review.

Please contact me at your earliest opportunity to discuss these questions at 908-735-9315 or otto@demaximis.com.

Very Truly Yours,
de maximis, inc.

Willard F. Potter
CPG Technical Coordinator

cc:
Lisa Baron, NJDOT/OMR
William Hyatt, Esq. CPG Coordinating Counsel
CPG Technical Committee
J. W. Porter, CPG Representative, Senior Coordinating Committee

Table 1
Figures 1-4
Attachments 1- 3

TABLE

Table 1
PREmis Database Discrepancies

PREmis Location ID	PREmis Northing	PREmis Easting	Sample ID	Date Collected
222	591038.00000	694177.00000	23541A	5/18/1995
NBSA Location ID	**NBSA Northing**	**NBSA Easting**	**Sample ID**	**Date Collected**
235	591150.80773	694213.30309	23541A	5/18/1995
Note 1	**Note 2**		**Note 3**	

Notes:
1.Redesignated PREmis ID is the same as NBSA ID of another boring location in Harrison Reach
2.State Plane Coordinates of Redesignated PREmis locations consistently plot ~ 120 ft west-southwest of NBSA locations
3.Redesignated PREmis Location ID 222 uses NBSA Sample ID for NBSA Location 235; Collection dates are identical

FIGURES

Figure 1

Core 235A 05/18/1995
Cs-137 Chronology

Cs-137	Depth
0.472	0.05
0.501	0.75
0.414	1.45
0.484	2.05
0.661	2.65
1.05	3.35
1.92	3.95
3.74	4.55
0.478	5.25
0.485	5.85
< 0.09	6.55
< 0.08	7.05

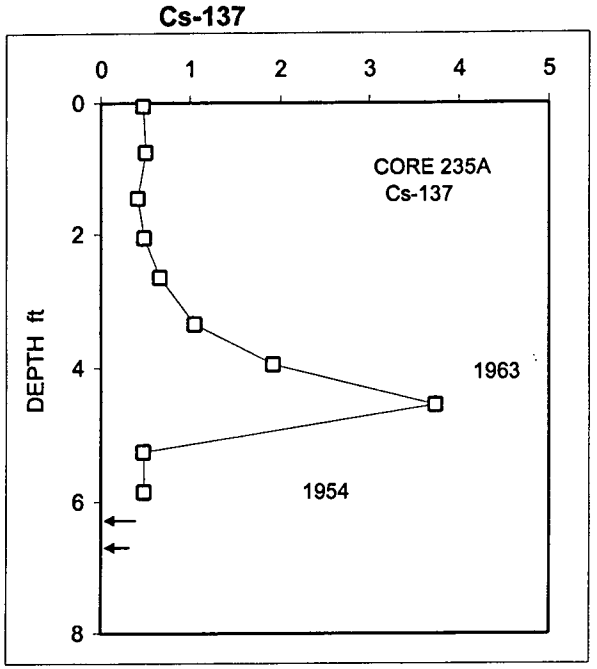
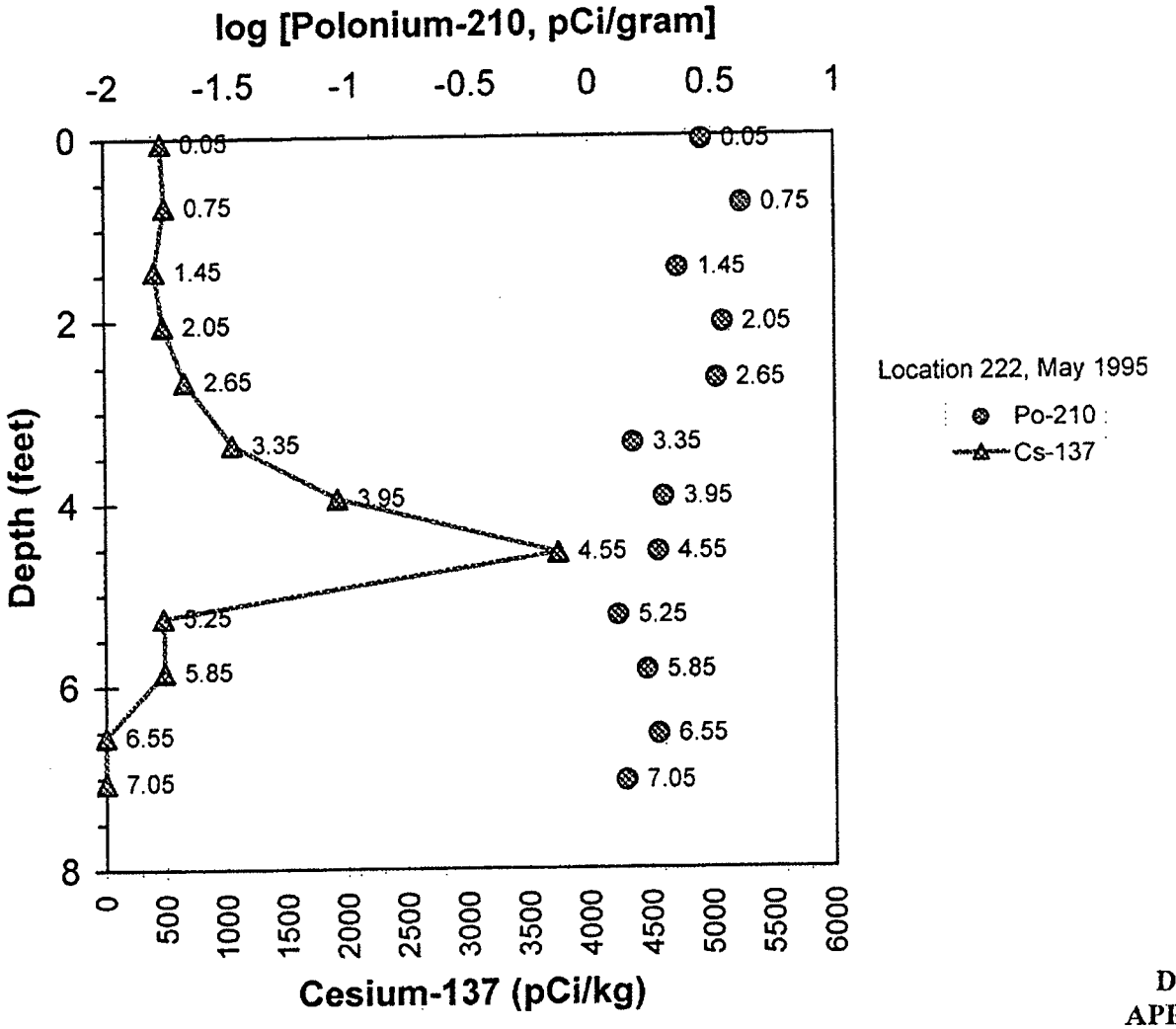
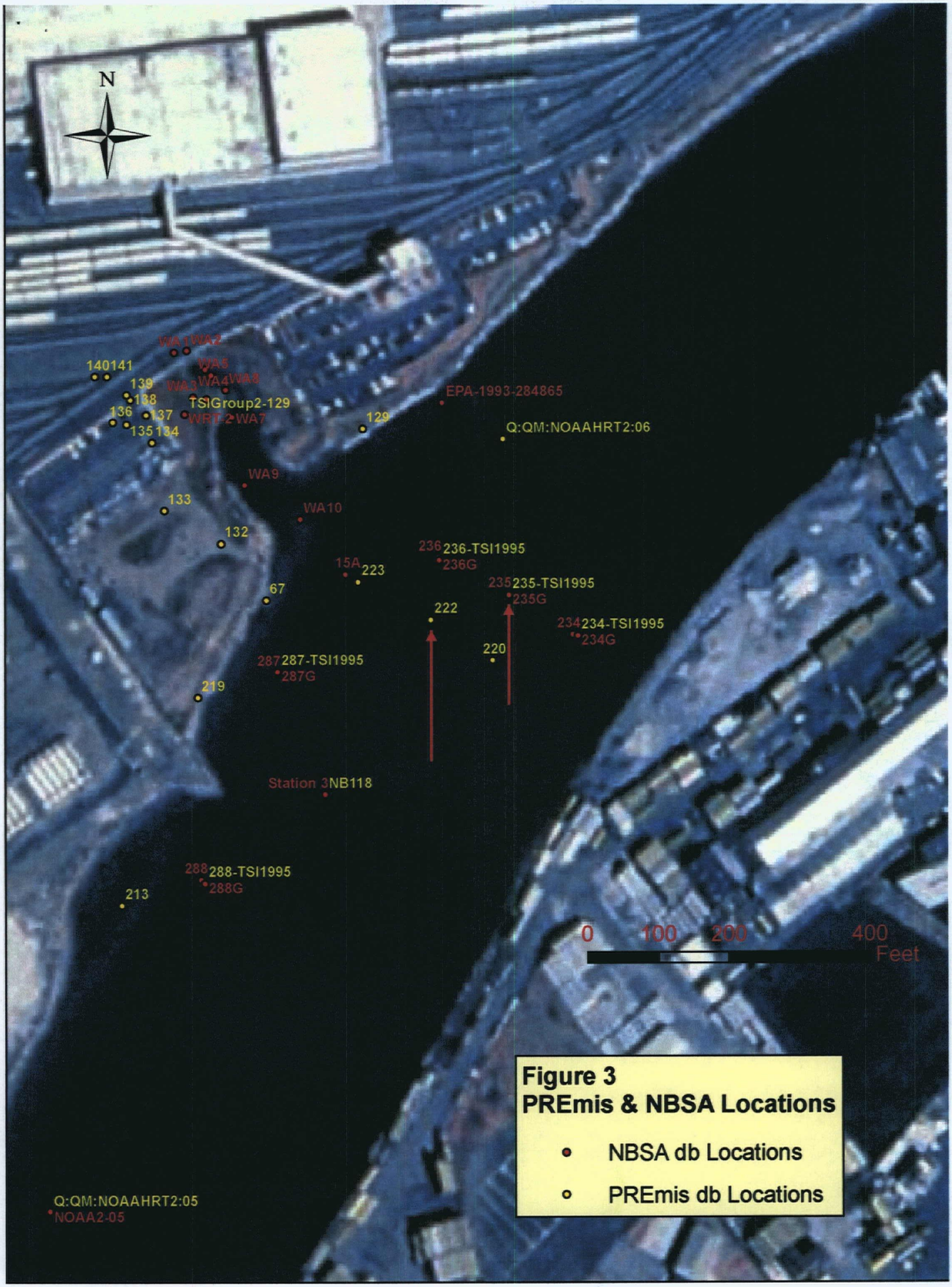


Figure 2



DRAFT
APRIL 2005

MALCOLM PIRNIE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WA5
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WA9
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234G
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100
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NOAA2-05
Figure 3
PREmis & NBSA Locations
NBSA db Locations
PREmis db Locations

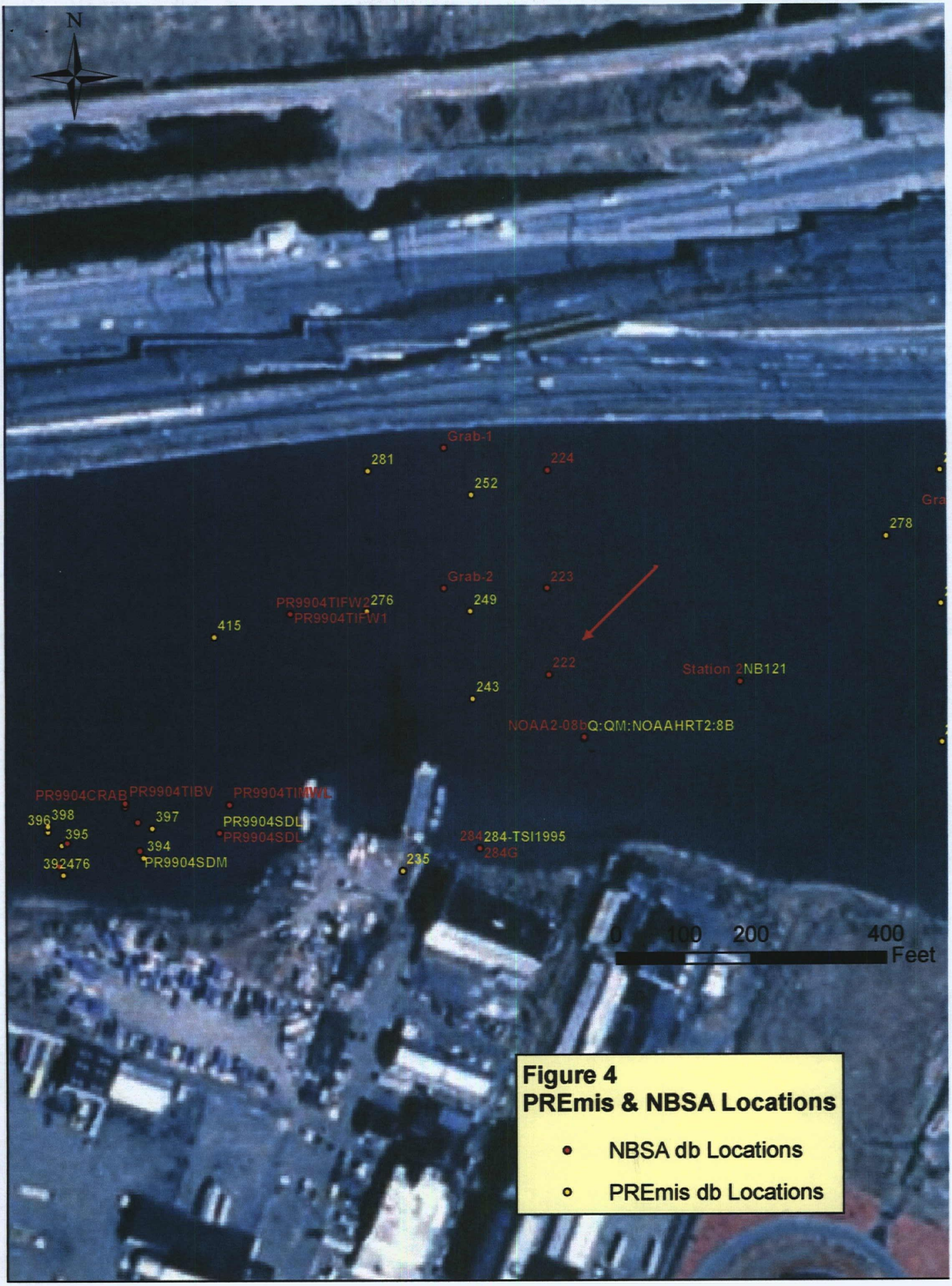

Figure 4
PREmis & NBSA Locations

- NBSA db Locations
- PREmis db Locations

ATTACHMENTS

ATTACHMENT 1

SECTION 2.1 - TECHNICAL MEMORANDUM
PRELIMINARY GEOCHEMICAL EVALUATION
AUGUST 2005

2.0 METHODOLOGY

2.1 AVAILABLE SEDIMENT DATA

Historical sediment data for the Lower Passaic River are available from two Microsoft ® Access databases: the Passaic River Estuary Management Information System (PREmis) database (Malcolm Pirnie, 2005) and the database compiled by Tierra Solutions, Inc. (TSI) to supplement the *Newark Bay Study Area Remedial Investigation Work Plan* (TSI, 2004).

The PREmis database, which was created for the Lower Passaic River Restoration Project, has electronic data from 60 studies that were funded through various federal, state, and private programs (Malcolm Pirnie, 2005). Thirty-eight of these 60 studies contain sediment data that were collected from 1990 to 2000. Table 1A provides a brief overview of the available sediment data on PREmis, which is organized by study name, and marks the sampling year, depth of sampling, number of samples, and classes of chemicals that were analyzed. Only two chemical classes were subdivided: the polychlorinated biphenyl (PCBs) class, which was divided into Aroclors, congeners, and total PCB, and the PAH class, which was subdivided from other semi-volatile organic compounds (SVOCs). Note that the number of locations per water body has not been tallied on these tables, and that total PCBs were not analyzed as part of this geochemical review. The PREmis data are available to the public via the web site www.ourPassaic.org.

The Newark Bay database (TSI, 2004) was created as part of the historical review of the Newark Bay remedial investigation. The objective of the historical review was to collect data pertaining to the Lower Passaic River, Newark Bay, Hackensack River, Arthur Kill, and Kill van Kull. Relevant references were compiled from searching several literary databases, and the post-1990 studies were added to the Newark Bay database (TSI, 2004). Instead of researching the Lower Passaic River and its tributaries, the Newark Bay database incorporates part of the PREmis database. Overall, the Newark Bay database contains 32 studies, but 20 of these studies are duplicates of data on PREmis. Of the remaining 12 unique studies identified by TSI, only 7 studies have sediment information. Table 1B is similar to Table 1A and provides a brief overview of the available sediment data on the Newark Bay database. A direct comparison of the Newark Bay database and PREmis database yielded several discrepancies between the data sets whose origin is still being investigated. Reconciliation of the databases was beyond the scope of this effort. As a result, Malcolm Pirnie relied exclusively on the PREmis database to avoid duplicates.

Note that both the PREmis database and the Newark Bay database contain non-sediment data (Appendix A), such as elutriate data, water data, tissue data, and soil data; however, these data are limited and do not cover a large temporal and spatial extent. For example, the PREmis database contains 12 samples of dissolved contaminants collected from 1993 to 1996, and Newark Bay database contains only 23 dissolved phase samples collected

from 1997 to 1999. Hence, non-sediment data were not reviewed as part of this initial geochemical analysis, but will be analyzed as the project progresses.

2.2 DATABASE QUERIES AND DOWNCORE PROFILES

All queries were restricted to the PREmis database. The data sources for each analyte queried are provided in Table 2. As an initial examination of the data, queries were restricted to certain time periods (see chemical-specific sections below). Note that further work is warranted to complete the geochemical analysis of historical data.

The sediment concentrations are reported with the units of µg/kg, or parts per billion (ppb), unless otherwise noted. Sediment concentrations that were nondetected (denoted with a laboratory qualifier of U) were set equal to zero in these initial queries[1]. Since different sampling programs segmented their sediment cores differently, the depth of surficial sediment is defined as 0 to <1 foot, unless otherwise noted. For mapping purposes, sample locations were plotted (ArcGIS 8.3, ArcMap-Arc View, ESRI) directly with the x and y coordinates noted in PREmis. On these maps, some points may appear on land, as delineated by the shoreline data from New Jersey Department of Environmental Protection (NJDEP), because of tidal conditions at the time of collection, data collection methods, or coordinate resolution. For graphing purposes, sample locations were projected to the centerline to determine the nearest river mile.

Downcore sediment profiles were constructed using Microsoft ® Excel; the depth of the profile is in the units of feet. Points on the profile represent the analyte concentrations for a given core horizon; however, they are plotted as the top of the core segment (not the mid-point of the core segment) unless otherwise noted. For the 1991 and 1993 data sets, all available sediment cores that had more than 3 core segments (totaling 23 cores) were examined. The 1995 data set contained 72 cores that had more than 3 core segments. Instead of plotting all 72 sediment cores, one core per river mile was randomly selected from the data set. Note that while the points in the 1991 and 1993 profiles are connected, the core segments are discontinuous.

2.2.1 Total DDT Query

Total DDT is defined as the sum of DDT and its metabolites: 1,1-dichloro-2,2-bis-(p-chlorophenyl)ethane (DDD) and 1,1-dichloro-2,2-bis-(p-chlorophenyl)ethylene (DDE). Sediment samples that were not analyzed for all three isomers were excluded from the analysis to avoid bias-low summations. Surface concentrations (0 to <1 foot) for total DDT were compiled for three time periods 1990-1991, 1992-1993, and 1994-1995 and presented on maps. Downcore profiles were constructed to assist in the interpretation of the surface concentration data. On downcore profiles of total DDT, the ratio of DDD+DDE to total DDT was also calculated and presented. Ratios equal to 1 imply that unaltered DDT accounts for zero percent of the total DDT value. Ratios were not

[1] For the purpose of this geochemical analysis, nondetects must be assigned to a value of zero since chemical concentrations will be used in a ratio. This zero assignment will avoid a confounding of the ratio analysis from the introduction of detection level estimates that are not directly proportional to the actual concentrations.

ATTACHMENT 2

SECTION 6.0 – LPRRP WORK PLAN
AUGUST 2005

6.0 DATA PRESENTATION

6.1 PROJECT DATABASE OVERVIEW

The Passaic River Estuary Management Information System (PREmis) is an internal project website designed to collect, store, manage and report historical data, as well as data and information that will be collected during the LPRRP. PREmis also provides effective project communication and coordination among the six partner agencies and associated consultants.

A centralized, web-based portal to the various forms of electronic information collected and stored for the project has been developed. At present, PREmis provides project team members access to information on project contacts, schedules, communications, project management, historical information, planning documents, and GIS mapping and reports. Since PREmis was created in a modular format, it can be upgraded as needed as the project proceeds. Also, the project-related information that is ready for release is made available to the public through the following website interface: http://www.ourPassaic.org.

6.2 OBJECTIVES

The main objectives for PREmis are to:

- Provide a central location for project information including large volumes of electronic field data.
- Provide timely access to data and documents for project team members.
- Deliver a variety of reports in a variety of formats, from on-screen tabular web reports and downloadable data sets for off-line analysis to GIS-based visual reports.
- Maintain defensible information through security safeguards.
- Allow different levels of users to access the site through a multi-tiered security plan.
- Track data and documents through on-line validation, review, and approval processes from remote locations.
- Automate the capture of field data.

6.3 PREMIS DESCRIPTION

The system uses a combination of different technologies, including:

- MapGuide, a web-based GIS interface to display analytical and shape file data.
- ColdFusion as the main programming environment.
- Various Internet technologies to upload, download, and report information.

To facilitate communication among team members on a real-time basis, the system allows members from the consulting team operating in various offices, the six partner agencies, and field crews to enter, manage, and report data. The flowchart of how data presentation will be handled by PREmis is presented in Figure 6-1. The use of Internet technologies such as Web Servers, Web Browsers, Firewalls, and e-mail provides the type of flexibility and security needed for this system.

Users have access to the system via standard Web Browsers and log on to a private web server located in Malcolm Pirnie's White Plains, NY office. All users have separate login identifications and passwords, and have been assigned to different user access levels. All data for the system are stored in ColdFusion and are accessible through both pre-defined reports and ad-hoc query capabilities. Data download capabilities have also been added as part of the reporting area.

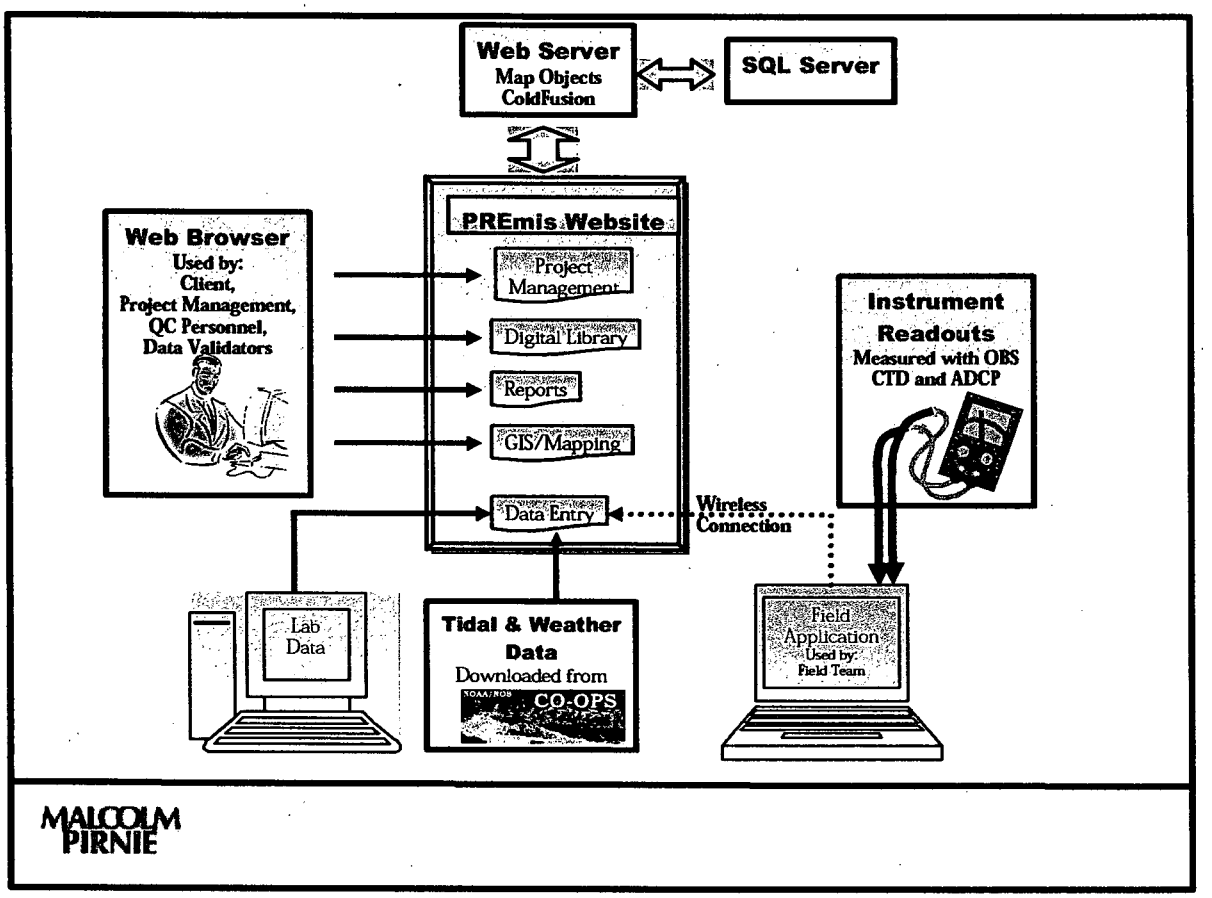

Figure 6-1: Data Presentation Flow Chart

6.4 PREMIS UTILITIES

PREmis uses the following modules for this project:

6.4.1 Management

This module includes budget tracking, scheduling, and project task tracking, as well as a platform for performing task-specific discussions. The reporting function of PREmis also assists in project management by allowing users to generate key management reports.

6.4.2 Data Storage

PREmis provides a platform for the electronic storage of documents and information. The documents are stored in the digital library and are coded with attributes that allow users to query the reports based on key words. The information is contained in a unified database that was developed to be consistent with USEPA's Multimedia Electronics Data Deliverable (MEDD) requirements. This database will be the repository for all historical data as well as data collected during on-going project activities.

The digital library also allows users to save documents and information that need to be available to authorized users in the general public. An option for marking the document as a public document is available in PREmis when storing the documents into the digital library. Once the document is marked public, it is available for viewing and downloading from the ourPassaic.org website.

6.4.3 Data Upload and Validation

The data upload function of PREmis allows users to upload data from various sources such as laboratory electronic data deliverables (EDDs) and field instrument readouts. The interactive module allows users to upload American Standard Code for Information Interchange (ASCII) files containing data directly into the website; the data are then reviewed and approved by the site quality control officer (SQO) or a designee prior to being available to the entire project team.

6.4.3.1 Field Application

The field application allows users (*i.e.*, sampling team members) to collect field information electronically instead of manually into paper-based log books during the project field investigations. The field application is able to support a variety of sampling events (*e.g.*, surface water/water column sampling, sediment sampling, and hydrodynamic monitoring) through the creation of sample-specific modules. The field application will also allow users to periodically download instrument readouts from various sampling instruments and will assist in uploading the information into the PREmis database after the data have been reviewed and approved by the SQO or a designee.

6.4.3.2 Laboratory Data Upload

The laboratory data upload section of PREmis will provide the ability to define and save EDD formats. Access to the laboratory upload section will be limited to laboratory personnel and members of the team involved with laboratory data QA/QC. The user can then select the EDD format, browse his or her computer for the EDD file, identify the file type (*e.g.*, Microsoft Excel or ASCII) and then upload to the website. Appropriate initial checks of the file for format and validation to metadata will be performed. If either of the checks fails, then the upload will be aborted. The user will be alerted as to the reason the process was aborted and resolution suggestions will be displayed.

Following these checks, the file will be copied to the digital library. The EDD will be parsed out and inserted into the PREmis database. Rows of data successfully inserted will be reported back to the user for review. Rows that are rejected will also be reported in an exception report. An e-mail will be sent to the user and the laboratory QA/QC officer with the name of the EDD and a copy of the exception report.

If a laboratory EDD containing errors is corrected and re-uploaded, only results that do not already exist in the PREmis database will be added. Therefore, unchanged results will not be updated.

6.4.3.3 Laboratory Data Validation

Laboratory data will be validated and approved via PREmis. Access to the laboratory validation section will be limited to validators and the SQO. The laboratory validation section will provide validators and the SQO the ability to pick a laboratory EDD and modify results, qualifiers, and add data validator qualifiers to indicate data usability. The validators and SQO will follow the same process. The process will involve:

- Selection of the EDD that is to be validated or approved.
- Download of that data in an Excel file to the validator's or SQO's computer.
- Upload of the modified Excel file to the website.
- Confirmation of changes on the website.
- Marking the status of the EDD.

The validators will only see EDDs that are awaiting validation, while the SQO will see a list of EDDs that have been validated and are awaiting approval, and EDDs that are awaiting validation. The user can select the EDD and download an Excel copy to his or her computer. Once the validation process is complete, the user will navigate back to the validation page and upload the modified file. The uploaded Excel file will go through checks to confirm that samples match for the selected EDD. If the integrity checks pass, then the modified results and qualifiers will be presented to the user for confirmation. Once the user confirms the changes, the information will be written to the database and audit records created to capture the original values and identify who changed the values and when. If the validator is uploading an EDD, it is marked as "Validated." If the SQO is uploading an EDD, s/he will have a choice to select "Approved" or "Rejected." Once the SQO marks an EDD as "Approved" or "Rejected," the final status of the EDD is marked as "Validated & Approved", "Not Validated & Approved," or "Rejected". Validated data that are ready for release are made available through a link to the public website http://www.ourPassaic.org.

6.4.4 Evaluation

The GIS Mapping/Map Guide and report functions of PREmis will assist the project team in assessing problems, formulating and evaluating solutions, and presenting findings. The GIS Mapping/Map Guide portion of PREmis provides a means for all project team members to easily access, display and query map and sample data stored in either ESRI shape files or the PREmis database. The report tool will assist users in querying information based on various attributes. Map Guide is also available on the public website http://www.ourPassaic.org.

With its interactive spatial query tool, GIS Mapping/Map Guide allows users to query information based on a selected area and then view related reports, documents, and data. It also gives users the ability to create custom spatial views of data and allows users to save their custom views of data to a personal library. By saving their MapGuide data views, users can simply pick a saved view from their personal list and MapGuide will automatically retrieve and display the results. In addition, users have the ability to save

their personal data views to a public list, enabling other team members to see their MapGuide results rather than re-creating them.

To assist team members in their analysis of sample data, a MapGuide interface displays various GIS data layers and sample data stored in the PREmis database. These data layers, referred to as themes, are stored in the shape files and viewed through MapGuide. Themes that may be included in PREmis include soils, vegetative cover, wetlands, topography, hydrology, tidal reach and elevations, water and sediment quality sample locations, property ownership, land use/cover, zoning, demographic data, regulatory floodplain boundaries, stream bathymetry, HTRW, and cultural sites information. At present, the interface gives users the ability to:

- Turn off and on various map themes incorporated into the shape files.
- Customize the MapGuide display of sample data results.
- Create ad-hoc queries for sample data by date, chemical class, location (*e.g.*, township, river mile, reach), sample type, depth and evaluation criteria such as those reflected in Applicable or Relevant and Appropriate Requirements (ARARs) determined for the project.
- Drill down into sample results for a particular location.
- Create and store custom MapGuide "views" by user.
- Generate tabular reports from selected data.
- Download sample data into either Microsoft Access or Excel.

ATTACHMENT 3

CONTAMINANT PAGE
OURPASSAIC.ORG WEBSITE

Lower Passaic River Restoration Project

Search: GO Contact Us

Contaminants

Home
Project Activities
Maps
Digital Library
Site Info
Related Links
Contaminants
Subscribe

Contaminants

The MS Access database below contains historical data for samples collected from the Passaic River Estuary. These data were not produced for the Lower Passaic River Restoration Project. Organizations that collected these data include, but may not be limited to:

Fish & Wildlife Services
National Oceanic and Atmospheric Administration
U.S. Army Corps of Engineers
N.Y. State Department of Environmental Conservation
N.Y. State Department of Health
TAMS Environmental
Tierra Solutions, Inc.
U.S. Environmental Protection Agency

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To download these data click here