

70029

**HUDSON RIVER PCB REASSESSMENT RIFE
LANDFILL/TREATMENT FACILITY SITING SURVEY**

December 1997



For

U.S. Environmental Protection Agency
Region II

and

U.S. Army Corps of Engineers
Kansas City District

TAMS CONSULTANTS, Inc.

403068



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 2
290 BROADWAY
NEW YORK, NY 10007-1866

January 2, 1998

To All Interested Parties:

With this transmittal, the U.S. Environmental Protection Agency (EPA) is releasing the Landfill/Treatment Facility Siting Survey Report. This report presents the findings of the screening level effort conducted in order to determine whether there are viable alternatives to agricultural land (e.g., Site 10) for a landfill or treatment facility should a dredging remedy be selected for the Hudson River PCBs site. This does not mean that EPA has made a decision regarding the appropriate remedial action for the site, only that the Agency was gathering information necessary to fully evaluate the **option** of dredging.

Although EPA originally intended to release the survey information as part of the Feasibility Study, where it could be analyzed as part of any alternatives selected for evaluation, we agreed to release the information as a separate report based on the hearing conducted by Representative Solomon in October 1997. EPA will accept comments on the Landfill/Treatment Facility Siting Survey until February 17, 1998. Please include the report section and page number for each comment. Comments should be sent to:

Douglas Tomchuk
US EPA - Region 2
290 Broadway - 20th Floor
New York, NY 10007-1866

Attn: Siting Survey Comments

The findings of this report will be one of the items discussed at the Hudson River PCB Oversight Committee (HROC) meeting to be held on January 21, 1998, at 7:30 p.m., at the Holiday Inn in Latham. Please channel any items you wish to be discussed at the HROC meeting to the chair of the appropriate Liaison Group, or other representatives, as limited time will be available for observer comments.

If you have any questions, please contact Ann Rychlenski, the Community Relations Coordinator for the Hudson River PCBs site Reassessment at (212) 637-3672.

Sincerely yours,

A handwritten signature in cursive script, appearing to read "William M. Caspe", is written over the signature line.

Richard L. Caspe, Director
Emergency and Remedial Response Division

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CONTENTS

1.	INTRODUCTION	1
2.	NYSDEC SITE SELECTION PROCESS	3
2.1	NYSDEC Siting of Site 10	3
2.2	Siting Criteria	5
2.3	Characteristics of Site 10	10
2.4	NYSDEC Alternatives to Site 10	12
3.	SITE IDENTIFICATION	17
3.1	Baseline Information	17
3.2	Site Identification Criteria	18
3.3	Site Designation	19
3.4	Field Reconnaissance	20
4.	SITE EVALUATION	23
4.1	Step 1 Evaluation	23
4.1.1	Site Categorization	23
4.1.2	Candidate Site Screening	24
4.2	Step 2 Evaluation	29
4.2.1	Site TN-3	32
4.2.2	Sites TN-4A and TN-4B	32
4.2.3	Sites SC-3A and SC-3F	33
4.2.4	Site SC-4	34
4.2.5	Site FM-4	34
4.2.6	Site HF-1	35
4.2.7	Remnant Deposits	35
4.2.8	Site E (Partial)	36
5.	COMPARISON TO SITE 10	38
	REFERENCES	46

HUDSON RIVER PCBs REASSESSMENT RI/FS
LANDFILL/TREATMENT FACILITY SITING SURVEY

CONTENTS (Continued)

TABLES

1	Evaluation of NYSDEC Alternative Disposal Sites and Site 10	14
2	Category Summary of Candidate Containment/Treatment Sites	25
3	Evaluation of Candidate Containment/Treatment Sites	27
4	Step 2 Evaluation of Candidate Sites	31
5	Site 10 Comparison	40

PLATES

1	Alternative Containment/Treatment Sites and NYSDEC Sites	11
2	Site 10 Comparison	41

APPENDICES

A	Municipal Contacts	48
B	Select Photographs	50

1. INTRODUCTION

This report presents the findings of a screening-level survey of sites where a landfill or treatment facility could potentially be located should the United States Environmental Protection Agency (USEPA) decide that it is necessary to dredge PCB-contaminated sediments from the Hudson River. This survey was conducted by TAMS Consultants, Inc. (TAMS) as part of the Hudson River PCBs Superfund Site Reassessment Remedial Investigation/Feasibility Study (RI/FS). TAMS' work was performed under contract to the United States Army Corps of Engineers (USACE) on behalf of USEPA Region II. The purpose of the survey is to provide USEPA with input to facilitate scoping of the final Feasibility Study for the project. Dredging and near-river treatment or disposal of dredge spoils is one alternative remedy for consideration from an engineering standpoint with regard to the Comprehensive Environmental Response Compensation and Liability Act (or CERCLA) and the Superfund Amendment and Reauthorization Act (or SARA), which provide the context for the Reassessment. In the Feasibility Study, USEPA may also consider utilizing remote landfill or treatment facilities, outside of the area evaluated as part of this study.

With continuing public concern over the potential use of Site 10, selected earlier for this purpose by the New York State Department of Environmental Conservation (NYSDEC), it has become necessary to identify and evaluate the viability of other potential sites. In addition, it is necessary to ascertain the existence of viable locations for installation of temporary facilities for dewatering and/or treatment of dredge spoils and dewatering supernatant prior to disposal of dredge spoils, elsewhere. The objectives of this survey are:

- To provide USEPA with an understanding of the previous siting efforts and site evaluation criteria;
- To identify and compile areas potentially useable for treatment and/or long-term containment of PCB-contaminated dredge spoils from the Upper Hudson River;

- To screen the potentially useable sites for engineering feasibility, for general compatibility with regulatory siting criteria, and in consideration of likely public concerns in order to generate a short list of candidate sites potentially warranting further, in-depth evaluation in the FS phase of this Reassessment; and
- To compare the candidate sites warranting further consideration to NYSDEC's preferred site (Site 10) on the basis of New York State's siting considerations/criteria.

2. NYSDEC SITE SELECTION PROCESS

A summary of NYSDEC's siting efforts and the criteria used by NYSDEC in its site selection and evaluation processes is provided below. Information on NYSDEC's top-ranked site, Site 10, as well as information on NYSDEC alternatives to Site 10, is also included in this chapter. This information is used in Chapter 5 as a basis for comparison for the newly-designated candidate containment/treatment sites described in Chapter 4.

2.1 NYSDEC Siting of Site 10

In the late 1970s, NYSDEC began evaluation of sites in the Upper Hudson River valley for containment of PCB-contaminated sediments from hot spots in the river. Prior to this period, New York State Department of Transportation (NYSDOT) and NYSDEC removed significant volumes of contaminated sediments from the Upper Hudson River for maintenance of the Hudson River/Champlain Canal navigation channel. These dredge spoils were disposed at locations near the river in Saratoga and Washington Counties. Disposal sites in Saratoga County included the Old and New Moreau dredge-spoil areas and Special Area 13 in the Town of Moreau. Sites in Washington County included the southern tip of Rogers Island, Site 518 near Lock 7, and Buoy 212 in the Town of Fort Edward.

In 1981, NYSDEC selected Site 10 in the Town of Fort Edward for the containment of contaminated river sediments. Forty sites were evaluated by NYSDEC prior to selection of Site 10 (USEPA, 1981). Site 10 was selected on the basis of size (approximately 250 acres total), clayey subsoil, accessibility, and environmental and socioeconomic factors. Also, Site 10 was not within a designated Agricultural District and was not in use as an active family farm at that time (Malcolm Pirnie, 1978). Site 10 is located adjacent to the Thompson Island Pool portion of the Upper Hudson River and is above the 100-year floodplain. Additional information on Site 10 can be found in Section 2.3.

A Siting Board was convened to evaluate NYSDEC's request for use of Site 10. The Siting Board gave its conditional approval to NYSDEC in 1982 (Sanders, 1989). In 1983, approvals for Site 10 were revoked by the New York State Supreme Court on issues originally brought forth by Washington County's Citizen Environmentalists Against Sludge Encapsulation (CEASE), including, among others, a violation of local zoning laws at the location of the proposed site.

During this time, NYSDEC decided to evaluate alternative disposal sites in the event the on-going legal challenge to Site 10 was not resolved. NYSDEC selected twelve alternative sites in Rensselaer, Saratoga, and Washington Counties. Each of the sites, except one, was located by NYSDEC in areas zoned for industrial or manufacturing use or in areas where no formal zoning or land-use plans existed at that time. NYSDEC retained Malcolm Pirnie to evaluate and rank each of the sites and develop conceptual designs and preliminary cost estimates for four of the top-ranked alternatives to Site 10. Site 10 was included in the evaluation process and received the most favorable score. Site G, located northeast of the Village of Fort Edward in the Town of Fort Edward, Washington County, received the highest ranking among the twelve alternative sites (Malcolm Pirnie, 1985).

When the decision to "disallow" Site 10 was upheld by New York's Court of Appeals in 1985, NYSDEC's Project Sponsor Group (PSG) prepared and submitted new permit applications for use of Site G, based on the Malcolm Pirnie study. In 1987, coincident with hearings associated with the Site G application, New York State's Environmental Conservation Law (ECL) was revised to eliminate local zoning and land-use regulations in the siting of a hazardous waste disposal facility (Sanders, 1989). By this time, the other issues in CEASE's legal challenge were also resolved. These events eliminated the rationale for revoking approvals for Site 10.

In 1989, the Siting Board rejected use of Site G in part because of its smaller size relative to Site 10. Also, Site 10 ranked more favorably than Site G when evaluated against the siting criteria. The Siting Board voted in favor of NYSDEC's proposed dredging project and use of Site 10. NYSDEC's Commissioner directed the PSG to conduct additional designs and reapply for use of Site

10 for containment of contaminated river sediments and channel sediments, as well as material to be excavated from the remnant deposits and dredge-spoil sites.

Additional design for the expanded use of Site 10 was conducted in the early 1990s. According to the former NYSDEC Hudson River PCB Project Manager (Dergosits, 1994, pers. comm.), the proposed facility at Site 10 would consist of four containment cells with a nominal capacity of 3.5 million cubic yards as well as a roughing and storage pond, a water treatment facility, and associated buildings, roads, ditches and berms to be constructed over an area of approximately 145 acres. The design included dredging approximately 1.8 million cubic yards of sediments from contaminated areas in the Upper Hudson River and 0.3 million cubic yards from canal maintenance as well as excavating approximately 1.4 million cubic yards from Remnant Deposits 2, 3, 4, and 5 and eight dredge-spoil areas (Dergosits, 1994, pers. comm.). No further action with this facility has been taken by NYSDEC since these designs were completed.

2.2 Siting Criteria

New York State regulations for siting and constructing new hazardous waste facilities, including treatment facilities and landfills, are contained in Title 6 (Department of Environmental Conservation) of the Codes, Rules, and Regulations of New York (6 NYCRR) at Part 360 ("Solid Waste Management Facilities") and Part 361 ("Siting of Industrial Hazardous Waste Facilities"). Part 360 includes landfill construction requirements as well as permit application requirements. Specific procedures and requirements for the siting of hazardous waste facilities are contained in Part 361. Section 361.7 of 6 NYCRR Part 361 identifies fourteen siting considerations and their relative importance by percentage to be used by a siting board in the review of an application for a new industrial hazardous waste facility. The fourteen NYSDEC siting considerations and their assigned numbers and relative importance by percentage are listed below:

NYSDEC Siting Considerations

1.	Population density in the vicinity (0.5 mile) of the proposed site, including residential and non-residential population	10%
2.	Population adjacent (0.5 mile) to anticipated transport route, including residential and non-residential population	7%
3.	Risk of accident in transporting hazardous waste to the proposed site, including mode of transport, length and accident rate of transport route, structures within 0.5 mile of transport route, transportation restrictions, and the nature and volume of waste being transported	10%
4.	Proximity to incompatible structures including residences, airports, schools, hospitals, churches, commercial centers	3%
5.	Proximity to major utility lines	1%
6.	Municipal effects including consistency with the intent of the master land-use plan; consistency with local laws, ordinances, rules, and regulations; and public expense/revenue tradeoffs	4%
7.	Potential for surface water and groundwater contamination from construction and operation of the proposed facility, including proximity to floodplains, wetlands, recharge zones, and aquifers	18%
8.	Potential impacts on sources of water supply for human and animal (livestock) consumption as well as agricultural, commercial, and industrial water supplies	8%
9.	Potential for fires and explosions at the site	11%
10.	Impacts on air quality from operations at the site	12%
11.	Proximity to areas of mineral exploitation	3%
12.	Preservation of endangered, threatened, and indigenous species	6%
13.	Conservation of historic and cultural resources	4%
14.	Open space, recreational, and visual impacts	3%

In the past, NYSDEC did not consider Siting Considerations 9, 11, and 12 to be applicable to a dredge-spoils landfill.

Specific criteria and procedures for applying the criteria to proposed sites, as well as a Siting Evaluation Worksheet, are also provided in Section 361.7 of 6 NYCRR Part 361. Specific criteria for each of the fourteen siting considerations are used to evaluate the sites. A Siting Board has the authority to alter the weights of the criteria, based on applicability of individual criteria to specific situations. Three distinct situations exist for each criterion, where the first situation is considered to be the most favorable with respect to the siting criterion; the second consideration is less favorable; and the third is least favorable. For example, NYSDEC Siting Consideration 7, potential for contamination of surface water and groundwater, was allocated the largest single weight of 18 percent. Forty percent of the score for this specific siting consideration is based on hydrogeologic characteristics consisting of three distinct situations, from most favorable to least favorable, including:

1. Natural soil conditions at the site are optimal; the soil characteristics would impede any groundwater contamination;
2. Subsurface conditions at the site do not present any major problems with respect to groundwater contamination; however, site modifications may be required to further reduce the risk of groundwater contamination; and
3. Subsurface conditions at the site are not desirable; extensive site modifications would be required to reduce the risk of groundwater contamination.

Should a proposed site meet condition 1 above, a value of 1 would be assigned; a value of 2 would be assigned for condition 2; and a value of 3 for condition 3. The assigned value is then multiplied by the criterion weight to determine the criterion score; the scores for each criterion for a specific consideration are summed and the total is multiplied by the siting consideration weight. A score for each siting consideration is determined in a similar manner and a total site score is obtained by summation. Sites with the lowest total scores are considered most favorable with respect to the siting criteria.

Part 360 identifies specific landfill construction requirements; these include, but are not limited to, a minimum horizontal separation of 100 feet between deposited waste and the property line and surface waterbodies; a minimum vertical separation of five feet between the base of the constructed liner system and the seasonal high groundwater elevation and ten feet from the base of the liner system to bedrock; a double-composite liner; and a leachate collection and removal system. Requirements of the federal Toxic Substances Control Act (TSCA) for a PCB/chemical waste landfill, contained in 40 CFR Part 761.75, are in general agreement with New York State's requirements. Both state and federal regulations require a soil liner with a permeability less than 1×10^{-7} cm/sec and a synthetic geomembrane liner which is chemically compatible with PCBs.

One of the differences between the state and federal requirements relates to depth to groundwater. New York State's landfill construction requirements specify a minimum vertical separation of five feet between the base of the constructed liner system and the seasonal high groundwater table, whereas federal TSCA requires a separation of 50 feet. Potential sites located in the lowland near-river areas, where depth to groundwater is typically within 50 feet of the ground surface, would likely not satisfy this federal requirement. According to TSCA (40 CFR 761.60), all dredged materials that contain PCBs at concentrations of 50 ppm or greater should be disposed in an incinerator or a chemical waste landfill in compliance with 40 CFR 761.70 and 761.75, respectively. Also, USEPA's Regional Administrator may approve an alternate disposal method. In addition, the Regional Administrator may issue a waiver for that specific federal requirement.

The dredge spoils can be considered an industrial waste where historic industrial discharges resulted in contamination (6 NYCRR Part 360.1). Siting considerations and criteria for industrial hazardous waste facilities in New York State (6 NYCRR Part 361.7) were used by NYSDEC and in this study to meet the goal of protecting public health and the environment. Near-river lowland areas, where the federal requirement for depth to groundwater would likely not be met, were not excluded from consideration by NYSDEC, nor by TAMS in this study.

As stated in Section 2.1, New York's Environmental Conservation Law was revised in 1987 to eliminate zoning and land-use considerations in the siting of a hazardous waste facility. According to the Environmental Conservation Law Article 27, Title 11 (Siting Industrial Hazardous Waste Facilities):

"Notwithstanding any other provision of law, no municipality may, except as expressly authorized by this article or the board, require any approval, consent, permit, certificate or other condition including conformity with local zoning or land use laws and ordinances, regarding the operation of a facility with respect to which a certificate hereunder has been granted; provided, however, that such municipality has received notice of the filing of the application therefor." (§27-1107, Powers of municipalities)

Thus, a municipality cannot reject a proposed facility because of non-conformity with local zoning and land-use laws and ordinances unless authorized by the Siting Board. As per the current Facility Siting Criteria under 6 NYCRR Part 361, the Siting Board can deny an application if residential areas and contiguous populations will be endangered, if construction or operation of the facility would be contrary to local zoning or land-use regulations in force on the date of the application, or if the facility is deemed not necessary or otherwise not in the public interest.

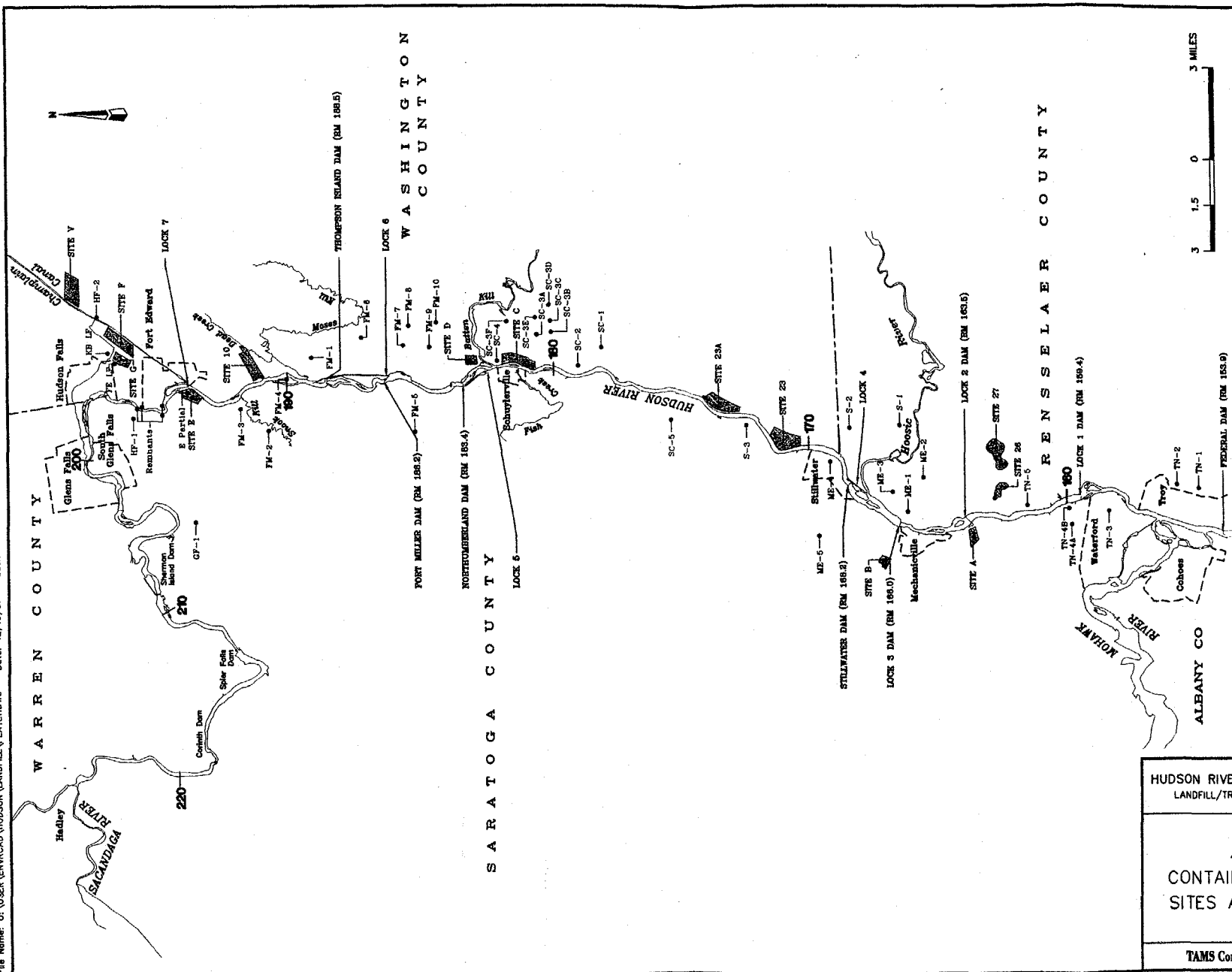
The Washington County Board of Supervisors recently adopted a resolution indicating its opposition to Hudson River remedial measures that involve dredging and landfilling in the Town of Fort Edward (Washington County, 1997). According to the resolution, a PCB dredge-spoils landfilling project would inflict significant, long-term damage to the Town of Fort Edward, especially affecting the agricultural industry, tourism development efforts, and the pastoral quality of life. Many towns and villages throughout the Upper Hudson area as well as Saratoga County's Board of Supervisors have adopted similar resolutions, asserting that a long-term containment facility or landfill near the river would not be in the public interest.

2.3 Characteristics of Site 10

Information on the characteristics of Site 10 and NYSDEC's intended use of the site was obtained from various sources, including Malcolm Pirnie (1978 and 1985) and USEPA (1981).

Site 10 is located about 2.5 miles south of the Village of Fort Edward and is within the Town of Fort Edward, Washington County. As shown on Plate 1, the site is centrally located between Lock 7 to the north and the Thompson Island Dam to the south, which is the Thompson Island Pool reach of the Upper Hudson River where many of the NYSDEC-defined hot spots exist. The western limit of the site, adjacent to Route 4, is within 300 feet of the Hudson River and site elevations range from about 10 to 60 feet above the elevation of the river. Thus, the site is outside the floodplain and is in close proximity to the river, allowing for the use of hydraulic dredges and pipelines for pumping dredge spoils directly from the river to the dewatering/containment areas. Dredge spoils would not have to be trucked through local roadways. Also, much of the site has not been cultivated for some time.

Numerous geotechnical and hydrogeologic field investigations have been conducted by NYSDEC at Site 10. Soils at the site are predominantly comprised of the Kingsbury and Covington soil series, both of which are deep, slowly permeable soils. Soil permeability at the site ranges from less than 1×10^{-7} cm/sec to about 2×10^{-7} cm/sec. Bedrock throughout most of the site is at a depth of 40 to 50 feet below the ground surface. Subsurface conditions at this site were considered by NYSDEC as suitable for a secure landfill. After screening forty sites and more-detailed investigations at four of those sites, including Site 10, NYSDEC's contractor concluded that "Site 10 is favored due to its proximity to the river (reduced transport distance), low elevation (permits use of either pipeline or truck), present use (hay field), good site drainage, large size (two hundred plus acres), and natural screening from nearby roads and houses" (Malcolm Pirnie, 1978). Also, the site was not located in a designated Agricultural District and on-site slopes were generally less than three percent. However, a May 1997 resolution by the Town Board of the Town of Fort Edward requested that the Site 10 parcels be returned to Agricultural District status (Town of Fort Edward, 1997). As of the date of



LEGEND:

- COUNTY BOUNDARY
- 220 - RIVER MILE (RM) UPSTREAM OF THE BATTERY
- SC-1 - ALTERNATIVE CONTAINMENT/TREATMENT SITE (LOCATION APPROXIMATE)
- SITE D - NYSDEC CONTAINMENT SITE (LOCATION APPROXIMATE)

SOURCES:

SHORELINES AND RM DESIGNATIONS ARE APPROXIMATE.

1. APPROXIMATE SITE LOCATIONS FOR NYSDEC SITES OBTAINED FROM MALCOLM PIRNIE, MARCH 1985.

HUDSON RIVER PCB REASSESSMENT RI/FS
LANDFILL/TREATMENT FACILITY SITING SURVEY

ALTERNATIVE
CONTAINMENT/TREATMENT
SITES AND NYSDEC SITES

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PLATE 1

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this report, the Site 10 parcels are zoned for agricultural/residential use by the Town of Fort Edward but have not been incorporated into the Agricultural District (Brooks, 1997, pers. comm.).

For the proposed containment cells at Site 10, NYSDEC would incorporate a double-composite liner with a primary and secondary leachate collection system to prevent migration of PCBs to groundwater. The double-composite liner would consist of a clay soil liner and a synthetic liner, in accordance with state and federal requirements. As stated in Section 2.1, the most recent NYSDEC plan for proposed Site 10 includes containment of approximately 2.1 million cubic yards of contaminated sediments from the Upper Hudson River, as well as 1.4 million cubic yards of material to be excavated from the remnant deposits and dredge-spoils sites, for a total nominal capacity of 3.5 million cubic yards.

2.4 NYSDEC Alternatives to Site 10

In 1984, prior to the revision of the Environmental Conservation Law, NYSDEC decided to evaluate alternative disposal sites should Site 10 be disallowed. NYSDEC selected twelve alternative sites in Rensselaer, Saratoga, and Washington Counties. The locations of the sites were limited to a two-mile wide corridor along each side of the river from Waterford to Hudson Falls for a distance of approximately 35 miles. Each of the sites, except one, was located by NYSDEC in an area zoned for industrial or manufacturing use or in an area where no formal zoning or land-use plan existed at that time. The one exception, Site B in the Town of Stillwater, Saratoga County, was located in a predominantly residential district (Malcolm Pirnie, 1985). The locations of the twelve alternative NYSDEC sites as well as Site 10 are shown on Plate 1.

NYSDEC retained Malcolm Pirnie to evaluate each of the sites and develop conceptual designs and preliminary cost estimates for four of the top-ranked alternative sites. It was determined that at least 75 acres of useable land would be required for containment of 700,000 cubic yards of contaminated sediments from the hot spots in the Thompson Island Pool and an additional 350,000 cubic yards from hot spots downstream of the Thompson Island Dam (Malcolm Pirnie, 1985). To

effectively manage the sediment and water generated during dredging operations, the area would include containment cells, a roughing and storage pond, a surge pond, and a water treatment plant. Treated effluent would be discharged back to the Hudson River.

The NYSDEC sites were evaluated on numerous factors, including location, accessibility, zoning, soils, drainage, and environmental sensitivity, among others. Information was obtained from published reports, maps and interviews. Subsurface investigations and preliminary biological assessments were also conducted. The sites were ranked according to the siting considerations/criteria and evaluation procedures outlined in 6 NYCRR Part 361.7 (Facility Siting Criteria for Siting of an Industrial Hazardous Waste Facility), which are summarized in Section 2.2. Except for three siting considerations (9, 11, and 12) not considered to be applicable to a dredge-spoils landfill, each of the siting considerations identified in Section 2.2 was considered in the ranking process. Site 10 was included in the ranking for comparative purposes. Information on each of the NYSDEC alternative sites as well as Site 10 and the final rankings for each site are provided in Table 1.

In this formal, quantitative ranking process, Site 10 received the most favorable (lowest) score and was ranked first. Thus, none of the twelve alternative sites selected by NYSDEC and ranked by Malcolm Pirnie were deemed to be more suitable than Site 10. Site G, located northeast of the Village of Fort Edward, received the highest ranking among the twelve alternative sites. Site G is located in an area that was zoned for industrial use in the Town of Fort Edward. However, at that time, a large portion of the site was used for agricultural purposes. In addition to the site's industrial zoning, another advantage was that future development around the site was expected to be minimal in that the area northwest of the site is the Fort Edward Landfill, which already contains PCBs, while land to the east and south is within the flood zone of the Champlain Canal (Malcolm Pirnie, 1985). Also, clay soils are present beneath a large portion of the site. The useable area for Site G (approximately 83 acres) was determined to be significantly less than the useable area for Site 10 (approximately 170 acres). Also, since the site is located near Lock 8 on the Champlain Canal north of the Hudson River, dredge spoils would have to be transported a greater distance when compared

Table 1
Evaluation of NYSDEC Alternative Disposal Sites and Site 10

NYSDEC Ranking	Site	County	USGS Quadrangle	Considerations
1	10	Washington	Fort Miller	Centrally located within TIP, outside floodplain, locally zoned residential-rural agricultural district, elevation about 30 ft above river level, suitable for pumping spoils, 170 of 250 acres suitable after elimination of shallow bedrock areas, ideal soil
2	G	Washington	Hudson Falls	Zoned industrial but within agricultural district, near residential community (Ruggi and Fahlmann properties), adjacent to Fort Edward landfill, dredge material through Lock 8, above floodplain, clays present, 83 of 128 acres usable
3	V	Washington	Hudson Falls	Near canal summit, north of Lock 8, industrial and residential district, partially cultivated, clay soils present, extensive wetlands, within floodplain, isolated from populated areas, far from Lock 7 along canal
4	E	Saratoga	Hudson Falls	Site includes New and Old Moreau Disposal areas and SA 13, cemetery, historic homestead, portions zoned industrial and residential/agricultural, accessible from river at northern end of TIP, excavation of spoils into landfill, relocate Rt. 29
5	23	Washington	Mechanicville and Schaghticoke	Entirely within floodplain, owned by Niagara Mohawk Power and was site of proposed power plant in 1960s, not zoned but within agricultural district, excellent access from river, shallow groundwater, non-ideal soils, large area (310 acres)
6	23A	Washington	Schuylerville and Schaghticoke	Entirely within floodplain, not zoned but within agricultural district, excellent access from river, shallow groundwater, shallow bedrock, geology not suitable, near Saratoga National Park, large area (312 acres)
7	F	Washington	Hudson Falls	Zoned industrial, dredge material through Lock 8, shallow groundwater, extensive drainage ditches throughout site, portion cultivated but not within an agricultural district, in floodplain, large area (approx. 250 acres)
8	27	Rensselaer	Troy North	Poor accessibility from river, high elevation, far from TIP, land is within a designated agricultural district, no formal zoning or land-use plan in Town of Schaghticoke
9	C	Washington	Schuylerville	No zoning restrictions, within floodplain and agricultural district, extensively cultivated, shallow groundwater, accessible from river, proximity to Schuylerville, bisected by Rt. 29, 105 of 184 acres usable
10	26	Rensselaer	Troy North	Poor accessibility from river, high elevation, far from TIP, only 55 acres of usable land, land is within a designated agricultural district, no formal zoning or land-use plan in Town of Schaghticoke
11	A	Saratoga	Mechanicville and Troy North	Manufacturing zoned, shallow groundwater and depth to bedrock, only 70 acres of usable land, proximity to Waterford's public water supply intake, far from Thompson Island Pool (TIP), rail line bisects site, in floodplain
12	D	Washington	Schuylerville	Within populated hamlet of Clarks Mills in the Town of Greenwich, proposed as an industrial area, surrounded by agricultural district, relocation of many homes and roads would be necessary
13	B	Saratoga	Mechanicville	Residential/rural zoned and portion within an agricultural district, high elevation would require trucking not pumping of spoils, high population density within one-half mile of site (Mechanicville), near water supply

Source: Malcolm Pirnie, 1985

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to Site 10, which is located near the center of the Thompson Island Pool. The differences which were quantified in the formal ranking process are described below.

Siting considerations and specific criteria for which Site G was considered less favorable than Site 10, in order of decreasing point differential, include:

- Population within one-half mile of the site boundary (7-point differential);
- Population adjacent to transport route (7-point differential);
- Contamination of ground and surface waters, specifically, site runoff characteristics as related to natural topography (3.6-point differential); and
- Risk of accident in transportation, including mode of transportation (longer barging and pipeline distance for Site G) and transportation restrictions such as locks (2.5-point differential).

These four siting considerations accounted for a 20.1-point differential between Site 10 and Site G, NYSDEC's preferred alternative.

Siting considerations and specific criteria for which Site G was considered more favorable than Site 10, in order of decreasing point differential, include:

- Proximity to historical or cultural resources (4-point differential);
- Municipal effects, including consistency with intent of master land-use plan, and local laws, ordinances, rules, and regulations (1.6-point differential); and
- Proximity to major utility lines (1-point differential).

These three siting considerations accounted for a 6.6-point differential. Scores for the remaining siting considerations evaluated were identical for the two sites. The net differential between Site 10 and Site G was 13.5 points. The net differentials between Site 10 and each of the other NYSDEC alternative sites were all greater than the Site 10/Site G differential. Among all sites, Site 10 received the lowest (most favorable) scores for each of the siting considerations carrying the greatest weight,

including contamination of ground and surface waters, air quality, population density, and risk of accident in transportation. Some of the alternative sites received lower (more favorable) scores than Site 10 for siting considerations carrying less weight, including utility lines, municipal effects, and conservation of historic and cultural resources.

3. SITE IDENTIFICATION

Subsequent to the review of NYSDEC's siting efforts and compilation of information regarding NYSDEC's twelve alternative sites, TAMS conducted an independent screening of the Upper Hudson study area for other potentially-viable locations for a dredge-spoils containment/treatment facility. This chapter provides a summary of the information utilized to map and evaluate the sites as well as the generic criteria used to identify the candidate sites.

The study area along the Upper Hudson River extends from the Federal Dam in the south to Hudson Falls in the north, a distance of over 40 miles. This area includes portions of Rensselaer, Saratoga and Washington Counties. Consistent with NYSDEC's siting efforts, a corridor two miles from each side of the Upper Hudson River was used to identify sites for evaluation. Since this corridor generated a significant number of sites for evaluation, it was considered unnecessary to expand the corridor to more than two miles from the river.

3.1 Baseline Information

This section provides a summary of the information used to select the candidate containment/treatment sites. Published maps and data were compiled to generate a base map for locating the candidate sites. Information compiled included land use and zoning maps and reports, topographic maps showing ground elevations, floodplain maps, and river survey maps indicating river-mile distances, as follows:

- United States Geological Survey (USGS) topographic, quadrangle maps were used as base maps. These maps show locations of major waterbodies, major roadways and railways, and major developed areas. Ground surface elevations at a contour interval of ten feet are also shown on the maps. Buildings/structures, including hospitals, churches, airports, cemeteries, industries, residences located predominantly outside of the major developed areas, and river/canal locks and dams, are also included on the maps. The study area covers portions of ten USGS maps, including Troy North,

Tomhannock, Mechanicville, Schaghticoke, Quaker Springs, Schuylerville, Gansevoort, Fort Miller, Glens Falls, and Hudson Falls;

- Municipal offices in each of the three counties were contacted in early 1997 to obtain the most recent data on land use and zoning. Additional information on land use, zoning and population was requested from each city, town and village within the study area. Population data received were total numbers for the individual towns or counties and were not specific to the candidate sites. A list of those offices contacted is provided in Appendix A. The land-use/zoning areas, such as industrial/commercial, residential, and agricultural zones, were transferred to the USGS base maps;
- The 100-year floodplains of the Upper Hudson River and tributaries to the river were also sketched on the USGS base maps. The locations of the floodplains were obtained from the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Maps (FIRMs) for the communities along the Upper Hudson River; and
- River-mile (RM) designations for the Upper Hudson River, referenced to the mouth of the Lower Hudson River at the Battery near Lower Manhattan (RM 0), were also added to the USGS base maps. The river-mile designations were obtained from the Hudson River Survey performed by Normandeau & Associates (1976-1977) and river cross-section maps generated by TAMS.

The USGS base maps and supplemental information sketched on those maps were the “working tools” of the survey.

3.2 Site Identification Criteria

Land areas were identified as candidate sites for inclusion in this preliminary survey on the basis of six generic engineering and population criteria:

- Having a location within a corridor two miles in width from each bank of the Upper Hudson River extending from Hudson Falls in the north to the Federal Dam at Troy in the south in Rensselaer, Saratoga and Washington Counties;
- Consisting of a contiguous area of 50 acres or more and having a shape with a reasonable chance of supporting an engineered facility (e.g., avoiding areas with extreme length-to-width ratios, or those with too many “bulbs” separated by deep ravines or hills). Whereas NYSDEC's minimum area for site selection was 75 acres (see Section 2.4), a 50-acre minimum was used in this study to include potentially viable smaller areas for either dredge-spoils dewatering/treatment without long-term

containment, or long-term containment of a smaller volume of dredge spoils when compared to NYSDEC's estimated volume;

- Having an average slope of two percent or less (to avoid the need for multiple, small "terraces" in the final landfill configuration), unless configured in a bowl shape providing natural retention structures;
- Encompassing five or fewer residences or other structures within the site "boundary" as represented on the most recent USGS map;
- Encompassing no airports, churches, schools, or other public halls or portions of recognized parklands or preserves within the site "boundary" as represented on the most recent USGS maps; and
- Excluding permanent streams and major roads from the site "boundary."

In addition to sites identified using these criteria, areas listed in county land use, zoning, and master plan documents as industrially zoned or reserved for industrial use were added to the compilation for consideration. These areas were outlined on the USGS base maps. Other areas, such as the remnant deposits (excluding Remnant Deposit 1 which presently consists of small islands in the center of the river near the General Electric Fort Edward Plant outfall), were added to the compilation due to unique characteristics warranting consideration. Some of the existing landfill and dredge-spoil sites already containing PCB-contaminated sediments or wastes were also included. Due to the smaller size criterion than was used for the NYSDEC studies, it was also appropriate to consider portions of previously-identified NYSDEC sites as individual entities for the purpose of this survey, with the possibility that some of the less-desirable aspects indicated previously could be avoided or mitigated.

3.3 Site Designation

The USGS base maps were visually scanned to identify those parcels meeting the criteria listed in Section 3.2. Parcels meeting the criteria were delineated on the maps and each candidate site was assigned a unique designation. The designation was based on the name of the USGS quadrangle and the numeric identifier, as follows:

- Troy North, TN-#;
- Mechanicville, ME-#;
- Schaghticoke, S-#;
- Schuylerville, SC-#;
- Fort Miller, FM-#;
- Hudson Falls, HF-#; and
- Glens Falls, GF-#.

The numeric identifier is sequential, based on the order in which a site was identified on the individual USGS quadrangle. For example, Site FM-2 was the second site identified on the Fort Miller USGS quadrangle. No sites were identified on the Tomhannock, Quaker Springs, or Gansevoort USGS maps, as major portions of these three maps are outside the study area. The NYSDEC sites, remnant-deposit sites, existing dredge-spoil sites and landfills were assigned the previously-designated names and were also sketched on the USGS base maps.

3.4 Field Reconnaissance

To obtain information about the current condition of each of the newly-designated sites as well as the former NYSDEC alternative sites, a field reconnaissance was performed over a three-day period from May 20 to 22, 1997. Except for the remnant deposits, observations were made from public roads or from other publicly-accessible areas. Attempts were made to visit many of the NYSDEC-defined sites and former dredge-spoil disposal areas, as well as those candidate sites identified in this study. A three-day field reconnaissance was originally envisioned, prior to determining the number of potential candidate sites. The TAMS field team, consisting of two professional engineers and a geologist, was able to visit each of the candidate sites and NYSDEC sites in that time frame. One of the candidate sites (Site SC-1) and one of the NYSDEC sites (Site 26) were not accessible from public roads and were therefore not visited.

The field reconnaissance predominantly consisted of a windshield survey from roadways adjacent to each of the candidate sites and NYSDEC sites. Visual observations were made at each site and documented on field reconnaissance forms. Information documented includes: names of nearby streets; type of terrain at the site; current land use at the site; surrounding land use; number of residences at the site; schools, churches, or hospitals in the vicinity; types of roads near the site; streams or waterbodies at and near the site; potential barge docking areas; potential pipeline routes for near-river, lowland sites for pumping dredge spoils; potential overland transportation routes for hauling dredge spoils by truck or rail; terrain along the overland transport routes; and residences along the transport routes. Field investigations were not conducted at the sites. Photographs of the candidate sites and surrounding areas were taken to document pertinent features, including current land use. Representative photographs of some of the sites are included in Appendix B of this report.

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4. SITE EVALUATION

Based on the field reconnaissance and the compilation of published information documented in Chapter 3, each of the newly-identified candidate sites was evaluated for basic engineering feasibility and likely advantages or concerns. Each site was screened for further consideration in a two-step process. Step 1 consisted of a categorization of each of the sites based on site elevation and zoning/land use. Also, an evaluation matrix was prepared in Step 1 as a screening tool. Many of the sites were eliminated from further consideration at the end of Step 1. The Step 2 Evaluation included an elimination of many of the remaining agricultural sites as well as a more-detailed analysis of the remaining sites warranting further consideration at that stage. These remaining candidate sites were then compared to NYSDEC's Site 10, based on the NYSDEC siting considerations previously presented. The results of the comparisons to Site 10 are presented in Chapter 5.

4.1 Step 1 Evaluation

4.1.1 Site Categorization

Each candidate site was assigned to one of the following four categories: Lowland Agricultural (LA), Upland Agricultural (UA), Lowland Industrial (LI), and Upland Industrial (UI) based on two criteria. The first criterion is the surface elevation of the site in relation to the river in view of engineering considerations with respect to transport of dredge spoils to the candidate site. Land along the Upper Hudson River within the study corridor generally falls into one of three groups: lowland areas adjacent to the river at elevations typically less than 50 ft above the elevation of the river; steeply sloping land along the valley walls; and those areas beyond the steep slopes of the river valley on the upland plateau. All sites were grouped as "L" for lowland or "U" for upland, since steeply sloping land was excluded in the initial site identification. For lowland sites, dredge spoils would be pumped from the river to the disposal site, while rail or truck transport would be necessary for upland sites.

The second criterion is based on land use or zoning of the parcel as taken from the maps obtained from the various city, town and village governments. Those areas designated as industrial, manufacturing or commercial were given the designation of "I". Those areas zoned as agricultural were given the designation of "A". Residential areas were avoided in the initial site selection. For those areas where formal land-use plans or zoning maps do not exist, determination of industrial or agricultural use was based on visual observations during the field reconnaissance. It should be noted that some sites within designated industrial zones or manufacturing districts are currently used for agricultural purposes. Such sites were classified according to the designated zoning rather than the current use. However, current use was noted during the field reconnaissance.

4.1.2 Candidate Site Screening

A total of 41 candidate sites were identified using the site identification criteria outlined in Section 3.2. The location of the approximate center of each of these sites as well as the location of NYSDEC's Site 10 and twelve alternative sites are shown on Plate 1. Of these 41 sites, two are existing landfills (Kingsbury Landfill [KB LF] and Fort Edward Landfill [FE LF]), one utilizes Remnant Deposits 2, 3, 4 and 5, and two are variants on NYSDEC sites (Site SC-4 overlaps with portions of NYSDEC Site C and Site E [Partial] reconfigures NYSDEC Site E to avoid relocating River Road and impacting the historic homestead and cemetery shown on the USGS map). A breakdown of the sites by county and category is provided in Table 2. Fifteen industrial-designated sites and 26 agricultural-designated sites were identified. Seven candidate sites are located in Rensselaer County, fourteen in Saratoga County, and eighteen in Washington County. Two of the 41 sites span county lines: Site S-2 straddles the Rensselaer and Washington County lines and the remnant deposits lie in both Saratoga and Washington Counties.

Table 2
Category Summary of Candidate Containment/Treatment Sites

	Rensselaer County	Saratoga County	Washington County	Site S-2 (Rens. and Wash. Counties)	REMN (Sar. and Wash. Counties)
Agricultural					
Upland	2	3	11	1	
Lowland	2	5	2		
Industrial					
Upland	2	2	4		
Lowland	1	4	1		1
TOTALS	7	14	18	1	1

Note: Total of 41 potential alternative sites selected and evaluated, see Plate 1

An evaluation matrix, included as Table 3, was prepared to document information on each of the 41 candidate sites. The matrix was used as a basis for comparisons among each of the sites and as a tool for site elimination. Information included in the matrix was obtained from the USGS base maps and the supplemental information added to those maps, as well as from observations made during the field reconnaissance. The respective county and category of each of the candidate sites are included in the matrix. Each of the remaining columns or groups of columns in the matrix represent different aspects of NYSDEC's siting considerations for qualitative application, as follows:

- ▶ *Land Use/Zoning:*
Information on land use and zoning at the site and in the vicinity of the site was obtained from the published maps and reports obtained from the county and local government sources listed in Appendix A. For those areas where published land-use/zoning information does not exist, visual observations made during the field reconnaissance provided the basis for the entry in the matrix.
- ▶ *Floodplain:*
 - "No" - Site is entirely outside the FEMA published 100-year floodplain
 - "Yes" - Most or all of the site is within the floodplain
 - "Portion" - Only a portion of the site is within the floodplain

- ▶ *Elevation Above River (ft):*
The difference in elevation between the average ground surface elevation of the candidate site and the average water surface elevation of the pool of the Upper Hudson River/Champlain Canal adjacent to the site.

- ▶ *River-Mile Distance from Thompson Island Dam:*
The distance to the point in the river adjacent to the approximate center point of each site as measured along the river/canal axis from the Thompson Island Dam using the system of "River Miles" established for the project. The Thompson Island Dam, located at RM 188.5, is the downstream limit of the Thompson Island Pool (see Plate 1). Distances in miles downstream (south) of the Thompson Island Dam are shown as negative, while those upstream (north) of the dam are indicated as positive.

- ▶ *Overland Pumping Distance (ft):*
The distance for overland pumping of dredge spoils was measured from the USGS base maps for each of the candidate sites classified as lowland (LA or LI). The values represent the distance from a potential barge docking area in the river to the candidate site. This consideration was generally not applicable to upland sites as pumping was not deemed feasible.

- ▶ *Major/County Roads:*
For each of the candidate sites classified as upland (UA or UI), names and classifications of roadways in the vicinity of the site were obtained from USGS base maps and local/county road maps. The trucking distance to all upland sites was measured on the USGS maps by following a likely trucking route to the site along existing roads from a potential barge docking point on the river. The "distance to site" column represents the distance along a road to be constructed from an existing road to the site. This consideration was generally not applicable to lowland sites where material would likely be pumped directly to the dewatering/containment area.

- ▶ *Rail Lines:*
Determination of the feasibility of rail transport of dredge spoils to upland sites was based on locations of rail lines shown on the USGS maps. "Distance to offload" represents the length of spur to be constructed from a potential dewatering area near the river to an existing rail line. "Hauling distance" represents the distance along the existing rail lines whereas "distance to site" represents the distance along a spur to be constructed from the existing rail line to the site.

Table 3
Evaluation of Additional Candidate Containment/Treatment Sites
Page 1 of 2

Site	County	Category	Land Use/Zoning		Floodplain	Elevation Above River (ft)	River Mile Distance From Thompson Island Dam	Overland Pumping Distance (ft)	Major/County Roads				Rail Lines			Population			Further Evaluation	Comments
			Site	Vicinity					Names(s)	Road Classification	Trucking Distance (ft)	Distance to Site (ft)	Distance to offroad (ft)	Hauling Distance (ft)	Distance To Site ** (ft)	Site	Surface Transport Route - Trucking	Surface Transport Route - Rail Lines		
TN-1	Rensselaer	UI	Industrial	Schools and Cemeteries	NO	360	-33.8	NA	Rt. 142, Rt. 40	Heavy Duty, Medium Duty	17,400	0	NA	NA	NA	Minimal	Moderate	NA	NO	Excluded: Hauling distance, elevation, slope on site
TN-2	Rensselaer	UI	Industrial	Schools and Cemeteries	NO	360	-33.2	NA	Rt. 142, Rt. 40	Heavy Duty, Medium Duty	13,500	0	NA	NA	NA	Minimal	Moderate	NA	NO	Excluded: Hauling distance, elevation, slope, proximity to Lensingburgh Reservoir
TN-3	Saratoga	LI	Industrial	Industrial	NO	30	-30.3	2900	NA	NA	NA	NA	NA	NA	NA	Minimal Residential, Heavy Industrial	NA	NA	YES	Industrial area behind GE Silicones Plant in Waterford
TN-4A	Saratoga	LI	Low Density Residential/Undeveloped, Active/Abandoned Agricultural	Low Density Residential/Undeveloped, Active/Abandoned Agricultural	NO	20	-28.8	1,500	NA	NA	NA	NA	NA	NA	NA	Minimal	NA	NA	YES	Industrial/agricultural area near GE Silicones Plant in Waterford
TN-4B	Saratoga	LI	Light Industrial/Manufacturing	Commercial Residential	Portion	20	-28.5	600	NA	NA	NA	NA	NA	NA	NA	Moderate	NA	NA	YES	Industrial/agricultural area near GE Silicones Plant in Waterford
TN-5	Rensselaer	LA	Residential Agricultural	Residential Agricultural	Portion	10	-27.4	600	NA	NA	NA	NA	NA	NA	NA	Minimal	NA	NA	NO	Excluded: Agricultural, floodplain
ME-1	Rensselaer	LI	Manufacturing	Residential Agricultural	NO	20	-22.9	600	NA	NA	NA	NA	NA	NA	NA	Minimal	NA	NA	NO	Excluded: Reroute railroad track, stream crossing, proximity to golf course
ME-2	Rensselaer	LA	Residential Agricultural	Residential Agricultural	YES	30	-23.6	NA	Linden Rd.	Light Duty	15,000	7,500	NA	NA	NA	Minimal	Minimal	NA	NO	Excluded: in floodplain of Hoosic River, difficult access
ME-3	Rensselaer	UA	Agricultural	Agricultural	NO	210	-22.3	NA	Linden Rd	Light Duty	4,800	1,700	NA	NA	NA	Minimal	Minimal	NA	NO	Excluded: Elevation, agricultural
ME-4	Saratoga	LA	Residential/Agricultural/Commercial	Residential/Agricultural/Commercial	YES	<10	-18.9	550	NA	NA	NA	NA	NA	NA	NA	Minimal	NA	NA	NO	Excluded: School and residences on perimeter of site, floodplain
ME-5	Saratoga	UA	Agricultural	Agricultural	NO	220	-18.5	NA	Lake Road, Fiske Road	Medium Duty, Light Duty	11,800 (last 3,500 ft is Light Duty)	500	NA	NA	NA	Minimal	Moderate	NA	NO	Excluded: Elevation, agricultural, population along transport route
S-1	Rensselaer	UA	Residential Agricultural	Residential Agricultural	NO	220	-22.6	NA	Rt. 67	Heavy Duty	16,100	200	NA	NA	NA	Minimal	Moderate	NA	NO	Excluded: elevation, agricultural, long trucking route
S-2	Rensselaer/Washington	UA	Residential Agricultural	Residential Agricultural	NO	230	-20.6	NA	River Road, Verbeek Road	Medium Duty, Light Duty	20,200	200	NA	NA	NA	Minimal	Light	NA	NO	Excluded: Elevation, agricultural, no major roads for trucking
S-3	Saratoga	LA	Agricultural	Agricultural	YES	<10	-15.6	500	NA	NA	NA	NA	NA	NA	NA	Light	NA	NA	NO	Excluded: in floodplain, near Saratoga Park
SC-1	Washington	UA	Agricultural	Agricultural	NO	200	-3.9	NA	Private Drive	Unimproved	2,500	100	NA	NA	NA	Minimal	Minimal	NA	NO	Excluded: Elevation, agricultural, requires building a new road
SC-2	Washington	LA	Agricultural	Agricultural	YES	10	-8.4	250	NA	NA	NA	NA	NA	NA	NA	Minimal	NA	NA	YES	In floodplain, agricultural
SC-3A	Washington	UA	Agricultural	Industrial/Public Service/Residential/Community service	NO	240	-7.9	NA	Rt. 29	Heavy Duty	4,000	0	NA	NA	NA	Minimal	Minimal	NA	YES	Upland agricultural
SC-3B	Washington	UA	Agricultural	Agricultural	NO	240	-8.2	NA	Rt. 29, Wilbur Ave., Fellows Road	Primary Highway, Light Duty, Light Duty	13,400 (last 5,300 ft is Light Duty)	0	NA	NA	NA	Minimal	Minimal	NA	YES	Small site - powerlines limit space, could be used with site SC-3C
SC-3C	Washington	UA	Agricultural	Agricultural	NO	240	-8.4	NA	Rt. 29, Wilbur Avenue	Primary Highway, Light Duty	12,400 (last 4,000 ft is Light Duty)	0	NA	NA	NA	Light	Minimal	NA	YES	Long, narrow site - powerlines limit space, could be used in conjunction with site SC-3B
SC-3D	Washington	UA	Agricultural	Agricultural	NO	260	-8.2	NA	Rt. 29, Rt. 40	Primary Highway, Secondary Highway	15,600	500	NA	NA	NA	Light	Moderate	NA	YES	Upland agricultural
SC-3E	Washington	UI	Industrial	Vacant/Commercial/Recreational/Residential	NO	260	-7.9	NA	Rt. 29	Primary Highway	7,200	0	NA	NA	NA	Minimal	Minimal	NA	NO	Excluded: Active precast concrete plant
SC-3F	Washington	UI	Industrial	Vacant	NO	260	-7.5	NA	Rt. 29, Windy Hill Road	Primary Highway, Light Duty	12,000 (the last 3,000 ft is Light Duty)	0	0	24,700	700 (1)	Minimal	Minimal	Light	YES	Adjacent to Fairgrounds
SC-4	Washington	LA	Agricultural/Vacant	Agricultural/Industrial	YES	10	-6.6	200	NA	NA	NA	NA	NA	NA	NA	Minimal	NA	NA	YES	In floodplain, overlaps with NYSDEC's Site C
SC-5	Saratoga	UA	Agricultural	Agricultural	NO	170	-12.9	NA	River Road, Rt. 4, Wilbur Road	Light Duty, Primary Highway, Light Duty	7,500 (last 700 ft and last 4,000 ft are Light Duty)	0	NA	NA	NA	Minimal	Minimal	NA	NO	Excluded: Future land use for Saratoga National Cemetery (veterans cemetery)
FM-1	Washington	UA	Agricultural	Agricultural	NO	110	0.5	NA	Rt. 4, Patterson Road	Primary Highway, Light Duty	5,000 (first 500 ft is Light Duty)	0	NA	NA	NA	Light	Minimal	Minimal	YES	Upland agricultural
FM-2	Saratoga	LA	Agricultural & Residential	Agricultural & Residential	NO	40	2.4	NA	Clark Road	Light Duty	7,000	200	300	9,500	200	Minimal	Minimal	Minimal	YES	Has railroad access

Table 3
Evaluation of Additional Candidate Containment/Treatment Sites
Page 2 of 2

Site	County	Category	Land Use/Zoning		Floodplain	Elevation Above River (ft)	River Mile Distance From Thompson Island Dam	Overland Pumping Distance (ft)	Major/County Roads				Rail Lines				Population		Further Evaluation	Comments
			Site	Vicinity					Names(s)	Road Classification	Trucking Distance (ft)	Distance to Site (ft)	Distance to offload* (ft)	Hauling Distance (ft)	Distance To Site ** (ft)	Site	Surface Transport Route - Road/Trucking	Surface Transport Route - Rail Lines		
FM-3	Saratoga	LA	Agricultural & Residential	Agricultural & Residential	YES	10	3.3	400	NA	NA	NA	NA	NA	NA	NA	Minimal	NA	NA	YES	Small site, could be used in conjunction with FM-2
FM-4	Saratoga	LA	Agricultural	Agricultural	YES	5	1.4	100	NA	NA	NA	NA	NA	NA	NA	Minimal	NA	NA	YES	Griffin Island, 1 to 2 homes on island
FM-5	Saratoga	UA	Agricultural	Agricultural	NO	170	-3.2	NA	Rt. 32	Secondary Highway	12,800	200	NA	NA	NA	Minimal	Moderate	NA	NO	Excluded: Elevation, trucking distance
FM-6	Washington	UA	Agricultural	Agricultural	NO	120	-1.6	NA	Rt. 4, East Dyer Road	Primary Highway, Light Duty	8,700 (last 6,700 ft is Light Duty)	200	NA	NA	NA	Minimal	Light	NA	NO	Excluded: Agricultural, elevation, trucking route
FM-7	Washington	UA	Agricultural	Agricultural	NO	100	-3.2	NA	Bald Mountain Road	Primary Highway, Light Duty	12,300 (last 4,300 ft is Light Duty)	0	NA	NA	NA	Minimal	Light	NA	NO	Excluded: Small site, elevation, agriculture
FM-8	Washington	UA	Agricultural	Agricultural	NO	120	-3.2	NA	Bald Mountain Road	Primary Highway, Light Duty	14,900 (last 6,900 ft is Light Duty)	500	NA	NA	NA	Minimal	Light	NA	NO	Excluded: Elevation, agriculture
FM-9	Washington	UA	Agricultural	Agricultural/Vacant/Forestry	NO	120	-4.1	NA	Rt. 4, River Road, Thompson Road	Primary Highway, Light Duty, Light Duty	8,400 (last 8,100 ft is Light Duty)	0	NA	NA	NA	Minimal	Minimal	NA	NO	Excluded: Elevation, agriculture
FM-10	Washington	UA	Agricultural	Agricultural	NO	200	-4.4	NA	Rt. 4, River Road, Thompson Road, Cottrell Road	Primary Highway, Light Duty, Light Duty	13,400 (mainly Light Duty)	0	NA	NA	NA	Minimal	Light	NA	NO	Excluded: Elevation, agriculture
HF-1	Saratoga	UI	Manufacturing	Urban Residential/Agricultural & Residential	NO	120	8.8	NA	Bluebird Road	Medium Duty	400	0	0	14,700	500	Moderate	Minimal	Light	YES	Parcel includes the Niagara Mohawk Power Company borrow area and a proposed industrial area
HF-2	Washington	LI	Agricultural	Vacant	NO	30	9.1	100	NA	NA	NA	0	0	NA	NA	Minimal	NA	NA	NO	Industrial zoned area, site is bisected by the Champlain Canal, the Feeder Canal and two major roads
REMN	Washington/Saratoga	LI	Open space	2.4-Agricultural/3.5-Residential, commercial	YES	<10	8.8 average	7,000 ft. ave.	NA	NA	NA	NA	NA	NA	NA	Minimal	NA	NA	YES	Unique siting approach, utilizes the existing landfill deposit land area, one area not suitable
E (Partial)	Saratoga	LI	Manufacturing	Agricultural & Residential/Vacant/Residential	YES	10	5.4	300 (Old Moreau), 1,000 (New Moreau)	NA	NA	NA	NA	NA	NA	NA	Minimal	NA	NA	YES	Reconfigures the NYSDEC plan to avoid River Road and the historic cemetery, purchase
FE LF	Washington	UI	Public Service	Vacant/Residential	NO	130	8.2	NA	Rt. 4, Burgoyne Ave.	Heavy Duty, Medium Duty	12,100	0	0	NA	NA	Minimal	Urban	NA	NO	Excluded: Site area is less than 50 acres
KB LF	Washington	UI	Public Service	Vacant/Commercial	NO	70	8.6	5,000	NA	NA	NA	NA	NA	NA	NA	Minimal	NA	NA	NO	Excluded: Site area is less than 50 acres
GF-1	Saratoga	UI	Commercial	Commercial	NO	50	6	NA	Rt. 9/32	Heavy Duty	22,500	800	NA	NA	NA	Minimal	Moderate	NA	NO	Excluded: Population density along a lengthy trucking route. Former PCB cleanup site not designated

Notes:

* Spur length from river to railroad to be constructed
 ** Spur length from railroad to site to be constructed
 1) Rail line is approximately 120 ft below the average site elevation

Category:
 LA - Lowland Agricultural
 LI - Lowland Industrial
 UA - Upland Agricultural
 UI - Upland Industrial

River Mile Distance calculated from Thompson Island Dam (RM 188.5), negative value indicates south (downstream) of Dam, positive value indicates north (upstream) of Dam

Population based on residential buildings shown on USGS maps (various dates, 1958 to 1980).
 Minimal - Five or less houses indicated on USGS Quadrangle
 Light - Six to ten houses indicated on USGS Quadrangle
 Moderate - Eleven to Fifty houses indicated on USGS Quadrangle
 Urban - Greater than 50 houses indicated on USGS Quadrangle

For upland sites, only rail or trucking options were evaluated, except the Kingsbury Landfill (Site KB LF).
 For lowland sites along the Hudson River, only hydraulic pumping was evaluated. Those lowland sites along tributaries of the Hudson River (Site ME-2, Hoosic River and FM-2, Snook Kill) would not be amenable to hydraulic pumping from the Hudson River

403100

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► *Population:*

A qualitative description (minimal, light, or moderate) of the population density at and near the sites and along anticipated transport routes was made based on the number of structures or residences shown on the most recent USGS maps. Industrial development in the site vicinity was also noted.

The 41 sites were then evaluated to determine which sites merited further consideration. Sites eliminated from further consideration are designated by a "No" entry under the "Further Evaluation" column of Table 3. Reasons for site elimination during the Step 1 Evaluation are included in the "Comment" column. Upon completion of this Step 1 Evaluation, 17 sites remained for further consideration. These sites included:

- Five lowland industrial sites (TN-3, TN-4A, TN-4B, Remnant Deposits 2 through 5, and E [Partial]);
- Two upland industrial sites (SC-3F and HF-1);
- Five lowland agricultural sites (SC-2, SC-4, FM-2, FM-3 and FM-4); and
- Five upland agricultural sites (SC-3A, SC-3B, SC-3C, SC-3D and FM-1).

Sites were eliminated for various reasons, some of which include hauling distance and site elevation (TN-1, TN-2, S-1, S-2), incompatible land uses or structures on and adjacent to the site (S-3, SC-3E, SC-5, ME-4), population density along anticipated transport route (GF-1), and limited size (FE LF, KB LF).

4.2 Step 2 Evaluation

At the onset of the Step 2 Evaluation, seven upland and lowland agricultural sites (SC-2, SC-3B, SC-3C, SC-3D, FM-1, FM-2, and FM-3) were set aside and not considered further as there was no obvious advantage over NYSDEC's Site 10. In the Step 2 Evaluation, additional information on the remaining ten sites was obtained, including an approximation of the acreage of each site from the USGS maps using a planimeter, determination of the predominant soil types from the county soil

surveys, and a determination of the probable method of conveying dredge spoils from a barge on the river to the site. This information is summarized in Table 4 as well as positive and negative considerations associated with each of the sites.

Containment schemes consist of three components: sediment dewatering, treatment of the contaminated water generated during dewatering, and landfilling. In the NYSDEC 1985 study, all three scheme components were assumed to be conducted at one site. For Site 10 and four of the NYSDEC top-ranked alternative sites (Sites G, V, E, and F), NYSDEC's conceptual designs included hydraulic pumping of dredge spoils from a docking facility in the river or canal to a combined dewatering/containment cell (Malcolm Pirnie, 1985). Overflow water would be collected, treated, and discharged back to the river or canal. This method of managing the dredge spoils was considered for the candidate lowland sites in this study.

For the upland sites in this study, a temporary dewatering facility would be constructed at a lowland site along the river/canal and the dewatered spoils would be transported by truck or rail to the candidate site for final containment. Dewatering the dredge spoils prior to transport would decrease the risk factors in transporting high liquid-content material along public roadways and would be less costly compared to overland hauling of saturated spoils. Two or more of the candidate sites could be used for this method. However, the cost of this method would likely be greater than containment at a single lowland site near the river.

A third method considered for management of the dredge spoils would utilize one of the lowland candidate sites for dewatering and/or treatment, e.g., stabilization, prior to off-site transport to a treatment facility or landfill located outside of the study area. For example, portions of the remnant deposits, which are one of the candidate sites physically isolated from agricultural areas, could be used for dewatering and/or treatment prior to final containment or treatment at a separate location. Assessing the viability of different treatment methods and off-site facilities is part of the Reassessment Feasibility Study.

Table 4
Step 2 Evaluation of Candidate Sites

Site	Approx. Acreage	Predominant Soil Type	Current Use	Pumping(P), Trucking(T), or Rail(R)	Positive Considerations	Negative Considerations	Scheme Components
TN-3	80	RhA	Grassed	P	Industrial zoning, low relief, near river	Distance from Thompson Island Pool	All. Possibly only material from lower pools
TN-4A	120	RhA	Cultivated	P	Low relief, near river	Residential zoning, distance from Thompson Island Pool, near Waterford intake	All. Possibly only material from lower pools
TN-4B	100	RhA	Grassed/industrial	P	Industrial zoning, low relief, near river	Distance from Thompson Island Pool, near Waterford intake	All. Possibly only material from lower pools
SC-3A	220	OtA, OaB	Commercial, gravel pit, vacant	T	Near major road and river, 8 miles from Thompson Island Dam	Site elevation, surrounding land use agricultural	All, may require dewatering prior to transport.
SC-3F	250	OaB, OaC, OtA	Driving range, grassed, gravel pit	T or R	Near major road and river, 7 miles from Thompson Island Dam	Site elevation, surrounding land use agricultural, near fairgrounds	All, may require dewatering prior to transport.
SC-4	110	Hb, Te	Industrial sludge disposal, cultivated	P	Near river, low relief, 6.5 miles from Thompson Island Dam	Floodplain, proximity to villages	All.
FM-4	100	Te, Tg, Lm	Residential, wooded, open water	P	Near river, low relief, in Thompson Island Pool, could utilize backwater area	Floodplain, potentially controversial approach	All.
HF-1	230	WnB	Vacant, industrial park, borrow area	T or R	Near Thompson Island Pool, immediate vicinity of remnants	Site elevation, beyond navigable portion of river, lots being actively marketed	All or disposal only (dewatering and/or treatment at Remnants or Site E)
REM N	85 (total)	Lm, WnD	Vacant, industrial, wooded	P	Near river and Thompson Island Pool, already contains PCBs, low relief, use natural escarpment for containment	Discontiguous, population density near 3 and 5, beyond navigable portion of river, requires pre-excavation of existing materials, floodplain	Sites 2 through 4 for disposal and Site 5 for dewatering and treatment
E (Partial)	80	Ud	Industrial, agricultural, residential	P	Near river, in Thompson Island Pool, already contains PCBs	Cemetery and historic area avoided, results in reduced area compared to NYSDEC's site	Could be combined with remnants and HF-1

SCHEME COMPONENTS

- 1) Dewatering/treatment of dredge spoils
- 2) Treatment of contaminated water from dewatering operations
- 3) Containment cell construction

REM N Acreage (Approx.)

REM N 2	9
REM N 3	27
REM N 4	26
REM N 5	8
Between 2 & 4	15
Total	85

Key to Soil Types

Hb	Hamlin silt loam
Lm	Limerick - Saco complex (silt loam)
OaB	Oakville loamy fine sand, undulating
OaC	Oakville loamy fine sand, rolling
OtA	Otisville gravelly sandy loam
RhA	Rhinebeck silt loam
Te	Teel silt loam
Tg	Tioga fine sandy loam
Ud	Udipsamments, dredged
WnB	Windsor loamy sand, undulating
WnD	Windsor loamy sand, hilly

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A summary of each of the remaining ten candidate sites follows. In some cases, two sites are grouped together because of their proximity to one another and complementary characteristics.

4.2.1 Site TN-3

This site in Saratoga County encompasses approximately 80 acres. Currently, the site appears to be grassed, possibly for hay farming. Positive considerations for this site include industrial zoning, low relief, and proximity to the river. Negative considerations include a long barging distance for a considerable portion of the contaminated sediments from the Thompson Island Pool, more than 30 miles from the center of the pool, requiring passage through six locks. This would result in a greater risk of accident in transport when compared to Site 10. Dredge spoils could be pumped directly from a barge to the site. Soil type at the site is a silt loam, which would likely not be suitable for a landfill liner resulting in the import of a large amount of impermeable, clayey soil. This site could be used for all scheme components, including dewatering/treatment of dredge spoils, water treatment, and containment. According to Malcolm Pirnie (1984), the Village of Waterford municipal water intake is located near River Mile 158, which is approximately 3,000 ft downstream of the site. Consequently, if water treatment occurs at this site, discharge of treated water back into the river must take into account the proximity of the municipal water intake.

4.2.2 Sites TN-4A and TN-4B

These two sites in Saratoga County are separated by an active rail line. Site TN-4A encompasses approximately 120 acres and Site TN-4B is about 100 acres. Site TN-4A is currently cultivated while Site TN-4B includes both cultivated fields and light industry. Positive considerations for these two sites include low relief and proximity to the river. Site TN-4B is also zoned industrial. Dredge spoils could be pumped directly from a barge to these sites. Negative considerations include residential zoning for a portion of site TN-4A, proximity to existing industrial area, including the General Electric Silicones Plant, and long barging distance from the Thompson Island Pool, requiring passage through five locks. Also, these two sites are approximately two miles upstream of the Village

of Waterford municipal water intake and within a few thousand feet of the GE Silicones Plant industrial water intake. Soil type at these sites is a silt loam which would likely not be suitable for a landfill liner. These sites could be used for all scheme components, including dewatering/treatment of dredge spoils, water treatment, and containment.

4.2.3 Sites SC-3A and SC-3F

These two sites in Washington County are in close proximity to each other. Site SC-3A encompasses approximately 220 acres and Site SC-3F is about 250 acres. The sites currently include commercial gravel pits, a golf driving range, and large, grassed areas. Site SC-3A is zoned for agricultural use while Site SC-3F is zoned industrial. Land use of areas surrounding both sites is predominantly agricultural. Positive considerations include a relatively short barging distance, approximately seven to eight miles from the Thompson Island Pool. Negative considerations for these two sites include site elevation above the river (220 ft to 260 ft above the Lock 4/5 Pool of the river) necessitating truck or rail transport of dredge spoils to the site. A major roadway, Route 29, could be used for transport of material via truck to the site. A rail line is also present near Site SC-3F and could be accessible from the river near the Village of Thomson near the Northumberland/Lock 5 Dam.

These sites are also adjacent to the Washington County Fairgrounds and would thus impact recreational resources, which is one of NYSDEC's siting considerations. Soil types at these sites include gravelly, sandy loam and loamy, fine sand which are unlikely to provide a suitable liner material. The optimal use of these sites would be for containment as the cost of transporting sediment to these upland sites without dewatering would be prohibitive. A site adjacent to the river would likely also be needed for dewatering and water treatment.

4.2.4 Site SC-4

This site in Washington County overlaps with a portion of NYSDEC's Site C. One of the negative aspects of Site C was the location of Route 29 and a local road, both of which exist within the proposed site boundary as drawn by NYSDEC. Candidate Site SC-4 eliminated this problem by moving the site boundaries to the north. This site encompasses approximately 110 acres. Currently, the site includes cultivated areas and a sludge-disposal area for the Hollingsworth-Vose Mill. Land areas in the vicinity of the site includes both agricultural and industrial uses. Positive considerations for the site include proximity to the river, low relief, and a relatively short barging distance (about seven miles) from the Thompson Island Pool. Dredge spoils could be pumped directly from a barge to the site. Negative considerations include proximity to local villages, including Schuylerville and Clarks Mills. Also, a large portion of the site is within the 100-year floodplain. Soil type at the site is a silt loam, which would likely not be suitable for a landfill liner. This site could be used for all scheme components, including dewatering/treatment of dredge spoils, water treatment, and containment.

4.2.5 Site FM-4

This proposed site in Saratoga County includes Griffin Island and the backwater area between Griffin Island and the west bank of the Hudson River up to River Road. The site encompasses approximately 100 acres. The proposed scheme for this site would entail filling in the backwater area to raise the ground surface up to the level of Griffin Island. Perimeter berms would be constructed to prevent river flood waters from entering the proposed containment area. The site currently includes a residence and wooded areas. The surrounding land use is predominantly agricultural. Positive considerations for the site include its location within the Thompson Island Pool and its low relief, enabling pumping of dredge spoils directly to the site. Negative considerations are that the site is entirely within the 100-year floodplain and would require filling of open water and wetland areas. Soil types on Griffin Island include silt loam and fine, sandy loam which would likely not be suitable for a landfill liner. Also, the residence on site would likely have to be relocated. This site could be

used for all scheme components, including dewatering/treatment of dredge spoils, water treatment, and containment.

4.2.6 Site HF-1

This site in Saratoga County encompasses approximately 230 acres. Currently, most of the site is situated in an area proposed as an industrial park. The Niagara Mohawk Power Corporation's former borrow area, which was utilized by General Electric during the capping of the remnant deposits, was located within the proposed boundaries of the site. The surrounding area includes manufacturing and residential zones. Positive considerations for the site include proximity to the Thompson Island Pool and the remnant deposits, where initial dewatering could occur. Dredge spoils could be transported to the site via existing rail lines adjacent to the site or via upgraded access roads from Remnant Deposits 2 and 4. Negative considerations include elevation at the site (approximately 120 ft above the river), the site is beyond the navigable portion of the Hudson River, and the lots at the industrial park are being actively marketed. Soil type at the site is a loamy sand which would likely not be suitable for landfill liner material. The optimal use of this site would be for final containment or treatment of dewatered spoils as transporting sediment to the site prior to dewatering would not be cost effective when compared with dewatering/containment at a nearby lowland site.

4.2.7 Remnant Deposits

This site includes Remnant Deposits 2 through 5 and the shoreline area between Remnant Deposits 2 and 4. Remnant Deposits 2 and 4 are located on the west bank of the Upper Hudson River in Saratoga County and Remnant Deposits 3 and 5 are located along the east bank in Washington County. The combined acreage for these sites is approximately 85 acres. The sites are currently vacant, grassed areas covering PCB-contaminated material. The surrounding land use includes agricultural and industrial tracts (Site HF-1) adjacent to Remnant Deposits 2 and 4 and residential and commercial uses adjacent to Remnant Deposits 3 and 5. Positive considerations for the site include proximity to the river and the Thompson Island Pool. Relief at the site is low while

the existing slope along the river valley walls could be used for containment. Furthermore, these sites already contain PCB-contaminated sediments but are currently unlined. One of the negative considerations is that the sites are discontinuous and would require construction of separate cells for containment. Also, the remnant deposits are beyond the navigable portion of the river. However, dredge spoils could be pumped from the upstream end of the navigable portion of the river near Rogers Island to Remnant Deposits 4 and 5. Another negative consideration is the population density adjacent to Remnant Deposits 3 and 5.

The remnant deposits are areas of sediments with high PCB concentrations that surfaced after the Fort Edward Dam was removed and the water level dropped. These areas were capped by General Electric in 1990 and 1991, under a Consent Decree with USEPA, in order to prevent exposure via direct contact and volatilization. The cap consisted of a leveling layer of clean sand taken from the former Niagara Mohawk borrow area at Site HF-1, a material known as Claymax™ consisting of a highly absorbent clay enclosed between geotextile fabric, a sand subsoil layer, and then a layer of clean topsoil. The areas were then seeded to establish a vegetative cover and maintained to prevent tree growth. The shoreline was protected with rocks sized appropriately to withstand flows from a 100-year flood. The elevation of the caps is above the 100-year floodplain. Soil boring information collected prior to the capping of the remnant deposits indicates that a substantial portion of the material is woodchips and does not have the structural properties necessary to support a containment facility. The remnant deposits would be more suitable for a temporary dewatering or treatment facility than a permanent containment area for new dredge spoils.

4.2.8 Site E (Partial)

In the NYSDEC 1985 study, negative considerations associated with Site E included the required rerouting of River Road and the presence of the cemetery and historic homestead. Site E (Partial) attempted to eliminate these negative aspects by reconfiguring the boundaries of the site to avoid relocating River Road, the cemetery and the historic homestead. The current proposed site encompasses approximately 80 acres, whereas NYSDEC's Site E is 128 acres. Current land use is

industrial and includes existing dredge spoil sites (Old and New Moreau Disposal Areas and NYSDOT's Special Area 13). Adjacent land uses are agricultural and residential. Positive considerations for this site include its location adjacent to the river and the Thompson Island Pool. A portion of the site also contains PCB-contaminated dredge spoils. Negative considerations include the presence of the historic homestead and cemetery adjacent to the reconfigured boundary. The Old Moreau Landfill, which is not lined, would have to be excavated in order to construct a suitable liner. The New Moreau Landfill would have to be investigated to determine if additional material could be placed on top of this lined landfill without compromising the existing liner. Also, the reconfigured site boundary is smaller than NYSDEC's Site E. Soil type at the site is listed in the Saratoga County Soil Survey as dredged sediments which would not be suitable as a landfill liner. This site could be used for all scheme components, including dewatering/treatment of dredge spoils, water treatment, and containment.

5. COMPARISON TO SITE 10

As described in Section 2.4, NYSDEC evaluated twelve sites as alternatives to Site 10. These sites, as well as Site 10, were evaluated and ranked by NYSDEC according to the requirements and procedures of 6 NYCRR Part 361. Each of the fourteen siting considerations identified in Section 2.2 of this report was evaluated, except for three which were not considered by NYSDEC as applicable to a dredge-spoils landfill. The siting considerations excluded from NYSDEC's ranking include: potential for fire and explosions on site; areas of mineral exploitation; and preservation of endangered, threatened, and indigenous species. Total scores were computed for each site based on the procedures described earlier and the sites, including Site 10, were ranked from one to thirteen (see Table 1). Site 10 was the top-ranked site among the thirteen evaluated by NYSDEC.

For evaluation of the newly-designated candidate sites, TAMS generally used the regulatory criteria in a qualitative way rather than performing the numerical ranking as was done by NYSDEC. The siting criteria were applied qualitatively as a tool to eliminate sites from further consideration and guide scoping of the Feasibility Study, rather than as a site selection tool. This preliminary survey was not intended to generate the detailed geologic, hydrogeologic, and demographic information that the formal, quantitative ranking would require. Rather, general information was used to eliminate sites from further consideration. Eight of the ten newly-designated sites remaining at the end of the Step 2 Evaluation were grouped into three combination of sites (TN-3, TN-4A, and TN-4B; SC-3A and SC-3F; and HF-1, Remnants, and E Partial) based on proximity and site characteristics. Two sites (Sites SC-4 and FM-4) were included as single entities for a total of five individual sites or combination of sites potentially warranting further investigation, should USEPA decide to proceed in that direction.

Each of the five sites or combination of sites was compared to Site 10 based on NYSDEC's siting considerations and criteria. Scores for each of the final candidate sites were not computed on the basis of the regulatory procedures. Rather, as shown in Table 5, each site or combination of sites

was qualitatively compared to Site 10. The three siting considerations (9, 11 and 12) not applied by Malcolm Pirnie in the NYSDEC 1985 study because they were not considered applicable to a dredge-spoils landfill were also not applied in this comparison. For each site, each of the remaining siting considerations were evaluated based on the information compiled on the USGS maps and presented in Tables 3 and 4. For each consideration, each site was determined to be either more favorable than Site 10 ("+" entry in Table 5), less favorable than Site 10 ("- " entry), or roughly equivalent ("0" entry). For each of the five sites, an overall comparison to Site 10 was made based on the entries in Table 5 and the weights of each of the siting considerations. Although some sites were rated more favorable than Site 10 for a specific siting consideration, the overall comparison for each site was determined to be less favorable than Site 10. As was the case in the NYSDEC 1985 study, siting considerations for which sites were rated more favorable than Site 10 carry less weight.

A summary of the comparisons for each of the five sites or combination of sites is provided below (refer to Plate 2 for location).

TN-3, TN-4A, TN-4B Combination

These three sites were combined due to their close proximity to one another. The total combined acreage for these sites is approximately 300 acres, with a major portion zoned for industrial use. These sites could be used for all scheme components, including dewatering/treatment of dredge spoils, water treatment, and containment. Containment/treatment at these sites could be limited to dredge spoils from the lower pools, if the long barging distance is determined to be cost prohibitive and dredging of contaminated sediments in the lower pools is determined to be necessary. A positive aspect to this group of sites is the rather isolated location from agricultural and residential areas. As this land is zoned industrial, the loss of current agricultural lands appears minimal. However, the area in the site vicinity consists of industrial/commercial establishments, including the General Electric Silicones Plant in Waterford.

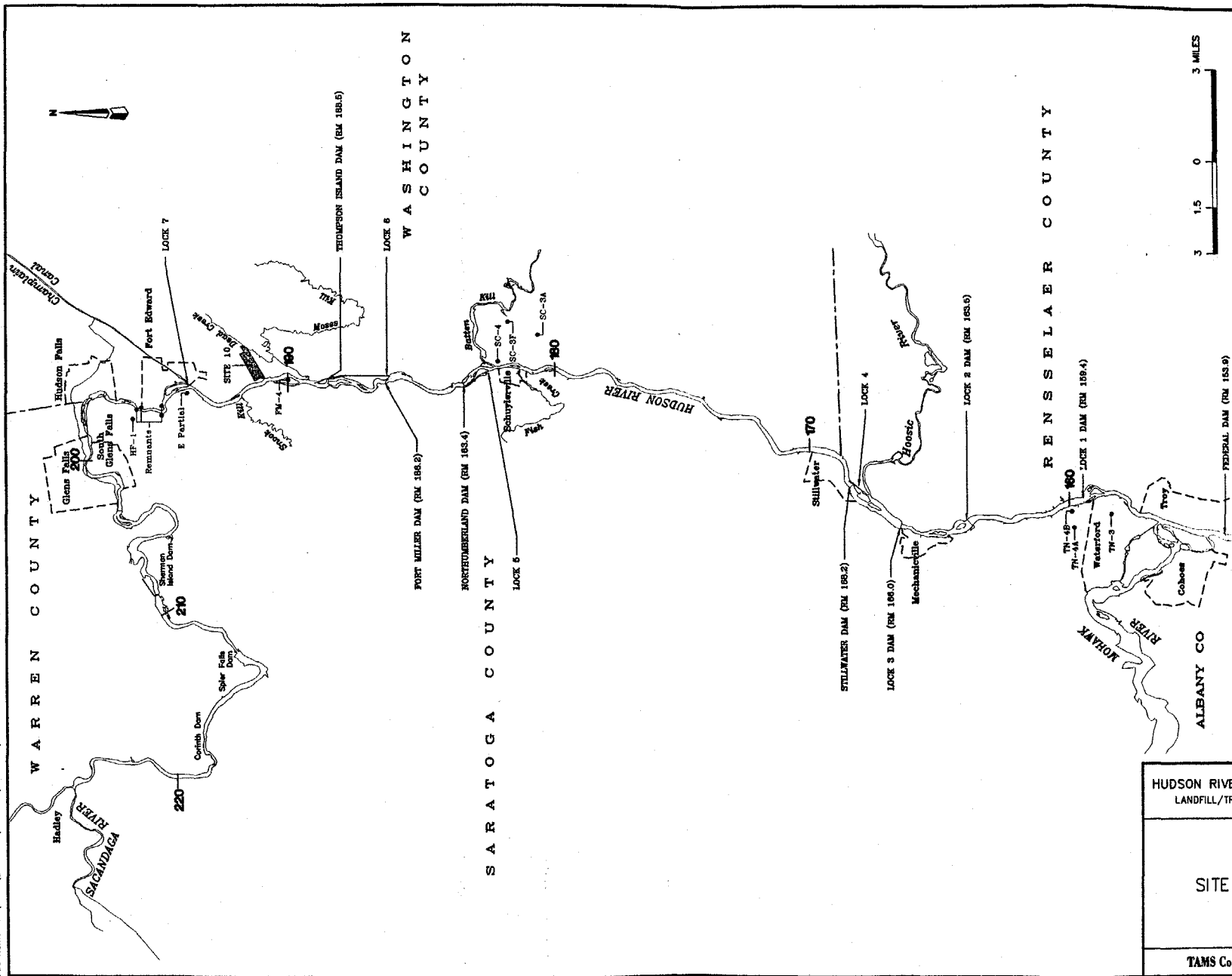
Table 5
Site 10 Comparison

NYSDEC Siting Consideration (1)	Weight (%) (2)	Site (3)				
		TN-3, TN-4A, TN-4B Comb.	SC-3A, SC-3F Comb.	SC-4	FM-4	HF-1, REMN, E (Partial) Comb.
1 Population density	10	"_"	"0"	"_"	"0"	"_"
2 Population adjacent to transport route	7	"_"	"0"	"_"	"0"	"_"
3 Risk of accident in transportation	10	"_"	"_"	"0"	"0"	"_"
4 Proximity to incompatible structures	3	"0"	"0"	"0"	"0"	"0"
5 Utility lines	1	"0"	"0"	"+"	"+"	"0"
6 Municipal effects	4	"+"	"0"	"0"	"0"	"+"
7 Contamination of ground and surface waters	18	"_"	"_"	"_"	"_"	"_"
8 Water supply sources	8	"_"	"0"	"_"	"_"	"0"
9 Fire and explosions	11	NA	NA	NA	NA	NA
10 Air quality	12	"_"	"0"	"_"	"0"	"_"
11 Areas of mineral exploitation	3	NA	NA	NA	NA	NA
12 Preservation of endangered, threatened, and indigenous species	6	NA	NA	NA	NA	NA
13 Conservation of historic and cultural resources	4	"0"	"_"	"+"	"0"	"0"
14 Open space, recreational and visual impacts	3	"0"	"_"	"_"	"_"	"_"
Overall Comparison		Less Favorable	Less Favorable	Less Favorable	Less Favorable	Less Favorable

Notes:

- (1) Siting Considerations listed in Section 2.2 of this report as per 6 NYCRR 361.7.
- (2) Individual siting consideration weight as per 6 NYCRR Part 361.7.
- (3) "+" The site was rated more favorable than Site 10 for this siting consideration.
 "-" The site was rated less favorable than Site 10 for this siting consideration.
 "0" The site was rated the same as Site 10 for this siting consideration.
 NA Not Applicable as per NYSDEC evaluation of sites (Malcolm Pirnie, 1985).

TAMS Consultants, Inc.



3 1.5 0 3 MILES

LEGEND:

- COUNTY BOUNDARY
- RIVER MILE (RM) UPSTREAM OF THE BATTERY
- STEP 2 EVALUATION CANDIDATE SITE (LOCATION APPROXIMATE)
- NYSDEC PREFERRED CONTAINMENT SITE (LOCATION APPROXIMATE)

SOURCES:

SHORELINES AND RM DESIGNATIONS ARE APPROXIMATE.

1. APPROXIMATE SITE LOCATIONS FOR NYSDEC SITES OBTAINED FROM MALCOLM PIRNIE, MARCH 1985.

HUDSON RIVER PCB REASSESSMENT RI/FS
LANDFILL/TREATMENT FACILITY SITING SURVEY

SITE 10 COMPARISON

TAMS Consultants, Inc.

PLATE 2

403113

As shown in Table 5, this combination of sites was determined to be less favorable than Site 10 for the following siting considerations: population density (residential and non-residential) on or near the site and along the transport route; risk of accident in transportation because of the site's distance from the Thompson Island Pool; potential for contamination of ground and surface waters due to non-ideal natural soil conditions; proximity to Waterford water intake; and potential air quality impacts to the nearby residential and industrial areas. The municipal effects siting consideration was considered more favorable for this combination of sites because of the site's partially-industrial zoning. However, this siting consideration carries a relatively small weight. From an overall standpoint, this combination of sites was considered less favorable than Site 10.

SC-3A, SC-3F Combination

These two sites were combined due to their close proximity to one another. The total combined acreage for these sites is approximately 470 acres, with a portion zoned for industrial use. These sites could be used for containment and/or treatment of dredge spoils, however, dewatering would likely have to occur at a separate location near the river because of the site's elevation and distance from the river. A major road and rail line exist nearby to enable truck or rail transport from the near-river dewatering area.

As shown in Table 5, this combination of sites was determined to be less favorable than Site 10 for the following siting considerations: risk of accident in transport due to steep grades from the river to the site; potential for contamination of ground and surface waters due to non-ideal soil conditions; and impacts to recreational and cultural resources due to the site's proximity to the Washington County Fairgrounds. From an overall standpoint, this combination of sites was also considered less favorable than Site 10.

Site SC-4

As shown in Table 5, this near-river, lowland site was determined to be less favorable than Site 10 for the following siting considerations: population density at or near the site and along the transport route because of the site's proximity to the villages of Schuylerville and Clarks Mills; potential for contamination of ground and surface waters due to non-ideal natural soil conditions, shallow depth to groundwater, and location within the floodplain; water supply sources due to potential impact of river floods through the site on river quality; potential air quality impacts to the nearby residential areas; and open space/visual impacts. This site was considered more favorable than Site 10 for two siting considerations carrying less weight, including utility lines and conservation of historic and cultural resources. From an overall standpoint, this site was also considered less favorable than Site 10.

Site FM-4

This site, Griffin Island, presented a unique siting approach in that the location is within the Hudson River Superfund Site in the Thompson Island Pool. Similar approaches for a containment facility have been used at other Superfund sites, e.g., Waukegan Harbor in Illinois, where near-shore confined disposal areas in open water have been used for containment of contaminated dredge spoils. As shown in Table 5, this lowland site was determined to be less favorable than Site 10 for the following siting considerations: potential for contamination of ground and surface waters due to non-ideal natural soil conditions, shallow depth to groundwater, and location within the floodplain and wetland, open-water areas; water supply sources due to potential impact of river floods through the site on river quality; and open space/visual impacts. This site was considered more favorable than Site 10 for the utility lines siting consideration. From an overall standpoint, this site was also considered less favorable than Site 10.

HF-1, Remnant Deposits, Site E (Partial) Combination

These three sites were combined due to their proximity to one another and site characteristics. It was envisioned that dewatering/treatment could be conducted at the remnant deposits and/or Site E (Partial) with final containment or treatment at Site HF-1. Existing access roads link Remnant Deposits 2 and 4 to Site HF-1. Site HF-1 is zoned industrial and is geographically isolated from nearby residential areas. However, the planned use of this land is for the Town of Moreau Industrial Park. Lots are presently for sale and are actively being marketed. Alternatively, containment could be considered at Site E (Partial) and/or the remnant deposits. This would likely require the excavation of existing PCB-contaminated soils and material for the construction of the containment cells and liner.

As shown in Table 5, this combination of sites was determined to be less favorable than Site 10 for the following siting considerations: population density on or near the site and along the transport route; risk of accident in transport of material to the Site HF-1 portion; potential for contamination of ground and surface waters due to non-ideal natural soil conditions; potential air quality impacts to the nearby residential and industrial areas in Fort Edward; and open space/visual impacts. This combination of sites was considered more favorable than Site 10 for the municipal effects siting consideration. The areas are not zoned for agricultural use and portions already contain PCB-contaminated material. From an overall standpoint, this combination of sites was also considered less favorable than Site 10.

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REFERENCES

Brooks, R. 1997. Personal Communication to Michael L. Spera, TAMS Consultants, Inc., from Robert Brooks, Washington County Department of Planning & Community Development, Director. December 15, 1997.

Dergosits, J. R. 1994. Personal Communication to Bruce Fidler, TAMS Consultants, Inc., from John R. Dergosits, NYSDEC, Hudson River PCB Project Manager. June 22, 1994.

Fort Edward, Town. 1997. Resolution No. 47: Returning Parcels in the Town of Fort Edward Back to Agricultural District. May 12, 1997.

Malcolm Pirnie. 1978. *Phase I Engineering Report, Dredging PCB Contaminated Hot Spots, Upper Hudson River, New York*. For NYSDEC. December 1978.

Malcolm Pirnie. 1984. *Draft Report: Study of Impacts of Hudson River Flow Regulation*. For Hudson River - Black River District. May 1984.

Malcolm Pirnie. 1985. *Hudson River PCB Reclamation/Demonstration Project, Evaluation of Alternative PCB Sites/Disposal Technologies*. For NYSDEC. March 1985.

NUS Corporation. 1984. *Feasibility Study, Hudson River PCBs Site, New York*. For USEPA. April 1984.

Sanders, J. E. 1989. The PCB Pollution Problem in the Upper Hudson River: From Environmental Disaster to "Environmental Gridlock", *Northeastern Environmental Science*, Volume 8, Number 1.

TAMS/Cadmus/Gradient. 1997. *Hudson River PCBs Reassessment RI/FS, Phase 2 Report, Review Copy, Further Site Characterization and Analysis, Volume 2C: Data Evaluation and Interpretation Report*. TAMS Consultants, Inc., The Cadmus Group, Inc., and Gradient Corporation. For USEPA, Region II. February 1997.

United States Department of Agriculture, Natural Resources Conservation Service. May 1995. *Soil Survey of Saratoga County, New York - Interim Report*.

United States Department of Agriculture, Soil Conservation Service. January 1988. *Soil Survey of Rensselaer County, New York*.

United States Department of Agriculture, Soil Conservation Service. September 1975. *Soil Survey of Washington County, New York*.

USEPA. 1981. *Draft Environmental Impact Statement for the Hudson River PCB Demonstration Reclamation Project*. USEPA, Region II with US Army Corps of Engineers and NYSDEC. May 1981.

Washington County Board of Supervisors. 1997. Resolution No. 164: Opposition to Hudson River PCB Landfill in Town of Fort Edward. May 16, 1997.

APPENDIX A
MUNICIPAL CONTACTS

RENSSELAER COUNTY

Rensselaer County Economic Development and Planning

Town/City Clerks:

Schodack
East Greenbush
North Greenbush
Rensselaer
Troy
Brunswick
Schaghticoke
Castleton-on-Hudson

SARATOGA COUNTY

Saratoga Economic Development Corporation

Saratoga County Planning Office

Town/City/Village Clerks:

Corinth
Hadley
Halfmoon
Moreau/South Glens Falls
Mechanicville
Northumberland
Saratoga
Stillwater
Waterford
Schuylerville
Victory Mills

WASHINGTON COUNTY

Washington County Local Development

Washington County Department of Planning & Community Development

Town/City/Village Clerks:

Kingsbury
Fort Edward
Easton
Greenwich

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APPENDIX B
SELECT PHOTOGRAPHS

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PHOTOGRAPH 1: Site TN-3, looking north/northeast from Bells Road



PHOTOGRAPH 2: Site TN-3, off Middletown Road at Hillview Road looking northeast towards the parcel, behind treeline behind residence



PHOTOGRAPH 3: TN-4A, On Brookwood Rd. looking south, GE Silicones in the distance



PHOTOGRAPH 4: Site TN-5, Looking northeast from River Road



PHOTOGRAPH 5: Site 23A, looking west from River Road towards the Hudson River



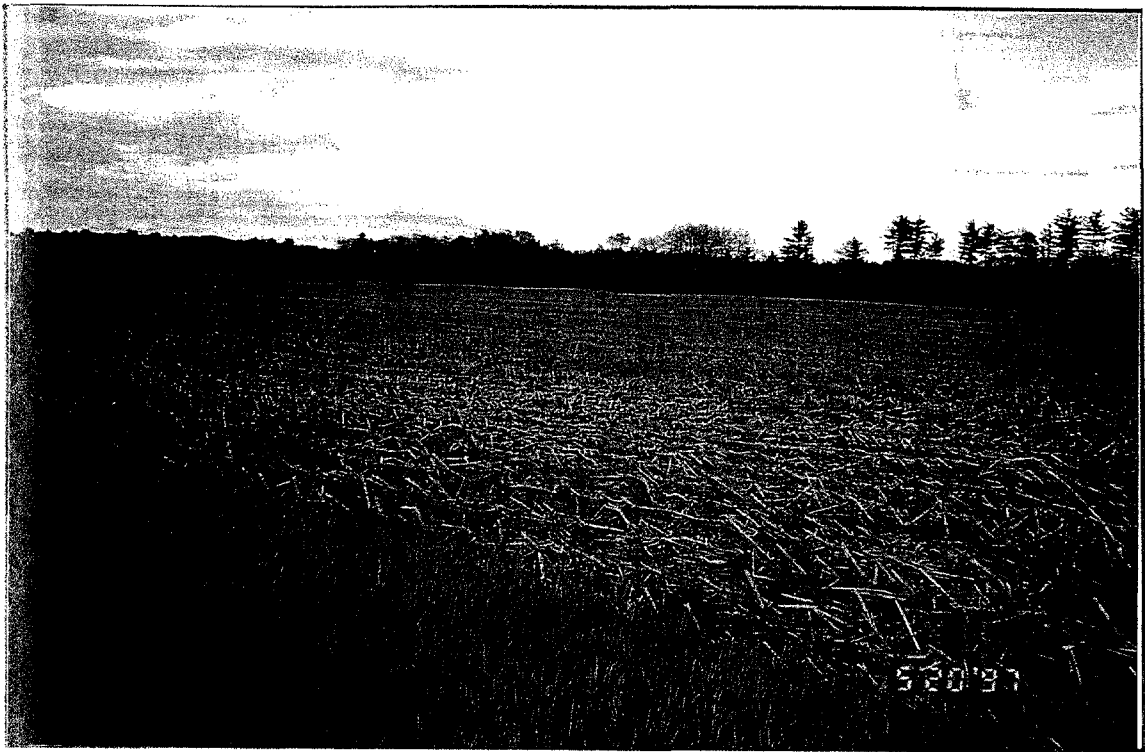
PHOTOGRAPH 6: Site SC-2, Looking southwest from River Road



PHOTOGRAPH 7: Site C, Looking south from Route 29



PHOTOGRAPH 8: Site SC-4, Hollingsworth-Vose Easton Mill, just south of Batten Kill, solid waste disposal area



PHOTOGRAPH 9: Site SC-5, Looking northeast from Duell Road



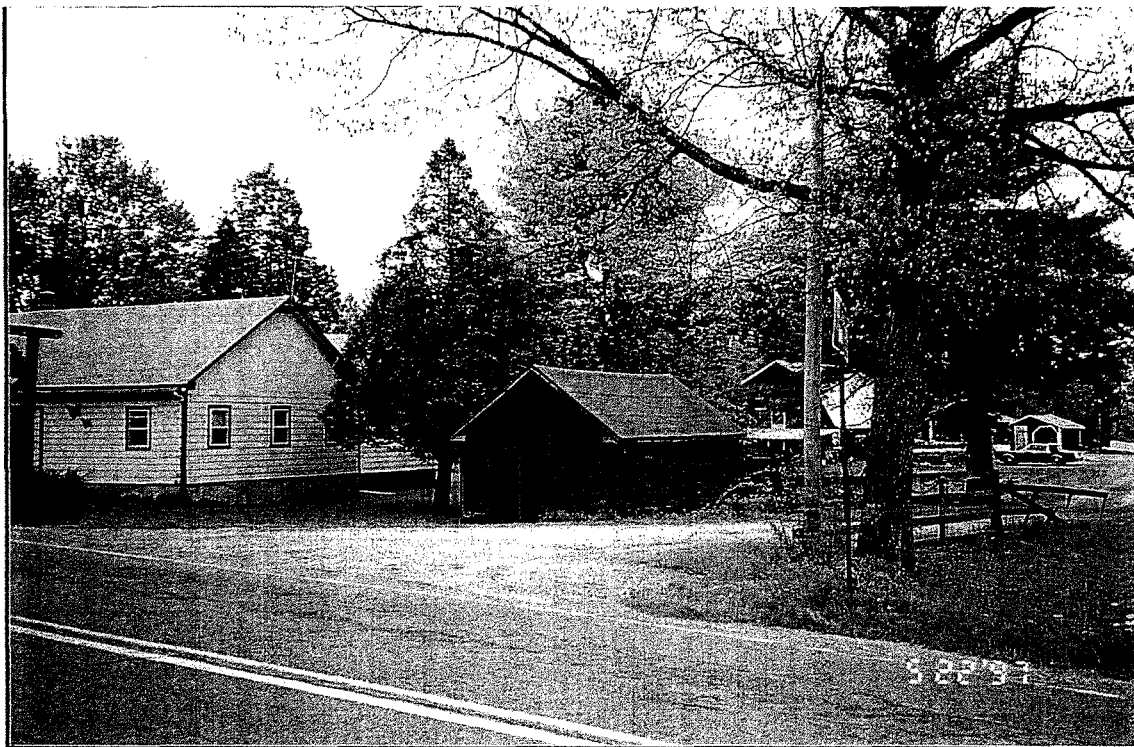
PHOTOGRAPH 10: Site SC-5, sign at corner of Wilbur and Duell Roads, future site of Saratoga National Cemetery



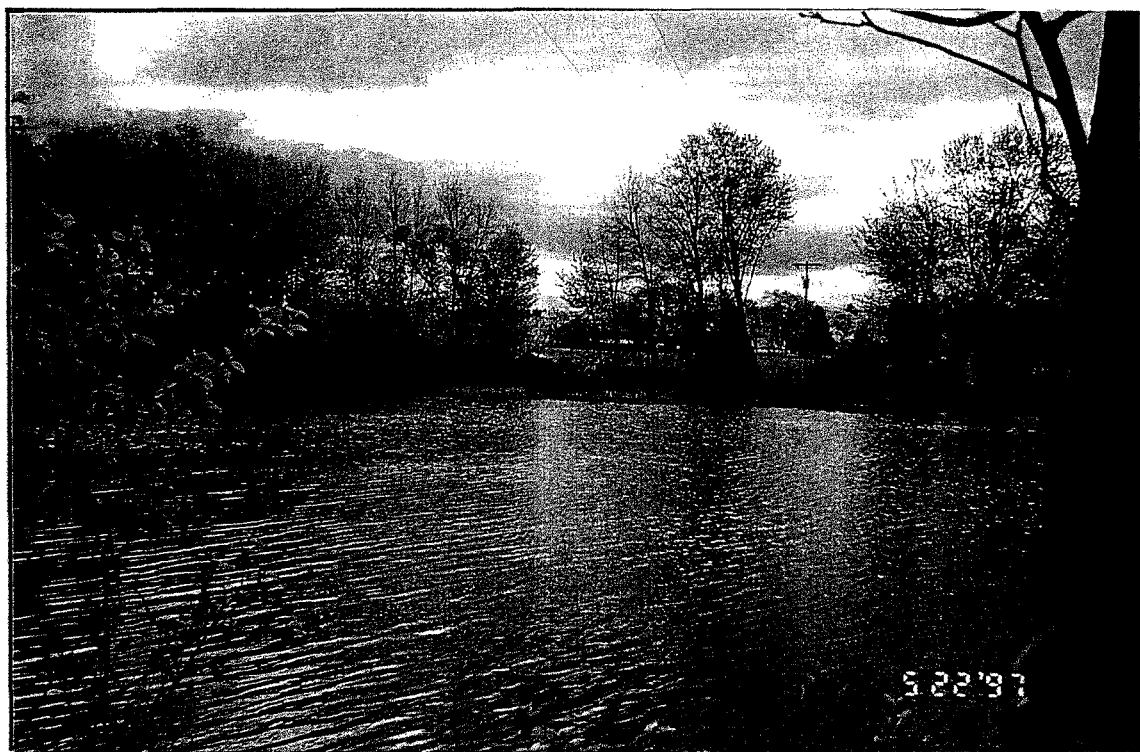
PHOTOGRAPH 11: Site SC-3A, View from Fellows Road, chopped wood appears to be firewood, parcel is possibly used for timber harvesting



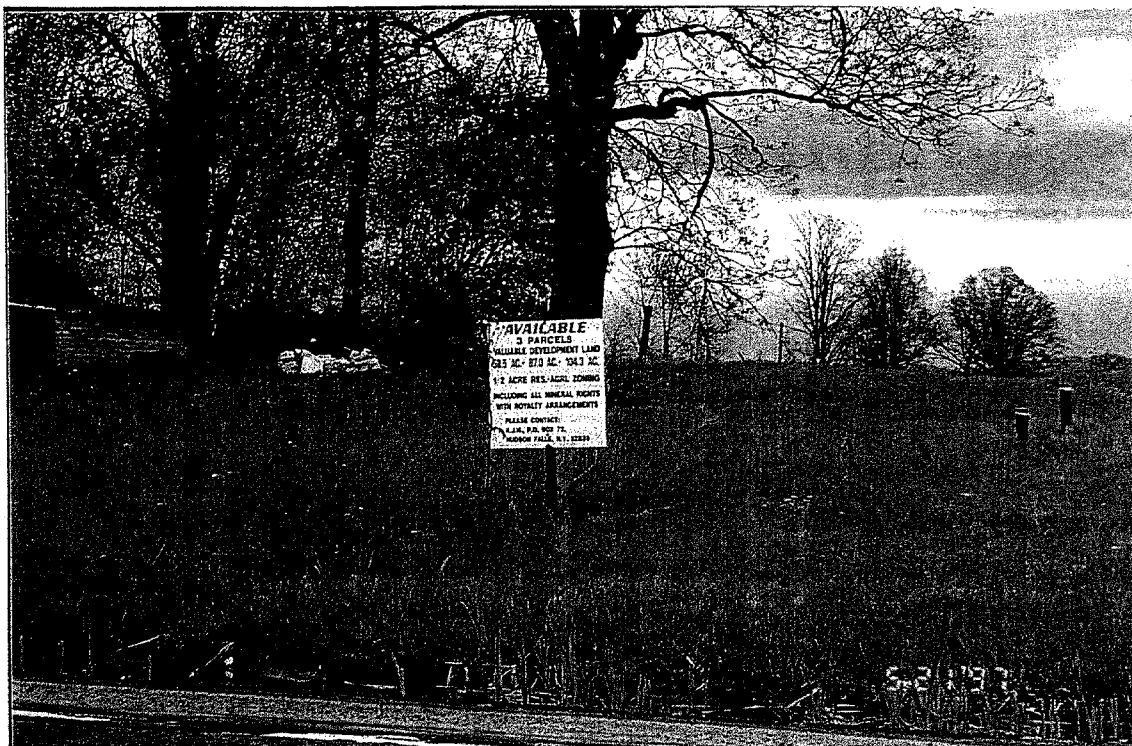
PHOTOGRAPH 12: Site SC-3F, View from Schuylerville Road, agricultural



PHOTOGRAPH 13: Site D, looking southeast from Clarks Mill Road



PHOTOGRAPH 14: Site FM-4, looking east across the Hudson River at Griffin Island from River Road



PHOTOGRAPH 15: Site 10, For Sale sign posted on Route 4



PHOTOGRAPH 16: Site 10, looking east/northeast from Route 4



PHOTOGRAPH 17: Site 10, looking west down Fitzpatrick Drive towards Site 10



PHOTOGRAPH 18: Old Moreau Site, looking southeast into the Site from the road leading to the Encore Paper Plant



PHOTOGRAPH 19: New Moreau Site, Drainage ditch along the southwest corner of the Site, view from River Road east of the railroad tracks



PHOTOGRAPH 20: Special Area 13, looking east from the road to the Marina



PHOTOGRAPH 21: Remnant Deposit 5, looking southeast from McCrea Street



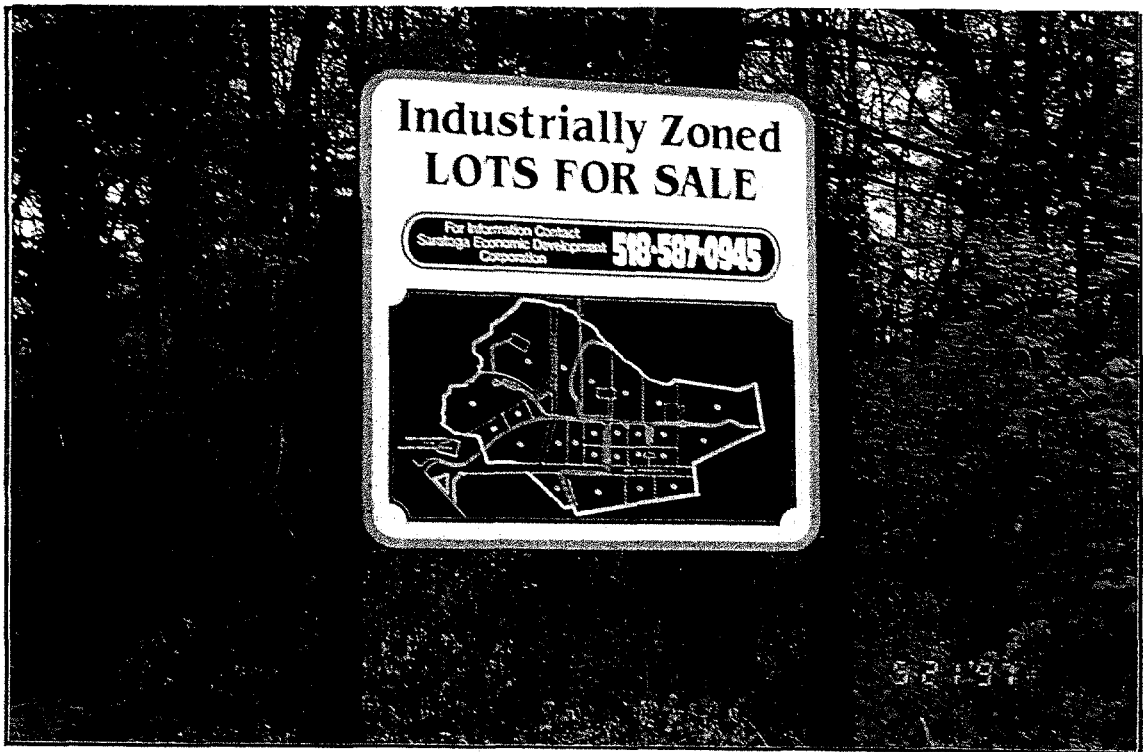
PHOTOGRAPH 22: Remnant Deposit 4, looking west across the Hudson River from McCrea Street



PHOTOGRAPH 23: Remnant Deposit 4, looking south towards the Site from the west bank of the Hudson River



PHOTOGRAPH 24: Remnant Deposit 3, looking northeast towards the Site from the west bank of the Hudson River



PHOTOGRAPH 25: Site HF-1, Entrance sign to the Moreau Industrial Park on Bluebird Road



PHOTOGRAPH 26: Site HF-1, looking north towards Lot #3, former Niagara Mohawk Power Corporation borrow area



PHOTOGRAPH 27: GE Hudson Falls Plant, looking east across the Hudson Falls Dam towards the GE Plant



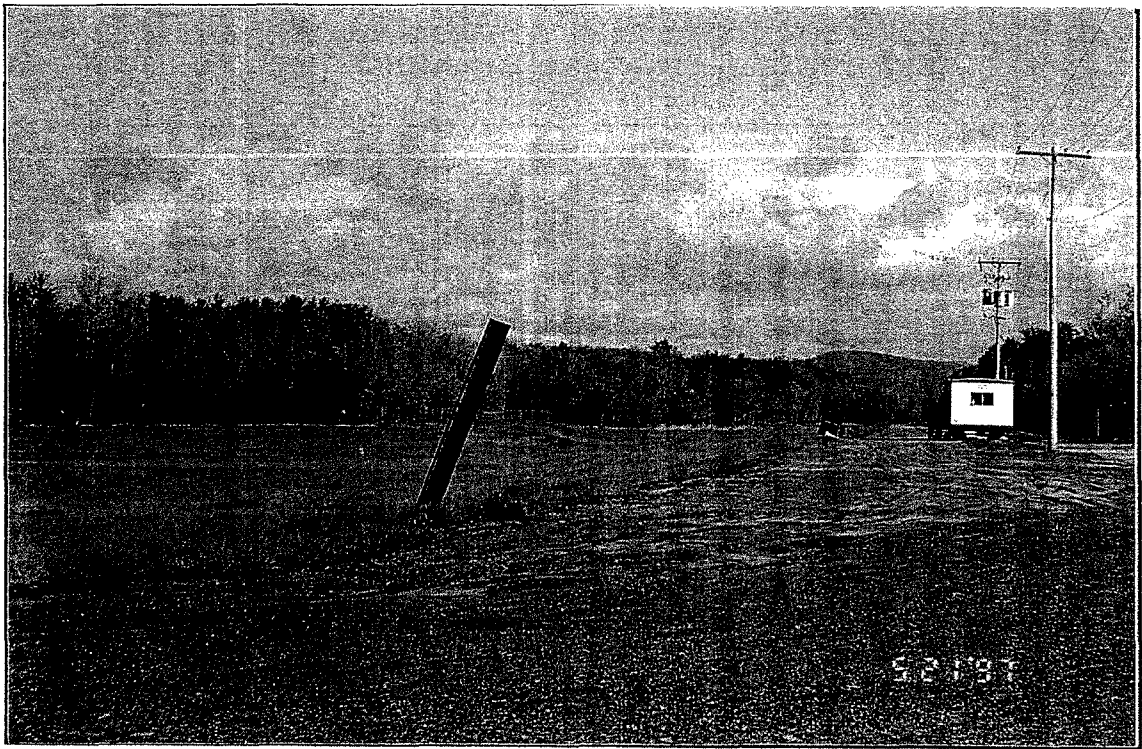
PHOTOGRAPH 28: Site F, looking west towards the railroad tracks



PHOTOGRAPH 29: Site G, looking west towards the Site from the Old Champlain Canal Heritage Trail



PHOTOGRAPH 30: Fort Edward Municipal Landfill, looking east across the Site



PHOTOGRAPH 31: Site GF-1, Behind Jeep dealership on Route 9, looking through the fence to the north/northeast along the former paved dragstrip