Department of Environmental Conservation

Division of Environmental Remediation

Record of Decision

Niagara Mohawk Troy - Water Street Former Manufactured Gas Plant Site Operable Unit 1: Area 4 - Upland Disposal Troy (C) Rensselaer County Site Number 4-42-029A

November 2000

New York State Department of Environmental Conservation
GEORGE E. PATAKI, *Governor* JOHN P. CAHILL, *Commissioner*

DECLARATION STATEMENT - RECORD OF DECISION

Niagara Mohawk Troy - Water Street
Former Manufactured Gas Plant
Operable Unit No. 1: Area 4 - Upland Disposal
Inactive Hazardous Waste Disposal Site
Troy (C), Rensselaer County, New York
Site No. 4-42-029A

Statement of Purpose and Basis

The Record of Decision (ROD) presents the selected remedy for the Niagara Mohawk Troy - Water Street Former Manufactured Gas Plant (MGP), Operable Unit No. 1 class 2 inactive hazardous waste disposal site which was chosen in accordance with the New York State Environmental Conservation Law. The remedial program selected is not inconsistent with the National Oil and Hazardous Substances Pollution Contingency Plan of March 8, 1990 (40CFR300).

This decision is based on the Administrative Record of the New York State Department of Environmental Conservation (NYSDEC) for the Niagara Mohawk Troy - Water Street Former MGP, Operable Unit No. 1 inactive hazardous waste site and upon public input to the Proposed Remedial Action Plan (PRAP) presented by the NYSDEC. A listing of the documents included as a part of the Administrative Record is included in Appendix B of the ROD.

Assessment of the Site

Actual or threatened release of hazardous waste constituents from this site, if not addressed by implementing the response action selected in this ROD, presents a current or potential significant threat to public health and the environment.

Description of Selected Remedy

Based on the results of the Remedial Investigation/Feasibility Study (RI/FS) for the Niagara Mohawk Troy - Water Street Former MGP, Operable Unit No. 1 and the criteria identified for evaluation of alternatives, the NYSDEC has selected excavation and off-site treatment or disposal of contaminated soils. The components of the remedy are as follows:

- excavation of approximately 19,000 cubic yards of tar. Excavated materials will be treated or disposed in accordance with applicable regulations;
- placement of an impermeable cap over the disposal area; and
- implementation of deed restrictions and a long term monitoring program to minimize direct contact exposure in the future.

New York State Department of Health Acceptance

The New York State Department of Health concurs with the remedy selected for this site as being protective of human health.

Declaration

The selected remedy is protective of human health and the environment, complies with State and Federal requirements that are legally applicable or relevant and appropriate to the remedial action to the extent practicable, and is cost effective. This remedy utilizes permanent solutions and alternative treatment or resource recovery technologies, to the maximum extent practicable, and satisfies the preference for remedies that reduce toxicity, mobility, or volume as a principal element.

12/1/00

Date

Michael J. O'Toole, Jr., Director
Division of Environmental Remediation

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RECORD OF DECISION

NIMO Troy - Water Street
Former MGP Inactive Hazardous Waste Disposal Site
Operable Unit No. 1: Area 4 - Upland Disposal
Troy (C), Rensselaer County, New York
Site No. 4-42-029A
November 2000

SECTION 1: SUMMARY OF THE RECORD OF DECISION

The New York State Department of Environmental Conservation (NYSDEC) in consultation with the New York State Department of Health has selected this remedy to address the significant threat to human health and/or the environment created by the presence of hazardous waste at the Niagara Mohawk Troy - Water Street Former Manufactured Gas Plant (MGP), Operable Unit No. 1 class 2, inactive hazardous waste disposal site. As more fully described in Section 4 of this document, operation of the former manufactured gas plant has resulted in the disposal of hazardous waste which is toxicity characteristic for benzene in Area 4 of the site, some of which has migrated from the site to surrounding areas, including Hudson River sediments and an adjacent access road. These disposal activities have resulted in the following significant threats to the public health and the environment:

- a significant threat to human health associated with direct contact exposure to contaminated soils and sediment.
- a significant environmental threat associated with contaminant levels in soil and sediment that have the potential to cause significant adverse acute or chronic effects to benthic organisms and other wildlife.

In order to eliminate or mitigate the significant threat to the public health and the environment that the hazardous waste disposed at the Troy Water Street Area 4 Site has caused, the following remedy was selected:

- excavation of approximately 19,000 cubic yards of tar. Excavated materials would be characterized as to whether the material met the definition of a hazardous waste, and treated or disposed in accordance with applicable regulations;
- placement of an impermeable cover over the disposal area; and
- implementation of deed restrictions and a long term monitoring program to minimize direct contact exposure in the future.

The selected remedy, discussed in detail in Section 8 of this document, is intended to attain the remediation goals selected for this site, in Section 6 of this Record of Decision (ROD), in conformity with applicable standards, criteria, and guidance (SCGs).

SECTION 2: SITE DESCRIPTION AND LOCATION

2.1: Site Description

The Area 4 of the Troy Water Street Site is a former industrial disposal area that occupies approximately 8.5 acres of a parcel currently owned by the Rensselaer County Sewer District. The site straddles the boundary of the City of Troy and the Town of North Greenbush in Rensselaer County, with 1.8 acres and 6.7 acres, respectively, in each municipality. Area 4 of the site is adjacent to approximately 3,200 feet of Hudson River shoreline and is bordered by the Hudson River to the west, a railroad spur owned by CSX Transportation to the east, a former asphalt batch plant owned by Chevron USA, Inc., to the north and the Rensselaer County Publicly Owned Treatment Works (POTW) to the south. An access road to the POTW runs along the east side of Area 4. The site is an elongated hill that rises approximately 20 feet from the POTW access road, cresting abruptly before dropping steeply to the shore of the Hudson River. No buildings exist on Area 4 and residences exist within one quarter mile.

2.2: Site Location

In December 1992 Niagara Mohawk Power Corporation (Niagara Mohawk) consented to a NYSDEC administrative order requiring an environmental preliminary site assessment of 21 Former Manufactured Gas Plant (MGP) Sites owned or operated by Niagara Mohawk or its predecessor companies. Included among the 21 sites is the Troy Water Street Site. For ease in investigating, the Troy Water Street Site was divided into four areas (see Figure 1):

Area 1, located west of the Hudson River; Area 2, the location of the former coking and gas plant operations;
Area 3, the location of the current Chevron Asphalt terminal, adjacent to Area 2;
Area 4, former disposal area immediately south of Area 3; Area 4 was used for the disposal of ash, slag, cinders, tar and other wastes from allegedly the former coking, iron and steel works and manufactured gas plant operations. The NYSDEC is not aware of the date when disposal began, however, steel production at Troy Water Street began prior to 1900.

The NYSDEC has developed this ROD for the upland portion of Area 4. To allow for needed additional characterization of the Hudson River sediments, yet advance a remedy for the land portion of Area 4, the NYSDEC separated the land portion of Area 4 into a distinct operable unit, referred to as Operable Unit 1. An Operable Unit represents a portion of the site remedy which for technical or administrative reasons can be addressed separately to eliminate or mitigate a release, threat of release or exposure pathway resulting from the site contamination. The selected remedy will create a barrier dividing Hudson River sediments from the land portion of Area 4. The barrier, in the form of an impermeable cap with erosion protection, will eliminate significant future movement of hazardous substances into the Hudson River.

Niagara Mohawk will investigate and, as necessary, remediate Hudson River sediments adjacent to Areas 2, 3 and 4. The Hudson River sediments is considered Operable Unit 2 and is not being addressed under this ROD.

SECTION 3: SITE HISTORY

The following is a chronology of the remedial history of Area 4:

June 1994- September 1995: Preliminary Site Assessment of Area 4.
March 1996: NYSDEC places the Troy Water Street Area 4 Site on the state registry of inactive hazardous waste disposal sites as a Class 2 site.
December 1995 - November 1998: Remedial Investigation (RI) of the site.

SECTION 4: SITE CONTAMINATION

To evaluate the contamination present at the site and to evaluate alternatives to address the significant threat to human health and the environment posed by the presence of hazardous waste, Niagara Mohawk has recently conducted a Remedial Investigation/Feasibility Study (RI/FS).

4.1: Summary of the Remedial Investigation

The purpose of the RI was to define the nature and extent of any contamination resulting from previous activities at the site. A report entitled "Remedial Investigation Report for Troy (Water Street), New York, Area 4", October 23, 1998, has been prepared which describes the field activities and findings of the RI in detail.

The RI included the following activities:

- collection and analysis of 12 surface soil samples;
- collection and analysis of 8 surface water samples from the Hudson River;
- collection of 32 sediment samples from the Hudson River;
- installation and sampling of 6 pore water points within the intertidal zone of the Hudson River;
- excavation and sampling of 3 test pits along a sanitary sewer line;
- completion of 13 soil borings;
- installation of 4 monitoring wells to supplement the 2 wells existing from the preliminary site assessment;

- collection and analysis of groundwater samples; and
- inventory of tar-like weeps in the intertidal zone.

To determine which media (soil, groundwater, etc.) are contaminated at levels of concern, the RI analytical data were compared to environmental Standards, Criteria, and Guidance values (SCGs). Groundwater, drinking water and surface water SCGs identified for the Troy Water Street Area 4 Site are based on NYSDEC Ambient Water Quality Standards and Guidance Values and Part V of New York State Sanitary Code. For soils, NYSDEC Technical and Administrative Guidance Memorandum (TAGM) 4046 provides soil cleanup guidelines for the protection of groundwater, background conditions, and health-based exposure scenarios. In addition, for soils, site specific background concentration levels can be considered for certain classes of contaminants. Guidance values for evaluating contamination in sediments are provided by the NYSDEC "Technical Guidance for Screening Contaminated Sediments".

Based on the RI results, in comparison to the SCGs and potential public health and environmental exposure routes, certain media and areas of the site require remediation. These are summarized below. More complete information can be found in the RI Report.

Chemical concentrations are reported in parts per billion (ppb) for water, and parts per million (ppm) for soil. For comparison purposes, where applicable, SCGs are provided for each medium.

4.1.1: Site Geology and Hydrogeology

The results from the soil classification performed during the soil boring and monitoring well installations indicate that a majority of the surficial soils at the site have been disturbed by excavation and subsequent backfilling operations. The thickness of fill, which consists of slag, cinders, ash, bricks, tar and gravel, was determined to range from 25 feet to about 45 feet. Below the fill, thin (less than five feet thick) overburden soils consisting of fine sand were documented only in the northern and southern part of the site. The unconsolidated deposits are underlain by shale bedrock.

The depth to groundwater ranges from approximately 13 feet to 23 feet. Groundwater on-site generally flows toward the Hudson River.

4.1.2: Nature of Contamination

As described in the RI report, many soil, surface water, groundwater, and sediment samples were collected at the Troy Water Street Area 4 Site to characterize the nature and extent of contamination. The main categories of contaminants which exceed their SCGs are volatile organic compounds and semivolatile organic compounds (see Tables 1A and 1B). Specific volatile organic compounds of concern in soil, and sediment are: benzene, toluene, ethylbenzene and xylenes. The summation of these compounds is referred to as BTEX. BTEX analysis is used to aid in determining the location and extent of manufactured gas plant wastes in media.

(BTEX can also be indicative of non-MGP wastes, however.) Specific semivolatile organic compounds of concern in soil, and sediment, are the polycyclic aromatic hydrocarbons (PAHs):

acenaphthene
acenaphthylene
anthracene
*benzo(a)anthracene
*benzo(a)pyrene
*benzo(b)fluoranthene
benzo(g,h,i)perylene
*benzo(k)fluoranthene
*dibenzo(a,h)anthracene
*chrysene
fluoranthene
fluorene
*indeno(1,2,3-cd) pyrene
2-methylnaphthalene
naphthalene
phenanthrene
pyrene

* Carcinogenic PAHs

PAH concentrations referred to in this plan are the summation of the individual PAHs listed above (i.e. total PAHs).

Approximately one-half of the soil samples contained phenol in excess of the SCG. Under the proposed remedy, soil in the locations where the samples exceeded the SCG would either be removed or covered.

The following hazardous substances are dismissed as contaminants of concern:

- Of volatile compounds, (other than BTEX), only methylene chloride and acetone were found in concentrations above the SCGs. The NYSDEC concludes however, that these compounds are not of concern because they were found in low levels and with the associated laboratory blank, suggesting potential laboratory introduction of these common laboratory equipment and glassware cleaning solvents.

- PCBs were analyzed for, but were not detected in any soil and groundwater samples.

- Of pesticides, only one soil sample exceeded SCGs, (endrin, 0.74 ppm). Pesticides were not detected in groundwater. The NYSDEC concludes pesticides are not a contaminant of concern.

- Of metals, only arsenic, mercury and lead exceeded either TAGM guidance values or background concentrations. These sample locations are coincident with the PAH contamination and would be covered or excavated under the proposed remedy.

- Cyanide concentrations in soil above background corresponded to areas of visual tar, which would be removed under the proposed remedy. Cyanide was not detected in groundwater above SCGs. The Department of Environmental Conservation has not established a recommended soil clean-up objective for cyanide. This is because of the wide range of toxicity exhibited by different cyanide compounds. Reports have indicated the cyanide at former MGP sites is a ferri-ferrocyanide compound of low toxicity. In addition, hydrogen cyanide is typically not present in purifier waste.

4.1.3: Extent of Contamination

Tables 1A and 1B summarize the extent of contamination for the contaminants of concern in surface and subsurface soil, respectively, and compares the data with the SCGs for the site. The following are the media which were investigated and a summary of the findings of the investigation.

Soil

1. Surface Soil: The surface of the site consists of fill materials: slag, cinders, ash, bricks, tar and gravel. Surface soil samples were collected from 0-2 inches in depth in both areas of general fill and areas of visual tar. A significant area of surface tar exists along and in the POTW access road. Visual surface tar would be removed under the proposed remedy.

BTEX compounds were not detected in any of the surface soil samples. PAHs concentrations for on-site samples ranged from 9.35 ppm to 5,603 ppm (sample SS-6). Higher concentrations corresponded to areas of visual tar. Carcinogenic PAHs representing a significant health threat through direct contact exposure were found in concentrations as high as 2,197 ppm (sample SS-06). The proposed remedy would remove visual tar, provide a cover over the site and restrictions on disturbing soil beneath the cover. These proposed actions would eliminate the potential for direct contact exposure to site-related carcinogenic PAHs.

2. Subsurface Soil: Concentrations of BTEX compounds ranged from not detected to 2,606 ppm (boring SB-27). Higher concentrations were found in borings in which tar was observed. Concentrations of PAHs ranged from not detected to 98,500 ppm. Similar to the BTEX results, higher concentrations were found in borings in which tar was observed. Based on the boring log results, the majority of tar is located in two areas ("cells") situated in the wider, southern portion of the site (see Figures 2, 3 and 4). The shale bedrock was not investigated; however, from interpretation of the boring logs and analytical data in the unconsolidated deposits, the NYSDEC concludes that bedrock has not been impacted by the disposal of hazardous substances in the unconsolidated horizon.

3. Sewer Bedding: Three test pits, each approximately 1,000 feet apart and adjacent to the site, were excavated in the bedding surrounding the sewer line under the Rensselaer County POTW access road to evaluate if the bedding is acting as a preferential migration pathway for contaminants of concern.

BTEX was not detected in the bedding material sampled from each test pit. PAHs ranged in concentration from 1.16 ppm to 67 ppm. Pieces of tar were observed within the sewer line backfill of one of the test pits. However, no flowing tar or NAPL (nonaqueous phase liquid) was observed. From the test pit observations and analytical data, the NYSDEC concludes that the storm sewer bedding is not providing a preferential pathway for the migration of contaminants.

Sediments

Sediment data is presented in this ROD to support NYSDEC's determination that contaminants of concern which migrated, and may continue to migrate from the site are present in sediment at concentration levels which pose a significant environmental threat to benthic organisms and other wildlife. The removal actions and placement of a cover as required by this ROD will reduce significant migration of site contaminants to the Hudson River in the future. A sediment remedy however, is not included in this ROD. Sediments will be addressed in a PRAP for operable unit 2. Because of tidal influence at the west edge of Area 4, Operable Unit 2 would need to address the potential for contaminated sediment from the river to be carried back into the intertidal zone following remediation of Operable Unit 1.

In sediment adjacent to Area 4, benzene concentrations ranged from not detected to 5.7 ppm. Also in sediment adjacent to Area 4, PAH concentrations ranged from 0.142 ppm to 52,561 ppm.

Tar Weeps

The RI reports visual observations of tar, referred to as weeps, in the Hudson River (see Figure 4). The area of study was limited to the intertidal area exposed between high and low tides, but extended upstream to Area 2. Surface area of the weeps adjacent to Area 4 is estimated at 3,158 square feet. Tar within the disposal area exhibits signs that it flows westward into the Hudson River. The remedy for this operable unit will only address those weeps located between WEEP-1 and WEEP-14 inclusive. The NYSDEC's decision to limit the areal extent of weep removal should not be interpreted as the NYSDEC's dismissal of the remaining weeps (in particular those weeps with the "A" prefix). The remaining weeps will be evaluated by the feasibility study for Operable Unit 2, the Hudson River.

Groundwater

1. Groundwater: BTEX was not detected in groundwater in concentrations exceeding the SCGs. PAHs were not detected in the groundwater. It is worth noting however, that monitoring wells have not been placed directly into or near site areas containing tar (for reasons of either smearing the well screen with tar or physical inaccessibility). Thus, the current groundwater data may be biased low.

Interpolation of groundwater elevation data suggests the tar and highly concentrated contaminants of concern in the soil are located at a maximum depth that is approximately two feet above the water table.

2. Pore Water: In the intertidal zone, six well points were driven into the sediment to a depth of three feet below grade, with a sufficient length of riser pipe to ensure the points could be located at high tide. The points were located both downstream of the study area and in areas adjacent to the visible tar weeps.

BTEX was not detected in pore water samples. PAH concentrations ranged from not detected to 91 ppb. With one exception, where PAHs were detected, benzo(a)pyrene was also detected, indicating

a concentration level in excess of the New York State standard of non-detect. The higher concentration of PAHs were found in the points located near areas of visible tar.

Surface Water

Surface water samples were collected from the Hudson River adjacent to the site and analyzed. BTEX and PAHs were not detected in any of the samples.

Waste Materials

Samples of tar were analyzed for waste characteristics during the preliminary site assessment. Toxicity Characteristic Leaching Procedure values were as high as 30,000 ppb for benzene indicating that the tar would likely need to be managed as a hazardous waste.

Air

The air quality was measured during soil disturbing investigation activities, when volatilization and wind-borne dust might generate unfavorable environmental conditions. Air monitoring with a photoionization detector during all aspects of the field work did not indicate the presence of volatile organic compounds in the breathing zone above the action levels specified in the project health and safety plan.

4.2: Summary of Human Exposure Pathways:

This section describes the types of human exposures that may present added health risks to persons at or around the site. A more detailed discussion of the health risks can be found in Section 5 of the RI report.

An exposure pathway is the manner by which an individual may come in contact with a contaminant. The five elements of an exposure pathway are 1) the source of contamination; 2) the environmental media and transport mechanisms; 3) the point of exposure; 4) the route of exposure; and 5) the receptor population. These elements of an exposure pathway may be based on past, present, or future events.

Current pathways which are known to or may exist at the site include:

- incidental ingestion and dermal contact with sediment, surface soil and tar are potential exposure pathways; and
- inhalation of volatile vapors and fugitive dust from soils is also a potential exposure pathway.

Currently, there are no drinking water or irrigation wells and therefore exposures to contaminated groundwater are not expected. However, potential exposures to contaminated groundwater may occur if wells are installed in the future or if intrusive activities are conducted below the groundwater table.

4.3: Summary of Environmental Exposure Pathways

This section summarizes the types of environmental exposures and ecological risks which may be presented by the site. The Fish and Wildlife Impact Assessment included in the RI presents a more detailed discussion of the potential impacts from the site to fish and wildlife resources. The following pathways for environmental exposure and/or ecological risks have been identified for operable unit 1:

- direct contact with surface soil by terrestrial wildlife and vegetation; and
- direct contact with subsurface soil by burrowing wildlife.

SECTION 5: ENFORCEMENT STATUS

The NYSDEC and the Niagara Mohawk entered into a Consent Order (Index #D0-0001-9210) on December 7, 1992. The Order obligates Niagara Mohawk to implement a full remedial program for this site.

SECTION 6: SUMMARY OF THE REMEDIATION GOALS

Goals for the remedial program have been established through the remedy selection process stated in 6 NYCRR Part 375-1.10. The overall remedial goal is to meet all Standards, Criteria and Guidance (SCGs) and be protective of human health and the environment. At a minimum, the remedy selected must eliminate or mitigate all significant threats to public health and/or the environment presented by the hazardous waste disposed at the site through the proper application of scientific and engineering principles.

The goals for this site are to eliminate the exposure pathways identified in Sections 4.3 and 4.4. Thus, the goals are:

- Eliminate, to the extent practicable, human, flora and fauna contact with surface soil.
- Eliminate, to the extent practicable, inhalation of volatile vapors and fugitive dust from soils.
- Eliminate, to the extent practicable, the weeping of tar and potential for migration of contaminants of concern from the disposal area into the Hudson River.

SECTION 7: SUMMARY OF THE EVALUATION OF ALTERNATIVES

The selected remedy must be protective of human health and the environment, be cost effective, comply with other statutory laws and utilize permanent solutions, alternative technologies or resource recovery technologies to the maximum extent practicable. Potential remedial alternatives

for the Troy Water Street Area 4 site were identified, screened and evaluated in the report entitled "Feasibility Study Report, Troy (Water Street), Area 4" (March 15, 2000).

A summary of the detailed analysis follows. As presented below, the time to implement reflects only the time required to implement the remedy, and does not include the time required to design the remedy, procure contracts for design and construction or to negotiate with responsible parties for implementation of the remedy.

7.1: Description of Remedial Alternatives

The following potential remedies are intended to address the contaminated soil at the site:

Alternative 1: No Action

Present Worth:	$ 404,000
Capital Cost:	$ 38,000
Annual O&M:	$ 24,000
Time to Implement	6 months

The No Action alternative is evaluated as a procedural requirement and as a basis for comparison. It requires continued monitoring only, allowing the site to remain in an unremediated state. This alternative would leave the site in its present condition and would not provide any additional protection to human health or the environment. Capital costs include the estimated cost of obtaining a deed restriction and installing additional monitoring wells. The no action alternative includes an annual operation and maintenance cost for groundwater monitoring.

Alternative 2: Containment with Groundwater Control

Present Worth:	$ 11,142,000
Capital Cost:	$ 9,553,000
Annual O&M:	$ 75,000
Time to Implement	1 year

This alternative is designed to isolate the contaminants of concern within the disposal area with a vertical barrier and cover. Visual tar outside of the barrier would be removed. Major components of this alternative are as follows:

- Peripheral areas of tar, such as that observed at the POTW access roadway and CSX Transportation property, (approximately 200 cy) would be excavated. Excavated materials would be characterized as to whether the material met the definition of a hazardous waste, and treated or disposed in accordance with applicable regulations. The area would be backfilled with non-contaminated soil. The road would be restored to its original condition;

- Tar not removed in above action and highly contaminated subsurface soils would be contained by approximately 128,750 square feet of vertical barrier, such as sheet piling. The barrier would extend to the bedrock surface. Laterally, the barrier wall would extend from

the Hudson River shore to the west side of the POTW access road, north to encompass soil boring SB-29 and south to encompass monitoring well MW-13;

- A 6NYCRR Part 360 compliant surface cover over the disposal area would be provided. The need for a gas collection system would be evaluated during remedial design. The cover would extend from the Chevron property line to a point approximately 100 feet south of monitoring well MW-13. The cover would also extend from the west edge of the POTW access road to the Hudson River shoreline. The site would be graded for slope stability. The design would account for erosion and scour control, such as rip-rap or gabion placement;

- Groundwater within the barrier would be extracted at a rate sufficient to prevent the water table from rising and contacting the tar and highly concentrated soils. Treatment of the groundwater prior to discharge, if necessary, would be evaluated during the remedial design;

- Deed restrictions would be implemented to prevent future exposures to site contaminants. The restrictions would include: utility or other excavation work notification to the NYSDEC and NYSDOH, prohibition of land development for residential use, notification to the NYSDEC prior to any action which could jeopardize the integrity of the remedy, and prohibition of the development of water supply wells; and

- A groundwater monitoring program would be implemented for a minimum of 30 years to assess the effectiveness of the containment system.

Alternative 3: Excavate Tar Areas and Cap

Present Worth:	$ 21,900,000
Capital Cost:	$ 21,300,000
Annual O&M:	$ 28,000
Time to Implement	1 year

This alternative is designed to remove accessible tar materials along the POTW roadway and remove tar and heavily impacted subsurface soils such that the site can be graded to a stable slope. A surface cover would also be provided. Major components of this alternative are as follows:

- Peripheral areas of visual tar, which includes tar mixed with soil, slag, ash or a combination of fill materials, such as that observed at the POTW access roadway and CSX Transportation property, (approximately 200 cy) would be excavated. Where tar or soil would be removed from the vicinity of the access road, the area would be backfilled with non-contaminated soil and the road would be restored to its original condition;

- Approximately 19,000 cy of visual tar, which includes tar mixed with soil, slag, ash or a combination of fill materials and soils from within the two apparent disposal "cells" would be excavated. Dewatering of the excavation is not anticipated as the targeted soils are above the anticipated groundwater table;

- Weeps of tar extending into the Hudson River would be removed using conventional excavating equipment and using a containment system such as a floating boom with a silt curtain to prevent the migration of disturbed sediments. This remedy will only address those weeps located between WEEP-1 and WEEP-14 inclusive. Approximately 230 cubic yards of contaminated material would be removed. All work on the banks of and in the Hudson River will comply with the substantive regulatory requirements of 6 NYCRR Part 608 Use and Protection of Waters;

- A 6NYCRR Part 360 compliant cap over the disposal area would be provided. The need for a gas collection system, however, would be evaluated during remedial design. The cover would extend from the Chevron property line to a point approximately 100 feet south of monitoring well MW-13. The cover would also extend from the west edge of the POTW access road to the Hudson River shoreline. The site would be graded for slope stability. The design would account for erosion and scour control, such as rip-rap or gabion placement at the riverbank;

- Deed restrictions limiting future site development would be implemented, to prevent future exposures to site contaminants. The restrictions would include: utility or other excavation work notification to the NYSDEC and NYSDOH, prohibition of land development for residential use, notification to the NYSDEC prior to any action which could jeopardize the integrity of the remedy, and prohibition of the development of water supply wells;

- A groundwater monitoring program would be implemented for a minimum of 30 years to assess the effectiveness of the soil and tar removal. Also, a long term monitoring and maintenance program would be established to ensure the cover is functioning as designed; and

- The removal of tar from the site, the establishment of a cover, and the use of erosion controls is expected to eliminate future tar weeps into the Hudson River. However, the site would be periodically inspected for evidence of new tar weeps.

Excavated materials would be characterized as to whether the material met the definition of a hazardous waste, and treated or disposed in accordance with applicable regulations.

Alternative 4: Excavate Tar and Soils > 500 ppm PAHs, Provide Cover

Present Worth:	$ 24,200,000
Capital Cost:	$ 23,600,000
Annual O&M:	$ 28,000
Time to Implement	1 year

This alternative is similar to Alternative 3 except that the excavation would include the removal of soil containing greater than 500 ppm PAHs. It is estimated an additional 24,800 cy of soil would be removed under this alternative. Thus the total volume that would be removed is an estimated 44,030 cy (19,200cy + 24,800cy + 30cy).

Alternative 5: Excavate Tar and Soils Exceeding SCGs

Present Worth:	$31,000,000
Capital Cost:	$31,000,000
Annual O&M:	$ 0
Time to Implement	2 years

This alternative would remove all soil containing concentrations of individual contaminants of concern in excess of SCG concentration guidelines, with the following limitation: since samples of background soils beyond the site area were also found to exceed the SCGs, removal would not extend beyond (east) of the POTW access road and vertically below the water table. Sheet piling, at an estimated cost of approximately $5 million, would be installed along portions of the excavation as required for safety and slope stability. The estimated volume that would be removed is 19,000 cy of tar and 54,400 cy of soil.

All excavated materials would be characterized as to whether the material met the definition of a hazardous waste, and treated or disposed in accordance with applicable regulations.

The site would be backfilled with clean soils and contoured to a stable slope.

7.2 Evaluation of Remedial Alternatives

The criteria used to compare the potential remedial alternatives are defined in the regulation that directs the remediation of inactive hazardous waste sites in New York State (6 NYCRR Part 375). For each of the criteria, a brief description is provided, followed by an evaluation of the alternatives against that criterion. A detailed discussion of the evaluation criteria and comparative analysis is included in the Feasibility Study.

The first two evaluation criteria are termed threshold criteria and must be satisfied in order for an alternative to be considered for selection.

1. Compliance with New York State Standards, Criteria, and Guidance (SCGs). Compliance with SCGs addresses whether or not a remedy will meet applicable environmental laws, regulations, standards, and guidance.

None of the alternatives presented would remove all soil and waste materials containing contaminants of concern in excess of the NYSDEC Technical and Administrative Guidance Memorandum (TAGM) 4046 values. Because TAGM values were exceeded in the background samples, the NYSDEC concludes a boundary defining the limit of removal cannot be established. Also, in order to remove the enormous volumes of soil containing concentrations greater than the TAGM values, long-term disruptions of the existing infrastructure, namely the POTW access road, railroad and sewer main would occur. Vehicular access to the site is limited to the one access road, which has substandard roadway width and vertical clearance. Alternative 5, for example, limits the excavation vertically to the water table, yet an estimated 7,000 trucks would still be needed to remove over 70,000 cy of contaminated soil and the importation of a similar magnitude of clean soil for backfill. The NYSDEC concludes that conformity to the SCGs is technically impracticable from

an engineering perspective. All work on the banks of and in the Hudson River will be required to comply with the substantive regulatory requirements of 6 NYCRR Part 608 Use and Protection of Waters.

2. Protection of Human Health and the Environment. This criterion is an overall evaluation of each alternative's ability to protect public health and the environment.

Under Alternative 1, the no action alternative, no measures would be taken to eliminate or mitigate the potential for exposure that currently exists to humans and wildlife from surface soils. Persons would continue to be exposed to contaminants of concern at concentrations above state guidance levels. For this reason, Alternative 1 does not meet the threshold criterion of being protective of human health and the environment and is therefore not evaluated further.

Alternatives 2, 3, 4 and 5 would be protective of human health and the environment. Each of these alternatives would effectively reduce human health risks and environmental impacts by eliminating direct contact exposure with soils and tar containing contaminants of concern through a combination of applicable removal, cover and containment measures.

The next five "primary balancing criteria" are used to compare the positive and negative aspects of each of the remedial strategies.

3. Short-term Effectiveness. The potential short-term adverse impacts of the remedial action upon the community, the workers, and the environment during the construction and/or implementation are evaluated. The length of time needed to achieve the remedial objectives is also estimated and compared against the other alternatives.

Potential adverse impacts are expected to be greater with increasing contaminated soil movement. Thus, the implementation of Alternative 2 would be anticipated to result in the least short-term construction related impacts. Alternatives 3 and 4 would have less short-term effectiveness because of the longer construction periods associated with the excavation and off-site transport of tar material and contaminated soils, and grading of the site. Alternative 5 would result in the highest degree of potential short-term impacts as a result of the increased volume and duration of contaminated soil excavation and off-site transport. Truck traffic associated with Alternative 5 would be much greater than traffic associated with Alternatives 2, 3, and 4.

4. Long-term Effectiveness and Permanence. This criterion evaluates the long-term effectiveness of the remedial alternatives after implementation. If wastes or treated residuals remain on site after the selected remedy has been implemented, the following items are evaluated: 1) the magnitude of the remaining risks, 2) the adequacy of the controls intended to limit the risk, and 3) the reliability of these controls.

When evaluated against the other alternatives, Alternative 5 provides the best long term effectiveness. By removing tar and the majority of soils above guidance values, a cover and groundwater monitoring would not be required. Thus, no long term maintenance would be expected with Alternative 5. Alternatives 3 and 4 provide effective long-term effectiveness as tar and highly contaminated soils would be removed from the site. Soil covers have been demonstrated to be

effective in the long term elimination of contact with soils, however, a periodic inspection and maintenance program would be required. Alternative 2 would be the least effective remedy in the long-term as the mass of tar and contaminated soils would continue to remain at the site. In addition, groundwater control and potential groundwater treatment would require frequent monitoring.

5. Reduction of Toxicity, Mobility or Volume. Preference is given to alternatives that permanently and significantly reduce the toxicity, mobility or volume of the wastes at the site.

Alternative 5 would effectively reduce the toxicity, mobility and volume of greater than 99 percent of the contaminated soil and tar exceeding SCGs by off-site treatment or disposal. This alternative achieves the greatest reduction in the toxicity, mobility and volume of impacted material, and results in the least amount of hazardous substances remaining at the site.

Alternatives 3 and 4 would also effectively reduce the toxicity, mobility and volume of the highly contaminated soils and tar by off-site treatment or disposal. Alternative 4 would reduce the volume of the contaminated soils by an estimated 44,030 cy, while Alternative 3 would reduce the volume of contaminated soil at the site by an estimated 19,000 cy.

Compared to the other alternatives, Alternative 2 offers the least reduction of toxicity, mobility and volume of the contaminants of concern present at the site. Although the contaminants of concern would be isolated by the cover and barrier wall, the mass of tar and contaminated soils would continue to remain at the site.

6. Implementability. The technical and administrative feasibility of implementing each alternative are evaluated. Technical feasibility includes the difficulties associated with the construction and the ability to monitor the effectiveness of the remedy. For administrative feasibility, the availability of the necessary personnel and material is evaluated along with potential difficulties in obtaining specific operating approvals, access for construction, etc.

Alternatives 2, 3, and 4 would be considered implementable. Alternative 2 would present construction challenges in the ability to provide sheet piling or other barrier wall materials along the majority of the site perimeter including the Hudson River shore. However, these challenges are considered manageable. Alternatives 3 and 4 would be expected to be accomplished with conventional earth-moving equipment. Staging, lay down and truck turn-around areas may present a challenge, however, given the narrow constraints of the site, but would be expected to be surmountable based on other remedial actions completed in the state in congested areas. The administrative efforts required to secure deed restrictions under these alternatives are anticipated to be relatively straightforward, although the site is not owned by Niagara Mohawk.

Alternative 5 would also be implementable but would present the greatest technical challenges associated with the greater extent of excavation and volume of soil that would be removed. Significant contractor and engineering effort would be required due to the relocation of the POTW access road, depth and lateral extent of excavation, potential flooding concerns and excavation endpoint determination.

7. Cost. Capital and operation and maintenance costs are estimated for each alternative and compared on a present worth basis. Although cost is the last balancing criterion evaluated, where two or more alternatives have met the requirements of the remaining criteria, cost effectiveness can be used as the basis for the final decision. The costs for each alternative are presented in Table 2.

Alternatives 2 and 3 are cost effective. That is, the costs are proportional to the overall effectiveness of the remedy. Although Alternative 3 is estimated at approximately double the cost of Alternative 2. Alternative 3 provides a much more effective remedy by permanently reducing the toxicity of over 87 percent of the hazardous substance mass.

Alternative 4 is less cost effective than Alternative 3. Alternative 4 achieves a slightly higher degree of contaminant mass reduction, yet provides little additional increase in protectiveness, as the exposure pathways would be eliminated or controlled in both alternatives.
The NYSDEC concludes Alternative 5 is not cost effective. Alternative 5 is one and one-half times more costly than Alternative 3 yet removes only about 12% more of the hazardous substance mass. As compared to Alternative 3, Alternatives 4 and 5 would require a disproportionate removal of soil volume, and hence cost, to remove little additional hazardous substance contamination. In addition, since the remedial action objectives are primarily the elimination of direct exposure, Alternative 5 provides little additional remedial effectiveness at a much greater cost, as compared to the other alternatives.

The final criterion is considered a modifying criterion and is taken into account after evaluating those above. It is evaluated after public comments on the Proposed Remedial Action Plan have been received.

8. Community Acceptance - Concerns of the community regarding the RI/FS reports and the Proposed Remedial Action Plan have been evaluated. The "Responsiveness Summary" included as Appendix A presents the public comments received and the Department's response to the concerns raised. Public comment regarding the remedy varied. In general, comments were supportive of the remedy while others believed an in-situ remedy would be more appropriate. As explained in Appendix A, the NYSDEC has determined that an in-situ remedy is not appropriate for this particular site.

SECTION 8: SUMMARY OF THE SELECTED REMEDY

Based upon the results of the RI/FS, and the evaluation presented in Section 7, the NYSDEC is selecting Alternative 3: Excavate Tar Areas and Provide a 6 NYCRR compliant cap as the remedy for this site (see Figure 5).

This selection is based on the achievement of the remedial action goals while remediating to the extent practicable. Alternative 1 is rejected as a remedy as it will not satisfy the threshold criterion of being protective of public health and the environment. Alternative 2 is not selected as a remedy as it does not effectively reduce the toxicity, volume and mobility of the contaminants of concern and is less effective in the long-term. Alternatives 4 and 5 are not selected because they will provide

no additional satisfaction of the remedial goals yet will be more costly. Both Alternatives 4 and 5 will be cost prohibitive in terms of the overall effectiveness of the remedy.

The salient strengths of Alternative 3 include cost-effective protection of public health and the environment through the elimination of direct contact exposure to the existing surface soils, long-term permanence of the remedial action (removal of over 87% of the mass of BTEX and PAHs at the site) and a simpler and more straightforward long-term monitoring program. Also, by removing the tar, establishing a cover and by providing erosion control, Alternative 3 will eliminate the tar weeps to the Hudson River.

The estimated present worth cost to implement the remedy is $ 21,900,000. The cost to construct the remedy is estimated to be $21,300,000, and the estimated average annual operation and maintenance cost for 30 years is $ 28,000.

The elements of the selected remedy are as follows:

1. A remedial design program to verify the components of the conceptual design and provide the details necessary for the construction, operation and maintenance, and monitoring of the remedial program. Any uncertainties identified during the RI/FS will be resolved;

2. Peripheral areas of visual tar, which includes tar mixed with soil, slag, ash or a combination of fill materials such as that observed at the POTW access roadway and CSX Transportation property, (approximately 200 cy) will be excavated. Where tar or soil will be removed from the vicinity of the access road, the area will be backfilled with non-contaminated soil and the road will be restored to its original condition;

3. Approximately 19,000 cy of visually identifiable tar, which includes tar mixed with soil, slag, ash or a combination of fill materials and soils from within the two apparent disposal "cells" will be excavated. Dewatering of the excavation is not anticipated as the targeted soils are above the expected groundwater table;

4. Weeps of tar extending into the Hudson River will be removed using conventional excavating equipment using a containment system such as a floating boom with a silt curtain to prevent the migration of disturbed sediments. It is estimated that approximately 230 cubic yards of contaminated material will be removed. All work on the banks of and in the Hudson River will comply with the substantive regulatory requirements of 6 NYCRR Part 608 Use and Protection of Waters. The selected remedy will only address those weeps located between WEEP-1 and WEEP-14 inclusive. The NYSDEC's decision to limit the areal extent of weep removal should not be interpreted as the NYSDEC's dismissal of the remaining weeps (in particular those weeps with the "A" prefix). The remaining weeps will be evaluated by the feasibility study for Operable Unit 2, the Hudson River.;

5. Excavated materials will be characterized as to whether the material met the definition of a hazardous waste, and treated or disposed in accordance with applicable regulations.

6. A 6NYCRR Part 360 compliant cap over the disposal area will be provided. The need for a gas collection system, however, will be evaluated during remedial design. The cap will extend from the Chevron property line to a point approximately 100 feet south of monitoring well MW-13. The cover will also extend from the west edge of the POTW access road to the Hudson River shoreline. The site will be graded for slope stability. The design will account for erosion and scour control, such as rip-rap or gabion placement at the riverbank;

7. Deed restrictions limiting future site development will be implemented, to prevent future exposures to site contaminants. The restrictions will include: utility or other excavation work notification to the NYSDEC and NYSDOH, prohibition of land development for residential use, notification to the NYSDEC prior to any action which could jeopardize the integrity of the remedy, and prohibition of the development of water supply wells; and

8. Since the remedy results in untreated contaminants of concern at the site, a long term monitoring program will be implemented. A groundwater monitoring well network will, at a minimum, consist of three upgradient wells and five downgradient wells. Analysis of the groundwater will include BTEX and PAHs. In addition, inspection of the cover and intertidal areas for evidence of new tar weeps will occur at least semi-annually.

SECTION 9: HIGHLIGHTS OF COMMUNITY PARTICIPATION

As part of the remedial investigation process, a number of Citizen Participation activities were undertaken in an effort to inform and educate the public about conditions at the site and the potential remedial alternatives. The following public participation activities were conducted for the site:

- A repository for documents pertaining to the site was established.
- A site mailing list was established which included nearby property owners, local political officials, local media and other interested parties.
- In December 1992, the NYSDEC issued a press release announcing the investigation and remediation, if necessary, of certain former MGP sites, including the Troy (Water Street) Site.
- On April 8, 1996, Niagara Mohawk issued a fact sheet discussing the preliminary site assessment results proposed RI.
- On September 9, 1996, Niagara Mohawk held a public information meeting announcing the findings of the preliminary site assessment and the proposed RI.
- A site mailing list was established which included nearby property owners, local political officials, local media and other interested parties.
- Niagara Mohawk held a second public information meeting to disseminate information regarding the investigation at the site.

- On July 13, 2000, the NYSDEC held a public meeting to solicit comments on the proposed remedy.

- In November 2000 a Responsiveness Summary was prepared and made available to the public in the Record of Decision, to address the comments received during the public comment period for the PRAP.

TABLE 1A
Nature and Extent of Contamination - Surface Soil
Niagara Mohawk Troy Water Street MGP Site
Area 4, Operable Unit No. 1

CONTAMINANT OF CONCERN	CONCENTRATION RANGE (ppm)	FREQUENCY of EXCEEDING SCGs	SCG (ppm)
Benzo (a) anthracene	<SCG - 600	10 of 12	0.224
Benzo (a) pyrene	0.17 - 410	12 of 12	0.061
Benzo (b) fluoranthene	<SCG - 360	5 of 12	1.1
Benzo (k) fluoranthene	<SCG - 170	5 of 12	1.1
Chrysene	<SCG - 530	10 of 12	0.4
Dibenz (a,h) anthracene	<SCG - 17	8 of 12	0.014
Indeno (1,2,3-cd) pyrene	<SCG - 120	4 of 12	3.2
Acenaphthene	ALL <SCG	0 of 12	50
Acenaphthylene	<SCG - 140	2 of 12	41
Anthracene	<SCG - 160	2 of 12	50
Benzo (g,h,i) perylene	<SCG - 74	1 of 12	50
Fluoranthene	<SCG - 1,500	3 of 12	50
Fluorene	<SCG - 83	2 of 12	50
2 - Methylnaphthalene	ALL <SCG	0 of 12	36.4
Naphthalene	<SCG - 38	2 of 12	13
Phenanthrene	<SCG - 680	3 of 12	50
Pyrene	<SCG - 740	3 of 12	50
Phenol	<SCG - 5.5	4 of 12	0.03
2-Methylphenol	<SCG - 0.16	1 of 12	0.1
4-Methylphenol	<SCG - 5.5	1 of 12	0.9

Notes for Table 1A
SCG from TAGM 4046 recommended soil cleanup objectives assuming a total organic carbon content of 1%.
See RI report for laboratory qualifications.

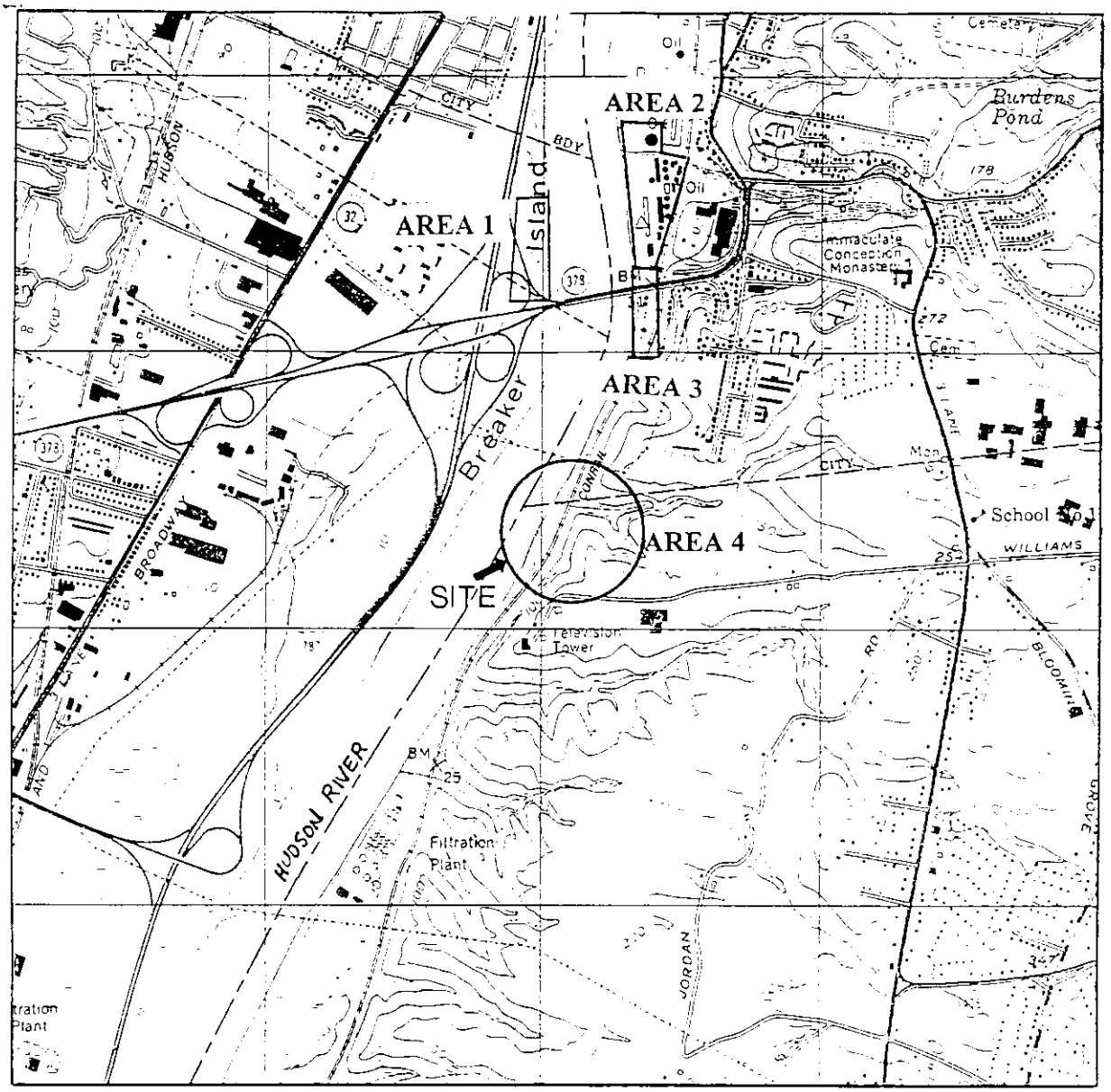
TABLE 1B
Nature and Extent of Contamination - Subsurface Soil
Niagara Mohawk Troy Water Street MGP Site
Area 4, Operable Unit No. 1

CONTAMINANT OF CONCERN	CONCENTRATION RANGE (ppm)	FREQUENCY of EXCEEDING SCGs	SCG (ppm)
Benzene	<SCG - 1,700	20 of 21	0.06
Ethylbenzene	<SCG - 66	3 of 21	5.5
Toluene	<SCG - 620	11 of 21	1.5
Xylenes	<SCG - 340	10 of 21	1.2
Benzo (a) anthracene	<SCG - 4,100	38 of 43	0.224
Benzo (a) pyrene	<SCG - 2,500	36 of 43	0.061
Benzo (b) fluoranthene	<SCG - 2,800	24 of 43	1.1
Benzo (k) fluoranthene	<SCG - 4,000	26 of 43	1.1
Chrysene	<SCG - 3,600	30 of 43	0.4
Dibenz (a,h) anthracene	<SCG - 490	19 of 43	0.014
Indeno (1,2,3-cd) pyrene	<SCG - 1,100	16 of 43	3.2
Acenaphthene	<SCG - 4,000	6 of 43	50
Acenaphthylene	<SCG - 4,100	6 of 43	41
Anthracene	<SCG - 4,400	12 of 43	50
Benzo (g,h,i) perylene	<SCG - 820	9 of 43	50
Fluoranthene	<SCG - 8,600	12 of 43	50
Fluorene	<SCG - 6,900	11 of 43	50
2 - Methylnaphthalene	<SCG - 6,000	7 of 43	36.4
Naphthalene	<SCG - 15,000	14 of 43	13
Phenanthrene	<SCG - 13,000	12 of 43	50
Pyrene	<SCG - 6,200	12 of 43	50
Phenol	<SCG - 4,300	9 of 14	0.03
2-Methylphenol	<SCG - 1,300	9 of 14	0.1
4-Methylphenol	<SCG - 4,100	9 of 14	0.9

Notes for Table 1B
SCG from TAGM 4046 recommended soil cleanup objectives assuming a total organic carbon content of 1%.
See RI report for laboratory qualifications.

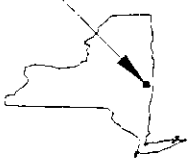
TABLE 2
Remedial Alternative Costs
Niagara Mohawk Troy Water Street MGP Site
Area 4, Operable Unit No. 1

Remedial Alternative	Capital Cost	Annual O&M	Total Present Worth
Alt. 1: No Action	$ 38,000.	$ 24,000.	$ 404,000.
Alt. 2: Barrier Wall	9,553,000.	75,000.	11,142,000.
Alt. 3: Tar Removal	21,300,000.	28,000.	21,900,000.
Alt. 4: Remove >500ppm PAHs	23,600,000.	28,000.	24,200,000.
Alt. 5: Remove to SCGs	31,000,000.	0.	31,000,000.



SOURCE: U.S.G.S. TOPOGRAPHIC QUADRANGLE
TROY SOUTH, NY QUADRANGLE
7.5 MINUTE SERIES
DATE: 1953
PHOTOREVISED: 1980

QUAD LOCATION



SCALE 1:24,000

0 2,000 4,000
SCALE FEET

N

DESIGNED:	**FIGURE 1** **SITE LOCATION MAP**	
DETAILED:		
CHECKED:	LOCATION: WATER STREET (AREA 4 TROY, NEW YORK	FIGURE: **1**

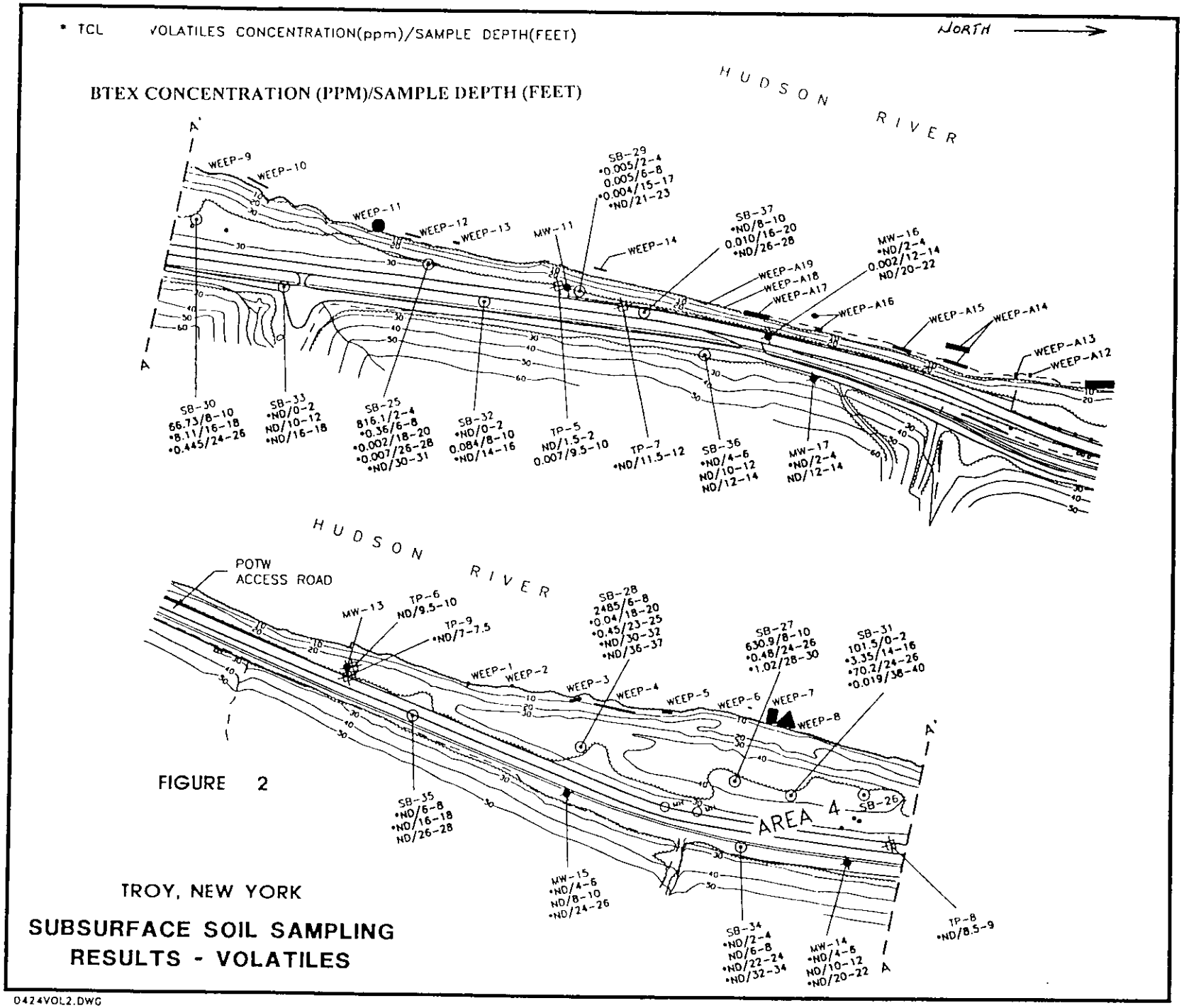


FIGURE 2

TROY, NEW YORK

SUBSURFACE SOIL SAMPLING RESULTS - VOLATILES

0424VOL2.DWG

* TCL SEMIVOLATILES CONCENTRATION(ppm)/SAMPLE DEPTH(FEET)

PAH CONCENTRATION (PPM)/SAMPLE DEPTH (FEET)

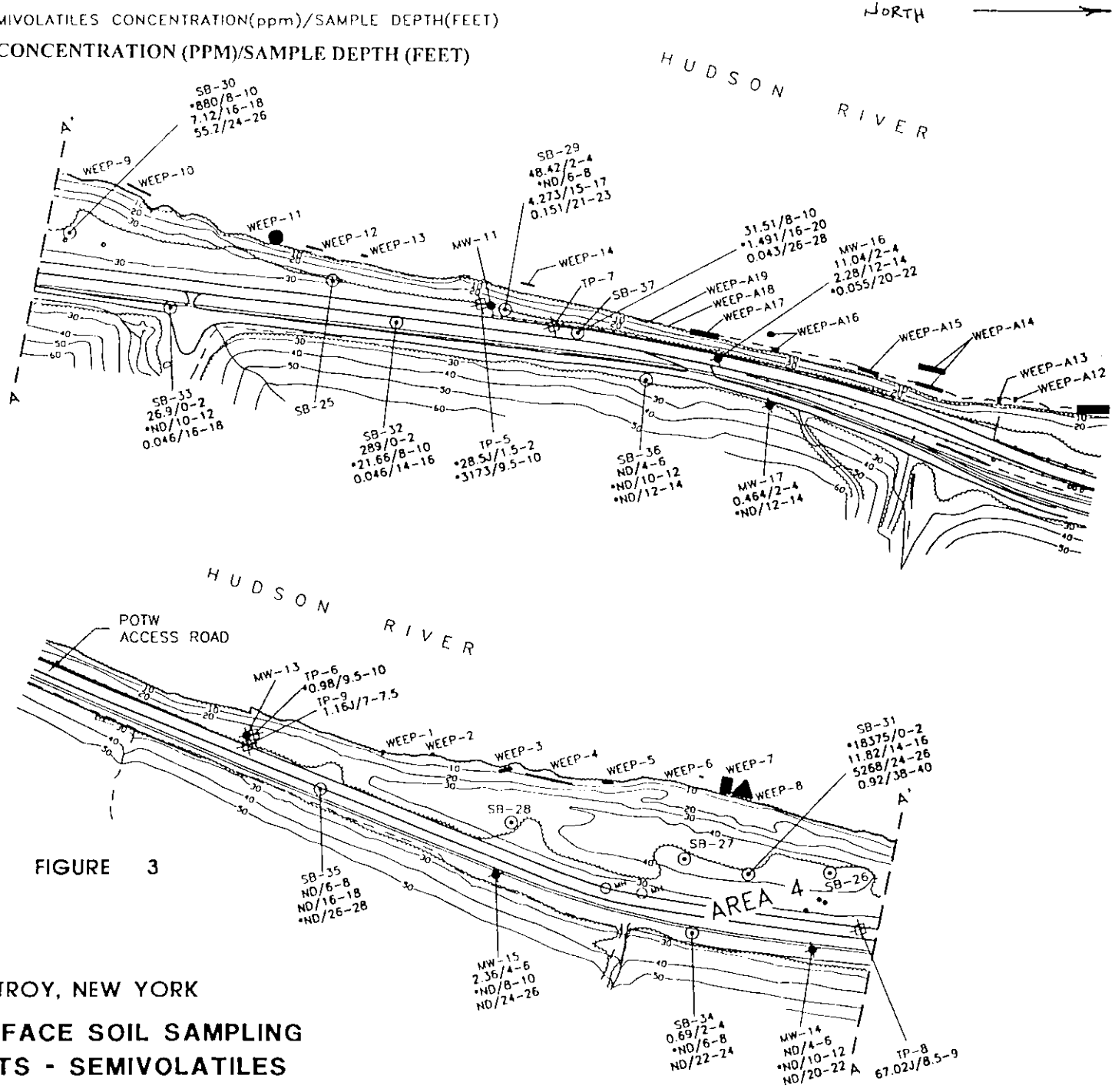
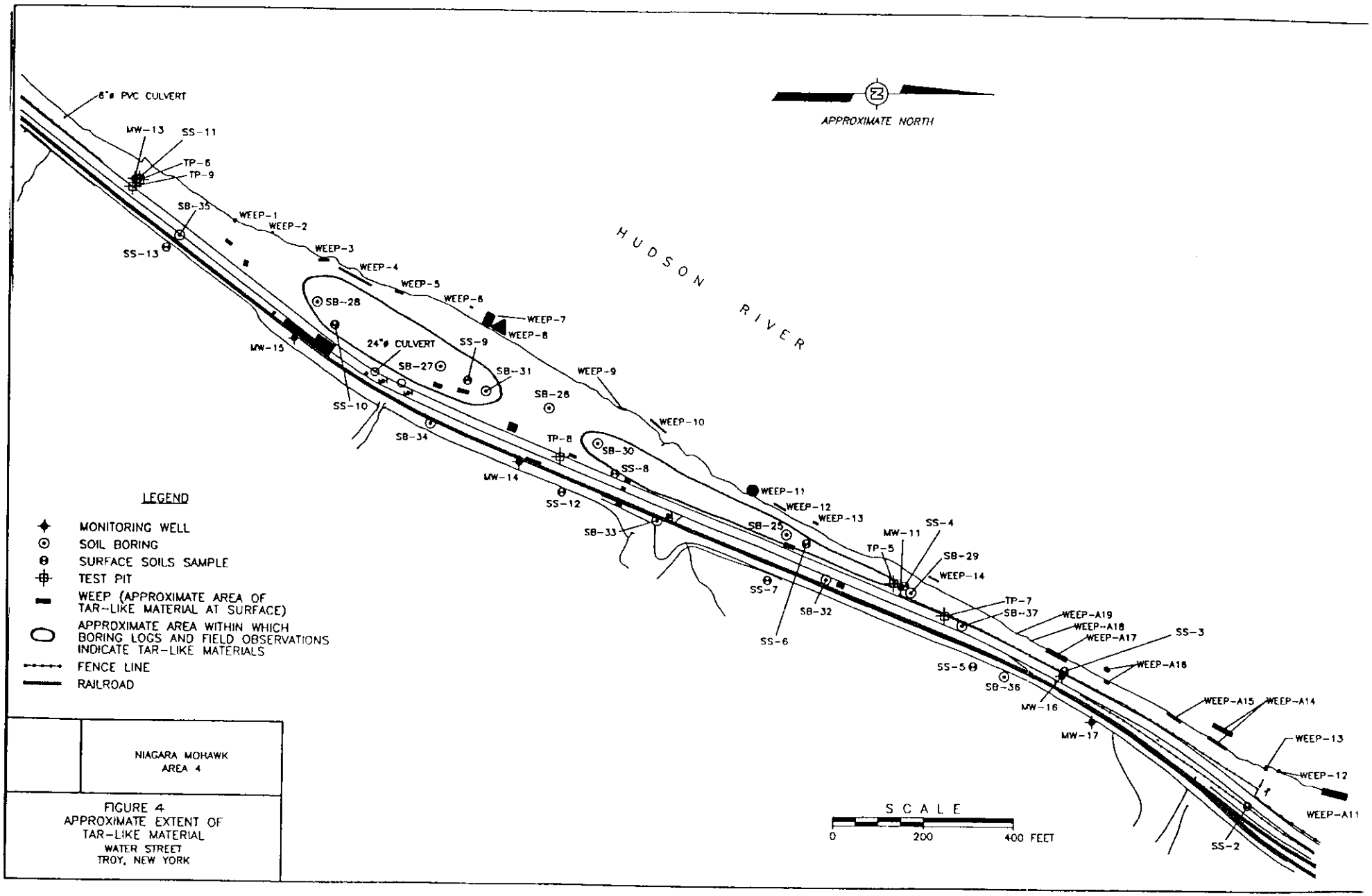


FIGURE 3

TROY, NEW YORK

SUBSURFACE SOIL SAMPLING RESULTS - SEMIVOLATILES

0424SVL2.DWG



NIAGARA MOHAWK
AREA 4

FIGURE 4
APPROXIMATE EXTENT OF
TAR-LIKE MATERIAL
WATER STREET
TROY, NEW YORK

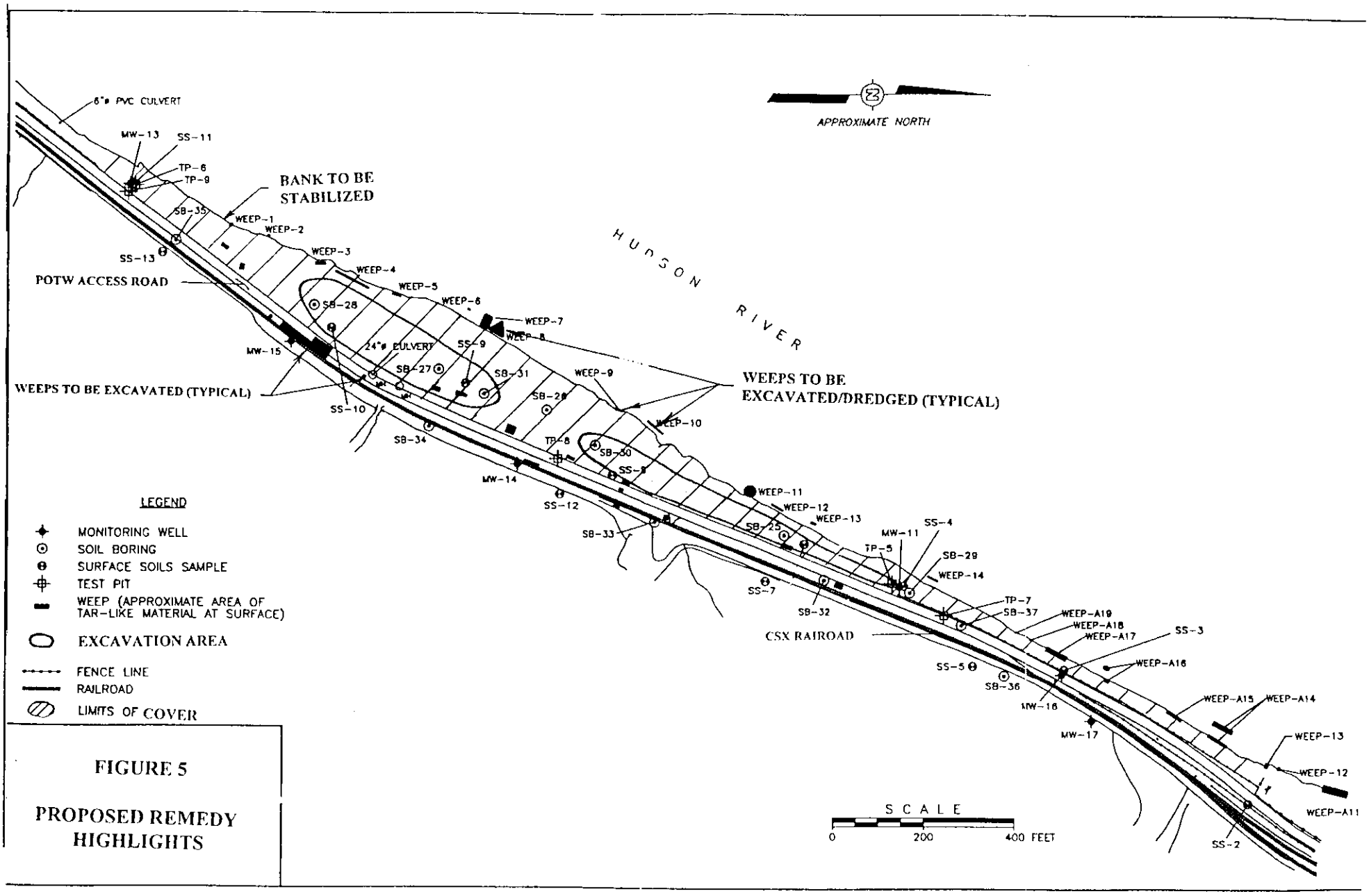


FIGURE 5

PROPOSED REMEDY HIGHLIGHTS

APPENDIX A

Responsiveness Summary

RESPONSIVENESS SUMMARY

for the
Proposed Remedial Action Plan
NIMO Troy - Water Street
Former MGP Inactive Hazardous Waste Disposal Site
Operable Unit 1 - Area 4: Upland Disposal
Troy (C), Rensselaer County, New York
Site No. 4-42-029A

The Proposed Remedial Action Plan (PRAP) for Operable Unit No. 1 of the NIMO Troy -Water Street Former MGP Site, was prepared by the NYSDEC and issued to the local document repository on June 22, 2000. The PRAP outlined the preferred remedial measure proposed for the remediation of the contaminated soil at Operable Unit No. 1 of the Site The preferred remedy is the excavation for off-site disposal of approximately 19,000 cubic yards of tars and capping of the upland disposal area.

The release of the PRAP was announced via a notice to the mailing list, informing the public of the PRAP's availability.

A public meeting was held on July 13, 2000, which included a presentation of the Remedial Investigation (RI) and the Feasibility Study (FS), as well as a discussion of the proposed remedy. The meeting provided an opportunity for citizens to discuss their concerns, ask questions and comment on the proposed remedy. These comments have become part of the Administrative Record for this site. Written comments were received from La Fave and Higgins, LLP, Orrick, Herrington & Sutcliffe, Rensselaer County Sewer District and the City of Troy. The public comment period for the PRAP ended on July 31, 2000. Although the City of Troy's comments were provided after the close of the comment period, they have been included in this responsiveness summary.

This Responsiveness Summary responds to all questions and comments raised at the public meeting and to the written comments received.

The following are the comments received at the public meeting, with the NYSDEC's responses:

COMMENT 1: Could recreational activities be allowed on the site after the remedy is in place?

RESPONSE 1 : Yes. The potential for re-use of the site was considered in the evaluation of alternatives for the site, and the selected remedy will permit recreational re-use of the property. Prior to the submittal of the feasibility study, the NYSDEC met with the members of the City of Troy planning department and the NYSDEC understands that the portion of the site in the City of Troy, is zoned industrial. The selected remedy could also allow future industrial and/or commercial use of the site provided measures to protect the integrity of the cap were incorporated into the construction, in addition to the development of a recreational path. Use restrictions to be placed on the properties comprising the site include prohibitions against

residential use and the development of water supply wells. It is the NYSDEC's understanding that neither residential use nor public supply wells are proposed for the site. It should be noted that while the selected remedy requires notification of, and approval by, the NYSDEC of any proposed activity which could jeopardize the integrity of the remedy (subsurface excavation, or the placement of footings, for example), the need for these actions should not be construed as meaning such activity could not occur.

COMMENT 2: Would a bike path be allowed [following remedial construction]?

RESPONSE 2: Yes. A bicycle path or other recreational structures could be constructed on top of the cover. The cap is intended to minimize the potential for human contact with low-level contamination that will remain at the site following completion of the remedy. The material of construction of the top layer of the cap could include crushed stone or asphalt concrete, as may be specified for a bicycle path, or the cover material could include topsoil, for a lawn.

COMMENT 3: How many acres is the site?

RESPONSE 3: Niagara Mohawk has identified the site as being approximately 8.5 acres in area.

COMMENT 4: How much of the site is located in the City of Troy and how much is in the Town of North Greenbush?

RESPONSE 4: Approximately 1.8 acres of the site lies in the City of Troy, with the balance (6.7 acres) in the Town of North Greenbush.

COMMENT 5: Would chemical oxidation be an acceptable in-situ approach for the site?

RESPONSE 5: The FS initially evaluated the use of in-situ chemical oxidation for this site, but did not develop it as an alternative because of the questionable effectiveness and ability to implement the process. This treatment method utilizes the injection of an oxidizing agent into the subsurface to react with contaminants to render the contaminants less toxic. The reaction generates significant off-gases and heat. The production of gas and heat during the treatment raises concerns regarding the ability to contain and treat the gas and other potentially mobilized untreated hazardous constituents. Controlling either of these potential releases of hazardous constituents is required to utilize the technology and, given the location of the site on a steep bank adjacent to the Hudson River, this would be very difficult. In addition, the viscous nature of the tar would likely limit complete oxidation of the tar deposits, having little impact on the mass not in contact with the oxidizing agent. Further, an extensive post-construction confirmatory sampling program would be required to document the effectiveness of the treatment. Even with such a sampling program, confirmation would not be as definitive as that which can be achieved through excavation.

COMMENT 6: Will this remedy cap or remove material from the river?

RESPONSE 6: The selected remedy will remove visible tar migrating from the tar deposits on the site into the Hudson River. Niagara Mohawk is currently investigating the extent of contamination in the Hudson River as a separate operable unit from the upland portion of Area 4,

which is the subject of this Record of Decision. Pending the results of the Hudson River investigation, a remedy in addition to the weep removal may be required to address contamination in the River.

COMMENT 7: Are we looking at a year before construction?

RESPONSE 7: The NYSDEC anticipates the design and preparation of bid documents to take about one year to complete. Therefore, construction is not likely to begin until late in 2001.

COMMENT 8: How long will Niagara Mohawk have to maintain the capped area? What about the thirty years mentioned in the documents?

RESPONSE 8: The Feasibility Study and the Record of Decision both present costs for operation and maintenance based upon thirty years. However, this is simply to allow a comparison to be made between alternatives. Niagara Mohawk will be responsible for the maintenance of this remedy as long as the contaminated material remains at the site.

COMMENT 9: If Niagara Mohawk is sold what will happen to the site, who will maintain it then?

RESPONSE 9: The NYSDEC's Order on Consent with Niagara Mohawk binds Niagara Mohawk Power Corporation (NMPC), and its successors and assigns to the remedial program, including operation and maintenance. In other words, any change in ownership or corporate status, including but not limited to, any transfer of assets or real property shall in no way alter Niagara Mohawk's responsibilities. Thus, the selected remedy regardless of its phase: design, construction or operation, maintenance and monitoring, will have to be implemented, operated, maintained and monitored by any purchaser, successor or assign of NMPC.

COMMENT 10: Anything you can do to avoid truck traffic through the neighborhood where the only vehicle access to the site exists should be given serious consideration. This small neighborhood already suffers enough from the traffic to the sewage treatment plant and given the large number additional trucks which will have to remove and deliver new materials this will be a significant disruption on the existing narrow streets. Use of the rail lines should be considered.

RESPONSE 10: The NYSDEC agrees truck traffic is a negative short term impact of the remedy and agrees the use of rail transportation should be evaluated in the remedial design. The design will require actions to mitigate the effect of truck traffic, such as designated traffic routes and restricted hours. However, should truck movement of materials be necessary, under the most optimistic scenario (or that which would result in the maximum traffic increase) about 160 trucks per day or 16 trucks/ hour could be expected. These rates assume maximum production over the minimum time to complete the project and will likely be lower based on typical construction site variables, such as vehicle availability, weather and excavation/handling rates.

To put the above numbers into perspective, the NYS Department of Transportation traffic volume records indicate that on average 13,700 vehicles per day pass through the intersection of Routes 4 and 378. Thus, an increase of 160 vehicles per day would only result in an one percent increase in traffic volume, and this maximum would only be for the one month period when

clean fill for the cap was being brought to the site. During the movement of the excavated soil from the site these numbers will be significantly lower, with a maximum of 32 trucks/ day estimated, over a four or five month period.

COMMENT 11: How long will excavation of the material to be disposed off-site take?

RESPONSE 11: The duration of the excavation and trucking of contaminated material from the site is estimated to be about five months. This estimate is based on a similar, but smaller-scale excavation, at another former MGP site,

COMMENT 12: Will the municipalities be compensated for the deed restrictions required by this remedy?

RESPONSE 12: Such compensation is not a requirement of the remedy. Any request for compensation would have to be directed to Niagara Mohawk, as part of the discussions regarding the establishment of the required deed restrictions.

COMMENT 13: When was the tar disposed of? Was there an identified time frame?

RESPONSE13 : The NYSDEC does not know the exact time frame of tar disposal. According to documents received from Niagara Mohawk, the manufactured gas plant however, operated from at least 1925 to 1955.

COMMENT 14: Did the steel mills produce tar or just coke?

RESPONSE 14: The operation of the former steel mills in the area was not a part of the scope of the remedial program for this site, therefore this information is not available.

COMMENT 15: Please explain at what point the DEC makes the final recommendation. Should we assume that Niagara Mohawk agrees with the remedy or will the process be delayed because they don't agree with what you will select?

RESPONSE 15: The selected remedy is similar to the Feasibility Study's recommended alternative and was presented in the PRAP with no comment from Niagara Mohawk. The NYSDEC does not expect Niagara Mohawk to disagree with or otherwise delay implementation of the selected remedy.

COMMENT 16: Did NYSDEC look at capping without removal? You had a wall but no cap did you look at just a cap?

RESPONSE 16: Providing a cover over the site without removing any hazardous substances from the site is akin to the Feasibility Study's media-specific alternative of SB-1: *No Action for Subsurface Soils*. The Feasibility Study retained this alternative only for comparative purposes; the alternative was dismissed from being a viable alternative as it did not satisfy overall protectiveness of public health and the environment. Also, although the site is not a municipal landfill, the NYSDEC draws upon the United States Environmental Protection Agency's Presumptive Remedy for CERCLA Municipal Landfill Sites, which recommends the removal of

accessible and discrete hot spots that are large enough that their remediation will reduce the threat posed by the site, yet small enough that it is reasonable to consider removal. Hazardous substances associated with the visible tar at this site are accessible and of sufficient mass such that removal of the visible tar, including tar mixed with soil, slag, etc. will mitigate the significant threat.

A letter dated July 28, 2000 was received from Diana L. Weiss of Orrick, Herrington & Sutcliff, LLP, representing American Premier Underwriters Inc., which included the following comments:

COMMENT 17: The proposed remedial action is not cost effective.

RESPONSE 17: In selecting a remedy for an inactive hazardous waste disposal site, the process must comply with 6 NYCRR 375-1.10, and must be not inconsistent with the National Contingency Plan (NCP), both of which require that the remedy selection give due consideration to the criteria detailed in Section 7.2 of the PRAP. Both the NCP and 6 NYCRR Part 375 require that a remedy be cost effective. As stated in the NCP, cost effectiveness is determined by evaluating three of the five balancing criteria to determine overall effectiveness. Overall effectiveness is then compared to cost to ensure that the remedy is cost effective. A remedy is cost effective if its costs are proportional to its overall effectiveness. Thus, there is a distinction between cost and cost effectiveness. The cost of a remedy is independent of other remedies. Cost effectiveness, on the other hand, implies a comparison to other potential remedies, that is, the balancing of trade-offs among alternatives that is conducted during the development of the proposed remedial action plan. It is possible, therefore, for an alternative to have the lowest cost as compared to the other alternatives, and for that same alternative to not be cost effective. Similarly, a more expensive remedy can be more cost effective than a less costly remedy. As described in RESPONSE 21, at this particular site the use of an in-situ remedy is not as cost effective as the selected remedy. The selected remedy, while greater in cost than in-situ stabilization, provides greater long-term effectiveness, greater reduction of toxicity, mobility and volume, is more easily implemented and the effectiveness measured. Thus, the selected remedy is cost effective and justified through the proportional increased benefit to the environment.

COMMENT 18: The estimated volume to be excavated in the proposed remedial action plan is likely to be understated and thus the proposed remedy could be higher in cost than that stated in the PRAP.

RESPONSE 18: NYSDEC guidance regarding feasibility studies recommends that cost estimates for remedial alternatives provide an accuracy of plus 50 percent to minus 30 percent. Therefore, while the NYSDEC acknowledges the estimated volume expressed in the PRAP could be under estimated, and thus the actual remedial cost may be higher than the ROD estimate, such variability is acceptable. It also should be recognized that the opposite may also be the case, volumes may have been over estimated by the ROD and actual costs are lower. The NYSDEC has concluded that the nature and extent of contamination of the operable unit has been adequately defined by the alternative presented in Niagara Mohawk's feasibility study. Because of the site topography, refinement of the contaminated soil volume estimate is an undertaking better suited to the remedial design phase.

COMMENT 19: The impermeable cover is excessive. The use of alternative covers could allow the potential re-use of the property, while the requirements for a impermeable cover likely would preclude future use.

RESPONSE 19: The impermeable cover will not preclude the identified future use of the site. Since only the two large tar deposit areas are being removed the cap is needed to reduce public health exposure to contaminants in the soil that will remain following completion of the remedy. Also, the disturbance of the area during the removal may increase the leachability of the remaining material resulting in increased groundwater contamination, therefore the low permeability cap is necessary.

COMMENT 20: The potential for re-use of the site was not considered.

RESPONSE 20: See RESPONSES 1 and 2.

COMMENT 21: The NYSDEC should recommend in-situ stabilization as the preferred remedy.

RESPONSE 21: In-situ stabilization was evaluated by the Feasibility Study. The FS however, did not develop an in-situ stabilization alternative since this technology would not reduce the volume of hazardous substance contamination and, more importantly, the long-term leaching characteristics and the effectiveness of the technology for stabilized soils with high levels of organic chemical waste are not well understood. The NYSDEC agrees with this assessment and also has concerns regarding in-situ stabilization at this particular site because of uncertainty in the ability to achieve adequate mixing due to the physical constraints of the site as well as the proximity to a dynamic, protected water body. During the investigation of the site, the NYSDEC observed the drilling firm had difficulty in advancing and removing augers through the tar. At the site, the tar was found to be relatively viscous, often containing slag and sand, which may be the cause of drilling difficulty. The success of an in-situ remedy relies in large part on the ability to homogeneously mix the introduced stabilization admixture with the contaminated material through overlapping auger holes. The steep western side of the site and proximity to the river would also affect the ability to auger properly for thorough mixing. An extensive post-construction confirmatory sampling program would be required to document the quality of mixing. Even with such a sampling program, confirmation would not be as definitive as that which can be achieved through excavation. Also, regardless of the success that may have been achieved at other MGP sites which were remediated via in-situ methods, the removal of the hazardous substance mass is the most effective means of preventing the leaching of hazardous substances into the environment. Further, while the selected remedy requires stream bank protection measures to minimize erosion and scour, in the scenario of a catastrophic flood event, these measures may be compromised. Given this possibility, the removal of the contaminated material from the flood way by the selected remedy will be more protective of the environment than a remedy which only stabilized contaminated material within the flood way.

COMMENT 22: Niagara Mohawk will be able to pass on its cost of the remedy to its customers. Therefore, the public will bear the burden of unnecessary, excessive costs.

RESPONSE 22: As detailed in RESPONSE 17 above, the NYSDEC has determined that the selected remedy is cost effective. The source of funding to implement the remedy however is not a consideration in the development and selection of the remedy for a site. The citizen participation activities undertaken to date by Niagara Mohawk have been in accordance with the requirements of the NYSDEC and have provided the public the opportunity to comment on the proposed remedy. In general, public comments received at the July meeting on the PRAP were supportive of the remedy.

A letter dated July 28, 2000 was received from Patrick J. Higgins of LaFave & Higgins LLP, representing Chevron USA Inc., which included the following comments:

COMMENT 23: In the December 8, 1999 letter (which was attached to the July 28, 2000 letter) IT Corporation identified intertidal weeps in Area 4 as weeps # 1-14. The feasibility study only includes weeps #1-14 in calculating the estimated volume of weep material to be removed. The proposed remedy also now excludes all alleged asphalt type weeps adjacent to area 3.

RESPONSE 23: Contrary to what the comment suggests, the proposed remedy did not exclude any intertidal weeps. Weeps have been identified along the Hudson River in locations beyond the defined limits of Area 4 and some of these weeps appear to be other than MGP waste in origin. The ROD has been modified to clarify the scope of weep removal in the selected remedy as follows; "The selected remedy will only address those weeps located between WEEP-1 and WEEP-14 inclusive. The NYSDEC's decision to limit the areal extent of weep removal should not be interpreted as the NYSDEC's dismissal of the remaining weeps (in particular those weeps with the "A" prefix). The remaining weeps will be evaluated in the feasibility study for Operable Unit 2, the Hudson River".

COMMENT 24: Any and all reference to the Chevron plant and any lands adjacent to it should be deleted from the Proposed Remedial Action Plan and Record of Decision.

RESPONSE 24: Reference to the Chevron plant and Chevron lands are used in the Proposed Remedial Action Plan and the Record of Decision as a geographic reference point. Since land reputedly owned by Chevron lies adjacent to Area 4 of the Site, reference to this parcel facilitates the description of Area 4 to the public and lessens ambiguity in describing the remedy. No change will be made to the ROD.

COMMENT 25: Chevron does not believe that it bears any responsibility for the sharing in the remedy and its cost.

RESPONSE 25: The PRAP does not identify Chevron as being responsible, in whole or in part, for executing the Record of Decision. Niagara Mohawk is obligated to implement the remedy under the terms of an Order on Consent with the NYSDEC. Niagara Mohawk however, independent of the NYSDEC, may seek cost recovery from other parties.

COMMENT 26: There is no TCLP data justifying the volume of coal tar and impacted soils destined for incineration versus the volume bound for thermal desorption.

RESPONSE 26: The selected remedy does not specify the method of disposal for the excavated coal tar impacted material. This allows for flexibility in the design phase, following the Record of Decision, in determining the method of disposal based on the current market rates. Incineration, thermal desorption, land disposal, treatment in a combustion boiler, or a combination thereof, if performed in accordance with appropriate regulations, would be acceptable forms of disposal/treatment for the waste to be excavated. The NYSDEC prefers treatment, such as thermal treatment, however, since it results in irreversible destruction of the toxic contaminants. It is anticipated that additional characterization of the material to be excavated will be undertaken during the design phase to determine what volume of material requires handling as hazardous waste and what material can be treated or disposed as non-hazardous waste.

COMMENT 27: A combination of thermal desorption and landfill disposal for the contaminated tar and soil would reduce the price of the proposed remedy.

RESPONSE 27: Agreed. See RESPONSE 26.

COMMENT 28: Stabilization is cost-effective and would result in an approximate 11 million dollar savings.

RESPONSE 28: In-situ stabilization was evaluated by the FS and PRAP and was not selected as the remedy for the reasons stated in RESPONSE 21.

COMMENT 29: Utility co-burn is another treatment option for the contaminated tar and soils.

RESPONSE 29: Agreed. See RESPONSE 26.

COMMENT 30: Chemical oxidation is another treatment option for the contaminated tar and soils.

RESPONSE 30: See RESPONSE 5.

COMMENT 31: The Proposed Remedy is inconsistent with the National Contingency Plan, and must not be implemented.

RESPONSE 31: Since this comment does not articulate why the proposed remedy is inconsistent with the NCP, a further response is not possible.

COMMENT 32: Excavated material meeting the definition of a hazardous waste should be pre-treated on-site by conditioning with inert material, (coal, sand, etc) then sent to an approved facility. Preparation could take place in containers or ventilated enclosures as necessary. Soils deemed non-hazardous should be sent to an approved facility which is permitted to treat, dispose and/or recycle non-hazardous material.

RESPONSE 32: The segregation and handling of characteristically hazardous and non-hazardous soils are details appropriate to the remedial design, but the concepts set forth by this comment are consistent with the selected remedy. The NYSDEC has issued a policy which

facilitates the permanent treatment of coal-tar contaminated soil, particularly hazardous waste characteristic soils including sediment. In summary, the NYSDEC allows the mixing of characteristically hazardous coal-tar soils destined for thermal treatment with on-site soils if needed to ensure the proper operation of the treatment unit. The methods of disposal and the applicability of the NYSDEC policy will be addressed by the remedial design.

COMMENT 33: The PRAP states at one point that the history of the site is not known before 1951. Niagara Mohawk and its predecessors of interest have been depositing coal tar and slag and other by-products at Area 4 since 1925.

RESPONSE 33: The NYSDEC was unable to locate the statement regarding the year 1951 in the PRAP. Regarding the comment concerning the year 1925, the NYSDEC considers the Record of Decision's reference to hazardous wastes disposed at the site from former manufactured gas plant operations to be sufficient. See also COMMENT 13.

COMMENT 34: A former employee of the Hudson Valley Fuel Corporation testified that he used to clean up purifier oxide boxes and shovel out coal tar from the MGP plant collecting boxes. He would then with other workers drive it down by truck to the Area 4 coal tar pits and dump it. Hudson Valley Fuel Corporation cranes on rail cars would dig the pits. Hudson Valley Fuel Corporation is now Niagara Mohawk Power Corporation. These facts should be included in the Record of Decision.

RESPONSE 34: The preliminary site assessment and RI reports did not indicate the presence of oxide box wastes, also referred to as purifier waste in Area 4. The NYSDEC did observe on occasion during intrusive activities, an odor characteristic of purifier waste. The NYSDEC acknowledges that purifier waste disposal could have occurred, however significant disposal areas have not been located by the investigations. Nonetheless, because of the protective cap, removal of visual tar and continued monitoring, the selected remedy will be protective of public health and of the environment even if purifier waste is present in currently undiscovered pockets and is not excavated during the remedy.

COMMENT 35: The PRAP states that Republic Steel is alleged to have covered over tar pits in Area 4 with slag in the 1960s. Neither the Niagara Mohawk Power Corporation or its consultant IT Corporation has ever been able to demonstrate any basis for this statement. As such, Chevron asks that it be deleted from the PRAP document.

RESPONSE 35: The sentence in the PRAP referring to Republic Steel's covering the site is paraphrased from statements made in Niagara Mohawk's January 15, 1994 "Initial Submittal" and introductory remarks contained in the RI Report. NYSDEC's conclusions regarding the surface of the site and the basis for its remedy selection are based upon the empirical, investigative data collected during the preliminary site assessment and remedial investigation, and not on the initial submittal statement. This reference has been eliminated in the ROD.

A letter dated July 17, 2000 was received from Charles A. DeFazio, P.E. of Rensselaer County Sewer District No. 1, which included the following comments:

COMMENT 36: Our access road [must] remain open for traffic during the entire remediation contract period. As most large sewer districts, our operation is 24 hours a day 365 days per year. I request that the design/bid documents for the remediation project require the contractor to maintain ingress and egress to the wastewater treatment plant at all times. The remedial design will require the contractor to provide the necessary access to the Rensselaer County Sewer District facilities, at all times during the construction activities associated with the implementation of the remedy

RESPONSE 36: As the comment states, maintenance of traffic is appropriately evaluated during the remedial design. Options to be considered could include a temporary re-alignment of the access road or staged construction with control devices (i.e. traffic lights) on the existing alignment.

COMMENT 37: Rensselaer County Sewer District has all of the intentions of implementing the requested deed restrictions for the property through a resolution by the Rensselaer County Legislature.

RESPONSE 37: Rensselaer County's cooperation in this matter is appreciated.

A letter dated August 8, 2000 was received from the Honorable Mark P. Pattison, Mayor, City of Troy, which included the following five comments. Although the letter was received after the close of the public comment period, the Department will respond:

COMMENT 38: The City is concerned that the selected remedy is fully protective of public health and that the actual clean-up activities are protective of public health and environment.

RESPONSE 38: The New York State Department of Health (NYSDOH) has concurred that the selected remedy is protective of public health and the NYSDEC has reviewed the environmental impact. Regarding the actual clean-up activities, they will be designed and monitored, to insure that the excavation of contaminated soil will have no short term negative environmental impacts. Measures will be in place to assure that the soil will not be carried off site as fugitive dust or erosion, for example. These impacts will be mitigated through conventional and remedial construction measures that are approved in advance of the work by the NYSDEC and the NYSDOH. Air monitoring during the construction of the remedy will be performed to verify the effectiveness of these control measures.

COMMENT 39: I would like clarification on the limitations imposed by the deed restriction for the proposed remedy. The PRAP specifies that residential uses would be prohibited under the proposed deed restrictions, but does not describe limitations on recreational uses.

RESPONSE 39: In addition to the residential use prohibition, restriction will also be required to prohibit the development of potable or non-potable water wells. Additional institutional controls will also be required to protect the integrity of the area to be capped and to restrict how and what

development may occur in this area. These restrictions or controls will require the notification of, and approval by, the NYSDEC of any proposed activities (i.e trenching or other excavations) which may jeopardize the integrity of the cap. Revisions to proposed designs, or other mitigation measures, may be required in order for any proposed facilities to be constructed. Also, see RESPONSES 1 and 2 for a discussion of recreational use of the site.

COMMENT 40: There must be no further degradation of the environment, particularly the Hudson River as a result of the clean-up activities.

RESPONSE 40: The potential for the migration of contamination into the Hudson River during remedial activities is also a significant concern to the NYSDEC. The remedial design will evaluate removal methods that will minimize the potential for such migration. Methods could include a "dry" excavation for the weep removal, where a combination of low tide and surface water diversion would eliminate river water at the weep location and hence eliminate any transport of contaminants via surface water. The use of silt curtains to contain suspended sediments and erosion controls to minimize run-off impacts will be evaluated during design.

COMMENT 41: The truck traffic during the removal period is a concern due to the site's proximity to residential neighborhoods. Please provide the City with information on how public health protections and applicable environmental regulations will be addressed in the transport and disposal effort, the duration of the effort, the planned route of transport and the number of trucks to be used.

RESPONSE 41: The remedial design will detail the requirements for transport and off-site disposal. Trucks carrying contaminated material will be required to be covered and to be a NYSDEC-permitted transporter. In addition, the design will require decontamination (washing) of the trucks prior to their leaving the site. Remedial construction is estimated to take one year to complete. The duration of the excavation and trucking of contaminated material from the site, based on a similar, but smaller-scale excavation at another former MGP site, is estimated to last five months. The planned route of transport will be determined in the design phase, however, the Menands bridge is a likely route considering the easy access it provides to interstate highways. The NYSDEC is not aware of any residential properties located on Water Street, but has observed, that some residential properties are located on or near the eastern approach to the Menands Bridge. Also see RESPONSE 10 for additional information relative to traffic volumes.

COMMENT 42: The City is concerned that any temporary disturbance of the access road is adequately addressed. Please provide additional information on how long the access road will be affected, what alternative access will be provided and other information relevant to the operation.

RESPONSE 42: The remedial design will need to account for access to the wastewater treatment plant at all times. The details of how the access will be provided and for what duration will be developed in the remedial design. See also RESPONSE 36 to the Rensselaer County Sewer District Number 1 comment.

APPENDIX B

Administrative Record

Initial Submittal, Troy (Water Street) MGP Site, Troy, New York, January 15, 1994

Final Preliminary Site Assessment/Interim Remedial Measures Study for Troy (Water Street) New York (Area 4), October 12, 1995, Groundwater Technology, Inc.

Remedial Investigation Report for Troy (Water Street), New York, Area 4, October 23, 1998, Fluor Daniel GTI, Inc.

Final Feasibility Study Report, Troy (Water Street), Area 4, March 15, 2000, IT Engineering of New York, P.C.

Letter, David H. King, P.E., Niagara Mohawk, to John Spellman, P.E., NYSDEC, October 11, 1995

Niagara Mohawk Troy (Water Street) Former Manufactured Gas Plant Site: Area 4, Proposed Remedial Action Plan, Operable Unit No. 1, June 2000, NYSDEC

Letter, G. Anders Carlson, Ph.D., New York State Department of Health, to Michael O'Toole, P.E., NYSDEC, March 13, 2000

A letter dated July 17, 2000 from Charles A. DeFazio, P.E. of Rensselaer County Sewer District No. 1., providing comments on the PRAP.

A letter dated July 28, 2000 was received from Diana L. Weiss of Orrick, Herrington & Sutcliff, LLP, representing American Premier Underwriters Inc., providing comments on the PRAP.

A letter dated July 28, 2000 was received from Patrick J. Higgins of LaFave & Higgins LLP, representing Chevron USA Inc., providing comments on the PRAP.

A letter dated August 8, 2000 from the Honorable Mark P. Pattison, Mayor, City of Troy, providing comments on the PRAP.

A letter dated October 11, 2000 from William Jones of Niagara Mohawk providing additional information to respond to a comment in the responsiveness summary.