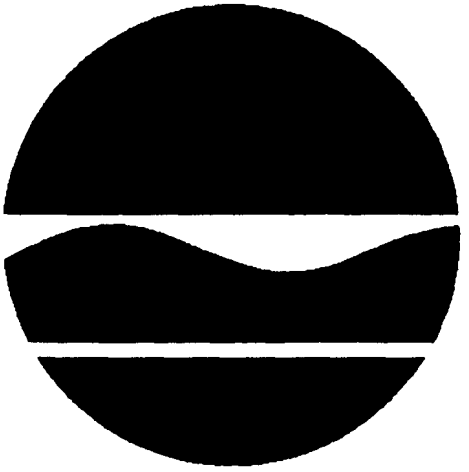


NEW YORK STATE
DEPARTMENT OF

ENVIRONMENTAL
CONSERVATION

DIVISION OF HAZARDOUS
WASTE REMEDIATION

RECORD OF DECISION

IROQUOIS GAS/WESTWOOD PHARMACEUTICAL

SITE NO. 9-15-141

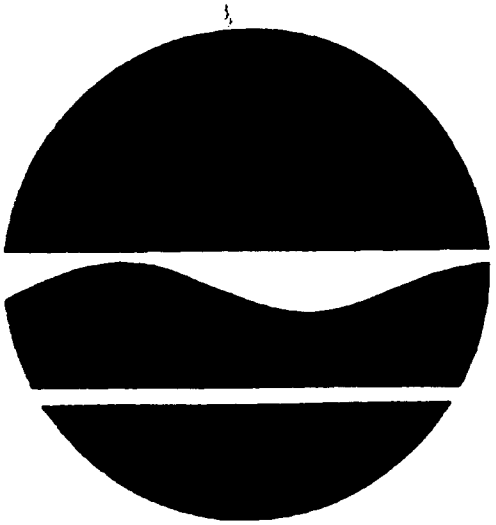
CITY OF BUFFALO, ERIE COUNTY

MARCH 1994

NEW YORK STATE

DEPARTMENT OF ENVIRONMENTAL CONSERVATION

RECORD OF DECISION



THE IROQUOIS GAS/WESTWOOD PHARMACEUTICAL SITE
IN THE CITY OF BUFFALO, NEW YORK
MARCH 1994

SITE CODE 9-15-141

PREPARED BY:

DIVISION OF HAZARDOUS WASTE REMEDIATION
270 Michigan Avenue, Buffalo, N.Y. 14203

DECLARATION STATEMENT - RECORD OF DECISION

IROQUOIS GAS/WESTWOOD PHARMACEUTICAL
Inactive Hazardous Waste Site
City of Buffalo, Erie County, New York
Site No. 915141

Statement of Purpose and Basis

The Record of Decision (ROD) presents the selected remedial action for the Iroquois Gas/Westwood Pharmaceutical inactive hazardous waste disposal site which was chosen in accordance with the New York State Environmental Conservation Law (ECL). 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 upon the Administrative Record of the New York State Department of Environmental Conservation (NYSDEC) for the Iroquois Gas/Westwood Pharmeceutical Inactive Hazardous Waste Site and upon public input to the Proposed Remedial Action Plan (PRAP) presented by the NYSDEC.

Assessment of the Site

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

Description of Selected Remedy

Based upon the results of the Remedial Investigation/Feasibility Study (RI/FS) for the Iroquois Gas/Westwood Pharmecutical site and the criteria identified for evaluation of alternatives, the NYSDEC has selected for the main site (Westwood property and the impacted land area) capping of the site, bio-remediation of soil and contaminated groundwater, extraction and treatment of contaminated groundwater, vertical barrier for hydraulic gradient control, and long term monitoring and operation and maintenance. For Scajaquada Creek, the NYSDEC has selected removal of contaminated sediments adjacent to the site for thermal destruction or disposal by other approved and suitable methods consistent with Federal/State regulations. The components of the remedy are as follows:

a) Main Site:

- Clay cap over the contaminated area
- Impermeable sheet piling barrier wall for hydraulic gradient control.
- Extraction wells for contaminated ground water.
- Groundwater and NAPL (non aqueous phase liquid) treatment before disposal.
- In-Situ biotreatment of soil and groundwater to enhance the remediation process if the treatability study finds this treatment to be effective.
- Long term monitoring, land use restriction and fencing.

b) Scajaquada Creek

- Excavation of contaminated sediments originating from the site.
- Fencing and use restriction in the stretch of creek under excavation for the duration of work.
- Construction of a temporary storage and dewatering facility for the excavated sediments on site.
- Pre-treatment and disposal of waste water from dewatering operation.
- Off site transport of the dewatered sediments for thermal destruction or disposal by other approved and suitable methods consistent with Federal/State regulations.
- Post sediment removal confirmatory sampling.

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 employ treatment that reduce toxicity, mobility, or volume as a principal element.

March 28, 1994
Date

Ann Hill DeBarbieri

Deputy Commissioner
Office of Environmental
Remediation NYS Department
of Environmental Conservation

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RECORD OF DECISION

"IROQUOIS GAS/WESTWOOD PHARMACEUTICAL"

Buffalo, Erie County, New York
Site No. 915141
Date of Issuance: March 1994

SECTION 1: SITE LOCATION AND DESCRIPTION

The Iroquois Gas/Westwood Pharmaceutical inactive hazardous waste site is 8.8 acres in size and located immediately west of Dart Street and north of Bradley Street in the City of Buffalo. Scajaquada Creek lies next to the site on the west, and has been impacted by contaminants from the main site. The land use near the site is mixed industrial and residential. Buffalo Structural Steel plant (an inactive industrial facility) is located on the north. Residential properties are located along Dart Street and Bradley Street on the east and south respectively. Two Westwood Pharmaceutical Buildings cover about 5 acres of the site. The southern building contains skin care products, bottle manufacturing facilities, offices and storage areas. The northern building contains shipping, receiving and storage areas. See Figures 1 and 2 for the site location.

SECTION 2: SITE HISTORY

2.1: Operational/Disposal History

In approximately 1897, People's Gas Light and Coke Company developed a manufactured gas plant at the site. Iroquois Gas Company acquired the property in 1925 and operated the manufactured gas plant until 1955. Iroquois (now National Fuel Gas) continued gas storage at the property until 1972. In 1968 National Fuel Gas removed or demolished some on site structures. Waste materials such as heavy tars, sludges, coal, coke and demolition debris were buried on site. In 1972, Westwood Pharmaceutical purchased the property and began construction of its plant buildings. During construction of Building No. 9, tarry and oily residues and other substances were encountered. Groundwater and soil sampling conducted by Westwood indicated the presence of elevated levels of contaminants in the soil and groundwater. Also, non-aqueous phase liquid (NAPL) was found in the substrata of the site. Groundwater monitoring indicated that the contaminants were moving off site into Scajaquada Creek. Scajaquada Creek discharges into Black Rock Canal and eventually to the Niagara River.

2.2: Remedial History

The Department listed the site in the Registry of Inactive Hazardous Waste Sites in New York during 1989. The site was classified "2". The classification of 2 means that the site is a significant threat to human health and/or environment. The Department asked Westwood to undertake a Remedial Investigation/ Feasibility Study (RI/FS) under Department Order on Consent. As a result of Westwood's refusal to do so, the New York State Attorney General filed a complaint against Westwood in Federal Court on December 27, 1990. The

complaint asked for relief for State costs under CERCLA, New York common law for public nuisance injunctive relief and natural resource damage relief. On June 17, 1991, the State filed a Motion for Partial Summary judgement against Westwood in Federal Court. Westwood agreed to implement a RI/FS program under Department oversight in a Stipulation and Order which was signed on March 24, 1992. Field work started in April 1992 and was completed in June 1993. On August 12, 1993 the complaint against Westwood was amended to include National Fuel Gas as a primary defendant. The Draft RI/FS report was completed by November 1993. Although the Department had requested Westwood to select a preferred remedy for the site, the Final RI/FS report dated February 1994 did not contain such preference.

SECTION 3: CURRENT STATUS

3.1: Summary of the Remedial Investigation (RI)

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/ Feasibility Study Iroquois Gas/Westwood Squibb Site No. 915141 - Remedial Investigation Report Volume I", February 1994 has been prepared describing the field activities and findings of the RI in detail.

The RI activities consisted of the following:

- Completing soil borings and installing monitoring wells and piezometers to characterize the horizontal and vertical extent of contamination in soil and groundwater.
- Evaluating the potential for NAPL and groundwater to move off site and into Scajaquada Creek.
- Determining the extent of contamination in the creek derived from the main site.
- Preparing a baseline risk assessment and proposing remedial action objectives for each contaminated environmental media.

In order to achieve the above mentioned tasks, 48 soil samples from 24 boreholes were chemically analyzed. Fifteen (15) monitoring wells and piezometers were installed. Groundwater samples were collected and chemically analyzed on a quarterly basis for one year. NAPL samples were collected twice during the RI period. Fifty (50) creek sediment samples from 31 locations in the creek bed adjacent to site were collected and chemically analyzed.

The analytical data obtained from the RI were compared to Standards, Criteria, and Guidance (SCGs). Groundwater, drinking water and surface water SCGs identified for the site were based on NYSDEC Ambient Water Quality Standards and Guidance Values and Part V of NYS Sanitary Code. NYSDEC soil cleanup guidelines for the protection of groundwater, background conditions, and risk-based remediation criteria were used to develop remediation goals for groundwater and sediments.

Based upon this evaluation it was determined that the following environmental media warranted a feasibility study for possible remediation:

Soil

The soil at the site is primarily contaminated with PAHs (Polynuclear Aromatic Hydrocarbons), BTEX (Benzene, Toluene, Ethylbenzene, Xylene), lead and cyanide. Total PAHS were found at concentrations ranging from non-detect to 21,000 parts per million (ppm). Carcinogenic PAHs ranged from non-detect to 5,135 ppm. BTEX were found at

concentrations ranging from non-detect to 1,100 ppm. Lead was found at concentrations from 9.6 ppm to 865 ppm and cyanide from 1.4 ppm to 270 ppm. The level of contaminants present in the soil exceed the SCGs. For example, benzo(a)pyrene (a contaminant listed in the total PAHs as well as in the carcinogenic PAHs) has been detected in a range from 0.37 ppm to 580 ppm with an average concentration of about 60 ppm. The SCG for the benzo(a)pyrene based on risk from soil ingestion is 0.061 ppm.

Groundwater

Groundwater in the upper aquifer (fill zone) is primarily contaminated with PAHs and volatile organics. The depth of fill varies up to 32 feet. A layer of silty clay exists below the fill at a depth of 20 to 66 feet below the surface, followed by a layer of sand and gravel, and then bedrock (Figure 3). No significant contamination has been found in the sand and gravel layer.

The total PAHs in the upper aquifer range from non-detect to 10,081 parts per billion (ppb). The carcinogenic PAHs range from non-detect to 2,606 ppb. Total BTEX concentrations range from non-detect to 8,240 ppb. These concentrations of the contaminants are much higher than groundwater standards and their corresponding SCGs.

The direction of groundwater flow is towards Scajaquada Creek. Figure 4 shows the water table elevation sloping gradually toward the creek. Data collected during the RI suggests that 983 ft^3/day of groundwater discharges to the creek. Contaminant loadings to the creek of total PAHs and BTEX based upon this discharge were calculated to be 172 lbs/year. Variation in contaminant loading to the creek will occur based upon changes in the groundwater flow rate and contaminant concentration.

Non Aqueous Phase Liquid (NAPL)

The concentration of the contaminants in NAPL is very high. The total PAHs are 158,900 ppm. The carcinogenic PAHs are 28,400 ppm and the total BTEX are 12,800 ppm.

The direction of flow of the NAPL is also expected to be towards Scajaquada Creek. While NAPL was not observed to be entering the creek directly, it was found in soil/fill a short distance from the creek, suggesting that NAPL may be entering the creek below surface water level. The quantity of NAPL entering the creek is estimated to be 440 lb/year, however, the quantity of BTEX and PAHs entering the creek from the direct seepage of NAPL was calculated to be 72 lbs/year.

The total loading to Scajaquada Creek of BTEX and PAHs from groundwater and NAPL, therefore, would be 244 lbs/year.

Creek Sediments

The creek sediments are primarily contaminated with the same contaminants which are present in soil, groundwater and NAPL. The total PAH concentration ranges from 4.5 ppm to 19,600 ppm and carcinogenic PAHs range from 3.5 ppm to 4,230 ppm. Direct discharges of oily wastes to the creek occurred during the operation as a manufactured gas plant (MGP). Historical spills from the site into the creek are also suspected to have contributed to the levels of contamination found during the RI.

3.2 Summary of Human Exposure Pathways:

This section describes the types of human exposure 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 6 of the RI Report.

An exposure pathway is the process by which an individual comes into contact with a contaminant. The five elements of an exposure pathway are 1) the source of contamination; 2) the environmental media and transport mechanism; 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.

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

- o Dermal absorption and ingestion of chemicals in soil.
- o Dermal absorption and ingestion of contaminated sediments and surface water

The Risk Assessment selected thirty chemicals of potential concerns (CPCs) including PAHs, Ethylbenzene and Benzene (Figure 5A). Of all the CPCs, PAHs are the primary CPCs which are present in all the media including soil, groundwater and sediments. PAHs are a class of compounds that are formed during the incomplete combustion or pyrolysis of organic materials containing carbon and hydrogen. Several members of the PAHs family are probable human carcinogens. They can affect the liver and cause kidney damage, keratosis and birth defects etc.

The contaminated soil is below the ground surface and for the most part covered by asphalt pavement and buildings. Therefore, the Risk Assessment concluded that the probability of contact with the contaminated soil would be minimal except during future excavation and construction. The excess cancer risk in that situation was determined to be $2x10^{-5}$ (two in one hundred thousand) based upon possible contact by construction workers. The cancer risk to children playing in Scajaquada Creek was determined to be $2x10^{-4}$ (2 in 10,000). Cancer risk associated with ingestion of fish from the creek was determined to be $2.5x10^{-3}$ (2½ in 1000).

3.3 Summary of Environmental Exposure Pathways:

This section summarizes the types of environmental exposures which may be presented by the site. The Habitat Based 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 have been identified:

- o Direct contact with surface water and sediment.
- o Ingestion of bioaccumulated levels of chemicals in food items by wildlife at the creek.

The level of contaminants detected in the sediments exceed the NYSDEC 1993 sediment guidelines for protection of aquatic life. Based on these findings, the Ecological Assessment concluded that the PAHs in the sediments may result in subchronic and/or chronic toxicity to aquatic life, as well as acute toxicity in certain locations adjacent to the main site where contamination is highest.

SECTION 4: ENFORCEMENT STATUS

Potentially Responsible Parties (PRPs) are those who may be legally liable for contamination at a site. This may include past or present owners and operators, waste generators, and haulers.

The Potential Responsible Parties (PRP) for the site include:

1. Westwood Squibb Pharmaceutical Co., Inc.

2. National Fuel Gas Distribution Corp. As successor in interest of Iroquois Gas Corp.

The Stipulation and Order was issued by the Federal Court on March 24, 1992.

The Order obligated Westwood to implement an RI/FS. Upon issuance of the Record of Decision, the State will approach the PRPs to implement the selected remedy under a Consent Decree.

The following is the chronological enforcement history of this site.

Date	Index No.	Subject
12/27/90		Complaint filed in Federal Court
6/17/91	CIV-90-1324C	Motion for Summary Judgement filed in Federal Court
3/24/92	CIV-90-1324C	Stipulation and Order of Partial Settlement
8/12/93	CIV-90-1324C	Amendment of Complaint to include National Fuel Gas as primary defendant

SECTION 5: SUMMARY OF THE REMEDIATION GOALS

Goals for the remedial program have been established through the remedy selection process stated in 6NYCRR 375-1.10. These goals are established under the overall goal of meeting all standard, criteria, and guidance (SCGs) and protecting human health and the environment.

At a minimum, the remedy selected should eliminate or mitigate all significant threats to the public health and to the environment presented by the hazardous waste disposed at the site through the proper application of scientific and engineering principles.

The goals selected for this site are:

- Reduce, control, or eliminate the contamination present within the soils/waste on site.
- Eliminate the threat to surface waters by eliminating any future contaminated surface run-off from the contaminated soils on site.
- Eliminate the threat to the environment, fish and wildlife and public health by remediating contaminated sediments originating from the site to background conditions.
- Eliminate the potential for direct human or animal contact with the contaminated soils on site.
- Reduce or eliminate migration of contaminated groundwater and NAPL to the environment.
- Prevent, to the extent practicable, migration of contaminants from the site to groundwater.
- Provide for attainment of SCGs for groundwater quality.

SECTION 6: SUMMARY OF THE EVALUATION OF ALTERNATIVES

Potential remedial alternatives for the Iroquois Gas/Westwood Pharmaceutical site were identified, screened and evaluated in a Feasibility Study (FS). This evaluation is

presented in the report entitled Final Remedial Investigation/Feasibility Study, Iroquois Gas/Westwood Pharmaceuticals Site #915141, Feasibility Study Volume II, February 1994 and Addendum, February 1994. A summary of the detailed analysis follows.

6.1: Description of Alternatives

The potential remedies are intended to address the contaminated soils and groundwater at the site and sediments in Scajaquada Creek.

The FS describes in detail the various remedial alternatives for the main site and for the adjacent Scajaquada Creek. A brief description of those remedial alternatives are as follows:

A. Remedial Alternatives for Main Site

Alternative 1: No Action

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.

Under this alternative the site would remain in its present condition, and human health and the environment would not be adequately protected.

Alternative 2: Capping Source Areas and Soil

Present Worth	$730,640
Capital Cost	$504,240
Present Worth of Operation and Maintenance (O&M) for 30 years	$226,400
Time to Implement	3 months

This alternative would consist of the following process options and technologies:

- Gravel-clay cap above soil and source area contaminants.
- Groundwater monitoring and use restrictions, land use restrictions and fencing.

The gravel/clay cap would prevent exposure to source area/soil materials. Since 65% of the site is already covered by either buildings or asphalt, capping the remaining source areas at the site would be easily accomplished. Size of the cap area is estimated to be 113,600 square feet. See Figures 5 and 6 for the area to be capped and for the cap cross-section. Although the cap would reduce infiltration through the source area, it would not prevent groundwater from coming in contact with contamination and in turn transporting contaminants into Scajaquada Creek.

Alternative 3: Cap Source Areas and Soil, Extraction Wells, Treatment System for Groundwater and NAPL and Vertical Impermeable Barrier

Present Worth	$1,749,500
Capital Cost	$1,162,800
Present Worth of O&M for 30 years	$586,700
Time to Implement	15 months

This alternative would consist of the following process options and technologies:

- Gravel/clay cap to contain the source area contaminants.
- Sheet piling vertical barrier for groundwater gradient control in the source area.
- Extraction wells for groundwater gradient control and removal of the contaminated groundwater (and NAPL if present).
- Treatment of groundwater and NAPL

- o Groundwater monitoring, land use restrictions and fencing.

The gravel/clay cap under this alternative would be similar to the Alternative 2. See Figures 5 and 6. The sheet piling vertical barrier would be driven into the silty clay underlying the fill. The area between the Westwood property fence line and Scajaquada Creek would be investigated during the design phase to determine the extent of contamination to locate the sheet piling vertical barrier. The sheet piling joints would be sealed with epoxy resin or equivalent sealant to make them impermeable. A number of extraction wells would be installed to provide gradient control within the barrier and to remove and treat groundwater. See Figures 7 and 8 for the location of the barrier wall and schematic of the groundwater treatment system.

Alternative 4: Excavation of Source Areas Soil and Off Site Disposal in a Landfill or by Incineration, Vertical Impermeable Barrier, Extraction Wells and Treatment System for Groundwater and NAPL

Present Worth	$5,950,800
Capital Cost	$5,378,300
Present Worth of O&M for 30 years	$572,500
Time to Implement	8 months

This alternative would consist of the following process options and technologies;

- o Excavation, temporary storage, separation, sizing, and off site disposal of solids and soil by incineration or by landfilling.

- o Sheet piling vertical barrier and extraction wells for gradient control and removal of contaminated groundwater (and NAPL if present).

- o Treatment of groundwater and NAPL for final disposal.

- o Groundwater monitoring and use restriction, land use restrictions and fencing.

Under this alterative contaminated materials around the warehouse building would be excavated and disposed by incineration. Only limited waste materials would be excavated because a substantial portion of the wastes lie under the warehouse floor and would not be accessible for removal. Sheet piling vertical barrier and extraction wells would be similar as for Alternative 3.

Alternative 5: Land Farming Soil On Site and Installation of Vertical Impermeable Barrier, Extraction Wells and Treatment System for groundwater and NAPL

Present Worth	$2,483,085
Capital Cost	$1,867,800
Present Worth of O&M for 30 years	$615,285
Time to Implement	16 months

This alternative would consist of the following process options and technologies:

- o Landfarming of contaminated soil.

- o Sheet piling vertical barrier and extraction wells for groundwater (and NAPL if present).

- o Treatment of groundwater and NAPL before disposal.

- o Groundwater monitoring, use and access restrictions.

Under this alternative the waste and contaminated soil from accessible areas would be excavated and treated at an on site treatment facility located on the property. The treatment facility would be constructed by grading or excavating and creating berms and ramps. The bottom would be made of clay and 60 mil high

density polyethylene (HDPE) liner. Water would be used to irrigate the treatment area in the facility. Excess water from the drainage layer inside the facility would be treated prior to disposal. The soil treatment facility would have controls for volatile emission subject to air quality regulations. A treatability study would be performed to determine appropriate types and amount of nutrients to be used for biodegradation. The waste and contaminated soil in the treatment facility would be tilled weekly using conventional agricultural equipment and monitored to determine the progress of treatment. The treated soil could be used as fill material if needed on site or disposed off site. The sheet piling vertical barrier and extraction and treatment system would be similar to the Alternatives 3 and 4.

Alternative 6: Capping Source Areas, In-Situ Biotreatment of Source Areas Soil and Groundwater

Present Worth	$1,320,500
Capital Cost	$733,800
Present Worth of O&M cost Cost for 30 years	$586,700
Time to Implement	9 months

This Alternative would consist of the following process options and technologies:

- Cap to contain source area contaminants.
- In-Situ biotreatment (biosparging/ bioventing) for soil and groundwater.
- Groundwater monitoring and use restriction, land use restrictions and fencing.

Biosparging is an aeration process designed to deliver oxygen to the subsurface for use by indigenous bacteria to degrade hydrocarbons. Bench scale testing would be employed to determine the effectiveness of the biotreatment and pilot testing would be done to determine site specific radius of influence and effectiveness. Alternate methods for adding oxygen to groundwater (e.g. use of hydrogen peroxide) would also be evaluated. A soil venting recovery system would be installed in horizontal trenches above the water table to capture the injected air and hydrocarbons generated from the biosparging system. The capture system's effectiveness would be routinely evaluated through periodic air monitoring. The system would include a vapor phase activated carbon and air compressors.

The area would be capped to prevent contact with contaminants, to control erosion, to reduce rain water infiltration, and to control volatilization from contaminated waste during in situ air sparging treatment. See Figures 9 and 10 for air injection well locations and a conceptual design.

There is a reasonable expectation that aerobic decomposition of PAHs in groundwater will occur. However, direct oxidation of NAPL is much less certain. Therefore, the use of surfactants to enhance the bacterial process would also be studied. This alternative as described in the FS does not discuss NAPL remediation. The use of surfactants may be suitable for this site, however, because the substantial silty clay deposit beneath contaminated fill/waste would substantially retard downward migration of contaminants mobilized by surfactants. Biosparging and/or the use of surfactants would be implemented if determined effective through treatability study and additional testing.

Under this alternative there would be no short term remedial action for groundwater and NAPL except monitoring.

Alternative 7: Capping Source Areas, In-Situ Biotreatment, Impermeable Vertical Barrier, Extraction Wells and Treatment System for Groundwater and NAPL

Present Worth	$1,996,800
Capital Cost	$1,196,800
Present Worth of O&M for 30 years	$800,000
Time to Implement	18 months

This alternative would consist of the following process options and technologies:

- o Cap to contain the source area contaminants.
- o In-Situ biotreatment of soil and groundwater.
- o Sheet piling vertical barrier for gradient control.
- o Extraction wells for gradient control.
- o Treatment of groundwater and any NAPL present.
- o Groundwater monitoring, land use restrictions, and fencing.

This alternative is a combination of the Alternatives 3 and 6. It includes all the process options and technologies of the Alternative 3 plus the bioremediation technology of the Alternative 6. See those sections for related details.

B. **Remedial Alternatives for Scajaquada Creek**

Alternative 1: No Action

The no action alternative is evaluated as a procedural requirement and as a basis for comparison. It requires continued monitoring, allowing the creek to remain in an un-remediated state.

Under this alternative, the creek would remain in its present condition and human health and the environment would not be afforded any additional protection.

Alternative 2: Capping Sediments

Present Worth:	$463,200
Capital Cost:	$293,000
Present worth of O&M for 30 years	$170,000
Time to Implement	3 months

This alternative would consist of the following process options and technologies:

- o Capping contaminated sediments in place
- o Monitoring and use restrictions, land use restrictions and fencing.

The capping would isolate sediments contaminated by the site to prevent exposure, surface water interaction, control erosion and mitigate volatilization. Figure 12, shows an area estimated to be capped. However, the exact size would be determined in the design phase using background site specific contaminant levels as a goal for remediation. To further protect the public from contact with the contaminants and maintain the integrity of the sediment containment system, the area would be enclosed with a chain link fence with warning signs. Creek use (fishing, boating, etc.) restrictions would be instituted to prevent intrusive activities that could damage the containment. This may, however, not be practical as the creek is designated as Class B stream suitable for contact recreation and fish propagation.

Alternative 3: Excavation of Sediments and Disposal in a Subtitle D Landfill

Present Worth	$1,190,000
Capital Cost	$1,190,000
Present Worth of O&M	$0
Time to Implement	8 months

This alternative would consist of the following process options and technologies:

- o Removal of sediments from the creek, dewatering and if necessary treatment.
- o Transportation to a solid waste landfill for disposal.
- o Monitoring, use and access restrictions during removal of sediments.

Under this alternative, the creek sediments contaminated by the site would be excavated and transported to a nearby dewatering facility. Water generated from the dewatering operations would be contained, treated and properly disposed. In the unlikely event sediments contain leachable levels of benzene (fail TCLP testing) additional treatment would be undertaken prior to disposal.

Before excavation, silt screens would be installed in the creek to prevent contaminant migration beyond the area of excavations. Approximately, 4,000 cubic yards of sediments would be excavated from the creek according to the FS (See Figure 12). However, the exact size of the excavation would be finalized during the design stage using background site specific contaminant levels as a goal for remediation.

Creek bed and banks would be reasonably restored to preremediation conditions. However, the details for the excavation would be finalized during the design stage after considering background levels.

Alternative 4: Sediment Excavation and Off-Site Disposal by Thermal Treatment

Present Worth	$1,488,000
Capital Cost	$1,488,000
Present Worth of O&M	$0
Time to Implement	8 months

This alternative would consist of the following process options and technologies:

- o Removal of sediments from the creek, dewatering and if necessary treatment.
- o Temporary storage, and off site thermal destruction.
- o Monitoring, land use restrictions and fencing during removal of sediments.

Under this alternative the creek sediments would be excavated as described for the Alternative 3. The dewatered sediments would be treated in an on-site treatment facility if necessary before transportation to an off site facility for thermal destruction or disposal by other approved and suitable methods consistent with Federal/State regulations. The work area would be fenced and air sampling would be done according to an approved health and safety plan.

6.2 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 (6NYCRR 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 contained 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. Alternatives 1, 2 and 6 for the main site would not meet this criteria because groundwater

containing contamination in excess of standard/guidance would still leave the site. Alternative 1, the no action alternative, for the creek would also not meet this criteria because contaminated sediments would still be exposed. Alternatives 3, 5 and 7 of the main site would meet this criteria. Also, Alternative 2, 3 and 4 of the creek would meet this criteria.

2. Protection of Human Health and the Environment. This criterion is an overall evaluation of the health and environmental impacts to assess whether each alternative is protective.

Alternatives 1, 2 and 6 for the main site and Alternative 1 and 2 for the Scajaquada Creek would not comply with this criteria. Under Alternative 1 for both main site and Scajaquada Creek no remediation would occur. Therefore, this alternative would not be protective of human health and environment. Under Alternatives 2 and 6 for the main site, the contamination would continue to migrate off site in an uncontrolled manner. Under Alternative 2 for Scajaquada Creek the wastes would be under a liner, however adequate control and protection against contact would not be assured. Alternatives 3,4, 5 and 7 for the main site and alternatives 3 and 4 for the Scajaquada Creek would comply with this criteria.

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 implementation are evaluated. The length of time needed to achieve the remedial objectives is also estimated and compared with the other alternatives.

There would be no short term adverse impact from the no action alternative (Alternative 1) for main site and for Scajaquada Creek. Under all other Alternatives (2 to 7) for the main site, there could be short term impacts caused by dust and volatile emissions during construction, excavation and land farming activities. However, the ambient air would be monitored to protect the public and environment during these activities.

Suspension of particulates from contaminated sediments capping and or sediment removal activities could occur under the creek Alternatives 2,3 and 4. However, control measures are available to minimize those impacts.

Under Alternative 1 for the main site, time of implementation would be zero since no remedial action would be implemented. Alternative 2 for both the main site and the creek would require 3 months to implement. The maximum time for implementation would be 18 months under Alternative 5 and 7 for the main site and 8 months under Alternative 3 for the creek. Under other remaining alternatives the time for implementation would vary between 8 months to 15 months.

4. Long-term Effectiveness and Permanence. This criterion evaluates the long-term effectiveness of alternatives after implementation of the response actions.

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.

Alternatives 3 and 4 for the creek would fully comply with this criteria because they would result in the creek site being permanently remediated. Alternative 1 for both the main site and the creek does not comply because no remedial action would be undertaken. Alternatives 2 and 6 for the main site would

also not comply because contaminated groundwater and NAPL would continue to move off site and into the creek. Alternatives 3, 4, 5, and 7 for the main site would comply because contaminated groundwater and NAPL would be contained on site. In addition, under Alternative 7 the remediation process would be augmented by bio-remediation of soil and groundwater if the treatability study finds this treatment to be effective.

The creek Alternative 2 would not comply as the wastes would be left in the creek under a liner. Long term effectiveness would not be assured.

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.

Alternatives 3 and 4 for the creek would comply because the creek site would be permanently remediated. Alternative l for both the main site and for the creek would not comply because no remedial measure would be implemented. Alternative 2 of the main site would not comply because contaminants from the waste would remain mobile through groundwater. Alternatives 3, 4 and 5 for the main site would result in a limited reduction in wastes volume through long term collection and treatment of the contaminated groundwater and NAPL. Under Alternative 7 the remediation process would be augmented by bio-remediation of soil and groundwater if the treatability study finds this treatment to be effective. Under Alternative 4 for the main site, only limited quantities of wastes would be removed. Alternative 6 of the main site would not comply because contaminated groundwater and NAPL would be moving off site.

The liner proposed for the creek Alternative 2 would contain contamination present in sediment thereby reducing mobility. However, toxicity and volume would not be significantly reduced. Creek Alternatives 3 and 4 would result in sediment removal thereby essentially eliminating the volume, toxicity and mobility of hazardous constituents present in the creek.

6. Implementability. The technical and administrative feasibility of implementing each alternative is evaluated. Technically, this includes the difficulties associated with the construction, the reliability of the technology, and the ability to monitor the effectiveness of the remedy. Administratively, the availability of the necessary personal and material is evaluated along with potential difficulties in obtaining specific operating approvals, access for construction, etc..

All alternatives are implementable. No serious problem is foreseen in getting access to the site or to the creek. Capping and pump/treat under alternatives 3,4,5 and 7 for the main site are proven technologies and would be implemented without any significant problem. Land farming of the wastes proposed in Alternative 5 for the main site has been implemented on other sites having petroleum wastes. Air sparging proposed under Alternatives 6 and 7 of the main site has been implemented on other sites. The installation of a liner under water in the creek under Alternative 2 of the creek would be complicated, however, similar installations have been made in waterways at other sites. Excavation of the sediments or dredging under Alternative 3 and 4 of the creek is a proven technology and no serious problems is anticipated in implementation.

7. Cost. Capital and O&M 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 Section 7.1.

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

Alternative 1 for both the main site and for the creek have no cost. Alternative 4 for the main site has the highest cost while removing only limited quantity of wastes. Alternative 4 for the creek has the highest cost but it would completely remove wastes from the aquatic environment and would provide permanent remedy by thermal destruction.

SECTION 7: SUMMARY OF THE SELECTED REMEDY

Based upon the results of the RI/FS, and the evaluation presented in Section 7, the NYSDEC has selected Alternative 7 for the main site and Alternative 4 for Scajaquada Creek as the remedy for this site. Alternative 7 of the main site is the only alternative that will contain the off-site migration of contaminated groundwater and NAPL, and yet also has the potential to accelerate soil and groundwater remediation. Both Alternatives 3 and 4 for the creek will permanently remove contaminated sediment from the creek. However, Alternative 4 for the creek would provide a high degree of reduction in toxicity and mobility of wastes by thermal destruction. Off site disposal of sediments in subtitle "D" landfill under creek Alternative 3, however, could be preferable if the ultimate cost for disposal under creek Alternative 4 substantially exceeds those projected in the feasibility study.

The estimated total present worth cost to implement the preferred overall remedy is $3.5 million. The cost to construct the remedy is estimated to be $2.7 million and the estimated present worth of annual operation and maintenance cost for 30 years is $0.8 million

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. Uncertainties identified during the RI/FS, including the extent of contamination between Westwood property fence line and Scajaquada Creek, the location of the sheet piling vertical barrier wall, and contamination near Dart Street would be investigated and resolved.

2. Main Site:

   - o Clay cap.
   - o Impermeable sheet piling barrier wall.
   - o Extraction wells.
   - o Groundwater and NAPL treatment by oil/water separation, filtration and activated carbon or equivalent.
   - o In-Situ biotreatment of soil and groundwater to enhance the remediation process if the treatability study finds this treatment to be effective.
   - o Long term monitoring, land use restrictions, and fencing.

3. Scajaquada Creek:

   - o Excavation of contaminated sediments originating from the site.
   - o Fencing and use restriction in the stretch of the creek under excavation for the duration of the work.

- o Construction on site and use of a temporary storage and dewatering facility for the excavated sediments.

- o Pre-treatment and disposal of wastewater from dewatering operation.

- o Off site transport of the dewatered sediments for thermal destruction or disposal by other approved and suitable methods consistent with Federal/State regulations.

- o Post sediment removal confirmatory sampling.

SECTION 8: CITIZEN PARTICIPATION ACTIVITIES

As part of the remedial investigation process, a citizen participation plan was developed for the Iroquois Gas/Westwood Pharmaceutical site. The principal objectives of the Citizen Participation Plan are: inform the public about conditions at the site; educate the public about the PRAP; obtain public comment on the PRAP; obtain support (community acceptance) of the remedial action; and ensure that all comments obtained from the public are evaluated and answered in a Responsiveness Summary.

The following public participation activities were conducted for the site:

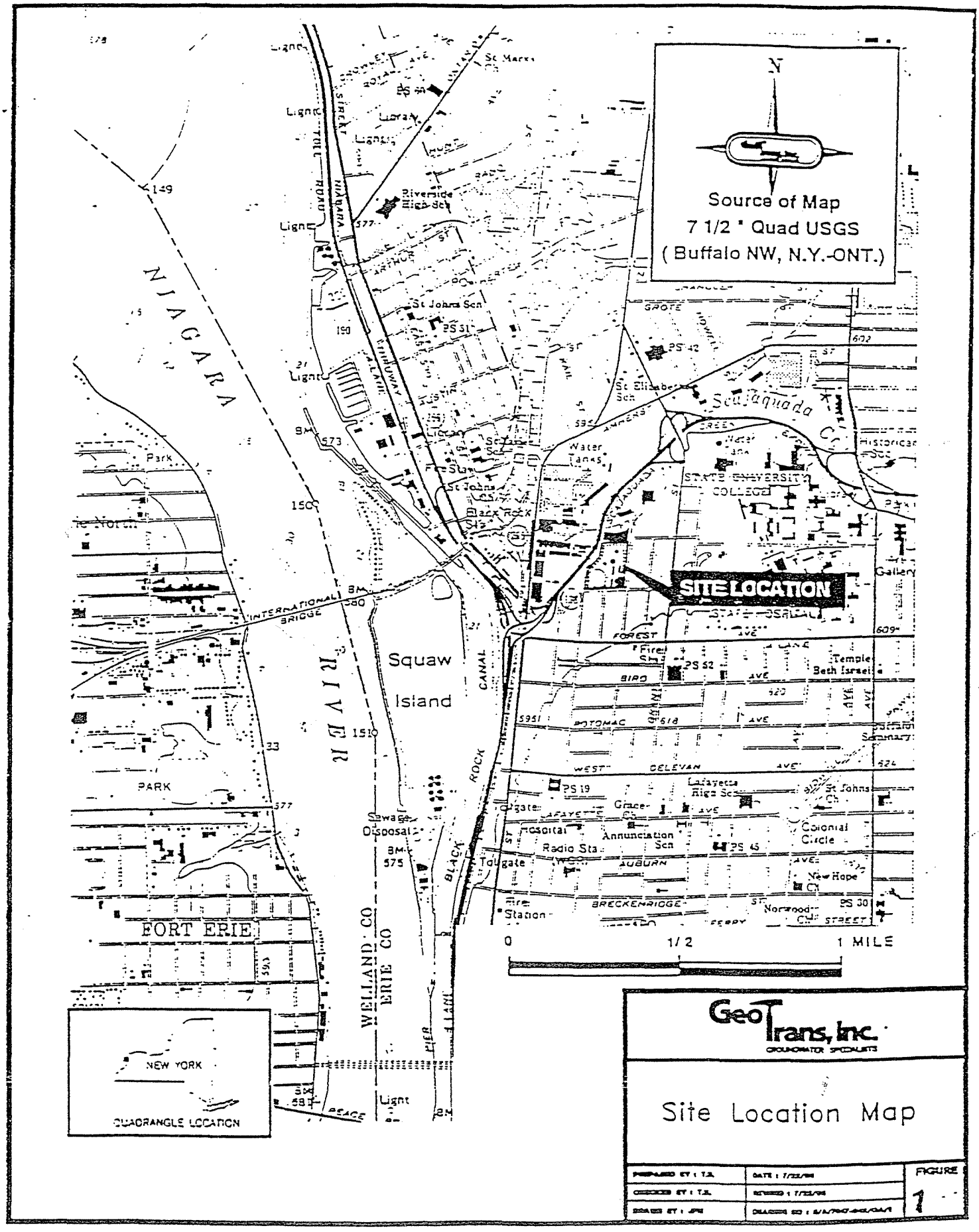
- o A citizen participation plan was developed and made available for inspection at the document repositories.

- o An informational mailing was sent to interested individuals/groups on February 14, 1994. This mailing also announced the public meeting scheduled for the PRAP.

- o The public comment period for the site lasted from February 14, 1994 to March 16, 1994.

- o A public meeting was held on February 24, 1994 to discuss the proposed remedial action plan and obtain public comment on it.

- o The public comments did not result in any substantive changes to the selected remedy. Based upon some comments, however, the text was modified to identify a small triangular area between the Westwood property fence line and Scajaquada Creek that will require additional investigation during the Design Phase to finalize the alignment of the barrier wall.



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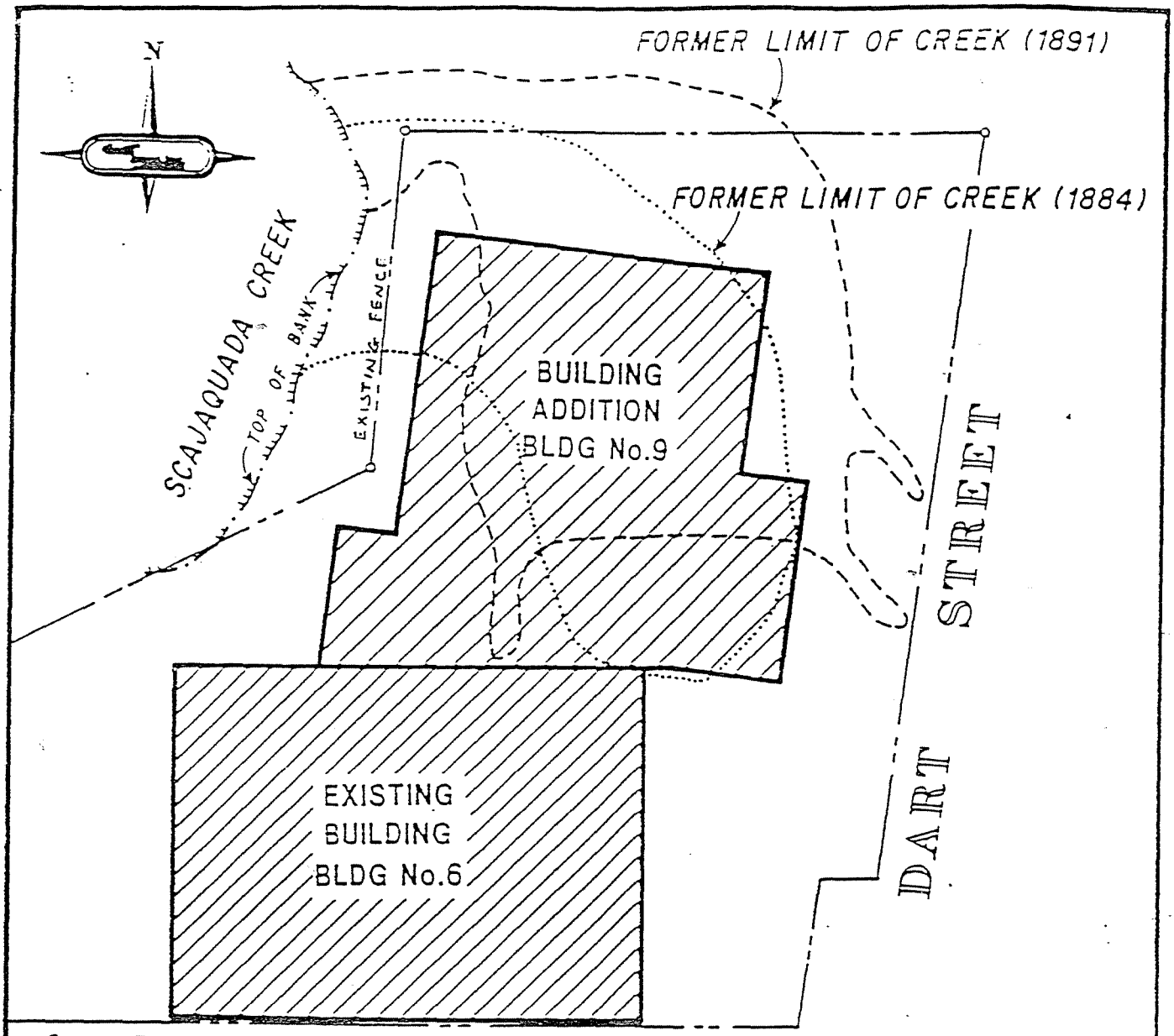
GROUNDWATER SPECIALISTS

Site Location Map

PREPARED BY : T.S.	DATE : 7/22/96	FIGURE
CHECKED BY : T.S.	REVISED : 7/23/96	1
DRAWN BY : JPS	DRAWING NO : S:\ATTACH\SLOC.DWG	

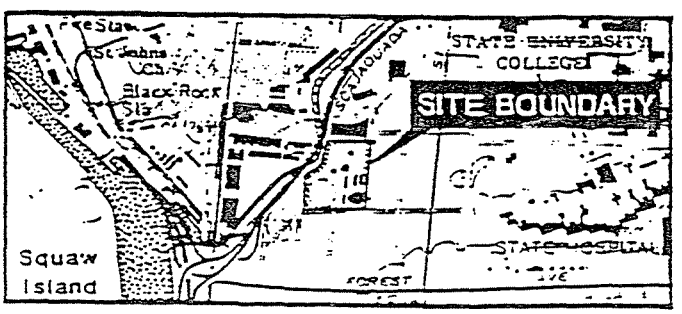


Source: Terrani, 1987b

LEGEND

0 100 200 FEET

Source of Map 7 1/2' Quad USGS



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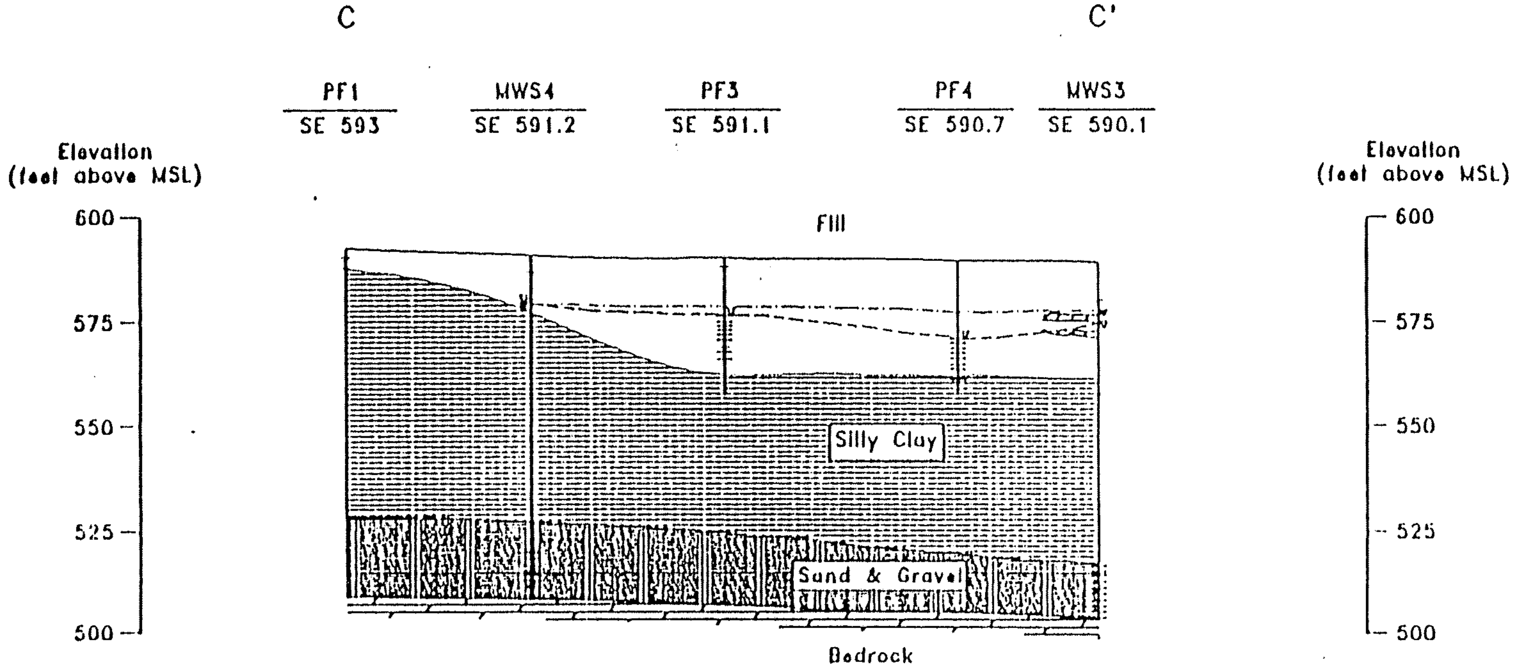
LOCATION OF INVESTIGATION AREA:
DART STREET FORMER FUEL GAS PLANT SITE,
BUFFALO, NEW YORK

PREPARED BY: D.A.G.	DRAWN BY: R.J.T.	FIGURE 2
CHECKED BY: C.R.F.	DATE: 6/10/87	



Legend

FILL

WOOD CHIPS

SILTY CLAY

SAND & GRAVEL

BEDROCK

Static Waterlevels recorded on June 15, 1992

------▽ In Fill Layer

-·-·-·-▼ In Sand & Gravel Layer

Note: This cross section was interpolated between boring locations. Actual conditions may vary.

Scale (feet)

50 — 0 — 25

(Vertical Exaggeration 2x)

MWS4 — Monitor Well S4

SE 591.2 — Surface Elevation = 591.2 feet above MSL

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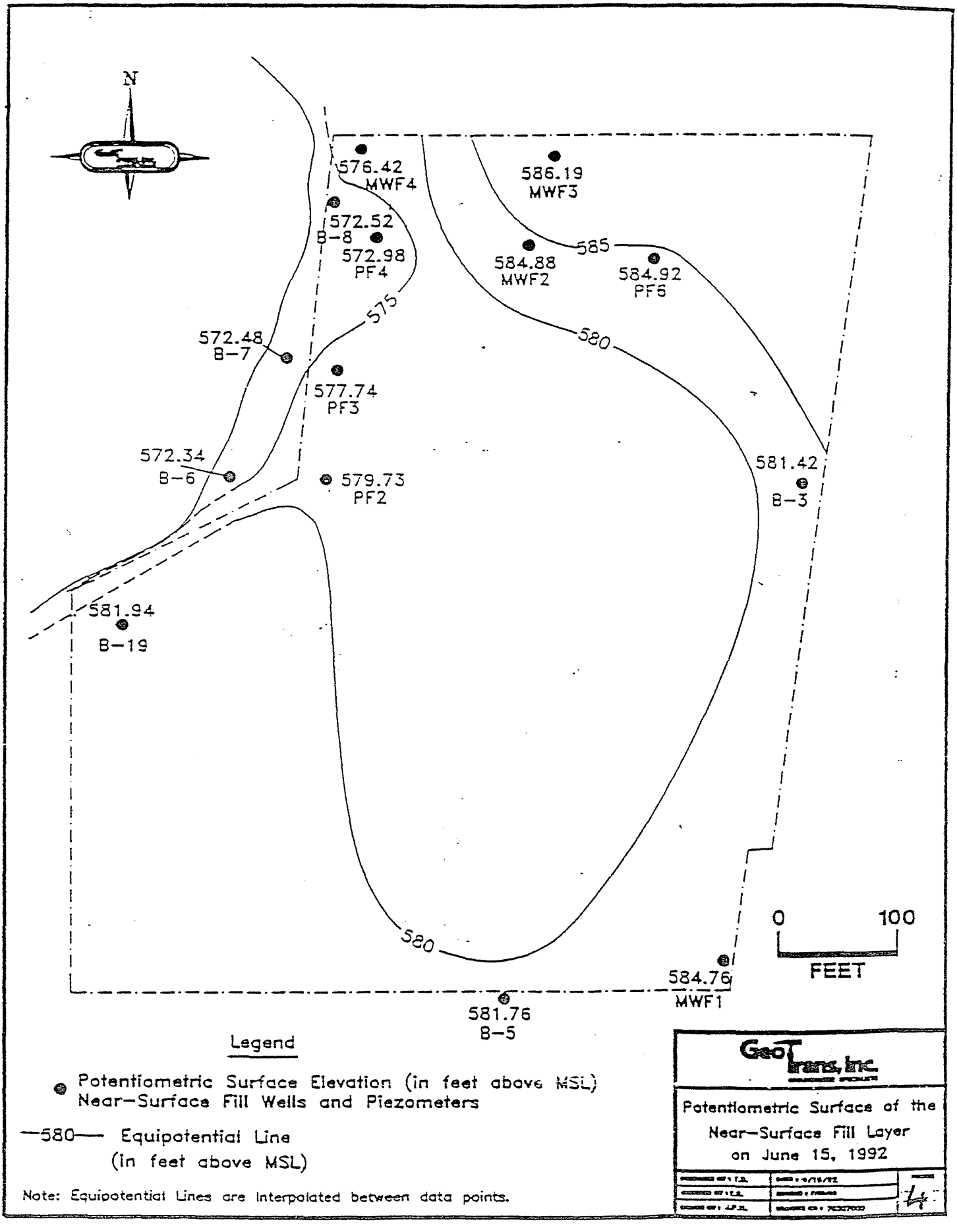
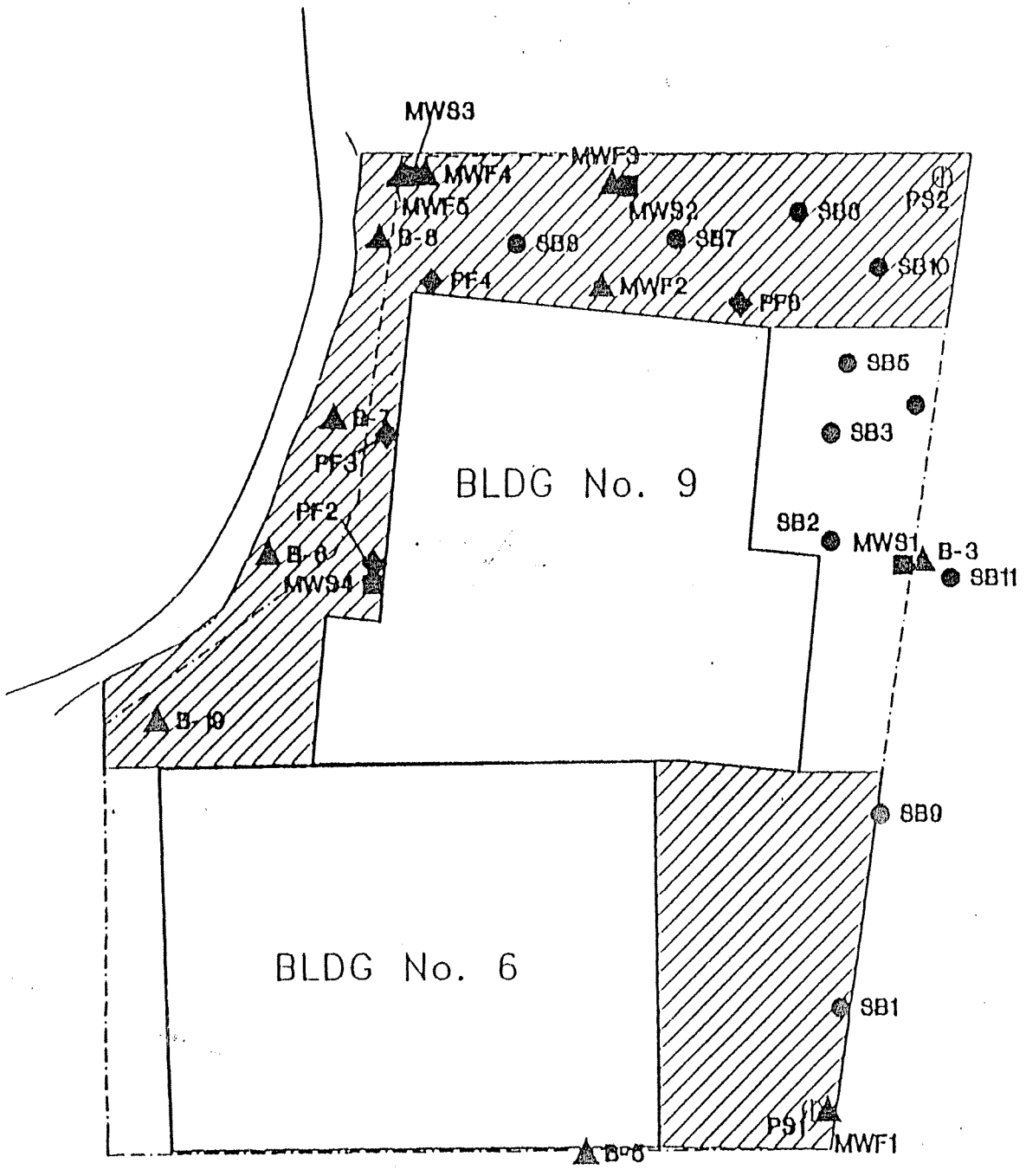
Geologic Cross-Section

C – C'

3


N
576.42
MWF4
586.19
MWF3
572.52
B-8
572.98
PF4
584.88
MWF2
584.92
PF6
585
575
580
572.48
B-7
577.74
PF3
572.34
B-6
579.73
PF2
581.42
B-3
581.94
B-19
580
0
100
FEET
584.76
MWF1
581.76
B-5
Legend
Potentiometric Surface Elevation (in feet above MSL)
Near-Surface Fill Wells and Piezometers
—580— Equipotential Line
(in feet above MSL)
Note: Equipotential Lines are interpolated between data points.
GeoTrans, Inc.
Potentiometric Surface of the
Near-Surface Fill Layer
on June 15, 1992



N

Legend

Capping Area

cap area: 113600 ft^2
total area: 352800 ft^2
area under building parking: 228000

- Soil Borings (11)
- Fill Monitor Wells (10) Includes "B" Series Wells
- Fill Piezometers (4)
- Lower Sand Monitor Wells (4)
- Lower Sand Piezometers (2)

0 100
FEET

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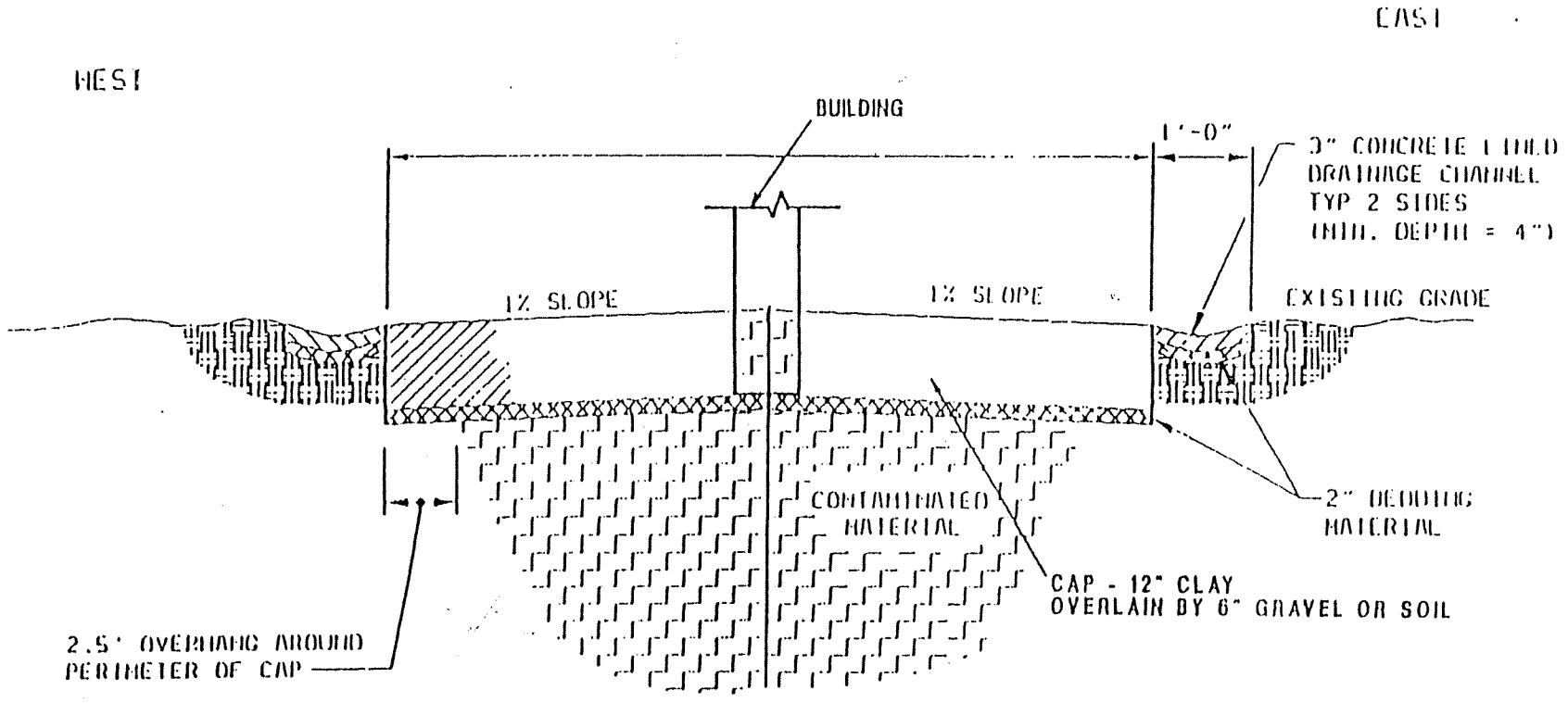
Capped area

PREPARED BY : T.A.	DATE : 7/22/94	Figure 5
CHECKED BY : T.A.	REVISED : 7/22/94	
DRAWN BY : JPM	DRAWING NO : 79-07044-2W18	

Summary of Chemicals of Potential Concern
for the IG/WS Site

Chemicals	Surface Soil	Subsurface Soil	Surface Water	Sediment
Organics:				
Benzene		X		
Dibenzofuran	X	X		X
Endosulfan sulfate			X	
Ethylbenzene				
Polycyclic Aromatic Hydrocarbons				
Acenaphthene		X		X
Anthracene		X		
Benzo(a)anthracene	X	X	X	X
Benzo(b)fluoranthene	X	X	X	X
Benzo(k)fluoranthene	X	X	X	X
Benzo(g,h,i)perylene	X	X		X
Benzo(a)pyrene	X	X	X	X
Chrysene	X	X	X	X
Dibenz(a,h)anthracene	X	X		X
Fluoranthene		X	X	X
Fluorene		X		X
Indeno(1,2,3-c,d)pyrene	X	X		X
2-Methylnaphthalene	X	X		
Naphthalene		X		X
Phenanthrene	X	X	X	X
Pyrene		X	X	X
Inorganics:				
Aluminum			X	
Antimony	X	X		
Arsenic			X	
Barium			X	
Cadmium		X		X
Lead				X
Manganese			X	X
Mercury	X	X		
Nickel			X	
Zinc			X	X

FIG. 5A



NOT TO SCALE

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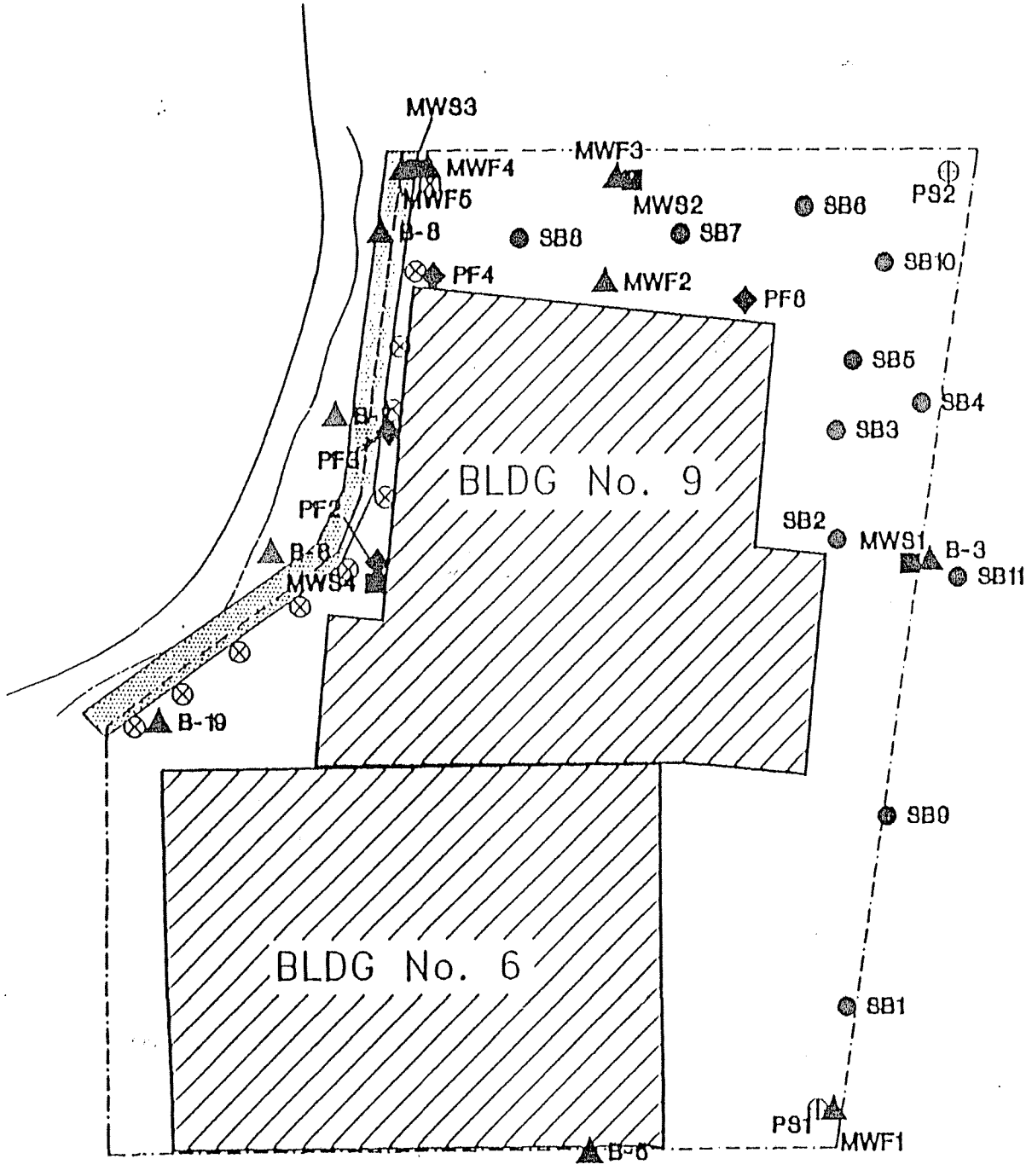
Cross-sectional view of the cap

PREPARED BY : T.B.	DATE : 7/28/94	FIGURE
CHECKED BY : T.B.	REVISED : 7/28/94	6
DRAWN BY : JPW	DRAWING NO : 94-07-041-B-W6	



N

Legend

- Sheet piling Barrier wall
- ⊗ Extraction wells
- ● Soil Borings (11)
- ▲ Fill Monitor Wells (10) includes "B" Series Wells
- ◆ Fill Piezometers (4)
- ■ Lower Sand Monitor Wells (4)
- ⊕ Lower Sand Piezometers (2)

0 100

FEET

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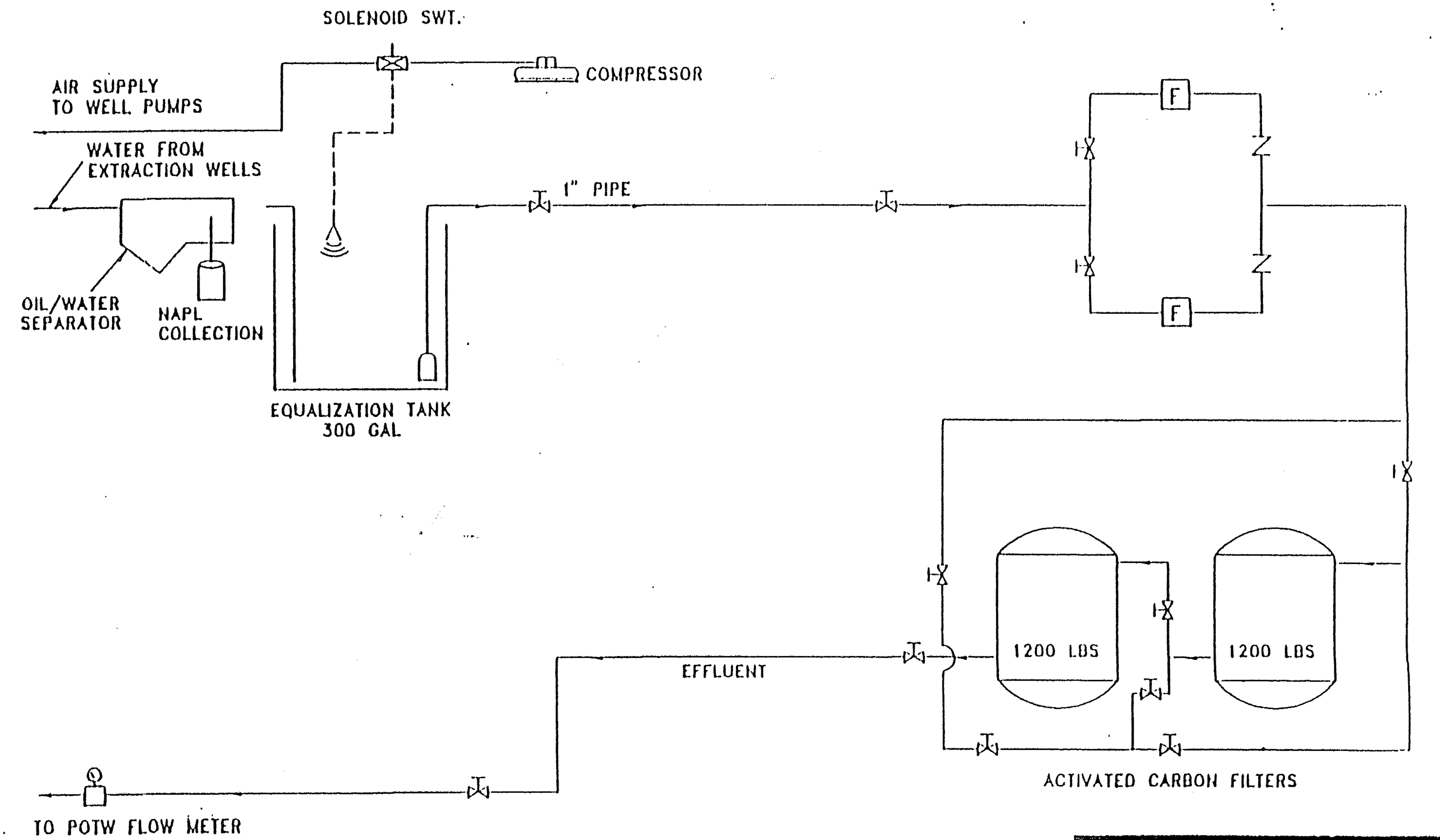
Location of Gradient Control System

PREPARED BY : T.A.	DATE : 7/22/94	FIGURE 7
CHECKED BY : T.B.	REVISED : 7/22/94	
DRAWN BY : JPH	DRAWING NO : 70-47044-2.dwg	



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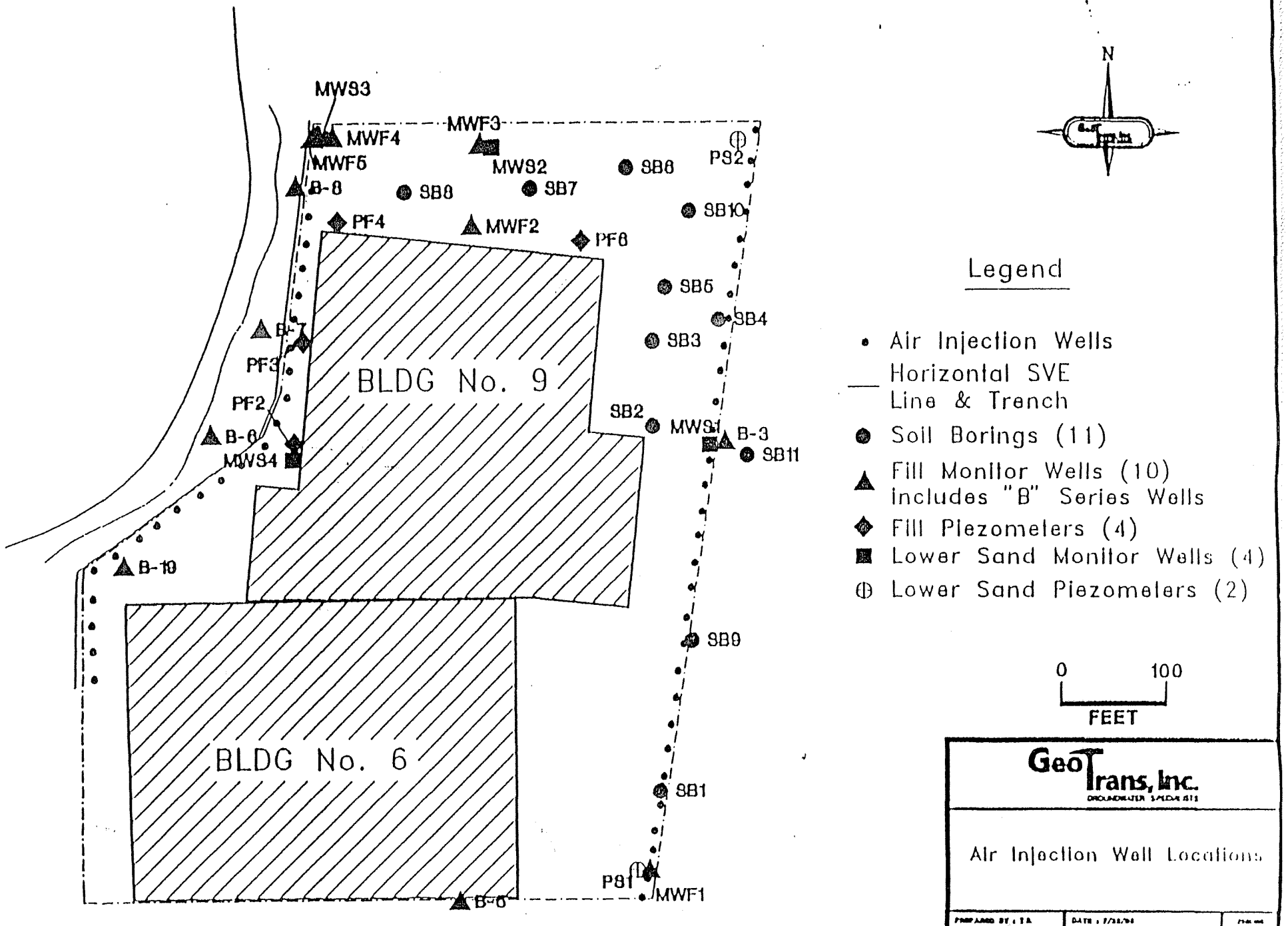
Groundwater Removal and Treatment System Process Flow Diagram

PREPARED BY: T.S.	DATE: [illegible]	FIGURE
CHECKED BY: T.S.	REVISED: [illegible]	8
DRAWN BY: [illegible]	DRAWING NO.: [illegible]	


MWS3
MWF4
MWF3
MWF5
MWS2
SB6
PS2
B-8
SB8
SB7
SB10
PF4
MWF2
PF6
SB5
SB4
B-7
SB3
PF3
BLDG No. 9
PF2
SB2
MWS1
B-3
B-6
SB11
MWS4
B-10
SB9
BLDG No. 6
SB1
PS1
MWF1
B-5
N
Legend
Air Injection Wells
Horizontal SVE Line & Trench
Soil Borings (11)
Fill Monitor Wells (10) Includes "B" Series Wells
Fill Piezometers (4)
Lower Sand Monitor Wells (4)
Lower Sand Piezometers (2)
0
100
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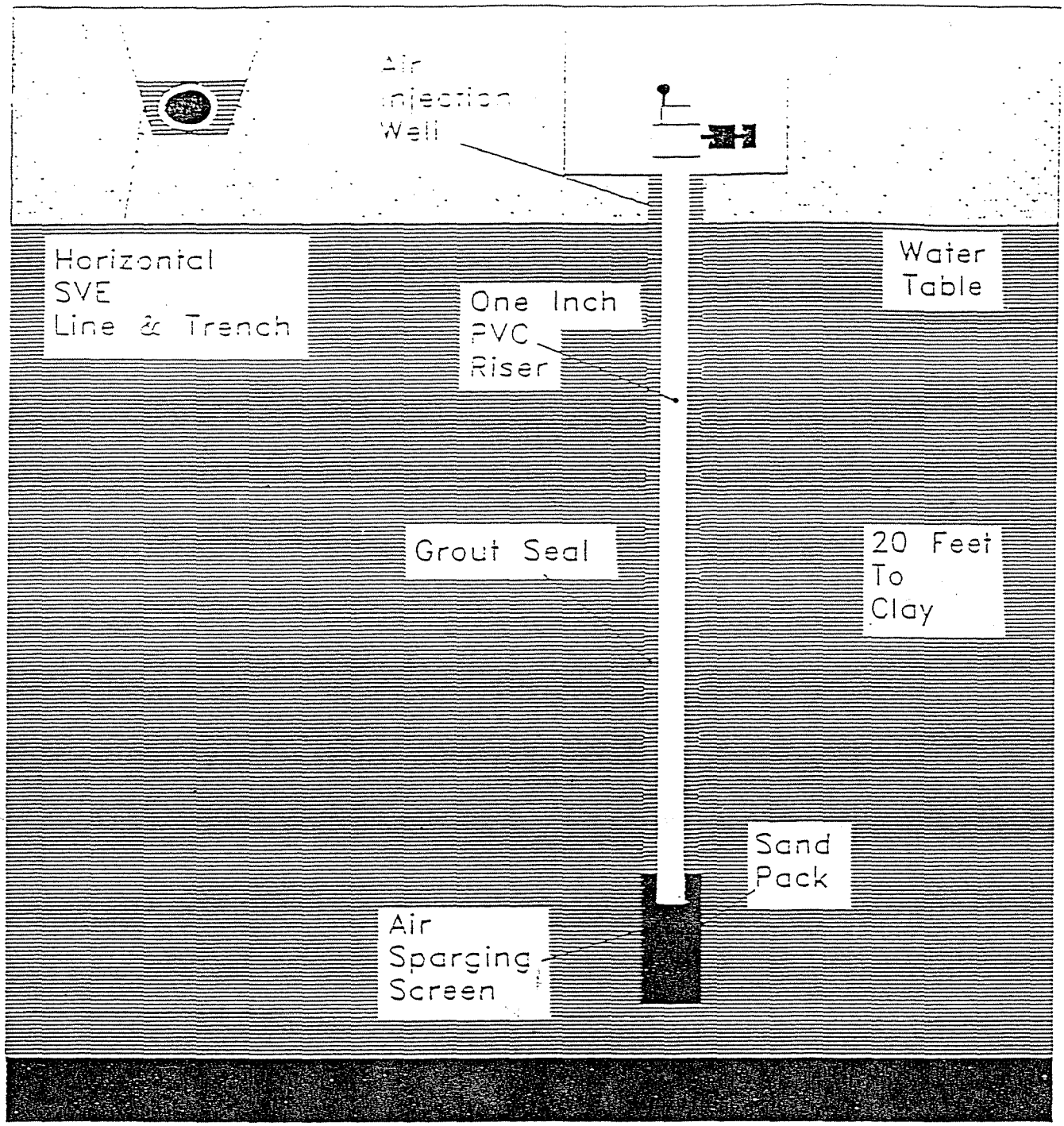
GeoTrans, Inc.
Air Injection Well Locations
9



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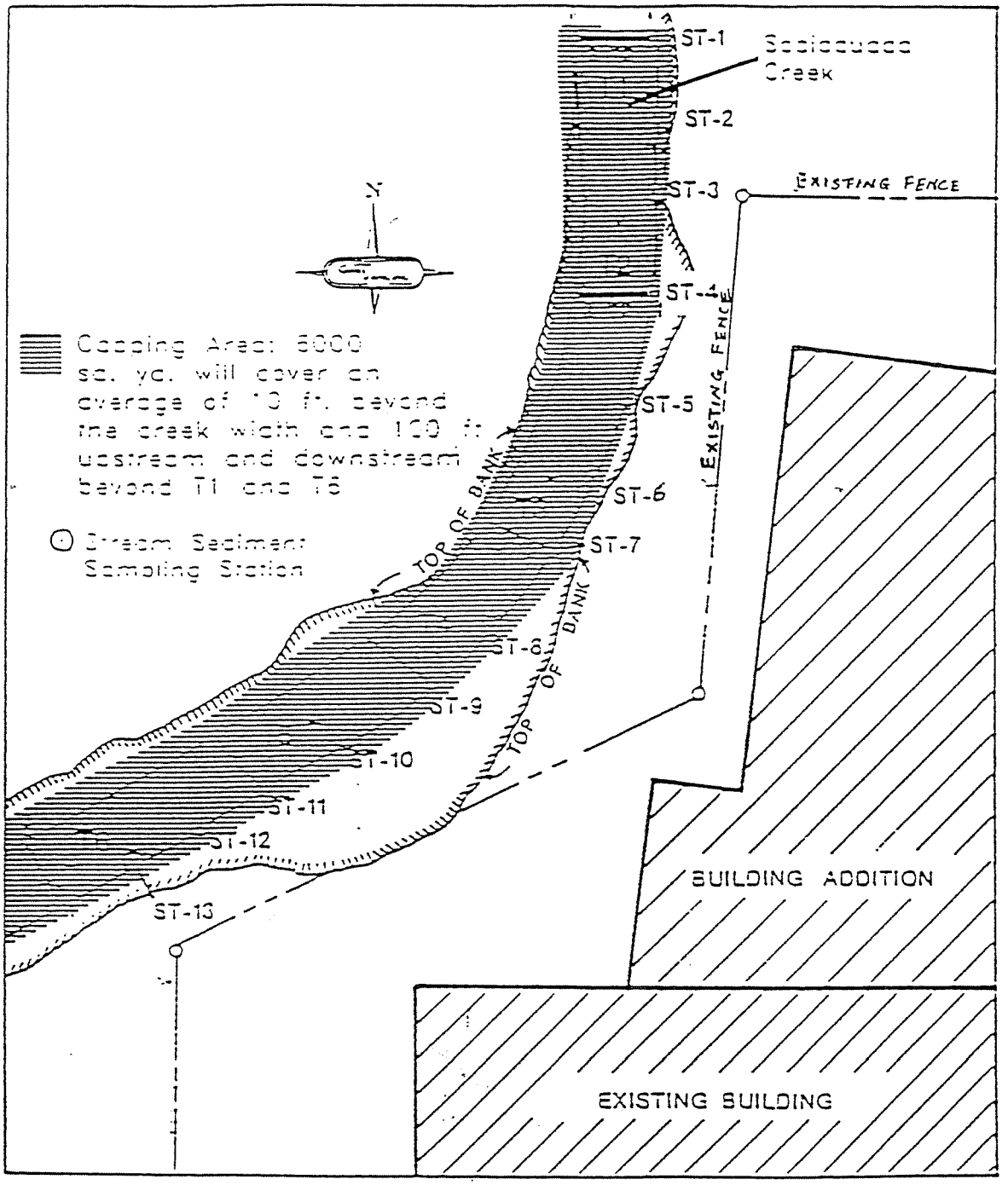
Cross Sectional View
of Biosparging System

PREPARED BY: T.S.	DATE: 7/22/96	FIGURE 10
CHECKED BY: T.S.	REVISED: 7/22/96	
DRAWN BY: JMS	DRAWING NO.: PROPOSAL	



0 50 100 150 200

SCALE IN FEET

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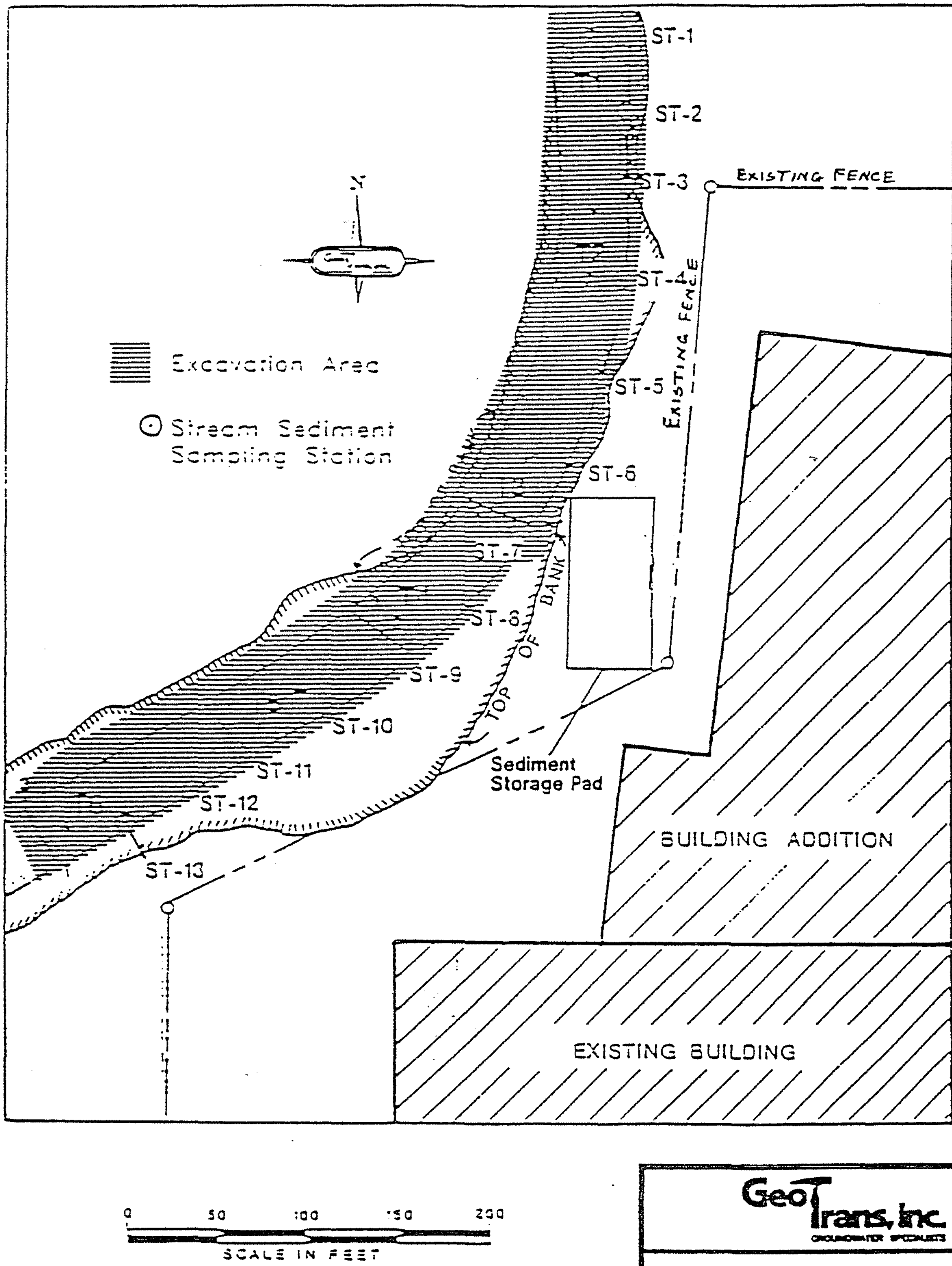
Sediment Capping Area for Scajaquada Creek

PREPARED BY : T.S.	DATE : 7/88/88	FIGURE
CHECKED BY : T.S.	REVISED : 7/07/88	11
DRAWN BY : JPS	DRAWING NO : G:\AUTOCAD\SCAJ\...	



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Sediment Excavation Area

FIGURE 12

APPENDIX A

RESPONSIVENESS SUMMARY

APPENDIX A

RESPONSIVENESS SUMMARY

I. Questions and Issues Discussed During February 24, 1994 Public Meeting:

1. Q. What is the present use of the northern building (building nine)?

   A. Westwood uses the northern building for warehousing and distribution of skin care products. It contains shipping and receiving areas and warehouse storage. It covers approximately 100,000 square feet.

2. Q. What is bio-sparging? How much has it been used? How effective is it?

   A. Bio-sparging is a bio-remediation technology designed to deliver air (oxygen) to the subsurface for use by indigenous bacteria to degrade hydrocarbons. The remediation process includes soil venting recovery system to capture the injected air and hydrocarbons generated from the bio-sparging process. This technology has been successfully used to remediate sites having petroleum wastes and those having aromatic and aliphatic hydrocarbons including benzene, toluene, xylene, and naphthalene. It has been reported that the bio-remediation technology is generally effective. The case history of a site in Frankenthal, Germany indicates that in 3 months aromatics were gone and aliphatics reduced to 1/3 of initial concentration. The sites in the United States where bio-remediation technology has been employed include Amber, PA, Millville, NJ, Granger, IN, Kelly Air Force Base, TX, etc.

3. Q. After 30 years, what will happen to the site?

   A. The proposed remedial action plan requires that the containment system be operated and maintained for 30 years. To ensure its effectiveness the remedy would be evaluated on a regular basis during the 30 year period. After 30 years the Department will seek to have responsible parties demonstrate that the remedy has been effective to discontinue operation and maintenance, otherwise, operation and maintenance will continue.

4. Q. Why would any one clean up the creek when the other companies in the area are contributing to the contamination and you are not addressing those sites? Fedders Auto is located near the creek and would have contributed to the sediment contamination in the creek.

   A. The Remedial Investigation of the site indicates that the level of contamination is much higher in the section of the creek adjacent to the Iroquois Gas/Westwood (IG/WS) site than elsewhere in the creek. This is due to the historic releases of the wastes from the IG/WS site as well as continued migration of contaminated groundwater and non aqueous phase liquid (NAPL) from that site. The Department has investigated the Fedders Auto Site, which is located downstream of the Iroquois Gas/Westwood Site. The polynuclear aromatic hydrocarbons (PAHs) were found to be only 34 parts per million in the soil at the Fedders Auto site. Since the PAH level in the

creek sediments is up to 19,600 PPM, the Fedders Auto site does not seem to be a significant source of contamination of the creek. The Department also analyzed creek sediment samples near the Pratt and Letchworth hazardous waste site, which is located approximately 500 feet upstream of the Iroquois Gas/Westwood Site. PAHs were found to be at a concentration of only 50 PPM. The level of contamination in the section of the creek adjacent to the IG/WS site is much higher than the background level. The risk assessment, therefore, concluded that the PAHs in the sediments may result in subchronic and/or chronic toxicity to aquatic life, as well as acute toxicity in certain locations adjacent to the IG/WS site where contamination is highest. The proposed remedial action plan addresses this issue by remediating the contaminated sediments adjacent to the site.

5. Q. The time to implement the Alternative 4 for the creek is given to be 8 months. Is there a way to do the dredging of the creek faster? Would not it be better to do it as quickly as possible which will lessen the time that the sediments will be disturbed; thereby reducing the contamination that will be getting into the creek.

   A. The 8 month time period indicated in the proposed remedial action plan for this alternative includes time for dredging, dewatering, treatment if necessary, transportation off site and disposal by thermal destruction. The time for actual dredging would be only a fraction of that time. The dredging contractor would try to complete the operation as quickly as possible to avoid unnecessary cost increase and overhead. Before dredging starts, silt screens would be installed in the creek to prevent contaminant migration beyond the area of dredging.

6. Q. Can you describe the treatment process for the dredged material?

   A. The treatment process would include dewatering of the dredged sediments, collection of the water removed from the sediments, treatment of the water and sediments to remove contaminants from them before final disposal. The details of the actual components of the treatment facility will be worked out during the design phase of the remedial program.

7. Q. Is there going to be any burning on the site?

   A. No. there would not be any burning or incineration of the wastes at the site. The incineration of sediments under Alternative 4 of the creek, would be in an off-site incinerator or in an off site utility boiler.

8. Q. Where are these utility boilers?

   A. Utility boilers are boilers which burn coal, oil or gas to produce steam and electricity and are owned by utility companies. Utility boilers are located in various areas throughout the United States.

9. Q. Is there any possibility that the contaminated groundwater could seep into the building?

   A. There has not been any report or evidence of seeps inside the building. The groundwater table at the site is reported to be below the floor foundation of the building, therefore, possibility of seepage of contaminated groundwater into the building is minimal.

10. Q How will the groundwater containment wall work?

    A. The purpose of the containment wall is to contain the contaminated groundwater and prevent it from migrating off-site. Presently the contaminated groundwater is moving into the Scajaquada Creek. The containment wall which will consist of sheet piling driven into the silty clay strata, will prevent that movement. To accomplish this, approximately ten extraction wells would be installed to provide groundwater gradient control within the containment. Gradient control and pumping of the groundwater would be automatic to ensure that the contaminated groundwater is not leaving the containment. The contaminated groundwater recovered by the wells, would be treated at an on site treatment facility before its final disposal.

II. Questions in a Letter Dated March 15, 1994 from Ms. Angeliki V. Keil, 81 Crescent Avenue, Buffalo, NY 14214

1. Q. Ms. Keil asked whether additional efforts should be made by the Department to increase public awareness of remedial projects and to encourage a higher level of community involvement.

    A. The Department has performed an public outreach program during the RI/FS and PRAP process. This effort has included:

    - The establishment of a local Document Repository which enabled interested parties to have convenient access to information about the site;
    - Development and maintenance of a contact list of over 150 individuals including local residents, elected officials and other interested groups with all returned mail immediately resent to "Current Resident";
    - An informational mailing to the contact list prior to the start of the RI informing the public about the upcoming activities, the location of the document repository and providing the names, addresses and phone numbers of Department personnel;
    - An informational mailing at the conclusion of the FS which summarized the results of the RI/FS and discussed the PRAP;
    - A public meeting was held to discuss the results of the RI/FS, present the PRAP and obtain comment regarding the plan;
    - Conducted a 30 day comment period to obtain comments from the public.
    - The Department believes these efforts have been successful and have met the goals of the Department's Citizen Participation Program. The outreach program will be continued in the future as the remediation of the site progresses.

2. Q. Ms. Keil asked whether the option of destroying the warehouse and excavating the pollution from the site and disposing it as a hazardous waste been considered.

A. This possibility was considered but not evaluated in detail because it is not feasible for this site. Buildings cover about two-thirds of the site and most of the contaminant source areas. Therefore, demolition would result in major disruptions to the company's operations. Their presence, however, acts as a cap on the contaminants thereby reducing the risk of direct contact and the amount of rainwater coming in contact with the contaminants.

3. Q. "This point is related to point two. There was no description, and no estimate of costs for an "ideal" plan that would insure the removal of the pollution, eliminate contamination of the creek and the environment, end the threat to humans and other living creatures....." "Also, I would have like to know how close to no pollution the adopted method comes."

A. For an "ideal" plan to be relevant to a site, it must be one that has a reasonable chance of being implemented. The disruption to manufacturing operations and cost associated with complete removal of all contaminants would, therefore, not render complete removal an ideal plan. The Department will take action to require the responsible parties to undertake and fully fund the remediation, and as such, it must be a remedy which will be protective of public health and the environment, implementable and cost effective. The selected plan fulfills these criteria.

4. Q. Since the 30 year limit is arbitrary, and since the equipment of the extraction wells and the disposal may continue indefinitely, it seems to me that the companies involved must be asked to set up an escrow account to pay at least partially for the replacement of equipment and the possible employment of better techniques that may be discovered in the future. Such cost may also include the capping of the area covered presently by the building once the building is torn down. There was no provision for such an escrow account in the plan even though the proposed plan is projected in perpetuity.

A. The Department will seek a court order for construction of the remedy and operation and maintenance (O&M) of facilities. This would require all costs to be borne by the responsible parties - National Fuel Gas and Westwood Pharmaceutical. Both firms have adequate assets to ensure long term care of O&M requirements. If, in the future, these companies are acquired by other companies, the responsibility for O&M would also be transferred to the new owners.

5. Q. "Since cap-pump-and-treat is the method proposed it would help the public to have a discussion of the history of the method with a list of sites where it has been used, especially cites that may be similar to this one in type of contamination and characteristics of soil and water patterns...."

A. Pump and treat system have been demonstrated to be reliable and effective in controlling contaminated groundwater. Technical reference manuals prepared by EPA and others are available for review at the Regional DEC offices. However, the application of these technologies does require detailed design. Such work would be done during the next phase of the project. Containment technologies of the type are currently being evaluated for other coal tar sites in New York State with problems similar to this site.

6. Q. "Finally the capping of the area means that the "remediated" area will have to remain simply grass covered without vegetation that can threaten the clay cap. Has the cost of keeping the area bare of vegetation been included in the estimates? Also this artificially necessitated "lawn" in the banks of the creek is a limitation that the future citizens of the area will have to live with."

A. The cost for maintaining the cap is included in the overall cost. The creek banks and bed will be restored to pre-remediation conditions. The remedy does not require maintenance of creek banks.

7. Q. Are provisions to include the state of practically permanent toxic nature of the site going to be included in the deed to the property so that the present plan will be respected in "perpetuity"?

   A. The Department has included provisions for land use restrictions in the Record of Decision to address this concern.

8. Q. "Since these plans obviously are proposed within the context of a certain lack of eagerness of the companies involved to remedy the situation, (as per the history in your fact sheet) it would be very helpful to me to have a profile of the companies involved as to their history of respecting the environment and their neighbors and workers. Things like: description of what they produce, history of lawful and unlawful emissions to the environment, any epidemiological studies of their workers; record of upgrading of their manufacturing processes to reduce pollution and recycle byproducts of production, etc. etc...."

   A. Neither of the responsible parties have been eager to study the site. It is not unusual to run into such resistance considering the cost of investigation and remediation. However, the litigation against Westwood resulted in a voluntary agreement to undertake the investigation requested by the Department. The investigation was conducted in a professional manner, was thorough, and resulted in a quality work product.

   There has been no need to create an environmental profile for either party at this time. Therefore, none is available.

9. Q. Ms. Keil asked whether, given the dermal absorption and injection of chemicals in soil and surface water in one of the pathways to human exposure, has the NYSDEC informed the appropriate authorities to mark the place visibly as dangerous?

   A. Most of the site consists of property owned by Westwood which is fenced. There is no exposed waste in the narrow strip of land between the creek and Westwood property. Therefore, the risk of contact with waste is not an immediate concern. The risk to public health associated with creek sediments and waste would be caused by long term exposure. This exposure scenario evaluated in the risk assessment was a worst case condition but has not been observed to be the case at this site. Therefore, it is not necessary to preclude public access to the creek and the nearby narrow strip of land.

   However, contaminated sediments adjacent to the site do pose an acute risk to aquatic organisms. Unfortunately, there are no temporary measures for addressing this risk.

10. Q "Page 9 - Re:CAP. Am I wrong to understand that most of the area proposed for capping is presently covered by cement or some kind of paving? Is the cap going to go simply on top of it or will some kind of excavation be necessary? If there is need of excavation what precautions will be taken to minimize dust migrating from the site and contaminating the workers of Westwood Squib and the area?"

A. Approximately 60% of the site area is covered by buildings and about 10% by pavement. No significant excavation is anticipated for the capping but grading of the area would be required before capping. Adequate measures for dust control including water sprinkling would be used during the work. Access to the work area would be restricted to preclude any exposure to the Westwood Squib plant personnel.

11. Q. "Sheet piling vertical barrier. There is no mention of the depth of this barrier. It seems to me that unless it goes to bedrock the pressure created by the blocked groundwater could create new paths of contamination where there are none at present in the layer of sand and gravel. The depth of the barrier is crucial to the effectiveness of the plan, and an estimate of its length of life would also be appreciated."

A. The sheet piling vertical barrier would be installed through the fill layer into the silty clay strata. The purpose of the barrier is to prevent flow of contaminated groundwater to the Scajaquada Creek and maintain an inward gradient. The contaminated groundwater is present in the fill strata. The silty clay strata prevents the vertical migration of the contaminated groundwater. Therefore, the depth of the barrier down to the bedrock is not necessary. The life of the sheet piling is usually very long and would be much more than the 30 years specified for the O&M operation. The vertical barrier would operate in conjunction with extraction wells to avoid mounding of groundwater. Therefore, probability of new pathways to the lower sand/gravel aquifer is minimal.

12. Q. "Extraction wells: I did not see any description of how these wells work and how they will be monitored and emptied. Here how important is the "human" factor? Who is going to be monitoring them? I have seen too much pollution extracted and then through sloppiness permitted to leach back to the creek for me not to raise this question. Two years ago when there was a spill of oil in the creek the DEC or some other appropriate department set up a boom to collect the oil and then proceeded to leave the soaked boom on the bank for at least two years to leach into the bank soil and back into the creek. This was so even after phone calls. So what are the procedures that will make sure that the extracted water will not spill over under certain conditions and contaminate the cap and once again the creek and sediments?

A. The details for operation of the extraction wells would be included in an Operation and Maintenance Plan (O&M Plan) which would be prepared during the design phase. The responsibility for the monitoring and operation of the extraction wells and the treatment system would be the PRPs. Review of the O&M would be regularly conducted during the 30 year O&M period. The probability of a spill of contaminated water would be minimal with a properly designed and operated treatment system, installed in accordance with the Proposed Remedial Action Plan.

13. Q. "Study of the slope between the property and the creek. I saw no study of this area. Am I wrong? Have I missed something? Yet there may be contaminant centers in that area, also. Maybe the cost of this portion of the study and possible inclusion in the remediation belongs squarely with Iroquois Gas, since Westwood probably never owned this section. I do not know who owns it. And what is the history of its ownership? Who filled in and straightened the creek in that area?

A careful study of the patterns of contamination of the property with the goal of estimating whether the sloping bank might have centers of contamination may be a good way to start. If the contamination in the property is around certain centers and fizzles out at the edges may be a few study wells may be enough to estimate the level of contamination of the slope on the other side of the barrier. If, however, the center of contamination is uniformly distributed or close to the perimeter, then the likelihood that the bank is as contaminated as the property and might require extraction wells is a possibility. A study of the history of usage of the bank could also provide clues.

The present plan must be changed to address the existence of the bank. Otherwise we could be in danger that after the dredging of the creek we may end up with new contamination originating in the sloping bank.

The importance of the bank did not become apparent to me until I visited the site. This is the area next to and under the Rt. 198."

A. Necessary modification has been made to include the area between Westwood property fence and the Scajaquada Creek. See Section 6 (Alternative 3 which is a part of Alternative 7, the selected remedy) and Section 7 of the ROD (Record of Decision).

14. Q "Treatment of extracted groundwater. I do not understand the system enough to be able to identify where the weak points might be. Once again I am worried about the human factor in both the design of the process used and the human factor in the operation of the process once it is established.

Activated carbon filters I understand is a good way to capture the contaminants in the water. However, you do not mention how may filters will be used or how often they will be renewed. Furthermore, there was no mention of how they will be disposed of. Incineration of the filters would not incinerate the metals present --- mercury, cyanide and lead. All it means that either Buffalo, or some other community will received the metals as pollution through the stack. I understand that there is not commercial incinerator in the area with the equipment to capture the metals. So what are you planning to do with the filters. This is an important point. To spend all this money and go through the effort and the hazards or remediation in order to spread the pollution into the environment through incineration would be not only ironic, but not a good use of tax money."

A. The PRAP provides conceptual rather than a detailed system design. The details for the complete treatment system and the methods for disposal of the spent carbon filters would be included in the design documents which would be prepared during the design phase. The disposal of spent filters would be done in accordance with the Federal/State regulations. However, if thermal destruction is the preferred method of disposal, contaminants would be permanently destroyed and would not be spread into the environment. The thermal destructor would have to be approved for the compounds of concern (e.g. metals, etc.) This approval would require that any air emission must state standards.

15. Q "Long term monitoring. I would like a schedule. Who is doing it and what criteria are you going to use about making judgements over time to whether the treatment is reducing the

pollution in the subsoil? Also how will the results of the monitoring be made public? And as I said above, what about an escrow account for beyond the 30 years, or in case some effective but costly method of bioremediation is invented that would represent an improvement on the present plan."

A. As mentioned earlier, the O&M plan which would be prepared during the design phase would include a detailed schedule for the long term monitoring. Periodic review of the O&M operations will be done during the 30 year period to verify whether or not the intended objectives of the remedial plan are being met. Modifications, if necessary, would be made after such a review to ensure that the intended objectives are achieved. The PRPs would be responsible for these modifications. If, after 30 years, the site remains a threat to the public health or the environment, the Department would pursue another agreement with the PRPs to make the necessary corrective measures using the best available technology of that time.

16. Q "Scajaquada Creek - The danger of migration of contaminated materials can be diminished not only through the use of screens and filters, but also through minimizing the duration of the excavation of creek sediments. This will be an important consideration for the selection of bids for the remediation job."

A. See the answer given for the similar question asked during the February 24, 1994 public meeting.

17. Q "Removal of sediments to temporary storage on site. Once again sloppiness here could lead to spills that when dry could be carried by air and contaminated humans through dust."

What will the dewatering facility be like? Will they use pressure or heat for the purpose? Or some other method. I would worry about any on site boiling, heating or burning. I need a description of the dewatering process to be able to imagine the potential dangers and be able to comment.

A. In accordance with an approved Health and Safety Plan, community air monitoring would be conducted during the remedial construction. There would not be any dispersion of dust and or contaminants above the permissible limits. A dewatering facility commonly includes gravity filters. The details of the facility would be prepared during the design phase. No burning, heating or boiling is anticipated at the site. The detailed description of the dewatering facility will be available to public after the design documents are completed.

18. Q "Construction of an on-site facility worries me due to possible design problems and human factor problems. Once again, I am worried about exposure to workers, and the neighborhood to particles of sediments carried through the air. The shorter time it takes to complete the dredging and pretreatment the better. What will the pretreatment be? This question is very important. Anything that involves burning, heating, or leaving exposed to the air would be unacceptable. In the hearing someone from the DEC I think mentioned rather reassuringly that there was some kind of portable incinerator that could be used. No on site incineration is acceptable."

A. Answer to the questions are same as given earlier. Pre-treatment of the sediments would not include burning, heating, or incineration at the site.

19. Q "Does the DEC or anyone else know anything about any kind of wildlife on or near the creek that may be affected by the work there? Are there any nests in the area or near by that may be affected?"

A. According to the information available to the Department, the site is not a habitat of any endangered species.

20. Q "In the plan there is no discussion of the problem of revolatilization of organic contaminants. They represent a real hazard any time there is excavation and moving around of contaminated soils. The workers will be wearing moon suits, but what about the Westwood workers and the people in the neighborhood?"

A. Under a community Air Monitoring Plan the air would be continuously monitored at the perimeter of the work site as well as within the site and to verify that no organic contaminants were being released above the permissible limits.

21. Q "The method of thermal desorption of organics was not discussed as possibility for this site."

A. Due to the nature of the site (70% covered by buildings and pavements), thermal desorption technology was not considered to be applicable.

22. Q "Incineration of the toxic spent filters and soils may reduce volume for the hazardous waste landfill, but it will release the metals into the air."

A. Disposal of spent carbon filters would be done according to Federal/State regulations. The Design documents will include the proposed disposal methods.

23. Q "The public comment time is too short for such a complex remediation plan. So given the lack of public participation in the hearing, and independent review of the actual plan other than this summary. I request that the review-comment period to be extended, and that a grant is given by the State Department of Health to a community environmental organization, possibly the Parkside Greens, to obtain our own technical consultant to review and comment on the plan.

Awaiting an answer to my comments. I would also appreciate copy of other commentary that you might have received and I would like to know where I could find the full study of the remediation plan."

A. We have found that a 30 day period is normally adequate for review of the PRAP and relevant supporting documents. There must be a substantial reason for an extension. In this particular case such a reason has not been presented, therefore, the comment period cannot be extended.

With respect to your request for a grant to fund further study of the PRAP, such funds are not available from this Department. The Federal Government does have provisions for funding such studies for Federal lead projects. However, there are no similar provisions for State lead projects.

This responsiveness summary contains all comments received and their answer. A copy is sent

to anyone providing comments, attendees of the public meeting and local elected officials. The full study can be found at the document repository located at the West Side Public Library on Grant Street.

III. Comments Received on March 15, 1994 from Tony Bryda of GeoTrans, Suite 100, 46050 Manekin Plaza, Sterling, Virginia

1. Comment - Section 3.2

The Department requested both Westwood and National Fuel Gas to implement an RI/FS. When the parties could not agree on the terms of an RI/FS consent order, the State sued Westwood as the property owner.

A. The Department record indicates that Westwood was requested to implement an RI/FS.

2. Comment 2 - Section 4.1: Groundwater, Paragraph 2

The maximum observed concentration of BTEX compounds in the fill aquifer was 8,240 ug/l.

A. The necessary correction has been made.

3. Comment 3 - Section 4.1: Groundwater, Paragraph 3

Based on the observed RI data, the groundwater discharge from the fill aquifer to the creek was calculated to range from 220 to 983 ft^3/d. The dissolved contaminant loading of TPAHs, BTEX and cyanide to the creek from the fill aquifer was calculated to range from 46 to 189 lbs/yr (Table 5-3, RI report Vol. I).

A. The methodology used to derive, low, medium and high creek loading estimates contained in Table 5-3, RI report Volume 2 have not been demonstrated to be accurate. Therefore, the loading estimates as calculated from the actual field data have been reported in this section. We consider those estimates to be average. They correspond to the values in Table 5-3 shown as "High Estimates".

4. Comment 4 - Section 4.1: NAPL, Paragraph 2

Suggested text revision for this paragraph follows: If DNAPL is migrating from the site, the direction of migration would be to the west and Scajaquada Creek. Calculations were performed that indicate the estimated mass of DNAPL entering the creek, if migration is occurring, would be as high as 440 lbs/yr. Of the 440 lbs/yr, 66 and 6 lbs/yr could be from TPAH and BTEX compounds, respectively.

Assuming DNAPL migration is occurring, loading to the creek of TPAH and BTEX and other chemicals from the groundwater and DNAPL in the fill layer combined was calculated to range from 46 to 261 lbs/ yr.

A. The estimate from total PAHs and BTEX entering the creek from NAPL and contaminated groundwater has been revised. This estimate is considered accurate for the following reasons:

1. Contaminant flow through groundwater was determined based on accepted methodology.

2. There is a very high likelihood that NAPL is entering the creek directly due to its presence in nearby groundwater.

5. Comment 5 - Section 5

Suggest adding a section after the fourth paragraph as follows:

> The PRPs for the creek sediment may include: The City of Buffalo, NY, The State of New York, National Fuel Gas Distribution Corp., as successor in interest of Iroquois Gas Corp.

A. According to the reports available to us only Westwood-Squibb and National Fuel have been identified as the PRPs for the site contamination remedial costs.

6. Comment 6 - Section 7.1A: Alternative 4:

Alternative 4 in the FS included the option for incineration or landfilling of removed soil. This option should be included in the bulleted description of Alternative 4.

A. The option for the incineration is included in the text for Alternative 4.

7. Comment 7 - Section 7.1A: Alternative 6:

Aerobic decomposition of two and three-ring PAHs can be expected, however, the higher ring PAHs are unlikely to be degraded effectively by this mechanism.

A description of the use of surfactants at the site was not included in the FS. Reference to the use of surfactants for enhancing biodegradation of the NAPL should be deleted from the description of this alternative. The use of surfactants are generally used to lower inter facial tension of DNAPL for partial mass removal not used for enhancing biodegradation.

A. The use of surfactants was not covered in the FS, their use for this site warrants further study and possible testing. If surfactants are found to be successful in reducing interfacial tension between water and dense NAPL, the rate of dissolution would in turn be expected to increase. An increased rate of dissolution would therefore "speed up" the remediation process.

8. Comment 8 - Section 7.1B: Alternative 2:

Although Scajaquada Creek is designated as a Class B stream, which is suitable for contact recreation and fish propagation, the current condition of the creek adjacent to the site prohibits boating or recreational use. A fenced wooded walkway spans the creek on the Pratt and Lambert properties approximately 150 feet south of the site. The walkway has approximately

three feet of clearance above the water line under typical flow conditions which prohibits boating usage. A railroad trestle spans the creek approximately 150 north of the site. This structure also would prohibit some boating usage.

A. Although the overhead structures mentioned above restricts passage of bigger boats into the section of the creek adjacent to the site, small pontoon boats can be launched in that section.

9. Comment - Section 7.1B: Alternative 4:

The location of a dewatering facility for the excavated creeks sediments would be constructed where indicated on Figure 3-2 (in the FS Addendum). The facility would be constructed on property assumed to be owned by the City of Buffalo, New York not on Westwood property.

A. The area between the Westwood property fence line and the Scajaquada Creek impacted by the site are considered part of the site.

10. Comment - Section 7.2: Evaluation of Remedial Alternatives General

The RI/FS was conducted consistent with the Guidance for Conducting Remedial Investigations and Feasibility Studies Under CERCLA (Comprehensive Environmental Response, Compensation and Liability Act) as stated in the Stipulation and Order covering the site. The remedial alternatives presented should be evaluated accordingly.

A. The Department's review was not inconsistent with CERCLA protocol.

11. Comment - Section 7.2 Evaluation of Remedial Alternatives: Protection of Human Health and the Environment, Paragraph 2

Periodic inspections of an installed cap for the creek sediments would assure adequate control and isolation of the sediments from direct contact.

A. Since there would be unrestricted use of the creek for boating and fishing (contact recreation), the damage to the liner would be possible. Periodic inspections may detect such damages, however the repairs to the liner would be difficult and perhaps time consuming thereby possibly impeding the use of the creek.

12. Comment - Section 8: Scajaquada Creek, General

The usefulness of cleaning a small section of contaminated creek sediments (approximately 800 feet in length over a larger area (approximately one mile) is questioned. Elevated levels of contamination in the creek sediment over the entire length of the creek have been reported. The removal action adjacent to the creek should be limited to the area contaminated by the former MGP operations only.

A. It is not correct that elevated levels of contaminants have been found over the entire length of the creek. The GeoTrans document of March 8, 1994 regarding Actions Levels of Scajaquada Creek indicates that the total PAHs upstream of the site ranged from 43.6 to 168.7 parts per

million (ppm). The total PAHs in the section of the creek adjacent to the site have been found up to 19600 ppm. The PRAP requires removal of the sediments from the creek section which have been impacted by the site. Actual length of the section would be determined in the design phase.

IV. Comments Received from Robert E. Glanville, Esq. on Behalf of National Fuel Gas - letter dated March 16, 1994

1. Comment 1A - "DEC has not complied with its Public Participation Responsibilities Under CERCLA and ECL."

A. DEC has fulfilled its public participation responsibilities under the ECL; such fulfillment has not been inconsistent with CERCLA and Federal Regulatory Compliance. 6 NYCRR Part 375-1.5(c)(2) specifies that the notice and brief analysis of the remedy that the Department proposes to address contamination at and near the site shall be made available to the public for public comment for a period of thirty days. The Proposed Remedial Action Plan ("PRAP") to address the contamination at and near this site was made publicly available on February 14, 1994. The public comment period closed on March 16, 1994. The public comment period for this PRAP therefore lasted for 30 days. A public hearing was held on February 24, 1994 during which the PRAP was presented and opportunity given for both verbal comments and written submissions. Thus all regulatory requirements to allow public comment have been met. Further, the fact that National Fuel Gas was able to submit its comments on the PRAP to the Department on March 16, 1994 demonstrates that adequate time existed for public comment.

Additionally, the Department has made every effort to keep National Fuel Gas informed as to progress of RI/FS. Throughout 1993, National Fuel Gas received data developed during the RI upon request even before final reports containing such data were placed in the Document Repository. The Department also made all final reports available to National Fuel Gas for copying during February 1994 to ensure that National Fuel Gas had access to all information necessary to make informed comments on the PRAP.

2. Comment 1B - "DEC's Notice and Analysis are Insufficient to Support the Conclusions Contained in the PRAP".

A. DEC's community relations to support the selection of a remedy are not in consistent with the NCP Section 300.400(f)(3)(i). The public notice mailed to area residents and interested citizens provided a summary of the proposed remedy contained in the PRAP and a location where the PRAP and supporting RI/FS documents could be found. (The document repository at the West Side Public Library). The PRAP along with supporting documents contain the analytical framework on which the remedy selection process was undertaken. This process is also not inconsistent with the NCP in that specific "threshold criteria" and "balancing criteria" were carefully considered in the evaluation. Please refer to the ROD Section 6.2 "Evaluation of Remedial Alternatives".

The Department did consider cost in the remedial selection process. However, other factors were also considered. Again, please refer to ROD Section 6.2. For example, remedies for the

main site range from $730,000 for only capping soils to $5,950,000 for partial removal and containment of contaminated groundwater and NAPL. The selected remedy by the Department provides what is considered the best mix of the selection criteria (which includes cost) at an estimated cost of $1,996,000 (for Alternative 7). Alternative 7 includes provision for in-situ bioremediation if it is determined to be effective through additional testing in the design phase. The Department believes bioremediation has the potential to reduce the duration for pumping and treating contaminated groundwater and NAPL. Their application will not disrupt the ongoing manufacturing operations being conducted on this property and will not require the demolition of existing building etc. (which cover a substantial portion of the property)

Therefore, the Department maintains that the selected remedy is protective of public health and the environment and is certainly cost effective.

3 Comment 4C - "Scajaquada Creek is not Encompassed within the Site."

A. The PRAP properly recommends remedial action in Scajaquada Creek. The DEC has jurisdiction over Scajaquada Creek relative to the remedial plan for the site because site contaminants have migrated to creek sediments and pose unacceptable exposure hazards to human health and the environment.

The PRAP for this site sets forth the inactive hazardous waste disposal site remedial program for the site. NYECL 27-1301.03 and 6 NYCRR 375-1.3(m) specify that an inactive hazardous waste disposal site remedial program means all activities undertaken to eliminate, remove, abate, control, or monitor health hazardous, and/or potential environmental hazards "in connection with a site". The Regulatory Impact Statement for 6 NYCRR Part 375 dated April 1991 specifies on page 15 that since the statutory definition of inactive hazardous waste site remedial program encompasses activities to address hazards in connection with a site, "a program also includes remediation of off-site hazards and potential hazards" (emphasis added).

The PRAP for this site properly includes remediation of off-site creek sediments in the remedial program for the site to eliminate, remove and control the health hazards and the environmental hazards posed by potential exposures to site contaminants in those sediments. In the face of the regulatory framework in New York for addressing hazards posed by inactive waste sites, it is inappropriate to conclude that the Department's jurisdiction over the site contaminants ends at the site's geographical boundaries.

This approach is not inconsistent with the federal regulatory approach used in remediating inactive waste sites. See: Guidance for Conducting Remedial Investigations and Feasibility Studies Under CERCLA, dated October 1988, p. 3-13 (specifying the final objective of the remedial investigation is to characterize the nature and extent of contamination such that informed decisions can be made as to risks posed by a site and the appropriate types of remedial response which involves using information on source location to give a preliminary estimate of locations of contaminants which may have migrated); National Oil and Hazardous Substances Pollution Contingency Plan; Final Rule, 40 CFR Part 300.5, March 8, 1990 (feasibility study means a study undertaken to develop and evaluate options for remedial action which uses data gathered during the remedial investigation).

4. Comment D - "The Sources of Contamination are Misidentified. The PRAP asserts that, "direct discharges of oily waste in the creek occurred during the operation as a Manufactured Gas Plant." National Fuel is unaware of any evidence supporting such an assertion and none has been cited by DEC. The PRAP also states that, "historical spills from the site into the creek are also suspected of having contributed to the levels of contamination found during the RI." National Fuel is equally unaware of any evidence of historical spills into the creek and none has been cited by DEC. To the extent that these recitations of unsupported fact and opinion form a basis for the proposed remedy, the remedy is arbitrary and unreasonable."

A. The statement in the PRAP is based on the investigation done by GeoTrans during the RI and report of historical spill and discharge to the creek. The RI report Section 5.2.1 Potential on Site Migration Pathways states "former discharge pipes from the main plant area to the creek were known to exist (Iroquois Gas record). These pipes were located to collect and discharge oily wastes from the main plant area, at a later date of plant operation". In addition, the Department has been provided with copy of a newspaper article from the late forties which reports the occurrence of a massive spill of waste in the creek and describes the Iroquois Gas plan to expedite pumping of the waste which was being done at a rate of 75,000 gallons per day.

5. Comment 2A - "The remedy proposed in the PRAP does not satisfy the criteria for Selecting Remedies Provided in the NCP and ECL..... If the remedies proposed in the PRAP are valuated using criteria identified in the NCP for selecting remedies, it becomes apparent that the remedy selection is not only inappropriate, it is also arbitrary and capricious."

A. The remedy selection is the culmination of over two years of intensive site investigation and study of remedial alternatives. The selected remedy is based on study which conform to Federal and State guidance and criteria. The Department believes the ROD document and supporting RI/FS reports substantially supports its decision with regard to the remedy selection process. Therefore, it considers the selected remedy neither arbitrary nor capricious.

6. Comment 2B - "The Proposed Remedy is Not Cost Effective."

A. Remedies which would permanently remediate a site and which reduce the volume, toxicity and mobility of residual waste and contamination are preferred. However, various structures have been constructed on top of the contaminated areas. Therefore, alternatives which would remove the total volume and toxicity of contamination have not been considered in depth because of the difficulties and cost associated with gaining direct access to the waste for treatment and/or removal.

The containment technologies which will be applied to the main site will obviate the need to gain direct access to the contamination. Such technologies also tend to fall at the low end of the remediation cost scale. As such they are ideally suited for this application. There is a need to install a vertical barrier along Scajaquada Creek to prevent the off-site migration of NAPL which is not contained and collected by the groundwater pumping system. Again, there are various types of vertical barriers (e.g., slurry walls, grout curtains, etc.), however, sheet piling tend to fall at the low end of the cost scale.

Therefore, the containment remedy for the main site will be protective of public health and the

environment and can be accomplished in a cost-effective manner.

With regard to creek sediments, containment would not be preferable to removal. As stated above the preference is for remedies that are permanent. The cost differential between containment and removal was not great enough to accept the added risk associated with possible future releases associated with cap failure and the possible difficulties in repairing and/or restoring the cap over the sediments.

7. Comment - "(1) Hydraulic containment, alone, may be sufficient to control the off-site migration of NAPL (non-aqueous phase liquids) and groundwater, in which case the use of a barrier wall becomes somewhat redundant. The PRAP does not include an adequate evaluation of whether hydraulic containment alone will control the migration of any NAPL or contaminate groundwater. If such containment could be accomplished, then the substantial expenditure for an unnecessary barrier wall would render the proposed remedy inconsistent with the NCP's requirement or cost-effectiveness. Even if a barrier wall is necessary to control off-site migration, there is no adequate evaluation of the alternatives to sheet piling. At minimum, the remedy should permit the use of a technical equivalent to sheet piling."

A. A containment using only hydraulic gradient control without a barrier wall is not considered adequate because a temporary breakdown in pumping by equipment failure could result in uncontrolled release of contaminated ground water and NAPL. The dense NAPL flow path is generally not effected by hydraulic gradient control, therefore, the barrier wall is necessary. Sheet piling or bentonite slurry wall have been used successfully at many containments. At this site, because of the need for substantial depth of the barrier wall, the sheet piling is a better alternative.

8. Comment - "(2) The proposed remedy seeks to achieve limited contaminant reduction in the subsurface using <u>both</u> groundwater extraction and in-situ bioremediation. The PRAP fails to include an adequate evaluation of whether one or the other alone would be sufficient for the remediation of the site since it does not appear to recognize that both approaches are limited by the same physical phenomenon (i.e., rate of contaminant desorption from the soil and aqueous solubility.) Furthermore, if a barrier wall is selected as a primary means to prevent off-site migration of contaminants, groundwater extraction then becomes a necessity as a means to manage the subsurface movement of groundwater at the site. Under those circumstances, it is probable that in-situ bioremediation will not add meaningfully to the effectiveness of the remedy while substantially increasing its cost. No adequate analysis of this issue is included in the PRAP."

A. It is true that groundwater extraction and treatment will reduce the toxicity and volume of the contamination over an extended as yet unknown time period. However, bio-remediation is expected to accelerate soil and groundwater remediation by providing a second mechanism for reducing waste volume. Therefore, groundwater extraction in conjunction with bio remediation is a better alternative for the attainment of the intended objectives. The PRAP does provide necessary justification for this alternative in the Section 8 Summary of the Preferred Remedy (Section 7 of the ROD Summary of the Selected Remedy)

9. Comment - "The use of a concrete cap is not cost-effective when compared to the use of an

asphalt cap using excavated creek sediments. The capping of the site prevents both direct contact with contamination and eliminates and/or reduces the infiltration of surface water into the subsurface. The PRAP suggests the use of concrete as the material of construction for the cap and concurrently dismisses the use of asphalt. While the structural differences between asphalt and concrete are recognized, an asphalt cap can perform as well as a concrete cap providing that it receives the proper maintenance. The significance of this statement becomes apparent when it is recognized that the production of cold-mix asphalt is a viable alternative for the management of any contaminated sediments that may be removed from the Scajaquada Creek (See comment (g) on the PRAP for creek sediments). The use of such an asphalt cap would achieve very substantial economies and render the use of a concrete cap less than cost-effective. The PRAP does not even address, let along rationally evaluate, the possibility of employing such an asphalt cap."

A. The PRAP does not recommend concrete cap as stated by the above comment. The preferred remedy of the PRAP (Alternative 7) requires clay cap. Therefore, the discussion on concrete cap versus asphalt cap in the above comment is not relevant to the project. Regarding the disposal of the excavated sediments from Scajaquada Creek, the text for Alternative 4 for the creek has been revised to have flexibility for sediment disposal.

10. Comment - "(4) The proposed treatment and disposition of the extracted groundwater has been oversimplified in the PRAP. First, while the local municipal treatment plants (POTWs) often will accept contaminated groundwater from MGP sites, they have not permitted the discharge of these waters directly into the sewer systems. Alternatively, the water has been trucked to the treatment plants using 5,000-gallon tankers. This option may be satisfactory for a project of short duration but may become prohibitively expensive for a long-term project (i.e. greater than four to six months). Second the treatment of groundwater at MGP sites often requires unit processes for the control of iron and cyanide compounds in addition to dissolved organic contaminants, recognizing that the specific treatment requirements will depend upon the quality of the groundwater and the requirements of the discharge permits. Since the proposed treatment system in the PRAP only addresses the removal of dissolved organic contaminants using activated carbon, the cost of treatment may represent an underestimate. An assessment of the additional costs that are associated with the additional treatment of the groundwater for iron and cyanide removal and the transportation of the water to the local treatment plant should be made to determine the impact of these requirements on the overall cost of the site remediation. The PRAP does not properly evaluate this issue."

A. The PRAP summarizes the text from RI/FS report regarding proposed treatment and disposition of extracted groundwater. The above mentioned comments refers to the various elements of the treatment system which has been left to be worked out and resolved during the Design Phase. The PRAP gives only a conceptual design. The final disposal of extracted ground water would be required to meet the Federal/State and local government treatment requirements. The treatment necessary to achieve the permitted levels of residual contaminants before disposal, would be worked out in the Design Phase. Actual cost of treatment could vary to some extent as compared to the estimated cost given in the RI/FS. However, this is to be considered normal for any estimate.

11. Comment -"(5) The PRAP for the site finds that capping complies with the long-term

effectiveness and permanence selection criteria (See page 12, Section 7.2, PRAP). However, no similar determination was made for the creek sediments. Even though the applications are different (i.e., surface cap versus underwater cap), caps in both instances can be equally effective and permanent in the long-term if properly maintained. Given the likelihood of recontamination of sediments from upstream permitted or unpermitted sources, capping may provide an appropriate reduction in potential impacts to human health and the environment. In-place management of the sediments using a cap also eliminates the potential health and environmental impacts resulting from the release of contaminated sediments during their removal, on-site handling, and dewatering. Stated differently, it may be that the impacts of removing and handling the sediments may outweigh those that result from managing them in-place. For example, the effectiveness of sediment traps to control the release of contaminants during the removal of the sediment has not been adequately addressed in the PRAP. Furthermore, the management of the water from the sediment dewatering process has not been directly addressed in the PRAP. It is likely that the water from the sediment will require treatment prior to its return to the creek; it is not clear that the PRAP has addressed this water treatment.

The advantages of in-place management of the creek sediment should be reevaluated and the use of a cap for that purpose should be reconsidered. Specifically, a cap constructed from a bentonite clay/geotextile matt armored with a combination of graded stone and riprap should have been considered in more depth during the development of the PRAP for the creek sediments."

A. The PRAP did evaluate the capping alternative for the creek sediments. It was determined that the capping would require constant monitoring as well as creek use restrictions. Since the creek is designated Class B stream suitable for contact recreation (boating, fishing, etc.), the capping of the contaminated sediments would not ensure adequate protection.

The comment refers to the potential health and environmental impacts resulting from disturbance of the sediments during excavation. Sediment excavation and or dredging has been conducted in many streams where sediments were contaminated. This is not a new experiment at this site. Adequate measures are available to prevent migration of suspended contaminants beyond the work area. The details of these measures will be worked out in the Design Phase of the project.

Regarding dewatering operation of the excavated sediment, the selected remedy provides for pre-treatment of the waste water before disposal. Regarding disposal of the excavated sediments after its treatment if necessary, the selected remedy provides for other options consistent with Federal/State regulations.

12. Comment - "(f) The volume of sediment that is identified for removal is not well defined in the PRAP and represents a critical variable that can have a substantial impact on the estimated cost of remediation. The uncertainty in the sediment volumes results."

A. The levels of contamination in the creek alongside the site are substantial and must be remediated. This will involve at least 4,000 cubic yards of sediment. Establishing minimum remedial needs for the creek allowed a relative comparison of cost for selection purposes. While the quantity of sediments ultimately requiring remediation may be somewhat higher . The ratio

of costs among alternatives should remain constant and therefore appropriate for use in remedy selection.

"The PRAP specifies the use of site-specific background contaminant levels for finalizing the extent of remediation. However, no specific methodology for using this information is identified.

At a minimum, remediation efforts should focus only on those areas of the creek which have contaminant concentrations that are statistically greater and pose a statistically greater human health and environmental risk than site-specific background concentrations that have been observed in upstream sediments."

A. The design consultant will be required to propose a methodology for determining background levels. Preliminary discussion in this regard have focused on assessing whether the levels of site specific contaminants can be used for this purpose. The Department is open to recommendations in this regard.

"There are continuing sources of contaminants for creek sediments which include urban runoff and other unidentified discharges."

A. Based upon the results of samples collected to date, the significant creek sediment contamination originated from coal tar disposed on site rather than miscellaneous sources.

"NYSDEC sampling has indicated contaminant concentration throughout the length of the creek, with "locally elevated" concentrations near the IG/WP".

A. The levels of contamination along the IG/WP site are not considered "locally elevated" but substantial. The highest levels of PAHs were found to be 20,000 PPM. This level borders on the levels of concentrated coal tar waste.

"Any remediated area of the creek would likely become recontaminated."

A. Since the major source of contamination is the IG/WP site, remediating the site will eliminate the major contributing source.

"There are no data presented in any of the documents which indicate whether the "locally elevated" concentrations of PAH in the sediments are statistically different than background concentrations of PAH in sediments upstream of the site. Under the circumstances, these data should be collected and evaluated before a final remedial action plan is defined for the site."

A. As stated above contaminant levels alongside the IG/WP site are not considered locally elevated but significant. Background levels will be used to determine where remediation of sediments should end. Therefore, a remedial action plan for the creek need not be delayed.

13. Comment - "(g) Although Table 2-4 of the Feasibility Study Addendum (See Page 2-17) identifies excavation and recycling of the excavated sediment in the General Response Action for Removal, the potential recycling options for contaminated sediments were not developed in

subsequent sections of the report. The contaminated sediments can be used as a potential hot-mix or cold-mix asphalt. The cold-mix asphalt can be produced on-site and used for construction of the site cap. Preliminary data from tests in which these materials were used demonstrates that these materials can meet permeability requirements established for RCRA liners and caps. Recycle options such as these can generally be accomplished for less than $100/ton (inclusive of transportation of off-site options). Under the circumstances, evaluation of these recycle options should be made before a final remedial action plan is developed for the site."

A. The selected remedy provides for other options besides thermal destructions of excavated sediments. See earlier answer for comment 9.

APPENDIX B

ADMINISTRATIVE RECORD

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ADMINISTRATIVE RECORD

1. Results of sampling and groundwater monitoring, Dart Street former Gas Plant Site, Termini Associates, June 1987.

2. Remedial Investigation/Feasibility Study Work Plan - Iroquois Gas/West Wood Pharmaceutical, Geo Trans, January 1992.

3. Remedial Investigation/Feasibility Study - Iroquois Gas/West Wood Pharmaceutical - Quality Assurance Plan, Geo Trans, January 1992.

4. Remedial Investigation/Feasibility Study Iroquois Gas/West Wood Pharmaceutical - Field Sampling Plan, Geo Trans, January 1992.

5. Stipulation and Order of Partial Settlement CIV-90-1324C- United States District Court Western District of New York, March 1992.

6. Buffalo Courier Express, November 4, 1947. Tarry Mixture ... Creek, Copy of Article Received January 1993.

7. Data Evaluation Summary Report Volume I & II Iroquois Gas/West Wood Pharmaceutical, Geo Trans., February 1993.

8. Scajaquada Creek Sediment Sampling Report, NYSDEC, August 1993.

9. NYS DEC/DOH Comments on Draft RI/FS Report, December 1993.

10. Final Remedial Investigation/Feasibility Study Report - Iroquois Gas/West Wood Pharmaceutical Volume I, II, II Supplement and Volume III, Geo Trans, February 1994.

11. Proposed Remedial Action Plan (PRAP), NYSDEC, February 1994.

12. Action Levels for Scajaquada Creek Sediments, Geo Trans, March 1994.