PROPOSED REMEDIAL ACTION PLAN
Trans Technology
Operable Unit No. 1
Glen Head, Nassau County, New York
Site No. 1-30-101

February 2006

Prepared by:

Division of Environmental Remediation
New York State Department of Environmental Conservation

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SECTION 1: SUMMARY AND PURPOSE OF THE PROPOSED PLAN

The New York State Department of Environmental Conservation (NYSDEC), in consultation with the New York State Department of Health (NYSDOH), is proposing a remedy for the Trans Technology site, Operable Unit 1, on-site soil. The presence of hazardous waste has created significant threats to human health and/or the environment that are addressed by this proposed remedy. As more fully described in Sections 3 and 5 of this document, industrial practices such as electrical components assembly, warehousing, metals fabrication, and plating, in which wastes were disposed of on-site and into cesspools and leaching pools, have resulted in the disposal of hazardous wastes, including VOCs and plating wastes. These wastes have contaminated the soil at the site, and have resulted in:

- a significant threat to human health associated with current and potential exposure to the soil, soil vapor, and indoor air.
- a significant environmental threat associated with the impacts of contaminants to soils and groundwater.

To eliminate or mitigate these threats, the NYSDEC proposes the following remedy:

- Implementation of a remedial design program to provide the details necessary for the construction, operation, maintenance, and monitoring of the remedial program.
- Excavation and off-site disposal of soils exceeding the cleanup objectives to prevent further groundwater contamination.
- Removal of impacted soil for off-site disposal at a permitted facility and removal of sanitary piping (for selected structures) to prevent further groundwater contamination.
- A two-foot cover would be backfilled over all excavated areas to prevent exposure to residual contaminated soils.
- Development of a site management plan to address residual contamination and any use restrictions.
- Imposition of an institutional control in the form of an environmental easement.
- Periodic certification of the institutional controls.

The proposed remedy, discussed in detail in Section 8, is intended to attain the remediation goals identified for this site in Section 6. The remedy must conform with officially promulgated standards and criteria that are directly applicable, or that are relevant and appropriate. The selection of a remedy must also take into consideration guidance, as appropriate. Standards, criteria and guidance are hereafter called SCGs.

This Proposed Remedial Action Plan (PRAP) identifies the preferred remedy, summarizes the other alternatives considered, and discusses the reasons for this preference. The NYSDEC will select a final remedy for the site only after careful consideration of all comments received during the public comment period.

The NYSDEC has issued this PRAP as a component of the Citizen Participation Plan developed pursuant to the New York State Environmental Conservation Law and Title 6 of the Official Compilation of Codes, Rules and Regulations of the State of New York (6 NYCRR) Part 375. This document is a summary of the information that can be found in greater detail in the September 2005 “Remedial Investigation (RI) Report,” the September 2005 “Feasibility Study” (FS), and other relevant documents. The public is encouraged to review the project documents, which are available at the following repositories:

Glen Cove Public Library
4 Glen Cove Avenue
Glen Cove, New York 11542-2885
M-Th 9 AM - 9 PM
Fri 9 AM - 5 PM
Sat 9 AM - 1 PM
Sun 1 PM - 5 PM (Oct - May)
Phone: (516) 676-2130

NYSDEC, Region 1
By Appointment
Attn: Mr. William Fonda
SUNY - Bldg. 40
Stony Brook, New York 11790-2356
M-F 8:30 AM - 4:30 PM
Phone: (631) 444-0350

NYSDEC, Central Office
Ms. Tara Diaz (Project Manager)
NYSDEC, Division of Environmental Remediation
625 Broadway
Albany, NY 12233-7015
Phone: (518) 402-9621

The NYSDEC seeks input from the community on all PRAPs. A public comment period has been set from February 22, 2006 to March 23, 2006, to provide an opportunity for public participation in the remedy selection process. A public meeting is scheduled for March 2, 2006, at the North Shore Middle School, located at 505 Glen Cove Avenue, Glen Head, NY 11545, beginning at 7:00 PM.

At the meeting, the results of the RI/FS will be presented along with a summary of the proposed remedy. After the presentation, a question-and-answer period will be held, during which verbal or written comments may be submitted on the PRAP. Written comments may also be sent to Ms. Diaz at the above address through March 23, 2006.

The NYSDEC may modify the proposed remedy or select another of the alternatives presented in this PRAP, based on new information or public comments. Therefore, the public is encouraged to review and comment on all of the alternatives identified here.

Comments will be summarized and addressed in the responsiveness summary section of the Record of Decision (ROD). The ROD is the NYSDEC’s final selection of the remedy for this site.

SECTION 2: SITE LOCATION AND DESCRIPTION

The Trans Technology site is a 7 ¾-acre property, located off Dumond Place, just east of the intersection of Glen Head Road and Glen Cove Avenue. The site is in the northwest portion of Long Island, in Glen Head, Nassau County, and is located in a mixed use commercial and residential area. The site is mostly paved but also consists of large buildings. Trans Technology is serviced by public water and there are no known private wells, however, septic systems are still used on the site. The nearest water supply well is about ½ mile northeast of the site. The closest Inactive Hazardous Waste Disposal site is Former Fresh & Clean, located about ¼ mile southeast of the site. Trans Technology's property location is shown on Figure 1.

Operable Unit No. 1 (OU-1), which is the subject of this document, consists of on-site soils. An operable unit represents a portion of the site remedy that for technical or administrative reasons can be addressed separately to eliminate or mitigate a release, threat of release or exposure pathway resulting from the site contamination.

The remaining operable unit for this site is OU-2, which will address on- and off-site groundwater. Preliminary investigations for this operable unit were conducted during the RI.

SECTION 3: SITE HISTORY

3.1: Operational/Disposal History

The first known manufacturing facilities at the site were constructed in the late 1950s by the Lundy Electronics Company (Lundy). Lundy manufactured aircraft actuators, printed circuit boards, and a variety of computer components until approximately 1978. Metal finishing and cleaning were part of the manufacturing process. Solvents, including trichloroethene (TCE), were reportedly used at the facility during this time. Plating wastes and spent solvents were discharged to on-site cesspools and leaching pools as part of site operations. The site was used by Lundy until approximately 1978. After 1978, machining activities were discontinued and solvent use at the site was reduced. Lundy was acquired by Trans Technology in the mid 1980s. Trans Technology ceased operations at the facility in 1994. The building space at the site was leased to a variety of small businesses, but has since been vacant, save for one tenant acting as building manager, in the main building.

3.2: Remedial History

In 2000, the NYSDEC listed the site as a Class 2 site in the Registry of Inactive Hazardous Waste Disposal Sites in New York. A Class 2 site is a site where hazardous waste presents a significant threat to the public health or the environment and action is required.

A Preliminary Site Assessment for the Glen Head regional groundwater plume was conducted by the NYSDEC in September 2000.

As part of an environmental audit in support of a potential property sale, several investigations were conducted in the 1990's and one in 2002. These investigations identified VOCs and metals contamination in on-site soils, groundwater, cesspools, and leaching pools.

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 NYSDEC and the Trans Technology Corporation entered into a Consent Order on May 1, 2002. The Order obligates the responsible parties to implement a full remedial program.

SECTION 5: SITE CONTAMINATION

A remedial investigation/feasibility study (RI/FS) has been conducted to evaluate the alternatives for addressing the significant threats to human health and/or the environment.

5.1: Summary of the Remedial Investigation

The purpose of the RI was to define the nature and extent of any contamination resulting from previous activities at the site. The RI was conducted between October and November of 2002. A Supplemental RI was conducted from September to November of 2003. The field activities and findings of the investigations are described in the RI report.

The following activities, as they relate to OU-1, were conducted during the RI:

- Research of historical information;
- Geophysical survey to determine depth to bedrock;
- Installation of 25 soil borings for analysis of soils as well as physical properties of soil (see Figure 2 & Figure 3);
- Collection of approximately 22 surface soil samples to evaluate potential chemical exposures via direct contact (see Figure 4);
- Collection of five (5) background surface soil samples chosen to represent areas that do not receive runoff from the former operating portions of the site or from the railroad tracks adjacent to the eastern boundary of the site (see Figure 5);
- Collection of five (5) soil vapor samples (see Figure 6), and six (6) sub slab samples (see Figure 7);
- A survey of public and private water supply wells in the area around the site;
- Investigation of the remainder of the leaching pools, cesspools and septic systems (see Figure 2);
- Interim Remedial Measure which entailed the cleaning of six of the most contaminated subsurface drainage structures under the Undergound Injection Control (UIC) program (see Figure 8), re-sampling of the six sub slab points, and 2 indoor and 1 outdoor ambient air samples;
- Supplemental RI work consisted of the collection of 18 additional surface soil samples, additional investigation of Building A (see Figure 4), including two (2) soil borings, three (3) soil vapor samples, and the collection of three (3) indoor air samples (basement - storage area, basement living area, and kitchen upstairs), and one (1) outdoor ambient air sample (see Figure 9). Also included was soil sampling from cesspool C-2 and from a septic tank located west of Building C (see Figure 2).

To determine whether the soil, soil vapor, or air contains contamination at levels of concern, data from the investigation were compared to the following SCGs:

- Soil SCGs are based on the NYSDEC "Technical and Administrative Guidance Memorandum (TAGM) 4046; Determination of Soil Cleanup Objectives and Cleanup Levels." In addition, background sample analytical results were statistically analyzed to obtain representative background values. For the chemicals detected in soil background samples, the calculated representative background sample will be used as the soil cleanup objective. For chemicals not detected in the background samples (including all VOCs), the TAGM #4046 guidance values SCGs will be used as the soil cleanup objectives.
- To determine whether soil vapor or air contains contamination at levels of concern, soil vapor and air samples are compared to values described in the New York State Soil Vapor Intrusion Guidance document.

- Background soil samples were taken from five (5) locations. These locations were upgradient of the areas of concern, and were unaffected by historic or current site operations. The samples were analyzed for VOCs, SVOCs & Metals. The results of the analysis were compared to data from the RI (Table 1) to determine appropriate site remediation goals.

- Groundwater, drinking water, and surface water SCGs are based on NYSDEC "Ambient Water Quality Standards and Guidance Values" and Part 5 of the New York State Sanitary Code.

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

5.1.1: Site Geology and Hydrogeology

Soils beneath the site consist of fine to coarse-grained sand and gravel to a depth of approximately 150 feet below ground surface (bgs). Intermittent clay, varying in thickness, exists throughout the site at depths between 60-150 feet bgs. Finer deposits of sand and silt also exist. Groundwater flows generally northwest at the site and is approximately 110 feet bgs.

5.1.2: Nature of Contamination

As described in the RI report, many soil, soil vapor and air samples were collected to characterize the nature and extent of contamination. As summarized in Table 1, the main categories of contaminants that exceed their SCGs are volatile organic compounds (VOCs), and inorganics (metals).

The VOCs of concern are tetrachloroethene (PCE), trichloroethene (TCE) and their breakdown products, 1,1,1-trichloroethane (TCA), cis-1,2-dichloroethene (1,2-DCE), 1,1-dichloroethane (1,1-DCA). The metals of concern are those associated with plating, including arsenic, cadmium, chromium, copper, iron, lead, mercury, nickel, and zinc.

5.1.3: Extent of Contamination

This section describes the findings of the investigation for all environmental media that were investigated.

Chemical concentrations are reported in parts per million (ppm) for soil, micrograms per cubic meter ($\mu g/m^3$) for soil vapor and air samples, and parts per billion (ppb) for water. For comparison purposes, where applicable, SCGs are provided for each medium.

Table 1 summarizes the degree of contamination for the contaminants of concern in soil, soil vapor and indoor/outdoor air and compares the data with the SCGs for the site. The following are the media which were investigated and a summary of the findings of the investigation.

Background Soil (2-6 inches bgs)

As described in Section 5.1, five background soil samples were collected along the western boundary of the site at locations shown on Figure 5.

Analytical results for the background soil samples are presented in Table 1. No VOCs were detected. The elevated SVOCs, metals, and their maximum detections were benzo (a) anthracene (1.5 ppm), chrysene (1.9 ppm), benzo (b) fluoranthene (1.8 ppm), benzo (k) fluoranthene (1.1 ppm), dibenzo (a,h) anthracene (0.35 ppm estimated), arsenic (50.5 ppm), cadmium (1.2 ppm), copper (119 ppm), mercury (0.59 ppm), and zinc (308 ppm).

The organic chemicals listed above (benzo (a) anthracene, chrysene, benzo (b) fluoranthene, benzo (k) fluoranthene, and dibenzo (a,h) anthracene) are a class of chemicals called polyaromatic hydrocarbons (PAHs). PAHs may be formed from fossil fuel combustion and are contained in particulate emissions from diesel and gasoline engines. The presence of PAHs in background soil samples is likely attributable to nearby vehicular traffic.

Surface Soil (2-6 inches bgs)

Table 1 presents the RI analytical results for site surface soils collected both during the initial RI investigations and during the supplemental investigation. No VOCs were detected above the SCGs. The only VOC detected was acetone, which was reported in several samples at concentrations below the SCGs. Acetone is a commonly used laboratory chemical and its presence may be associated with laboratory contamination. The following metals were detected in surface soils at concentrations above the SCGs: arsenic (161 ppm), barium (895 ppm), cadmium (9.3 ppm), chromium (499 ppm), copper (418 ppm), mercury (0.69 ppm), nickel (74 ppm), and zinc (1,580 ppm).

Figure 10 presents the distribution of chemicals measured in RI surface soil samples above the SCGs. In general, the highest chemical concentrations were measured in sample Surf-22. This sample is located at the rear (east) of Building E, adjacent to the railroad tracks.

Subsurface Soil

SCGs were exceeded in samples from only one soil boring location, RI-5 (see Figure 3 for sample locations and Table 1 for sample data).

Several metals were measured at concentrations exceeding background SCG concentrations in the 0 to 2 ft bgs sample collected from RI-5. These metals and their maximum detections include cadmium (15.5 ppm), chromium (269 ppm), copper (162 ppm), nickel (105 ppm), and zinc (205 ppm). Mercury was detected in this sample at a concentration of 0.56 ppm which is below the maximum background mercury concentration (0.59 ppm). The deeper sample from boring RI-5 (6 to 8 ft bgs) did not contain any metals above background SCGs, but did contain TCE at a concentration of 2.1 ppm. The SCG for TCE is 0.7 ppm. Soil boring RI-5 is located in the portion of Building G which formerly housed degreasing and chrome plating operations.

The RI soil boring results indicate that soils below the buildings do not exceed SCGs except for within the immediate vicinity of boring RI-5 located in the former plating and degreasing area (see Figure 3).

Sub-Slab Soil Vapor

Table 1 presents the results of the sub-slab soil vapor sampling from the six boreholes within which soil vapor monitoring points were installed. The chemical detected at the highest concentration in soil vapor was TCE (2,400 $\mu g/m^3$) in RI-6 (see Figure 7 for sample locations). This sample location is located within the portion of the building formerly used for degreasing operations. TCE was also detected in three vapor monitoring points closest to RI-6 (RI-3, RI-7 and RI-9). The presence of TCE in soil vapor at these locations is not likely to be reflective of an elevated presence of TCE in the soil matrix.

Soil Vapor

The soil vapor monitoring probes are located throughout the south portion of the site as shown on Figure 6. The analytical results from sampling these probes are presented in Table 1. PCE was detected in all samples. Several other VOCs were detected, generally at lower concentrations, most notably TCE, toluene, methyl tert-butyl ether (MTBE) and trichlorotrifluoroethane.

Measured PCE concentrations range from between 3 $\mu g/m^3$ and 47,000 $\mu g/m^3$. These samples were taken from between 10 and 220 feet from the south property line (an indicator of relative proximity to the current or former dry-cleaning operations as sample FS-1 at 47,000 µg/m^3 was taken 10 feet away).

These results indicate that the source of PCE present in soil vapor, is most likely originating from a southern off-site location. The NYSDEC Preliminary Site Assessment Report for the regional groundwater plume shows that Building A is located directly north of the location of a former dry-cleaning establishment and that the site is within a few hundred feet of several other former or current dry-cleaning operations. The PCE in the soil vapor could be associated with these current and/or former dry-cleaning operations that historically used PCE in this area.

Air

Table 1 presents the results of ambient air sampling at Building A. Ambient air results were compared to the New York State Soil Vapor Intrusion Guidance document and NYSDEC Short-Term Guideline Concentrations (AGCs). PCE exceeded one or more of these limits in all three samples. Measured concentrations were Building A ambient indoor (basement) at 99 µg/m^3 and Building A ambient outdoor at 16 µg/m^3.

Ethylbenzene was measured in the Building A indoor air sample at a concentration of 4 µg/m^3, which for reference purposes, exceeds the outdoor air SCGs. No other chemicals exceeded these limits.

Taken together, the PCE analytical results of the Building A sampling indicate the following. The elevated PCE concentration measured in soil vapor adjacent to Building A (sample FS-1 at 47,000 µg/m^3) suggests a residual presence of PCE relatively close to the ground surface in the unsaturated zone suggesting a release point nearby. The lack of PCE in the subsurface soil sample suggests the release did not occur at Building A. Furthermore, the PCE detection in outdoor ambient air suggests that PCE use and emission may be an ongoing occurrence at dry-cleaning operations near the site and is affecting ambient air quality. Finally, the results of the Building A septic system soil investigation confirm that past or present activities at Building A are not the source of PCE measured in soil gas and ambient air.

However, since the indoor air levels were elevated above the SCGs, an IRM was conducted. A carbon air handling system was installed on August 4, 2004 and remained in use until the tenant vacated the premises in February 2005.

Groundwater

A limited groundwater investigation was conducted in November of 2002. Contaminants of concern above SCGs were PCE and its degradation products including TCE. PCE was found up to 1700 ppb and TCE up to 940 ppb. Additional investigation is being conducted under a separate operable unit.

5.2: <u>Interim Remedial Measures</u>

An IRM is conducted at a site when a source of contamination or exposure pathway can be effectively addressed before completion of the RI/FS.

An IRM was conducted at Trans Technology to remediate and close selected subsurface drainage structures. The IRM objectives were to clean the structures, remove the contaminated sediment and, for the open-bottom structures, to remove underlying soil which may be impacted.

To provide data which was needed to develop and implement the IRM, additional sampling from within and around septic system structures was conducted concurrent with the RI sampling activities (see Figures 8 & 11). Soil borings around the structures were done to a minimum depth of 12 feet bgs. Subsurface structure sampling was conducted to a minimum depth of 8 feet below the bottom of the drainage structure.

The liquid contained within the structures was sampled and analyzed for corrosivity, VOCs (Method 8260), and Metals. The analytical results were submitted to the Nassau County Department of Public Works (NCDPW) to obtain approval for treatment of the liquid at the Bay Park Scavenger Waste Disposal Facility. The liquid was approved by the NCDPW for treatment. Prior to removal of accumulated sediments, the liquid contained within each structure was pumped and transported to the aforementioned treatment facility for treatment and disposal.

After the liquids were removed, the sludge residue was vacuumed out and inspections were conducted. For those structures with concrete bottoms, Nassau County Department of Health (NCDH) verified the integrity and no endpoint samples were necessary. The rest were further investigated.

The results of the IRM sampling showed levels of VOCs, SVOCs, & metals, above SCGs in a number of cesspools and leaching pools located throughout the site. These results were consistent with the findings of previous sampling programs in that the chemical presence was found to be contained within the drainage structures and little migration from the structures has occurred. Site Cleanup Objectives (SCOs) were developed to address the subsurface drainage structures.

The IRM, completed in September 2003, entailed cleaning six out of 42 subsurface drainage structures (C-3, C-4, C-5, LP-2, LP-3, & LP-11) (see Figure 9), under the UIC program, in conjunction with the NCDH, acting as representatives of the Environmental Protection Agency (EPA). These structures were the most contaminated of those on-site. The methods used to clean the structures were described in the IRM Work Plan. A representative of the NCDH was on-site during the work and collected split samples of the excavation endpoints. All six structures received closure approval from the NCDH.

After completion of the IRM, the soil vapor probes installed within the main building complex were sampled on three more occasions.

A second round of samples was collected from the sub-slab soil vapor monitoring probes shown on Figure 7. These soil vapor samples were collected less than one week after the IRM was completed. The analytical results showed higher detections of TCE than the samples collected in November 2002 (first round of sampling, discussed under the subheading Site Soil Vapor in section 5.1.3).

Approximately 10 weeks after completion of the IRM (clean out of selected cesspools/leaching pools), a third round of samples was collected from the sub-slab soil vapor monitoring probes. As with the prior sampling event, TCE was the chemical detected at the highest concentrations, although at levels substantially lower than measured one week after the IRM.

Selected soil vapor probes (RI-3, RI-6 and RI-7) were resampled about 1 year after the IRM. These samples were analyzed specifically for the following chemicals which had previously been measured at elevated concentrations in soil vapor samples: PCE, TCE, 1,1,1-trichloroethane and cis-1,2-dichloroethene. Concentrations measured in these samples were approximately the same as levels measured for the 10-week sampling event.

In soil vapor samples from all three events, TCE was the chemical present at the highest concentration. The TCE concentrations for the original RI sampling event ranged from non-detect to 2,400 $\mu g/m^3$. The first post-IRM event ranged from 42 $\mu g/m^3$ to 200,000 $\mu g/m^3$. The second event ranged from 31 $\mu g/m^3$ to 81,000 $\mu g/m^3$. The third event, which only included 3 of the 6 sub-slab points, ranged from 100,000 $\mu g/m^3$ to 230,000 $\mu g/m^3$.

The sub-slab vapor sampling results, performed after the completion of the IRM, suggest that some of the VOCs may have been trapped beneath the building slab and are not readily dissipating. It is also possible that small quantities of impacted sediment or sludge may have been introduced to the sanitary piping during the IRM. Considering the latter possibility, the final remediation of the subsurface drainage structures should be performed to minimize this potential occurrence. If this is not feasible, the sanitary pipes should be flushed or removed after the subsurface structures are cleaned out. In addition, other remedies may be required.

During the third round of IRM sub-slab soil vapor sampling, ambient indoor air samples were collected from two locations in the main building complex: one from the hallway between locations RI-6 and RI-7; and one from the office area west of location RI-11 (see Figure 7). In addition, an outdoor ambient air sample was collected from the rear of the building (near soil vapor probe RI-6). Ambient air samples were analyzed for PCE, TCE, 1,1,1-trichloroethane and cis-1,2-dichloroethene. The analytical results for these samples are presented in Table 1.

In the ambient indoor air samples, TCE was the chemical present at the highest concentrations (36 $\mu g/m^3$ and 290 $\mu g/m^3$). This level poses a concern and needs to be addressed. Currently, all but 1 tenant have vacated the building.

PCE was the only chemical detected in the outdoor ambient air sample taken from the rear (east) of the main building complex opposite the location of soil vapor probe RI-6. The measured concentration was 1.6 $\mu g/m^3$. This concentration is likely representative of the background ambient outdoor PCE concentration at this location. Note that PCE measured in the ambient outdoor sample collected at Building A (adjacent to the former dry-cleaning site and nearer to the operating dry cleaners) is approximately three times higher (5.1 $\mu g/m^3$).

Interim remedial (mitigation) measures were also taken at Building A to address current human exposures (via inhalation) to volatile organic compounds (PCE) associated with soil vapor intrusion.

Two air purification units with activated carbon treatment were installed. One was placed in the lower floor living space, and the other was placed in the upper floor living room area. Each unit had a flow rate of 400 cubic feet per minute, and an activated carbon bed size of 22 pounds.

The performance of the system was monitored as outlined in the sampling plan. Each monitoring event included one indoor air sample from the downstairs living space, one indoor air sample from the upstairs living room and one outdoor ambient air sample. Samples were collected using tetrachloroethene badges and analyzed using Method NYSDOH 3119. All subsequent indoor air samples were within acceptable levels after the units were installed.

5.3: Summary of Human Exposure Pathways:

This section describes the types of human exposures that may present added health risks to persons at or around the site. A more detailed discussion of the human exposure pathways can be found in Section 6.0 of the RI report.

An exposure pathway describes the means by which an individual may be exposed to contaminants originating from a site. An exposure pathway has five elements: [1] a contaminant source, [2] contaminant release and transport mechanisms, [3] a point of exposure, [4] a route of exposure, and [5] a receptor population.

The source of contamination is the location where contaminants were released to the environment (any waste disposal area or point of discharge). Contaminant release and transport mechanisms carry contaminants from the source to a point where people may be exposed. The exposure point is a location where actual or potential human contact with a contaminated medium may occur. The route of exposure is the manner in which a contaminant actually enters or contacts the body (e.g., ingestion, inhalation, or direct contact). The receptor population is the people who are, or may be, exposed to contaminants at a point of exposure.

An exposure pathway is complete when all five elements of an exposure pathway exist. An exposure pathway is considered a potential pathway when one or more of the elements currently does not exist, but could in the future.

Exposure to contaminants in groundwater is not expected since the area is serviced by public water.

Elevated levels of metals exist in several areas throughout the site which have the potential to cause dermal contact, dust inhalation or ingestion by individuals. The majority of these areas are currently beneath the paved driveway or the footprint of the building and do not cause an immediate exposure risk. The site is proposed to be converted into a residential area. The contaminated soils are expected to be removed during the remediation activities and during the redevelopment of the property, further removing the threat of dermal contact.

Soil vapor intrusion currently affects two (2) site-related buildings; Building A, a former area of operations converted into a residence, and the Main building. Measures to eliminate vapor intrusion were employed at the residence, but the tenants were eventually asked to vacate the home. The tenants of the main building have been vacated except for the building manager. Soil vapor contamination remains beneath both Building A and the Main building. Soil and groundwater contamination sources must be remediated to prevent future exposure to soil vapor after the property is converted to residential use.

5.4: <u>Summary of Environmental Impacts</u>

This section summarizes the existing and potential future environmental impacts presented by the site. Environmental impacts include existing and potential future exposure pathways to fish and wildlife receptors, as well as damage to natural resources such as aquifers and wetlands. The following environmental exposure pathways and ecological risks have been identified:

The VOCs and metals in the leaching pools and cesspools potentially could leach into the groundwater and impact the sole source groundwater resources in the Magothy Formation.

SECTION 6: <u>SUMMARY OF THE REMEDIATION GOALS</u>

Goals for the remedial program have been established through the remedy selection process stated in 6 NYCRR Part 375-1.10. At a minimum, the remedy selected must eliminate or mitigate all significant threats to public health and/or the environment presented by the hazardous waste disposed at the site through the proper application of scientific and engineering principles.

The remediation goals for this site are to eliminate or reduce to the extent practicable:

- Exposures of persons at or around the site to VOCs, SVOCs, and metals in soil, as well as VOCs in soil vapor, ambient air and indoor air;
- The release of contaminants from soil into groundwater that may create exceedances of groundwater quality standards; and,
- The release of contaminants from subsurface soil in cesspools and leaching pools, into indoor air and ambient air through soil vapor.

Further, the remediation goals for the site include attaining to the extent practicable:

- NYSDEC TAGM 4046 Recommended Soil Cleanup Objectives and/or representative soil background concentrations arrived at utilizing the statistical methodology from NYSDEC Technical Guidance DER-10 for both surface soil and subsurface soil;

SECTION 7: SUMMARY OF THE EVALUATION OF ALTERNATIVES

The selected remedy must be protective of human health and the environment, be cost-effective, comply with other statutory requirements, and utilize permanent solutions, alternative technologies or resource recovery technologies to the maximum extent practicable. Potential remedial alternatives for the Trans Technology Site were identified, screened and evaluated in the FS report which is available at the document repositories identified in Section 1.

A summary of the remedial alternatives that were considered for this site are discussed below. The present worth represents the amount of money invested in the current year that would be sufficient to cover all present and future costs associated with the alternative. This enables the costs of remedial alternatives to be compared on a common basis. As a convention, a time frame of 30 years is used to evaluate present worth costs for alternatives with an indefinite duration. This does not imply that operation, maintenance, or monitoring would cease after 30 years if remediation goals are not achieved.

7.1: Description of Remedial Alternatives

The following potential remedies were considered to address the contaminated soils at the 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 (periodic inspection of the site and limited groundwater monitoring), allowing the site to remain in an unremediated state. This alternative would leave the site in its present condition and would not provide any additional protection to human health or the environment.

Present Worth: *$13,800*
Capital Cost: *$0*
Annual OM&M: *$1,000*

Alternative 2: Contaminated Soil Consolidation, Capping & UIC Feature Closure

For Alternative 2, soils in these areas would be excavated to a minimum depth of 2 feet. Additional excavation would occur if confirmatory sampling showed that soil cleanup objectives were not met. Confirmatory samples would be obtained from the base of the excavations at a spacing of approximately 100 feet. The excavated soil would be replaced with clean soil and topsoil. Soils estimated to be removed are shown on Figure 10. The limits shown on Figure 10 generally extend to the property line or to paved areas.

Excavated soil would be consolidated under maintained paved areas of the site including future driveways and parking areas. Based on a 2-foot excavation depth, the total volume of soil to be excavated for consolidation is approximately 1,200 cubic yards.

In addition to soil removal, remedial Alternative 2 also includes removal of the contaminated soil from the UIC structures. This is described in detail in Section 4.0 of the Feasibility Study Report.

A total of 25 cesspools and leaching pools at the site have been found to contain soil that exceeds the soil cleanup objectives. Six of these (C-3, C-4, C-5, LP-2, LP-3 and LP-11) were successfully remediated during the IRM. Endpoint samples from the three open-bottom structures remediated during the IRM met the site cleanup objectives for all chemicals. The remaining structures to be remediated are: C-6, LP-1, LP-3A, LP-5, LP-7, LP-8, LP-10, LP-13, LP-16, LP-17, LP-19, LP-20, LP-21, LP-22, LP-24, LP-30, LP-31, LP-31A, and LP-34. Locations are shown on Figure 11.

As indicated above, at selected structures the sanitary piping between the building and the structures would be removed. Piping would also be removed from all six structures remediated during the IRM (C-3, C-4, C-5, LP-2, LP-3 and LP-11) and from LP-20, LP-21, and LP-31. These structures were selected due to elevated VOC concentrations measured in sediment during the RI. Sanitary piping and associated backfill surrounding the pipes would be excavated between the building wall and the drainage structures. Post-excavation soil samples would be collected from the base and sides of each excavation. In the event SCOs are not attained, the excavations would be extended until the confirmatory samples indicate compliance with SCOs. If confirmatory samples from the sidewalls adjacent to the building exceed SCOs, the excavation would continue beneath the building. Excavation of piping beneath the building would entail removal of portions of the building slab.

Under this alternative, remediation could be performed in conjunction with building demolition. In this case, the main building complex slab in the vicinity of the structures would be removed and the associated piping and impacted backfill would be excavated at that time.

Prior to redevelopment of the site and/or reoccupation of existing buildings, a Site Management Plan would be prepared. This plan would include provisions for soil and/or soil vapor sampling at the site and assessment of the potential for exposures to occur via soil vapor intrusion into occupied buildings.

The property owner would provide a periodic certification, prepared and submitted by a professional engineer or such expert acceptable to the NYSDEC, until the NYSDEC notifies the property owner in writing that this certification is no longer needed. The estimated cost for this effort is $1,000 per certification.

For Alternative 2, the design and implementation would depend on the future use of the property as the soil cover(s) would be constructed according to the proposed redevelopment (i.e., parking areas and roadways). Time for design would therefore be approximately one year. It would take approximately 6 months to one year to construct the remedy and thereby attain the remediation goals.

Capital Cost:	*$454,500*
Annual OM&M:	*$12,000*
Present Worth OM&M (Years 1-30):	*$165,200*
Total Estimated Cost:	*$619,700*

Alternative 3: Contaminated Soil Excavation, Off-site Disposal and UIC Feature Closure

For Alternative 3, soils in these areas would be excavated to a minimum depth of 2 feet. Additional excavation would occur if confirmatory sampling showed that soil cleanup objectives were not met. Confirmatory samples would be obtained from the base of the excavations at a spacing of approximately 100 feet. The excavated soil would be replaced with clean soil and topsoil. Soils estimated to be removed are shown on Figure 10. The limits shown on Figure 10 generally extend to the property line or to paved areas.

Excavated soil would be transported off site for disposal at a permitted facility. Based on a 2-foot excavation depth, the total volume of soil to be excavated for disposal is approximately 1,200 cubic yards.

In addition to soil removal, remedial Alternative 3 also includes removal of the contaminated soil from the UIC structures. This is described in detail in Section 4.0 of the Feasibility Study Report.

A total of 25 cesspools and leaching pools at the site have been found to contain sediment in excess of the cleanup objectives. Six of these (C-3, C-4, C-5, LP-2, LP-3 and LP-11) were successfully remediated during the IRM. Endpoint samples from the three open-bottom structures remediated during the IRM met the site cleanup objectives for all chemicals. The remaining structures to be remediated are: C-6, LP-1, LP-3A, LP-5, LP-7, LP-8, LP-10, LP-13, LP-16, LP-17, LP-19, LP-20, LP-21, LP-22, LP-24, LP-30, LP-31, LP-31A, and LP-34. Locations are shown on Figure 11.

As indicated above, at selected structures the sanitary piping between the building and the structures would be removed. Piping would also be removed from all six structures remediated during the IRM (C-3, C-4, C-5, LP-2, LP-3 and LP-11) and from LP-20, LP-21, and LP-31. These structures were selected due to elevated VOC concentrations measured in sediment during the RI. Sanitary piping and associated backfill surrounding the pipes would be excavated between the building wall and the drainage structures. Post-excavation soil samples would be collected from the base and sides of each excavation. In the event SCOs are not attained, the excavations would be extended until the confirmatory samples indicate compliance with SCOs. If confirmatory samples from the sidewalls adjacent to the building exceed SCOs, the excavation would proceed beneath the building. Excavation of piping beneath the building would entail removal of portions of the building slab.

Under this alternative, remediation could be performed in conjunction with building demolition. In this case, the main building complex slab in the vicinity of the structures would be removed and the associated piping and impacted backfill would be excavated at that time.

Prior to redevelopment of the site and/or reoccupation of existing buildings, a Site Management Plan would be prepared. This plan would include provisions for soil and/or soil vapor sampling at the site and assessment of the potential for exposures to occur via soil vapor intrusion into occupied buildings.

The property owner would provide a periodic certification, prepared and submitted by a professional engineer or such expert acceptable to the NYSDEC, until the NYSDEC notifies the property owner in writing that this certification is no longer needed. The estimated cost for this effort is $1,000 per certification.

Alternative 3 can be designed and implemented independently of site redevelopment. The time to design this remedy would be three months. The time required to implement this remedy and attain remediation goals would be approximately four months.

Capital Cost: *$504,500*
Annual OM&M: *$2,000*
Present Worth OM&M (Years 1-30): . *$27,500*
Total Estimated Cost: *$532,000*

7.2 Evaluation of Remedial Alternatives

The criteria to which potential remedial alternatives are compared are defined in 6 NYCRR Part 375, which governs the remediation of inactive hazardous waste disposal sites in New York State. A detailed discussion of the evaluation criteria and comparative analysis is included in the FS report.

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

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

2. Compliance with New York State Standards, Criteria, and Guidance (SCGs). Compliance with SCGs addresses whether a remedy will meet environmental laws, regulations, and other standards and criteria. In addition, this criterion includes the consideration of guidance which the NYSDEC has determined to be applicable on a case-specific basis.

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

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

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

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.

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

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

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

8. Community Acceptance. Concerns of the community regarding the RI/FS reports and the PRAP are evaluated. A responsiveness summary will be prepared that describes public comments received and the manner in which the NYSDEC will address the concerns raised. If the selected remedy differs significantly from the proposed remedy, notices to the public will be issued describing the differences and reasons for the changes.

SECTION 8: SUMMARY OF THE PROPOSED REMEDY

The NYSDEC is proposing Alternative 3, Contaminated Soil Excavation, Off-site Disposal and UIC Feature Closure as the remedy for OU-1 of this site. The elements of this remedy are described at the end of this section.

The proposed remedies are based on the results of the RI and the evaluation of alternatives presented in the FS.

Alternative 3 for OU-1 is being proposed because, as described below, it satisfies the threshold criteria and provides the best balance of the primary balancing criteria described in Section 7.2. It would achieve the remediation goals for the site by removing the soils, both surface and subsurface, that create the most significant threat to public health and the environment. It would greatly reduce the source of contamination to groundwater, and it would create the primary conditions needed to begin restoring groundwater quality to the extent practicable. Alternative 2 would also comply with the threshold selection criteria but to a lesser degree or with lower certainty as contamination would remain on-site. Alternative 1 does not comply with the threshold selection criteria, therefore, it will not be considered for this remedy selection.

Because both Alternative 2 and Alternative 3 satisfy the threshold criteria, the five balancing criteria are particularly important in selecting a final remedy for the site.

Alternative 2 (Contaminated Soil Consolidation, Capping & UIC Feature Closure) and Alternative 3 (Contaminated Soil Excavation, Off-site Disposal and UIC Feature Closure) both have short-term impacts associated with construction which can easily be controlled.

Achieving long-term effectiveness is best accomplished by excavation and removal of the contaminated overburden soils (Alternative 3). Alternative 3 is more favorable because it would result in the removal of approximately 1200 cubic yards of impacted soil at the site, which along with the UIC closures, would remove most of the contaminated soil above the watertable. This would lessen the need for property use restrictions and long-term monitoring. Alternative 2, would result in the contaminated soil remaining on-site and require more extensive deed restrictions and long-term monitoring.

Alternative 2 would reduce the mobility of contaminants but this reduction is dependent upon the long-term maintenance of the containment system while Alternative 3 would remove the contaminants from the site.

Alternative 3 and Alternative 2 are equally implementable.

Although the capital cost of Alternative 2 is less expensive than Alternative 3, it is not a permanent remedy and the operation and maintenance costs would increase the total remedial cost.

Cesspools and leaching pools (UIC features) at the site may represent a potential source of groundwater contamination. These have also been determined to be the source of VOCs measured in soil gas beneath Buildings F, G, H and I. On this basis, the no-action alternative for subsurface structure soils is not recommended. The IRM (see Section 5.2) showed that removal of these soils is effective, implementable, and would attain the SCO. Since this is a presumptive remedy, it is included in both Alternative 2 and Alternative 3. The cost for this part of the remedy includes remediation of the UIC structures and excavation and/or proper closure of the sanitary piping.

The cost of Alternative 3 would be approximately $532,000.

The elements of the proposed remedies are as follows:

1. A remedial design program would be implemented to provide the details necessary for the construction, operation, maintenance, and monitoring of the remedial program. This would include a detailed plan for excavation of soils and UIC closure of the selected drainage structures (i.e., cesspools and leaching pools).

2. Excavation and off-site disposal of soils exceeding the cleanup objectives to

prevent direct contact and further groundwater contamination.

3. UIC approved removal of impacted soil from selected cesspools and leaching pools for off-site disposal at a permitted facility, and removal/UIC closure of sanitary piping from these selected structures to prevent further groundwater contamination.

4. A two-foot cover would be backfilled over all excavated areas to prevent exposure to contaminated soils. The two-foot thick cover would consist of clean soil and top soil. The top six inches of soil would be of sufficient quality to support vegetation. Clean soil would constitute soil with no analytes in exceedance of NYSDEC TAGM 4046 soil cleanup objectives or local site background as determined by the procedure in DER 10 ("Tech Guide").

5. Development of a site management plan to: (a) address residual contaminated soils that may be excavated from the site during future redevelopment. The plan would require soil characterization and, where applicable, disposal/reuse in accordance with NYSDEC regulations; (b) evaluate the potential for vapor intrusion for any buildings developed on the site, including provision for mitigation of any impacts identified; and (c) identify any use restrictions.

6. Imposition of an institutional control in the form of an environmental easement that would (a) require compliance with the approved site management plan; (b) limit the use and development of the property to restricted residential, commercial or industrial uses only; and (c) require the property owner to complete and submit to the NYSDEC a periodic certification.

7. The property owner would provide a periodic certification, prepared and submitted by a professional engineer or such expert acceptable to the NYSDEC, until the NYSDEC notifies the property owner in writing that this certification is no longer needed. This submittal would contain certification that the institutional controls, are still in place, allow the NYSDEC access to the site, and that nothing has occurred that would impair the ability of the control to protect public health or the environment, or constitute a violation or failure to comply with the site management plan.

TABLE 1
Nature and Extent of Contamination
Samples Obtained from November 2002 through April 2004

SUBSURFACE SOIL (Cesspools & Leaching Pools)	Contaminants of Concern	Concentration Range Detected (ppm)[a]	SCG[b] (ppm)[a]	Frequency of Exceeding SCG
Volatile Organic Compounds (VOCs)	Acetone	ND(0.011) -1.4 J	0.2	7 of 28
	Chlorobenzene	ND(0.0032) - 250	1.7	4 of 53
	Ethylbenzene	ND(0.0021) - 28	5.5	3 of 53
	1,3-Dichlorobenzene	ND(0.0021) - 27	1.6	3 of 53
	1,4-Dichlorobenzene	ND(0.0021) - 335	8.5	6 of 53
	1,2-Dichlorobenzene	ND(0.0021) - 1,500	7.9	5 of 53
	m+p-Xylene	ND(0.001) - 270	1.2	8 of 50
	Toluene	ND(0.0021) - 530	1.5	7 of 50
	o-Xylene	ND(0.001) - 80	1.2	5 of 50
	Isopropylbenzene	ND(0.011) - 0.91 J	0.5	3 of 28
	1,1-Dichloroethane	ND(0.001) - 490	0.1	4 of 53
	Trichloroethene	ND(0.001) - 4,600	0.7	6 of 53
	Tetrachloroethene	ND(0.001) - 0.42	1.4	0 of 53
	1,1,1-Trichloroethane	ND(0.001) - 600	0.8	2 of 53
	Methylene chloride	ND(0.001) - 230	0.1	3 of 53

TABLE 1
Nature and Extent of Contamination (Continued)
Samples Obtained from November 2002 through April 2004

SUBSURFACE SOIL (Cesspools & Leaching Pools)	Contaminants of Concern	Concentration Range Detected (ppm)[a]	SCG[b] (ppm)[a]	Frequency of Exceeding SCG
Semivolatile Organic Compounds (SVOCs)	4-Methylphenol	ND(0.342) - 220	0.9	2 of 31
	Fluoroanthene	0.046 J - 243	50	6 of 31
	Acenapthene	ND(0.342) - 68	50	1 of 31
	Fluorene	ND(0.342) - 87	50	1 of 31
	Di-n-butylphthalate	ND(0.342) - 31.4	8.1	1 of 31
	Dibenzofuran	ND(0.342) - 37	6.2	1 of 31
	Anthracene	ND(0.342) - 190 J	50	1 of 31
	Phenanthrene	0.042 J - 920	50	5 of 31
	Benzo (a) anthracene	0.043 J - 410	0.51	9 of 31
	bis(2-Ethylhexyl) phthalate	0.140 J - 746	50	4 of 31
	Butylbenzyl phthalate	ND(0.342) - 42.1	50	0 of 31
	Chrysene	0.093 J - 126	0.72	10 of 31
	Pyrene	0.110 J - 820	50	6 of 31
	Benzo(b) flouranthene	0.076 J - 380	1.1	10 of 31
	Benzo(k) flouranthene	0.041 J -250	1.1	8 of 31
	Benzo(g,h,i) perylene	0.054 J - 230	50	2 of 31
	Benzo(a)pyrene	0.049 J - 360	0.59	9 of 31
	Dibenz(a,h) anthracene	ND(0.342) - 62 J	0.14	3 of 31
	Indeno(1,2,3-cd) pyrene	0.045 J - 200 J	3.2	7 of 31

TABLE 1
Nature and Extent of Contamination (Continued)
Samples Obtained from November 2002 through April 2004

SUBSURFACE SOIL (Cesspools & Leaching Pools)	Contaminants of Concern	Concentration Range Detected (ppm)[a]	SCG[b] (ppm)[a]	Frequency of Exceeding SCG
Inorganic Compounds	Arsenic	ND(0.46) - 46.6	7.5 or SB	TBD
	Barium	6.6 - 1,240	300	2 of 46
	Cadmium	0.07 - 27.9	10	2 of 46
	Chromium	4.6 - 6,330	50	7 of 46
	Cobalt	ND(0.47) - 33.8	30	1 of 24
	Copper	2.1 J - 2,040	119	7 of 24
	Iron	707 - 20,200	17,000	3 of 24
	Lead	1.7 - 815	145	15 of 46
	Mercury	ND(0.009) - 21.1 J	0.59	10 of 46
	Nickel	0.73 - 140 J	13	11 of 24
	Selenium	ND(0.31) - 5	2	1 of 46
	Vanadium	0.78 - 51.4	150	0 of 24
	Zinc	6.1 - 1,160 J	308	7 of 24
	Silver	ND(0.16) - 113	5	6 of 46

TABLE 1
Nature and Extent of Contamination (Continued)
Samples Obtained from November 2002 through April 2004

SUBSURFACE SOIL	Contaminants of Concern	Concentration Range Detected (ppm)[a]	SCG[b] (ppm)[a]	Frequency of Exceeding SCG
Volatile Organic Compounds (VOCs)	Acetone	ND(0.010) - 0.068 J	0.2	0 of 30
	2-Butanone	0.001 J - 0.017	0.3	0 of 30
	cis-1,2-Dichloroethene	ND(0.006) - 0.0022 J	NA	NA
	Chloroform	ND(0.006) - 0.008 J	0.3	0 of 36
	1,1,1-Trichloroethane	ND(0.006) - 0.004 J	0.8	0 of 36
	Trichloroethene	ND(0.006) - 2.1	0.7	1 of 36
	Tetrachloroethene	ND(0.006) - 0.062	1.4	0 of 36
Inorganic Compounds	Arsenic	0.5 - 15.8	7.5 or SB	TBD
	Barium	17.1 - 84.5	300	0 of 24
	Cadmium	ND(0.04) - 15.5	10	1 of 24
	Chromium	4.3J - 269	50	1 of 24
	Cobalt	3.5 - 9.0	30	0 of 24
	Copper	4 - 162	119	1 of 24
	Iron	8,110 - 21,400	17,000	2 of 24
	Lead	1.8 - 56.5	145	0 of 24
	Mercury	ND(0.009) - 0.56	0.59	0 of 24
	Nickel	5.4 - 105	13	1 of 24
	Selenium	ND(0.30) - 0.65J	2	0 of 24
	Vanadium	6.3 - 27.9	150	0 of 24
	Zinc	9.8 - 205	308	0 of 24
	Silver	ND(0.15) - 0.75	5	0 of 24

TABLE 1
Nature and Extent of Contamination (Continued)
Samples Obtained from November 2002 through April 2004

SURFACE SOIL	Contaminants of Concern	Concentration Range Detected (ppm)[a]	SCG[b] (ppm)[a]	Frequency of Exceeding SCG
Volatile Organic Compounds (VOCs)	Acetone	ND(0.011) - 0.059 J	0.2	0 of 22
Inorganic Compounds	Arsenic	2.9 - 161	7.5 or SB	TBD
	Barium	14 - 895	300	1 of 41
	Cadmium	0.08 - 9.3	1.2	11 of 41
	Chromium	5.6 - 499	19.1	15 of 41
	Cobalt	3.1 - 14.2	30	0 of 41
	Copper	8.3 - 418	119	6 of 41
	Iron	7,500 - 28,800	17,000	5 of 41
	Lead	15 - 500	145	10 of 41
	Mercury	0.02 - 0.69	0.59	2 of 41
	Nickel	6.3 - 74	13	15 of 41
	Selenium	ND(0.31) - 1.8	2	0 of 41
	Vanadium	12.2 - 63.2	150	0 of 41
	Zinc	27.5 - 1580	308	10 of 41

TABLE 1
Nature and Extent of Contamination (Continued)
Samples Obtained from November 2002 through April 2004

SURFACE SOIL BACKGROUND SAMPLES	Contaminants of Concern	Concentration Range Detected (ppm)[a]	SCG[b] (ppm)[a]	Frequency of Exceeding SCG
Volatile Organic Compounds (VOCs)	No VOCs Detected	NA	NA	NA
Semivolatile Organic Compounds (SVOCs)	Fluoroanthene	0.57 - 3.9	50	0 of 5
	Di-n-butylphthalate	0.043 J - 0.047 J	8.1	0 of 5
	Dibenzo(a,h) anthracene	0.057 J - 0.35 J	0.14	1 of 5
	Anthracene	0.56 J - 0.25	50	0 of 5
	Phenanthrene	ND (0.18) - 1.9	50	0 of 5
	Benzo (a) anthracene	0.23 J - 1.5	0.51	1 of 5
	Indeno (1,2,3-cd) pyrene	0.20 J - 1.2	3.2	0 of 5
	Butylbenzyl phthalate	0.061 J - 0.37 J	50	0 of 5
	Chrysene	0.31 J - 1.9 J	0.72	1 of 5
	Pyrene	0.340 J - 2.9	50	0 of 5
	Benzo(b) flouranthene	0.31 J - 1.8	1.1	1 of 5
	Benzo(k) flouranthene	0.17 J - 1.1	1.1	0 of 5
	Benzo(g,h,i) perylene	0.22 J - 1.3	50	0 of 5

TABLE 1
Nature and Extent of Contamination (Continued)
Samples Obtained from November 2002 through April 2004

SURFACE SOIL BACKGROUND SAMPLES	Contaminants of Concern	Concentration Range Detected (ppm)[a]	SCG[b] (ppm)[a]	Frequency of Exceeding SCG
Inorganic Compounds	Arsenic	5.4 - 50.5	7.5 or SB	TBD
	Barium	36.3 - 73.1	300	0 of 5
	Cadmium	0.08 - 9.30.10 - 1.2	1.2	0 of 5
	Chromium	11.6 - 19.1	19.1	0 of 5
	Cobalt	4.7 - 6.0	30	0 of 5
	Copper	33.2 - 119	119	0 of 5
	Iron	10,300 - 17,000	17,000	0 of 5
	Lead	50.5 - 145	145	0 of 5
	Mercury	0.08 - 0.59	0.59	0 of 5
	Nickel	9.9 - 12.4	13	0 of 5
	Selenium	0.41 J - 0.9	2	0 of 5
	Zinc	80.6 - 308	308	0 of 5

TABLE 1
Nature and Extent of Contamination (Continued)
Samples Obtained from November 2002 through April 2004

SUBSLAB SOIL VAPOR	**Contaminants of Concern**	**Concentration Range Detected ($\mu g/m^3$)[a]**	**SCG[b] ($\mu g/m^3$)[a]**	**Frequency of Exceeding SCG**
Samples obtained 11/18/02 prior to IRM	Acetone	39 - 480	To determine whether soil vapor or air contains contamination at levels of concern, soil vapor and air samples are compared to values described in the New York State Soil Vapor Intrusion Guidance document.	
	Trichlorofluoromethane	ND(13) - 23		
Volatile Organic Compounds (VOCs)	Methylene chloride	10 - 27		
	Carbon disulfide	ND(1.3) - 4.4		
	1,1-Dichloroethane	ND(1.2) - 19		
	Methyl tert-butyl ether	ND(13) - 15		
	2-Butanone	11 - 71		
	cis-1,2-Dichloroethene	ND(1.2) - 98		
	1,1,1-Trichloroethane	ND(1.2) - 13		
	Benzene	ND(1.2) - 2.2		
	Trichloroethene	ND(1.2) - 2,400		
	4-Methyl-2-pentanone	ND(13) - 30		
	Toluene	30 - 210		
	Tetrachloroethene	ND(1.2) - 53		
	Ethylbenzene	ND(2.1) - 9.1		
	m,p-Xylene	ND(1.2) - 33		
	Styrene	ND(1.2) - 4.1		
	o-Xylene	ND(1.2) - 14		
	1,4-Dichlorobenzene	ND(1.2) - 98		

TABLE 1
Nature and Extent of Contamination (Continued)
Samples Obtained from November 2002 through April 2004

SUBSLAB SOIL VAPOR	Contaminants of Concern	Concentration Range Detected (µg/m³)[a]	SCG[b] (µg/m³)[a]	Frequency of Exceeding SCG
Samples obtained 9/10/03 (post IRM) **Volatile Organic Compounds (VOCs)**	Acetone	ND(11) - 17	To determine whether soil vapor or air contains contamination at levels of concern, soil vapor and air samples are compared to values described in the New York State Soil Vapor Intrusion Guidance document.	
	Trichlorofluoromethane	ND(13) - 22		
	Methylene chloride	ND(1.0) - 3.9		
	1,1-Dichloroethene	ND(1.2) - 7.1		
	Trichlorotrifluoroethane	ND(2.1) -5.0		
	Carbon disulfide	ND(2.1) - 2.4		
	1,1-Dichloroethane	ND(1.2) - 140		
	Methyl tert-butyl ether	ND(2.1) - 5.6		
	Vinyl acetate	ND(1.2) - 5.1		
	cis-1,2-Dichloroethene	ND(1.2) - 5,300		
	Chloroform	ND(1.2) - 4.3		
	1,1,1-Trichloroethane	ND(1.2) - 4,300		
	Trichloroethene	42 - 200,000		
	Toluene	ND(1.2) - 2.6		
	Tetrachloroethene	110 - 13,000		
	1,4-Dichlorobenzene	ND(1.2) - 18		

TABLE 1
Nature and Extent of Contamination (Continued)
Samples Obtained from November 2002 through April 2004

SOIL VAPOR	Contaminants of Concern	Concentration Range Detected (ug/m^3)[a]	SCG[b] (ug/m^3)[a]	Frequency of Exceeding SCG
Volatile Organic Compounds (VOCs)	Acetone	ND(28)-89	To determine whether soil vapor or air contains contamination at levels of concern, soil vapor and air samples are compared to values described in the New York State Soil Vapor Intrusion Guidance document.	
	Trichlorofluoromethane	ND(1.4)-2.5		
	Trichlorotrifluoroethane	2.2-34		
	Carbon Disulfide	ND(1.4)-2.4		
	Methylene chloride	ND(1.4)-1.8		
	Methyl tert-butyl ether	3.4-6.0		
	Vinyl acetate	5.9-11		
	2-Butanone	23-28		
	cis-1,2-Dichloroethene	ND(1.4)-2		
	Chloroform	ND(1.4)-14		
	1,1,1-Trichloroethane	ND(1.4)-35		
	Trichloroethene	5.9-110		
	4-Methyl-2-pentanone	2.2-3.0		
	Toluene	88-280		
	Tetrachloroethene	3-47,000		
	Chlorobenzene	ND(1.4)-1.6		
	Ethylbenzene	6.3-9.7		
	m+p-Xylene	16-23		
	Styrene	2.2-3.4		
	o-Xylene	5.2-7.2		
	1,4-Dichlorobenzene	17-23		

TABLE 1
Nature and Extent of Contamination (Continued)
Samples Obtained from November 2002 through April 2004

AIR	Contaminants of Concern	Concentration Range Detected (µg/m³)[a]	SCG[b] (µg/m³)[a]	Frequency of Exceeding SCG
Volatile Organic Compounds (VOCs)	Acetone	26 - 73	To determine whether soil vapor or air contains contamination at levels of concern, soil vapor and air samples are compared to values described in the New York State Soil Vapor Intrusion Guidance document.	
	Carbon disulfide	ND(2.1) - 21		
	Methyl tert-butyl ether	6.1 - 7		
	Vinyl acetate	4.8 - 5.2		
	2-Butanone	3.9 - 5.8		
	Benzene	ND(1.2) - 2.9		
	Toluene	15 - 16		
	Ethylbenzene	ND(2.1) - 4		
	m,p-Xylenes	6.1 - 11		
	Styrene	ND(1.2) - 27		
	o-Xylene	2.2 - 3.6		
	Trichloroethene	ND(1.2) - 290		
	Tetrachloroethene	1.6 - 99		
	1,1,1-Trichloroethane	ND(1.2) - 21		

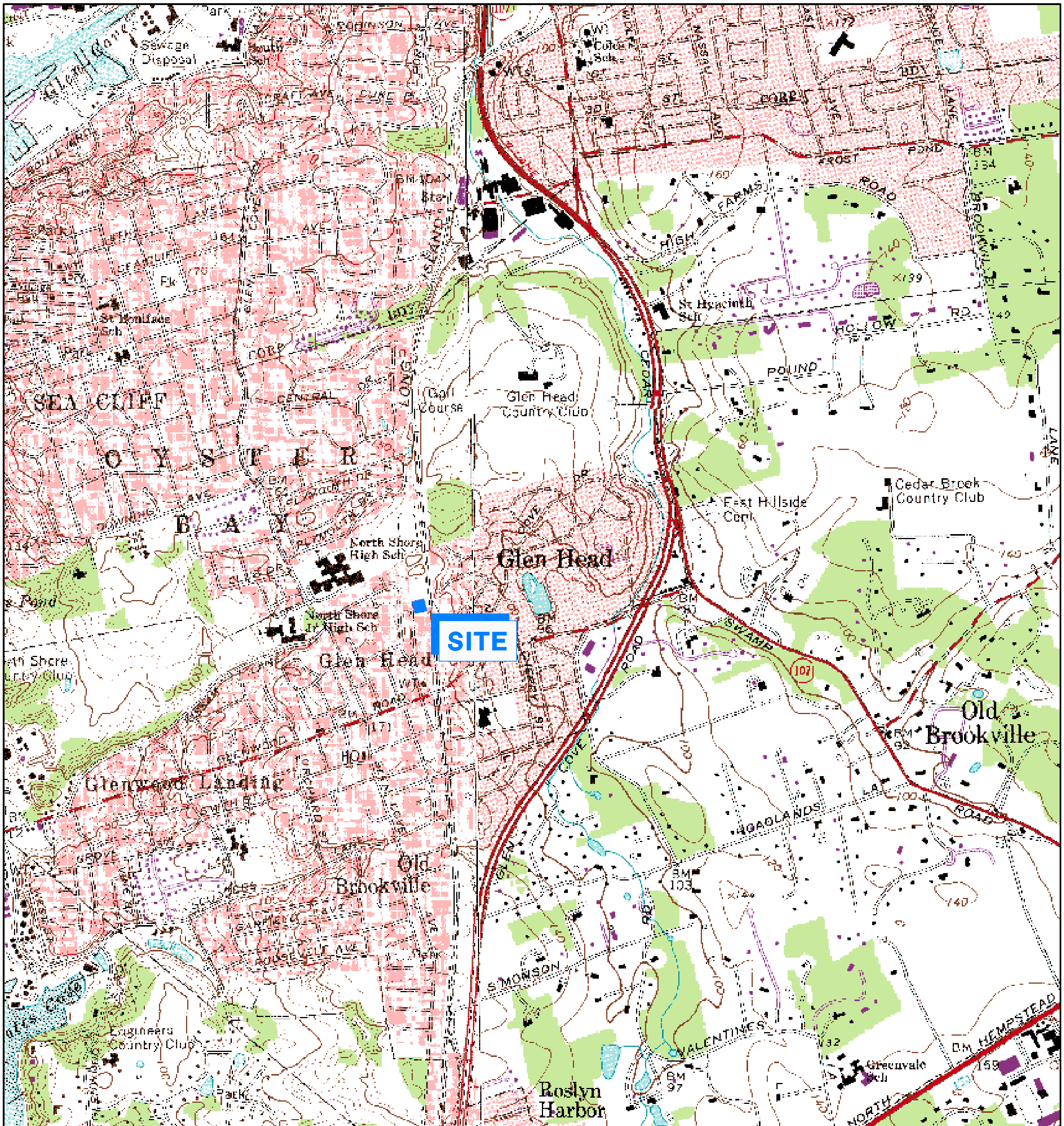
[a] ppb = parts per billion, which is equivalent to micrograms per liter, µg/L, in water;
ppm = parts per million, which is equivalent to milligrams per kilogram, mg/kg, in soil;
ug/m³ = micrograms per cubic meter

[b] SCG = standards, criteria, and guidance values;

ND = Non Detect
NA = Not Applicable
SB = Site Background
TBD = To Be Determined: A program would be implemented during remedial design to determine appropriate site background concentration and, consequently, frequency of exceeding site background, before developing a detailed plan for excavation of soils.

TABLE 2
Remedial Alternative Costs

Remedial Alternative	Capital Cost	Annual OM&M	Total Estimated Cost
Alternative 1: No Action	$0	$1,000	$13,800
Alternative 2: Contaminated Soil Consolidation, Capping & UIC Feature Closure	$454,500	$12,000	$619,700
Alternative 3: Contaminated Soil Excavation, Off-site Disposal and UIC Feature Closure	$504,500	$2,000	$532,000



SOURCE:

USGS HICKSVILLE AND SEA CLIFF, NY QUADRANGLES.

N

0 1000 2000ft

FIGURE 1
SITE LOCATION MAP
TRANSTECHNOLOGY CORPORATION
GLEN HEAD, NEW YORK

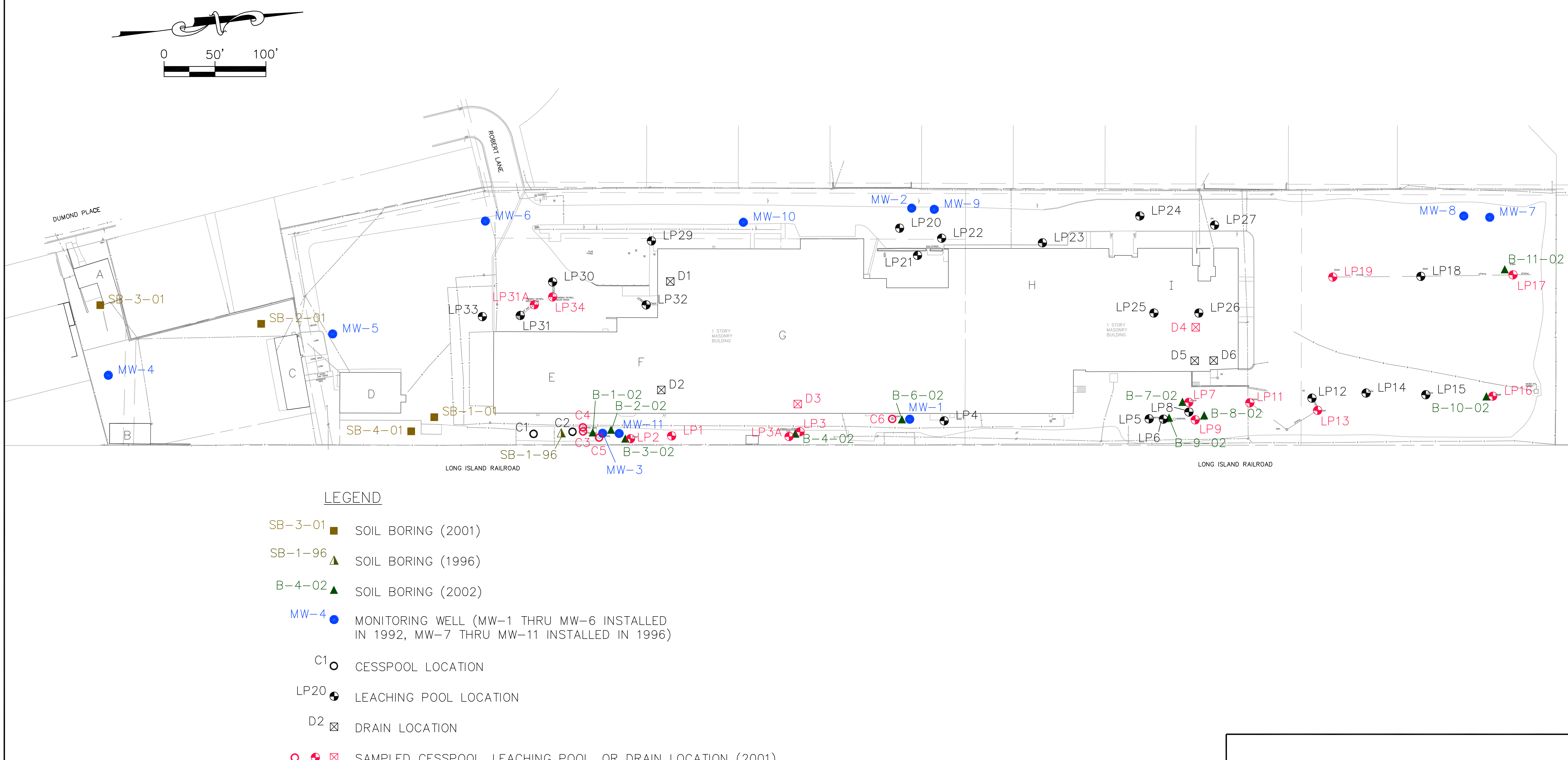
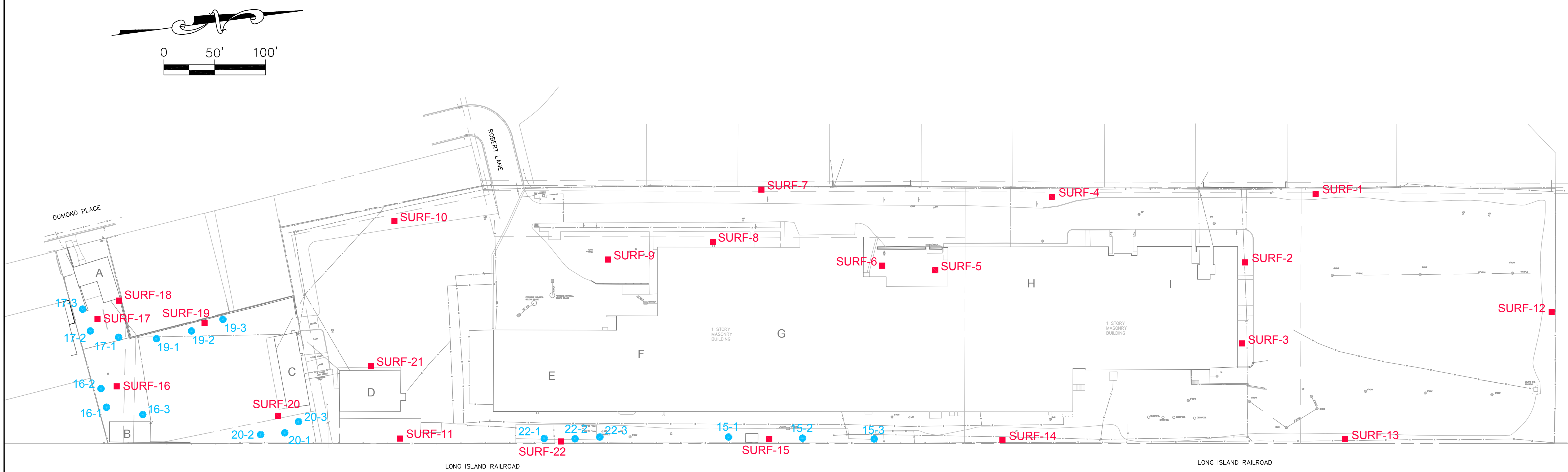


FIGURE 2
HISTORIC SAMPLE LOCATIONS
TRANSTECHNOLOGY CORPORATION
GLEN HEAD, NEW YORK

FIGURE 3
REMEDIAL INVESTIGATION
SOIL BORING SAMPLING LOCATIONS
TRANSTECHNOLOGY CORPORATION
GLEN HEAD, NEW YORK



LEGEND

SURF-11 ■ RI SURFACE SOIL SAMPLE LOCATION

17-3 ● SUPPLEMENTAL RI SOIL SAMPLE LOCATION

FIGURE 4
SURFACE SOIL SAMPLING LOCATIONS
TRANSTECHNOLOGY CORPORATION
GLEN HEAD, NEW YORK

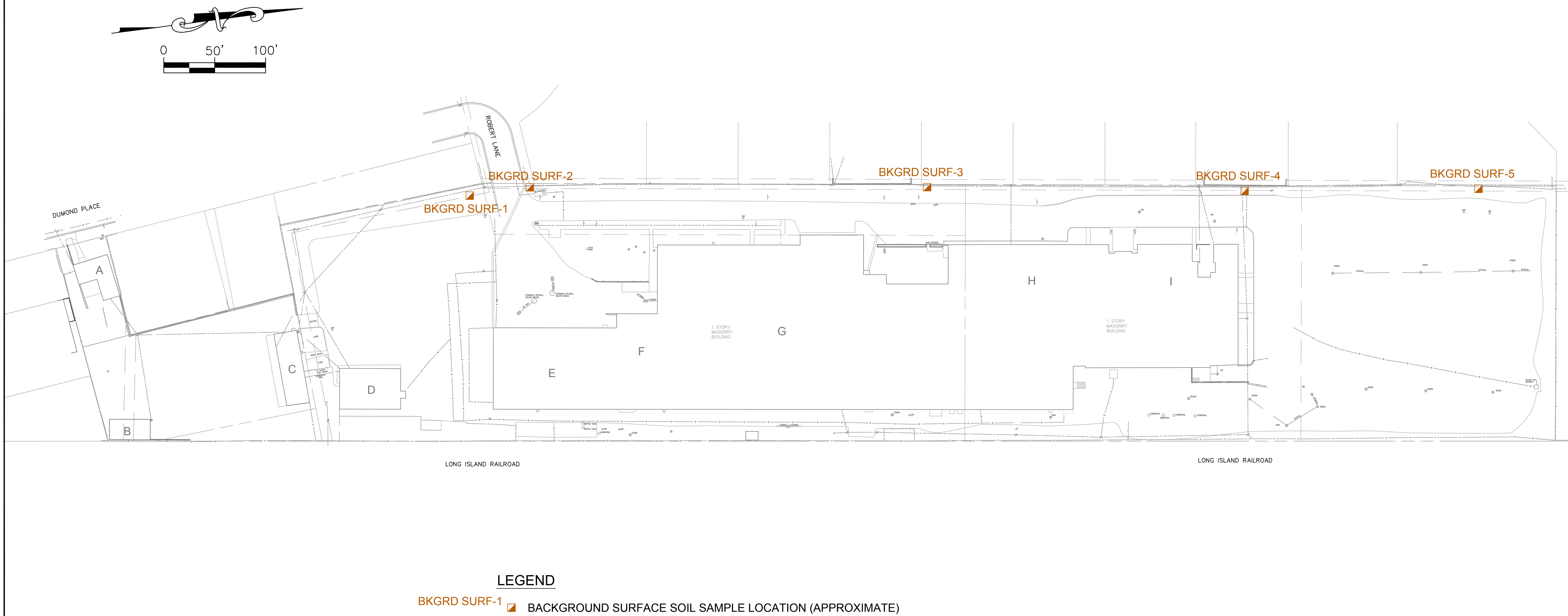
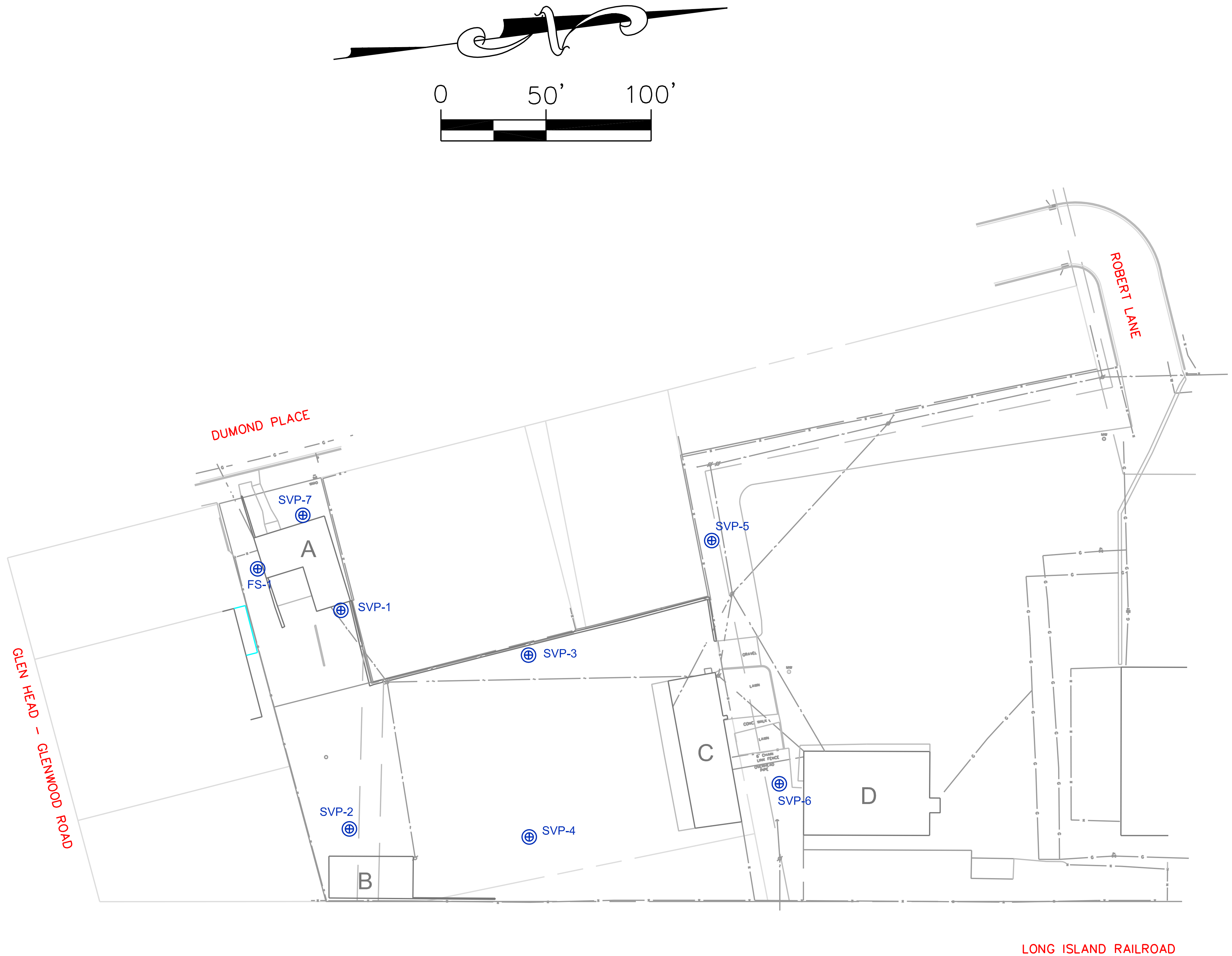


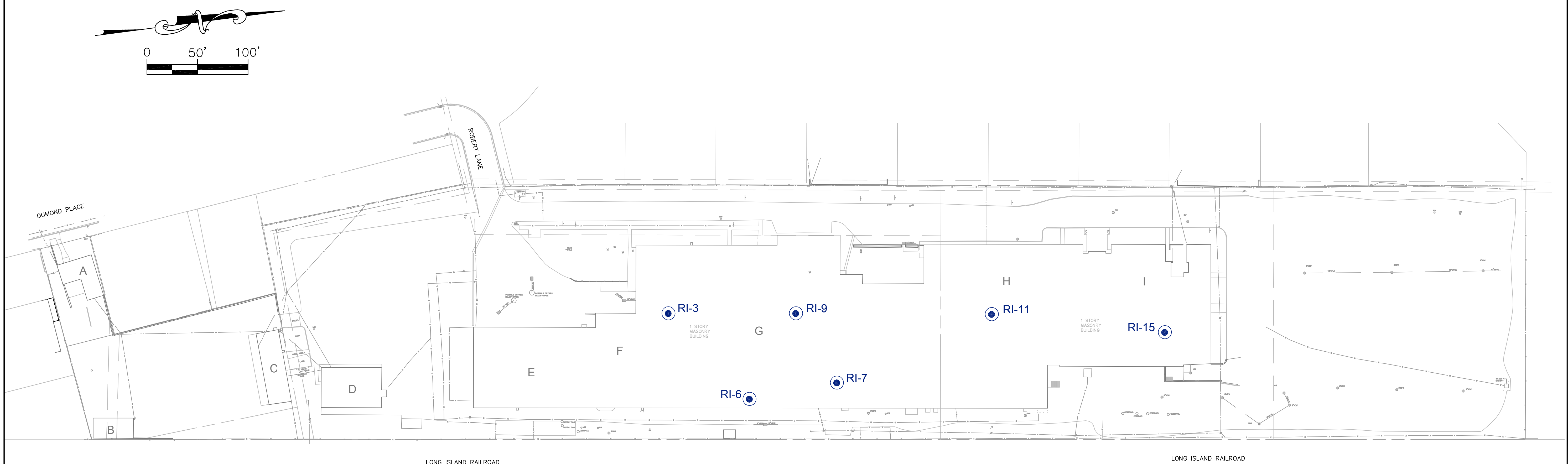
FIGURE 5
BACKGROUND SURFACE SOIL
SAMPLING LOCATIONS
TRANSTECHNOLOGY CORPORATION
GLEN HEAD, NEW YORK



LEGEND

Soil Vapor Monitoring Probe Locations

FIGURE 6
SOIL VAPOR MONITORING PROBES
LOCATED IN THE SOUTH PORTION OF THE SITE
TRANSTECHNOLOGY CORPORATION
GLEN HEAD, NEW YORK



LEGEND

RI-3 ● SOIL VAPOR MONITORING POINT

FIGURE 7
REMEDIAL INVESTIGATION
SOIL VAPOR MONITORING POINTS
TRANSTECHNOLOGY CORPORATION
GLEN HEAD, NEW YORK

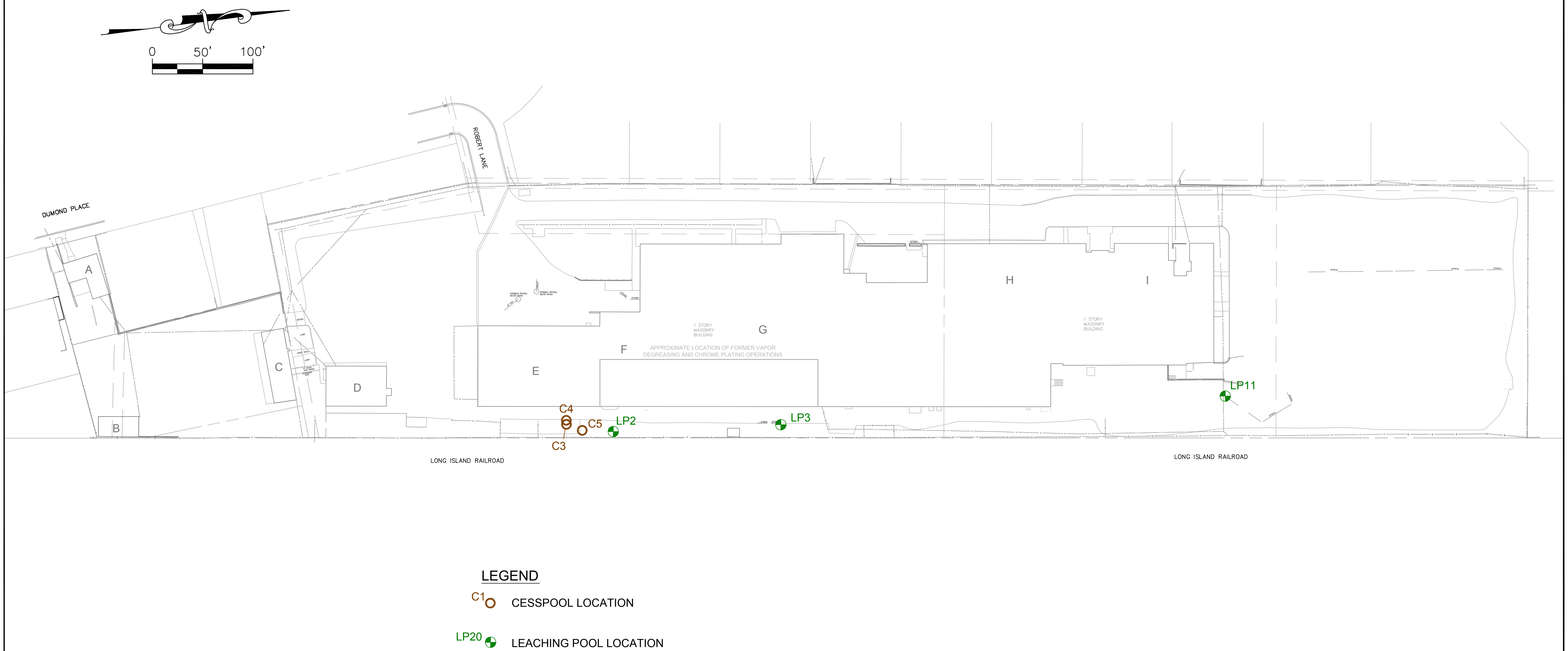


FIGURE 8
UNDERGROUND STRUCTURES REMEDIATED
INTERIM REMEDIAL MEASURES (09/2003)
TRANSTECHNOLOGY CORPORATION
GLEN HEAD, NEW YORK

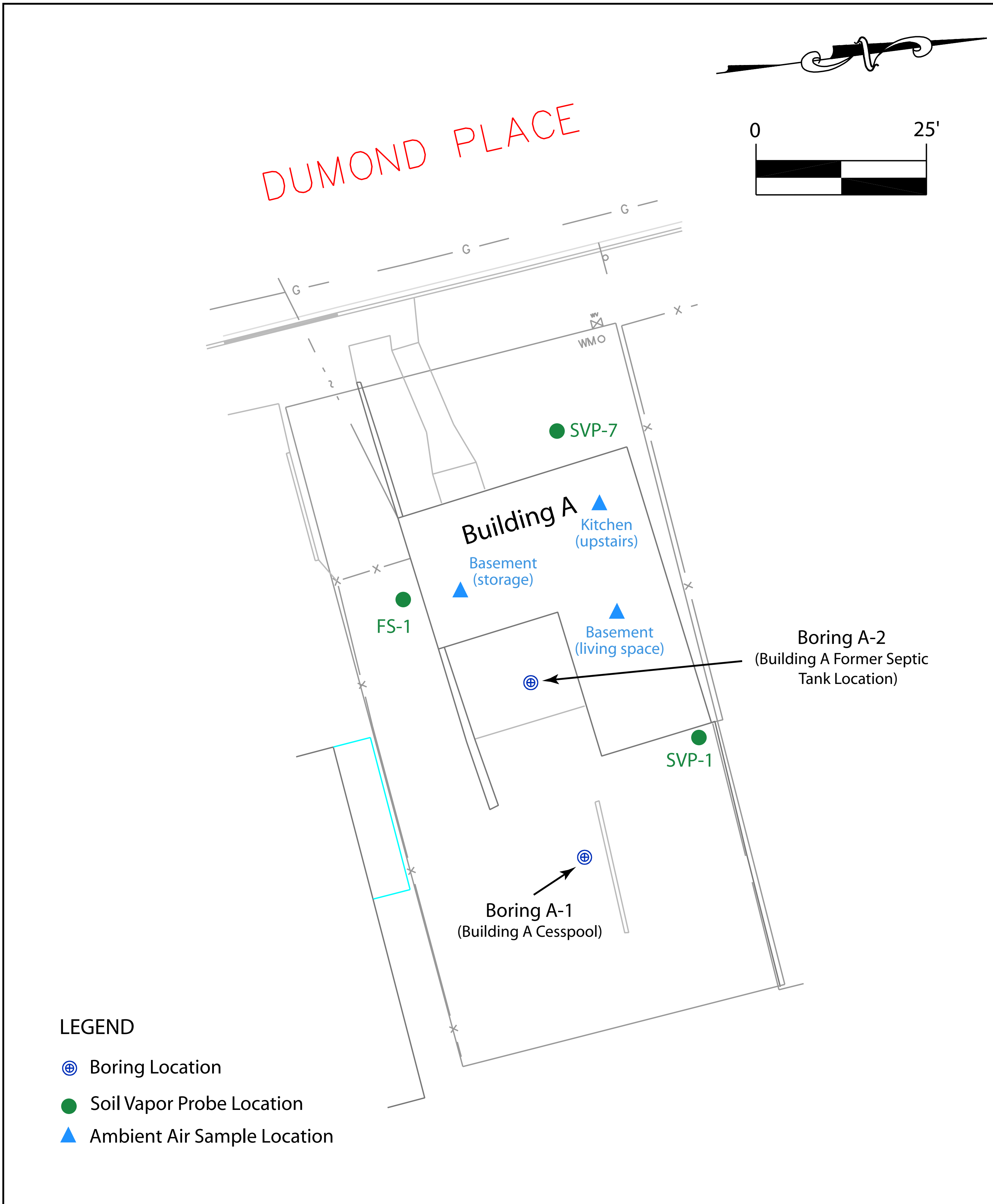
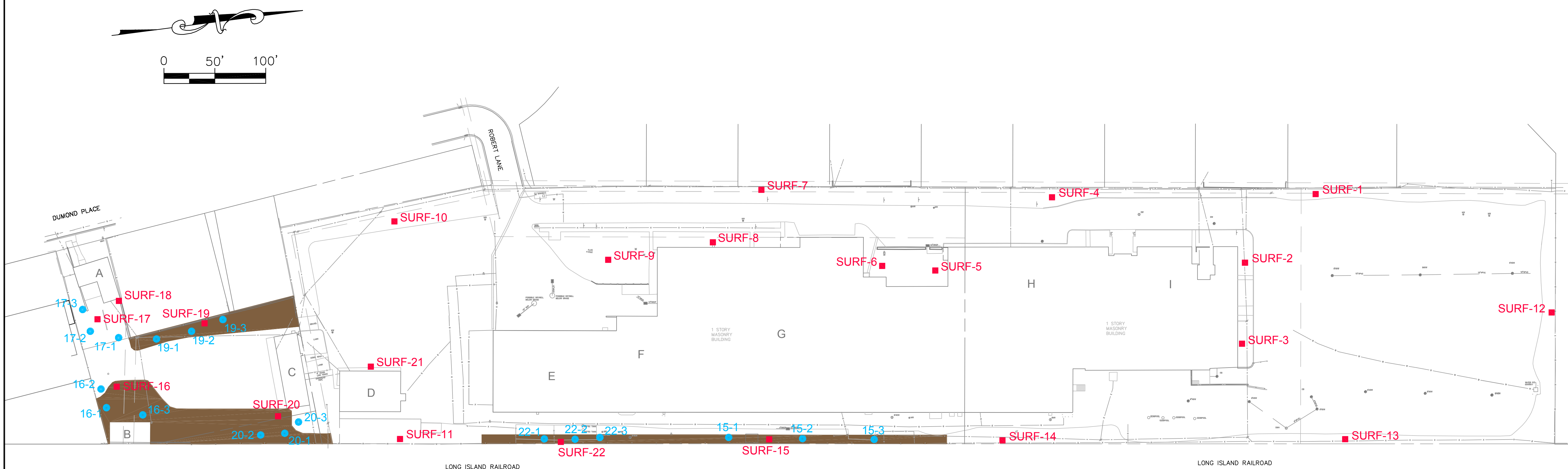


FIGURE 9
BUILDING A SAMPLE LOCATIONS: SUPPLEMENTAL RI
TRANSTECHNOLOGY CORPORATION
GLEN HEAD, NEW YORK



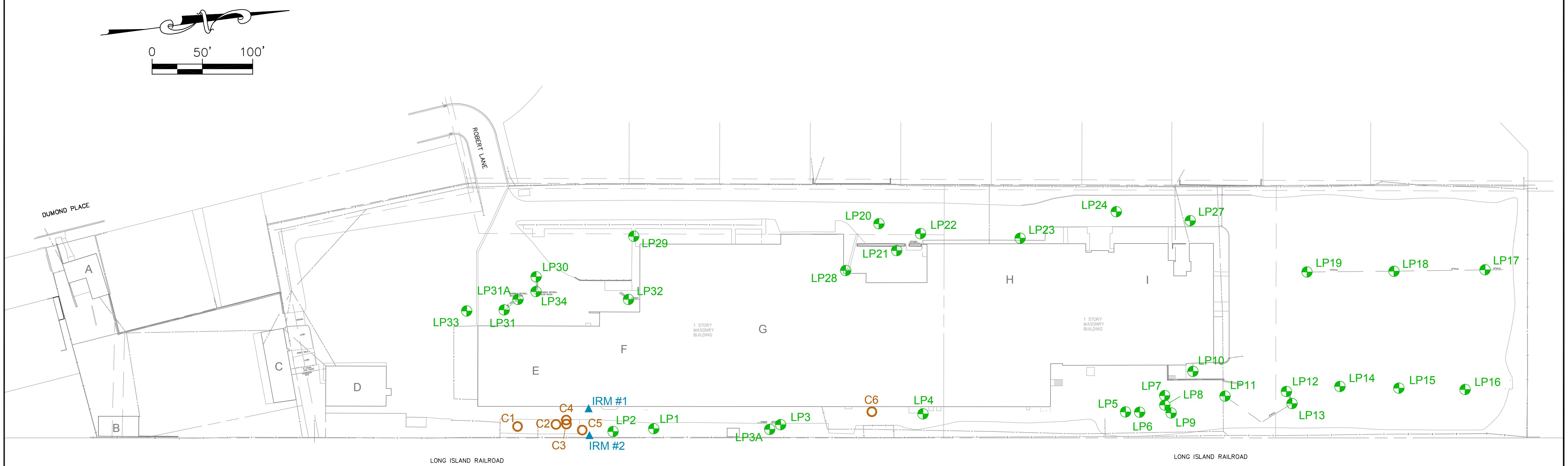
LEGEND

SURF-11 ■ RI SURFACE SOIL SAMPLE LOCATION

17-3 ● SUPPLEMENTAL RI SOIL SAMPLE LOCATION

AREA OF EXCEEDANCE OF SURFACE SOIL CLEANUP OBJECTIVES

FIGURE 10
APPROXIMATE AREAS OF
IMPACTED SURFACE SOILS
TRANSTECHNOLOGY CORPORATION
GLEN HEAD, NEW YORK



LEGEND

C1 CESSPOOL SAMPLE LOCATION

LP20 LEACHING POOL SAMPLE LOCATION

IRM #1 SOIL BORING LOCATION

FIGURE 11
IRM SAMPLING LOCATIONS
TRANSTECHNOLOGY CORPORATION
GLEN HEAD, NEW YORK