Figure 7.5 Former No. 3 gas holder.

Based on these observations, the foundation of the No. 2 gas holder is not believed to retain water, or to significantly influence the migration of groundwater or NAPL.

No. 3 Gas Holder

The No. 3 gas holder was the third of the holders constructed, and the last to use a water seal (as per the plant inventory). Shown in Figure 7.5, the holder was built with a stone and brick foundation extending approximately 10 feet below grade. This foundation, and a 2-foot think concrete floor (from roughly 8 to 10 feet bgs) were completely excavated in NYSEG's 2000-2001 source area removal IRM, described in Section 6 (NYSEG, 2002). Boring SB-201, drilled in the footprint of the holder after the foundation removal, showed silt extending from 11 to 18 feet bgs, indicating that the holder foundation did not penetrate to sand and gravel unit.

In test trenching work completed by NYSEG subsequent to the holder removal, the supervising engineer noted that water level in the gravel used to backfill the excavation appeared elevated above the surrounding water table (personal communication with T. Blazicek, 2002). Mounding in the water table due to this phenomenon is believed to account for the elevated water-level at PZ01-04.

No. 4 Gas Holder

Constructed in 1927, the No. 4 gas holder was the last and by far the largest of the holders used at the site. Shown in an air photo in Figure 7.6, the holder stood 205 feet high (per site inventory). Unlike the older holders, the No. 4 holder was constructed as a tar-seal, piston-style holder, built with a slab on grade. This type of construction did not allow the holder contents to contact groundwater, and did not require a significant reservoir of potentially

Figure 7.6 Former No. 4 gas holder, circa 1960.

impacted water to create a seal at its base. The hydraulic implications of the holder's foundation were discussed above, in Subsection 7.1.4.2, in conjunction with the 66-inch storm sewer, which passes underneath.

7.1.4.4 Buried Walls

Test pits have revealed two remnant walls that are large enough, and still adequately intact, to have potential effects on the migration of groundwater and or NAPL. This subsection discusses the findings relevant to the following features:

- The buried concrete retention wall found parallel to (and slightly west of) the 66-inch storm sewer; and
- The boundary wall on the west and south west property line.

Retention Wall

A buried concrete retention wall (shown on Figure 2) was identified in several test pits excavated during the investigation of the 66-inch storm sewer. The top of the wall was found to be between 3 and 4.5 feet below grade, running for approximately 175 feet parallel (and slightly to the west of) the 66-inch storm sewer. The ends of the wall were uncovered in test pits TP-201 and TP-202. The wall is constructed of concrete, approximately 1 foot thick at the top, and thickening slightly with depth. On the south end, TP-201 uncovered the bottom of the wall, approximately 13 feet below grade and still within the silt unit. On the north end, at TP-202, the wall extended to at least 12 feet below grade.

Because the wall was initially thought to be a remnant of the Brandywine Canal (discussed in Subsection 7.1.4.1), a third test pit, TP-203, was excavated perpendicularly from the wall to search for a suspected second wall which would form the other side of the canal. TP-203 was excavated approximately 45 feet to each side of the retention wall and identified no second wall.

Figure 7.7 Retention basin around oil tanks 6, 5 and 7 looking south (no. 4 gas holder in background).

Further review of the site's historical documentation has shown that the buried wall is likely the eastern portion of a retention basin which once enclosed the oil tanks identified by the numbers 5, 6 and 7 on Figure 2. This wall is visible on the left side of the historical photograph shown in Figure 7.7. Note that, though currently the top of the wall is at least 3 feet below grade, the photograph shows the wall top at the ground surface. This observation is consistent with notes from test pits and boring throughout the western portion of the site, all showing that site grade was raised approximately 3 feet following the MGP closure.

Though the retention-basin wall extends several feet below the water table (which is approximately 10 feet below grade), it does not appear to have a significant effect on groundwater flow.

Western Boundary Wall

In addition to the retention wall, Figure 7.7 shows the western boundary wall, a feature that extends along the property line from the northwest corner to the southwest corner, then turns and runs 200 feet along the southern property line, ending near the Court Street site entrance. Two test pits, TP-209 and TP-210, were excavated down the face of the wall. Both test pits extended 15 feet below grade, but neither found the bottom of the boundary wall.

Both TP-209 and TP-210 were excavated within or near the footprint of the oil tank retention basin pictured in Figure 7.7. Both test pits uncovered foundation remnants between 8 and 10 feet below grade. The foundations may be related to oil tank 7. If so, the locations of the oil tanks shown on Figure 2, which were based on historical Sanborn maps, may be shifted southward slightly. At and below a depth of 8 to 10 feet, the soils were heavily impacted by a thin oily NAPL.

The western boundary coincides, approximately, with the westernmost extent of the silt unit. It appears that the wall forms a cut-off between the elevated water-table associated with the silt found onsite, and the nearly flat-lying water table observed offsite (at MW97-9S, for instance), where the silt is absent. By blocking lateral flow and limiting the possible flow paths from east to west, the wall appears to keep water levels to the east artificially high.

7.1.4.5 Court Street Flood Wall

The flood wall appears to have little potential to affect groundwater or constituent migration[6]. As discussed in Subsection 7.2.3.2, if the wall were relatively impervious to flow, its net effect would be to cause the water behind it to move downward and pass underneath it or, near the ends of the sheeting, to move laterally around the ends. In the case of the former, cross-sectional flow modeling showed that the water passing beneath the wall would discharge near the northern

Figure 7.8 View of the flood wall looking east from the Tompkins Street Bridge.

[6] Except where the flood wall is slotted to allow the BB pipe to pass through (see Subsection 7.1.4.8).

bank of the river, about the same place it would discharge if the wall were not there. In the case of the latter, the western end of the flood wall sheeting does occur near the site, about 100 feet east of the pump house. Water moving around the end of the sheeting would be expected to discharge to the riverbed near this area.

If the sheeting were relatively impervious, mounding of water behind the flood wall might also be expected to occur, though this has not happened to an appreciable degree. Reasons for the lack of groundwater mounding behind the flood wall include leakage through the flood wall (i.e., the sheeting is not impervious), drainage structures behind the flood wall, and the absence of low-permeability materials behind the wall that would prevent water from migrating downward and under the wall. Information regarding the permeability of the flood wall sheet piling is unavailable; however, as-built drawings for a project that involved re-facing, lengthening, heightening, and deepening (by driving sheet piling) the flood wall during the 1940s (contained on the Electronic Attachments CD) do not show formal drainage structures behind the flood wall near the site. Silt was identified in the borings drilled behind the flood wall, but these borings could not be located closer than about 10 feet from the wall. It is possible that some of the silt immediately behind the wall was removed and replaced with more permeable fill when the wall was built. This would allow any groundwater above or in the silt to drain down into the sand and gravel and subsequently under the flood wall.

7.1.4.6 Combined Storm/Sanitary Sewer

In addition to the 66-inch-diameter storm sewer, historic maps indicate that a second sewer passes beneath the flood wall approximately 50 feet to the east (Figure 2). As-built drawings for the flood wall show a 36-inch-diameter, cast iron sanitary sewer with an invert elevation of 830.7 feet AMSL passing beneath the flood wall and into a manhole/control structure, as shown on Figure 2. A 1974 map provided by the city of Binghamton shows this sewer identified as a "combined storm/sanitary facility." The City of Binghamton's sewer department indicated that, after leaving the control structure near the pump house, the sanitary sewer follows the north shore of the river to Susquehanna Street, a distance of approximately 2,000 feet (Brown, Personal Communication with M.K. Cobb, 1998). The best representation of the correct location of the sewer is shown on Figure 2.

The potential for the sanitary sewer to act as a preferential pathway for groundwater and site constituents depends primarily upon the following:

- Depth of the sewer relative to the water table;
- Orientation of the sewer;
- Geologic material(s) surrounding the sewer; and
- Quality of groundwater near the sewer.

Review of flood-wall drawings and environmental data collected during the site investigations, particularly at soil boring SB-109 and monitoring wells MW97-11S and MW97-12S, which appear to be installed very near the sanitary sewer, reveals that:

- The sanitary sewer occurs in the silt unit until it reaches the edge of the unit, near the former bridge abutment, at which point it is inferred to occur in the sand and gravel unit.

- Soil samples collected during drilling at SB-109, MW97-11S and MW97-12S showed no evidence of impacts from the site.

- The invert elevation of the sanitary sewer is approximately 1.5 feet below the river elevations measured at the staff gauge during this investigation.

- Groundwater samples collected from monitoring wells MW97-11S and MW97-12S show little or no evidence of impacts due to dissolved MGP-type wastes.

- Water level measurements from MW97-11S and MW97-12S are in keeping with the local water-table configuration, suggesting that there is no significant preferential drainage along the sewer (see Figure 11).

Through these observations, and assuming the sewer slopes toward the river, it can reasonably be inferred that:

- Where the sanitary sewer occurs in the silt unit, its bedding materials may represent an interval of higher hydraulic conductivity. If this is true, the water-level data suggest that the net effect is minor, and that only a small fraction of groundwater flow may preferentially follow the sewer in the down-slope direction.

- Further downslope along the sanitary sewer, where it occurs in the sand and gravel unit (near the former bridge abutment), the contrast in hydraulic conductivity between the sewer bedding material (if present) and the sand and gravel would be lessened or non-existent, reducing or eliminating the ability of the sewer to act as a preferential pathway for groundwater. Given the proximity of the sewer to the river at this point (approximately 10 feet), and the relatively high hydraulic conductivity of the sand and gravel unit, groundwater preferentially flowing along the sewer in the silt unit (if any), would be expected to drain to the river within a short distance.

- The low hydraulic conductivity of the silt suggests that the quantity of water that might be drained by the sanitary sewer bedding (if any) would be relatively small.

- Water-quality data from samples collected from MW97-11S and MW97-12S suggest that water preferentially following the sanitary sewer (if any) would not contain elevated levels of site-related constituents, except possibly benzene, which was detected in the groundwater sample collected from MW97-11S at an estimated concentration of 4 µg/L.

7.1.4.7 Municipal Water Lines beneath Court Street

BBL's discussions with City of Binghamton personnel revealed that there are two water lines beneath Court Street, one 24 inches in diameter, the other 20 inches in diameter. The lines run parallel to the street and are located near, or just south of its centerline. The depths to the top of the lines are 5.5 feet and 5.75 feet, respectively, making the depth to the bottom of the lines about 7.5 to 8 feet. Based on the water-table elevation contour map prepared for the site (Figure 11) and an approximate grade elevation of Court Street of 845 feet AMSL, the bottom of these lines was approximately 5 feet above the water table at the time the water levels were measured (October 2, 2001). Seasonal fluctuations in the water table are unlikely to raise the zone of saturation to the level of the water-lines; therefore the lines cannot act as preferential pathways for groundwater flow.

7.1.4.8 24-inch, "BB", and "E" pipes

These three pipes, which are shown on Figure 2, pass through the same general area of the flood wall. Tracing performed by BBL found that the pipes run northward from the flood wall and pass beneath the BMH warehouse. The 24-inch pipe is the only pipe that was identified on the opposite (north) side of the warehouse, and appeared to continue northward under nearby railroad tracks. The purpose of the 24-inch pipe and "E" pipe (an 18-inch cast iron pipe) is unknown, but BBL found that they did not flow after a heavy rain storm, and that the 24-inch pipe was nearly plugged with sediment. The sediment had no coal-tar-like odors or discoloration and was found to contain no BTEX and only relatively low levels of PAHs (Table 16). BBL removed the sediment plugging the end of the 24-inch pipe and attempted to teleview it, but encountered another sediment plug about 15 feet from its end, precluding further viewing. Based on this information, discharge from the 24-inch and E pipes is not considered a likely source of site-related constituents to the river.

Similarly, the outsides of these two pipes are not considered likely preferential pathways. Although NAPL is present behind the flood wall at this location, it occurs beneath these pipes, in the sand-and-gravel unit (Figure 8). The 24-inch and E pipes are bedded in the overlying silt unit, and at the time that they were investigated, occurred above the water table. As shown on Figure 8, the top of the sheeting in this area is coincident with the bottom of the 24-inch pipe. Although not shown on the figure, this is also the case with the E pipe (information regarding the sheeting and pipe elevations can be found on the flood wall drawings contained on the Electronic Attachments CD). If there are times when the water table reaches the 24-inch and E pipes, some seepage of water or NAPL could occur along joints in the concrete wall above the sheeting. Indeed, minor staining (but no seepage) was noted in a few of the joints in this area. The staining did not occur more than several inches above the invert of the 24-inch pipe. Based on this information, BBL infers that such discharge is relatively insignificant. Additionally, it does not appear that the 24-inch and E pipes pass through areas containing NAPL farther back from the flood wall. Figure 8 includes information for monitoring well MW-15S, which is located between the 24-inch and BB pipes, about 100 feet back from the wall. This information shows that NAPL occurred only at the top of the sand and gravel, at an elevation of approximately 827 feet AMSL, below the elevation of the 24-inch pipe and E pipe inverts. Because these two pipes are bedded in the silt, and are therefore above the NAPL, migration of NAPL along the outside of them does not appear possible. The silt at MW98-15S did exhibit petroleum-like (rather than coal-tar-like) odors; however, this is inferred to be related to the petroleum-related NAPL identified upgradient of MW98-15S, beneath the BMH warehouse.

The BB pipe has the potential to act as a preferential pathway. This pipe, which is a 10-inch diameter former water intake for the MGP, is the only pipe of the three that is perennially below the water table. More importantly, the wall's sheet piling was slotted to avoid the pipe, leaving a gap in the sheeting. The result of this is that the groundwater and NAPL that are present in the sand-and-gravel unit behind the flood wall at this location may preferentially be drawn to and pass through this gap in the sheeting, subsequently discharging to the Susquehanna River's bed near the shoreline. BBL identified the end of the BB pipe, which emerges from the riverbed about 20 feet from the shore, but identified no water flow out of it.

The area around these three pipes is the only location where NAPL was identified behind the flood wall. Because NAPL does not accumulate in piezometer PZ01-02, which is screened across this NAPL-containing interval, NAPL does not appear to be pooled behind the flood wall. Possible reasons for this include:

- The NAPL in this area is above residual saturation, but is not accumulating behind the flood wall because it has an avenue for escape (e.g., the slot in the sheeting at the BB pipe), or

- The NAPL in this area is at residual saturation. NAPL at residual saturation is by definition immobile so would not accumulate over time.

7.2 Groundwater Flow

7.2.1 Regional Groundwater Flow

The hydrogeology of the Susquehanna River Valley in the region has been the subject of considerable study. Detailed studies of the hydrogeology of the valley-fill aquifer in the region have been performed by Randall (1977 and 1978), Holecek, et al. (1982), and MacNish and Randall (1983). Ku, et al. (1975) studied stream flow in the region and its effect upon groundwater recharge, Randall (1986) and Wolcott and Coon (2002) developed finite-difference aquifer models for the region. The following discussion of regional groundwater flow is based upon these studies.

Groundwater in the sediments overlying bedrock in the Susquehanna River Valley near Binghamton is derived principally from infiltration of precipitation falling on the land and infiltration of water through the beds of tributary streams (Ku, et al., 1975). Most of the rain and snowmelt in areas of the valley where sand and gravel occur at the surface infiltrates the soil; while only a small percentage of rain or snowmelt infiltrates the top foot or two of soils on the surrounding hills bordering the valley (Ku, et al., 1975; MacNish and Randall, 1983). Tributary streams have been shown to be important sources of recharge in valleys in the region (Miller and Randall, 1991). Typically, these streams originate in uplands and lose considerable amounts of water as they flow across stratified drift of the valley floor. A small but steady flow of groundwater likely moves through the bedrock and till from upland areas toward the river valley and into the sediments.

As soon as infiltrating water reaches the water table, it begins to move toward areas of discharge. In the Susquehanna River Valley near Binghamton, the major discharge areas are the Susquehanna and Chenango Rivers. The majority of groundwater flow in the valley is interpreted to occur through stratified-drift (sand and gravel) aquifers, due to their relatively high hydraulic conductivity, large thickness, and considerable areal extent. Lesser amounts of groundwater move through silt and clay deposits, till, and bedrock.

7.2.2 Site Groundwater Flow

Groundwater flow at the site was evaluated using the following information:

- Regional hydrogeologic information (presented above).

- Water-level data collected at available monitoring wells and piezometers located at and near the site, and staff gauge SG-2, located along the Susquehanna River (Figure 2). The most comprehensive round of water-level data was collected October 2, 2001. These data and two prior rounds (December 22 and 23, 1997 and February 11, 1998) are presented on Table 2.

- Conceptual-level areal and cross-sectional groundwater flow models developed as part of this investigation.

To aid interpretation of site groundwater flow, potentiometric surface maps for the water table (Figure 11) and sand-and-gravel unit (Figure 12) were prepared using the October 2, 2001 groundwater elevation data set.

7.2.2.1 Shallow Groundwater Occurrence and Flow

The water table near the site occurs either in the fill unit, the silt unit, or the sand and gravel unit, depending on the area of the site. The water table is illustrated on Figure 11. Note that the boundaries of the silt unit are superimposed on the water table. The fact that the water table occurs in the fill unit onsite is likely the result of the relatively low vertical hydraulic conductivity of the silt unit, which retards infiltration, and results in groundwater being mounded beneath most of the site. This condition also suggests that the water in the fill unit is derived from infiltration of precipitation that falls on the site. In areas where the silt unit is absent, to the east and west of the site, the water table occurs in the sand and gravel unit (e.g., at MW97-9S, MW97-14S, and B-1).

Several important observations regarding shallow groundwater flow can be made from the water-table depicted on Figure 11:

- East and west of the site, where the water table occurs in the sand and gravel unit, groundwater flows toward the Susquehanna River. The horizontal gradient in the sand and gravel is slight, with a maximum relief of just over 1 foot observed in the site monitoring wells.

- Where the water table occurs in or above the silt unit, lateral flow directions are radial from the apex of a mound near the center of the site. Gradients here are much higher, with approximately 7 feet of relief.

- The water table is not affected by the portions of the 66-inch-diameter storm sewer found north of the No. 4 gas holder (see Subsection 7.1.4.2).

- The foundation of the No. 4 gas holder forms a barrier to shallow groundwater flow (see Subsection 7.1.4.2).

- South of the No. 4 gas holder, where the 66-inch storm sewer emerges from underneath the gas holder, an area of permeable fill materials creates a hydraulic low, and a potential preferential pathway for migration to the Susquehanna River (see Subsection 7.1.4.2).

- Preferentially permeable fill materials emplaced after removal of the No. 3 gas holder foundation may create localized mounding, visible in the arcuate deflection of the water-table contours seen in central western portion of the site (see Subsection 7.1.4.3).

- The western boundary wall (discussed in Subsection 7.1.4.4), may form a cut-off between the elevated water-table associated with the silt found onsite, and the nearly flat-lying water table observed where silt is absent offsite.

- Groundwater is not significantly mounded behind the Court Street flood wall (discussed in Subsection 7.1.4.5), though it may inhibit some direct discharge to the Susquehanna River. The wall may promote lateral flow to the east or west toward areas of preferential discharge (e.g., at the 66-inch storm sewer, or where the silt is absent east of PZ01-02).

Contrasting the water table figure with the potentiometric surface map of the underlying sand and gravel (Figure 12), shows significant downward gradient where the water table is mounded above the silt unit. Where the silt is absent (e.g., at MW01-17) the vertical gradient is much less pronounced (and also reversed). The extremely low vertical conductivity of the silt, which creates the mounding affect, also produces strong vertical gradients. By contrast, the high permeability of the sand and gravel prevents large pressure differentials from forming.

Based on the above observations and Figure 7, the following statements regarding shallow groundwater flow can be made:

- The majority of shallow groundwater at the site moves radially away from the center of the groundwater mound located near the center of the site, then spills off the edge of the silt unit into the sand and gravel aquifer. Once in the sand and gravel aquifer, groundwater flows to the river.

- A portion of the shallow groundwater may be collected by a preferential drainage found along the southern section of the 66-inch-diameter storm sewer (near PZ01-06) and routed to the Susquehanna River.

- Groundwater is not mounded considerably behind the flood wall. Subsection 7.1.4.5 provides details about the potential affects of the flood wall on groundwater flow.

- A fraction of the shallow groundwater seeps vertically through the silt unit into the sand and gravel unit.

7.2.2.2 Groundwater Occurrence and Flow in the Sand-and-Gravel Unit

Groundwater flowing in the sand and gravel unit beneath the site is derived primarily from three sources:

- Flow onto the site from upgradient sources;
- Water in the fill unit onsite that spills off the edge of or leaks through the silt unit (i.e., recharge); and
- Water that seeps into the sand and gravel unit from the bedrock/till unit beneath the site.

The majority of the water flowing beneath the site is likely derived from upgradient sources, given the site's relatively small surface area (and therefore low potential for recharge), and the presumed small contribution from the bedrock/till unit (although the amount of water discharging to the sand and gravel unit from the bedrock/till unit is difficult to quantify, it is described qualitatively by Randall (1986) to be "small [but] continuous"). In contrast, the areal model developed for the site as a part of the Phase I SRI, which is described in detail in the following subsection, has estimated the flux of groundwater in the sand and gravel unit beneath the site to be approximately 200 gpm.

Groundwater head measurements collected from well pairs located in areas where the water table occurs in the sand and gravel (MW97-9 and MW97-14) are essentially identical, indicating that groundwater flow in the sand and gravel unit at these locations is horizontal.

Figure 9 presents the potentiometric surface of the sand and gravel unit, using the October 2, 2001 data set. Review of the figure reveals the following about the unit:

- Groundwater flow in the sand and gravel unit is directed toward the river;

- The hydraulic gradient across the site is slight, approximately 0.003 ft/ft; and

- The average rate at which groundwater moves in the sand and gravel unit beneath the site, known as the average linear velocity (Fetter, 1988) is calculated to be approximately 3 ft/d using a k value of 328 ft/d, the hydraulic gradient presented above, and an effective porosity (n_e) of 30 percent (calculated based on an average moisture content of 14 percent for two samples of the unit that were analyzed for moisture content [Data area available on the Electronic Attachments CD]).

Table 7.10 Vertical Gradients from Water Table

Well Pair	Groundwater elevation at well pair members (ft. AMSL)		Vertical Gradient	Change (ft.)	Relationship
	Shallow	Deep			
MW93-2	838.29	831.47	Down	6.82	Silt to lower sand and gravel
MW97-10	835.67	831.59	Down	4.08	Silt to lower sand and gravel
MW01-9	831.87	831.68	Up	0.01	Upper to lower sand and gravel
MW01-17	831.75	831.86	Up	0.11	Upper to lower sand and gravel

Data collected October 2, 2001 (see Table 2).

As noted in Subsection 7.2.2.1, and demonstrated in Table 7.10 there is a weak upward vertical gradient within the sand and gravel. This gradient is not inferred to have a significant affect on groundwater flow beneath the site. BBL also measured the vertical gradient beneath the river using a temporary well installed at the base of the sand and gravel at the SR-102 riverbed-boring location. After allowing the well to equilibrate overnight, BBL measured the depth to water in the well, and the depth to the river surface from the top of the temporary well's casing. These measurements, obtained on August 23, 2001, indicate an upward vertical gradient of 0.22 ft/ft. This gradient measurement confirms that water in the sand-and-gravel unit discharges to the river. As expected, the magnitude of the vertical gradient in the sand and gravel increases with proximity to the river. This phenomenon is demonstrated in the groundwater flow models discussed in the Subsection 7.2.3.

As mentioned above, the sand-and-gravel unit beneath the site belongs to a much larger aquifer system encompassing much of the Susquehanna River valley in the region. This aquifer is designated the Clinton Street Ballpark Sole Source Aquifer (USEPA, 2002). While the City of Binghamton obtains its water directly from the Susquehanna River, some adjacent communities rely on groundwater pumped from this aquifer. Given the site's proximity to the river, and a groundwater flow regime in which all water discharges to the river, the areal extent of the aquifer downgradient of the site is limited to the width of Court Street.

7.2.2.3 Groundwater Occurrence and Flow in the Bedrock and Till

The low permeability of the bedrock and till units give them a very minor role in the occurrence and flow of groundwater at the site. This assessment was confirmed with two bedrock monitoring wells installed during the Phase II SRI:

- MW01-07R was installed adjacent to MW97-7S. Water levels measured from this well pair show an upward gradient, with a 0.62 foot differential.

- MW01-03R was installed adjacent to MW93-3D. Water levels measured from this well pair show an upward gradient, with a 0.81 foot differential.

As discussed in the groundwater flow modeling subsection below, groundwater in the bedrock is inferred to originate in the uplands and valley walls where bedrock is found near the ground surface, and a significant downward gradient is presumed to exist. Because the Court Street site is adjacent to a regional groundwater discharge point (e.g., the Susquehanna River), the principal flow direction of groundwater in the bedrock at the site must be upward through the till. Due to extremely low permeability of the till, the net flow is believed to be extremely small with respect to the volume of water flowing in the sand and gravel aquifer.

7.2.3 Groundwater-Flow Modeling

To develop a better understanding of groundwater flow in the sand and gravel unit, including the effect of the flood wall on groundwater flow and the relationship between the unit and the river, BBL developed two groundwater-flow models: a two-dimensional, analytical-element-method (AEM) areal model, and a cross-sectional finite-element model. The modeling program used to generate the areal model was TWODAN™ (Fitts, 1995); the program used to produce the cross-sectional model was FLONET™ (Waterloo Hydrogeologic, Inc., 1997). Details concerning the construction, calibration, and sensitivity of the models are presented in Appendix B.

7.2.3.1 Areal Model

The areal model was used to estimate the rate of groundwater discharge to the river from the sand and gravel unit beneath the site, and to provide an estimate of hydraulic head in areas of sparse data to aid construction of the cross-sectional model. Data on flood-wall construction gathered during this investigation showed that the flood wall sheet piling did not fully penetrate the sand and gravel unit; making the two-dimensional areal model inappropriate for assessing its effects on groundwater flow. The effects of the flood wall were examined using the cross-sectional model (described below).

The results of model calibration performed (Appendix B) demonstrated that the model was capable of producing field-measured heads within acceptable limits of error both near, and across the river from the site. Figure B-1 of Appendix B shows the model-produced equipotential contours. The results of the sensitivity analysis showed that the model is more sensitive to changes in hydraulic conductivity than to changes in recharge. Increasing or decreasing the hydraulic conductivity one order of magnitude results in a concomitant increase or decrease in discharge to the river by approximately the same factor. Increasing or decreasing the recharge by an order of magnitude resulted in an increase or decrease in discharge to the river by a factor of approximately 1.4, as shown in Table B-1 of Appendix B.

The rate of groundwater discharge to the river along the length of the site (approximately 450 feet) was estimated by the model to be 0.46 cubic feet per second (cfs), or 205 gpm. Comparison of this estimate with the average flow of the Susquehanna River upstream of the site at Conklin, New York, (3,586 cfs, which is based on 96 years of measurements), shows that the quantity of water discharging to the river from the sand and gravel unit beneath the site is relatively insignificant, representing approximately 0.01 percent of the total flow of the river and a dilution ratio of approximately 8,000:1.

7.2.3.2 Cross-Sectional Model

BBL used the cross-sectional model to investigate the effects of the flood wall on groundwater flow, and to examine the distribution of regional groundwater discharge to the river. Figure B-3 of Appendix B shows the distribution of hydrostratigraphic units and model boundary conditions used in the model.

The results of model calibration performed (Appendix B) demonstrated that the model was capable of producing field-measured heads within acceptable limits of error at the site.

To add a measure of conservatism to the model, the flood wall was considered to be a relatively effective barrier to groundwater flow (i.e., it was assigned a low value of hydraulic conductivity [See Appendix B]). This assumption is conservative because a relatively impervious flood wall would have a more dramatic influence on groundwater flow conditions than a flood wall that was relatively transparent to groundwater flow.

Figure B-4 of Appendix B depicts the model output in terms of equipotential contours and streamlines. The figure shows the following:

- The simulated flood wall does not cause groundwater to mound behind it appreciably; rather, groundwater is diverted under the flood wall and discharges to the river near the shoreline, as it would be expected to do in the absence of the flood wall.

- The majority of groundwater flow beneath the site occurs through the sand and gravel unit.

- The rate of groundwater discharge to the river is estimated by the model to be 0.17 cfs (80 gpm). This value is considered reasonably close to the value of 0.46 cfs estimated by the areal model described in the previous section, which constitutes approximately 0.01 percent of the total average flow of the river.

- Groundwater flowing through the sand and gravel unit discharges along a portion of the river bottom that extends approximately to the center of the river.

7.2.4 Summary of Groundwater Flow

Using available regional hydrogeologic information and the understanding of site hydrostratigraphic units described in Subsection 4.2.1.2, the following summarizes groundwater flow at the site:

- The majority of groundwater flow beneath the site occurs in the sand and gravel unit and originates upgradient of the site.

- Groundwater in the fill unit is derived from infiltration of precipitation falling on the site. The quantity of water in the fill unit is relatively small.

- The occurrence of groundwater in the fill is likely the result of the low vertical hydraulic conductivity of the underlying silt unit, which restricts infiltration.

- A small quantity of groundwater discharges from the bedrock/till unit to the overlying sand and gravel unit.

- Groundwater in all of the hydrostratigraphic units identified discharges to the Susquehanna River.

7.3 NAPL Evaluation

Due to their immiscible nature, NAPLs can persist for many years in the subsurface environment, where they act as continuing sources of constituents to groundwater as they slowly dissolve. This is particularly true with DNAPLs, which tend to migrate below the water table, rather than float on top of it. NAPLs can also diffuse into low-permeability zones, such as silt or clay layers, which then also act as a continuing source of constituents to groundwater. For these reasons, characterizing the nature and extent of NAPLs at sites such as the Court Street site, where a considerable volume of NAPL is present in the subsurface and where there are potential off-site sources of non-MGP NAPL, is an important, challenging component of a remedial investigation.

7.3.1 NAPL Characterization

To characterize NAPLs at the site, BBL used two approaches. The first approach, referred to as "source evaluation", entailed reviewing chromatograms and analytical results for samples believed to contain, or in the case of groundwater, samples that have moved through areas containing NAPL. This source evaluation provided information about the potential origin of the NAPL, including whether or not NAPL in a given sample was likely site related. The second approach consisted of collecting and analyzing samples of NAPL that accumulated in monitoring wells or piezometers to characterize important physical properties of free-phase NAPLs.

BBL's PAH forensic specialist performed the source evaluation on a subset of NAPL-containing samples[7] by examining the total-ion-current (TIC) chromatograms generated from Method 8270 and using diagnostic ratios of selected target PAHs to describe compositional characteristics of the several candidate sources. To provide an impartial evaluation, the specialist was given only the laboratory results and did not know where within the former MGP the samples were located or any details about the MGP's operational history.

The source evaluation was able to identify whether the NAPL in a sample had the characteristics of:

- Coal tar, including whether the NAPL had the characteristics of high-temperature or low-temperature processes (useful in differentiating sources of NAPL within the plant).

- Petroleum, including whether the NAPL had the characteristics of kerosene-range products, diesel/No. 2 fuel-oil range products, or lubricating/waste oils.

- A mixture of coal tar NAPL and petroleum products.

A more detailed discussion of the source evaluation is contained in Subsection 8.4.1.3.

[7] Including a groundwater sample from a well screened across a sheen-containing interval of soil.

Table 7.11 Forensic Source-Evaluation Results

Sample I.D.	Depth (ft.)	Matrix	Location	Coal Tar Characteristics		Petroleum Characteristics		
				High Temp.	Low Temp.	Kero-sene	Diesel	Lube/ Waste
TB-02	10-14	Soil	Onsite with former oil tank area		ü			
TP-07	5	Soil	Onsite with former oil tank area		ü			
MW01-07R	20-22	Soil	Southwest of site within former filling station			ü		
SB-4	12-14	Soil	Onsite within plant operations area		ü			
SB-5	4-6	Soil	Onsite within plant operations area	ü				
SB-6	4-6	Soil	Onsite within plant operations area		ü			
SB-101	15-17	Soil	Northeast site corner			ü	ü	
TW97-3S	19*	Water	Railroad Tracks north of site				ü	ü

* Depth is to middle of well screen. Sample locations are shown on Figure 2.

Table 7.11 summarizes the evaluation's findings. The table shows that NAPL-containing samples collected on-site appear to be site-related, while samples collected north and east of the site, including beneath the BMH warehouse, are likely petroleum related.

BBL characterized the physical and chemical properties of site-derived NAPLs by collecting and analyzing two samples, one from each monitoring point where a sufficient quantity accumulated. The first sample was collected from former well MW97-13S on October 13, 1997, and the second sample from piezometer PZ01-06 on January 28, 2002. Both samples were DNAPLs and were analyzed for a suite of physical properties consisting of density (ASTM D-1481), viscosity (ASTM D-445), and interfacial tension with water (ASTM D-971). The sample from MW97-13S was also analyzed for TCL VOCs, SVOCs, TAL inorganics, and cyanide. Table 7.12 summarizes the results of the physical analyses. Table 6 summarizes the results of the chemical analyses.

Table 7.12 DNAPL Physical Properties

NAPL Sample	Measurement Temperature (°C)	Density (g/mL)	Dynamic Viscosity (cP)	Kinematic Viscosity (cSt)	Interfacial Tension (dyne/cm)
MW-13S	10	1.082	237	219	25*
PZ01-06	12	1.074	1030	959	21.9

Notes:
cP = Centipoise, cSt = Centistokes.
* Interfacial tension for this sample was measured at 22 °C.

An additional laboratory analysis was performed on the sample collected from MW97-13S to determine the wettability of the NAPL by the soil imbibition method. The analysis found that the NAPL was non-wetting with respect to groundwater on a sample of silt collected at the site. This means that groundwater has a greater affinity for the silt than the NAPL and will tend to coat the silt and occupy the smaller, more constricted pore openings. Conversely, the NAPL will preferentially occupy the larger pore openings in the silt.

Based on the analytical results of the samples described above, the DNAPL can be characterized as a highly viscous, moderately dense DNAPL that would preferentially migrate through the largest pore spaces and would be relatively difficult to mobilize where present in pools. DNAPL migration is discussed in greater detail in Subsection 7.3.4.

LNAPL has been identified in trace amounts in two piezometers, PZ01-02 and PZ01-04; however, not in a sufficient quantity to sample. Based on the results of the source evaluation, the NAPL identified near and beneath the BMH building may also be an LNAPL, though it occurs below the water table. The conceptual model provided in Section 10 offers a possible explanation for this observation.

To provide insight on the chemical composition of the DNAPL, BBL computed mass fractions for the individual analytes detected (Table 12). The table shows that VOCs (BTEX) comprised approximately 77 percent of the detected compounds, SVOCs comprised approximately 22 percent of the detected compounds, and inorganic compounds comprised approximately one percent of the detected compounds in the NAPL sample. The sum of all analytes detected in the DNAPL sample (10,418 milligrams per kilogram [mg/kg]) constitutes approximately one percent of the total mass of the sample; therefore, approximately 99 percent of the mass of the DNAPL sample consisted of unidentified compounds. The VOCs were comprised entirely of BTEX and the SVOCs were comprised of PAHs and phenol. A variety of inorganics were detected in the sample; however, cyanide was not among them.

7.3.2 NAPL Delineation

Delineating the extent of NAPLs, particularly DNAPLs, often proves challenging at former MGP sites. This is due to many factors, including:

- *Lack of information.* Information on plant operations and waste-handling practices is often scant or non-existent.
- *Multiple NAPL-release points*. Typical MGP sites had numerous locations where DNAPL could have been released, many frequently undocumented.
- *Complicated behavior in the subsurface.* DNAPL often migrates in complicated, unpredictable ways, and its migration can be influenced by man-made features and naturally occurring conditions.

Despite such complications, the geologic and analytical data generated by the numerous borings drilled and wells/piezometers installed at the site have permitted BBL to sufficiently characterize the extent of NAPLs. The balance of this section describes the methods BBL used to identify and discriminate between different types of NAPLs, and then discusses the horizontal and vertical extents of NAPL at the site.

7.3.2.1 Methods

BBL used two approaches to delineate the extent of both the coal-tar-related and petroleum-related NAPLs identified at the site. These approaches consisted of using visual observations and inferring the presence of NAPL by comparing analytical results to the effective solubilities of detected constituents in soil, sediment, and groundwater samples. To discriminate between coal-tar- and petroleum-related NAPLs, BBL used olfactory observations (i.e., coal-tar- versus fuel-oil-type odors) and the PAH source evaluation described in Subsection 7.3.1.

A description of the two NAPL-delineation approaches follows.

Visual Observation

Visual observations constitute the most direct means of identifying NAPL. Visual cues included direct identification of NAPL, or of oily sheens on soil, sediment, or groundwater samples. Figure 14 identifies the locations where NAPL was observed during the field investigations.

Comparing VOC and SVOC Concentrations to Effective Solubilities

This approach employed mathematical methods to infer the presence of NAPL using VOC and SVOC analytical data from the site. These methods compare the concentrations of detected constituents to their effective-solubility limits. NAPL was inferred to be present at (or near) a given sampling location if a constituent occurred at a concentration greater than one percent of its effective solubility. This approach is based on principles presented in USEPA guidance on DNAPL site evaluation (Publication 9355.4-07FS, 1992) and other sources (WCGR, 1991; Cohen and Mercer, 1993; Pankow and Cherry, 1996; Kueper, Personal Communication with M.J. Gefell, 1997).

Because this approach relies on dissolved concentrations, it is most-readily applied to groundwater analytical results; however, results from soil and sediment analyses can also be used if the porosity and water content of the sample are known. With this information, the concentration of a detected soluble compound in the pore water can be calculated from the laboratory data. For this study, if a VOC or SVOC was calculated to be in pore water at a concentration greater than 10 percent of its effective solubility, NAPL was inferred to be present at (or near) the sampling location.

Appendix D summarizes the results of the effective-solubility screening for both groundwater and pore water, and describes the mathematical methods in more detail. Figure 14 identifies the locations where NAPL was inferred using the effective-solubility approach described above.

7.3.2.2 Horizontal Limits of NAPL

Figure 14 depicts the approximate horizontal limits of both coal-tar- and petroleum-related NAPLs at the site. The reader should consider the following observations when evaluating the figure:

- The sampling locations for this investigation were necessarily biased toward discovering NAPL. That is, investigation locations were sited in those areas where historical information suggested that MGP wastes would most likely be present (e.g., the former gas holders and oil storage tanks).

- The potential NAPL locations depicted on the figure are indiscriminate with respect to depth. For example, one two-inch thick interval exhibiting a sheen in a 60-foot deep boring would result in that location being flagged for the presence of NAPL, even though the other 59 feet and 10 inches of material penetrated were NAPL free. (The following subsection addresses the vertical extent of DNAPL.)

- Given the complex stratigraphy and multiple potential source areas at the site, significant variation in the extent of NAPL is expected to occur over short distances, both horizontally and vertically, within the "probable NAPL-containing area" bounded on the figure. Similarly, it is possible that NAPL may exist outside the limits suggested by the figure; however, the density and spacing of borings makes it unlikely that any large bodies of NAPL exist outside those limits.

- At most of the locations where NAPL was identified, the NAPL existed below the water table.

- Though NAPL appears to extend to the river at two locations, NAPL occurs directly behind the flood wall at only one of them, near the 24-inch outfall (see Subsection 7.1.4.8).

NAPL was observed in several locations along the western site boundary (e.g., at boring TB-2 and wells MW97-9 and MW93-1). The area of soils containing NAPL, therefore, likely extends beyond the western site boundary a short distance beneath Brandywine Avenue. The limits of NAPL west of the site (shown on Figure 14) were deduced from the following observations:

- The absence of impacts at monitoring well pair MW01-17, and well B-1, located west of the site on the 267 Court Street property.

- The evidence that lateral migration of nonaqueous-phase liquids (NAPLs) at the site tends to follow the direction of groundwater movement, which at the western portion of the site is toward the southeast, not west.

- The absence of BTEX and PAHs in the groundwater monitored by well MW97-07, which is located between the southwestern corner of the site and the Susquehanna River, downgradient of the 267 Court

Street property and Brandywine Avenue. If coal tar were present at, or upgradient of this well, which screens the sand-and-gravel unit, we would expect to see dissolved-phase impacts. Other site wells that monitor this unit and are located near or downgradient of coal-tar NAPL (e.g., MW93-02D, MW93-03D, MW97-9D, and MW97-10D) all exhibit elevated concentrations of BTEX and/or PAHs.

7.3.2.3 Vertical Limits of NAPL

By definition, DNAPL is denser than water and therefore can potentially migrate downward beneath the water table. Under certain conditions, LNAPL can also occur beneath the water table. BBL used the same visual and effective-solubility methods described in Subsection 7.3.2.1 to evaluate the vertical limits of NAPL.

Three important observations can be made from the evaluation. First of these is that NAPL has reached the greatest depths beneath the former MGP itself. This is demonstrated by Table 7.13, which shows all locations where NAPL was observed (or inferred to be present by the effective-solubility method) below the uppermost several feet of the sand-and-gravel unit. All of these locations are on site. Where NAPL is present offsite, it appears confined to the uppermost several feet of the sand-and-gravel unit, or shallower.

Table 7.13 Deepest Occurrences of NAPL/Sheen

Location	Unit	Basal Elevation of NAPL/Sheen (FAMSL)	Max. Depth Below Top of S&G Unit (ft.)	Depth Below Water Table (ft. bgs)
SB-201	S&G	811.0	16	25
TB-2	S&G	812.6	17	29
TB-3	S&G	792.7	33.5	45
TB-8	S&G	804.9	23	33
MW93-1D	S&G	798.9*	29*	33
MW93-2D	S&G	795.6*	26.5*	43
MW93-3D	S&G	801.1	26	35
MW93-5D	S&G	793.4	33.5	45
MW97-10D	S&G	794.6	34	39
MW01-03R	S&G	802.2	23	32

Notes:
FAMSL = Feet above mean sea level.
Ft. bgs – Feet below ground surface.
S&G = Sand and gravel.
Depth below water table estimated using Figure 11.
* NAPL presence inferred from groundwater quality.

The second important observation is that NAPL is confined vertically to the sand-and-gravel unit. NAPL was not identified in till or bedrock samples. This is particularly relevant beneath the Susquehanna River. The three riverbed borings that drilled into the till identified NAPL only in the upper few feet of the riverbed. This strongly suggests that upward migration of NAPL from depth beneath the river is not occurring, and therefore is not responsible for the NAPL identified in shallow riverbed materials.

The third observation regards the vertical distribution of NAPL. In most borings where NAPL was observed, it is not present continuously from the depth at which it was first observed to the depth at which it was last observed, rather, it occurs sporadically, separated by NAPL-free intervals. This indicates that the NAPL is distributed unevenly and tends to form stringers and ganglia, particularly in the sand and gravel. This is not surprising given the stratified nature of the subsurface, and is discussed in further detail in Subsection 7.3.4.

7.3.3 Soil Evaluation

7.3.3.1 Overview

BBL evaluates soil quality here, in the NAPL evaluation, because NAPLs (primarily coal-tar DNAPL) are responsible for the majority of impacts to site soils. No areas of soils that have been affected by other MGP-related byproducts (e.g., cyanide) exist outside areas affected by NAPLs. Although site investigations identified no NAPLs at the surface, BBL performed limited surface-soil sampling, primarily to support the risk evaluation (Section 9).

MGP sites can contain several types of byproducts with different physical and chemical natures. Two byproducts that are often found at former MGP sites in large quantities, and therefore tend to be the focus of investigations, are coal-tar NAPL[8] and purifier wastes. Principal components of coal tar that are routinely analyzed for at MGP sites are BTEX, which are VOCs, and PAHs, which are SVOCs. Knowing the levels and distribution of these two classes of organic compounds is a useful way of identifying the nature and extent of soils affected by coal tar. Because coal tar typically contains elevated levels of these compounds, soil samples that contain it need not always be analyzed; rather it can be assumed that the levels of BTEX and PAHs will likely be above applicable Standards, Criteria, and Guidance (SCGs). Purifier wastes are typically composed of lime or a cellulose-based matrix (e.g., sawdust or wood chips) and often contain cyanide. Cyanide complexes in purifier waste typically color the waste bright blue, making it easy to detect in the field. BBL identified no purifier waste at the site and samples analyzed for cyanide did not detect levels above SCGs.

To evaluate the analytical results, BBL used the SCGs contained in the NYSDEC's Technical and Administrative Guidance Memorandum (TAGM) HWR-94-4046 (NYSDEC, 1994) and a follow-up NYSDEC memorandum from Michael J. O'Toole, Jr. dated December 20, 2000. These SCGs, referred to hereafter as "guidance values", set limits for total detected VOCs and SVOCs, specifically • 10 ppm VOCs and • 500 ppm SVOCs.

7.3.3.2 Surface Soil

The surface-soil sampling focused on areas of the site that were not recently paved or covered with clean fill. The sampling interval for these samples was generally the uppermost 0.5 feet of soil; however, during early stages of site investigations, a number of samples collected from 0 to 2 feet below grade were analyzed. While these earlier samples were not specifically collected to provide data for risk evaluation, we include them in this discussion to help understand surface and near-surface soil quality. Figure 4 summarizes analytical results for all samples collected at depths of 2 feet or less. Table 8 summarizes surface-soil analytical results. As noted in

[8] And other NAPLs.

Subsection 4.7, since many of the shallow samples were collected, the majority of the site has been covered with gravel or paved, so that the initial soil quality results are no longer valid for assessing exposure risk.

None of the samples shown on Figure 4 exceed the guidance values. The human health evaluation (Subsection 9.2) evaluates risks posed to humans by the individual constituents detected in surface-soil samples.

7.3.3.3 Subsurface Soil

Because soils that contain NAPL are assumed to exceed guidance values (see Subsection 7.3.3.1), describing the nature and extent of subsurface soils affected by the site requires discussing both soil analytical results and the extent of NAPL together. Analytical results for subsurface soils are summarized in Table 5. Selected subsurface soil analytical results are shown on Figure 5.

To meaningfully evaluate subsurface soils, this discussion divides the soils into two groups: soil above the water table (i.e., unsaturated soil) and soil below the water table (saturated soil). Figure 18 shows the extent of unsaturated soil that exceeds guidance values. In general, the areal extent is limited to the northern part of the site, encompassing several of the former oil tanks, the former No. 2 gas holder and the former retorts. The limited extent of this area reflects the fact that most soils above the water table either do not contain NAPL or have already been removed by an IRM (e.g., the former No. 3 gas holder).

Below the water table, the extent of soil that exceeds guidance values is interpreted to be, by and large, the soils containing NAPL. Figure 19 depicts the locations where saturated soils were found to contain NAPL. Note that a number of test-pit and soil-boring locations either did not encounter the water table, or did not penetrate the full thickness of the saturated soils overlying the till unit. This means that NAPL may be present in these soils beneath such relatively shallow investigation locations. The reader is reminded that, as noted in Subsection 7.3.2, the NAPL in subsurface soils is unevenly distributed. As such, in any given region of soil that contains NAPL, there will be zones of soil that do not contain NAPL and therefore would likely be below the guidance values.

As noted in Subsection 7.3.1, a region of subsurface soil located north and east of the site contains petroleum-related NAPL. This NAPL was identified in samples collected from monitoring well TW97-3S and soil borings SB-101, SB-103, and SB-104. This region is bounded to the east, west, and south by monitoring-well cluster MW97-14 and soil borings SB-22, SB-23, and SB-102, where no petroleum-related impacts were observed during drilling. The northern limit of these affected soils has not been defined but appears be to north, and upgradient of, the site. The soils affected by the petroleum-related NAPL generally occurred near and several feet below the water table, toward the bottom of the silt and the top of sand and gravel.

7.3.4 NAPL Fate and Transport

In this subsection, BBL first provides an order-of-magnitude estimate of the volume of DNAPL present in the subsurface beneath the site, and then discusses NAPL transport at the site, including problems associated with predicting how DNAPL may migrate at the site. Two facts will become apparent to the reader. First, there is likely a large volume of NAPL present in the subsurface, most of it below the water table. Second, reliably predicting DNAPL migration at the site scale, indeed even determining with certainty whether DNAPL *is* moving at the site, is not practicable with the current data set. Despite this, the information gathered at the site is adequate to develop a reasonable model that explains NAPL transport at the site sufficiently for remedial decision-making. Subsection 7.3.4.2 presents this model.

7.3.4.1 Volume Estimate

BBL estimated the quantity of coal-tar NAPL produced by the MGP using available manufactured-gas production data for the MGP and a constant factor of 730 gallons of NAPL per million standard cubic feet (gal/MM scf; Eng, 1985). Using an average gas-production rate for the Binghamton MGP of 157 MM scf/year (Eng, 1985), and a period of gas production of 51 years, we estimate that the MGP produced approximately 8,010 MM scf of gas during its lifetime. (We calculated the production period of 51 years assuming that the plant began operations in 1888, and ceased producing manufactured gas in 1939. Gas-production data provided for the MGP by Eng (1985) indicate that no gas was manufactured at the MGP in 1940 or 1950, rather, the source of gas listed during these years was "natural gas".) Using the NAPL-production factor of 730 gal/MM scf, we estimate the amount of coal-tar NAPL produced during the plant's lifetime to be approximately 5.8 million gallons. This estimate does not include the volume of other NAPLs that may have been released at the site (e.g., petroleum feedstocks) because such releases have not been confirmed. Nor does the estimate include NAPLs that may have migrated beneath the site from off-site sources such as the adjacent scrap yard, asphalt batch plant, or former oil refinery. Site data are insufficient to prove that such migration has occurred, in part because offsite property owners would not grant NYSEG access for drilling.

Information on the disposition of byproducts for the site is non-existent; however, a release to the subsurface of only one-to-ten percent of the coal tar likely generated (calculated above), which BBL believes is reasonable given the site history, would equate to 58,000 to 580,000 gallons of DNAPL. If one were to estimate the volume of soils above the till beneath the site and apply a reasonable range of bulk-retention factors (0.25 to 3 percent [Kueper, 1999]), they would find that the soils could easily accommodate many times these volumes of DNAPL.

7.3.4.2 DNAPL Distribution in the Subsurface

The distribution of DNAPL beneath the site, particularly in the sand-and-gravel unit is complex. This would be expected because the distribution of DNAPL is affected by geologic layering. Pankow and Cherry (1996) note that horizontal zones of residual or free-phase DNAPL need not be caused by a particularly low-permeability silt or clay aquitard. Rather, a minor contrast in permeability "*...as from a coarse sand layer to a finer sand...*" will cause a variation in DNAPL entry pressure. The result is lateral spreading of the DNAPL until the edge of the "aquitard" is reached or until the height of the DNAPL pool becomes great enough to overcome the entry pressure of the aquitard, in which case the DNAPL will continue migrating downward toward the base of the aquifer. Accordingly, Pankow and Cherry note that, "*Given the subtlety of geologic heterogeneity that can cause a deflection of DNAPL in the saturated zone, as well as the complexity of the spatial distribution of such geologic heterogeneity in most systems, DNAPL pathways are generally* ***unpredictable*** *in the saturated zone, even when considerable information on the stratigraphy of the subsurface environment is available.*" In short, it is not possible to accurately predict the paths that DNAPL beneath the site will take in any but the broadest sense.

Accumulations of free-phase NAPL have been identified at the site, as shown in the adjacent Table 7.14. Such accumulations or "pools" are important features because they represent DNAPL that can potentially migrate, and because the time required for the pool to dissolve would be much longer than for a body of "residual" NAPL[9]. Based on the data contained in table 7.14, the pools that were encountered were small, as the NAPL either did not consistently accumulate in wells after it was removed, or the thickness in the well was so small that there was not a sufficient amount to sample. It is possible that some of the NAPL accumulations represented residual NAPL that was mobilized locally due to perturbations caused by drilling.

Table 7.14 Observations of Free-Phase NAPL

Location	Unit	NAPL Type	Sufficient Amount to Sample?	Consistently Return After Purging?
MW93-1S	Fill	DNAPL	NA[1]	NA
MW97-8S	Silt	DNAPL	No[2]	No[2]
MW97-13S	Fill	DNAPL	Yes	No[2]
PZ01-02	Silt/ S&G	LNAPL	No	Yes
PZ01-04	Fill	LNAPL	No	Yes
PZ01-06	Fill	DNAPL	Yes	No

Notes:
S&G = Sand and Gravel. NA = Not available.
[1] Well decommissioned shortly after installation.
[2] Based on information provided by NYSEG (Blazicek, 2000).

Identifying all such DNAPL pools at the Court Street site is not practical primarily because it would require drilling and sampling a prohibitively large number of boreholes. Many borings would be needed because a considerable volume of DNAPL can occur in a relatively small area. Pankow and Cherry (1996) note that 800 liters (211 gallons) of DNAPL could be contained at the bottom of a sand aquifer, with the pool measuring only 10 feet by 10 feet in area and 1-foot thick. Additionally, BBL's

[9] Residual NAPL is comprised of blobs and ganglia that have been cutoff and disconnected from a continuous NAPL body by water. Such NAPL is not mobile.

experience at numerous MGP and creosote DNAPL sites indicates that residual and pooled DNAPL cannot always be reliably distinguished by visual examination of split-spoon samples. Such a distinction is best made by installing a properly constructed well that is screened across the NAPL-containing zone. Installing a well in every single zone where NAPL is identified at such large MGP sites is also not practical.

While NAPLs are pooled at the site, it is not possible to determine with a reasonable degree of accuracy whether NAPLs are migrating at the site. This is due in part to the viscous nature of coal-tar DNAPLs in general, and particularly those characterized at the site. Because hydraulic conductivity is inversely related to viscosity, the greater the viscosity of the NAPL the slower it will migrate[10]. It is possible therefore, that it could take a long time for a moving body of viscous DNAPL to reach equilibrium.

The best evidence that NAPL is moving is either when NAPL enters an established monitoring well that was previously NAPL-free, or when NAPL is observed repeatedly discharging to the land surface or to a body of surface water. There have been no cases at the site where NAPL was found in a well where previously there had been none. Sheens or NAPL-containing riverbed materials were identified in the Susquehanna River as early as 1991 (ES, 1992) and were still present in 2001. As discussed in Section 8, the Susquehanna River adjacent to the site is predominately erosional, therefore the continual presence of sheens generated from the riverbed suggests an ongoing source of NAPL to the riverbed. However, this observation does not necessarily indicate ongoing NAPL migration through subsurface soils. The continual presence of sheens could be explained by gradual erosion downward through soils containing residual levels of NAPL. Additionally, the available data cannot distinguish NAPL discharges through soil from potential NAPL discharges out of pipes that outfall near the areas of affected sediment.

7.3.4.3 Conceptual Model for NAPL Transport

Although it is not possible to predict the exact paths that DNAPL will follow beneath the site, or identify every location where it is pooled, it is possible, with the information in hand, to develop a reasonable model that explains NAPL transport at the site sufficiently for remedial decision-making. This section provides such a model. First, we describe potential sources of NAPL to the subsurface, and then explain how the NAPL appears to be distributed in the subsurface, and the mechanisms that likely governed its distribution.

This investigation identified three potential sources of NAPLs to the subsurface: the former MGP, the former oil refinery and asphalt batch plant that now occupies the same property, and the scrap yard. Most of the NAPLs identified below the land surface during this investigation are likely the result of site operations. However, the source evaluation (Section 7.3.1), coupled with the history of land use immediately north of the site, suggest that NAPL identified beneath the railroad tracks (well TW-3S) and east of the site beneath the BMH Warehouse is petroleum- rather than coal-tar related and most-likely originated off site. While it is true that petroleum

[10] Assuming all other factors (including interfacial tension) are equal.

products were used at the former MGP, the tanks were located on the opposite (west) side of the site. Given the widespread occurrence of coal-tar-related NAPL at the site, it is unlikely that petroleum released at the site could migrate off site against groundwater flow to the east without also picking up some coal-tar characteristics in its chemical signature.

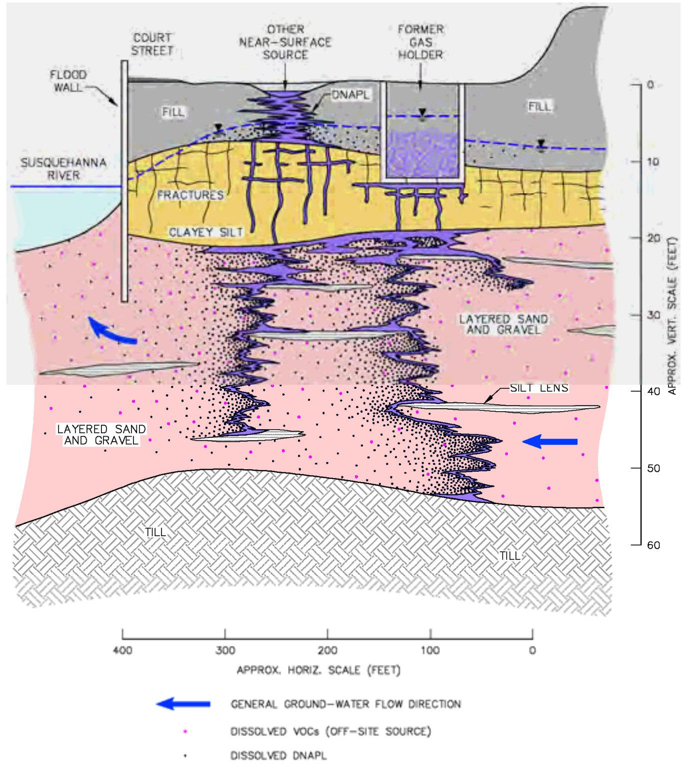


Figure 7.9 Conceptual Model for DNAPL Transport.

There are probably numerous NAPL release points at the site, given its long history and the typically poor waste-handling practices of the era; however, identifying them all is not practicable. Chief among the potential sources are the former oil-storage tanks (LNAPL), former gas holder Nos. 1 through 3 (primarily DNAPL[11]), and the tar-separating well (primarily DNAPL). We call these out because NAPL was either handled or generated in bulk at these areas and such features are often found to be sources of NAPLs at former MGP sites. What is clear is that much of the fill and a considerable volume of the silt beneath the site contain NAPL or elevated levels of site-related constituents.

NAPLs have moved downward through the unsaturated zone (primarily fill) and reached the water table. LNAPL would have floated on the water surface, while DNAPL continued migrating downward through the larger pore spaces of the silt[12]. Indeed in many samples of the silt observed by BBL, DNAPL preferentially followed both vertical fractures and horizontal bedding planes. This is illustrated conceptually on Figure 7.9. Upon reaching the sand-and-gravel unit, the DNAPL spread laterally, preferentially but not exclusively in the downgradient direction. Away from the immediate source areas (e.g., the former gas holders and the tar separating well), NAPL was most frequently observed near the top of the sand and gravel unit.

In some areas, probably beneath former plant locations that encouraged DNAPL to pool (e.g., a gas holder with a leaky bottom), DNAPL quantities and heads (pressures) were great enough for the DNAPL to migrate to the base of the sand-and-gravel unit. The stratified, heterogeneous nature of the unit creates complex DNAPL migration pathways and a highly irregular DNAPL distribution. DNAPL in the sand-and-gravel unit tends to form "fingers", blobs, and ganglia, and pool on finer-grained layers.

[11] Coal tar can be an LNAPL, although this is uncommon.
[12] LNAPLs appear less common than DNAPLs at the site, being detected in a measurable thickness in only one piezometer (PZ01-02). The quantity of LNAPL in PZ01-02 was not enough to collect a sample for physical analysis.

The till beneath the sand-and-gravel unit appears to form a capillary barrier that has prevented further downward migration of the DNAPL. Several factors are responsible for making the till a DNAPL barrier, chief among them are its very dense, fine-grained nature (and resulting low permeability) and the strong upward hydraulic gradient across it. If the source of DNAPL was not exhausted by the time the DNAPL reached the till, the DNAPL would likely migrate along the till's surface in the down-slope direction, and pool in depressions. The shape of the till's surface has been reasonably characterized through drilling of numerous borings, and no large depressions have been identified on site (Figure 9). Several observations provide insight on the extent and potential migration of DNAPL near the top of the till:

- DNAPL or sheens were identified near or at the top of the till at only 4 of the 35 locations on and off-site that reached the top of the till (TB-3, MW97-10D, MW93-3D, and MW01-3R).

- DNAPL or sheens were not observed at or near the top of the till in any offsite borings, including seven in or south of Court Street, and three in the Susquehanna River.

- DNAPL has not accumulated in any wells screened at the base of the sand and gravel.

- At MW93-3D and MW01-3R, where DNAPL or sheens were observed near the top of the till, there is no evidence of DNAPL or sheens at shallower depths.

These facts suggest that, if DNAPL is pooled on top of the till, such pools are not extensive. These facts also suggest that DNAPL has migrated laterally near the base of the sand and gravel to the area of MW93-3D and MW01-3R (Figure 2).

Offsite migration of NAPL has occurred at or near the top of the sand-and-gravel unit in several places: south of the site, along the 66-inch sewer (where the former Brandywine canal and Creek once were located), and southeast of the site, near the 24-inch outfall.

In the area of the 66-inch sewer, NAPL exists on site in the generally low-permeability, silty fill that surrounds the pipe, and in the sand and gravel beneath it. As described in Subsection 7.1.4.2, shallow groundwater flow converges near the sewer south of the former No. 4 gas holder, due in part to the localized absence of the silt unit in this area. Where the silt is absent, shallow groundwater and DNAPL can drain into the underlying sand and gravel. DNAPL is interpreted to have migrated laterally southward in the silty fill and at the top of the sand and gravel beneath the sewer, likely reaching the Susquehanna River's bed near the shore and the mouth of the 66-inch sewer. Upward gradients in the sand-and-gravel unit beneath the river as discussed in Section 7.2.2.2, and the layered nature of the sand-and-gravel unit, serve to keep the NAPL shallow and near the shore. Direct discharge of sediment containing NAPLs (both site and non-site related) from inside the 66-inch sewer may also be responsible for some or all of the affected riverbed materials near the 66-inch sewer outfall.

Near the 24-inch outfall, NAPL has similarly migrated southward laterally along the top of the sand-and-gravel unit. In this area, coal-tar NAPL is not present in the fill or upper portion of the silt; rather it appears concentrated at the top of the sand and gravel. Unlike at the 66-inch sewer, steel sheeting was driven into the sand and gravel beneath the flood wall in this area. As described in Section 7.1.4.8, the sheeting is slotted near the 24-inch outfall to accommodate a former water-intake pipe for the MGP identified as "BB". This feature is inferred to encourage groundwater and NAPL flow to converge in this area and pass through the sheeting. Additionally, the BB pipe may have more permeable bedding around it, particularly if it was laid in a trench, which would serve to preferentially direct groundwater and NAPL movement along it. Upon reaching the sheeting, migrating NAPL likely pooled and spread laterally and then downward with the hydraulic gradient and through the opening in the sheeting beneath the BB pipe. After passing the flood wall, the NAPL (and groundwater) moved upward to the river bottom near the shore. There is no evidence that significant pooling of NAPL occurs behind the flood wall, nor that significant seepage of NAPL occurs through joints in its concrete facing.

The presence of coal-tar NAPL at the top of the sand-and-gravel unit east of the on-site source areas (e.g., at SB-22, SB-23 and MW98-15S) can be explained by pumping at the former Ranney well. The modeling performed by BBL (Appendix B) indicated that the capture zone of the Ranney well likely extended beneath at least a portion of the site. While pumping, the well may have created a hydraulic gradient in the sand and gravel unit adequate to draw both groundwater and NAPL toward it. Though the coal-tar NAPL never reached the Ranney well, it was drawn far enough eastward to reach the BB pipe. When pumping was discontinued at the Ranney well, the direction of groundwater and NAPL flow returned to southward, toward the river.

The petroleum-related NAPL identified northwest of and beneath the BMH Warehouse appear to be derived from an upgradient, offsite source, most-likely the former oil refinery. Most of the soils observed to contain the petroleum-related NAPL did not appear saturated with free-phase NAPL[13], rather most exhibited odors and sheens, suggesting that much or all of this NAPL may be at residual saturation and not pooled.

[13] Droplets of free-phase, petroleum-based NAPL were only identified in one split-spoon sample, collected at boring SB-101.

7.4 Groundwater Quality

This subsection discusses the quality of groundwater at and near the site, based on the analytical results of groundwater samples collected from monitoring wells during the various phases of site investigations. The scope of each completed groundwater sampling round was outlined in Subsection 4.5 and is summarized in Table 7.15. The laboratory results of detected analytes are presented in Table 4. Figure 13 shows the concentrations of total BTEX, PAHs and cyanide, from the most recent data available for each well.

Table 7.15 Groundwater Sampling Rounds

Date	Number of Wells Sampled	TCL VOCs	BTEX	TCL SVOCs	PAHs	TAL Inorganics	Cyanide	TCL PCBs	Chloride
July 1993	8	ü		ü		ü	ü	ü	
Oct. 1993	8	ü		ü		ü	ü		
Jan. 1994	8	ü		ü		ü	ü		
April 1994	8	ü		ü		ü	ü		
Dec. 1997	25	ü		ü		ü	ü		
June 1998	3	ü		ü		ü	ü		
Oct. 2001	5		ü		ü		ü		ü

For a comprehensive list of samples, see Table 3.
2001 chloride analyses for bedrock wells only.

The analytical results are discussed in three groups, based on the screened intervals of the wells sampled: wells screened at or near the water table, at the base of the sand and gravel unit, and in bedrock.

Where applicable, the analytical results presented in Table 4 are compared to NYSDEC Class GA groundwater standards. Note that the NYSDEC has not determined groundwater standards for certain compounds and inorganics that were analyzed during this investigation, most significantly PAHs. Where available, the NYSDEC guidance values are used for comparison.

Discussions of inorganics focus on the results of the dissolved (filtered) analyses rather than the total (unfiltered) analyses. The reason for this approach is that considerable suspended matter was evident in most of the samples collected. Suspended matter can produce sampling artifacts; therefore, samples containing such matter should be filtered prior to analysis (Hem, 1989; Appelo and Postma, 1993).

PCB analyses conducted in the first round of sampling for the Task II RI did not detect any PCB isomers in any wells; therefore, no further PCB sampling was conducted.

Shallow Monitoring-Well Results

Volatile Organic Compounds

The most recent VOC groundwater analytical data from the 17 shallow monitoring wells sampled include six locations where one or more compounds were detected above NYSDEC Class GA groundwater standards (MW97-8S, MW97-9S, MW97-10S, MW97-11S, and MW97-13S, MW98-15S). These wells are generally located at or south of the site.

BTEX were the only VOCs detected in shallow groundwater samples. The highest concentrations of BTEX were found in three wells that screened NAPL-impacted soils: MW97-13S (34,600 µg/L), MW97-9S (5,430 µg/L) and MW97-8S (4,638 µg/L). The large gap between these concentrations and the next highest (268 µg/L at MW98-15S) suggest, not surprisingly, that the proximity of NAPL is the strongest control on dissolved BTEX concentrations. It is significant that no BTEX was detected at MW93-3S or MW97-12S (both near the center of southern property line), nor in the six shallow monitoring wells encircling the site on the west, north and east sides (B-1, MW01-17S, MW93-6S, TW97-2S, TW97-3S, MW97-14S and MW98-16S).

Time-series data, available for only four wells (MW97-2S, MW97-3S, MW97-6S and TW97-3S) show no consistent trends toward greater or lesser VOC concentrations in shallow groundwater.

These data indicate that groundwater containing concentrations of VOCs in excess of applicable standards is generally confined to the site, and south of the site along two potential preferential flow paths: the 66-inch-diameter storm sewer, and the 24-inch pipe.

Semivolatile Organic Compounds

The most recent SVOC analytical data from 17 shallow monitoring wells sampled include six locations where one or more compounds were detected above NYSDEC Class GA groundwater standards or guidance values (MW93-2S, MW97-8S, MW97-9S, MW97-13S, MW98-15S, and TW97-3S). These wells are generally located at or south of the site, except TW97-3S, which is located north of the site.

The SVOCs detected consisted primarily of PAHs and various phenolic compounds (phenol, 2,4-dichlorophenol, 2-methylphenol, and 4-methylphenol). PAHs represented the vast majority of SVOCs identified, with naphthalene being the most common single compound. The locations with the highest concentrations of VOCs, noted above, also had the highest concentrations of PAHs (MW97-13S, MW97-9S and MW97-8S) with concentrations as high as 12,053 µg/L.

As with the VOCs, the time-series data from wells MW97-2S, MW97-3S, MW97-6S and TW97-3S, show no consistent trends toward greater or lesser SVOC concentrations in shallow groundwater.

The SVOC analytical results suggest that groundwater containing concentrations of SVOCs in excess of criteria is generally confined to the site, and south of the site along two potential preferential flow paths: the 66-inch-diameter storm sewer, and the 24-inch pipe.

Inorganics

Analytical results for groundwater samples collected from most of the shallow wells show that dissolved concentrations of several inorganics occur in excess of Class GA standards. The inorganics most commonly detected in excess of standards were iron, manganese, and sodium, which are naturally occurring and are not major constituents of typical MGP wastes. These three analytes accounted for 83 percent of the exceedances. Also occurring at concentrations exceeding standards at one or a few locations were arsenic (MW91-9S), cyanide (MW97-13S), and selenium (MW97-9S, MW97-13S, MW97-14S, and TW97-3S).

Measurements obtained during groundwater sampling indicate that several shallow downgradient wells, often those containing organic compounds, have low concentrations of dissolved oxygen (groundwater sampling logs are contained on the Electronic Attachments CD). This observation suggests that reducing (anoxic) conditions exist in areas where organic compounds are present in shallow soil and groundwater. These conditions are commonly associated with biodegradation of organic compounds, where available dissolved oxygen is consumed, creating an anoxic environment in the groundwater. In such environments, the solubility of many inorganics, including iron and manganese, increases considerably (Hem, 1989). Additionally, creation of dissolved plumes of iron and manganese due to biodegradation of the aromatic hydrocarbons has been demonstrated by Bennett et al. (1993). While iron oxide was used at some MGP's as a purifying agent, no evidence of such purifier waste has been found at the site. Iron, manganese, and sodium are abundant in the earth's crust; therefore, the aquifer material itself can act as a source of these inorganics to groundwater.

Deep Monitoring-Well Results

Volatile Organic Compounds

The most recent samples collected from all of the deep monitoring wells, except one, had concentrations of one or more VOCs above NYSDEC Class GA groundwater standards. The one exception (MW01-17D) was analyzed for BTEX only[14], therefore several of the most frequently detected VOCs were not reported. The compounds most frequently detected in excess of standards were the chlorinated aliphatic hydrocarbons 1,1,1-trichloroethane (TCA) and one of its degradation (daughter) products, 1,1-dichloroethane (DCA). One or both of these compounds probably occur at all deep wells in concentrations exceeding their respective standards, though neither was detected at MW93-3D. This seeming discrepancy can be explained by the elevated concentrations of other constituents in that well. In order to accurately quantify the major constituents, the laboratory had to dilute the sample, which increases the detection limits of the sample by an order of magnitude, making the detection limits much higher than the expected concentrations of 1,1,1-TCA and 1,1-DCA.

Other compounds reported to occur in excess of standards were BTEX (MW93-1D, MW93-2D, MW93-3D, and MW97-9D) and styrene (MW97-9D). Where detected, the total VOC concentration was greatest in the sample collected from MW93-3D (1,980 µg/L, [estimated]) and least in the sample collected from TW97-1D (16 µg/L, [estimated]). No VOCs were detected in the sample from MW01-17D; however, as noted above, this sample was analyzed for BTEX only.

[14] Groundwater samples collected for the Phase II SRI were analyzed for likely MGP-related analytes only, including BTEX, PAHs and cyanide (See Section 4.5.4).

The source of the chlorinated aliphatic hydrocarbons appears to be upgradient of, and unrelated to the site. Evidence supporting this statement consists of the following:

- These compounds are not commonly associated with MGP sites (Environmental Research & Technology, Inc. and Koppers Company, Inc., 1984).
- These compounds were never detected in any of the soil, shallow groundwater, or river sediment samples collected during site investigations.
- These compounds were detected in all three surface water samples collected from the 66-inch-diameter storm sewer, including the upgradient location. The storm-sewer sampling results are discussed in Subsection 7.1.4.2.
- These compounds were detected in groundwater samples collected from monitoring wells located hydraulically upgradient of site.

As discussed in Subsection 7.2.2, the sand and gravel underlying the site is a small part of the Clinton Street Ballpark Sole Source Aquifer (USEPA, 2002). However, the presence of these chlorinated aliphatic hydrocarbons (unrelated to the site) render the groundwater undrinkable even without the presence of site-related constituents.

The available time-series data, shown in Table 7.16, show no consistent trends toward greater or lesser BTEX concentrations in deep groundwater, except that BTEX has decreased considerably at upgradient monitoring well MW93-5D.

Semivolatile Organic Compounds

The most recent samples collected from seven of the ten deep monitoring wells, had concentrations of one or more SVOCs above NYSDEC Class GA groundwater standards or guidance values. Phenol was the only SVOC detected in concentrations above the Class GA standards (at MW93-1D and TW97-1D). PAH concentrations were above the guidance values at MW93-1D, and accounted for the remaining five exceedances (MW93-2D, MW93-3D, MW93-5D, MW97-9D, and MW97-10D).

Table 7.16 Time Series Groundwater BTEX Concentrations in Deep Overburden Wells

	Total BTEX (µg/L)				
	7/20/93	10/20/93	1/24/94	4/26/94	12/17/97
MW93-1D	372	1,187	1,230	97	1,150
MW93-2D	594	482	152	400	409
MW93-3D	1,517	2,140	1,943	244	1,980
MW93-5D	216	41	9	1	4
MW93-6D	ND	ND	ND	ND	ND

ND = none detected

The available time-series data, shown in Table 7.17 indicate several trends in PAH concentrations in deep groundwater. Concentrations in wells located downgradient of the site (i.e., MW93-1D, MW93-2D, and MW93-3D) have increased between 1993 and 1997. In contrast, concentrations have decreased in wells located upgradient of the site (MW93-5D and MW93-6D).

Table 7.17 Time Series Groundwater PAH Concentrations in Deep Overburden Wells

	Total PAHs (µg/L)				
	7/20/93	10/20/93	1/24/94	4/26/94	12/17/97
MW93-1D	143	564	451	274	800
MW93-2D	3,314	578	553	432	6,297
MW93-3D	4,392	837	643	803	7,950
MW93-5D	1,488	246	550	450	134
MW93-6D	176	960	49	4	ND

ND = none detected

The SVOC analytical results suggest that groundwater containing concentrations of SVOCs in excess of criteria is generally confined to the site, and south of the site.

Inorganics

Analytical results for groundwater samples collected from all of the deep wells show that dissolved concentrations of several inorganics occur in excess of Class GA standards. Similar to the results for shallow groundwater samples, the inorganics most commonly detected in excess of standards were manganese, sodium, and iron, which are naturally occurring and are not major constituents of typical MGP wastes. These three analytes accounted for 99 percent of the exceedances. The only other inorganic that occurred at a concentration exceeding a standard was selenium at one location (MW93-5D). Cyanide, though detected in both upgradient and downgradient wells, did not exceed the Class GA standard in any deep monitoring well.

Table 7.18
Bedrock Groundwater Analytical Results

	Concentration			
	BTEX	PAHs	Cyanide	Chloride
	(µg/L)			mg/L
MW01-03R	ND	ND	2	12.9
MW01-07R	ND	ND	3	12.2

ND = none detected; samples collected October 2001.

Similar to the case of shallow wells, field dissolved-oxygen measurements indicated reducing conditions in wells where organic compounds were present. The observed exceedances of iron and manganese are attributed to these reducing conditions, which are likely the result of biodegradation of the organic compounds.

Bedrock Monitoring Well Results

The groundwater sampling results indicate that bedrock groundwater quality has not been adversely affected by site-related constituents. As shown in Table 7.18, no PAHs or BTEX were detected in either of the two bedrock groundwater samples collected. The chloride results indicate that the bedrock groundwater is not saline. The concentration of cyanide and chloride detected in the groundwater samples from these two bedrock monitoring wells are below NYSDEC Class GA groundwater standards.

7.4.1 Potential Upgradient Groundwater Constituent Sources

A number of potential upgradient groundwater constituent sources were identified near the site. The results of the VISTA database search (described in Subsection 4.5.2) identified 18 potential contaminant sources as being located within one-half mile, and upgradient or crossgradient of the site (see the Electronic Attachments CD). These sources consisted of:

- Resource Conservation and Recovery Act (RCRA) listed hazardous-waste generators (three sites);
- NYSDEC-listed aboveground or underground storage tanks (five sites);
- NYSDEC-listed leaking underground storage tanks (eight sites); and
- NYSDEC-listed spills (two sites).

In addition to these, five other potential sources were identified through review of historical information and performance of a reconnaissance of the area. Historic Sanborn Fire Insurance Maps from 1887, 1891, 1918, 1950 (included on the Electronic Attachments CD) and the area reconnaissance identified the following potential sources located within one-quarter-mile upgradient or cross-gradient of the site:

- **Binghamton Oil Refinery.** The refinery was located immediately north-northeast of the site and appears on maps dated 1887, 1891 and 1918. As many as 18 storage tanks are depicted on the property, 13 of which are described as “sunk in the ground.”

- **Crandall, Stone & Co. Carriage Hardware Manufacturers.** This facility first appears on a map dated 1891, east of the site on the south side of Court St. across from the location of the former Raney Well (Figure 2). That facility’s name changed to “Brewer Tichener Corp., Crandall Stone Div., Automotive and Carriage Hardware Manufacturers” on a map dated 1950. The map notes describe a “plating and polishing room.”

- **Binghamton Metal Forms, Inc.** Appears on Sanborn Fire Insurance Map dated 1950, approximately 1,200 feet northeast of the site on Griswold Street.

- **Municipal Asphalt Co. Asphalt Plant.** This plant appears on the map dated 1950. A reconnaissance of the area performed during this investigation identified this plant as apparently still in operation under the name of “Barrett Paving Plant." The approximate location of this plant is identified on Figure 2.

- **Scrap Yard/Weitzman & Sons Scrap Yard.** An area identified as a “scrap yard” appears on the map dated 1950. A reconnaissance of the area performed during this investigation confirmed that a scrap yard, identified as Weitzman & Sons, currently occupies the same area. The approximate location of the yard is identified on Figure 2.

7.4.2 Groundwater Fate and Transport

Based on the detailed interpretation of groundwater flow at the site presented in Subsection 7.2 and available groundwater quality data, the following statements regarding constituent fate and transport can be made:

- Groundwater in the fill unit migrates radially away from a water-table mound near the site center, drains down into the sand and gravel unit via leakage through or off the edge of the silt unit. All of the groundwater in this unit discharges to the Susquehanna River near the site; therefore, the potential exists for dissolved, site-related constituents in fill-unit groundwater to be transported to the Susquehanna River.

- Groundwater in the sand and gravel unit migrates southward and discharges to the Susquehanna River; therefore, the potential exists for dissolved, site-related constituents in groundwater of the sand and gravel unit to be transported to the Susquehanna River.

- Migration of constituents dissolved in groundwater at the site is subject to the processes of advection (i.e., move forward), dispersion (i.e., dilute and spread laterally), and adsorption onto aquifer material as they migrate toward the river. Dissolved organic constituents will also biodegrade en route to the river, as evidenced by low levels of dissolved oxygen and increased levels of dissolved iron and manganese in groundwater that has been affected by site constituents.

Section 7.4.3, below, provides an overview of contaminant transport processes, and presents discussions of the fate and transport of the inorganic and organic constituents of concern at the site.

7.4.2.1 Transport Processes

There are five processes that govern the fate and transport of dissolved constituents (solutes) in saturated media:

- Advection;
- Dispersion;
- Diffusion;
- Retardation; and
- Biodegradation.

Advection is a transport process by which solutes may migrate along with flowing groundwater at a rate similar to the average linear groundwater velocity. Dispersion is a transport process by which solutes may migrate at rates faster or slower than the average linear groundwater velocity and is controlled by physical mixing processes, resulting in reduced solute concentrations. Diffusion is a process by which chemicals move from areas of higher concentration to areas of lower concentration. Retardation describes several processes that cause the solute to move through the aquifer more slowly than the average linear groundwater velocity. Retardation processes include adsorption, by which an aqueous compound preferentially adheres to a solid, and precipitation, by which an aqueous compound becomes a solid by either physical or chemical means. Biodegradation is a mass-transfer process by which solutes are metabolized by aquifer microorganisms and may result in complete destruction of organic solutes, ultimately removing solute mass from groundwater.

These processes (except advection) result in reduced contaminant toxicity, mobility, and/or dissolved solute mass, commonly referred to as “natural attenuation.” Natural attenuation of organic compounds in groundwater can be a corrective-action alternative at hazardous waste sites, whether as a sole remedy or remedy component (USEPA, 1997).

7.4.2.2 Organic Compounds

The migration rate of dissolved organic compounds in groundwater typically is much slower than the groundwater flow rate due to naturally-occurring attenuation processes such as hydrophobic sorption and in-situ biodegradation. The effect of hydrophobic sorption on the migration rate of organic compounds can be evaluated by using compound-specific retardation factors, which describe the compound-migration rate relative to the average linear groundwater flow velocity. Retardation factors for those organic compounds that have been detected in excess of NYSDEC Class GA standards at the site during the most recent sampling event have been calculated and are presented in Table 34. Retardation factors were calculated using:

- Organic carbon content measured for the saturated silt and sand and gravel units (Table 5);

- Soil bulk density values obtained from physical testing of the soils (silt unit) or calculated from soil moisture content data (sand and gravel unit). The bulk density and moisture content data used in the calculations are contained in soil and NAPL physical testing section of the Electronic Attachments CD; and

- K_{oc} values referenced in Mott (1995) and Ravi and Johnson (1994).

As shown in Table 12, the retardation factors for the silt unit ranged from three for phenol to 98 for xylenes; the retardation factors for the sand and gravel unit ranged from three for phenol to 101 for xylenes.

In general, the higher the retardation factor, the slower the constituent migrates in groundwater. For example, a constituent with a retardation factor of two migrates twice as slowly as the average groundwater flow velocity and a constituent with a retardation factor of 100 migrates 100 times slower than the average linear groundwater velocity.

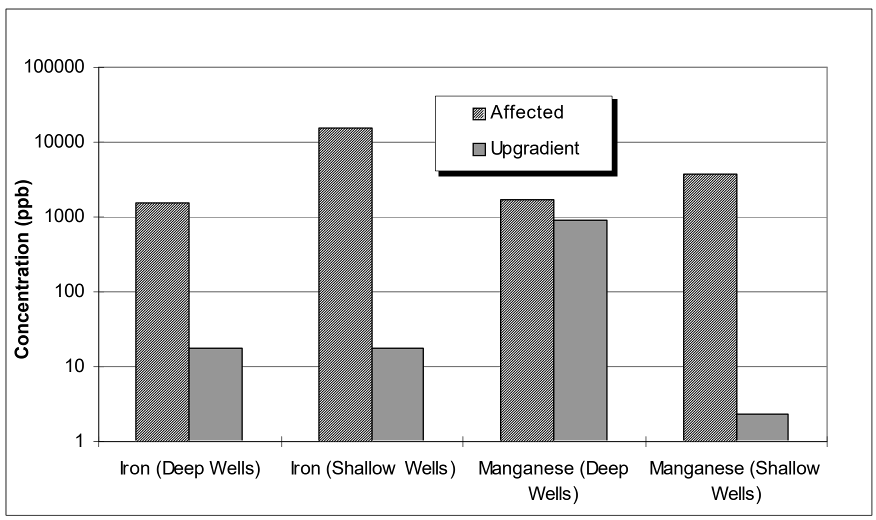
In-situ biodegradation of organic compounds removes mass from groundwater by converting the compounds to non-hazardous byproducts, such as carbon dioxide and methane. The effect of in-situ biodegradation on the migration of organic compounds can be expressed in terms of "half-life." The term half-life is defined as the amount of time required for a given mass of a compound to be reduced by one-half; therefore, the lower the half-life for a given organic compound, the more rapidly it is degraded. The more rapidly that a compound is degraded, the less distance it travels before its concentration is reduced to "acceptable" levels. Half-lives for those organic compounds that have been detected in excess of NYSDEC Class GA standards at the site during the most recent sampling event are presented in Table 11.

Several statements can be made about the retardation factors and half-lives as presented in Table 11:

- All of the organic compounds that have been detected in excess of NYSDEC Class GA standards at the site during the most recent sampling events will migrate much more slowly than site groundwater due to their retardation factors.

- Although phenol is the least retarded of the listed organic compounds, it is the most readily biodegradable; therefore, it would not be expected to migrate far from its source. Site data demonstrate this observation; the concentration of phenol is high in the groundwater sample collected from monitoring well MW97-13S, where the presence of DNAPL has been documented, but drops off dramatically or is not detected in groundwater from most other monitoring wells.

Figure 7.10 Natural Attenuation Parameters



- All of the organic compounds detected in groundwater can be biodegraded in-situ. Evidence that biodegradation of these compounds is occurring at the site includes increased levels of dissolved iron and manganese in affected groundwater, which are indicative of biodegradation. The observed increase of these constituents is depicted in adjacent Figure 7.9, where the average iron and manganese concentrations of samples collected from the most-affected wells (those with BTEX concentrations greater than 1,000 ppb, i.e., MW93-1D, MW93-3D, MW97-8S, MW97-9S, and MW97-13S) are plotted with respect to the concentration in the site's least-affected, upgradient wells (MW97-14S&D). The plot shows that iron and manganese concentrations in samples collected from the affected wells are elevated above those collected from unaffected wells.

7.4.2.3 Inorganics

The concentrations of inorganic solutes in groundwater at concentrations exceeding NYSDEC Class GA standards (principally iron, manganese, and sodium) are anticipated to decrease downgradient of the site. As discussed in Subsection 7.4, elevated concentrations of inorganics are attributed to the presence of reducing conditions in site groundwater caused by biodegradation of the organic compounds at the site. As the reduced groundwater moves downgradient of the site, it will mix with oxygenated groundwater, creating a "transition zone," where trace metals, such as iron and manganese, coprecipitate (Fetter, 1993), resulting in a reduction of inorganics concentrations in groundwater. Farther downgradient, the concentrations of inorganics that are still above background concentrations would be further reduced by dispersion.

In addition to precipitation, inorganics tend to be adsorbed to organic material and clay minerals, further reducing their concentrations in groundwater.

8. Susquehanna River Evaluation Findings

Evaluation of the site's potential impacts to the Susquehanna River began in 1991 with the Prioritization Investigation, and has been a major focus of subsequent site investigation up though the 2001 Phase II SRI. This section discusses the findings of river work, divided into the following categories of work:

- Surface water quality;
- The results of a seepage evaluation;
- Riverbed probing;
- Riverbed sampling results; and
- Fate and Transport

8.1 Surface Water Quality

Susquehanna River surface water quality data are available from site investigations and from the City of Binghamton Water Filtration Plant (located across the river). As discussed below, these surface water sampling data, show no evidence of impacts to surface-water quality attributable to the site. It should be noted that some MGP- and non-MGP-impacted sediments produce sheens when disturbed, thus temporarily exceeding the water-quality standard for oil and floating substances (6 NYCRR Part 703.2). The nature and extent of sheen-producing riverbed materials are discussed in Subsections 8.3 and 8.4, below.

8.1.1 Site Investigation Samples

For the Prioritization Investigation in 1991, ES collected four surface-water samples from the Susquehanna River:

- SW91-1, upstream of the site, at the sediment sample location identified SED-1 (see Figure 3);
- SW91-2, near the outfall of the 66-inch storm sewer at the sample location identified SED-2; and
- SW91-3 and SW91-4, downstream of the site, at the sample location identified SED-3.

During the Task II RI in 1993, BBL reexamined the quality of the Susquehanna River by collecting five new surface-water samples (these sample locations were not surveyed; therefore, they are not shown on the site figure):

- SW93-1, approximately 400 feet downstream of the site's western boundary;
- SW93-2, adjacent to the site, near the Phase I SRI probing point P-2 (see Figure 3);

- SW93-3, near the 24-inch pipe outfall; and
- SW93-4 and SW93-5, approximately 135 and 420 feet upstream of the 24-inch pipe outfall.

Each of the samples from the Prioritization Investigation and Task II RI was submitted for laboratory analysis of VOCs, SVOCs, metals and cyanide. As indicated on Table 8.1, no organic compounds were detected. Several metals were detected, notably iron and aluminum, however, the locations and concentrations of these detections suggest they are unrelated to the site. The analytical data for the Task II RI samples are summarized on Table 14.

Table 8.1
Surface Water Analytical Results*

Investigation	Sample ID	VOCs	SVOCs	Total Cyanide	Amenable Cyanide
Prioritization Invest.	SW91-1	ND	ND	ND	ND
	SW91-2	ND	ND	97	45
	SW91-3	ND	ND	ND	ND
	SW91-4	ND	ND	ND	ND
Task II RI	SW93-1	ND	ND	ND	ND
	SW93-2	ND	ND	ND	ND
	SW93-3	ND	ND	ND	ND
	SW93-4	ND	ND	ND	ND

* excludes metals; discussed in Subsection 8.1;
Results in ppb; ND= not detected.

In 2001, BBL collected a single surface-water sample to confirm that river water was suitable to use during drilling of the Phase II SRI riverbed borings. BBL collected the sample near the intake of the City of Binghamton's water filtration plant (see Figure 2), and submitted for analysis of BTEX and PAHs. The laboratory reported no detections.

8.1.2 Water Filtration Plant Analytical Results

The City of Binghamton Water Filtration Plant, located across the Susquehanna River from the site, conducts a regular sampling program but has not found any site-related constituents in its intake water. In the October 9, 1997 sampling event, plant raw water was analyzed for VOCs, pesticides, and PCBs, and plant finished water was analyzed for selected inorganics. Among the constituents analyzed, no MGP-type constituents were detected. Plant officials have seen no evidence of contamination in their intake water (McNerney, Personal Communication with M. K. Cobb, 1998). The analytical data from the October 1997 sampling event are presented on the Electronic Attachments CD.

8.2 Riverbed Seepage Evaluation

To identify the presence of groundwater seeps in the Susquehanna riverbed, BBL completed a temperature and specific conductivity survey on September 29, 1997. The measurements, taken along three transects of 1,000 feet each and aligned parallel to the north bank of the river, showed no large fluctuations in the measured parameters. A large fluctuation in the measured parameters would have indicated a localized area of significant groundwater discharge into the river. No such area was detected. (The data collected during the survey are presented on the Electronic Attachments CD.)

Prior to sampling, BBL staff measured the water level of the river and the water levels in monitoring wells nearest the river (MW97-11S and MW97-12S), to determine the direction of the hydraulic gradient. As expected, groundwater was found at elevations above the river level, implying net groundwater flow into the river.

The temperature and conductivity of the groundwater near the river showed levels different than those taken in the river water. During the week that the temperature/conductivity survey was conducted, the temperature of the groundwater at monitoring wells MW97-11S and MW97-12S averaged approximately 15°C, whereas readings of the river water ranged between 16.8 and 18.1°C. Specific conductivity of groundwater in these wells during sampling averaged approximately 3 milliseimens per centimeter (mS/cm), whereas readings of the river water ranged between 0.194 and 0.242 mS/cm.

A large-scale groundwater seep would likely have been detected during the river sampling as a sharp increase in conductivity paired with a less dramatic decrease in temperature. Minor fluctuations do occur in the data, but are so slight that they cannot prove the existence of seeps. Though we can conclude from other data sources that groundwater is entering the river, the results of the river survey do not suggest any discreet areas of uncharacteristically rapid discharge. Therefore, groundwater discharge to the river should be considered as diffuse flow.

8.3 Riverbed Probing Results

As noted previously, probing in the Susquehanna River along the former plant site was performed during three separate investigations. The first was done in 1993 as part of the Task II RI, along three riverbed transects totaling 87 individual probing points. These three transects extended from the Tompkins Street Bridge upstream to the 24-inch outfall and ran parallel to the river's north shore (immediately off the bank, 25 feet from the bank, and 50 feet from the bank). The resulting data, presented in Appendix A-4 of the Task II RI (which is included on the Electronic Attachments CD), indicated that riverbed materials were primarily coarse sand and gravel with traces of fine sand and fine sandy clay.

The second probing round was performed during the Phase I SRI and consisted of 10 probing points, approximately 10 feet from the bank between the 24-inch outfall and the former bridge abutment. The purpose of this exercise was to investigate the presence of soft sediment between the two pipe outfalls adjacent to the site and document any sheens observed. No sheens were observed. The probing indicated that the area was largely devoid of sediment, as the riverbed was lined chiefly with gravel and cobbles.

During the Phase II SRI a third round of probing was conducted in three transects running parallel to the north bank of the Susquehanna River (offset 2 feet, 10 feet and 20 feet from the bank). The probing transects were started near the 66-inch storm sewer and extended upstream beyond the site, ending near the location of the former Raney well. For the 108 locations probed during the Phase II SRI, the average and maximum depth of penetrable material was 1.1 and 6.7 feet, respectively. The maximum depth was noted at a location approximately 70 feet downstream of the 24-inch outfall and 10 feet from the bank. At approximately 60% of all probed locations, the penetrable material was less than 1 foot and at approximately 36% of the locations it was less than 0.5 feet. A summary of the probing observations is presented on the Electronic Attachments CD.

Based upon the probing results for the river, the riverbed material can be described as mostly coarse materials with small pockets of finer grained material adjacent to, and downstream of, the 24-inch outfall and the 66-inch storm sewer. Available grain size distribution data is presented on the Electronic Attachments CD. Distinct sheens were noted at only 12 locations, which were generally near the 24-inch outfall and the 66-inch storm sewer.

8.4 Riverbed Sampling

Sediment and riverbed-material samples were collected and analyzed for various constituents during four separate investigations since 1991, as described previously in Section 5.4. Samples were collected upstream, adjacent to, and downstream of the former MGP site to delineate the extent of site-related constituents. As depicted on Figure 9, the vast majority of locations with sheens or NAPL occurred near the outfalls of the 66-inch storm sewer and the 24-inch outfall, though sheens were found sporadically at points both up and downstream of the site, between SS-15 and SS-1D (Figure 9). A total of 85 samples were collected for chemical analysis from 65 locations in the riverbed.

The individual sample results are presented in Table 9. An evaluation of the data, including discussions related to SVOCs (and particularly PAHs), VOCs (particularly BTEX), cyanide, TPHs, inorganic analytes, TOC, and PCBs are presented in the subsections below.

8.4.1 Assessment of PAHs in the Riverbed

In riverbed samples analyzed for TCL SVOCs, the PAHs were the most-frequently detected constituents. A discussion of the nature and extent of PAHs detected in the Susquehanna River sediments is presented below.

8.4.1.1 Distribution of PAHs

PAHs were detected in 68 of 78 samples analyzed, with a maximum total PAH concentration of 4,230 mg/kg in sample SED-2 taken from 0 – 0.5 ft below sediment surface (bss), near the 66-inch storm sewer (Figure 15). In order to understand the spatial distribution of PAHs in the riverbed, BBL evaluated the data in three dimensions: lateral distribution along the north riverbank, distance from that riverbank, and depth below the riverbed surface. For the data collected, the key findings were:

- Samples containing the higher reported PAH concentrations, the majority of the locations where sheens were noted are clustered around the 66-inch storm sewer and, to a lesser degree, around the 24-inch outfall.

- All sediment PAH concentrations greater than 100 mg/kg were within 40 feet of the bank and those reported at concentrations above 500 mg/kg were between 10 and 20 feet from the bank.

- Most of the PAH is present in the upper 2 feet of the riverbed.

These data suggest that there are sources of PAHs to the river at or near the 24-inch pipe and 66-inch storm sewer. The point-source nature of these two areas is highlighted by the rapid decline in PAH concentrations with increasing distance from the riverbank and in the downstream direction.

As part of the evaluation of PAH distribution, isoconcentration contours for three different total PAH concentrations in the uppermost riverbed samples were approximated (Figure 15). At the request of the NYSDEC, a total PAH isoconcentration line for 4 mg/kg was developed. For purposes of comparison, also presented on the figure are isoconcentration lines for 20 and 100 mg/kg PAHs. As noted, each of the three lines is clustered in the same general areas, with little difference between them. As discussed in Section 8.4.1.2 and noted on Figure 15, the area enclosed by these lines is generally the same areas where sheens were noted.

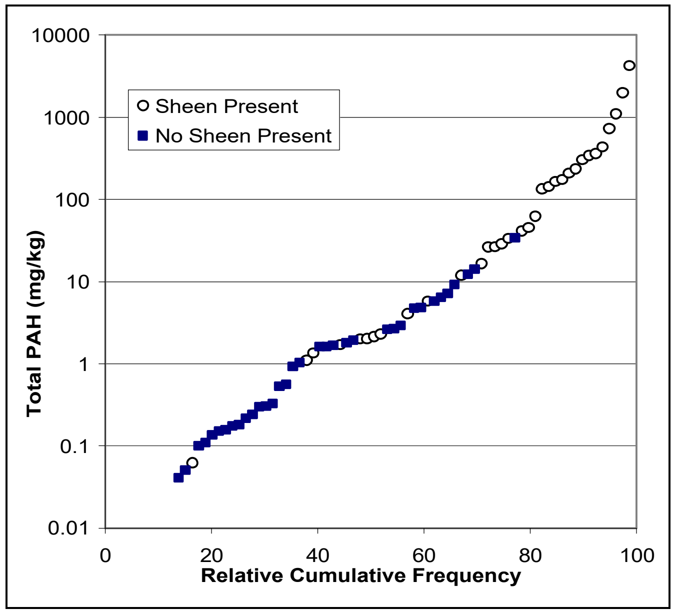
Other sources of PAHs to the riverbed materials are suggested by the presence of PAHs at concentrations up to 41 mg/kg (for sample SS-12) in samples collected upstream of the site. As described below, the laboratory data were evaluated to help identify potential multiple sources of PAHs to better distinguish site-related impacts from background and local (upstream) conditions.

8.4.1.2 Correlation of Sheens with PAH Detections

BBL looked for sheens during all riverbed probing and sampling activities. Observations of sheens are denoted on Figure 15 with a green location symbol. The presence of sheens in the riverbed samples was further assessed by plotting sheen presence versus total sediment PAH concentration.

As noted in Figure 8.1, sheens were predominantly noted in the sediment samples containing the more elevated PAH concentrations. Table 8.2 presents summary statistics for the dataset. Overall, the

Figure 8.1 Frequency Distribution of Total PAHs in Sediment



geometric average concentration for total PAHs for all samples was 3.3 mg/kg, while the geometric average concentration where sheens were observed was 31 mg/kg, suggesting a co-location of sheens and elevated PAH concentrations. BBL analyzed this potential relationship using a student t-test. Results of the analysis show that a statistical difference exists between the PAH concentrations of samples collected from locations where sheens were and were not observed.

Table 8.2 Correlation between PAH Concentrations and Observed Sheens

	All Samples	Samples without Sheens	Samples with Sheens
Sample Size	78	44	34
Frequency of PAH Detection (%)	87	80	97
Minimum PAH Concentrations (mg/kg)	ND	ND	ND
Maximum PAH Concentrations (mg/kg)	4,230	35	4,230
Median PAH Concentrations (mg/kg)	2.1	0.32	37
Geometric Average (mg/kg)	3.3	0.60	31
Arithmetic Average (mg/kg)	140	2.8	318

8.4.1.3 Potential Sources of PAHs to the Riverbed

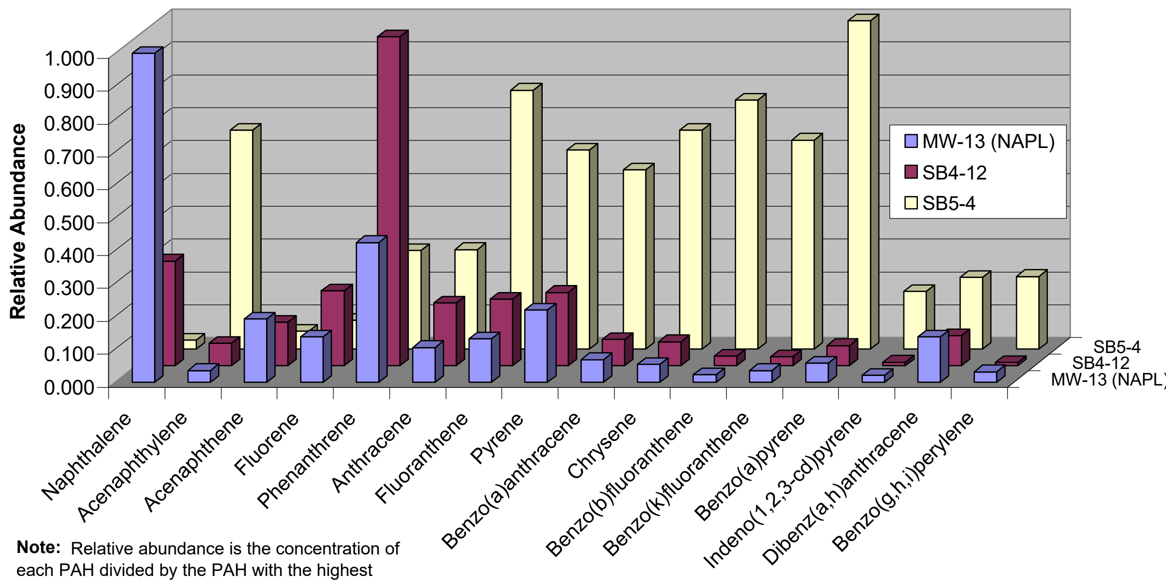
PAHs are ubiquitous in the environment, originating from both naturally-occurring and anthropogenic processes. As noted in section 5.4.1, BBL planned activities to investigate the presence of background PAHs in the many storm sewer outfalls, discharge pipes and upstream Susquehanna River sediment. However, the investigation was suspended due to the presence of an oil sheen on the Susquehanna that was observed at, and extending several miles upstream of, the investigation area on the day sampling was planned.

NYSEG and NYSDEC have agreed to move forward without further background sampling. Using available site data, a source evaluation was performed to assess the potential nature of hydrocarbon sources influencing PAH distributions in the riverbed within and around the site. The review focused on hydrocarbon compositions revealed by the relative concentrations of the target PAHs and the total ion current chromatograms from the Method 8270 gas chromatography/mass spectrometry (GC/MS) full-scan analyses. A series of characteristics were defined for three categories of sources (MGP-related tars, petroleum, and pyrogenic PAHs). Data and chromatograms for each sample were reviewed and observations were recorded for hallmark characteristics of these sources as described below.

MGP-Related Tars

PAHs constitute the predominant hydrocarbon fraction of MGP-related tars. The PAH fraction of unweathered MGP-related tars contains a high percentage of low-molecular-weight (LMW) PAHs: naphthalene, methyl-substituted naphthalenes, acenaphthene and phenanthrene. In addition to these LMW PAHs, MGP residues also contain fluoranthene, pyrene, chrysene, and other high-molecular-weight (HMW) PAHs. As MGP residues are

Figure 8.2. Changes to PAH Composition from Natural Attenuation



Note: Relative abundance is the concentration of each PAH divided by the PAH with the highest concentration found in that sample.

exposed to natural conditions in surface sediments, their PAH composition changes. The LMW PAHs are depleted through a combination of physical-chemical weathering and biodegradation whereas the HMW PAHs are more persistent. The LMW PAHs are differentially depleted according to their aqueous solubility and volatility (both are related to molecular weight); i.e., naphthalene is depleted more rapidly than acenaphthene, which is depleted more rapidly than phenanthrene, etc. The HMW PAHs, while persistent, become less bioavailable over time. The mechanism for reduced bioavailability is believed to be an increase in the sorption, or binding strength between HMW PAH molecules and sediment particles as the residue weathers.

Because the changes in PAH composition caused by natural attenuation in sediments are so readily recognizable, MGP-related tar characteristics were evaluated using the relative abundance of naphthalene, phenanthrene, and fluoranthene. The relative abundance of these three PAHs illustrate progressive stages of natural attenuation through weathering and biodegradation, with a greater abundance of naphthalene and phenanthrene present in the less attenuated samples, and little or no naphthalene present in the more attenuated samples. These changes in PAH composition are illustrated in Figure 8.2.

An additional MGP-related tar PAH compositional feature worth noting is the relative abundance of fluoranthene (Fl) and pyrene (Py). The Fl/Py ratio is an indicator of the temperature of formation of the tar, with lower temperature processes typically yielding an Fl/Py ratio <1 and higher temperature processes typically producing an Fl/Py ratio >1. Figures 8.3 and 8.4 below illustrate both thermal ratios in sediment PAH compositions. This thermal signature ratio was also evaluated as a MGP by-product characteristic.

Figure 8.3. Low-Temperature MGP By-Product PAH Composition

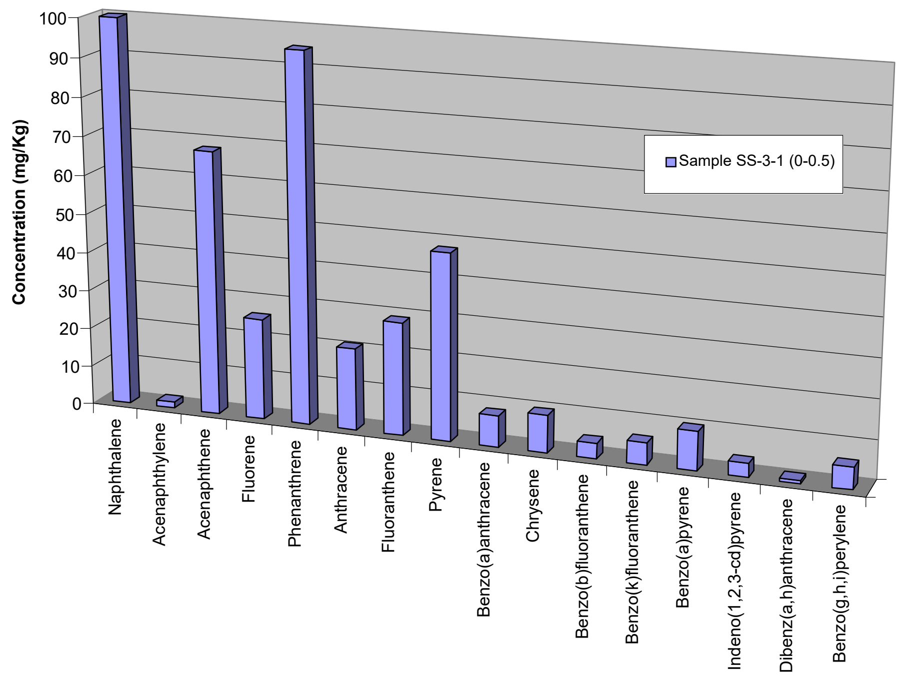
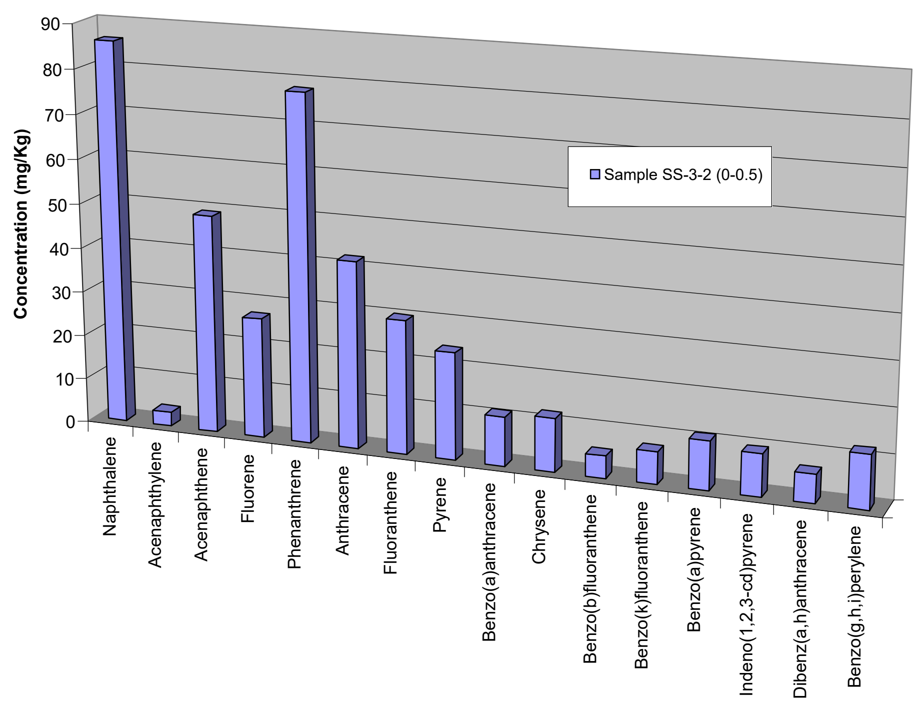


Figure 8.4. High-Temperature MGP By-Product PAH Composition



As summarized in Table 15 approximately 50 percent of riverbed samples containing PAHs exhibited characteristics of MGP-related tars. All of these were located adjacent to, or downstream of, the 24- and 66-inch sewer outfalls. With the exception of 10 of the higher-concentration samples listed in Table 15, varying degrees of weathering/biodegradation were noted.

Petroleum

Although petroleum-derived hydrocarbons include the PAHs found in MGP-related tars, petroleum residue compositions differ markedly from MGP residues. Most petroleum products contain several hydrocarbon fractions, with PAHs comprising much less of the hydrocarbon content than in MGP-related tars. In surface sediments, recent petroleum residues are notable for the "picket fence" pattern produced by the normal-alkanes that define the hydrocarbon range of the petroleum product. For example, gasoline has a lower molecular weight range than kerosene, which is lower than No. 2 fuel oil/diesel, etc. Petroleum compositions are also rapidly altered in surface sediments by natural weathering and biodegradation. As with MGP-related tars, the lower-molecular-weight, more soluble hydrocarbons are preferentially depleted. However, as petroleum residues weather, the relative abundance of persistent complex hydrocarbons increases in the residue, producing a baseline hump in the gas chromatograms of these residues. Also, their PAH composition changes, with the common (regulated) PAHs decreasing in abundance relative to their alkyl-substituted homologues. Distinct petroleum fingerprints may be recognizable in the GC/MS total ion current chromatograms that are the instrument output of the Method 8270 analysis.

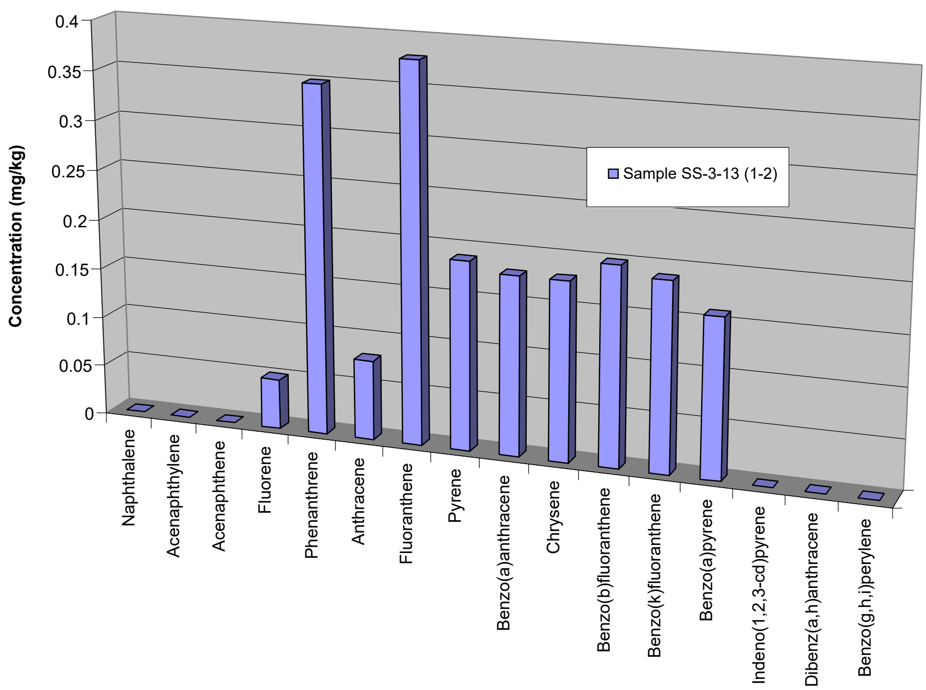
Petroleum characteristics were evaluated from the GC/MS chromatograms to indicate the potential for sources of hydrocarbons unrelated to MGP tar, multiple sources (MGP tars and petroleum), and possibly blended sources (mixtures of tar in a distillate petroleum carrier). The chromatographic features that were monitored as petroleum characteristics were the baseline humps in the GC/MS chromatograms corresponding to the hydrocarbon ranges of kerosene, No. 2 fuel/diesel, and waste/lube oil. In summary, approximately 20 percent of the locations sampled showed evidence of petroleum-related PAH components (Table 15). These samples were located upstream, adjacent to and downstream of the 24- and 66-inch sewer outfalls (Figure 8.6).

Background Pyrogenic PAHs

Although a rigorous background sampling program was not implemented, the samples that were analyzed were examined for background characteristics. PAHs are natural products that are formed through a variety of processes, including formation of petroleum, diagenesis through bacterial transformation of organic matter, and incomplete combustion (pyrolysis) of petroleum, coal and wood (Neff 1979). PAHs formed through pyrolysis (i.e., pyrogenic PAHs consisting of high-molecular-weight [HMW] PAHs) are ubiquitous and typically constitute the PAH background in urban and industrial area sediments (Youngblood and Blumer, 1975; LaFlamme and Hites, 1978; Gscwend and Hites, 1981; Tan and Heit, 1981; Tissier and Saliot, 1983; Volkman et al., 1992; and Tolosa et al., 1996). Typically, these background PAHs are introduced into sediments through atmospheric deposition of soot particles, stormwater discharges, and surface runoff of soot and road dust.

Background pyrogenic PAH compositions consist primarily of HMW PAHs, with little or no low-molecular-weight (LMW) PAHs, with the exception of phenanthrene and anthracene. An example of a sediment sample containing background pyrogenic PAH compositional features is depicted in Figure 8.5 below.

Figure 8.5. Background Pyrogenic PAH Composition



It should be noted that advanced weathering/biodegradation of MGP residues produce PAH compositions that are very similar to pyrogenic background: HMW PAHs with little or undetectable presence of LMW PAHs. For this reason, sources of low-concentration residues (e.g., less than 1 mg/kg total PAH) are very difficult to distinguish through a screening evaluation. Because the limits on the analytical sensitivity make it difficult to evaluate the source of residues with very low PAH concentrations, this evaluation categorizes samples with total PAH less than 1 mg/Kg as background.

At low concentrations, samples may often still be evaluated by their Fl/Py ratio, discussed above. This ratio is typically greater than 1 in high-temperature pyrogenic residues (e.g., soot in urban runoff and atmospheric fallout [McCarthy et al. 2000]) as well as in high-temperature-process tars (Emsbo-Mattingly 2001). By contrast, a ratio less than 1 is not typical for PAHs derived from background runoff/fallout sources. Though inconclusive by itself, evaluating this ratio provides an additional line of evidence distinguishing background characteristics and MGP by-product characteristics.

In Table 15, all samples with total PAHs less than 1 mg/Kg and measurable Fl/Py had a ratio greater than 1. All samples with total PAHs greater than 1 mg/Kg, lacking petroleum characteristics, and having a Fl/Py ratio less than 1 were categorized as having "MGP By-Product Characteristics." All samples with total PAHs greater than

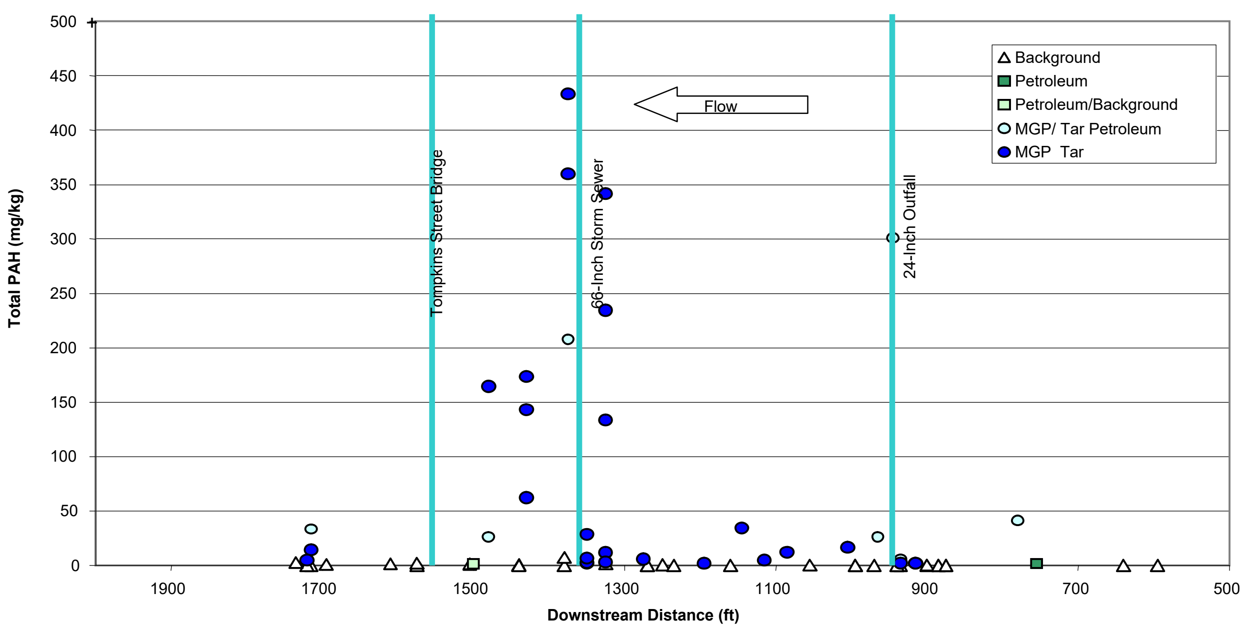
1 mg/Kg, lacking petroleum characteristics, and having a Fl/Py ratio greater than 1 were categorized as having 1) "MGP By-Product Characteristics" if there was additional evidence of a tar composition, or 2) "Background Characteristics" if there was no additional evidence of a tar composition.

In summary, approximately 40 percent of the locations sampled were characterized as having background pyrogenic PAH components (see Table 15). These samples were located upstream, adjacent to and downstream of the 24- and 66-inch sewer outfalls.

Source Evaluation Summary

Based on a review of PAH compositions and sample chromatograms, the apparent source(s) of each sample were noted in Table 15. These apparent sources are plotted as a function of total PAH concentration and river location in Figure 8.6.

Figure 8.6
PAH Concentration and Sources by Downstream Distance



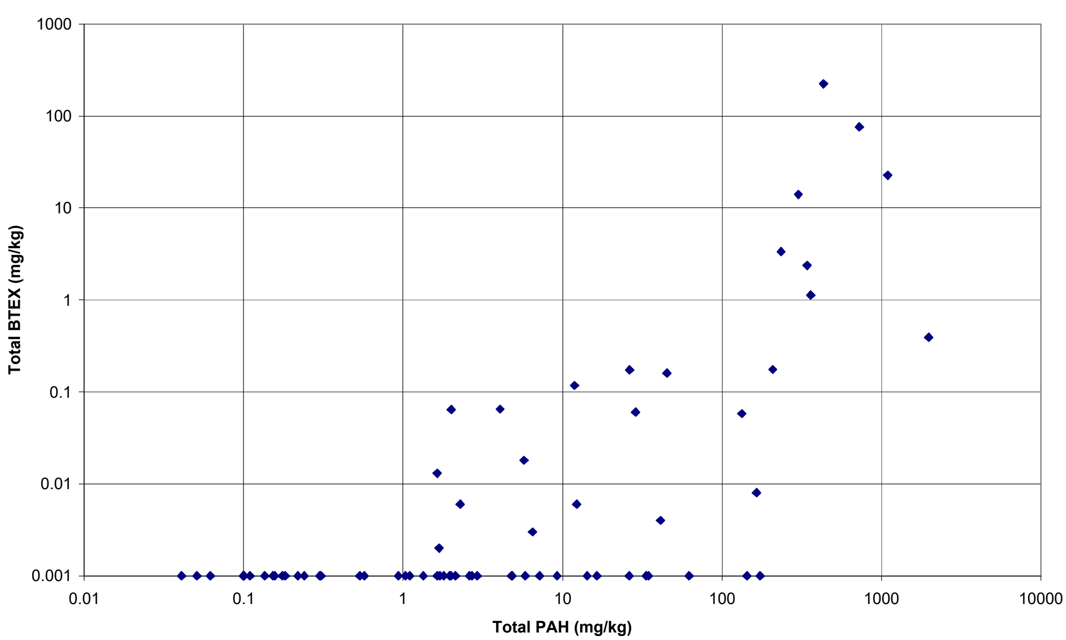
Detections of (PAHs) from MGP-related tars are predominantly clustered around the 66-inch storm sewer, with less frequent detections near the 24-inch pipe outfall, and downstream of the 66-inch storm sewer as far as SS-1D (Figure 15). Additional sources include the petroleum-related and background PAHs. Based upon the source evaluation, approximately 50 percent of the sampled locations were characterized as being petroleum-related or background pyrogenic PAH components. Background PAH characteristics were noted among the samples taken along the entire length and area of the portion of river that was investigated. Petroleum-related PAHs were noted at the most upstream location sampled and co-mingled with background PAHs both above and below the Tompkins Street Bridge. Some of these petroleum-related residues are likely responsible for some of the sheens that were noted during the site investigations. Additional upstream sampling would be required to better evaluate the relative contributions of background PAHs to sediments adjacent to and downstream of the site.

8.4.2 VOC Data

For those riverbed samples analyzed for TCL VOCs, only BTEX was detected. For this reason, the discussion below is limited to BTEX.

One or more of the BTEX compounds were detected in 27 of 75 samples analyzed, with a maximum reported total BTEX concentration of 224 mg/kg noted at location SS-3-2 (near the 66-inch storm sewer) at a depth interval of 0 to 0.5 feet bss. Of the 27 samples in which BTEX was detected, 20 samples had BTEX concentrations less than 1 mg/kg, and 15 had concentrations less than 0.1 mg/kg. The arithmetic average concentration of BTEX for all samples analyzed was 4.6 mg/kg, and was only 7.2 mg/kg for the samples in which BTEX compounds were actually detected. To further assess the distribution of BTEX in riverbed samples, Figure 8.7 graphically compares the concentration of BTEX with the concentration PAHs in the riverbed samples. As shown, samples with low, presumably background concentrations of PAHs (i.e., less than 1 mg/kg) do not typically contain BTEX. With higher concentrations of PAHs, BTEX becomes more frequently detected, though typically at lesser concentrations.

Figure 8.7
Relationship between BTEX and PAH



8.4.3 Cyanide

Total cyanide was detected in only 2 of 76 samples. The highest concentration of cyanide (19.6 mg/kg) was found at location SS-1 (Figure 15) in a sample from 0 to 0.9 ft bss, collected in 1993. Subsequent sampling in the area of SS-1 (which is located downstream of the Tompkins Street Bridge) did not confirm the presence of cyanide in the area. The other detection of total cyanide (at 3.1 mg/kg in a sample from 1- to 2-ft bss at location SS-12-4) was from a location upstream of both the site and the 24-inch outfall.

8.4.4 Total Petroleum Hydrocarbons

A total of 25 samples from the 1993 and 1997 sampling events were analyzed for total petroleum hydrocarbons (TPH). In six samples, TPH was detected, ranging from 96 to 7,100 mg/kg. Two of the samples were characterized as 10W40 oil, and four were characterized as #4 fuel oil.

8.4.5 Inorganics

In the 1993 and 1997 sampling, 18 samples were also analyzed for several inorganics (metals) on the Target Analyte List. Two of these samples were taken at background locations upstream of the site. A number of the samples had quantifiable concentrations. The inorganic analytes are discussed further in Section 9. Following a review of the 1993 and 1997 inorganics data, it was decided (with NYSDEC concurrence) that the subsequent 2001 investigation would not include analysis for inorganics except cyanide.

8.4.6 Total Organic Carbon (TOC)

A total of 40 samples have been analyzed for TOC. Results ranged from 0.18% to 4.81%, with an arithmetic average of 1.38%.

8.4.7 Polychlorinated Biphenyls

A total of 10 riverbed samples were analyzed for PCBs. None were detected in any of the samples.

8.5 Fate and Transport

BBL's evaluation of sediment transport focused on the potential for sediment affected by the site to be transported upriver, to the city's Water Filtration Plant intake. A hydraulic model of the river was used to simulate water-column sediment and constituent transport under a variety of conditions. The potential for ice-jams to occur on the river was evaluated, because such phenomena might affect sediment transport in the river.

8.5.1 River Hydraulic Model

BBL estimated the potential movement of river sediment from near the site to the city's Water Filtration Plant intake through the use of a river hydraulic model. The theoretical model simulated constituent movement through the water column under the premise that if the water column adjacent to the site did not move toward the intake, then sediment could not be transported (via the water column) in that direction. The model took into account the natural dilution and dispersion processes present in the river to evaluate the potential for sediments affected by MGP constituents to be drawn toward the intake. Because the intake is located slightly upstream and across the river, it is highly unlikely that constituent-containing sediment could be drawn to the intake even under unrealistically conservative conditions (i.e., extremely low flow and high winds). The model examined the worst-case scenario by treating the system as a point source entering a lake and predicting the subsequent plume distribution. Treating the Susquehanna River as a lake simulates extreme low-flow conditions and therefore adds a strong measure of conservatism to the model. The model took into account channel geometry, advection due to flow or wind driven currents, and characteristics of both the water and the constituents of concern.

The plume geometry and dilution characteristics were simulated using the Cornell Mixing Zone Expert System (CORMIX; Jirka and Hinton, 1992). The CORMIX model uses ambient river geometry, flow, and density data to predict the dilution and plume characteristics of a submerged point source discharge. CORMIX was developed for, and is supported by, the USEPA primarily for judging discharge compliance with regulatory mixing zone constraints. By making conservative assumptions with regard to flow characteristics and constituent releases from the sediment, the CORMIX model is applicable to the Susquehanna River to assess the characteristics of a discharge emanating from the sediment surface.

To simulate low-flow conditions, the water in the river was assumed to be approximately 3 feet deep and 400 feet wide. The discharge point was assumed to be approximately 10 feet from the north shore of the river on the river's bottom. Advective river velocity was assumed to be 0.03 meter per second (0.001 foot per second), and the discharge velocity 0.0001 meter per second (0.0003 foot per second). To estimate the constituent concentration in the discharge, a steady-state discharge of one gram per day was divided by the volume of discharge per day (3.28 cubic meters) for a concentration of 0.0003 parts per billion (ppb). The hypothetical discharge water was assumed to be the same density and temperature as the river water, and the constituent discharged was modeled as 100 percent conservative (i.e., no decay). These conditions were used by the CORMIX model to predict the resulting steady-state plume dimensions, approximate travel times, and dilution characteristics.

The results of this model simulation represent extreme low-flow conditions in the Susquehanna River, with a minor yet still extant downstream advective component of transport. The result is a predicted constituent plume that is rapidly diluted, attaches to the north river bank, and is not likely to impact the water or sediment quality of the south side of the river for miles downstream. During steady-state conditions, the plume is completely vertically mixed approximately 12 feet downstream of the discharge. At that point the dilution at the center of the plume is 106 to 1, and the concentration is 0.000003 ppb. The centerline of the plume will have the least dilution and the highest concentration; as the plume spreads out, the constituent concentration at the edge of the plume can be considerably less than at the centerline. At a distance of approximately 56 feet downstream, the centerline dilution increases to 367 to 1 and the predicted concentration drops to 0.0000008 ppb. The plume at this point is approximately 20 feet wide and attaches to the north bank of the river. Far-range model predictions for low-flow conditions include a dilution ratio of approximately 3,300 to 1 and a constituent concentration of 0.00000009 ppb at a point approximately 3.1 miles downstream. Predicted time of travel for the 3.1 miles is slightly over 19 days, which illustrates the extreme low-flow assumption. It is unlikely that, during these conditions, a significant amount of sediment transport could occur.

The CORMIX model predicts the constituent plume based on turbulent diffusivity, which in practice incorporates such factors as hydrologic mixing and eddy diffusivity, and is typically orders of magnitude greater than molecular diffusion. Turbulent diffusivities in the horizontal and vertical directions are provided in the CORMIX output, and, for the assumed conditions are 0.00055 meters squared per second (m^2/s) and 0.00044 m^2/s, respectively. To evaluate the discharge under truly stagnant conditions, such as a lake, these values can be used in the governing advective-diffusion equation based on the conservation of mass to estimate the steady-state concentration of a constituent at a given distance from the source. The solution for the advective diffusion equation is provided in *The Handbook of Hydrology* (Maidment, 1993), and with the advective terms zeroed out is as follows:

$$C_{(x,y,z)} = q / 4x\pi(E_Y E_X)^{½}$$

where: C is the concentration (mass/volume);
q is the mass loading (mass/time);
x is the distance from the source; and
E_Y and E_X are the horizontal and vertical diffusivities (area/time).

Assuming a one gram per day loss of the constituent from the sediment and the diffusivities from the CORMIX results, the approximate concentration of a constituent across the river near the intake (approximately 122 meters away from the source) is computed to be 0.00000002 ppb at steady-state conditions with no advective transport. This concentration reflects a dilution ratio of more than 20,000 to one in the absence of advective transport, and indicates that there is little likelihood that a dissolved constituent from the sediment on the north shore of the river could be transported across and upstream to the vicinity of the water intake in concentrations quantifiable using standard analytical methods. There remains even lesser possibility that sediment or particulate-bound constituents could be transported in the absence of advective transport.

These analyses illustrate the diffusive transport of constituents under the extremely conservative conditions of very low to no flow in the Susquehanna River; however, USGS flow data collected from the gauge at Conklin, New York (USGS No. 1503000, approximately 2 miles upstream) indicate a daily average flow of 3,586 cfs, which will increase the advective transport and dilution ratio several orders of magnitude. The lowest flow ever recorded at the gage was 85 cfs in October 1964. Assuming the same channel dimensions as above and an average water depth of three feet, a flow of 85 cfs would correspond to a velocity of 0.071 feet per second, approximately 20 times the velocity assumed in the CORMIX model. It is evident that even with low flow and velocity, advective transport is more then adequate to prevent the constituents in the sediment from diffusing across the river to the vicinity of the water intake.

The effect of wind will not impact the general conclusions of the advective-diffusive transport analysis. In, general, wind over water bodies will cause resistance of water surface velocity in flowing water, and will serve to cause wind-induced circulation in stagnant waters. Wind in itself cannot cause advective flow throughout the depth of the water column. In the case of moving water, a wind in the opposite direction of flow will cause flow resistance or even reversal at the surface, but only with a corresponding increase of water velocity at depth, which would further increase the dispersion and advective transport of a sediment-derived pollutant. As the wind direction changes to become perpendicular to water flow, its effect on water velocity decreases. The water in the Susquehanna River at the site was not stagnant; therefore, any wind circulation patterns would also have a net downstream advective component that would prevent constituent transport directly across the river.

8.5.2 Ice-Jam Evaluation

To evaluate the effects, if any, of ice jams on water-column transport of Susquehanna River sediment near the site, BBL conducted a historical investigation of ice-jam occurrence, and NYSEG staff documented icing conditions during the winter of 1997-1998.

BBL contacted the U.S. Army Corps of Engineers, the city of Binghamton, and the USGS; none of these entities had records indicating the occurrence of ice-jams in the river near the site. No entities were identified that regularly collect river-icing data for the stretch of the river near the site.

To determine whether ice-jamming was occurring downriver and affecting the river near the site, NYSEG staff documented icing conditions and measured the stage of the Susquehanna River three times per week during the 1997-1998 winter season beginning on January 19, 1998, and ending on March 20, 1998. By comparing the river stage to river discharge (as recorded by the USGS at the Conklin, NY station), the occurrence of ice jamming could be identified, since an ice jam would result in a backup of river water behind it, causing the stage of the river to be higher than the stage of similar discharges in the absence of ice jamming. Analysis of river stage and discharge data shows no anomaly that would represent ice jamming. Stage and discharge data are presented in Table 13.

9. Risk Evaluation

9.1 Overview

This section presents the human health evaluation and the ecological assessment for the NYSEG Court Street Site. The human health evaluation is a semi-quantitative evaluation that identifies potentially complete exposure pathways and quantifies potential risks for the most likely pathways. The ecological assessment is consistent with NYSDEC (1994) guidance for conducting a Fish and Wildlife Impact Analysis (FWIA). The FWIA characterizes site resources, identifies potential ecological receptors, and provides a preliminary evaluation of potential effects. Collectively, the information from the human health evaluation and the FWIA will be used to assist in developing remedial strategies for the site.

9.2 Human Exposure Evaluation

The purpose of this section is to evaluate the potential for human exposure to chemicals of potential interest (COPI) detected in environmental media found on and near the site. The evaluation is based on site-specific information on the environmental setting, current and foreseeable future land uses, and analytical data for the site. Information collected during the various phases of site investigation, including analytical data, form much of the basis for the conclusions rendered in this evaluation.

9.2.1 Environmental Setting

The NYSEG Court Street Site is located in the City of Binghamton. The site is bordered to the north by railroad tracks, which are elevated on a gravel embankment or concrete pilings. The site is bordered to the east by leased commercial/industrial property and to the west by a concrete retaining wall and Brandywine Avenue. To the south, the property is bounded by Court Street and the Susquehanna River. Approximately 90% of the site proper is unvegetated and covered with gravel or asphalt. The site and surrounding land use is predominantly industrial, and there are no residential areas adjacent to the site.

9.2.2 Constituents of Potential Interest

This evaluation defines COPI as constituents detected in one or more samples of soil, groundwater, surface water, riverbed materials, or effluent and sediment from storm sewers, regardless of whether they are site-derived. The available data indicate that the principle COPI for the site are PAHs; however, other constituents including VOCs have been detected on site.

Although COPI have been detected in soil, groundwater, surface water, riverbed materials, and storm-sewer sediment and effluent, the mere presence of COPI is not necessarily indicative of site-related activities nor of unacceptable risks to human health. Whether the occurrence of a chemical presents an unacceptable risk to human health depends upon variables such as dose, exposure route, and the frequency and duration of exposure.

9.2.3 Exposure Pathways

An initial step in evaluating potential human exposure is identifying complete exposure pathways. There are three elements necessary for an exposure pathway to be complete: 1) COPI are present in environmental media, 2) locations exist where human exposure to these media could occur, and 3) routes of exposure exist that could allow COPI to be taken up by the human body (e.g., direct contact through ingestion or dermal contact, or indirect contact via inhalation).

The following subsections present potential exposure pathways and describe the likelihood that such pathways could become complete.

9.2.3.1 Potential Direct Contact with On-Site Soils

The potential direct contact exposure pathway (i.e., ingestion or dermal contact) is not likely to be completed for three reasons. First, fencing and a locked gate secure the site; therefore, only authorized workers have access. Second, NYSEG requires that an OSHA-compliant health and safety plan be prepared prior to any excavation work at the site. Third, an approximately 18-inch thick layer of gravel/clean fill or pavement covers most of the site, effectively isolating workers from exposure to surface soils in the covered areas.

Because a small portion of the site (near SSO-1, SSO-2, and SSO-3) is grass covered, BBL evaluated the potential risks of worker exposure to surface soil in this area by conducting a conservative risk calculation (Table 10). Using the USEPA's standard default worker exposure scenario for soil ingestion (the largest component of total risk), along with the maximum detected PAH and inorganic concentrations detected in SSO-1 (9/15/98), yields a total excess lifetime cancer risk of seven in one million (7E-06) and a hazard index of 0.08. These results indicate that even under an extremely conservative exposure scenario, risks associated with exposure to this area would be considered acceptable by regulatory agencies such as the USEPA (i.e., total excess lifetime cancer risk less than one in ten thousand, and non-carcinogenic hazard index less than one). Factoring in dermal exposure would at most double the risk estimate. Even so, the total risk values would still be well within the USEPA's acceptable range (one in ten thousand to one in one million).

Potential worker exposure to on-site subsurface soils may also occur. Although PAH concentrations in subsurface soils are frequently higher than surface soils, the potential for exposure (and hence risk) is expected to be relatively low. Specifically, most of the subsurface soil samples with elevated PAH concentrations were collected at depths ranging from 4 to 18 feet, and exposure to soils at this depth would be limited to excavation activities. Excavation activities are typically infrequent and of short duration (especially compared to the 250 days per year for 25 years exposure that was assumed in the surface soil risk quantification). In addition, NYSEG's Health and Safety Plan would address methods to minimize potential worker exposure during excavation activities.

9.2.3.2 Potential Direct Contact with Off-Site Soils

Humans are unlikely to come in contact with off-site soils because most of the area surrounding the site is either paved (Brandywine Avenue, Court Street, and the BMH parking lot) or covered by about ten feet of fill (railroad tracks north of the site). The potential does exist for construction workers to contact subsurface soils when digging along Brandywine Avenue or Court Street. Soil samples collected along Brandywine Avenue (from borings SB-110, SB-111, SB-112) were largely non-detect, and the uppermost 20 feet of soils at nearby monitoring well pair MW97-9 were visually clean. An exception is the soil sample collected from boring SB-111, which had a total PAH concentration of 416 mg/kg (at a depth of 7 to 7.5 feet). BBL attributes the source of PAHs in this sample to the coal and ash that comprised it. Coal and ash were commonly used as fill materials in the past. Most soil samples collected beneath Court Street (i.e., samples SB-105, SB-106, SB-107, and SB-108) had relatively low total PAH concentrations (maximum of 53 mg/kg in sample SB-106). PAH concentrations detected in the off-site soils were generally lower than those detected in on-site soils. Also, potential exposure would be more infrequent than that assumed for on-site workers (250 days per year for 25 years). As such, risks for off-site soils would be even lower and acceptable.

9.2.3.3 Potential Inhalation of Vapor/Particulates

Exposure to COPI released from soil to ambient air is not of concern for on-site workers or other potential receptors. The cover of clean fill, grass, and pavement for both on-site and off-site areas mitigates potential exposure associated with the volatilization of organic compounds or the ejection of inorganics on airborne particulates. Although the inhalation of vapors or particulates may occur in the event of excavation activities, these activities are typically infrequent and of relatively short duration. Also, NYSEG's Health and Safety Plan would address methods to minimize potential exposure during on-site excavation activities (where most of the subsurface PAHs were detected).

9.2.3.4 Potential Exposure to Groundwater and NAPL

Groundwater affected by the site is not used for drinking, nor is it likely to be in future. The municipal water supply for Binghamton and the surrounding vicinity is derived from the Susquehanna River. Direct contact exposure to groundwater or exposure to NAPL is unlikely to occur during day-to-day activities at the site. NYSEG's Health and Safety Plan would address the air monitoring requirements and personal protective equipment necessary to protect workers in the event that NAPL were encountered.

9.2.3.5 Potential Exposure to Susquehanna River Sediment and Surface Water

Dermal contact with surface water and riverbed materials in the Susquehanna River is possible, but not likely to occur on a frequent basis. Access to the river adjacent to the site is difficult due to the high retaining wall and steep banks; however, there is a small footpath leading down to the river near the Tompkins Street Bridge. Children have been seen fishing in the river, and the presence of fishing line and lures indicates that the area near the pump house is a popular location for fishing. Although a potential receptor might stand in the river while fishing or wading, it is unlikely that riverbed materials will come into contact with the skin. The riverbed materials in the area of the Susquehanna River next to the site are compacted such that an individual tend would stand on top of them rather than sinking beneath them. This surficial layer of riverbed material may also serve to effectively isolate sediment-associated PAHs.

9.2.3.6 Potential Exposure to Storm Sewer Sediment and Surface Water

Low concentrations of COPI were detected in sediment and water samples collected from the storm sewer outfalls. However, due to difficult access and the location of the outfalls, exposure to these media is unlikely. The only likely exposure associated with the storm sewer would be for city workers conducting maintenance on the sewer system. However, worker exposure would be limited by the health and safety procedures that are involved when working in a sewer system (e.g., rubber gloves, high boots, coveralls). Also, PAHs were not detected in water samples from the storm sewer, and storm sewer sediment PAH concentrations were relatively low (maximum detected total PAH concentration of 126 mg/kg).

9.2.4 Summary

Based on an evaluation of the current and foreseeable use of the site and the nature and location of COPI, the most likely exposure pathways are:

- Worker exposure to on-site surface soil and subsurface soil, NAPL, and groundwater: potential exposure would be limited by the relatively low PAH concentrations in uncovered surface soil, and health and safety procedures used during excavation activities.

- Worker exposure for city employees performing maintenance in the storm sewer: potential exposure would be limited by health and safety practices.

- Exposure for people conducting recreational activities along the Susquehanna River: exposure would be limited by physical conditions (e.g., the nature of the sediment bed, depth of water).

9.3 Ecological Assessment Results

9.3.1 Overview

This subsection describes the FWIA that BBL conducted for the site. The objectives of the FWIA were to identify the fish and wildlife resources that exist on and near the site and to evaluate the potential for exposure of these resources to site-related constituents. BBL completed the FWIA in accordance with Steps I, IIA, and IIB of the FWIA guidance prepared by the NYSDEC (1994). Results of the FWIA will be used to aid in remedial decision-making.

Step I is performed to characterize the terrestrial and aquatic ecology of the site and surrounding areas to develop a list of potential ecological receptors. The specific components of Step I are: IA) site description and maps, IB) description of fish and wildlife resources, IC) description of fish and wildlife resource value, and ID) identification of applicable fish and wildlife regulatory criteria.

The specific components of Step II performed for this FWIA are IIA) pathway analysis and IIB) criteria-specific analysis. Step IIA is an exposure pathway evaluation based on the receptor information generated in Step I and the location of site-related constituents. Step IIB is a criteria-specific analysis which compares constituent levels in the environmental media to media-specific numerical screening levels. Step IIB is a screening step used to evaluate the potential significance of the complete exposure pathways and determine if further ecological evaluation is warranted.

9.3.2 Site Description

The site is bordered to the north by railroad tracks, to the east by BMH warehouse and sales offices, to the south by Court Street, and to the west by Brandywine Avenue. The northern border of the site is bounded by railroad tracks elevated on a gravel embankment or concrete pilings. A concrete retaining wall is present along the western border adjacent to Brandywine Avenue. This wall is approximately 4 feet tall at the southwest corner of the site, and slopes down to 1 foot at the northwest corner of the site. The site perimeter is fenced, with the main entrance gate along the southern border off of Court Street. The site itself consists of a gravel storage area with a small patch of vegetation located in the southeastern portion of the site. Approximately 90 percent of the site consists of a level, unvegetated gravel and asphalt lot that is used for equipment storage. A few shrubs, small trees, vines, and herbaceous plants are located along the steep bank bordering the railroad tracks. The Susquehanna River is located on the south side of Court Street.

9.3.2.1 Ecological Characterization

BBL reviewed topographic and regional maps to identify the general physical and ecological features of the site and surrounding areas. Information from the NYSDEC Natural Heritage Program database was also used. A field biologist conducted a walkover of the site and adjacent areas on October 31, 1997 (referred-to hereafter as the “site visit”. During the site visit, the biologist assessed habitat value, vegetative covertypes, and associated fish and wildlife species within a 0.5-mile radius of the site. Covertype mapping for the site and surrounding areas was performed by identifying the dominant vegetative assemblages and classifying similar areas into ecological communities. Figure 16 presents a map depicting the site location and natural resources within a 2-mile radius of the site. Figure 17 presents the covertype map. The site visit assisted in the evaluation of wildlife habitat value and human resource value for each covertype, and included an evaluation of the presence of stressed flora and/or fauna.

Vegetative Covertypes

A limited amount of vegetation exists at the site, and is located primarily along the railroad tracks north of the site. The scant vegetation consists primarily of staghorn sumac, boxelder, tree-of-heaven, honeysuckle, grape, Virginia creeper, catnip, knapweed, black raspberry, and other species that are common in disturbed areas. Four general covertypes have been identified within a 0.5-mile radius of the site (see Figure 17). These covertypes are described as:

1) Industrial;
2) Urban;
3) Wooded; and
4) Field.

Coverage of the vegetative types is described as follows.

Industrial Vegetative Covertype - The entire site is described as industrial covertype. This covertype also occurs in a band to the north and west of the site, as well as more limited areas to the east and south. The industrial covertype generally consists of industrial buildings, paved and gravel lots, as well as limited amounts of cultivated vegetation (i.e., lawns, ornamental shrubs, and trees). Opportunistic vegetation exists on unused portions of property (i.e., edges of the site, the railroad embankment). In general, the majority of the land is actively used, and little or no vegetation is present. Plant species observed or expected to occur within the industrial covertype are presented on the Electronic Attachments CD included with this report. These species include, but are not limited to, tree-of-heaven, boxelder, ragweed, knapweed, and Virginia creeper. These species commonly occur in disturbed areas.

Urban Vegetative Covertype - The urban covertype generally consists of residential and commercial sections of the city of Binghamton. This covertype is characterized by commercial or residential buildings, public parks, roads, and parking lots, with less than 40 percent vegetative cover. In general, vegetative cover (lawns, ornamental trees, and shrubs) is greater in residential areas. Plant species observed or expected to occur within the urban vegetative covertype are presented on the Electronic Attachments CD. In addition to those species listed, other ornamental herbaceous and woody species are also expected to occur within this covertype.

Wooded Vegetative Covertype - The wooded vegetative covertype consists of areas where the dominant vegetation consists of mature trees. This covertype is located along the shores of the Susquehanna River, as well as a small area located just upstream of the Water Treatment Plant on the south bank. Plant species observed or expected to occur within the wooded vegetative covertype are presented on the Electronic Attachments CD. These species include, but are not limited to, silver maple, willow, boxelder, sensitive fern, beggars ticks, and grasses.

Field Vegetative Covertype - The field vegetative covertype consists of a small open field where the dominant vegetation is grasses and forbs. This covertype is located to the southeast of the site, east of the Water Treatment Plant. Plant species observed or expected to occur within the field vegetative covertype are presented on the Electronic Attachments CD. These species include, but are not limited to, goldenrod, blackberry, aster, Queen Anne's lace, and grasses.

9.3.2.2 Surface Waters

The main surface water near the site is the Susquehanna River, which is located just south of the site, flows westward and averages about 400 feet in width. The river bank consists of anthropogenic features (e.g., concrete retaining walls, etc.) and natural river banks. Vegetation growing along the natural river banks includes silver maple, willow, red-osier dogwood, grasses, asters, vervain, and other miscellaneous plants.

The NYSDEC best usage classification for the Susquehanna River is "Class A." According to New York Regulations Title 6 Part 701.6, the best usages for "Class A" streams are as a source of water for drinking, culinary or food processing purposes, primary and secondary contact recreation, and fishing. "Class A" waters shall also be suitable for fish propagation and survival. Currently, the river is used as a source of drinking water, for fishing and other recreational activities, and supports fish propagation.

Wetlands

Based on the New York State Freshwater Wetlands Maps for the Binghamton East, Binghamton West, Chenango Forks, and Castle Creek quadrangles (NYSDOT, 1984), one New York State regulated wetland is located, at least in part, within a 2-mile radius of the site. Wetland CC-11 is located partially within the 2-mile radius of the site. Wetland CC-11 is located north and hydraulically upstream of the site. As such, it is expected to be hydrologically isolated from any site conditions.

9.3.2.3 Fish and Wildlife

In general, the wildlife species inhabiting or using the site are likely to consist of common species typical of urbanized and disturbed areas in New York. During the site visit, the only wildlife observed near the site was a seagull. No threatened/endangered species or critical habitats were observed during the site visit. The potential fish and wildlife species inhabiting each of the covertypes are described in the following sections.

Industrial Vegetative Covertype - The site itself, as well as a significant portion of the surrounding land, is classified as an industrial vegetative covertype. Most of the area is covered with buildings, pavement, or gravel. Due to the sparse vegetation and limited habitat of this covertype and the on-going level of human activity and disturbance, very few wildlife species are expected to inhabit the industrial areas. Furthermore, wildlife access to the site itself is limited due to a fenced perimeter and surrounding urban land uses. The limited number of wildlife species that may utilize this covertype are presented on the Electronic Attachments CD. These species include rock dove, house sparrow, gray squirrel, and mice. In general, the limited number of species inhabiting or using this covertype is likely to consist of common species capable of utilizing urbanized or disturbed areas in New York State.

Urban Vegetative Covertype - The urban vegetative covertype has limited vegetation and habitat capable of supporting a variety of wildlife species. Those species that utilize this covertype generally consist of species that are capable of utilizing habitats that are created by urban landscapes. Wildlife species observed or typical of the urban vegetative covertype are presented on the Electronic Attachments CD. These species include, but are not limited to grey squirrel, mice, American robin, rock dove, house sparrow, and house finch.

Wooded Vegetative Covertype - The wooded vegetative covertype is present as a narrow border along some of the banks of the Susquehanna River and is also present in a small area to the east of the Water Treatment Plant. Wildlife species typical of wooded vegetative covertypes are presented on the Electronic Attachments CD. These species include, but are not limited to, gray squirrel, mice, red-eyed vireo, baltimore oriole, American robin, veery, and downy woodpecker. Some of the typical woodland species such as raccoon, striped skunk, and whitetail deer may not use this covertype due to its relatively small size and surrounding urban land uses.

Field Vegetative Covertype - The field vegetative covertype is present as a small field to the east of the Water Treatment Plant. Wildlife species typical of field vegetative covertypes are presented on the Electronic Attachments CD. These species include, but are not limited to, cottontail rabbit, mice, bobolink, song sparrow, and swallows. Larger mammals such as whitetail deer, raccoon, and striped skunk may not use this covertype due to its relatively small size and surrounding urban land use.

Susquehanna River - Fish and wildlife species typical of the Susquehanna River habitat are presented on Electronic Attachments CD. These species include, but are not limited to, beaver, otter, turtles, water snakes, smallmouth bass, walleye, sunfish, and minnows. In general, fish and wildlife species inhabiting or using this covertype are likely to be common species adapted to riverine systems.

9.3.2.4 Threatened/Endangered Species and Significant Habitat

No threatened or endangered plant or animal species were observed during the site visit. BBL requested reviews of USFWS records and NYSDEC Natural Heritage Program files to assist in evaluating sensitive species or habitats near the site. The USFWS records indicated that no endangered or threatened species are known to exist near the site (Stilwell, 2002). The NYSDEC Natural Heritage Program files revealed that one endangered vascular plant, one endangered animal species, and one special concern animal species have been recorded to within a 2-mile radius of the site (Mackey, 2002). These threatened, endangered, and special concern species and their respective occurrences are as follows:

- Peregrine falcon (*Falco peregrinus*), a state endangered bird, was recorded in the summer of 2000 as nesting in a building located within the city of Binghamton, approximately 0.75-mile southwest of the site;

- Downy wood mint (*Blephilia ciliate*), a state endangered vascular plant, was recorded historically (pre-1889) as occurring in Ely Hill, Binghamton, which is located north of the Chenango River and the site; and

- Pygmy snaketail (*Ophiogomphus howei*), a state special concern insect, was recorded historically (no date provided) as occurring along the Susquehanna River in Binghamton.

As discussed in subsection 4.5.5.1 (Pathway Analysis), riverbed materials represent the only potentially-complete exposure pathway for biota (specifically benthic macroinvertebrates and fish) to site-related constituents. As such, none of the species listed above would be susceptible to potential impacts from site-related constituents.

9.3.2.5 Observations of Stress

BBL's biologist did not observe evidence of stressed vegetation or negative impacts on wildlife was not observed for the site or areas adjacent to the site during the site visit.

9.3.3 Fish and Wildlife Resource Values

Step IC of the FWIA consists of an assessment of 1) the general ability of the area within 0.5 miles of the site to support fish and wildlife resources, and 2) the value of fish and wildlife resources to humans. The following subsections provide a qualitative evaluation of the value of the identified covertypes to wildlife and the value of these wildlife resources to humans.

9.3.3.1 Value of Habitat to Associated Fauna

The qualitative determination of habitat value is based on field observations, research, and professional judgment. Habitat values are assigned using the following classification system:

- **No Value**: Paved areas, buildings, and parking lots;

- **Low Value**: Areas with habitat quality that marginally supports a minimal number and diversity of low quality species;

- **Moderate Value**: Areas that support a variety of quality species with little or no stress related to human disturbance; and

- **High Value**: Critical habitat for rare species and/or extensive undeveloped habitat supporting a great diversity and abundance of wildlife without functional constraints imposed by human disturbance.

<u>Industrial Vegetative Covertype</u> - The entire site is described as industrial vegetative covertype. The site is mostly gravel, and includes small, scattered areas of vegetation. The industrial vegetative covertype also occurs in a band to the north and west of the site, as well as more limited areas to the east and south. The covertype provides inadequate food, shelter, and nesting areas for most species. The high level of human activity and disturbance also limits the potential wildlife usage. As such, the industrial vegetative covertype offers no value to wildlife.

<u>Urban Vegetative Covertype</u> - The urban vegetative covertype occurs to the northeast, south, and west of the site. This covertype has more vegetation than the industrial covertype, but the vegetation present is usually limited to lawns and ornamental plantings of trees, shrubs, and herbaceous plants. This covertype is also subject to a high degree of human disturbance, and also offers limited food and cover for wildlife species. The only wildlife species expected to regularly utilize this habitat are those that are urban-adapted. The urban vegetative covertype offers low value to wildlife.

Wooded Vegetative Covertype - The wooded vegetative covertype is located along most of the banks of the Susquehanna River as a narrow border, and is also present as a section of woods located to the east of the Water Treatment Plant. This covertype has natural vegetation, and offers food and cover for a variety of woodland animal species. This covertype offers adequate food, cover, and shelter for a variety of wildlife species, but is subject to periodic human disturbance. Due to human disturbance of this area and surrounding urban land uses, it only offers low to moderate value to wildlife.

Field Vegetative Covertype - The field vegetative covertype is present as a small field to the east of the Water Treatment Plant. This covertype has natural vegetation, and offers food and cover for a variety of field animal species. However, this area is located near a residential area, and is subject to human use. This covertype offers adequate food, cover, and shelter for a variety of wildlife species, but is subject to periodic human disturbance. Due to the relatively small size of the area and the human disturbance from surrounding urban land uses, this covertype only offers low to moderate value to wildlife.

Susquehanna River - The Susquehanna River is located south of the site. The Susquehanna River has natural vegetation present along much of its banks. The river is relatively undisturbed, and offers adequate food, cover, and shelter for a variety of aquatic and terrestrial organisms. This covertype offers moderate value to wildlife.

9.3.3.2 Value of Resources to Humans

The site itself consists of a gravel storage area with a small patch of vegetation (lawn) located in the southeastern portion of the site. The site perimeter is fenced so public access is limited. As such, the on-site resources are minimal, and have no value to humans. Current human use of fish and wildlife resources near the site are associated with the Susquehanna River. Activities associated with the river include recreational boating, fishing, and wildlife observation. These uses are likely to remain consistent in the future, and are not likely to be affected by activities or conditions at the site.

9.3.4 Applicable Fish and Wildlife Regulatory Criteria

The following New York State laws, rules, regulations, and guidelines are applicable to this FWIA.

- Environmental Conservation Law—Chapter 43-B of the Consolidated Laws
  - Article 11, Fish and Wildlife:
    Statute 11-0503 Polluting Streams Prohibited;
    Statute 11-0535 Endangered and Threatened Species;
  - Article 15, Water Resources: Title 5, Protection of Water; and
  - Article 24, Freshwater Wetlands.

- Title 6 of the New York Codes, Rules, and Regulations (6 NYCRR)
  - Part 608, Use and Protection of Waters;
  - Part 663, Freshwater Wetlands Permit Requirements;
  - Part 664, Freshwater Wetlands Maps and Classifications;
  - Part 701, Classifications—Surface Waters and Groundwaters;
  - Part 702, Derivation and Use of Standards and Guidance Values;
  - Part 703, Surface Water and Groundwater Quality Standards and Groundwater Effluent Standards; and
  - Part 800 ff., Classes and Standards of Quality and Purity Assigned to Fresh Surface and Tidal Salt Waters.

- Guidelines
  - NYSDEC Division of Fish and Wildlife document entitled "Technical Guidance for Screening Contaminated Sediment," dated January 1999.

9.3.5 Impact Assessment

Step II of FWIA includes an impact assessment to determine the impacts, if any, on fish and wildlife resources. This impact assessment includes a pathway analysis (Step IIA), and a criteria-specific analysis (Step IIB).

9.3.5.1 Pathway Analysis

The objective of the pathway analysis is to identify constituents of interest associated with the site, and to evaluate potential pathways by which fish and wildlife receptors may be exposed. A complete exposure pathway exists if there is a source, a potential point of exposure, and a viable route of exposure and receptor at the exposure point. If any one of these elements is missing, then the pathway is not complete and exposure cannot occur. If no fish or wildlife receptors or complete exposure pathways are present, then potential impacts to resources are considered to be minimal. If a "minimum impact" conclusion results from Step IIA, then it is not necessary to continue with further steps of the FWIA.

Potential media of interest associated with the site include surface water, riverbed materials, groundwater, and surface soil. Potential pathways of exposure associated with these media are discussed in the following sections.

<u>Surface Water</u> – As described in Section 8.1, no organic compounds were detected in river-water samples collected during the various phases of investigations described in this report, and concentrations of inorganic constituents were generally similar in samples collected upstream, downstream, and adjacent to the site. When disturbed, some MGP- and non-MGP-impacted sediments produce temporary sheens. Based on these findings, there appears to be no effect of the site upon the quality of water in the Susquehanna River, and therefore no

potential exposure for fish and wildlife to site-related chemicals in surface water, except briefly when sheen-producing sediments are disturbed.

Riverbed materials – Constituents detected in riverbed materials include VOCs, SVOCs, and inorganics. Exposure may occur to fish and benthic organisms residing in or near riverbed materials. In addition, wildlife could potentially be exposed to riverbed materials constituents via direct contact or ingestion. Because a complete exposure pathway may exist, riverbed materials are evaluated in Subsection 9.4.5.2 - Criteria-Specific Analysis.

Groundwater – Constituents detected in groundwater include VOCs, SVOCs, and inorganics. There are no groundwater seeps at the site, and exposure for wildlife to groundwater would only occur if the animal burrowed down to the water table. However, given that the minimum depth to groundwater at the site is approximately 7 to 8 feet, burrowing animals are not likely to burrow down to the water table. Trees present at the site could root deep enough to be exposed to groundwater, but no signs of stressed vegetation were observed at the site. As such, complete exposure pathways do not exist for groundwater.

Surface Soil – As described in Section 7.3.3.2, site-related constituents exist in the surface soils at the site; however, these soils represent only about 10 percent of the site. Either gravel or pavement covers the balance of the site. Wildlife resources could potentially be exposed to surface soils via direct contact and ingestion of organisms that live in the soil (e.g., earthworms). However, the terrestrial habitat of the site for wildlife is extremely limited. Due to the limited wildlife habitat at the site and the extensive gravel cover, wildlife exposure to site soils is not likely to exist.

9.3.5.2 Criteria-Specific Analysis

Because the pathway analysis identified the potential for a complete exposure pathway for riverbed materials, BBL performed a criteria-specific analysis to evaluate the significance of potential complete exposure pathways to ecological resources. This assessment involved comparing constituent concentrations detected in riverbed materials to sediment screening levels found in the NYSDEC document entitled "Technical Guidance for Screening Contaminated Sediments" dated January 1999. For organic compounds, there are three types of ecological risk-based screening levels for sediment: 1) protection of benthic aquatic life from acute toxicity, 2) protection of benthic aquatic life from chronic toxicity, and 3) protection of wildlife from bioaccumulation. Screening levels have not been developed for all constituents; therefore, BBL used other sediment-screening values from the Ontario Ministry of Environment (1993) when NYSDEC screening levels were not available. If riverbed-material concentrations are below screening levels, it is assumed that there is a minimal potential for adverse effects to the resource. However, due to the conservative nature of these screening levels, concentrations that exceed them do not necessarily mean that an ecological risk exists, but rather that additional investigation or evaluation may be warranted.

Riverbed-material samples were collected during June 1993, October 1997, and August 2001, and their analytical results were compared to sediment screening levels for the criteria-specific analysis. Sediment screening levels were adjusted for total organic carbon (TOC) content on a sample-specific basis, except for the 1997 samples, which were based on a site-specific average TOC concentration of 2%. Background samples were also evaluated. Only the shallowest riverbed-material data are used for comparison (generally the 0 to 0.5-foot interval) because organisms are only expected to be exposed to the top few inches of riverbed materials. Table 9 presents the comparison of riverbed-material data to the NYSDEC screening levels. The sampling locations are shown on Figure 3.

Inorganics

1993 Data

Twelve riverbed-material samples (and one duplicate sample) were collected adjacent to and downstream of the site, and two samples were collected upstream of the site. The upstream samples are considered background locations. Concentrations of several inorganics in the twelve samples collected adjacent to and downstream of the site exceeded the chronic toxicity screening levels. These inorganics were chromium, copper, iron, lead, mercury, and nickel. One of these samples (SS-02) also had a lead concentration that exceeded its acute toxicity criterion. Both of the background samples (SS-13 and SS-14) had concentrations of arsenic, copper, iron, lead, manganese, and nickel that exceeded their respective chronic toxicity screening levels. Note that neither the NYSDEC nor the Ontario Ministry of Environment criteria includes cyanide.

1997 Data

BBL collected 23 riverbed-material samples (and two duplicate samples) in 1997. Only two of the riverbed-material samples (and one duplicate sample) were analyzed for inorganics. These samples exceeded the chronic toxicity screening levels for copper, iron, lead, mercury, nickel, and/or zinc. Lead was the only inorganic with concentrations that exceeded the acute toxicity screening levels.

2001 Data

The 2001 riverbed-material samples were not analyzed for inorganics for which there are applicable screening levels.

Organics

1993 Data

Nine of the 12 riverbed-material samples collected in 1993 were analyzed for VOCs. One sample (SS-11) exceeded the chronic toxicity screening levels for total xylenes and the acute toxicity screening levels for ethylbenzene. Each of the 12 riverbed-material samples collected in 1993 was analyzed for SVOCs. Eleven of the samples exceeded the chronic toxicity screening levels. Six of the samples (SS-03, SS-06, SS-09, SS-10, SS-11, and SS-12) also exceeded the acute toxicity screening levels. SVOCs that exceeded the acute screening levels include 2-methylnaphthalene, acenaphthylene, anthracene, benzo(a)anthracene, benzo(a)pyrene, benzo(g,h,i)perylene, chrysene, dibenzo(a,h)anthracene, fluorene, indeno(1,2,3-cd)pyrene, naphthalene, phenanthrene, and pyrene. Only two samples (SS-03 and SS-11) exceeded the acute toxicity screening levels for total PAHs. These samples include sample SS-03 (collected near the 66-inch storm sewer outfall) and sample SS-11 (collected near the 24-inch pipe outfall).

The 1993 background samples (SS-13 and SS-14) did not exceed toxicity screening levels for volatile organic compounds (VOCs) or semi-volatile organic compounds (SVOCs).

1997 Data

Each of the 23 riverbed-material samples collected in 1997 was analyzed for VOCs. Of these, one sample (SS-3-1) exceeded the chronic toxicity screening levels for ethylbenzene, and two samples (SS-3-2 and SS-3-5) exceeded the acute toxicity screening levels for benzene, ethylbenzene, and/or total xylenes. Each of the 23 riverbed-material samples were also analyzed for SVOCs, and 12 of the samples exceeded the chronic and/or acute toxicity screening levels. Seven of the samples (SS-3-1, SS-3-2, SS-3-3, SS-3-5, SS-3-6, SS-3-11, and SS-3-12) also exceeded the acute toxicity screening levels, including fluorene, 2-methylnaphthalene, acenaphthylene, anthracene, benzo(a)anthracene, chrysene, naphthalene, and/or phenanthrene. Only 5 samples (SS-3-1, SS-3-2, SS-3-5, SS-3-6, and SS-3-11) exceeded the acute toxicity screening levels for total PAHs. These samples were collected near the 66-inch storm sewer outfall.

2001 Data

A total of 17 riverbed-material samples (and two duplicate samples) were collected in 2001. Fourteen of these samples were analyzed for VOCs, and none exceeded the chronic and/or acute toxicity screening levels. The same 14 samples were also analyzed for SVOCs, and seven of the samples exceeded the chronic and/or acute toxicity screening levels for several constituents. Five of the samples (SR-102, SR-108, SR-109, SR-112, and SS-1D) also exceeded the acute toxicity screening levels, and the constituents included acenaphthylene, anthracene, benzo(a)anthracene, chrysene, fluorene, naphthalene, and phenanthrene. Only one sample (SR-102) exceeded the acute toxicity screening levels for total PAHs. This sample was collected near the 66-inch storm sewer outfall.

Data Evaluation

The riverbed-material screening results suggest that the Susquehanna River sediments and bed material have been affected by site-related organic constituents. Figure 15 presents the sampling locations and total PAH concentrations. The majority of the riverbed-material samples with exceedances of the chronic and/or acute toxicity values for total PAHs (4 and 45 mg/Kg, respectively) are located near the 24-inch pipe outfall and the 66-inch storm sewer outfall.

9.3.6 Summary and Conclusions

The FWIA for the site was conducted in accordance with NYSDEC (1994) guidance. The site is described as a predominately industrial covertype. Most of the site is covered with gravel or asphalt, and provides limited terrestrial habitat. Furthermore, the site itself has a fenced perimeter, which limits site access to local fauna. Although several threatened or endangered species were recorded in or near the site, there are no potential impacts to these species. One state wetland (CC-11) is located north and upgradient of the site, indicating that there is no threat to this resource from site-related constituents. Susquehanna River sediments and bed materials represent the only complete exposure pathway for wildlife at the site. Concentrations of most inorganics are similar to background concentrations; however, several organics (notably PAHs) detected in the riverbed materials exceed the NYSDEC screening levels. The majority of the samples that contained PAHs above screening levels were collected near the 24-inch pipe outfall and the 66-inch storm sewer outfall. These locations generally correlated well with those locations where sheens could be generated by disturbing the riverbed materials.

The sediment screening levels used in this assessment are conservative screening-level values for the protection of benthic aquatic life (i.e., invertebrates). Exceeding these screening levels in the Susquehanna River does not identify actual risks to benthic species, but merely indicates that the potential for adverse effects cannot be dismissed based on the available data.

10. Summary and Conclusions

With the findings presented in this report, NYSEG has characterized the nature and extent of the former MGP's impacts on the environment and can proceed with a Feasibility Study. The investigation included a detailed analysis of the following:

- The site's geology and physical setting;
- The nature and extent of impacts to soil, groundwater, and the Susquehanna River;
- The dynamics of groundwater and NAPL migration at the site; and
- The nature of potential risks posed to human health and the environment by the site.

This section provides a summary of these findings, including conceptual models of relevant processes.

10.1 Site Setting

The Court Street Former MGP Site is located on the north side of Court Street in an industrial section of Binghamton, New York. The Susquehanna River runs just south of the site, immediately across Court Street. The eastern third of the property is used as a natural gas service center by Columbia Gas. The remaining portion of the site is a lot used only as an equipment storage and parking area for NYSEG's Court Street Service Center.

Figure 10.1: View of site floodwall and site from Tompkins Street Bridge.

The site housed an MGP that manufactured gas from 1888 to about 1939, during which time operations gradually expanded westward from the eastern portion of the site, eventually covering the entire site. By about 1969, all aboveground structures at the plant had been dismantled. As discussed later, many foundations and other buried structures remain in place.

10.2 Hydrogeology

10.2.1 Geology and Physical Setting

The conceptual model of site hydrogeology is illustrated on Figure 10.2. Though generalized, the figure shows the relationship of the key stratigraphic units influencing the occurrence and flow of groundwater, NAPL, and dissolved constituents. The key units can be described as follows:

- **Fill** – Silt, sand, gravel, ash, cinders, and slag. Also includes demolition debris, foundation remnants, and buried utilities. The fill is largely unsaturated, but can contain and transmit significant quantities of groundwater where the water table is mounded due to foundations or the underlying silt and clay.

- **Alluvial Silt and Clay** – Massive, with a blocky texture and little or no organic matter. This unit forms a discontinuous lens up to 13 feet thick that underlies the entire site, but pinches out to the east, west, and south. The silt and clay unit is largely saturated, but poorly permeable.

- **Outwash Sand and Gravel** – Comprises discontinuous layers of variable thickness and composition. Generally composed of fine to coarse sand and fine to coarse gravel, with occasional lenses of fine sand and silt. The sand and gravel unit is a significant aquifer, averaging 30 feet thick below the site, that is capable of transmitting large quantities of groundwater, particularly in comparison to the silt above and the till below.

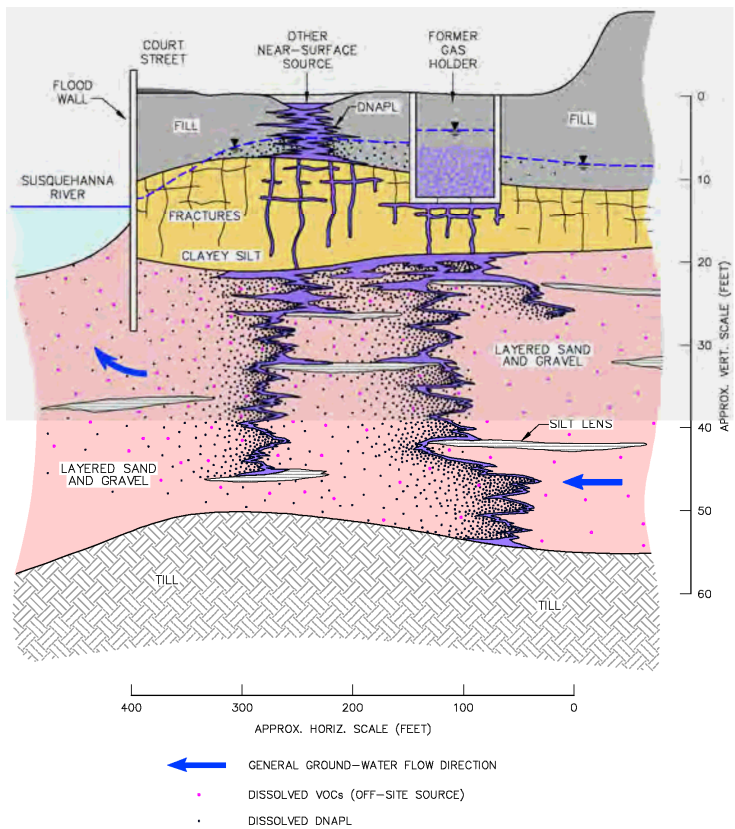


Figure 10.2: Conceptual model depicting site geology and DNAPL distribution and migration.

- **Till** – Dense silt and clay matrix containing embedded sand and gravel, rounded to angular, multiple rock-types. The till is approximately 45 feet thick beneath the site, and very poorly permeable, thus forming a lower confining unit.

- **Bedrock** (not shown) – Dark gray shale, slightly weathered, horizontal bedding. The bedrock is poorly permeable and effectively isolated from site influences by the till and a strong upward hydraulic gradient.

Several physical structures influence the occurrence and flow of shallow groundwater. The most significant are the following:

- **The 66-inch-diameter Storm Sewer** – An active storm sewer that crosses the western portion of the site from north to south (see Figure 2) and collects runoff from a large portion of the city. Traces of NAPL observed inside the sewer suggest that the interior of the sewer has the potential to contribute site-related constituents to the Susquehanna River. However, laboratory results for samples of sediment collected from the pipe were not indicative of NAPL, and showed that PAHs were present at comparable levels in pipe sediments both upstream and downstream of the site.

  North of the No. 4 gas holder, the bedding materials observed outside the sewer were not sufficiently permeable to create a preferential pathway along the outside of the pipe. South of the No. 4 gas holder, the fill beneath the sewer is more permeable and the silt is absent in at least one location. Groundwater flow appears to be focused in this area, allowing shallow groundwater and DNAPL to move preferentially southward beneath the pipe, in both the fill and at the top of the sand and gravel, toward the river. It appears that impacts to the riverbed at the sewer outlet (discussed in Subsection 10.5) are in part associated with this preferential pathway; however, it is unclear whether the impacts are ongoing or historical in nature.

- **Gas Holder Foundations** – The former MGP included four gas holders constructed (in the places shown on Figure 2) between 1888 and 1927. The foundation of the No. 3 gas holder was excavated as part of an IRM conducted by NYSEG in 2000 and 2001. The foundations of the other three holders are still largely intact. The No. 1 holder, the oldest and smallest, is believed to have a sealed bottom, and so retains perched water but has no significant effect on groundwater flow. The No. 2 holder foundation does not appear to hold water; and likewise has no apparent effect on groundwater flow. The No. 1 and No. 2 (and formerly the No. 3) holders were constructed in the general fashion illustrated on Figure 10.2. The foundation of the No. 4 gas holder, the youngest and largest, was constructed in the manner of an upside-down coffee can, sealed on the top and sides but not the bottom. The circular foundation walls of the No. 4 holder are at least 15 feet deep and act to partially cut off and divert shallow groundwater flow around the holder.

- **Court Street Flood Wall** – The flood wall appears to have little potential to adversely affect groundwater or constituent migration[15]. The actual path that groundwater behind the flood wall takes to reach the river depends primarily on how easily water can pass through the flood wall. If the wall, particularly the sheetpiling beneath the wall proper, is relatively porous, groundwater flow would be unaffected and discharge to the nearshore side of the river. If the flood wall is relatively impervious to flow, groundwater from the site would move downward beneath the wall and/or move laterally around the western end of the wall. In the case of the former, numerical groundwater-flow modeling showed that the water passing beneath the flood wall would discharge in the same general area as it would have if the wall were not there. In the case of the latter, groundwater would be expected to discharge to the river near the end of the flood

[15] Except at one location, which is described in Subsection 10.4, below.

wall, in an area of the river that has been thoroughly investigated as part of this RI. BBL found no NAPL behind the western end of the flood wall, so mobilization of NAPL around the western end of the flood wall is not a concern.

- **The 24-inch, "BB," and "E" pipes** – These three pipes pass through the same general area of the flood wall. Tracing performed by BBL found that the pipes run northward from the flood wall and pass beneath the BMH warehouse. The 24-inch pipe is the only pipe that was identified on the opposite (north) side of the warehouse and appeared to continue northward under nearby rail lines. The purpose of the 24-inch and "E" pipes is unknown, but BBL found that these pipes did not flow after a heavy rainstorm, and that the 24-inch pipe was nearly plugged with sediment. The sediment had no coal-tar-like odors or discoloration and was found to contain only relatively low levels of PAHs. BBL removed the sediment plugging the end of the 24-inch pipe and attempted to teleview it, but encountered another sediment plug about 15 feet from its end, precluding further viewing. Based on this information, discharge from the 24-inch and "E" pipes is not considered a likely source of site-related constituents to the river.

  Similarly, the outsides of the pipes are not considered likely preferential pathways. Although NAPL is present behind the flood wall at this location, as evidenced by sheens and NAPL "blobs" in split-spoon samples, it occurs beneath these pipes in the sand and gravel unit. The 24-inch and "E" pipes are bedded in the overlying silt unit, and, at the time that they were investigated, were located above the water table.

  The "BB" pipe has the potential to act as a preferential pathway. This pipe, which is a 10-inch-diameter former water intake for the MGP, is the only pipe of the three that is perennially below the water table. More importantly, the flood wall's sheetpiling was slotted to avoid the pipe, leaving a gap in the sheeting. As a result, the groundwater and NAPL that are present in the sand and gravel unit behind the flood wall at this location may preferentially be drawn to and pass through this gap in the sheeting, subsequently discharging to the Susquehanna River's bed near the shoreline. The NAPL found near the pipe does not appear to be pooled significantly, as it does not accumulate in a piezometer that is screened across the NAPL-containing interval. Subsection 10.4 discusses NAPL-related issues in this area of the site in greater detail. BBL identified the end of the BB pipe, which emerges from the riverbed about 20 feet from the shore, but identified no discernable flow out of it.

10.2.2 Groundwater Occurrence and Flow

The Susquehanna River is a major regional groundwater discharge location. Given the site's proximity to the river, groundwater on site in every stratigraphic unit will eventually discharge there. The potentiometric surface map of the sand and gravel (Figure 12) shows a clear, albeit low, gradient from all points on site toward the river. At the water table, the route of flow can be considerably more tortuous, particularly on site, where the silt and clay unit creates a groundwater mound. Groundwater flow at the water table (depicted on Figure 11), can be summarized as follows:

- The majority of shallow groundwater at the site moves radially away from the center of the groundwater mound located near the center of the site, then spills off the edge of the silt unit into the sand and gravel unit. Once in the sand and gravel aquifer, groundwater flows to the river.

- Shallow groundwater in the southwest corner of the site converges near the area where the 66-inch storm sewer passes beneath Court Street, indicating preferential flow in this area. This pattern appears to be caused by the more conductive fill material beneath the sewer in this area, and the localized absence of the silt unit (near piezometer PZ01-06). Where the silt is missing, shallow groundwater can preferentially drain down into the sand and gravel unit.

- A strong downward gradient, appropriate for a groundwater mound, is apparent from the silt to the sand and gravel. Within the sand and gravel, and from the bedrock through the till, the gradient is generally upward, suggesting that groundwater beneath the site discharges to the Susquehanna River.

10.3 Groundwater Quality

To appraise groundwater quality, BBL compared the analytical results to NYSDEC Class GA groundwater standards or guidance values. Using these criteria as a reference, the data show the following:

- In shallow groundwater, criteria for VOCs and SVOCs are most frequently exceeded at and downgradient of the site. Downgradient impacts appear to be limited to two areas where NAPL has migrated off site: at the 66-inch storm sewer, and near the 24-inch and "BB" pipes. BTEX and PAHs accounted for the majority of organics detected.

- In monitoring wells screened at the base of the sand and gravel, VOC results show the pervasive presence of several chlorinated hydrocarbons, particularly 1,1,1-trichloroethane and one of its degradation products, 1,1-dichloroethane, frequently at concentrations above the Class GA standards. Detected only in deep wells and in both upgradient and downgradient locations, these chlorinated hydrocarbons are attributed to an upgradient source.

- At the base of the sand and gravel, criteria for site-related organics (principally BTEX and PAHs) are most frequently exceeded on site and immediately downgradient of the site (i.e., between the southern property line and the Susquehanna River).

- One or more inorganics exceed criteria in each well, both shallow and deep, upgradient and downgradient, where a full TAL suite was analyzed. The highest concentrations occur where organic concentrations are also high.

- Based on sampling of groundwater from the bedrock wells, bedrock groundwater quality has not been impacted by site-related constituents.

The sand and gravel unit comprises a very small part of a much larger aquifer referred to as the Clinton Street Ballpark Sole Source Aquifer, a USEPA designation. While the City of Binghamton obtains its water directly from the Susquehanna River and is, therefore, excluded from this USEPA designation, some adjacent communities rely on groundwater pumped from this aquifer. Given the site's proximity to the river, and a groundwater flow regime in which all water discharges to the river, the areal extent of the site's impacts is highly unlikely to expand beyond its current bounds. This means that the fraction of the aquifer that has been affected by the former MGP is very small, and is unlikely to expand significantly over time. In addition, the presence of chlorinated hydrocarbons (unrelated to the site) renders the groundwater in this portion of the aquifer undrinkable, even without the presence of site-related constituents.

10.4 NAPL Evaluation

NAPLs in the ground beneath the site, primarily coal-tar DNAPL, are responsible for most of the environmental impacts resulting from the former MGP. As shown on Figure 10.2, NAPL is present in both unsaturated and saturated soils beneath the site. Most of the NAPL released appears to be a DNAPL, and, due to the shallow water table beneath the site, most of the NAPL and NAPL-affected soils occur in the saturated zone. DNAPL has moved through the silt beneath the site, exploiting the larger pore spaces afforded by bedding planes and fractures. Upon entering the underlying sand and gravel, much of the DNAPL spreads laterally, preferentially but not exclusively, in the direction of groundwater flow (generally southward). At some locations, all apparently on site, the DNAPL has also migrated downward to the base of the sand and gravel. The paths that it has taken are tortuous and unpredictable; as a result, the DNAPL is distributed very irregularly beneath the site. The till that underlies the sand and gravel appears to be an effective capillary barrier, preventing further downward migration of the DNAPL.

The term *residual saturation* can be used to describe two important ways in which subsurface DNAPL can occur. DNAPL at or below residual saturation is immobile, trapped in soil pore spaces. DNAPL above residual saturation (i.e., pooled) has the potential to move through the subsurface and will enter properly constructed wells that screen across it. Both forms of DNAPL dissolve slowly and, until nearly completely dissolved, will affect groundwater quality nearby. Much of the DNAPL beneath the site appears to be residual, although DNAPL did accumulate in three monitoring wells or piezometers: MW97-8, MW97-13S, and PZ01-06. Once removed from these wells, the DNAPL either did not return (MW97-8 and PZ01-06) or returned very slowly. Other small DNAPL pools likely exist at the site, as they are typically hard to find, but extensive DNAPL pools are unlikely to have gone undetected given the extensive network of monitoring wells, soil borings, and test pits installed.

Migration off site appears limited to two areas, one associated with the 66-inch storm sewer near the southwest corner of the site, and the other associated with an area where several pipes penetrate the flood wall southeast of the site. Subsection 10.2.1 summarizes the role these features have played in NAPL migration. In summary, it appears that NAPL has migrated southward beneath the 66-inch storm sewer, both in the fill and at the top of the sand and gravel, and has most likely reached the Susquehanna River. This NAPL may be responsible, at least in part, for impacted riverbed materials that occur near the outfall of the sewer. Inside the sewer is evidence that NAPL has seeped into it through joints. As such, the affected riverbed materials could also be the result of such discharge. It is reasonable to assume that both of these mechanisms are partly responsible for the affected riverbed materials.

East of the site, NAPL is inferred to have migrated eastward along the top of the sand and gravel due to pumping at the former Ranney well. Pumping was discontinued before the NAPL reached the well, and the NAPL appears to have then moved southward, along with the groundwater. The path that the NAPL appears to have taken after it started to move southward is coincident with the paths of three pipes in the area (see Subsection 10.2.1). Where these pipes pass through the flood wall is the only place where NAPL was found behind the wall, though the NAPL is not extensively pooled in this area. The steel sheeting beneath the flood wall in this area is slotted, accommodating a former water-intake pipe for the MGP. This gap in the sheeting could allow preferential migration of groundwater and NAPL through the wall, and is believed chiefly responsible for impacted riverbed materials in this area.

To date, the investigations performed have not conclusively demonstrated ongoing NAPL migration. Due to the viscous nature of the NAPL, which can result in very slow migration, and uncertainty involving the quantity, release points, and release durations, determining whether NAPL at the site is still moving is not practicable. In the two areas where NAPL appears to reach from the site to the river, it would be prudent to assume that migration is ongoing when considering remedial options.

A NAPL with different chemical characteristics exists east and northeast of the site and extends beneath the BMH warehouse. This NAPL occurs near the base of the silt and the top of the sand and gravel, and is characterized by a distinct petroleum-like odor and a chromatographic chemical signature that is indicative of petroleum, not coal tar. While petroleum products were used by the MGP, they were stored at the opposite end of the site. It is unlikely that petroleum released at the site would have migrated northeastward through coal-tar-impacted areas. If such migration did occur, BBL expects that the NAPL would exhibit characteristics of both coal-tar- and petroleum-based NAPLs; it does not. The northern limit of this petroleum-based NAPL is not defined, but likely exists north of the site, where a scrap yard and an oil refinery existed for many years.

10.5 Susquehanna River

10.5.1 Water Quality

The site has not adversely affected the quality of river water. Laboratory results for samples of river water, collected in 1991, 1993, and 2001, did not exceed applicable NYSDEC criteria. Results of tests performed by the City of Binghamton on samples of river water drawn into its filtration plant, located across the river from the site, show no discernable effect from the site. When disturbed, some MGP- and non-MGP-impacted sediments produce sheens, thus temporarily exceeding the water-quality standard for oil and floating substances (6 NYCRR Part 703.2). The source of sheens in the river is discussed in Subsection 10.5.2.

BBL surveyed the river bottom along the north shore to identify preferential points of groundwater discharge to the river, but found none. Groundwater discharge to the river, therefore, is interpreted to be diffuse.

10.5.2 Sediment Quality

BBL probed the riverbed materials upriver, downriver, and adjacent to the site, searching for significant deposits of soft sediment and areas that produced a sheen on the water surface when disturbed. Adjacent to the site, the Susquehanna riverbed is largely devoid of soft sediment, except in a few small, sporadic locations. Otherwise, the riverbed consists mainly of gravel and cobbles. Riverbed materials that produced sheens were confined largely to areas around and downstream of the 66-inch and 24-inch pipe outfalls, though a few other points were identified that produced sheens, some upstream of the pipe outfalls and the site.

Analytical results for samples of the riverbed material found the following:

- Site-related PAHs are present within 40 feet of the riverbank closest to the site, and are generally allocated with the sheens observed while probing and collecting samples.

- Along the bank, these areas of site-related PAHs are generally restricted to the 66-inch storm sewer area and, to a lesser extent, the 24-inch outfall.

- Higher concentrations of PAHs are largely restricted to the upper 2 feet of riverbed material.

- Higher concentrations of BTEX in the riverbed materials correlate well with samples containing higher levels of PAHs.

- Concentrations of most inorganics are similar to background concentrations.

Expert review of the laboratory GC/MS chromatograms has shown that the presence of PAHs in the river could be attributed to several sources (including petroleum and background pyrogenic sources) in addition to the former MGP. At approximately 50% of the locations sampled, PAHs appear to reflect petroleum and/or background characteristics. The site-related PAHs are clustered around the outfalls of the 66-inch storm sewer and the 24-inch pipe. An isolated deposit of sediment located a few hundred feet downstream of the 66-inch storm sewer also contains site-related PAHs. A number of samples contained levels of PAHs above NYSDEC screening levels. The majority of these samples were located near the 24- and 66-inch sewer outfalls. One of the 1993 samples that exceeded screening levels (SS-12) is located upstream of both the site and the two outfall areas. This upstream sample revealed prominent petroleum characteristics possibly associated with No. 4 or higher fuel oil.

In summary, the sampling data have identified PAHs in riverbed materials that can be attributed to several sources in addition to the MGP site. Clearly site-related PAHs in the riverbed are largely limited to areas near two distinct points of probable discharge: the outfalls of 66-inch storm sewer and the 24-inch pipe. Detections of these site-related PAHs do not extend far from their probable entry points and remain near the riverbed surface. The limited vertical extent of PAHs is consistent with the upward groundwater gradient measured between the river and the underlying soils.

The river hydraulic model used to evaluate whether site-related constituents in sediments could be transported across the river to the City's water-filtration-plant intake found that there is little likelihood site-related constituents could be transported intake in concentrations quantifiable using standard analytical methods. This modeling also found that the effects of wind would not impact the general conclusions of the model.

No record of ice-jams was found for the reach of the river near the site, and none were identified during the winter of 1997-1998; therefore, altered water-column transport of Susquehanna River sediment due to ice jams is not considered to be a concern at the site.

10.6 Human Health and Ecological Assessment

10.6.1 Human Health Evaluation

The site does not pose a significant threat to human health because, based on the current and foreseeable use of the site and the nature and location of chemicals of potential interest (COPI) in environmental media associated with the site, human exposure to COPI is unlikely to occur. The site is fenced and gated, with access controlled by NYSEG. The site area is either paved or covered by lawn or clean fill materials, precluding direct contact.

Off site, in the Susquehanna River, human exposure to sediments containing COPI is possible, though likely to be seasonal in nature.

10.6.2 Ecological Assessment

The ecological assessment identified two areas where the potential exists for adverse impacts to wildlife; both are isolated areas of the Susquehanna River's bed. One area is located near and downriver of the 66-inch sewer outfall; the other is near and downriver of the 24-inch outfall. In these two areas, concentrations of several constituents, notably PAHs, exceed the NYSDEC sediment screening levels for the protection of benthic aquatic life (i.e., invertebrates). The locations of sediment samples that exceeded the NYSDEC acute-toxicity values generally correlated well with those locations where sheens could be generated by disturbing the sediment.

Site-related constituents have not adversely affected the quality of the Susquehanna River water.

10.7 Data Adequacy

The findings presented in this report adequately characterize the following:

- The site's geology and physical setting;
- The nature and extent of site impacts to soil, groundwater, and the Susquehanna River;
- The dynamics of groundwater and NAPL migration at the site; and
- The nature of risks posed to human health and the environment by the site.

NYSEG has characterized the nature and extent of the former MGP's impacts on the environment so that a Feasibility Study can commence.

10.8 Compliance with Order on Consent

All of the requirements for a remedial investigation listed in the Order on Consent have been met, or rendered moot. Table 10.1, below, lists the stated objectives of the Order on Consent, and the sections of this report discussing the data collected to achieve them.

Table 10.1 Compliance with the Order on Consent Objectives

<table>
<tr><th>Order on Consent Objectives</th><th>Relevant Section of Text</th></tr>
<tr><td>1) Source area delineation and characterization to allow planning for remediation on property [NYSEG] controls.</td><td>Section 7.3 NAPL Evaluation</td></tr>
<tr><td>2) Install wells upgradient of the site in order to determine the impact the Site's contamination may have on groundwater quality, to the extent access can be obtained.</td><td>Section 7.4 Groundwater Quality</td></tr>
<tr><td>3) Determine the existence and extent of NAPLs on the Site and between the Site and Susquehanna River</td><td>Section 7.3 NAPL Evaluation</td></tr>
<tr><td>4) Determine the existence and extent of hazardous substance and petroleum contamination originating from the Site along the banks and in the sediment of that portion of the Susquehanna River located across from the and downgradient from the Site.</td><td>Section 8.3 Riverbed Sampling</td></tr>
<tr><td>5) Search for preferential pathways impacting sediments through the study of, inter alia, temperature gradients indicating seeps, nearby storm sewers, and the former creek bed.</td><td>Section 7.14 Utilities and Man-made Structures
Section 8.2 Riverbed Seepage Evaluation</td></tr>
<tr><td>6) Analyze municipal water at the Susquehanna River intake for the presence of MGP constituents.</td><td>Section 8.1 Surfacewater Quality</td></tr>
<tr><td>7) Evaluate whether contaminated sediments could be drawn to such intake.</td><td>Section 8.6 River Fate and Transport Evaluation</td></tr>
<tr><td>8) Perform, in coordination with the City of Binghamton, a pump test to determine if the cone of depression from the City's Ranney well extends to the groundwater underlying the site.</td><td rowspan="2">Rendered moot by decommissioning of the Raney Well (discussed in Section 3.1).</td></tr>
<tr><td>9) Perform a water quality analysis during such pump test to determine if coal-tar constituents are impacting the Ranney Well.</td></tr>
</table>

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Tables

In this final draft, the report title has changed from *Phase II Supplemental Remedial Investigation Report* to *Remedial Investigation Report*. The following tables have not been reprinted to reflect this change. No other details have been modified for this final edition.

TABLE 1

NEW YORK STATE ELECTRIC AND GAS CORPORATION
COURT STREET SITE
BINGHAMTON, NEW YORK

SUPPLEMENTAL REMEDIAL INVESTIGATION
WELL CONSTRUCTION DETAILS

Location ID	Unit Screened	Date Completed	Northing Coordinate	Easting Coordinate	Measuring Point Elev.	Ground Surface Elev.	Well Diam.	Casing Type	Screen Slot Size	Screen Length	Sump Length	Depth to Screened Interval (ft. bgs)		Well Depth	Estimated Hydraulic Conductivity (K)
			ft.	ft.	ft. AMSL	ft. AMSL	in.		in.	ft.	ft.	Top	Bottom	ft. bgs	ft./day
Monitoring Wells															
MW93-1S (ab)	fill/upper S&G	5/28/1993	na	na	na	na	2	SS	0.01	10.0	0.4	10.3	20.3	20.7	na
MW93-1D	lower S&G	5/27/1993	766785.9	1006318.9	848.07	846.1	2	SS	0.01	10.0	0.3	40.9	50.9	51.2	19
MW93-2D	lower S&G	6/2/1993	766833.6	1006452.4	846.22	844.1	2	SS	0.01	10.0	0.4	43.6	53.6	54.0	0.9
MW93-2S	silt	6/4/1993	766831.5	1006446.3	846.42	844.1	2	SS	0.01	10.0	0.6	4.2	14.2	14.8	5.0
MW93-3D	lower S&G	6/1/1993	766875.5	1006563.0	846.84	844.6	2	SS	0.01	9.6	0.0	37.0	46.6	46.6	14
MW93-3S	silt/S&G	6/9/1993	766893.9	1006612.2	846.60	844.2	2	SS	0.01	10.0	0.0	12.0	22.0	22.0	3.0
MW-01-03R	bedrock	8/3/2001	766879.9	1006546.1	847.05	844.2	2	PVC	0.01	10.0	0.0	98.0	108.0	108.0	0.5
MW93-5D	lower S&G	6/3/1993	767166.6	1006453.9	847.61	844.9	2	SS	0.01	9.9	0.5	46.5	56.4	56.9	0.6
MW93-6D	lower S&G	6/8/1993	767154.8	1006230.8	846.80	844.2	2	SS	0.01	10.0	0.1	49.8	59.8	59.9	77
MW93-6S	silt/S&G	6/7/1993	767154.3	1006224.6	847.13	844.5	2	SS	0.01	10.0	0.0	13.0	23.0	23.0	9.0
MW97-7S	upper S&G	9/25/1997	766680.6	1006336.5	849.36	849.6	2	PVC	0.01	10.0	0.2	16.0	26.0	26.2	863
MW-01-07R	bedrock	8/24/2001	766675.0	1006347.1	848.57	849.0	2	PVC	0.01	10.0	0.0	99.0	109.0	109.0	3.7
MW97-8S	silt	9/30/1997	766776.1	1006414.0	845.69	846.0	2	PVC	0.01	10.0	2.0	12.0	22.0	24.0	86
MW97-9D	lower S&G	9/23/1997	766894.7	1006248.2	847.13	847.4	2	PVC	0.01	10.0	0.2	33.8	43.8	44.0	257
MW97-9S	upper S&G	9/23/1997	766901.7	1006245.7	846.99	847.2	2	PVC	0.01	10.0	0.2	13.0	23.0	23.2	703
MW97-10D	lower S&G	9/23/1997	766984.0	1006658.0	843.68	844.1	2	PVC	0.01	10.0	0.2	40.0	50.0	50.2	1620
MW97-10S	silty fill	9/19/1997	766983.7	1006661.5	843.43	844.0	2	PVC	0.01	8.0	0.0	4.0	12.0	12.0	57
MW97-11S	silty fill	9/26/1997	766805.9	1006507.2	844.15	844.6	2	PVC	0.01	10.0	0.2	7.6	17.6	17.8	24
MW97-12S	silty fill	9/25/1997	766836.5	1006626.2	843.56	844.0	2	PVC	0.01	10.0	0.2	7.3	17.3	17.5	3.0
MW97-13S (ab)	coarse fill	9/18/1997	767079.8	1006456.8	844.66	844.8	2	PVC	0.01	5.0	2.0	5.0	10.0	12.0	na
MW97-14D	lower S&G	12/11/1997	767165.7	1006893.2	845.57	845.9	2	PVC	0.01	5.0	0.1	34.9	39.9	40.0	na
MW97-14S	upper S&G	12/11/1997	767165.8	1006897.1	845.55	845.9	2	PVC	0.01	10.0	0.1	9.9	19.9	20.0	na
MW98-15S	silt	5/19/1998	766964.3	1006809.4	842.35	842.6	2	PVC	0.01	10.0	0.0	5.0	15.0	15.0	na
MW98-16D	lower S&G	5/21/1998	767088.5	1007110.2	841.70	841.9	2	PVC	0.01	5.0	0.0	38.5	43.5	43.5	na
MW98-16S	fill/upper S&G	5/21/1998	767090.4	1007112.8	841.56	841.9	2	PVC	0.01	10.0	0.0	7.0	17.0	17.0	na
MW-01-17D	lower S&G	9/18/2001	767043.1	1006086.3	861.16	861.5	2	PVC	0.01	5.0	0.0	54.2	59.2	59.2	20
MW-01-17S	upper S&G	9/19/2001	767034.1	1006087.9	861.32	861.7	2	PVC	0.01	10.0	0.0	27.0	37.0	37.0	277
Piezometers															
PZ93-1	coarse fill	6/9/1993	767153.1	1008516.9	848.37	844.7	2	PVC	0.01	5.0	0.0	3.5	8.5	8.5	na
PZ-01-02	silt/S&G	8/16/2001	766866.4	1006781.2	841.93	842.3	2	PVC	0.01	10.0	2.0	9.0	19.0	21.0	na
PZ-01-03	silty fill	9/12/2001	766894.7	1006354.7	845.17	845.5	2	PVC	0.02	10.0	0.0	6.0	16.0	16.0	na
PZ-01-04	silty fill	9/12/2001	767004.0	1006317.7	848.32	845.3	2	PVC	0.01	10.0	0.0	4.6	14.6	14.6	0.2
PZ-01-05	silty fill	9/13/2001	767133.0	1006247.3	847.79	844.9	2	PVC	0.02	10.0	0.0	4.5	14.5	14.5	na
PZ-01-06	coarse fill	9/14/2001	766805.0	1006397.2	844.54	845.1	2	PVC	0.02	10.0	0.0	8.0	18.0	18.0	0.1
Temporary Wells															
TW97-1D	lower S&G	12/9/1997	767242.7	1006210.2	857.07	857.4	2	PVC	0.01	5.0	0.1	56.4	61.4	61.5	na
TW97-1S	silt	12/9/1997	767248.1	1006209.7	857.10	857.4	2	PVC	0.01	10.0	0.1	17.0	27.0	27.1	na
TW97-2D	lower S&G	12/5/1997	767243.1	1006470.8	856.00	856.4	2	PVC	0.01	5.0	0.1	64.0	69.0	69.1	na
TW97-2S	coarse fill/silt	12/3/1997	767242.4	1006479.3	856.09	856.4	2	PVC	0.01	10.0	0.1	14.4	24.4	24.5	na
TW97-3S	upper S&G	12/2/1997	767238.7	1006688.6	855.52	855.8	2	PVC	0.01	10.0	0.1	14.0	24.0	24.1	na
Other Observation Wells															
B-1	upper S&G	2/15/1991	766763.8	1006030.2	863.45	863.8	4	PVC	0.01	10.0	0.0	29.8	39.8	39.8	na
City Wel11	S&G	na	767091.9	1007137.3	842.03	842.0	na	na	na	na	na	na	na	na	na
City Well 2	S&G	na	767076.6	1007187.1	841.50	841.7	na	na	na	na	na	na	na	na	na
DGC-6D	S&G	na	na	na	844.73	na	na	na	na	na	na	na	na	na	na
DGC-6S	S&G	na	na	na	844.82	na	na	na	na	na	na	na	na	na	na

Notes:
Elevations given in feet above Mean Sea Level (ft. AMSL), 1929 National Geodetic Vertical Datum (NGVD); northing and easting coordinates on New York State Plain grid.
Depths given in feet below ground surface (ft. bgs).
na indicates not available.
In location ID Column, (ab) indicates the well has been abandoned.
Hydraulic conductivity estimated from rising-head slug tests for all but PZ01-04 and PZ01-06 (specific capacity tests). Test reductions are on electronic attachments CD.
In Unit Screened Column, S&G indicates sand and gravel hydrostratigraphic unit.
In casing type column, SS indicates stainless steel, PVC indicates polyvinyl chloride.
In stickup length column, negative numbers indicate the depth of casing below ground surface at a flushmount.
Other Observation Wells section includes offsite wells installed for unrelated investigations:
Well B-1, installed by NYSEG at 267 Court St. Service Center Property.
City Wells 1 and 2, installed for City of Binghamton adjacent to former Raney Well.
DGC-6S&D, installed for Almy Bros. Site RI (Dunn, 1991), south of river (see Figure 1)

TABLE 2

NEW YORK STATE ELECTRIC AND GAS CORPORATION
COURT STREET SITE
BINGHAMTON, NEW YORK

SUPPLEMENTAL REMEDIAL INVESTIGATION
WATER-LEVEL DATA

Location ID	Unit Screened	Measuring Point Elev.	Depth to Screened Interval		Well Depth	December 22-23, 1997		February 11, 1998		October 2, 2001	
		ft. AMSL	Top	Bottom	ft. bgs	depth	elev.	depth	elev.	depth	elev.
Monitoring Wells											
MW93-1D	lower S&G	848.07	40.9	50.9	51.2	16.18	831.89	15.69	832.38	16.55	831.52
MW93-2D	lower S&G	846.22	43.6	53.6	54.0	14.37	831.85	13.92	832.30	14.75	831.47
MW93-2S	silt	846.42	4.2	14.2	14.8	8.28	838.14	8.34	838.08	8.13	838.29
MW93-3D	lower S&G	846.84	37.0	46.6	46.6	15.02	831.82	14.58	832.26	15.41	831.43
MW93-3S	silt/S&G	846.60	12.0	22.0	22.0	14.70	831.90	14.15	832.45	15.15	831.45
MW-01-03R	bedrock	847.05	98.0	108.0	108.0					14.81	832.24
MW93-5D	lower S&G	847.61	46.5	56.4	56.9	15.36	832.25	14.73	832.88	15.72	831.89
MW93-6D	lower S&G	846.80	49.8	59.8	59.9	14.62	832.18	14.01	832.79	14.92	831.88
MW93-6S	silt/S&G	847.13	13.0	23.0	23.0	14.94	832.19	14.34	832.79	15.24	831.89
MW97-7S	upper S&G	849.36	16.0	26.0	26.2	17.68	831.68	17.35	832.01	18.08	831.28
MW-01-07R	bedrock	848.57	99.0	109.0	109.0					16.67	831.90
MW97-8S	silt	845.69	12.0	22.0	24.0	14.25	831.44	13.97	831.72	13.81	831.88
MW97-9D	lower S&G	847.13	33.8	43.8	44.0	15.15	831.98	14.63	832.50	15.45	831.68
MW97-9S	upper S&G	846.99	13.0	23.0	23.2	15.01	831.98	14.50	832.49	15.32	831.67
MW97-10D	lower S&G	843.68	40.0	50.0	50.2	11.71	831.97	11.20	832.48	12.09	831.59
MW97-10S	silty fill	843.43	4.0	12.0	12.0	8.09	835.34	8.20	835.23	7.76	835.67
MW97-11S	silty fill	844.15	7.6	17.6	17.8	12.24	831.91	11.39	832.76		
MW97-12S	silty fill	843.56	7.3	17.3	17.5	11.76	831.80	11.86	831.70	11.43	832.13
MW97-13S	coarse fill	844.66	5.0	10.0	12.0	4.42	840.24	4.19	840.47		
MW97-14D	lower S&G	845.57	34.9	39.9	40.0	13.10	832.47	12.62	832.95	13.63	831.94
MW97-14S	upper S&G	845.55	9.9	19.9	20.0	13.07	832.48	12.60	832.95	13.59	831.96
MW98-15S	silt	842.35	5.0	15.0	15.0					11.35	831.00
MW98-16D	lower S&G	841.70	38.5	43.5	43.5					10.38	831.32
MW98-16S	fill/upper S&G	841.56	7.0	17.0	17.0					10.30	831.26
MW-01-17D	lower S&G	861.16	54.2	59.2	59.2					28.30	832.86
MW-01-17S	upper S&G	861.32	27.0	37.0	37.0					29.57	831.75
Piezometers											
PZ93-1	coarse fill	848.37	3.5	8.5	8.5	9.58	838.79	9.49	838.88	9.38	838.99
PZ-01-02	silt/S&G	841.93	9.0	19.0	21.0					11.71	830.22
PZ-01-03	silty fill	845.17	6.0	16.0	16.0					11.68	833.49
PZ-01-04	silty fill	848.32	4.6	14.6	14.6					12.60	835.72
PZ-01-05	silty fill	847.79	4.5	14.5	14.5					14.51	833.28
PZ-01-06	coarse fill	844.54	8.0	18.0	18.0					13.78	830.76
Temporary Wells											
TW97-1D	lower S&G	857.07	56.4	61.4	61.5	24.86	832.21	24.27	832.80	25.17	831.90
TW97-1S	silt	857.10	17.0	27.0	27.1	25.78	831.32	21.53	835.57	21.45	835.65
TW97-2D	lower S&G	856.00	64.0	69.0	69.1	23.70	832.30	23.05	832.95		
TW97-2S	coarse fill/silt	856.09	14.4	24.4	24.5	19.02	837.07	19.01	837.08		
TW97-3S	upper S&G	855.52	14.0	24.0	24.1	18.45	837.07	18.44	837.08	18.15	837.37
Other Observation Wells											
B-1	upper S&G	863.45	29.8	39.8	39.8	31.31	832.14	30.86	832.59		
City Wel11	S&G	842.03	na	na	na			9.60	832.43		
City Well 2	S&G	841.50	na	na	na	9.63	831.87	9.25	832.25		
DGC-6D	S&G	844.73	na	na	na			11.48	833.25		
DGC-6S	S&G	844.82	na	na	na			11.09	833.73		
Staff Gauges											
SG-1 (1997-1998)	Susquehanna	na	na	na	na		831.33		831.63		
SG-2 (2001)	Susquehanna	na	na	na	na						830.21

Notes:

Elevations given in feet above Mean Sea Level (AMSL), 1929 National Geodetic Vertical Datum (NGVD).
na = not available; blank spaces indicate measurements not taken.
Depths given in feet below ground surface (ft. bgs).
In Unit Screened Column, S&G indicates sand and gravel hydrostratigraphic unit.
Other Observation Wells section includes offsite wells installed for unrelated investigations:
Well B-1, installed by NYSEG at 267 Court St. Service Center Property.
City Wells 1 and 2, installed for City of Binghamton adjacent to former Raney Well.
DGC-6S&D, installed for Almy Bros. Site RI (Dunn, 1991), south of river (see Figure 1)

TABLE 3-A

NEW YORK STATE ELECTRIC AND GAS CORPORATION
COURT STREET SITE
BINGHAMTON, NEW YORK

SUPPLEMENTAL REMEDIAL INVESTIGATION
SOIL ANALYTICAL SAMPLE SUMMARY

Location	Depth Range	Date Sampled	VOCs	SVOCs	R	I	TOC	PCBs	TPH
Surface Soil Samples									
Task II RI Samples									
SF-01	(0 - 2")	5/1/1993	X^2	X^5		X		X	
SF-02	(0 - 2")	5/1/1993	X^2	X^5		X		X	
SF-03	(0 - 2")	5/1/1993	X^2	X^5		X		X	
SF-04	(0 - 2")	5/1/1993	X^2	X^5		X		X	
SF-05 (DUP)	(0 - 2")	5/1/1993	X^2	X^5		X		X	
Phase I SRI Samples									
SB-123	(0 - 2")	9/18/1997						X	
SB-456	(0 - 2")	9/16/1997						X	
SF-05	(0 - 2")	5/1/1993	X	X		X		X	
SS-123 (DUP)	(0 - 2")	9/18/1997						X	
SS-123	(0 - 2")	9/18/1997						X	
SS0-1	(0 - 2")	9/15/1997	X^2	X^5		X^7*			
SS0-1	(0 - 2")	9/19/1997	X^2	X^5		X^7			
SS0-2	(0 - 2")	9/15/1997	X^2	X^5		X^7*			
SS0-3	(0 - 2")	9/15/1997	X^2	X^5		X^7*			
Test Pit Samples									
Task II RI Samples									
TP-02	(6')	5/1/1993	X^2	X^5		X*			
TP-05	(6')	5/1/1993	X^2	X^5	X	X*			X
TP-07	(5')	5/1/1993	X^2	X^5		X*			
TP-14	(6')	5/1/1993	X^2	X^5		X			
TP-15	(6')	5/1/1993	X^2	X^5		X*			
TP-21 (DUP)	(8')	5/1/1993	X^2	X^5		X*			
Subsurface Soil Samples									
Task II RI Samples									
TB93-01	(28 - 30')	5/1/1993	X^2	X^5		X			
TB93-02	(10 - 14')	5/1/1993	X^2	X^5	X	X*			X
TB93-05	(10 - 14')	5/1/1993	X^2	X^5	X	X			X
TB93-06	(6 - 8.5')	5/1/1993	X^2	X^5	X	X*			X
TB93-10	(12 - 14')	5/1/1993	X^2	X^5		X			
TB93-11	(10 - 16')	5/1/1993	X^2	X^5	X	X*			X
Phase I SRI Samples									
MW97-12S	(12.0' - 14.0')	9/25/1997					X		
MW97-7 (DUP)	(18.0' - 20.0')	9/25/1997	X^2	X^5		X^7			
MW97-7	(18.0' - 20.0')	9/25/1997	X	X					
MW97-7 (DUP)	(28.0' - 30.0')	9/25/1997					X		
MW97-7	(28.0' - 30.0')	9/25/1997					X		
SB97-1	(2.0' - 4.0')	9/18/1997	X^3	X^4					
SB97-1	(4.0' - 6.0')	9/18/1997	X^3	X^4					
SB97-2	(2.0' - 4.0')	9/17/1997	X^3	X^4					
SB97-2	(4.0' - 6.0')	9/17/1997	X^3	X^4					
SB97-3	(0.0' - 2.0')	9/17/1997	X^3	X^4					
SB97-3	(4.0' - 6.0')	9/17/1997	X^3	X^4					
SB97-4	(2.0' - 4.0')	9/16/1997	X^3	X^4					
SB97-4	(12.0' - 14.0')	9/16/1997	X^3	X^4	X				
SB97-5	(2.0' - 4.0')	9/16/1997	X^3	X^4					
SB97-5	(4.0' - 6.0')	9/16/1997	X^3	X^4	X				
SB97-6	(0.0' - 2.0')	9/17/1997	X^3	X^4					
SB97-6 (DUP)	(4.0' - 6.0')	9/17/1997	X^3	X^4	X				
SB97-6	(4.0' - 6.0')	9/17/1997	X^3	X^4	X				
SB97-7	(0.0' - 2.0')	9/17/1997	X^3	X^4					
SB97-7	(4.0' - 6.0')	9/17/1997	X^3	X^4					
SB97-8	(0.0' - 2.0')	9/18/1997	X^3	X^4					
SB97-8 (DUP)	(2.0' - 4.0')	9/19/1997	X^3	X^4					
SB97-8	(2.0' - 4.0')	9/19/1997	X^1	X4					
TB-12	(46.0' - 48.0')	9/25/1997					X		
TB-13	(18.0' - 20.0')	9/30/1997	X^2	X^5		X^7			

See Notes on Page 2.

TABLE 3-A

NEW YORK STATE ELECTRIC AND GAS CORPORATION
COURT STREET SITE
BINGHAMTON, NEW YORK

SUPPLEMENTAL REMEDIAL INVESTIGATION
SOIL ANALYTICAL SAMPLE SUMMARY

Location	Depth Range	Date Sampled	VOCs	SVOCs	R	I	TOC	PCBs	TPH
MW98-15S	(9 - 11')	5/18/1998	X[2]	X[5]					X
SB-4 (DUP)	(12 - 14')	5/18/1998			X[6]	X[9]			
SB-4	(12 - 14')	5/18/1998			X	X			
SB-6	(4 - 6')	5/18/1998			X[6]	X[9]			
SB-20	(7 - 10')	5/18/1998	X[2]	X[5]		X[8]			
SB-21	(4 - 6')	5/20/1998	X[2]	X[5]		X[8]			
SB-22	(12 - 16')	5/20/1998	X[2]	X[5]	X[6]	X[8]			X
SB-23 (DUP)	(16 - 18')	5/22/1998	X[2]	X[5]	X[6]	X[8]			X
SB-23	(16 - 18')	5/22/1998	X	X		X			
SB-112	(4 - 6')	9/17/2001	X[1]	X4					
TP-21	NA	5/1/1993	X	X		X			
Supplemental Remedial Investigation									
MW-01-07R	(20 - 22')	7/25/2001	X[1]	X[4]					
MW-01-07R	(22 - 24')	7/25/2001							X
SB-101 (DUP)	(10 - 12')	8/3/2001	X[1]	X[4]					
SB-101	(10 - 12')	8/3/2001	X[1]	X[4]					
SB-101	(15 - 17')	8/7/2001	X[1]	X[4]					X
SB-102	(10 - 12')	8/6/2001	X[1]	X[4]					
SB-102	(21 - 23')	8/6/2001	X[1]	X[4]					
SB-103	(8 - 10')	8/27/2001	X[1]	X[4]					
SB-103	(14 - 16')	8/27/2001	X[1]	X[4]					
SB-104	(10 - 12')	8/29/2001	X[1]	X[4]					
SB-104	(20 - 22')	8/30/2001	X[1]	X[4]					
SB-105	(8 - 10')	8/9/2001	X[1]	X[4]					
SB-105	(14 - 16')	8/9/2001	X[1]	X[4]					
SB-106	(7 - 9')	8/8/2001	X[1]	X[4]					
SB-106	(13 - 15')	8/8/2001	X[1]	X[4]					
SB-107	(7 - 8')	8/10/2001	X[1]	X[4]					
SB-108 (DUP)	(6 - 8')	8/13/2001	X[1]	X[4]					
SB-108	(6 - 8')	8/13/2001	X[1]	X[4]					
SB-108	(35 - 37')	8/14/2001	X[1]	X[4]					
SB-109	(10 - 11')	8/15/2001	X[1]	X[4]					
SB-109	(17 - 19')	8/15/2001	X[1]	X[4]					
SB-110	(7 - 9')	9/17/2001	X[1]	X[4]					
SB-111	(7 - 7.5')	9/17/2001	X[1]	X[4]					
SB-112 (DUP)	(4 - 6')	9/17/2001	X[1]	X[4]					

Notes:
DUP = Duplicate sample collected.
NA = Not Available.
VOCs = Volatile Organic Compounds by Method 8240, 8260 or 95-1.
SVOCs = Semivolatile Organic Compounds by Method 8270 or 95-2.
R = Reactive compounds (Cyanide by 7.3.3.2 and Sulfide by 7.3.4.1).
I = Inorganics analyzed by Method 7470 for mercury and sulfide 7.3.4.
TOC = Total Organic Carbon by Method 8060.
PCBs = Polychlorinated biphenyls by Method 8080.
TPH = Total Petroleum Hydrocarbons by Method 8015.
[1]BTEX = Method 8260A.
[2]VOCs by Method 8240
[3]BTEX by Method 8240.
[4]PAHs = Method 8270A.
[5]SVOCs by Method 8270.
[6]Reactive Cyanide only.
[7]Inorganics by Method 6010.
[8]Inorganics by Method CLP-M.
[9]Sulfide analysis performed only.
*Total cyanide by Method 335.3 and amenable cyanide by Method 335.1 also analyzed.
1993/1994 samples analyzed under ASP Category B, revision 12/1991.
1997 samples analyzed under ASP Category B, revision 10/1995.
2001 samples analyzed under ASP Category B, revision 2000.

TABLE 3-B

NEW YORK STATE ELECTRIC AND GAS CORPORATION
COURT STREET SITE
BINGHAMTON, NEW YORK

SUPPLEMENTAL REMEDIAL INVESTIGATION
SEDIMENT ANALYTICAL SAMPLE SUMMARY

Location	Depth Range	Date Sampled	VOCs	SVOCs	I	TOC	PCBs	S	TPH
Task II RI Samples									
SS-01	(0 - 0.9')	5/1/1993	X	X	X*	X		X	
SS-02	(0 - 0.7')	5/1/1993	X	X	X*	X		X	
SS-03	(0 - 1.2')	5/1/1993	X	X	X*	X		X	
SS-04	(0 - 0.9')	5/1/1993	X	X	X*	X		X	
SS-05	(0 - 0.8')	5/1/1993	X	X	X*	X		X	
SS-06	(0 - 0.6')	5/1/1993	X	X	X*	X		X	
SS-07	(0 - 1')	5/1/1993	X	X	X*	X		X	
SS-08	(0 - 1.4')	5/1/1993	X	X	X*	X		X	
SS-09	(0 - 0.8')	5/1/1993	X	X	X*	X		X	
SS-10 (DUP)	(0 - 0.8')	5/1/1993	X	X	X*	X		X	
SS-10	(0 - 0.8')	5/1/1993	X	X	X	X		X	
SS-11	(0 - 0.7')	5/1/1993	X	X	X*	X		X	
SS-12	(0 - 0.8')	5/1/1993	X	X	X*	X		X	
SS-13	(0 - 0.9')	5/1/1993	X	X	X*	X		X	
SS-14	(0 - 1.1')	5/1/1993	X	X	X*	X		X	
Phase I SRI Samples									
MH-1	NA	10/13/1997	X	X	X*				
MH-2	NA	10/13/1997	X	X	X*				
MH-3	NA	10/13/1997	X	X	X*				
PIPE	NA	10/7/1997	X	X	X*				X
SS-1-A	(0.0' - 0.5')	10/10/1997	X	X	X*				X
SS-1-B (DUP)	(0.0' - 0.5')	10/10/1997	X	X	X*				X
SS-1-B	(0.0' - 0.5')	10/10/1997	X	X	X				X
SS-12-1	(0.0' - 0.5')	10/9/1997	X	X	X^{3*}				X
SS-12-1	(1.0' - 2.0')	10/9/1997	X	X	X^{3*}				X
SS-12-1	(2.0' - 3.0')	10/9/1997	X	X	X^{3*}				X
SS-12-2	(0.0' - 0.5')	10/9/1997	X	X	X^{3*}				X
SS-12-2	(1.0' - 2.0')	10/9/1997	X	X	X^{3*}				X
SS-12-3	(0.0' - 0.5')	10/9/1997	X	X	X^{3*}	X			X
SS-12-3	(1.0' - 2.0')	10/9/1997	X	X	X^{3}				X
SS-12-4	(0.0' - 0.5')	10/9/1997	X	X	X^{3}				X
SS-12-4	(1.0' - 2.0')	10/9/1997	X	X	X^{3*}		X		X
SS-12-5	(0.0' - 0.5')	10/10/1997	X	X	X^{3}				X
SS-12-5 (DUP)	(1.0' - 2.0')	10/10/1997	X	X	X^{3}		X		X
SS-12-5	(1.0' - 2.0')	10/10/1997	X	X	X^{3}		X		X
SS-12-6	(0.0' - 0.5')	10/10/1997	X	X	X^{3}	X			X
SS-12-6	(1.0' - 2.0')	10/10/1997	X	X	X^{3*}				X
SS-12-7	(0.0' - 0.5')	10/10/1997	X	X	X^{3}		X		X
SS-12-7	(1.0' - 2.0')	10/10/1997	X	X	X^{3}				X
SS-3-1	(0.0' - 0.5')	10/8/1997	X	X	X^{3*}				X
SS-3-1	(1.0' - 2.0')	10/8/1997	X	X	X^{3*}				X
SS-3-1	(3.0' - 4.0')	10/8/1997	X	X	X^{3*}		X		X
SS-3-2	(0.0' - 0.5')	10/7/1997	X	X	X^{3*}		X		X
SS-3-3 (DUP)	(0.0' - 0.5')	10/8/1997	X	X	X^{3*}				X
SS-3-3	(0.0' - 0.5')	10/8/1997	X	X	X^{3}				X
SS-3-3	(1.0' - 2.0')	10/8/1997	X	X	X^{3*}				X
SS-3-3	(3.0' - 4.0')	10/8/1997	X	X	X^{3*}		X		X
SS-3-4	(0.0' - 0.5')	10/7/1997	X	X	X^{3*}				X
SS-3-4	(1.0' - 2.0')	10/7/1997	X	X	X^{3*}				X
SS-3-5	(0.0' - 0.5')	10/7/1997	X	X	X^{3*}	X			X
SS-3-5	(1.0' - 2.0')	10/7/1997	X	X	X^{3*}				X
SS-3-6	(0.0' - 0.5')	10/7/1997	X	X	X^{3*}		X		X
SS-3-6	(2.0' - 3.0')	10/7/1997	X	X	X^{3*}				X
SS-3-7	(0.0' - 0.5')	10/7/1997	X	X	X^{3*}				X
SS-3-7	(1.0' - 2.0')	10/7/1997	X	X	X^{3*}				X
SS-3-8	(0.0' - 0.5')	10/8/1997	X	X	X^{3*}	X			X
SS-3-8	(1.0' - 2.0')	10/8/1997	X	X	X^{3*}				X
SS-3-9	(0.0' - 0.5')	10/8/1997	X	X	X^{3*}				X

See Notes on Page 2.

TABLE 3-B

NEW YORK STATE ELECTRIC AND GAS CORPORATION
COURT STREET SITE
BINGHAMTON, NEW YORK

SUPPLEMENTAL REMEDIAL INVESTIGATION
SEDIMENT ANALYTICAL SAMPLE SUMMARY

Location	Depth Range	Date Sampled	VOCs	SVOCs	I	TOC	PCBs	S	TPH
SS-3-9	(1.0' - 2.0')	10/8/1997	X	X	X[3*]				X
SS-3-10	(0.0' - 0.5')	10/8/1997	X	X	X[3*]				X
SS-3-10	(1.0' - 2.0')	10/8/1997	X	X	X[3*]				X
SS-3-11	(0.0' - 0.5')	10/8/1997	X	X	X[3*]				X
SS-3-11	(1.0' - 2.0')	10/8/1997	X	X	X[3*]		X		X
SS-3-11	(2.0' - 3.0')	10/8/1997	X	X	X[3*]				X
SS-3-12	(0.0' - 0.5')	10/8/1997	X	X	X[3*]				X
SS-3-12	(1.0' - 2.0')	10/8/1997	X	X	X[3*]				X
SS-3-13	(0.0' - 0.5')	10/8/1997	X	X	X[3*]				X
SS-3-13	(1.0' - 2.0')	10/8/1997	X	X	X[3*]				X
SS-3-14	(0.0' - 0.5')	10/8/1997	X	X	X[3*]		X		X
SS-3-14	(1.0' - 2.0')	10/8/1997	X	X	X[3*]				X
Phase II SRI Samples									
SS-15	(0 - 0.8')	8/24/2001	X[1]	X[2]	X[3]	X			
SS-1C	(0 - 0.7')	8/24/2001			X[3]	X			
SS-1D	(0 - 0.7')	8/24/2001	X[1]	X[2]	X[3]	X			
SS-1E	(0 - 0.6')	8/24/2001			X[3]	X			
SR-101	(0 - 2')	8/16/2001	X[1]	X[2]	X[3]	X			
SR-102 (DUP)	(0 - 2')	8/21/2001	X[1]	X[2]	X[3]	X			
SR-102	(0 - 2')	8/21/2001	X[1]	X[2]	X[3*]	X			
SR-104	(0 - 1')	8/23/2001	X[1]	X[2]	X[3]	X			
SR-105	(0 - 2')	8/24/2001	X[1]	X[2]	X[3]	X			
SR-106	(0 - 2')	8/27/2001	X[1]	X[2]	X[3]	X			
SR-107	(0 - 2')	8/27/2001	X[1]	X[2]	X[3]	X			
SR-108 (DUP)	(0 - 2')	8/28/2001	X[1]	X[2]	X[3]	X			
SR-108	(0 - 2')	8/28/2001	X[1]	X[2]	X[3*]	X			
SR-109	(0 - 2')	8/28/2001	X[1]	X[2]	X[3]	X			
SR-109	(4 - 6')	8/28/2001		X[2]	X[3]				
SR-109	(8 - 10')	8/29/2001			X[3]				
SR-110	(0 - 2')	8/29/2001	X[1]	X[2]	X[3]	X			
SR-111	(0 - 2')	8/29/2001	X[1]	X[2]	X[3]	X			
SR-112	(0 - 2')	8/29/2001	X[1]	X[2]	X[3]	X			
SR-113	(0 - 2')	8/30/2001	X[1]	X[2]	X[3]	X			
SR-114	(0 - 2')	8/31/2001			X[3]	X			
CSPH SUMP	NA	11/29/2001	X[1]	X[2]					
CSPH SUMP (DUP)	NA	11/29/2001	X[1]	X[2]					

Notes:
DUP = Duplicate sample collected.
VOCs = Volatile Organic Compounds by Method 8240.
SVOCs = Semivolatile Organic Compounds by Method 8270.
I = Inorganics by Method 6010, 7470 for mercury, 335.3 for total cyanide and 335.1
for amenable cyanide.
NA = Not Available.
TOC = Total Organic Carbon by Method 9060 (for pre-2001 data) or Lloyd Kahn (for 2001 data).
PCBs = Polychlorinated biphenyls by Method 8080.
S = Total Solids.
TPH = Total Petroleum Hydrocarbons by Method 310-13.
[1]BTEX = Method 8260A.
[2]PAHs = Method 8270.
[3]Cyanide = for total cyanide by Method 335.3 (1997 data) and by Method 335.2 (for 2001 data).
*Total cyanide and amenable cyanide analysis.
1993/1994 samples analyzed under ASP Category B, revision 12/1991.
1997 samples analyzed under ASP Category B, revision 10/1995.
2001 samples analyzed under ASP Category B, revision 2000.

TABLE 3-C

NEW YORK STATE ELECTRIC AND GAS CORPORATION
COURT STREET SITE
BINGHAMTON, NEW YORK

SUPPLEMENTAL REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL SAMPLE SUMMARY

Location	Date Sampled	VOCs	SVOCs	PCBs	I	L
Task II RI Samples						
MW93-1D	7/20/1993	X	X	X	X	
MW93-1D	10/20/1993	X	X		X	
MW93-1D	1/24/1994	X	X		X	
MW93-1D	4/26/1994	X	X		X	
MW93-2D	7/20/1993	X	X	X	X	
MW93-2D	10/20/1993	X	X		X	
MW93-2D	1/24/1994	X	X		X	
MW93-2D	4/26/1994	X	X		X	
MW93-2S	7/20/1993	X	X	X	X	
MW93-2S	10/20/1993	X	X		X	
MW93-2S	1/24/1994	X	X		X	
MW93-2S	4/26/1994	X	X		X	
MW93-3D	7/20/1993	X	X	X	X	
MW93-3D	10/20/1993	X	X		X	
MW93-3D	1/24/1994	X	X		X	
MW93-3D	4/26/1994	X	X		X	
MW93-3S (DUP)	7/20/1993	X	X	X	X	
MW93-3S (DUP)	10/20/1993	X	X		X	
MW93-3S (DUP)	1/24/1994	X	X		X	
MW93-3S (DUP)	4/26/1994	X	X		X	
MW93-5D	7/20/1993	X	X	X	X	
MW93-5D	10/20/1993	X	X		X	
MW93-5D	1/24/1994	X	X		X	
MW93-5D	4/26/1994	X	X		X	
MW93-6D	7/20/1993	X	X	X	X	
MW93-6D	10/20/1993	X	X		X	
MW93-6D	1/24/1994	X	X		X	
MW93-6D	4/26/1994	X	X		X	
MW93-6S	7/20/1993	X	X	X	X	
MW93-6S	10/20/1993	X	X		X	
MW93-6S	1/24/1994	X	X		X	
MW93-6S	4/26/1994	X	X		X	
Phase I SRI Samples						
MW93-1D	12/18/1997	X	X		X	
MW93-2D	12/18/1997	X	X		X	
MW93-2S	12/18/1997	X	X		X	
MW93-3D	12/18/1997	X	X		X	
MW93-3S	12/18/1997	X	X		X	
MW93-5D	12/19/1997	X	X		X	
MW93-6D	12/17/1997	X	X		X	
MW93-6S	12/17/1997	X	X		X	
MW97-10D	12/18/1997	X	X		X	
MW97-10S	12/18/1997	X				
MW97-10S	12/19/1997		X		X	
MW97-11S	12/19/1997	X	X		X	
MW97-12S	12/19/1997	X	X		X	
MW97-13S (DUP)	12/22/1997	X	X		X	
MW97-13S	12/22/1997	X	X		X	
MW97-14D	12/22/1997	X	X		X	
MW97-14S	12/22/1997	X	X		X	
MW97-7	12/19/1997	X	X		X	
MW97-8	12/19/1997	X	X		X	
MW97-9D	12/19/1997	X	X		X	

See Notes on Page 2.

TABLE 3-C

NEW YORK STATE ELECTRIC AND GAS CORPORATION
COURT STREET SITE
BINGHAMTON, NEW YORK

SUPPLEMENTAL REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL SAMPLE SUMMARY

Location	Date Sampled	VOCs	SVOCs	PCBs	I	L
MW97-9S	12/19/1997	X	X		X	
NYSEG #1	12/19/1997	X	X		X	
TW97-1D	12/22/1997	X	X		X	
TW97-2D	12/22/1997	X	X		X	
TW97-2S	12/22/1997	X	X		X	
TW97-3S (DUP)	12/22/1997	X	X		X	
MW98-15S (DUP)	6/5/1998	X	X		X[4]	
MW98-16D	6/5/1998	X	X		X[4]	
MW98-16S	6/5/1998	X	X		X[4]	
Phase II SRI Samples						
MW01-03R (DUP)	10/1/2001	X[1]	X[2]		X[3]	X
MW01-07R	10/1/2001	X[1]	X[2]		X[3]	X
MW01-17D (DUP)	10/2/2001	X[1]	X[2]		X[3]	
MW01-17S	10/2/2001	X[1]	X[2]		X[3]	
TW97-3S	10/2/2001	X[1]	X[2]		X[3]	

Notes:
DUP = Duplicate sample collected.
VOCs = Volatile Organic Compounds by Method 8240 .
SVOCs = Semivolatile Organic Compounds by Method 8270.
PCBs = Polychlorinated Biphenyls by Method 8080.
I = Inorganics by Method 6010/7000.
L = Chloride by Method E325.3.
[1]BTEX = Method 8260.
[2]PAHs = Method 8270.
[3]Cyanide = by Method 335.2 for total cyanide.
[4]Inorganics by Method SW846 6010, including Methods 7470 for mercury and 9010 for cyanide.
1993/1994 samples analyzed under ASP Category B, revision 12/1991.
1997 samples analyzed under ASP Category B, revision 10/1995.
2001 samples analyzed under ASP Category B, revision 2000.

TABLE 4-A

NEW YORK STATE ELECTRIC AND GAS CORPORATION
COURT STREET SITE
BINGHAMTON, NEW YORK

SUPPLEMENTAL REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS
DETECTED VOLATILE ORGANIC COMPOUNDS

Location Date Sampled Sample Type	NYSDEC GA Criteria	MW93-1D 7/20/1993 FS	MW93-1D 10/20/1993 FS	MW93-1D 1/24/1994 FS	MW93-1D 4/26/1994 FS	MW93-1D 12/18/1997 FS	MW93-2S 7/20/1993 FS	MW93-2S 10/20/1993 FS	MW93-2S 1/24/1994 FS	MW93-2S 4/26/1994 FS	MW93-2S 12/18/1997 FS	MW93-2D 7/20/1993 FS	MW93-2D 10/20/1993 FS
1,1,1-Trichloroethane	5	25. UD	25. UD	50. UD	**2. J**	50. U	5. U	5. U	5. U	5. U	10. U	**17**	**15**
1,1-Dichloroethane	5	**26. D**	**19. JD**	**20. JD**	**21**	**8. J**	5. U	5. U	5. U	5. U	10. U	**11**	**10**
Concentrations above the NY	5	25. UD	25. UD	50. UD	5. U	50. U	5. U	5. U	5. U	5. U	10. U	5. U	5. U
1,2-Dichloroethene, Total	5	25. UD	25. UD	50. UD	5. U	50. U	5. U	5. U	5. U	5. U	10. U	5. U	5. U
Acetone	50 G	50. UD	50. UD	100 UD	10. U	50. U	10. U	**10**	10. U	10. U	10. U	10. U	10. U
Benzene	0.7	660 UD	**1,000 D**	**890 D**	**67**	**810**	5. U	5. U	**1. J**	5. U	10. U	**19**	**19**
Carbon tetrachloride	5	25. UD	25. UD	50. UD	5. U	50. U	5. U	5. U	5. U	5. U	10. U	5. U	5. U
Chloroform	7	25. UD	25. UD	50. UD	5. U	50. U	5. U	5. U	5. U	5. U	10. U	5. U	5. U
Ethylbenzene	5	**250 D**	**29. D**	**200 D**	**2. J**	**160**	**3. J**	5. U	**6**	5. U	10. U	**64**	**52**
Methylene chloride	5	25. UD	**11. JD**	50. UD	**0.80 J**	50. U	5. U	1. U	5. U	**1. JB**	10. U	**3. J**	5. U
Styrene	5	25. UD	25. UD	50. UD	5. U	50. U	5. U	5. U	5. U	5. U	10. U	5. U	**49**
Toluene	5	**12. JD**	**8. JD**	50. UD	**1. J**	**10. J**	5. U	5. U	5. U	5. U	10. U	**71. B**	**61**
Vinyl acetate	NA	50. UD	50. UD	100 UD	**1. J**	--	10. U	10. U	10. U	10. U	--	10. U	10. U
Xylenes, Total	5 d	**110 D**	**150 D**	**140 D**	**27**	**170**	**5**	**7**	**80**	5. U	10. U	**440**	**350**
Total BTEX		**372**	**1,187**	**1,230**	**97**	**1,150**	**8**	**7**	**87**	ND	ND	**594**	**482**
Total Volatiles		**398**	**1,217**	**1,250**	**122**	**1,158**	**8**	**17**	**87**	**1**	ND	**625**	**556**

See Notes on Page 7.

TABLE 4-A

NEW YORK STATE ELECTRIC AND GAS CORPORATION
COURT STREET SITE
BINGHAMTON, NEW YORK

SUPPLEMENTAL REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS
DETECTED VOLATILE ORGANIC COMPOUNDS

Location Date Sampled Sample Type	NYSDEC GA Criteria	MW93-2D 1/24/1994 FS	MW93-2D 4/26/1994 FS	MW93-2D 12/18/1997 FS	MW93-3S 7/20/1993 FS	MW93-3S 7/20/1993 DUP	MW93-3S 10/20/1993 FS	MW93-3S 10/20/1993 DUP	MW93-3S 1/24/1994 FS	MW93-3S 1/24/1994 DUP	MW93-3S 4/26/1994 FS	MW93-3S 4/26/1994 DUP	MW93-3S 12/18/1997 FS
1,1,1-Trichloroethane	5	**16. JD**	**18**	**11. J**	25. UD	31. UD	5. U	5. U	5. U	5. U	5. U	5. U	10. U
1,1-Dichloroethane	5	**11. JD**	**12**	**10. J**	25. UD	31. UD	5. U	5. U	5. U	5. U	5. U	5. U	10. U
Concentrations above the NY	5	25. UD	**2. J**	20. U	25. UD	31. UD	5. U	5. U	5. U	5. U	5. U	5. U	10. U
1,2-Dichloroethene, Total	5	25. UD	**2. J**	20. U	25. UD	31. UD	5. U	5. U	5. U	5. U	5. U	5. U	10. U
Acetone	50 G	50. UD	10. U	20. U	50. UD	62. UD	10. U	10. U	**10**	10. U	10. U	10. U	10. U
Benzene	0.7	**18. JD**	**17**	**16. J**	**790 D**	1,000 UD	5. U	5. U	5. U	**1. J**	5. U	5. U	10. U
Carbon tetrachloride	5	25. UD	5. U	20. U	25. UD	31. UD	5. U	5. U	5. U	5. U	5. U	5. U	10. U
Chloroform	7	25. UD	**0.40 J**	20. U	25. UD	31. UD	5. U	5. U	5. U	5. U	5. U	5. U	10. U
Ethylbenzene	5	**42. D**	**39**	**68**	**65. D**	100 UD	5. U	5. U	5. U	5. U	5. U	5. U	10. U
Methylene chloride	5	25. UD	**2. JB**	20. U	**45. D**	31. UD	5. U	5. U	5. U	5. U	5. U	5. U	10. U
Styrene	5	**48. D**	**34**	20. U	25. UD	31. UD	5. U	5. U	5. U	5. U	5. U	5. U	10. U
Toluene	5	**60. D**	**44**	**15. J**	25. UD	31. UD	5. U	5. U	5. U	5. U	5. U	5. U	10. U
Vinyl acetate	NA	50. UD	**9. J**	--	50. UD	62. UD	10. U	10. U	10. U	10. U	10. U	**3. J**	--
Xylenes, Total	5 d	**32. D**	**300**	**310**	**66. D**	100 UD	5. U	5. U	5. U	5. U	5. U	5. U	10. U
Total BTEX		**152**	**400**	**409**	**921**	ND	ND	ND	ND	**1**	ND	ND	ND
Total Volatiles		**227**	**479**	**430**	**966**	ND	ND	ND	**10**	**1**	ND	**3**	ND

See Notes on Page 7.

TABLE 4-A

NEW YORK STATE ELECTRIC AND GAS CORPORATION
COURT STREET SITE
BINGHAMTON, NEW YORK

SUPPLEMENTAL REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS
DETECTED VOLATILE ORGANIC COMPOUNDS

Location	**NYSDEC**	**MW93-3D**	**MW93-3D**	**MW93-3D**	**MW93-3D**	**MW93-3D**	**MW01-03R**	**MW93-5D**	**MW93-5D**	**MW93-5D**	**MW93-5D**	**MW93-5D**	**MW93-6S**
Date Sampled	**GA**	**7/20/1993**	**10/20/1993**	**1/24/1994**	**4/26/1994**	**12/18/1997**	**10/1/2001**	**7/20/1993**	**10/20/1993**	**1/24/1994**	**4/26/1994**	**12/19/1997**	**7/20/1993**
Sample Type	**Criteria**	**FS**	**FS**	**FS**	**FS**	**FS**	**FS**	**FS**	**FS**	**FS**	**FS**	**FS**	**FS**
1,1,1-Trichloroethane	5	**6. JD**	25. UD	83. UD	**2. J**	100 U	--	**35**	**40**	**35**	**26**	**24**	5. U
1,1-Dichloroethane	5	**17. JD**	**17. JD**	**18. JD**	**2. J**	100 U	--	**3. J**	**7**	**7**	**4. J**	**2. J**	5. U
Concentrations above the NY	5	25. UD	25. UD	83. UD	5. U	100 U	--	5. U	**3. J**	**2. J**	**2. J**	10. U	5. U
1,2-Dichloroethene, Total	5	25. UD	25. UD	83. UD	5. U	100 U	--	5. U	5. U	5. U	**3. J**	10. U	5. U
Acetone	50 G	50. UD	50. UD	170 UD	10. U	100 U	--	10. U	10. U	10. U	10. U	10. U	10. U
Benzene	0.7	**51. D**	**68. D**	**68. JD**	**8**	**80. J**	10. U	**50**	**9**	**1. J**	5. U	10. U	5. U
Carbon tetrachloride	5	25. UD	25. UD	83. UD	5. U	100 U	--	**4. J**	5. U	5. U	5. U	10. U	5. U
Chloroform	7	25. UD	25,000 UD	83. UD	5. U	100 U	--	**2. J**	5. U	**1. J**	**1. J**	10. U	5. U
Ethylbenzene	5	**530 D**	**890 D**	**790 D**	**86**	**800**	10. U	**100**	5. U	5. U	5. U	**1. J**	5. U
Methylene chloride	5	**15. JD**	25. UD	83. UD	**0.80 J**	100 U	--	**7**	5. U	5. U	**0.70 J**	10. U	**4. J**
Styrene	5	25. UD	25. UD	83. UD	5. U	100 U	--	5. U	5. U	5. U	5. U	10. U	5. U
Toluene	5	**76. D**	**82. D**	**85. D**	**10**	**100**	10. U	**12**	5. U	5. U	5. U	10. U	5. U
Vinyl acetate	NA	50. UD	50. UD	170 UD	10. U	--	--	10. U	10. U	10. U	10. U	--	10. U
Xylenes, Total	5 d	**860 D**	**1,100 D**	**1,000 D**	**140**	**1,000**	--	**54**	**32**	**8**	**1. J**	**3. J**	5. U
Total BTEX		**1,517**	**2,140**	**1,943**	**244**	**1,980**	ND	**216**	**41**	**9**	**1**	**4**	ND
Total Volatiles		**1,555**	**2,157**	**1,961**	**249**	**1,980**	ND	**267**	**91**	**54**	**37.7**	**30**	**4**

See Notes on Page 7.

TABLE 4-A

NEW YORK STATE ELECTRIC AND GAS CORPORATION
COURT STREET SITE
BINGHAMTON, NEW YORK

SUPPLEMENTAL REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS
DETECTED VOLATILE ORGANIC COMPOUNDS

Location Date Sampled Sample Type	NYSDEC GA Criteria	MW93-6S 10/20/1993 FS	MW93-6S 1/24/1994 FS	MW93-6S 4/26/1994 FS	MW93-6S 12/17/1997 FS	MW93-6D 7/20/1993 FS	MW93-6D 10/20/1993 FS	MW93-6D 1/24/1994 FS	MW93-6D 4/26/1994 FS	MW93-6D 12/17/1997 FS	MW97-7 12/19/1997 FS	MW01-07R 10/1/2001 FS	MW97-8 12/19/1997 FS
1,1,1-Trichloroethane	5	5. U	5. U	5. U	10. U	**47**	**40**	**42**	**39**	**26**	10. U	--	200 U
1,1-Dichloroethane	5	5. U	5. U	5. U	10. U	**6**	**6**	**6**	**7**	**4. J**	10. U	--	200 U
Concentrations above the NY	5	5. U	5. U	5. U	10. U	**3. J**	**3. J**	**4. J**	**3. J**	**1. J**	10. U	--	200 UJ
1,2-Dichloroethene, Total	5	5. U	5. U	5. U	10. U	5. U	5. U	5. U	**3. J**	10. U	10. U	--	200 U
Acetone	50 G	10. U	10. U	10. U	10. U	10. U	10. U	10. U	10. U	10. U	10. U	--	200 U
Benzene	0.7	**4. J**	**28**	**10**	10. U	5. U	5. U	5. U	5. U	10. U	10. U	10. U	**2,700**
Carbon tetrachloride	5	5. U	5. U	5. U	10. U	5. U	5. U	5. U	5. U	10. U	10. U	--	200 U
Chloroform	7	5. U	5. U	5. U	10. U	**1. J**	5. U	**2. J**	**2. J**	10. U	10. U	--	200 U
Ethylbenzene	5	5. U	**22**	**0.40 J**	10. U	5. U	5. U	5. U	5. U	10. U	10. U	10. U	**900**
Methylene chloride	5	5. U	5. U	5. U	10. U	**4. J**	5. U	5. U	**0.80 J**	10. U	10. U	--	200 U
Styrene	5	5. U	5. U	5. U	10. U	5. U	5. U	5. U	5. U	10. U	10. U	--	200 U
Toluene	5	5. U	5. U	5. U	10. U	5. U	5. U	5. U	5. U	10. U	10. U	10. U	**38. J**
Vinyl acetate	NA	10. U	10. U	10. U	--	10. U	10. U	10. U	10. U	--	--	--	--
Xylenes, Total	5 d	**4. J**	**13**	**3. J**	10. U	5. U	5. U	5. U	5. U	10. U	**1. J**	--	**1,000**
Total BTEX		**8**	**63**	**13.4**	ND	ND	ND	ND	ND	ND	**1**	ND	**4,638**
Total Volatiles		**8**	**63**	**13.4**	ND	**61**	**49**	**54**	**54.8**	**31**	1	ND	**4,638**

See Notes on Page 7.

TABLE 4-A

NEW YORK STATE ELECTRIC AND GAS CORPORATION
COURT STREET SITE
BINGHAMTON, NEW YORK

SUPPLEMENTAL REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS
DETECTED VOLATILE ORGANIC COMPOUNDS

Location Date Sampled Sample Type	NYSDEC GA Criteria	MW97-9S 12/19/1997 FS	MW97-9D 12/19/1997 FS	MW97-10S 12/18/1997 FS	MW97-10D 12/18/1997 FS	MW97-11S 12/19/1997 FS	MW97-12S 12/19/1997 FS	MW97-13S 12/22/1997 FS	MW97-13S 12/22/1997 DUP	MW97-14S 12/22/1997 FS	MW97-14D 12/22/1997 FS	MW98-15S 6/5/1998 FS	MW98-15S 6/5/1998 DUP
1,1,1-Trichloroethane	5	250 U	**4. J**	10. U	**21**	10. U	10. U	200 U	2,000 U	10. U	**14**	100 U	20. U
1,1-Dichloroethane	5	250 U	**6. J**	10. U	**2. J**	10. U	10. U	200 U	2,000 U	10. U	10. U	100 U	20. U
Concentrations above the NY	5	250 UJ	10. U	10. U	10. U	10. U	10. U	200 UJ	2,000 UJ	10. UJ	10. UJ	100 U	20. U
1,2-Dichloroethene, Total	5	250 U	10. U	10. U	10. U	10. U	10. U	200 U	2,000 U	10. U	10. U	100 U	20. UJ
Acetone	50 G	250 U	10. U	10. U	10. U	10. U	10. U	**74. J**	2,000 U	10. U	10. U	100 U	20. U
Benzene	0.7	**4,400**	**13**	10. U	10. U	**4. J**	10. U	**22,000 D**	**22,000**	10. U	10. U	100 U	**3. J**
Carbon tetrachloride	5	250 U	10. U	10. U	10. U	10. U	10. U	200 U	2,000 U	10. U	10. U	100 U	20. U
Chloroform	7	250 U	10. U	10. U	10. U	10. U	10. U	200 U	2,000 U	10. U	10. U	100 U	20. U
Ethylbenzene	5	**630**	**7. J**	**13**	10. U	10. U	10. U	**2,600 J**	**2,900**	10. U	10. U	**250**	**240**
Methylene chloride	5	250 U	10. U	10. U	10. U	10. U	10. U	200 U	2,000 U	10. U	10. U	100 U	20. U
Styrene	5	250 U	**12**	10. U	10. U	10. U	10. U	200 U	2,000 U	10. U	10. U	100 U	20. U
Toluene	5	250 U	**54**	10. U	10. U	10. U	10. U	**7,400 D**	**7,200**	10. U	10. U	100 U	20. U
Vinyl acetate	NA	--	--	--	--	--	--	--	--	--	--	--	--
Xylenes, Total	5 d	**400**	**130**	**5. J**	10. U	10. U	10. U	**2,600 J**	**2,500**	10. U	10. U	100 U	**25**
Total BTEX		**5,430**	**204**	**18**	ND	**4**	ND	**34,600**	**34,600**	ND	ND	**250**	**268**
Total Volatiles		**5,430 U**	**226**	**18**	**23**	**4**	ND	**34,674**	**34,600**	ND	14	**250**	**268**

See Notes on Page 7.

TABLE 4-A

NEW YORK STATE ELECTRIC AND GAS CORPORATION
COURT STREET SITE
BINGHAMTON, NEW YORK

SUPPLEMENTAL REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS
DETECTED VOLATILE ORGANIC COMPOUNDS

Location Date Sampled Sample Type	NYSDEC GA Criteria	MW98-16S 6/5/1998 FS	MW98-16D 6/5/1998 FS	MW01-17S 10/2/2001 FS	MW01-17D 10/2/2001 FS	MW01-17D 10/2/2001 DUP	B-1 12/19/1997 FS	TW97-1D 12/22/1997 FS	TW97-2S 12/22/1997 FS	TW97-2D 12/22/1997 FS	TW97-3S 12/22/1997 FS	TW97-3S 12/22/1997 DUP	TW97-3S 10/2/2001 FS
1,1,1-Trichloroethane	5	**3. J**	**12**	--	--	--	**2. J**	**12**	10. U	**26**	10. U	10. U	--
1,1-Dichloroethane	5	10. U	10. U	--	--	--	**2. J**	**4. J**	10. U	10. U	10. U	10. U	--
Concentrations above the NY	5	10. U	10. U	--	--	--	10. U	10. UJ	10. UJ	10. UJ	10. UJ	10. UJ	--
1,2-Dichloroethene, Total	5	10. UJ	10. UJ	--	--	--	10. U	10. U	10. U	10. U	10. U	10. U	--
Acetone	50 G	10. U	10. U	--	--	--	10. U	10. U	10. U	10. U	10. U	10. U	--
Benzene	0.7	10. U	10. U	10. U	10. U	10. U	10. U	10. U	10. U	10. U	10. U	10. U	10. U
Carbon tetrachloride	5	10. U	10. U	--	--	--	10. U	10. U	10. U	10. U	10. U	10. U	--
Chloroform	7	10. U	**1. J**	--	--	--	10. U	10. U	10. U	10. U	10. U	10. U	--
Ethylbenzene	5	10. U	10. U	10. U	10. U	10. U	10. U	10. U	10. U	10. U	10. U	10. U	10. U
Methylene chloride	5	10. U	10. U	--	--	--	10. U	10. U	10. U	10. U	10. U	10. U	--
Styrene	5	10. U	10. U	--	--	--	10. U	10. U	10. U	10. U	10. U	10. U	--
Toluene	5	10. U	10. U	10. U	10. U	10. U	10. U	10. U	10. U	10. U	10. U	10. U	10. U
Vinyl acetate	NA	--	--	--	--	--	--	--	--	--	--	--	--
Xylenes, Total	5 d	10. U	10. U	--	--	--	10. U	10. U	10. U	10. U	10. U	10. U	--
Total BTEX		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Total Volatiles		**3**	**13**	ND	ND	ND	**4**	**16**	ND	**26**	ND	ND	ND

See Notes on Page 7.

TABLE 4-A

NEW YORK STATE ELECTRIC AND GAS CORPORATION
COURT STREET SITE
BINGHAMTON, NEW YORK

SUPPLEMENTAL REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS
DETECTED VOLATILE ORGANIC COMPOUNDS

Notes:

All concentrations reported in micrograms per liter (ug/L); also expressed as parts per billion (ppb).
NYSDEC GA Criteria values as reported in NYSDEC, Division of Water Technical and Operational Guidance Series (1.1.1) Memorandum, Ambient Water Quality Standards and Guidance Values, dated October 1993.
Detections are bolded.
Concentrations above the NYSDEC GA criteria values are shaded.
ND = Not detected.
D = Concentration is based on a diluted sample analysis.
J = The compound was positively identified; however, the associated numerical value is an estimated concentration only.
U = The compound was analyzed for but not detected. The associated value is the compound quantitation limit.

Criteria Notes:

d = Value listed applies to each isomer (1,2-, 1,3-, and 1,4-) individually.
G = Guidance value.

TABLE 4-B

NEW YORK STATE ELECTRIC AND GAS CORPORATION
COURT STREET SITE
BINGHAMTON, NEW YORK

SUPPLEMENTAL REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS
DETECTED SEMIVOLATILE ORGANIC COMPOUNDS

Location Date Sampled Sample Type	NYSDEC GA Criteria	MW93-1D 7/20/1993 FS	MW93-1D 10/20/1993 FS	MW93-1D 1/24/1994 FS	MW93-1D 4/26/1994 FS	MW93-1D 12/18/1997 FS	MW93-2S 7/20/1993 FS	MW93-2S 10/20/1993 FS	MW93-2S 1/24/1994 FS	MW93-2S 4/26/1994 FS	MW93-2S 12/18/1997 FS	MW93-2D 7/20/1993 FS	MW93-2D 10/20/1993 FS
2,4-Dimethylphenol	1 a	10. U	10. U	11. U	10. U	10. U	12. U	10. U	11. U	10. U	10. U	10. U	10. U
2,4-Dinitrotoluene	5	10. U	10. U	11. U	10. U	10. U	12. U	10. U	11. U	10. U	10. U	10. U	10. U
2-Methylnaphthalene	NA	**19**	**23**	**8. J**	10. U	**2. J**	12. U	**9. J**	**180**	**24**	**8. J**	**320**	**220**
2-Methylphenol	1 a	10. U	10. U	11. U	10. U	10. U	12. U	10. U	11. U	10. U	10. U	10. U	10. U
4-Methylphenol	1 a	10. U	10. U	11. U	10. U	10. U	12. U	10. U	11. U	10. U	10. U	10. U	10. U
4-Nitrophenol	1 a	10. U	10. U	11. U	10. U	25. U	12. U	10. U	11. U	10. U	26. U	10. U	10. U
Acenaphthene	20 G	**35**	**160**	**120**	**73**	**160 D**	**18**	**24**	**41**	**15**	**12**	**100**	**120**
Acenaphthylene	NA	**4. J**	**19**	**12**	**10**	**6. J**	**1. J**	10. U	**6. J**	**7. J**	**2. J**	**230**	**200**
Anthracene	50 G	**3. J**	**10**	**4. J**	**12**	10. U	**5. J**	**6. J**	**8. J**	**8. J**	**1. J**	**7. J**	**4. J**
Benzo(a)anthracene	0.002 G	10. U	**7. J**	11. U	**12**	10. U	0.90 U	10. U	11. U	**14**	10. U	10. U	10. U
Benzo(a)pyrene	ND	10. U	**4. J**	11. U	**9. J**	10. U	12. U	10. U	11. U	**14**	10. U	10. U	10. U
Benzo(b)fluoranthene	0.002 G	10. U	10. U	11. U	**4. J**	10. U	12. U	10. U	11. U	**8. J**	10. U	10. U	10. U
Benzo(g,h,i)perylene	NA	10. U	10. U	11. U	**3. J**	10. U	12. U	10. U	11. U	**8. J**	10. U	10. U	10. U
Benzo(k)fluoranthene	0.002 G	10. U	10. U	110 U	**11**	10. U	12. U	10. U	110 U	**9. J**	10. U	10. U	10. U
Benzoic Acid	NA	25. U	26. U	28. U	26. U	--	31. U	25. U	28. U	26. U	--	24. U	24. U
bis(2-Ethylhexyl)phthalate	50	10. U	10. U	110 U	10. U	10. U	12. U	10. U	110 U	10. U	10. U	10. U	10. U
Carbazole	NA	**1. J**	**4. J**	110 U	10. U	**7. J**	**2. J**	10. U	110 U	10. U	10. U	**2. J**	10. U
Chrysene	0.002 G	10. U	**6. J**	110 U	**11**	10. U	12. U	10. U	110 U	**13**	10. U	10. U	10. U
Di-n-butyl phthalate	50	10. U	10. U	110 U	10. U	10. U	**2. J**	10. U	110 U	10. U	10. U	10. U	10. U
Dibenz(a,h)anthracene	NA	10. U	10. U	110 U	10. U	10. U	12. U	10. U	110 U	**3. J**	10. U	10. U	10. U
Dibenzofuran	NA	**2. J**	**6. J**	110 U	**4. J**	**5. J**	**1. J**	**4. J**	**8. J**	10. U	**2. J**	**4. J**	10. U
Diethyl phthalate	50 G	10. U	10. U	110 U	10. U	10. U	12. U	10. U	110 U	10. U	10. U	10. U	10. U
Fluoranthene	50 G	**2. J**	**13**	110 U	**22**	10. U	**4. J**	**6. J**	**5. J**	**20**	10. U	**3. J**	10. U
Fluorene	50 G	**11**	**26**	**11**	**11**	**5. J**	**29**	**11**	**27**	**13**	**10**	**33**	**13**
Hexachloroethane	5	10. U	10. U	110 U	10. U	10. U	12. U	10. U	110 U	10. U	10. U	10. U	10. U
Indeno(1,2,3-cd)pyrene	0.002 G	10. U	10. U	110 U	10. U	10. U	12. U	10. U	110 U	10. U	10. U	10. U	10. U
Naphthalene	10 G	**42**	**200**	**260**	10. U	**610 D**	**12**	10. U	**640 D**	**71**	**45**	**2,600**	**3,600 D**
Phenanthrene	50 G	**25**	**79**	**36**	**66**	**16**	**12**	**35**	**63**	**40**	**10**	**17**	**21**
Phenol	1 a	10. U	10. U	110 U	10. U	**3. J**	12. U	10. U	110 U	10. U	10. U	10. U	10. U
Pyrene	50 G	**2. J**	**17**	110 U	**30**	**1. J**	**6. J**	**10**	**6. J**	**35**	10. U	**4. J**	10. U
Total PAHs		**143**	**564**	**451**	**274**	**800**	**87**	**101**	**640**	**302**	**88**	**3,314**	**578**
Total Semivolatiles		**146**	**574**	**451**	**278**	**815**	**92**	**105**	**640**	**302**	**90**	**3,320**	**578**
Total PCBs		ND	--	--	--	--	ND	--	--	--	--	ND	--

See Notes on Page 7.

TABLE 4-B

NEW YORK STATE ELECTRIC AND GAS CORPORATION
COURT STREET SITE
BINGHAMTON, NEW YORK

SUPPLEMENTAL REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS
DETECTED SEMIVOLATILE ORGANIC COMPOUNDS

Location Date Sampled Sample Type	NYSDEC GA Criteria	MW93-2D 1/24/1994 FS	MW93-2D 4/26/1994 FS	MW93-2D 12/18/1997 FS	MW93-3S 7/20/1993 FS	MW93-3S 7/20/1993 DUP	MW93-3S 10/20/1993 FS	MW93-3S 10/20/1993 DUP	MW93-3S 1/24/1994 FS	MW93-3S 1/24/1994 DUP	MW93-3S 4/26/1994 FS	MW93-3S 4/26/1994 DUP	MW93-3S 12/18/1997 FS
2,4-Dimethylphenol	1 a	11. U	10. U	10. U	**11. J**	10. U	10. U	12. U	110 U	10. U	10. U	10. U	10. U
2,4-Dinitrotoluene	5	11. U	10. U	10. U	12. U	10. U	10. U	12. U	110 U	10. U	10. U	10. U	10. U
2-Methylnaphthalene	NA	**160**	**96**	**580 EJ**	**1. J**	**0.90 J**	10. U	12. U	110 U	10. U	10. U	10. U	10. U
2-Methylphenol	1 a	11. U	10. U	10. U	12. U	10. U	10. U	12. U	110 U	10. U	10. U	10. U	10. U
4-Methylphenol	1 a	11. U	10. U	10. U	12. U	10. U	10. U	12. U	110 U	10. U	10. U	10. U	10. U
4-Nitrophenol	1 a	11. U	10. U	25. U	12. U	10. U	10. U	12. U	110 U	10. U	10. U	10. U	26. U
Acenaphthene	20 G	**120**	**120**	**100 EJ**	**1. J**	10. U	10. U	12. U	110 U	10. U	10. U	10. U	10. U
Acenaphthylene	NA	**250**	**180**	**210 EJ**	12. U	10. U	10. U	12. U	110 U	10. U	10. U	10. U	10. U
Anthracene	50 G	11. U	**3. J**	10. U	12. U	10. U	10. U	12. U	110 U	10. U	10. U	10. U	10. U
Benzo(a)anthracene	0.002 G	11. U	10. U	10. U	12. U	10. U	10. U	12. U	110 U	10. U	10. U	10. U	10. U
Benzo(a)pyrene	ND	11. U	10. U	10. U	12. U	10. U	10. U	12. U	110 U	10. U	10. U	10. U	10. U
Benzo(b)fluoranthene	0.002 G	11. U	10. U	10. U	12. U	10. U	10. U	12. U	110 U	10. U	10. U	10. U	10. U
Benzo(g,h,i)perylene	NA	11. U	10. U	10. U	12. U	10. U	10. U	12. U	110 U	10. U	10. U	10. U	10. U
Benzo(k)fluoranthene	0.002 G	11. U	10. U	10. U	12. U	10. U	10. U	12. U	11. U	10. U	10. U	10. U	10. U
Benzoic Acid	NA	27. U	24. U	--	30. U	25. U	25. U	29. U	27. U	25. U	25. U	24. U	--
bis(2-Ethylhexyl)phthalate	50	11. U	10. U	10. U	12. U	**4. J**	10. U	12. U	11. U	10. U	10. U	10. U	10. U
Carbazole	NA	11. U	10. U	**4. J**	12. U	10. U	10. U	12. U	11. U	10. U	10. U	10. U	10. U
Chrysene	0.002 G	11. U	10. U	10. U	12. U	10. U	10. U	12. U	11. U	10. U	10. U	10. U	10. U
Di-n-butyl phthalate	50	11. U	10. U	10. U	12. U	10. U	10. U	12. U	11. U	10. U	10. U	10. U	10. U
Dibenz(a,h)anthracene	NA	11. U	10. U	10. U	12. U	10. U	10. U	12. U	11. U	10. U	10. U	10. U	10. U
Dibenzofuran	NA	11. U	10. U	**2. J**	12. U	10. U	10. U	12. U	11. U	10. U	10. U	10. U	10. U
Diethyl phthalate	50 G	11. U	10. U	10. U	12. U	10. U	10. U	12. U	11. U	10. U	10. U	10. U	10. U
Fluoranthene	50 G	11. U	**3. J**	10. U	12. U	10. U	10. U	12. U	11. U	10. U	10. U	10. U	10. U
Fluorene	50 G	**7. J**	**8. J**	**3. J**	12. U	10. U	10. U	12. U	11. U	10. U	10. U	10. U	10. U
Hexachloroethane	5	11. U	10. U	10. U	12. U	10. U	10. U	12. U	11. U	10. U	10. U	10. U	10. U
Indeno(1,2,3-cd)pyrene	0.002 G	11. U	10. U	10. U	12. U	10. U	10. U	12. U	11. U	10. U	10. U	10. U	10. U
Naphthalene	10 G	**5,600 D**	**3,800 D**	**5,400 D**	**110**	**92**	10. U	12. U	11. U	10. U	10. U	10. U	**2. J**
Phenanthrene	50 G	**16**	**18**	**4. J**	12. U	10. U	10. U	12. U	11. U	10. U	10. U	10. U	10. U
Phenol	1 a	11. U	10. U	10. U	**7. J**	10. U	10. U	12. U	11. U	10. U	10. U	10. U	10. U
Pyrene	50 G	11. U	**4. J**	10. U	12. U	10. U	10. U	12. U	11. U	10. U	10. U	10. U	10. U
Total PAHs		**553**	**432**	**6,297**	**112**	**92.9**	ND	ND	ND	ND	ND	ND	**2**
Total Semivolatiles		**553**	**432**	**6,303**	**130**	**96.9**	ND	ND	ND	ND	ND	ND	**2**
Total PCBs		--	--	--	ND	ND	--	--	--	--	--	--	--

See Notes on Page 7.

TABLE 4-B

NEW YORK STATE ELECTRIC AND GAS CORPORATION
COURT STREET SITE
BINGHAMTON, NEW YORK

SUPPLEMENTAL REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS
DETECTED SEMIVOLATILE ORGANIC COMPOUNDS

Location Date Sampled Sample Type	NYSDEC GA Criteria	MW93-3D 7/20/1993 FS	MW93-3D 10/20/1993 FS	MW93-3D 1/24/1994 FS	MW93-3D 4/26/1994 FS	MW93-3D 12/18/1997 FS	MW-01-03R 10/1/2001 FS	MW93-5D 7/20/1993 FS	MW93-5D 10/20/1993 FS	MW93-5D 1/24/1994 FS	MW93-5D 4/26/1994 FS	MW93-5D 12/19/1997 FS	MW93-6S 7/20/1993 FS
2,4-Dimethylphenol	1 a	10. U	10. U	10. U	10. U	10. U	--	10. U	10. U	10. U	10. U	10. U	10. U
2,4-Dinitrotoluene	5	10. U	10. U	10. U	10. U	10. U	--	10. U	10. U	10. U	10. U	10. U	10. U
2-Methylnaphthalene	NA	**520**	**360 D**	**320 D**	**290 D**	**210 EJ**	--	**150**	**17**	**27**	**8. J**	10. U	10. U
2-Methylphenol	1 a	10. U	10. U	10. U	10. U	10. U	--	10. U	10. U	10. U	10. U	10. U	10. U
4-Methylphenol	1 a	10. U	10. U	10. U	10. U	10. U	--	10. U	10. U	10. U	10. U	10. U	10. U
4-Nitrophenol	1 a	10. U	10. U	10. U	10. U	25. U	--	10. U	10. U	10. U	10. U	25. U	10. U
Acenaphthene	20 G	190 U	**250**	**210**	**200**	**180 EJ**	11. U	25. U	**15**	**25**	**15**	**1. J**	**34**
Acenaphthylene	NA	94. U	**130**	**110**	**120**	**51**	11. U	**180**	**22**	**140**	**76**	**30**	**0.90 J**
Anthracene	50 G	31. U	**42**	**32**	**47**	**18**	11. U	**10**	**10**	**130**	**10**	**2. J**	**0.80 J**
Benzo(a)anthracene	0.002 G	**6**	**12**	**8. J**	**16**	10. U	11. U	**2. J**	10. U	**4. J**	10. U	10. U	10. U
Benzo(a)pyrene	ND	4. U	**11**	**6. J**	**14**	10. U	11. U	**2. J**	**5. J**	**3. J**	10. U	10. U	10. U
Benzo(b)fluoranthene	0.002 G	2. U	**5. J**	10. U	**6. J**	10. U	11. U	10. U	10. U	10. U	10. U	10. U	10. U
Benzo(g,h,i)perylene	NA	10. U	**4. J**	10. U	**5. J**	10. U	11. U	10. U	10. U	10. U	10. U	10. U	10. U
Benzo(k)fluoranthene	0.002 G	10. U	**7. J**	10. U	10. U	10. U	11. U	10. U	10. U	10. U	10. U	10. U	10. U
Benzoic Acid	NA	24. U	25. U	25. U	24. U	--		**16. J**	26. U	24. U	25. U	--	26. U
bis(2-Ethylhexyl)phthalate	50	10. U	10. U	10. U	10. U	10. U	--	10. U	**27**	10. U	10. U	10. U	10. U
Carbazole	NA	31. U	**32**	**37**	**32**	**1. J**	--	**1. J**	10. U	10. U	10. U	10. U	**1. J**
Chrysene	0.002 G	6. U	**12**	**8. J**	**15**	**1. J**	11. U	**2. J**	**6. J**	**4. J**	10. U	10. U	10. U
Di-n-butyl phthalate	50	10. U	10. U	10. U	10. U	10. U	--	10. U	10. U	10. U	10. U	10. U	10. U
Dibenz(a,h)anthracene	NA	10. U	10. U	10. U	10. U	10. U	11. U	10. U	10. U	10. U	10. U	10. U	10. U
Dibenzofuran	NA	**20. J**	**22**	**23**	**24**	**18**	11. U	**2. J**	10. U	10. U	10. U	10. U	**3. J**
Diethyl phthalate	50 G	10. U	10. U	10. U	10. U	10. U	--	10. U	10. U	10. U	10. U	10. U	10. U
Fluoranthene	50 G	**16. J**	**28**	**19**	**34**	**7. J**	11. U	**9. J**	**13**	**12**	**8**	**2. J**	10. U
Fluorene	50 G	**100**	**120**	**84**	**130**	**86. EJ**	11. U	**52**	**20**	**62**	**34**	10. U	**12**
Hexachloroethane	5	10. U	10. U	10. U	10. U	10. U	--	10. U	10. U	10. U	10. U	10. U	10. U
Indeno(1,2,3-cd)pyrene	0.002 G	10. U	10. U	10. U	10. U	10. U	11. UJ	10. U	10. U	10. U	10. U	10. U	10. U
Naphthalene	10 G	**3,600**	**4,600 D**	**6,500 D**	**3,200 D**	**7,300 D**	11. U	**1,000**	**63**	**550 D**	**110**	**79**	**3. J**
Phenanthrene	50 G	**130**	**180**	**140**	**170**	**89. EJ**	11. U	**68**	**53**	**86**	**79**	**17**	**8. J**
Phenol	1 a	10. U	10. U	10. U	10. U	10. U	--	**8. J**	10. U	10. U	10. U	10. U	10. U
Pyrene	50 G	**20**	**36**	**26**	**46**	**8. J**	11. U	**13**	**22**	**18**	**110**	**3. J**	10. U
Total PAHs		**4,392**	**837**	**643**	**803**	**7,950**	ND	**1,488**	**246**	**550**	**450**	**134**	**58.7**
Total Semivolatiles		**4,412**	**891**	**703**	**859**	**7,969**	ND	**1,515**	**273**	**550**	**450**	**134**	**62.7**
Total PCBs		ND	--	--	--	--	--	ND	--	--	--	--	ND

See Notes on Page 7.

TABLE 4-B

NEW YORK STATE ELECTRIC AND GAS CORPORATION
COURT STREET SITE
BINGHAMTON, NEW YORK

SUPPLEMENTAL REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS
DETECTED SEMIVOLATILE ORGANIC COMPOUNDS

Location Date Sampled Sample Type	NYSDEC GA Criteria	MW93-6S 10/20/1993 FS	MW93-6S 1/24/1994 FS	MW93-6S 4/26/1994 FS	MW93-6S 12/17/1997 FS	MW93-6D 7/20/1993 FS	MW93-6D 10/20/1993 FS	MW93-6D 1/24/1994 FS	MW93-6D 4/26/1994 FS	MW93-6D 12/17/1997 FS	MW97-7 12/19/1997 FS	MW01-07R 10/1/2001 FS	MW97-8 12/19/1997 FS
2,4-Dimethylphenol	1 a	10. U	10. U	12. U	10. U	10. U	10. U	10. U	11. U	10. U	10. U	--	10. U
2,4-Dinitrotoluene	5	10. U	10. U	12. U	10. U	10. U	10. U	10. U	11. U	10. U	10. U	--	10. U
2-Methylnaphthalene	NA	10. U	10. U	**140**	10. U	10. U	**160**	10. U	11. U	10. U	10. U	--	**720 D**
2-Methylphenol	1 a	10. U	10. U	12. U	10. U	10. U	10. U	10. U	11. U	10. U	10. U	--	10. U
4-Methylphenol	1 a	10. U	10. U	12. U	10. U	10. U	10. U	10. U	11. U	10. U	10. U	--	10. U
4-Nitrophenol	1 a	10. U	10. U	12. U	25. U	10. U	10. U	10. U	11. U	25. U	25. U	--	25. U
Acenaphthene	20 G	**36**	10. U	**46**	**3. J**	**60**	**31**	**40**	11. U	10. U	10. U	11. U	**170 EJ**
Acenaphthylene	NA	10. U	10. U	12. U	10. U	10. U	**180**	10. U	11. U	10. U	10. U	11. U	**26**
Anthracene	50 G	10. U	10. U	12. U	10. U	**6. J**	**19**	10. U	11. U	10. U	10. U	11. U	**20**
Benzo(a)anthracene	0.002 G	10. U	10. U	12. U	10. U	10. U	**8. J**	10. U	11. U	10. U	10. U	11. U	**4. J**
Benzo(a)pyrene	ND	10. U	10. U	12. U	10. U	10. U	**8. J**	10. U	11. U	10. U	10. U	11. U	**4. J**
Benzo(b)fluoranthene	0.002 G	10. U	10. U	12. U	10. U	10. U	**5. J**	10. U	11. U	10. U	10. U	11. U	**4. J**
Benzo(g,h,i)perylene	NA	10. U	10. U	12. U	10. U	10. U	**4. J**	10. U	11. U	10. U	10. U	11. U	**1. J**
Benzo(k)fluoranthene	0.002 G	10. U	10. U	12. U	10. U	10. U	10. U	10. U	11. U	10. U	10. U	11. U	10. U
Benzoic Acid	NA	25. U	24. U	30. U	--	25. U	**30**	24. U	27. U	--	--		--
bis(2-Ethylhexyl)phthalate	50	10. U	10. U	12. U	10. U	**3. J**	**16**	10. U	11. U	10. U	10. U	--	10. U
Carbazole	NA	10. U	10. U	12. U	10. U	10. U	10. U	10. U	11. U	10. U	10. U	--	**12**
Chrysene	0.002 G	10. U	10. U	12. U	10. U	10. U	**9. J**	10. U	11. U	10. U	10. U	11. U	**5. J**
Di-n-butyl phthalate	50	10. U	10. U	12. U	10. U	10. U	10. U	10. U	11. U	10. U	10. U	--	10. U
Dibenz(a,h)anthracene	NA	10. U	10. U	12. U	10. U	10. U	10. U	10. U	11. U	10. U	10. U	11. U	10. U
Dibenzofuran	NA	**3. J**	10. U	**4. J**	**1. J**	**5. J**	10. U	10. U	11. U	10. U	10. U	11. U	**16**
Diethyl phthalate	50 G	10. U	10. U	12. U	10. U	10. U	10. U	10. U	11. U	10. U	10. U	--	10. U
Fluoranthene	50 G	10. U	10. U	12. U	10. U	**2. J**	**21**	10. U	11. U	10. U	10. U	11. U	**15**
Fluorene	50 G	**4. J**	10. U	12. U	10. U	**41**	**63**	10. U	11. U	10. U	10. U	11. U	**96. EJ**
Hexachloroethane	5	10. U	10. U	12. U	10. U	10. U	10. U	10. U	11. U	10. U	10. U	--	10. U
Indeno(1,2,3-cd)pyrene	0.002 G	10. U	10. U	12. U	10. U	10. U	10. U	10. U	11. U	10. U	10. U	11. UJ	**1. J**
Naphthalene	10 G	**3. J**	10. U	12. U	10. U	**2. J**	**960 D**	10. U	11. U	10. U	10. U	11. U	**3,000 D**
Phenanthrene	50 G	**7. J**	**8. J**	**19**	10. U	**63**	**110**	**9. J**	**4. J**	10. U	10. U	11. U	**100 EJ**
Phenol	1 a	10. U	10. U	12. U	10. U	10. U	10. U	10. U	11. U	10. U	10. U	--	**12**
Pyrene	50 G	10. U	10. U	12. U	10. U	**2. J**	**33**	10. U	11. U	10. U	10. U	11. U	**20**
Total PAHs		**50**	**8**	**205**	**3**	**176**	**960**	**49**	**4**	ND	ND	ND	**4,186**
Total Semivolatiles		**53**	**8**	**209**	**4**	**184**	**960**	**49**	**4**	ND	ND	ND	**4,226**
Total PCBs		--	--	--	--	ND	--	--	--	--	--	--	--

See Notes on Page 7.

TABLE 4-B

NEW YORK STATE ELECTRIC AND GAS CORPORATION
COURT STREET SITE
BINGHAMTON, NEW YORK

SUPPLEMENTAL REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS
DETECTED SEMIVOLATILE ORGANIC COMPOUNDS

Location	NYSDEC	MW97-9S	MW97-9D	MW97-10S	MW97-10D	MW97-11S	MW97-12S	MW97-13S	MW97-13S	MW97-14S	MW97-14D	MW98-15S	MW98-15S
Date Sampled	GA	12/19/1997	12/19/1997	12/19/1997	12/18/1997	12/19/1997	12/19/1997	12/22/1997	12/22/1997	12/22/1997	12/22/1997	6/5/1998	6/5/1998
Sample Type	Criteria	FS	FS	FS	FS	FS	FS	FS	DUP	FS	FS	FS	DUP
2,4-Dimethylphenol	1 a	10. U	10. U	10. U	10. U	10. U	10. U	**440 EJ**	**430 EJ**	10. U	10. U	10. U	10. U
2,4-Dinitrotoluene	5	10. U	10. U	10. U	10. U	10. U	10. U	50. U	50. U	10. U	10. U	**2. J**	10. U
2-Methylnaphthalene	NA	**500 D**	**25**	10. U	**36**	10. U	10. U	**1,800 D**	**1,600 D**	10. U	10. U	**290 D**	**300 D**
2-Methylphenol	1 a	10. U	10. U	10. U	10. U	10. U	10. U	**740 DJ**	**650 DJ**	10. U	10. U	10. U	10. U
4-Methylphenol	1 a	10. U	10. U	10. U	10. U	10. U	10. U	**1,900 D**	**1,700 D**	10. U	10. U	10. U	10. U
4-Nitrophenol	1 a	25. U	25. U	25. U	25. U	25. U	25. U	120 U	120 U	25. U	25. U	**2. J**	24. UJ
Acenaphthene	20 G	**140 EJ**	**6. J**	**2. J**	**23**	**3. J**	10. U	**150**	**140**	10. U	10. U	**130**	**120**
Acenaphthylene	NA	**21**	**28**	10. U	**5. J**	10. U	10. U	**79**	**75**	10. U	10. U	**5. J**	10. U
Anthracene	50 G	**43**	**1. J**	10. U	**12**	10. U	10. U	**140**	**120 J**	10. U	10. U	**17**	**13**
Benzo(a)anthracene	0.002 G	**27**	10. U	10. U	**3. J**	10. U	10. U	**82**	**62. J**	10. U	10. U	**4. J**	**2. J**
Benzo(a)pyrene	ND	**21**	10. U	10. U	**2. J**	10. U	10. U	**85. J**	**65. J**	10. U	10. U	**3. J**	**1. J**
Benzo(b)fluoranthene	0.002 G	**21**	10. U	10. U	**2. J**	10. U	10. U	**67. J**	**54. J**	10. U	10. U	**2. J**	**1. J**
Benzo(g,h,i)perylene	NA	**6. J**	10. U	10. U	10. U	10. U	10. U	**25. J**	**15. J**	10. U	10. U	10. U	10. U
Benzo(k)fluoranthene	0.002 G	10. U	10. U	10. U	10. U	10. U	10. U	**21. J**	**14. J**	10. U	10. U	**2. J**	10. U
Benzoic Acid	NA	--	--	--	--	--	--	--	--	--	--		
bis(2-Ethylhexyl)phthalate	50	10. U	10. U	10. U	10. U	10. U	10. U	50. U	50. UJ	10. U	10. U	**1. J**	10. UJ
Carbazole	NA	**11**	10. U	10. U	10. U	10. U	10. U	50. U	**26. J**	10. U	10. U	10. U	10. U
Chrysene	0.002 G	**16**	10. U	10. U	**4. J**	10. U	10. U	**97**	**74. J**	10. U	10. U	**3. J**	**2. J**
Di-n-butyl phthalate	50	10. U	10. U	10. U	10. U	10. U	10. U	50. U	50. UJ	10. U	10. U	10. U	10. U
Dibenz(a,h)anthracene	NA	**3. J**	10. U	10. U	10. U	10. U	10. U	50. UJ	50. UJ	10. U	10. U	10. U	10. U
Dibenzofuran	NA	**20**	10. U	10. U	**2. J**	10. U	10. U	**16. J**	**14. J**	10. U	10. U	**4. J**	**4. J**
Diethyl phthalate	50 G	10. U	10. U	**1. J**	10. U	10. U	10. U	50. U	50. U	10. U	10. U	10. U	10. U
Fluoranthene	50 G	**45**	10. U	10. U	**10**	10. U	10. U	**150**	**120 J**	10. U	10. U	**13**	**9. J**
Fluorene	50 G	**13**	**3. J**	10. U	**18**	10. U	10. U	**96**	**85**	10. U	10. U	**50**	**44**
Hexachloroethane	5	10. U	10. U	10. U	10. U	10. U	10. U	50. U	50. UJ	10. U	10. U	**3. J**	10. U
Indeno(1,2,3-cd)pyrene	0.002 G	**6. J**	10. U	10. U	10. U	10. U	10. U	**21. J**	**12. J**	10. U	10. U	10. U	10. U
Naphthalene	10 G	**2,200 D**	**910 D**	10. U	**49**	10. U	10. U	**8,200 D**	**7,600 D**	10. U	10. U	**420 D**	**450 D**
Phenanthrene	50 G	**200 EJ**	**8. J**	10. U	**45**	10. U	10. U	**750 DJ**	**550 DJ**	10. U	10. U	**76**	**64**
Phenol	1 a	**35**	10. U	10. U	10. U	10. U	10. U	**3,100 D**	**2,900 D**	10. U	**1. J**	10. U	10. U
Pyrene	50 G	**91. EJ**	**1. J**	10. U	**13**	10. U	10. U	**290**	**230 J**	10. U	10. U	**16**	**11**
Total PAHs		**3,353**	**982**	**2**	**222**	**3**	ND	**12,053**	**10,816**	ND	ND	**1,031**	**1,017**
Total Semivolatiles		**3,419**	**982**	**3**	**224**	**3**	ND	**18,249**	**16,536**	ND	**1**	**1,043**	**1,021**
Total PCBs		--	--	--	--	--	--	--	--	--	--	--	--

See Notes on Page 7.

TABLE 4-B

NEW YORK STATE ELECTRIC AND GAS CORPORATION
COURT STREET SITE
BINGHAMTON, NEW YORK

SUPPLEMENTAL REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS
DETECTED SEMIVOLATILE ORGANIC COMPOUNDS

Location Date Sampled Sample Type	NYSDEC GA Criteria	MW98-16S 6/5/1998 FS	MW98-16D 6/5/1998 FS	MW01-17S 10/2/2001 FS	MW01-17D 10/2/2001 FS	MW01-17D 10/2/2001 DUP	B-1 12/19/1997 FS	TW97-1D 12/22/1997 FS	TW97-2S 12/22/1997 FS	TW97-2D 12/22/1997 FS	TW97-3S 12/22/1997 FS	TW97-3S 12/22/1997 DUP	TW97-3S 10/2/2001 FS
2,4-Dimethylphenol	1 a	10. U	10. U	--	--	--	10. U	10. U	10. U	10. U	10. U	10. U	--
2,4-Dinitrotoluene	5	10. U	10. U	--	--	--	10. U	10. U	10. U	10. U	10. U	10. U	--
2-Methylnaphthalene	NA	10. U	10. U	--	--	--	10. U	10. U	10. U	10. U	10. U	10. U	--
2-Methylphenol	1 a	10. U	10. U	--	--	--	10. U	10. U	10. U	10. U	10. U	10. U	--
4-Methylphenol	1 a	10. U	10. U	--	--	--	10. U	10. U	10. U	10. U	10. U	10. U	--
4-Nitrophenol	1 a	24. UJ	24. UJ	--	--	--	25. U	25. U	25. U	25. U	25. U	25. U	--
Acenaphthene	20 G	10. U	10. U	11. U	11. U	10. U	10. U	10. U	10. U	10. U	**2. J**	**2. J**	11. U
Acenaphthylene	NA	10. U	10. U	11. U	11. U	10. U	10. U	10. U	10. U	10. U	10. U	10. U	11. U
Anthracene	50 G	10. U	10. U	11. U	11. U	10. U	10. U	10. U	10. U	10. U	10. U	10. U	11. U
Benzo(a)anthracene	0.002 G	10. UJ	10. U	11. U	11. U	10. U	10. U	10. U	10. U	10. U	10. U	10. U	11. U
Benzo(a)pyrene	ND	10. U	10. U	11. U	11. U	10. U	10. U	10. U	10. U	10. U	10. U	**1. J**	11. U
Benzo(b)fluoranthene	0.002 G	10. UJ	10. UJ	11. U	11. U	10. U	10. U	10. U	10. U	10. U	10. U	10. U	11. U
Benzo(g,h,i)perylene	NA	10. U	10. U	11. U	11. U	10. U	10. U	10. U	10. U	10. U	10. U	10. U	11. U
Benzo(k)fluoranthene	0.002 G	10. U	10. U	11. U	11. U	10. U	10. U	10. U	10. U	10. U	10. U	10. U	11. U
Benzoic Acid	NA						--	--	--	--	--	--	
bis(2-Ethylhexyl)phthalate	50	**9. J**	**2. J**	--	--	--	10. U	10. U	10. U	10. U	10. U	10. U	--
Carbazole	NA	10. U	10. U	--	--	--	10. U	10. U	10. U	10. U	10. U	10. U	--
Chrysene	0.002 G	10. U	10. U	11. U	11. U	10. U	10. U	10. U	10. U	10. U	10. U	10. U	11. U
Di-n-butyl phthalate	50	10. U	10. U	--	--	--	10. U	10. U	10. U	10. U	10. U	10. U	--
Dibenz(a,h)anthracene	NA	10. U	10. U	11. U	11. U	10. U	10. U	10. U	10. U	10. U	10. U	10. U	11. U
Dibenzofuran	NA	10. U	10. U	11. U	11. U	10. U	10. U	10. U	10. U	10. U	10. U	10. U	11. U
Diethyl phthalate	50 G	10. U	10. U	--	--	--	10. U	10. U	10. U	10. U	10. U	10. U	--
Fluoranthene	50 G	10. U	10. U	11. U	11. U	10. U	10. U	10. U	10. U	10. U	10. U	**1. J**	11. U
Fluorene	50 G	10. U	10. U	11. U	11. U	10. U	10. U	10. U	10. U	10. U	10. U	10. U	11. U
Hexachloroethane	5	10. U	10. U	--	--	--	10. U	10. U	10. U	10. U	10. U	10. U	--
Indeno(1,2,3-cd)pyrene	0.002 G	10. U	10. U	11. UJ	11. UJ	10. UJ	10. U	10. U	10. U	10. U	10. U	10. U	11. UJ
Naphthalene	10 G	10. U	10. U	11. U	11. U	10. U	10. U	**5. J**	**2. J**	10. U	10. U	10. U	11. U
Phenanthrene	50 G	10. U	10. U	11. U	11. U	10. U	10. U	10. U	10. U	10. U	10. U	10. U	11. U
Phenol	1 a	10. U	10. U	--	--	--	10. U	**4. J**	**1. J**	10. U	**2. J**	10. U	--
Pyrene	50 G	10. U	10. U	11. U	11. U	10. U	10. U	10. U	10. U	10. U	**3. J**	**4. J**	11. U
Total PAHs		ND	ND	ND	ND	ND	ND	**5**	**2**	ND	**5**	**8**	ND
Total Semivolatiles		**9**	**2**	ND	ND	ND	ND	**9**	**3**	ND	**7**	**8**	ND
Total PCBs		--	--	--	--	--	--	--	--	--	--	--	--

See Notes on Page 7.

TABLE 4-B

NEW YORK STATE ELECTRIC AND GAS CORPORATION
COURT STREET SITE
BINGHAMTON, NEW YORK

SUPPLEMENTAL REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS
DETECTED SEMIVOLATILE ORGANIC COMPOUNDS

Notes:

All concentrations reported in micrograms per liter (ug/L); also expressed as parts per billion (ppb).
NYSDEC GA Criteria values as reported in NYSDEC, Division of Water Technical and Operational Guidance Series (1.1.1) Memorandum, Ambient Water Quality Standards and Guidance Values, dated October 1993.
Detections are bolded.
Concentrations above the NYSDEC GA criteria values are shaded.
ND = Not detected.
D = Concentration is based on a diluted sample analysis.
E = The compound was quantitated above the calibration range.
J = The compound was positively identified; however, the associated numerical value is an estimated concentration only.
U = The compound was analyzed for but not detected. The associated value is the compound quantitation limit.

Criteria Notes:

a = Value listed applies to the sum of these substances.
d = Value listed applies to each isomer (1,2-, 1,3-, and 1,4-) individually.
G = Guidance value.
NA = Not available/Not applicable.

TABLE 4-C

NEW YORK STATE ELECTRIC AND GAS CORPORATION
COURT STREET SITE
BINGHAMTON, NEW YORK

SUPPLEMENTAL REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS
DETECTED INORGANIC CONSTITUENTS

Location Date Sampled Sample Type	NYSDEC GA Criteria	MW93-1D 7/20/1993 FS	MW93-1D 10/20/1993 FS	MW93-1D 1/24/1994 FS	MW93-1D 4/26/1994 FS	MW93-1D 12/18/1997 FS	MW93-2S 7/20/1993 FS	MW93-2S 10/20/1993 FS	MW93-2S 1/24/1994 FS	MW93-2S 4/26/1994 FS	MW93-2S 12/18/1997 FS	MW93-2D 7/20/1993 FS	MW93-2D 10/20/1993 FS
Aluminum	NA	**28,800**	**20,200**	**10,100**	**3,660**	**575 JN**	**27,400**	**35,700**	**43,600**	**70,200**	**1,480 JN**	**24,300**	**9,990**
Aluminum, Dissolved	NA	--	--	--	--	19. UN	--	--	--	--	19. UN	--	--
Antimony	3 G	5. U	5. U	3. U	3. U	4.9 UJ*	5. U	5. U	3. U	3. U	4.9 UJ*	5. U	5. U
Antimony, Dissolved	3 G	--	--	--	--	4.9 UJ*	--	--	--	--	4.9 UJ*	--	--
Arsenic	25	**19.4**	**15.7**	**10.2**	**8.1 B**	**6.1 B**	**9.7 J**	**14.1**	**18.8**	**19.5**	4.6 U	**15.3**	**10.5**
Arsenic, Dissolved	25	--	--	--	--	4.6 U	--	--	--	--	4.6 U	--	--
Barium	1,000	**200**	**144 J**	**93. J**	**93. B**	**47.9 BE**	**248 J**	**338**	**473**	**555**	**47.7 BE**	**192 J**	**112 J**
Barium, Dissolved	1,000	--	--	--	--	**42.1 BE**	--	--	--	--	**37.6 BE**	--	--
Beryllium	3 G	--	--	--	--	1. U	--	--	--	--	1. U	--	--
Beryllium, Dissolved	3 G	--	--	--	--	1. U	--	--	--	--	1. U	--	--
Cadmium	5	**5**	4. U	3. U	3. U	10. U	6. U	**5**	**6**	**3. B**	10. U	4. U	4. U
Cadmium, Dissolved	5	--	--	--	--	10. U	--	--	--	--	10. U	--	--
Calcium		--	--	--	--	**140,000**	--	--	--	--	**68,300**	--	--
Calcium, Dissolved		--	--	--	--	**138,000**	--	--	--	--	**71,000**	--	--
Chromium	50	**112**	68. U	**25**	**10**	**52.5 JN**	**38**	**56**	**62**	**582**	**52.8 JN**	**76**	**24**
Chromium, Dissolved	50	--	--	--	--	1.4 UN	--	--	--	--	1.4 UN	--	--
Cobalt	NA	--	--	--	--	2. U	--	--	--	--	2. U	--	--
Cobalt, Dissolved	NA	--	--	--	--	2. U	--	--	--	--	2. U	--	--
Copper	200	**81**	62. U	**32**	**20. B**	20. U	**43**	**103**	**134**	**124**	20. U	**49**	**26**
Copper, Dissolved	200	--	--	--	--	20. U	--	--	--	--	20. U	--	--
Iron	300	**48,700**	40,800 U	**20,500**	**6,900**	**2,780 JN***	**40,300**	**58,200**	**72,000**	**121,000**	**2,530 JN***	**41,700**	**20,000**
Iron, Dissolved	300	--	--	--	--	**1,810 N***	--	--	--	--	**28.6 BN***	--	--
Lead	25	**33.4**	24.7 U	**12.3**	**16.9**	R	**48.1**	**81**	**71.5**	**167**	R	1. U	**14.4**
Lead, Dissolved	25	--	--	--	--	R	--	--	--	--	R	--	--
Magnesium	35,000 G	--	--	--	--	**24,000**	--	--	--	--	**3,210 B**	--	--
Magnesium, Dissolved	35,000 G	--	--	--	--	**23,600**	--	--	--	--	**2,770 B**	--	--
Manganese	300	**3,170**	3,150 U	**2,740**	**2,380**	**2,220 ***	**1,580**	**1,870**	**2,760**	**2,950**	**283 ***	**2,980**	**2,540**
Manganese, Dissolved	300	--	--	--	--	**2,190 ***	--	--	--	--	**94.7 ***	--	--
Mercury	2	**0.15 J**	0.10 U	0.10 U	0.10 U	0.20 U	**0.2**	**0.33**	0.10 U	**0.5**	0.20 U	**0.13 J**	0.10 U
Mercury, Dissolved	2	--	--	--	--	0.20 U	--	--	--	--	0.20 U	--	--
Nickel	100	**74**	**53**	**22. J**	**10. B**	**5.1 B**	**49**	**89**	**98**	**270**	**44.9**	**56**	**27. J**
Nickel, Dissolved	100	--	--	--	--	1.3 U	--	--	--	--	**4.3 B**	--	--
Potassium		--	--	--	--	**1,080 B**	--	--	--	--	**2,830 B**	--	--
Potassium, Dissolved		--	--	--	--	**938 B**	--	--	--	--	**2,810 B**	--	--
Selenium	10	**1.1 J**	1. U	1. U	1. U	4.3 U	**2. J**	1. U	2. U	1. U	4.3 U	**1.1 J**	1. U
Selenium, Dissolved	10	--	--	--	--	4.3 U	--	--	--	--	4.3 U	--	--
Silver	50	7. U	7. U	**4. J**	3. U	2. UJ	7. U	7. U	3. U	**3. B**	2. UJ	7. U	7. U
Silver, Dissolved	50	--	--	--	--	2. UJ	--	--	--	--	2. UJ	--	--
Sodium	20,000	--	--	--	--	**44,600**	--	--	--	--	**11,400**	--	--
Sodium, Dissolved	20,000	--	--	--	--	**44,400**	--	--	--	--	**10,500**	--	--
Thallium	4 G	--	--	--	--	5.6 U	--	--	--	--	5.6 U	--	--
Thallium, Dissolved	4 G	--	--	--	--	5.6 U	--	--	--	--	5.6 U	--	--
Vanadium	NA	**49. J**	**40. J**	**21. J**	**19. B**	1. U	**35. J**	**60**	**55**	**97**	**2.5 B**	**34. J**	**24. J**
Vanadium, Dissolved	NA	--	--	--	--	1. U	--	--	--	--	**1.3 B**	--	--
Zinc	300	**138**	**148**	**55**	**31**	**17.4 B**	**178**	**283**	**346**	**533**	**27.1**	**124**	**59**
Zinc, Dissolved	300	--	--	--	--	6.1 U	--	--	--	--	**11.7 B**	--	--
Cyanide, Amenable	200	--	--	--	--	--	--	--	10. U	--	--	--	--
Cyanide, Total	200	10. U	10. U	10. U	10. U	10. U	10. U	10. U	**17.8**	10. U	10. U	10. U	10. U

See Notes on Page 7.

TABLE 4-C

NEW YORK STATE ELECTRIC AND GAS CORPORATION
COURT STREET SITE
BINGHAMTON, NEW YORK

SUPPLEMENTAL REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS
DETECTED INORGANIC CONSTITUENTS

Location Date Sampled Sample Type	NYSDEC GA Criteria	MW93-2D 1/24/1994 FS	MW93-2D 4/26/1994 FS	MW93-2D 12/18/1997 FS	MW93-3S 7/20/1993 FS	MW93-3S 7/20/1993 DUP	MW93-3S 10/20/1993 FS	MW93-3S 10/20/1993 DUP	MW93-3S 1/24/1994 FS	MW93-3S 1/24/1994 DUP	MW93-3S 4/26/1994 FS	MW93-3S 4/26/1994 DUP	MW93-3S 12/18/1997 FS
Aluminum	NA	**5,980**	**21,300**	**647 JN**	**183,000**	**119,000**	**218,000**	**119,000**	**191,000**	**108,000**	**115,000**	**150,000**	**15,600 JN**
Aluminum, Dissolved	NA	--	--	19. UN	--	--	--	--	--	--	--	--	19. UN
Antimony	3 G	3. U	3. U	4.9 UJ*	5. U	5. U	5. U	5. U	3. U	3. U	3. U	3. U	4.9 UJ*
Antimony, Dissolved	3 G	--	--	4.9 UJ*	--	--	--	--	--	--	--	--	4.9 UJ*
Arsenic	25	**5.2 J**	**13.2**	4.6 U	**54.7**	**45.2**	**82.8**	**39.9**	**69.2**	**36.5**	**50.1**	**41.3**	**10.3**
Arsenic, Dissolved	25	--	--	4.6 U	--	--	--	--	--	--	--	--	4.6 U
Barium	1,000	**81. J**	**217**	**69.9 BE**	**876**	**690**	**1,010**	**803**	**924**	**722**	**572**	**837**	**253 E**
Barium, Dissolved	1,000	--	--	**61. BJE**	--	--	--	--	--	--	--	--	**49.1 BE**
Beryllium	3 G	--	--	1. U	--	--	--	--	--	--	--	--	**1. B**
Beryllium, Dissolved	3 G	--	--	1. U	--	--	--	--	--	--	--	--	1. U
Cadmium	5	3. U	3. U	10. U	**5**	**6**	4. U	**4. J**	**7**	**8**	3. U	3. U	10. U
Cadmium, Dissolved	5	--	--	10. U	--	--	--	--	--	--	--	--	10. U
Calcium		--	--	**125,000**	--	--	--	--	--	--	--	--	**108,000**
Calcium, Dissolved		--	--	**119,000**	--	--	--	--	--	--	--	--	**96,500**
Chromium	50	**9. J**	**39**	**5.2 BJN**	**255**	**175**	**795**	**529**	**3,320**	**1,810**	**5,260**	**13,700**	**2,760 JN**
Chromium, Dissolved	50	--	--	1.4 UN	--	--	--	--	--	--	--	--	**1.8 BN**
Cobalt	NA	--	--	2. U	--	--	--	--	--	--	--	--	**28.4 B**
Cobalt, Dissolved	NA	--	--	2. U	--	--	--	--	--	--	--	--	2. U
Copper	200	**20. J**	**47**	20. U	**390**	**291**	**393**	**269**	**425**	**260**	**262**	**501**	**113**
Copper, Dissolved	200	--	--	20. U	--	--	--	--	--	--	--	--	20. U
Iron	300	**11,900**	**43,400**	**1,370 JN***	**249,000**	**179,000**	**313,000**	**179,000**	**305,000**	**171,000**	**215,000**	**312,000**	**35,700 JN***
Iron, Dissolved	300	--	--	**354 N***	--	--	--	--	--	--	--	--	17.9 UN*
Lead	25	**6.4**	**29.5**	R	**211**	**136**	**228**	**140**	**176**	**94.5**	**116**	**80.8**	**21.3 J**
Lead, Dissolved	25	--	--	R	--	--	--	--	--	--	--	--	R
Magnesium	35,000 G	--	--	**29,500**	--	--	--	--	--	--	--	--	**11,300**
Magnesium, Dissolved	35,000 G	--	--	**28,000**	--	--	--	--	--	--	--	--	**7,180**
Manganese	300	**2,540**	**3,380**	**2,170 ***	**4,630**	**3,920**	**4,320**	**2,980**	**4,540**	**3,090**	**2,780**	**3,820**	**541 ***
Manganese, Dissolved	300	--	--	**2,050 ***	--	--	--	--	--	--	--	--	**11.6 B***
Mercury	2	0.10 U	0.10 U	0.20 U	**0.58**	**0.53**	**0.43**	**0.6**	**0.11 J**	0.10 U	**0.18 B**	0.10 U	0.20 U
Mercury, Dissolved	2	--	--	0.20 U	--	--	--	--	--	--	--	--	0.20 U
Nickel	100	**10. J**	**50**	**4.1 B**	**335**	**238**	**618**	**460**	**1,100**	**641**	**486**	**1,110**	**212**
Nickel, Dissolved	100	--	--	1.3 U	--	--	--	--	--	--	--	--	**50.1**
Potassium		--	--	**1,760 B**	--	--	--	--	--	--	--	--	**5,590**
Potassium, Dissolved		--	--	**1,680 B**	--	--	--	--	--	--	--	--	**4,050 B**
Selenium	10	1. U	1. U	4.3 U	**1.4 J**	**2.1 J**	1. U	1. U	**2. J**	**2.2 J**	**1.1 B**	1. U	**9.9**
Selenium, Dissolved	10	--	--	4.3 U	--	--	--	--	--	--	--	--	**9.8**
Silver	50	**53**	**5. B**	2. UJ	7. U	7. U	7. U	7. U	3. U	**4. J**	3. U	3. U	2. UJ
Silver, Dissolved	50	--	--	2. UJ	--	--	--	--	--	--	--	--	2. UJ
Sodium	20,000	--	--	**67,100**	--	--	--	--	--	--	--	--	**30,900**
Sodium, Dissolved	20,000	--	--	**64,400**	--	--	--	--	--	--	--	--	**26,000**
Thallium	4 G	--	--	5.6 U	--	--	--	--	--	--	--	--	5.6 U
Thallium, Dissolved	4 G	--	--	5.6 U	--	--	--	--	--	--	--	--	5.6 U
Vanadium	NA	**11. J**	**41. B**	1. U	**249**	**162**	**285**	**162**	**236**	**131**	**169**	**233**	**26.4 B**
Vanadium, Dissolved	NA	--	--	1. U	--	--	--	--	--	--	--	--	1. U
Zinc	300	**36**	**29**	**13.8 B**	**885**	**624**	**1,020**	**589**	**1,040**	**549**	**544**	**741**	**92.3**
Zinc, Dissolved	300	--	--	6.1 U	--	--	--	--	--	--	--	--	6.1 U
Cyanide, Amenable	200	--	--	--	--	--	--	--	10. U	**14.3**	10. U	10. U	--
Cyanide, Total	200	10. U	10. U	10. U	10. U	29.3 U	10. U	10. U	**11.4**	**14.3**	**13.3**	**10.4**	10. U

See Notes on Page 7.

TABLE 4-C

NEW YORK STATE ELECTRIC AND GAS CORPORATION
COURT STREET SITE
BINGHAMTON, NEW YORK

SUPPLEMENTAL REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS
DETECTED INORGANIC CONSTITUENTS

Location Date Sampled Sample Type	NYSDEC GA Criteria	MW93-3D 7/20/1993 FS	MW93-3D 10/20/1993 FS	MW93-3D 1/24/1994 FS	MW93-3D 4/26/1994 FS	MW93-3D 12/18/1997 FS	MW01-03R 10/1/2001 FS	MW93-5D 7/20/1993 FS	MW93-5D 10/20/1993 FS	MW93-5D 1/24/1994 FS	MW93-5D 4/26/1994 FS	MW93-5D 12/19/1997 FS	MW93-6S 7/20/1993 FS
Aluminum	NA	**18,700**	**11,600**	**2,840**	**8,550**	**423 JN**	--	**9,210**	**59,700**	**9,070**	**2,690**	19. UN	**112,000**
Aluminum, Dissolved	NA	--	--	--	--	19. UN	--	--	--	--	--	19. UN	--
Antimony	3 G	5. U	5. U	3. U	3. U	**31.8 BJ***	--	5. U	5. U	3. U	3. U	4.9 UJ*	5. U
Antimony, Dissolved	3 G	--	--	--	--	4.9 UJ*	--	--	--	--	--	4.9 UJ*	--
Arsenic	25	**10.4**	**9. J**	**3.6 J**	**5.3 B**	4.6 U	--	**4.9 J**	**35.3**	**5.6 J**	2. U	4.6 U	**63.3**
Arsenic, Dissolved	25	--	--	--	--	4.6 U	--	--	--	--	--	4.6 U	--
Barium	1,000	**201**	**166 J**	**92. J**	**142 B**	**115 BE**	--	**154 J**	**720**	**141 J**	**82. B**	**71.6 BE**	**648**
Barium, Dissolved	1,000	--	--	--	--	**109 BJE**	--	--	--	--	--	**71. BJE**	--
Beryllium	3 G	--	--	--	--	1. U	--	--	--	--	--	1. U	--
Beryllium, Dissolved	3 G	--	--	--	--	1. U	--	--	--	--	--	1. U	--
Cadmium	5	**4**	4. U	3. U	3. U	10. U	--	4. U	**8**	3. U	3. U	10. U	**6**
Cadmium, Dissolved	5	--	--	--	--	10. U	--	--	--	--	--	10. U	--
Calcium		--	--	--	--	**133,000**	--	--	--	--	--	**131,000**	--
Calcium, Dissolved		--	--	--	--	**129,000**	--	--	--	--	--	**140,000**	--
Chromium	50	55. U	**28**	**5. J**	**14**	**7.7 BJN**	--	**65**	**359**	**42**	**10**	1.4 UN	**201**
Chromium, Dissolved	50	--	--	--	--	1.4 UN	--	--	--	--	--	1.4 UN	--
Cobalt	NA	--	--	--	--	2. U	--	--	--	--	--	2. U	--
Cobalt, Dissolved	NA	--	--	--	--	2. U	--	--	--	--	--	2. U	--
Copper	200	**51**	**40**	**12. J**	**24. B**	20. U	--	**31**	**170**	**30**	4. U	20. U	**409**
Copper, Dissolved	200	--	--	--	--	20. U	--	--	--	--	--	20. U	--
Iron	300	**29,600**	**23,700**	**5,750**	**16,500**	**1,970 JN***	--	**15,200**	**113,000**	**17,200**	**2,660**	**121 JN***	**217,000**
Iron, Dissolved	300	--	--	--	--	**1,290 N***	--	--	--	--	--	17.9 UN*	--
Lead	25	**25.9**	**23.4**	**8**	**17**	R	--	**10.7**	**106**	**13.2**	**5.8**	R	**228**
Lead, Dissolved	25	--	--	--	--	R	--	--	--	--	--	R	--
Magnesium	35,000 G	--	--	--	--	**23,900**	--	--	--	--	--	**26,200**	--
Magnesium, Dissolved	35,000 G	--	--	--	--	**23,300**	--	--	--	--	--	**28,400**	--
Manganese	300	**1,590**	**1,500**	**1,030**	**1,450**	**1,180 ***	--	**892**	**2,000**	**728**	**708**	**407 ***	**16,100**
Manganese, Dissolved	300	--	--	--	--	**1,130 ***	--	--	--	--	--	**406 ***	--
Mercury	2	**0.12 J**	0.10 U	0.10 U	0.10 U	0.20 U	--	0.10 U	**0.28**	0.10 U	0.10 U	0.20 U	**0.45**
Mercury, Dissolved	2	--	--	--	--	0.20 U	--	--	--	--	--	0.20 U	--
Nickel	100	**37. J**	**30. J**	8. U	**16. B**	**3.5 B**	--	**52**	**271**	**39. J**	**8. B**	**3.2 B**	**259**
Nickel, Dissolved	100	--	--	--	--	1.3 U	--	--	--	--	--	**2.8 B**	--
Potassium		--	--	--	--	**2,030 B**	--	--	--	--	--	**2,700 B**	--
Potassium, Dissolved		--	--	--	--	**2,060 B**	--	--	--	--	--	**2,460 B**	--
Selenium	10	**1.3 J**	1. U	1. U	1. U	4.3 U	--	**1.9 J**	1. U	**1.1 J**	1. U	4.3 U	**3.1 J**
Selenium, Dissolved	10	--	--	--	--	4.3 U	--	--	--	--	--	**12.1**	--
Silver	50	7. U	7. U	3. U	3. U	2. UJ	--	7. U	**7. J**	3. U	3. U	2. UJ	7. U
Silver, Dissolved	50	--	--	--	--	2. UJ	--	--	--	--	--	2. UJ	--
Sodium	20,000	--	--	--	--	**69,900**	--	--	--	--	--	**86,700**	--
Sodium, Dissolved	20,000	--	--	--	--	**69,300**	--	--	--	--	--	**90,000**	--
Thallium	4 G	--	--	--	--	5.6 U	--	--	--	--	--	5.6 U	--
Thallium, Dissolved	4 G	--	--	--	--	5.6 U	--	--	--	--	--	5.6 U	--
Vanadium	NA	**34. J**	**24. J**	**7. J**	**25. B**	**1. B**	--	**19. J**	**100**	**18. J**	**19. B**	1. U	**173**
Vanadium, Dissolved	NA	--	--	--	--	1. U	--	--	--	--	--	1. U	--
Zinc	300	**90**	**73**	**25**	**45**	**18.3 B**	--	**172**	**383**	**66**	**12. B**	**7.2 B**	**696**
Zinc, Dissolved	300	--	--	--	--	**8.5 B**	--	--	--	--	--	**6.5 B**	--
Cyanide, Amenable	200	--	--	--	--	--	--	--	**39.3**	--	--	--	--
Cyanide, Total	200	10. U	10. U	10. U	10. U	10. U	**2. B**	10. U	**39.3**	10. U	10. U	10. U	14.5 U

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TABLE 4-C

NEW YORK STATE ELECTRIC AND GAS CORPORATION
COURT STREET SITE
BINGHAMTON, NEW YORK

SUPPLEMENTAL REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS
DETECTED INORGANIC CONSTITUENTS

Location / Date Sampled / Sample Type	NYSDEC GA Criteria	MW93-6S 10/20/1993 FS	MW93-6S 1/24/1994 FS	MW93-6S 4/26/1994 FS	MW93-6S 12/17/1997 FS	MW93-6D 7/20/1993 FS	MW93-6D 10/20/1993 FS	MW93-6D 1/24/1994 FS	MW93-6D 4/26/1994 FS	MW93-6D 12/17/1997 FS	MW97-7 12/19/1997 FS	MW01-07R 10/1/2001 FS	MW97-8 12/19/1997 FS
Aluminum	NA	**75,100**	**101,000**	**31,600**	**4,430 JN**	**14,000**	**9,690**	**7,510**	**3,050**	**278 JN**	**5,070 JN**	--	**5,930 JN**
Aluminum, Dissolved	NA	--	--	--	19. UN	--	--	--	--	19. UN	**1,270 N**	--	**30.5 BN**
Antimony	3 G	5. U	3. U	3. U	4.9 UJ*	5. U	5. U	3. U	3. U	4.9 UJ*	4.9 UJ*	--	4.9 UJ*
Antimony, Dissolved	3 G	--	--	--	4.9 U*	--	--	--	--	4.9 U*	4.9 UJ*	--	4.9 UJ*
Arsenic	25	**43.4**	**56.7**	**20.7**	**16.5**	**12.4**	**11.2**	**7.1 J**	**2.9 B**	4.6 U	**6.3 B**	--	**4.8 B**
Arsenic, Dissolved	25	--	--	--	4.6 U	--	--	--	--	4.6 U	4.6 U	--	4.6 U
Barium	1,000	**712**	**561**	**246**	**215 E**	**148 J**	**142 J**	**104 J**	**95. B**	**97.9 BE**	**1,770 E**	--	**597 E**
Barium, Dissolved	1,000	--	--	--	**92.1 BJE**	--	--	--	--	**93.8 BJE**	**978 JE**	--	**459 JE**
Beryllium	3 G	--	--	--	1. U	--	--	--	--	1. U	**2.5 B**	--	1. U
Beryllium, Dissolved	3 G	--	--	--	1. U	--	--	--	--	1. U	1. U	--	1. U
Cadmium	5	**6**	**25**	3. U	10. U	**4. J**	4. U	**5**	3. U	10. U	10. U	--	10. U
Cadmium, Dissolved	5	--	--	--	10. U	--	--	--	--	10. U	10. U	--	10. U
Calcium		--	--	--	**165,000**	--	--	--	--	**144,000**	**247,000**	--	**156,000**
Calcium, Dissolved		--	--	--	**157,000**	--	--	--	--	**137,000**	**188,000**	--	**155,000**
Chromium	50	**151**	**174**	**58**	**29. JN**	**46**	**25**	**16**	**10**	**37.3 JN**	1.4 UN	--	**8.4 BJN**
Chromium, Dissolved	50	--	--	--	1.4 UN	--	--	--	--	1.4 UN	1.4 UN	--	1.4 UN
Cobalt	NA	--	--	--	**5.2 B**	--	--	--	--	2. U	**19.8 B**	--	**9.2 B**
Cobalt, Dissolved	NA	--	--	--	2. U	--	--	--	--	2. U	**3.9 B**	--	2. U
Copper	200	**330**	**345**	**114**	20. U	**39**	**37**	**25**	**12. B**	20. U	**94.9**	--	**47**
Copper, Dissolved	200	--	--	--	20. U	--	--	--	--	20. U	**28.3**	--	20. U
Iron	300	**158,000**	**236,000**	**99,400**	**93,100 JN***	**24,200**	**18,900**	**14,300**	**6,280**	**1,760 JN***	**2,280 JN***	--	**15,000 JN***
Iron, Dissolved	300	--	--	--	**2,890 N***	--	--	--	--	17.9 UN*	**294 N***	--	**2,580 N***
Lead	25	**246**	**186**	**68**	**11. J**	**20.2**	**24**	**11.4**	**5.4**	R	**29.2 J**	--	**51.2**
Lead, Dissolved	25	--	--	--	R	--	--	--	--	R	R	--	R
Magnesium	35,000 G	--	--	--	**17,900**	--	--	--	--	**26,000**	**60,300**	--	**21,500**
Magnesium, Dissolved	35,000 G	--	--	--	**16,400**	--	--	--	--	**24,700**	**27,900**	--	**19,600**
Manganese	300	**16,500**	**17,900**	**9,570**	**7,140 ***	**613**	**538**	**344**	**236**	**275 ***	**18,300 ***	--	**2,810 ***
Manganese, Dissolved	300	--	--	--	**6,590 ***	--	--	--	--	**159 ***	**6,190 ***	--	**2,140 ***
Mercury	2	**0.66**	**0.22**	0.10 U	0.20 U	**0.15 J**	0.10 U	0.10 U	0.10 U	0.20 U	0.20 U	--	0.20 U
Mercury, Dissolved	2	--	--	--	0.20 U	--	--	--	--	0.20 U	0.20 U	--	0.20 U
Nickel	100	**194**	**214**	**75**	**12.3 B**	**37. J**	**28. J**	**19. J**	**12. B**	**39.2 B**	**51.5**	--	**15.7 B**
Nickel, Dissolved	100	--	--	--	**1.6 B**	--	--	--	--	**26.4 B**	**9.6 B**	--	**3.4 B**
Potassium		--	--	--	**3,890 B**	--	--	--	--	**2,090 B**	**14,600**	--	**22,100**
Potassium, Dissolved		--	--	--	**3,410 B**	--	--	--	--	**2,130 B**	**14,100**	--	**22,500**
Selenium	10	1. U	2. U	1. U	**33.8**	**1.4 J**	1. U	1. U	1. U	4.3 U	**8.2**	--	4.3 U
Selenium, Dissolved	10	--	--	--	**4.6 B**	--	--	--	--	4.3 U	**7.9 J**	--	**9.2**
Silver	50	7. U	**24**	3. U	2. U	7. U	7. U	**5. J**	**4. B**	2. UJ	2. UJ	--	2. UJ
Silver, Dissolved	50	--	--	--	2. UJ	--	--	--	--	2. UJ	2. UJ	--	2. UJ
Sodium	20,000	--	--	--	**74,900**	--	--	--	--	**80,700**	**387,000 J**	--	**700,000**
Sodium, Dissolved	20,000	--	--	--	**71,200**	--	--	--	--	**78,600**	**476,000 J**	--	**710,000**
Thallium	4 G	--	--	--	5.6 U	--	--	--	--	5.6 U	5.6 U	--	5.6 U
Thallium, Dissolved	4 G	--	--	--	5.6 U	--	--	--	--	5.6 U	**5.7 B**	--	5.6 U
Vanadium	NA	**143**	**149**	**74**	**10.6 B**	**26. J**	**29. J**	**16. J**	**19. B**	1. U	**5. B**	--	**12.8 B**
Vanadium, Dissolved	NA	--	--	--	**1.2 B**	--	--	--	--	1. U	**2.6 B**	--	**1.4 B**
Zinc	300	**542**	**622**	**181**	**59.2**	**75**	**61**	**63**	**16. B**	**6.2 B**	**63.6**	--	**92.3**
Zinc, Dissolved	300	--	--	--	**7.8 B**	--	--	--	--	**7.2 B**	**21.6**	--	**10.6 B**
Cyanide, Amenable	200	10. U	10. U	--	--	--	--	--	--	--	--	--	--
Cyanide, Total	200	**22.3**	**11.7**	10. U	10. U	10. U	10. U	10. U	10. U	10. U	10. U	**16**	10. U

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TABLE 4-C

NEW YORK STATE ELECTRIC AND GAS CORPORATION
COURT STREET SITE
BINGHAMTON, NEW YORK

SUPPLEMENTAL REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS
DETECTED INORGANIC CONSTITUENTS

Location Date Sampled Sample Type	NYSDEC GA Criteria	MW97-9S 12/19/1997 FS	MW97-9D 12/19/1997 FS	MW97-10S 12/19/1997 FS	MW97-10D 12/18/1997 FS	MW97-11S 12/19/1997 FS	MW97-12S 12/19/1997 FS	MW97-13S 12/22/1997 FS	MW97-13S 12/22/1997 DUP	MW97-14S 12/22/1997 FS	MW97-14D 12/22/1997 FS	MW98-15S 6/5/1998 FS	MW98-15S 6/5/1998 DUP
Aluminum	NA	**92,600 JN**	**1,080 JN**	**1,770 JN**	**23,200 JN**	**105,000 JN**	**26,400 JN**	**313 JN**	**191 BJN**	**15,800 JE**	**32,800 JE**	**1,530**	**1,400**
Aluminum, Dissolved	NA	**23.1 BN**	19. UN	19. UN	19. UN	**19. BN**	**31.1 BN**	**69.3 BN**	**53.6 BN**	**84.5 BE**	**89.7 BE**	40. U	40. U
Antimony	3 G	**7.6 BJ***	4.9 UJ*	4.9 UJ*	4.9 UJ*	**986 J***	4.9 UJ*	**1,370 J***	**53.2 BJ***	4.9 UJ	**16.6 BJ**	7. UJ	7. UJ
Antimony, Dissolved	3 G	4.9 UJ*	4.9 UJ*	4.9 UJ*	4.9 UJ*	4.9 UJ*	4.9 UJ*	4.9 UJ*	4.9 UJ*	4.9 U	4.9 U	7. UJ	7. UJ
Arsenic	25	**153**	4.6 U	**5.5 B**	**21.2**	**64.9**	**13.2**	**29.1**	**25**	4.6 U	**24.1**	**20.4**	**23**
Arsenic, Dissolved	25	**35.3**	4.6 U	**6.2 B**	4.6 U	4.6 U	**10.2**	**24**	**22.8**	4.6 U	4.6 U	**25.6**	**26.6**
Barium	1,000	**1,720 E**	**71.4 BE**	**94. BE**	**417 E**	**572 E**	**858 E**	**278 E**	**310 E**	**264 E**	**366 E**	**205**	**214**
Barium, Dissolved	1,000	**773 JE**	**46.3 BE**	**70.4 BJE**	**94.7 BJE**	**162 BJE**	**210 JE**	**277 JE**	**285 JE**	**54.7 BJE**	**56.6 BJE**	**212**	**222**
Beryllium	3 G	**5.4**	1. U	1. U	**1.1 B**	**4.4 B**	**6.5**	1. U	1. U	**6.5**	**1.8 B**	1. U	1. U
Beryllium, Dissolved	3 G	1. U	1. U	1. U	1. U	1. U	1. U	1. U	1. U	**1. BJ**	**1.1 BJ**	1. U	1. U
Cadmium	5	10. U	10. U	10. U	10. U	10. U	10. U	10. U	10. U	10. U	10. U	1. U	1. U
Cadmium, Dissolved	5	10. U	10. U	10. U	10. U	10. U	10. U	10. U	10. U	10. U	10. U	1. U	1. U
Calcium		**155,000**	**103,000**	**72,900**	**165,000**	**229,000**	**138,000**	**383,000**	**421,000**	**240,000**	**160,000**	**75,100**	**77,700**
Calcium, Dissolved		**169,000**	**105,000**	**68,700**	**136,000**	**168,000**	**140,000**	**419,000**	**429,000**	**145,000**	**143,000**	**80,600**	**83,500**
Chromium	50	**107 JN**	1.4 UN	1.4 UN	**33. JN**	**146 JN**	**19.9 JN**	**15.4 JN**	**2.7 BJN**	**2.1 B**	**45.1**	2. U	**2.2 B**
Chromium, Dissolved	50	1.4 UN	1.4 UN	1.4 UN	1.4 UN	1.4 UN	1.4 UN	1.4 UN	1.4 UN	1. U	1. U	2. U	2. U
Cobalt	NA	**67.9**	2. U	**3.1 B**	**21.4 B**	**79.3**	**34.2 B**	**8.1 B**	**5.2 B**	**46.7 B**	**31.2 B**	2. U	**2. B**
Cobalt, Dissolved	NA	**2.6 B**	2. U	2. U	2. U	**2.7 B**	**2.2 B**	**5.5 B**	**5.9 B**	2. U	2. U	2. U	2. U
Copper	200	**437**	20. U	20. U	**67.4**	**246**	**235**	20. U	20. U	**108**	**78.2**	**21.7 B**	**23.6 B**
Copper, Dissolved	200	20. U	20. U	20. U	20. U	20. U	20. U	20. U	20. U	20. U	20. U	2. U	2. U
Iron	300	**246,000 JN***	**2,570 N***	**5,070 JN***	**46,500 JN***	**165,000 JN***	**50,400 JN***	**8,960 JN***	**9,100 JN***	**906**	**64,500**	**8,700**	**9,000**
Iron, Dissolved	300	**38,000 N***	**38.8 BN***	**2,760 N***	17.9 UN*	**1,510 N***	**7,490 N***	**5,740 N***	**6,120 N***	17.9 U	17.9 U	**7,060**	**7,780**
Lead	25	**134**	R	**38.6**	**64.4**	**140**	**113**	**10.2 J**	R	**16.9**	**38.6**	**5.8**	**3.2**
Lead, Dissolved	25	R	R	R	R	R	R	R	R	R	R	2. U	2. U
Magnesium	35,000 G	**42,300**	**21,300**	**3,130 B**	**37,600**	**70,300**	**25,100**	**55,800 J**	**62,000**	**45,500**	**44,600**	**8,680**	**8,890**
Magnesium, Dissolved	35,000 G	**25,300**	**21,900**	**2,840 B**	**25,500**	**31,300**	**26,500**	**68,400 J**	**69,000**	**13,800**	**29,400**	**8,740**	**9,030**
Manganese	300	**10,900 ***	**1,140 ***	**2,000 ***	**2,390 ***	**8,000 ***	**9,830 ***	**821 ***	**902 ***	**1,420**	**2,600**	**1,720**	**1,790**
Manganese, Dissolved	300	**8,360 ***	**1,030 ***	**1,940 ***	**866 ***	**5,840 ***	**8,350 ***	**776 ***	**827 ***	**2.3 B**	**884**	**1,850**	**1,880**
Mercury	2	**0.21**	0.20 U	0.20 U	0.20 U	0.20 U	**0.42**	0.20 U	0.20 U	0.20 U	0.20 U	0.10 U	0.10 U
Mercury, Dissolved	2	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.10 U	0.10 U
Nickel	100	**163**	**5. B**	**5.1 B**	**45.9**	**190**	**47.6**	**12.5 B**	**15. B**	**80.1 J**	**71.8 J**	**4.3 B**	**4.4 B**
Nickel, Dissolved	100	**1.9 B**	**1.9 B**	**2.2 B**	1.3 U	**3.4 B**	**1.8 B**	**18.7 B**	**18.4 B**	**2.2 B**	**2.9 B**	2. U	2. U
Potassium		**16,300 J**	**1,770 B**	**6,040**	**7,030**	**20,300**	**15,200**	**27,000 J**	**30,200 J**	**4,050 B**	**9,900**	**5,240**	**5,320**
Potassium, Dissolved		**9,290 J**	**1,560 B**	**6,470**	**2,590 B**	**7,800**	**14,100**	**40,200 J**	**38,100 J**	**3,490 B**	**5,700**	**5,610**	**5,780**
Selenium	10	**7.4 J**	4.3 U	4.3 U	4.3 U	4.3 UJ	4.3 U	4.3 U	R	**15.4 J***	**5. BJ***	R	R
Selenium, Dissolved	10	**24.7 J**	**8.6**	**5.4**	4.3 U	**7**	**8.3**	**11.8**	R	**20. ***	**7. ***	R	R
Silver	50	2. UJ	2. UJ	2. UJ	2. UJ	**2. BJ**	2. UJ	2. UJ	2. UJ	2. UJ	2. UJ	3. U	3. U
Silver, Dissolved	50	2. UJ	2. UJ	2. UJ	2. UJ	2. UJ	2. UJ	2. UJ	2. UJ	2. UJ	2. UJ	3. U	3. U
Sodium	20,000	**79,600**	**29,600**	**29,600**	**96,800**	**354,000**	**347,000 J**	**363,000 J**	**407,000**	**28,500**	**127,000**	**109,000**	**108,000**
Sodium, Dissolved	20,000	**94,400**	**30,300**	**31,100**	**87,200**	**403,000**	**474,000 J**	**490,000 J**	**486,000**	**30,800**	**137,000**	**110,000**	**107,000**
Thallium	4 G	5.6 U	5.6 U	5.6 U	5.6 U	5.6 U	**5.6 B**	5.6 U	5.6 U	**6.3 B**	5.6 U	6. U	6. U
Thallium, Dissolved	4 G	5.6 U	5.6 U	5.6 U	5.6 U	5.6 U	5.6 U	5.6 U	5.6 U	5.6 U	5.6 U	6. U	6. U
Vanadium	NA	**141**	**2. B**	**5.4 B**	**32.7 B**	**166**	**68.2**	**17.6 B**	**3.6 B**	**1.9 B**	**50. B**	**2.4 B**	**2.2 B**
Vanadium, Dissolved	NA	**2.7 B**	1. U	1. U	1. U	1. U	1. U	**1.7 B**	**2. B**	1. U	1. U	2. U	2. U
Zinc	300	**438**	**15.1 B**	**47.8**	**164**	**733**	**244**	**30.6**	**35.2**	**182**	**203**	**17.1 B**	**20.4**
Zinc, Dissolved	300	**31**	6.1 U	**11.3 B**	6.1 U	**41.6**	**12.8 B**	**10.8 B**	**15.3 B**	6.1 U	**6.7 BJ**	3. U	3. U
Cyanide, Amenable	200	**29**	--	--	--	**23**	--	**290**	**290**	--	--		
Cyanide, Total	200	**29**	10. U	10. U	10. U	**23**	10. U	**580**	**600**	**23**	10. U	**17.9 J**	**20.5 J**

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TABLE 4-C

NEW YORK STATE ELECTRIC AND GAS CORPORATION
COURT STREET SITE
BINGHAMTON, NEW YORK

SUPPLEMENTAL REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS
DETECTED INORGANIC CONSTITUENTS

Location Date Sampled Sample Type	NYSDEC GA Criteria	MW98-16S 6/5/1998 FS	MW98-16D 6/5/1998 FS	MW01-17S 10/2/2001 FS	MW01-17D 10/2/2001 FS	MW01-17D 10/2/2001 DUP	B-1 12/19/1997 FS	TW97-1D 12/22/1997 FS	TW97-2S 12/22/1997 FS	TW97-2D 12/22/1997 FS	TW97-3S 12/22/1997 FS	TW97-3S 12/22/1997 DUP	TW97-3S 10/2/2001 FS
Aluminum	NA	40. U	**265**	--	--	--	19. UN	**2,920 JE**	**10,800 JE**	**2,750 JE**	19. UE	19. UE	--
Aluminum, Dissolved	NA	40. U	40. U	--	--	--	**21.5 BN**	**82.5 BE**	**84.5 BE**	**86.1 BE**	**80. BE**	**102 BE**	--
Antimony	3 G	7. UJ	7. UJ	--	--	--	4.9 UJ*	4.9 UJ	4.9 UJ	4.9 UJ	4.9 UJ	4.9 UJ	--
Antimony, Dissolved	3 G	7. UJ	7. UJ	--	--	--	4.9 UJ*	4.9 U	4.9 U	4.9 U	4.9 U	4.9 U	--
Arsenic	25	3. U	3. U	--	--	--	4.6 U	4.6 U	**5.7 B**	4.6 U	4.6 U	4.6 U	--
Arsenic, Dissolved	25	3. U	**4.2 B**	--	--	--	4.6 U	4.6 U	4.6 U	4.6 U	4.6 U	4.6 U	--
Barium	1,000	**62.1 B**	**103 B**	--	--	--	**151 BE**	**191 BE**	**204 E**	**186 BE**	**39.3 BE**	**39.8 BE**	--
Barium, Dissolved	1,000	**63.1 B**	**102 B**	--	--	--	**96.2 BJE**	**71.6 BJE**	**45.9 BE**	**87.7 BJE**	**38.6 BE**	**39.3 BE**	--
Beryllium	3 G	1. U	1. U	--	--	--	1. U	1. U	**2.1 B**	1. U	1. U	1. U	--
Beryllium, Dissolved	3 G	1. U	1. U	--	--	--	1. U	**1.4 B**	**1.1 BJ**	**1. BJ**	**1. BJ**	**1. BJ**	--
Cadmium	5	1. U	1. U	--	--	--	10. U	10. U	10. U	10. U	10. U	10. U	--
Cadmium, Dissolved	5	1. U	1. U	--	--	--	10. U	10. U	10. U	10. U	10. U	10. U	--
Calcium		**108,000**	**132,000**	--	--	--	**138,000**	**158,000**	**188,000**	**146,000**	**150,000**	**153,000**	--
Calcium, Dissolved		**111,000**	**135,000**	--	--	--	**146,000**	**154,000**	**202,000**	**152,000**	**171,000**	**172,000**	--
Chromium	50	**2.3 B**	2. U	--	--	--	1.4 UN	**3.5 B**	**11.8**	**6.1 B**	1. U	1. U	--
Chromium, Dissolved	50	2. U	2. U	--	--	--	1.4 UN	1. U	1. U	1. U	1. U	1. U	--
Cobalt	NA	2. U	2. U	--	--	--	2. U	**7.2 B**	**24.4 B**	**8.3 B**	2. U	2. U	--
Cobalt, Dissolved	NA	2. U	2. U	--	--	--	2. U	2. U	2. U	2. U	2. U	2. U	--
Copper	200	2. U	2. U	--	--	--	20. U	**30.5**	**102**	**28.4**	20. U	20. U	--
Copper, Dissolved	200	2. U	**5.9 B**	--	--	--	20. U	20. U	20. U	20. U	20. U	20. U	--
Iron	300	50. U	**354**	--	--	--	**65.9 BJN***	**5,610**	**18,500**	**5,540**	**57.2 B**	**44.1 B**	--
Iron, Dissolved	300	50. U	50. U	--	--	--	17.9 UN*	**22. B**	**70.3 B**	17.9 U	**43.4 B**	**66. B**	--
Lead	25	2. U	2. U	--	--	--	R	**26.9**	**131**	**22**	R	R	--
Lead, Dissolved	25	2. U	2. U	--	--	--	R	R	R	R	R	R	--
Magnesium	35,000 G	**17,900**	**24,000**	--	--	--	**28,900**	**27,000**	**15,600**	**30,300**	**11,300**	**11,500**	--
Magnesium, Dissolved	35,000 G	**18,300**	**24,300**	--	--	--	**31,500**	**26,100**	**14,100**	**31,400**	**13,300**	**13,400**	--
Manganese	300	**132**	**105**	--	--	--	**793 ***	**464**	**1,830**	**770**	**797**	**809**	--
Manganese, Dissolved	300	**128**	**124**	--	--	--	**346 ***	**227**	**836**	**380**	**847**	**755**	--
Mercury	2	0.10 U	0.10 U	--	--	--	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	--
Mercury, Dissolved	2	0.10 U	0.10 U	--	--	--	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	--
Nickel	100	2. U	2. U	--	--	--	**3.8 B**	**9.6 B**	**32.3 B**	**11.2 B**	**2.2 B**	**2. B**	--
Nickel, Dissolved	100	2. U	**2.2 B**	--	--	--	**2.2 B**	**2.3 B**	**2.8 B**	**2.6 B**	**2.8 B**	**2.8 B**	--
Potassium		**4,690 B**	**2,700 B**	--	--	--	**5,090**	**4,580 B**	**4,470 B**	**3,570 B**	**3,650 B**	**3,660 B**	--
Potassium, Dissolved		**5,000 B**	**2,790 B**	--	--	--	**4,930 B**	**4,330 B**	**3,870 B**	**3,210 B**	**3,620 B**	**3,720 B**	--
Selenium	10	R	R	--	--	--	4.3 U	4.3 UJ*	**7.1 J***	4.3 UJ*	**6.8 J***	**9.2 J***	--
Selenium, Dissolved	10	R	R	--	--	--	**5.3**	**5.8 ***	**8.5 ***	**5.2 ***	**12. ***	**12.7 ***	--
Silver	50	3. U	3. U	--	--	--	2. UJ	2. UJ	2. UJ	2. UJ	2. UJ	2. UJ	--
Silver, Dissolved	50	3. U	3. U	--	--	--	2. UJ	2. UJ	2. UJ	2. UJ	2. UJ	2. UJ	--
Sodium	20,000	**78,200**	**112,000**	--	--	--	**123,000**	**75,300**	**19,100**	**86,000**	**19,000**	**19,100**	--
Sodium, Dissolved	20,000	**79,300**	**118,000**	--	--	--	**131,000**	**84,000**	**21,100**	**95,700**	**19,800**	**19,800**	--
Thallium	4 G	6. U	6. U	--	--	--	5.6 U	5.6 U	5.6 U	5.6 U	5.6 U	5.6 U	--
Thallium, Dissolved	4 G	6. U	6. U	--	--	--	5.6 U	5.6 U	**6.2 B**	5.6 U	5.6 U	5.6 U	--
Vanadium	NA	2. U	2. U	--	--	--	1. U	**5.6 B**	**25. B**	**4.5 B**	1. U	1. U	--
Vanadium, Dissolved	NA	2. U	2. U	--	--	--	1. U	1. U	1. U	1. U	1. U	1. U	--
Zinc	300	3. U	3. U	--	--	--	**29.5**	**44.5**	**142**	**35.4**	6.1 U	6.1 U	--
Zinc, Dissolved	300	3. U	3. U	--	--	--	**9. B**	6.1 U	6.1 U	6.1 U	6.1 U	6.1 U	--
Cyanide, Amenable	200			--	--	--	--	--	**79**	--	**60**	--	--
Cyanide, Total	200	10. UJ	10. UJ	1. U	**3. B**	**3. B**	10. U	10. U	**100**	10. U	**78**	--	**32**

See Notes on Page 7.

TABLE 4-C

NEW YORK STATE ELECTRIC AND GAS CORPORATION
COURT STREET SITE
BINGHAMTON, NEW YORK

SUPPLEMENTAL REMEDIAL INVESTIGATION
GROUNDWATER ANALYTICAL RESULTS
DETECTED INORGANIC CONSTITUENTS

Notes:
All concentrations reported in micrograms per liter (ug/L); also expressed as parts per billion (ppb).
Detections are bolded.
* = Duplicate analysis not within control limits.
B = The reported value was obtained from a reading less than the contract required detection limit (CRDL) but greater than or equal to the instrument detection limit.
D = Concentration is based on a diluted sample analysis.
E = The reported value is estimated due to matrix interference.
J = The analyte was positively identified; however, the associated numerical value is an estimated concentration only.
N = Spiked sample recovery not within control limits.
R = The sample results are rejected.
U = The analyte was analyzed for but not detected. The associated value is the analyte instrument detection limit.

Criteria Notes:
a = Value listed applies to the sum of these substances.
d = Value listed applies to each isomer (1,2-, 1,3-, and 1,4-) individually.
G = Guidance value.
NA = Not available/Not applicable.

TABLE 5-A

NEW YORK STATE ELECTRIC AND GAS CORPORATION
COURT STREET SITE
BINGHAMTON, NEW YORK

SUPPLEMENTAL REMEDIAL INVESTIGATION
SUBSURFACE SOIL ANALYTICAL RESULTS - DETECTED VOLATILE ORGANIC COMPOUNDS

Location Depth Range Date Sampled Sample Type	MW97-7 (18.0' - 20.0') 9/25/97 FS	MW97-7 (18.0' - 20.0') 9/25/97 DUP	SB97-1 (2.0' - 4.0') 9/18/97 FS	SB97-1 (4.0' - 6.0') 9/18/97 FS	SB97-2 (2.0' - 4.0') 9/17/97 FS	SB97-2 (4.0' - 6.0') 9/17/97 FS	SB97-3 (0.0' - 2.0') 9/17/97 FS	SB97-3 (4.0' - 6.0') 9/17/97 FS	SB97-4 (12.0' - 14.0') 9/16/97 FS	SB97-4 (2.0' - 4.0') 9/16/97 FS	SB97-5 (2.0' - 4.0') 9/16/97 FS
1,2-Dichloroethane	0.01 U	0.01 U	--	--	--	--	--	--	--	--	--
Acetone	0.01 UJ	0.01 UJ	--	--	--	--	--	--	--	--	--
Benzene	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 UJ	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U
Benzene (TCLP)	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 UJ	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U
Ethylbenzene	0.01 U	0.01 U	--	--	--	--	--	--	--	--	--
Methylene chloride	0.01 U	0.01 U	--	--	--	--	--	--	--	--	--
Styrene	0.01 U	0.01 U	--	--	--	--	--	--	--	--	--
Toluene	0.01 U	0.01 U	--	--	--	--	--	--	--	--	--
o-Xylene	--	--	--	--	--	--	--	--	--	--	--
Xylenes, Total	0.01 U	0.01 U	--	--	--	--	--	--	--	--	--
m,p-Xylene	--	--	--	--	--	--	--	--	--	--	--
Total BTEX	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

See Notes on Page 7.

TABLE 5-A

NEW YORK STATE ELECTRIC AND GAS CORPORATION
COURT STREET SITE
BINGHAMTON, NEW YORK

SUPPLEMENTAL REMEDIAL INVESTIGATION
SUBSURFACE SOIL ANALYTICAL RESULTS - DETECTED VOLATILE ORGANIC COMPOUNDS

Location Depth Range Date Sampled Sample Type	SB97-5 (4.0' - 6.0') 9/16/97 FS	SB97-6 (0.0' - 2.0') 9/17/97 FS	SB97-6 (4.0' - 6.0') 9/17/97 FS	SB97-7 (0.0' - 2.0') 9/17/97 FS	SB97-7 (4.0' - 6.0') 9/17/97 FS	SB97-8 (0.0' - 2.0') 9/18/97 FS	SB97-8 (2.0' - 4.0') 9/19/97 FS	SB97-8 (2.0' - 4.0') 9/19/97 DUP	TB-13 (18.0' - 20.0') 9/30/97 FS	SB-20 (7 - 10') 5/18/98 FS	SB-21 (4 - 6') 5/20/98 FS
1,2-Dichloroethane	--	--	--	--	--	--	--	--	**0.003 J**	32. U	72. U
Acetone	--	--	--	--	--	--	--	--	0.01 UJ	32. UJ	72. U
Benzene	0.01 U	0.01 U	**2.4 DJ**	0.01 U	**0.01 J**	0.01 U	0.01 U	0.01 U	**0.18 J**	**17. J**	72. U
Benzene (TCLP)	0.01 U	0.01 U	**2.4 DJ**	0.01 U	**0.01 J**	0.01 U	0.01 U	0.01 U	**0.18 J**	**17. J**	72. U
Ethylbenzene	--	--	--	--	--	--	--	--	**0.03**	**100**	**300**
Methylene chloride	--	--	--	--	--	--	--	--	0.01 U	32. U	72. UJ
Styrene	--	--	--	--	--	--	--	--	0.01 U	32. U	**85**
Toluene	--	--	--	--	--	--	--	--	**0.06 J**	**5.6 J**	**180**
o-Xylene	--	--	--	--	--	--	--	--	--	--	--
Xylenes, Total	--	--	--	--	--	--	--	--	**0.09**	**97**	**430**
m,p-Xylene	--	--	--	--	--	--	--	--	--	--	--
Total BTEX	ND	ND	**2.4**	ND	**0.01**	ND	ND	ND	**0.36**	**220**	**910**

See Notes on Page 7.

TABLE 5-A

NEW YORK STATE ELECTRIC AND GAS CORPORATION
COURT STREET SITE
BINGHAMTON, NEW YORK

SUPPLEMENTAL REMEDIAL INVESTIGATION
SUBSURFACE SOIL ANALYTICAL RESULTS - DETECTED VOLATILE ORGANIC COMPOUNDS

Location Depth Range Date Sampled Sample Type	SB-22 (12 - 16') 5/20/98 FS	SB-23 (16 - 18') 5/22/98 FS	SB-23 (16 - 18') 5/22/98 DUP	MW98-15S (9 - 11') 5/18/98 FS	SB-101 (10 - 12') 8/3/01 FS	SB-101 (15 - 17') 8/7/01 FS	SB-101 (10 - 12') 8/3/01 DUP	SB-102 (10 - 12') 8/6/01 FS	SB-102 (21 - 23') 8/6/01 FS	SB-103 (14 - 16') 8/27/01 FS
1,2-Dichloroethane	76. U	40. U	3.8 U	0.12 U	--	0.06 U	--	--	--	--
Acetone	76. U	40. U	3.8 U	0.19 UJ	--	0.06 U	--	--	--	--
Benzene	76. U	40. U	**5.5**	0.12 U	0.006 U	0.06 U	0.006 U	0.007 U	0.005 U	0.04 U
Benzene (TCLP)	76. U	40. U	**5.5**	0.12 U	0.006 U	0.06 U	0.006 U	0.007 U	0.005 U	0.04 U
Ethylbenzene	**100**	**200**	**74**	0.12 U	0.006 U	**0.2**	0.006 U	0.007 U	0.005 U	0.04 U
Methylene chloride	76. UJ	40. UJ	3.8 UJ	0.12 U	--	0.06 U	--	--	--	--
Styrene	76. U	40. U	3.8 U	0.12 U	--	0.06 U	--	--	--	--
Toluene	76. U	**4.8 J**	**1.3 J**	0.12 U	0.006 U	0.06 U	0.006 U	0.007 U	0.005 U	0.04 U
o-Xylene	--	--	--	--	0.006 U	**0.06**	0.006 U	0.007 U	0.005 U	**0.02 J**
Xylenes, Total	**67. J**	**64**	**22**	0.12 U	--	--	--	--	--	--
m,p-Xylene	--	--	--	--	0.01 U	0.11 U	0.01 U	0.01 U	0.01 U	**0.07 J**
Total BTEX	**167**	**269**	**103**	ND	ND	**0.26**	ND	ND	ND	**0.09**

See Notes on Page 7.

TABLE 5-A

NEW YORK STATE ELECTRIC AND GAS CORPORATION
COURT STREET SITE
BINGHAMTON, NEW YORK

SUPPLEMENTAL REMEDIAL INVESTIGATION
SUBSURFACE SOIL ANALYTICAL RESULTS - DETECTED VOLATILE ORGANIC COMPOUNDS

Location Depth Range Date Sampled Sample Type	SB-103 (8 - 10') 8/27/01 FS	SB-104 (10 - 12') 8/29/01 FS	SB-104 (20 - 22') 8/30/01 FS	SB-105 (14 - 16') 8/9/01 FS	SB-105 (8 - 10') 8/9/01 FS	SB-106 (13 - 15') 8/8/01 FS	SB-106 (7 - 9') 8/8/01 FS	SB-107 (7 - 8') 8/10/01 FS	SB-108 (35 - 37') 8/14/01 FS	SB-108 (6 - 8') 8/13/01 FS
1,2-Dichloroethane	--	--	--	--	--	--	--	--	--	--
Acetone	--	--	--	--	--	--	--	--	--	--
Benzene	0.006 U	0.005 U	0.05 U	0.005 U	0.006 U	0.05 U	0.006 U	0.006 U	0.005 U	0.006 U
Benzene (TCLP)	0.006 U	0.005 U	0.05 U	0.005 U	0.006 U	0.05 U	0.006 U	0.006 U	0.005 U	0.006 U
Ethylbenzene	0.006 U	0.005 U	0.05 U	0.005 U	0.006 U	**0.3**	0.006 U	0.006 U	0.005 U	0.006 U
Methylene chloride	--	--	--	--	--	--	--	--	--	--
Styrene	--	--	--	--	--	--	--	--	--	--
Toluene	0.006 U	0.005 U	0.05 U	0.005 U	0.006 U	0.05 U	0.006 U	0.006 U	0.005 U	0.006 U
o-Xylene	0.006 U	0.005 U	0.05 U	0.005 U	0.006 U	**0.1**	0.006 U	0.006 U	0.005 U	0.006 U
Xylenes, Total	--	--	--	--	--	--	--	--	--	--
m,p-Xylene	0.01 U	0.01 U	0.10 U	0.01 U	0.01 U	**0.11**	0.01 U	0.01 U	0.01 U	0.01 U
Total BTEX	ND	ND	ND	ND	ND	**0.51**	ND	ND	ND	ND

See Notes on Page 7.

TABLE 5-A

NEW YORK STATE ELECTRIC AND GAS CORPORATION
COURT STREET SITE
BINGHAMTON, NEW YORK

SUPPLEMENTAL REMEDIAL INVESTIGATION
SUBSURFACE SOIL ANALYTICAL RESULTS - DETECTED VOLATILE ORGANIC COMPOUNDS

Location Depth Range Date Sampled Sample Type	**SB-108 (6 - 8') 8/13/01 DUP**	**SB-109 (10 - 11') 8/15/01 FS**	**SB-109 (17 - 19') 8/15/01 FS**	**SB-110 (7 - 9') 9/17/01 FS**	**SB-111 (7 - 7.5') 9/17/01 FS**	**SB-112 (4 - 6') 9/17/01 FS**	**SB-112 (4 - 6') 9/17/01 DUP**	**TB93-01 (28 - 30') 5/1/93 FS**	**TB93-02 (10 - 14') 5/1/93 FS**	**TB93-05 (10 - 14') 5/1/93 FS**
1,2-Dichloroethane	--	--	--	--	--	--	--	0.03 UD	4. UD	3. UD
Acetone	--	--	--	--	--	--	--	**0.07 DB**	**6. JD**	**8. D**
Benzene	0.006 U	0.006 U	**0.004 J**	0.006 U	0.006 U	0.005 U	0.006 U	**0.05 D**	**33. D**	**33. D**
Benzene (TCLP)	0.006 U	0.006 U	**0.004 J**	0.006 U	0.006 U	0.005 U	0.006 U	**0.05 D**	**33. D**	**33. D**
Ethylbenzene	0.006 U	0.006 U	**0.02**	0.006 U	0.006 U	0.005 U	0.006 U	**0.49 D**	**39. D**	**53. D**
Methylene chloride	--	--	--	--	--	--	--	**0.01 JD**	**2. JD**	**1. JD**
Styrene	--	--	--	--	--	--	--	**0.12 D**	**43. D**	**92. D**
Toluene	0.006 U	0.006 U	0.006 U	0.006 U	0.006 U	0.005 U	0.006 U	**0.10 D**	**66. D**	**98. D**
o-Xylene	0.006 U	0.006 U	**0.004 J**	0.006 U	0.006 U	0.005 U	0.006 U	--	--	--
Xylenes, Total	--	--	--	--	--	--	--	**1. D**	**75. D**	**128 D**
m,p-Xylene	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	--	--	--
Total BTEX	ND	ND	**0.03**	ND	ND	ND	ND	**1.6**	**213**	**312**

See Notes on Page 7.

TABLE 5-A

NEW YORK STATE ELECTRIC AND GAS CORPORATION
COURT STREET SITE
BINGHAMTON, NEW YORK

SUPPLEMENTAL REMEDIAL INVESTIGATION
SUBSURFACE SOIL ANALYTICAL RESULTS - DETECTED VOLATILE ORGANIC COMPOUNDS

Location Depth Range Date Sampled Sample Type	TB93-06 (6 - 8.5') 5/1/93 FS	TB93-10 (12 - 14') 5/1/93 FS	TB93-11 (10 - 16') 5/1/93 FS	TP-02 (6') 5/1/93 FS	TP-05 (6') 5/1/93 FS	TP-07 (5') 5/1/93 FS	TP-14 (6') 5/1/93 FS	TP-15 (6') 5/1/93 FS	TP-21 (8') 5/1/93 FS	TP-21 (8') 5/1/93 DUP
1,2-Dichloroethane	4. UD	1. UD	2. UD	0.03 UD	104 UD	40. UD	0.03 UD	45. UD	0.03 UD	0.01 UD
Acetone	**9. JD**	**2. D**	4. UD	**0.27 D**	208 UD	**54. JD**	**0.10 D**	**73. JD**	**0.14 D**	**0.20 D**
Benzene	**33. D**	**2. D**	**32. D**	**1. D**	**691 D**	**124 D**	**0.13 D**	**479 D**	**0.05 D**	**0.03 D**
Benzene (TCLP)	**33. D**	**2. D**	**32. D**	**1. D**	**691 D**	**124 D**	**0.13 D**	**479 D**	**0.05 D**	**0.03 D**
Ethylbenzene	**92. D**	**2. D**	**7. D**	**1. D**	**1,830 D**	**781 D**	**0.19 D**	**827 D**	**0.03 JD**	**0.01 JD**
Methylene chloride	**2. JD**	**0.38 JD**	2. UD	**0.02 JD**	104 UD	**19. JD**	**0.02 JD**	**19. JD**	**0.01 JD**	**0.008 JD**
Styrene	**8. D**	**1. D**	**35. D**	**0.04 D**	104 UD	40. UD	0.03 UD	**37. JD**	0.03 UD	0.01 UD
Toluene	**66. D**	**9. D**	**50. D**	**0.18 D**	**1,040 D**	**397 D**	**0.07 D**	**870 D**	**0.03 JD**	**0.03 D**
o-Xylene	--	--	--	--	--	--	--	--	--	--
Xylenes, Total	**91. D**	**15. D**	**46. D**	**1. D**	**1,460 D**	**773 D**	**0.23 D**	**857 D**	**0.14 D**	**0.04 D**
m,p-Xylene	--	--	--	--	--	--	--	--	--	--
Total BTEX	**282**	**28**	**135**	**3.2**	**5,021**	**2,075**	**0.62**	**3,033**	**0.24**	**0.1**

See Notes on Page 7.

TABLE 5-A

NEW YORK STATE ELECTRIC AND GAS CORPORATION
COURT STREET SITE
BINGHAMTON, NEW YORK

SUPPLEMENTAL REMEDIAL INVESTIGATION
SUBSURFACE SOIL ANALYTICAL RESULTS - DETECTED VOLATILE ORGANIC COMPOUNDS

Notes:

All concentrations reported in milligrams per kilogram (mg/Kg); also expressed as parts per million (ppm).
Detections are bolded.
ND = Not detected.
J = The compound was positively identified; however, the associated numerical value is an estimated concentration only.
U = The compound was analyzed for but not detected. The associated value is the compound quantitation limit.
-- = Not analyzed.

TABLE 5-B

NEW YORK STATE ELECTRIC AND GAS CORPORATION
COURT STREET SITE
BINGHAMTON, NEW YORK

SUPPLEMENTAL REMEDIAL INVESTIGATION
SUBSURFACE SOIL ANALYTICAL RESULTS - DETECTED SEMIVOLATILE ORGANIC COMPOUNDS

Location	MW97-7	MW97-7	SB97-1	SB97-1	SB97-2	SB97-2	SB97-3	SB97-3	SB97-4	SB97-4	SB97-5
Depth Range	(18.0' - 20.0')	(18.0' - 20.0')	(2.0' - 4.0')	(4.0' - 6.0')	(2.0' - 4.0')	(4.0' - 6.0')	(0.0' - 2.0')	(4.0' - 6.0')	(12.0' - 14.0')	(2.0' - 4.0')	(2.0' - 4.0')
Date Sampled	9/25/97	9/25/97	9/18/97	9/18/97	9/17/97	9/17/97	9/17/97	9/17/97	9/16/97	9/16/97	9/16/97
Sample Type	FS	DUP	FS	FS	FS	FS	FS	FS	FS	FS	FS
2,4-Dinitrotoluene	0.40 U	0.38 U	--	--	--	--	--	--	--	--	--
2-Methylnaphthalene	0.40 U	0.38 U	--	--	--	--	--	--	--	--	--
Acenaphthene	0.40 U	0.38 U	0.41 U	**2.2**	3.6 U	0.36 U	4.3 U	**2. J**	**5.8 J**	0.61 U	0.35 U
Acenaphthylene	0.40 U	0.38 U	**0.31 J**	**0.58 J**	3.6 U	**0.12 J**	**2.6 J**	**8. J**	**3. J**	**0.85**	**0.54**
Anthracene	0.40 U	0.38 U	**0.10 J**	**4.1**	3.6 U	**0.07 J**	**1.3 J**	**3.1 J**	**8.4 J**	**0.48 J**	**0.24 J**
Benzo(a)anthracene	0.40 U	0.38 U	**0.29 J**	**4.7**	3.6 U	**0.22 J**	**4. J**	**16**	**3.5 J**	**0.71**	**0.42**
Benzo(a)pyrene	0.40 U	0.38 U	**0.34 J**	**4**	3.6 U	**0.26 J**	**5.1**	**15**	**2.7 J**	**0.85**	**0.63**
Benzo(b)fluoranthene	0.40 U	0.38 U	**0.25 J**	**3.4**	3.6 U	**0.34 J**	**4.9**	**12**	**1.3 J**	**0.74**	**0.6**
Benzo(ghi)perylene	0.40 U	0.38 U	**0.26 J**	**2.7**	3.6 U	**0.15 J**	**1.9 J**	**15**	**0.45 J**	**0.27 J**	**0.21 J**
Benzo(k)fluoranthene	0.40 U	0.38 U	**0.26 J**	**3.1**	3.6 U	**0.30 J**	**4.1 J**	**13**	**1.2 J**	**0.71**	**0.47**
Bis(2-ethylhexyl) phthalate	0.40 U	0.38 U	--	--	--	--	--	--	--	--	--
Carbazole	--	--	--	--	--	--	--	--	--	--	--
Chrysene	0.40 U	0.38 U	**0.36 J**	**4.7**	3.6 U	**0.38**	**4.8**	**19**	**3.2 J**	**0.84**	**0.48**
Di-n-butyl phthalate	0.40 U	0.38 U	--	--	--	--	--	--	--	--	--
Di-n-octyl phthalate	**0.06 J**	**0.07 J**	--	--	--	--	--	--	--	--	--
Dibenzo(a,h)anthracene	0.40 U	0.38 U	0.41 U	**0.22 J**	3.6 U	0.36 U	4.3 U	9.4 U	4. UJ	0.61 U	0.35 U
Dibenzofuran	0.40 U	0.38 U	--	--	--	--	--	--	--	--	--
Fluoranthene	0.40 U	0.38 U	**0.37 J**	**16. D**	3.6 U	**0.64**	**12**	**46**	**8.9 J**	**1.3**	**0.84**
Fluorene	0.40 U	0.38 U	0.41 U	**2**	3.6 U	0.36 U	4.3 U	**4.9 J**	**10. J**	0.61 U	**0.07 J**
Indeno(1,2,3-cd)pyrene	0.40 U	0.38 U	**0.20 J**	**2.4**	3.6 U	**0.11 J**	**1.8 J**	**10**	**0.46 J**	**0.22 J**	**0.14 J**
Naphthalene	0.40 U	0.38 U	0.41 U	**0.87**	3.6 U	**0.07 J**	**0.81 J**	9.4 U	**14. J**	0.61 U	0.35 U
Phenanthrene	0.40 U	0.38 U	**0.11 J**	**18. D**	3.6 U	**0.25 J**	**3.9 J**	**6.6 J**	**46. DJ**	**0.67**	**0.30 J**
Pyrene	0.40 U	0.38 U	**0.72**	**15. D**	3.6 U	**0.39**	**5.2**	**59**	**9.8 J**	**0.75**	**0.47**
Total PAHs	ND	ND	**3.6**	**84**	ND	**3.3**	**52.4**	**230**	**119**	**8.4**	**5.4**
Total Semivolatiles	**0.06**	**0.07**	**3.6**	**84**	ND	**3.3**	**52.4**	**230**	**119**	**8.4**	**5.4**

See Notes on Page 7.

TABLE 5-B

NEW YORK STATE ELECTRIC AND GAS CORPORATION
COURT STREET SITE
BINGHAMTON, NEW YORK

SUPPLEMENTAL REMEDIAL INVESTIGATION
SUBSURFACE SOIL ANALYTICAL RESULTS - DETECTED SEMIVOLATILE ORGANIC COMPOUNDS

Location Depth Range Date Sampled Sample Type	SB97-5 (4.0' - 6.0') 9/16/97 FS	SB97-6 (0.0' - 2.0') 9/17/97 FS	SB97-6 (4.0' - 6.0') 9/17/97 FS	SB97-7 (0.0' - 2.0') 9/17/97 FS	SB97-7 (4.0' - 6.0') 9/17/97 FS	SB97-8 (0.0' - 2.0') 9/18/97 FS	SB97-8 (2.0' - 4.0') 9/19/97 FS	SB97-8 (2.0' - 4.0') 9/19/97 DUP	TB-13 (18.0' - 20.0') 9/30/97 FS	SB-20 (7 - 10') 5/18/98 FS	SB-21 (4 - 6') 5/20/98 FS
2,4-Dinitrotoluene	--	--	--	--	--	--	--	--	0.39 U	21. U	7.5 U
2-Methylnaphthalene	--	--	--	--	--	--	--	--	**0.18 J**	**180**	**71**
Acenaphthene	**1.8 J**	1.5 U	**82**	0.36 U	0.43 U	1.5 U	2. U	0.41 U	0.39 U	**210**	**7.2 J**
Acenaphthylene	**22**	**1. J**	**15. J**	**0.42**	**0.27 J**	**0.37 J**	**0.82 JN**	**0.25 J**	0.39 U	**18. J**	**16**
Anthracene	**10**	**0.28 J**	**63**	**0.19 J**	**0.14 J**	**0.46 J**	2. U	**0.07 J**	0.39 U	**89**	**9.2**
Benzo(a)anthracene	**18**	**0.57 J**	**31. J**	**0.77**	**1**	**1.9**	**0.54 JN**	**0.23 J**	0.39 U	**61**	**6.8 J**
Benzo(a)pyrene	**33**	**1.9**	**28. J**	**0.86**	**1.8**	**2.3**	**1.7 JN**	**0.59**	0.39 U	**46. J**	**5.6 J**
Benzo(b)fluoranthene	**25**	**1.3 J**	**11. J**	**0.66**	**1.5**	**2.3**	**1.1 JN**	**0.45**	0.39 U	**58. J**	**3.5 J**
Benzo(ghi)perylene	**7.3**	**0.85 J**	**9.9 J**	**0.35 J**	**0.61**	**1.3 J**	**1.2 JN**	**0.66**	0.39 U	21. UJ	7.5 U
Benzo(k)fluoranthene	**21**	**0.87 J**	**15. J**	**0.57**	**1.4**	**2.1**	**1.1 JN**	**0.46**	0.39 U	**22. J**	**3.6 J**
Bis(2-ethylhexyl) phthalate	--	--	--	--	--	--	--	--	0.39 UJ	21. UJ	7.5 UJ
Carbazole	--	--	--	--	--	--	--	--	--	**3.8 J**	7.5 U
Chrysene	**22**	**0.73 J**	**32. J**	**0.85**	**1.1**	**2.3**	**0.70 JN**	**0.31 J**	0.39 U	**42**	**5.6 J**
Di-n-butyl phthalate	--	--	--	--	--	--	--	--	0.39 U	21. U	7.5 U
Di-n-octyl phthalate	--	--	--	--	--	--	--	--	0.39 U	21. UJ	7.5 U
Dibenzo(a,h)anthracene	7.2 U	1.5 U	42. U	0.36 U	**0.06 J**	1.5 U	2. U	0.41 U	0.39 U	21. UJ	7.5 U
Dibenzofuran	--	--	--	--	--	--	--	--	0.39 U	**17. J**	**2.5 J**
Fluoranthene	**26**	**0.75 J**	**77**	**1.2**	**1.3**	**4.4**	**0.32 JN**	**0.31 J**	0.39 U	**100**	**13**
Fluorene	**2.9 J**	1.5 U	**100**	0.36 U	0.43 U	**0.20 J**	2. U	0.41 U	**0.05 J**	**130**	**14**
Indeno(1,2,3-cd)pyrene	**5.8 J**	**0.75 J**	**8.3 J**	**0.32 J**	**0.6**	**1.2 J**	**0.88 JN**	**0.44**	0.39 U	21. UJ	7.5 U
Naphthalene	**0.92 J**	1.5 U	**200**	0.36 U	**0.07 J**	1.5 U	2. U	**0.05 J**	**0.4**	**390 D**	**93**
Phenanthrene	**9.9**	**0.28 J**	**300 D**	**0.57**	**0.45**	**2**	2. U	**0.17 J**	**0.11 J**	**310**	**47**
Pyrene	**20**	**0.58 J**	**92**	**1.4**	**1**	**3.5**	**0.69 JN**	**0.44**	0.39 U	**210**	**27**
Total PAHs	**226**	**9.9**	**1,064**	**8.2**	**11.3**	**24.3**	**9.1**	**4.4**	**0.74**	**1,866**	**323**
Total Semivolatiles	**226**	**9.9**	**1,064**	**8.2**	**11.3**	**24.3**	**9.1**	**4.4**	**0.74**	**1,887**	**325**

See Notes on Page 7.

TABLE 5-B

NEW YORK STATE ELECTRIC AND GAS CORPORATION
COURT STREET SITE
BINGHAMTON, NEW YORK

SUPPLEMENTAL REMEDIAL INVESTIGATION
SUBSURFACE SOIL ANALYTICAL RESULTS - DETECTED SEMIVOLATILE ORGANIC COMPOUNDS

Location Depth Range Date Sampled Sample Type	SB-22 (12 - 16') 5/20/98 FS	SB-23 (16 - 18') 5/22/98 FS	SB-23 (16 - 18') 5/22/98 DUP	MW98-15S (9 - 11') 5/18/98 FS	SB-101 (10 - 12') 8/3/01 FS	SB-101 (15 - 17') 8/7/01 FS	SB-101 (10 - 12') 8/3/01 DUP	SB-102 (10 - 12') 8/6/01 FS	SB-102 (21 - 23') 8/6/01 FS	SB-103 (14 - 16') 8/27/01 FS
2,4-Dinitrotoluene	4. U	46. U	45. U	0.41 U	--	--	--	--	--	--
2-Methylnaphthalene	**130 D**	**84**	**63**	0.41 U	--	--	--	--	--	--
Acenaphthene	**110 D**	**150**	**110**	**2.7**	0.41 U	**21**	0.41 U	0.44 U	0.37 U	4.1 U
Acenaphthylene	**7.5**	46. U	**5.4 J**	0.41 U	0.41 U	4. U	0.41 U	0.44 U	0.37 U	4.1 U
Anthracene	**37**	**43. J**	**33. J**	**1.6**	0.41 U	**16**	0.41 U	0.44 U	0.37 U	4.1 U
Benzo(a)anthracene	**22**	**21. J**	**16. J**	**1.4 J**	0.41 U	**5.5**	0.41 U	0.44 U	0.37 U	4.1 U
Benzo(a)pyrene	**15. J**	**15. J**	**10. J**	1.2 UJ	0.41 U	**3.9 J**	0.41 U	0.44 U	0.37 U	4.1 U
Benzo(b)fluoranthene	**8.3 J**	**15. J**	**12. J**	1.2 UJ	0.41 U	**2.1 J**	0.41 U	0.44 U	0.37 U	4.1 U
Benzo(ghi)perylene	**1.5 J**	46. U	45. U	0.13 UJ	0.41 U	4. U	0.41 U	0.44 U	0.37 U	4.1 U
Benzo(k)fluoranthene	**10. J**	**5.5 J**	45. U	0.54 UJ	0.41 U	**2.5 J**	0.41 U	0.44 U	0.37 U	4.1 U
Bis(2-ethylhexyl) phthalate	4. U	46. UJ	45. UJ	0.41 UJ	--	--	--	--	--	--
Carbazole	4. U	46. U	45. U	0.41 U	--	--	--	--	--	--
Chrysene	**14**	**21. J**	**16. J**	**1.3 J**	0.41 U	**5.5**	0.41 U	0.44 U	0.37 U	4.1 U
Di-n-butyl phthalate	4. U	46. U	45. U	0.41 U	--	--	--	--	--	--
Di-n-octyl phthalate	4. UJ	46. U	45. U	0.81 UJD	--	--	--	--	--	--
Dibenzo(a,h)anthracene	4. UJ	46. U	45. U	0.81 UJD	0.41 U	4. U	0.41 U	0.44 U	0.37 U	4.1 U
Dibenzofuran	**3.7 J**	46. U	45. U	0.41 U	0.41 U	4. U	0.41 U	0.44 U	0.37 U	4.1 U
Fluoranthene	**45**	**57**	**42. J**	**2.4**	0.41 U	**13**	0.41 U	**0.26 J**	0.37 U	4.1 U
Fluorene	**44**	**68**	**49**	**1.6**	0.41 U	**12**	0.41 U	0.44 U	0.37 U	4.1 U
Indeno(1,2,3-cd)pyrene	**1.5 J**	46. U	45. U	0.12 UJ	0.41 U	4. U	0.41 U	0.44 U	0.37 U	4.1 U
Naphthalene	**390 D**	**690**	**500**	0.41 U	0.41 U	4. U	0.41 U	0.44 U	0.37 U	4.1 U
Phenanthrene	**150 D**	**170**	**130**	**5.1**	0.41 U	**30**	0.41 U	0.44 U	0.37 U	4.1 U
Pyrene	**81. D**	**70**	**53**	**4.8 D**	0.41 U	**14. D**	0.41 U	0.44 U	0.37 U	4.1 U
Total PAHs	**1,067**	**1,410**	**1,039**	**20.9**	ND	**126**	ND	**0.26**	ND	ND
Total Semivolatiles	**1,071**	**1,410**	**1,039**	**20.9**	ND	**126**	ND	**0.26**	ND	ND

See Notes on Page 7.

TABLE 5-B

NEW YORK STATE ELECTRIC AND GAS CORPORATION
COURT STREET SITE
BINGHAMTON, NEW YORK

SUPPLEMENTAL REMEDIAL INVESTIGATION
SUBSURFACE SOIL ANALYTICAL RESULTS - DETECTED SEMIVOLATILE ORGANIC COMPOUNDS

Location Depth Range Date Sampled Sample Type	SB-103 (8 - 10') 8/27/01 FS	SB-104 (10 - 12') 8/29/01 FS	SB-104 (20 - 22') 8/30/01 FS	SB-105 (14 - 16') 8/9/01 FS	SB-105 (8 - 10') 8/9/01 FS	SB-106 (13 - 15') 8/8/01 FS	SB-106 (7 - 9') 8/8/01 FS	SB-107 (7 - 8') 8/10/01 FS	SB-108 (35 - 37') 8/14/01 FS	SB-108 (6 - 8') 8/13/01 FS
2,4-Dinitrotoluene	--	--	--	--	--	--	--	--	--	--
2-Methylnaphthalene	--	--	--	--	--	--	--	--	--	--
Acenaphthene	0.40 U	0.41 U	0.43 U	0.36 U	0.42 U	**7**	0.39 U	0.41 U	0.38 U	0.39 U
Acenaphthylene	0.40 U	0.41 U	0.43 U	0.36 U	0.42 U	4.1 U	0.39 U	0.41 U	0.38 U	0.39 U
Anthracene	0.40 U	**0.30 J**	0.43 U	0.36 U	0.42 U	**3.6 J**	0.39 U	0.41 U	0.38 U	0.39 U
Benzo(a)anthracene	0.40 U	**0.52**	0.43 U	0.36 U	0.42 U	4.1 U	0.39 U	0.41 U	0.38 U	**0.71**
Benzo(a)pyrene	0.40 U	**0.43**	0.43 U	0.36 U	0.42 U	4.1 U	**0.35 J**	0.41 U	0.38 U	**0.88**
Benzo(b)fluoranthene	0.40 U	**0.47**	0.43 U	0.36 U	0.42 U	4.1 U	**0.39**	0.41 U	0.38 U	**0.89**
Benzo(ghi)perylene	**0.20 J**	**0.28 J**	0.43 U	0.36 U	0.42 U	4.1 U	**0.32 J**	0.41 U	0.38 U	**0.43**
Benzo(k)fluoranthene	0.40 U	**0.40 J**	0.43 U	0.36 U	0.42 U	4.1 U	**0.28 J**	0.41 U	0.38 U	**0.7**
Bis(2-ethylhexyl) phthalate	--	--	--	--	--	--	--	--	--	--
Carbazole	--	--	--	--	--	--	--	--	--	--
Chrysene	0.40 U	**0.55**	0.43 U	0.36 U	0.42 U	4.1 U	**0.37 J**	0.41 U	0.38 U	**0.75**
Di-n-butyl phthalate	--	--	--	--	--	--	--	--	--	--
Di-n-octyl phthalate	--	--	--	--	--	--	--	--	--	--
Dibenzo(a,h)anthracene	0.40 U	0.41 U	0.43 U	0.36 U	0.42 U	4.1 U	0.39 U	0.41 U	0.38 U	0.39 U
Dibenzofuran	0.40 U	0.41 U	0.43 U	0.36 U	0.42 U	4.1 U	0.39 U	0.41 U	0.38 U	0.39 U
Fluoranthene	**0.30 J**	**1.1**	0.43 U	0.36 U	0.42 U	**3.4 J**	**0.7**	**0.23 J**	0.38 U	**1.1**
Fluorene	0.40 U	0.41 U	0.43 U	0.36 U	0.42 U	**3.1 J**	0.39 U	0.41 U	0.38 U	0.39 U
Indeno(1,2,3-cd)pyrene	0.40 U	**0.30 J**	0.43 U	0.36 U	0.42 U	4.1 U	**0.24 J**	0.41 U	0.38 U	**0.45**
Naphthalene	0.40 U	0.41 U	0.43 U	0.36 U	0.42 U	**20**	0.39 U	0.41 U	0.38 U	0.39 U
Phenanthrene	0.40 U	**1.1**	0.43 U	0.36 U	0.42 U	**11**	**0.58**	0.41 U	0.38 U	0.39 U
Pyrene	**0.20 J**	**1.3**	0.43 U	0.36 U	0.42 U	**4.6**	**0.89**	0.41 U	0.38 U	**0.81**
Total PAHs	**0.7**	**6.8**	ND	ND	ND	**52.7**	**4.1**	**0.23**	ND	**6.7**
Total Semivolatiles	**0.7**	**6.8**	ND	ND	ND	**52.7**	**4.1**	**0.23**	ND	**6.7**

See Notes on Page 7.

TABLE 5-B

NEW YORK STATE ELECTRIC AND GAS CORPORATION
COURT STREET SITE
BINGHAMTON, NEW YORK

SUPPLEMENTAL REMEDIAL INVESTIGATION
SUBSURFACE SOIL ANALYTICAL RESULTS - DETECTED SEMIVOLATILE ORGANIC COMPOUNDS

Location	**SB-108**	**SB-109**	**SB-109**	**SB-110**	**SB-111**	**SB-112**	**SB-112**	**TB93-01**	**TB93-02**	**TB93-05**
Depth Range	**(6 - 8')**	**(10 - 11')**	**(17 - 19')**	**(7 - 9')**	**(7 - 7.5')**	**(4 - 6')**	**(4 - 6')**	**(28 - 30')**	**(10 - 14')**	**(10 - 14')**
Date Sampled	**8/13/01**	**8/15/01**	**8/15/01**	**9/17/01**	**9/17/01**	**9/17/01**	**9/17/01**	**5/1/93**	**5/1/93**	**5/1/93**
Sample Type	**DUP**	**FS**	**FS**	**FS**	**FS**	**FS**	**DUP**	**FS**	**FS**	**FS**
2,4-Dinitrotoluene	--	--	--	--	--	--	--	1. U	83. UD	86. UD
2-Methylnaphthalene	--	--	--	--	--	--	--	**6**	**630 D**	**930 D**
Acenaphthene	0.39 U	0.41 U	**0.95**	0.39 U	**12**	0.37 U	0.39 U	**4**	**58. JD**	**75. JD**
Acenaphthylene	0.39 U	0.41 U	0.39 U	0.39 U	**3.2**	0.37 U	0.39 U	**2**	**220 D**	**430 D**
Anthracene	**0.28 J**	0.41 U	0.39 U	0.39 U	**25**	0.37 U	0.39 U	**2**	**120 D**	**170 D**
Benzo(a)anthracene	**1.4**	0.41 U	0.39 U	0.39 U	**26**	0.37 U	0.39 U	1. U	83. UD	**96. D**
Benzo(a)pyrene	**1.4**	0.41 U	0.39 U	0.39 U	**22**	0.37 U	0.39 U	**0.38 J**	**60. JD**	**77. JD**
Benzo(b)fluoranthene	**1.3**	0.41 U	0.39 U	0.39 U	**22**	0.37 U	0.39 U	**0.17 J**	**21. JD**	**33. JD**
Benzo(ghi)perylene	**0.79**	0.41 U	0.39 U	0.39 U	**8.4**	0.37 U	0.39 U	1. U	**21. JD**	**30. JD**
Benzo(k)fluoranthene	**0.85**	0.41 U	0.39 U	0.39 U	**17**	0.37 U	0.39 U	**0.23 J**	**38. JD**	**46. JD**
Bis(2-ethylhexyl) phthalate	--	--	--	--	--	--	--	**0.29 JB**	83. UD	86. UD
Carbazole	--	--	--	--	--	--	--	--	--	--
Chrysene	**1.3**	0.41 U	0.39 U	0.39 U	**24**	0.37 U	0.39 U	**1. J**	**60. JD**	**88. D**
Di-n-butyl phthalate	--	--	--	--	--	--	--	1. U	83. UD	86. UD
Di-n-octyl phthalate	--	--	--	--	--	--	--	1. U	83. UD	86. UD
Dibenzo(a,h)anthracene	0.39 U	0.41 U	0.39 U	0.39 U	**2.3**	0.37 U	0.39 U	1. U	**12. JD**	86. UD
Dibenzofuran	0.39 U	0.41 U	0.39 U	0.39 U	**13**	0.37 U	0.39 U	**1. J**	**19. JD**	**27. JD**
Fluoranthene	**2.2**	0.41 U	0.39 U	0.39 U	**90. D**	0.37 U	0.39 U	**1**	**130 D**	**190 D**
Fluorene	0.39 U	0.41 U	**0.26 J**	0.39 U	**17**	0.37 U	0.39 U	**4**	**110 D**	**220 D**
Indeno(1,2,3-cd)pyrene	**0.73**	0.41 U	0.39 U	0.39 U	**8**	0.37 U	0.39 U	**0.13 J**	**21. JD**	**27. JD**
Naphthalene	0.39 U	0.41 U	0.39 U	0.39 U	**13**	0.37 U	0.39 U	**7**	**1,200 D**	**1,500 DB**
Phenanthrene	**0.79**	0.41 U	**0.47**	0.39 U	**100 D**	0.37 U	0.39 U	**8**	**440 D**	**670 D**
Pyrene	**1.6**	0.41 U	0.39 U	0.39 U	**26**	0.37 U	0.39 U	**2**	**230 D**	**300 D**
Total PAHs	**12.6**	ND	**1.7**	ND	**416**	ND	ND	**37.9**	**3,371**	**4,882**
Total Semivolatiles	**12.6**	ND	**1.7**	ND	**429**	ND	ND	**38**	**3,390**	**4,909**

See Notes on Page 7.

TABLE 5-B

NEW YORK STATE ELECTRIC AND GAS CORPORATION
COURT STREET SITE
BINGHAMTON, NEW YORK

SUPPLEMENTAL REMEDIAL INVESTIGATION
SUBSURFACE SOIL ANALYTICAL RESULTS - DETECTED SEMIVOLATILE ORGANIC COMPOUNDS

Location Depth Range Date Sampled Sample Type	TB93-06 (6 - 8.5') 5/1/93 FS	TB93-10 (12 - 14') 5/1/93 FS	TB93-11 (10 - 16') 5/1/93 FS	TP-02 (6') 5/1/93 FS	TP-05 (6') 5/1/93 FS	TP-07 (5') 5/1/93 FS	TP-14 (6') 5/1/93 FS	TP-15 (6') 5/1/93 FS	TP-21 (8') 5/1/93 FS	TP-21 (8') 5/1/93 DUP
2,4-Dinitrotoluene	190 UD	40. UD	**58. JD**	22. UD	440 UD	86. UD	8.6 UD	240 UD	0.88 U	0.73 U
2-Methylnaphthalene	**2,200 D**	**110 D**	**5,900 D**	**7. JD**	**3,600 D**	**870 D**	**31. D**	**2,400 D**	**0.40 J**	**1**
Acenaphthene	**660 D**	**16. JD**	**350 JD**	**170 D**	**780 D**	**150 D**	**20. D**	**270 D**	**0.08 J**	**0.21 J**
Acenaphthylene	**510 D**	**27. JD**	**3,200 D**	10. UD	**740 D**	**280 D**	**8. JD**	**1,000 D**	**0.46 J**	**0.20 J**
Anthracene	**460 D**	**33. JD**	**3,000 D**	**50. D**	**550 D**	**180 D**	**18. D**	**720 D**	**1**	**0.26 J**
Benzo(a)anthracene	190 UD	**22. JD**	**2,400 D**	**21. JD**	440 UD	86. UD	**22. D**	**460 D**	**2**	**1. J**
Benzo(a)pyrene	**250 D**	**21. JD**	**980 D**	**11. JD**	**300 JD**	**100 D**	**19. D**	**380 D**	**4**	**1**
Benzo(b)fluoranthene	**110 JD**	**9. JD**	**750 D**	**10. JD**	**130 JD**	**47. JD**	**17. D**	**200 JD**	**2**	**1. J**
Benzo(ghi)perylene	**130 JD**	**8. JD**	**330 JD**	**4. JD**	**110 JD**	**36. JD**	**10. D**	**160 JD**	**2**	**1**
Benzo(k)fluoranthene	**160 JD**	**12. JD**	**200 JD**	**7. JD**	**150 JD**	**44. JD**	**14. D**	**310 D**	**2**	**1. J**
Bis(2-ethylhexyl) phthalate	190 UD	40. UD	250 UD	22. UD	440 UD	86. UD	8.6 UD	240 UD	**1. J**	0.73 U
Carbazole	--	--	--	--	--	--	--	--	--	--
Chrysene	**250 D**	**22. JD**	**890 D**	**19. JD**	**300 JD**	**100 D**	**22. D**	**440 D**	**3**	**1**
Di-n-butyl phthalate	190 UD	40. UD	250 UD	22. UD	440 UD	86. UD	8.6 UD	240 UD	**0.19 J**	0.73 U
Di-n-octyl phthalate	190 UD	40. UD	250 UD	22. UD	440 UD	86. UD	8.6 UD	240 UD	0.88 U	0.73 U
Dibenzo(a,h)anthracene	**44. JD**	40. UD	**77. JD**	22. UD	440 UD	**14. JD**	**5. JD**	**47. JD**	**1. J**	**0.17 J**
Dibenzofuran	**78. JD**	40. UD	**290 D**	**22. D**	**100 JD**	**28. JD**	**5. JD**	**260 D**	0.88 U	0.73 U
Fluoranthene	**570 D**	**62. D**	**2,300 D**	**48. D**	**630 D**	**200 D**	**40. D**	**880 D**	**4**	**2**
Fluorene	**490 D**	**70. D**	**2,100 D**	**130 D**	**650 D**	**180 D**	**23. D**	**720 D**	**0.21 J**	**0.28 J**
Indeno(1,2,3-cd)pyrene	**100 JD**	**7. JD**	**270 D**	**5. JD**	**100 JD**	**35. JD**	**10. D**	**160 JD**	**2**	**1. J**
Naphthalene	**3,300 D**	**590 D**	**10,000 D**	**27. D**	**6,700 D**	**1,500 D**	**21. D**	**4,000 D**	**0.48 J**	**0.36 J**
Phenanthrene	**1,600 D**	**200 D**	**7,100 D**	**280 D**	**2,100 D**	**640 D**	**74. D**	**2,100 D**	**3**	**3**
Pyrene	**920 D**	**99. D**	**3,300 D**	**66. D**	**1,200 D**	**370 D**	**50. D**	**1,100 D**	**8**	**2**
Total PAHs	**11,754**	**1,308**	**43,147**	**855**	**18,040**	**4,746**	**404**	**15,347**	**35.6**	**16.5**
Total Semivolatiles	**11,832**	**1,308**	**43,495**	**876**	**18,140**	**4,774**	**409**	**15,607**	**36**	**16.5**

See Notes on Page 7.

TABLE 5-B

NEW YORK STATE ELECTRIC AND GAS CORPORATION
COURT STREET SITE
BINGHAMTON, NEW YORK

SUPPLEMENTAL REMEDIAL INVESTIGATION
SUBSURFACE SOIL ANALYTICAL RESULTS - DETECTED SEMIVOLATILE ORGANIC COMPOUNDS

Notes:
All concentrations reported in milligrams per kilogram (mg/Kg); also expressed as parts per million (ppm).
Detections are bolded.
ND = Not detected.
D = Concentration is based on a diluted sample analysis.
J = The compound was positively identified; however, the associated numerical value is an estimated concentration only.
U = The compound was analyzed for but not detected. The associated value is the compound quantitation limit.
-- = Not analyzed.

TABLE 5-C

NEW YORK STATE ELECTRIC AND GAS CORPORATION
COURT STREET SITE
BINGHAMTON, NEW YORK

SUPPLEMENTAL REMEDIAL INVESTIGATION
SUBSURFACE SOIL ANALYTICAL RESULTS - DETECTED INORGANIC COMPOUNDS

Location	MW97-7	TB-13	SB-4	SB-4	SB-6	SB-20	SB-21	SB-22	SB-23	SB-23	TB93-01	TB93-02
Depth Range	(18.0' - 20.0')	(18.0' - 20.0')	(12 - 14')	(12 - 14')	(4 - 6')	(7 - 10')	(4 - 6')	(12 - 16')	(16 - 18')	(16 - 18')	(28 - 30')	(10 - 14')
Date Sampled	9/25/97	9/30/97	5/18/98	5/18/98	5/18/98	5/18/98	5/20/98	5/20/98	5/22/98	5/22/98	5/1/93	5/1/93
Sample Type	FS	FS	FS	DUP	FS	FS	FS	FS	FS	DUP	FS	FS
Aluminum	**8,890 J**	**11,000**	--	--	--	**9,840**	**6,020**	**8,910**	**7,290**	**6,160**	**7,600**	**10,700**
Antimony	**1.4 BJ**	0.52 UJ	--	--	--	1.8 UJ	1.6 UJ	1.7 UJ	2.3 UJ	2.2 UJ	0.33 U	0.37 U
Arsenic	**6**	**2.5**	--	--	--	**4.1**	**3.9**	**4.6**	**16.3**	**13.7**	**4**	**10**
Barium	**128 J**	**62.4**	--	--	--	**83.4**	**44. B**	**37.8 B**	**83.5**	**75.2**	**14. J**	**66**
Beryllium	**0.42 B**	**0.39 B**	--	--	--	**0.48 B**	**0.24 B**	**0.44 B**	**0.41 B**	**0.35 B**	--	--
Cadmium	0.05 U	0.06 U	--	--	--	0.25 U	0.23 U	0.24 U	0.32 U	0.31 U	0.44 U	0.49 U
Calcium	**13,500 J**	**1,510**	--	--	--	**17,200 J**	**42,700 J**	**1,270 J**	**3,430 J**	**2,410 J**	--	--
Chromium	**12.3**	**14.7**	--	--	--	**15.3**	**7.7**	**11.6**	**11.4**	**9.6**	**30**	**14**
Cobalt	**6.7**	**9.6**	--	--	--	**7.1 B**	**4.9 B**	**8.8 B**	**11.1 B**	**8.5 B**	--	--
Copper	**22.4**	**12.2**	--	--	--	**20.7**	**17**	**17.1**	**32.4**	**26.9**	**16**	**22**
Iron	**18,700 J**	**18,800**	--	--	--	**16,900**	**12,800**	**20,300**	**30,200**	**25,100**	**16,500**	**19,400**
Lead	**13.6**	**10.3 J**	--	--	--	**115**	**21.9**	**10.6**	**19.9**	**16.4**	**7**	**123**
Magnesium	**5,270 J**	**3,750**	--	--	--	**3,780**	**3,520**	**2,840**	**3,040**	**2,560**	--	--
Manganese	**1,390 J**	**242**	--	--	--	**198**	**482**	**208**	**891**	**679**	**314**	**512**
Mercury	**0.03 B**	**0.02 B**	--	--	--	**0.11 B**	**0.08 B**	0.06 U	0.08 U	0.07 U	0.06 U	**0.11 J**
Nickel	**19.4 J**	**23.7 J**	--	--	--	**24.5**	**11.1**	**19.9**	**27.4**	**21.9**	**24**	**18**
Potassium	**1,020**	**488 B**	--	--	--	**813 B**	**386 B**	**604 B**	**1,030 B**	**947 B**	--	--
Selenium	0.31 UJ	0.32 U	--	--	--	**1.1 B**	0.68 U	0.73 U	0.97 U	0.92 U	0.21 U	**0.45 J**
Sodium	**90.4 B**	51.7 U	--	--	--	118 U	105 U	113 U	150 U	142 U	--	--
Thallium	**1.7 J**	**0.84 BJ**	--	--	--	1.5 U	1.4 U	1.5 U	1.9 U	1.8 U	--	--
Vanadium	**13.1 J**	**12.5**	--	--	--	**15.5**	**10. B**	**11.8 B**	**14.3 B**	**11.9 B**	**14**	**18**
Zinc	**62.1 J**	**57.1**	--	--	--	**133 J**	**36.4 J**	**55.2 J**	**68.6 J**	**58.2 J**	**54**	**109**
Cyanide, Total	0.59 U	0.59 U	--	--	--	0.61 U	**0.79**	0.59 U	0.78 U	0.73 U	3. U	**12**
Cyanide, Amenable	--	--	--	--	--	--	--	--	--	--	--	**4**
Reactive Sulfide	--	--	100 UJ	100 UJ	100 UJ	--	--	**470 J**	100 UJ	--	--	--

See Notes on Page 2.

TABLE 5-C

NEW YORK STATE ELECTRIC AND GAS CORPORATION
COURT STREET SITE
BINGHAMTON, NEW YORK

SUPPLEMENTAL REMEDIAL INVESTIGATION
SUBSURFACE SOIL ANALYTICAL RESULTS - DETECTED INORGANIC COMPOUNDS

Location Depth Range Date Sampled Sample Type	TB93-05 (10 - 14') 5/1/93 FS	TB93-06 (6 - 8.5') 5/1/93 FS	TB93-10 (12 - 14') 5/1/93 FS	TB93-11 (10 - 16') 5/1/93 FS	TP-02 (6') 5/1/93 FS	TP-05 (6') 5/1/93 FS	TP-07 (5') 5/1/93 FS	TP-14 (6') 5/1/93 FS	TP-15 (6') 5/1/93 FS	TP-21 (8') 5/1/93 FS	TP-21 (8') 5/1/93 DUP
Aluminum	**14,400**	**9,940**	**11,300**	3,400 U	**10,200**	**4,640**	**9,980**	**12,100**	**8,420**	**10,400**	**11,800**
Antimony	0.38 U	**0.41 J**	0.31 U	**2. J**	0.40 U	**5. J**	0.39 U	0.33 U	0.43 U	**1. J**	0.33 U
Arsenic	**4**	**13**	**4**	**2**	**15**	**22**	**13**	**8**	**3**	**10**	**6**
Barium	**70**	**87**	**45**	**27**	**120**	**70**	**141**	**95**	**54**	**50**	**37**
Beryllium	--	--	--	--	--	--	--	--	--	--	--
Cadmium	0.50 U	**1**	0.41 U	**1. J**	0.54 U	**2**	**1**	**1**	0.58 U	0.46 U	0.44 U
Calcium	--	--	--	--	--	--	--	--	--	--	--
Chromium	**19**	**44**	**15**	**6**	**18**	**9**	**18**	**18**	**10**	**14**	**14**
Cobalt	--	--	--	--	--	--	--	--	--	--	--
Copper	**15**	**47**	**11**	**26**	**31**	**37**	**36**	**42**	**26**	**20**	**14**
Iron	**22,900**	**21,900**	**20,500**	**10,100**	**31,100**	**19,700**	**20,300**	**25,000**	**8,740**	**17,600**	**18,900**
Lead	**26**	**343**	**10**	**183**	**39**	**894**	**282**	**297**	**887**	**32**	**31**
Magnesium	--	--	--	--	--	--	--	--	--	--	--
Manganese	**514**	**367**	**220**	**198**	**178**	**292**	**572**	**409**	**174**	**230**	**193**
Mercury	0.07 U	**0.44**	0.06 U	**0.46**	**0.14**	**2**	**1**	**0.33**	**0.29**	**0.08 J**	**0.12**
Nickel	**21**	**23**	**20**	**8**	**20**	**18**	**24**	**24**	**10**	**17**	**18**
Potassium	--	--	--	--	--	--	--	--	--	--	--
Selenium	0.26 U	**2**	0.20 U	**4**	**2**	**2**	**1**	**1**	**1**	**1**	**2**
Sodium	--	--	--	--	--	--	--	--	--	--	--
Thallium	--	--	--	--	--	--	--	--	--	--	--
Vanadium	**22**	**19**	**14**	**8**	**32**	**15**	**19**	**21**	**17**	**18**	**18**
Zinc	**80**	**159**	**56**	**80**	**62**	**223**	**273**	**198**	**78**	**65**	**58**
Cyanide, Total	3. U	**27**	3. U	**50**	**6**	**68**	**23**	2.9 U	**42**	2.5 U	**18**
Cyanide, Amenable	--	3. U	--	3. U	**6**	**24**	2.9 U	--	3.5 U	--	**18**
Reactive Sulfide	--	--	--	--	--	--	--	--	--	--	--

Notes:
All concentrations reported in milligrams per kilogram (mg/Kg); also expressed as parts per million (ppm).
Detections are bolded.
B = The reported value was obtained from a reading less than the contract required detection limit (CRDL) but greater than or equal to the instrument detection limit.
J = The analyte was positively identified; however, the associated numerical value is an estimated concentration only.
U = The analyte was analyzed for but not detected. The associated value is the analyte instrument detection limit.
-- = Not analyzed.

TABLE 5-D

NEW YORK STATE ELECTRIC AND GAS CORPORATION
COURT STREET SITE
BINGHAMTON, NEW YORK

SUPPLEMENTAL REMEDIAL INVESTIGATION
SUBSURFACE SOIL ANALYTICAL RESULTS - MISCELLANEOUS COMPOUNDS

Location	**MW97-7**	**MW97-7**	**MW97-12S**	**TB-12**	**SB-22**	**SB-23**	**MW98-15S**	**SB-101**	**TB93-02**	**TB93-05**	**TB93-06**	**TB93-11**	**TP-05**
Depth Range	**(28.0' - 30.0')**	**(28.0' - 30.0')**	**(12.0' - 14.0')**	**(46.0' - 48.0')**	**(12 - 16')**	**(16 - 18')**	**(9 - 11')**	**(15 - 17')**	**(10 - 14')**	**(10 - 14')**	**(6 - 8.5')**	**(10 - 16')**	**(6')**
Date Sampled	**9/25/97**	**9/25/97**	**9/25/97**	**9/25/97**	**5/20/98**	**5/22/98**	**5/18/98**	**8/7/01**	**5/1/93**	**5/1/93**	**5/1/93**	**5/1/93**	**5/1/93**
Sample Type	**FS**	**DUP**	**FS**	**FS**	**FS**	**FS**	**FS**	**FS**	**FS**	**FS**	**FS**	**FS**	**FS**
Total Organic Carbon (TOC)	**18,100**	**17,700**	**25,100**	**8,200**	--	--	--	--	--	--	--	--	--
TPH as #2 Fuel Oil	--	--	--	--	--	--	--	**1,380**	--	--	--	--	--
Total Petroleum Hydrocarbons	--	--	--	--	**9,316**	**15,315**	**1,180**	--	**23,900**	**8,390**	**20,100**	**15,000**	**13,100**

Notes:
All concentrations reported in milligrams per kilogram (mg/Kg); also expressed as parts per million (ppm).
Detections are bolded.
-- = Not analyzed.

TABLE 6

NEW YORK STATE ELECTRIC AND GAS CORPORATION
COURT STREET SITE
BINGHAMTON, NEW YORK

SUPPLEMENTAL REMEDIAL INVESTIGATION
NON-AQUEOUS PHASE LIQUID ANALYTICAL RESULTS

Location Date Samples Sample Type	MW97-13S 10/13/1997 FS
Volatile Organic Compounds	
1,1,1-Trichloroethane	1.2 U
1,1,2,2-Tetrachloroethane	1.2 U
1,1,2-Trichloroethane	1.2 U
1,1-Dichloroethane	1.2 UJ
1,1-Dichloroethene	1.2 U
1,2-Dichloroethane	1.2 UJ
1,2-Dichloroethene (Total)	1.2 U
1,2-Dichloropropane	1.2 U
2-Butanone	1.2 U
2-Hexanone	1.2 U
4-Methyl-2-pentanone	1.2 U
Acetone	1.2 U
Benzene	**1,600 D**
Bromodichloromethane	1.2 U
Bromoform	1.2 U
Bromomethane	1.2 U
Carbon Disulfide	1.2 U
Carbon Tetrachloride	1.2 U
Chlorobenzene	1.2 U
Chloroethane	1.2 U
Chloroform	1.2 U
Chloromethane	1.2 U
cis-1,3-Dichloropropene	1.2 U
Dibromochloromethane	1.2 U
Ethylbenzene	**2,400 D**
Methylene chloride	1.2 U
Styrene	1.2 U
Tetrachloroethene	1.2 U
Toluene	**1,700 D**
trans-1,3-Dichloropropene	1.2 U
Trichloroethene	1.2 U
Vinyl Acetate	1.2 U
Vinyl chloride	1.2 U
Xylenes, Total	**2,300 D**
Semivolatile Organic Compounds	
1,2,4-Trichlorobenzene	R
1,2-Dichlorobenzene	R
1,3-Dichlorobenzene	R
1,4-Dichlorobenzene	R
2,4,5-Trichlorophenol	R
2,4,6-Trichlorophenol	R
2,4-Dichlorophenol	R
2,4-Dimethylphenol	R
2,4-Dinitrophenol	R
2,4-Dinitrotoluene	R
2,6-Dinitrotoluene	R
2-Chloronaphthalene	R
2-Chlorophenol	R
2-Methylnaphthalene	**450 J**
2-Methylphenol	R
2-Nitroaniline	R
2-Nitrophenol	R
3,3'-Dichlorobenzidine	R
3-Nitroaniline	R
4,6-Dinitro-2-methylphenol	R

See Notes on Page 4.

TABLE 6

NEW YORK STATE ELECTRIC AND GAS CORPORATION
COURT STREET SITE
BINGHAMTON, NEW YORK

SUPPLEMENTAL REMEDIAL INVESTIGATION
NON-AQUEOUS PHASE LIQUID ANALYTICAL RESULTS

Location Date Samples Sample Type	MW97-13S 10/13/1997 FS
4-Bromophenyl phenyl ether	R
4-Chloro-3-methylphenol	R
4-Chloroaniline	R
4-Chlorophenyl-phenylether	R
4-Methylphenol	R
4-Nitroaniline	R
4-Nitrophenol	R
Acenaphthene	**140 J**
Acenaphthylene	**26 J**
Anthracene	**77 J**
Benzo(a)anthracene	**50 J**
Benzo(a)pyrene	**42 J**
Benzo(b)fluoranthene	**16 J**
Benzo(ghi)perylene	**23 J**
Benzo(k)fluoranthene	**26 J**
Benzoic Acid	R
Benzyl Alcohol	R
Bis(2-chloroethoxy) methane	R
Bis(2-chloroethyl) ether	R
Bis(2-ethylhexyl) phthalate	R
Bis(2-chloroisopropyl) ether	R
Butyl benzyl phthalate	R
Chrysene	**39 J**
Di-n-butyl phthalate	R
Di-n-octyl phthalate	R
Dibenzo(a,h)anthracene	R
Dibenzofuran	**14 J**
Diethyl phthalate	R
Dimethyl phthalate	R
Fluoranthene	**96 J**
Fluorene	**100 J**
Hexachlorobenzene	R
Hexachlorobutadiene	R
Hexachlorocyclopentadiene	R
Hexachloroethane	R
Indeno(1,2,3-cd)pyrene	**15 J**
Isophorone	R
N-Nitroso-Di-n-propylamine	R
N-nitrosodiphenylamine	R
Naphthalene	**730 J**
Nitrobenzene	R
Pentachlorophenol	R
Phenanthrene	**310 J**
Phenol	**16 J**
Pyrene	**160 J**
Inorganics	
Aluminum	**6.8 B**
Antimony	0.29 UJ
Arsenic	**3.1**
Barium	0.44 U
Beryllium	0.06 U
Cadmium	0.03 UJ
Calcium	**58 B**
Chromium	**0.18 B**
Cobalt	0.21 U
Copper	**0.76 B**

See Notes on Page 4.

TABLE 6

NEW YORK STATE ELECTRIC AND GAS CORPORATION
COURT STREET SITE
BINGHAMTON, NEW YORK

SUPPLEMENTAL REMEDIAL INVESTIGATION
NON-AQUEOUS PHASE LIQUID ANALYTICAL RESULTS

Location Date Samples Sample Type	MW97-13S 10/13/1997 FS
Iron	**13**
Lead	**1.4**
Magnesium	22.1 U
Manganese	**0.18 B**
Mercury	**0.04 B**
Nickel	0.25 UJ
Potassium	25.9 U
Selenium	**0.66**
Silver	0.08 UJ
Sodium	34.1 U
Thallium	**0.36 BJ**
Vanadium	**0.26 B**
Zinc	**3.4 J**
Cyanide, Total	0.50 U

See Notes on Page 4.

TABLE 6

NEW YORK STATE ELECTRIC AND GAS CORPORATION
COURT STREET SITE
BINGHAMTON, NEW YORK

SUPPLEMENTAL REMEDIAL INVESTIGATION
NON-AQUEOUS PHASE LIQUID ANALYTICAL RESULTS

Notes:

All concentrations reported in micrograms per liter (ug/L); also expressed as parts per billion (ppb).
Detections are bolded.
ND = Not detected.
B = The reported value was obtained from a reading less than the contract required detection limit (CRDL) but greater than or equal to the instrument detection limit.
D = Concentration is based on a diluted sample analysis.
J = The compound was positively identified; however, the associated numerical value is an estimated concentration only.
R = The sample results are rejected.
U = The compound was analyzed for but not detected. The associated value is the compound quantitation limit.

TABLE 7

NEW YORK STATE ELECTRIC AND GAS CORPORATION
COURT STREET SITE
BINGHAMTON, NEW YORK

SUPPLEMENTAL REMEDIAL INVESTIGATION
STORM SEWER WATER ANALYTICAL RESULTS

Location Date Sampled Sample Type	MH-1 10/13/1997 FS	MH-2 10/13/1997 FS	MH-3 10/13/1997 FS
Volatile Organic Compounds			
1,1,1-Trichloroethane	**53**	**51**	**38**
1,1-Dichloroethane	**13. J**	**12. J**	**8. J**
Acetone	**10**	**44**	10. U
Benzene	10. U	10. U	**4. J**
Ethylbenzene	10. U	10. U	**1. J**
Total BTEX	ND	ND	**5**
Inorganics			
Aluminum	**61.4 B**	**54.8 B**	**68.9 B**
Arsenic	**3. B**	2.4 U	2.4 U
Barium	**506**	**497**	**468**
Calcium	**145,000**	**144,000**	**135,000**
Copper	**2.7 B**	**4.2 B**	**5.6 B**
Iron	15.3 UJ	15.3 UJ	15.3 UJ
Lead	1.9 UJ	1.9 UJ	1.9 UJ
Magnesium	**15,500**	**15,500**	**14,600**
Manganese	**705**	**687**	**632**
Mercury	**0.10 B**	**0.08 B**	**0.08 B**
Potassium	**15,700**	**15,500**	**14,700**
Sodium	**778,000**	**813,000**	**746,000**
Zinc	**33.3**	**51.5**	**42.2**

Notes:

All concentrations reported in micrograms per liter (ug/L); also expressed as parts per billion (ppb).

Detections are bolded.

ND = Not Detected.

B = The reported value was obtained from a reading less than the contract required detection limit (CRDL) but greater than or equal to the instrument detection limit.

J = The compound/analyte was positively identified; however, the associated numerical value is an estimated concentration only.

U = The compound/analyte was analyzed for but not detected. The associated value is the compound quantitation/analyte instrument detection limit.

Semivolatile organic compounds were analyzed for, but not detected.

TABLE 8-A

NEW YORK STATE ELECTRIC AND GAS CORPORATION
COURT STREET SITE
BINGHAMTON, NEW YORK

SUPPLEMENTAL REMEDIAL INVESTIGATION
SURFACE SOIL ANALYTICAL RESULTS - DETECTED VOLATILE ORGANIC COMPOUNDS

Location	**SF-01**	**SF-02**	**SF-03**	**SF-04**	**SF-05**	**SF-05**	**SS0-1**	**SS0-1**	**SS0-2**	**SS0-3**
Depth Range	**(0 - 2")**	**(0 - 2")**	**(0 - 2")**	**(0 - 2")**	**(0 - 2")**	**(0 - 2")**	**(0 - 2")**	**(0 - 2")**	**(0 - 2")**	**(0 - 2")**
Date Samples	**5/1/93**	**5/1/93**	**5/1/93**	**5/1/93**	**5/1/93**	**5/1/93**	**9/15/97**	**9/19/97**	**9/15/97**	**9/15/97**
Sample Type	**FS**	**FS**	**FS**	**FS**	**FS**	**DUP**	**FS**	**FS**	**FS**	**FS**
Ethylbenzene	0.005 U	0.006 U	0.005 U	0.005 U	0.006 U	0.006 U	**0.001 JN**	0.01 U	0.01 U	0.01 U
Tetrachloroethene	0.005 U	0.006 U	0.005 U	0.005 U	0.006 U	0.006 U	**0.005 J**	0.01 U	0.01 U	**0.002 JN**
Xylenes, Total	0.005 U	0.006 U	0.005 U	0.005 U	0.006 U	0.006 U	**0.02**	0.01 U	0.01 U	0.01 U
Total BTEX	ND	ND	ND	ND	ND	ND	**0.02**	ND	ND	ND

Notes:

All concentrations reported in milligrams per kilogram (mg/Kg); also expressed as parts per million (ppm).
Detections are bolded.
ND = Not detected.
J = The compound was positively identified; however, the associated numerical value is an estimated concentration only.
N = The analysis indicates the presence of a compound for which there is presumptive evidence to make a tentative identification.
U = The compound was analyzed for but not detected. The associated value is the compound quantitation limit.

TABLE 8-B

NEW YORK STATE ELECTRIC AND GAS CORPORATION
COURT STREET SITE
BINGHAMTON, NEW YORK

SUPPLEMENTAL REMEDIAL INVESTIGATION
SURFACE SOIL ANALYTICAL RESULTS - DETECTED SEMIVOLATILE ORGANIC COMPOUNDS

Location	SF-01	SF-02	SF-03	SF-04	SF-05	SF-05	SS0-1	SS0-1	SS0-2	SS0-3
Depth Range	(0 - 2")	(0 - 2")	(0 - 2")	(0 - 2")	(0 - 2")	(0 - 2")	(0 - 2")	(0 - 2")	(0 - 2")	(0 - 2")
Date Sampled	5/1/93	5/1/93	5/1/93	5/1/93	5/1/93	5/1/93	9/15/97	9/19/97	9/15/97	9/15/97
Sample Type	FS	FS	FS	FS	FS	DUP	FS	FS	FS	FS
2-Methylnaphthalene	**0.03 J**	0.37 U	**0.06 J**	0.35 U	**0.02 J**	0.37 U	**0.22 J**	0.43 U	**0.10 J**	0.72 U
Acenaphthene	**0.31 J**	**0.05 J**	**0.21 J**	0.35 U	**0.13 J**	**0.10 J**	**0.33 J**	**0.05 J**	**0.05 J**	**0.09 J**
Acenaphthylene	0.34 U	**0.06 J**	**0.12 J**	0.35 U	**0.06 J**	**0.04 J**	**0.96 J**	**0.30 J**	**0.57**	0.72 U
Anthracene	**0.43**	**0.14 J**	**0.46**	0.35 U	**0.27 J**	**0.21 J**	**0.79 J**	**0.16 J**	**0.24 J**	**0.23 J**
Benzo(a)anthracene	**0.63**	**0.63**	**1.8**	**0.076 J**	**1.3**	**1**	**2.1**	**0.72**	**0.73**	**1.1**
Benzo(a)pyrene	**0.45**	**0.58**	**1.4**	**0.059 J**	**1.2**	**0.91**	**2**	**0.98**	**1.1**	**1.1**
Benzo(b)fluoranthene	**0.59**	**0.87**	**2.3**	**0.11 J**	**1.9**	**1.6**	**1.6**	**0.61**	**0.82**	**0.87**
Benzo(ghi)perylene	**0.20 J**	**0.28 J**	**0.55**	0.35 U	**0.51**	**0.38**	**1.8**	**0.82 J**	**0.22 J**	**0.54 J**
Benzo(k)fluoranthene	**0.29 J**	**0.31 J**	**0.62**	0.35 U	**0.7**	**0.41**	**1.3 J**	**0.69**	**0.87**	**0.8**
Benzoic Acid	0.85 U	0.94 U	0.90 U	0.89 U	0.96 U	0.94 U	7.8 UJ	**0.04 J**	2.1 UJ	3.6 UJ
Bis(2-ethylhexyl) phthalate	**0.06 J**	**0.09 J**	**0.58**	**0.35**	**0.20 J**	**0.09 J**	**0.32 J**	**0.08 J**	**0.06 J**	**0.13 J**
Chrysene	**0.58**	**0.56**	**1.5**	**0.08 J**	**1.3**	**0.99**	**2.4**	**0.8**	**0.92**	**1.4**
Di-n-butyl phthalate	**0.02 J**	0.37 U	**0.06 J**	**0.13 J**	**0.02 J**	**0.07 J**	1.6 U	0.43 U	0.42 UJ	0.72 U
Dibenzo(a,h)anthracene	**0.06 J**	0.37 U	**0.19 J**	0.35 U	**0.16 J**	**0.12 J**	**0.16 J**	**0.07 J**	0.42 U	0.72 U
Dibenzofuran	**0.19 J**	**0.02 J**	**0.07 J**	0.35 U	**0.04 J**	**0.03 J**	**0.35 J**	0.43 U	0.42 U	0.72 U
Dimethyl phthalate	0.34 U	**0.09 J**	0.36 U	0.35 U	0.38 U	0.37 U	1.6 U	0.43 U	0.42 U	0.72 U
Fluoranthene	**1.7**	**1**	**2.7**	**0.25 J**	**2.3**	**1.9**	**4.5**	**1.1**	**1.8 J**	**2.6**
Fluorene	**0.32 J**	**0.05 J**	**0.19 J**	0.35 U	**0.10 J**	**0.08 J**	**0.53 J**	0.43 U	**0.06 J**	**0.10 J**
Indeno(1,2,3-cd)pyrene	**0.22 J**	**0.24 J**	**0.61**	**0.037 J**	**0.55**	**0.39**	**1.5 J**	**0.67**	**0.24 J**	**0.60 J**
Naphthalene	**0.04 J**	0.37 U	**0.06 J**	**0.02 J**	0.38 U	0.37 U	**0.48 J**	0.43 U	0.42 U	0.72 U
Phenanthrene	**1.8**	**0.58**	**1.6**	**0.25 JB**	**1.2**	**1**	**4**	**0.67**	**0.61 J**	**1.2**
Pyrene	**1.2**	**1.3**	**3.4**	**0.19 J**	**2.4**	**2**	**3.2**	**1.6**	**0.91**	**1.6**
Total PAHs	**8.8**	**6.6**	**17.8**	**1.1**	**14.1**	**11.1**	**27.9**	**9.2**	**9.2**	**12.2**
Total Semivolatiles	**9.1**	**6.8**	**21.2**	**1.3**	**14.4**	**11.3**	**28.5**	**9.4**	**9.3**	**12.4**

Notes:
All concentrations reported in milligrams per kilogram (mg/Kg); also expressed as parts per million (ppm).
Detections are bolded.
J = The compound was positively identified; however, the associated numerical value is an estimated concentration only.
U = The compound was analyzed for but not detected. The associated value is the compound quantitation limit.

TABLE 8-C

NEW YORK STATE ELECTRIC AND GAS CORPORATION
COURT STREET SITE
BINGHAMTON, NEW YORK

SUPPLEMENTAL REMEDIAL INVESTIGATION
SURFACE SOIL ANALYTICAL RESULTS - DETECTED INORGANIC COMPOUNDS

Location Depth Range Date Sampled Sample Type	SF-01 (0 - 2") 5/1/93 FS	SF-02 (0 - 2") 5/1/93 FS	SF-03 (0 - 2") 5/1/93 FS	SF-04 (0 - 2") 5/1/93 FS	SF-05 (0 - 2") 5/1/93 FS	SF-05 (0 - 2") 5/1/93 DUP	SS0-1 (0 - 2") 9/15/97 FS	SS0-1 (0 - 2") 9/19/97 FS	SS0-2 (0 - 2") 9/15/97 FS	SS0-3 (0 - 2") 9/15/97 FS
Aluminum	**7,050**	**5,250**	**9,040**	**8,260**	**8,140**	**7,450**	**8,730**	**10,600**	**9,800**	**7,720**
Antimony	0.31 U	0.33 U	**0.45 J**	0.32 U	0.34 U	0.33 U	**1.9 BJ**	**1.6 BJ**	**0.86 BJ**	**5.6 BJ**
Arsenic	**3.7**	**5.5**	**8.7**	**8**	**5.5**	**6**	**8.4 J**	**7.3 J**	**6.5 J**	**6.9 J**
Barium	**41.5**	**37.2**	**68.5**	**39.2**	**57.6**	**49.3**	**86.8**	**81.1**	**76.2**	**49.3**
Beryllium	--	--	--	--	--	--	**0.28 B**	**0.42 B**	**0.36 B**	**0.22 B**
Cadmium	0.41 U	0.44 U	**1.1**	0.42 U	**1.4**	**0.78 J**	**2.4**	0.06 UJ	**0.20 B**	**0.28 B**
Calcium	--	--	--	--	--	--	**11,500**	**3,920**	**4,480**	**21,800**
Chromium	**9.8**	**8.1**	**15.2**	**12.1**	**14.5**	**14.7**	**27.7**	**16.5**	**15**	**11.9**
Cobalt	--	--	--	--	--	--	**8.6**	**9.1**	**8.3**	**6.9**
Copper	**18.9**	**17.4**	**33.1**	**18.3**	**25.5**	**21.3**	**32**	**24.8**	**23.5**	**22.9**
Iron	**16,000**	**13,000**	**24,700**	**19,500**	**15,100**	**14,500**	**22,900**	**21,700**	**20,100**	**19,300**
Lead	**13.1**	**56.1**	**142**	**15.9**	**93.9**	**117**	**186**	**107**	**90.7**	**52.8**
Magnesium	--	--	--	--	--	--	**4,030**	**3,850**	**3,870**	**5,020**
Manganese	**391**	**378**	**579**	**458**	**418**	**382**	**449 J**	**574**	**529 J**	**437 J**
Mercury	0.05 U	**0.43**	**9.8**	0.05 U	**0.29**	**0.13**	**11.4 J**	**0.25**	**0.23 J**	**0.15 J**
Nickel	**15.5**	**11.6**	**21.8**	**17.7**	**15.2**	**15.3**	**21**	**22.1**	**20.5**	**18.8**
Potassium	--	--	--	--	--	--	**896**	**978**	**1,040**	**584**
Silver	0.61 U	0.66 U	0.64 U	0.63 U	0.69 U	0.67 U	**0.23 BJ**	0.15 UJ	0.15 UJ	0.12 UJ
Sodium	--	--	--	--	--	--	**481 B**	58.5 U	**526 B**	**439 B**
Thallium	--	--	--	--	--	--	**1.6 J**	**1.6**	**1.7 J**	**4.5**
Vanadium	**12.1**	**15.4**	**13.8**	**10.5**	**15**	**16.8**	**15.3**	**15.7**	**14.8**	**12.8**
Zinc	**59.4**	**67.2**	**138**	**51**	**253**	**112**	**170**	**110**	**100**	**87.7**

Notes:
All concentrations reported in milligrams per kilogram (mg/Kg); also expressed as parts per million (ppm).
Detections are bolded.
B = The reported value was obtained from a reading less than the contract required detection limit (CRDL) but greater than or equal to the instrument detection limit.
J = The analyte was positively identified; however, the associated numerical value is an estimated concentration only.
U = The analyte was analyzed for but not detected. The associated value is the analyte instrument detection limit.

TABLE 8-D

NEW YORK STATE ELECTRIC AND GAS CORPORATION
COURT STREET SITE
BINGHAMTON, NEW YORK

SUPPLEMENTAL REMEDIAL INVESTIGATION
SURFACE SOIL ANALYTICAL RESULTS - POLYCHLORINATED BIPHENYLS

Location	**SB-123**	**SS-123**	**SS-123**	**SB-456**
Depth Range	**(0 - 2")**	**(0 - 2")**	**(0 - 2")**	**(0 - 2")**
Sample Number	**SB-022A**	**SB-022B**	**SB-025**	**SB-010**
Date Sampled	**9/18/1997**	**9/18/1997**	**9/18/1997**	**9/16/1997**
Sample Type	**FS**	**FS**	**DUP**	**FS**
Aroclor-1016	0.09 U	0.10 U	0.10 U	0.09 U
Aroclor-1221	0.13 U	0.14 U	0.14 U	0.13 U
Aroclor-1232	0.09 U	0.10 U	0.10 U	0.09 U
Aroclor-1242	0.09 U	0.10 U	0.10 U	0.09 U
Aroclor-1248	0.09 U	0.10 U	0.10 U	0.09 U
Aroclor-1254	0.09 U	0.10 U	0.10 U	0.09 U
Aroclor-1260	0.09 U	**0.07 J**	0.10 U	0.09 U

Notes:
Results reported in milligrams per kilogram (mg/Kg);
also expressed as parts per million (ppm).
Detections are bolded.
J = The compound was positively identified; however, the
associated numerical value is an estimated concentration only.
U = The compound was analyzed for but not detected.
The associated value is the compound quantitation limit.

TABLE 9-A

NEW YORK STATE ELECTRIC AND GAS CORPORATION
COURT STREET SITE
BINGHAMTON, NEW YORK

SUPPLEMENTAL REMEDIAL INVESTIGATION
SURFICIAL RIVERBED SAMPLES ANALYTICAL RESULTS

Location Depth Range Date Sampled Sample Type	Benthic Aquatic Life Toxicity Criteria (1,2) Chronic (ug/g OC)	 Acute (ug/g OC)	SS-13 (0.0' - 0.8') 6/16/1993 FS	SS-14 (0.0' - 1.0') 6/16/1993 FS	SS-01 (0.0' - 0.8') 6/16/1993 FS	SS-02 (0.0' - 0.5') 6/16/1993 FS	SS-03 (0.0' - 1.0') 6/16/1993 FS	SS-03 (0.0' - 1.0') 6/16/1993 DL	SS-04 (0.0' - 0.9') 6/16/1993 FS	SS-05 (0.0' - 0.8') 6/16/1993 FS
Volatile Organic Compounds (VOCs) (mg/Kg)										
Acetone	NA	NA	--	--	--	--	0.051	--	0.021	--
1,1,1-Trichloroethane	NA	NA	--	--	--	--	--	--	--	--
2-Butanone	NA	NA	--	--	--	--	--	--	--	--
Benzene	28	103	--	--	--	--	0.018	--	--	0.002
Ethylbenzene	24	212	--	--	--	--	0.27	--	--	--
Methylene Chloride	NA	NA	-	-	--	--	0.008	--	0.015	--
Styrene	NA	NA	--	--	--	--	--	--	--	--
Toluene	49	235	-	-	--	--	0.006	--	--	--
Xylenes, Total	92	833	--	--	--	--	0.099	--	--	--
Total BTEX	NA	NA	--	--	--	--	0.4	--	--	--
Semivolatile Organic Compounds (SVOCs) (mg/Kg)										
2-Methylnaphthalene	34	304	--	--	--	--	**55**	**55**	--	0.028
3-Nitroaniline	NA	NA	--	--	--	--	--	--	--	--
4-Methylphenol	NA	NA	--	--	--	--	--	--	--	--
4-Nitroaniline	NA	NA	--	--	--	--	--	--	--	--
4-Nitrophenol	NA	NA	--	--	--	--	--	--	--	--
Acenaphthene	140	NA	--	--	0.028	0.027	**250**	**290**	--	**0.54**
Acenaphthylene	0.044 (a)	0.64 (a)	--	--	**0.067**	--	**16**	**16**	--	--
Anthracene	107	986	--	--	0.088	0.037	**110**	**110**	--	--
Benzo(a)anthracene	12	94	0.017	0.021	**0.37**	**0.16**	**70**	**69**	0.027	**0.049**
Benzo(a)pyrene	0.37 (c)	1440 (b)	0.013	0.018	**0.42**	0.13	**87**	**84**	0.026	0.046
Benzo(b)fluoranthene	NA	NA	--	--	0.47	0.2	65	62	--	0.051
Benzo(ghi)perylene	0.17 (c)	320 (b)	--	--	**0.23**	--	**32**	**44**	--	--
Benzo(k)fluoranthene	0.24 (c)	1340 (b)	--	--	0.14	0.074	**22**	**17**	--	--
Bis(2-ethylhexyl) phthalate	199.5	NA	--	0.15	0.13	0.17	--	--	0.052	0.05
Butyl benzyl phthalate	NA	NA	--	--	--	--	--	--	--	--
Chrysene	0.34 (c)	460 (b)	--	--	**0.36**	0.16	**62**	**62**	-	0.049
Di-n-butyl phthalate	NA	NA	0.07	0.1	0.032	0.043	--	--	0.076	0.05
Di-n-octyl phthalate	NA	NA	--	--	--	--	--	--	--	--
Dibenzo(a,h)anthracene	0.06 (c)	130 (b)	--	--	0.034	**0.4**	**5.8**	**6.5**	-	-
Dibenzofuran	NA	NA	--	--	0.4	0.4	11	45	0.48	0.41
Fluoranthene	1020	NA	0.028	0.042	0.72	0.32	**170**	**190**	0.058	0.1
Fluorene	8	73	--	--	0.029	0.016	**110**	**120**	0.017	0.018
Indeno(1,2,3-cd)pyrene	0.2 (c)	320 (b)	--	--	**0.22**	0.072	**26**	**32**	--	--
N-nitrosodiphenylamine	NA	NA	--	--	--	--	--	--	--	--
Naphthalene	30	258	--	--	--	--	**120**	**130**	--	**0.18**
Phenanthrene	120	950 (b)	0.02	0.02	0.37	0.18	**270**	**400**	0.063	0.042
Pyrene	961	8775	0.023	0.035	0.79	0.26	**240**	**280**	0.049	0.12
Total PAHs	4 (a)	45 (a)	0.1	0.1	**4.3**	2.0	**1711**	**1968**	0.2	1.2
Total Semivolatiles	NA	NA	0.2	0.4	4.9	2.6	1722	2013	0.8	1.7
Inorganics (mg/Kg)										
Aluminum	NA	NA	12500	12000	6560	6000	11800	--	8920	9810
Antimony	2	25	0.42	--	--	--	--	--	--	--
Arsenic	6	33	**7.1**	**10.2**	3.9	4.1	3.2	--	1.9	3.9
Barium	NA	NA	64.9	68.5	57.5	52.7	85.4	--	63.8	58.6
Beryllium	NA	NA	- -	- -	--	--	--	--	--	--
Cadmium	0.6	9	--	--	--	--	--	--	--	--
Calcium	NA	NA	--	--	--	--	--	--	--	--
Chromium	26	110	17.2	17.5	13.3	9	15.2	--	11.9	13.4
Cobalt	NA	NA	- -	- -	--	--	--	--	--	--
Copper	16	110	**18.1**	**22.1**	**22.9**	15	**37.1**	--	13.9	13.8
Iron	20,000	40,000	**28300**	**27800**	18500	15400	19800	--	15500	**20400**
Lead	31	110	21.3	**43.5**	**89.4**	**117**	**42.1**	--	24	20.8
Magnesium	NA	NA	- -	- -	--	--	--	--	--	--
Manganese	460	1100	**517**	425	365	331	400	--	247	431
Mercury	0.15	1.3	-	-	--	--	**0.43**	--	--	--
Nickel	16	50	**25.3**	**26.8**	14.9	12.4	**20.9**	--	17.2	**19.9**
Potassium	NA	NA	- -	- -	--	--	--	--	--	--
Selenium	NA	NA	-	-	--	--	--	--	--	--
Silver	1	2.2	-	-	--	--	--	--	--	--
Sodium	NA	NA	- -	- -	--	--	--	--	--	--
Thallium	NA	NA	- -	- -	--	--	--	--	--	--
Vanadium	NA	NA	14.7	13.8	9.3	8.4	13.9	--	11.6	11.8
Zinc	120	270	82.9	101	84	65.1	92.2	--	63.4	69.3
Cyanide, Total	NA	NA	--	--	19.6	--	--	--	--	--
Miscellaneous Compounds (mg/Kg)										
TPH as #4 Fuel Oil	NA	NA	--	--	--	--	--	--	--	--
TPH as 10W40 Oil	NA	NA	--	--	--	--	--	--	--	--
Total Organic Carbon (TOC) (3)										
TOC (mg/Kg)	NA	NA	1,800	5,000	14,600	6,700	29,000	29,000	2,400	3,600
% TOC	NA	NA	0.18	0.5	1.46	0.67	2.9	2.9	0.24	0.36

See Notes on Page 9.

TABLE 9-A

NEW YORK STATE ELECTRIC AND GAS CORPORATION
COURT STREET SITE
BINGHAMTON, NEW YORK

SUPPLEMENTAL REMEDIAL INVESTIGATION
SURFICIAL RIVERBED SAMPLES ANALYTICAL RESULTS

Location	**Benthic Aquatic Life Toxicity Criteria (1,2)**		**SS-06**	**SS-07**	**SS-08**	**SS-09**	**SS-10**	**SS-10**	**SS-11**	**SS-11**
Depth Range			**(0.0' - 0.5')**	**(0.0' - 0.9')**	**(0.0' - 1.0')**	**(0.0' - 0.7')**	**(0.0' - 0.7')**	**(0.0' - 0.7')**	**(0.0' - 0.6')**	**(0.0' - 0.6')**
Date Sampled	**Chronic**	**Acute**	**6/16/1993**	**6/16/1993**	**6/16/1993**	**6/16/1993**	**6/16/1993**	**6/16/1993**	**6/16/1993**	**6/16/1993**
Sample Type	**(ug/g OC)**	**(ug/g OC)**	**FS**	**FS**	**FS**	**FS**	**FS**	**DUP**	**FS**	**DL**
Volatile Organic Compounds (VOCs) (mg/Kg)										
Acetone	NA	NA	--	0.019	0.035	0.021	0.12	0.13	--	--
1,1,1-Trichloroethane	NA	NA	--	--	--	--	--	--	--	--
2-Butanone	NA	NA	--	--	--	--	--	--	--	--
Benzene	28	103	--	--	--	--	--	--	--	--
Ethylbenzene	24	212	--	--	--	--	0.068	0.097	**12**	--
Methylene Chloride	NA	NA	-	--	-	-	-	0.025	-	-
Styrene	NA	NA	--	--	--	--	--	--	--	--
Toluene	49	235	--	--	0.006	--	--	--	--	--
Xylenes, Total	92	833	--	--	--	--	0.071	0.11	**2.4**	--
Total BTEX	NA	NA	--	--	--	--	--	--	--	--
Semivolatile Organic Compounds (SVOCs) (mg/Kg)										
2-Methylnaphthalene	34	304	0.036	--	0.078	0.25	0.65	0.63	**55**	**57**
3-Nitroaniline	NA	NA	--	--	--	--	--	--	--	--
4-Methylphenol	NA	NA	--	--	--	--	--	--	--	--
4-Nitroaniline	NA	NA	--	--	--	--	--	--	--	--
4-Nitrophenol	NA	NA	--	--	--	--	--	--	--	--
Acenaphthene	140	NA	1.2	--	0.042	0.9	2.2	2.3	**29**	**30**
Acenaphthylene	0.044 (a)	0.64 (a)	**0.82**	**0.087**	**0.21**	**0.24**	**1.6**	**1.5**	**2.5**	**2.4**
Anthracene	107	986	0.83	0.085	0.26	0.5	1	1.1	**12**	**12**
Benzo(a)anthracene	12	94	**2.8**	**0.35**	**0.91**	**1**	**1.4**	**1.4**	**6.8**	**6.5**
Benzo(a)pyrene	0.37 (c)	1440 (b)	**3.7**	**0.43**	**1.2**	**1**	**1.9**	**1.9**	**6.2**	**5.9**
Benzo(b)fluoranthene	NA	NA	3.7	0.47	1.2	1.2	1.7	1.6	5.5	5
Benzo(ghi)perylene	0.17 (c)	320 (b)	**1.4**	**0.27**	**0.58**	**0.57**	**2.1**	**2**	**2.7**	**3**
Benzo(k)fluoranthene	0.24 (c)	1340 (b)	**0.77**	0.14	**0.36**	**0.35**	**0.41**	**0.37**	**1.6**	--
Bis(2-ethylhexyl) phthalate	199.5	NA	0.075	--	--	0.094	0.2	0.14	--	--
Butyl benzyl phthalate	NA	NA	--	--	--	--	--	--	--	--
Chrysene	0.34 (c)	460 (b)	**2.9**	**0.36**	**1**	**0.98**	**1.3**	**1.2**	**6.1**	**6.1**
Di-n-butyl phthalate	NA	NA	--	0.052	0.042	0.063	--	--	--	--
Di-n-octyl phthalate	NA	NA	--	--	--	--	--	--	--	--
Dibenzo(a,h)anthracene	0.06 (c)	130 (b)	**0.32**	-	**0.096**	**0.13**	--	--	**0.6**	**0.63**
Dibenzofuran	NA	NA	0.5	0.5	0.48	0.22	0.095	0.097	-	-
Fluoranthene	1020	NA	4.3	0.59	1.8	2	2.4	2.2	16	17
Fluorene	8	73	**0.17**	0.021	0.062	**0.58**	**0.9**	**0.93**	**14**	**14**
Indeno(1,2,3-cd)pyrene	0.2 (c)	320 (b)	**1.9**	**0.26**	**0.64**	**0.56**	**1.5**	**1.5**	**2.2**	**2.3**
N-nitrosodiphenylamine	NA	NA	--	--	--	--	--	--	--	--
Naphthalene	30	258	**0.73**	0.063	0.14	**0.63**	**1.4**	**1.3**	--	**67**
Phenanthrene	120	950 (b)	**1.7**	0.25	0.7	**1.8**	2.2	2.2	**40**	**45**
Pyrene	961	8775	6	0.77	2.4	2.2	3.9	3.9	**24**	22
Total PAHs	4 (a)	45 (a)	**33.3**	**4.1**	**11.7**	**14.9**	**26.6**	**26.0**	**224**	**296**
Total Semivolatiles	NA	NA	33.9	4.7	12.2	15.3	26.9	26.3	224	296
Inorganics (mg/Kg)										
Aluminum	NA	NA	11000	10500	9390	7810	7330	9150	8690	--
Antimony	2	25	--	--	--	--	--	--	0.46	--
Arsenic	6	33	3.2	3.2	3.3	4.1	3.2	4.3	4.6	--
Barium	NA	NA	78.4	79.3	60.1	49.9	34.7	40.3	47.3	--
Beryllium	NA	NA	--	--	--	--	--	--	--	--
Cadmium	0.6	9	--	--	--	--	--	--	--	--
Calcium	NA	NA	--	--	--	--	--	--	--	--
Chromium	26	110	**47.3**	14.3	11.9	12.2	10.4	12.3	11.6	--
Cobalt	NA	NA	--	--	--	--	--	--	--	--
Copper	16	110	**24.9**	**34.5**	**21.4**	**24.5**	**32.1**	**35.1**	**27.6**	--
Iron	20,000	40,000	19300	19300	16600	16800	13900	18900	18200	--
Lead	31	110	**71.5**	**44.9**	**41.3**	**35**	**34.6**	**56.4**	**251**	--
Magnesium	NA	NA	--	--	--	--	--	--	--	--
Manganese	460	1100	319	247	255	222	153	161	230	--
Mercury	0.15	1.3	**0.18**	0.1	0.06	--	--	0.11	--	--
Nickel	16	50	**21.4**	**22.6**	**17.7**	**16.8**	14.2	**18.1**	**17.2**	--
Potassium	NA	NA	--	--	--	--	--	--	--	--
Selenium	NA	NA	--	--	--	--	--	--	--	--
Silver	1	2.2	--	--	--	--	--	--	--	--
Sodium	NA	NA	--	--	--	--	--	--	--	--
Thallium	NA	NA	--	--	--	--	--	--	--	--
Vanadium	NA	NA	12.5	12.8	11	11	9.8	10.6	10.6	--
Zinc	120	270	76.3	78.7	63.7	73.4	90.4	93	68.1	--
Cyanide, Total	NA	NA	3.7	3.9	3	2.7	2.8	3.2	--	--
Miscellaneous Compounds (mg/Kg)										
TPH as #4 Fuel Oil	NA	NA	--	--	--	--	--	--	--	--
TPH as 10W40 Oil	NA	NA	--	--	--	--	--	--	--	--
Total Organic Carbon (TOC) (3)										
TOC (mg/Kg)	NA	NA	13,800	15,000	17,000	7,400	26,000	22,900	23,400	23,400
% TOC	NA	NA	1.38	1.5	1.7	0.74	2.6	2.29	2.34	2.34

See Notes on Page 9.

TABLE 9-A

NEW YORK STATE ELECTRIC AND GAS CORPORATION
COURT STREET SITE
BINGHAMTON, NEW YORK

SUPPLEMENTAL REMEDIAL INVESTIGATION
SURFICIAL RIVERBED SAMPLES ANALYTICAL RESULTS

Location Depth Range Date Sampled Sample Type	Benthic Aquatic Life Toxicity Criteria (1,2) Chronic (ug/g OC)	 Acute (ug/g OC)	SS-12 (0.0' - 0.8') 6/16/1993 FS	SS-1-A (0.0' - 0.5') 10/10/1997 FS	SS-1-B (0.0' - 0.5') 10/10/1997 FS	SS-1-B (0.0' - 0.5') 10/10/1997 DUP	SS-3-1 (0.0' - 0.5') 10/8/1997 FS	SS-3-2 (0.0' - 0.5') 10/7/1997 FS	SS-3-3 (0.0' - 0.5') 10/8/1997 FS	SS-3-3 (0.0' - 0.5') 10/8/1997 DUP
Volatile Organic Compounds (VOCs) (mg/Kg)										
Acetone	NA	NA	0.019	--	--	--	--	--	--	--
1,1,1-Trichloroethane	NA	NA	--	0.01 UJ	0.01 UJ	0.01 UJ	0.01 U	1.4 U	0.01 U	0.01 U
2-Butanone	NA	NA	--	0.01 UJ	0.006 J	0.01 UJ	0.01 U	1.4 U	0.01 U	0.006 J
Benzene	28	103	--	0.01 U	0.01 U	0.01 U	0.03	**2.4**	0.002 J	0.004 J
Ethylbenzene	24	212	--	0.01 U	0.01 U	0.01 U	**1. D**	**120 DJ**	0.008 J	0.08 J
Methylene Chloride	NA	NA	0.007	--	--	--	--	--	--	--
Styrene	NA	NA	--	0.01 U	0.01 U	0.01 U	0.01 U	0.92 J	0.01 U	0.01 U
Toluene	49	235	0.004	0.01 U	0.01 U	0.01 U	0.004 J	**1.5**	0.01 U	0.002 JN
Xylenes, Total	92	833	--	0.01 U	0.01 U	0.01 U	0.09	**100 DJ**	0.002 J	0.02 J
Total BTEX	NA	NA	--	0.000 U	0.000 U	0.000 U	1	224	0.01	0.11
Semivolatile Organic Compounds (SVOCs) (mg/Kg)										
2-Methylnaphthalene	34	304	0.17	0.42 U	0.43 U	0.39 U	**23. D**	**49. D**	**1.3**	**2.2**
3-Nitroaniline	NA	NA	--	2.1 U	2.2 U	1.9 U	R	1.8 U	R	R
4-Methylphenol	NA	NA	--	0.42 U	0.43 U	0.39 U	0.07 J	0.37 U	0.40 U	0.39 U
4-Nitroaniline	NA	NA	--	2.1 U	2.2 U	1.9 U	R	1.8 U	R	2. U
4-Nitrophenol	NA	NA	--	2.1 U	2.2 U	1.9 U	2.2 U	1.8 U	2. U	2. U
Acenaphthene	140	NA	**1.5**	0.42 U	0.06 J	0.08 J	**68. D**	**49. D**	**5.6 D**	**6.3 DJ**
Acenaphthylene	0.044 (a)	0.64 (a)	**0.55**	0.42 U	**0.06 J**	0.39 U	**1.6**	**3.2 EJ**	**0.12 J**	**0.09 J**
Anthracene	107	986	**1.8**	0.42 U	0.33 J	0.32 J	**21. JD**	**42. D**	**3.8 D**	2.1
Benzo(a)anthracene	12	94	**2.4**	0.09 J	**1**	**0.37 J**	**8. JD**	**11. JD**	**0.7**	**0.35 J**
Benzo(a)pyrene	0.37 (c)	1440 (b)	**2.6**	0.12 J	**1.2**	**0.44**	**10. EJ**	**8.6 J**	**0.71**	**0.39 J**
Benzo(b)fluoranthene	NA	NA	3	0.42 U	1.3	0.4	0.44 U	5.4 J	0.36 J	0.19 J
Benzo(ghi)perylene	0.17 (c)	320 (b)	**1.8**	0.04 J	**0.24 J**	0.10 J	**2.7 J**	**1.5**	**0.58 J**	0.08 J
Benzo(k)fluoranthene	0.24 (c)	1340 (b)	**0.62**	0.42 U	**1**	**0.56**	**9.5 EJ**	**4.5 J**	**0.47**	**0.35 J**
Bis(2-ethylhexyl) phthalate	199.5	NA	0.05	0.42 U	0.43 U	0.39 U	0.10 J	1.1	0.09 J	0.07 J
Butyl benzyl phthalate	NA	NA	--	0.42 U	0.43 U	0.39 U	0.44 U	0.37 U	0.40 U	0.39 U
Chrysene	0.34 (c)	460 (b)	**2.3**	0.10 J	**1.2**	**0.41**	**9.6 JD**	**12. JD**	**0.92**	**0.51**
Di-n-butyl phthalate	NA	NA	0.11	0.42 U	0.43 U	0.39 U	0.44 U	0.18 J	0.40 U	0.39 U
Di-n-octyl phthalate	NA	NA	--	0.42 U	0.43 U	0.39 U	0.44 U	0.37 U	0.40 U	0.39 U
Dibenzo(a,h)anthracene	0.06 (c)	130 (b)	-	0.42 U	**0.13 J**	0.05 J	**0.77 J**	**0.49**	0.04 J	0.39 U
Dibenzofuran	NA	NA	-	0.42 U	0.43 U	0.06 J	0.08 J	2.6	0.19 J	0.19 J
Fluoranthene	1020	NA	4.9	0.24 J	2.6 D	1.9	**29. D**	**30. D**	2	1.4
Fluorene	8	73	**0.74**	0.42 U	0.10 J	0.15 J	**26. D**	**27. JD**	**2.2**	**2.2**
Indeno(1,2,3-cd)pyrene	0.2 (c)	320 (b)	**1.6**	0.04 J	**0.25 J**	0.10 J	**2.5 J**	**1.4**	**0.44 J**	0.07 J
N-nitrosodiphenylamine	NA	NA	--	0.42 U	0.43 U	0.39 U	0.44 U	0.37 UJ	0.40 U	0.39 U
Naphthalene	30	258	**1**	0.42 U	0.43 U	0.39 U	**100 D**	**86. D**	**3.7 D**	**3.7 D**
Phenanthrene	120	950 (b)	**5**	0.18 J	1.2	1.2	0.44 U	**78. D**	**6.1 D**	**4.9 D**
Pyrene	961	8775	**8.6**	0.12 J	1.1	0.69	**48. JD**	**24. D**	2.1	1.5
Total PAHs	4 (a)	45 (a)	**38.6**	0.94	**11.8**	**6.8**	**360**	**433**	**31**	**26**
Total Semivolatiles	NA	NA	38.7	0.94	11.8	6.8	360	437	31	27
Inorganics (mg/Kg)										
Aluminum	NA	NA	11600	7,360	8,770	5,340	--	--	--	--
Antimony	2	25	--	0.94 BJ	0.53 BJ	0.49 BJ	--	--	--	--
Arsenic	6	33	2.5	5.6	5.9	4.2	--	--	--	--
Barium	NA	NA	66.8	84.3	95	66.5	--	--	--	--
Beryllium	NA	NA	--	0.37 B	0.37 B	0.25 B	--	--	--	--
Cadmium	0.6	9	--	0.03 UJ	0.04 UJ	0.04 BJ	--	--	--	--
Calcium	NA	NA	--	5,910	6,730	5,020	--	--	--	--
Chromium	26	110	13.9	9.9	11.9	8.2	--	--	--	--
Cobalt	NA	NA	--	6.4	8.2	5.4 B	--	--	--	--
Copper	16	110	**30.4**	**31.7**	**27.3**	**21.2**	--	--	--	--
Iron	20,000	40,000	18900	14,800	**22,100**	12,800	--	--	--	--
Lead	31	110	**37.9**	**122**	**139**	**192**	--	--	--	--
Magnesium	NA	NA	--	2,380	3,260	2,040	--	--	--	--
Manganese	460	1100	456	330	456	299	--	--	--	--
Mercury	0.15	1.3	--	**0.26**	**0.36**	**0.24**	--	--	--	--
Nickel	16	50	**18.3**	14.2 J	**30.1 J**	11.2 J	--	--	--	--
Potassium	NA	NA	--	826	471 B	295 B	--	--	--	--
Selenium	NA	NA	--	0.26 U	0.99	0.45 B	--	--	--	--
Silver	1	2.2	--	0.09 UJ	0.34 BJ	0.79 BJ	--	--	--	--
Sodium	NA	NA	--	133 B	46.6 U	38.9 U	--	--	--	--
Thallium	NA	NA	--	0.30 UJ	0.34 UJ	0.28 UJ	--	--	--	--
Vanadium	NA	NA	14.1	14.1	13.7	9.2	--	--	--	--
Zinc	120	270	82	102 J	**130 J**	102 J	--	--	--	--
Cyanide, Total	NA	NA	--	0.63 U	0.65 U	0.58 U	0.66 U	0.57 U	0.60 U	0.59 U
Miscellaneous Compounds (mg/Kg)										
TPH as #4 Fuel Oil	NA	NA	--	94. U	98. U	87. U	1,700	7,100	89. U	200 J
TPH as 10W40 Oil	NA	NA	--	94. U	98. U	96	99. U	86. U	89. U	88. U
Total Organic Carbon (TOC) (3)										
TOC (mg/Kg)	NA	NA	7,000	--	--	--	--	--	--	--
% TOC	NA	NA	0.7	--	--	--	--	--	--	--

See Notes on Page 9.

TABLE 9-A

NEW YORK STATE ELECTRIC AND GAS CORPORATION
COURT STREET SITE
BINGHAMTON, NEW YORK

SUPPLEMENTAL REMEDIAL INVESTIGATION
SURFICIAL RIVERBED SAMPLES ANALYTICAL RESULTS

Location	Benthic Aquatic Life Toxicity Criteria (1,2)		SS-3-4	SS-3-5	SS-3-6	SS-3-7	SS-3-8	SS-3-9	SS-3-10	SS-3-11
Depth Range			(0.0' - 0.5')	(0.0' - 0.5')	(0.0' - 0.5')	(0.0' - 0.5')	(0.0' - 0.5')	(0.0' - 0.5')	(0.0' - 0.5')	(0.0' - 0.5')
Date Sampled	Chronic	Acute	10/7/1997	10/7/1997	10/7/1997	10/7/1997	10/8/1997	10/8/1997	10/8/1997	10/8/1997
Sample Type	(ug/g OC)	(ug/g OC)	FS	FS	FS	FS	FS	FS	FS	FS
Volatile Organic Compounds (VOCs) (mg/Kg)										
Acetone	NA	NA	--	--	--	--	--	--	--	--
1,1,1-Trichloroethane	NA	NA	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U
2-Butanone	NA	NA	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.002 JN
Benzene	28	103	0.01 U	0.004 J	0.004 J	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U
Ethylbenzene	24	212	0.01 U	**3.3 DJ**	0.04	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U
Methylene Chloride	NA	NA	--	--	--	--	--	--	--	--
Styrene	NA	NA	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U
Toluene	49	235	0.01 U	0.002 JN	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.001 JN
Xylenes, Total	92	833	0.01 U	0.06	0.01 J	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U
Total BTEX	NA	NA	0.000 U	3.4	0.06	0.000 U	0.000 U	0.000 U	0.000 U	0.001
Semivolatile Organic Compounds (SVOCs) (mg/Kg)										
2-Methylnaphthalene	34	304	0.37 U	**20. JD**	**10. JD**	0.37 U	0.43 U	0.37 U	0.37 U	**3.6**
3-Nitroaniline	NA	NA	1.8 U	1.8 U	1.8 U	1.8 U	R	R	R	R
4-Methylphenol	NA	NA	0.37 U	0.37 U	0.37 U	0.37 U	0.43 U	0.37 U	0.37 UJ	0.75 U
4-Nitroaniline	NA	NA	1.8 U	1.8 U	1.8 U	1.8 U	R	R	R	3.7 U
4-Nitrophenol	NA	NA	1.8 U	1.8 U	1.8 U	1.8 U	2.2 U	1.8 U	1.8 U	3.7 U
Acenaphthene	140	NA	0.61	**47. D**	**35. D**	0.94	0.43 U	0.37 U	0.37 U	**17. JD**
Acenaphthylene	0.044 (a)	0.64 (a)	0.37 U	**0.45**	**1.3**	0.37 U	0.43 U	0.37 U	0.37 U	**0.78**
Anthracene	107	986	0.10 J	**5.7 J**	**4.6 J**	0.04 J	0.43 U	0.37 U	0.37 U	**13. JD**
Benzo(a)anthracene	12	94	0.08 J	**2.2**	**4.3 EJ**	0.37 U	0.43 U	0.37 U	0.05 J	**6.8 EJ**
Benzo(a)pyrene	0.37 (c)	1440 (b)	0.09 J	**2.4**	**5. EJ**	0.04 J	0.43 U	0.37 U	0.06 J	**6.6 EJ**
Benzo(b)fluoranthene	NA	NA	0.37 U	0.99	2	0.37 U	0.43 U	0.37 U	0.37 U	3.4
Benzo(ghi)perylene	0.17 (c)	320 (b)	0.06 J	**1.3**	**2.2**	0.37 U	R	R	0.04 J	**1.5 J**
Benzo(k)fluoranthene	0.24 (c)	1340 (b)	0.05 J	**1.4**	**2.2**	0.37 U	0.43 U	0.37 U	0.37 U	**4**
Bis(2-ethylhexyl) phthalate	199.5	NA	0.39	0.08 J	0.37 U	0.04 J	0.43 U	0.37 U	0.11 J	0.23 J
Butyl benzyl phthalate	NA	NA	0.37 U	0.37 U	0.37 U	0.37 U	0.43 U	0.37 U	0.37 U	0.75 U
Chrysene	0.34 (c)	460 (b)	0.08 J	**2.2**	**3.6 EJ**	0.37 U	0.43 U	0.37 U	0.06 J	**7.8 EJ**
Di-n-butyl phthalate	NA	NA	0.15 J	0.37 U	0.37 U	0.37 U	0.43 U	0.37 U	0.37 U	0.75 U
Di-n-octyl phthalate	NA	NA	0.06 J	0.37 U	0.37 U	0.37 U	0.43 U	0.10 J	0.37 U	0.75 U
Dibenzo(a,h)anthracene	0.06 (c)	130 (b)	0.37 U	**0.22 J**	**0.56**	0.37 U	R	R	R	**0.16 J**
Dibenzofuran	NA	NA	0.37 U	0.37 U	0.37 U	0.37 U	0.43 U	0.37 U	0.37 U	0.48 J
Fluoranthene	1020	NA	0.28 J	10. JD	18. UD	0.09 J	0.43 U	0.37 U	0.09 J	**24. D**
Fluorene	8	73	**0.18 J**	**12. JD**	13. UD	**0.18 J**	0.43 U	0.37 U	0.37 U	**12. JD**
Indeno(1,2,3-cd)pyrene	0.2 (c)	320 (b)	0.04 J	**0.95**	**1.8**	0.37 U	R	R	R	**1.3 J**
N-nitrosodiphenylamine	NA	NA	0.37 U	0.37 U	0.37 U	0.37 U	0.43 U	0.37 U	0.37 U	0.75 U
Naphthalene	30	258	0.37 U	**94. D**	**21. D**	0.04 J	0.43 U	0.37 U	0.04 J	**1.6**
Phenanthrene	120	950 (b)	0.66	**26. JD**	**40. D**	0.34 J	0.43 U	0.37 U	0.08 J	**42. D**
Pyrene	961	8775	0.38	7.6 EJ	16. UD	0.13 J	0.43 U	0.37 U	0.12 J	**28. D**
Total PAHs	4 (a)	45 (a)	2.6	**234**	**134**	1.8	ND	ND	0.54	**174**
Total Semivolatiles	NA	NA	3.2	234	134	1.8	ND	ND	5.4	174
Inorganics (mg/Kg)										
Aluminum	NA	NA	--	--	--	--	--	--	--	--
Antimony	2	25	--	--	--	--	--	--	--	--
Arsenic	6	33	--	--	--	--	--	--	--	--
Barium	NA	NA	--	--	--	--	--	--	--	--
Beryllium	NA	NA	--	--	--	--	--	--	--	--
Cadmium	0.6	9	--	--	--	--	--	--	--	--
Calcium	NA	NA	--	--	--	--	--	--	--	--
Chromium	26	110	--	--	--	--	--	--	--	--
Cobalt	NA	NA	--	--	--	--	--	--	--	--
Copper	16	110	--	--	--	--	--	--	--	--
Iron	20,000	40,000	--	--	--	--	--	--	--	--
Lead	31	110	--	--	--	--	--	--	--	--
Magnesium	NA	NA	--	--	--	--	--	--	--	--
Manganese	460	1100	--	--	--	--	--	--	--	--
Mercury	0.15	1.3	--	--	--	--	--	--	--	--
Nickel	16	50	--	--	--	--	--	--	--	--
Potassium	NA	NA	--	--	--	--	--	--	--	--
Selenium	NA	NA	--	--	--	--	--	--	--	--
Silver	1	2.2	--	--	--	--	--	--	--	--
Sodium	NA	NA	--	--	--	--	--	--	--	--
Thallium	NA	NA	--	--	--	--	--	--	--	--
Vanadium	NA	NA	--	--	--	--	--	--	--	--
Zinc	120	270	--	--	--	--	--	--	--	--
Cyanide, Total	NA	NA	0.59 U	0.64 U	0.57 U	0.59 U	0.65 U	0.55 U	0.55 U	0.56 U
Miscellaneous Compounds (mg/Kg)										
TPH as #4 Fuel Oil	NA	NA	89. U	670	150	89. U	98. U	3,900 J	83. U	84. U
TPH as 10W40 Oil	NA	NA	89. U	97. U	85. U	89. U	98. U	82. U	83. U	690
Total Organic Carbon (TOC) (3)										
TOC (mg/Kg)	NA	NA	--	14,200	--	--	11,100	--	--	--
% TOC	NA	NA	--	1.42	--	--	1.11	--	--	--

See Notes on Page 9.

TABLE 9-A

NEW YORK STATE ELECTRIC AND GAS CORPORATION
COURT STREET SITE
BINGHAMTON, NEW YORK

SUPPLEMENTAL REMEDIAL INVESTIGATION
SURFICIAL RIVERBED SAMPLES ANALYTICAL RESULTS

Location Depth Range Date Sampled Sample Type	Benthic Aquatic Life Toxicity Criteria (1,2) Chronic (ug/g OC)	 Acute (ug/g OC)	SS-3-12 (0.0' - 0.5') 10/8/1997 FS	SS-3-13 (0.0' - 0.5') 10/8/1997 FS	SS-3-14 (0.0' - 0.5') 10/8/1997 FS	SS-12-1 (0.0' - 0.5') 10/9/1997 FS	SS-12-2 (0.0' - 0.5') 10/9/1997 FS	SS-12-3 (0.0' - 0.5') 10/9/1997 FS	SS-12-4 (0.0' - 0.5') 10/9/1997 FS	SS-12-5 (0.0' - 0.5') 10/10/1997 FS
Volatile Organic Compounds (VOCs) (mg/Kg)										
Acetone	NA	NA	--	--	--	--	--	--	--	--
1,1,1-Trichloroethane	NA	NA	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 UJ	0.01 UJ
2-Butanone	NA	NA	0.004 JN	0.004 JN	0.004 JN	0.01 U	0.01 U	0.01 U	0.01 UJ	0.01 UJ
Benzene	28	103	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U
Ethylbenzene	24	212	0.01 U	0.01 U	0.01 U	0.02	0.001 JN	0.01 U	0.01 U	0.01 U
Methylene Chloride	NA	NA	--	--	--	--	--	--	--	--
Styrene	NA	NA	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U
Toluene	49	235	0.01 U	0.001 JN	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U
Xylenes, Total	92	833	0.01 U	0.01 U	0.01 U	0.002 J	0.01 U	0.01 U	0.01 U	0.01 U
Total BTEX	NA	NA	0.000 U	0.001	0.000 U	0.02	0.001	0.000 U	0.000 U	0.000 U
Semivolatile Organic Compounds (SVOCs) (mg/Kg)										
2-Methylnaphthalene	34	304	0.18 J	0.38 UJ	0.37 U	**0.69**	0.35 U	0.43 U	0.39 U	0.40 U
3-Nitroaniline	NA	NA	R	1.9 UJ	R	2. U	1.7 U	2.1 U	1.9 U	2. U
4-Methylphenol	NA	NA	0.37 U	0.38 UJ	0.37 U	0.40 U	0.35 U	0.43 U	0.39 U	0.40 U
4-Nitroaniline	NA	NA	1.8 U	1.9 UJ	1.9 U	2. U	1.7 U	2.1 U	1.9 U	2. U
4-Nitrophenol	NA	NA	1.8 U	1.9 UJ	1.9 U	2. U	1.7 U	2.1 U	1.9 U	2. U
Acenaphthene	140	NA	2.8	0.38 UJ	0.37 U	0.68	0.07 J	0.40 J	0.39 U	0.40 U
Acenaphthylene	0.044 (a)	0.64 (a)	**0.21 J**	0.38 UJ	0.37 U	**0.06 J**	0.35 U	0.43 U	0.39 U	0.40 U
Anthracene	107	986	1.3	0.38 UJ	0.37 U	0.24 J	0.35 U	0.05 J	0.39 U	0.40 U
Benzo(a)anthracene	12	94	**1.3**	0.38 UJ	0.09 J	0.15 J	0.35 U	0.07 J	0.39 U	0.40 U
Benzo(a)pyrene	0.37 (c)	1440 (b)	**1.6**	0.38 UJ	0.10 J	0.18 J	0.04 J	0.12 J	0.39 U	0.40 U
Benzo(b)fluoranthene	NA	NA	1.1	0.38 UJ	0.09 J	0.07 J	0.35 U	0.08 J	0.39 U	0.40 U
Benzo(ghi)perylene	0.17 (c)	320 (b)	**0.39 J**	0.38 UJ	R	0.10 J	0.35 U	**0.23 J**	0.39 U	0.40 U
Benzo(k)fluoranthene	0.24 (c)	1340 (b)	**1.3**	0.38 UJ	0.13 J	0.10 J	0.35 U	0.08 J	0.39 U	0.40 U
Bis(2-ethylhexyl) phthalate	199.5	NA	0.09 J	0.06 J	0.17 J	0.40 U	0.08 J	0.43 U	0.39 U	0.40 U
Butyl benzyl phthalate	NA	NA	0.37 U	0.38 UJ	0.37 U	0.40 U	0.35 U	0.43 U	0.39 U	0.40 U
Chrysene	0.34 (c)	460 (b)	**1.6**	0.38 UJ	0.12 J	0.17 J	0.35 U	0.12 J	0.39 U	0.40 U
Di-n-butyl phthalate	NA	NA	0.37 U	0.38 UJ	0.37 U	0.40 U	0.35 U	0.43 U	0.39 U	0.40 U
Di-n-octyl phthalate	NA	NA	0.37 U	0.38 UJ	0.37 U	0.40 U	0.35 U	0.43 UJ	0.39 U	0.05 J
Dibenzo(a,h)anthracene	0.06 (c)	130 (b)	0.04 J	0.38 UJ	0.37 U	0.40 U	0.35 U	0.43 U	0.39 U	0.40 U
Dibenzofuran	NA	NA	0.33 J	0.38 UJ	0.37 U	0.40 U	0.35 U	0.43 U	0.39 U	0.40 U
Fluoranthene	1020	NA	3.8 D	0.04 J	0.22 J	0.42	0.35 U	0.21 J	0.05 J	0.40 U
Fluorene	8	73	**2.3**	0.38 UJ	0.37 U	**0.32 J**	0.35 U	**0.12 J**	0.39 U	0.40 U
Indeno(1,2,3-cd)pyrene	0.2 (c)	320 (b)	**0.39 J**	0.38 UJ	R	0.07 J	0.35 U	0.09 J	0.39 U	0.40 U
N-nitrosodiphenylamine	NA	NA	0.37 U	0.38 UJ	0.37 U	0.40 U	0.35 U	0.43 U	0.39 U	0.40 U
Naphthalene	30	258	0.5	0.38 UJ	0.37 U	**0.62**	0.35 U	0.07 J	0.39 U	0.40 U
Phenanthrene	120	950 (b)	**3.9 D**	0.38 UJ	0.11 J	1.3	0.35 U	0.20 J	0.39 U	0.40 U
Pyrene	961	8775	3.5 D	0.38 UJ	0.18 J	0.57	0.04 J	0.29 J	0.39 U	0.40 U
Total PAHs	4 (a)	45 (a)	**26**	0.04	1	**6**	0.15	2.1	0.05	ND
Total Semivolatiles	NA	NA	28.8	0.1	4.2	6	0.24	2.1	0.05	0.05
Inorganics (mg/Kg)										
Aluminum	NA	NA	--	--	--	--	--	--	--	--
Antimony	2	25	--	--	--	--	--	--	--	--
Arsenic	6	33	--	--	--	--	--	--	--	--
Barium	NA	NA	--	--	--	--	--	--	--	--
Beryllium	NA	NA	--	--	--	--	--	--	--	--
Cadmium	0.6	9	--	--	--	--	--	--	--	--
Calcium	NA	NA	--	--	--	--	--	--	--	--
Chromium	26	110	--	--	--	--	--	--	--	--
Cobalt	NA	NA	--	--	--	--	--	--	--	--
Copper	16	110	--	--	--	--	--	--	--	--
Iron	20,000	40,000	--	--	--	--	--	--	--	--
Lead	31	110	--	--	--	--	--	--	--	--
Magnesium	NA	NA	--	--	--	--	--	--	--	--
Manganese	460	1100	--	--	--	--	--	--	--	--
Mercury	0.15	1.3	--	--	--	--	--	--	--	--
Nickel	16	50	--	--	--	--	--	--	--	--
Potassium	NA	NA	--	--	--	--	--	--	--	--
Selenium	NA	NA	--	--	--	--	--	--	--	--
Silver	1	2.2	--	--	--	--	--	--	--	--
Sodium	NA	NA	--	--	--	--	--	--	--	--
Thallium	NA	NA	--	--	--	--	--	--	--	--
Vanadium	NA	NA	--	--	--	--	--	--	--	--
Zinc	120	270	--	--	--	--	--	--	--	--
Cyanide, Total	NA	NA	0.56 U	0.57 U	0.56 U	0.60 U	0.52 U	0.64 U	0.58 U	0.60 U
Miscellaneous Compounds (mg/Kg)										
TPH as #4 Fuel Oil	NA	NA	83. U	85. U	84. U	180	78. U	96. U	88. U	91. U
TPH as 10W40 Oil	NA	NA	83. U	85. U	84. U	89. U	78. U	96. U	88. U	91. U
Total Organic Carbon (TOC) (3)										
TOC (mg/Kg)	NA	NA	--	--	--	--	--	9,800	--	--
% TOC	NA	NA	--	--	--	--	--	0.98	--	--

See Notes on Page 9.

TABLE 9-A

NEW YORK STATE ELECTRIC AND GAS CORPORATION
COURT STREET SITE
BINGHAMTON, NEW YORK

SUPPLEMENTAL REMEDIAL INVESTIGATION
SURFICIAL RIVERBED SAMPLES ANALYTICAL RESULTS

Location	Benthic Aquatic Life Toxicity Criteria (1,2)		SS-12-6	SS-12-7	SR-101	SR-102	SR-102	SR-104	SR-105
Depth Range			(0.0' - 0.5')	(0.0' - 0.5')	(0 - 2')	(0 - 2')	(0 - 2')	(0 - 1')	(0 - 2')
Date Sampled	Chronic	Acute	10/10/1997	10/10/1997	8/16/2001	8/21/2001	8/21/2001	8/23/2001	8/24/2001
Sample Type	(ug/g OC)	(ug/g OC)	FS	FS	FS	FS	DUP	FS	FS
Volatile Organic Compounds (VOCs) (mg/Kg)									
Acetone	NA	NA	--	--	--	--	--	--	--
1,1,1-Trichloroethane	NA	NA	0.01 UJ	0.01 UJ	--	--	--	--	--
2-Butanone	NA	NA	0.01 UJ	0.02 J	--	--	--	--	--
Benzene	28	103	0.01 U	0.01 U	0.005 U	0.06 U	0.04 U	0.005 U	0.006 U
Ethylbenzene	24	212	0.01 U	0.01 U	0.005 U	0.16	0.19	0.005 U	0.006 U
Methylene Chloride	NA	NA	--	--	--	--	--	--	--
Styrene	NA	NA	0.01 U	0.01 U	--	--	--	--	--
Toluene	49	235	0.01 U	0.01 U	0.005 U	0.06 U	0.04 U	0.005 U	0.006 U
Xylenes, Total	92	833	0.01 U	0.01 U	--	--	--	--	--
Total BTEX	NA	NA	0.000 U	0.000 U	0.000 U	0.16	0.19	0.000 U	0.000 U
Semivolatile Organic Compounds (SVOCs) (mg/Kg)									
2-Methylnaphthalene	34	304	0.44 U	0.46 U	--	--	--	--	--
3-Nitroaniline	NA	NA	2.2 U	2.3 U	--	--	--	--	--
4-Methylphenol	NA	NA	0.44 U	0.46 U	--	--	--	--	--
4-Nitroaniline	NA	NA	2.2 U	2.3 U	--	--	--	--	--
4-Nitrophenol	NA	NA	2.2 U	2.3 U	--	--	--	--	--
Acenaphthene	140	NA	0.44 U	0.15 J	0.37 U	**27**	**12**	**0.57**	0.37 U
Acenaphthylene	0.044 (a)	0.64 (a)	0.44 U	0.46 U	0.37 U	**3.2**	2. U	0.38 U	0.37 U
Anthracene	107	986	0.44 U	0.46 U	0.37 U	**23**	**10**	0.38 U	0.37 U
Benzo(a)anthracene	12	94	0.44 U	0.46 U	0.37 U	**14**	**4**	0.38 U	0.37 U
Benzo(a)pyrene	0.37 (c)	1440 (b)	0.44 U	0.46 U	0.19 J	**9.9**	**2.8**	0.38 U	0.37 U
Benzo(b)fluoranthene	NA	NA	0.44 U	0.46 U	0.19 J	6.3	1.5	0.38 U	0.37 U
Benzo(ghi)perylene	0.17 (c)	320 (b)	0.44 U	0.46 U	0.37 U	**2.5**	2. U	0.38 U	0.37 U
Benzo(k)fluoranthene	0.24 (c)	1340 (b)	0.44 U	0.46 U	0.37 U	**4.9**	**1.5**	0.38 U	0.37 U
Bis(2-ethylhexyl) phthalate	199.5	NA	0.44 U	0.46 U	--	--	--	--	--
Butyl benzyl phthalate	NA	NA	0.44 U	0.46 U	--	--	--	--	--
Chrysene	0.34 (c)	460 (b)	0.44 U	0.46 U	0.22 J	**12**	**3.6**	0.38 U	0.37 U
Di-n-butyl phthalate	NA	NA	0.44 U	0.46 U	--	--	--	--	--
Di-n-octyl phthalate	NA	NA	0.44 U	0.46 U	--	--	--	--	--
Dibenzo(a,h)anthracene	0.06 (c)	130 (b)	0.44 U	0.46 U	0.37 U	1.8 U	2. U	0.38 U	0.37 U
Dibenzofuran	NA	NA	0.44 U	0.46 U	0.37 U	7.7	2.5	0.38 U	0.37 U
Fluoranthene	1020	NA	0.44 U	0.46 U	0.39	**29**	9.2	0.38 U	0.37 U
Fluorene	8	73	0.44 U	0.07 J	0.37 U	**29**	**12**	0.38 U	0.37 U
Indeno(1,2,3-cd)pyrene	0.2 (c)	320 (b)	0.44 U	0.46 U	0.37 U	**2.2**	2. U	0.38 U	0.37 U
N-nitrosodiphenylamine	NA	NA	0.44 U	0.46 U	--	--	--	--	--
Naphthalene	30	258	0.44 U	0.46 U	0.37 U	**29**	**15**	0.38 U	0.37 U
Phenanthrene	120	950 (b)	0.44 U	0.46 U	0.37 U	**91. D**	**26**	0.38 U	0.37 U
Pyrene	961	8775	0.44 U	0.46 U	0.35 J	**25**	10	0.38 U	0.37 U
Total PAHs	4 (a)	45 (a)	ND	0.22	1.3	**308**	**108**	0.57	ND
Total Semivolatiles	NA	NA	ND	0.22	1.3	316	110	0.57	ND
Inorganics (mg/Kg)									
Aluminum	NA	NA	--	--	--	--	--	--	--
Antimony	2	25	--	--	--	--	--	--	--
Arsenic	6	33	--	--	--	--	--	--	--
Barium	NA	NA	--	--	--	--	--	--	--
Beryllium	NA	NA	--	--	--	--	--	--	--
Cadmium	0.6	9	--	--	--	--	--	--	--
Calcium	NA	NA	--	--	--	--	--	--	--
Chromium	26	110	--	--	--	--	--	--	--
Cobalt	NA	NA	--	--	--	--	--	--	--
Copper	16	110	--	--	--	--	--	--	--
Iron	20,000	40,000	--	--	--	--	--	--	--
Lead	31	110	--	--	--	--	--	--	--
Magnesium	NA	NA	--	--	--	--	--	--	--
Manganese	460	1100	--	--	--	--	--	--	--
Mercury	0.15	1.3	--	--	--	--	--	--	--
Nickel	16	50	--	--	--	--	--	--	--
Potassium	NA	NA	--	--	--	--	--	--	--
Selenium	NA	NA	--	--	--	--	--	--	--
Silver	1	2.2	--	--	--	--	--	--	--
Sodium	NA	NA	--	--	--	--	--	--	--
Thallium	NA	NA	--	--	--	--	--	--	--
Vanadium	NA	NA	--	--	--	--	--	--	--
Zinc	120	270	--	--	--	--	--	--	--
Cyanide, Total	NA	NA	0.65 U	0.69 U	0.47 U	0.53 U	0.56 U	0.55 U	0.54 U
Miscellaneous Compounds (mg/Kg)									
TPH as #4 Fuel Oil	NA	NA	98. U	103 U	--	--	--	--	--
TPH as 10W40 Oil	NA	NA	98. U	103 U	--	--	--	--	--
Total Organic Carbon (TOC) (3)									
TOC (mg/Kg)	NA	NA	28,100	--	8,701	17,811	24,835	2,322	1,723
% TOC	NA	NA	2.81	--	0.87	1.78	2.48	0.23	0.17

See Notes on Page 9.

TABLE 9-A

NEW YORK STATE ELECTRIC AND GAS CORPORATION
COURT STREET SITE
BINGHAMTON, NEW YORK

SUPPLEMENTAL REMEDIAL INVESTIGATION
SURFICIAL RIVERBED SAMPLES ANALYTICAL RESULTS

Location Depth Range Date Sampled Sample Type	Benthic Aquatic Life Toxicity Criteria (1,2) Chronic (ug/g OC)	 Acute (ug/g OC)	SR-106 (0 - 2') 8/27/2001 FS	SR-107 (0 - 2') 8/27/2001 FS	SR-108 (0 - 2') 8/28/2001 FS	SR-108 (0 - 2') 8/28/2001 DUP	SR-109 (0 - 2') 8/28/2001 FS	SR-110 (0 - 2') 8/29/2001 FS	SR-111 (0 - 2') 8/29/2001 FS
Volatile Organic Compounds (VOCs) (mg/Kg)									
Acetone	NA	NA	--	--	--	--	--	--	--
1,1,1-Trichloroethane	NA	NA	--	--	--	--	--	--	--
2-Butanone	NA	NA	--	--	--	--	--	--	--
Benzene	28	103	0.005 U	0.005 U	0.006 U	0.005 U	0.007 U	0.006 U	0.005 U
Ethylbenzene	24	212	0.005 U	0.005 U	0.006 U	0.005 U	0.007 U	0.006 U	0.005 U
Methylene Chloride	NA	NA	--	--	--	--	--	--	--
Styrene	NA	NA	--	--	--	--	--	--	--
Toluene	49	235	0.005 U	0.005 U	0.006 U	0.005 U	0.007 U	0.006 U	0.005 U
Xylenes, Total	92	833	--	--	--	--	--	--	--
Total BTEX	NA	NA	0.000 U	0.000 U	0.000 U	0.000 U	0.000 U	0.000 U	0.000 U
Semivolatile Organic Compounds (SVOCs) (mg/Kg)									
2-Methylnaphthalene	34	304	--	--	--	--	--	--	--
3-Nitroaniline	NA	NA	--	--	--	--	--	--	--
4-Methylphenol	NA	NA	--	--	--	--	--	--	--
4-Nitroaniline	NA	NA	--	--	--	--	--	--	--
4-Nitrophenol	NA	NA	--	--	--	--	--	--	--
Acenaphthene	140	NA	0.30 J	0.36 U	**0.48 J**	0.40 UJ	1.3 J	0.38 U	0.37 U
Acenaphthylene	0.044 (a)	0.64 (a)	0.38 U	0.36 U	0.37 UJ	0.40 UJ	**0.85 J**	0.38 U	0.37 U
Anthracene	107	986	0.38 U	0.36 U	**0.53 J**	0.40 UJ	1.7 J	0.38 U	0.37 U
Benzo(a)anthracene	12	94	0.38 U	0.36 U	**0.85 J**	0.40 UJ	**3.6 J**	0.38 U	0.37 U
Benzo(a)pyrene	0.37 (c)	1440 (b)	0.38 U	0.36 U	**0.81 J**	0.40 UJ	**3.1 J**	0.38 U	0.37 U
Benzo(b)fluoranthene	NA	NA	0.38 U	0.36 U	0.85 J	0.40 UJ	2.1 J	0.38 U	0.20 J
Benzo(ghi)perylene	0.17 (c)	320 (b)	0.38 U	0.36 U	**0.43 J**	0.40 UJ	**1.9 J**	0.38 U	0.37 U
Benzo(k)fluoranthene	0.24 (c)	1340 (b)	0.38 U	0.36 U	**0.56 J**	0.40 UJ	**0.89 J**	0.38 U	0.37 U
Bis(2-ethylhexyl) phthalate	199.5	NA	--	--	--	--	--	--	--
Butyl benzyl phthalate	NA	NA	--	--	--	--	--	--	--
Chrysene	0.34 (c)	460 (b)	0.38 U	0.36 U	**0.95 J**	0.40 UJ	**3.9 J**	0.38 U	0.20 J
Di-n-butyl phthalate	NA	NA	--	--	--	--	--	--	--
Di-n-octyl phthalate	NA	NA	--	--	--	--	--	--	--
Dibenzo(a,h)anthracene	0.06 (c)	130 (b)	0.38 U	0.36 U	0.37 UJ	0.40 UJ	**0.67 J**	0.38 U	0.37 U
Dibenzofuran	NA	NA	0.38 U	0.36 U	0.37 UJ	0.40 UJ	0.45 UJ	0.38 U	0.37 U
Fluoranthene	1020	NA	0.38 U	0.36 U	2.1 J	0.40 UJ	3.2 J	0.38 U	0.30 J
Fluorene	8	73	0.38 U	0.36 U	**0.19 J**	0.40 UJ	**1.4 J**	0.38 U	0.37 U
Indeno(1,2,3-cd)pyrene	0.2 (c)	320 (b)	0.38 U	0.36 U	**0.40 J**	0.40 UJ	**1.1 J**	0.38 U	0.37 U
N-nitrosodiphenylamine	NA	NA	--	--	--	--	--	--	--
Naphthalene	30	258	0.38 U	0.36 U	**0.22 J**	0.40 UJ	**0.67 J**	0.38 U	0.37 U
Phenanthrene	120	950 (b)	0.38 U	0.36 U	**1.9 J**	0.40 UJ	1.5 J	0.38 U	0.37 U
Pyrene	961	8775	0.38 U	0.36 U	1.4 J	0.40 UJ	5.6 J	0.38 U	0.4
Total PAHs	4 (a)	45 (a)	0.3	ND	**11.7**	ND	**33.5**	ND	1.1
Total Semivolatiles	NA	NA	0.3	ND	11.7	ND	33.5	ND	1.1
Inorganics (mg/Kg)									
Aluminum	NA	NA	--	--	--	--	--	--	--
Antimony	2	25	--	--	--	--	--	--	--
Arsenic	6	33	--	--	--	--	--	--	--
Barium	NA	NA	--	--	--	--	--	--	--
Beryllium	NA	NA	--	--	--	--	--	--	--
Cadmium	0.6	9	--	--	--	--	--	--	--
Calcium	NA	NA	--	--	--	--	--	--	--
Chromium	26	110	--	--	--	--	--	--	--
Cobalt	NA	NA	--	--	--	--	--	--	--
Copper	16	110	--	--	--	--	--	--	--
Iron	20,000	40,000	--	--	--	--	--	--	--
Lead	31	110	--	--	--	--	--	--	--
Magnesium	NA	NA	--	--	--	--	--	--	--
Manganese	460	1100	--	--	--	--	--	--	--
Mercury	0.15	1.3	--	--	--	--	--	--	--
Nickel	16	50	--	--	--	--	--	--	--
Potassium	NA	NA	--	--	--	--	--	--	--
Selenium	NA	NA	--	--	--	--	--	--	--
Silver	1	2.2	--	--	--	--	--	--	--
Sodium	NA	NA	--	--	--	--	--	--	--
Thallium	NA	NA	--	--	--	--	--	--	--
Vanadium	NA	NA	--	--	--	--	--	--	--
Zinc	120	270	--	--	--	--	--	--	--
Cyanide, Total	NA	NA	0.55 U	0.53 U	0.55 U	0.58 U	0.66 U	0.56 U	0.55 U
Miscellaneous Compounds (mg/Kg)									
TPH as #4 Fuel Oil	NA	NA	--	--	--	--	--	--	--
TPH as 10W40 Oil	NA	NA	--	--	--	--	--	--	--
Total Organic Carbon (TOC) (3)									
TOC (mg/Kg)	NA	NA	3,781	11,045	2,748	2,658	18,637	5,837	16,757
% TOC	NA	NA	0.38	1.1	0.27	0.27	1.86	0.58	1.68

See Notes on Page 9.

TABLE 9-A

NEW YORK STATE ELECTRIC AND GAS CORPORATION
COURT STREET SITE
BINGHAMTON, NEW YORK

SUPPLEMENTAL REMEDIAL INVESTIGATION
SURFICIAL RIVERBED SAMPLES ANALYTICAL RESULTS

Location / Depth Range / Date Sampled / Sample Type	Benthic Aquatic Life Toxicity Criteria (1,2) Chronic (ug/g OC)	Acute (ug/g OC)	SR-112 (0 - 2') 8/29/2001 FS	SR-113 (0 - 2') 8/30/2001 FS	SR-114 (0 - 2') 8/31/2001 FS	SS-15 (0 - 0.8') 8/24/2001 FS	SS-1C (0 - 0.7') 8/24/2001 FS	SS-1D (0 - 0.7') 8/24/2001 FS	SS-1E (0 - 0.6') 8/24/2001 FS
Volatile Organic Compounds (VOCs) (mg/Kg)									
Acetone	NA	NA	--	--	--	--	--	--	--
1,1,1-Trichloroethane	NA	NA	--	--	--	--	--	--	--
2-Butanone	NA	NA	--	--	--	--	--	--	--
Benzene	28	103	0.005 U	0.006 U	--	0.009 U	--	0.16	--
Ethylbenzene	24	212	0.005 U	0.006 U	--	0.009 U	--	0.03 U	--
Methylene Chloride	NA	NA	--	--	--	--	--	--	--
Styrene	NA	NA	--	--	--	--	--	--	--
Toluene	49	235	0.005 U	0.006 U	--	0.009 U	--	0.03 U	--
Xylenes, Total	92	833	--	--	--	--	--	--	--
Total BTEX	NA	NA	0.000 U	0.000 U	--	0.000 U	--	0.16	--
Semivolatile Organic Compounds (SVOCs) (mg/Kg)									
2-Methylnaphthalene	34	304	--	--	--	--	--	--	--
3-Nitroaniline	NA	NA	--	--	--	--	--	--	--
4-Methylphenol	NA	NA	--	--	--	--	--	--	--
4-Nitroaniline	NA	NA	--	--	--	--	--	--	--
4-Nitrophenol	NA	NA	--	--	--	--	--	--	--
Acenaphthene	140	NA	0.38 U	0.40 UJ	--	2.7 U	--	**4.7**	--
Acenaphthylene	0.044 (a)	0.64 (a)	**0.30 J**	0.40 UJ	--	2.7 U	--	**0.41**	--
Anthracene	107	986	**0.51**	0.40 UJ	--	2.7 U	--	**4.6**	--
Benzo(a)anthracene	12	94	**1.1**	0.30 J	--	2.7 U	--	**2.6**	--
Benzo(a)pyrene	0.37 (c)	1440 (b)	**1.5**	**0.40 J**	--	2.7 U	--	**1.4**	--
Benzo(b)fluoranthene	NA	NA	0.88	0.40 J	--	2.7 U	--	0.9	--
Benzo(ghi)perylene	0.17 (c)	320 (b)	**0.81**	0.40 UJ	--	2.7 U	--	**0.78**	--
Benzo(k)fluoranthene	0.24 (c)	1340 (b)	**0.8**	0.40 UJ	--	2.7 U	--	**0.82**	--
Bis(2-ethylhexyl) phthalate	199.5	NA	--	--	--	--	--	--	--
Butyl benzyl phthalate	NA	NA	--	--	--	--	--	--	--
Chrysene	0.34 (c)	460 (b)	**1.1**	0.30 J	--	2.7 U	--	**2.5**	--
Di-n-butyl phthalate	NA	NA	--	--	--	--	--	--	--
Di-n-octyl phthalate	NA	NA	--	--	--	--	--	--	--
Dibenzo(a,h)anthracene	0.06 (c)	130 (b)	0.38 U	0.40 UJ	--	2.7 U	--	0.40 U	--
Dibenzofuran	NA	NA	0.38 U	0.40 UJ	--	2.7 U	--	0.40 U	--
Fluoranthene	1020	NA	1.7	0.42 J	--	2.7 U	--	5.1	--
Fluorene	8	73	0.38 U	0.40 UJ	--	2.7 U	--	3.7	--
Indeno(1,2,3-cd)pyrene	0.2 (c)	320 (b)	**0.6**	0.40 UJ	--	2.7 U	--	**0.56**	--
N-nitrosodiphenylamine	NA	NA	--	--	--	--	--	--	--
Naphthalene	30	258	0.38 U	0.40 UJ	--	2.7 U	--	**0.55**	--
Phenanthrene	120	950 (b)	**0.47**	0.22 J	--	2.7 U	--	**9.4 D**	--
Pyrene	961	8775	**4.5**	0.66 J	--	1.7 J	--	7.2 D	--
Total PAHs	4 (a)	45 (a)	**14.3**	2.7	--	1.7	--	**45**	--
Total Semivolatiles	NA	NA	14.3	2.7	--	1.7	--	45	--
Inorganics (mg/Kg)									
Aluminum	NA	NA	--	--	--	--	--	--	--
Antimony	2	25	--	--	--	--	--	--	--
Arsenic	6	33	--	--	--	--	--	--	--
Barium	NA	NA	--	--	--	--	--	--	--
Beryllium	NA	NA	--	--	--	--	--	--	--
Cadmium	0.6	9	--	--	--	--	--	--	--
Calcium	NA	NA	--	--	--	--	--	--	--
Chromium	26	110	--	--	--	--	--	--	--
Cobalt	NA	NA	--	--	--	--	--	--	--
Copper	16	110	--	--	--	--	--	--	--
Iron	20,000	40,000	--	--	--	--	--	--	--
Lead	31	110	--	--	--	--	--	--	--
Magnesium	NA	NA	--	--	--	--	--	--	--
Manganese	460	1100	--	--	--	--	--	--	--
Mercury	0.15	1.3	--	--	--	--	--	--	--
Nickel	16	50	--	--	--	--	--	--	--
Potassium	NA	NA	--	--	--	--	--	--	--
Selenium	NA	NA	--	--	--	--	--	--	--
Silver	1	2.2	--	--	--	--	--	--	--
Sodium	NA	NA	--	--	--	--	--	--	--
Thallium	NA	NA	--	--	--	--	--	--	--
Vanadium	NA	NA	--	--	--	--	--	--	--
Zinc	120	270	--	--	--	--	--	--	--
Cyanide, Total	NA	NA	0.57 U	0.58 U	0.60 U	0.80 U	0.56 U	0.56 U	0.56 U
Miscellaneous Compounds (mg/Kg)									
TPH as #4 Fuel Oil	NA	NA	--	--	--	--	--	--	--
TPH as 10W40 Oil	NA	NA	--	--	--	--	--	--	--
Total Organic Carbon (TOC) (3)									
TOC (mg/Kg)	NA	NA	3,402	26,107	19,639	48,175	3,916	16,978	3,800
% TOC	NA	NA	0.34	2.61	1.96	4.81	0.39	1.7	0.38

See Notes on Page 9.

TABLE 9-A

NEW YORK STATE ELECTRIC AND GAS CORPORATION
COURT STREET SITE
BINGHAMTON, NEW YORK

SUPPLEMENTAL REMEDIAL INVESTIGATION
SURFICIAL RIVERBED SAMPLES ANALYTICAL RESULTS

Notes:

(1) Sediment criteria are from NYSDEC (1999) *Technical Guidance for Screening Contaminated Sediments*. Units are in ug/g OC and are adjusted for sample-specific TOC concentration. If NYSDEC criteria are not available, additional values are used as described below.

(a) Effects Range-Low (ERL) and Effects Range-Median (ERM) values, respectively from Long et al. (1995), as reported in NYSDEC (1999). Units are in mg/kg and are not adjusted for sample-specific TOC concentration.

(b) Ontario Ministry of Environment (OME, 1993) Severe Effect Levels. Units are in ug/g OC and are adjusted for sample-specific TOC concentration.

(c) Ontario Ministry of Environment (OME, 1993) Lowest Effect Levels. Units are in mg/kg and are not adjusted for sample-specific TOC concentration.

(2) Criteria which are presented in ug/g OC (organic carbon) are adjusted for each sample based on sample-specific TOC concentrations. For example, for benzo(a)anthracene (chronic value of 12 ug/g OC; acute value of 94 ug/g OC) and 1997 sample MH-1 (TOC of 2%, or 20 g OC/Kg), the criteria are adjusted as follows:

chronic: (12 ug/g OC) * (20 g OC/Kg) = 240 ug/Kg, or 0.240 mg/Kg
acute: (94 ug/g OC) * (20 g OC/Kg) = 1,880 ug/Kg, or 1.88 mg/Kg

The benzo(a)anthracene concentration detected in sample MH-1 was 1.3 mg/Kg. This concentration exceeds the sample-specific chronic value, but not the sample-specific acute value.

For 2001 sample SR-102 (TOC of 1.78%, or 17.8 gOC/Kg), the criteria are adjusted as follows:

chronic: (12 ug/g OC) * (17.8 g OC/Kg) = 213.6 ug/Kg, or 0.214 mg/Kg
acute: (94 ug/g OC) * (17.8 g OC/Kg) = 1,673.2 ug/Kg, or 1.673 mg/Kg

The benzo(a)anthracene concentration detected in sample SR-102 was 14 mg/Kg. This concentration exceeds the sample-specific chronic and acute values.

(3) For the 1997 samples that lacked TOC data, criteria were adjusted based on a site-specific average of 2% TOC concentration, which is an average of samples SS-3-5, SS-3-8, SS-12-3, and SS-12-6 (criteria for these individual samples were adjusted based on their sample-specific TOC concentration). Criteria for the 1993 and 2001 samples were a adjusted on sample-specific basis for TOC concentration.

BTEX - Benzene, Toluene, Ethylbenzene, and Xylene.
PAHs - Polynuclear Aromatic Hydrocarbons.
VOCs - Volatile Organic Compounds.
SVOCs - Semivolatile Organic Compounds.
TOC - Total Organic Carbon.
Results are reported in milligrams per kilogram (mg/Kg) .
FS = Field sample.
DL = Dilution run.
DUP = Field duplicate.
NA = Not available.
U = Compound was analyzed for but not detected. Value shown is the detection limit.
B = The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.
J = The compound was positively identified; however, the associated numerical value is an estimated concentration only.
D = Concentration is based on a diluted sample analysis.
R = Sample results are rejected.
E = The compound was quantitated above the calibration range.
N = The analysis indicates the presence of a compound for which there is presumptive evidence to make a tentative identification.
ND = All associated compounds were analyzed for but none were detected.
-- = Not analyzed.
Detected concentration exceeds the Benthic Aquatic Life Chronic Toxicity Criteria.
Detected concentration exceeds the Benthic Aquatic Life Acute Toxicity Criteria.

TABLE 9-B

NEW YORK STATE ELECTRIC AND GAS CORPORATION
COURT STREET SITE
BINGHAMTON, NEW YORK

SUPPLEMENTAL REMEDIAL INVESTIGATION
DEEP RIVERBED SAMPLES ANALYTICAL RESULTS

Location Depth Range Date Samples Sample Type	SS-3-1 (1.0' - 2.0') 10/8/1997 FS	SS-3-1 (3.0' - 4.0') 10/8/1997 FS	SS-3-3 (1.0' - 2.0') 10/8/1997 FS	SS-3-3 (3.0' - 4.0') 10/8/1997 FS	SS-3-4 (1.0' - 2.0') 10/7/1997 FS	SS-3-5 (1.0' - 2.0') 10/7/1997 FS	SS-3-6 (2.0' - 3.0') 10/7/1997 FS
Volatile Organic Compounds							
2-Butanone	0.01 UJ	0.01 U	**0.004 J**	0.01 U	**0.003 J**	0.01 U	0.01 U
Benzene	**0.06 J**	**0.006 J**	**0.06 J**	0.01 U	0.01 U	**0.01 J**	**0.002 J**
Ethylbenzene	**16. D**	**0.04**	**50. DJ**	**0.03**	0.01 U	**2.3 DJ**	**0.09**
Toluene	**0.02**	0.01 U	**0.04 J**	0.01 U	**0.001 JN**	**0.001 JN**	0.01 U
Xylenes, Total	**6.6 D**	**0.02**	**26. DJ**	**0.04**	**0.002 J**	**0.06**	**0.02**
Semivolatile Organic Compounds							
2-Methylnaphthalene	**84. JD**	**0.45**	**55. JD**	**0.08 J**	0.37 U	**15. JD**	**0.74**
3-Nitroaniline	**0.14 J**	R	R	R	1.8 U	1.8 U	1.8 U
4-Nitroaniline	R	R	**0.32 J**	R	1.8 U	1.8 U	1.8 U
4-Nitrophenol	4.2 U	1.9 U	4.4 U	2. U	1.8 U	1.8 U	1.8 U
Acenaphthene	**170 D**	**0.88**	**110 D**	**0.36 J**	**1.7**	**53. D**	**2.8**
Acenaphthylene	**4.9**	**0.04 J**	**1.7**	0.40 U	**0.05 J**	**2**	**0.06 J**
Anthracene	**75. JD**	**0.18 J**	**27. JD**	**0.13 J**	**0.21 J**	**16. JD**	**0.34 J**
Benzo(a)anthracene	**28. JD**	**0.09 J**	**8.5 EJ**	**0.05 J**	**0.18 J**	**6.9 J**	**0.21 J**
Benzo(a)pyrene	**36. JD**	**0.07 J**	**9.6 EJ**	**0.04 J**	**0.22 J**	**7.5 E**	**0.22 J**
Benzo(b)fluoranthene	**13. JD**	0.38 U	0.89 U	0.40 U	**0.08 J**	**3.4 J**	**0.09 J**
Benzo(ghi)perylene	**5.9 J**	**0.05 J**	**4.8 J**	R	**0.15 J**	**12. JD**	**0.15 J**
Benzo(k)fluoranthene	**20. JD**	**0.06 J**	**6.3**	0.40 U	**0.11 J**	**3.1 J**	**0.12 J**
Bis(2-ethylhexyl) phthalate	0.84 U	**0.18 J**	**0.10 J**	**0.07 J**	**0.11 J**	0.37 U	**0.05 J**
Chrysene	**32. JD**	**0.09 J**	**9.2 EJ**	**0.06 J**	**0.19 J**	**7.2 J**	**0.24 J**
Di-n-octyl phthalate	0.84 U	**0.09 J**	0.89 U	0.40 U	**0.04 J**	0.37 U	0.37 U
Dibenzo(a,h)anthracene	**1.8 J**	R	**0.91 J**	R	0.37 U	**0.82**	0.37 U
Dibenzofuran	**0.54 J**	0.38 U	0.89 U	0.40 U	0.37 U	0.37 U	0.37 U
Fluoranthene	**90. D**	**0.21 J**	**28. JD**	**0.15 J**	**0.57**	**30. JD**	**0.71**
Fluorene	**66. JD**	**0.24 J**	**42. JD**	**0.18 J**	**0.49**	**20. JD**	**0.85**
Indeno(1,2,3-cd)pyrene	**5.6 J**	R	**3.7 J**	R	**0.10 J**	**2.6**	**0.10 J**
N-nitrosodiphenylamine	0.84 U	0.38 U	0.89 U	0.40 U	0.37 U	0.37 UJ	0.37 U
Naphthalene	**310 D**	**0.73**	**260 D**	**0.33 J**	**0.04 J**	**70. D**	**2.1**
Phenanthrene	0.84 U	**0.68**	**110 D**	**0.46**	**1.6**	**67. D**	**2.2**
Pyrene	**150 DJ**	**0.30 J**	**48. JD**	**0.17 J**	**0.82**	**25. JD**	**0.98**
Polychlorinated Biphenyls							
PCBs (all)	--	ND	--	ND	--	--	--
Inorganics							
Aluminum	--	--	--	--	--	--	--
Antimony	--	--	--	--	--	--	--
Arsenic	--	--	--	--	--	--	--
Barium	--	--	--	--	--	--	--
Beryllium	--	--	--	--	--	--	--
Cadmium	--	--	--	--	--	--	--
Calcium	--	--	--	--	--	--	--
Chromium	--	--	--	--	--	--	--
Cobalt	--	--	--	--	--	--	--
Copper	--	--	--	--	--	--	--
Iron	--	--	--	--	--	--	--
Lead	--	--	--	--	--	--	--
Magnesium	--	--	--	--	--	--	--
Manganese	--	--	--	--	--	--	--
Mercury	--	--	--	--	--	--	--
Nickel	--	--	--	--	--	--	--
Potassium	--	--	--	--	--	--	--
Silver	--	--	--	--	--	--	--
Sodium	--	--	--	--	--	--	--
Thallium	--	--	--	--	--	--	--
Vanadium	--	--	--	--	--	--	--
Zinc	--	--	--	--	--	--	--
Cyanide, Total	0.63 U	0.57 U	0.67 U	0.59 U	0.59 U	0.60 U	0.68 U
Cyanide, Amenable	0.63 U	0.57 U	0.67 U	0.59 U	0.59 U	0.60 U	0.68 U
Total Petroleum Hydrocarbons							
TPH as #4 Fuel Oil	**10,000**	86. U	**6,900 J**	89. U	89. U	**600**	**150**

See Notes on Page 5.

TABLE 9-B

NEW YORK STATE ELECTRIC AND GAS CORPORATION
COURT STREET SITE
BINGHAMTON, NEW YORK

SUPPLEMENTAL REMEDIAL INVESTIGATION
DEEP RIVERBED SAMPLES ANALYTICAL RESULTS

Location	SS-3-7	SS-3-8	SS-3-9	SS-3-10	SS-3-11	SS-3-11	SS-3-12
Depth Range	(1.0' - 2.0')	(1.0' - 2.0')	(1.0' - 2.0')	(1.0' - 2.0')	(1.0' - 2.0')	(2.0' - 3.0')	(1.0' - 2.0')
Date Samples	10/7/1997	10/8/1997	10/8/1997	10/8/1997	10/8/1997	10/8/1997	10/8/1997
Sample Type	FS	FS	FS	FS	FS	FS	FS
Volatile Organic Compounds							
2-Butanone	0.01 U	**0.009 J**	0.01 U	0.01 U	**0.002 JN**	**0.002 JN**	**0.008 JN**
Benzene	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.06 U
Ethylbenzene	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.06 U
Toluene	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	**0.008 JN**
Xylenes, Total	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.06 U
Semivolatile Organic Compounds							
2-Methylnaphthalene	0.37 U	0.39 U	0.39 U	0.40 U	**3.1**	**1.1**	**0.27 J**
3-Nitroaniline	1.8 U	R	R	R	R	R	R
4-Nitroaniline	1.8 U	1.9 U	R	2. U	3.8 U	3.7 U	2. U
4-Nitrophenol	1.8 U	1.9 U	2. U	2. U	3.8 U	3.7 U	**0.73 J**
Acenaphthene	**0.89**	0.39 U	**0.06 J**	0.40 U	**15. D**	**4.3**	**19. JD**
Acenaphthylene	0.37 U	0.39 U	0.39 U	0.40 U	**0.56 J**	**0.55 J**	**1.1**
Anthracene	**0.09 J**	0.39 U	**0.08 J**	0.40 U	**10. D**	**5.1**	**6.5 J**
Benzo(a)anthracene	**0.08 J**	0.39 U	**0.56**	0.40 U	**4.8**	**3.9**	**3.5 J**
Benzo(a)pyrene	**0.08 J**	0.39 U	**0.91**	0.40 U	**4.6**	**4.7**	**2.5**
Benzo(b)fluoranthene	0.37 U	0.39 U	**0.84**	0.40 U	**1.8**	**2**	**1.3**
Benzo(ghi)perylene	**0.05 J**	R	**0.88 J**	R	**1. J**	**0.96 J**	**0.30 J**
Benzo(k)fluoranthene	**0.04 J**	0.39 U	0.39 U	0.40 U	**3.5**	**3.3**	**2.1**
Bis(2-ethylhexyl) phthalate	**0.04 J**	**0.04 J**	**0.23 J**	**0.09 J**	**0.14 J**	**0.14 J**	**0.10 J**
Chrysene	**0.07 J**	0.39 U	**0.69**	0.40 U	**5.4**	**5.3**	**3.4 J**
Di-n-octyl phthalate	0.37 U	0.39 U	**0.10 J**	0.40 U	0.76 U	0.74 U	0.41 U
Dibenzo(a,h)anthracene	0.37 U	R	**0.06 J**	R	**0.12 J**	**0.09 J**	**0.06 J**
Dibenzofuran	0.37 U	0.39 U	0.39 U	0.40 U	**0.27 J**	**0.15 J**	**2**
Fluoranthene	**0.23 J**	0.39 U	**1.1**	**0.06 J**	**16. D**	**6.6 D**	**9.5 JD**
Fluorene	**0.26 J**	0.39 U	0.39 U	0.40 U	**9.3 D**	**3**	**22. D**
Indeno(1,2,3-cd)pyrene	0.37 U	R	**0.71 J**	R	**0.89 J**	**0.84 J**	**0.32 J**
N-nitrosodiphenylamine	0.37 U	0.39 U	0.39 U	0.40 U	**0.26 J**	0.74 U	0.41 U
Naphthalene	**0.08 J**	0.39 U	0.39 U	0.40 U	**1.3**	**0.76**	**0.68**
Phenanthrene	**0.7**	0.39 U	**0.38 J**	**0.04 J**	**42. D**	**11. D**	**79. D**
Pyrene	**0.35 J**	0.39 UJ	**0.92**	**0.07 J**	**24. D**	**8.7 D**	**13. JD**
Polychlorinated Biphenyls							
PCBs (all)	--	--	--	--	ND	--	--
Inorganics							
Aluminum	--	--	--	--	--	--	--
Antimony	--	--	--	--	--	--	--
Arsenic	--	--	--	--	--	--	--
Barium	--	--	--	--	--	--	--
Beryllium	--	--	--	--	--	--	--
Cadmium	--	--	--	--	--	--	--
Calcium	--	--	--	--	--	--	--
Chromium	--	--	--	--	--	--	--
Cobalt	--	--	--	--	--	--	--
Copper	--	--	--	--	--	--	--
Iron	--	--	--	--	--	--	--
Lead	--	--	--	--	--	--	--
Magnesium	--	--	--	--	--	--	--
Manganese	--	--	--	--	--	--	--
Mercury	--	--	--	--	--	--	--
Nickel	--	--	--	--	--	--	--
Potassium	--	--	--	--	--	--	--
Silver	--	--	--	--	--	--	--
Sodium	--	--	--	--	--	--	--
Thallium	--	--	--	--	--	--	--
Vanadium	--	--	--	--	--	--	--
Zinc	--	--	--	--	--	--	--
Cyanide, Total	0.59 U	0.58 U	0.59 U	0.60 U	0.57 U	0.56 U	0.61 U
Cyanide, Amenable	0.59 U	0.58 U	0.59 U	0.60 U	0.57 U	0.56 U	0.61 U
Total Petroleum Hydrocarbons							
TPH as #4 Fuel Oil	88. U	88. U	88. U	90. U	**590**	**160**	**490**

See Notes on Page 5.

TABLE 9-B

NEW YORK STATE ELECTRIC AND GAS CORPORATION
COURT STREET SITE
BINGHAMTON, NEW YORK

SUPPLEMENTAL REMEDIAL INVESTIGATION
DEEP RIVERBED SAMPLES ANALYTICAL RESULTS

Location	SS-3-13	SS-3-14	SS-12-1	SS-12-1	SS-12-2	SS-12-3	SS-12-4
Depth Range	(1.0' - 2.0')	(1.0' - 2.0')	(1.0' - 2.0')	(2.0' - 3.0')	(1.0' - 2.0')	(1.0' - 2.0')	(1.0' - 2.0')
Date Samples	10/8/1997	10/8/1997	10/9/1997	10/9/1997	10/9/1997	10/9/1997	10/9/1997
Sample Type	FS	FS	FS	FS	FS	FS	FS
Volatile Organic Compounds							
2-Butanone	**0.06 J**	**0.004 JN**	0.01 U	0.01 U	0.01 U	0.01 UJ	0.01 UJ
Benzene	0.01 U	**0.002 JN**	**0.002 J**	0.01 U	0.01 U	0.01 U	0.01 U
Ethylbenzene	0.01 U	0.01 U	**0.003 J**	0.01 U	0.01 U	0.01 U	0.01 U
Toluene	0.01 U	**0.01 J**	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U
Xylenes, Total	0.01 U	0.01 U	**0.001 J**	0.01 U	0.01 U	0.01 U	0.01 U
Semivolatile Organic Compounds							
2-Methylnaphthalene	0.39 UJ	0.39 UJ	**0.37 J**	0.40 U	0.40 U	0.45 U	0.41 U
3-Nitroaniline	1.9 UJ	2. UJ	2. U	2. U	2. U	2.2 U	2. U
4-Nitroaniline	1.9 UJ	2. UJ	2. U	2. U	2. U	2.2 U	2. U
4-Nitrophenol	1.9 UJ	2. UJ	2. U	2. U	2. U	2.2 U	2. U
Acenaphthene	0.39 UJ	0.39 UJ	**0.26 J**	0.40 U	**0.11 J**	**0.6**	0.41 U
Acenaphthylene	0.39 UJ	0.39 UJ	0.40 U	0.40 U	0.40 U	0.45 U	0.41 U
Anthracene	**0.08 J**	**0.04 J**	**0.09 J**	0.40 U	0.40 U	**0.12 J**	0.41 U
Benzo(a)anthracene	**0.18 J**	**0.15 J**	**0.04 J**	0.40 U	0.40 U	**0.05 J**	0.41 U
Benzo(a)pyrene	**0.16 J**	**0.15 J**	**0.05 J**	0.40 U	0.40 U	**0.06 J**	**0.06 J**
Benzo(b)fluoranthene	**0.20 J**	**0.18 J**	0.40 U	0.40 U	0.40 U	0.45 U	**0.05 J**
Benzo(ghi)perylene	0.39 UJ	0.39 UJ	0.40 U	0.40 U	0.40 U	**0.08 J**	0.41 U
Benzo(k)fluoranthene	**0.19 J**	**0.20 J**	0.40 U	0.40 U	0.40 U	0.45 U	**0.06 J**
Bis(2-ethylhexyl) phthalate	**0.07 J**	**0.09 J**	**0.05 J**	0.40 U	0.40 U	0.45 U	0.41 U
Chrysene	**0.18 J**	**0.16 J**	**0.05 J**	0.40 U	0.40 U	**0.06 J**	0.41 U
Di-n-octyl phthalate	0.39 UJ	0.39 UJ	0.40 U	0.40 U	0.40 UJ	0.45 U	**0.08 J**
Dibenzo(a,h)anthracene	0.39 UJ	0.39 UJ	0.40 U	0.40 U	0.40 U	0.45 U	0.41 U
Dibenzofuran	0.39 UJ	0.39 UJ	0.40 U	0.40 U	0.40 U	0.45 U	0.41 U
Fluoranthene	**0.38 J**	**0.35 J**	**0.14 J**	0.40 U	0.40 U	**0.19 J**	**0.09 J**
Fluorene	**0.05 J**	0.39 UJ	**0.14 J**	0.40 U	0.40 U	**0.22 J**	0.41 U
Indeno(1,2,3-cd)pyrene	0.39 UJ	0.39 UJ	0.40 U	0.40 U	0.40 U	0.45 U	0.41 U
N-nitrosodiphenylamine	0.39 UJ	0.39 UJ	0.40 U	0.40 U	0.40 U	0.45 U	0.41 U
Naphthalene	0.39 UJ	0.39 UJ	**0.5**	0.40 U	0.40 U	**0.06 J**	0.41 U
Phenanthrene	**0.35 J**	**0.23 J**	**0.46**	**0.06 J**	0.40 U	**0.39 J**	0.41 U
Pyrene	**0.19 J**	**0.18 J**	**0.18 J**	0.40 U	0.40 U	**0.17 J**	**0.04 J**
Polychlorinated Biphenyls							
PCBs (all)	--	--	--	--	--	--	ND
Inorganics							
Aluminum	--	--	--	--	--	--	--
Antimony	--	--	--	--	--	--	--
Arsenic	--	--	--	--	--	--	--
Barium	--	--	--	--	--	--	--
Beryllium	--	--	--	--	--	--	--
Cadmium	--	--	--	--	--	--	--
Calcium	--	--	--	--	--	--	--
Chromium	--	--	--	--	--	--	--
Cobalt	--	--	--	--	--	--	--
Copper	--	--	--	--	--	--	--
Iron	--	--	--	--	--	--	--
Lead	--	--	--	--	--	--	--
Magnesium	--	--	--	--	--	--	--
Manganese	--	--	--	--	--	--	--
Mercury	--	--	--	--	--	--	--
Nickel	--	--	--	--	--	--	--
Potassium	--	--	--	--	--	--	--
Silver	--	--	--	--	--	--	--
Sodium	--	--	--	--	--	--	--
Thallium	--	--	--	--	--	--	--
Vanadium	--	--	--	--	--	--	--
Zinc	--	--	--	--	--	--	--
Cyanide, Total	0.58 U	0.59 U	0.60 U	0.59 U	0.60 U	0.67 U	**3.1**
Cyanide, Amenable	0.58 U	0.59 U	0.60 U	0.59 U	0.60 U	--	0.62 U
Total Petroleum Hydrocarbons							
TPH as #4 Fuel Oil	87. U	88. U	**170**	89. U	90. U	100 U	93. U

See Notes on Page 5.

NEW YORK STATE ELECTRIC AND GAS CORPORATION
COURT STREET SITE
BINGHAMTON, NEW YORK

SUPPLEMENTAL REMEDIAL INVESTIGATION
DEEP RIVERBED SAMPLES ANALYTICAL RESULTS

Location Depth Range Date Samples Sample Type	SS-12-5 (1.0' - 2.0') 10/10/1997 FS	SS-12-5 (1.0' - 2.0') 10/10/1997 DUP	SS-12-6 (1.0' - 2.0') 10/10/1997 FS	SS-12-7 (1.0' - 2.0') 10/10/1997 FS	SR-109 (4 - 6') 8/28/2001 FS	SR-109 (8 - 10') 8/29/2001 FS
Volatile Organic Compounds						
2-Butanone	0.01 UJ	0.01 UJ	**0.01**	0.01 UJ	--	--
Benzene	0.01 U	0.01 U	0.01 U	0.01 U	--	--
Ethylbenzene	0.01 U	0.01 U	0.01 U	0.01 U	--	--
Toluene	0.01 U	0.01 U	0.01 U	0.01 U	--	--
Xylenes, Total	0.01 U	0.01 U	0.01 U	0.01 U	--	--
Semivolatile Organic Compounds						
2-Methylnaphthalene	0.41 U	0.40 U	0.43 U	0.41 U	--	--
3-Nitroaniline	2. U	2. U	2.1 U	2. U	--	--
4-Nitroaniline	2. U	2. U	2.1 U	2. U	--	--
4-Nitrophenol	2. U	2. U	2.1 U	2. U	--	--
Acenaphthene	0.41 U	0.40 U	0.43 U	**0.13 J**	0.36 UJ	--
Acenaphthylene	0.41 U	0.40 U	0.43 U	0.41 U	0.36 UJ	--
Anthracene	0.41 U	0.40 U	0.43 U	0.41 U	0.36 UJ	--
Benzo(a)anthracene	0.41 U	0.40 U	0.43 U	0.41 U	0.36 UJ	--
Benzo(a)pyrene	**0.05 J**	0.40 U	0.43 U	0.41 U	0.36 UJ	--
Benzo(b)fluoranthene	**0.06 J**	0.40 U	0.43 U	0.41 U	0.36 UJ	--
Benzo(ghi)perylene	0.41 U	0.40 U	0.43 U	0.41 U	0.36 UJ	--
Benzo(k)fluoranthene	**0.05 J**	0.40 U	0.43 U	0.41 U	0.36 UJ	--
Bis(2-ethylhexyl) phthalate	0.41 U	0.40 U	0.43 U	0.41 U	--	--
Chrysene	0.41 U	0.40 U	0.43 U	0.41 U	0.36 UJ	--
Di-n-octyl phthalate	0.41 U	0.40 U	0.43 UJ	0.41 U	--	--
Dibenzo(a,h)anthracene	0.41 U	0.40 U	0.43 U	0.41 U	0.36 UJ	--
Dibenzofuran	0.41 U	0.40 U	0.43 U	0.41 U	0.36 UJ	--
Fluoranthene	**0.11 J**	0.40 U	0.43 U	0.41 U	0.36 UJ	--
Fluorene	0.41 U	0.40 U	0.43 U	**0.05 J**	0.36 UJ	--
Indeno(1,2,3-cd)pyrene	0.41 U	0.40 U	0.43 U	0.41 U	0.36 UJ	--
N-nitrosodiphenylamine	0.41 U	0.40 U	0.43 U	0.41 U	--	--
Naphthalene	0.41 U	0.40 U	0.43 U	0.41 U	0.36 UJ	--
Phenanthrene	0.41 U	0.40 U	0.43 U	0.41 U	0.36 UJ	--
Pyrene	**0.05 J**	0.40 U	0.43 U	0.41 U	0.36 UJ	--
Polychlorinated Biphenyls						
PCBs (all)	ND	ND	--	--	--	--
Inorganics						
Aluminum	--	--	--	--	--	--
Antimony	--	--	--	--	--	--
Arsenic	--	--	--	--	--	--
Barium	--	--	--	--	--	--
Beryllium	--	--	--	--	--	--
Cadmium	--	--	--	--	--	--
Calcium	--	--	--	--	--	--
Chromium	--	--	--	--	--	--
Cobalt	--	--	--	--	--	--
Copper	--	--	--	--	--	--
Iron	--	--	--	--	--	--
Lead	--	--	--	--	--	--
Magnesium	--	--	--	--	--	--
Manganese	--	--	--	--	--	--
Mercury	--	--	--	--	--	--
Nickel	--	--	--	--	--	--
Potassium	--	--	--	--	--	--
Silver	--	--	--	--	--	--
Sodium	--	--	--	--	--	--
Thallium	--	--	--	--	--	--
Vanadium	--	--	--	--	--	--
Zinc	--	--	--	--	--	--
Cyanide, Total	0.62 U	0.60 U	0.64 U	0.61 U	0.54 U	0.57 U
Cyanide, Amenable	--	--	0.64 U	--	--	--
Total Petroleum Hydrocarbons						
TPH as #4 Fuel Oil	93. U	90. U	97. U	92. U	--	--

See Notes on Page 5.

TABLE 9-B

NEW YORK STATE ELECTRIC AND GAS CORPORATION
COURT STREET SITE
BINGHAMTON, NEW YORK

SUPPLEMENTAL REMEDIAL INVESTIGATION
DEEP RIVERBED SAMPLES ANALYTICAL RESULTS

Notes:

Results are reported in milligrams per kilogram (mg/Kg) .
FS = Field sample.
DUP = Field duplicate.
NA = Not available.
U = Compound was analyzed for but not detected. Value shown is the detection limit.
B = The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.
J = The compound was positively identified; however, the associated numerical value is an estimated concentration only.
D = Concentration is based on a diluted sample analysis.
R = Sample results are rejected.
E = The compound was quantitated above the calibration range.
N = The analysis indicates the presence of a compound for which there is presumptive evidence to make a tentative identification.
ND = All associated compounds were analyzed for but none were detected.
-- = Not analyzed.

TABLE 10

NEW YORK STATE ELECTRIC AND GAS CORPORATION
COURT STREET SITE
BINGHAMTON, NEW YORK

SUPPLEMENTAL REMEDIAL INVESTIGATION
EXPOSURE AND RISK QUANTIFICATION FOR HYPOTHETICAL WORKERS (1) INCIDENTAL INGESTION OF SOIL

Chemical of Potential Interest	Maximum Concentration Detected on Uncovered Surface Soil Samples (3)	Units	Non-Carcinogenic Risk			Carcinogenic Risk		
			Intake (2) (mg/kg-day)	Reference Dose (4) (mg/kg-day)	Hazard Quotient	Intake (2) (mg/kg-day)	Cancer Slope Factor (5) 1/(mg/kg-day)	Risk
Acenaphthene	330	ug/kg	3.22896E-07	0.06	5.3816E-06	NC	NC	
Acenaphthylene	960	ug/kg	9.39335E-07			NC	NC	
Anthracene	790	ug/kg	7.72994E-07	0.3	2.57665E-06	NC	NC	
Benzo(a)anthracene	2100	ug/kg	2.05479E-06			7.33855E-07	0.73	5.35714E-07
Benzo(a)pyrene	2000	ug/kg	1.95695E-06			6.9891E-07	7.3	5.10204E-06
Benzo(b)fluoranthene	1600	ug/kg	1.56556E-06			5.59128E-07	0.73	4.08163E-07
Benzo(g,h,i)perylene	1800	ug/kg	1.76125E-06			NC	NC	
Benzo(k)fluoranthene	13000	ug/kg	1.27202E-05			4.54291E-06	0.073	3.31633E-07
bis(2-Ethylhexyl)phthalate	320	ug/kg	3.13112E-07	0.02	1.56556E-05	1.11826E-07	0.014	1.56556E-09
Chrysene	2400	ug/kg	2.34834E-06			8.38692E-07	0.0073	6.12245E-09
Dibenzofuran	350	ug/kg	3.42466E-07			NC	NC	
Dibenz(a,h)anthracene	160		1.56556E-07			5.59128E-08	7.3	4.08163E-07
Fluoranthene	4500	ug/kg	4.40313E-06	0.04	0.000110078	NC	NC	
Fluorene	350	ug/kg	3.42466E-07	0.04	8.56164E-06	NC	NC	
Indeno(1,2,3-cd)pyrene	1500	ug/kg	1.46771E-06			5.24182E-07	0.73	3.82653E-07
Naphthalene	480	ug/kg	4.69667E-07			NC	NC	
Phenanthrene	4000	ug/kg	3.91389E-06			NC	NC	
Pyrene	3200	ug/kg	3.13112E-06	0.03	0.000104371	NC	NC	
Antimony	1.9	mg/kg	1.8591E-06	0.0004	0.00464775	NC	NC	
Arsenic	8.4	mg/kg	8.21918E-06	0.0003	0.02739726	2.93542E-09	1.5	4.40313E-09
Barium	86.4	mg/kg	8.45401E-05	0.07	0.001207716	NC	NC	
Beryllium	0.28	mg/kg	2.73973E-07	0.005	5.47945E-05	9.78474E-11	4.3	4.20744E-10
Cadmium	2.4	mg/kg	2.34834E-06	0.001	0.002348337	NC	NC	
Chromium	27.7	mg/kg	2.71037E-05	1	2.71037E-05	NC	NC	
Cobalt	8.6	mg/kg	8.41487E-06			NC	NC	
Copper	32	mg/kg	3.13112E-05	0.037	0.000846247	NC	NC	
Iron	22900	mg/kg	0.022407045			NC	NC	
Lead	186	mg/kg	0.000181996			6.49986E-08	NV	
Magnesium	4030	mg/kg	0.003943249			NC	NC	
Manganese	449	mg/kg	0.000439335	0.14	0.003138105	NC	NC	
Mercury	11.4	mg/kg	1.11546E-05	0.0003	0.037181996	NC	NC	
Nickel	21	mg/kg	2.05479E-05	0.02	0.001027397	NC	NC	
Selenium	0.32	mg/kg	3.13112E-07	0.005	6.26223E-05	NC	NC	
Silver	0.23	mg/kg	2.25049E-07	0.005	4.50098E-05	NC	NC	
Thallium	1.6	mg/kg	1.56556E-06			NC	NC	
Vanadium	15.3	mg/kg	1.49706E-05	0.007	0.002138664	NC	NC	
Zinc	170	mg/kg	0.000166341	0.3	0.000554468	NC	NC	
				Hazard Index =	0.080924094		Total CancerRisk =	7.18088E-06

See Notes on Page 2.

TABLE 10

NEW YORK STATE ELECTRIC AND GAS CORPORATION
COURT STREET SITE
BINGHAMTON, NEW YORK

SUPPLEMENTAL REMEDIAL INVESTIGATION
EXPOSURE AND RISK QUANTIFICATION FOR HYPOTHETICAL WORKERS (1) INCIDENTAL INGESTION OF SOIL

Notes:
NV = no value;   NC = not a carcinogen

(1) Assumes that a hypothetical on-site worker will be exposed to the maximum contaminated surface soil every work day for 25 years
(2) Intake - (C x CF x IR x EF x ED)/(BW x AT) where:
    C = Soil Concentration (mg/kg)
    CF = Conversion Factor = 1E-09 ug/kg or 1E-06 mg/kg
    IR = Soil Ingestion Rate = 100 mg/day
    EF = Exposure Frequency = 250 days
    ED = Exposure Duration = 25 years
    BW = Body Weight = 70 kg
    AT = 25 x 250 days for non-carcinogenic risk; 25550 days for carcinogenic risk (70 yr lifespan)
(3) Uncovered surface soil samples include SS-01, SS-02, SS-03, and SF-05.
(4) Reference Dose generated by USEPA
(5) Carcinogenic Slope Factor generated by USEPA

TABLE 11

NEW YORK STATE ELECTRIC AND GAS CORPORATION
COURT STREET SITE
BINGHAMTON, NEW YORK

SUPPLEMENTAL REMEDIAL INVESTIGATION
FATE AND TRANSPORT PARAMETERS

Organic Compounds	Compound Koc	Retardation Factor of Silt **	Retardation Factor of Sand and Gravel **	Biodegradation Half-Life (days)***
Benzene	83	9.7	10.1	5-16
Toluene	275	29.8	31.2	4-22
Ethylbenzene	832	88.3	92.5	3-10
Xylenes	912	96.7	101.3	7-28
Phenol*	14	2.5	2.5	0.25-3.5

Notes:
* The Koc value for this compound obtained from Ravi and Johnson (1994), all others obtained from Mott (1995).
** Computed using moisture content and bulk density data collected during the SRI and methods presented in Freeze and Cherry (1979).
*** Howard, P. H. 1991. Handbook of Environmental Degradation Rates. Lewis Publishers: Chelsea, Michigan. Taken as the maximum of reported ranges for unacclimated, aqueous aerobic biodegradation half lives.

TABLE 12

NEW YORK STATE ELECTRIC AND GAS CORPORATION
COURT STREET SITE
BINGHAMTON, NEW YORK

SUPPLEMENTAL REMEDIAL INVESTIGATION
CALCULATED MASS FRACTIONS FOR INDIVIDUAL ANALYTES DETECTED IN DNAPL

Chemical Constituent of NAPL	Concentration (ppm)	Mass Fraction (%)
Benzene	1,600	15.4
Toluene	1,700	16.3
Ethylbenzene	2,400	23
Xylenes	2,300	22.1
Total VOCs	**8,000**	**76.8**
2-Methylnaphthalene	450	4.3
Acenaphthene	140	1.3
Acenaphthylene	26	0.2
Anthracene	77	0.7
Benzo(a)anthracene	50	0.5
Benzo(a)pyrene	42	0.4
Benzo(a)fluoranthene	16	0.2
Benzo(ghi)perylene	23	0.2
Benzo(k)fluoranthene	26	0.2
Chrysene	39	0.4
Dibenzofuran	14	0.1
Fluoranthene	96	0.9
Fluorene	100	1
Indeno(1,2,3-cd)pyrene	15	0.1
Naphthalene	730	7
Phenanthrene	310	3
Phenol	16	0.2
Pyrene	160	1.5
Total SVOCs	**2,330**	**22.4**
Aluminum	6.8	0.07
Arsenic	3.1	0.03
Calcium	58	0.6
Chromium	0.18	0.002
Copper	0.76	0.007
Iron	13	0.1
Lead	1.4	0.01
Manganese	0.18	0.002
Mercury	0.04	0.0004
Selenium	0.66	0.006
Thallium	0.36	0.003
Vanadium	0.26	0.002
Zinc	3.4	0.03
Total Inorganics	**88.14**	**0.8**
Total	**10,418**	**100**

TABLE 13

NEW YORK STATE ELECTRIC AND GAS CORPORATION
COURT STREET SITE
BINGHAMTON, NEW YORK

SUPPLEMENTAL REMEDIAL INVESTIGATION
SUSQUEHANNA RIVER STAGE AND DISCHARGE DATA

Date	Discharge (cfs)	River Stage (ft AMSL)
1/19/1998	5,790	833.29
1/21/1998	4,800	832.91
1/23/1998	3,870	832.57
1/26/1998	3,720	832.51
1/28/1998	2,960	832.23
1/30/1998	2,600	832.09
2/2/1998	2,310	831.99
2/4/1998	2,160	831.89
2/6/1998	2,010	831.81
2/9/1998	1,650	831.65
2/11/1998	1,610	831.63
2/13/1998	4,530	832.89
2/16/1998	2,680	832.11
2/18/1998	3,230	832.49
2/20/1998	6,520	833.53
2/23/1998	4,800	832.95
2/25/1998	NA	832.83
2/27/1998	4,580	832.85
3/2/1998	12,800	835.25
3/4/1998	9,920	834.59
3/6/1998	7,040	833.75
3/9/1998	10,500	834.87
3/11/1998	23,100	830.63
3/13/1998	11,600	834.97
3/16/1998	6,530	833.61
3/18/1998	5,420	833.19
3/20/1998	6,710	833.65

Notes:
1) River stage measurements taken at site staff gauge SG-1.
2) Discharge recorded at USGS Station number 01503000, Susquehanna River at Conklin, NY.
3) NA = Not Available.
4) cfs = cubic feet per second.
5) ft AMSL = feet above mean level, 1929 NGVD.

TABLE 14

NEW YORK STATE ELECTRIC AND GAS CORPORATION
COURT STREET SITE
BINGHAMTON, NEW YORK

SUPPLEMENTAL REMEDIAL INVESTIGATION
SURFACE WATER ANALYTICAL RESULTS

Location / Sample Type	**NYSDEC Criteria**	**SW93-1 FS**	**SW93-2 FS**	**SW93-3 FS**	**SW93--4 FS**	**SW93-4 DUP**	**SW93-5 FS**
Aluminum	NA	**631**	**260**	**316**	**255**	**358**	**373**
Antimony	3 G	3.0 U	3.0 U	**3.4 J**	3.0 U	3.0 U	3.0 U
Barium	1,000	**21 J**	**21 J**	**23 J**	**22 J**	**22 J**	**22 J**
Copper	200	**4.0 J**	**4.0 J**	4.0 U	**4.0 J**	**4.0 J**	**4.0 J**
Iron	300	**486**	**340**	**323**	**726**	**342**	**327**
Lead	50	**2.6 J**	**1.5 J**	**1.7 J**	**2.1 J**	**3.8**	**5.0**
Manganese	300	**68**	**67**	**69**	**69**	**66**	**67**
Zinc	300	**10 J**	**6.0 J**	**5.0 J**	**8.0 J**	**6.0 J**	**7.0 J**

Notes:
All concentrations reported in micrograms per liter (ug/L); also expressed as parts per billion (ppb).
Table modified from Table F-6 in the Task II Remedial Investigation Report (BBL, 1996).
Samples collected on June 17, 1993.
Detections are bolded.
J = The analyte was positively identified; however, the associated numerical value is an estimated concentration only.
U = The analyte was analyzed for but not detected. The associated value is the analyte instrument detection limit.
Surface water samples were also analyzed for VOCs and SVOCs, but none were detected.
An additional surface water sample was collected in 2001 and analyzed for BTEX and PAHs, but none were detected.

Criteria Notes:
G = Guidance value.
NA = Not applicable.

TABLE 15

NEW YORK STATE ELECTRIC AND GAS CORPORATION
COURT STREET SITE
BINGHAMTON, NEW YORK

FORENSIC SOURCE EVALUATION FINDINGS

Location	Depth Range	Total PAH	MGP-Related Tar Characteristics					Petroleum Characteristics			Background Characteristics		
	feet bgs	mg/Kg dry wt	Napth. > Phen. > Fluor.	Napth. < Phen. > Fluor.	Napth. < Phen.< Fluor.	Fluor. / Pyrene > 1	Fluor. / Pyrene < 1	Kerosene Range	Diesel Range	Waste/ Lube Oil Range	Total PAHs < 1 mg/kg	Fluor. / Pyrene > 1	Fluor. / Pyrene < 1
1993 Riverbed Samples													
SS-01	0-0.9	4.8			x		x						
SS-02	0-0.7	1.6										x	
SS-03	0-1.2	1,979		x			x						
SS-04	0-0.9	0.24									x	x	
SS-05	0-0.8	1.7	x				x						
SS-06	0-0.6	35			x		x						
SS-07	0-1	4.8			x		x						
SS-08	0-1.4	12			x		x						
SS-09	0-0.8	16			x		x						
SS-10	0-0.8	26			x		x		x	x			
SS-11	0-0.7	301	x				x		x	x			
SS-12	0-0.8	41		x			x			x			
SS-13	0-0.9	0.1									x	x	
SS-14	0-1.1	0.14									x	x	
1997 Riverbed Samples													
SS-12-1	0-0.5	5.7 J		x			x		x				
SS-12-1	1-2	2.3 J	x				x						
SS-12-1	2-3	0.062 J									x		
SS-12-2	0-0.5	0.15 J									x		
SS-12-2	1-2	0.11 J									x		
SS-12-3	0-0.5	2.1 J			x		x						
SS-12-3	1-2	2.0 J		x		x							
SS-12-4	0-0.5	0.051 J									x		
SS-12-4	1-2	0.31 J									x		
SS-12-5	0-0.5	ND									x		
SS-12-5	1-2	0.31 J									x		
SS-12-6	0-0.5	ND									x		
SS-12-6	1-2	ND									x		
SS-12-7	0-0.5	0.22 J									x		
SS-12-7	1-2	0.18 J									x		
SS-1A	0-0.5	0.94								x		x	
SS-1B	0-0.5	11.8			x	x							
SS-1B (DUP)	0-0.5	6.8			x	x				x			
SS-3-1	0-0.5	360 J	x				x						
SS-3-1	1-2	1,092 J	x				x						
SS-3-1	3-4	4.1 J											
SS-3-10	0-0.5	0.54 J									x		
SS-3-10	1-2	0.18 J									x		
SS-3-11	0-0.5	170 J		x		x							
SS-3-11	1-2	140 J		x			x						
SS-3-11	2-3	62 J		x			x						
SS-3-12	0-0.5	26 J		x		x				x			
SS-3-12	1-2	170 J		x			x						
SS-3-13	0-0.5	0.041 J									x		
SS-3-13	1-2	2.0 J										x	
SS-3-14	0-0.5	1.0 J										x	
SS-3-14	1-2	1.6 J										x	
SS-3-2	0-0.5	430 J	x			x							
SS-3-3	0-0.5	31 J		x			x						
SS-3-3	1-2	720 J	x				x						
SS-3-3	3-4	2.0 J		x			x						
SS-3-4	0-0.5	2.6 J		x			x						
SS-3-4	1-2	6.5 J		x			x						
SS-3-5	0-0.5	230 J	x			x							
SS-3-5	1-2	340 J	x			x							
SS-3-6	0-0.5	130 J		x		x							
SS-3-6	2-3	12 J		x			x						
SS-3-7	0-0.5	1.8 J									x		
SS-3-7	1-2	2.9 J		x			x						
SS-3-8	0-0.5	ND									x		
SS-3-8	1-2	ND									x		
SS-3-9	1-2	7.2 J										x	
SS-3-9	0-0.5	ND									x		

TABLE 15

NEW YORK STATE ELECTRIC AND GAS CORPORATION
COURT STREET SITE
BINGHAMTON, NEW YORK

FORENSIC SOURCE EVALUATION FINDINGS

Location	Depth Range feet bgs	Total PAH mg/Kg dry wt	MGP-Related Tar Characteristics					Petroleum Characteristics			Background Characteristics		
			Napth. > Phen. > Fluor.	Napth. < Phen. > Fluor.	Napth. < Phen.< Fluor.	Fluor. / Pyrene > 1	Fluor. / Pyrene < 1	Kerosene Range	Diesel Range	Waste/ Lube Oil Range	Total PAHs < 1 mg/kg	Fluor. / Pyrene > 1	Fluor. / Pyrene < 1
2001 Riverbed Samples													
SR-101	0-2	1.3								x	x		
SR-102	0-2	308		x			x		x				
SR-104	0-1	0.57									x		
SR-105	0-2	ND									x		
SR-106	0-2	0.26									x		
SR-107	0-2	ND									x		
SR-108	0-2	12			x	x							
SR-109	0-2	33.5			x		x		x	x			
SR-109	4-6	ND									x		
SR-110	0-2	ND									x		
SR-111	0-2	1.1									x		
SR-112	0-2	14			x		x						
SR-113	0-2	2.7											x
SS-1D	0-0.7	45		x			x		x	x			
SS-15	0-0.8	1.7								x			
CSPH SUMP	sump sediment			x		x				x			
CSPH SUMP (DUP)	sump sediment			x		x				x			
Soil Samples													
TB-02	10-14	3,371	x			x							
TP-07	5	4,746	x			x							
SB-4	12-14	118.71		x			x						
SB-5	4-6	225.62			x	x							
SB-6	4-6	1064.2		x			x						
SB-101	15-17	125.5						x	x				
SB-101	10-12	ND									x		
MW01-7R	20-22	0.2						x					
Groundwater and NAPL Samples													
TW97-2S	groundwater	2									x		
TW97-3S	groundwater	8							x	x			
MW-13	NAPL	NA	x				x						

Acronyms and Abbreviations:
Napth = Naphthalene.
Phen. = Phenanthrene.
Fluor = Fluoranthene.
PAHs = Polycyclic Aromatic Hydrocarbons.
ug/kg, mg/kg = micrograms and milligrams per kilogram.
dry wt. = dry weight.
bgs = below ground surface (riverbed sample depths referenced to riverbed surface).

TABLE 16

NEW YORK STATE ELECTRIC AND GAS CORPORATION
COURT STREET SITE
BINGHAMTON, NEW YORK

SUPPLEMENTAL REMEDIAL INVESTIGATION
PIPE AND SEWER SEDIMENT SAMPLE ANALYTICAL RESULTS

Location Date Sampled Sample Type	MH-1 10/13/1997 FS	MH-2 10/13/1997 FS	MH-3 10/13/1997 FS	24-INCH PIPE 10/7/1997 FS	CSPH SUMP 11/29/2001 FS	CSPH SUMP 11/29/2001 DUP
Volatile Organic Compounds						
1,1,1-Trichloroethane	0.01 U	0.10 U	**0.002 J**	0.01 U	--	--
2-Butanone	0.01 U	0.10 U	0.01 U	0.01 U	--	--
Acetone	0.01 U	0.10 U	0.01 U	0.01 U	--	--
Benzene	0.01 U	0.10 U	0.01 U	0.01 U	**0.008**	**0.01**
Ethylbenzene	0.01 U	0.10 U	0.01 U	0.01 U	**0.08**	**0.18**
Methylene chloride	0.01 U	0.10 U	0.01 U	0.01 U	--	--
Styrene	0.01 U	0.10 U	0.01 U	0.01 U	--	--
Toluene	0.01 U	0.10 U	0.01 U	0.01 U	**0.01**	**0.01**
o-Xylene	--	--	--	--	**0.04**	**0.08**
Xylenes, Total	0.01 U	0.10 U	0.01 U	0.01 U	--	--
m,p-Xylene	--	--	--	--	**0.02**	**0.07**
Total BTEX	ND	ND	ND	ND	**0.16**	**0.36**
Semivolatile Organic Compounds						
2-Methylnaphthalene	4.4 U	6.7 U	38. U	0.37 U	--	--
3-Nitroaniline	22. U	33. U	190 U	1.8 U	--	--
4-Methylphenol	4.4 U	6.7 U	38. U	0.37 U	--	--
4-Nitroaniline	22. UJ	33. UJ	190 UJ	1.8 U	--	--
4-Nitrophenol	22. U	33. U	190 U	1.8 U	--	--
Acenaphthene	4.4 U	**14**	38. U	**0.62**	**9.3**	**8**
Acenaphthylene	4.4 U	6.7 U	38. U	**2**	7. U	7.1 U
Anthracene	4.4 U	**1.8 J**	38. U	**0.86**	**5. J**	**5. J**
Benzo(a)anthracene	**1.3 J**	**1.6 J**	38. U	**2.3**	**6. J**	**6. J**
Benzo(a)pyrene	**1.2 J**	**2.1 J**	**4.7 J**	**3.7 DJ**	**5. J**	**5. J**
Benzo(b)fluoranthene	**0.97 J**	**2. J**	**4.8 J**	**1.5**	**6. J**	**6. J**
Benzo(ghi)perylene	**0.59 J**	**1.1 J**	**6. J**	**0.93**	**3. J**	**4. J**
Benzo(k)fluoranthene	**1. J**	**1.8 J**	**5.8 J**	**1.6**	**5. J**	**5. J**
Bis(2-ethylhexyl) phthalate	4.4 U	6.7 U	38. U	**0.29 J**	--	--
Butyl benzyl phthalate	4.4 U	6.7 U	**180**	0.37 U	--	--
Chrysene	**1.3 J**	**2.2 J**	38. U	**2.4**	**8.1**	**7.7**
Di-n-butyl phthalate	4.4 U	6.7 U	38. U	0.37 U	--	--
Di-n-octyl phthalate	4.4 U	6.7 U	38. U	0.37 U	--	--
Dibenzo(a,h)anthracene	4.4 U	6.7 U	38. U	**0.21 J**	7. U	7.1 U
Dibenzofuran	4.4 U	**1.8 J**	38. U	0.37 U	7. U	**1. J**
Fluoranthene	**2.9 J**	**5.4 J**	**4.9 J**	**5.5 D**	**17**	**18**
Fluorene	4.4 U	**9.9**	38. U	0.37 U	**7.4**	**7. J**
Indeno(1,2,3-cd)pyrene	4.4 U	**1.1 J**	**4.8 J**	**0.77**	**3. J**	7.1 U
N-nitrosodiphenylamine	4.4 U	6.7 U	38. U	0.37 U	--	--
Naphthalene	4.4 U	6.7 U	38. U	**0.32 J**	**12**	**10**
Phenanthrene	**1.6 J**	**2.5 J**	38. U	**0.16 J**	**23**	**21**
Pyrene	**1.6 J**	**3.5 J**	**4.4 J**	**3.9 DJ**	**16**	**15**
Total PAHs	**12.5**	**49**	**35.4**	**26.8**	**126**	**118**
Total Semivolatiles	**12.5**	**50.8**	**215**	**27.1**	**126**	**119**
Inorganics						
Aluminum	**4,880**	**11,800**	**13,500**	**11,600**	--	--
Antimony	**2.4 BJ**	**4.2 BJ**	**3.7 BJ**	**1.4 BJ**	--	--
Arsenic	**4.3**	**13**	**16.2**	**7.5**	--	--
Barium	**42.8**	**230**	**226**	**70.9**	--	--
Beryllium	**0.21 B**	**0.37 B**	**0.43 B**	**0.47 B**	--	--
Cadmium	**0.20 BJ**	**2.7**	**3.7**	**0.93**	--	--
Calcium	**35,100**	**35,100**	**12,400**	**2,190**	--	--
Chromium	**27.8**	**46.5**	**44.8**	**16.5 J**	--	--
Cobalt	**4. B**	**11.2**	**12.6**	**10.3**	--	--
Copper	**70.1**	**153**	**159**	**21.2**	--	--
Iron	**16,800**	**52,100**	**64,200**	**23,800**	--	--
Lead	**219**	**284**	**326**	**30.9**	--	--
Magnesium	**4,100**	**8,180**	**7,720**	**3,640**	--	--
Manganese	**195**	**513**	**1,050**	**355**	--	--
Mercury	**0.13 B**	**0.57**	**0.7**	**0.07 B**	--	--
Nickel	**14.9 J**	**34.2 J**	**38.9 J**	**23.7 J**	--	--
Potassium	**601 B**	**1,360**	**1,580**	**991**	--	--
Selenium	**1.4**	**1.6**	**1.6**	0.36 U	--	--
Silver	**0.42 BJ**	**1.4 BJ**	**1.6 J**	**0.39 BJ**	--	--
Sodium	**99.6 B**	**155 B**	**245 B**	**804**	--	--
Thallium	**3.3 J**	**3.7 J**	**3.5 J**	**1.2 BJ**	--	--

See Notes on Page 2.

TABLE 16

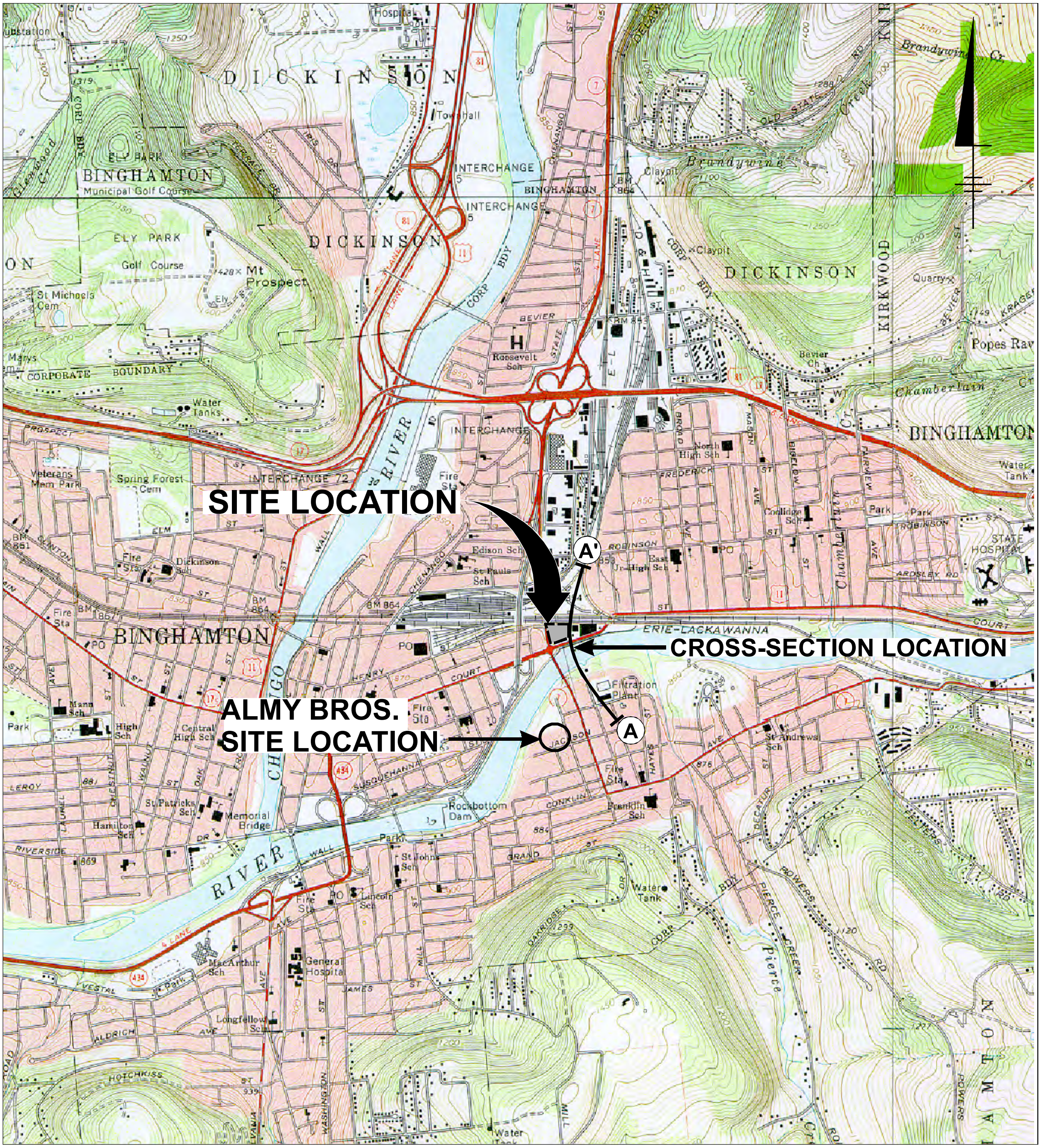
NEW YORK STATE ELECTRIC AND GAS CORPORATION
COURT STREET SITE
BINGHAMTON, NEW YORK

SUPPLEMENTAL REMEDIAL INVESTIGATION
PIPE AND SEWER SEDIMENT SAMPLE ANALYTICAL RESULTS

Location Date Sampled Sample Type	MH-1 10/13/1997 FS	MH-2 10/13/1997 FS	MH-3 10/13/1997 FS	24-INCH PIPE 10/7/1997 FS	CSPH SUMP 11/29/2001 FS	CSPH SUMP 11/29/2001 DUP
Vanadium	**11.9**	**35.8**	**38.2**	**15.8 J**	--	--
Zinc	**194 J**	**641 J**	**770 J**	**94.4**	--	--
Cyanide, Total	**1.2**	**3.8**	**1.5**	0.71 U	--	--
Cyanide, Amenable	0.67 U	1. U	0.57 U	0.71 U	--	--
Total Petroleum Hydrocarbons						
TPH as .4 Fuel Oil	--	--	--	**390**	--	--
TPH as 10W40 Oil	--	--	--	110 U	--	--

Notes:
Results are reported in milligrams per kilogram (mg/Kg) .
-- = Not analyzed.
B = The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.
CSPH = Court Street pump house.
D = Concentration is based on a diluted sample analysis.
DUP = Field duplicate.
FS = Field sample.
J = The compound was positively identified; however, the associated numerical value is an estimated concentration only.
ND = All associated compounds were analyzed for but none were detected.
U = Compound was analyzed for but not detected. Value shown is the detection limit.

Figures



REFERENCE: Base map source: USGS 7.5 Min. Topo. Quad., Binghamton East, NY., Binghamton West, NY., Castle Creek, NY., Chenango Forks, NY. (1968, Photorevised 1976).

2,000 ft 0 2,000 ft

GRAPHIC SCALE

QUADRANGLE LOCATION

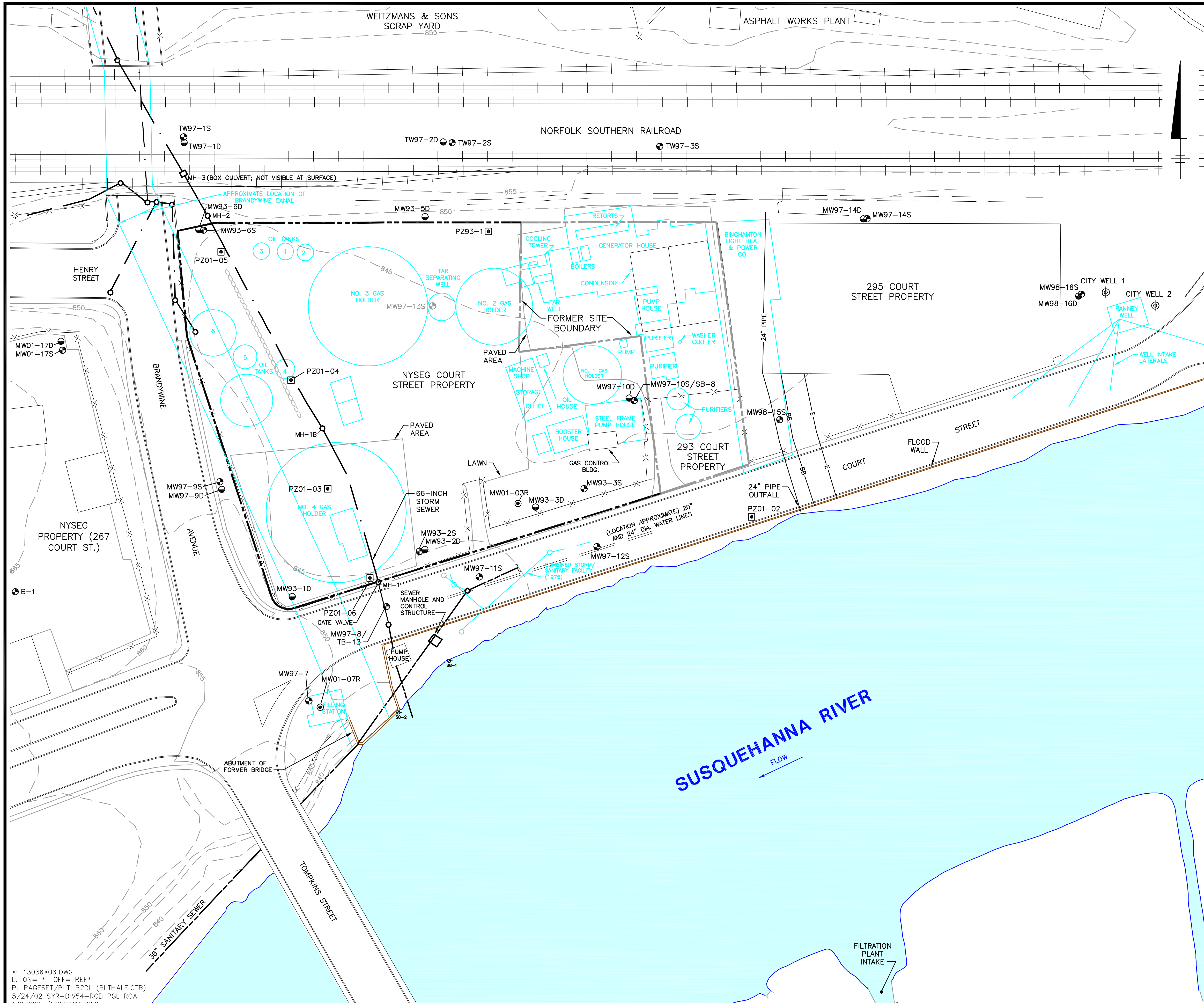
NEW YORK STATE ELECTRIC & GAS CORP.
BINGHAMTON, NEW YORK
COURT STREET SITE
PHASE II SUPPLEMENTAL REMEDIAL INVESTIGATION

SITE LOCATION AND SELECTED FEATURES

BBL® BLASLAND, BOUCK & LEE, INC. engineers & scientists

FIGURE 1

04/30/02 SYR-D54-DJH
13036003/13036n02.CDR



LEGEND

FLOOD WALL
RAILROAD TRACK
FENCE
SITE PROPERTY LINES (APPROXIMATE)
SEWER LINE (APPROXIMATE)
GROUND SURFACE ELEVATION CONTOUR (FT. AMSL)
HISTORICAL FEATURE
BURIED CONCRETE WALL
MONITORING WELL (SHALLOW)
MONITORING WELL (DEEP)
MONITORING WELL (BEDROCK)
PIEZOMETER
CITY MONITORING WELL
STAFF GAUGE
DECOMMISSIONED MONITORING WELL

NOTES:

1. BASE MAP PROVIDED BY NYSEG (JUNE 12, 1997).
2. SURFACE ELEVATIONS DIGITIZED FROM CITY OF BINGHAMTON MAP, SHEET 303, FLOWN DECEMBER 2, 1973 AND MAPPED APRIL 1, 1974.
3. ALL ELEVATIONS ARE REFERENCED TO MEAN SEA LEVEL USING NATIONAL GEODETIC VERTICAL DATUM OF 1929, HORIZONTAL DATUM: NAD 83 NEW YORK STATE CENTRAL 3102.
4. ALL INVESTIGATION LOCATIONS SURVEYED BY HAWK ENGINEERING, P.C. BINGHAMTON, N.Y. EXCEPT THE FOLLOWING SEDIMENT PROBING AND SAMPLING LOCATIONS:
   - LOCATIONS WITH AN "SS" OR "SF" PREFIX;
   - LOCATIONS WITH A "-2" SUFFIX; AND
   - SEDIMENT SAMPLING LOCATIONS SED-1 AND SED-2.
5. STORM SEWER LOCATION DIGITIZED FROM CITY OF BINGHAMTON MAP, SHEET 303, ENTITLED: PRELIMINARY REPORT, COMPREHENSIVE STORM DRAINAGE, EXISTING FACILITIES. PREPARED BY VERNON O. SHUMAKER, CONSULTING ENGINEER, VESTAL, NEW YORK, DATE NOT PROVIDED.

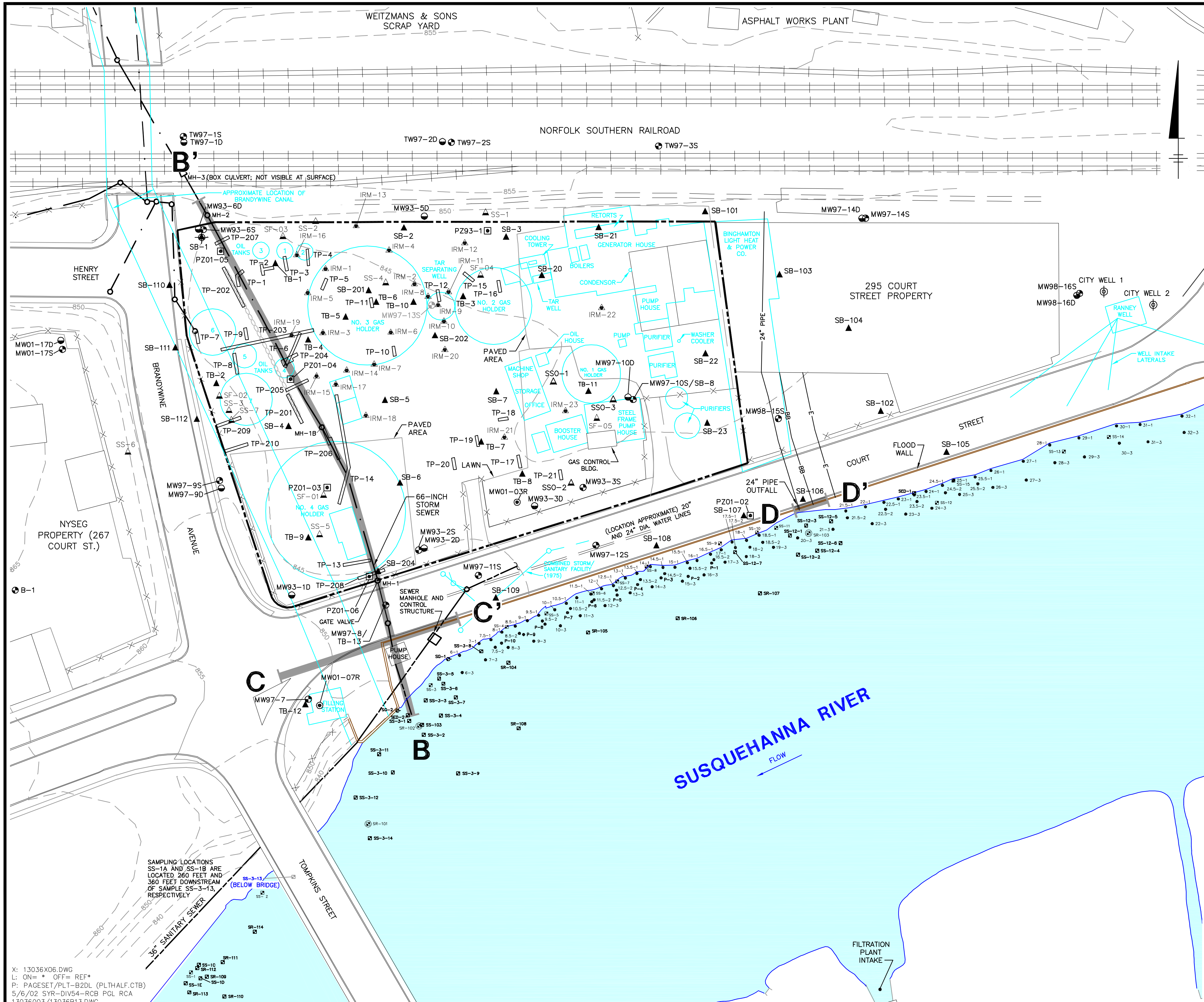
X: 13036X06.DWG
L: ON= * OFF= REF*
P: PAGESET/PLT-B2DL (PLTHALF.CTB)
5/24/02 SYR-DIV54-RCB PGL RCA
13036003/13036B10.DWG

NEW YORK STATE ELECTRIC & GAS CORP.
BINGHAMTON, NEW YORK
COURT STREET SITE
PHASE II SRI

SITE PLAN

BLASLAND, BOUCK & LEE, INC.
engineers & scientists

FIGURE
2



LEGEND

- FLOOD WALL
- RAILROAD TRACK
- FENCE
- SITE PROPERTY LINES (APPROXIMATE)
- SEWER LINE (APPROXIMATE)
- GROUND SURFACE ELEVATION CONTOUR (FT. AMSL)
- HISTORICAL FEATURE
- BURIED CONCRETE WALL
- MONITORING WELL (SHALLOW)
- MONITORING WELL (DEEP)
- MONITORING WELL (BEDROCK)
- PIEZOMETER
- CITY MONITORING WELL
- SURFACE SOIL SAMPLE
- TEST PIT
- SOIL BORING
- STAFF GAUGE
- SEDIMENT PROBING POINT
- SEDIMENT BORING AND/OR SAMPLING LOCATION
- DEEP RIVERBED BORING LOCATION
- IRM CONFIRMATORY SAMPLE LOCATION
- DECOMMISSIONED MONITORING WELL
- B — B' LINE OF CROSS-SECTION

NOTES:

1. BASE MAP PROVIDED BY NYSEG (JUNE 12, 1997).
2. SURFACE ELEVATIONS DIGITIZED FROM CITY OF BINGHAMTON MAP, SHEET 303, FLOWN DECEMBER 2, 1973 AND MAPPED APRIL 1, 1974.
3. ALL ELEVATIONS ARE REFERENCED TO MEAN SEA LEVEL USING NATIONAL GEODETIC VERTICAL DATUM OF 1929, HORIZONTAL DATUM: NAD 83 NEW YORK STATE CENTRAL 3102.
4. ALL INVESTIGATION LOCATIONS SURVEYED BY HAWK ENGINEERING, P.C. BINGHAMTON, N.Y. EXCEPT THE FOLLOWING SEDIMENT PROBING AND SAMPLING LOCATIONS:
   - LOCATIONS WITH AN "SS" OR "SF" PREFIX;
   - LOCATIONS WITH A "-2" SUFFIX; AND
   - SEDIMENT SAMPLING LOCATIONS SED-1 AND SED-2.
5. LOCATIONS OF CONFIRMATORY SAMPLING POINTS IRM-1 THROUGH IRM-23 FROM FIGURE 6 OF THE JANUARY 2002 "INTERIM REMEDIAL MEASURES, FINAL ENGINEERING REPORT" PREPARED BY NYSEG LICENSING AND ENVIRONMENTAL OPERATIONS DEPARTMENT.
6. STORM SEWER LOCATION DIGITIZED FROM CITY OF BINGHAMTON MAP, SHEET 303, ENTITLED: PRELIMINARY REPORT, COMPREHENSIVE STORM DRAINAGE, EXISTING FACILITIES. PREPARED BY VERNON O. SHUMAKER, CONSULTING ENGINEER, VESTAL, NEW YORK, DATE NOT PROVIDED.

0 100' 200'

GRAPHIC SCALE

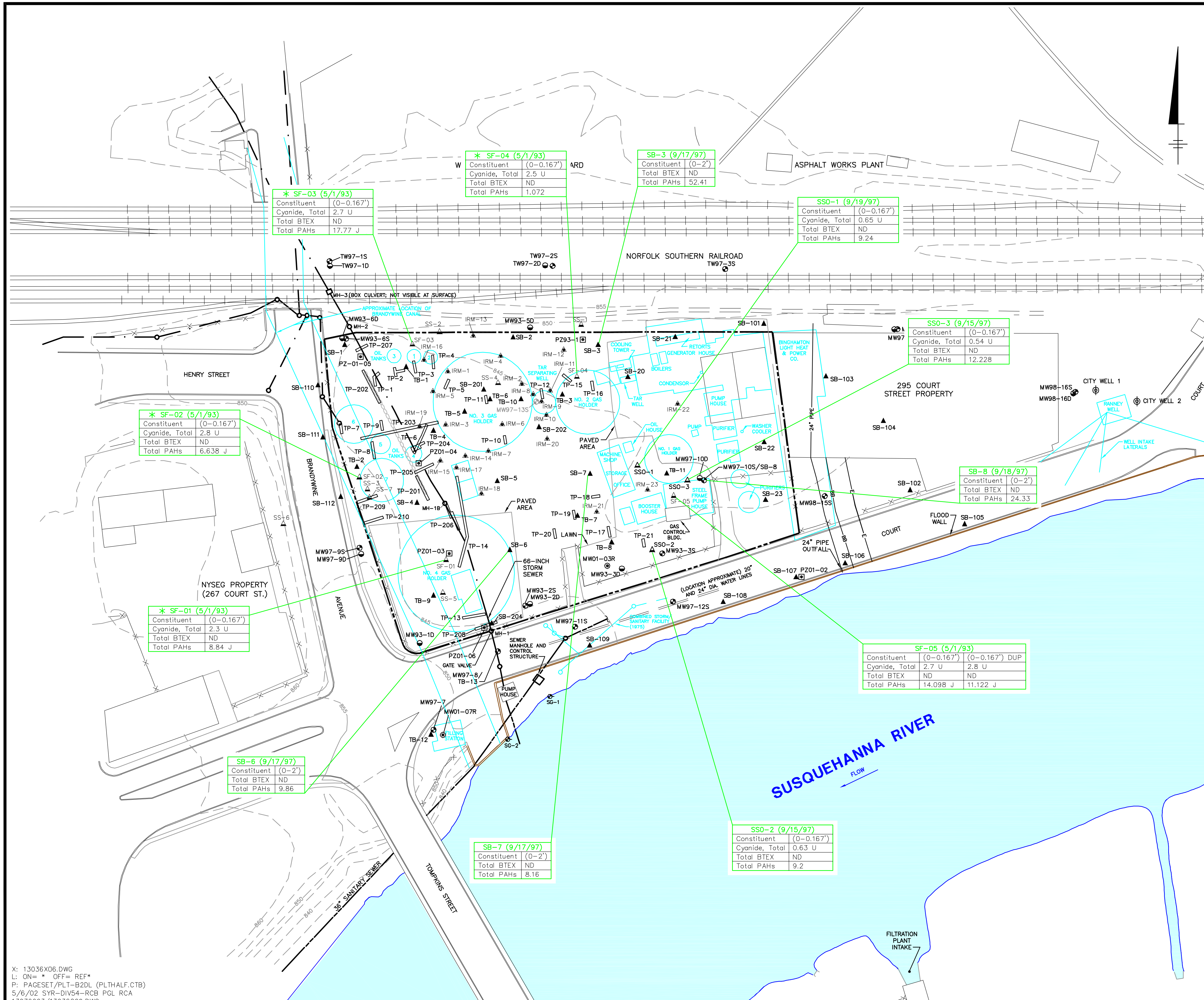
NEW YORK STATE ELECTRIC & GAS CORP.
BINGHAMTON, NEW YORK
COURT STREET SITE
PHASE II SRI

INVESTIGATION LOCATIONS

BBL BLASLAND, BOUCK & LEE, INC. engineers & scientists

FIGURE 3

X: 13036X06.DWG
L: ON=* OFF= REF*
P: PAGESET/PLT-B2DL (PLTHALF.CTB)
5/6/02 SYR-DIV54-RCB PGL RCA
13036003/13036B13.DWG



LEGEND

- FLOOD WALL
- RAILROAD TRACK
- FENCE
- SITE PROPERTY LINES (APPROXIMATE)
- SEWER LINE (APPROXIMATE)
- GROUND SURFACE ELEVATION CONTOUR (FT. AMSL)
- HISTORICAL FEATURE
- BURIED CONCRETE WALL
- MONITORING WELL (SHALLOW)
- MONITORING WELL (DEEP)
- MONITORING WELL (BEDROCK)
- PIEZOMETER
- CITY MONITORING WELL
- SURFACE SOIL SAMPLE
- TEST PIT
- SOIL BORING
- STAFF GAUGE
- SEDIMENT BORING AND/OR SAMPLING LOCATION
- IRM CONFIRMATORY SAMPLE LOCATION
- DECOMMISSIONED MONITORING WELL

* SF-02 (5/1/93)		
Constituent	(0-0.167')	SAMPLE ID / SAMPLE DATE
Cyanide, Total	2.8 U	TOTAL CYANIDE
Total BTEX	ND	BENZENE, TOLUENE, ETHYLBENZENE, AND XYLENE
Total PAHs	6.638 J	TOTAL POLYNUCLEAR AROMATIC HYDROCARBONS

RESULTS ARE IN MILLIGRAMS PER KILOGRAM (mg/Kg) EQUIVALENT TO PARTS PER MILLION (ppm)

U CYANIDE CONCENTRATION WAS NOT DETECTED ABOVE THE INDICATED INSTRUMENT DETECTION LIMIT

ND CONCENTRATIONS WERE NOT DETECTED ABOVE THE INSTRUMENT DETECTION LIMIT

J ESTIMATED VALUE

NOTES:

1. BASE MAP PROVIDED BY NYSEG (JUNE 12, 1997).
2. SURFACE ELEVATIONS DIGITIZED FROM CITY OF BINGHAMTON MAP, SHEET 303, FLOWN DECEMBER 2, 1973 AND MAPPED APRIL 1, 1974.
3. ALL ELEVATIONS ARE REFERENCED TO MEAN SEA LEVEL USING NATIONAL GEODETIC VERTICAL DATUM OF 1929, HORIZONTAL DATUM: NAD 83 NEW YORK STATE CENTRAL 3102.
4. ALL INVESTIGATION LOCATIONS SURVEYED BY HAWK ENGINEERING, P.C. BINGHAMTON, N.Y. EXCEPT THE FOLLOWING SEDIMENT PROBING AND SAMPLING LOCATIONS:
   - LOCATIONS WITH AN "SS" OR "SF" PREFIX;
   - LOCATIONS WITH A "-2" SUFFIX; AND
   - SEDIMENT SAMPLING LOCATIONS SED-1 AND SED-2.
5. LOCATIONS OF CONFIRMATORY SAMPLING POINTS IRM-1 THROUGH IRM-23 FROM FIGURE 6 OF THE JANUARY 2002 "INTERIM REMEDIAL MEASURES, FINAL ENGINEERING REPORT" PREPARED BY NYSEG LICENSING AND ENVIRONMENTAL OPERATIONS DEPARTMENT.
6. * = SURFACE SOIL SAMPLING LOCATION SF-1 IS NOW PAVED OVER WITH ASPHALT: SURFACE SOIL SAMPLING LOCATIONS SF-2, SF-3, AND SF-4 ARE NOW COVERED WITH GRAVEL. ACCORDINGLY, THESE LOCATIONS NO LONGER FALL INTO THE 0-2 FEET BELOW GRADE INTERVAL. AND MAY NOT CONSTITUTE A DIRECT ROUTE FOR HUMAN EXPOSURE.
7. STORM SEWER LOCATION DIGITIZED FROM CITY OF BINGHAMTON MAP, SHEET 303, ENTITLED: PRELIMINARY REPORT, COMPREHENSIVE STORM DRAINAGE, EXISTING FACILITIES. PREPARED BY VERNON O. SHUMAKER CONSULTING ENGINEER, VESTAL, NEW YORK, DATE NOT PROVIDED.

0 120' 240'

GRAPHIC SCALE

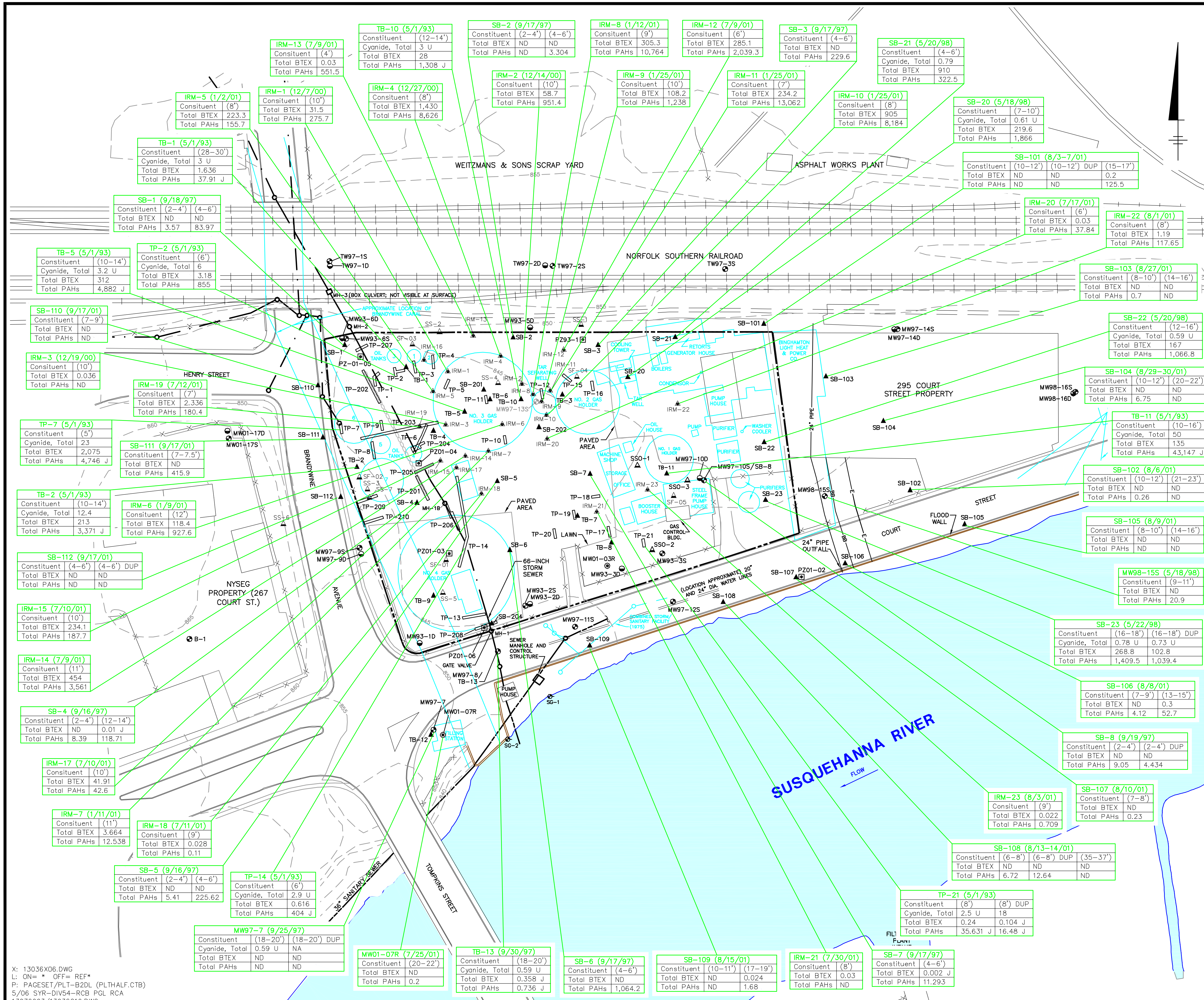
NEW YORK STATE ELECTRIC & GAS CORP.
BINGHAMTON, NEW YORK
COURT STREET SITE
PHASE II SRI

SUMMARY OF SOIL ANALYTICAL DATA (0 - 2')

BLASLAND, BOUCK & LEE, INC.
engineers & scientists

FIGURE 4

X: 13036X06.DWG
L: ON=* OFF= REF*
P: PAGESET/PLT-B2DL (PLTHALF.CTB)
5/6/02 SYR-DIV54-RCB PGL RCA
13036003/13036C09.DWG



LEGEND

- FLOOD WALL
- RAILROAD TRACK
- FENCE
- SITE PROPERTY LINES (APPROXIMATE)
- SEWER LINE (APPROXIMATE)
- GROUND SURFACE ELEVATION CONTOUR (FT. AMSL)
- HISTORICAL FEATURE
- BURIED CONCRETE WALL
- MONITORING WELL (SHALLOW)
- MONITORING WELL (DEEP)
- MONITORING WELL (BEDROCK)
- PIEZOMETER
- CITY MONITORING WELL
- SURFACE SOIL SAMPLE
- TEST PIT
- SOIL BORING
- STAFF GAUGE
- SEDIMENT BORING AND/OR SAMPLING LOCATION
- IRM CONFIRMATORY SAMPLE LOCATION
- DECOMMISSIONED MONITORING WELL

SB-22 (5/20/98)		
Constituent	(12-16')	SAMPLE ID / SAMPLE DATE
Cyanide, Total	0.59 U	TOTAL CYANIDE
Total BTEX	167	BENZENE, TOLUENE, ETHYLBENZENE, AND XYLENE
Total PAHs	1,066.8	TOTAL POLYNUCLEAR AROMATIC HYDROCARBONS

RESULTS ARE IN MILLIGRAMS PER KILOGRAM (mg/Kg) EQUIVALENT TO PARTS PER MILLION (ppm)

U CYANIDE CONCENTRATION WAS NOT DETECTED ABOVE THE INDICATED INSTRUMENT DETECTION LIMIT

ND CONCENTRATIONS WERE NOT DETECTED ABOVE THE INSTRUMENT DETECTION LIMIT

J ESTIMATED VALUE

NOTES:

1. BASE MAP PROVIDED BY NYSEG (JUNE 12, 1997).
2. SURFACE ELEVATIONS DIGITIZED FROM CITY OF BINGHAMTON MAP, SHEET 303, FLOWN DECEMBER 2, 1973 AND MAPPED APRIL 1, 1974.
3. ALL ELEVATIONS ARE REFERENCED TO MEAN SEA LEVEL USING NATIONAL GEODETIC VERTICAL DATUM OF 1929, HORIZONTAL DATUM: NAD 83 NEW YORK STATE CENTRAL 3102.
4. ALL INVESTIGATION LOCATIONS SURVEYED BY HAWK ENGINEERING, P.C. BINGHAMTON, N.Y. EXCEPT THE FOLLOWING SEDIMENT PROBING AND SAMPLING LOCATIONS:
   - LOCATIONS WITH AN "SS" OR "SF" PREFIX;
   - LOCATIONS WITH A "-2" SUFFIX; AND
   - SEDIMENT SAMPLING LOCATIONS SED-1 AND SED-2.
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6. STORM SEWER LOCATION DIGITIZED FROM CITY OF BINGHAMTON MAP, SHEET 303, ENTITLED: PRELIMINARY REPORT, COMPREHENSIVE STORM DRAINAGE, EXISTING FACILITIES. PREPARED BY VERNON O. SHUMAKER, CONSULTING ENGINEER, VESTAL, NEW YORK, DATE NOT PROVIDED.

0 120' 240'

GRAPHIC SCALE

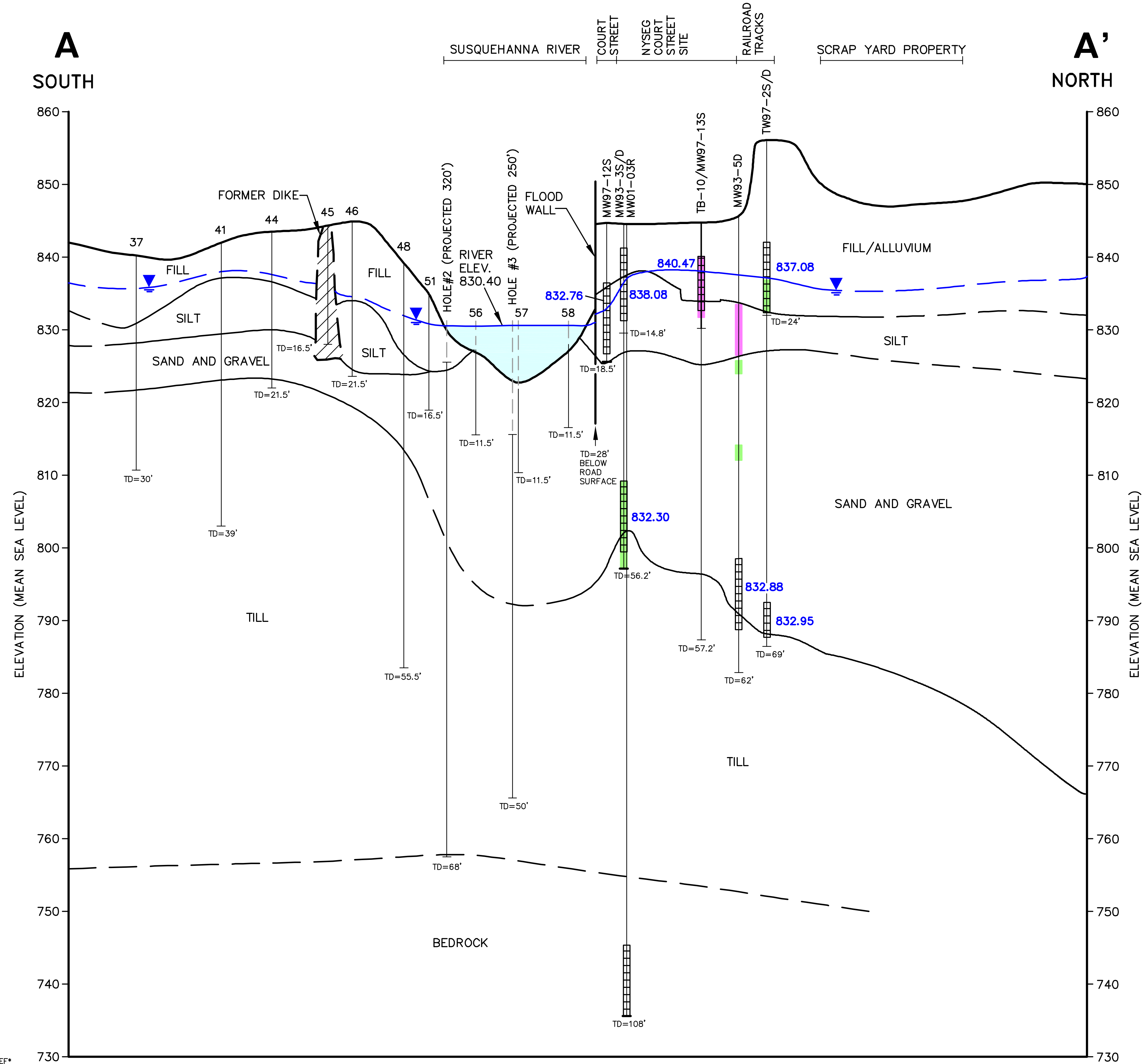
NEW YORK STATE ELECTRIC & GAS CORP.
BINGHAMTON, NEW YORK
COURT STREET SITE
PHASE II SRI

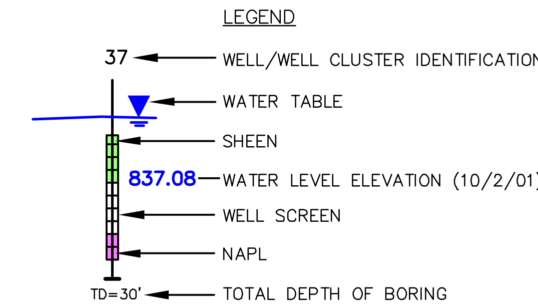
SUMMARY OF SOIL ANALYTICAL DATA (GREATER THAN 2')

BBL BLASLAND, BOUCK & LEE, INC. engineers & scientists

FIGURE 5

X: 13036X06.DWG
L: ON=* OFF= REF*
P: PAGESET/PLT-B2DL (PLTHALF.CTB)
5/06 SYR-DIV54-RCB PGL RCA
13036003/13036C10.DWG





NOTES:

1. GROUND SURFACE ELEVATIONS BASED ON CITY OF BINGHAMTON MAP, SHEET 303, 1974 AND USGS 7.5 MINUTE TOPOGRAPHIC MAP, BINGHAMTON WEST QUADRANGLE, 1968. ALL ELEVATIONS ABOVE MEAN SEA LEVEL, 1929 NATIONAL GEODETIC VERTICAL DATUM.
2. POSTED RIVER STAGE AND WATER TABLE ELEVATIONS MEASURED OCTOBER, 2001.
3. ALL ELEVATIONS ARE REFERENCED TO MEAN SEA LEVEL USING NATIONAL GEODETIC VERTICAL DATUM OF 1929, HORIZONTAL DATUM: NAD 83 NEW YORK STATE CENTRAL 3102.
4. STRATIGRAPHIC CONTACTS INFERRED FROM AVAILABLE SUBSURFACE LOGS AND CONTOUR MAPS GENERATED TO APPROXIMATE TILL AND SILT SURFACES.
5. WELLS WITH PREFIXES MW, TB, AND TW INSTALLED BY BBL IN 1993 AND 1997. WELLS DESIGNATED BY NUMBER ONLY WERE CONSTRUCTED FOR THE CITY OF BINGHAMTON WATER FILTRATION PROJECT, 1957. WELLS DESIGNATED "HOLE" WERE CONSTRUCTED BY THE STATE OF NEW YORK, DEPARTMENT OF PUBLIC WORKS, FOR THE CONSTRUCTION OF THE TOMPKINS STREET BRIDGE, 1960.
6. DASHED LINES ARE INFERRED.

0 300' 600'
HORIZONTAL SCALE (FEET)

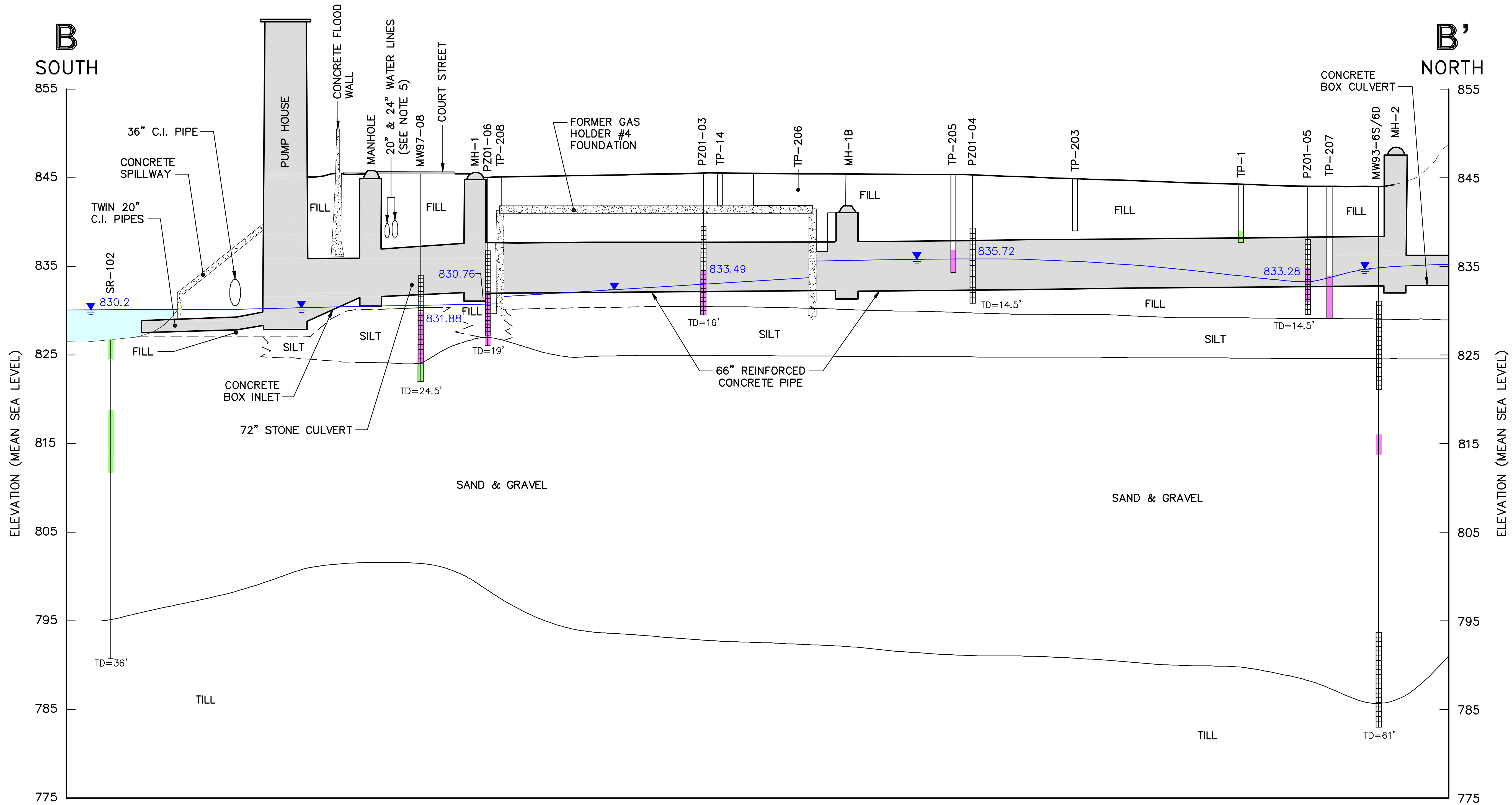
NEW YORK STATE ELECTRIC & GAS CORP.
COURT STREET SITE
BINGHAMTON, NEW YORK
PHASE II SRI

GEOLOGIC CROSS-SECTION A-A'

BBL BLASLAND, BOUCK & LEE, INC. *engineers & scientists*

FIGURE 6

L: ON= * OFF= REF*
P: PAGESET/PLT-BL
5/2/02 SYR-54-PGL SDL RCA
13036003/13036V13.DWG



NOTES:

1. GROUND SURFACE ELEVATIONS BASED ON CITY OF BINGHAMTON MAP, SHEET 303, 1974 AND USGS 7.5 MINUTE TOPOGRAPHIC MAP, BINGHAMTON WEST QUADRANGLE, 1968. ALL ELEVATIONS ABOVE MEAN SEA LEVEL, 1929 NATIONAL GEODETIC VERTICAL DATUM.
2. RIVER STAGE AND WATER TABLE ELEVATIONS MEASURED OCTOBER, 2001.
3. ALL ELEVATIONS ARE REFERENCED TO MEAN SEA LEVEL USING THE NATIONAL GEODETIC VERTICAL DATUM OF 1929.
4. DASHED LINES ARE INFERRED.
5. THE LOCATIONS OF THESE WATER LINES ARE APPROXIMATE. IT IS POSSIBLE THAT THEIR RESPECTIVE LOCATIONS MAY BE REVERSED.

LEGEND

MW97-08 ← WELL/WELL CLUSTER IDENTIFICATION
← WATER TABLE
← WELL SCREEN
833.49 ← WATER LEVEL ELEVATION (10/2/01)
← NAPL
← SHEEN
TD=24.5' ← TOTAL DEPTH

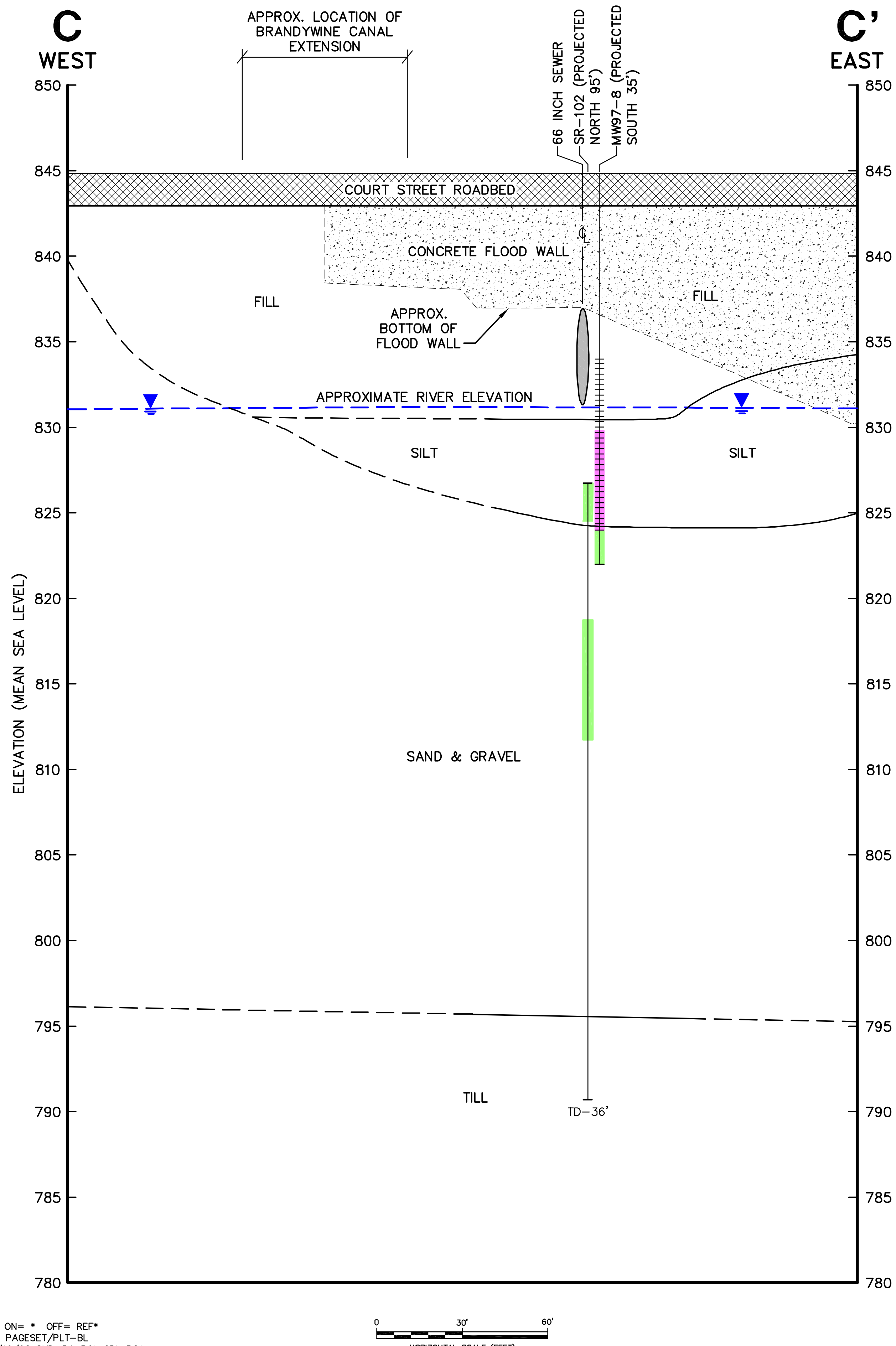
0 50' 100'
APPROX. HORIZONTAL SCALE (FEET)

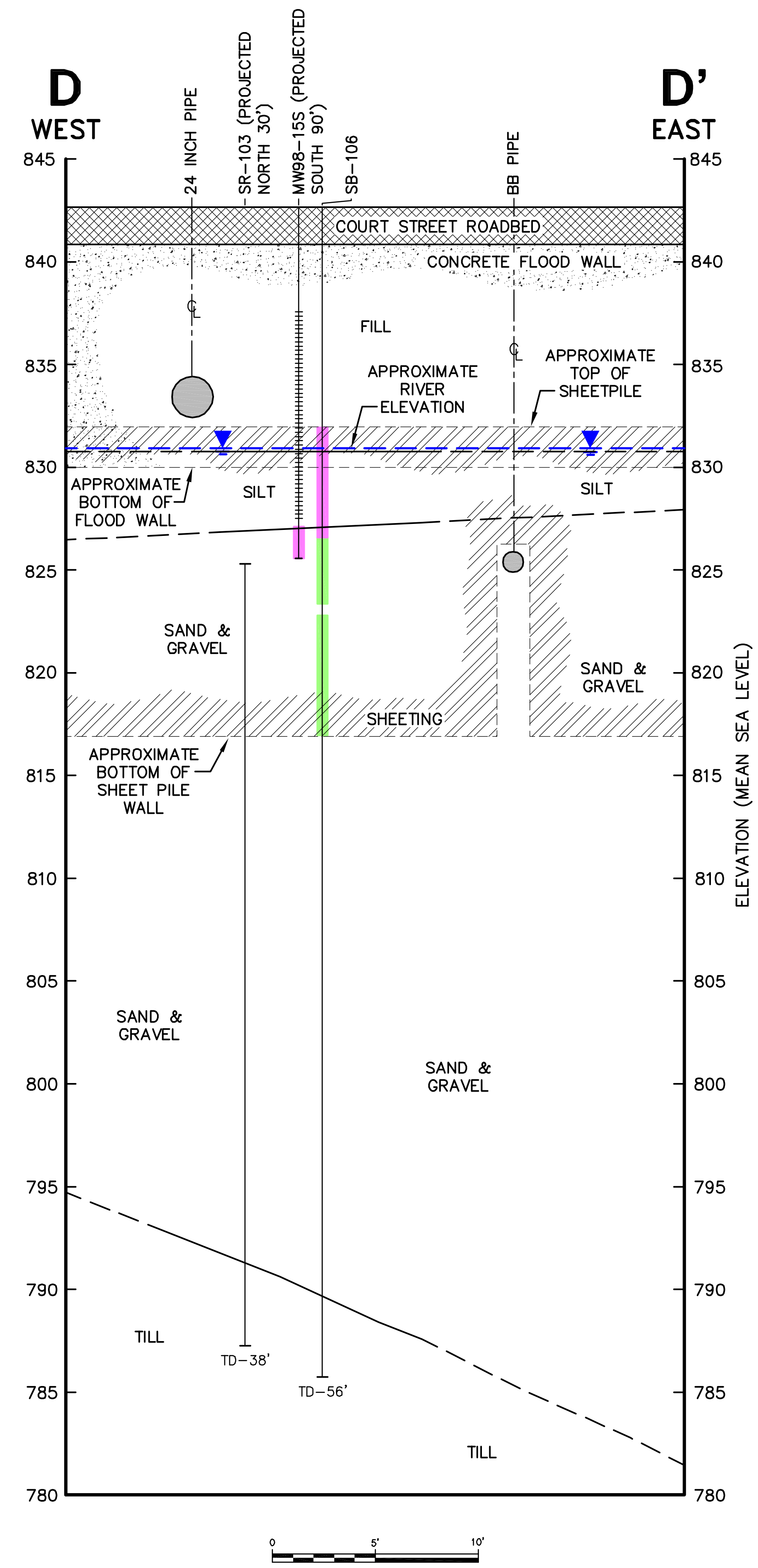
NEW YORK STATE ELECTRIC & GAS CORP.
COURT STREET SITE
BINGHAMTON, NEW YORK
PHASE II SRI

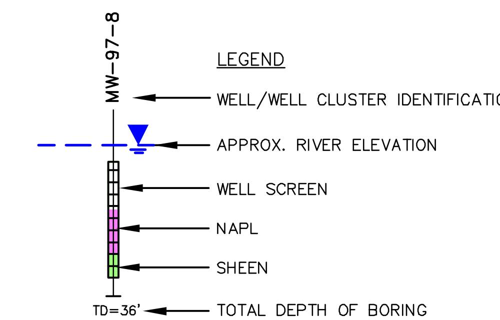
GEOLOGIC CROSS-SECTION B-B'

BBL®
BLASLAND, BOUCK & LEE, INC.
engineers & scientists

FIGURE
7







NOTES:

1. ALL ELEVATIONS ARE REFERENCED TO MEAN SEA LEVEL USING NATIONAL GEODETIC VERTICAL DATUM OF 1929.
2. DASHED LINES ARE INFERRED.

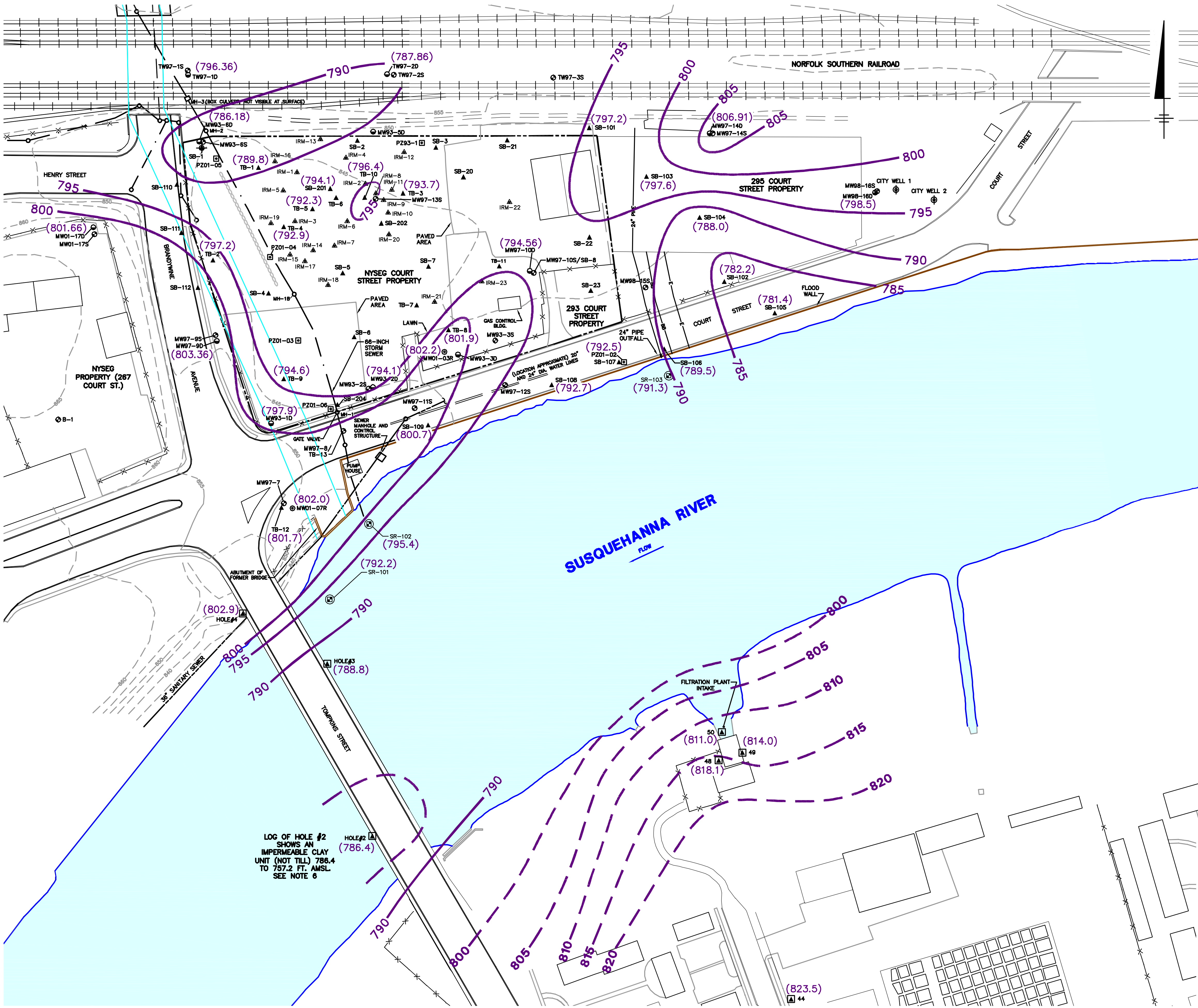
L: ON= * OFF= REF*
P: PAGESET/PLT-BL
5/16/02 SYR-54-PGL SDL RCA
13036003/13036V15.DWG

NEW YORK STATE ELECTRIC & GAS CORP.
COURT STREET SITE
BINGHAMTON, NEW YORK
PHASE II SRI

GEOLOGIC CROSS-SECTIONS C-C' AND D-D'

BBL BLASLAND, BOUCK & LEE, INC. engineers & scientists

FIGURE 8



LEGEND

- FLOOD WALL
- RAILROAD TRACK
- FENCE
- SITE PROPERTY LINES (APPROXIMATE)
- SEWER LINE (APPROXIMATE)
- GROUND SURFACE ELEVATION CONTOUR (FT. AMSL)
- BURIED CONCRETE WALL
- MONITORING WELL (SHALLOW)
- MONITORING WELL (DEEP)
- MONITORING WELL (BEDROCK)
- PIEZOMETER
- CITY MONITORING WELL
- SOIL BORING
- DEEP RIVERBED BORING LOCATION
- HISTORICAL BORING (SEE NOTE 5)
- IRM CONFIRMATORY SAMPLE LOCATION
- (823.8) TOP OF TILL ELEVATION (FT. AMSL)
- 820 TILL SURFACE ELEVATION CONTOUR (FT. AMSL) DASHED WHERE INFERRED

NOTES:

1. BASE MAP PROVIDED BY NYSEG (JUNE 12, 1997).
2. SURFACE ELEVATIONS DIGITIZED FROM CITY OF BINGHAMTON MAP, SHEET 303, FLOWN DECEMBER 2, 1973 AND MAPPED APRIL 1, 1974.
3. ALL ELEVATIONS ARE REFERENCED TO MEAN SEA LEVEL USING NATIONAL GEODETIC VERTICAL DATUM OF 1929, HORIZONTAL DATUM: NAD 83 NEW YORK STATE CENTRAL 3102.
4. STORM SEWER LOCATION DIGITIZED FROM CITY OF BINGHAMTON MAP, SHEET 303, ENTITLED: PRELIMINARY REPORT, COMPREHENSIVE STORM DRAINAGE, EXISTING FACILITIES. PREPARED BY VERNON O. SHUMAKER, CONSULTING ENGINEER, VESTAL, NEW YORK, DATE NOT PROVIDED.
5. ALL SURFACE SOIL SAMPLING, SOIL BORING, TEST BORING, MONITORING WELL, CITY WELL, AND TEMPORARY MONITORING WELL LOCATIONS SURVEYED BY HAWK ENGINEERING, P.C., BINGHAMTON, N.Y.
6. HISTORICAL BORINGS DESIGNATED "HOLE", ADVANCED BY THE STATE OF NEW YORK, DEPARTMENT OF PUBLIC WORKS, FOR THE CONSTRUCTION OF THE TOMPKINS STREET BRIDGE, 1960. HISTORICAL BORINGS DESIGNATED BY NUMBER ONLY, ADVANCED FOR THE CITY OF BINGHAMTON WATER FILTRATION PROJECT, 1957.
7. LOCATIONS OF CONFIRMATORY SAMPLING POINTS IRM-1 THROUGH IRM-23 FROM FIGURE 6 OF THE JANUARY 2002 "INTERIM REMEDIAL MEASURES, FINAL ENGINEERING REPORT" PREPARED BY NYSEG LICENSING AND ENVIRONMENTAL OPERATIONS DEPARTMENT.

0 130' 260

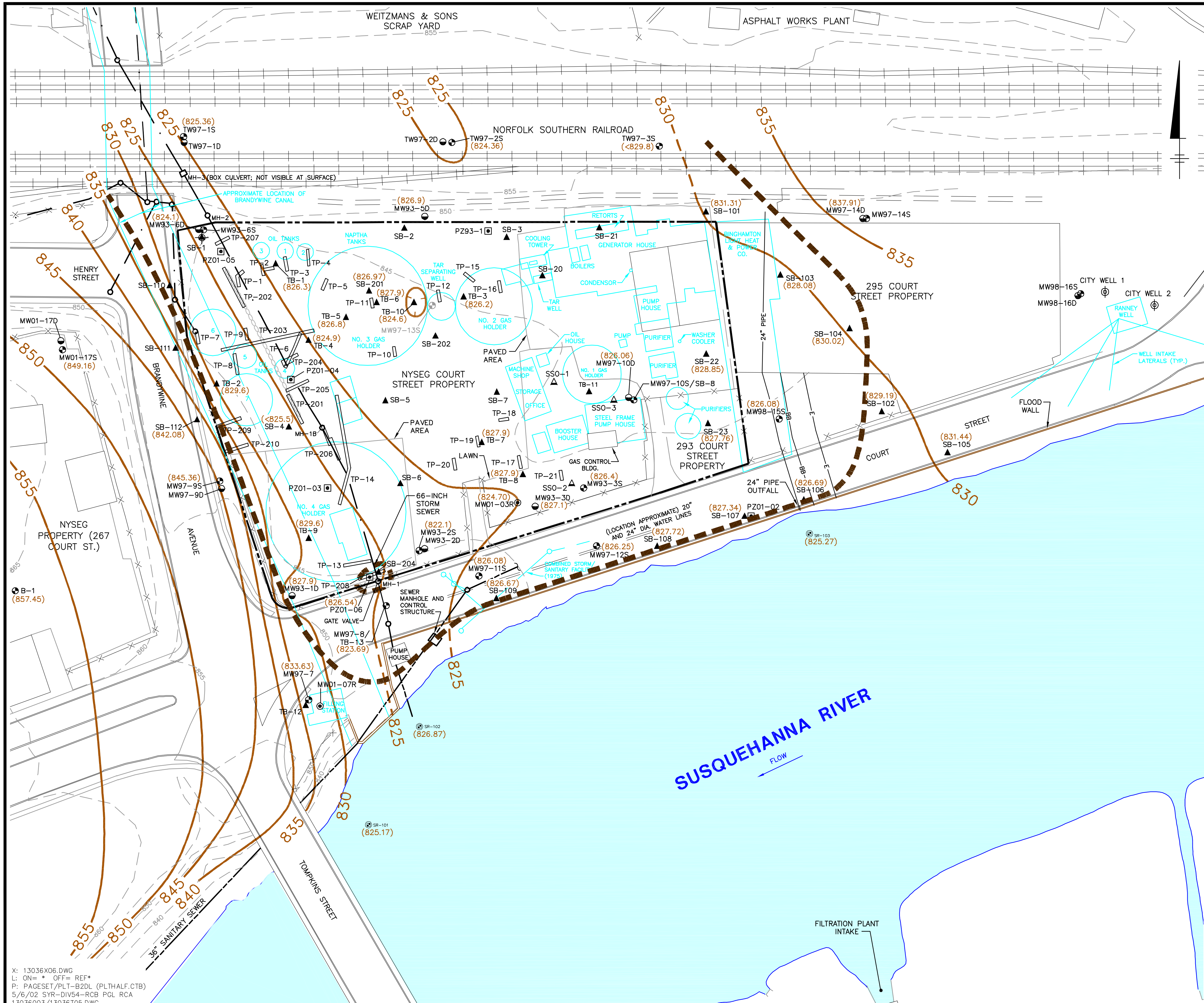
GRAPHIC SCALE

NEW YORK STATE ELECTRIC & GAS CORP.
BINGHAMTON, NEW YORK
COURT STREET SITE
PHASE II SRI

TILL SURFACE ELEVATION CONTOUR MAP

BBL
BLASLAND, BOUCK & LEE, INC.
engineers & scientists

FIGURE
9



LEGEND

- FLOOD WALL
- RAILROAD TRACK
- FENCE
- SITE PROPERTY LINES (APPROXIMATE)
- SEWER LINE (APPROXIMATE)
- GROUND SURFACE ELEVATION CONTOUR (FT. AMSL)
- HISTORICAL FEATURE
- BURIED CONCRETE WALL
- MONITORING WELL (SHALLOW)
- MONITORING WELL (DEEP)
- MONITORING WELL (BEDROCK)
- PIEZOMETER
- CITY MONITORING WELL
- SURFACE SOIL SAMPLE
- TEST PIT
- SOIL BORING
- DEEP RIVERBED BORING LOCATION
- DECOMMISSIONED MONITORING WELL
- (837.91) SAND AND GRAVEL SURFACE ELEVATION (FT. AMSL)
- 835 SAND AND GRAVEL SURFACE ELEVATION CONTOUR (FT. AMSL)
- EDGE OF SILT

NOTES:

1. BASE MAP PROVIDED BY NYSEG (JUNE 12, 1997).
2. SURFACE ELEVATIONS DIGITIZED FROM CITY OF BINGHAMTON MAP, SHEET 303, FLOWN DECEMBER 2, 1973 AND MAPPED APRIL 1, 1974.
3. ALL ELEVATIONS ARE REFERENCED TO MEAN SEA LEVEL USING NATIONAL GEODETIC VERTICAL DATUM OF 1929, HORIZONTAL DATUM: NAD 83 NEW YORK STATE CENTRAL 3102.
4. STORM SEWER LOCATION DIGITIZED FROM CITY OF BINGHAMTON MAP, SHEET 303, ENTITLED: PRELIMINARY REPORT, COMPREHENSIVE STORM DRAINAGE, EXISTING FACILITIES. PREPARED BY VERNON O. SHUMAKER, CONSULTING ENGINEER, VESTAL, NEW YORK, DATE NOT PROVIDED.
5. ALL SURFACE SOIL SAMPLING, SOIL BORING, TEST BORING, MONITORING WELL, CITY WELL, AND TEMPORARY MONITORING WELL LOCATIONS SURVEYED BY HAWK ENGINEERING, P.C., BINGHAMTON, N.Y.
6. HISTORICAL BORINGS ADVANCED BY THE STATE OF NEW YORK, DEPARTMENT OF PUBLIC WORKS, FOR THE CONSTRUCTION OF THE TOMPKINS STREET BRIDGE, 1960.

0 100' 200'

GRAPHIC SCALE

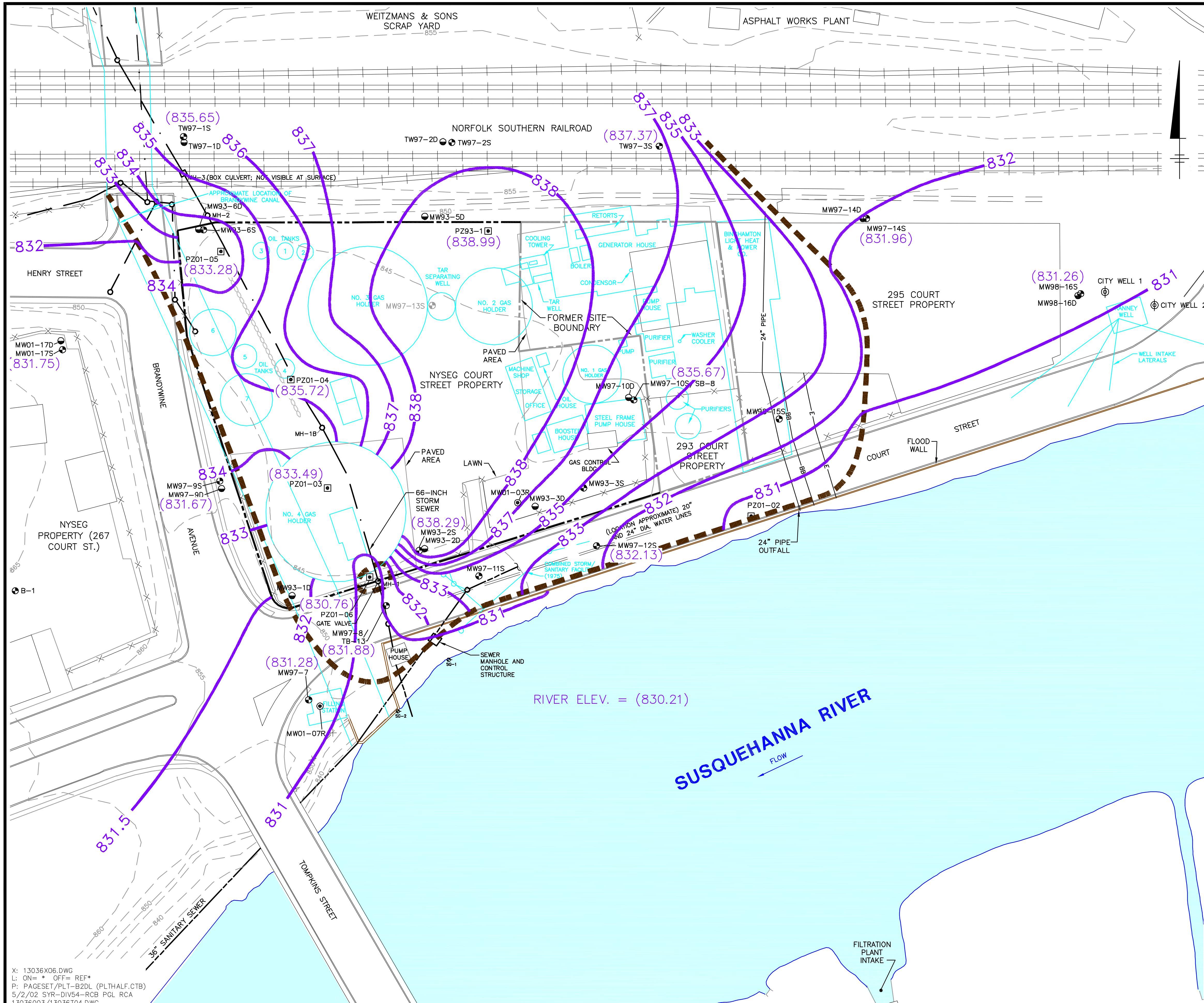
NEW YORK STATE ELECTRIC & GAS CORP.
BINGHAMTON, NEW YORK
COURT STREET SITE
PHASE II SRI

SAND AND GRAVEL SURFACE ELEVATION MAP

BBL BLASLAND, BOUCK & LEE, INC. engineers & scientists

FIGURE 10

X: 13036X06.DWG
L: ON=* OFF=REF*
P: PAGESET/PLT-B2DL (PLTHALF.CTB)
5/6/02 SYR-DIV54-RCB PGL RCA
13036003/13036T05.DWG



LEGEND

- FLOOD WALL
- RAILROAD TRACK
- FENCE
- SITE PROPERTY LINES (APPROXIMATE)
- SEWER LINE (APPROXIMATE)
- GROUND SURFACE ELEVATION CONTOUR (FT. AMSL)
- HISTORICAL FEATURE
- BURIED CONCRETE WALL
- MONITORING WELL (SHALLOW)
- MONITORING WELL (DEEP)
- MONITORING WELL (BEDROCK)
- PIEZOMETER
- CITY MONITORING WELL
- STAFF GAUGE
- DECOMMISSIONED MONITORING WELL
- (831.26) WATER TABLE ELEVATION (FT. AMSL)
- 832 WATER TABLE ELEVATION CONTOUR (FT. AMSL) DASHED WHERE INFERRED
- EDGE OF SILT

NOTES:

1. BASE MAP PROVIDED BY NYSEG (JUNE 12, 1997).
2. SURFACE ELEVATIONS DIGITIZED FROM CITY OF BINGHAMTON MAP, SHEET 303, FLOWN DECEMBER 2, 1973 AND MAPPED APRIL 1, 1974.
3. ALL ELEVATIONS ARE REFERENCED TO MEAN SEA LEVEL USING NATIONAL GEODETIC VERTICAL DATUM OF 1929, HORIZONTAL DATUM: NAD 83 NEW YORK STATE CENTRAL 3102.
4. STORM SEWER LOCATION DIGITIZED FROM CITY OF BINGHAMTON MAP, SHEET 303, ENTITLED: PRELIMINARY REPORT, COMPREHENSIVE STORM DRAINAGE, EXISTING FACILITIES. PREPARED BY VERNON O. SHUMAKER, CONSULTING ENGINEER, VESTAL, NEW YORK, DATE NOT PROVIDED.
5. ALL SURFACE SOIL SAMPLING, SOIL BORING, TEST BORING, MONITORING WELL, CITY WELL, AND TEMPORARY MONITORING WELL LOCATIONS SURVEYED BY HAWK ENGINEERING, P.C., BINGHAMTON, N.Y.

0 100' 200'
GRAPHIC SCALE

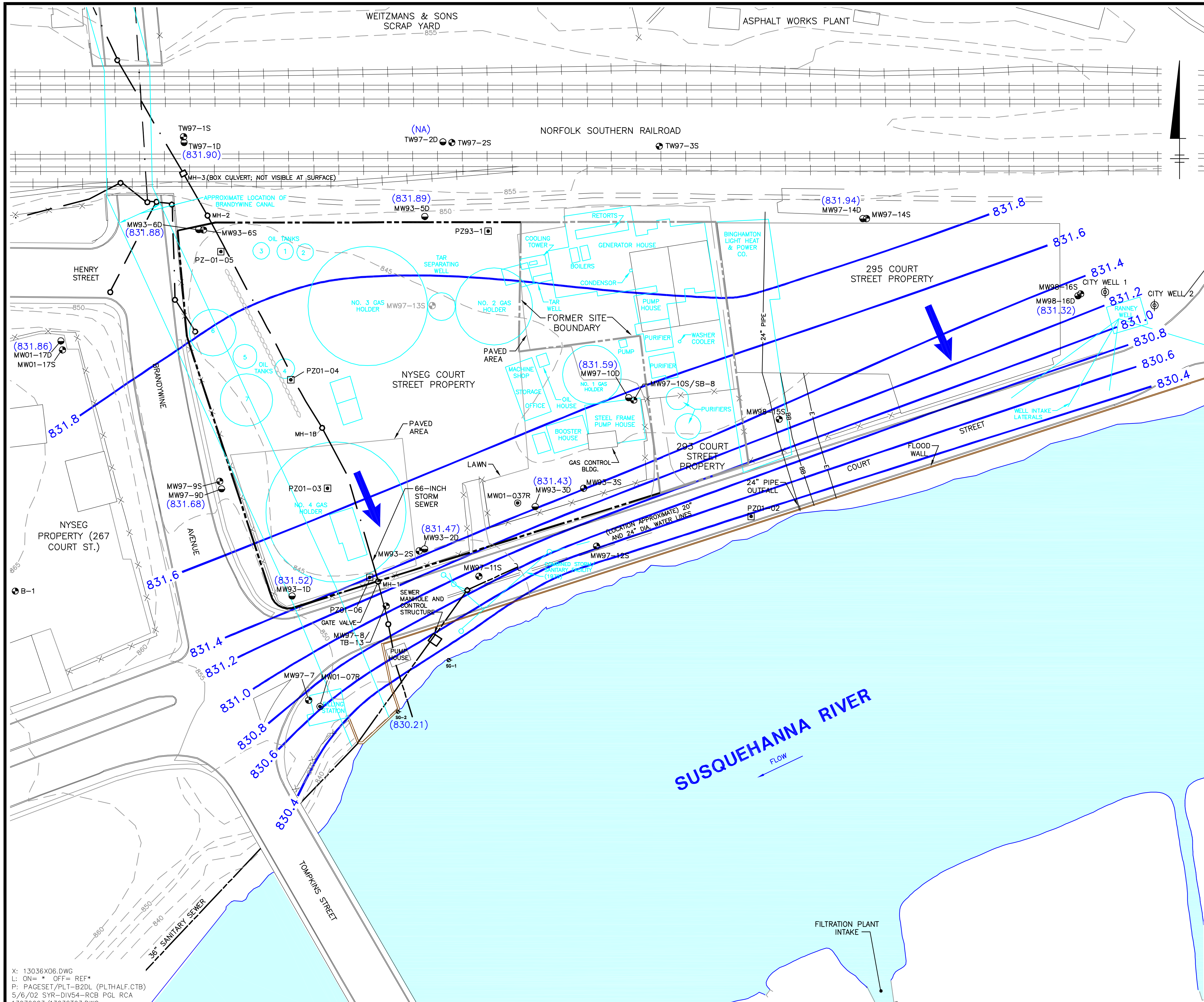
NEW YORK STATE ELECTRIC & GAS CORP.
BINGHAMTON, NEW YORK
COURT STREET SITE
PHASE II SRI

WATER TABLE ELEVATION CONTOUR MAP - OCTOBER 2, 2001

BLASLAND, BOUCK & LEE, INC.
engineers & scientists

FIGURE
11

X: 13036X06.DWG
L: ON=* OFF= REF*
P: PAGESET/PLT-B2DL (PLTHALF.CTB)
5/2/02 SYR-DIV54-RCB PGL RCA
13036003/13036T04.DWG



X: 13036X06.DWG
L: ON=* OFF= REF*
P: PAGESET/PLT-B2DL (PLTHALF.CTB)
5/6/02 SYR-DIV54-RCB PGL RCA
13036003/13036T03.DWG

LEGEND

- FLOOD WALL
- RAILROAD TRACK
- FENCE
- SITE PROPERTY LINES (APPROXIMATE)
- SEWER LINE (APPROXIMATE)
- 840 — GROUND SURFACE ELEVATION CONTOUR (FT. AMSL)
- HISTORICAL FEATURE
- BURIED CONCRETE WALL
- MONITORING WELL (SHALLOW)
- MONITORING WELL (DEEP)
- MONITORING WELL (BEDROCK)
- PIEZOMETER
- CITY MONITORING WELL
- STAFF GAUGE
- DECOMMISSIONED MONITORING WELL
- (831.68) DEEP GROUNDWATER POTENTIOMETRIC ELEVATION IN FEET ABOVE MEAN SEA LEVEL (NA = NOT AVAILABLE)
- 831.8 DEEP GROUNDWATER POTENTIOMETRIC ELEVATION CONTOUR (FT. AMSL)
- GROUNDWATER FLOW DIRECTION

NOTES:

1. BASE MAP PROVIDED BY NYSEG (JUNE 12, 1997).
2. SURFACE ELEVATIONS DIGITIZED FROM CITY OF BINGHAMTON MAP, SHEET 303, FLOWN DECEMBER 2, 1973 AND MAPPED APRIL 1, 1974.
3. ALL ELEVATIONS ARE REFERENCED TO MEAN SEA LEVEL USING NATIONAL GEODETIC VERTICAL DATUM OF 1929, HORIZONTAL DATUM: NAD 83 NEW YORK STATE CENTRAL 3102.
4. ALL INVESTIGATION LOCATIONS SURVEYED BY HAWK ENGINEERING, P.C. BINGHAMTON, N.Y. EXCEPT THE FOLLOWING SEDIMENT PROBING AND SAMPLING LOCATIONS:
   - LOCATIONS WITH AN "SS" OR "SF" PREFIX;
   - LOCATIONS WITH A "-2" SUFFIX; AND
   - SEDIMENT SAMPLING LOCATIONS SED-1 AND SED-2.
5. ONLY WELLS INTERPRETED TO BE SCREENED IN THE SAND AND GRAVEL UNITS WERE USED FOR THESE CONTOURS.
6. CONTOUR INTERVAL = 0.2 FEET.
7. STORM SEWER LOCATION DIGITIZED FROM CITY OF BINGHAMTON MAP, SHEET 303, ENTITLED: PRELIMINARY REPORT, COMPREHENSIVE STORM DRAINAGE, EXISTING FACILITIES. PREPARED BY VERNON O. SHUMAKER, CONSULTING ENGINEER, VESTAL, NEW YORK, DATE NOT PROVIDED.

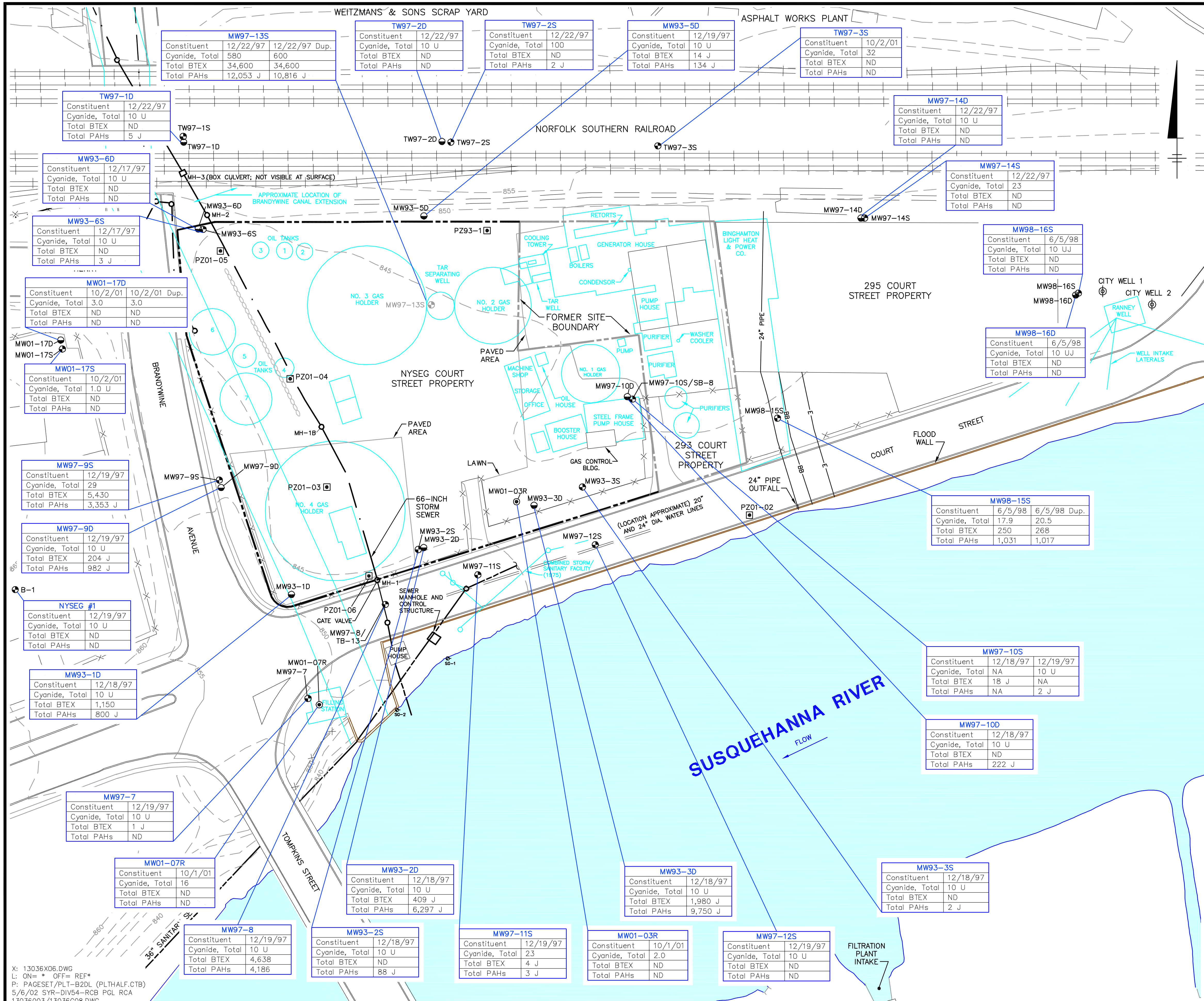
0 100' 200'
GRAPHIC SCALE

NEW YORK STATE ELECTRIC & GAS CORP.
BINGHAMTON, NEW YORK
COURT STREET SITE
PHASE II SRI

SAND AND GRAVEL UNIT GROUNDWATER POTENTIOMETRIC ELEVATION CONTOUR MAP - OCTOBER 1, 2001

BBL
BLASLAND, BOUCK & LEE, INC.
engineers & scientists

FIGURE
12



MW97-13S		
Constituent	12/22/97	12/22/97 Dup.
Cyanide, Total	580	600
Total BTEX	34,600	34,600
Total PAHs	12,053 J	10,816 J

TW97-2D	
Constituent	12/22/97
Cyanide, Total	10 U
Total BTEX	ND
Total PAHs	ND

TW97-2S	
Constituent	12/22/97
Cyanide, Total	100
Total BTEX	ND
Total PAHs	2 J

MW93-5D	
Constituent	12/19/97
Cyanide, Total	10 U
Total BTEX	14 J
Total PAHs	134 J

TW97-3S	
Constituent	10/2/01
Cyanide, Total	32
Total BTEX	ND
Total PAHs	ND

TW97-1D	
Constituent	12/22/97
Cyanide, Total	10 U
Total BTEX	ND
Total PAHs	5 J

MW97-14D	
Constituent	12/22/97
Cyanide, Total	10 U
Total BTEX	ND
Total PAHs	ND

MW93-6D	
Constituent	12/17/97
Cyanide, Total	10 U
Total BTEX	ND
Total PAHs	ND

MW97-14S	
Constituent	12/22/97
Cyanide, Total	23
Total BTEX	ND
Total PAHs	ND

MW93-6S	
Constituent	12/17/97
Cyanide, Total	10 U
Total BTEX	ND
Total PAHs	3 J

MW98-16S	
Constituent	6/5/98
Cyanide, Total	10 UJ
Total BTEX	ND
Total PAHs	ND

MW01-17D		
Constituent	10/2/01	10/2/01 Dup.
Cyanide, Total	3.0	3.0
Total BTEX	ND	ND
Total PAHs	ND	ND

MW98-16D	
Constituent	6/5/98
Cyanide, Total	10 UJ
Total BTEX	ND
Total PAHs	ND

MW01-17S	
Constituent	10/2/01
Cyanide, Total	1.0 U
Total BTEX	ND
Total PAHs	ND

MW97-9S	
Constituent	12/19/97
Cyanide, Total	29
Total BTEX	5,430
Total PAHs	3,353 J

MW98-15S		
Constituent	6/5/98	6/5/98 Dup.
Cyanide, Total	17.9	20.5
Total BTEX	250	268
Total PAHs	1,031	1,017

MW97-9D	
Constituent	12/19/97
Cyanide, Total	10 U
Total BTEX	204 J
Total PAHs	982 J

NYSEG #1	
Constituent	12/19/97
Cyanide, Total	10 U
Total BTEX	ND
Total PAHs	ND

MW97-10S		
Constituent	12/18/97	12/19/97
Cyanide, Total	NA	10 U
Total BTEX	18 J	NA
Total PAHs	NA	2 J

MW93-1D	
Constituent	12/18/97
Cyanide, Total	10 U
Total BTEX	1,150
Total PAHs	800 J

MW97-10D	
Constituent	12/18/97
Cyanide, Total	10 U
Total BTEX	ND
Total PAHs	222 J

MW97-7	
Constituent	12/19/97
Cyanide, Total	10 U
Total BTEX	1 J
Total PAHs	ND

MW01-07R	
Constituent	10/1/01
Cyanide, Total	16
Total BTEX	ND
Total PAHs	ND

MW93-2D	
Constituent	12/18/97
Cyanide, Total	10 U
Total BTEX	409 J
Total PAHs	6,297 J

MW93-3D	
Constituent	12/18/97
Cyanide, Total	10 U
Total BTEX	1,980 J
Total PAHs	9,750 J

MW93-3S	
Constituent	12/18/97
Cyanide, Total	10 U
Total BTEX	ND
Total PAHs	2 J

MW97-8	
Constituent	12/19/97
Cyanide, Total	10 U
Total BTEX	4,638
Total PAHs	4,186

MW93-2S	
Constituent	12/18/97
Cyanide, Total	10 U
Total BTEX	ND
Total PAHs	88 J

MW97-11S	
Constituent	12/19/97
Cyanide, Total	23
Total BTEX	4 J
Total PAHs	3 J

MW01-03R	
Constituent	10/1/01
Cyanide, Total	2.0
Total BTEX	ND
Total PAHs	ND

MW97-12S	
Constituent	12/19/97
Cyanide, Total	10 U
Total BTEX	ND
Total PAHs	ND

X: 13036X06.DWG
L: ON= * OFF= REF*
P: PAGESET/PLT-B2DL (PLTHALF.CTB)
5/6/02 SYR-DIV54-RCB PGL RCA
13036003/13036C08.DWG

LEGEND

- FLOOD WALL
- RAILROAD TRACK
- FENCE
- SITE PROPERTY LINES (APPROXIMATE)
- SEWER LINE (APPROXIMATE)
- GROUND SURFACE ELEVATION CONTOUR (FT. AMSL)
- HISTORICAL FEATURE
- BURIED CONCRETE WALL
- MONITORING WELL (SHALLOW)
- MONITORING WELL (DEEP)
- MONITORING WELL (BEDROCK)
- PIEZOMETER
- CITY MONITORING WELL
- STAFF GAUGE
- DECOMMISSIONED MONITORING WELL

MW93-3S		
Constituent	12/18/97	SAMPLE DATE
Cyanide, Total	10 U	TOTAL CYANIDE
Total BTEX	ND	BENZENE, TOLUENE, ETHYLBENZENE, AND XYLENE
Total PAHs	2 J	TOTAL POLYNUCLEAR AROMATIC HYDROCARBONS

SAMPLE ID

RESULTS ARE IN MICROGRAMS PER LITER (ug/L) EQUIVALENT TO PARTS PER BILLION (ppb)

U	CYANIDE CONCENTRATION WAS NOT DETECTED ABOVE THE INDICATED INSTRUMENT DETECTION LIMIT
ND	CONCENTRATIONS WERE NOT DETECTED ABOVE THE INSTRUMENT DETECTION LIMIT
J	ESTIMATED VALUE
Dup.	DUPLICATE SAMPLE

NOTES:

1. BASE MAP PROVIDED BY NYSEG (JUNE 12, 1997).
2. GROUND SURFACE ELEVATIONS DIGITIZED FROM CITY OF BINGHAMTON MAP, SHEET 303, FLOWN DECEMBER 2, 1973 AND MAPPED APRIL 1, 1974.
3. ALL ELEVATIONS ARE REFERENCED TO MEAN SEA LEVEL USING NATIONAL GEODETIC VERTICAL DATUM OF 1929, HORIZONTAL DATUM: NAD 83 NEW YORK STATE CENTRAL 3102.
4. ALL INVESTIGATION LOCATIONS SURVEYED BY HAWK ENGINEERING, P.C. BINGHAMTON, N.Y. EXCEPT THE FOLLOWING SEDIMENT PROBING AND SAMPLING LOCATIONS:
   - LOCATIONS WITH AN "SS" OR "SF" PREFIX;
   - LOCATIONS WITH A "-2" SUFFIX; AND
   - SEDIMENT SAMPLING LOCATIONS SED-1 AND SED-2.

0 100' 200'

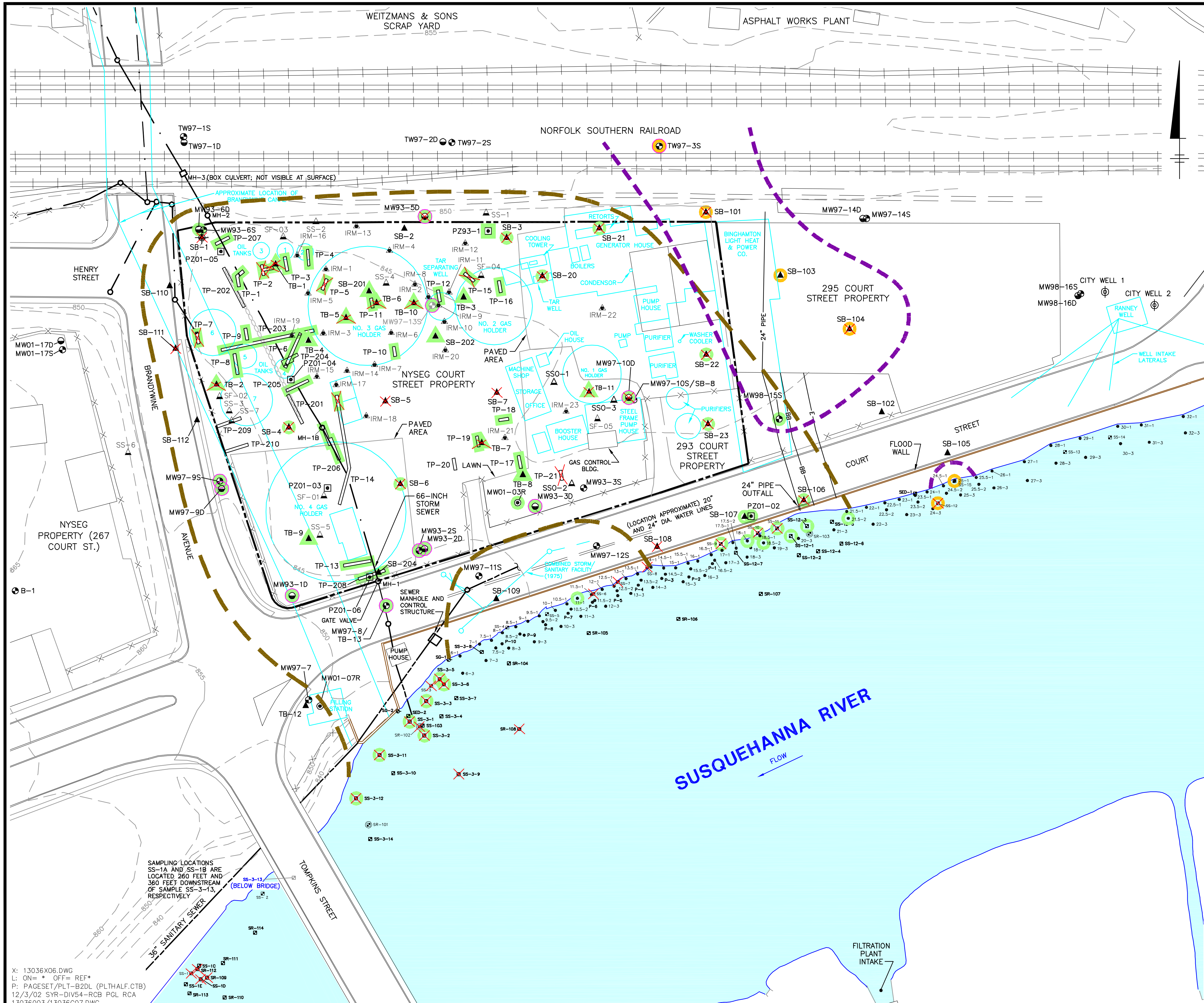
GRAPHIC SCALE

NEW YORK STATE ELECTRIC & GAS CORP.
BINGHAMTON, NEW YORK
COURT STREET SITE
PHASE II SRI

SUMMARY OF GROUNDWATER ANALYTICAL DATA

BBL BLASLAND, BOUCK & LEE, INC. engineers & scientists

FIGURE **13**



LEGEND:

- FLOOD WALL
- RAILROAD TRACK
- FENCE
- SITE PROPERTY LINES (APPROXIMATE)
- SEWER LINE (APPROXIMATE)
- GROUND SURFACE ELEVATION CONTOUR (FT. AMSL)
- HISTORICAL FEATURE
- BURIED CONCRETE WALL
- MONITORING WELL (SHALLOW)
- MONITORING WELL (DEEP)
- MONITORING WELL (BEDROCK)
- PIEZOMETER
- CITY MONITORING WELL
- SURFACE SOIL SAMPLE
- TEST PIT
- SOIL BORING
- STAFF GAUGE
- SEDIMENT PROBING POINT
- SEDIMENT BORING AND/OR SAMPLING LOCATION
- DEEP RIVERBED BORING LOCATION
- IRM CONFIRMATORY SAMPLE LOCATION
- DECOMMISSIONED MONITORING WELL
- GROUNDWATER SAMPLING LOCATION WITH ORGANIC COMPOUNDS DETECTED >1% OF EFFECTIVE SOLUBILITY
- SOIL SAMPLE WITH ORGANIC COMPOUNDS DETECTED >10% OF EFFECTIVE SOLUBILITY
- LOCATIONS WHERE NAPL VISUALLY IDENTIFIED, OR INFERRED FROM SHEEN
- AS ABOVE, EXCEPT PAH EVALUATION SHOWED THAT THE NAPL WAS PETROLEUM-RELATED RATHER THAN COAL-TAR RELATED
- PROBABLE EXTENT OF COAL-TAR-RELATED NAPL
- PROBABLE EXTENT OF PETROLEUM-RELATED NAPL

NOTES:

1. BASE MAP PROVIDED BY NYSEG (JUNE 12, 1997).
2. SURFACE ELEVATIONS DIGITIZED FROM CITY OF BINGHAMTON MAP, SHEET 303, FLOWN DECEMBER 2, 1973 AND MAPPED APRIL 1, 1974.
3. ALL ELEVATIONS ARE REFERENCED TO MEAN SEA LEVEL USING NATIONAL GEODETIC VERTICAL DATUM OF 1929, HORIZONTAL DATUM: NAD 83 NEW YORK STATE CENTRAL 3102.
4. ALL INVESTIGATION LOCATIONS SURVEYED BY HAWK ENGINEERING, P.C. BINGHAMTON, N.Y. EXCEPT THE FOLLOWING SEDIMENT PROBING AND SAMPLING LOCATIONS:
   - LOCATIONS WITH AN "SS" OR "SF" PREFIX;
   - LOCATIONS WITH A "-2" SUFFIX; AND
   - SEDIMENT SAMPLING LOCATIONS SED-1 AND SED-2.
5. STORM SEWER LOCATION DIGITIZED FROM CITY OF BINGHAMTON MAP, SHEET 303, ENTITLED: PRELIMINARY REPORT, COMPREHENSIVE STORM DRAINAGE, EXISTING FACILITIES. PREPARED BY VERNON O. SHUMAKER, CONSULTING ENGINEER, VESTAL, NEW YORK, DATE NOT PROVIDED.
6. ADDITIONAL SURFACE SEDIMENT SAMPLES SS-1-A AND SS-1-B ARE LOCATED APPROXIMATELY 260 FEET AND 360 FEET, RESPECTIVELY, DOWNSTREAM OF SAMPLE SS-3-13.
7. INDICATION OF POTENTIAL NAPL PRESENCE IS BASED ON VISUAL OBSERVATION OF NAPL AND COMPARISON OF OBSERVED CONSTITUENT CONCENTRATIONS TO RESPECTIVE SOLUBILITY LIMIT (USEPA, 1992). SEE TEXT FOR DETAILS.
8. SEDIMENT SAMPLE SS-03 COLLECTED FOR TASK 2 RI CONDUCTED BY BBL, 1996 AND LOCATED ADJACENT TO SAMPLE SS-3-5.

0 100' 200'

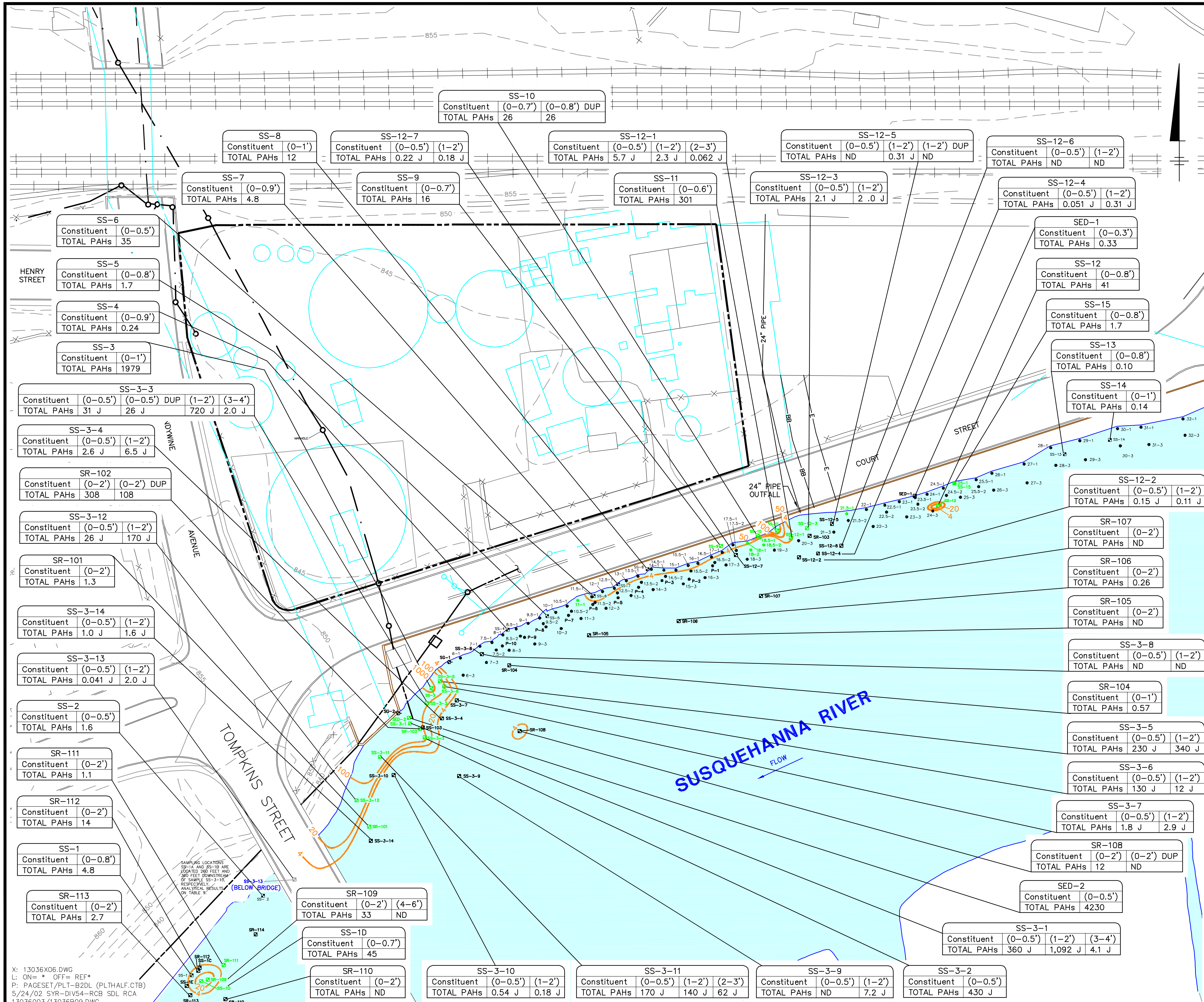
GRAPHIC SCALE

NEW YORK STATE ELECTRIC & GAS CORP.
BINGHAMTON, NEW YORK
COURT STREET SITE
PHASE II SRI

SUBSURFACE REGIONS WHERE THE PRESENCE OF COAL-TAR AND PETROLEUM-RELATED NAPLs IS PROBABLE

BLASLAND, BOUCK & LEE, INC.
engineers & scientists

FIGURE 14



LEGEND

FLOOD WALL
RAILROAD TRACK
FENCE
SITE PROPERTY LINES (APPROXIMATE)
SEWER LINE (APPROXIMATE)
SURFACE ELEVATION CONTOUR (FT. AMSL)
HISTORIC FEATURE
20 — 20 TOTAL PAH ISOCONCENTRATION LINES FOR UPPERMOST RIVERBED SAMPLES
STAFF GAUGE
RIVER SEDIMENT PROBE SAMPLE (SEE NOTE 5)
SEDIMENT BORING AND/OR SAMPLING LOCATION (SEE NOTE 5)
GREEN INDICATES PRESENCE OF OBSERVED SHEEN

SS-1	
Constituent	(0-0.8')
TOTAL PAHs	4.8

SAMPLE ID
SAMPLE DEPTH IN FEET
CONCENTRATIONS ARE mg/Kg (ppm)
ND – NOT DETECTED
J – ESTIMATED VALUE
DUP – DUPLICATE SAMPLE

NOTES:

1. BASE MAP PROVIDED BY NYSEG (JUNE 12, 1997).
2. SURFACE ELEVATIONS DIGITIZED FROM CITY OF BINGHAMTON MAP, SHEET 303, FLOWN DECEMBER 2, 1973 AND MAPPED APRIL 1, 1974.
3. ALL INVESTIGATION LOCATIONS SURVEYED BY HAWK ENGINEERING, P.C. BINGHAMTON, N.Y. EXCEPT THE FOLLOWING SEDIMENT PROBING AND SAMPLING LOCATIONS:
   - LOCATIONS WITH AN "SS" OR "SF" PREFIX;
   - LOCATIONS WITH A "-2" SUFFIX; AND
   - SEDIMENT SAMPLING LOCATIONS SED-1 AND SED-2.
4. DATA FOR ALL SAMPLES DESIGNATED "SR", AND SAMPLES SS-1D AND SS-15, HAVE NOT YET BEEN VALIDATED.
5. GREEN COLORATION INDICATES THE FOLLOWING:
   - LOCATIONS WHERE A RAINBOW-COLORED SHEEN WAS GENERATED WHEN THE SEDIMENT WAS DISTURBED, AND/OR
   - LOCATIONS WHERE RECOVERED SEDIMENT CORES EXHIBITED A RAINBOW SHEEN, BLACK STAINING, AND/OR NAPL DROPLETS.

0 100' 200'
GRAPHIC SCALE

NEW YORK STATE ELECTRIC & GAS CORP.
BINGHAMTON, NEW YORK
COURT STREET SITE
PHASE II SRI

SELECTED SEDIMENT DATA

BBL®
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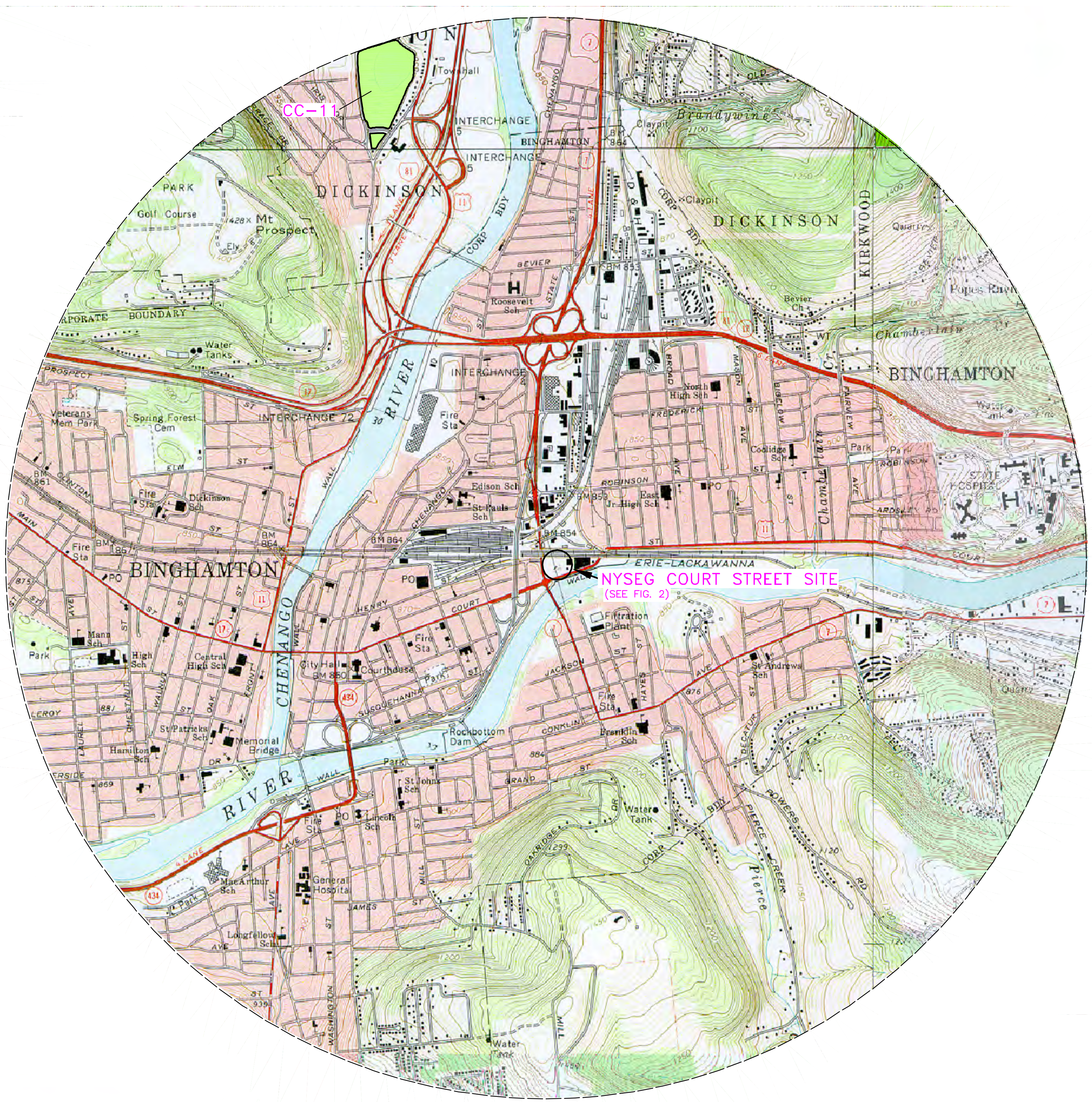
engineers & scientists

FIGURE
15



LEGEND

NYS REGULATED WETLAND

NOTES:

1. BASE MAP IS A SCANNED IMAGE OF USGS 7.5 MINUTE SERIES QUADRANGLES: CASTLE CREEK AND AND BINGHAMTON WEST, 1973, @ A SCALE OF 1" = 2000'.

2. NYS REGULATED WETLANDS WERE DIGITIZED FROM NYS DEPARTMENT OF TRANSPORTATION 7.5 MINUTE SERIES PLANIMETRIC MAP: CASTLE CREEK QUADRANGLE, 1973, @ A SCALE OF 1" = 2000'.

0 2400' 4800'

SCALE: 1"=2400'

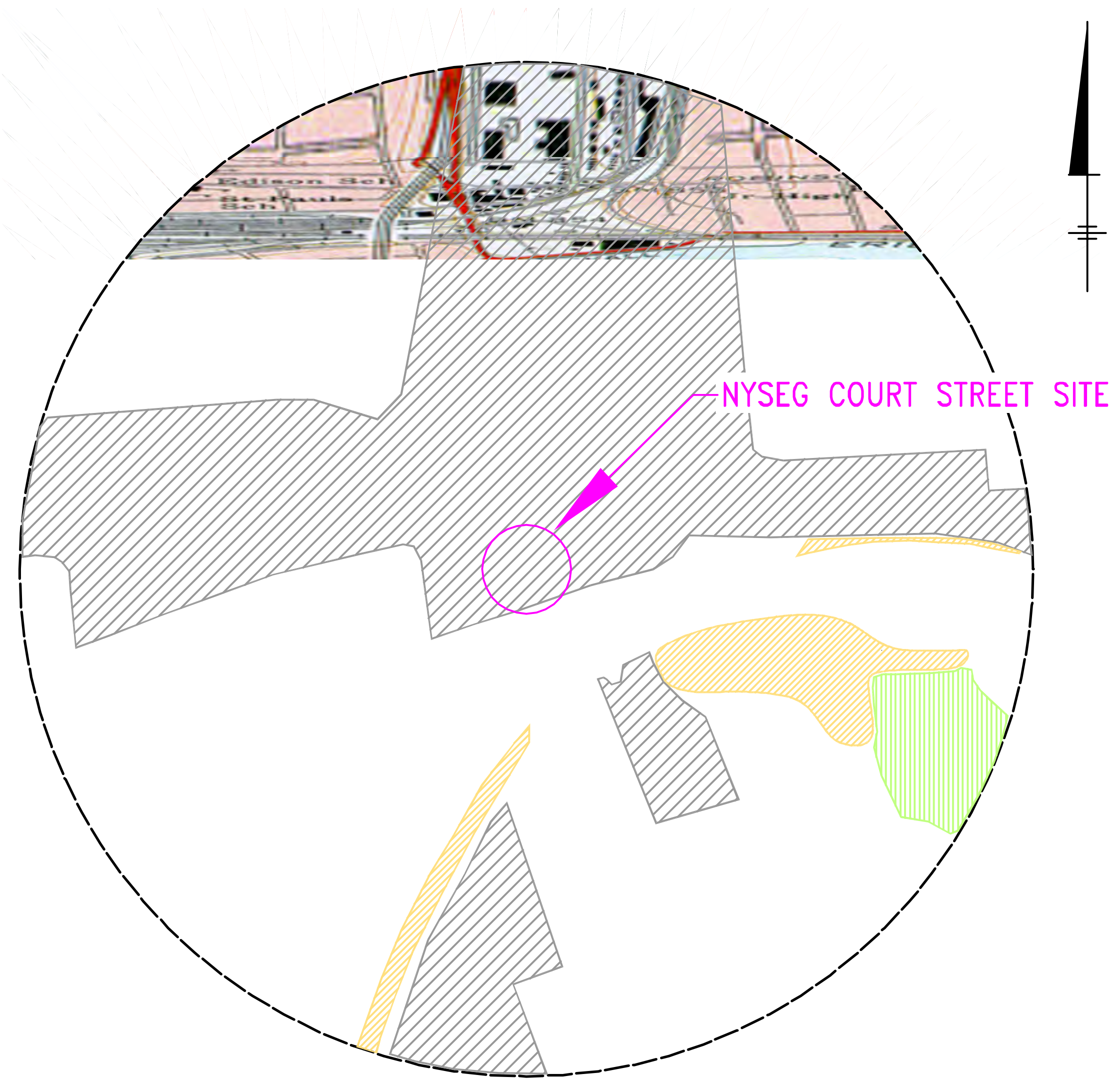
NEW YORK STATE ELECTRIC & GAS CORP.
BINGHAMTON, NEW YORK
COURT STREET SITE
PHASE II SRI

SITE LOCATION AND NATURAL RESOURCES WITHIN 2 MILES OF THE SITE

BBL
BLASLAND, BOUCK & LEE, INC.
engineers & scientists

FIGURE
16

RASTER IMAGE: 13036G01.TIF
P:PAGESET/PLT-BL (PLTHALF.CTB)
4/30/02 SYR-54-PGL RCA
13036003/13036R01.DWG



DRAFT

LEGEND

FIELD VEGETATIVE COVERTYPE

WOODED VEGETATIVE COVERTYPE

URBAN VEGETATIVE COVERTYPE

INDUSTRIAL VEGETATIVE COVERTYPE

0 1000' 2000'

SCALE: 1"=1000'

NOTES:

1. BASE MAP IS A SCANNED IMAGE OF USGS 7.5 MINUTE SERIES QUADRANGLE BINGHAMTON WEST, 1973, @ A SCALE OF 1" = 2000'.
2. NYS REGULATED WETLANDS WERE DIGITIZED FROM NYS DEPARTMENT OF TRANSPORTATION 7.5 MINUTE SERIES PLANIMETRIC MAP: BINGHAMTON WEST QUADRANGLE, 1973, @ A SCALE OF 1" = 2000'.

NEW YORK STATE ELECTRIC & GAS CORP.
BINGHAMTON, NEW YORK
COURT STREET SITE
PHASE II SRI

GENERAL VEGETATIVE COVERTYPES WITHIN 0.5 MILES OF THE SITE

BBL®
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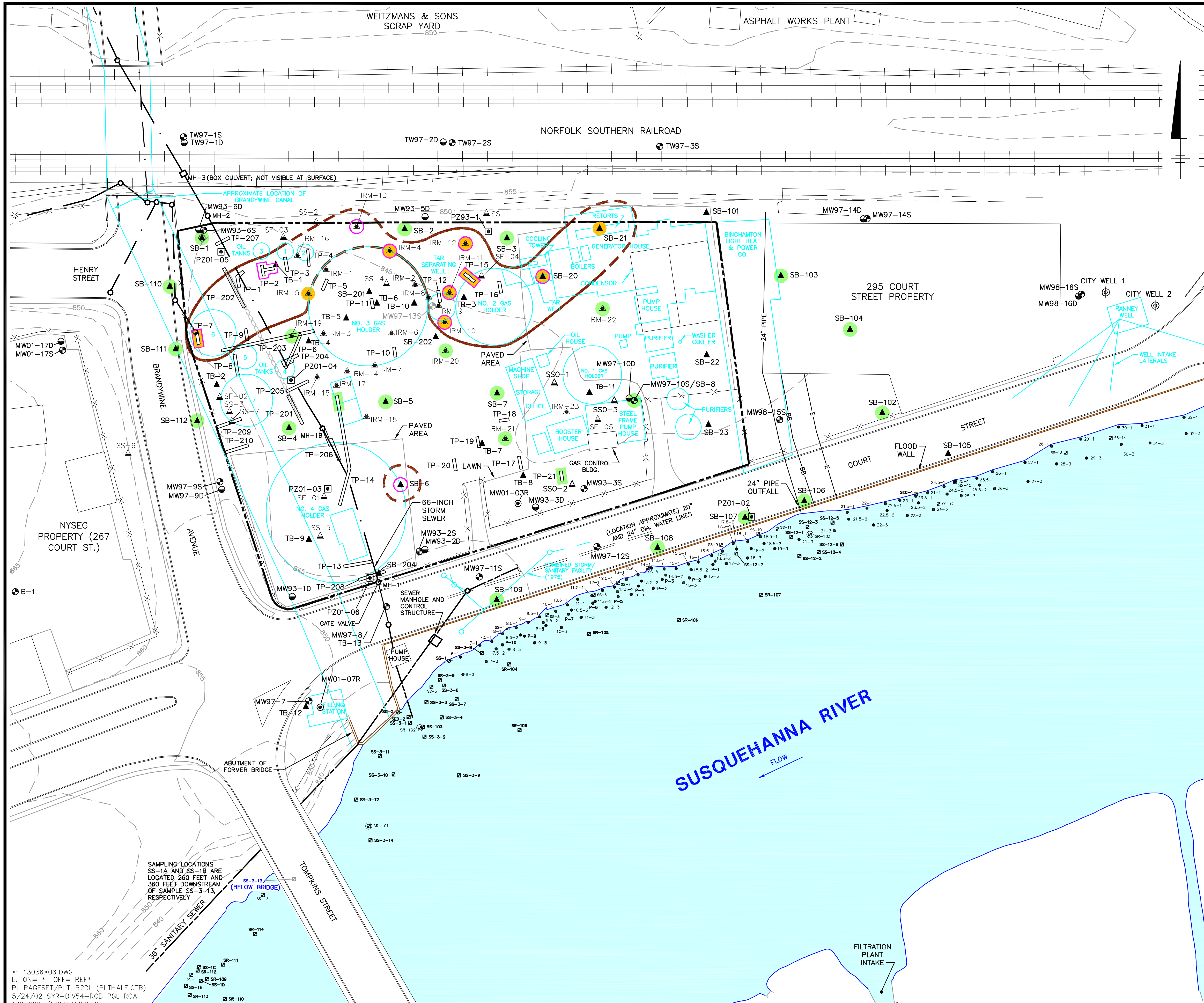
engineers & scientists

FIGURE
17

RASTER IMAGE: 130MAP.TIF
P:PAGESET/PLT-AP (PLT-FULL.CTB)
4/30/02 SYR-54-PGL
RCA13036036/13036R02.DWG



LEGEND

- FLOOD WALL
- RAILROAD TRACK
- FENCE
- SITE PROPERTY LINES (APPROXIMATE)
- SEWER LINE (APPROXIMATE)
- GROUND SURFACE ELEVATION CONTOUR (FT. AMSL)
- HISTORICAL FEATURE
- BURIED CONCRETE WALL
- MONITORING WELL (SHALLOW)
- MONITORING WELL (DEEP)
- MONITORING WELL (BEDROCK)
- PIEZOMETER
- CITY MONITORING WELL
- SURFACE SOIL SAMPLE
- TEST PIT
- SOIL BORING
- STAFF GAUGE
- SEDIMENT PROBING POINT
- SEDIMENT BORING AND/OR SAMPLING LOCATION
- DEEP RIVERBED BORING LOCATION
- IRM CONFIRMATORY SAMPLE LOCATION
- DECOMMISSIONED MONITORING WELL
- VOCs ABOVE GUIDANCE VALUES
- SVOCs ABOVE GUIDANCE VALUES
- VOCs AND SVOCs BELOW GUIDANCE VALUES
- INFERRED LIMITS OF UNSATURATED SOILS EXCEEDING GUIDANCE VALUES

NOTES:

1. BASE MAP PROVIDED BY NYSEG (JUNE 12, 1997).
2. SURFACE ELEVATIONS DIGITIZED FROM CITY OF BINGHAMTON MAP, SHEET 303, FLOWN DECEMBER 2, 1973 AND MAPPED APRIL 1, 1974.
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4. ALL INVESTIGATION LOCATIONS SURVEYED BY HAWK ENGINEERING, P.C. BINGHAMTON, N.Y. EXCEPT THE FOLLOWING SEDIMENT PROBING AND SAMPLING LOCATIONS:
   - LOCATIONS WITH AN "SS" OR "SF" PREFIX;
   - LOCATIONS WITH A "-2" SUFFIX; AND
   - SEDIMENT SAMPLING LOCATIONS SED-1 AND SED-2.
5. LOCATIONS OF CONFIRMATORY SAMPLING POINTS IRM-1 THROUGH IRM-23 FROM FIGURE 6 OF THE JANUARY 2002 "INTERIM REMEDIAL MEASURES, FINAL ENGINEERING REPORT" PREPARED BY NYSEG LICENSING AND ENVIRONMENTAL OPERATIONS DEPARTMENT.

0 100' 200'

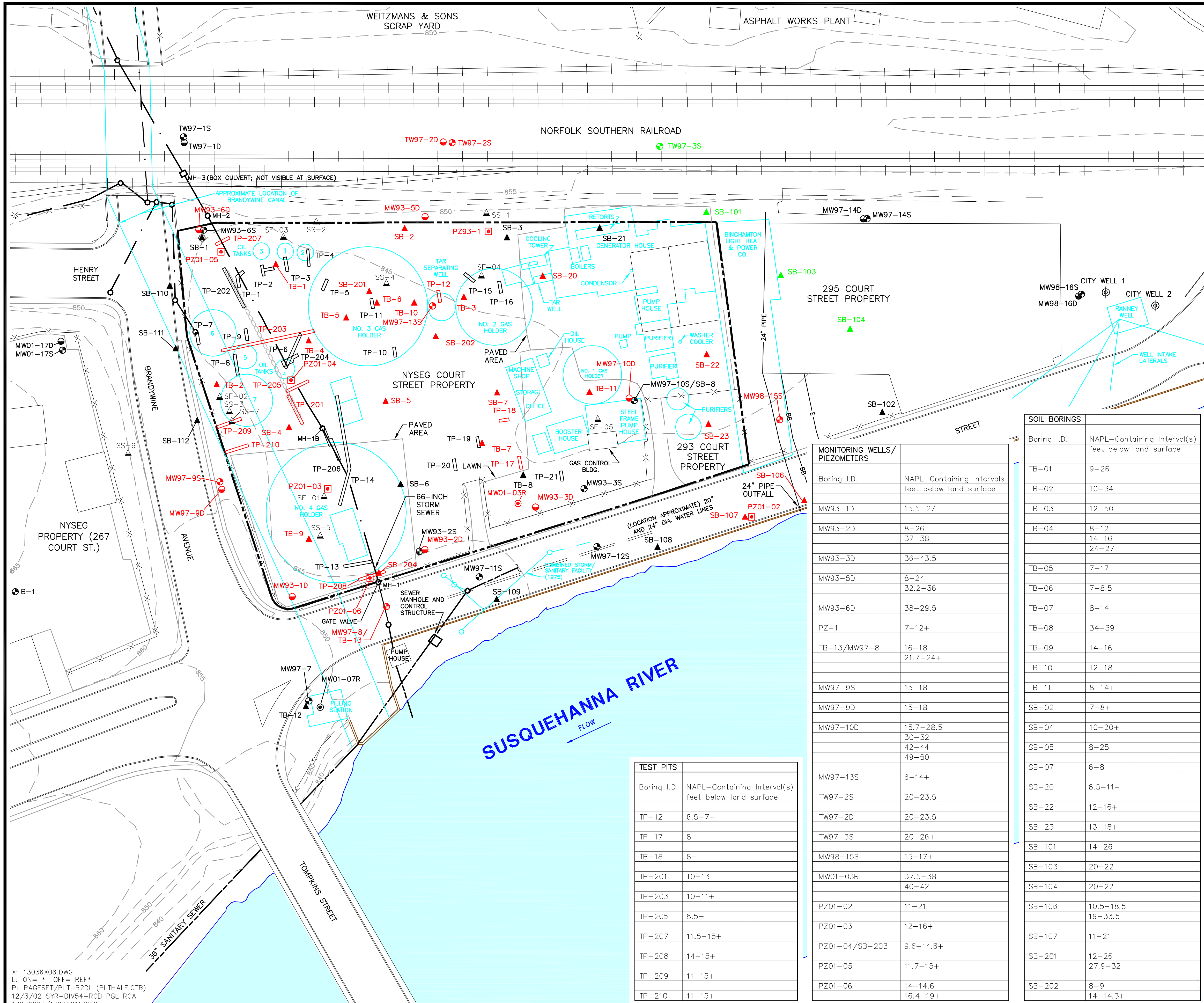
GRAPHIC SCALE

NEW YORK STATE ELECTRIC & GAS CORP.
BINGHAMTON, NEW YORK
COURT STREET SITE
PHASE II SRI

UNSATURATED SOILS EXCEEDING GUIDANCE VALUES

BBL® BLASLAND, BOUCK & LEE, INC. engineers & scientists

FIGURE 18



TEST PITS	
Boring I.D.	NAPL-Containing Interval(s) feet below land surface
TP-12	6.5-7+
TP-17	8+
TB-18	8+
TP-201	10-13
TP-203	10-11+
TP-205	8.5+
TP-207	11.5-15+
TP-208	14-15+
TP-209	11-15+
TP-210	11-15+

MONITORING WELLS/ PIEZOMETERS	
Boring I.D.	NAPL-Containing Intervals feet below land surface
MW93-1D	15.5-27
MW93-2D	8-26
	37-38
MW93-3D	36-43.5
MW93-5D	8-24
	32.2-36
MW93-6D	38-29.5
PZ-1	7-12+
TB-13/MW97-8	16-18
	21.7-24+
MW97-9S	15-18
MW97-9D	15-18
MW97-10D	15.7-28.5
	30-32
	42-44
	49-50
MW97-13S	6-14+
TW97-2S	20-23.5
TW97-2D	20-23.5
TW97-3S	20-26+
MW98-15S	15-17+
MW01-03R	37.5-38
	40-42
PZ01-02	11-21
PZ01-03	12-16+
PZ01-04/SB-203	9.6-14.6+
PZ01-05	11.7-15+
PZ01-06	14-14.6
	16.4-19+

SOIL BORINGS	
Boring I.D.	NAPL-Containing Interval(s) feet below land surface
TB-01	9-26
TB-02	10-34
TB-03	12-50
TB-04	8-12
	14-16
	24-27
TB-05	7-17
TB-06	7-8.5
TB-07	8-14
TB-08	34-39
TB-09	14-16
TB-10	12-18
TB-11	8-14+
SB-02	7-8+
SB-04	10-20+
SB-05	8-25
SB-07	6-8
SB-20	6.5-11+
SB-22	12-16+
SB-23	13-18+
SB-101	14-26
SB-103	20-22
SB-104	20-22
SB-106	10.5-18.5
	19-33.5
SB-107	11-21
SB-201	12-26
	27.9-32
SB-202	8-9
	14-14.3+

LEGEND:

- FLOOD WALL
- RAILROAD TRACK
- FENCE
- SITE PROPERTY LINES (APPROXIMATE)
- SEWER LINE (APPROXIMATE)
- 840 GROUND SURFACE ELEVATION CONTOUR (FT. AMSL)
- HISTORICAL FEATURE
- BURIED CONCRETE WALL
- MONITORING WELL (SHALLOW)
- MONITORING WELL (DEEP)
- MONITORING WELL (BEDROCK)
- PIEZOMETER
- CITY MONITORING WELL
- TEST PIT
- SOIL BORING
- SATURATED SOILS OBSERVED TO CONTAIN NAPL (RED)
- SATURATED SOILS OBSERVED TO CONTAIN NAPL, EXCEPT PAH ELEVALUATION SHOWED THAT NAPL WAS PETROLEM RELATED RATHER THAN COAL-TAR RELATED (GREEN)

NOTES:

1. BASE MAP PROVIDED BY NYSEG (JUNE 12, 1997).
2. SURFACE ELEVATIONS DIGITIZED FROM CITY OF BINGHAMTON MAP, SHEET 303, FLOWN DECEMBER 2, 1973 AND MAPPED APRIL 1, 1974.
3. ALL ELEVATIONS ARE REFERENCED TO MEAN SEA LEVEL USING NATIONAL GEODETIC VERTICAL DATUM OF 1929, HORIZONTAL DATUM: NAD 83 NEW YORK STATE CENTRAL 3102.
4. STORM SEWER LOCATION DIGITIZED FROM CITY OF BINGHAMTON MAP, SHEET 303, ENTITLED: PRELIMINARY REPORT, COMPREHENSIVE STORM DRAINAGE, EXISTING FACILITIES. PREPARED BY VERNON O. SHUMAKER, CONSULTING ENGINEER, VESTAL, NEW YORK, DATE NOT PROVIDED.
5. "+" SYMBOL INDICATES THAT THE FULL THICKNESS OF SATURATED SOILS CONTAINING NAPL WAS NOT PENETRATED.

0 100' 200'

GRAPHIC SCALE

NEW YORK STATE ELECTRIC & GAS CORP.
BINGHAMTON, NEW YORK
COURT STREET SITE
PHASE II SRI

SATURATED SOILS OBSERVED TO CONTAIN NAPL

BBL
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engineers & scientists

FIGURE 19

X: 13036X06.DWG
L: ON=* OFF=REF*
P: PAGESET/PLT-B2DL (PLTHALF.CTB)
12/3/02 SYR-DIV54-RCB PGL RCA
13036003/13036C11.DWG

Appendices

BLASLAND, BOUCK & LEE, INC.
engineers & scientists

Appendix A

Subsurface Logs

BLASLAND, BOUCK & LEE, INC.
engineers & scientists

Soil Borings

New York State Electric and Gas
Binghamton, NY

Court Street Boring Log Key

AMSL	= Above Mean Sea Level
ags	= above ground surface
bgs	= below ground surface
in.	= inch
ft.	= feet
ID	= Inner Diameter
OD	= Outer Diameter
HSA	= Hollow Stem Auger
MGP	= Manufactured Gas Plant
NA	= Not Applicable
-	= Not Available
PVC	= Polyvinyl Chloride
SS	= Split Spoon
WOH	= Weight of Hammer
WOR	= Weight of Rod

BLASLAND, BOUCK & LEE INC.
ENGINEERS & SCIENTISTS

Boring No. TB-01 Well No.

Client: NYSEG

Site: Court St., Binghamton, NY

Date Start/Finish: 5/17/93 – 5/7/93
Drilling Company: Parratt Wolf Inc.
Driller's Name: Doug Richmond
Rig Type: CME Mobil – 57
Spoon Size: 2-inch I. D.
Hammer Weight: 140-lbs.
Height of Fall: 30-inches
Drilling Method: HSA
Bit Size: **Auger Size:** 2 1/2-inch ID

Northing:
Easting:
Well Casing Elev.: ft.
Corehole Depth: 60 ft.
Borehole Depth: 59.0 ft.
Ground Surface Elev.: 844.8 ft.

General Location:
Adjacent to oil tank 1,
Northeast area of site.

Depth (Ft.)	Sample/Run Number	Sample/Int/Type	Blows/6 in.	N	Recovery (Ft.)	Analytical Sample	Sample ID	PID Field (ppm)	PID Headspace (ppm)	Drilling Water Level	Geologic Col.	Stratigraphic Description	Misc. Test	Well Column	Well Materials
0–2												Brown fine to coarse SAND and fine to medium GRAVEL, dry, loose, (FILL).			
2–4	1		52, 18, 10, 12	28	1.6			4.8	20.0			some red brick at 2.0' – 5.0'.			Cement/bentonite grout 59.0' – 0.0'
4–6	2		27, 3, 5, 5	8	1.1			1.0	15.3			Black stained little slag, little coal, moist, loose.			
6–8	3		6, 3, 2, 1	5	1.0			23.7	648			Black stained SILT, little clay, some **oil globules** in matrix, moist, soft, nonplastic.			
8–10	4		WOH, WOH, 2, 2		0.8			27.6	633			SILT and CLAY, some **coal tar residue** and **oil globules** in matrix, wet.			
10–12	5				1.4			4.9	803			grades to gray, damp to moist			
12–14	6		16, 10, 11, 11	21	2.0			24.8	1207						
14–16	7		5, 7, 9, 10	16	1.8			23.5	595			grades to little clay, nonplastic			
16–18	8		5, 6, 8, 8	14	0.8			12.6	383			grades to some clay, trace sand			
18–20	9		12, 10, 11, 14	21	1.2			39.6	934			Brown/gray fine to medium GRAVEL, little sand, some **coal tar residue** and **oil globules**, wet, loose, slight odor, sheen.			
20–22	10		8, 10, 11, 11	21	1.0			28.7	213						

Geologist Initials: TRO + VAD

Project No.: 130.08

Remarks:

Water Levels

Date	Time	Elevation

BLASLAND, BOUCK & LEE INC.
ENGINEERS & SCIENTISTS

Boring No. TB-01 Well No.

Client: NYSEG

Site: Court St., Binghamton, NY

Date Start/Finish: 5/17/93 – 5/7/93
Drilling Company: Parratt Wolf Inc.
Driller's Name: Doug Richmond
Rig Type: CME Mobil – 57
Spoon Size: 2-inch I. D.
Hammer Weight: 140-lbs.
Height of Fall: 30-inches
Drilling Method: HSA
Bit Size: Auger Size : 2 1/2-inch ID

Northing:
Easting:
Well Casing Elev.: ft.
Corehole Depth: 60 ft.
Borehole Depth: 59.0 ft.
Ground Surface Elev.: 844.8 ft.

General Location:
Adjacent to oil tank t,
Northeast area of site.

Depth (Ft.)	Sample/Run Number	Blows/6 in.	N	Recovery (Ft.)	Analytical Sample	Sample ID	PID Field (ppm)	PID Headspace (ppm)
22–24	11	17, 17, 16, 15	23	0.8			18.5	531
24–26	12	29, 10, 11, 11	21	0.6			22.4	409
26–28	13	8, 10, 11, 12	21	1.8		BSVIBM9301	4.5	256
28–30	14	16, 11, 27, 24	28	2.0	X	BSVIBM9301	41.7	—
30–32	15	21, 20, 22, 25	42	0.9			35.0	539
32–34	16	22, 18, 14, 8	32	1.1			10.6	57.2
34–36	17	11, 11, 11, 13	22	0.7			7.0	163
36–38	18	9, 8, 9, 11	17	0.3			14.3	211
38–40	19	3, 4, 4, 4	8	0.6			21.0	61.7
40–42	20	8, 9, 15, 12	24	1.3			4.1	72.4
42–44	21	9, 8, 9, 9	17	1.4			5.2	134

Stratigraphic Description

- 25 ft: grades to coarse SAND and fine GRAVEL.
- No coal tar residue or oil globules visible after 26 ft.
- 28 ft: Gray fine to medium SAND, trace silt, wet, loose.
- grades to fine SAND, some fine to medium gravel, some silt, moist.
- 30 ft: Dark gray/brown medium to coarse SAND and fine to medium GRAVEL, wet, loose.
- 32.3 ft: Dark gray-brown fine to medium SAND, little silt, wet, loose.
- 40 ft: grades to red brown

Geologist Initials: TRO + VAD

Project No.: 130.05

Remarks:

Water Levels

Date	Time	Elevation

BLASLAND, BOUCK & LEE INC.
ENGINEERS & SCIENTISTS

Boring No. TB-01 Well No.

Client: NYSEG

Site: Court St., Binghamton, NY

Date Start/Finish: 5/17/93 – 5/7/93
Drilling Company: Parratt Wolf Inc.
Driller's Name: Doug Richmond
Rig Type: CME Mobil – 57
Spoon Size: 2-inch I. D.
Hammer Weight: 140-lbs.
Height of Fall: 30-inches
Drilling Method: HSA
Bit Size: **Auger Size:** 2 1/2-inch ID

Northing:
Easting:
Well Casing Elev.: ft.
Corehole Depth: 60 ft.
Borehole Depth: 59.0 ft.
Ground Surface Elev.: 844.8 ft.

General Location:
Adjacent to oil tank 1,
Northeast area of site.

Depth (Ft.)	Sample/Run Number	Sample/Int/Type	Blows/6 in.	N	Recovery (Ft.)	Analytical Sample	Sample ID	PID Field (ppm)	PID Headspace (ppm)	Drilling Water Level	Geologic Col.	Stratigraphic Description	Misc. Test	Well Column	Well Materials
44–46	22		10, 10, 14, 10	24	1.3			10.4	31.6			grades to trace clay			
46–48	23		8, 10, 11, 11	21	1.8			8.1	91.6			grades to fine SAND and SILT, little clay, wet, soft.			
48–50	24		WOH, 4, 4, 6	8	0.8			14.0	252			Gray-brown fine to medium SAND, some silt, wet, loose.			
50–52	25		11, 12, 13, 13	25	0.6			4.3	69.7			grades to trace silt, trace fine gravel, medium dense.			
52–54	26		12, 15, 20, 25	35	0.8			5.8	114						
55–57	27		10, 14, 17, 25	31	0.5				158			Gray brown fine SAND and fine to medium GRAVEL, trace silt, wet, hard.			
57–59	28		17, 19, 30, 30	49	0.4				213						

Bottom of boring at 59.0 ft.

NOTES:
Augered 0.0' – 2.0' feet without sampling.
Borehole grouted to surface with cement/bentonite grout.
Test boring located adjacent to oil tank 1 on northwest side of site.

Geologist Initials: TRO + VAD

Project No.: 130.08

Remarks:

Water Levels		
Date	Time	Elevation

BLASLAND, BOUCK & LEE INC.
ENGINEERS & SCIENTISTS

Boring No. TB-02 **Well No.**

Client: NYSEG

Site: Court St., Binghamton, NY

Date Start/Finish: 5/18/93 – 5/18/93
Drilling Company: Parratt Wolf Inc.
Driller's Name: Doug Richmond
Rig Type: CME Mobil – 57
Spoon Size: 2-inch I. D.
Hammer Weight: 140-lbs.
Height of Fall: 30-inches
Drilling Method: HSA
Bit Size: **Auger Size:** 2 1/2-inch ID

Northing:
Easting:
Well Casing Elev.: ft.
Corehole Depth: 49.4 ft.
Borehole Depth: 48.4 ft.
Ground Surface Elev.: 845.6 ft.

General Location:
Near oil tanks 5, 6, 7 & 8,
Northeast area of site.

Depth (Ft.)	Sample/Run Number	Blows/6 in.	N	Recovery (Ft.)	Analytical Sample / Sample ID	PID Field (ppm)	PID Headspace (ppm)	Drilling Water Level
2–4	1	50/.4		1.2		10.5	2.2	
4–6	2	10, 15, 21, 12	36	1.1		10.1	12.4	
6–8	3	13, 12, 10, 8	22	NR		NR	NR	
8–10	4	6, 6, 2, 4	8	0.7		30.6	2349	▽ (~9 ft)
10–12	5	4, 7, 12, 31	19	0.9	BSVIBM9302	915	1758	
12–14	6	6, 4, 12, 13	16	1.0	BSVIBM9302	765	2563	
14–16	7	10, 10, 11, 13	21			417	2255	
16–18	8	7, 8, 5, 5	13	1.0		78.7	1548	
18–20	9	2, 3, 2, 3	5	0.7		360	2449	
20–22	10	5, 5, 4, 3	9	0.2		307	1968	

Stratigraphic Description

0–2 ft: Brown fine to coarse SAND and fine to medium GRAVEL, dry, loose. (FILL)

2 ft: Brown fine to coarse SAND, trace fine gravel, some silt, trace slag, damp, medium dense.

trace brick and moist at 4.0 ft.

grades to little fine gravel, trace silt and clay, coal tar odor.

wet at 9.0 ft.

grades to black fine to coarse SAND, fine to medium GRAVEL and BRICK, some **coal tar residue** in matrix, wet, loose.

12 ft: Gray SILT, little clay, trace **coal tar residue** in matrix, moist, stiff.

iron oxidation staining.

16 ft: Gray-brown fine to medium SAND, little clay, trace silt, some **oil globules** in matrix, some iron oxidation, wet, loose.

Well Materials: Cement/bentonite grout 48.4' – 0.0'

Geologist Initials: STH

Remarks:

Project No.: 130.08

Water Levels

Date	Time	Elevation

BLASLAND, BOUCK & LEE INC.
ENGINEERS & SCIENTISTS

Boring No. TB-02 **Well No.**

Client: NYSEG

Site: Court St., Binghamton, NY

Date Start/Finish: 5/18/93 – 5/18/93
Drilling Company: Parratt Wolf Inc.
Driller's Name: Doug Richmond
Rig Type: CME Mobil – 57
Spoon Size: 2-inch I. D.
Hammer Weight: 140-lbs.
Height of Fall: 30-inches
Drilling Method: HSA
Bit Size: **Auger Size:** 2 1/2-inch ID

Northing:
Easting:
Well Casing Elev.: ft.
Corehole Depth: 49.4 ft.
Borehole Depth: 48.4 ft.
Ground Surface Elev.: 845.6 ft.

General Location:
Near oil tanks 5, 6, 7 & 8,
Northeast area of site.

Depth (Ft.)	Sample/Run Number	Sample/Int/Type	Blows/6 in.	N	Recovery (Ft.)	Analytical Sample	Sample ID	PID Field (ppm)	PID Headspace (ppm)	Drilling Water Level	Geologic Col.	Stratigraphic Description	Misc. Test	Well Column	Well Materials
22–24	11		5, 4, 2, 3	6	0.9			406	816			grades to brown fine GRAVEL, some **oil globules** in matrix, wet, loose.			
24–26	12		2, 3, 3, 4	6	1.0			78.8	78.5						
26–28	13		6, 6, 6, 6	12	0.8			42.0	76.2			Gray-brown fine to medium SAND, trace silt, trace **oil globules** in matrix, wet, loose.			
28–30	14		2, 3, 3, 7	6	1.3			43.7	124						
30–32	15		5, 5, 8, 9	13	1.0			41.5	32.2			grades to little **oil globules** in matrix. grades with trace fine to medium gravel.			
32–34	16		15, 20, 12, 12	32	1.3			24.5	98.5						
34–36	17		20, 20, 50/.4		0.6			9.3	618			grades to fine to coarse SAND, some silt, trace red oxidation staining, moist, medium dense, no oil visible.			
36–38	18		50/.11		NR			NR	NR			grades to very dense.			
38–40	19		50/.4		0.4			109	564			grades with fine GRAVEL, damp.			
40–42	20		20, 44, 30, 17	74	1.2			26.1	1279			grades to dense.			
42–44	21		44, 44, 29, 17	73	0.8			45.2	196						

Geologist Initials: STH

Project No.: 130.08

Remarks:

Water Levels		
Date	Time	Elevation

BLASLAND, BOUCK & LEE INC.
ENGINEERS & SCIENTISTS

Boring No. TB-02 Well No.

Client: NYSEG

Site: Court St., Binghamton, NY

Date Start/Finish: 5/18/93 – 5/18/93
Drilling Company: Parratt Wolf Inc.
Driller's Name: Doug Richmond
Rig Type: CME Mobil – 57
Spoon Size: 2-inch I. D.
Hammer Weight: 140-lbs.
Height of Fall: 30-inches
Drilling Method: HSA
Bit Size: Auger Size: 2 1/2-inch ID

Northing:
Easting:
Well Casing Elev.: ft.
Corehole Depth: 49.4 ft.
Borehole Depth: 48.4 ft.
Ground Surface Elev.: 845.6 ft.

General Location:
Near oil tanks 5, 6, 7 & 8,
Northeast area of site.

Depth (Ft.)	Sample/Run Number	Sample/Int/Type	Blows/6 in.	N	Recovery (Ft.)	Analytical Sample	Sample ID	PID Field (ppm)	PID Headspace (ppm)	Drilling Water Level	Geologic Col.	Stratigraphic Description	Misc. Test	Well Column	Well Materials
44															
45	22		20 50 50/.3		0.3			9.8	218						
46															
47	23		44 50/.2		0.5			31.0	90.6			grades to very dense, damp to dry			
48	24		50/.4		0.1			13.0	236						
49												Bottom of boring at 48.4 ft. (TILL)			
50												NOTES: Augered 0.0' – 2.0' feet without sampling. Borehole grouted to surface with cement/bentonite grout. Test boring located in oil tank 4 on the west side of site.			
51															
52															
53															
54															
55															
56															
57															
58															
59															
60															
61															
62															
63															
64															
65															

Geologist Initials: STH

Project No.: 130.08

Remarks:

Water Levels

Date	Time	Elevation

BLASLAND, BOUCK & LEE INC.
ENGINEERS & SCIENTISTS

Boring No. TB-03 Well No.

Client: NYSEG
Site: Court St., Binghamton, NY

Date Start/Finish: 5/19/93 – 5/19/93
Drilling Company: Parratt Wolf Inc.
Driller's Name: Doug Richmond
Rig Type: CME Mobil – 57
Spoon Size: 2-inch I. D.
Hammer Weight: 140-lbs.
Height of Fall: 30-inches
Drilling Method: HSA
Bit Size: Auger Size : 2 1/2-inch ID

Northing:
Easting:
Well Casing Elev.: ft.
Corehole Depth: 57 ft.
Borehole Depth: 56.0 ft.
Ground Surface Elev.: 844.7 ft.

General Location:
Gasholder No. 2

Depth (Ft.)	Sample/Run Number	Sample/Int/Type	Blows/6 in.	N	Recovery (Ft.)	Analytical Sample	Sample ID	PID Field (ppm)	PID Headspace (ppm)	Drilling Water Level	Geologic Col.	Stratigraphic Description	Misc. Test	Well Column	Well Materials
0–2												Brown fine to coarse SAND and fine to medium GRAVEL, trace silt, dry, loose.			
2–4	1		32, 16, 13, 15	29	1.8			20.0	6.0			brick fragments at 2.9' – 3.3'. black staining at 3.3'.			Cement/bentonite grout 56.0' – 0.0'
4–6	2		2, 2, 2, 6	4	0.3			1537	505			grades to trace silt, moist.			
6–8	3		50/2		0.2			2500	739						
8–10	4		43, 50/2		0.4			2500	313			CONCRETE, strong coal tar odor, dry to damp.			
10–12	5		50/.5		0.3			38.1	589			Gray brown fine to coarse SAND, little fine to medium gravel, trace silt, moist.			
12–14	6		7, 12, 15, 16	27	1.2			1514	579			Gray brown SILT, trace clay, some **coal tar residue** in matrix, oxidation staining, moist, stiff.			
14–16	7		7, 9, 9, 9	18	1.0			341	378			grades to damp, no coal tar residue. grades to little clay, trace fine to coarse sand and fine to medium gravel, moist, medium stiff, some **coal tar residue** in matrix.			
16–18	8		8, 7, 8, 8	15	1.0			1664	482						
18–20	9		2, 1, 1, 1	2	0.7			925	123			Black fine SAND, saturated, very loose, coal tar odor and oil sheen on water.			
20–22	10		2, 2, 3, 3	5	1.5			0.0	143						

Geologist Initials: STH

Project No.: 130.08

Remarks:

Water Levels		
Date	Time	Elevation

BLASLAND, BOUCK & LEE INC.
ENGINEERS & SCIENTISTS

Boring No. TB-03 Well No.

Client: NYSEG

Site: Court St., Binghamton, NY

Date Start/Finish: 5/19/93 – 5/19/93
Drilling Company: Parratt Wolf Inc.
Driller's Name: Doug Richmond
Rig Type: CME Mobil – 57
Spoon Size: 2-inch I. D.
Hammer Weight: 140-lbs.
Height of Fall: 30-inches
Drilling Method: HSA
Bit Size: **Auger Size:** 2 1/2-inch ID

Northing:
Easting:
Well Casing Elev.: ft.
Corehole Depth: 57 ft.
Borehole Depth: 56.0 ft.
Ground Surface Elev.: 844.7 ft.

General Location:
Gasholder No. 2

Depth (Ft.)	Sample/Run Number	Sample/Int/Type	Blows/6 in.	N	Recovery (Ft.)	Analytical Sample	Sample ID	PID Field (ppm)	PID Headspace (ppm)	Drilling Water Level	Geologic Col.	Stratigraphic Description	Misc. Test	Well Column	Well Materials
22–24	11		3 6 9 8	15				0.0	129						
24–26	12		3 6 4 6	10	1.6			NA	48.6			grades to fine to coarse SAND, very loose.			
26–28	13		3 5 5 8	10	2.0			NA	11.5						
28–30	14		6 6 9 8	15	2.0			NA	18.3			grades to gray-brown fine SAND.			
30–32	15		4 4 5 7	9	—			NA	27.1			grades with trace silt, little oil sheen, odor.			
32–34	16		6 7 8 11	15	1.6			NA	166						
34–36	17		7 10 12 12	22	1.4			NA	44.2						
36–38	18		13 13 19 12	32	1.8			NA	41.2						
38–40	19		6 13 14 20	27	1.2			NA	42.4						
40–42	20		7 9 12 12	21	1.6			NA	10.9						
42–44	21		7 9 10 10	19	2.0			NA	289			grades with some medium sand, some oil sheen.			

Geologist Initials: STH

Project No.: 130.08

Remarks:

Water Levels		
Date	**Time**	**Elevation**

BLASLAND, BOUCK & LEE INC.
ENGINEERS & SCIENTISTS

Boring No. TB-03 Well No.

Client: NYSEG
Site: Court St., Binghamton, NY

Date Start/Finish:	5/19/93 – 5/19/93
Drilling Company:	Parratt Wolf Inc.
Driller's Name:	Doug Richmond
Rig Type:	CME Mobil – 57
Spoon Size:	2-inch I. D.
Hammer Weight:	140-lbs.
Height of Fall:	30-inches
Drilling Method:	HSA
Bit Size: Auger Size:	2 1/2-inch ID

Northing:	
Easting:	
Well Casing Elev.:	ft.
Corehole Depth:	57 ft.
Borehole Depth:	56.0 ft.
Ground Surface Elev.:	844.7 ft.

General Location: Gasholder No. 2

Depth (Ft.)	Sample/Run Number	Sample/Int/Type	Blows/6 in.	N	Recovery (Ft.)	Analytical Sample	Sample ID	PID Field (ppm)	PID Headspace (ppm)	Drilling Water Level	Geologic Col.	Stratigraphic Description	Misc. Test	Well Column	Well Materials
44–46	22		6, 9, 10, 13	19	0.6			36.5	22.9						
46–48	23		7, 9, 17, 12	26	0.7			27.7	128			grades to brown fine to medium SAND, trace oil sheen, medium dense.			
48–50	24		13, 15, 20, 35	35	1.0			10.7	330						
50–52	25		13, 35, 50/.4		0.8			71.1	448			Gray-brown fine to medium SAND, some oil sheen, trace medium gravel, wet, medium dense to dense.			
52–54			26, 50/.3		0.3			5.3	513			Brown fine to coarse SAND, trace to little silt, little fine to medium gravel, moist, medium dense to dense, no oil sheen.			
54–56	26 / 27		24, 17, 31, 26	48	0.2			20.7	44.3			gravel is slightly embedded, some silt.			
56												Bottom of boring at 56.0 ft.			

NOTES:
Augered 0.0' – 2.0' feet without sampling.
Borehole terminated due to heaving sand entering the augers
Borehole grouted to surface with cement/bentonite grout.

Geologist Initials: STH

Remarks:

Project No.: 130.08

Water Levels		
Date	Time	Elevation

BLASLAND, BOUCK & LEE INC.
ENGINEERS & SCIENTISTS

Boring No. TB-04 Well No.

Client: NYSEG
Site: Court St, Binghamton, NY

Date Start/Finish: 5/20/93 – 5/20/93
Drilling Company: Parratt Wolf Inc.
Driller's Name: Doug Richmond
Rig Type: CME Mobil – 57
Spoon Size: 2-inch I. D.
Hammer Weight: 140-lbs.
Height of Fall: 30-inches
Drilling Method: HSA
Bit Size: Auger Size: 2 1/2-inch ID

Northing:
Easting:
Well Casing Elev.: ft.
Corehole Depth: 55 ft.
Borehole Depth: 54.0 ft.
Ground Surface Elev.: 844.9 ft.

General Location:
Outside Southwest side of gasholder No. 3

Depth (Ft.)	Sample/Run Number	Blows/6 in.	N	Recovery (Ft.)	Analytical Sample	Sample ID	PID Field (ppm)	PID Headspace (ppm)	Stratigraphic Description
0–2									Brown fine to coarse SAND and fine to medium GRAVEL, dry, loose.
2–4	1	16, 12, 2, 17	14	0.8			25.2	147	grades to fine to coarse SAND, fine to medium GRAVEL, and BRICK FRAGMENTS, trace silt.
4–6	2	7, 6, 12, 12	18	0.6			24.8	303	Black staining at 3.8 ft. **coal tar residue** in matrix.
6–8	3	18, 35, 14, 15	49	1.0			96.7	261	Black fine to coarse SAND, fine to medium GRAVEL, ASH, and CINDERS, some **coal tar residue**, wet, loose.
8–10	4	6, 4, 5, 7	9	1.2			25.3	154	Brown/gray/green SILT, trace iron oxidation, trace **coal tar residue** in matrix, damp, medium stiff.
10–12	5	7, 11, 12, 16	23	1.5			22.0	171	
12–14	6	7, 14, 14, 14	28	1.3			15.8	113	No coal tar residue in matrix 12.0' – 14.0'.
14–16	7	5, 8, 11, 12	19	1.2			8.6	120	trace **coal tar residue** in matrix 14.0' – 16.0'.
16–18	8	8, 8, 5, 6	13	1.3			4.5	144	grades to dark gray SILT, little clay, moist, medium stiff, no coal tar residue
18–20	9	WOH, 5, 6, 8	11	NR					
20–22	10	18, 14, 14, 18	28	0.9			2.2	39.2	Gray brown fine to coarse SAND, little fine to medium gravel, little silt, wet, medium dense.

Well Materials: Cement/bentonite grout 54.0' – 0.0'

Geologist Initials: STH

Project No.: 130.08

Remarks:

Water Levels		
Date	Time	Elevation

BLASLAND, BOUCK & LEE INC.
ENGINEERS & SCIENTISTS

Boring No. TB-04 Well No.

Client: NYSEG

Site: Court St, Binghamton, NY

Date Start/Finish: 5/20/93 – 5/20/93
Drilling Company: Parratt Wolf Inc.
Driller's Name: Doug Richmond
Rig Type: CME Mobil – 57
Spoon Size: 2-inch I. D.
Hammer Weight: 140-lbs.
Height of Fall: 30-inches
Drilling Method: HSA
Bit Size: Auger Size : 2 1/2-inch ID

Northing:
Easting:
Well Casing Elev.: ft.
Corehole Depth: 55 ft.
Borehole Depth: 54.0 ft.
Ground Surface Elev.: 844.9 ft.

General Location:
Outside Southwest side of gasholder No. 3

Depth (Ft.)	Sample/Run Number	Sample/Int/Type	Blows/6 in.	N	Recovery (Ft.)	Analytical Sample	Sample ID	PID Field (ppm)	PID Headspace (ppm)	Drilling Water Level	Geologic Col.	Stratigraphic Description	Misc. Test	Well Column	Well Materials
22–24	11		14 17 21 19	38	1.0			4.3	22.9						
24–26	12		4 4 6 12	10	0.8			5.3	91.6			Gray brown fine to coarse SAND and fine to medium GRAVEL, trace oil sheen in matrix, wet, loose, slight odor.			
26–28	13		12 12 6 5	18	1.2			0.0	17.2			grades to gray brown fine to medium SAND, trace silt, wet, loose, slight odor, no oil sheen after 27.0 feet.			
28–30	14		5 5 6 11	11	—			0.3	8.7			grades to fine SAND, slight odor.			
30–32	15		6 6 7 7	13	1.8			1.8	8.7						
32–34	16		4 7 9 9	16	1.5			1.5	18.9						
34–36	17		8 10 14 14	24	1.4			0.4	6.4						
36–38	18		4 7 7 10	14	1.7			0.1	10.5			grades to brown fine SAND, trace silt, oxidation staining.			
38–40	19		5 8 9 10	17	1.0			0.1	10.3						
40–42	20		7 7 8 10	15	0.9			0.3	12.0			grades to little silt.			
42–44	21		26 12 12 26	24	0.5			1.8	13.8			grades to gray brown fine to coarse SAND, some silt, little fine to medium gravel, trace clay, moist to wet, medium dense.			

Geologist Initials: STH

Project No.: 130.08

Remarks:

Water Levels		
Date	Time	Elevation

BLASLAND, BOUCK & LEE INC.
ENGINEERS & SCIENTISTS

Boring No. TB-04 Well No.

Client: NYSEG

Site: Court St., Binghamton, NY

Date Start/Finish: 5/20/93 – 5/20/93
Drilling Company: Parratt Wolf Inc.
Driller's Name: Doug Richmond
Rig Type: CME Mobil – 57
Spoon Size: 2-inch I. D.
Hammer Weight: 140-lbs.
Height of Fall: 30-inches
Drilling Method: HSA
Bit Size: Auger Size : 2 1/2-inch ID

Northing:
Easting:
Well Casing Elev.: ft.
Corehole Depth: 55 ft.
Borehole Depth: 54.0 ft.
Ground Surface Elev.: 844.9 ft.

General Location:
Outside Southwest side of gasholder No. 3

Depth (Ft.)	Sample/Run Number	Sample/Int/Type	Blows/6 in.	N	Recovery (Ft.)	Analytical Sample	Sample ID	PID Field (ppm)	PID Headspace (ppm)	Drilling Water Level	Geologic Col.	Stratigraphic Description	Misc. Test	Well Column	Well Materials
44			50/2		NR			NR	NR						
45	22														
46															
47															
48			35		0.8			3.5	81.6						
49	23		31 15	46								grades to dense.			
50			8 13		0.6			0.6	33.8						
51	24		31 30	61											
52			27 50/2					0.6	39.5			grades to very dense, embedded grains of sand and gravel.			
53	25														
54												Bottom of boring at 54.0 ft. (TILL)			
55															
56															
57															
58															
59															
60															
61															
62															
63															
64															
65															

NOTES:
Augered 0.0' – 2.0' feet without sampling.
Augered to top of till from 52.0' to 54.0'.
Borehole grouted to surface with cement/bentonite grout.

Geologist Initials: STH

Project No.: 130.08

Remarks:

Water Levels		
Date	Time	Elevation

BLASLAND, BOUCK & LEE INC.
ENGINEERS & SCIENTISTS

Boring No. TB-05 Well No.

Client: NYSEG
Site: Court St, Binghamton, NY

Date Start/Finish: 5/20/93 – 5/21/93
Drilling Company: Parratt Wolf Inc.
Driller's Name: Doug Richmond
Rig Type: CME Mobil – 57
Spoon Size: 2-inch I. D.
Hammer Weight: 140-lbs.
Height of Fall: 30-inches
Drilling Method: HSA
Bit Size: **Auger Size:** 2 1/2-inch ID

Northing:
Easting:
Well Casing Elev.: ft.
Corehole Depth: 57 ft.
Borehole Depth: 56.0 ft.
Ground Surface Elev.: 844.3 ft.

General Location:
Gasholder No. 3

Depth (Ft.)	Sample/Run Number	Blows/6 in.	N	Recovery (Ft.)	Analytical Sample	Sample ID	PID Field (ppm)	PID Headspace (ppm)	Stratigraphic Description
0–2									Brown fine to coarse SAND and fine to medium GRAVEL, dry, loose, (FILL).
2–4	1	13, 12, 13, 13	25	1.0			6.4	534	grades with some red brick. grades with little slag, moist.
4–6	2	10, 8, 5, 3	13	0.8			51.5	514	grades to dark brown, some **coal tar residue** and **oil globules** in matrix, wet.
6–8	3	6, 50/.1		0.4			115	853	grades to black, saturated with **coal tar residue** and **oil globules**.
10–12	4	12, 3, 4, 4	7	0.6	X	BSVVTB9305	167	NA	Black SILT and fine SAND, trace fine to medium gravel, some **coal tar residue** and **oil globules** in matrix, strong odor, wet, soft.
12–14	5	21, 11, 7, 4	18	1.4			146	NA	Gray/green SILT, little clay, little fine sand, some **oil globules** in matrix, some iron oxidation, damp, medium stiff.
14–16	6	8, 8, 9, 8	17	0.8			90.0	259	grades to trace clay, little **oil globules** in matrix, damp to moist, nonplastic.
16–18	7	4, 4, 14, 11	18	1.8			77.0	163	Dark gray CLAY, some silt, moist, soft, plastic. no coal tar residue or oil globules after 17.0'.
18–20	8	11, 10, 9, 11	19	0.9			28.0	782	Brown fine to coarse SAND and fine to medium GRAVEL, trace silt, wet, loose.
20–22	9	WOH, 19, 12, 15	31	0.8			53.0	129	grades to little silt, saturated.

Well Materials: Cement/bentonite grout 56.0' – 0.0'

Geologist Initials: VAD + TRO

Project No.: 130.08

Remarks:

Water Levels		
Date	Time	Elevation

BLASLAND, BOUCK & LEE INC.
ENGINEERS & SCIENTISTS

Boring No. TB-05 Well No.

Client: NYSEG

Site: Court St., Binghamton, NY

Date Start/Finish: 5/20/93 – 5/21/93
Drilling Company: Parratt Wolf Inc.
Driller's Name: Doug Richmond
Rig Type: CME Mobil – 57
Spoon Size: 2-inch I. D.
Hammer Weight: 140-lbs.
Height of Fall: 30-inches
Drilling Method: HSA
Bit Size: Auger Size : 2 1/2-inch ID

Northing:
Easting:
Well Casing Elev.: ft.
Corehole Depth: 57 ft.
Borehole Depth: 56.0 ft.
Ground Surface Elev.: 844.3 ft.

General Location:
Gasholder No. 3

Depth (Ft.)	Sample/Run Number	Sample/Int/Type	Blows/6 in.	N	Recovery (Ft.)	Analytical Sample	Sample ID	PID Field (ppm)	PID Headspace (ppm)	Drilling Water Level	Geologic Col.	Stratigraphic Description	Misc. Test	Well Column	Well Materials
22–24	10		8 12 13 18	30	0.6			21.5	78.4			grades to gray brown fine to medium SAND, trace to little fine to medium gravel, saturated, loose.			
24–26	11		5 8 12 8	20	0.8			100	568						
26–28	12		5 7 9 25	16	1.2							grades to trace fine to medium gravel.			
28–30	13		1		0.9			6.0	57.2			grades to trace silt, no gravel.			
30–32	14		8 9 10 9	19	0.8			29.3	239						
32–34	15		4 6 9 11	15	1.4			6.1	16.9			grades to wet to moist.			
34–36	16		8 13 14 16	17	1.0			1.1	31.2			grades to fine SAND, little silt, wet.			
36–38	17		9 10 11 13	21	1.2			2.5	15.7						
38–40	18		8 9 9 11	18	0.8			12.5	33.0						
40–42	19		12 8 8 5	16	1.0			0.1	28.8						
42–44	20		10 9 9 10	18	1.0			3.0	30.7						

Geologist Initials: VAD + TRO

Project No.: 130.08

Remarks:

Water Levels

Date	Time	Elevation

BLASLAND, BOUCK & LEE INC.
ENGINEERS & SCIENTISTS

Boring No. TB-05 Well No.

Client: NYSEG

Site: Court St., Binghamton, NY

Date Start/Finish: 5/20/93 – 5/21/93 Drilling Company: Parratt Wolf Inc. Driller's Name: Doug Richmond Rig Type: CME Mobil – 57 Spoon Size: 2-inch I. D. Hammer Weight: 140-lbs. Height of Fall: 30-inches Drilling Method: HSA Bit Size: Auger Size : 2 1/2-inch ID	Northing: Easting: Well Casing Elev.: ft. Corehole Depth: 57 ft. Borehole Depth: 56.0 ft. Ground Surface Elev.: 844.3 ft.	General Location: Gasholder No. 3

Depth (Ft.)	Sample/Run Number	Sample/Int/Type	Blows/6 in.	N	Recovery (Ft.)	Analytical Sample	Sample ID	PID Field (ppm)	PID Headspace (ppm)	Drilling Water Level	Geologic Col.	Stratigraphic Description	Misc. Test	Well Column	Well Materials
44–46	21		11, 12, 12, 10	24	0.5			3.5	38.5			grades to trace gravel.			
46–48	22		26, 36, 12, 13	48	0.8			50.0	35.9						
48–50	23		16, 15, 14, 14	29	0.6			57.0	648			grades to no gravel.			
50–52	24		12, 15, 16, 15	31	1.2			92.0	126						
52–54	25		15, 16, 50/.4		0.6			11.6	113			Brown fine to medium SAND and SILT, some fine to coarse gravel, trace clay, moist, medium dense to dense.			
54–56	26		48, 34, 30, 29	64	0.4			11.2	57.5			grades to moist to damp, dense.			
56												Bottom of boring at 56.0 ft. (TILL)			

NOTES:
Augered 0.0' – 2.0' feet without sampling.
Borehole grouted to surface with bentonite/cement grout.
Test boring located west portion of 7500,000 cu. ft. gas holder # 3.

Geologist Initials: VAD + TRO

Project No.: 130.08

Remarks:

Water Levels		
Date	Time	Elevation

BLASLAND, BOUCK & LEE INC.
ENGINEERS & SCIENTISTS

Boring No. TB-06 Well No.

Client: NYSEG

Site: Court St, Binghamton, NY

Date Start/Finish: 5/24/93 – 5/24/93
Drilling Company: Parratt Wolf Inc.
Driller's Name: Doug Richmond
Rig Type: CME Mobil – 57
Spoon Size: 2-inch I. D.
Hammer Weight: 140-lbs.
Height of Fall: 30-inches
Drilling Method: HSA
Bit Size: . Auger Size : 2 1/2-inch ID

Northing:
Easting:
Well Casing Elev.: ft.
Corehole Depth: 9.5 ft.
Borehole Depth: 8.5 ft.
Ground Surface Elev.: 844.8 ft.

General Location:
Gasholder No. 3

Depth (Ft.)	Sample/Run Number	Sample/Int/Type	Blows/6 in.	N	Recovery (Ft.)	Analytical Sample	Sample ID	PID Field (ppm)	PID Headspace (ppm)	Drilling Water Level	Geologic Col.	Stratigraphic Description	Misc. Test	Well Column	Well Materials
0–2												Brown fine to coarse SAND and fine to medium GRAVEL, dry, loose. (FILL)			
2–4	1		61 19 15 11	34	2.0			0.1	0.0			grades to some brick, little black staining, slight odor, damp.			Cement/bentonite grout 8.5' – 0.0'
4–6	2		16 1 16 29	17	0.6			16.3	566			grades to some wood boards, wet.			
6–8	3		4 1 18 50/2	17	NR	X	BSVIBN9306	NA	NA			some oil globules, wet.			
8.5												Bottom of boring at 8.5 ft. (CONCRETE)			

NOTES:
Augered 0.0' – 2.0' feet without sampling.
Auger refusal at 8.5' concrete chips in spoon and auger.
Borehole grouted to surface with cement/bentonite grout.

Geologist Initials: VAD + TRO

Project No.: 130.08

Remarks:

Water Levels		
Date	Time	Elevation

BLASLAND, BOUCK & LEE INC.
ENGINEERS & SCIENTISTS

Boring No. TB-07 Well No.

Client: NYSEG
Site: Court St., Binghamton, NY

Date Start/Finish: 5/24/93 – 5/24/93
Drilling Company: Parratt Wolf Inc.
Driller's Name: Doug Richmond
Rig Type: CME Mobil – 57
Spoon Size: 2-inch I. D.
Hammer Weight: 140-lbs.
Height of Fall: 30-inches
Drilling Method: HSA
Bit Size: Auger Size : 2 1/2-inch ID

Northing:
Easting:
Well Casing Elev.: ft.
Corehole Depth: 25 ft.
Borehole Depth: 24.0 ft.
Ground Surface Elev.: 843.9 ft.

General Location:
South center area of site,
downgradient of potential source areas.

Depth (Ft.)	Sample/Run Number	Sample/Int/Type	Blows/6 in.	N	Recovery (Ft.)	Analytical Sample	Sample ID	PID Field (ppm)	PID Headspace (ppm)	Drilling Water Level	Geologic Col.	Stratigraphic Description	Misc. Test	Well Column	Well Materials
0–2												Brown fine to coarse SAND and fine to medium GRAVEL, dry, loose.			
2–4	1		60/2		0.2			0.4	13.9						Cement/bentonite grout 24.0' – 0.0'
4–6	2		4, 4, 4, 6	8	0.1			0.0	NA						
6–8	3		6, 2, 2, 2	4	0.1			9.4	29.3						
8–10	4		3, 3, 3, 4	6	1.8			0.0	21.1			Gray/brown SILT, some clay, little to some black viscous, **coal tar residue** in matrix, moist to wet, soft, nonplastic.			
10–12	5		2, 3, 4, 6	7	1.4			0.0	6.9			grades to some oxidation staining, slightly plastic.			
12–14	6		7, 9, 9, 11	18	1.6			0.0	21.9			No coal tar residue in matrix after 14.0'.			
14–16	7		2, 3, 4, 3	7	1.6			0.0	12.2			grades to gray SILT and CLAY, semiplastic.			
16–18	8		3, 5, 9, 13	14	0.8			0.0	2.1			Gray/brown fine to coarse SAND and fine to medium GRAVEL, little silt, saturated, loose to medium dense.			
18–20	9		4, 7, 11, 11	18	0.5			0.0	0.0						
20–22	10		13, 9, 7, 9	16	1.4			0.0	0.0						

Geologist Initials: VAD + TRO

Project No.: 130.08

Remarks:

Water Levels

Date	Time	Elevation

BLASLAND, BOUCK & LEE INC.
ENGINEERS & SCIENTISTS

Boring No. TB-07 Well No.

Client: NYSEG

Site: Court St., Binghamton, NY

Date Start/Finish: 5/24/93 – 5/24/93
Drilling Company: Parratt Wolf Inc.
Driller's Name: Doug Richmond
Rig Type: CME Mobil – 57
Spoon Size: 2-inch I. D.
Hammer Weight: 140-lbs.
Height of Fall: 30-inches
Drilling Method: HSA
Bit Size: Auger Size : 2 1/2-inch ID

Northing:
Easting:
Well Casing Elev.: ft.
Corehole Depth: 25 ft.
Borehole Depth: 24.0 ft.
Ground Surface Elev.: 843.9 ft.

General Location:
South center area of site, downgradient of potential source areas.

Depth (Ft.)	Sample/Run Number	Sample/Int/Type	Blows/6 in.	N	Recovery (Ft.)	Analytical Sample	Sample ID	PID Field (ppm)	PID Headspace (ppm)	Drilling Water Level	Geologic Col.	Stratigraphic Description	Misc. Test	Well Column	Well Materials
-22 to -24	11		7 7 7 7	14	1.2			0.0	37.3			Dark gray fine to coarse SAND, little silt, saturated, loose.			
-24												Bottom of boring at 24.0 ft.			

Depth scale: -22, -23, -24, -25, -26, -27, -28, -29, -30, -31, -32, -33, -34, -35, -36, -37, -38, -39, -40, -41, -42, -43, -44

NOTES:
Augered 0.0' – 2.0' feet without sampling.
Borehole terminated at 24.0' after confirming depth to silt layer.
Borehole grouted to surface with cement/bentonite grout.

Geologist Initials: VAD + TRO

Project No.: 130.08

Remarks:

Water Levels		
Date	Time	Elevation

BLASLAND, BOUCK & LEE INC.
ENGINEERS & SCIENTISTS

Boring No. TB-08 Well No.

Client: NYSEG

Site: Court St., Binghamton, NY

Date Start/Finish: 5/24/93 – 5/25/93
Drilling Company: Parratt Wolf Inc.
Driller's Name: Doug Richmond
Rig Type: CME Mobil – 57
Spoon Size: 2-inch I. D.
Hammer Weight: 140-lbs.
Height of Fall: 30-inches
Drilling Method: HSA
Bit Size: Auger Size : 2 1/2-inch ID

Northing:
Easting:
Well Casing Elev.: ft.
Corehole Depth: 53.8 ft.
Borehole Depth: 52.8 ft.
Ground Surface Elev.: 843.9 ft.

General Location:
South center area of site, downgradient of potential source areas.

Depth (Ft.)	Sample/Run Number	Sample/Int/Type	Blows/6 in.	N	Recovery (Ft.)	Analytical Sample	Sample ID	PID Field (ppm)	PID Headspace (ppm)	Drilling Water Level	Geologic Col.	Stratigraphic Description	Misc. Test	Well Column	Well Materials
0–2												GRASS cover, TOPSOIL.			Cement/bentonite grout 52.8' – 0.0'
2–4	1		2, 3, 3, 4	6	1.2			0.0	0.0			Brown fine to medium SAND, some ash, some coal, some slag, moist, loose. (FILL)			
4–6	2		2, 3, 6, 5	9	1.0			0.0	0.3			grades to primarily ASH.			
6–8	3		3, 1, 2, 2	3	1.8			0.0	4.4			Brown SILT, some clay, some oxidation staining, moist, soft. grades to gray SILT and CLAY, wet, soft, semiplastic.			
8–10	4		2, 2, 2, 4	4	0.4			0.0	0.4			grades to trace fine gravel, wet.			
10–12	5		5, 6, 6, 7	12	1.7			0.0	1.7			grades to gray SILT, little clay, moist, non to slightly plastic.			
12–14	6		6, 7, 9, 12	16	1.4			0.0	1.6						
14–16	7		5, 8, 6, 5	14	1.8			0.0	1.7			grades to gray/brown SILT, little fine sand, little clay, moist, nonplastic. grades to trace clay, damp.			
16–18	8		7, 9, 8, 7	17	NR			0.0	NA			Gray fine to coarse SAND, saturated, loose.			
18–20	9		3, 4, 8, 4	12	NR			NA	14.6						
20–22	10		2, 3, 1, 2	4	0.7			0.0	1.8						

Geologist Initials: VAD + TRO

Remarks:

Project No.: 130.08

Water Levels

Date	Time	Elevation

BLASLAND, BOUCK & LEE INC.
ENGINEERS & SCIENTISTS

Boring No. TB-08 **Well No.**

Client: NYSEG

Site: Court St., Binghamton, NY

Date Start/Finish: 5/24/93 - 5/25/93 **Drilling Company:** Parratt Wolf Inc. **Driller's Name:** Doug Richmond **Rig Type:** CME Mobil - 57 **Spoon Size:** 2-inch I. D. **Hammer Weight:** 140-lbs. **Height of Fall:** 30-inches **Drilling Method:** HSA **Bit Size:** **Auger Size:** 2 1/2-inch ID	**Northing:** **Easting:** **Well Casing Elev.:** ft. **Corehole Depth:** 53.8 ft. **Borehole Depth:** 52.8 ft. **Ground Surface Elev.:** 843.9 ft.	**General Location:** South center area of site, downgradient of potential source areas.

Depth (Ft.)	Sample/Run Number	Sample/Int/Type	Blows/6 in.	N	Recovery (Ft.)	Analytical Sample	Sample ID	PID Field (ppm)	PID Headspace (ppm)	Drilling Water Level	Geologic Col.	Stratigraphic Description	Misc. Test	Well Column	Well Materials
22-24	11		3 6 9 8	15	0.8			1.2	70.1			grades to trace silt, slight coal tar odor.			
24-26	12		7 4 7 7	11	0.6			0.6	26.3						
26-28	13		7 8 8 8	16	0.5		BSVJBM9301	0.6	58.1			Gray/brown SILT, little clay lense 26.3' - 26.4'. grades to dark gray fine SAND, trace silt, saturated,			
28-30	14		6 6 9 10	15	0.8	X		11.6	53.4			slight coal tar odor.			
30-32	15		4 4 5 10	9	1.0			4.8	116						
32-34	16		9 7 9 7	16	0.7			2.1	77.0			grades to fine to medium SAND.			
34-36	17		3 4 6 8	10	1.0			16.0	27.0			lenses of **coal tar residue** in matrix, and **oil globules**, 34.4' - 39.0'.			
36-38	18		8 6 8 8	14	1.0			36.0	438						
38-40	19		8 9 10 10	19	1.4			30.8	3375			No coal tar residue or oil globules after 39.0'			
40-42	20		6 10 10 11	20	1.0			5.3	70.5			grades to fine SAND, trace silt.			
42-44	21		8 10 12 14	22	1.2			13.0	27.5			Brown SILT, some fine to coarse sand, some fine gravel, wet, medium dense.			

Geologist Initials: VAD + TRO

Project No.: 130.08

Remarks:

Water Levels

Date	Time	Elevation

BLASLAND, BOUCK & LEE INC.
ENGINEERS & SCIENTISTS

Boring No. TB-08 Well No.

Client: NYSEG
Site: Court St., Binghamton, NY

Date Start/Finish: 5/24/93 – 5/25/93
Drilling Company: Parratt Wolf Inc.
Driller's Name: Doug Richmond
Rig Type: CME Mobil – 57
Spoon Size: 2-inch I. D.
Hammer Weight: 140-lbs.
Height of Fall: 30-inches
Drilling Method: HSA
Bit Size: **Auger Size:** 2 1/2-inch ID

Northing:
Easting:
Well Casing Elev.: ft.
Corehole Depth: 53.8 ft.
Borehole Depth: 52.8 ft.
Ground Surface Elev.: 843.9 ft.

General Location:
South center area of site, downgradient of potential source areas.

Depth (Ft.)	Sample/Run Number	Sample/Int/Type	Blows/6 in.	N	Recovery (Ft.)	Analytical Sample	Sample ID	PID Field (ppm)	PID Headspace (ppm)	Drilling Water Level	Geologic Col.	Stratigraphic Description	Misc. Test	Well Column	Well Materials
44–46	22		9 37 13 12	50	0.9			4.0	70.4			grades to wet to moist.			
46–48	23		25 18 20 15	38	0.4			0.0	139						
48–50	24		7 7 12 20	19	0.4			4.7	34.0			grades to moist.			
50–52	25		20 40 35 36	75	0.8			0.4	20.6			grades to gray SILT and fine to medium GRAVEL, moist to damp, dense.			
52–52.8	26		35 50/.5		NR			1.2	NA			grades to very dense.			
												Bottom of boring at 52.8 ft. (TILL)			

NOTES:
Augered 0.0' – 2.0' feet without sampling.
Augered from 52.5 to 52.8' to confirm the presence of till.
Borehole grouted to surface with cement/bentonite grout.
WOH – Weight of hammer
NR – No recovery
NA – Not available

Geologist Initials: VAD + TRO

Project No.: 130.08

Remarks:

Water Levels		
Date	Time	Elevation

BLASLAND, BOUCK & LEE INC.
ENGINEERS & SCIENTISTS

Boring No. TB-09 Well No.

Client: NYSEG
Site: Court St., Binghamton, NY

Date Start/Finish: 5/25/93 – 5/25/93 **Drilling Company:** Parratt Wolf Inc. **Driller's Name:** Doug Richmond **Rig Type:** CME Mobil – 57 **Spoon Size:** 2-inch I. D. **Hammer Weight:** 140-lbs. **Height of Fall:** 30-inches **Drilling Method:** HSA **Bit Size: Auger Size:** 2 1/2-inch ID	**Northing:** **Easting:** **Well Casing Elev.:** ft. **Corehole Depth:** 59.5 ft. **Borehole Depth:** 58.5 ft. **Ground Surface Elev.:** 845.6 ft.	**General Location:** Gasholder No. 4

Depth (Ft.)	Sample/Run Number	Sample/Int/Type	Blows/6 in.	N	Recovery (Ft.)	Analytical Sample	Sample ID	PID Field (ppm)	PID Headspace (ppm)	Drilling Water Level	Geologic Col.	Stratigraphic Description	Misc. Test	Well Column	Well Materials
0–2												Brown fine to coarse SAND and fine to coarse GRAVEL, dry, loose. (FILL)			
2–4	1		20 24 17 50/2	41	1.2			0.0	0.9						Cement/bentonite grout 58.5' – 0.0'
3.3–4.5												CONCRETE			
4.5–6	2		4 7 6	11	1.6			1.2	4.2			Brown fine to coarse SAND and fine to medium GRAVEL, dry, loose.			
6–8	3		5 3 2 3	5	1.0			4.6	38.3			grades to damp, slight coal tar odor.			
8–10	4		5 4 7 10	11	0.6			4.7	31.7						
10–12	5		6 5 4 7	9	0.6			0.1	9.8			grades to moist, no odor.			
12–14	6		6 4 3 9	7	0.2			0.4	17.2			grades to wet.			
14–16	7		9 11 12 12	23	0.9			0.5	10.3			Gray/brown SILT, little clay, moist to wet, stiff. grades with fine to medium GRAVEL, little **coal tar residue** in matrix, wet.			
16–18	8		10 9 2 2	11	0.2			0.0	10.5			Gray/brown fine to coarse SAND, saturated, loose. No coal tar residue or oil globules after 16.0'.			
18–20	9		3 4 1 2	5	0.6			3.5	28.5			grades with little fine gravel, slight odor.			
20–22	10		WOH WOH WOH 2		1.6			1.9	35.1						

Geologist Initials: VAD + TRD

Remarks:

Project No.: 130.08

Water Levels		
Date	Time	Elevation

BLASLAND, BOUCK & LEE INC.
ENGINEERS & SCIENTISTS

Boring No. TB-09 Well No.

Client: NYSEG

Site: Court St., Binghamton, NY

Date Start/Finish: 5/25/93 – 5/25/93
Drilling Company: Parratt Wolf Inc.
Driller's Name: Doug Richmond
Rig Type: CME Mobil – 57
Spoon Size: 2-inch I. D.
Hammer Weight: 140-lbs.
Height of Fall: 30-inches
Drilling Method: HSA
Bit Size: **Auger Size**: 2 1/2-inch ID

Northing:
Easting:
Well Casing Elev.: ft.
Corehole Depth: 59.5 ft.
Borehole Depth: 58.5 ft.
Ground Surface Elev.: 845.6 ft.

General Location:
Gasholder No. 4

Depth (Ft.)	Sample/Run Number	Sample/Int/Type	Blows/6 in.	N	Recovery (Ft.)	Analytical Sample	Sample ID	PID Field (ppm)	PID Headspace (ppm)	Drilling Water Level	Geologic Col.	Stratigraphic Description	Misc. Test	Well Column	Well Materials
22–24	11		4, 4, 6, 9	10	1.0			0.6	34.5						
24–26	12		WOH, 3, 3, 4	6	1.3			1.4	7.3			grades to fine to coarse SAND and fine to medium GRAVEL. grades to dark gray fine to medium SAND.			
26–28	13		3, 3, 3, 4	6	1.8		BSVJBM9301	0.0	2.9						
28–30	14		4, 8, 18, 18	26	1.6	X	BSVJBM9301	0.0	1.7						
30–32	15		5, 7, 10, 12	17	0.5			1.4	3.5			grades to fine to coarse SAND and fine to medium GRAVEL.			
32–34	16		10, 11, 12, 13	23	1.0			0.0	0.7			grades to brown fine SAND, wet, medium dense.			
34–36	17		12, 6, 7, 9	13	0.6			0.0	0.9						
36–38	18		11, 11, 12, 13	23	0.8			0.0	0.4						
38–40	19		10, 13, 11, 12	24	1.2			0.0	0.0			grades to fine to coarse SAND lense 38.0' – 38.6'.			
40–42	20		4, 6, 11, 12	17	0.8			0.0	0.0						
42–44	21		7, 7, 9, 12	16	0.6			0.0	0.0						

Geologist Initials: VAD + TRO

Project No.: 130.08

Remarks:

Water Levels

Date	Time	Elevation

BLASLAND, BOUCK & LEE INC.
ENGINEERS & SCIENTISTS

Boring No. TB-09 Well No.

Client: NYSEG
Site: Court St., Binghamton, NY

Date Start/Finish: 5/25/93 – 5/25/93
Drilling Company: Parratt Wolf Inc.
Driller's Name: Doug Richmond
Rig Type: CME Mobil – 57
Spoon Size: 2-inch I. D.
Hammer Weight: 140-lbs.
Height of Fall: 30-inches
Drilling Method: HSA
Bit Size: **Auger Size:** 2 1/2-inch ID

Northing:
Easting:
Well Casing Elev.: ft.
Corehole Depth: 59.5 ft.
Borehole Depth: 58.5 ft.
Ground Surface Elev.: 845.6 ft.

General Location:
Gasholder No. 4

Depth (Ft.)	Sample/Run Number	Sample/Int/Type	Blows/6 in.	N	Recovery (Ft.)	Analytical Sample	Sample ID	PID Field (ppm)	PID Headspace (ppm)	Drilling Water Level	Geologic Col.	Stratigraphic Description	Misc. Test	Well Column	Well Materials
44–46	22		9, 10, 13, 16	23	1.0			0.0	0.0			grades to fine to coarse SAND.			
46–48	23		6, 9, 10, 12	19	1.0			0.0	0.0						
48–50	24		7, 20, 18, 10	38	1.0			0.0	0.1						
50–52	25		10, 9, 13	22	1.6			0.0	0.4			Gray SILT and fine to medium GRAVEL, wet, stiff.			
52–54	26		9, 9, 45, 50/.5	54	0.6			0.0	0.6			grades to moist.			
54–56	27		18, 25, 23, 37	48	0.6			0.0	0.0			grades to damp.			
56	28		100/.5		NR			NA	NA			Gray green fine to medium SAND and fine to medium GRAVEL, some silt, embedded gravel, damp, hard. (TILL)			
56.5	29		150/.3		NR			NA	NA						
57–58.5	30		58, 50, 61	111	0.6			NA	NA						
58.5												Bottom of boring at 58.5 ft..			

NOTES:
Augered 0.0' – 2.0' feet without sampling.
Borehole grouted to surface with cement/bentonite grout.
WOH – Weight of hammer
NR – No recovery
NA – Not available

Geologist Initials: VAD + TRO

Remarks:

Project No.: 130.08

Water Levels		
Date	Time	Elevation

BLASLAND, BOUCK & LEE INC.
ENGINEERS & SCIENTISTS

Boring No. TB-10 Well No.

Client: NYSEG

Site: Court St., Binghamton, NY

Date Start/Finish: 5/27/93 – 5/27/93
Drilling Company: Parratt Wolf Inc.
Driller's Name: Doug Richmond
Rig Type: CME Mobil – 57
Spoon Size: 2-inch I. D.
Hammer Weight: 140-lbs.
Height of Fall: 30-inches
Drilling Method: HSA
Bit Size: Auger Size : 2 1/2-inch ID

Northing:
Easting:
Well Casing Elev.: ft.
Corehole Depth: 58.2 ft.
Borehole Depth: 57.2 ft.
Ground Surface Elev.: 844.4 ft.

General Location:

Depth (Ft.)	Sample/Run Number	Sample/Int/Type	Blows/6 in.	N	Recovery (Ft.)	Analytical Sample	Sample ID	PID Field (ppm)	PID Headspace (ppm)	Drilling Water Level	Geologic Col.	Stratigraphic Description	Misc. Test	Well Column	Well Materials
0												Brown fine to coarse SAND and fine to medium GRAVEL, little silt, dry, loose. (FILL)			
2–4	1		48, 15, 14, 7	29	1.3			0.0	3.1			grades with black staining and little brick.			Cement/bentonite grout 57.2' – 0.0'
4–6	2		2, 2, 1, 2	3	0.6			200	48.4			mixed with some **coal tar residue**.			
6–7.4	3		2, 2, 2, 50/.4		0.8			714	483			Black SILT, some fine to coarse sand and fine to medium gravel, wet, loose.			
8												CONCRETE.			
10–12	4		9, 7, 8, 8	15	1.8		BSVIBN9310	518	282			Gray SILT, trace clay, moist, stiff, some black staining, no coal tar residue in matrix.			
12–14	5		7, 12, 13, 14	25	1.9	X		237	517			grades to some **coal tar residue** in matrix.			
14–16	6		5, 6, 9, 7	15	1.8			3.5	473						
16–18	7		7, 9, 9, 9	18	1.6			27.3	248			No coal tar residue after 18.0'.			
18–20	8		5, 5, 6, 3	11	0.8			4.3	127						
20–22	9		3, 3, 4, 4	7	1.1			2.3	41.1			Dark gray fine to coarse SAND and fine to medium GRAVEL, wet, loose.			

Geologist Initials: TRO

Project No.: 130.08

Remarks:

Water Levels		
Date	Time	Elevation

BLASLAND, BOUCK & LEE INC.
ENGINEERS & SCIENTISTS

Boring No. TB-10 Well No.

Client: NYSEG

Site: Court St., Binghamton, NY

Date Start/Finish: 5/27/93 – 5/27/93
Drilling Company: Parratt Wolf Inc.
Driller's Name: Doug Richmond
Rig Type: CME Mobil – 57
Spoon Size: 2-inch I. D.
Hammer Weight: 140-lbs.
Height of Fall: 30-inches
Drilling Method: HSA
Bit Size: Auger Size: 2 1/2-inch ID

Northing:
Easting:
Well Casing Elev.: ft.
Corehole Depth: 58.2 ft.
Borehole Depth: 57.2 ft.
Ground Surface Elev.: 844.4 ft.

General Location:

Depth (Ft.)	Sample/Run Number	Sample/Int/Type	Blows/6 in.	N	Recovery (Ft.)	Analytical Sample	Sample ID	PID Field (ppm)	PID Headspace (ppm)	Drilling Water Level	Geologic Col.	Stratigraphic Description	Misc. Test	Well Column	Well Materials
22–24	10		3, 3, 3, 4	6	1.6			2.4	45.6			grades to fine to coarse SAND, little silt.			
24–26	11		4, 6, 9, 10	15	1.6			0.2	24.2			grades to brown fine SAND and SILT.			
26–28	12		4, 5, 6, 5	11	1.5			0.4	18.8						
28–30	13		4, 1, 6, 6	7	1.0			2.3	27.7			grades to brown to dark gray fine to coarse SAND.			
30–32	14		4, 5, 5, 6	10	1.0			2.3	12.2			Brown SILT, some fine sand lense 31.0' – 31.5'.			
32–34	15		5, 6, 6, 5	12	1.2			0.9	29.1						
34–36	16		6, 11, 12, 14	23	1.1			0.4	27.7						
36–38	17		3, 5, 8, 9	13	0.8			0.8	27.0						
38–40	18		9, 10, 15, 16	25	0.8			0.1	11.1						
40–42	19		5, 9, 14, 15	23	1.1			0.0	8.1			grades to brown fine SAND, some silt.			
42–44	20		7, 7, 7, 8	14	1.0			1.5	9.0						

Geologist Initials: TRC

Project No.: 130.08

Remarks:

Water Levels

Date	Time	Elevation

BLASLAND, BOUCK & LEE INC.
ENGINEERS & SCIENTISTS

Boring No. TB-10 Well No.

Client: NYSEG

Site: Court St., Binghamton, NY

Date Start/Finish: 5/27/93 – 5/27/93
Drilling Company: Parratt Wolf Inc.
Driller's Name: Doug Richmond
Rig Type: CME Mobil – 57
Spoon Size: 2-inch I. D.
Hammer Weight: 140-lbs.
Height of Fall: 30-inches
Drilling Method: HSA
Bit Size: Auger Size : 2 1/2-inch ID

Northing:
Easting:
Well Casing Elev.: ft.
Corehole Depth: 58.2 ft.
Borehole Depth: 57.2 ft.
Ground Surface Elev.: 844.4 ft.

General Location:

Depth (Ft.)	Sample/Run Number	Sample/Int/Type	Blows/6 in.	N	Recovery (Ft.)	Analytical Sample	Sample ID	PID Field (ppm)	PID Headspace (ppm)	Drilling Water Level	Geologic Col.	Stratigraphic Description	Misc. Test	Well Column	Well Materials
44–46	21		7 9 14 13	23	0.9			1.1	20.4						
46–48	22		23 17 15 17	32	1.0			1.7	79.9						
48–50	23		13 25 13 15	48	0.5			0.8	65.4			Brown/gray SILT and fine to medium GRAVEL, moist to wet, medium dense.			
50–52	24		18 14 15 26	29	1.1			3.9	41.3			grades to dense.			
52–54	25		11 13 17 18	30	0.6			7.5	100						
54–56	26		9 14 33 50/.3	47	1.1			2.7	19.2			Gray/green fine to medium SAND and fine to medium GRAVEL, some silt, moist, dense to very dense. (TILL)			
56–57.2	27		8 28 50/.2		0.1			11.5	40.6						
57.2												Bottom of boring at 57.2 ft.			

NOTES:
Augered 0.0' – 2.0' feet without sampling.
Augered to 57.2 to confirm presence of till.
Borehole grouted to surface with cement/bentonite grout.
WOH – Weight of hammer
NR – No recovery
NA – Not available

Geologist Initials: TRO

Project No.: 130.08

Remarks:

Water Levels		
Date	Time	Elevation

BLASLAND, BOUCK & LEE INC.
ENGINEERS & SCIENTISTS

Boring No. TB-11 Well No.

Client: NYSEG
Site: Court St., Binghamton, NY

Date Start/Finish: 5/27/93 – 5/27/93
Drilling Company: Parratt Wolf Inc.
Driller's Name: Doug Richmond
Rig Type: CME Mobil – 57
Spoon Size: 2-inch I. D.
Hammer Weight: 140-lbs.
Height of Fall: 30-inches
Drilling Method: HSA
Bit Size: **Auger Size:** 2 1/2-inch ID

Northing:
Easting:
Well Casing Elev.: ft.
Corehole Depth: 15.3 ft.
Borehole Depth: 14.3 ft.
Ground Surface Elev.: 845.4 ft.

General Location:
Gasholder No. 1

Depth (Ft.)	Sample/Run Number	Blows/6 in.	N	Recovery (Ft.)	Analytical Sample	Sample ID	PID Field (ppm)	PID Headspace (ppm)	Stratigraphic Description	Well Materials
0–2									Brown fine to coarse SAND and fine to medium GRAVEL, trace silt, damp, loose.	Cement/bentonite grout 35.6' – 0.0'
2–4	1	10, 13, 21, 16	34	0.1			0.0	7.0	grades to wet.	
4–6	2	19, 10, 11, 8	21	0.8			0.0	17.9		
6–8	3	8, 6, 8, 4	14	0.8			14.7	231	grades with some black thick **coal tar residue** and **oil globules.**	
8–10	4	10, 4, 40, 30	44	0.7		BSVXBN9311	39.7	341	saturated.	
10–12	5	3, 56, 32, 7	88	1.6	X	BSVXBN9311	57.3	374	saturated with black thick **coal tar residue.**	
12–14	6	4, 6, 5, 4	11	1.6			46.0	NA		
14–14.3	7	60/.3		0.3			31.0	NA	red brick pieces in end of spoon.	

Bottom of boring at 14.3 ft.

NOTES:
Augered 0.0' – 2.0' feet without sampling.
Auger to 14.3' possible foundation.
Borehole grouted to surface with cement/bentonite grout.
WOH – Weight of hammer
NR – No recovery
NA – Not available

Geologist Initials: TRO

Remarks:

Project No.: 130.08

Water Levels		
Date	Time	Elevation

Date Start/Finish: 9/18/97 / 9/18/97
Drilling Company: MAXIM Technologies, Inc.
Driller's Name: Rodney Bush
Drilling Method: HSA

Auger Size: 4.25 ID in.
Rig Type: 82 Acker
Spoon Size: 3 in.

Northing: 1006227.93547
Easting: 767146.92645

Borehole Depth: 10 ft.
Ground Surface: 844.07 feet

Geologist: Matthew W. Erbe

Soil Boring No: SB-01

Client:
New York State Electric & Gas

Location:
Court Street Yard
Binghamton, New York

gs elevation 844.07 ft

DEPTH	ELEVATION	Sample Interval	Sample Type Number	Blow/6 In.	N	Recovery (ft.)	PID (ppm) Headspace
		S-1		5 17 20 16	37	1.4	0.0
		S-2		5 6 6 5	12	1.8	0.0
	840						
5		S-3		5 7 7 6	14	1.6	0.7
		S-4		6 4 3 3	7	0.8	0.0
	835	S-5		2 3 3 5	6	2.0	0.0
10							
	830						
15							

Stratigraphic Description

GROUND SURFACE

Gray medium GRAVEL, very loose (FILL).

Brown fine to medium GRAVEL, some Silt, trace fine Sand, slag, coal and concrete fragments, loose, moist.

As above, trace ceramic fragments.

Brown to light brown fine to medium GRAVEL, some Silt and Clay, moderately cemented, little to some slag, coal, and brick fragments, moist (FILL).

Light brown fine to medium GRAVEL and SILT, little to trace slag, coal, and brick fragments, moist (FILL).

As above, piece of white and black slag.

Black fine to coarse SAND size coal and slag, moist (FILL).

Light brown fine to medium GRAVEL and SILT, weakly cemented, moist.

Dark brown SILT, little fine Gravel, trace coal fragments, moist to wet (FILL).

As above, poor recovery.

Brown fine SAND, little fine to medium Gravel, coal fragments (2mm), white flakes (waste material), weakly cemented, moist to wet (FILL).

Brown fine SAND and SILT, trace fine Gravel, slag (2mm), and coal (FILL).

Orange brown CLAYEY SILT, Fe mottling, trace brick and coal, wet (FILL).

Greenish gray CLAYEY SILT, some black streaks, moderate cementation, trace brick, stiff (FILL). At 9.8' bgs, brick fragment (3mm).

Bottom of boring 10.0' bgs.

BBL
BLASLAND, BOUCK & LEE, INC.
engineers & scientists

Remarks:
PCB composite sample taken from (1.0-1.2'). Sample intervals (2-4' & 4-6') analyzed of PAHs, total benzene, TCLP benzene. bgs - below ground surface

Saturated Zones

Date / Time	Elevation	Depth
9/18/97	834.27	9.8

Project: 130.36.002 Script: gmbore Date: 04/01/98

Date Start/Finish: 9/17/97 / 9/17/97 **Drilling Company:** MAXIM Technologies, Inc. **Driller's Name:** Rodney Bush **Drilling Method:** HSA **Auger Size:** 4.25 ID in. **Rig Type:** 82 Acker **Spoon Size:** 3 in.	**Northing:** 1006432.46799 **Easting:** 767156.11764 **Borehole Depth:** 8 ft. **Ground Surface:** 844.87 feet **Geologist:** LaRae N. Mishler	**Soil Boring No: SB-02** **Client:** New York State Electric & Gas **Location:** Court Street Yard Binghamton, New York

DEPTH	ELEVATION	Sample Interval	Sample Type Number	Blow/6 In.	N	Recovery (ft.)	PID (ppm) Headspace	Geologic Column	Stratigraphic Description
gs elevation 844.87 ft									**GROUND SURFACE**
		S-1		15 17 19 18	36	1.7	0.0		Brown fine to coarse SAND and fine to coarse GRAVEL, little Silt, loose, dry. (FILL) Light brown fine to medium SAND and fine to coarse GRAVEL, little Silt, dry to moist. (FILL) At 0.7', 0.1' thick layer of black coated fragments.
		S-2		10 11 8 5	19	1.5	0.0		Black fine to coarse SAND and fine to coarse GRAVEL sized coal fragments, moist. (FILL) As above, Fe staining, piece of white slag. As above, no Fe staining, no white slag.
5	840	S-3		4 10 8 4	18	1.0	0.0		Brick. No recovery from 5-8'.
		S-4		5 4 3 4	7	0.8	48.7		Coal fragments, trace pieces of brick. (FILL) Saturated. Slag, black coated, slight sheen, odor. (FILL)
									Bottom of boring 8.0' bgs.
10	835								
15	830								

BBL
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engineers & scientists

Remarks:

PCB composite sample taken at 0.7'. Sample intervals (2-4' & 4-8') analyzed for PAHs, total benzene, TCLP benzene. bgs - below ground surface

Saturated Zones		
Date / Time	Elevation	Depth

Project: 130.36.002 Script: gmbore Date: 04/01/98

Date Start/Finish: 9/17/97 / 9/17/97 **Drilling Company:** MAXIM Technologies, Inc. **Driller's Name:** Rodney Bush **Drilling Method:** HSA **Auger Size:** 4.25 ID in. **Rig Type:** 82 Acker **Spoon Size:** 3 in.	**Northing:** 1006534.54148 **Easting:** 767146.48907 **Borehole Depth:** 6 ft. **Ground Surface:** 844.81 feet **Geologist:** LaRae N. Mishler	**Soil Boring No: SB-03** **Client:** New York State Electric & Gas **Location:** Court Street Yard Binghamton, New York

DEPTH	ELEVATION	Sample Interval	Sample Type Number	Blow/6 In.	N	Recovery (ft.)	PID (ppm) Headspace	Geologic Column	Stratigraphic Description
gs elevation 844.81 ft.									**GROUND SURFACE**
		S-1		15 20 14 8	34	1.3	0.0		Brown fine to coarse SAND and fine to medium GRAVEL, little Silt, loose, dry. (FILL) Color change to dark brown, coal fragments. Black coated fine to coarse Sand size fragments, trace slag. (FILL)
		S-2		6 5 4 3	9	0.4	0.0		Orange-brown SILT and fine SAND, 0.1" black layer at 2.05'. Tan fine SAND (0.1' thick), dense, moist. (FILL) At 2.2', tan/orange color change. At 2.3', brick.
5	840	S-3		3 2 1 3	3	1.6	15.0		Brown fine to medium SAND and SILT, brick fragments, moist. (FILL) Orange SILT and fine SAND, moist. (FILL) White/tan fine to medium SAND, trace Silt, moist. (FILL) Fine to coarse SAND and fine to coarse GRAVEL sized coal fragments. (FILL) At 6.0', saturated, slight sheen, odor.
									Bottom of boring 6.0' bgs.
10	835								
15	830								

BBL
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engineers & scientists

Remarks:
PCB composite sample taken at 1.3'. Sample intervals (0-2' & 4-6') analyzed of PAHs, total benzene, TCLP benzene. bgs - below ground surface

Saturated Zones		
Date / Time	Elevation	Depth

Project: 130.36.002
Script: gmbore
Date: 04/01/98

Date Start/Finish: 9/16/97 / 9/16/97 **Drilling Company:** MAXIM Technologies, Inc. **Driller's Name:** Rodney Bush **Drilling Method:** HSA **Auger Size:** 4.25 ID in. **Rig Type:** 82 Acker **Spoon Size:** 3 in.	**Northing:** 1006315.68988 **Easting:** 766956.04409 **Borehole Depth:** 20 ft. **Ground Surface:** 845.48 feet **Geologist:** LaRae N. Mishler	**Soil Boring No: SB-04** **Client:** New York State Electric & Gas **Location:** Court Street Yard Binghamton, New York

DEPTH	ELEVATION	Sample Interval	Sample Type Number	Blow/6 In.	N	Recovery (ft.)	PID (ppm) Headspace	Geologic Column	Stratigraphic Description
gs elevation 845.48 ft.									**GROUND SURFACE**
	845	S-1		21 29 35 34	64	1.6	0.0		Brown SILT and fine to medium, rounded GRAVEL, dry. Gray fine to coarse GRAVEL, subrounded to angular, trace Silt, dry.
		S-2		16 27 35 36	62	1.7	0.0		Brown SILT and fine to coarse SAND, little fine to medium Gravel, moist. At 2.3', black-coated coarse, angular Sand. At 3.2', cobble (>3").
5	840	S-3		14 13 14 9	27	2.0	14.1		At 3.7', trace black-coated sand-size fragments. Brown SILT and fine to medium GRAVEL, moist. (FILL) Fine to coarse GRAVEL and fine to medium SAND, coated with black residue, odor. (FILL)
		S-4		3 3 4 5	7	2.0	0.3		Greenish gray SILT, some fine to medium Sand, black staining, Fe staining, moist. (FILL) From 7.4' to 7.8', white staining, pieces of ceramic.
		S-5		2 1 4 3	5	0.8	16.1		At 9.0', black coated fragments. At 9.5', white ceramic fragments.
10	835	S-6		1 2 4 6	6	1.2	20.1		At 9.9', black staining, slight sheen, slight odor, moist. Greenish gray SILT, slightly plastic, Fe staining, moist.
		S-7		5 7 10 14	17	1.8	37.1		As above, dark red spotting throughout with slight sheen.
15		S-8		3 4	11	1.7	124		

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Remarks:

PCB composite sample taken from (2.0-2.2'). Sample intervals (2-4' & 12-14') analyzed of PAHs, total benzene, TCLP benzene. Sample interval (12-14') analyzed for reactivity. bgs - below ground surface.

Saturated Zones

Date / Time	Elevation	Depth
9/16/97	828.98	16.5 ▼

Project: 130.36.002 Script: gmbore Date: 04/01/98

Client:
New York State Electric & Gas

Location:
Court Street Yard
Binghamton, New York

Soil Boring No: SB-04

Total Depth = 20 ft.

DEPTH	ELEVATION	Sample Interval	Sample Type Number	Blow/6 In.	N	Recovery (ft.)	PID (ppm) Headspace	Geologic Column	Stratigraphic Description
	830	S-8		7 8	11	1.7	124		At 14' bgs, greenish gray SILT, dark red spotting throughout, sheen, odor.
		S-9		6 10 10 11	20	1.6	115		As above, moist.
		S-10		2 3 3 2	6	0.8	62.4		As above. At 19.7', sheen, brown oily spots, odor, saturated at 20'.
20	825								Bottom of boring 20.0' bgs.
25	820								
30	815								
35									

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Remarks:
Water in augers up to 16.5' below ground surface. Tape was covered with brown oily substance.

Saturated Zones

Date / Time	Elevation	Depth
9/16/97	828.98	16.5

Project: 130.36.002
Script: gmbore
Date: 04/01/98

Date Start/Finish: 9/16/97 / 9/16/97
Drilling Company: MAXIM Technologies, Inc.
Driller's Name: Rodney Bush
Drilling Method: HSA

Auger Size: 4.25 ID in.
Rig Type: 82 Acker
Spoon Size: 3 in.

Northing: 1006412.89901
Easting: 766980.32487

Borehole Depth: 14 ft.
Ground Surface: 844.20 feet

Geologist: Matthew W. Erbe

Soil Boring No: SB-05

Client:
New York State Electric & Gas

Location:
Court Street Yard
Binghamton, New York

DEPTH	ELEVATION	Sample Interval	Sample Type Number	Blow/6 In.	N	Recovery (ft.)	PID (ppm) Headspace
gs elevation 844.20 ft.							
		S-1		26 34 45 40	79	2.0	0.0
		S-2		45 29 21 21	50	1.0	0.0
5	840	S-3		17 21 10 11	31	1.2	1.8
		S-4		2 3 3 2	6	1.8	0.0
	835	S-5		1 2 2 3	4	1.3	0.0
10		S-6		2 4 6 7	10	1.8	0.3
		S-7		3 4 5 6	9	2.0	1.4
15	830						

Geologic Column

Stratigraphic Description

GROUND SURFACE

Brown SILT and fine to medium GRAVEL, loose, dry. (FILL).

Dark brown fine to medium GRAVEL and SILT, dense. (FILL).
At 1.2', trace black coated fragments.
At 1.5', piece of orange plastic, trace fine to coarse Sand.

As above, some slag, Fe staining, white ceramic (0.5") at 2.5'.
At 2.75', orange spots.
At 2.9', cobble, loose, dry.

Dark brown fine to medium GRAVEL, coarse SAND, and SILT, some black staining, dry. (FILL).

Yellow brown CLAY with orange specks, black Sand, trace orange brick. (FILL).

At 5.1', black sheen on soil, then gray SILT and GRAVEL, dry. (FILL).

Gray brown SILT and CLAY, brick fragment at 6.1', wet to moist. (FILL).

Gray brown SILT, some Clay, orange staining throughout, moist.

As above.

Medium Gravel seam (0.1' thick), dry to moist.

Gray SILT and CLAY, orange staining, moist.
At 12.1' and 12.3', 0.5" thick black Silt seams.

Rootlets from 12.5' to 13.2'.

Bottom of boring 14.0' bgs.

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Remarks:
PCB composite sample taken from (1.0-1.2'). Sample intervals (2-4' & 4-6') analyzed of PAHs, total benzene, TCLP benzene. Sample interval (4-6') analyzed for reactivity and as MS/MSD. 3" spoons from (0-6') then 2" (6-14'). bgs - below ground surface

Saturated Zones

Date / Time	Elevation	Depth

Date Start/Finish: 9/17/97 / 9/17/97 **Drilling Company:** MAXIM Technologies, Inc. **Driller's Name:** Rodney Bush **Drilling Method:** HSA **Auger Size:** 4.25 ID in. **Rig Type:** 82 Acker **Spoon Size:** 3 in.	**Northing:** 1006427.73148 **Easting:** 766898.97821 **Borehole Depth:** 6 ft. **Ground Surface:** 844.22 feet **Geologist:** LaRae N. Mishler	**Soil Boring No: SB-06** **Client:** New York State Electric & Gas **Location:** Court Street Yard Binghamton, New York

DEPTH	ELEVATION	Sample Interval	Sample Type Number	Blow/6 In.	N	Recovery (ft.)	PID (ppm) Headspace	Geologic Column	Stratigraphic Description
gs elevation 844.22 ft.									**GROUND SURFACE**
		S-1		35 24 19 15	43	1.8	0.0		Brown fine to coarse GRAVEL, rounded, little Silt, loose, dry. Dark brown fine to medium GRAVEL and SILT, dense, moist. (FILL) At 1.5', Fe staining, then black staining to 2.0'.
		S-2		9 9 7 7	16	1.5	1.2		As above. At 3.6', charred wood layer (0.5" thick). At 3.7', Silt content increases, moist at bottom of spoon.
5	840	S-3		3 2 5 15	7	1.0	85.1		Greenish brown fine to medium GRAVEL and SILT, black staining, moist. (FILL) At 5.8', coarse Gravel coated in viscous black substance, then grass and viscous black substance, strong odor.
									Bottom of boring 6.0' bgs.
10	835								
15	830								

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Remarks:
PCB composite sample taken from (1.0-1.2'). Sample intervals (0-2' & 4-6') analyzed of PAHs, total benzene, TCLP benzene. Sample interval (4-6') analyzed for reactivity and duplicate of reactivity. 2" Split spoons used (6-14'). bgs - below ground surface.

Saturated Zones

Date / Time	Elevation	Depth

Project: 130.36.002 Script: gmbore Date: 04/01/98

Date Start/Finish: 9/17/97 / 9/17/97 **Drilling Company:** MAXIM Technologies, Inc. **Driller's Name:** Rodney Bush **Drilling Method:** HSA **Auger Size:** 4.25 ID in. **Rig Type:** 82 Acker **Spoon Size:** 3 in.	**Northing:** 1006526.09842 **Easting:** 766989.33265 **Borehole Depth:** 8 ft. **Ground Surface:** 844.20 feet **Geologist:** LaRae N. Mishler	**Soil Boring No: SB-07** **Client:** New York State Electric & Gas **Location:** Court Street Yard Binghamton, New York

gs elevation 844.20 ft.

DEPTH	ELEVATION	Sample Interval	Sample Type Number	Blow/6 In.	N	Recovery (ft.)	PID (ppm) Headspace	Geologic Column	Stratigraphic Description
									GROUND SURFACE
		S-1		15 25 26 13	51	2.0	0.5		Brown medium to coarse SAND and fine GRAVEL, some Silt, loose, dry. (FILL) Dark brown fine to medium GRAVEL and fine to coarse SAND, some Silt, dry to moist. (FILL) At 0.6', Fe staining. At 0.8', black staining to 1.0'.
		S-2		10 5 4 3	9	1.8	0.0		Brick fragments. Black, small fragment of coal. As above, black layer from 2.4' to 2.5'.
5	840	S-3		6 3 3 3	6	1.7	0.0		SLAG waste, black, red, and white fragments, fine to coarse Sand and fine to medium Gravel-sized. (FILL) Dark brown SILT and fine to coarse SAND, trace fine to medium Gravel, moist. (FILL) Black SILT and fine to coarse SAND. (FILL)
		S-4		4 3 2 3	5	0.6	0.0		SLAG waste. Brown SILT, Fe stained, moist. (FILL) SLAG waste, Fe stained. At 5.2', piece of coal. Saturated at 6.7' bgs. Dark green SILT and CLAY, saturated. Bottom of boring 8.0' bgs.
10	835								
15	830								

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Remarks:
Sample intervals (0-2' & 4-8') analyzed of PAHs, total benzene, TCLP benzene. bgs - below ground surface

Saturated Zones		
Date / Time	Elevation	Depth

Project: 130.36.002 Script: gmbore Date: 04/01/98

Date Start/Finish: 9/24/97 / 9/24/97
Drilling Company: MAXIM Technologies, Inc.
Driller's Name: Rodney Bush
Drilling Method: HSA

Auger Size: 4.25 ID in.
Rig Type: 82 Acker
Spoon Size: 2 in.

Northing: 1006333.76425
Easting: 766677.81012

Borehole Depth: 50 ft.
Ground Surface: 849.77 feet

Geologist: Matthew W Erbe

Soil Boring No: TB-12

Client:
New York State Electric & Gas

Location:
Court Street
Binghamton, New York

DEPTH	ELEVATION	Sample Interval	Sample Type Number	Blow/6 In.	N	Recovery (ft.)	PID (ppm) Headspace	Geologic Column	Stratigraphic Description
gs elevation 849.77 ft.									GROUND SURFACE
		S-1		7 42 39 41	81	1.0	0.0		Brown SILT, grass rootlets, loose, dry (TOPSOIL). Brown SILT and fine GRAVEL, loose, dry. (FILL) Light gray SILT, very fine SAND, and medium to coarse subround to subangular GRAVEL, loose, dry. (FILL)
		S-2		53 47 32 26	79	1.0	0.0		Light brown very fine SAND and SILT, some fine to medium GRAVEL, trace coal fragments, loose, dry. (FILL)
5	845	S-3		14 10 8 6	18	0.7	1.1		As above.
		S-4		9 9 8 7	17	1.0	0.0		Light brown fine SAND and medium GRAVEL, trace coal, medium dense, dry. (FILL)
		S-5		7 7 4 4	11	0.7	0.0		Light brown fine SAND and medium GRAVEL, trace SILT, medium dense, moist. (FILL) Wet at 9.5' bgs.
10	840	S-6		4 4 3 2	7	0.5	0.0		As above, loose. One 0.02' white fine Gravel seam.
		S-7		3 4 5 3	9	0.0	NA		No recovery.
15	835	S-8		1 1	2	0.3	0.0		Brown SILT and fine to medium GRAVEL, trace fine Sand, brick fragments, saturated, very loose. (FILL)

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Remarks:
Sampled for TOC 46-48' and 48-50' bgs. bgs - below ground surface

Saturated Zones		
Date / Time	Elevation	Depth

Project: 130.36.002
Script: gmbore
Date: 04/01/98

Client:
New York State Electric & Gas

Location:
Court Street
Binghamton, New York

Soil Boring No: TB-12

Total Depth = 50 ft.

DEPTH	ELEVATION	Sample Interval	Sample Type Number	Blow/6 In.	N	Recovery (ft.)	PID (ppm) Headspace	Geologic Column
		S-8		1, 1	2	0.3	0.0	
		S-9		1, 2, 2, 2	4	0.3	0.9	
20	830	S-10		3, 2, 3, 3	5	0.7	1084	
		S-11		3, 4, 4, 7	8	0.5	763	
		S-12		5, 3, 4, 3	7	0.6	252	
25	825	S-13		6, 5, 4, 5	9	0.3	301	
		S-14		5, 2, 2, 3	4	0.3	80.1	
30	820	S-15		2, 3, 3, 4	6	0.7	2.9	
		S-16		13, 19, 19, 16	38	1.5	44.6	
		S-17		16, 16, 16, 17	32	1.8	42.1	
35	815	S-18		15, 17	43	1.0	15.2	

Stratigraphic Description

As above, no brick.

As above, color change to reddish brown.

Moderate brownish gray fine SAND, some fine to medium Gravel, loose, odor.

Brown gray fine to medium GRAVEL, little dark gray, fine Sand, trace Silt, loose, strong odor.

Dark gray fine to medium GRAVEL, trace very fine and coarse Sand, Silt, loose, strong odor.

Brown fine SAND and fine to medium GRAVEL, no odor.

As above.

As above, some coarse Sand.

Olive gray SILT and fine GRAVEL, dense.

Brown very fine to fine SAND and fine GRAVEL, very loose.

As above, dense.

Brown SILT, very fine SAND, and fine GRAVEL.

Brown to dark gray fine to coarse SAND and medium GRAVEL, little to some Silt, moderately cemented, trace rounded white granite and red sandstone Gravel.

Brown fine to coarse, subangular SAND, dense.

Grades to medium to coarse, rounded GRAVEL, moderately cemented by grayish brown Silt.

One red sandstone fragment.

Brown fine to medium, subangular SAND, trace Silt.

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Remarks:

Saturated Zones		
Date / Time	Elevation	Depth

Client:
New York State Electric & Gas

Location:
Court Street
Binghamton, New York

Soil Boring No: TB-12

Total Depth = 50 ft.

DEPTH	ELEVATION	Sample Interval	Sample Type Number	Blow/6 In.	N	Recovery (ft.)	PID (ppm) Headspace	Geologic Column	Stratigraphic Description
		S-18		26 33	43	1.0	15.2		As above, no Silt.
		S-19		19 25 17 16	42	2.0	47.5		Grades to grayish brown fine to coarse, well rounded GRAVEL, some Silt, trace medium Sand. Yellow brown Silt and fine, rounded Gravel seam, moderately cemented.
40	810	S-20		19 13 13 14	26	1.0	23.8		Light brownish gray fine to medium GRAVEL, some SILT, little to trace fine to medium Sand (many rock types present), loose cementation, medium dense.
		S-21		12 20 36 25	56	1.0	16.9		As above, some Silt and fine to medium Sand. As above.
		S-22		17 10 9 8	19	1.5	3.1		Grades to fine to medium SAND. Brown fine to medium, subangular SAND, trace fine Gravel.
45	805	S-23		7 7 8 11	15	2.0	45.2		Brown fine to medium, subangular SAND, trace Silt. At 44.7', 0.1" thick fine to medium Gravel and Sand seam. At 44.9', 0.1" thick Silty Sand seam. At 45.9', 0.1" thick Silty Sand seam.
		S-24		7 11 20 35	31	2.0	30.5		Brown fine to medium, subangular SAND, trace Silt, dense.
50	800	S-25		57 89 42 37	131	1.5	2.5		Gray brown SILT and coarse SAND to fine GRAVEL (rounded, many types), trace fine Sand, very dense (TILL). As above, little fine Sand (TILL).
									Bottom of spoons 50.0' bgs. Bottom of boring 48.0' bgs.
55	795								

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Remarks:
3" split spoon used 48-50' bgs. A shelby tube attempt at that interval was unsuccessful.

Saturated Zones

Date / Time	Elevation	Depth

Project: 130.36.002 Script: gmbore Date: 04/01/98

DRAFT

Date Start/Finish: 5/18/98 / 5/18/98 **Drilling Company:** MAXIM Technologies, Inc. **Driller's Name:** Rodney Bush **Drilling Method:** Hollow-Stemmed Auger **Auger Size:** ID 4.25 in. **Rig Type:** CME 55 **Spoon Size:** 2 in.	**Northing:** 767108.10962 **Easting:** 1006570.99605 **Borehole Depth:** 11 ft. **Ground Surface:** 844.62 feet **Geologist:** Michael Cobb	**Soil Boring No: SB-20** **Client:** New York State Electric & Gas **Location:** 293 Court Street Property, Binghamton, New York

gs elevation 844.62 ft.

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Blows/6 In.	N	Recovery (ft.)	PID (ppm) Headspace	Geotechnical Test	Geologic Column	Stratigraphic Description	Soil Boring Construction
										GROUND SURFACE	
										Asphalt (pavement).	Borehole backfilled with cement/bentonite grout.
		S-1 2" SS		3 1 1 1	2	0.9	1.2			Dark brown to black fine SAND, some Silt and medium Sand, little coarse Sand, trace brick fragments, dry to moist.	
	840	S-2 2" SS		1 1 2 1	3	0.9	2.1			Dark brown to black fine to coarse SAND, some silt and coal cinders, moist.	
5		S-3 2" SS		1 1 1 1	2	0.8	23.7			Dark brown to black coarse SAND to fine GRAVEL, some fine to medium SAND, oily staining, odor, moist.	
		S-4 2" SS		1 1 1 1	2	0.9	12.1			In spoon-tip (5-7' interval), light gray SILT, black oily staining.	
10	835	S-5 2" SS		1 1 1 1	2	1.0	12.1			Olive gray SILT and CLAY, little medium to coarse Sand, thick black oily staining, wet, strong odor. Black SILT with stringers of fine to coarse Sand, black oily staining, wet, strong odor.	
										Bottom of spoons at 11' bgs. Bottom of boring at 9' bgs.	
15	830										

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Remarks:
bgs = below ground surface. SS = Split-Spoon Samples collected from 7-11' bgs submitted for anaylses of VOCs, SVOCs, TCLP Benzene, Total and Amenable Cyanide, and Metals.

Saturated Zones

Date / Time	Elevation	Depth

Project: 130.36.006 Script: nbblwell Date: 02/24/99

DRAFT

Date Start/Finish: 5/21/98 / 5/21/98 **Drilling Company:** MAXIM Technologies, Inc. **Driller's Name:** Rodney Bush **Drilling Method:** Hollow-Stemmed Auger **Auger Size:** ID 4.25 in. **Rig Type:** CME 55 **Spoon Size:** 3 in.	**Northing:** 767156.49965 **Easting:** 1006628.23657 **Borehole Depth:** 6 ft. **Ground Surface:** 845.77 feet **Geologist:** Michael Cobb	**Soil Boring No: SB-21** **Client:** New York State Electric & Gas **Location:** 293 Court Street Property, Binghamton, New York

GS elevation 845.77 ft.

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Blows/6 In.	N	Recovery (ft.)	PID (ppm) Headspace	Geotechnical Test	Geologic Column	Stratigraphic Description	Soil Boring Construction
										GROUND SURFACE	
	845									Concrete surface.	
		S-1 3" SS		6 8 7	14	1.1	0.0			Light brown fine to coarse SAND and fine GRAVEL, loose, dry.	
		S-2 3" SS		7 22 11 9	33	0.3	629			Poor recovery. Olive gray SILT and fine to coarse SAND, some orange mottling and black staining. Bottom 4" of spoon is covered with black oily liquid. In spoon tip, black stained medium to coarse SAND and fine GRAVEL, strong odor. Water in borehole at 3.5' bgs.	Borehole backfilled with Type 1 Portland Cement/Bentonite Grout.
5	840	S-3 3" SS		9 6 9 50/.4'	15	0.3	178			Concrete fragments, fine to medium GRAVEL, little medium to coarse SAND, trace copper wire fragments, heavy black oily staining, water and NAPL on spoon, low viscosity, strong odor.	
										Bottom of boring at 6' bgs. Water in borehole interpretted to be perched in a buried foundation, and not necessarily in communication with deeper groundwater.	
10	835										
15											

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Remarks:

bgs = below ground surface. SS = Split-Spoon. NAPL = Non Aqueous Phase Liquid. Samples collected from 4-6' bgs submitted for analysis of VOCs, SVOCs, Total and Amenable Cyanide, and Metals.

Saturated Zones

Date / Time	Elevation	Depth

DRAFT

Date Start/Finish: 5/20/98 / 5/20/98 **Drilling Company:** MAXIM Technologies, Inc. **Driller's Name:** Rodney Bush **Drilling Method:** Hollow-Stemmed Auger **Auger Size:** ID 4.25 in. **Rig Type:** CME 55 **Spoon Size:** 2 in.	**Northing:** 767029.22909 **Easting:** 1006736.02707 **Borehole Depth:** 16 ft. **Ground Surface:** 844.85 feet **Geologist:** Michael Cobb	**Soil Boring No: SB-22** **Client:** New York State Electric & Gas **Location:** 293 Court Street Property, Binghamton, New York

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Blows/6 In.	N	Recovery (ft.)	PID (ppm) Headspace	Geotechnical Test	Geologic Column	Stratigraphic Description	Soil Boring Construction
GS elevation 844.85 ft.										GROUND SURFACE	
										Concrete surface.	
		S-1 2" SS		8 9 3	17	0.2	1.2			Medium brown fine to coarse SAND and fine GRAVEL, dry.	
		S-2 2" SS		3 4 50/ .4'	50+	0.2	8.0			Strike concrete at 3.4' bgs.	
5	840	S-3 3" SS		17 7 5 6	12	1.2	0.6			Dark reddish brown fine to coarse SAND, little silt concentrated in lenses, trace coal fragments, moist.	
		S-4 2" SS		3 2 3 2	5	1.1	41.4			Dark brown SILT, some fine to coarse Sand, little coal fragments, grading to black SILT, trace coal fragments, trace red staining, faint odor.	Borehole backfilled with Type 1 Portland Cement/Bentonite Grout.
		S-5 2" SS		2 2 2 3	4	1.8	88.0			Black stained SILT, some to little fine Sand, no fill traces, faint odor, becoming wet at 8.3'bgs.	
10	835	S-6 2" SS		6 4 2 3	6	1.7	318				
		S-7 2" SS		2 3 6 7	9	2.0	580			Black stained SILT, as above. Oily staining and strong odor, wet.	
15	830	S-8 2" SS		3 5	12	1.9	783				

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Remarks:
bgs = below ground surface. SS = Split-Spoon. Samples combined from 12-16' bgs for analysis of VOCs, SVOCs, Total, Amenable and Reactive Cyanide, Metals, and TPH.

Saturated Zones

Date / Time	Elevation	Depth

Client:
New York State Electric & Gas

Location:
293 Court Street Property,
Binghamton, New York

Soil Boring No: SB-22

Total Depth = 16 ft.

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Blows/6 In.	N	Recovery (ft.)	PID (ppm) Headspace	Geotechnical Test	Geologic Column	Stratigraphic Description	Soil Boring Construction
		S-8 2" SS		7 20	12	1.9	763			At 14' bgs, Black stained SILT, little fine Sand, slight sheens, strong odor, wet. In spoon tip, fine to coarse SAND and fine GRAVEL, reddish-brown NAPL, strong odor, wet.	
										Bottom of boring at 16' bgs.	
20	825										
25	820										
30	815										
35	810										

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Remarks:

Saturated Zones

Date / Time	Elevation	Depth

Project: 130.36.006
Script: nbblwell
Date: 02/24/99

DRAFT

Date Start/Finish: 5/19/98 / 5/19/98 **Drilling Company:** MAXIM Technologies, Inc. **Driller's Name:** Rodney Bush **Drilling Method:** Hollow-Stemmed Auger **Auger Size:** ID 4.25 in. **Rig Type:** CME 55 **Spoon Size:** 2 and 3 in.	**Northing:** 766957.97596 **Easting:** 1006737.77404 **Borehole Depth:** 18 ft. **Ground Surface:** 843.26 feet **Geologist:** Michael Cobb	**Soil Boring No: SB-23** **Client:** New York State Electric & Gas **Location:** 293 Court Street Property, Binghamton, New York

gs elevation 843.26 ft.

GROUND SURFACE

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Blows/6 In.	N	Recovery (ft.)	PID (ppm) Headspace	Geotechnical Test	Geologic Column	Stratigraphic Description	Soil Boring Construction
		S-1 2" SS		2 2 3 9	5	0.8	0.2			Grass covered surface. Medium brown fine SAND, some Silt, trace fine gravel, little rootlets and organic debris, moist.	
	840	S-2 2" SS		7 7 8 13	15	1.2	0.8			Pale reddish-brown SILT, some to little fine SAND, little rootlets. Reddish brown to black medium to coarse SAND, some fine Sand and fine Gravel-sized cinders, loose, dry to moist.	
5		S-3 2" SS		6 3 2 2	5	0.4	0.2			Medium brown fine to coarse SAND, little Silt, trace fine Gravel, rootlets, loose, moist.	
		S-4 2" SS		3 3 4 5	7	2.0	0.2			Pale reddish brown SILT and fine SAND, trace medium to coarse Sand, moist. Becomes wet at 7.5 bgs.	Borehole backfilled with Type I Portland Cement/Bentonite Grout.
	835	S-5 2" SS		5 4 3 4	7	0.3	0.3				
10		S-6 2" SS		4 4 5 5	9	1.3	0.2			Pale reddish brown SILT, some fine Sand concentrated in seams, trace medium Sand, wet.	
	830	S-7 2" SS		2 2 3 3	5	1.7	1553			As above, grading to black fine SAND, some Silt, oily sheens, petroleum-like odor, wet.	
15		S-8 3" SS		3 5	18	2.0	1340			As above with more SILT, heavy sheens, strong odor, wet.	

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Remarks:
bgs = below ground surface. SS = Split-Spoon. Samples collected from 16-18' bgs submitted for analysis of VOCs, SVOCs, Total, Amenable and Reactive Cyanide, Metals, and TPH.

Saturated Zones

Date / Time	Elevation	Depth

Project: 130.36.006 Script: nbblwell Date: 02/24/99

Client:
New York State Electric & Gas

Location:
293 Court Street Property,
Binghamton, New York

Soil Boring No: SB-23

Total Depth = 18 ft.

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Blows/6 In.	N	Recovery (ft.)	PID (ppm) Headspace	Geotechnical Test	Geologic Column	Stratigraphic Description	Soil Boring Construction
		S-8 3" SS		13 16	18	2.0	1340			Fine to coarse SAND and fine to medium GRAVEL, trace coarse Gravel, heavy black staining and odors.	
	825	S-9 3" SS		5 5 3 3	8	1.0	1000			As above, with heavy coating of black oily liquid, reddish tint, strong odor. NAPL and water dripping off spoon.	
										Bottom of boring at 18' bgs.	
20											
	820										
25											
	815										
30											
	810										
35											

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Remarks:
NAPL = Non Aqueous Phase Liquid.

Saturated Zones

Date / Time	Elevation	Depth

Project: 130.36.006
Script: nbblwell
Date: 02/24/99

Date Start/Finish:	08/03/01 - 08/06/01	**Northing:**	767172.61	**Boring ID:**	**SB-101**
Drilling Company:	Lyon Drilling	**Easting:**	1006735.65	**Client:**	New York State Electric and Gas
Driller's Name:	Harry Lyon	**Casing Elevation:**	NA	**Location:**	Court Street, Binghamton, NY
Drilling Method:	Hollow Stem Auger	**Surface Elevation:**	846.31 ft. AMSL		
Sampler Size:	2-in. and 3-in. Split Spoon	**Borehole Depth:**	50 ft. bgs		
Auger Size:	4.25-in. ID	**Descriptions By:**	Michael K. Cobb		
Rig Type:	CME 55-Truck Mount Rig				

Depth (ft. bgs)	Elevation (ft. AMSL)	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Stratigraphic Description
0								Asphalt.
	845	1	0-2	NA, 15, 20, 17	35	0.5	0.0	Medium brown and gray fine to coarse SAND and GRAVEL [FILL], dry, no odor/staining/sheen.
		2	2-4	6, 3, 5, 8	8	1.6	0.2	SAND and GRAVEL as above but with weathered Brick debris, trace white fibers, no odor/staining/sheen.
5		3	4-6	3, 6, 3, 3	9	1.0	0.2	Black fine grained COAL, no odor/staining/sheen. Tan orange/rust mottled SILT, gray staining, blocky and spongy texture, moist, no odor or sheen.
	840	4	6-8	4, 6, 6, 7	12	1.0	0.2	Medium reddish brown SILT, trace black/rust mottling, no odor/staining/sheen.
		5	8-10 3-in SS	8, 7, 12, 14	NA	1.0	0.0	Dark brown fine to coarse SAND and fine to medium GRAVEL, trace red Brick and Coal fragments, moist, medium dense, no odor/staining/sheen.
10	835	6	10-12 3-in SS	6, 6, 6, 9	NA	0.6	0.6	Light red-brown SILT, little Coal fragments and coarse Sand. Tan SILT, trace Clay and fine Sand, stiff, moist to wet, little oxidation staining.
		7	12-14	5, 6, 10, 12	16	1.8	420	
15		8	14-16	3, 3, 5, 5	8	1.0	230	SILT as above but wet. Dark gray-brown stained fine to coarse SAND and fine to coarse rounded GRAVEL, trace Silt, wet, little thin amber-olive NAPL, mostly as sheens, indistinct non-MGP odor (possibly fuel oil).

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*=The validity of these readings are considered suspect based on field observation of the collected sample and errat behavior of the PID instrument.
For adequate sample volume, the upper 19 feet of SB-101 were drilled twice at adjacent locations. Description of the interval from 15-19' bgs from second boring.
Sample collected from 10'-12' with a duplicate.

Client:
New York State Electric and Gas

Site Location:
Court Street
Binghamton, NY

Boring ID: SB-101

Borehole Depth: 50 ft. bgs

Depth (ft. bgs)	Elevation (ft. AMSL)	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Geologic Column	Stratigraphic Description
	830	9	16-18	3 4 4 5	8	0.9	47		Fine to coarse SAND and fine to medium GRAVEL as above, sheen in spoon, medium dense, no NAPL, no odor/staining/sheen. Sand and Gravel as above, with trace sheens/NAPL. Shake test at 17'-19; bgs : olive green NAPL floating on water.
20		10	18-20	WOR 3 2 3	5	1.2	48.1		As above, with sheens and faint non-MGP odor.
	825	11	20-22	3 3 2 1	5	0.05	>9999*		
		12	22-24 3-in SS	2 1 3 3	NA	0.2	6800		
25		13	24-26	1 3 3 2	6	0.2	4500		SAND and GRAVEL as above but with little Silt.
	820	14	26-28 3-in SS	7 6 9 6	NA	49	1.5		Fine well-sorted SAND, no odor/staining/sheen.
30		15	28-30	1 1 4 5	5	1.5	15.7		Medium brown fine SAND, little medium Sand, medium dense, slight odor, no sheen/staining.
	815	16	30-32	1 2 3 3	5	1.5	540		Olive brown fine to medium well sorted SAND, wet, loose to medium dense, no odor/staining/sheen.
		17	32-34	3 4 5 7	9	1.0	53.1		
35		18	34-36	1 2 4 5	6	1.0	7.5		

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Sample collected from 10'-12' with a duplicate.

Client:
New York State Electric and Gas
Site Location:
Court Street
Binghamton, NY

Boring ID: SB-101
Borehole Depth: 50 ft. bgs

Depth (ft. bgs)	Elevation (ft. AMSL)	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Geologic Column	Stratigraphic Description
	810	19	36-38	4 6 6 7	12	1.5	19.6		Olive brown fine to medium well sorted SAND, wet, loose to medium dense, trace Silt, no odor/staining/sheen.
		20	38-40	3 7 7 8	14	NA	>9999*		Olive fine SAND, trace Silt, trace coarse Sand, loose to medium dense, no odor/staining/sheen.
40	805	21	40-42	3 3 7 8	10	0.8	9.1		
		22	42-44	2 5 8 10	13	1.0	16.5		Dark brown fine medium SAND, trace fine to coarse Gravel, medium dense, no odor/staining/sheen.
45		23	44-46	2 4 8 12	12	0.5	79		
	800	24	46-48	6 11 18 20	29	0.7	-		Same as above but with little fine Gravel and coarse Sand.
		25	48-50	2 9 40 NA	49	0.9	0.9		
50									Tan SILT and CLAY matrix and gray medium to coarse SAND, little fine rounded to angular Gravel, hard, no odor/staining/sheen. [TILL]
	795								
55									

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For adequate sample volume, the upper 19 feet of SB-101 were drilled twice at adjacent locations. Description of the interval from 15-19' bgs from second boring.
Sample collected from 10'-12' with a duplicate.

Date Start/Finish: 08/06/01 - 08/08/01 **Drilling Company:** Lyon Drilling **Driller's Name:** Dave Lyons **Drilling Method:** Hollow Stem Auger **Sampler Size:** 2-in. Split Spoon **Auger Size:** 3.25-in. ID **Rig Type:** Trailer-mounted CME-45	**Northing:** 766971.14 **Easting:** 1006912.67 **Casing Elevation:** NA **Surface Elevation:** 842.19 ft. AMSL **Borehole Depth:** 61.8 ft. bgs **Descriptions By:** Jerry Shi	**Boring ID:** **SB-102** **Client:** New York State Electric and Gas **Location:** Court Street Binghamton, NY	

Depth (ft. bgs)	Elevation (ft. AMSL)	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Geologic Column	Stratigraphic Description
	845								
0		1	0-2	NA NA 7 25	NA	1.0	0.0		Asphalt. Concrete slab. FILL consisting of Bricks, some fine Gravel and coarse Sand, dry, no odor/staining/sheen.
	840	2	2-4	41 50/.3 NA NA	NA	0.8	0.0		Brown FILL consisting of coarse SAND, little Gravel, little Brick, dry, no odor/staining/sheen. Concrete slab at 2.8' bgs. Augers grind to 3.6', still in slab. Boring abandoned; rig offset 8'; augered to 4' bgs.
5		3	4-6	7 11 14 8	25	0.9	0.0		Gray brown FILL consisting of fine to coarse Sand and fine Gravel, crushed Stone and Concrete, dry, no odor/staining/sheen.
	835	4	6-8	6 5 3 3	8	0.3	0.0		First attempt: spoon and auger refusal at 6.1' bgs. Boring abandoned; rig offset 3 feet; and augered to 6' bgs. Second attempt: Brown FILL consisting of fine to medium Sand, little fine to medium Gravel as crushed stone, trace Brick, dry, no odor/staining/sheen.
		5	8-10	5 3 3 3	6	0.0	-		No recovery.
10		6	10-12	4 48 50/.3 NA	NA	1.2	0.0		Olive brown FILL consisting of medium to coarse Sand and fine to medium Gravel (Limestone and Concrete pebbles), trace Wood, loose, wet, no odor/staining/sheen.
	830	NA	12-13	NA	NA	NA	NA		No Sample.
		7	13-15	4 9 5 4	14	0.8	0.2		Olive brown fine to medium GRAVEL and medium to coarse SAND, trace Wood, loose, wet, no odor/staining/sheen.
15		8	15-17	1 1	5	1.0	0.0		Brown medium SAND, little fine to medium Gravel, no odor/staining/sheen. Olive brown fine SAND, little Silt, moist, no odor/staining/sheen.

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Remarks: Horiz. datum: NAD83-State Plane NY Central
Vert. datum: NGVD 29
Due to difficult drilling, boring abandoned after 3.8' (first attempt), and 6.1' (second attempt). Third attempt completed to 61.8' bgs.
Samples collected from 10'-12' and 21'-23' bgs.

Client:
New York State Electric and Gas

Site Location:
Court Street
Binghamton, NY

Boring ID: SB-102

Borehole Depth: 61.8 ft. bgs

Depth (ft. bgs)	Elevation (ft. AMSL)	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Geologic Column	Stratigraphic Description
		8	15-17	4, 2	5	1.0	0.0		Olive brown fine SAND, little Silt, trace medium to coarse Sand and fine Gravel, moist, yellow staining from 15.6' - 16.0' bgs, no odor or sheen.
	825	9	17-19	2, 1, 2, 3	3	1.0	0.1		Gray-brown fine SAND and fine to medium GRAVEL, little Silt, increased amount of Gravel from 18.9' - 19.0' bgs, wet, no odor/staining/sheen.
20		10	19-21	7, 9, 9, 15	18	1.0	0.0		Gray-brown fine to coarse GRAVEL, some fine Sand, trace Wood, loose, wet, no odor/staining/sheen.
	820	11	21-23	12, 15, 12, 10	27	1.5	0.0		Olive brown fine SAND and SILT, no odor/staining/sheen. Gray fine to coarse GRAVEL, little fine Sand and Silt, loose, wet, no odor/staining/sheen.
		12	23-25	15, 15, 14, 11	29	1.5	4.5		Gray medium to coarse GRAVEL, little fine to coarse Sand, wet, no odor/staining/sheen.
25		13	25-27	12, 10, 11, 9	21	0.2	5.2		
	815	14	27-29	12, 24, 20, 14	44	1.6	5.1		Olive brown medium to coarse Sand, saturated, no odor/staining/sheen. Olive brown fine to medium GRAVEL, little medium to coarse Sand, loose, wet, no odor/staining/sheen.
30		15	29-31	21, 14, 19, 16	33	1.5	0.3		Olive brown fine to coarse GRAVEL, little medium to coarse Sand, wet, no odor/staining/sheen.
	810	16	31-33	15, 18, 18, 17	36	2.0	0.5		Olive brown fine to medium GRAVEL, little medium to coarse Sand, wet, no odor/staining/sheen.
		17	33-35	10, 11, 14, 9	24	2.0	0.0		Olive brown medium to coarse SAND, trace fine Sand and fine Gravel, wet, no odor/staining/sheen.
35		18	35-37	5, 4	11	0.5	0.1		Olive brown fine to medium GRAVEL, little medium to coarse Sand, trace coarse Gravel, wet, no odor/staining/sheen.

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