GLENN SPRINGS HOLDINGS, INC.

MILLER SPRINGS REMEDIATION MANAGEMENT, INC.

ANNUAL MONITORING REPORT - 1999
HYDE PARK RRT PROGRAM

- **SOURCE CONTROL SYSTEM**
- **INTERMEDIATE FORMATIONS**
- **GORGE FACE SEEP SURVEY**
- **BLOODY RUN MONITORING**
- **COLLECTED LIQUIDS MONITORING**
- **BEDROCK NAPL/APL RATIO TESTING**
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EXECUTIVE SUMMARY

Annual Source Control (SC) NAPL/APL ratio testing was conducted between September 7 and September 19, 1999. A significant NAPL/APL ratio still exists at each of the tested wells (SC-2, 3, 4, 5 & 6) though limited hydraulic head is evident under the land fill cap. Thus limiting the volume of NAPL recovery.

Chemical and hydraulic monitoring of the Intermediate Formations was performed on August 16, 1999. Three of the four APL Plume Flux Parameters (chloroform, Mirex and 2,3,7,8-TCDD) analyzed were non-detect. Aroclor 1248 exceeded the survey level, however flux calculations show that the flux level was not exceeded.

The Gorge Face Seep Survey was conducted on August 21, 1999. A total of 23 seep locations and eight culverts, as well as the Garfield Street Outfall Sewer and Bloody Run outlet were inspected. Additionally, Seeps 2, 7d, 12 and Culvert 12 were sampled. All samples were non-detect.

Hydraulic and chemical monitoring of the Bloody Run bedrock monitoring wells was conducted on August 17 and 18, 1999. All parameters were reported as non-detect.

Collected Liquids Monitoring of the APL Containment System, Existing OBCS System, RRT OBCS, Source Control System and Decanters was performed at the various frequencies required. No exceedances were reported.

NAPL/APL ratio tests were conducted at the bedrock purge wells between August 16 and September 8, 1999. NAPL was observed at 4 of the 12 purge wells tested.

A purge/monitoring well inspection was conducted during August 1999. A total of two wells were identified for repair.

1.0 INTRODUCTION

The groundwater pumping activities conducted at the Hyde Park Landfill Site are regularly monitored for containment performance and the results are reported quarterly. In addition to the quarterly monitoring activities, there are several miscellaneous programs that are performed semi-annually or annually.

This report represents the fourth annual monitoring report, presenting the monitoring data for the following programs over the past year (fourth quarter 1998 through third quarter 1999):

i) Source Control System (Section 2.0):
ii) Intermediate Formations (Section 3.0);
iii) Gorge Face Seep Survey (Section 4.0);
iv) Bloody Run Monitoring (Section 5.0);
v) Collected Liquids Monitoring (Section 6.0); and
vi) Bedrock NAPL/APL Ratio Testing (Section 7.0).

This report is prepared for Miller Springs Remediation Management, Inc. (MSRM), which has been assigned the responsibility for managing the Hyde Park Requisite Remedial Technology (RRT) Program under the direction of Glenn Springs Holding, Inc. (GSHI) a subsidiary of Occidental Petroleum Corporation.

An electronic copy of the full text, figures, tables and historic data associated with this report are included on the attached CD as Adobe Acrobat pdf files.

2.0 SOURCE CONTROL SYSTEM

Six extraction wells and nine monitoring wells were installed into the Hyde Park Landfill at the locations presented on Figure 2.1. One extraction well (SC-1) has subsequently been converted into a monitoring well due to insufficient non-aqueous phase liquid (NAPL) volume being present at this location. The purpose of the extraction wells is to reduce the amount of chemicals migrating downward from the landfill by removing any remaining NAPL from within the landfilled waste materials. The data collection activities performed to ensure achievement of this objective are described in the following subsections.

2.1 NAPL VOLUME EVALUATION

The amount of NAPL collected by each extraction well is to be determined annually. The total recovered NAPL volume is measured monthly at Decanter No. 3 (Source Control), with the potential amount of NAPL contributed by each SC well estimated annually.

Total NAPL accumulation for the Source Control Wells reported in the Hyde Park Quarterly Monitoring Reports. Table 5.1 of the Fourth Quarter 1999 report is attached as Appendix A of this report. The approximated Quarterly NAPL accumulations are as follow:

- Fourth Quarter 1998 0 gallons
- First Quarter 1999 564 gallons
- Second Quarter 1999 188 gallons
- Third Quarter 1999 658 gallons

Total 1410 gallons

Source Control Well pumping activity for the year was as follow:

Well No.	Date	Well No.	Date	Well No.	Date
2,3 & 4	10-02-98	2 & 4	12-28-98	2,3 & 4	05-05-99
2 & 4	10-05-98	2,3 & 4	01-18-99	2,3 & 4	05-20-99
2 & 4	10-28-98	2 & 4	02-02-99	2,3 & 4	07-20-99
2,3 & 4	12-04-98	2,3 & 4	03-01-99	2,3 & 4	08-19-99
2 & 4	12-11-98	2,3 & 4	03-17-99		

Note: Source Control Well pumping is based on hydraulic recovery in the well. SC-5 and SC-6 did not recover to sufficient level for pumping between October-1998 and September-1999.

NAPL/APL ratio testing of the SC wells is to be performed annually attached. The NAPL/APL ratio field sheets are attached as Appendix B of this report. The results of the individual well NAPL ratio determinations for 1999 are presented below:

Extraction Well	***Total Volume Extracted (gallons)***	***APL Volume (gallons)***	***NAPL Volume (gallons)***	***% NAPL***
SC-2	55	51	4	7.2
SC-3	9	0	9	100
SC-4	19	0	19	100
SC-5	Dry	N/A	N/A	N/A
SC-6	Dry	N/A	N/A	N/A

The wells were tested over the 3 working days between September 7 and September 9, 1999. Testing was performed by pumping from each SC well and discharging the flow into individual 55-gallon drums once a day for 3 days per well. At the end of the third day of pumping at each individual SC well, the NAPL was decanted from the drums. SC-5 and SC-6 did not produce any NAPL/APL as the water level in these wells was below the bottom of the pump. This is indicative of the dewatering of the landfill as anticipated during landfill design.

Following review of the NAPL/APL flow data from the Source Control Wells it was clear that the total volume of flow, read from the in-line flow meter, into the Source Control Decanter (No. 3) was incorrect. Therefore a total recovery volume of NAPL/APL is not available. The volume of collected NAPL is estimated measuring the accumulation of NAPL in the decanter. The suspect flow meter has been replaced and operating procedures been modified to allow for recording of the flow per individual SC well.

Extraction Well	*NAPL Volume (gallons)*		
	NAPL/APL Test 3 Day Recovery	*Assumed Monthly Volume*	*Approximate Extrapolated Annual Total*
SC-2	4	4	48
SC-3	9	9	108
SC-4	19	19	228
SC-5	--	--	--
SC-6	---	--	--
			384 gal.

Based on the current rate of recharge into the Source Control Wells it is anticipated that the wells will be pumped once per month. Assuming a yield equivalent to the recovery during the NAPL/APL Ratio Test, approximately 384 gallons of NAPL are expected to be recovered from the Source Control system. This estimate represents a significant decline from previous NAPL recovery estimates. Much of the decline is a result of reduced operating head of APL within the landfill driving less NAPL coupled with the removal of NAPL from the vicinity of the pumping wells.

2.2 WATER LEVEL MONITORING

Table 2.1 presents recorded water levels for the Source Control System monitoring wells for over the past 1-year period, demonstrating little groundwater table fluctuation beneath the landfill liner cap. Historical water level data dating back to 1992 is presented on the enclosed CD under the file name OEW.pdf.

3.0 INTERMEDIATE FORMATIONS

Chemical monitoring of the Intermediate Formations is performed annually, along with a calculation of the associated bedrock flux if required. As per the Hyde Park Future Monitoring and Assessment Requirements (April 1996); "The Intermediate Formation have proven to be a bedrock unit with very low transmissivity. Repeated monitoring events indicated that well IFW-5 was the only well which could consistently yield sufficient water to collect a sample, and even at this location sampling efforts typically spanned two to four days. Therefore, future hydraulic and chemical monitoring will be based on data from IFW-5 only." Seven Intermediate Formation Wells (IFWs) were installed as shown on Figure 3.1, however hydraulic and chemical monitoring was performed at IFW-5 only. The other six IFWs have historically not produced an adequate volume of water over 4 days to facilitate complete sample collection.

3.1 GROUNDWATER SAMPLING

Purging of IFW-5 began on August 16, 1999, with the static water level being measured prior to any water removal. (Historical water level data from all 7 IFWs dating back to 1990 is presented on the enclosed CD under the file name IFW.pdf. As required by established protocols, IFW-5 was purged to dryness on 3 consecutive days. Sample collection was completed on August 19, 1999. The sample was submitted for analysis of the following parameters:

APL Plume Flux Parameters	*Sample Volume*	*Submitted to Laboratory*	*Detection Level*
Chloroform	3 x 40 mL	STL	1.0 µg/L
Aroclor 1248(Total PCBs)	2 x 1L	RECRA	1.0 µg/L
Mirex	1 x 1L	STL	1.0 µg/L
2,3,7,8-TCDD	3 x 1L	ALTA	2.5 pg/L

3.2 ANALYTICAL RESULTS

The analytical results for the August 1999 sample are presented in Table 3.1.

From the analytical data results it can be seen that the 2,3,7,8-TCDD, Mirex and chloroform concentrations were below the RRT-required detection levels in the sampled groundwater. The total PCBs reported concentration was 9.2 µg/L, which is above the

RRT-required detection level of 1.0 µg/L. This requires the calculation of the APL Plume Flux for PCBs.

3.3 APL PLUME FLUX

The RRT Stipulation identifies the procedure by which the APL Plume Flux from the Hyde Park Landfill through the Intermediate Formations is to be calculated. The stipulated procedure is to collect aliquots from each well based on the proportion of the groundwater flow and composite them for one analysis. As IFW-5 is the only well to produce water, the 'composite' consists of only a sample from this well.

The levels of the APL Plume Flux Parameters 2,3,7,8-tetrachloro-dibenzo-p-dioxin, chloroform and mirex in the collected sample were below the respective detection levels; therefore, the flux rate for these three parameters is not calculated.

The reported Aroclor 1248 concentration for the August 1999 sample is 9.2 µg/L. The reported concentration is above the detection level, of 1.0 ug/l, for the parameter. As such, an APL Plume Flux calculation from the Hyde Park Landfill through the Intermediate Formations is required for Aroclor 1248.

The APL Plume Flux for Aroclor 1248 was calculated using the following equation:

$$\boxed{\text{Flux} = Q\ (\text{lbs./day}) \times 3.785\ \text{L/Gal} \times \text{Conc ug/L} \times 10^{-9}\ \text{kg/ug} \times 2.205\ \text{lbs./kg}}$$

where:

Q = groundwater flow in gallons per day; and

Groundwater flow has to be calculated using the following equation: Q = KiA

where:

K = hydraulic conductivity (ft/min);

Conc = reported concentration for Aroclor 1248 in µg/L.

i = hydraulic gradient; and

A = cross-sectional area of saturated flow (ft^2).

The hydraulic conductivity was calculated using Hvorslev's equation as well as a method developed by Ferris et al. Similar results were achieved and an average value of

1.0×10^{-7} ft / min was utilized. This value corresponds to the values associated with the low permeability Rochester and Intermediate Formations.

The hydraulic gradient was determined from historic water levels, which best reflected static conditions. The value used (0.008) is the average of two hydraulic gradients calculated which best correspond to the direction of groundwater flow past IFW-5. These two gradients were calculated from IFW-6 to IFW-3 and from IFW-7 to IFW-2. A calculated gradient from IFW-5 to IFW-4 was not included due to the unknown static conditions of IFW-4. Note that the groundwater flow beneath the Site in the Intermediate Formations is from west to east, away from the Niagara River gorge.

The cross-sectional area of saturated flow was calculated using the average historical depth of saturation (27.5 feet) data from within the Intermediate Formations at wells IFW-1, IFW-6 and IFW-5 and a total width of 1,400 feet. (Historical information was used, as these wells have never returned to static conditions due to the sampling activities). The width was calculated using the lineal distances from the midpoint of wells IFW-5 and IFW-6 to IFW-5 and from the midpoint of IFW-4 and IFW-5 to IFW-5. Using these values a cross-sectional area of 38,500 square feet was obtained.

Using the above cross-sectional area and hydraulic gradient the resultant historical flow was calculated to be 0.33 gpd. This low flow rate was to be expected based upon the low permeability / hydraulic conductivity of the Intermediate Formations.

The resultant APL Plume Flux for the Aroclor 1248 concentration reported for Round 12 (1999) sampling is listed below with the previous Rounds 5-11 flux values included for reference:

	Aroclor 1248 Concentration at IFW-5 (µg/L)	***Calculated APL Plume Flux (lbs/day)***
Round 5 (Nov. 1992)	4.5 / 99.5	1.2×10^{-8} / 2.7×10^{-7}
Round 6 (Nov. 1993)	2.5	6.9×10^{-9}
Round 7 (Nov. 1994)	1	2.8×10^{-9}
Round 8 (Nov. 1995)	2	5.6×10^{-9}
Round 9 (Sept. 1996)	5.4	1.5×10^{-8}
Round 10 (Aug. 1997)	ND 2.5	6.9×10^{-9}
Round 11 (Aug. 1998)	ND	N / A
Round 12 (Aug. 1999)	9.2	2.5×10^{-8}

The calculated flux is below the APL Plume Flux Action Level of 5×10^{-3} lb / day, as stated in the RRT Stipulation for Aroclor 1248, thus no further action is required.

3.4 CONCLUSION

The calculated flux of 2.5×10^{-8} lb / day is below the APL Plume Flux Action Level value of 5×10^{-3} lb / day as stated in the RRT Stipulation for Aroclor 1248, therefore no further action is required.

The next Intermediate Formations sampling round (IFW-5) will be conducted in August 2000.

4.0 GORGE FACE SEEP SURVEY

The annual field survey of the accessible pathways along the Niagara Gorge between the New York Power Authority (NYPA) (PASNY) fence on the Lower Access Road and the Garfield Avenue Outfall Sewer was conducted by MSRM, along with representatives of the New York State Department of Health (NYSDOH) and the United States Environmental Protection Agency (EPA). The purpose of the survey is to monitor the status of previously identified seeps/wet areas and to identify new flowing seeps and wet areas. The team of survey members who participated on August 21, 1999 were as follows:

- Gerry Pietraszek - NYSDEC;
- Brian Sadowski - NYSDEC;
- Dino Czak - TAMS Consultants (for EPA);
- Frank Kizlik (MSRM); and
- Rick Passmore - CRA Services (for MSRM).

4.1 SEEP SURVEY RESULTS

During the survey, all of the seep/wet areas identified during previous surveys were re-examined and a re-evaluation of the proposed remedial action was conducted. The seep locations are presented on Figure 4.1.

A total of 29 seep locations and eight culverts, as well as the Garfield Street Outfall Sewer and the Bloody Run outlet, were visited and inspected for variations in flow and exposed wet areas. Descriptions of the observations from each remaining seep are listed in the following summary of survey results:

SEEP SURVEY RESULTS

Seep No.	*Description*	*Notes*
1	Damp, sparse vegetation, seep basin clear, no odor	APWs in operation since April 1997
2 (Culv. 6)	Damp area 0 to 30 feet north of seep (from Lockport/Rochester contact) Steady drip, green algae and grass on face of Rochester Shale, several wet and dripping areas	Sampled 8/19/99, no fence present

SEEP SURVEY RESULTS

Seep No.	*Description*	*Notes*
2 (Culv. 6) Contd.	Note: Intermittent ditch flow, 135 feet in length, south of south wall of Seep 2, ends 15 feet north of north wall of Seep 2, no odor, green moss	
3 (Top)	Very heavy phragmities reeds in weephole area, on north side of Bloody Run concrete box culvert	Fenced
3 (Bottom) (Culv. 5)	No flow, heavy vegetation, seep basin is clear	Remediated
4	Moderate flowing (>5 gpm), heavy vegetation, no odor Note: 90 feet south of south wall of Seep 4, dripping heavy vegetation to Seep 4, dripping base Medina originates Medina columns	Fence in place
5	Damp rock face, occasional light dripping (Figure 4.2)	Remediated
6	Damp rock face (Figure 4.2)	
7a	Covered with local rock, heavy vegetation	Remediated
7b	Covered with local rock	Remediated
7c	Covered with local rock, audible water flow beneath rocks, some exposed flow at lower end	Remediated
7d	Wet and flowing over top of Irondequoit (waterfall), no odor	Sampled 8/19/99 (ND in 1998)
7e	Flowing water beneath rocks, heavy vegetation	No action required
7f	Exposed channel flow 40 feet above dead tree stump	Refer to 7d

SEEP SURVEY RESULTS

Seep No.	*Description*	*Notes*
7g	Audible flow 15 feet down slope from 36-inch tree stump	Refer to 7d
7h	Medium / light vegetation, no apparent flow	Refer to 7d
7i	Heavy vegetation, audible flow	Refer to 7d
8	Exposed flowing water around rocks, no odor	No action required
11a	Covered with local rock	Remediated
11b	Dry	
12	Steady flow out of culvert from NYPA South Tunnel, >20 gpm, no odor	Sampled 8 / 19 / 99 (ND in 1998)
14	North - approximately 80 feet south of south fence line of Seep 3, slightly moist face on Neagha Shale, water originates from Rochester / Irondequoit contact. *Note: Seep 17A is blending into Seep 14.*	Fence removed in 1996
16	Approximately 320 feet north of the north fence line of Seep 1, slightly moist rock face at north and south ends. Moisture from the Lockport-Rochester contact onto the Rochester.	Fence removed in 1996
17a	North - area approximately 175 to 200 feet north of centerline of Seep 2; moist to wet area on middle to lower Rochester Shale, wet at Irondequoit / Reynales contact. *Note: Seep 17A is blending into Seep 14.*	No action required

SEEP SURVEY RESULTS

Seep No.	*Description*	*Notes*
17b	South - one damp area over bottom portion of Rochester Shale at approximately 100 and 150 feet north of centerline of Seep 2.	No action required
18a	South - 0 to 40 feet north of north fenceline of Seep 3, heavy vegetation on rock face and in ditch line, free water in ditch	Fence removed in 1996
18b	North - approximately 75 feet north of north fenceline of Seep 3, slight dripping from Neagha Shale over Thorold Sandstone, some vegetation, free water in ditch 0 to 25 feet north of Seep 18b	Fence removed in 1996
19	Approximately 120 feet south of south end of wing wall, rock face dry, ditch line is damp, moderate vegetation	No action required
20	Area covers 100 feet north from north fenceline of S-4, moist area at base of Grimsby Sandstone, slight dripping within Power Glenn Swale	No action required
21	New seep area in 1994, 375 feet south of S-7 (Devil's Hole stairs), dry	Remediated
Bloody Run	Sections a to f plus S-11c have been eliminated as area was remediated in July 1994, no visible flow, slight chemical odor noted intermittently	Area fenced along shoreline and upslope. Fence in good condition.

During the seep survey, the following culverts were also inspected and the observed conditions were as follows:

CULVERT SURVEY RESULTS

Culvert No.	*Description*	*Notes*
1	Picks-up ditch flow to DI at station 0+00.	No action required
2 (Inlet)	Exposed by NYPA, <5 GPM inlet flow, no odor	No action required
2 (Outlet)	Heavy vegetation, flow <5 GPM , no odor	No Action Required
3 (Inlet)	Exposed by NYPA, damp soil.	No Action Required
3 (Outlet)	Little standing water in culvert.	No Action Required
4 (Inlet)	Exposed by NYPA, Free flowing water at inlet, flow <1 GPM, No Odor, Flow originates in the area of the Bloody Run Box Culvert. (Added to 1999 Sample list)	Sampled 9/7/99
4 (Outlet)	Flow < 1 GPM, no odor.	No Action Required
5	Slight flow (<1 GPM), no flow at fence, no odor.	No Action Required
6	Flow <1 GPM, standing water at the outlet, water is clear, no odor.	No Action Required
7	Dry, no flow, inlet buried.	No Action Required
8	Dry, outlet visible, partially covered with local rock by NYPA.	No Action Required
Garfield Avenue Sewer	No flow at exposed original outlet, typical sewer odor, additional caving into former archway (Whirlpool Sandstone) Note: Additional washout since 1998, Parks department built a culvert/pedestrian walkway at path in summer 1999.	No Action Required

Figure 4.1 shows the general locations of all the seep/wet areas discussed in this report. Figures 4.2 and 4.3 give some specific details about Seeps 5 and 6 as well as 7 and 8, respectively.

4.2 SEEP SAMPLING

Three seeps identified as No. 2, No. 7d, and No. 12 were sampled on August 19, 1999 and analyzed for the APL Plume Definition Parameters. Additionally Culvert No. 4 was sampled on September 7, 1999 and analyzed for the APL Plume Definition Parameters. The analytical results for these samples are presented in Table 4.1 showing no detections of any of the APL Plume Flux Parameters.

4.3 RECOMMENDATIONS

The water in the area above the waterfall at Seep 7d was sampled. The sample was clean and as such, the waterfall will not be diverted and Seeps 7f and 7h do not need to be recovered with local rock.

The sample from Seep 12 was non detect for all parameters. Therefore, no remedial action is required to prevent access to this open channel flow.

The sample from Seep 2, was non-detect for all parameters. Therefore, no remedial action is required to prevent access to this open channel flow.

The sample from Culvert #4 was non detect for all parameters. Therefore, no further action is required to prevent access to this open channel flow.

5.0 BLOODY RUN MONITORING

Subsequent to remediation of the Bloody Run overburden soils north of the Hyde Park Landfill Site, four Bloody Run Monitoring Wells (BRs) were installed to determine if Hyde Park chemicals remain in the upper 15 feet of bedrock at concentrations above the Bloody Run Monitoring Levels. The BR well locations are presented on Figure 5.1. Groundwater samples were collected quarterly in 1994, semi-annually in 1995 and 1996, and annually in 1997 and 1998. Sampling is to be performed annually hereafter. This report presents the analytical data collected during the 1999 annual sampling event.

5.1 GROUNDWATER SAMPLING

The 1999 sampling event was conducted on August 17 and 18, 1999. During this event, a total of five samples were collected, including four groundwater well samples and one duplicate sample. A summary of all the samples collected is presented in Table 5.1.

The Bloody Run monitoring wells (BR-1, BR-2, BR-3, and BR-4) were all purged using a submersible pump following measurement of static water levels from each well. The water level data continues to show that a gradient of approximately 15 feet from east to west exists within the upper 15 feet of bedrock beneath the Bloody Run area. (Historical water level data dating back to 1995 is presented on the enclosed CD under the file name BR.pdf). Upon completion of purging activities, each well was sampled using a dedicated teflon bailer.

The groundwater samples were analyzed for the Bloody Run Monitoring Parameters. Sample sets for each well, as well as the duplicate sample, consisted of two 40 mL vials for MCB and MCT analysis and a 1 liter amber glass bottle for HCB and TCP analysis.

5.2 ANALYTICAL RESULTS

None of the compounds of interest were reported in any of the wells. One parameter, 2,4,5-trichlorophenol, was reported as non-detect at 25 µg/L which is above the monitoring level of 10 µg/L. However, this parameter has been reported as ND (10) during previous sampling events, and the laboratory has been informed of their oversight. Table 5.2 presents the analytical results. Future analytical tests will be conducted such that a 10 ppb detection level is achieved.

All data were subsequently deemed acceptable following a review of the quality control and quality assurance protocols implemented by the laboratory.

6.0 COLLECTED LIQUIDS MONITORING

Monitoring of the collected liquids from the various remedial systems was performed as required. The systems monitored were as follows:

i) APL Containment System;

ii) existing OBCS System (On-Site System);

iii) RRT OBCS (Off-Site System);

iv) SC System; and

v) Decanters.

6.1 APL CONTAINMENT SYSTEM

Operation of the APL Plume Containment System commenced on March 3, 1997. Monitoring data is provided in the individual Quarterly Monitoring Reports.

6.2 EXISTING OBCS SYSTEM (ON-SITE SYSTEM)

An annual sample was collected from Wet Well A on August 2, 1999. The analytical results are summarized in Table 6.1. The reported concentrations are slightly lower than observed in 1998.

6.3 RRT OBCS

The sampling frequency for the OBCS was reduced to annual in 1998. Samples were collected from Wet Wells C and D on August 2, 1999. Table 6.2 summarizes the sample analytical results for Wet Well C and Table 6.3 summarizes the results for Wet Well D. The reported concentrations were comparable to those observed in 1998.

6.4 SC SYSTEM

The volume of collected liquids collected for the SC System is described in Section 2.0.

6.5 DECANTERS

Representative APL samples were collected from the three decanters monthly and submitted for the required analysis. Tables 6.4, 6.5, and 6.6 presents the sample analytical results from Decanters 1, 2, and 3, respectively.

7.0 BEDROCK NAPL/APL RATIO TESTING

NAPL/APL ratio determinations are performed annually for each bedrock purge well at the Site. The locations of the bedrock purge wells are presented on Figure 7.1. This annual testing program is used to evaluate where pumping for NAPL is being accomplished and will continue until the operation of the NAPL Plume Containment System is terminated.

This report presents the results of the fifth annual NAPL/APL ratio-testing program.

7.1 NAPL/APL RATIO TESTING PROGRAM PROTOCOLS

The individual purge well NAPL/APL ratio tests were performed using a mobile 300-gallon NAPL/APL separation tank mounted on a trailer. The tests were conducted by diverting recovered groundwater into the separation tank using an existing valve and sampling port at the well head. The separation tank is graduated for volume determination. The collected liquid was allowed to settle for a minimum of 4 hours prior to NAPL/APL quantification to ensure maximum phase separation.

NAPL, if present, was removed from the sump at the bottom of the tank with a peristaltic pump following decanting. The NAPL was pumped into a graduated bucket so that the volume could be accurately determined. The peristaltic pump was turned off and the remaining APL was removed from the separation tank with a centrifugal suction pump when NAPL was not present in the peristaltic pump discharge stream. The APL volume was calculated by subtracting the decanted NAPL volume from the previously measured total separation tank volume. All collected NAPL was drummed for off-Site disposal and the APL was pumped into a sump at the Hyde Park Storage Facility from which liquids are collected and treated.

The separation tank was decontaminated following each individual test. The tank was cleaned with a water spray if no NAPL was observed. The water was then removed with the peristaltic pump and discharged to the Hyde Park Storage Facility sump. The tank was cleaned with solvents (i.e., Bio-T-Max) and rinsed down with water if NAPL or a sheen was observed. The peristaltic pump was used to remove the wash water for discharge to the Hyde Park Storage Facility sump.

All NAPL/APL handling, well chamber entry, and associated health and safety protocols were performed in accordance with the Hyde Park RRT Program procedures.

7.2 NAPL/APL RATIO TEST RESULTS

The 1999 annual purge well NAPL/APL ratio tests were completed between August 16 and September 8, 1999.

Twelve operational wells were tested initially following a period during which the particular purge well pump had not experienced extensive shutdowns (more than several hours) during the previous week. If no NAPL was recovered during the initial test, a second test was conducted for confirmation. During the retest, the purge well pump was shut down for a minimum of 24 hours prior to commencing the second test. This shutdown period allowed any NAPL present in the well to accumulate prior to pumping. A second test was completed for eight wells (PW-1U, PW-1L, PW-2M, PW-2L, PW-3L, PW4-M, PW-6UR, and PW-6MR).

The results of the NAPL/APL ratio testing are summarized in Table 7.1.

7.3 CONCLUSIONS AND RECOMMENDATIONS

The 1999 NAPL/APL ratio tests indicated that measurable NAPL volumes were available from three of the 12 purge wells tested. The purge wells, which produced measurable NAPL volumes during normal operating conditions, were PW-2UR, PW-3M and PW-4U. In addition, PW-5UR produced trace NAPL volume (approximately 4-8 ml in 300 gallons).

Table 7.1 summarizes this information, including the calculated NAPL/APL ratios at each PW and estimated annual NAPL volumes. The total estimated NAPL volume removed via the bedrock NAPL Plume Containment System is approximately 1,500 gallons over the past year.

8.0 EXISTING WELL SURVEY

An annual inspection of all Hyde Park purge and monitoring wells was performed. This includes an assessment of whether well repairs and/or well replacement are required.

8.1 SURVEY RESULTS

The well inspection survey was performed in August 1999. The inspection results are summarized in Table 8.1. A total of two wells were identified as requiring repairs (indicated with boxes in Table 8.1), both of which were minor (i.e., needs lock or bolts) and have been completed.

FIGURES

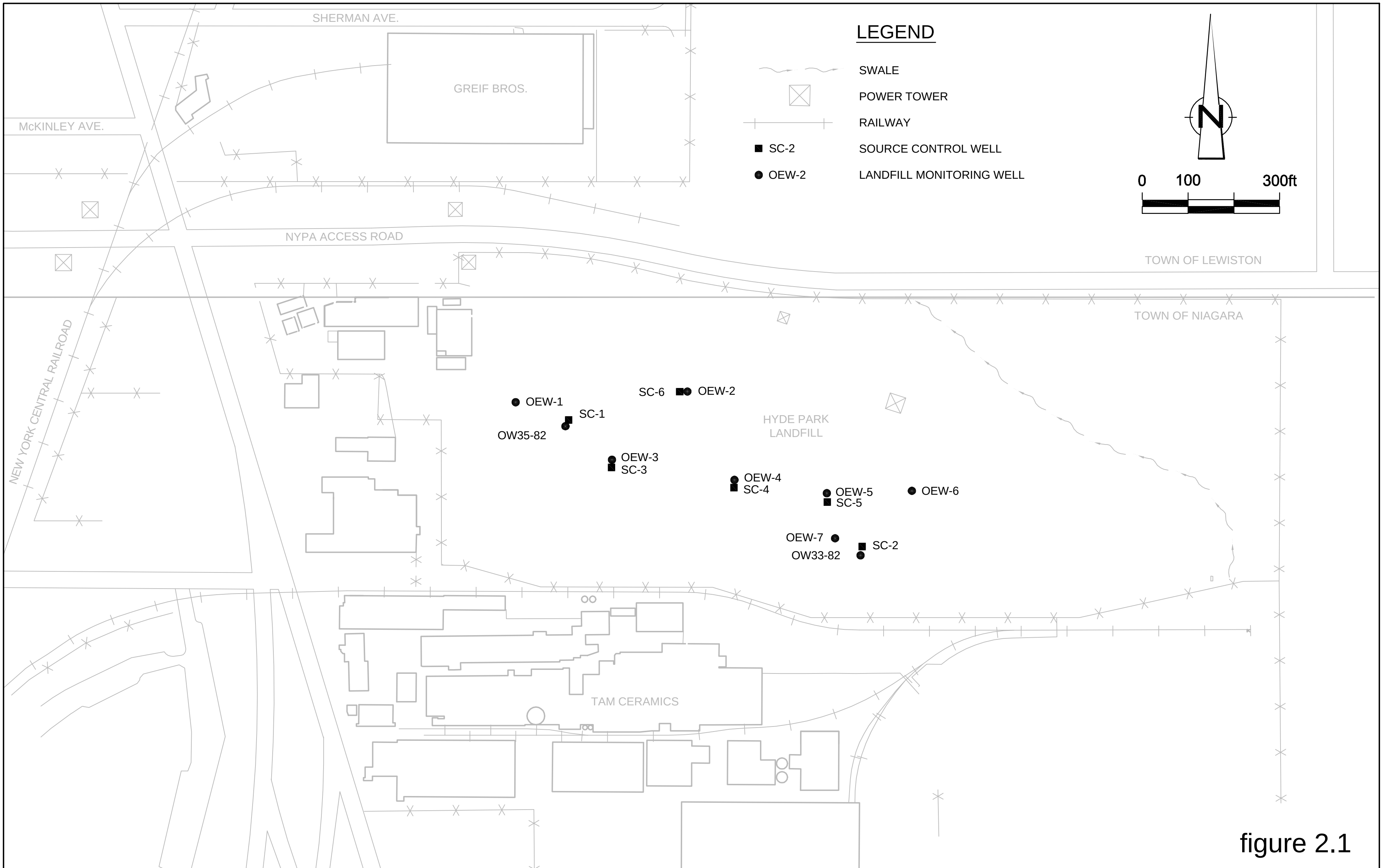


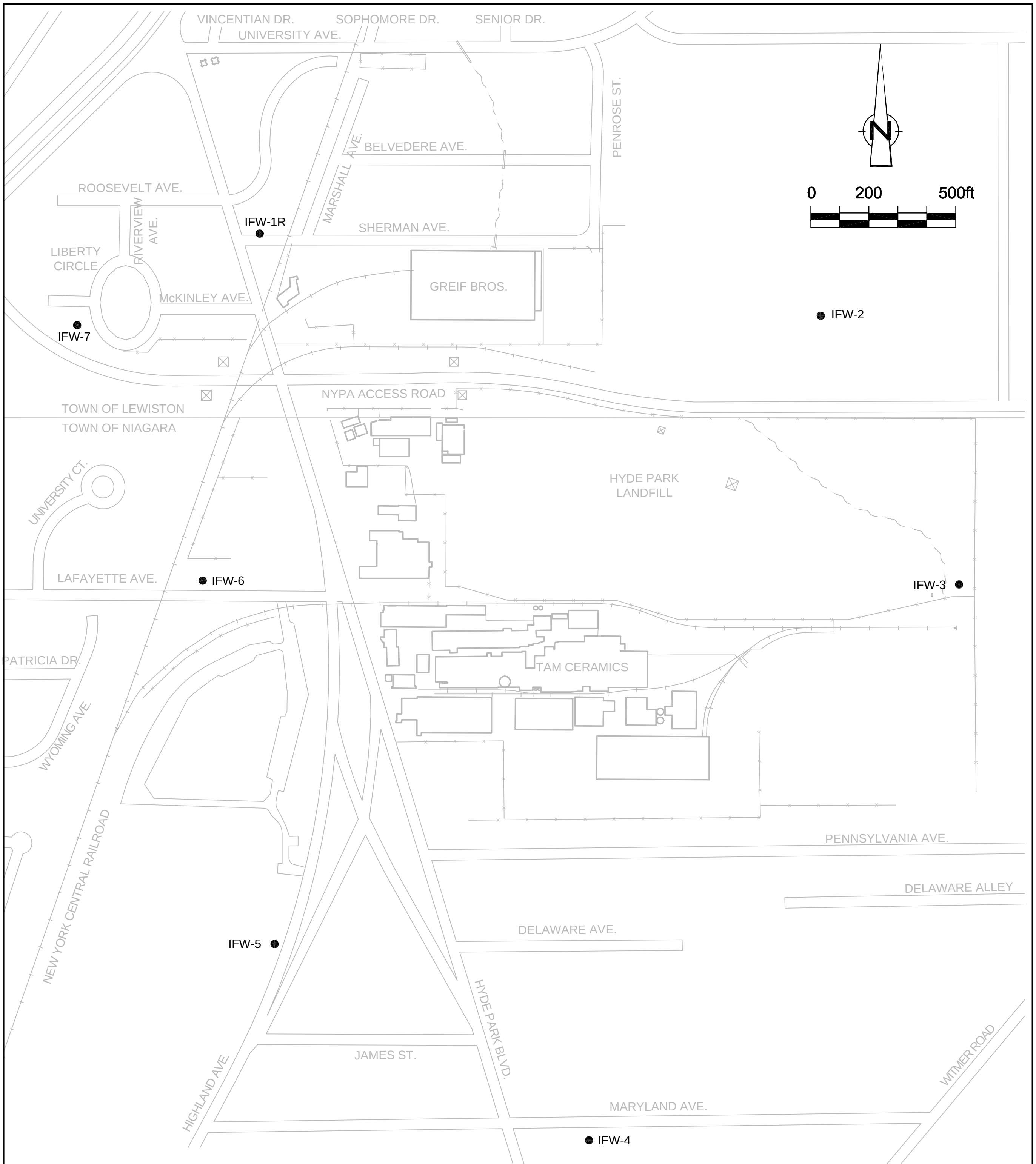
figure 2.1

SOURCE CONTROL SYSTEM WELL LOCATION
HYDE PARK RRT PROGRAM
Hyde Park Landfill Site

NOTES:
1.) SITE BENCHMARK IS A P.K. NAIL SET IN THE EAST FACE OF A POWER POLE LOCATED AT THE WEST END OF THE EXISTING HYDE PARK LANDFILL, ELEVATION = 612.77. DATUM NOT VERIFIED.

CRA

01069-20(272)GN-WA001 JUN 06/2000



NOTES:

1.) SITE BENCHMARK IS A P.K. NAIL SET IN THE EAST FACE OF A POWER POLE LOCATED AT THE WEST END OF THE EXISTING HYDE PARK LANDFILL, ELEVATION = 612.77. DATUM NOT VERIFIED.

LEGEND

	SWALE
	POWER TOWER
	RAILWAY
IFW-2	INTERMEDIATE FORMATIONS WELL

figure 3.1

IFW MONITORING WELL LOCATION
MONTORING PROGRAM STATUS
HYDE PARK RRT PROGRAM
Hyde Park Landfill Site

CRA

01069-20(272)GN-WA002 JUN 06/2000

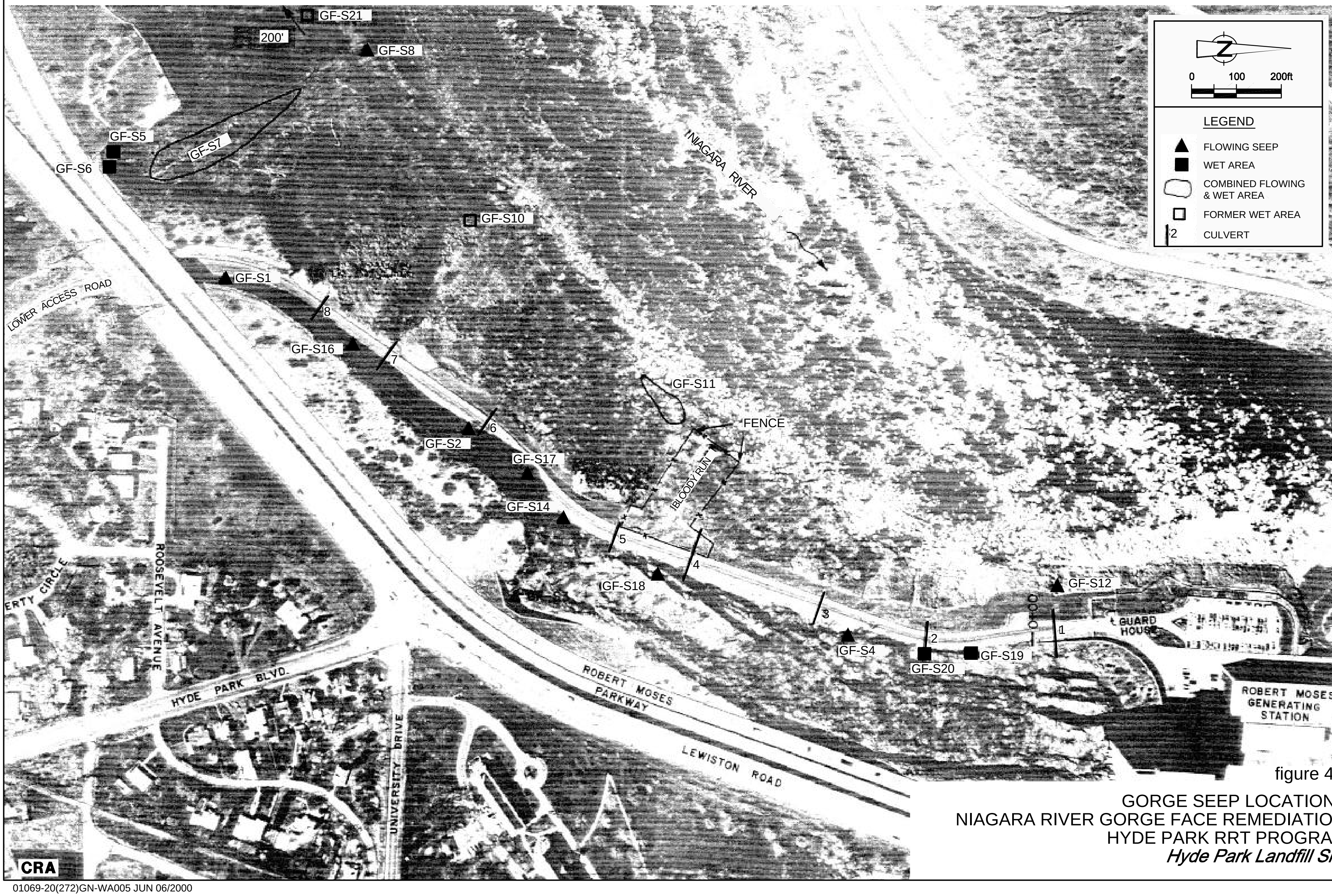


figure 4.1

GORGE SEEP LOCATIONS
NIAGARA RIVER GORGE FACE REMEDIATION
HYDE PARK RRT PROGRAM
Hyde Park Landfill Site

01069-20(272)GN-WA005 JUN 06/2000

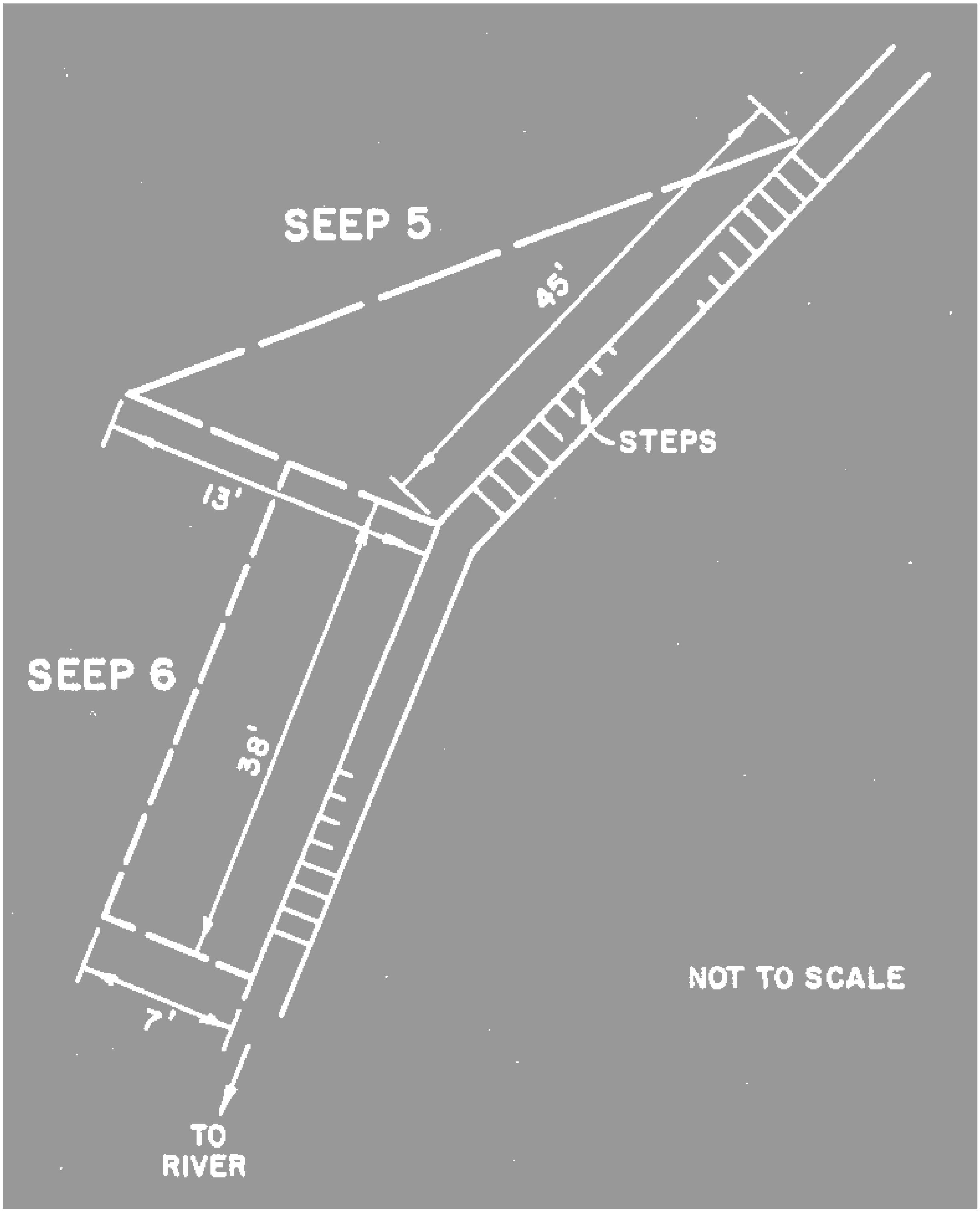


figure 4.2

SEEPS 5 AND 6
HYDE PARK RRT PROGRAM
Hyde Park Landfill Site

CRA

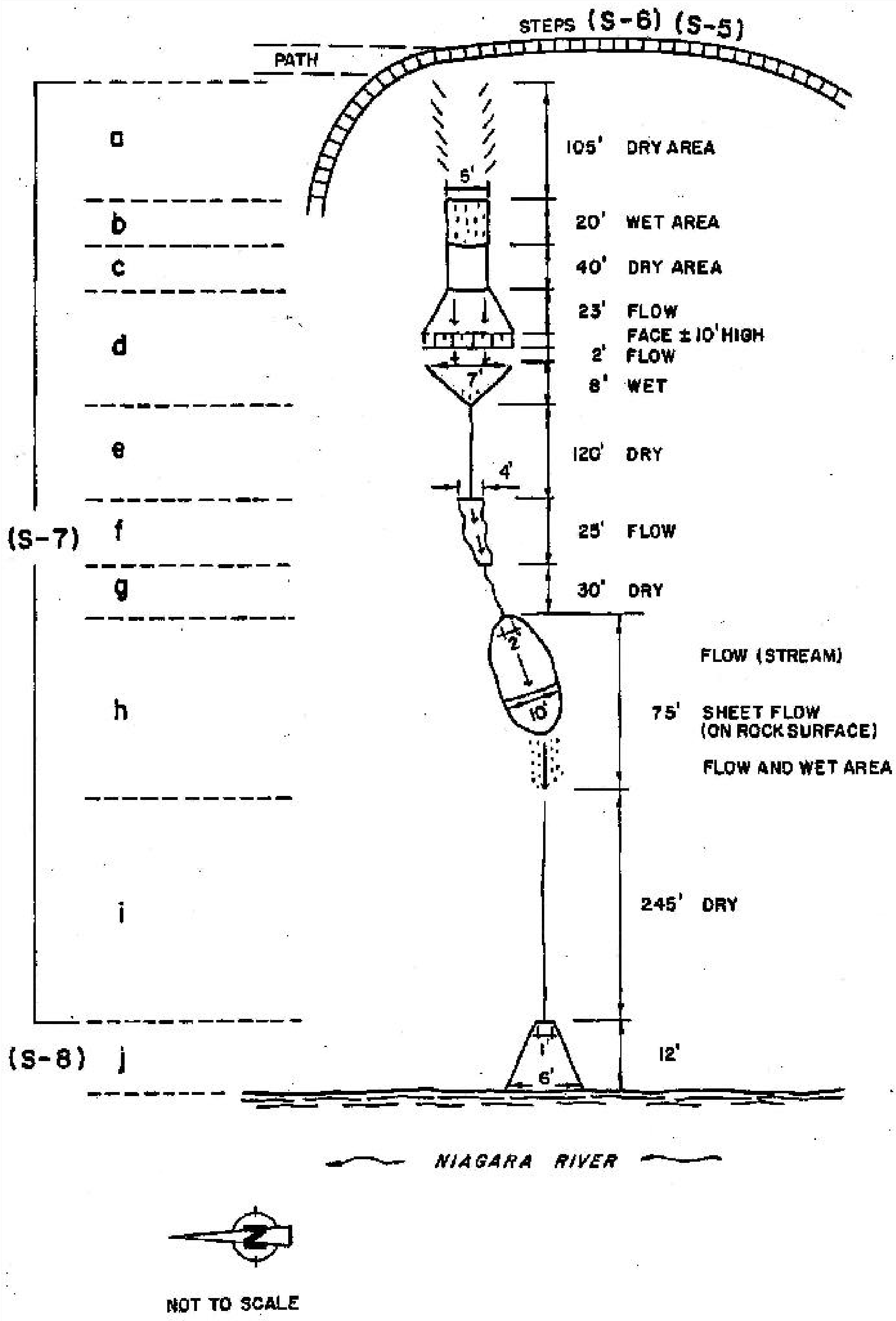


figure 4.3

SEEPS 7 AND 8
HYDE PARK RRT PROGRAM
Hyde Park Landfill Site

CRA

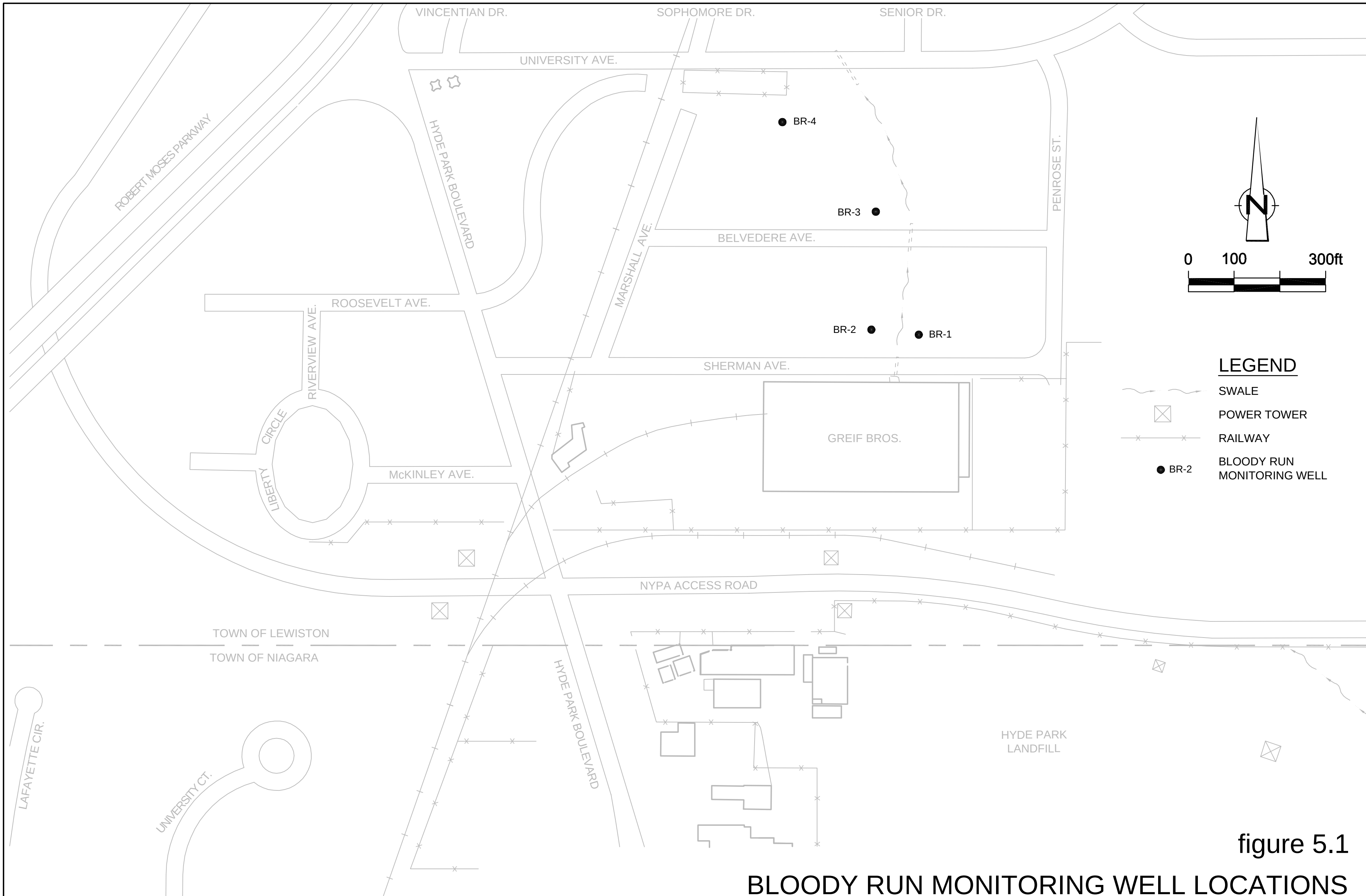


figure 5.1

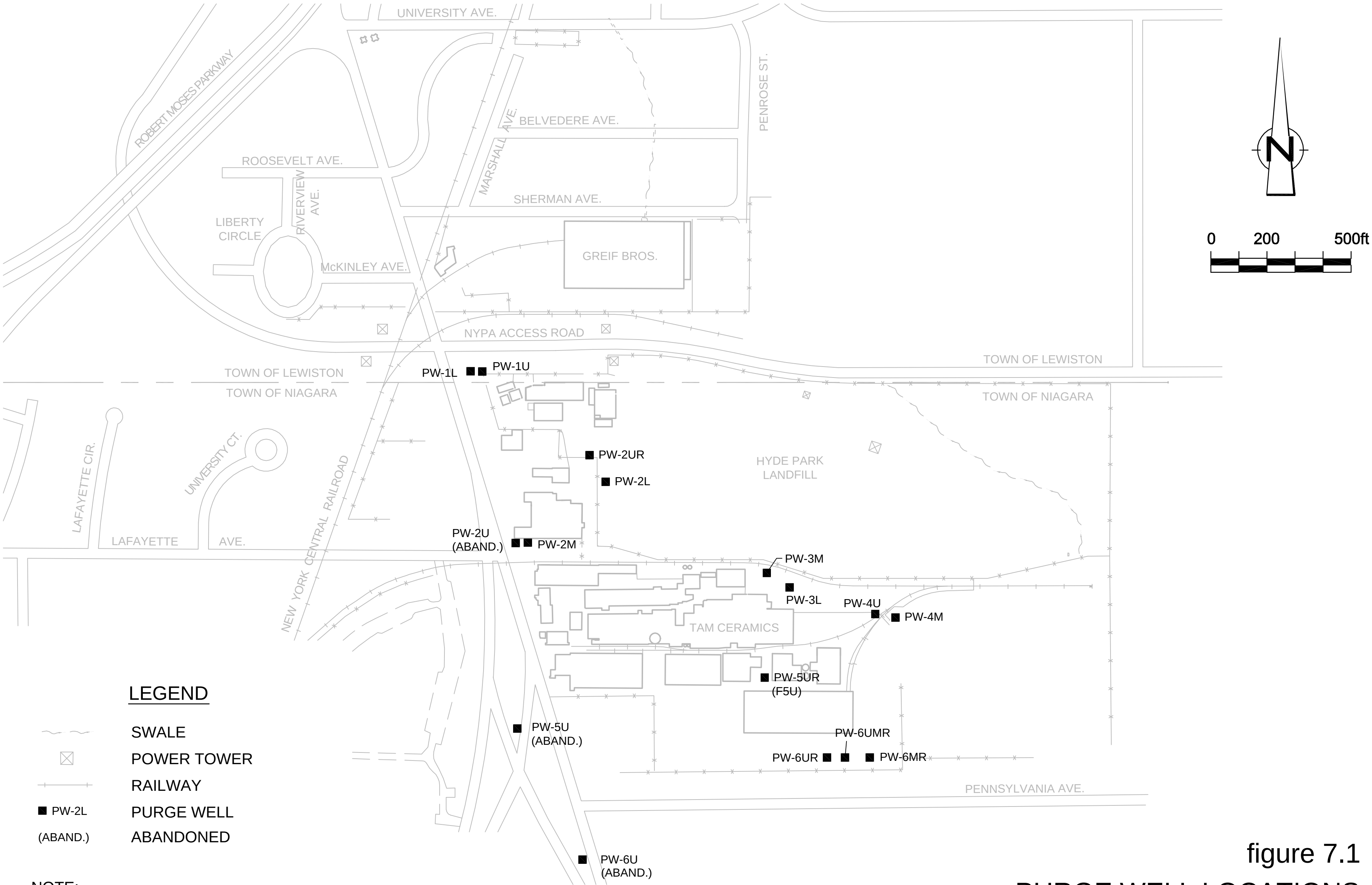
BLOODY RUN MONITORING WELL LOCATIONS
HYDE PARK RRT PROGRAM
Hyde Park Landfill Site

NOTES:

1.) SITE BENCHMARK IS A P.K. NAIL SET IN THE EAST FACE OF A POWER POLE LOCATED AT THE WEST END OF THE EXISTING HYDE PARK LANDFILL, ELEVATION = 612.77. DATUM NOT VERIFIED.

CRA

01069-20(272)GN-WA003 JUN 06/2000



NOTE:

SITE BENCHMARK IS A P.K. NAIL SET IN THE EAST FACE OF A POWER POLE LOCATED AT THE WEST END OF THE EXISTING HYDE PARK LANDFILL, ELEVATION = 612.77. DATUM NOT VERIFIED.

figure 7.1

PURGE WELL LOCATIONS
HYDE PARK RRT PROGAM
Hyde Park Landfill Site

CRA

01069-20(272)GN-WA004 JUN 06/2000

TABLES

TABLE 2.1

OEW WATER LEVEL MEASUREMENTS
SOURCE CONTROL SYSTEM MONITORING
HYDE PARK RRT PROGRAM

WELL NO.	***OEW-1***	***OEW-2***	***OEW-3***	***OEW-4***	***OEW-5***	***OEW-6***	***OEW-7***	***OW33-82***	***OW35-82***
TYPE	***O***	***O***	***O***	***O***	***O***	***O***	***O***	***O***	***O***
CASING EL.	***619.88***	***630.17***	***637.61***	***639.16***	***636.00***	***630.97***	***630.51***	***627.49***	***632.47***
GROUND EL.	***611.8***	***617.6***	***615.7***	***630.5***	***628.4***	***623.5***	***620.9***	***621.6***	***618.9***
11 / 02 / 98	603.50	597.27	598.41	NM	NM	Dry	603.51	NM	NM
12 / 10 / 98	603.55	597.52	598.96	NM	NM	Dry	603.60	NM	NM
01 / 20 / 99	603.89	598.06	599.73	NM	NM	Dry	604.41	NM	NM
02 / 23 / 99	603.48	597.77	598.88	NM	NM	608.43	603.81	NM	NM
03 / 17 / 99	603.38	597.67	599.01	NM	NM	608.47	603.53	NM	NM
04 / 09 / 99	603.67	598.19	599.41	NM	NM	608.96	603.80	NM	NM
05 / 06 / 99	603.38	597.82	599.02	NM	NM	608.54	603.58	NM	NM
06 / 04 / 99	603.29	597.77	598.99	NM	NM	608.45	603.41	NM	NM
07 / 01 / 99	603.05	597.86	599.06	NM	NM	608.51	603.41	NM	NM
07 / 29 / 99	603.05	597.60	598.86	NM	NM	Dry	607.51	NM	NM

All elevations are based on USGS datum.
O = Overburden Well
NM = Not Measured

TABLE 3.1

IFW ANALYTICAL RESULTS
INTERMEDIATE FORMATIONS MONITORING
HYDE PARK RRT PROGRAM

		Well I.D.:	IFW-5
		Sample Collection Date:	8/19/99
Parameter	***Units***	***Survey Level***	
2,3,7,8-Tetrachlorodibenzo-p-dioxin	pg/L	500	ND500
Aroclor 1248 (Total PCBs)	µg/L	1	9.2
Perchloropentacyclodecane (Mirex)	µg/L	1	ND1
Chloroform	µg/L	10	ND10

Notes:

-- Not applicable.

TABLE 4.1

GORGE SEEP ANALYTICAL RESULTS
GORGE FACE SEEP SURVEY MONITORING
HYDE PARK RRT PROGRAM

	Sample Location: *Sample Date:* *Sample Description:*		*Aug. 99* *Water* *Seep-2*	*Aug. 99* *Water* *Seep-7d*	*Aug. 99* *Water* *Seep-12*	*Sept. 99* *Water* *Seep-4 Culvert*
Analytes	***Units***	***Survey Level***				
Monochlorobenzene (MCB)	µg/L	10	ND	ND	ND	ND
2-Chlorotoluene	µg/L	-	ND	ND	ND	ND
3-Chlorotoluene	µg/L	-	ND	ND	ND	ND
4-Chlorotoluene	µg/L	-	ND	ND	ND	ND
Monochlorotoluenes (MCT), Total	µg/L	10	ND	ND	ND	ND
2-Chlorobenzotrifluoride	µg/L	-	ND	ND	ND	ND
3-Chlorobenzotrifluoride	µg/L	-	ND	ND	ND	ND
4-Chlorobenzotrifluoride	µg/L	-	ND	ND	ND	ND
Monochlorobenzotrifluorides (MCBTF), Total	µg/L	10	ND	ND	ND	ND
1,3,5-Trichlorobenzene	µg/L	-	ND	ND	ND	ND
1,2,4-Trichlorobenzene	µg/L	-	ND	ND	ND	ND
1,2,3-Trichlorobenzene	µg/L	-	ND	ND	ND	ND
Trichlorobenzene (TCB), Total	µg/L	10	ND	ND	ND	ND
1,2,4,5-Tetrachlorobenzene	µg/L	-	ND	ND	ND	ND
1,2,3,4-Tetrachlorobenzene	µg/L	-	ND	ND	ND	ND
Tetrachlorobenzenes (TTCB), Total	µg/L	10	ND	ND	ND	ND
2,4,5-Trichlorophenol (TCP)	µg/L	10	ND	ND	ND	ND
Octachlorocyclopentene (C-58)	µg/L	10	ND	ND	ND	ND
a-Hexachlorocyclohexane	µg/L	-	ND	ND	ND	ND
b-Hexachlorocyclohexane	µg/L	-	ND	ND	ND	ND
g-Hexachlorocyclohexane	µg/L	-	ND	ND	ND	ND
d-Hexachlorocyclohexane	µg/L	-	ND	ND	ND	ND
Hexachlorocyclohexane (BHC), Total	µg/L	10	ND	ND	ND	ND
Total Organic Carbon (TOC)	mg/L	200	ND	ND	ND	ND
Total Organic Halides (TOX)	mg/L	0.5	ND	ND	ND	ND
Phenol	mg/L	0.25	ND	ND	ND	ND

Notes:

* ND represents not detected at the survey level.
** NA represents not analyzed.

TABLE 5.1

SAMPLE KEY AND FIELD OBSERVATIONS
BLOODY RUN MONITORING PROGRAM
HYDE PARK RRT PROGRAM

Sample ID	*Well No.*	*Date*	*Time*	*pH*	*Conductivity*	*Temperature (°C)*	*Water Quality*
BR1	BR-1	08 / 18 / 99	1415	7.42	1248	12.3	N / A
BR2	BR-2	08 / 18 / 99	1115	6.76	1945	11.9	N / A
BR3	BR-3	08 / 17 / 99	1230	7.07	1310	13.2	N / A
BR4	BR-4	08 / 18 / 99	1330	6.92	1859	12.1	N / A
BR5	BR-5	08 / 18 / 99	1330	--	--	--	N / A

TABLE 5.2

BR WELL ANALYTICAL RESULTS
BLOODY RUN MONITORING PROGRAM
HYDE PARK RRT PROGRAM

Well ID: / ***Sample Collection Date:***	***Monitoring Level***	***BR-1*** ***08/18/99***	***BR-2*** ***08/18/99***	***BR-3*** ***08/17/99***	***BR-4*** ***08/18/99***	***BR-4(dup)*** ***08/18/99***
Volatiles (µg/L)						
Chlorobenzene	10	ND 10	ND 10	ND 10	ND 10	ND 10
m-Chlorotoluene	10	ND 10	ND 10	ND 10	ND 10	ND 10
o-Chlorotoluene	10	ND 10	ND 10	ND 10	ND 10	ND 10
p-Chlorotoluene	10	ND 10	ND 10	ND 10	ND 10	ND 10
Semi-Volatiles (µg/L)						
Hexachlorobenzene	10	ND 10	ND 10	ND 10	ND 10	ND 10
2,4,5-Trichlorophenol	10	ND 25	ND 25	ND 25	ND 25	ND 25

Note:

ND - Non-detect at the associated value.

TABLE 6.1

WET WELL A ANALYTICAL RESULTS
COLLECTED LIQUIDS MONITORING PROGRAM
HYDE PARK RRT PROGRAM

Analytical Parameter	*Reporting Units*	*Monitoring Level*	*Date 8/2/99*
pH	units	0.1	6.4
Chloride	mg/L	1	5,250
Total Organic Carbon	mg/L	200	2,750
Total Organic Halides	µg/L	500	16,800
Phenol	µg/L	10	385,000
Monochlorobenzenes	µg/L	10	1,200
Monochlorotoluenes	µg/L	10	7,000
Trichlorobenzenes	µg/L	10	279
Tetrachlorobenzenes	µg/L	10	400
Octachlorocyclopentene	µg/L	10	ND 38
Monochlorobenzotrifluorides	µg/L	10	2,330[(1)]
2,4,5-Trichlorophenol	µg/L	10	1,700
Hexachlorocyclohexanes	µg/L	10	192

Note:

(1) Reported concentration shown is sum of detection limits for which each monochlorobenzotrifluoride was reported as non detect.

- o-Monochlorobenzotrifluoride ND(800)
- p-Monochlorobenzotrifluoride ND(1,200)
- m-Monochlorobenzotrifluoride ND(330)

TABLE 6.2

WET WELL C ANALYTICAL RESULTS
COLLECTED LIQUIDS MONITORING PROGRAM
HYDE PARK RRT PROGRAM

Analytical Parameter	*Reporting Units*	*Monitoring Level*	*Date 8/2/99*
pH	units	0.1	7.44
Chloride	mg/L	1	316
Total Organic Carbon	mg/L	200	9.6
Total Organic Halides	µg/L	500	5,440
Phenol	µg/L	10	ND(10)
Monochlorobenzenes	µg/L	10	2.0J
Monochlorotoluenes	µg/L	10	5.7
Trichlorobenzenes	µg/L	10	2.0J
Tetrachlorobenzenes	µg/L	10	16
Octachlorocyclopentene	µg/L	10	ND10
Monochlorobenzotrifluorides	µg/L	10	29.1
2,4,5-Trichlorophenol	µg/L	10	8J
Hexachlorocyclohexanes	µg/L	10	16.4

Note:

J - Associated value is estimated.

TABLE 6.3

WET WELL D ANALYTICAL RESULTS
COLLECTED LIQUIDS MONITORING PROGRAM
HYDE PARK RRT PROGRAM

Analytical Parameter	*Reporting Units*	*Monitoring Level*	*Date 8/2/99*
pH	units	0.1	6.96
Chloride	mg/L	1	243
Total Organic Carbon	mg/L	200	11.3
Total Organic Halides	µg/L	500	4,640
Phenol	µg/L	10	20.0
Monochlorobenzenes	µg/L	10	61.0
Monochlorotoluenes	µg/L	10	257
Trichlororobenzenes	µg/L	10	93.0
Tetrachlorobenzenes	µg/L	10	109
Octachlorocyclopentene	µg/L	10	ND10
Monochlorobenzotrifluorides	µg/L	10	112
2,4,5-Trichlorophenol	µg/L	10	160
Hexachlorocyclohexanes	µg/L	10	139

TABLE 6.4

DECANTER NO. 1 (BEDROCK) ANALYTICAL RESULTS
COLLECTED LIQUIDS MONITORING PROGRAM
HYDE PARK RRT PROGRAM

	Reporting	*Monitoring*	*Date*											
Analytical Parameter	*Units*	*Level*	*9/8/98*	*10/13/98*	*11/2/98*	*12/8/98*	*1/8/99*	*2/3/99*	*3/4/99*	*4/7/99*	*5/7/99*	*6/1/99*	*7/6/99*	*8/2/99*
pH	units	0.1	6.7	7.2	7.3	7.3	7.2	6.8	6.7	6.8	7.3	6.8	6.6	6.9
Chloride	mg/L	1	790	872	850	1,140	770	666	872	736	779	765	679	824
Total Organic Carbon	mg/L	200	70.0	68	66	68.0	56.0	54.0	71.7	60.5	57.0	48.4J	47	49.8
Total Organic Halides	µg/L	500	24,000	40,200	37,000	29,100	24,000	18,400	36,400	26,200	22,800	17,400	17,400	19,000
Phenol	µg/L	10	24,000	17,300	17,000	26,600	110,000	11,800	15,500	16,800	13,800	12,500	11,000	12,000
Monochlorobenzenes	µg/L	10	960	760J	2,300	1,500	2,000.0	1,100	2100J	1,900	1,700	860	840	840
Monochlorotoluenes	µg/L	10	10,400	2230J	3,300	4,000	4,400	3,800	3,900	4,200	3,800	2,700	2,140	2,300
Trichlorobenzenes	µg/L	10	30,700	730	560	329	395	620	690	550	560J	428	427	509
Tetrachlorobenzenes	µg/L	10	44,000	570	550	490	410	830	780	550	550	370	350	330
Octachlorocyclopentene	µg/L	10	ND(390)	ND(10)	ND(10)	ND(10)	ND(10)	ND(10)	ND(20)	ND(10)	ND(10)	ND(10)	ND(10)	ND(10)
Monochlorobenzotrifluorides	µg/L	10	ND(8)	800J	1,590	2,390	1,860	1,880	1,880	1,790	2,270	1,390	940	1,030
2,4,5-Trichlorophenol	µg/L	10	33,000	510	480	550	320	550	640	480	480	380	410	480
Hexachlorocyclohexanes	µg/L	10	343	348	378	389	443.0	446	383	309	372	292	311	292
Benzoic acids	µg/L	100	16,000	--	--	--		--	--	--	--	--	--	--
Monochlorobenzoic Acids	µg/L	100	11,700	--	--	--		--	--	--	--	--	--	--
Chlorendic Acid	µg/L	250	5,200	--	--	--		--	--	--	--	--	--	--
Monthly Average Pumping Rate (gpm)														
- NAPL Purge Wells			32.8	27.2	27.7	26.8	30.4	45.3	50.3	53.1	49.0	47.2	47.5	46.5
- APL Purge Wells			3.8	3.3	3.7	3.8	4.1	4.4	4.4	3.2	3.9	2.4	4.7	3.6

Note:

NA - Not Analyzed

TABLE 6.5

DECANTER NO. 2 (OVERBURDEN) ANALYTICAL RESULTS
COLLECTED LIQUIDS MONITORING PROGRAM
HYDE PARK RRT PROGRAM

Analytical Parameter	*Reporting Units*	*Monitoring Level*	*Date* 9/8/98	10/13/98	11/2/98	12/8/98	1/8/99	2/3/99	3/4/99	4/7/99	5/7/99	6/1/99	7/6/99	8/2/99
pH	units	0.1	6.8	7.2	7.4	7.4	7.3	8.2	7.0	8.2	7.4	7.0	6.9	6.9
Chloride	mg/L	1	360	447	720	458	970	263	546	495	323	444	497	252
Total Organic Carbon	mg/L	200	21.0	18.3	130	13.0	75.0	14.0	28.2	63.3	9.4	12.1J	15.9	12.6
Total Organic Halides	µg/L	500	7,000	12,400	34,000	8,450	18,000	2,860	6,020	8,455	1,680	3,200	6,580	6,000
Phenol	µg/L	10	3,800	1,200	260,000	6,200	180,000	2,100	5,400	6,600	1,100	1,100	980	900
Monochlorobenzenes	µg/L	10	190	180J	1,200	240	1,400	180	460.0	620	320	59	46	92
Monochlorotoluenes	µg/L	10	7,820	1480J	1,800	1,700	4,100	870	269	1,870	ND(10)	281	188	390
Trichlorobenzenes	µg/L	10	ND(10)	276	305	130	459	154	103	353	60	55	148	152
Tetrachlorobenzenes	µg/L	10	10	235	330	211	500	230	111	401	83	79	191	280
Octachlorocyclopentene	µg/L	10	ND(10)	ND(10)	ND(10)	ND(10)	ND(10)	ND(10)	ND(10)	ND(20)	ND(10)	ND(10)	ND(10)	ND(10)
Monochlorobenzotrifluorides	µg/L	10	ND(96)	406J	796	760	1,400	322	88	621	90	118	34.5	138
2,4,5-Trichlorophenol	µg/L	10	ND(10)	140.0	390	160	400.0	120	100	330	59	75	170.0	220
Hexachlorocyclohexanes	µg/L	10	287	178	159	213	345	404	54.3	113	48	56	160	89
Benzoic acids	µg/L	100	13,000	--	--	--	--	--	--	--	--	--	--	30
Monochlorobenzoic Acids	µg/L	100	14,800	--	--	--	--	--	--	--	--	--	--	ND(160)
Chlorendic Acid	µg/L	250	3500J	--	--	--	--	--	--	--	--	--	--	2,100
Monthly Average Pumping Rate (gpm)			**1.6 #**	**1.9 #**	**0.8 #**	**1.5 #**	**10.8 #**	**22.9 #**	**22.2 #**	**17.6 #**	**12.0 #**	**17.1 #**	**2.3 #**	**3.3**
- Wet Well A			1,759	1,949 #	1,272	168 #	2,700	17,046 #	18,985	16,616	8,725	12,814	4,431	329
- Wet Well C			31,479	37,898 #	13,956	26,696 #	201,760	408,566 #	679,341	490,048	395,073	434,958	47,776	72,301
- Wet Well D			36,209	44,570 #	17,709	38,913 #	277,139	498,904 #	294,615	254,944	129,999	291,120	50,771	75,778

Note:

NA - Not Analyzed

TABLE 6.6

DECANTER NO. 3 (SOURCE CONTROL) ANALYTICAL RESULTS
COLLECTED LIQUIDS MONITORING PROGRAM
SEPTEMBER 1997 TO AUGUST 1998
HYDE PARK RRT PROGRAM

Analytical Parameter	*Reporting Units*	*Monitoring Level*	*Date* 9/8/98	10/13/98	11/2/98	12/8/98	1/8/99	2/3/99	3/4/99	4/7/99	5/7/99	6/1/99	7/6/99	8/2/99
pH	units	0.1	6.9	7.1	7.5	7.4	7.1	8.0	7.0	8.0	7.3	6.9	6.7	6.8
Chloride	mg/L	1	620	647	700	676	880	681	699	685	6.7	723	708	688
Total Organic Carbon	mg/L	200	37.0	39.8	38.0	38.1	68.0	64.4	57.6	44.3	63.9	78.1J	68.7	65.1
Total Organic Halides	µg/L	500	24,000	25,800	34,000	17,400	32,000	24,400	26,400	20,100	23,100	21,900	22,300	27,600
Phenol	µg/L	10	13,000	12,300	11,000	47,100	170,000	21,600	14,700	25,700	21,600	23,700	24,000	23,000
Monochlorobenzenes	µg/L	10	470	410J	1,400	710	1,400	1,200.0	1,400	1,600	1,500	970	640	710
Monochlorotoluenes	µg/L	10	8,600	4740J	5,900	5,000	6,300	5,600.0	5,800	6,900	5,600	4,800	2,900	3,330
Trichlorobenzenes	µg/L	10	570	590	550	325	910	467.0	670	450	480	316J	464	393
Tetrachlorobenzenes	µg/L	10	810	420	410	330	1,490	390.0	610	ND(38)	380	266J	310	350
Octachlorocyclopentene	µg/L	10	ND(10)	ND(10)	ND(10)	ND(10)	ND(10)	ND(10)	ND(20)	ND(19)	ND(19)	R	ND(10)	ND(10)
Monochlorobenzotrifluorides	µg/L	10	ND(10)	720J	1,470	1,830	3,090	1,810.0	1,640	1,460	1,380	1,300	680	436
2,4,5-Trichlorophenol	µg/L	10	340	980	950	810	420	1,300	1,400	1,100	1,100	1200J	1,300	1,300
Hexachlorocyclohexanes	µg/L	10	531	506	529	434	726	116.0	415	417	566	538	549	448
Benzoic acids	µg/L	100	3,400	--	--	--	NA	--	--	--	--	--	--	8,600
Monochlorobenzoic Acids	µg/L	100	11,000	--	--	--	NA	--	--	--	--	--	--	12,000
Chlorendic Acid	µg/L	250	2700J	--	--	--	NA	--	--	--	--	--	--	3,800
Monthly Average Pumping Rate (gpm)	(1)		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Note:

NA - Not Analyzed
(1) - Flows not available as noted in Annual report Section 2.0

TABLE 7.1

NAPL/APL RATIO TEST RESULTS SUMMARY
NAPL PLUME CONTAINMENT SYSTEM PURGE WELLS
HYDE PARK RRT PROGRAM

Well I.D.	*Test No. 1*			*Test No. 2*			*NAPL/APL Ratio (% NAPL by Volume of APL)*	*Assumed Annual Flow Rate (gpm)*	*Estimated Annual NAPL Volume (gallons)*
	Date (Time)	*Volume (gallons) APL*	*NAPL*	*Date (Time)*	*Volume (gallons) APL*	*NAPL*			
PW-1U	September 3, 1999 (300 min.)	75	0	September 7, 1999 (240 min.)	75	sheen	0	0.5	0
PW-1L	August 20, 1999 (15 min.)	325	0	August 24, 1999 (15 min.)	325	0	0	7.5	0
PW-2UR	August 23, 1999 (180 min.)	300	0.26				0.087	2.5	1150
PW-2M	August 18, 1999 (15 min.)	325	0	September 1, 1999 (30 min.)	325	0	0	15	0
PW-2L	September 2, 1999 (250 min.)	300	0	September 3, 1999 (75 min.)	300	0	0		0
PW-3M	September 7, 1999 (240 min.)	N / A	2.50				N / A		???
PW-3L	August 16, 1999 (20 min.)	325	0	September 1, 1999 (20 min.)	325	0	0	7.5	0
PW-4U	August 30, 1999 (260 min.)	100	0.26				0	0.25	
PW-4M	August 30, 1999 (60 min.)	300	0	August 31, 1999 (60 min.)	300	0	0	0.5	0
PW-5UR	September 2, 1999 (60 min.)	300	<0.002				<0.0007	5	20
PW-6UR	August 26, 1999 (210 min.)	300	0	August 27, 1999 (105 min.)	300	0	0		0
PW-6MR	August 26, 1999 (60 min.)	300	0	August 27, 1999 (15 min.)	300	0	0		0
									1500

TABLE 8.1

MONITORING WELL INSPECTION SURVEY SUMMARY
HYDE PARK RRT PROGRAM

Well Identification	*Sounded Depth (ft. BTOC)*	*Installed Depth (ft. BTOC)*	*Road Box*	*Grout Seal*	*Lid/Center Bolt*	*Expandable Cap*	*Lid 9/16 Bolts*	*Protective Casing*	*Labeled*
OMW Wells									
OMW-1	9.30	9.07	-	G	-	G	-	G	Y
OMW-2	7.00	6.89	-	G	-	G	-	G	Y
OMW-3	13.96	13.77	-	G	-	G	-	G	Y
OMW-4R	16.57	17.88	-	G	-	G	-	G	Y
OMW-5R	14.30	11.83	-	G	-	G	-	G	Y
OMW-6	8.60	8.27	G	G	G	G	-	-	Y
OMW-7	14.90	14.59	-	G	-	G	-	G	Y
OMW-8R	18.15	20.94	-	G	-	G	-	G	Y
OMW-9	15.45	15.67	G	G	G	G	-	G	Y
OMW-10R	16.52	17.19	-	G	-	G	G	-	Y
OMW-11	13.00	12.61	-	G	G	G	-	-	Y
OMW-12R	9.63	9.75	-	G	G	G	-	-	Y
OMW-13R	13.05	13.63	-	G	-	G	-	G	Y
OMW-14R	8.50	13.21	-	G	G	G	-	G	Y
OMW-15	8.50	5.94	-	G	G	G	-	G	Y
OMW-16R	8.11	9.16	-	G	G	G	-	G	Y
PMW Wells									
PMW-1U	NAPL	64.76	-	G	G	G	G	G	Y
PMW-1M	NAPL	93.17	-	G	G	G	G	G	Y
PMW-1L	NAPL	114.71	-	G	G	G	G	G	Y
PMW-2U	54	54.19							
PMW-2M	84.1	95.13							
PMW-2L	114.55	126.59	G	G	-	G	-	-	Y
PMW-3U	NAPL	50.20	G	G	-	G	-	-	Y
PMW-3M	NAPL	108.87	G	G	-	G	G	-	Y
PMW-3L	NAPL	128.01	G	G	-	G	G	-	Y
AFW Wells									
AFW-1U	52.46	28.54	G	G	G	G	G	G	Y
AFW-1M	93.33	55.13	G	G	G	G	G	G	Y

Notes:

R - Replace
P - Poor Condition
G - Good Condition
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TABLE 8.1

MONITORING WELL INSPECTION SURVEY SUMMARY
HYDE PARK RRT PROGRAM

Well Identification	*Sounded Depth (ft. BTOC)*	*Installed Depth (ft. BTOC)*	*Road Box*	*Grout Seal*	*Lid/Center Bolt*	*Expandable Cap*	*Lid 9/16 Bolts*	*Protective Casing*	*Labeled*
AFW-1L	79.40	80.31	G	G	G	G	-	G	Y
AFW-2U	57.40	59.19	G	G	G	G	G	G	Y
AFW-2M	87.00	87.13	G	G	G	G	G	G	Y
AFW-2L	104.40	105.03	G	G	G	G	G	G	Y
AFW-3U	47.44	47.70	G	G	G	G	G	G	Y
AFW-3M	83.25	83.36	G	G	G	G	G	G	Y
AFW-3L	105.50	105.53	G	G	G	G	G	G	Y
AGW Wells									
AGW-1U	52.11	54.74	-	G	G	G	-	G	Y
AGW-1M	96.25	96.16	-	G	G	G	-	G	Y
AGW-1L	115.90	115.32	-	G	G	G	-	G	Y
AGW-2U	65.10	66.44	-	G	G	G	-	G	Y
AGW-2M	106.00	108.69	-	G	G	G	-	G	Y
AGW-2L	133.00	133.24	-	G	G	G	-	G	Y
AGW-3U	66.00	72.33	-	G	G	G	-	G	Y
AGW-3M	128.95	128.1	-	G	G	G	-	G	Y
AGW-3L	148.5	148.43	-	G	G	G	-	G	Y
IFW Wells									
IFW-1	PUMP IN WELL		-	G	G	-	G	-	Y
IFW-2	198.60		-	G	G	-	-	G	Y
IFW-3	PUMP IN WELL		-	G	G	G	-	-	Y
IFW-4	58.92		-	G	-	G	G	G	Y
IFW-5	PUMP IN WELL		-	G	G	G	-	-	Y
IFW-6	PUMP IN WELL		-	G	G	G	-	-	Y
IFW-7	181.35		-	G	-	G	G	G	Y

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HYDE PARK RRT PROGRAM

Well Identification	*Sounded Depth (ft. BTOC)*	*Installed Depth (ft. BTOC)*	*Road Box*	*Grout Seal*	*Lid/Center Bolt*	*Expandable Cap*	*Lid 9/16 Bolts*	*Protective Casing*	*Labeled*
CMW Wells									
CMW-1OB	11.10		-	-	-	-	G	-	Y
CMW-1SH	23.20		-	-	-	-	G	-	Y
CMW-2OB	19.00		-	-	-	-	G	-	Y
CMW-2SH	41.40		-	-	-	-	G	-	Y
CMW-3OB	16.53		G	G	-	-	G	-	Y
CMW-3SH	37.00		G	G	-	-	G	-	Y
CMW-4OB	7.40		G	G	-	-	G	-	Y
CMW-4SH	18.75		G	G	-	-	G	-	Y
CMW-5OB	7.85		G	G	-	-	G	-	Y
CMW-5SH	29.48		G	G	-	-	G	-	Y
CMW-6OB	3.30		G	G	-	-	G	-	Y
CMW-6SH	19.82		G	G	G	G	-	-	Y
CMW-7OB	5.10		G	G	-	-	G	-	Y
CMW-7SH	24.35		G	G	-	-	G	-	Y
CMW-8OB	3.05		G	G	-	-	G	-	Y
CMW-8SH	10.70		R	R	-	-	G	-	Y
CMW-9SH	13.00		G	G	-	-	G	-	Y
CMW-11SH	16.86		G	G	-	-	G	-	Y
Bloody Run Wells									
BR-1	36.70		-	G	G	-	-	G	Y
BR-2	40.40		-	G	G	-	-	G	Y
BR-3	37.11		-	G	G	-	-	G	Y
BR-4	36.20		-	G	G	-	-	G	Y
ABP Wells									
ABP-1	16.90		G	G	G	G	-	G	Y
ABP-2	48.25		G	G	G	G	-	G	Y
ABP-3	59.75		G	G	-	G	-	G	Y
ABP-4	59.0		-	G	G	G	-	G	Y
ABP-5	58.95		G	G	-	G	G	G	Y
ABP-6	52.85		G	G	G	G	G	-	Y
ABP-7	62.35		-	G	-	G	G	G	Y
ABP-8	58.62		-	G	G	-	-	G	Y

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TABLE 8.1

MONITORING WELL INSPECTION SURVEY SUMMARY
HYDE PARK RRT PROGRAM

Well Identification	*Sounded Depth (ft. BTOC)*	*Installed Depth (ft. BTOC)*	*Road Box*	*Grout Seal*	*Lid/Center Bolt*	*Expandable Cap*	*Lid 9/16 Bolts*	*Protective Casing*	*Labeled*
OEW Wells									
OEW-1	NAPL		-	G	-	-	-	G	Y
OEW-2	NAPL		-	G	-	-	-	G	Y
OEW-3	NAPL		-	G	-	-	-	G	Y
OEW-4	NAPL		-	G	-	-	-	G	Y
OEW-5	NAPL		-	G	-	-	-	G	Y
OEW-6	NAPL		-	G	-	-	-	BENT	Y
OEW-7	NAPL		-	G	-	-	-	G	Y
OEW-33	NAPL		-	G	-	-	-	LOOSE	Y
OEW-35	NAPL		-	G	-	-	-	G	Y
NAPL PLUME CONTAINMENT SYSTEM MONITORING WELLS									
A2U	51.72		-	G	G	G	G	-	Y
AIU	58.1		-	G	-	G	G	-	Y
B1U	58.60	59.6	N / A	G	-	G	-	G	Y
B1M	84.20	84.81	N / A	G	-	G	-	G	Y
B1L	102.50	106.54	N / A	G	-	G	-	G	Y
B2U	49.12	51.27	-	G	G	G	-	G	Y
B2M	75.80	74.96	-	G	G	G	-	G	Y
B2L	98.38	98.38	-	G	G	G	-	G	Y
BC3U	64.60	54.68	G	G	-	G	G	G	Y
BC3M	87.00	87.41	G	G	-	G	-	G	Y
BC3L	102.30	106.38	G	G	-	G	G	-	Y
C1U	57.25	57.56	G	G	-	G	G	-	Y
C1M	81.50	84.04	G	G	-	G	Poor Fit - Sticks	-	Y

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HYDE PARK RRT PROGRAM

Well Identification	*Sounded Depth (ft. BTOC)*	*Installed Depth (ft. BTOC)*	*Road Box*	*Grout Seal*	*Lid/Center Bolt*	*Expandable Cap*	*Lid 9/16 Bolts*	*Protective Casing*	*Labeled*
C1L	104.60	105.76	G	G	-	G	Poor Fit - Sticks	-	Y
C2U (ABP-6)	52.35	55.11	G	G	G	G	-	-	Y
C2M	79.83	79.8	-	G	G	G	G	G	Y
C2L	94.11	100.71	G	G	-	G	G	G	Y
CD1L	108.85		-	G	-	G	G	-	Y
CD1M	86.52		-	G	G	G	G	-	Y
CD1U	NAPL		-	G	G	G	G	-	Y
D1U	50.10	50.69	-	G	G	-	-	-	Y
D1M	85.58	85.63	-	G	G	-	-	-	Y
D1L	105.92	109.67	-	G	G	-	-	-	Y
D2U	47.32	47.71	-	G	G	-	-	-	Y
D2M	85.92	85.80	-	G	G	-	-	-	Y
D2L	109.2	109.52	-	G	G	G	-	-	Y
D3U	45.00		G	G	-	G	-	-	Y
D5L	119.60	119.50	-	G	G	G	-	-	Y
E1U	55.56	55.92	-	G	G	G	-	G	Y
E1M	100.00	95.95	-	G	G	G	-	G	Y
E1L	119.9	121.29	-	G	G	G	-	G	Y
E2U	42.15	48.17	-	G	G	G	-	G	Y
E2M	56.95	89.49	-	G	G	G	-	G	Y
E2L	115.10	117.48	-	G	G	G	-	G	Y
E3M	94.12	93.93	-	G	-	G	G	-	Y
E3L	118.35		-	G	G	G	-	-	Y
F1U	63.50	64.71	-	G	G	G	-	-	Y
F1M	110.00	110.28	-	G	G	G	-	-	Y
F1L	128.10	134.12	-	G	G	G	-	G	Y
F2U	59.50	60.37	-	G	G	G	-	-	Y
F2M	79.30	101.22	-	G	G	G	-	-	Y
F2L	126.10	126.53	-	G	G	G	-	-	Y
G1U	65.10	71.53	G	G	G	G	-	G	Y
G1M	125.5	126.48	-	G	G	G	-	G	Y
G1L	148.00	148.93	-	G	G	G	G	G	Y
G2U	67.20	68.77	-	G	G	-	-	G	Y
G2M	122.00	122.77	-	G	G	-	-	G	Y
G2L	146.50	140.85	-	G	G	-	-	-	Y
F4U	57.25	58.97	-	G	G	G	-	-	Y
F4M	103.95	103.82	-	G	G	G	-	-	Y
F4L	126.35	125.46	-	G	G	G	-	-	Y
F5U	55.50	58.50	-	G	G	G	-	-	Y
F3L	121.33		-	G	G	G	-	-	Y

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HYDE PARK RRT PROGRAM

Well Identification	*Sounded Depth (ft. BTOC)*	*Installed Depth (ft. BTOC)*	*Road Box*	*Grout Seal*	*Lid/Center Bolt*	*Expandable Cap*	*Lid 9/16 Bolts*	*Protective Casing*	*Labeled*
GH4U	37.89		G	G	-	G	-	-	Y
E4U	NAPL	59.75	G	G	-	G	G	-	Y
E4M	99.5	99.78	G	G	-	G	G	-	Y
E4L	119.00	119.57	G	G	-	G	G	-	Y
G3U	61.77	65.44	G	G	-	G	G	-	Y
G3M	NAPL	127.76	-	G	-	G	G	G	Y
G3L	148.10		G	G	G	G	G	-	Y
G4U	54.80		G	G	G	G	G	-	Y
H1U	58.00	58.73	-	G	-	G	G	G	Y
H1M	125.00	129.34	-	G	-	G	-	G	Y
H1L	145.40	144.94	-	G	-	G	G	G	Y
H2U	53.82	58.10	-	G	-	G	G	G	Y
H2M	128.20	128.97	-	G	-	G	G	G	Y
H2L	150.00	152.37	-	G	-	G	G	G	Y
H3U	70.75	73.35	-	G	-	G	G	G	Y
H3L	140.00	140.05	-	G	-	G	-	-	Y
H4L	135.8	135.69	-	G	-	G	-	-	Y
HT-1	25.00		-	G	-	G	-	G	Y
HT-2	38.11		-	G	-	G	-	G	Y
HT-3	13.10		-	G	-	G	-	G	Y
J1U	46.23	47.36	-	G	-	G	-	G	Y
J1M	103.5	90.19	-	G	-	G	-	G	Y
J1L	122.2	125.48	-	G	-	G	-	G	Y
J2U	47.60	47.58	-	G	-	G	-	G	Y
J2M	100.15	103.18	-	G	-	G	-	G	Y
J2L	124.89	127.23	-	G	-	G	-	G	Y
J3U	NAPL		-	G	-	G	-	G	Y
J3L	123.32	122.70	-	G	-	G	-	G	Y
J4L	121.37	122.64	-	G	-	G	-	G	Y

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