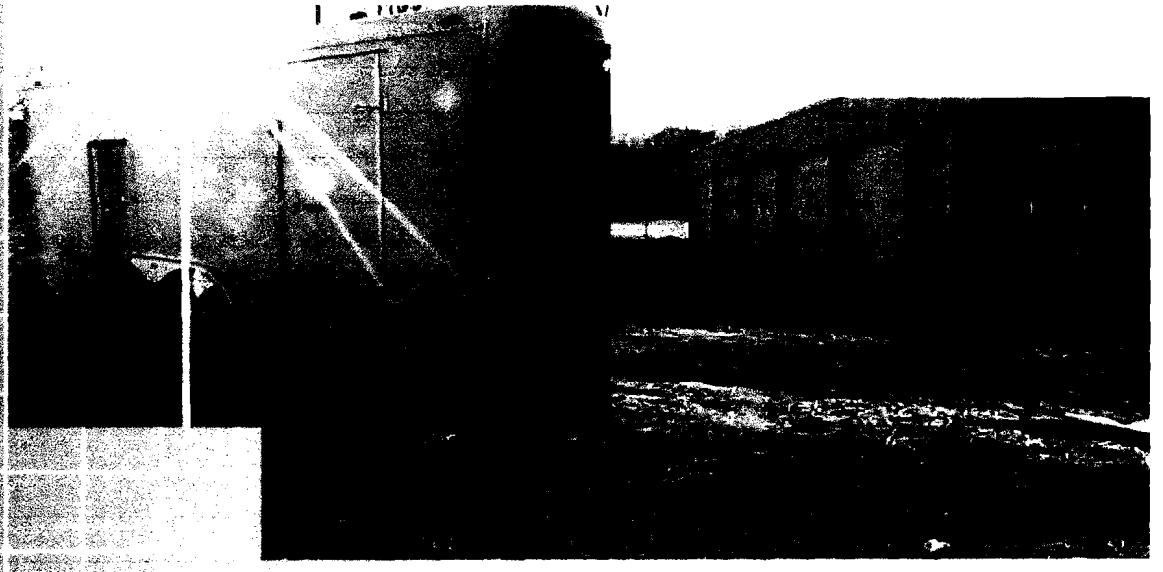
NEW YORK STATE DEPARTMENT OF TRANSPORTATION

Albany, New York

Harrison Subresidency
Town of Harrison
Westchester County, New York

D008873
PIN 8807.31.301

Air Sparging and Soil Vapor Extraction System



Operation and Maintenance Report for September 2001

October 2001

LAWLER, MATUSKY & SKELLY ENGINEERS LLP
Environmental Science & Engineering Consultants
One Blue Hill Plaza • Pearl River, New York 10965

MONTHLY OPERATION AND MAINTENANCE REPORT
AIR SPARGING / SOIL VAPOR EXTRACTION SYSTEM
HARRISON SUBRESIDENCY, WESTCHESTER, NEW YORK

SEPTEMBER 2001

LIST OF TABLES, FIGURES, AND ATTACHMENTS

LIST OF TABLES

LIST OF FIGURES

MONTHLY OPERATION AND MAINTENANCE REPORT
AIR SPARGING / SOIL VAPOR EXTRACTION SYSTEM
HARRISON SUBRESIDENCY, WESTCHESTER, NEW YORK

SEPTEMBER 2001

LIST OF TABLES, FIGURES, AND ATTACHMENTS (continued)

ATTACHMENTS

MONTHLY OPERATION AND MAINTENANCE REPORT

NYSDOT – HARRISON SUBRESIDENCY **D008873**
TOWN OF HARRISON – WESTCHESTER, NY **PIN 8007.31.301**

MONTH: September 2001

9/04/01- LMS was on site in response to Air Sparge malfunction. Power inverter indicated insufficient voltage. Sparge point SP-2 was not functioning (no pressure and high flow), but well cover could not be removed with tools at hand. Adjusted POT from 6.0 to <4.0 and restarted system. Manually shut airflow to all wells except SP-1.

9/19/01- LMS was on site in response to high moisture separator level alarm. Drained moisture separator. Investigated problem at SP-2 and determined that well cap was not in place. Replaced cap and restarted system.

9/27/01- LMS was on site to allow access for Handex to repair well SP-3 and AS blower. AS has been down since 9/20, awaiting repair by Handex. SVE was also found to be out of service upon arrival, but no page had been received from autodialer. SVE moisture separator was full. Drained separator and restarted SVE. Left AS as-is to facilitate diagnosis by Handex.

- Handex was on site later in day and repaired well SP-3 from tee up. Reset well pad and cover at slightly higher grade. Electrician was not present to look at sparge blower. Electrician is scheduled for 10/1. LMS was not present when Handex was on site.

9/28/01- LMS on site to restart AS system. Tested autodialer phone line service at phone panel on south wall of DOT building. Results indicate that there is no service to panel from Nynex.

MAINTENANCE THIS MONTH:
None.

SPARE PARTS USED:
None.

SPARE PARTS ORDERED:
None.

SITE PHONE NUMBER: (914) 428-8130

TYPICAL OPERATING PARAMETERS:

Air Sparging (Total Flow = 20 CFM)

	Pressure	Flow
	(psi)	(scfm)
SP 1	7	17
SP 2	6.5	7
SP 3	9.5	0
SP 4	Not Operating	

Vapor Extraction (Total Flow = 218 CFM)

	Vacuum	
	(in.-H_2O)	
VE 1	18	
VE 2	15	
VE 3	12	
VE 4	14	

OUTSTANDING ISSUES AND ACTIONS:

- Handex and Healey electric examined AS blower on 10/1 and determined that the cause of recent failures has been due to supply problems from power company. Con Ed has been contacted and is investigating the problem.
- Verizon has repaired the phone line to the system, but the autodialer is not functioning. This problem will be taken up with the autodialer manufacturer.

- Was quarterly well sampling conducted? Yes _ No X
  If yes, date: _____

  Since no groundwater sampling was conducted this month, the groundwater monitoring well data summaries are not included in this month's report

Lawler, Matusky & Skelly Engineers LLP

TABLES

TABLE 1 (Page 1 of 2)

SVE CONCENTRATIONS AND LOADINGS AT SYSTEM STARTUP
(11 November 2000)
Harrison Subresidency

Location Collected LMS Sample ID Lab Sample ID Date Sampled	SVE AB13459 00110156-01 11/8/00 (ppbv)	Formula Weight (g/mole)	(µg/m³)	Loading (lb/hr) (assume Q = 218 ft³/min)
Volatile Organic Compounds (ug/L)				
Dichlorodifluoromethane	ND	120.92	ND	ND
Chloromethane	ND	50.5	ND	ND
Vinyl Chloride	ND	62.5	ND	ND
Bromomethane	ND	95	ND	ND
Chloroethane	ND	64.5	ND	ND
Trichlorofluoromethane	ND	137.37	ND	ND
Acetone	ND	58.08	ND	ND
1,1-Dichloroethene	ND	97	ND	ND
Methylene Chloride	ND	87.9	ND	ND
trans-1,2-Dichloroethene	ND	96.94	ND	ND
MTBE	ND	88.15	ND	ND
1,1-Dichloroethane	ND	99	ND	ND
2-Butanone	ND	72.11	ND	ND
cis-1,2-Dichloroethene	ND	96	ND	ND
2,2-Dichloropropane	ND	112.99	ND	ND
Chloroform	ND	119	ND	ND
Bromochloromethane	ND	129.38	ND	ND
1,1,1-Trichloroethane	ND	133.4	ND	ND
1,1-Dichloropropene	ND	110.97	ND	ND
1,2-Dichloroethane	ND	98.96	ND	ND
Carbon Tetrachloride	ND	154	ND	ND
Benzene	ND	78.1	ND	ND
Trichloroethene	ND	131.39	ND	ND
1,2-Dichloropropane	ND	113	ND	ND
Dibromomethane	ND	173.83	ND	ND
Bromodichloromethane	ND	163.83	ND	ND
trans-1,3-Dichloropropene	ND	111	ND	ND
4-Methyl-2-Pentanone	ND	100.16	ND	ND
cis-1,3-Dichloropropene	ND	111	ND	ND
Toluene	0.60	92.1	2.30	0.0019
trans-1,3-Dichloropropene	ND	110.97	ND	ND
1,1,2-Trichloroethane	ND	133	ND	ND
2-Hexanone	ND	100.16	ND	ND
1,3-Dichloropropane	ND	112.99	ND	ND
Dibromochloromethane	ND	208.28	ND	ND
Tetrachloroethylene	ND	166	ND	ND
1,2-Dibromoethane	ND	187.86	ND	ND
Chlorobenzene	ND	113	ND	ND
1,1,1,2-Tetrachloroethane	ND	168	ND	ND
Ethylbenzene	1.4	106	6.17	0.0050
m/p-Xylene	3.4	106	ND	ND
Styrene	ND	104	ND	ND
O-Xylene	0.77	106	3.39	0.0028
Bromoform	ND	252.73	ND	ND
1,1,2,2-Tetrachloroethane	ND	168	ND	ND

TABLE 1 (Page 2 of 2)

SVE CONCENTRATIONS AND LOADINGS AT SYSTEM STARTUP
(11 November 2000)
Harrison Subresidency

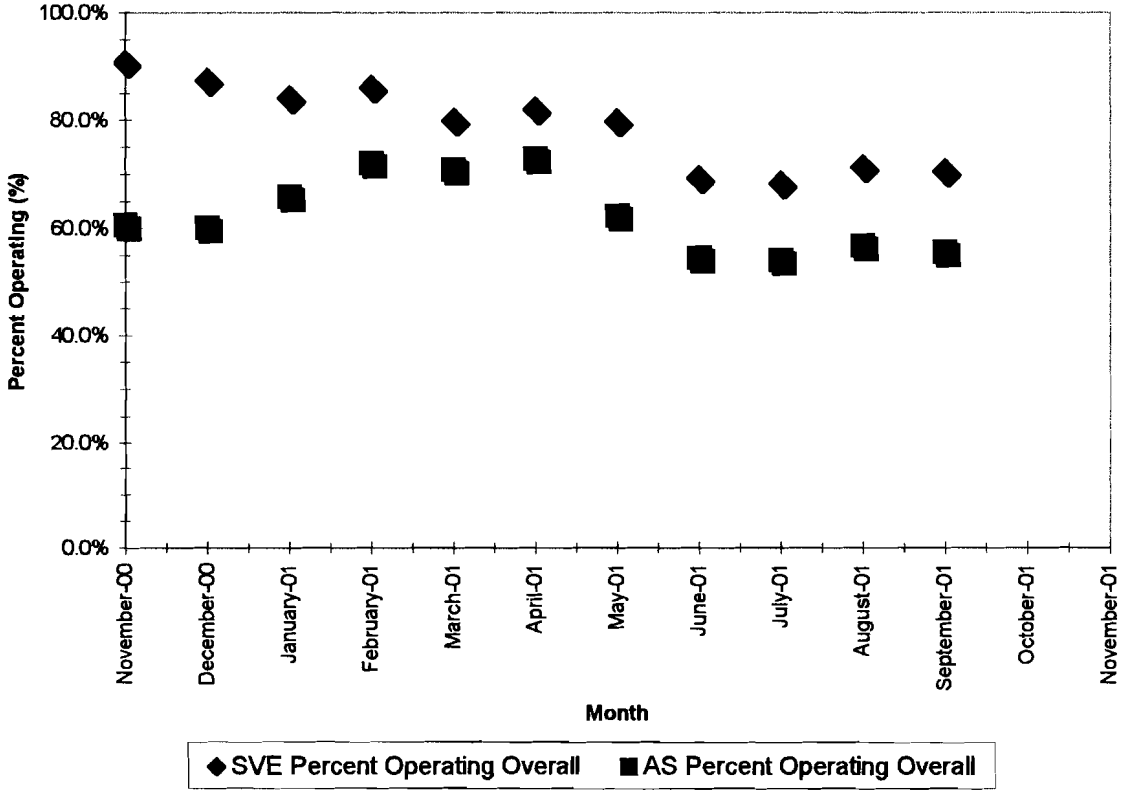
Location Collected LMS Sample ID Lab Sample ID Date Sampled	SVE AB13459 00110156-01 11/8/00 (ppbv)	Formula Weight (g/mole)	($\mu g/m^3$)	Loading (lb/hr) (assume Q = 218 ft^3/min)
Isopropylbenzene	ND	120.19	ND	ND
1,2,3-Trichloropropane	ND	147.43	ND	ND
Bromobenzene	ND	157.01	ND	ND
n-Propylbenzene	ND	120.19	ND	ND
2-Chlorotoluene	ND	126.59	ND	ND
4-Chlorotoluene	ND	126.59	ND	ND
1,3,5-Trimethylbenzene	1.5	120	7.48	0.0061
tert-Butylbenzene	ND	134.22	ND	ND
1,2,4-Trimethylbenzene	4.2	120	20.95	0.0171
sec-Butylbenzene	ND	134.21	ND	ND
1,3-Dichlorobenzene	ND	147	ND	ND
1,4-Dichlorobenzene	ND	147	ND	ND
p-Isopropylbenzene	ND	120.19	ND	ND
1,2-Dichlorobenzene	ND	147	ND	ND
n-Butylbenzene	ND	134.22	ND	ND
1,2-Dibromo-3-Chloropropane	ND	236.33	ND	ND
1,2,4-Trichlorobenzene	ND	181	ND	ND
Naphthalene	ND	128.17	ND	ND
Hexachlorobutadiene	ND	261	ND	ND
1,2,3-Trichlorobenzene	ND	181.45	ND	ND
Total VOCs:	11.87			0.0329
Tentively Indentified Compounds, TIC ($\mu g/L$)				
2-Methyl-Butane	38.0	72.15	113.98	0.0930
Pentane	33.6	72.15	100.78	0.0823
2-Methyl-Pentane	46.9	86.18	168.03	0.1371
Hexane	49.8	86.18	178.41	0.1456
Methyl Cyclopentane	34.3	84.16	120.00	0.0979
2-Methyl-Hexane	34.7	100.2	144.54	0.1180
3-Methyl-Hexane	32.0	100.2	133.29	0.1088
Heptane	29.4	10.2	12.47	0.0102
Methyl-Cyclohexane	35.9	98.19	146.54	0.1196
1,5-Dimethylcyclopentene	33.5	96.17	133.93	0.1093

ND - Not detected at analytical reporting limit.

TABLE 4

CUMULATIVE SYSTEM RUNTIME
Harrison Subresidency

Month	SVE Cumulative Hours Running (approx.)	AS Cumulative Hours Running (approx.)	Cumulative Hours Available	OVERALL		MONTH	
				SVE Percent Operating Overall	AS Percent Operating Overall	SVE Percent Operating - Month	AS Percent Operating - Month
November-00	654	436	720	90.8%	60.6%	90.8%	60.6%
December-00	1,280	879	1,464	87.4%	60.0%	84.1%	59.5%
January-01	1,858	1,454	2,208	84.1%	65.8%	77.6%	77.2%
February-01	2,122 (a)	2,076	2,880	86.1% (b)	72.1%	92.6% (b)	92.6%
March-01	2,613	2,567	3,624	80.0%	70.8%	66.0%	66.0%
April-01	3,273	3,173	4,344	82.1%	73.0%	91.6%	84.1%
May-01	3,781	3,173	5,088	79.9%	62.4%	68.3%	0.0%
June-01	3,781	3,173	5,808	69.4%	54.6%	0.0%	0.0%
July-01	4,229	3,548	6,552	68.3%	54.2%	60.2%	50.5%
August-01	4,950	4,143	7,296	71.3%	56.8%	96.9%	79.9%
September-01	5,407	4,460	8,016	70.6%	55.6%	63.5%	44.1%
October-01			8,760				
November-01			9,480				



Notes:
(a) Due to a malfunction in the SVE elapsed timer in February, this value is not representative of the actual hours of operation.
(b) This value is calculated using an estimated value for SVE elapsed time..

FIGURES

Map source: USGS 7.5 minute quadrangle map, Glenville Conn. NY, 1960
Photorevised 1971.

\446\harrison\135usgs.dsf

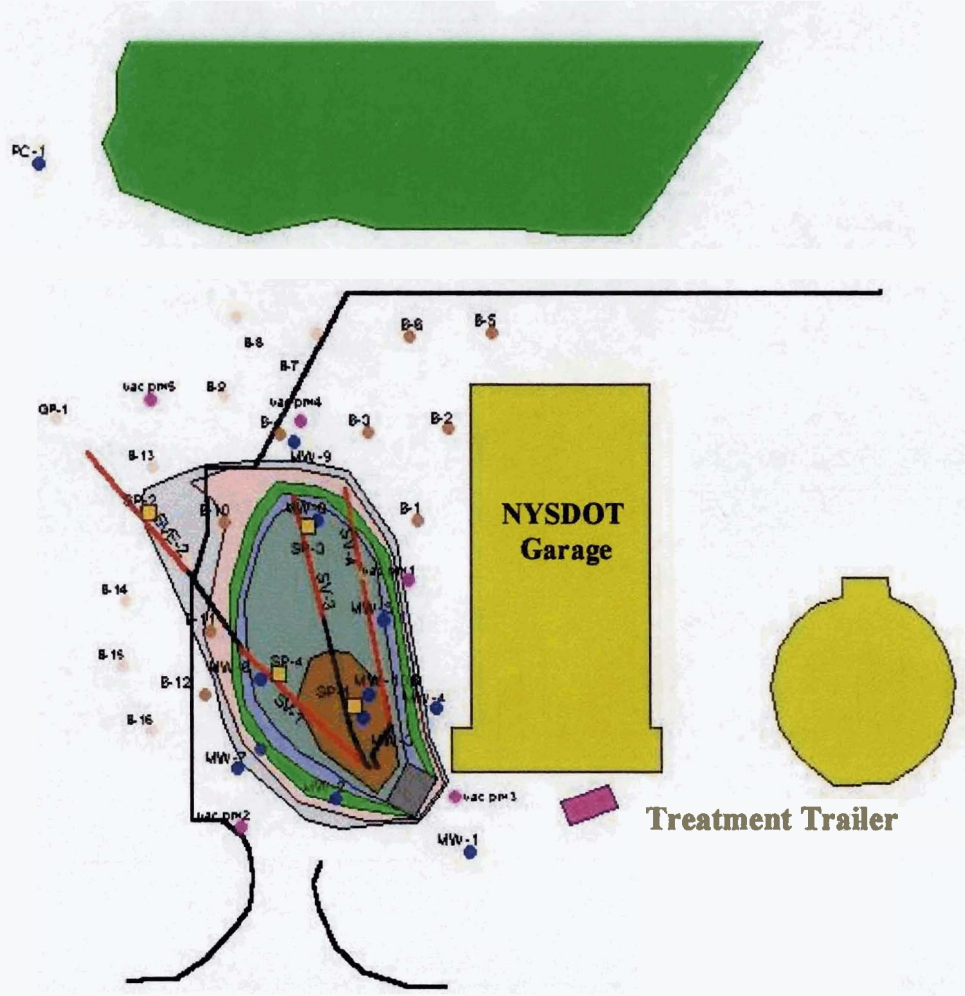
Figure 1

Site Location

HARRISON SUBRESIDENCY
NYSDOT PIN A98906.701

LAWLER, MATUSKY & SKELLY ENGINEERS LLP
Pearl River, New York

Figure 2
Harrison Subresidency, Westchester County
Petroleum (BTEX & MTBE) Contaminant Plume at the Water Table (Spring 1997)
Wells, Borings, and Soil Vapor Extraction Lines



- SVE Monitoring Points

Wells & Borings

- Boring
- Sparge Well
- Well
- Borings (appx. location)
- Extra Line - Possible SP-5
- Septic Tank (Appx. Locn.)

SVE Lines

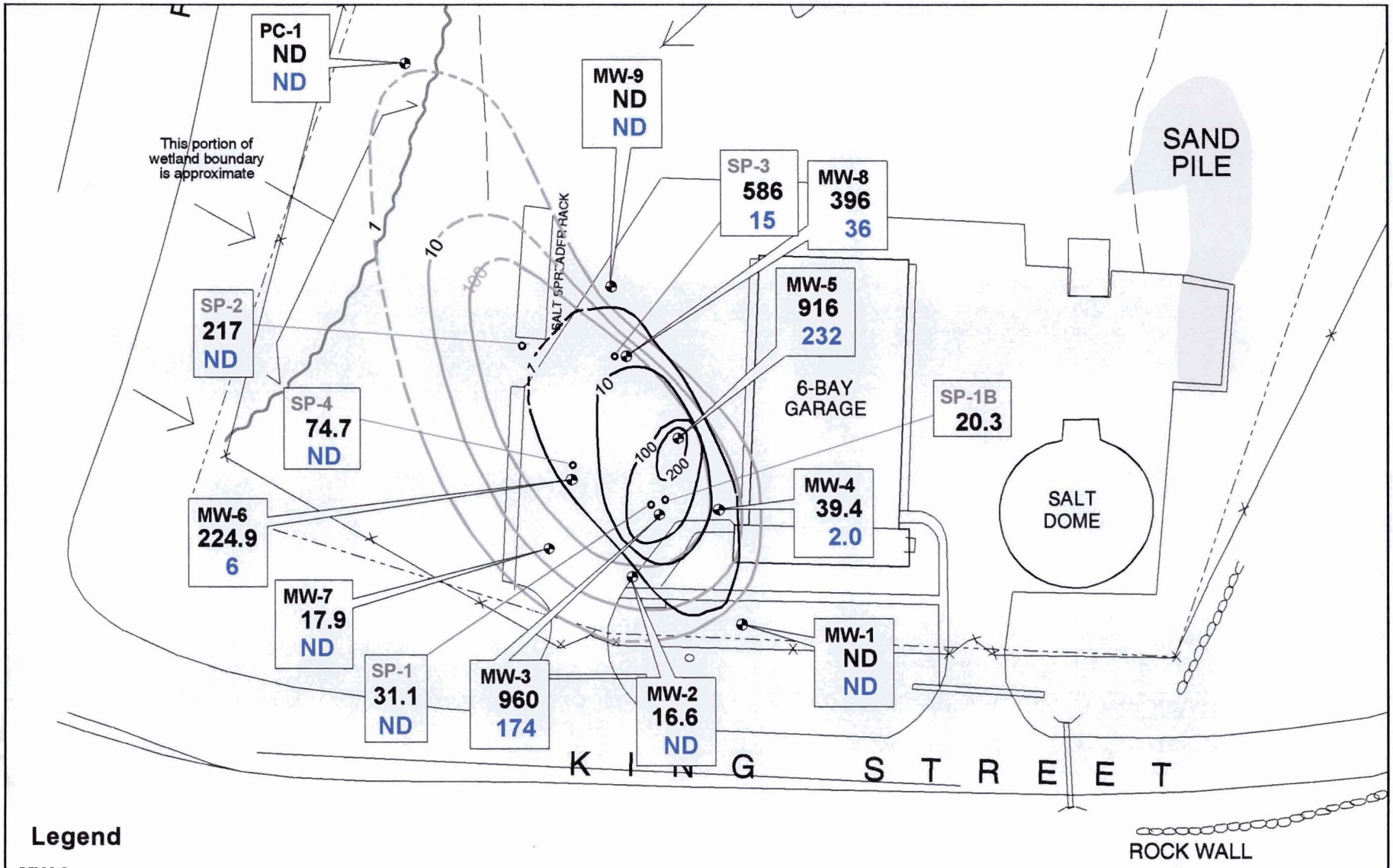
- Open
- Solid
- Pavement Edge
- Remediation Trailer
- Former UST Location (apprx.)
- Buildings
- >1000 ppb BETX & MTBE
- >750 ppb BETX & MTBE
- >500 ppb BETX & MTBE
- >100 ppb BETX & MTBE
- >50 ppb BETX & MTBE
- >25 ppb BETX & MTBE
- Landfill

Contours: Approximate location of equal BTEX & MTBE concentrations in micrograms per liter (ug/l; or ppb). Spring 1997

N
W E
S

40 0 40 80 Meters

NYSDOT
Environmental Analysis Bureau
December 2000



Legend

MW-2 ⊕ Monitoring well

SP- • Sparge well

14 BTEX concentration - May 2000 (µg/L)

6 BTEX concentration - May 2001 (µg/L)

Contour lines dashed where inferred

0 150ft

SCALE IN FEET

446\146\102map-v2.dsf

Figure 3

Total BTEX Concentrations at Water Table AS/SVE Remediation

Harrison Subresidency PSA
NYSDOT PIN A989.06.701

LAWLER, MATUSKY & SKELLY ENGINEERS LLP
Environmental Science & Engineering Consultants

FIGURE 4
AS/SVE EQUIPMENT SPECIFICATIONS AND LAYOUT
Harrison Subresidency

NYSDOT HARRISON SUBRESIDENCY

D008873 CPIN 8007.31.301

AIR SPARGING AND SOIL VAPOR EXTRACTION SYSTEM SPECIFICATIONS

TRAILER (Class 1 , Div. 2)

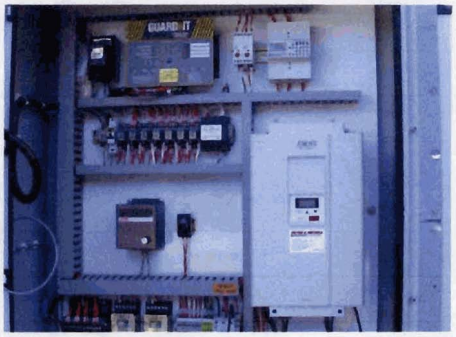
Haulmark	Grizzly
Model	#G816B2
OVERALL	
Length	19'17"
Width	100"
Height	103"
INTERIOR	
Length	16'4"
Width	96"
Height	78"
Platform Height	19"
Tire Size	ST205/R15 15"
Payload Cap.	4280 (avg.)
Double Rear doors	
Side door	
Color	white

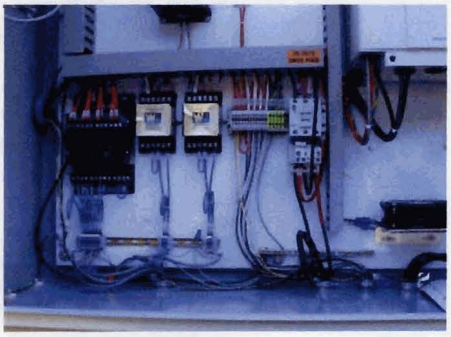
AIR SPARGING SYSTEM

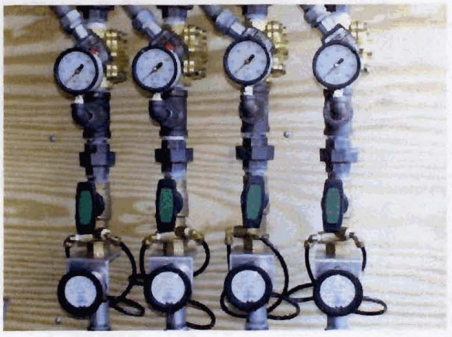
Blower	Becker KDT
Model #	3.140
HP	12
Voltage	230 V/3 phase
Converter	VFD
Max. pressure	22 psig
Max. flow	90 scfm
Max. temp.	125 F
Noise level	84 max. dBA
Outlet size	1 ½ " bsp

SOIL VAPOR EXTRACTION

Blower	Gast
Model #	R6P155Q-50
HP	5.5
	230 V/1 phase
Max. vacuum	85" w.c.
Max. flow	280 scfm
Max. temp.	100 F
Noise level	81 max. dBA
Moisture sep.	60 gal.

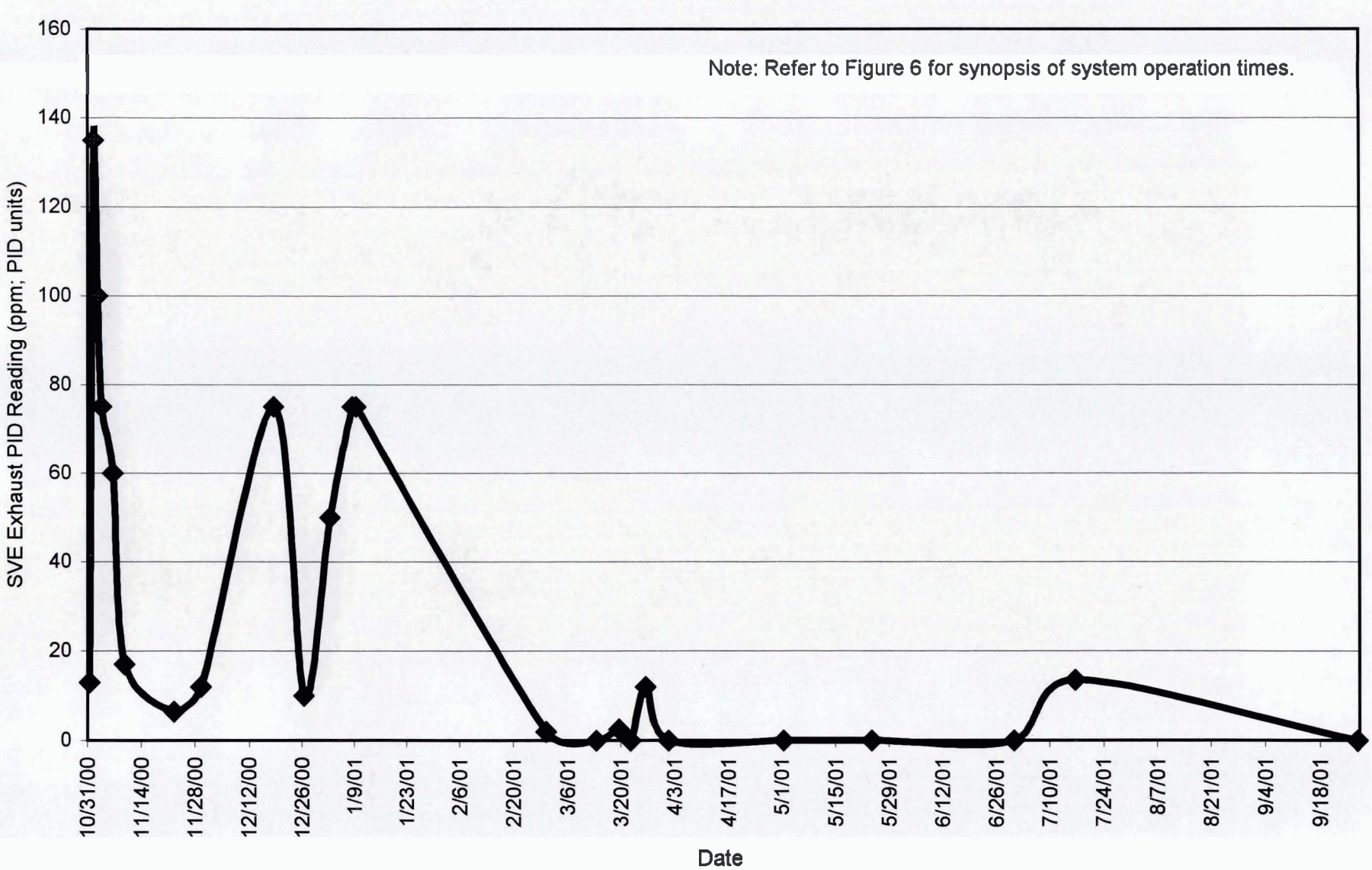






LMS

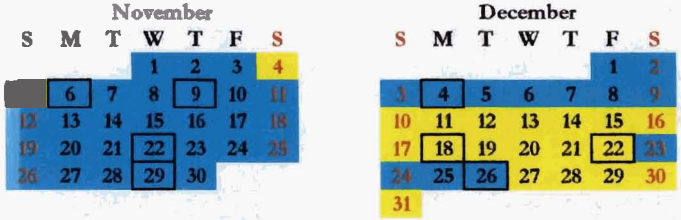
FIGURE 5
SVE EXHAUST PID READINGS FOR THE YEARS 2000-2001
Harrison Subresidency



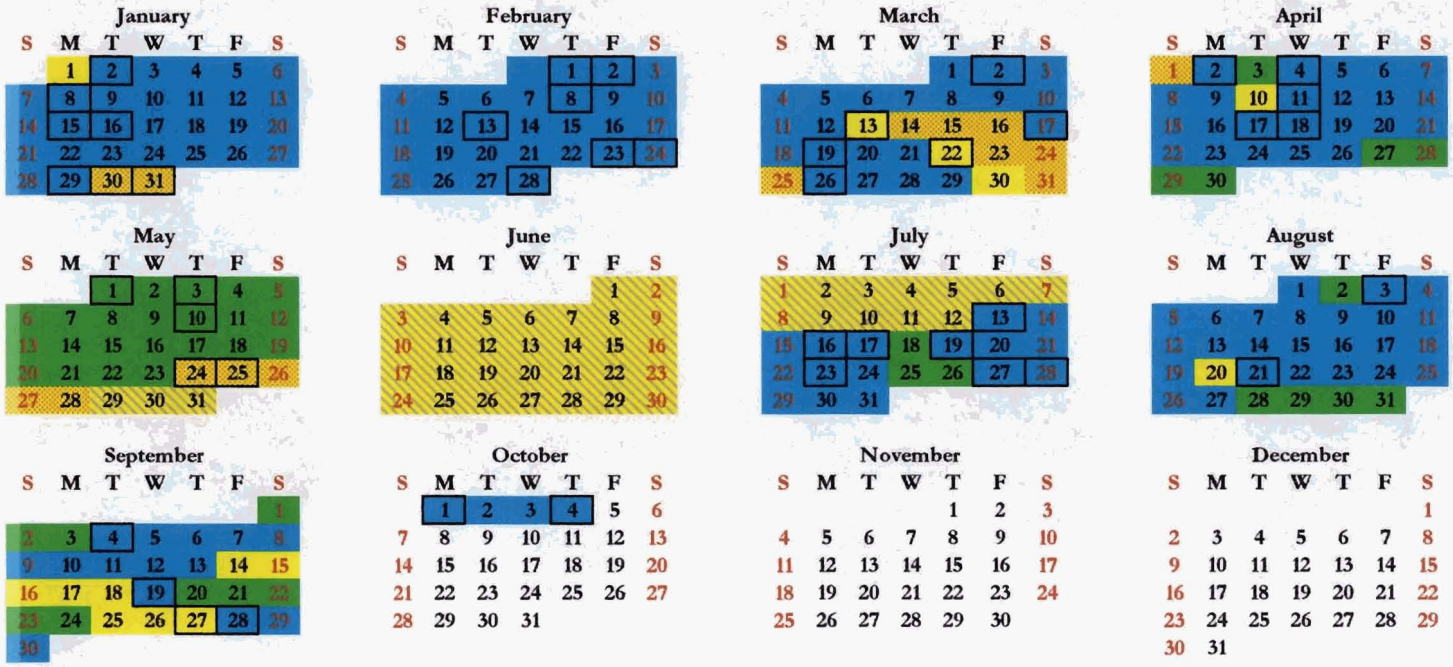
Lawler, Matusky & Skelly Engineers LLP

FIGURE 6
OPERATING CALENDAR
Harrison Subresidency

YEAR 2000



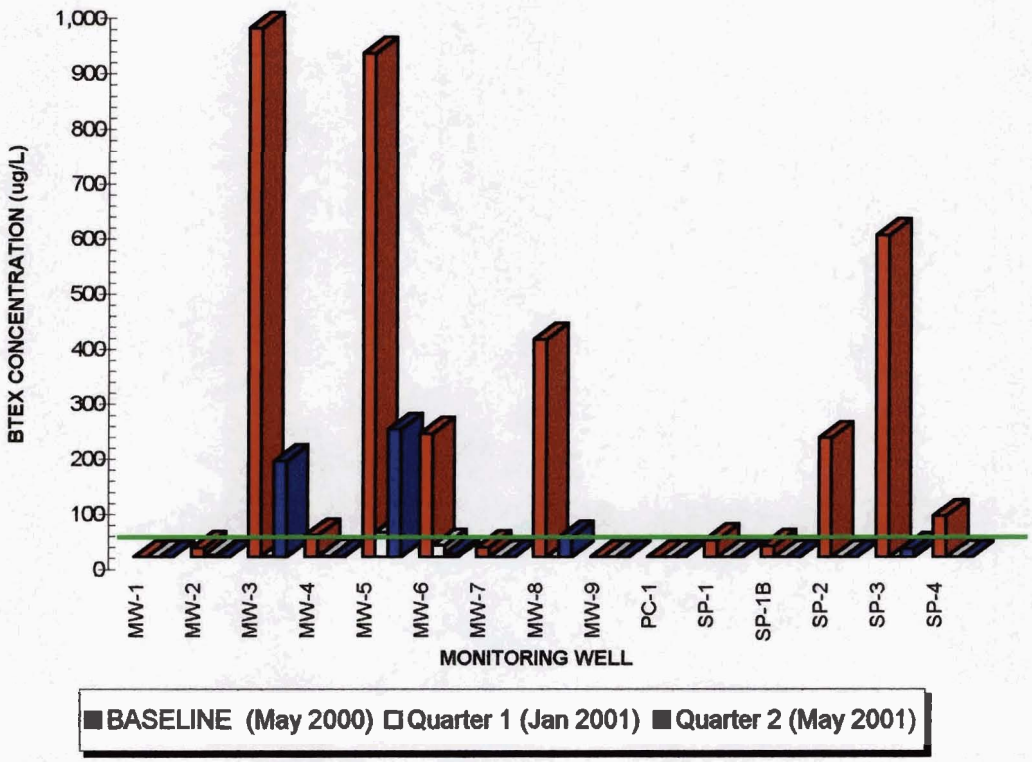
YEAR 2001

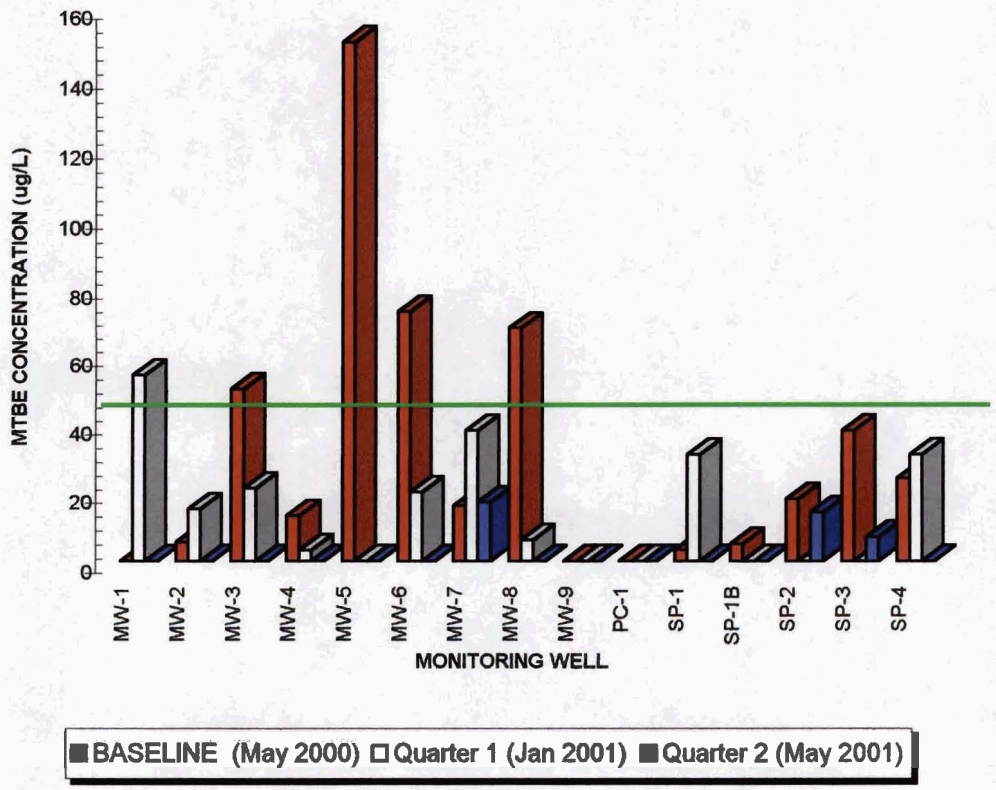


Legend

- Up time
- Unplanned downtime
- Unplanned downtime, warranty issues
- Planned downtime; quarterly sampling or maintenance
- Planned or Unplanned AS system down time; SVE running
- Site Visits

FIGURE 7
GROUNDWATER MONITORING - SECOND QUARTER RESULTS (MAY 2001)
Harrison Subresidency





Target effluent goal (50 ug/L for BTEX and MTBE)

Lawler, Matusky & Skelly Engineers LLP

ATTACHMENT A

Lawler, Matusky & Skelly Engineers LLP
Environmental Science & Engineering Consultants

ATTACHMENT A
INSPECTION REPORT SHEET
Harrison Subresidency

SEPTEMBER 2001 (Page 1 of 1)

	Date: 9/4/01 GG Weather: 72F Clear Slt. Breaze	Date: 9/19/01 GG Weather: 75F Clear Slt. Breaze	Date: 9/27/01 GG Weather: 55F rising Sl Brz, Sunny	Date: 9/28/01 RD Weather:
SVE hours /time	05031.7 @ 1030	05275.1 @ 0900	[a]05320.1 @ 0800	5343 @ 0730
AS hours/time	04142.6 @ 1030	04385.8 @ 0900	[a]04396.1 @ 0800	4396 @ 0730
AS POT setting (before/after)	6 / 3.8	3.8 / 5.6	5.6	5.6 / 5.7
Air Sparging Flow Rate (CFM)	VS / cfm	VS / cfm	VS / cfm	VS / cfm
SP-1	100 / 14	100 / 18	100 / Not Operating on Arrival	NR / 17
SP-3	- / -	- / -	- /	NR / 0
SP-4	- / -	- / -	- /	- / -
SP-2	- / -	50 / 8	50 /	NR / 6
Air Sparging Pressure (PSI)	psi	psi		psi
SP-1	6	7		7.5
SP-3	-	-		9.5
SP-4	-	-		-
SP-2	-	6.5		9
Air Sparging Blower Outlet	7	8		11
SVE Velocity (ft/min)	ft/min	ft/min	ft/min	ft/min
VE-1	Not Read	Not Read	Not Read	Not Read
VE-2	Not Read	Not Read	Not Read	Not Read
VE-3	Not Read	Not Read	Not Read	Not Read
VE-4	Not Read	Not Read	Not Read	Not Read
SVE Vacuum (in W.C.)	VS / in W.C.	VS / in W.C.	VS / in W.C.	VS / in W.C.
VE-1	100 / 16	100 / 18	100 / 21	100 / 15
VE-2	100 / 14	100 / 15	100 / 17	100 / 14
VE-3	100 / 11	100 / 12	100 / 13	100 / 10
VE-4	100 / 12	100 / 13	100 / 16	100 / 10
SVE Blower Inlet	Not Read	40	45	41
Vacuum at SVE Knockout Pot	Not Read	23	27	23
Pressure Monitoring Points (in W.C.)	in W.C.	in W.C.	in W.C.	in W.C.
PM-1	Not Read (Startup)	Not Read (Startup)	Not Read (Startup)	Not Read
PM-2	Not Read (Startup)	Not Read (Startup)	Not Read (Startup)	Not Read
PM-3	Not Read (Startup)	Not Read (Startup)	Not Read (Startup)	Not Read
PM-4	Not Read (Startup)	Not Read (Startup)	Not Read (Startup)	Not Read
PM-5	Not Read (Startup)	Not Read (Startup)	Not Read (Startup)	Not Read
Air Sparging Temperature (°C)	Not Read (Startup)	Not Read (Startup)	Not Operating	13
SVE Exhaust Temperature (°C)	Not Read (Startup)	Not Read (Startup)	Not Read (Startup)	37
SVE Exhaust PID Reading	no odor	slight petr. Odor	0 @ 5 min after start	Not Read
Knockout Pot Water Level (in.)	18	Full	Full	Not Read
Date of Last AS Filter Change	2/13/01	2/13/01	2/13/01	2/13/01
Date of Last SVE Filter Change	3/26/001	3/26/001	3/26/001	3/26/001
Highest Vicinity Ambient PID Reading	No Odors	No Odors	No Odors	No Odors
Location	-	-	-	-

VS = Valve Setting, % open (e.g., 0, 25, 50, 75, 100) GG = George Gattullo; RD = Rob Degiorgio PID: H-Nu P101, LMS#001 Anemoter: Dwyer 47

Comments:

a - System not operating on arrival.