

**MAY 2002 MONTHLY REPORT
SITE IR-1/21 INDUSTRIAL LANDFILL
GROUNDWATER EXTRACTION SYSTEM
HUNTERS POINT NAVAL SHIPYARD
SAN FRANCISCO, CALIFORNIA**

**Environmental Remedial Action
Contract Number N62474-98-D-2076
Contract Task Order 0082**

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Revision 0**

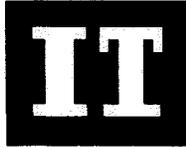
May 29, 2002

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U. S. Department of the Navy
Southwest Division
Naval Facilities Engineering Command
Environmental Division
1220 Pacific Highway
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Submitted by:

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A Member of The IT Group

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1.0 Introduction

This monthly report was prepared by IT Corporation (IT) on behalf of the U.S. Department of the Navy (Navy) under Environmental Remedial Action Contract Number N62474-98-D-2076, Contract Task Order 0082 to document activities associated with the operation and maintenance (O&M) of the groundwater extraction system (GES) at Hunters Point Shipyard, Site IR-1/21 Industrial Landfill. This report includes a summary of activities from April 16, 2002 through May 15, 2002.

The objective of the GES is to prevent mounding of the groundwater behind a containment wall along a portion of the landfill to reduce the migration of groundwater and landfill constituents into the San Francisco Bay. The GES collects groundwater from seven extraction wells and one extraction trench, and discharges the groundwater into the City and County of San Francisco sanitary sewer. The installation of the containment barrier was completed in December 1997 and the GES began operations in February 1999 (IT, 1999). A cathodic protection system installed in June 1999 minimizes corrosion of the sheet pile barrier.

Operation of the GES and scheduled monitoring events are performed according to the Operation and Maintenance Manual (IT, 2000) and with the City and County of San Francisco Industrial Wastewater Discharger Class I Permit No. 01-1202. This permit was issued on December 1, 2001 and expires on June 17, 2004.

2.0 Summary of Field Activities

Field activities performed during this reporting period of April 16, 2002 through May 15, 2002 include various O&M activities and the collection of field data. The collected field data includes groundwater levels; pressure and flow readings throughout the GES and the voltage and amperage readings at the cathodic protection system rectifiers.

2.1 Operation and Maintenance

The following O&M activities were performed at the GES during this reporting period:

- Throughout the system flow rates were recorded on a daily basis to monitor flow at the extraction wells and collection and monitoring pad.
- On April 17, 2002, the basket strainer, pressure regulator, and flow meter at the collection and monitoring pad were cleaned.
- On April 22, 2002, the digital output flow meter at the collection and monitoring pad was replaced with an analog flow meter.
- On April 22, 2002, the groundwater pump at well EW-142 was removed, cleaned, and placed back into the well.
- On April 24, 2002, the flow meter internal parts at well EW-158 were replaced.
- On April 29, 2002, the basket strainer, pressure regulator, and flow meter at the collection and monitoring pad were cleaned.
- On April 30, 2002, the flow meters and screens at wells EW-138, EW-146, EW-150, and EW-158 were cleaned.
- On May 3, 2002, the flow meter at well EW-146 was cleaned and the capacitor inside the pump motor was replaced.
- On May 10, 2002, the flow meters and screens at wells EW-138, EW-146, EW-150, and EW-158 were cleaned.
- On May 13, 2002, the groundwater pumps at wells EW-146 and EW-154 were removed and cleaned.
- On May 13, 2002, the flow meters at EW-138, EW-146, EW-150, and EW-158 were cleaned.
- On May 15, 2002, the monthly O&M was performed at the GES.

2.2 Field Data

Data collected during this period to support O&M of the GES and cathodic protection system include the following:

- Groundwater levels were measured at the extraction wells, monitoring wells, and piezometers.
- Pressure and flow readings were recorded at the extraction wells and at the collection and monitoring pad.
- Voltage and amperage readings were recorded at the cathodic protection system rectifiers.

These readings and results are included as Appendices A, B, and C. These data are used to monitor the performance of the system.

2.2.1 Groundwater Level Measurements

During this reporting period, water levels were measured at the extraction wells, monitoring wells, and piezometers on May 15, 2002. Depth to groundwater was measured to the nearest 0.01 foot. These measurements are provided in Appendix A. Also included in Appendix A are the groundwater elevations associated with the groundwater level measurements and a map of the potentiometric surface.

2.2.2 Groundwater Extraction System Measurements

Water well pressure and pipeline flow readings were taken at the extraction wells between April 16, 2002 and May 15, 2002. These readings are summarized in Appendix B. Water well pressures from the various groundwater extraction wells ranged from 25 to 55 pounds per square inch (psi). Water pressure at the monitoring pad was recorded as 25 psi.

Individual well pipeline flow and cumulative discharge pipe totalizer flow readings have been effected by biofouling within the lines and flow meters. Under desirable conditions and according to permit operating conditions, the summation of flow meter readings from individual wells is to corroborate the flow meter reading with the discharge totalizer within 10 percent variability. During a period of about 2.5 months ending April 25, 2002, the flow meter readings have not shown the desired corroboration. As a result, meter reading, inspection, and cleaning (if needed) have been performed on a daily basis beginning March 13, 2002. The problem was found to be a faulty flow meter at the collection and monitoring pad. On April 23, 2002, the meter was replaced and the readings have been below permit limits since. The daily practices described to mitigate the biofouling and flow control will continue until a confident decision can

be made that the biofouling of the flow meters has stopped. Appendix B also shows the daily flow readings and the corresponding percent error for that day.

The total flow for the 29-day discharge period from April 16 through May 15, 2002, was 444,713 gallons, with an average flow rate of 10.65 gallons per minute. The total flow was calculated by adding the flows at each extraction well. The accuracy of this flow reading was confirmed by the monthly flow reading at the discharge pipe. The flow reading at the discharge pipe was 431,380 gallons, which is 3.0 percent larger than the extraction wells. This deviation is within the 10 percent accuracy range specified by the permit (No. 98-0301).

2.2.3 Cathode Protection System Rectifier Inspection

The cathode protection system rectifiers were inspected on May 15, 2002. A record of this inspection is provided in Appendix C. The output at Rectifier 1 was 10 volts direct current (VDC) and 40.0 amperes (amps). The output at Rectifier 2 was 16 VDC and 41.0 amps.

2.3 Sample Collection

The City and County of San Francisco Industrial Wastewater Discharger Class I Permit No. 01-1202 requires a quarterly sample to be collected from the GES effluent. During this reporting period, no samples of the effluent were collected. The next sampling event will take place June 3, 2002 in compliance with the permit requirements and samples will be sent to Applied Physics & Chemistry Laboratory in Chino, California for analysis.

3.0 References

IT Corporation, 2000, *Operation and Maintenance Manual, Groundwater Extraction System/Containment Barrier, Site IR-1/21 Industrial Landfill, Hunters Point Shipyard, San Francisco, California, Delivery Order #0083, Revision 0, Concord, California.*

IT Corporation, 1999, *Contractor Quality Control Plan, Environmental Protection Plan, Sampling and Analysis Plan, Health and Safety Plan, Long Term Groundwater Extraction and Monitoring, Site IR-1/21 Industrial Landfill, Hunters Point Shipyard, San Francisco, California, Delivery Order #0083, Revision 0, Martinez, California.*

San Francisco Public Utilities Commission, 2001, *Industrial Wastewater Discharger – Class I Permit No. 01-1202, Bureau of Environmental Regulation and Management, San Francisco, California.*

**APPENDIX A
GROUNDWATER LEVEL MEASUREMENTS AND
THE POTENTIOMETRIC SURFACE MAP**

Monthly Monitoring Well, Extraction Well, and Piezometer Water Levels
Contract No. N62474-98-D-2076
Contract Task Order 0082
Hunters Point Shipyard, Site IR-1/21 Industrial Landfill
U. S. Navy Southwest Division

IT Corporation
 Project No. 831667

Date Recorded: 05/15/02
 Operator: Bob Rust

Location	Time	Depth to Water (ft)	Determined Groundwater Elevation (ft)
EW-108	10:45	5.18	1.67
EW-122	10:40	6.89	1.39
EW-134	10:38	12.67	-3.80
EW-138	10:36	14.86	-5.41
EW-142	10:35	9.37	0.68
EW-146	10:33	8.28	1.56
EW-150	10:32	11.54	-1.80
EW-154	10:30	9.08	1.22
EW-158	10:28	13.41	-2.91
IR01MW1-3	09:50	11.78	2.00
IR01MW43A	09:11	10.32	1.90
IR01MW44A	08:05	7.07	2.05
IR01MW47B	09:05	8.63	3.65
MW-60-1	10:00	12.07	2.62
MW-60-2	10:03	11.13	2.46
MW-60-3	08:37	7.61	2.39
MW-60-4	08:14	6.03	3.35
PZ-93D	08:11	6.68	3.69
PZ-100B	08:08	7.71	2.16
PZ-100E	08:17	dry at 7.64	< 3.95
PZ-107C	08:29	8.31	1.59
PZ-107D	08:26	7.47	2.77
PZ-107E	08:23	6.82	3.97
PZ-107F	08:20	6.13	5.46
PZ-114D	08:33	6.90	3.48

Location	Time	Depth to Water (ft)	Determined Groundwater Elevation (ft)
PZ-121A	08:41	7.93	3.24
PZ-121B	08:44	8.81	2.81
PZ-121C	08:47	8.55	4.08
PZ-121E	08:50	5.93	5.76
PZ-121F	08:53	dry at 9.68	< 3.92
PZ-131A	09:08	10.67	2.55
PZ-131D	09:02	9.26	2.80
PZ-131E	08:59	10.81	3.32
PZ-131F	08:56	6.74	6.76
PZ-138A	09:14	11.21	2.38
PZ-138B	09:17	11.61	2.43
PZ-138C	09:20	11.82	2.53
PZ-138D	09:23	12.27	2.50
PZ-138E	09:26	11.87	2.52
PZ-138F	09:29	17.17	2.71
PZ-144C	10:06	12.20	2.55
PZ-144E	10:09	12.54	2.54
PZ-150A	09:47	12.54	2.54
PZ-150B	09:44	12.16	2.51
PZ-150C	09:41	12.22	2.61
PZ-150D	09:38	12.55	2.60
PZ-150E	09:35	12.65	2.65
PZ-150F	09:32	19.78	2.75
PZ-159A	09:53	11.28	2.81
PZ-161D	09:56	12.47	2.79

NOTES:

ft denotes feet.

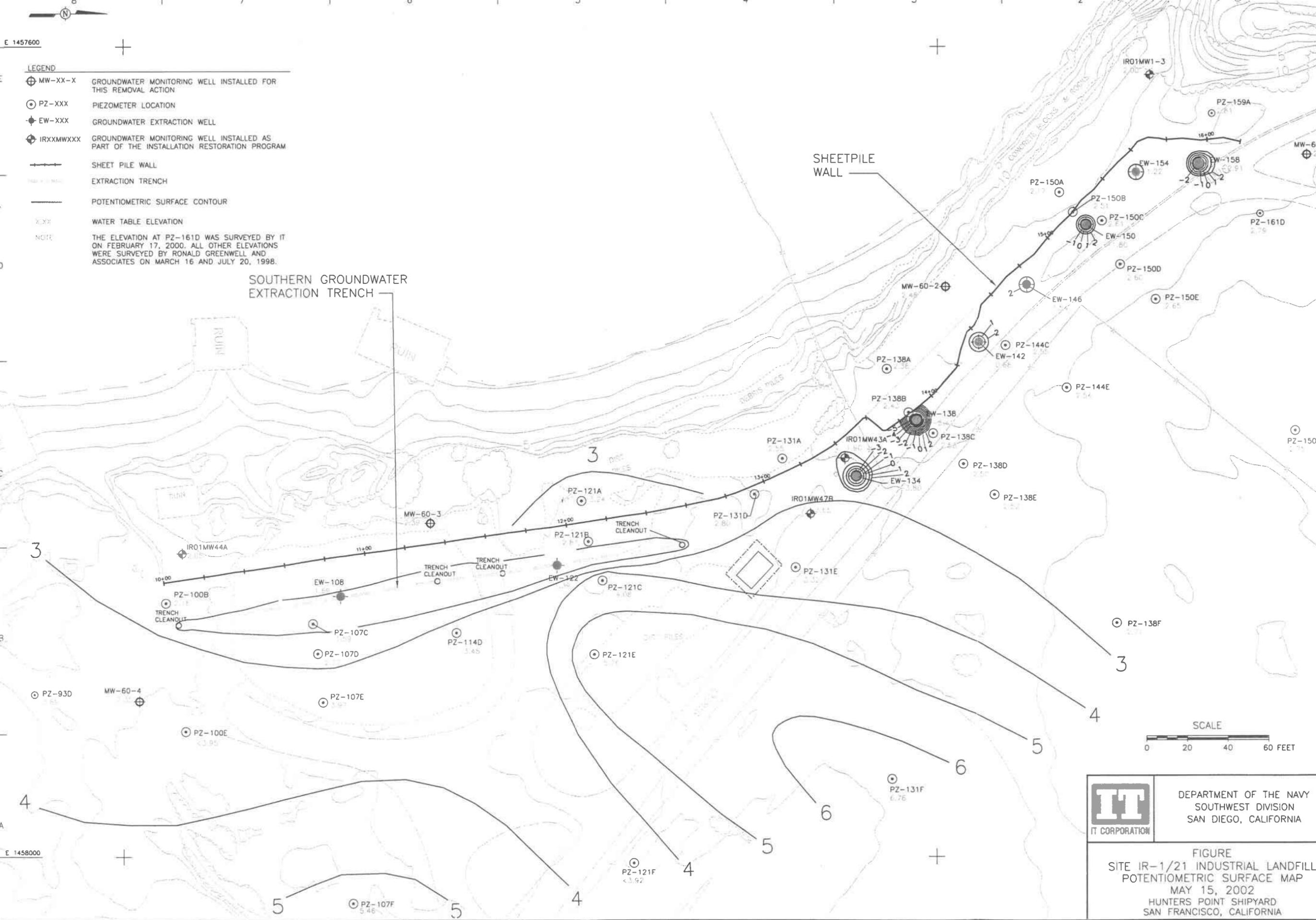
Determined Groundwater Elevation = Top of Casing Elevation - Depth to Water

DRAWING NUMBER 831667-D3
 APPROVED BY WCS
 CHECKED BY [Signature]
 DRAWN BY M. Verheeg
 OFFICE Concord
 X-REF
 IMAGE

E 1457600

E 1458000

- LEGEND**
- ⊕ MW-XX-X GROUNDWATER MONITORING WELL INSTALLED FOR THIS REMOVAL ACTION
 - ⊙ PZ-XXX PIEZOMETER LOCATION
 - ⊖ EW-XXX GROUNDWATER EXTRACTION WELL
 - ⊕ IRXXMWXXX GROUNDWATER MONITORING WELL INSTALLED AS PART OF THE INSTALLATION RESTORATION PROGRAM
 - SHEET PILE WALL
 - EXTRACTION TRENCH
 - POTENTIOMETRIC SURFACE CONTOUR
 - XXX WATER TABLE ELEVATION
- NOTE**
 THE ELEVATION AT PZ-161D WAS SURVEYED BY IT ON FEBRUARY 17, 2000. ALL OTHER ELEVATIONS WERE SURVEYED BY RONALD GREENWELL AND ASSOCIATES ON MARCH 16 AND JULY 20, 1998.



 ITT CORPORATION	DEPARTMENT OF THE NAVY SOUTHWEST DIVISION SAN DIEGO, CALIFORNIA
FIGURE SITE IR-1/21 INDUSTRIAL LANDFILL POTENTIOMETRIC SURFACE MAP MAY 15, 2002 HUNTERS POINT SHIPYARD SAN FRANCISCO, CALIFORNIA	

APPENDIX B
EXTRACTION WELL AND SYSTEM READINGS

Monthly Extraction Well and System Readings, 04/16/02-05/15/02
Contract Task Order 0082
Hunters Point Shipyard, Site IR-1/21 Industrial Landfill
Contract No. N62474-98-D-2076

IT Corporation
 Project No. 831667

Date Recorded: 05/15/2002
 Operator: Bob Rust

Location	Time	Pressure (psi)	Actual Flow Rate (gpm)	Average Flow Rate (gpm)	Total Flow (gal) (Since 02/20/99)	Change in Flow (gal) (04/16/02-05/15/02)
EW-108	1300	37	0	0.10	345,808	3,976
EW-122	1250	25	0	0.03	201,205	1,305
EW-134	1240	30	0	0.09	211,162	3,802
EW-138	1230	42	3	1.95	2,849,386	81,635
EW-142	1220	35	1.5	0.13	293,125	5,575
EW-146	1210	30	0	1.22	861,886	51,128
EW-150	1200	32	4	1.84	2,466,871	76,780
EW-154	1150	28	0	0.10	222,681	4,202
EW-158	1140	55	6	5.18	9,556,437	216,310
Total Change in Flow at the Wells						444,713
Collection and Monitoring Pad	1310	25	9.5	8.39	350,272	431,380

Conductivity at Monitoring Pad: 3.45 mS/CM
 Number of days in reporting period 29

Average Monthly Flow Rate, Using Readings at the Wells (gpm)	10.65
Average Monthly Flow Rate, Using Readings at Monitoring Pad (gpm)	10.33
Error of Flow Meter at the Monitoring Pad (%)	3.00%

Abbreviations:

psi = pounds per square inch
 gpm = gallons per minute
 gal = gallon
 EW = extraction well
 mS/CM = millisiemens per centimeter

Monthly Extraction Well and System Readings
Contract Task Order 0082
Hunters Point Shipyard, Site IR-1/21 Industrial Landfill
Contract No. N62474-98-D-2076

IT Corporation
 Project No. 831667

Date Recorded:
 Operator:

04/16/02- 05/15/02
 Bob Rust

Date	Total Flow at Wells (gallons)	Total Flow at Collection and Monitoring Pad (gallons)	Error in Flow Meters
03/25/02	18,028	17,769	1.44%
03/26/02	14,997	14,896	0.67%
03/27/02	17,150	13,429	21.70%
03/28/02	15,220	12,496	17.90%
03/29/02	13,665	12,494	8.57%
04/01/02	40,055	38,113	4.85%
04/02/02	10,147	11,903	17.31%
04/03/02	17,696	15,053	14.94%
04/04/02	16,184	13,186	18.52%
04/05/02	18,894	15,316	18.94%
04/08/02	52,503	43,232	17.66%
04/09/02	13,429	12,448	7.31%
04/10/02	17,155	13,084	23.73%
04/11/02	17,886	13,299	25.65%
04/12/02	17,597	13,094	25.59%
04/15/02	48,310	39,701	17.82%
04/16/2002	16,832	14,009	16.77%
04/17/02	14,307	11,247	21.39%
04/18/02	17,831	14,860	16.66%
04/19/02	18,240	15,348	15.86%
04/22/02	49,227	40,205	18.33%
04/23/02	12,123	12,038	0.70%
04/24/02	10,460	14,115	34.94%
04/25/02	15,678	15,447	1.47%
04/26/02	17,176	17,097	0.46%
04/29/02	47,787	47,702	0.18%
04/30/02	16,409	16,274	0.82%
05/01/02	15,811	15,702	0.69%
05/02/02	16,776	16,585	1.14%
05/03/02	17,787	17,417	2.08%

Monthly Extraction Well and System Readings
Contract Task Order 0082
Hunters Point Shipyard, Site IR-1/21 Industrial Landfill
Contract No. N62474-98-D-2076

IT Corporation
Project No. 831667

Date Recorded:
Operator:

04/16/02- 05/15/02
Bob Rust

Date	Total Flow at Wells (gallons)	Total Flow at Collection and Monitoring Pad (gallons)	Error in Flow Meters
05/06/02	40,965	43,906	7.18%
05/07/02	15,802	15,595	1.31%
05/08/02	14,726	14,600	0.86%
05/09/02	17,493	17,214	1.59%
05/10/02	12,128	11,917	1.74%
05/13/02	42,961	43,232	0.63%
05/14/02	13,124	13,097	0.21%
05/15/02	17,902	17,782	0.67%

APPENDIX C
CATHODIC PROTECTION SYSTEM MONTHLY INSPECTION RECORD

Cathodic Protection System Monthly Inspection Record
Contract No. N62474-98-D-2076
Contract Task Order 0082
Hunters Point Shipyard, Site IR-1/21 Industrial Landfill
U. S. Navy Southwest Division

IT Corporation

Project No. 831667

Date	Rectifier 1 Output		Rectifier 2 Output		Step Voltage Control Settings	
	VDC	Amperes	VDC	Amperes	C	F
06/01/1999	10.5	41.4	10.3	44.8	1	3
08/19/1999	10.8	44.0	10.2	48.2	1	3
09/09/1999	10.8	44.1	10.2	48.8	1	3
10/28/1999	10.6	47.4	10.0	≥ 50.0	1	3
11/18/1999	11.8	46.3	9.9	≥ 50.0	1	3
12/16/1999	11.5	46.1	8.7	48.6	1	3
01/13/2000	11.5	45.3	10.1	48.5	1	3
02/03/2000	11.4	46.5	10.0	48.2	1	3
03/09/2000	11.3	46.2	9.9	48.9	1	3
04/06/2000	10.8	45.3	10.1	48.9	1	3
05/10/2000	11.3	45.5	10.0	48.3	1	3
06/07/2000	10.7	44.5	10.0	48.0	1	3
07/06/2000	11.0	44.0	10.0	47.5	1	3
08/23/2000	12	44	10	48	1	3
09/12/2000	12	44	10	47.5	1	3
10/09/2000	11	45	10	48	1	3
11/02/2000	11	44	10	47.5	1	3
12/06/2000	10.5	46	10	49.5	1	3
06/07/2000	10.7	44.5	10.0	48.0	1	3
12/06/2000	10.5	46	10	49.5	1	3
01/09/2001	11	46.5	10	≥ 50.0	1	3

Cathodic Protection System Monthly Inspection Record
Contract No. N62474-98-D-2076
Contract Task Order 0082
Hunters Point Shipyard, Site IR-1/21 Industrial Landfill
U. S. Navy Southwest Division

IT Corporation

Project No. 831667

Date	Rectifier 1 Output		Rectifier 2 Output		Step Voltage Control Settings	
	VDC	Amperes	VDC	Amperes	C	F
02/06/2001	11	48	10	≥ 50.0	1	3
03/23/2001	11	45	10	48.5	1	3
04/06/2001	12	46.5	10	≥ 50.0	1	3
05/17/2001	11	47.0	10	≥ 50.0	1	3
06/18/2001	10	41.0	16	41.0	1	3
07/19/2001	10	41.0	16	41.0	1	3
08/15/2001	10	42.0	16	42.0	1	3
9/00/01	no readings	no readings	no readings	no readings	1	3
10/09/2001	10	42.0	16	42.0	1	3
11/14/2001	10	41.0	16	41.0	1	3
12/13/2001	10	42.0	16	42.0	1	3
01/15/2001	10	43	16	43	1	3
02/19/2002	10	44	14	44	1	3
03/19/2002	10	42	18	42	1	3
04/16/2002	10	40	16	42	1	3
05/15/2002	10	40	16	41	1	3

Notes:

≥ = greater than or equal to (gauge was maxed out)

VDC denotes volts direct current.