

12/1/97-01442

**NAVAL BASE, NORFOLK
NORFOLK, VIRGINIA**

Close-out Report

**Site 7
Inert Chemical Landfill**

December 1997



SITE NAME AND LOCATION

Site 7
Inert Chemical Landfill
Naval Base, Norfolk
Norfolk, Virginia

STATEMENT OF BASIS

This No Further Response Action Plan (NFRAP) decision is based on the results of previous investigations the Initial Assessment Study (IAS) (NEESA, 1983), the Relative Risk Ranking Data Collection Sampling and Analysis Report (Baker, January 1996), and the Site Management Plan Naval Base, Norfolk (CH2MHill, March 1997).

DECLARATION

Based on the information and results provided, it has been determined that no significant risk or threat to public health or the environment exists. No further action under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), as amended, is required.

In the event contamination posing an unacceptable risk to human health or the environment is discovered after execution of this site close-out document, the Partnership agrees that additional investigation to characterize this contamination will be undertaken and further agrees to remediate the contamination if deemed necessary.

We the undersigned hereby acknowledge our approval and acceptance of the above declaration on this 3rd day of December, 1997.

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DECISION SUMMARY

1.0 INTRODUCTION

This Close-out Report supports the No Further Response Action Plan (NFRAP) decision at the Inert Chemical Landfill, Site 7. The purpose of this report is to summarize the existing information and data for the site and describe the Naval Base Partnering Team's rational for determining this site as requiring no further action.

1.1 Site History.

The Department of the Navy (DON) initiated the Navy Assessment and Control of Installation Pollutants (NACIP) Program in 1981. The NACIP Program utilized a three-phased approach to site study and cleanup. The program encompassed an Initial Assessment Study (IAS), Confirmation and Characterization Studies and Remedial Measures. The 1983 IAS, was to identify and assess sites posing a potential threat to human health or the environment due to contamination from past hazardous materials operations. The Inert Chemical Landfill was one of the 18 possible areas of concern identified during this study.

1.2 Site Description.

The Inert Chemical Landfill is located east of Hampton Boulevard and south of CD Landfill, Figures 1 and 2. The Inert Chemical Landfill was used for a one-time disposal of inert chemicals, primarily unused ion exchange resins. Eighty-four pallets of materials were buried in this landfill in June 1979, with the approval of the Virginia Department of Health, Solid and Hazardous Waste Management Division. The landfill is approximately 2,000 square feet in size. The landfill was constructed with a one-foot clay base and six-foot clay side berms. The landfill cover consisted of one foot of clay and two feet of soil. The contents of this disposal area was excavated and disposed of through a Navy Public Works Center (PWC) contract in 1982. The site was recommended no further action in the IAS.

2.0 FIELD INVESTIGATION ACTIVITIES

The Inert Chemical Landfill was investigated as part of the Relative Risk Ranking System Data Collection Sampling and Analysis Report (Baker, January 1996). This report was conducted to determine the potential risk at Naval Base, Norfolk (NBN) and establish a ranking of these sites using the Naval Facilities Engineering Command, Atlantic Division (LANTDIV) Relative Risk Ranking (RRR) System. The objects of this field investigation were to:

- Gather contaminant, pathway and receptor information to be used in the Navy's RRR system.
- Collect samples for laboratory analysis where no data was available for use in the RRR system.

2.1 Sample Collection.

Sample location and selection of analyte parameters were determined during site reconnaissance performed prior to the field sampling event. Site reconnaissance was performed by Baker Environmental, LANTDIV, and NBN personnel. Sample locations and depths were based on the history and information available for the site and best engineering judgment.

A total of three samples (2 surface soil and 1 groundwater) were collected for analysis at the site, Figure 2. The samples were analyzed for the parameters identified in Table 1.

RRR Site ID	Sample Type	Sample ID	Analytical Parameters		
			VOC	SVOC	Metals/Cn
NB01	Surface Soil	NB01S1	X	X	X
	Surface Soil	NB01S2	X	X	X
	Groundwater	NB01W1	X	X	X

2.2 Analytical Results.

The maximum concentration of the detected compounds in each media sampled are summarized and compared to the EPA's Risk Based Concentrations (RBCs) in Table 2. Soil samples were compared to the industrial and residential in soil ingestion RBCs, and the groundwater sample was compared to the tap water RBC. Table 3 contains all compounds detected in the samples collected at the site for each media. The land use at the site, current and future, is vehicle parking in a zone designated for air operations; therefore, the industrial soil ingestion RBC values were utilized in assessing potential future actions.

No organic compounds were detected in the soil at concentrations exceeding the industrial RBCs. Arsenic, ubiquitous in this geographic region, was the only inorganic compound detected in the soil above the industrial RBCs. No detected compounds in the groundwater sample exceeded the tap water RBCs.

3.0 RISK CHARACTERIZATION

3.1 Human Health Risk Assessment.

A qualitative assessment for human health indicates the site is not expected to pose an unacceptable risk to human health due to the low level of contamination and limited exposure pathways. The current gravel parking area overlying the site, primarily used by deployed military personnel, is secured with limited access. Future plans are to pave this parking area; this will significantly decrease the limited exposure pathway that currently exists.

3.2 Ecological Risk Assessment.

A qualitative assessment for ecological risk indicates the site is not expected to pose an unacceptable ecological risk due to the low level of contamination and limited pathways by which receptors may be exposed. Several receptor species may exist at the Naval Base outside of industrialized areas that provide a potential exposure pathway, including rodents, small animals, and birds. The potential exists for exposure through incidental ingestion of contaminated surface soil. However, due to the low contaminants levels and gravel surface at the site, the potential for direct exposure is limited. The migration of contamination to sediments or surface water through groundwater or runoff would be very slow and is not likely to occur.

4.0 CONCLUSION AND RECOMMENDATION

Based on this evaluation, no further action is recommended for this site.

Notes

1. Sample number designation: Base-RRR Site Number-Media-Sample Number

Base - NB (Naval Base)

Site Number - ## (i.e. 01, Inert Chemical Landfill)

Media -

S - Surface Soil

D - Subsurface Soil

H - Sediment

C - Concrete

W - Groundwater

2. Sample Analysis

VOC - Volatile organic compound, analyzed by Method SW846-8240.

SVOC - Semivolatile organic compound, analyzed by Method SW846-8270.

Metals analyzed by Method SW846-6010 (various) and 7471.

Cn - Cyanide, analyzed by Method SW846-9012.

PCB - Polychlorinated Biphenyl. PCBs and pesticide analyzed by Method SW846-8080.

Asbestos - Analyzed by 40 CFR, Part 73, Subpart F, Appendix A.

3. Qualifiers

B - Detected in Blank

J - Estimated Value

4. RBC Basis

C - carcinogenic effects

N - noncarcinogenic effects

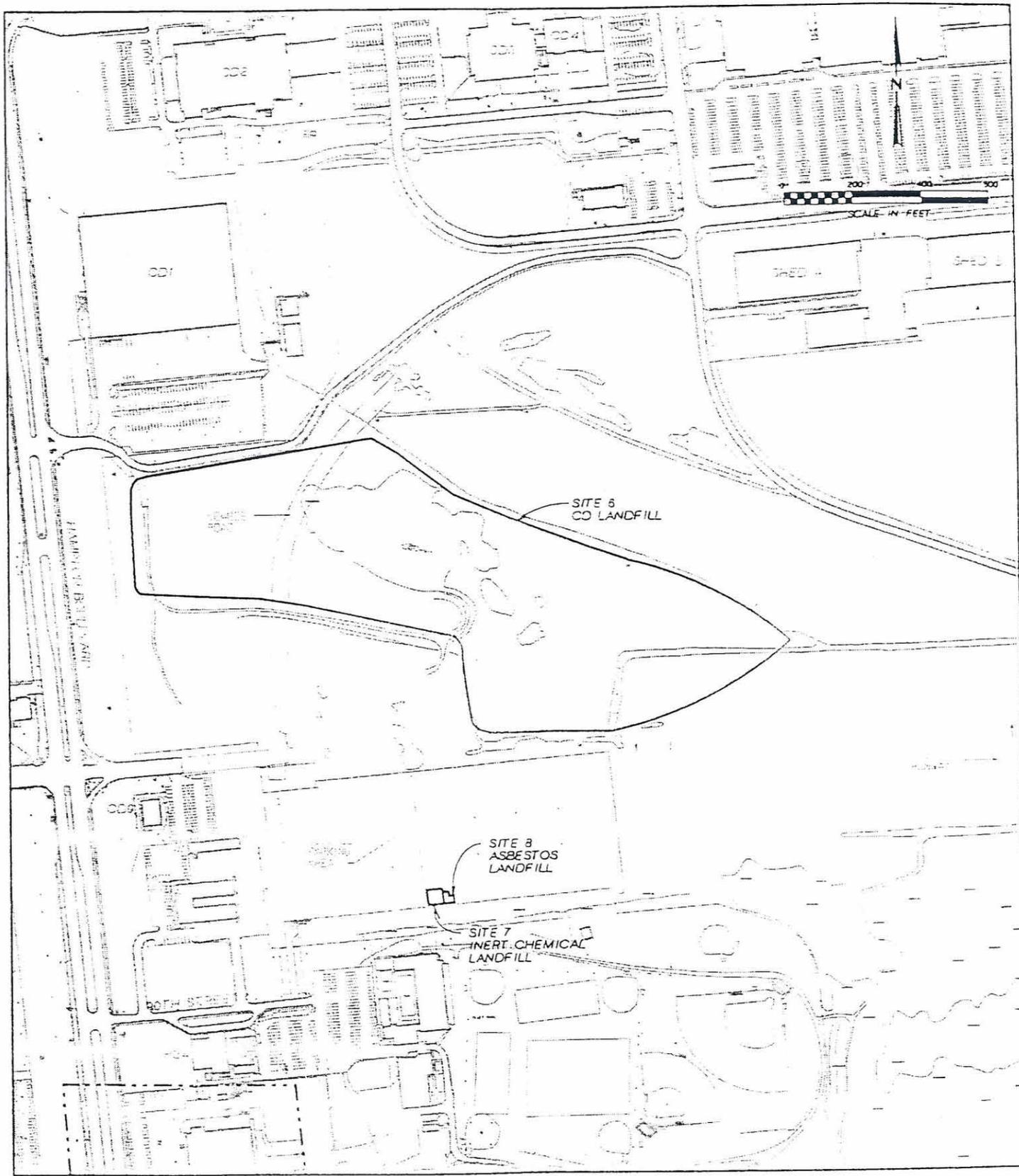
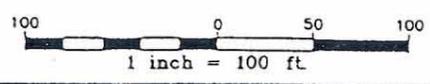
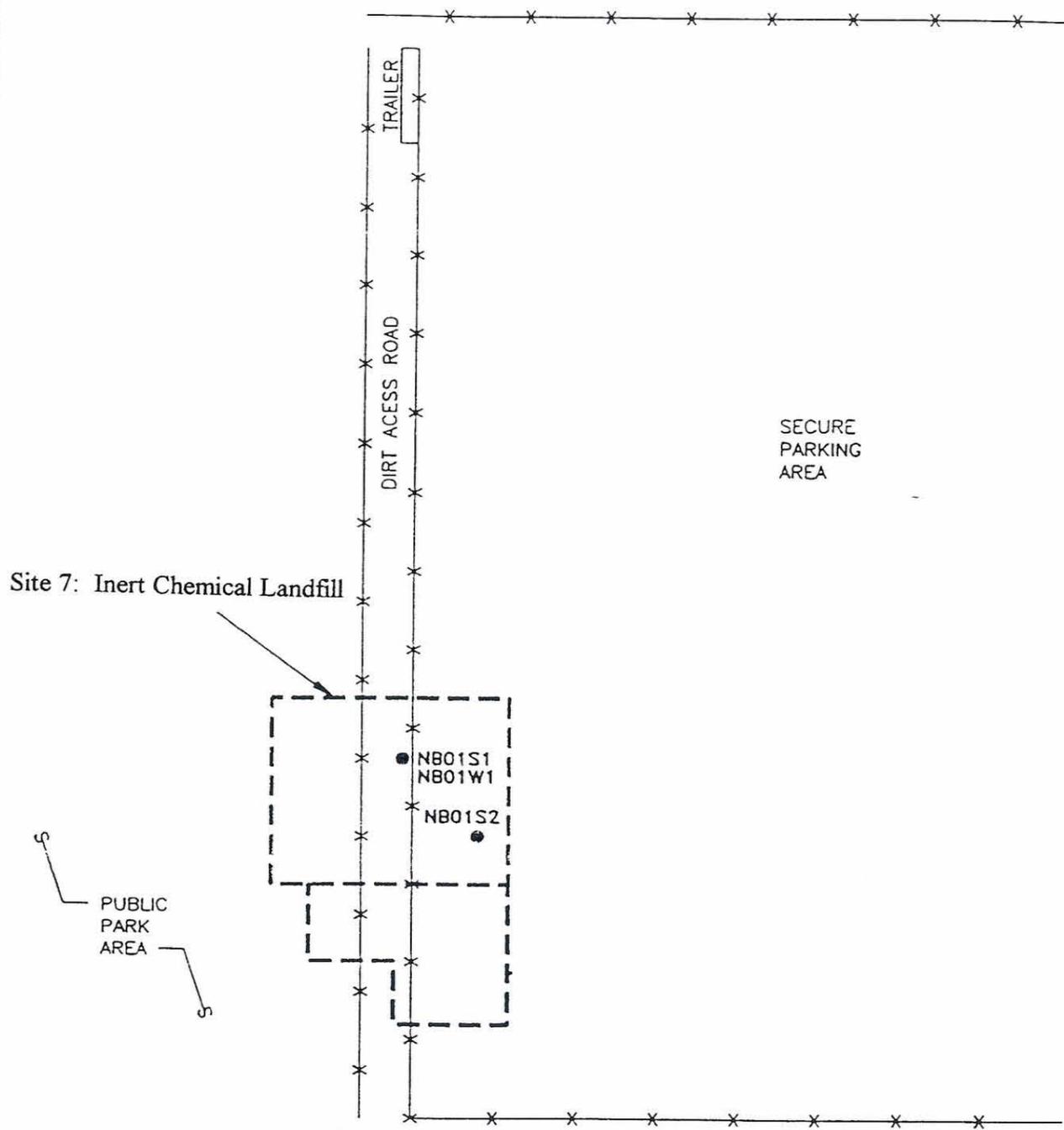


FIGURE 1: SITE 7, INERT CHEMICAL LANDFILL

LEGEND

PROPERTY BOUNDARY
 NORFOLK NAVAL BASE



LEGEND

- NB01S1 ● - SURFACE SOIL SAMPLING POINT
- NB01W1 - GROUNDWATER SAMPLING POINT

FIGURE 2: INERT CHEMICAL LANDFILL SAMPLING LOCATIONS

SOURCE: LANTDIV, 1995.

NAVAL BASE NORFOLK
NORFOLK, VIRGINIA

TABLE 2: Maximum Concentration of Detected Compounds, Site 7 - Insert Chemical Landfill
SURFACE SOIL

Sample Number	Contaminant	Result (mg/kg)	Qualifier	Frequency	Industrial RBC		Exceed Industrial RBC		Residential RBC		Exceed Residential RBC	
					(mg/kg)	Basis	RBC	Basis	(mg/kg)	Basis	RBC	
NB01S2	Acetone	2.00E-02		1/2	2.00E+05	N	NO	7.80E+03	N	NO		
NB01S2	Chlorobenzene	2.00E-03 J		1/2	4.10E+04	N	NO	1.60E+03	N	NO		
NB01S2	Methylene chloride	1.00E-03 J		1/2	7.60E+02	C	NO	8.50E+01	C	NO		
NB01S2	Toluene	2.00E-03 J		1/2	4.10E+05	N	NO	1.60E+04	N	NO		
NB01S2	2-methylnaphthalene	2.20E-01 J		2/2	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A		
NB01S2	Acenaphthene	2.00E-01 J		1/2	1.20E+05	N	NO	4.70E+03	N	NO		
NB01S2	Acenaphthylene	6.10E-02 J		1/2	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A		
NB01S2	Anthracene	1.80E-01 J		1/2	6.10E+05	N	NO	2.30E+04	N	NO		
NB01S2	Benzo(a)anthracene	4.80E-01		2/2	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A		
NB01S2	Benzo(a)pyrene	5.20E-01		2/2	7.80E-01	C	NO	8.80E-02	C	YES		
NB01S2	Benzo(b)fluoranthene	1.40E+00		2/2	7.80E+00	C	NO	8.80E-01	C	YES		
NB01S2	Benzo(g,h,i)perylene	1.60E-01 J		2/2	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A		
NB01S2	Benzo(k)fluoranthene	7.80E-01		2/2	7.80E+01	C	NO	8.80E+00	C	NO		
NB01S2	Bis(2-ethylhexyl)phthalate (D	8.90E-02 J		1/2	4.10E+02	C	NO	4.60E+01	C	NO		
NB01S2	Carbazole	6.20E-02 J		1/2	2.90E+02	C	NO	3.20E+01	C	NO		
NB01S2	Chrysene	1.00E+00		2/2	7.80E+02	C	NO	8.80E+01	C	NO		
NB01S2	Dibenzo(a,h)anthracene	4.60E-02 J		1/2	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A		
NB01S2	Dibenzofuran	1.70E-01 J		1/2	8.20E+03	N	NO	3.10E+02	N	NO		
NB01S1	Dibutyl phthalate	6.30E-02 BJ		2/2	2.00E+05	N	NO	7.80E+03	N	NO		
NB01S2	Fluoranthene	1.10E+00		2/2	8.20E+04	N	NO	3.10E+03	N	NO		
NB01S2	Fluorene	1.00E-01 J		1/2	8.20E+04	N	NO	3.10E+03	N	NO		
NB01S2	Indeno(1,2,3-cd)pyrene	2.00E-01 J		2/2	7.80E+00	C	NO	8.80E-01	C	NO		
NB01S2	Naphthalene	2.90E-01 J		2/2	8.20E+04	N	NO	3.10E+03	N	NO		
NB01S2	Phenanthrene	6.40E-01		2/2	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A		
NB01S2	Pyrene	9.60E-01		2/2	6.10E+04	N	NO	2.30E+03	N	NO		
NB01S1	Aluminum	3.87E+03		2/2	1.00E+06	N	NO	7.80E+04	N	NO		
NB01S2	Arsenic	9.00E+00		2/2	3.80E+00	C	YES	4.30E-01	C	YES		
NB01S2	Barium	6.70E+01		2/2	1.40E+05	N	NO	5.50E+03	N	NO		
NB01S1	Beryllium	1.00E+00		2/2	1.30E+00	C	NO	1.50E-01	C	YES		
NB01S2	Cadmium	1.00E+00		1/2	1000	N	NO	39	N	NO		
NB01S2	Calcium	3.67E+04		2/2	Human Nutrient	#N/A	Human Nutrient	Human Nutrient	#N/A	Human Nutrient		
NB01S2	Chromium	1.60E+01		2/2	1.00E+04	N	NO	3.90E+02	N	NO		
NB01S2	Cobalt	6.00E+00		1/2	1.20E+05	N	NO	4.70E+03	N	NO		
NB01S2	Copper	5.60E+01		2/2	8.20E+04	N	NO	3.10E+03	N	NO		
NB01S2	Iron	2.49E+04		2/2	6.10E+05	N	NO	2.30E+04	N	YES		
NB01S2	Lead	8.30E+01		2/2	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A		
NB01S2	Magnesium	2.21E+04		2/2	Human Nutrient	#N/A	Human Nutrient	Human Nutrient	#N/A	Human Nutrient		
NB01S2	Manganese	2.78E+02		2/2	4.70E+04	N	NO	1.80E+03	N	NO		
NB01S1	Nickel	2.00E+01		2/2	4.10E+04	N	NO	1.60E+03	N	NO		
NB01S1	Selenium	1.00E+00		2/2	1.00E+04	N	NO	3.90E+02	N	NO		
NB01S1	Vanadium	2.60E+01		2/2	1.40E+04	N	NO	5.50E+02	N	NO		
NB01S2	Zinc	6.10E+01		2/2	6.10E+05	N	NO	2.30E+04	N	NO		

TABLE 2: Maximum Concentration of Detected Compounds, Site 7 - Inert Chemical Landfill
GROUNDWATER

SAMPLE_NO	Parameter	Result (ug/L)	QUALIFIER	Frequency	Tap Water	Basis	Exceed
					RBC (ug/L)		Tap Water RBC
NB01W1	Aluminum	7.90E+02		1/1	3.70E+04	N	NO
NB01W1	Calcium	8.73E+03		1/1	Human Nutrient	#N/A	Human Nutrient
NB01W1	Iron	2.13E+03		1/1	1.10E+04	N	NO
NB01W1	Manganese	2.36E+02		1/1	8.40E+02	N	NO
NB01W1	Sodium	8.29E+03		1/1	Human Nutrient	#N/A	Human Nutrient
NB01W1	Zinc	1.62E+02		1/1	1.10E+04	N	NO

TABLE 3: Detected Compounds, Site 7 - Insert Chemical Landfill
SURFACE SOIL

Sample Number	Contaminant	Result (mg/kg)	Qualifier
NB01S2	Acetone	2.00E-02	
NB01S2	Chlorobenzene	2.00E-03	J
NB01S2	Methylene chloride	1.00E-03	J
NB01S2	Toluene	2.00E-03	J
NB01S2	2-methylnaphthalene	2.20E-01	J
NB01S1	2-methylnaphthalene	3.80E-02	J
NB01S2	Acenaphthene	2.00E-01	J
NB01S2	Acenaphthylene	6.10E-02	J
NB01S2	Anthracene	1.80E-01	J
NB01S2	Benzo(a)anthracene	4.80E-01	
NB01S1	Benzo(a)anthracene	1.10E-01	J
NB01S2	Benzo(a)pyrene	5.20E-01	
NB01S1	Benzo(a)pyrene	1.30E-01	J
NB01S2	Benzo(b)fluoranthene	1.40E+00	
NB01S1	Benzo(b)fluoranthene	3.90E-01	
NB01S2	Benzo(g,h,i)perylene	1.60E-01	J
NB01S1	Benzo(g,h,i)perylene	6.50E-02	J
NB01S2	Benzo(k)fluoranthene	7.80E-01	
NB01S1	Benzo(k)fluoranthene	1.90E-01	J
NB01S2	Bis(2-ethylhexyl)phthalate (D	8.90E-02	J
NB01S2	Carbazole	6.20E-02	J
NB01S2	Chrysene	1.00E+00	
NB01S1	Chrysene	2.70E-01	J
NB01S2	Dibenzo(a,h)anthracene	4.60E-02	J
NB01S2	Dibenzofuran	1.70E-01	J
NB01S1	Dibutyl phthalate	6.30E-02	BJ
NB01S2	Dibutyl phthalate	6.20E-02	BJ
NB01S2	Fluoranthene	1.10E+00	
NB01S1	Fluoranthene	2.00E-01	J
NB01S2	Fluorene	1.00E-01	J
NB01S2	Indeno(1,2,3-cd)pyrene	2.00E-01	J
NB01S1	Indeno(1,2,3-cd)pyrene	7.30E-02	J
NB01S2	Naphthalene	2.90E-01	J
NB01S1	Naphthalene	5.10E-02	J
NB01S2	Phenanthrene	6.40E-01	
NB01S1	Phenanthrene	1.40E-01	J
NB01S2	Pyrene	9.60E-01	
NB01S1	Pyrene	1.90E-01	J
NB01S1	Aluminum	3.87E+03	
NB01S2	Aluminum	1.62E+03	
NB01S2	Arsenic	9.00E+00	
NB01S1	Arsenic	6.00E+00	
NB01S2	Barium	6.70E+01	
NB01S1	Barium	5.80E+01	
NB01S1	Beryllium	1.00E+00	
NB01S2	Beryllium	1.00E+00	
NB01S2	Cadmium	1.00E+00	
NB01S2	Calcium	3.67E+04	
NB01S1	Calcium	1.38E+04	
NB01S2	Chromium	1.60E+01	
NB01S1	Chromium	1.20E+01	
NB01S2	Cobalt	6.00E+00	
NB01S2	Copper	5.60E+01	
NB01S1	Copper	2.70E+01	
NB01S2	Iron	2.49E+04	
NB01S1	Iron	1.01E+04	
NB01S2	Lead	8.30E+01	
NB01S2	Magnesium	2.21E+04	
NB01S1	Magnesium	6.94E+03	
NB01S2	Manganese	2.78E+02	
NB01S1	Manganese	2.24E+02	
NB01S1	Nickel	2.00E+01	
NB01S2	Nickel	1.70E+01	
NB01S1	Selenium	1.00E+00	
NB01S2	Selenium	1.00E+00	
NB01S1	Vanadium	2.60E+01	
NB01S2	Vanadium	1.20E+01	
NB01S2	Zinc	6.10E+01	
NB01S1	Zinc	5.70E+01	

TABLE 3: Detected Compounds, Site 7 - Inert Chemical Landfill
GROUNDWATER

SAMPLE_NO	Parameter	Result (ug/L)	QUALIFIER
NB01W1	Aluminum	7.90E+02	
NB01W1	Calcium	8.73E+03	
NB01W1	Iron	2.13E+03	
NB01W1	Manganese	2.36E+02	
NB01W1	Sodium	8.29E+03	
NB01W1	Zinc	1.62E+02	