New York State Department of Environmental Conservation, Region 5

Division of Environmental Remediation, Michael J. O'Toole, Jr., Director

NYSDEC Region 5

Atlas Missile Silo Site S-8 Additional Groundwater Monitoring Well Installations, Sampling Results, And Recommendations Final Report

February 2000

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

GEORGE PATAKI, Governor

JOHN CAHILL, Commissioner

STUART BUCHANAN, Regional Director

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Section 1 - Executive Summary

1.1 Summary of Results

The Atlas Missile Silo Site S-8 located in the Town of Clayburg, Clinton County, New York State is the subject of this site investigation. The owner of record is Gregory Chadwick Gibbons, 2 Bedford Mews, Pleasantville NY 10570. This facility was investigated by a consultant working for the Department of Defense (DOD) in 1987. The 1987 report was based on the initial investigation and sampling associated with the site.

The 1987 report documented low levels of contamination found at this site (table 1). Contamination was mainly caused by a breakdown product of the cleaning solvent trichloroethene (TCE), trans-1,2-dichloroethene (DCE). TCE was also detected in the water in the silo. In the fall of 1995 the New York State Department of Health (NYSDOH) sampled nearby residences of the atlas missile silo sites. The results of this sampling indicate that nothing was detected in the residential wells sampled. The recommendations from the NYSDOH May 1996 residential well sampling summary report are that continued monitoring of on site wells be continued. The old monitoring wells on site were destroyed as part of the site work to convert the site into an airstrip. To answer the question of whether this site should be listed on the registry, three monitoring wells installed on site, each 200 feet deep, in the summer of 1999 (figure 2). These wells were sampled and analyzed for Volatile Organic Analysis (VOA), EPA method 8260 - GC/MS. The results of this November 9, 1999 sampling did not indicate any contamination.

1.2 Presence of Significant Threat

There is not a significant threat posed by any contaminated groundwater at this site. The site itself has two residential drinking water wells installed near the silo near the 200 foot depth of the monitoring wells. These wells were sampled in the summer of 1999, and the results are shown on table 2, and indicate that there is essentially no significant contamination evident. The monitoring wells installed in 1999 were sampled, and no contamination was found in these wells. These pieces of information taken in concert with the previous NYSDOH sampling of nearby down gradient residential wells indicate that there is not a significant threat associated with the site in terms contaminated groundwater due to the old missile silo operations.

There is a 55 gallon drum currently in the silo that is scheduled for removal. This drum is approximately 140 feet below grade, and it is not know what the contents of the drum are. There is a possibility that the contents of this drum is TCE. The sampling, extraction, and proper disposal of this drum is being pursued by the NYSDEC under a state funded contract. Once this drum has been removed, there will no longer be any significant threat based on the missile base operations remaining at this site.

1.3 Recommended Action

This site has been investigated sufficiently to make a determination of no significant threat. This site should therefore not be included in the Registry of Inactive Hazardous Waste Disposal Sites for New York State. The work remaining at this site is the removal of the 55 gallon drum from the silo, and either proper abandonment of the three newly installed 200' monitoring wells, or transferring maintenance of these wells to the current site owner for use as water supply wells. Since these wells are open hole bedrock wells, cased into rock and sealed to assure separation form overburden groundwater, and have been sampled and do not contain volatile organic chemicals, they could be beneficial to the current site owner as water supply wells.

Section 2 -Introduction

2.1 Current Site Description

The site is currently used as a private air strip and residential subdivision. There are two houses currently on the site. One of the houses uses the old missile silo and underground living quarters and launch control center as part of the residence. The silo itself is currently pumped free of water to a depth of approximately 160 feet, and has power and lights in it. The living quarters and the launch control center have been converted to living space (e.g., bathroom, bedrooms, hallways, etc.).

2.2 Previous Investigations

2.2.1 1987 DOD Report

The Atlas Missile Silos are former Department of Defense (DOD) sites that have been initially investigated and reported by a contractor working for the DOD in 1987. The 1987 report recommended that the site not be pursued further. The additional work was done however due to other considerations form the NYSDOH, and the NYSDEC.

Table 1
Summary of 1987 DOD Report

Contaminant	Well Numbers	Level (ppb)	DW Std	GA Std
methylene chloride	801, 802, 803, silo, trip blank**	7, <5, <5, <5 (below MDL)***	5	0.8
chloroform	rinsate from silo and MW sampling	<5 ***	50	7
trichloroethene	silo	<5 ***	5	5
trans-1,2-dichloroethene	803, silo	<5 (below MDL)***, 8	5	5
total chromium	802, 803	14 (20 dup.), 11	100	50
total lead	802, 803, silo	7, 8, 21 (19 dup.)	15 *	25
total barium	801, 802, 803, silo	113, 188 (202 dup.), 132, 77 (76 dup.)	2,000	1,000
di-n-butyl phthalate	802, 803, silo, method blank**	<10, <10, <10 ***	50	50
di-n-octyl phthalate	802, 803	<10, <10 ***	50	50

Notes:
* The lead action levels is exceeded if the concentration of lead in more than 10 % of one liter first draw tap samples collected during any monitoring period exceeds 0.015 milligrams per liter. (NYSDOH Subpart 5-1; section 5-1.41)
** These chemicals were detected in the trip blanks and sample blanks and are most likely lab artifacts, and not indicative of the groundwater quality from the monitoring well.
*** MDL = Method Detection Limit

2.2.2 NYSDOH Summary Report, May 1996

The section of this residential well sampling report that applies to S-8 is included in appendix B. In the fall of 1995 the DOH sampled residences nearby the atlas missile silo sites. The results of this sampling indicate that nothing was detected in the residential wells that were sampled. The report also recommends that the existing monitoring wells on site continued to be sampled due to the proximity of residential drinking water wells and future residential well sampling should include areas north of the site. It should be noted that this report was issued prior to the newly installed monitoring well data being available.

2.3 Standards Criteria and Guidance

The site has various applicable SCGs. The applicability of these SCGs requires that they be considered in the investigation of the site. The SCGs are:

- Technical and Administrative Guidance Memorandum (TAGM) 4046.
- Technical Operations and Guidance Series (TOGS) 1.1.1.
- Part V of 10NYCRR - NYSDOH Drinking Water Standards
- 6NYCRR Parts 371 & 375, 376, 700-705.
- Fish And Wildlife Impact Analysis for Inactive Hazardous Waste Sites (FWIA)

Section 3 - Scope Of Work - 1999 Field Investigation

3.1 Investigation Objective

The objective of the investigation was to determine if there is a need for continued action at this site in terms of contamination resulting from operations of the missile silo. Specifically, the objective was to determine if the Atlas Missile Silo Sites should be added to the Registry of Inactive Hazardous Waste Sites for New York State. Currently only S-11 is listed on the registry (# 510009). This 1999 phase of the investigation included installation of three monitoring wells, 200' deep, sampling and analysis of these three wells, and the preparation of this report documenting the findings from the sampling and analysis and presenting a conclusion regarding the site status.

3.2 Sample Collection

Samples were collected from the three newly installed monitoring wells using dedicated tubing, and a pump. The NYSDOH also sampled the two existing residential wells on site. The results of this NYSDOH sampling are shown on table 2 and summary sheets are included in Appendix B.

3.3 Sample Analysis

The samples, including trip blanks, were sent to Roy F. Weston Inc. Laboratory in Lionville Pennsylvania and analyzed in accordance with USEPA method 8260 - GC/MS. The NYSDOH sample were analyzed by their own lab.

Section 4 - Investigation Results

4.1 1999 200' Monitoring Wells; Installation and Sampling

The sample results for the three new monitoring wells are all non-detect. The sample summary sheets are attached in Appendix A. Monitoring well locations are shown on figure 2. The section of the Field Data Summary, New York State Superfund Standby Contract, Atlas Missile Sites: S-4, S-6, S-8, and S-12, Plattsburgh Area, New York describing the monitoring well installation, that applies to S-8, is included as Appendix C.

4.2 1999 NYSDOH Sampling of Existing Residential Water Supply Wells On Site

The initial samples were taken on July 29, 1999. The follow up samples were taken on August 24, 1999. The results indicate that there is no significant contamination by TCE or its breakdown products in these wells.

Table 2: 1999 NYSDOH Sampling of Existing Residential Wells On Site

Well Location	Well Depth	Sampling Dates	DW Standard	Results
East of Silo, Top of Slope	180 feet	7/29/99 & 8/24/99	N/A	ND
West of Silo, Riser in Field Behind House	240 feet	7/29/99 & 8/24/99	5 ppb 5 ppb	TCE - < 0.5 ppb (present but below the detection limit of 0.5) DCE - 0.7 ppb

Section 5 - Presence of Significant Threat

The on site TCE and DCE groundwater contamination does not represent a significant threat to human health and the environment. The non-detect sample results from the three additional monitoring wells in combination with the residential well sampling (from both 1995 and from 1999) are the basis for the conclusion that there is not a significant threat posed by contamination of the groundwater at this site.

There is a 55 gallon drum currently in the silo that is scheduled for removal. This drum is approximately 140 feet below grade, and it is not know what the contents of the drum are. There is a possibility that the drum contains TCE. The sampling, extraction, and proper disposal of this drum is being pursued by the NYSDEC under a state funded contract. Once this drum has been removed, there will no longer be any significant threat based on the missile base operations remaining at this site.

Section 6 - Recommendations

6.1 Recommended Site Classification

This site has been investigated sufficiently to make a determination of no significant threat, once the drum in the silo has been properly disposed of. The recommendation for Atlas Missile Silo S-8 in Clayburg New York is that it not be pursued further as a "P" site. There is a possible significant threat posed by the drum located within the silo itself, approximately 140 feet below grade. Once this drum has been properly sampled and disposed of, no significant threat will remain at the site due to past missile base operations. The drinking water wells on site have been sampled and the one well with detectable results was well below the established drinking water standard for the chemicals detected (table 2).

6.2 Future Work

The work remaining at this site is the removal of the 55 gallon drum from the silo, and either proper abandonment of the three newly installed 200' monitoring wells, or transferring maintenance of these wells to the current site owner for use as water supply wells. Since these wells are open hole bedrock wells, cased into rock and sealed to assure separation form overburden groundwater, and have been sampled and do not contain volatile organic chemicals, they could conceivably be beneficial to the current site owner as water supply wells.

Section 7 - References

Field Data Summary, New York State Superfund Standby Contract, Atlas Missile Sites: S-4, S-6, S-8, and S-12, Plattsburgh Area, New York, September 1999, prepared by Malcolm Pirnie Inc., Buffalo New York.

Sample Data Package: RFW Batch 9911L663, NYSDEC ID: SH599-11899-B08141, B08142, B08143, B08TB, December 1999, Recra Environmental Inc., Lionville Pennsylvania,

Final Report Confirmation Study of Former Atlas Missile Sites For Potential Toxic and Hazardous Waste Contamination Former Atlas Site S-8, Essex, New York, May 1987, for the U.S. Army Corps of Engineers, Kansas City Missouri; prepared by Law Environmental, Atlanta Georgia

Summary Report 1995 NYSDOH Residential Well Sampling of Atlas Missile Silo Sites, May 1996, NYSDOH.

Figure 1 Atlas Missile Site S-8 Site Location Map

Source: U.S.G.S. Quadrangle Map - Redford

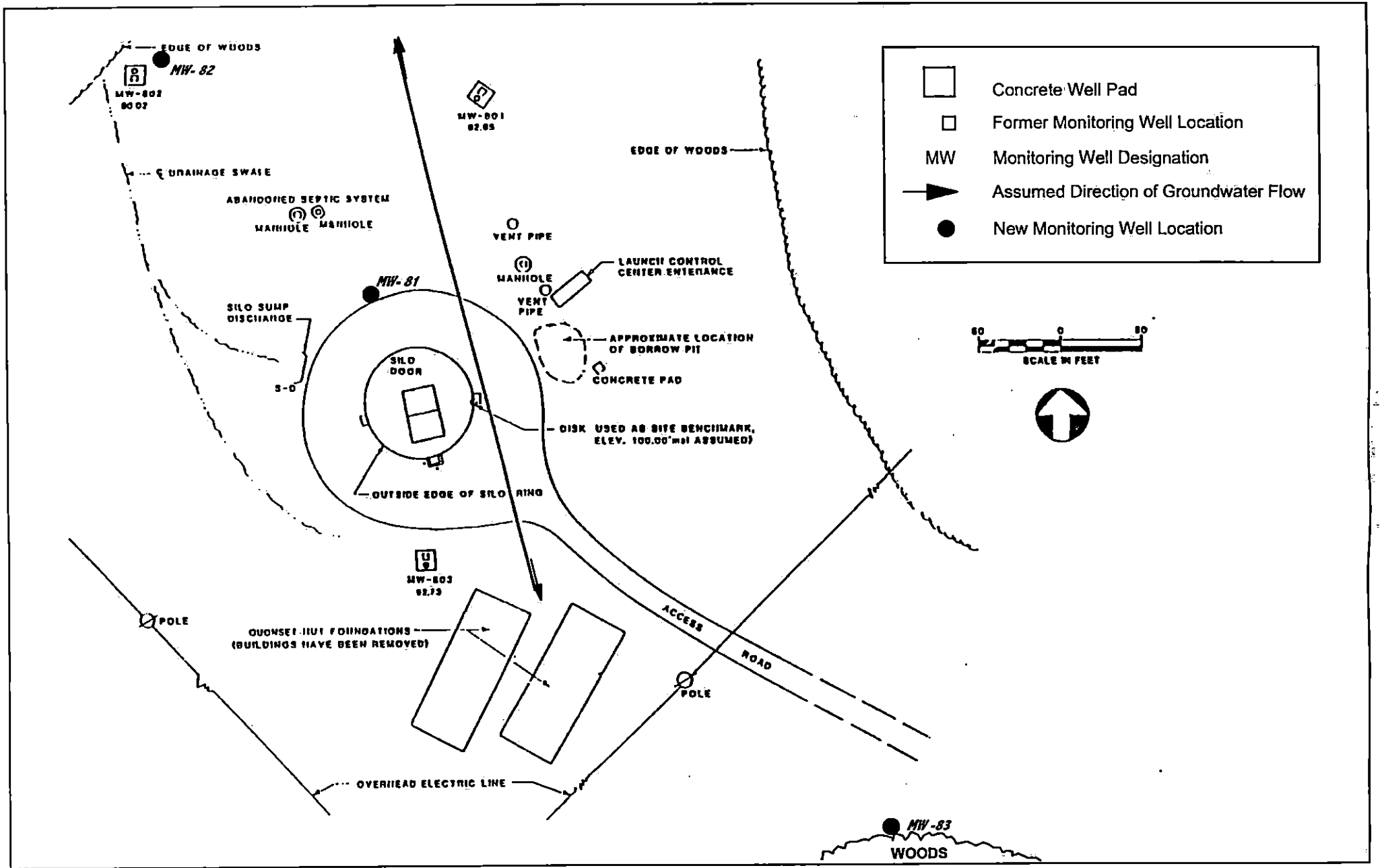
MALCOLM PIRNIE

ATLAS SITE S-8
CLAYBURG, NEW YORK
SITE LOCATION MAP

APRIL 1999

Figure 2 Atlas Missile Site S-8 Site Map

FIGURE 2-3



MALCOLM PIRNIE

ATLAS SITE S-8
CLAYBURG, NEW YORK

NEW MONITORING WELL LOCATIONS

OCTOBER 1999

Appendix A: Sample Results Summary Sheet for S-8, 1999

Recra LabNet - Lionville Laboratory
Volatiles by GC/MS, HSL List
Report Date: 12/17/99 14:58

RFW Batch Number: 9911L681 Client: NYSDEC Work Order: 01667600001 Page: 1a

Sample Information	Cust ID:	SH599-11999-00MW61		SH599-11999-00MW62		SH599-11999-00MW63		SH599-11999-00MW64		SH599-11999-000TB2		SH599-11999-00MW81	
	RFW#:	001		002		003		004		005		006	
	Matrix:	WATER		WATER		WATER		WATER		WATER		WATER	
	D.F.:	1.00		1.00		1.00		1.00		1.00		1.00	
	Units:	UG/L		UG/L		UG/L		UG/L		UG/L		UG/L	
Surrogate Recovery	Toluene-d8	101	%	97	%	103	%	103	%	104	%	100	%
	Bromofluorobenzene	96	%	96	%	97	%	94	%	96	%	94	%
	1,2-Dichloroethane-d4	107	%	105	%	108	%	109	%	113	%	109	%
Chloromethane		10	U	10	U	10	U	10	U	10	U	10	U
Bromomethane		10	U	10	U	10	U	10	U	10	U	10	U
Vinyl Chloride		10	U	10	U	10	U	10	U	10	U	10	U
Chloroethane		10	U	10	U	10	U	10	U	10	U	10	U
Methylene Chloride		5	B	6	B	2	JB	8	B	10	B	6	B
Acetone		2	JB	2	JB	3	JB	4	JB	4	JB	3	JB
Carbon Disulfide		5	U	5	U	5	U	5	U	5	U	5	U
1,1-Dichloroethene		5	U	5	U	5	U	5	U	5	U	5	U
1,1-Dichloroethane		5	U	5	U	5	U	5	U	5	U	5	U
1,2-Dichloroethene (total)		5	U	5	U	5	U	5	U	5	U	5	U
Chloroform		5	U	5	U	5	U	5	U	5	U	5	U
1,2-Dichloroethane		5	U	5	U	5	U	5	U	5	U	5	U
2-Butanone		2	JB	3	JB	3	JB	3	JB	2	JB	2	JB
1,1,1-Trichloroethane		5	U	5	U	5	U	5	U	5	U	5	U
Carbon Tetrachloride		5	U	5	U	5	U	5	U	5	U	5	U
Vinyl Acetate		10	U	10	U	10	U	10	U	10	U	10	U
Bromodichloromethane		5	U	5	U	5	U	5	U	5	U	5	U
1,2-Dichloropropane		5	U	5	U	5	U	5	U	5	U	5	U
cis-1,3-Dichloropropene		5	U	5	U	5	U	5	U	5	U	5	U
Trichloroethene		2	J	6		5	U	5		5	U	5	U
Dibromochloromethane		5	U	5	U	5	U	5	U	5	U	5	U
1,1,2-Trichloroethane		5	U	5	U	5	U	5	U	5	U	5	U
Benzene		5	U	5	U	5	U	5	U	5	U	5	U
Trans-1,3-Dichloropropene		5	U	5	U	5	U	5	U	5	U	5	U
Bromoform		5	U	5	U	5	U	5	U	5	U	5	U
4-Methyl-2-pentanone		10	U	10	U	10	U	10	U	10	U	10	U
2-Hexanone		10	U	10	U	10	U	10	U	10	U	10	U
Tetrachloroethene		5	U	5	U	5	U	5	U	5	U	5	U
1,1,2,2-Tetrachloroethane		5	U	5	U	5	U	5	U	5	U	5	U

*= Outside of EPA CLP QC limits.

Cust ID:	SH599-11999-00MW61	SH599-11999-00MW62	SH599-11999-00MW63	SH599-11999-00MW64	SH599-11999-000TB2	SH599-11999-00MW81
RFW#:	001	002	003	004	005	006
Toluene	5 U	5 U	1 J	5 U	5 U	5 U
Chlorobenzene	5 U	5 U	5 U	5 U	5 U	5 U
Ethylbenzene	5 U	5 U	5 U	5 U	5 U	5 U
Styrene	5 U	5 U	5 U	5 U	5 U	5 U
Xylene (total)	5 U	5 U	5 U	5 U	5 U	5 U

*= Outside of EPA CLP QC limits.

Sample Information	Cust ID:	SH599-11999-00MW82	SH599-11999-00MW83	VBLKZM	VBLKZP	VBLKZP BS	VBLKZO
	RFW#:	007	008	99LVN421-MB1	99LVN424-MB1	99LVN424-MB1	99LVN425-MB1
	Matrix:	WATER	WATER	WATER	WATER	WATER	WATER
	D.F.:	1.00	1.00	1.00	1.00	1.00	1.00
	Units:	UG/L	UG/L	UG/L	UG/L	UG/L	UG/L
Surrogate Recovery	Toluene-d8	105 %	108 %	101 %	100 %	104 %	101 %
	Bromofluorobenzene	98 %	101 %	96 %	92 %	93 %	97 %
	1,2-Dichloroethane-d4	114 %	112 %	102 %	107 %	108 %	112 %
Chloromethane		10 U	10 U	10 U	10 U	10 U	10 U
Bromomethane		10 U	10 U	2 J	10 U	10 U	10 U
Vinyl Chloride		10 U	10 U	10 U	10 U	10 U	10 U
Chloroethane		10 U	10 U	10 U	10 U	10 U	10 U
Methylene Chloride		9 B	6 B	7	6	6 B	7
Acetone		4 JB	4 BJ	4 J	5 J	11 B	4 J
Carbon Disulfide		5 U	5 U	5 U	5 U	5 U	5 U
1,1-Dichloroethene		5 U	5 U	5 U	5 U	86 %	5 U
1,1-Dichloroethane		5 U	5 U	5 U	5 U	5 U	5 U
1,2-Dichloroethene (total)		1 J	5 U	5 U	5 U	5 U	5 U
Chloroform		5 U	5 U	5 U	5 U	5 U	5 U
1,2-Dichloroethane		5 U	5 U	5 U	5 U	5 U	5 U
2-Butanone		2 JB	2 BJ	2 J	2 J	10 U	2 J
1,1,1-Trichloroethane		5 U	5 U	5 U	5 U	5 U	5 U
Carbon Tetrachloride		5 U	5 U	5 U	5 U	5 U	5 U
Vinyl Acetate		10 U	10 U	10 U	10 U	10 U	10 U
Bromodichloromethane		5 U	5 U	5 U	5 U	5 U	5 U
1,2-Dichloropropane		5 U	5 U	5 U	5 U	5 U	5 U
cis-1,3-Dichloropropene		5 U	5 U	5 U	5 U	5 U	5 U
Trichloroethene		5 U	5 U	5 U	5 U	92 %	5 U
Dibromochloromethane		5 U	5 U	5 U	5 U	5 U	5 U
1,1,2-Trichloroethane		5 U	5 U	5 U	5 U	5 U	5 U
Benzene		5 U	5 U	5 U	5 U	103 %	5 U
Trans-1,3-Dichloropropene		5 U	5 U	5 U	5 U	5 U	5 U
Bromoform		5 U	5 U	5 U	5 U	5 U	5 U
4-Methyl-2-pentanone		10 U	10 U	10 U	10 U	10 U	10 U
2-Hexanone		10 U	10 U	10 U	10 U	10 U	10 U
Tetrachloroethene		5 U	5 U	5 U	5 U	5 U	5 U
1,1,2,2-Tetrachloroethane		5 U	5 U	5 U	5 U	5 U	5 U

*= Outside of EPA CLP QC limits.

	Cust ID:	SH599-11999-00MW82	SH599-11999-00MW83	VBLKZM	VBLKZP	VBLKZP BS	VBLKZO
	RFW#:	007	008	99LVN421-MB1	99LVN424-MB1	99LVN424-MB1	99LVN425-MB1
Toluene		5 U	5 U	5 U	5 U	106 %	5 U
Chlorobenzene		5 U	5 U	5 U	5 U	101 %	5 U
Ethylbenzene		5 U	5 U	5 U	5 U	5 U	5 U
Styrene		5 U	5 U	5 U	5 U	5 U	5 U
Xylene (total)		5 U	5 U	5 U	5 U	5 U	5 U

*= Outside of EPA CLP QC limits.

Appendix B: Sections of the 1996 NYSDOH Residential Well Sampling of Atlas Missile Silo Sites, May 1996 that apply to S-8, 1999 Residential Well Sample Results from NYSDOH Sampling

SUMMARY REPORT

1995 NYSDOH Residential Well Sampling of Atlas Missile Silo Sites

May 1996

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Introduction

The Atlas Missile Silo sites associated with the Plattsburgh Air Force Base were operated by the United States Department of Defense as part of the Intercontinental Ballistic Missile (ICBM) program. Ten(10) of these sites operated in northern New York State from the early 1960's until 1965 (refer to Figure 1, Attachment 1). Each missile silo site consisted of an underground silo (174 feet deep and 69 feet in diameter), a missile, a launch control center, and above ground maintenance buildings, security systems, and waste treatment facilities (septic leachfield). Activities at these sites which produced potential contaminants included: propellant storage (kerosene & liquid oxygen), underground fuel storage (diesel), operation of hydraulic systems and equipment maintenance (petroleum oil, lubricants and solvents).

The Department of Defense initiated preliminary investigations in the late 1980's, entitled "confirmation studies", to "assess the potential existence of toxic or hazardous contamination" at former Atlas Missile sites located in northern New York State.

Based on a review of these preliminary investigation, the New York State Department of Health (NYSDOH) sampled residential wells near these Missile Silo sites in 1995. This report summarizes the results of the NYSDOH sampling activities and includes recommendations about the need for additional investigation or groundwater monitoring at each site.

Atlas Missile Silo Site S-8

Saranac, Clinton County

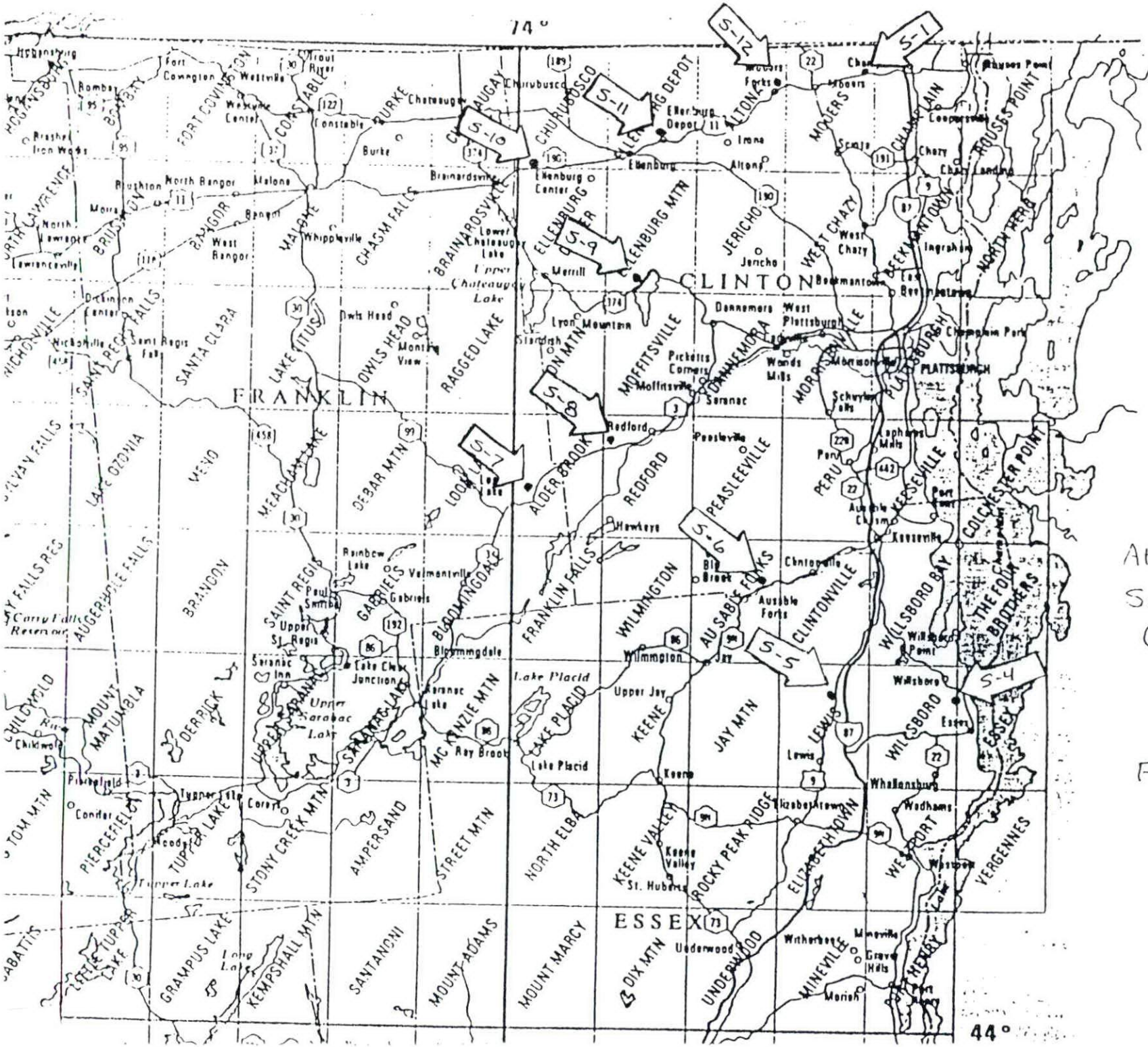
On July 12, 1995, NYSDOH staff sampled three private drinking water wells south of the Atlas Missile Silo site S-8 in Saranac, Clinton County. Two wells were spring fed and one was a point well. All three of the samples were analyzed for VOCs and two of the samples were analyzed for metals. No VOCs were detected in any of the samples. In the point well sample sodium (246 mg/l) and manganese (458 mcg/l) were detected above the NYSDOH public drinking water supply standards of 20 ug/l and 300 mcg/l respectively. However, available data does not indicate that these compounds are associated with the Atlas Missile Silo site. The sampling locations are depicted in Figure 7, Attachment 1, and the data is summarized in Attachment 2, Table 1.

The May 1988 confirmation study prepared for this site for the US Army Corps of Engineers indicated that trichloroethene and trans-1,2-dichloroethene were found below the detection limits in groundwater samples. Trans-1,2-dichloroethene (at 8 mcg/l) and trichloroethene (below detection limit) were detected in the silo water sample. Metals detected in soil samples were within expected background levels.

The surface water drainage at the site appears to flow northwest, then south to the North branch of the Saranac River. On-site monitoring well data confirm this direction of localized groundwater flow. However, regional groundwater flow is likely to the south towards the Saranac River. No residential well sampling was performed at the distant homes north of the site. Continued monitoring of on-site groundwater monitoring wells is warranted due to the proximity of residential drinking water wells and future residential well sampling should include areas north of the site.

ATTACHMENT 1

FIGURES

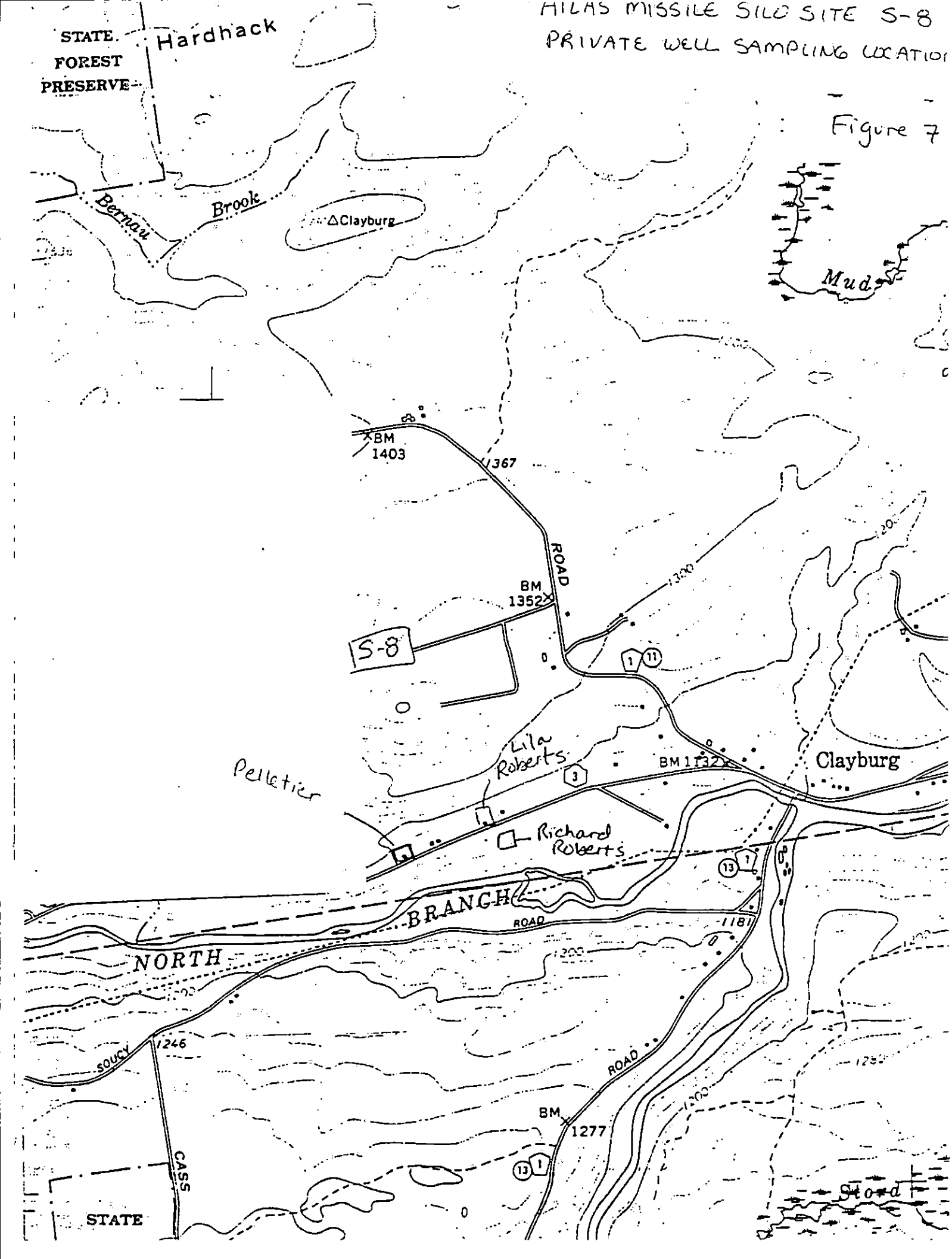


Atlas Missile Silo Sites in Upstate New York

Figure 1

HILAS MISSILE SILO SITE S-8
PRIVATE WELL SAMPLING LOCATIO

Figure 7



ATTACHMENT II

TABLES

S-7	Nichols, Lynn	HCR #1, Box 67	Onchiota, NY 12989	Franklin	891-3058	dug well - spring fed		11/30/95	12/29/95	ND	NA	ND
S-7	Ingraham, Peter	HCR #1, Box 65	Onchiota, NY 12989	Franklin		300 ft.		11/30/95	12/29/95	ND	NA	ND
S-7	Nichols, Clay	HCR #1 Box 68	Onchiota, NY 12989	Franklin	891-4769			11/30/95	1/4/96	ND	ND	ND
S-8	Pelletier, Thomas	5018 Rte. 3	Saranac, NY 12981	Clinton	293-7114	spring		7/12/95	8/23/95	ND	NA	ND
S-8	Roberts, Lila M.	4968 Rte. 3	Saranac, NY 12981	Clinton	293-1215	spring		7/12/95	8/23/95	ND	NA	NA
S-8	Roberts, Richard	4951 Rte.3	Saranac, NY 12981	Clinton	293-7138	point well		7/12/95	8/23/95	ND	NA	Na:246 mg/L, Mn: 458 mcg/L
S-9	Dove, H.	house #2687 c/o David Jones, 6 Boat Launch Rd.	Ellenburg Depot, NY 12935	Clinton	492-7931	63 ft.		10/13/95	11/6/95	ND	NA	NA
S-9	Dubrey Sr., Victor	Box 2712, Rte. 374	Ellenburg Depot, NY 12935	Clinton	492-7954	dug		7/12/95	8/24/95	ND	ND	NA
S-9	Dubrey, Irene	PO Box 2644	Ellenburg Depot, NY 12935	Clinton	492-7177	dug, spring fed		7/12/95	8/24/95	ND	ND	NA
S-9	Jones, David	6 Boat Launch Rd.	Ellenburg Depot, NY 12935	Clinton	492-7931	60 ft.		10/13/95	11/1/95	ND	NA	NA
S-9	Holt, Shane	Route 374, Box 2653	Ellenburg Depot, NY 12935	Clinton	492-7358	136 ft., drilled		7/12/95	8/23/95	toluene: 2.2		
S-9	Skiff, Jay	Route 374, Box 2685	Ellenburg Depot, NY 12935	Clinton	492-2073	50 ft., drilled		7/12/95	8/24/95	ND	ND	
S-11	Baxter, Viola (Justin = Viola's brother)	PO Box 54, 5046 Route 11	Ellenburg Depot, NY 12935	Clinton	594-7678	30-35 ft. artesian		10/12/95	11/1/95	TCE: 2.9		
S-11	Cheeseman, Calvin	38 Canaan Rd.	Ellenburg Depot, NY 12935	Clinton	594-3906	unknown		10/13/95	11/2/95	TCE: 2.1		
S-11	Cook, Loretta	5079A Rt.11, PO Box 76	Ellenburg Depot, NY 12935	Clinton		unknown	letter also sent 11/6/95 to owner: James	10/12/95	11/1/95	TCE: 2.7		

~~MIKE~~ KICH - I

STATE OF NEW YORK
DEPARTMENT OF HEALTH

Flanigan Square, 547 River Street, Troy, New York 12180-2216

Antonia C. Novello, M.D., M.P.H.
Commissioner

Dennis P. Whalen
Executive Deputy Commissioner

September 7, 1999

Mr. Bruce Francisco
P.O. Box 270
Westbrook, CT 06498

RE: Water Sample Test Results
Atlas Missile Silo S-8
Site ~~#510011~~ 510810N
(T) Saranac, Clinton County

Dear Mr. Francisco:

On July 29, 1999, I collected a water sample from the outdoor tap of the two homes located in the Adirondack Airpark Estates which you represent. For your reference I designated the home behind the airplane hangar as the "hangar home" and the home under construction adjacent to the silo as the "silo home". The samples were analyzed for volatile organic compounds at the New York State Department of Health's Wadsworth Center for Laboratories and Research in Albany. I have enclosed a copy of your test results and an "Analytical Report Explanation Sheet" to help you interpret these results. No volatile organic compounds were detected in the hangar home sample. Low levels of the compounds cis–1,2 – dichloroethene (0.7mcg/l) and trichloroethene (present but less than 0.5 mcg/l) were detected in the silo home sample. To confirm these results I resampled the silo home on August 24, 1999. As you can see from the enclosed lab report these compounds were again detected at the same concentrations. These levels are well below 5.0 mcg/l which is the New York State public water supply standard for each of these compounds. Therefore based on the laboratory results for these samples, the water from both homes is suitable for all purposes. As these homes are for sale, we recommend you share these reports with future owners and tell them that they may contact this office at the number below with any questions.

If you have any questions, please call me toll-free at 1-800-458-1158, extension 27890.

Sincerely,

Daniel R. Geraghty
Public Health Specialist II
Bureau of Environmental Exposure
Investigation

Enclosures

Mr. Francisco
Atlas Missile
9/7/99

cc: G.A. Carlson, Ph.D.
Mr. M. Rivara/ Mr. R. Fedigan/FILE
Mr. R. Mulvey – DEC – Region 5
Mr. E. Snizek – Clinton County Health Dept.

H:\DAN\LETTERS\S8FRANSI.DOC

PAGE 1 RESULTS OF EXAMINATION FINAL REPORT

SAMPLE ID: 9902229 SAMPLE RECEIVED:99/08/02/ CHARGE: 8.00
PROGRAM: 110:STATE SUPERFUND ANALYTICAL SERVICES
SOURCE ID: DRAINAGE BASIN: GAZETTEER CODE:0962
POLITICAL SUBDIVISION:SARANAC COUNTY:CLINTON
LATITUDE:44 36 03.81 LONGITUDE:73 51 23.79 Z DIRECTION: 1240
LOCATION: ATLAS MISSILE SILO S8 510810N
DESCRIPTION:HANGAR HOME, OUTSIDE TAP
REPORTING LAB: TOX:LAB FOR ORGANIC ANALYTICAL CHEMISTRY
TEST PATTERN: 5022W:VOLATILE ORGANICS IN WATER
SAMPLE TYPE: 120:PRIVATE WATER SUPPLY - DRILLED WELL
TIME OF SAMPLING: 99/07/29 14:00 DATE PRINTED:99/08/11

ANALYSIS: 5022W VOLATILE ORGANICS IN WATER-EPA 502.2 (DES 310-33)
DATE PRINTED: 99/08/11 FINAL REPORT

PARAMETER	RESULT
DICHLORODIFLUOROMETHANE (FREON-12)	< 0.5 MCG/L
CHLOROMETHANE	< 0.5 MCG/L
VINYL CHLORIDE	< 0.5 MCG/L
BROMOMETHANE	< 0.5 MCG/L
CHLOROETHANE	< 0.5 MCG/L
TRICHLOROFLUOROMETHANE (FREON-11)	< 0.5 MCG/L
1,1-DICHLOROETHENE	< 0.5 MCG/L
METHYLENE CHLORIDE (DICHLOROMETHANE)	< 0.5 MCG/L
TRANS-1,2-DICHLOROETHENE	< 0.5 MCG/L
1,1-DICHLOROETHANE	< 0.5 MCG/L
2,2-DICHLOROPROPANE	< 0.5 MCG/L
CIS-1,2-DICHLOROETHENE	< 0.5 MCG/L
CHLOROFORM	< 0.5 MCG/L
BROMOCHLOROMETHANE	< 0.5 MCG/L
1,1,1-TRICHLOROETHANE	< 0.5 MCG/L
1,1-DICHLOROPROPENE	< 0.5 MCG/L
CARBON TETRACHLORIDE	< 0.5 MCG/L
1,2-DICHLOROETHANE	< 0.5 MCG/L
BENZENE	< 0.5 MCG/L
TRICHLOROETHENE	< 0.5 MCG/L
1,2-DICHLOROPROPANE	< 0.5 MCG/L
BROMODICHLOROMETHANE	< 0.5 MCG/L
DIBROMOMETHANE	< 0.5 MCG/L
CIS-1,3-DICHLOROPROPENE	< 0.5 MCG/L
TOLUENE	< 0.5 MCG/L
TRANS-1,3-DICHLOROPROPENE	< 0.5 MCG/L
1,1,2-TRICHLOROETHANE	< 0.5 MCG/L
1,3-DICHLOROPROPANE	< 0.5 MCG/L
TETRACHLOROETHENE	< 0.5 MCG/L

**** CONTINUED ON NEXT PAGE ****

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NY STATE DEP'T. HEALTH SUBMITTED BY:GERAGHTY
FLANIGAN SQ., 547 RIVER ST.
TROY ****INTERAGENCY MAIL****

PAGE 2 RESULTS OF EXAMINATION FINAL REPORT

SAMPLE ID: 9902229 SAMPLE RECEIVED:99/08/02/ CHARGE: 8.00
POLITICAL SUBDIVISION:SARANAC COUNTY:CLINTON
LOCATION: ATLAS MISSILE SILO S8 510810N
TIME OF SAMPLING: 99/07/29 14:00 DATE PRINTED:99/08/11

PARAMETER	RESULT
DIBROMOCHLOROMETHANE	< 0.5 MCG/L
1,2-DIBROMOETHANE (EDB)	< 0.5 MCG/L
CHLOROBENZENE	< 0.5 MCG/L
1,1,1,2-TETRACHLOROETHANE	< 0.5 MCG/L
ETHYLBENZENE	< 0.5 MCG/L
M/P-XYLENE	< 0.5 MCG/L
O-XYLENE	< 0.5 MCG/L
STYRENE	< 0.5 MCG/L
ISOPROPYLBENZENE (Cumene)	< 0.5 MCG/L
BROMOFORM	< 0.5 MCG/L
1,1,2,2-TETRACHLOROETHANE	< 0.5 MCG/L
1,2,3-TRICHLOROPROPANE	< 0.5 MCG/L
N-PROPYLBENZENE	< 0.5 MCG/L
BROMOBENZENE	< 0.5 MCG/L
1,3,5-TRIMETHYLBENZENE	< 0.5 MCG/L
O-CHLOROTOLUENE	< 0.5 MCG/L
P-CHLOROTOLUENE	< 0.5 MCG/L
TERT-BUTYLBENZENE	< 0.5 MCG/L
1,2,4-TRIMETHYLBENZENE	< 0.5 MCG/L
SEC-BUTYLBENZENE	< 0.5 MCG/L
4-ISOPROPYLTOLUENE (p-Cymene)	< 0.5 MCG/L
1,3-DICHLOROBENZENE	< 0.5 MCG/L
1,4-DICHLOROBENZENE	< 0.5 MCG/L
N-BUTYLBENZENE	< 0.5 MCG/L
1,2-DICHLOROBENZENE	< 0.5 MCG/L
1,2-DIBROMO-3-CHLOROPROPANE	< 0.5 MCG/L
1,2,4-TRICHLOROBENZENE	< 0.5 MCG/L
HEXACHLOROBUTADIENE (C-46)	< 0.5 MCG/L
NAPHTHALENE	< 0.5 MCG/L
1,2,3-TRICHLOROBENZENE	< 0.5 MCG/L
PH OF VOLATILE ALIQUOT	2

**** END OF REPORT ****

PAGE 1 RESULTS OF EXAMINATION FINAL REPORT

SAMPLE ID: 9902230 SAMPLE RECEIVED:99/08/02/ CHARGE: 8.00
PROGRAM: 110:STATE SUPERFUND ANALYTICAL SERVICES
SOURCE ID: DRAINAGE BASIN: GAZETTEER CODE:0962
POLITICAL SUBDIVISION:SARANAC COUNTY:CLINTON
LATITUDE:44 36 05.07 LONGITUDE:73 51 23.43 Z DIRECTION: 180
LOCATION: ATLAS MISSILE SILO S8 510810N
DESCRIPTION:SILO HOME, OUTSIDE SHOWER TAP
REPORTING LAB: TOX:LAB FOR ORGANIC ANALYTICAL CHEMISTRY
TEST PATTERN: 5022W:VOLATILE ORGANICS IN WATER
SAMPLE TYPE: 120:PRIVATE WATER SUPPLY - DRILLED WELL
TIME OF SAMPLING: 99/07/29 14:30 DATE PRINTED:99/08/11

ANALYSIS: 5022W VOLATILE ORGANICS IN WATER-EPA 502.2 (DES 310-33)
DATE PRINTED: 99/08/11 FINAL REPORT

PARAMETER	RESULT
DICHLORODIFLUOROMETHANE (FREON-12)	< 0.5 MCG/L
CHLOROMETHANE	< 0.5 MCG/L
VINYL CHLORIDE	< 0.5 MCG/L
BROMOMETHANE	< 0.5 MCG/L
CHLOROETHANE	< 0.5 MCG/L
TRICHLOROFLUOROMETHANE (FREON-11)	< 0.5 MCG/L
1,1-DICHLOROETHENE	< 0.5 MCG/L
METHYLENE CHLORIDE (DICHLOROMETHANE)	< 0.5 MCG/L
TRANS-1,2-DICHLOROETHENE	< 0.5 MCG/L
1,1-DICHLOROETHANE	< 0.5 MCG/L
2,2-DICHLOROPROPANE	< 0.5 MCG/L
CIS-1,2-DICHLOROETHENE	0.7 MCG/L
CHLOROFORM	< 0.5 MCG/L
BROMOCHLOROMETHANE	< 0.5 MCG/L
1,1,1-TRICHLOROETHANE	< 0.5 MCG/L
1,1-DICHLOROPROPENE	< 0.5 MCG/L
CARBON TETRACHLORIDE	< 0.5 MCG/L
1,2-DICHLOROETHANE	< 0.5 MCG/L
BENZENE	< 0.5 MCG/L
TRICHLOROETHENE	0.5 MCG/L [PL]
1,2-DICHLOROPROPANE	< 0.5 MCG/L
BROMODICHLOROMETHANE	< 0.5 MCG/L
DIBROMOMETHANE	< 0.5 MCG/L
CIS-1,3-DICHLOROPROPENE	< 0.5 MCG/L
TOLUENE	< 0.5 MCG/L
TRANS-1,3-DICHLOROPROPENE	< 0.5 MCG/L
1,1,2-TRICHLOROETHANE	< 0.5 MCG/L
1,3-DICHLOROPROPANE	< 0.5 MCG/L
TETRACHLOROETHENE	< 0.5 MCG/L

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NY STATE DEP'T. HEALTH SUBMITTED BY:GERAGHTY
FLANIGAN SQ., 547 RIVER ST.
TROY ****INTERAGENCY MAIL****

0297 NEW YORK STATE DEPARTMENT OF HEALTH 097
WADSWORTH CENTER

PAGE 2 RESULTS OF EXAMINATION FINAL REPORT

SAMPLE ID: 9902230 SAMPLE RECEIVED:99/08/02/ CHARGE: 8.00
POLITICAL SUBDIVISION:SARANAC COUNTY:CLINTON
LOCATION: ATLAS MISSILE SILO S8 510810N
TIME OF SAMPLING: 99/07/29 14:30 DATE PRINTED:99/08/11

PARAMETER	RESULT
DIBROMOCHLOROMETHANE	< 0.5 MCG/L
1,2-DIBROMOETHANE (EDB)	< 0.5 MCG/L
CHLOROBENZENE	< 0.5 MCG/L
1,1,1,2-TETRACHLOROETHANE	< 0.5 MCG/L
ETHYLBENZENE	< 0.5 MCG/L
M/P-XYLENE	< 0.5 MCG/L
O-XYLENE	< 0.5 MCG/L
STYRENE	< 0.5 MCG/L
ISOPROPYLBENZENE (Cumene)	< 0.5 MCG/L
BROMOFORM	< 0.5 MCG/L
1,1,2,2-TETRACHLOROETHANE	< 0.5 MCG/L
1,2,3-TRICHLOROPROPANE	< 0.5 MCG/L
N-PROPYLBENZENE	< 0.5 MCG/L
BROMOBENZENE	< 0.5 MCG/L
1,3,5-TRIMETHYLBENZENE	< 0.5 MCG/L
O-CHLOROTOLUENE	< 0.5 MCG/L
P-CHLOROTOLUENE	< 0.5 MCG/L
TERT-BUTYLBENZENE	< 0.5 MCG/L
1,2,4-TRIMETHYLBENZENE	< 0.5 MCG/L
SEC-BUTYLBENZENE	< 0.5 MCG/L
4-ISOPROPYLTOLUENE (p-Cymene)	< 0.5 MCG/L
1,3-DICHLOROBENZENE	< 0.5 MCG/L
1,4-DICHLOROBENZENE	< 0.5 MCG/L
N-BUTYLBENZENE	< 0.5 MCG/L
1,2-DICHLOROBENZENE	< 0.5 MCG/L
1,2-DIBROMO-3-CHLOROPROPANE	< 0.5 MCG/L
1,2,4-TRICHLOROBENZENE	< 0.5 MCG/L
HEXACHLOROBUTADIENE (C-46)	< 0.5 MCG/L
NAPHTHALENE	< 0.5 MCG/L
1,2,3-TRICHLOROBENZENE	< 0.5 MCG/L
PH OF VOLATILE ALIQUOT	2

**** END OF REPORT ****

0226 NEW YORK STATE DEPARTMENT OF HEALTH 097
WADSWORTH CENTER

PAGE 1 RESULTS OF EXAMINATION FINAL REPORT

SAMPLE ID: 9902471 SAMPLE RECEIVED:99/08/25/ CHARGE: 8.00
PROGRAM: 110:STATE SUPERFUND ANALYTICAL SERVICES
SOURCE ID: DRAINAGE BASIN: GAZETTEER CODE:0962
POLITICAL SUBDIVISION:SARANAC COUNTY:CLINTON
LATITUDE:44 36 05.07 LONGITUDE:73 51 23.43 Z DIRECTION: 180
LOCATION: 510810N ATLAS MISSILE SILO - 58
DESCRIPTION:SILO HOME, OUTSIDE SHOWER TAP
REPORTING LAB: TOX:LAB FOR ORGANIC ANALYTICAL CHEMISTRY
TEST PATTERN: 5022W:VOLATILE ORGANICS IN WATER
SAMPLE TYPE: 120:PRIVATE WATER SUPPLY - DRILLED WELL
TIME OF SAMPLING: 99/08/24 13:45 DATE PRINTED:99/09/01

ANALYSIS: 5022W VOLATILE ORGANICS IN WATER-EPA 502.2 (DES 310-33)
DATE PRINTED: 99/09/01 FINAL REPORT

PARAMETER	RESULT
DICHLORODIFLUOROMETHANE (FREON-12)	< 0.5 MCG/L
CHLOROMETHANE	< 0.5 MCG/L
VINYL CHLORIDE	< 0.5 MCG/L
BROMOMETHANE	< 0.5 MCG/L
CHLOROETHANE	< 0.5 MCG/L
TRICHLOROFLUOROMETHANE (FREON-11)	< 0.5 MCG/L
1,1-DICHLOROETHENE	< 0.5 MCG/L
METHYLENE CHLORIDE (DICHLOROMETHANE)	< 0.5 MCG/L
TRANS-1,2-DICHLOROETHENE	< 0.5 MCG/L
1,1-DICHLOROETHANE	< 0.5 MCG/L
2,2-DICHLOROPROPANE	< 0.5 MCG/L
CIS-1,2-DICHLOROETHENE	0.7 MCG/L
CHLOROFORM	< 0.5 MCG/L
BROMOCHLOROMETHANE	< 0.5 MCG/L
1,1,1-TRICHLOROETHANE	< 0.5 MCG/L
1,1-DICHLOROPROPENE	< 0.5 MCG/L
CARBON TETRACHLORIDE	< 0.5 MCG/L
1,2-DICHLOROETHANE	< 0.5 MCG/L
BENZENE	< 0.5 MCG/L
TRICHLOROETHENE	0.5 MCG/L [PL]
1,2-DICHLOROPROPANE	< 0.5 MCG/L
BROMODICHLOROMETHANE	< 0.5 MCG/L
DIBROMOMETHANE	< 0.5 MCG/L
CIS-1,3-DICHLOROPROPENE	< 0.5 MCG/L
TOLUENE	< 0.5 MCG/L
TRANS-1,3-DICHLOROPROPENE	< 0.5 MCG/L
1,1,2-TRICHLOROETHANE	< 0.5 MCG/L
1,3-DICHLOROPROPANE	< 0.5 MCG/L
TETRACHLOROETHENE	< 0.5 MCG/L

**** CONTINUED ON NEXT PAGE ****

NYS ELAP ID'S: 10762(INORGANIC,NUCLEAR) 10763(ORGANIC) 10765(BACTERIOLOGY)
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BUR. ENVIRONMENTAL EXPOSURE INVESTIGAT.
NY STATE DEP'T. HEALTH SUBMITTED BY:GERAGHTY
FLANIGAN SQ., 547 RIVER ST.
TROY ****INTERAGENCY MAIL****

SAMPLE ID: 9902471 SAMPLE RECEIVED:99/08/25/ CHARGE: 8.00
POLITICAL SUBDIVISION:SARANAC COUNTY:CLINTON
LOCATION: 510810N ATLAS MISSILE SILO - 58
TIME OF SAMPLING: 99/08/24 13:45 DATE PRINTED:99/09/01

PARAMETER	RESULT
DIBROMOCHLOROMETHANE	< 0.5 MCG/L
1,2-DIBROMOETHANE (EDB)	< 0.5 MCG/L
CHLOROBENZENE	< 0.5 MCG/L
1,1,1,2-TETRACHLOROETHANE	< 0.5 MCG/L
ETHYLBENZENE	< 0.5 MCG/L
M/P-XYLENE	< 0.5 MCG/L
O-XYLENE	< 0.5 MCG/L
STYRENE	< 0.5 MCG/L
ISOPROPYLBENZENE (Cumene)	< 0.5 MCG/L
BROMOFORM	< 0.5 MCG/L
1,1,2,2-TETRACHLOROETHANE	< 0.5 MCG/L
1,2,3-TRICHLOROPROPANE	< 0.5 MCG/L
N-PROPYLBENZENE	< 0.5 MCG/L
BROMOBENZENE	< 0.5 MCG/L
1,3,5-TRIMETHYLBENZENE	< 0.5 MCG/L
O-CHLOROTOLUENE	< 0.5 MCG/L
P-CHLOROTOLUENE	< 0.5 MCG/L
TERT-BUTYLBENZENE	< 0.5 MCG/L
1,2,4-TRIMETHYLBENZENE	< 0.5 MCG/L
SEC-BUTYLBENZENE	< 0.5 MCG/L
4-ISOPROPYLTOLUENE (p-Cymene)	< 0.5 MCG/L
1,3-DICHLOROBENZENE	< 0.5 MCG/L
1,4-DICHLOROBENZENE	< 0.5 MCG/L
N-BUTYLBENZENE	< 0.5 MCG/L
1,2-DICHLOROBENZENE	< 0.5 MCG/L
1,2-DIBROMO-3-CHLOROPROPANE	< 0.5 MCG/L
1,2,4-TRICHLOROBENZENE	< 0.5 MCG/L
HEXACHLOROBUTADIENE (C-46)	< 0.5 MCG/L
NAPHTHALENE	< 0.5 MCG/L
1,2,3-TRICHLOROBENZENE	< 0.5 MCG/L
PH OF VOLATILE ALIQUOT	2

**** END OF REPORT ****

Appendix C: Sections of the Field Data Summary, New York State Superfund Standby Contract, Atlas Missile Sites: S-4, S-6, S-8, and S-12, Plattsburgh Area, New York, September 1999, that apply to S-8

MALCOLM PIRNIE

FIELD DATA SUMMARY

NEW YORK STATE SUPERFUND STANDBY CONTRACT
ATLAS MISSILE SITES: S-4, S-6, S-8, AND S-12
PLATTSBURGH AREA, NEW YORK

WORK ASSIGNMENT D-002852-30

NEW YORK STATE DEPT. OF ENVIRONMENTAL CONSERVATION
DIVISION OF HAZARDOUS WASTE REMEDIATION

SEPTEMBER 1999

MALCOLM PIRNIE, INC.

P. O. Box 1938
Buffalo, New York 14219

0266-337/FDS

MALCOLM PIRNIE

FIELD DATA SUMMARY
NEW YORK STATE SUPERFUND STANDBY CONTRACT
ATLAS MISSILE SITES

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LIST OF FIGURES

MALCOLM PIRNIE

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MALCOLM PIRNIE

1.0 INTRODUCTION

Malcolm Pirnie Inc. has completed the field activities described in the June 1999 New York State Superfund Standby Contract Site Investigation Work Plan for the Atlas Missile Sites: S-4, S-6, S-8, and S-12. This document presents a compilation of field data collected during the investigation conducted from July-September 1999 and includes:

- Site Maps
- Stratigraphic Borehole Logs
- Well Construction Diagrams
- Well Completion
- Well Development Data
- Laboratory Analytical Results

Brief descriptions of the work scope and data collected are presented in the following sections. Interpretations of the data will be presented in a summary report prepared by the New York State Department of Environmental Conservation (NYSDEC).

2.0 SITE MAP PREPARATION

The deep bedrock groundwater monitoring systems at each Atlas Missile site identified above consists of three to four newly installed monitoring wells designated as follows:

Site No.	S-4	S-6	S-8	S-12
Well Nos.	MW-41	MW-61	MW-81	MW-121
	MW-42	MW-62	MW-82	MW-122
	MW-43	MW-63	MW-83	MW-123
		MW-64		MW-124

The site maps, originally presented as Figures 2-1 through 2-4 in the Atlas Missile Work Plan have been modified to include the approximate location of the newly installed monitoring wells. The well locations were selected during the NYSDEC-coordinated site walkover conducted on June 29, 1999. The locations of the new monitoring wells, as shown on the site maps, have not been surveyed to ascertain either vertical or horizontal measurements. Site maps are presented on Figures 2-1 through 2-4.

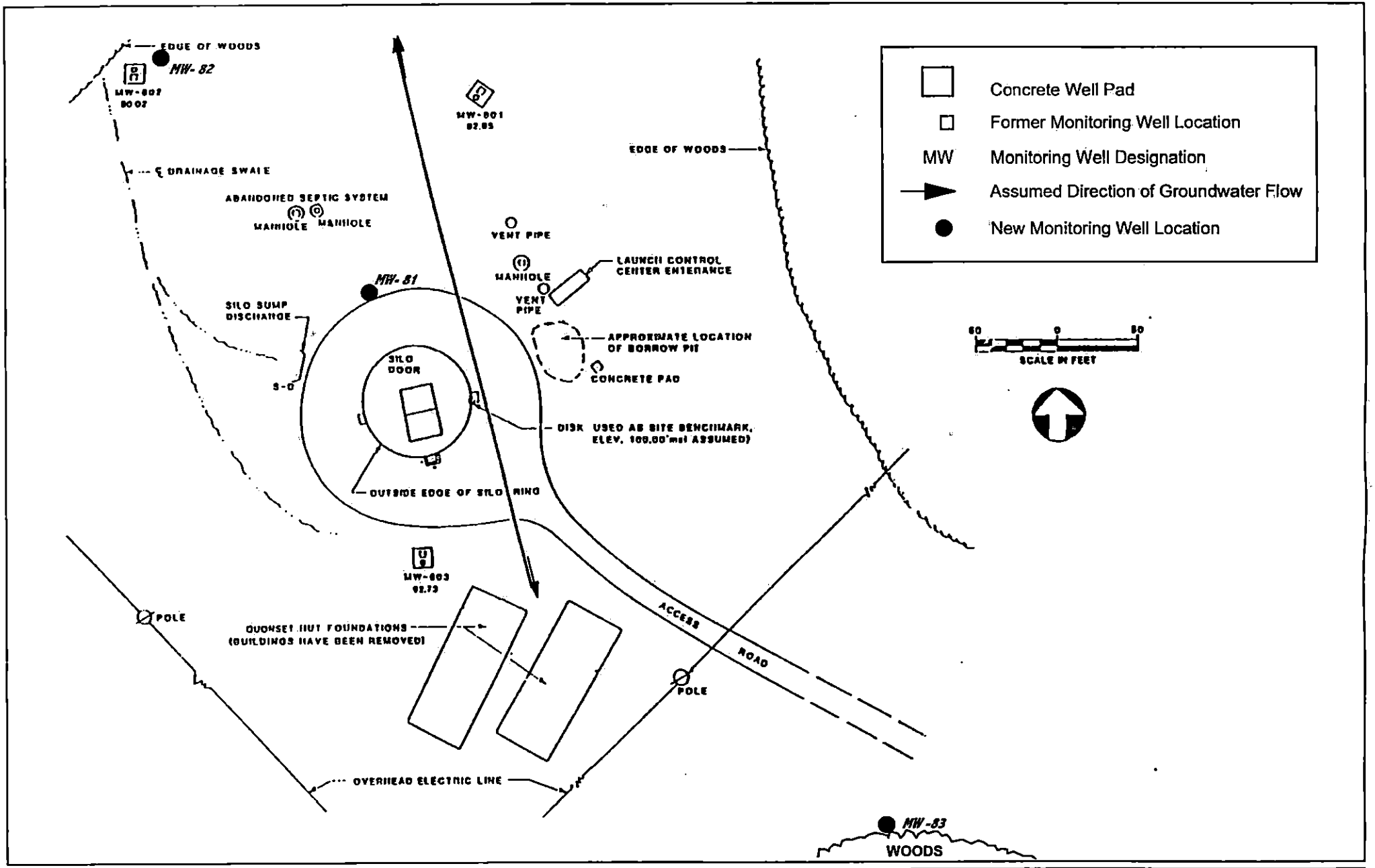
3.0 STRATIGRAPHIC AND WELL CONSTRUCTION LOGS

The drilling program included the drilling and installation of 14 new bedrock groundwater monitoring wells as identified in Section 2.0 above. Mud rotary and air hammer drilling methods were employed to facilitate borehole advancement and monitoring well installation. Representative samples of drill cuttings were collected at five-foot increments during borehole advancement to characterize bedrock stratigraphy. The samples were described on stratigraphic borehole logs by Malcolm Pirnie personnel and are presented in Appendix A. Well construction data is also provided in Appendix A and is summarized in Table 1.

4.0 WELL COMPLETION

Subsequent to advancement of the borehole to total well depth, each well was completed with a locking, permanent well cover affixed to the 6-inch diameter steel casing. All wells were secured with keyed-alike padlocks (masterlock key no. 3252). Appendix C contains one well key.

FIGURE 2-3



MALCOLM PIRNIE

ATLAS SITE S-8
CLAYBURG, NEW YORK

NEW MONITORING WELL LOCATIONS

OCTOBER 1999

MALCOLM PIRNIE

Table 1
Monitoring Well Construction Summary
Atlas Missile Sites (S-4, S-6, S-8 and, S-12)
Plattsburgh Area, New York

Well #	Date Completed	Depth to Bedrock (ft)	Depth of 6" Diameter Casing (ft)	Open Hole Interval	Total Well Depth (ft)
Site S-4					
MW-41	7/26/99	8.0	18.0	18.0 - 200.0	200.0
MW-42	7/23/99	34.5	41.0	41.0 - 200.0	200.0
MW-43	7/27/99	60.0	65.0	65.0 - 200.0[(1)]	200.0
Site S-6					
MW-61	8/9/99	64.0	69.0	69.0 - 200.0	200.0
MW-62	8/13/99	61.0	66.0	66.0 - 200.0	200.0
MW-63	8/16/99	115.0	120.0	120.0 - 200.0	200.0
MW-64	8/17/99	77.0	82.0	82.0 - 200.0	200.0
Site S-8					
MW-81	8/2/99	57.0	61.0	61.0 - 200.0	200.0
MW-82	8/3/99	75.0	80.0	80.0 - 200.0	200.0
MW-83	8/4/99	48.0	53.2	53.2 - 200.0	200.0
Site S-12					
MW-121	8/27/99	54.0	61.0	61.0 - 200.0	200.0
MW-122	8/26/99	65.0	68.0	68.0 - 200.0	200.0
MW-123	8/23/99	68.0	71.0	71.0 - 200.0	188.3
MW-124	9/22/99	89.2	100.0	100.0 - 200.0	200.0

Notes:
All depths are depth below ground surface.
(1) Forty (40) feet of 2-inch sch 40 PVC well materials partially obstruct 160 -200' interval.

5.0 WELL DEVELOPMENT

Prior to development, static water level elevations were measured in all newly installed monitoring wells. Table 2 presents a compilation of water level data measured during the development process. The monitoring wells were then purged and developed in accordance with the procedures specified in the Work Plan. All deep bedrock wells exhibited some well recharge and recovery ranging from a low estimated at less than .5 gallons per minute (gpm) at well location MW-63, to more than 500 gpm at monitoring well MW-124. Well development at all locations was completed using a nominal 4-inch diameter submersible pump capable of purging 8-25 gpm. A summary of field analytical parameters measured during the well development process is presented as Table 2 with the Well Development and Purging Logs in Appendix B.

6.0 GROUNDWATER ANALYTICAL RESULTS

Groundwater was sampled for chlorinated volatile organic compounds (VOCs) that included trichloroethene and its breakdown products (cis-1,2-dichloroethene, trans-1,2 dichloroethene, and vinyl chloride). Three to five groundwater samples were collected from the bedrock at each well location during borehole advancement. Each sample was collected from either an openhole interval, or from a discrete stratigraphic interval that was isolated using a single 4-inch diameter packer assembly. Interval-specific groundwater samples were collected using a precleaned 1¼ -inch PVC or plastic disposable bailer.

Groundwater samples were sent to Friend Laboratory Inc. in Waverly, New York for analyses. Samples were analyzed using Method 8021 within 24 hours of receipt at the laboratory and analytical results were considered during the drilling program for well location and depth decisions. Analytical results for the newly installed groundwater monitoring wells are presented in Appendix D and are summarized in Table 3.

MALCOLM PIRNIE

Table 2
Well Development Summary [1]
Atlas Missile Sites (S-4, S-6, S-8 and, S-12)
Plattsburgh Area, New York

Well #	Date Developed	Well Volume	Purged Volume	pH	Conductivity (µmhos/cm)	Temperature (°F)	Turbidity (NTU)	Appearance	Comments
Site S-4									
MW-41	9/23/99	290.9	300	7.05	629	55.0	35	Clear	-Pumped well to "dry" condition
MW-42	9/23/99	291.8	600	5.21	496	55.5	15	Clear	-Pump installed to 200' bgs, repositioned to 150'bgs
MW-43	9/23/99	300.0	1,500	5.35	515	53.5	14	Clear	-Pump installed to 60' bgs, repositioned to 20' bgs
Site S-6									
MW-61	9/22/99	239.2	230	8.38	260	50.3	36	Green tint	-Well purged "dry", no recharge
MW-62	9/22/99	211.9	210	9.11	298	50.2	>100	Brown, Cloud	-Well purged "dry", no recharge
MW-63	9/22/99	172.7	165	11.40	1040	50.3	>100	Brown, Turbid	-Well purged "dry", no recharge
MW-64	9/22/99	201.2	600	8.39	225	50.1	2	Clear	-Well pumped down to ~110' bgs
Site S-8									
MW-81	9/22/99	274.2	250	9.10	338	47.9	41	Slightly turbid	-Well pumped to "dry" condition, slow recharge
MW-82	9/22/99	292.1	570	7.35	498	46.8	3	Clear	-Well capable of purging to "dryness"
MW-83	9/22/99	276.4	280	11.30	362	47.7	65	Cloudy	-Installed pump @ top and bottom of water column.
Site S-12									
MW-121	9/21/99	286.6	1,200	7.54	4570	49.8	4	Clear	-Purged water from top & bottom of water column
MW-122	9/21/99	285.7	1,000	7.90	2570	50.5	3	Clear	
MW-123	9/21/99	280.5	800	7.51	12860	50.3	7	Clear	-Well capable of purging to "dryness"
MW-124	9/21/99	282.3	360	8.06	3420	50.1	46	Cloudy	-Completed drilling to total depth of 200' bgs, -Interval specific packer testing was not conducted due to extremely fractured character of bedrock, -Purged >2000g of water with air prior to installation of submersible pump

Notes:
(µmhos/cm) - micro mhos per centimeter
°F - degree Farenheit
NTU - Nephelometric turbidity units
[1] Values presented represent final development measurements.

MALCOLM PIRNIE

Table 3
Groundwater Screening Analytical Results
Atlas Missile Sites (S-4, S-6, S-8, S-12)
Plattsburgh Area, New York

Site #	Well #	Sample Depth (ft)	Date Sampled	Analytical Results
S-4	B-41	50 – 80	7/27/99	ND
	"	80 – 120	7/26/99	ND
	"	120 – 160	7/26/99	ND
	"	160 – 200	7/26/99	ND
	B-42	80 – 120	7/23/99	ND
	"	120 – 160	7/23/99	ND
	"	160 – 200	7/23/99	ND
	B-43	65 – 80	7/27/99	ND
	"	80 – 120	7/27/99	ND
	"	120 – 160	7/27/99	ND
	"	160 – 200	7/27/99	ND
S-6	B-61	69 – 200	8/11/99	ND
	B-62	66 – 120	8/13/99	ND
	"	66 – 200	8/17/99	4 ug/l of TCE
	B-63	120 - 200	8/17/99	ND
	B-64	82 – 130	8/17/99	ND
	"	130 – 160	8/17/99	ND
	"	160 – 200	8/17/99	ND
S-8	B-81	61 – 80	7/30/99	ND
	"	80 – 120	8/2/99	ND
	"	120 – 160	8/2/99	ND
	"	160 – 200	8/3/99	ND
	B-82	80 – 110	8/3/99	ND
	"	110 – 140	8/3/99	ND
	"	140 – 170	8/3/99	ND
	"	170 – 200	8/4/99	ND
	B-83	53 – 80	8/4/99	ND
	"	120 – 160	8/4/99	ND
	"	160 – 200	8/4/99	ND
S-12	B-121	61 – 80	8/24/99	ND
	"	80 – 110	8/24/99	ND
	"	110 – 137	8/24/99	ND
	"	135 – 165	8/25/99	ND
	"	170 – 200	8/27/99	ND
	B-122	68 – 80	8/25/99	ND
	"	85 – 115	8/26/99	4 ug/l of cis12DCE
	"	120 – 160	8/26/99	ND
	"	160 – 200	8/26/99	3 ug/l of cis12DCE
	B-123	71 – 90	8/23/99	4 ug/l of cis12DCE
	"	90 – 110	8/23/99	4 ug/l of cis12DCE
	"	110 – 140	8/23/99	3 ug/l of cis12DCE
	"	140 – 170	8/24/99	ND
	"	168 – 188	8/24/99	5 ug/l of cis12DCE
	B-124	100 – 120	8/27/99	3 ug/l of cis12DCE and 1 ug/l of Benz.
	"	100 – 140	9-21-99	ND
	"	100 – 160	9-21-99	5 ug/l of cis12DCE
	"	100 – 180	9-21-99	4 ug/l of cis12DCE
	"	100 – 200	9-21-99	5 ug/l of cis12DCE

Notes: cis12DCE = cis-1,2 dichloroethene TCE = Trichloroethene
ug/l = Micrograms per liter Benz = Benzene

MALCOLM PIRNIE

APPENDIX A

BOREHOLE AND WELL CONSTRUCTION LOGS

FIELD BOREHOLE LOG

CLIENT NYSDEC
PROJECT ATLAS Missle Inv
LOCATION
CONTRACTOR American Auger
METHOD OF BORING: SOIL
ROCK

JOB NO. 0266-337
LOGGED BY JPH
CORE DIA.

BOREHOLE NO. MW-81
STARTED 9:00 A M 7/30 19 99
FINISHED 6:00 P M 8/2 19 99
ELEVATIONS: DATUM

SAMPLE NO.	TYPE	DEPTH	BLOWS "N"	RECOVERY %	MOISTURE TIN NO.	SAMPLE DESCRIPTION: Color, Texture Classification, Compactness/Consistency, Moisture Condition, Weathering/Fracturing, Inclusions, Odor, Etc.	NOTES: Boring, Testing and Sampling Procedures, Water Loss and Gain Drilling and Testing Equipment, Etc.
1		65				Gneiss, gray-pink, quartz w/biotite, feldspar	
2		70				Gneiss A/A	
3		75				Gneiss A/A	
4		80				Gneiss A/A	Stopped drilling ops to conduct sample collection in 61-80' open hole interval
5		85				GNEISS A/A	Parameters: pH @ 11.27; Cond @ 1366 uS/cm; Temp @ 68.2°F
6		90				GNEISS A/A	turbidity >100; Headspace 0.0 ppm
7		95				GNEISS A/A	
8		100				GNEISS A/A	

Sheet No. 1 of 4

MALCOLM

CLIENT NYSDEC

PROJECT ATLAS Missile Inv

LOCATION

CONTRACTOR American Auger

METHOD OF BORING: SOIL

ROCK

JOB NO. 0266-337

LOGGED BY JPH

CORE DIA.

FIELD BOREHOLE LOG

BOREHOLE NO. MW-81

STARTED 9.00 AM 7/30 19 99

FINISHED 6:00 PM 8/2 19 99

ELEVATIONS: DATUM

SAMPLE NO.	TYPE	DEPTH	BLOWS "N"	RECOVERY %	MOISTURE TIN NO.	SAMPLE DESCRIPTION: Color, Texture Classification, Compactness/Consistency, Moisture Condition, Weathering/Fracturing, Inclusions, Odor, Etc.	NOTES: Boring, Testing and Sampling Procedures, Water Loss and Gain Drilling and Testing Equipment, Etc.
9		105				GNEISS, GRAY-BLK, QUARTZ, BIOTITE, FELDSPAR	
10		110				GNEISS - A/A	
11		115				GNEISS A/A	SAMPLE COLLECTED 80-120 INTERVAL
12		120				GNEISS A/A	
13		125				GNEISS A/A	
14		130				GNEISS A/A	SAMPLED 120-140 INTERVAL
15		135				GNEISS A/A - FRACTURE AT 135'.	
16		140				GNEISS A/A	

MALCOLM

CLIENT NYSDEC
PROJECT ATLAS Missile Inv
LOCATION
CONTRACTOR American Auger
METHOD OF BORING: SOIL
ROCK
JOB NO. 0266-337
LOGGED BY JPH
CORE DIA.

FIELD BOREHOLE LOG

BOREHOLE NO. MW-81
STARTED 9:00 AM 8/30 19 99
FINISHED 6:00 PM 8/2 19 99
ELEVATIONS: DATUM

SAMPLE NO.	TYPE	DEPTH	BLOWS "N"	RECOVERY %	MOISTURE TIN NO.	SAMPLE DESCRIPTION: Color, Texture Classification, Compactness/Consistency, Moisture Condition, Weathering/Fracturing, Inclusions, Oder, Etc.	NOTES: Boring, Testing and Sampling Procedures, Water Loss and Gain Drilling and Testing Equipment, Etc.
17		145				GNEISS, GRAY-PINK, QUARTZ, BIOTITE, FELDSPAR	
18		150				GNEISS A/A	
19		155				GNEISS A/A	
20		160				GNEISS A/A	SAMPLED 160-200 INTERVAL
21		165				GNEISS A/A	
22		170				GNEISS A/A, BIOTITE CONTENT INCREASES.	
23		175				GNEISS A/A, SIGNIFICANT BIOTITE CONTENT	
24		180				GNEISS A/A SIGNIFICANT BIOTITE CONTENT	

MALCOLM

FIELD BOREHOLE LOG

CLIENT NYSDEC
PROJECT ATLAS MISSILE INV
LOCATION
CONTRACTOR AMERICAN AUGER
METHOD OF BORING : SOIL
ROCK

JOB NO. 0266-337
LOGGED BY JPH
CORE DIA.

BOREHOLE NO. MW-81
STARTED 900 AM 7/30 19 99
FINISHED 6:00 PM 8/2 19 99
ELEVATIONS: DATUM

SAMPLE NO.	TYPE	DEPTH	BLOWS "N"	RECOVERY %	MOISTURE TIN NO.	SAMPLE DESCRIPTION: Color, Texture Classification, Compactness/Consistency, Moisture Condition, Weathering/Fracturing, Inclusions, Odor, Etc.	NOTES: Boring, Testing and Sampling Procedures, Water Loss and Gain Drilling and Testing Equipment, Etc.
25		185				GNEISS A/A	
26		190				GNEISS A/A	
27		195				GNEISS A/A	
28						END OF BORING	

Sheet No. 4 of 4

MALCOLM

WELL NO: CAW-01

MALCOLM PIRNIE

BEDROCK

MONITORING WELL SHEET

PROJECT: NYSDEC STANDBY Atlas Missile Proj. START DATE: 7/28/99 END DATE: 8/2/99

PROJECT NO.: 0266-337 FIELD GEOLOGIST: J.P. Hilton

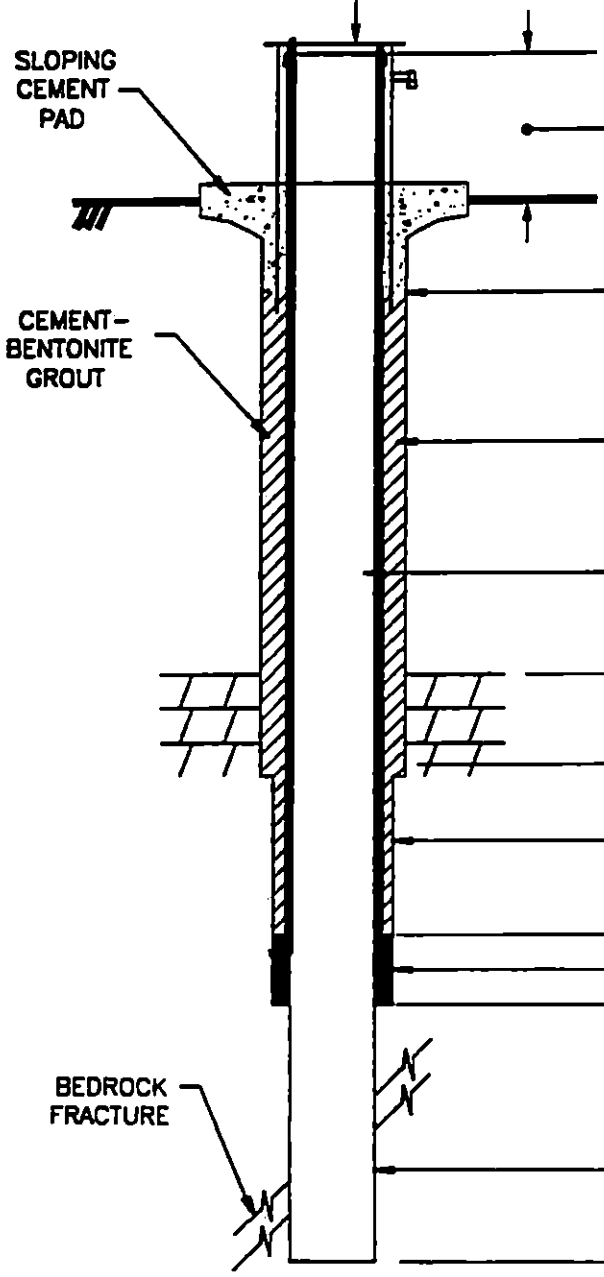
LOCATION: S-8 Clayburg Site

DRILLING CO.: American Auger

DRILLER (S): R. Baye

DRILLING METHOD (S): 9 7/8" RB, 6" Air Hammer

DEVELOPMENT METHOD (S): 4" submersible Pmp



SIZE AND LENGTH OF LOCKABLE PROTECTIVE STEEL CASING: 6" x 61'

LOCKED? X YES ___ NO

STICK-UP: NONE @ GRADE As flush-mount

DEPTH TO TOP OF GROUT/ BOTTOM OF CEMENT: @ GRADE

BOREHOLE DIAMETER: 10"

CASING DIAMETER AND MATERIAL: 6" Black Steel

WEATHERED ROCK DEPTH: 55'

COMPETENT ROCK DEPTH: 57'

ROCK SOCKET DIAMETER: 10"

DEPTH: NA

PELLET SIZE: NA

DEPTH: 61'

HOLE DIAMETER (CORE, ROLLER BIT, HAMMER): 6"

DEPTH: 200'

NOTE: DEPTHS ARE FEET BELOW GRADE

CLIENT NYSDEC

PROJECT ATLAS MISSILE INV

LOCATION

CONTRACTOR AMERICAN AUGER

METHOD OF BORING: SOIL

ROCK

JOB NO. 02666-337

LOGGED BY JPH

CORE DIA.

FIELD BOREHOLE LOG

BOREHOLE NO. MW-82

STARTED 1000 AM 8/3 19 99

FINISHED 1830 M 8/3 19 99

ELEVATIONS: DATUM

SAMPLE NO.	TYPE	DEPTH	BLOWS "N"	RECOVERY %	MOISTURE TIN NO.	SAMPLE DESCRIPTION: Color, Texture Classification, Compactness/Consistency, Moisture Condition, Weathering/Fracturing, Inclusions, Oder, Etc.	NOTES: Boring, Testing and Sampling Procedures, Water Loss and Gain Drilling and Testing Equipment, Etc.
1		80				GNEISS - GRAY-BROWN. QUARTZ, BIOTITE, FELDSPAR	SAMPLED INTERVAL 80-110
2		85				GNEISS - SAME A/A	
3		90				GNEISS - SAME A/A	
4		95				GNEISS - SAME A/A, SLIGHTLY GREENISH HUE	
5		100				GNEISS - SAME A/A	
6		105				GNEISS - SAME A/A - GRAY - TAN COLOR	
7		110				GNEISS SAME A/A - DARK COLOR DUE TO HIGH BIOTITE CONTENT	
8		115				GNEISS SAME A/A	

Sheet No. 1 of

MALCOLM

CLIENT NYSDEC

PROJECT ATLAS MISSILE INV

LOCATION

CONTRACTOR AMERICAN AUGER

METHOD OF BORING: SOIL

ROCK

JOB NO. 0266-337

LOGGED BY JPH

CORE DIA.

FIELD BOREHOLE LOG

BOREHOLE NO. MW-82

STARTED 1000 hr M 8/3 19 99

FINISHED 1830 M 8/3 19 99

ELEVATIONS: DATUM

SAMPLE NO.	TYPE	DEPTH	BLOWS "N"	RECOVERY %	MOISTURE TIN NO.	SAMPLE DESCRIPTION: Color, Texture Classification, Compactness/Consistency, Moisture Condition, Weathering/Fracturing, Inclusions, Odor, Etc.	NOTES: Boring, Testing and Sampling Procedures, Water Loss and Gain Drilling and Testing Equipment, Etc.
9		120				GNEISS PINK-GRAY - QUARTZ, BIOTITE, FELDSPAR	
10		125				GNEISS - SAME A/A	
11		130				GNEISS - SAME A/A	
12		135				GNEISS - SAME A/A	
13		140				GNEISS - SAME A/A	
14		145				GNEISS - SAME A/A	
15		150				GNEISS - SAME A/A	
16		155				GNEISS - SAME A/A	

MALCOLM

CLIENT NYSDEC
PROJECT ATLAS Missile Inv
LOCATION
CONTRACTOR American Auger
METHOD OF BORING: SOIL
ROCK

JOB NO. 0266-337

LOGGED BY JPH

CORE DIA.

FIELD BOREHOLE LOG

BOREHOLE NO. MW-82
STARTED 1000 M 8/3 19 99
FINISHED 1830 M 19 99
ELEVATIONS: DATUM

SAMPLE NO.	TYPE	DEPTH	BLOWS "N"	RECOVERY %	MOISTURE TIN NO.	SAMPLE DESCRIPTION: Color, Texture Classification, Compactness/Consistency, Moisture Condition, Weathering/Fracturing, Inclusions, Odor, Etc.	NOTES: Boring, Testing and Sampling Procedures, Water Loss and Gain Drilling and Testing Equipment, Etc.
17		160				SAME A/A	
18		165				SAME A/A	
19		170				SAME A/A	
20		175				SAME A/A	
21		180				SAME A/A	
22		185				SAME A/A	
23		190				SAME A/A	
24		195				SAME A/A	
						END OF BORING AT 200'	

MALCOLM

MALCOLM PIRNIE

WELL NO. 2SW 12

BEDROCK

MONITORING WELL SHEET

PROJECT NYSDEC STANDBY Atlas Missle Proj. START DATE 7/28/99 END DATE 8/3/99

PROJECT NO. 0266-337 FIELD GEOLOGIST J.P. Hilton

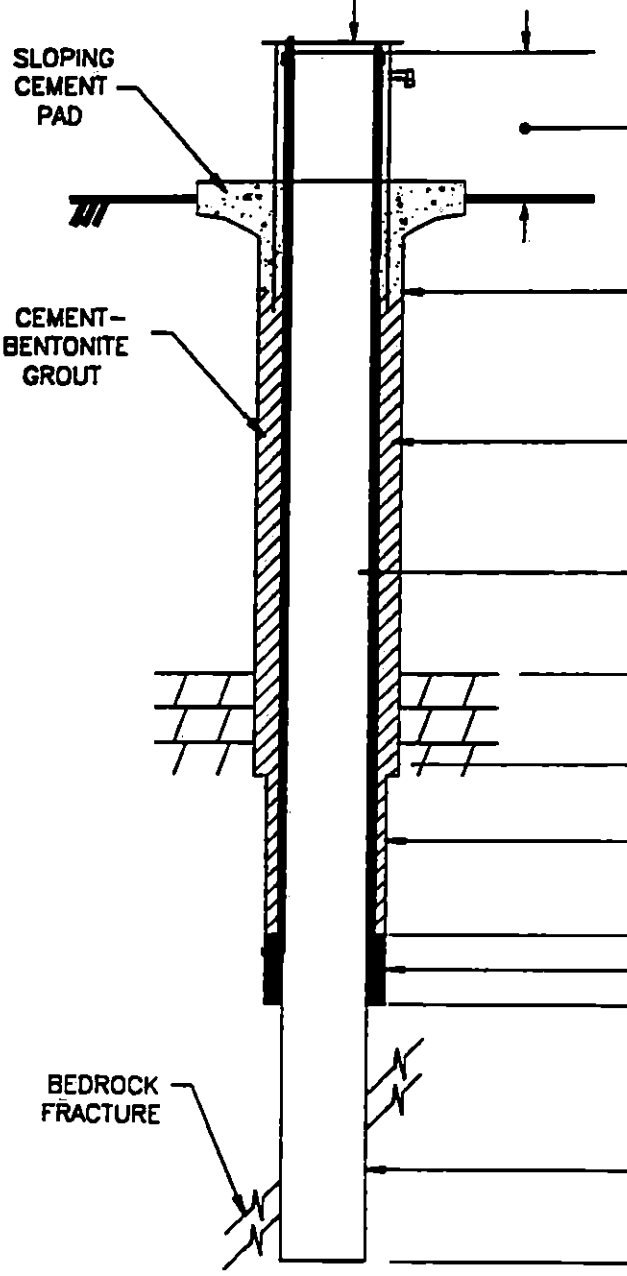
LOCATION S-8 Clayburg Site

DRILLING CO. American Auger

DRILLER (S) R. Baye

DRILLING METHOD (S) 9 7/8" RB 6" Air Hammer

DEVELOPMENT METHOD (S) 4" submersible Pump



SIZE AND LENGTH OF LOCKABLE PROTECTIVE STEEL CASING 6" X 8Z'

LOCKED? X YES ___ NO

STICK-UP 2.0'

DEPTH TO TOP OF GROUT/ BOTTOM OF CEMENT @ grADE

BOREHOLE DIAMETER 10"

CASING DIAMETER AND MATERIAL 6" Black Steel

WEATHERED ROCK DEPTH 75'

COMPETENT ROCK DEPTH NA

ROCK SOCKET DIAMETER 10"

DEPTH NA

PELLET SIZE NA

DEPTH 80'

HOLE DIAMETER 6" (CORE, ROLLER BIT, HAMMER)

DEPTH 200'

NOTE: DEPTHS ARE FEET BELOW GRADE

CLIENT NYSDEC

PROJECT ATLAS MISSILE INV

LOCATION

CONTRACTOR AMERICAN AUGER

METHOD OF BORING : SOIL

ROCK

JOB NO. 0266-337

LOGGED BY JPH

CORE DIA.

FIELD BOREHOLE LOG

BOREHOLE NO. MW-03

STARTED 1000 M 8/4 19 99

FINISHED 1715 M 8/4 19 99

ELEVATIONS: DATUM

SAMPLE NO.	TYPE	DEPTH	BLOWS "N"	RECOVERY %	MOISTURE TIN NO.	SAMPLE DESCRIPTION: Color, Texture Classification, Compactness/Consistency, Moisture Condition, Weathering/Fracturing, Inclusions, Odor, Etc.	NOTES: Boring, Testing and Sampling Procedures, Water Loss and Gain Drilling and Testing Equipment, Etc.
1		53				GNEISS - GRAY - GREEN - QUARTZ - BIOTITE - FELDSPAR	
2		55				SAME A/A	
3		60				SAME A/A	
4		65				SAME A/A	
5		70				SAME A/A	
6		75				SAME A/A	
7		80				SAME A/A	
8		85				SAME A/A	

MALCOLM

CLIENT NYSDEC

PROJECT ATLAS Missile Inv

LOCATION

CONTRACTOR American Auger

METHOD OF BORING: SOIL

ROCK

JOB NO. 0266-337

LOGGED BY JPH

CORE DIA.

FIELD BOREHOLE LOG

BOREHOLE NO. MW-83

STARTED 1000 M 8/4 19 99

FINISHED 1715 M 8/4 19 99

ELEVATIONS: DATUM

SAMPLE NO.	TYPE	DEPTH	BLOWS "N"	RECOVERY %	MOISTURE TIN NO.	SAMPLE DESCRIPTION: Color, Texture Classification, Compactness/Consistency, Moisture Condition, Weathering/Fracturing, Inclusions, Odor, Etc.	NOTES: Boring, Testing and Sampling Procedures, Water Loss and Gain Drilling and Testing Equipment, Etc.
9		90				SAME A/A	
10		95				SAME A/A	
11		100				SAME A/A	
12		105				SAME A/A	
13		110				SAME A/A	
14		115				SAME A/A	
15		120				SAME A/A	
16		125				SAME A/A	

MALCOLM

CLIENT NYSDEC

PROJECT ATLAS Missile INV

LOCATION

CONTRACTOR American Auger

METHOD OF BORING: SOIL

ROCK

JOB NO. 0266-337

LOGGED BY JPH

CORE DIA.

FIELD BOREHOLE LOG

BOREHOLE NO. MW-83

STARTED 1000 M 8/4 19 99

FINISHED 1115 M 8/4 19 99

ELEVATIONS: DATUM

SAMPLE NO.	TYPE	DEPTH	BLOWS "N"	RECOVERY %	MOISTURE TIN NO.	SAMPLE DESCRIPTION: Color, Texture Classification, Compactness/Consistency, Moisture Condition, Weathering/Fracturing, Inclusions, Oder, Etc.	NOTES: Boring, Testing and Sampling Procedures, Water Loss and Gain Drilling and Testing Equipment, Etc.
17		130				SAME A/A	
18		135				SAME A/A	
19		140				SAME A/A	
20		145				SAME A/A	
21		150				SAME A/A	
22		155				SAME A/A	
23		160				SAME A/A	
24		165				SAME A/A	

MALCOLM

CLIENT NYSDEC

PROJECT ATLAS MISSILE INV

LOCATION

CONTRACTOR AMERICAN AUGER

METHOD OF BORING : SOIL

ROCK

JOB NO. 0266-337

LOGGED BY JPH

CORE DIA.

FIELD BOREHOLE LOG

BOREHOLE NO. MW-83

STARTED 1000 M 8/4 19 99

FINISHED 1715 M 8/4 19 99

ELEVATIONS: DATUM

SAMPLE NO.	TYPE	DEPTH	BLOWS "N"	RECOVERY %	MOISTURE TIN NO.	SAMPLE DESCRIPTION: Color, Texture Classification, Compactness/Consistency, Moisture Condition, Weathering/Fracturing, Inclusions, Oder, Etc.	NOTES: Boring, Testing and Sampling Procedures, Water Loss and Gain Drilling and Testing Equipment, Etc.
25		170				SAME A/A	
26		175				SAME A/A	
27		180				SAME A/A	
28		185				SAME A/A	
29		190				SAME A/A	
30		195				SAME A/A	
						END OF BORING	

Sheet No. 4 of 4

MALCOLM

MALCOLM PIRNIE

WELL NO. MW 53

BEDROCK

MONITORING WELL SHEET

PROJECT NYSDEC STANDBY Atlas Missile Proj. START DATE 7/29/99 END DATE 8/4/99

PROJECT NO. 0266-337 FIELD GEOLOGIST J.P. Hilton

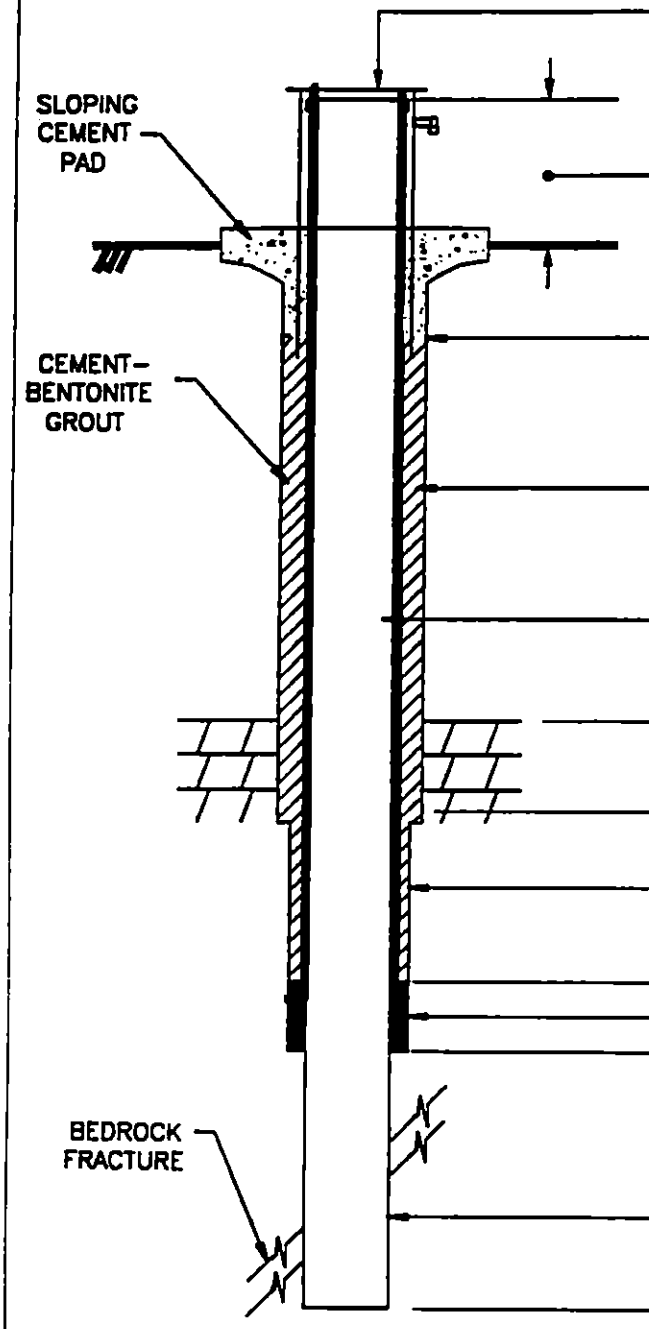
LOCATION S-8 Clayburg Site

DRILLING CO. American Auger

DRILLER (S) R. Baye

DRILLING METHOD (S) 9 7/8" RB
6" Air Hammer

DEVELOPMENT METHOD (S) 4" submersible Pmp



SIZE AND LENGTH OF LOCKABLE PROTECTIVE STEEL CASING 6" X 55'

LOCKED? X YES ___ NO

STICK-UP 1.8'

DEPTH TO TOP OF GROUT/ BOTTOM OF CEMENT @ GRADE

BOREHOLE DIAMETER 10"

CASING DIAMETER AND MATERIAL 6" Black Steel

WEATHERED ROCK DEPTH 48'

COMPETENT ROCK DEPTH NA

ROCK SOCKET DIAMETER 10"

DEPTH NA

PELLET SIZE NA

DEPTH 53.2'

HOLE DIAMETER (CORE, ROLLER BIT, HAMMER) 6"

DEPTH 200'

NOTE: DEPTHS ARE FEET BELOW GRADE

MALCOLM PIRNIE

APPENDIX B

WELL DEVELOPMENT RECORDS

MALCOLM PIRNIE

WELL DEVELOPMENT / PURGING LOG

PROJECT TITLE: NYSDEC ATLAS MISSLE PROJECT

PROJECT NO. : 0266-337

STAFF: J.P. HILTON

DATE: 9/22/99

WELL NO.: MW- 81

(1) TOTAL CASING AND SCREEN LENGTH (ft.): 200.8

(2) CASING INTERNAL DIAMETER (in.): 6"

(3) WATER LEVEL BELOW TOP OF CASING (ft.): 18.0'

(4) VOLUME OF WATER IN CASING (gal.): 274.2

WELL I.D.	VOL. GAL/Ft.
1"	0.04
2"	0.17
3"	0.38
4"	0.66
5"	1.04
6"	1.50
8"	2.60

$V = 0.0408 [(2)^2 \times \{ (1) - (3) \}] =$ _____ GAL.

8:40 9:30

PARAMETERS	ACCUMULATED VOLUME PURGED (GALLONS)										
	200	250									
pH	9.3	9.1									
CONDUCTIVITY	314	338									
TEMPERATURE	48.1	47.9									
TURBIDITY	28	41									
APPEARANCE	green tint	slightly turbid									

COMMENTS: Purged and developed using a 4-inch dia. submersible pump.

- Well pumped to "dry" condition, slow recharge

MALCOLM PIRNIE

WELL DEVELOPMENT / PURGING LOG

PROJECT TITLE: NYSDEC ATLAS MISSLE PROJECT

PROJECT NO. : 0266-337

STAFF: J.P. HILTON

DATE: 9/22/99

WELL NO.: MW- 82

(1) TOTAL CASING AND SCREEN LENGTH (ft.): 202.8

(2) CASING INTERNAL DIAMETER (in.): 6"

(3) WATER LEVEL BELOW TOP OF CASING (ft.): 8.04

(4) VOLUME OF WATER IN CASING (gal.): 292.1

WELL I.D.	VOL. GAL/Ft.
1"	0.04
2"	0.17
3"	0.38
4"	0.66
5"	1.04
6"	1.50
8"	2.60

$V = 0.0408 [(2)^2 \times \{ (1) - (3) \}] =$ _____ GAL.

10:20 10:23 10:25 10:48 10:53 10:59

PARAMETERS	ACCUMULATED VOLUME PURGED (GALLONS)										
	200	250	300	400	500	570					
pH	8.56	8.25	8.23	9.1	8.6	7.35					
CONDUCTIVITY	478	474	472	498	496	498					
TEMPERATURE	47	47.4	47.9	47.8	47.1	46.8					
TURBIDITY	35	30	41	13	4	3					
APPEARANCE	green tint	green tint	green tint	clear	clear	clear					

COMMENTS: Purged and developed using a 4-inch dia. submersible pump.

- well capable of purging to "dryness" @ 25gpm
- yeild estimated @ ≤20gpm

MALCOLM PIRNIE

WELL DEVELOPMENT / PURGING LOG

PROJECT TITLE: NYSDEC ATLAS MISSLE PROJECT

PROJECT NO. : 0266-337

STAFF: J.P. HILTON

DATE: 9/22/99

WELL NO.: MW- 83

(1) TOTAL CASING AND SCREEN LENGTH (ft.): 203.6

(2) CASING INTERNAL DIAMETER (in.): 6"

(3) WATER LEVEL BELOW TOP OF CASING (ft.): 19.32

(4) VOLUME OF WATER IN CASING (gal.): 276.4

WELL I.D.	VOL. GAL/Ft.
1"	0.04
2"	0.17
3"	0.38
4"	0.66
5"	1.04
6"	1.50
8"	2.60

$V = 0.0408 [(2)^2 \times \{ (1) - (3) \}] =$ _____ GAL.

8:45 9:17

PARAMETERS	ACCUMULATED VOLUME PURGED (GALLONS)										
	200	250	280								
pH	11.2	11.3	11.3								
CONDUCTIVITY	484	489	362								
TEMPERATURE	49.7	48.8	47.7								
TURBIDITY	4	16	65								
APPEARANCE	clear	clear	cloudy								

COMMENTS: Purged and developed using a 4-inch dia. submersible pump.

- installed pump at the top and bottom of water column
- Maximum well yeild estimated @ 10 gpm
- Elevated pH attributed to grout @ casing/bedrock interface

MALCOLM PIRNIE

APPENDIX D

ANALYTICAL RESULTS

MALCOLM PIRNIE

SITE S-8

FLI
FRIEND LABORATORY I · N · C

ONE RESEARCH CIRCLE WAVERLY, NY 14892-1532
TELEPHONE (607) 565-3500 FAX (607) 565-4083

DATE 04-AUG-1999

LAB SAMPLE ID : L36662-1

Malcolm Pirnie, Inc. - Orchard Park
Jim Richert
40 Centre Drive
Buffalo, NY 14219

SAMPLE SOURCE	0266-337 S-8 B-81-99
ORIGIN	B-81 (61-80)
DESCRIPTION	GRAB
SAMPLED ON	30-JUL-99 00:00 by CLIENT
DATE RECEIVED	02-AUG-99 08:14
P.O. NO.	N/A

Analysis Performed	Result	Units	Detection Limit	Date Analyzed	Method	Notebook Reference
EPA 8021						
Vinyl chloride	U	ug/l	1	02-AUG-99	EPA 8021	99-111-1763
trans-1,2-Dichloroethene	U	ug/l	1	02-AUG-99	EPA 8021	99-111-1763
cis-1,2-Dichloroethene	U	ug/l	1	02-AUG-99	EPA 8021	99-111-1763
Trichloroethene	U	ug/l	1	02-AUG-99	EPA 8021	99-111-1763
Surrogate Recovery:						
CFB-1	61	%				99-111-1763
CFB-2	81	%				99-111-1763

QC NY 10252 NJ 73168 PA 68180 EPA NY 00033

Approved by: _____ Lab Director

KEY: ND or U = None Detected < = less than ug/L = micrograms per liter (equivalent to parts per billion)
mg/L = milligrams per liter (equivalent to parts per million) mg/kg = milligrams per kilogram (equivalent to parts per million)
B = analyte was detected in the method or trip blank J = result estimated below the quantitation limit

FLI
FRIEND LABORATORY INC

ONE RESEARCH CIRCLE WAVERLY, NY 14892-1532
TELEPHONE (607) 565-3500 FAX (607) 565-4083

DATE 04-AUG-1999

LAB SAMPLE ID : L36662-2

Malcolm Pirnie, Inc. - Orchard Park
Jim Richert
40 Centre Drive
Buffalo, NY 14219

SAMPLE SOURCE	:	FRIEND LABORATORY, INC.
ORIGIN	:	95-045-87-28
DESCRIPTION	:	TRIP BLANK
SAMPLED ON	:	30-JUL-99 00:00 by FLI/BB
DATE RECEIVED	:	02-AUG-99 08:14
P.O. NO.	:	N/A

Analysis Performed	Result	Units	Detection Limit	Date Analyzed	Method	Notebook Reference
EPA 8021						
Vinyl chloride	U	ug/l	1	02-AUG-99	EPA 8021	99-111-1761
trans-1,2-Dichloroethene	U	ug/l	1	02-AUG-99	EPA 8021	99-111-1761
cis-1,2-Dichloroethene	U	ug/l	1	02-AUG-99	EPA 8021	99-111-1761
Trichloroethene	U	ug/l	1	02-AUG-99	EPA 8021	99-111-1761
Surrogate Recovery:						
CFB-1	61	%				99-111-1761
CFB-2	81	%				99-111-1761

QC NY 10252 NJ 73168 PA 68180 EPA NY 00033

Approved by: _____
Lab Director

KEY: ND or U = None Detected < = less than ug/L = micrograms per liter (equivalent to parts per billion)
mg/L = milligrams per liter (equivalent to parts per million) mg/kg = milligrams per kilogram (equivalent to parts per million)
B = analyte was detected in the method or trip blank J = result estimated below the quantitation limit

MALCOLM PIRNIE, INC.

CHAIN OF CUSTODY RECORD

PROJECT NO.: 0266-337 | SITE NAME: S-8 / B-81-99

SAMPLERS (SIGNATURE): John P. Hilton

STATION NO.	DATE	TIME	COMP.	GRAB	STATION LOCATION	NO. OF CONTAINERS	40 ML VOAs Method 8021						REMARKS
1	7/30			X	B-81 (61-80)	2	2						L36662 -1
					Trip Blanks	2	2						-2
					95-045-87-28								Note: 24 hr turn-around required
					John's #bottles	4							Analyses to include:
													TCE
													Cis 1,2-~~DEC~~ DCE
					Temperature bottle								Trans 1,2 DCE
					included (coke bottle)								Vinyl Chloride

RELINQUISHED BY (SIGNATURE):	DATE/TIME:	RECEIVED BY (SIGNATURE):	RELINQUISHED BY (SIGNATURE):	DATE/TIME:	RECEIVED BY (SIGNATURE):
John P. Hilton	7/30/99 15:00				
RELINQUISHED BY (SIGNATURE):	DATE/TIME:	RECEIVED BY (SIGNATURE):	RELINQUISHED BY (SIGNATURE):	DATE/TIME:	RECEIVED BY (SIGNATURE):
RELINQUISHED BY (SIGNATURE):	DATE/TIME:	RECEIVED FOR LABORATORY BY (SIGNATURE):	DATE/TIME:	REMARKS: Analyses per Agreement w/ K. Wager	
		Doris Jones	8/2/99 8:14		

Distribution Original accompanies shipment, copy to coordinator field files

1.5 trip blanks received

FLI
FRIEND LABORATORY INC

ONE RESEARCH CIRCLE WAVERLY, NY 14892-1532
TELEPHONE (607) 565-3500 FAX (607) 565-4083

DATE 05-AUG-1999

LAB SAMPLE ID : L36692-1

Malcolm Pirnie, Inc. - Orchard Park
Jim Richert
40 Centre Drive
Buffalo, NY 14219

SAMPLE SOURCE	0266-337 5-8/B-81
ORIGIN	B-81 (80-120)
DESCRIPTION	GRAB
SAMPLED ON	02-AUG-99 14:15 by CLIENT
DATE RECEIVED	03-AUG-99 11:11
P.O. NO.	N/A

Analysis Performed	Result	Units	Detection Limit	Date Analyzed	Method	Notebook Reference
EPA 8021						
Vinyl chloride	U	ug/l	1	04-AUG-99	EPA 8021	99-111-1788
trans-1,2-Dichloroethene	U	ug/l	1	04-AUG-99	EPA 8021	99-111-1788
cis-1,2-Dichloroethene	U	ug/l	1	04-AUG-99	EPA 8021	99-111-1788
Trichloroethene	U	ug/l	1	04-AUG-99	EPA 8021	99-111-1788
Surrogate Recovery:						
CFB-1	86	%				99-111-1788
CFB-2	80	%				99-111-1788

QC 30 NY 10252 NJ 73168 PA 68180 EPA NY 00033

Approved by: _____ Lab Director

KEY: ND or U = None Detected < = less than ug/L = micrograms per liter (equivalent to parts per billion)
mg/L = milligrams per liter (equivalent to parts per million) mg/kg = milligrams per kilogram (equivalent to parts per million)
B = analyte was detected in the method or trip blank J = result estimated below the quantitation limit

FLI
FRIEND LABORATORY I · N · C

ONE RESEARCH CIRCLE WAVERLY, NY 14892-1532
TELEPHONE (607) 565-3500 FAX (607) 565-4083

DATE 05-AUG-1999

LAB SAMPLE ID : L36692-2

Malcolm Pirnie, Inc. - Orchard Park
Jim Richert
40 Centre Drive
Buffalo, NY 14219

SAMPLE SOURCE	0266-337 5-8/B-81
ORIGIN	B-81 (120-160)
DESCRIPTION	GRAB
SAMPLED ON	02-AUG-99 16:30 by CLIENT
DATE RECEIVED	03-AUG-99 11:11
P.O. NO.	N/A

Analysis Performed	Result	Units	Detection Limit	Date Analyzed	Method	Notebook Reference
EPA 8021						
Vinyl chloride	U	ug/l	1	04-AUG-99	EPA 8021	99-111-1795
trans-1,2-Dichloroethene	U	ug/l	1	04-AUG-99	EPA 8021	99-111-1795
cis-1,2-Dichloroethene	U	ug/l	1	04-AUG-99	EPA 8021	99-111-1795
Trichloroethene	U	ug/l	1	04-AUG-99	EPA 8021	99-111-1795
Surrogate Recovery:						
CFB-1	77	%				99-111-1795
CFB-2	77	%				99-111-1795

QC NY 10252 NJ 73168 PA 68180 EPA NY 00033

Approved by: _____
Lab Director

KEY: ND or U = None Detected < = less than ug/L = micrograms per liter (equivalent to parts per billion)
mg/L = milligrams per liter (equivalent to parts per million) mg/kg = milligrams per kilogram (equivalent to parts per million)
B = analyte was detected in the method or trip blank J = result estimated below the quantitation limit

FLI
FRIEND LABORATORY I · N · C

ONE RESEARCH CIRCLE WAVERLY, NY 14892-1532
TELEPHONE (607) 565-3500 FAX (607) 565-4083

DATE 05-AUG-1999

LAB SAMPLE ID : L36692-3

Malcolm Pirnie, Inc. - Orchard Park
Jim Richert
40 Centre Drive
Buffalo, NY 14219

SAMPLE SOURCE	0266-337 5-8/B-81
ORIGIN	5-8 DUPE
DESCRIPTION	GRAB
SAMPLED ON	02-AUG-99 00:00 by CLIENT
DATE RECEIVED	03-AUG-99 11:11
P.O. NO.	N/A

Analysis Performed	Result	Units	Detection Limit	Date Analyzed	Method	Notebook Reference
EPA 8021						
Vinyl chloride	U	ug/l	1	04-AUG-99	EPA 8021	99-111-1796
trans-1,2-Dichloroethene	U	ug/l	1	04-AUG-99	EPA 8021	99-111-1796
cis-1,2-Dichloroethene	U	ug/l	1	04-AUG-99	EPA 8021	99-111-1796
Trichloroethene	U	ug/l	1	04-AUG-99	EPA 8021	99-111-1796
Surrogate Recovery:						
CFB-1	90	%				99-111-1796
CFB-2	80	%				99-111-1796

QC NY 10252 NJ 73168 PA 68180 EPA NY 00033

Approved by: _____ Lab Director

KEY: ND or U = None Detected < = less than ug/L = micrograms per liter (equivalent to parts per billion)
mg/L = milligrams per liter (equivalent to parts per million) mg/kg = milligrams per kilogram (equivalent to parts per million)
B = analyte was detected in the method or trip blank J = result estimated below the quantitation limit

FLI
FRIEND LABORATORY I · N · C

ONE RESEARCH CIRCLE WAVERLY, NY 14892-1532
TELEPHONE (607) 565-3500 FAX (607) 565-4083

DATE 05-AUG-1999

LAB SAMPLE ID : L36692-4

Malcolm Pirnie, Inc. - Orchard Park
Jim Richert
40 Centre Drive
Buffalo, NY 14219

SAMPLE SOURCE	FRIEND LABORATORY, INC.
ORIGIN	TRIP BLANK
DESCRIPTION	GRAB
SAMPLED ON	02-AUG-99 00:00 by LAB
DATE RECEIVED	03-AUG-99 11:11
P.O. NO.	N/A

Analysis Performed	Result	Units	Detection Limit	Date Analyzed	Method	Notebook Reference
EPA 8021						
Vinyl chloride	U	ug/l	1	04-AUG-99	EPA 8021	99-111-1787
trans-1,2-Dichloroethene	U	ug/l	1	04-AUG-99	EPA 8021	99-111-1787
cis-1,2-Dichloroethene	U	ug/l	1	04-AUG-99	EPA 8021	99-111-1787
Trichloroethene	U	ug/l	1	04-AUG-99	EPA 8021	99-111-1787
Surrogate Recovery:						
CFB-1	93	%				99-111-1787
CFB-2	76	%				99-111-1787

QC NY 10252 NJ 73168 PA 68180 EPA NY 00033

Approved by: _____ Lab Director

KEY: ND or U = None Detected < = less than ug/L = micrograms per liter (equivalent to parts per billion)
mg/L = milligrams per liter (equivalent to parts per million) mg/kg = milligrams per kilogram (equivalent to parts per million)
B = analyte was detected in the method or trip blank J = result estimated below the quantitation limit

MALCOLM PIRNIE, INC.

CHAIN OF CUSTODY RECORD

PROJECT NO.: 0266-337

SITE NAME: S-8 / B-81

SAMPLERS (SIGNATURE): DJ & BH

LOC: L36692

STATION NO.	DATE	TIME	COMP.	GRAB	STATION LOCATION	NO. OF CONTAINERS							REMARKS
1	8/2	1415		X	B-81 (80-120)	2	X		-1				ANALYZE FOR:
2	8/2	1630		X	B-81 (120-160)	2	X		-2				TCE
3	8/2	—		X	S-8 DUPE	2	X		-3				cis 1,2-DCE
4	8/2	—		X	TRIP BLANK	2	X		-4				Trans 1,2-DCE
													VINYL CHLORIDE
													24 HOUR TAT

RELINQUISHED BY (SIGNATURE):	DATE/TIME:	RECEIVED BY (SIGNATURE):	RELINQUISHED BY (SIGNATURE):	DATE/TIME:	RECEIVED BY (SIGNATURE):
DJ & BH	8/2/99 1830				
RELINQUISHED BY (SIGNATURE):	DATE/TIME:	RECEIVED BY (SIGNATURE):	RELINQUISHED BY (SIGNATURE):	DATE/TIME:	RECEIVED BY (SIGNATURE):
				8/3/99 11:1	Lisa Lovell
RELINQUISHED BY (SIGNATURE):	DATE/TIME:	RECEIVED FOR LABORATORY BY (SIGNATURE):	DATE/TIME:	REMARKS: ANALYSIS PER AGREEMENT w/ K. WAGER.	

Distribution Original accompanies shipment, copy to coordinator field files

FLI
FRIEND LABORATORY I · N · C

ONE RESEARCH CIRCLE WAVERLY, NY 14892-1532
TELEPHONE (607) 565-3500 FAX (607) 565-4083

DATE : 05-AUG-1999

LAB SAMPLE ID : L36741-1

Malcolm Pirnie, Inc. - Orchard Park
Jim Richert
40 Centre Drive
Buffalo, NY 14219

SAMPLE SOURCE	0266-377 S-8 (ATLAS)
ORIGIN	B-81 (160-200)
DESCRIPTION	GRAB
SAMPLED ON	03-AUG-99 09:00 by CLIENT
DATE RECEIVED	04-AUG-99 11:35
P.O. NO.	N/A

Analysis Performed	Result	Units	Detection Limit	Date Analyzed	Method	Notebook Reference
EPA 8021						
Vinyl chloride	U	ug/l	1	05-AUG-99	EPA 8021	99-111-1806
trans-1,2-Dichloroethene	U	ug/l	1	05-AUG-99	EPA 8021	99-111-1806
cis-1,2-Dichloroethene	U	ug/l	1	05-AUG-99	EPA 8021	99-111-1806
Trichloroethene	U	ug/l	1	05-AUG-99	EPA 8021	99-111-1806
Surrogate Recovery:						
CFB-1	95	%				99-111-1806
CFB-2	79	%				99-111-1806

Approved by: _____ Lab Director

KEY: ND or U = None Detected < = less than ug/L = micrograms per liter (equivalent to parts per billion)
mg/L = milligrams per liter (equivalent to parts per million) mg/kg = milligrams per kilogram (equivalent to parts per million)
B = analyte was detected in the method or trip blank J = result estimated below the quantitation limit

FLI
FRIEND LABORATORY INC

ONE RESEARCH CIRCLE WAVERLY, NY 14892-1532
TELEPHONE (607) 565-3500 FAX (607) 565-4083

DATE 05-AUG-1999

LAB SAMPLE ID : L36741-2

Malcolm Pirnie, Inc. - Orchard Park
Jim Richert
40 Centre Drive
Buffalo, NY 14219

SAMPLE SOURCE	0266-377 S-8 (ATLAS)
ORIGIN	B-82 (80-110)
DESCRIPTION	GRAB
SAMPLED ON	03-AUG-99 13:10 by CLIENT
DATE RECEIVED	04-AUG-99 11:35
P.O. NO.	N/A

Analysis Performed	Result	Units	Detection Limit	Date Analyzed	Method	Notebook Reference
EPA 8021						
Vinyl chloride	U	ug/l	1	05-AUG-99	EPA 8021	99-111-1807
trans-1,2-Dichloroethene	U	ug/l	1	05-AUG-99	EPA 8021	99-111-1807
cis-1,2-Dichloroethene	U	ug/l	1	05-AUG-99	EPA 8021	99-111-1807
Trichloroethene	U	ug/l	1	05-AUG-99	EPA 8021	99-111-1807
Surrogate Recovery:						
CFB-1	99	%				99-111-1807
CFB-2	81	%				99-111-1807

QC NY 10252 NJ 73168 PA 68180 EPA NY 00033

Approved by: _____ Lab Director

KEY: ND or U = None Detected < = less than ug/L = micrograms per liter (equivalent to parts per billion)
mg/L = milligrams per liter (equivalent to parts per million) mg/kg = milligrams per kilogram (equivalent to parts per million)
B = analyte was detected in the method or trip blank J = result estimated below the quantitation limit

FLI
FRIEND LABORATORY INC

ONE RESEARCH CIRCLE WAVERLY, NY 14892-1532
TELEPHONE (607) 565-3500 FAX (607) 565-4083

DATE 05-AUG-1999

LAB SAMPLE ID : L36741-3

Malcolm Pirnie, Inc. - Orchard Park
Jim Richert
40 Centre Drive
Buffalo, NY 14219

SAMPLE SOURCE	0266-377 S-8 (ATLAS)
ORIGIN	B-82 (110-140)
DESCRIPTION	GRAB
SAMPLED ON	03-AUG-99 15:20 by CLIENT
DATE RECEIVED	04-AUG-99 11:35
P.O. NO.	N/A

Analysis Performed	Result	Units	Detection Limit	Date Analyzed	Method	Notebook Reference
EPA 8021						
Vinyl chloride	U	ug/l	1	05-AUG-99	EPA 8021	99-111-1808
trans-1,2-Dichloroethene	U	ug/l	1	05-AUG-99	EPA 8021	99-111-1808
cis-1,2-Dichloroethene	U	ug/l	1	05-AUG-99	EPA 8021	99-111-1808
Trichloroethene	U	ug/l	1	05-AUG-99	EPA 8021	99-111-1808
Surrogate Recovery:						
CFB-1	91	%				99-111-1808
CFB-2	80	%				99-111-1808

QC NY 10252 NJ 73168 PA 68180 EPA NY 00033

Approved by: _____ Lab Director

KEY: ND or U = None Detected < = less than ug/L = micrograms per liter (equivalent to parts per billion)
mg/L = milligrams per liter (equivalent to parts per million) mg/kg = milligrams per kilogram (equivalent to parts per million)
B = analyte was detected in the method or trip blank J = result estimated below the quantitation limit

FLI
FRIEND LABORATORY I · N · C

ONE RESEARCH CIRCLE WAVERLY, NY 14892-1532
TELEPHONE (607) 565-3500 FAX (607) 565-4083

DATE 05-AUG-1999

LAB SAMPLE ID : L36741-4

Malcolm Pirnie, Inc. - Orchard Park
Jim Richert
40 Centre Drive
Buffalo, NY 14219

SAMPLE SOURCE	:	0266-377 S-8 (ATLAS)
ORIGIN	:	B-82 (140-170)
DESCRIPTION	:	GRAB
SAMPLED ON	:	03-AUG-99 17:20 by CLIENT
DATE RECEIVED	:	04-AUG-99 11:35
P.O. NO.	:	N/A

Analysis Performed	Result	Units	Detection Limit	Date Analyzed	Method	Notebook Reference
EPA 8021						
Vinyl chloride	U	ug/l	1	05-AUG-99	EPA 8021	99-111-1809
trans-1,2-Dichloroethene	U	ug/l	1	05-AUG-99	EPA 8021	99-111-1809
cis-1,2-Dichloroethene	U	ug/l	1	05-AUG-99	EPA 8021	99-111-1809
Trichloroethene	U	ug/l	1	05-AUG-99	EPA 8021	99-111-1809
Surrogate Recovery:						
CFB-1	93	%				99-111-1809
CFB-2	83	%				99-111-1809

QC NY 10252 NJ 73168 PA 68180 EPA NY 00033 Approved by: Lab Director

KEY: ND or U = None Detected < = less than ug/L = micrograms per liter (equivalent to parts per billion)
mg/L = milligrams per liter (equivalent to parts per million) mg/kg = milligrams per kilogram (equivalent to parts per million)
B = analyte was detected in the method or trip blank J = result estimated below the quantitation limit

FLI
FRIEND LABORATORY I · N · C

ONE RESEARCH CIRCLE WAVERLY, NY 14892-1532
TELEPHONE (607) 565-3500 FAX (607) 565-4083

DATE 05-AUG-1999

LAB SAMPLE ID : L36741-5

Malcolm Pirnie, Inc. - Orchard Park
Jim Richert
40 Centre Drive
Buffalo, NY 14219

SAMPLE SOURCE	0266-377 S-8 (ATLAS)
ORIGIN	95-045-87-25
DESCRIPTION	TRIP BLANK
SAMPLED ON	03-AUG-99 00:00 by CLIENT
DATE RECEIVED	04-AUG-99 11:35
P.O. NO.	N/A

Analysis Performed	Result	Units	Detection Limit	Date Analyzed	Method	Notebook Reference
EPA 8021						
Vinyl chloride	U	ug/l	1	04-AUG-99	EPA 8021	99-111-1789
trans-1,2-Dichloroethene	U	ug/l	1	04-AUG-99	EPA 8021	99-111-1789
cis-1,2-Dichloroethene	U	ug/l	1	04-AUG-99	EPA 8021	99-111-1789
Trichloroethene	U	ug/l	1	04-AUG-99	EPA 8021	99-111-1789
Surrogate Recovery:						
CFB-1	85	%				99-111-1789
CFB-2	77	%				99-111-1789

QC NY 10252 NJ 73168 PA 68180 EPA NY 00033

Approved by: _____
Lab Director

KEY: ND or U = None Detected < = less than ug/L = micrograms per liter (equivalent to parts per billion)
mg/L = milligrams per liter (equivalent to parts per million) mg/kg = milligrams per kilogram (equivalent to parts per million)
B = analyte was detected in the method or trip blank J = result estimated below the quantitation limit

MALCOLM PIRNIE, INC.

CHAIN OF CUSTODY RECORD

PROJECT NO.: 0266 - 337

SITE NAME: S-8 (ATLAS)

SAMPLERS (SIGNATURE):

STATION NO.	DATE	TIME	COMP.	GRAB	STATION LOCATION	NO. OF CONTAINERS	VOCs L36741	REMARKS
	8/3	0900		X	B-81-(160-200)	2	X -1	ANALYZE FOR
	8/3	1310		X	B-82 (80-110)	2	X -2	TCE
	8/3	1520		X	B-82 (110-140)	2	X -3	CIS 1,2-DCE
	8/3	1720		X	B-82 (140-170)	2	X -4	TRANS 1,2-DCE
	8/3	-		X	TRIP BLANK	2	X -5	VINYL CHLORIDE
								24-HOUR TAT

RELINQUISHED BY (SIGNATURE):	DATE/TIME:	RECEIVED BY (SIGNATURE):	RELINQUISHED BY (SIGNATURE):	DATE/TIME:	RECEIVED BY (SIGNATURE):
	8/3/99 1800				
RELINQUISHED BY (SIGNATURE):	DATE/TIME:	RECEIVED BY (SIGNATURE):	RELINQUISHED BY (SIGNATURE):	DATE/TIME:	RECEIVED BY (SIGNATURE):
				8/4/99 11:35	
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FLI
FRIEND LABORATORY I · N · C

ONE RESEARCH CIRCLE WAVERLY, NY 14892-1532
TELEPHONE (607) 565-3500 FAX (607) 565-4083

DATE 06-AUG-1999

LAB SAMPLE ID : L36791-1

Malcolm Pirnie, Inc. - Orchard Park
Jim Richert
40 Centre Drive
Buffalo, NY 14219

SAMPLE SOURCE	0266-337 ATLAS MISSLE S-8
ORIGIN	B-82 (170-200)
DESCRIPTION	GRAB
SAMPLED ON	04-AUG-99 09:30 by CLIENT
DATE RECEIVED	05-AUG-99 11:55
P.O. NO.	N/A

Analysis Performed	Result	Units	Detection Limit	Date Analyzed	Method	Notebook Reference
EPA 8021						
Vinyl chloride	U	ug/l	1	05-AUG-99	EPA 8021	99-111-1823
trans-1,2-Dichloroethene	U	ug/l	1	05-AUG-99	EPA 8021	99-111-1823
cis-1,2-Dichloroethene	U	ug/l	1	05-AUG-99	EPA 8021	99-111-1823
Trichloroethene	U	ug/l	1	05-AUG-99	EPA 8021	99-111-1823
Surrogate Recovery:						
CFB-1	72	%				99-111-1823
CFB-2	77	%				99-111-1823

QC NY 10252 NJ 73168 PA 68180 EPA NY 00033

Approved by: _____ Lab Director

KEY: ND or U = None Detected < = less than ug/L = micrograms per liter (equivalent to parts per billion)
mg/L = milligrams per liter (equivalent to parts per million) mg/kg = milligrams per kilogram (equivalent to parts per million)
B = analyte was detected in the method or trip blank J = result estimated below the quantitation limit

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FRIEND LABORATORY I · N · C

ONE RESEARCH CIRCLE WAVERLY, NY 14892-1532
TELEPHONE (607) 565-3500 FAX (607) 565-4083

DATE 06-AUG-1999

LAB SAMPLE ID : L36791-2

Malcolm Pirnie, Inc. - Orchard Park
Jim Richert
40 Centre Drive
Buffalo, NY 14219

SAMPLE SOURCE	0266-337 ATLAS MISSLE S-8
ORIGIN	B-83 (53-80)
DESCRIPTION	GRAB
SAMPLED ON	04-AUG-99 11:50 by CLIENT
DATE RECEIVED	05-AUG-99 11:55
P.O. NO.	N/A

Analysis Performed	Result	Units	Detection Limit	Date Analyzed	Method	Notebook Reference
EPA 8021						
Vinyl chloride	U	ug/l	1	05-AUG-99	EPA 8021	99-111-1824
trans-1,2-Dichloroethene	U	ug/l	1	05-AUG-99	EPA 8021	99-111-1824
cis-1,2-Dichloroethene	U	ug/l	1	05-AUG-99	EPA 8021	99-111-1824
Trichloroethene	U	ug/l	1	05-AUG-99	EPA 8021	99-111-1824
Surrogate Recovery:						
CFB-1	72	%				99-111-1824
CFB-2	78	%				99-111-1824

QC D NY 10252 NJ 73168 PA 68180 EPA NY 00033

Approved by: _____ Lab Director

KEY: ND or U = None Detected < = less than ug/L = micrograms per liter (equivalent to parts per billion)
mg/L = milligrams per liter (equivalent to parts per million) mg/kg = milligrams per kilogram (equivalent to parts per million)
B = analyte was detected in the method or trip blank J = result estimated below the quantitation limit

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ONE RESEARCH CIRCLE WAVERLY, NY 14892-1532
TELEPHONE (607) 565-3500 FAX (607) 565-4083

DATE 06-AUG-1999

LAB SAMPLE ID : L36791-3

Malcolm Pirnie, Inc. - Orchard Park
Jim Richert
40 Centre Drive
Buffalo, NY 14219

SAMPLE SOURCE	0266-337 ATLAS MISSLE S-8
ORIGIN	B-83 (120-160)
DESCRIPTION	GRAB
SAMPLED ON	04-AUG-99 16:00 by CLIENT
DATE RECEIVED	05-AUG-99 11:55
P.O. NO.	N/A

Analysis Performed	Result	Units	Detection Limit	Date Analyzed	Method	Notebook Reference
EPA 8021						
Vinyl chloride	U	ug/l	1	06-AUG-99	EPA 8021	99-111-1825
trans-1,2-Dichloroethene	U	ug/l	1	06-AUG-99	EPA 8021	99-111-1825
cis-1,2-Dichloroethene	U	ug/l	1	06-AUG-99	EPA 8021	99-111-1825
Trichloroethene	U	ug/l	1	06-AUG-99	EPA 8021	99-111-1825
Surrogate Recovery:						
CFB-1	69	%				99-111-1825
CFB-2	79	%				99-111-1825

Approved by: _____ Lab Director

KEY: ND or U = None Detected < = less than ug/L = micrograms per liter (equivalent to parts per billion)
mg/L = milligrams per liter (equivalent to parts per million) mg/kg = milligrams per kilogram (equivalent to parts per million)
B = analyte was detected in the method or trip blank J = result estimated below the quantitation limit

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FRIEND LABORATORY INC

ONE RESEARCH CIRCLE WAVERLY, NY 14892-1532
TELEPHONE (607) 565-3500 FAX (607) 565-4083

DATE 06-AUG-1999

LAB SAMPLE ID : L36791-4

Malcolm Pirnie, Inc. - Orchard Park
Jim Richert
40 Centre Drive
Buffalo, NY 14219

SAMPLE SOURCE	0266-337 ATLAS MISSLE S-8
ORIGIN	B-83 (160-200)
DESCRIPTION	GRAB
SAMPLED ON	04-AUG-99 18:00 by CLIENT
DATE RECEIVED	05-AUG-99 11:55
P.O. NO.	N/A

Analysis Performed	Result	Units	Detection Limit	Date Analyzed	Method	Notebook Reference
EPA 8021						
Vinyl chloride	U	ug/l	1	06-AUG-99	EPA 8021	99-111-1826
trans-1,2-Dichloroethene	U	ug/l	1	06-AUG-99	EPA 8021	99-111-1826
cis-1,2-Dichloroethene	U	ug/l	1	06-AUG-99	EPA 8021	99-111-1826
Trichloroethene	U	ug/l	1	06-AUG-99	EPA 8021	99-111-1826
Surrogate Recovery:						
CFB-1	72	%				99-111-1826
CFB-2	78	%				99-111-1826

QC NY 10252 NJ 73168 PA 68180 EPA NY 00033

Approved by: _____ Lab Director

KEY: ND or U = None Detected < = less than ug/L = micrograms per liter (equivalent to parts per billion)
mg/L = milligrams per liter (equivalent to parts per million) mg/kg = milligrams per kilogram (equivalent to parts per million)
B = analyte was detected in the method or trip blank J = result estimated below the quantitation limit

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ONE RESEARCH CIRCLE WAVERLY, NY 14892-1532
TELEPHONE (607) 565-3500 FAX (607) 565-4083

DATE 16-AUG-1999

LAB SAMPLE ID : L36791-5

Malcolm Pirnie, Inc. - Orchard Park
Jim Richert
40 Centre Drive
Buffalo, NY 14219

SAMPLE SOURCE	0266-337 ATLAS MISSLE S-8
ORIGIN	TRIP BLANK
DESCRIPTION	GRAB
SAMPLED ON	04-AUG-99 00:00 by CLIENT
DATE RECEIVED	05-AUG-99 11:55
P.O. NO.	N/A

Analysis Performed	Result	Units	Detection Limit	Date Analyzed	Method	Notebook Reference
EPA 8021						
Vinyl chloride	U	ug/l	1	12-AUG-99	EPA 8021	99-111-1940
trans-1,2-Dichloroethene	U	ug/l	1	12-AUG-99	EPA 8021	99-111-1940
cis-1,2-Dichloroethene	U	ug/l	1	12-AUG-99	EPA 8021	99-111-1940
Trichloroethene	U	ug/l	1	12-AUG-99	EPA 8021	99-111-1940
Surrogate Recovery:						
CFB-1	81	%				99-111-1940
CFB-2	79	%				99-111-1940

QC NY 10252 NJ 73168 PA 68180 EPA NY 00033

Approved by: _____ Lab Director

KEY: ND or U = None Detected < = less than ug/L = micrograms per liter (equivalent to parts per billion)
mg/L = milligrams per liter (equivalent to parts per million) mg/kg = milligrams per kilogram (equivalent to parts per million)
B = analyte was detected in the method or trip blank J = result estimated below the quantitation limit

MALCOLM PIRNIE, INC.

CHAIN OF CUSTODY RECORD

PROJECT NO.: 0266-337

SITE NAME: ATLAS MISSILE S-8

SAMPLERS (SIGNATURE): [signature]

VPS L36791

STATION NO.	DATE	TIME	COMP.	GRAB	STATION LOCATION	NO. OF CONTAINERS			REMARKS
	8/4	930		X	B-82 (170-200)	2	X	-1	24 HOUR TAT
	8/4	1150		X	B-83 (53-80)	2	X	-2	
	8/4	1600		X	B-83 (120-160)	1	X	-3	
	8/4	1800		X	B-83 (160-200)	2	X	-4	ANALYSIS INCLUDES
	8/4	—		X	TRIP BLANK	2	X	-5	TCE
									cis 1,2-DCE
									trans 1,2-DCE
									VINYL CHLORIDE

RELINQUISHED BY (SIGNATURE):	DATE/TIME:	RECEIVED BY (SIGNATURE):	RELINQUISHED BY (SIGNATURE):	DATE/TIME:	RECEIVED BY (SIGNATURE):
[signature]	8/4/99 1830				
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RELINQUISHED BY (SIGNATURE):	DATE/TIME:	RECEIVED FOR LABORATORY BY (SIGNATURE):	DATE/TIME:	REMARKS:	
		[signature]	8/5/99 11:55	8.9 temp as received	

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