

N91571.AR.002830
NIROP ABL ROCKET CENTER
5090.3a

CORRESPONDENCE RELATED TO PLANNED INVESTIGATION AND/OR REMEDIATIONS
AT PLANT 1 AIR COMPRESSOR BUILDINGS 341 AND 252 SOLID WASTE MANAGEMENT
UNITS 37A AND 37X (SWMU 37A) (SWMU 37X) AND SEPTIC TANK SITES WITH
TRANSMITTAL ALLEGANY BALLISTICS LABORATORY ROCKET CENTER WV

3/17/2000

ALLIANT MIDDLE PRODUCTS COMPANY LLC



Alliant Missile Products Company LLC Tel 304 726-5000
Allegany Ballistics Laboratory
210 State Route 956
Rocket Center, WV 26726-0210

March 17, 2000

Commander
Environmental Quality Division
LANTDIVNAVFACENGCOM
1510 Gilbert Street
Norfolk, VA 23511-2699

ATTN: Ms. Dawn Hayes

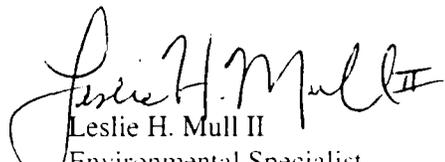
Dear Ms. Hayes:

As requested, I am enclosing all correspondence between Alliant Techsystems Inc. (ATK) and the WVDEP Office of Water Resources (Groundwater Program) related to the planned investigations and/or remediations at the Allegany Ballistics Laboratory (ABL) Plant 1 air compressor houses (Buildings 341 and 252), SWMUs 37A and 37X, and septic tank sites.

If you have any questions or require additional information, please do not hesitate to call me at 304-726-5425.

Sincerely,

ALLIANT MISSILE PRODUCTS COMPANY LLC


Leslie H. Mull II
Environmental Specialist
ABL Environmental Group

Enclosures

cc w/o enclosures: John Waugaman, ABL



DIVISION OF ENVIRONMENTAL PROTECTION

CECIL H. UNDERWOOD
GOVERNOR

1201 Greenbrier Street
Charleston, WV 25311-1088

MICHAEL P. MIANO
DIRECTOR

5 January 1999

Leslie H. Mull II
Alliant Techsystems
P.O. Box 210
Rocket Center,
West Virginia 26726

Re: Building 341
Allegany Ballistics Laboratory
Rocket Center, Mineral County

Dear Mr. Mull:

Personnel from the Groundwater Program of the Office of Water Resources visited the Allegany Ballistics Laboratory on December 14th and 15th, 1998. During the second day of this visit, we inspected Building 341, where hydrocarbon contamination had been reported. This contamination had been found at the northwest and southeast corners of this building. A previous study had been completed to delineate the problem; however, the data generated was not available to our personnel during our visit.

It is our office's opinion that the following should now be completed at this site:

- A subsurface study should be completed at the two locations where the contamination has been found; *i.e.*, the two corners of the building. The purpose of this study is to determine the vertical and horizontal extent of the contamination, the concentration and phases (soil, groundwater, or free product) of the contaminants, and the relative weight and age of the hydrocarbon contamination. The field supervisor conducting this study should have the authority to adjust the number and locations of the borings (or geoprobe locations) to define the full extent of the problem.
- Subsurface samples should also be collected along the length of the building to determine if there are more than two problem areas. The outlet of any drains should also be tested.

Building 341
Allegany Ballistics Laboratory,
5 January 1999, page 2.

- There are two vertical pipes located in a concrete slab at the northwestern corner of the building. A determination should be made to where these lead. If a vault or wells are found to exist, then the purpose of these should be ascertained. All liquids and sludges should be sampled, removed, and properly disposed of with the proper documentation. It is our office's opinion, that if this problem is to be properly resolved, then this vault and/or wells must be filled with concrete and closed in a proper manner.
- The area contained a large number of underground pipes and conduits. These should be accurately described and located as they may serve as routes for subsurface contamination migration.

Your office should at this time prepare a short report proposing this subsurface investigation. This report should include a brief history of the Building 341 area, and it should state why a hydrocarbon product was used at this location. In addition, this report should include the analytical data collected to date, the laboratory reports and chain-of-custody records that would have accompanied this data, and a map showing where these previous samples were collected. Three copies of this report should be submitted to our office.

Our office will make a determination on whether sampling under the building or if groundwater monitoring wells are required once we have reviewed the results of the above-requested study.

We will expect a response from your office within 45 days of your receipt of this letter.

If you have any questions, please do not hesitate to contact me at 304-558-2108. Our teletypewriter number is 304-558-2751.

Sincerely,

OFFICE OF WATER RESOURCES


George R. Dasher
Geologist
Groundwater Program

Building 341
Allegany Ballistics Laboratory,
5 January 1999, page 3.

cc: Dave Watkins, Manager, Groundwater Program
Tom Bass, Office of Environmental Remediation
Tina Parsons, Geologist, Groundwater Program
Bill Timmermeyer, Inspector, Environmental Enforcement



Alliant Techsystems Inc. Tel 304 726-5000
Allegany Ballistics Laboratory
210 State Route 956
Rocket Center, WV 26726-0210

February 19, 1999

Mr. George Dasher
West Virginia Division of Environmental Protection
Office of Water Resources
1201 Greenbrier Street
Charleston, WV 25311-1088

**Reference: Building 341
Allegany Ballistics Laboratory
Rocket Center, Mineral County**

Dear Mr. Dasher:

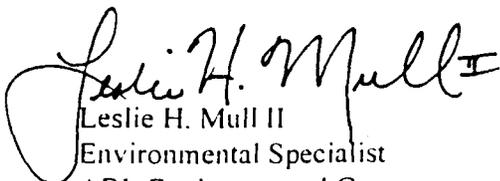
Subject: Site Characterization Study

As requested in your letter of January 5, 1999, ABL is providing the enclosed report outlining a proposed Site Characterization Study to be conducted at Building 341.

ABL will await your comments on the proposed study before finalizing a Scope-of-Work and soliciting bids on this project. It is anticipated, barring any unforeseen delays, that work at the site could begin sometime in early Spring. You will be notified when a tentative start date has been set.

If you have any questions, please do not hesitate to contact me at 304-726-5425.

Sincerely,


Leslie H. Mull II
Environmental Specialist
ABL Environmental Group

Enclosure

Allegany Ballistics Laboratory

SITE CHARACTERIZATION STUDY; BUILDING 341 (COMPRESSOR HOUSE)

Site History and Background

Building 341, a metal building measuring 28' x 38', is located toward the eastern end of ABL Plant I (see Attachment I) and serves as a utility building, providing compressed air to the eastern third of the facility. The exact date of its construction is unknown but Building 341, along with Building 341A located directly adjacent and to the north of Building 341, was erected sometime in the mid-1960s on a site previously occupied by Building 303. Building 303, built in 1962, also served as a utility building until being damaged in an explosion of a nearby building in 1964. It was soon after dismantled and replaced by Buildings 341 and 341A with the only remaining evidence of Building 303 being the original building pad measuring 28' x 51' (see Attachment II).

Utilities in the vicinity of Building 341/341A consist of air, steam, electrical, sanitary sewer, and water. All air, steam, and electrical utilities are located above ground. The sanitary sewer line as well as both an active and abandoned water line are located below grade. The general location of these subsurface utilities is known with determination of their exact locations to be made as part of the site investigation.

Equipment originally located in Building 303, including vacuum pumps, an air compressor, and a tempered water system, was relocated to Buildings 341 and 341A following demolition of Building 303 in 1964. Presently, two vacuum pumps and a tempered water system are installed in Building 341A and a large piston air compressor is located in Building 341. The air compressor system in Building 341 also includes an air dryer unit and an oil/water separator. The current oil/water separator, installed in 1995 to replace an outdated unit, discharges treated water to the ABL sanitary sewer system. Prior to 1995, discharges from the oil/water separator are believed to have been piped directly to the surface somewhere in the vicinity of the building's southeast corner.

Currently, there are several petroleum products being used in Building 341 and Building 341A on a regular basis. These products include hydraulic fluids and lubricating oils that provide lubrication and cooling for the various pieces of equipment operating in the two buildings. It is likely that similar types of hydrocarbon based fluids have been used at this site since the early 1960s.

Previous Investigations

Visual inspections conducted in Building 341 have identified significant staining on the floor inside the building and along the outer southeastern edge of the building pad. The exact source of the staining is unknown but has been attributed to past spills, leaks, and/or equipment failures on site. The magnitude or extent of these suspected releases is not known.

Three vertical cast iron pipes located toward the northwest corner of the original building pad have been identified as potential pathways through which past releases may have reached the environment. No drawings have been found to verify the actual purpose of these pipes but it is believed that they were installed to carry equipment discharges (i.e. noncontact cooling water and

steam condensate) from Building 303. With the removal of Building 303 and the reinstallation of equipment in Buildings 341 and 341A, it is likely that active discharges to these pipes were discontinued. Two of the pipes are in a portion of the original pad that is external to both Buildings 341 and 341A while the remaining pipe is located inside Building 341. A preliminary investigation of these pipes was conducted in November 1997. Approximately 55 gallons of groundwater was pumped from Pipe A, sampled, and analyzed for solvents and PCB's with no contaminants being detected. Results of these analyses are included as Attachment III. Due to the obvious presence of hydrocarbons, ABL choose not to have any TPH analysis run on the water. During pumping it was determined, based on the drawdown in Pipes B and C, that the three pipes are interconnected either physically or hydraulically. No drawings of Building 303 (or Building 341) could be produced that identify the terminal point of these pipes.

According to interviews with facility personnel, in the early 1990s an ABL Maintenance crew discovered hydrocarbon contamination in both soil and groundwater at the southeast corner of Building 341 while excavating a shallow pit for a footer installation. No sampling was conducted and no formal documentation of the event made.

No other investigations in or around Building 341 have occurred.

Site Characterization Study

The Site Characterization Study at Building 341 calls for a subsurface survey to determine both the nature and extent (vertical and horizontal) of suspected contamination at the site. Sampling of soil and groundwater shall be conducted to ascertain the concentration and phases (i.e. residual, free liquid, and dissolved hydrocarbons) of any contamination. All subsurface utilities and piping will also be located and investigated as potential routes of contaminant migration.

Initially, a 10' x10' grid pattern will be established around the Building 341/341A pad site. 20 borings shall be made along the perimeter of the building pad using a Geoprobe at those locations identified as B1 through B20 on the Sampling Location Diagram (Attachment IV). The first set of borings will be made approximately five feet from the edge of the building pad taking into account limitations in accessibility. Where conditions dictate an adjustment to a boring location, an alternate site will be chosen as near the originally intended site as possible. At each of the first 20 boring locations both a soil and groundwater sample will be collected for a total of 40 samples. Using a mobile laboratory, samples will be analyzed on site for Total Petroleum Hydrocarbons-Gasoline Range Organics (TPH-GRO), Total Petroleum Hydrocarbons-Diesel Range Organics (TPH-DRO), and Polynuclear Aromatic Hydrocarbons (PAHs). Based on a knowledge of past and present operations at the site, ABL has no reason to believe any products containing Benzene, Toluene, Ethylbenzene, or Xylene (BTEX) have ever been used in or around Building 341 and therefore no analysis for these parameters is currently planned.

As analytical results are received, the field supervisor will determine the number and location of subsequent borings as well as making any necessary changes to sampling and/or analytical procedures. This process will continue until the full extent of contamination at the site has been delineated.

Report of Findings

Following completion of the Site Characterization Study a report documenting the findings of the study, including copies of all supporting documentation (i.e. lab reports, chain-of-custodies, applicable diagrams), will be prepared and submitted to you for review.

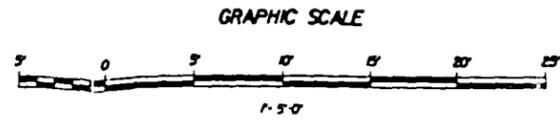
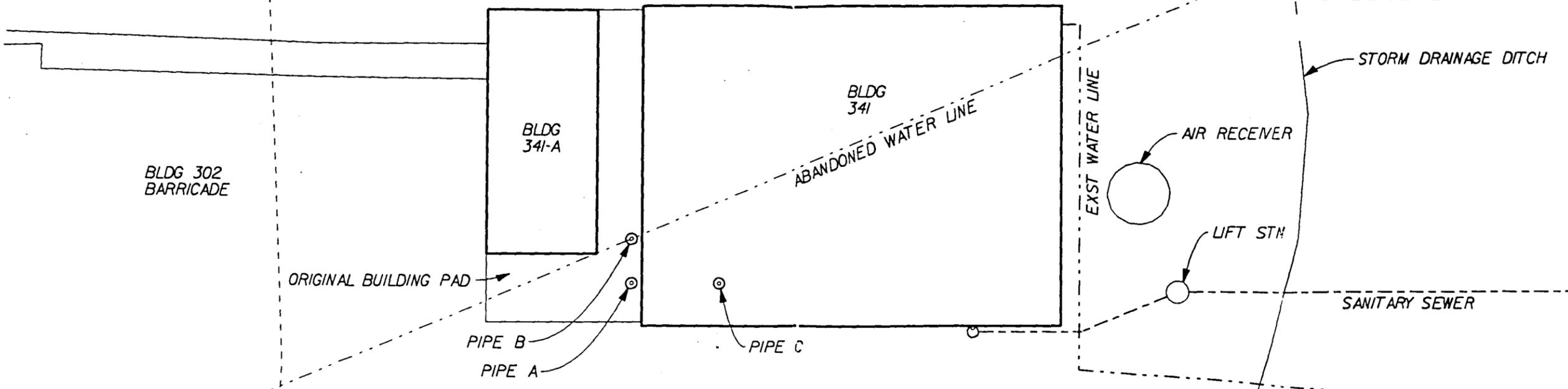
ATTACHMENT I

**Allegany Ballistics Laboratory
Building 341 Site Characterization Study**

WORK SITE LOCATION MAP



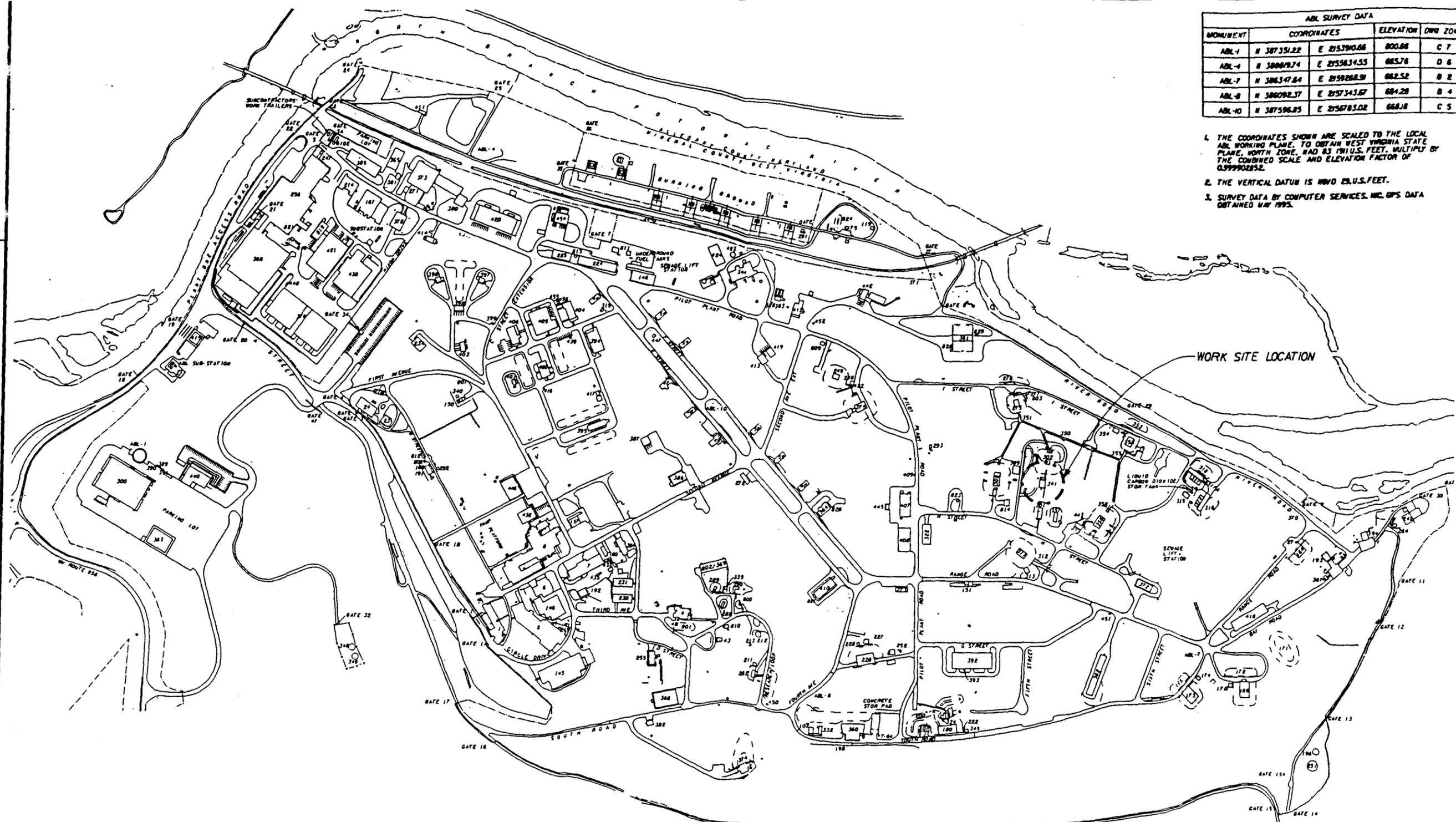
D
C
B
A



8 7 6 5 4 3 2 1

DESIGNED & ENGINEERED FOR LANTON CIVIL & ENVIRONMENTAL ENGINEERING 1000 W. 10TH ST. SUITE 100 NORFOLK, VA 23510 PHONE: 757/622-1111 FAX: 757/622-1112		LIGHT TITLED FOR ALL RIGHTS RESERVED REPRODUCTION OF THIS DRAWING WITHOUT PERMISSION IS PROHIBITED	
PROJECT NO. 0021 CONTRACT NO. ENV11201	DATE: 01/11/99 DATE: 01/11/99 DATE: 01/11/99 DATE: 01/11/99	DRAFTER: J.R. ROBBIN CHECKER: L.K. MALLI ENGR: L.K. MALLI DES. SUPV: D.R. HAMILTON AREA SUPV:	DATE: 01/11/99 DATE: 01/11/99 DATE: 01/11/99 DATE: 01/11/99
DEPT. OF THE NAVY - NAVAL FACILITIES ENGINEERING COMMAND AT ANTIC DIVISION NAVAL STATION NORFOLK, VA 23511		FACILITIES RESTORATION - FY1998 BUILDING 341 SITE CHARACTERIZATION STUDY SITE PLAN	
CAGE CODE 80091 SIZE D SCALE: 1" = 50' EFD NO. NOS-E-8117 SPEC. NO. 9		CONTRACT NUMBER: ENV11201 SHEET 2	
W.O. J02789A CODE 095818M		INTERPRET THIS DRAWING IN ACCORDANCE WITH DDD-STD-100	

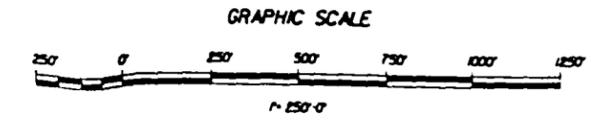
C-1



ABL SURVEY DATA				
MONUMENT	COORDINATES		ELEVATION	DWG ZONE
ABL-1	N 387351.22	E 215790.66	800.66	C 7
ABL-4	N 388879.74	E 215563.53	685.76	D 6
ABL-7	N 386347.84	E 215926.91	682.52	B 2
ABL-8	N 386092.37	E 215734.67	684.28	B 4
ABL-10	N 387596.25	E 215678.02	668.18	C 5

- THE COORDINATES SHOWN ARE SCALED TO THE LOCAL ABL WORKING PLANE. TO OBTAIN WEST VIRGINIA STATE PLANE, NORTH ZONE, NAD 83 (N) U.S. FEET, MULTIPLY BY THE COMBINED SCALE AND ELEVATION FACTOR OF 0.99992852.
- THE VERTICAL DATUM IS MVD 28 U.S. FEET.
- SURVEY DATA BY COMPUTER SERVICES, INC. GPS DATA OBTAINED MAY 1995.

SHEET NO.	NAVFAC DWG NO.	CONTRACTOR DRAWING NO.	REV	TITLE
T-1 (11)	4377030	ENVR-0021-ENVO001	-	WORK SITE LOCATION PLAN
C-1 (2)	4377031	ENVR-0021-ENVI1201	-	SITE PLAN
C-2 (3)	4377032	ENVR-0021-ENVI1202	-	SAMPLING LOCATION DIAGRAM



DESIGNED & ENGINEERED FOR LANTON ALLIANCE BUSINESS CORPORATION 10010 W. STATE ST. SUITE 100 FARMINGTON, VT 05475 TEL: (802) 875-1111 FAX: (802) 875-1112		REVISIONS NO. DATE BY 1 11/1995 J.M.	
DRAWN BY: J.M. HOPKINSON CHECKED BY: L.K. MALLI ENGR. L.K. MALLI PROJ. MGR. D.R. HAMILTON AREA SUPV. J.M. HOPKINSON SAFETY:		DATE:	
DEPT. OF THE NAVY, NAVAL FACILITIES ENGINEERING COMMAND ATLANTIC DIVISION NAVAL STATION MORFORD, VA 23051		CASE CODE 80091 SIZE: D SCALE: 1" = 250.0' EFD NO. NDS-E-8117 SPEC. NO. 88-C 4377030 ENVR 0021 CONTRACTOR DRAWING NO. 11 ENVO1001 SHEET 1	
FACILITIES RESTORATION - FY1998 BUILDING 341 SITE CHARACTERIZATION STUDY WORK SITE LOCATION PLAN		INTERPRET THIS DRAWING IN ACCORDANCE WITH DOD-STD-100 P.O. 402/89A CODE 0958184	

ATTACHMENT III

**Allegany Ballistics Laboratory
Building 341 Site Characterization Study**

ANALYTICAL RESULTS; NOVEMBER 1997



CT&E Environmental Services Inc.

Laboratory Division

Laboratory Analysis Report

Leslie H. Mull, II
ALLIANT TECH SYSTEMS

Laboratory Number 297-11-0193-001 Respectfully
Submitted:

BLDG 341 - DRAIN
GROUNDWATER INVESTIGATION

Date Sampled 11/06/97 10:50
Date Received 11/07/97

Sampled by CLIENT
PO # M-420-000

112097 1433

ANALYSIS FOR REQUESTED PARAMETERS
ALL RESULTS ARE ON AN AS RECEIVED BASIS

PARAMETER	RESULT	MDL	UNITS	METHOD	ANALYZED DATE/TIME/ANALYST

Volatiles :					
Acetone[67-64-1]	ND	10	mg/L	SW8240	11/18/97 14:28 MAM
Carbon disulfide[75-15-0]	ND	10	mg/L	SW8240	11/18/97 14:28 MAM
Carbon tetrachloride[56-23-5]	ND	10	mg/L	SW8240	11/18/97 14:28 MAM
Chlorobenzene[108-90-7]	ND	10	mg/L	SW8240	11/18/97 14:28 MAM
Cyclohexanone[108-94-1]	ND	100	mg/L	SW8240	11/18/97 14:28 MAM **
Ethyl Acetate[141-78-6]	ND	10	mg/L	SW8240	11/18/97 14:28 MAM **
Ethylbenzene[100-41-4]	ND	10	mg/L	SW8240	11/18/97 14:28 MAM
Ethylether[60-29-7]	ND	10	mg/L	SW8240	11/18/97 14:28 MAM
Methylene Chloride[75-09-2]	ND	10	mg/L	SW8240	11/18/97 14:28 MAM
2-Butanone[78-93-3] (MEK)	ND	10	mg/L	SW8240	11/18/97 14:28 MAM
4-Methyl-2-pentanone[108-10-1]	ND	10	mg/L	SW8240	11/18/97 14:28 MAM
Tetrachloroethene[127-18-4]	ND	10	mg/L	SW8240	11/18/97 14:28 MAM
Toluene[108-88-3]	ND	10	mg/L	SW8240	11/18/97 14:28 MAM
1,1,1-Trichloroethane[71-55-6]	ND	10	mg/L	SW8240	11/18/97 14:28 RCM
1,2,2-Trichlorotrifluoroethane[76-13-1]	ND	10	mg/L	SW8240	11/18/97 14:28 RCM **
Trichloroethene[79-01-6]	ND	10	mg/L	SW8240	11/18/97 14:28 RCM
Trichlorofluoromethane[75-69-4]	ND	10	mg/L	SW8240	11/18/97 14:28 RCM
Total Xylenes[1330-20-7]	ND	10	mg/L	SW8240	11/18/97 14:28 RCM
1,1,2-Trichloroethane[79-00-5]	ND	10	mg/L	SW8240	11/18/97 14:28 RCM
Benzene[71-43-2]	ND	10	mg/L	SW8240	11/18/97 14:28 RCM
SURROGATE RECOVERY - VOLATILES- DILUTION					
Decachlorobiphenyl <SURROGATE>	103	-----	% REC	SW8240	11/18/97 14:28 RCM
Toluene-d8 <SURROGATE>	104	-----	% REC	SW8240	11/18/97 14:28 RCM
Bromofluorobenzene <SURROGATE>	86	-----	% REC	SW8240	11/18/97 14:28 RCM

Method Reference: USEPA: Test Methods For Evaluating Solid Waste; SW-846, 3rd Edition; Nov 1986.

ND: Not detected at a concentration greater than the MDL - Method Detection Limit.

** : Estimated value only-Laboratory is not calibrated for this compound.



CT&E Environmental Services Inc.

Laboratory Division

Laboratory Analysis Report

Leslie H. Mull, II
ALLIANT TECH SYSTEMS

Laboratory Number 297-11-0193-001
Respectfully Submitted:

BLDG 341 - DRAIN
GROUNDWATER INVESTIGATION

Date Sampled 11/06/97 10:50
Date Received 11/07/97

Sampled by CLIENT
PC # 11-420-000

112097 1433

POLYCHLORINATED BIPHENYLS(PCB's)
ALL RESULTS ARE ON AN AS RECEIVED BASIS

PARAMETER	RESULT	MDL	UNITS	METHOD	ANALYZED
					DATE/TIME/ANALYST
PCB(as Aroclor 1016)[12674-11-2]	ND	0.50	ug/L	SW8080	11/14/97 21:51 KPP
PCB(as Aroclor 1221)[11104-28-2]	ND	0.50	ug/L	SW8080	11/14/97 21:51 KPP
PCB(as Aroclor 1232)[11141-16-5]	ND	0.50	ug/L	SW8080	11/14/97 21:51 KPP
PCB(as Aroclor 1242)[53469-21-9]	ND	0.50	ug/L	SW8080	11/14/97 21:51 KPP
PCB(as Aroclor 1248)[12672-29-6]	ND	0.50	ug/L	SW8080	11/14/97 21:51 KPP
PCB(as Aroclor 1254)[11097-69-1]	ND	0.50	ug/L	SW8080	11/14/97 21:51 KPP
PCB(as Aroclor 1260)[11096-82-5]	ND	0.50	ug/L	SW8080	11/14/97 21:51 KPP
SURROGATE RECOVERY - PESTICIDE FRACTION					
Tetrachloro-meta-Xylene <SURROGATE>	63	-----	% REC	SW8080	11/14/97 21:51 KPP

ND: Not detected at a concentration greater than the MDL - Method Detection Limit.

Method Reference: USEPA: Test Methods For Evaluating Solid Waste; SW-846, 3rd Edition; Nov 1986.

4665 Paris Street, Suite 200-B, Denver, CO 80239 — Tel: (303) 373-4772 Fax: (303) 576-8307
1258 Greenbrier Street, Charleston, WV 25311-1002 — Tel: (304) 346-0725 Fax: (304) 346-0761
4643 Benson Avenue, Baltimore, MD 21227-1410 — Tel: (410) 247-7400 Fax: (410) 247-7402
4440 Glen Este-Withamsville Road, Suite 900, Cincinnati, OH 45245-1331 — Tel: (513) 752-9696 Fax: (513) 752-2614



CT&E Environmental Services Inc.

Laboratory Division

Laboratory Analysis Report

Leslie H. Mull, II
ALLIANT TECH SYSTEMS

Laboratory Number 297-11-0193-001

Respectfully
Submitted:

BLDG 341 - DRAIN
GROUNDWATER INVESTIGATION

Date Sampled 11/06/97 10:50
Date Received 11/07/97

J. M. ...
112097 1433

Sampled by CLIENT
PC # M-420-000

ANALYSIS FOR REQUESTED PARAMETERS
ALL RESULTS ARE ON AN AS RECEIVED BASIS

PARAMETER	RESULT	MDL	UNITS	METHOD	ANALYZED
					DATE/TIME/ANALYST
2-Ethoxyethanol [110-80-5]	ND	2.5	mg/L	SW8015	11/13/97 15:18 ATL
2-Nitropropane [79-46-9]	ND	2.5	mg/L	SW8015	11/13/97 15:18 ATL
n-Butanol [71-36-3]	ND	2.5	mg/L	SW8015	11/13/97 15:18 ATL
Isobutanol [78-83-1]	ND	2.5	mg/L	SW8015	11/13/97 15:18 ATL
Methanol [67-56-1]	ND	2.5	mg/L	SW8015	11/13/97 15:18 ATL

Method Reference: USEPA: Test Methods For Evaluating Solid Waste; SW-846, 3rd Edition; Nov 1986.

ND: Not detected at a concentration greater than the MDL - Method Detection Limit.

4665 Paris Street, Suite 200-B, Denver, CO 80239 — Tel: (303) 373-4772 Fax: (303) 576-8307
1258 Greenbrier Street, Charleston, WV 25311-1002 — Tel: (304) 346-0725 Fax: (304) 346-0761
4643 Benson Avenue, Baltimore, MD 21227-1410 — Tel: (410) 247-7400 Fax: (410) 247-7402
4440 Glen Este-Withamsville Road, Suite 900, Cincinnati, OH 45245-1331 — Tel: (513) 752-9696 Fax: (513) 752-2614



CT&E Environmental Services Inc.

Laboratory Analysis Report

Leslie H. Mull, II
ALLIANT TECH SYSTEMS

Laboratory Number 297-11-0193-001

Respectfully
Submitted:

BLDG 341 - DRAIN
GROUNDWATER INVESTIGATION

Date Sampled 11/06/97 10:50
Date Received 11/07/97

Sampled by CLIENT
PO # M-420-000

112097 1433

ANALYSIS FOR REQUESTED PARAMETERS
ALL RESULTS ARE ON AN AS RECEIVED BASIS

PARAMETER	RESULT	MDL	UNITS	METHOD	ANALYZED
					DATE/TIME/ANALYST
Total Cresols	ND	25	ug/L	SW8270	11/13/97 19:22 JER
1,2-Dichlorobenzene [95-50-1]	ND	25	ug/L	SW8270	11/13/97 19:22 JER
Nitrobenzene [98-95-3]	ND	25	ug/L	SW8270	11/13/97 19:22 JER
Pyridine [110-86-1]	ND	25	ug/L	SW8270	11/13/97 19:22 JER
SURROGATE RECOVERY - ACID FRACTION					
2-Fluorophenol <SURROGATE>	25	-----	% REC	SW8270	11/13/97 19:22 JER
Phenol-d6 <SURROGATE>	49	-----	% REC	SW8270	11/13/97 19:22 JER
2,4,6-Tribromophenol <SURROGATE>	109	-----	% REC	SW8270	11/13/97 19:22 JER
SURROGATE RECOVERY - BASE/NEUT FRACTION					
Nitrobenzene-d5 <SURROGATE>	66	-----	% REC	SW8270	11/13/97 19:22 JER
2-Fluorobiphenyl <SURROGATE>	83	-----	% REC	SW8270	11/13/97 19:22 JER
o-Terphenyl <SURROGATE>	116	-----	% REC	SW8270	11/13/97 19:22 JER

Method Reference: USEPA: Test Methods For Evaluating Solid Waste; SW-846, 3rd Edition; Nov 1986.

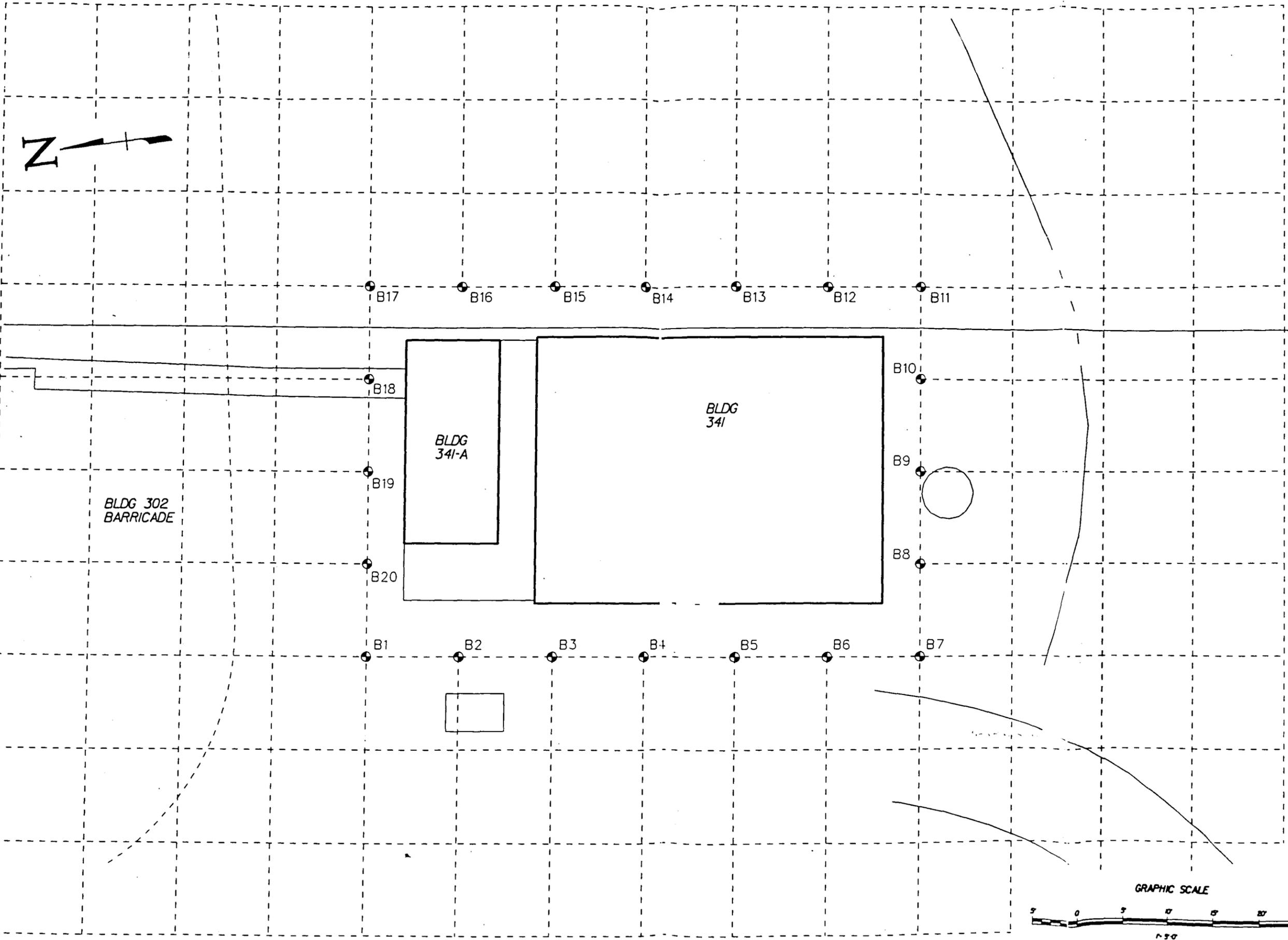
ND: Not detected at a concentration greater than the MDL - Method Detection Limit.

ATTACHMENT IV

**Allegany Ballistics Laboratory
Building 341 Site Characterization Study**

SAMPLING LOCATION DIAGRAM

D
C
B
A



DESIGNED & ENGINEERED FOR LANTON NAVAL FACILITIES ENGINEERING COMMAND	
DRAFTSMAN J.R. ROBERTSON	DATE 11/11/98
CHECKER L.K. MALLON	DATE 11/11/98
AREA SUPPLY D.E. HAMILTON	DATE 11/11/98
SAFETY AREA SUPPLY	DATE 11/11/98
DEPT. OF THE NAVY, NAVAL FACILITIES ENGINEERING COMMAND ATLANTIC DIVISION NORFOLK, VA 23511	
NAVAL STATION FACILITIES RESTORATION - FY1998 JI DING 341 SITE CHARACTERIZATION STUDY SAMPLING LOCATION DIAGRAM	
CARE CODE 80081 SIZE D	SCALE: 1" = 50'
EFD NO. NOS-E-8117	SPEC. NO. 88-G
4377032	ENVR 0021
ENV11202	SHEET 3
C-2	

REVISIONS
INTERPRET THIS DRAWING IN ACCORDANCE WITH DDG-STD-100
H.O. 40289A CODE 0958184



Office of Water Resources
1201 Greenbrier Street
Charleston, WV 25311-1088
304-558-2108
304-558-2780 fax

West Virginia Division of Environmental Protection

Cecil H. Underwood
Governor

Michael P. Miano
Director

9 March 1999

Les H. Mull II
Environmental Specialist
ABL Environmental Group
210 State Route 956
Rocket Center,
West Virginia 26726

Re: Allegany Ballistics Laboratory
Building 341
Rocket Center, Mineral County

Dear Mr. Mull:

The Groundwater Program of the Office of Water Resources has received a *Site Characterization Study* for the Building 341 area of your facility. This Study was prepared by Alliant Techsystems, and the accompanying cover letter was dated February 19th, 1999.

This report documented the following:

- Building 341, a metal building measuring 28 by 38 feet, is located near the eastern end of the ABL plant. The building provides compressed air to the eastern third of the plant. Building 341 and the adjacent Building 341A were constructed in the mid-1960's, when the previous building, Building 303, was damaged in an explosion. Building 303 was also a utility building with the same function as Building 341.
- Utilities in the vicinity of Buildings 341 and 341A consist of air, steam, electrical, sanitary sewer, and water. The air, steam, and electrical utilities are aboveground, while the sanitary sewer and two water lines (one active, one abandoned) are underground.
- At present, there are two vacuum pumps and a tempered water system located in Building 341A and a large piston air compressor, air dryer unit, and an oil-water separator in Building 341. The pumps, air compressor, and water system were originally located in Building 303. The oil-water separator was installed in

1995 to replace an outdated unit, and it discharges treated water to the ABL sanitary sewer. Prior to 1995, the discharges are believed to have been piped directly to the surface somewhere in the vicinity of the building's southeastern corner.

- Currently, several petroleum products are stored in Building 341 and 341A. These include hydraulic fluids and lubricated oils for the equipment. It is believed that similar products have been stored in the two buildings since the 1960's.
- Previous inspections have identified significant staining on the floor inside Building 341 and along the outer southeastern edge of the building. The exact source of the staining is unknown, and the magnitude and extent of these suspected releases are unknown.
- There are three vertical cast iron pipes located at the northwestern corner of the original building pad. These have been identified as potential pathways through which past releases could have reached the subsurface. No drawings of Building 341 or Building 303 have been found to verify the purpose of these pipes, but it is believed they were installed to carry equipment discharges, such as non-contact cooling water and steam condensate. With the removal of Building 303, it is likely that the active use of these pipes was discontinued. Two of the pipes are located on the outside of Building 341, while one is located inside the building.
- A preliminary investigation of these pipes was conducted in November of 1997, when approximately 55 gallons of groundwater was pumped from Pipe A and sampled for solvents and PCBs. No contaminants were detected. No hydrocarbons were tested for. During pumping it was determined from the drawn down on Pipes B and C that the three pipes are connected, either physically or hydraulically.
- In the early 1990's, according to interviews with the facility personnel, an ABL maintenance crew discovered hydrocarbon contamination in both the soil and groundwater at the southeast corner of Building 341 while excavating a shallow footer trench. No sampling was conducted and no formal documentation of the event was made. No other investigations have been made of this building to date.

It is our office's understanding that it is your plan to now initiate the following at this building:

- Complete a subsurface survey to determine the nature and the horizontal and vertical extent of the suspected contamination. Sampling of both the soil and groundwater shall be conducted to ascertain the concentration and phases of any contamination. All subsurface utilities and piping will also be located and investigated as potential contaminant routes.
- Initially a ten by ten foot grid will be established around the Building 341 and 341A pad site. Twenty borings shall be made along the perimeter of the building pad using a Geoprobe. The first set of borings will be made approximately five feet from the edge of the building pad. Where conditions dictate that the boring locations must be moved, an alternative site will be chosen as near to the original site as possible.
- The samples will be analyzed on site for TPH-GRO, TPH-DRO, and a suite of PAHs using a mobile laboratory. Based on a knowledge of past and present operations at the site, there is no reason to believe any products containing BTEX were used around the building.
- As the analytical results are received, the field supervisor will determine the number and location of subsequent borings, as well as make any necessary changes to the sampling and/or analytical procedures. This process will continue until the full extent of the contamination at the site has been delineated.
- Following the completion of the field work, a report documenting the findings, including copies of all supporting documentation, will be prepared and submitted to our office for our review.

Our office is in general agreement with your proposed plan; however, we do have one serious concern and several additional criteria.

Our serious concern is that our office cannot allow you to delineate the extent of the contamination using only a mobile laboratory. The problem, simply put, is that a field laboratory cannot be properly calibrated to give accurate results. Results often indicate there is contamination when there is not, and vice versa. On the other hand, we realize that you will need to obtain the results immediately if your plan to delineate the contamination in one mobilization is to be achieved, and we can offer two suggestions.

The first option is to locate beforehand the services of a nearby permanent West Virginia certified laboratory, rush the samples to this laboratory, and obtain a fast turnaround. The samples from the first geoprobe samples can be analyzed at this laboratory while the geoprobe is collecting its subsequent samples. The additional geoprobe sampling (after the first 20 samples) can then be based on the results of the permanent laboratory's analytical results.

The second option is to use the mobile laboratory to locate the contamination in the field, and then confirm the results using a permanent West Virginia certified laboratory. This will allow you to have the fast turn around in the field, but also the more analytical dependable samples from the permanent laboratory.

Regardless of which method is used, the individual soil samples should be located within the vertical geoprobe column by the use of a PID detector, visual examination, and odor. The sample with the worst contamination is the sample that should be sent to the mobile and permanent laboratories. On occasion, it may be necessary to collect more than one sample from each geoprobe column, if severe contamination is found at more than one location.

If groundwater is encountered, then a groundwater sample should be collected for analysis at the permanent West Virginia certified laboratory.

Despite that fact your office has already collected some VOC data, it would still be very wise to collect additional such data. These volatiles should not only include the four BTEX compounds, but the most-commonly encountered chlorinated solvents, such as what you analyzed for during your previous investigation. These should be analyzed for at the permanent West Virginia certified laboratory.

Those PAHs tested for should include at a minimum fluorene, phenanthrene, naphthalene, acenaphthene, and acenaphthylene, which are the five PAHs most soluble in water. To be truthful, it would be wise to test not only for PAHs, but also for a complete suite of semi-volatiles. These too should be analyzed for at the permanent West Virginia certified laboratory.

TPH-DRO and TPH-GRO should be tested for at all of the geoprobe locations, and these should be tested using the permanent West Virginia certified laboratory (as well as the field laboratory, if you so choose). TPH testing should be EPA Method 8015. The DRO test should include a high enough carbon range to include lube-oil grade petroleum products.

Allegany Ballistics Laboratory,
Building 341
9 March 1999, page 5.

The volatiles and semi-volatiles need not be permanent-laboratory tested at each geoprobe location. They can instead be tested at approximately every third location; however, they should be tested for at every location that displays severe visual, odor, and/or PID contamination.

The first two groundwater samples should also be sampled for TPH-DRO, TPH-GRO, and a complete set of volatile and semi-volatile parameters at the permanent West Virginia laboratory. After that, only every third sample need be tested for the volatiles and semi-volatiles. All of the groundwater samples should be analyzed for TPH-DRO and TPH-GRO at the permanent West Virginia laboratory.

The samples collected at the northern end of the building pad should be kept as close to the concrete pad as possible. This is so the area under the pad, where Pipes A, B, and C lead to, can be adequately tested. If necessary, it a jackhammer may be required to break the concrete so that this area can be more thoroughly tested.

If contamination is found near the underground conduits, then—when stepping out from the first set of samples—the field supervisor should take great care to place the subsequent samples as close to the underground conduits as is safely possible. This is so that any possible contaminant route following the underground conduit can be adequately tested.

The local Enforcement inspector, Bill Timmermeyer, should be contacted approximately ten working days before the geoprobe investigation is to be begun. Mr. Timmermeyer's phone number is 304-822-3551.

Please be advised that one of our ultimate goals at this site is the proper closure of the three vertical pipes under the applicable Underground Injection regulations.

Lastly, two copies of each subsequent report should be provided, so that we can give a copy to Enforcement.

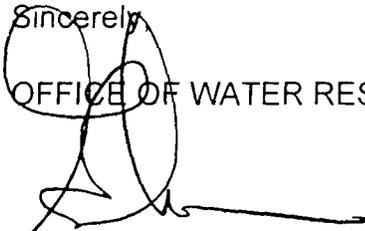
If you are in agreement with our above-outlined criteria, please send us a short letter stating that fact. We will then give you permission to begin work in the field.

Allegany Ballistics Laboratory,
Building 341
9 March 1999, page 6.

If you have any questions, please do not hesitate to contact me at 304-558-2108. Our teletypewriter number is 304-558-2751.

Sincerely,

OFFICE OF WATER RESOURCES



George R. Dasher
Geologist
Groundwater Program

cc: Tom Bass, Office of Environmental Remediation
Rindy Clayton, Underground Injection, Groundwater Program
Tina Parsons, Geologist, Groundwater Program
Bill Timmermeyer, Inspector, Environmental Enforcement
Dave Watkins, Manager, Groundwater Program



Office of Water Resources
1201 Greenbrier Street
Charleston, WV 25311
304-558-2108
Fax Number 304-558-2780

West Virginia Division of Environmental Protection

Cecil H. Underwood
Governor

Michael P. Miano
Director

March 31, 1999

Mr. Alex Priskos
Vice President and General Manager
Alliant Techsystems, Inc.
State Route 956
P.O. Box 210
Rocket Center, WV 26726-0210

Re: Allegany Ballistics Laboratory UIC Inspection

Dear Mr. Priskos:

On December 14 and 15, 1998, personnel from the Office of Water Resources (OWR) and Office of Environmental Remediation (OER) conducted Underground Injection Control (UIC) inspections at the Alliant Techsystems, Inc./Allegany Ballistics Laboratory facility located in Rocket Center, West Virginia. Results of that inspection are contained herein, including measures to be taken by Alliant Techsystems to ensure compliance with West Virginia state regulations §47CSR13 and §47CSR58.

General actions to be taken by Alliant Techsystems are as follows.

1. Evaluate the validity of each sump inspected to determine its use as an injection well by ascertaining whether the sump acted as a conduit for the subsurface emplacement of fluids either by direct or indirect means.
2. Characterize all effluent and sludge located within each sump, using methods specified for each individual sump as incorporated within the body of this report, prior to any waste disposal or well closure. Each sample shall be analyzed using the lowest levels of detection and be performed by a West Virginia certified laboratory.
3. Prepare a closure plan for each sump in accordance with UIC program guidelines, and submit such report to the UIC program for review and approval.

Specific actions to be taken per individual sump:

Sump 37R is a covered circular concrete structure extending approximately three to four inches above ground level, of unknown depth and containing fluids and possibly sludge. Alliant Techsystems will determine whether this sump is enclosed or open at the bottom. Alliant Techsystems will also ascertain the integrity of the sump by inspecting for cracks or fractures within the body of the sump. Alliant Techsystems will analyze both the effluent and sludge, if present, for Target Compound List (TCL) and Total Analyte List (TAL) and Ammonium Perchlorate (AP).

Sump 37X requires the same action as sump 37R above. In addition, all floor drain(s) located within building 214 conveying substances to this sump are to be properly closed. Alliant Techsystems shall prepare a closure plan for these drains and submit that plan to the UIC program for review and approval.

Sump 37N is a rectangular concrete structure that extends approximately three to four inches above ground level containing two conduit openings and covered with a metal lid. A metal basket rested inside this sump. Action required for this sump is the same as for sump 37R above except analyses performed on the effluent and sludge should be for TCL and TAL and dissolved chromium (hexavalent and trivalent). The results of each chromium analysis is to be summed to achieve a total chromium concentration. If this requirement is unclear, the UIC program office is to be called at 558-2108 for further clarification.

Sump 37V is a rectangular concrete structure extending approximately two feet above ground, of unknown depth, containing fluids and possibly sludge, and covered with a wooden lid. At least three conduit openings were observed on the inside of the sump. Action required for this sump is the same as for sump 37R, except effluent and sludge samples should be analyzed for Cyclotetromethylene Tetranitramine (HMX), Royal Demolition Explosive (RDX), Nitroglycerin (NG), Pentaerythritol Tetranitrate (PETN), and Ammonium Perchlorate (AP). An ancillary sump, a circular terracotta tile structure extending approximately three to four inches above ground, was also observed. It is of unknown depth, contains fluids and possibly sludge, and is covered with a wooden lid. Effluent and sludge samples from this ancillary sump should be analyzed for TCL and TAL.

Sump 37W is a rectangular concrete structure extending approximately two to three feet above ground and covered by a wooden lid. The contents and depth of this sump were not determined. Action required is the same as for sump 37R above, except that the effluent and sludge samples should be analyzed for PETN, NG, TNT (trinitrotoluene), and TCL.

Sump 37B is a rectangular concrete structure extending approximately one foot above ground level and of unknown depth. Steam was observed exuding from this structure. For actions required see Sump 37BB below.

Sump 37BB is a rectangular concrete structure set approximately level with the ground surface and covered with a metal perforated lid. Depth is unknown. Action required for both sumps 37B and 37BB is the same as for sump 37R, except effluent and sludge samples should be analyzed for hydrocarbons using EPA method 8015 TPH-GRO (Gasoline Range Organics) and TPH-DRO (Diesel Range Organics) including lubricant oils, solvents using EPA method 601, and coolants. Metals should also be analyzed using TAL. In addition, all internal building drains or conveyances including sinks shall be properly closed. Alliant Techsystems shall prepare a closure plan for all drains and conveyances and submit such plan to the UIC program for review and approval. Both sumps 37B and 37BB are located in building 7.

Sump 37I appears to be earthen. Action required for this sump is the same as for sump 37R above, except effluent and sludge samples should be analyzed for liquid explosives HMX, RDX, NG, PETN, AP and lead citrate.

Sump 37O appears to be earthen. Action required is the same as for sump 37R above, except effluent and sludge samples should be analyzed for TCL, HMX, RDX, NG, PETN, and AP. Also, a cast iron pipe approximately four to six inches in diameter is located near this sump. Alliant Techsystems should ascertain the pipe's function and contents.

Sump 37Q has been filled with concrete and closed. No further action is required of this sump.

Sump 37A requires the same action as sump 37R, except effluent and sludge samples should be analyzed for PETN, HMX, RDX, NG, and AP.

Sumps 37C, D, E, F, G, H, J, K, L, M, P, S, T, and U have been removed. Further action will be deferred until all analyses of the remaining sumps have been received and reviewed by the Office of Water Resources.

Subsequent actions to be taken by Alliant Techsystems at the following facilities:

Building 8: A surface discharge of an acrid, odorous nature appeared to be exiting from the rear of this building into a conduit for surface discharge. Alliant Techsystems shall analyze this discharge for TCL and TAL.

Building 256: Previous UIC actions were taken by the Office of Water Resources to rectify concerns regarding steam condensate blowdown to eliminate subsurface injections and impacts to ground water. Preventive measures in the form of splash guards were not being maintained. Apparently the rapid drip/pressurized discharge of steam condensate had resulted in the deterioration of the splash guards. Alliant Techsystems is directed to inventory these preventive measures, and return them to compliance where deterioration of these splash guards has occurred. Due to the nature of steam condensate blowdown these sites will require perpetual maintenance which is a requirement of Alliant Techsystems Groundwater Protection Plan (GPP) and a condition of the National Pollutant Discharge Elimination System (NPDES) permit. Failure to comply with the GPP requirements could jeopardize the status of the NPDES permit.

Building 341: Incidental to the remedial action taking place at this building, two small drains outside and one small drain inside this building were observed. Action required by Alliant Techsystems is to analyze the effluent and sludge from these drains for TCL, TAL and TPH. Alliant Techsystems should prepare a closure plan for these drains and submit the plan to the UIC program for review and approval.

In addition to the requirements specified above, Alliant Techsystems is to inventory any other sumps not identified by this inspection, and all septic systems whether in-service or not. All such sumps and septic systems should be identified on a facility-wide map with latitudinal and longitudinal coordinates (degrees, minutes and seconds) for each. For those systems presently in-service and not covered under a UIC permit, Alliant Techsystems is hereby notified that a permit is required for operation of these systems. Alliant Techsystems must contact the UIC program for a permit application. If Alliant Techsystems intends to discontinue operation of these systems, then Alliant Techsystems shall prepare a plan for proper closure of these septic systems and submit the plan to the UIC program for review and approval. Prior to closure, the effluent and sludge fractions of these systems will require characterization for proper handling and disposal in accordance with applicable state and federal regulations.

Alliant Techsystems may incorporate all requirements of this letter into one action plan to be submitted to the UIC program, Office of Water Resources no later than June 1, 1999. A copy of such plans shall also be submitted to the Office of Environmental Enforcement (OEE) inspector in Mineral County, Mr. Bill Timmermeyer at 1 Depot Street, Romney, WV 26757. Mr. Timmermeyer and the UIC program shall be notified no later than ten days prior to commencement of any action required in this letter.

Allegany Ballistics Laboratory/UIC Inspection
March 31, 1999
Page 5

Any questions regarding this letter should be directed to Rindy Clayton at (304) 558-2100 or TDY (304) 558-2751. Ms. Clayton's e-mail address is *rclayton@mail.dep.state.wv.us*.

Sincerely,

OFFICE OF WATER RESOURCES



Rindy Clayton
Environmental Resource Specialist II
Ground Water /UIC Program

- cc: Tom Bass, OER/Superfund
- George Dasher, OWR/Ground Water Program
- Steve Hoffman, Naval Sea Systems Command
- Tina Parsons, OWR/Ground Water/UIC Program Supervisor
- Jerry Ray, OWR/Permits Section/Assistant Chief
- Bill Timmermeyer, OEE/Environmental Inspector
- David P. Watkins, OWR/Ground Water/UIC Program Manager
- John Waugaman, Alliant Techsystems



Alliant Missile Products Company LLC Tel 304 726-5000
Allegany Ballistics Laboratory
210 State Route 956
Rocket Center, WV 26726-0210

May 11, 1999

Mr. George Dasher
West Virginia Division of Environmental Protection
Office of Water Resources
1201 Greenbrier Street
Charleston, WV 25311-1088

**Reference: Building 341 Site Characterization Study
Allegany Ballistics Laboratory
Rocket Center, Mineral County**

Dear Mr. Dasher:

Alliant Techsystems (ATK) prepared and submitted the above referenced Site Characterization Study to the Groundwater Program of the Office of Water Resources on February 19, 1999. On March 15, 1999, ATK received a response to its proposed Study from the Groundwater Program (Letter dated March 9, 1999) that expressed concern over the exclusive use of a mobile laboratory for conducting analyses associated with the Study. That response also included a request for the analysis of several additional parameters as part of the initial round of sampling to be conducted at the site.

ATK has reviewed the Groundwater Program's response and find the requested changes to be relevant and appropriate. It is therefore ATK's intention to revise the Study as follows:

1. All samples (both soil and groundwater) collected as part of the Site Characterization Study will be sent to a permanent West Virginia certified laboratory for analysis.
2. The use of a mobile laboratory for "real time" delineation of the extent of contamination is entirely optional on the part of ATK.
3. A PID detector (along with visual and olfactory examination) will be used to screen each soil boring, with that portion of each boring identified as having the greatest contamination being collected and sent to the laboratory for analysis. Where more than one portion of a single boring contains severe contamination, each portion will be individually sampled and analyzed.
4. Soil and groundwater samples collected during the first round of sampling at boring locations B1 through B20 (Attachment I) will be analyzed for those parameters identified in the attached Soil & Groundwater Sampling Matrices (Attachment II). As requested, ATK will have all soil and groundwater samples analyzed for TPH-GRO and TPH-DRO (Extended Range). Approximately every third set of samples will be analyzed for the Target Compound List (TCL) Volatiles and TCL-Semivolatiles, which include BTEX, PAHs, and a third of the Spent Solvents (F001-F005) analytes.

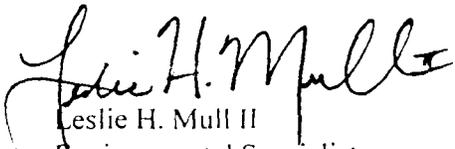
... (PCBs) were detected during preliminary sampling of the vertical cast iron pipes in November 1997, and ATK has no reason to believe any of these contaminants are present today, all soil and groundwater samples collected from borings B1 and B11 will be analyzed for these parameters to confirm their absence. Samples from these two locations were specifically selected for solvent analysis since it is expected, based on the site history, that the greatest potential for finding contamination exists at these locations.

5. The initial round of borings (B1-B20) will be placed as close to the building pad as possible with all subsequent borings being located based on a 10'x10' grid pattern as originally proposed by ATK. Sampling near underground conduits (i.e., water lines, sewer lines, and electrical utilities) will be conducted as close as possible to the conduits without sacrificing safety.
6. The northwest corner of the building pad, including the three (3) vertical cast iron pipes, will be evaluated using all reasonable means to characterize that area, including possible excavation of select portions of the building pad.

Any other guidance prescribed in your March 9 correspondence and not specifically addressed above will also be incorporated into the scope-of-work for this effort. ATK requests the Groundwater Program's written concurrence with the proposed Study as it now stands revised.

If you have any questions or need additional information, please do not hesitate to contact me at 304-726-5425.

Sincerely,



Leslie H. Mull II
Environmental Specialist
ABL Environmental Group

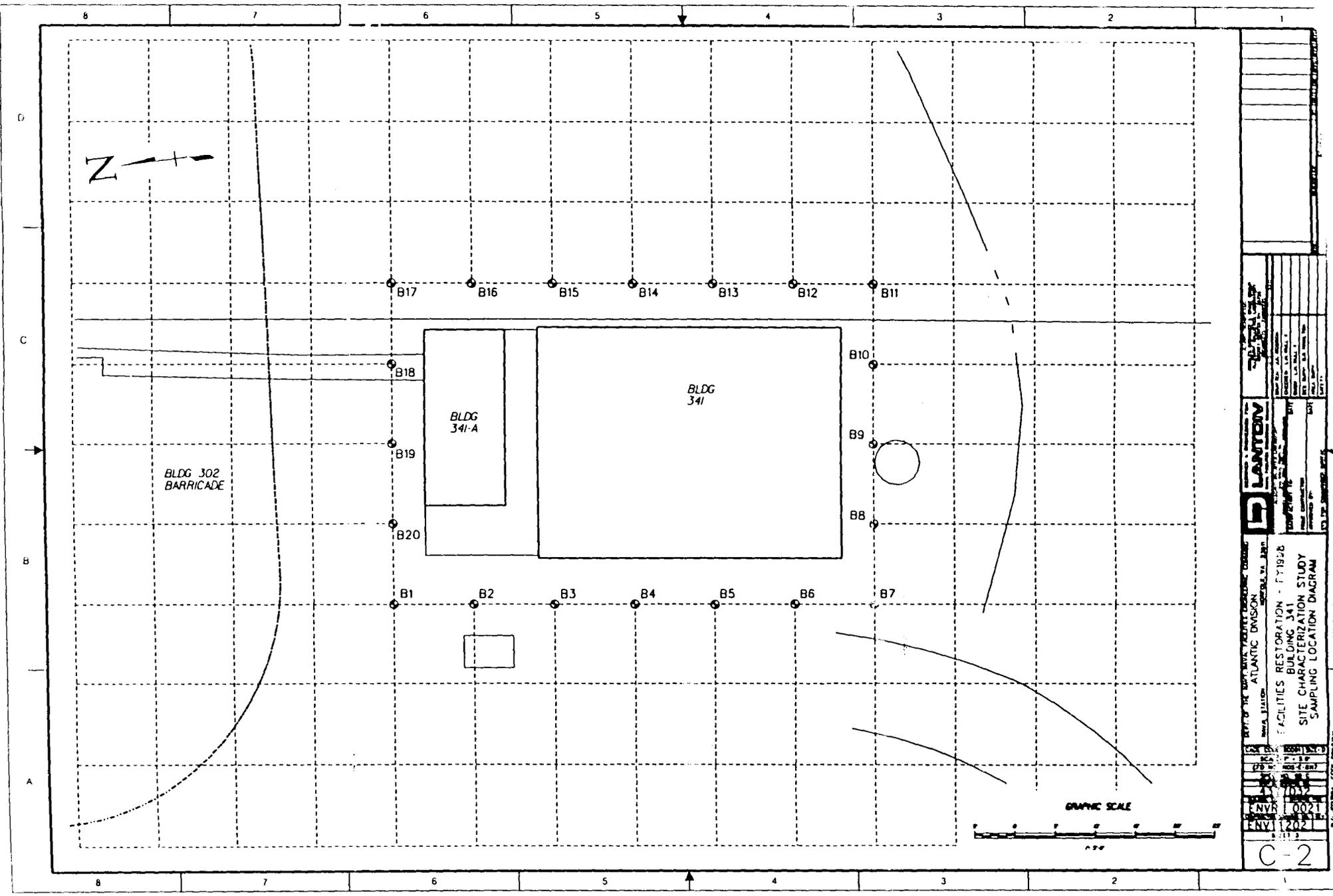
Attachments

cc: Lou Williams (NAVSEA)

ATTACHMENT I

**Allegany Ballistics Laboratory
Building 341 Site Characterization Study**

SAMPLING LOCATION DIAGRAM



LANTON Environmental Services, Inc. 10000 Old York Road, Suite 100 York, PA 17403 Phone: 717-765-1111 Fax: 717-765-1112	
PROJECT: FACILITIES RESTORATION - FT 1928 BUILDING 341 SITE CHARACTERIZATION STUDY SAMPLING LOCATION DIAGRAM	DRAWN BY: [initials] CHECKED BY: [initials] DATE: 0021 1/20/01
C-2	

ATTACHMENT II

**Allegany Ballistics Laboratory
Building 341 Site Characterization Study**

SOIL & GROUNDWATER SAMPLING MATRICES

Allegany Ballistics Laboratory
Building 341 Site Characterization Study
SOIL & GROUNDWATER SAMPLING MATRICES
1st Round Sampling (B1-B20)

SAMPLING LOCATION ID	SOIL									
	MOBILE LAB*					PERMANENT LAB				
	TPH-GRO (SW 8015B)	TPH-DRO (SW 8015B)	TCL-VOLATILES	TCL-SEMIVOLATILES	SOLVENTS (F001-F005)	TPH-GRO (SW 8015B)	TPH-DRO (SW 8015B)	TCL-VOLATILES	TCL-SEMIVOLATILES	SOLVENTS (F001-F005)
B1	x	x				x	x	x	x	x
B2	x	x				x	x			
B3	x	x				x	x			
B4	x	x				x	x	x	x	
B5	x	x				x	x			
B6	x	x				x	x			
B7	x	x				x	x	x	x	
B8	x	x				x	x			
B9	x	x				x	x	x	x	
B10	x	x				x	x			
B11	x	x				x	x	x	x	x
B12	x	x				x	x			
B13	x	x				x	x			
B14	x	x				x	x	x	x	
B15	x	x				x	x			
B16	x	x				x	x			
B17	x	x				x	x	x	x	
B18	x	x				x	x			
B19	x	x				x	x	x	x	
B20	x	x				x	x			
Totals	20	20	0	0	0	20	20	8	8	2

SAMPLING LOCATION ID	GROUNDWATER									
	MOBILE LAB					PERMANENT LAB				
	TPH-GRO (SW 8015B)	TPH-DRO (SW 8015B)	TCL-VOLATILES	TCL-SEMIVOLATILES	SOLVENTS (F001-F005)	TPH-GRO (SW 8015B)	TPH-DRO (SW 8015B)	TCL-VOLATILES	TCL-SEMIVOLATILES	SOLVENTS (F001-F005)
B1						x	x	x	x	x
B2						x	x			
B3						x	x			
B4						x	x	x	x	
B5						x	x			
B6						x	x			
B7						x	x	x	x	
B8						x	x			
B9						x	x	x	x	
B10						x	x			
B11						x	x	x	x	x
B12						x	x			
B13						x	x			
B14						x	x	x	x	
B15						x	x			
B16						x	x			
B17						x	x	x	x	
B18						x	x			
B19						x	x	x	x	
B20						x	x			
Totals	0	0	0	0	0	20	20	8	8	2

* Mobile Lab analyses are optional.



Office of Water Resources
1201 Greenbrier Street
Charleston, WV 25311-1088
304-558-2108
304-558-2780 fax

West Virginia Division of Environmental Protection

Cecil H. Underwood
Governor

Michael P. Miano
Director

24 May 1999

Les H. Mull II
Environmental Specialist
Alliant Techsystems
Allegany Ballistics Laboratory
210 State Route 956
Rocket Center,
West Virginia 26726

Re: Allegany Ballistics Laboratory
Building 341
Rocket Center, Mineral County

Dear Mr. Mull:

The Groundwater Program of the Office of Water Resources has received your letter, dated May 11th, 1999, which was a response to our office's letter of March 9th, 1999. Your May letter delineated the following:

- All soil and groundwater samples collected as a part of the Site Characterization Study will be sent to a permanent West Virginia certified laboratory for analysis.
- The use of a mobile laboratory for "real time" delineation of the contamination is optional on the part of your office.
- A PID detector, along with visual and olfactory examination, will be used to screen each soil boring. That portion of each boring that is identified as having the greatest contamination will be sent to the laboratory. If more than one part of a single boring contains severe contamination, then each portion will be individually analyzed.
- Of the 20 soil and groundwater samples collected during the first round of sampling (at those locations closest to the building), all 20 will be analyzed for TPH-DRO and TPH-GRO groundwater and soils, eight will be analyzed for volatiles and semi-volatiles groundwater and soils, two will be analyzed for solvents groundwater and soils, and 11 will be analyzed for PCB's groundwater and soils.

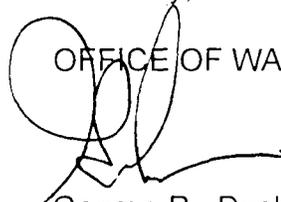
Allegany Ballistics Laboratory,
Building 341
24 May 1999, page 2.

- The initial round of sampling will be placed as close as possible to the building pad. All subsequent borings will be located based on a 10- by 10-foot grid pattern. Sampling near the underground conduits will be conducted as close as possible without sacrificing safety.
- The northwestern corner of the building pad, which includes the three vertical cast iron pipes, will be evaluated using all reasonable means to characterize that area, including the possible excavation of select portions of the building pad.

Our office is in agreement with your proposed plan. We have no additional suggestions or recommendations, and you have our permission to begin work in the field. Please contact both our office and the local Environmental Enforcement inspector approximately ten working day before the work will begin. The local inspector is Mr. Bill Timmermeyer, whose phone number is 304-822-3551.

If you have any questions, please do not hesitate to contact me at 304-558-2108. Our teletypewriter number is 304-558-2751.

Sincerely,



OFFICE OF WATER RESOURCES

George R. Dasher
Geologist
Groundwater Program

cc: Tom Bass, Office of Environmental Remediation
Tina Parsons, Geologist, Groundwater Program
Bill Timmermeyer, Inspector, Environmental Enforcement
Dave Watkins, Manager, Groundwater Program



Alliant Missile Products Company LLC Tel 304 726-5000
Allegany Ballistics Laboratory
210 State Route 956
Rocket Center, WV 26726-0210

May 28, 1999

Ms. Rindy Clayton
West Virginia Division of Environmental Protection
Office of Water Resources
1201 Greenbrier Street
Charleston, WV 25311-1088

Reference: Allegany Ballistics Laboratory UIC Inspection

Dear Ms. Clayton:

On December 14 and 15, 1998, personnel from the Office of Water Resources (OWR) and Office of Environmental Remediation (OER) visited Allegany Ballistics Laboratory (ABL) for the purpose of conducting an Underground Injection Control (UIC) inspection. Results of that inspection, including required corrective measures, were detailed in a report from the OWR Groundwater/UIC Program to Alliant Techsystems Inc. (ATK) dated March 31, 1999. ATK, in cooperation with the Navy, propose the following courses of action in addressing each of the items identified in the OWR report:

SWMUs (Wastewater Sumps)

- **Sumps 37B, 37N, 37V and 37V (Ancillary), 37W, and 37BB:** These sumps have all been identified as part of the ongoing Installation Restoration Program (IRP) i.e., "Superfund" effort at ABL and are scheduled for appropriate correction actions as agreed to by the Navy (NAVFAC), EPA, and OER. All conveyances discharging to Sumps 37B and 37BB were disconnected and or plugged by ATK in March 1999 as part of a sanitary sewer upgrade project at ABL. Wastewaters previously discharged to these sumps from sources in Building 7 are now directed to an aboveground storage tank.
- **Sump 37A (Building 4):** In the 1940s this concrete sump received wastewater from operations involving PETN. Currently, there is no active discharge of any wastewater to this sump. Sump 37A was investigated as part of a Phase I RCRA Facility Investigation conducted at ABL in 1995 and based upon results of that investigation recommended for no further action. ATK will proceed with a plan to evaluate and close this sump in accordance with all applicable UIC requirements.
- **Sump 37I (Building 49):** From the 1940's to the early 1990's, this earthen lined sump received wastewater contaminated with liquid explosives. As with Sump 37A, this sump was recommended for no further action following the RCRA investigation in 1995. The exact location of Sump 37I has never been determined due to the absence of any physical feature in the area where it was believed to have been located. A groundwater sample collected during the 1995 investigation, from what was

believed to be the approximate location of the sump, was analyzed for both PETN and Nitro, with neither contaminant being detected. Based on the findings of the RCRA investigation and due to the lack of an existing physical structure, ATK believes that no potential threat to groundwater exists at this site and therefore proposes no further action for Sump 37I.

- **Sump 37O (Building 226):** This earthen lined sump operated from 1962 to 1970 and managed contact cooling water and building washdown water generated in Building 226. Sump 37O was also investigated in 1995, with soil at the approximate location of the sump being sampled and analyzed for RDX and TNT. Neither explosive contaminant was detected in the soil and this sump was also recommended for no further action based on the lack of findings. Because of the similarity between Sump 37O and 37I (i.e., no remaining physical feature and no findings during the 1995 RCRA investigation), ATK also proposes to take no further action at this sump.
- **Sump 37R (Building 2003):** Sump 37R received ammonium perchlorate (AP) containing wastewater generated during routine maintenance and cleanup of Building 2003. All wastewaters currently generated at Building 2003 as a result of these activities are now collected in a tank to await treatment. All floor drains leading to Sump 37R have been plugged. ATK will proceed with a plan to fully evaluate and close this sump in accordance with applicable UIC *and/or* RCRA requirements.
- **Sump 37X (Building 214):** Sump 37X received liquids released during the hydrotesting of rocket motor cases in Building 214. [Hydrotesting requires the pressurizing of a rocket motor case to some prescribed pressure or to the point of failure. Most commonly water would be introduced into the case as the pressurizing agent but, historically other liquids are also known to have been used. As a result of each test, a volume of liquid equal to that of the case would be released within the test bays in Building 214. The test bays are interconnected by a trough drain that at one time discharged to Sump 37X.] As part of a building renovation project in 1998, all drains in Building 214 were redirected to the facility's sanitary sewer system and the inlet to Sump 37X was sealed. Evaluation and closure of this sump will be conducted in the same manner as Sump 37R.
- **Sumps (Other):** Three previously undocumented wastewater sumps, tentatively identified by ATK as Sump 2-1, Sump 2-2, and Sump 2-3, have been identified at ABL. All three are located on Plant 2 and received floor drain discharges from Buildings 2000, 2001, and 2008 respectively. Since the discovery of these sumps, the floor drains within each of the buildings they served have been sealed to prevent further discharge to the sumps. ATK will evaluate and close each of these sumps in a manner similar to Sumps 37R and 37X.

Per direction from the Groundwater UIC Program, ATK will evaluate Sump 37A, Sump 37R, Sump 37X, Sump 2-1, Sump 2-2, and Sump 2-3 to determine each of their potential to act as a conduit for the subsurface injection of fluids. The contents and/or effluent of each sump will be characterized as prescribed in the UIC Inspection Report and a closure plan will be submitted to your office for review and approval.

Miscellaneous items

- **Building 8, Environmental Unit:** During the UIC investigation, a surface discharge of steam condensate from an environmental unit located at Building 8 was identified for further investigation (i.e., sampling and analysis). The environmental unit in question serves a portion of Building 8 that

houses a manufacturing operation, specifically the degreasing of metal parts using chlorinated solvents. The "acrid" odor detected by the UIC inspection team in the vicinity of the environmental unit was the result of vapors from those solvents and did not originate from the condensate discharge as documented in the UIC Inspection Report. ATK therefore believes that no action is warranted with regard to this issue.

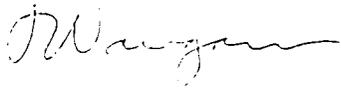
- **Building 256, Injection Well:** In 1995 ATK conducted a UIC survey at ABL, identifying 57 Class 5 injection wells across the facility. The majority of those injection wells received steam condensate blowdown from either steam distribution lines or steam using processes and equipment. Under a UIW Closure Plan agreed to between ATK and the OWR (UIC Section), those 57 injection wells were modified in September 1995 using either concrete plugs or pre-cast caps. During the recent UIC inspection at ABL in December 1998, one of the discharges, located near Building 256, was found to have a badly deteriorated cap allowing potential injection or infiltration of steam condensate into the subsurface. This finding has raised a question as to the condition of the plugs or caps at the remaining closure sites. ATK has begun to conduct inspections of all Class 5 injection wells closed in 1995 and will make repairs as necessary to the plugs or caps at those locations to prevent the subsurface injection of fluids. The ABL Groundwater Protection Plan (GPP) will also be revised by ATK, incorporating a requirement for such inspections to be conducted on a quarterly basis.
- **Septic Tanks:** A septic tank survey conducted at ABL in 1995 identified 25 units that had been in use at one time or another during the facility's 57 year history. Of those 25 units, only one remains active today. That septic tank (with drainage field) currently provides treatment for sanitary waste from a small operations building (Building 49) on the facility. Building 49 is regularly occupied by less than twenty (20) employees and therefore, based on ATK's understanding of the UIC requirements for Class 5 Injection Wells as defined in 47 CSR 13 of the West Virginia Code of State Regulations, is exempt from any permitting requirement. Of the remaining 24 systems, only one is known to have received both sanitary and process wastes. An investigation and closure of that septic tank is currently being planned by ATK and coordinated through the OER Superfund Section. The other 23 tanks, used exclusively for the treatment of sanitary wastes, will be addressed by ATK using a two-phase approach. Phase 1 will call for a thorough search of all historical records and documentation to determine which, if any of the tanks were closed either through removal or by filling with an inert material. Any tanks found to meet these requirements will be identified as requiring no further action. Phase 2 will consist of a physical search for the remaining tanks using Ground Penetrating Radar (GPR). Tanks located using GPR will be excavated and inspected to determine their status under UIC with all findings being fully documented. Closure plans will be prepared for all "open" tanks on a case-by-case basis and submitted to the Groundwater/UIC section for review and approval.
- **Building 341:** ATK has submitted a proposed Site Characterization Study to the OWR Groundwater Program for Building 341 that includes an investigation of the three drains mentioned in the UIC Investigation Report. Following completion of the Site Characterization Study, ATK will submit a Closure Plan for those drains to the Groundwater Program for review and approval.

As requested, two facility-wide maps have been included that identify the locations of all septic tanks and sumps at ABL. These maps are all inclusive, with no other units of either type being known or suspected to exist on the facility. In the unlikely event that an additional septic tank or sump is discovered at ABL

following closure of the units identified above, ATK will immediate issue a report to the OWR Groundwater/UIC Program documenting the finding and proposing corrective actions.

If you have any questions or need additional information, please do not hesitate to contact me at 304-726-5218.

Sincerely,



John L. Waugaman
Environmental Manager
Allegany Ballistics Laboratory

Enclosures

cc: Tom Bass (OER, Superfund Section)
Dawn Hayes (NAVFAC)
Bill Timmermeyer (OEE, Romney)
Lou Williams (NAVSEA)



Alliant Missile Products Company LLC Tel 304 726-5000
Allegany Ballistics Laboratory
210 State Route 956
Rocket Center, WV 26725-0210

September 10, 1999

West Virginia Division of Environmental Protection
Office of Water Resources
Groundwater Program
1201 Greenbrier Street
Charleston, WV 25311

**Subject: Project Specification for Site Characterizations and Unit Closures;
Building 252, Building 341, SWMU 37A, SWMU 37X, Septic Tanks (24);
Allegany Ballistics Laboratory (ABL), Mineral County**

Dear Mr. Dasher:

As discussed in our conversation on September 7, I am providing the subject Project Specification for your review and comment. This Specification details both general and specific requirements for conducting site characterization studies at two compressor houses (Building 252 and Building 341), two former wastewater sumps (SWMU 37A and SWMU 37X), and twenty-four (24) septic tank sites, located on ABL Plant 1. Closure of the two SWMUs is also to be included as part of this project.

Work to be performed under this Specification at the compressor houses and septic tank sites should be considered Phase I of a two-phase effort. Phase II will address the implementation of any remedial actions that may be required as a result of the Phase I (i.e., site characterization studies) findings at those locations. It is both Alliant Techsystems' and the Navy's desire to work with the OWR Groundwater Program in developing the requirements for Phase II following a full review of the data generated during the investigative phase.

ABL is awaiting comments from the Groundwater Program before finalizing this Project Specification and starting the bid solicitation process.

If you have any questions or require any additional information, please do not hesitate to call me at 304-726-5425.

Sincerely,

Leslie H. Mull II
Environmental Specialist
Allegany Ballistics Laboratory

cc w/ enclosures: Tom Bass, OWM Superfund Group
Rindy Clayton, OWR Groundwater Program
Bill Timmermeyer, OEE (Romney)

PROJECT SPECIFICATION
September xx, 1999

Purpose

This specification covers Subcontractor requirements for conducting site characterization studies at twenty-seven (27) locations at Allegany Ballistics Laboratory (ABL), Rocket Center, WV. Specific locations to be investigated include two active compressor houses (Building 252 and Building 341), two inactive wastewater sumps, identified as Solid Waste Management Unit (SWMU) 37A and SWMU 37X, and twenty-three (23) inactive or abandoned septic tanks and one (1) active septic tank. The purpose of these studies will be to determine if any soil and/or groundwater contamination exists at the sites and, if so, to delineate the nature and extent of the contamination. This project will also include closure of both the SWMUs through complete removal of the physical units following characterization of any contents. All activities to be undertaken per this specification must be in accordance with all applicable State and Federal regulations.

Attachment I to this specification includes 1) an ABL Plant 1 Map showing the general locations of the compressor houses and the SWMUs, 2) individual site maps for Building 252, Building 341, SWMU 37A (Building 4), and SWMU 37X (Building 214), and 3) a Septic Tank Location Map.

(Note: The title "Subcontractor" shall mean the party performing the work of the Subcontractor, as covered by this specification, whether directly or by lower-tier subcontractors and suppliers. The title "Contractor" as used in this specification shall mean "Alliant Missile Products Company LLC (ATK), Allegany Ballistics Laboratory.")

Site Backgrounds and History

Building 252: Building 252 is a 25' x 25' metal utility building located on a concrete pad of the same dimensions. The building, constructed in 1962, contains a reciprocating air compressor unit that supplies compressed air to operations buildings on the southern portion of ABL Plant 1. Based on the age of the building and its known function, there is a high probability of petroleum hydrocarbon contamination being present in the soil and/or groundwater adjacent to the building site.

Building 341: Erected in 1968, Building 341 is a 28' x 38' metal building containing a reciprocating air compressor unit that provides compressed air for the eastern third of ABL Plant 1. The building is co-located on a 28' x 51' concrete building pad with another smaller utility building (Building 341 A). It is believed that one or more areas adjacent to the building pad, and possibly the area under the pad, may have been contaminated with petroleum hydrocarbons (e.g., lubricating oils) as a result of past operational practices at the site.

SWMU 37A: SWMU 37A, located on the south side of Building 4, between Building 4 and Building 4B, is a 36" x 36" x 72" concrete sump that operated during the 1940s and received wastewater from operations involving the solid explosive PETN. The sump was constructed with a closed bottom but the integrity of the structure is suspect due to the presence of cracks. Discharges from the sump were carried to a nearby drainage ditch via vitrified clay pipe. (Note: Buildings 4 and 4B are currently under demolition and will be completely removed by August 31, 1999.)

SWMU 37X: Located adjacent to Building 214, SWMU 37X is a concrete wastewater sump that operated from the early-1960s until 1998 receiving non-explosive liquid discharges generated from the pressure testing of rocket motor cases. The sump is constructed from inverted sections of 36" concrete culvert set in the ground to a depth of approximately ten (10) feet and appears to be open bottomed. Although water had been the primary pressurizing agent used in recent

years, oil or fluids, including petroleum-based products, are known to have been used for testing in the past.

Septic Tanks: Twenty-five septic tanks have served various buildings on ABL Plant 1 during its 58-year history. The Septic Tank Location Map included in Attachment I shows the approximate location of each tank with a numeric identifier. Of those units, one (Tank No. 10) remains active while a second (Tanks No. 4) is currently scheduled for investigation and closure under the ongoing Installation Restoration Program (IRP) at the facility. The status of the remaining twenty-three (23) septic tanks is for the most part unknown. There is no information available to indicate any of the tanks, other than Tank No. 4, received any substances or materials other than sanitary wastes from those buildings they once served.

Sampling and Analytical Requirements – General

1. Sampling of both soil and groundwater shall be conducted as necessary to completely delineate the extent (both vertical and horizontal) of any contamination at each site.
2. All soil, sludge, and groundwater samples must be sent to a permanent West Virginia certified laboratory for analysis unless otherwise directed by the Contractor. Validation of data will not be required.
3. Soil and sediment samples collected at depths of 0-1 foot will be done so using a stainless-steel trowel or similar implement.
4. Soil borings, taken at depths greater than one foot, and all groundwater samples shall be collected using a Geoprobe[®] or similarly capable device (e.g., hand auger).
5. The Subcontractor may be required to perform excavation of concrete and/or bore through concrete where necessary to fully characterize a site, or where directed to do so by the Contractor.

Sampling and Analytical Requirements – Site Specific

Building 252: In conducting the Site Characterization Study at Building 252, the subcontractor must follow the specific guidance for sampling and analysis presented below:

1. Complete a subsurface survey to determine the nature and the horizontal and vertical extent of the suspected contamination. Sampling of both the soil and groundwater shall be conducted to ascertain the concentration and phases of any contamination. All subsurface utilities and piping will also be located and investigated as potential contamination routes.
2. A 10 x 10 foot sampling grid will be established around the Building 252 pad site as illustrated in Attachment I, Building 252 Site Plan/Sampling Location Diagram. Initially, twelve (12) borings shall be made along the perimeter of the building using a Geoprobe[®] (or similarly capable device) with each boring being made as close to the building pad as possible. Where conditions dictate that a boring location must be moved, an alternative site will be chosen as near to the original location as possible.
3. A PID detector, along with visual and olfactory examination, will be used to screen each soil boring. That portion of each boring that is identified as having the greatest contamination will be sent to a WV certified laboratory for analysis. Depth(s) of any identified contamination will be fully documented.
4. The initial round of sampling and analyses at the site shall be conducted per the attached Building 252 Soil & Groundwater Sampling Matrices (See Attachment II). Results received from the initial round of sampling will be used to determine the location and number of any subsequent borings. This process will continue until the full extent of contamination at the site has been delineated.

In conducting the Site Characterization Study at Building 341, the subcontractor must adhere to the following guidance for sampling and analysis as agreed to by Alliant

1. Complete a subsurface survey to determine the nature and the horizontal and vertical extent of the suspected contamination. Sampling of both the soil and groundwater shall be conducted to ascertain the concentration and phases of any contamination. All subsurface utilities and piping will also be located and investigated as potential contamination routes.
2. A 10 x 10 foot sampling grid will be established around the Building 341/341A pad site as illustrated in Attachment I, Building 341 Site Plan/Sampling Location Diagram. Initially, twenty (20) borings shall be made along the perimeter of the building using a Geoprobe® (or similarly capable device) with each boring being made as close to the building pad as possible. Where conditions dictate that a boring location must be moved, an alternative site will be chosen as near to the original location as possible.
3. A PID detector, along with visual and olfactory examination, will be used to screen each soil boring. That portion of each boring that is identified as having the greatest contamination will be sent to a WV certified laboratory for analysis. If a single boring contains two distinct areas of contamination, both areas will be sampled independently for analysis. Depth(s) of any identified contamination will be fully documented.
4. The initial round of sampling and analyses at the site shall be conducted per the attached Building 341 Soil & Groundwater Sampling Matrices (See Attachment II). Results received from the initial round of sampling will be used to determine the location and number of any subsequent borings. This process will continue until the full extent of contamination at the site has been delineated.
5. The northwest corner of the building pad, including the three (3) cast iron pipes, will be fully evaluated using all reasonable means to characterize that area, including possible excavation of select portions of the building pad.
6. Following their complete evaluation, the three (3) cast iron pipes shall be properly closed under the applicable UIC regulations.

SWMU 37A: Specific sampling, analytical, and closure requirements pertaining to SWMU 37A are as follow:

1. Initial sampling shall consist of one sediment/sludge sample collected from within the sump at a depth of 0-1 foot for the purpose of material characterization.
2. Following receipt of analysis results, the sump's contents (i.e. sediments and water) shall be removed and disposed of in a manner deemed appropriate based on the material's characterization. If the contents are characterized as hazardous, pressure washing of the sump shall be required to ensure all residual material is removed prior to excavation of the sump.
3. After removal of all contents, the concrete sump will be completely excavated and disposed of as clean fill at an on-site location to be determined by the Contractor.
4. Following removal of the concrete sump, one sample shall be collected from each of the four walls and the floor of the remaining pit. Samples collected from the walls shall be centered horizontally and at a vertical depth between the outlet pipe and bottom of the sump. The floor sample shall be collected from the approximate center of the pit. All samples will be collected at a depth of 0-1 foot.
5. All samples collected at SWMU 37A shall be analyzed for PETN, HMX, RDX, NG, and Ammonium Perchlorate (AP).

SWMU 37X: Specific sampling, analytical, and closure requirements pertaining to SWMU 37X are as follows:

1. Water sampling at SWMU 37X shall consist of one sediment/sludge sample collected from within the sump at a depth of 0-1 foot and one soil boring taken directly adjacent to the sump at a depth of 10-12 feet.
2. Following receipt of analysis results, the sump's contents shall be removed and disposed of in a manner deemed appropriate based on the material's characterization. If the contents are characterized as hazardous, pressure washing of the sump shall be required to ensure all residual material is removed prior to excavation of the sump.
3. After removal of all contents, the concrete structure shall be completely excavated and disposed of as clean fill at an on-site location to be determined by the Contractor.
4. All samples collected at SWMU 37X shall be analyzed for Target Compound List (TCL) - Total, Target Analyte List (TAL), and Diesel Range Organics (DRO) - Extended (Method 8015B)

Septic Tanks: Specific requirements pertaining to the investigation and closure of the twenty-four (24) septic tanks are as follows:

1. The Subcontractor shall use Ground Penetrating Radar (GPR), or other appropriate means, to identify the exact location of each of the twenty-four (24) units. Where the subsurface survey fails to find a physical structure within a 50-foot radius of where a septic tank was originally believed to be located, as indicated on the Septic Tank Location Map, the tank will be assumed to have been removed and no further action will be required.
2. Upon locating a tank, the Subcontractor will uncover and open the unit to determine its status.
3. All tanks found to contain material will be sampled by collecting a composite sample consisting of individual grab samples taken from a minimum of three depths (i.e., top, middle, and bottom) within the tank. Material will be characterized by Toxicity Characteristic Leaching Procedure (TCLP) and F001-F005 Solvents analysis.

Additional Requirements

1. The Subcontractor is responsible for the proper handling and disposal of all wastes (i.e., soil, sediments, sludges, and water) generated as a result of this project. The Subcontractor must request approval from the Contractor, and obtain a manifest signed by the Contractor, prior to shipping any wastes from ABL for off-site disposal.
2. All liquid wastes generated as a result of these activities are to be drummed and properly labeled pending disposal.
3. All solid wastes and sludges are to be placed in plastic lined roll-offs pending disposal.
4. Backfill material, at all applicable locations, shall consist of limestone chip up to two feet below grade with soil to grade. Soil shall be compacted to 90%.
5. All disturbed areas shall be seeded and mulched within seven (7) days following completion of work.

Deliverables

The Subcontractor shall provide a separate Site Characterization Report for Building 252, Building 341, SWMU 37A, SWMU 37X, and the Septic Tanks that completely documents all actions undertaken as part of each investigation and all findings/results of those investigations. Each report shall include, at a minimum, the following information:

- Introduction/Background
- Summary of Findings including tabulated analytical results
- Maps and diagrams as applicable
- Appendix containing analytical data sheets, field records, sampling logs, and photographs (as requested by the contractor).

Schedule

All initial field work described in this specification for Building 252, Building 341, SWMU 37A, and SWMU 37X must be completed by the Subcontractor within 30 days of contract award with any follow-up field work being completed within 30 days following receipt of laboratory results. The Period-of-Performance for completing all field work associated with the portion of this specification related to Septic Tanks will be 90 days from the date of contract award.

The Subcontractor will provide five (5) copies of each draft Site Characterization Report to ATK for review within 30 days of completing all field work at ABL. Five (5) copies of each final report are due 15 days following receipt of any comments from ATK.

Allegany Ballistics Laboratory

SITE CHARACTERIZATION STUDY LOCATIONS

- **ABL Plant 1 Map; Site Locations**
- **Building 341 Site Plan/Sampling Location Diagram**
- **Building 252 Site Plan/Sampling Location Diagram**
- **SWMU 37A (Building 4) Site Map**
- **SWMU 37X (Building 214) Site Map**
- **Septic Tank Location Map**

ATTACHMENT B

Allegany Ballistics Laboratory

SOIL AND GROUNDWATER SAMPLING MATRICES

- Building 252 Soil & Groundwater Sampling Matrices
- Building 344 Soil & Groundwater Sampling Matrices

Building 252 Site Characterization Study

SOIL & GROUNDWATER SAMPLING MATRICES
1st Round Sampling (B1-B12)

SOIL					
SAMPLING LOCATION ID*	WV Certified Lab				
	TPH-GRO (SW 8015B)	TPH-DRO (SW 8015B)	TCL-VOLATILES	TCL-SEMIVOLATILES	SOLVENTS (F001-F005)
B1	x	x			
B2	x	x			
B3	x	x	x	x	x
B4	x	x			
B5	x	x			
B6	x	x	x	x	x
B7	x	x			
B8	x	x			
B9	x	x	x	x	x
B10	x	x			
B11	x	x			
B12	x	x	x	x	x
Totals	12	12	4	4	4

GROUNDWATER					
SAMPLING LOCATION ID*	WV Certified Lab				
	TPH-GRO (SW 8015B)	TPH-DRO (SW 8015B)	TCL-VOLATILES	TCL-SEMIVOLATILES	SOLVENTS (F001-F005)
B1	x	x			
B2	x	x			
B3	x	x	x	x	x
B4	x	x			
B5	x	x			
B6	x	x	x	x	x
B7	x	x			
B8	x	x			
B9	x	x	x	x	x
B10	x	x			
B11	x	x			
B12	x	x	x	x	x
Totals	12	12	4	4	4

*Reference Attachment I (Building 252 Site Plan & Sampling Location Diagram) for boring locations.

Allegany Ballistics Laboratory

Building 341 Site Characterization Study

SOIL & GROUNDWATER SAMPLING MATRICES

1st Round Sampling (B1-B20)

SOIL					
SAMPLING LOCATION ID*	WV Certified Lab				
	TPH-GRO (SW 8015B)	TPH-DRO (SW 8015B)	TCL-VOLATILES	TCL-SEMIVOLATILES	SOLVENTS (F001-F005)
B1	x	x	x	x	x
B2	x	x			
B3	x	x			
B4	x	x	x	x	
B5	x	x			
B6	x	x			
B7	x	x	x	x	
B8	x	x			
B9	x	x	x	x	
B10	x	x			
B11	x	x	x	x	x
B12	x	x			
B13	x	x			
B14	x	x	x	x	
B15	x	x			
B16	x	x			
B17	x	x	x	x	
B18	x	x			
B19	x	x	x	x	
B20	x	x			
Totals	20	20	8	8	2

GROUNDWATER					
SAMPLING LOCATION ID*	WV Certified Lab				
	TPH-GRO (SW 8015B)	TPH-DRO (SW 8015B)	TCL-VOLATILES	TCL-SEMIVOLATILES	SOLVENTS (F001-F005)
B1	x	x	x	x	x
B2	x	x			
B3	x	x			
B4	x	x	x	x	
B5	x	x			
B6	x	x			
B7	x	x	x	x	
B8	x	x			
B9	x	x	x	x	
B10	x	x			
B11	x	x	x	x	x
B12	x	x			
B13	x	x			
B14	x	x	x	x	
B15	x	x			
B16	x	x			
B17	x	x	x	x	
B18	x	x			
B19	x	x	x	x	
B20	x	x			
Totals	20	20	8	8	2

*Reference Attachment 1 (Building 341 Site Plan & Sampling Location Diagram) for boring locations



Office of Water Resources
1201 Greenbrier Street
Charleston, WV 25311-1088
304-558-2108
304-558-2780 fax



West Virginia Division of Environmental Protection

Leslie H. Underwood
Governor

Michael C. Castle
Director

4 October 1999

Les H. Mull II
Environmental Specialist
Alliant Techsystems
Allegany Ballistics Laboratory
210 State Route 956
Rocket Center,
West Virginia 26726

Re: Allegany Ballistics Laboratory
Rocket Center, Mineral County

Dear Mr. Mull:

The Groundwater Program of the Office of Water Resources has received your report, dated "September xxx, 1999" (the cover letter was dated September 10th, 1999). To summarize, this report proposed an extensive subsurface investigation at the following 29 locations:

- Building 252, a 25-foot square metal utility building located on a concrete pad where there is a high probability of petroleum contamination;
- Building 341, a 28- by 38-foot metal building on a 28- by 51-foot concrete pad that may have been contaminated with petroleum hydrocarbons;
- SWMU 37A, a 36-inch square by 72-inch concrete sump that received wastewater from operations involving the solid explosive PETN;
- SWMU 37X, a concrete open-bottomed wastewater sump that received non-explosive liquid discharges generated from the pressure testing of rocket motor cases; and

"To use all available resources to protect and restore West Virginia's environment in concert with the needs of present and future generations."



West Virginia
Division of
Environmental Protection

- 25 septic tanks that served various buildings at the plant.

The investigative methods and sampling procedures your office has proposed are as follows:

BUILDINGS 252 AND 341 (AND THE BUILDING 341A CONCRETE PAD):

- Sampling of both the soil and groundwater shall be conducted to ascertain the concentration, phase, and horizontal and vertical extent of the suspected contamination. All subsurface utilities and piping will also be located and investigated as potential contamination routes.
- A ten- by ten-foot sampling grid will be established. Initially, 12 borings shall be made around the perimeter of Building 252 and 20 borings around the perimeter of Building 341 and the 341A concrete pad. Each boring will be made using a Geoprobe or similarly-capable device, with each boring being made as close to the building pad as possible. Where conditions dictate that a boring location must be moved, an alternative site will be chosen as near to the original location as possible.
- A PID detector, along with visual and olfactory examination, will be used to screen each soil boring. That portion of each boring that is identified as having the greatest contamination will be sent to a West Virginia certified laboratory for analysis. If a single boring contains two distinct areas of contamination, both areas will be sampled independently for analysis. The depth of any identified contamination will be fully documented.
- The results received from the initial round of sampling will be used to determine the location and number of any subsequent borings. This process will continue until the full extent of contamination at the site has been delineated.
- The northwest corner of the Building 341 pad, including the three cast iron pipes, will be fully evaluated using all reasonable means to characterize that area, including the possible excavation of select portions of the building pad. Following this evaluation, the three cast iron pipes shall be properly closed under the applicable UIC regulations.
- All the collected soil and groundwater samples will be analyzed for TPH-GRO and TPH-DRO using EPA Method 8015B. Approximately four soil and four groundwater samples from Building 252 will be analyzed for a suite of volatiles, semi-volatiles, and solvents. Approximately eight soil and eight groundwater

samples from Building 341 will be analyzed for a suite of volatiles and semi-volatiles, and two soil and two groundwater samples will be analyzed for a suite of solvents.

SUMPS SWMU 37A AND SWMU 37X:

- The initial sampling of Sump SWMU 37A shall consist of one sediment or sludge sample collected from within the sump at a depth of zero to one foot for the purpose of material characterization.
- The initial sampling of Sump SWMU 37X shall consist of one sediment or sludge sample collected from within the sump at a depth of zero to one foot, and one soil boring taken directly adjacent to the sump at a depth of ten to 12 feet.
- Following receipt of analysis results, the sumps' contents (*i.e.* sediments and water) shall be removed and disposed of in a manner deemed appropriate based on the material's characterization. If the contents are characterized as hazardous, pressure washing of the sump shall be required to ensure all residual material is removed prior to excavation of the sump.
- After removal of all contents, the concrete sumps will be completely excavated and disposed of as clean fill at an on-site location to be determined.
- Following removal of the concrete sump at SWMU 37A, one sample shall be collected from each of the four walls and the floor of the remaining pit. Samples collected from the walls shall be centered horizontally and at a vertical depth between the outlet pipe and bottom of the sump. The floor sample shall be collected from the approximate center of the pit. All samples will be collected at a depth of zero to one foot.
- All samples at sump SWMU 37A shall be analyzed for PETN, HMX, RDX, NG, and Ammonium Perchlorate (AP).
- All samples collected at SWMU 37X shall be analyzed for Target Compound List—Total, Target Analyte List, and TPH-DRO-Extended.

SEPTIC TANKS:

- The Subcontractor shall use Ground Penetrating Radar (or other appropriate means) to identify the exact location of each of the 24 units. Where the

subsurface survey fails to find a physical structure within a 50-foot radius of where the tank was originally believed to be located, the tank will be assumed to have been removed and no further action will be required.

- Upon locating a tank, the Subcontractor will uncover and open the unit to determine its status.
- All tanks found to contain material will be sampled by collecting a composite sample consisting of individual grab samples taken from a minimum of three depths (*i.e.*, top, middle, and bottom) within the tank. Material will be characterized by Toxicity Characteristic Leaching Procedure and F001-F005 Solvents analysis.

ADDITIONAL REQUIREMENTS:

- The Subcontractor is responsible for the proper handling and disposal of all wastes (*i.e.*, soil, sediments, sludges, and water) generated as a result this project. The Subcontractor must request approval and obtain a signed manifest from Alliant Techsystems prior to shipping any wastes off site for disposal.
- All liquid wastes generated as a result of these activities are to be drummed and properly labeled pending disposal.
- All solid wastes and sludges are to be placed in plastic lined roll-offs pending disposal.
- Backfill material, at all applicable locations, shall consist of limestone chip up to two feet below grade with soil to grade. Soil shall be compacted to 90%.
- All disturbed areas shall be seeded and mulched within seven days following completion of work.

Our office is in agreement with your proposed plan, including the sample methods and the analytical test methods, and you have our permission to begin work in the field. We do have the following requirements:

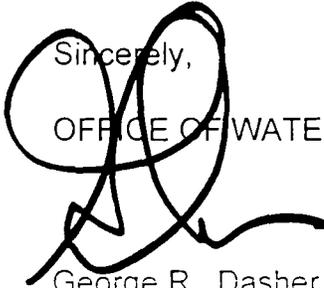
- All the samples analyzed to be taken to a West Virginia certified laboratory.
- The sampling equipment must be properly decontaminated between sample collections.

Allegany Ballistic Laboratory,
4 October 1999, page 5.

- Accurate records must be kept of any materials hauled off site.
- A 100-foot radius should be searched with the Ground Penetrating Radar unit before any septic tank is assumed to have been removed and no further action required.
- If a Ground Penetrating Radar unit is not used to locate the septic tanks, then you should inform our office prior to the planned field work of what type of method will be used to locate the tanks.
- Unless your office can document exactly what compounds were disposed of in the individual septic systems (or what work activities were on going in the buildings in which the septic systems served during the life of those septic systems), then the three septic tank grab samples should be analyzed for the Total Compound List and the Total Analyte List, as well as the TCLPs. TCLPs should only be run on the sludge samples.
- If your office chooses, you may instead remove the entire contents of the individual sump and septic systems and treat it as a hazardous waste, and dispose of the contents appropriately. The septic tank box should be removed and inspected for cracks and leaks. If the tank is cracked or has leaked, then the underlying and surrounding soils will need to be sampled and delineated to determine the horizontal and vertical extent of the contamination. These soils can also be treated as a hazardous waste.
- Please be advised, that once our office has reviewed the results of the septic tank removals, we may require additional testing and remedial activities within the individual septic tank fields.
- To insure that you are in compliance with the hazardous waste regulations, you should contact Mr. Mike Dorsey, of the Office of Waste Management. Mr. Dorsey's phone number is 304-558-5989.
- Please contact the local Environmental Enforcement inspector approximately ten working day before the work will begin. The local inspector is Mr. Bill Timmermeyer, whose phone number is 304-822-3551.

Allegheny Ballistic Laboratory,
4 October 1999, page 6.

If you have any questions, please do not hesitate to contact me at 304-558-2108. Our teletypewriter number is 304-558-2751.

Sincerely,


OFFICE OF WATER RESOURCES

George R. Dasher
Geologist
Groundwater Program

cc: Tom Bass, Office of Environmental Remediation
Mike Dorsey, Office of Waste Management
Marie Holman, US-EPA Region III, UIC Program
Tina Parsons, Geologist, Groundwater Program
Bill Timmermeyer, Inspector, Environmental Enforcement
Dave Watkins, Manager, Groundwater Program



Memorandum

P.O. Box 210
Rocket Center, WV 26726

Date	October 21, 1999	From	John L. Waugaman
Subject	Estimate of Costs on 99 Environmental Line Item	Organization	Environmental
To	Bill Smith	MS	WV01-26P
		Telephone	726-5218

Attached is a two-part plan addressing, 1) the investigation of air compressor buildings 341 and 252, abandoned sumps at building 4 and 214 and 25 abandoned septic tanks, (this is the statement of work currently being reviewed by WVDEP), 2) the investigation of the Burning Grounds, including the ammonium perchlorate-contaminated boiler water. This document focuses on the identification and quantification of contamination and, except for the two SWMUs, does not address remediation. A subsequent "Phase II" effort will address remediation.

The costs are based on published laboratory fees, ATK Construction Management guidance on heavy equipment rates and ATK Environmental Programs estimate of the scope of the project. It should be noted that we are several months away from getting State comments on Part 2. Due to the degree of uncertainty in the scope of Part 2 the costs are presented in a range. It is likely that most of the funds expended in Part 2 will be in data collection to demonstrate that soil and, possibly, groundwater remediation, is not necessary until RCRA Closure of the Burning Grounds. To do so we will have to establish the level of contamination through sampling and analysis. In the case of AP-contaminated boiler feed water there is some possibility WV will require treatment, containment or re-piping of the system backflush discharge.

The estimated cost of Part 1 is \$193,500 and Part 2 from \$163,500 to \$368,500. The high range could be reduced to \$290,000 if we are not required to complete another round of Burning Grounds groundwater sampling.

The following table is an estimated schedule for the above.
 (HELP, BILL S)

	Task	Part 1 - Compressors		Part 2 - BGs/AP	
		Start	Finish	Start	Finish
1.	NAVSEA/WWDEP Approval	10/8			
2.	Generate Project Specification				
3.	Publish RFP in CBD				
4.	Award Project				
5.	Mobilization				
6.	Field Work	60-90 days			
7.	Project Report to WWDEP (3 wks)				
8.	Phase II SOW/Specification (2 mos)				
9.					

* Identify cost of winter time field work, possibly delay until March (?)

cc: Mark DeYoung
 George Fletcher
 Les Mull
 Kirby Smith
 Doug Speer

PART 1

Allegany Ballistics Laboratory

Site Characterizations and Unit Closures

Building 252, Building 341, SWMU 37A, SWMU 37X, and Septic Tanks (25)

PROJECT STATEMENT OF WORK

October 4, 1999

Purpose

This specification covers Subcontractor requirements for conducting site characterization studies at twenty-seven (27) locations at Allegany Ballistics Laboratory (ABL), Rocket Center, WV. Specific locations to be investigated include two active compressor houses (Building 252 and Building 341), two inactive wastewater sumps, identified as Solid Waste Management Unit (SWMU) 37A and SWMU 37X, and twenty-four (24) inactive or abandoned septic tanks and one (1) active septic tank. The purpose of these studies will be to determine if any soil and/or groundwater contamination exists at the sites and, if so, to delineate the nature and extent of the contamination. This project will also include closure of both the SWMUs through complete removal of the physical units following characterization of any contents. All activities to be undertaken per this specification must be in accordance with all applicable State and Federal regulations.

Attachment I to this specification includes 1) an ABL Plant 1 Map showing the general locations of the compressor houses and the SWMUs, 2) individual site maps for Building 252, Building 341, SWMU 37A (Building 4), and SWMU 37X (Building 214), and 3) a Septic Tank Location Map.

(Note: The title "Subcontractor" shall mean the party performing the work of the Subcontractor, as covered by this specification, whether directly or by lower-tier subcontractors and suppliers. The title "Contractor" as used in this specification shall mean "Alliant Missile Products Company LLC (ATK), Allegany Ballistics Laboratory.")

Site Background and History

Building 252: Building 252 is a 25' x 25' metal utility building located on a concrete pad of the same dimensions. The building, constructed in 1962, contains a reciprocating air compressor unit that supplies compressed air to operations buildings on the southern portion of ABL Plant 1. Based on the age of the building and its known function, there is a high probability of petroleum hydrocarbon contamination being present in the soil and/or groundwater adjacent to the building site.

Building 341: Erected in 1968, Building 341 is a 28' x 38' metal building containing a reciprocating air compressor unit that provides compressed air for the eastern third of ABL Plant 1. The building is co-located on a 28' x 51' concrete building pad with another smaller utility building (Building 341 A). It is believed that one or more areas adjacent to the building pad, and possibly the area under the pad, may have been contaminated with petroleum hydrocarbons (e.g., lubricating oils) as a result of past operational practices at the site.

SWMU 37A: SWMU 37A, located on the south side of Building 4, between Building 4 and Building 4B, is a 36" x 36" x 72" concrete sump that operated during the 1940s and 1950s to collect wastewater from operations involving the solid explosive PETN. The sump was constructed with a closed bottom but the integrity of the structure is suspect due to the presence of cracks. Discharges from the sump were carried to a nearby drainage ditch via vitrified clay pipe. (Note: Buildings 4 and 4B are currently under demolition and will be completely removed by August 31, 1999.)

SWMU 37X. Located adjacent to Building 214, SWMU 37X is a concrete wastewater sump that operated from the early-1960s until 1998 receiving non-explosive liquid discharges generated from the pressure testing of rocket motor cases. The sump is constructed from inverted sections of 36" concrete culvert set in the ground to a depth of approximately ten (10) feet and appears to be open bottomed. Although water had been the primary pressurizing agent used in recent years, other fluids, including petroleum-based products, are known to have been used for testing in the past.

Septic Tanks: Twenty-five septic tanks have served various buildings on ABL Plant 1 during its 58-year history. The Septic Tank Location Map included in Attachment I shows the approximate location of each tank with a numeric identifier. Of those units, only one (Tank No. 10) remains active today while the others were eventually abandoned or taken out-of-service following construction of the Plant 1 Sewage Treatment Plant in the early 1960's. The exact status of the twenty-four (24) deactivated septic tanks is for the most part unknown, although there is no information to indicate any of the tanks, other than Tank No. 4, received any substances or materials other than sanitary wastes from those buildings they once served.

Sampling and Analytical Requirements – General

1. Sampling of both soil and groundwater shall be conducted as necessary to completely delineate the extent (both vertical and horizontal) of any contamination at each site.
2. All soil, sludge, and groundwater samples must be sent to a permanent West Virginia certified laboratory for analysis unless otherwise directed by the Contractor. Validation of data will not be required.
3. Soil and sediment samples collected at depths of 0-1 foot will be done so using a stainless-steel trowel or similar implement.
4. Soil borings, taken at depths greater than one foot, and all groundwater samples shall be collected using a Geoprobe or similarly capable device (e.g., hand auger).
5. The Subcontractor may be required to perform excavation of concrete and/or bore through concrete where necessary to fully characterize a site, or where directed to do so by the Contractor.

Sampling and Analytical Requirements – Site Specific

Building 252: In conducting the Site Characterization Study at Building 252, the subcontractor must follow the specific guidance for sampling and analysis presented below:

1. Complete a subsurface survey to determine the nature and the horizontal and vertical extent of the suspected contamination. Sampling of both the soil and groundwater shall be conducted to ascertain the concentration and phases of any contamination. All subsurface utilities and piping will also be located and investigated as potential contamination routes.
2. A 10 x 10 foot sampling grid will be established around the Building 252 pad site as illustrated in Attachment I, Building 252 Site Plan/Sampling Location Diagram. Initially, twelve (12) borings shall be made along the perimeter of the building using a Geoprobe (or similarly capable device) with each boring being made as close to the building pad as possible. Where conditions dictate that a boring location must be moved, an alternative site will be chosen as near to the original location as possible.
3. A PID (hand-held vapor) detector, or other approved detector, along with visual and olfactory examination, will be used to screen each soil boring. That portion of each boring that is identified as having the greatest contamination will be sent to a WV certified laboratory for analysis. Depth(s) of any identified contamination will be fully documented.
4. The initial round of sampling and analyses at the site shall be conducted per the attached Building 252 Soil & Groundwater Sampling Matrices (See Attachment II). Results received from the initial round of sampling will be used to determine the location and number of any subsequent borings. This process will continue until the full extent of contamination at the site has been delineated.

Building 341: In conducting the Site Characterization Study at Building 341, the subcontractor must adhere to the following guidance for sampling and analysis as agreed to by Alliant Techsystems Inc., the Navy, and the WVDEP:

1. Complete a subsurface survey to determine the nature and the horizontal and vertical extent of the suspected contamination. Sampling of both the soil and groundwater shall be conducted to ascertain the concentration and phases of any contamination. All subsurface utilities and piping will also be located and investigated as potential contamination routes.
2. A 10 x 10 foot sampling grid will be established around the Building 341/341A pad site as illustrated in Attachment I, Building 341 Site Plan/Sampling Location Diagram. Initially, twenty (20) borings shall be made along the perimeter of the building using a Geoprobe (or similarly capable device) with each boring being made as close to the building pad as possible. Where conditions dictate that a boring location must be moved, an alternative site will be chosen as near to the original location as possible.
3. A PID detector, along with visual and olfactory examination, will be used to screen each soil boring. That portion of each boring that is identified as having the greatest contamination will be sent to a WV certified laboratory for analysis. If a single boring contains two distinct areas of contamination, both areas will be sampled independently for analysis. Depth(s) of any identified contamination will be fully documented.
4. The initial round of sampling and analyses at the site shall be conducted per the attached Building 341 Soil & Groundwater Sampling Matrices (See Attachment II). Results received from the initial round of sampling will be used to determine the location and number of any subsequent borings. This process will continue until the full extent of contamination at the site has been delineated.

5. The northwest corner of the building pad, including the three (3) cast iron pipes, will be fully evaluated using all reasonable means to characterize that area, including possible excavation of select portions of the building pad.
6. Following their complete evaluation, the three (3) cast iron pipes shall be properly closed under the applicable UIC regulations.

SWMU 37A: Specific sampling, analytical, and closure requirements pertaining to SWMU 37A are as follow:

1. Initial sampling shall consist of one sediment/sludge sample collected from within the sump at a depth of 0-1 foot for the purpose of material characterization.
2. Following receipt of analysis results, the sump's contents (i.e. sediments and water) shall be removed and disposed of in a manner deemed appropriate based on the material's characterization. If the contents are characterized as hazardous, pressure washing of the sump shall be required to ensure all residual material is removed prior to excavation of the sump.
3. After removal of all contents, the concrete sump will be completely excavated and disposed of as clean fill at an on-site location to be determined by the Contractor.
4. Following removal of the concrete sump, one sample shall be collected from each of the four walls and the floor of the remaining pit. Samples collected from the walls shall be centered horizontally and at a vertical depth between the outlet pipe and bottom of the sump. The floor sample shall be collected from the approximate center of the pit. All samples will be collected at a depth of 0-1 foot.
5. All samples collected at SWMU 37A shall be analyzed for PETN, HMX, RDX, NG, and Ammonium Perchlorate (AP).

SWMU 37X: Specific sampling, analytical, and closure requirements pertaining to SWMU 37X are as follow:

1. Initial sampling at SWMU 37X shall consist of one sediment/sludge sample collected from within the sump at a depth of 0-1 foot and one soil boring taken directly adjacent to the sump at a depth of 10-12 feet.
2. Following receipt of analysis results, the sump's contents shall be removed and disposed of in a manner deemed appropriate based on the material's characterization. If the contents are characterized as hazardous, pressure washing of the sump shall be required to ensure all residual material is removed prior to excavation of the sump.
3. After removal of all contents, the concrete structure shall be completely excavated and disposed of as clean fill at an on-site location to be determined by the Contractor.
4. All samples collected at SWMU 37X shall be analyzed for Target Compound List (TCL) - Total, Target Analyte List (TAL), and Diesel Range Organics (DRO) – Extended (Method 8015B)

Septic Tanks: Specific requirements pertaining to the investigation and closure of the twenty-five (25) septic tanks are as follows:

1. The Subcontractor shall use Ground Penetrating Radar (GPR), or other appropriate means, to identify the exact location of each of the twenty-five (25) units. Where the subsurface survey fails to find a physical structure within a 100-foot radius of where a septic tank was originally believed to be located, as indicated on the Septic Tank Location Map, the tank will be assumed to have been removed and no further action will be required.
2. Upon locating a tank, the Subcontractor will uncover and open the unit to determine its status.
3. All tanks found to contain material will be sampled by collecting a composite sample consisting of individual grab samples taken from a minimum of three depths (i.e., top, middle, and bottom) within the tank. Material will be characterized by Toxicity Characteristic Leaching Procedure (TCLP) and TCL Total, and TAL.

Additional Requirements

1. The Subcontractor is responsible for the proper handling and disposal of all wastes (i.e., soil, sediments, sludges, and water) generated as a result this project. The Subcontractor must request approval from the Contractor, and obtain a manifest signed by the Contractor, prior to shipping any wastes from ABL for off-site disposal.
2. All liquid wastes generated as a result of these activities are to be drummed and properly labeled pending disposal.
3. All solid wastes and sludges are to be placed in plastic lined roll-offs pending disposal.
4. Backfill material, at all applicable locations, shall consist of limestone chip up to two feet below grade with soil to grade. Soil shall be compacted to 90%.
5. All disturbed areas shall be seeded and mulched within seven (7) days following completion of work.

Deliverables

The Subcontractor shall provide a separate Site Characterization Report for Building 252, Building 341, SWMU 37A, SWMU 37X, and the Septic Tanks that completely documents all actions undertaken as part of each investigation and all findings/results of those investigations. Each report shall include, at a minimum, the following information:

- Introduction/Background
- Narrative of all investigative activities (e.g., sampling, excavation)
- Summary of Findings including tabulated analytical results
- Maps and diagrams of all sample locations and concentrations, as applicable
- Appendix containing analytical data sheets, field records, sampling logs, and photographs (as requested by the contractor).

Schedule

All field work described in this specification for Building 252, Building 341, SWMU 37A, and SWMU 37X must be completed by the Subcontractor within 30 days of contract award with any follow-up field work being completed within 30 days following receipt of laboratory results. The Period-of-Performance for completing all field work associated with the portion of this specification related to Septic Tanks will be 90 days from the date of contract award.

The Subcontractor will provide five (5) copies of each draft Site Characterization Report to ATK for review within 30 days of completing all field work at ABL. Five (5) copies of each final report are due 15 days following receipt of any comments from ATK.

ATTACHMENT I

Allegany Ballistics Laboratory

SITE CHARACTERIZATION STUDY LOCATIONS

- ABL Plant 1 Map; Site Locations
- Building 341 Site Plan/Sampling Location Diagram
- Building 252 Site Plan/Sampling Location Diagram
- SWMU 37A (Building 4) Site Map
- SWMU 37X (Building 214) Site Map
- Septic Tank Location Map

DRAFT

ATTACHMENT II

Allegany Ballistics Laboratory

SOIL AND GROUNDWATER SAMPLING MATRICES

- Building 252 Soil & Groundwater Sampling Matrices
- Building 344 Soil & Groundwater Sampling Matrices

DRAFT

Allegany Ballistics Laboratory

Building 252 Site Characterization Study

SOIL & GROUNDWATER SAMPLING MATRICES

1st Round Sampling (B1-B12)

SOIL					
SAMPLING LOCATION ID*	WV Certified Lab				
	TPH-GRO (SW 8015B)	TPH-DRO (SW 8015B)	TCL-VOLATILES	TCL-SEMIVOLATILES	SOLVENTS (f001-f005)
B1	x	x			
B2	x	x			
B3	x	x	x	x	x
B4	x	x			
B5	x	x			
B6	x	x	x	x	x
B7	x	x			
B8	x	x			
B9	x	x	x	x	x
B10	x	x			
B11	x	x			
B12	x	x	x	x	x
Totals	12	12	4	4	4

GROUNDWATER					
SAMPLING LOCATION ID*	WV Certified Lab				
	TPH-GRO (SW 8015B)	TPH-DRO (SW 8015B)	TCL-VOLATILES	TCL-SEMIVOLATILES	SOLVENTS (F001-F005)
B1	x	x			
B2	x	x			
B3	x	x	x	x	x
B4	x	x			
B5	x	x			
B6	x	x	x	x	x
B7	x	x			
B8	x	x			
B9	x	x	x	x	x
B10	x	x			
B11	x	x			
B12	x	x	x	x	x
Totals	12	12	4	4	4

*Reference Attachment I (*Building 252 Site Plan & Sampling Location Diagram*) for boring locations.

DRAFT

Allegany Ballistics Laboratory

Building 341 Site Characterization Study

SOIL & GROUNDWATER SAMPLING MATRICES

1st Round Sampling (B1-B20)

SOIL					
SAMPLING LOCATION ID*	WV Certified Lab				
	TPH-GRO (SW 8015B)	TPH-DRO (SW 8015B)	TCL-VOLATILES	TCL-SEMIVOLATILES	SOLVENTS (F001-F005)
B1	x	x	x	x	x
B2	x	x			
B3	x	x			
B4	x	x	x	x	
B5	x	x			
B6	x	x			
B7	x	x	x	x	
B8	x	x			
B9	x	x	x	x	
B10	x	x			
B11	x	x	x	x	x
B12	x	x			
B13	x	x			
B14	x	x	x	x	
B15	x	x			
B16	x	x			
B17	x	x	x	x	
B18	x	x			
B19	x	x	x	x	
B20	x	x			
Totals	20	20	8	8	2

GROUNDWATER					
SAMPLING LOCATION ID*	WV Certified Lab				
	TPH-GRO (SW 8015B)	TPH-DRO (SW 8015B)	TCL-VOLATILES	TCL-SEMIVOLATILES	SOLVENTS (F001-F005)
B1	x	x	x	x	x
B2	x	x			
B3	x	x			
B4	x	x	x	x	
B5	x	x			
B6	x	x			
B7	x	x	x	x	
B8	x	x			
B9	x	x	x	x	
B10	x	x			
B11	x	x	x	x	x
B12	x	x			
B13	x	x			
B14	x	x	x	x	
B15	x	x			
B16	x	x			
B17	x	x	x	x	
B18	x	x			
B19	x	x	x	x	
B20	x	x			
Totals	20	20	8	8	2

*Reference Attachment I (*Building 341 Site Plan & Sampling Location Diagram*) for boring locations.

DRAFT

PART 2

STATEMENT OF WORK Investigation of Contamination Related to Burning Grounds Operations October 1999

Background

The Burning Grounds has operated in its current location since the early 1960s. In the first few decades of operation at the site, explosive waste [including ammonium perchlorate (AP)] and explosive-contaminated waste was burned directly on the ground in accordance with the common practice at the time. TCE and other solvents were disposed of in earthen pits at the Burning Grounds during the 1960s and 1970s. The TCE was used to clean composite propellant operations and was contaminated with explosives and AP. A certain amount of soil and groundwater contamination may be present as a result of these operations. The purpose of this project is to quantify the contamination which may be present at the site as required by the West Virginia Division of Environmental Protection (WVDEP), and to remediate the site where risk to human health and the environment may dictate, or where required by WVDEP.

Groundwater at the site is currently being treated for organic constituents in a groundwater treatment plant. AP is present in the groundwater, and is known to pass through the treatment plant without being treated or otherwise removed from the water. The effluent from the treatment plant is either discharged to the North Branch Potomac River or pumped to the ABL Plant 1 boiler facility. The presence of untreated AP in the effluent from the groundwater treatment plant shall be addressed under this project. The fate of the AP is not known at present. The fate may vary depending on the use of the effluent and any treatment steps which may be added to the groundwater treatment system or the boiler feedwater treatment system.

Tasks

① Soil/Groundwater Sampling

As required by WVDEP, groundwater samples were taken from thirteen wells at the Burning Grounds, as well as the influent and effluent at the Groundwater Treatment Facility. The sample locations are as follows:

Downgradient wells:	1EW21, 1EW18, 1EW14, 1EW10, 1EW16, 1EW29-B, 1EW30-B, 1EW31-B, 1EW33-B
Upgradient wells:	1GW15-B, 1GW11-B, 1GW10, 1GW32
Groundwater treatment system:	Influent and effluent

The samples were analyzed for the constituents found in 40 CFR 264 Appendix IX, plus the following list of explosives: 1,3,5-trinitrobenzene, 2,4,6-trinitrotoluene, 1,3-dinitrobenzene, 2,4-dinitrotoluene, 2,6-dinitrotoluene, tetryl, nitrocellulose, nitroglycerin, HMX, RDX, nitrobenzene. WVDEP may require additional sampling, the scope of which is not known. Table 1 reflects a minimal amount.

The WVDEP Groundwater Protection Act (GPA) requires that a source of groundwater contamination be removed or remediated. Soil sampling within the Burning Grounds may be required. It is likely that this analytical will be limited to AP and possibly RDX. However, it is possible that the burning grounds will have to be sampled for multiple parameters for either RCRA or the WV GPA, as reflected in the "high" estimate in Table 2. A Risk Assessment may be

DRAFT

necessary to determine acceptable levels of contamination in the soil. Any soil remediation would be a Phase II task and is included in the Burning Grounds Upgrade in the FY00 proposal.

② Ammonium Perchlorate Environmental Fate

The environmental fate of the AP shall be addressed under this project. Where contamination is found possible remediation efforts will be evaluated with respect to potential risks to human health and the environment and with respect to environmental regulatory requirements. The project to address AP contamination shall be approached in a two-phase manner. Phase I will investigate the level of contamination of AP and will, if necessary, assess the risk to human health and the environment caused by the presence of AP both in the groundwater and the boiler discharge. Phase II, if necessary, will address possible corrective measures whether it be soil remediation or groundwater treatment. Phase II will be implemented only if required by risk or regulatory considerations.

AP fate will be evaluated according to one or more of the following possibilities:

*(a) AP may be removed from boiler feedwater by the EDR/RO system and discharged to drainage ditch through blowdown/backwash discharge point.**

If the North Branch Potomac River is considered the point of compliance, then the use of mixing zones or risk assessment may show no further action required. If the ditch is considered the point of compliance then the first option may be to pipe the discharge directly to the river and use mixing zones to permit it (Phase I). Several less desirable options may also be required; treatment of the EDR/RO backwash discharge in order to meet the WVDEP discharge limits; treatment of AP at the Groundwater Treatment Plant; use of an alternate boiler feedwater source (all Phase II). Sediment sampling and groundwater monitoring could be required along the ditch to evaluate the extent of AP contamination. Soil and/or groundwater remediation could be required to address existing AP contamination. The remediation/Phase II costs are not addressed here.

*Initial testing indicates that the EDR/RO system does remove AP from the boiler feedwater and discharges the AP to the blowdown/backwash discharge point. The system will be sampled again during the heating season to determine if higher flows affect the data.

(b) AP may pass through the EDR/RO system and be discharged through steam traps throughout Plant 1.

Widespread discharge of AP to the environment throughout the facility would likely be unacceptable to WVDEP. Removal of AP from the boiler feedwater could be required by treatment of AP in the existing boiler feedwater, or by use of an alternate boiler feedwater source which has no AP contamination. Soil sampling and groundwater monitoring at each steam discharge point could be required. Soil and/or groundwater remediation could be required to address existing AP contamination. Those costs are not estimated in Tables 1 or 2.

(c) AP may pass through the EDR/RO system and be destroyed in the boilers.

The existing boilers would, in effect, serve as a treatment unit for AP. No further action would be required for the steam distribution system. However, AP may be still be present in the boiler blowdown and discharged to the ditch as described in section (a) above. Removal of AP from the boiler feedwater could be required by treatment of AP in the existing boiler feedwater, or by use of an alternate boiler feedwater source which has no AP contamination.

Note: Options (a), (b), and (c) could necessitate an evaluation of the feasibility of continued use of Site 1 water in the Plant 1 boiler system.

DRAFT

Cost Estimate

A cost estimate is provided in Table 1. The assumptions upon which the estimate is based are provided in Table 2. The cost estimate and supporting assumptions are based on engineering judgment using the best available information on the scope. The tasks that are required, and the actual costs for the required tasks, may vary from those provided in the cost estimate.

Note: AP contamination at the Burning Grounds was primarily caused by the placement of AP-contaminated TCE in open solvent pits at the Burning Grounds in the 1960s and 1970s. The TCE was used in the clean-up of composite (AP-containing) propellants. AP contamination was probably also caused by open burning of composite propellants directly on the ground in the 1960s, 1970s and 1980s. NAVFAC is typically charged with addressing under CERCLA contamination which occurred before 1986. Clearly, the large majority of AP contamination at the site is a result of operations before 1986. The AP-contaminated groundwater is being extracted by the NAVFAC groundwater extraction system at the Burning Grounds. The groundwater treatment facility, which was designed to treat the TCE contamination from the solvent pits, does not treat the AP contamination in the groundwater, and therefore discharges the AP-contaminated water to the North Branch Potomac River or transfers it to the ABL boilers for use as boiler feedwater. It may be appropriate for NAVFAC to address the tasks required under this Scope of Work.

Table 1

Cost Estimate for Burning Grounds Investigation SOW						
	Subcontract		ATK Support		Total	
	Low	High	Low	High	Low	High
Task 1	\$127,500	\$295,000	\$4,000	\$7,000	\$131,500	\$302,000
Task 2(a)	\$28,000	\$60,000	\$4,000	\$6,500	\$32,000	\$66,500
Task 2(b)	\$0		\$0		\$0	\$0
Task 2(c)	\$0		\$0		\$0	\$0
Total					\$163,500.00	\$368,500.00

DRAFT

Table 2

Assumptions Underlying the Cost Estimate in Table 1							
	Item	Units	# of units		Cost per unit	Total	
			Low	High		Low	High
Task 1	Water samples *	Appendix IX analysis/ other	15	30	\$1000/\$4333	\$80,000	\$160,000
	Soil Samples **	Appendix IX analysis/ other	40	75	\$1000	\$40,000	\$75,000
	Geoprobe	Day	5	20	\$1,500	\$7,500	\$30,000
	Risk assessment	Each	0	1	\$30,000	0	\$30,000
	Total					\$127,500.00	\$295,000.00
Task 2(a)	Water samples	Each	20		\$100	\$2,000	\$2,000
	Soil samples	Each	20		\$100	\$2,000	\$2,000
	Mixing Zone	Hrs	30		\$50	\$1,500	0
	Geoprobe	Day	2	4	\$1,500	\$3,000	\$6,000
	Risk assessment	Each	1		\$10,000 \$20,000	0	\$20,000
	Re-pipe boiler discharge	Feet	1300		\$15 \$24	\$20,000	\$30,000
	Total					\$28,500.00	\$60,000.00
Task 2(b)	It is assumed (for this budgeting effort) that this task will not be required						
Task 2(c)	It is assumed (for this budgeting effort) that this task will not be required						

*** NOTE ***

* "High" does not include worst case. Although unlikely, if WVDEP successfully requires four quarters of Appendix IX sampling the "high" estimate will be \$320,000.

** "High" does not reflect sampling of all eight acres. If WVDEP successfully requires full soil sampling for multiple parameters the "high" estimate could be as high as \$200,000.