BCT AGENDA
October 20-21, 1998
1330 – 1630 October 20, 1998
0830 – 1230 October 21, 1998
NCO CLUB

→ North End Transfer

Effected Sites/Environmental Issues

SEAD 29 - Bldg 732 WASTE OIL TANK
SEAD 32 – Bldg 718 (2) WASTE OIL STORAGE TANKS
SEAD 35 – Bldg 718 (3) WASTE OIL BURNERS
SEAD 41 – Bldg 718 BOILER BLOWDOWN PIT
SEAD 61 – Bldg 718 – (1) UST WASTE OIL TANK
SEAD 18 - Bldg 709 – CLASSIFIED DOCUMENT INCINERATOR
SEAD 7 - SHALE PIT
SEAD 21 - SEWAGE TREATMENT PLANT 715
SEAD 123 A-F EBS IDENTIFIED SITES
SEAD 25/26
LEAD PROPOSAL
UXO/INSTALLATION ARCHIVE SEARCH REPORT
LEAD BASED PAINT
ASBESTOS
UNDERGROUND STORAGE TANKS (UST)

→ FAMILY HOUSING TRANSFERS

EFFECTED SITES/ENVIRONMENTAL CONCERNS
SEAD 119A SEWAGE SPILL
LEAD BASED PAINT
ASBESTOS
UST'S

→ AIRFIELD TRANSFER

EFFECTED SITES/ENVIRONMENTAL CONCERNS
SEAD 211A-E EBS SITES
SMALL ARMS RANGE
LBP
ASBESTOS

→ PRISON PARCEL TRANSFER

SEAD 44B QA TEST LABORATORY
SEAD 43 OLD MISSILE PRPELLANT LAB
SEAD 56
SEAD 69
SEAD 62
SEAD 44A
SEAD 52
SEAD 60
SEAD 64C
UXO CONCERN
- FUNCTION TEST AREA
- LIQUID PROPELLANT STORAGE AREA
- FUNCTION TEST PITS

→ SEAD 25 – FIRE DEMONSTRATION PAD FEASIBILITY STUDY

- EVALUATION PLAN
- PAH'S
- GROUNDWATER

→ OB GROUNDS UPDATE

- ROD
- UXO CLEARANCE
- REMEDIAL DESIGN
- COST GROWTH

→ SEAD 12 UPDATE

- WORKPLAN COMMENTS
- FIELDWORK EFFORT
- BLDG SURVEY

October 15, 1998

Engineering and
Environmental Office

Ms. Carla M. Struble, P.E.
U.S. Environmental Protection Agency
Emergency and Remedial Response Division
290 Broadway
18th Floor, E-3
New York, New York 10007-1866

Mr. James A. Quinn
NYS Department of Environmental Conservation
Division of Hazardous Waste Remediation
Bureau of Eastern Remedial Action
50 Wolfe Road, Room 208
Albany, New York 12233-7010

Dear Ms. Struble/Mr. Quinn:

This is a reminder that the next BRAC Cleanup Team Meeting will be held on 20-21 October 1998 at the Seneca Army Depot NCO Club. The meeting will start at 1330 hours.

Attached is the proposed agenda for the meeting.

Please be prepared to discuss specific issues your agency has regarding the transfer of property. Of particular concern should be non-CERCLA issues such as lead based paint, underground storage tanks, etc.

Should you have any questions, please contact Stephen Absolom at (607) 869-1309.

Sincerely,

Donald C. Olson
LTC, U.S. Army
Commanding Officer

Enclosure

Eng/Env

Copies Furnished:

Mr. Michael Duchesneau, Parsons Engineering Science, Inc., 30 Dan Road, Canton, MA 02021

Commander, U.S. Army Corps of Engineers, Huntsville Division, ATTN: CEHND-ED-CS (Kevin Healy), P.O. Box 1600, Huntsville, Alabama 35807

Commander, U.S. Army Corps of Engineers, Seneca Army Depot Activity, ATTN: CENAN-PP-E, SEDA Resident Office, Romulus, New York 14541-5001

Commander, U.S. Army Industrial Operations Command, ATTN: AMSIO-EQE (R. Nida), Rock Island, IL 61299-6000

Mr. Dan Geraghty, New York State Department of Health, Bureau of Environmental Exposure Investigation, 2 University Place, Room 205, Albany, New York 12203

Commander, USACHPPM, 5158 Blackhawk Road, ATTN: Keith Hoddinott, Aberdeen Proving Ground, Maryland 21010-5422

Mr. Robert K. Scott, NYSDEC, Region 8, 6274 East Avon-Lima Road, Avon, New York 14414-9519

Commander, U.S. Army Environmental Center, ATTN: SFIM-AEC-IRP (John Buck), Aberdeen Proving Ground, Maryland 21010-5410

Ms. Patricia Jones, Seneca Army Depot IDA, Building 101, 5786 State Route 96, Romulus, New York 14541

Mr. John Cleary, BTC, SEDA

BCT AGENDA
October 20-21, 1998
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- COST GROWTH

→ SEAD 12 UPDATE

- WORKPLAN COMMENTS
- FIELDWORK EFFORT
- BLDG SURVEY

FY99

INSTALLATION	PROJECT NAME	DSERTS#	1383#	CN(AMS	EXEC	ARD DA	STATUS	C-ER ($000)		
SENECA	BEC SALARY	Prg mgt	SE095MAY29	6S20	INST	Nov-98	PGMMGT	$ 100	100	
SENECA	BEC/BRAC SUPPORT	Prg mgt	SEDA-96-01	6S27	CENAN	Nov-98	PGMSPT	$ 200	300	1sep98braco
SENECA	RAB SUPPORT	Prg mgt	SEDA-95-10	6S46	INST	Nov-98	RAB	$ 10	310	
SENECA	OB GROUNDS, SEAD-23	SEAD-23	SE0092F027	6S34	CENAN	APR 99	LTM	$ 201	511	hold
SENECA	SEWAGE SLUDGE WASTE P	SEAD-5	SE093MAR69	6S41	CENAN	Nov-98	LTM	$ 32	543	hold
SENECA	REMOVAL-METALS, SEAD-2	SEAD-24,50,54,67	SEDA-95-06	6R37	CENAN	Nov-98	LTM	$ 40	583	
SENECA	REMOVAL-BTEX/VOCS, SEA	SEAD-38 to 41	SEDA-95-07	6R44	CENAN	Nov-98	LTM	$ 40	623	
SENECA	ASH LANDFILL, SEAD-3,6,8,1	SEAD-3,6,8,14,15	SE0092F004	6R33	CENAN	Nov-98	RD/RA	$ 2,416	3,039	hold
SENECA	FTAS, SEAD-25,26	SEAD-25,26	SE0094S003	6R29	CENAN	APR 99	RA	$ 3,020	6,059	?
SENECA	MUNITIONS WASHOUT FACI	SEAD-4	SE0094S002	6S31	CENAN	DEC98	RI/FS	$ 430	6,489	hold
SENECA	MULTIPLE SITES ROD W/RIS	SEAD-9,ETC	SEDA-95-05	6S42	CENAN	Nov-98	RI/FS	$ 550	7,039	
SENECA	MUNITION DESTRUCTION A	SEAD-45,46,57	SEDA-95-09	6S62	CENAN	JAN99	RI/FS	$ 1,752	8,791	
SENECA	AMMUNITION BREAKDOWN	SEAD-52,60	SEDA-95-08	6S40	CENAN	APR 99	RI/FS	$ 1,752	10,543	hold
SENECA	OLD CONSTR DEBRIS LF, S	SEAD-11,64a,64d	SE093MAR06	6R38	CENAN	JAN99	RA	$ 1,601	12,144	We changed the status code to
SENECA	IRFNA DISPOSAL SITE, SEA	SEAD-13	SE093MAR11	6S39	CENAN	JAN99	RI/FS	$ 850	12,994	hold
SENECA	ASBESTOS TRAINING	SEAD-102	SE00	6S55	INST	Nov-98	Prg Mgt	$ 3	12,997	
SENECA	ENVIRONMENTAL TRAINING	SEAD-103	SE0089F004	6S55	INST	Nov-98	Prg Mgt	$ 21	13,018	
SENECA	HAZARDOUS WASTE DISPO	SEAD-101	SE-SW-37	6R52	INST	Nov-98	CMP/RA	$ 100	13,118	
SENECA	ASBESTOS ABATEMENT	SEAD-100	SE-A-23	6R51	INST	Nov-98	CMP/RA	$ 25	13,143	
SENECA	ENV TEST CONTRACT	SEAD-106	SE094MAR02	6S50	INST	Nov-98	CMP/RI	$ 23	13,166	
SENECA	RAD SITES, SEAD-12,63	SEAD-12,63	SE0094S008	6S32	CENAN	APR99	RD	$ 646	13,812	
SENECA	RAD SURVEYS	SEAD-111	SE095MAY20	6S13	INST	Nov-98	CMP/RI	$ 250	14,062	
SENECA	P TREATED DISPOSAL	SEAD-116	SE097FEB25	7R03	INST	Nov-98	CMP/RA	$ 51	14,113	
SENECA	INSTALLATION UXO (EE/CA)	SEAD-118	SE06AUG01	7S02	CENAN	Nov-98	CMP/RI	$ 100	14,213	Name change, removed "archiv
SENECA	SLUDGE PILES, SEAD-59,71	SEAD-59,71	SE093MAR69	6R41	CENAN	JUN99	RD	$ 600	14,813	hold
TOTAL FUNDED								$14,813		

DEPARTMENT OF THE ARMY
SENECA ARMY DEPOT ACTIVITY
5786 STATE RTE 96
ROMULUS, NEW YORK 14541-5001

REPLY TO
ATTENTION OF

September 21, 1998

Engineering and
Environmental Division

Ms. Carla M. Struble, P.E.
U.S. Environmental Protection Agency
Emergency and Remedial Response Division
290 Broadway
18th Floor, E-3
New York, New York 10007-1866

Mr. James A. Quinn
NYS Department of Environmental Conservation
Division of Hazardous Waste Remediation
Bureau of Eastern Remedial Action
50 Wolfe Road, Room 208
Albany, New York 12233-7010

Dear Ms. Struble/Mr. Quinn:

The Seneca County Industrial Development Agency has requested that the BCT be able to discuss the ability to transfer or lease specific parcels of real estate. I have enclosed a copy of this request.

To facilitate the discussion, I have enclosed the summaries of the investigations for the EBS sites for these areas. Request you review the proposed recommendations and be prepared to discuss your agency's position. The back up data for these recommendations is included in the document previously provided and entitled "DRAFT Investigation of Environmental Baseline Survey Non Evaluated Sites SEAD 199A, SEAD 122 (A,B,C,D,E) and SEAD 123 (A,B,C,D,E,F)."

You should also review the SWMU Classification Report for other sites in the areas planned for discussion. As of this date, there has been no formal indication of the site for the proposed prison. I have included a map which indicates, to the best of my knowledge, the site boundaries being considered as the alternative location.

If you have any questions, please contact Stephen M. Absolom, Base Environmental Coordinator, at (607) 869-1309.

Enclosures

for Donald C. Olson
LTC, U.S. Army
Commanding Officer

Copies Furnished w/enclosure:

Commander, U.S. Army Corps of Engineers, Seneca Army Depot Activity, ATTN: CENAN-PP-E, SEDA Resident Office, Romulus, New York 14541-5001

Mr. Michael Duchesneau, Parsons Engineering Science, Inc., 30 Dan Road, Canton, MA 02021

Commander, U.S. Army Corps of Engineers, Huntsville Division, ATTN: CEHND-ED-CS (Kevin Healy), P.O. Box 1600, Huntsville, Alabama 35807

Commander, U.S. Army Industrial Operations Command, ATTN: AMSIO-EQE (R Nida), Rock Island, IL 61299-6000

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Ms. Patricia Jones, Seneca Army Depot IDA, Building 101, 5786 State Route 96, Romulus, New York 14541

Seneca County Industrial
Development Agency
Seneca Army Depot
Bldg. 101
Romulus, NY 14541
607-869-1373
Fax: 607-869-1356

MEMORANDUM

TO: Mr. Stephen Absolom - BEC

FROM: Patricia Jones, Project Coordinator

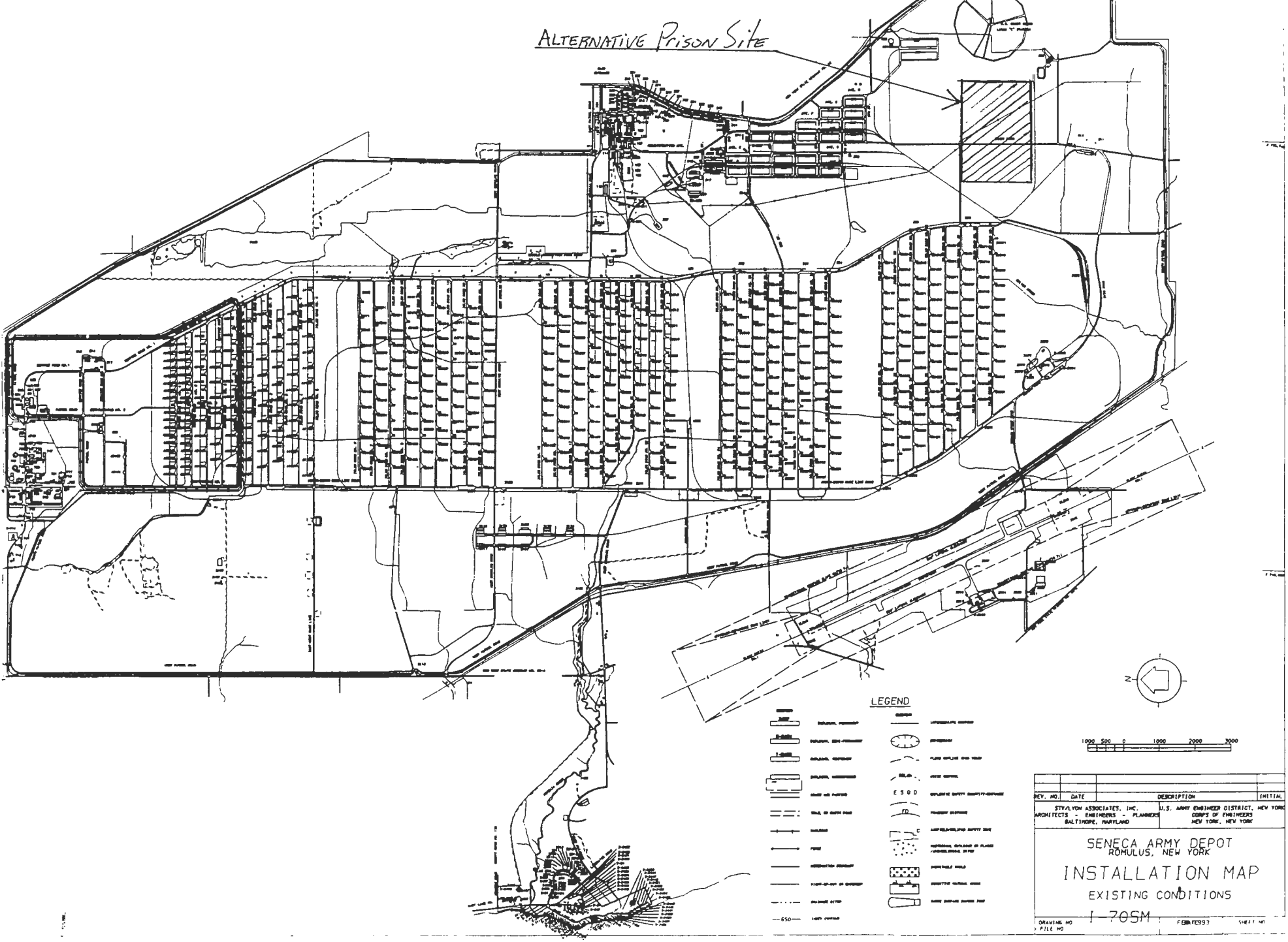
SUBJ: October 1998 BCT Meeting

1. It would be very helpful for the October 20, 1998 BCT meeting to include a session describing all the environmental sites on the parcels which we hope to be FOSTABLE by early 1999, i.e., the prison site, the north end, both housing areas, and the airfield/training range sites.

2. With the State and EPA at the table, hopefully, time lines can be discussed and priorities established.

3. Please call if you have any questions.

Copy Furnished:
BTC
CEA
Mr. Randy Battaglia, NY Corps
Ms. Carla Struble, EPA (By fax)


ALTERNATIVE Prison Site
LEGEND
N
1000 500 0 1000 2000 3000
REV. NO. DATE DESCRIPTION INITIAL
STV/LYON ASSOCIATES, INC.
ARCHITECTS - ENGINEERS - PLANNERS
BALTIMORE, MARYLAND
U.S. ARMY ENGINEER DISTRICT, NEW YORK
CORPS OF ENGINEERS
NEW YORK, NEW YORK
SENECA ARMY DEPOT
ROMULUS, NEW YORK
INSTALLATION MAP
EXISTING CONDITIONS
I-70SM
DRAWING NO
FILE NO
FEB 1993
SHEET NO

1.0 INTRODUCTION

1.1 Seneca Army Depot Activity

Seneca Army Depot Activity (SEDA) is a U.S. Army facility located in Seneca County, New York. The Depot occupies approximately 10,600 acres. It is bounded on the east by Route 96 and on the west by Route 96A. Most of the surrounding land is used for farming.

Construction at SEDA began in 1941. Its mission included reception, storage, and distribution of ammunition and explosives, GSA and strategic materials and Office of Civil Defense engineering equipment. It also included providing receipt, storage and issue of items that supported special weapons activity and performance of depot-level maintenance, demilitarization and surveillance on conventional ammunition and special weapons.

1.2 BRAC and Environmental Baseline Survey

SEDA was included on the Federal Facilities National Priorities List on July 13, 1989. In March 1995, the Base Realignment and Closure Commission (BRAC) submitted its recommendation that SEAD be selected for closure. This recommendation was subsequently approved in 1996. The Base Realignment and Closure Act requires environmental issues to be investigated, pursuant to CERCLA.

An Environmental Baseline Survey Report (Woodward Clyde, 1996a) was prepared for SEDA. The EBS classified discrete areas of real property associated with the Depot, which are subject to transfer or lease, into standard environmental condition of property types. The determination that a specific property is environmentally suitable for transfer or lease is established under the FOST/FOSL guidance.

As part of continuing work after the completion of the EBS, additional sampling and analyses was necessary at selected non-evaluated sites at SEDA to determine their environmental condition. Most of the non-evaluated sites were initially identified in the EBS, however, some sites were added to the list to be evaluated because of rumor or speculation that a release(s) had occurred. The Land Reuse Authority (LRA) identified "SEAD" areas 119, 122, and 123 as priority status, based on the fact that the sites in these areas have a high suitability for transfer or lease. Thus, these three areas are presented in this report. Most of the "SEAD" area designations are actually composed of several individuals sites, which are designated by sequential letters of the alphabet (e.g., SEAD-122A, -122B, -122C, -122D, and -122E). The 12 priority Non-Evaluated EBS sites, whose locations within the Depot are shown on Figure 1-1, are listed in the Table 1-1 (on the following page).

1.3 Technical Approach for Investigation of Non-Evaluated EBS Sites

The process by which the sites within these three areas were investigated is diagrammed in the Seneca Army Depot Decision Criteria Flow Chart (Figure 1-2). This flow chart provides the overall guidance for investigating and remediating sites at SEDA. The limited sampling and analyses was designed to provide initial data so that an impact analysis could be performed. The impact analysis involved a comparison to applicable NYSDEC standard/criteria or guidance (SCG) (Soil: TAGMs; Groundwater: GA; Sediment: Benthic Aquatic Life/Human Health). If the SCGs were exceeded, then a comparison to Preliminary Remediation Goals (PRG)s was performed. The type of PRG values used was based on the intended use of the property. At

SEAD-122 sites, the "Recreational PRGs" were used. At SEAD-123 sites, the "Residential PRGs" were used. Note that no samples were collected at SEAD-119. Drinking Water (DW) PRGs were used for groundwater.

The samples were collected in source areas that were believed to have been most impacted (i.e., had the highest chemical concentrations) compared to other locations within the site. The evaluation at each site included collecting a limited amount of soil, sediment and/or groundwater data, as appropriate, to provide a basis of determining if the site has been environmentally impacted. Since many of these sites involved rumors, with no analytical data to support further evaluation, limited, but representative, data collection was deemed appropriate at these sites.

Table 1-1
Priority Non-Evaluated EBS Sites

Number	SEAD Area Designation	Description	EBS Site Number
1	SEAD 119A	Building 2409 Sewage Spill	54(6)HR(P)
2	SEAD 122A	Skeet/Trap Range	115Q-X
3	SEAD 122B	Building 2302 Small Arms Range	114Q-X
4	SEAD 122C	Near Building 2311 Conex with Unknown Contents	107(7)
5	SEAD 122D	Hot Pad Spill	56(6)PR
6	SEAD 122E	Deicing Planes	6(2)PS, 7(2)PS, 8(2)PS
7	SEAD 123A	Building 744 Indoor Firing Range	125Q-X
8	SEAD 123B	Building 716 and 717 Petroleum Releases	102(6)PS/PR(P)
9	SEAD 123C	Building 747 HM Spills	100(6)PS/PR/HS/HR
10	SEAD 123D	Area West of Building 715	113(7)
11	SEAD 123E	Rumored DDT Burial at Ice Rink	Rumor
12	SEAD 123F	Mound North of Post 3	Rumor

Possible outcomes of the limited sampling and analyses program Impact Analysis, as indicated on Figure 1-2, are as follows:

1. Concentrations of constituents of concern are below the NYSDEC SCG (e.g., TAGMs), suggesting that the site has not affected the environment. The site will be designated as a "no further action" site with no reuse restrictions.

2. Concentrations of constituents of concern were above NYSDEC SCG (e.g., TAGMs), therefore, comparisons to PRGs are necessary. If concentrations are less than PRGs, then additional sampling (possibly via an ESI) will be performed. If the concentrations exceed the PRGs, then a Hot Spot Analysis will be performed; this analysis will likely include additional sampling as well.

In addition, where the significance of the environmental impact is not definitive based strictly on the analytical data comparisons, professional judgment will be used to develop the final recommendations. Thus, in some instances slight exceedance of a TAGM does not automatically result in a recommendation for further investigation at the site.

The sections that describe the sites provide a summary of the investigation fieldwork and analytical results for each of the 12 priority Non-Evaluated EBS sites within areas SEAD-119, SEAD-122, and SEAD-123. The tables and figures are presented at the end of the text sections for clarity. Note that the analytical data tables present comparisons to both SCGs (e.g., TAGMs) and PRGs, where applicable. The results of these comparisons are presented in "bold and shade" format (i.e., the exceedences are bolded and shaded in the tables).

1.4 Field Investigation Methods

The field investigations were performed using the methods outlined in the Generic Installation Remedial Investigation/Feasibility Study Work Plan (Parsons, 1995). Specific notes regarding selected field investigation methods/procedures, which are not specifically covered in the Generic Workplan, are presented below.

The temporary wells were installed according to the permanent unconfined well installation methods outlined the Generic Workplan, except that no permanent surface completion was performed. The wells were decommissioned shortly after the groundwater sampling was performed using the "Casing Pulling" method outlined in "Groundwater Monitoring Well Decommissioning Procedures" (NYSDEC, 1996). Immediately after installation, the wells were purged of at least one borehole volume. On the following day, ground water samples were collected after at least one well casing volume had been purged from the well.

The analytical data included in this report has not been validated, but it will be validated in the near future, and the results/recommendations updated appropriately.

2.0 SEAD-119A - Building 2409 Sewage Spill

2.1 Site Information

This parcel is associated with a lift station located by Building 2409, which is a former pump house presently used for dry storage (Figure 2-1). A raw sewage release was observed on the

east side of this building during the 1995 EBS visual inspection. The pump station receives wastes from multiple sources, potentially containing hazardous substances.

2.2 Summary of Investigation

No field sampling was performed at the site, because it was not considered necessary. Instead a review of the sewers systems specifications and sources was performed to demonstrate that there are no likely sources of hazardous substances that discharge waste into the lift (pump) station near Building 2409.

According to a General Sanitary Sewer Map of the Seneca Army Depot, there are nine buildings located along the small looping section of sanitary sewer pipe near Colonel Drive. The sanitary sewer pipe on Colonel Drive is the sole source for sewage discharge to the pump station near Building 2409 (Figure 2-1). The nine buildings include are houses, garages and a dry storage area, and there is no reason to suspect that hazardous substances were discharged from them; there was no industrial use in this area The building uses are as follows:

- Family Housing: 2401, 2403, 2404, 2406, and 2408
- Family Housing Garages (no sewer connection): S2402, S-2405, and S-2407
- Dry Storage Area (former pump house): 2409

The sewage from the residential houses is collected in 6-inch polyvinyl chloride (PVC) and bituminous non-perforated fiber pipe. Sewage waste collected at the pump station is pumped in a 1 1/2-inch PVC force main over Kendaia Creek and along East Lake Road, and eventually it discharges to the Seneca County District No. 1 Treatment Plant to the south.

Recommendation: Based on the additional information presented above, SEAD-119A should not be identified as a SWMU/PAOC and the final site classification should indicate that no further action is required and there are no reuse restrictions at this site.

3.0 SEAD-122A - Skeet/Trap Range

3.1 Site Information

This parcel is associated with a former trap/skeet range located to the east of Building 2301 at the Airfield (Figure 3-1). This area was identified in a visual inspection and interview during the 1995 EBS.

The purpose of the investigation was to determine if surface soils have been impacted by the activities at the skeet shooting range. The constituent of concern is lead in soil.

3.2 Summary of Investigation

The skeet shooting area is behind brick farm house near the entrance to the air field (Figure 3-1). The entrance to skeet range is through a 4 foot high chain-link fence. A network of narrow asphalt walkways lead to five shooting stations that face an open field. A building that was used to launch clay pigeons is located approximately 25 feet north of the shooting stations. Two 20-

foot tall buildings on either side of the shooting stations are used for launching targets. An area of clay target fragments and slightly stressed vegetation was observed approximately 200 feet downrange from the shooting stations, which indicated that this was the downrange distance where many of clay targets were hit by the shot.

A total of five surface soil samples were collected at downrange locations at the skeet/trap shooting range (Figure 3-1). The samples were collected at distances of 125 feet, 175 feet, 200 feet, 250 feet and 300 feet from the shooting stations; the 200-foot sample was in the area that contained a concentration of clay target fragments. The rationale for selecting the sample locations is provided in Table 3-1.

The results of the laboratory analyses are presented in Tables 3-2 and 3-3. These results were compared to the NYSDEC TAGM for lead (No Recreational PRG is established for lead). The results of the comparisons are given below.

Comparison to TAGM:

- All five of the samples had concentrations that exceed the NYSDEC TAGM for lead, which is 21.86 mg/Kg, however many of these concentrations only slightly exceeded the TAGM and are likely due to natural variation in the concentration in the soil. These samples had lead concentrations that were less than two times the TAGM. The highest concentration (143 mg/Kg), which was found in the 250-foot downrange sample (SS122A-4), is approximately six times greater than the TAGM.

Comparison to Recreational PRG:

- No Recreational PRG has been established for lead.

Recommendation: Based on professional judgment it is recommended that final actions for SEAD-122A, as outlined under Decision No. B in the Decision Criteria Flowchart, include: 1) a no action SMWU designation on all applicable permits and 2) that regulators be notified by AOC that the site will be designated as no further action with no reuse restrictions.

4.0 SEAD-122B - Building 2302 Small Arms Range

4.1 Site Information

This parcel is associated with a firing range located in the area to the east of Building 2302 at the Airfield. This areas was identified in a visual inspection and interview during the 1995 EBS.

The purpose of the investigation was to determine if surface soils have been impacted by the activities at the small arms firing range. The constituents of concern are metals in soil.

4.2 Investigation Summary

The site is comprised of a two adjacent small arms ranges (Range 1 and Range 2) (Figure 4-1). Range 1 has a concrete platform with 22 numbered shooting stations and a roof. A 3-sided berm, composed of dirt, encompasses the downrange area, which has rows of target mounting frames. The sides of the berm extend to the front edge of the shooting platform. Range 2 has only two

shooting stations and it is smaller than Range 1. Its downrange area is also enclosed by a 3-sided berm. The shooting lanes are enclosed by concrete piping to prevent shooting above the berm (i.e., backstop).

A total of five surface soil samples were collected at downrange locations at the small arms range (Figure 4-1). The samples were collected at locations immediately downrange and in locations that were believed to be impact points for the shots. The rationale for selecting the sample locations is provided in Table 4-1.

The results of the laboratory analyses are presented in Tables 4-2 and 4-3. These results were compared to NYSDEC TAGMs and Recreational PRGs. The results of the comparisons are given below.

Comparison to TAGMs:

- Ten metals exceeded their respective TAGMs, however, some exceedences were more significant than others. Copper and lead were the only metals that were found at concentrations that exceeded their TAGMs in all five samples. The maximum concentrations of these metals exceeded their TAGMs by 15 times and 1,962 times, respectively. Less prevalent metals included silver, arsenic and antimony, which were found to exceed their TAGMs in two to three samples. Lastly, five metals (cadmium, chromium, cyanide, magnesium, and zinc) exceeded their TAGMs in only one sample, and the exceedences were between 1.1 times and 3 times).

Comparison to Recreational PRGs:

- Only one metal exceeded its Recreational PRG. The metal was arsenic and it exceeded its PRG by 2.5 times. None of the other metals concentrations exceeded their respective Recreational PRG values.

Recommendation: Based on professional judgment, and as indicated at Decision No. D in the Decision Criteria Flowchart, it is recommend that additional surface soil sampling be performed to determine the extent of the impacts from metals (particularly copper, lead, antimony, and arsenic) at SEAD-122D, the Small Arms Range. At this time, there are an insufficient number of data points to perform a Mini Risk Assessment. NFA ROD TRANSFER AS RANGE

5.0 SEAD-122C - Near Building 2311 Conex with Unknown Contents

5.1 Site Information

This parcel is associated with a vented conex near Building 2311 (Figure 5-1). This conex was observed during the 1995 EBS visual inspection, however, the contents of this conex was unknown at the time and, therefore, an accurate category designation could not be determined.

5.2 Investigation Summary

- No field sampling was performed at the site, because it was not considered necessary. Instead a visual site inspection of the interior of the conex was performed to determine if there are likely sources of hazardous substances within the conex.

The inspection of the interior of the six foot by ten foot conex, which is vented at the top, revealed that it contained shooting targets (e.g., human profiles and bulls eyes) for use at the Small Arms Range. It also contained 30 to 40 sheets of plywood of various sizes for making targets. No containers were observed within the conex. No evidence of oil or hazardous materials storage or spills were observed. Reading of organic vapors using an OVM were at background concentrations within the conex during the inspection.

Recommendation: Based on the additional information presented above, SEAD-122C should not be identified as a SWMU/PAOC and the final site classification should indicate that no further action is required and there are no reuse restrictions at this site.

6.0 SEAD-122D - Hot Pad Spill

6.1 Site Information

This parcel is the site of a JP-4 spill that occurred in 1990 and was revealed during an interview (Figure 6-1). The incident occurred on the "hot pad" located about 880 feet west of Building 2312. The spill involved more than 50 gallons of fuel, which ran off the pad into the grass. No records indicate that the spill was cleaned up.

The purpose of the investigation was to determine if surface soils on the perimeter of the pad have been impacted by the JP-4 fuel oil spill. The constituents of concern are volatile organics, semivolatile organics, and TPH in soil.

6.2 Investigation Summary

This area is comprised of an approximately 600-foot by 60-foot rectangular concrete pad located at the southern end of the SEDA airfield. The pad is bounded on the north, east and south by grass; an small asphalt roadway connects to the southern end of the pad. On the west side is a 400-foot by 400-foot grassy area with a central drainage area. Asphalt taxiways on the northern and southern sides of this square grassy area provide access to the refueling pad from the runway.

A total of four soil samples were collected from two soil borings at the Hot Pad Spill area (Figure 6-1). The soil borings were located in low areas on the downgradient (western) side of the concrete pad, which are likely to receive run-off if a spill occurred while a plane was being refueled on the concrete pad. The rationale for selecting the two sample locations is provided in Table 6-1.

The results of the laboratory analyses are presented in Tables 6-2 through 6-5. These results were compared to NYSDEC TAGMs and Recreational PRGs. The results of the comparisons are given below.

Comparison to TAGMs:

- None of the volatile compounds exceeded their respective TAGMs. Acetone and toluene were detected in a few of the samples but at concentrations well below their TAGMs.

- None of the semivolatile organic compounds exceeded their TAGMs. The semivolatile compounds found included mostly phthalates, which were found in all of the samples, and eight PAH compounds, which were found in only one sample (SB122D-2).

- Sample SB122D-2 also contained a TPH concentration of 108 mg/Kg, but there is no TAGM for TPH. No TPH were found in the other samples.

Comparison to Recreational PRGs:

- None of the concentrations of volatile organics, semivolatile organics, exceeded their respective Recreational PRGs.

Recommendation: Based on professional judgment, it is recommended that final actions for SEAD-122D, as outlined under Decision No. B in the Decision Criteria Flowchart, include: 1) a no action SMWU designation on all applicable permits and 2) that regulators be notified by AOC that the site will be designated as no further action with no reuse restrictions.

7.0 SEAD-122E - Deicing Planes

7.1 Site Information

This parcel is associated with the deicing of planes at three separate aircraft refueling areas in the airfield (Figure 7-1). Two of the refueling areas area located near the ends (west side) of the northwest- southeast runway (the are both labeled "aircraft refueling"), and the third is located at the end of a short taxi way west of the central portion of the runway (it is labeled "aircraft parking and refueling").

The purpose of the investigation was to determine if soils or groundwater on the perimeter of the three pads have been impacted by the deicing fluids used on the planes. The constituents of concern are semivolatile organics and principal components of deicing fluids (alcohols/glycols, i.e., ethylene glycol, propylene glycol, total unknown alkanes) in soil and groundwater.

7.2 Investigation Summary

This area is comprised of a three separate aircraft refueling/deicing areas. The areas are located along the length of the airfield. For ease of reference, these asphalt aircraft refueling platforms will be referred to as North, South, and Central, based on their relative position in the airfield (Figure 7-1).

Two soil samples were collected from a soil boring performed at the edge of each of the three aircraft/deicing areas (Figure 7-1). Each soil boring was located in the lowest area on the edge of the asphalt pad, which was likely to have received run-off during the aircraft deicing activities. The rationale for selecting the boring locations is provided in Table 7-1. Also, a temporary monitoring well was installed in each of the three borings so that a groundwater sample could be collected.

The results of the laboratory analyses are presented in Tables 7-2 through 7-5. These results were compared to NYSDEC TAGMs and Recreational PRGs. The results of the comparisons are given below.

Comparison to TAGMs and GA Standards:

- Seven semivolatile organic compounds exceeded their respective TAGMs in soil. These semivolatile compounds included mostly PAHs and one phthalate compound. Most of these exceedences occurred in the surface soil samples at the south area (SB122E-1) and the central area (SB122E-2), however, at the latter area, the number and magnitude of the exceedences in the surface soil sample were greater for all compounds. The greatest magnitude of TAGM exceedences were for benzo(a)pyrene (138 times) and dibenz(a,h)anthracene (136 times), which were at the central area. Only one semivolatile organic compound exceeded its TAGM at the north area (SB122E-3), but the exceedences in the two samples were only 1.1 and 1.6 times the TAGM.

- No propylene glycol or ethylene glycol was detected in the soil samples collected at this site. In soil, the estimated total concentration of unknown alkanes (≈TPH) was greatest in the surface soil sample (SB122E-2) from the central area. There is no TAGM for total alkanes in soil.

- There were five semivolatile organic compounds detected in groundwater and they were found predominantly in the central area (MW122E-2); the other two areas contained only an estimated concentration of one phthalate compound. All of the their concentrations, however, were below established NYSDEC GA groundwater standards.

- No propylene glycol or ethylene glycol was detected in the groundwater samples collected at this site. In groundwater, the estimated total concentration of unknown alkanes (≈TPH) was greatest in MW122E-3, which is at the north area. There is no NYSDEC GA groundwater standard for total alkanes in groundwater.

Comparison to Recreational PRGs and Drinking Water PRGs:

- In soil, none of the concentrations of semivolatile organics or glycols exceeded established Recreational PRGs.

- In groundwater, one semivolatile organic compounds (hexachlorobutadiene) was found at an estimated concentration that was 2.2 times the Drinking Water PRG.

Recommendation: As indicated at Decision No. D in the Decision Criteria Flowchart, it is recommend that additional surface soil sampling to determine the extent of the impacts from semivolatile organic compounds (particularly PAHs) at the south and central pad areas at SEAD-122E. No further investigation of the north area is recommended. At this time, there are an insufficient number of data points to perform a Mini Risk Assessment at this site.

AIR CRAFT IDLING / START UP

8.0 SEAD-123A - Indoor Firing Range

8.1 Site Information

This parcel is associated with Building 744 (Figure 8-1). Building 744 was a physical activities center or health club facility. Interviews conducted during the 1995 EBS revealed that a shooting range existed in the basement of the facility. These interviews also reported that the shooting range was dismantled, but no records could be found documenting the cleaning process.

8.2 Investigation Summary

No field sampling was performed at the site, because it was not considered necessary. Instead the results of an inspection and field screening program will be used to demonstrate the environmental condition of the Indoor Firing Range at Building 744.

The Firing Range at Building 744 was decommissioned in 1992, when the military ceased using the north area of the Depot for army residences and as an administration area. After the firing range was decommissioned, a visual inspection and an XRF survey for lead impacts was performed by SEDA environmental staff. The XRF detector used was a model MAP 3 spectrum analyzer manufactured by Scitec Corporation. The results of the inspection and survey described below were provide by the SEDA environmental staff. The visual inspection was conducted starting at the bullet backstop and working back to the firing line area. The air duct for both the bullet trap area and the shooting line area were inspected. No visual evidence of lead was observed. The area behind the bullet trap was inspected. In this location, small amount of bullet fragments were observed. Also, bullet fragments were observed on the metal backstop.

The XRF survey consisted of field screening of many areas and surfaces within the decommissioned range. The surfaces/areas that were screened with the XRF detector were as follows: the bullet backstop, front surfaces and backside or underneath, wall, floor and ceiling of area directly adjacent to backstop, walls, floor and ceiling at random distances from backstop to the firing line area, the duct work exiting from the backstop and the duct work exiting from the firing line area. All results showed low or no lead with the exception of the area behind the backstop where there was visual evidence of bullet fragments. These screening results from this area (i.e., the bullet fragments) showed levels of lead between 19,304 ppm and 34,646 ppm.

Recommendation: Based on the additional information presented above, the small area of bullet fragments behind the backstop (which was visible in the inspection) should be removed. Following the removal, the area behind the backstop should be resurveyed with the XRF detector to ensure that the lead has been removed. Upon completing this action, SEAD-123A should not be identified as a SWMU/PAOC and the final site classification should indicate that no further action is required and there are no reuse restrictions at this site.

9.0 SEAD-123B - Building 716 and 717 Petroleum Releases

9.1 Site Information

This parcel is associated with Buildings 716 and 717 (Figure 9-1). Specifically, this is a 40,600-gallon fuel oil above ground storage tank (SRN 188) that has been in service since 1956 and an associated fueling area. There has been no record of leaking or spilling of petroleum product at this location. However, based on a 1995 EBS visual inspection, the area directly around the fueling station exhibited staining. Also, during this inspection, water was observed to be flowing over the above ground storage tank containment berm into an adjacent drainage ditch. This particular tank has been out of service and empty since 1989. The berm drain has been kept open since that time. A visual inspection conducted by the Seneca army Depot Activity Environmental Department staff on April 24, 1996 revealed only small puddles of water inside of the berm.

The purpose of the investigation was to determine if soil in the immediate vicinity of the fueling station, and sediment in the nearby drainage ditch, have been impacted by petroleum products. The constituents of concern are volatile organics, semivolatile organics and TPH in soil and sediment.

9.2 Investigation Summary

The site is comprised of an approximately 240-foot by 140-foot rectangular area that is enclosed by a chain-link fence (Figure 9-1). In the east-central portion of this area there is an inactive 40,600-gallon above ground storage tank (Tank 188) within a containment berm. An outfall pipe leads from a drain in the floor of the bermed area around the tank to a drainage ditch, which is adjacent to the southern perimeter fence. The ditch directs flow to the west. There is also a centrally located shed and fuel off-loading/filling area, which is accessible by a gate on the west side of the site. An overhead transfer pipe extends from Tank 188, past the shed, and it ends at the edge of the asphalt immediately west of the shed.

The field program included three soil borings from which two soil samples were collected from each boring, three surface soil samples, and two sediment samples (Figure 9-1). The soil borings and surface soil samples were collected from within the fenced area around the above ground tank. The sediment samples were collected in two locations, one at the outfall pipe from Tank 188 and one immediately downgradient from this area. The rationale for these sample locations is provided in Table 9-1.

The results of the laboratory analyses are presented in Tables 9-2 through 9-5. These results were compared to NYSDEC TAGMs and Residential PRGs. The results of the comparisons are given below.

Comparison to TAGMs:

- No volatile organic compounds were exceeded their respective TAGMs in surface and subsurface soil samples.

- No semivolatile organic compounds exceeded their respective TAGMs in surface or subsurface soil. The semivolatile compounds detected were mostly PAHs with some phthalate compounds.

- TPH were found in five out of the six surface soil samples, but not in the subsurface soil samples. The maximum TPH concentration was in surface soil sample SS123B-1 (2,880 mg/Kg). The next highest concentration was 179 mg/Kg in the surface soil samples SB123B-1. The other three TPH concentrations were less than 100 mg/Kg. There is no TAGM for TPH.

- No volatile organic compounds in the samples exceeded established New York State sediment criteria. One volatile organic compound (acetone) was found in both of the sediment samples. The detected concentrations were near the method detection limit.

- No semivolatile organic compounds exceeded established New York State sediment criteria. Semivolatile organic compounds were found in both sediment samples, although the numbers of compounds and their concentrations were higher in the sample beneath the outfall pipe

(SD123B-1) than in the downstream sample (SD123B-2). The compounds detected were mostly PAHs, with a few phthalates.

- No TPH were found in either of the two sediment samples collected in the drainage ditch.

Comparison to Residential PRGs:

- None of the concentrations of volatile organics or semivolatile organics exceeded their respective PRGs in the soil samples.

Recommendation: Based on professional judgment, it is recommended that final actions for SEAD-123B, as outlined under Decision No. B in the Decision Criteria Flowchart, include: 1) a no action SMWU designation on all applicable permits and 2) that regulators be notified by AOC that the site will be designated as no further action with no reuse restrictions.

10.0 SEAD-123C - Building 747 HM Spill

10.1 Site Information

This parcel is associated with Building 747 (Figure 10-1). A visual inspection was attempted at this building; however, access to the building and the surrounding areas was denied. The tank list shows that there is a 4,000 gallon fuel oil underground storage tank (SRN 44) associated with this building that has been in service since 1982. No release has been documented for this tank. An interview conducted during the mid-EBS meeting in January 1996 revealed that this building was been used for storage of battery acids and paints and that releases of petroleum product and solvents have occurred.

No sampling was performed at this site during the field program. The site was addressed in a Underground Storage Tank Closure Report prepared for Seneca Army Depot by Environmental Products and Services (1998). The pertinent findings of this report are described below.

10.2 Investigation Summary

The 4,000-gallon fiberglass underground fuel oil storage tank near Building 747 was removed as part of the closure of seven other tanks at SEDA. During the closure, six soil samples were collected from the floor and walls of the tank pit excavation. Analytical results of these soil samples showed that no volatile organics or semivolatile organics were detected in the samples.

Analytical results of a ground water sample collected from a monitoring well installed in the center of the excavation pit showed that 12 target analytes were detected. Five of these compounds were found at concentrations above guidance values set forth in NYSDEC STARS Memo #1. These five compounds, and their concentrations, are as follows: n-butylbenzene (9.3 ppb , naphthalene (43.0 ppb and 21 ppb), 1,2,4-trimethylbenzene (34.3 ppb), 1,3,5-trimethylbenzene (11.0 ppb), and total xylenes (14.5 ppb). Also, the concentrations of three of these compounds (total xylenes, 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene) are above their respective NYSDEC GA standards of 5 ppb.

According to a February 11, 1998 letter from NYSDEC, the status of the site (Spill No. 9712298 - Building 747) is that "groundwater contamination above STARS criteria" exists at the site.

Furthermore, NYSDEC's status letter "requests that the tank pit well be resampled in May 1998 and ground water analyzed using Method 8021." They note that "further work, if any, will be determined upon receipt of the analytical results."

Recommendation: As indicated at Decision No. D in the Decision Criteria Flowchart, it is recommend that an additional groundwater sample be collected from the tank pit well at SEAD-123C and analyzed using methods specified by NYSDEC. The results should be submitted to NYSDEC and, after they have reviewed the results, a request of the status of the site should be made by SEDA. SPill ?

11.0 SEAD-123D - Area West of Building 715

11.1 Site Information

This parcel is associated with open land north of Building 715 (Figure 11-1). A visual inspection of this area during the 1995 EBS revealed several suspected mounding areas and a rusty drum protruding from a mound of soil. No evidence of soil staining or groundwater contamination could be determined from the visual inspection. During the 1995 EBS, interviewees were asked if they had any knowledge of this area, but no one had any information.

The purpose of the investigation was to determine if the soils in the mounds or debris areas have been impacted by oil or hazardous materials. The constituents of concern are volatile organics, semivolatile organics, TPH, metals, and pesticides/PCBs in soil.

11.2 Investigation Summary

The site is comprised of a 4.6-acre triangular shaped area that is mostly wooded (Figure 11-1). Six locations within the area showed signs of disturbance. The disturbed areas consisted of either low mounds of dirt and/or surface debris consisting of construction material or rusted drum fragments.

A detailed visual inspection of the area west of Building 715 was performed and all of the mounds within this area were identified. Five areas/mounds that were considered most likely to have been impacted based on visual inspection were identified in the area. Five test pits were excavated, one at each of the five areas/mounds, and two soil samples were collected from each pit (Figure 11-1). The rationale for the test pit sample locations is provided in Table 11-1.

The results of the laboratory analyses are presented in Tables 11-2 through 11-9. These results were compared to NYSDEC TAGMs and Residential PRGs. The results of the comparisons are given below.

Comparison to TAGMs:

- Two volatile organic compounds (acetone and methyl ethyl ketone) were found in the soils at the site. Acetone was found in six of the samples at concentrations below the TAGM (between 10 µg/Kg and 17 µg/Kg), however, in one sample it was found at 660 µg/Kg, which is 3.3 times the TAGM. Methyl ethyl ketone was found in only one sample at a concentration below the TAGM. It is likely that these compounds are laboratory artifacts and are not believed to be indicative of the true soil chemistry at SEAD-123D.

- No semivolatile organic compounds were found at concentrations that were above their respective TAGM values. The semivolatile organic compounds were mostly PAHs with a few phthalate compounds.

- TPH were found in soil samples at three of the five test pits excavated. At TP123D-2 and TP123D-3 TPH concentrations were between 22.1 mg/Kg and 39.4 mg/Kg only in near surface (0.5 foot depth) soil samples. At TP124D-4, the TPH concentrations of 115 mg/Kg and 221 mg/Kg were found in samples collected from 0.5-foot and 1.0-foot depths, respectively. There is no TAGM for TPH.

- Eight metals were found in the soil samples at concentrations that were slightly above their respective TAGM values, however, these exceedences were only 1.1 to 1.8 times greater than the TAGMs for these metals. The relatively low magnitude of the exceedences suggests that they are likely to result because of natural variability in the metals concentrations in the soil, and not from impacts from on-site activities. Specifically, the metals that exceeded the TAGMs, and the magnitude of their exceedences (shown in parentheses), are as follows: aluminum (1.03 - 1.1 times); chromium (1.02 times); copper (1.1 times); iron (1.2 times); lead (1.1 - 1.4 times); manganese (1.1 - 1.8 times); mercury (1.3 times); and zinc (1.1 - 1.5 times).

- No pesticides or PCBs were found at concentrations that exceeded TAGM values. The two pesticides that were found (4,4-DDE and 4,4-DDT) were detected at concentrations well below their respective TAGM values (two of the detections were estimated, because they were below the contract required detection limit).

Comparison to Residential PRGs:

- None of the concentrations of volatile organics, semivolatile organics, metals, or pesticides/PCBs exceeded established PRGs in the soil samples.

Recommendation: Based on professional judgment it is recommended that final actions for SEAD-123D, as outlined under Decision No. B in the Decision Criteria Flowchart, include: 1) a no action SMWU designation on all applicable permits and 2) that regulators be notified by AOC that the site will be designated as no further action with no reuse restrictions.

12.0 SEAD-123E - Rumored DDT Burial at Ice Rink

12.1 Site Information

This parcel is associated with an area that was rumored to have been used for the burial of empty DDT cans.

The purpose of this investigation was to perform an EM 31 Survey within the area. Upon completion of the survey, the data was reduced and likely EM anomalies (i.e.,. targets) identified.

12.2 Investigation Summary

The site is comprised of an approximately 300-foot by 200-foot area that contains an rectangular depression in the ground surface that is used seasonally for an ice skating rink; the rink is surrounded by grassy areas (Figure 12-1). A fenced water tower is on the west side of the area and fenced tennis courts exist on the east side.

An EM-31 survey was performed over a 300-foot by 240-foot area that encompassed the former ice rink. The EM-31 survey was performed by collecting EM measurements every one second along parallel, north-south oriented survey lines. These lines were spaced 20 feet apart. The local grid system that was used to reference the EM-31 survey was itself referenced to local anthropogenic features (such as corners in fences, building corners, etc.). Once the EM-31 data were collected, they were corrected for instrument drift using instrument function check data that were collected before and after the survey. Finally, the data were reduced to produce pseudo-color maps of the measured EM responses. These maps are presented in Figure 12-2 and Figure 12-3. Figure 12-2 shows the measured apparent ground conductivity and Figure 12-3 shows the in-phase response. In each figure, the range of measured values has been mapped to an arbitrary color scale, which was chosen to highlight the anomalous features observed in the EM data.

A prominent EM anomaly is visible in both the apparent ground conductivity data and in the in-phase response data in the south central portion of the surveyed area, immediately south of the former ice rink. This area is presumably associated with the suspected buried DDT drums. Although this location is not below the former ice rink, the lack of an EM anomaly beneath the rink and the size and amplitude of the EM anomaly immediately south of the rink indicate that the suspected burial location is indeed south of the rink and that no burial occurred beneath the rink itself. Two additional EM anomalies are prevalent along the western and eastern boundaries of the surveyed area, and both are associated with chain-link fencing.

Recommendation: Based on the results of the geophysical survey, it is recommended that the geophysical anomaly south of the ice skating area at SEAD-123E be investigated, and the environmental impact from the anomaly be determined. This is in accordance with the actions defined by Decision No. D in the Decision Criteria Flowchart. Test Pit

13.0 SEAD-123F - Mound North of Post 3

13.1 Site Information

This parcel is associated with a reported mound in an area north of the Post 3, in the Administration area (Figure 13-1).

The purpose of the investigation was to determine if soil in a mound north of Post 3 has been impacted by oil or hazardous materials. The constituents of concern are volatile organics, semivolatile organics, TPH, metals, and pesticides/PCBs in soil. An EM-31 geophysical survey was also performed.

13.2 Investigation Summary

The site consists of a gradually sloping mound that is approximately 200-feet long, 100 feet wide and 4.5 feet high (Figure 13-1). The mound is located in the northwest corner of a grassy field adjacent to the parking lot at Building 750. both the mound and the field are regularly mowed by SEDA maintenance staff.

A detailed visual inspection of the area north of Post 3 was performed and the mound was identified. A test pit was excavated and two soil samples were collected from the pit (Figure 13-1). The test pit was excavated at the north end of the mound where there were signs of past excavating activities and stressed vegetation. The rationale for the sample locations is provided in Table 13-1. In addition, a geophysical survey was performed at TP123F-1 to determine if there were any anomalies in the mound.

An EM-31 survey was performed over a 400-foot by 200-foot area that encompassed the soil mound near Post 3. The EM-31 survey was performed by collecting EM measurements every one second along parallel, north-south oriented survey lines. These lines were spaced 20 feet apart. The local grid system that was used to reference the EM-31 survey was itself referenced to local anthropogenic features (such as corners in fences, building corners, etc.) and to the staked boundaries of test pit TP123-F, which was excavated into the soil mound. Once the EM-31 data were collected, they were corrected for instrument drift using instrument function check data that were collected before and after the survey. Finally, the data were reduced to produce pseudo-color maps of the measured EM responses. These maps are presented in Figure 13-2 and Figure 13-3. Figure 13-2 shows the measured apparent ground conductivity and Figure 13-3 shows the in-phase response. In each figure, the range of measured values has been mapped to an arbitrary color scale, which was chosen to highlight the anomalous features observed in the EM data.

No EM anomalies were observed that could be associated with buried metallic objects. A large amplitude anomaly is visible in both the apparent ground conductivity and the in-phase response data along the western boundary of the surveyed area, and is associated with a chain link fence. Intermittent medium amplitude anomalies are also observed along the northern boundary of the surveyed area, and these too are associated with chain link fencing. A low amplitude apparent ground conductivity is visible over the area of the soil mound, but is a product of the EM-31 instrument being slightly higher above the local terrain while it was carried over this portion of the survey area. Since the EM-31's apparent ground conductivity response is proportional to the instrument's elevation above the local terrain, an increase in the instruments height above the local terrain will result in a slightly reduced apparent ground conductivity measurement. (The EM-31 instrument is factory calibrated to measure apparent ground conductivity in a homogeneous space one meter below the instrument; by increasing the amount of open space below the instrument decreases the absolute conductivity of the space below the instrument that is being surveyed.)

The results of the laboratory analyses are presented in Tables 13-2 through 13-9. These results were compared to NYSDEC TAGMs and Residential PRGs. The results of the comparisons are given below.

Comparison to TAGMs:

- No volatile organic compounds were found at concentrations that exceeded their respective TAGMs. Only one compound (acetone) was found in one sample; it was found at an estimated concentration below the CRDL.

- No semivolatile organic compounds were found at concentrations that exceeded their respective TAGMs. The semivolatiles were mostly PAHs, although one phthalate compound was found. All of the compounds found were detected at estimated concentrations.

- No TPH were detected in the soil samples.

- Four metals were found at concentrations that exceeded their respective TAGMs, however, these exceedences were only 1.1 to 1.3 times greater than the TAGMs for these metals. The relatively low magnitude of the exceedences suggests that they are likely to result because of natural variability in the metals concentrations in the soil, and not from impacts from on-site activities. Specifically, the metals that exceeded the TAGMs, and the magnitude of their exceedences (shown in parentheses), are as follows: copper (1.1 times); magnesium (1.1 times); manganese (1.3 times); and nickel (1.1 times).

- No pesticides or PCBs were detected in any of the soil samples.

Comparison to Residential PRGs:

- None of the concentrations of volatile organics, semivolatile organics, or pesticides/PCBs exceeded established Residential PRGs in the soil samples. Only two metals (arsenic and beryllium) exceeded their respective Residential PRGs. The exceedences were 8.6 times and 11.4 times for arsenic and 2.1 times and 1.7 times for beryllium.

Recommendation: Based on professional judgment it is recommended that final actions for SEAD-123F, as outlined under Decision No. B in the Decision Criteria Flowchart, include: 1) a no action SMWU designation on all applicable permits and 2) that regulators be notified by AOC that the site will be designated as no further action with no reuse restrictions.

File
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BCT

Meeting Minutes Summary
Base Clean-up Team (BCT) Meeting, Day 1
Tuesday, October 20, 1998

Attendees:
Steve Absolom – SEDA
Thomas Graesek - SEDA
Thomas Enroth - NY District COE
Janet Fallo - NY District COE
Robert Scott - NYSDEC - Avon
Keith Hoddinott – USACHPPM
John Buck – USAEC
Dan Geraghty - NYSDOH
James Quinn - NYSDEC
Patricia Jones - Seneca County IDA
Carla Struble - USEPA
Alicia Allen - USACOE – Huntsville
Michael Duchesneau - Parsons

The monthly meeting of the Base Clean-up Team (BCT) was called to order by Mr. Stephen Absolom, the BRAC Environmental Coordinator (BEC), at approximately 13:00 hours at the Non-Commissioned Officers (NCO) Club at the Seneca Army Depot Activity (SEDA), in Romulus NY. The list of attendees is provided above.

The BCT began with an overview of the Industrial Development Agency (IDA) provided by Pat Jones. Each parcel was discussed by Pat and has been added to the sections pertaining to that parcel. The goal of the IDA is to have the North End, the Housing Areas and the SEDA Airfield transferred to a redeveloper in March 1999. This will require that all clean-ups at all waste disposal sites be complete or underway in order for the transfer to occur. The FOST's for each of the areas will also have to be completed by then as well. The North End FOST has been submitted to the regulators, who have provided some comments. Resolution of these comments and agreement over the disposition of any waste disposal sites within these areas are therefore a critical issue to be addressed in order for the on-time transfers of the parcels to occur.

Ms. Jones also indicated that she had been approached by the editor of Ithaca Journal regarding the agenda for tonight's RAB meeting.

Ms Jones indicated that Mr. Russell Miller, a SEDA RAB member, recently attended a RAB conference in San Diego. Mr. Miller provided a summary of his experiences later during the evening meeting of the RAB.

Mr. Stephen Absolom indicated that the base commander, Lt. Col. Donald Olson, received a letter from Mr. Ken Reimer, another SEDA RAB member. Mr. Reimer expressed

concern to the commander regarding the lack of speed that the clean-ups are occurring at SEDA. He also stated that the description of the SEDA on the NPL Internet site did not seem to be accurate. Finally, he expressed concern that the types of activities performed at SEAD12/63 were not fully explained to the RAB by the Army. Mr. Absolom indicated that the commander was prepared to respond to Mr. Reimer's letter at the evening meeting of the RAB. The commander did discuss the letter during the RAB meeting.

Mr. Absolom stated that the Seneca Army Depot Activity Ordnance Evaluation Report, prepared by the St. Louis District, has been submitted as a pre-draft. Once the document has been finalized it will be available for distribution. Most of the sites involving ordnance have already been identified. This document will be useful in addressing concerns regarding reuse areas that may have ordnance.

There were discussions regarding the process that will be used to remove from further consideration and evaluation, sites that are currently classified as No-Action Solid Waste Management Units (SWMU)s. Several sites that were investigated as Environmental Baseline Survey (EBS) sites will also fall into this category and will need to be formally eliminated from further consideration. All existing SWMUs were identified and classified during the RCRA permitting process. This list served as the list of sites to be evaluated under CERCLA when the entire depot was listed as a CERCLA facility. During the finalization of the SWMU Classification Report, numerous sites, approximately 24, were given No-Further Action (NFA) status. At the time, the final decision document that would be used to remove the sites from further consideration was not clear. The process outlined in the Interagency Agreement (IAG) states that a NFA site has to be listed as a NFA in the RCRA permit. There is no requirement in the IAG to do a NFA Record of Decision (ROD). Since the depot is closing, the request for a Part B RCRA permit has been withdrawn. The depot is operating under the interim status provisions of RCRA until the depot is closed. Therefore, this avenue for final disposition is not available since the permit doesn't exist. It was suggested that, in lieu of the RCRA permit, a separate decision document could be drafted that will serve the same purpose and allow all NFA sites to be formally eliminated for future consideration. For EBS sites, the EBS report could be used to as the vehicle to document what sites will be granted NFA status. It was generally agreed that some type of document would be used to document the NFA decisions.

The main topic to be discussed during the BCT meeting was the classification of sites that are within the four (4) reuse parcels that will be transferred. Recent interest in these four sites has prompted the need to resolve the status of the sites that may exist within each parcel to avoid delays associated with the transfers. Four (4) parcels are to be transferred to the IDA as soon as the economic development conveyance has been approved. Once transferred to the IDA, each parcel, with the exception of the prison parcel, will be transferred to the eventual end reuse group. Interest in the transfer of the prison parcel for reuse as a maximum-security prison has become a high priority. The prison parcel, like the transfer of the LORAN station to the US Coast Guard, will be a direct federal to

federal agency transfer and will not follow the procedures associated with the other parcels.

The four (4) parcels that are to be transferred include:

1. The North End Area,
2. The Family Housing Areas,
3. The SEDA Airfield and
4. The Prison Parcel Area.

The transfer to the four (4) parcels requires that all waste disposal sites, within each parcel, be identified and remediated to appropriate levels that will be consistent with the intended future use of the parcels. Waste disposal sites, rumored and confirmed, have been identified within the boundaries of some of the parcels and the topic for discussion at the BCT centered upon the disposition of these sites. Each parcel was discussed along with the waste disposal sites that exist within the parcels. The Army presented their proposed designation of each site within each parcel. The representatives from the EPA, the NYSDEC and the NYSDOH stated that they would review the status of each site and provided written comments on the recommendations at a later date.

NORTH END

The first parcel discussed was the North End Area. A previously interested group for this parcel, Youth Services Inc. (YSI) has withdrawn their proposal to lease the parcel from the IDA due to financial issues. A new group, not named, has expressed an interest in the North End. The plan would be to lease the parcel then purchase the parcel. This will allow the buyer to demolish some of the buildings, allowing more development that would be suitable with their plans.

The sites located at the North End that will be transferred include:

- **SEAD-29 : The Waste Oil Tank at Building 732.**

This site is a SWMU that has been managed under the SEDA's Underground Storage Tank (UST) program. It was not listed as a NFA SWMU because the tank contained waste oil, not virgin oil. Waste oil was suspected to have contained solvents such as TCE. However, the tank has been managed by SEDA through an approved New York State UST program. As part of this program, this tank was removed and closed under the provisions of the New York State UST program. The tank was removed in order to avoid the need to upgrade the tank by the December 31, 1998 deadline as required by the UST regulations. Since it is no longer in service there was no need to upgrade the tank and the tank was removed and closed. The Army proposes that this site be given the designation as a NFA.

Army Proposed Action Item: Designate the site as a NFA site, since the tank has been closed under the NY State Tank Management Program.

- **SEAD-32 : The Two (2) Waste Oil Storage Tanks at the Boiler House, Building 718.**

This site is another SWMU that was been managed under the SEDA's Underground Storage Tank (UST) program. This tank has been managed by SEDA through a program that has been approved by the New York State UST group. The fuel that was burned in the boilers and stored in the tank was No. 6 fuel oil. This tank was not listed as a NFA SWMU because for a short period of time, SEDA added 5% waste oil to the fuel. The addition of waste oil to the fuel was an attempt to recycle waste oil at the depot. The practice was discontinued because of operational difficulties that were encountered with the boiler burners. The viscosity of No. 6 fuel is so high that the fuel is considered immobile. For this reason, tanks containing No. 6 fuel are exempt from the UST program. The Army proposes that this site be given the designation as a NFA since the tanks contained the immobile No. 6 fuel and have been managed under the UST program.

Army Proposed Action Item: Designate the site as a NFA site, since the tanks contained No. 6 fuel and are exempt under the NY State Tank Management Program.

- **SEAD-35 : The Three (3) Waste Oil Burners at Building 718.**

This site is a SWMU that was listed as a NFA SWMU since the SWMU are the burners. The burners are located within the building and are not used for storage of the oil, rather are used as part of the process. The SWMU had been agreed to be a NFA SWMU.

Army Proposed Action Item: Designate the site as a NFA site, since the burners are part of the process and would not have been the source of an environmental release.

- **SEAD-41 : The Boiler Blowdown Pit at Building 718.**

This site is a SWMU that was evaluated during the SWMU classification process. Boiler blowdown is comprised of condensed steam and should not be a source of waste materials. However, since the pit is a potential disposal area for other materials, a limited soil sampling effort was conducted in the blowdown pit to confirm the absence of waste materials. The results indicated the presence of low levels of Total Petroleum Hydrocarbons (TPH). Although TPH is not currently recognized by NYSDEC for compliance purposes it can be useful as an indicator parameter. The Army has planned to conduct a removal action to eliminate the presence of any waste materials that may be present in the pit.

Army Proposed Action Item: The site will be the subject of a future removal action.

- **SEAD-61 : The UST Waste Oil Tank at Building 718.**

This is another SWMU that has been managed under the SEDA's UST program. It was not listed as a NFA SWMU because the tank contained waste oil, not virgin oil. Waste oil was suspected to have contained solvents. However, even though the tank was listed as a

SWMU, the tank has been managed by SEDA through an approved New York State UST program. Any releases from this tank would have been remediated through the NYS UST program and therefore there is no need to include this SWMU as a site requiring a CERCLA evaluation. This tank is a double walled fiberglass tank with leak detection that meets the provisions of the New York State UST program and the December 31, 1998 UST regulation deadline. The tank is no longer in active service but is still in the program and can be used by a future reuser. The Army proposes that this site be given the designation as a NFA.

Army Proposed Action Item: Designate the site as a NFA site, since the tank has been managed under the NY State Tank Management Program and meets the UST requirements.

- **SEAD-18 : The Classified Document Incinerator at Building 718.**

This site is a SWMU that was listed, as a NFA SWMU since the only materials burned in the incinerator was paper. The site is located within the high security area. The NFA designation of this SWMU had been previously agreed to by all parties.

Army Proposed Action Item: Designate the site as a NFA site, since the incinerator would not have been the source of an environmental release.

- **SEAD-7 : The Shale Pit**

This site is a SWMU that was listed, as a NFA SWMU since the pit was a source of shale fill for buildings and roads. This site is located outside of the guard post at Gate 3. The site was listed as a SWMU as it was an area where clean fill was placed. Disposal of waste materials was not performed at this site and a site inspection confirmed the lack of waste materials. All parties had previously agreed to the NFA designation of this SWMU.

Army Proposed Action Item: Designate the site as a NFA site, since the site was not the source of an environmental release.

- **SEAD-21 : The Sewage Treatment Plant 715.**

This site is a SWMU that was listed as a NFA SWMU since the SWMU is already regulated as a wastewater treatment facility in accordance with the State Pollution Discharge Elimination System (SPDES).

Army Proposed Action Item: Designate the site as a NFA site, since the site is regulated under the New York SPDES program.

- **SEAD-123 a-f, EBS Identified Sites**

The following description summaries the discussions that occurred for each of the EBS sites located within the North End area. Discussions were generally brief. Mr. Absolom presented the Army recommendation for each site to the group. Additional text, originally not part of the discussion, has been added to provide a clearer understanding regarding the nature of each site. These sites, a-f, are sites that were rumored to be potential waste

disposal sites. The sites were identified as Class 7 sites during the EBS. Class 7 sites are described in the EBS as sites that have not been evaluated or require additional evaluation. As a follow-up to the EBS effort, Parsons conducted additional limited investigations at several EBS sites during the spring of 1998 to provide a basis for site classification. The results of this investigation were presented in three (3) separate draft reports. EBS sites located within the North End Area were given site designation numbers SEAD-123 a thru f. The results for sites SEAD-123 a thru f are presented in the draft report, *Investigation of Environmental Baseline Survey Non-Evaluated Sites, SEAD-119a, SEAD-122 (A,B,C,D,E) and SEAD-123 (A,B,C,D,E,F), April, 1998.*

- **SEAD-123 a, The Indoor shooting Range**

This site is an indoor shooting range at Building 744. This site was converted from a free weightlifting room to a shooting range and was decommissioned in 1992, when military activity ceased at the North End. Mr. Absolom indicated that a visual inspection of the range was conducted and a survey was conducted using an X-Ray Fluorescence (XRF) portable meter. The survey was performed using the XRF to detect the presence of lead at the surfaces of the ducts, vents, walls, and ceilings, the steel backstop and the floors within the range. The results suggested that lead was either not present or present at low levels. Mr. Thomas Graesek, who was involved with the building scan , identified that low lead levels are considered to be levels that are less than 6%. This is the criterion that is used when evaluating lead paint in buildings. The only exception is a trap area, located behind the bullet backstop, where bullets were collected. Bullet fragments were observed in the trap and therefore the level of lead in this area is above the 6% level. Since access to the trap is difficult, requiring removal of the steel backstop, exposure to the lead bullet fragments is unlikely. The question was raised regarding the applicability of the "Range Rule" to this site. Mr. John Buck, from AEC, indicated that he thought that the "Range Rule" might apply in which case this site would be addressed under the provisions of the "Range Rule". Mr. Buck indicated that he would make inquires as to this issue. The Army believes that since the site was an indoor range and all exposed surfaces areas are free of lead or less than the criteria for lead paint, this site should be designated as a NFA site. Ms. Struble from EPA noted that the recommendation of the EBS report is not consistent with the current recommendation of NFA. The EBS report recommended a limited removal action to remove any remaining lead bullet fragments. Mr. Absolom responded that the EBS is still a draft and will be modified if necessary. The EBS recommendation was based upon an understanding that the existing bullet fragments would pose a potential threat. Mr. Graesek indicated that the lead bullet fragments are inaccessible and all areas within the building that are accessible are below levels considered safe.

Army Proposed Action Item: Designate the site as a NFA site, since the site is free of lead that is accessible.

- **SEAD-123 c, The 40,000-Gallon Aboveground Fuel Storage Tank at Buildings 716 and 717.**

This site includes the 40,000 gallon aboveground fuel oil storage tank and the area surrounding the tank. The tank was placed in service in 1956 but has empty and not been

used since 1989. Although the tank has not been used, this tank is included in the SEDA's Tank Management Program. A visual inspection conducted in 1995 as part of the EBS site investigation effort noted surface soil staining in an area adjacent to the refueling station. In March 1998, as part of the supplemental EBS sampling efforts, Parsons collected a total of eleven (11) soil samples from various locations at this site. Six (6) samples were collected from the (3) soil borings (one surface soil sample was collected at each soil boring location), three (3) surface soil samples were collected from the staining area and two (2) samples were collected from the surface of the ditches surrounding the site. Although TPH was detected in 5 out of the 6 surface soil samples, no volatile or semi-volatile organic compound exceeded their respective TAGM values. There is no New York State criterion for TPH. The levels of TPH were considered to be low. Only one surface soil sample contained elevated TPH levels.

Army Proposed Action Item: Designate the site as a NFA site, since the site is part of the Tank Management Program and the levels detected are below New York State Criterion

- **SEAD-123 d, Area West of Building 715.**

This site is an area associated with a 4-acre triangular shaped open area of land, north of Building 715. A visual inspection of this area during the 1995 EBS survey revealed the presence of soil mounds. No visual evidence existed of waste disposal activities. Parsons collected a total of ten (10) soil samples from test pits conducted at five (5) mounds found at this site. None of the sample results were above the New York State TAGM criterion for volatile and semi-volatile, pesticide or PCB organic compounds. Low levels of metals, barely above the TAGM values, which in most instances are site background concentration levels, were detected.

Army Proposed Action Item: Designate the site as a NFA site, since the levels detected are either below New York State Criterion or at or near site background concentrations.

- **SEAD-123e, Rumored DDT Burial Area at the Ice Rink**

This site is an area associated with a rumor that cans containing DDT was buried near the ice rink. Parsons conducted an EM31 geophysical survey a this location and identified one anomaly. This anomaly was determined to be a buried water pipe.

Army Proposed Action Item: Designate the site as a NFA site, since there is no evidence that DDT burial has occurred.

- **SEAD-123 f, Mound North of Post 3.**

This site is an area associated with a mound north of Post 3. Parsons collected a total of two (2) soil samples from a test pit performed at the mound. None of the sample results were above the New York State TAGM criterion for volatile and semi-volatile, pesticide or PCB organic compounds. Low levels of metals, barely above the TAGM values, which in most instances are site background concentration levels, were detected.

Army Proposed Action Item: Designate the site as a NFA site, since the levels since the levels detected are either below New York State Criterion or at or near site background concentrations.

- **UXO/Installation Archive Search Report**

Mr. Absolom discussed the results of a depot-wide ordnance historical archive search conducted by representatives of the COE, St. Louis District. The report, titled the Seneca Army Depot Activity Ordnance Evaluation Report, prepared by the St. Louis District, has been submitted as a pre-draft. Two general areas were identified by this search as possible areas where ordnance may exist. These areas are the various firing ranges and the two landing zones. The landing zones were used mainly as helicopter landing pads. No areas within the North End were identified as areas where ordnance were suspected to have been disposed of.

- **Lead Based Paint (LBP)**

A lead based paint survey has been conducted at the North End. The Army will make the results of this survey available to the future reuser and will note in the deed that lead based paint is in some of the buildings. Lead based paint abatement will be a requirement of the future reuser, not the Army. Mr. Quinn noted that the FOST will require a site walkover/survey for lead based paint and asbestos.

- **Asbestos**

An asbestos survey has also been conducted at the North End in 1989 and 1991. No additional surveys are planned. The Army will make the results of this survey available to the future reuser and will note in the deed that asbestos may exist in some of the buildings. The Army has removed asbestos where it is in a friable state and could constitute an imminent health hazard. Asbestos abatement will be a requirement of the future reuser, not the Army. Mr. Quinn from NYSDEC suggested that this might not be sufficient for the NYSDEC to agree with a transfer because of the long period of time that has passed from when the surveys were performed. Mr. Enroth noted that many of the pipechases in the barracks are sealed. Access to the asbestos in these areas is not possible. Army notification of this condition will be included at the time of transfer. Mr. Quinn felt that conditions may have changed and he may require that additional surveys be performed to determine the current asbestos condition of the buildings. Mr. Absolom reiterated that the Army has no plans to do additional surveys.

- **Underground Storage Tanks (UST)**

Mr. Graesek, who has been responsible for the SEDA Tank Management Program, provided an overview of the tank program. All tanks have either been removed or upgraded to be compliance with the December 31, 1998, UST regulation requirements. One tank at Building 719, a former gas station, in the North End has been removed. The excavation has not been backfilled, pending results of laboratory sampling results. He noted that product was determined to be present and apparently the pumps were leaking. The site will be closed in accordance with the requirements of the State of New York

Tank Management Program. Questions were raised regarding when the FOST will be issued. It was noted that the FOST can't be finalized until all action are closed out.

- **PCB Equipment**

All electrical equipment that may contain PCBs have been surveyed and determined to be less than 500 mg/kg.

- **Radon**

A radon survey has been conducted. Five (5) areas were retested to confirm initial results. The highest retested result was 0.6 piC/L, which is below the 4 piC/L cutoff level. Radon was not considered to be a concern in the North End.

FAMILY HOUSING

Family housing includes two, non-adjacent, parcels. One parcel is the lakefront housing area and the other area is Elliot Acres, located near the administration area. The sale of the housing parcel will be used to off-set the development costs associated with development of other base areas. The IDA has solicited bids and selected a contractor to develop both housing areas. The sites located within the Family Housing Areas that will be transferred include:

- **SEAD-119a : The Sewage Spill at Building 119.**

This site is located in the lakefront housing areas. A sewage pump lift station has occasionally failed causing a release of sewage to the surface. It was noted that sewage is not regulated under CERCLA and should not be considered an issue. Apparently, this site was identified during the EBS survey and was considered a concern because of the possibility that hazardous materials could have been released as part of the spill. A survey of the five houses that are connected to the sewage line in the lakefront area indicated that there are no sources of industrial chemicals as all the sewage connections are residential, therefore, the potential for hazardous materials to have been released is negligible. The spill is regulated under the New York SPDES program. Ms. Struble indicated that the EPA agrees that this is not an issue.

Army Proposed Action Item: Designate the site as a NFA site, since the site is not a source of hazardous chemical, sewage is not regulated under CERCLA and the spill is regulated under the New York SPDES program.

- **Lead Based Paint (LBP)**

A lead based paint survey has been conducted at the lake housing area but not Elliot Acres. The housing along Flax Drive, in the lakefront area, were constructed in 1989 and therefore are not a lead based paint issue. In the lakefront area, only the cottages and the farmhouses have been surveyed. The remaining housing to be surveyed is at Elliot Acres, constructed in 1961, which is located across the base near the Administration Area. The cottages at the lakefront housing were found to have lead paint. Ms. Struble asked if soil sampling had been performed in the soil surrounding the buildings. She noted that lead in soil might be an issue. Mr. Buck noted that according to HUD requirements, only bare

soil adjacent to a building has to be sampled for lead. He also stated that if soil if greater than 2000 mg/kg then abatement is required. If lead in soil between 400 mg/kg and 2000 mg/kg, then an interim measure, such as mulching, is appropriate. Mr. Graesek noted that all areas surrounding the buildings are grass covered and therefore were not sampled. Ms. Struble asked if there was a playground in the area and if the soil in the playground was sampled. Mr. Graesek indicated that there was a playground but the soil was not sampled. Mr. Absolom indicated that the Army would investigate the playground for the presence of lead in soil. The Army will make the results of this survey available to the future reuser and will note in the deed that lead based paint is in some of the buildings. Any additional lead based paint abatement will be a requirement of the future reuser, not the Army.

- **Asbestos**

An asbestos survey has been conducted at the lakefront housing area. Building 208/209 was determined to contain asbestos that will require abatement. The some of the crawl spaces and the outside of the housing in the lakefront area along Colonel's Drive is covered with transite board that contains asbestos. This material will not be removed prior to transfer because the transite boards are not in a friable state.

- **Underground Storage Tanks (UST)**

Four USTs exist in the housing areas but are exempt form the UST regulations as the tanks were used to store No.2 home heating fuel. However, the Army has plans to perform tank tightness testing. If the tanks are found to be leaking then the tanks will be removed.

- **Radon**

A radon survey has been conducted. One house in the lakefront area at Flax Drive was above the 4 piC/L cutoff level. The information will be disclosed to the reuser but the Army has no plans to perform remedial efforts to alleviate the radon level in this house.

- **Potable Water Supply**

Water is supplied to the housing areas from water lines that are owned by the Army. These lines will be transferred to the reuser. The pump station that supplies the water is owned and maintained by the Village of Waterloo, who removes potable water from Lake Seneca, filters and chlorinates the water in the line. The Villages of Varick and Romulus believe that they can build a filtration plant and supply water at a cost less than what Waterloo is currently charging. This is a political issue that may affect the future of who the reuser will need to obtain water from.

- **SEAD-12, Special Weapons Storage Area, Update**

Mr. Enroth provided a brief overview of the status of the work being conducted at SEAD-12, the Special Weapons Storage Area. Parsons has mobilized on-site during the end of September and has completed the test pits. The test pitting revealed the presence of a variety of electrical components and building debris. One radiological screen sample done on the electrical components was 5 times above background. A total of 27 groundwater monitoring wells have been installed, with 13 remaining to be installed. Groundwater has

been observed at the site at the 8-9 foot depth. Subsurface borings have been nearly completed. Approximately 318 surface soil samples are scheduled to be conducted during the next month. Soil split samples have been performed with EPA. Surface scanning within the buildings is slated to begin within the next month. Workplan comments have been received from NYSDOH and are being resolved.

The meeting ended at approximately 17:30 and was scheduled to reconvene tomorrow at 8:30.

Meeting Minutes Summary
Base Clean-up Team (BCT) Meeting, Day 2
Tuesday, October 20, 1998

Attendees:
Steve Absolom – SEDA
Thomas Graesek – SEDA
Randall Battaglia – NY District COE
Thomas Enroth - NY District COE
Janet Fallo - NY District COE
Robert Scott - NYSDEC - Avon
Keith Hoddinott – USACHPPM
John Buck – USAEC
Dan Geraghty - NYSDOH
James Quinn - NYSDEC
Patricia Jones - Seneca County IDA
Carla Struble - USEPA
Alicia Allen - USACOE – Huntsville
Michael Duchesneau - Parsons

Mr. Stephen Absolom, the BRAC Environmental Coordinator (BEC) reconvened the monthly meeting of the Base Clean-up Team (BCT), at approximately 8:30 hours at the Non-Commissioned Officers (NCO) Club at the Seneca Army Depot Activity (SEDA), in Romulus NY. The list of attendees is provided above.

The topics to be discussed involve resolution of the remaining sites that were discussed during the previous days' BCT meeting. This is necessary to finalize the classification of sites that are within the reuse parcels that will be transferred.

SEDA AIRFIELD

The airfield parcel will be transferred to the Finger Lakes Law Enforcement Acadamy (FLLEA). This organization will operate a law enforcement training area. The ranges will be used as firing ranges and the airfield will be used to train police officers for high speed car pursuits. There are no SWMU sites located within the Airfield parcel. The only sites that are located within the SEDA Airfield are sites that were identified in the 1995 EBS. Many of these sites are rumored or suspected sites that have no information. Parsons was tasked in the spring of 1998 to perform a limited sampling effort in order to develop a basis for site classification. The sites that were identified in the EBS and evaluated in the supplemental sampling include:

- **SEAD-122a, The Skeet and Trap Range.**

This site is an area behind the brick farmhouse near the entrance to the airfield. This site was constructed for a former depot commander who enjoyed skeet shooting and only

operated for a small four-year window. It is not active and has not been used since the former commander left the depot. Parsons collected a total of five (5) surface soil samples from areas between the shooting lane and the downrange backstop. The samples were analyzed for the presence of lead. All five of the sample results were above the New York State TAGM criterion, which in the case of lead is the site background concentration level. This concentration is 22 mg/kg. The highest concentration of the samples collected was 143 mg/kg. The Army believes that the concentration levels observed during the EBS supplemental sampling does not constitute a threat and therefore this site should be a NFA

Army Proposed Action Item: Designate the site as a NFA site, since the levels detected are near site background concentrations.

- **SEAD-122b, The Small Arms Range East of Building 2302**

This site is a small arms range that was found to contain elevated levels of copper and lead in the surface soil. However, the site will be transferred to the FLLEA as a small arms range and will be used as a small arms range during training activities. Therefore, the benefits gained by conducting a clean-up of the site before transfer is questionable since the future use will involve activities that will recontaminate the site. The Army proposes that this site be given the designation as a NFA as it will be transferred as a range..

Army Proposed Action Item: Designate the site as a NFA site, since the site will be transferred to the FLLEA as a target range.

- **SEAD-122c : Area Near Building 2311 Conex with Unknown Contents.**

Access to this building was not provided during the site inspection for the EBS. Parsons performed a visual inspection of the building during the follow-up supplementary EBS sampling in March of 1998. The contents of this building were determined to be clay skeet targets. No evidence of oil or hazardous materials storage or spills was observed.

Army Proposed Action Item: Designate the site as a NFA site, since there is no evidence of waste disposal activities.

- **SEAD-122d : Hot Pad Spill .**

This site was the location where a release of jet fuel, JP-4, occurred in 1990. The spill occurred during refueling operations and was due to a faulty valve. Approximately 50 gallons of JP-4 was released to the Hot Pad Area and ran off in to the surrounding grassy area. Parsons collected a total of four (4) soil samples from two (2) soil borings, two (2) samples from each boring to determine if any residual fuel is present. One sample was collected from the surface, (0-2"), and one sample was collected at a location that represented the most impacted conditions. If no indications of hydrocarbons were present, then the soil sample at the water table was collected. No volatile or semi-volatile compounds were determined to be present above the TAGM values.

Army Proposed Action Item: Designate the site as a NFA site, since there is no evidence of residual fuel above any NYSDEC criterion.

- **SEAD-122e : Deicing Plane Areas .**

This site was the location where plane deicing occurred on occasion. Deicing fluids are comprised of glycol, either ethylene or propylene. Three (3) areas surrounding the airfield

were suspected to be likely locations where deicing operations may have occurred. Parsons installed two (2) soil borings at each of the three suspect areas and collected a total of (2) soil samples each of the soil borings. The total number of samples collected was six (6). In addition, three (3) temporary monitoring wells were installed on the edge of each of the three areas to determine the presence of Light Non-Aqueous Phase Liquids (LNAPL)s. One sample from each boring was collected from the surface, (0-2"), and one sample was collected at a location that represented the most impacted conditions. If no indications of hydrocarbons were present, then the soil sample at the water table was collected. Semi-volatile compounds, Polynuclear Aromatic Hydrocarbons (PAH)s were determined to be present above the TAGM values. The most significant impacted sample was at the surface at location SB-122E-2, which is the central area. No propylene or ethylene glycol was detected in any soil sample. Low levels of semi-volatile organic compounds were detected in groundwater at the central location but were all below the NYSDEC GA groundwater standards. No propylene or ethylene glycol was detected in any groundwater sample. The future use of the parcel is as a training area that will involve the use of the airfield as a high speed chase training area. Car exhaust, like jet and helicopter exhaust, will release PAH compounds to the surrounding area, therefore the Army does not believe that removal of PAH compounds is necessary since the future use will continue to deposit these compounds. Further, since the use will be training, there is little likelihood that exposure to the presence of PAH compounds in the areas surrounding the runway will occur.

Army Proposed Action Item: Designate the site as a NFA site, since the presence of low levels of PAH compounds do not constitute a significant threat.

- **Lead-Based Paint (LBP)**

No lead-based paint was found in the buildings at the Airfield.

- **Asbestos**

Two (2) buildings, the tower and Building 2306, were covered with transite board. Transite board contains asbestos.

PRISON PARCEL

This parcel has been identified as a future maximum-security prison for the State of New York. The prison will contain approximately 300 cells. Inmates will only be allowed out of the cells for one hour per day. Mr. Absolom indicated that representatives of the New York State, Office of General Services (OGS) and the federal General Services Administration (GSA) are negotiating the federal to federal transfer. The parcel comprises approximately 600 acres, located in the southeastern portion of the depot and surrounds the area near the LORAN station. The Public Impact Statement, which will also meet the requirements of the SEQR, will be completed prior to excavation. The current plan is to send out bids in December of 1998 for this work. Construction is planned for early April of 1999.

The sites located within the Prison Parcel that will be transferred include:

- **SEAD-44b : The QA Test Laboratory, Brady Road.**

This site was used for fuse storage. This site is located on the edge of the building foundation footprint and will be excavated during construction activities. Excavation is currently planned for April of 1999. The site was an area and building that was part of the QA Missile Testing facility. The recent ordnance archive search did not identify the site as a known or suspected ordnance site. Sampling of the site was performed during the Expanded Site Inspections (ESI)s. The results of the sampling indicated little impacts have occurred. Only two PAH compounds exceeded their respective TAGM values in soil, each by a factor of less than two. No impacts to groundwater were observed, other than iron.

Army Proposed Action Item: Designate the site as a NFA site, since the compounds present do not constitute a significant threat.

- **SEAD-43 : The Old Missile Propellant Test Laboratory – Building 606**

Sampling of the site was performed during the Expanded Site Inspections (ESI)s. The results of the sampling indicated little impacts have occurred. On occasion, low levels of PAH compounds were found to exceed their respective TAGM values in soil. The exceedances were by a factor of six or less. Impacts to the downgradient groundwater quality were not higher than the upgradient concentrations.

Army Proposed Action Item: Designate the site as a NFA site, since the compounds present do not constitute a significant threat.

- **SEAD-56 : The Herbicide and Pesticide Storage Area – Building 606.**

This site is part of the Coast Guard Site and will be transferred to the Coast Guard with the LORAN station. The results of the sampling indicated little impacts have occurred. On occasion, low levels of PAH compounds were found to exceed their respective TAGM values in soil. The exceedances were by a factor of three or less. Impacts to the downgradient groundwater quality were not higher than the upgradient concentrations.

Army Proposed Action Item: Designate the site as a NFA site, since the compounds present do not constitute a significant threat.

- **SEAD-69 : The Disposal Area – Building 606.**

This site is located south of Building 606. The results of the sampling indicated little impacts have occurred. On occasion, low levels of PAH compounds were found to exceed their respective TAGM values in soil. The exceedances were by a factor of three or less. Impacts to the downgradient groundwater quality were not higher than the upgradient concentrations.

Army Proposed Action Item: Designate the site as a NFA site, since the compounds present do not constitute a significant threat.

- **SEAD-62 : The Nicotine Sulfate Disposal Area.**

This site was suspected to be the location where drums of Nicotine Sulfate were alleged to have been buried. Geophysical surveys were performed during the ESI. The results of the survey failed to detect the presence of buried drums.

Army Proposed Action Item: Designate the site as a NFA site, since the rumor of drum disposal could not be confirmed and the site present do not constitute a significant threat.

- **SEAD-44a : The Old Missile Propellant Test Laboratory – West of Building 616.**

This site was a pad area used for missile testing. This site is located on the edge of the building foundation footprint and will be excavated during construction activities. Excavation is currently planned for April of 1999. The site was part of the QA Missile Testing facility. The recent ordnance archive search did not identify the site as a known or suspected ordnance site. Sampling of the site was performed during the Expanded Site Inspections (ESI)s. The results of the sampling indicated little impacts have occurred. Only two PAH compounds exceeded their respective TAGM values in soil, each by a factor of less than two. No impacts to groundwater were observed, other than iron.
Army Proposed Action Item: Designate the site as a NFA site, since the compounds present do not constitute a significant threat.

- **SEAD-52 : The Ammunition Breakdown Building 612 and Adjacent Area.**

The approach for this site is to confirm the explosive "hits" and treat the site as a removal action, if the "hits" are confirmed.
Army Proposed Action Item: Designate the site as an IRM site, after confirming the presence of explosive compounds.

- **SEAD-60 : The Oil Spill Adjacent to the Ammunition Breakdown Area at Building 609.**

In April 1995, as part of the ESI sampling efforts, Parsons collected a total of nine (9) soil samples from various locations at this site. Three (3) surface soil samples were collected and six (6) subsurface samples were collected from (3) soil borings. Samples were collected from oil staining area. Two (2) surface water and sediment samples were collected from the surface of the ditches surrounding the site. Four (4) monitoring wells were also installed and sampled. TPH was detected in the surface soil samples but decreased with increasing depth. The levels of TPH were elevated in one monitoring well. The Army proposed to treat this site as a spill site and remove the impacted soils under the spill management program.

Army Proposed Action Item: Designate the site as a NFA site, since the site will be managed and closed out as part of the spill management program, not CERCLA.

- **SEAD-64c : The Former Garbage Disposal Area.**

This site was investigated in April 1995, as part of the ESI sampling efforts. Parsons collected a total of nine (9) soil samples from various locations at this site. Three (3) surface soil samples were collected and six (6) subsurface samples were collected from soil borings and test pits. Four (4) monitoring wells were also installed and sampled. The results of the investigation concluded the no significant impacts had occurred at this site.
Army Proposed Action Item: Designate the site as a NFA site, since the materials present do not constitute a significant threat.

- **SEAD-64a : The Former Garbage Disposal Area.**

This site was investigated in April 1995, as part of the ESI sampling efforts. Parsons collected soil samples from various locations at this site. Monitoring wells were also installed and sampled. The results of the investigation concluded that waste materials from solid waste had occurred at this site. The Army is planning to perform an IRM at this facility to eliminate the threat that may exist at this site.

Army Proposed Action Item: Designate the site as an Interim Remedial Measures (IRM) site, remove the waste materials present.

- **SEAD-64d : The Former Garbage Disposal Area.**

This site was investigated in April 1995, as part of the ESI sampling efforts. Parsons collected soil samples from various locations at this site. Monitoring wells were also installed and sampled. The results of the investigation concluded that waste materials from solid waste had occurred at this site. The Army is planning to perform an IRM at this facility to eliminate the threat that may exist at this site.

Army Proposed Action Item: Designate the site as an Interim Remedial Measures (IRM) site, remove the waste materials present.

- **UXO Concern**

The UXO archive search has been completed at the depot. The results of the search concluded that SEAD-44a, the Function Test Pits, might be a site where UXO may be present. This site is located within the area of the prison and will require additional investigation for UXO. The Army will perform an Engineering Evaluation/Cost Analysis (EE/CA) for the identification and removal of all UXO that may be present.

SEAD-44c, the liquid propellant storage area, was another site that the archive search identified as a site with potential UXO issues. The report recommends that additional UXO evaluations be conducted at this location.

FOSTs DISCUSSION

Mr. Absolom identified that four (4) draft FOSTs are currently planned for completion in January, 1999. Ms. Struble of EPA indicated that this would be too much work for EPA to be able to handle.

Mr. Absolom also what would be the best way to reach an agreement if there were disagreements regarding the disposition of sites.

The priority area for the first FOST is the housing area, since the housing areas have no SWMUs. Mr. Absolom indicated that because of this the FOST for the housing area should be completed in November 1998. Mr. Absolom reiterated that no asbestos resampling was planned at this time. Mr. Buck from AEC will review the HUD requirements to determine if asbestos resampling will be a requirement.

Ms. Struble indicated that EPA would check the state spill records for closure of sites with fuel spills in the housing areas.

The four houses within the housing area will not be separated during the transfer. The FOSTs will include all housing.

The priorities for determining what sites will be considered NFAs are:

1. Housing,
2. Airfield,
3. North End and
4. Prison.

The prison area could be changed to the number one priority it the interest in the site becomes significant.

SEAD –25 : THE FIRE DEMONSTRATION PAD FEASIBILITY STUDY (FS)

Mr. Absolom summarized the Army's position regarding the current plan regarding the evaluation of SEAD-25. The site is located within the industrial area. All sites within this area have been evaluated as industrial sites. Each alternative that will be assembled will be evaluated assuming an industrial scenario. Once this evaluation has been completed, the preferred alternative will then be evaluated further for unrestricted (residential use). The evaluation for unrestricted, residential, use will be considered to be sufficient for meeting the NYSDEC requirement for pre-release conditions. Mr. Quinn indicated that a residential scenario is not necessarily equivalent to pre-release conditions. The exact definition of what pre-release conditions are was not a scenario that Mr. Quinn could provide. Mr. Duchesneau asked Mr. Quinn if NYSDEC would accept background be used as pre-release for metals and possibly the levels of the TAGMs for organic compounds as a definition of pre-release conditions. Mr. Absolom indicated that the Army might evaluate clean-up to background but would not be willing to clean-up a site to background. Mr. Quinn would not commit to the definition of what pre-release. Further discussion of this issue was tabled for a later date.

Further discussion occurred regarding the presence of PAH compounds in the drainage ditches that surround the site. Mr. Absolom indicated that one stretch of a ditch contained PAH compounds at elevated concentration levels however, the presence of these compounds did not come from activities associated with the site. Rather, these compounds were likely a result of runoff from other areas of the depot and possibly residual conditions from a former oil spill. The spill was closed by the NY spill control agency and should not be included as part of the evaluation of this site. Both EPA and NYSDEC representatives indicated that they would have to consider this further before agreeing to this.

OB GROUNDS UPDATE

Record of Decision (ROD) is near completion, with only minor comments remaining. A fax response to the remaining comments was sent on October 28, 1998.

UXO Clearance remains an issue. The results of the geophysical effort were less positive than what was expected. The depth of penetration was small, approximately 3 to 6 inches. The buried objects that represent the target munitions were not detected at the two (2) foot depth. Additional options are being considered for obtaining the four (4) foot clearance depth required by the Department of Defense Explosives Safety Board (DDESB).

Mr. Absolom indicated that if Value Engineering (VE) of the ordnance clearance can be shown to be a significant cost savings that the Army may propose to change the ROD to take advantage of that cost savings. Mr. Quinn indicated that unless the cost for an alternative is an order of magnitude less than one alternative, then NYSDEC would be reluctant to agree with changing the alternative.

ASH LANDFILL UPDATE

It had been suggested at the previous BCT meeting the to move ahead with the ROD for this site, that the ROD be split into two (2) RODs, one for the groundwater and one for the soils. If the ROD was split the tracking for the ROD was slated for March, 1999. The groundwater approach was acceptable but the clean-up of the debris piles and covering the Ash Landfill and the Non-Combustible Fill Landfill (NCFL) was problematic. The issues of covering the landfills and removing the debris piles were a regulatory requirement due to the presence of metals and the potential ecological impacts that the presence of the metals may have. The ecological risk assessment indicated that the population and diversity of species a the site does not suggest ecological impacts, although the presence of metals, such as lead, in soil may present a threat. The Arm Peer Review Team (PRT) recommended that before moving forward with the ROD for this site that the Army and the regulatory agencies determine what the "valued ecological receptors" are at the site that will be protected. The PRT indicated that recent EPA guidance, May 14, 1998, indicated that identification of the "valued ecological receptors" are the first step that must be taken before the Army can commit to spend money for a remedial action. Ms. Struble provided a written response stating that EPA does not believe that this guidance is applicable to a CERCLA site. The guidance at issue was published by EPA to apply to sites that do not have specific guidance on how to conduct an ecological risk assessment. In the case, such as a SEDA, the CERCLA Ecological Risk Assessment (ERAG)s should be consulted as guidance on how to conduct an ecological risk assessment at CERCLA site. Mr. Absolom indicated that the comments from the PRT and the EPA position would have to be resolved before the ROD could be finalized. He also indicated that ERAGs guidance was used for the current ecological risk assessment, which did not identify that there were any ecological damages. It was suggested that perhaps a phone conference call could be conducted to resolve this issue. Further discussion on what ecological damage had occurred was tabled.

The next BCT meeting was scheduled for Tuesday, November 17, 1998. The meeting was adjourned at approximately 12:00.

ENVIRONMENTAL CONCERNS - PROPOSED 709 ACRE PRISON SITE:

1. **SEAD 69 (Brac 63(6)PS/HS/HR) - Building 606 - Old Missile Propellant Disposal Area. No action required. Awaiting preparation of close-out document.**

2. **SEAD 62 (Brac 62(6)HR(P) - Nicotine sulfate disposal area near Buildings 606 and 612.** See SEAD 69

3. **SEAD 44A (Brac 60(6)HR) - Material proof and surveillance test area west of Building 616. No action required. Awaiting preparation of close-out document.** → May have have UXO concerns

4. **SEAD 52 (Brac 59(6)PS//PR/HR) - Buildings 608 and 612 - Ammunition Breakdown Area. Need to investigate. Will do initial sampling and then phased approach. Army still awaiting funds to begin.**

5. **SEAD 60 (Brac 59(6)PS/PR/HR - #2 oil discharge adjacent to Bldg 609. Needs excavation and samples. Could possibly be closed out under Spill Program.** Awaiting Funds

6. **SEAD 64C(Brac 119Q-X) - South/East Corner of Ammo Area. This site is believed to be the location of a small arms range. ~~A visual inspection of the area revealed a 250-foot long accurate berm with a dirt track leading to it.~~ No action required. Awaiting preparation of close-out document.**
May have have UXO Concern

7. **SEAD 44B (Brac 6l(6)H) - Material Proof and Surveillance Test Area on Brady Road.** No Action Required awaiting Documents
No UXO concern based on ASR.
~~Note: SEAD 44B is the only environmental site situated on the 132 acre parcel which the facility will be built.~~

8 SEAD 43 & 56 See #1
ADD may have UXO concern

HEADQUARTERS
DEPARTMENTS OF THE ARMY AND THE AIR FORCE
Washington, DC 20310-2500
31 January 1994

NG PAM (AR) 385-16/
ANGPAM 91-101

Safety

GUIDELINES FOR CONVERTING INDOOR FIRING RANGES TO OTHER USES

Summary. This is a new pamphlet. This guidance prescribes policy, responsibilities, and procedures on how to convert lead-contaminated indoor firing ranges to other uses.

Applicability. This guidance applies to all persons responsible for the operation of Army National Guard (ARNG) and Air National Guard (ANG) indoor firing ranges. As no regulation/guidance can foresee all situations that might arise, the following is written in a broad scope and is intended to be interpreted as to the INTENT of the law by health professionals.

Supplementation. Supplementation of this guidance is prohibited without prior approval from Chief, National Guard Bureau (NGB-AVN-SI).

Impact on New Manning System. This guidance does not contain information that affects the New Manning System.

Interim changes. Interim changes are not official unless they are authenticated by the Chief, Administrative Services. Users will destroy interim changes on their expiration date unless sooner superseded or rescinded.

Suggested Improvements. The proponent of this publication is the National Guard Bureau. Users are invited to send comments and suggested improvements on DA Form 2028 (Recommended Changes to Publications and Blank Forms) directly to Chief, National Guard Bureau, **Attn:** NGB-AVN-SI, 111 South George Mason Drive, Arlington, VA 22204-1382.

Distribution. Distribution of this publication is made in accordance with the requirements on DA Form 12-09-E.

CONTENTS *(Listed by paragraph numbers)*

1. Purpose

This pamphlet establishes policy and procedures for converting indoor firing ranges to other uses.

2. References

Related publications are listed below.

a. DODI 6055.1 (Department of Defense Occupational Safety and Health (OSH) Program).

b. AR 11-34 (The Army Respiratory Protection Program).

c. AR 40-5 (Preventive Medicine).

d. NGR (AR) 385-15 (Policy, Responsibilities, and Procedures for Inspection/Evaluation and Use of ARNG Indoor Firing Ranges).

e. TB MED 502 (Occupational and Environmental Health Repiratory Protection Program).

f. USAEHA TG 141 (Industrial Hygiene Air Sampling and Bulk Sampling Instructions).

g. Title 29, Code of Federal Regulations (CFR) revision, Part 1910 (Occupational Safety and Health Standards).

Glossary

Section I
Abbreviations

ANG
Air National Guard

ARNG
Army National Guard

BUN
Blood urea nitrogen

BZ
breaking zone

CBC
Complete blood count

CE
cellulose ester

CFR
Code of Federal Regulations

cm
centimeter

DHEW
Department of Health, Education, and Welfare

EPA
Environmental Protection Agency

GA
general area

OMPF
Official Military Personnel File

mm
millimeter

OPF
Official Personnel File

OSHA
Occupational Safety and Health Administration

TCLP
Toxic Characteristic Leaching Procedure

TSP
Tri-Sodium Phosphate

ug/sq ft
microgram per square foot

USAEHA
US Army Environmental Hygiene Agency

Section II
Terms

HEPA
Refers to high efficiency particulate air filter system capable of capturing up to 99.97 percent of particles 0.3 microns in size or larger.

Lead-Contaminated Range
It is assumed that all indoor ranges which have been fired in are lead-contaminated.

Wipe Sample
The terms wipe, swipe, or smear sample are used synonymously to describe the techniques utilized for assessing lead surface contamination.

By Order of the Secretaries of the Army and the Air Force:

PHILIP G. KILLEY
Major General, USAF
Acting Chief, National Guard Bureau

Official:

DAVID MISKELL
Acting Chief
Administrative Services

Distribution: A/F

Appendix I

USAEHA TG NO. 141 **December 1990**

Supporting Laboratories and Areas Served

Supporting laboratory	Areas served
Commander U.S. Army Environmental Hygiene Activity-South Fort McPherson, GA 30330-5000 DSN 572-3234	Alabama, Arkansas, Florida, Georgia, Western Kentucky, Louisiana, Mississippi, Oklahoma, Panama, Puerto Rico, South Carolina, Tennessee, Central & Eastern Texas
Commander U.S. Army Environmental Hygiene Activity-West Fitzsimons Army Medical Center Aurora, CO 80045-5001 DSN 943-8288	Alaska, Arizona, California, Colorado, Idaho, Illinois, Iowa, Kansas, Michigan, Minnesota, Missouri, Montana, Nebraska, Nevada, New Mexico, North Dakota, Oregon, South Dakota, West Texas, Utah, Washington, Wisconsin, Wyoming
Commander U.S. Army Pacific Environmental Health Engineerng Agency Sagami APO San Francisco 96343 Camp Zama 228-4111	Hawaii, Japan, Korea, Okinawa, Philippines,Thailand, and all other Far East countries
Commander 10th Medical Laboratory ATTN: AEMML-PM-LAB APO New York 09180 Landstuhl Military (2223-)7272	Europe, Africa, Middle East, Western Europe, Turkey, Africa, and Middle East countries
Commander U.S. Army Environmental Hygiene Agency ATTN: HSHB-ML-A Bldg E2100 Aberdeen Proving Ground, MD 21010-5422 DSN: 594-2619 (metals, quartz, asbestos) DSN: 584-2208 (solvents, organics, acid mists, pesticides)	a. Worldwide support to laboratories listed above b. Connecticut, Delaware, District of Columbia, Eastern Kentucky, Indiana, Maine, Maryland, Massachusetts, New Hampshire, New Jersey, New York, North Carolina, Ohio, Pennsylvania, Rhode Island, Vermont, Virginia, West Virginia

APPENDIX H

Examples of Computation of Lead Levels From Wipe Sample Results

Sample results will be returned in the form of micrograms. The results must be converted to micrograms per square foot. This can be accomplished by following the examples listed below:

$$\frac{\frac{75ug}{100\ cm2} \quad \frac{929\ cm2}{1\ sq\ ft}}{} \quad \frac{ug}{sq\ ft}$$

$$\frac{75 \times 929}{100} = \frac{69675}{100} = 696.75ug/sq\ ft$$

OR

$$\frac{\frac{75ug}{16in2} \quad \frac{144\ in2}{1\ sq\ ft}}{} \quad \frac{ug}{sq\ ft}$$

$$75 \times 9 = 675ug/sq\ ft$$

ug - microgram
cm2 - centimeters squared
sq ft - square foot
In2 - inches squared

16. **Sample number:** Number that field personnel assigns to the sample number. Use a consecutive numbering system so there is no duplication of numbers from batch-to-batch samples.

17. **Constituents:** Leave blank.

18. **Results:** Leave blank.

19. **Remarks:** Leave blank.

20. **Comments to lab:** Use for any general information or remarks you wish to include.

21. **Lab use only:** Leave blank.

Appendix G

USAEHA TG No. 141 **December 1990**

Instructions for Completing AEHA Form 8-R, Bulk Sample Data

1. **Return address:** Self-explanatory.

2. **Point of contact.** Name and DSN of person in charge of sampling/project.

3. **Sampled installation:** Self-explanatory.

4. **Project number:** For USAEHA and OSA use only.

5. **ARLOC:** Army location code - reference DA Pam 525-12 (CONUS) and 525-13 (Foreign).

6. **Samples collected by:** Self-explanatory.

7. **Date collected:** Self-explanatory.

8. **Date shipped:** Date samples sent for analysis.

9. **Description of operation:** Brief description of the industrial operation (for example, degreasing metal parts, spray painting vehicles, etc.).

10. **Location (bldg/area):** Self-explanatory.

11. **Associated complaints:** Worker complaints about exposure problems arising from operation (for example, dizziness, nausea, skin irritation, etc.).

12. **Associated air samples:** If air samples corresponding to these bulks are submitted for analysis, please so indicate and list the sample numbers which identify these air samples. Ship air samples separately from bulk samples.

13. **Label information:**

a. **Trade name:** Self-explanatory; if unknown, indicate.

b. **NSN:** If available, so indicate.

c. **Manufacturer:** Self-explanatory; if unknown, so indicate.

d. **Address:** Self-explanatory; if unknown, so indicate.

e. **MSDS:** Attach the MSDS whenever possible and so indicate.

14. **Analysis desired:** List specific parameters when they are known or suspected to be present otherwise, indicate general type of analysis desired (for example, unknown solvents, etc.).

15. **Lab use only:** Leave blank.

Appendix F

BULK SAMPLE DATA

For use of this form see USAEHA TG 141; the proponent is HSHB-LO.

Return Address *(complete address including Zip Code)*	Point of Contact *(name/AUTOVON)*

Sampled Installation	Project Number	ARLOC

Samples Collected By	Date Collected	Date Shipped

Description of Operation	Location *(BLDG/AREA)*

Associated Complaints *(be specific)*

Associated Air Samples ☐ Yes ☐ No — If yes, list sample numbers

Label Information

Trade Name	NSN	Manufacturer

Address	MSDS Attached ☐ Yes ☐ No

Analysis Desired

Lab Use Only	Sample No.	Constituents	Results	Remarks

Comments to Lab:

Lab Use Only

Analyst *(initials)*	Reviewed By *(initials)*	Date Received	Date Reported

Procedures Performed	Comments:

AEHA Form 8, 1 Oct 84

APPENDIX E
Where to Purchase Sample Media and Containers

E-1. The following is a list of vendors which supply the media and containers necessary to collect air and lead surface wipe samples. The information is provided to assist States in obtaining the proper media and containers. Alternative vendors are available and may be utilized, if known. Contact your Regional Industrial Hygiene Office for additional assistance or clarification.

E-2. Pre-loaded 3 piece cassette with cellulose ester (CE) filter and pad, 37 millimeter (mm), pore size 0.8 microns, breathing zone (BZ) and general area (GA) air samples.

Order From	Catalog Number
a. Millipore Corp. Ashby Road Bedford, MA 01730 617-275-9200 800-225-1380	MAWP-037-A0
b. Gelman Sciences 600 South Wagner Rd Ann Arbor, MI 48106 313-665-0651 800-521-1520	64678 (GN-4)
c. Supelco, Inc. Supelco Park Bellefonte, PA 16823 800-247-6628 800-359-3041	2-3368M

E-3. 37 mm CE filter with pad, no cassette included, for lead surface wipe samples.

Order From	Catalog Number
a. Supelco, Inc. Supelco Park Bellefonte, PA 16823 800-247-6628 800-359-3041	2-3381M
b. Millipore Corp. Ashby Road Bedford, MA 01730 617-275-9200 800-225-1380	AAWP-037-00
c. SKC,Inc. 334 Valley View Rd Eighty Four, PA 15330 412-941-9701 800-752-8472	225-5

E-4. Smear tabs are used for lead surface wipe samples.

Order From	Catalog Number
a. SKC,Inc. 334 Valley View Rd Eighty Four, PA 15330 412-941-9701 800-752-8472	225-24

E-5. Number 40 Whatman paper, 11.0 centimeters in diameter, used for surface wipe samples.

Order From	Catalog Number
a. Cole-Parmer 7425 North Oak Park Ave Chicago, IL 60648 708-647-7600 800-323-4340	L-06647-13
b. Thomas Scientific 99 High Hill Rd at I-95 P.O. Box 99 Swedesboro, NJ 08085-0099 609-467-2000 800-524-0027	4716-E25
c. Fisher Scientific 711 Forbes Avenue Pittsburgh, PA 15219 412-562-8300	09-845-D

E-6. Glass container (25 milliliter) for collection and shipment of media.

Order From	Catalog Number
a. Pierce Chemical Company P.O. Box 117 Rockford, IL 61105 815-968-0747 800-874-3723	13219 (screw cap)
b. Alltech Associates, Inc. Applied Science Labs 2051 Waukegan Rd Deerfield, IL 60015 312-948-8600 800-255-8324	95321 (screw cap)

E-7. Plastic ziplock bags can be obtained through the Army logistics system. Many sizes are available. Contact your supporting logistics branch for assistance.

E-8. Distilled water can be purchased at larger grocery stores, usually by the gallon, at a cost of approximately $1.25. Deionized water can be obtained at local and state water labs or a hospital.

E-9. Tri-Sodium Phosphate (TSP) can be purchased at almost any hardware store.

Appendix D

OSHA Instruction CPL 2-2.20B
FEB 5
Directorate of Technical Support

APPENDIX 2-B

Screening for Carcinogenic Aromatic Amines

1. As in the case of routine wipe sampling, wear clean, disposable impervious gloves. Wipe an area of exactly 100 cm^2 with a sheet of filter paper moistened in the center with 5 drops of methanol.

2. After wiping the sample area, apply 3 drops of fluorescamine (a visualization reagent supplied by SLCAL upon request) to the contaminated area of the filter paper.

3. Place a drop of the visualization reagent on an area of the filter paper which has not contacted the surface. This marks a non-sample area or *blank* on the filter paper adjacent to the test area.

4. After a reaction time of 6 minutes, irradiate the filter paper with 366 nm ultraviolet light.

5. Compare the color development of the contacted area with the non-sample area or *blank*. A positive reaction will show a discoloration as a yellow color darker than the yellow color of the fluoroescamine *blank*.

6. A discoloration indicates surface contamination, possble aromatic amine carcinogen. Repeat a wipe sampling of the contaminated areas using the regular surface contamination procedure.

7. The following compounds are some of the suspected carcinogenic agents that can be detected by this screening procedure:

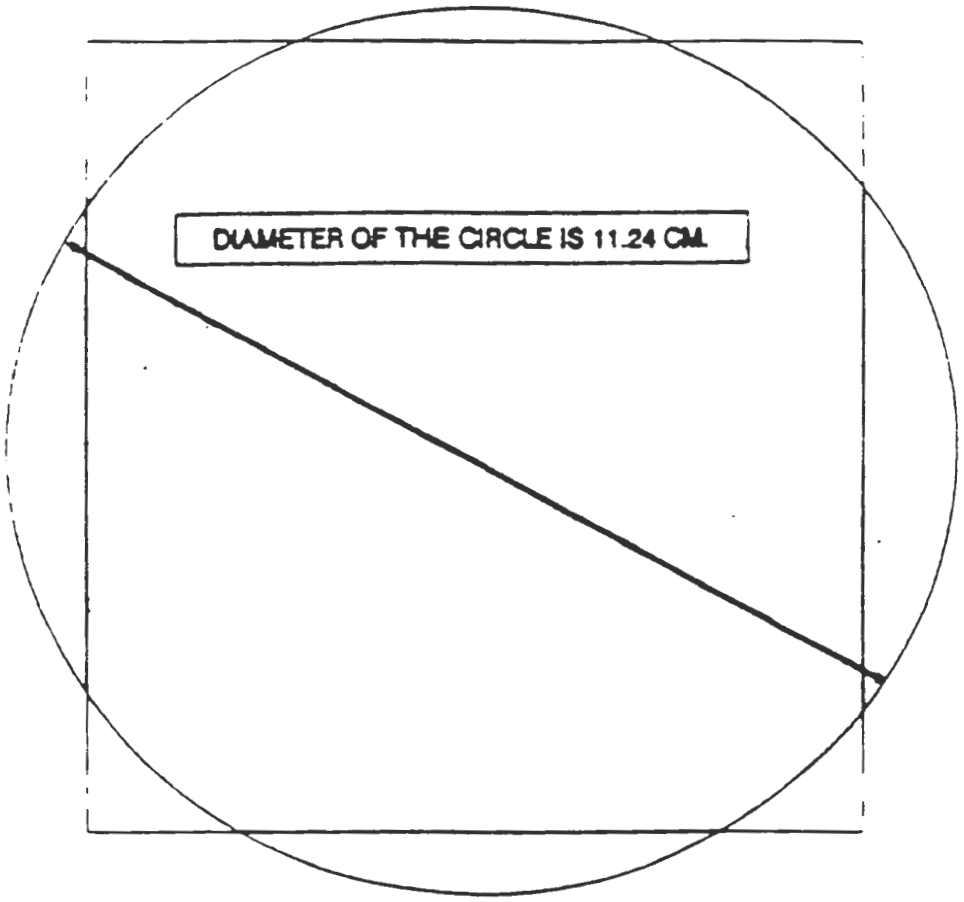
4,4'-Methylene bis(2-chloroaniline)
Benzidine
α-Napthylamine
β-Napthylamine
4-Aminobiphenyl

Appendix D

OSHA Instruction CPL 2-2.208
FEB 5 1990
Directorate of Technical Support

APPENDIX 2-A

Template samples which cover 100 square centimeters.



THE SQUARE IS 10 CM ON A SIDE.

Appendix D

to the solvent notation in the Chemical Information Manual.

4. Do not take surface wipe samples on skin if:
   a) OSHA or ACGIH shows a "skin" notation, the substance has a skin LD50 of 200 mg/kg or less, or an acute oral LD50 of 500 mg/kg or less.
   b) The substance is an irritant, causes dermatitis, contact sensitization, or is termed corrosive.

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Appendix D

OSHA Instruction CPL 2-2.208
FEB. 5 1987
Directorate of Technical Support

It is recommended that hands and fingers be the only skin surfaces wiped. Before any skin wipe is taken, explain why you want the sample and ask the employee about possible skin allergies to the chemicals in the sampling filter or media. If the employee refuses, do not force the issue.

c. Wipe a section of the surface to be sampled using a template with an opening exactly 100 cm^2. (See Appendix 2-A)

e. For surfaces smaller than 100 cm^2 use a template of the largest size possible. Be sure to document the size of the area wiped. For curved surfaces, the wiped area should be estimated as accurately as possible and then documented.

f. Maximum pressure should be applied when wiping.

g. To insure that all portions of the partitioned area are wiped, start at the outside edge and progress toward the center making concentric squares of decreasing size.

h. If the filter dries out during the wiping procedure, discard the filter, reduce area to be wiped by half, and repeat wiping procedure with a new filter.

i. Without allowing the filter to contact any other surface, fold the filter with the exposed side in, then fold it over again. Place the filter in a sample vial, cap the vial, number it, and place a corresponding number at the sample location on the sketch. Include notes with the sketch giving any further description of the sample (e.g., "Fred Employee's respirator, inside;" "Lunch table;" etc.).

j. At least one blank filter treated in the same fashion, but without wiping, should be submitted for each sampled area.

k. Submit the samples to the Salt Lake City Analytical Laboratory with the appropriate OSHA 91.

C. SPECIAL TECHNIQUES FOR WIPE SAMPLING

1. Acids and Bases

When examining surfaces for contamination with strong acids or bases, (e.g., hydrochloric acid and sodium hydroxide), pH paper moistened with water may be used. However, these results should be viewed with caution due to potential interferences.

2. Direct Reading Instruments

For some types of surface contamination (e.g., mercury sniffer for mercury), direct reading instruments may be used.

3. Aromatic Amines

Screening may be done to determine the precise areas of carcinogenic aromatic amine contamination. This is an optional procedure (See Appendix 2-B)

D. SPECIAL CONSIDERATIONS

1. Due to their volatile nature, most organic solvents are not suitable for wipes. If necessary, surface contamination can be judged by other means, (e.g., by use of detector tubes, photoionization analyzers, or other similar instruments). Consult the Chemical Information Manual.

2. Some substances are not stable enough as samples to be wipe sampled reliably. Consult the Chemical Information Manual.

3. Some substances should have solvent added to the vial as soon as the wipe sample is placed in the vial (e.g., Benzidine). These substances will be indicated with an "X" next

Appendix D

OSHA Instruction CPL 2-2.208
FEB 5 1991
Directorate of Technical Support

c) Consider the toxicity, contribution of skin absorption and/or gastrointestinal absorption to the total dose. Other factors are the ambient air concentrations, skin irritation, etc., when evaluating sample results.

6. The Chemical Information Manual, lists substances which represent a potential for ingestion toxicity, skin absorption, and/or have a hazardous skin effect. This information may be found under the "Health" notation. Additional toxicological information concerning chronic skin absorption, dermatitis, etc. should be used in determining if the resulting exposure presents a potential employee hazard (see bibliography).

B. GENERAL TECHNIQUE FOR WIPE SAMPLING

1. Filter Media and Solvents
   a. Consult the Chemical Information Manual, for appropriate filter media and solvents (dry wipes may be used; solvents are not always necessary but may enhance removal).
   b. Direct skin wipes should not be taken when high skin absorption of a substance is expected. Under no conditions should any solvent other than distilled water be used on skin, personal protective gear which directly contacts the skin, or surfaces which contact food or tobacco products.
   c. Generally, there are two types of filters recommended for taking wipe samples:
      1) Glass fiber filters (GFF) (37 mm) are usually used for materials which are analyzed by High Performance Liquid Chromatography (HPLC), and often for substances analyzed by Gas Chromatography (GC). The Chemical Information Manual specifies when GFFs are to be used.
      2) Paper filters are generally used for metals, and may be used for anything not analyzed by HPLC. For convenient usage, the Whatman smear tab (or its equivalent) is commonly used (see Chemical Information Manual for details).
   d. Preloading a group of vials with appropriate filters is a convenient method. (The Whatman smear tabs should be inserted with the tab end out.) Always wear clean plastic gloves when handling filters. Gloves should be disposable and should not be powdered.

2. Procedures
   Follow these procedures when wipe samples are taken:
   a. If multiple samples are to be taken at the worksite, prepare a rough sketch of the area(s) or room(s) which are to be wipe sampled.
   b. A new set of clean impervious gloves should be used with each individual sample. This avoids contamination of the filter by the hand and the subsequent possibility for false positives, and prevents contact with the substance.
   c. Withdraw the filter from the vial. If a damp wipe sample is desired, moisten the filter with distilled water (or other solvent as recommended in the Chemical Information Manual).

   CAUTION:
   Skin, personal protective equipment or surfaces which contact food or tobacco products must either be wiped DRY, or wiped with distilled water, never with organic solvents. Skin wipes should not be done for materials with high skin absorption.

Appendix D

CHAPTER 2

SAMPLING FOR SURFACE CONTAMINATION

A. GENERAL

1. The terms "wipe sampling," "swipe sampling" and "smear sampling" are all used synonymously to describe the techniques used for assessing surface contamination. However, the term "wipe sampling" is one which will be used in this chapter.

2. "Wipe sampling" is most often used to screen for asbestos, lead, other metals, and PCBs.

3. The uses are:
   a. Skin Sampling
      1) Potential contact with skin irritants may be evaluated by wiping surfaces, which may be touched by workers.
      2) Skin wipes are not recommended for those substances which absorb rapidly through the skin. Biological monitoring for these substances or their metabolites, or biological markers, is often the only means of assessing their absorption. Wipe the inside surfaces of protective gear or other surfaces which may contact skin, instead.
   b. Surfaces
      1) Surfaces which may be contacted by food or other materials which are ingested or placed in the mouth (e.g., chewing tobacco, gum, cigarettes) may be wipe sampled (including hands and fingers) to show contamination.
      2) Contaminated smoking materials may allow the toxic materials, or their combustion products, to enter the body via the lungs (e.g., lead mercury). Wiping of surfaces which smoking materials may touch (e.g., hands and fingers) may be useful in evaluating this possible route of exposure.
      3) Accumulated toxic materials may become suspended in air, and may contribute to airborne exposures (e.g., asbestos, lead or beryllium). Bulk and wipe samples may aid in determining this possibility.
   c. Personal Protective Equipment Sampling
      1) Effectiveness of personal protective gear (e.g., gloves, aprons, respirators, etc.) may sometimes be evaluated by wipe sampling the inner surfaces of the protective gear (and protected skin).
      2) Effectiveness of decontamination of surfaces and protective gear (e.g., respirators) may sometimes be evaluated by wipe sampling.

4. When accompanied by close observation of the operation in question, wipe sampling can help identify sources of contamination and poor work practices.

5. Evaluation of Sampling Results
   a) False negative results, i.e., surface contamination is not detected by a wipe sample, are possible.
   b) The CSHO must use professional judgment on a case-by-case basis when evaluating the significance of positive wipe sampling results.

APPENDIX B
INTERPRETATION OF SAMPLE RESULTS (PRIOR TO CLEANING)

B-1 200 micrograms/sq ft or LESS
If all sample results are 200 micrograms/sq ft or less, the range can be converted and/or used for any purpose.

B-2 BETWEEN 201 and 200,000 micrograms/sq ft.
Range must be decontaminated. Continue with cleaning instructions listed in paragraph 15. Sample results will be used to establish a baseline. The baseline sample results will be used to ensure the 75 percent reduction is achieved.

B-3 OVER 200,000 micrograms/sq ft.
Your sample media may not be capable of collecting additional lead dust and results that are above 200,000 micrograms/sq ft should be considered suspect. Larger concentrations of lead dust may exist on surfaces tested other than results indicate. If the initial sampling results are above 200,000 micrograms/sq ft, the range should be cleaned by either HEPA vacuuming and/or wet wiping to establish a baseline. After the cleaning procedure is completed, resampling should occur until sample results are under the 200,000 micrograms/sq ft limit.

B-4 High sample results may exist due to personnel walking or moving equipment/vehicles over the range surfaces causing the lead dust to be "ground" into the substratum. For example, a maintenance activity may have oversprayed paint or spilled solvents onto the surface which would bond with the lead dust. Consult your Regional Industrial Hygiene Office for specific guidance.

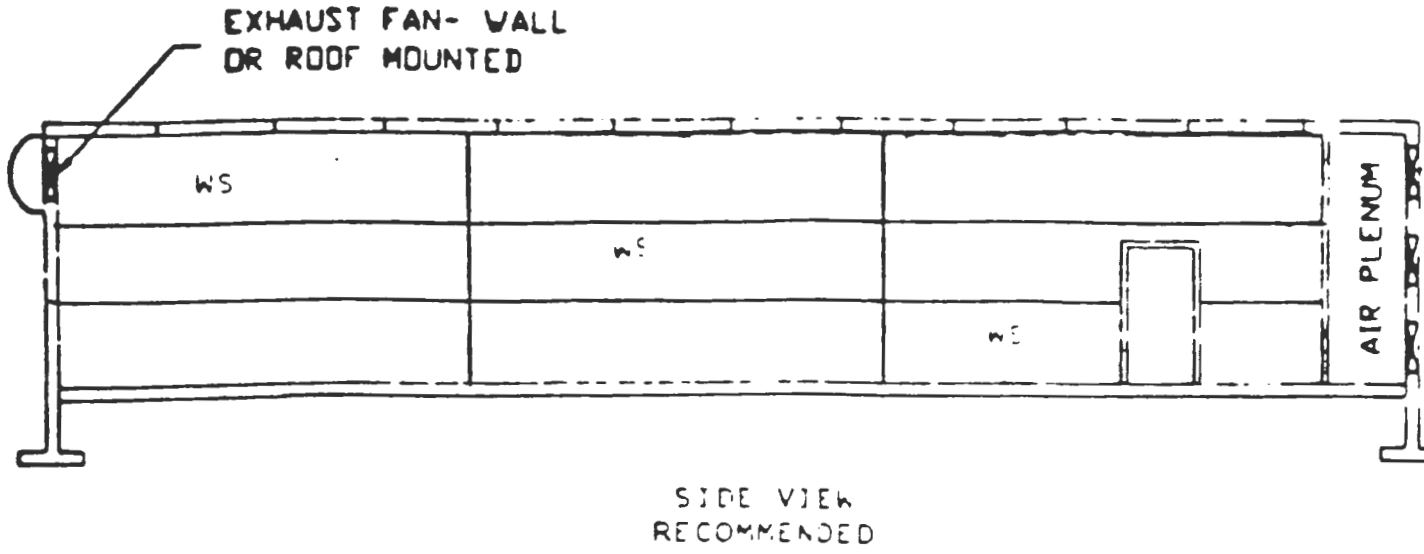
APPENDIX C
INTERPRETATION OF SAMPLE RESULTS (AFTER CLEANING)

C-1 200 micrograms/sq ft or LESS
If all sample results are less than 200 micrograms/sq ft, the range can be converted and/or used for any purpose after a coat of lead-free latex paint is applied. The paint color must contrast the color of the present substratum.

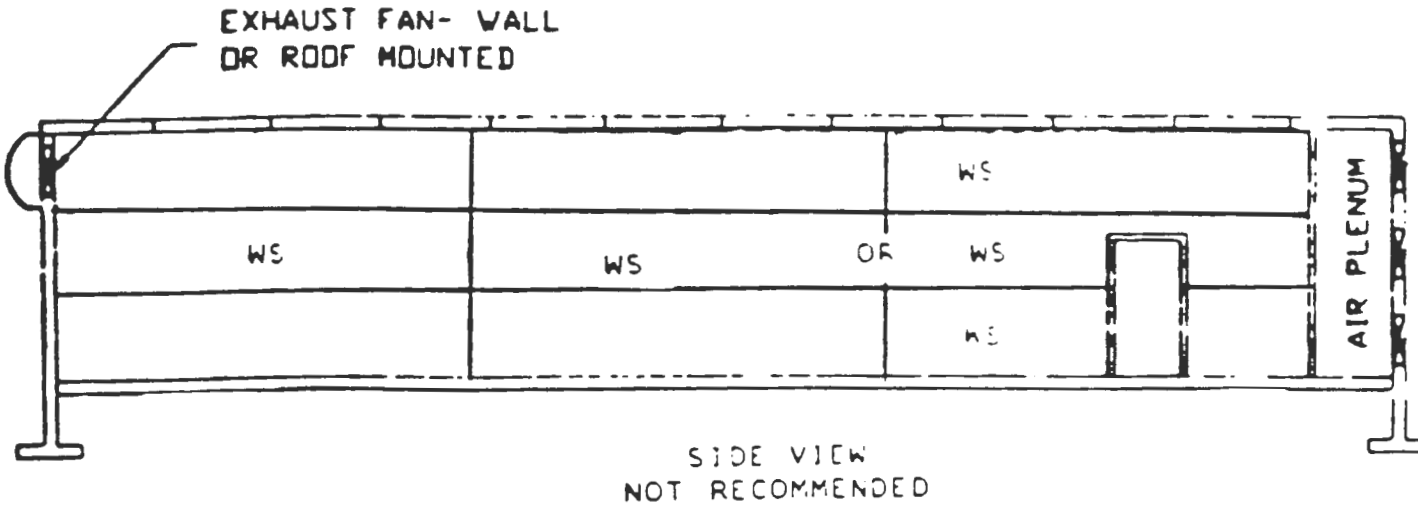
C-2 ABOVE 200 micrograms/sq ft
As a minimum, a 75 percent reduction should occur from your initial sample results or the samples should be under the 200 microgram/sq ft level. If all sample results meet this criteria, a contrasting color of lead-free latex paint must be applied before the area is utilized for other purposes. The room can only be used as a storage area. Storage of kitchen equipment and food is prohibited. The room cannot be used for a child care or nursery area. If sample results are not below the 75 percent reduction, a more thorough cleaning of the range is required along with resampling until criteria are met.

* **PLEASE NOTE**, that if your original wipe sample results were, i.e., 175,000 ug/sq ft then you would have to reduce the lead level below 13,125 ug/sq ft. This would meet the 75 percent reduction criteria; however, this is an enormous amount of lead dust and care should be taken to ensure a heavy coat of paint seals the lead dust. It is unknown at this time whether or not the remaining amount of lead dust will allow the latex paint to adhered to the substratum. If the paint peels, falls to the floor and is crushed over a period of time, it will create another respirable lead hazard. If this happens, contact your Regional Industrial Hygiene Office for guidance. Periodically monitor the converted range for signs of peeling paint. Paint chips can be analyzed for lead content. **DO NOT IGNORE PEELING PAINT IN A CONVERTED INDOOR FIRING RANGE.**

SAMPLING STRATEGY FOR COLLECTION OF WIPE SAMPLES



SIDE VIEW
RECOMMENDED

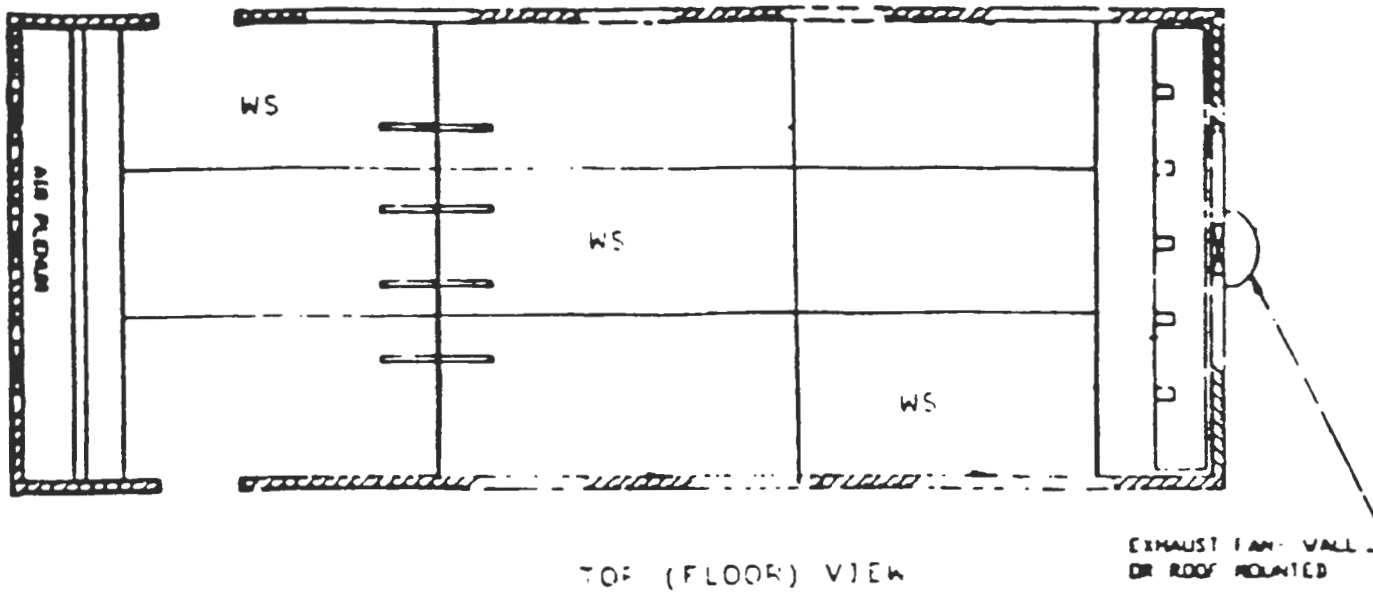


SIDE VIEW
NOT RECOMMENDED

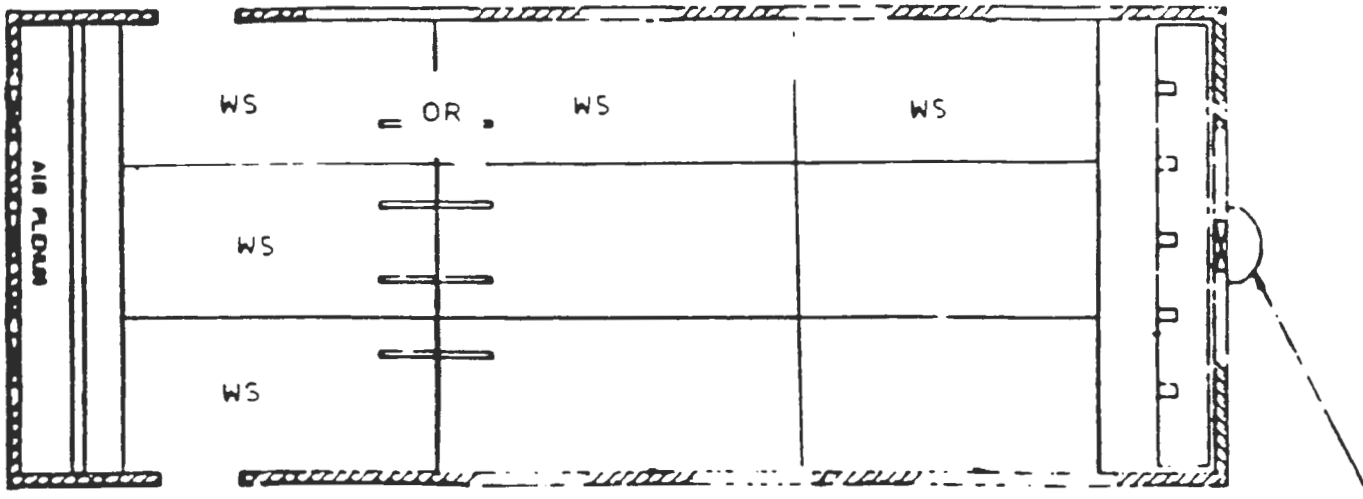
WS - WIPE SAMPLE

Figure A-2. Sampling Strategy for Collection of Wipe Samples

SAMPLING STRATEGY FOR COLLECTION OF WIPE SAMPLES



TOP (FLOOR) VIEW
RECOMMENDED



TOP (FLOOR) VIEW
NOT RECOMMENDED

WS - WIPE SAMPLE

Figure A-1. Sampling Strategy for Collection of Wipe Samples

13. Worker Education
OSHA 29 CFR 1910.1025 requires that those workers who are potentially exposed to any lead level shall be informed of the content of Appendices A and B of this standard. A training program must be instituted for all individuals who are subject to exposure to lead at or above the action level or for whom the possibility of skin or eye irritations exists. The training program shall be repeated for personnel currently involved in range cleanup operations, at least annually. This training must be documented on DD Form 1556 or DD Form 1556-1 and filed permanently in the employee's Official Personnel File (OPF) or the soldier's Official Military Personnel File (OMPF). As a minimum, complete blocks 1, 2, 3, 7, 8, 11, 12, 13, 17, 18, 24, 33, and 36 on DD Form 1556. Place the following statement in block 18, "Do not destroy, retain this record for the duration of employment/service plus 30 years." The employer will assure that each employee is informed of the following:

a. The content of the standard and its appendices.

b. The specific nature of operations that could result in exposure to lead above the action level.

c. The purpose, proper selection, fitting, use and limitations of respirators.

d. The purpose and a description of medical surveillance program.

e. Eating and drinking are prohibited in lead contaminated areas.

f. Smoking and smoking materials will not be permitted in contaminated areas.

g. Employees must wash their hands and other exposed skin whenever they leave the work area.

h. The engineering controls and work practices associated with the individual's job assignment.

i. The contents of any compliance plan in effect.

14. Personal Protective Equipment
As a minimum, personnel conducting the decontamination of the range will be provided with the following personal protective equipment:

a. Full face air purifying respirator with HEPA cartridges. The requirements outlined in 29 CFR 1910.134 must be met prior to placing workers in respiratory protection.

b. Protective coveralls with hood and shoe covers or disposable Tyvek TM full body suit. Protective clothing will be changed at least daily at the end of shift and more frequently if it should become grossly contaminated. If cotton coveralls are used by the employees, then the employer will provide for maintaining and laundering of protective clothing. Protective clothing will not be taken home by personnel. Prior to leaving the work area, employees will thoroughly HEPA vacuum clothing to prevent lead dust from leaving the area. If disposable clothing is used, it will be HEPA vacuumed before removal and placed in a proper disposal container. Work and street clothing will not be stored together.

c. Disposable rubber gloves will be provided.

15. Point of Contact
Deviations from this guidance will require a written exception to policy from your Regional Industrial Hygiene Office. Questions and/or comments regarding this subject should be directed to your Regional Industrial Hygiene Office or Chief, National Guard Bureau, Attn: NGB-AVN-SI, 111 South George Mason Drive, Arlington, VA 22204-1382.

Appendix A
SAMPLING STRATEGY FOR COLLECTION OF WIPE SAMPLES

A-1. A template measuring 10 centimeters by 10 centimeters square, approximately 4 inches square, (see App D, app 2-A) should be used to accurately measure and mark the area before collecting wipe samples.

A-2. Prior to cleaning the range, three samples must be collected and analyzed for total lead dust on each surface, i.e., floor, ceiling, backstop, and each wall to include the plenum wall, if applicable. In addition, a total of 3 samples should be collected from the fixtures, i.e., gas/electric heaters, lights, baffles. As a minimum, 18 samples will be collected. Samples should be collected from areas which have been least disturbed by airflow. Established walkways should be avoided.

A-3. Samples should be staggered to different areas of the range. A grid system should be utilized. Each range surface area should be divided evenly into 3 sections by 3 sections. A wipe sample should be collected as illustrated in **figures A-1** and **A-2**. Samples should not be collected on all one section of a wall or end of the building.

8. Wipe Sampling Protocol
See **appendix A.**

9. Range Cleaning Instructions
Before a State begins decontaminating their ranges, they must ensure that procedures comply with all federal, state and local regulations. The range ventilation system will be in operation during all cleaning procedures to ensure a negative pressure environment is maintained. In the absence of a mechanical system, all doors and windows will be sealed to eliminate fugitive emissions. A HEPA filtered vacuum system is the preferred method of cleanup followed by wet wiping of the range. The HEPA vacuum is designed to collect loose surface lead dust particles. A cleaning solution containing Tri-Sodium Phosphate (TSP) should be added to all water containers. At least one ounce of five (5) percent TSP should be added to each gallon of HOT water. Mix new solutions of TSP frequently. Wet wiping will require dual containers of water; one container for wetting the applicator (mops, rags, sponge, etc.) and the other container is for rinsing the applicator after the dust has been wiped from surfaces. Waste water placed into containers can be left to evaporate. **PROPERLY DISPOSE OF ALL HAZARDOUS WASTE AND DO NOT PLACE ANY LEAD CONTAMINATED WASTE INTO THE SEWER SYSTEM OR ONTO THE GROUND.** Mop heads, sponges and rags will be discarded as hazardous waste following cleanup. Wet cleaning by a high pressure system is prohibited, as this method may embed the lead into the substratum and generate large quantities of unwanted hazardous waste. Dry sweeping may not be used. All surface areas of the range must be cleaned. If a surface area of the range is painted or coated with a sealant which is smooth, there is no need to paint over or remove this coated surface material. Wood floors should receive a coat of deck enamel or urethane, concrete floors should be sealed with deck enamel and linoleum or tile floors should be waxed. A progression of cleaning from top to bottom, and from behind the steel backstop to the firing line should be used. After removing the sand, if applicable, and the steel backstop, areas in front of and behind the bullet trap along with the steel backstop plate(s) should be cleaned. Next, clean the ceiling, lights, baffles, retrieval system, heating system(s), and ventilation duct(s). Acoustical material should be vacuumed and removed rather than painted over. A Toxic Characteristic Leaching Procedure (TCLP) test for lead only may need to be performed on the acoustical material. A TCLP test will determine if the material is classified as "hazardous" and can be disposed of in a sanitary landfill. Contact your environmental office for assistance before arranging for this laboratory testing. The floor should be the last surface cleaned, starting at the bullet trap and ending behind the firing line. Following the wet wiping of all surfaces, the area should be permitted to dry and a second HEPA vacuuming of all surface area should take place until no dust or residue can be seen. A thorough visual inspection to detect surface dust should be made following cleanup and prior to resampling. As a variety of conditions exist in ranges, unique situations may arise and specific written guidance from your Regional Industrial Hygiene Office may be required.

10. Cleaning Stored Contaminated Equipment
If stored equipment is confirmed as being contaminated (sample result is higher than the 200 microgram/sq ft) with lead dust, it must be decontaminated before removing from the range. The stored equipment located next to the bullet trap and firing line should be cleaned first and removed. Depending on the size or material of the item, either HEPA vacuum or wet wipe will be used. Refer to paragraph 15 for additional guidance. Every attempt should be made to clean and reclaim the item since disposing of equipment as hazardous waste is costly and wasteful. Only as a last resort will the item be discarded as hazardous waste. Porous items, i.e., canvas tents can be laundered at local companies which specialize in industrial laundry services. Items, such as office partitions and carpet, that were present during firing should be considered grossly contaminated and be discarded unless analysis proves otherwise. Consult your environmental office before removing or disposing of items.

11. Contaminated Sand and Lead Waste
Consult your State's environmental office for specific disposal guidance to comply with local laws on this matter.

12. Medical Surveillance
a. A preplacement medical examination is required of all individuals involved with range cleanup operations. Consult 29 CFR 1910.1025 for additional information on medical surveillance requirements. A medical examination must include - -

(1) A detailed work and medical history.
(2) A thorough physical examination.
(3) A respirator use evaluation.
(4) A blood pressure measurement.
(5) Blood sample analysis to include:
  (a) A baseline blood lead level.
  (b) A complete blood count (CBC).
  (c) Blood urea nitrogen (BUN).
  (d) Serum creatinine.
  (e) Zinc protoporphyrin.
(6) A routine urine analysis.
(7) Recordkeeping.

b. Air Monitoring. Worker-breathing-zone air samples must be collected to ensure personnel are not overexposed to airborne lead during the cleanup phase. Daily air samples will be collected on all personnel involved in the cleanup operation. These exposure levels will be used to evaluate work practices and personal protective equipment. Within five (5) working days after receipt of monitoring results, each employee will be notified in writing of the results which represent that employee's exposure. Refer to USAEHA Technical Guide 141 (app A-6) for air sampling instructions and a blank air sample data form. Contact your Regional Industrial Hygiene Office for assistance.

h. Federal Register, 18 April 1990, Vol 55, No. 75 (Department of Housing and Urban Development, Lead-Based Paint: Interim Guidelines for Hazard Identification and Abatement in Public and Indian Housing, as amended, September 1990, Office of Public and Indian Housing, Department of Housing and Urban Development, 451 Seventh Street, SW, Washington, DC 20410).

I. OSHA Technical Manual, Vol VI

j. DHEW NIOSH 76-130 (Lead Exposure and Design Considerations for Indoor Firing Ranges).

3. Explanation of abbreviations and terms
Abbreviations and special terms used in this publication are listed in the **glossary.**

4. Policy and procedures
a. Conversion of Ranges. If a State wishes to convert an indoor firing range to another functional area, such as a storage area, kitchen, or office space, the following guidance must be adhered to--

b. No Equipment/Items Stored In Range. Wipe samples must be collected and analyzed prior to and after cleaning. Pre- and post-cleaning wipe sample results will be compared to ensure that a minimum 75 percent reduction in surface lead dust is achieved or sample results are 200 ug/sq ft or below which ever is less. The amount and location of wipe samples to be collected are provided in **appendix A.** Interpretation of sample results are contained in **appendices B** and **C.** Occupational Safety and Health Administration (OSHA) Instruction CPL 2-2.20B (**app D**) provides the necessary guidance on the technique needed to collect wipe samples.

c. Equipment/Items Stored In Range. In addition to the samples that must be collected in the above paragraph, samples must also be collected from equipment/items stored in the range. Sample selection is important. The number of items stored and length of storage differs from range to range. The decision on how many samples to collect will be determined by the individual collecting the samples. The more samples collected, the better the statistical comparison of the results. Samples must be collected from equipment/items with as smooth a surface as possible. Sample results collected from a rough surface would be inaccurate due to the minimal surface contact of the media. Also, the likelihood of tearing the media filter exists. Samples should also be collected on items which have been stored the longest and have not been disturbed. Items stored closest to the bullet trap and firing line are more likely to have higher concentrations of lead dust. Interpretations of sample results are contained in **appendices B** and **C.**

5. Goal
The ultimate goal of each State is to ensure every indoor firing range is as free of lead dust as possible before the area is used for other purposes. This can be accomplished if the following guidance is utilized.

6. Background
The Environmental Protection Agency (EPA) identifies lead as a highly toxic metal. Elemental lead is indestructible, and common in the environment. Lead can enter the body by inhalation (breathing) and ingestion (eating). In addition, lead is a cumulative poison. It accumulates in the blood, bones, and organs, including the kidneys, brain and liver. Effects include nervous and reproductive system disorders, delays in neurological and physical development, cognitive and behavioral changes, and hypertension. Symptoms include loss of appetite, difficulty sleeping, irritability, fatigue, headache, and inability to concentrate. It can stay in the bones for decades. Worker awareness and training are important so that employees can recognize the symptoms of exposure and get prompt medical attention.

7. Wipe Sample Media
a. OSHA Instruction CPL 2-2.20B (**app D**) provides the necessary guidance on the technique needed to collect wipe samples. Only distilled or deionized water will be used to saturate sample media. At least one field blank filter must be submitted with each sample sheet. The field blank must be from the same lot and labeled as a blank on the sample sheet. **Appendix E** identifies how to obtain and where to purchase sample media. Use the following guidance for determining media acceptability.

(1) Acceptable Media consists of--

(a) Thirty-seven (37) millimeter (mm) cellulose ester (CE) filters, with or without the cassette.

(b) Eleven (11) centimeter (cm) diameter Whatman #40 paper.

(c) Whatman smear tabs.

(2) Unacceptable Media consists of but is not limited to--

(a) Cotton balls.

(b) Baby wipes or wet wipes.

b. Documentation of Sample Collection. An AEHA Form 8-R (Bulk Sample Data) must be completed and submitted with samples to your supporting laboratory. A copy of this form is located in **appendix F.** Instructions on completing this form are in **appendix G.** Each sample must be individually marked. If CE filters with cassettes are used; write the sample number on a label and place the label on the outside of the cassette. Whatman paper, smear tabs, or CE filters without the cassette should be placed in a ziplock plastic bag or sterile glass container. Acid must be added to the samples and a glass container would assist the laboratory in analysis. If samples are placed in glass containers, ensure they are properly packed before shipment. A label with the sample number should be placed on the outside of the bag. In addition, a floor plan must be completed of each range which documents the locations of each sample collection point. Current blueprints may be used for this purpose. **DO NOT** repeat sample numbers; this may cause confusion when sample results are returned. Samples can be sent to USAEHA laboratories for analysis. See **appendix I** for the laboratory which serves your region.

HEADQUARTERS
DEPARTMENTS OF THE ARMY AND THE AIR FORCE
Washington, DC 20310-2500
31 January 1994

NG PAM (AR) 385-16/
ANGPAM 91-101

Safety

GUIDELINES FOR CONVERTING INDOOR FIRING RANGES TO OTHER USES

Summary. This is a new pamphlet. This guidance prescribes policy, responsibilities, and procedures on how to convert lead-contaminated indoor firing ranges to other uses.

Applicability. This guidance applies to all persons responsible for the operation of Army National Guard (ARNG) and Air National Guard (ANG) indoor firing ranges. As no regulation/guidance can foresee all situations that might arise, the following is written in a broad scope and is intended to be interpreted as to the INTENT of the law by health professionals.

Supplementation. Supplementation of this guidance is prohibited without prior approval from Chief, National Guard Bureau (NGB-AVN-SI).

Impact on New Manning System. This guidance does not contain information that affects the New Manning System.

Interim changes. Interim changes are not official unless they are authenticated by the Chief, Administrative Services. Users will destroy interim changes on their expiration date unless sooner superseded or rescinded.

Suggested Improvements. The proponent of this publication is the National Guard Bureau. Users are invited to send comments and suggested improvements on DA Form 2028 (Recommended Changes to Publications and Blank Forms) directly to Chief, National Guard Bureau, **Attn:** NGB-AVN-SI, 111 South George Mason Drive, Arlington, VA 22204-1382.

Distribution. Distribution of this publication is made in accordance with the requirements on DA Form 12-09-E.

CONTENTS *(Listed by paragraph numbers)*

1. Purpose

This pamphlet establishes policy and procedures for converting indoor firing ranges to other uses.

2. References

Related publications are listed below.

a. DODI 6055.1 (Department of Defense Occupational Safety and Health (OSH) Program).

b. AR 11-34 (The Army Respiratory Protection Program).

c. AR 40-5 (Preventive Medicine).

d. NGR (AR) 385-15 (Policy, Responsibilities, and Procedures for Inspection/Evaluation and Use of ARNG Indoor Firing Ranges).

e. TB MED 502 (Occupational and Environmental Health Repiratory Protection Program).

f. USAEHA TG 141 (Industrial Hygiene Air Sampling and Bulk Sampling Instructions).

g. Title 29, Code of Federal Regulations (CFR) revision, Part 1910 (Occupational Safety and Health Standards).

File

Oct BCT

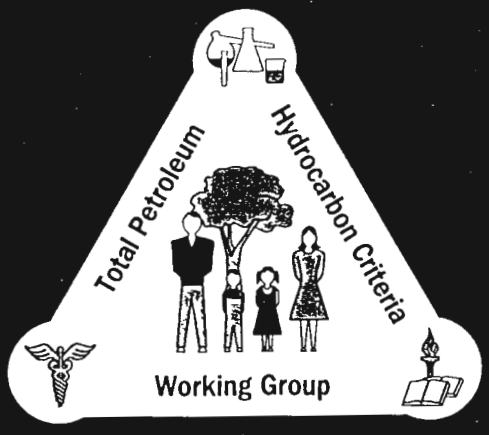
Here is the information I promised you during the October BCT meeting. It contains the compositions of several classes of POL. Please note that I was mistaken about Benzene not being in any jet fuel. JP-4 (and probably 7) contains some BTEX while JP-5 and 8 do not. I have also included the references for this information. Please let me know if I can provide any additional information.

Keith Hoddinott

Total Petroleum Hydrocarbon Criteria Working Group Series

Volume 3

Selection of Representative TPH Fractions Based on Fate and Transport Considerations



John B. Gustafson
Joan Griffith Tell
Doug Orem

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Compound	Number of Carbons	EC	Weight Percent	Reference
CRUDE OIL				
Straight Chain Alkanes				
n-Hexane	6	6	0.7 - 1.8	API, 1993
n-Heptane	7	7	0.8 - 2.3	API, 1993
n-Octane	8	8	0.9 - 1.9	API, 1993
n-Nonane	9	9	0.6 - 1.9	API, 1993
n-Decane	10	10	1.8	API, 1993
n-Undecane	11	11	1.7	API, 1993
n-Dodecane	12	12	1.7	API, 1993
Branched Chain Alkanes				
2,2-Dimethylbutane	6	5.37	0.04	API, 1993
2,3-Dimethylbutane	6	5.68	0.04 - 0.14	API, 1993
2-Methylpentane	6	5.72	0.3 - 0.4	API, 1993
3-Methylpentane	6	5.85	0.3 - 0.4	API, 1993
3-Ethylpentane	7		0.05	API, 1993
2,4-Dimethylpentane	7	6.31	0.05	API, 1993
2,3-Dimethylpentane	7	6.69	0.1 - 0.6	API, 1993
2,2,4-Trimethylpentane	8	6.89	0.004	API, 1993
2,3,3-Trimethylpentane	8	7.58	0.006	API, 1993
2,3,4-Trimethylpentane	8	7.55	0.005	API, 1993
2-Methyl-3-ethylpentane	8	7.66	0.04	API, 1993
2-Methylhexane	7	6.68	0.7	API, 1993
3-Methylhexane	7	6.76	0.19 - 0.5	API, 1993
2,2-Dimethylhexane	8	7.25	0.01 - 0.1	API, 1993
2,3-Dimethylhexane	8	7.65	0.06 - 0.16	API, 1993
2,4-Dimethylhexane	8	7.38	0.06	API, 1993
2,5-Dimethylhexane	8	7.36	0.06	API, 1993
3,3-Dimethylhexane	8	7.45	0.03	API, 1993
2,3-Dimethylheptane	9	8.64	0.05	API, 1993
2,6-Dimethylheptane	9	8.47	0.05 -0.25	API, 1993
2-Methyloctane	9		0.4	API, 1993
3-Methyloctane	9	8.78	0.1 - 0.4	API, 1993
4-Methyloctane	9	8.71	0.1	API, 1993
Cycloalkanes				
Cyclopentane	5	5.66	0.05	API, 1993
Methylcyclopentane	6	6.27	0.3 - 0.9	API, 1993
1,1-Dimethylcyclopentane	7	6.72	0.06 - 0.2	API, 1993
1-trans-2-Dimethylcyclopentane	7	6.87	0.15 - .5	API, 1993
1-cis-3-Dimethylcyclopentane	7	6.82	0.2	API, 1993
1-trans-3-Dimethylcyclopentane	7	6.85	0.2 - 0.9	API, 1993
1,1,2-Trimethylcyclopentane	8	7.67	0.06	API, 1993
1,1,3-Trimethylcyclopentane	8	7.25	0.3	API, 1993
1-trans-2-cis-3-Trimethylcyclopentane	8	7.51	0.3 - 0.4	API, 1993

Compound	Number of Carbons	EC	Weight Percent	Reference
1-trans-2-cis-4-Trimethylcyclopentane	8		0.2	API, 1993
1-trans-2-Dimethylcyclohexane	8	7.94	0.3	API, 1993
Ethylcyclohexane	8	8.38	0.2	API, 1993
Cyclohexane	6	6.59	0.7	API, 1993
1-trans-2-trans-4-Trimethylcyclohexane	9		0.2	API, 1993
Alkyl Benzenes				
Benzene	6	6.5	0.04 - 0.4	API, 1993
Toluene	7	7.58	0.09 - 2.5	API, 1993
Ethylbenzene	8	8.5	0.09 - 0.31	API, 1993
o-Xylene	8	8.81	0.03 - 0.68	API, 1993
m-Xylene	8	8.6	0.08 - 2.0	API, 1993
p-Xylene	8	8.61	0.09 - 0.68	API, 1993
1-Methyl-4-ethylbenzene	9	9.57	0.03 - 0.13	API, 1993
1-Methyl-2-ethylbenzene	9	9.71	0.01 - 0.09	API, 1993
1-Methyl-3-ethylbenzene	9	9.55	0.04 - 0.4	API, 1993
1,2,3-Trimethylbenzene	9	10.06	0.1	API, 1993
1,2,4-Trimethylbenzene	9	9.84	0.13 - 0.69	API, 1993
1,3,5-Trimethylbenzene	9	9.62	0.05 - 0.18	API, 1993
1,2,3,4-Tetramethylbenzene	10	11.57	0.2	API, 1993
Biphenyl	12	14.26	0.006 - .04	API, 1993
Naphtheno-Benzenes				
Indan	9	10.27	0.07	API, 1993
Tetralin (tetrahydronaphthalene)	10	11.7	0.03	API, 1993
5-Methylthtrohydronaphthalene	11		0.08	API, 1993
6-Methylthtrohydronaphthalene	11		0.09	API, 1993
Fluorene	13	16.55	0.003 - 0.06	API, 1993
Alkyl Naphthalenes				
Naphthalene	10	11.69	0.02 - 0.09	API, 1993
Polynuclear Aromatics				
Phenanthrene	14	19.36	0.003 - 0.05	API, 1993
DIESEL				
Straight Chain Alkanes				
n-Octane	8	8	0.1	BP, 1996
n-Nonane	9	9	0.19 - 0.49	BP, 1996
n-Decane	10	10	0.28 - 1.2	BP, 1996
n-Undecane	11	11	0.57 - 2.3	BP, 1996
n-Dodecane	12	12	1.0 - 2.5	BP, 1996
n-Tridecane	13	13	1.5 - 2.8	BP, 1996
n-Tetradecane	14	14	0.61 - 2.7	BP, 1996
n-Pentadecane	15	15	1.9 - 3.1	BP, 1996
n-Hexadecane	16	16	1.5 - 2.8	BP, 1996
n-Heptadecane	17	17	1.4 - 2.9	BP, 1996

Compound	Number of Carbons	EC	Weight Percent	Reference
n-Octadecane	18	18	1.2 - 2.0	BP, 1996
n-Nonadecane	19	19	0.7 - 1.5	BP, 1996
n-Eicosane	20	20	0.4 - 1.0	BP, 1996
n-Heneicosane	21	21	0.26 - 0.83	BP, 1996
n-Docosane	22	22	0.14 - 0.44	BP, 1996
n-Tetracosane	24	24	0.35	BP, 1996
Branched Chain Alkanes				
3-Methylundecane	12		0.09 - 0.28	BP, 1996
2-Methyldodecane	13		0.15 - 0.52	BP, 1996
3-Methyltridecane	14		0.13 - 0.30	BP, 1996
2-Methyltetradecane	15		0.34 - 0.63	BP, 1996
Alkyl Benzenes				
Benzene	6	6.5	0.003 - 0.10	BP, 1996
Toluene	7	7.58	0.007 - 0.70	BP, 1996
Ethylbenzene	8	8.5	0.007 - 0.20	BP, 1996
o-Xylene	8	8.81	.001 - 0.085	BP, 1996
m-Xylene	8	8.6	0.018 - 0.512	BP, 1996
p-Xylene	8	8.61	0.018 - 0.512	BP, 1996
Styrene	9	8.83	<.002	BP, 1996
1-Methyl-4-isopropylbenzene	10	10.13	0.003 - 0.026	BP, 1996
1,3,5-Trimethylbenzene	9	9.62	0.09 - 0.24	BP, 1996
n-Propylbenzene	9	9.47	0.03 - 0.048	BP, 1996
Isopropylbenzene	9	9.13	<0.01	BP, 1996
n-Butylbenzene	10	10.5	0.031 - 0.046	BP, 1996
Biphenyl	12		0.01 - 0.12	BP, 1996
Naphtheno-Benzenes				
Fluorene	13	16.55	0.034 - 0.15	BP, 1996
Fluoranthene	16	21.85	0.0000007 - 0.02	BP, 1996
Benz(b)fluoranthene	20	30.14	0.0000003 - 0.000194	BP, 1996
Benz(k)fluoranthene	20	30.14	0.0000003 - 0.000195	BP, 1996
Indeno (1,2,3-cd) pyrene	22	35.01	0.000001 - 0.000097	BP, 1996
Alkyl Naphthalenes				
Naphthalene	10	11.69	.01 - 0.80	BP, 1996
1-Methylnaphthalene	11	12.99	0.001 - 0.81	BP, 1996
2-Methylnaphthalene	11	12.84	0.001 - 1.49	BP, 1996
1,3-Dimethylnaphthalene	12	14.77	0.55 - 1.28	BP, 1996
1,4-Dimethylnaphthalene	12	14.6	0.110 - 0.23	BP, 1996
1,5-Dimethylnaphthalene	12	13.87	0.16 - 0.36	BP, 1996
Polynuclear Aromatics				
Anthracene	14	19.43	0.000003 -0.02	BP, 1996
2-Methyl anthracene	15	20.73	0.000015 - 0.018	BP, 1996
Phenanthrene	14	19.36	0.000027 - 0.30	BP, 1996
1-Methylphenanthrene	15	20.73	0.000011 - 0.024	BP, 1996
2-Methylphenanthrene	15		0.014 - 0.18	BP, 1996

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Compound	Number of Carbons	EC	Weight Percent	Reference
3-Methylphenanthrene	15		0.000013 - 0.011	BP, 1996
4 & 9-Methylphenanthrene	15		0.00001 - 0.034	BP, 1996
Pyrene	16	20.8	0.000018 - 0.015	BP, 1996
1-Methylpyrene	17		0.0000024 - 0.00137	BP, 1996
2-Methylpyrene	17		0.0000037 - 0.00106	BP, 1996
Benz(a)anthracene	18	26.37	0.0000021 - 0.00067	BP, 1996
Chrysene	18	27.41	0.000045	BP, 1996
Triphenylene	18	26.61	0.00033	BP, 1996
Cyclopenta(cd)pyrene	18		0.000002 - 0.0000365	BP, 1996
1-Methyl-7-isopropylphenanthrene	18		0.0000015 - 0.00399	BP, 1996
3-Methylchrysene	19		<0.001	BP, 1996
6-Methylchrysene	19		<0.0005	BP, 1996
Benz(a)pyrene	20	31.34	0.000005 -0.00084	BP, 1996
Benz(e)pyrene	20	31.17	0.0000054 - 0.000240	BP, 1996
Perylene	20	31.34	<0.0001	BP, 1996
Benz(ghi)perylene	22	34.01	0.0000009 - 0.00004	BP, 1996
Picene	22		0.0000004 - 0.000083	BP, 1996
FUEL OIL #2				
Straight Chain Alkanes				
n-Octane	8	8	0.1	BP, 1996
n-Nonane	9	9	0.20 - 0.30	BP, 1996
n-Decane	10	10	0.5	BP, 1996
n-Undecane	11	11	0.80 - 0.90	BP, 1996
n-Dodecane	12	12	0.84 - 1.20	BP, 1996
n-Tridecane	13	13	0.96 - 2.00	BP, 1996
n-Tetradecane	14	14	1.03 - 2.50	BP, 1996
n-Pentadecane	15	15	1.13 - 3.20	BP, 1996
n-Hexadecane	16	16	1.05 - 3.30	BP, 1996
n-Heptadecane	17	17	0.65 - 3.60	BP, 1996
n-Octadecane	18	18	0.55 - 2.50	BP, 1996
n-Nonadecane	19	19	0.33 - 1.30	BP, 1996
n-Eicosane	20	20	0.18 - 0.60	BP, 1996
n-Heneicosane	21	21	0.09 - 0.40	BP, 1996
n-Docosane	22	22	0.1	BP, 1996
Alkyl Benzenes				
Benzene	6	6.5	<0.125	BP, 1996
Toluene	7	7.58	0.025 - 0.110	BP, 1996
Ethylbenzene	8	8.5	0.028 - 0.04	BP, 1996
Biphenyl	12		0.006 - 0.009	BP, 1996
Naphtheno-Benzenes				
Acenaphthene	12	15.5	0.013 - 0.022	BP, 1996
Acenaphthylene	12	15.06	0.006	BP, 1996
Fluorene	13	16.55	0.004 - 0.045	BP, 1996

Compound	Number of Carbons	EC	Weight Percent	Reference
Fluoranthene	16	21.85	0.000047 - 0.00037	BP, 1996
2,3- Benzofluorene	17	23.83	<0.0024	BP, 1996
Benzo(a)fluorene	17		<0.0006	BP, 1996
Benzo(ghi)fluoranthene	18		<0.0024	BP, 1996
Benz(b)fluoranthene	20	30.14	<0.0024	BP, 1996
Benz(k)fluoranthene	20	30.14	<0.00006	BP, 1996
Indeno (1,2,3-cd) pyrene	22	35.01	<0.0012	BP, 1996
Alkyl Naphthalenes				
Naphthalene	10	11.69	0.009 - 0.40	BP, 1996
1-Methylnaphthalene	11	12.99	0.29 - 0.48	BP, 1996
2-Methylnaphthalene	11	12.84	0.36 -1.00	BP, 1996
1,4-Dimethylnaphthalene	12	14.6	0.043 - 0.045	BP, 1996
Polynuclear Aromatics				
Anthracene	14	19.43	0.00010 - 0.011	BP, 1996
2-Methyl anthracene	15	20.73	0.009 - 0.017	BP, 1996
9,10-Dimethyl anthracene	16		0.002 - 0.006	BP, 1996
Phenanthrene	14	19.36	0.009 -0.170	BP, 1996
1-Methylphenanthrene	15	20.73	0.017	BP, 1996
2-Methylphenanthrene	15		0.768	BP, 1996
Pyrene	16	20.8	0.00 - 0.012	BP, 1996
Benz(a)anthracene	18	26.37	0.000002 - 0.00012	BP, 1996
Chrysene	18	27.41	0.000037 - 0.00039	BP, 1996
Triphenylene	18	26.61	0.00002 - 0.00014	BP, 1996
Benzo(b)chrysene	19		<0.0036	BP, 1996
Benz(a)pyrene	20	31.34	0.000001 - 0.000060	BP, 1996
Benz(e)pyrene	20	31.17	0.0000020 - 0.000010	BP, 1996
Benzo(ghi)pyrene	20	31.17	0.0000010 - 0.0000070	BP, 1996
Perylene	20	31.34	<0.0024	BP, 1996
3-Methylcholanthrene	21		<0.00006	BP, 1996
Benz(ghi)perylene	22	34.01	0.0000057	BP, 1996
Picene	22		<0.00012	BP, 1996
Coronene	24	34.01	<0.000024	BP, 1996
GASOLINE				
Straight Chain Alkanes				
Propane	3	3	0.01 - 0.14	LUFT, 1988
n-Butane	4	4	3.93 - 4.70	LUFT, 1988
n-Pentane	5	5	5.75 - 10.92	LUFT, 1988
n-Hexane	6	6	0.24 - 3.50	LUFT, 1988
n-Heptane	7	7	0.31 - 1.96	LUFT, 1988
n-Octane	8	8	0.36 - 1.43	LUFT, 1988
n-Nonane	9	9	0.07 - 0.83	LUFT, 1988
n-Decane	10	10	0.04 - 0.50	LUFT, 1988
n-Undecane	11	11	0.05 - 0.22	LUFT, 1988
n-Dodecane	12	12	0.04 - 0.09	LUFT, 1988

Compound	Number of Carbons	EC	Weight Percent	Reference
Branched Chain Alkanes				
Isobutane	4	3.67	0.12 - 0.37	LUFT, 1988
2,2-Dimethylbutane	6	5.37	0.17 - 0.84	LUFT, 1988
2,3-Dimethylbutane	6	5.68	0.59 - 1.55	LUFT, 1988
2,2,3-Trimethylbutane	7	6.36	0.01 - 0.04	LUFT, 1988
Neopentane	5	4.32	0.02 - 0.05	LUFT, 1988
Isopentane	5	4.75	6.07 - 10.17	LUFT, 1988
2-Methylpentane	6	5.72	2.91 - 3.85	LUFT, 1988
3-Methylpentane	6	5.85	2.4 (vol)	LUFT, 1988
2,4-Dimethylpentane	7	6.31	0.23 - 1.71	LUFT, 1988
2,3-Dimethylpentane	7	6.69	0.32 - 4.17	LUFT, 1988
3,3-Dimethylpentane	7	6.55	0.02 - 0.03	LUFT, 1988
2,2,3-Trimethylpentane	8	7.37	0.09 - 0.23	LUFT, 1988
2,2,4-Trimethylpentane	8	6.89	0.32 - 4.58	LUFT, 1988
2,3,3-Trimethylpentane	8	7.58	0.05 - 2.28	LUFT, 1988
2,3,4-Trimethylpentane	8	7.55	0.11 - 2.80	LUFT, 1988
2,4-Dimethyl-3-ethylpentane	9		0.03 - 0.07	LUFT, 1988
2-Methylhexane	7	6.68	0.36 - 1.48	LUFT, 1988
3-Methylhexane	7	6.76	0.30 - 1.77	LUFT, 1988
2,4-Dimethylhexane	8	7.38	0.34 - 0.82	LUFT, 1988
2,5-Dimethylhexane	8	7.36	0.24 - 0.52	LUFT, 1988
3,4-Dimethylhexane	8	7.74	0.16 - 0.37	LUFT, 1988
3-Ethylhexane	8	7.79	0.01	LUFT, 1988
2-Methyl-3-ethylhexane	9		0.04 - 0.13	LUFT, 1988
2,2,4-Trimethylhexane	9	7.93	0.11 - 0.18	LUFT, 1988
2,2,5-Trimethylhexane	9	7.87	0.17 - 5.89	LUFT, 1988
2,3,3-Trimethylhexane	9		0.05 - 0.12	LUFT, 1988
2,3,5-Trimethylhexane	9	8.24	0.05 - 1.09	LUFT, 1988
2,4,4-Trimethylhexane	9	8.07	0.02 - 0.16	LUFT, 1988
2-Methylheptane	8	7.71	0.48 - 1.05	LUFT, 1988
3-Methylheptane	8	7.78	0.63 - 1.54	LUFT, 1988
4-Methylheptane	8	7.72	0.22 - 0.52	LUFT, 1988
2,2-Dimethylheptane	9	8.28	0.01 - 0.08	LUFT, 1988
2,3-Dimethylheptane	9	8.64	0.13 - 0.51	LUFT, 1988
2,6-Dimethylheptane	9	8.47	0.07 - 0.23	LUFT, 1988
3,3-Dimethylheptane	9	8.42	0.01 - 0.08	LUFT, 1988
3,4-Dimethylheptane	9	8.62	0.07 - 0.33	LUFT, 1988
2,2,4-Trimethylheptane	10		0.12 - 1.70	LUFT, 1988
3,3,5-Trimethylheptane	10		0.02 - 0.06	LUFT, 1988
3-Ethylheptane	9	8.77	0.02 - 0.16	LUFT, 1988
2-Methyloctane	9		0.14 - 0.62	LUFT, 1988
3-Methyloctane	9	8.78	0.34 - 0.85	LUFT, 1988
4-Methyloctane	9	8.71	0.11 - 0.55	LUFT, 1988
2,6-Dimethyloctane	10	9.32	0.06 - 0.12	LUFT, 1988
2-Methylnonane	10	9.72	0.06 - 0.41	LUFT, 1988

Compound	Number of Carbons	EC	Weight Percent	Reference
3-Methylnonane	10	9.78	0.06 - 0.32	LUFT, 1988
4-Methylnonane	10		0.04 - 0.26	LUFT, 1988
Cycloalkanes				
Cyclopentane	5	5.66	0.19 - 0.58	LUFT, 1988
Methylcyclopentane	6	6.27	not quantified	LUFT, 1988
1-Methyl-cis-2-ethylcyclopentane	8		0.06 - 0.11	LUFT, 1988
1-Methyl-trans-3-ethylcyclopentane	8		0.06 - 0.12	LUFT, 1988
1-cis-2-Dimethylcyclopentane	7	7.21	0.07 - 0.13	LUFT, 1988
1-trans-2-Dimethylcyclopentane	7	6.87	0.06 - 0.20	LUFT, 1988
1,1,2-Trimethylcyclopentane	8	7.67	0.06 - 0.11	LUFT, 1988
1-trans-2-cis-3-Trimethylcyclopentane	8	7.51	0.01 - 0.25	LUFT, 1988
1-trans-2-cis-4-Trimethylcyclopentane	8		0.03 - 0.16	LUFT, 1988
Ethylcyclopentane	7	7.34	0.14 - 0.21	LUFT, 1988
n-Propylcyclopentane	8	7.1	0.01 - 0.06	LUFT, 1988
Isopropylcyclopentane	8		0.01 - 0.02	LUFT, 1988
1-trans-3-Dimethylcyclohexane	8	7.99	0.05 - 0.12	LUFT, 1988
Ethylcyclohexane	8	8.38	0.17 - 0.42	LUFT, 1988
Cyclohexane	6	6.59	0.08	API, 1993
Straight Chained Alkenes				
cis-2-Butene	4	4.25	0.13 - 0.17	LUFT, 1988
trans-2-Butene	4	4.1	0.16 - 0.20	LUFT, 1988
Pentene-1	5	4.89	0.33 - 0.45	LUFT, 1988
cis-2-Pentene	5	5.16	0.43 - 0.67	LUFT, 1988
trans-2-Pentene	5	5.08	0.52 - 0.90	LUFT, 1988
cis-2-Hexene	6	6.14	0.15 - 0.24	LUFT, 1988
trans-2-Hexene	6	6.05	0.18 - 0.36	LUFT, 1988
cis-3-Hexene	6	6.03	0.11 - 0.13	LUFT, 1988
trans-3-Hexene	6	6.02	0.12 - 0.15	LUFT, 1988
cis-3-Heptene	7	7.01	0.14 - 0.17	LUFT, 1988
trans-2-Heptene	7	7.05	0.06 - 0.10	LUFT, 1988
Branched Chain Alkenes				
2-Methyl-1-butene	5	4.96	0.22 - 0.66	LUFT, 1988
3-Methyl-1-butene	5	4.57	0.08 - 0.12	LUFT, 1988
2-Methyl-2-butene	5	5.21	0.96 - 1.28	LUFT, 1988
2,3-Dimethyl-1-butene	6	5.7	0.08 - 0.10	LUFT, 1988
2-Methyl-1-pentene	6	5.89	0.20 - 0.22	LUFT, 1988
2,3-Dimethyl-1-pentene	7		0.01 - 0.02	LUFT, 1988
2,4-Dimethyl-1-pentene	7	6.48	0.02 - 0.03	LUFT, 1988
4,4-Dimethyl-1-pentene	7		0.60 (vol)	LUFT, 1988
2-Methyl-2-pentene	6	6.07	0.27 - 0.32	LUFT, 1988
3-Methyl-cis-2-pentene	6	6.11	0.35 - 0.45	LUFT, 1988
3-Methyl-trans-2-pentene	6	6.22	0.32 - 0.44	LUFT, 1988
4-Methyl-cis-2-pentene	6	5.69	0.04 - 0.05	LUFT, 1988

Compound	Number of Carbons	EC	Weight Percent	Reference
4-Methyl-trans-2-pentene	6	5.73	0.08 - 0.30	LUFT, 1988
4,4-Dimethyl-cis-2-pentene	7	6.47	0.02	LUFT, 1988
4,4-Dimethyl-trans-2-pentene	7	6.23	Not quantified	LUFT, 1988
3-Ethyl-2-pentene	7	7.07	0.03 - 0.04	LUFT, 1988
Cycloalkenes				
Cyclopentene	5	5.55	0.12 - 0.18	LUFT, 1988
3-Methylcyclopentene	6	6.1	0.03 - 0.08	LUFT, 1988
Cyclohexene	6	6.74	0.03	LUFT, 1988
Alkyl Benzenes				
Benzene	6	6.5	0.12 - 3.50	LUFT, 1988
Toluene	7	7.58	2.73 - 21.80	LUFT, 1988
Ethylbenzene	8	8.5	0.36 - 2.86	LUFT, 1988
o-Xylene	8	8.81	0.68 - 2.86	LUFT, 1988
m-Xylene	8	8.6	1.77 - 3.87	LUFT, 1988
p-Xylene	8	8.61	0.77 - 1.58	LUFT, 1988
1-Methyl-4-ethylbenzene	9	9.57	0.18 - 1.00	LUFT, 1988
1-Methyl-2-ethylbenzene	9	9.71	0.19 - 0.56	LUFT, 1988
1-Methyl-3-ethylbenzene	9	9.55	0.31 - 2.86	LUFT, 1988
1-Methyl-2-n-propylbenzene	10		0.01 - 0.17	LUFT, 1988
1-Methyl-3-n-propylbenzene	10		0.08 - 0.56	LUFT, 1988
1-Methyl-2-isopropylbenzene	10		0.01 - 0.12	LUFT, 1988
1-Methyl-3-t-butylbenzene	11		0.03 - 0.11	LUFT, 1988
1-Methyl-4-t-butylbenzene	11	10.92	0.04 - 0.13	LUFT, 1988
1,2-Dimethyl-3-ethylbenzene	10	10.93	0.02 - 0.19	LUFT, 1988
1,2-Dimethyl-4-ethylbenzene	10	10.75	0.50 - 0.73	LUFT, 1988
1,3-Dimethyl-2-ethylbenzene	10	10.81	0.21 - 0.59	LUFT, 1988
1,3-Dimethyl-4-ethylbenzene	10	10.75	0.03 - 0.44	LUFT, 1988
1,3-Dimethyl-5-ethylbenzene	10	10.51	0.11 - 0.42	LUFT, 1988
1,3-Dimethyl-5-t-butylbenzene	12		0.02 - 0.16	LUFT, 1988
1,4-Dimethyl-2-ethylbenzene	10	10.68	0.05 - 0.36	LUFT, 1988
1,2,3-Trimethylbenzene	9	10.06	0.21 - 0.48	LUFT, 1988
1,2,4-Trimethylbenzene	9	9.84	0.66 - 3.30	LUFT, 1988
1,3,5-Trimethylbenzene	9	9.62	0.13 - 1.15	LUFT, 1988
1,2,3,4-Tetramethylbenzene	10	11.57	0.02 - 0.19	LUFT, 1988
1,2,3,5-Tetramethylbenzene	10	11.09	0.14 - 1.06	LUFT, 1988
1,2,4,5-Tetramethylbenzene	10	11.05	0.05 - 0.67	LUFT, 1988
1,2-Diethylbenzene	10	10.52	0.57	LUFT, 1988
1,3-Diethylbenzene	10	10.4	0.05 - 0.38	LUFT, 1988
n-Propylbenzene	9	9.47	0.08 - 0.72	LUFT, 1988
Isopropylbenzene	9	9.13	<10.01 - 0.23	LUFT, 1988
n-Butylbenzene	10	10.5	0.04 - 0.44	LUFT, 1988
Isobutylbenzene	10	9.96	0.01 - 0.08	LUFT, 1988
sec-Butylbenzene	10	9.98	0.01 - 0.13	LUFT, 1988
t-Butylbenzene	10	9.84	0.12	LUFT, 1988
n-Pentylbenzene	11	11.49	0.01 - 0.14	LUFT, 1988
Isopentylbenzene	11		0.07 - 0.17	LUFT, 1988

Compound	Number of Carbons	EC	Weight Percent	Reference
Naphtheno Benzenes				
Indan	9	10.27	0.25 - 0.34	LUFT, 1988
1-Methylindan	10		0.04 - 0.17	LUFT, 1988
2-Methylindan	10	11.39	0.02 - 0.10	LUFT, 1988
4-Methylindan	10	11.33	0.01 - 0.16	LUFT, 1988
5-Methylindan	10	11.28	0.09 - 0.30	LUFT, 1988
Tetralin (tetrahydronaphthalene)	10	11.7	0.01 - 0.14	LUFT, 1988
Alkyl Naphthalenes				
Naphthalene	10	11.69	0.09 - 0.49	LUFT, 1988
Polynuclear Aromatics				
Pyrene	16	20.8	Not quantified	LUFT, 1988
Benz(a)anthracene	18	26.37	Not quantified	LUFT, 1988
Benz(a)pyrene	20	31.34	0.19 - 2.8 mg/kg	LUFT, 1988
Benz(e)pyrene	20	31.17	Not quantified	LUFT, 1988
Benz(ghi)perylene	22	34.01	Not quantified	LUFT, 1988
JP-4				
Straight Chain Alkanes				
n-Butane	4	4	0.12	API, 1993
n-Pentane	5	5	1.06	API, 1993
n-Hexane	6	6	2.21	API, 1993
n-Heptane	7	7	3.67	API, 1993
n-Octane	8	8	3.8	API, 1993
n-Nonane	9	9	2.25	API, 1993
n-Decane	10	10	2.16	API, 1993
n-Undecane	11	11	2.32	API, 1993
n-Dodecane	12	12	2	API, 1993
n-Tridecane	13	13	1.52	API, 1993
n-Tetradecane	14	14	0.73	API, 1993
Branched Chain Alkanes				
Isobutane	4	3.67	0.66	API, 1993
2,2-Dimethylbutane	6	5.37	0.1	API, 1993
2,2,3,3-Tetramethylbutane	8	7.3	0.24	API, 1993
2-Methylpentane	6	5.72	1.28	API, 1993
3-Methylpentane	6	5.85	0.89	API, 1993
2,2-Dimethylpentane	7	6.25	0.25	API, 1993
2-Methylhexane	7	6.68	2.35	API, 1993
3-Methylhexane	7	6.76	1.97	API, 1993
2,2-Dimethylhexane	8	7.25	0.71	API, 1993
2,4-Dimethylhexane	8	7.38	0.58	API, 1993
2,5-Dimethylhexane	8	7.36	0.37	API, 1993
3,3-Dimethylhexane	8	7.45	0.26	API, 1993
2-Methylheptane	8	7.71	2.7	API, 1993
3-Methylheptane	8	7.78	3.04	API, 1993

Compound	Number of Carbons	EC	Weight Percent	Reference
4-Methylheptane	8	7.72	0.92	API, 1993
2,4-Dimethylheptane	9	8.34	0.43	API, 1993
2,5-Dimethylheptane	9	8.47	0.52	API, 1993
4-Ethylheptane	9	8.69	0.18	API, 1993
2-Methyloctane	9		0.88	API, 1993
3-Methyloctane	9	8.78	0.79	API, 1993
4-Methyloctane	9	8.71	0.86	API, 1993
2-Methylundecane	12		0.64	API, 1993
2,6-Dimethylundecane	13		0.71	API, 1993
Cycloalkanes				
Methylcyclopentane	6	6.27	1.16	API, 1993
1-cis-2-Dimethylcyclopentane	7	7.21	0.54	API, 1993
1-cis-3-Dimethylcyclopentane	7	6.82	0.34	API, 1993
1-trans-3-Dimethylcyclopentane	7	6.85	0.36	API, 1993
Ethylcyclopentane	7	7.34	0.26	API, 1993
1-cis-3-Dimethylcyclohexane	8	7.75	0.42	API, 1993
Cyclohexane	6	6.59	1.24	API, 1993
Methylcyclohexane	7	7.22	2.27	API, 1993
1-Methyl-2-ethylcyclohexane	9		0.39	API, 1993
1-Methyl-3-ethylcyclohexane	9		0.17	API, 1993
1,3,5-Trimethylcyclohexane	9		0.99	API, 1993
1,1,3-Trimethylcyclohexane	9	8.45	0.48	API, 1993
n-Butylcyclohexane	10		0.7	API, 1993
Alkyl Benzenes				
Benzene	6	6.5	0.5	API, 1993
Toluene	7	7.58	1.33	API, 1993
Ethylbenzene	8	8.5	0.37	API, 1993
o-Xylene	8	8.81	1.01	API, 1993
m-Xylene	8	8.6	0.96	API, 1993
p-Xylene	8	8.61	0.35	API, 1993
1-Methyl-4-ethylbenzene	9	9.57	0.43	API, 1993
1-Methyl-2-ethylbenzene	9	9.71	0.23	API, 1993
1-Methyl-3-ethylbenzene	9	9.55	0.49	API, 1993
1-Methyl-2-isopropylbenzene	10		0.29	API, 1993
1,2-Dimethyl-4-ethylbenzene	10	10.75	0.77	API, 1993
1,3-Dimethyl-5-ethylbenzene	10	10.51	0.61	API, 1993
1,4-Dimethyl-2-ethylbenzene	10	10.68	0.7	API, 1993
1,2,4-Trimethylbenzene	9	9.84	1.01	API, 1993
1,3,5-Trimethylbenzene	9	9.62	0.42	API, 1993
1,3-Diethylbenzene	10	10.4	0.46	API, 1993
n-Propylbenzene	9	9.47	0.71	API, 1993
Isopropylbenzene	9	9.13	0.3	API, 1993

Reference
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Compound	Number of Carbons	EC	Weight Percent	Reference
Alkyl Naphthalenes				
Naphthalene	10	11.69	0.5	API, 1993
1-Methylnaphthalene	11	12.99	0.78	API, 1993
2-Methylnaphthalene	11	12.84	0.56	API, 1993
2,6-Dimethylnaphthalene	12	14.6	0.25	API, 1993
JP-5				
Straight Chain Alkanes				
n-Octane	8	8	0.12	API, 1993
n-Nonane	9	9	0.38	API, 1993
n-Decane	10	10	1.79	API, 1993
n-Undecane	11	11	3.95	API, 1993
n-Dodecane	12	12	3.94	API, 1993
n-Tridecane	13	13	3.45	API, 1993
n-Tetradecane	14	14	2.72	API, 1993
n-Pentadecane	15	15	1.67	API, 1993
n-Hexadecane	16	16	1.07	API, 1993
n-Heptadecane	17	17	0.12	API, 1993
Branched Chain Alkanes				
2,4,6-Trimethylheptane	10		0.07	API, 1993
3-Methyloctane	9	8.78	0.07	API, 1993
4-Methyldecane	11		0.78	API, 1993
2-Methyldecane	11		0.61	API, 1993
2,6-Dimethyldecane	12		0.72	API, 1993
2-Methylundecane	12		1.39	API, 1993
2,6-Dimethylundecane	13		2	API, 1993
Cycloalkanes				
1-Methyl-4-ethylcyclohexane	9		0.48	API, 1993
1,3,5-Trimethylcyclohexane	9		0.09	API, 1993
1,1,3-Trimethylcyclohexane	9	8.45	0.05	API, 1993
n-Butylcyclohexane	10		0.9	API, 1993
Heptylcyclohexane	13		0.99	API, 1993
Straight Chain Alkenes				
Tridecene	13		0.45	API, 1993
Alkyl Benzenes				
o-Xylene	8	8.81	0.09	API, 1993
m-Xylene	8	8.6	0.13	API, 1993
1,2,4-Trimethylbenzene	9	9.84	0.37	API, 1993
1,3-Diethylbenzene	10	10.4	0.61	API, 1993
1,4-Diethylbenzene	10	10.46	0.77	API, 1993
1,2,4-Triethylbenzene	12	12.29	0.72	API, 1993
1-t-Butyl-3,4,5-trimethylbenzene	13		0.24	API, 1993

Compound	Number of Carbons	EC	Weight Percent	Reference
n-Heptylbenzene	13		0.27	API, 1993
n-Octylbenzene	14		0.78	API, 1993
Biphenyl	12		0.7	API, 1993
Phenylcyclohexane	12		0.82	API, 1993
Alkyl Naphthalenes				
Naphthalene	10	11.69	0.57	API, 1993
1-Methylnaphthalene	11	12.99	1.44	API, 1993
2-Methylnaphthalene	11	12.84	1.38	API, 1993
2,3-Dimethylnaphthalene	12	15	0.46	API, 1993
2,6-Dimethylnaphthalene	12	14.6	1.12	API, 1993
1-Ethylnaphthalene	12	14.41	0.32	API, 1993
JP-8				
Straight Chain Alkanes				
n-Heptane	7	7	0.03	API, 1993
n-Octane	8	8	0.9	API, 1993
n-Nonane	9	9	0.31	API, 1993
n-Decane	10	10	1.31	API, 1993
n-Undecane	11	11	4.13	API, 1993
n-Dodecane	12	12	4.72	API, 1993
n-Tridecane	13	13	4.43	API, 1993
n-Tetradecane	14	14	2.99	API, 1993
n-Pentadecane	15	15	1.61	API, 1993
n-Hexadecane	16	16	0.45	API, 1993
n-Heptadecane	17	17	0.08	API, 1993
n-Octadecane	18	18	0.02	API, 1993
Branched Chain Alkanes				
2,4,6-Trimethylheptane	10		0.07	API, 1993
3-Methyloctane	9	8.78	0.04	API, 1993
2-Methyldecane	11		0.41	API, 1993
2,6-Dimethyldecane	12		0.66	API, 1993
2-Methylundecane	12		1.16	API, 1993
2,6-Dimethylundecane	13		2.06	API, 1993
Cycloalkanes				
1-Methyl-4-ethylcyclohexane	9		0.1	API, 1993
1,3,5-Trimethylcyclohexane	9		0.06	API, 1993
1,1,3-Trimethylcyclohexane	9	8.45	0.06	API, 1993
n-Butylcyclohexane	10		0.74	API, 1993
n-Propylcyclohexane	9		0.14	API, 1993
Hexylcyclohexane	12		0.93	API, 1993
Heptylcyclohexane	13		1	API, 1993
Straight Chain Alkenes				
Tridecene	14		0.73	API, 1993

Compound	Number of Carbons	EC	Weight Percent	Reference
Alkyl Benzenes				
o-Xylene	8	8.81	0.06	API, 1993
m-Xylene	8	8.6	0.06	API, 1993
1-Methyl-2-isopropylbenzene	10		0.56	API, 1993
1,3-Dimethyl-5-ethylbenzene	10	10.51	0.62	API, 1993
1,2,4-Trimethylbenzene	9	9.84	0.27	API, 1993
1,2,4-Triethylbenzene	12	12.29	0.99	API, 1993
1,3,5-Triethylbenzene	12	12.1	0.6	API, 1993
n-Heptylbenzene	13		0.25	API, 1993
n-Octylbenzene	14		0.61	API, 1993
Biphenyl	12		0.63	API, 1993
Phenylcyclohexane	12		0.87	API, 1993
Alkyl Naphthalenes				
Naphthalene	10	11.69	1.14	API, 1993
1-Methylnaphthalene	11	12.99	1.84	API, 1993
2-Methylnaphthalene	11	12.84	1.46	API, 1993
2,3-Dimethylnaphthalene	12	15	0.36	API, 1993
2,6-Dimethylnaphthalene	12	14.6	1.34	API, 1993
1-Ethylnaphthalene	12	14.41	0.33	API, 1993
Straight Chain Alkanes				
n-Heptane	7	7	0.1	API, 1993
n-Octane	8	8	0.2 - 0.3	API, 1993
n-Nonane	9	9	0.4 - 0.8	API, 1993
n-Decane	10	10	1.5 - 1.7	API, 1993
n-Undecane	11	11	3.5 - 6.1	API, 1993
n-Dodecane	12	12	2.8 - 5.7	API, 1993
n-Tridecane	13	13	3.1 - 5.2	API, 1993
n-Tetradecane	14	14	2.3 - 4.7	API, 1993
n-Pentadecane	15	15	0.6 - 2.3	API, 1993
n-Hexadecane	16	16	0.1 - 0.7	API, 1993
n-Heptadecane	17	17	0.4	API, 1993
n-Octadecane	18	18	0.3	API, 1993
n-Nonadecane	19	19	0.2	API, 1993
n-Eicosane	20	20	0.1	API, 1993
n-Heneicosane	21	21	0.1	API, 1993

Seneca County Industrial
Development Agency
Seneca Army Depot
Bldg. 101
Romulus, NY 14541
607-869-1373
Fax: 607-869-1356

September 15, 1998

Mr. Stephen Absolom
Base Environmental Coordinator
Seneca Army Depot
Romulus, NY 14541

RE: Prioritization of FOST/FOSL Documentation

1. Reference your letter, dated September 3, 1998, subject as above.

2. Priorities for FOSL/FOST's are:

    1. FOST for Prison
    2. FOSL for four Farm Houses.
    3. FOST for North Depot Area.
    4. FOST for Housing Area.
    5. FOST for Airfield
    6. FOST for Utilities
    7. FOSL for PID Area

3. As we do not currently know the exact location for the prison site, you may want to start on the FOSL for the four farm houses; but when prison location is announced, please immediately begin the prison FOST.

4. I assume we will be doing separate FOSTs for each utility. I do not know at this time which of the utilities will be conveyed in the lst conveyance. Also, will need separate FOSTs for the North End/South End STP and Boiler Plants.

5. Please call if you have any questions.

Patricia Jones
Project Coordinator

CF:
BTC
CEA
Mr. Glenn Cooke
Mr. David Knisely

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Patricia Jones
Project Coordinator

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Mr. Glenn Cooke
Mr. David Knisely

SENECA ARMY DEPOT ACTIVITY

PROJECTS/1383 NAME

RI/FS PRIORITIES:

1. ASH LANDFILL, SEAD-3,6,8,14,15
2. OB GROUNDS, SEAD-23
3. FIRE TRAINING AREAS, SEAD-25,26
4. RAD SITES, SEAD-12,48,63, BLDG 804
5. DEACT FURNACES, SEAD-16,17
6. MUNITIONS WASHOUT FACILITY, SEAD-4
7. OLD CONSTRUCTION DEBRIS LANDFILL, SEAD-11,64A,64D
8. IRFNA DISPOSAL SITE, SEAD-13
9. SEAD-52,60 (BLDGS 608,609,612)
10. SLUDGE PILE, SEAD-5,59,71
11. MUNITION DESTRUCTION AREAS, SEAD-45,46,57

#1-11 are the only sites that should need cleaning up. They each have their own project.

RECORDS OF DECISION:

1. SWMU CLASSIFICATION REPORT (NO FURTHER ACTION ROD): SEADS 1, 2, 7, 10, 18, 19, 20, 21, 22, 29, 30, 31, 35, 36, 37, 42, 47, 49, 51, 53, 55, 61, 65, 72
2. MULTIPLE SITES ROD W/RISK EVALUATION: SEADS 9, 27, 32, 33, 34, 38, 39, 40, 41, 43, 44, 56, 58, 62, 64B, 64C, 69, 70, 28, 66, 68

REMOVALS:

1. REMOVAL-BTEX/VOCS, SEAD-25, 38, 39, 40, 41
2. REMOVAL-METALS, SEAD- 24, 50, 54, 67

In these sites Eng-Science said that [illegible] extraction [illegible] and a risk assess. will be done.

If it works out right, we will do a No Action ROD for these, too.

BCT AGENDA
October 20-21, 1998
1330 – 1630 October 20, 1998
0830 – 1230 October 21, 1998
NCO CLUB

North End Transfer

Effected Sites/Environmental Issues

SEAD 29 - Bldg 732 WASTE OIL TANK
SEAD 32 – Bldg 718 (2) WASTE OIL STORAGE TANKS
SEAD 35 – Bldg 718 (3) WASTE OIL BURNERS
SEAD 41 – Bldg 718 BOILER BLOWDOWN PIT
SEAD 61 – Bldg 718 – (1) UST WASTE OIL TANK
SEAD 18 - Bldg 709 – CLASSIFIED DOCUMENT INCINERATOR
SEAD 7 - SHALE PIT
SEAD 21 - SEWAGE TREATMENT PLANT 715
SEAD 123 A-F EBS IDENTIFIED SITES
UXO/INSTALLATION ARCHIVE SEARCH REPORT
LEAD BASED PAINT
ASBESTOS
UNDERGROUND STORAGE TANKS (UST)

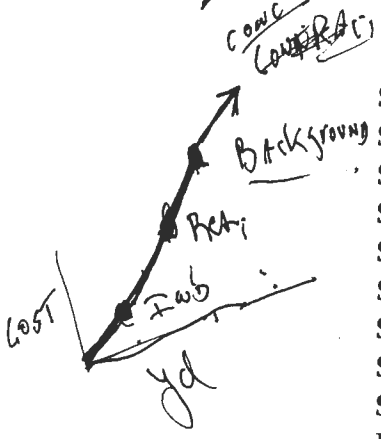
FAMILY HOUSING TRANSFERS

EFFECTED SITES/ENVIRONMENTAL CONCERNS
SEAD 119A SEWAGE SPILL
LEAD BASED PAINT
ASBESTOS
UST'S

AIRFIELD TRANSFER

EFFECTED SITES/ENVIRONMENTAL CONCERNS
SEAD ~~21~~ 122 A-E EBS SITES
SMALL ARMS RANGE
LBP
ASBESTOS

PRISON PARCEL TRANSFER



SEAD 44B QA TEST LABORATORY
SEAD 43 OLD MISSILE PRPELLANT LAB
SEAD 56
SEAD 69 606 Disposal Area
SEAD 62 Migrating Surface Area
SEAD 44A ~~Risk~~ QA TEST LAB
SEAD 52 – BLDG 612 Complex
SEAD 60 – Oil Spill 612 Spill program
SEAD 64C – proposed LANDFILL site
UXO CONCERN
- FUNCTION TEST AREA
- LIQUID PROPELLANT STORAGE AREA
- FUNCTION TEST PITS

SEAD 25 – FIRE DEMONSTRATION PAD FEASIBILITY STUDY

- EVALUATION PLAN
- PAH'S
- GROUNDWATER

→ OB GROUNDS UPDATE

Thursday
1000 hrs

- ROD
- UXO CLEARANCE
- REMEDIAL DESIGN
- COST GROWTH

→ SEAD 12 UPDATE

- WORKPLAN COMMENTS
- FIELDWORK EFFORT
- BLDG SURVEY

1. Ash LF – ROD

LEAD --- 1250 PPM

FACSIMILE TRANSMITTAL HEADER SHEET

US Army Corps of Engineers
Engineering and Support Center, Huntsville
Directorate of Engineering
Civil-Structures Division

OFFICE LOCATION:
4820 University Square
Huntsville, AL 35816-1822

MAILING ADDRESS:
PO Box 1600
Huntsville, AL 35807-4301

FAX NO. 256-895-1602

TO: Mr. Absolom
OFFICE SYMBOL:
PHONE NUMBER:
FAX NUMBER:
NUMBER OF PAGES (including header) 4

FROM: Kevin Healy
OFFICE SYMBOL: CEHND-ED-CS- DATE:
PHONE NUMBER: 256-895-16

MESSAGE:

I presume you'll get a copy of the report, Tuesday. Here's my comments to add to it.

Second page of Project Background

"The *potential for the* presence of *OE* in the OB area necessitates...HTRW cleanup operations. The scope was written to remove any *OE* from soil known to be heavily contaminated..."

"Based *upon the fact that an OE removal was anticipated,* an Explosives Safety Submission was required. This plan..., including the US Army *Technical Center for Explosives Safety.*"

"a) live ordnance, of whatever...OB area. Therefore, unrestricted land use is not possible without ***additional characterization of the site. This characterization would have to prove that OE did not exist at all or did not exist beneath a specific depth. OE that did exist above the specified depth would have to be removed.***

"b)" ***delete this bullet. This decision was made by me, not required by Cliff Doyle. Thought was that if the sifting operation was located far enough away from the site proper, that all other operations could proceed without interference. Also, the 842' is the distance for intentional detonation of a MK II. The required safety distance, from the sifter, for the non-essential personnel (with regard to the sifting operation) is 400 feet. The 842" is not relevant in this portion of the discussion.***

Add, instead:

"b) the sifting unit would require barricading."

"These assumptions resulted in the following scoping changes:

"a) ***OE would be removed (by geophysical mapping and anomaly investigation) on approximately 21 acres of area outside of the burn pads and berms, to a depth demonstrated during the geophysical test plot."***

"b) characterization of the site, with respect to the presence (or lack thereof) of OE beneath the depth established for the geophysical instrumentation, would be performed on four acres of the site. This characterization would be done by sifting soils in one foot lifts to determine what OE existed and at what depths."

c) delete "c)" since it was rewritten as "a)"

"As a result of the revised scope, including...300% increase in the proposed cost of the original scope." ***Recommend deleting the remainder of this sentence ",and furthermore, the IGE could not...contractor's proposal." This is,again, casting aspersions on the contractor's two proposals which is not warranted. Additionally, there were things missing from the original IGE (such as no cost included for digging anomalies during the performance of the 21 acre removal as per M. Young (due to poor communication between she and myself). This would have added substantially to the IGE and made the cost growth look substantially less odd. Suffice it to say that the increase in cost and effort necessitated a relook at the overall approach.***

Insert the following:

"During DDESB's review, it was decided that a barricade was not required around the sifter unit and that the safety distance for all personnel non-essential to the sifting operation was only 400' (as opposed to the originally assumed 850'). This allowed the following:

a) The sifter could be moved to various locations on the site, thereby removing one of the reasons sited for the increase in the contractors increased proposal cost. The subcontractor no longer had to transport soils long distances following excavation and sifting.

b) The sifting could be performed with much less of an effect on other on-going operations than originally assumed.

"During the planning stages of the VE study, *Mr. Wayne Shaw* communicated..." . ***I haven't spoken with Cliff since the ESS was approved. It was Wayne who took Cliff to task following the team meeting several weeks ago in the ED Conference Room.***

Delete "a)". This decision is explained in the above, inserted paragraph and occurred as part of DDESB's review, prior to Wayne's involvement.

" b) Original: the site is free of live OE, but somewhat dirty with metal scrap."

Revised: ***the site contains live OE on the surface and is heavily contaminated with scrap in the subsurface soil (apparently only from a depth of 0-6"/1')".***

That's what Richard Hopkins and the EODT field crews said and that's essentially what your "Rationale" paragraph says so let's keep it accurate. Additionally, I regret that the "Rationale" paragraph states that the anomaly assumption should be changed to 6890 from the original 1000. The 6890 was extrapolated from one 35 foot long swath (5 feet wide) and in no way should be used to "characterize" this entire site. The EODT value of 1000 was an <u>average</u> and we have nothing to indicate that that value is wrong. Subsequently, the estimated cost of all proposed actions that include characterization efforts will be (artificially) $1.5 million higher while the proposed alternatives that eliminate characterizations are (artificially) $1.5 million cheaper.

" c) Original: the site soil is undisturbed outside...borings conducted by PES.

Revised: the site soil may not have had fill operations, but metal...has penetrated the soil to ***a maximum depth of 1 foot***, even though fill operations may not have occurred.

Rationale: The test plot conducted by EODT, the verification...first two locations all ***suggest that contamination may extend to as deep as one foot."***

All of what Richard said last week plus what information was added from the field efforts indicated that contamination was limited to a maximum depth of one foot (in many instances 3-6 inches). By no means is anything proven and the suggestion that contamination extends to <u>at least</u> one foot is erroneous by my recollection.

"Proposal 2" Correct "berms" to "burns".

Baseline Costs and all costs that follow: Anomaly Removal costs should be based upon an average value as opposed to an interpolated value based upon minimal field verification.

General Observations:

I personally would prefer to see some characterization done (on a statistically derived number of acres) to determine whether the predominance of "contamination" does exist throughout the site, to what depth the "contamination" does exist and whether the "contamination" does include OE (or simply scrap). If initial characterization shows that the "contamination" is all scrap, then unrestricted use would be easy to propose. If initial characterization shows that the depth is predominantly minimal, then excavation and sifting would become more practical (i.e. less expensive) and a remediation (to unrestricted use) might be more feasible than now envisioned.

My dislike of any "do-nothing-with-the-subsurface" alternative is based on the following:

o our assumption in going with this alternative is that there is no sense in remediating OE to unrestricted use because the site will forever be restricted (no unrestricted use allowed) due to the lead that is being left on-site and the need to maintain the 9 inch soil cover. However, the lead requirements which were imposed upon SEDA and which are driving the soil cover requirement are based upon an artificial value (the 60 ppm) chosen by the regulators to protect wildlife. The value should be (and possibly could end up being) higher, in which case the land could again be considered for unrestricted use from an HTRW viewpoint. However, if nothing is done with the OE, the landowners will still not be free to use the land as they see fit.

o the effort to characterize the site would be minimal. The information derived from this effort would enable us to better define the problem at this site (or the lack thereof).

Conclusion.

Our VE study should be formerly presented to Mr. Absolom, since it is he who will have the responsibility to defend our decision to the regulators, the RAB and the LRA. They will have to live with the permanent restrictions and the institutional controls that we are proposing.

September 21, 1998

Engineering and
Environmental Division

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Mr. James A. Quinn
NYS Department of Environmental Conservation
Division of Hazardous Waste Remediation
Bureau of Eastern Remedial Action
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Albany, New York 12233-7010

Dear Ms. Struble/Mr. Quinn:

The Seneca County Industrial Development Agency has requested that the BCT be able to discuss the ability to transfer or lease specific parcels of real estate. I have enclosed a copy of this request.

To facilitate the discussion, I have enclosed the summaries of the investigations for the EBS sites for these areas. Request you review the proposed recommendations and be prepared to discuss your agency's position. The back up data for these recommendations is included in the document previously provided and entitled "DRAFT Investigation of Environmental Baseline Survey Non Evaluated Sites SEAD 199A, SEAD 122 (A,B,C,D,E) and SEAD 123 (A,B,C,D,E,F)."

Sue
Eng/Env
JIM

You should also review the SWMU Classification Report for other sites in the areas planned for discussion. As of this date, there has been no formal indication of the site for the proposed prison. I have included a map which indicates, to the best of my knowledge, the site boundaries being considered as the alternative location.

If you have any questions, please contact Stephen M. Absolom, Base Environmental Coordinator, at (607) 869-1309.

Enclosures

Donald C. Olson
LTC, U.S. Army
Commanding Officer

Copies Furnished w/enclosure:

Commander, U.S. Army Corps of Engineers, Seneca Army Depot Activity, ATTN: CENAN-PP-E, SEDA Resident Office, Romulus, New York 14541-5001

Mr. Michael Duchesneau, Parsons Engineering Science, Inc., 30 Dan Road, Canton, MA 02021

Commander, U.S. Army Corps of Engineers, Huntsville Division, ATTN: CEHND-ED-CS (Kevin Healy), P.O. Box 1600, Huntsville, Alabama 35807

Commander, U.S. Army Industrial Operations Command, ATTN: AMSIO-EQE (R Nida), Rock Island, IL 61299-6000

Mr. Dan Geraghty, New York State Department of Health, Bureau of Environmental Exposure Investigation, 2 University Place, Room 205, Albany, New York 12203

Commander, USACHPPM, 5158 Blackhawk Road, ATTN: Keith Hoddinott, Aberdeen Proving Ground, Maryland 21010-5422

Mr. Robert K. Scott, NYSDEC, Region 8, 6274 East Avon-Lima Road, Avon, New York 14414-9519

Commander, U.S. Army Environmental Center, ATTN: SFIM-AEC-IRP (John Buck), Aberdeen Proving Ground, Maryland 21010-5410

Ms. Patricia Jones, Seneca Army Depot IDA, Building 101, 5786 State Route 96, Romulus, New York 14541