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PRESENTATION SLIDES FOR TECHNICAL REVIEW COMMITTEE HELD 3 OCTOBER 1994
TO DISCUSS REMEDIAL INVESTIGATION AT OUTLYING LANDING FIELD BARIN NAS
WHITING FIELD FL
10/3/1994
ABB ENVIRONMENTAL

Technical Review Committee Meeting October 1994

Remedial Investigation

**Outlying Landing Field (OLF) Barin
Foley, Alabama**

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Agenda

- Introduction
- Installation Restoration Program Summary
- OLF Barin Results and Activities
 - Remedial Investigation (RI) Program Summary
 - RI Site Specific Investigations
 - Human Health Risk Assessment Summary
 - Ecological Risk Assessment Summary
 - Additional Investigations in 1994
- Questions, Comments, and Discussion
- Adjourn

Installation Restoration Program

- The Navy Installation Restoration (IR) program is designed to identify and abate or control contaminant migration resulting from past operations at Naval installations.

- Required by
 - CERCLA - Comprehensive Environmental Response, Compensation, and Liability Act (1980)

 - SARA - Superfund Amendments and Reauthorization Act (1986)

Installation Restoration Program (continued)

- Southern Division, Naval Facilities Engineering Command (SOUTHNAVFACENGCOM) along with NAS Whiting Field Public Works Office is responsible for the program in the south-eastern United States.

Summary of Investigative Sites

Site Number	Site Name	Period of Operation	Types of Material Potentially Disposed
19B	Former Hangar Maintenance Area	1942 to 1959	Solvents, petroleum oils, fuels, and electrolytes
20B	Abandoned Underground Storage Tanks and Fuel Pit Area	1942 to 1952	Aviation gas and jet fuel
21B	Rubble Landfill	1959	Waste debris from dismantled buildings
22B	Old Firefighting Demonstration Area	1942 to 1945	Fuels, petroleum oils, and solvents
23B	Drainage Ditch Leading to Sandy Creek	1942 to 1959	Fuels and kerosene
24B	Former Firefighting Training Area	1989 to 1991	Diesel fuel
25B	Machine Gun Butt Area	Mid 1940's to Mid 1960's	Ammunition casings; lead and copper
26B	Abandoned Wastewater Treatment Plant (WWTP)	1942 to 1959	Sewage and chemicals
27B	Uncontrolled Dump Site	Unknown	Civilian household waste
28B	Fuel Pit Drainage Ditch	Mid 1940's to Present	Aviation gas and jet fuel

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Location of Remedial Investigation Study Areas

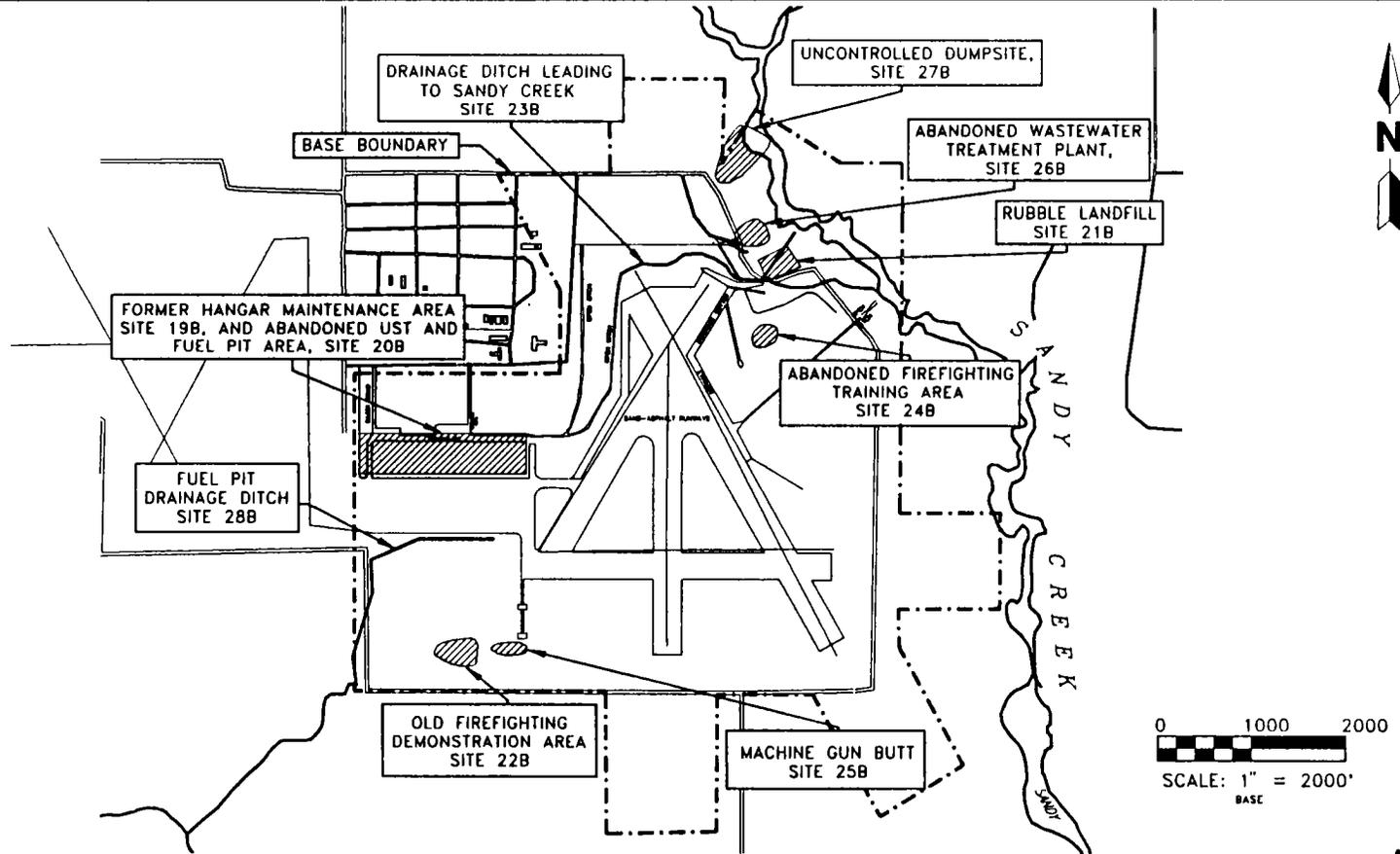


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Remedial Investigation, Sites 19B and 20B

- Investigation Methods
 - Soil Gas Survey
 - 88 sample points
 - Test Pit Activities
 - 9 test pit locations
- Monitoring Well Installation and Groundwater Sampling
 - 9 water table wells
 - 5 deep production zone wells
 - 23 groundwater samples

Monitoring Well Locations Sites 19B and 20B

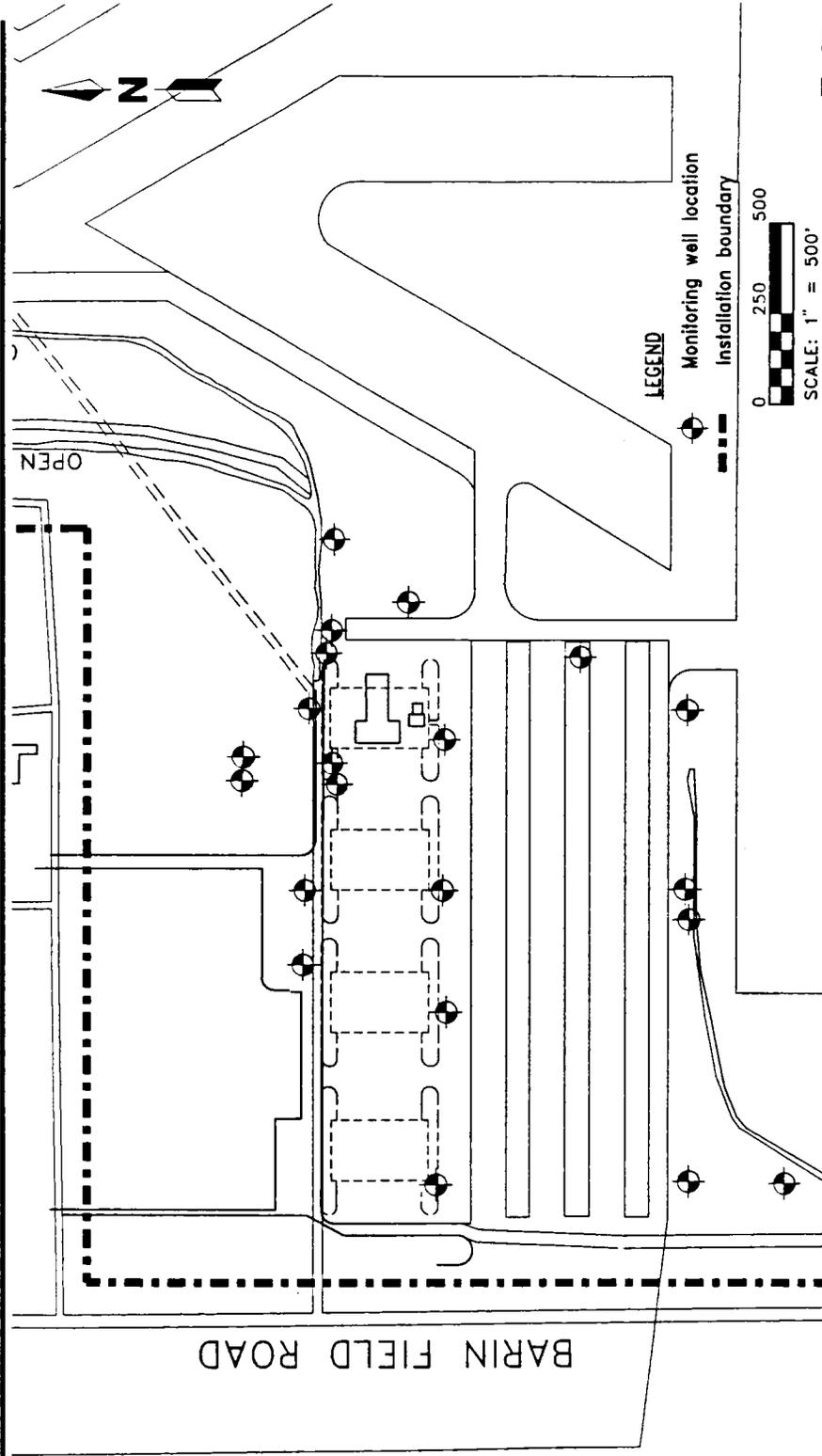


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Remedial Investigation, Sites 19B and 20B

- **Results**
 - **Soil Gas Survey**
 - **No contamination source areas identified**
 - **Test Pit Activities**
 - **No contamination identified**
 - **Groundwater Sampling**
 - **5 organic compounds exceeded regulations**
 - **11 inorganic parameters exceeded regulations**

Remedial Investigation, Site 21B

- Investigation Methods
 - Geophysical Survey
 - 3.1 acres
 - Surface Soil Samples
 - 3 samples collected
 - Test Pitting Activities
 - 3 test pits
 - Monitoring Well Installation and Groundwater Sampling
 - 3 water table wells
 - 3 groundwater samples

Sites 21B, 24B, 25B, 26B, AND 27B Sample Locations

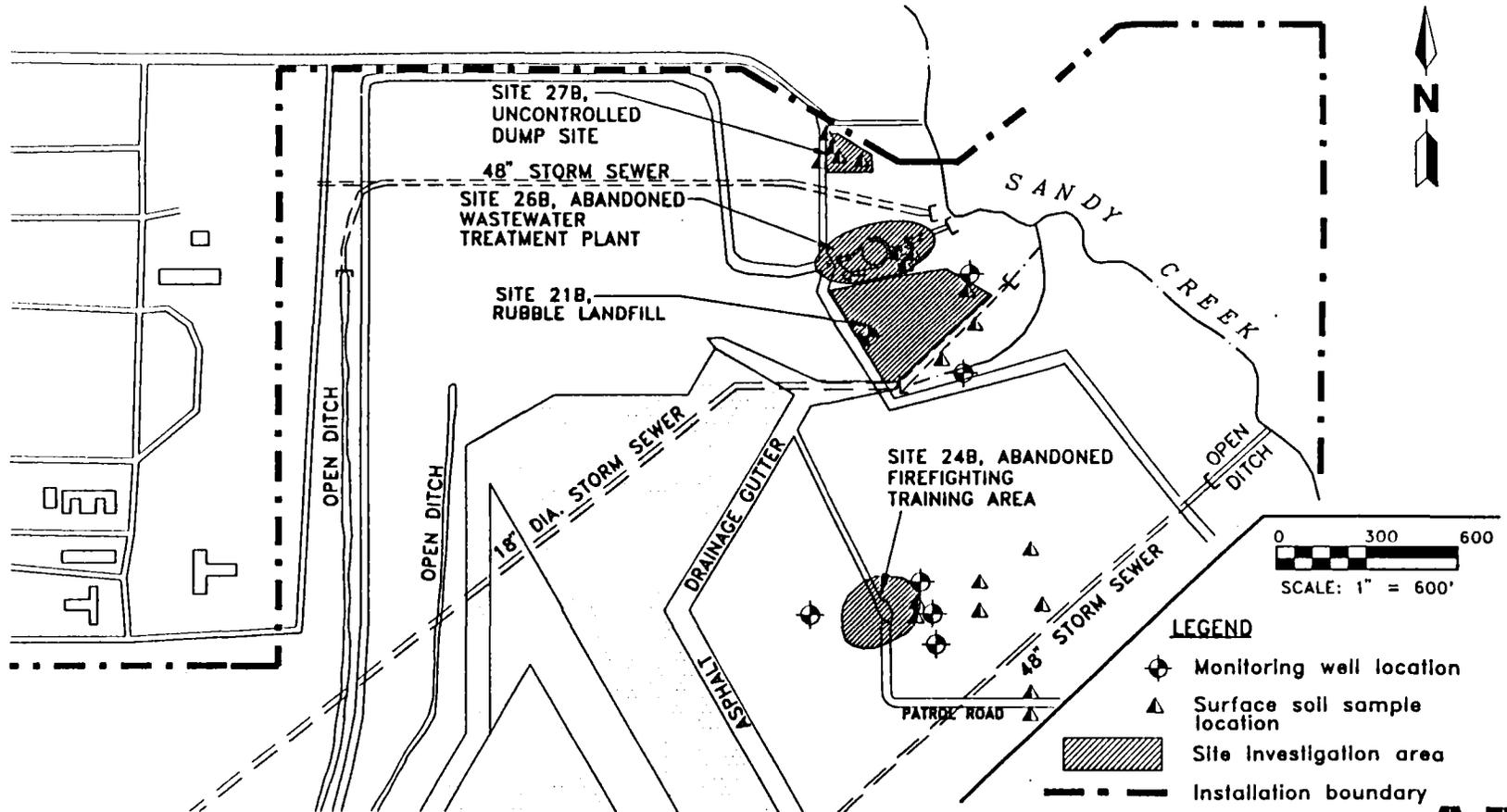


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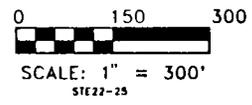
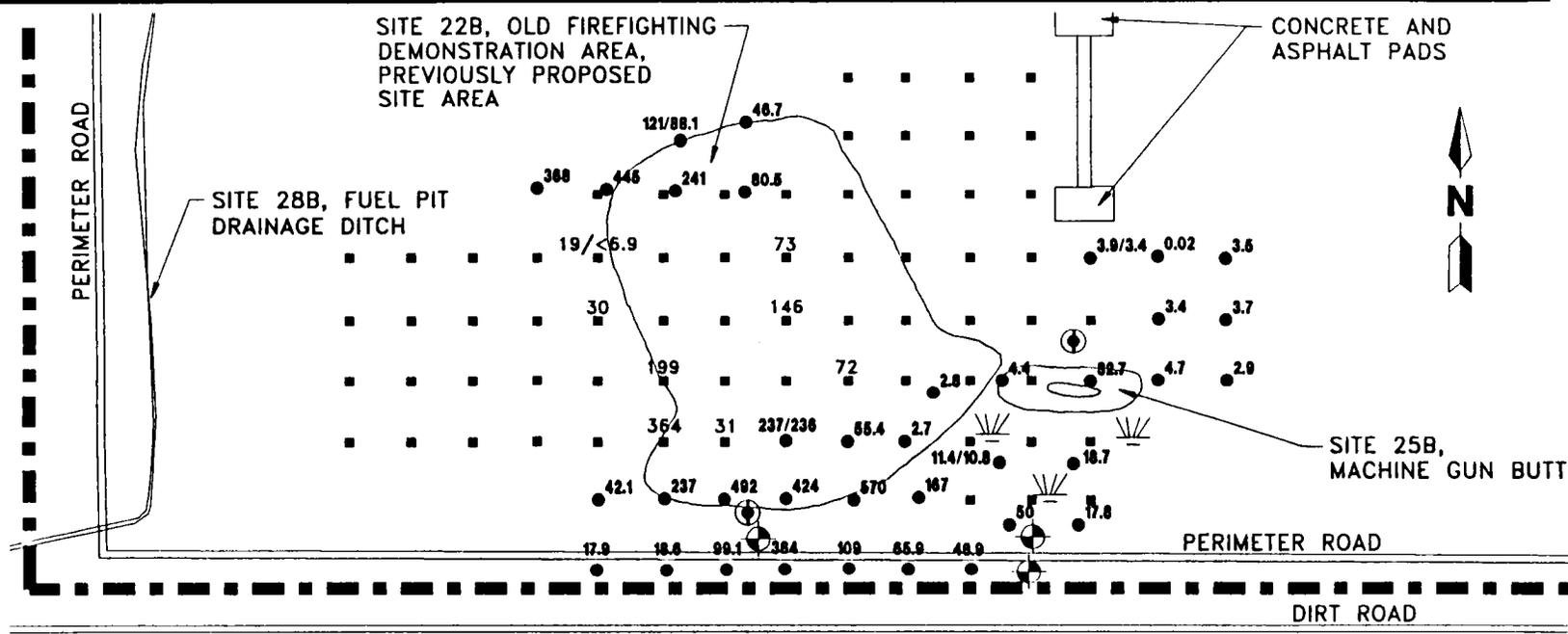
Remedial Investigation, Site 21B

- Results
 - Geophysical Survey
 - Defined landfill boundaries
 - Surface Soil Samples
 - 13 organic compounds detected
 - 9 inorganic parameters exceeded background
 - Test Pitting Activities
 - Confirmed absence of buried materials
 - No organic compounds exceeded background
 - 6 inorganic parameters exceeded background
 - Groundwater Sampling
 - No organic compounds detected
 - 5 inorganic parameters exceed regulations

Remedial Investigation, Sites 22B and 25B

- Investigation Methods
 - Surface Soil Sampling
 - 38 surface soil samples
 - Subsurface Soil Sampling
 - 2 soil borings
 - 5 subsurface soil samples
 - Monitoring Well Installation and Groundwater Sampling
 - 1 water table well
 - 4 groundwater samples

Sites 22B and 25B Surface Soil Sample Analytical Results For Lead



- LEGEND**
- Monitoring well location
 - Soil boring location
 - Installation boundary

- 445 ● RI surface soil sample location and Lead concentrations reported in mg/kg
- 3.9/3.4 ● Lead concentrations in mg/kg detected in sample and duplicate sample
- 73 ■ Site inspection surface soil sample locations and reported lead concentrations in mg/kg; (no concentration indicates compound was not detected)

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Remedial Investigation, Sites 22B and 25B

- **Results**
 - **Surface Soil Sampling**
 - Copper at 6 locations exceeded background
 - Lead at 29 locations exceeded background
 - **Subsurface Soil Sampling**
 - Several organic compounds detected
 - Lead and Copper in one soil boring, increased with depth
 - **Groundwater Sampling**
 - 1 organic compound exceeded regulations
 - 5 inorganic parameters exceeded regulations

Site Assessment and Investigation

Surface Water and Sediment Assessment and Sites 23B and 28B Remedial Investigation

- Investigation Methods
 - Surface Water and Sediment Sampling
 - 5 sediment, Sandy Creek ditch (Site 23B)
 - 2 sediment, Wolf Creek ditch (Site 23B)
 - 10 surface water and sediment (SW/SD), Sandy Creek
 - 3 SW/SD, Wolf Creek
 - Subsurface Soil Sampling
 - 1 soil boring, Sandy Creek ditch (Site 23B)
 - 3 samples from soil boring

Sandy Creek Surface Water and Sediment Sampling Locations

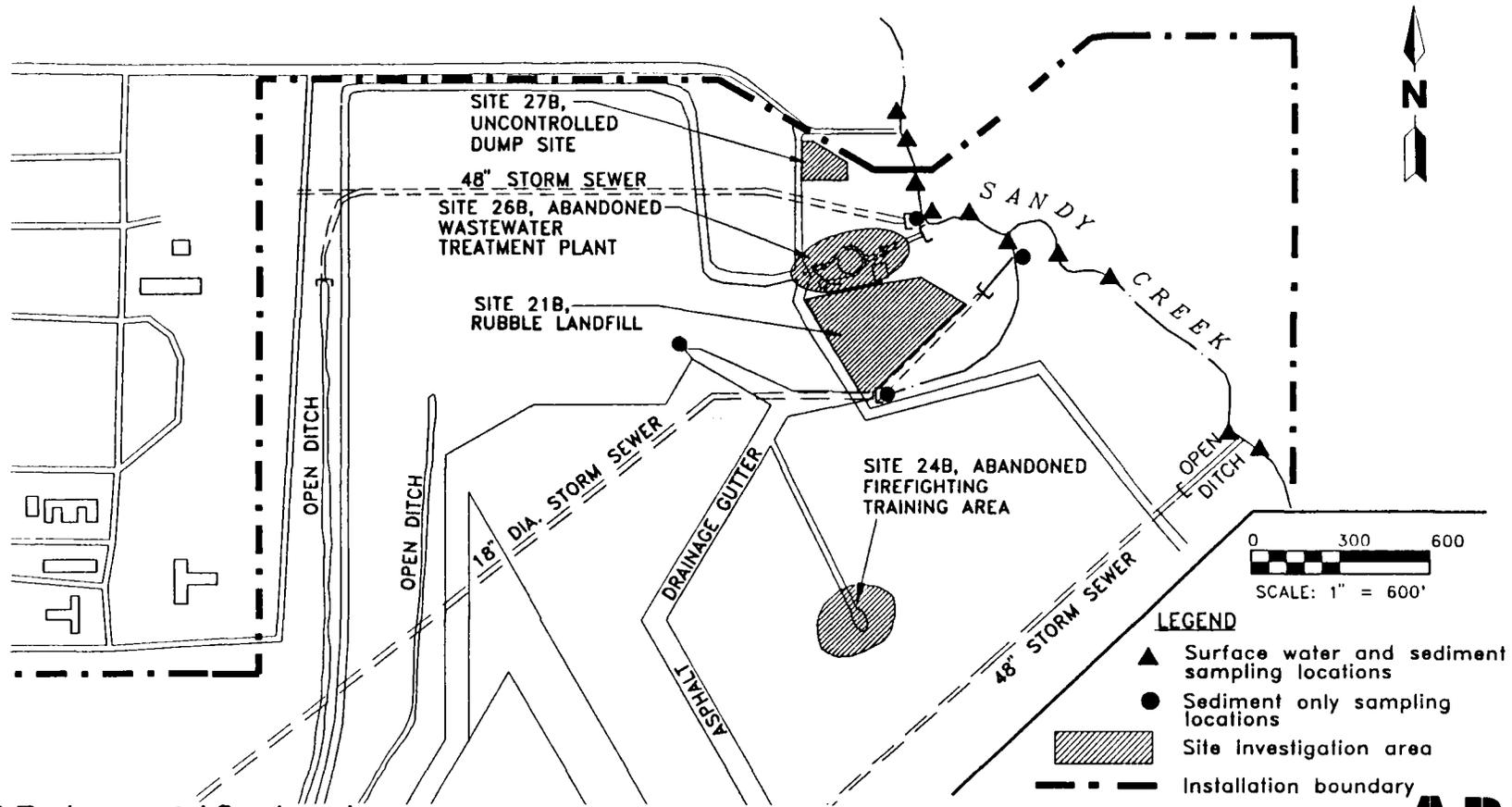


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Wolf Creek Surface Water and Sediment Sampling Locations

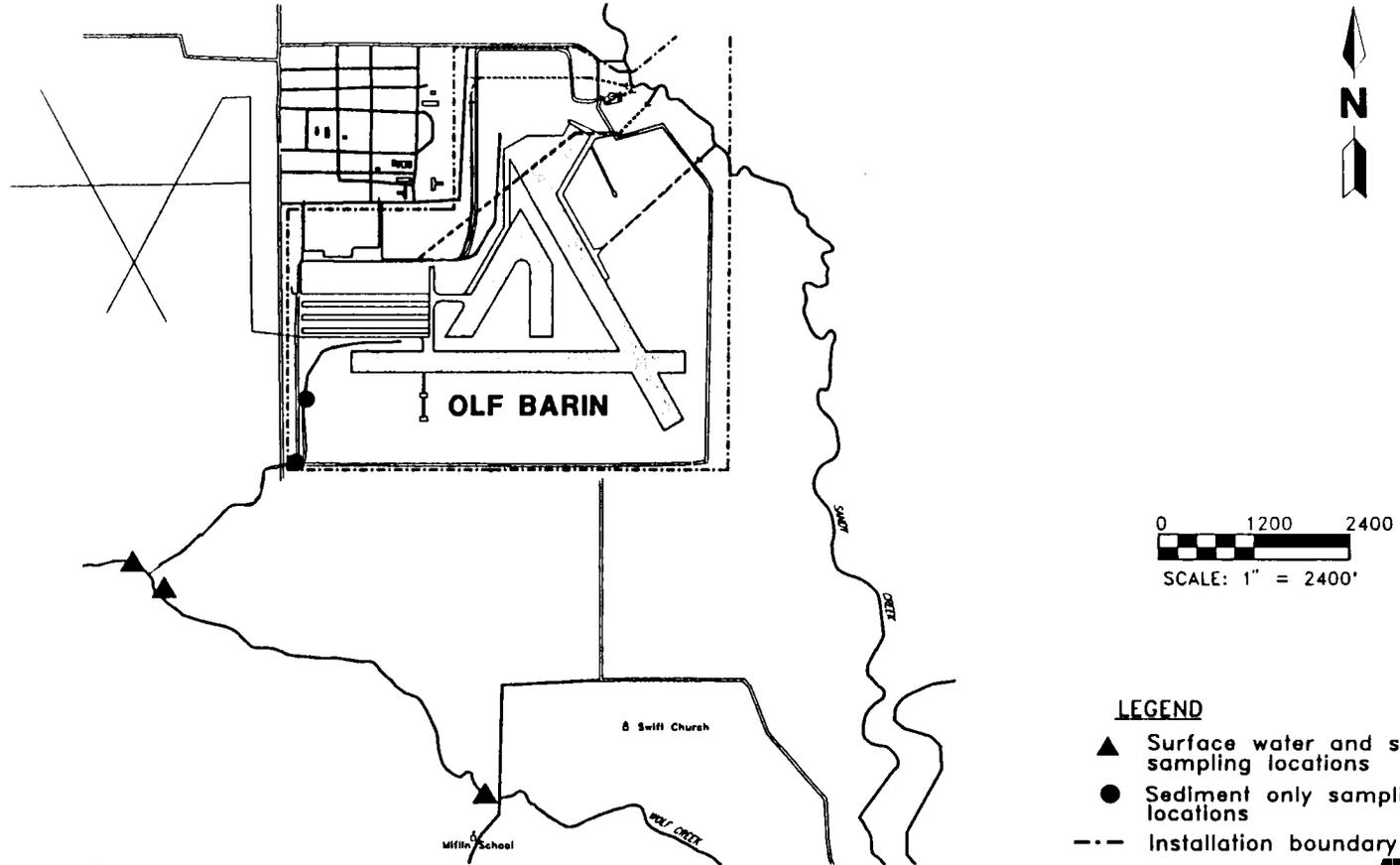


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Remedial Investigation, Sites 23B and 28B

- **Results**
 - **Surface Water and Sediment Sampling**
 - **Semivolatile organic compounds in Sandy Creek upgradient sediment sample**
 - **Numerous organic and inorganic compounds in drainage ditch samples**
 - **Subsurface Soil Sampling**
 - **No organic compounds reported**
 - **7 inorganic analytes exceeded background values**

Remedial Investigation, Site 24B

- Investigation Methods
 - Surface Soil Sampling
 - 6 surface soil samples
 - Subsurface Soil Sampling
 - 1 soil boring
 - 5 subsurface soil samples
 - Monitoring Well Installation and Groundwater Sampling
 - 4 water table wells
 - 4 groundwater samples

Sites 21B, 24B, 25B, 26B, AND 27B Sample Locations

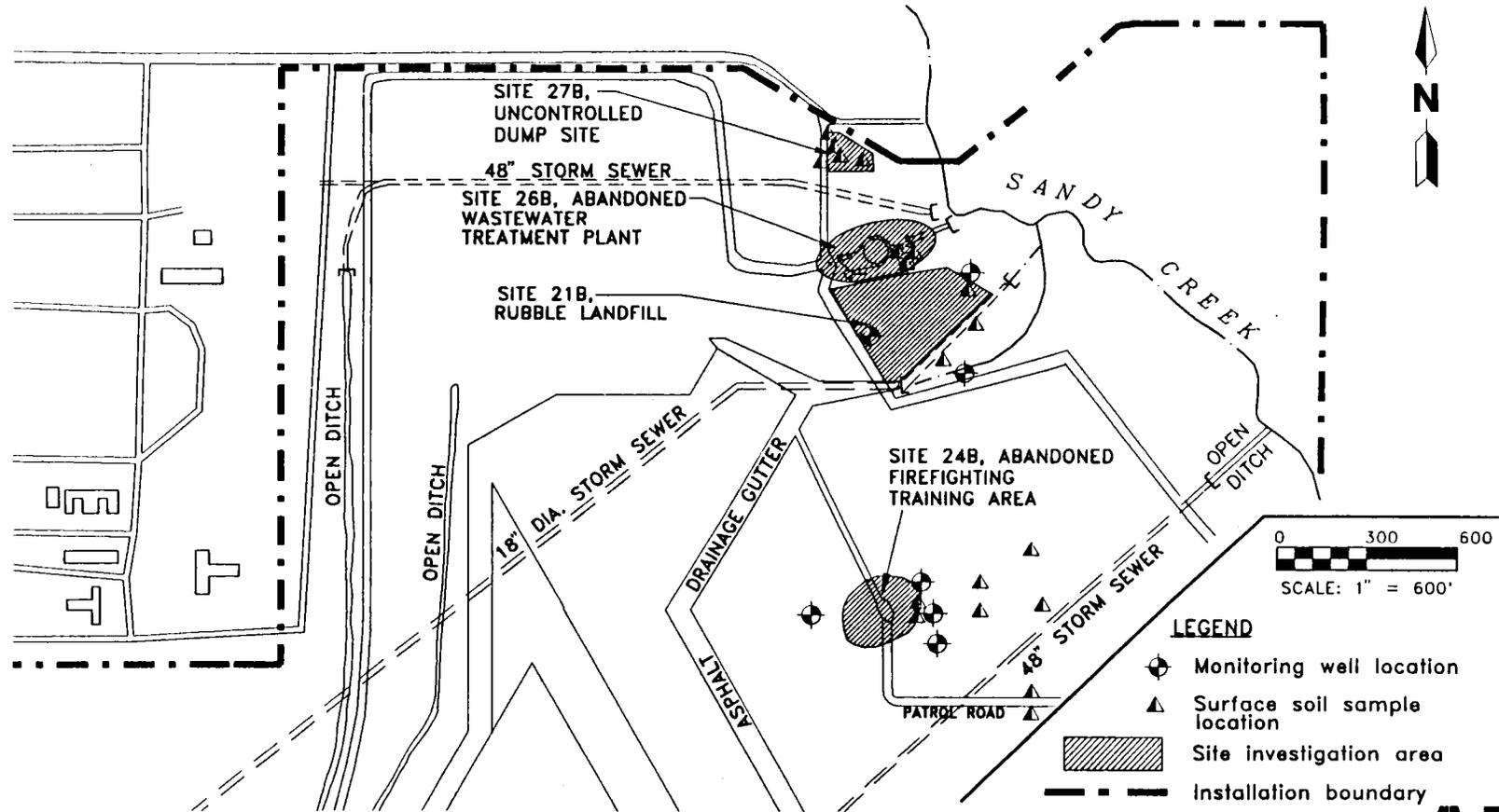


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Remedial Investigation, Site 24B

- Results
 - Surface Soil Sampling
 - 4 PAH compounds exceeded background
 - 5 inorganic compounds exceeded background
 - Subsurface Soil Sampling
 - 1 organic compound detected
 - No inorganic compounds exceeded background
 - Groundwater Sampling
 - no organic compounds detected
 - 5 inorganic parameters exceeded regulations

Remedial Investigation, Sites 26B and 27B

- Investigation Method
 - Surface Soil Sampling
 - 3 samples at Site 26B
 - 5 samples at Site 27B
- Results
 - Surface Soil Sampling
 - Site 26 B:
 - 6 pesticide compounds exceeded background
 - 9 inorganic parameters exceeded background
 - Site 27 B:
 - 3 pesticide compounds exceeded background
 - 4 inorganic parameters exceeded background

Sites 21B, 24B, 25B, 26B, AND 27B Sample Locations

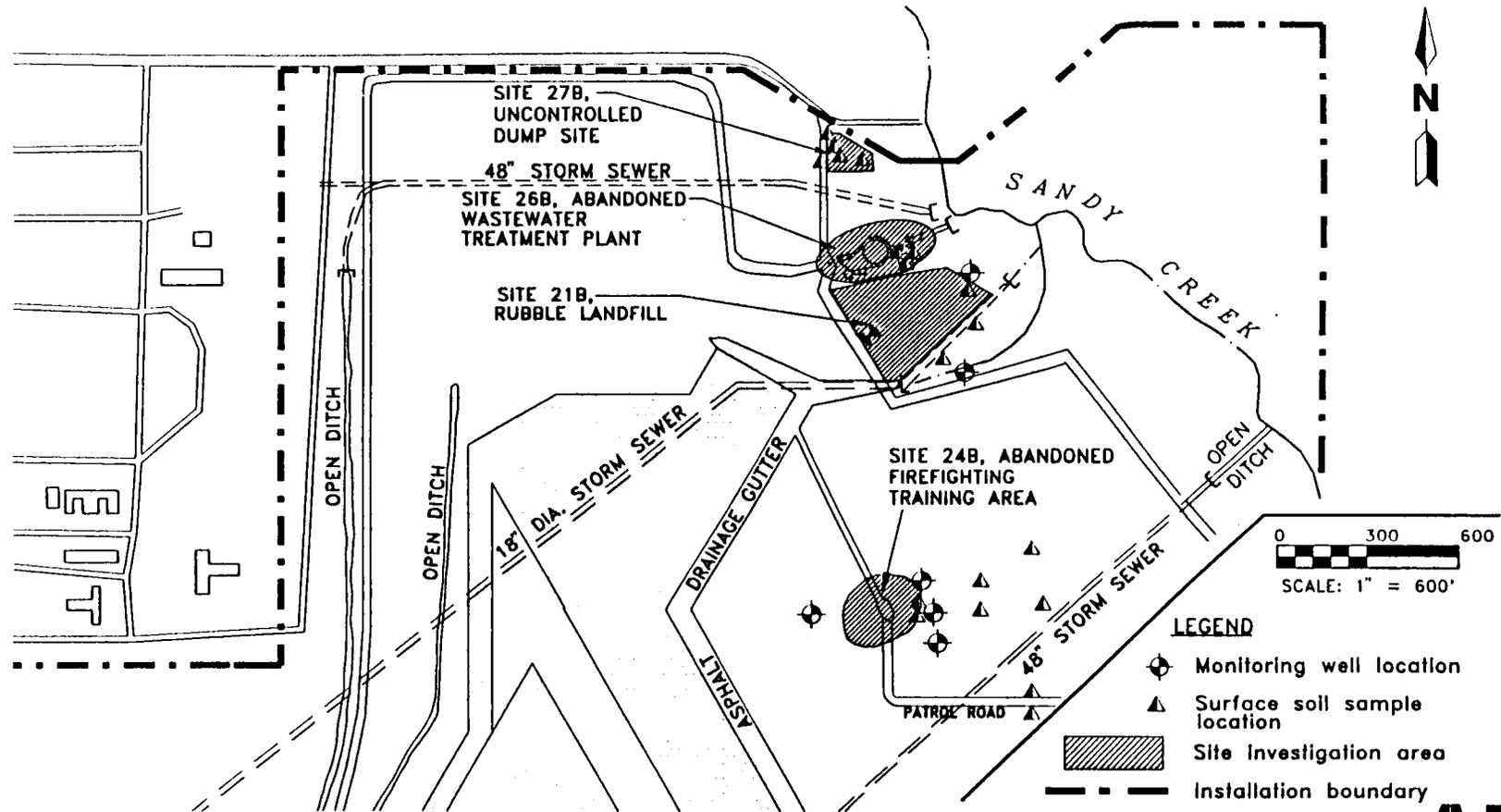
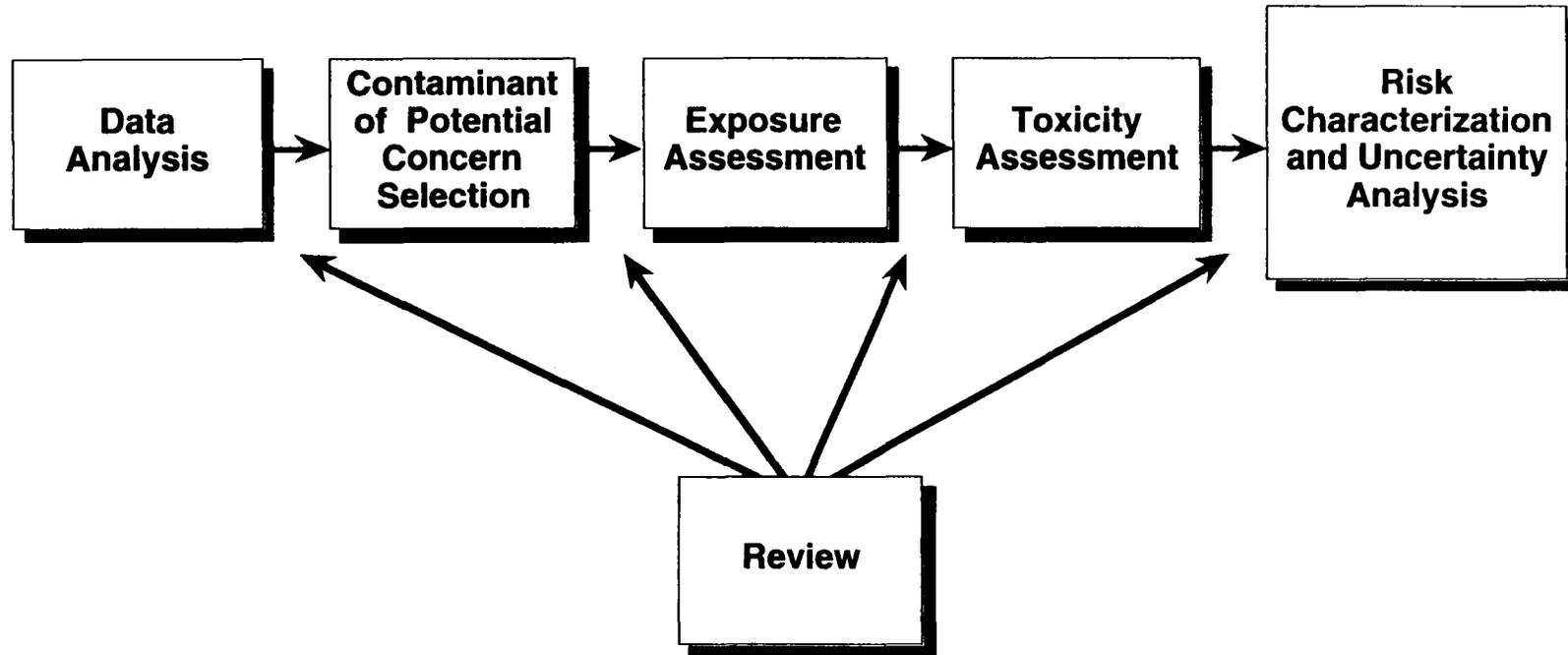


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5 Steps in Risk Assessment



Human Exposure Scenarios

Exposure Medium Exposure Route	Resident (future, except groundwater)	Transient (present and future)	Excavation Worker (present and future)
Surface Soil			
Incidental ingestion	X	X	--
Dermal contact	X	--	--
Subsurface Soil			
Incidental ingestion	¹ --	--	X
Dermal contact	¹ --	--	X
Groundwater			
Incidental ingestion	² X	--	--
¹ Excavation worker scenario used as a surrogate to this exposure route. ² Adult exposure only.		Notes: X = Exposure considered in risk assessment. -- = Exposure not considered in risk assessment	

Human Exposure Scenarios (continued)

Exposure Medium Exposure Route	Resident (future, except groundwater)	Transient (present and future)	Excavation Worker (present and future)
Surface Water			
Ingestion during swimming	X	X	--
Dermal contact during swimming or wading	X	X	--
Sediment			
Ingestion	X	X	--
Dermal contact	X	X	--
Air			
Inhalation of shower vapors	X	X	X
Inhalation of particulate dust	X	X	X
Notes:			
X = Exposure considered in risk assessment.			
-- = Exposure not considered in risk assessment			

Uncertainty Factors of Human Health Risk Assessment

Uncertainty Factor	Results of Uncertainty Factor on Risk
Exposure Point Concentration	Overestimates risk. May grossly overestimate risk over 30 year analysis period
Exposure Scenarios	Overestimates risk.
Population of Receptors	Unknown. May overestimate risk for majority of the population but may underestimate risks for a small segment of the population
Toxicity Assessment, Toxicity Factors	Overestimates risk.
Toxicity Factors, Potentiation or Antagonism	Unknown. May underestimate risks in persons unusually susceptible to toxic effects due to age, genetic predisposition, underlying disease processes, or lifestyle choices.

Results of Human Health Risk Assessment

- No unacceptable risks from surface or subsurface soil, sediment or surface water
- Elevated risks from groundwater at Sites 19B and 20B

Human Health Risk Assessment Recommendations

- Conduct additional groundwater sampling at Sites 19B and 20B
- Revise Human Health Risk Assessment as needed for Sites 19B and 20B
- No further action at remaining OLF Barin sites

Definitions

- Risk
 - The likelihood that an undesired outcome or effect will occur

- Ecological Risk Assessment (ERA)
 - An appraisal of the effects of a hazardous waste site on plants and animals (= Ecological Receptors)

Ecological Risk Assessment

- Evaluate Potential Impacts to:
 - Individual organisms
 - A population of organisms
 - An ecological community

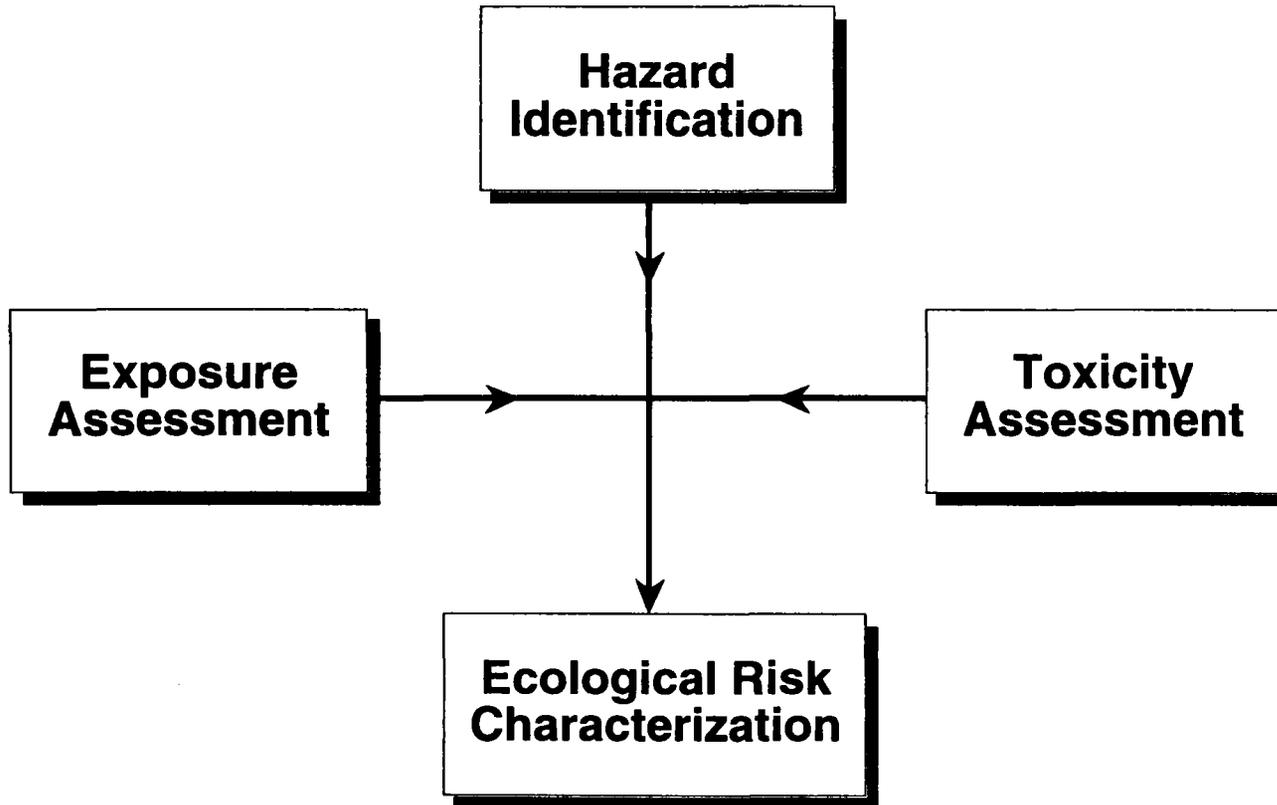
Ecological Risk Assessment can be used to:

- Provide decision makers with information on threats to the environment associated with contaminants or with actions designed to remediate the site
- Direct data collection activities
- Evaluate environmental data to determine if a problem exists
- Direct solutions to a problem
- Communicate with the public and with regulators

How was Ecological Risk evaluated?

- Food Web Modeling
- Comparison to Standards and Criteria
- Laboratory Bioassay
- Field Investigation

Ecological Risk Assessment Process



Results of Ecological Risk Assessment

- Surface soil not a concern, except at Sites 22B and 25B
- Potential risks from exposure to lead in soils at Sites 22B and 25B
- Slightly elevated polynuclear aromatic hydrocarbons (PAHs) in sediment at one Sandy Creek Station

Ecological Risk Assessment Recommendations

- Conduct additional surface soil sampling for lead at Sites 22B and 25B
- Conduct limited bioassessment study to evaluate lead impacts at Sites 22B and 25B
- Re-sample one Sandy Creek sediment sampling station
- Revise Site 22B and Sandy Creek ERAs as needed
- No further action at remaining OLF Barin sites

Technical Review Committee Meeting October 1994

Additional Investigation to Fill Data Gaps

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Summary of Data Gap Field Exploration and Sampling Program

Site No.	Site Name	Surface Water / Sediment	Surface Soil Sampling Analytical / Biological	Soil Boring	Subsurface Soil Sampling	Monitoring Well Installation	Groundwater Sampling
N/A	Facility Wide Background	1/1	--	--	--	--	--
19B & 20B	Former Hangar Maintenance Area and Abandoned UST and Fuel Pit Area	--	--	10	10	--	5
22B	Old Firefighting Demonstration Area	--	22/18	--	--	--	--
25B	Machine Gun Butt Area	--	--	1	1	1	1
NA	Sandy Creek	1/1	--	--	--	--	--
Notes: NA = not applicable -- = no investigation or samples proposed UST = underground storage tank Sites 21B, 23B, 24B, 26B, 27B, 28B and Wolf Creek = no investigation or samples proposed.							

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TECHNICAL REVIEW COMMITTEE MEETING MARCH 1993

**REMEDIAL INVESTIGATION
OUTLYING LANDING FIELD (OLF) BARIN
FOLEY, ALABAMA**



AGENDA

- INTRODUCTION
- STATUS OF INSTALLATION RESTORATION PROGRAM
- RI PROGRAM DISCUSSION
 - INTRODUCTION AND OVERVIEW
 - PREVIOUS INVESTIGATIONS
 - RI PROGRAM SUMMARY
 - RI SITE SPECIFIC INVESTIGATIONS
 - COMMUNITY RELATIONS
- QUESTIONS AND COMMENTS
- SITE VISIT
- ADJOURN



INSTALLATION RESTORATION (IR) PROGRAM (CONTINUED)

- SOUTHERN DIVISION, NAVAL FACILITIES ENGINEERING COMMAND (SOUTHNAVFACENGCOM) IS RESPONSIBLE FOR THE PROGRAM IN THE SOUTHEASTERN UNITED STATES.



INSTALLATION RESTORATION (IR) PROGRAM

■ **THE NAVY INSTALLATION RESTORATION PROGRAM IS DESIGNED TO IDENTIFY AND ABATE OR CONTROL CONTAMINANT MIGRATION RESULTING FROM PAST OPERATIONS AT NAVAL INSTALLATIONS**

■ **REQUIRED BY**

- **CERCLA - COMPREHENSIVE ENVIRONMENTAL RESPONSE, COMPENSATION AND LIABILITY ACT (1980)**
- **SARA - SUPERFUND AMENDMENTS AND REAUTHORIZATION ACT (1986)**



INSTALLATION RESTORATION (IR) PROGRAM (CONTINUED)

■ SCOPE

- IDENTIFICATION, INVESTIGATION, AND CLEANUP OF CONTAMINATION FROM HAZARDOUS SUBSTANCES.

- CORRECTION OF OTHER ENVIRONMENTAL DAMAGE WHICH CREATES AN IMMINENT THREAT TO PUBLIC HEALTH OR THE ENVIRONMENT.



IR PROGRAM COMPONENTS

- **PRELIMINARY ASSESSMENT / SITE INSPECTION (PA/SI)**
- **REMEDIAL INVESTIGATION / FEASIBILITY STUDY (RI/FS)**
- **REMEDIAL DESIGN / REMEDIAL ACTION (RD/RA) AND LONG-TERM MONITORING**

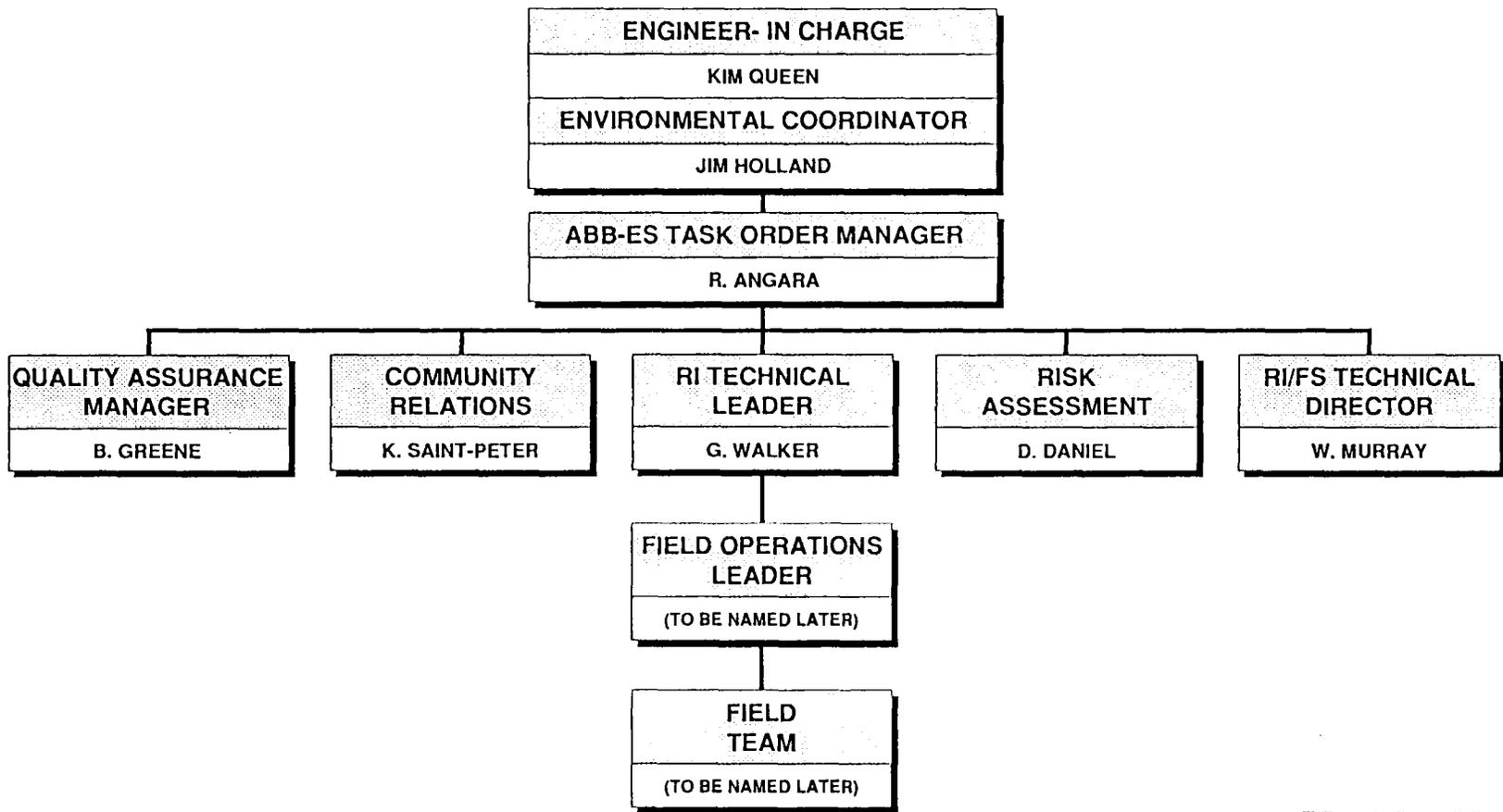


PURPOSE OF TECHNICAL REVIEW COMMITTEE (TRC) MEETING

- REVIEW PREVIOUS INVESTIGATION RESULTS AND FINDINGS
- DISCUSS STATUS OF REMEDIAL INVESTIGATION (RI)
- DISCUSS PROPOSED RI PROGRAM
- DISCUSS TRC COMMENTS AND CONCERNS



PROJECT ORGANIZATION



INTRODUCTION

■ **PREVIOUS INVESTIGATIONS**

- **PRELIMINARY ASSESSMENT (PA) - NEESA (FEBRUARY, 1989)**
- **SITE INSPECTION (SI) - ABB-ES (SEPTEMBER, 1991)**
- **HAZARD RANKING SYSTEM II SCORING - ABB-ES (OCTOBER, 1992)**

■ **INTERIM REMEDIAL MEASURES**

- **TREATMENT SYSTEM INSTALLED ON FACILITY WELL (AUGUST, 1988)**
- **REMEDIAL ACTION PLAN FOR UNDERGROUND STORAGE TANKS (USTS) REMOVAL AND CLOSURE (ERC ENVIRONMENTAL AND ENERGY SERVICES CO., JULY, 1990)**
 - **UST REMOVAL (BARNES ELECTRIC, JANUARY, 1992)**

■ **CURRENT INVESTIGATIONS**

- **REMEDIAL INVESTIGATIONS (RI) - ABB-ES**



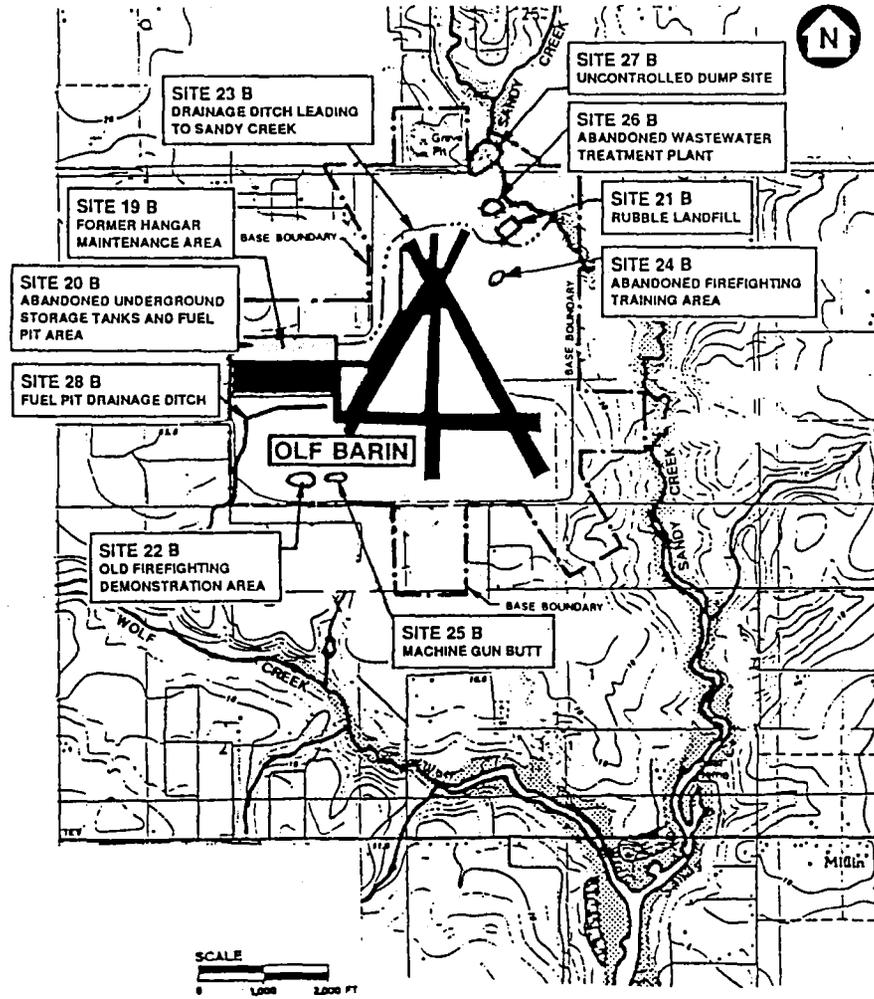
PRELIMINARY ASSESSMENT: NEESA (FEBRUARY, 1989)

- **IDENTIFIED 5 POTENTIAL SOURCE AREA SITES**
 - **SITE 19B: FORMER HANGAR MAINTENANCE AREA**
 - **SITE 20B: ABANDONED UNDERGROUND STORAGE TANKS AND FUEL PIT AREA**
 - **SITE 21B: RUBBLE LANDFILL**
 - **SITE 22B: OLD FIREFIGHTING DEMONSTRATION AREA**
 - **SITE 23B: DRAINAGE DITCH LEADING TO SANDY CREEK**

- **ALL SITES RECOMMENDED FOR FURTHER INVESTIGATION**



LOCATION OF REMEDIAL INVESTIGATION STUDY AREAS

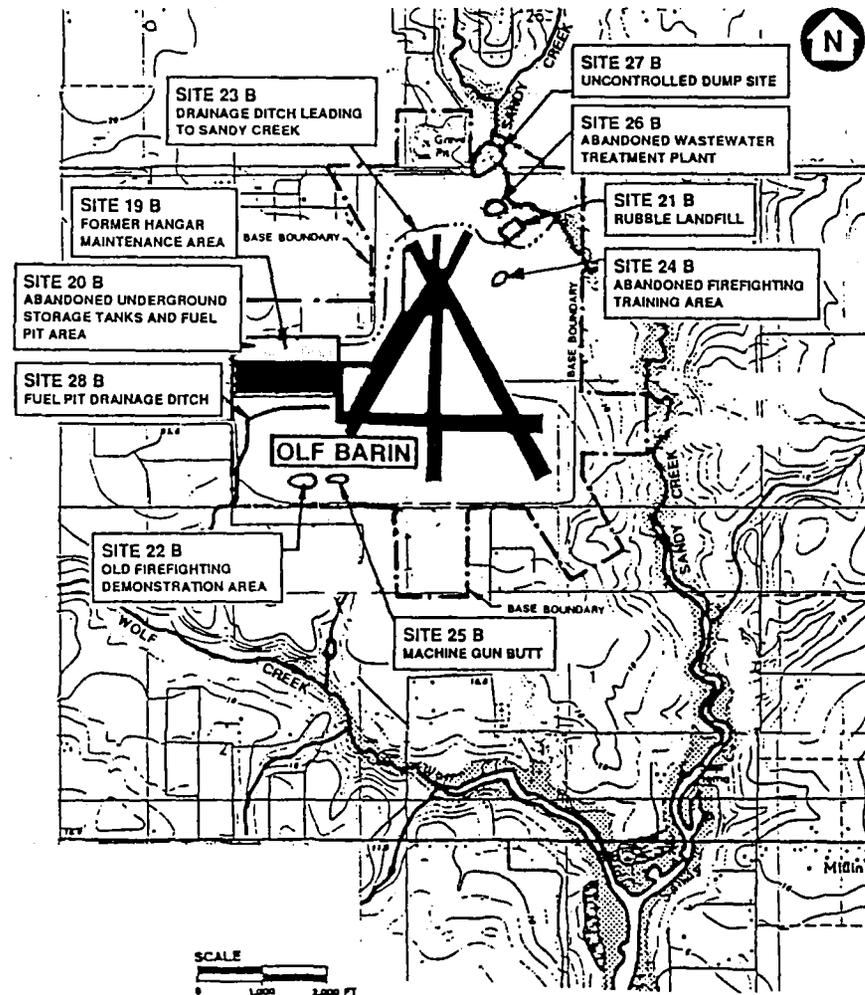


SITE INSPECTION: ABB-ES (SEPTEMBER, 1991)

- INVESTIGATED 5 SITES IDENTIFIED IN PRELIMINARY ASSESSMENT
- THREE SITES ADDED DURING SITE INSPECTION
 - SITE 25B: MACHINE GUN BUTT AREA
 - SITE 26B: ABANDONED WASTEWATER TREATMENT PLANT
 - SITE 27B: UNCONTROLLED DUMP SITE
- RESULTS OF INVESTIGATION
 - ALL SITES REQUIRE ADDITIONAL INVESTIGATION
 - RECOMMEND HRS II SCORING OF THREE SITE GROUPS



LOCATION OF REMEDIAL INVESTIGATION STUDY AREAS



HAZARD RANKING SYSTEM II SCORING: ABB-ES (OCTOBER, 1992)

■ FACILITY SCORED AS 3 SITE GROUPS

- GROUP 1 (SITES 19B, 20B, AND 23B) SCORE 26.11**
- GROUP 2 (SITES 21B, 26B, AND 27B) SCORE 50.01**
- GROUP 3 (SITES 22B AND 25B) SCORE 7.71**

■ TOTAL COMBINED FACILITY SCORE: 56.38

■ TOTAL COMBINED FACILITY SCORE BASED ON:

- GROUP 1 - GROUNDWATER PATHWAY SCORE**
- GROUP 2 - SURFACE WATER PATHWAY SCORE**
- GROUP 3 - SOILS EXPOSURE SCORE**

■ AIR PATHWAY WAS NOT SIGNIFICANT

- SCORE 1.45**



RI PROGRAM SUMMARY

- DATA QUALITY OBJECTIVES
- PRELIMINARY ACTIVITIES
- COMMUNITY RELATIONS
- FIELD INVESTIGATIVE TASKS
- LABORATORY ANALYSIS
- DATA ASSESSMENT
- DATA MANAGEMENT
- RI TECHNICAL MEMORANDA PREPARATION
- BASELINE RISK ASSESSMENT

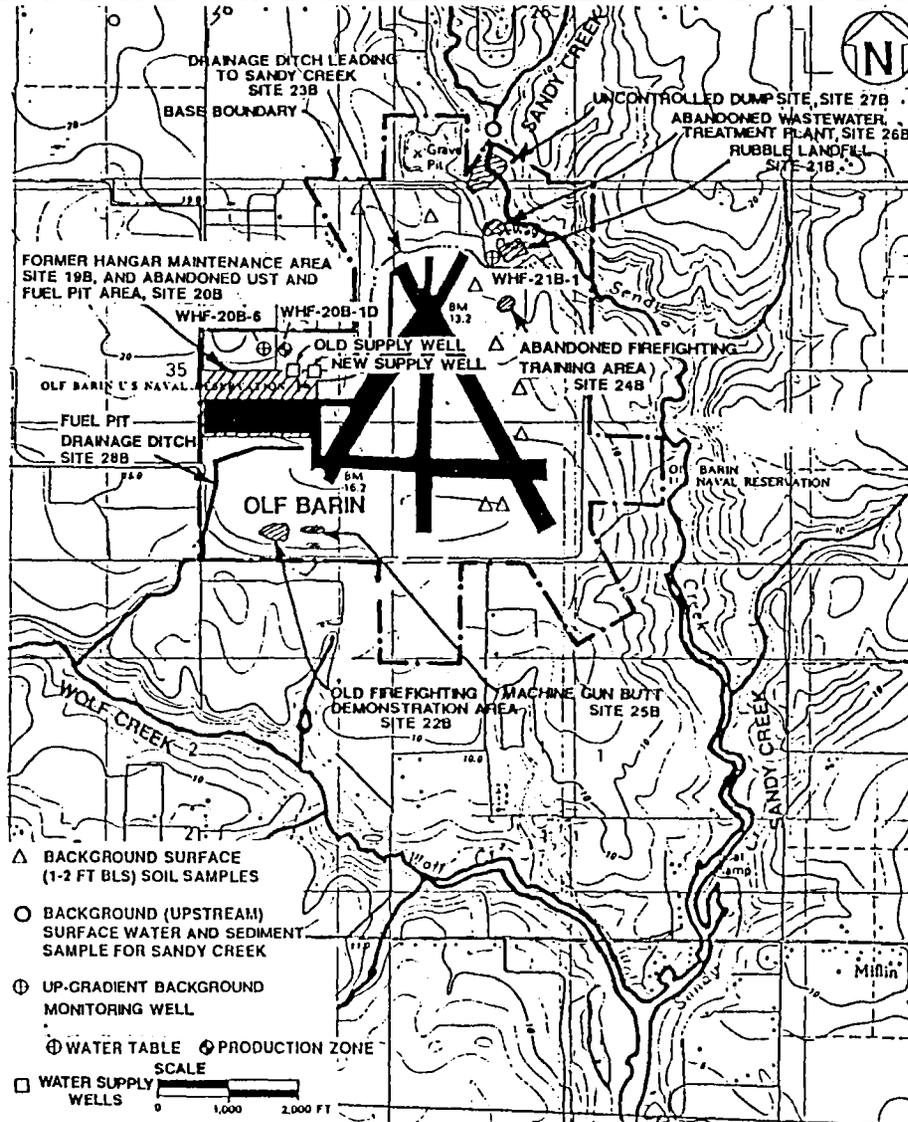


BACKGROUND - PROPOSED ANALYTICAL SUMMARY

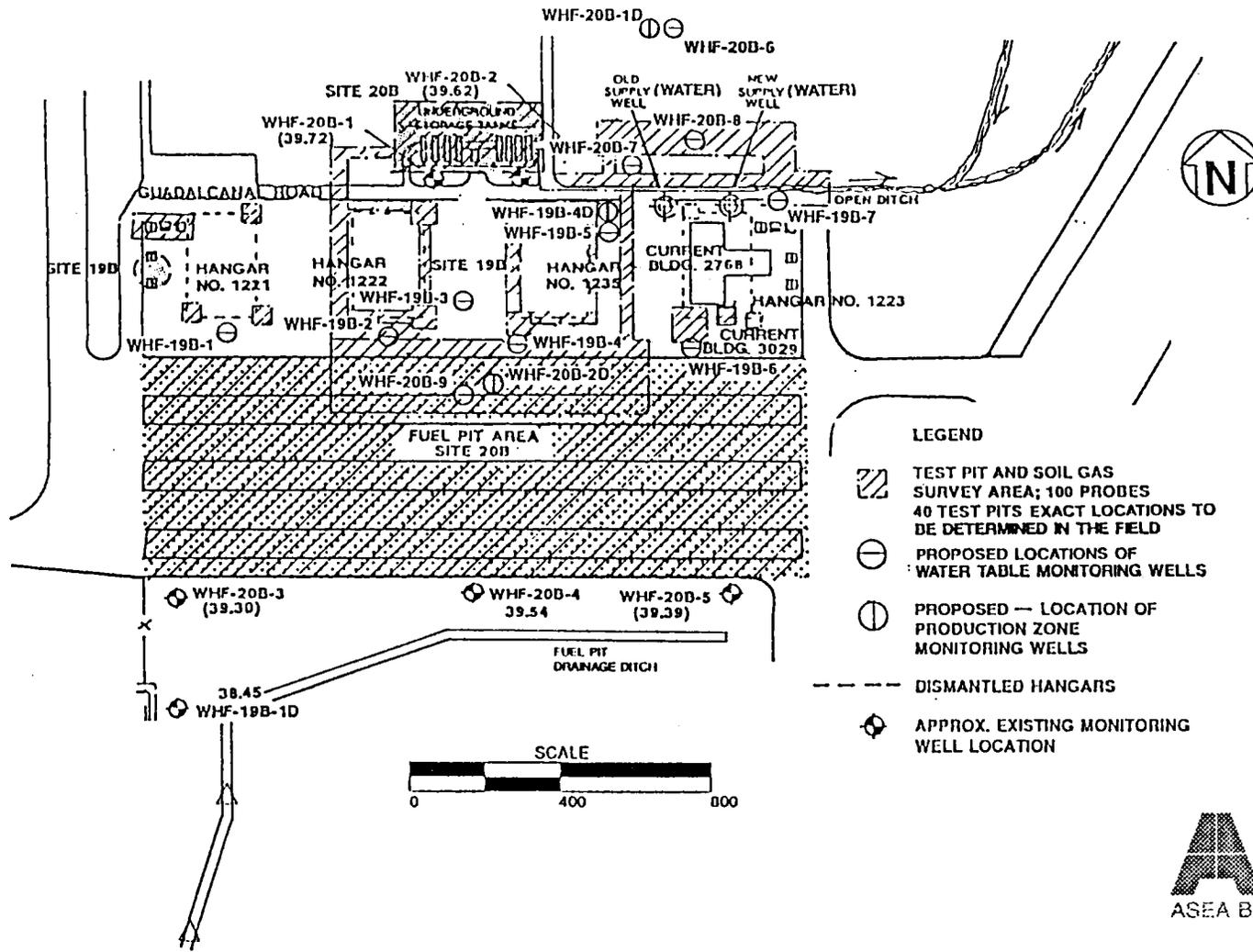
SAMPLE DESCRIPTION	TYPE OF SAMPLE	VOC BY GC (Including xylenes and MTBE)	VOC BY GC/MS	SVOCs BY GC/MS	PESTI-CIDES/PCBs	PAHs BY HPLC	TOTAL PETROLEUM HYDRO-CARBONS	NO. OF SAMPLES			TOTAL CYANIDE
								METALS			
								TAL	LEAD ONLY	COPPER ONLY	
SITE-WIDE BACKGROUND (GROUNDWATER BACKGROUNDS INCLUDED WITH UPGRADIENT WELLS FOR SITES 19B/20B AND 21B; SURFACE WATER AND SEDIMENT WITH SANDY CREEK)	SO	0	0	0	8	8	0	8	0	0	8



LOCATION OF INSTALLATION-WIDE RECOMMENDED SAMPLING LOCATIONS



SITES 19B AND 20B - PROPOSED EXPLORATION PROGRAMS



SITES 19B AND 20B - HISTORICAL DATA SUMMARY

SITE NUMBER	SITE NAME	MATERIALS DISPOSED	MATRIX	FREQUENCY OF DETECTION	MAXIMUM CONC. (mg/kg)	MATRIX	FREQUENCY OF DETECTION	MAXIMUM CONC. (µg/l)
19B	FORMER HANGAR MAINTENANCE AREA INCLUDING THE INSTALLATION WATER SUPPLY AREAS	SOLVENTS, OILS, AND FUELS	<u>SOIL</u>	NA	NA	<u>GROUNDWATER</u>	4/9	30
			NOT DETECTED			LEAD		
19B			<u>SEDIMENT</u>	NA	NA	<u>SURFACE WATER</u>	NA	NA
			NOT SAMPLED			NOT DETECTED		
20B	ABANDONED USTs AND FUEL PIT AREA	FUELS AND AVGAS	<u>SOIL</u>	NA	NA	<u>GROUNDWATER</u>	3/9	5.9
			NOT SAMPLED			MERCURY	2/2	8
20B						TETRACHLOROETHENE	2/2	6
20B			<u>SEDIMENT</u>	NA	NA	<u>SURFACE WATER</u>	NA	NA
			NOT SAMPLED			NOT SAMPLED		

NA = NOT APPLICABLE

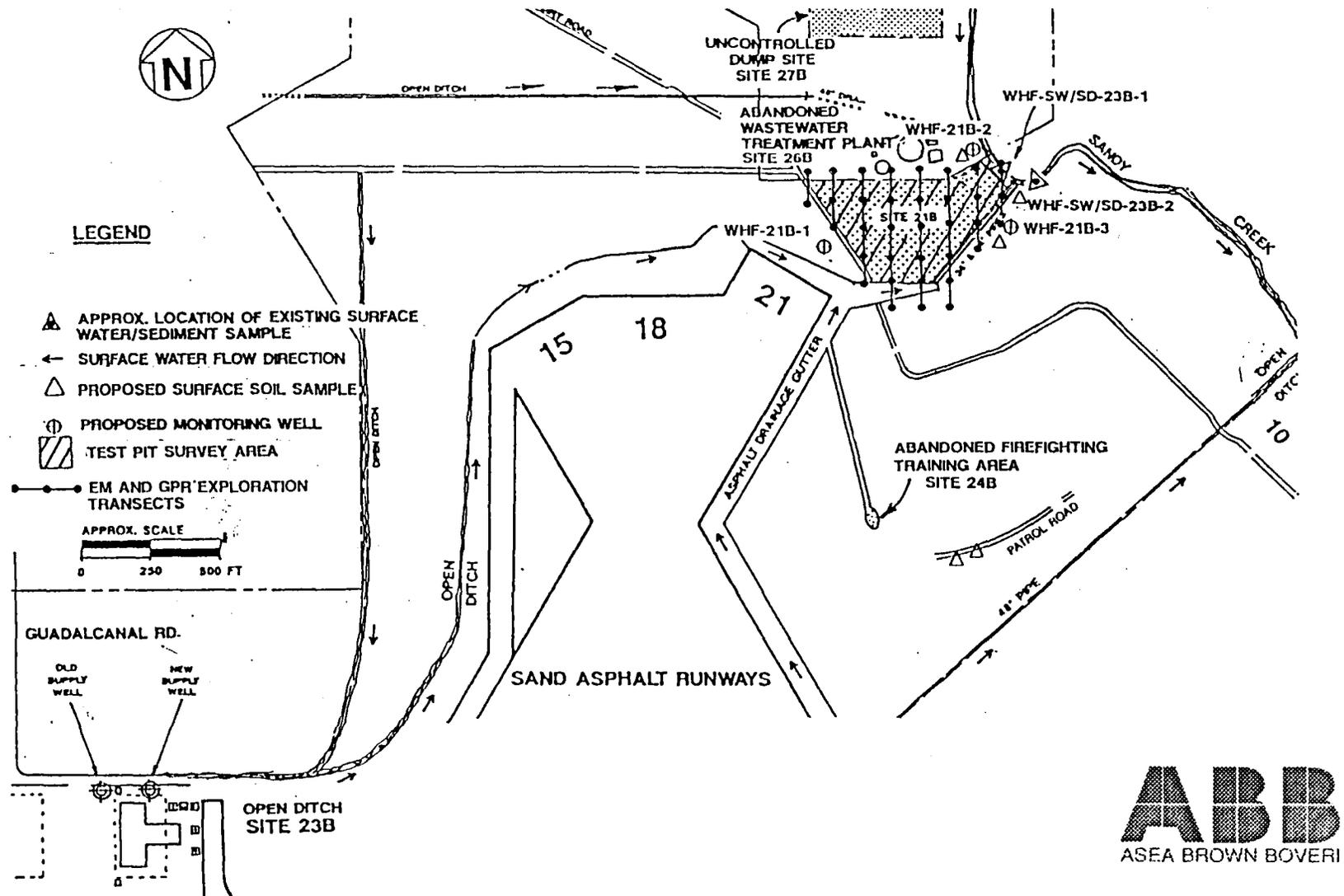


SITES 19B AND 20B - PROPOSED ANALYTICAL SUMMARY

SAMPLE DESCRIPTION	TYPE OF SAMPLE	VOC BY GC (Including xylenes and MTBE)	VOC BY GC/MS	SVOCs BY GC/MS	PESTICIDES/PCBs	PAHs BY HPLC	TOTAL PETROLEUM HYDROCARBONS	METALS			TOTAL CYANIDE
								TAL	LEAD ONLY	COPPER ONLY	
								PRODUCTION WELL	GW	0	
PRODUCTION WELL (PUMPING TEST)	GW	3	0	0	0	0	0	0	0	0	0
MONITORING WELLS (22 NEW AND EXISTING WELLS)	GW	0	22	22	22	0	0	22	0	0	22
MONITORING WELLS (PUMPING TEST)	GW	15	0	0	0	0	0	0	0	0	0
TEST PITS	SO	0	20	0	0	0	0	0	0	0	0



SITE 21B - PROPOSED EXPLORATION PROGRAM



SITE 21B - HISTORICAL DATA SUMMARY

SITE NUMBER	SITE NAME	MATERIALS DISPOSED	MATRIX	FREQUENCY OF DETECTION	MAXIMUM CONC. ($\mu\text{g/l}$)	MATRIX	FREQUENCY OF DETECTION	MAXIMUM CONC. ($\mu\text{g/l}$)
			<u>SOIL</u>			<u>GROUNDWATER</u>		
21B	RUBBLE LANDFILL INCLUDING SANDY CREEK	DEBRIS FROM DISMANTLED BUILDINGS	METHYLENE CHLORIDE	1/4	448	NOT SAMPLED	NA	NA
			<u>SEDIMENT</u>			<u>SURFACE WATER</u>		
			METHYLENE CHLORIDE	2/3	113	CYANIDE	1/3	6
			TOLUENE	3/3	229			
			DDT	2/3	14			
			DDE	2/3	5			
			DDD	2/3	2			
			DIELDRIN	2/3	10			
			XYLENES	3/3	286			
			ETHYLBENZENE	3/3	57			

NA = NOT APPLICABLE

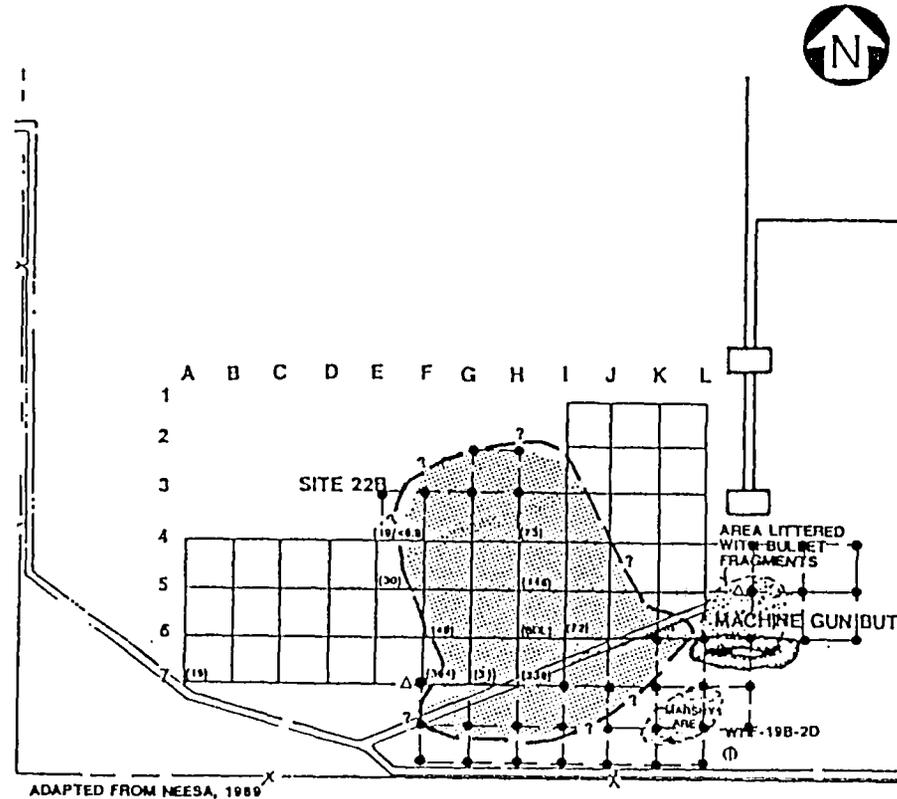


SITE 21B - PROPOSED ANALYTICAL SUMMARY

SAMPLE DESCRIPTION	TYPE OF SAMPLE	VOC BY GC (Including xylenes and MTBE)	VOC BY GC/MS	SVOCs BY GC/MS	PESTICIDES/PCBs	PAHs BY HPLC	TOTAL PETROLEUM HYDRO-CARBONS	NO. OF SAMPLES			TOTAL CYANIDE
								METALS			
								TAL	LEAD ONLY	COPPER ONLY	
MONITORING WELLS (3 WELLS)	GW	0	3	3	3	0	0	3	0	0	3
SURFACE SOIL	SO	0	3	3	3	0	0	3	0	0	3
TEST PITS (3 PITS)	SO	0	3	3	3	0	0	3	0	0	3



SITES 22B AND 25B - PROPOSED EXPLORATION PROGRAMS



LEGEND

- NEW GRID SECTION SURFACE SOIL SAMPLING LOCATIONS
- △ SOIL BORING AND SUBSURFACE SAMPLE LOCATION
- SOIL SAMPLING GRID
- (384) LEAD CONCENTRATION (mg/kg)
- ⊕ EXISTING MONITORING WELL

■ AREA OF ELEVATED LEAD CONCENTRATION

APPROX. SCALE
0 150 300



SITE 22B - HISTORICAL DATA SUMMARY

SITE NUMBER	SITE NAME	MATERIALS DISPOSED	MATRIX	FREQUENCY OF DETECTION	MAXIMUM CONC. (mg/kg)	MATRIX	FREQUENCY OF DETECTION	MAXIMUM CONC. (µg/l)
			<u>SOIL</u>			<u>GROUNDWATER</u>		
22B	OLD FIREFIGHTING DEMONSTRATION AREA	FUELS, OILS, AND SPENT SOLVENTS	LEAD	10/54	364	NOT SAMPLED	NA	NA
			<u>SEDIMENT</u>			<u>SURFACE WATER</u>		
			NOT SAMPLED	NA	NA	NOT SAMPLED	NA	NA

NA = NOT APPLICABLE

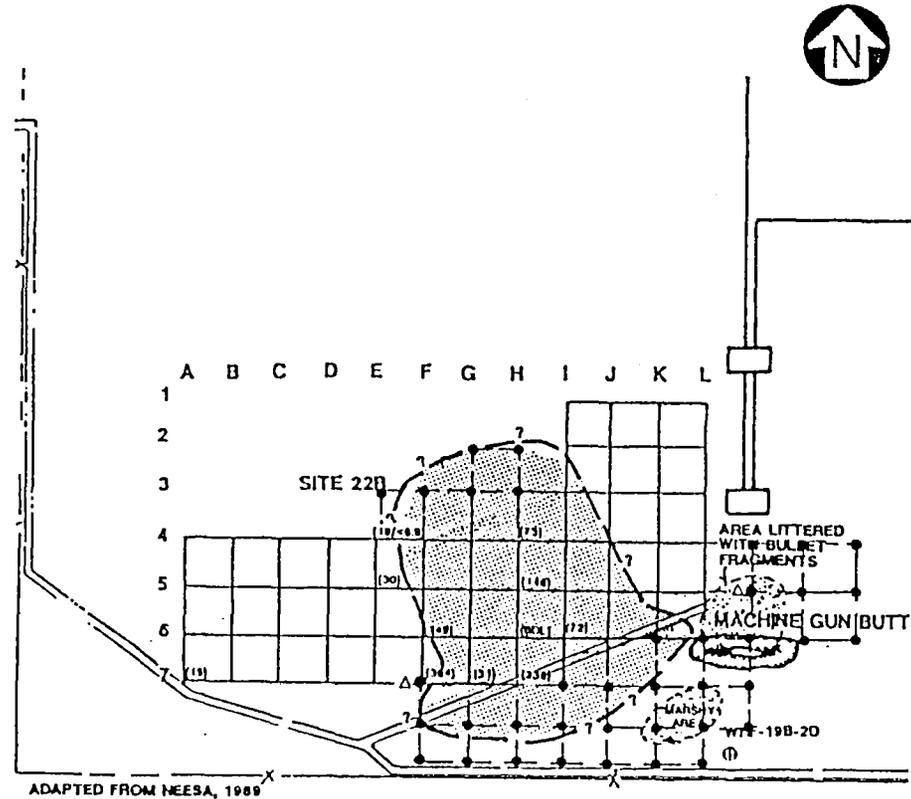


SITE 22B - PROPOSED ANALYTICAL SUMMARY

SAMPLE DESCRIPTION	TYPE OF SAMPLE	VOC BY GC (Including xylenes and MTBE)	VOC BY GC/MS	SVOCs BY GC/MS	PESTICIDES/PCBs	PAHs BY HPLC	TOTAL PETROLEUM HYDROCARBONS	NO. OF SAMPLES			TOTAL CYANIDE
								METALS			
								TAL	LEAD ONLY	COPPER ONLY	
SURFACE SOIL	SO	0	0	0	0	0	0	0	22	22	0
1 SOIL BORING (4 SAMPLES - 0, 3, 10, WT)	SO	0	0	0	0	4	0	0	4	4	0



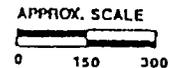
SITES 22B AND 25B - PROPOSED EXPLORATION PROGRAMS



LEGEND

- ◆ NEW GRID SECTION SURFACE SOIL SAMPLING LOCATIONS
- △ SOIL BORING AND SUBSURFACE SAMPLE LOCATION
- SOIL SAMPLING GRID
- (364) LEAD CONCENTRATION (mg/kg)
- Ⓞ EXISTING MONITORING WELL

■ AREA OF ELEVATED LEAD CONCENTRATION



SITE 25B - PROPOSED ANALYTICAL SUMMARY

SAMPLE DESCRIPTION	TYPE OF SAMPLE	VOC BY GC (Including xylenes and MTBE)	VOC BY GC/MS	SVOCs BY GC/MS	PESTI- CIDES/ PCBs	PAHs BY HPLC	TOTAL PETROLEUM HYDRO- CARBONS	NO. OF SAMPLES			TOTAL CYANIDE
								METALS			
								TAL	LEAD ONLY	COPPER ONLY	
MACHINE GUN BUTT SURFACE SOIL	SO	0	0	0	0	0	0	14	14	0	
1 SOIL BORING (4 SAMPLES - 0,3, 10, WT)	SO	0	0	0	0	4	0	4	4	0	
DISPLACED MACHINE GUN BUTT SOIL	SO	0	0	0	0	0	0	2	2	0	



SITE 23B - PROPOSED ANALYTICAL SUMMARY

SAMPLE DESCRIPTION	TYPE OF SAMPLE	VOC BY GC (Including xylenes and MTBE)	VOC BY GC/MS	SVOCs BY GC/MS	PESTICIDES/PCBs	PAHs BY HPLC	TOTAL PETROLEUM HYDRO-CARBONS	NO. OF SAMPLES			TOTAL CYANIDE
								METALS			
								TAL	LEAD ONLY	COPPER ONLY	
DRAINAGE DITCH LEADING TO SANDY CREEK											
UPPER DITCH AT GUDALCANAL ROAD (SOIL BORING, 3 SAMPLES)	SO	0	3	3	3	0	0	3	0	0	3
NORTHERN DITCH OUTFALL	SO/SD	0	1	1	1	0	0	1	0	0	1
SOUTHERN DITCH OUTFALL	SO/SD	0	1	1	1	0	0	1	0	0	1
18-INCH STORM SEWER OUTFALL	SO/SD	0	3	3	3	0	0	3	0	0	3
SANDY CREEK	SW/SD	0	10	10	10	0	0	10	0	0	10



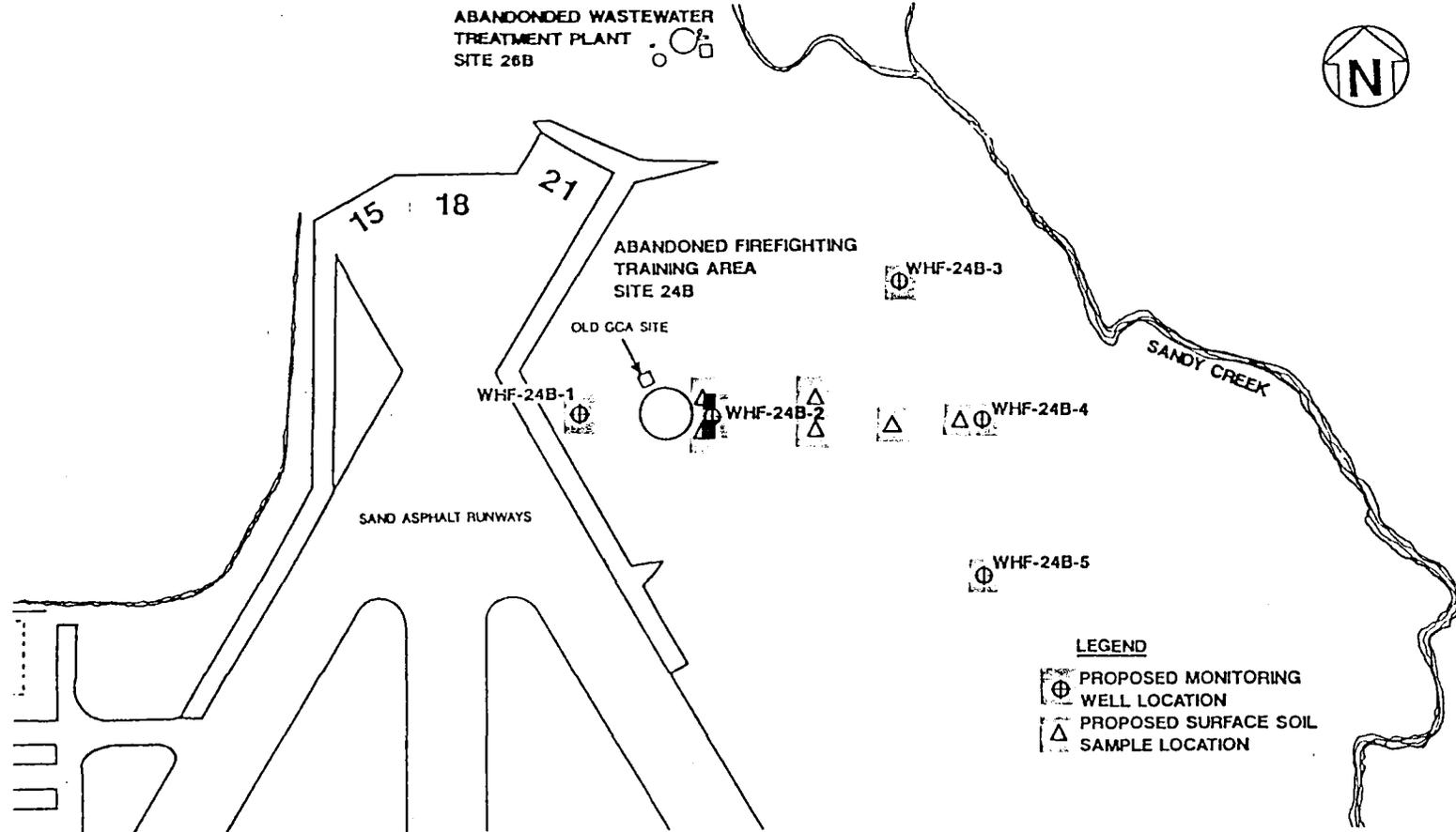
SITE 23B - HISTORICAL DATA SUMMARY

SITE NUMBER	SITE NAME	MATERIALS DISPOSED	MATRIX	FREQUENCY OF DETECTION	MAXIMUM CONC. (µg/kg)	MATRIX	FREQUENCY OF DETECTION	MAXIMUM CONC. (µg/l)
			<u>SOIL</u>			<u>GROUNDWATER</u>		
23B	DRAINAGE DITCH TO SANDY CREEK	FUEL	NOT DETECTED	NA	NA	NOT SAMPLED	NA	NA
			<u>SEDIMENT</u>			<u>SURFACE WATER</u>		
			METHYLENE CHLORIDE	2/3	113	CYANIDE	1/3	6
			TOLUENE	3/3	229			
			DDT	2/3	14			
			DDE	2/3	5			
			DDD	2/3	2			
			DIELDRIN	2/3	10			
			XYLENES	3/3	286			
			ETHYLBENZENE	3/3	57			

NA = NOT APPLICABLE



SITE 24B - PROPOSED EXPLORATION PROGRAM

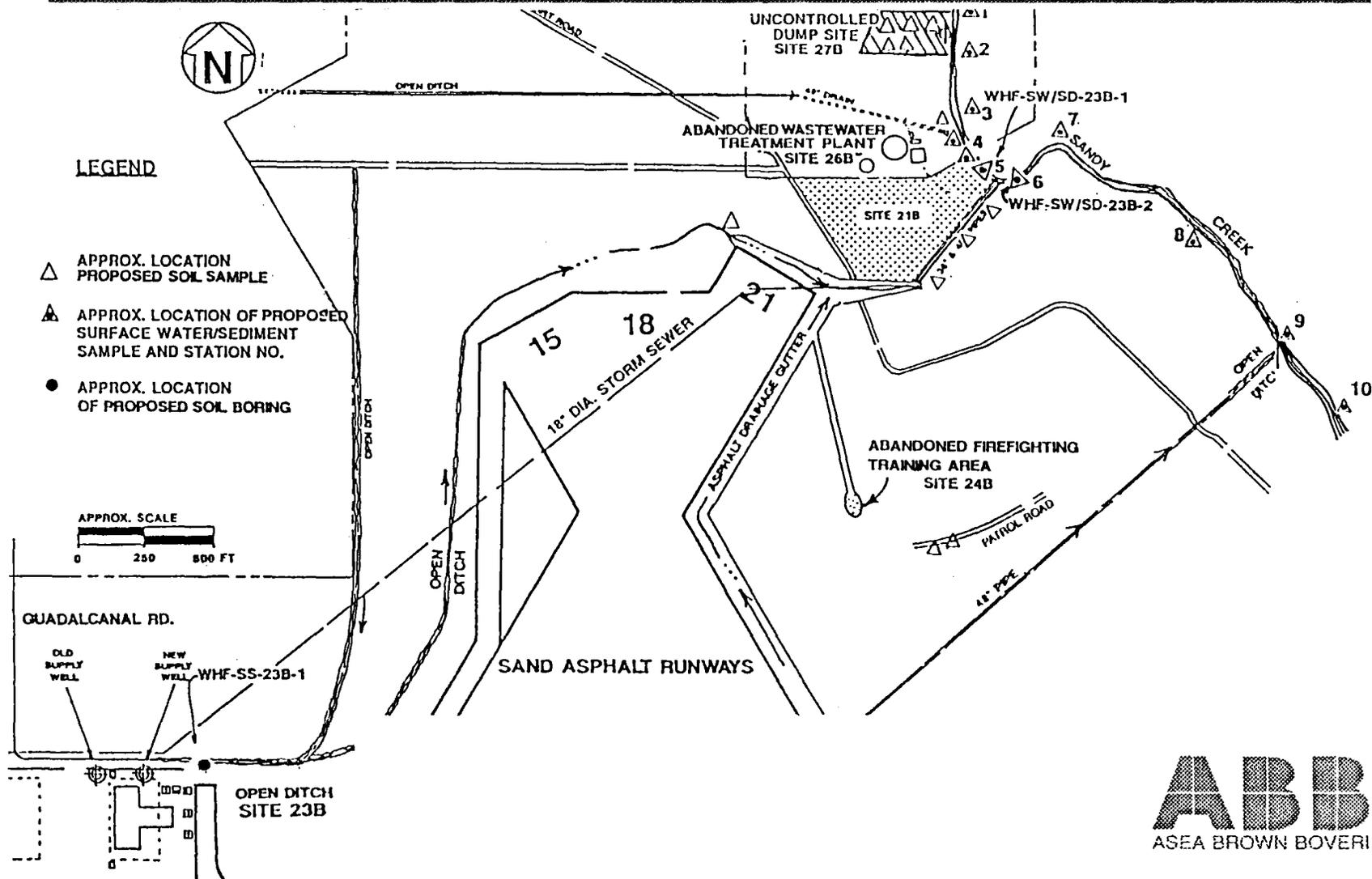


SITE 24B - PROPOSED ANALYTICAL SUMMARY

SAMPLE DESCRIPTION	TYPE OF SAMPLE	VOC BY GC (Including xylenes and MTBE)	VOC BY GC/MS	SVOCs BY GC/MS	PESTICIDES/PCBs	PAHs BY HPLC	TOTAL PETROLEUM HYDROCARBONS	NO. OF SAMPLES			TOTAL CYANIDE
								METALS			
								TAL	LEAD ONLY	COPPER ONLY	
MONITORING WELLS (5 WELLS)	GW	0	5	5	5	0	0	5	0	0	5
SURFACE SOIL	SO	0	6	0	0	6	6	6	0	0	6
SOIL BORING (4 SAMPLES - 0, 5, 10, WT)	SO	0	4	0	0	4	4	4	0	0	4



SITES 23B, 26B, AND 27B - PROPOSED EXPLORATION PROGRAMS

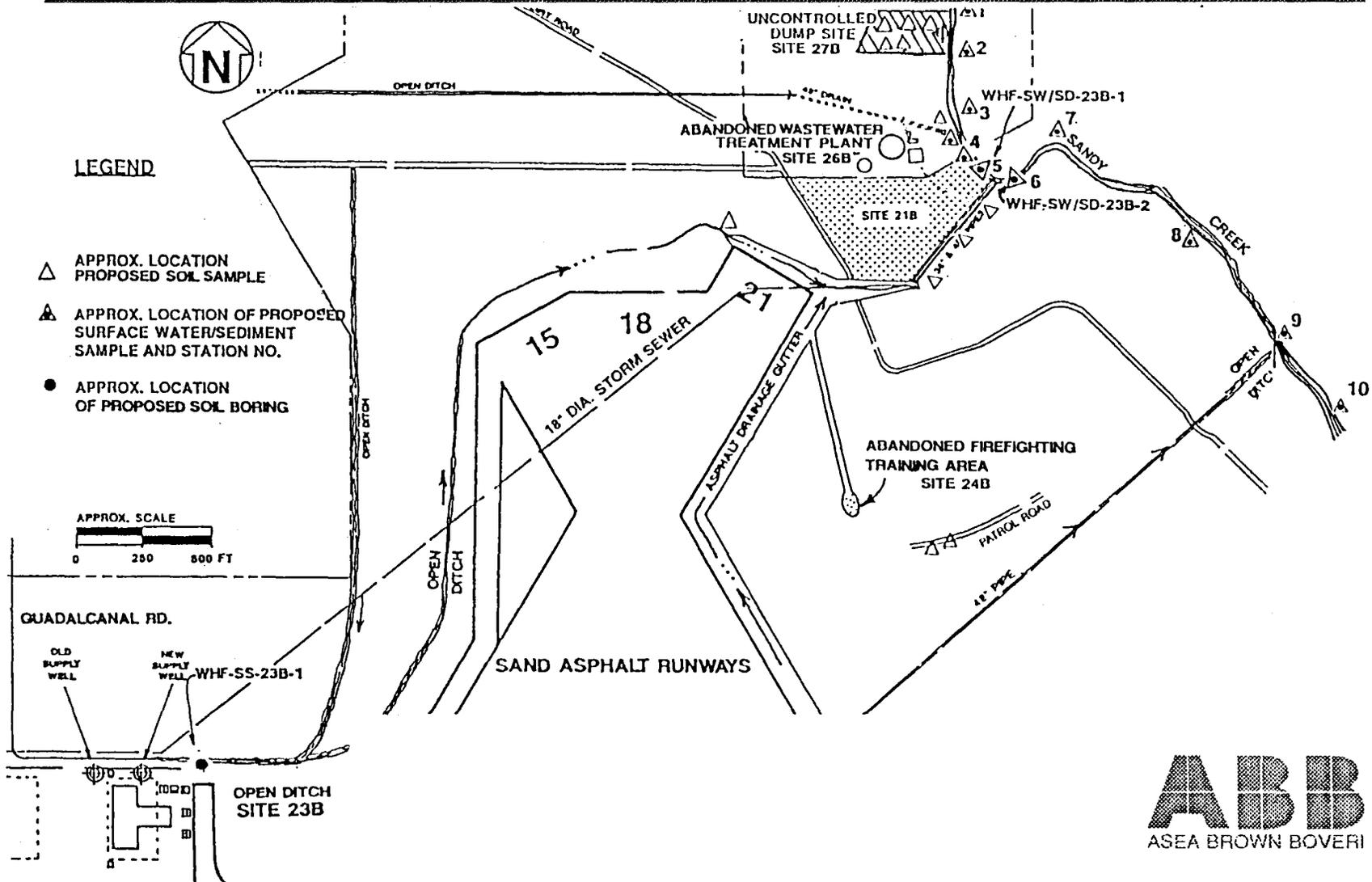


SITE 26B - PROPOSED ANALYTICAL SUMMARY

SAMPLE DESCRIPTION	TYPE OF SAMPLE	VOC BY GC (Including xylenes and MTBE)	VOC BY GC/MS	SVOCs BY GC/MS	PESTI- CIDES/ PCBs	PAHs BY HPLC	TOTAL PETROLEUM HYDRO- CARBONS	NO. OF SAMPLES			TOTAL CYANIDE
								METALS			
								TAL	LEAD ONLY	COPPER ONLY	
ABANDONED WASTEWATER TREATMENT PLANT	SO	0	0	3	3	0	0	3	0	0	3



SITES 23B, 26B, AND 27B - PROPOSED EXPLORATION PROGRAMS

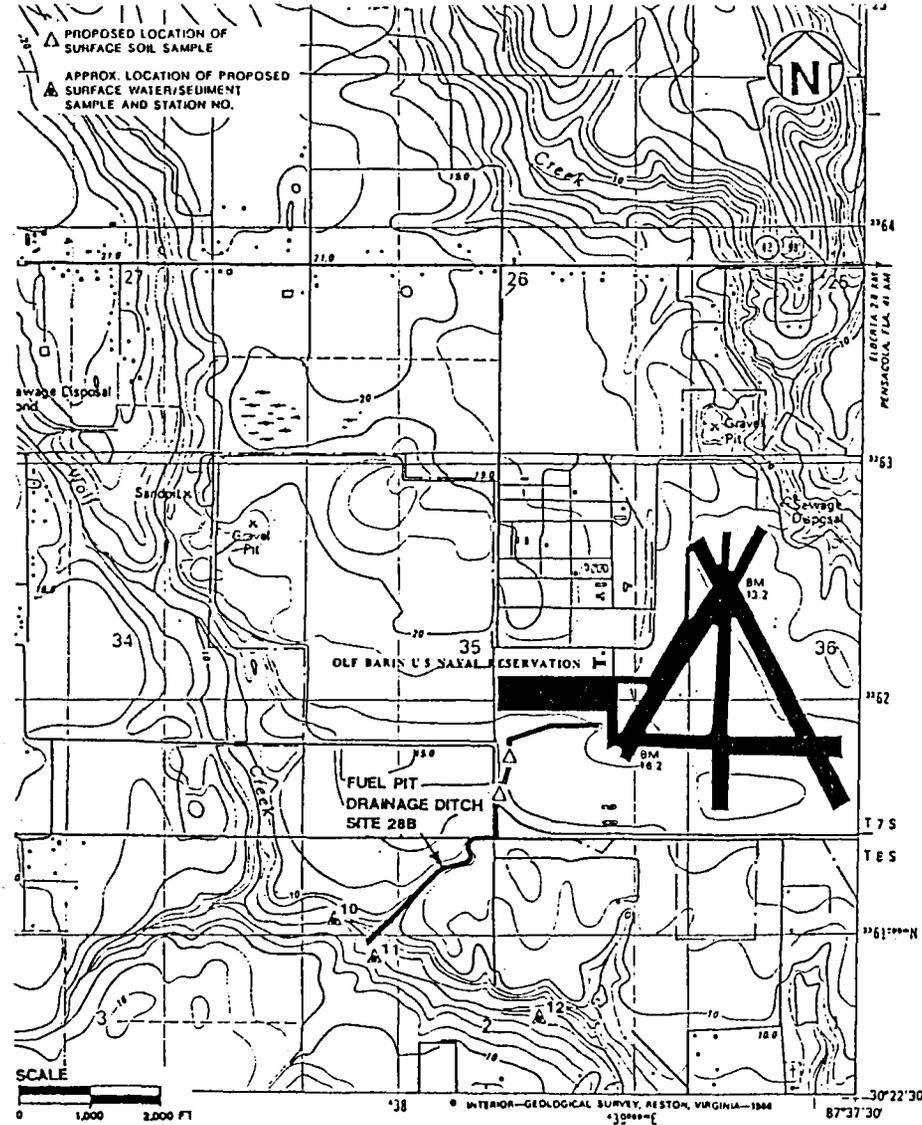


SITE 27B - PROPOSED ANALYTICAL SUMMARY

SAMPLE DESCRIPTION	TYPE OF SAMPLE	VOC BY GC (including xylenes and MTBE)	VOC BY GC/MS	SVOCs BY GC/MS	PESTI- CIDES/ PCBs	PAHs BY HPLC	TOTAL PETROLEUM HYDRO- CARBONS	NO. OF SAMPLES			TOTAL CYANIDE
								METALS			
								TAL	LEAD ONLY	COPPER ONLY	
UNCONTROLLED DUMPSITE	SO	0	5	5	5	0	0	5	0	0	5



LOCATION OF SITE 28B, FUEL PIT DRAINAGE DITCH



SITE 28B - PROPOSED ANALYTICAL SUMMARY

SAMPLE DESCRIPTION	TYPE OF SAMPLE	VOC BY GC (Including xylenes and MTBE)	NO. OF SAMPLES								
			VOC BY GC/MS	SVOCs BY GC/MS	PESTI- CIDES/ PCBs	PAHs BY HPLC	TOTAL PETROLEUM HYDRO- CARBONS	METALS			TOTAL CYANIDE
								TAL	LEAD ONLY	COPPER ONLY	
FUEL PIT DRAINAGE DITCH, WOLF CREEK	SO	0	2	2	2	0	0	2	0	0	2
	SW	0	3	3	3	0	0	3	0	0	3
	SD	0	3	3	3	0	0	3	0	0	3

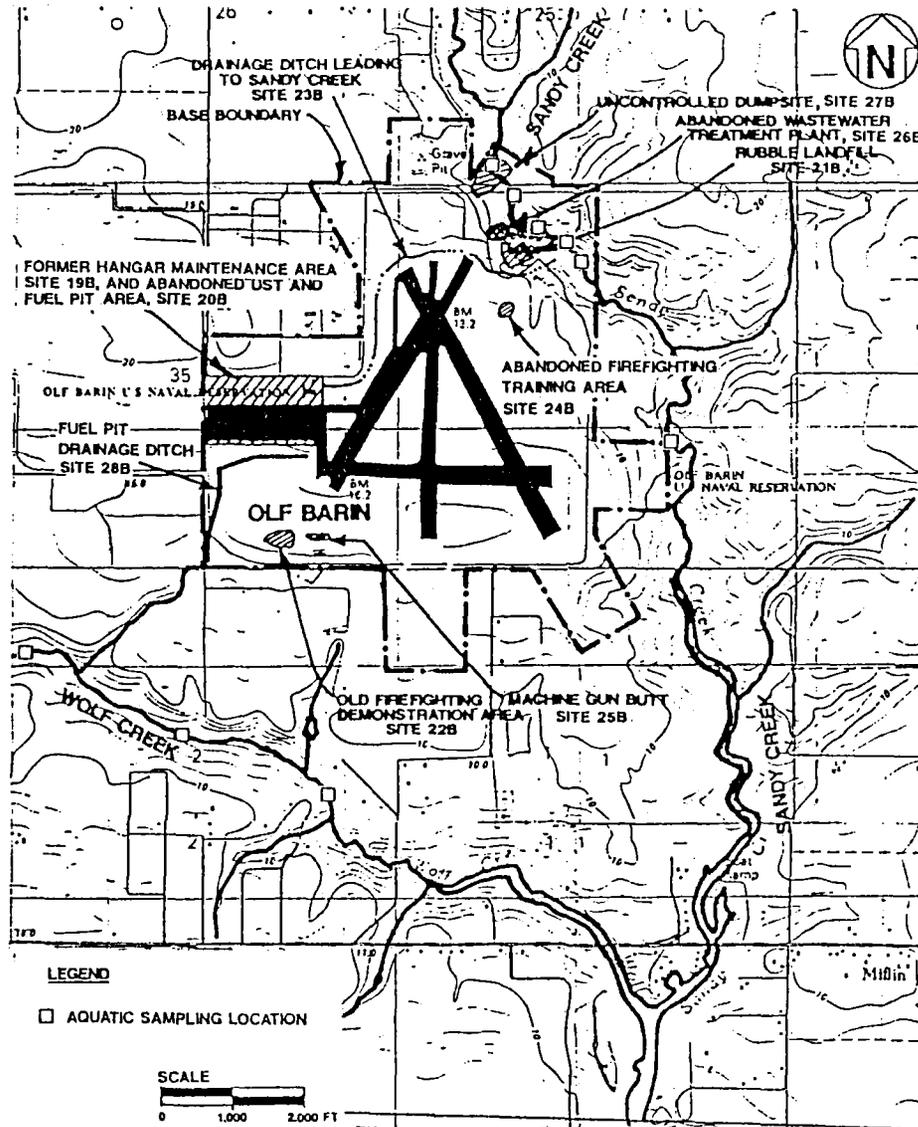


INVESTIGATIVE ACTIVITIES COMMON TO MULTIPLE SITES

- AQUATIC SAMPLING
- AQUIFER CHARACTERIZATION
- ECOLOGICAL SURVEY
- PUBLIC HEALTH SURVEY
- SURVEY OF SAMPLING LOCATIONS



AQUATIC SAMPLING LOCATIONS AT OLF BARIN



BASELINE RISK ASSESSMENT

■ 3 COMPONENTS

■ DATA EVALUATION AND DATA SUMMARIZATION

DETERMINE WHICH DATA ARE SUITABLE FOR USE IN RISK ASSESSMENT AND ORGANIZE DATA IN USEFUL FORMAT

■ HUMAN HEALTH RISK ASSESSMENT

DETERMINE IF CONTAMINATION PRESENT POSES SIGNIFICANT RISK TO PUBLIC HEALTH IN ABSENCE OF REMEDIAL ACTION

■ ECOLOGICAL RISK ASSESSMENT

DEFINE POTENTIAL ECOLOGICAL EFFECTS RESULTING FROM CHEMICALS IN ENVIRONMENTAL MEDIA



COMMUNITY RELATIONS

- **COMMUNITY RELATIONS PLAN**
- **FACT SHEET**
- **PRESS RELEASE**

