

US EPA ARCHIVE DOCUMENT



**EPA Contract No. 68-W6-0042
EPA Work Assignment No. 128-RSDB-0146**

**EPA Project Officer: Diana King
EPA Remedial Project Manager: Joseph F. LeMay, P.E.**

**BASELINE HUMAN HEALTH AND
ECOLOGICAL RISK ASSESSMENT**

VOLUME I

TEXT AND FIGURES

**Southwest Properties, Wells G&H Superfund Site
Operable Unit 2
Woburn, Massachusetts**

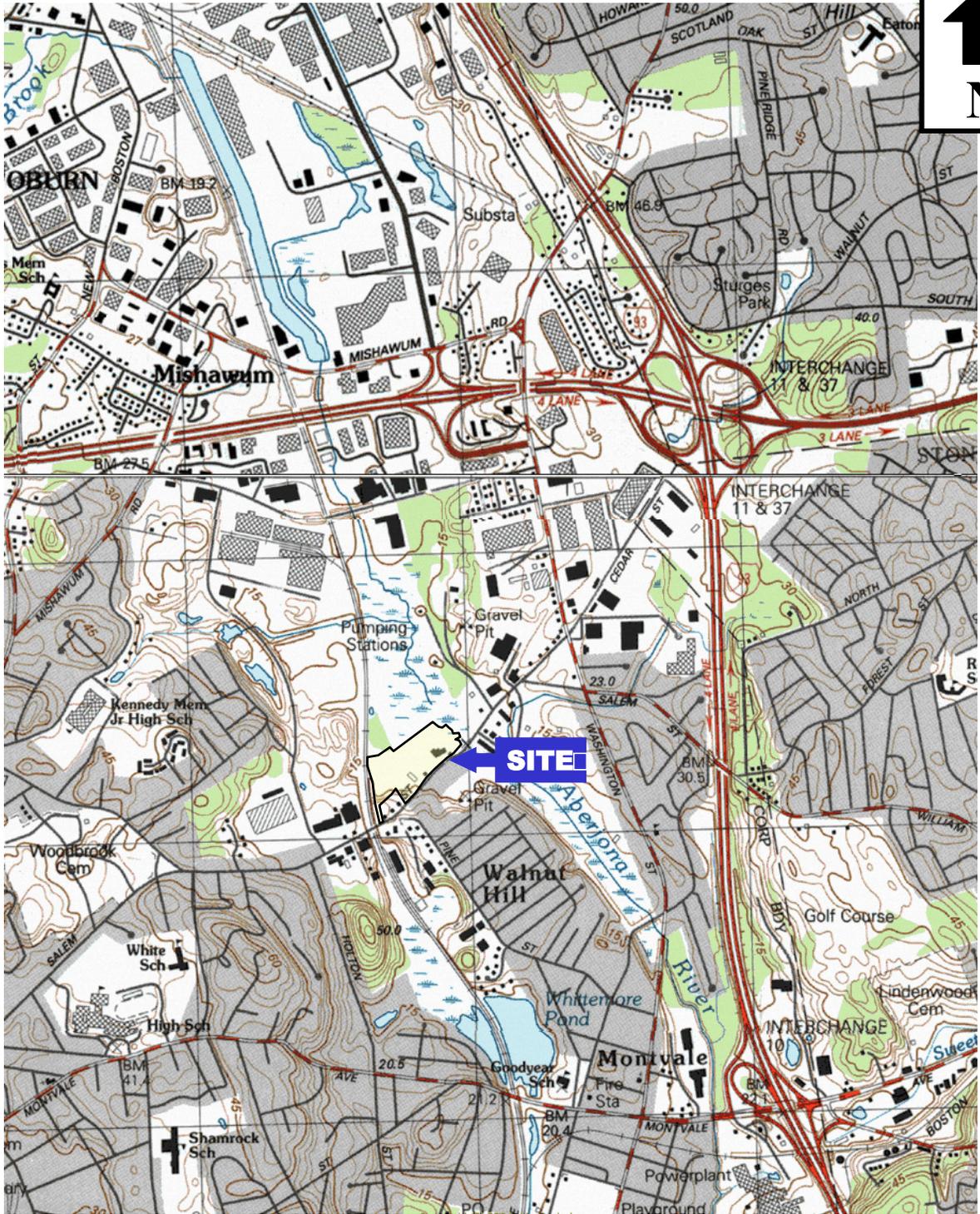
Revised February 2006

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Wakefield, MA 01880**

Team Subcontractor:

**TRC Environmental Corporation
Boott Mills South
116 John Street
Lowell, Massachusetts 01852**



**BASE MAP IS A PORTION OF THE FOLLOWING 7.5' USGS TOPOGRAPHIC QUADRANGLE:
 BOSTON NORTH, MA 1985; READING, MA 1987**

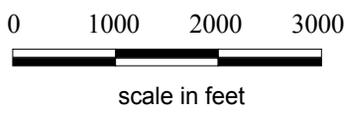
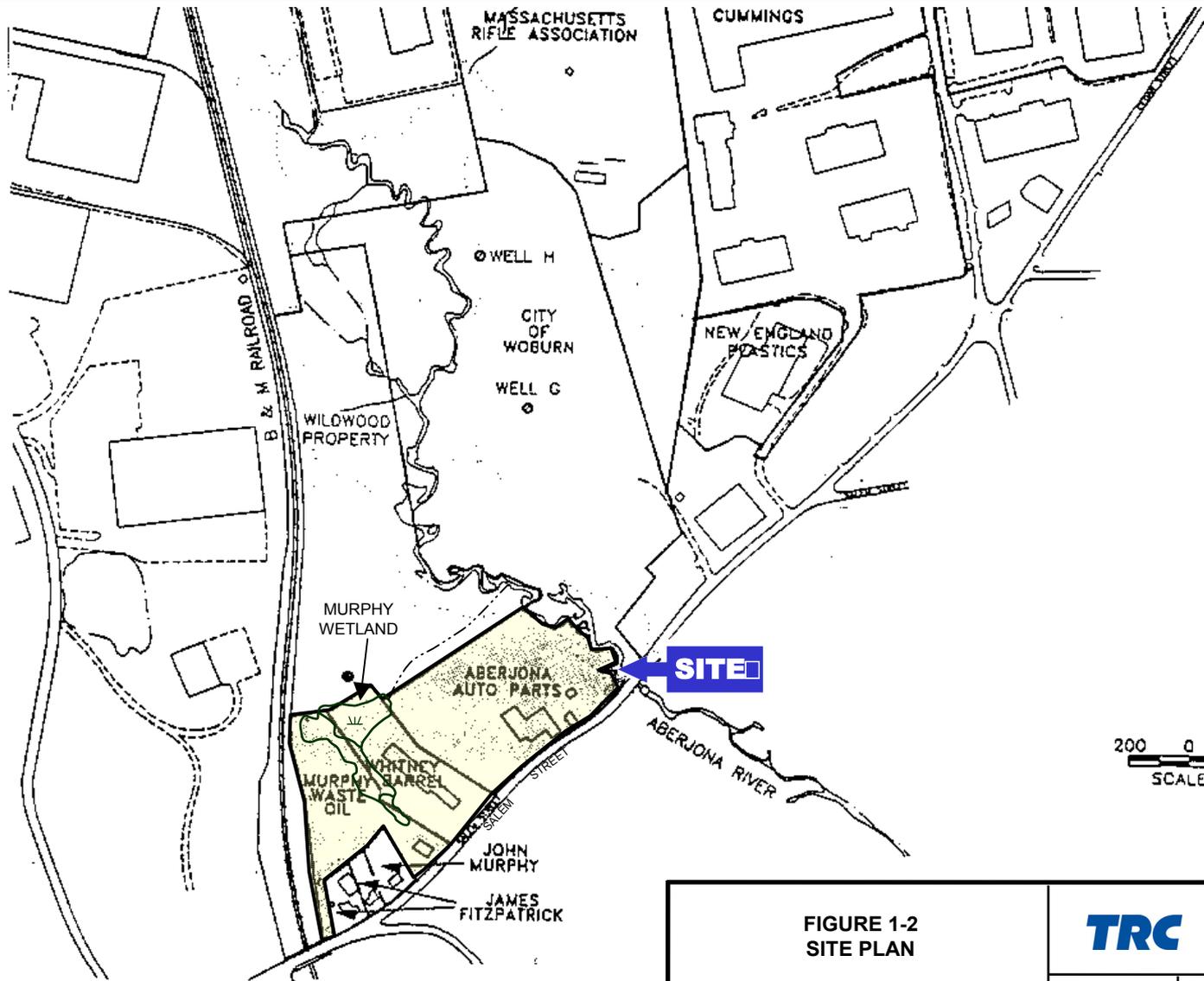


FIGURE 1-1
SITE LOCATION MAP
 SOUTHWEST PROPERTIES
 WELLS G&H SUPERFUND SITE
 OPERABLE UNIT 2
 WOBURN, MASSACHUSETTS

Boott Mills South
 Foot of John Street
 Lowell, MA 01852
 978-970-5600

QUADRANGLE
 LOCATION

TRC PROJ. NO.: 02136-0390-01461
 EPA CONTRACT NO.: 68-W6-0042
 RAC SUBCONTRACT NO.: 107061



02136/SOUTHWEST/FSP/SITE PLAN

**FIGURE 1-2
SITE PLAN**

SOUTHWEST PROPERTIES
WELLS G&H SUPERFUND SITE
OPERABLE UNIT 2
WOBURN, MASSACHUSETTS



Boott Mills South
Foot of John Street
Lowell, MA 01852
978-970-5600

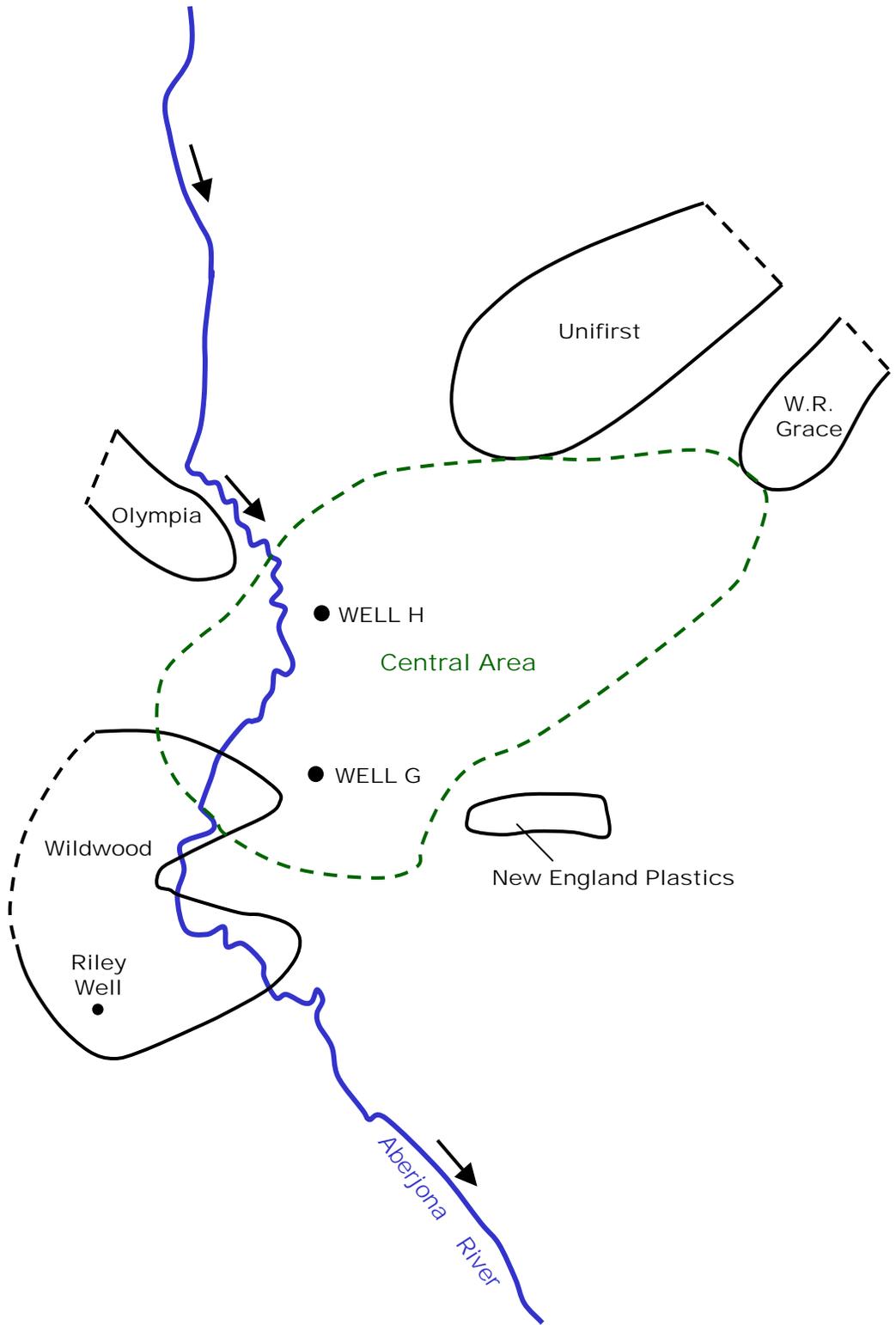
QUADRANGLE
LOCATION



TRC PROJ. NO.: 02136-0390-01461

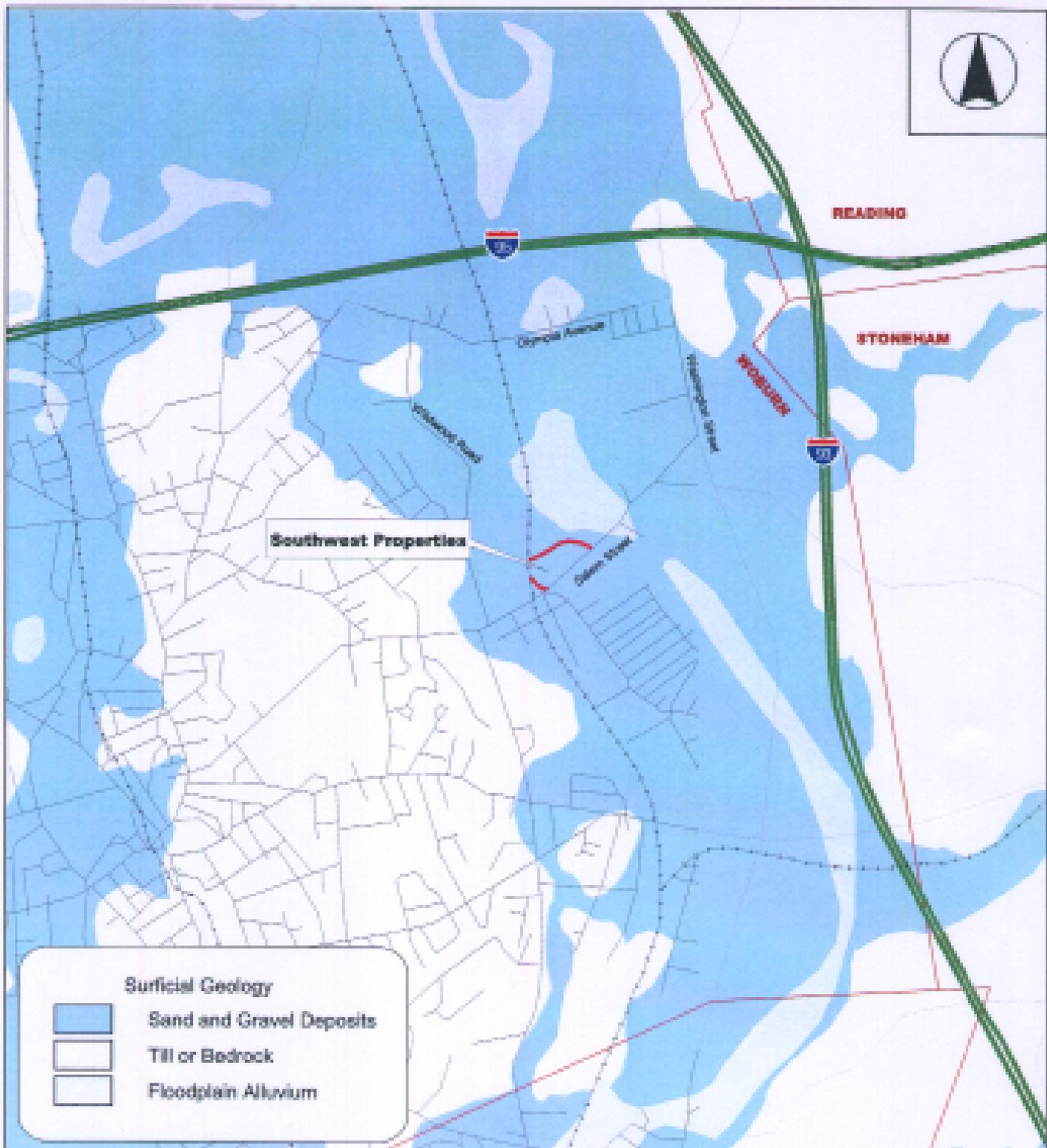
EPA CONTRACT NO.: 68-W6-0042

RAC SUBCONTRACT NO.: 107061



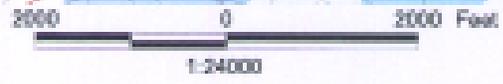
021366SOUTHWESTFSP,SKETCH

FIGURE 1-3 LOCATION OF CENTRAL AREA SOUTHWEST PROPERTIES WELLS G&H SUPERFUND SITE OPERABLE UNIT 2 WOBURN, MASSACHUSETTS			Boott Mills South Foot of John Street Lowell, MA 01852 978-970-5600
		QUADRANGLE LOCATION 	TRC PROJ. NO.: 02136-0390-01461 EPA CONTRACT NO.: 68-W6-0042 RAC SUBCONTRACT NO.: 107061
			



Surficial Geology

- Sand and Gravel Deposits
- Till or Bedrock
- Floodplain Alluvium



c:\mgis\mbox\mbox\mgf1.apr

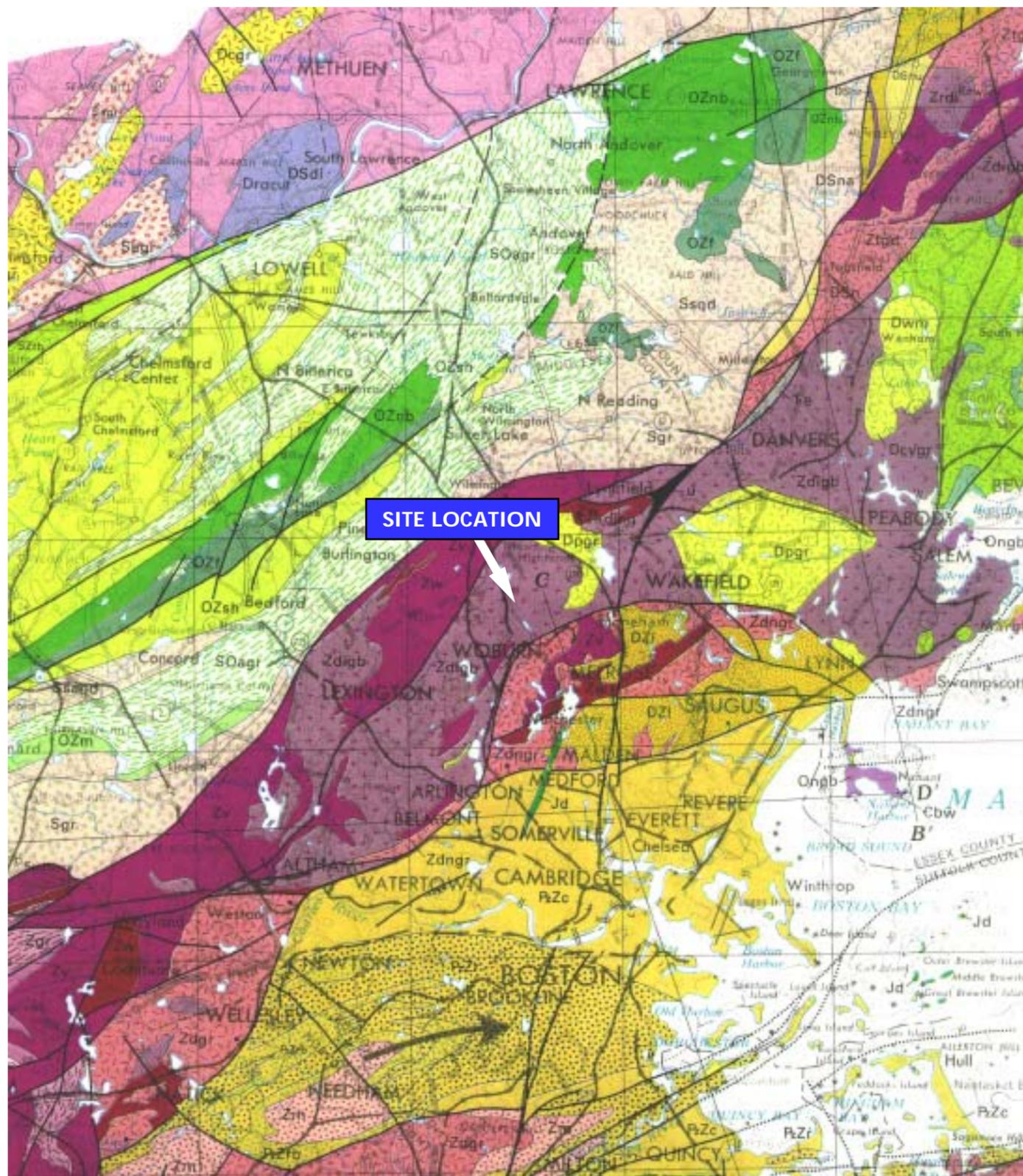
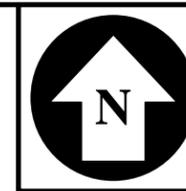
GIS electronic data layers obtained from MassGIS, Office of Geographic and Environmental Information (<http://www.state.ma.us/mgis/massgis.htm>)

**FIGURE 1-4
SURFICIAL GEOLOGY MAP
WELLS G&H OUI
OLYMPIA PROPERTY
SUPERFUND SITE
WOBURN, MASSACHUSETTS**

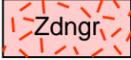


Scott Mills South
Foot of John Street
Lowell, MA, 01852
978-278-5800

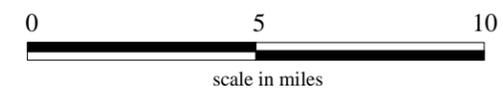
TRC PROJ. NO.: 82136-8276-01461
EPA CONTRACT NO.: 68-W6-0042
RAD SUBCONTRACT NO.: 167061



Legend

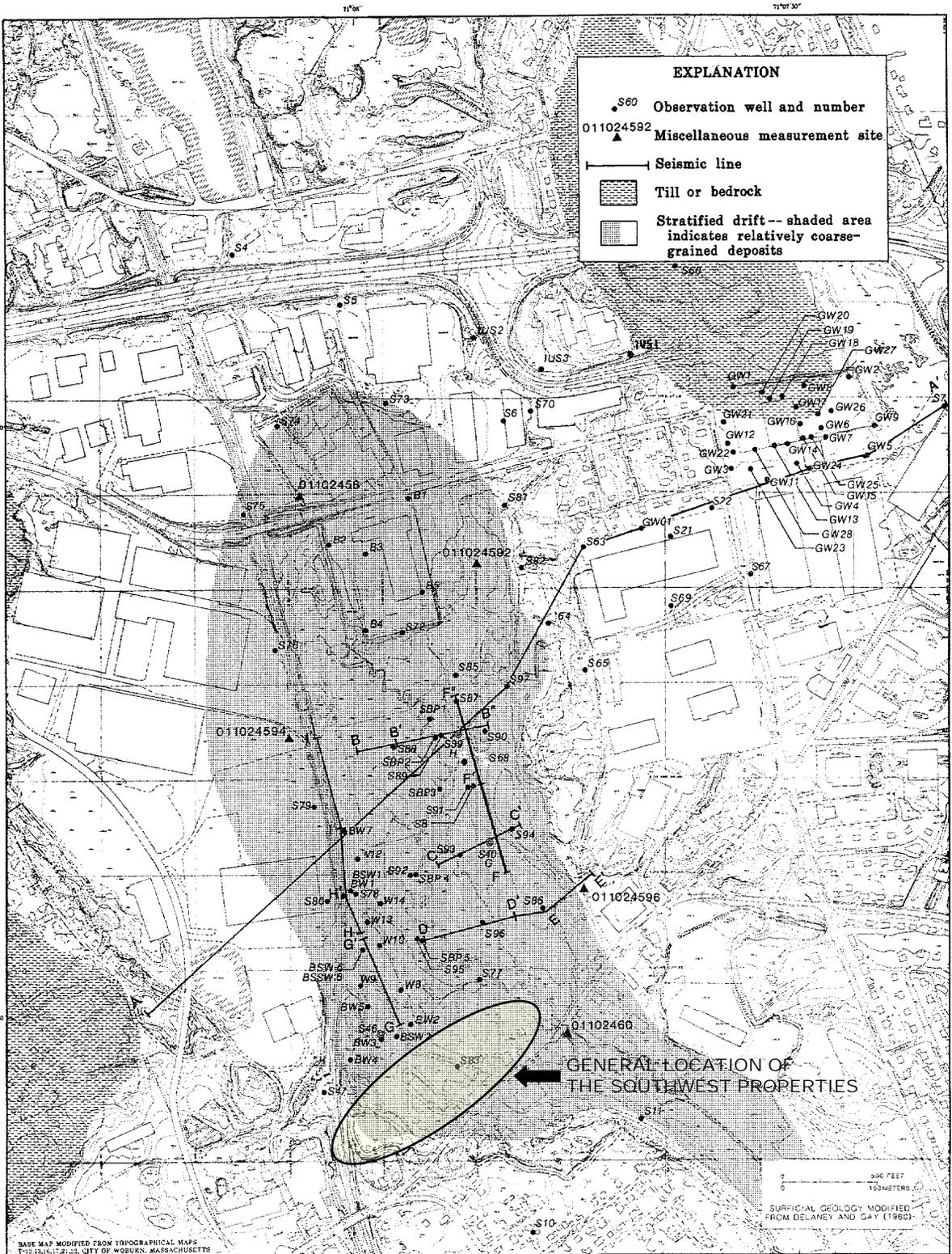
-  **Dpgr** **Peabody Granite (Middle Devonian)**
Alkalic granite containing ferro-hornblende. Intrudes Zgb, Zdng
-  **Zdng** **Gray granite to granodiorite more mafic than Zdgr north of Boston.**
Intrudes Zw, Zv
-  **Zdigb** **Diorite and gabbo (Proterozoic Z)**
Complex of diorite and gabbro, subordinate metavolcanic rocks and intrusive granite and granodiorite
-  **Zv** **Metamorphosed mafic to felsic flow, and volcanoclastic and hypabyssal intrusive rocks (Proterozoic Z)**
Includes some diorite and gabbro north and northwest of Boston

BASE MAP IS A PORTION OF THE FOLLOWING:
BEDROCK GEOLOGIC MAP OF MASSACHUSETTS, SHEET 1 OF 3
DEPARTMENT OF PUBLIC WORKS AND
JOSEPH A. SINNOTT, STATE GEOLOGIST, 1983



02136SOUTHWEST/FSP/BEDROCK

<p>FIGURE 1-5 BEDROCK GEOLOGY MAP SOUTHWEST PROPERTIES WELLS G&H SUPERFUND SITE OPERABLE UNIT 2 WOBURN, MASSACHUSETTS</p>			Boot Mills South Foot of John Street Lowell, MA 01852 978-970-5600
			TRC PROJ. NO.: 02136-0390-01461 EPA CONTRACT NO.: 68-W6-0042 RAC SUBCONTRACT NO.: 107061
		QUADRANGLE LOCATION 	



Source: Myette et al., 1987

FIGURE 1-6. USGS STUDY AREA

SOUTHWEST PROPERTIES
WELLS G&H SUPERFUND SITE
OPERABLE UNIT 2
WOBURN, MASSACHUSETTS



QUADRANGLE
LOCATION

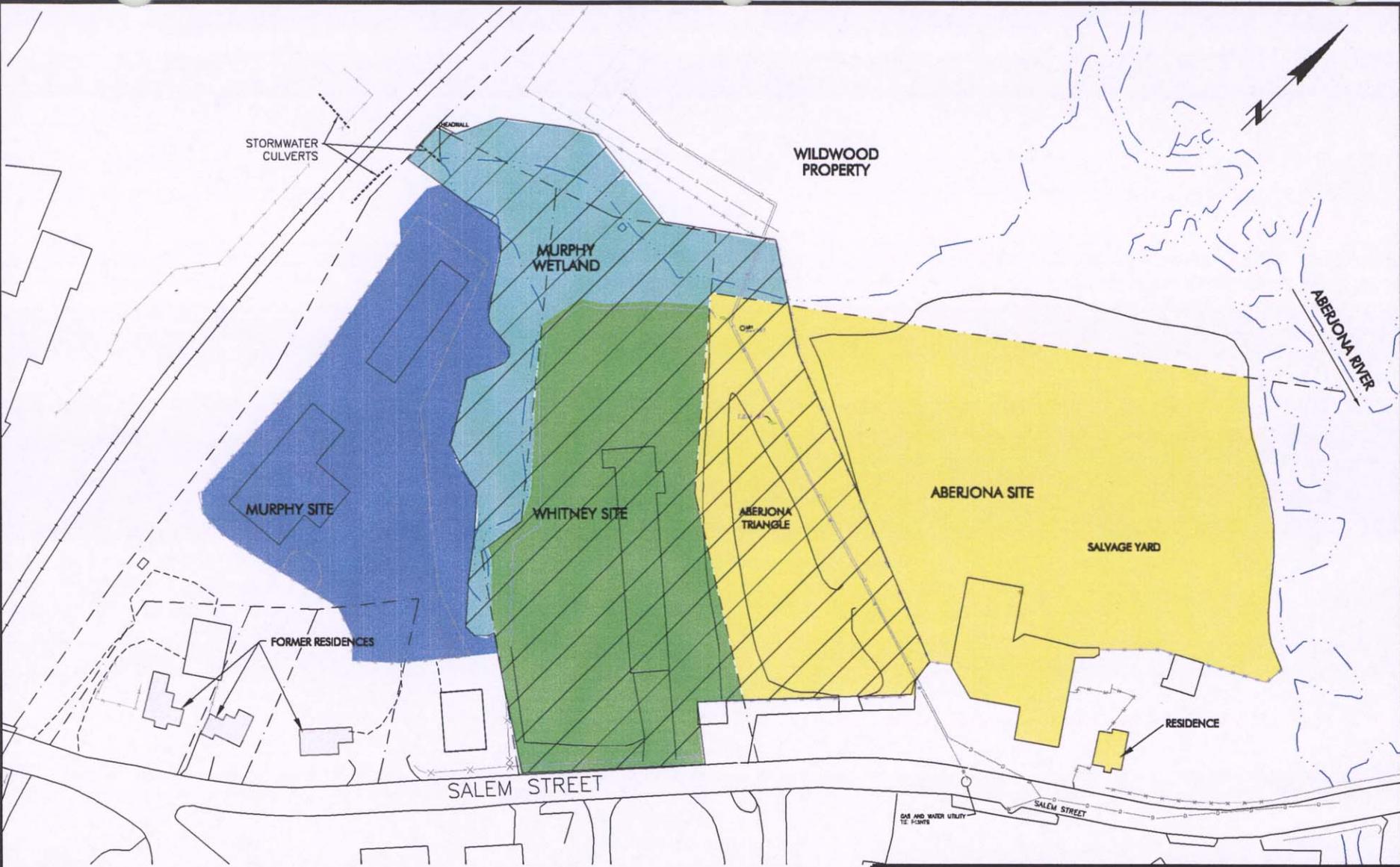


Boott Mills South
Foot of John Street
Lowell, MA 01852
978-970-5600

TRC PROJ. NO.: 02136-0390-01461

EPA CONTRACT NO.: 68-W6-0042

RAC SUBCONTRACT NO.: 107061



SOURCE:
 SUPPLEMENTAL REMEDIAL INVESTIGATION REPORT, SOUTHWEST PROPERTIES,
 VOLUME I OF XXIII, WELLS G&H SUPERFUND SITE, WOBURN, MASSACHUSETTS,
 AUGUST 2003

- ABERJONA SITE
- WHITNEY SITE
- MURPHY WETLAND
- MURPHY SITE

CURRENT TRESSPASSER EXPOSURE POINTS

LEGEND

- STREAM OR WETLAND
- PROPERTY LINE

APPROXIMATE GRAPHIC SCALE

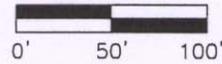


FIGURE 3-1A
CURRENT SCENARIO
EXPOSURE POINTS
 SOUTHWEST PROPERTIES
 WELLS G&H SUPERFUND SITE
 OPERABLE UNIT 2
 WOBURN, MASSACHUSETTS

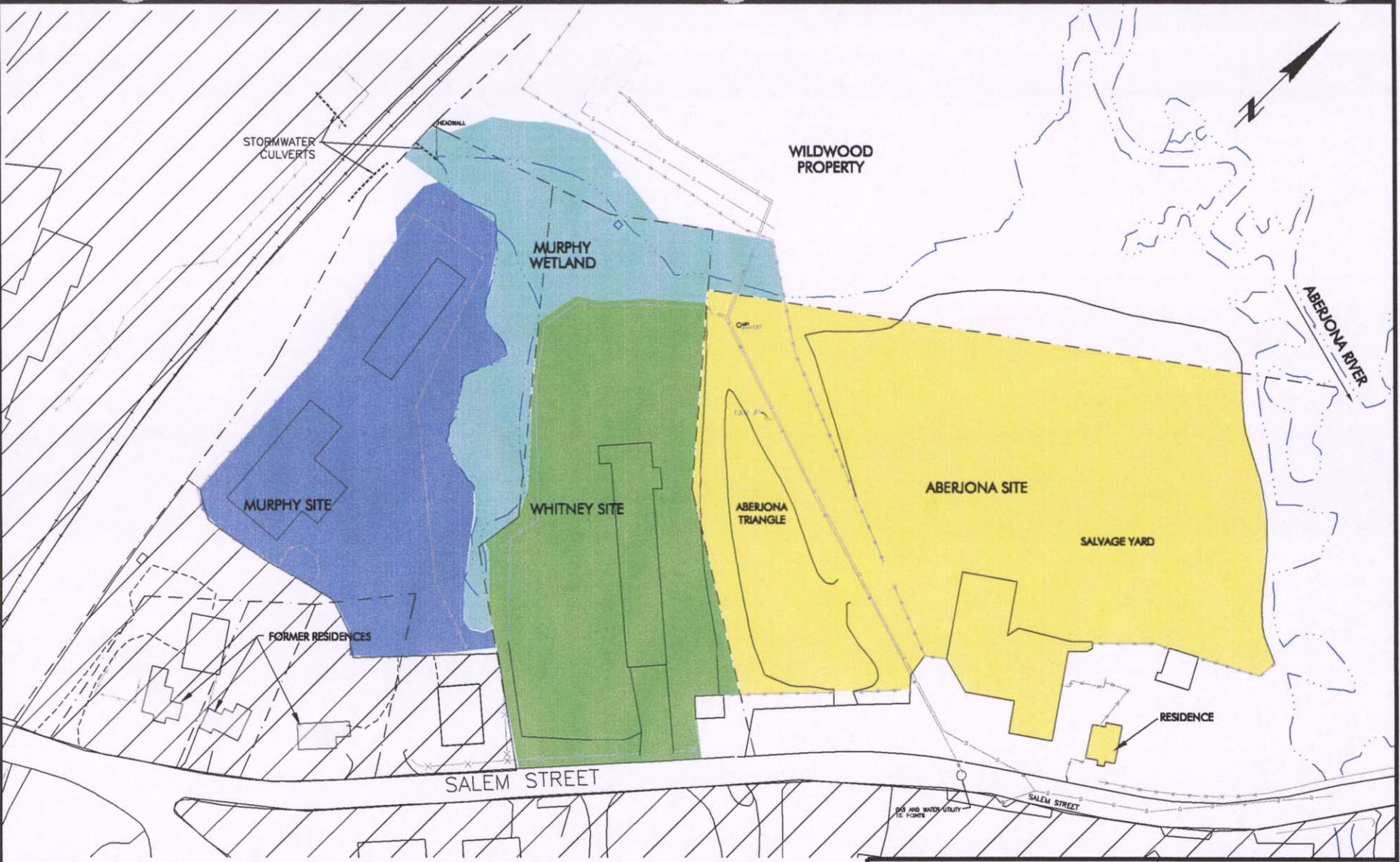
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TRC Boott Mills South
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TRC PROJ. NO.: 02136-0390-01467

EPA CONTRACT NO.: 68-W6-0042

RAC SUBCONTRACT NO.: 107061

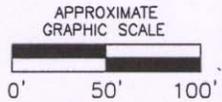


SOURCE:
 SUPPLEMENTAL REMEDIAL INVESTIGATION REPORT, SOUTHWEST PROPERTIES,
 VOLUME I OF XXIII, WELLS G&H SUPERFUND SITE, WOBURN, MASSACHUSETTS,
 AUGUST 2003

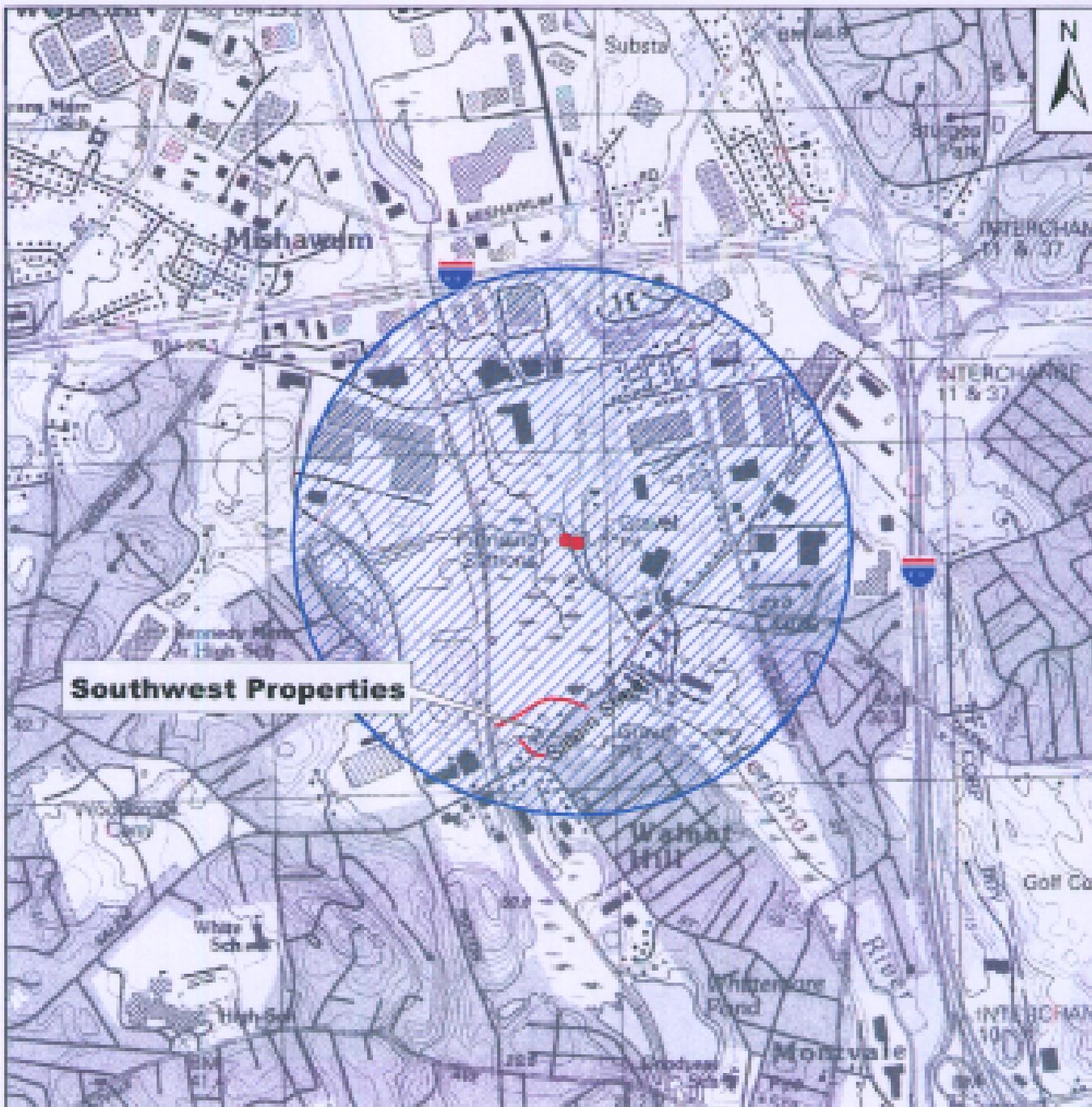
- ABERJONA SITE
- WHITNEY SITE
- MURPHY WETLAND
- MURPHY SITE

OFFSITE RESIDENT
 (GW-1 SCENARIO)

- LEGEND**
- STREAM OR WETLAND
 - PROPERTY LINE



<p>FIGURE 3-1B FUTURE SCENARIO EXPOSURE POINTS</p> <p>SOUTHWEST PROPERTIES WELLS G&H SUPERFUND SITE OPERABLE UNIT 2 WOBURN, MASSACHUSETTS</p>	<p>TRC Boott Mills South Foot of John Street Lowell, MA 01852 978-970-5600</p>
<p>M&E Metcalf & Eddy</p>	
<p>TRC PROJ. NO.: 02136-0390-01467</p> <p>EPA CONTRACT NO.: 68-W6-0042</p> <p>RAC SUBCONTRACT NO.: 107061</p>	



Southwest Properties

1,500 750 0 1,500 Feet



Base map and spatial datalayers obtained from MassGIS, EDEA. Original vector data was compiled at 1:25,000-scale. Some inaccuracies may result if viewed at larger scales.

Please note that GIS data for Public Water Supply and WPA data are no longer immediately available to the public at MassGIS for security reasons. The data displayed were acquired prior to Sept. 11, 2001.

FIGURE 3-3
INTERIM WELLHEAD PROTECTION
AREA FOR WELLS G&H
WELLS G&H SUPERFUND SITE
OPERABLE UNIT 2
(SOUTHWEST PROPERTIES)
WOBURN, MASSACHUSETTS

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Deot Mills South
 Part of John Street
 Lowell, MA 01852
 978-973-9500

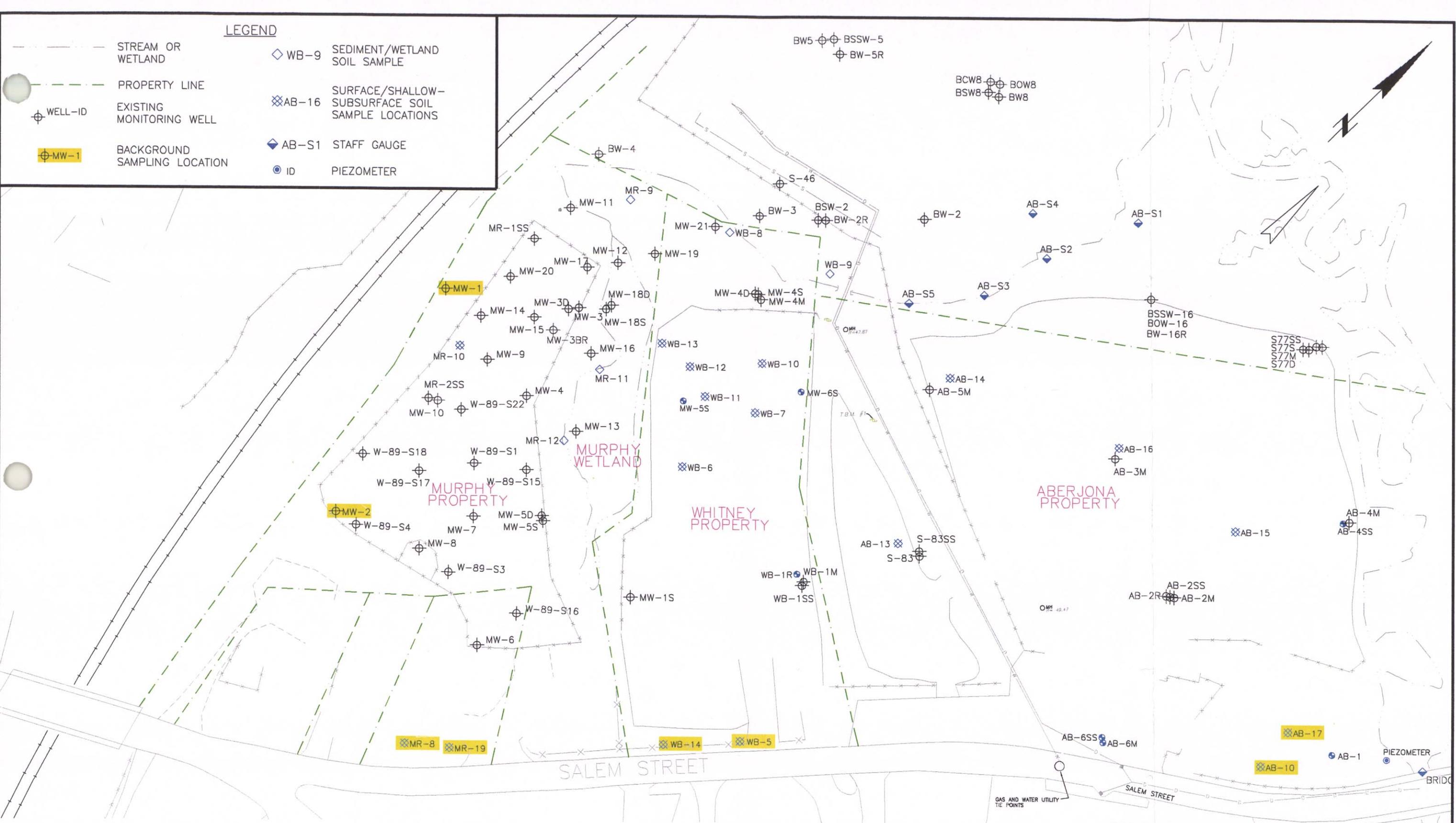
QUADRANGLE
 LOCATION



TRC PROJ. NO.: 00138 0380 01467

EPA CONTRACT NO.: 68-W6-0540

RAC SUBCONTRACT NO.: 107001

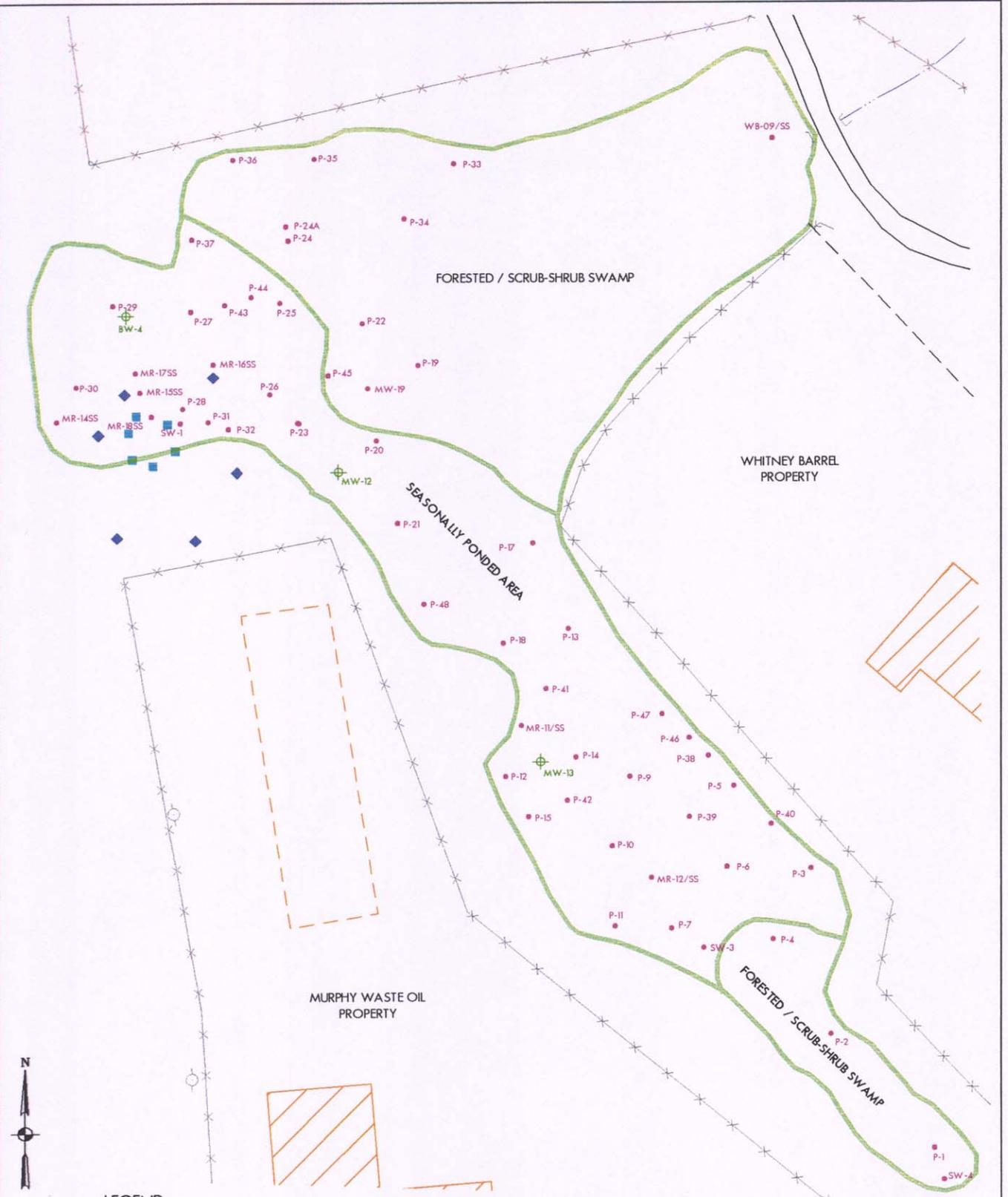


SOURCE:
 SUPPLEMENTAL REMEDIAL INVESTIGATION REPORT, SOUTHWEST PROPERTIES,
 VOLUME I OF XXIII, WELLS G&H SUPERFUND SITE, WOBURN, MASSACHUSETTS,
 AUGUST 2003

FIGURE 3-3
 2003 SOIL AND GROUNDWATER
 BACKGROUND SAMPLING
 LOCATIONS
 SOUTHWEST PROPERTIES
 WELLS G&H SUPERFUND SITE
 OPERABLE UNIT 2
 WOBURN, MASSACHUSETTS

TRC	Boott Mills South Foot of John Street Lowell, MA 01852 978-970-5600
	TRC PROJ. NO.: 02136-0390-01467
	EPA CONTRACT NO.: 68-W6-0042
	RAC SUBCONTRACT NO.: 107061

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LEGEND:

- SEDIMENT SAMPLE
- ⊕ SURFACE WATER SAMPLE
- LIMITS OF MURPHY WETLAND
- MR-13SST1 ■ SEDIMENT (COMPOSITE)
- MR-13SST2 ◆ SEDIMENT (COMPOSITE)

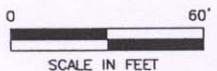


FIGURE 4-1
MURPHY WETLAND-HABITAT COVER
TYPES AND SAMPLING LOCATIONS
SOUTHWEST PROPERTIES
SUPERFUND SITE OU-2
WOBURN, MASSACHUSETTS



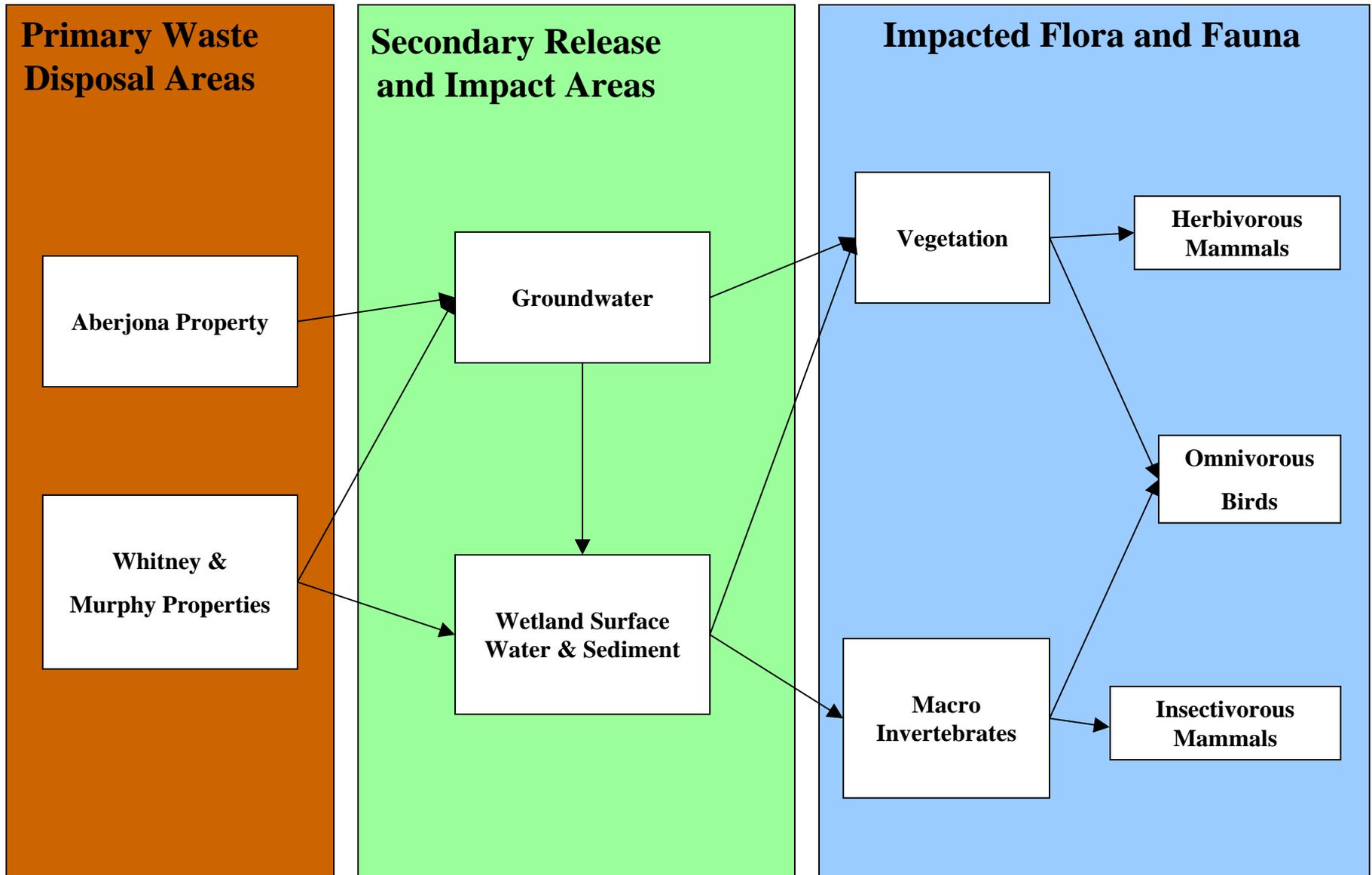
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EPA CONTRACT NO.: 68-W6-0042

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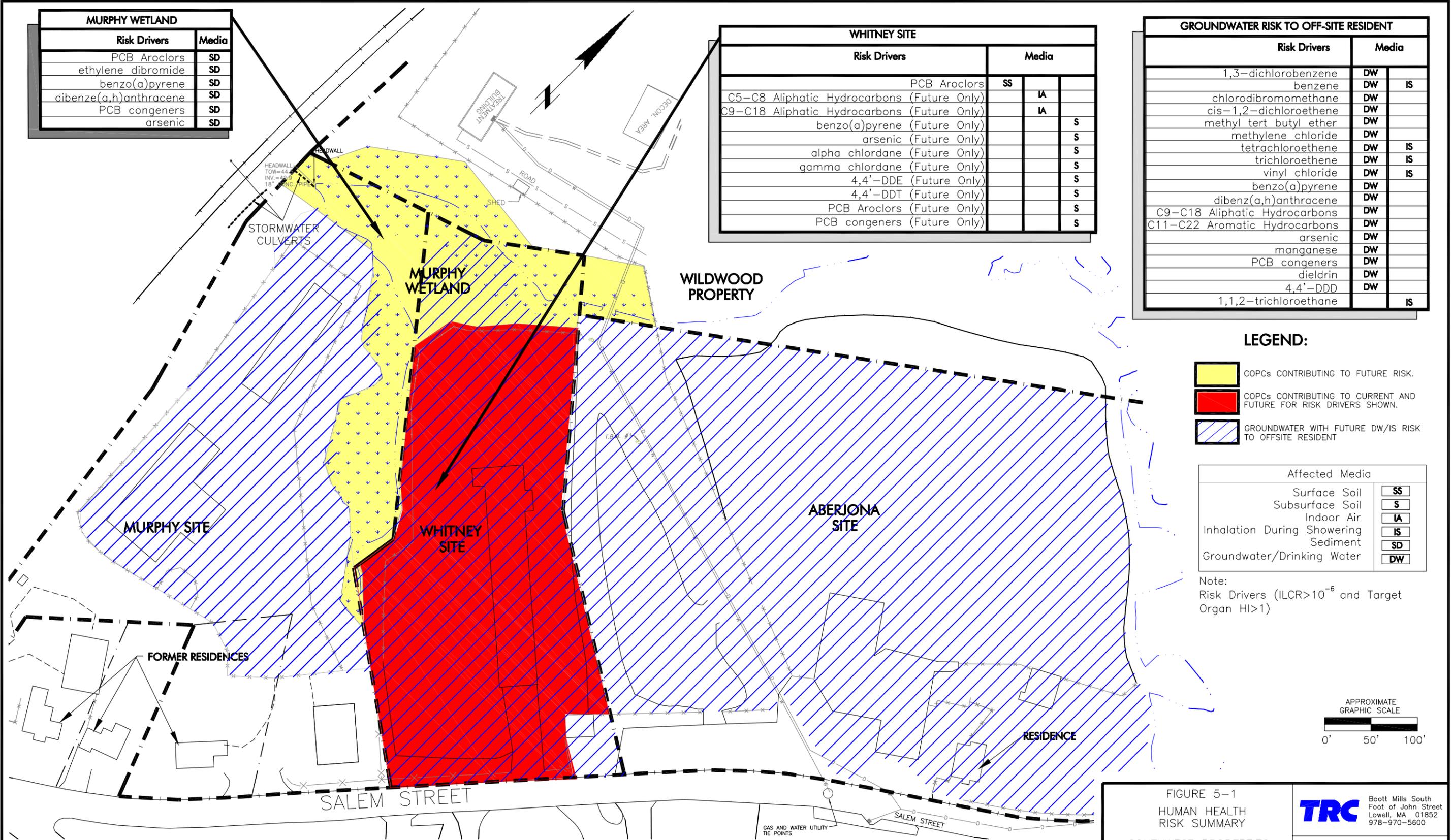
Figure 4-2. Conceptual Site Model for Wells G&H Superfund Site OU-2



MURPHY WETLAND	
Risk Drivers	Media
PCB Aroclors	SD
ethylene dibromide	SD
benzo(a)pyrene	SD
dibenzo(a,h)anthracene	SD
PCB congeners	SD
arsenic	SD

WHITNEY SITE			
Risk Drivers	Media		
PCB Aroclors	SS		
C5-C8 Aliphatic Hydrocarbons (Future Only)		IA	
C9-C18 Aliphatic Hydrocarbons (Future Only)		IA	
benzo(a)pyrene (Future Only)			S
arsenic (Future Only)			S
alpha chlordane (Future Only)			S
gamma chlordane (Future Only)			S
4,4'-DDE (Future Only)			S
4,4'-DDT (Future Only)			S
PCB Aroclors (Future Only)			S
PCB congeners (Future Only)			S

GROUNDWATER RISK TO OFF-SITE RESIDENT		
Risk Drivers	Media	
1,3-dichlorobenzene	DW	
benzene	DW	IS
chlorodibromomethane	DW	
cis-1,2-dichloroethene	DW	
methyl tert butyl ether	DW	
methylene chloride	DW	
tetrachloroethene	DW	IS
trichloroethene	DW	IS
vinyl chloride	DW	IS
benzo(a)pyrene	DW	
dibenz(a,h)anthracene	DW	
C9-C18 Aliphatic Hydrocarbons	DW	
C11-C22 Aromatic Hydrocarbons	DW	
arsenic	DW	
manganese	DW	
PCB congeners	DW	
dieldrin	DW	
4,4'-DDD	DW	
1,1,2-trichloroethane		IS

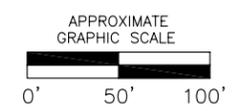


LEGEND:

- COPCs CONTRIBUTING TO FUTURE RISK.
- COPCs CONTRIBUTING TO CURRENT AND FUTURE FOR RISK DRIVERS SHOWN.
- GROUNDWATER WITH FUTURE DW/IS RISK TO OFFSITE RESIDENT

Affected Media	
Surface Soil	SS
Subsurface Soil	S
Indoor Air	IA
Inhalation During Showering	IS
Sediment	SD
Groundwater/Drinking Water	DW

Note:
Risk Drivers (ILCR > 10⁻⁶ and Target Organ HI > 1)



LEGEND

- WETLAND
- STREAM OR WETLAND
- PROPERTY LINE

SOURCE:
SUPPLEMENTAL REMEDIAL INVESTIGATION REPORT, SOUTHWEST PROPERTIES,
VOLUME I OF XXIII, WELLS G&H SUPERFUND SITE, WOBURN, MASSACHUSETTS,
AUGUST 2003

FIGURE 5-1
HUMAN HEALTH
RISK SUMMARY

SOUTHWEST PROPERTIES
WELLS G&H SUPERFUND SITE
OPERABLE UNIT 2
WOBURN, MASSACHUSETTS

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RISK DRIVERS		
SEDIMENT ORGANISMS	MUSKRAT	SHREW

MURPHY SITE

COPCs CONTRIBUTING TO RISK	
PCB AROCLORS	
PCB CONGENERS	
CHROMIUM	
LEAD	
ZINC	

LEGEND

 FORESTED SCRUB SHRUB WETLAND AREA

 SEASONALLY PONDED WETLAND AREA



APPROXIMATE PONDED/FORESTED WETLAND BOUNDARY



STREAM OR WETLAND



PROPERTY LINE

WILDWOOD PROPERTY

RISK DRIVERS

SHREW

WHITNEY SITE

ABERJONA SITE

APPROXIMATE GRAPHIC SCALE



SOURCE:
SUPPLEMENTAL REMEDIAL INVESTIGATION REPORT, SOUTHWEST PROPERTIES,
VOLUME I OF XXIII, WELLS G&H SUPERFUND SITE, WOBURN, MASSACHUSETTS,
AUGUST 2003

FIGURE 5-2
ECOLOGICAL RISK
ASSESSMENT SUMMARY
SOUTHWEST PROPERTIES
WELLS G&H SUPERFUND SITE
OPERABLE UNIT 2
WOBURN, MASSACHUSETTS

M&E Metcalf & Eddy

TRC Boott Mills South
Foot of John Street
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