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T SB16-94-11	Temporary groundwater sampling point
MW76-93-7	Groundwater monitoring well
SB76-94-01	Soil boring
SB76-94-04	Angled soil boring
SS51-97-1	Shallow soil sample location
SG-76W-7	Soil-gas probe
	Shallow soil-gas sampling location
7-95-1	Soil-gas monitoring well
VZM-OT-1	Vadose zone monitoring well
L-3	Vacuum lysimeter
P PZ 51-92-3	Piezometer
SSW-C.63	Slope stability well
SI-8.107	Slope indicator well
EW 7B-96-1	Extraction well
T SB16-94-11 / MW76-93-7	Properly destroyed groundwater monitoring well or temporary groundwater sampling point
	Soil sampling location (in soil borings)
	Sample location was excavated

LT	Less than reporting limit
ND (or <)	Not detected
NS	Not sampled
NA	Not analyzed
17	Surface structure (e.g., buildings, etc.)
A — A'	Cross section
	Sanitary sewer line
	Abandoned sanitary sewer
	Storm drain line
	LBNL site boundary
750	Water level elevation contour line (feet)
900	Topographic contour line (feet)
51-01-09	Hydrauger
	Solid Waste Management Unit
	Area of Concern

NOTE: Other symbols used are explained on the figures.

Figure D-1. Key to Symbols Used on Figures.

D-1 Symbols.ai
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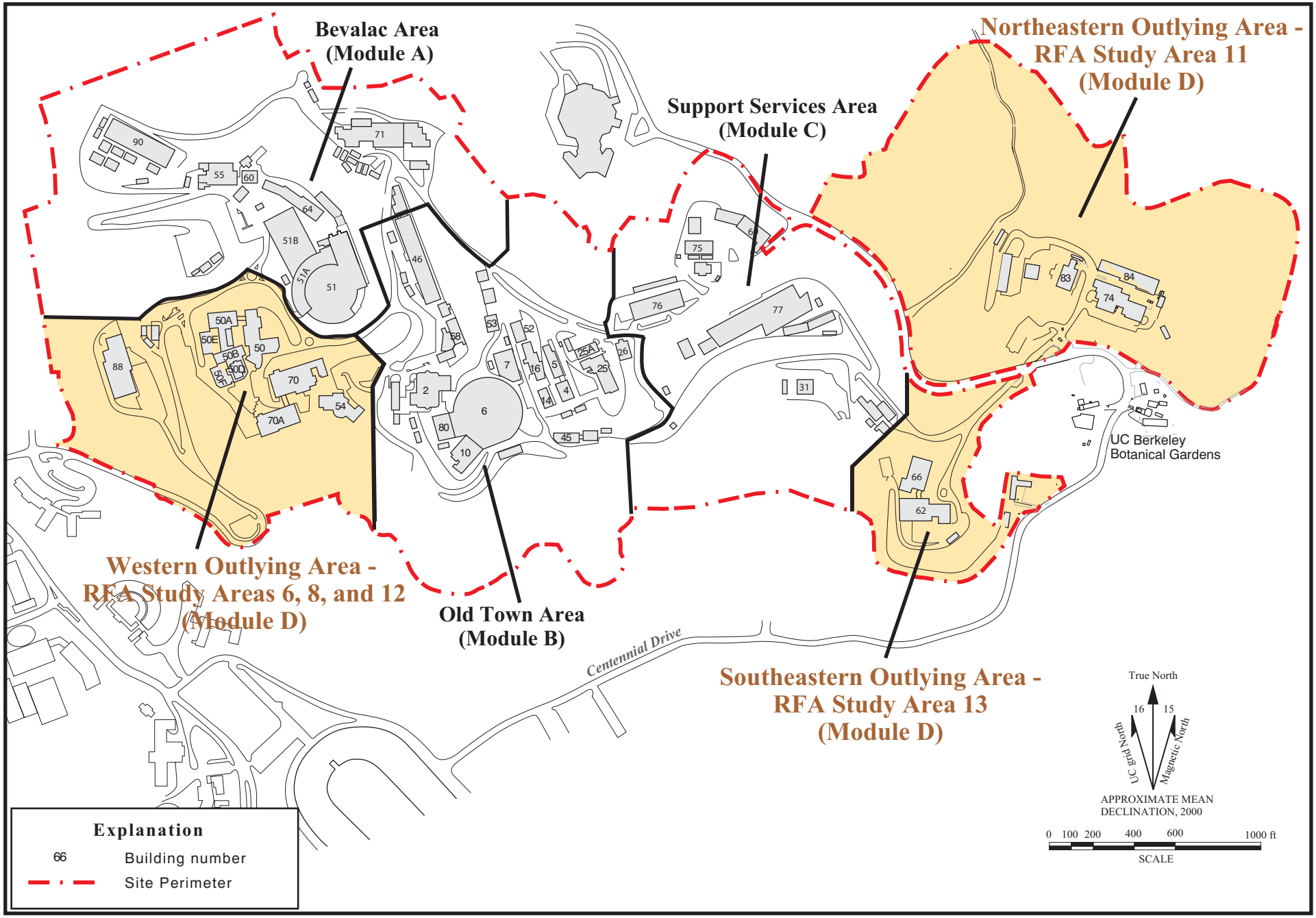

Figure D-2. Location of Outlying Areas, Lawrence Berkeley National Laboratory.

D-2.ai
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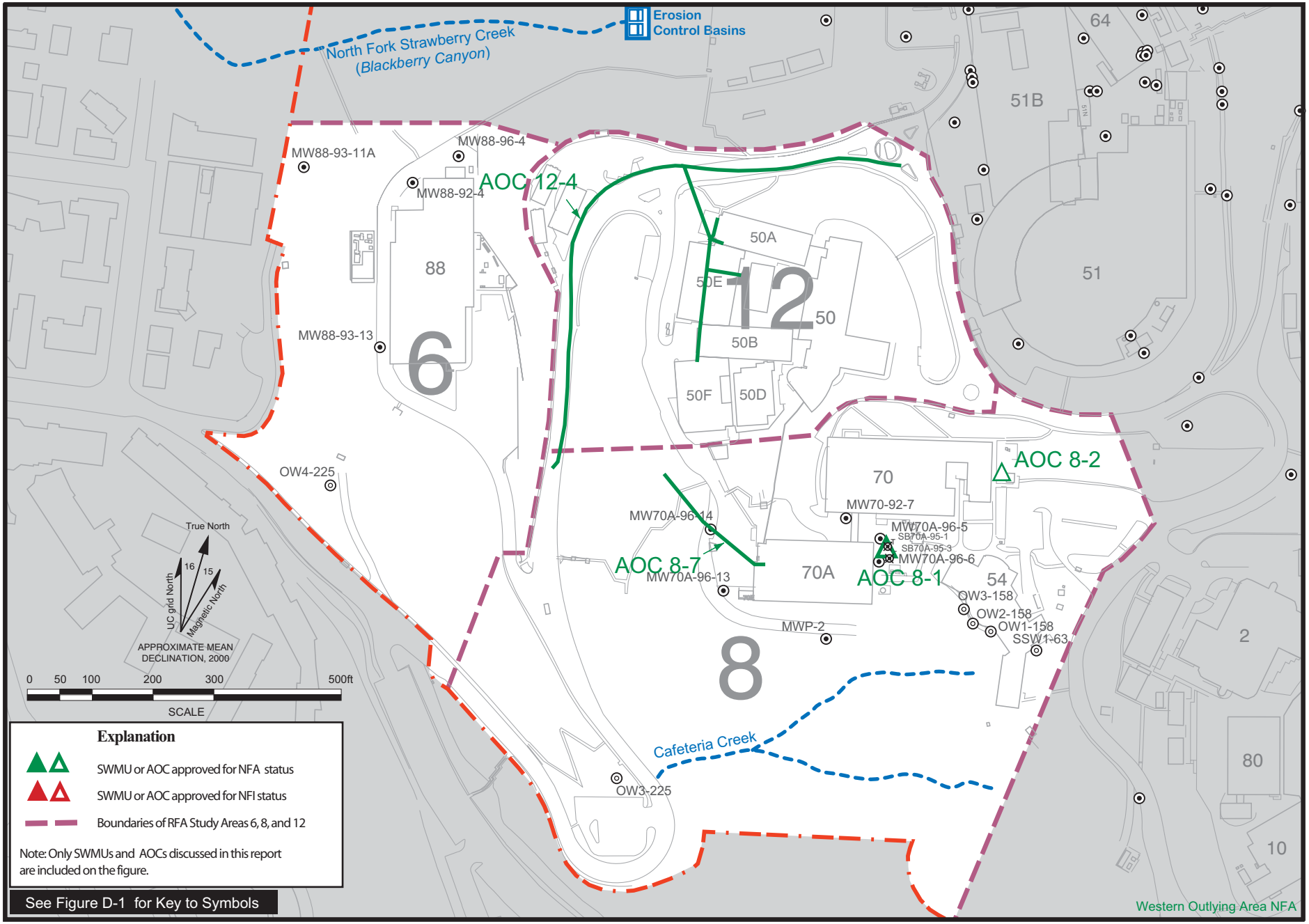

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Figure D-3a. Locations of SWMUs and AOCs in Western Outlying Area (RFA Study Areas 6, 8, and 12) Discussed in Module D.

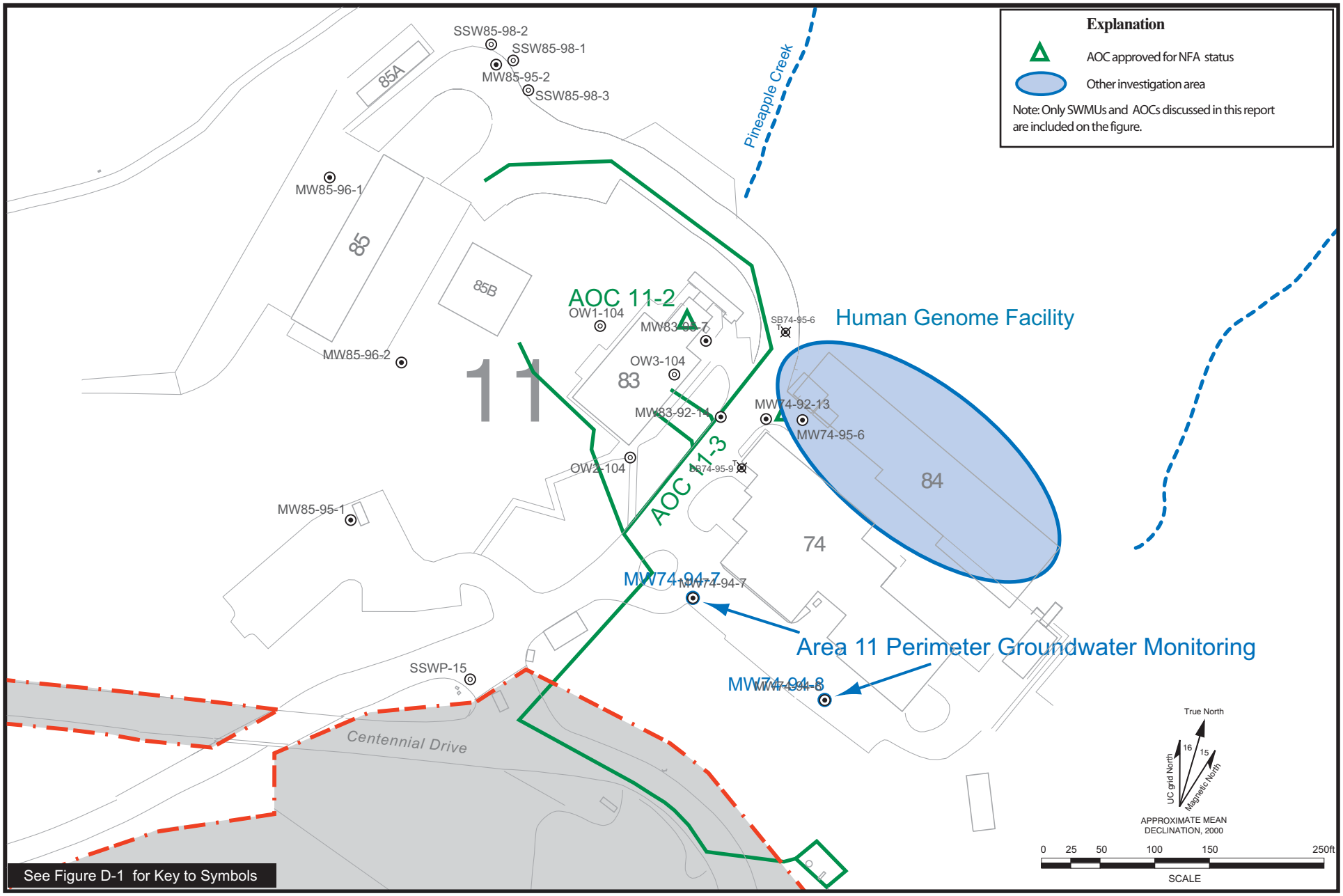

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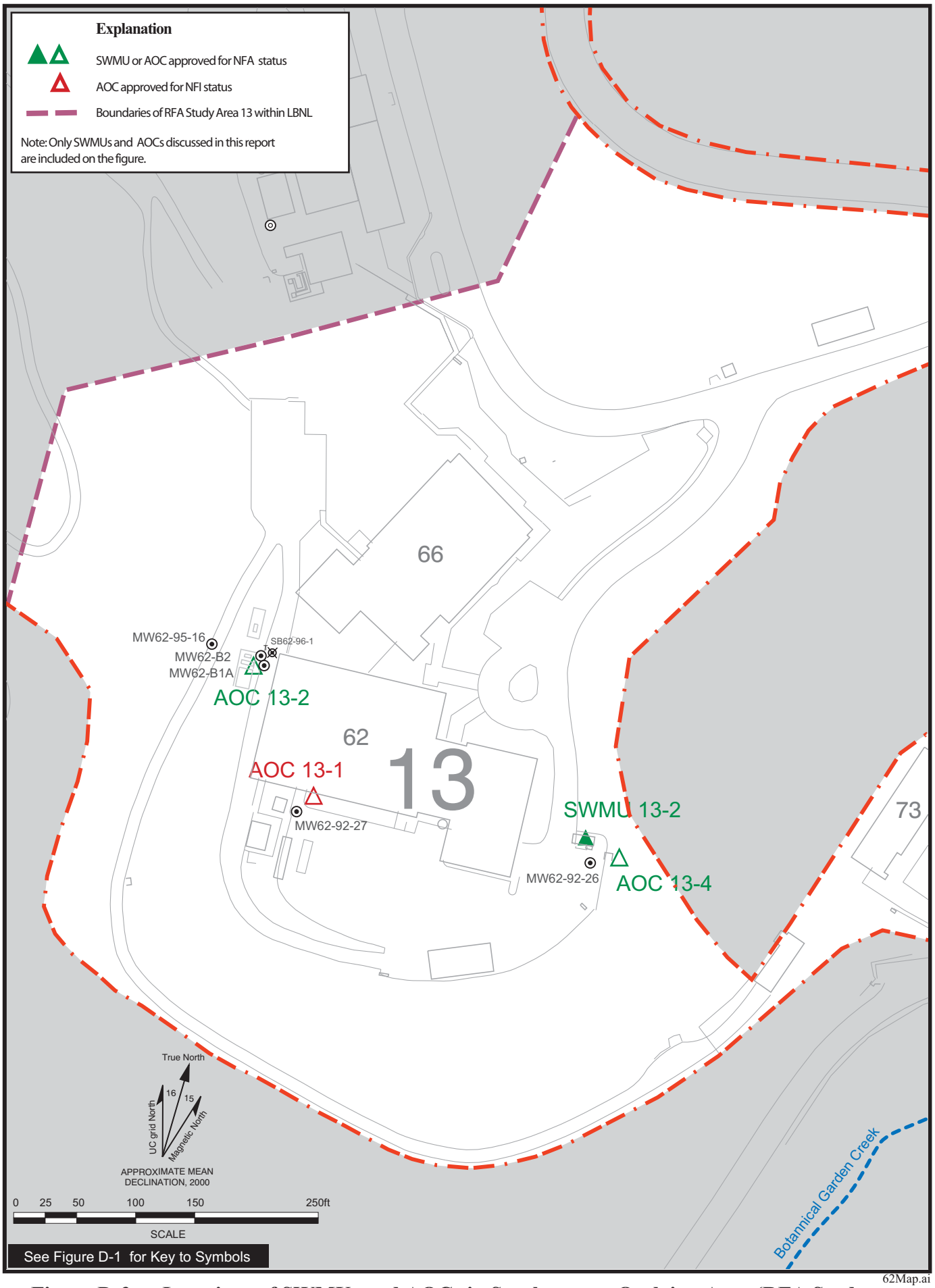
Figure D-3b. Locations of AOCs and Other Investigation Areas in Northeastern Outlying Area (RFA Study Area 11 - Life Sciences Area) Discussed in Module D.



62Map.ai
09/00

Figure D-3c. Locations of SWMUs and AOCs in Southeastern Outlying Area (RFA Study Area 13) Discussed in Module D.

Age	Formation	Description
Quaternary	Artificial fill	Generally engineered fill consisting of fine-grained material. Older fills include vegetative and other debris.
	Colluvium	Predominantly clayey silt.
	Debris flows	Boulders and gravels of basalt, chert, and porcelenite in a silty clay matrix.
	Landslides	Translational/rotational slide masses incorporating bedrock. Occur at the Moraga/Orinda Formation contact.

	WEST OF HAYWARD FAULT	EAST OF HAYWARD FAULT					
		West of Life Sciences Area Main Canyon Landslide Deposit			*East of Life Sciences Area Main Canyon Landslide Deposit*		
Age		**Group**	**Formation**	**Description**	**Group**	**Formation**	**Description**
Tertiary		Contra Costa	Moraga	Andesitic flows, breccias, and agglomerates with minor amounts of basaltic flows and interbedded volcaniclastic sandstone and conglomerate.	San Pablo (?)	Neroly	Fossiliferous, shallow marine, fine grained sandstones with minor amounts of siltstone.
			Orinda	Alluvial sedimentary deposits consisting primarily of claystone and siltstone with lenticular to linear beds of sandstone and conglomerate.		Briones	Fossiliferous, shallow marine, fine grained sandstones with minor amounts of siltstone.
					Monterey	Claremont	Chert and shale with minor amounts of sandstone.
Cretaceous		Great Valley		Marine mudstones, shales, and sandstones.			
Jurassic	Franciscan Complex						

Figure D2.1-1. Stratigraphic Correlation Chart, Lawrence Berkeley National Laboratory.

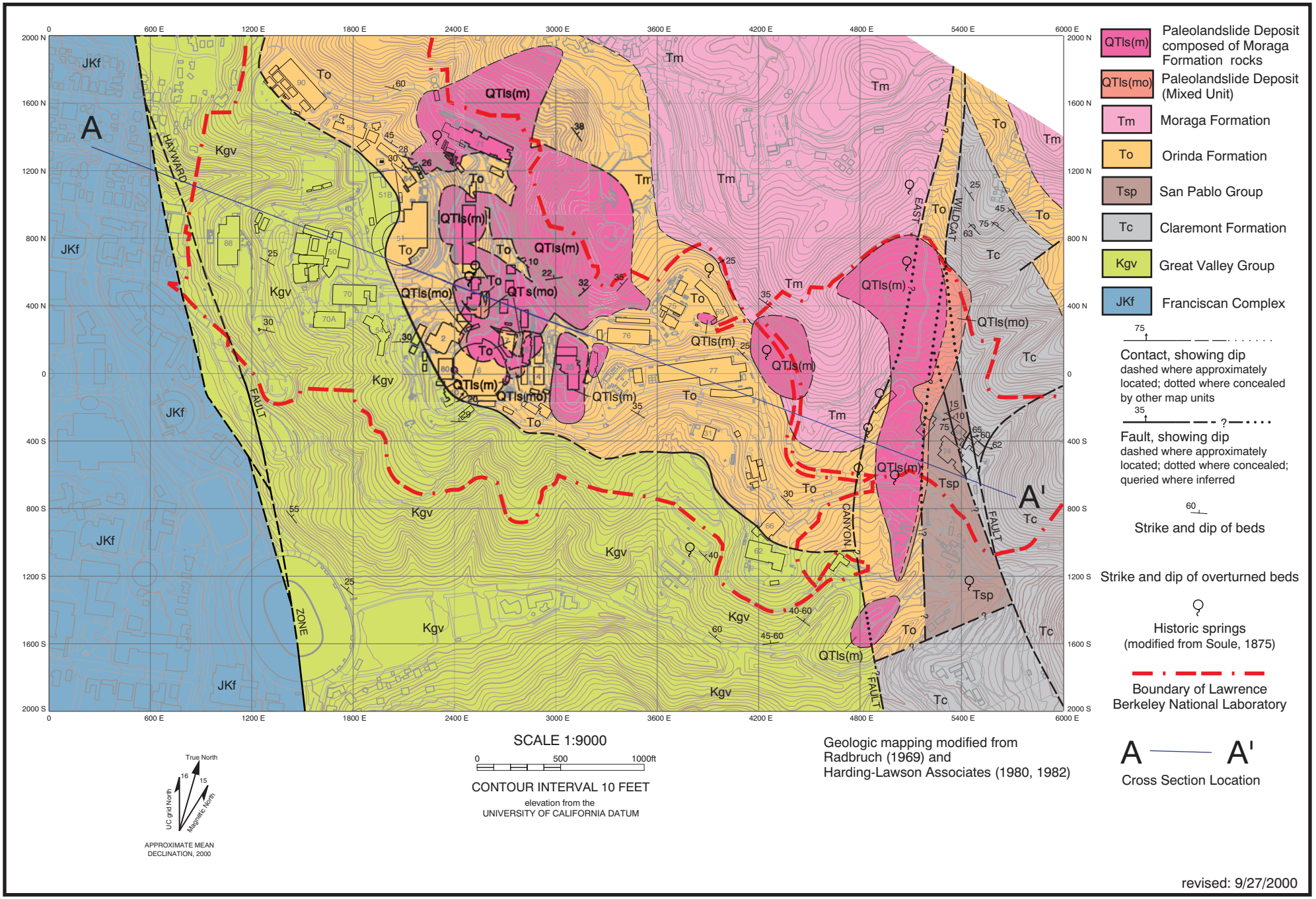


Figure D2.1-2. Bedrock Geologic Map, Lawrence Berkeley National Laboratory.

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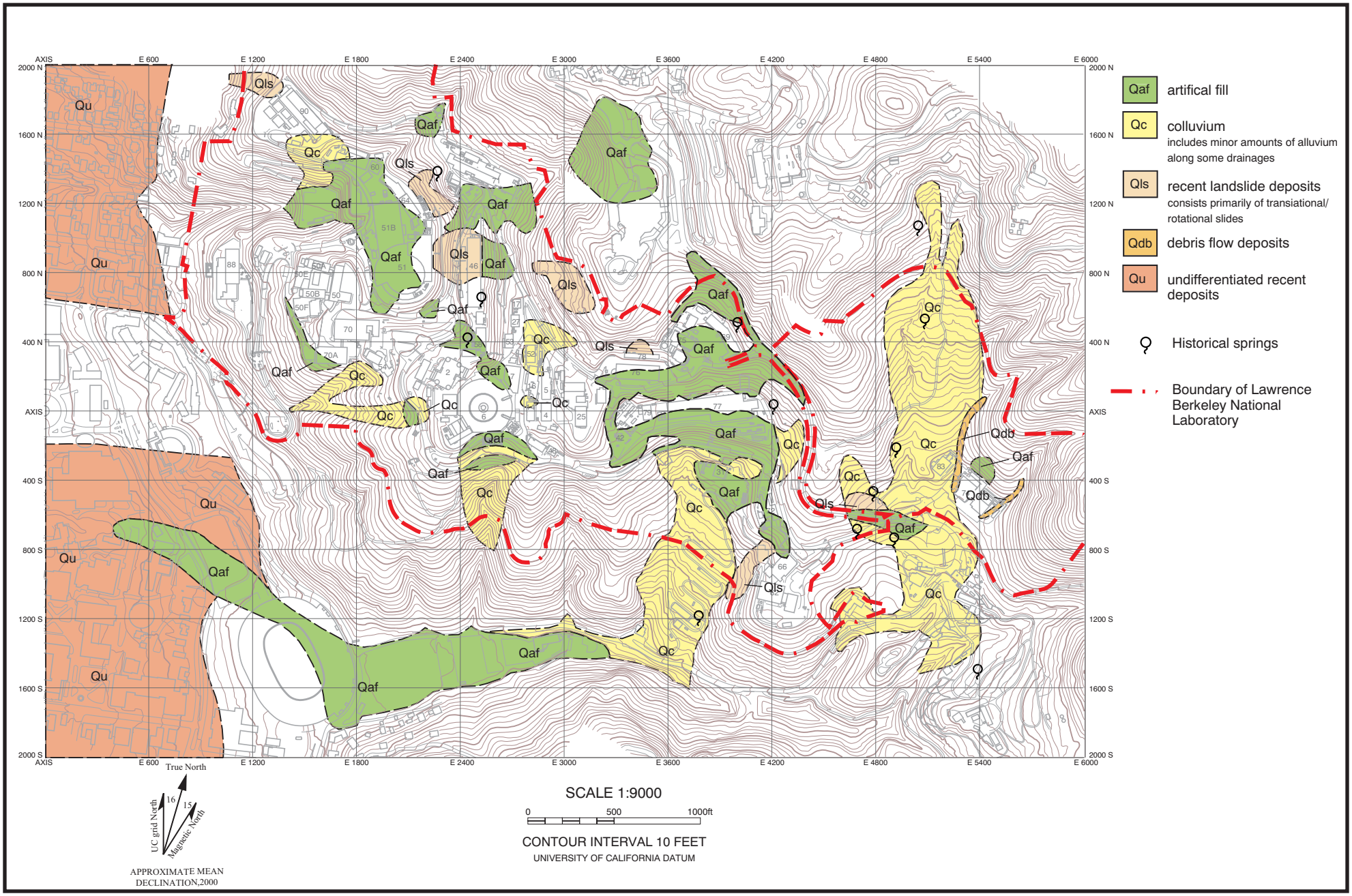

Figure D2.1-3 Surficial Geologic Map (modified from Harding-Lawson Associates, 1982), Lawrence Berkeley National Laboratory.

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09/00

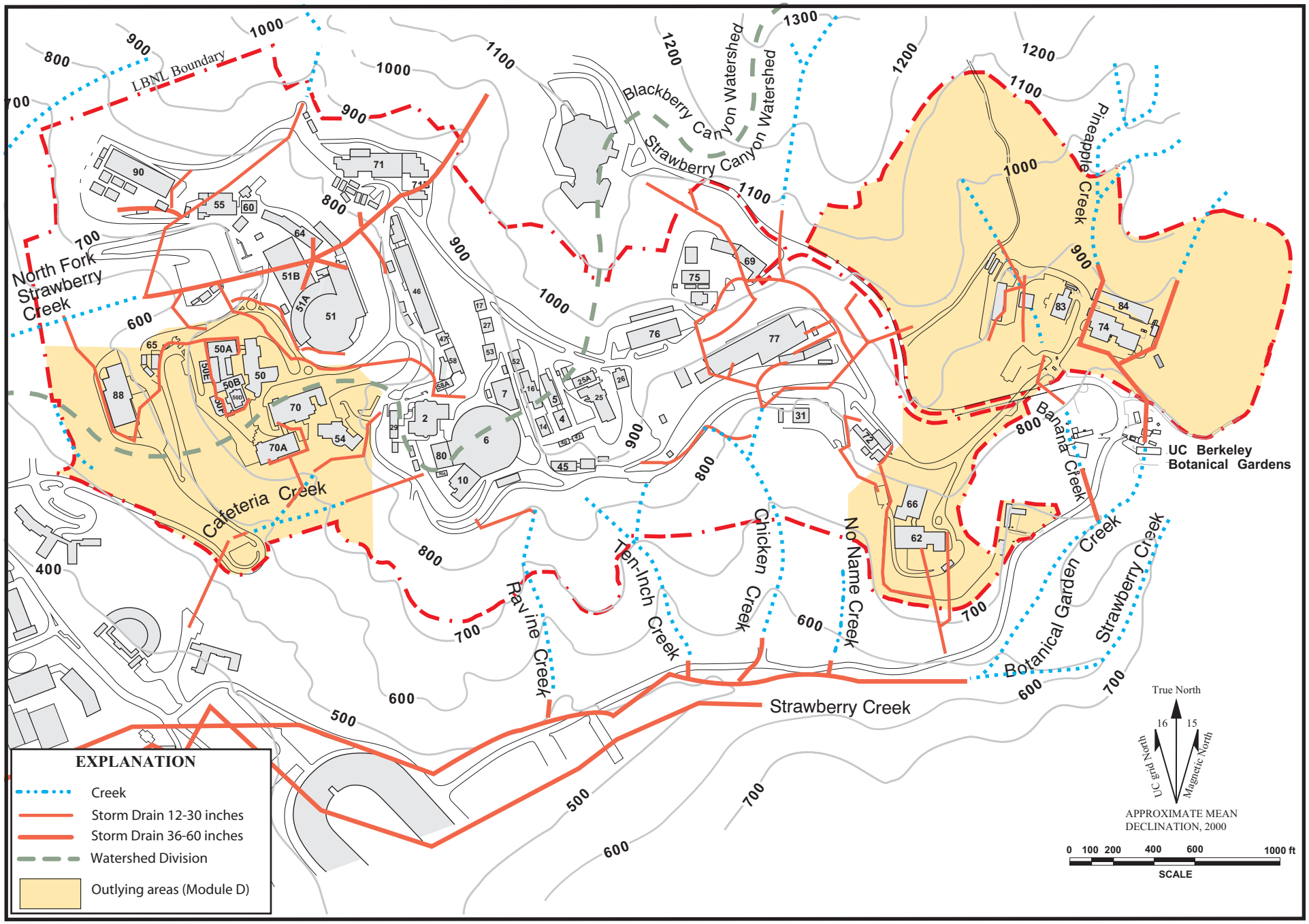

Figure D2.1-4. LBNL Surface Hydrology and Stormwater Drainage System.

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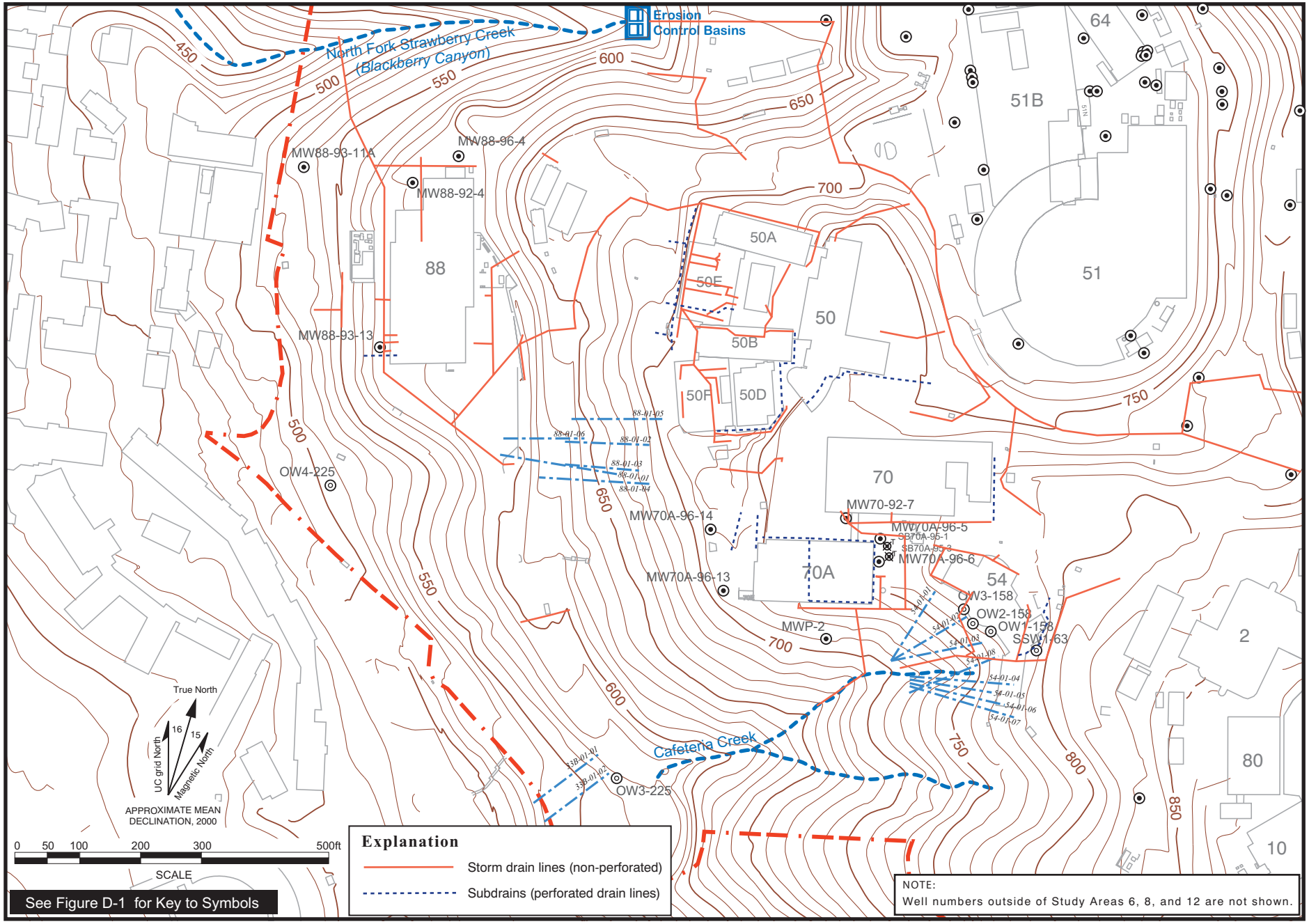

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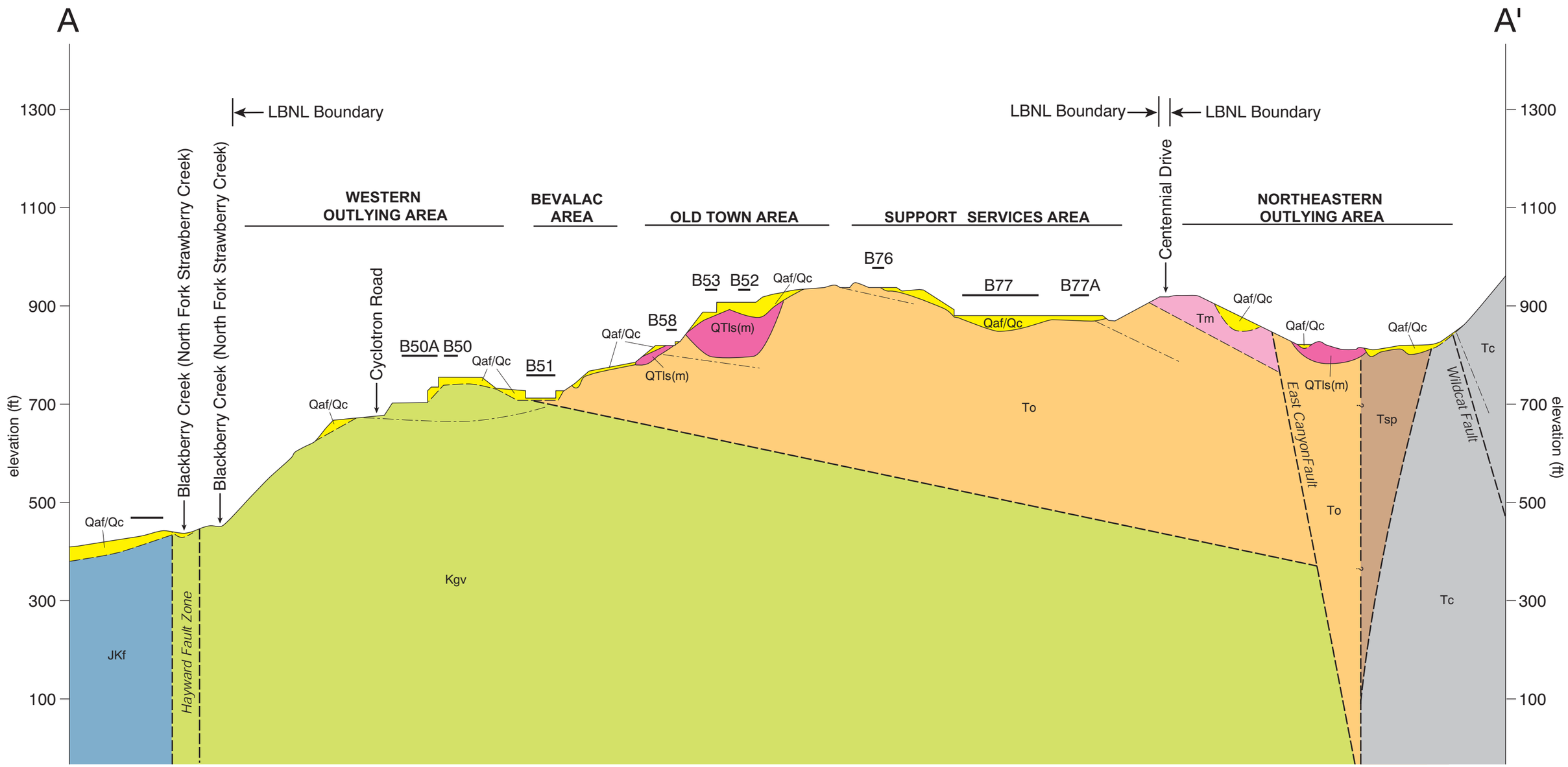
Figure D2.2-1. Storm Drains, Subdrains, and Hydraugers in Western Outlying Area (RFA Study Areas 6, 8, and 12).



HORIZONTAL SCALE 1:4800

0 500 1000 ft

2x vertical exaggeration

elevation from the UNIVERSITY OF CALIFORNIA DATUM

B58 — approximate horizontal location of buildings on or near section

tinted box indicates unit appears in section

- Qaf/Qc — artificial fill/colluvium (may locally include alluvium)
- QTls(m) — Paleolandslide Deposit Composed of Moraga Formation Rocks
- Tm — Moraga Formation
- To — Orinda Formation
- Tsp — San Pablo Group
- Tc — Claremont Formation
- Kgv — Great Valley Group
- JKf — Franciscan Complex

Contact — dashed where approximately located

Fault — dashed where approximately located; queried where inferred

generalized apparent dip

revision: 9/26/2000

Figure D2.2-2. LBNL Site Cross Section A-A', Including Western Outlying Area.

D2.2-2 A-A'.ai

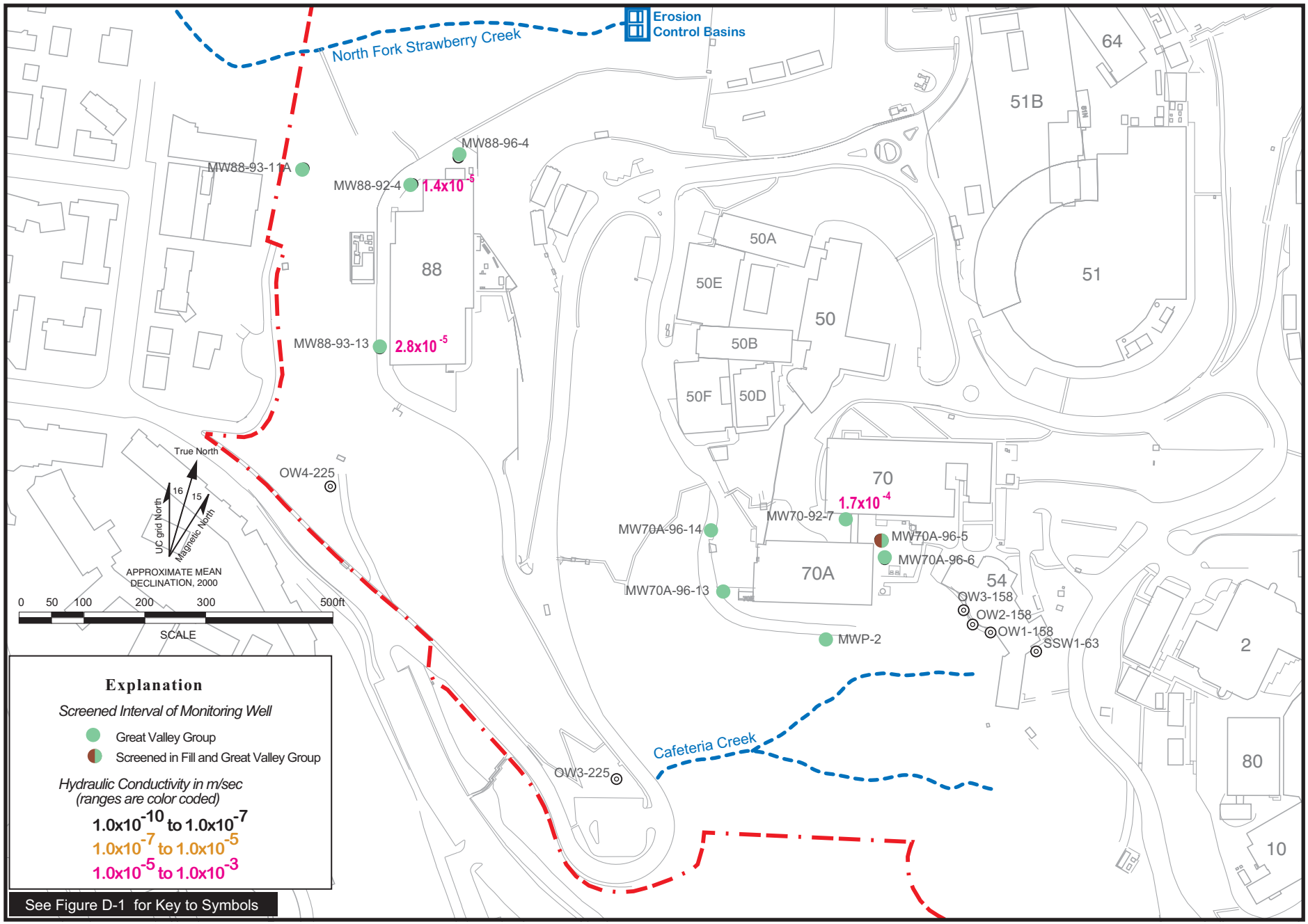


Figure D2.2-3. Well Locations Showing Hydraulic Conductivity Estimates Calculated from Slug Tests and Pumping Tests in Western Outlying Area.

D2.2-3 B50,70,88K
09/00

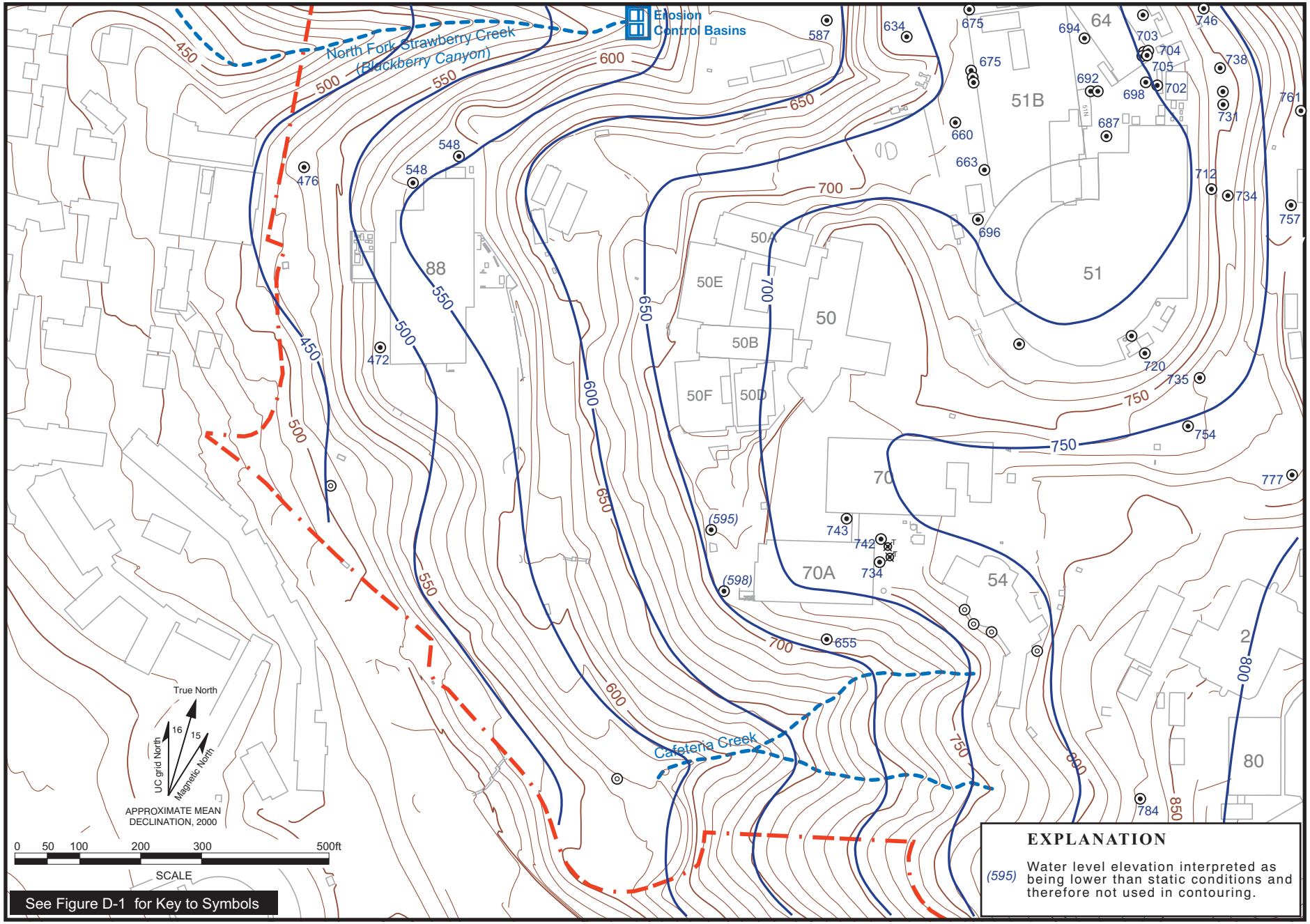


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Figure D2.2-4. Water Level Elevation Contour Map, Western Outlying Area (RFA Study Areas 6, 8, and 12), Fourth Quarter Fiscal Year 1999.

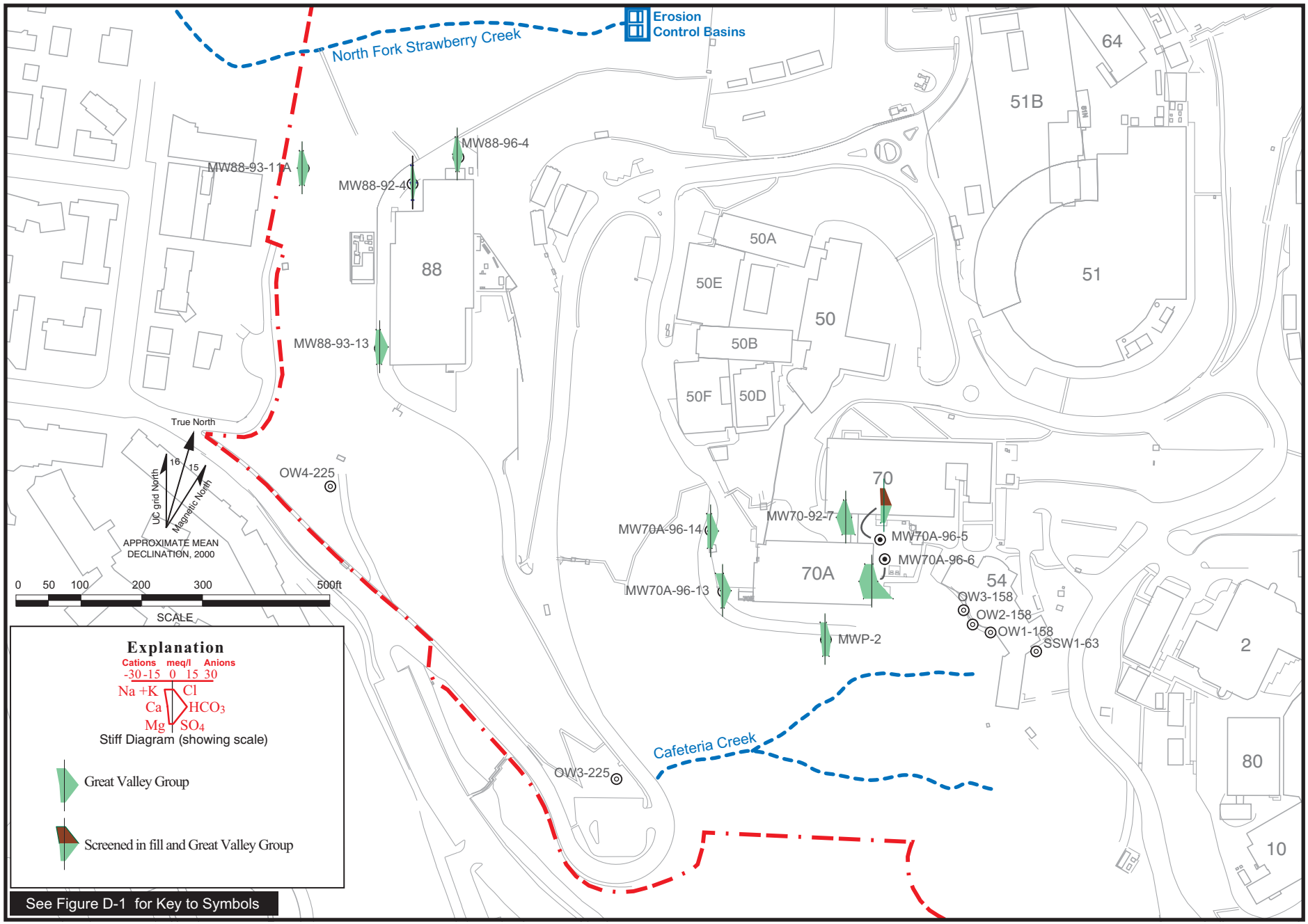
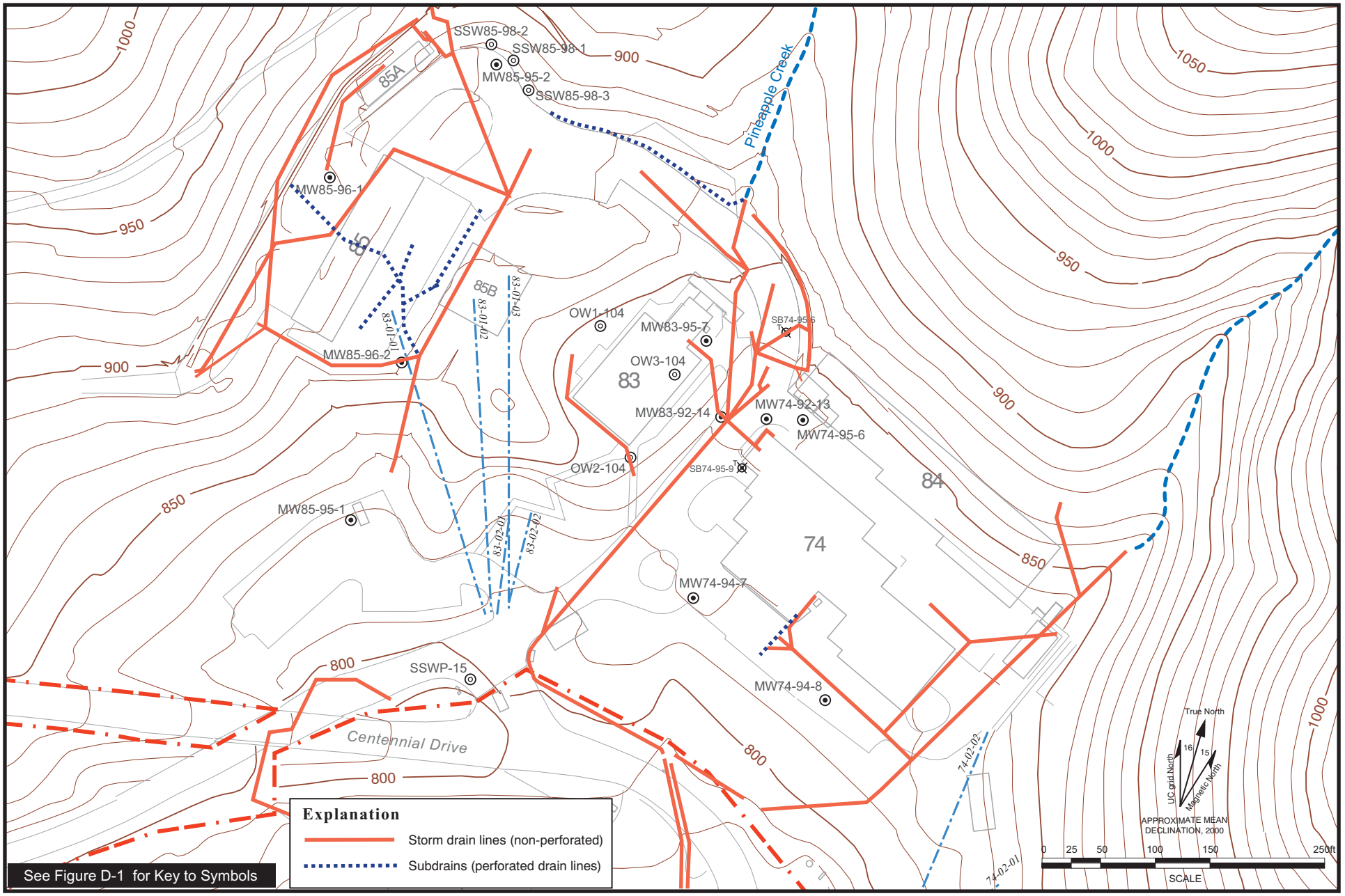


Figure D2.2-5. Stiff Diagram of Groundwater Geochemical Parameters in Western Outlying Area.

D2.2-5 B50,70,88Stiff
09/00



74-85map.ai
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Figure D2.3-1. Storm Drains, Subdrains, and Hydraugers in Northeastern Outlying Area.

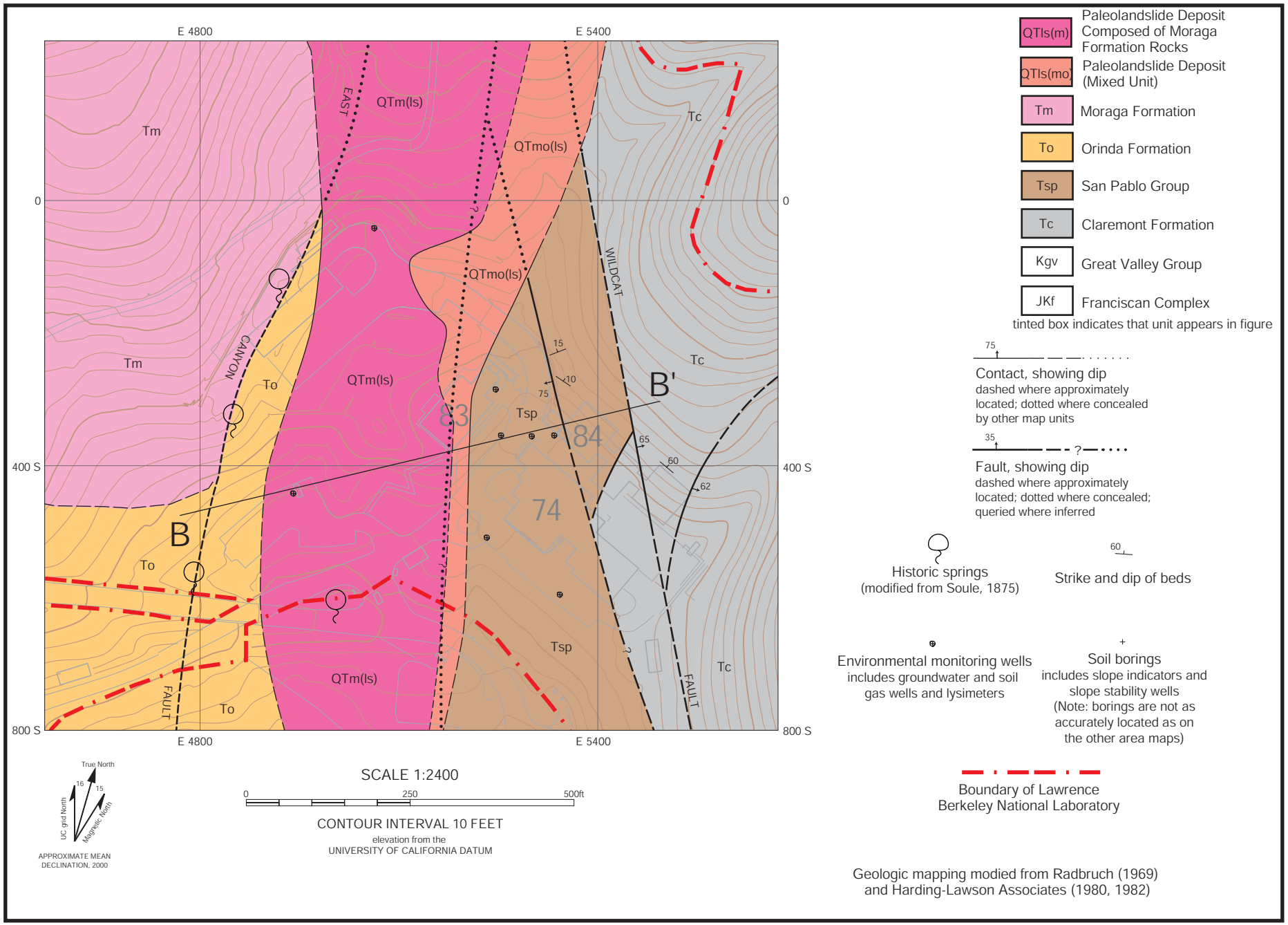

Figure D2.3-2. Life Sciences Area Bedrock Geologic Map.

D2.3-2 LSBRmap.ai
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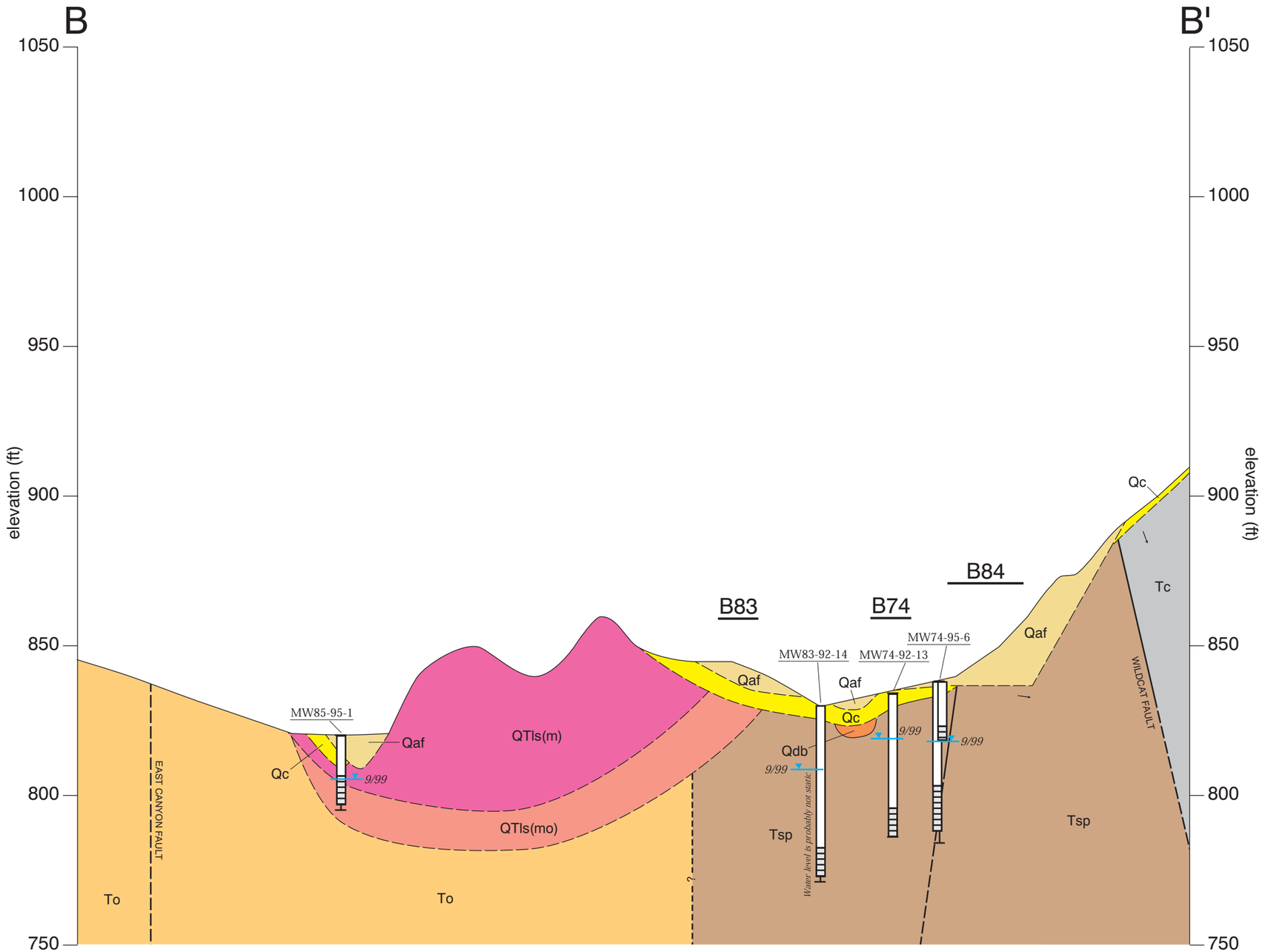

HORIZONTAL SCALE 1:900

0 100 200ft

2x vertical exaggeration

elevation from the UNIVERSITY OF CALIFORNIA DATUM

B58 — approximate horizontal location of buildings on or near section

tinted box indicates unit appears in section

Qaf	artificial fill	QTls(m)	Paleolandslide Deposit Composed of Moraga Formation Rocks	Tsp	San Pablo Group
Qc	colluvium (may locally include alluvium)	QTls(mo)	Paleolandslide Deposit (Mixed Unit)	Tc	Claremont Formation
Qdb	debris flow deposits	Tm	Moraga Formation	Kgv	Great Valley Group
		To	Orinda Formation		

Contact — dashed where approximately located

Fault — dashed where approximately located; queried where inferred

generalized apparent dip

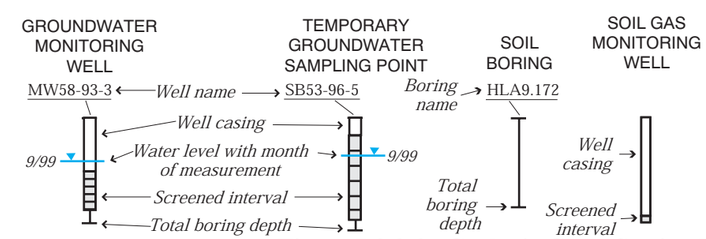

Figure D2.3-3. Geologic Cross Section B-B', Life Sciences Area.

D2.3-3 LifeSciBB.ai
09/00

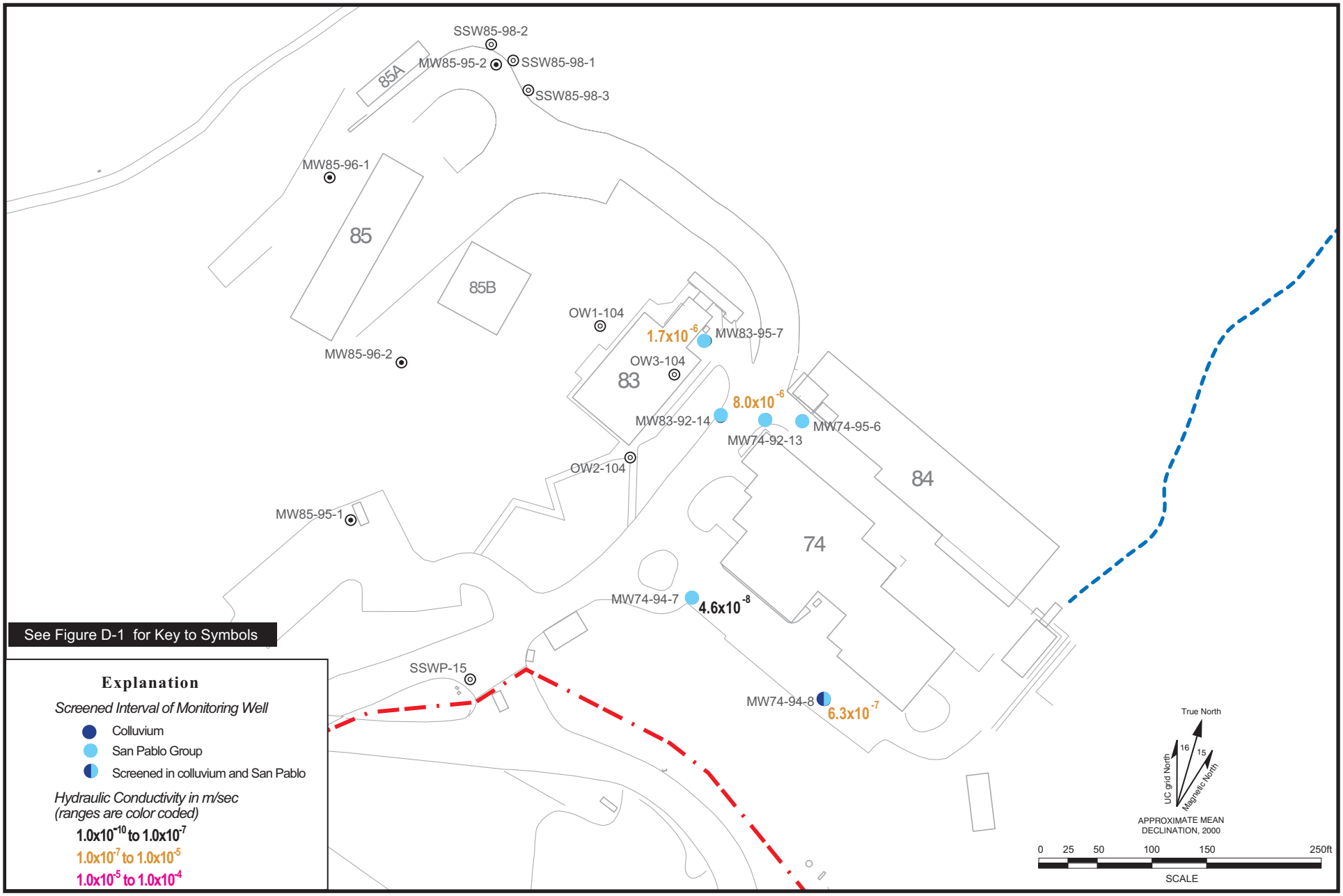

Figure D2.3-4. Well Locations Showing Hydraulic Conductivity Estimates Calculated from Slug Tests and Pumping Tests in Northeastern Outlying Area.

D2.3-4 B74,85K.ai
09/00

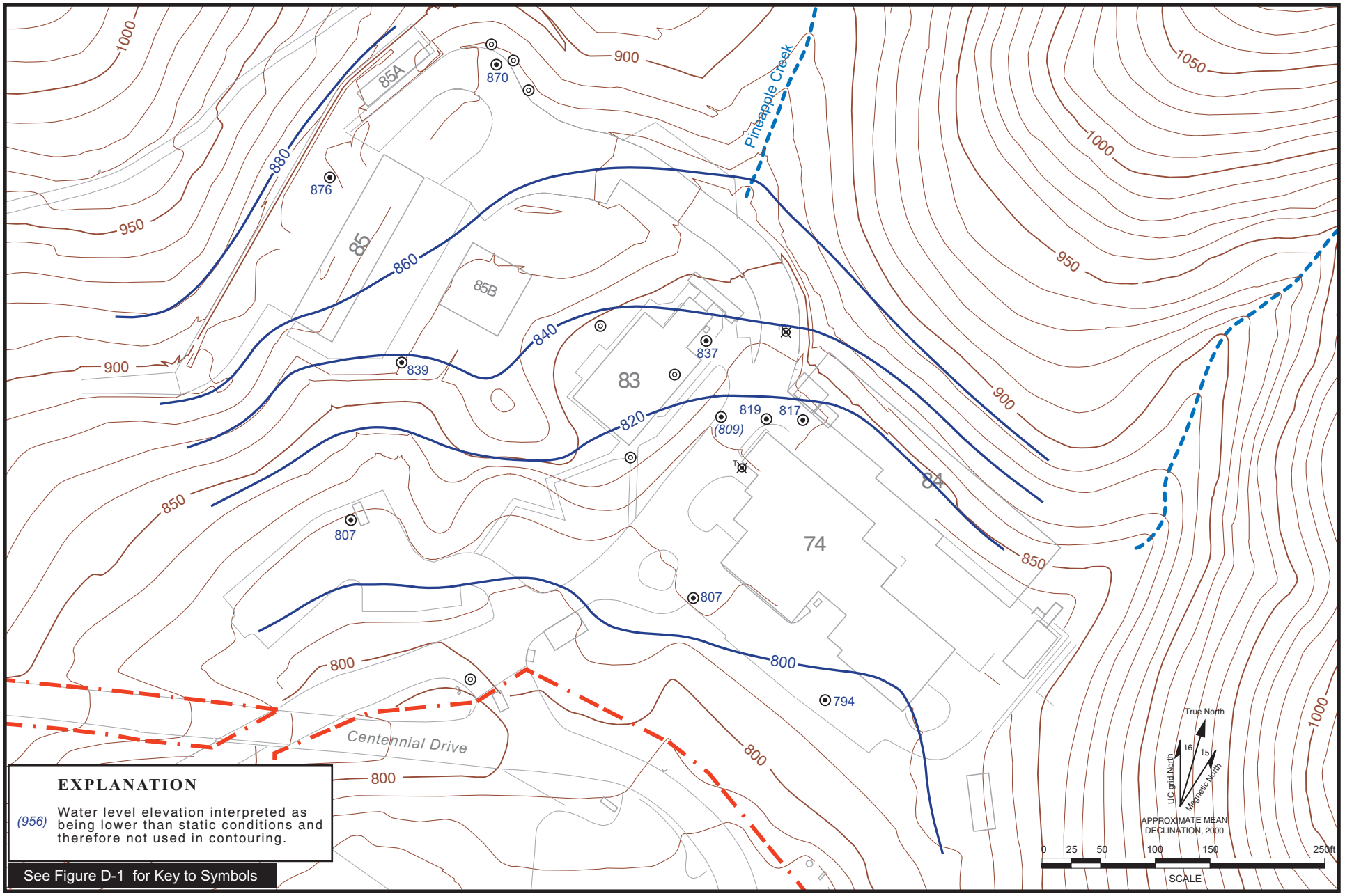

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Figure D2.3-5. Water Level Elevation Contour Map, Northeastern Outlying Area, Fourth Quarter Fiscal Year 1999.

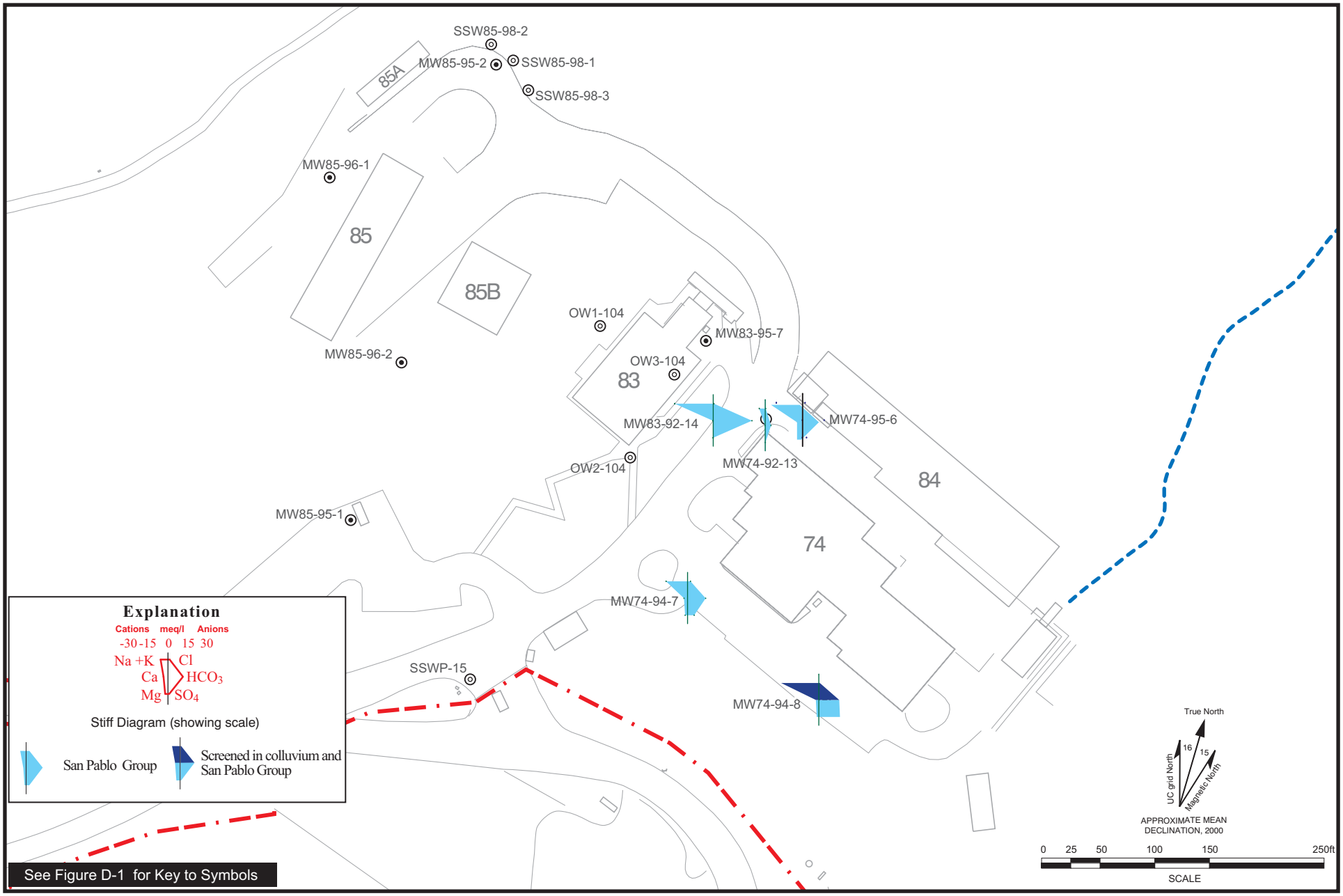

Figure D2.3-6. Stiff Diagrams of Groundwater Geochemical Parameters in Northeastern Outlying Area.

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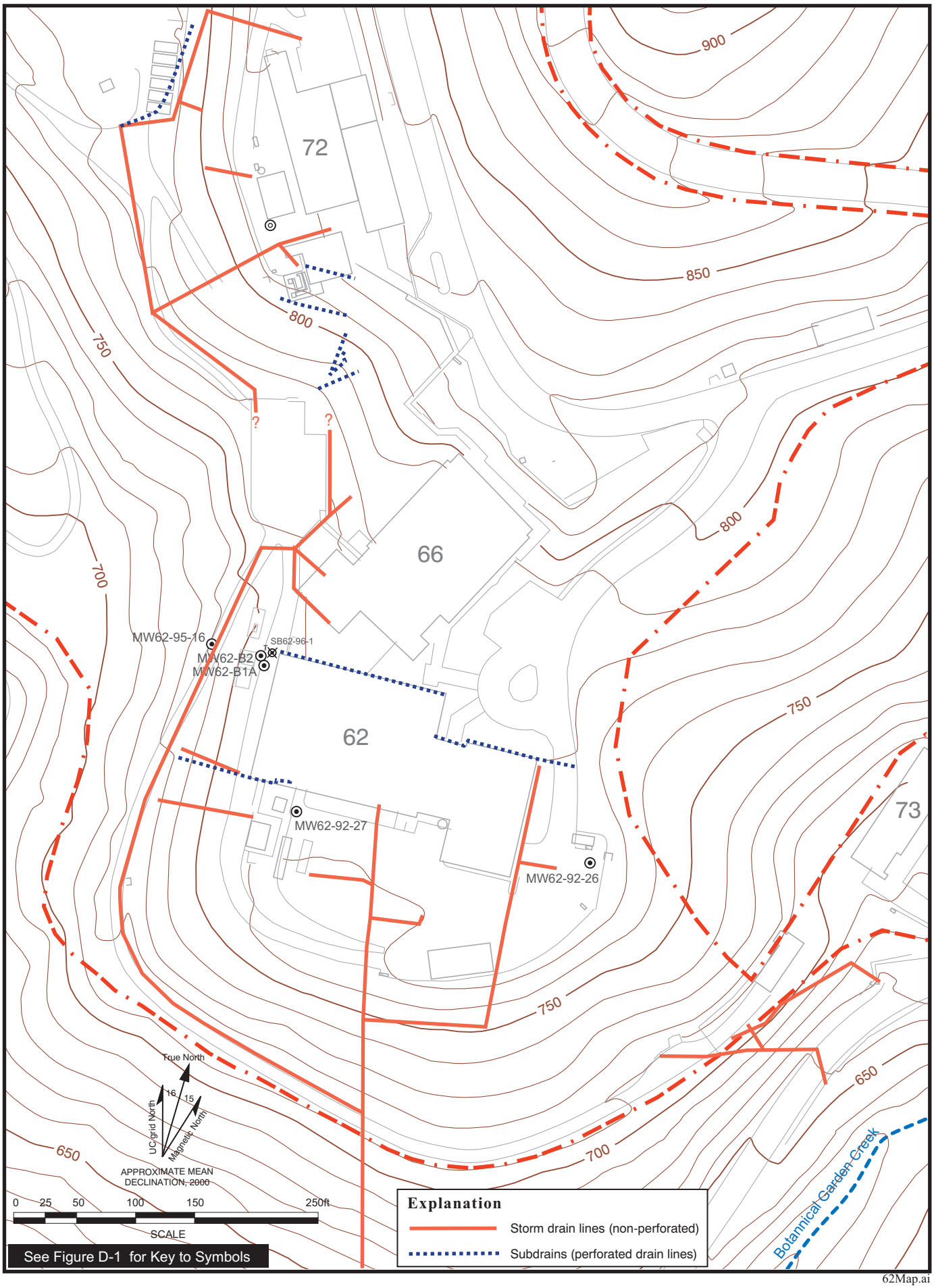

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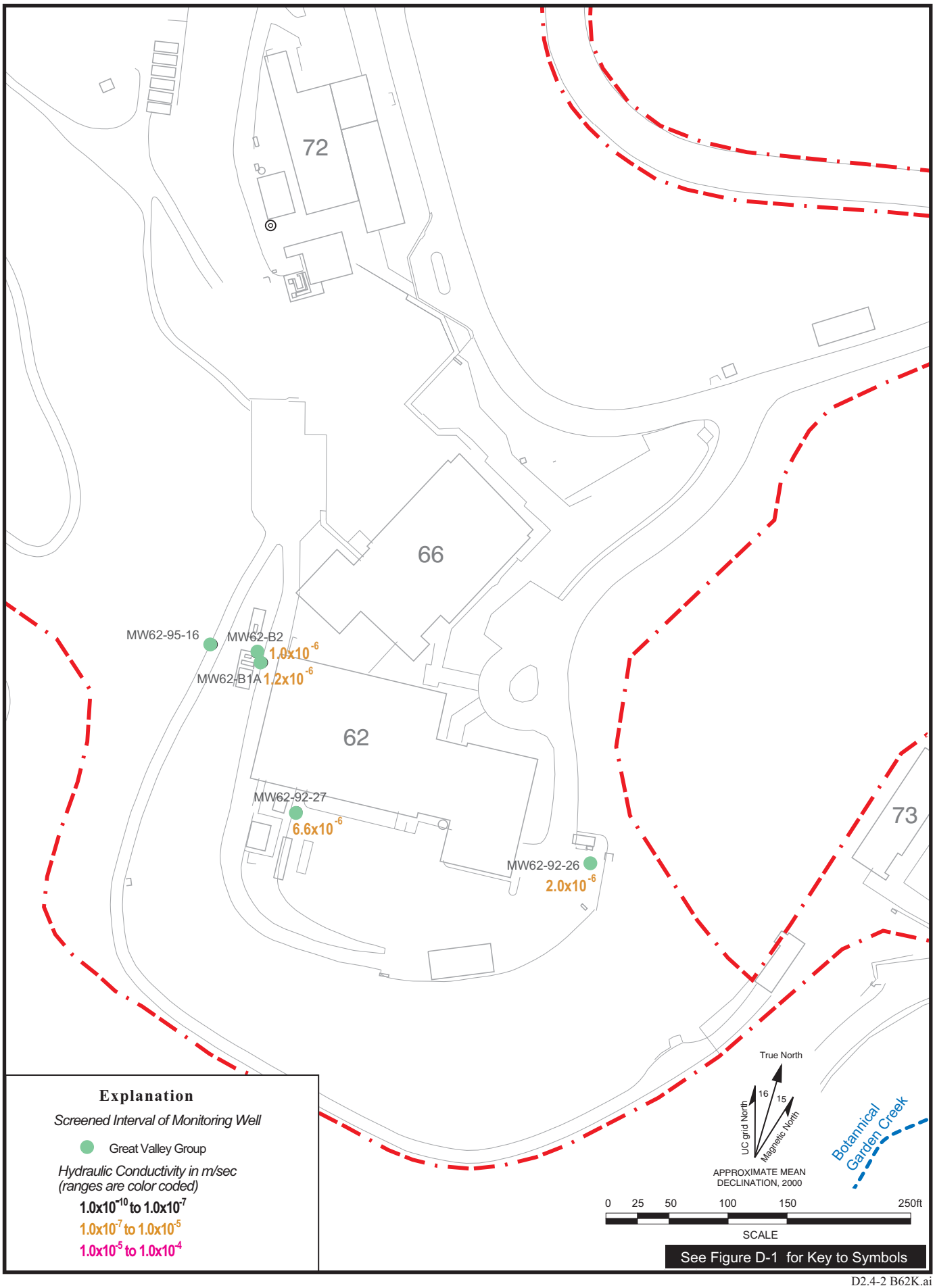
Figure D2.4-1. Storm Drains and Subdrains in Southeastern Outlying Area.



D2.4-2 B62K.ai
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Figure D2.4-2. Well Locations Showing Hydraulic Conductivity Estimates Calculated from Slug Tests and Pumping Tests in Southeastern Outlying Area.

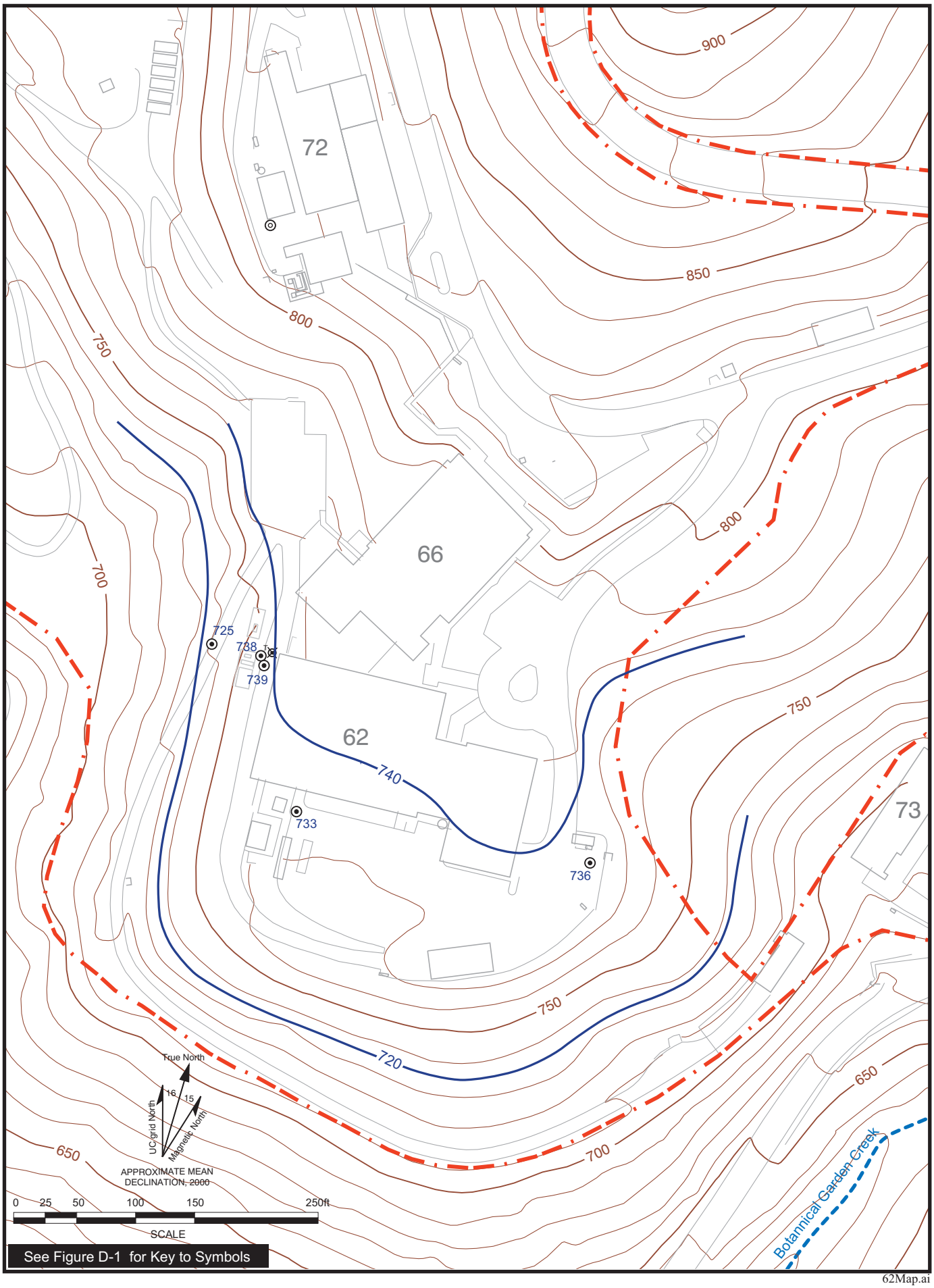

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Figure D2.4-3. Water Level Elevation Contour Map, Southeastern Outlying Area, Fourth Quarter Fiscal Year 1999.

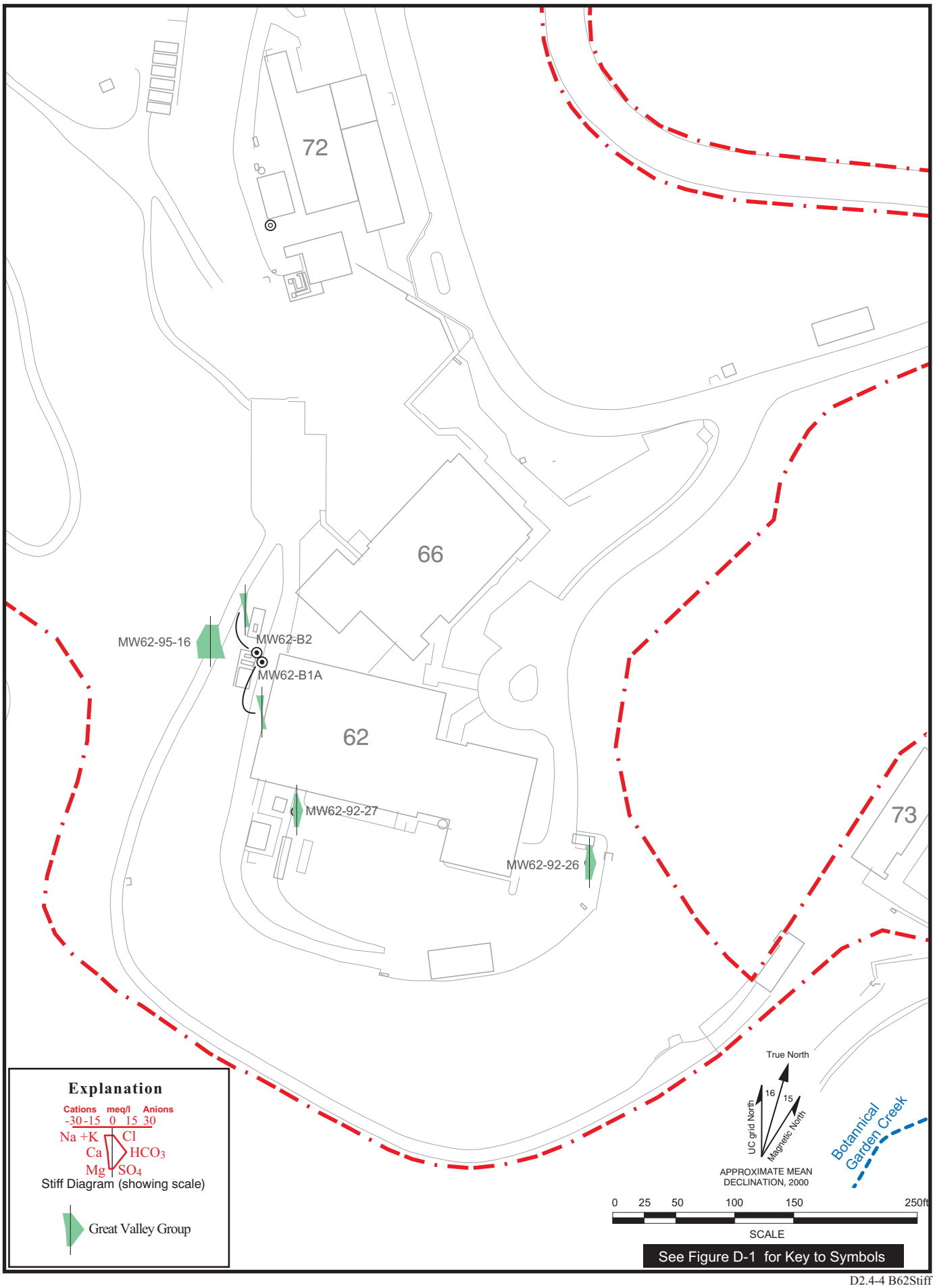

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Figure D2.4-4. Stiff Diagram of Groundwater Geochemical Parameters in Southeastern Outlying Area.

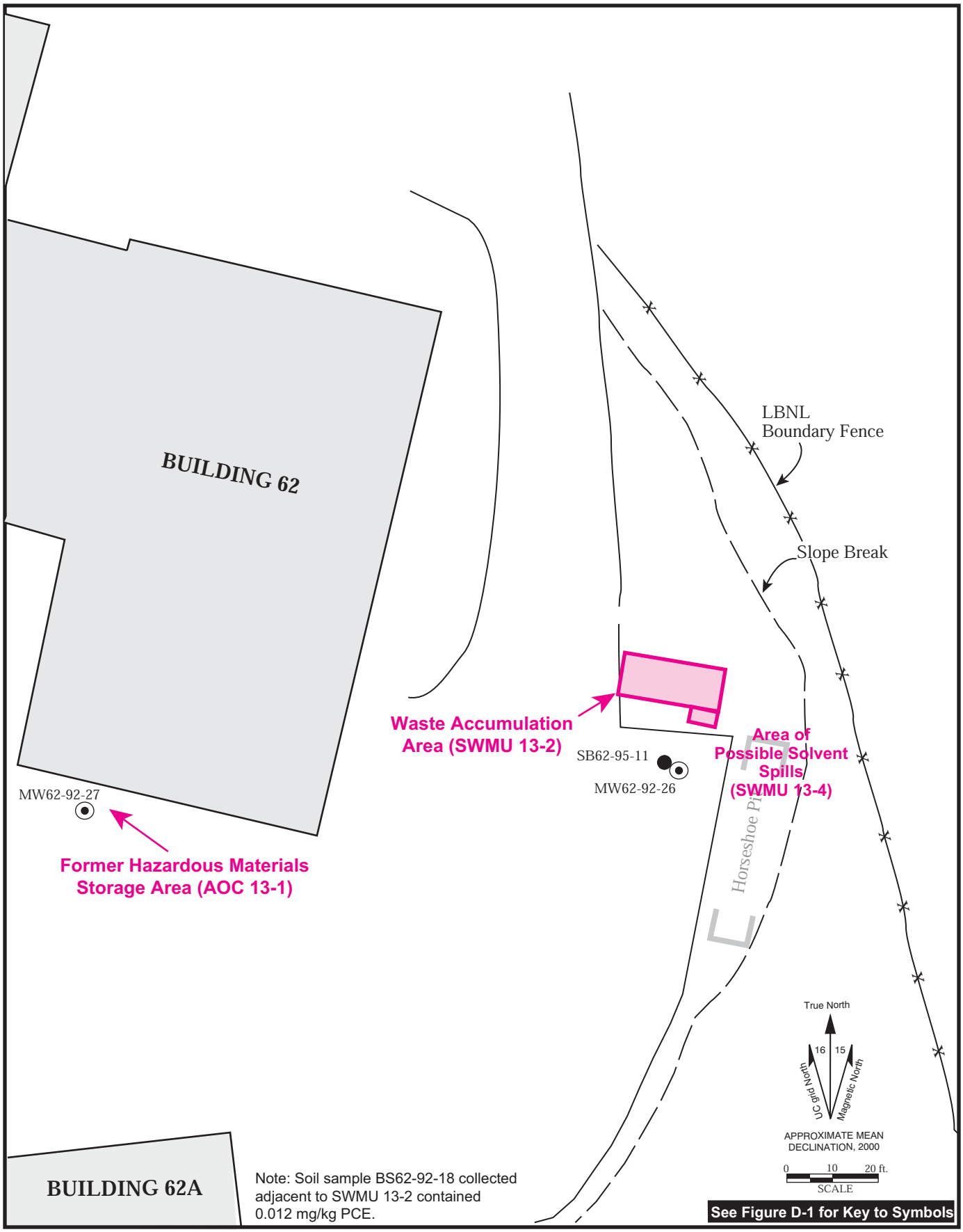
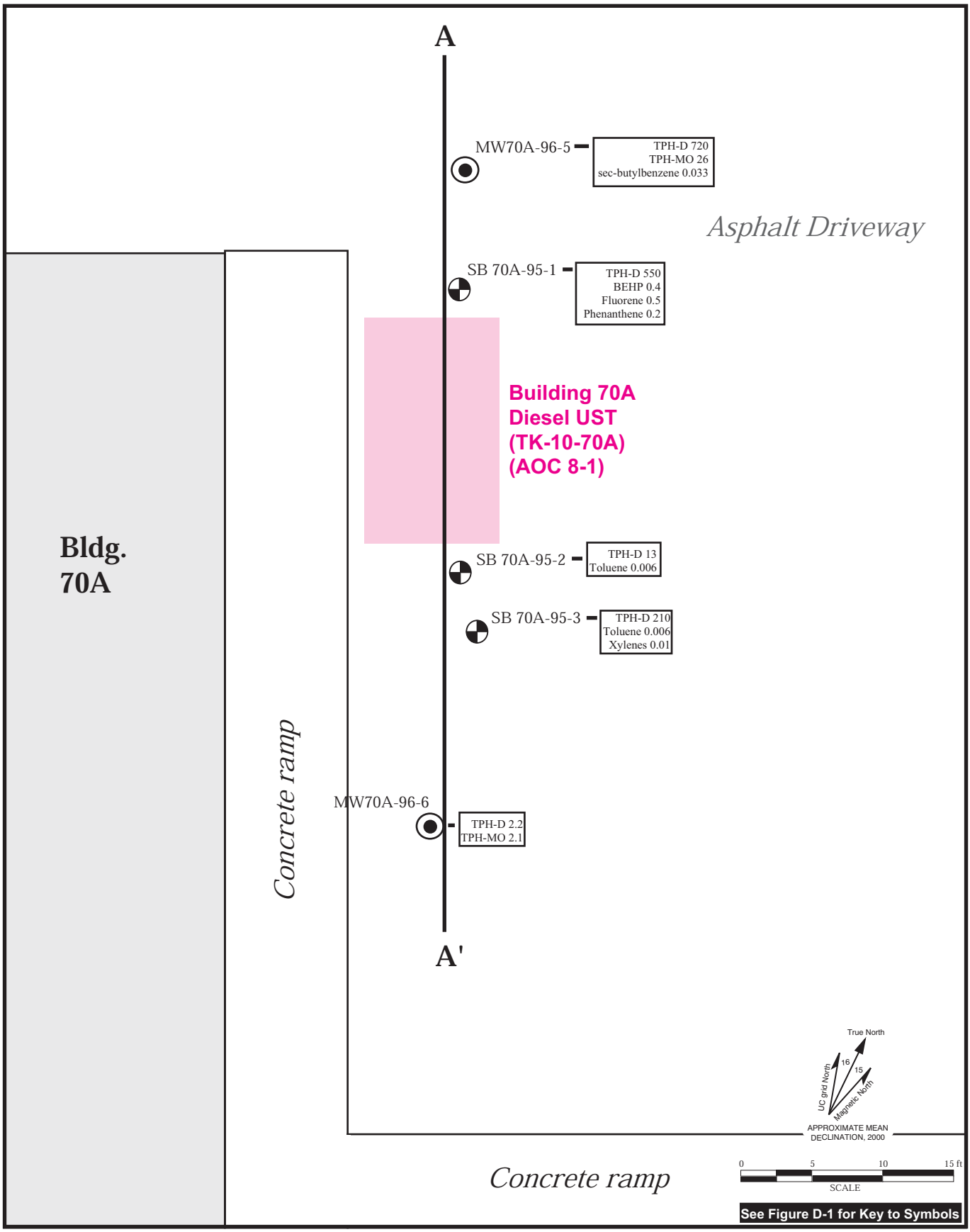


Figure D3.1-1. Locations of Soil Borings Showing Contaminant Concentrations (mg/kg) Exceeding Background, Building 62 Waste Accumulation and Chemical Storage Area (SWMU 13-2).

D3.1-1 B62Soil
09/00



D3.2-1 B70A.ai
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Figure D3.2-1. Locations of Soil Borings and Maximum Concentrations of Analytes Detected Above Background Levels (mg/kg), Building 70A Diesel UST (AOC 8-1).

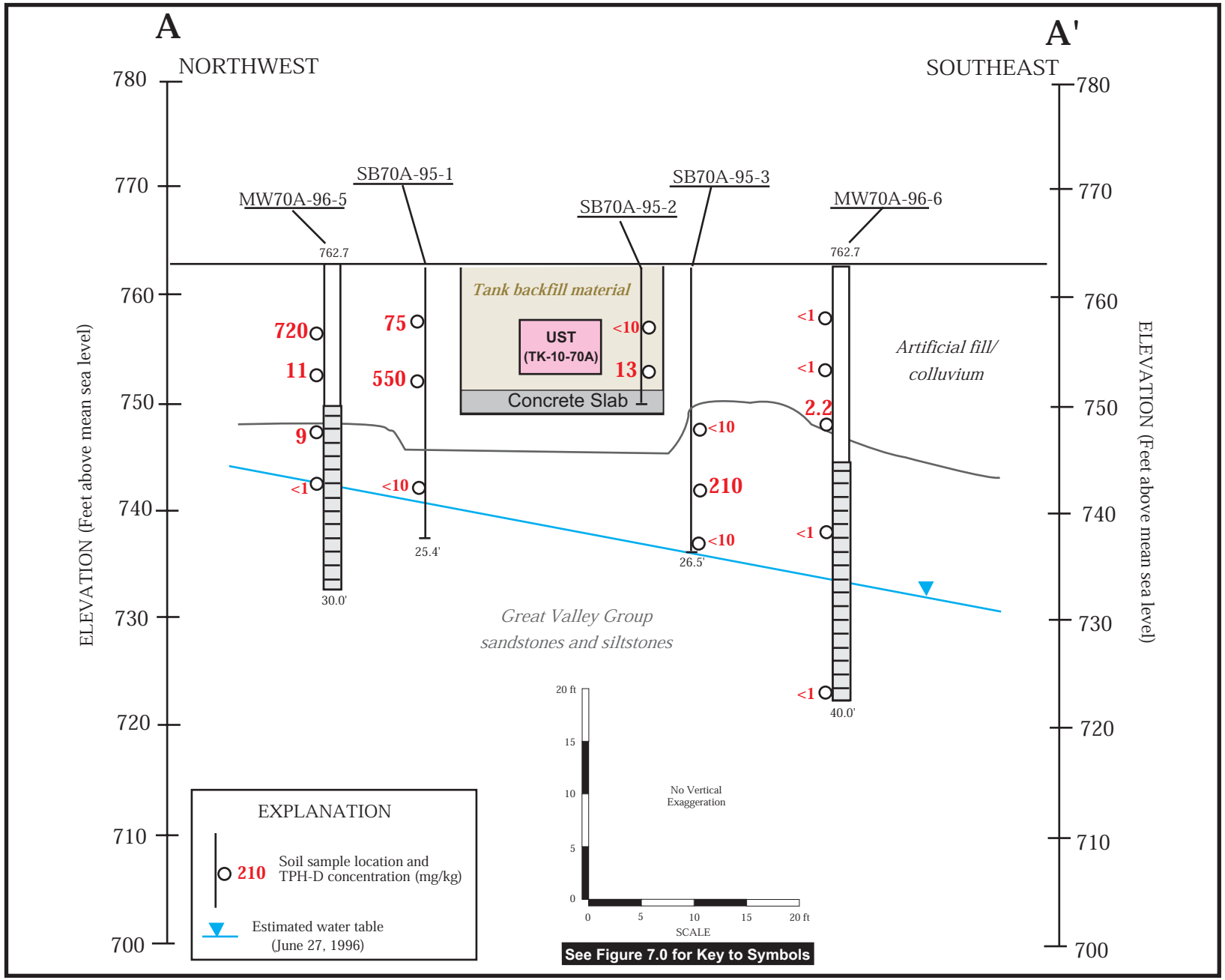
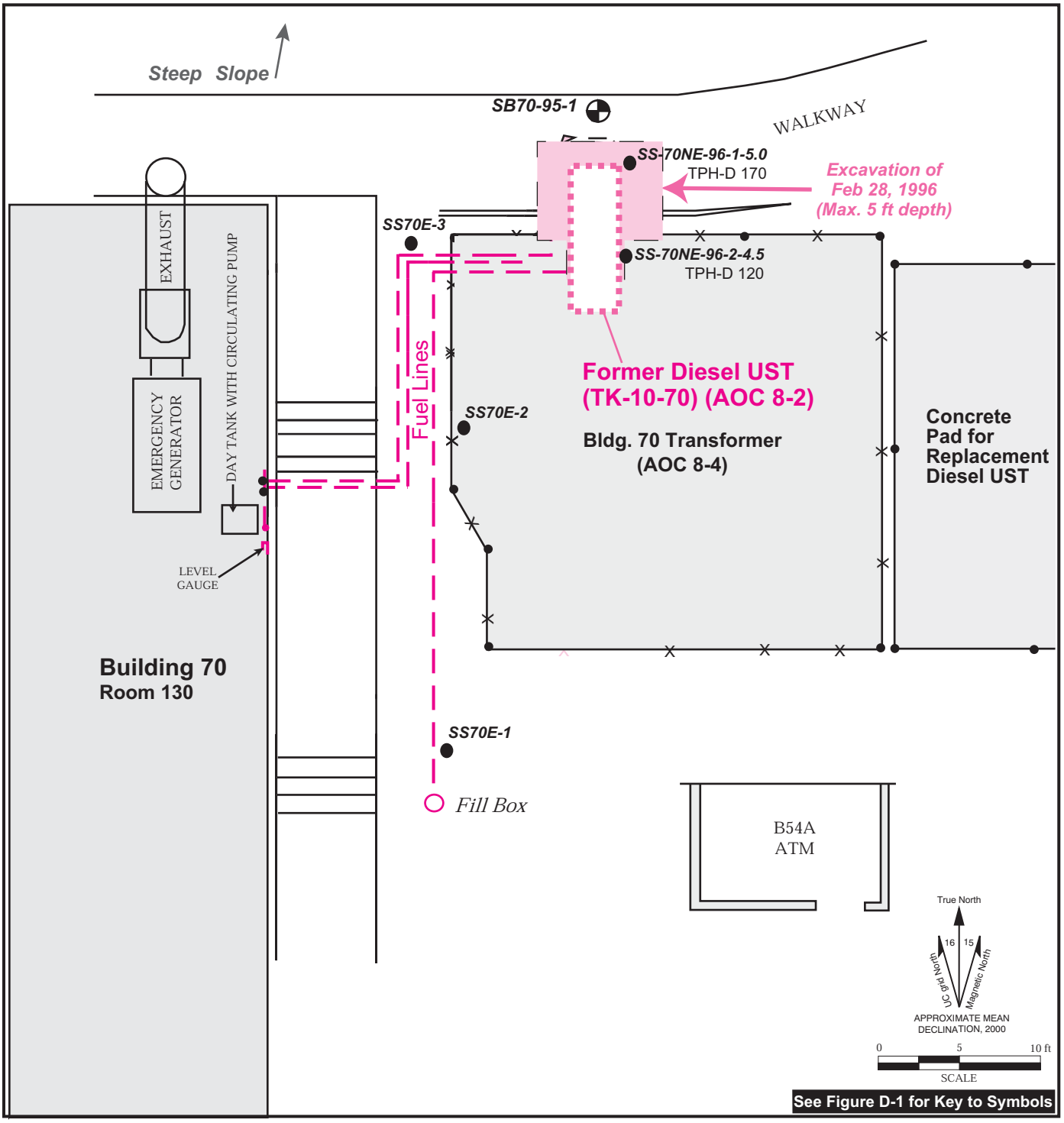


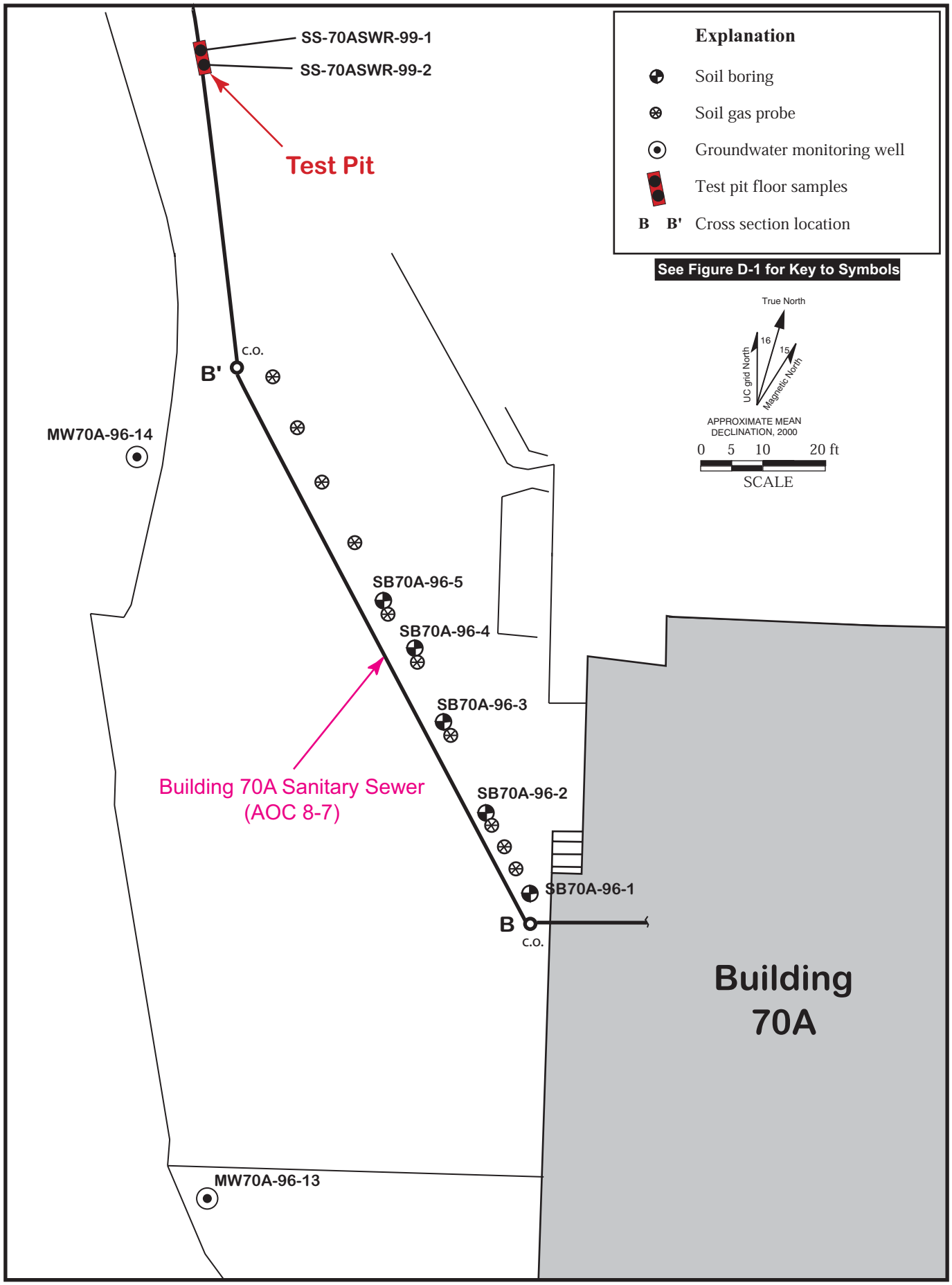
Figure D3.2-2. Geologic Cross Section A-A' Showing TPH-D Concentrations (mg/kg), Building 70A Diesel UST (AOC 8-1).

D3.2-2 AA70A.ai
09/00



D3.3-1 B70.ai
09/00

Figure 3.3-1. Locations of Soil Borings and Maximum Concentrations of TPH-D Detected (mg/kg), Building 70 Diesel UST (AOC 8-2).



D3.4-1 B70Asewer.ai
09/00

Figure D3.4-1. Locations of Soil Gas Probes, Soil Borings, Monitoring Wells, and Test Pit Samples, Building 70A Sanitary Sewer (AOC 8-7).

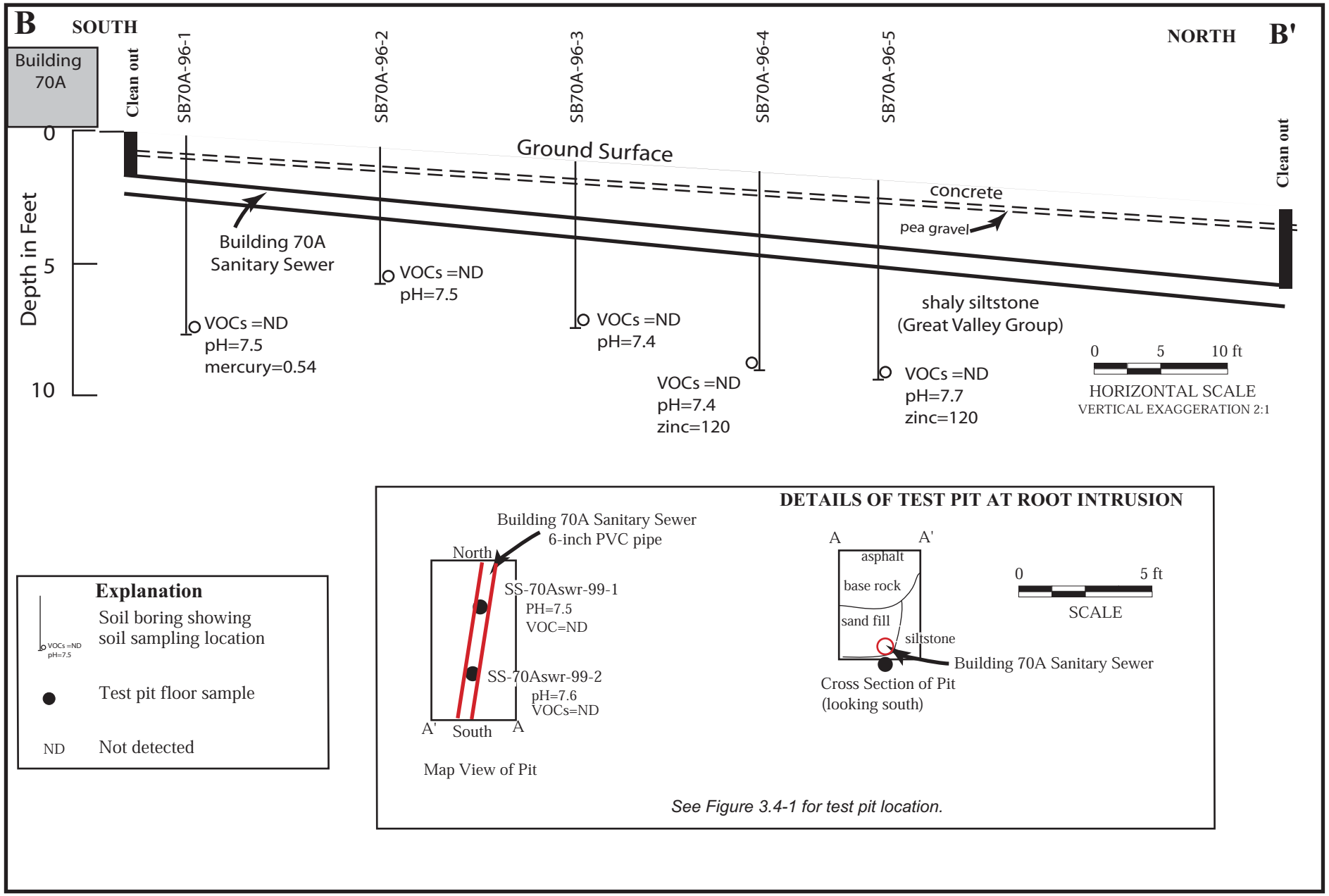
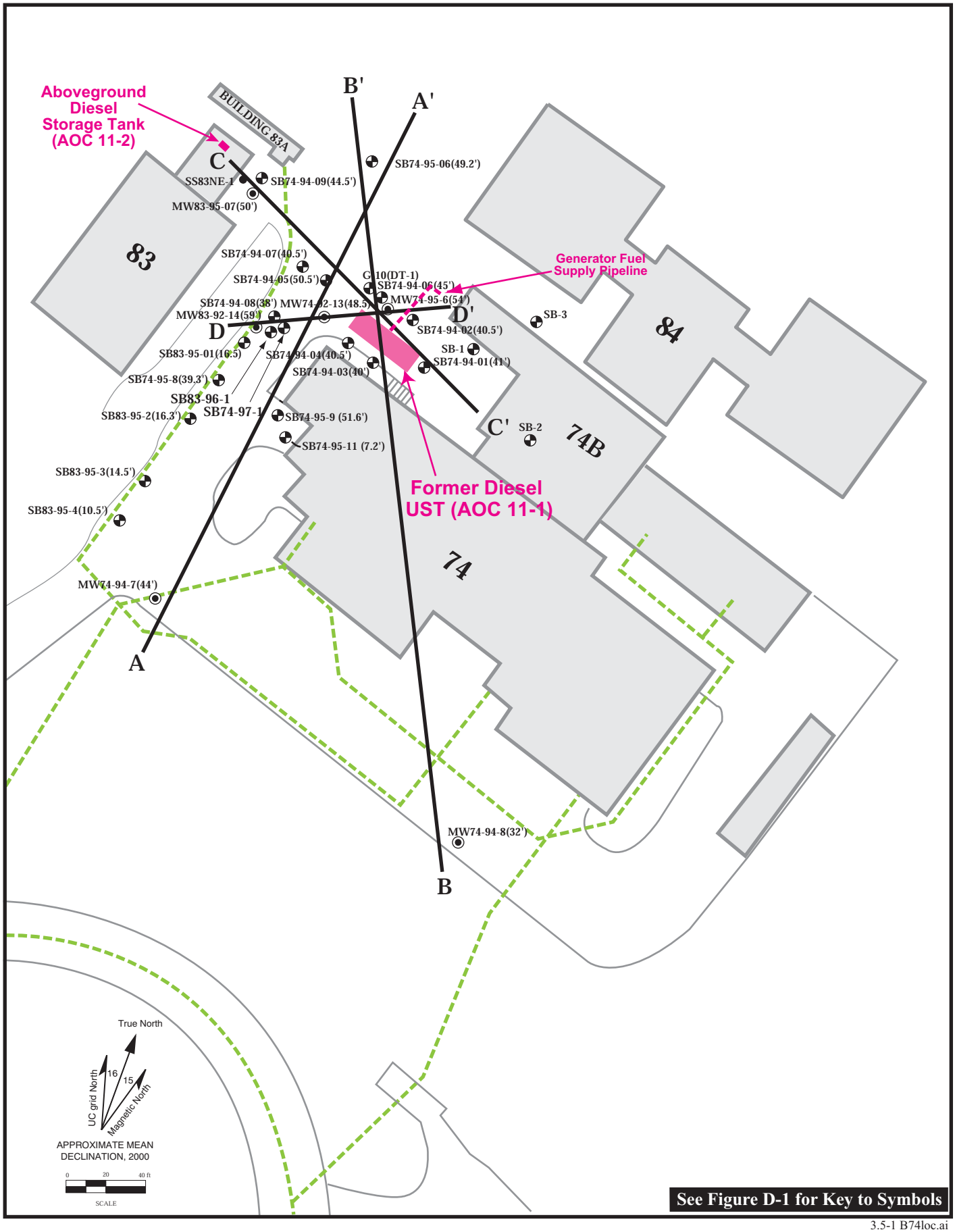


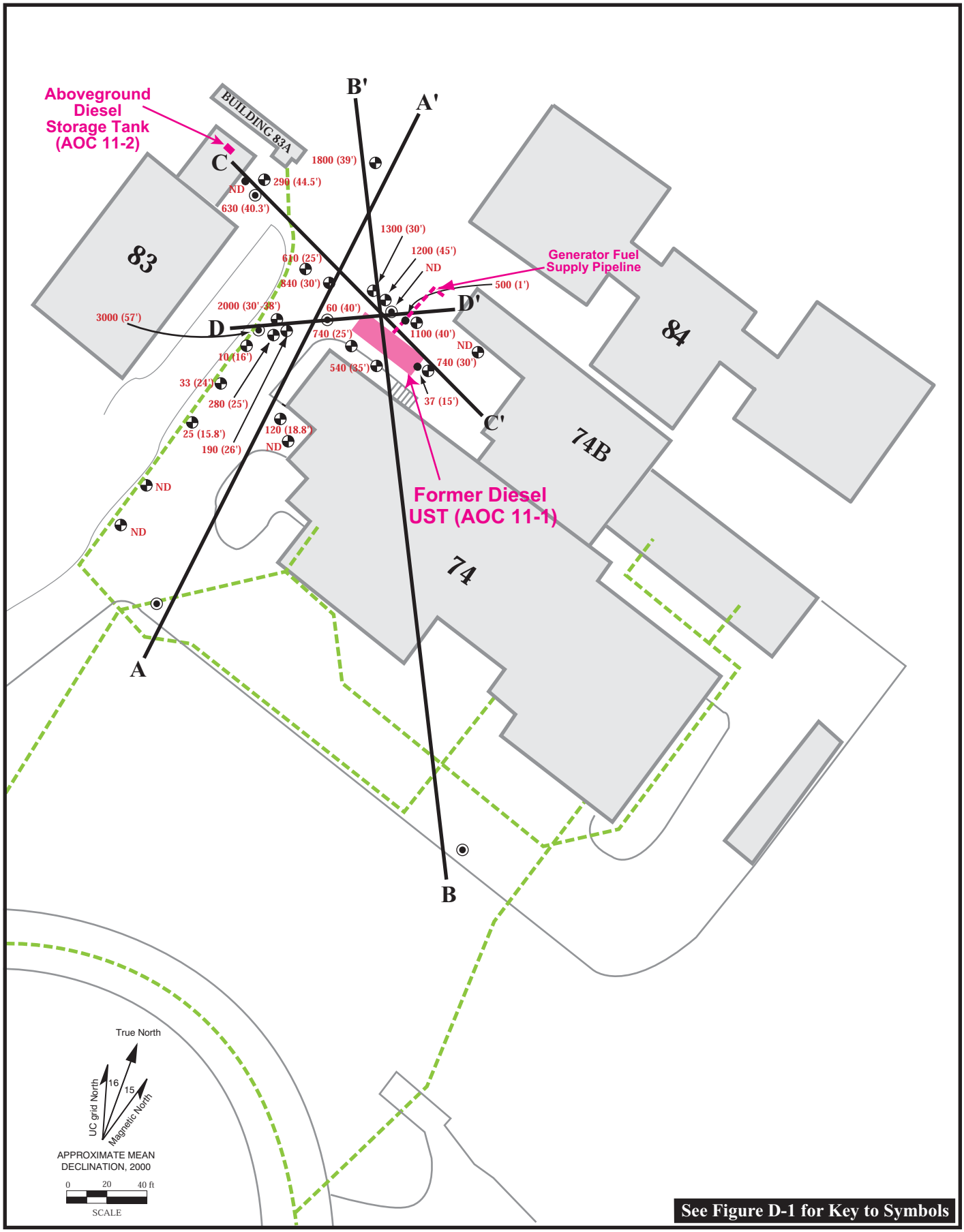
Figure D3.4-2. Geologic Cross Section B-B' Showing Concentrations of Analytes Detected Above Background Levels (mg/kg), Building 70A Sanitary Sewer UST (AOC 8-7).

D3.4-2 BBb76.ai
09/00



3.5-1 B74loc.ai
09/00

Figure D3.5-1. Site Map and Locations of Geologic Cross Sections, Former Building 74 Diesel UST (AOC 11-1).



D3.5-2 TPH74.ai
09/00

Figure D3.5-2. Locations of Soil Borings and Maximum Detected Concentrations of TPH-D (mg/kg), Former Building 74 Diesel UST (AOC 11-1).

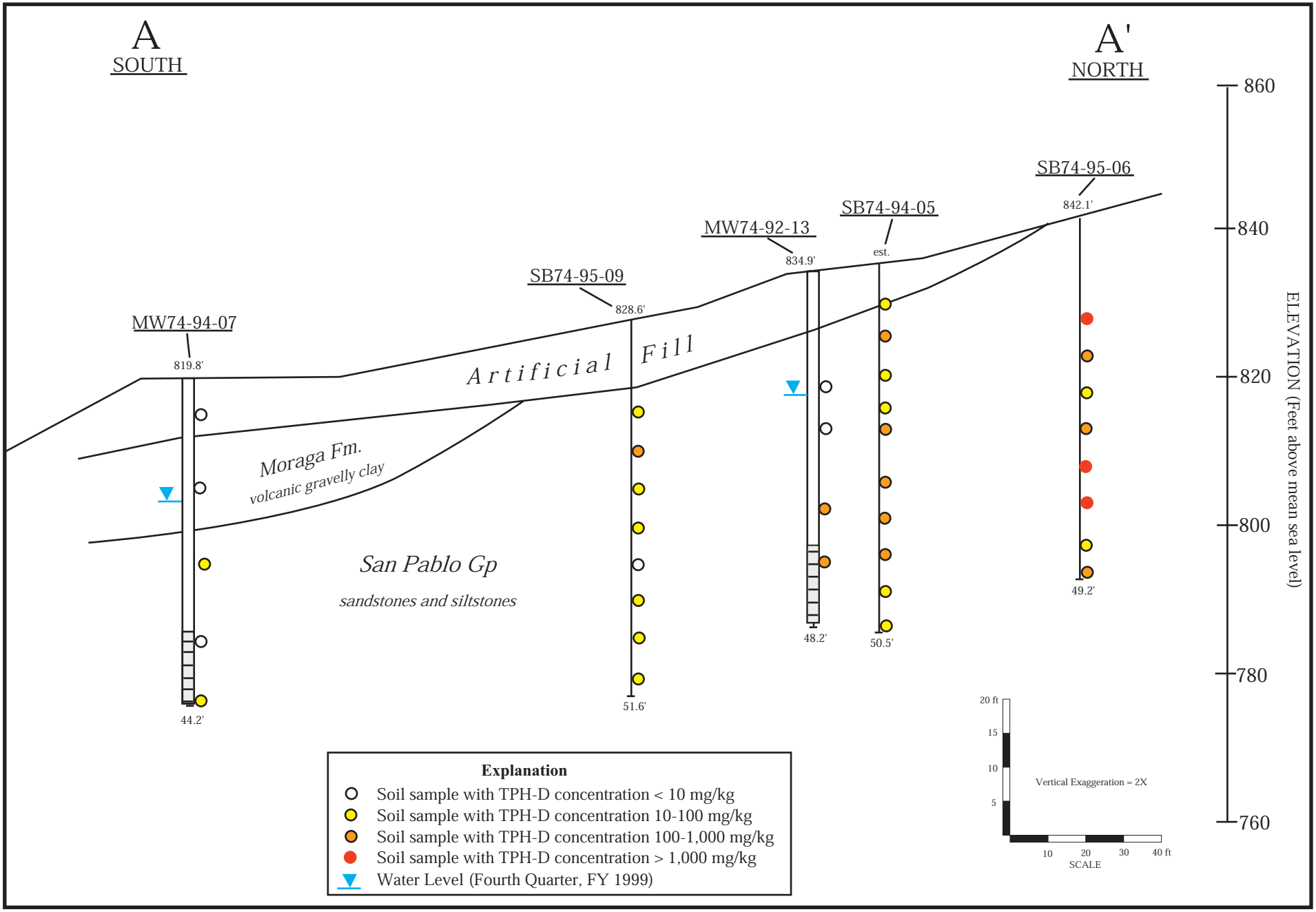


Figure D3.5-3. Life Sciences Area Geologic Cross Section A-A' Showing TPH-D Concentrations (mg/kg), Former Building 74 Diesel UST (AOC 11-1).

D3.5-3 AA.ai
09/00

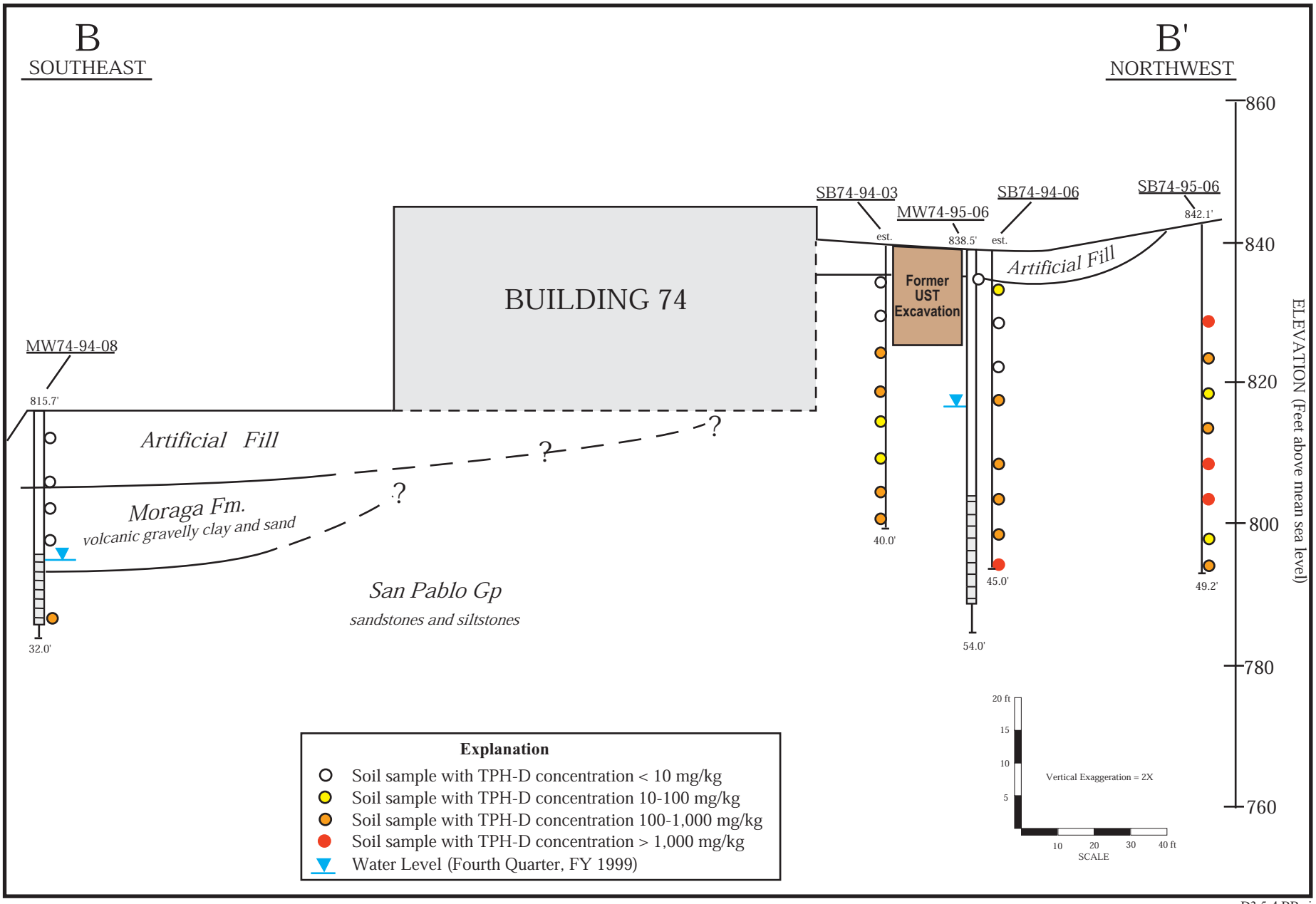


Figure D3.5-4. Life Sciences Area Geologic Cross Section B-B' Showing TPH-D Concentrations (mg/kg), Former Building 74 Diesel UST (AOC 11-1) .

D3.5-4 BB.ai
09/00

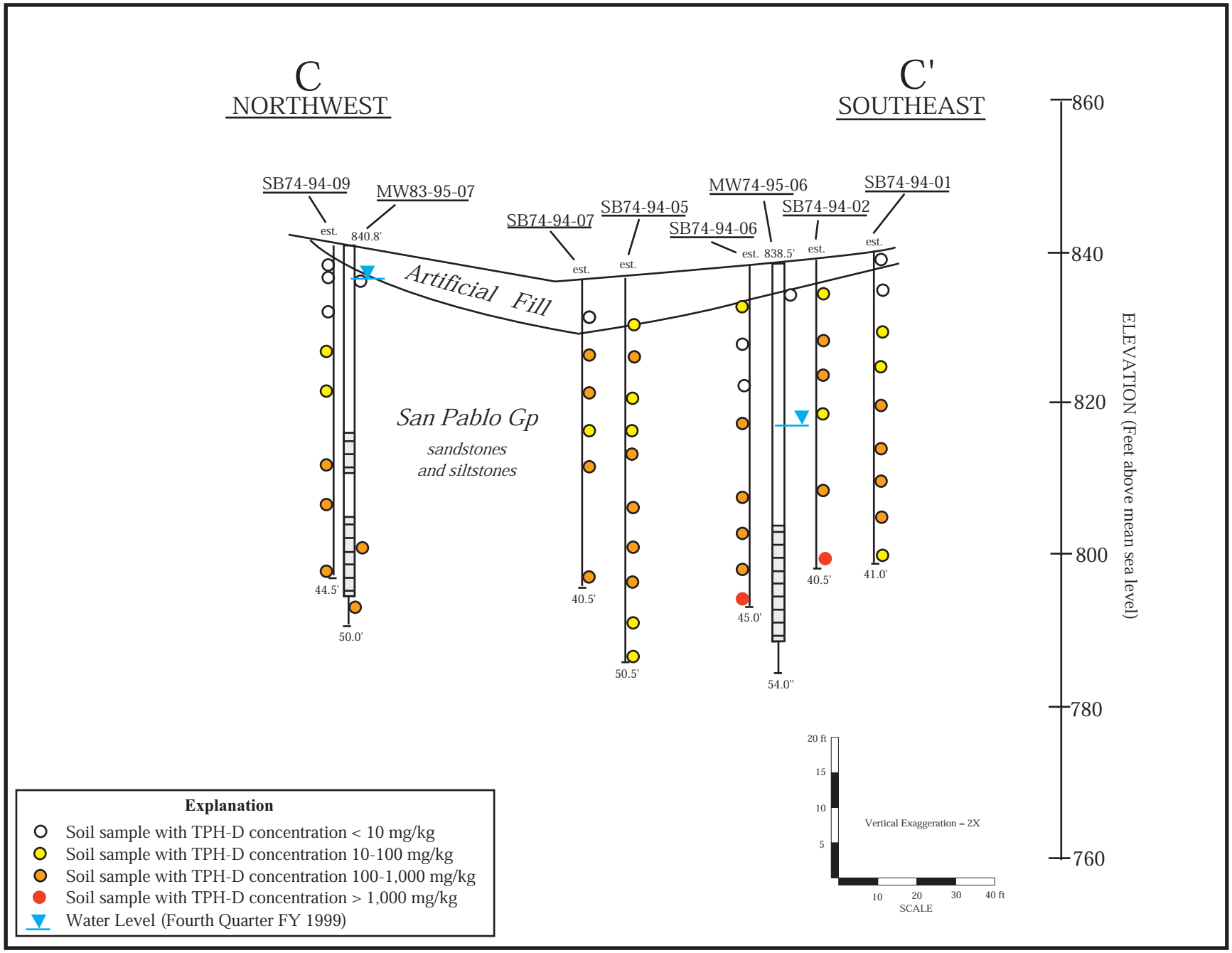


Figure D3.5-5. Life Sciences Area Geologic Cross Section C-C' Showing TPH-D Concentrations (mg/kg), Former Building 74 Diesel UST (AOC 11-1).

D3.5-5 CC.ai
09/00

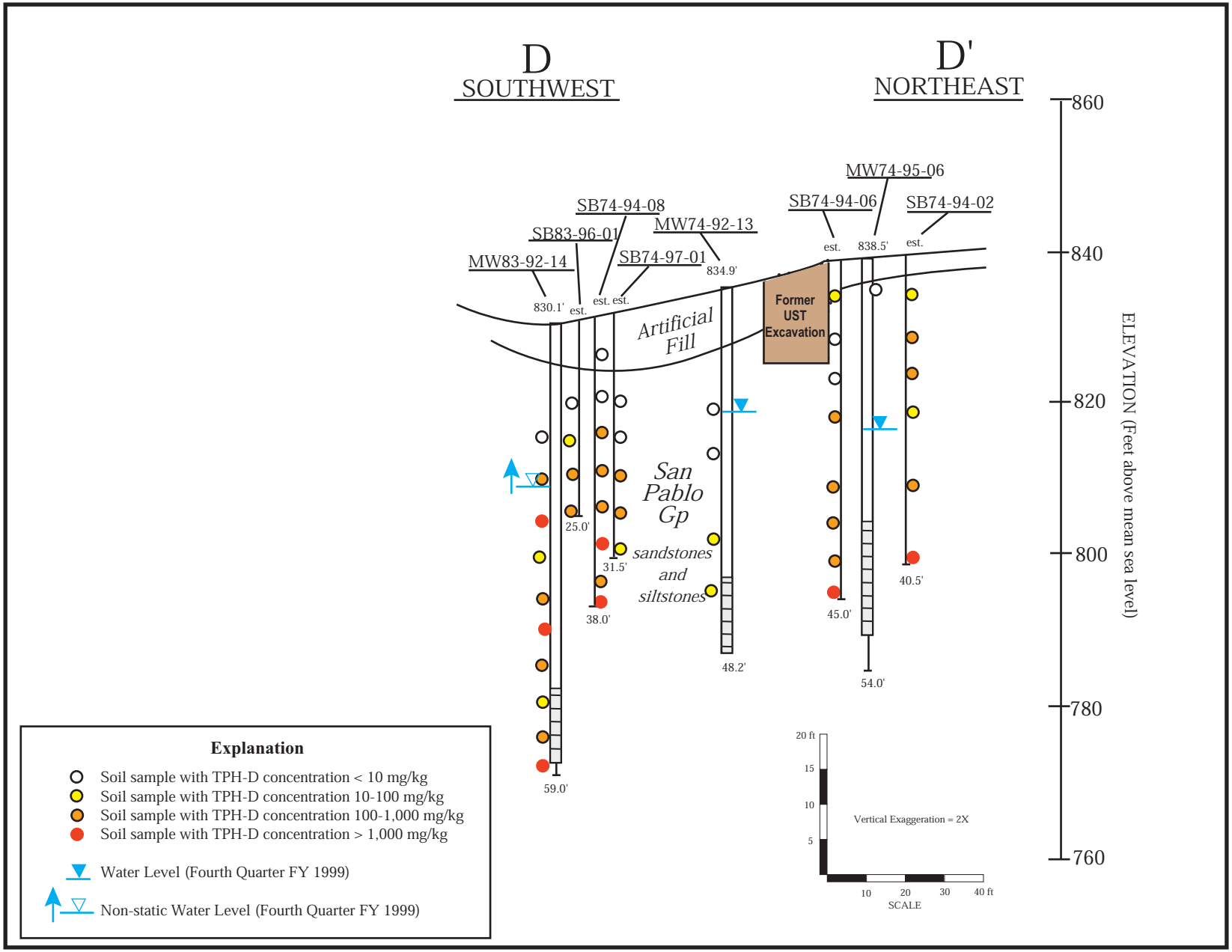


Figure D3.5-6. Life Sciences Area Geologic Cross Section D-D' Showing TPH-D Concentrations (mg/kg), Former Building 74 Diesel UST (AOC 11-1).

D3.5-6 DD.ai
09/00

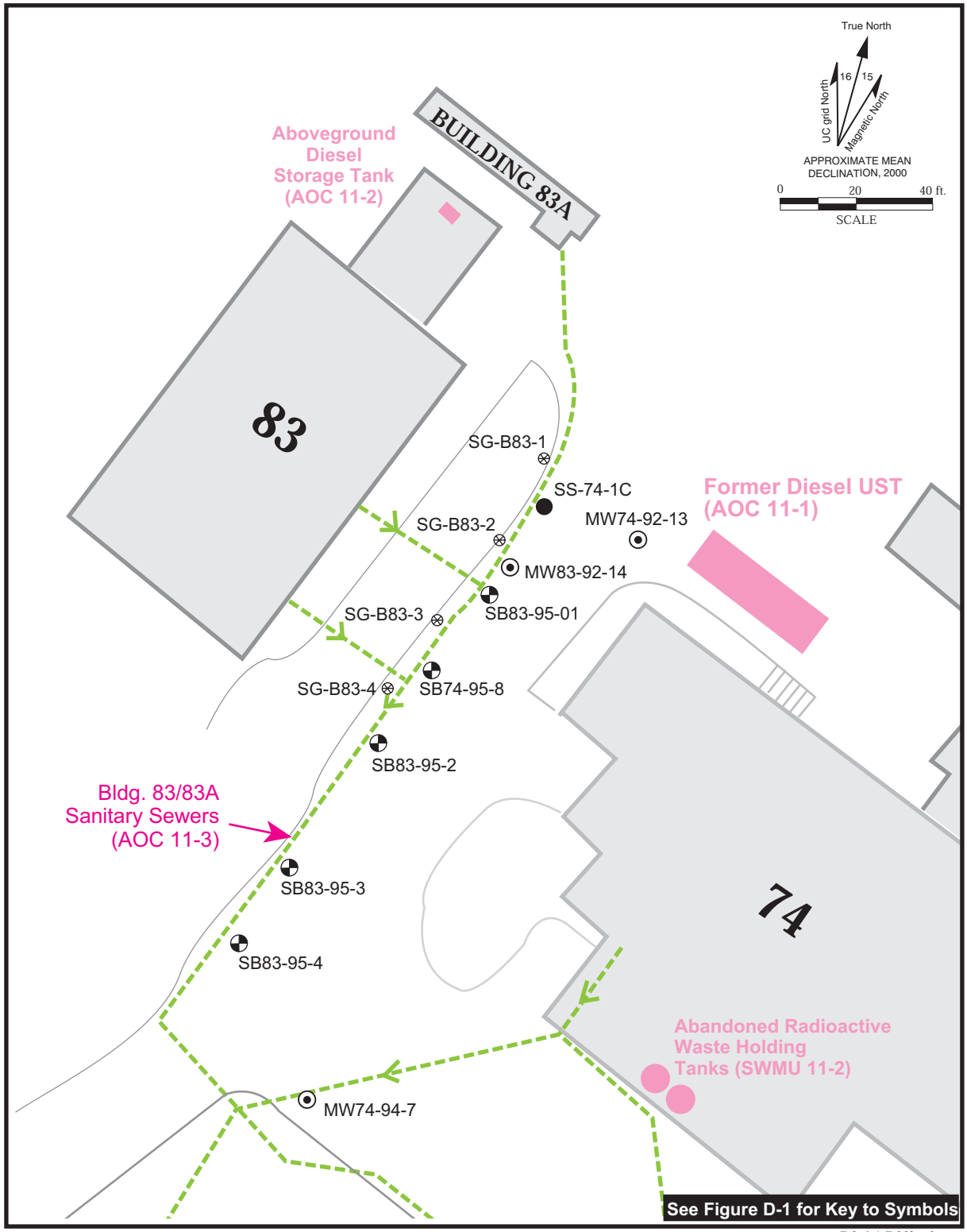
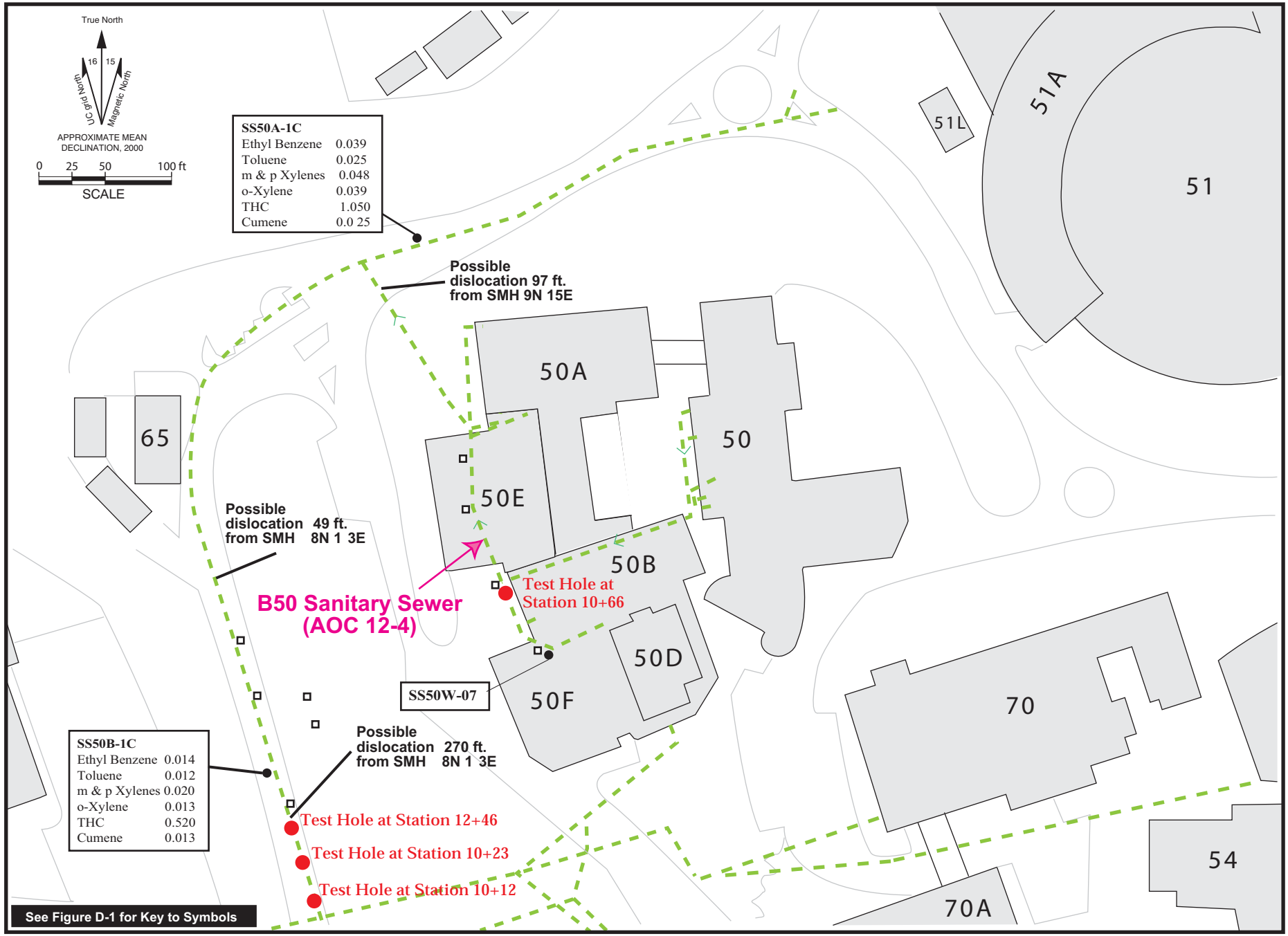


Figure D3.6-1. Locations of Soil Borings, Buildings 83/83A Sanitary Sewers (AOC 11-3).

D3.6-1 B83borings
09/00



D3.7-1 B50borings.ai
09/00

Figure D3.7-1. Locations of Soil Borings Showing Detected Contaminant Concentrations (mg/kg), Building 50 Sanitary Sewer Dislocations (AOC 12-4).

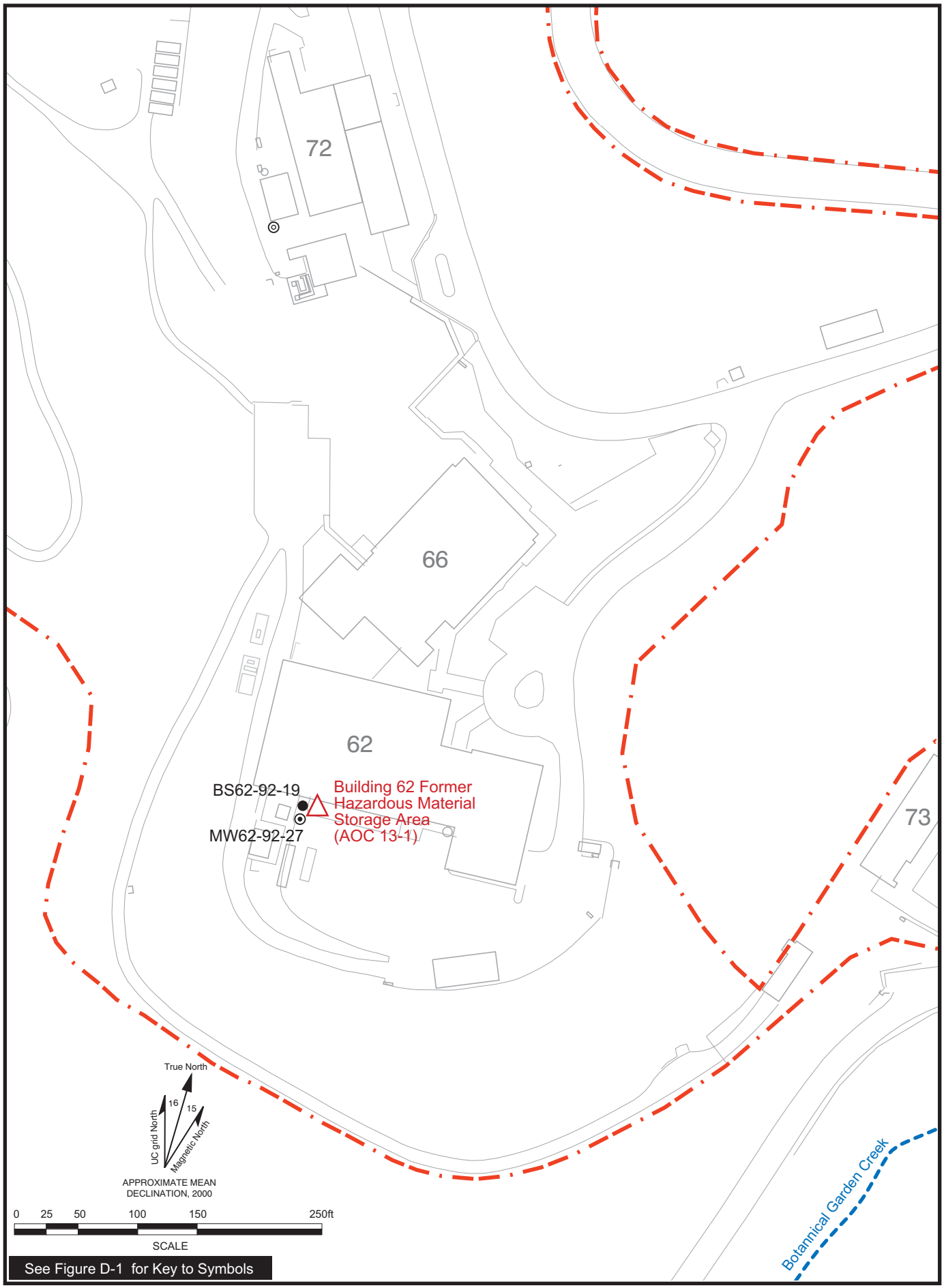


Figure D3.8-1. Locations of Soil Samples, Building 62 (Former) Hazardous Materials Storage Area (AOC 13-1).

D3.8-1 B61ss.ai
09/00

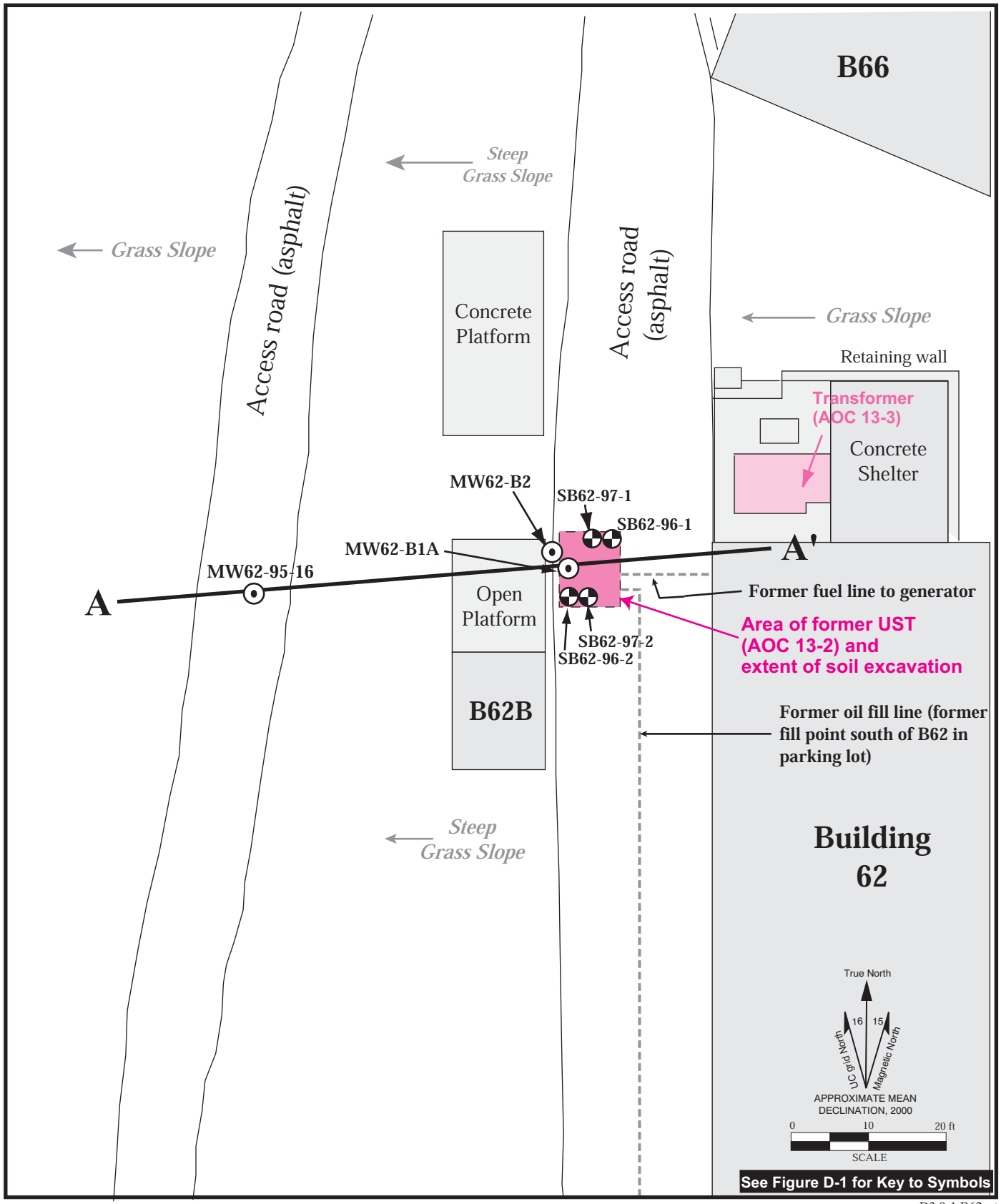


Figure D3.9-1. Locations of Soil Samples Collected Subsequent to Soil Removal Activities, Building 62 Former Diesel UST (AOC 13-2).

D3.9-1 B62ust
09/00

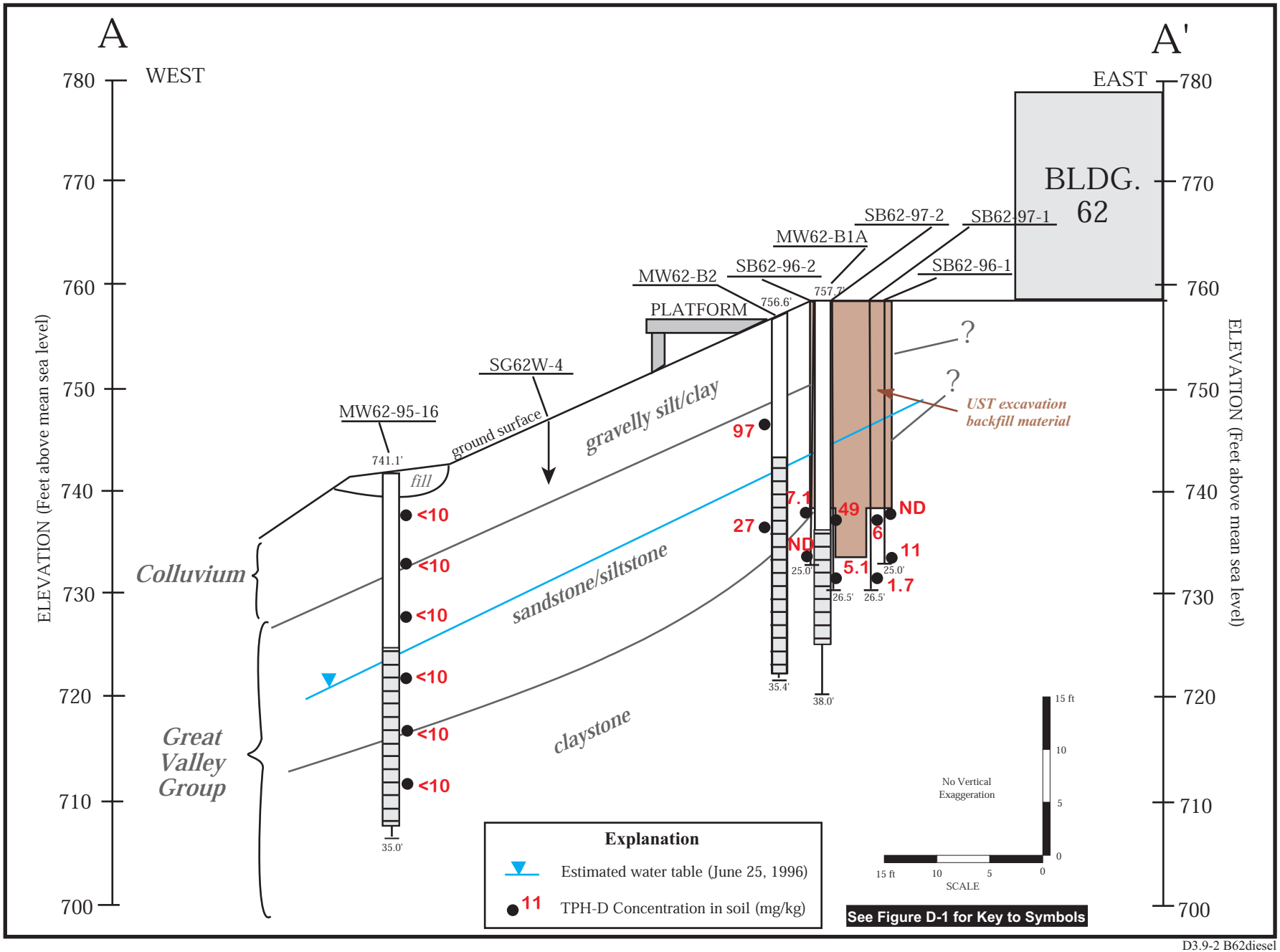


Figure D3.9-2. Geologic Cross Section Showing TPH-D Concentrations in Soil Samples Collected Subsequent to Soil Removal Activities, Building 62 Former Diesel UST (AOC 13-2).

D3.9-2 B62diesel
09/00

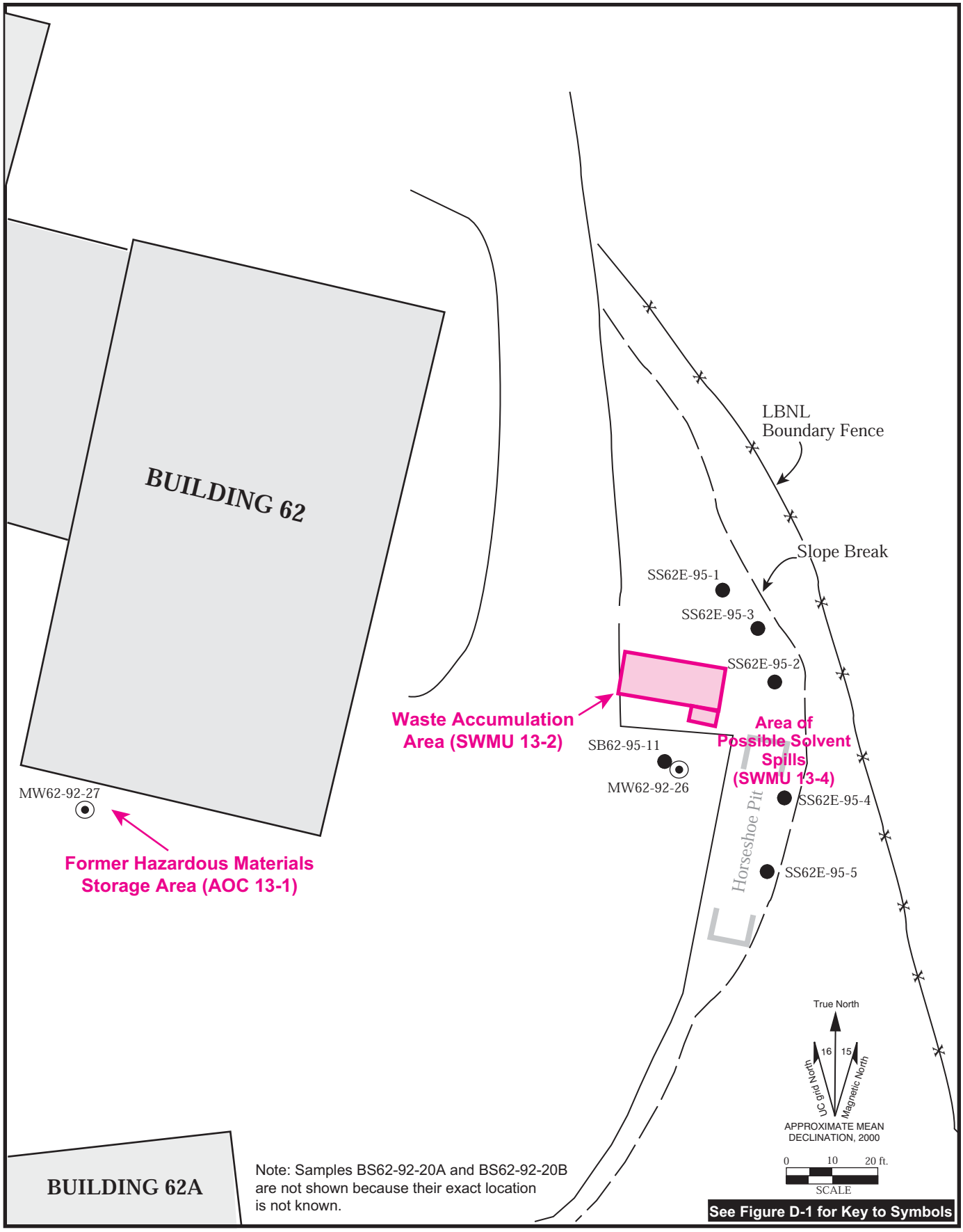
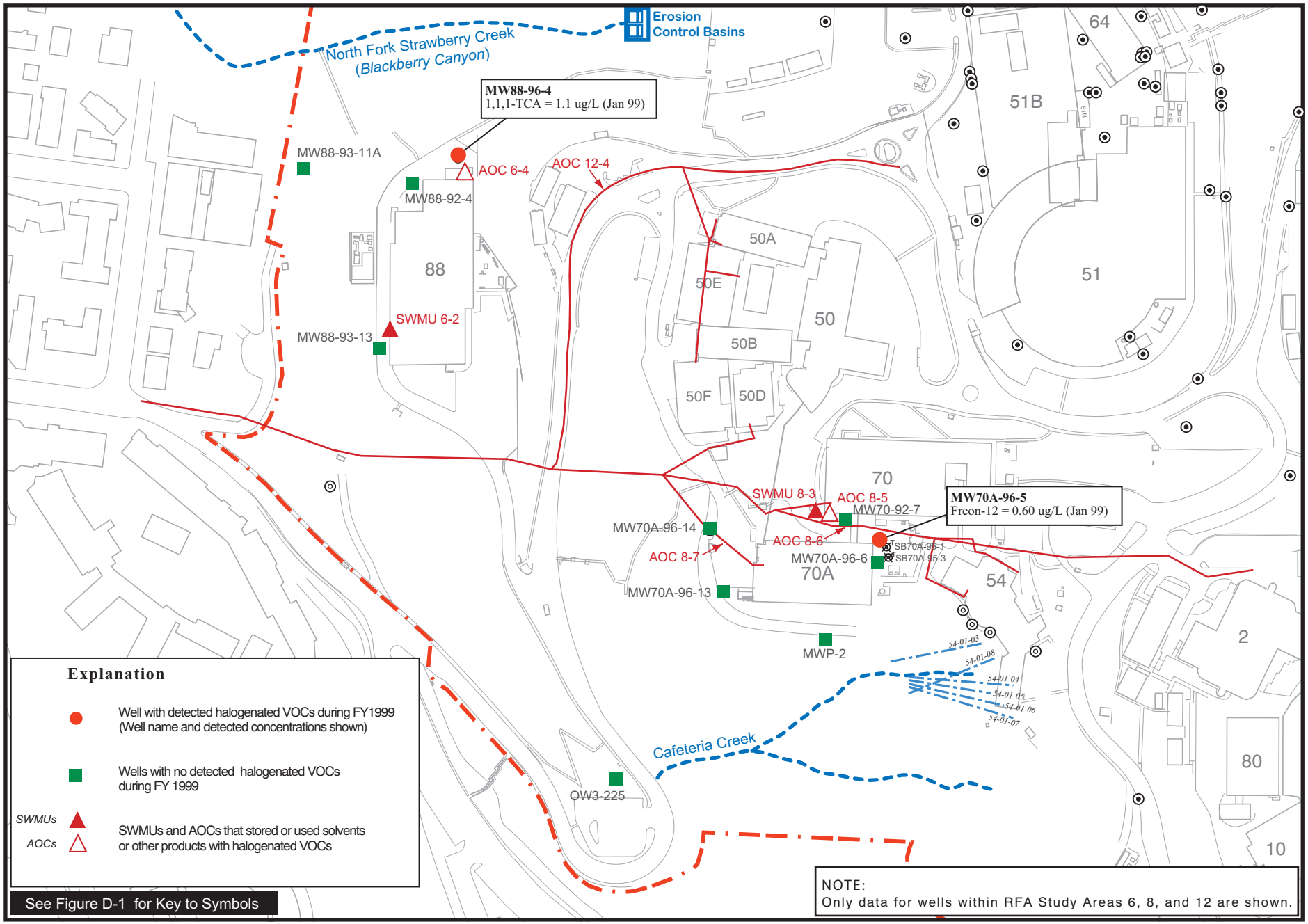


Figure D3.10-1. Locations of Soil Samples, Possible Solvent Spills East of Building 62 (AOC 13-1).

D3.10-1 B62ss.ai
09/00



50-70-88map.ai
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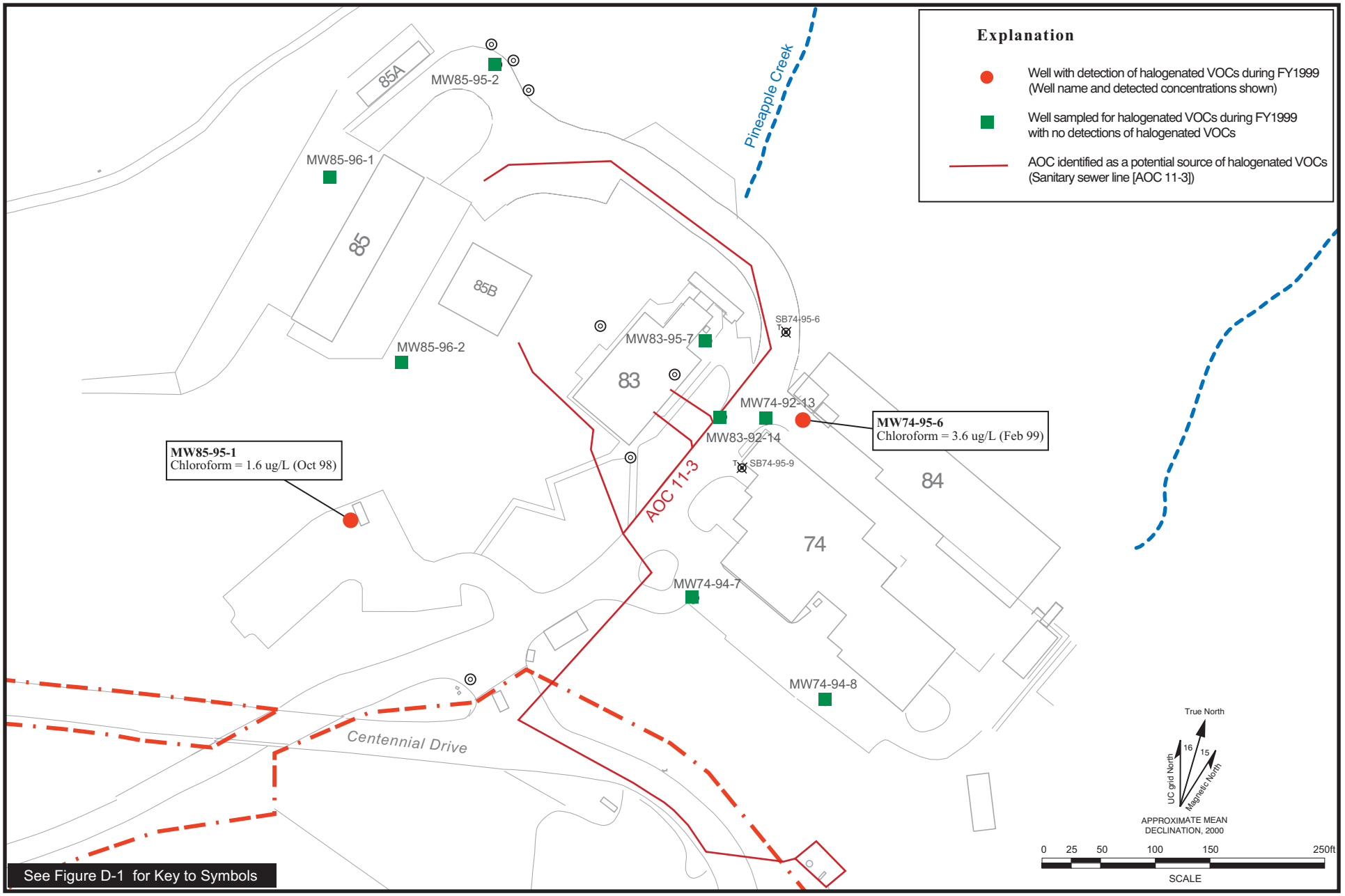
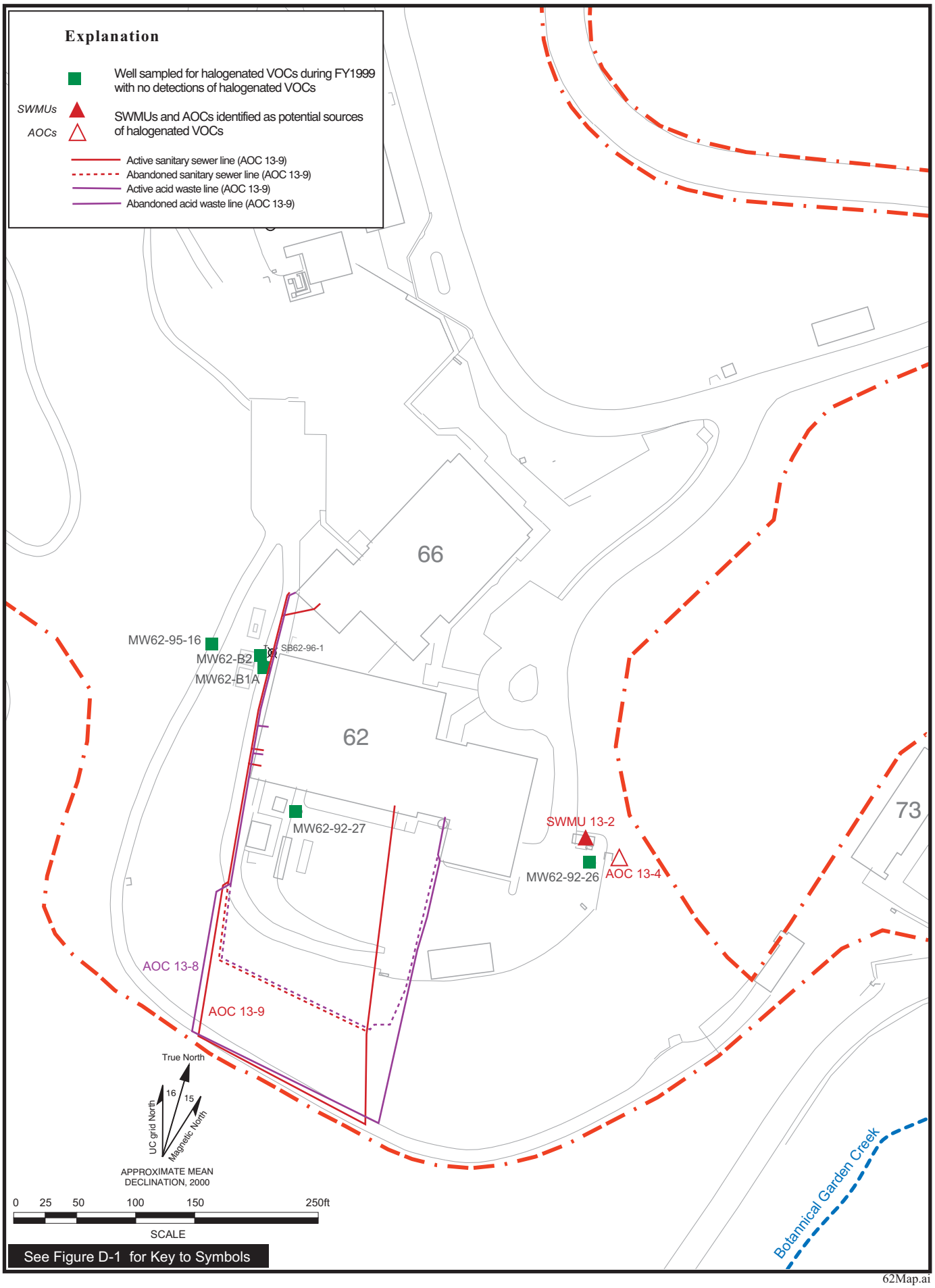
Figure D4.3-1a. Halogenated VOCs Detected During FY 1999 in Groundwater in Western Outlying Area With Potential Source Areas.



74-85map.ai
09/00

Figure D4.3-1b. Halogenated VOCs Detected During FY 1999 in Groundwater in Northeastern Outlying Area With Potential Source Areas.



62Map.ai
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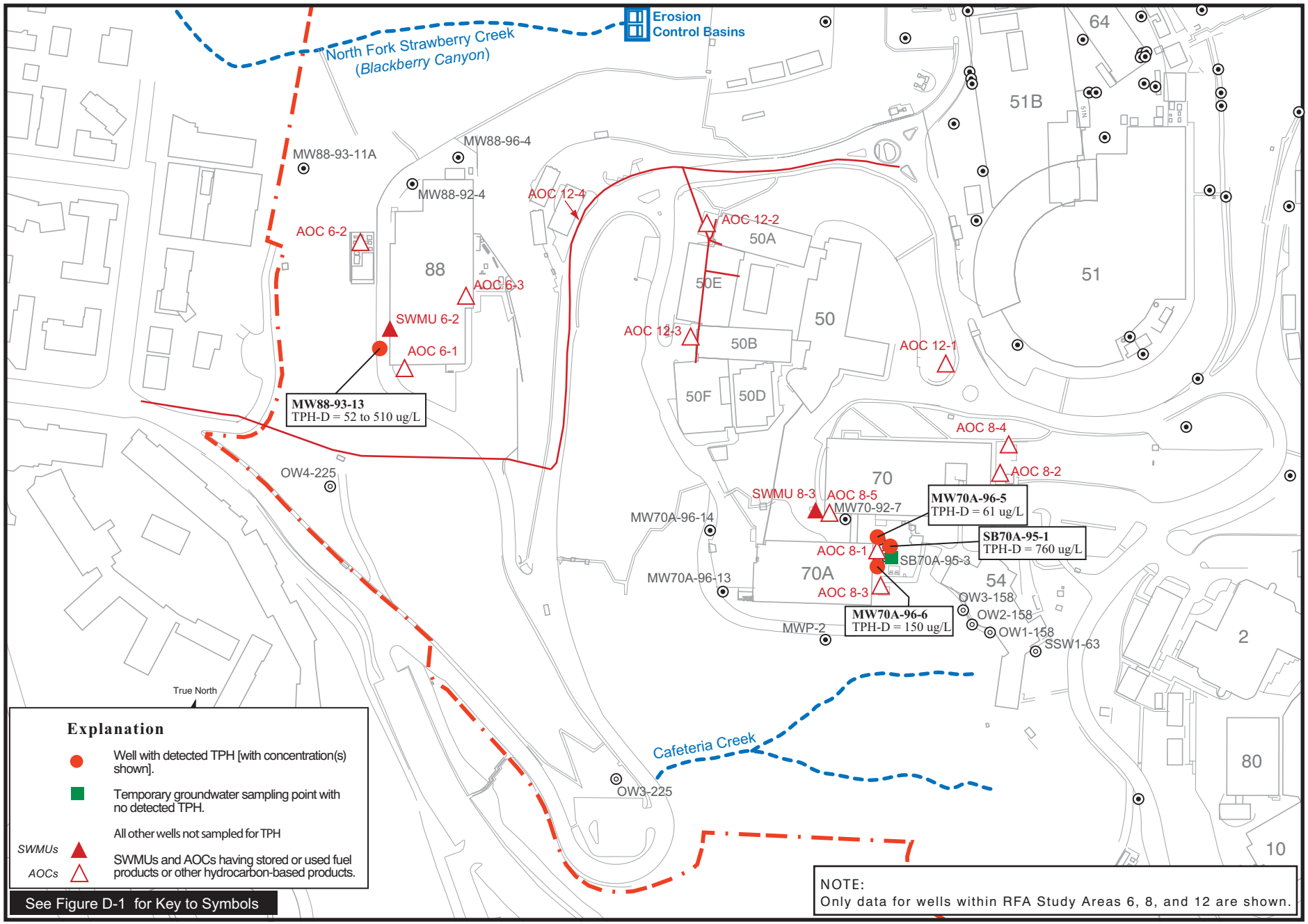
Figure D4.3-1c. Wells Sampled for Halogenated VOCs in Groundwater in Southeastern Outlying Area During FY1999, With Potential Source Areas.



50-70-88map.ai
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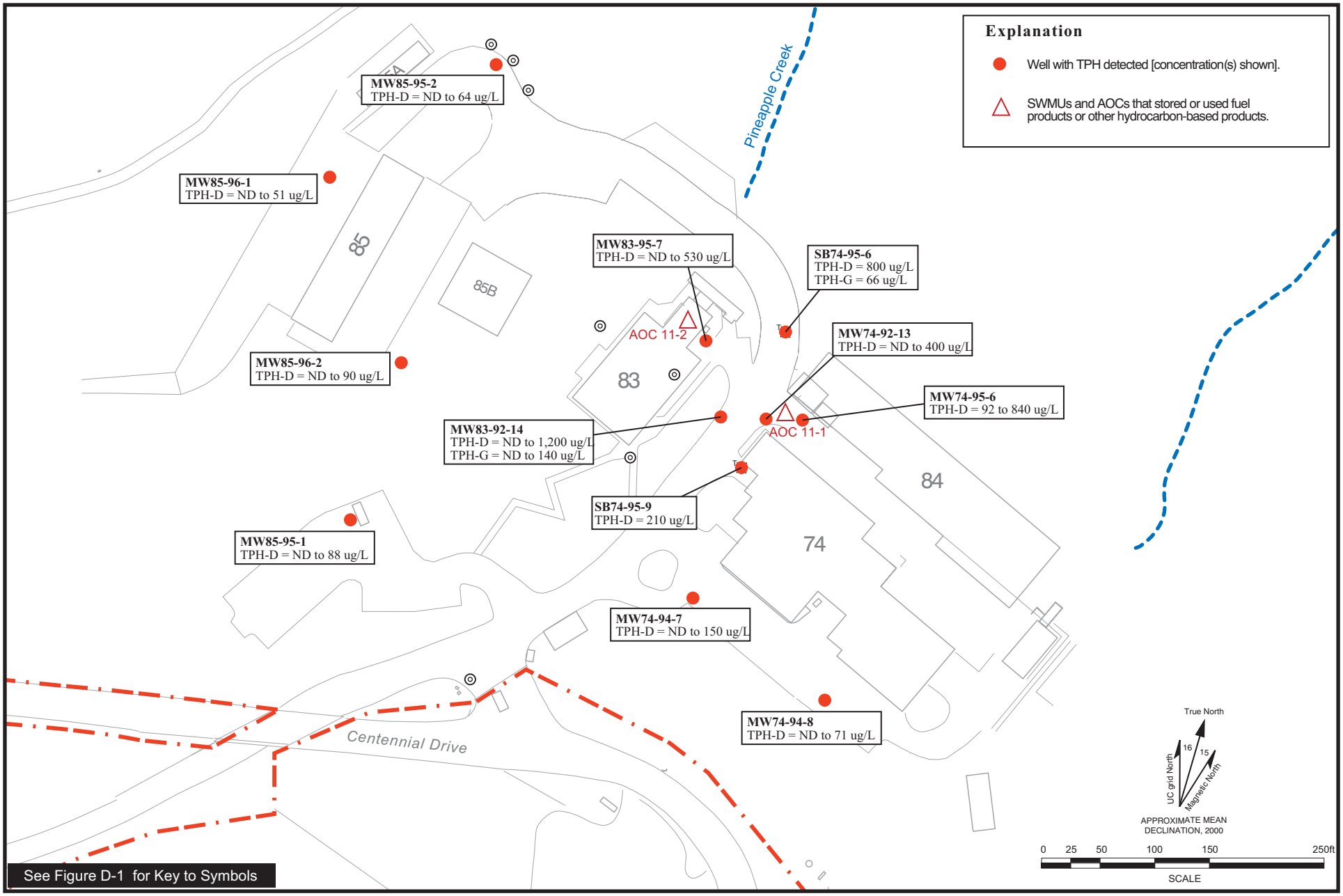
Figure D4.4-1a. TPH Concentration Ranges Detected in Groundwater in Western Outlying Area With Locations of SWMUs and AOCs That Stored or Used Fuel Products or Other Hydrocarbon-Based Products.



74-85map.ai
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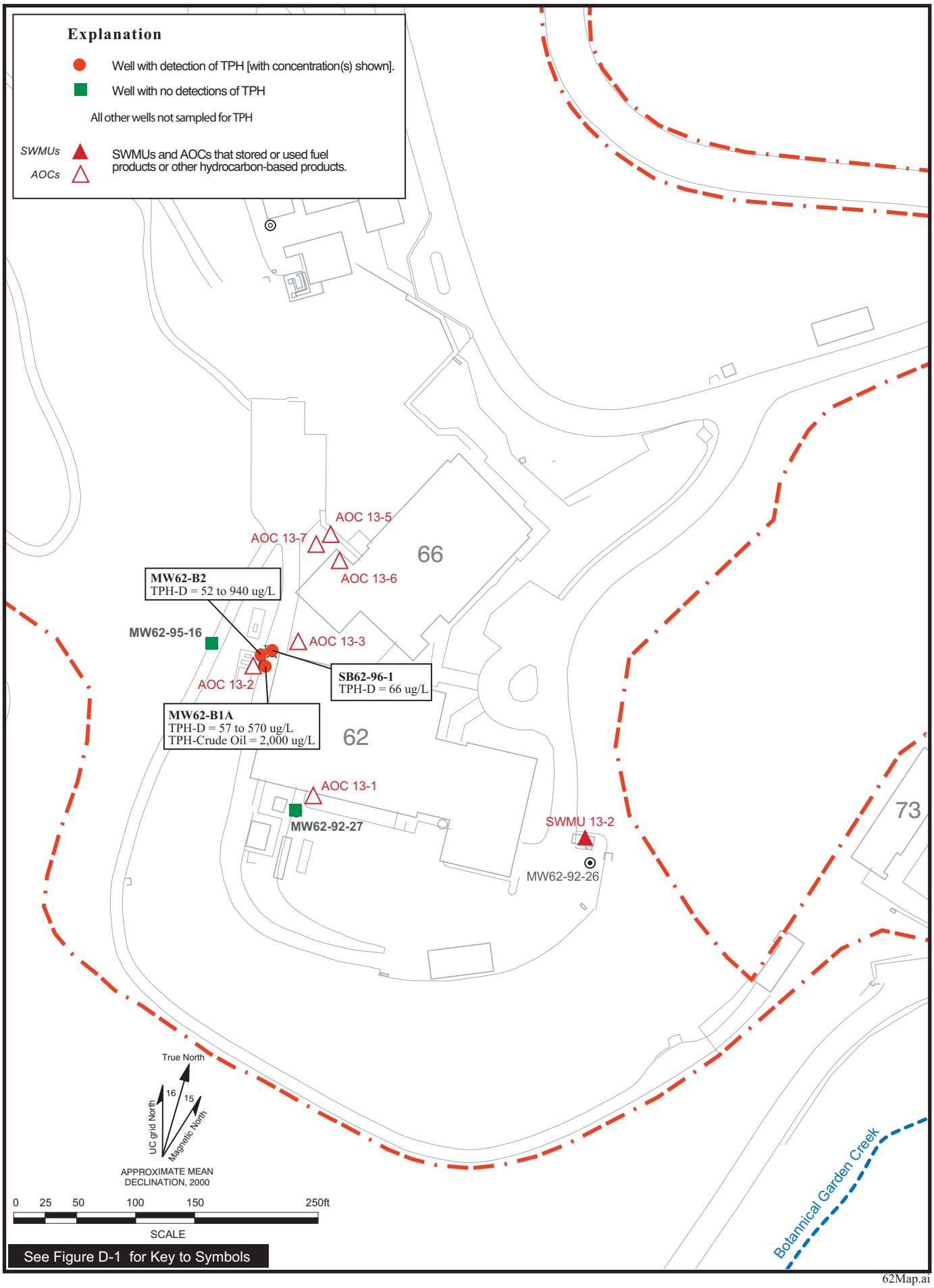
Figure D4.4-1b. TPH Concentration Ranges Detected in Groundwater in Northeastern Outlying Area With Locations of AOCs That Stored or Used Fuel Products or Other Hydrocarbon-Based Products.



62Map.ai
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Figure D4.4-1c. Concentrations of TPH Detected in Groundwater in Southeastern Outlying Area With Locations of SWMUs and AOCs That Stored or Used Fuel Products or Other Hydrocarbon-Based Products.

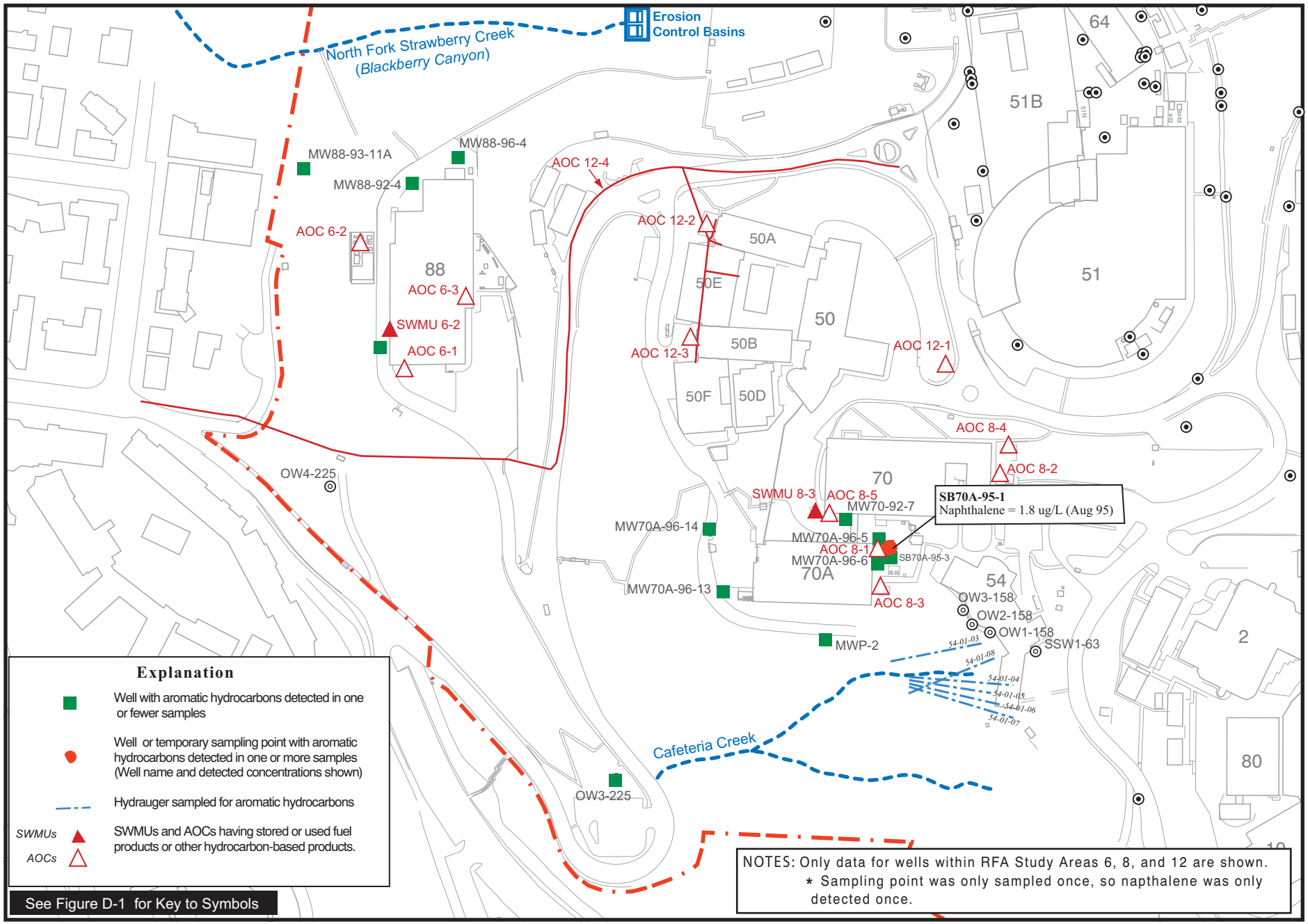

Figure D4.4-2a. Aromatic Hydrocarbons Detected in More Than One Sample in Western Outlying Area With Locations of SWMUs and AOCs That Stored or Used Fuel Products or Other Hydrocarbon-Based Products.

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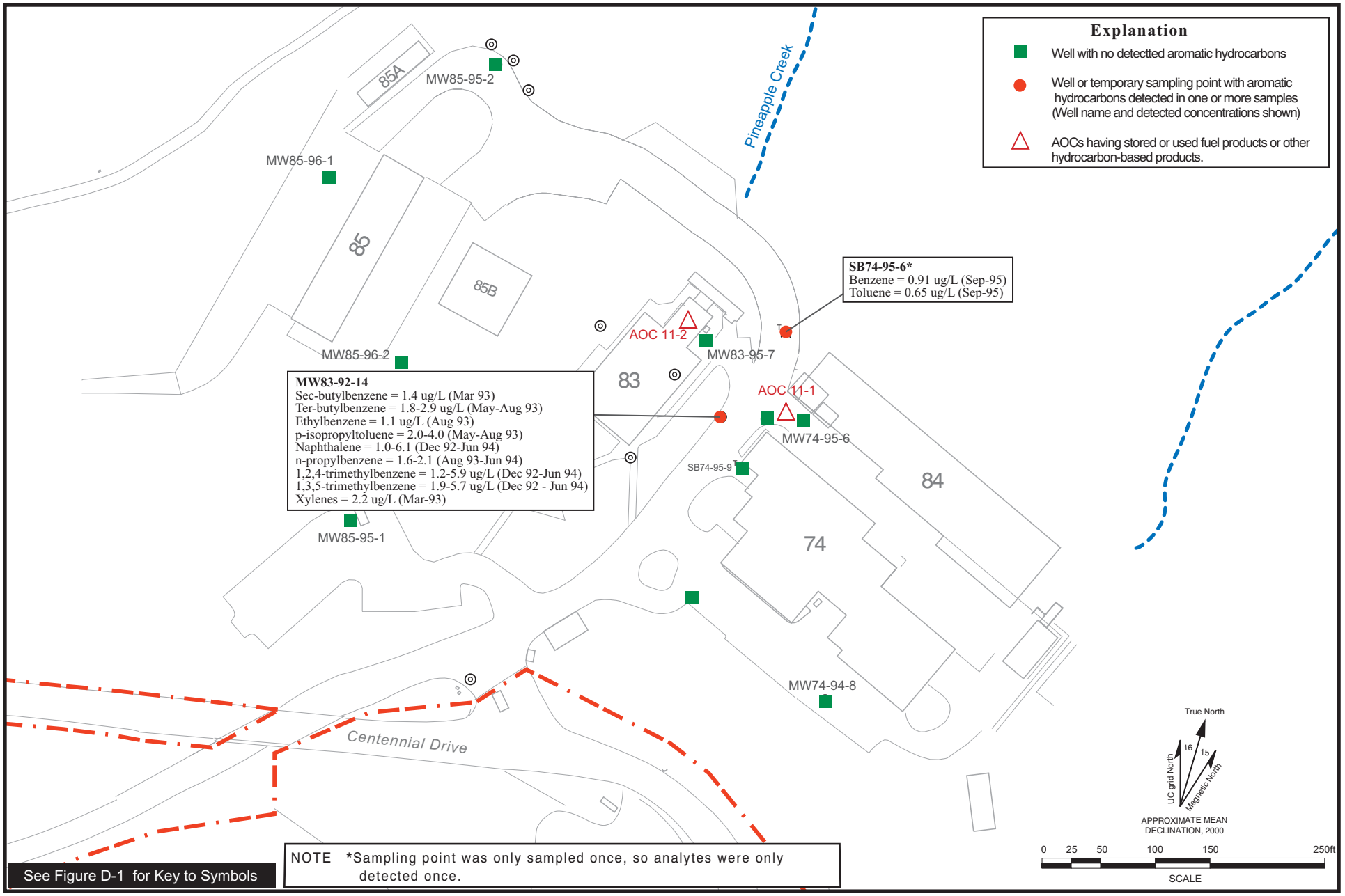

74-85map.ai
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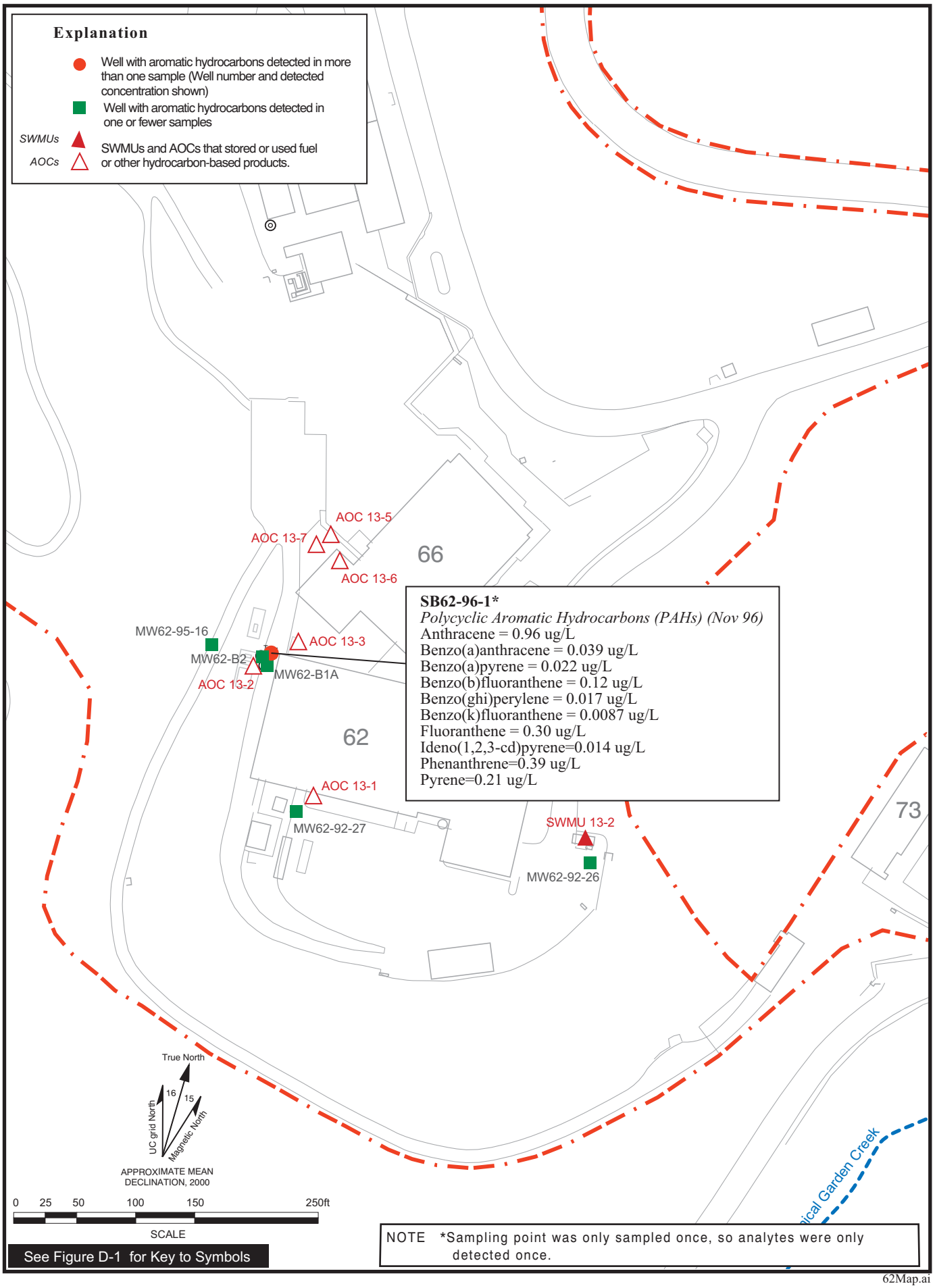
Figure D4.4-2b. Aromatic Hydrocarbons Detected in MoreThan One Sample in Northeastern Outlying Area With Locations of AOCs That Stored or Used Fuel Products or Other Hydrocarbon-Based Products.



62Map.ai
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Figure D4.4-2c. Aromatic Hydrocarbons Detected in One or More Samples in Groundwater in Southeastern Outlying Area With Locations of SWMUs and AOCs That Stored or Used Fuel Products or Other Hydrocarbon-Based Products.

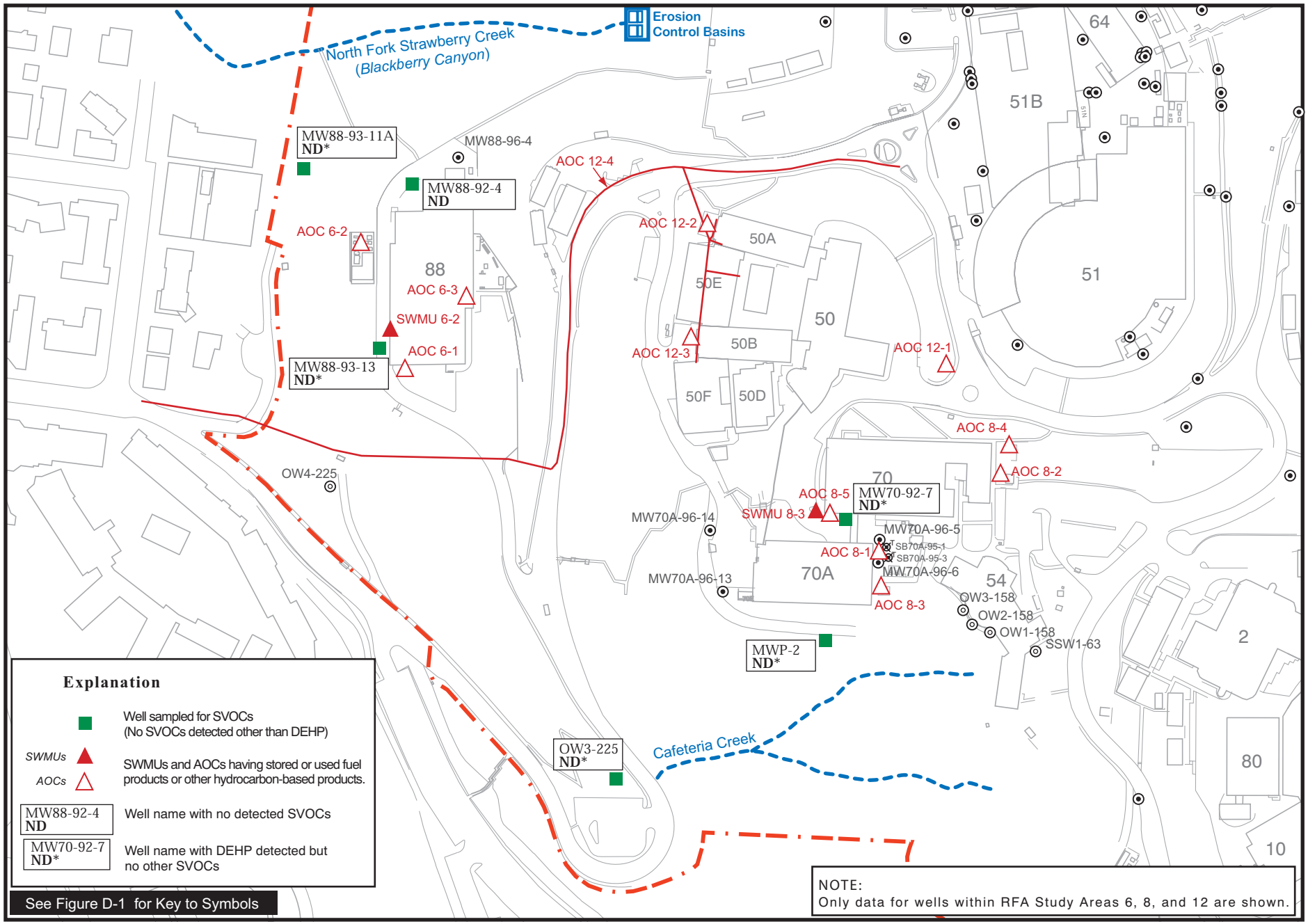

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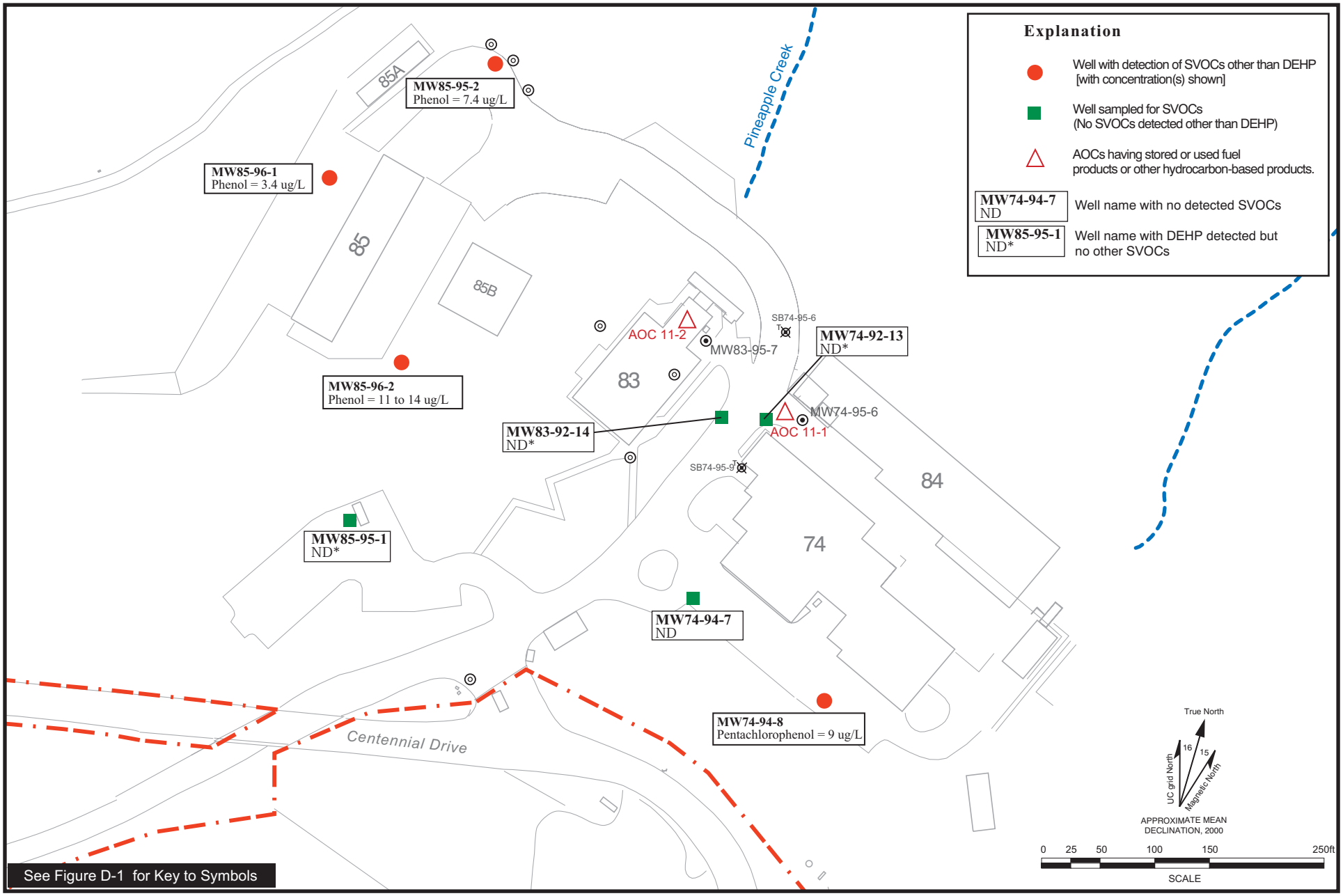
Figure D4.5-1a. Locations of Wells Sampled for SVOCs in Western Outlying Area With Locations of SWMUs and AOCs That Stored or Used SVOCs.



74-85map.ai
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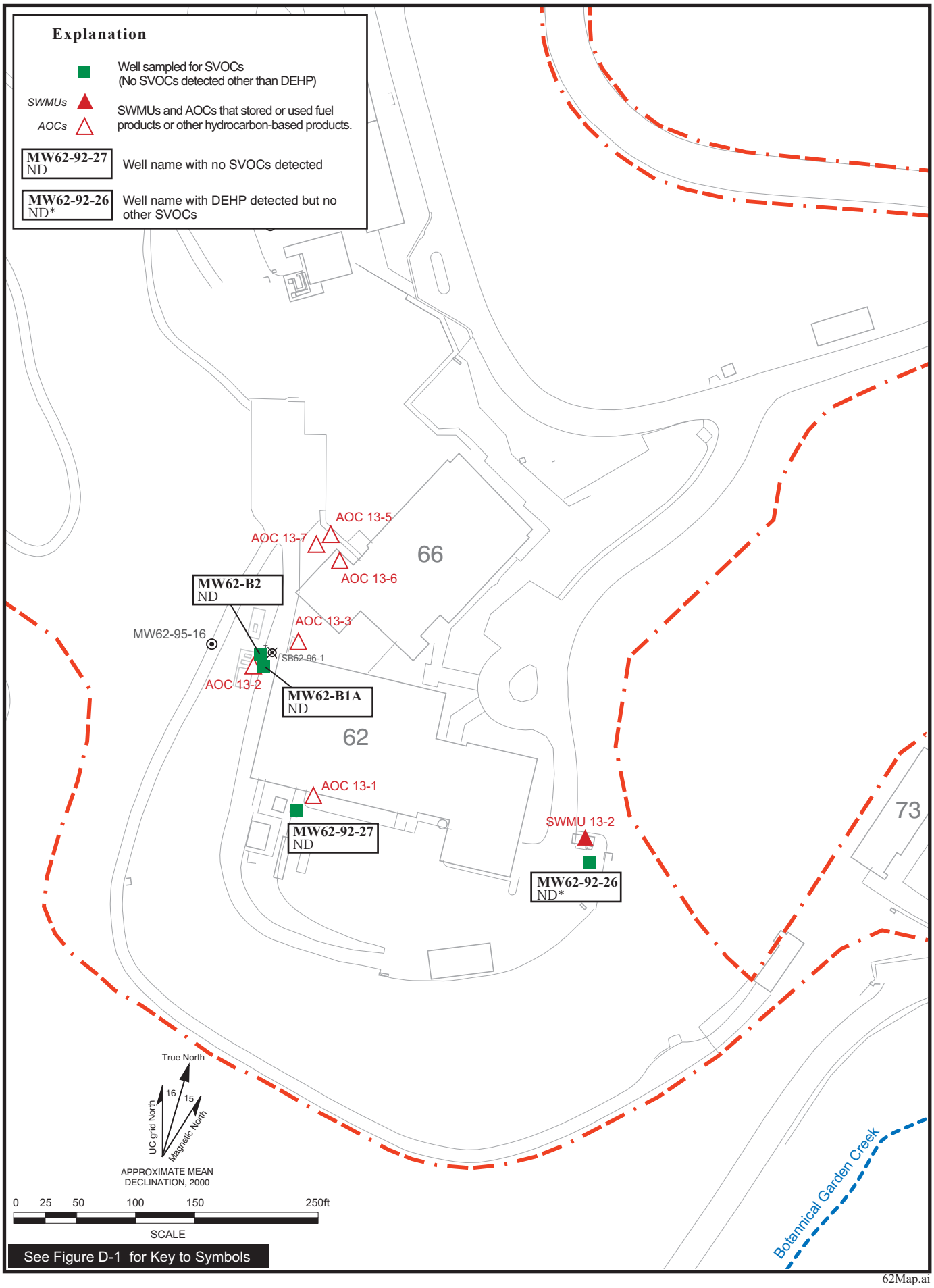
Figure D4.5-1b. Locations of Wells Sampled for SVOCs in Northeastern Outlying Area With Locations of AOCs That Stored or Used SVOCs.



62Map.ai
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Figure D4.5-1c. Locations of Wells Sampled for SVOCs in Southeastern Outlying Area With Locations of SWMUs and AOCs That Stored or Used SVOCs.

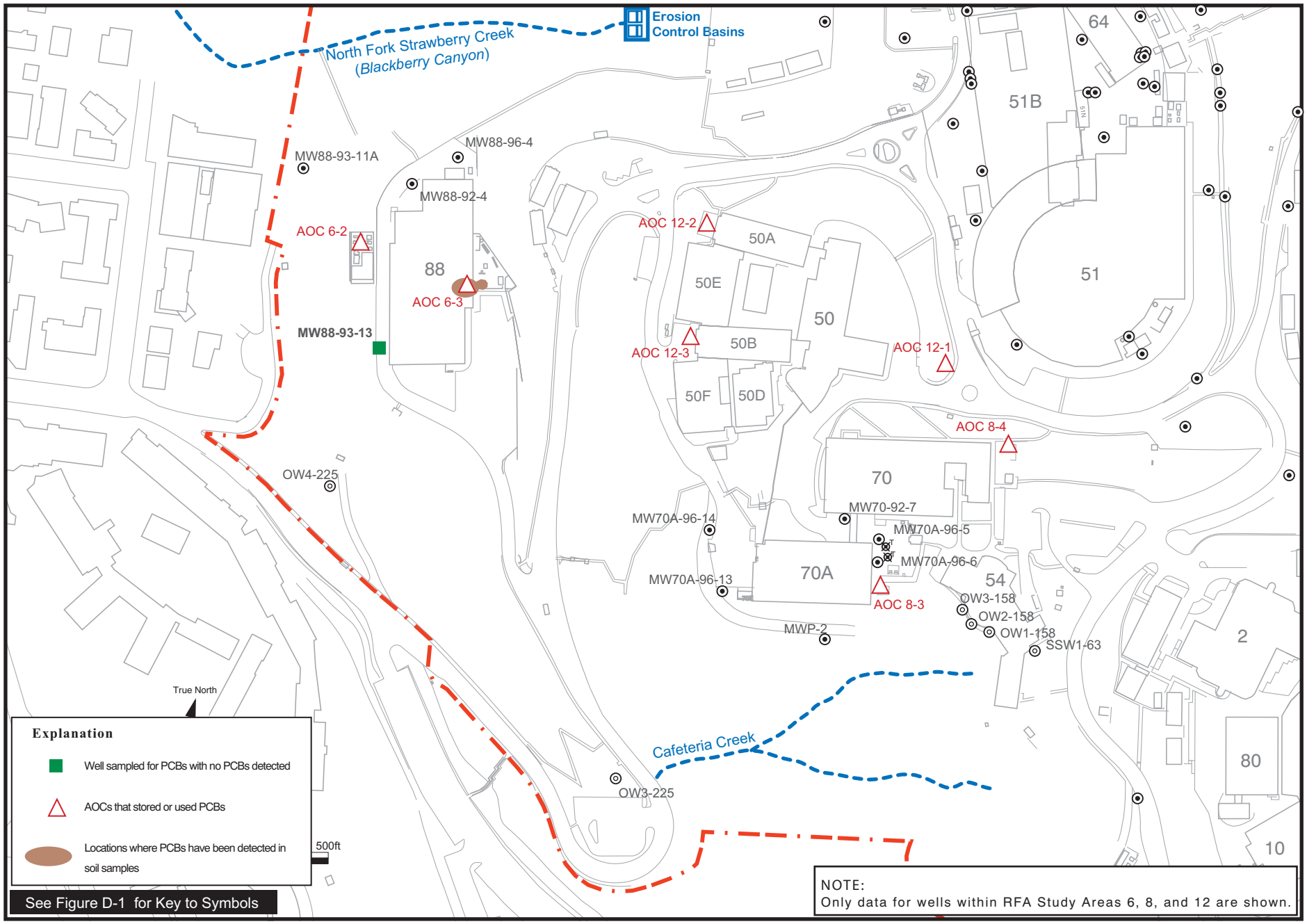

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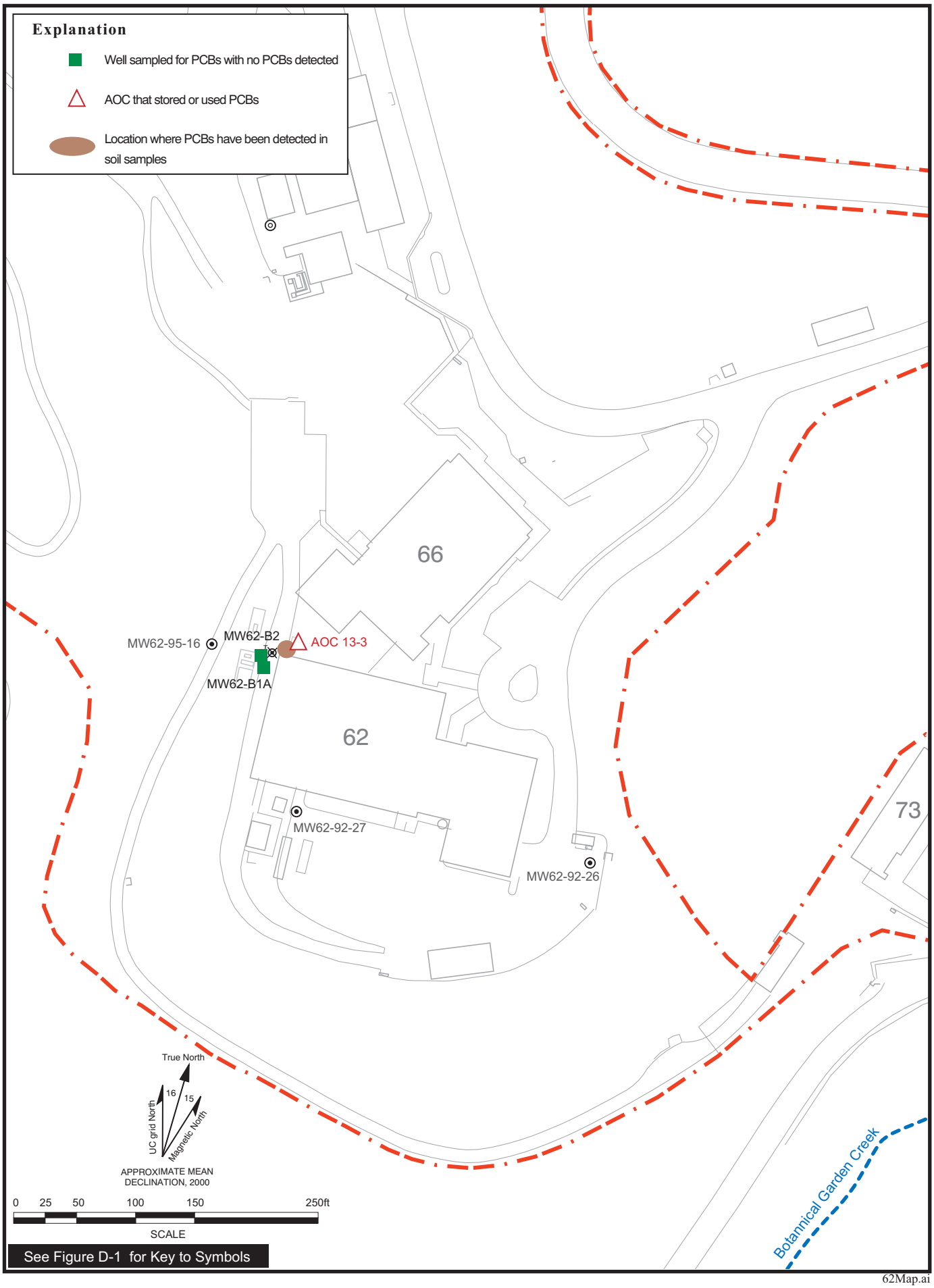
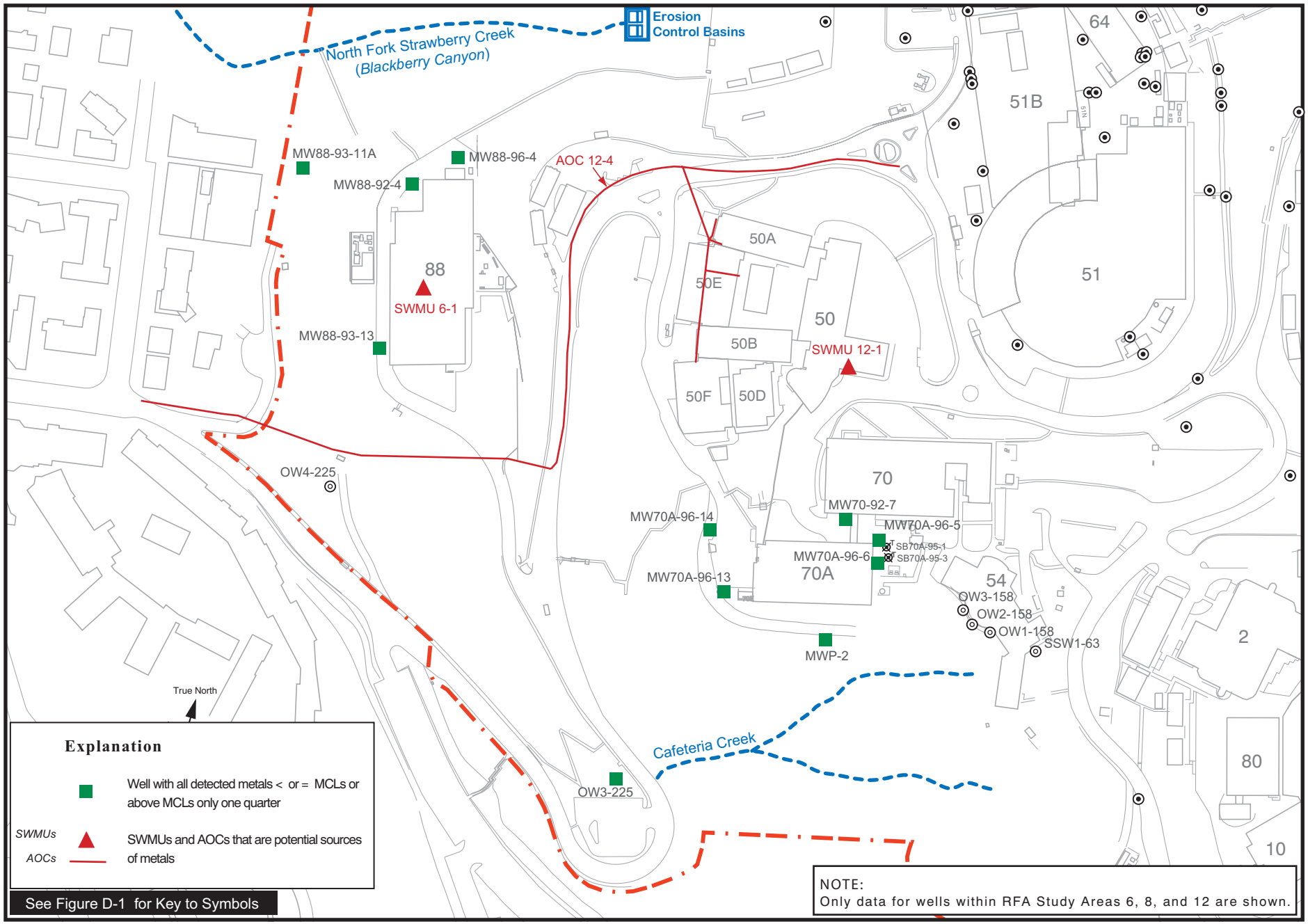
Figure D4.6-1a. Location of Well Sampled for PCBs in Groundwater in Western Outlying Area With Locations of AOCs That Stored or Used PCBs.



62Map.ai
09/00

Figure D4.6-1b. PCBs in Groundwater and Soil in Southeastern Outlying Area With Location of AOC That Stored or Used PCBs.



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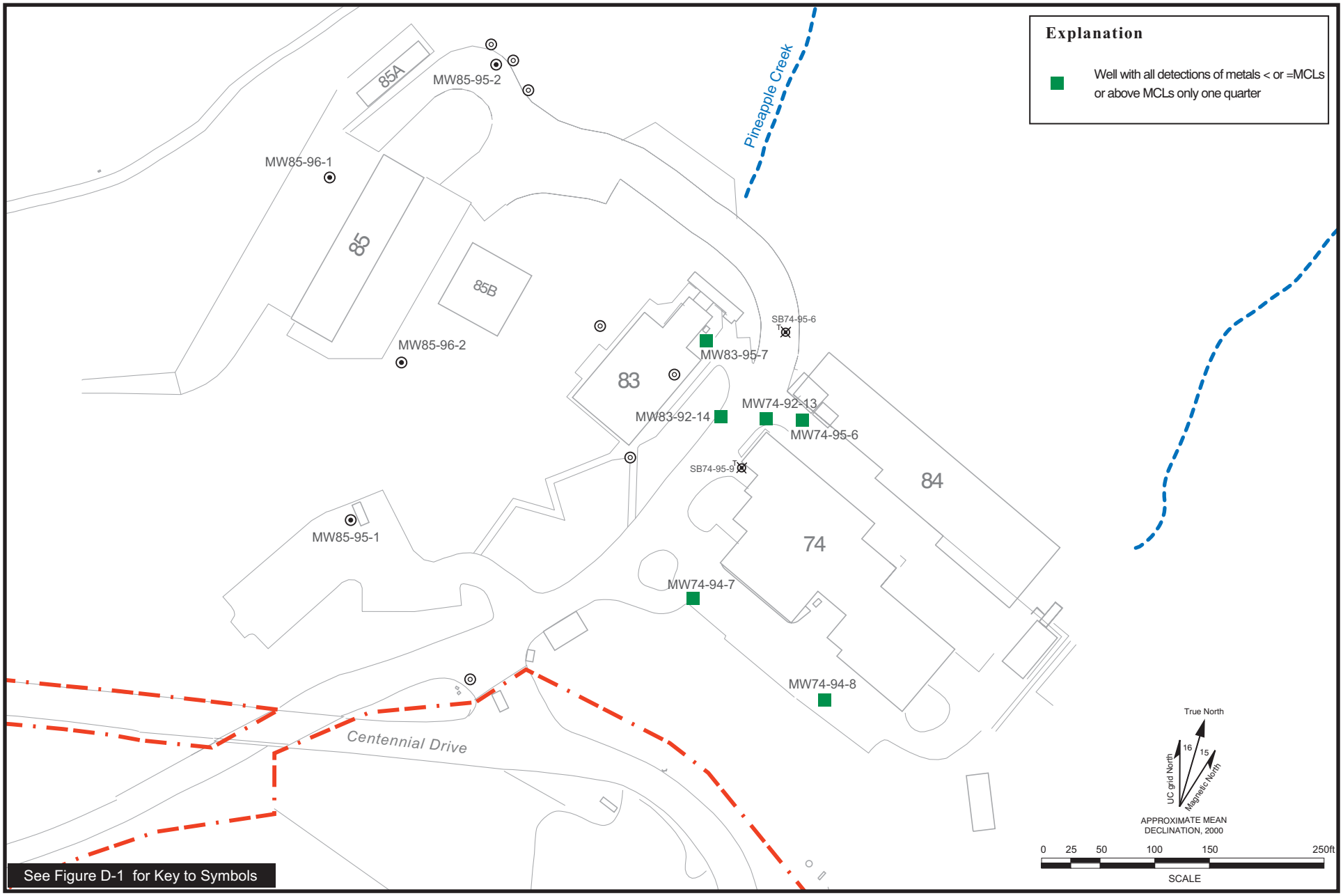
09/00

Figure D4.7-1a. Location of Wells Sampled for Metals in Groundwater in Western Outlying Area.



74-85map.ai
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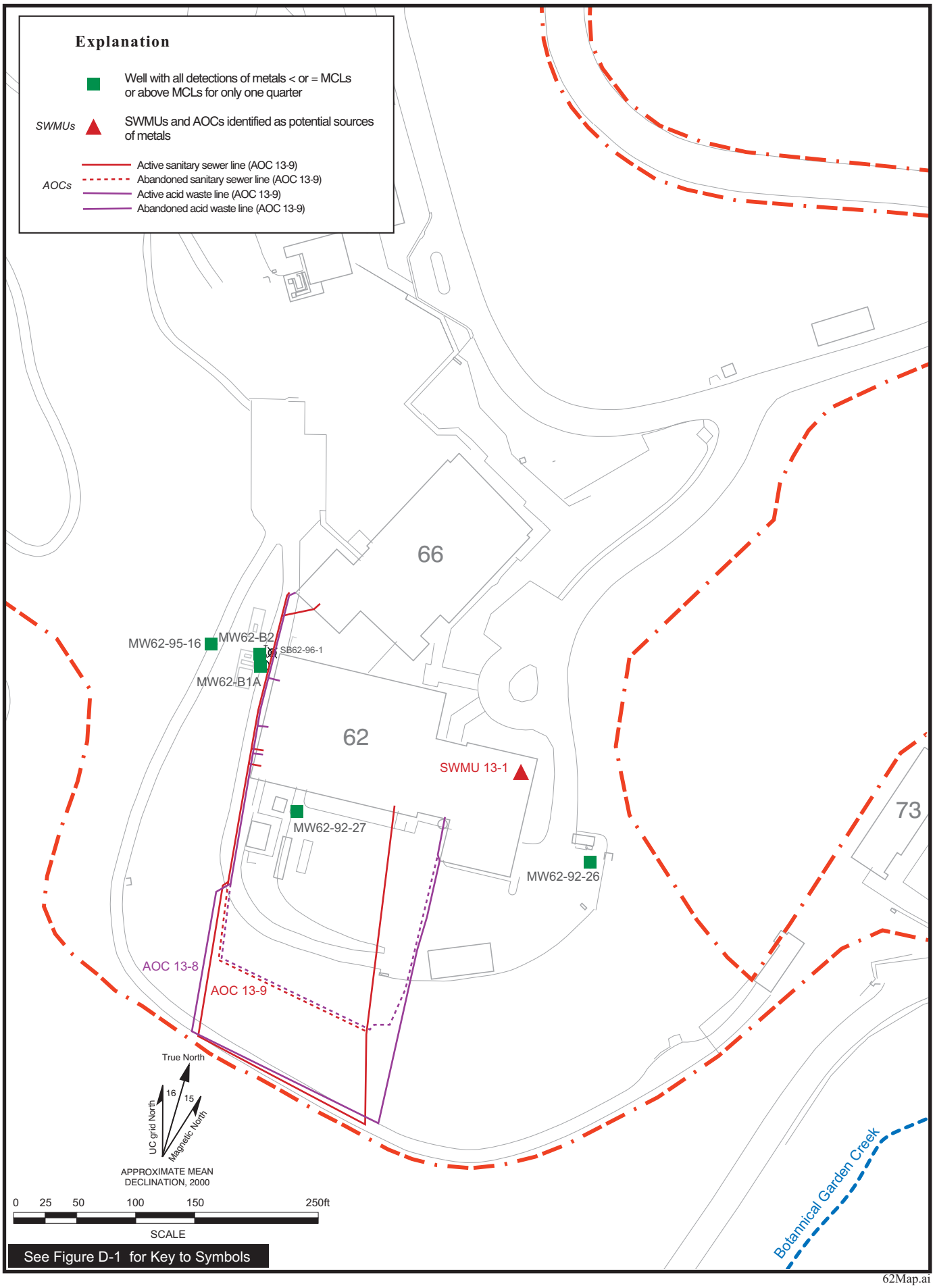
Figure D4.7-1b. Wells Sampled for Metals in Groundwater in Northeastern Outlying Area.



62Map.ai
09/00

Figure D4.7-1c. Wells Sampled for Metals in Groundwater in Southeastern Outlying Area.

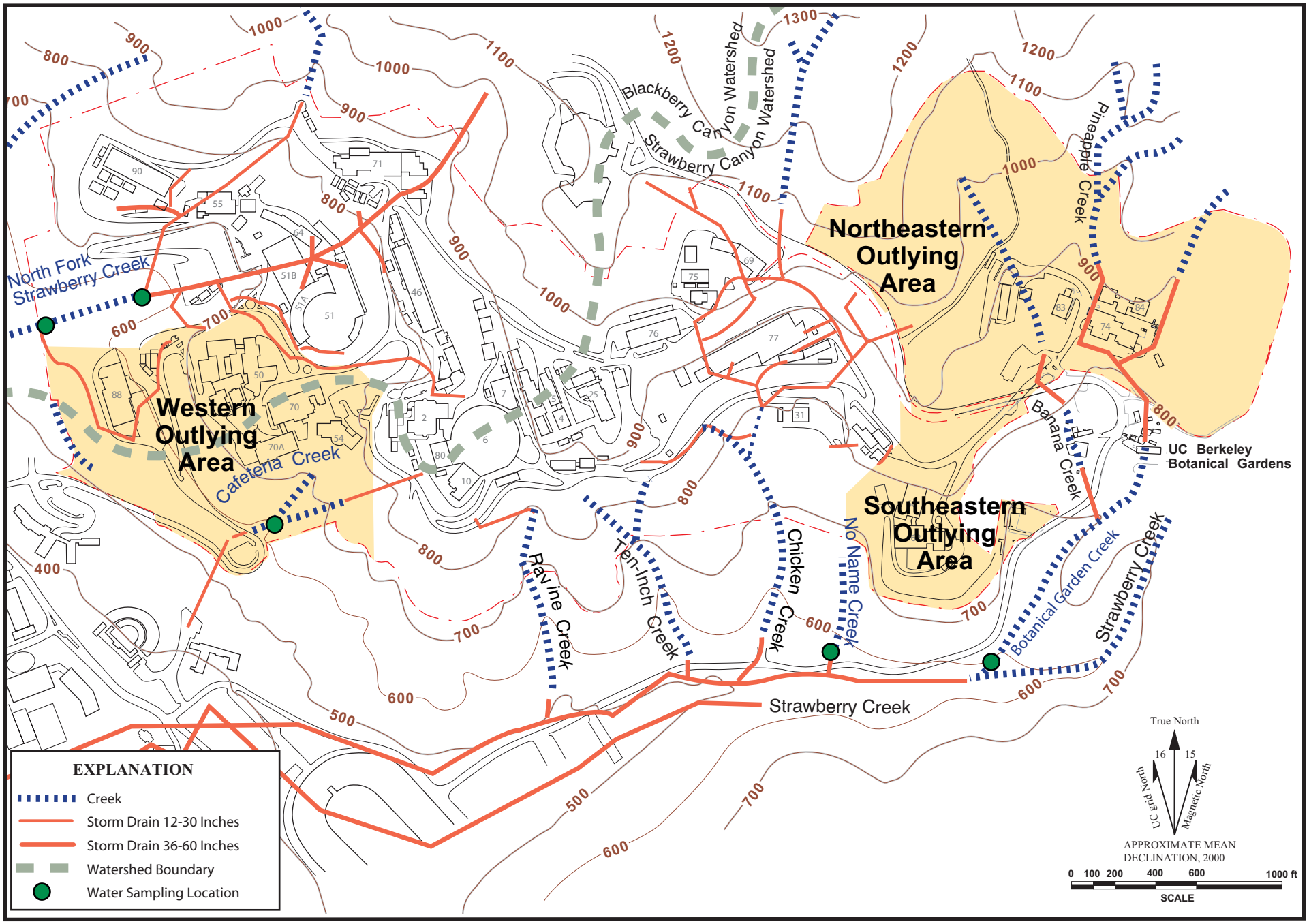


Figure D4.8-1. Surface Water Sampling Locations Evaluating Potential Migration Pathways of Contamination in Outlying Areas to Surface Water.

D4.8-1 OutAreaSurfWtr.ai
09/00

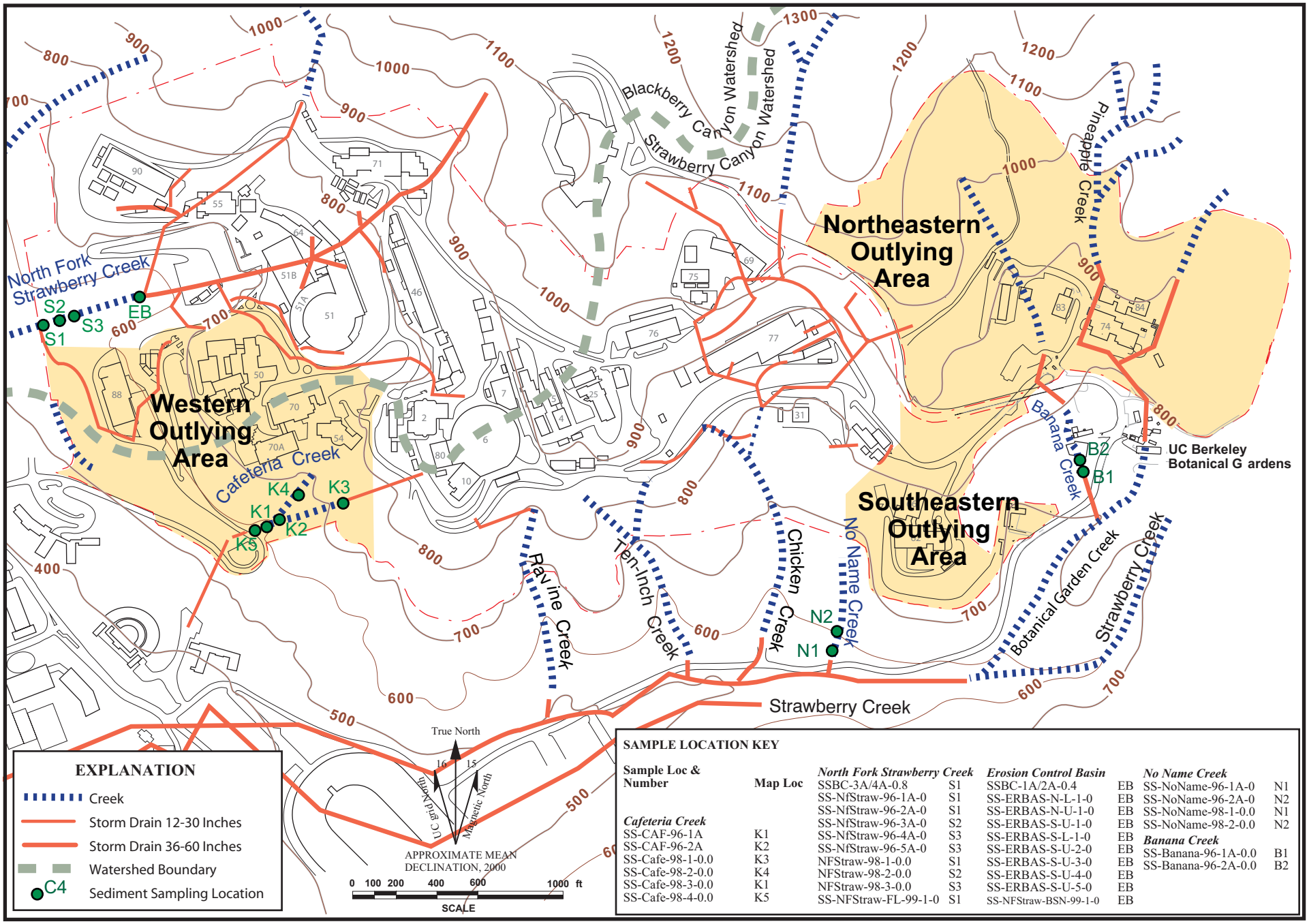


Figure D4.8-2. **Sediment Sampling Locations Evaluating Potential Migration Pathways of Contamination in Outlying Areas to Surface Water.**

D4.8-2 OutAreaSed.ai
09/00

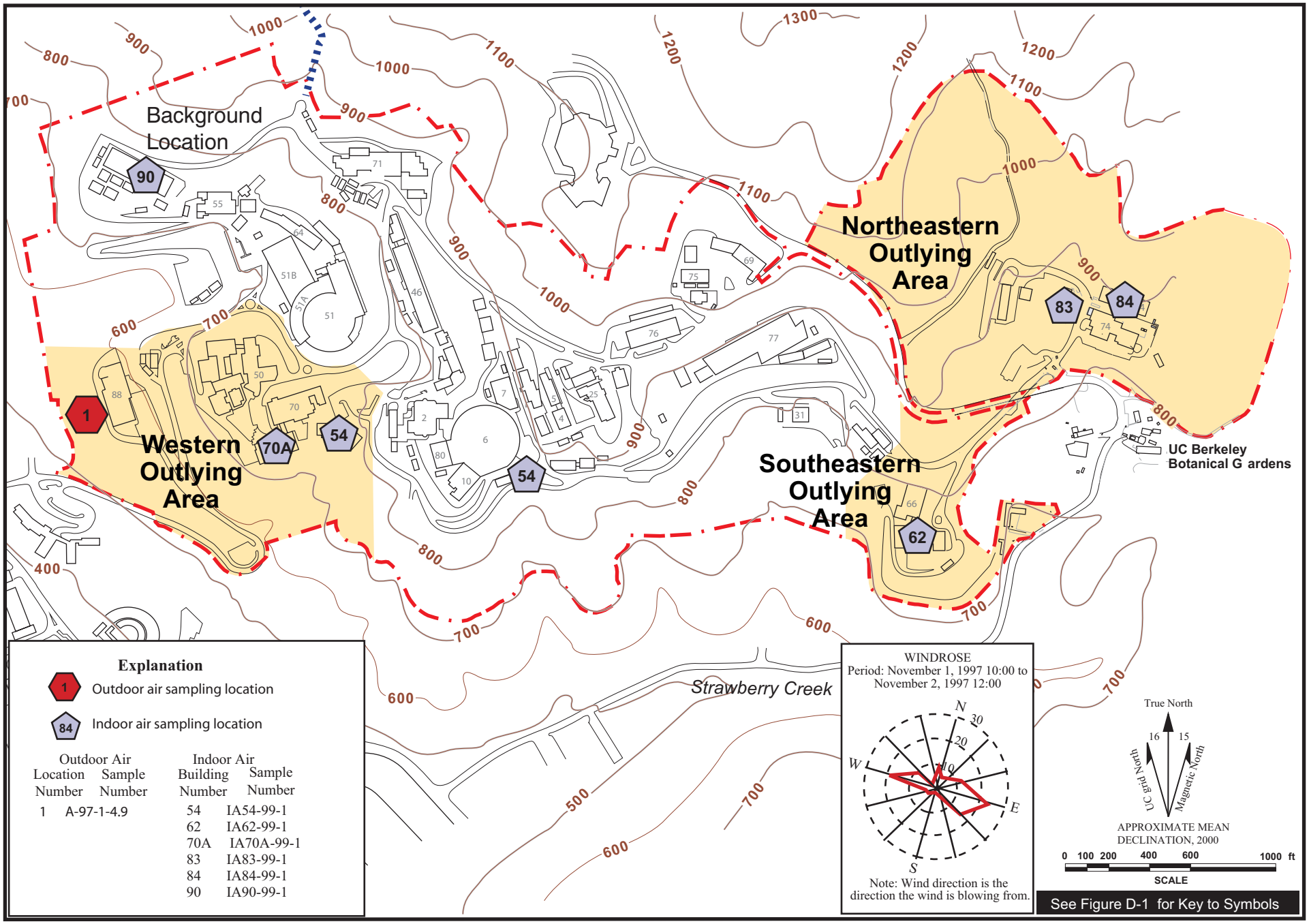


Figure D5.1-1. Indoor and Outdoor Air Sampling Locations, Outlying Areas.

D5.1-1air.ai
09/00