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	SB16-94-11	Temporary groundwater sampling point	LT	Less than reporting limit
	MW76-93-7		ND (or <)	Not detected
	SB76-94-01	Groundwater monitoring well	NS	Not sampled
	SB76-94-04	Soil boring	NA	Not analyzed
		Angled soil boring		
	SS51-97-1	Shallow soil sample location		
	SG-76W-7	Soil-gas probe	17	Surface structure (e.g., buildings, etc.)
		Shallow soil-gas sampling location	A ————— A'	Cross section
	7-95-1	Soil-gas monitoring well		Sanitary sewer line
	VZM-OT-1	Vadose zone monitoring well		Abandoned sanitary sewer
	L-3	Vacuum lysimeter		Storm drain line
	PZ 51-92-3	Piezometer		LBNL site boundary
	SSW-C.63	Slope stability well		Water level elevation contour line (feet)
	SI-8.107	Slope indicator well		Topographic contour line (feet)
	EW 7B-96-1	Extraction well		Hydrauger
	SB16-94-11	Properly destroyed groundwater monitoring well or temporary groundwater sampling point		Solid Waste Management Unit
	MW76-93-7			Area of Concern
		Soil sampling location (in soil borings)		
		Sample location was excavated		

NOTE: Other symbols used are explained on the figures.

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

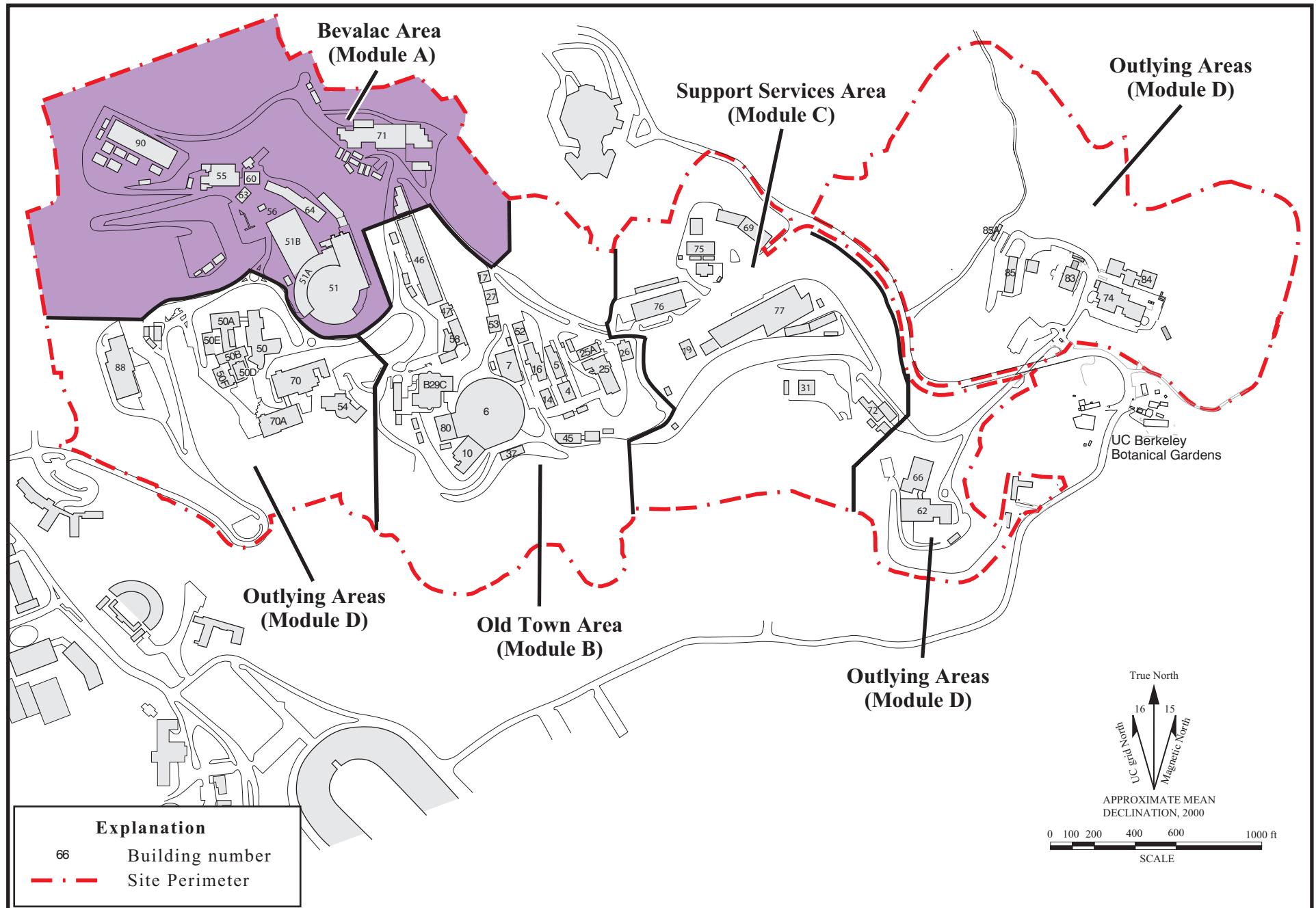


Figure A-2. Location of the Bevalac Area, Lawrence Berkeley National Laboratory.

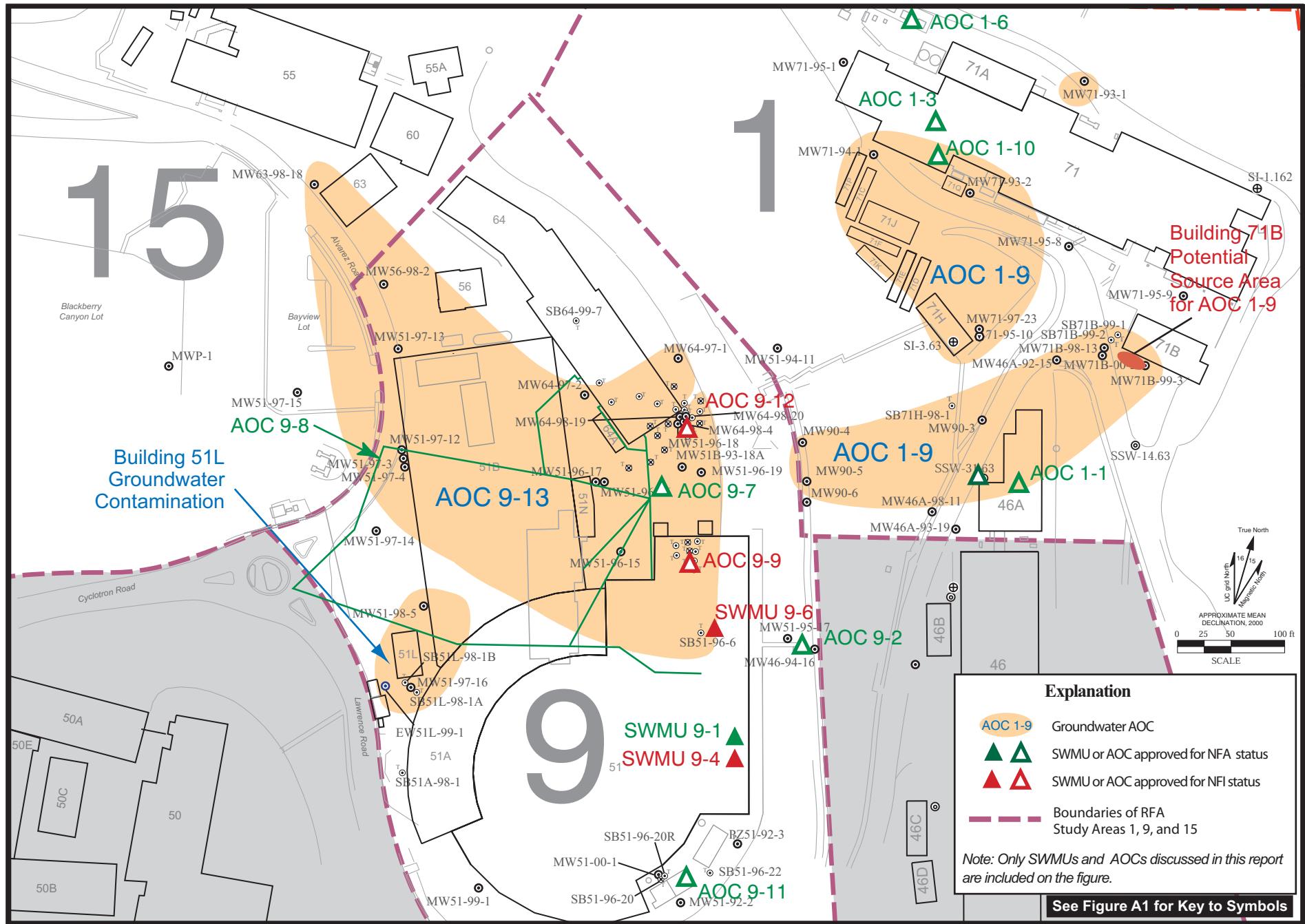


Figure A-3. Locations of SWMUs and AOCs in the Bevalac Area Discussed in Module A.

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.				
Age	WEST OF HAYWARD FAULT		EAST OF HAYWARD FAULT			
	<i>West of Life Sciences Area Main Canyon Landslide Deposit</i>			<i>East of Life Sciences Area Main Canyon Landslide Deposit</i>		
	Group	Formation	Description	Group		
	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.			
	Great Valley				Briones	Fossiliferous, shallow marine, fine grained sandstones with minor amounts of siltstone.
			Marine mudstones, shales, and sandstones.			
	Franciscan Complex			Monterey	Claremont	Chert and shale with minor amounts of sandstone.

Figure A2.1-1. Stratigraphic Correlation Chart, Lawrence Berkeley National Laboratory.

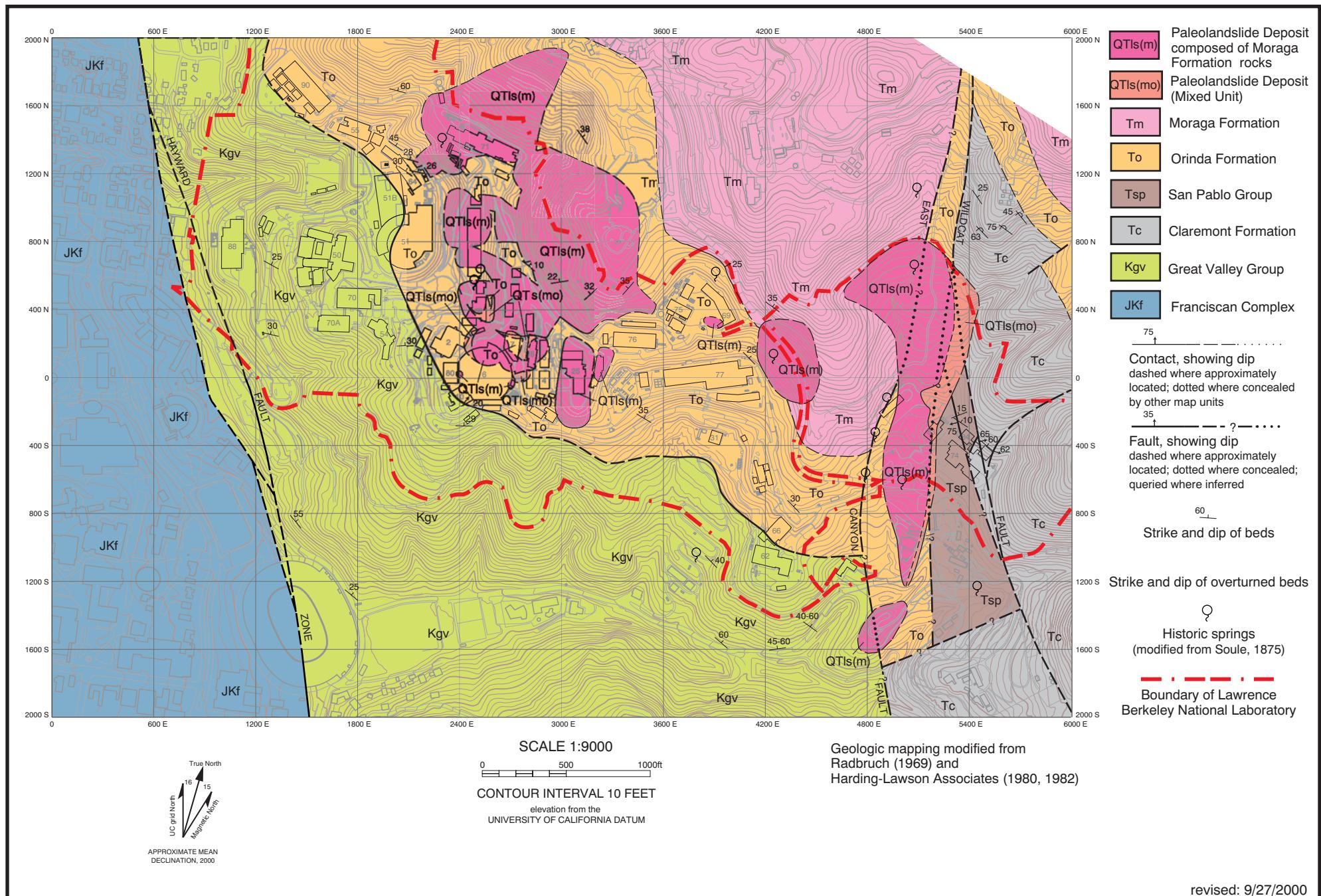


Figure A2.1-2. Bedrock Geologic Map, Lawrence Berkeley National Laboratory.

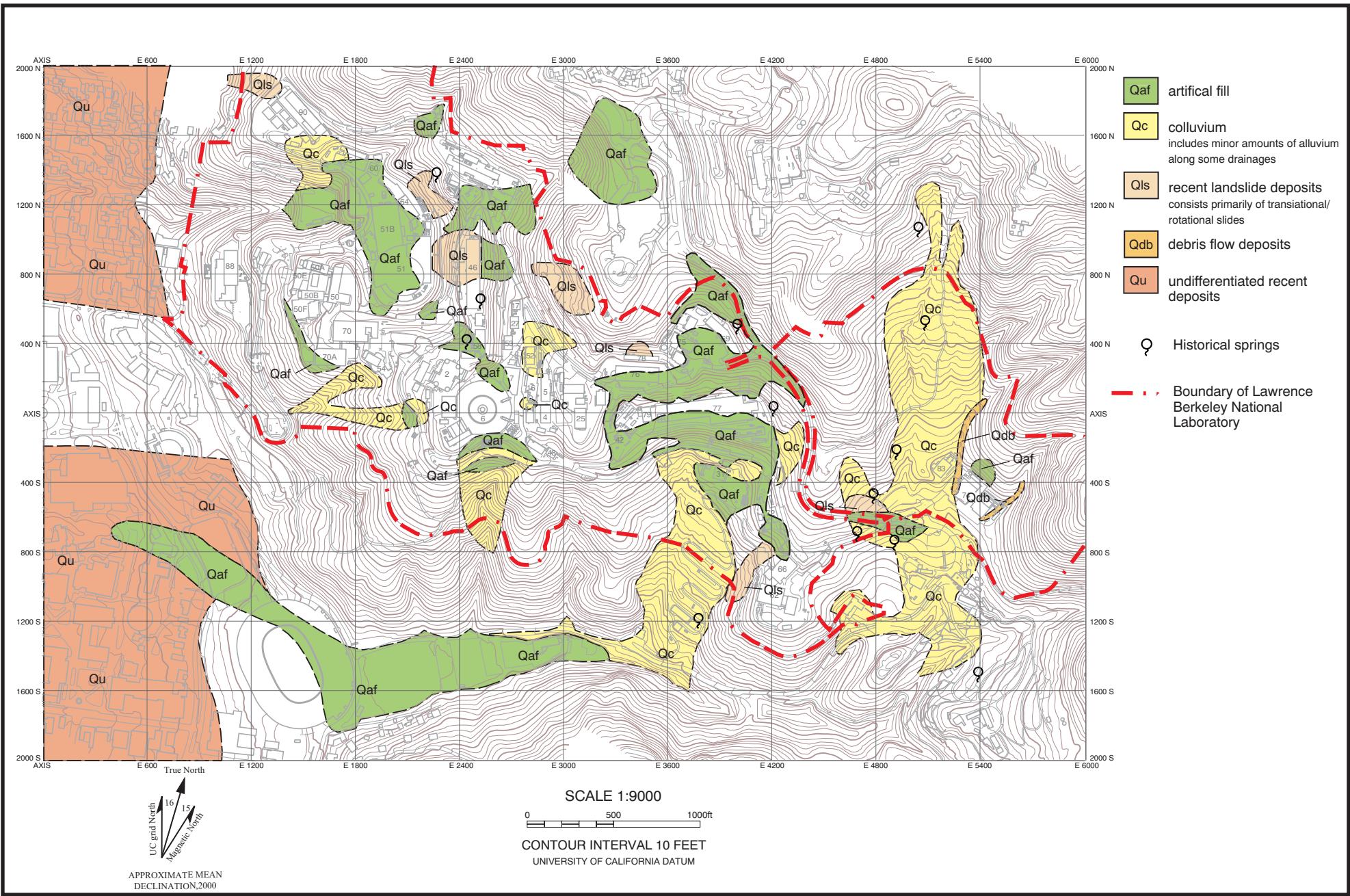


Figure A2.1-3 Surficial Geologic Map (modified from Harding-Lawson Associates, 1982).

A2.1-3 site surf map.ai
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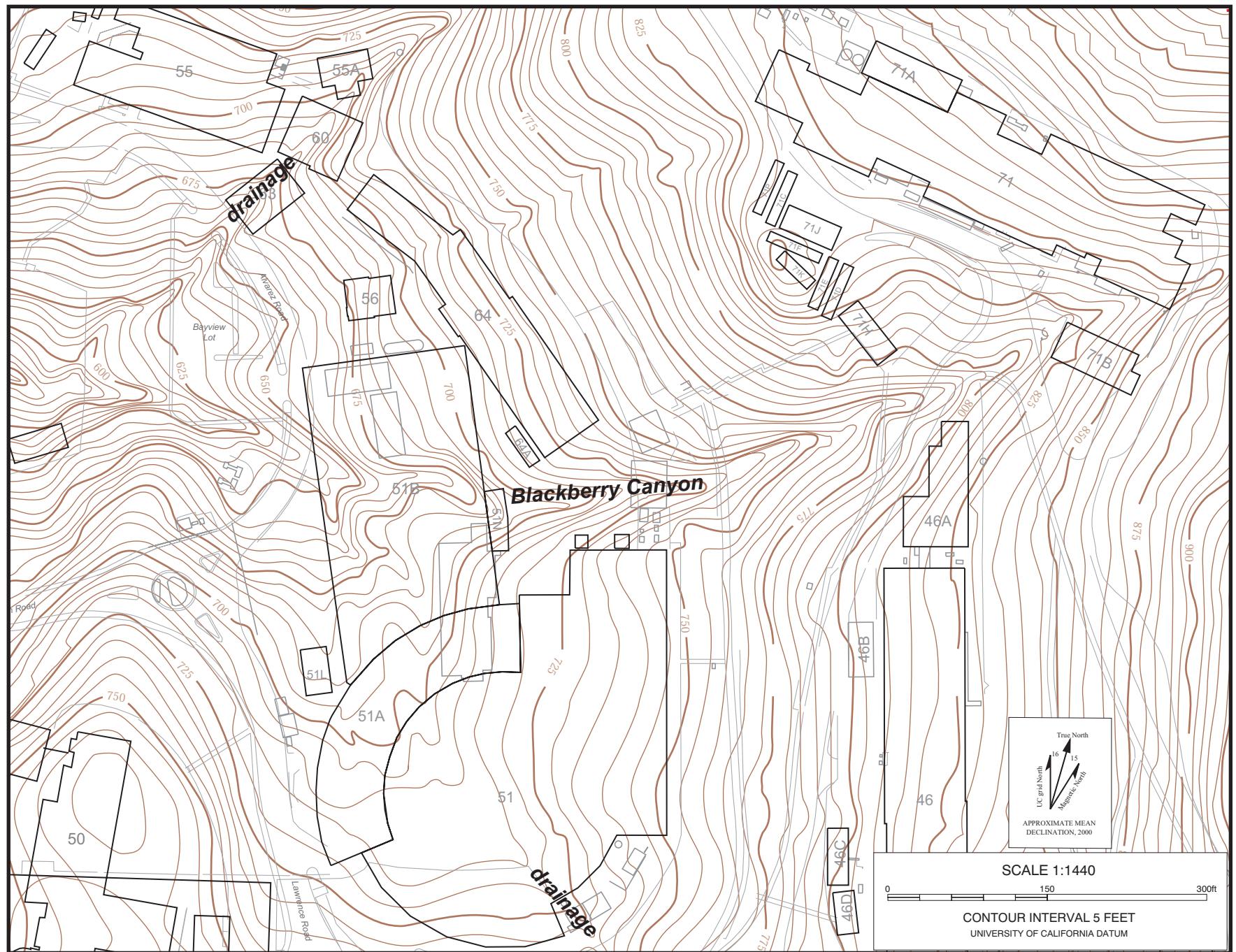


Figure A2.2-1. Original Topography of the Bevalac Area (University of California, Berkeley, 1948).

A2.2-1 bv orig topo.ai
09/00

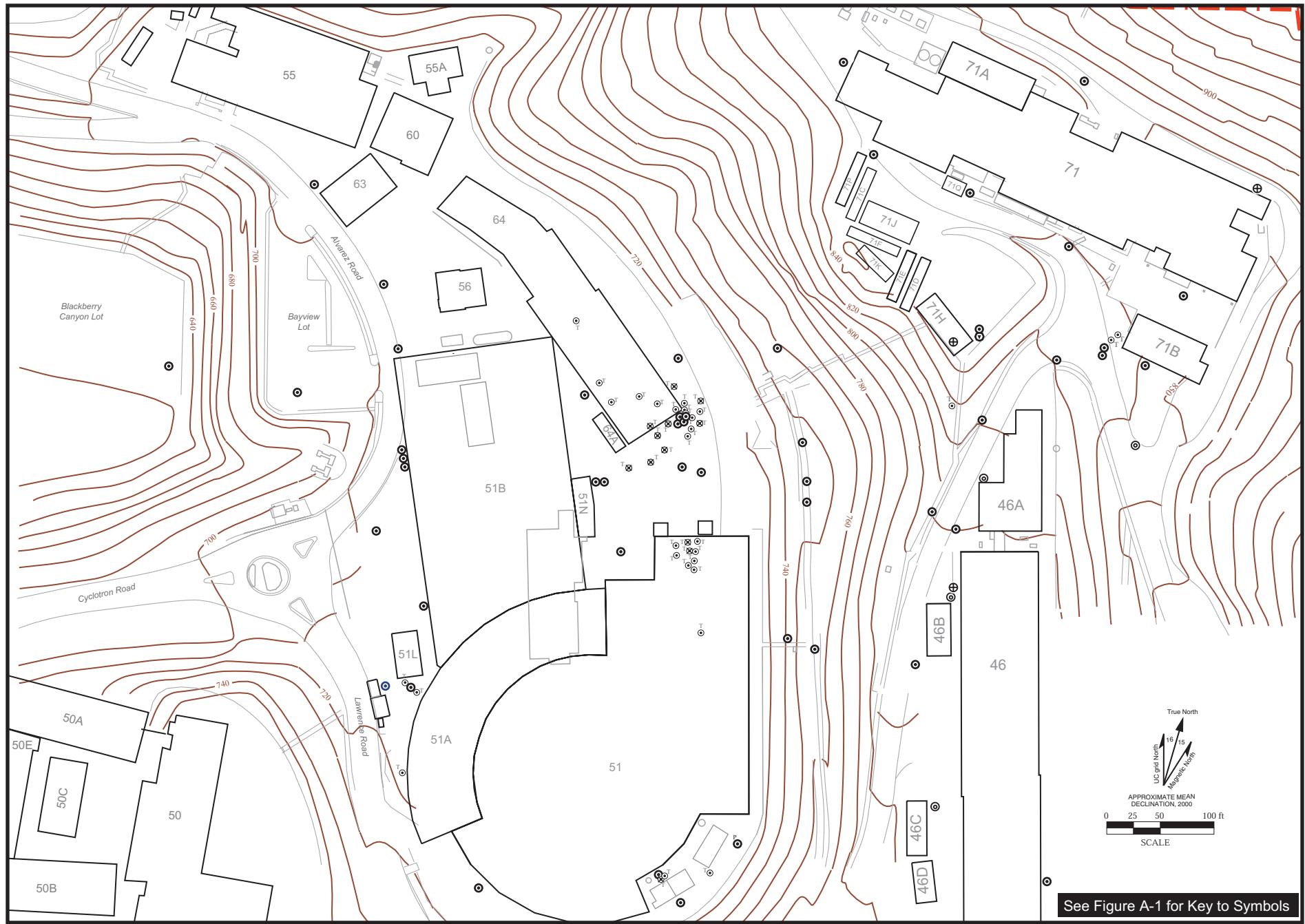


Figure A2.2-2. Current Topography of Bevalac Area.

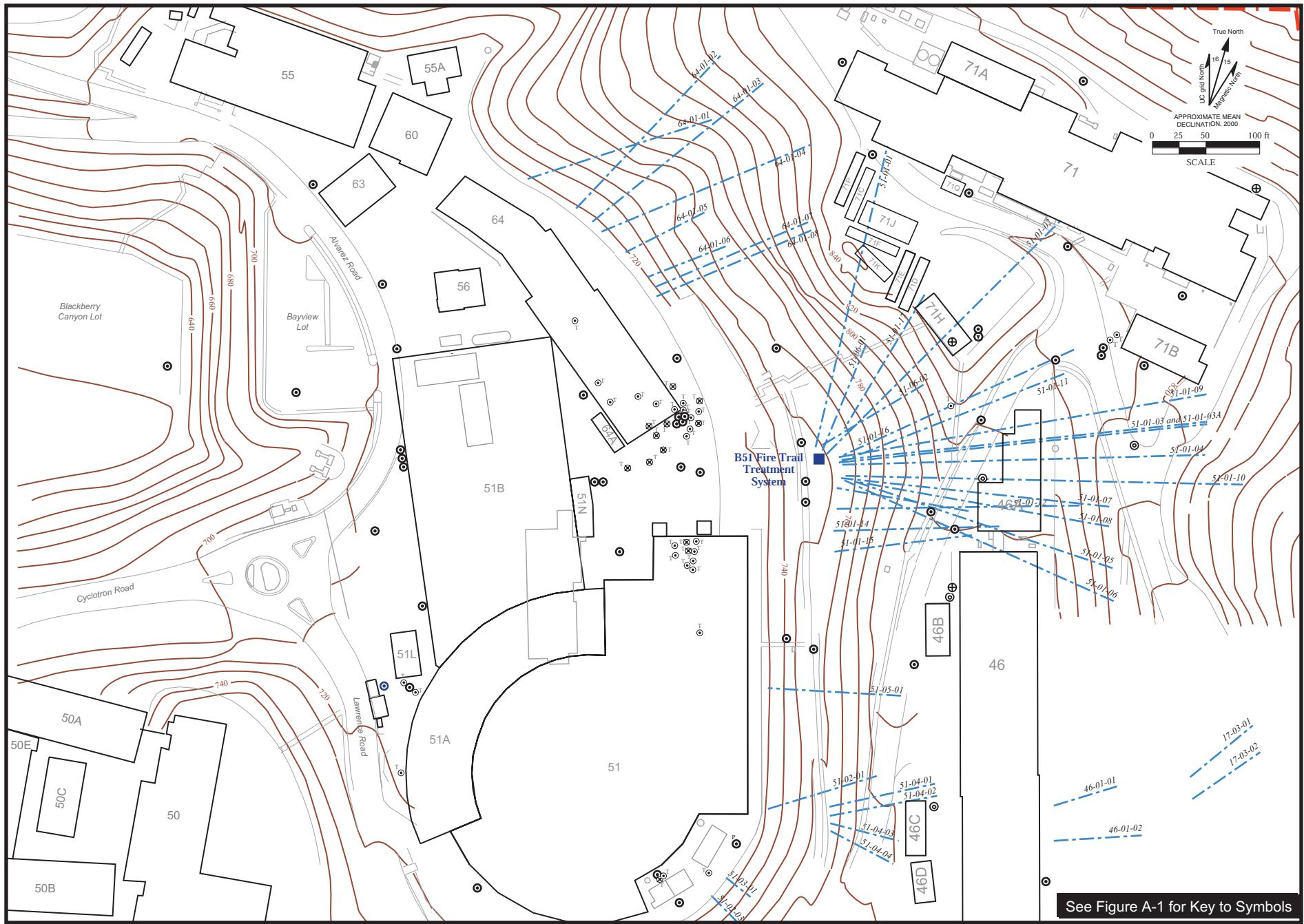
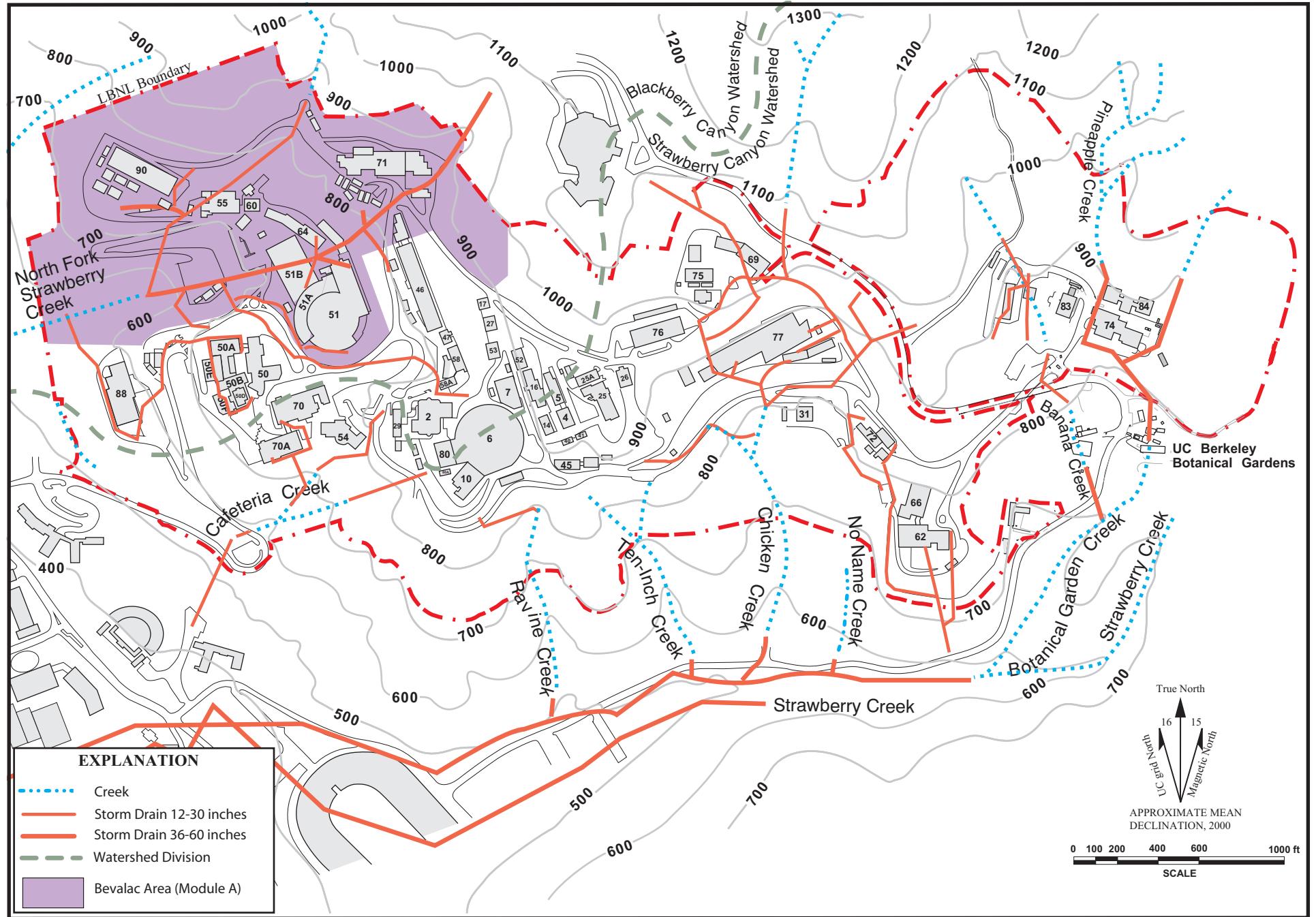


Figure A2.2-3. Hydraugers in the Bevalac Area.



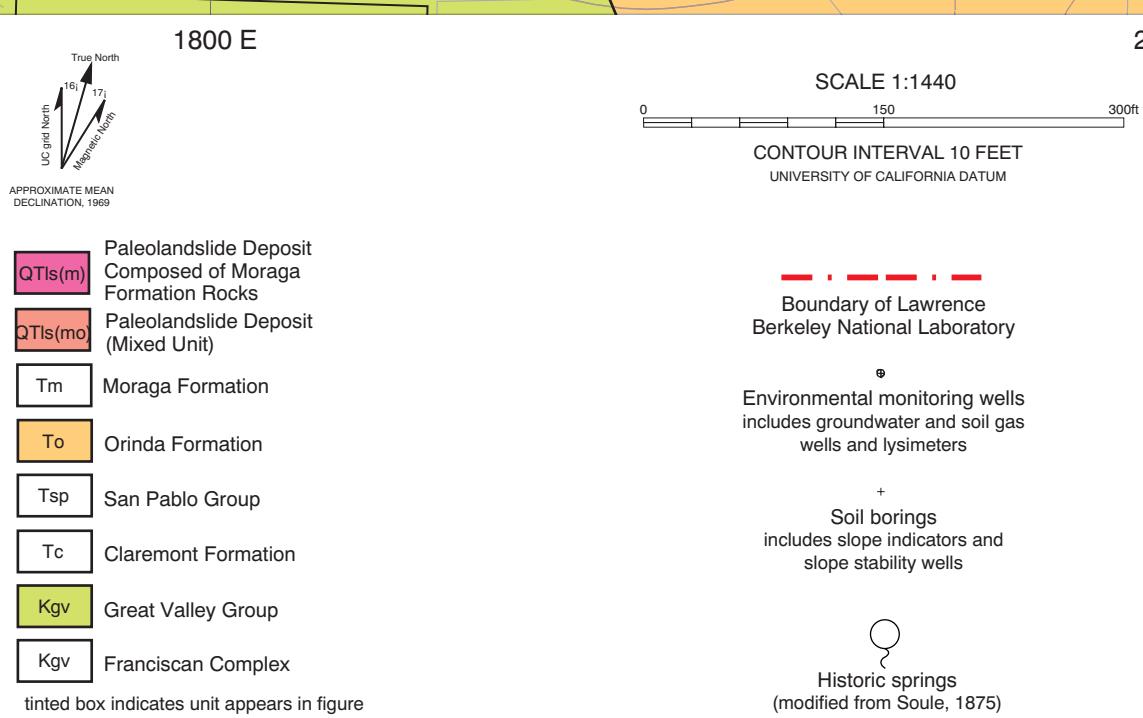
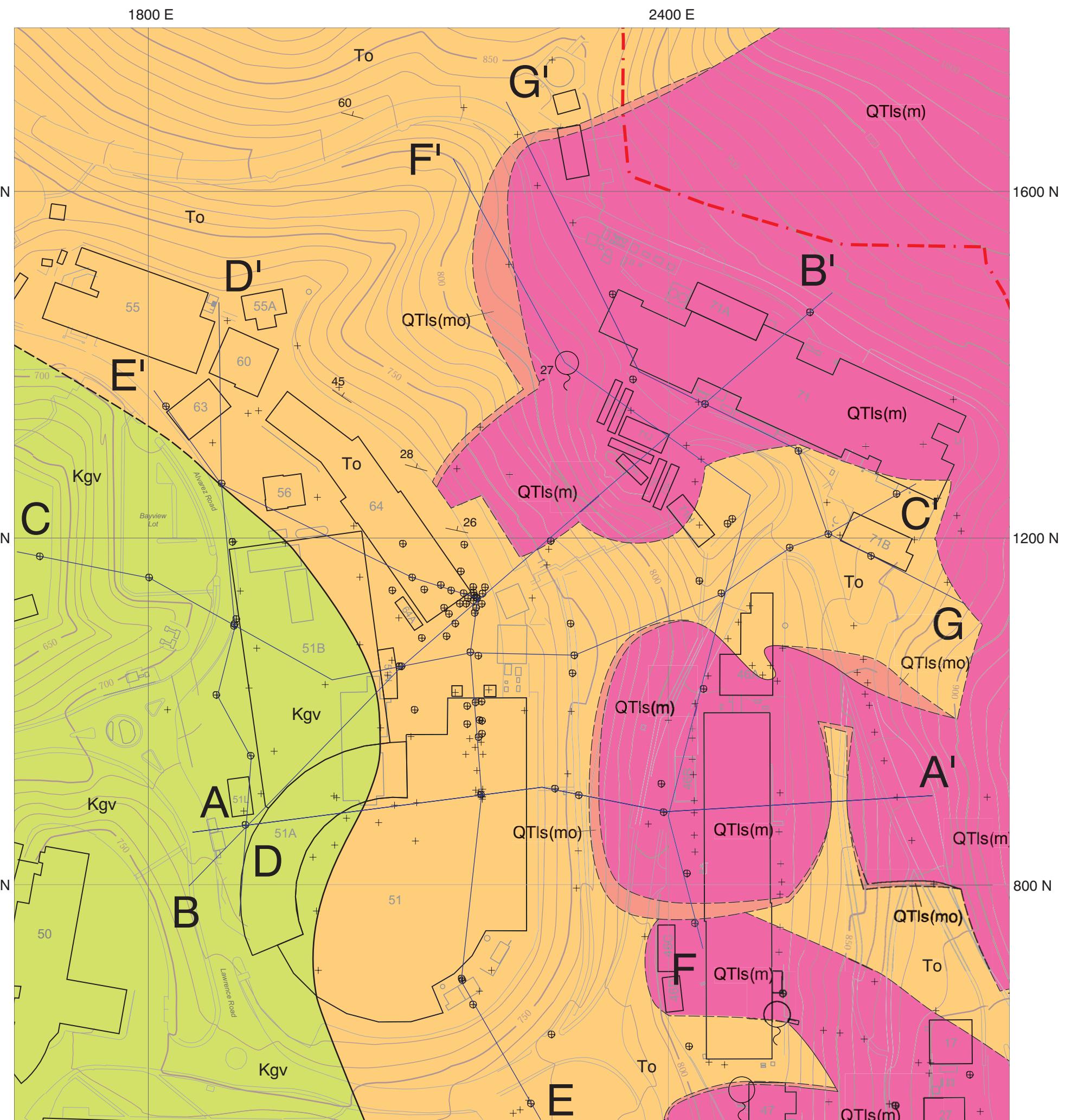


Figure A2.3-1. Bevalac Area Bedrock Geologic Map.

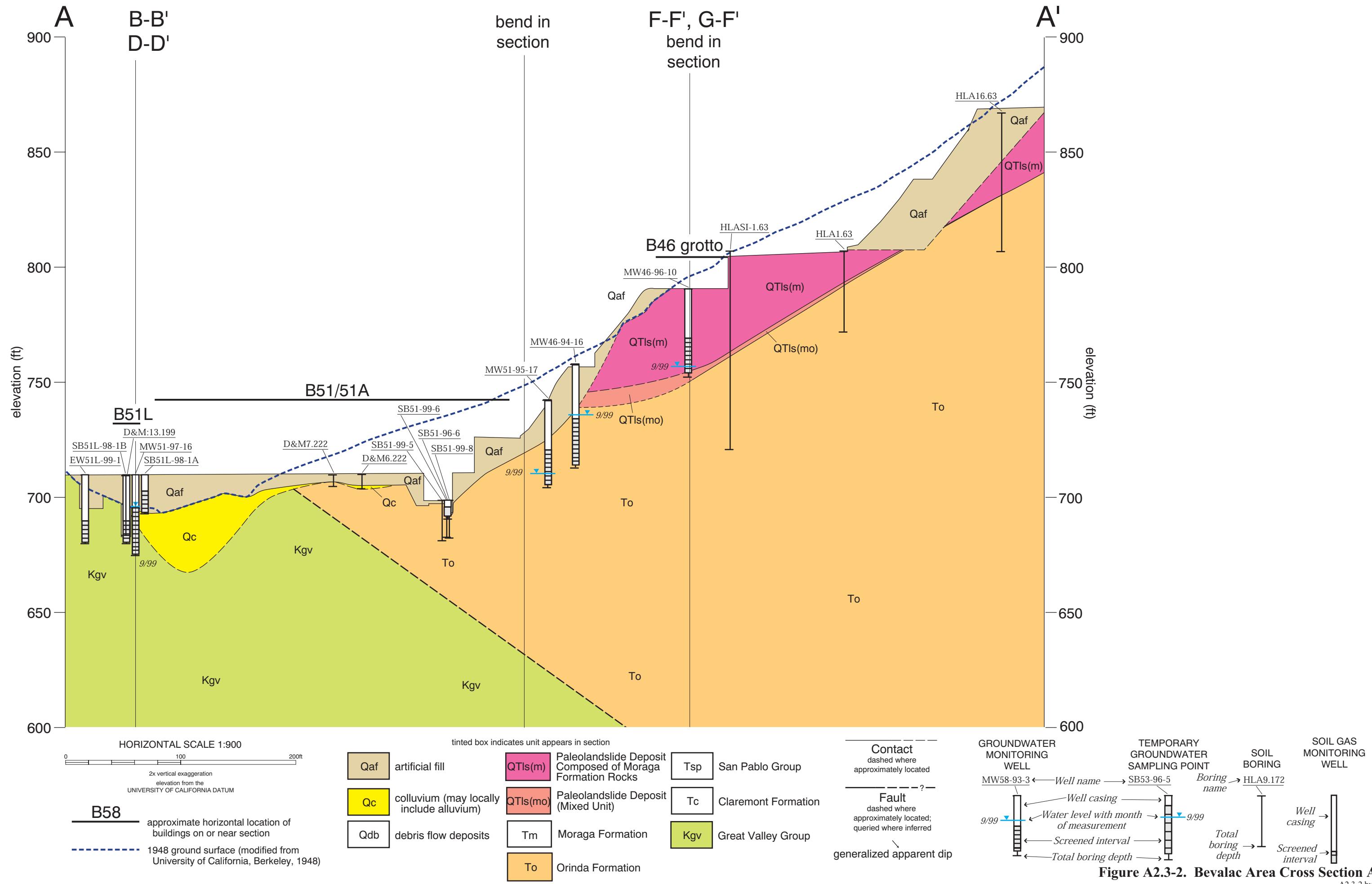
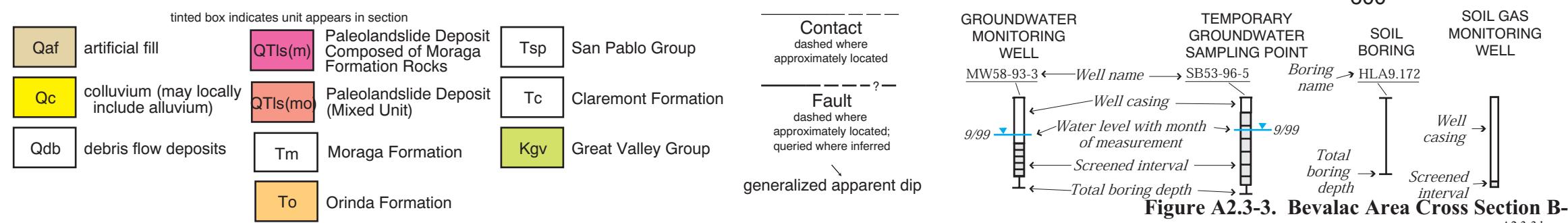
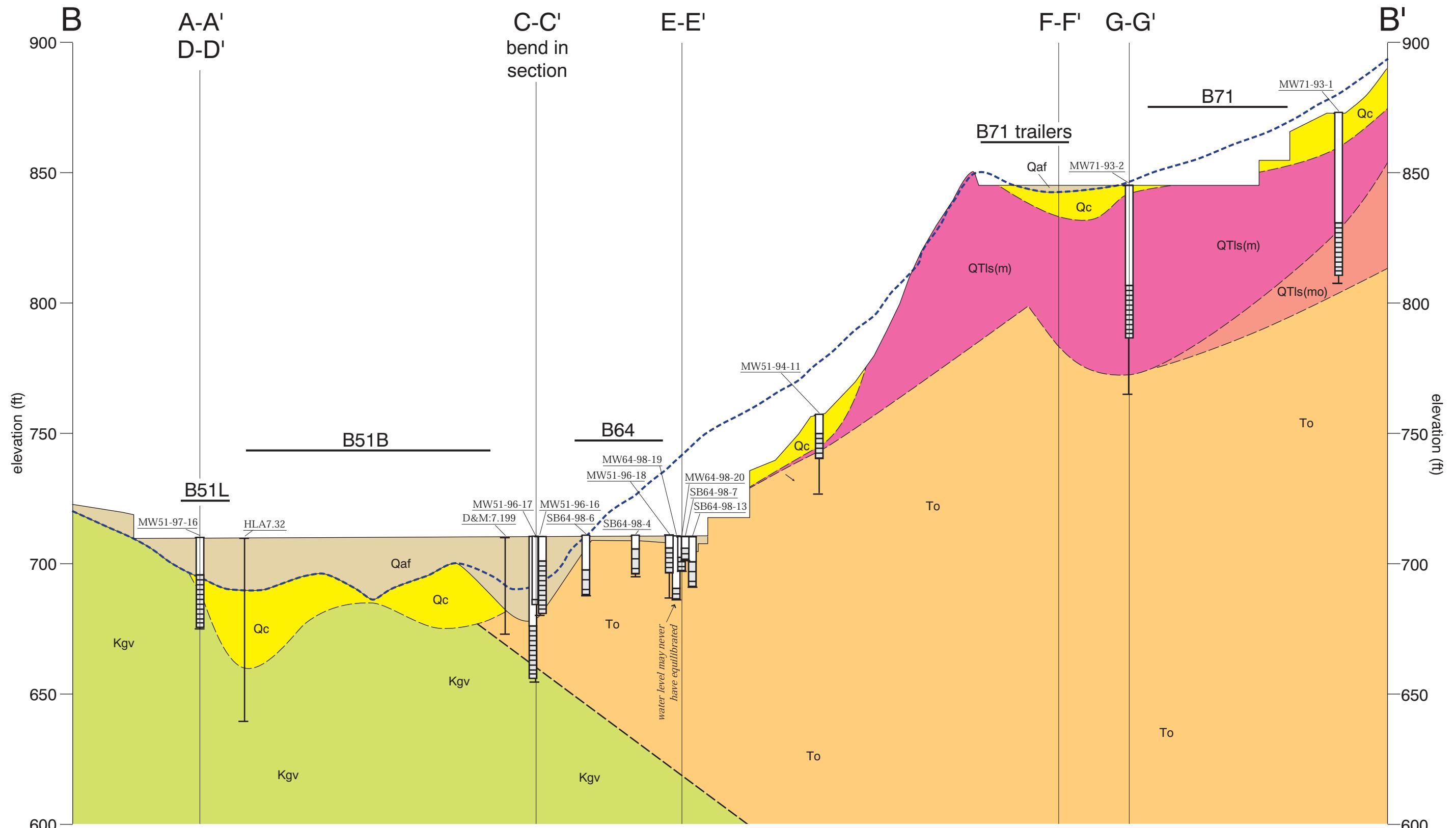
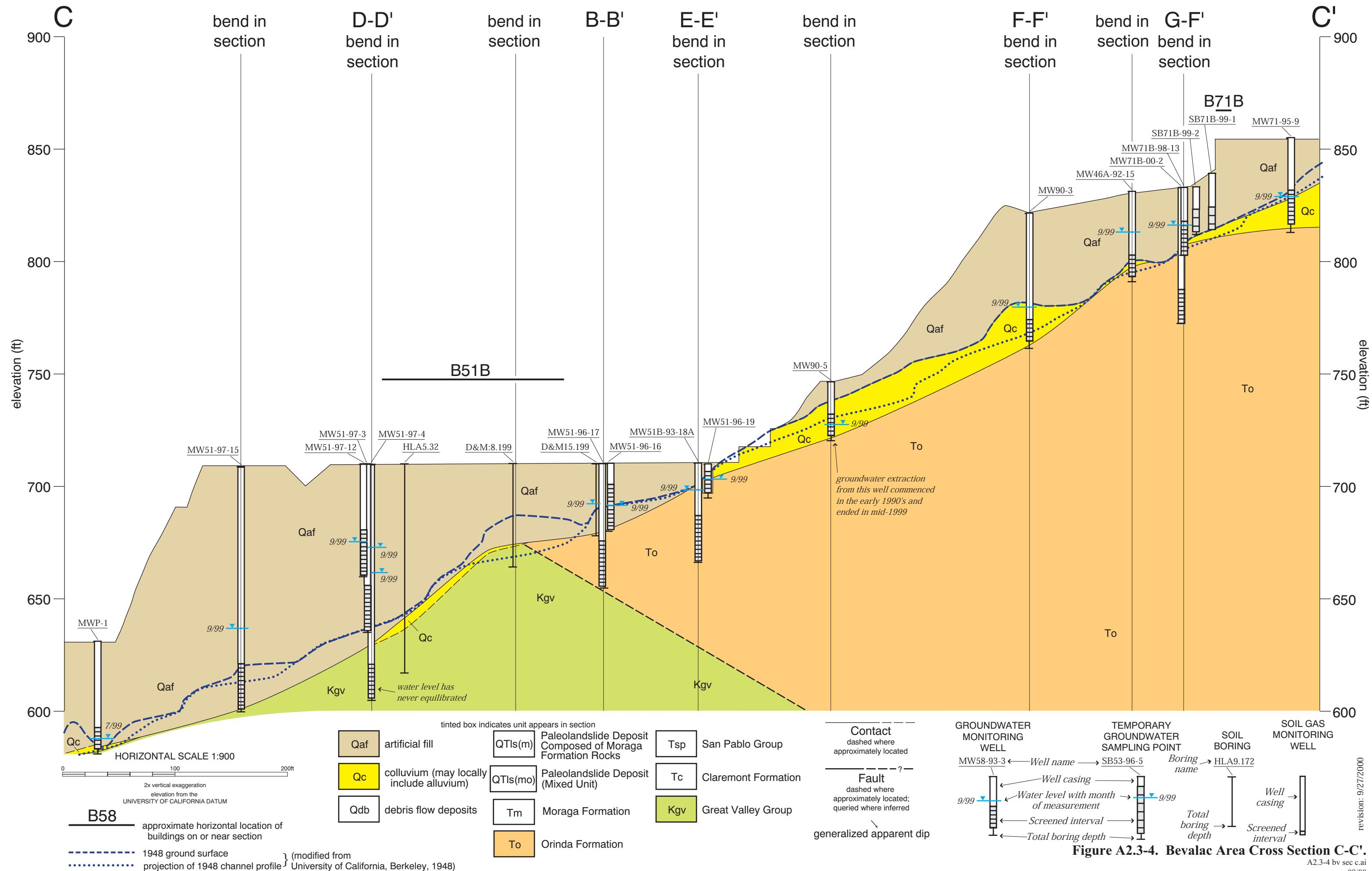
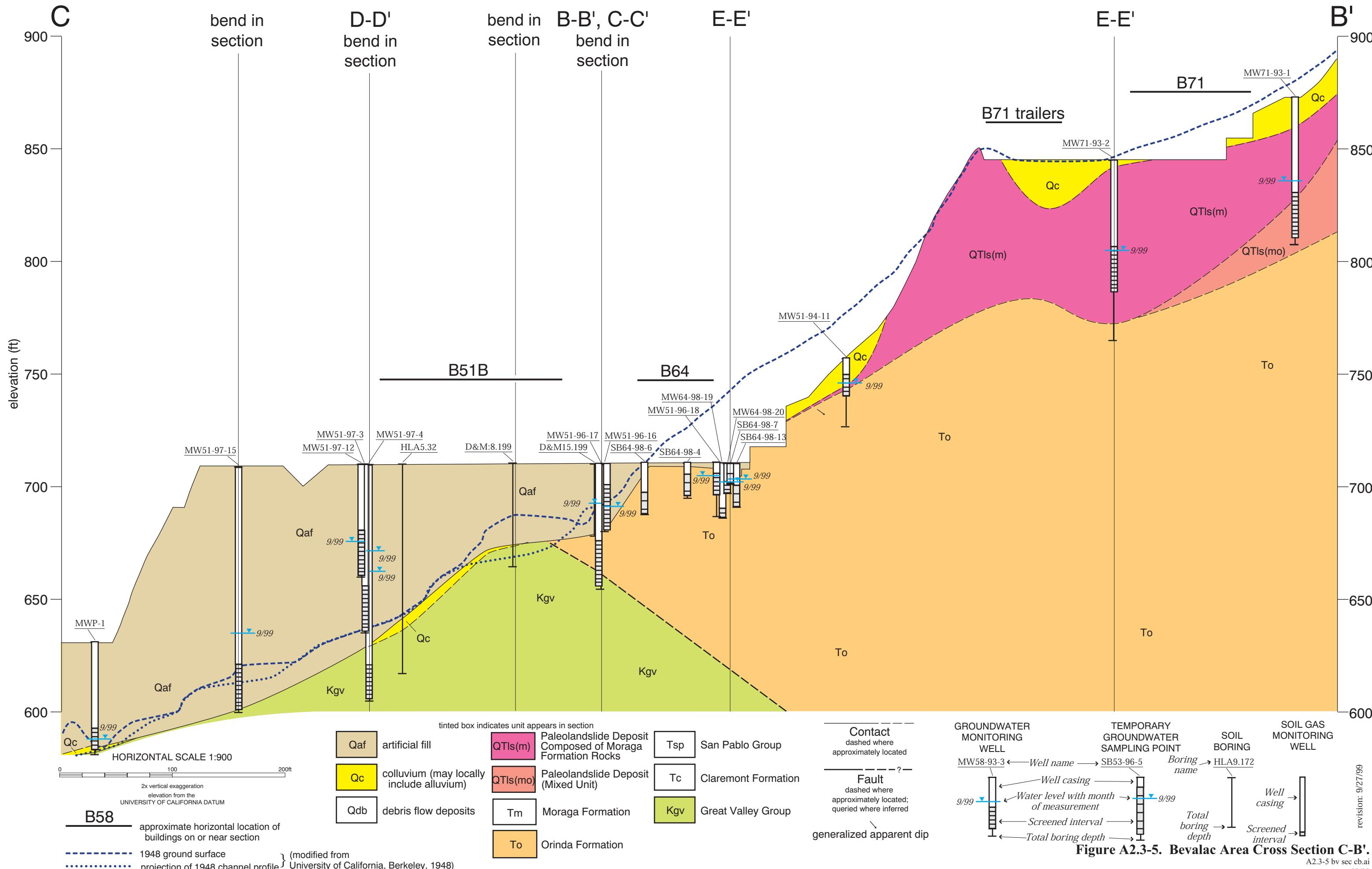


Figure A2.3-2. Bevalac Area Cross Section A-A'.

A2.3-2 bv sec a.ai
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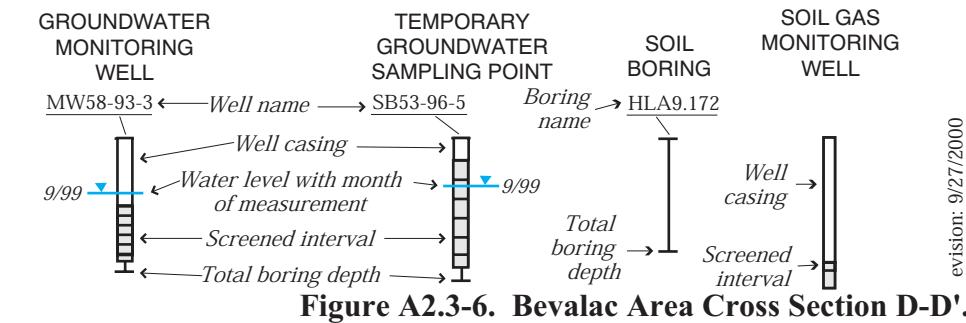
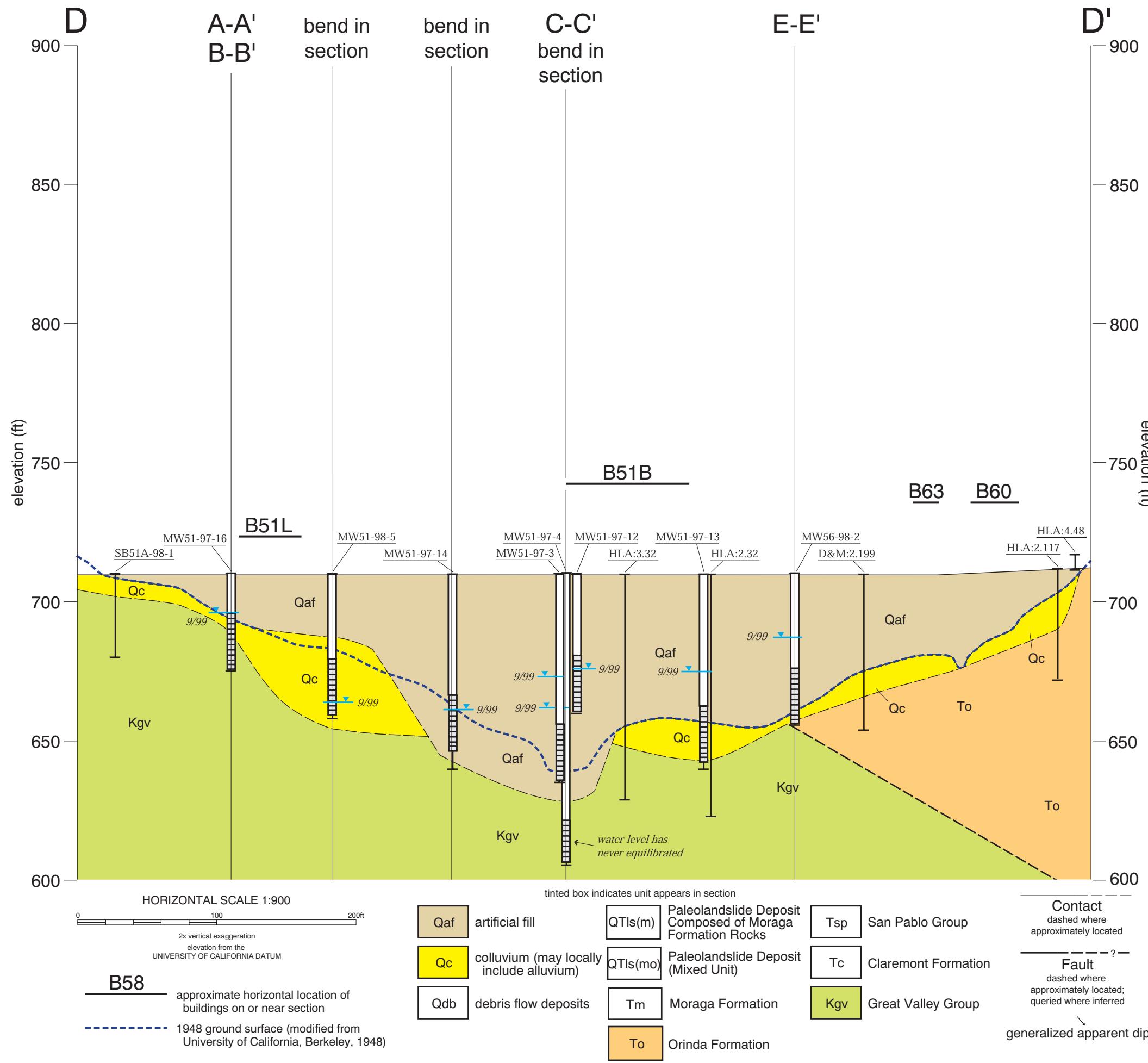


Figure A2.3-6. Bevalac Area Cross Section D-D'.

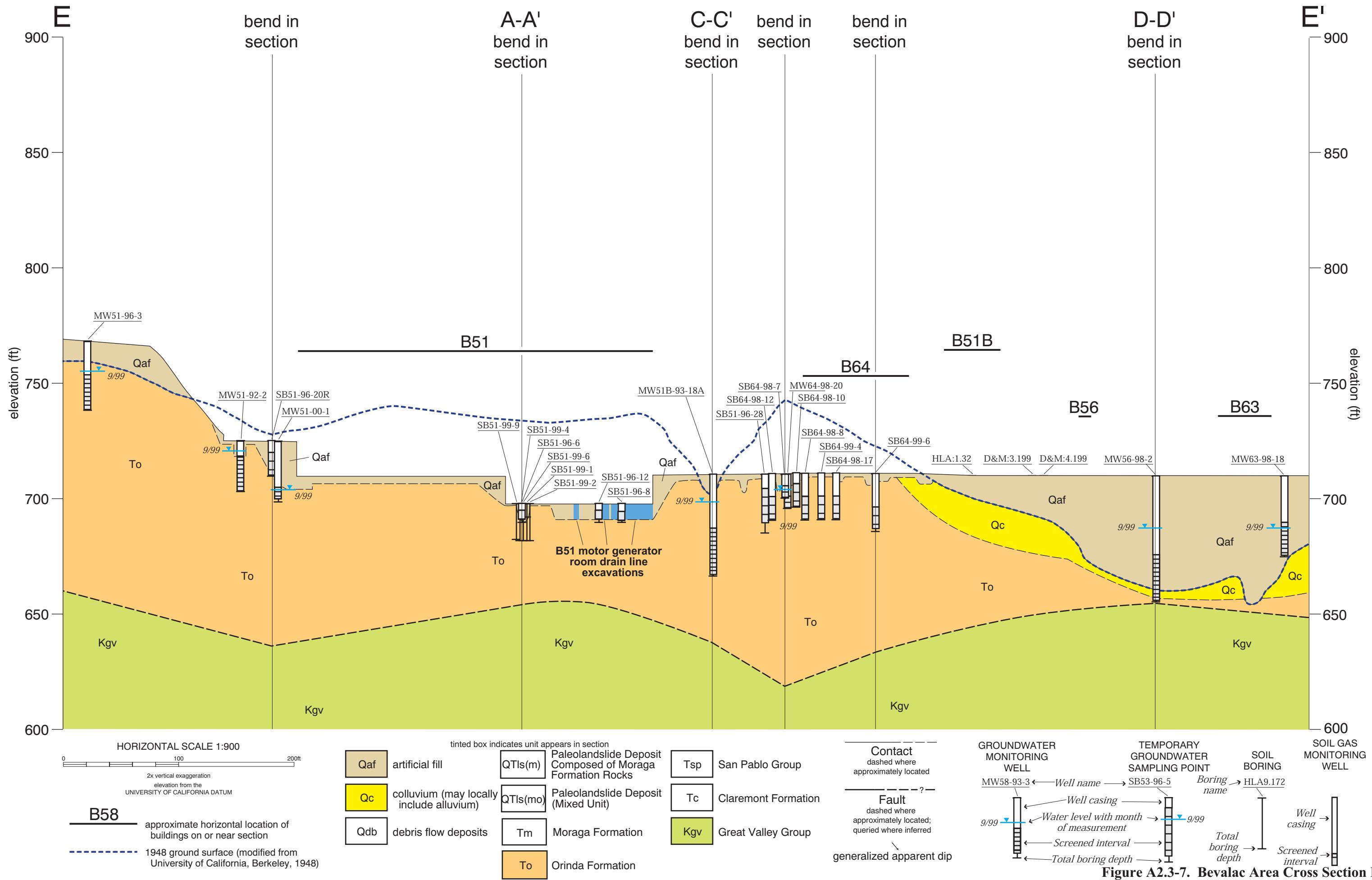


Figure A2.3-7. Bevalac Area Cross Section E-E'.

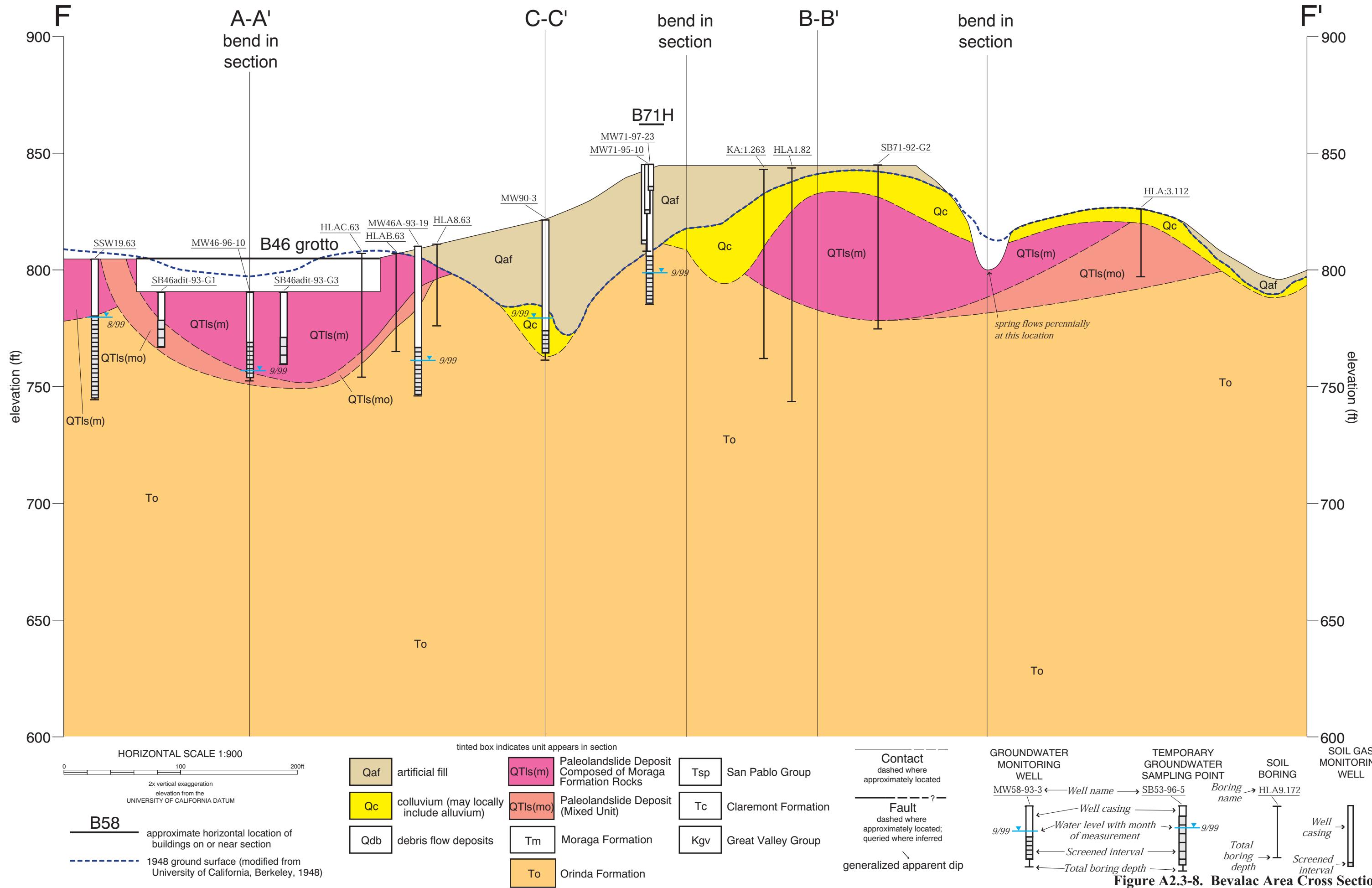
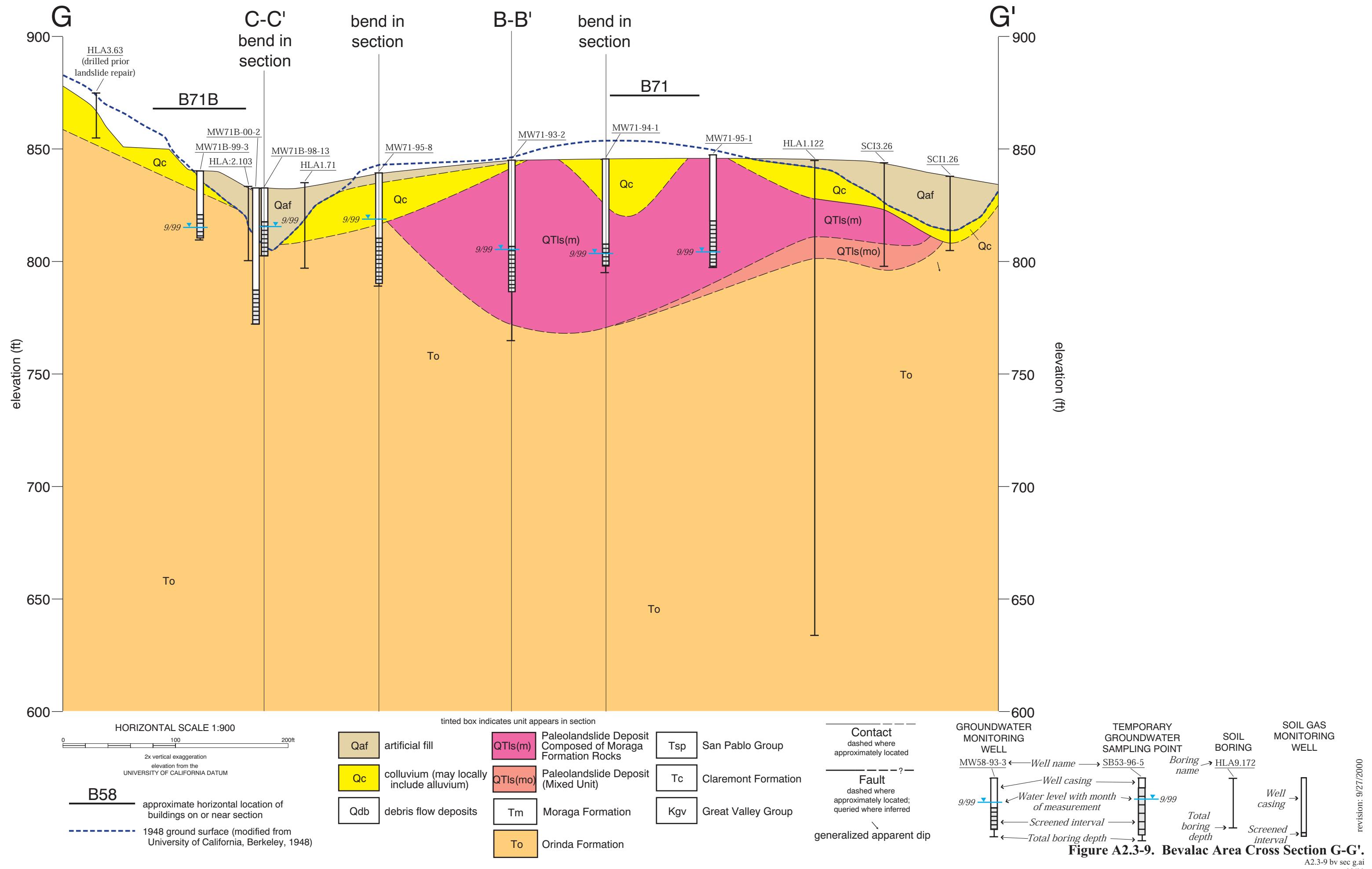


Figure A2.3-8. Bevalac Area Cross Section F-F'.



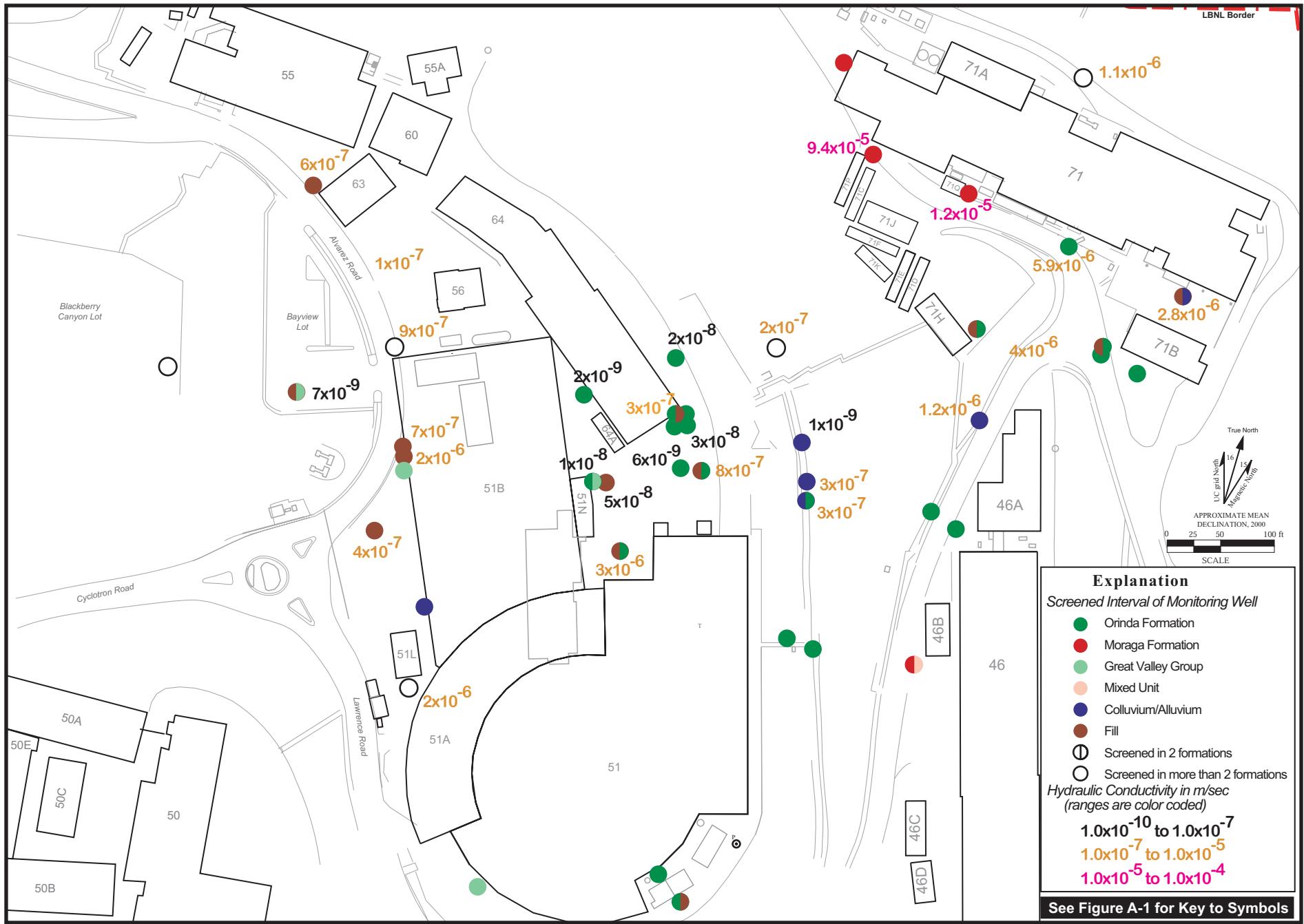


Figure A2.3-10. Bevalac Area Well Locations, Showing Hydraulic Conductivity from Slug Tests.

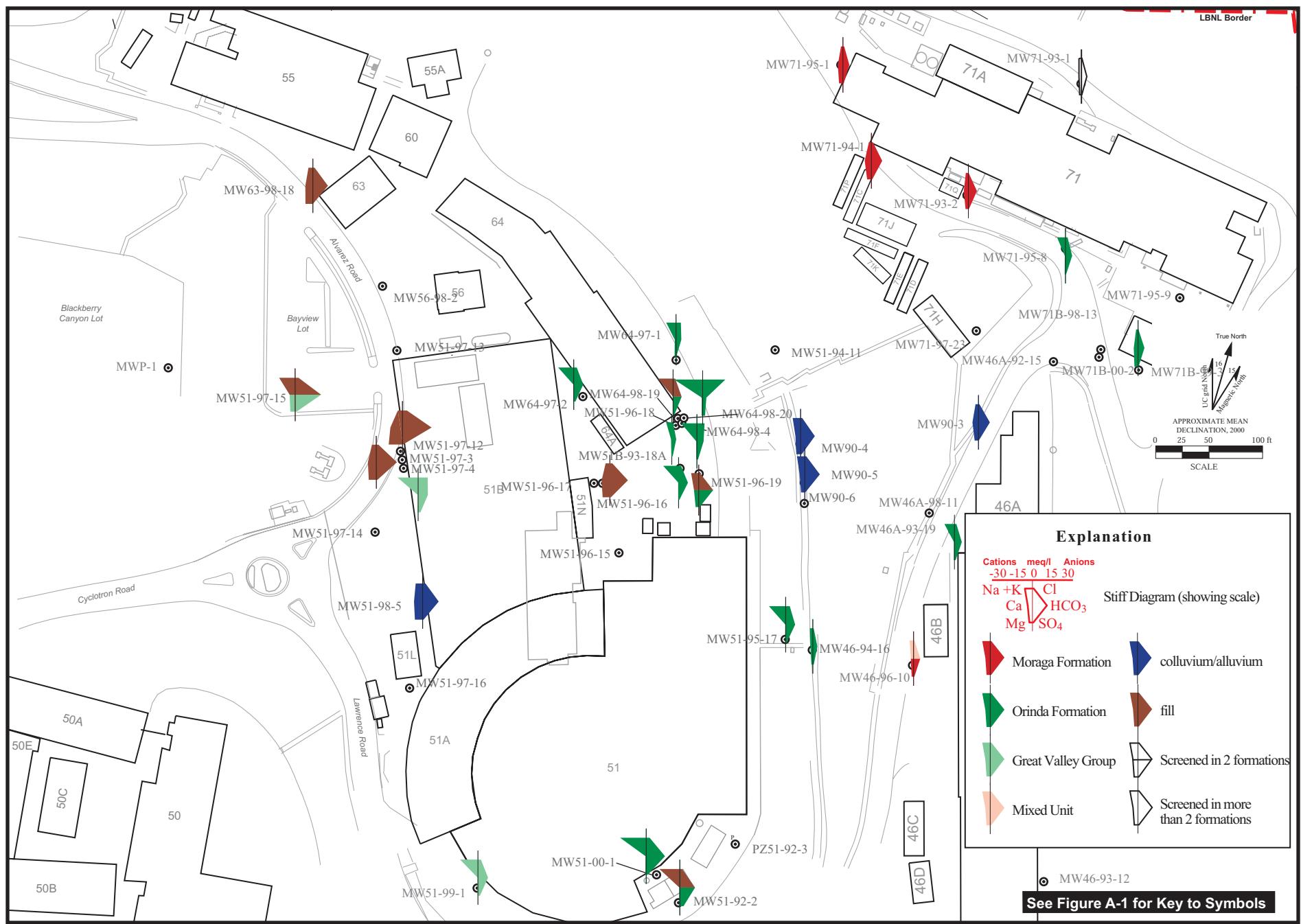


Figure A2.3-11. Bevalac Area Well Locations, Showing Stiff Diagrams.

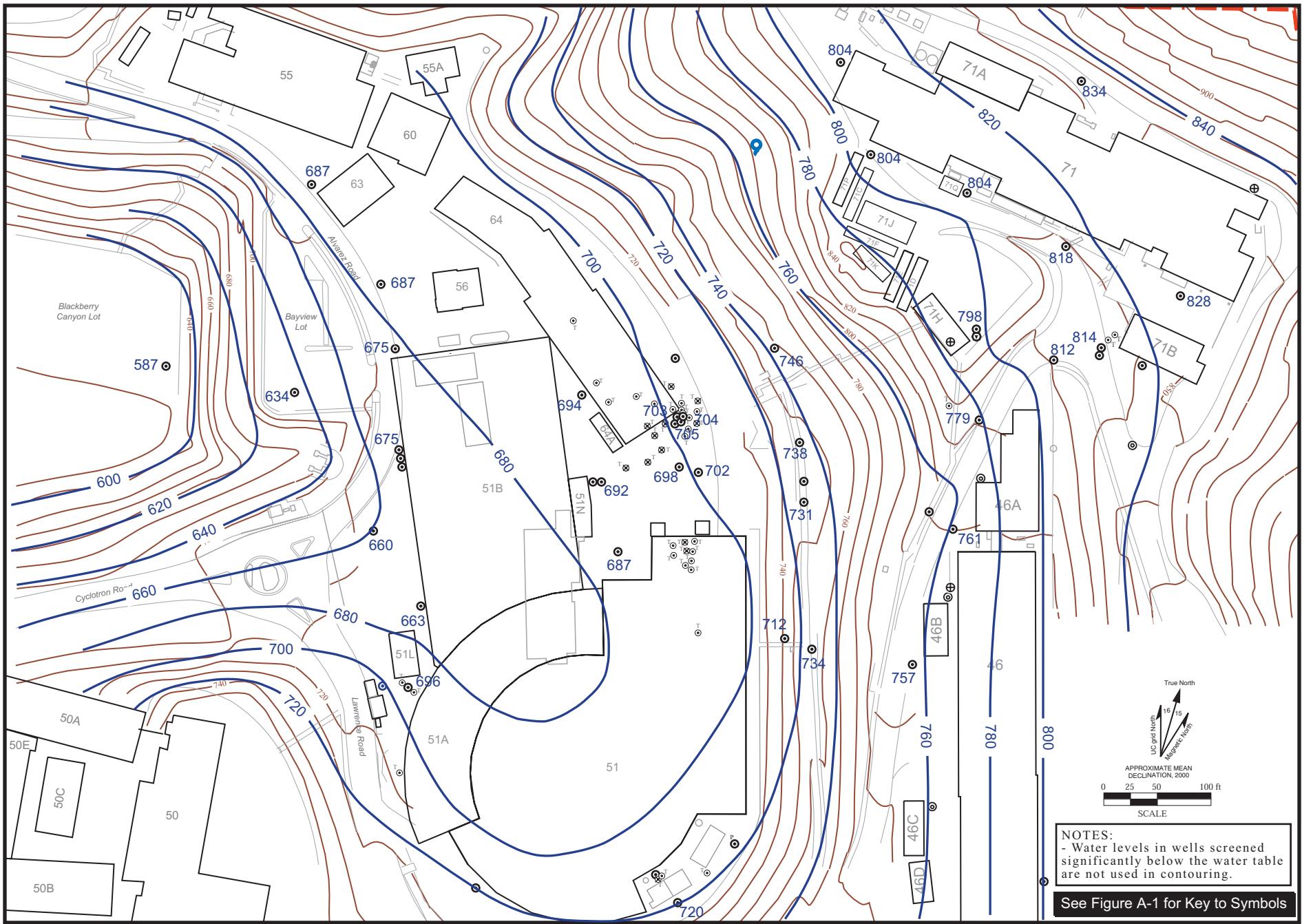


Figure A2.3-12. Water Level Elevation Contour Map, Bevalac Area, Fourth Quarter Fiscal Year 1999.

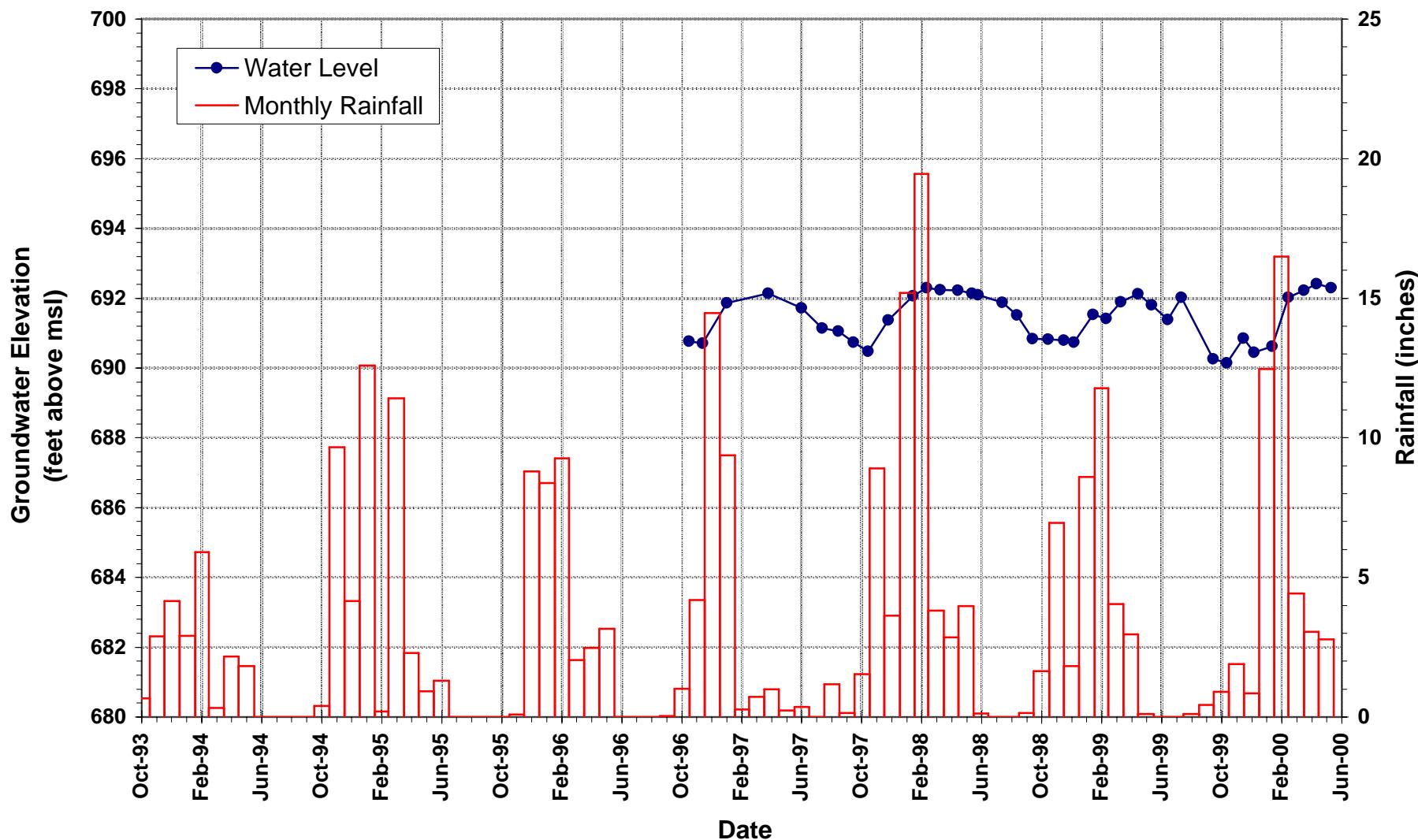


Figure A2.4-1. Hydrograph of Well MW51-96-16.

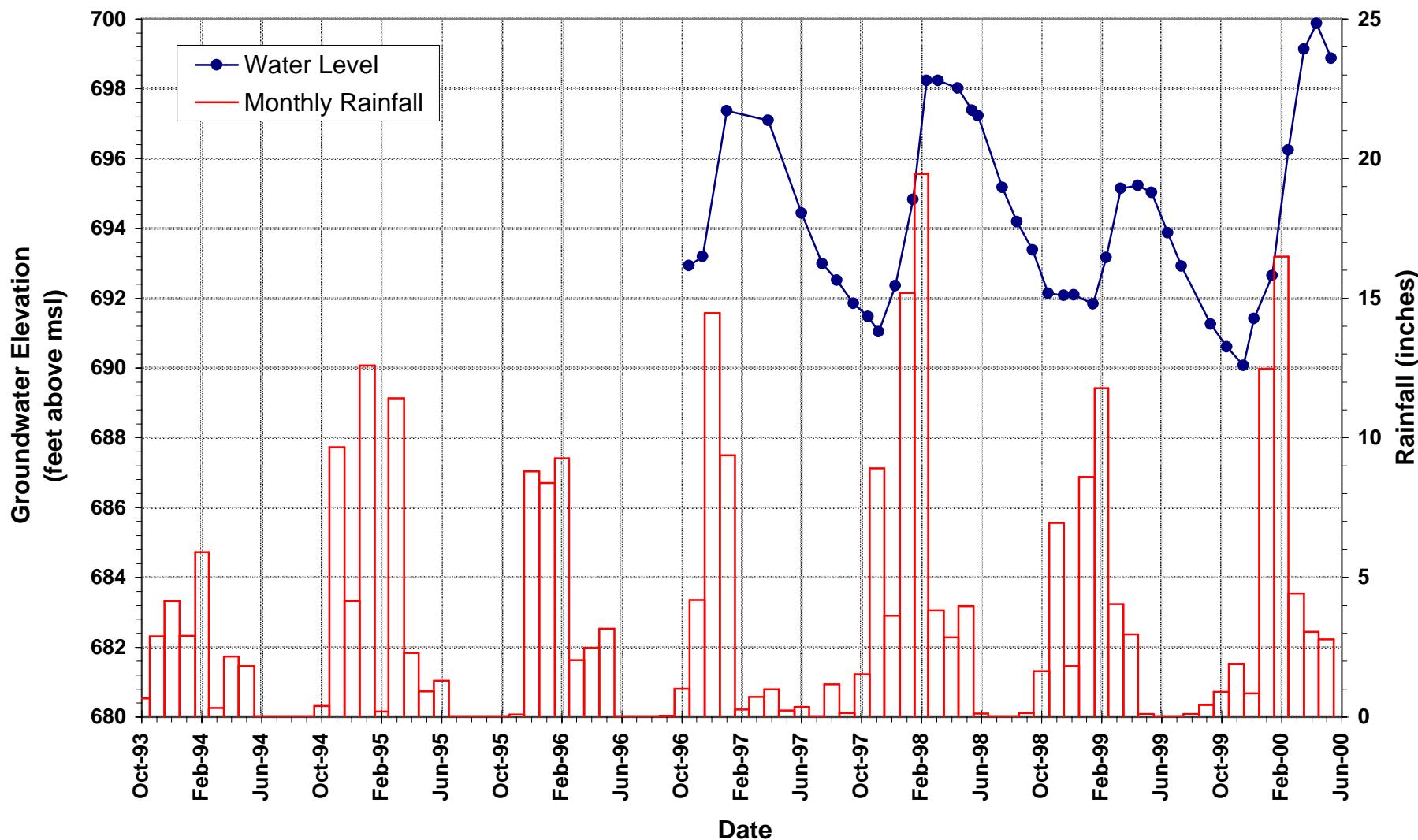


Figure A2.4-2. Hydrograph of Well MW51-96-17.

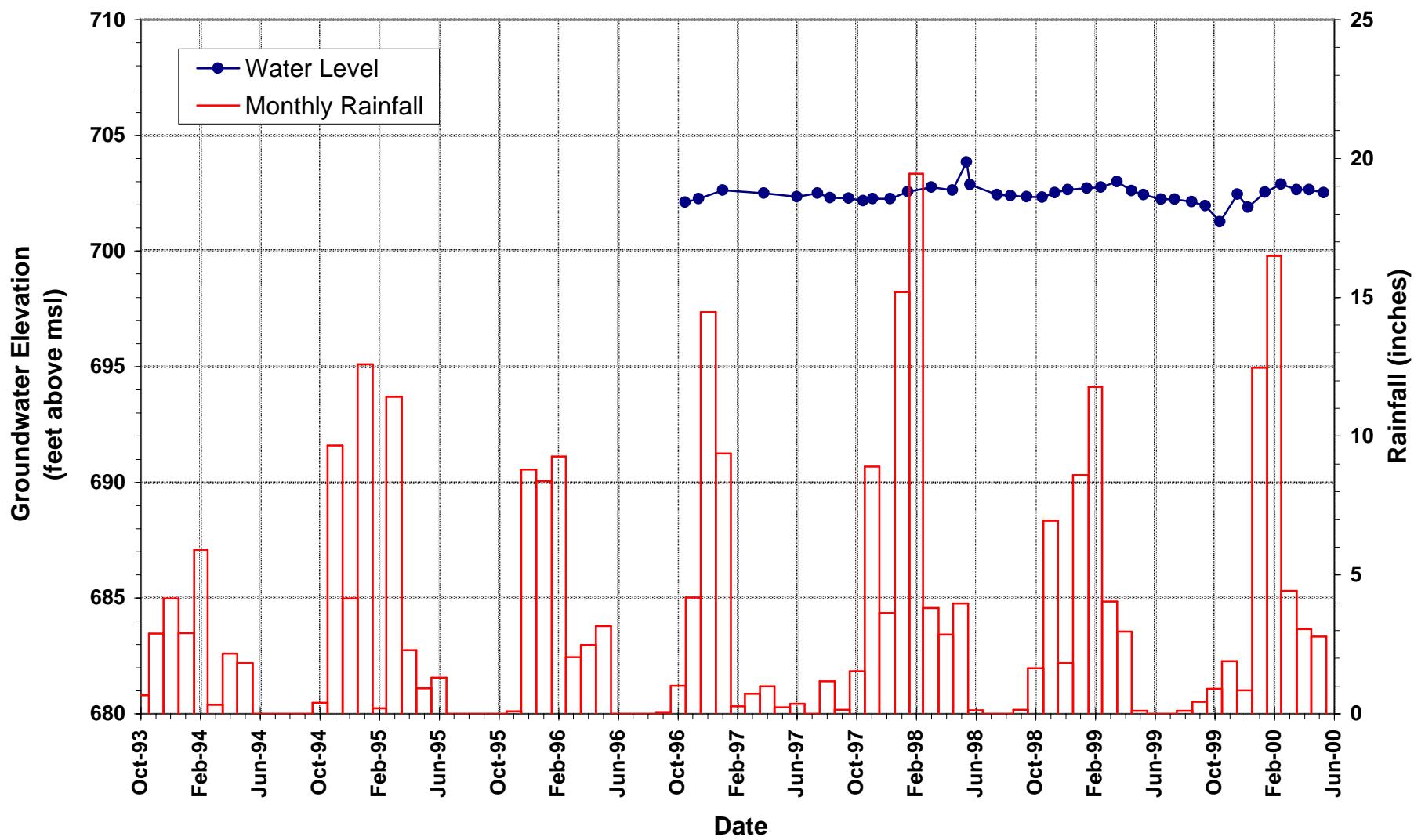


Figure A2.4-3. Hydrograph of Well MW51-96-19.

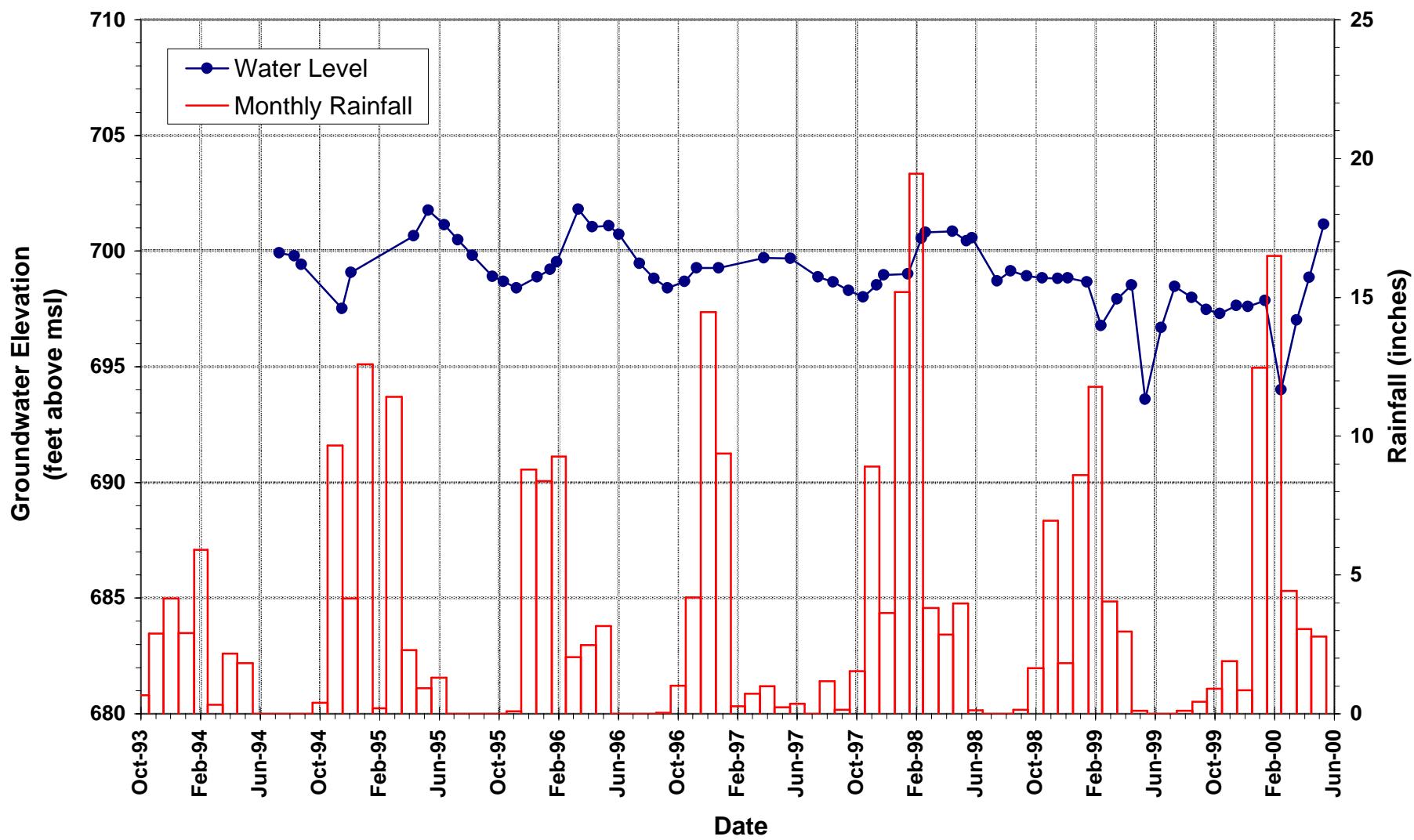


Figure A2.4-4. Hydrograph of Well MW51B-93-18A.

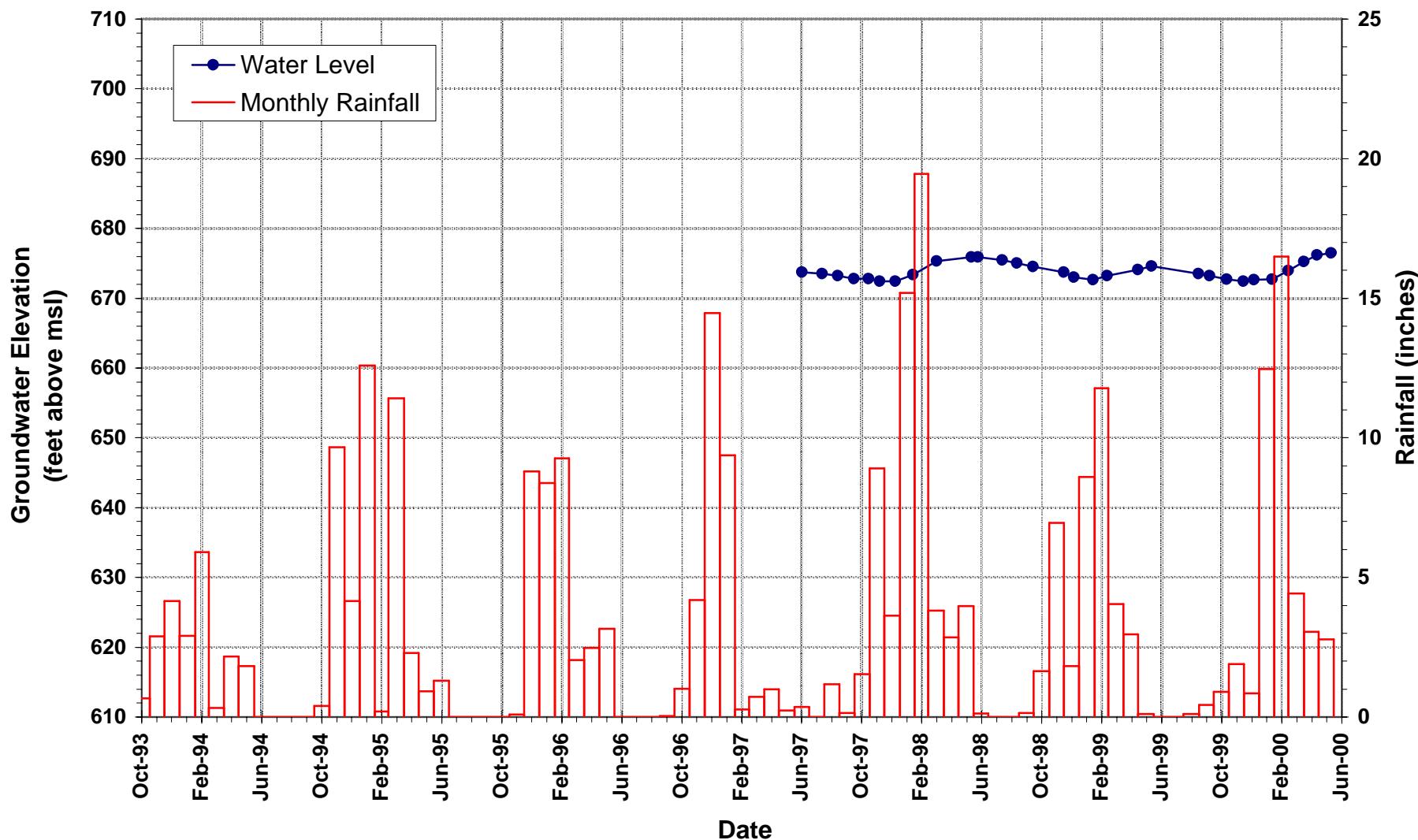


Figure A2.4-5. Hydrograph of Well MW51-97-3.

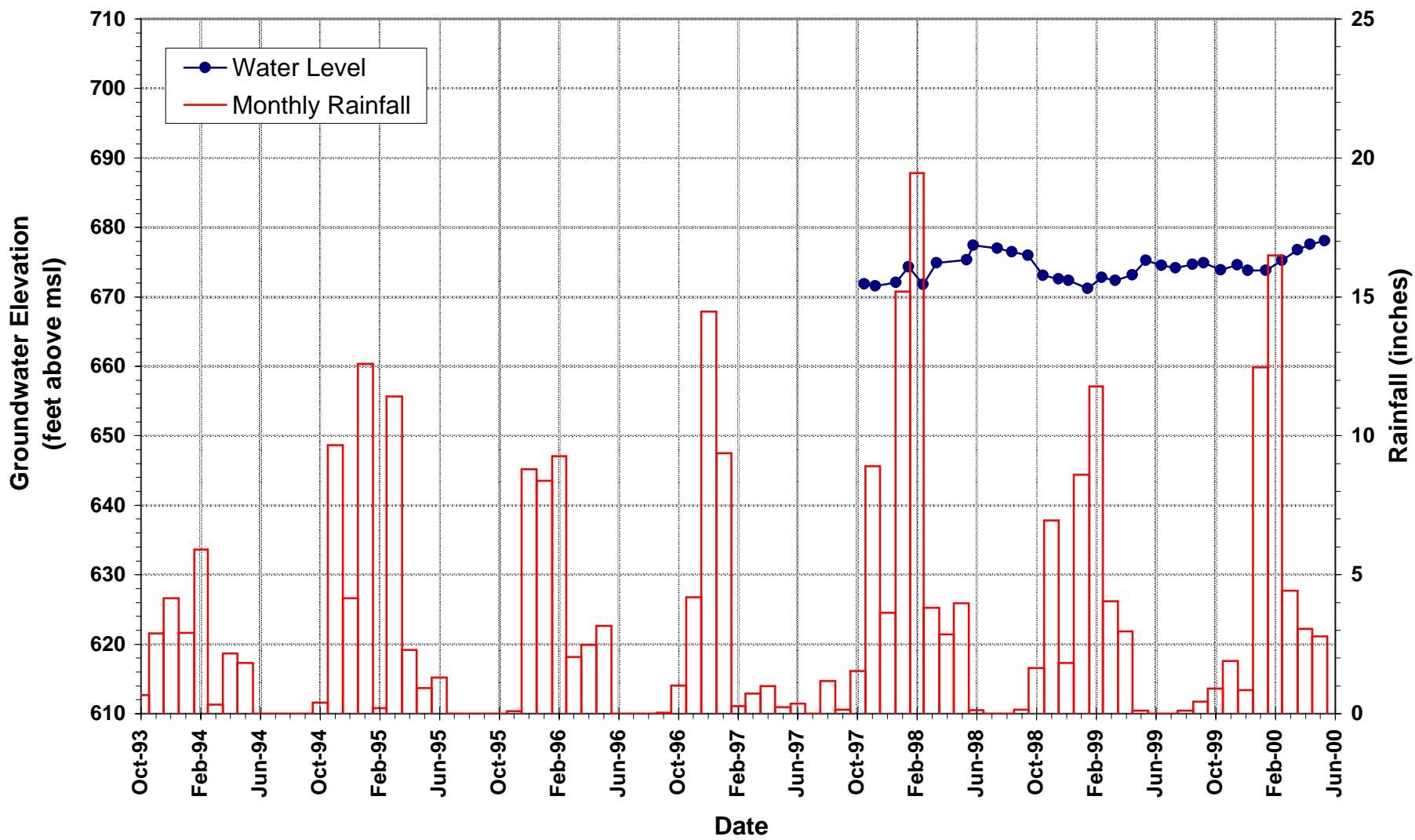


Figure A2.4-6. Hydrograph of Well MW51-97-12.

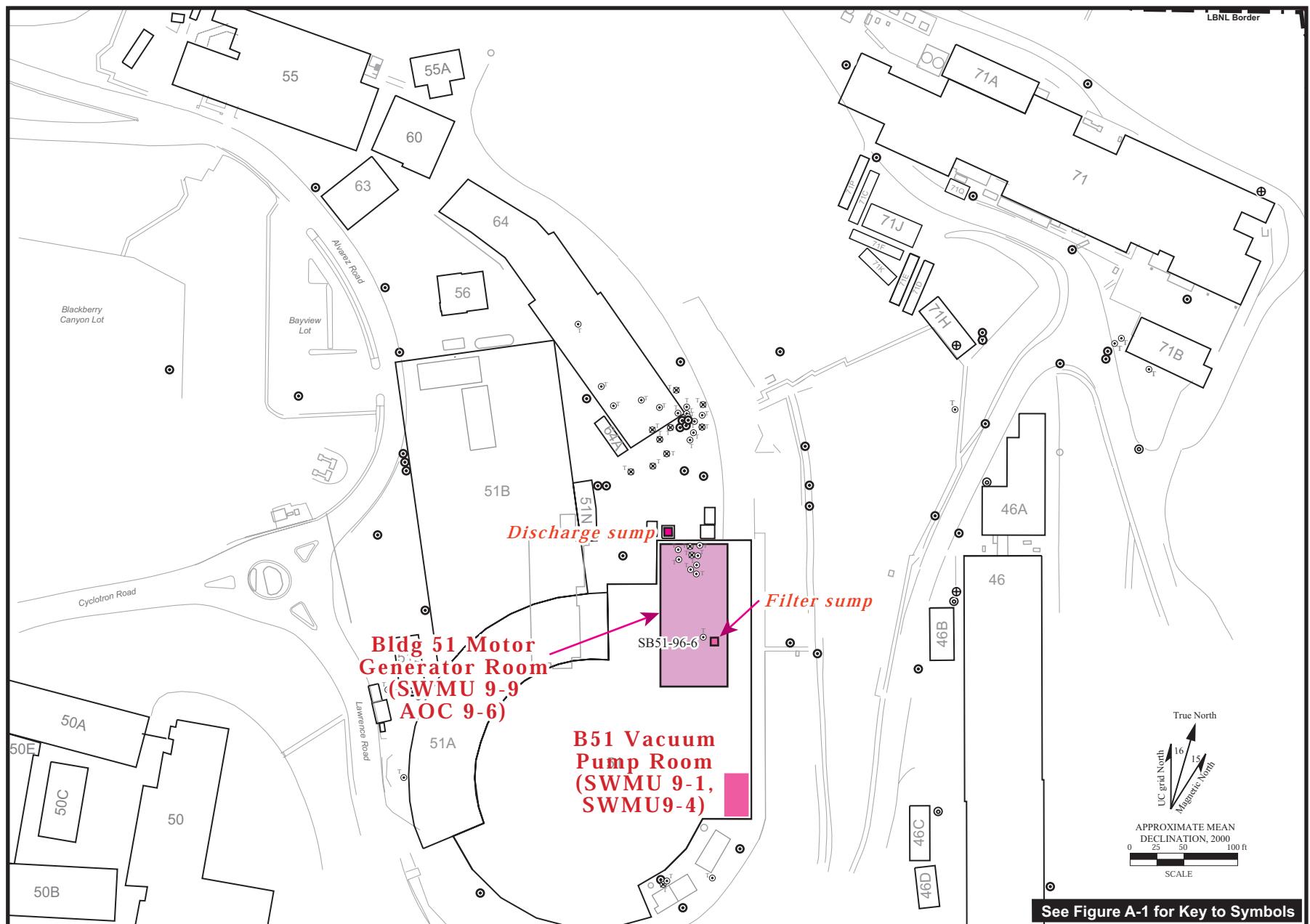
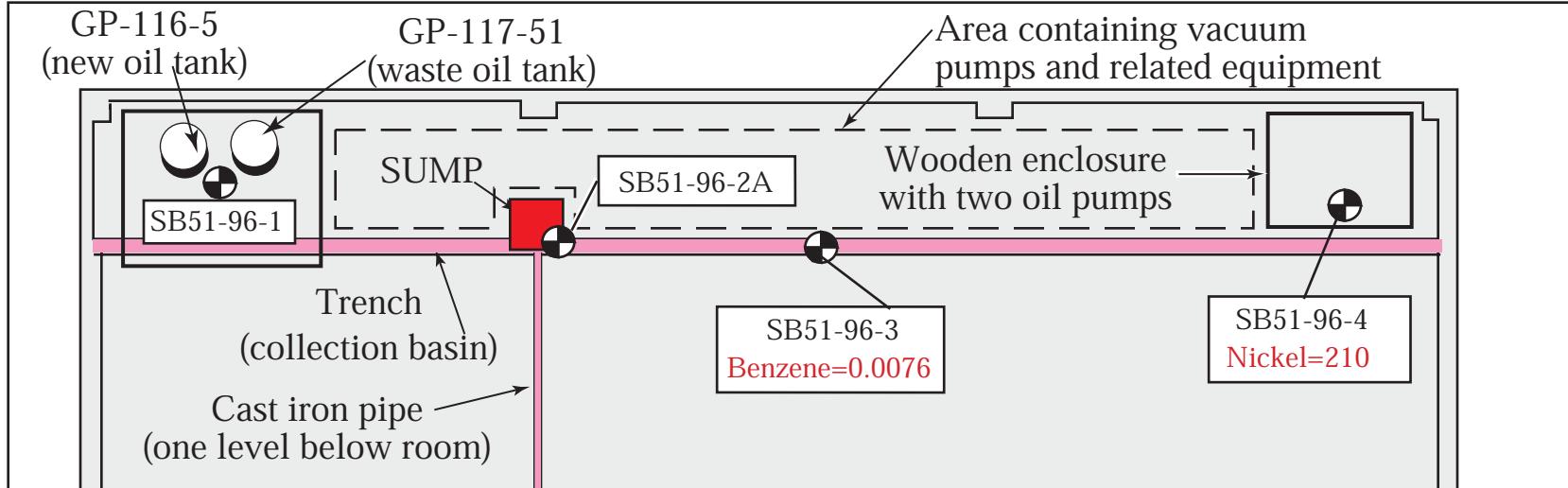


Figure A3.1-1. Location of Building 51 Vacuum Pump Room and Motor Generator Room.



True North
15 Magnetic North
16 UC grid North

APPROXIMATE MEAN DECLINATION, 2000

0 5 10 20 ft

SCALE

See Figure A-1 for Key to Symbols

Note: Metals concentrations are shown only where above LBNL background and PRGs.

Figure A3.1-2. Maximum Contaminant Concentrations (mg/kg) Detected in Soil Borings, Building 51 Vacuum Pump Room Waste Oil Tanks (SWMU 9-1) and Building 51 Vacuum Pump Room Sump and Collection Basin (SWMU 9-4).

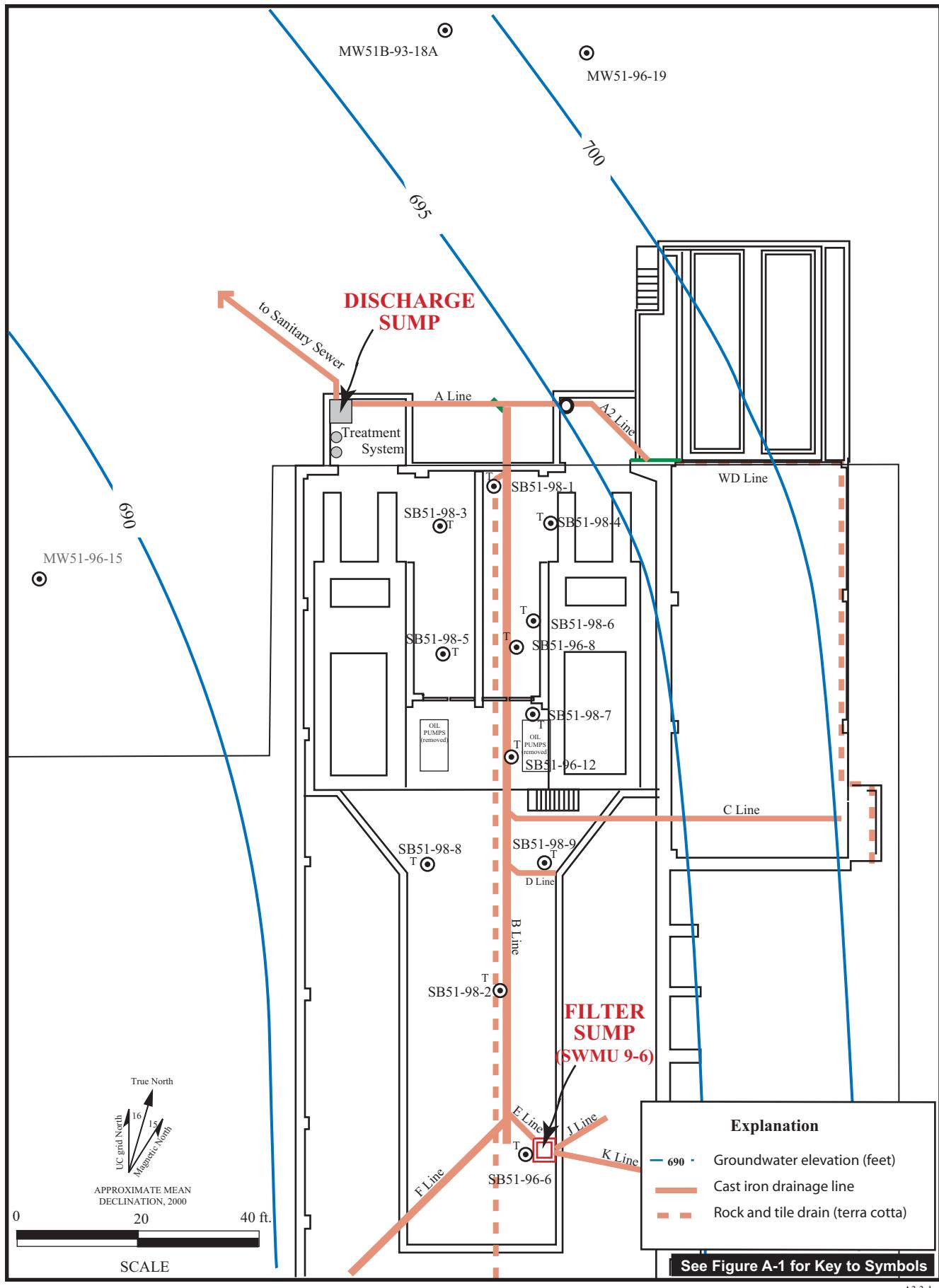


Figure A3.3-1. Building 51 Motor Generator Room Basement.

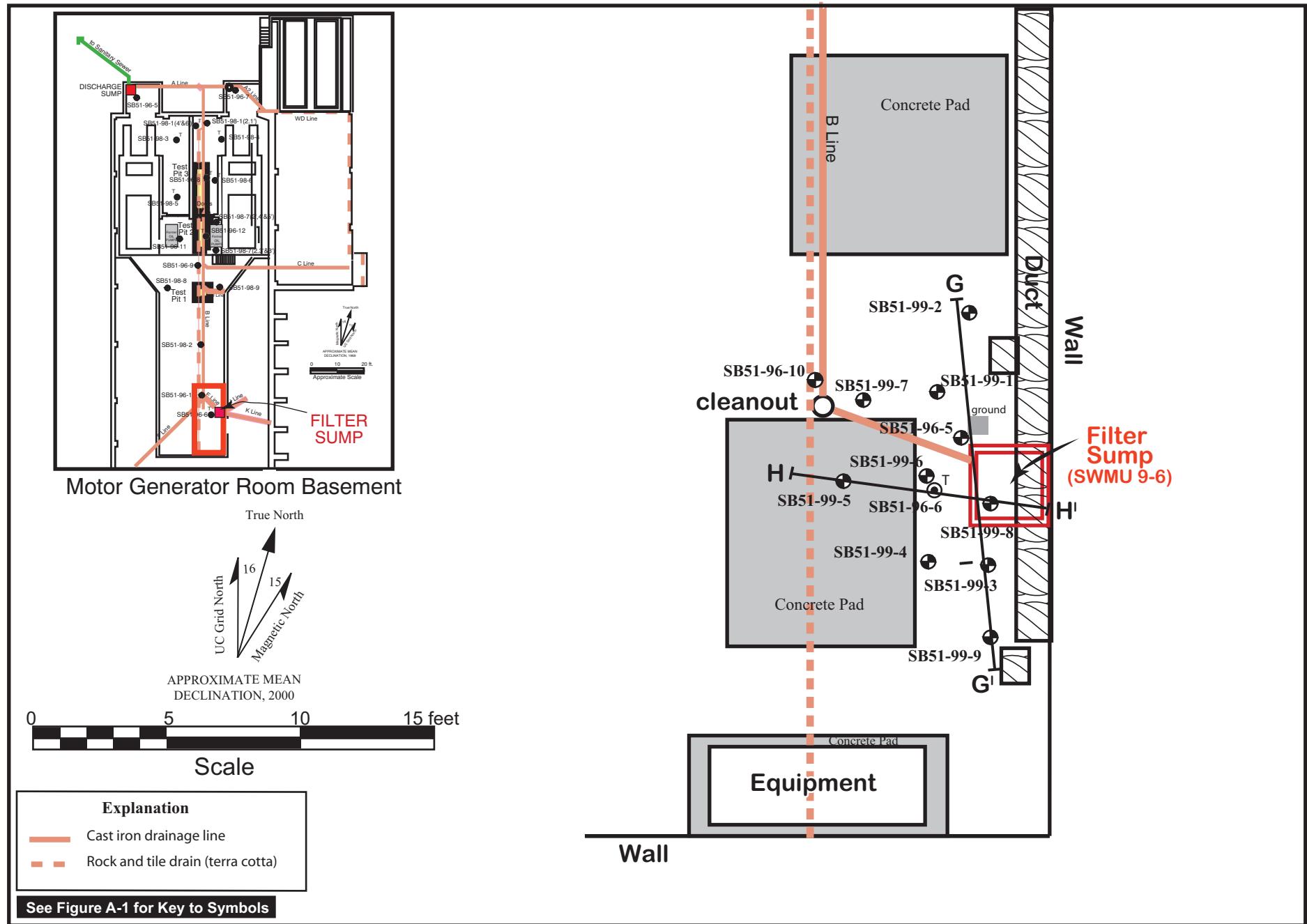


Figure A3.3-2. Locations of Soil Borings and Cross Sections, Building 51, Motor Generator Room Basement Filter Sump.

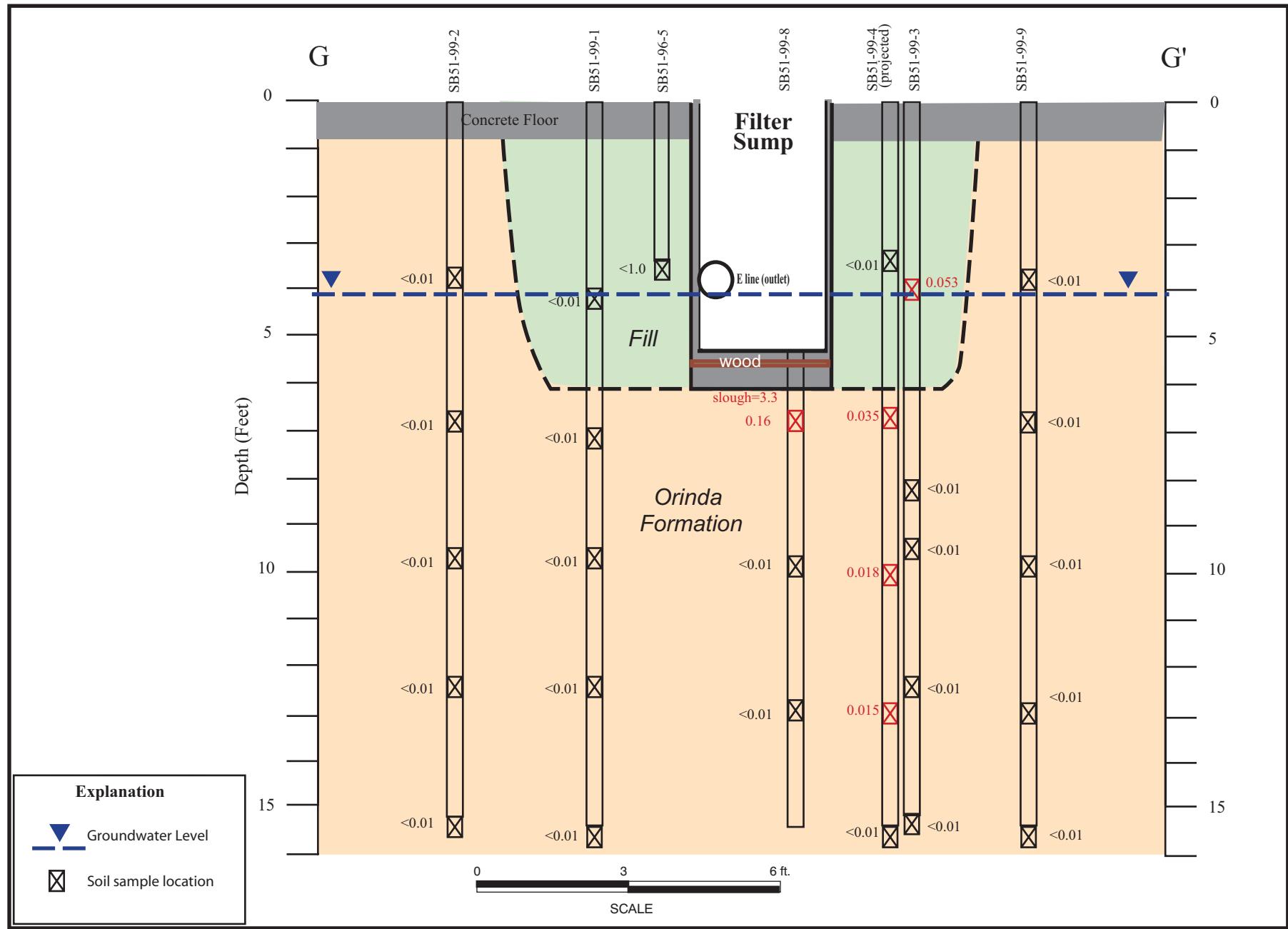


Figure A3.3-3. Concentrations of PCBs Detected in Soil (mg/kg) (Aroclor 1242), Building 51 Motor Generator Room Basement Filter Sump (SWMU 9-6) Cross Section G-G'.

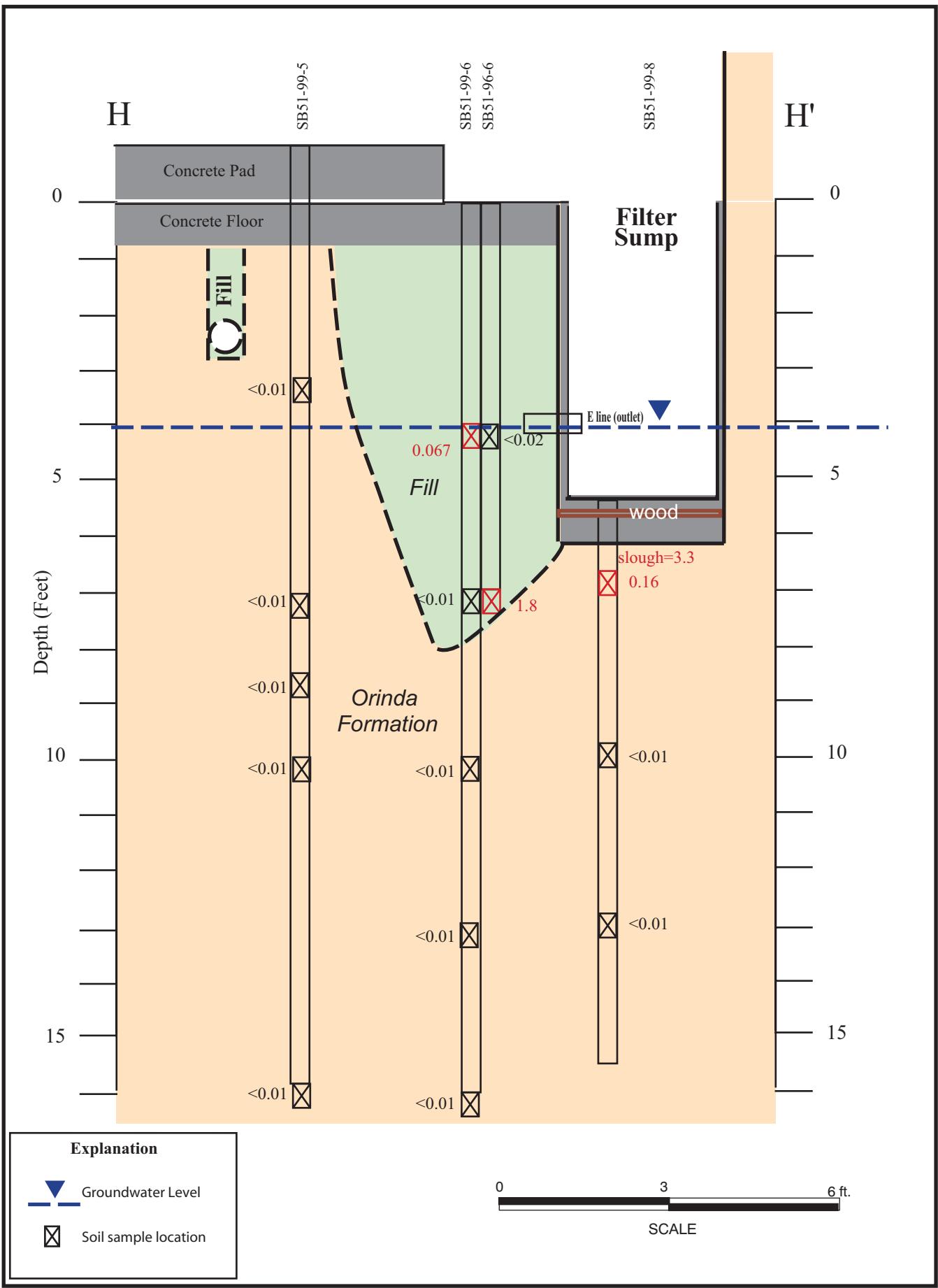


Figure A3.3-4. Concentrations of PCBs Detected in Soil (mg/kg) (Aroclor-1242) Building 51 Motor Generator Room Basement Filter Sump (SWMU 9-6) Cross Section H-H'.

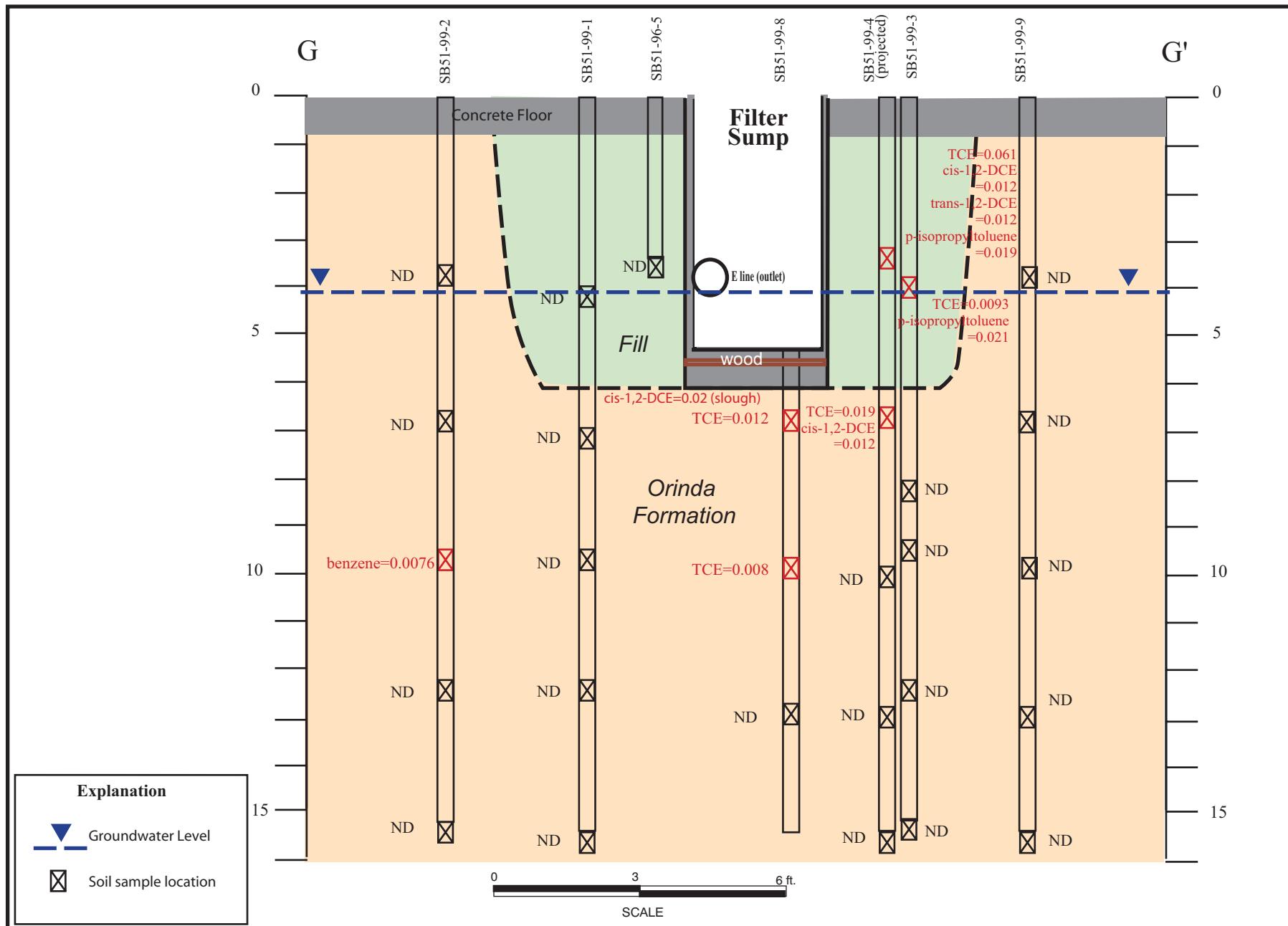


Figure A3.3-5. Concentrations of VOCs Detected in Soil (mg/kg) Building 51 Motor Generator Room Basement Filter Sump (SWMU 9-6) Cross Section G-G'.

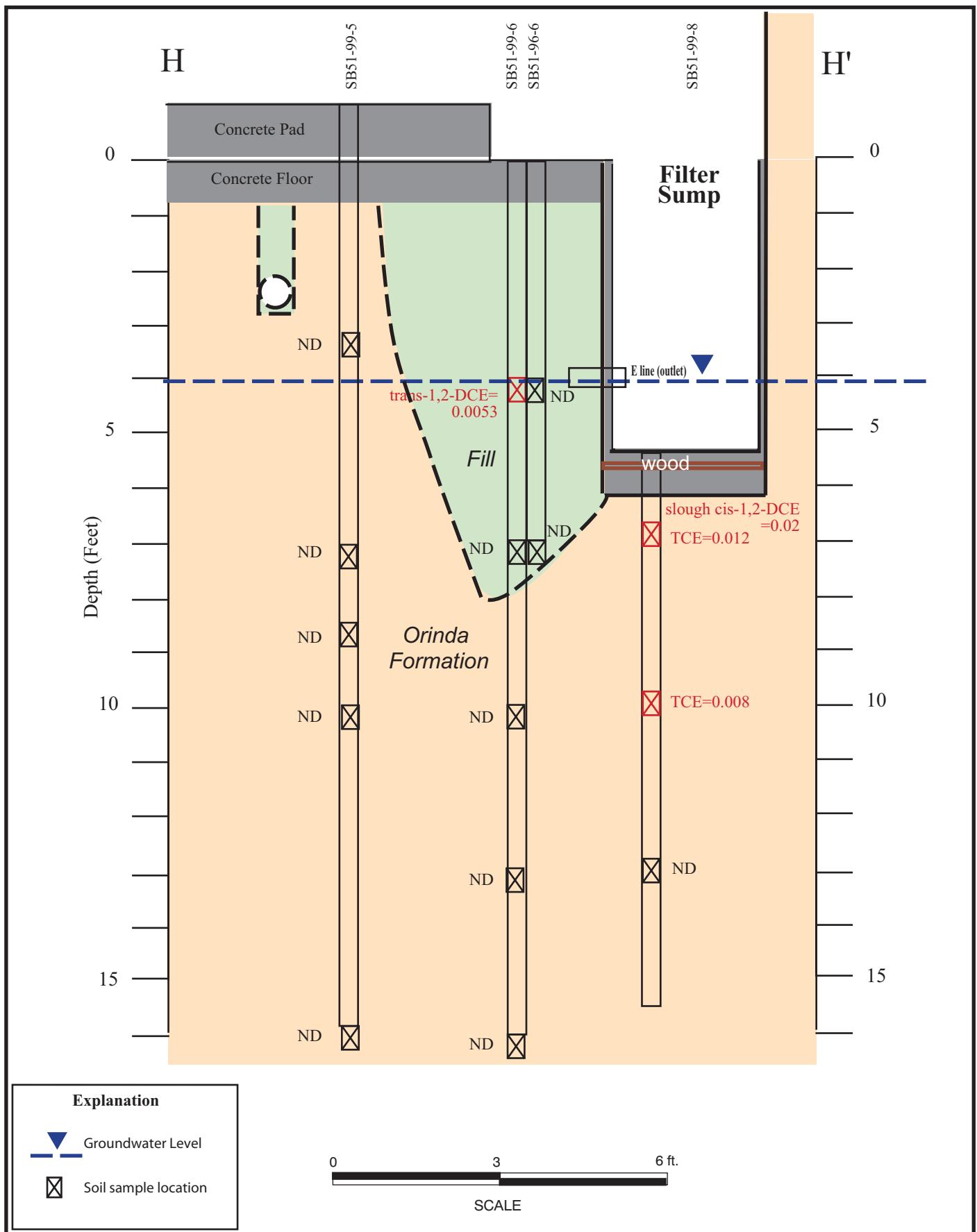


Figure A3.3-6. Concentrations of VOCs Detected in Soil (mg/kg) Building 51 Motor Generator Room Basement Filter Sump (SWMU 9-6) Cross Section H-H'.

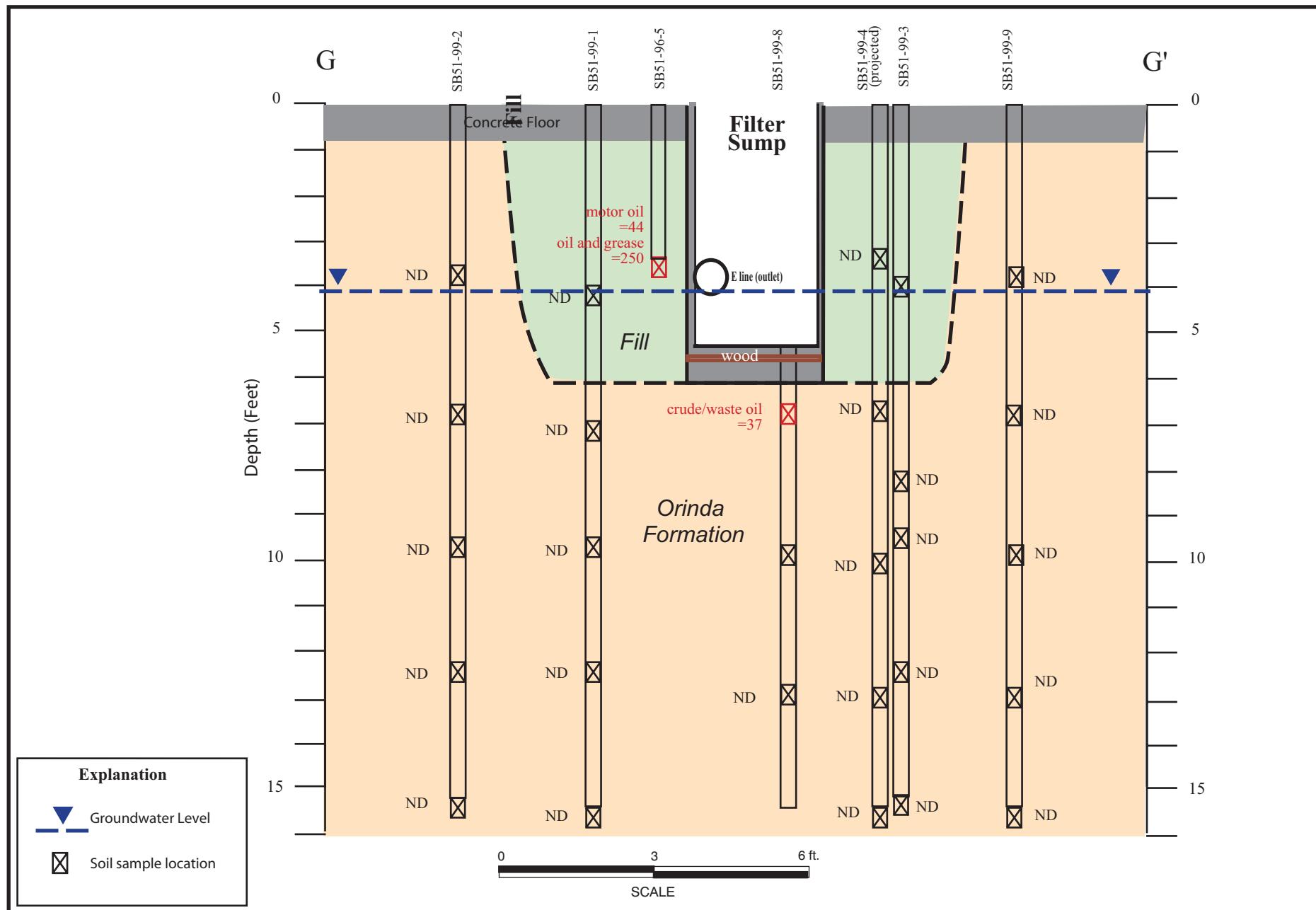


Figure A3.3-7. Concentrations of Fuels and Oils Detected in Soil (mg/kg), Building 51 Motor Generator Room Basement Filter Sump (SWMU 9-6), Cross Section G-G'.

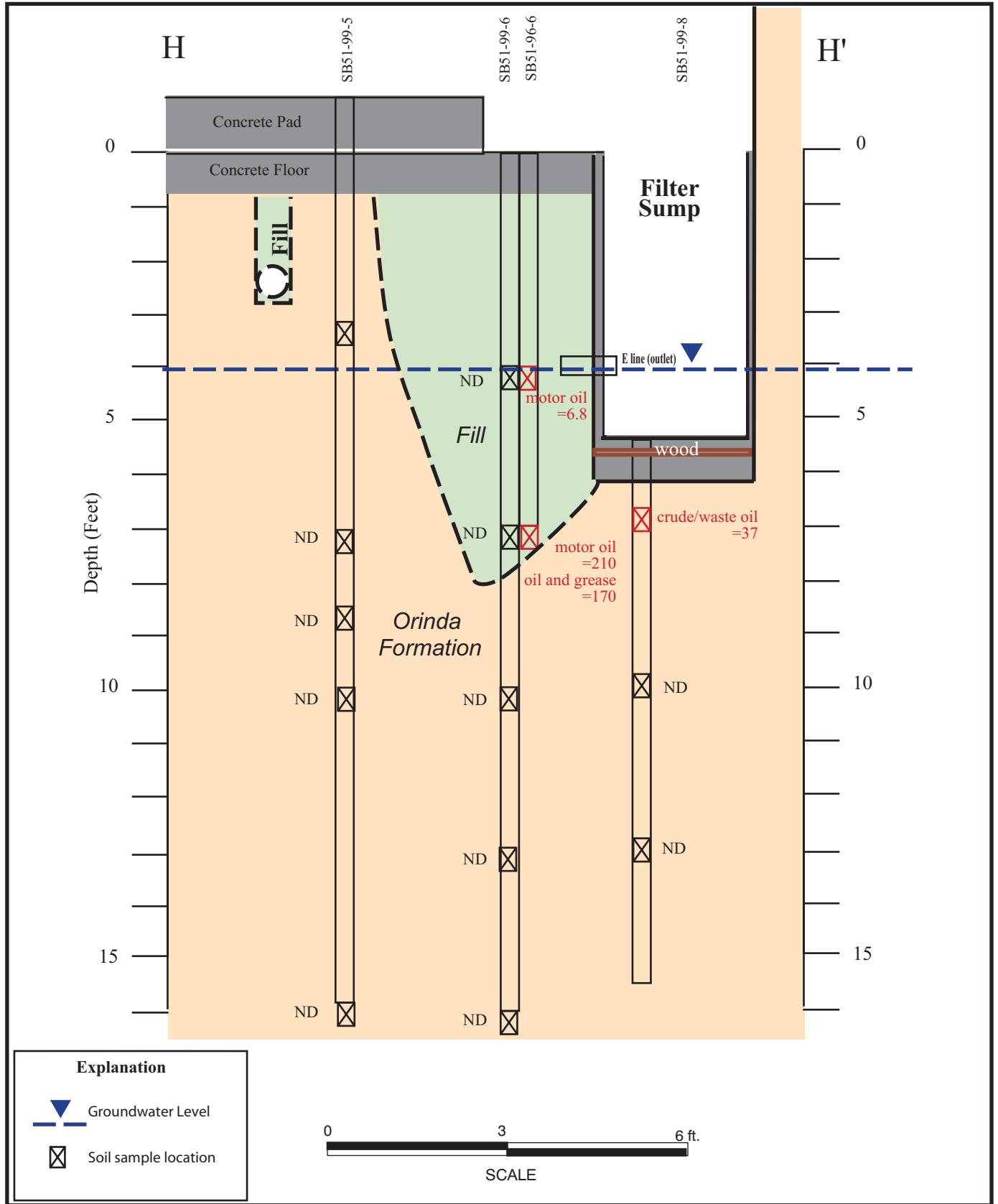


Figure A3.3-8. Concentrations of Fuels and Oils Detected in Soil (mg/kg), Building 51 Motor Generator Room Basement Filter Sump (SWMU 9-6), Cross Section H-H'.

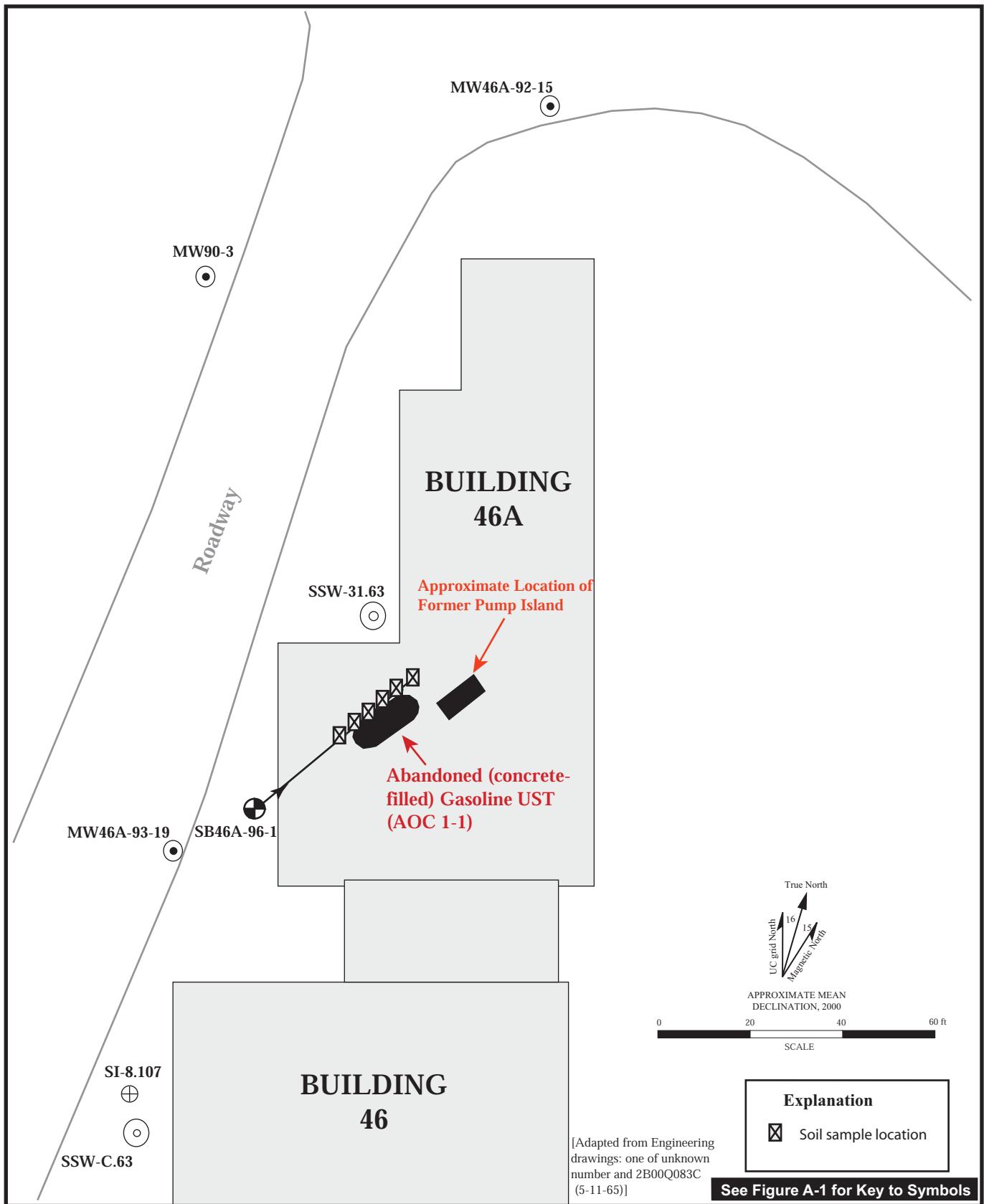


Figure A3.4-1. Soil Sample Locations, Building 46A Former (Abandoned) Motor Pool Gasoline UST (AOC 1-1).

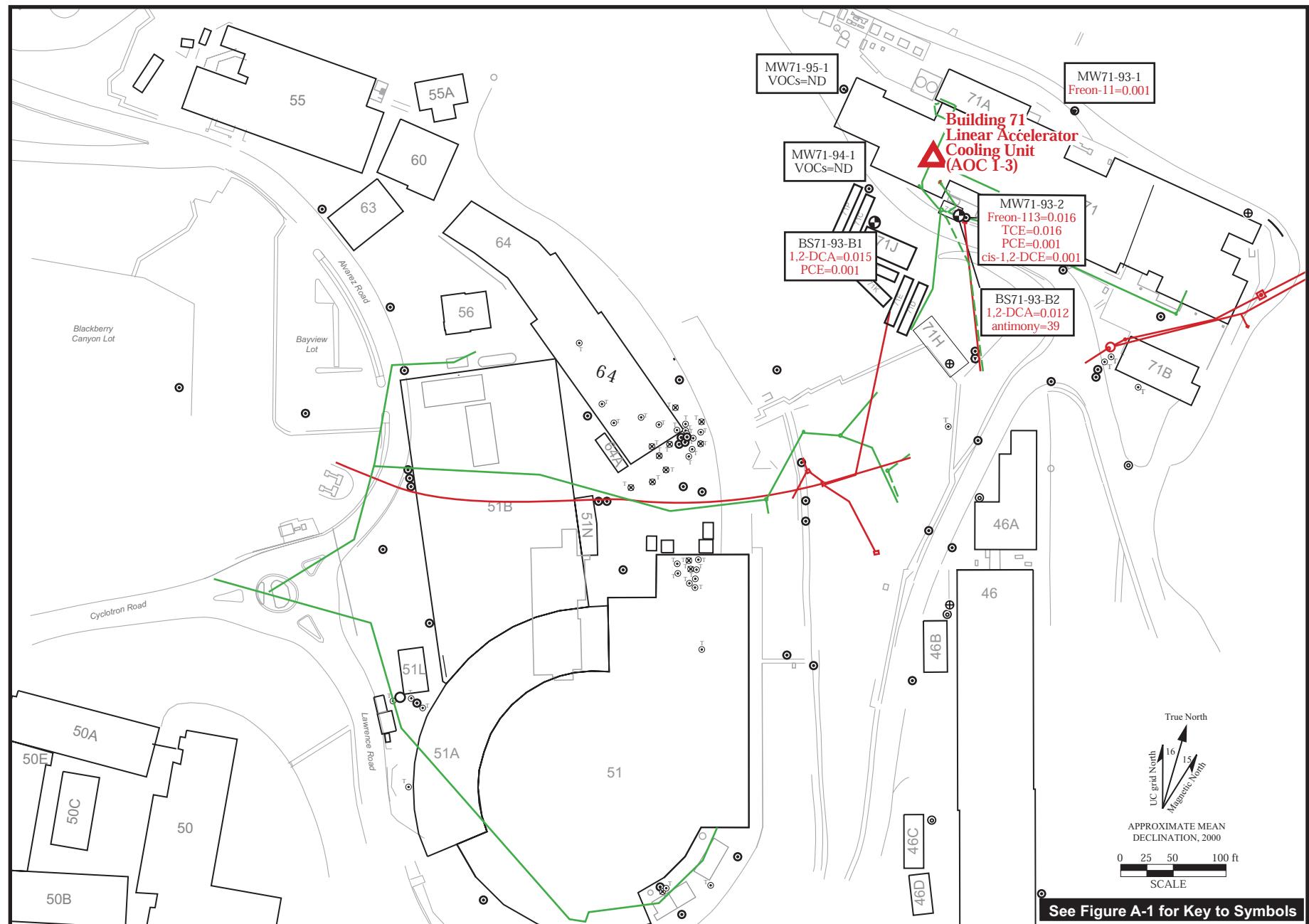


Figure A3.5-1 Locations of Soil Samples and Maximum Concentration of Contaminants Detected (mg/kg), Building 71 Linear Accelerator Cooling Unit (AOC 1-3).

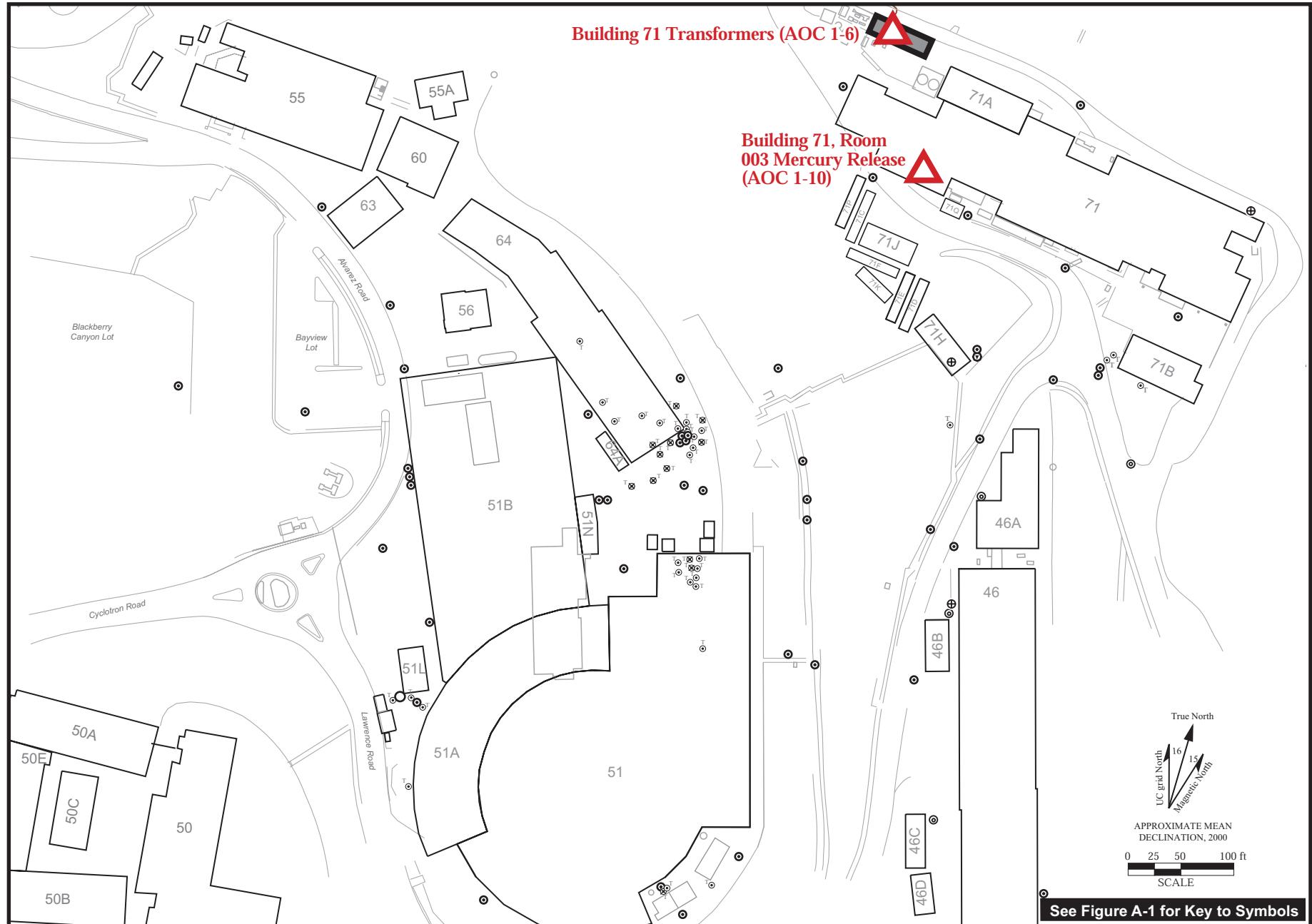
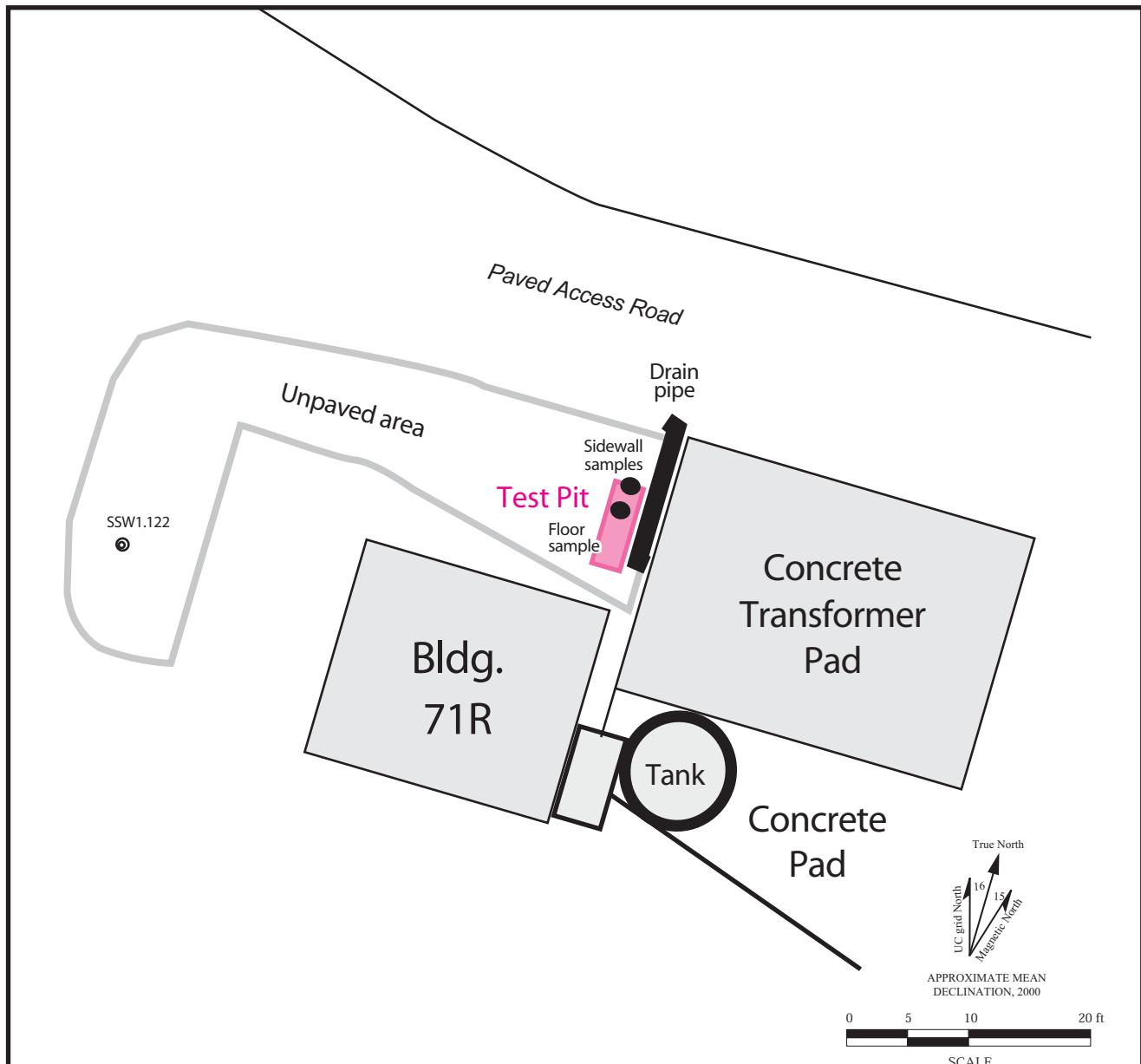


Figure A3.6-1. Locations of Building 71 Transformers (AOC 1-6) and Building 71 Room 003 Mercury Release (AOC1-10).



See Figure A-1 for Key to Symbols

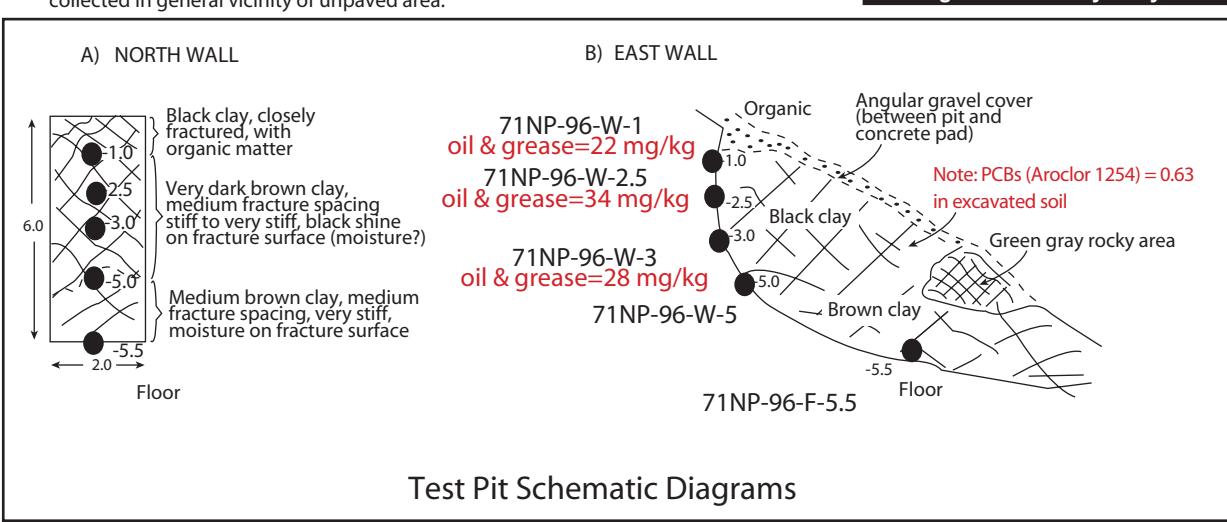


Figure A3.6-2. Maximum Contaminant Concentrations (mg/kg) Detected in Soil Samples, Building 71 Transformers (AOC 1-6).

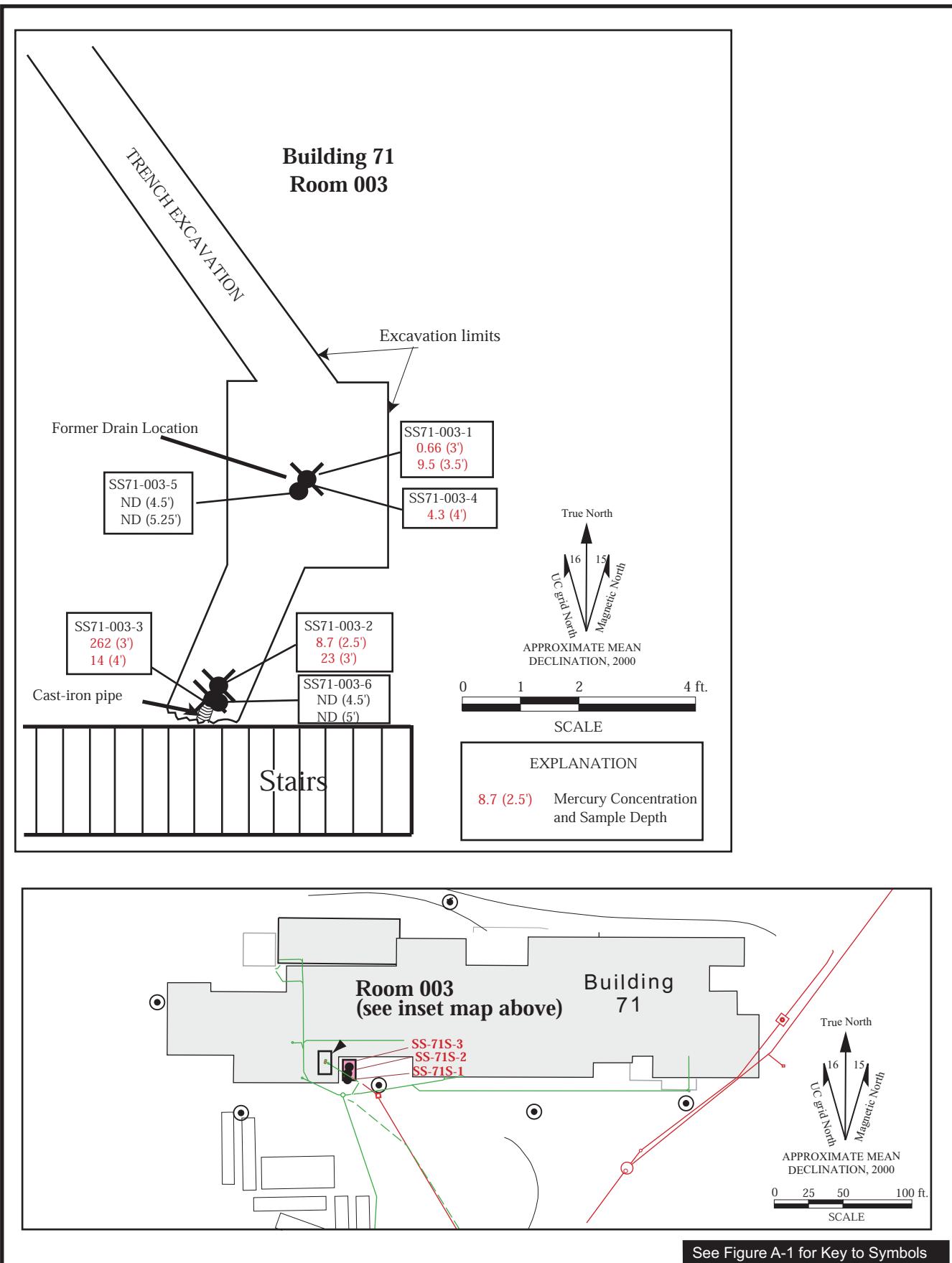
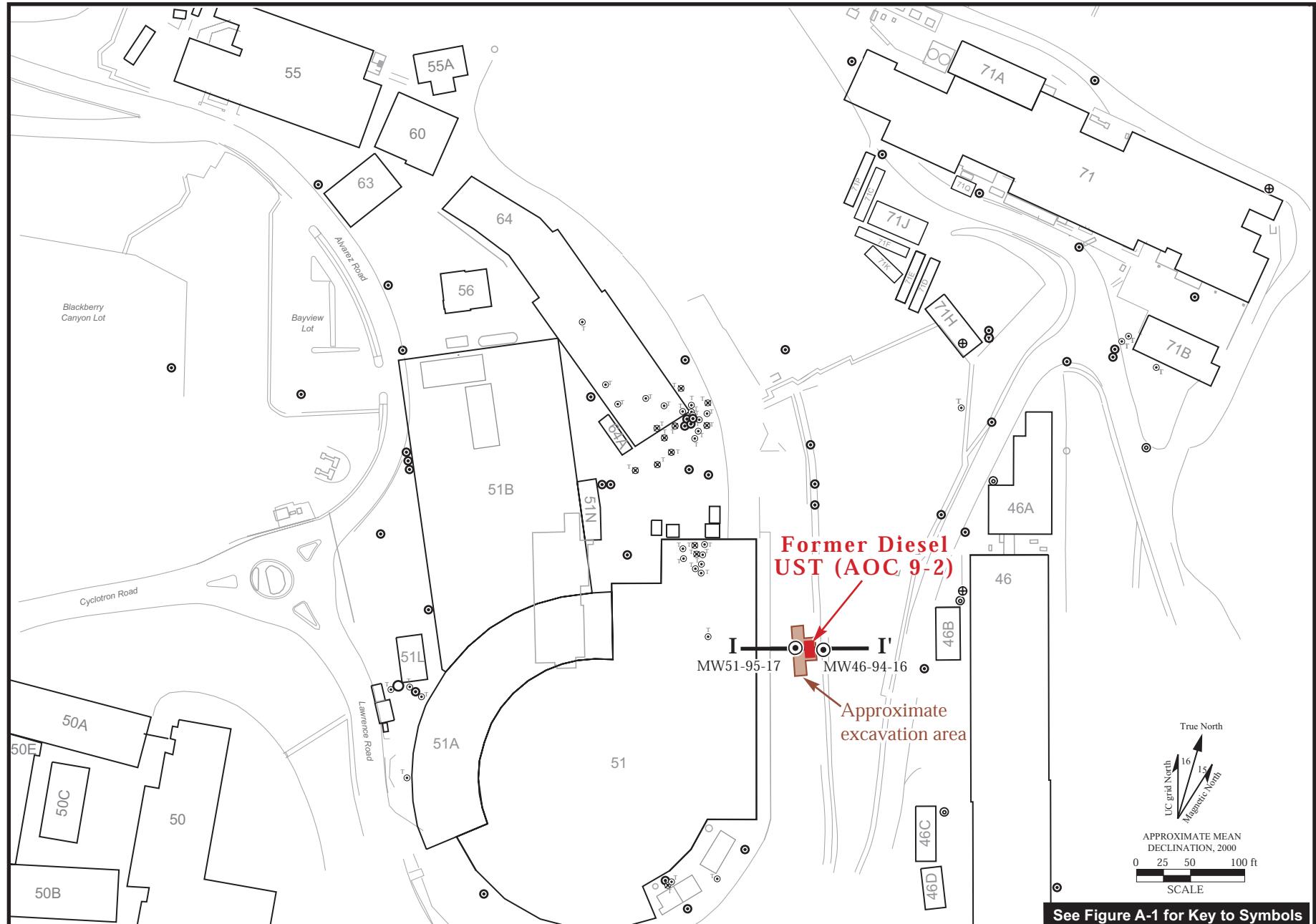


Figure A3.7-1. Mercury Concentrations (mg/kg) Detected in Soil Samples, Building 71 Room 003 Mercury Release (AOC 1-10).

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See Figure A-1 for Key to Symbols

Figure A3.8-1. Location of Former Building 51 Diesel UST (AOC 9-2).

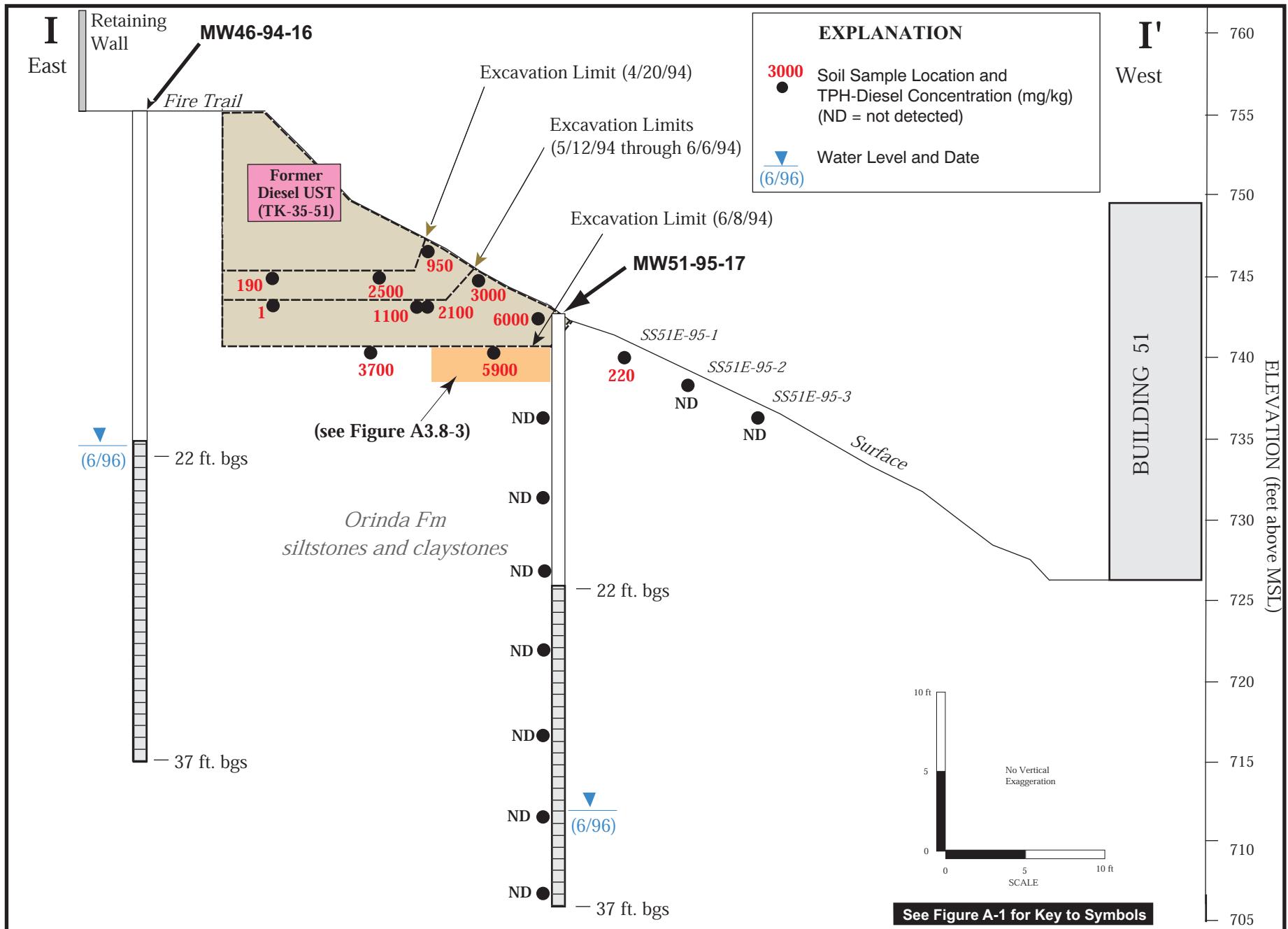


Figure A3.8-2. Geologic Cross-Section I-I' Showing TPH-Diesel Concentrations in Soil, Building 51 Former Diesel UST.

EXPLANATION

TPH-D = 4.9 Detected concentration of TPH-D (mg/kg)
B(b)F = 0.00057 Detected concentration of benzo(b)fluoranthene (mg/kg)
Ph = 0.0016 Detected concentration of phenanthrene (mg/kg)

SS1 = SS-51Slope-96-1
 SS2 = SS-51Slope-96-2
 SS3 = SS-51Slope-96-3
 SS4 = SS-51Slope-96-4
 SS5 = SS-51Slope-96-5
 SS6 = SS-51Slope-96-6
 SS7 = SS-51Slope-96-7
 SS8 = SS-51Slope-96-8

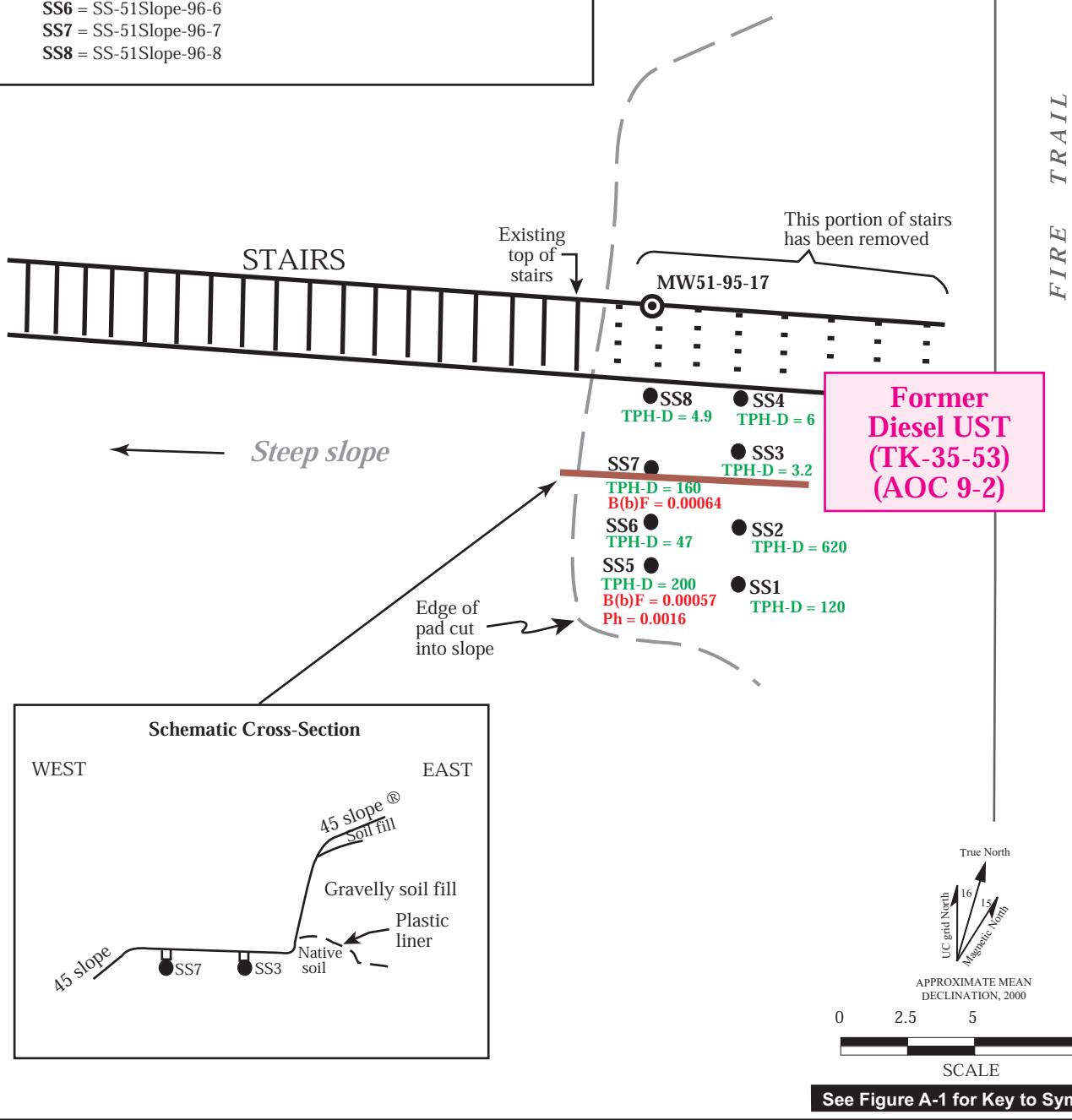


Figure A3.8-3. TPH and PAH Concentrations (mg/kg) Detected in Shallow Soil Samples Beneath Final Soil Excavation, Former Building 51 Diesel UST (AOC 9-2).

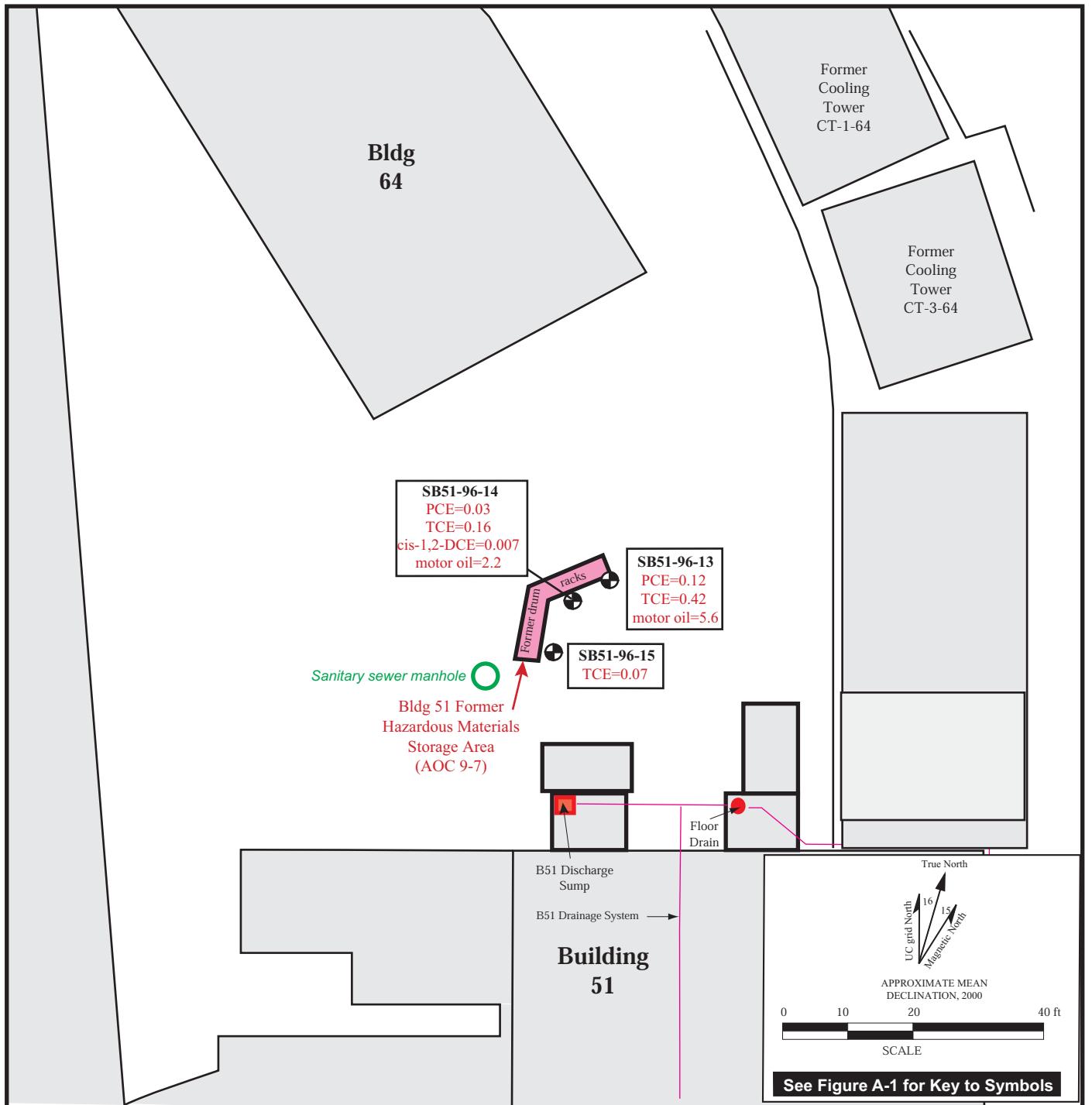


Figure A3.9-1. Maximum Contaminant Concentrations (mg/kg) Detected in Soil Borings, Building 51 Former Hazardous Materials Storage Area (AOC 9-7).

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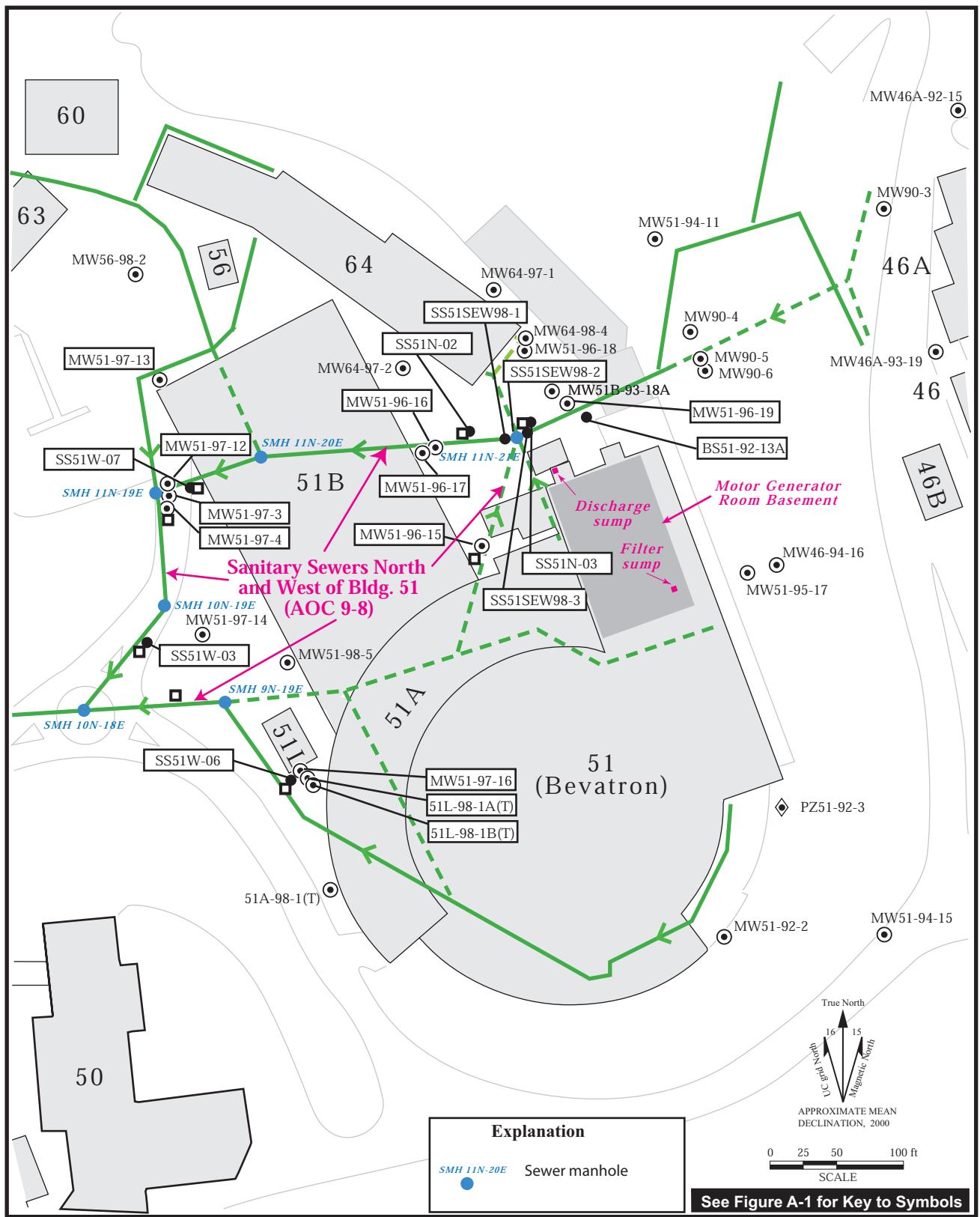


Figure A3.10-1. Site Map, Building 51 (Bvatron) Complex Area, Location of Sanitary Sewer North and West of Building 51 (AOC 9-8), and Related Sampling Locations.

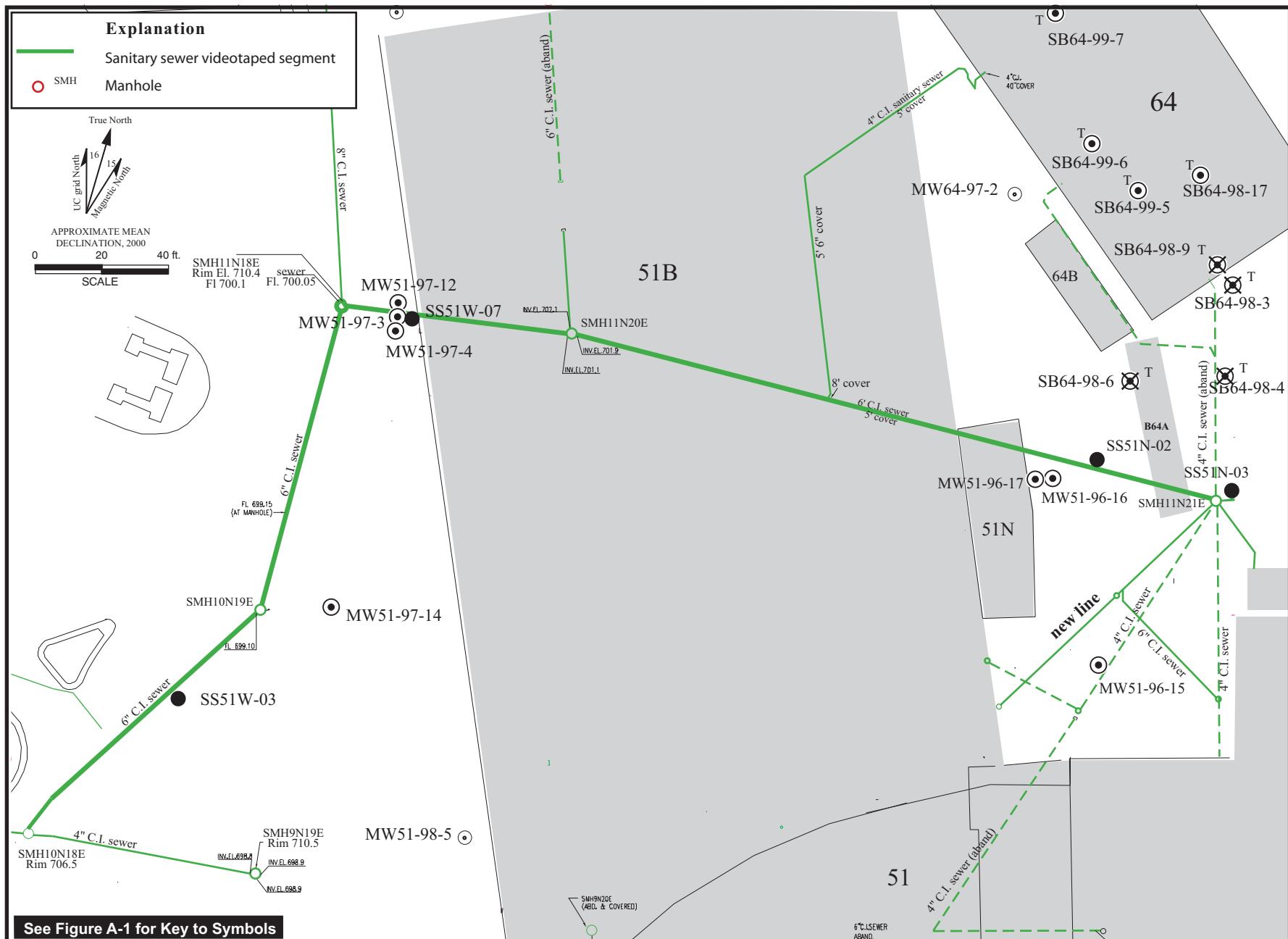


Figure A3.10-2. Locations of Videotaped Segments of Sanitary Sewers North and West of Buildings 51 and 51B (AOC 9-8).

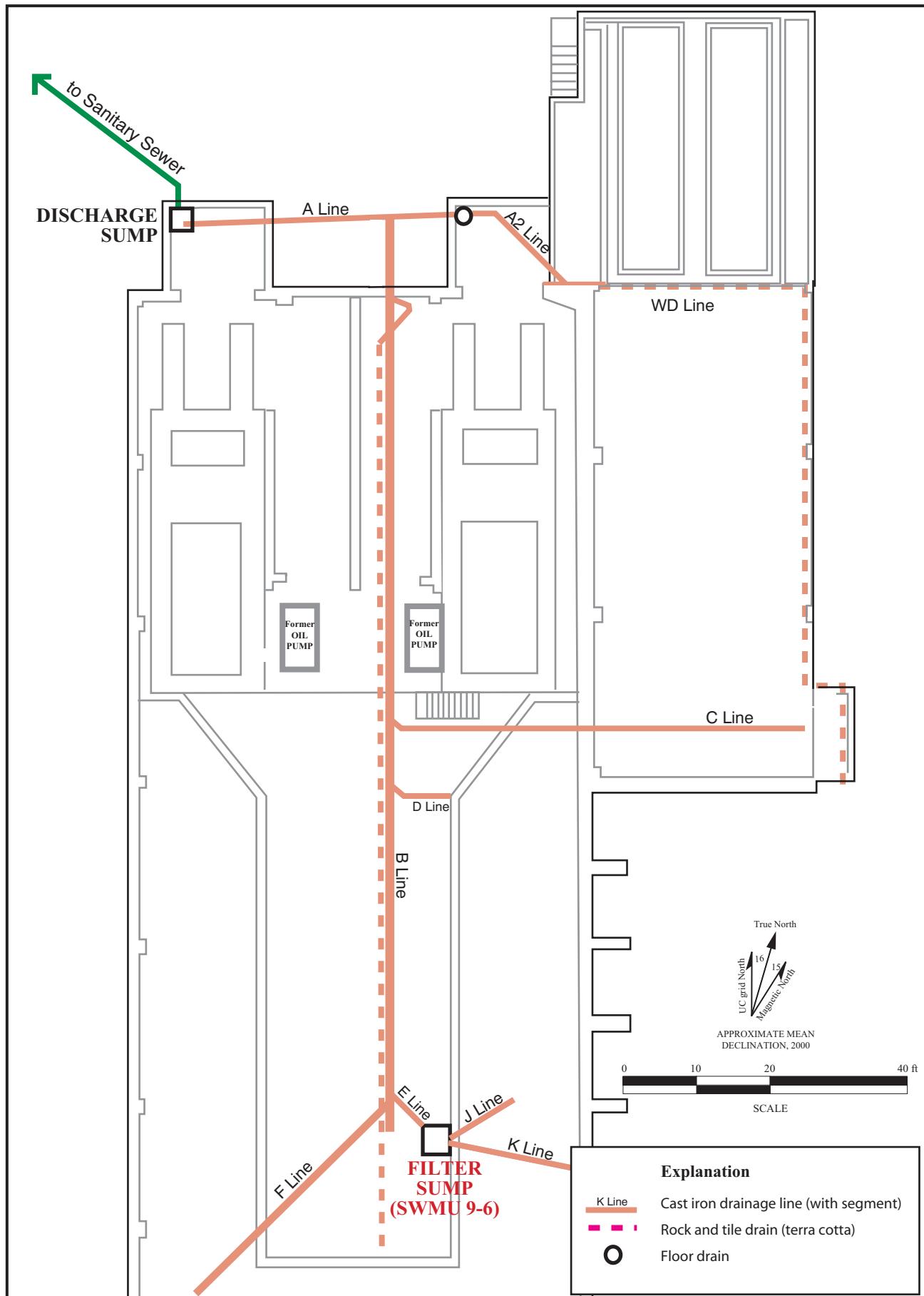


Figure A3.11-1. Plan View of Building 51 Motor Generator Room Basement Showing Location of Drainage Lines.

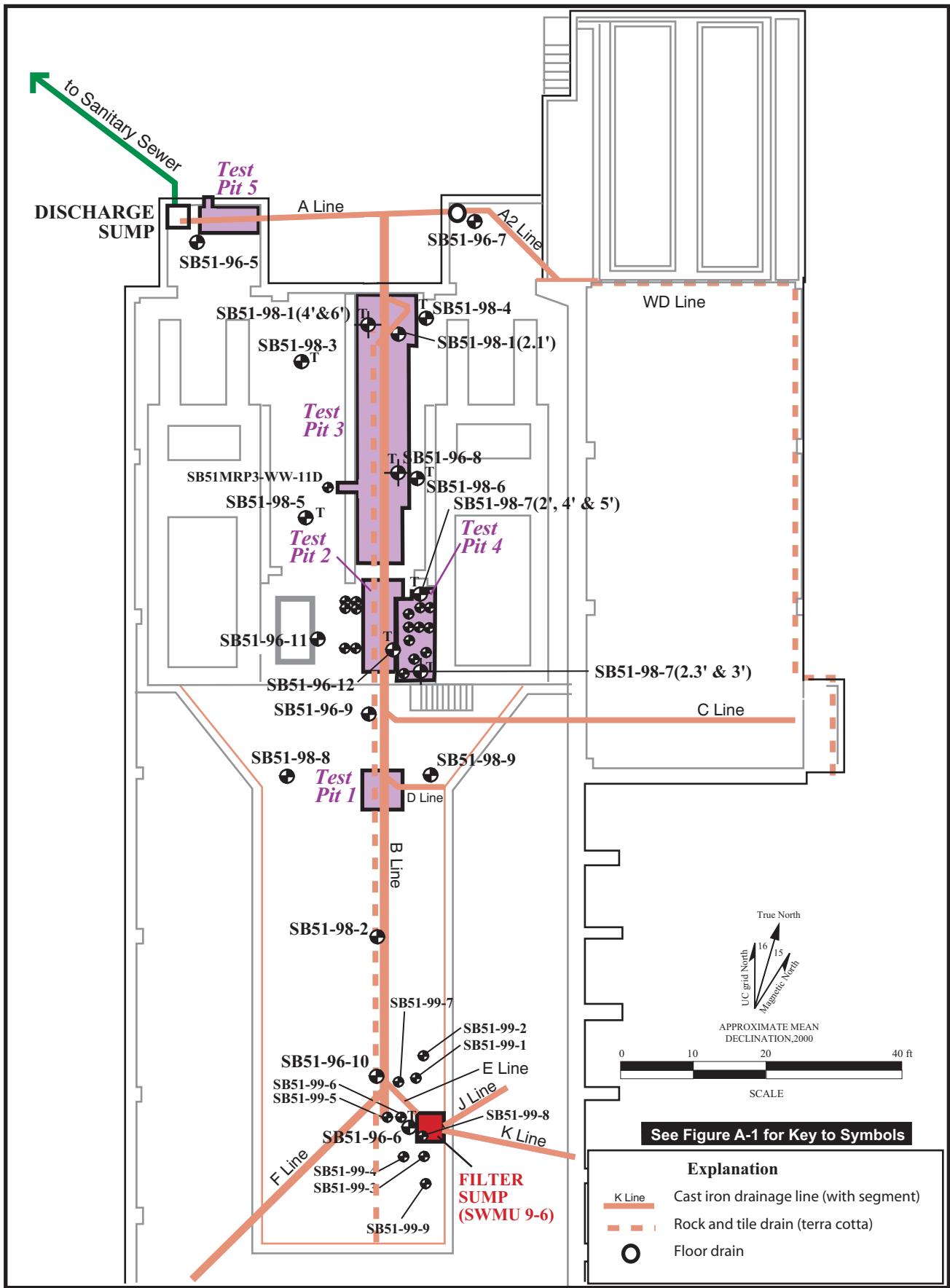
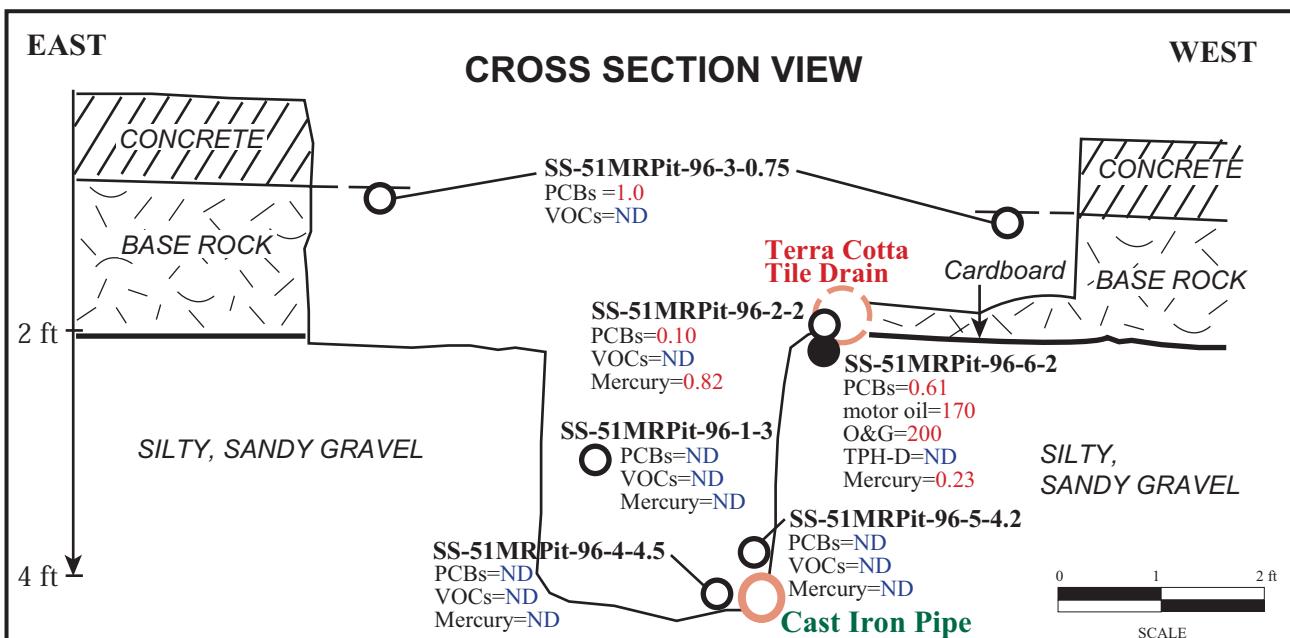
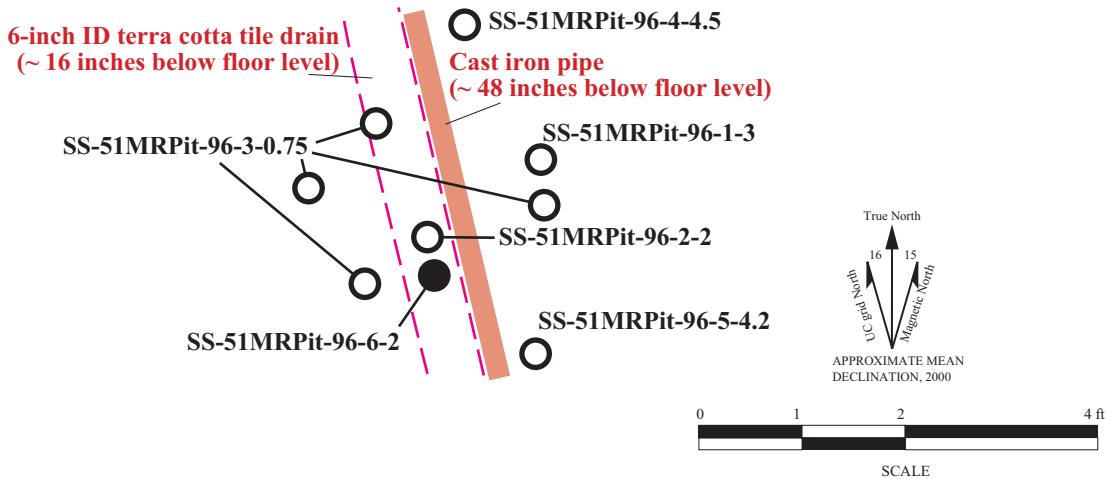


Figure A3.11-2. Plan View of Building 51 Motor Generator Room Basement Showing Locations of Soil Borings and Test Pits.

PLAN VIEW OF SAMPLE LOCATIONS



Explanation

- Sample from material now excavated
 - Sample from material remaining in place

0.82 Detected concentration of analyte in sample (mg/kg)

ND Analyte not detected

Figure A3.11-3. Map and Cross Section of Test Pit 1 Showing Contaminant Concentrations Detected (mg/kg) in Soil Samples.

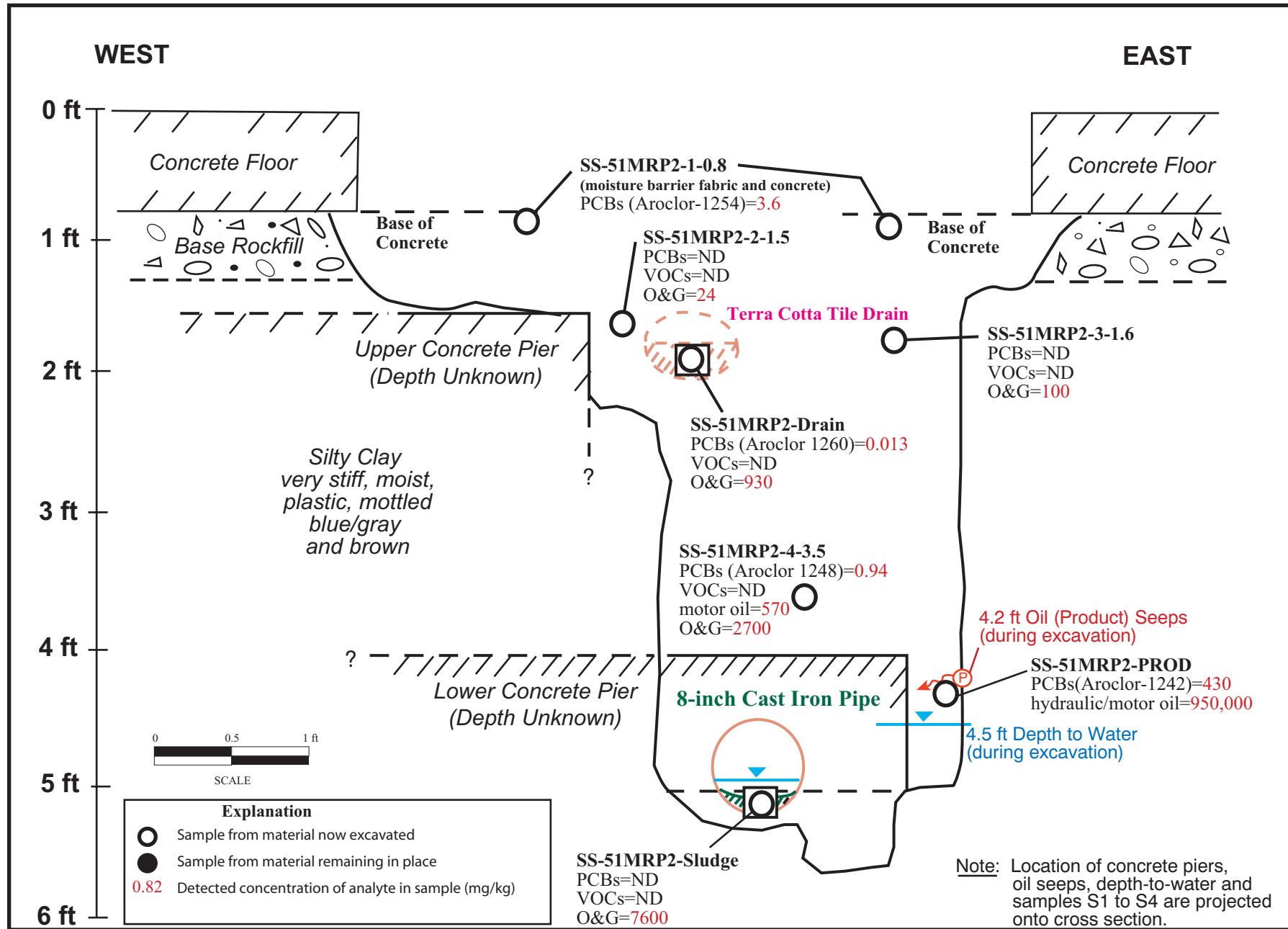


Figure A3.11-4. Cross-Section Through Test Pit 2 Showing Locations of Samples and Concentrations of Analytes Detected (mg/kg).

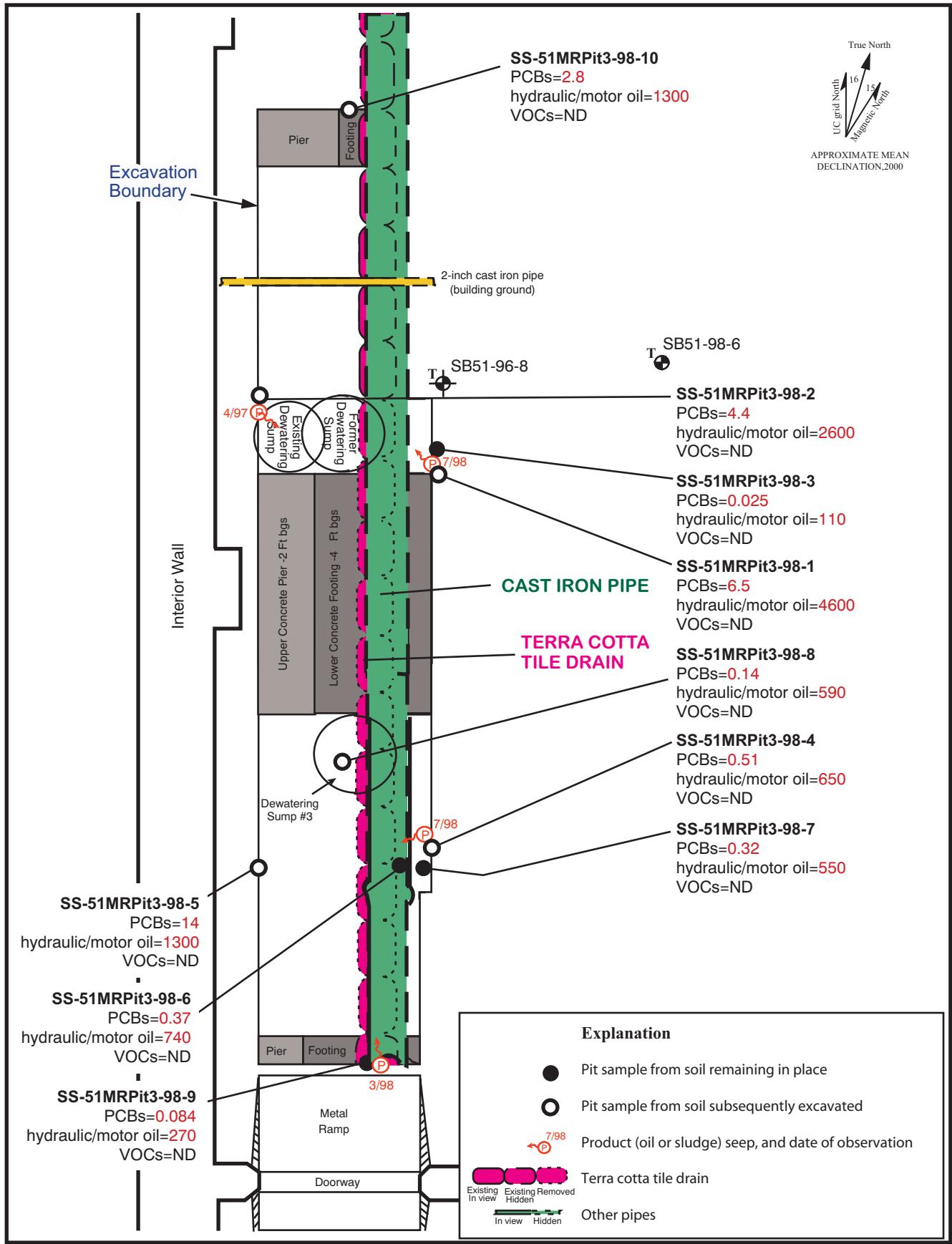


Figure A3.11-5. Initial Extent of Test Pit 3 (July 1998) Showing Soil Samples and Concentrations of Analytes Detected (mg/kg).

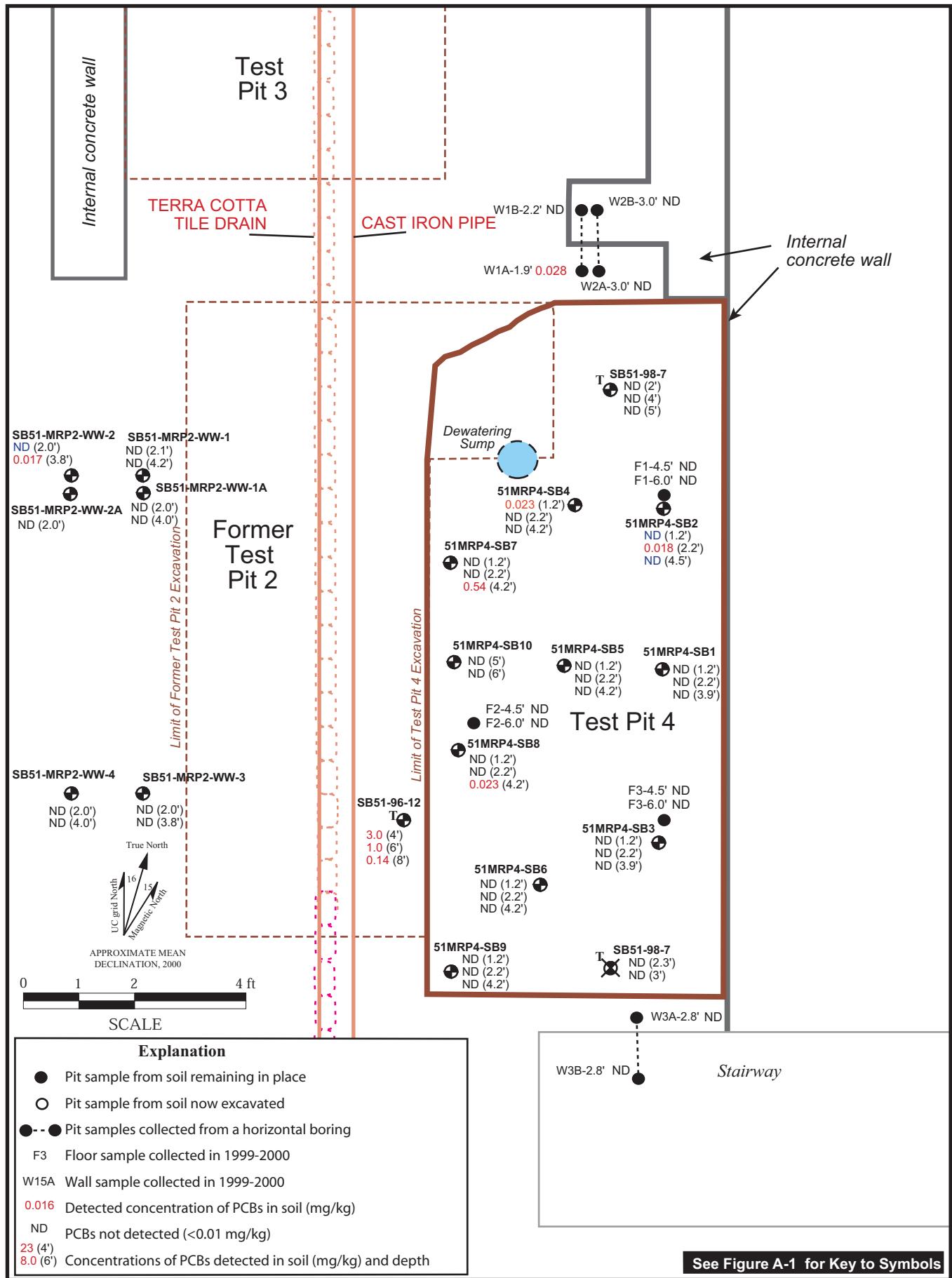


Figure A3.11-6. Plan View of Test Pit 4 Showing Concentrations of PCBs Detected (mg/kg) in Soil Samples, Building 51 Motor Generator Room Basement (AOC 9-9).

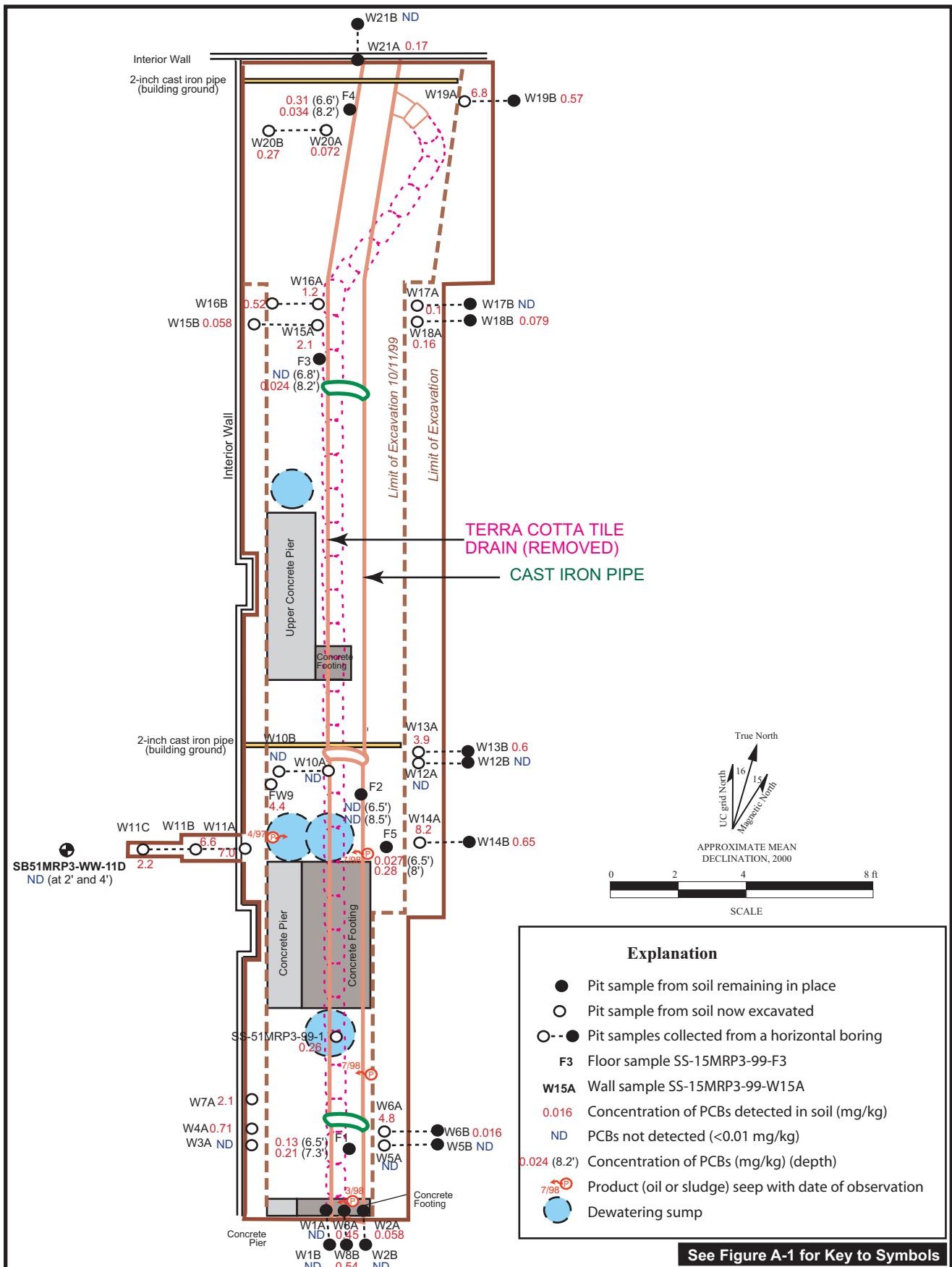


Figure A3.11-7. Concentrations of PCBs Detected (mg/kg) in 1999 and 2000 Samples, Test Pit 3 (Plan View).

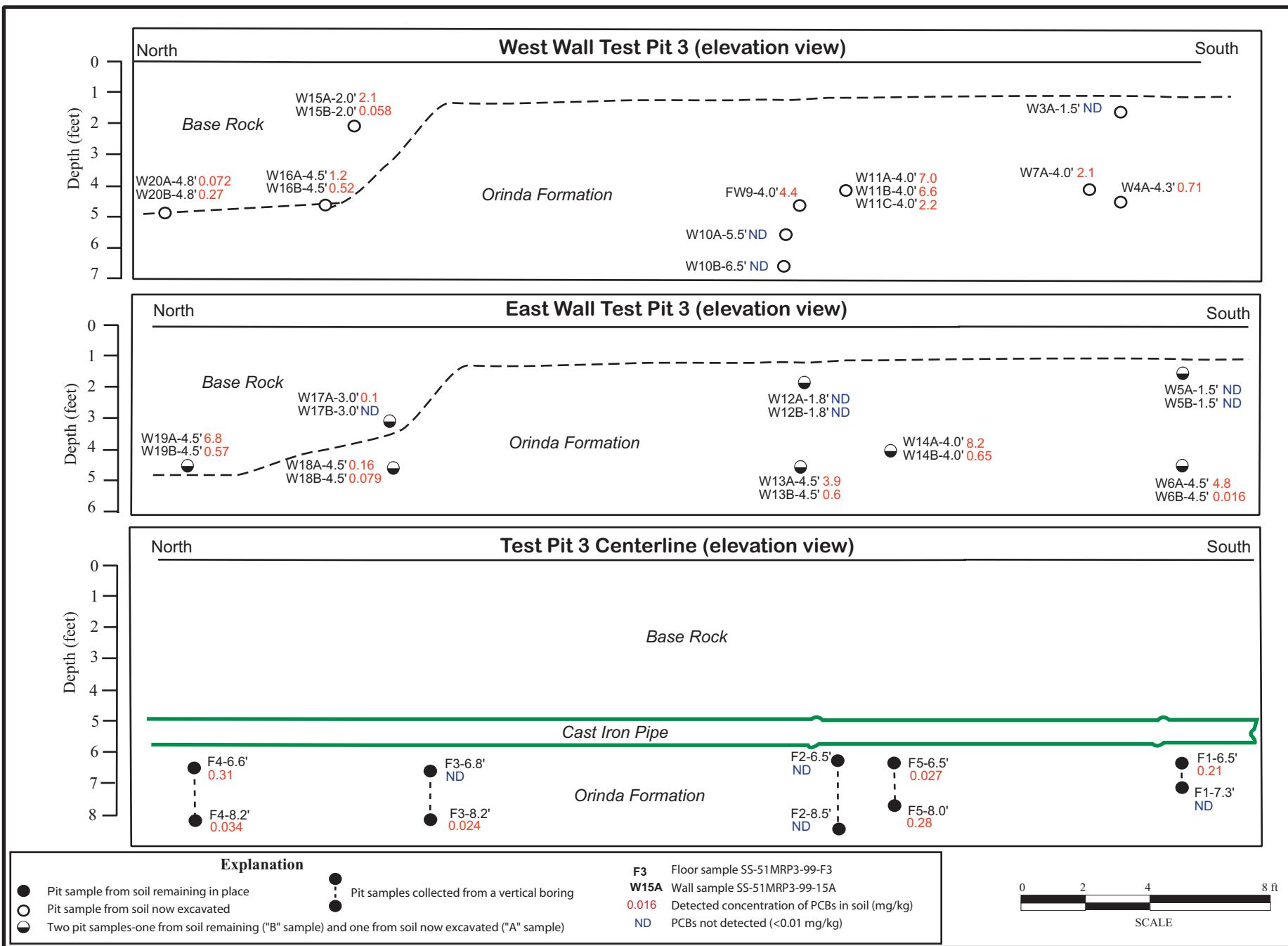


Figure A3.11-8. Concentrations of PCBs Detected in Soil Samples Collected in October 1999 (mg/kg), Test Pit 3.

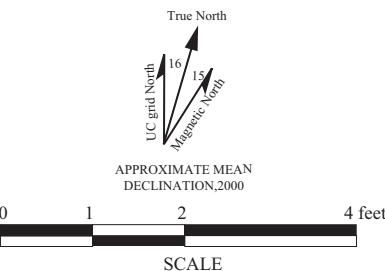
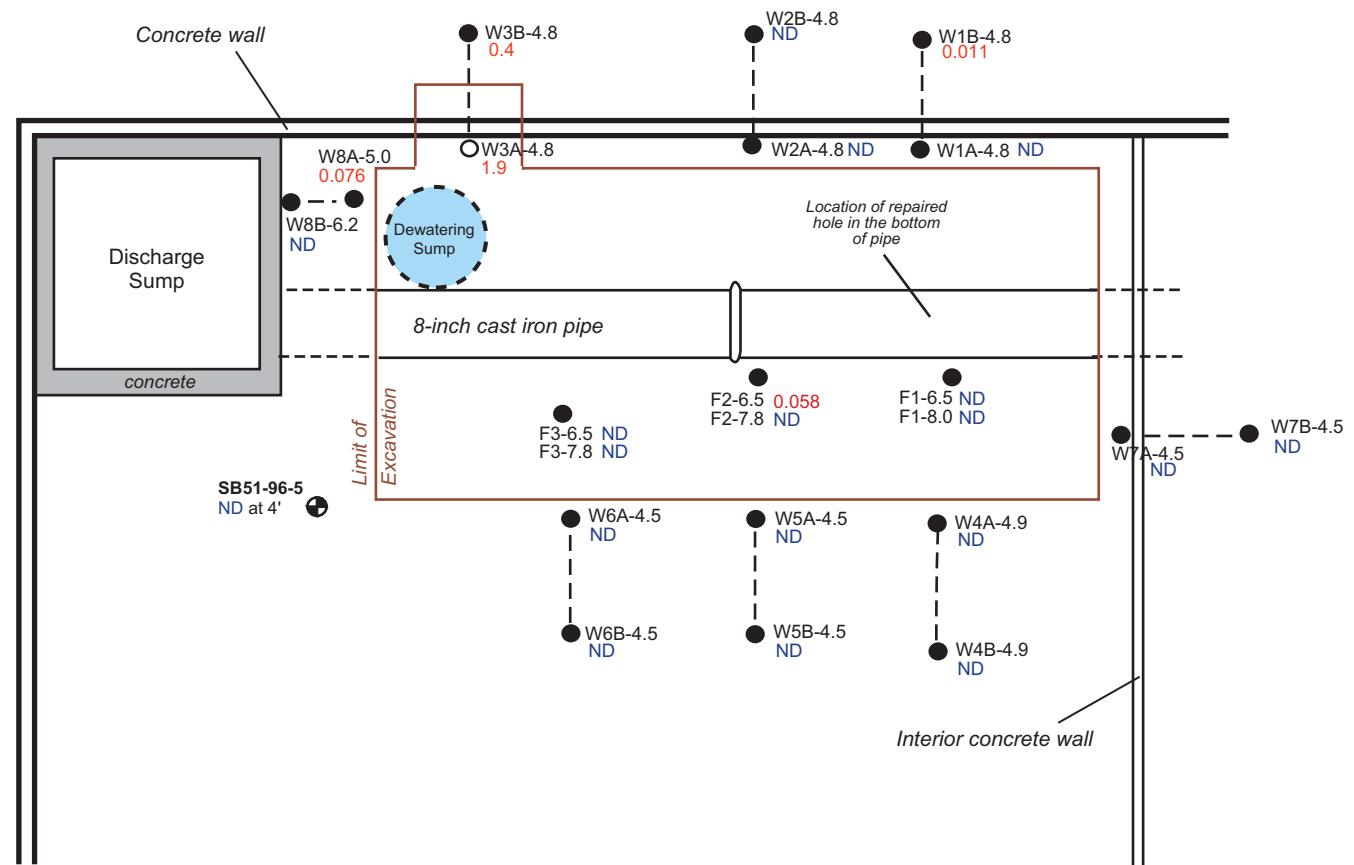


Figure A3.11-9. Plan View of Test Pit 5 With Concentrations of PCBs Detected (mg/kg) in Soil Samples.

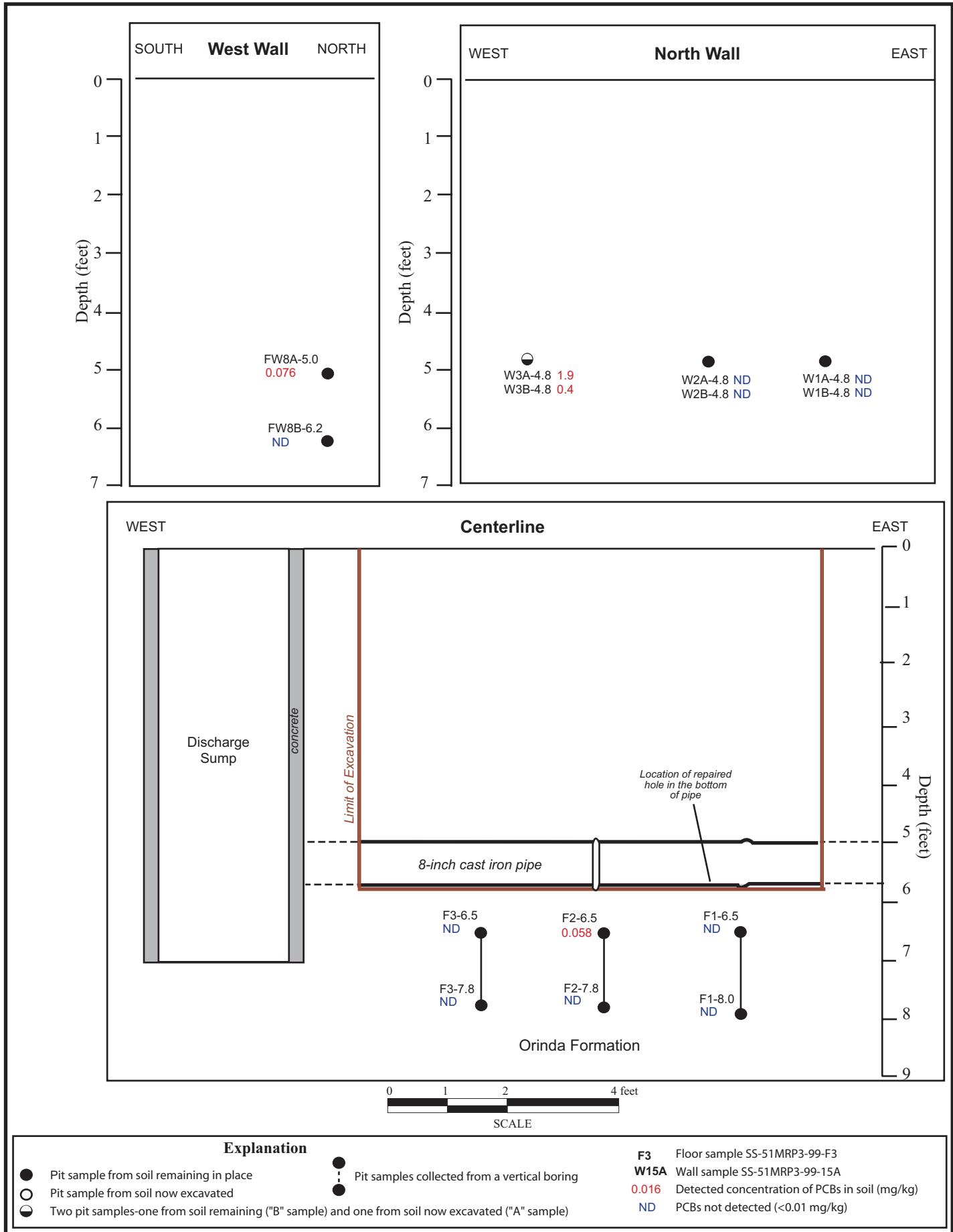


Figure A3.11-10. Elevation Views of Test Pit 5 With Concentrations of PCBs Detected (mg/kg).

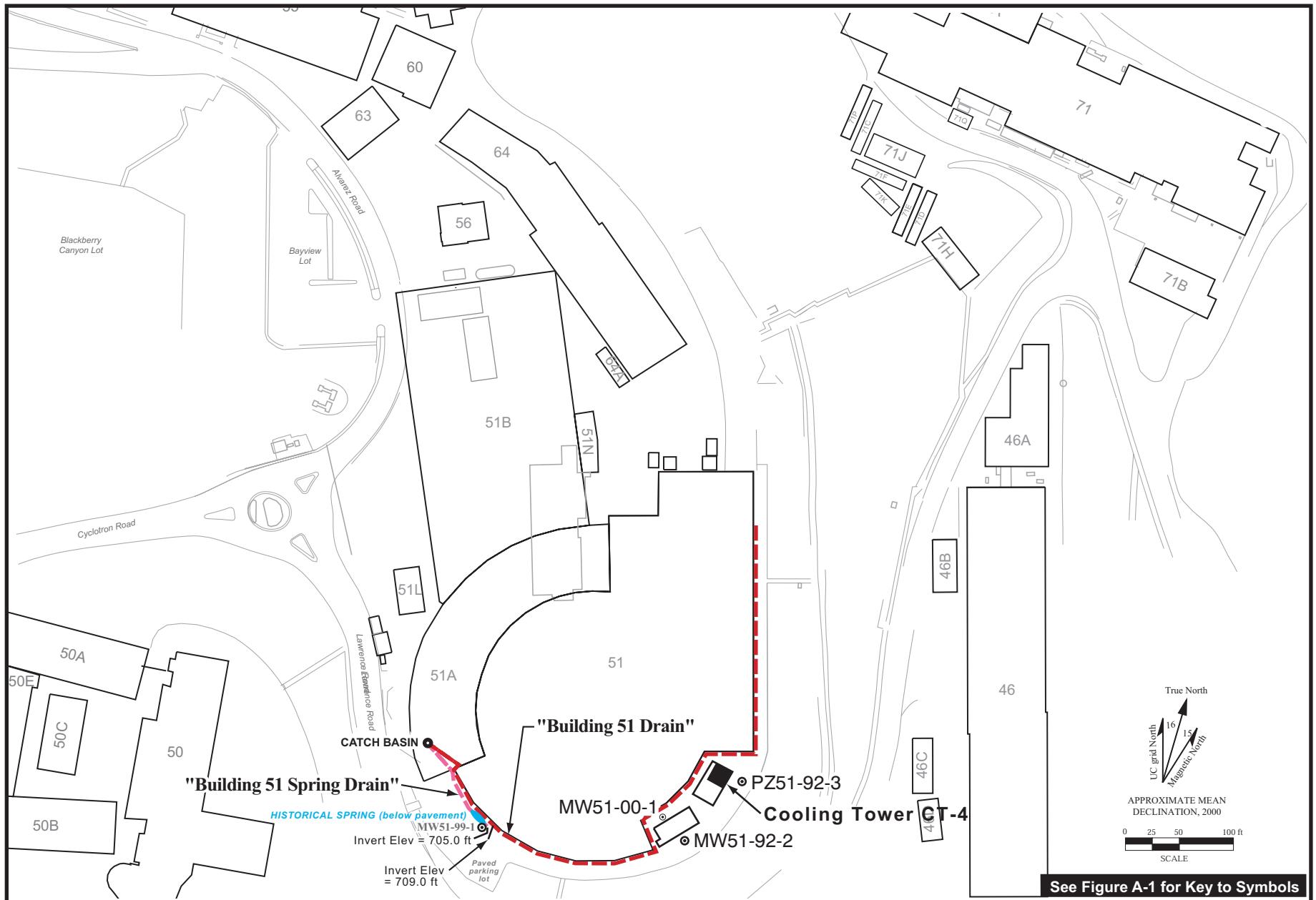


Figure A3.12-1. Map of the Southern Portion of the Building 51 Complex Showing Former Cooling Towers Southeast of Building 51 (AOC 9-11).

**BUILDING
51**

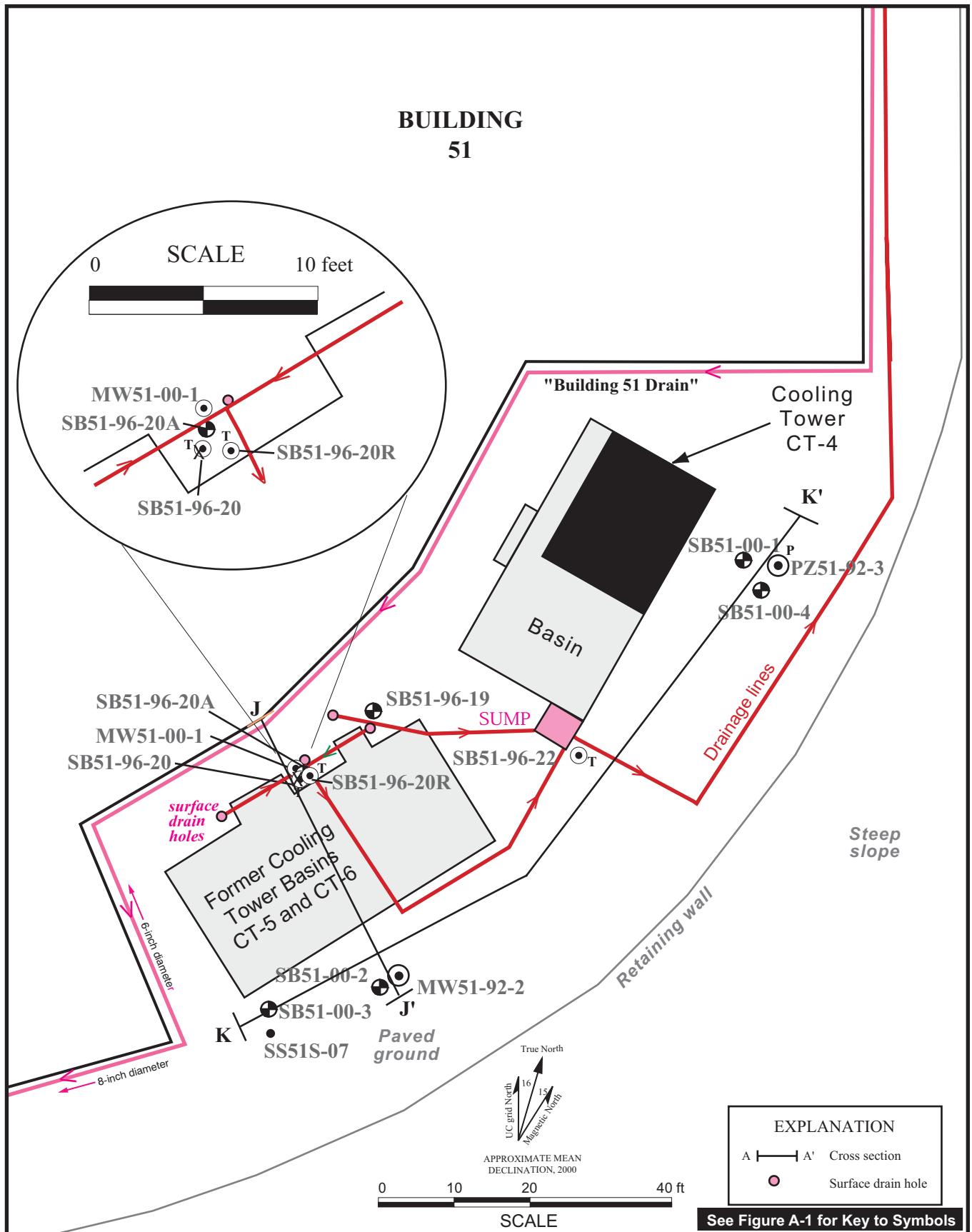


Figure A3.12-2. Soil Boring and Cross Section Locations, Former Cooling Towers Southeast of Building 51 (AOC 9-11).

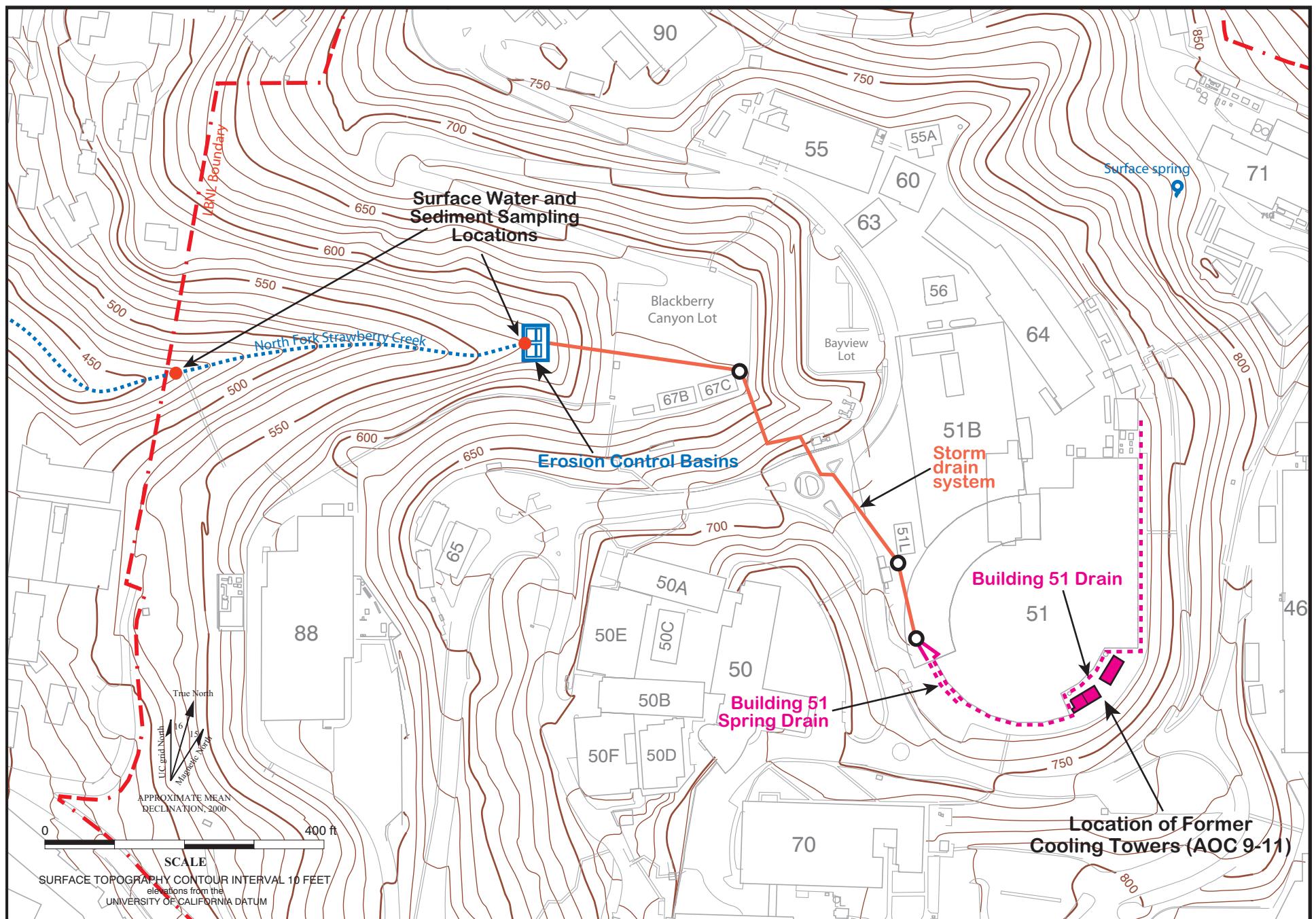


Figure A3.12-3. Potential Migration Pathway of Contamination to Surface Water from Former Cooling Towers Southeast of Building 51 (AOC 9-11).

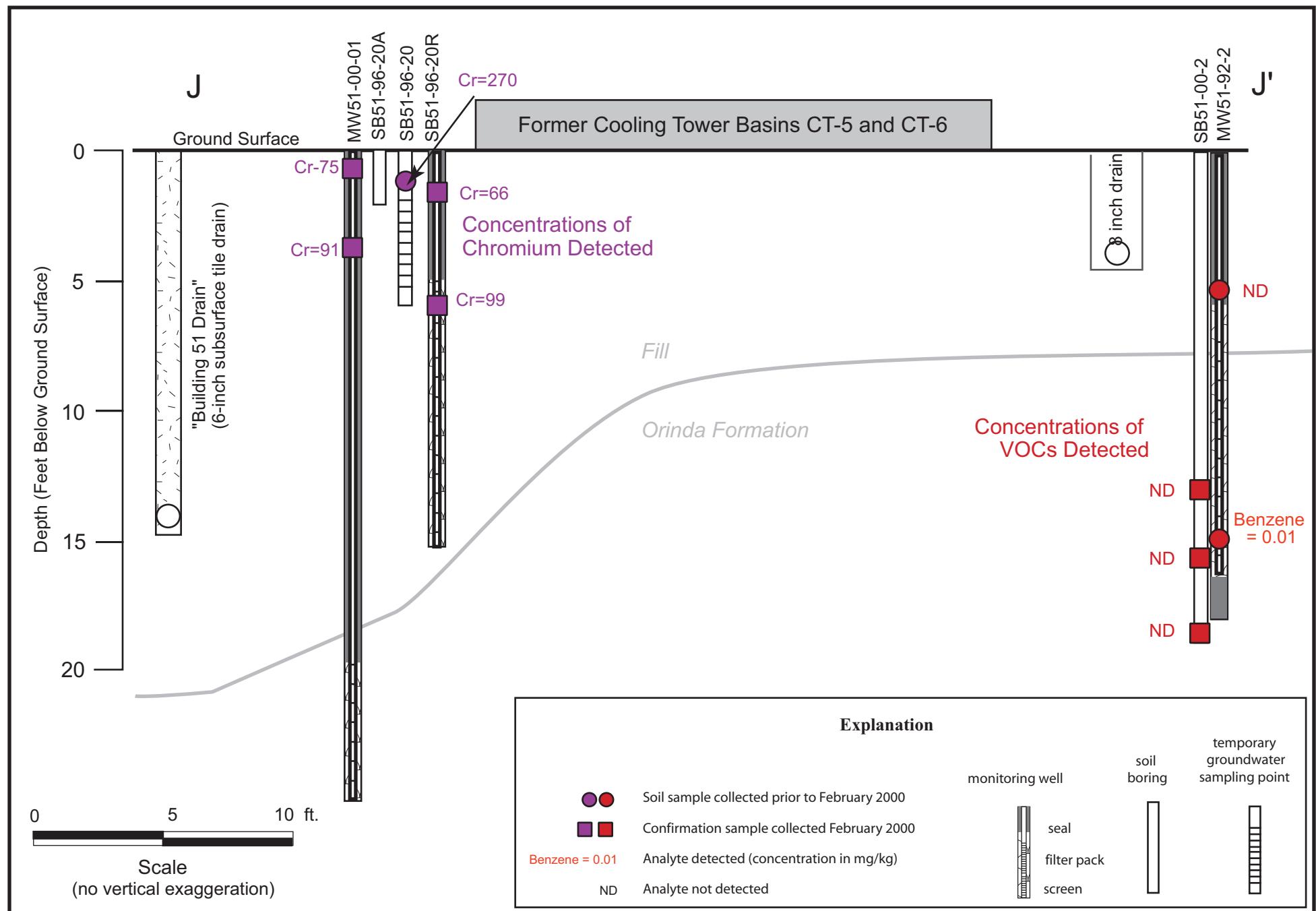


Figure A3.12-4. Cross Section J-J' Showing Soil Sampling Results, Former Cooling Towers Southeast of Building 51 (AOC 9-11).

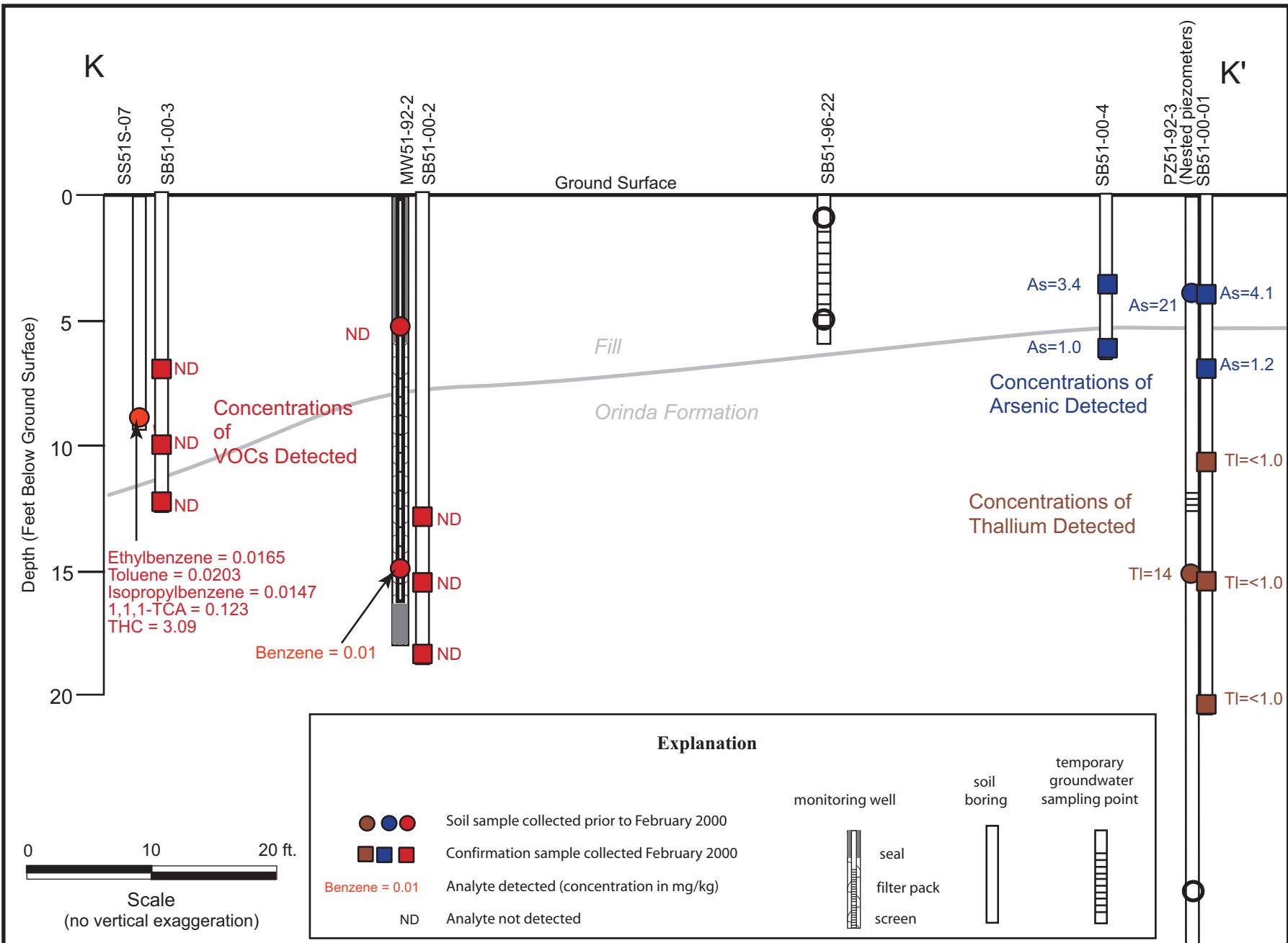


Figure A3.12-5. Cross Section K-K' Showing Soil Sampling Results, Former Cooling Towers Southeast of Building 51 (AOC 9-11).

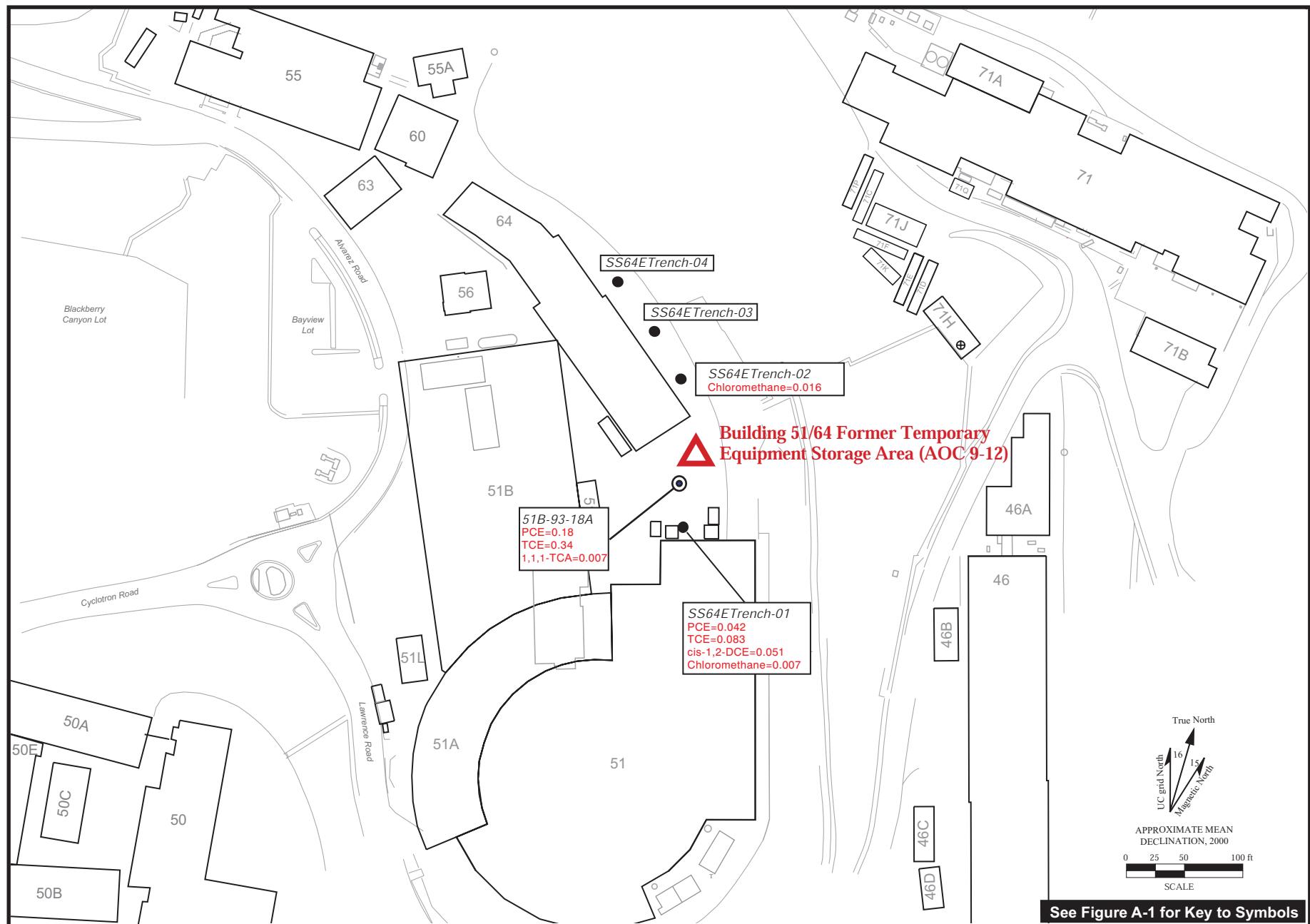


Figure A3.13-1. Maximum Detected Concentrations (mg/kg) of Organic Constituents in Soil Samples Collected in 1994,
Building 51/64 Former Temporary Equipment Storage Area (AOC 9-12).

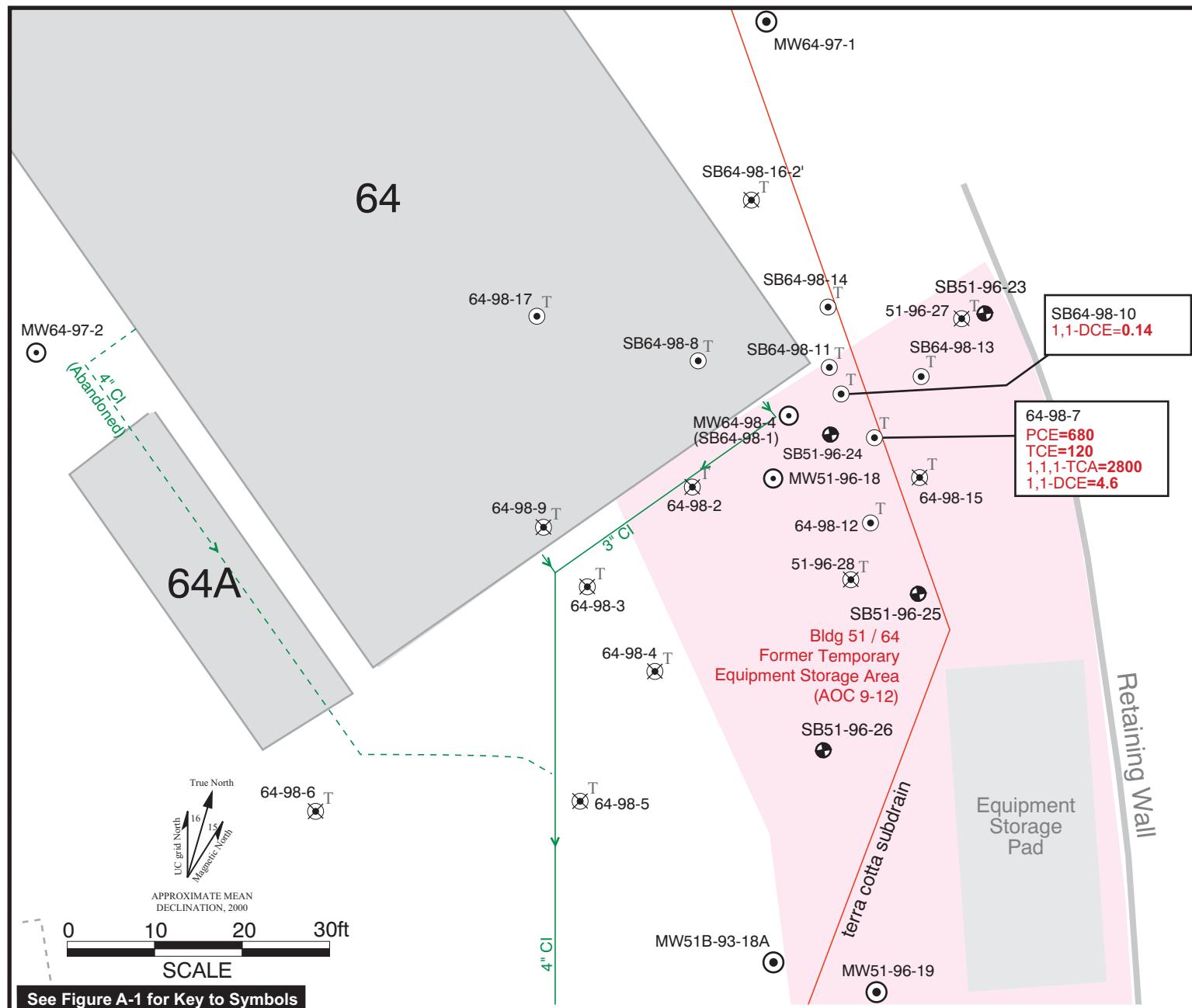


Figure A3.13-2. Maximum VOC Concentrations Detected (mg/kg) in Soil Borings Above Residential PRGs, Building 51 / 64 Former Temporary Equipment Storage Area (AOC 9-12).

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Figure A3.14-1. Soil Gas Sampling Results (ppm) and Maximum Concentrations of Contaminants Detected in Soil Borings (mg/kg), Building 71B Potential Source Area.

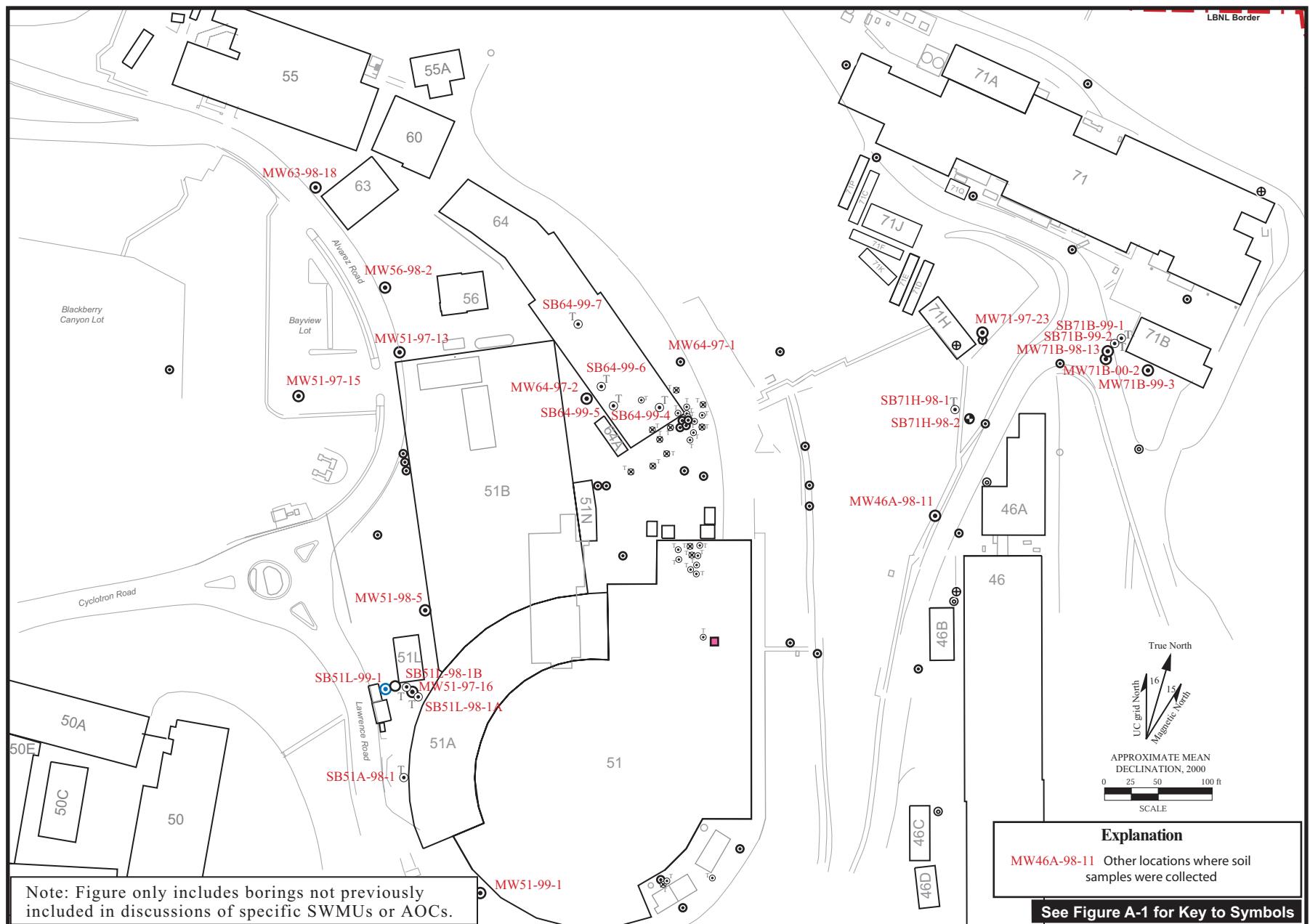


Figure A3.15-1. Other Locations of Soil Samples, Bevalac Area.

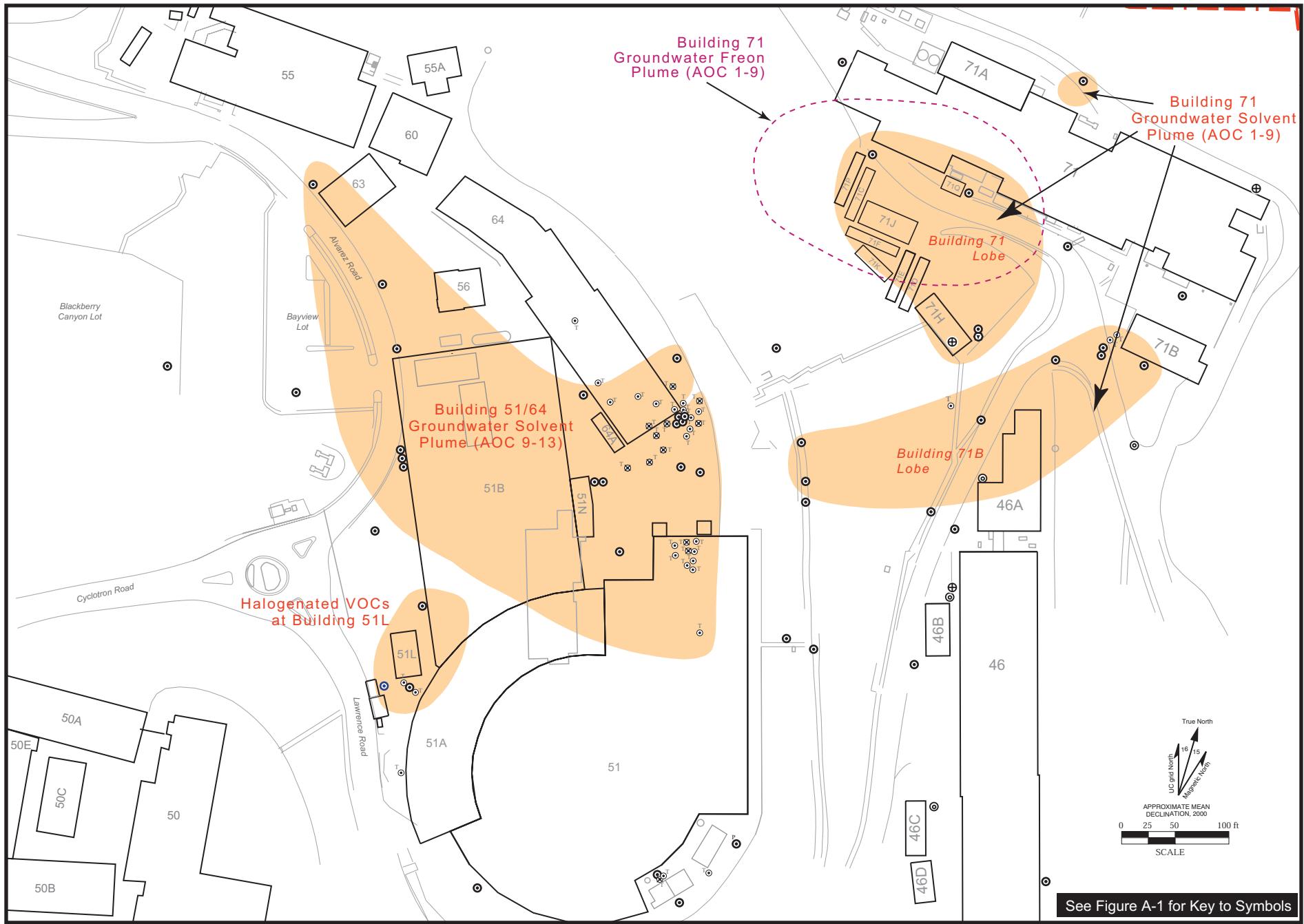


Figure A4.1-1. Areas of Groundwater Contamination (Halogenated VOCs) in Bevalac Area.

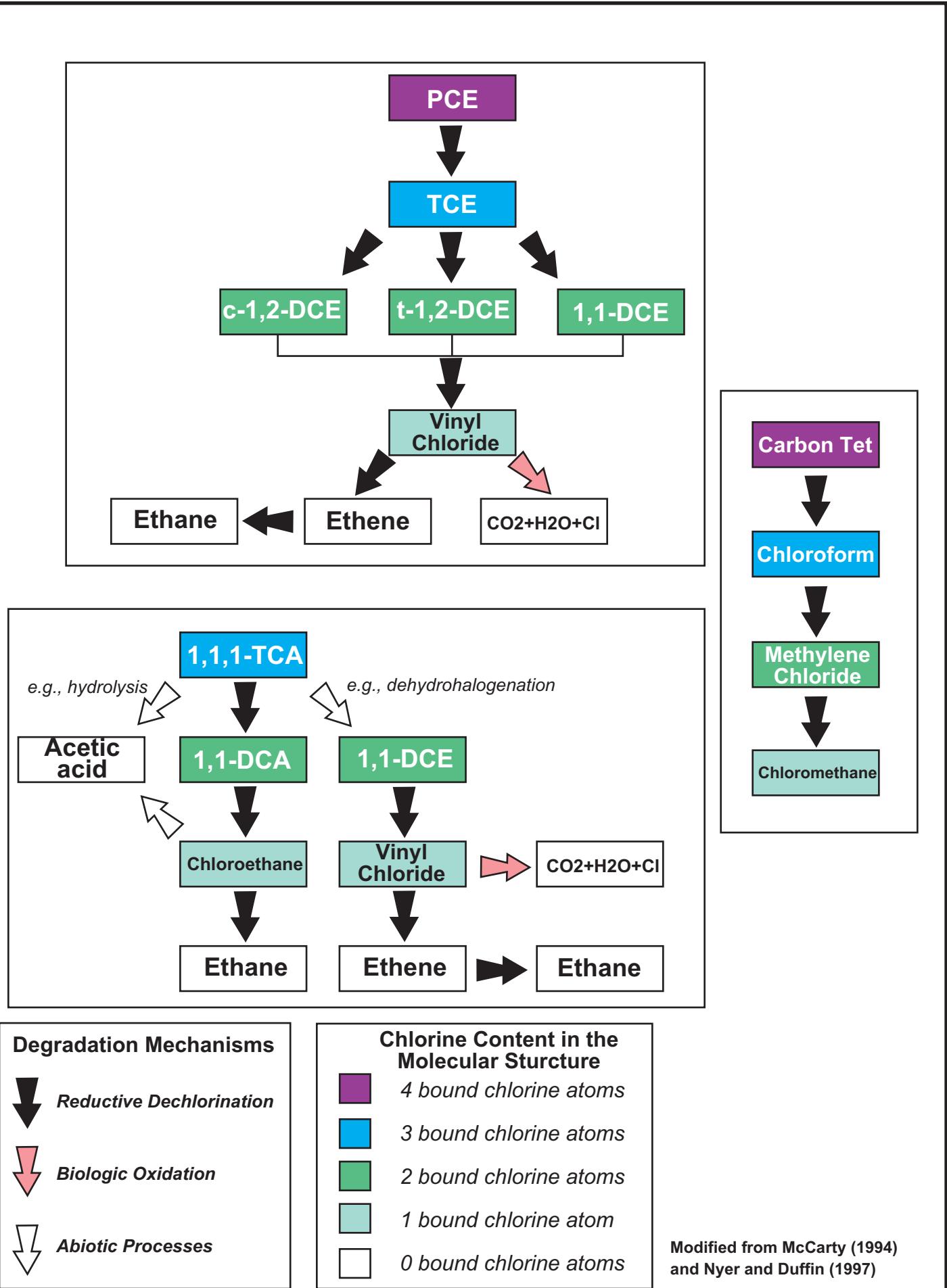


Figure A4.2-1. Generalized Degradation Pathways of Chlorinated Hydrocarbons.

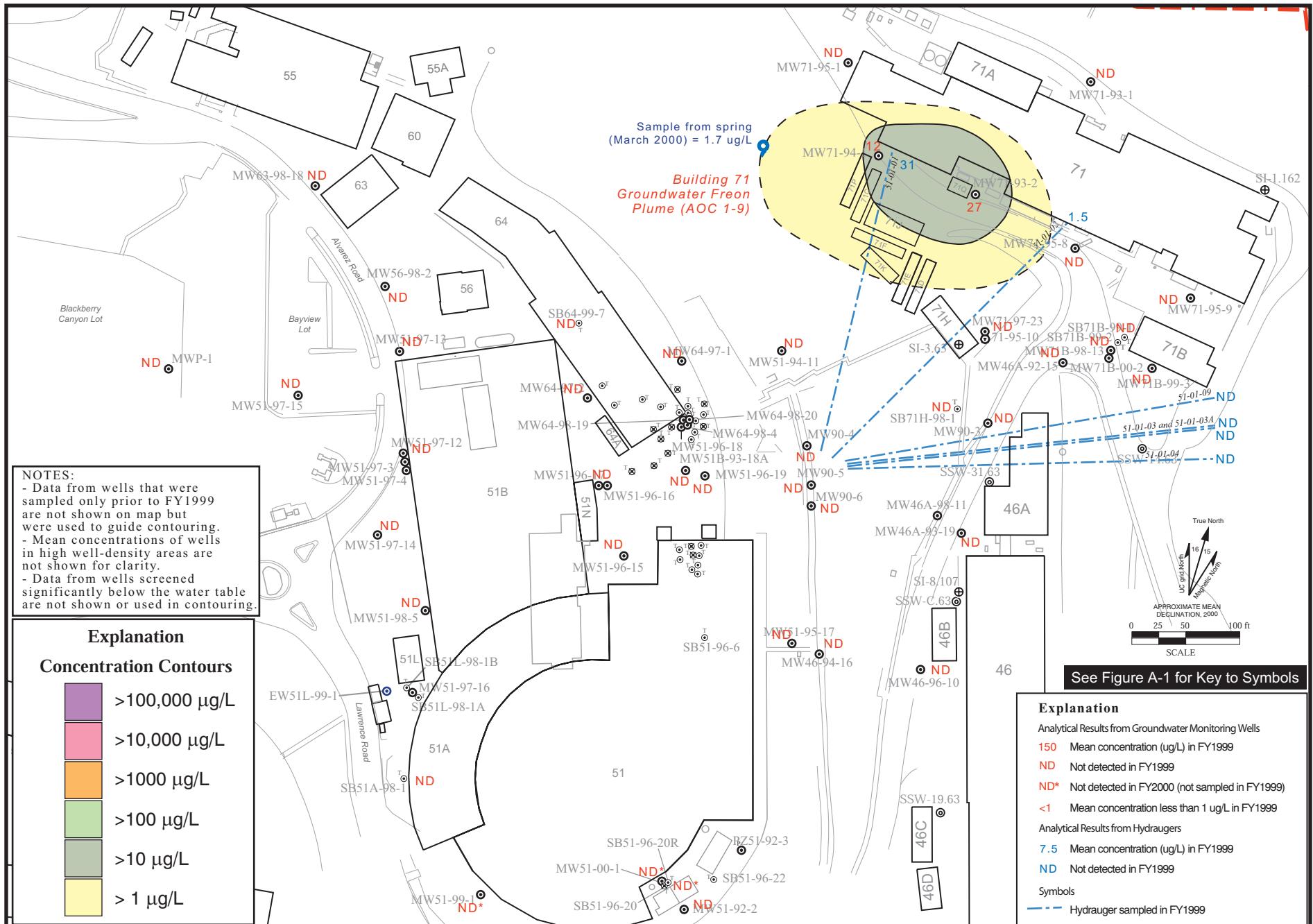


Figure A4.3-1. Isoconcentration Contour Map (Plume Map): Mean Concentrations of Freon-113 Near Water Table, Bevalac Area, Fiscal Year 1999.

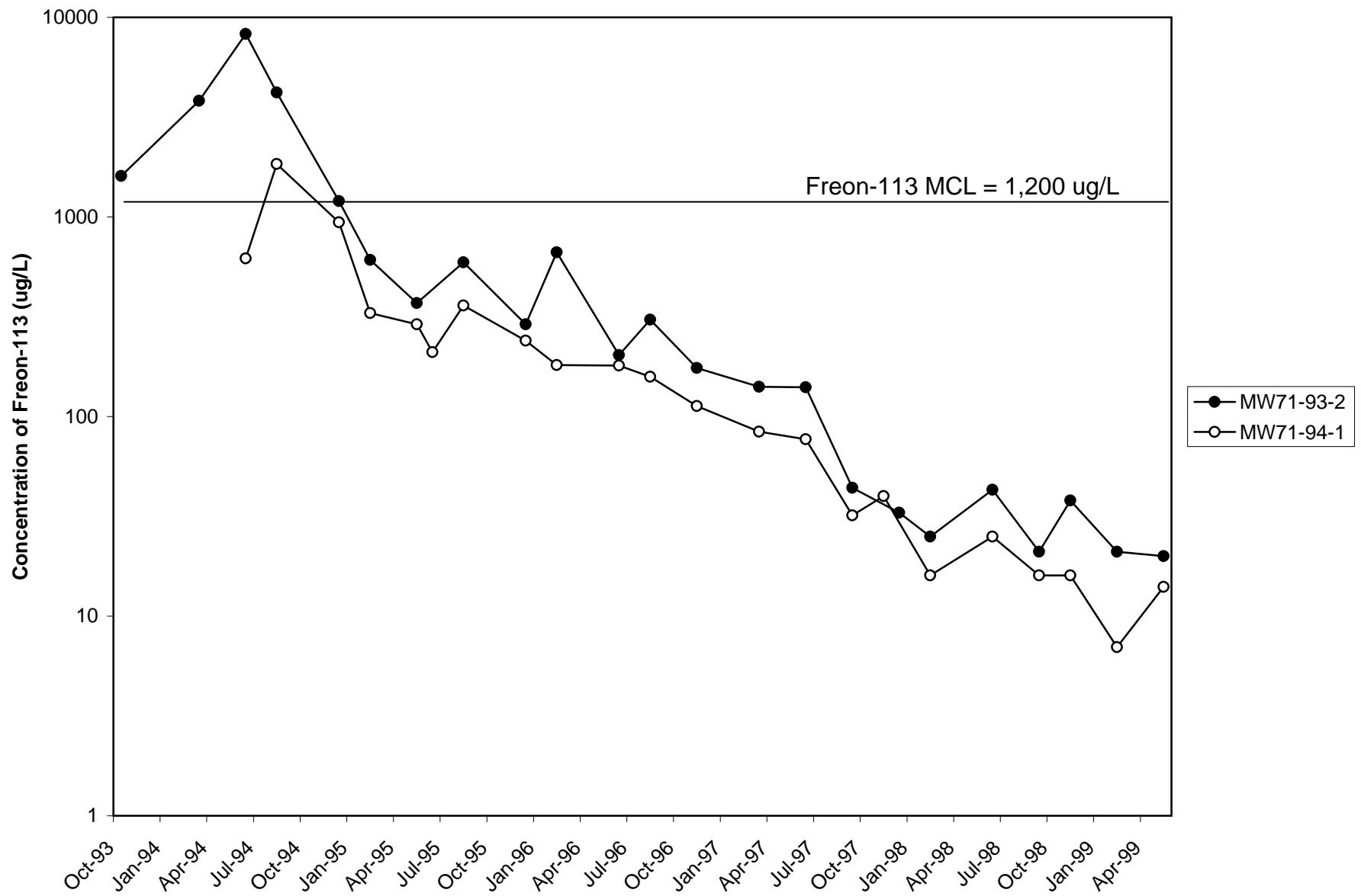


Figure A4.3-2. Concentrations of Freon-113 in MW71-93-2 and MW71-94-1 from FY1994 Through FY1999.

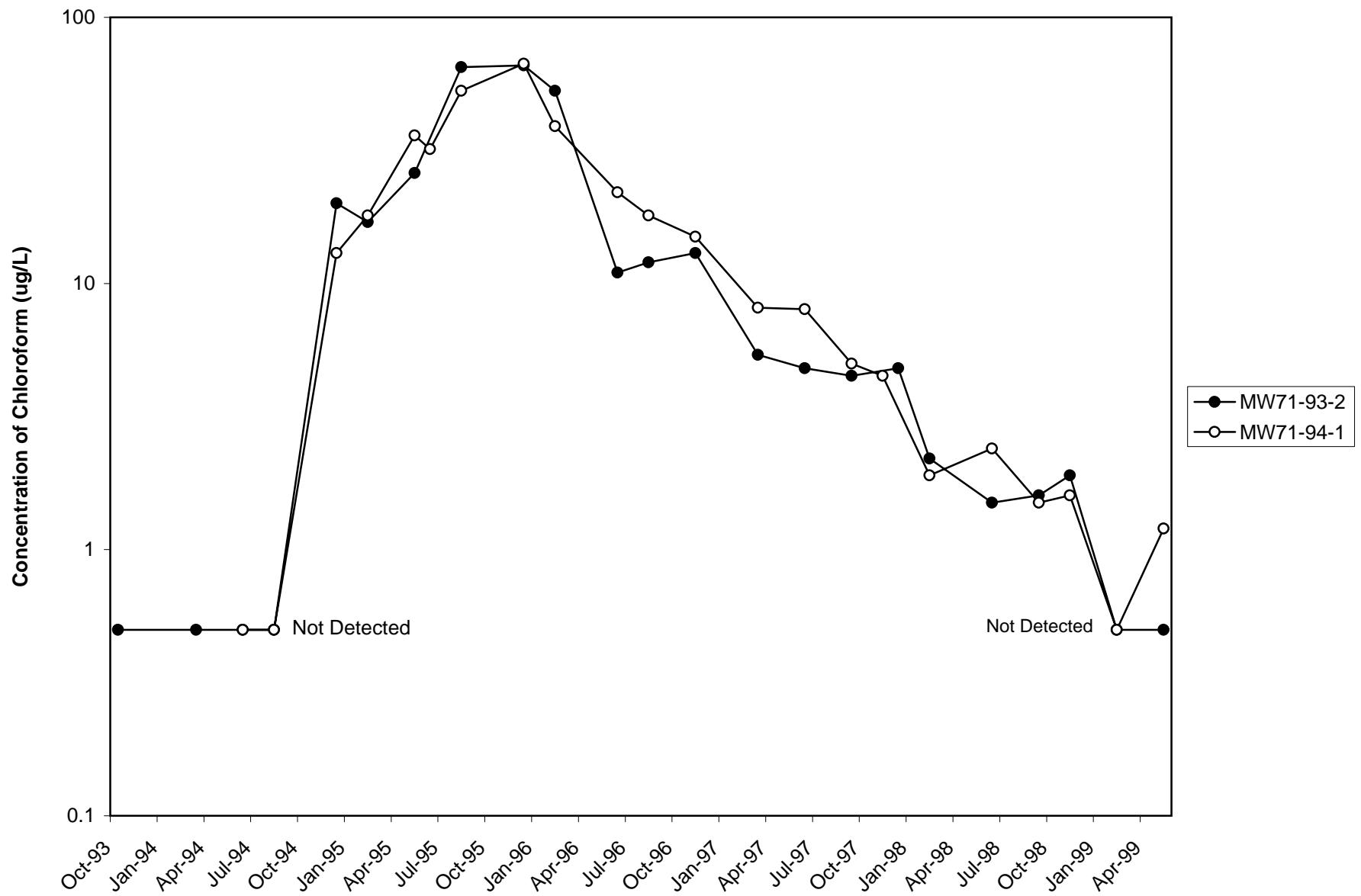


Figure A4.3-3. Concentrations of Chloroform in MW71-93-2 and MW71-94-1 from FY1994 Through FY1999.

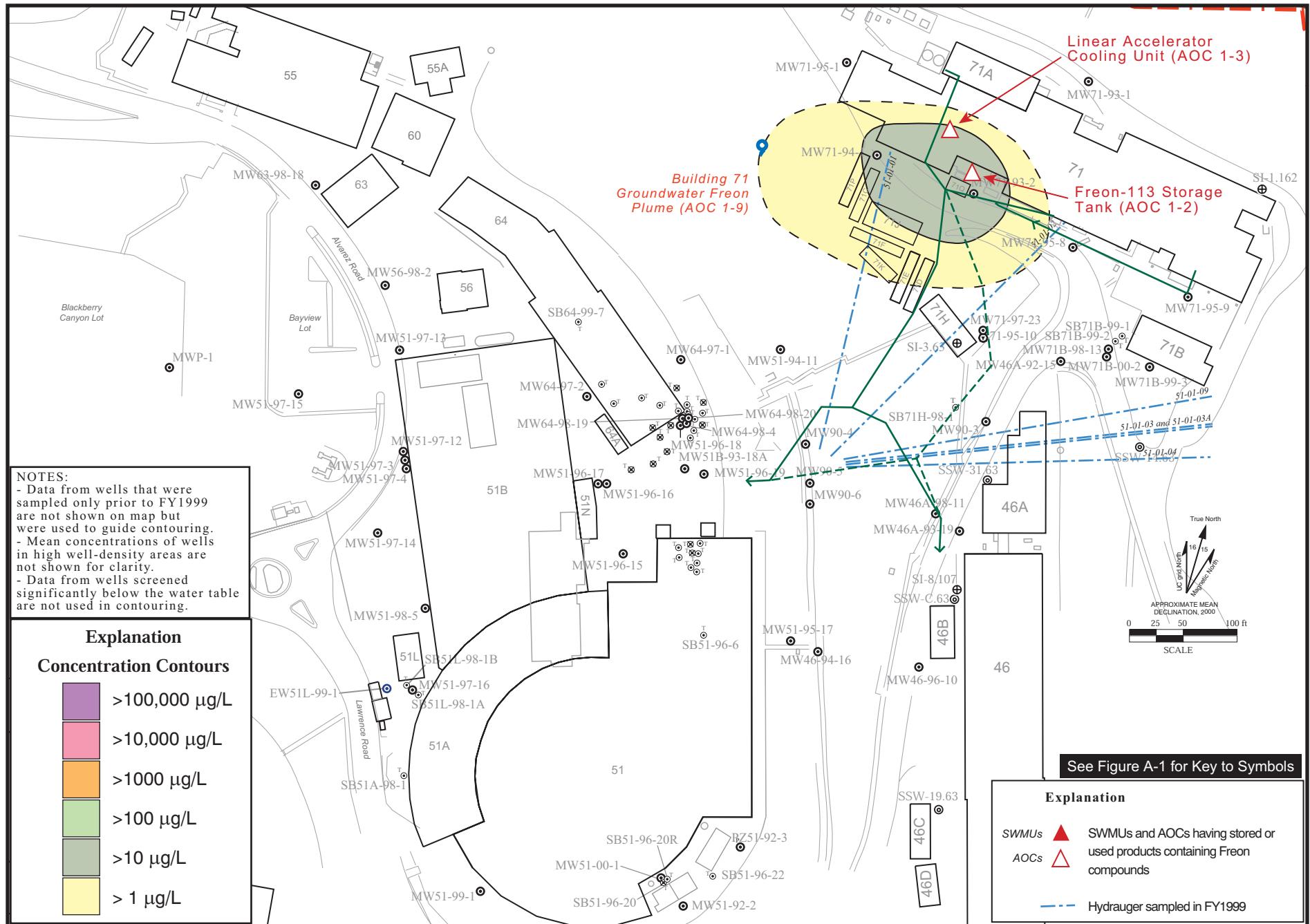


Figure A4.3-4. Isoconcentration Contour Map (Plume Map): Mean Concentrations of Freon-113 Near Water Table, With Potential Sources of Freon-113, Bevalac Area, Fiscal Year 1999.

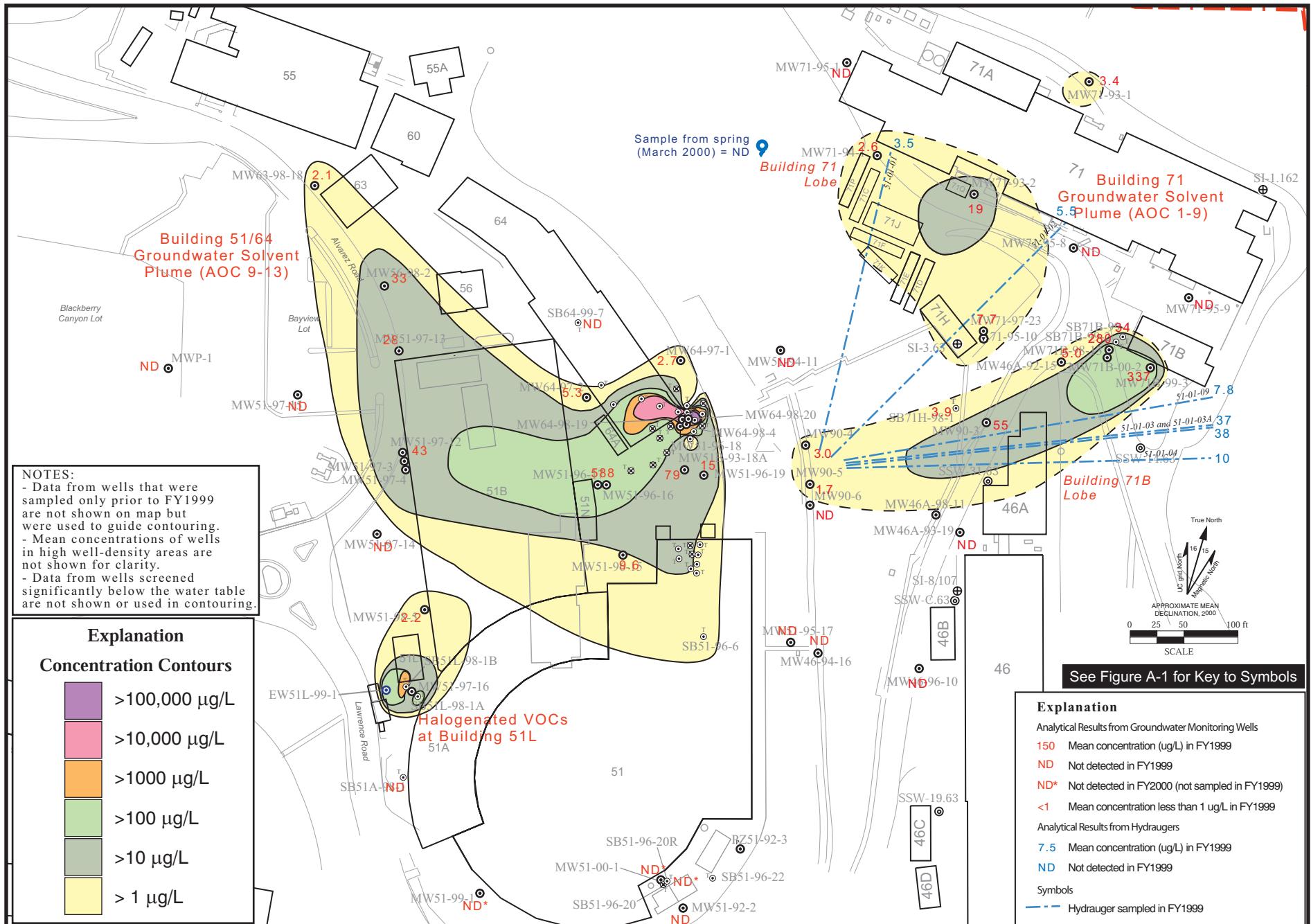


Figure A4.4-1. Isoconcentration Contour Map (Plume Map): Mean Concentrations of Total Halogenated VOCs (Excluding Freon Compounds) Near Water Table, Bevalac Area, Fiscal Year 1999.

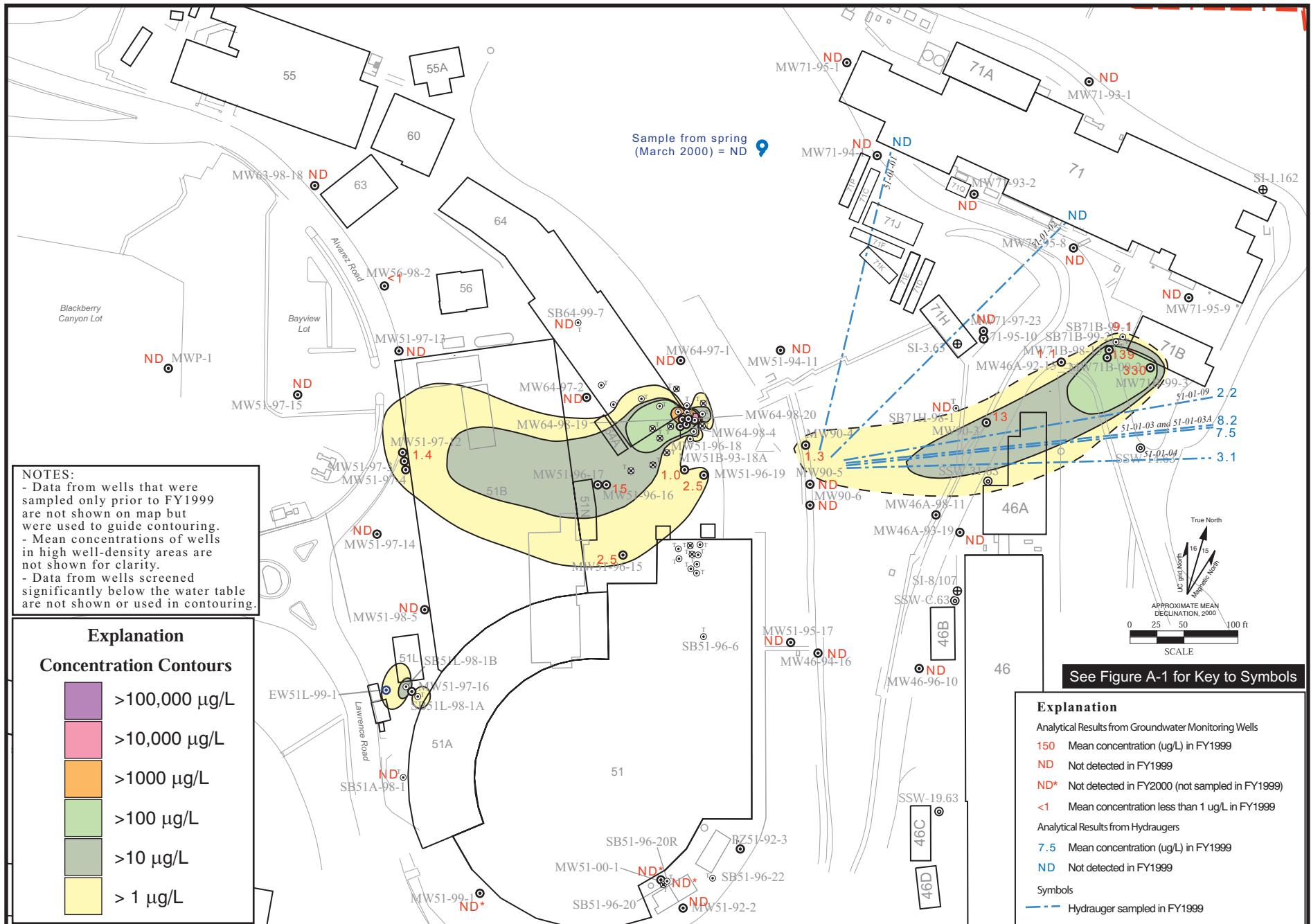


Figure A4.4-2. Isoconcentration Contour Map (Plume Map): Mean Concentrations of PCE Near Water Table, Bevalac Area, Fiscal Year 1999.

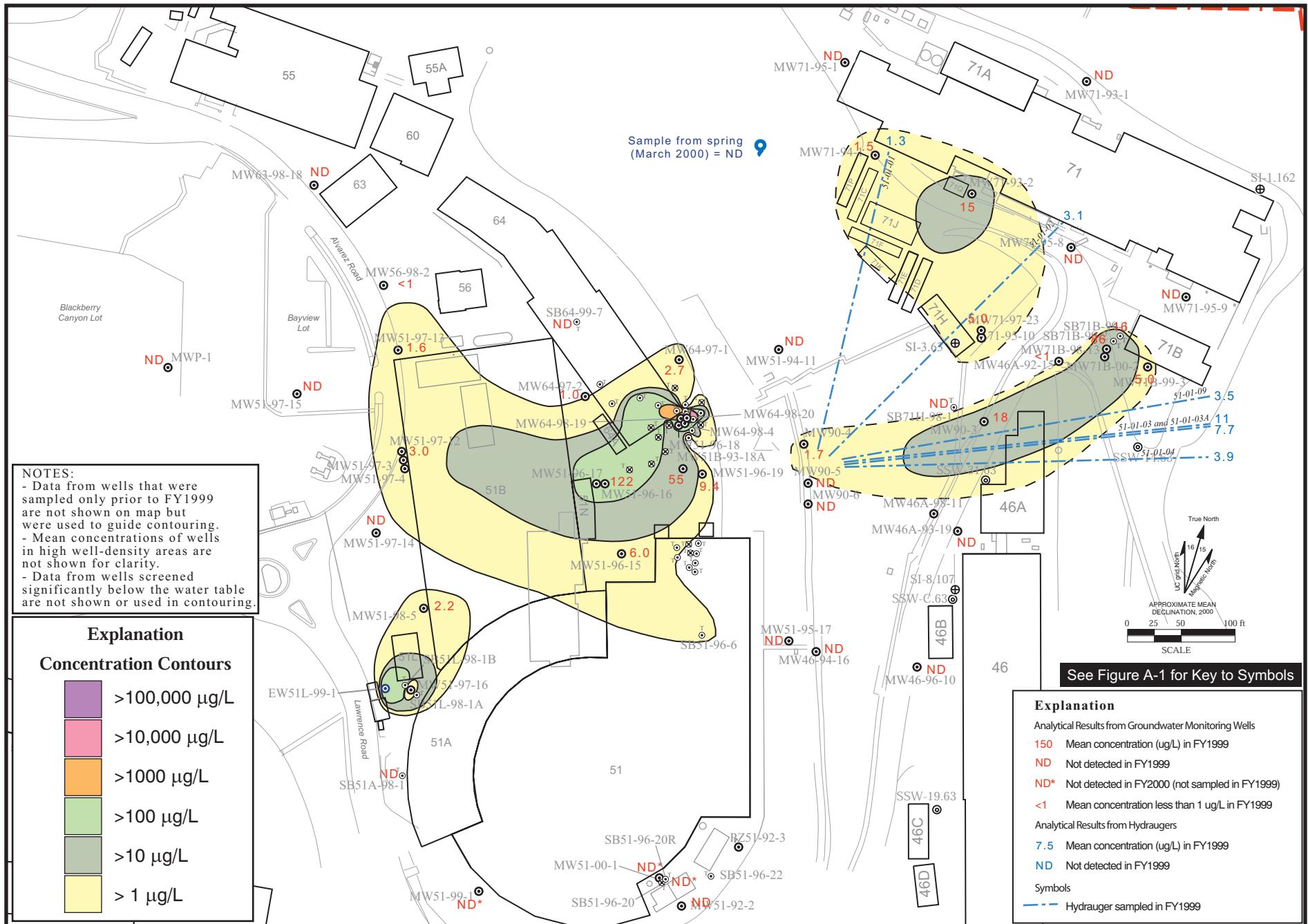


Figure A4.4-3. Isoconcentration Contour Map (Plume Map): Mean Concentrations of TCE Near Water Table, Bevalac Area, Fiscal Year 1999.

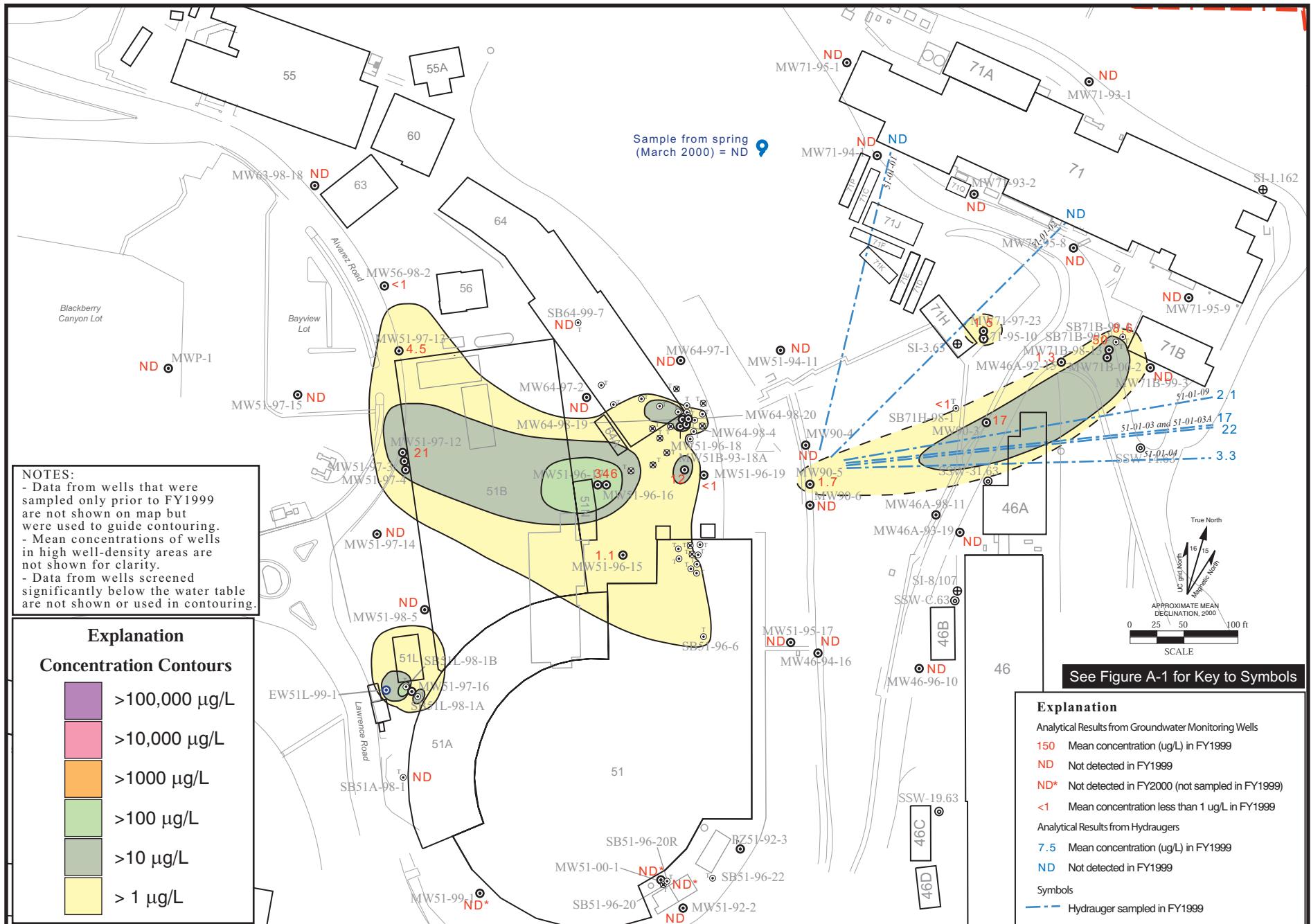


Figure A4.4-4. Isoconcentration Contour Map (Plume Map): Mean Concentrations of cis-1,2-DCE Near Water Table, Bevalac Area, Fiscal Year 1999.

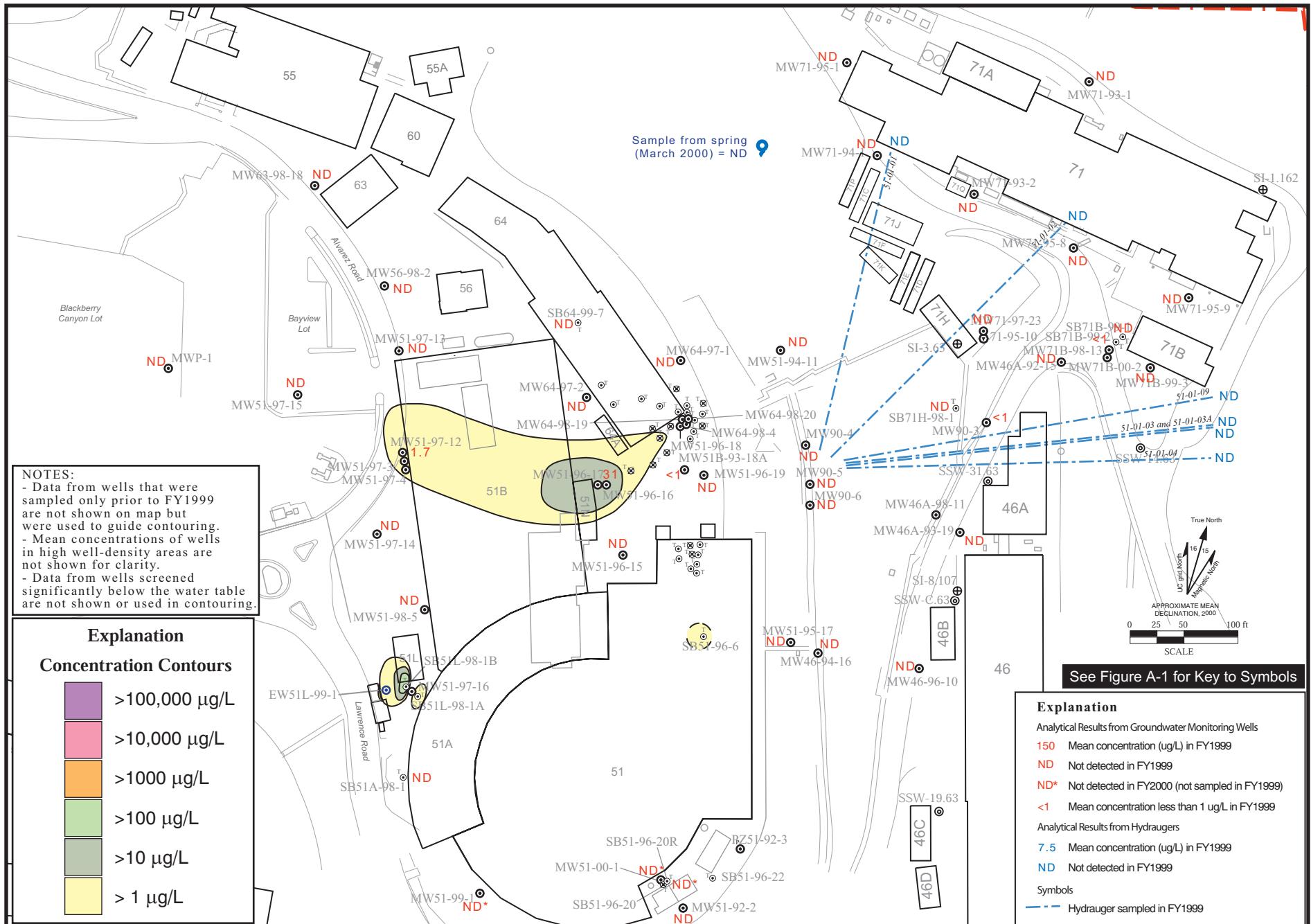


Figure A4.4-5. Isoconcentration Contour Map (Plume Map): Mean Concentrations of trans-1,2-DCE Near Water Table, Bevalac Area, Fiscal Year 1999.

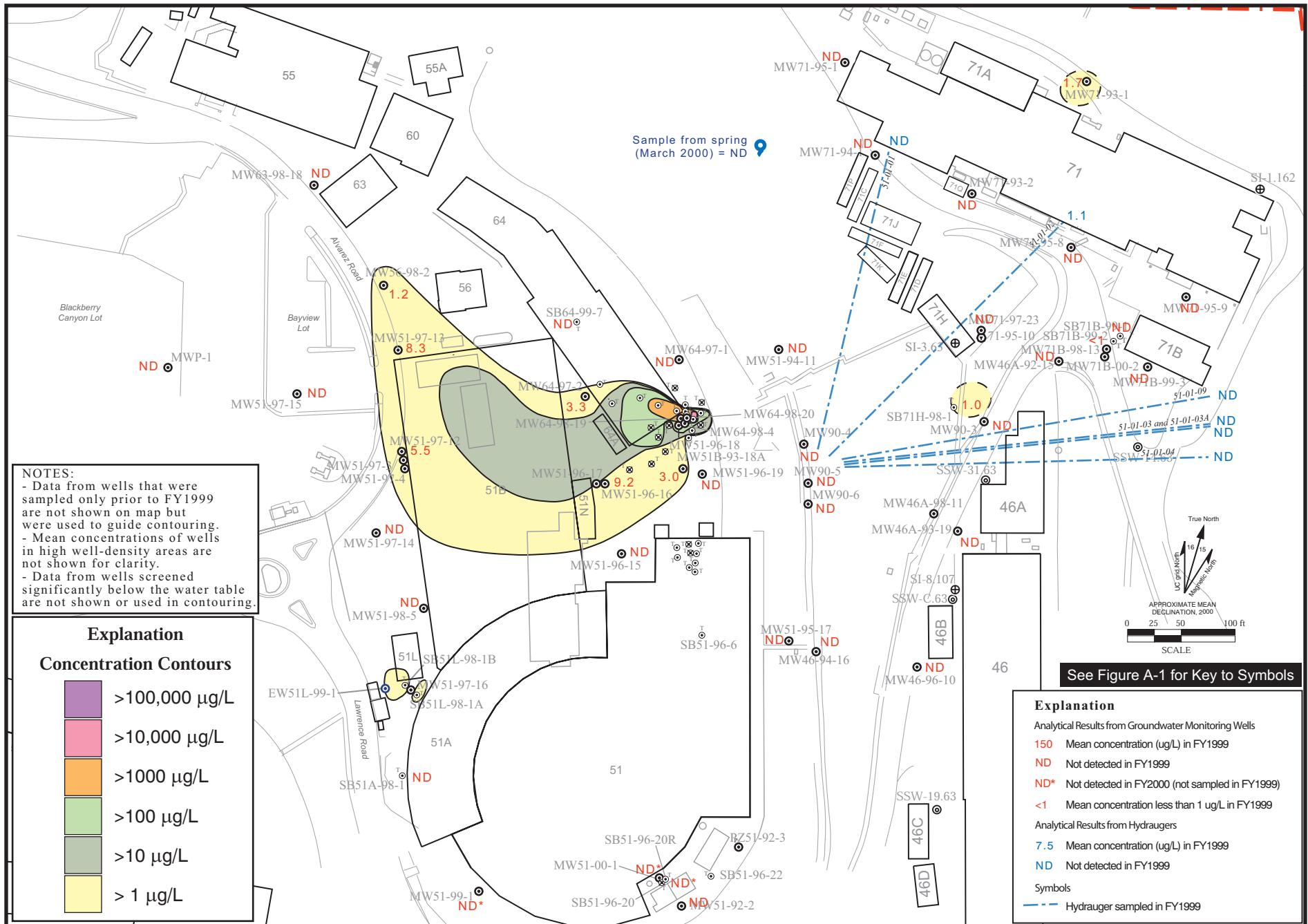


Figure A4.4-6. Isoconcentration Contour Map (Plume Map): Mean Concentrations of 1,1-DCE Near Water Table, Bevalac Area, Fiscal Year 1999.

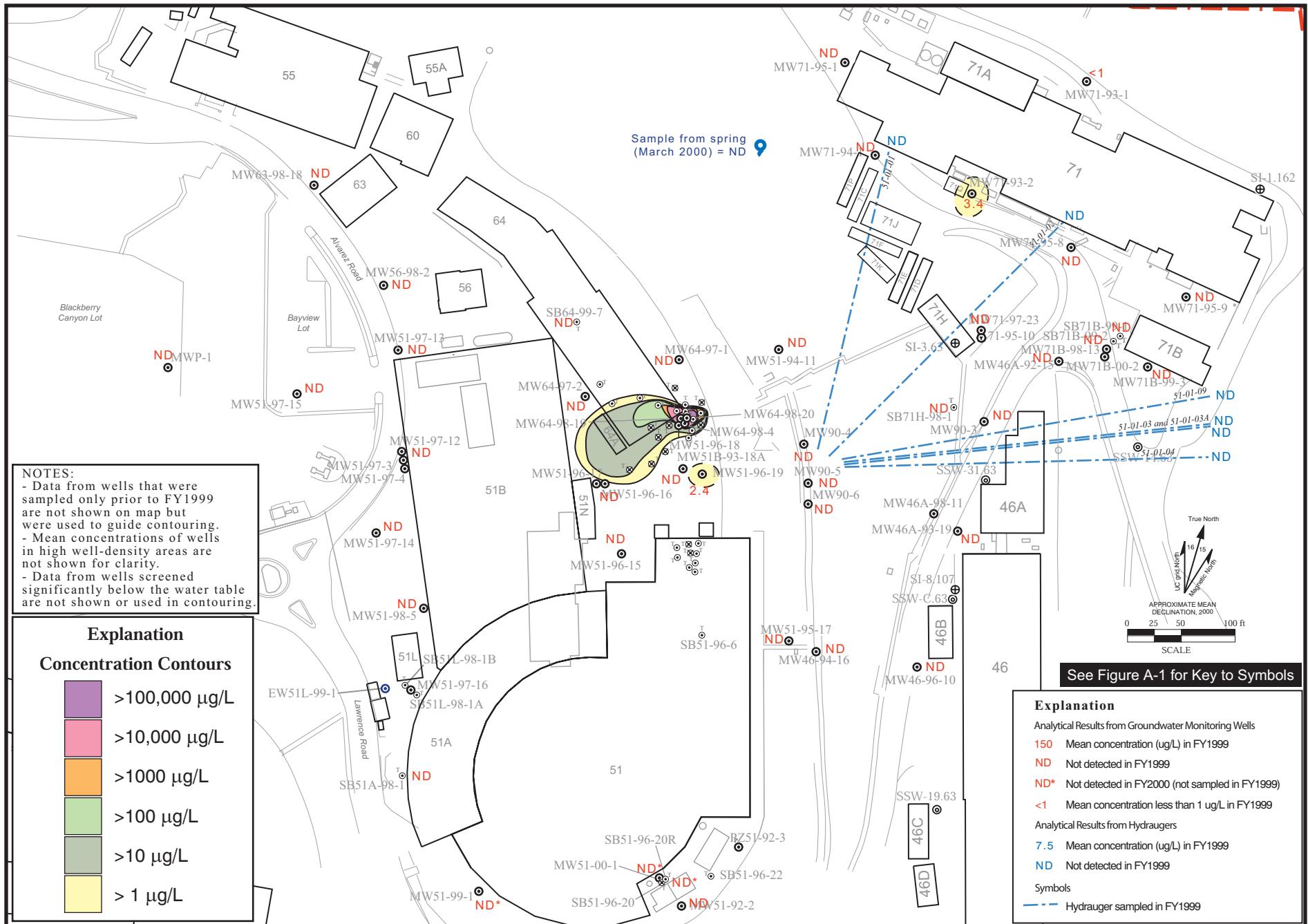


Figure A4.4-7. Isoconcentration Contour Map (Plume Map): Mean Concentrations of 1,1,1-TCA Near Water Table, Bevalac Area, Fiscal Year 1999.

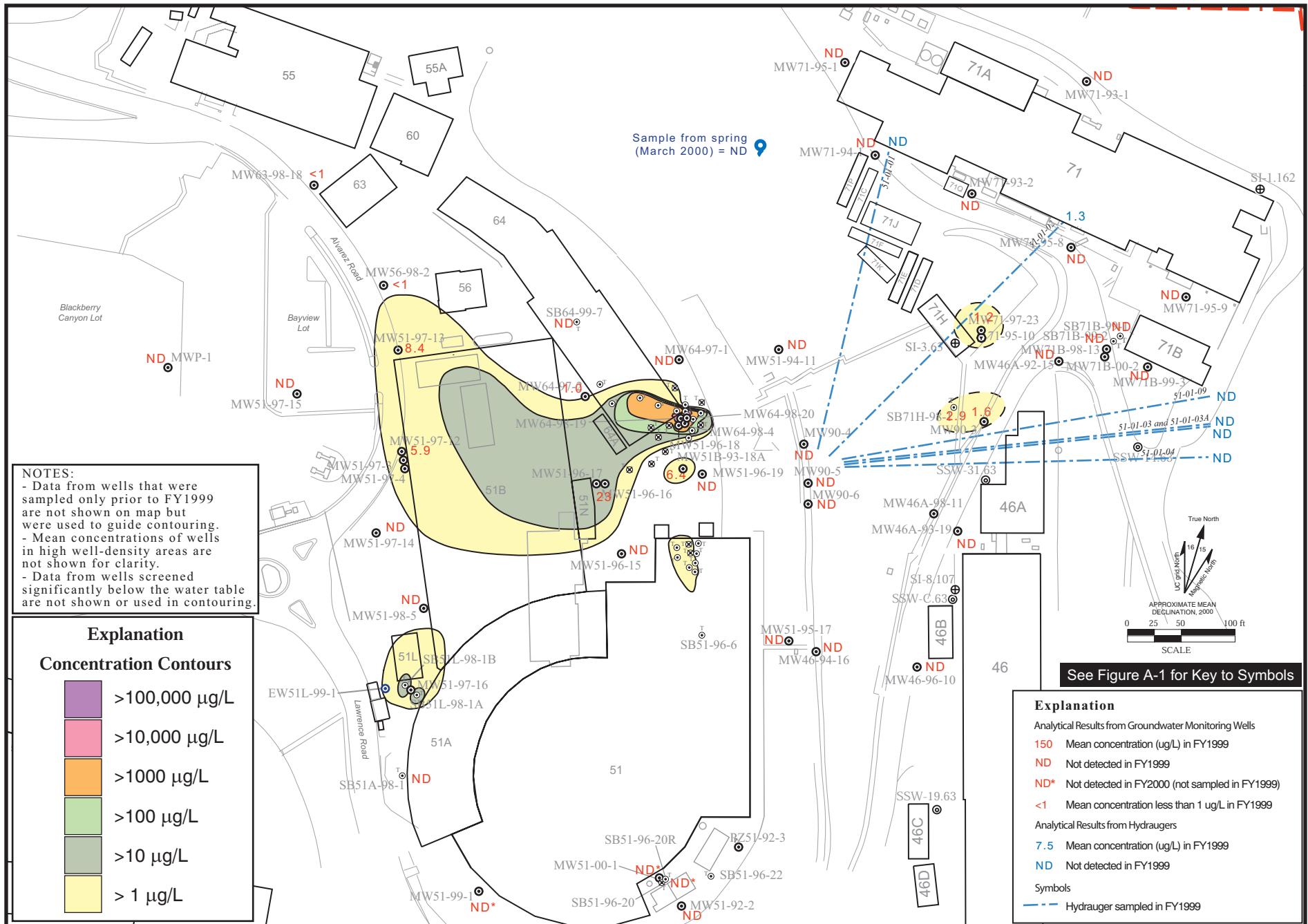


Figure A4.4-8. Isoconcentration Contour Map (Plume Map): Mean Concentrations of 1,1-DCA Near Water Table, Bevalac Area, Fiscal Year 1999.

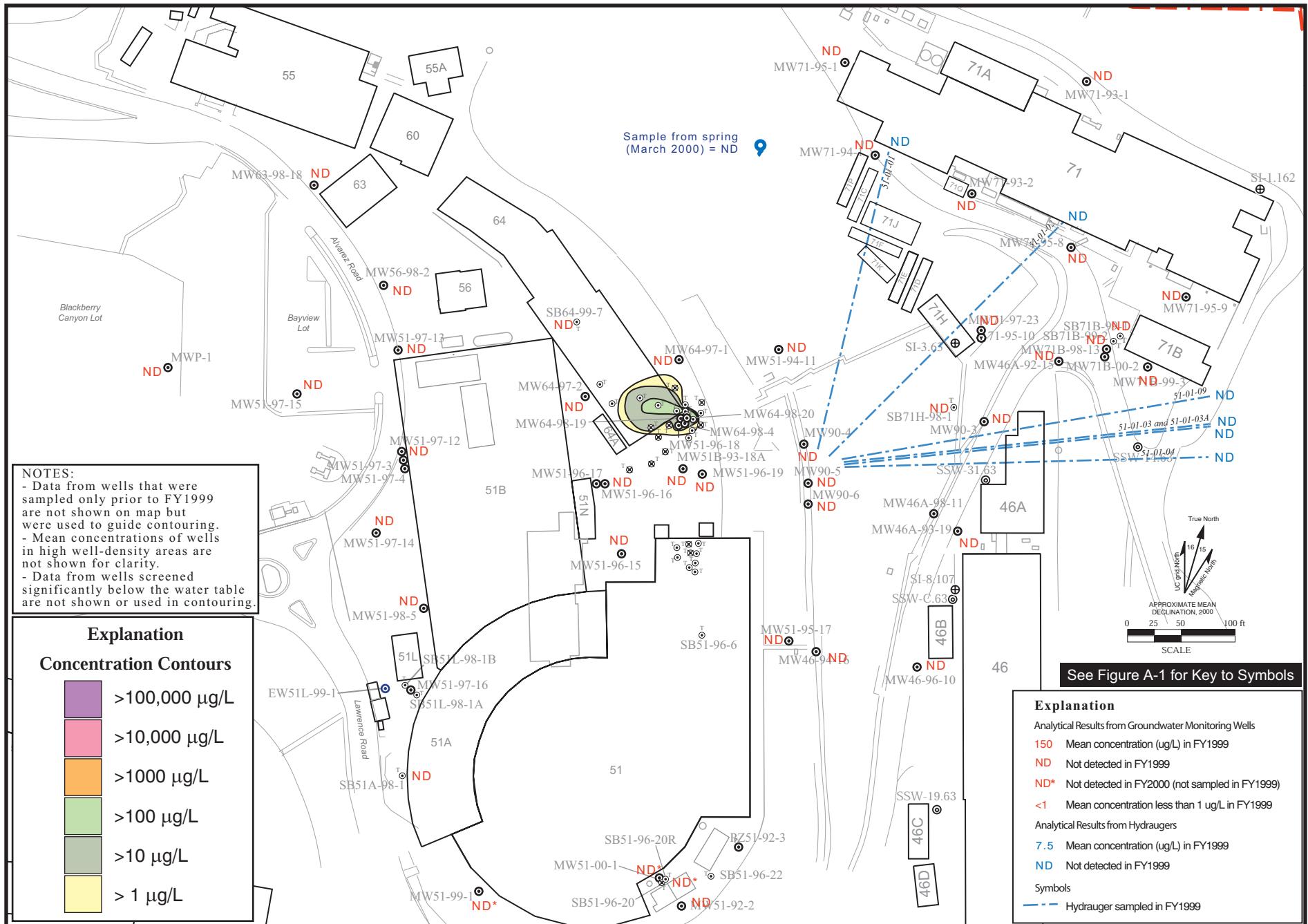


Figure A4.4-9. Isoconcentration Contour Map (Plume Map): Mean Concentrations of 1,2-DCA Near Water Table, Bevalac Area, Fiscal Year 1999.

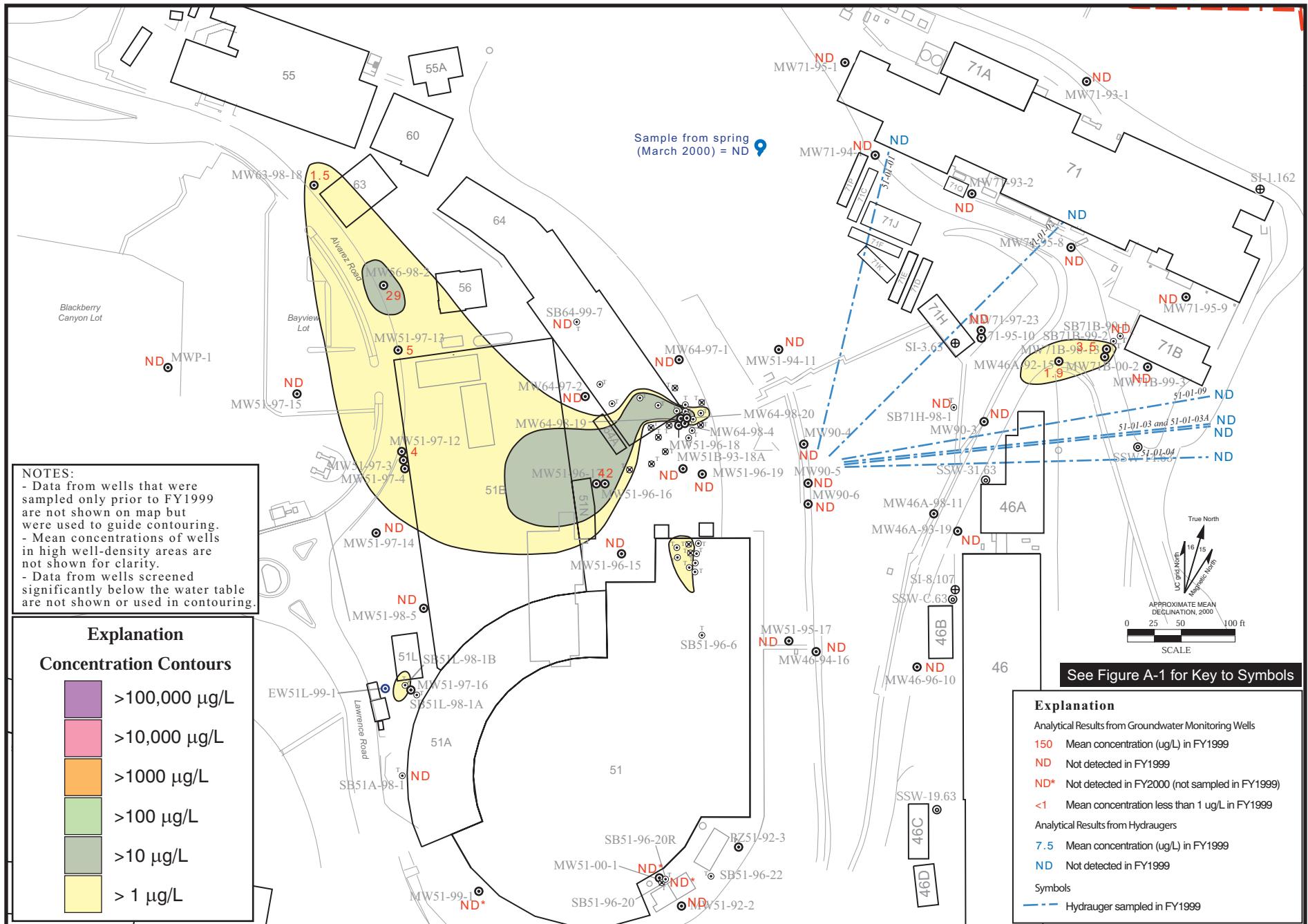


Figure A4.4-10. Isoconcentration Contour Map (Plume Map): Mean Concentrations of Vinyl Chloride Near Water Table, Bevalac Area, Fiscal Year 1999.

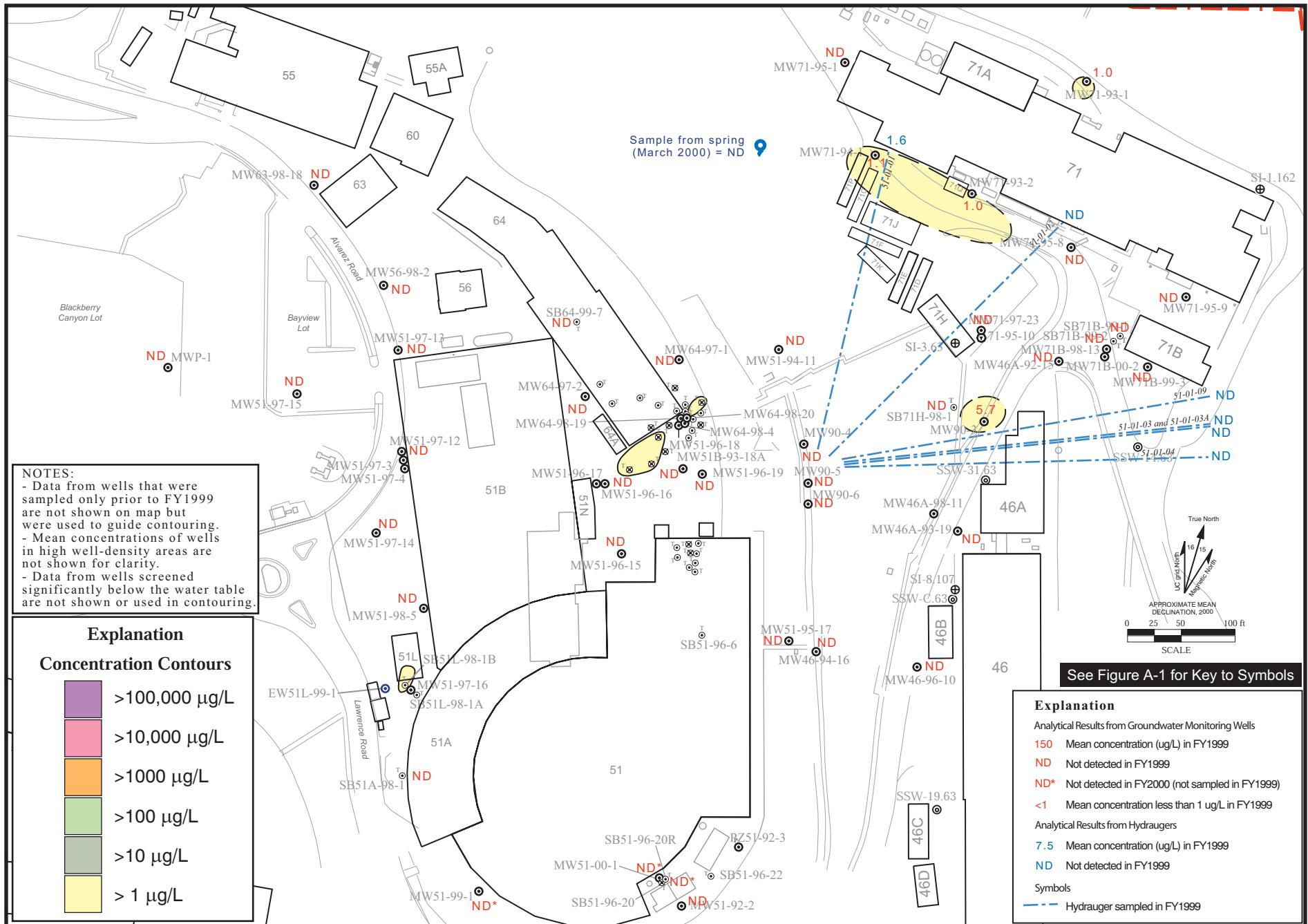


Figure A4.4-11. Isoconcentration Contour Map (Plume Map): Mean Concentrations of Chloroform Near Water Table, Bevalac Area, Fiscal Year 1999.

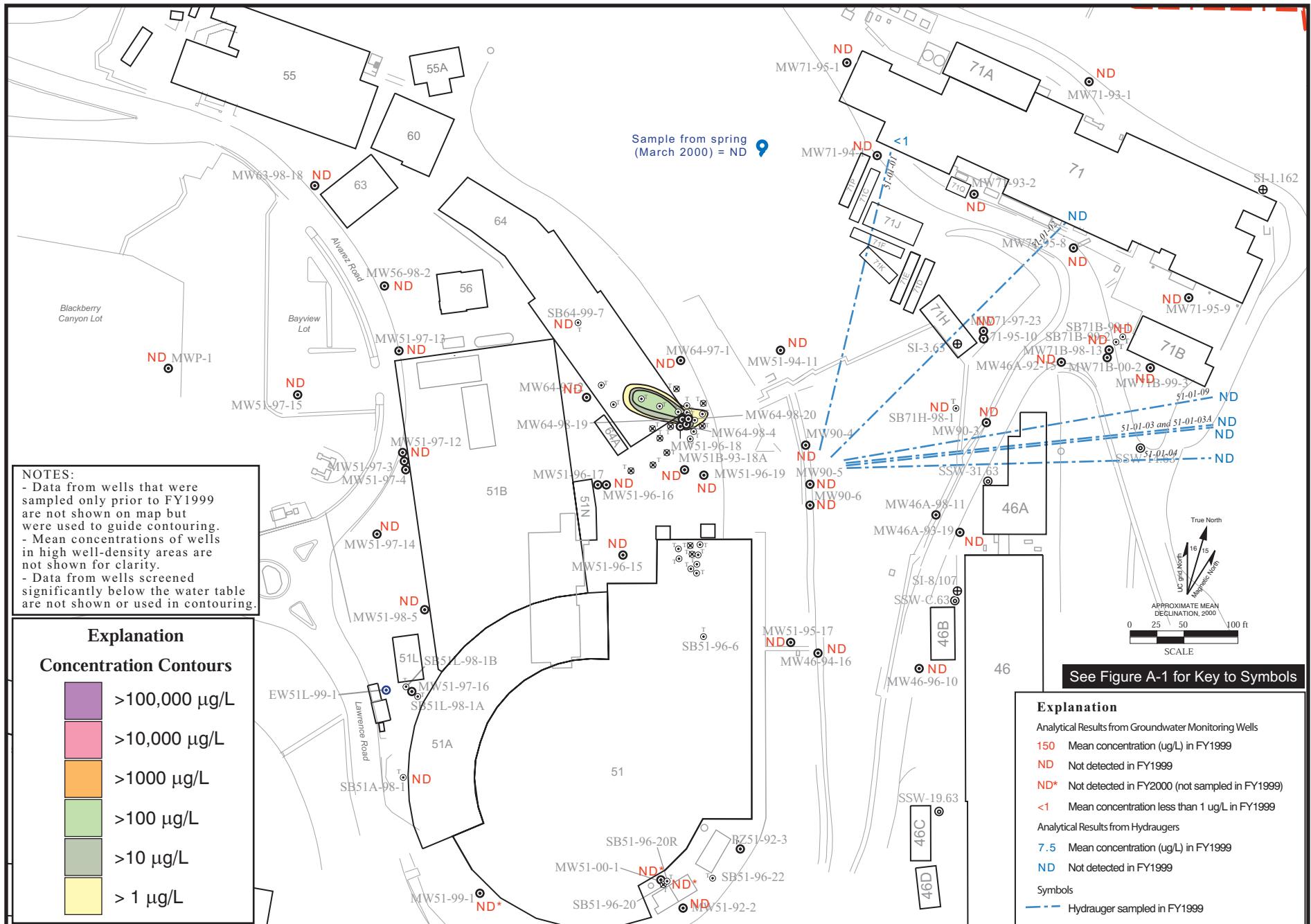


Figure A4.4-12. Isoconcentration Contour Map (Plume Map): Mean Concentrations of Methylene Chloride Near Water Table, Bevalac Area, Fiscal Year 1999.

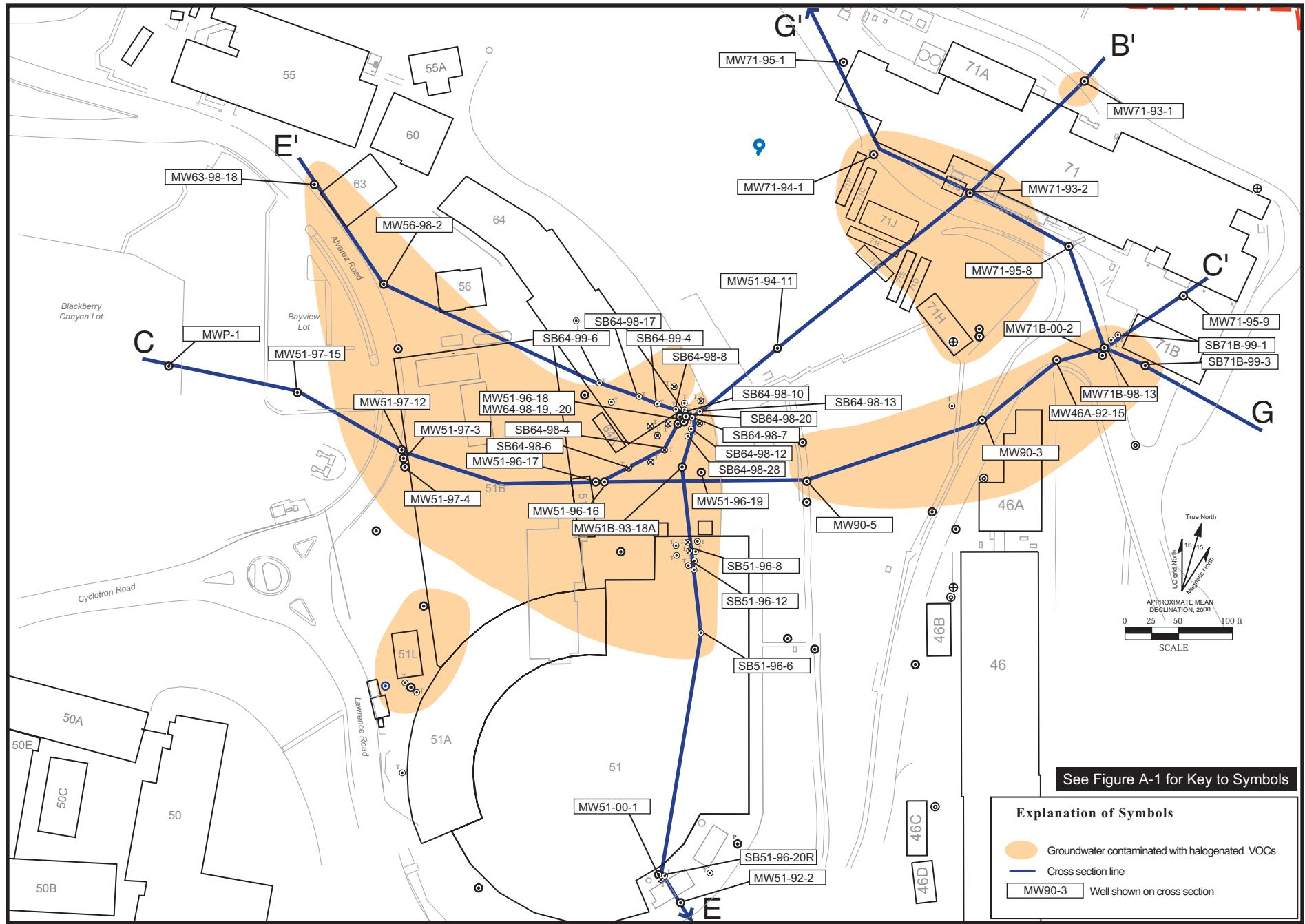
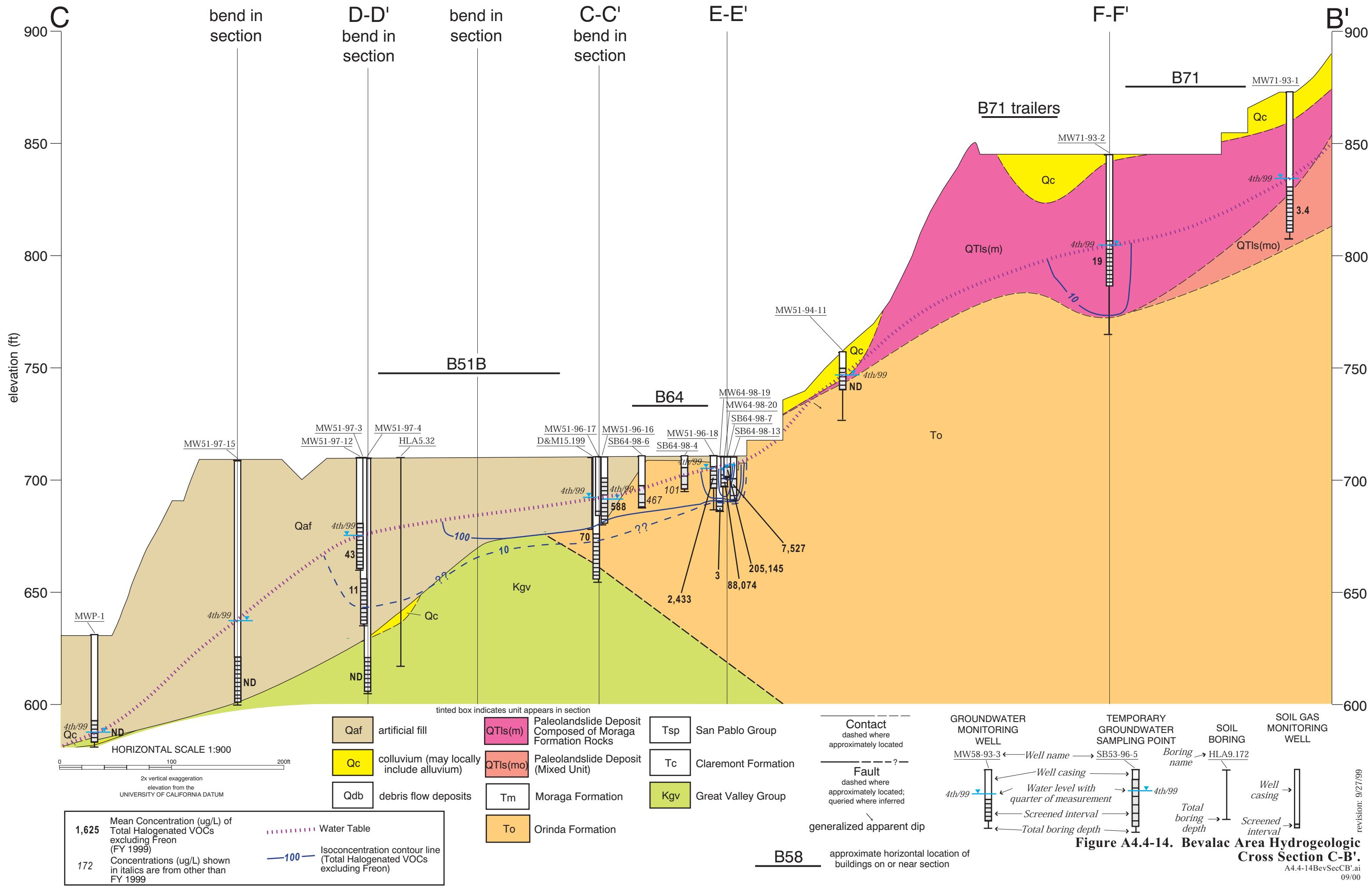


Figure A4.4-13. Cross Section Index Map of the Bevalac Area.



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approximate horizontal location of buildings on or near section

Figure A4.4-14. Bevalac Area Hydrogeologic Cross Section C-B'.
A4.4-14BevSecCB'.ai
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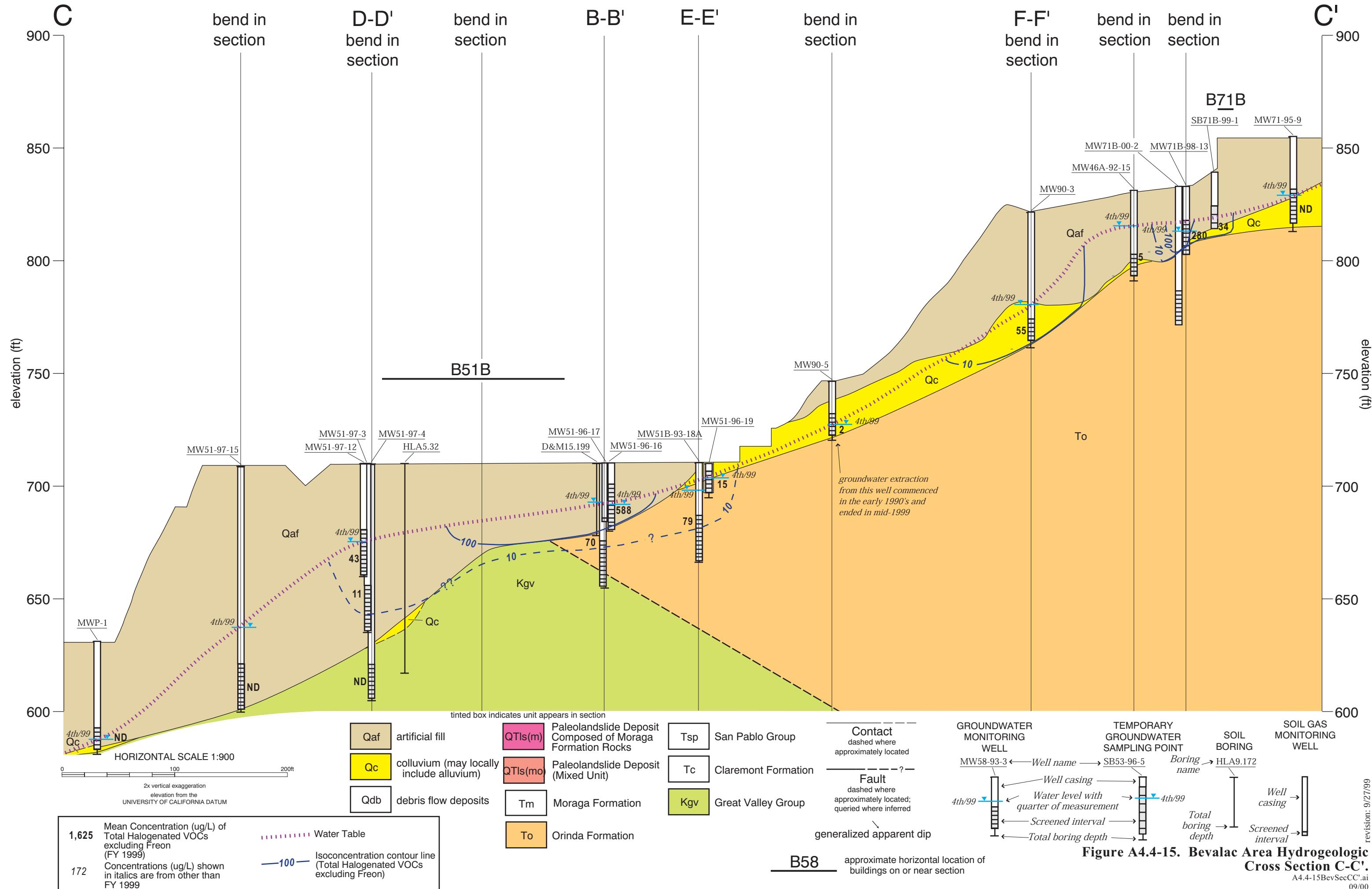
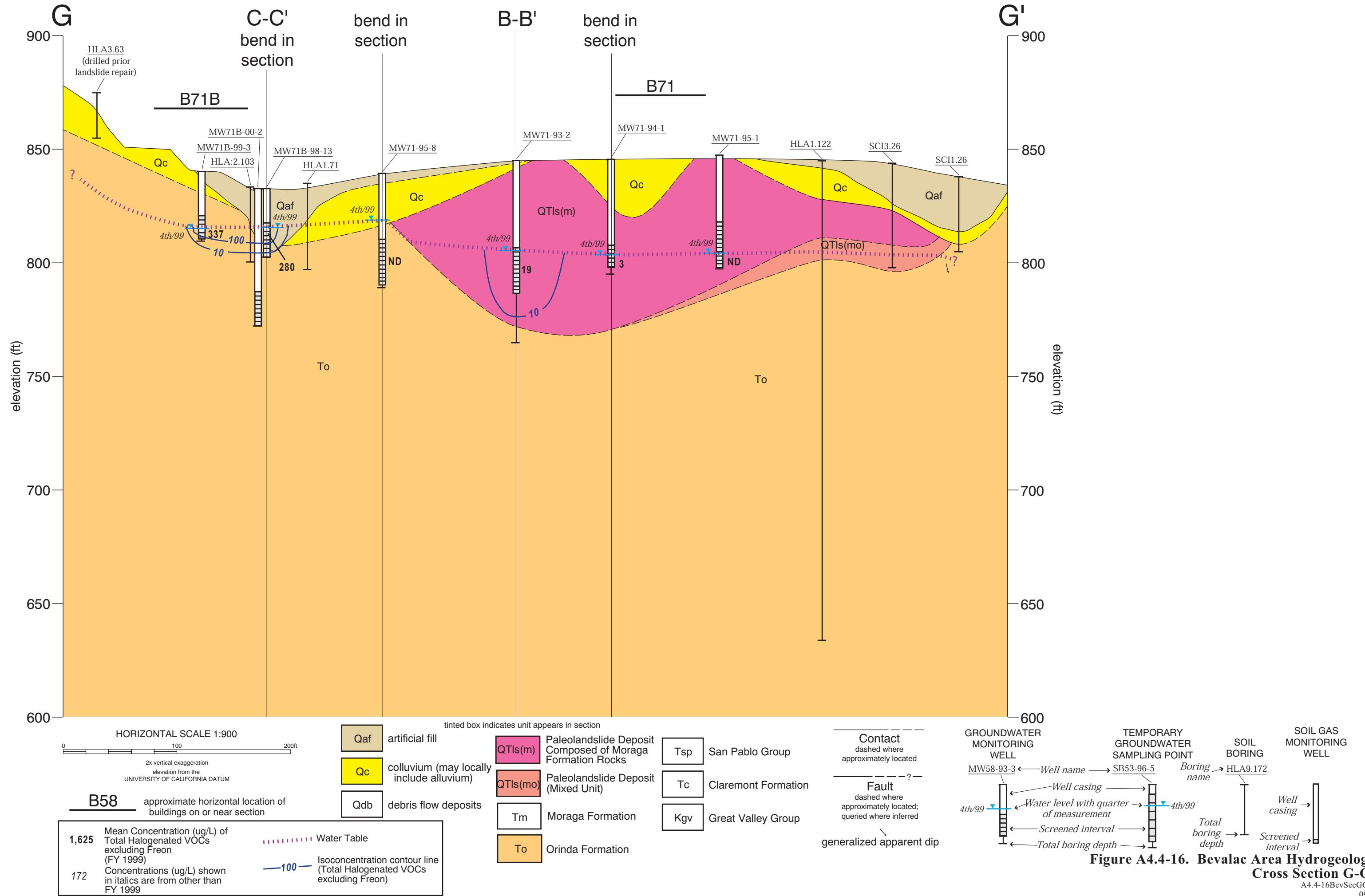


Figure A4.4-15. Bevalac Area Hydrogeologic Cross Section C-C'.
A4.4-15BevSecCC'.ai
09/00



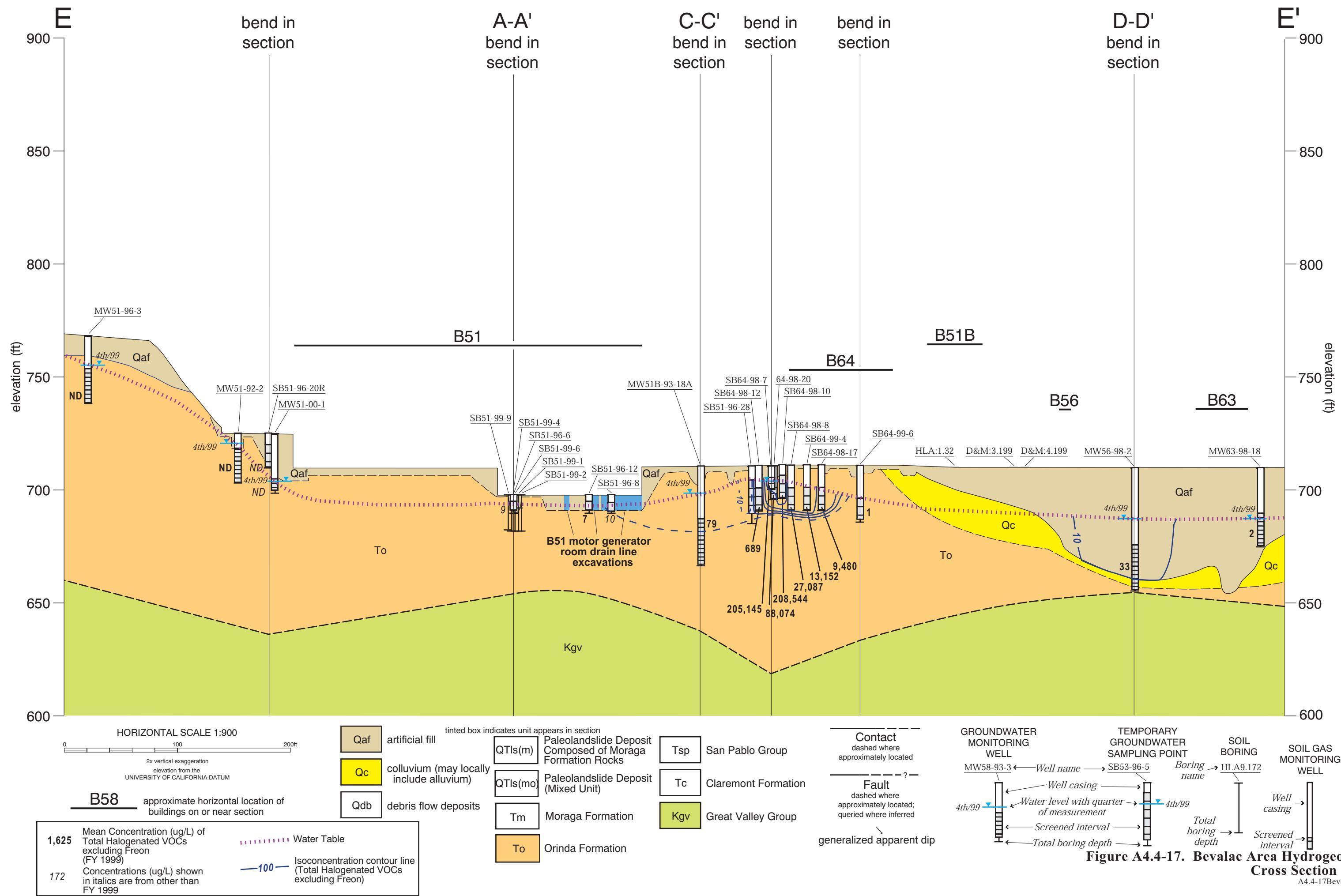


Figure A4.4-17. Bevalac Area Hydrogeologic Cross Section E-E'.
A4.4-17BevSecEE'.ai

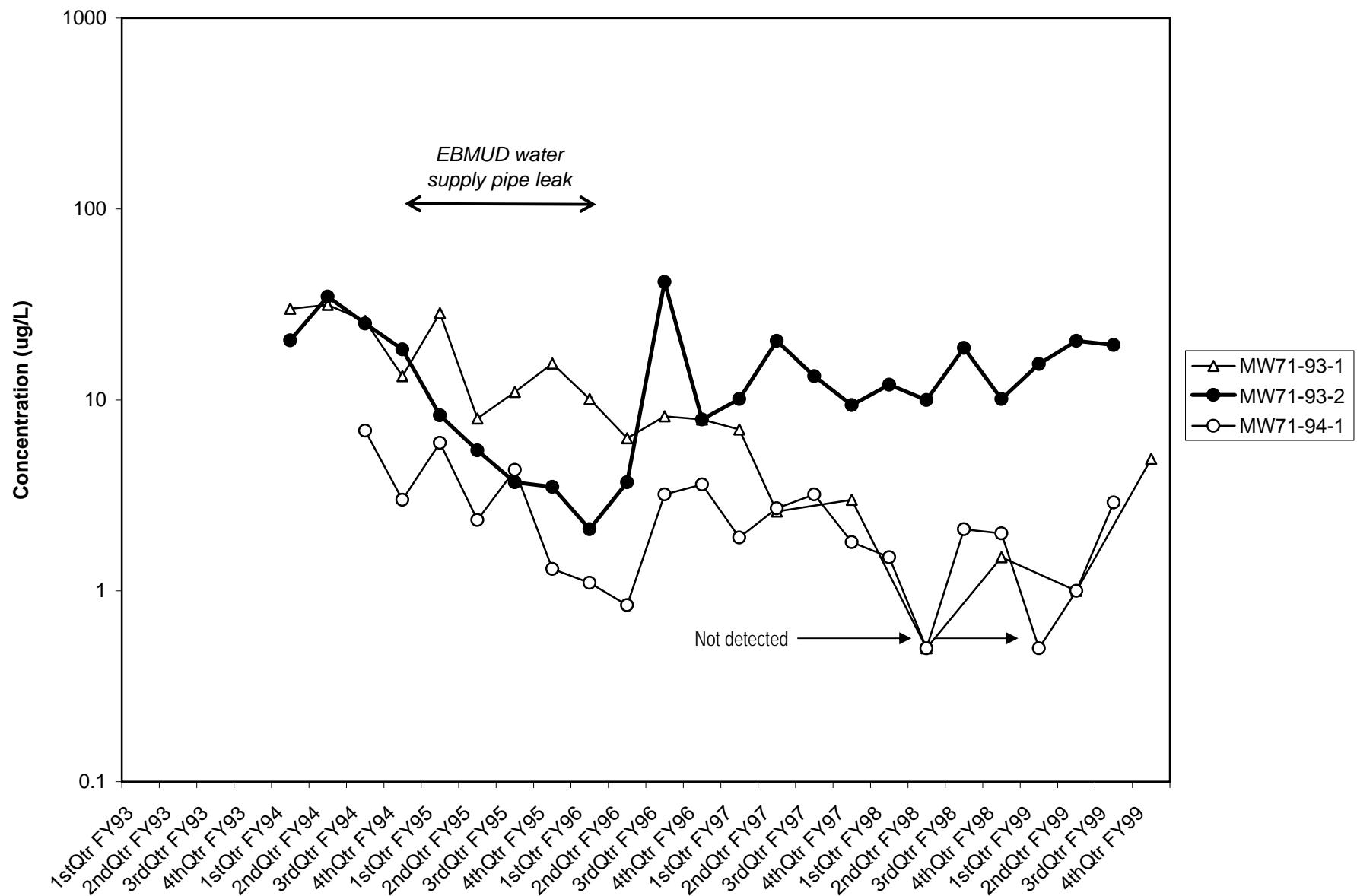


Figure A4.4-18. Concentrations of Halogenated VOCs (Excluding Freon Compounds, Chloroform, and Bromodichloromethane) in Selected Wells Monitoring Building 71 Groundwater Solvent Plume (Building 71 Lobe).

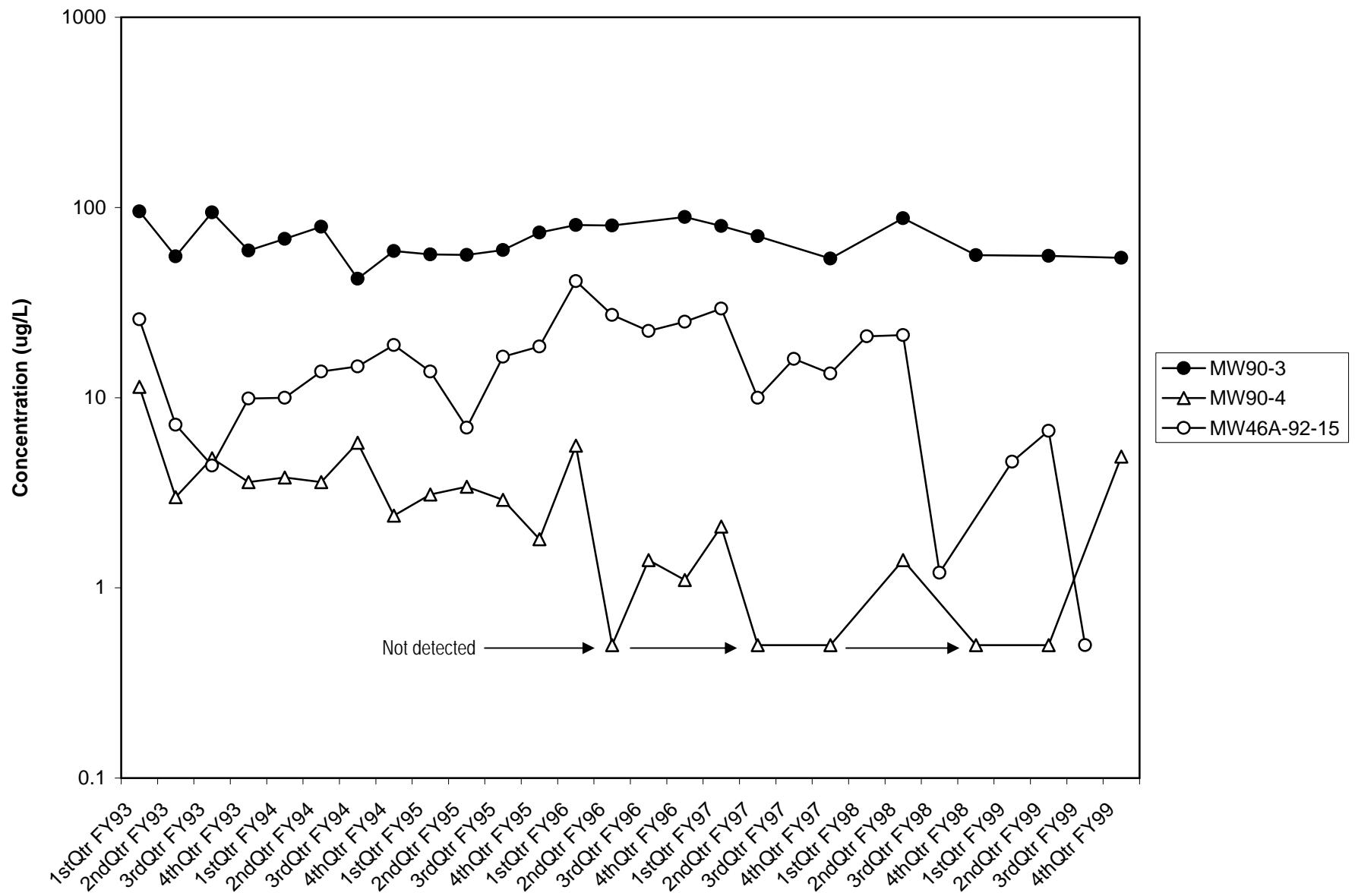


Figure A4.4-19. Concentrations of Halogenated VOCs (Excluding Freon Compounds) in Selected Wells Monitoring Building 71 Groundwater Solvent Plume (Building 71B Lobe).

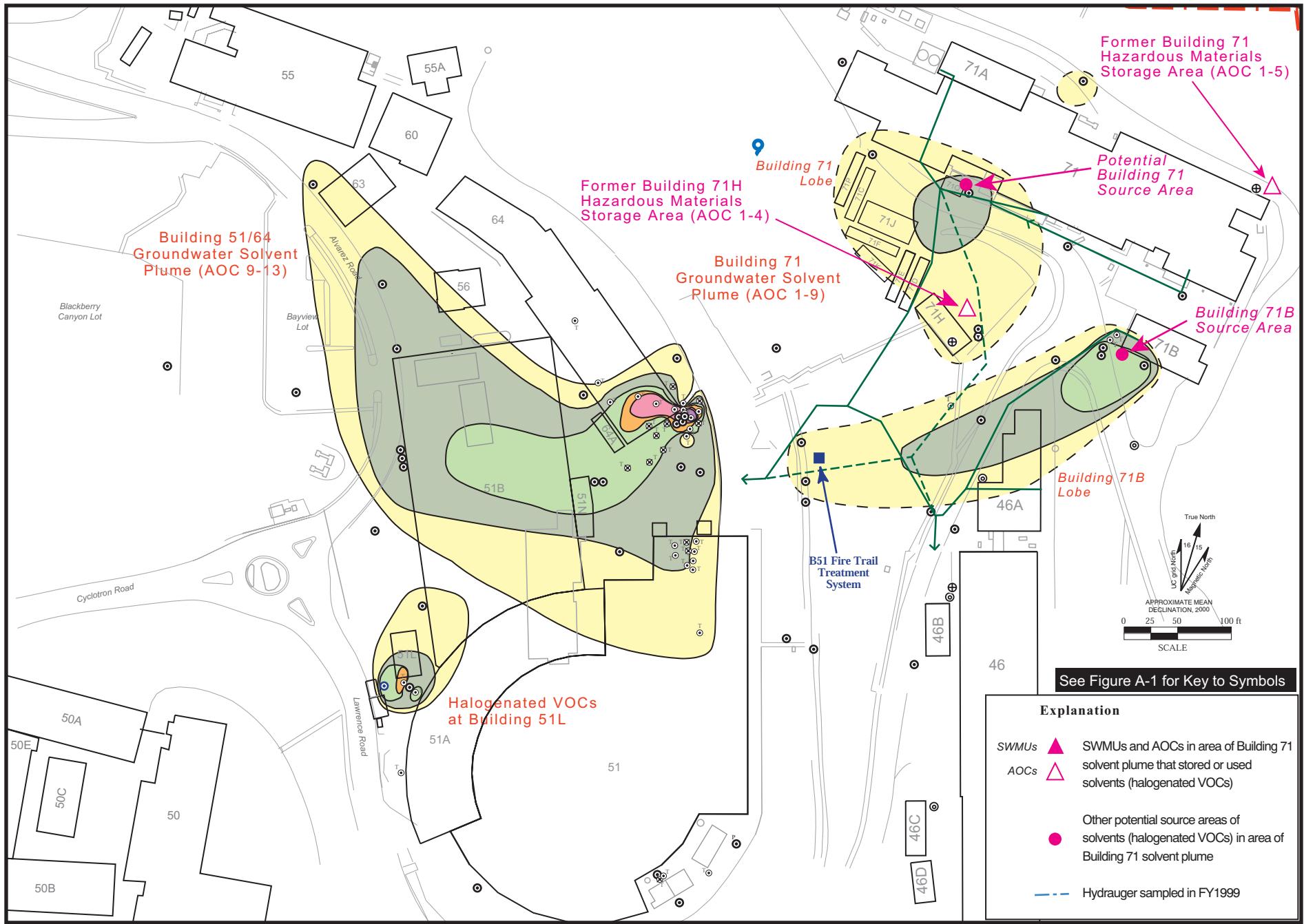


Figure A4.4-20. Isoconcentration Contour Map (Plume Map): Mean Concentrations of Total Halogenated VOCs (Excluding Freon Compounds) (FY1999) Near Water Table in Bevalac Area, With Potential Source Areas for the Building 71 Solvent Plume.

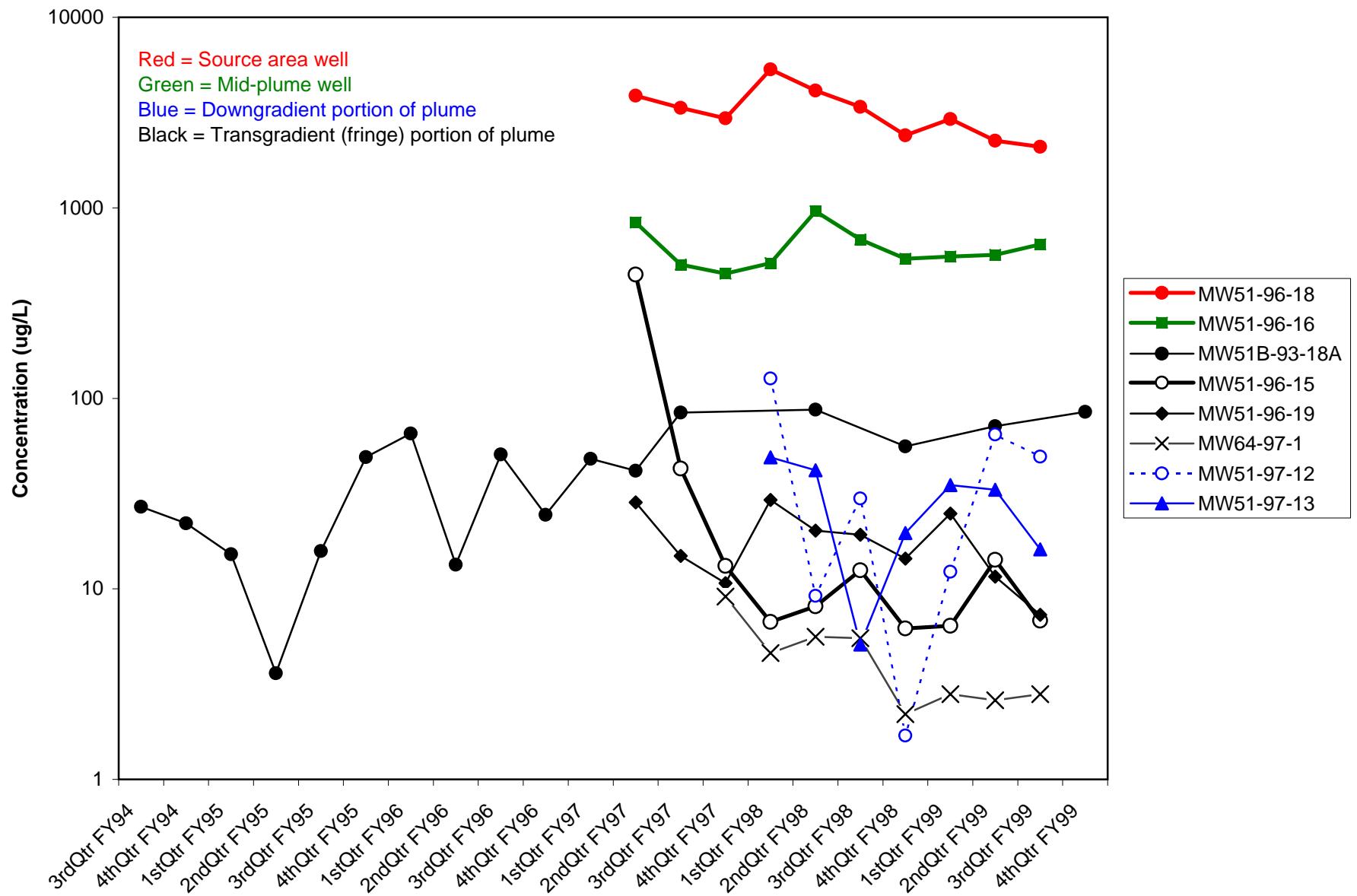


Figure A4.4-21. Concentrations of Halogenated VOCs (Excluding Freon Compounds) in Selected Wells Monitoring Building 51/64 Groundwater Solvent Plume (AOC 9-13).

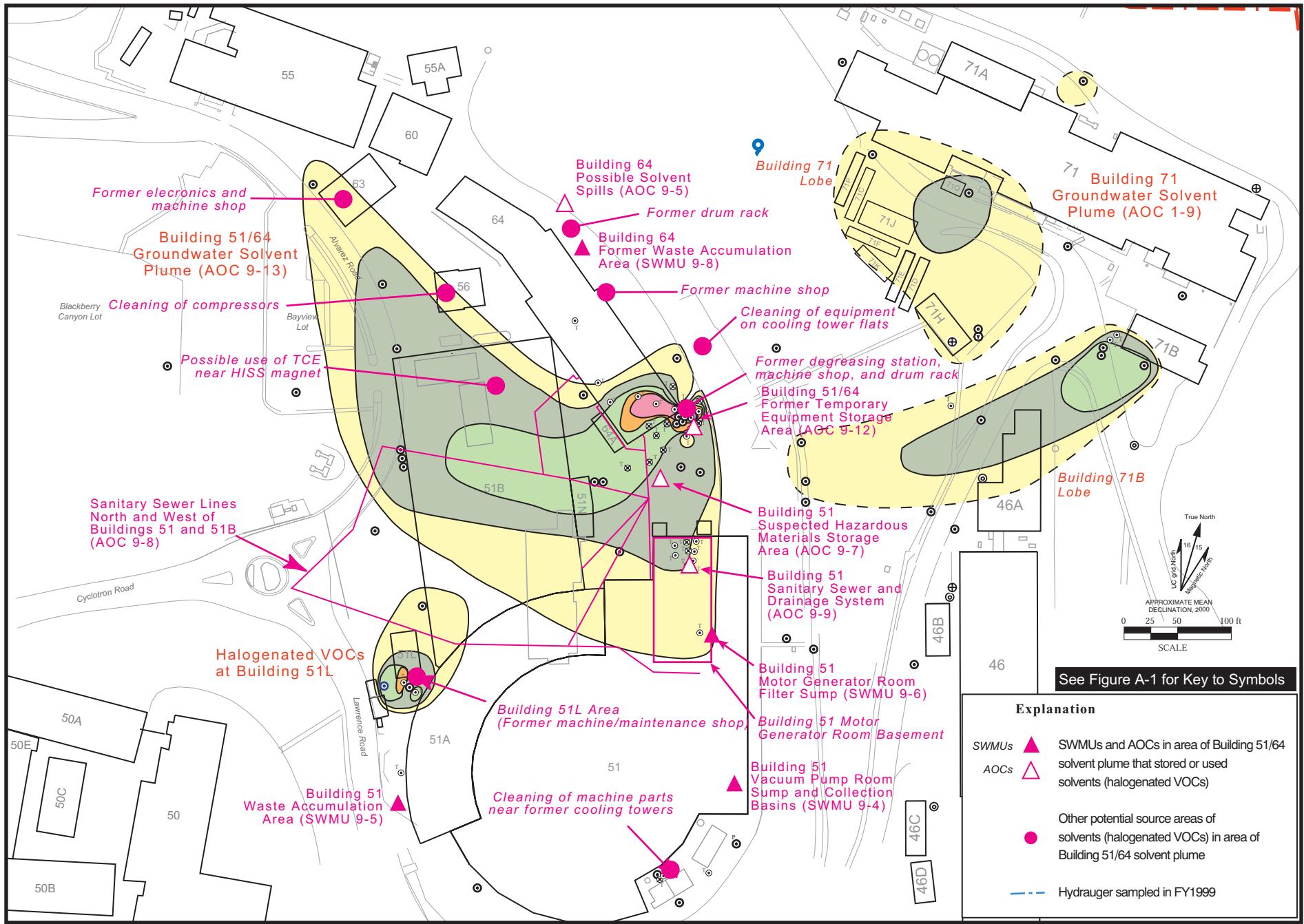


Figure A4.4-22. Isoconcentration Contour Map (Plume Map): Mean Concentrations of Total Halogenated VOCs (Excluding Freon Compounds) (FY1999) Near Water Table in Bevalac Area, With Potential Source Areas for the Building 51/64 Solvent Plume.

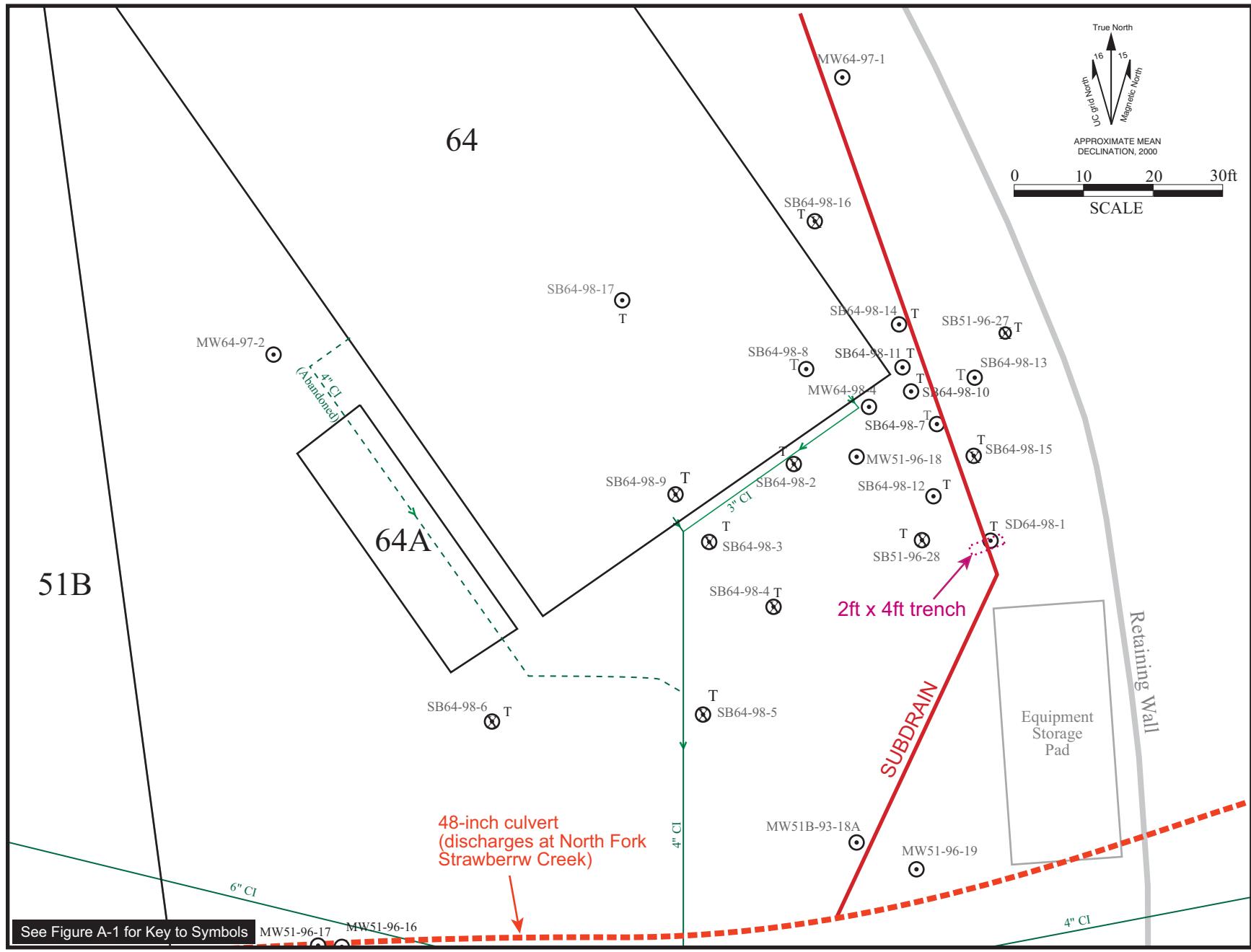


Figure A4.4-23. Location of Building 64 Subdrain.

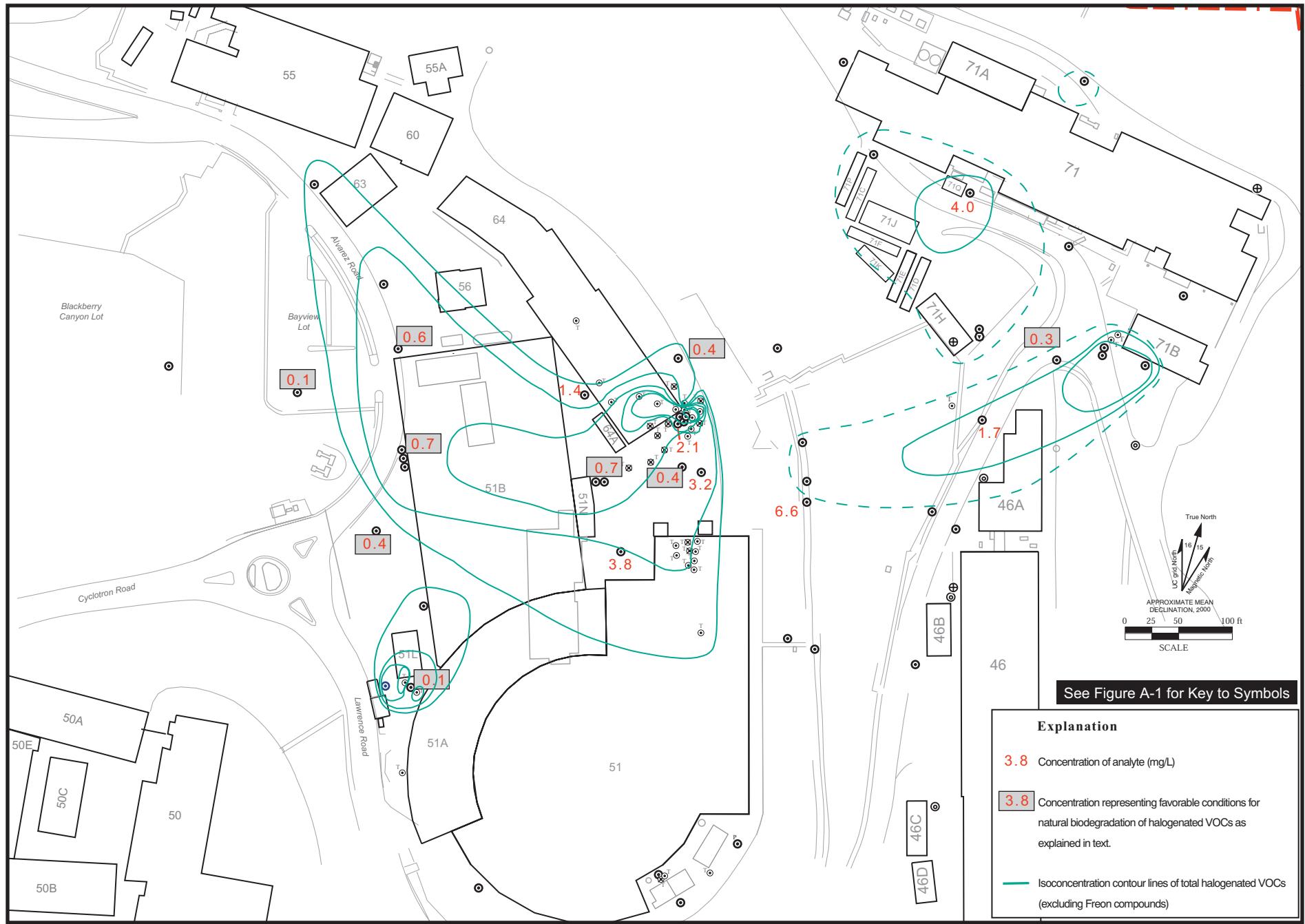


Figure A4.4-24. Dissolved Oxygen (DO) in Groundwater in the Bevalac Area (November-December 1997).

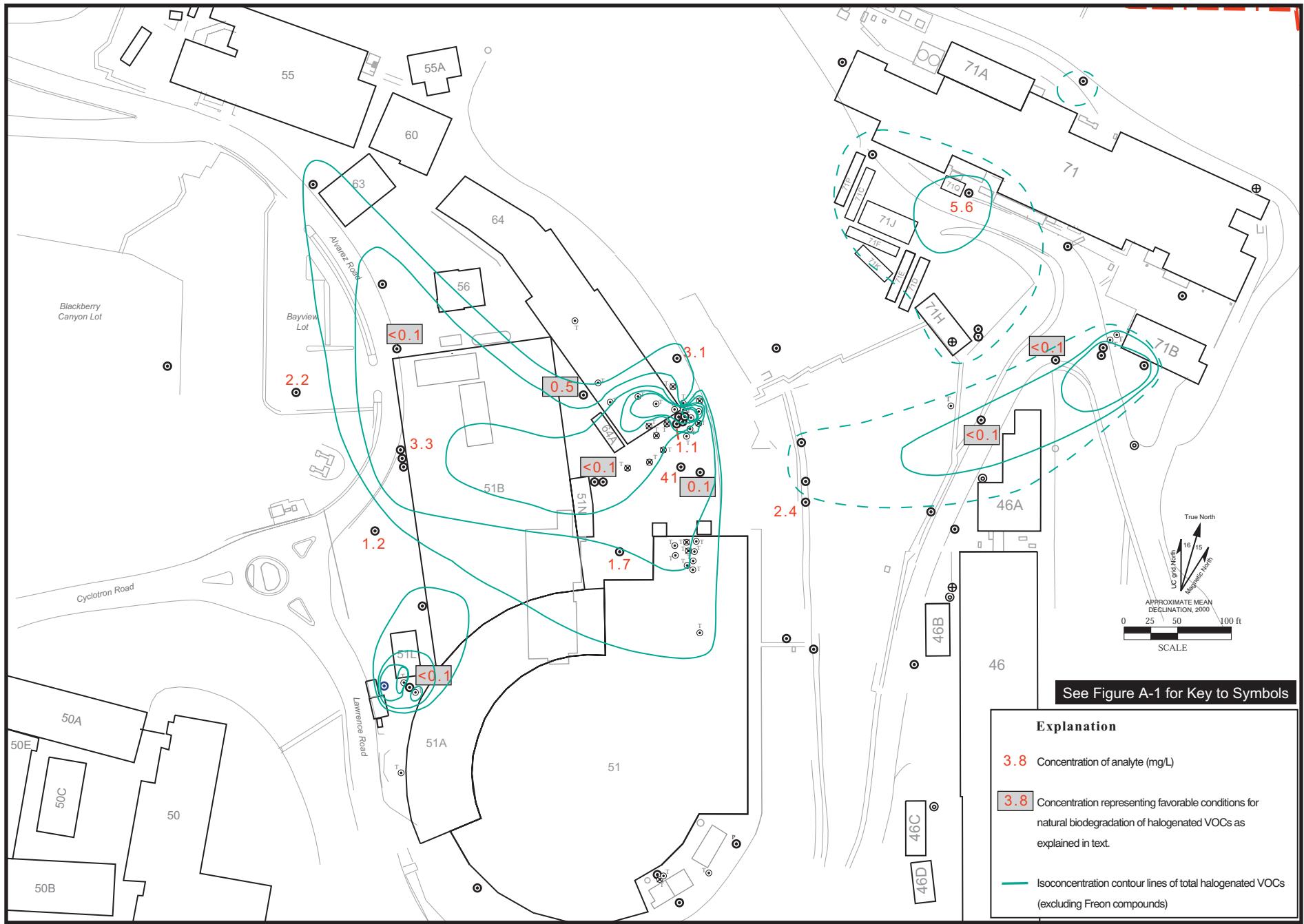


Figure A4.4-25. Nitrate (NO_3^-) in Groundwater in the Bevalac Area (November-December 1997).

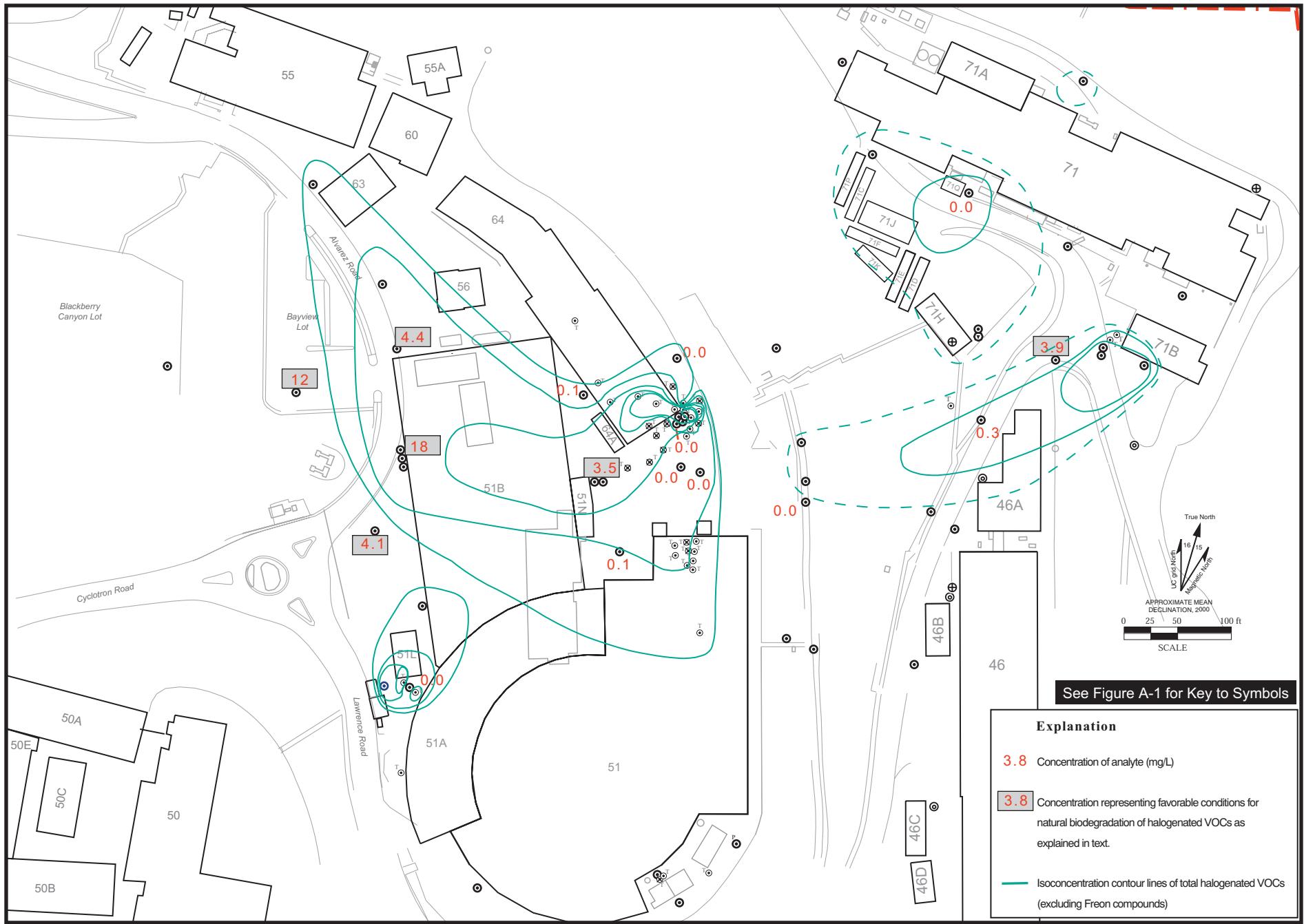


Figure A4.4-26. Divalent Manganese (Mn^{2+}) in Groundwater in the Bevalac Area (November-December 1997).

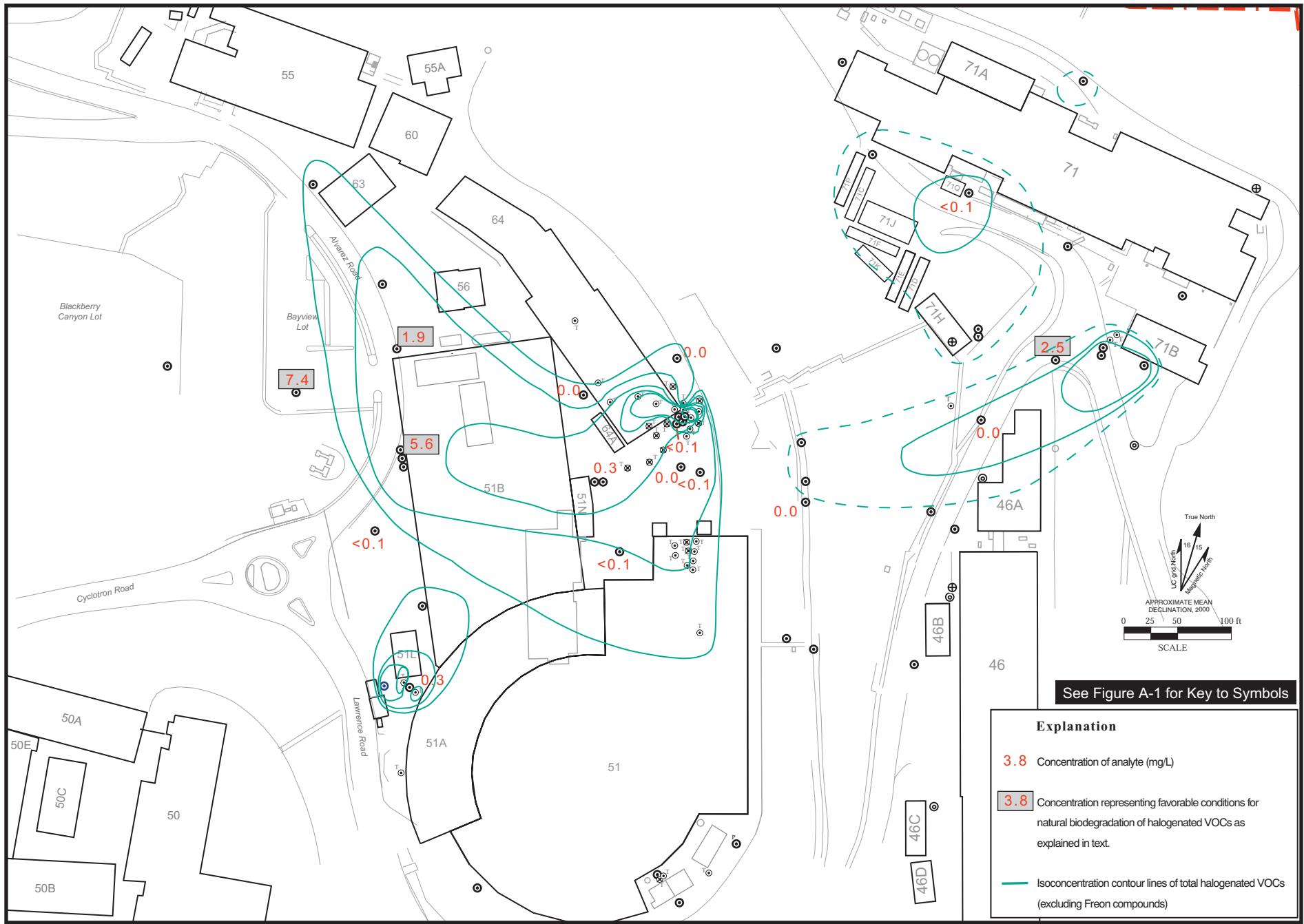


Figure A4.4-27. Ferrous Iron (Fe^{2+}) in Groundwater in the Bevalac Area (November-December 1997).

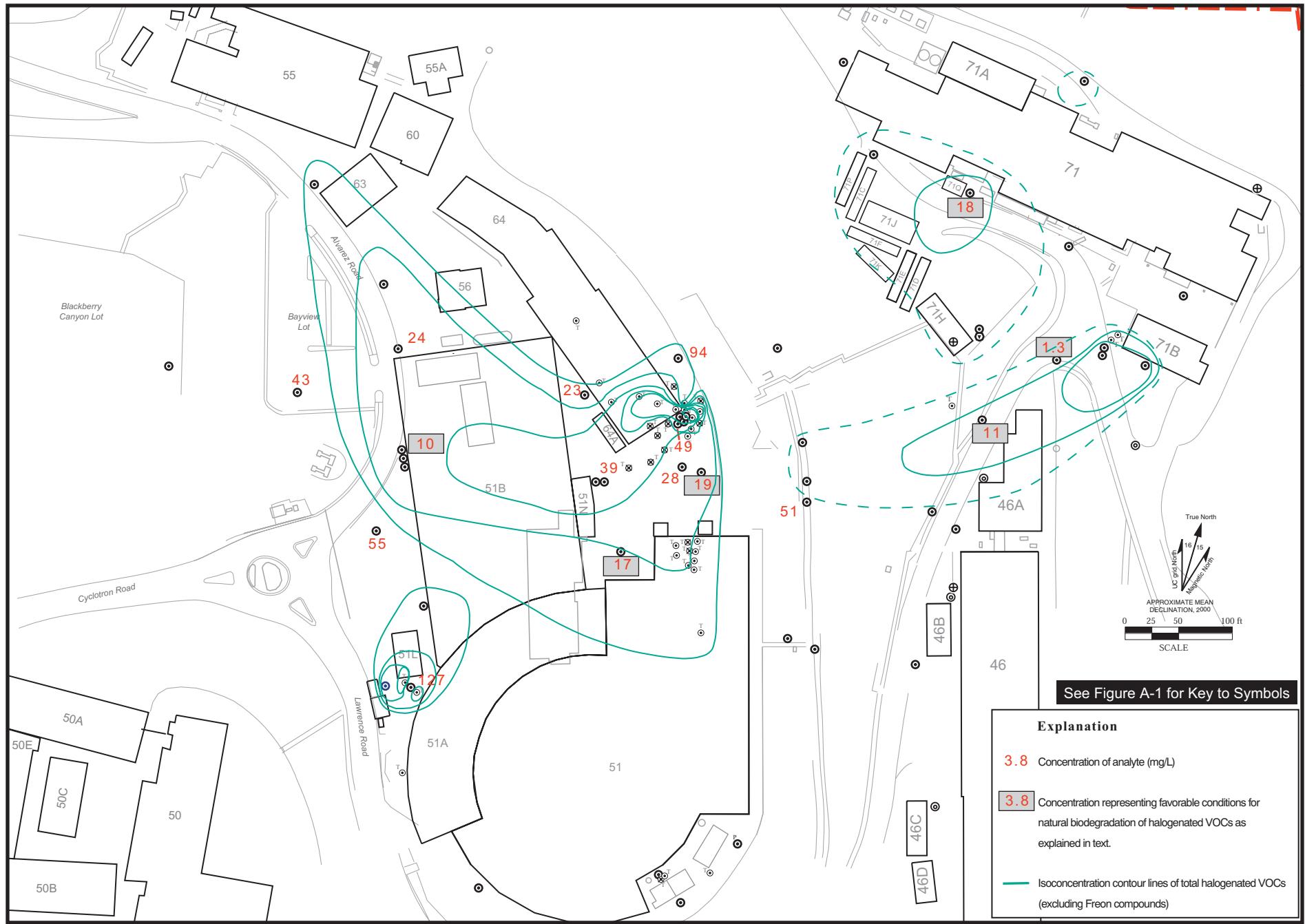


Figure A4.4-28. Sulfate (SO_4) in Groundwater in the Bevalac Area (November-December 1997).

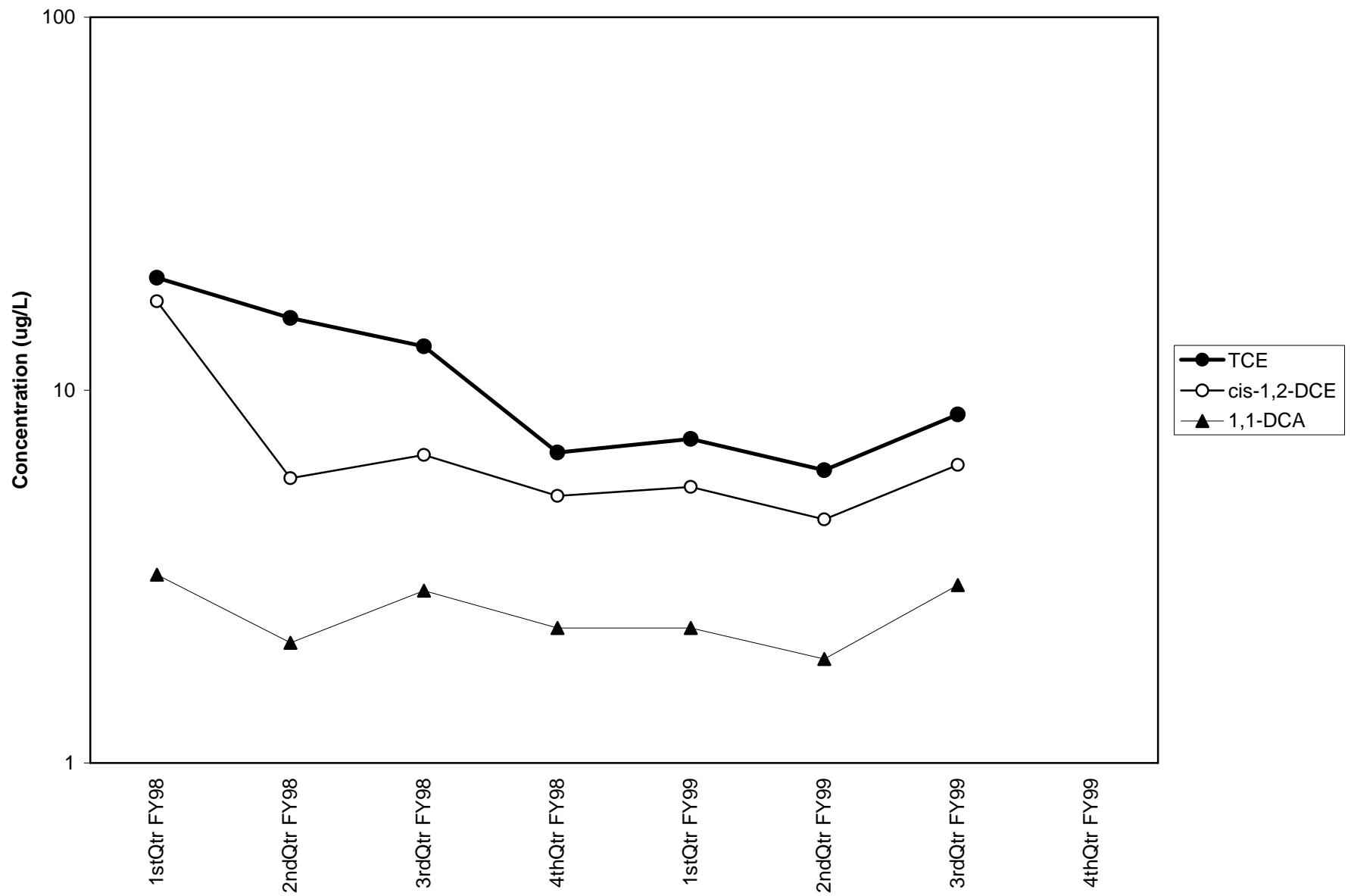


Figure A4.4-29. Concentrations of Selected Halogenated VOCs in MW51-97-16, Building 51L Area Groundwater Contamination.

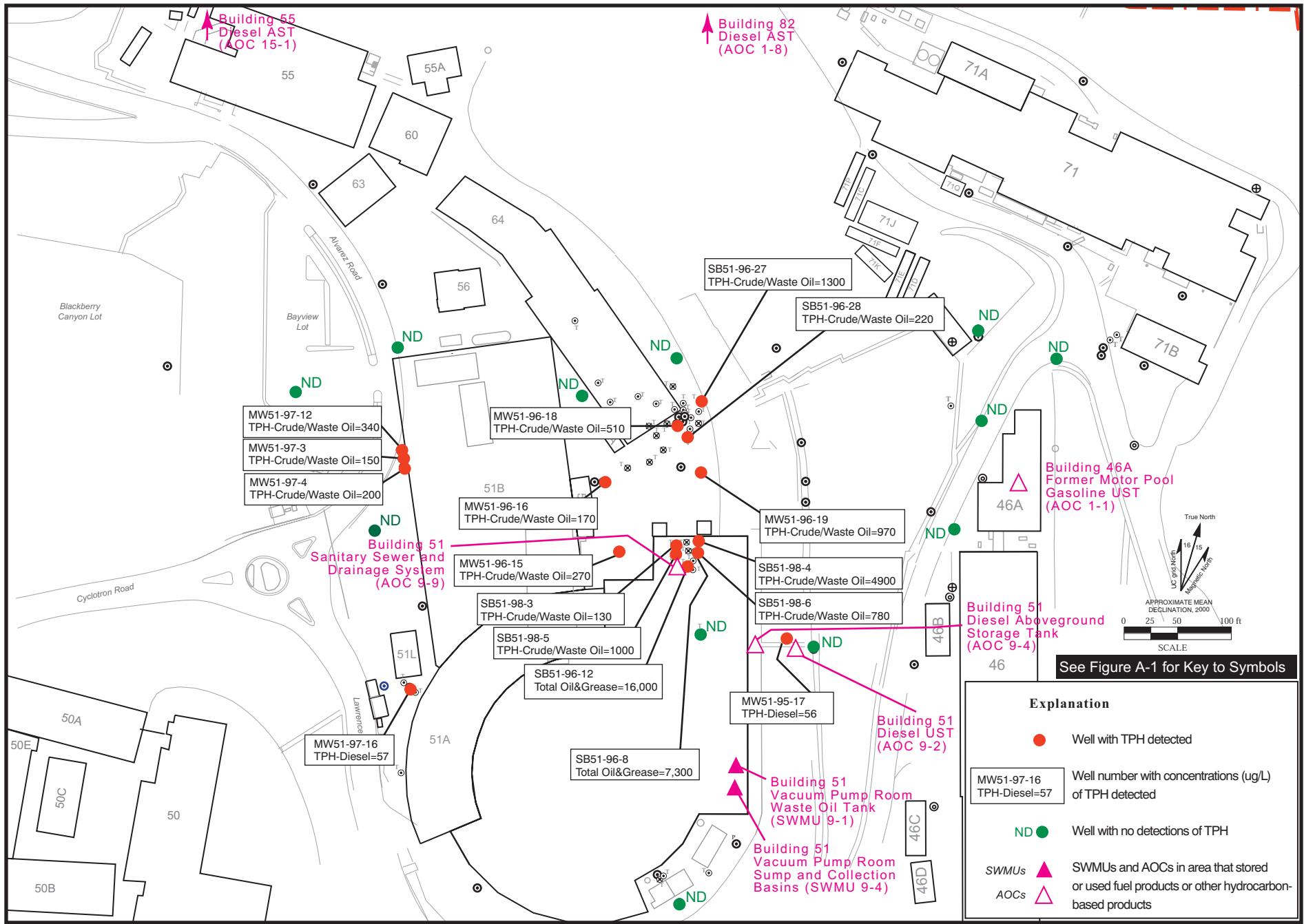


Figure A4.5-1. Maximum Concentrations of TPH Detected in Groundwater in Bevalac Area, With Locations of SWMUs and AOCs That Stored or Used Fuel Products or Other Hydrocarbon-Based Products.

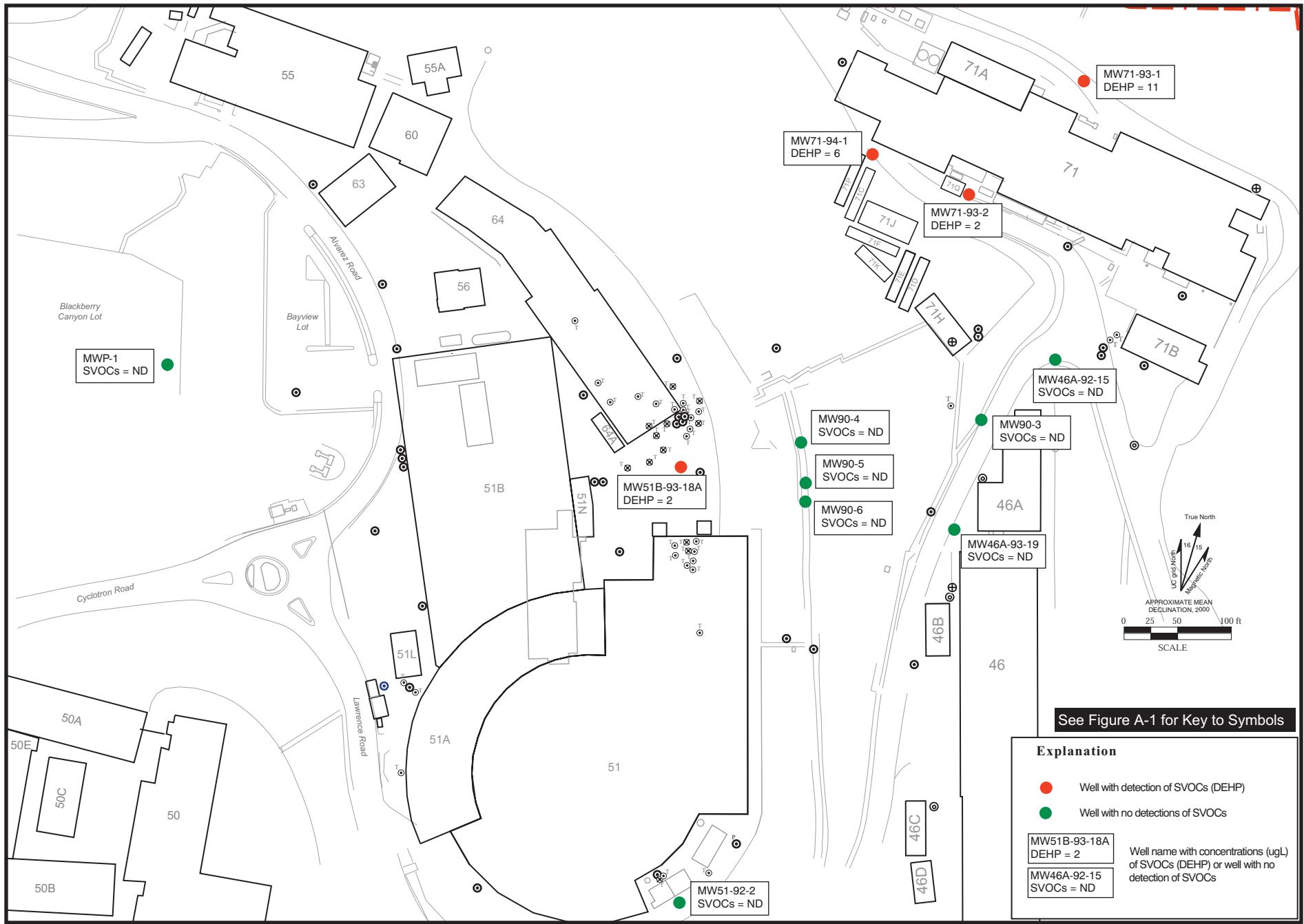


Figure A4.5-2. Maximum Concentrations of SVOCs Detected in Groundwater in Bevalac Area.

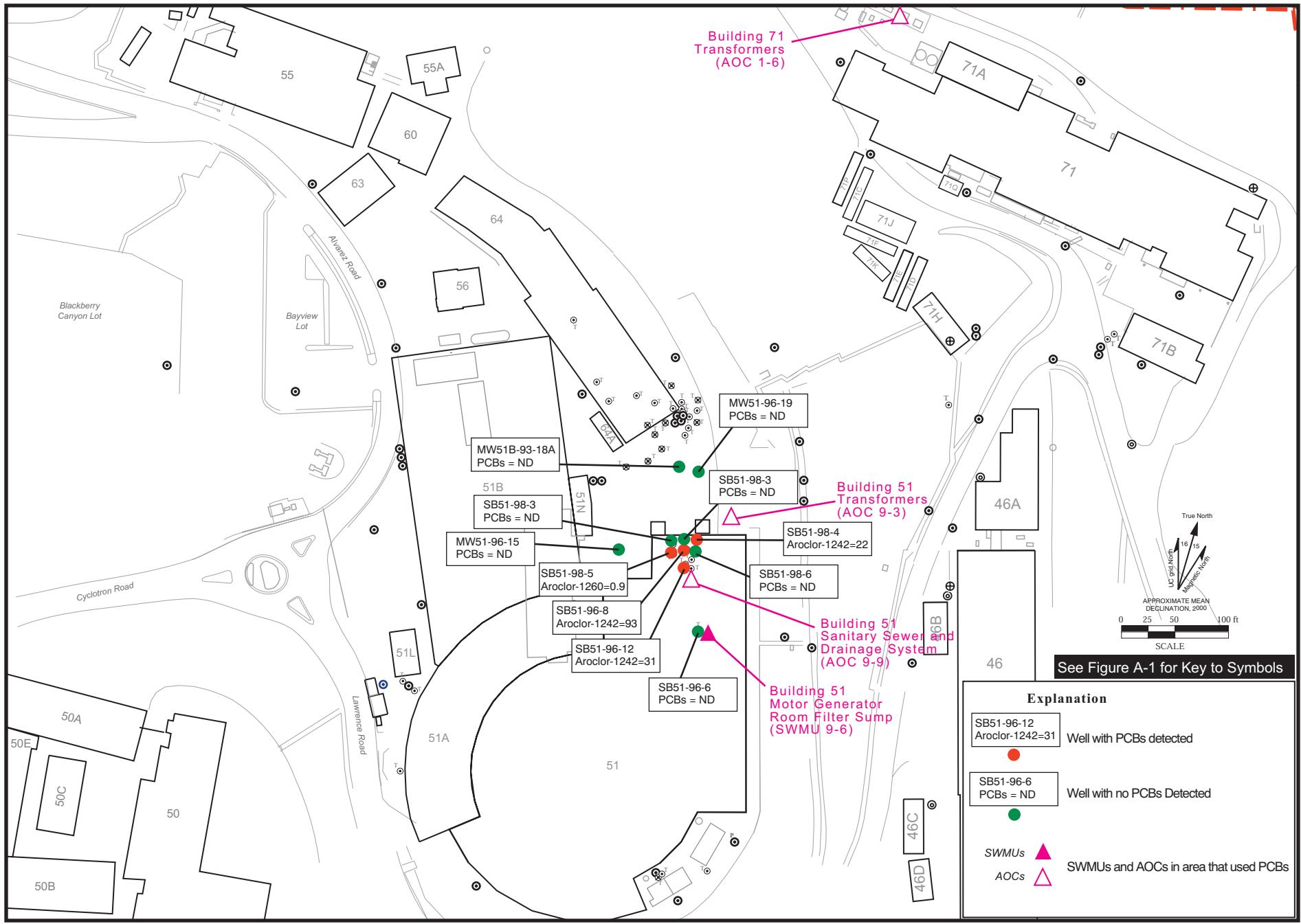


Figure A4.5-3a. Maximum Concentrations of PCBs Detected in Groundwater in Bevalac Area with Locations of SWMUs and AOCs Having Used PCBs.

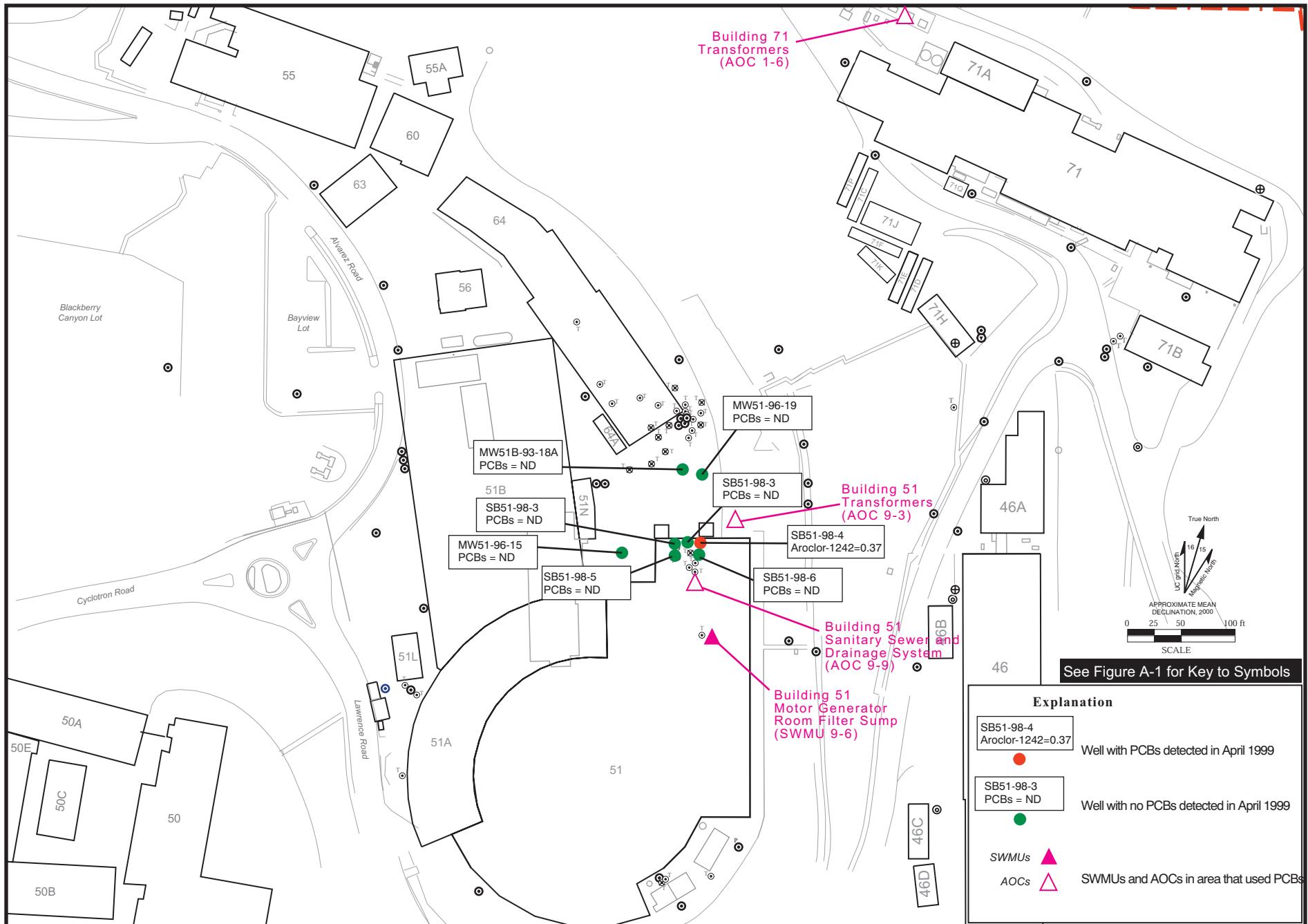


Figure A4.5-3b. Concentrations of PCBs Detected in Groundwater in April 1999 in Bevalac Area with Locations of SWMUs and AOCs Having Used PCBs.

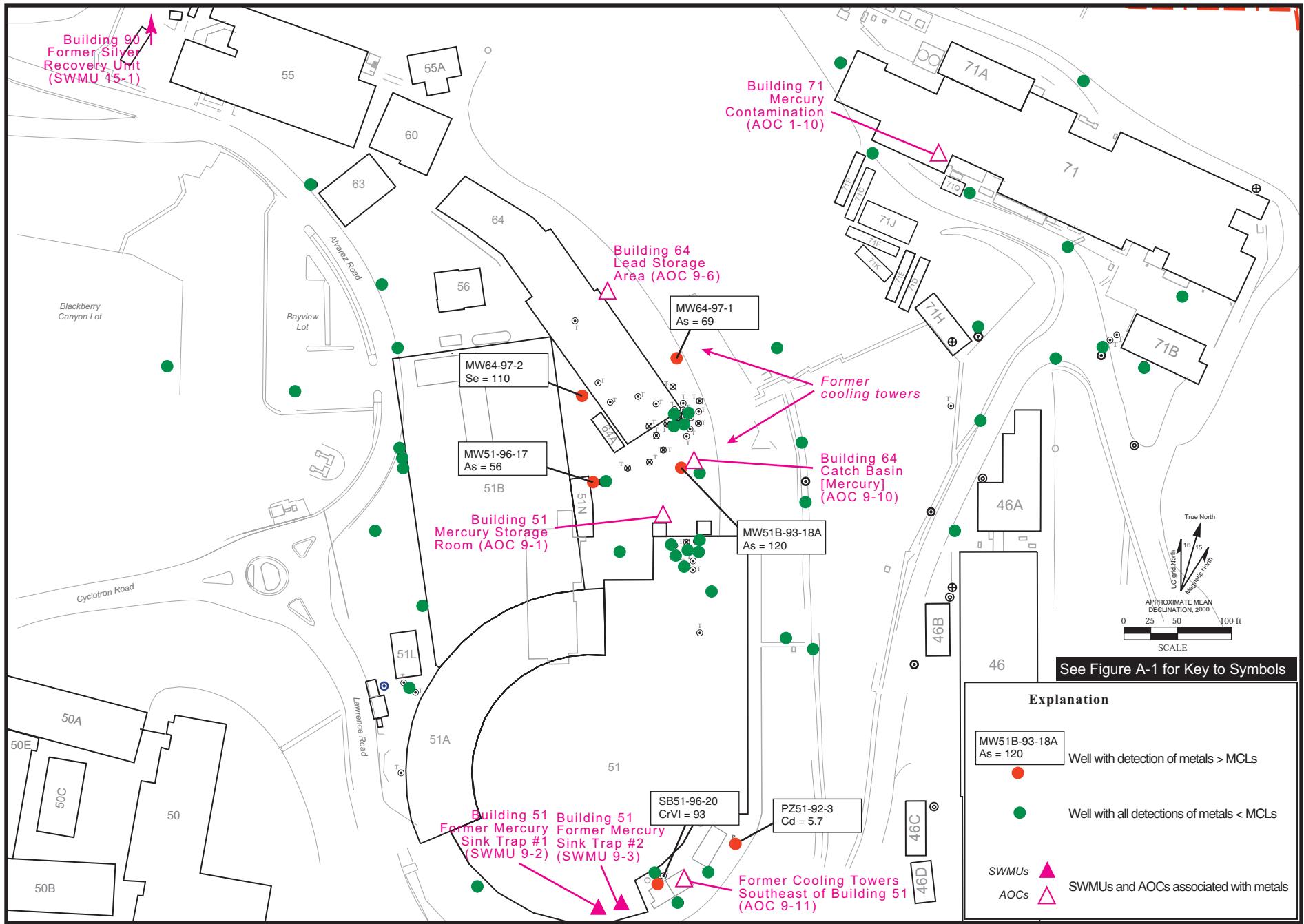


Figure A4.5-4. Maximum Concentrations of Metals Detected in Groundwater Above MCLs in Bevalac Area, With Locations of SWMUs and AOCs and Other Areas Associated With Metals.

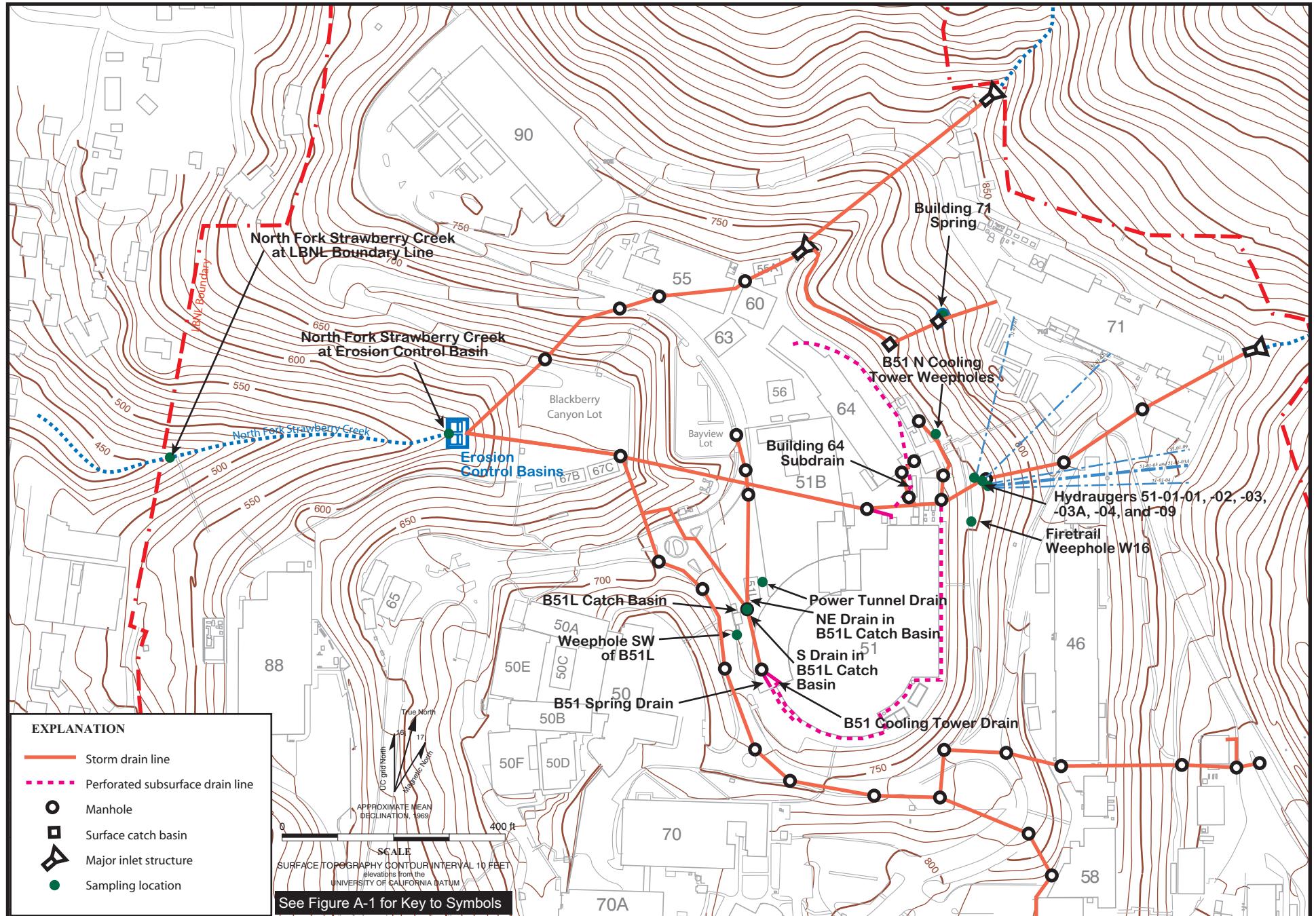


Figure A4.6-1. Surface Water Sampling Locations and Potential Paths of Groundwater Contamination to Surface Water via Storm Drain System in Bevalac Area.

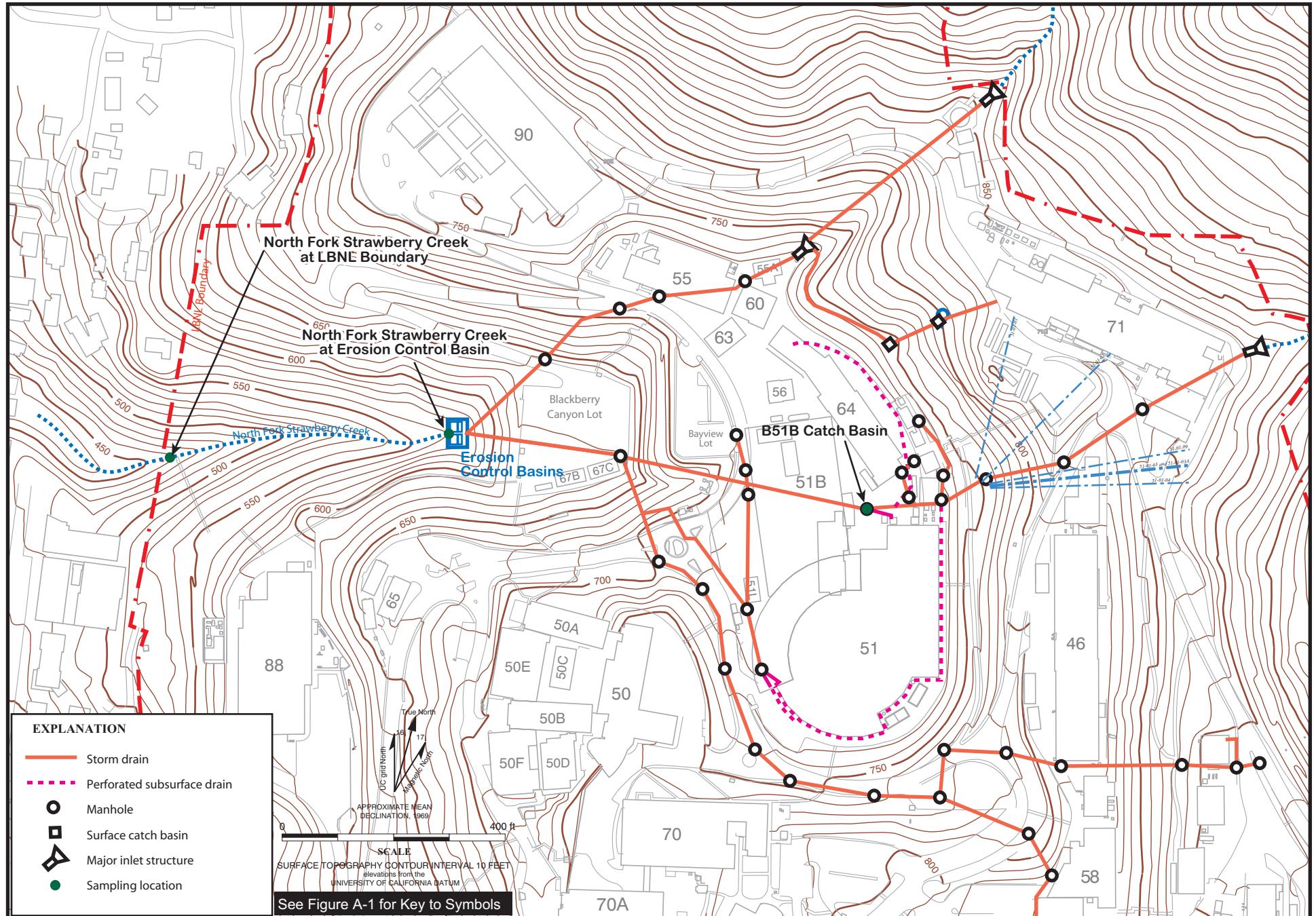


Figure A4.6-2. Sediment Sampling Locations and Potential Paths of Groundwater Contamination to Surface Water via Storm Drain System in Bevalac Area.

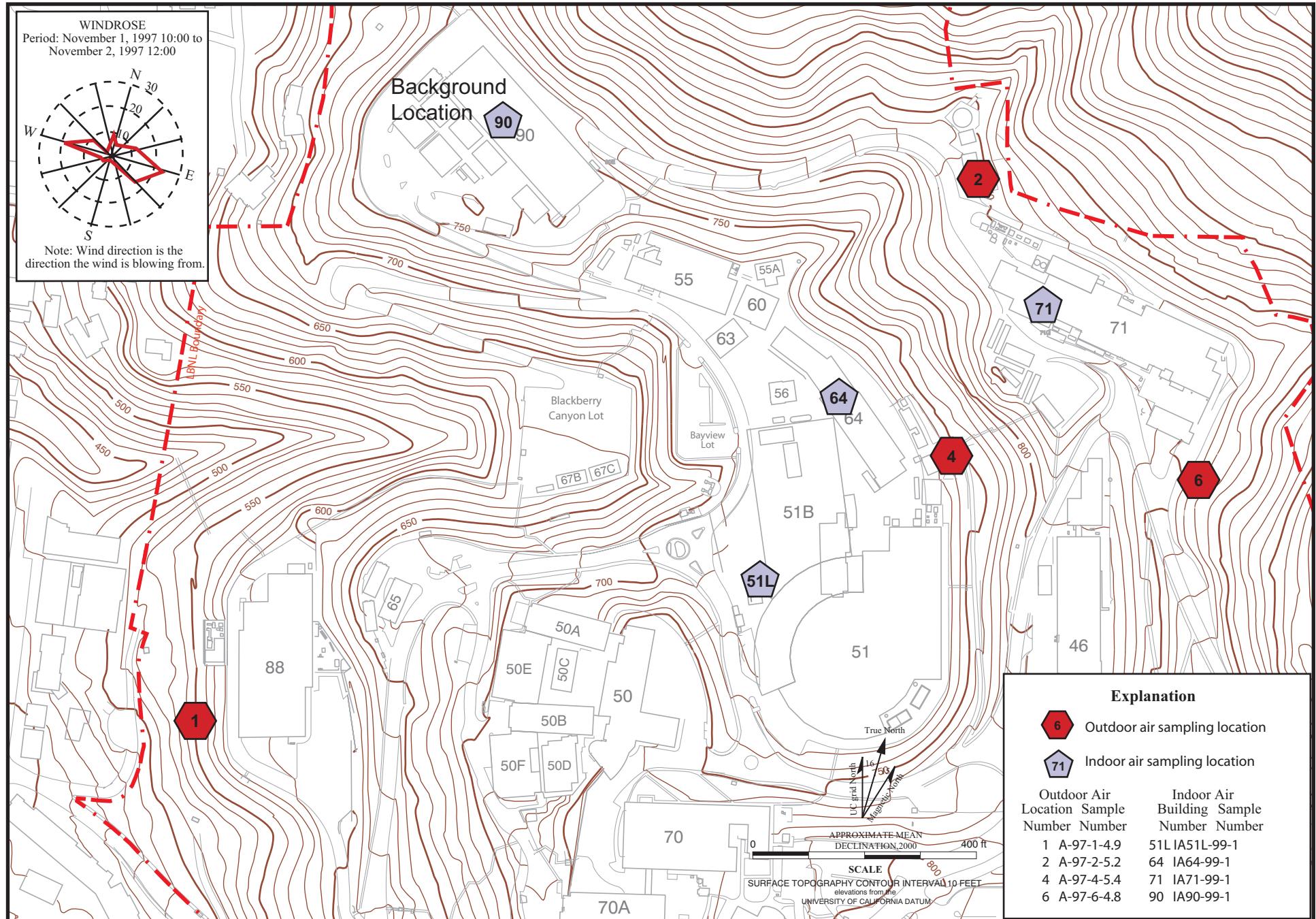


Figure A5.1-1. Indoor and Outdoor Air Sampling Locations.