Woodward-Clyde Consultants

QUENDALL TERMINALS

SITE INVESTIGATION (1983)

Presented to:

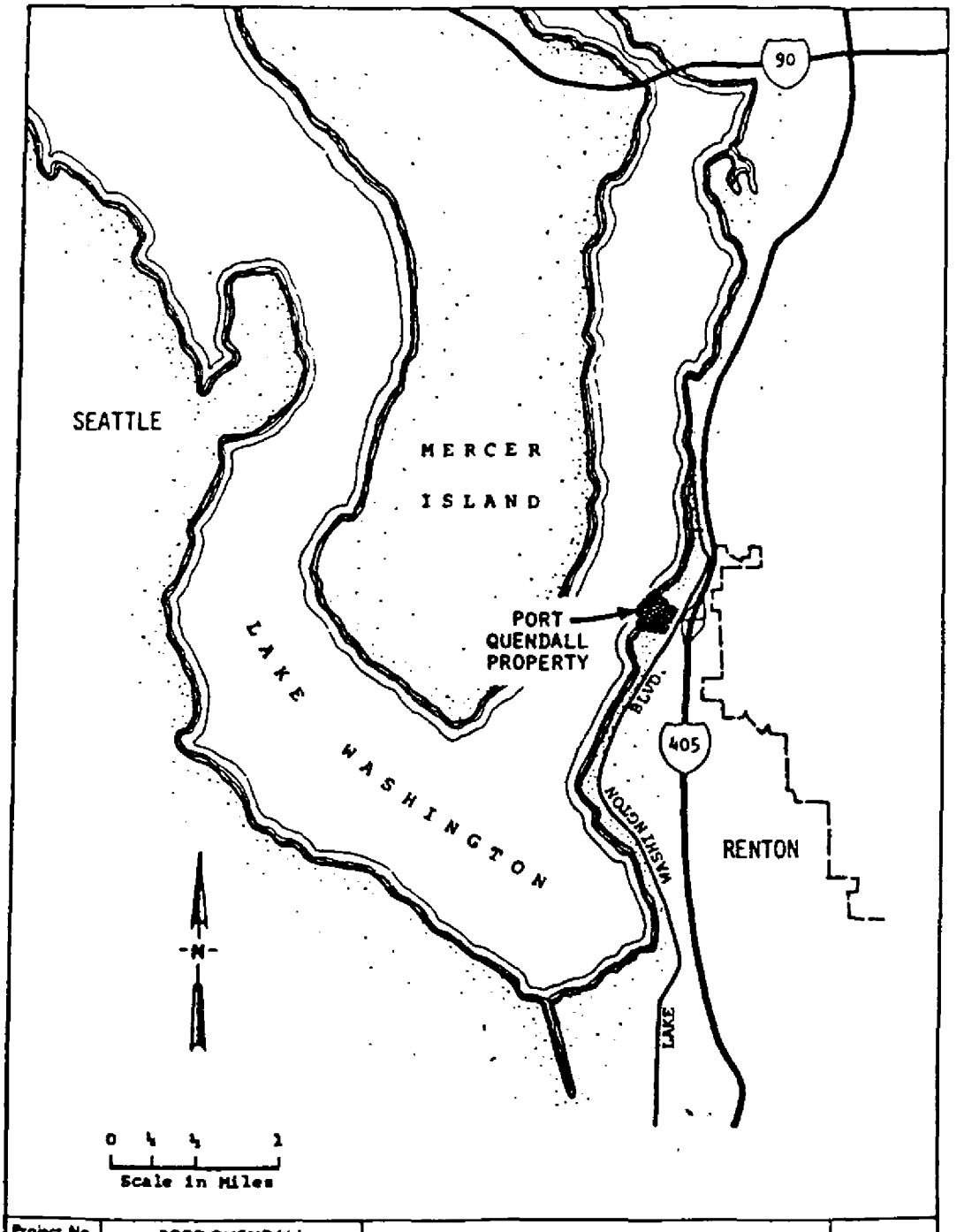
Washington Department of Ecology

October 9, 1986

878600

SCOPE OF INVESTIGATION

- Review of available geologic and hydrologic data
- Drilling and sampling of borings
- Monitoring well installation
- Excavation, logging, and sampling of four trenches
- Water sampling and testing
- Laboratory analysis of water and soil samples



Project No. 80029A	PORT QUENDALL Renton, Washington	LOCATION OF PORT QUENDALL PROPERTY	Figure 1
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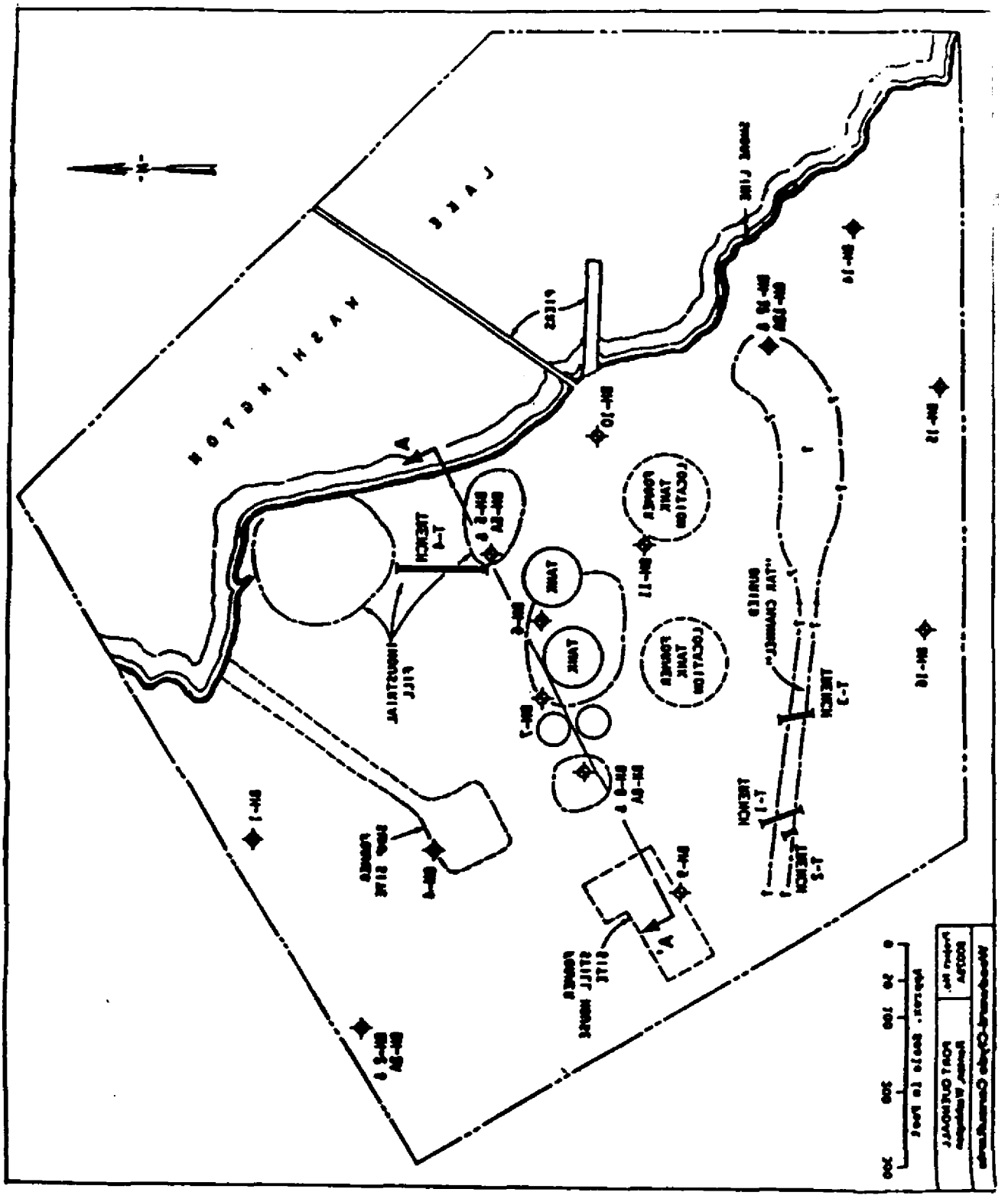

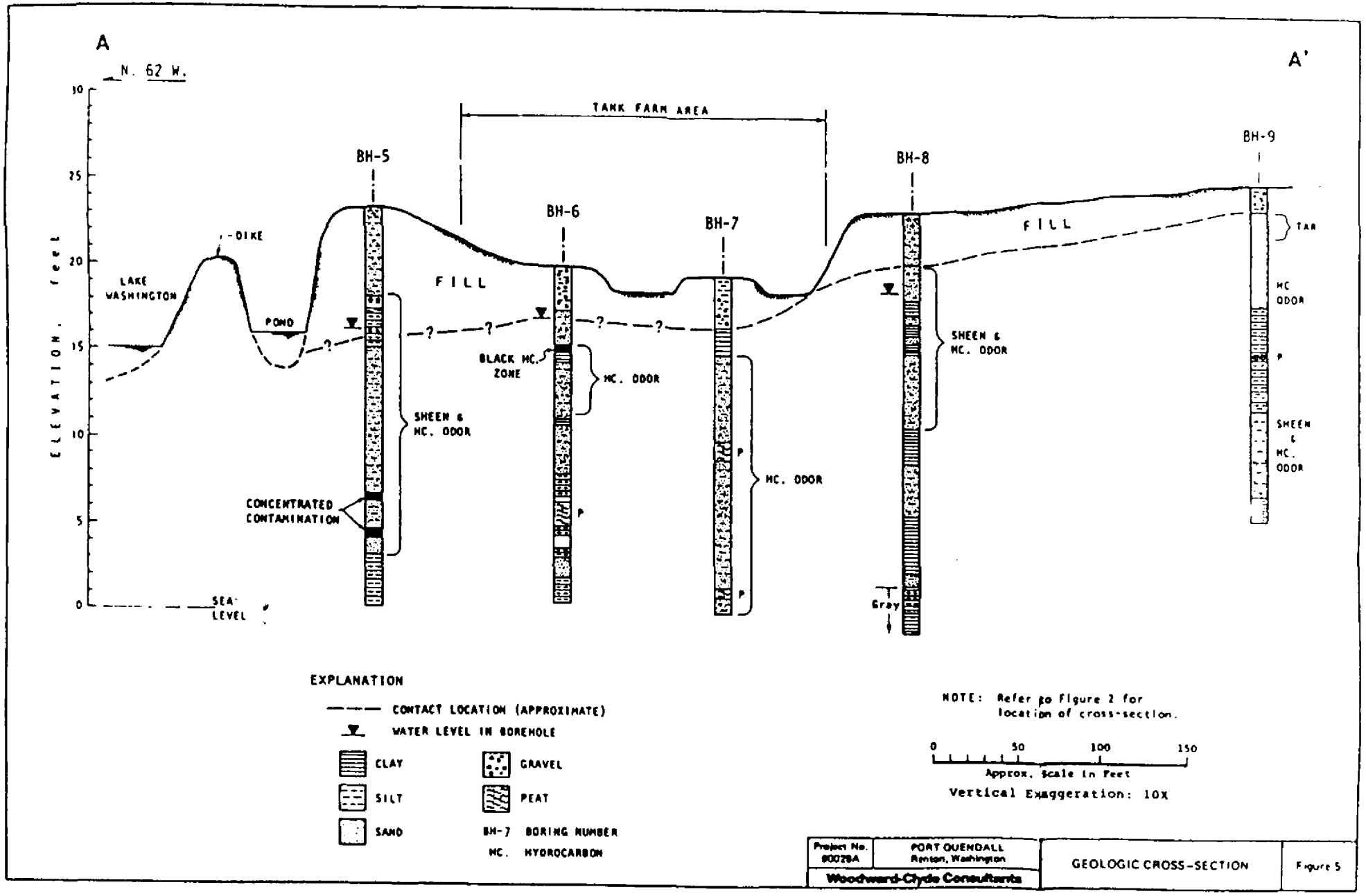

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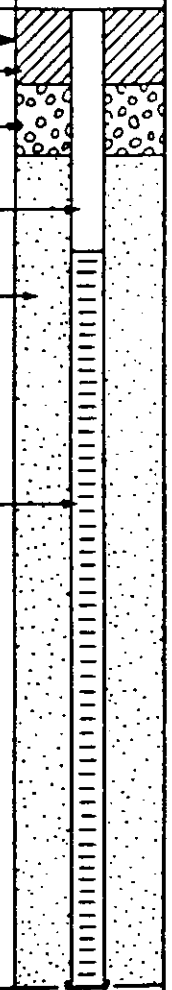
Project: PORT QUENDALL Renton, Washington	Log of Boring No. 2A
Date Drilled: June 2, 1983	Remarks
Type of Boring: 6" Hollow Stem Auger	
Hammer Weigh:	

Depth, Ft	Samples	Blows/Ft	PAH concentration (%)	MATERIAL DESCRIPTION	LITHOLOGY	WELL DETAIL
				Surface Elevation:		
				MONITORING WELL 2A "AS BUILT" DIAGRAM No lithologic log or sampling Installation is monitoring well location 5.7 feet west-southwest of Boring 2		
5						
10						
15						
20				BOTTOM OF BORING @ 20'		



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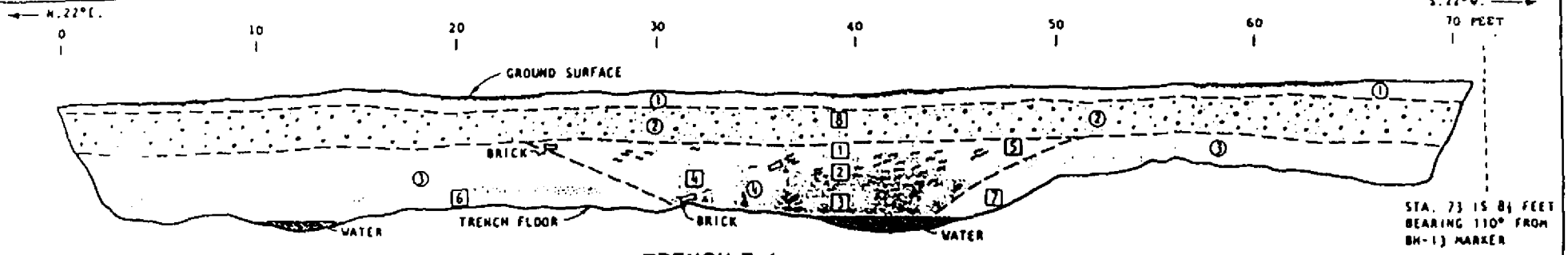
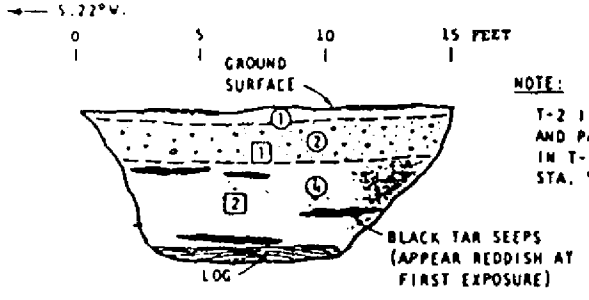


TRENCH T-1



TRENCH T-2

NOTE:

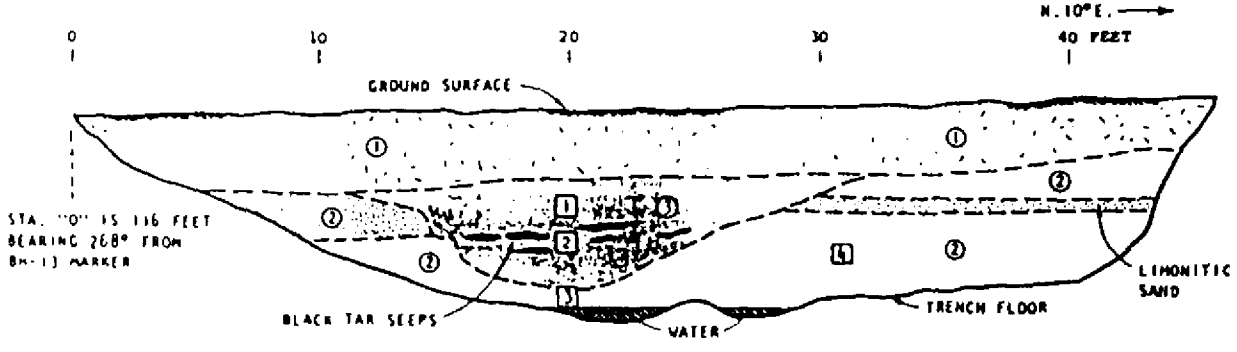
T-2 IS 25 FEET E.S.E. OF AND PARALLEL TO T-1. STA. "0" IN T-2 IS CORRELABLE WITH STA. "38" IN T-1.

UNIT DESCRIPTIONS FOR T-1 & T-2

1. ORGANIC SILT (MH): Dark brown to black, highly plastic with abundant fibre debris (wood).
2. SANDY GRAVEL (GP): Light brown to buff; 1" minus rounded gravel & sand aggregate fill. Wood fibre along lower contact.
3. SILTY SAND TO SANDY SILT (SM-ML): Gray to brown, damp, medium to fine sand, occasional coarse lenses.
4. CHANNEL DEPOSITS: Mottled clay, sand and gravel lenses interspersed with cultural debris including tar, bricks & wood.

TAR FRAGMENTS

[4] SAMPLE LOCATION AND NUMBER



TRENCH T-3

UNIT DESCRIPTIONS FOR T-3

1. FILL: Clayey organic silt, black, abundant wood fibre and rootlets.
2. SILTY SAND TO CLAYEY SAND (SM-SP): Olive brown to gray, occasional continuous thin sand beds.
3. CHANNEL DEPOSITS: Abundant cultural debris including metal & tar fragments, wood, and tar seeps. Pronounced odor with iridescent sheen on groundwater surface.

[4] SAMPLE LOCATION AND NUMBER

Project No 90029A	PORT QUENDALL Renton, Washington	CROSS-SECTIONS OF TRENCHES T-1, T-2, AND T-3	Figure 3
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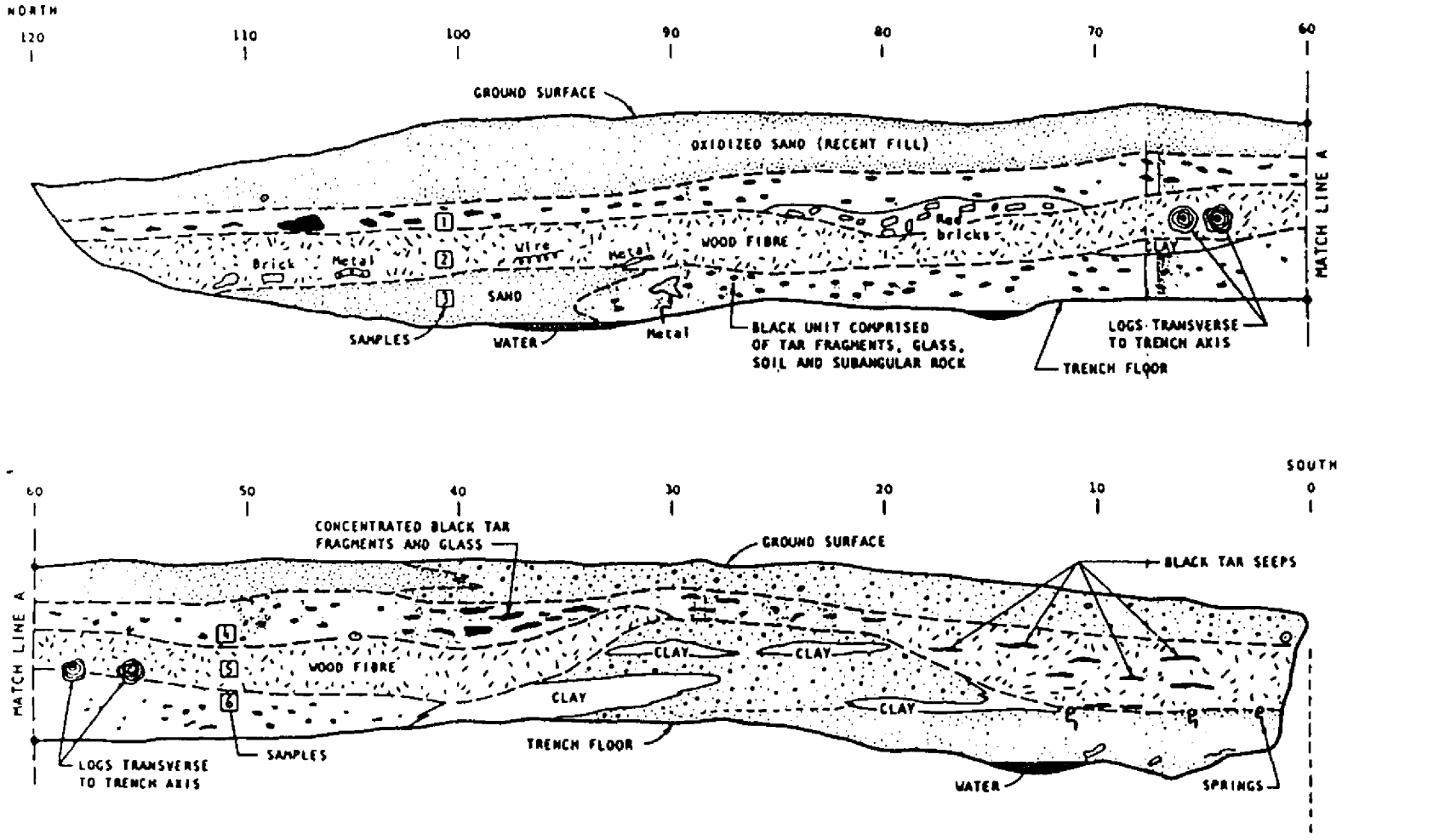

TRENCH T-4

Project No. 90079A	PORT QUENDALL Renton, Washington	CROSS-SECTION OF TRENCH T-4	Figure 4
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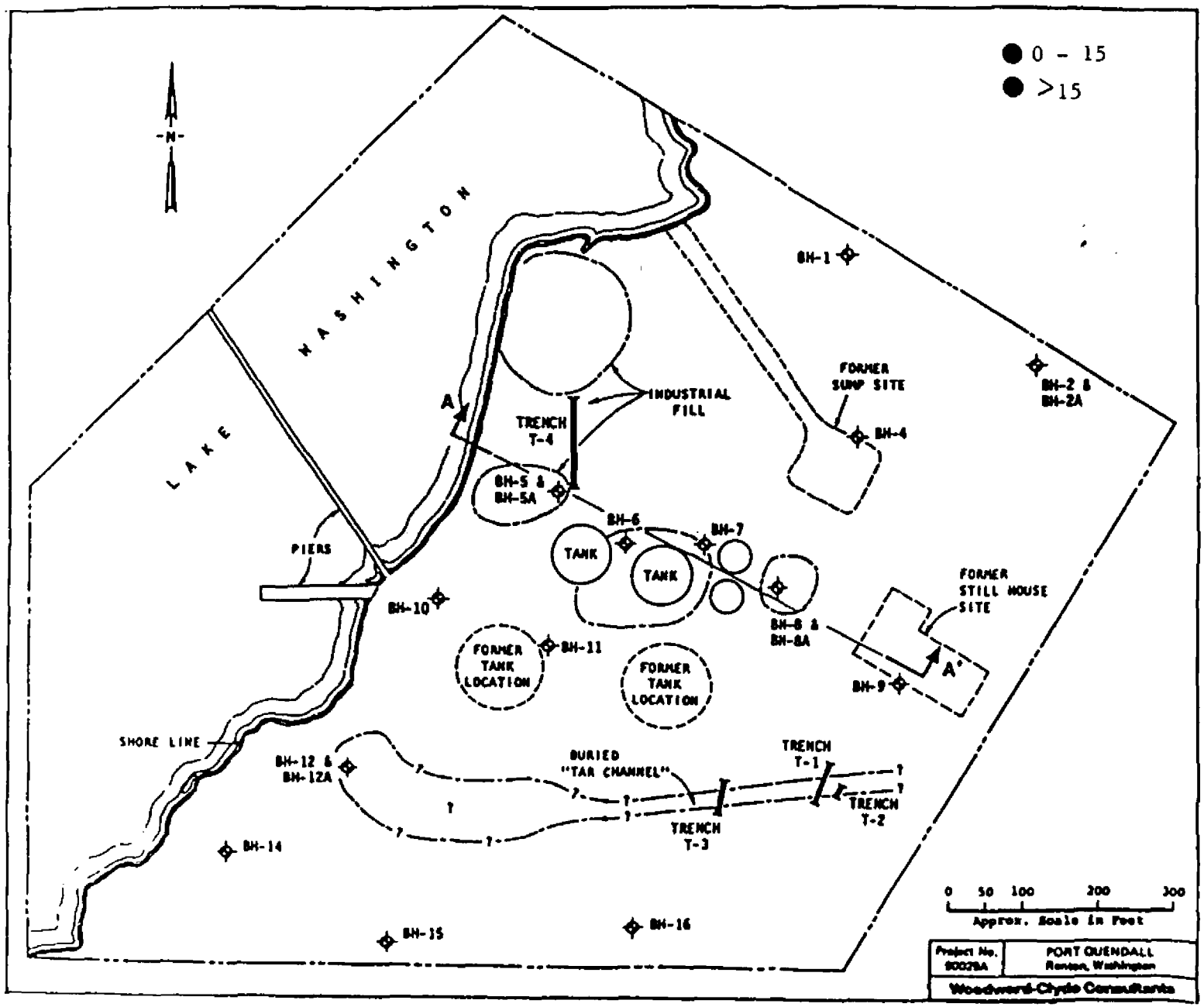
WELL DEPTH (ft)



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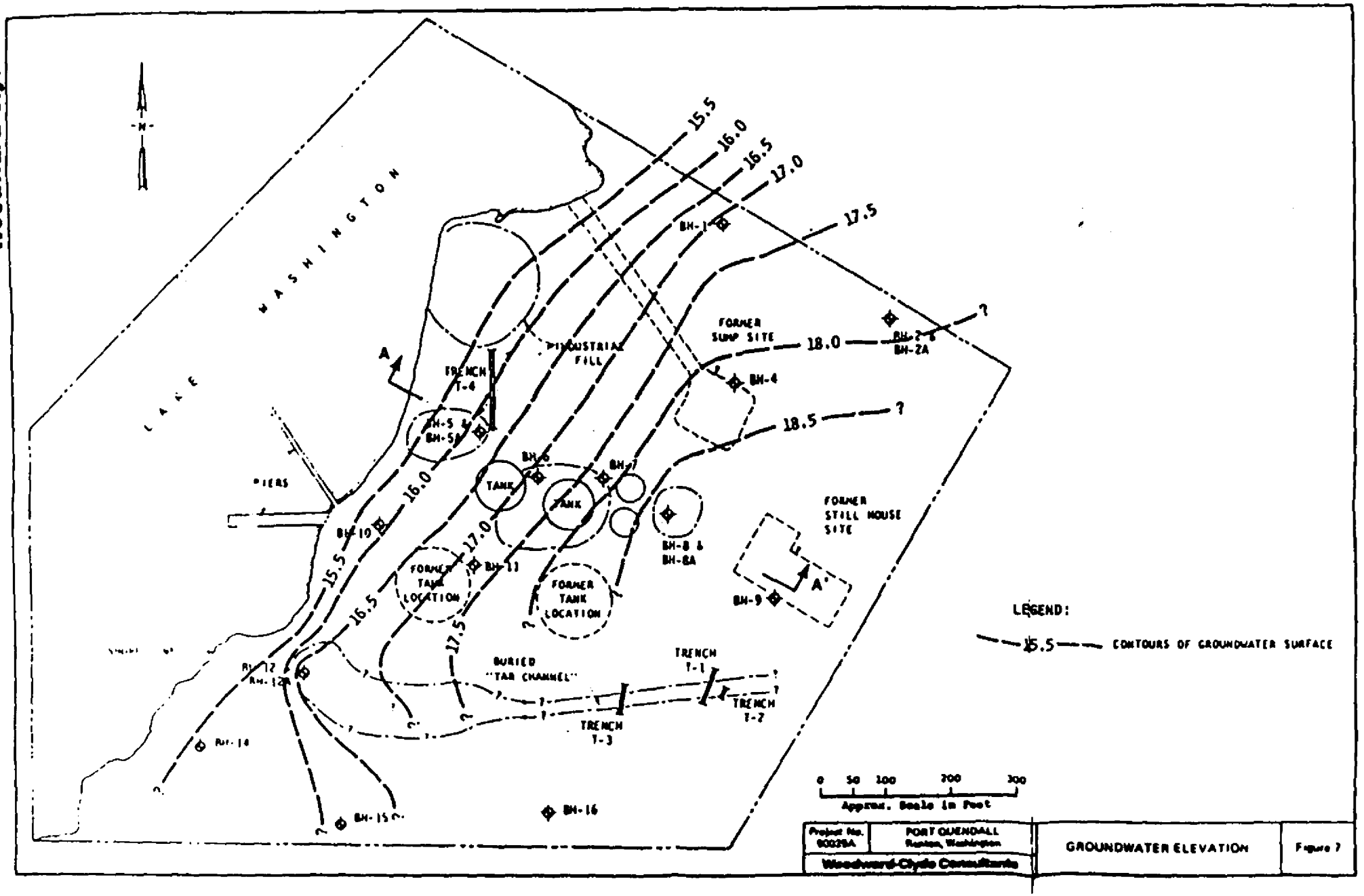
GROUNDWATER ELEVATION



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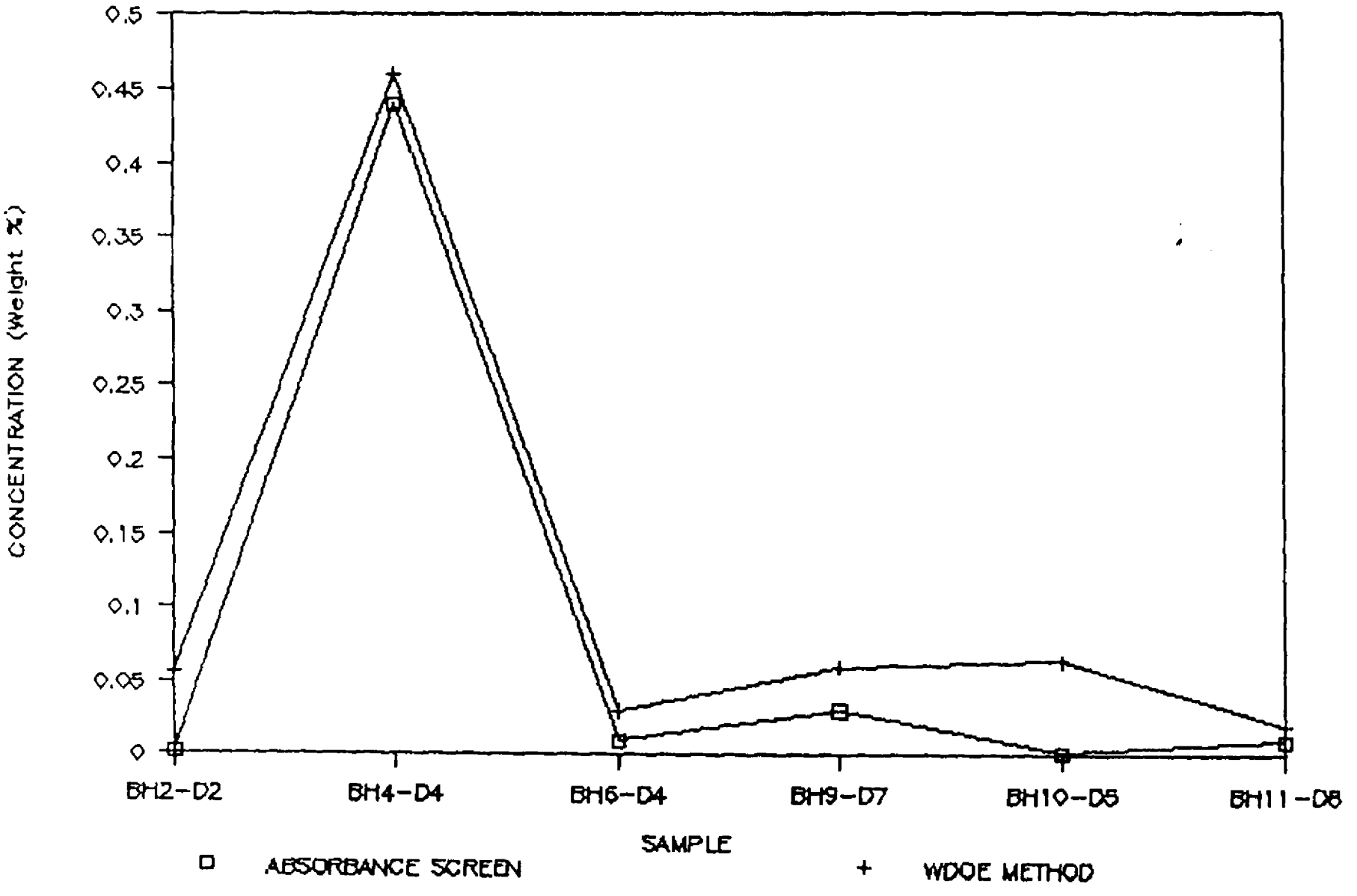
ABSORBANCE VS. WDOE METHOD



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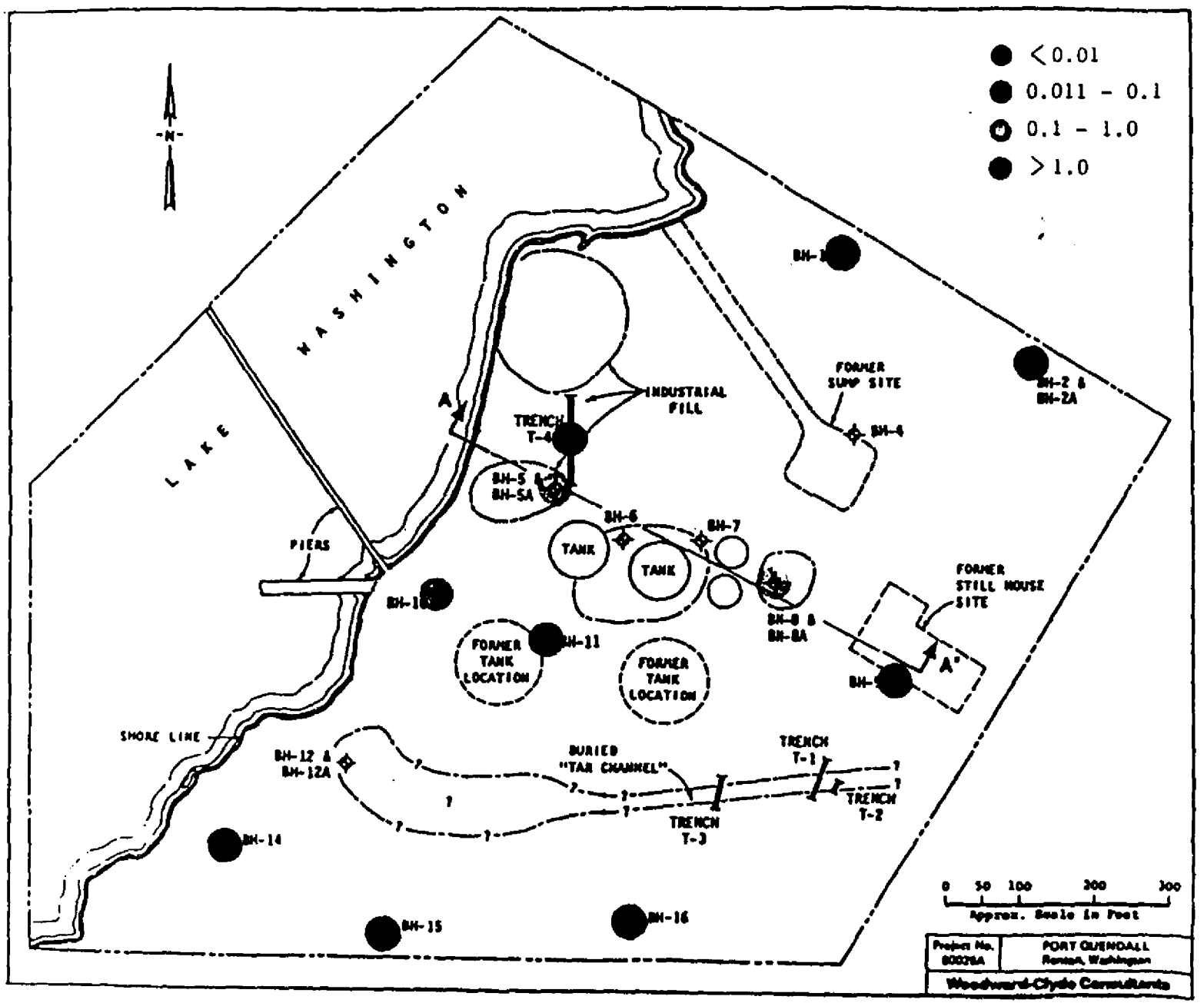
SOILS DATA:

DEPTH: 0 - 1.5 ft.

PAH'S (%)



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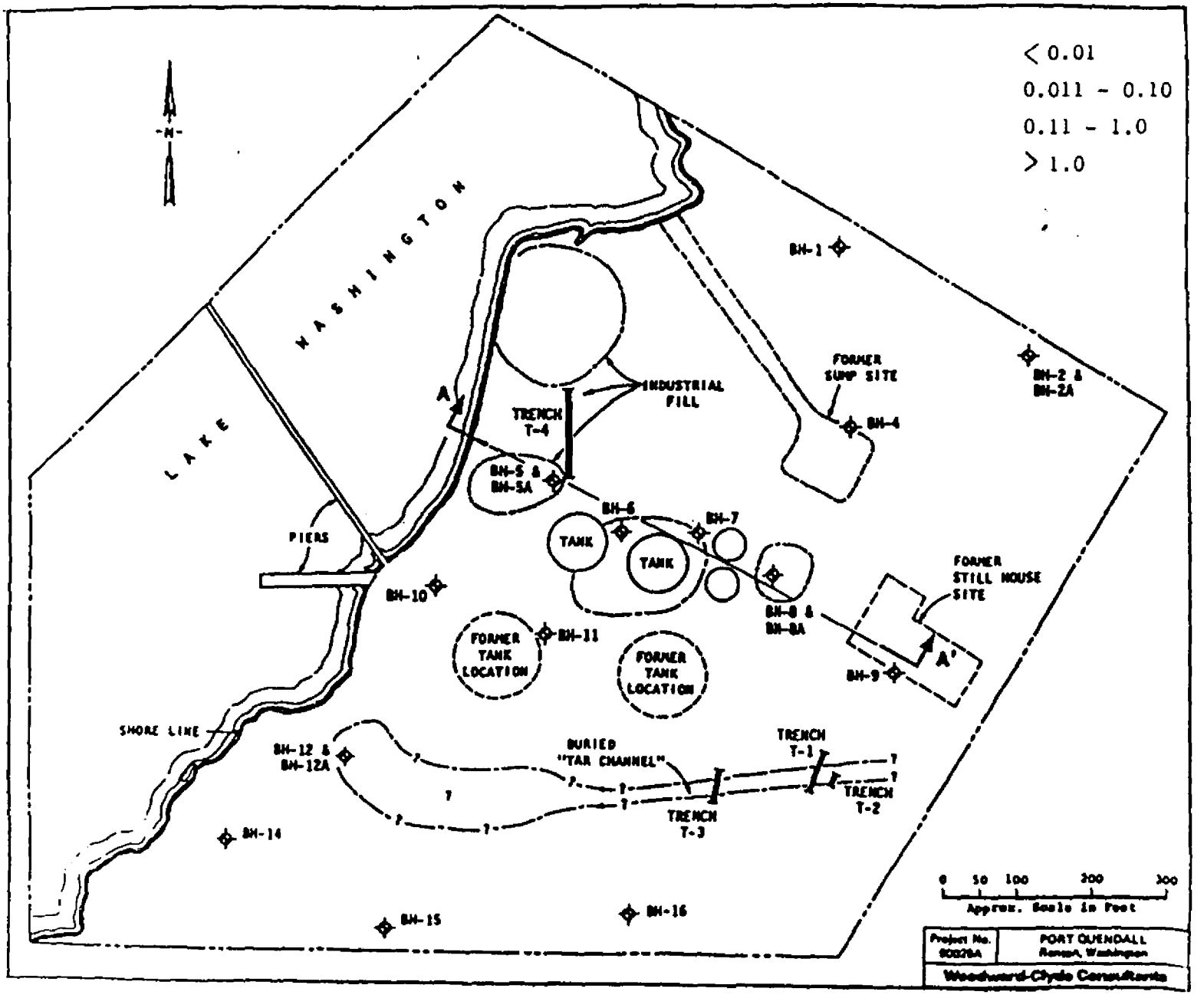
SOILS DATA

DEPTH: 1.5 - 3.0 ft.

PAH'S (%)



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SOILS DATA

DEPTH: 3.0 - 4.5 ft.

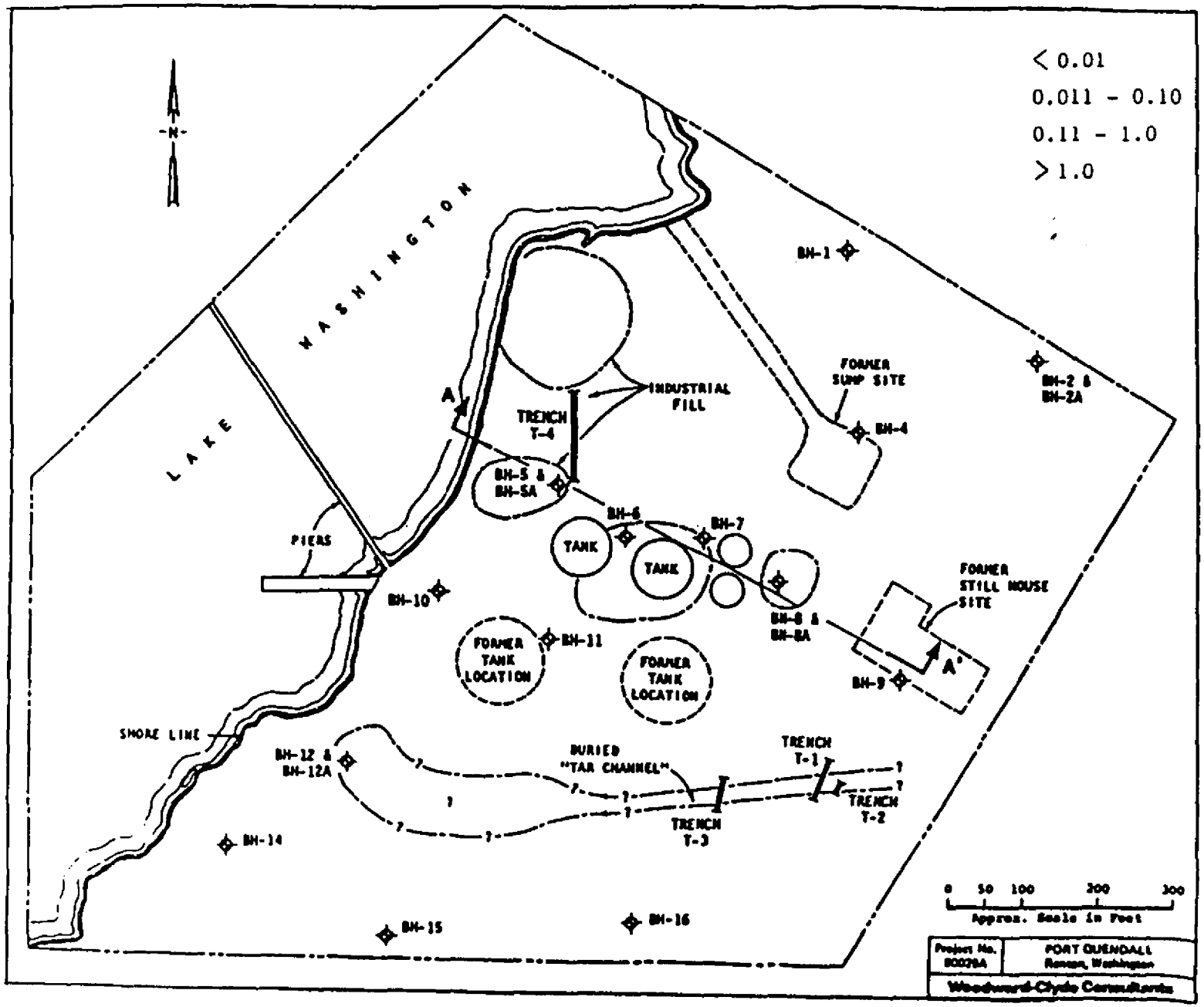
PAH'S (%)

< 0.01

0.011 - 0.10

0.11 - 1.0

> 1.0



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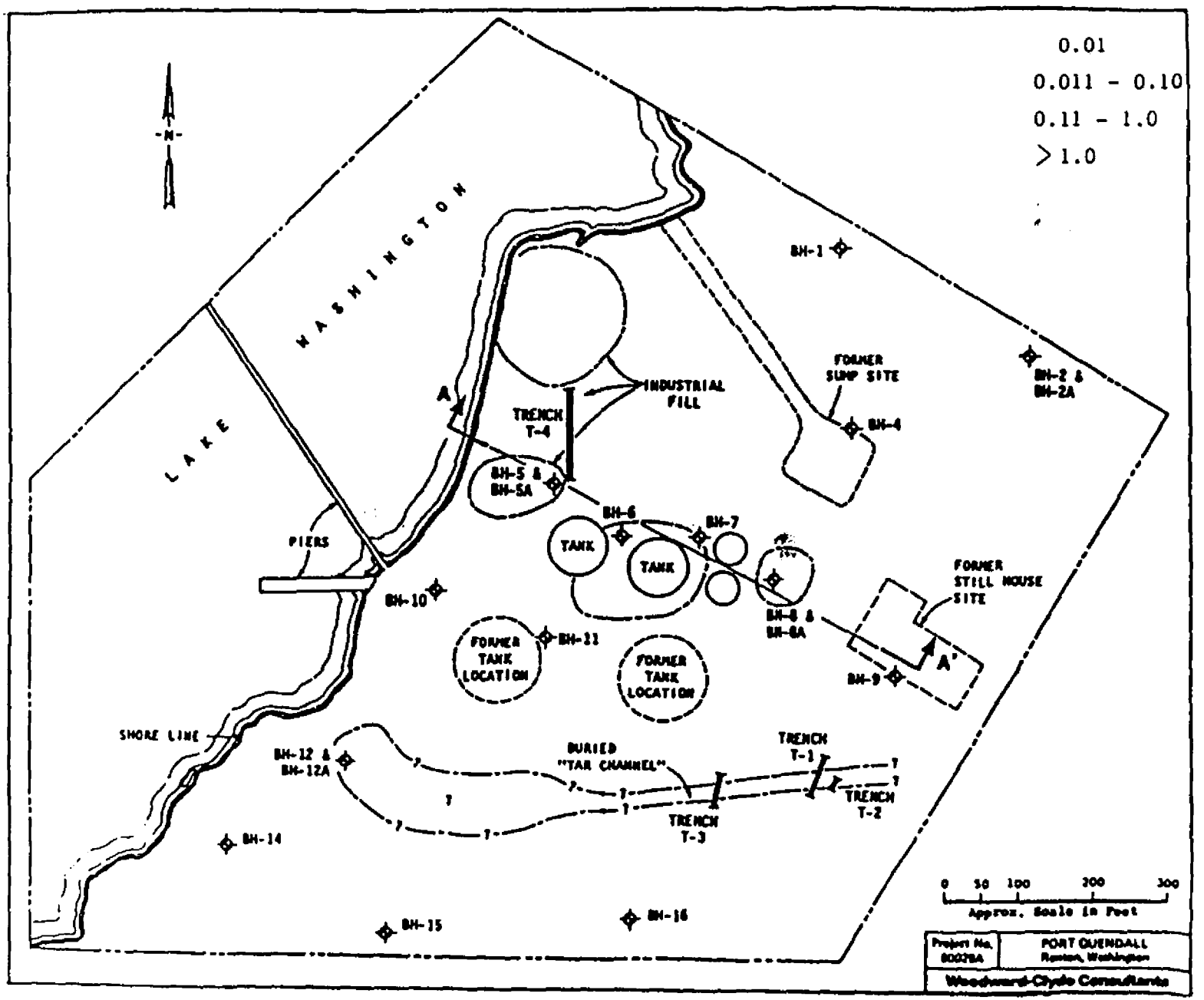
SOILS DATA

DEPTH: 4.5 - 6.0 ft.

PAH'S (%)



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SOILS DATA

DEPTH: 6.0 - 7.5 ft.

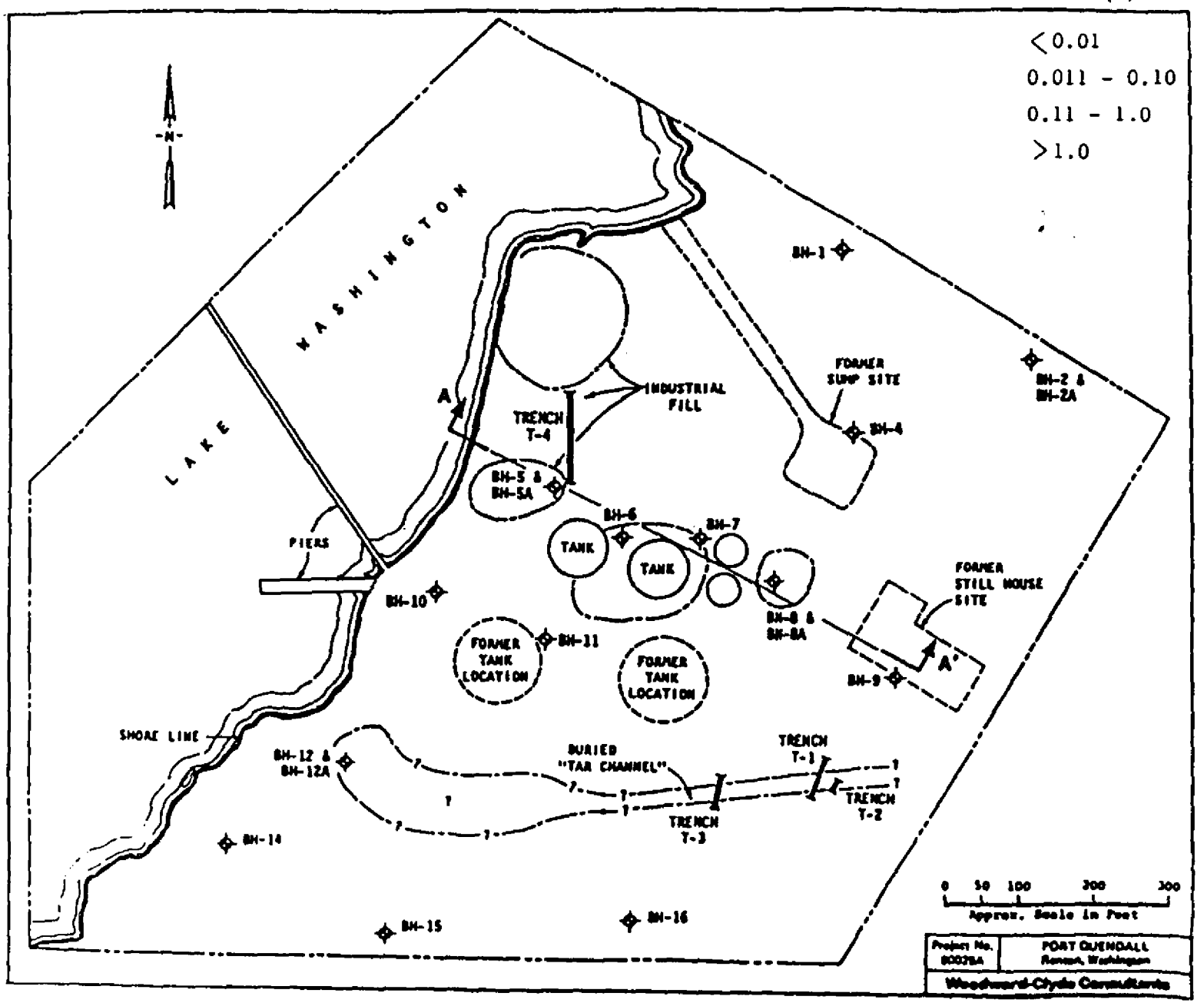
PAH's (%)

<0.01

0.011 - 0.10

0.11 - 1.0

>1.0



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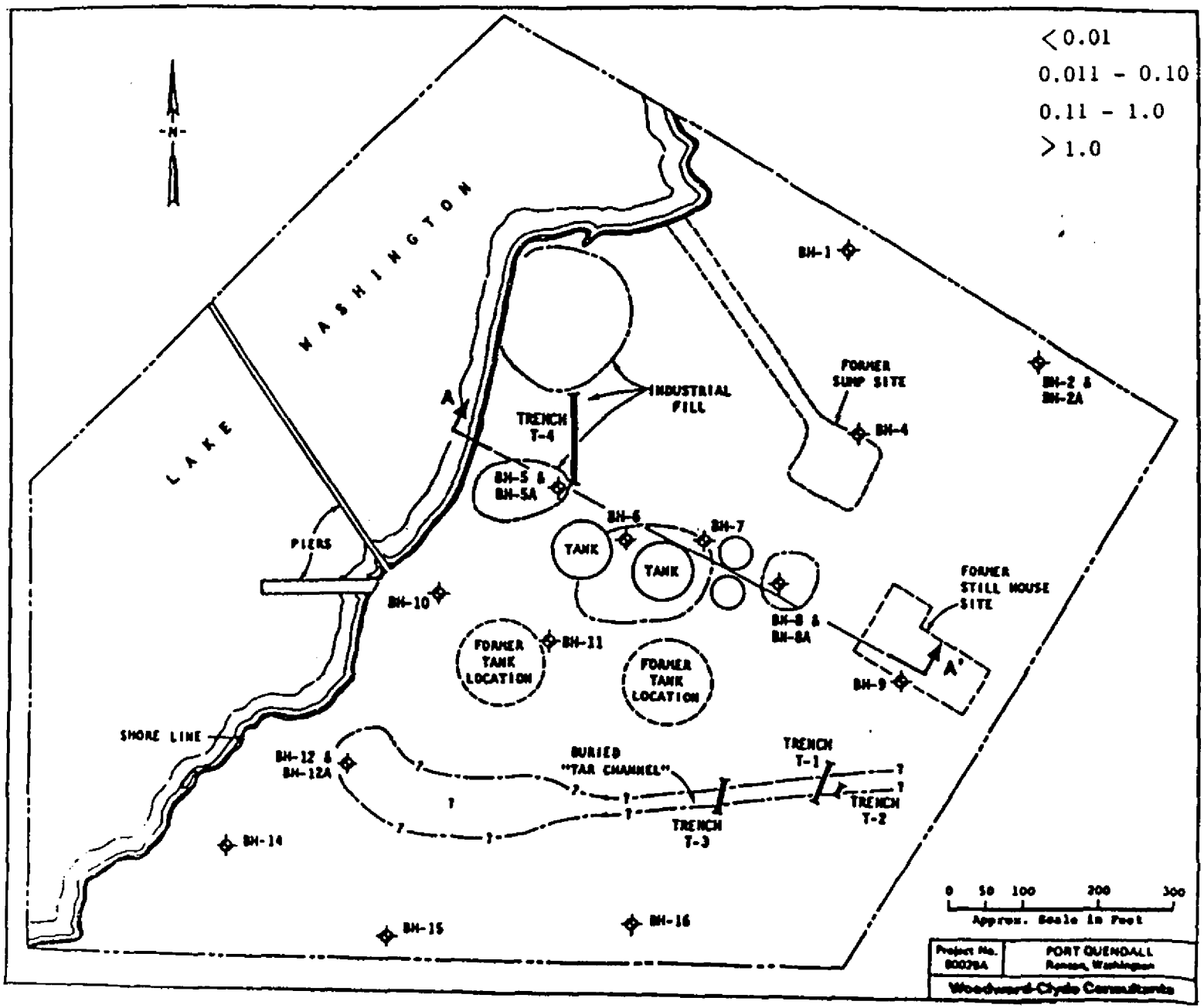
SOILS DATA

DEPTH: 7.5 - 9.0 ft.

PAH'S (%)



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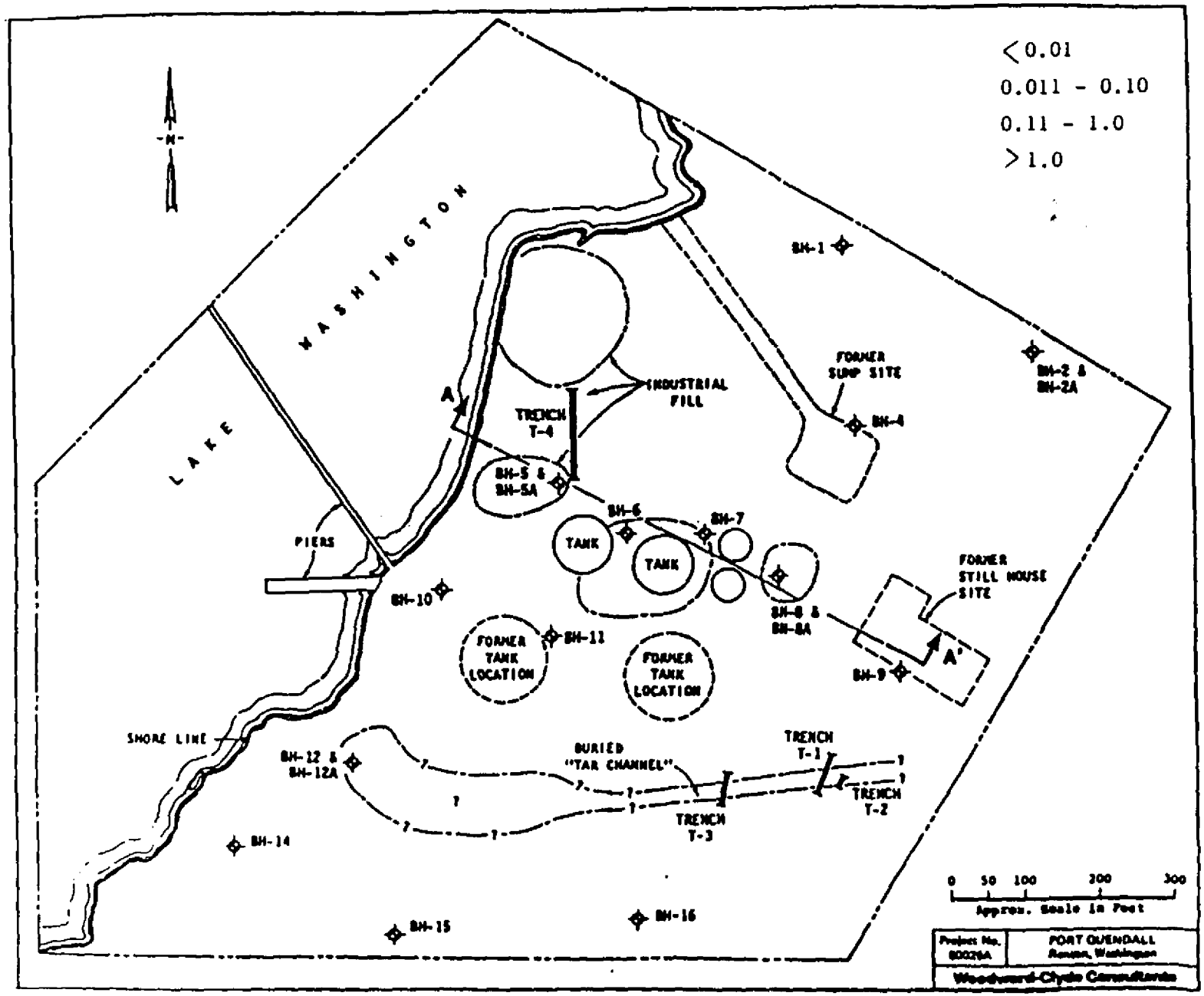
SOILS DATA

DEPTH: 9.0 - 10.5 ft.

PAH'S (%)



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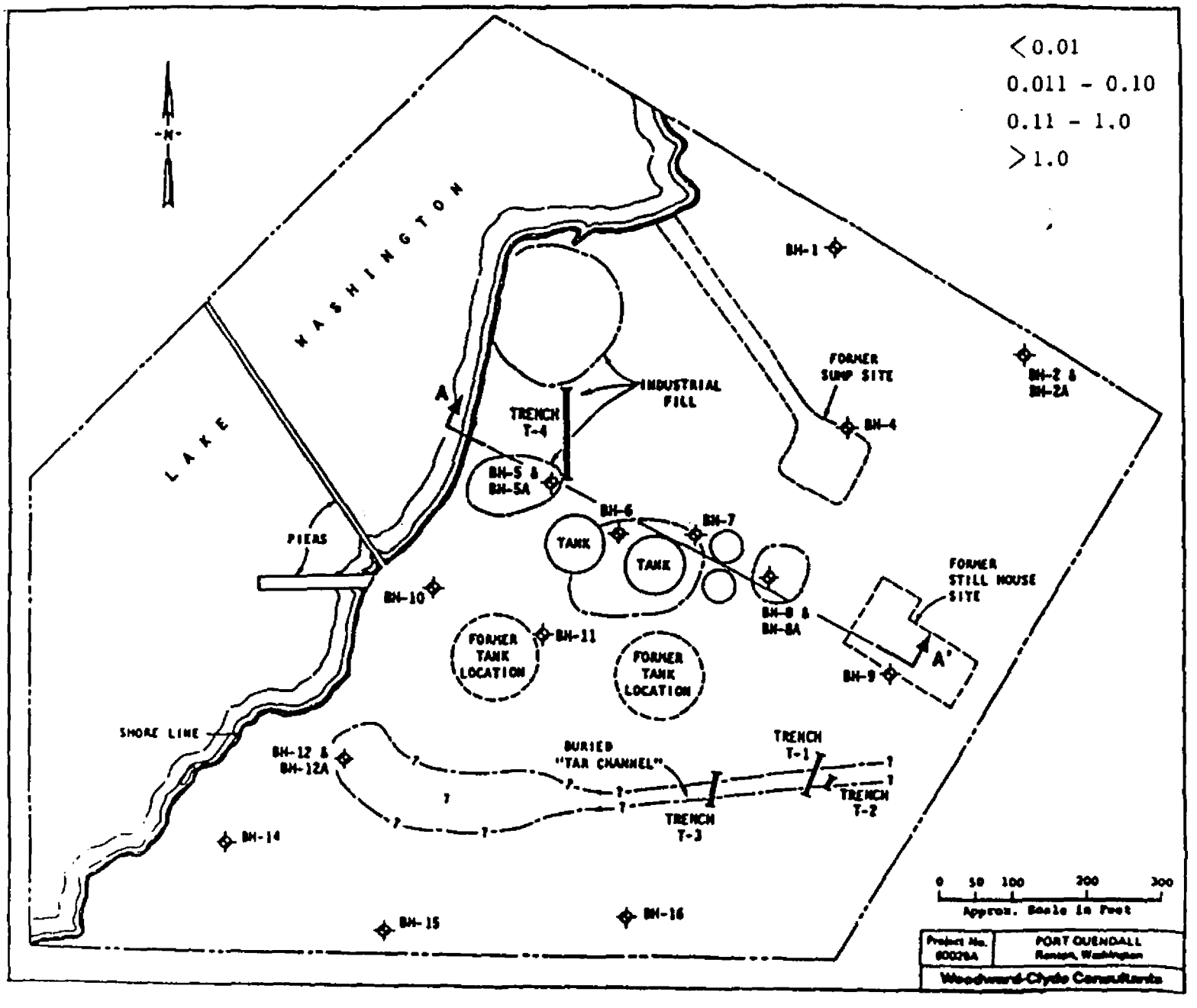
SOILS DATA
DEPTH: 12 - 15 ft.
PAH'S (%)



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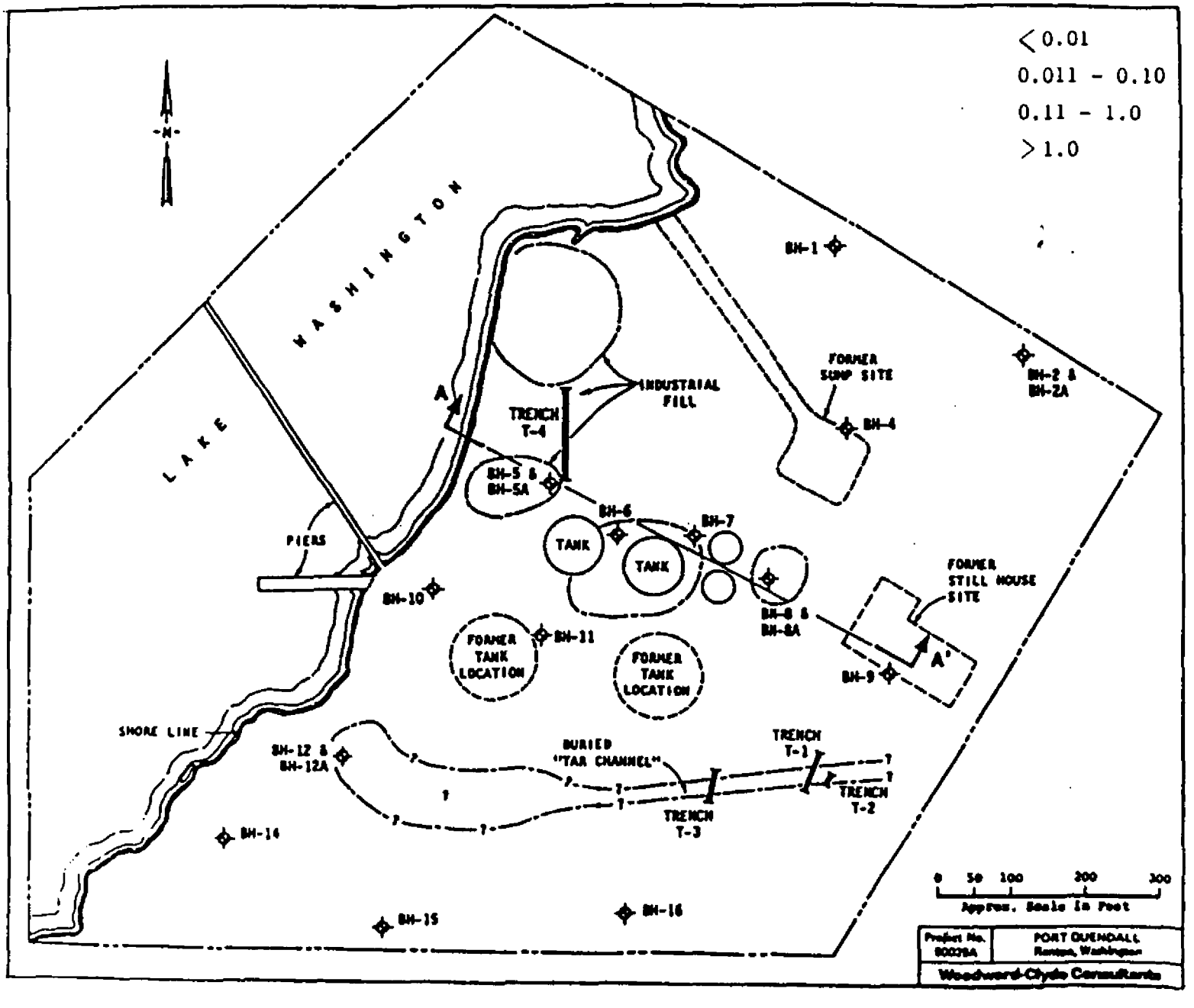
SOILS DATA

DEPTH: 18 - 21 ft.

PAH'S (%)



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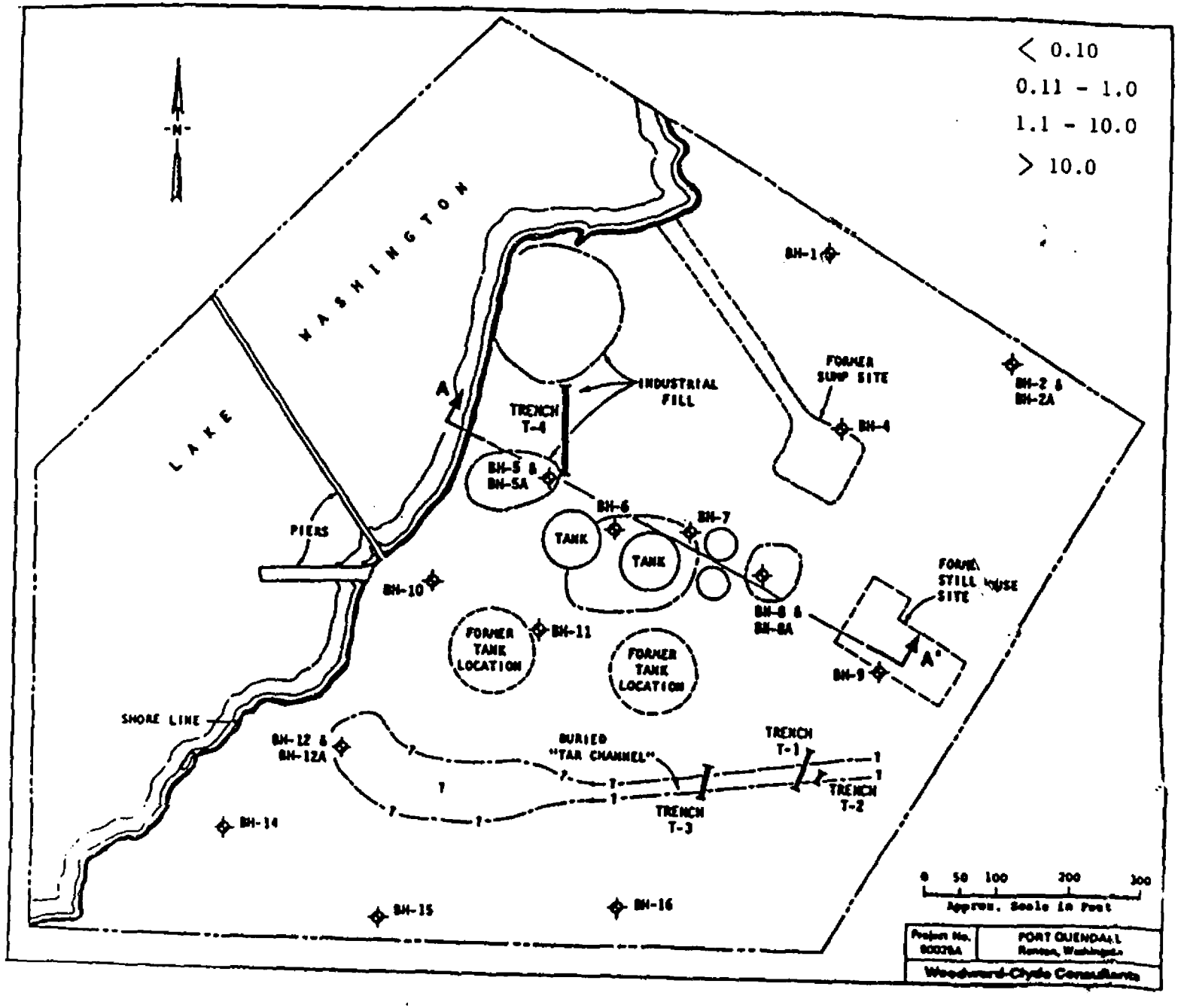
WELL WATER
PAH'S (ppm)

< 0.10
0.11 - 1.0
1.1 - 10.0
> 10.0



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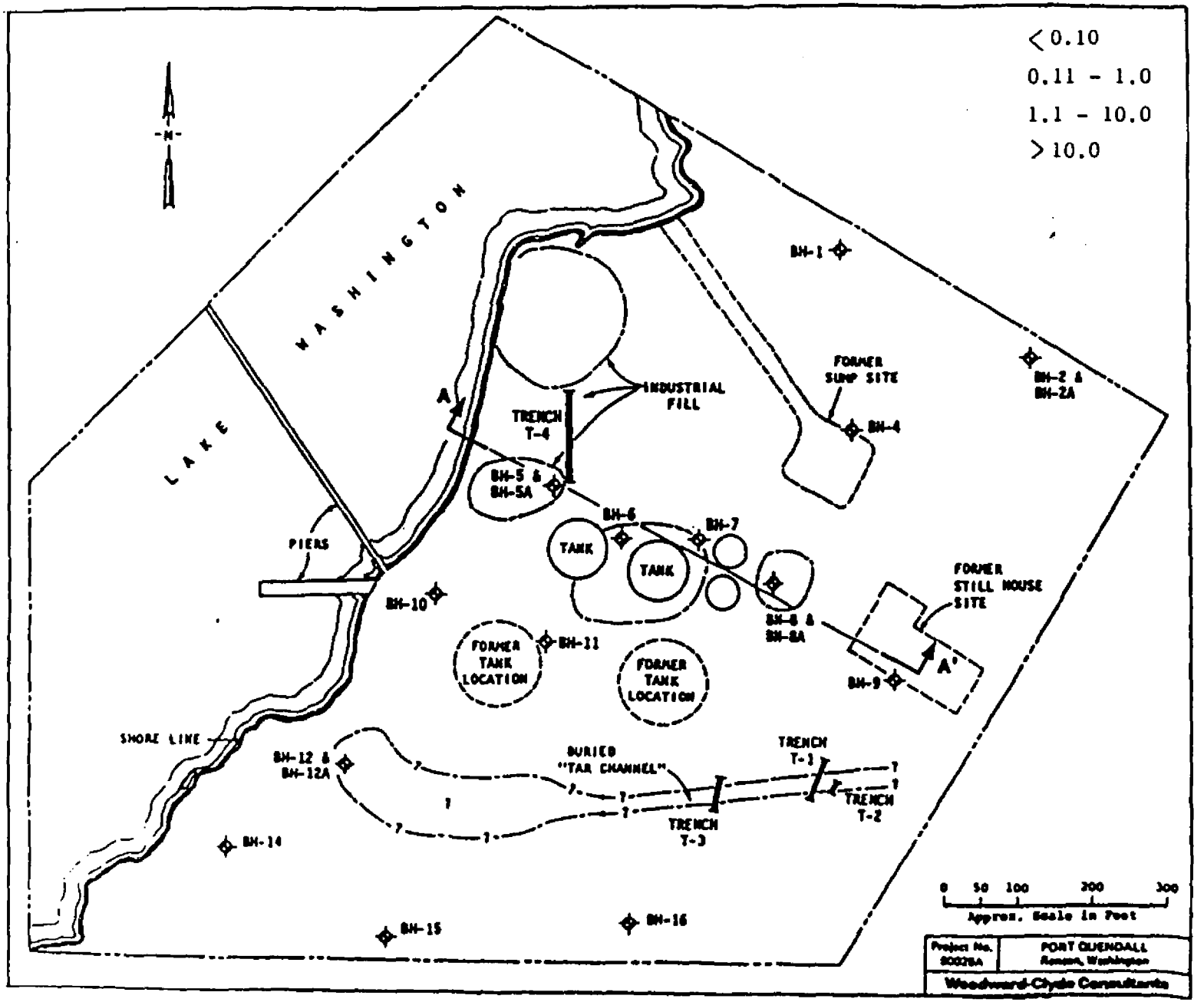
WELL WATER:

BTX (ppm)



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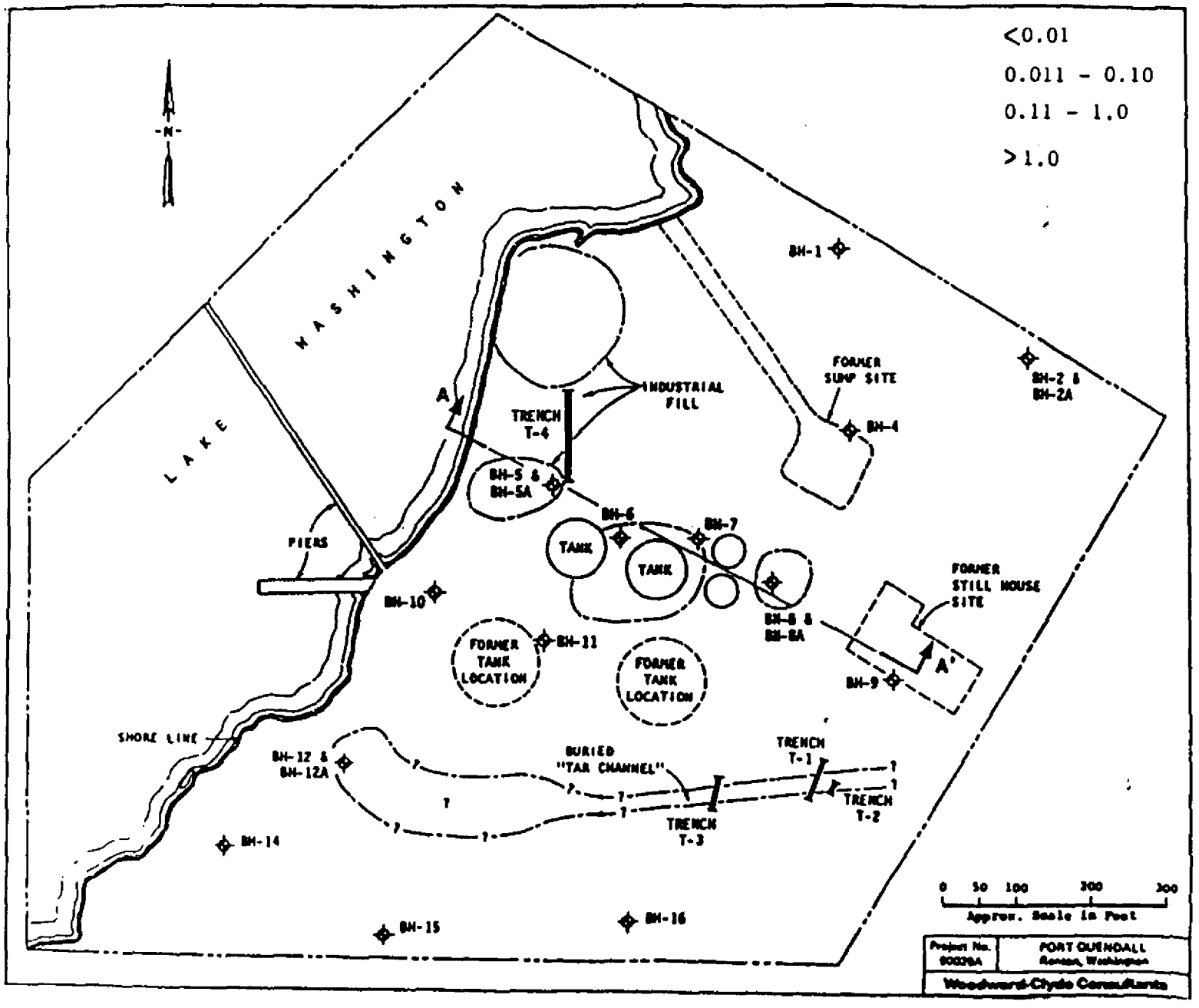
WELL WATER
PENTACHLOROPHENOL (ppm)



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QUENDALL TERMINALS

DATA SUMMARY

BORING #	SOIL PAH (%)	DEPTH	WATER PAH (ppm)	SCREENED INTERVAL (FT)	DEPTH TO WATER	WATER ELEVATION
BH-1	4.800	4.5 - 6.0	0.115	5.0 - 19.5	6.11	17.31
BH-2A			0.006	5.0 - 19.5	7.16	17.90
BH-2	0.003	4.5 - 6.0	2.640	5.0 - 20.0	7.53	17.94
BH-4	3.400	12.0 - 15.0				
BH-5A			5.210	5.0 - 10.0	7.81	16.47
BH-5	1.900	18.0 - 19.5	4.240	13.0 - 23.0	9.51	16.13
BH-6	1.000	3.0 - 4.5	0.930	8.0 - 18.0	4.84	
BH-7	0.970	6.0 - 7.5				
BH-8A			22.700	5.0 - 10.0	4.72	18.92
BH-8	1.800	12.0 - 15.0	1.840	13.0 - 23.0	6.40	18.72
BH-9	2.200	3.0 - 4.5				
BH-10	0.630	0.0 - 1.5	0.013	5.0 - 19.5	6.59	15.91
BH-11	0.017	1.5 - 3.0				
BH-12A			0.745	5.0 - 10.0	5.11	16.30
BH-12	0.004	1.3 - 3.0	0.007	13.0 - 23.0	7.56	16.83
BH-14	0.022	0.0 - 1.5				
BH-15	0.008	3.0 - 4.5	0.010	5.0 - 19.5	5.55	16.15
BH-16	1.100	1.5 - 3.0				

TRENCH #		
T-1	1.300	2.5
T-2	0.500	3.75
T-3	1.200	5.9
T-4	1.900	4.7

CONTAMINATION SUMMARY

Soils

- o PAH's encountered at all depths
- o ~~Major~~ Principal contamination in A-A' section
- o Major contamination at about 6-9 feet
- o PAH contamination is largely random
- o PAH distribution not correlated to site lithology
- o Free creosote encountered in trenches
- o Tar materials exist in former May Creek channel
- o Most soils do not exceed DOE 1% definition of extremely hazardous waste

Water

- o Relatively low levels of PAH's in water (1/1000 of soil concentration)
- o Relatively low levels of BTX
- o Low levels of PCP