Clark Co.

Sweet, Edwards & Associates, Inc.
Ground Water, Waste Disposal, Engineering Geology & Drilling Services
P.O. Box 328 • 208 Church St. • Kelso, WA 98626 • (206) 423-3580

WA 6906
1.9.85

received 4/25/85 by J. Chance
Lab

January 9, 1985

Vince McQuiggin
Pacific Wood Treating
111 West Division St.
Ridgefield, WA 98642

RE: PWT/RBT SITE WATER QUALITY SUMMARY

Dear Vince:

Attachment I is a summary and statistical analysis of water quality data collected at the Pacific Wood Treatment Corporation/Ridgefiled Brick and Tile Site. Based upon the statistical analysis performed, as per 40 CFR 265.93, there appears to be no significant increase of downgradient water quality parameters over background values.

If you have any questions or comments, please call.

Respectfully submitted,

SWEET, EDWARDS AND ASSOCIATES, INC.

JAMES J. MAUL
Hydrogeologist

JJM/bg

ENCLOSURE: Attachment I
Table 1 - 10 pages

USEPA RCRA
3058202

ATTACHMENT I

PACIFIC WOOD TREATMENT CORPORATION
RIDGEFIELD BRICK AND TILE SITE

January 9, 1985

Samples have been collected quarterly at the Pacific Wood Treatment Corporation's Ridgefield Brick and Tile site (PWT/RBT) for a period of one year.

Water quality data from the monitoring system at the PWT/RBT site are shown as Table 1, sheets 1 through 10. Data was collected at four domestic wells. Downgradient wells include the Muffet well, Rutkowski well, and Falls well. The Ryf well was used for measuring upgradient or background water quality. Suction lysimeters LS-1, LS-2, and LS-3 were also sampled. The toe drain for the waste cell was sampled at two points, the toe drain distribution box and at the toe drain sump, see Figure 1.

Because of limited sample volumes from the suction lysimeters, these samples were tested for key constituents agreed upon with the Washington Department of Ecology as important monitoring parameters. Incomplete data also exists for the toe drain sampling sites. During dry weather periods there was no liquid in the toe distribution box.

A t-statistic was calculated for each set of parameters from the three downgradient wells, as per 40 CFR 265.93, see Table 2. This value was compared to a tabulated t-value from standard tables at the 0.05 level of significance and two degrees of freedom. All calculated t-statistics were below the tabulated value (2.92), which suggests that a significant increase in these parameters cannot be assumed at the .05 level. Since the .05 level is less stringent than a .01 level test, the criteria applies to the .01 level as well (as required in 40 CFR 265 Appendix IV). In addition, the coefficients of variation (c.v.) was calculated for each background parameter to cross check on the normality of the data population. The results indicate a probable normal distribution, i.e., c.v. less than 1.0.

Calculations

Basic Formulas:

$$\text{Mean } (\bar{X}) = \frac{X_1 + X_2 \ldots + X_n}{n}$$

$$\text{variance } (S^2) = \frac{(X_1 - \bar{X})^2 + (X_2 - \bar{X})^2 \ldots + (X_n - \bar{X})^2}{n-1}$$

$$\text{t-statistic } (t) = \frac{\bar{X}_m - \bar{X}_b}{\left(\frac{S^2_m}{N_m} + \frac{S^2_b}{N_b}\right)^{1/2}}$$

$$\text{coefficient of variation (c.v.)} = \frac{52}{\bar{X}}$$

Where: X = data value
n = total number of data points
m = monitoring well
b = background well

TABLE 2

	Well	Parameter	Mean	Variance	t-statistic
#4	Rutkowski	pH	7.2	0.13	.82
		Specific Conductivity	226	2134	1.49
#1	Falls	pH	7.23	0.173	0.70
		Specific Conductivity	173	1033	0.28
#5	Muffet	pH	7.25	0.104	0.71
		Specific Conductivity	213	1018	1.38
#7 BACK	RYF	pH	7.5	0.28	0.07
		Specific Conductivity	180	700	0.15

Pentachlorophenol was identified in very low levels during quarterly sampling runs in both wells and lysimeters (Table 1). Laboratory spike control available for fourth quarter sampling indicates that the PCP levels may be significantly lower than reported in Table 1. Note the recovery for the spiked sample was 217 percent of the spike.

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SHEET NO. 1 OF 10
CALCULATED BY _____ DATE _____
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Table 1-MONITORING DATA

Muffet #5

	Date	1/11/84	3/23/84	6/12/84	9/13/84	Mean	Variance	T	Significant Difference
	Quarter	1	2	3	4				
Indicators	pH	—	7.6	7.1	7.0	7.25	0.104	0.71	No
Indicators	Conductivity (micromhos/cm)	—	250	190	200	213.3	1018	1.38	No
Metals (mg/l)	Chromium	<0.01	<0.005	<0.01	<0.01	---			
Metals (mg/l)	Copper	<0.005	<0.005	<0.005	<0.005	<0.005			
Metals (mg/l)	Arsenic	<0.005	<0.005	<0.005	<0.005	<0.005			
Metals (mg/l)	Cadmium	<0.002	<0.002	<0.002	<0.002	<0.002			
Metals (mg/l)	Lead	<0.010	<0.005	<0.010	<0.010	---			
Metals (mg/l)	Mercury	<0.001	<0.001	<0.001	<0.001	<0.001			
Metals (mg/l)	Barium	<0.10	0.10	<0.10	<0.10	---			
Metals (mg/l)	Selenium	<0.005	<0.005	<0.005	<0.005	<0.005			
Metals (mg/l)	Silver	<0.010	<0.010	<0.010	<0.010	<0.010			
Organics (mg/l)	Pentachlorophenol	<0.00001	<0.0001	0.00043	<0.0001	---			
Organics (mg/l)	Naphthalene	<0.001	<0.005	<0.001	<0.001	---			
Organics (mg/l)	Total Phenol	—	—	0.013	<0.005	---			

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Table 1-MONITORING DATA

Rutkowski

	Date	12/14/83	3/23/84	6/12/84	9/13/84	Mean	Variance	T	Significant Difference
	Quarter	1	2	3	4				
Indicators	pH	–	7.6	7.3	6.9	7.2	0.13	0.82	No
Indicators	Conductivity (micromhos/cm)	–	280	200	200	226	2134	1.49	No
Metals (mg/l)	Chromium	<0.010	<0.005	<0.010	<0.010	---			
Metals (mg/l)	Copper	0.013	<0.005	<0.005	<0.005	---			
Metals (mg/l)	Arsenic	<0.005	<0.005	<0.005	<0.005	<0.005			
Metals (mg/l)	Cadmium	<0.002	<0.002	<0.002	<0.002	<0.002			
Metals (mg/l)	Lead	<0.010	<0.005	<0.010	<0.010	---			
Metals (mg/l)	Mercury	<0.001	<0.001	<0.001	<0.001	<0.001			
Metals (mg/l)	Barium	<0.010	<0.010	<0.010	<0.010	<0.010			
Metals (mg/l)	Selenium	<0.005	<0.005	<0.005	<0.005	<0.005			
Metals (mg/l)	Silver	<0.010	<0.010	<0.010	<0.010	<0.010			
Organics (mg/l)	Pentachlorophenol	<0.00001	<0.0001	0.00013	<0.0001	---			
Organics (mg/l)	Naphthalene	<0.001	<0.005	<0.001	<0.001	---			
Organics (mg/l)	Total Phenol	–	–	<0.005	<0.005	<0.005			

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Table 1-MONITORING DATA

Falls

	Date	1/11/84	3/23/84	6/12/84	9/13/84	Mean	Variance	T	Significant Difference
	Quarter	1	2	3	4				
Indicators	pH	–	7.7	7.1	6.9	7.23	0.173	0.70	No
Indicators	Conductivity (micromhos/cm)	–	210	160	150	173.3	1033	0.28	No
Metals (mg/l)	Chromium	<0.010	<0.005	<0.010	<0.010	---			
Metals (mg/l)	Copper	0.050	0.022	0.005	0.008	---			
Metals (mg/l)	Arsenic	<0.005	0.014	<0.005	<0.005	---			
Metals (mg/l)	Cadmium	<0.002	<0.002	<0.002	<0.002	<0.002			
Metals (mg/l)	Lead	<0.010	<0.005	<0.010	<0.010	---			
Metals (mg/l)	Mercury	<0.001	<0.001	<0.001	<0.001	<0.001			
Metals (mg/l)	Barium	<0.10	0.1	<0.10	<0.10	---			
Metals (mg/l)	Selenium	<0.005	<0.005	<0.005	<0.005	<0.005			
Metals (mg/l)	Silver	<0.010	<0.010	<0.010	<0.010	<0.010			
Organics (mg/l)	Pentachlorophenol	<0.00001	<0.0001	0.00086	<0.0001	---			
Organics (mg/l)	Naphthalene	<0.001	<0.001	<0.001	<0.001	---			
Organics (mg/l)	Total Phenol	–	–	<0.005	<0.005	<0.005			

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Table 1- MONITORING DATA

RYF UPGRADIENT

	Date	12/14/83	3/23/84	6/12/84	9/13/84	Mean	Variance	C.V.
	Quarter	1	2	3	4			
Indicators	pH	–	8.1	7.3	7.1	7.5	0.28	0.07
Indicators	Conductivity (micromhos/cm)	–	210	160	170	180	700	0.15
Metals (mg/l)	Chromium	<0.010	<0.005	<0.010	<0.010	---		
Metals (mg/l)	Copper	<0.005	<0.005	0.006	0.012	---		
Metals (mg/l)	Arsenic	<0.005	<0.005	<0.005	<0.005	<0.005		
Metals (mg/l)	Cadmium	<0.002	<0.002	<0.002	<0.002	<0.002		
Metals (mg/l)	Lead	<0.010	<0.005	<0.010	<0.010	---		
Metals (mg/l)	Mercury	<0.001	<0.001	<0.001	<0.001	<0.001		
Metals (mg/l)	Barium	<0.010	<0.010	<0.010	<0.010	<0.010		
Metals (mg/l)	Selenium	<0.005	<0.005	<0.005	<0.005	<0.005		
Metals (mg/l)	Silver	<0.010	<0.010	<0.010	<0.010	<0.010		
Organics (mg/l)	Pentachlorophenol	<0.00001	<0.0001	0.0011	<0.0001	---		
Organics (mg/l)	Naphthalene	<0.001	<0.005	<0.001	<0.001	---		
Organics (mg/l)	Total Phenol	---	---	<0.005	<0.005	<0.005		

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Table 1-MONITORING DATA

Lysimeter 1

		Date	12/14/83	3/23/84	6/12/84	9/14/84	Mean	Variance
		Quarter	1	2	3	4		
Indicators		pH	–	7.7	–	–	–	
Indicators		Conductivity (micromhos/cm)	–	110	–	–	–	
Metals (mg/ℓ)		Chromium	0.006	L/0.005	---	---	---	
Metals (mg/ℓ)		Copper	0.005	0.005	---	---	0.005	
Metals (mg/ℓ)		Arsenic	L/0.005	L/0.005	L/0.005	L/0.005	L/0.005	
Metals (mg/ℓ)		Cadmium	L/0.002	0.002	---	---	---	
Metals (mg/ℓ)		Lead	---	L/0.005	---	L/0.010	---	
Metals (mg/ℓ)		Mercury	---	L/0.001	---	---	---	
Metals (mg/ℓ)		Barium	---	L/0.10	---	---	---	
Metals (mg/ℓ)		Selenium	---	L/0.005	---	L/0.005	L/0.005	
Metals (mg/ℓ)		Silver	---	L/0.010	---	---	---	
Organics (mg/ℓ)		Pentachlorophenol	0.0001	0.0014	L/0.001	0.0001	0.00052	3×10^{-7}
Organics (mg/ℓ)		Naphthalene	---	L/0.005	L/0.050	L/0.001	---	
Organics (mg/ℓ)		Total Phenol	---	---	---	---	---	

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Table 1- MONITORING DATA

Lysimeter 2

	Date	12/19/83	3/23/83	6/12/84	9/13/84	Mean
	Quarter	1	2	3	—	
Indicators	pH	—	8.2	—	—	—
Indicators	Conductivity (micromhos/cm)	—	780	—	—	—
Metals (mg/ℓ)	Chromium	---	<0.005	---	---	---
Metals (mg/ℓ)	Copper	---	0.005	---	---	---
Metals (mg/ℓ)	Arsenic	---	<0.005	<0.005	---	<0.005
Metals (mg/ℓ)	Cadmium	---	<0.002	---	---	---
Metals (mg/ℓ)	Lead	---	<0.005	---	---	---
Metals (mg/ℓ)	Mercury	---	<0.001	---	---	---
Metals (mg/ℓ)	Barium	---	0.10	---	---	---
Metals (mg/ℓ)	Selenium	---	<0.005	---	---	---
Metals (mg/ℓ)	Silver	---	<0.010	---	---	---
Organics (mg/ℓ)	Pentachlorophenol	---	<0.0001	0.0019	---	---
Organics (mg/ℓ)	Naphthalene	---	<0.005	<0.05	---	---
Organics (mg/ℓ)	Total Phenol	---	---	---	---	---

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Table 1-MONITORING DATA

Lysimeter 3

	Date	12/14/83	3/23/84	6/12/84	9/13/84	Mean	Variance
	Quarter	1	2	3	4		
Indicators	pH	–	8.6	–	–	–	
Indicators	Conductivity (micromhos/cm)	–	450	–	–	–	
Metals (mg/l)	Chromium	0.006	L/0.005	---	---	---	
Metals (mg/l)	Copper	L/0.005	0.005	---	---	---	
Metals (mg/l)	Arsenic	L/0.005	L/0.005	L/0.005	---	L/0.005	
Metals (mg/l)	Cadmium	L/0.002	L/0.002	---	---	L/0.002	
Metals (mg/l)	Lead	---	L/0.005	---	---	---	
Metals (mg/l)	Mercury	---	---	---	---	---	
Metals (mg/l)	Barium	---	L/0.10	---	---	---	
Metals (mg/l)	Selenium	---	L/0.005	---	---	---	
Metals (mg/l)	Silver	---	L/0.010	---	---	---	
Organics (mg/l)	Pentachlorophenol	0.00053	0.0003	0.0098	---	0.0035	2×10^{-5}
Organics (mg/l)	Naphthalene	---	L/0.005	L/0.050	---	---	
Organics (mg/l)	Total Phenol	---	---	---	---	---	

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Table 1-MONITORING DATA

Toe Drain Distribution Box

		1/11/84	3/23/84	6/12/84	9/13/84	Mean
	Date	1/11/84	3/23/84	6/12/84	9/13/84	Mean
	Quarter	1	2	3	4	
Indicators	pH	—				
Indicators	Conductivity (micromhos/cm)	—				
Metals (mg/l)	Chromium	L/0.010				
Metals (mg/l)	Copper	L/0.005				
Metals (mg/l)	Arsenic	L/0.005				
Metals (mg/l)	Cadmium	L/0.002				
Metals (mg/l)	Lead	L/0.010				
Metals (mg/l)	Mercury	L/0.001				
Metals (mg/l)	Barium	L/0.1				
Metals (mg/l)	Selenium	L/0.005				
Metals (mg/l)	Silver	L/0.010				
Organics (mg/l)	Pentachlorophenol	0.00127				
Organics (mg/l)	Naphthalene	0.005				
Organics (mg/l)	Total Phenol	—				

Note:

1) Statistical Calculations.
   a) Data from the Toe Drain Distribution Box and the Toe Drain Sump have been pooled.
   b) For values less than detection limits used in calculation of Mean and Variance half the detection limit was used.

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Table 1-MONITORING DATA

Toe Drain Sump

	Date	12/19/83	3/23/84	6/12/84	9/13/84	Mean	Variance
	Quarter	1	2	3	4		
Indicators	pH	–	6.4	–	–	–	
Indicators	Conductivity (micromhos/cm)	–	410	–	–	–	
Metals (mg/ℓ)	Chromium	<0.010	<0.005	---	---	---	
Metals (mg/ℓ)	Copper	<0.005	<0.005	---	---	<0.005	
Metals (mg/ℓ)	Arsenic	0.009	0.008	---	---	0.0065	8.2×10^{-6}
Metals (mg/ℓ)	Cadmium	<0.002	<0.002	---	---	<0.002	
Metals (mg/ℓ)	Lead	<0.010	<0.005	---	---	---	
Metals (mg/ℓ)	Mercury	<0.001	<0.001	---	---	<0.001	
Metals (mg/ℓ)	Barium	0.10	0.10	---	---	0.10	
Metals (mg/ℓ)	Selenium	<0.005	<0.005	---	---	<0.005	
Metals (mg/ℓ)	Silver	<0.010	<0.010	---	---	<0.010	
Organics (mg/ℓ)	Pentachlorophenol	0.00056	0.0027	---	---	0.0015	8×10^{-7}
Organics (mg/ℓ)	Naphthalene	0.010	<0.005	---	---	0.0058	9.7×10^{-6}
Organics (mg/ℓ)	Total Phenol	---	---	---	---	---	

See note on preceeding page.

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Table 1- MONITORING DATA

Transfer Blank

	Date	12/14/83	3/23/84	6/12/84	9/14/84
	Quarter	1	2	3	4
Indicators	pH				7.8
Indicators	Conductivity (micromhos/cm)				13
Metals (mg/l)	Chromium				L/0.010
Metals (mg/l)	Copper				L/0.005
Metals (mg/l)	Arsenic				L/0.005
Metals (mg/l)	Cadmium				L/0.002
Metals (mg/l)	Lead				L/0.010
Metals (mg/l)	Mercury				L/0.001
Metals (mg/l)	Barium				L/0.10
Metals (mg/l)	Selenium				L/0.005
Metals (mg/l)	Silver				L/0.010
Organics (mg/l)	Pentachlorophenol				L/0.0001
Organics (mg/l)	Naphthalene				L/0.001
Organics (mg/l)	Total Phenol				L/0.005

Sweet, Edwards & Associates, Inc.

BORING LOG

PROJECT Pacific Wood Treating / RBT Site

Location Ridgefield Brick & Tile

Boring No. LS-1

Surface Elevation

Drilling Method Auger

Total Depth 54.5 ft.

Drilled By Sweet, Edwards & Assoc.

Date Completed 9/12/83

Logged By J. Maul

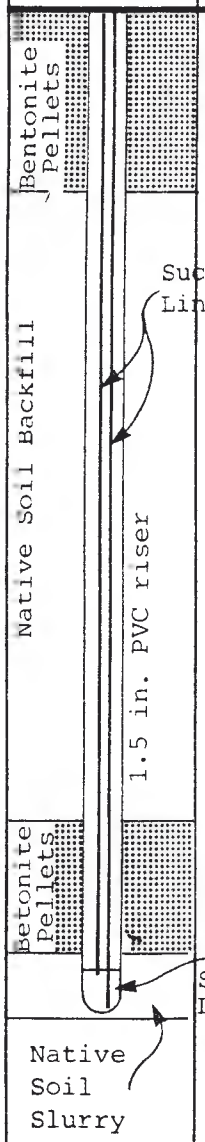
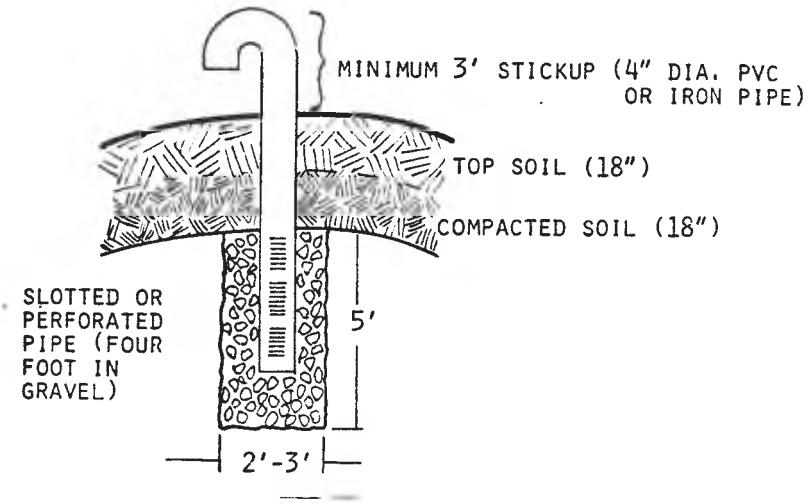
WELL DETAILS	PENETRATION TIME/RATE	DEPTH (FEET)	SAMPLE NO.	SAMPLE TYPE	PERMEABILITY TESTING	SYMBOL	LITHOLOGIC DESCRIPTION	WATER QUALITY
		10 20 30 40 50 60 70	4-1A 4-1B 4-2A 4-2B				43.5'-45.25' SILTY SAND- Tanish orange, lenses of feldspathic mica sand, medium fine, unsaturated. 52.0'-54.25' SAND- Orange and tan streaks, heavily oxidized, trace silt. Gravels at 54.5'. Auger refusal. Suction lysimeter installed at 52.0'.	

FIGURE 12

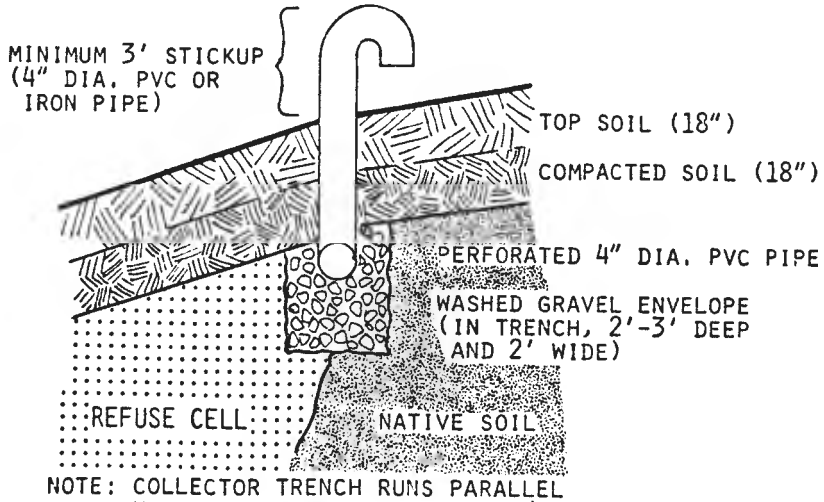
PASSIVE GAS VENTING SCHEMATIC

OPTION I AND II

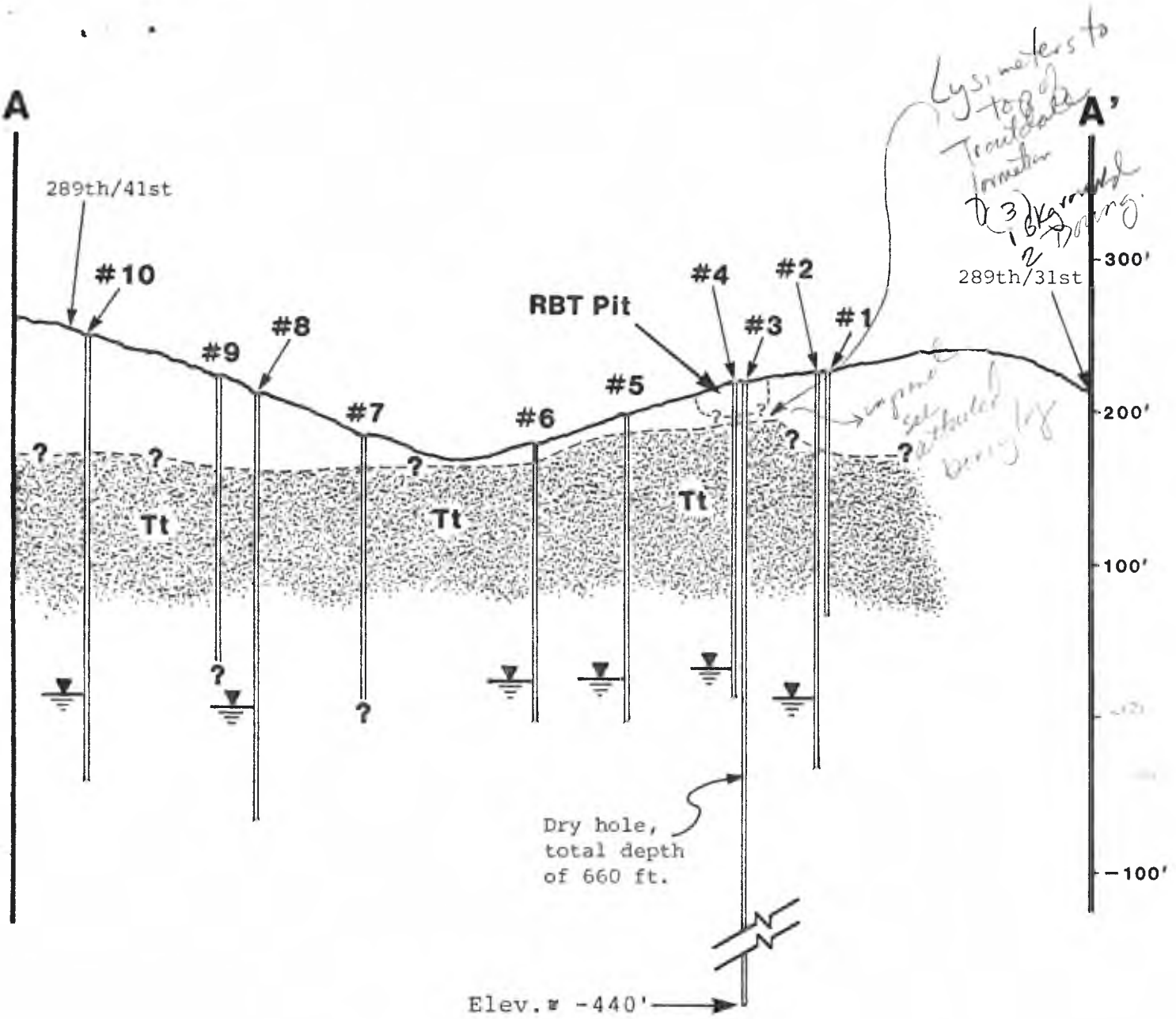


OPTION III

(SEE FIGURE 10 FOR PLACEMENT OF THREE RISERS)



NOTE: COLLECTOR TRENCH RUNS PARALLEL TO THE CONTOUR AT THE WASTE/ NATIVE SOIL BOUNDARY.



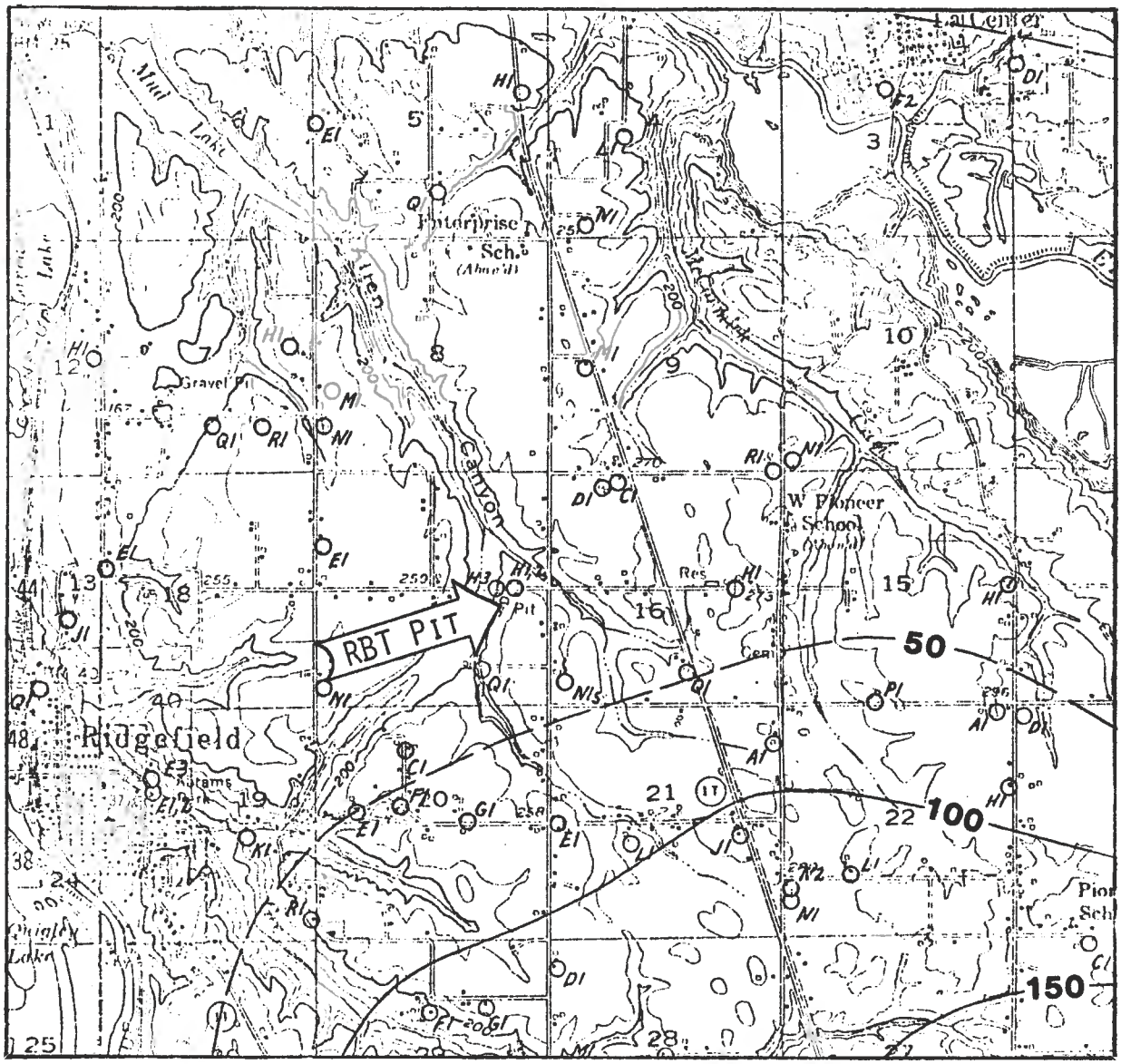
SCALE: HORIZONTAL @ 1"= 400'
VERTICAL @ 1"= 100'

PROJECTED WELL LOCATIONS, DEPTHS AND REPORTED STATIC WATER LEVELS ALONG 289TH STREET, RIDGEFIELD, WASH.

RBT PIT
Cross Section

FIGURE 4

Sweet, Edwards & Associates, Inc.



Base: USGS W.S.P. 1600, Plate 3

Scale: 1"=4000'

N

EXPLANATION

O_{El} REPRESENTATIVE WELL

100 PRINCIPAL GROUND WATER CONTOUR

50 INTERMEDIATE GROUND WATER CONTOUR

RBT PIT

Ground Water Contour and Well Location Map

FIGURE 5

Sweet, Edwards & Associates, Inc.