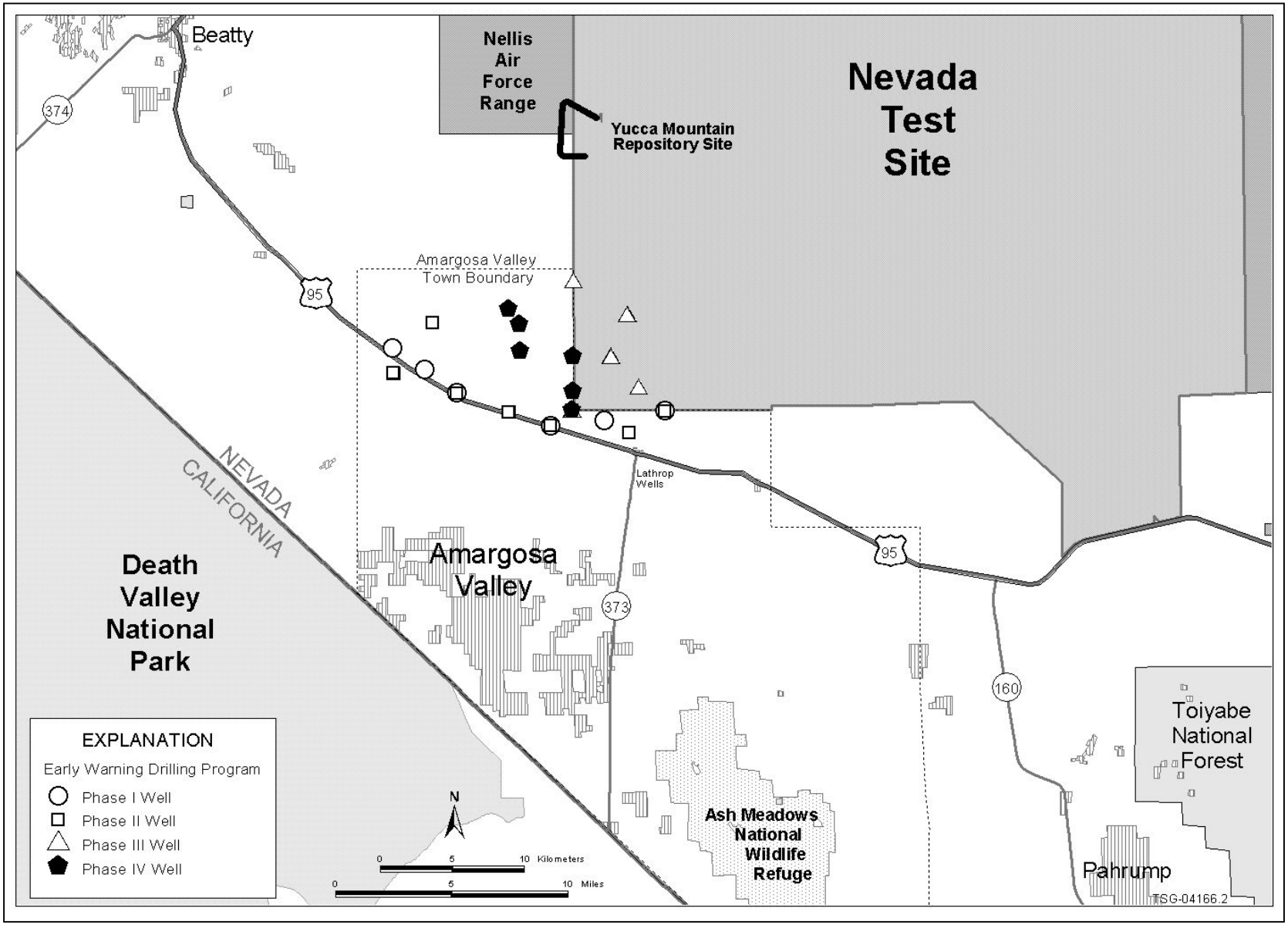


Figure 1.1-1
Early Warning Drilling Program Region

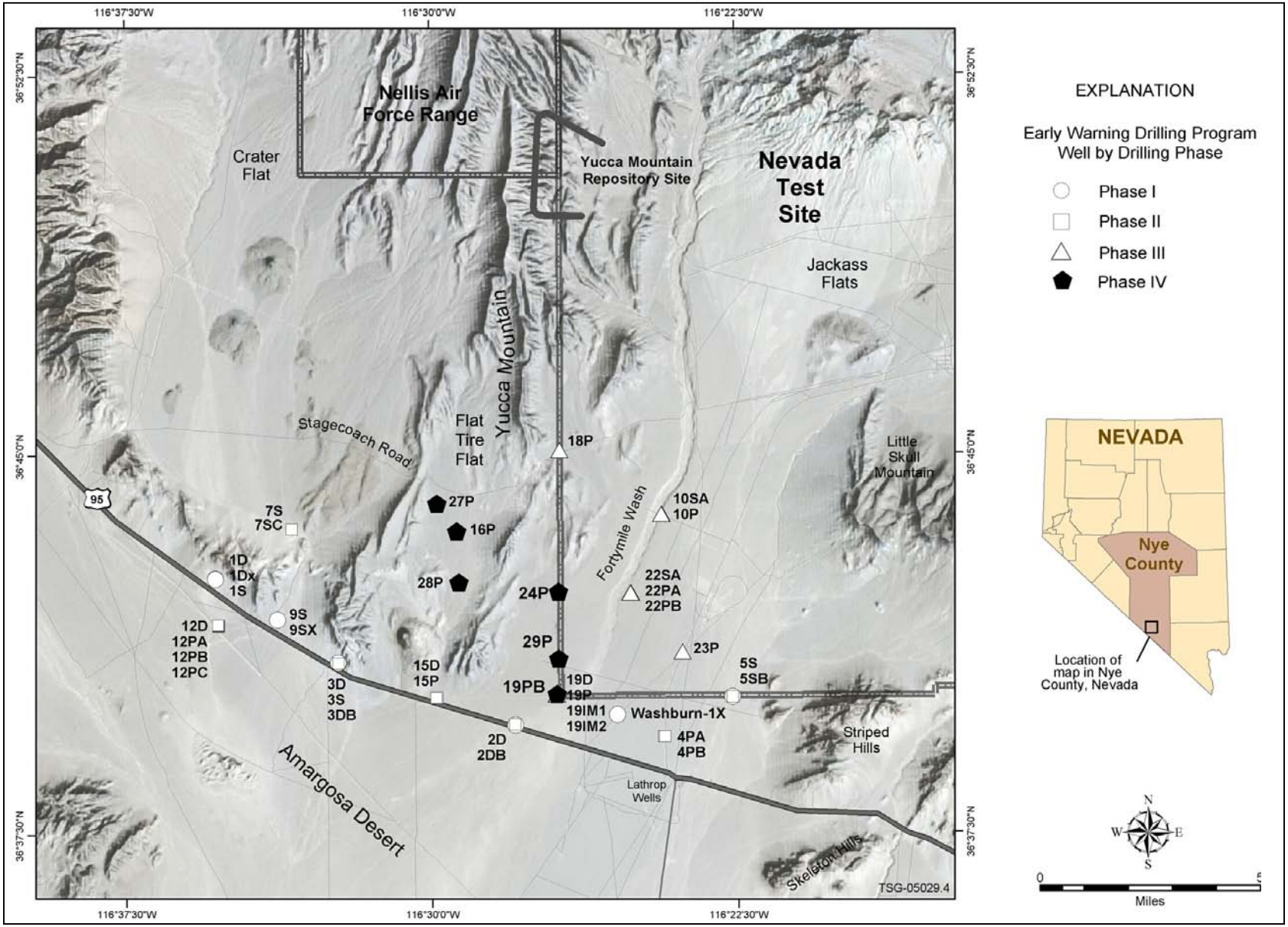
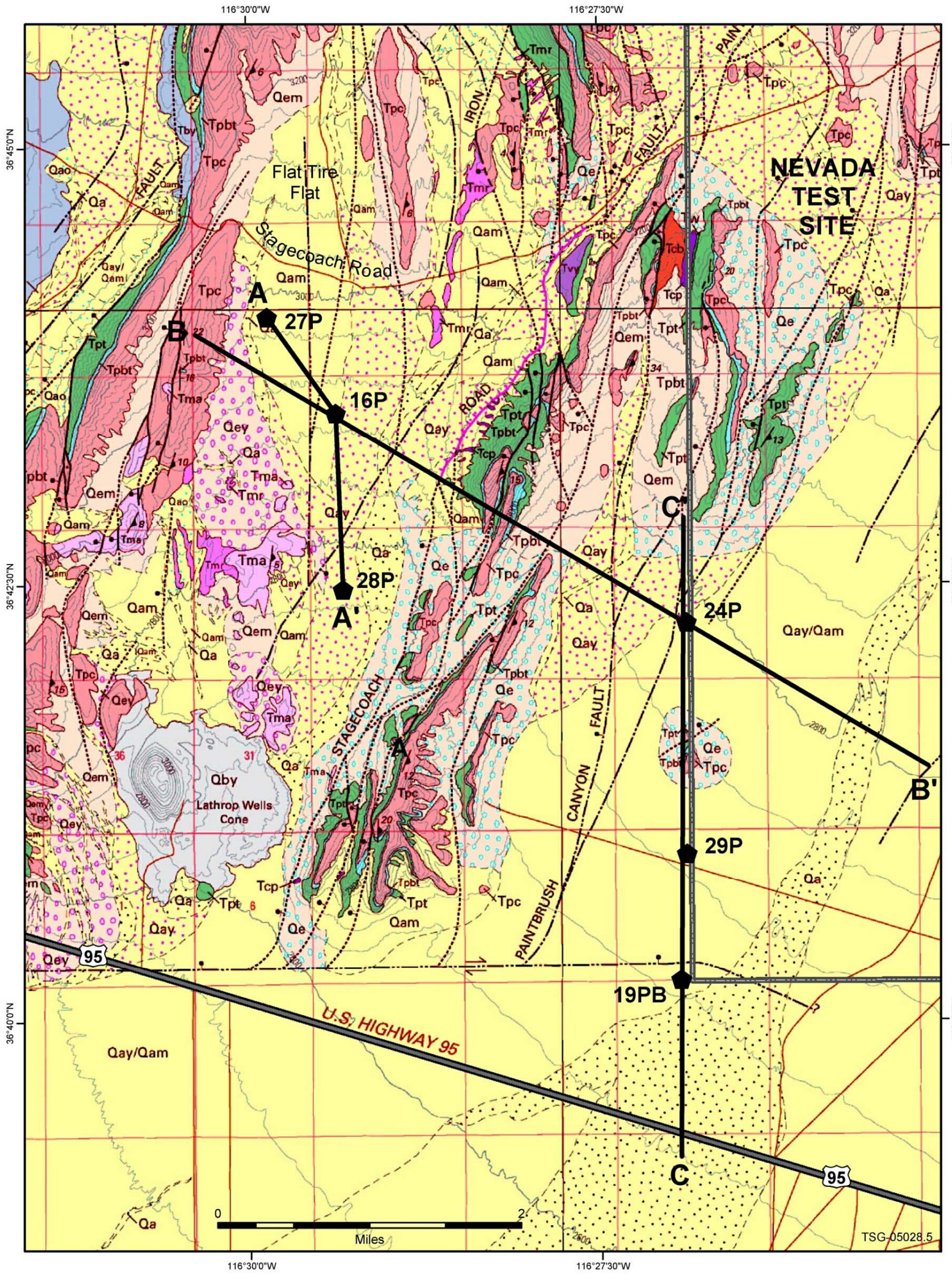


Figure 1.3-1
Early Warning Drilling Program Well Locations

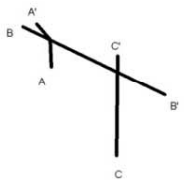


EXPLANATION

Early Warning Drilling Program Well by Drilling Phase

Phase IV

Cross Section Transect



Bedrock contact - Solid where exposed; dashed where approximately located; dotted where concealed beneath Quaternary cover

Contact between Quaternary surficial deposits

Fault scarp in surficial deposits - Hachures on downthrown side

Fault - Solid where exposed or tightly constrained; dashed where approximately located; dotted where concealed beneath Quaternary cover. Ball and bar on downthrown side. Opposed arrows indicate relative movement where known.

Fault located from geophysical methods - Ball and bar on downthrown side. Opposed arrows indicate relative movement where known.

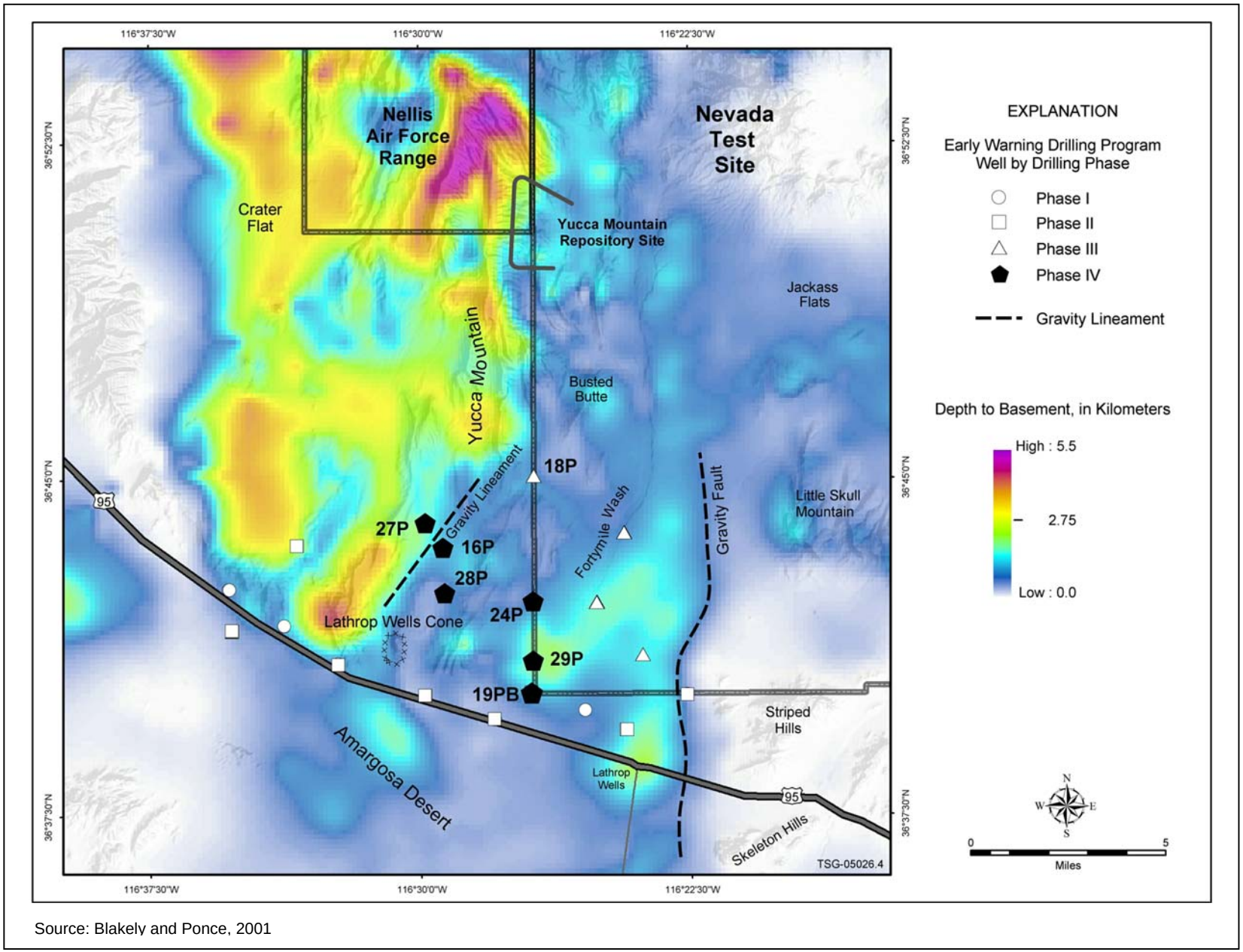
30 **Strike and dip of bedding** - Inclined - measured in field

15 **Strike and dip of compaction foliation in welded tuff**

Source: Potter and others, 1992

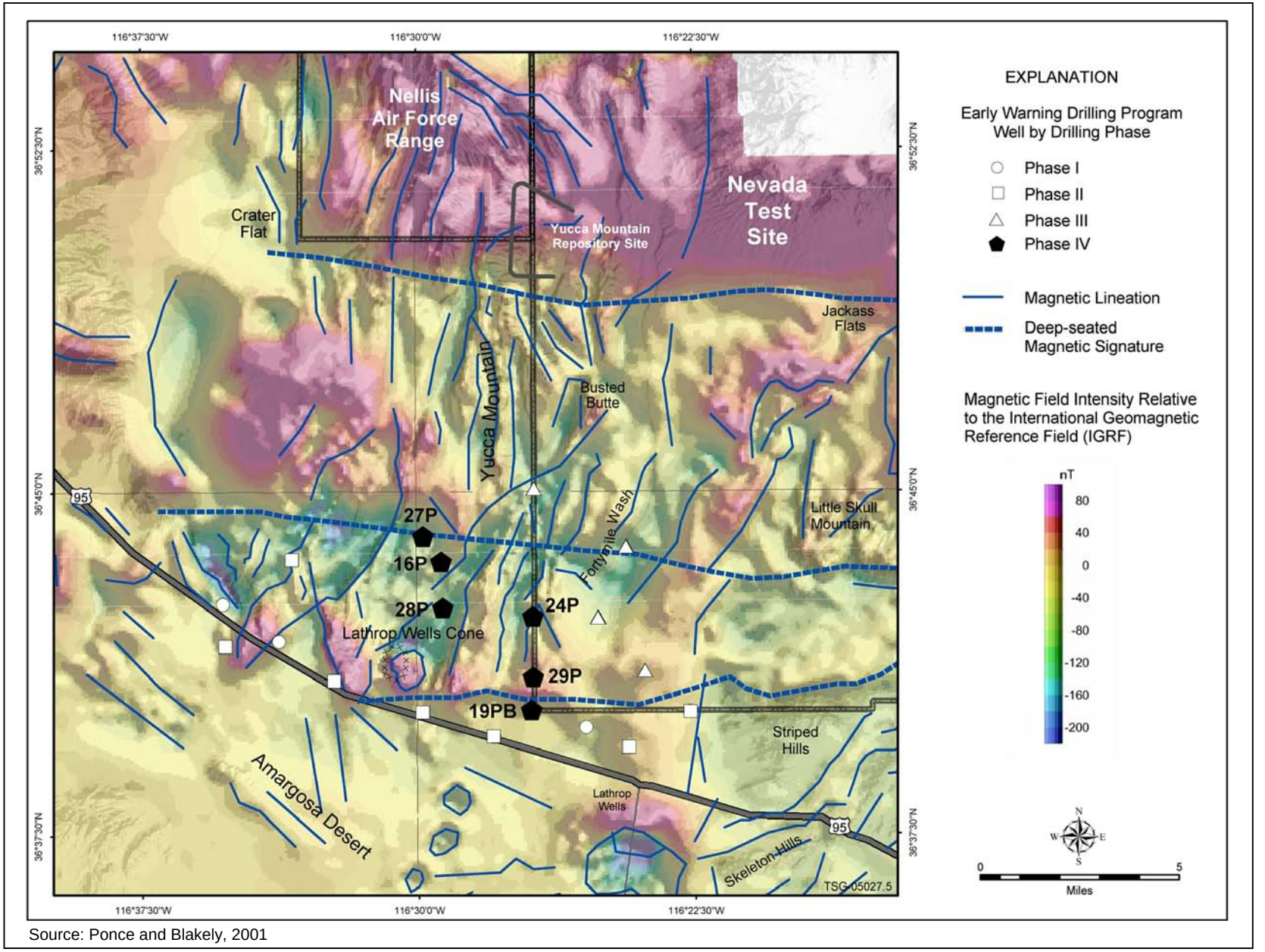
Qa	Alluvium (Holocene)
Qay	Younger alluvium (Holocene and late Pleistocene)
Qam	Alluvium (late and middle Pleistocene)
Qao	Older alluvium (middle and early Pleistocene)
Qey	Eolian sand and fragments (Holocene and late Pleistocene)
Qem	Eolian-colluvial ramp deposits (Holocene to middle Pleistocene)
Qby	Younger Quaternary basalt (late Pleistocene)
Qbo	Older Quaternary basalt (early Pleistocene)
Tby	Younger Tertiary basalt of Crater Flat (Pliocene)
Tvy	Younger volcanic rocks (Pliocene to Miocene)
	Timber Mountain Group (Miocene)
Tma	Ammonia Tanks Tuff
Tmr	Rainier Mesa Tuff—Includes rhyolite of Fluorspar Canyon
	Paintbrush Group (Miocene)
Tvx	Intracaldera and caldera margin megabreccia and mesobreccia
Tpk	Rhyolite of Comb Peak
Tpv	Rhyolite of Vent Pass
Tpcy	Tuff of Pinyon Pass
Tpc	Tiva Canyon Tuff
Tpbt	Bedded tuff
Tpt	Topopah Spring Tuff
Tw	Wahmonie Formation (Miocene)
	Crater Flat Group (Miocene)
Tcp	Prow Pass Tuff
Tcb	Bullfrog Tuff
Tcs	Pre-Bullfrog Tuff bedded tuff

Figure 1.3-2
Geologic Map of the Yucca Mountain Area with Cross Section Locations
July 2005
NWRPO-2004-04 Figures.doc



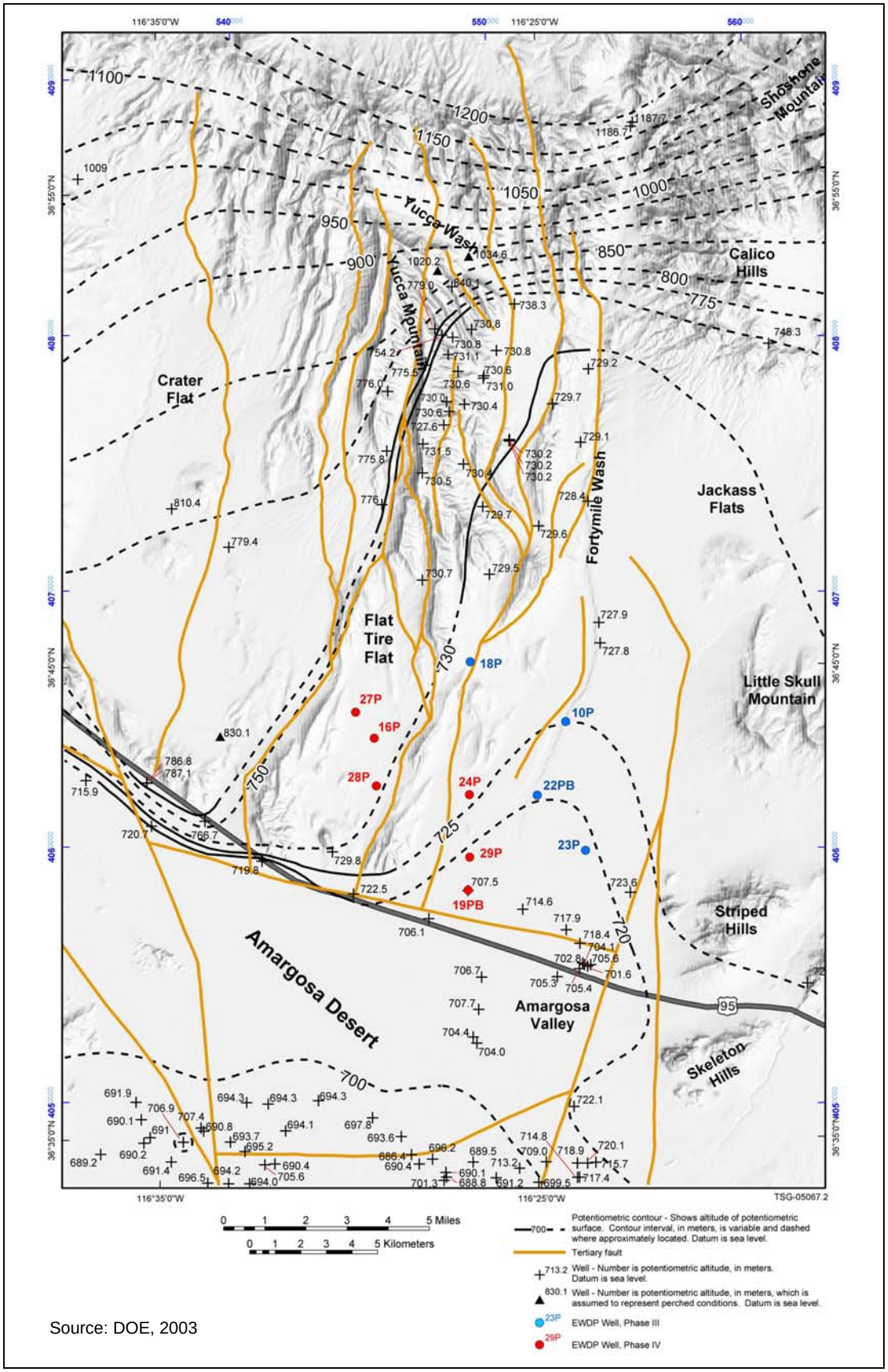
Source: Blakely and Ponce, 2001

Figure 1.3-3
Depth to Paleozoic-Age Basement Rocks



Source: Ponce and Blakely, 2001

Figure 1.3-4
Aeromagnetic Survey Map



Source: DOE, 2003

Figure 1.3-5
Potentiometric Surface Map of the Yucca Mountain/Amargosa Desert Area

Modeled flowpaths for original model with Case 2 recharge rates

Modeled flowpaths for potential climate change scenario

Source: (Winterle, CNWRA)

Figure 1.3-6
Modeled Potential Groundwater Flowpaths from the Yucca Mountain Repository

Alluvium Drill Cuttings Logging Form - Nye County Nuclear Waste Repository Project Office

Borehole ID: **NC-EWDP-24P** (Phase 4) Driller/Drilling Company: Greg Secrist/Eklund Drilling Co. Drilling Method: Reverse Circulation Air Rotary & Select Drive Core Alluvium Depth (ft bgs): 0 to 400 Start Date: 7/16/2003 End Date: 7/25/2003 Page 1 of 6

Date Logged	Logged By (Initials)	Date Checked	Checked By (Initials)	Sample Number	Depth Interval (feet bgs) From	Depth Interval (feet bgs) To	Drilling Data: Liquid Drilling Fluid Injection Rate (gpm)	Drilling Data: Drilling Rate (feet/min)	Drilling Data: Water Production (gpm)	Drilling Data: Sample Recovery (gallons)	Drilling Data: Borehole Diameter (inches)	Sample Density Measurements: Tare Weight (kg)	Sample Density Measurements: Sample Plus Tare Weight (kg)	Sample Density Measurements: Sample Weight (kg)	Munsell Color Symbol	Moisture Content: Dry	Moisture Content: Moist	Moisture Content: Wet	Particle Size Distribution (%): Gravel	Sand	Silt	Clay	Fines (Silt plus Clay)	Grading: Well Graded	Grading: Poorly Graded	Estimated Plasticity: None	Low	Moderate	High	USCS Group Symbol	Gravel/Sand Grain Shape: Angular	Subangular	Subrounded	Rounded	Cementation: None	Weak	Moderate	Strong	HCL Reaction: None	Weak	Strong	Major Rock Type (%): Volcanics	Carbonates	Other
7/16/2003	BW	7/17/2003	EJH	24P-0-2.5	0.00	2.50	0.0	1.3	0.0	2.0	6.3	0.85	9.45	8.60	10YR 5/4	☑	☐	☐	9	73	18	0	18	☐	☐	☑	☐	☐	☐	SM	☐	☑	☐	☐	☑	☐	☐	☐	☐	☐	☑	100		
7/16/2003	BW	7/17/2003	EJH	24P-2.5-5.0	2.50	5.00	0.0	1.3	0.0	4.0	6.3	0.85	21.70	20.85	7.5YR 4/4	☑	☐	☐	17	72	11	0	11	☑	☐	☑	☐	☐	☐	SW-SM	☐	☑	☐	☐	☐	☐	☑	☐	☐	☐	☑	100		
7/16/2003	BW	7/17/2003	EJH	24P-5.0-7.5	5.00	7.50	0.0	1.3	0.0	5.0	6.3	0.85	33.10	32.25	10YR 5/4	☑	☐	☐	24	68	8	0	8	☑	☐	☑	☐	☐	☐	SW-SM	☐	☑	☐	☐	☐	☐	☑	☐	☐	☐	☑	100		
7/16/2003	BW	7/17/2003	EJH	24P-7.5-10.0	7.50	10.00	0.0	1.3	0.0	6.0	6.3	0.85	38.50	37.65	10YR 5/4	☑	☐	☐	25	67	8	0	8	☑	☐	☑	☐	☐	☐	SW-SM	☐	☑	☐	☐	☐	☐	☑	☐	☐	☐	☑	100		
7/16/2003	BW	7/17/2003	EJH	24P-10.0-12.5	10.00	12.50	0.0	1.3	0.0	5.0	6.3	0.85	26.25	25.40	10YR 5/4	☑	☐	☐	23	69	8	0	8	☑	☐	☑	☐	☐	☐	SW-SM	☐	☑	☐	☐	☐	☐	☑	☐	☐	☐	☑	100		
7/16/2003	BW	7/17/2003	EJH	24P-12.5-15.0	12.50	15.00	0.0	1.3	0.0	3.5	6.3	0.85	16.05	15.20	10YR 5/4	☑	☐	☐	26	67	7	0	7	☑	☐	☑	☐	☐	☐	SW-SM	☐	☑	☐	☐	☐	☐	☑	☐	☐	☐	☑	100		
7/16/2003	BW	7/17/2003	EJH	24P-15.0-17.5	15.00	17.50	0.0	1.3	0.0	7.0	6.3	0.85	39.20	38.35	10YR 5/4	☑	☐	☐	20	72	8	0	8	☑	☐	☑	☐	☐	☐	SW-SM	☐	☑	☐	☐	☐	☐	☑	☐	☐	☐	☑	100		
7/16/2003	BW	7/17/2003	EJH	24P-17.5-20.0	17.50	20.00	0.0	1.3	0.0	2.5	6.3	0.85	12.30	11.45	7.5YR 5/2	☑	☐	☐	35	62	3	0	3	☑	☐	☑	☐	☐	☐	SW	☐	☑	☐	☐	☑	☐	☐	☐	☐	☐	☑	100		
7/16/2003	BW	7/17/2003	EJH	24P-20.0-22.5	20.00	22.50	0.0	3.3	0.0	0.5	6.3	0.85	3.65	2.80	5YR 5/1	☑	☐	☐	9	86	5	0	5	☑	☐	☑	☐	☐	☐	SW	☐	☑	☐	☐	☑	☐	☐	☐	☐	☐	☑	100		
7/16/2003	BW	7/17/2003	EJH	24P-22.5-25.0	22.50	25.00	0.0	3.3	0.0	3.0	6.3	0.85	15.85	15.00	7.5YR 5/2	☑	☐	☐	15	76	9	0	9	☑	☐	☑	☐	☐	☐	SW-SM	☐	☑	☐	☐	☑	☐	☐	☐	☐	☐	☑	100		
7/16/2003	BW	7/17/2003	EJH	24P-25.0-27.5	25.00	27.50	0.0	3.3	0.0	2.0	6.3	0.85	8.90	8.05	5YR 6/3	☑	☐	☐	11	76	8	5	13	☑	☐	☐	☑	☐	☐	SW-SM	☐	☑	☐	☐	☑	☐	☐	☐	☐	☐	☑	100		
7/16/2003	BW	7/17/2003	EJH	24P-27.5-30.0	27.50	30.00	0.0	3.3	0.0	2.5	6.3	0.85	15.70	14.85	5YR 6/3	☑	☐	☐	21	67	7	5	12	☑	☐	☐	☑	☐	☐	SW-SM	☐	☑	☐	☐	☑	☐	☐	☐	☐	☐	☑	100		
7/16/2003	BW	7/17/2003	EJH	24P-30.0-32.5	30.00	32.50	0.0	3.3	0.0	2.0	6.3	0.85	11.30	10.45	5YR 6/3	☑	☐	☐	21	73	6	0	6	☑	☐	☑	☐	☐	☐	SW-SM	☐	☑	☐	☐	☑	☐	☐	☐	☐	☐	☑	100		
7/16/2003	BW	7/17/2003	EJH	24P-32.5-35.0	32.50	35.00	0.0	3.3	0.0	3.0	6.3	0.85	20.40	19.55	7.5YR 5/2	☑	☐	☐	21	73	6	0	6	☑	☐	☑	☐	☐	☐	SW-SM	☐	☑	☐	☐	☑	☐	☐	☐	☐	☐	☑	100		
7/16/2003	BW	7/17/2003	EJH	24P-35.0-37.5	35.00	37.50	0.0	3.3	0.0	2.0	6.3	0.85	12.00	11.15	7.5YR 5/2	☑	☐	☐	18	74	6	2	8	☑	☐	☐	☑	☐	☐	SW-SM	☐	☑	☐	☐	☑	☐	☐	☐	☐	☐	☑	100		
7/16/2003	BW	7/17/2003	EJH	24P-37.5-40.0	37.50	40.00	0.0	3.3	0.0	2.0	6.3	0.85	13.04	12.19	7.5YR 5/2	☑	☐	☐	9	80	9	2	11	☑	☐	☐	☑	☐	☐	SW-SM	☐	☑	☐	☐	☑	☐	☐	☐	☐	☐	☑	100		
7/16/2003	BW	7/17/2003	EJH	24P-40.0-42.5	40.00	42.50	0.0	2.9	0.0	2.5	6.3	0.85	15.15	14.30	5YR 4/2	☑	☐	☐	25	71	4	0	4	☑	☐	☑	☐	☐	☐	SW	☐	☑	☐	☐	☑	☐	☐	☐	☐	☐	☑	100		
7/16/2003	BW	7/17/2003	EJH	24P-42.5-45.0	42.50	45.00	0.0	2.9	0.0	1.5	6.3	0.85	9.30	8.45	5YR 4/2	☑	☐	☐	26	70	4	0	4	☑	☐	☑	☐	☐	☐	SW	☐	☑	☐	☐	☑	☐	☐	☐	☐	☐	☑	100		
7/16/2003	BW	7/17/2003	EJH	24P-45.0-47.5	45.00	47.50	0.0	2.9	0.0	1.5	6.3	0.85	9.45	8.60	7.5YR 5/2	☑	☐	☐	17	73	8	2	10	☑	☐	☐	☑	☐	☐	SW-SM	☐	☑	☐	☐	☑	☐	☐	☐	☐	☐	☑	100		
7/16/2003	BW	7/17/2003	EJH	24P-47.5-50.0	47.50	50.00	0.0	2.9	0.0	2.5	6.3	0.85	12.20	11.35	7.5YR 5/2	☑	☐	☐	9	85	6	0	6	☑	☐	☑	☐	☐	☐	SW-SM	☐	☑	☐	☐	☑	☐	☐	☐	☐	☐	☑	100		
7/16/2003	BW	2/17/2004	JSW	24P-50.0-52.5	50.00	52.50	0.0	2.9	0.0	3.0	6.3	0.85	16.65	15.80	5YR 4/2	☑	☐	☐	20	74	4	2	6	☑	☐	☑	☐	☐	☐	SW-SM	☐	☑	☐	☐	☑	☐	☐	☐	☐	☐	☑	100		
7/16/2003	BW	2/17/2004	JSW	24P-52.5-55.0	52.50	55.00	0.0	2.9	0.0	3.0	6.3	0.85	19.05	18.20	5YR 4/2	☑	☐	☐	27	67	4	2	6	☑	☐	☑	☐	☐	☐	SW-SM	☐	☑	☐	☐	☑	☐	☐	☐	☐	☐	☑	100		
7/16/2003	BW	2/17/2004	JSW	24P-55.0-57.5	55.00	57.50	0.0	2.9	0.0	2.5	6.3	0.85	14.85	14.00	5YR 4/2	☑	☐	☐	22	72	4	2	6	☑	☐	☑	☐	☐	☐	SW-SM	☐	☑	☐	☐	☑	☐	☐	☐	☐	☐	☑	100		
7/16/2003	BW	2/17/2004	JSW	24P-57.5-60.0	57.50	60.00	0.0	2.9	0.0	2.0	6.3	0.85	13.10	12.25	5YR 6/3	☑	☐	☐	8	83	8	1	9	☑	☐	☐	☑	☐	☐	SW-SM	☐	☑	☐	☐	☑	☐	☐	☐	☐	☐	☑	100		
7/16/2003	BW	2/17/2004	JSW	24P-60.0-62.5	60.00	62.50	0.0	1.9	0.0	2.5	6.3	0.85	14.85	14.00	5YR 6/3	☑	☐	☐	17	75	8	0	8	☑	☐	☑	☐	☐	☐	SW-SM	☐	☑	☐	☐	☑	☐	☐	☐	☐	☐	☑	100		
7/17/2003	BW	2/17/2004	JSW	24P-62.5-65.0	62.50	65.00	0.0	1.9	0.0	2.0	6.3	0.85	6.90	6.05	5YR 6/3	☑	☐	☐	43	54	3	0	3	☑	☐	☑	☐	☐	☐	SW	☐	☑	☐	☐	☑	☐	☐	☐	☐	☑	☐	100		
7/17/2003	BW	2/17/2004	JSW	24P-65.0-67.5	65.00	67.50	0.0	1.9	0.0	1.5	6.3	0.85	8.50	7.65	5YR 6/3	☑	☐	☐	33	60	7	0	7	☑	☐	☑	☐	☐	☐	SW-SM	☐	☑	☐	☐	☑	☐	☐	☐	☐	☑	☐	100		
7/17/2003	BW	2/17/2004	JSW	24P-67.5-70.0	67.50	70.00	0.0	1.9	0.0	2.0	6.3	0.85	10.35	9.50	5YR 6/3	☑	☐	☐	39	56	5	0	5	☑	☐	☑	☐	☐	☐	SW	☐	☑	☐	☐	☑	☐	☐	☐	☐	☑	☐	100		
7/17/2003	BW	2/17/2004	JSW	24P-70.0-72.5	70.00	72.50	0.0	1.9	0.0	2.5	6.3	0.85	13.25	12.40	5YR 4/2	☑	☐	☐	39	58	3	0	3	☑	☐	☑	☐	☐	☐	SW	☐	☑	☐	☐	☑	☐	☐	☐	☐	☑	☐	100		
7/17/2003	BW	2/17/2004	JSW	24P-72.5-75.0	72.50	75.00	0.0	1.9	0.0	2.0	6.3	0.85	9.40	8.55	5YR 4/2	☑	☐	☐	38	61	1	0	1	☑	☐	☑	☐	☐	☐	SW	☐	☑	☐	☐	☑	☐	☐	☐	☐	☑	☐	100		

Nye County Department of Natural Resources and Federal Facilities Printed 7/14/2005

Figure 2.3-1
Example of Alluvium Drill Cuttings Geologic Logging Form

Non-Alluvium Logging Form - Nye County Nuclear Waste Repository Project Office

Borehole ID: **NC-EWDP-24P** (Phase 4) Driller/Drilling Company: Greg Secrist/Eklund Drilling Co. Drilling Method: Reverse Circulation Air Rotary Alluvium Depth (ft bgs): 400 to 1860 Start Date: 7/27/2003 End Date: 8/7/2003 Page 1 of 11

Logged (date)	Logged (by)	Checked (date)	Checked (by)	Sample	Depth Interval (feet/bgs) from	Depth Interval (feet/bgs) to	Drilling/Coring Data: Liquid Drilling Fluid Injection Rate (gpm)	Drilling/Coring Rate (feet/min)	Water Production (gpm)	Sample Recovery (gallons)	Sample Density Data: Borehole Diameter (inches)	Tare Weight (kg)	Sample Plus Tare Weight (kg)	Sample Weight (kg)	Munsell Color Symbol
07/29/03	EJH	11/25/03	BW	24P-1000-1005	1000.00	1005.00	1.3	0.6	74.0	2.5	6.3				10yr 7/4
07/29/03	EJH	11/25/03	BW	24P-1005-1010	1005.00	1010.00	1.3	0.6	74.0	2.5	6.3				10yr 7/4
07/29/03	EJH	11/25/03	BW	24P-1010-1015	1010.00	1015.00	1.3	0.6	74.0	2.5	6.3				10yr 7/4
07/29/03	EJH	11/25/03	BW	24P-1015-1020	1015.00	1020.00	1.3	0.6	74.0	2.5	6.3				10yr 7/4
07/30/03	EJH	11/25/03	BW	24P-1020-1025	1020.00	1025.00	1.3	0.7	89.0	3.0	6.3				10yr 7/4
07/30/03	EJH	11/25/03	BW	24P-1025-1030	1025.00	1030.00	1.3	0.7	89.0	3.0	6.3				10yr 7/4
07/30/03	EJH	11/25/03	BW	24P-1030-1035	1030.00	1035.00	1.3	0.7	89.0	3.0	6.3				10yr 7/4
07/30/03	EJH	11/25/03	BW	24P-1035-1040	1035.00	1040.00	1.3	0.7	89.0	3.0	6.3				10R 4/6
07/30/03	EJH	11/25/03	BW	24P-1040-1045	1040.00	1045.00	1.3	0.7	89.0	2.5	6.3				10YR 7/4
07/30/03	EJH	11/25/03	BW	24P-1045-1050	1045.00	1050.00	1.3	0.7	89.0	3.0	6.3				10R 4/6
07/30/03	EJH	11/25/03	BW	24P-1050-1055	1050.00	1055.00	1.3	0.7	89.0	3.0	6.3				10R 4/6
07/30/03	EJH	11/25/03	BW	24P-1055-1060	1055.00	1060.00	1.3	0.7	89.0	3.0	6.3				5YR 5/6
07/30/03	EJH	11/25/03	BW	24P-1060-1065	1060.00	1065.00	1.3	0.6	81.0	2.5	6.3				5YR 5/6
07/30/03	EJH	11/25/03	BW	24P-1065-1070	1065.00	1070.00	1.3	0.6	81.0	3.0	6.3				5YR 5/6
07/30/03	EJH	11/25/03	BW	24P-1070-1075	1070.00	1075.00	1.3	0.6	81.0	3.5	6.3				5YR 5/6
07/30/03	EJH	11/25/03	BW	24P-1075-1080	1075.00	1080.00	1.3	0.6	81.0	3.0	6.3				5YR 5/6
07/30/03	EJH	11/25/03	BW	24P-1080-1085	1080.00	1085.00	1.3	0.4	81.0	3.5	6.3				5YR 5/6
07/30/03	EJH	11/25/03	BW	24P-1085-1090	1085.00	1090.00	1.3	0.4	81.0	3.5	6.3				5YR 5/6
07/30/03	EJH	11/25/03	BW	24P-1090-1095	1090.00	1095.00	1.3	0.4	81.0	3.5	6.3				5YR 5/6
07/30/03	EJH	11/25/03	BW	24P-1095-1100	1095.00	1100.00	1.3	0.4	81.0	4.0	6.3				5YR 5/6
07/30/03	EJH	11/25/03	BW	24P-1100-1105	1100.00	1105.00	1.3	0.6	92.0	4.0	6.3				5YR 5/6
07/30/03	EJH	11/25/03	BW	24P-1105-1110	1105.00	1110.00	1.3	0.6	92.0	2.5	6.3				5YR 5/6
07/30/03	EJH	11/25/03	BW	24P-1110-1115	1110.00	1115.00	1.3	0.6	92.0	3.0	6.3				5YR 5/6
07/30/03	EJH	11/25/03	BW	24P-1115-1120	1115.00	1120.00	1.3	0.6	92.0	3.0	6.3				5YR 5/6
07/30/03	EJH	11/25/03	BW	24P-1120-1125	1120.00	1125.00	1.3	0.7	92.0	3.0	6.3				5YR 5/6
07/30/03	EJH	11/25/03	BW	24P-1125-1130	1125.00	1130.00	1.3	0.7	92.0	2.5	6.3				5YR 5/6
07/30/03	EJH	11/25/03	BW	24P-1130-1135	1130.00	1135.00	1.3	0.7	92.0	3.0	6.3				5YR 5/6
07/30/03	EJH	11/25/03	BW	24P-1135-1140	1135.00	1140.00	1.3	0.7	92.0	3.0	6.3				10YR 8/2
07/30/03	EJH	11/25/03	BW	24P-1140-1145	1140.00	1145.00	1.3	0.7	94.0	2.0	6.3				10YR 8/2

Sample	Moisture Content: Not Applicable	Dry	Moist	Wet	HCL Re-action: None	Weak	Strong	Rock Unit – Tuff – Deposition: Ash Fall	Ash Flow	Reworked	Welding: Dense	Moderate	Weak	None	Alteration: Vitric	Devitrified	Matrix	Vapor Phase	Spherulitic	Sedimentary: Claystone	Mudstone	Siltstone	Sandstone	Conglomerate	Chert	Carbonate: Limestone	Dolomite	Other	Weathering: Fresh	Slight	Moderate	High	Decomposed	Structure: None Observed	Stratified	Laminated	Fractured	Other	Matrix: Dense/Non-porous	Open/Porous	Other
24P-1000-1005				✓	✓				✓					✓		✓													✓					✓						✓	
24P-1005-1010				✓	✓				✓				✓			✓													✓					✓						✓	
24P-1010-1015				✓	✓				✓					✓		✓													✓					✓						✓	
24P-1015-1020				✓	✓				✓					✓		✓													✓					✓						✓	
24P-1020-1025				✓	✓				✓					✓		✓													✓					✓						✓	
24P-1025-1030				✓	✓				✓					✓		✓													✓					✓						✓	
24P-1030-1035				✓	✓				✓				✓			✓													✓					✓						✓	
24P-1035-1040				✓	✓				✓				✓			✓													✓					✓						✓	
24P-1040-1045				✓	✓				✓					✓		✓													✓					✓						✓	
24P-1045-1050				✓	✓				✓					✓		✓													✓					✓						✓	
24P-1050-1055				✓	✓				✓					✓		✓													✓					✓						✓	
24P-1055-1060				✓	✓				✓					✓		✓													✓					✓						✓	
24P-1060-1065				✓	✓				✓					✓		✓													✓					✓						✓	
24P-1065-1070				✓	✓				✓					✓		✓													✓					✓						✓	
24P-1070-1075				✓	✓				✓					✓		✓													✓					✓						✓	
24P-1075-1080				✓	✓				✓					✓		✓													✓					✓						✓	
24P-1080-1085				✓	✓				✓					✓		✓													✓					✓						✓	
24P-1085-1090				✓	✓				✓					✓		✓													✓					✓						✓	
24P-1090-1095				✓	✓				✓					✓		✓													✓					✓						✓	
24P-1095-1100				✓	✓				✓					✓		✓													✓					✓						✓	
24P-1100-1105				✓	✓				✓				✓			✓													✓					✓						✓	
24P-1105-1110				✓	✓				✓				✓			✓													✓					✓						✓	
24P-1110-1115				✓	✓				✓				✓			✓													✓					✓						✓	
24P-1115-1120				✓	✓				✓					✓		✓													✓					✓						✓	
24P-1120-1125				✓	✓				✓					✓		✓													✓					✓						✓	
24P-1125-1130				✓	✓				✓					✓		✓													✓					✓						✓	
24P-1130-1135				✓	✓				✓					✓		✓													✓					✓						✓	
24P-1135-1140				✓	✓				✓					✓		✓													✓					✓						✓	
24P-1140-1145				✓	✓				✓					✓		✓													✓					✓						✓	

Sample	Phenocrysts – Mafics: % by Vol.	Munsell Color Symbol	Max. Size (mm)	Quartz: % by Vol.	Munsell Color Symbol	Max. Size (mm)	Feldspar: % by Vol.	Munsell Color Symbol	Max. Size (mm)	Clasts – Pumice: % by Vol.	Munsell Color Symbol	Max. Size (mm)	Lithics: % by Vol.	Munsell Color Symbol	Max. Size (mm)
24P-1000-1005	1	N1	2	1	N7	2	1	CL	2	4	10YR 8/6	4			
24P-1005-1010	1	N1	2	1	N7	2				5	10YR 8/6	3	1	N2	2
24P-1010-1015	1	N1	2	1	N7	3				6	10YR 8/6	4	1	N5	4
24P-1015-1020	2	5G 2/1	2	2	N7	2	1	CL	2	5	10YR 8/6	6	1	N4	2
24P-1020-1025	1	N1	2	1	N7	2				5	10YR 8/6	5	2	N4	3
24P-1025-1030	1	N1	2	2	N8	2				10	5YR 8/4	4	5	N4	3
24P-1030-1035	2	N1	2	2	N8	2	1	CL	2	10	5YR 8/4	6	5	N4	4
24P-1035-1040	2	N1	2	2	N8	2	1	CL	2	5	5YR 8/4	5	2	N5/N4	3
24P-1040-1045	1	5G 2/1	2	2	N8	2				10	5YR 8/4	5	5	N5/N4	2
24P-1045-1050	2	5G 2/1	2	2	N8	2				20	5YR 8/4	6	5	N5/N4	2
24P-1050-1055	1	5G 2/1	2	2	N8	2				15	5YR 8/4	6	5	N5/N4	3
24P-1055-1060	1	5G 2/1	2	2	N8	2	1	CL	2	5	5YR 8/4	5	5	5YR 4/1	4
24P-1060-1065	2	5G 2/1	2	1	N8	2	1	CL	2	5	5YR 8/4	5	3	5YR 4/1	2
24P-1065-1070	1	5G 2/1	2	1	N8	2				5	5YR 8/4	5	3	10YR 6/6	2
24P-1070-1075	1	5G 2/1	2	1	N8	2				10	10YR 7/4	6	3	10YR 4/2	4
24P-1075-1080	2	5G 2/1	2	1	N8	2				10	10YR 7/4	5	4	5YR 3/4	10
24P-1080-1085	2	5G 2/1	2	1	N8	2				10	10YR 7/4	5	5	10R 4/6 N4 & N2	5
24P-1085-1090	2	5G 2/1	2	1	N8	2				10	5YR 8/4	5	5	10R 4/6 N4 & N2	5
24P-1090-1095	2	5G 2/1	2	1	N8	2				5	5YR 8/4	5	5	10R 4/6 N4 & N2	5
24P-1095-1100	2	5G 2/1	2	1	N8	2				10	5YR 8/4	5	5	10R 4/6 N4 & N2	4
24P-1100-1105	1	N1	1	1	N5	1	1	CL	1	15	10YR 8/2 N1	3	15	N1 & N4	10
24P-1105-1110	2	N1	2	2	N5	2				20	10YR 8/2 N1	5	10	N1 & N4	10
24P-1110-1115	1	N1	1	2	N5	1	1	CL	1	15	10YR 8/2 N1	3	5	N1 & N4	2
24P-1115-1120	1	N1	2	1	N5	1	1	CL	1	20	10YR 8/2 N1	3	5	N1 & N4	3
24P-1120-1125	2	N1	2	1	N5	1	1	CL	1	10	10YR 8/2 N1	3	10	N1 & N4	5
24P-1125-1130	1	N1	2	2	N5	1	1	CL	1	15	10YR 8/2 N1	7	15	N1 & N4	15
24P-1130-1135	2	N1	2	1	N5	1	2	CL	1	20	10YR 8/2 N1	5	20	VARIEGATED	5
24P-1135-1140	1	N1	2	2	N5	2	2	CL	1	20	10YR 8/2 N1	4	15	VARIEGATED	4
24P-1140-1145	1	N1	1	1	N5	1	1	CL	1	15	10YR 8/2 N1	4	20	VARIEGATED	2

Figure 2.3-2
Example of Non-Alluvium Drill Cuttings Geologic Logging Form

Alluvium Core Logging Form - Nye County Nuclear Waste Repository Project Office

Key for Sample Number: SC = Sonic core; C = Drive core. Key for Sample Type: L = Logging; D = Density; F = Fill; LC = Lost core; R = Entire run; X = End of run (overlaps with next run).

Borehole ID: **NC-EWDP-24P** (Phase 4) Driller/Drilling Company: Greg Secrist/Eklund Drilling Co. Drilling Method: Reverse Circulation Air Rotary & Select Drive Core Alluvium Depth (ft bgs): 0 to 400 Start Date: 7/16/2003 End Date: 7/25/2003 Page 1 of 2

Date Logged	Logged By (Initials)	Date Checked	Checked By (Initials)	Core Run Number	Sample Type	Sample Number	Depth Interval (feet bgs) From	Depth Interval (feet bgs) To	Coring Data: Coring Rate (feet/min)	Coring Data: Sample Recovery (feet)	Coring Data: Core Diameter (inches)	Sample Density Data: Tare Weight (kg)	Sample Density Data: Sample Plus Tare Weight (kg)	Sample Density Data: Sample Weight (kg)	Munsell Color Symbol	Moisture Content: Dry	Moisture Content: Moist	Moisture Content: Wet	Particle Size Distribution (%): Gravel	Particle Size Distribution (%): Sand	Particle Size Distribution (%): Silt	Particle Size Distribution (%): Clay	Particle Size Distribution (%): Fines (Silt plus Clay)	Grading: Well Graded	Grading: Poorly Graded	Grading: Not Applicable	Estimated Plasticity: None	Estimated Plasticity: Low	Estimated Plasticity: Moderate	Estimated Plasticity: High	USCS Group Symbol	Gravel/Sand GrainShape: Angular	Gravel/Sand GrainShape: Subangular	Gravel/Sand GrainShape: Subrounded	Gravel/Sand GrainShape: Rounded	Cementation: None	Cementation: Weak	Cementation: Moderate	Cementation: Strong	HCL Reaction: None	HCL Reaction: Weak	HCL Reaction: Strong	Major Rock Type (%): Volcanics	Major Rock Type (%): Carbonates	Major Rock Type (%): Other
7/17/2003	BW	2/17/2004	JSW	1	F	24P-79.42-80.00-F	79.42	80.00																																				
7/17/2003	BW	2/17/2004	JSW	1	L	24P-80.00-80.18-C	80.00	80.18							5YR4/2		✓		25	65	10	0	10	✓			✓				SW		✓			✓							100		
7/17/2003	BW	2/17/2004	JSW	1	RD	24P-80.00-81.69-C	80.00	81.69	1.7	1.7	4.0	29.85	40.95	11.10																														
7/17/2003	BW	2/17/2004	JSW	1	L	24P-80.18-80.43-C	80.18	80.43							5YR 4/2		✓		35	60	5	0	5	✓			✓				SW		✓			✓							100		
7/17/2003	BW	2/17/2004	JSW	1	L	24P-80.43-80.93-C	80.43	80.93							5YR 4/2		✓		35	60	5	0	5	✓			✓				SW		✓			✓				✓			100		
7/17/2003	BW	2/17/2004	JSW	1	L	24P-80.93-81.43-C	80.93	81.43							5YR 4/2		✓		26	69	5	0	5	✓			✓				SW		✓			✓				✓			100		
7/17/2003	BW	2/17/2004	JSW	1	L	24P-81.43-81.69-C	81.43	81.69							5YR 4/2		✓		26	69	5	0	5	✓			✓				SW		✓			✓				✓			100		
7/22/2003	BW	2/17/2004	JSW	2	F	24P-119.07-120.13-F	119.07	120.13																																				
7/22/2003	BW	2/17/2004	JSW	2	L	24P-120.13-120.58-C	120.13	120.58							5YR 4/3		✓		20	70	5	5	10	✓				✓			SW-SM			✓		✓				✓			100		
7/22/2003	BW	2/17/2004	JSW	2	RD	24P-120.13-121.34-C	120.13	121.34	1.3	1.2	4.0	29.90	40.75	10.85																														
7/22/2003	BW	2/17/2004	JSW	2	L	24P-120.58-121.08-C	120.58	121.08							5YR 4/3		✓		25	65	5	5	10	✓				✓			SW-SM			✓		✓				✓			100		
7/22/2003	BW	2/17/2004	JSW	2	L	24P-121.08-121.34-C	121.08	121.34							5YR 4/3		✓		50	40	5	5	10	✓				✓			SW-SM			✓		✓				✓			100		
7/22/2003	BW	2/17/2004	JSW	3	F	24P-159.44-160.00-F	159.44	160.00																																				
7/22/2003	BW	2/17/2004	JSW	3	L	24P-160.00-160.12-C	160.00	160.12							5YR 5/6		✓		75	15	8	2	10	✓				✓			SW-SM			✓		✓				✓			100		
7/22/2003	BW	2/17/2004	JSW	3	RD	24P-160.00-162.13-C	160.00	162.13	2.1	2.1	4.0	29.90	41.15	11.25																														
7/22/2003	BW	2/17/2004	JSW	3	L	24P-160.12-160.62-C	160.12	160.62							5YR 5/6		✓		50	40	8	2	10	✓				✓			SW-SM			✓		✓				✓			100		
7/22/2003	BW	2/17/2004	JSW	3	L	24P-160.62-160.87-C	160.62	160.87							10YR 5/4		✓		45	45	8	2	10	✓				✓			SW-SM			✓		✓				✓			100		
7/22/2003	BW	2/17/2004	JSW	3	L	24P-160.87-161.37-C	160.87	161.37							10YR 5/4		✓		25	65	8	2	10	✓				✓			SW-SM			✓		✓				✓			100		
7/22/2003	BW	2/17/2004	JSW	3	L	24P-161.37-161.87-C	161.37	161.87							10YR 5/4		✓		15	75	8	2	10	✓				✓			SW-SM		✓			✓				✓			100		
7/22/2003	BW	2/17/2004	JSW	3	L	24P-161.87-162.13-C	161.87	162.13							10YR 5/4		✓		15	75	8	2	10	✓				✓			SW-SM		✓			✓				✓			100		
7/23/2003	BW	2/17/2004	JSW	4	F	24P-198.60-200.87-F	198.60	200.87																																				
7/23/2003	BW	2/17/2004	JSW	4	L	24P-200.31-200.61-C	200.31	200.61							10YR 5/4		✓		53	42	3	2	5	✓				✓			GW			✓			✓					✓		100		
7/23/2003	BW	2/17/2004	JSW	4	RD	24P-200.31-200.87-C	200.31	200.87	0.9	0.6	4.0	29.90	41.15	11.25																														
7/23/2003	BW	2/17/2004	JSW	4	L	24P-200.61-200.87-C	200.61	200.87							10YR 5/4		✓		53	42	3	2	5	✓				✓			GW			✓			✓					✓		100		
7/23/2003	BW	2/17/2004	JSW	5	F	24P-239.48-240.00-F	239.48	240.00																																				
7/23/2003	BW	2/17/2004	JSW	5	L	24P-240.00-240.23-C	240.00	240.23							10YR 4/3		✓		10	85	4	1	5	✓				✓			SW		✓			✓					✓		100		
7/23/2003	BW	2/17/2004	JSW	5	RD	24P-240.00-241.75-C	240.00	241.75	1.8	1.8	4.0	29.90	41.10	11.20																														
7/23/2003	BW	2/17/2004	JSW	5	L	24P-240.23-240.48-C	240.23	240.48							10YR 4/3		✓		50	45	4	1	5	✓			✓				GW		✓			✓						✓	100		

Figure 2.3-3
Example of Alluvium Core Geologic Logging Form

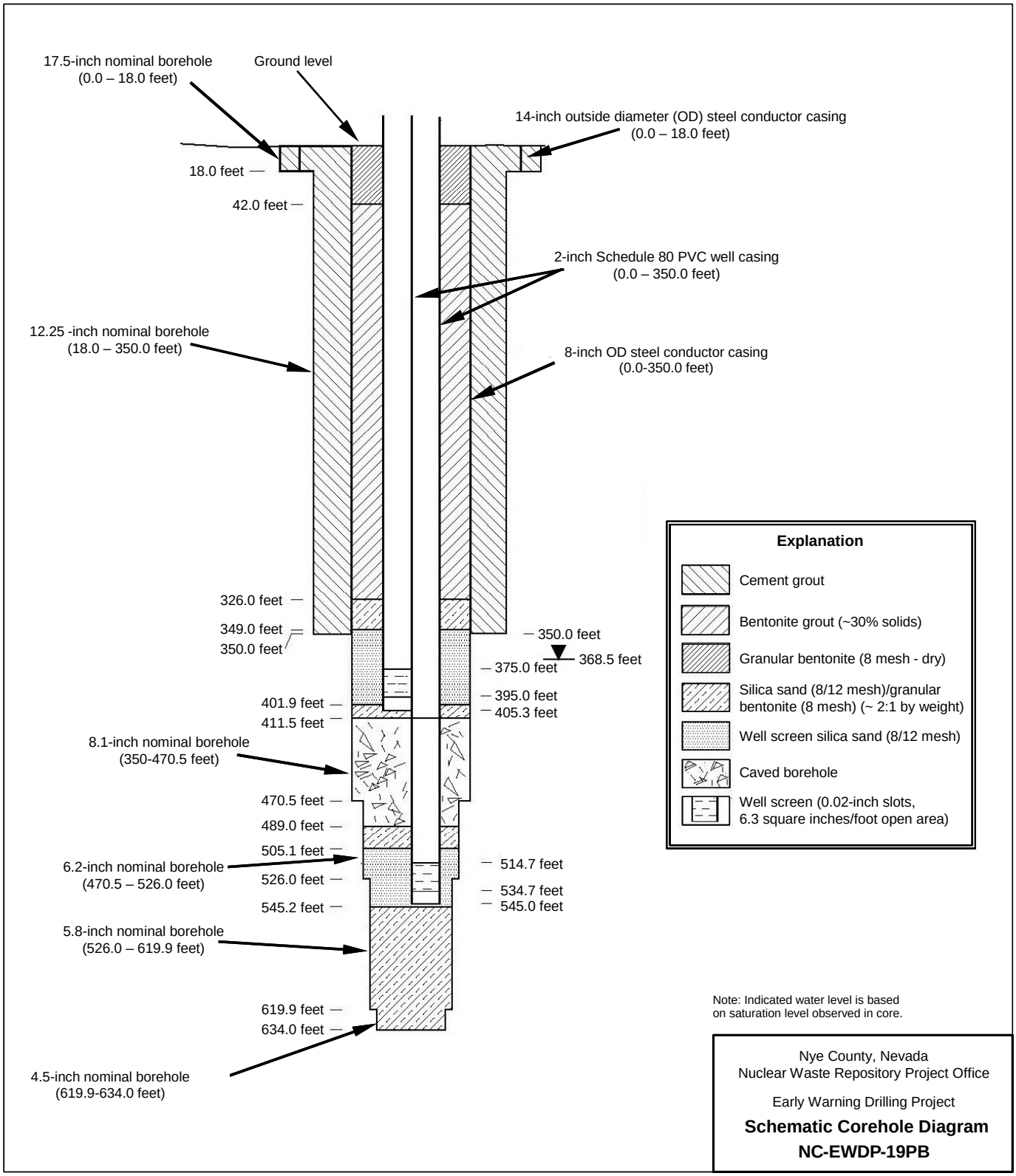


Figure 3.1-1
Schematic Dual-String Piezometer Completion Diagram for 19PB

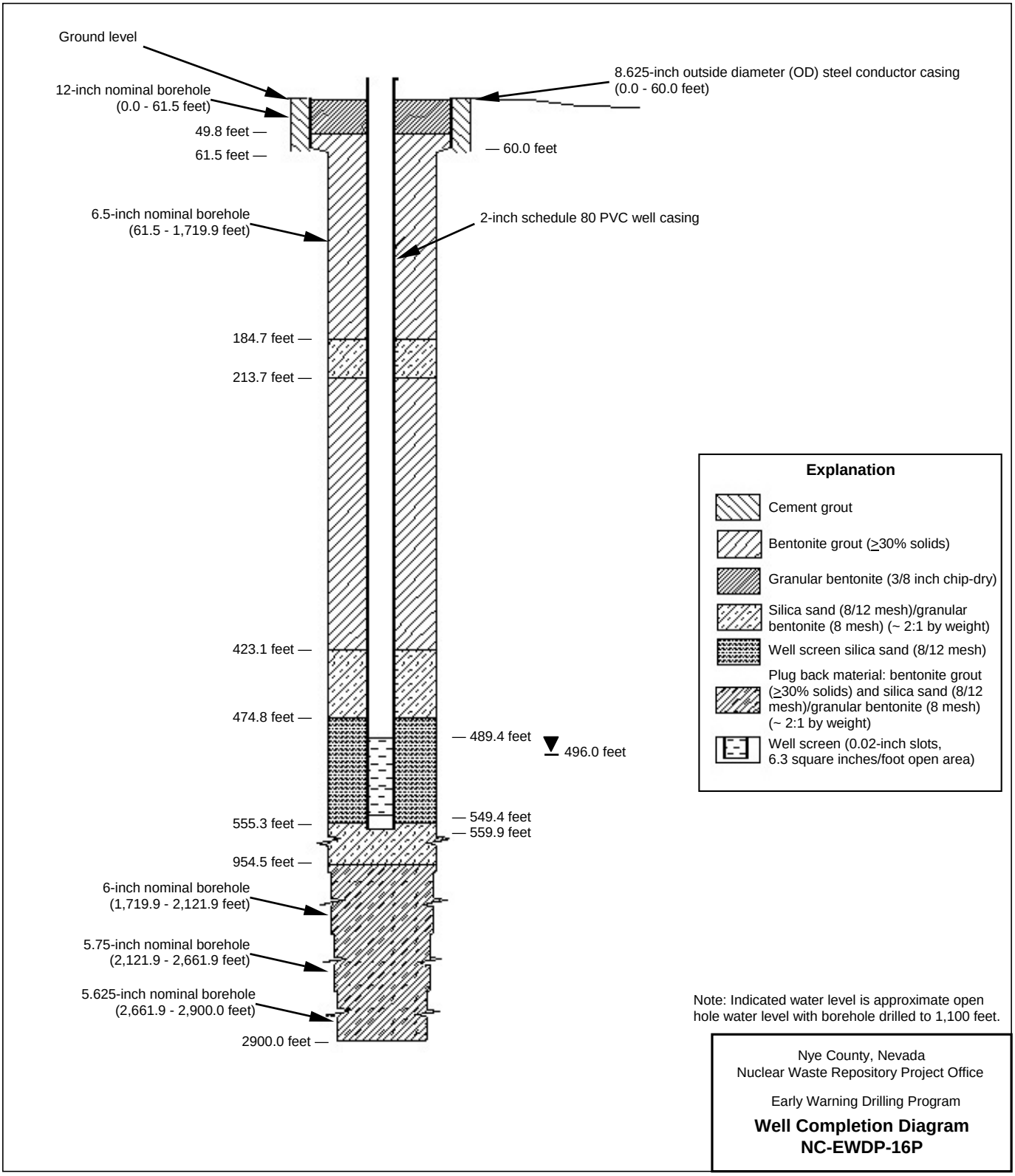


Figure 3.1-2
Schematic Single-String Piezometer Completion Diagram for 16P

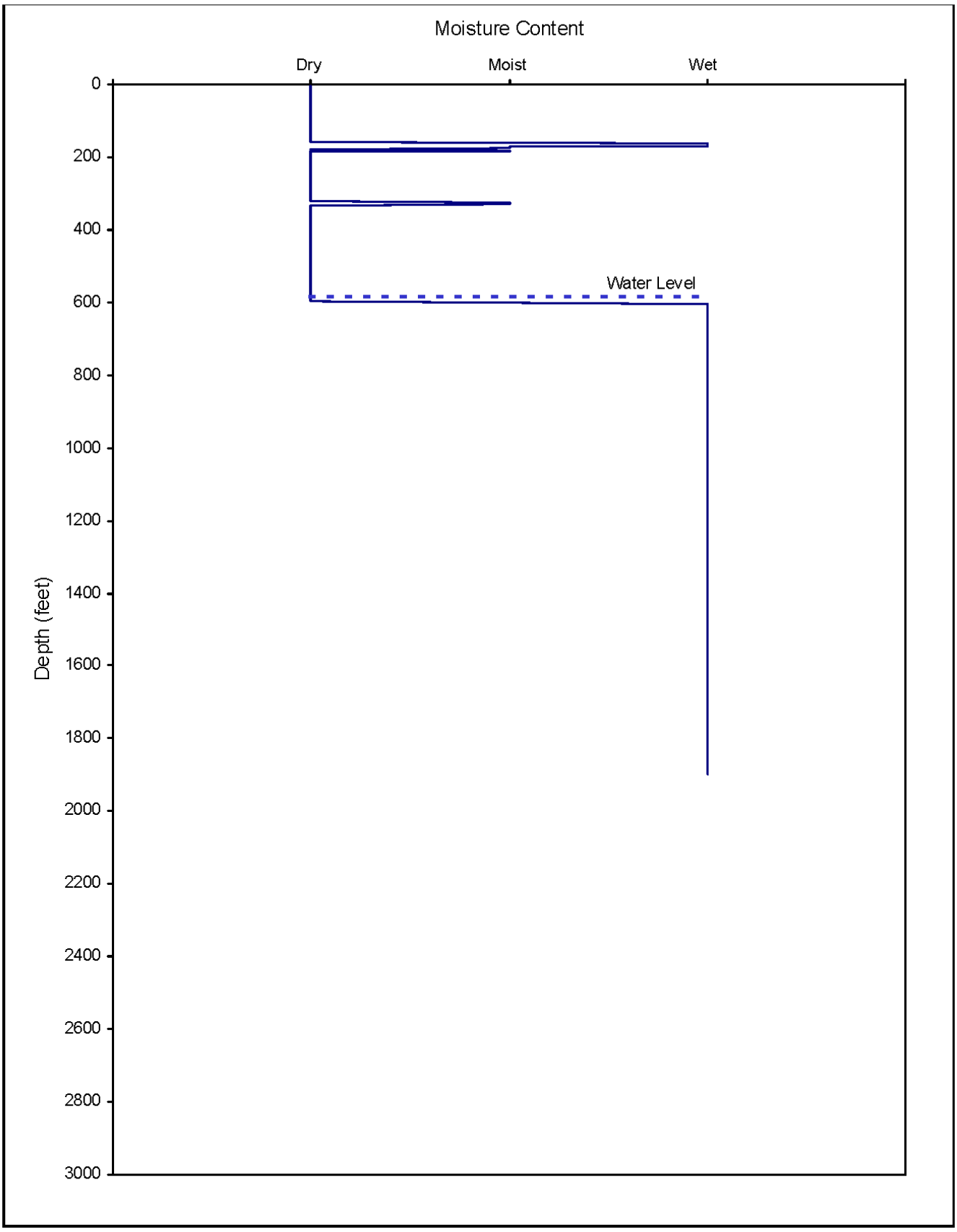


Figure 4.1-1
Moisture Content vs. Depth for 27P Drill Cuttings Samples

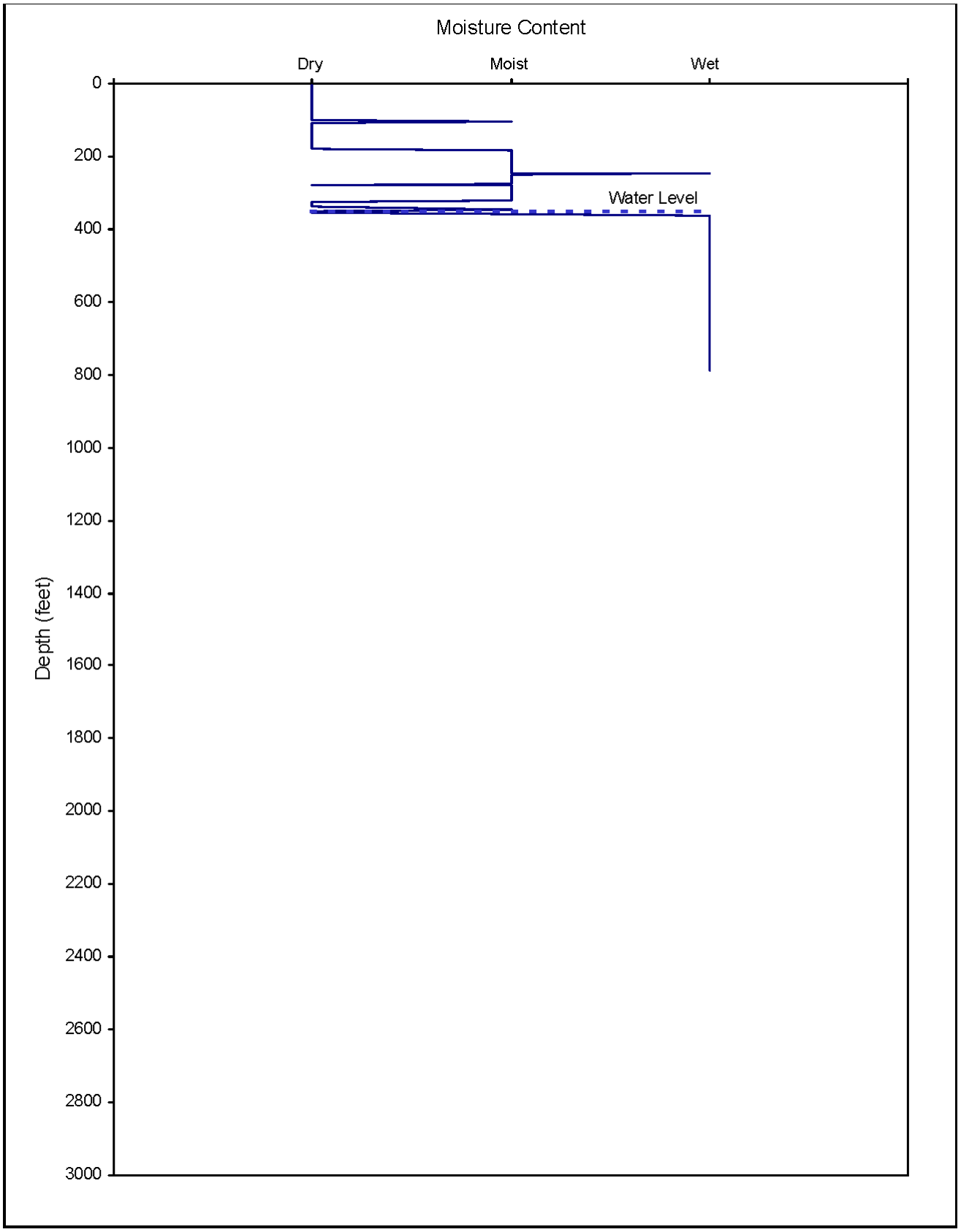


Figure 4.1-2
Moisture Content vs. Depth for 29P Drill Cuttings Samples

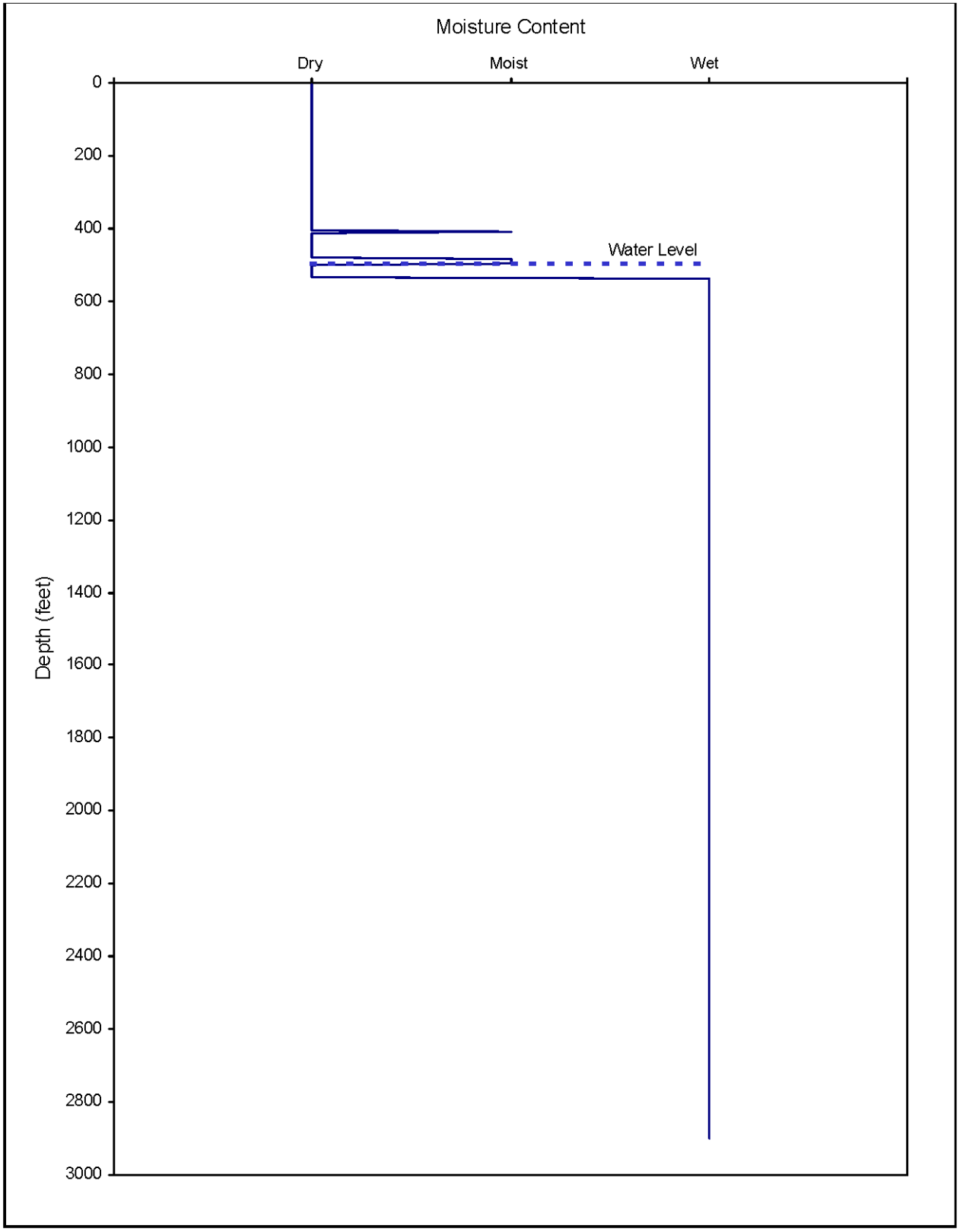


Figure 4.1-3
Moisture Content vs. Depth for 16P Drill Cuttings Samples

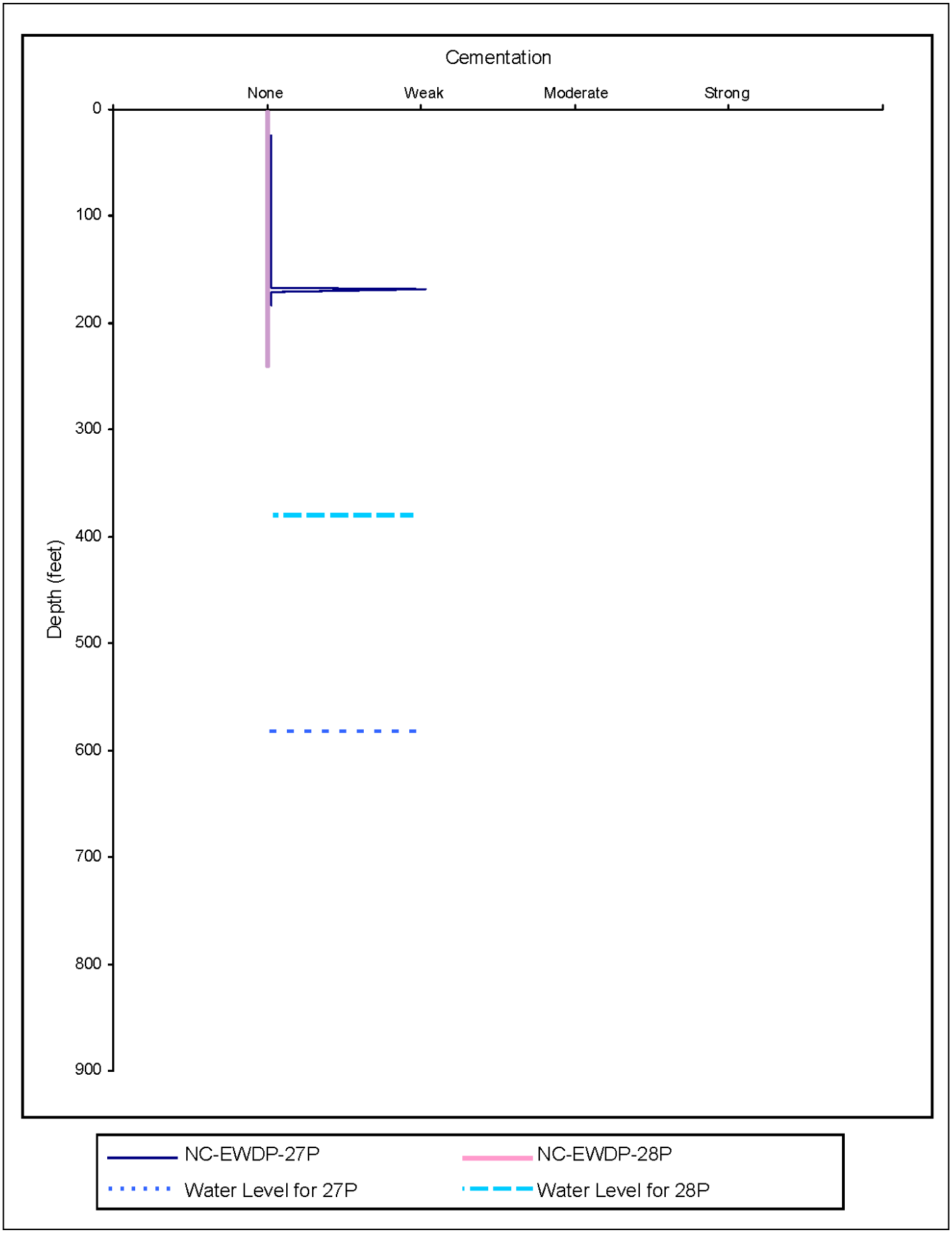


Figure 4.1-4
Cementation vs. Depth for 27P and 28P Alluvial Drill Cuttings Samples

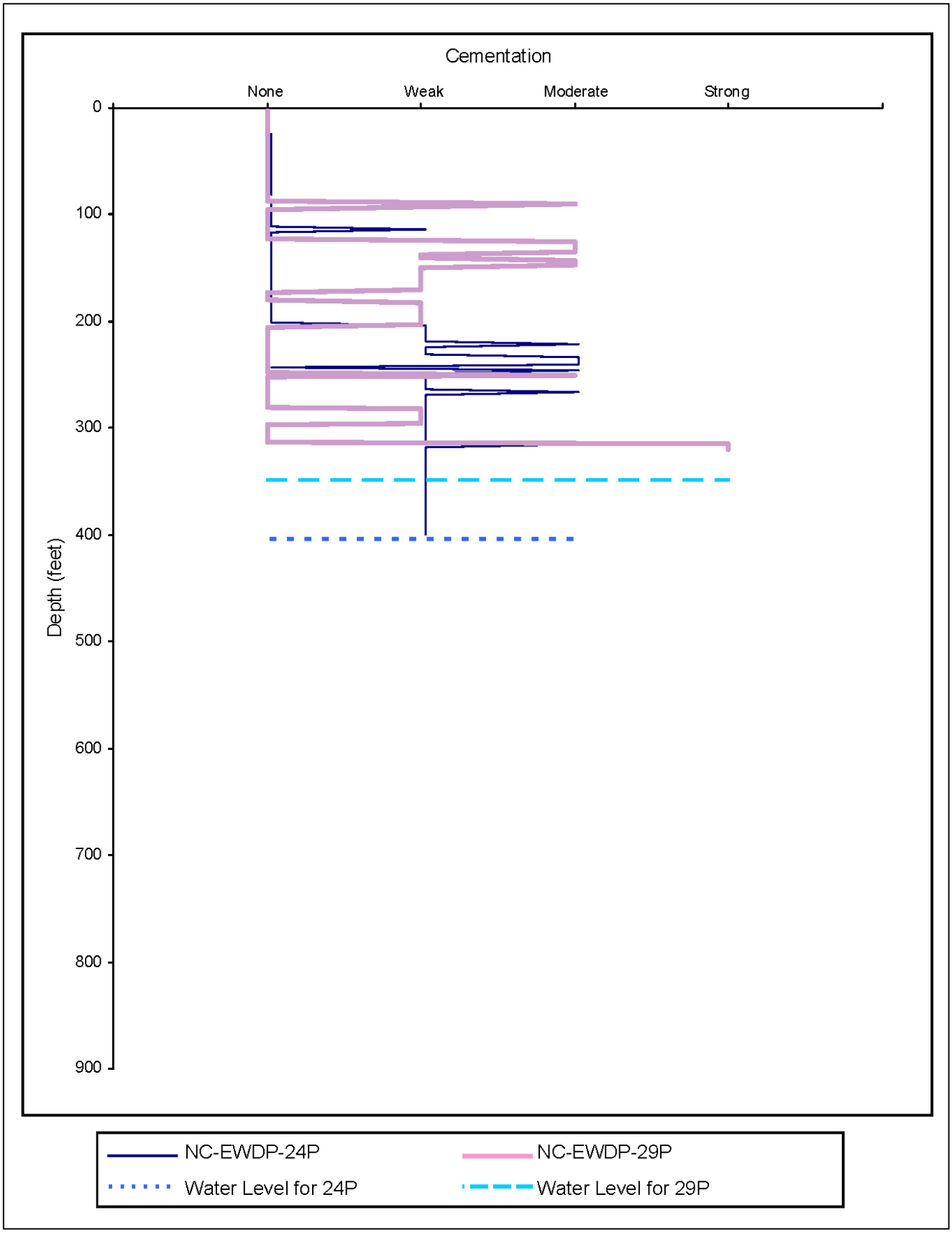


Figure 4.1-5
Cementation vs. Depth for 24P and 29P Alluvial Drill Cuttings Samples

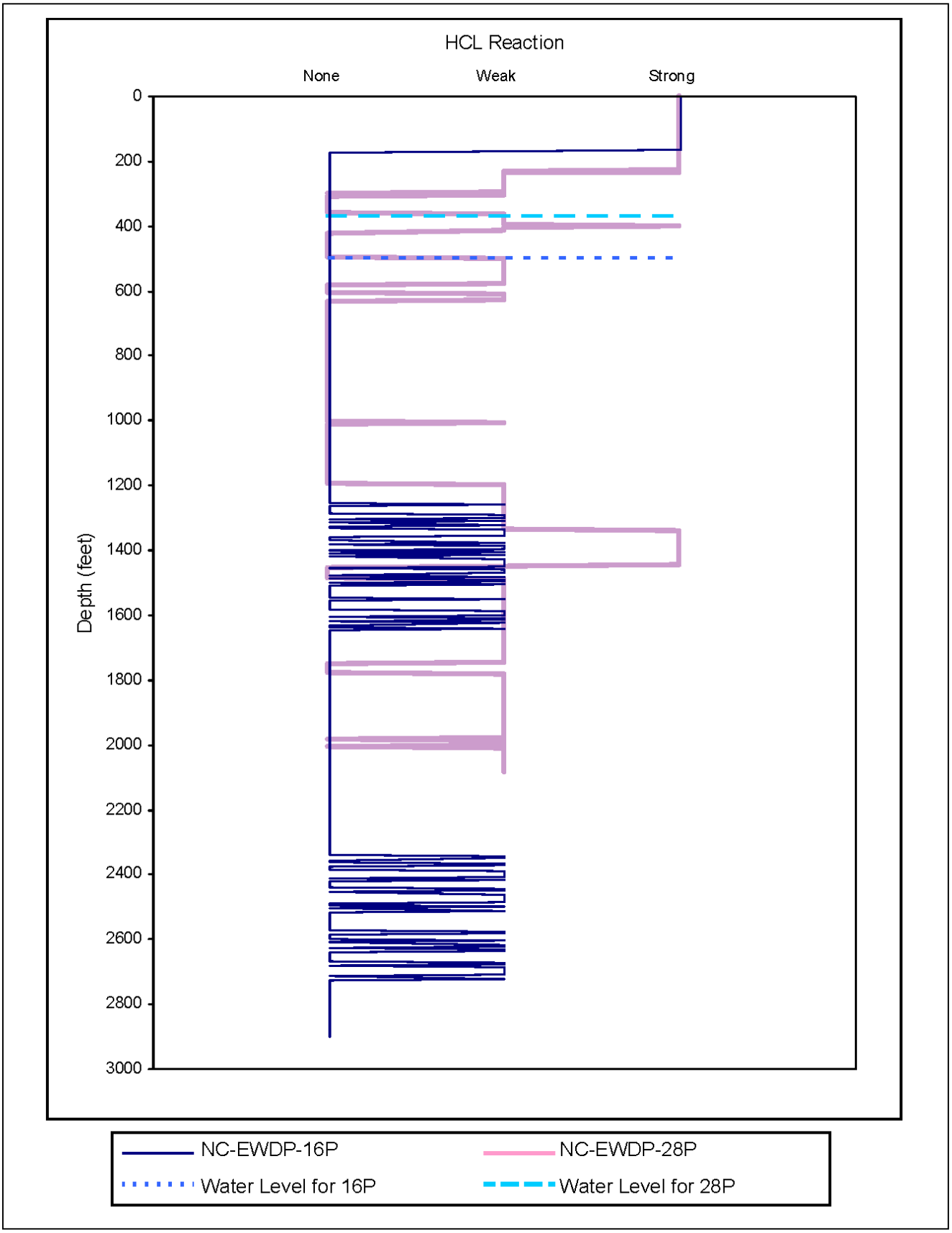


Figure 4.1-6
Hydrochloric Acid Reaction vs. Depth for 16P and 28P Drill Cuttings Samples

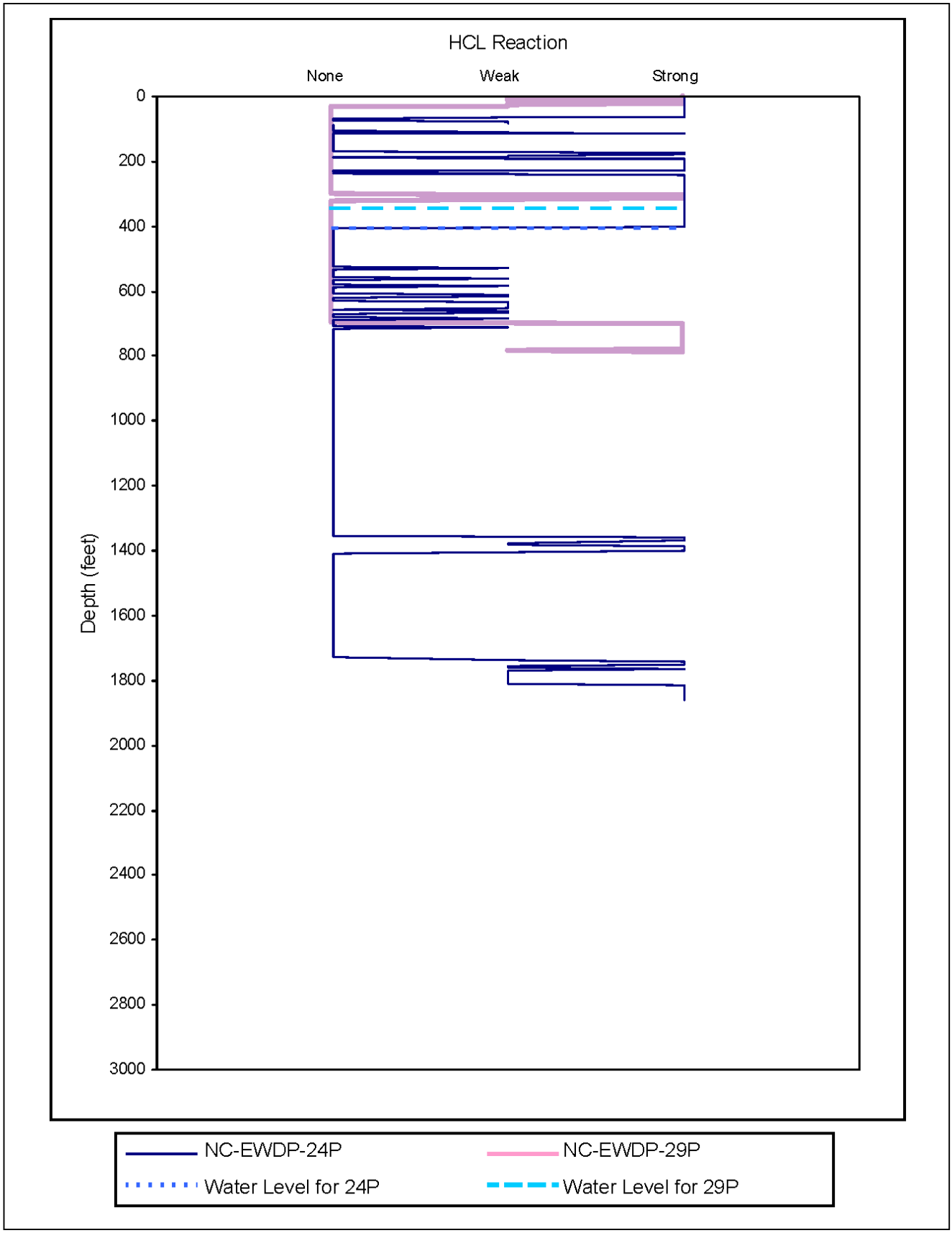


Figure 4.1-7
Hydrochloric Acid Reaction vs. Depth for 24P and 29P Drill Cuttings Samples

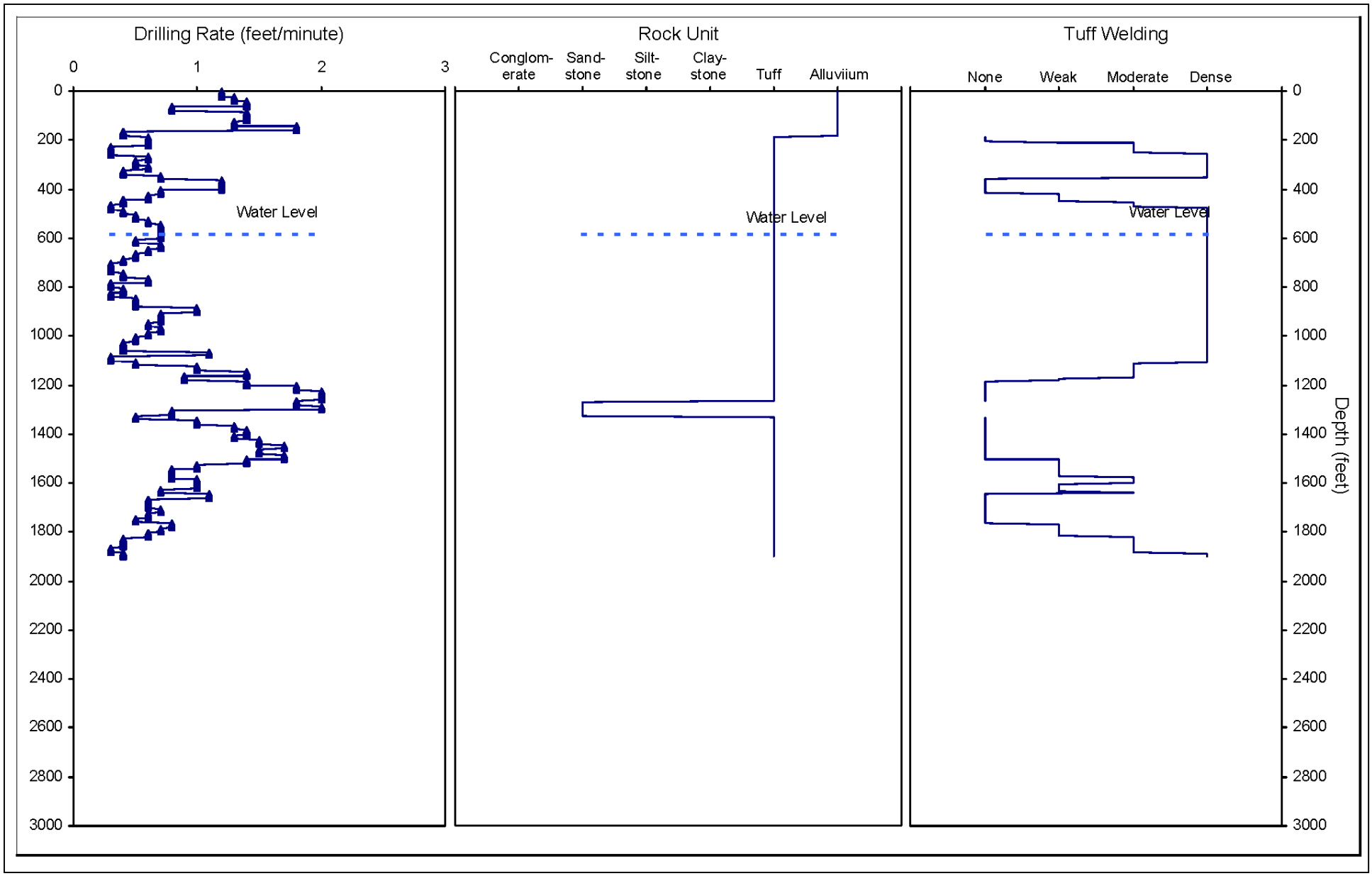


Figure 4.1-8
Drilling Rate, Rock Unit, and Tuff Welding vs. Depth for 27P

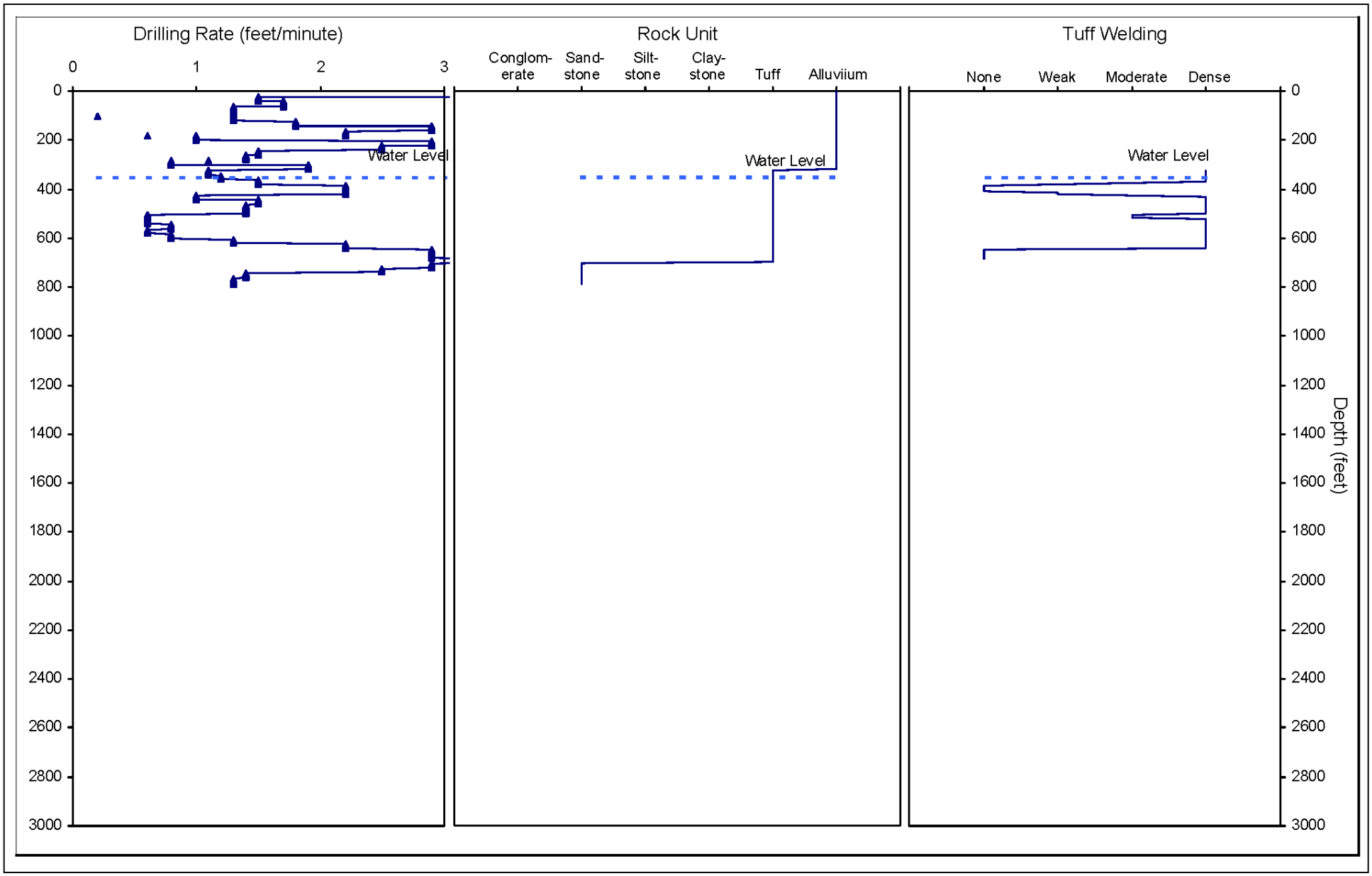


Figure 4.1-9
Drilling Rate, Rock Unit, and Tuff Welding vs. Depth for 29P

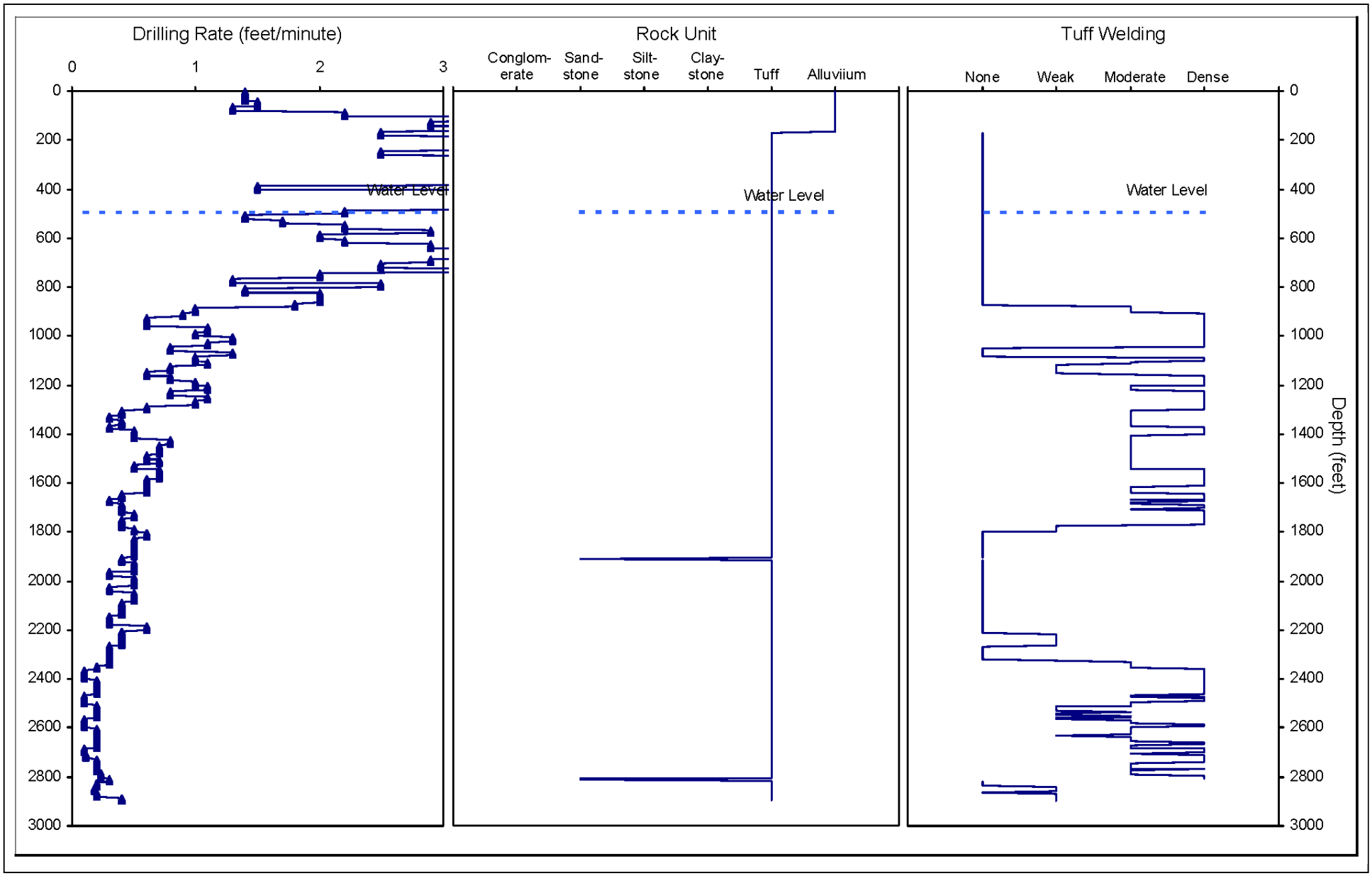


Figure 4.1-10
Drilling Rate, Rock Unit, and Tuff Welding vs. Depth for 16P

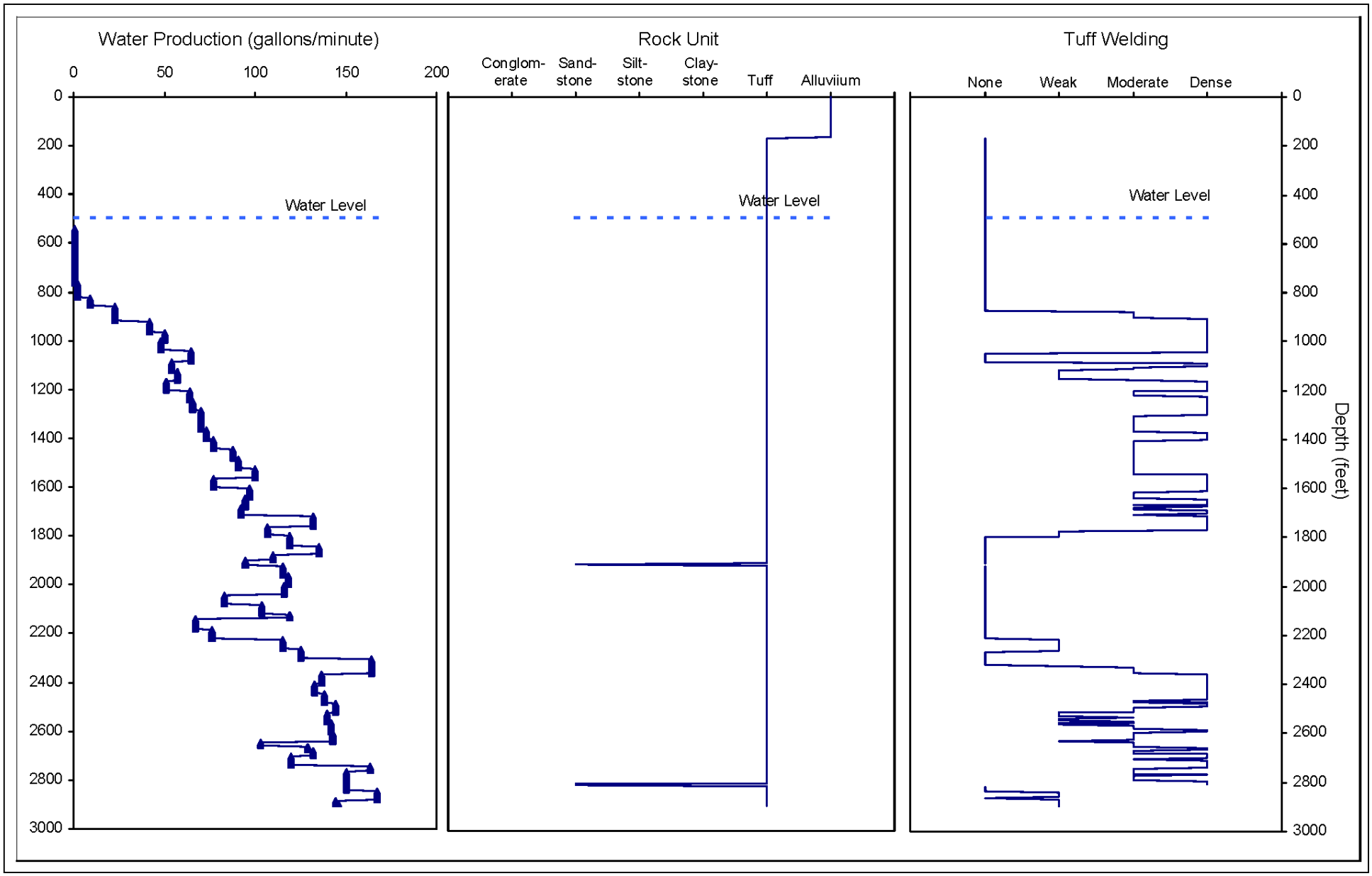


Figure 4.1-11
Water Production, Rock Unit, and Tuff Welding vs. Depth for 16P

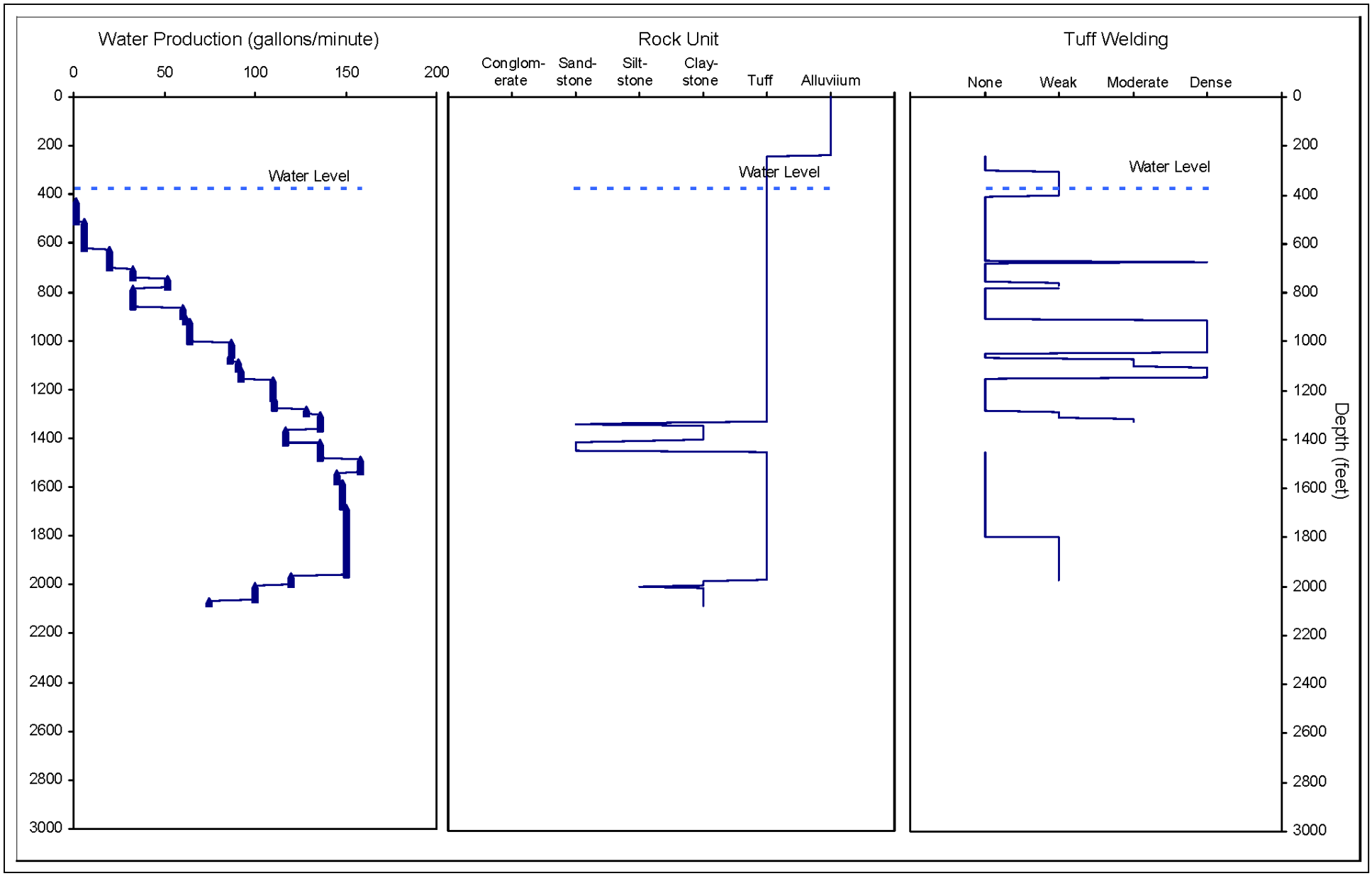


Figure 4.1-12
Water Production, Rock Unit, and Tuff Welding vs. Depth for 28P

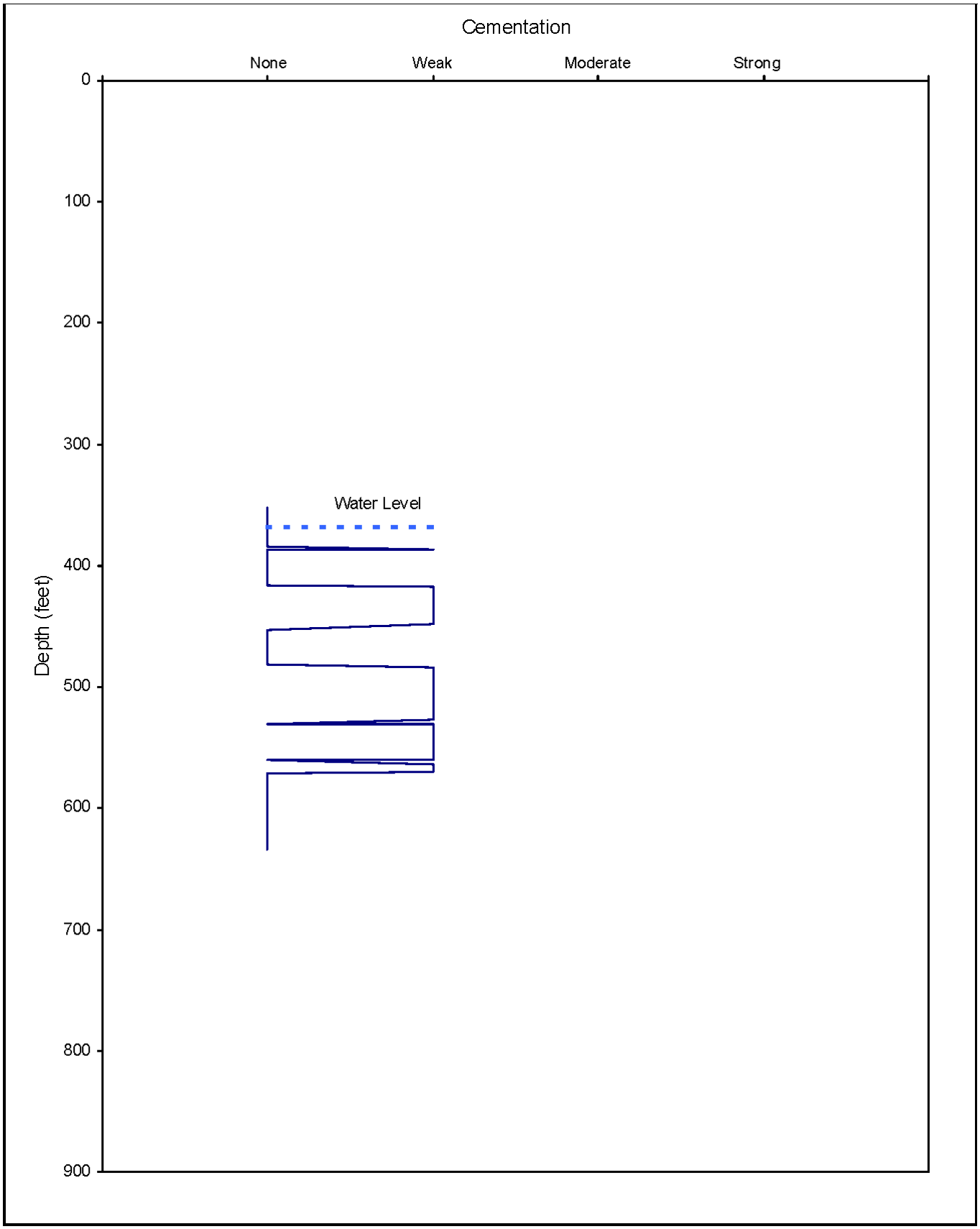


Figure 4.2-1
Cementation vs. Depth for 19PB Alluvial Sonic Grab Core Samples

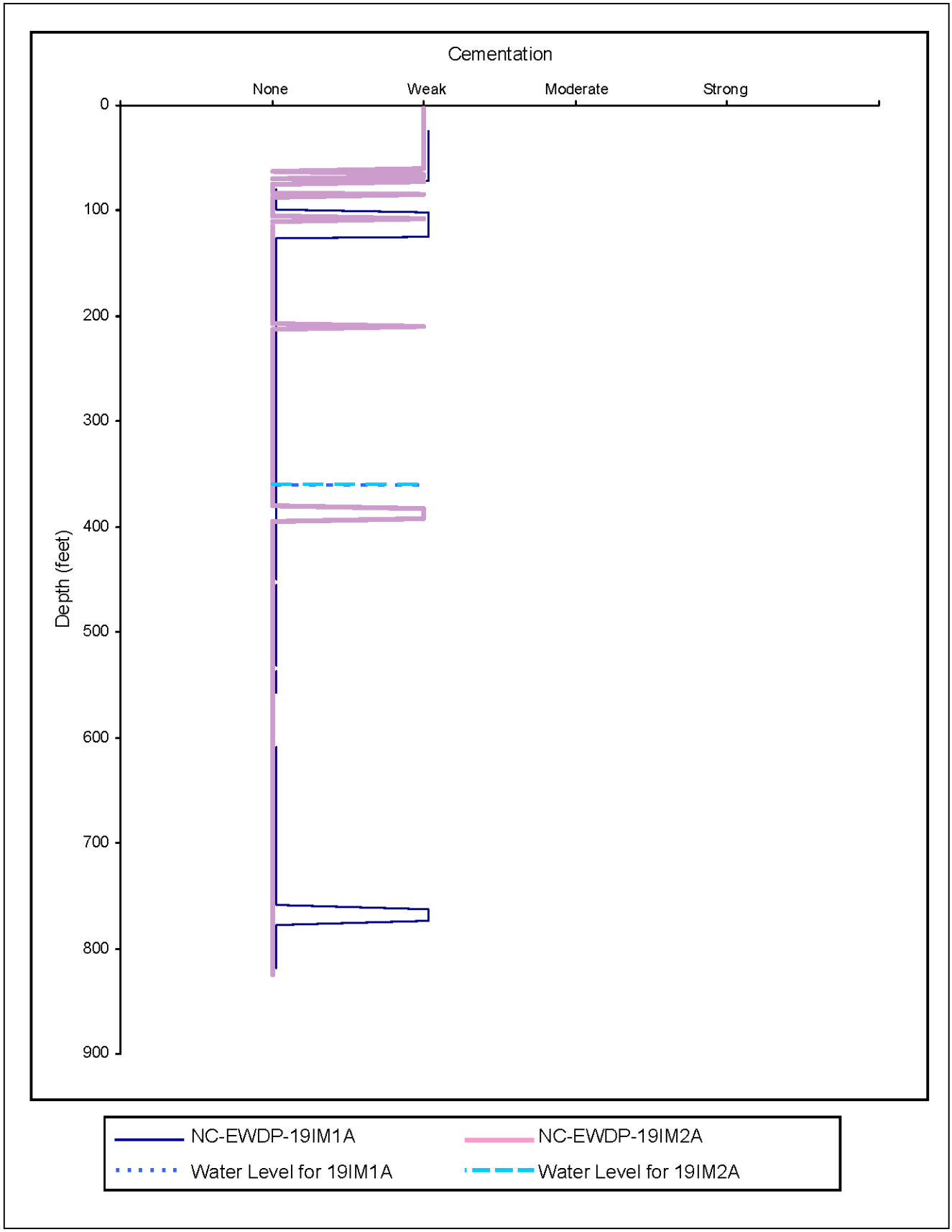


Figure 4.2-2
Cementation vs. Depth for 19IM1A and 19IM2A Alluvial Drill Cuttings Samples

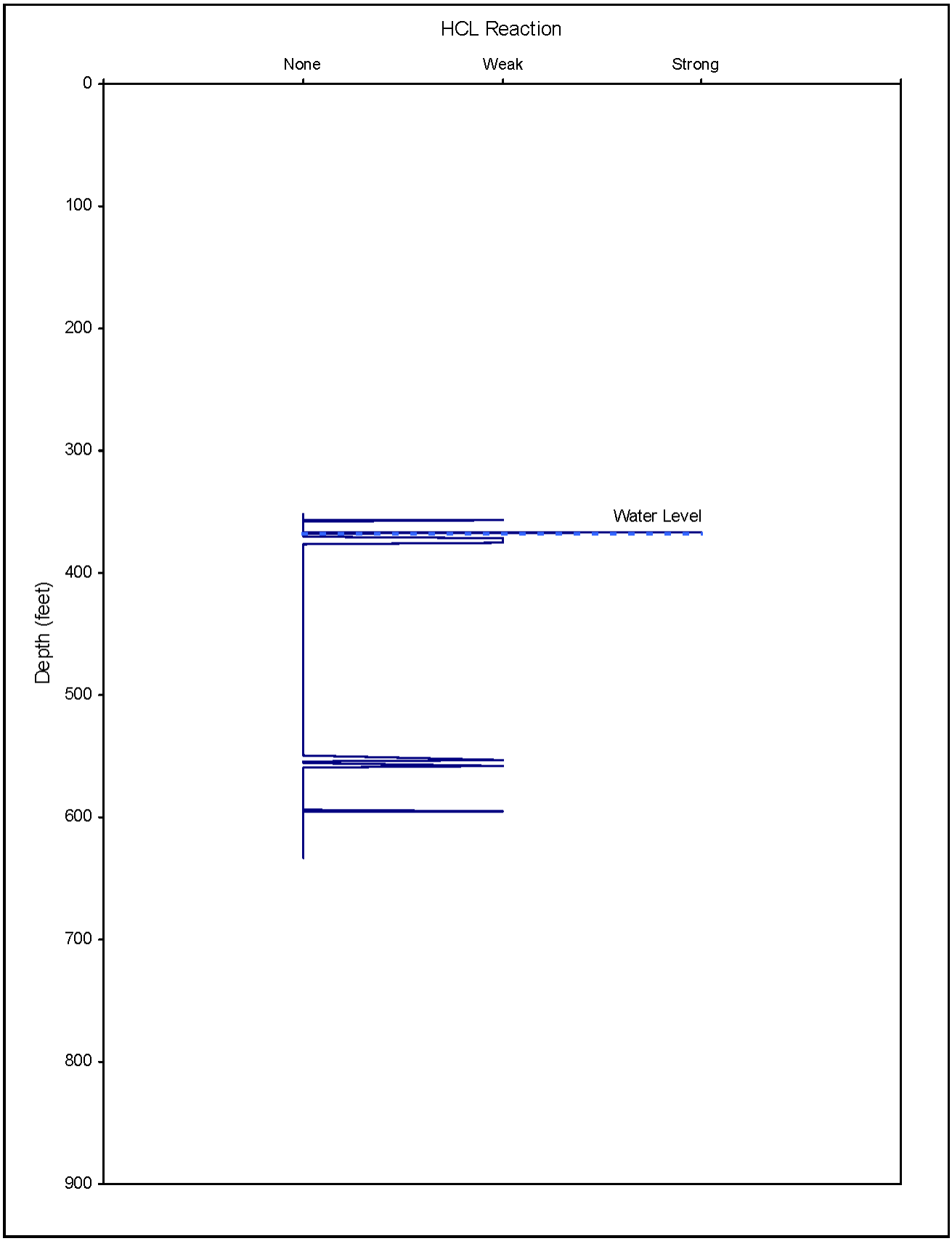


Figure 4.2-3
Hydrochloric Acid Reaction vs. Depth for 19PB Alluvial Sonic Grab Core Samples

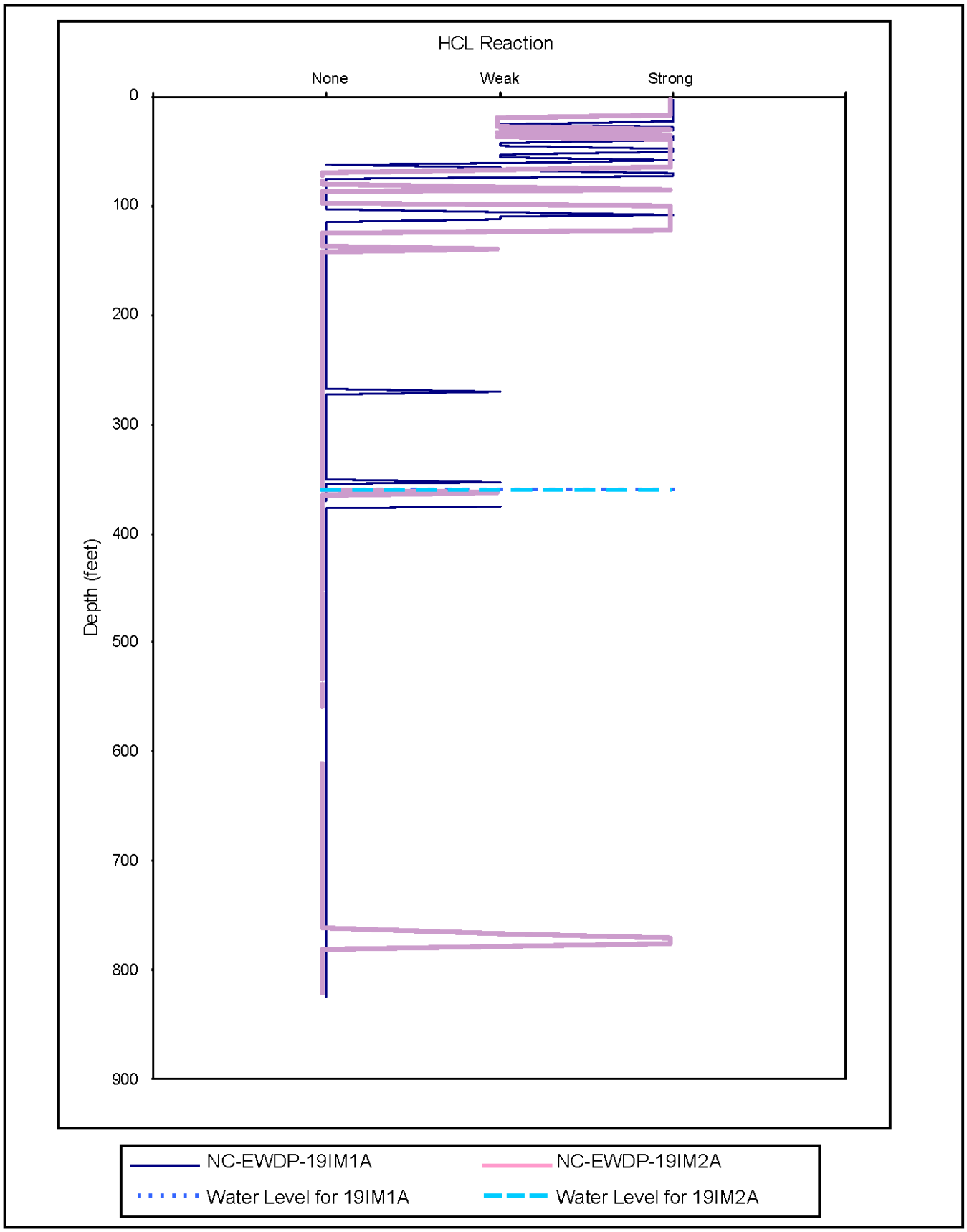


Figure 4.2-4
Hydrochloric Acid Reaction vs. Depth for 19IM1A and 19IM2A Alluvial Drill Cuttings Samples

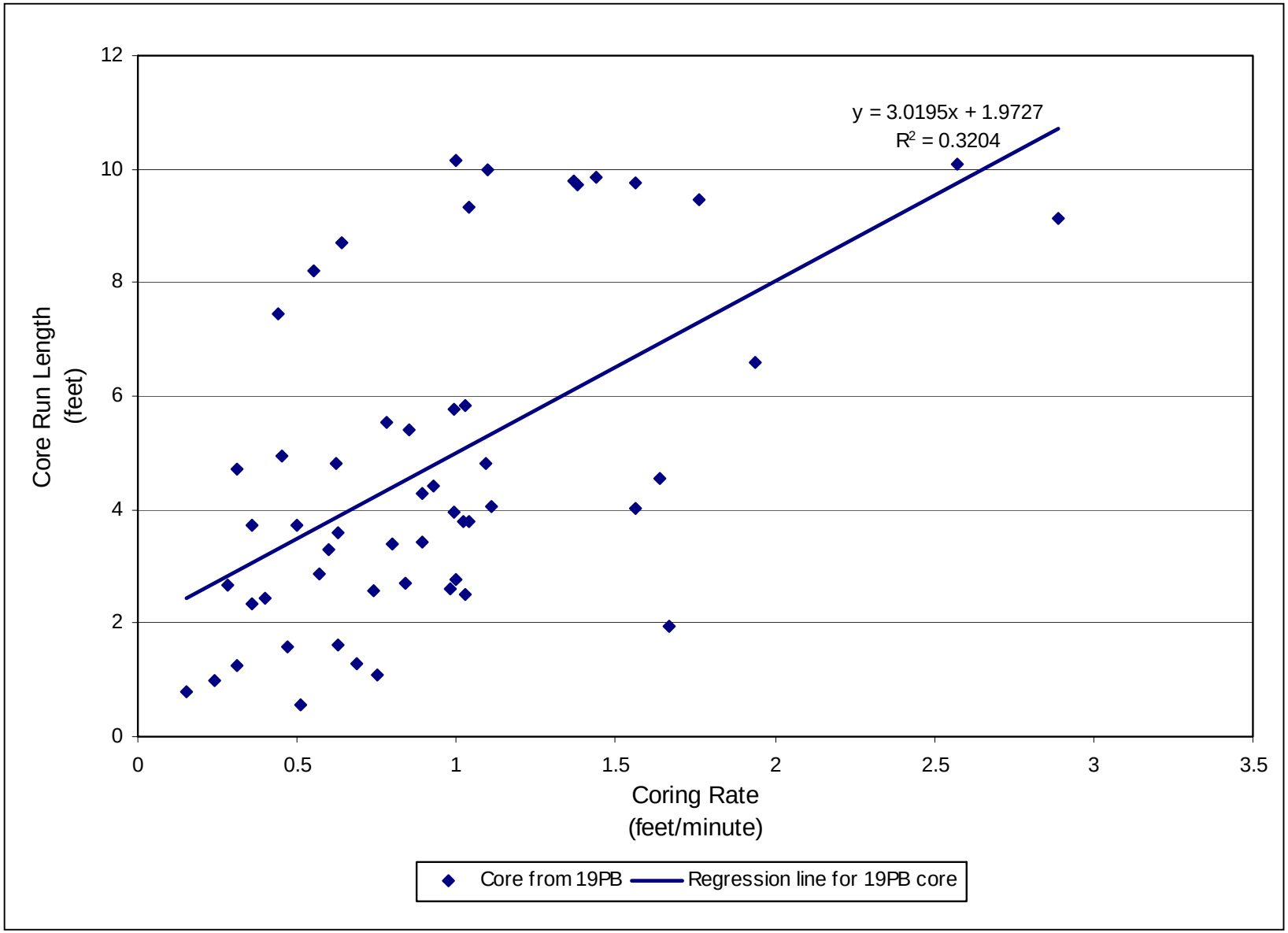


Figure 4.2-5
Coring Rate vs. Run Length for 19PB

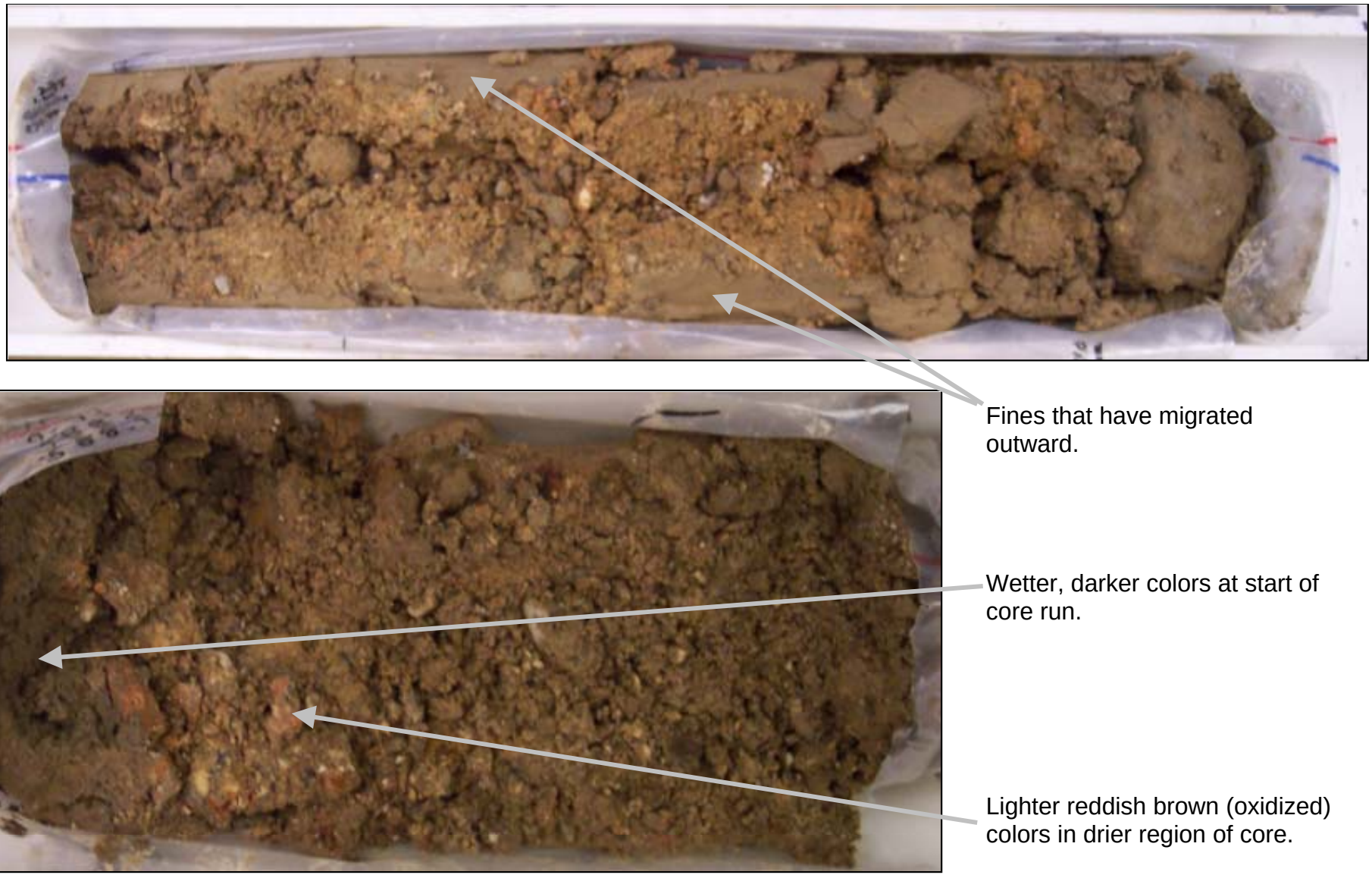


Figure 4.2-6
Example of Sample Disturbance in 19PB Sonic Core Segments

Cobbles and coarser gravel to finer gravel at 456.6 feet.

Increase in fines at 581.1 feet.

Cobbles and gravel from 570.5 to 570.9 feet.

Figure 4.2-7
Examples of Textural Layers in 19PB Sonic Core Segments

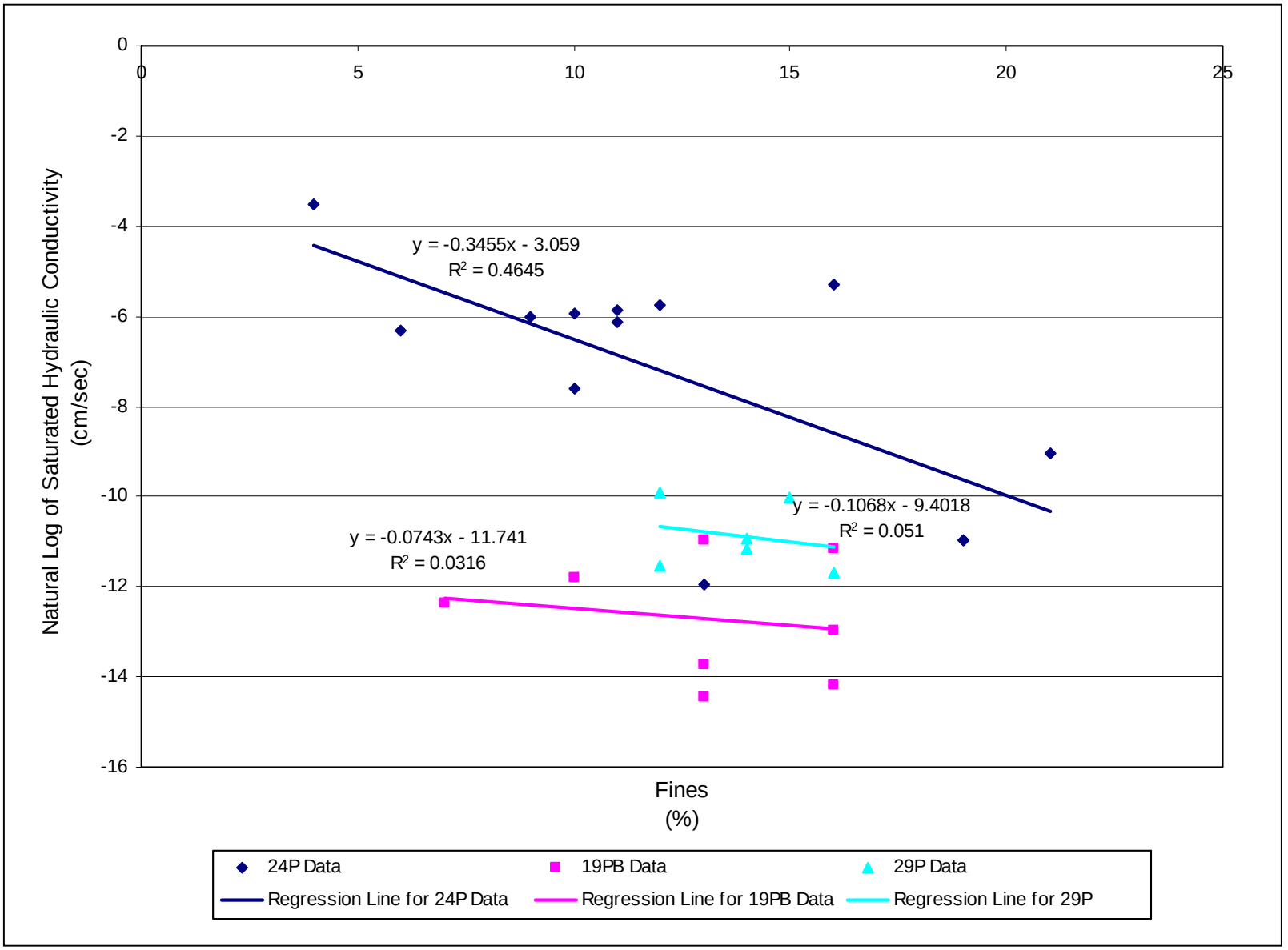


Figure 5.1-1
Saturated Hydraulic Conductivity vs. Percentage of Fines for 24P, 29P, and 19PB Drive Core Samples

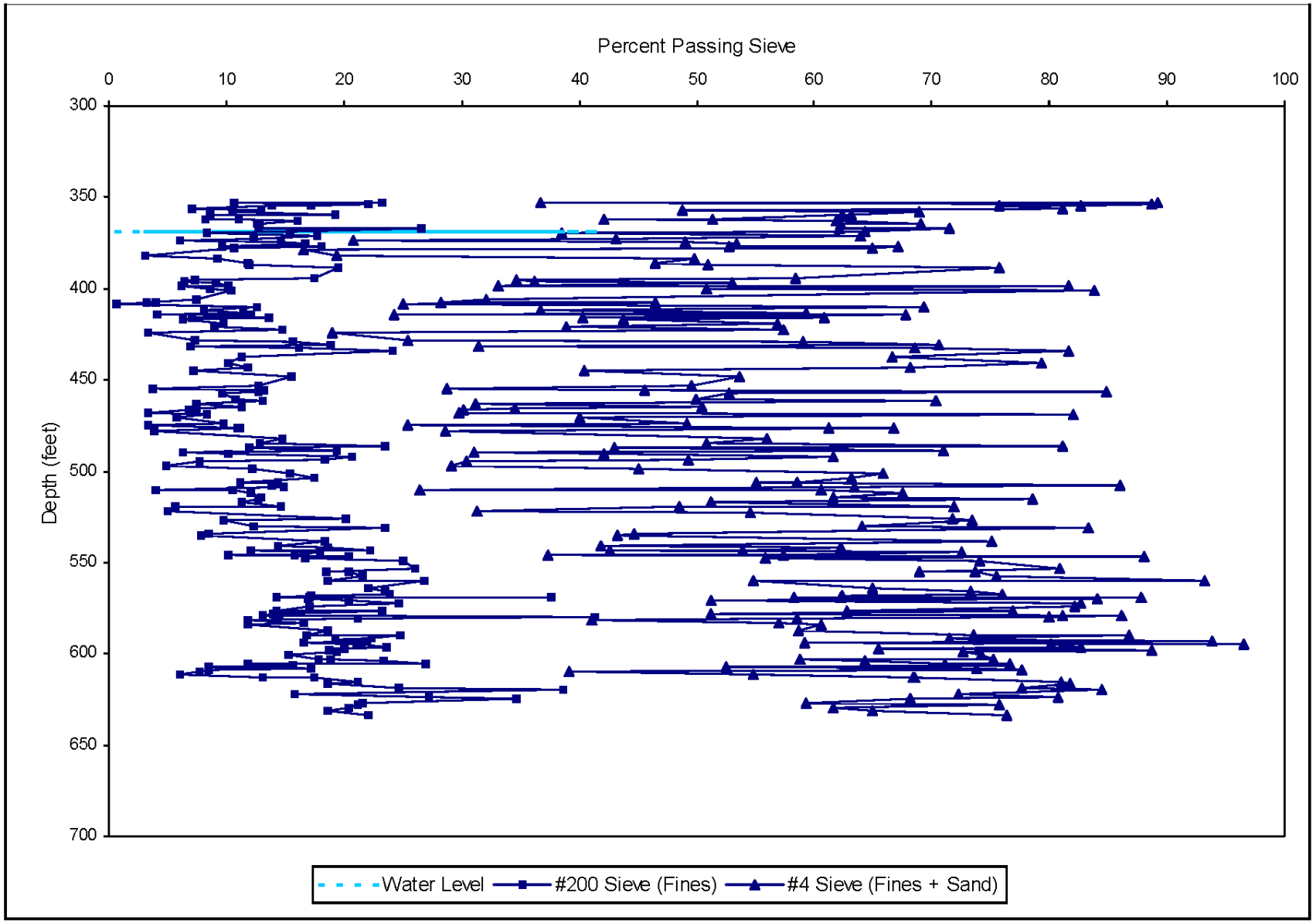


Figure 5.1-2
Laboratory Particle Size Distribution vs. Depth for 19PB Alluvial Sonic Grab Core Samples

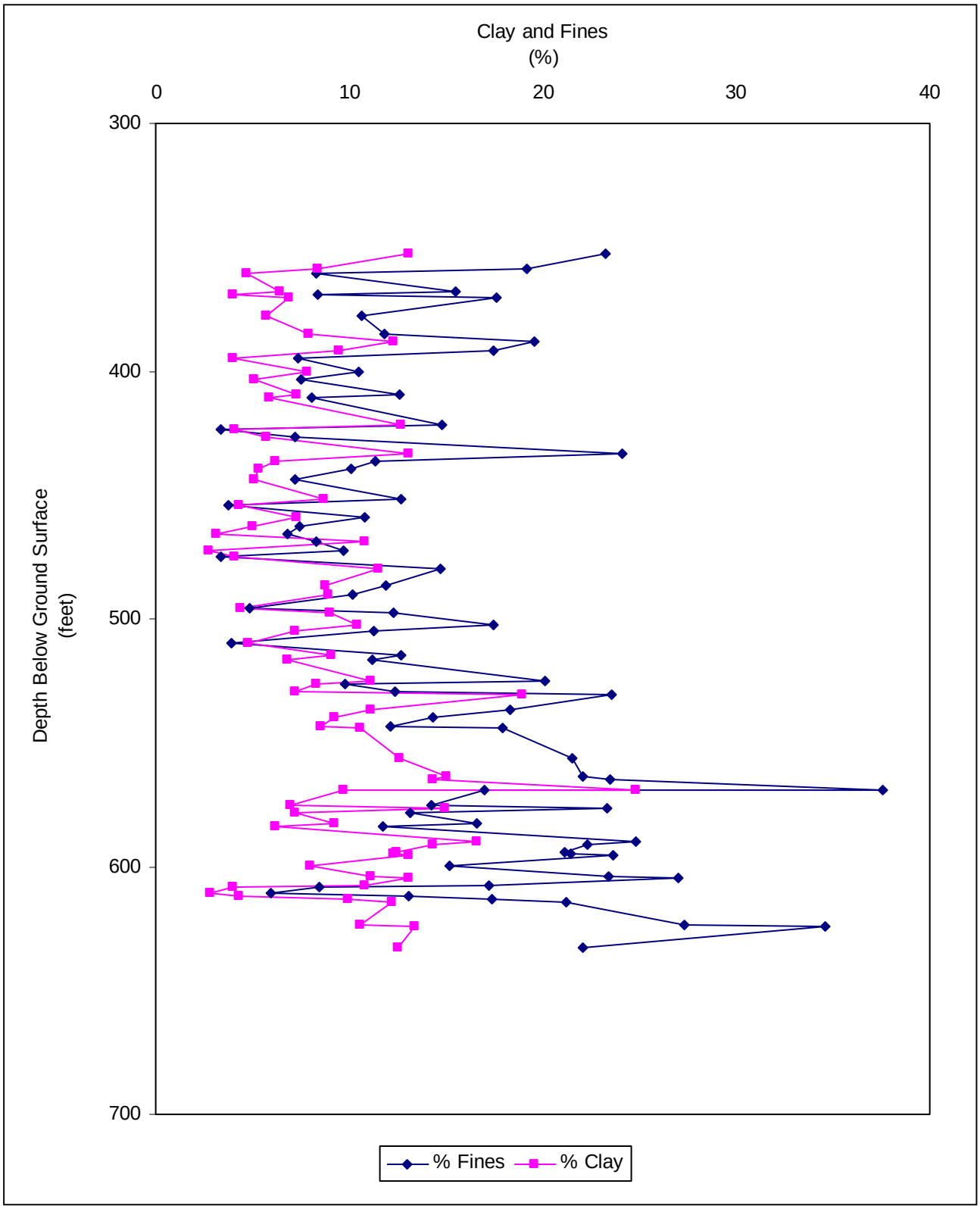


Figure 5.1-3
Clay and Fines Fractions for 19PB Sonic Grab Core Samples,
based on Hydrometer and Wet Sieve Particle Size Distribution Data, Respectively

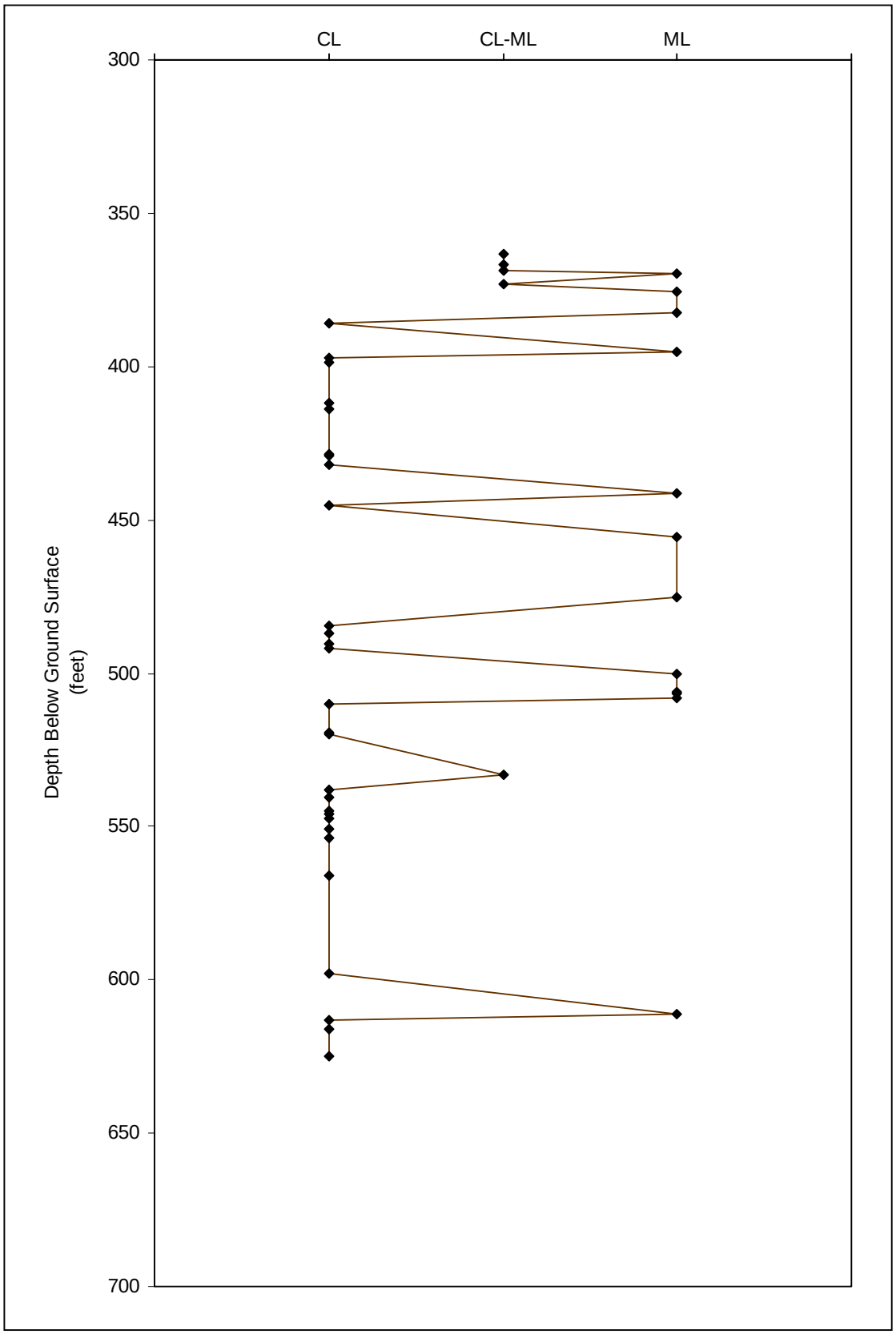


Figure 5.1-4
Atterberg Limits-based Classification of Fines Fraction for 19PB Sonic Grab Core Samples

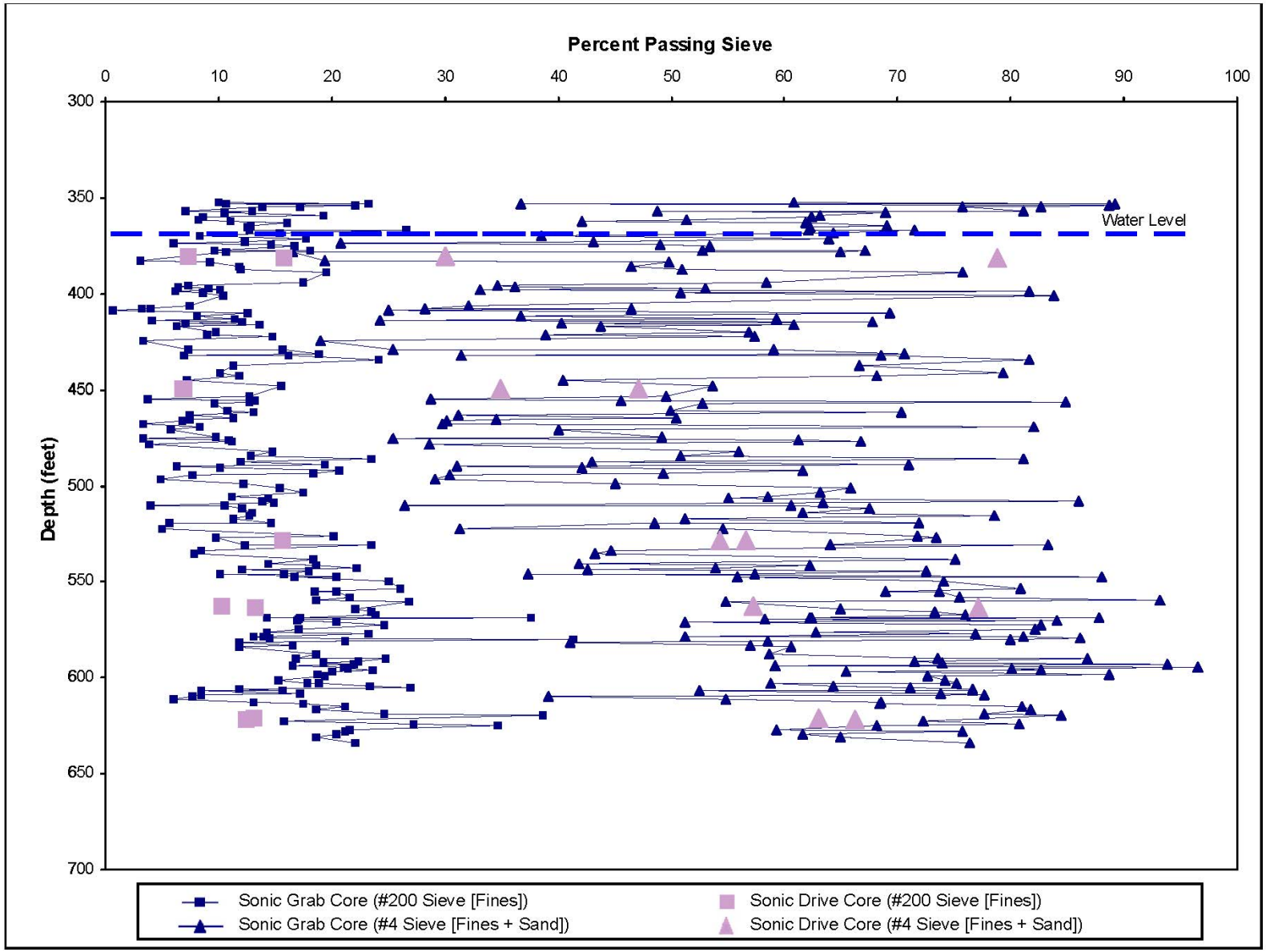


Figure 5.1-5
Laboratory Particle Size Distribution vs. Depth for 19PB Alluvial Sonic Grab and Drive Core Samples

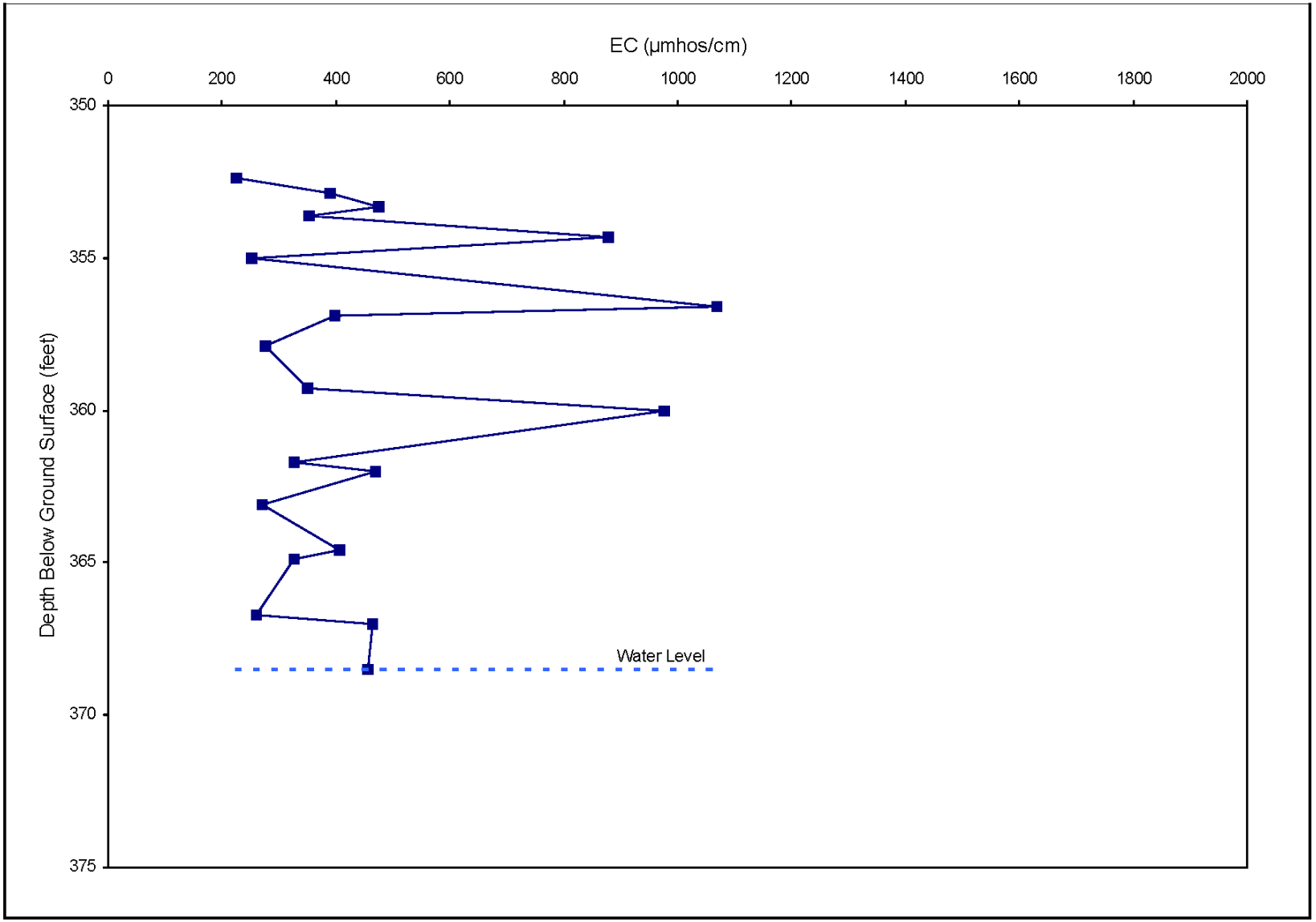


Figure 5.1-6
Electrical Conductivity vs. Depth for 19PB Alluvial Sonic Grab Core Samples

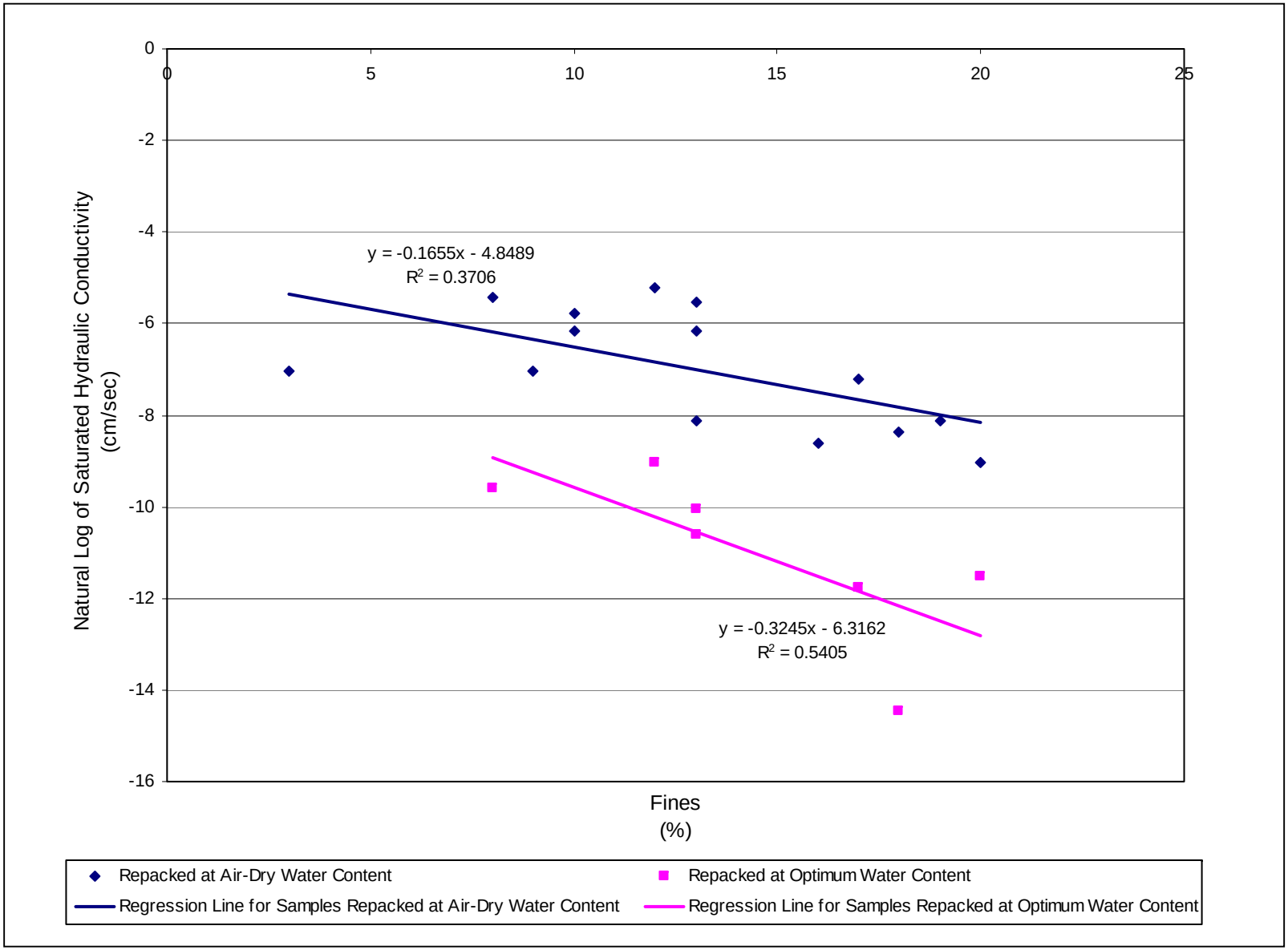


Figure 5.1-7
Saturated Hydraulic Conductivity vs. Fines Fraction for Repacked Sonic Core Samples

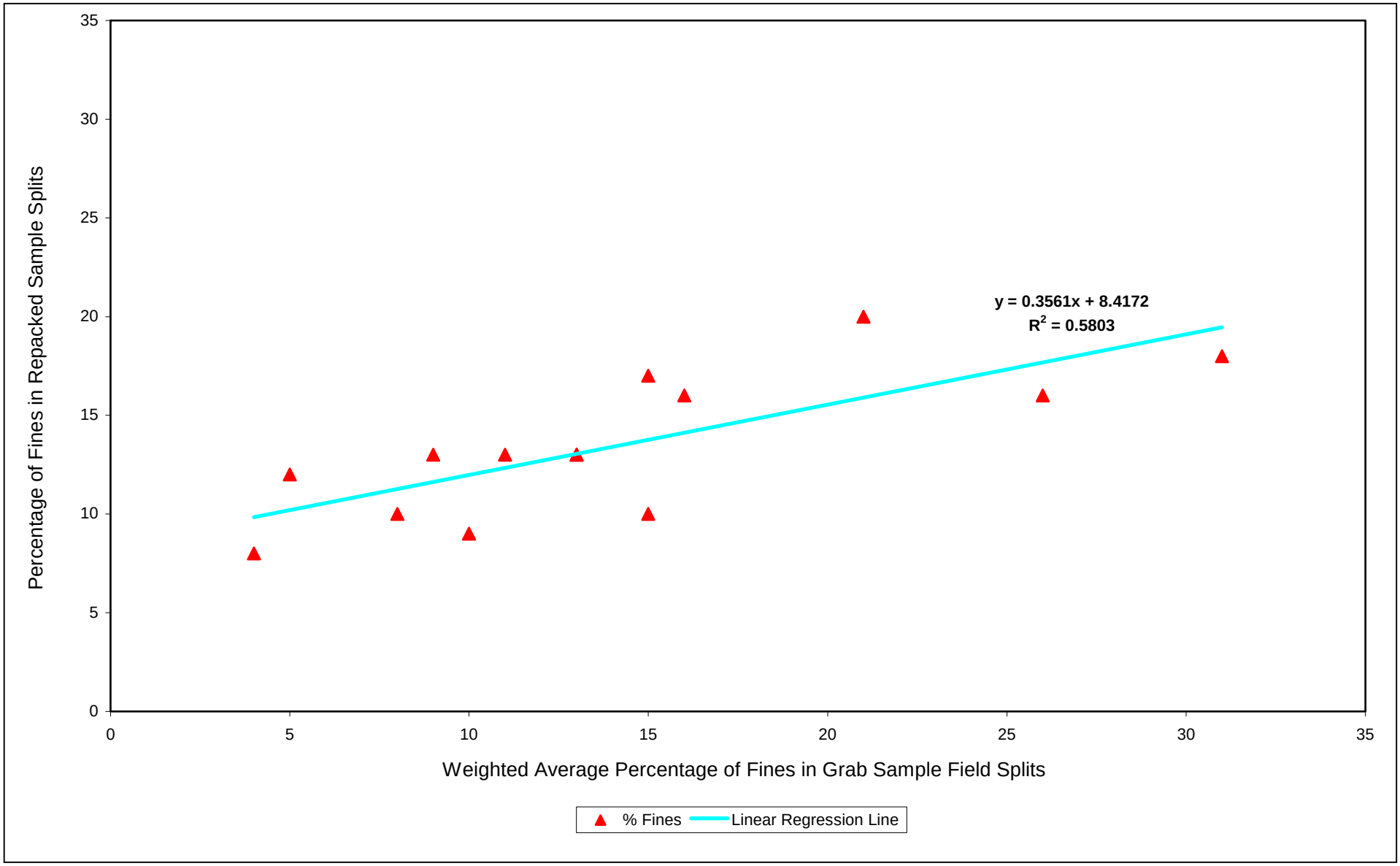


Figure 5.1-8
Percentage of Fines in Sample Splits from Identical Depth Intervals

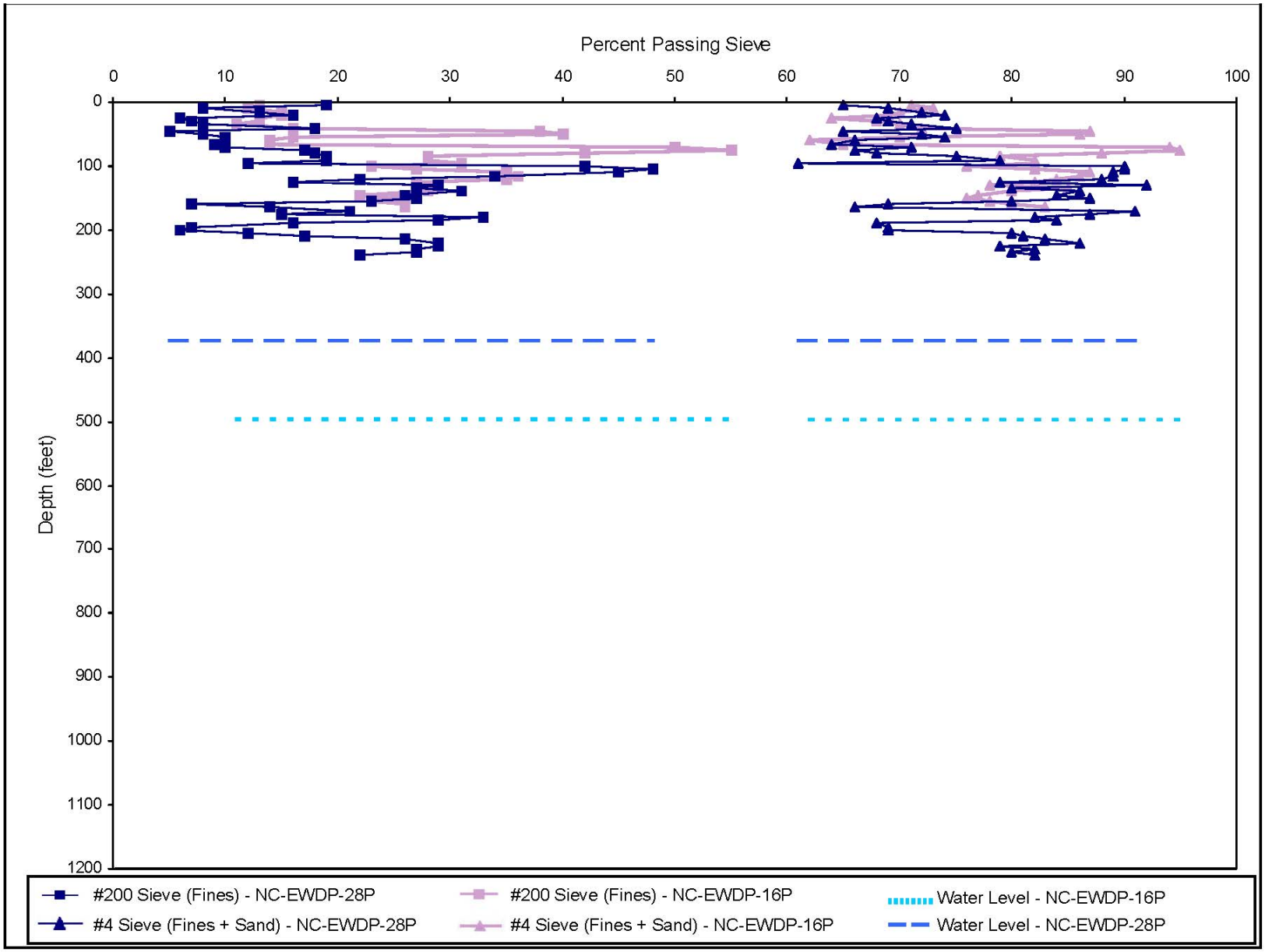


Figure 5.2-1
Laboratory Particle Size Distribution vs. Depth for 28P and 16P Alluvial Drill Cuttings Samples

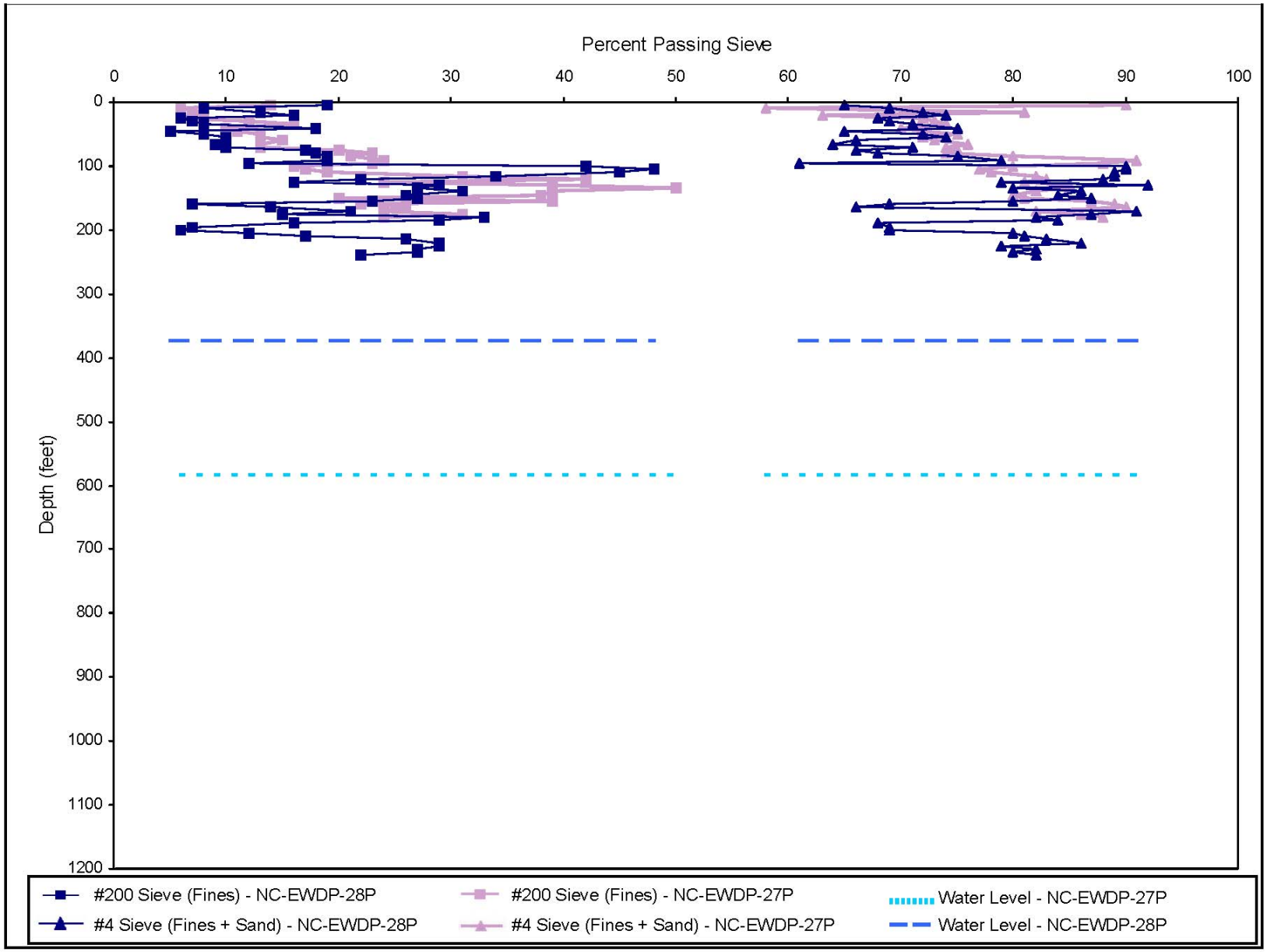


Figure 5.2-2
Laboratory Particle Size Distribution vs. Depth for 28P and 27P Alluvial Drill Cuttings Samples

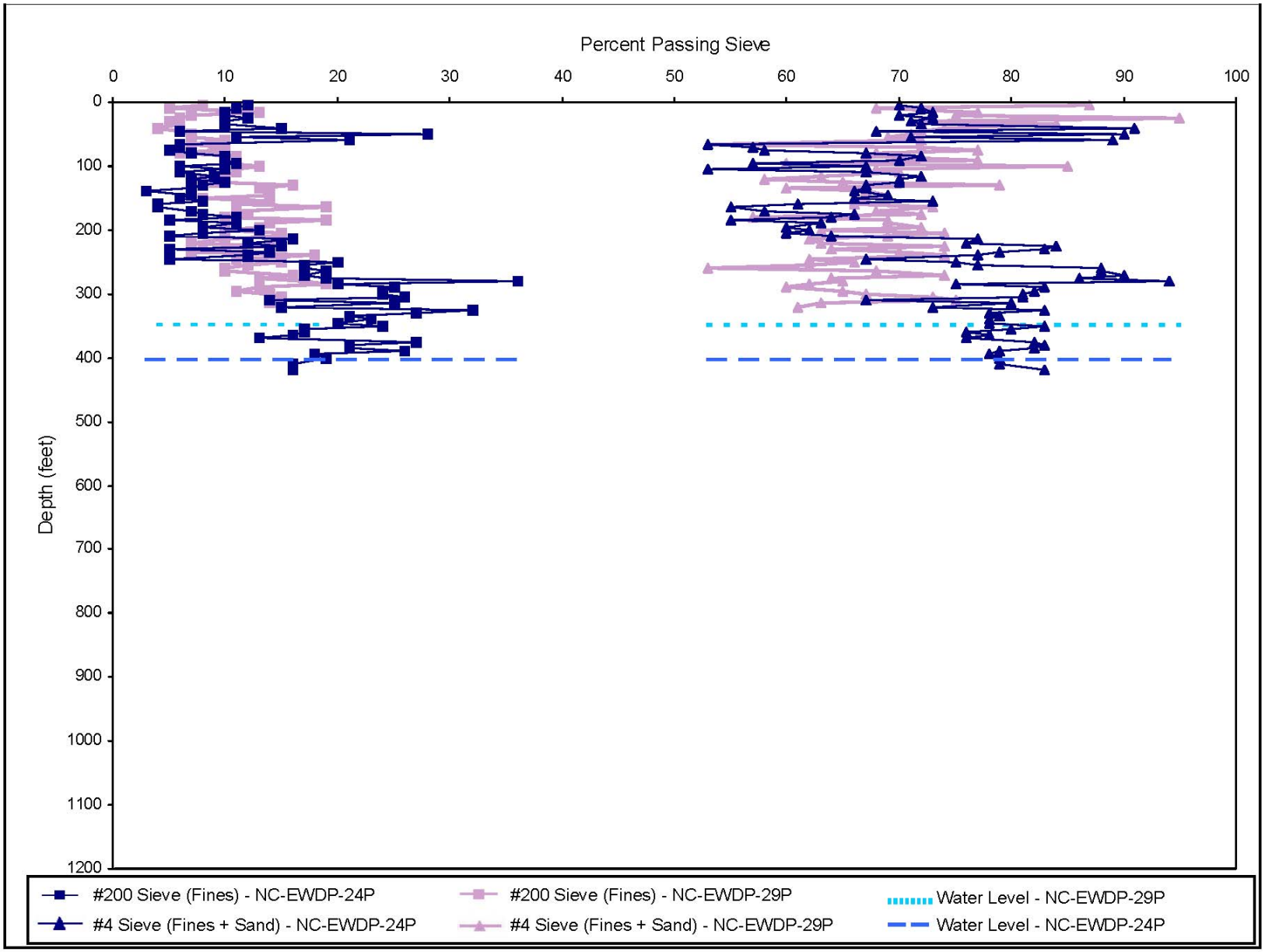


Figure 5.2-3
Laboratory Particle Size Distribution vs. Depth for 24P and 29P Alluvial Drill Cuttings Samples

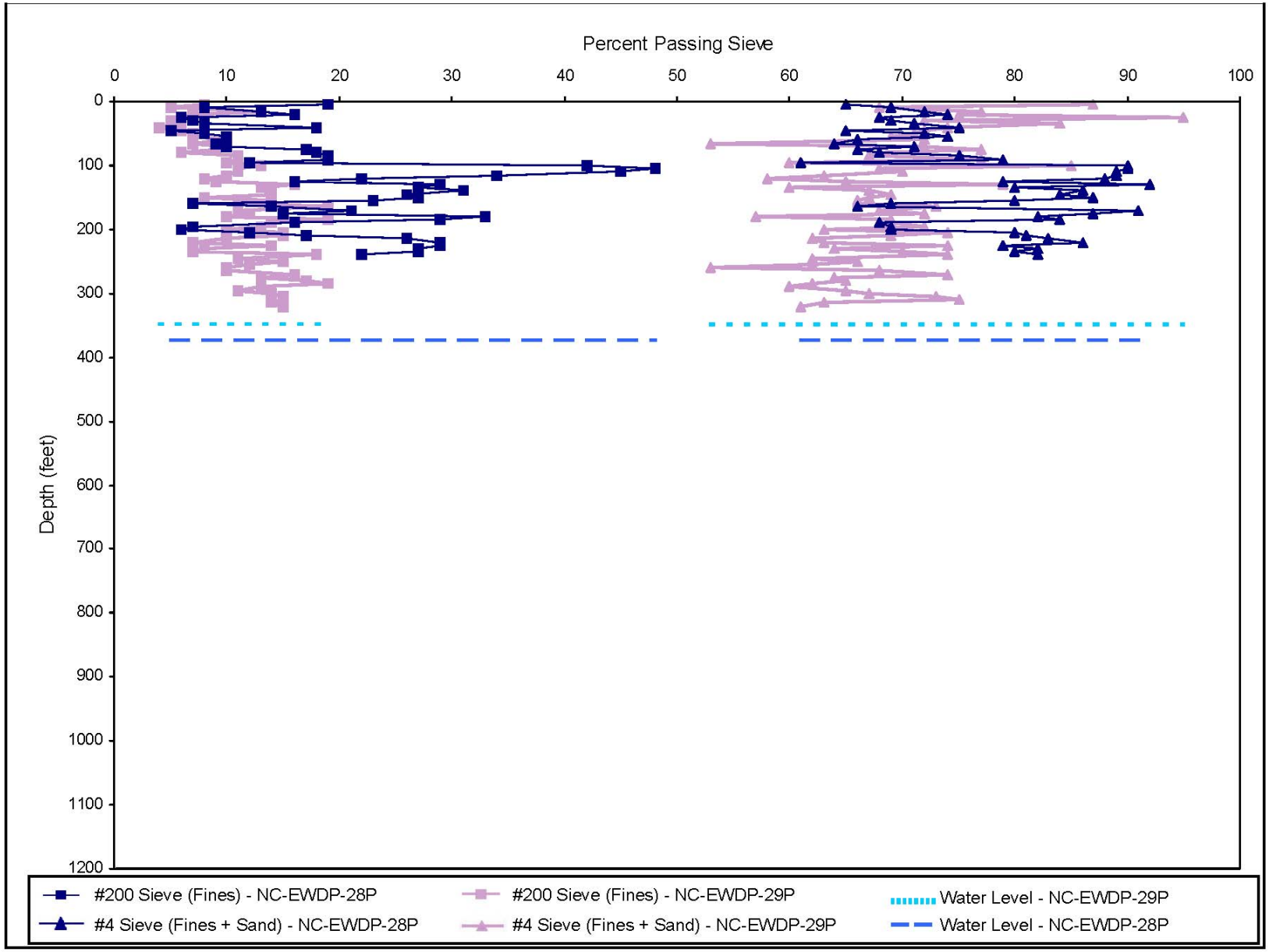


Figure 5.2-4
Laboratory Particle Size Distribution vs. Depth for 28P and 29P Alluvial Drill Cuttings Samples

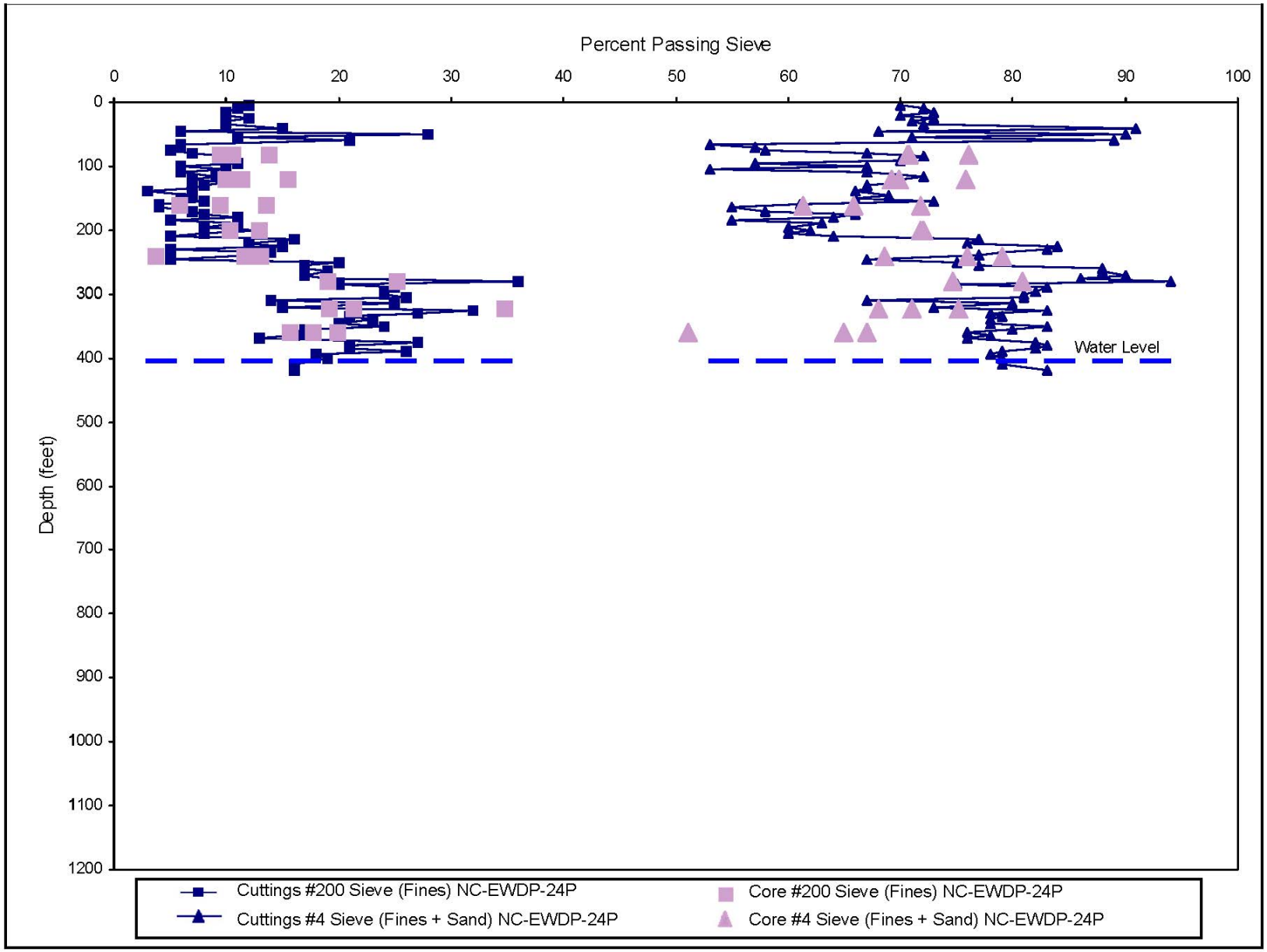


Figure 5.2-5
Laboratory Particle Size Distribution vs. Depth for 24P Alluvial Drill Cuttings and Drive Core Samples, including Shoe Core Samples

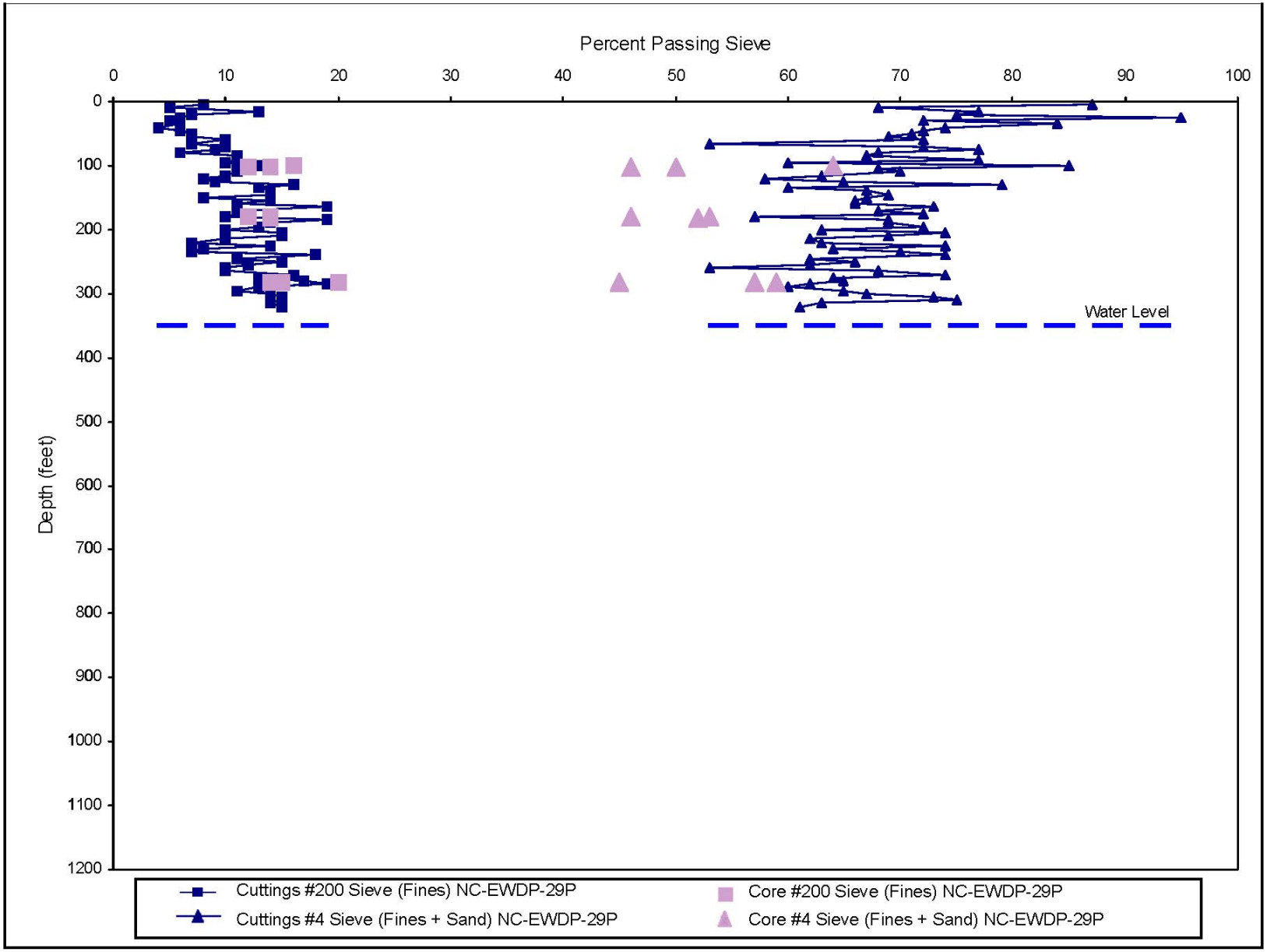


Figure 5.2-6
Laboratory Particle Size Distribution vs. Depth for 29P Alluvial Drill Cuttings and Drive Core Samples, including Shoe Core Samples

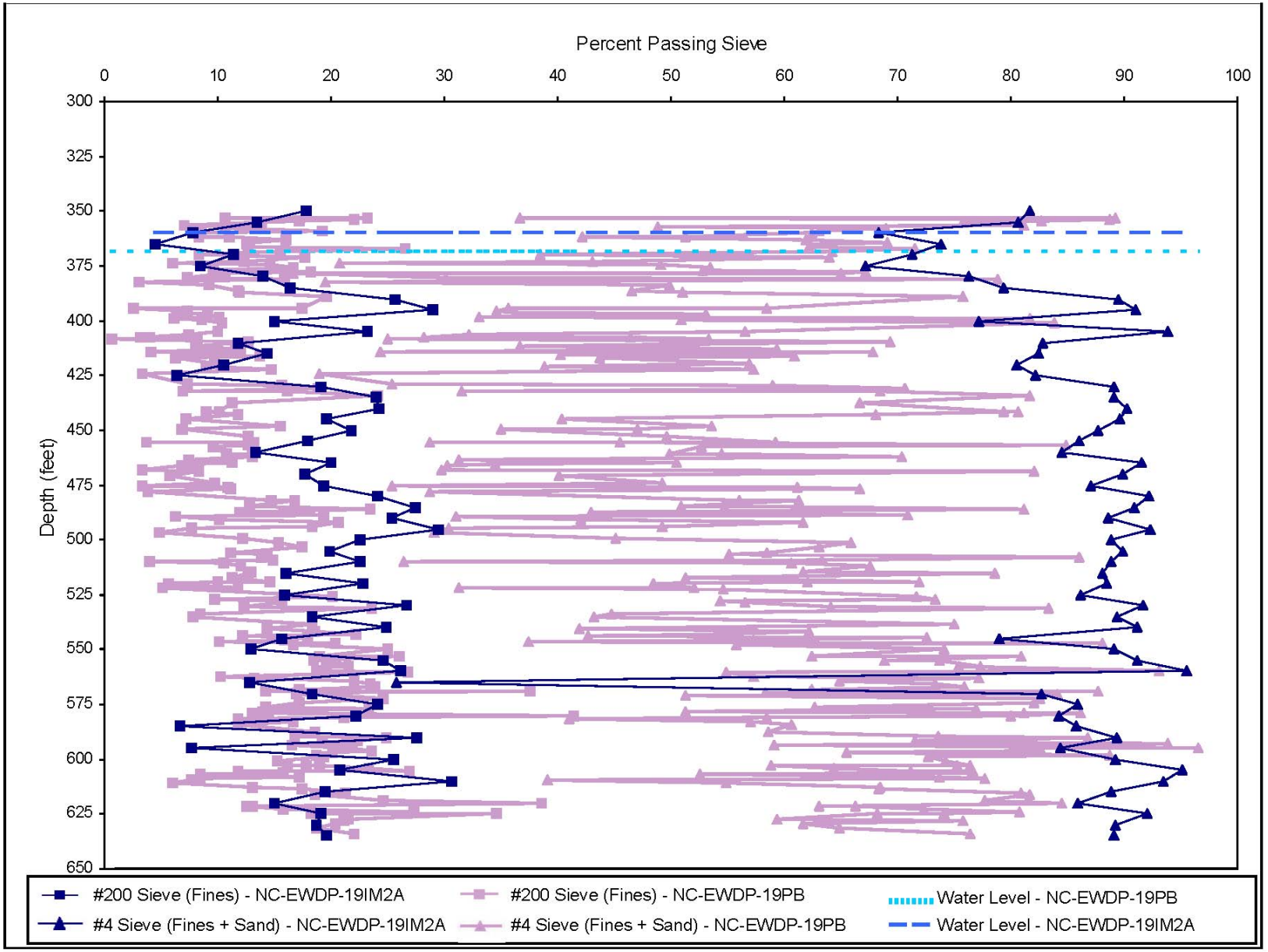


Figure 5.2-7
Laboratory Particle Size Distribution vs. Depth for 19IM2A Alluvial Drill Cuttings and 19PB Sonic Grab Core Samples

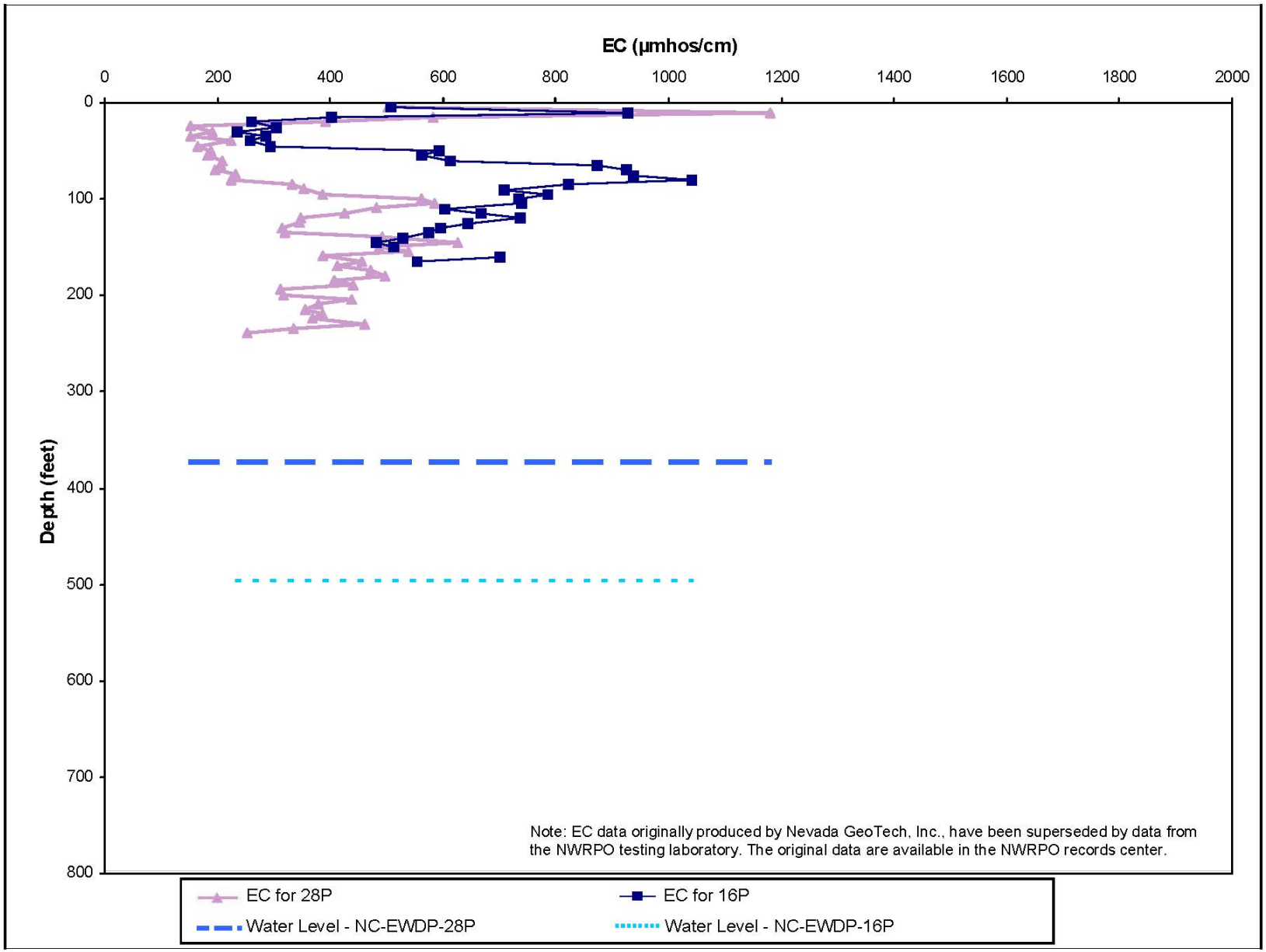


Figure 5.2-8
Electrical Conductivity vs. Depth for 28P and 16P Alluvial Drill Cuttings Samples

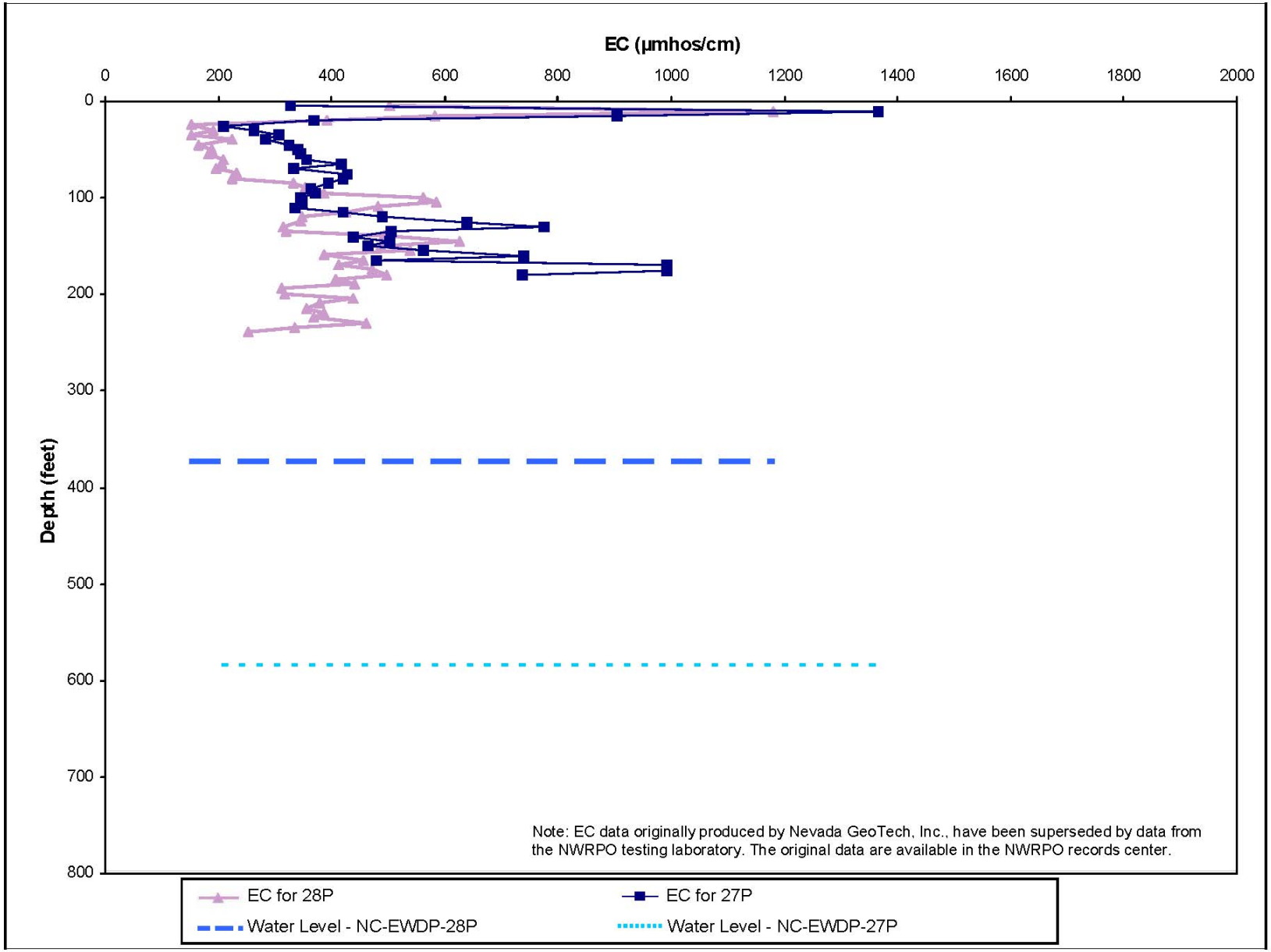


Figure 5.2-9
Electrical Conductivity vs. Depth for 28P and 27P Alluvial Drill Cuttings Samples

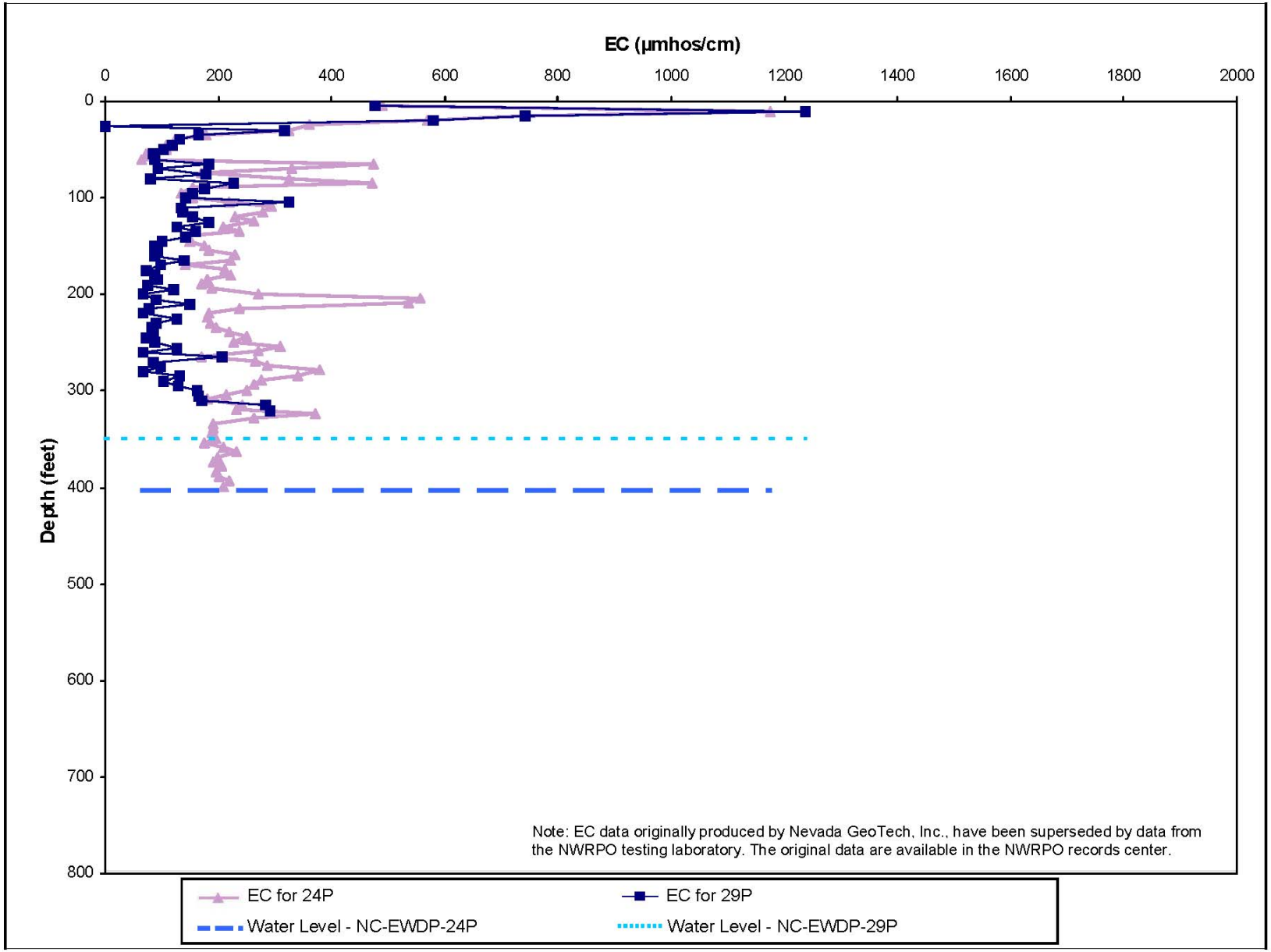


Figure 5.2-10
Electrical Conductivity vs. Depth for 24P and 29P Alluvial Drill Cuttings Samples

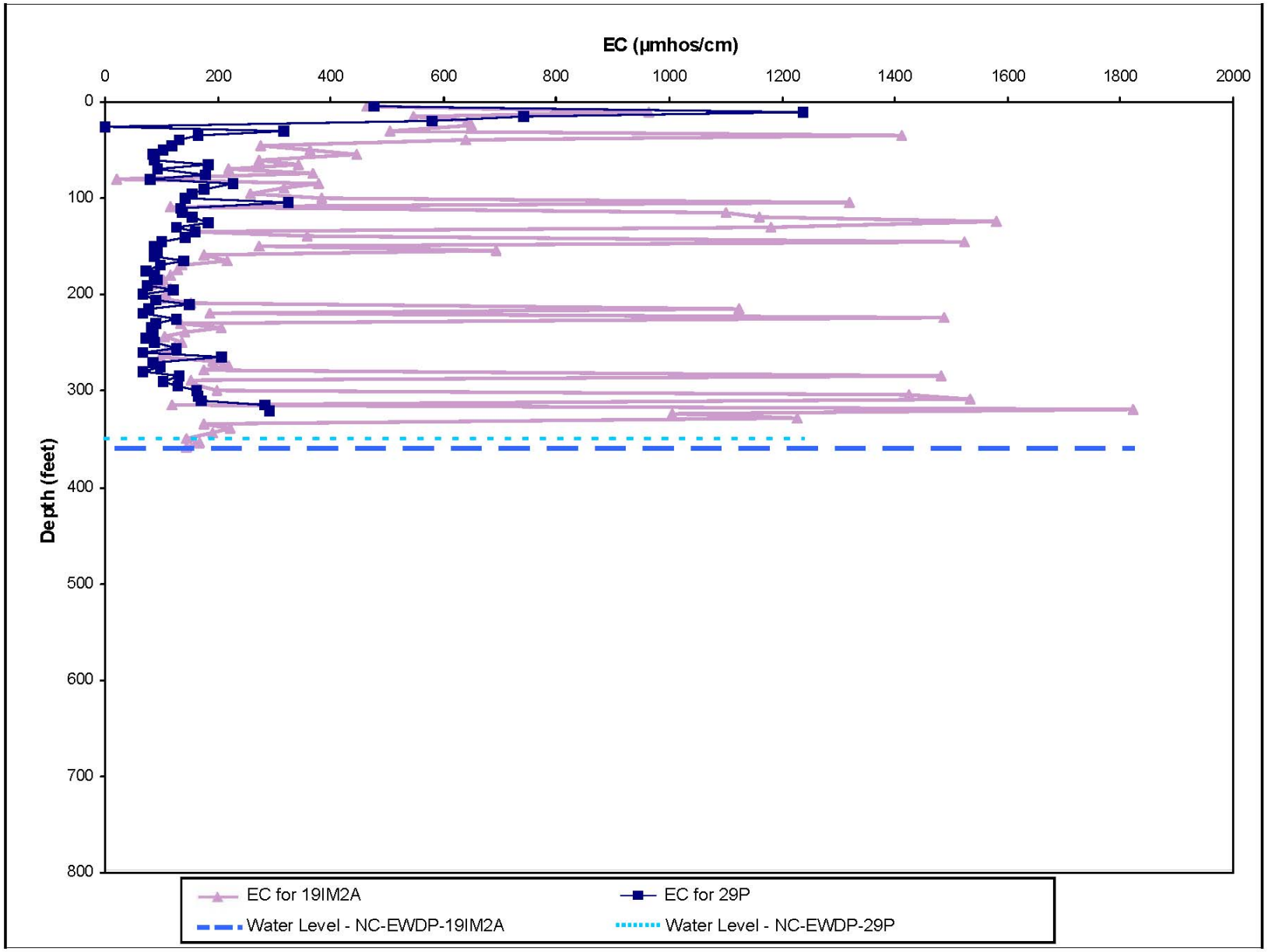


Figure 5.2-11
Electrical Conductivity vs. Depth for 19IM2A and 29P Alluvial Drill Cuttings Samples

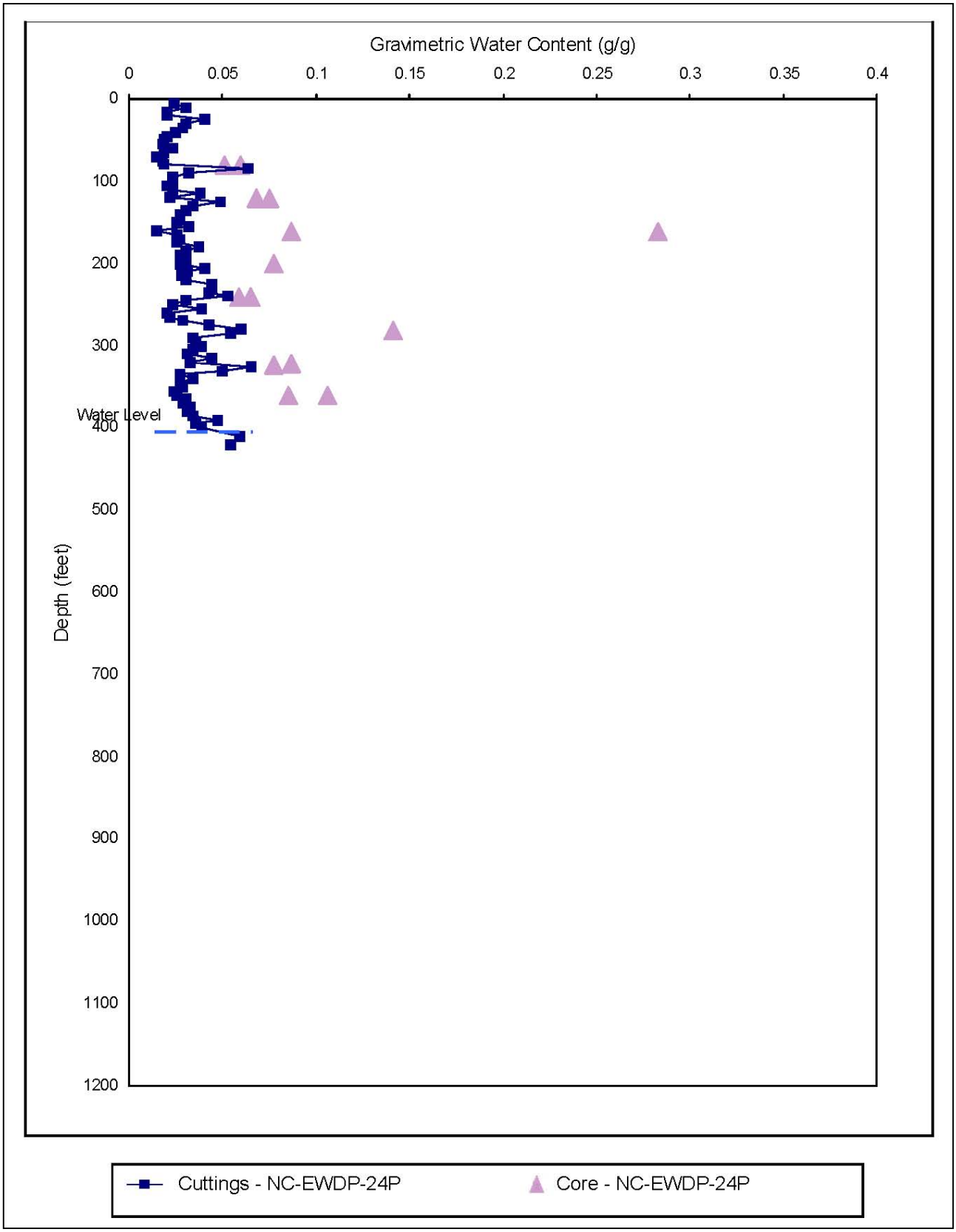


Figure 5.2-12
Gravimetric Water Content vs. Depth for 24P Alluvial Drill Cuttings and Drive Core Samples

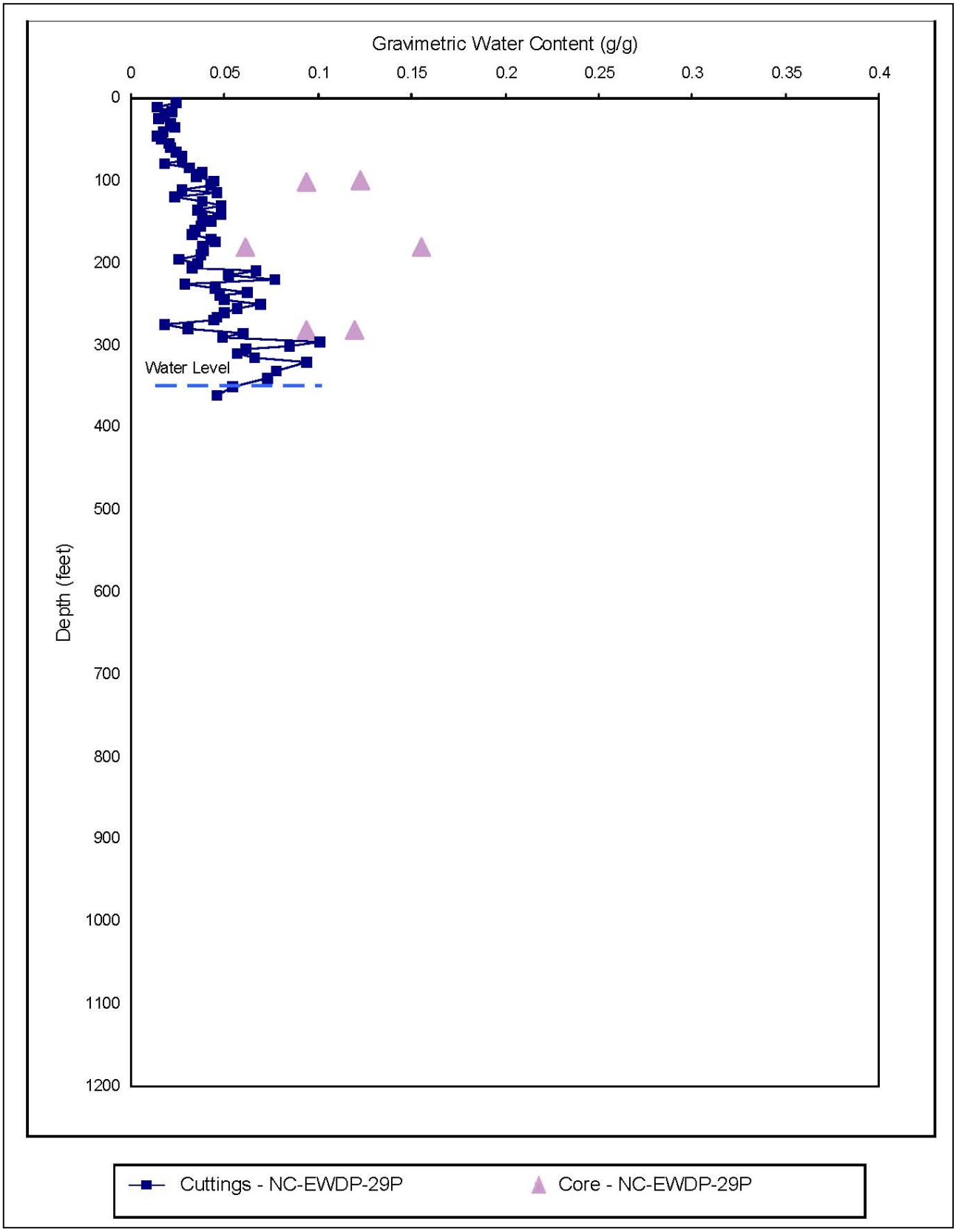


Figure 5.2-13
Gravimetric Water Content vs. Depth for 29P Alluvial Drill Cuttings and Drive Core Samples

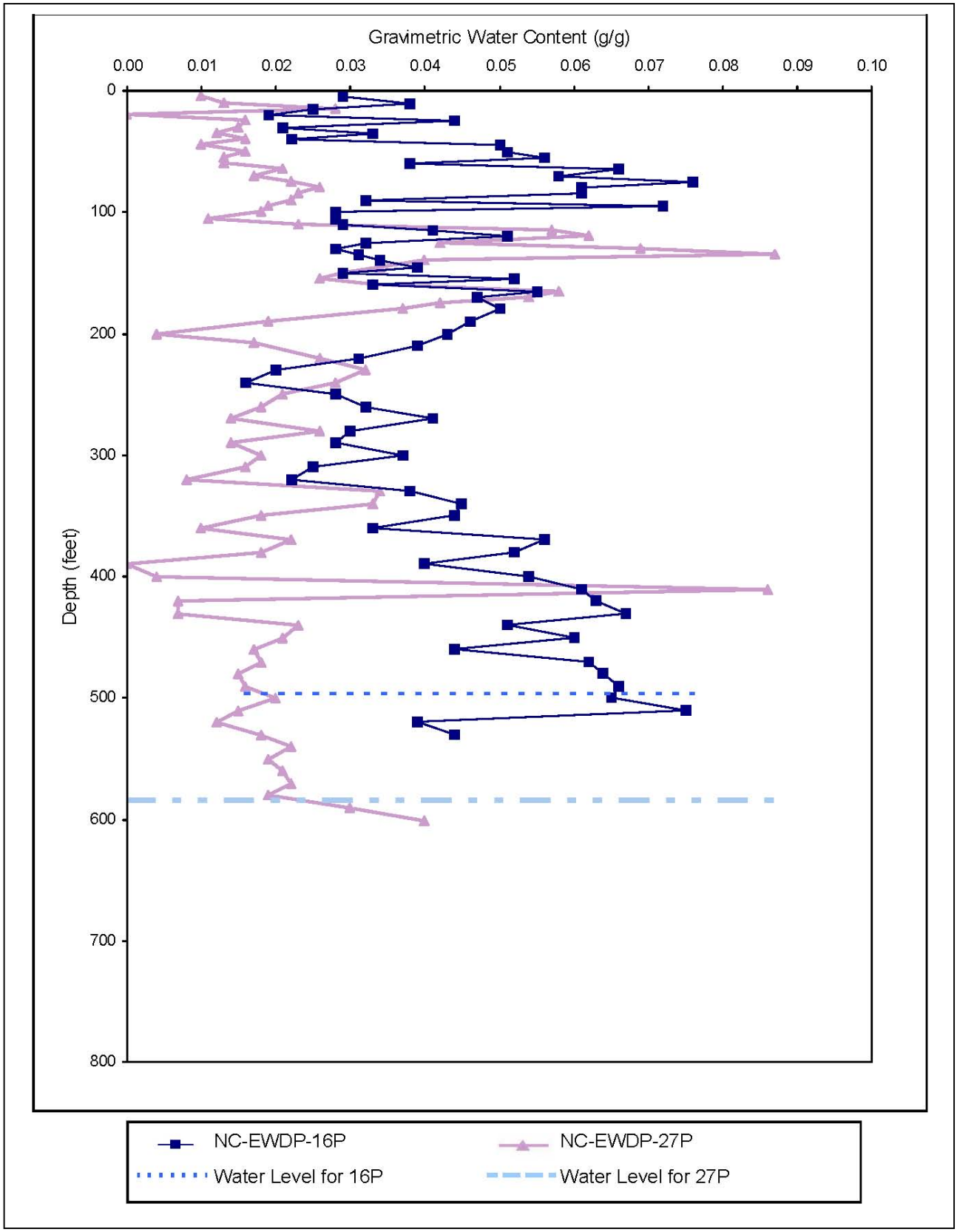


Figure 5.2-14
Gravimetric Water Content vs. Depth in Alluvium and Non-Alluvium for 16P and 27P

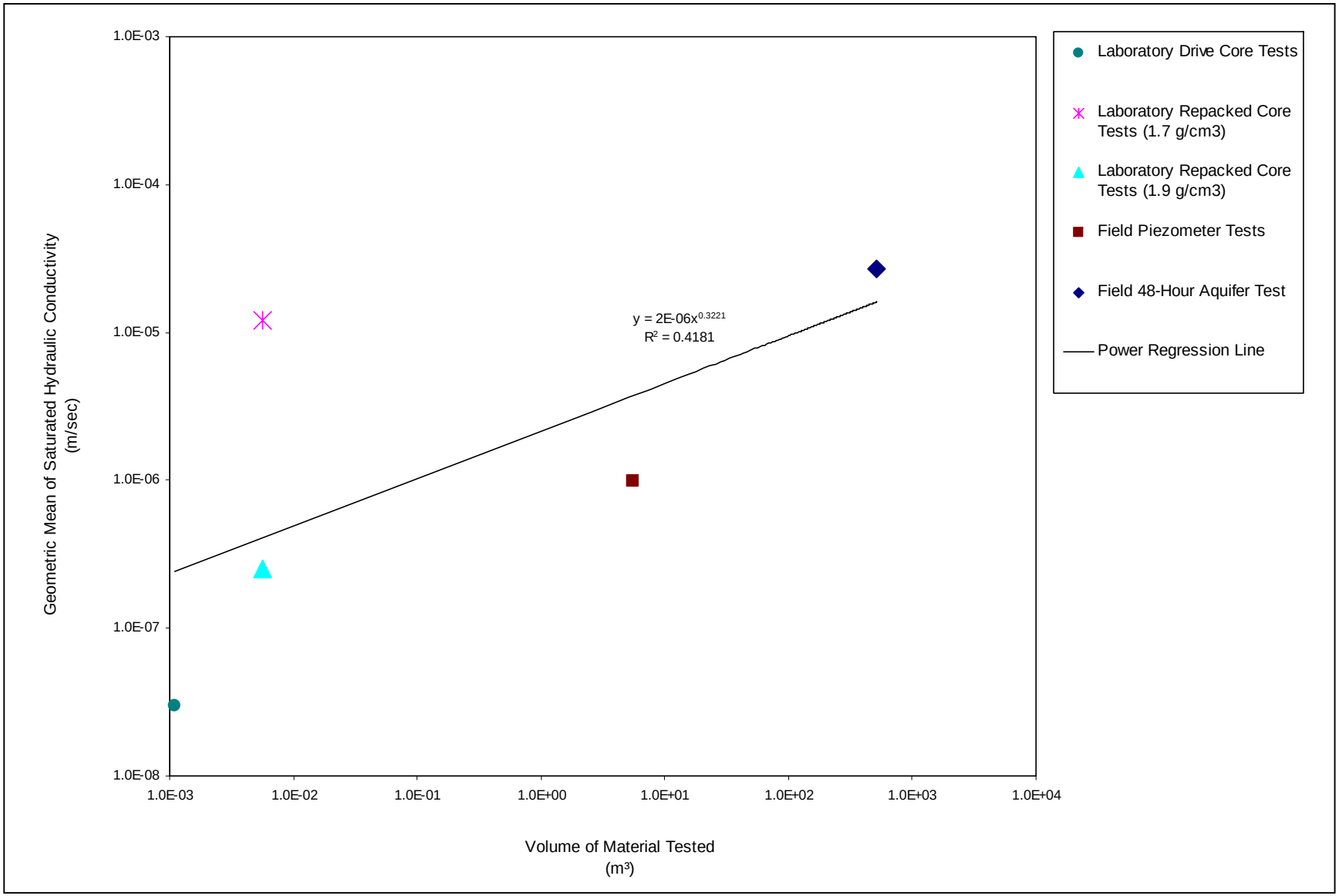


Figure 5.3-1
Geometric Mean of Saturated Hydraulic Conductivity vs. Measurement Scale for Site 19 Core and In Situ Tests

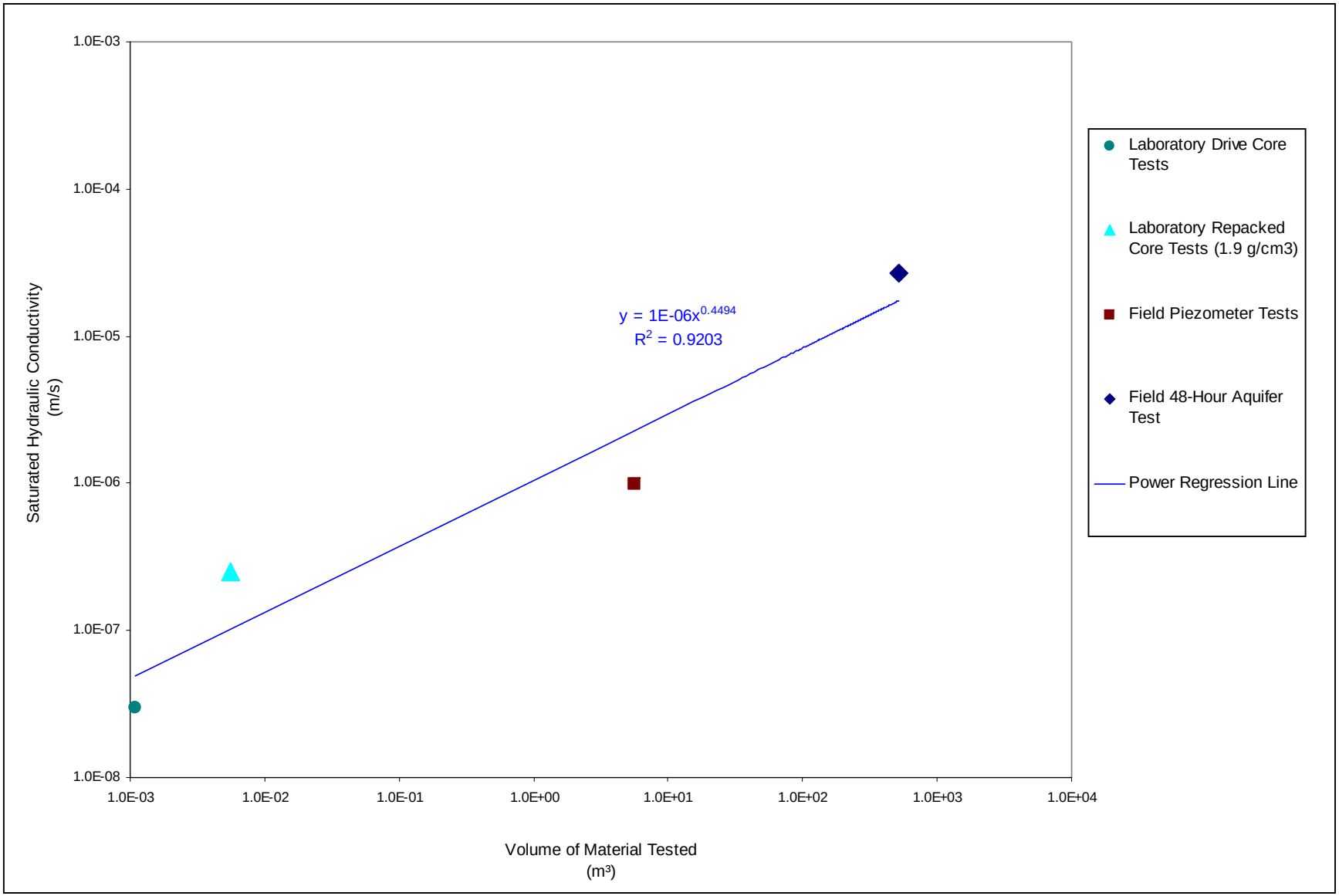


Figure 5.3-2
Geometric Mean of Saturated Hydraulic Conductivity vs. Measurement Scale for Site 19 Core and In Situ Tests, excluding Data from Core Repacked at Air-Dried Water Content

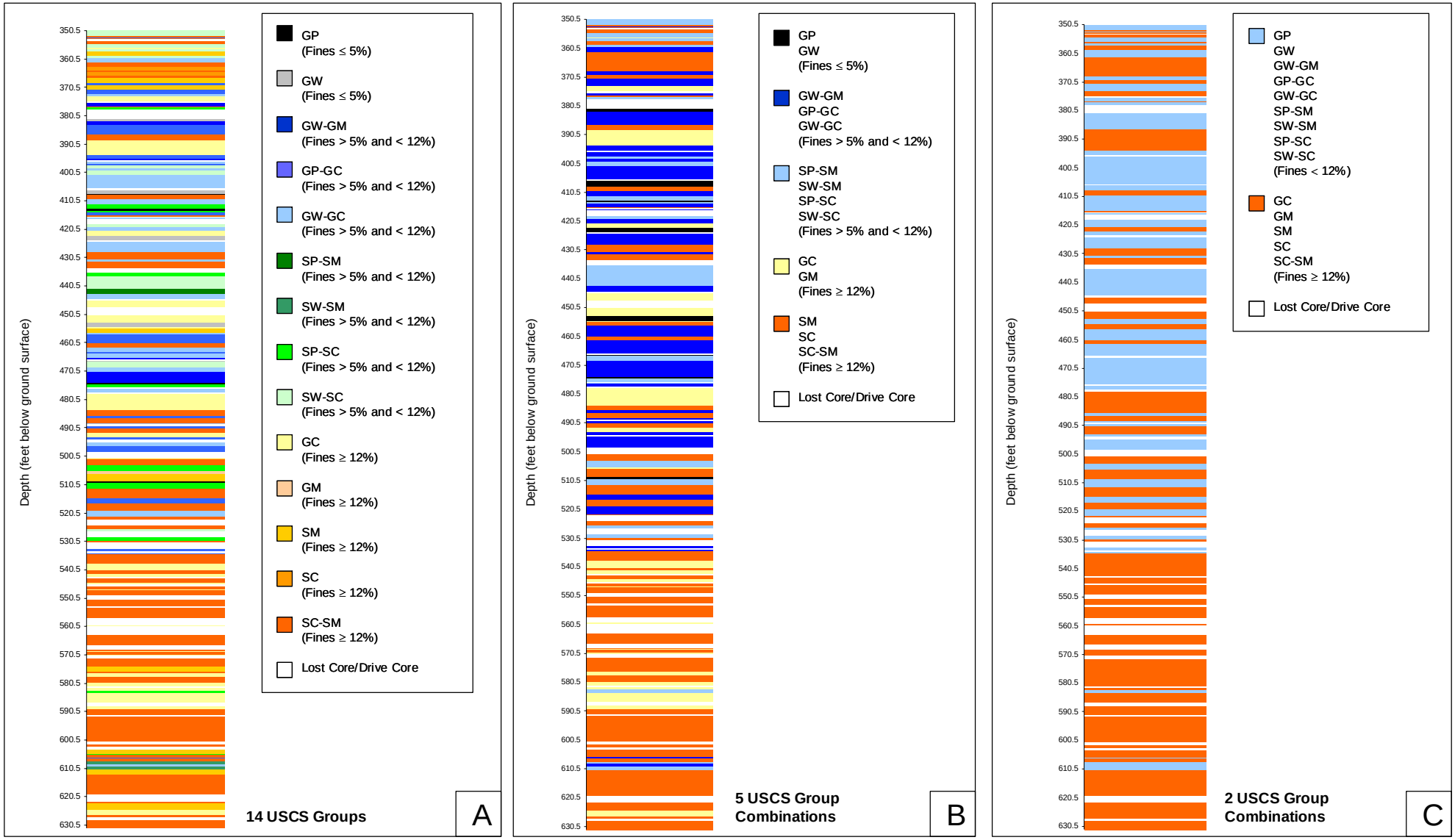


Figure 6.1-1
Preliminary Summary Lithologic Logs for 19PB

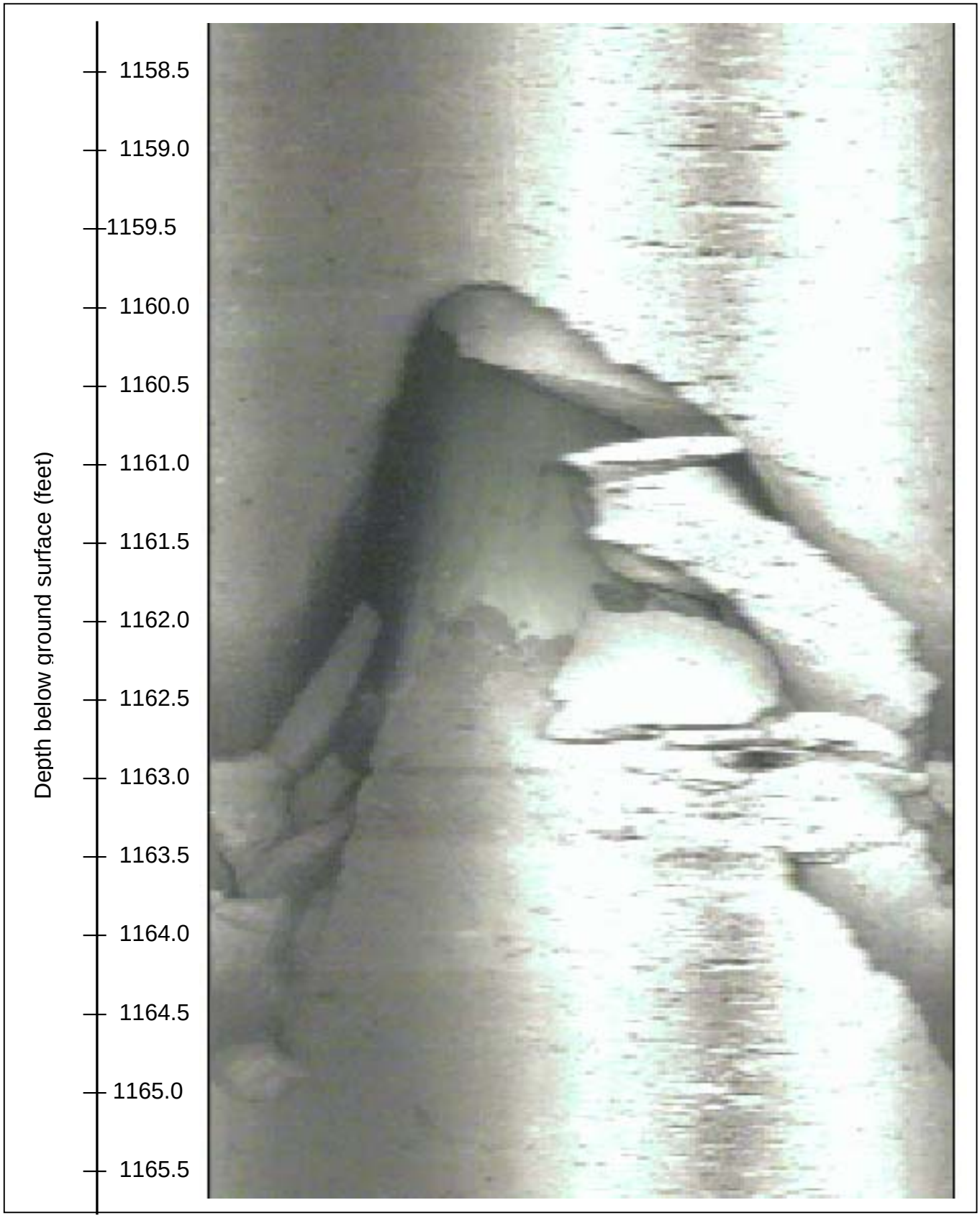


Figure 6.2-1
Optical Televiewer Image for 27P from 1158.5 to 1165.5 Feet Below Ground Surface

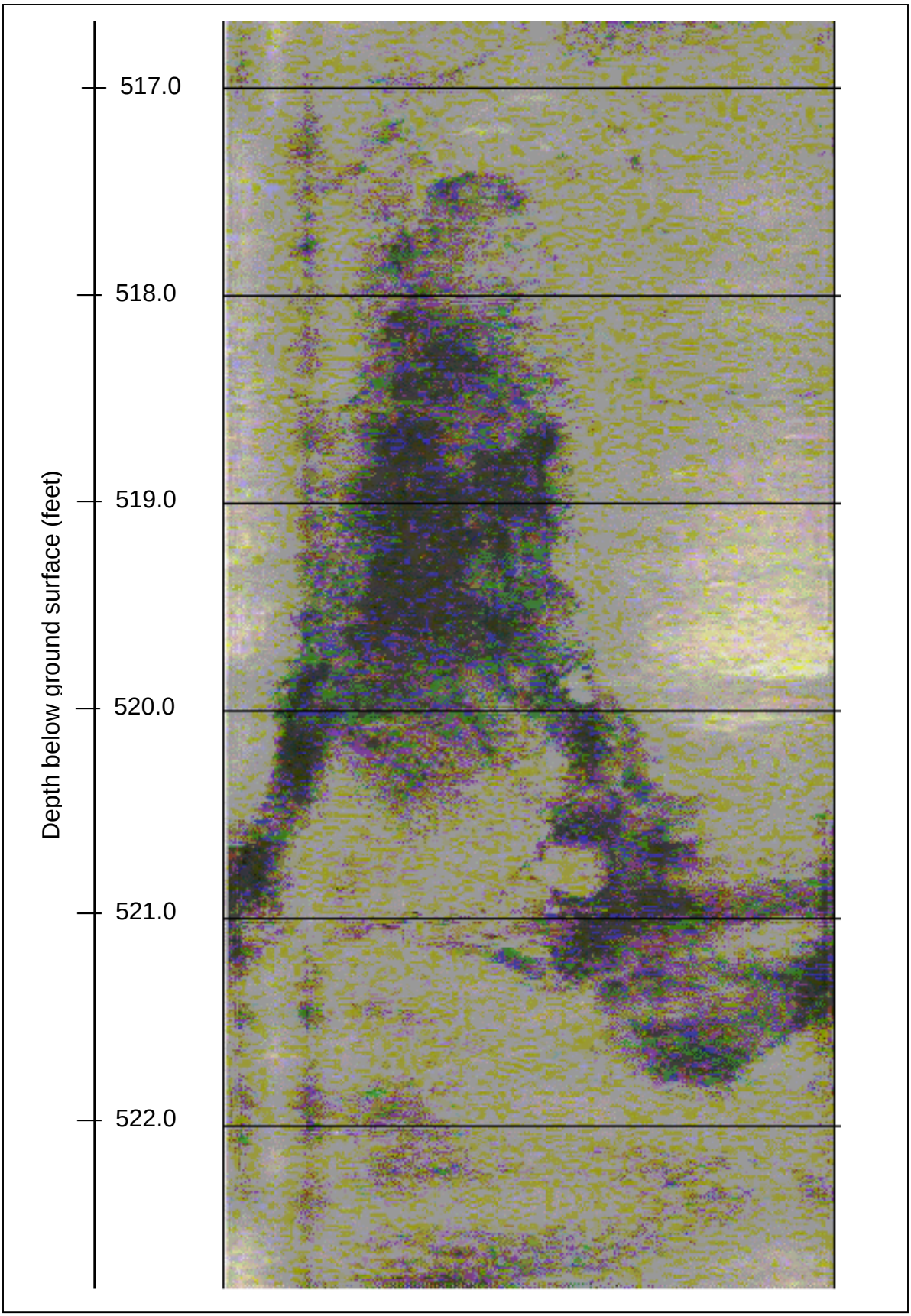


Figure 6.2-2
Optical Televiewer Image for 29P from 517 to 522 Feet Below Ground Surface

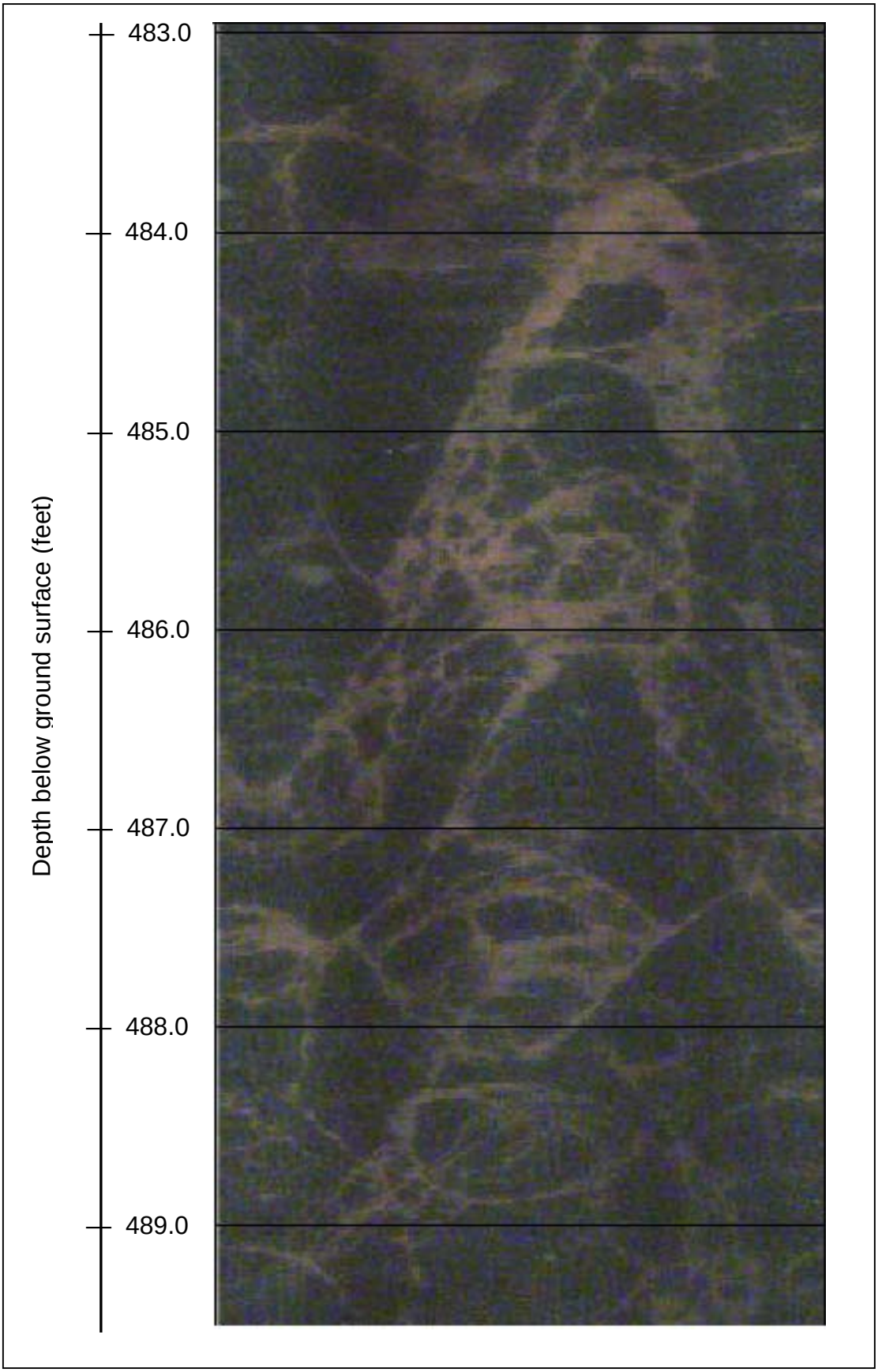


Figure 6.2-3
Optical Televiewer Image for 29P from 483.0 to 489.5 Feet Below Ground Surface

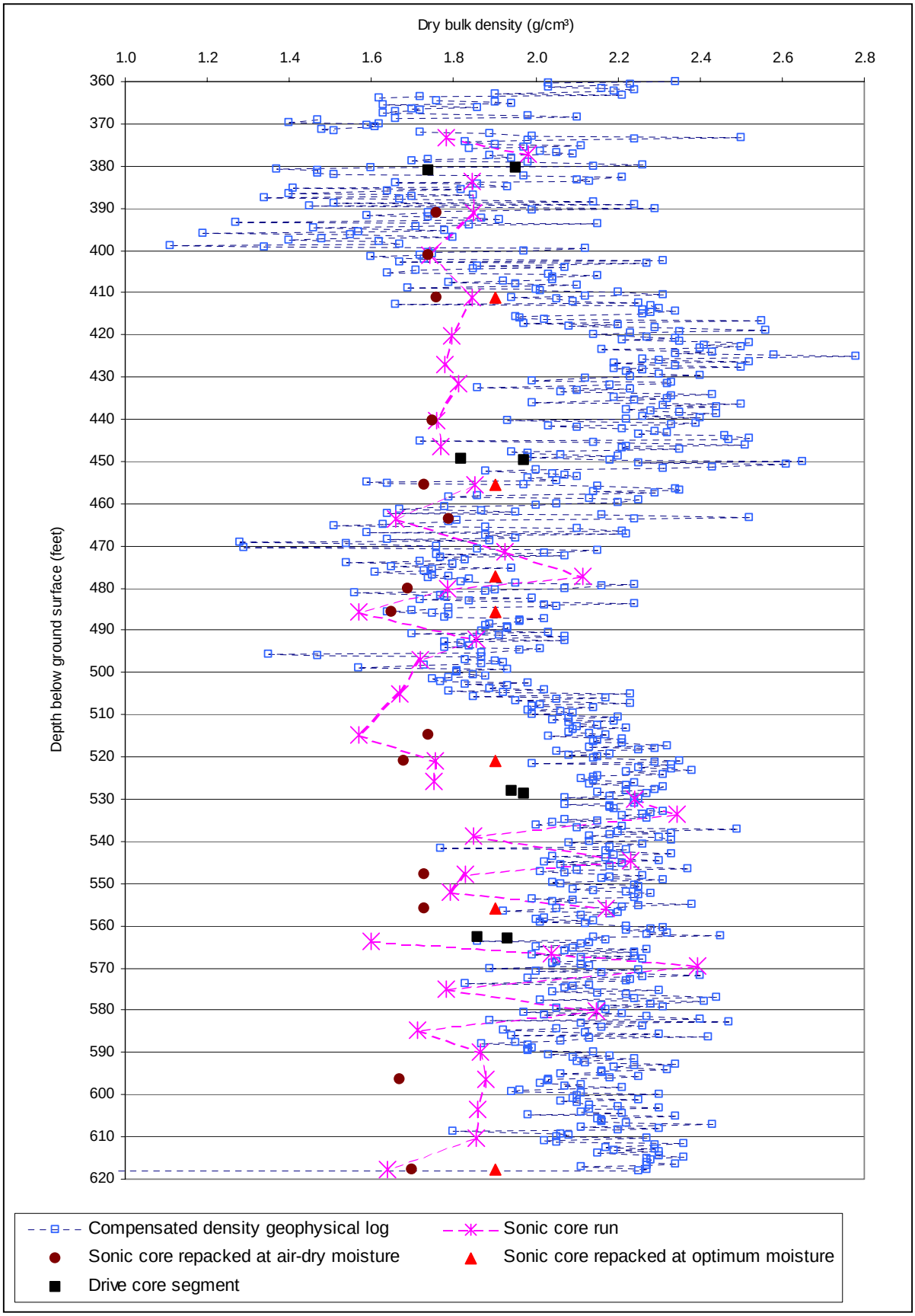


Figure 6.2-4
Dry Bulk Density Depth Profiles from 19PB using Different Measurement Methods

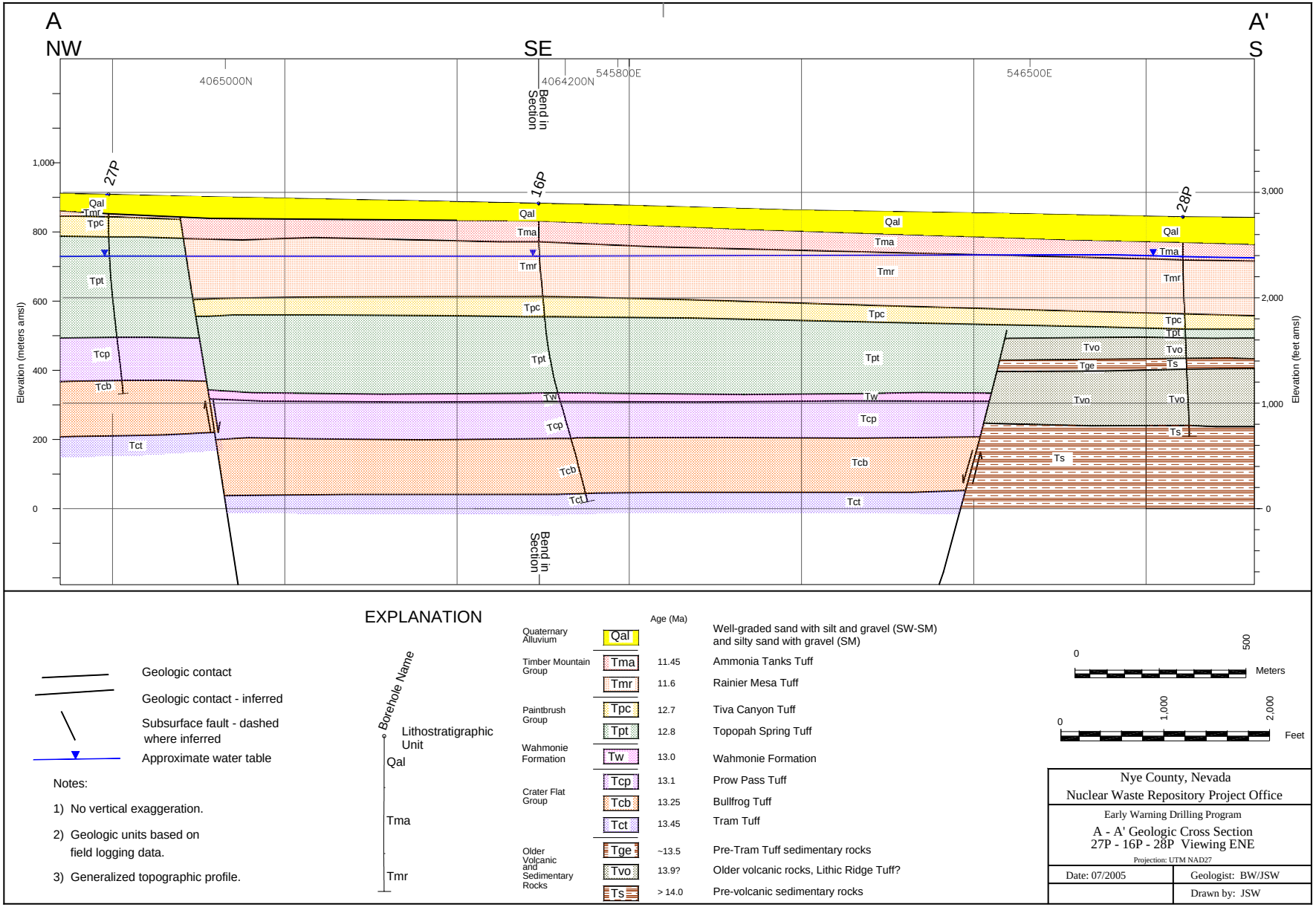


Figure 6.3-1
Cross Section A–A′

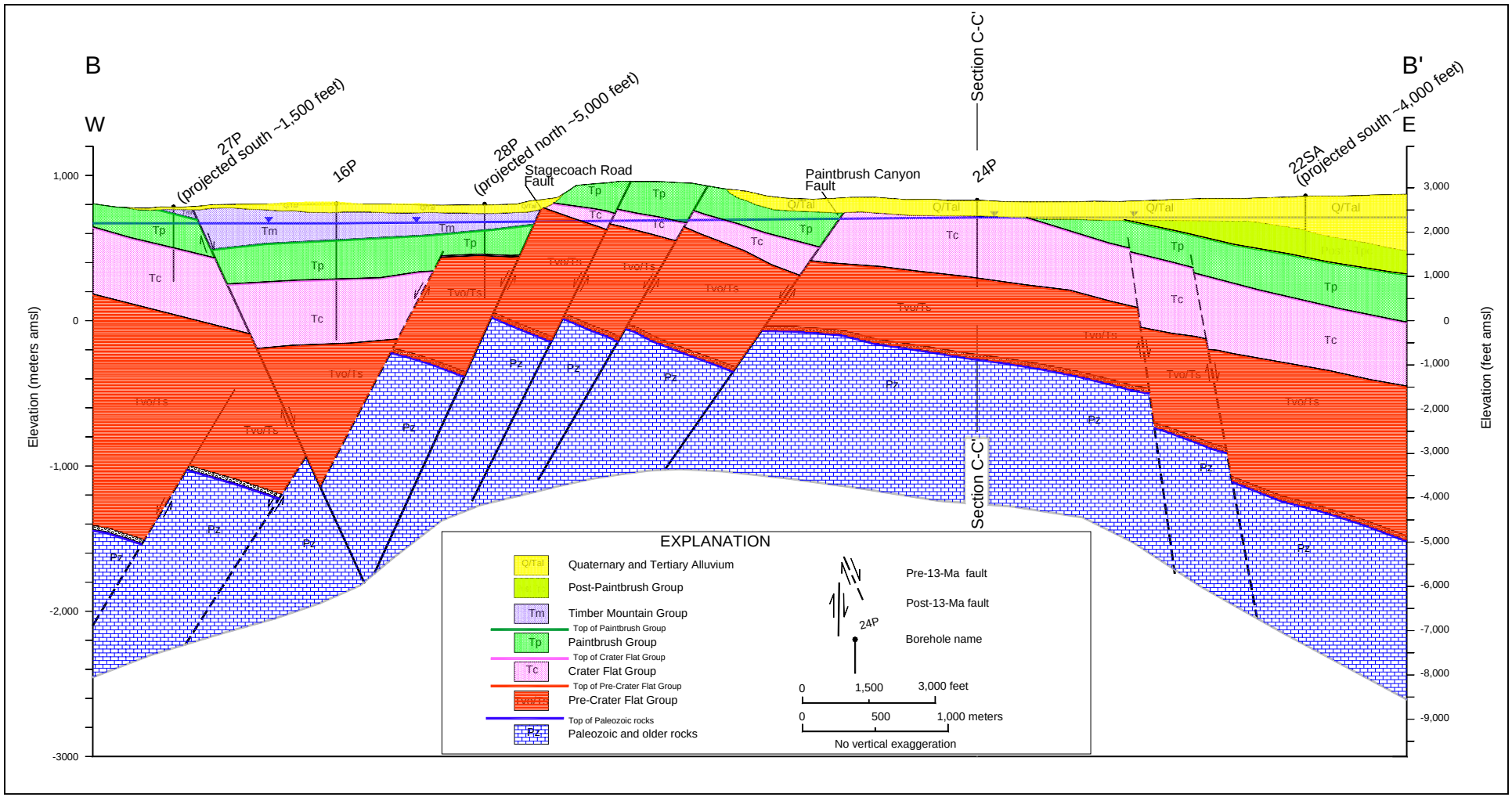


Figure 6.3-2
Conceptual Cross Section B–B′

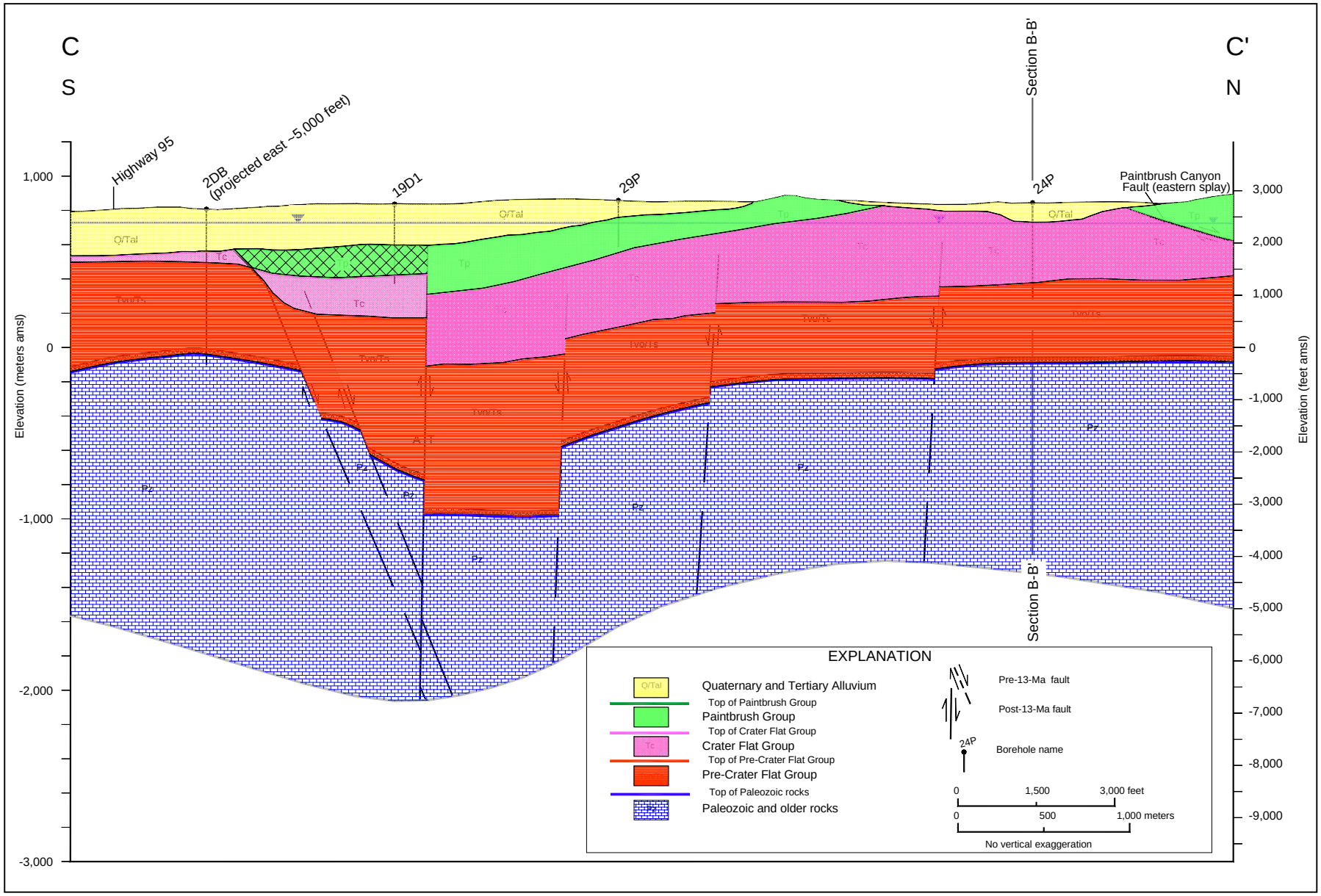


Figure 6.3-3
Conceptual Cross Section C–C′