

2008 Annual Report

Hecla
MINING COMPANY

Site 23/D



Site 23/D

June 2, 2009

Presentation Outline

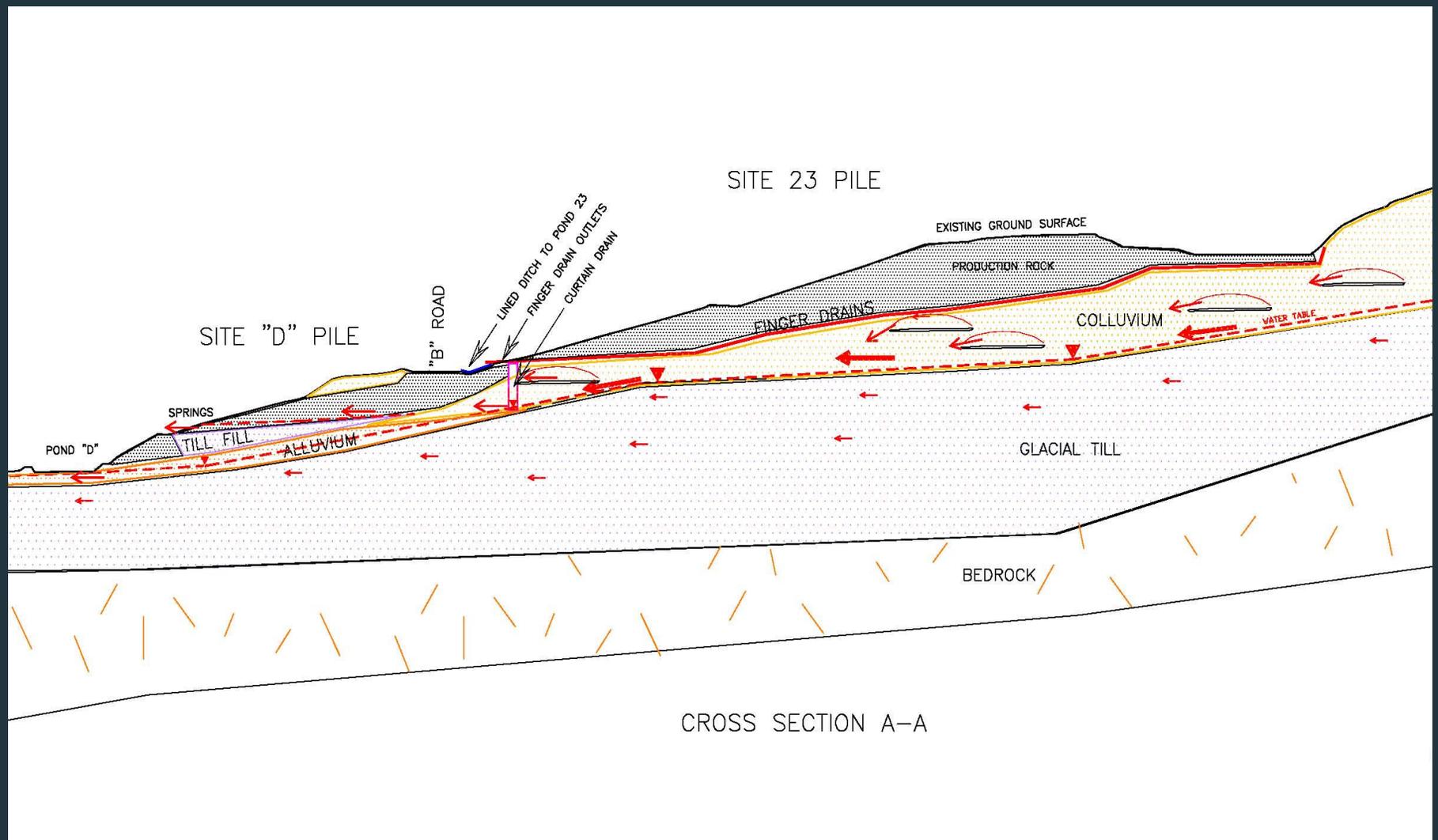
- Placement data
- Stability
 - Compaction
 - Inspections
 - Slope monitoring
- Water level data
- Precipitation and flow data
- Water quality at internal monitoring sites
- ABA data
- General site management

Aerial Photograph of Site 23/D 2008

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Appendix 2 Site 23/D Conceptual Cross Section



CROSS SECTION A-A

b1

Table 3.1 Site 23 Placement Data

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PRODUCTION ROCK PLACED AT SITE 23					PRODUCTION ROCK HAULED				
	Surveyed (cy)		Surveyed (tons)		Hauled To Tails (tons)	From UG Truck Counts (tons)			
Year	Monthly	Cumulative	Monthly	Cumulative	Monthly	Class 1	Class 2	Class 3	Total
2007	48,441	600,522	82,000	1,016,588	40,690	45,662	34,437	65,852	145,951
2008	24,432	619,999	41,358	1,049,528	25,012	28,041	11,091	8,414	47,546
				~492,000 tons remaining	Production % by class	59%	23%	18%	

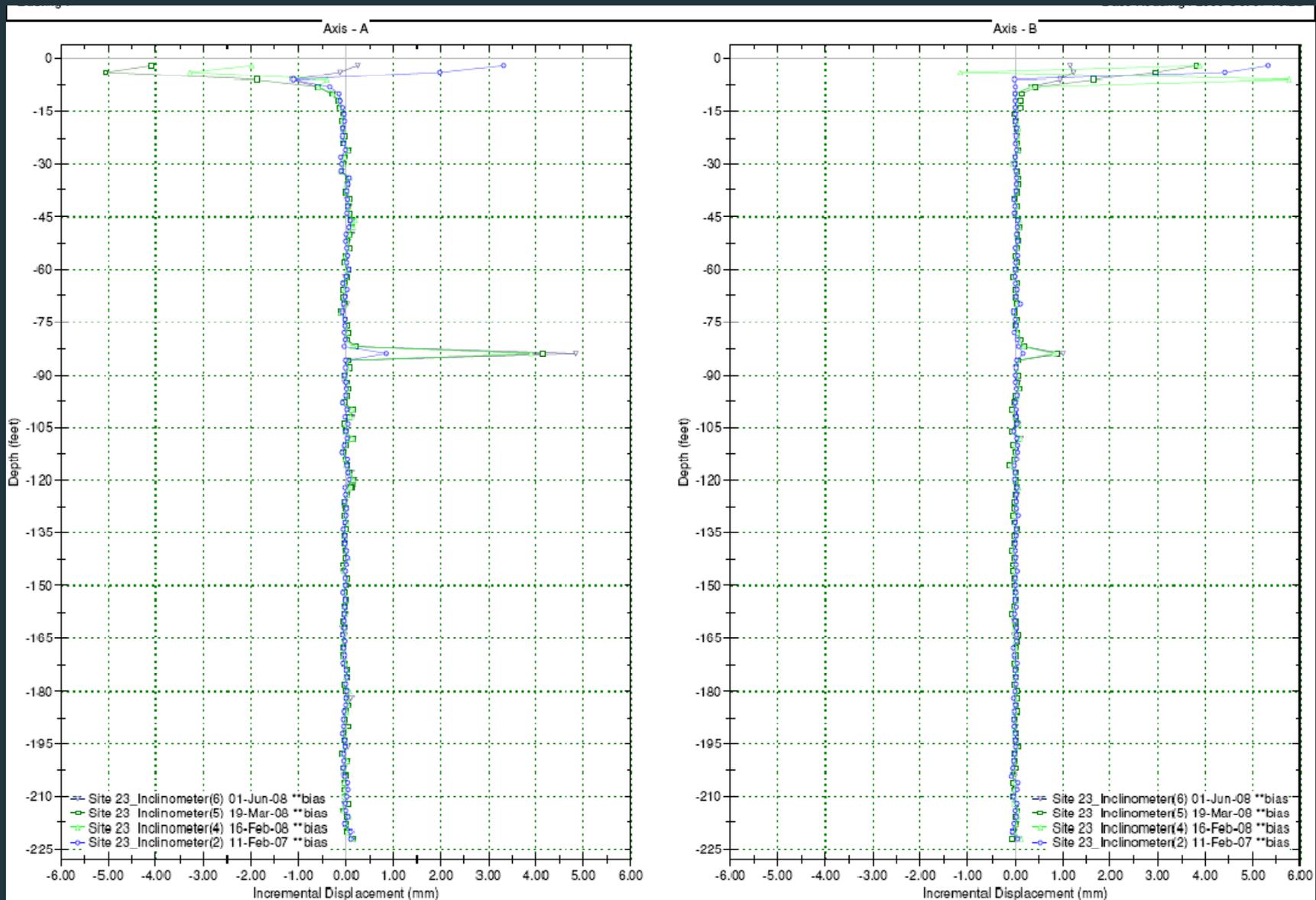
Slide 6

b1 were does class 1 placed and "less tails haul" come from?
ballouc, 4/28/2008

Site 23/D Stability

- Compaction
 - Method specification includes spreading in less than 24" lifts with at least one pass with bulldozer and four passes with vibratory compactor
- Inspections
 - Results of operator, engineering, environmental and regulatory inspections revealed no visible signs of instability
 - No issues of non-compliance were noted in 32 USFS and 1 ADEC/ADNR inspections
- Slope monitoring
 - 12 survey hubs monitored with GPS
 - No large movements were identified
 - Inclinator readings
 - Minor creep at 85' (~3mm/yr)

Figure 3.30 Inclinometer Incremental Displacement



Site 23/D Water Level Data

- Water table is below base of pile
- Well-drained pile and foundation indicate pile stability is maximized
- Perched water tables in colluvial wedge and alluvial sands
- Braided flow paths
- Distinct seasonal pattern, especially in alluvial sands
- Silt/clay till below colluvial wedge inhibits downward water movement

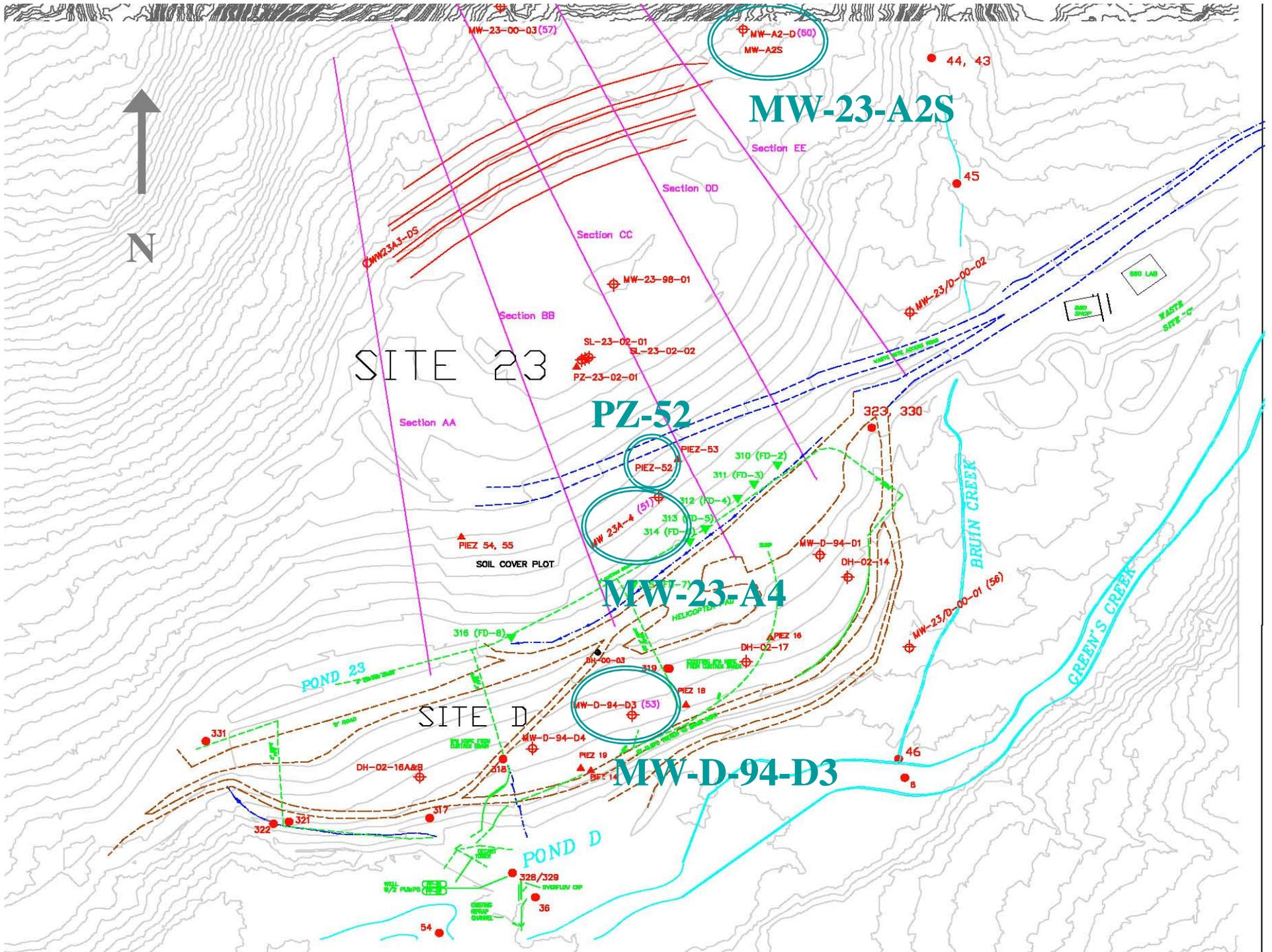


Figure 3.1 Pressure Data for Piezometer 52

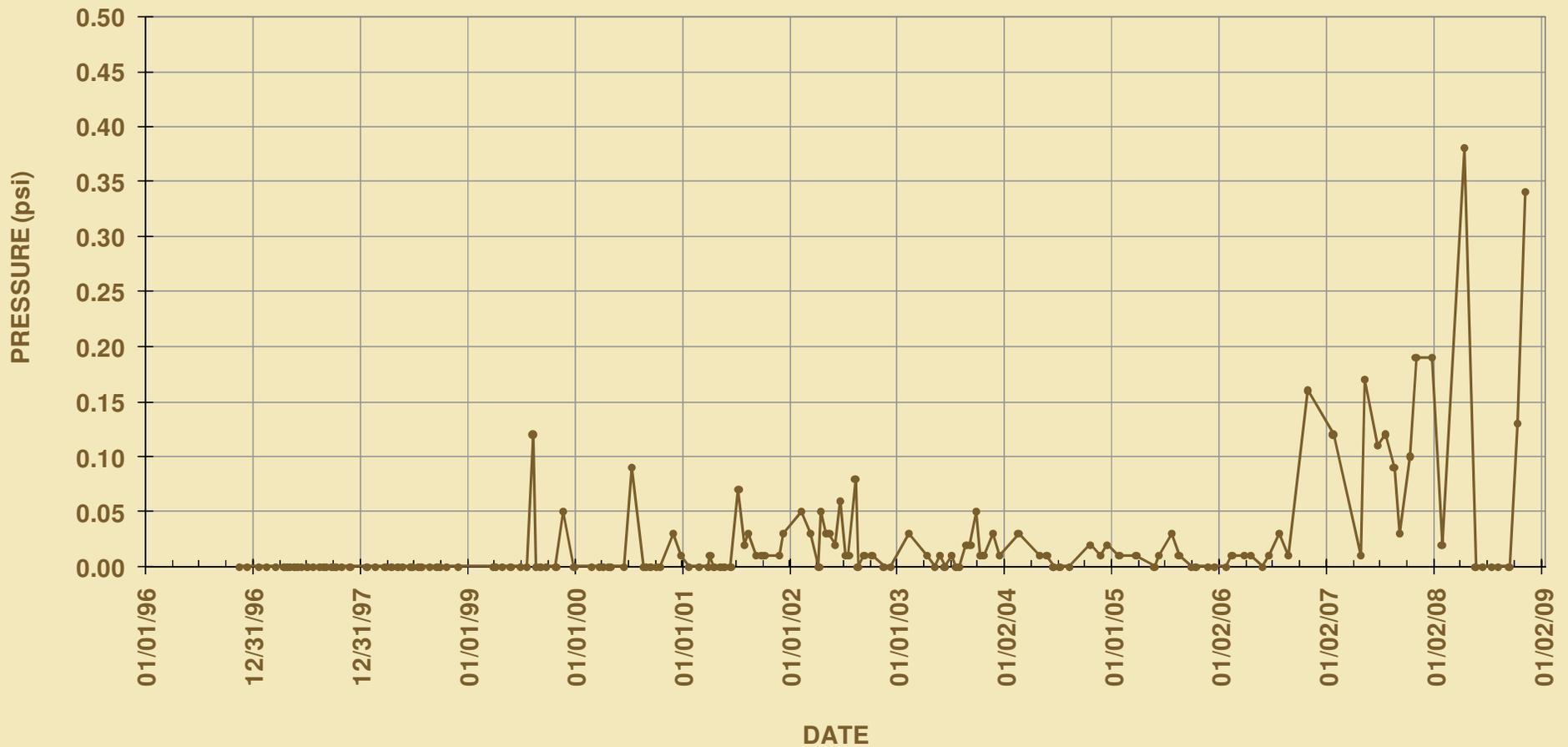


Figure 3.6/7 Water Levels MW-23-A2S/D

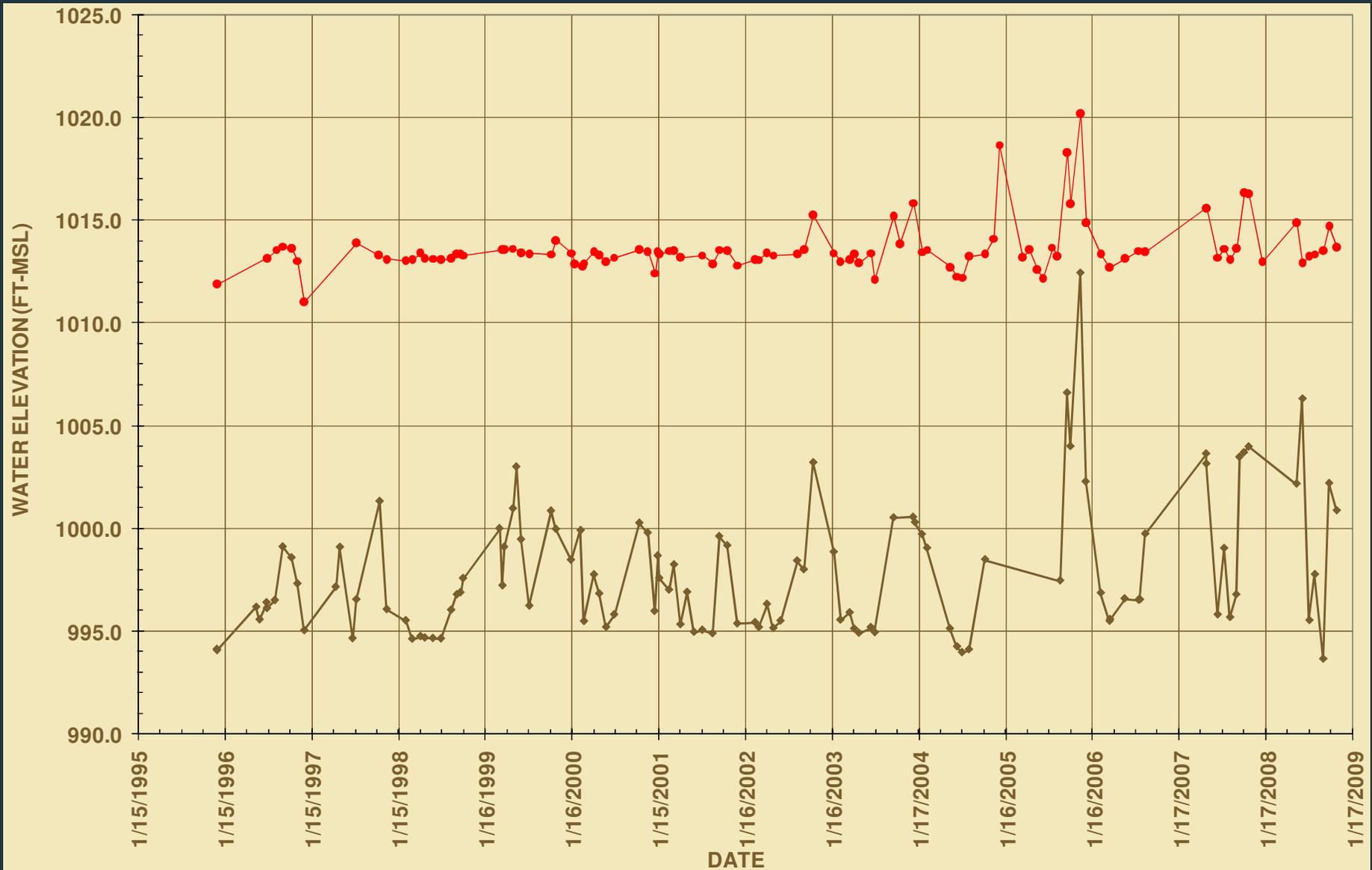


Figure 3.9 Water Level Data for Well MW-23-A4

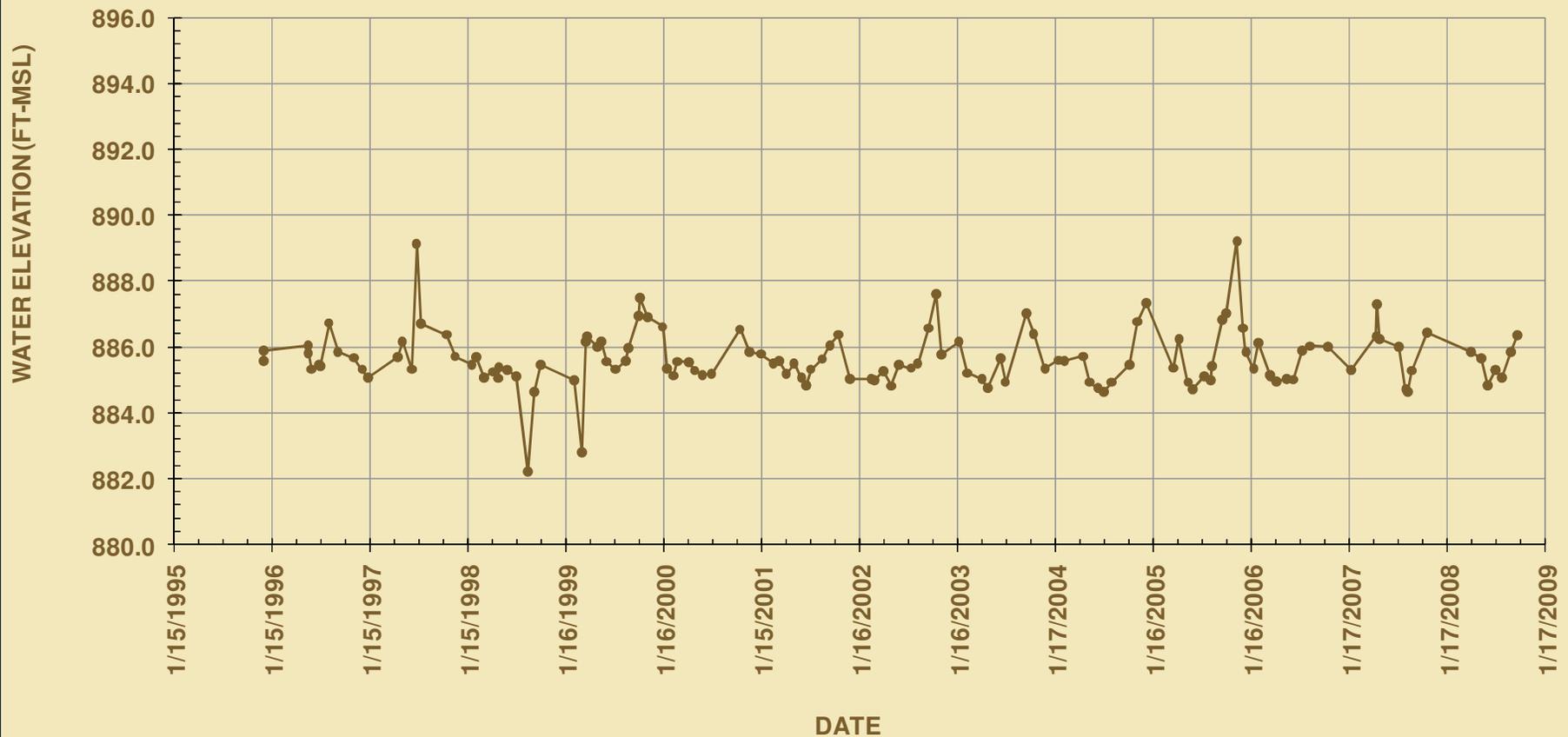


Figure 3.11 Water Level Data for Well MW-94-D3

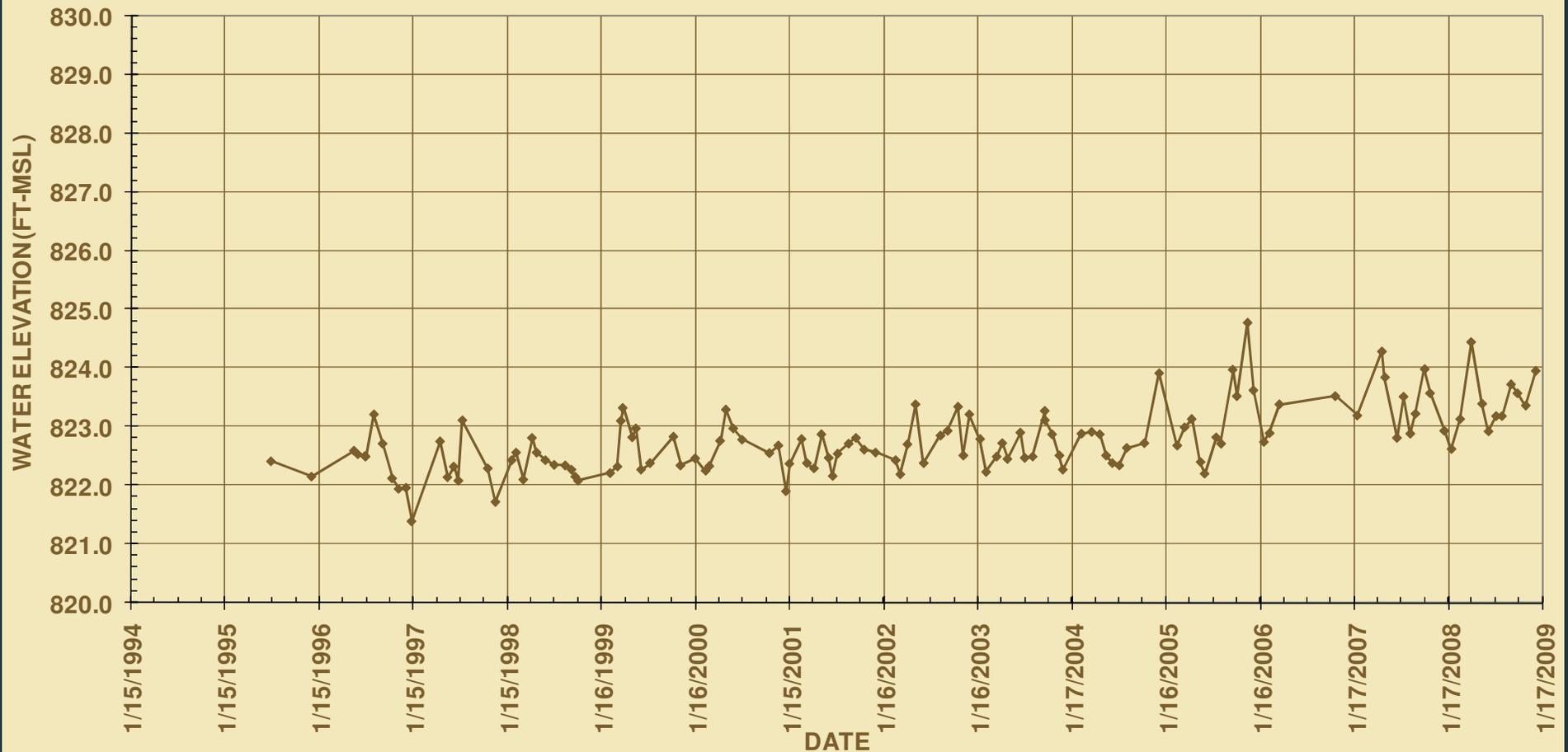


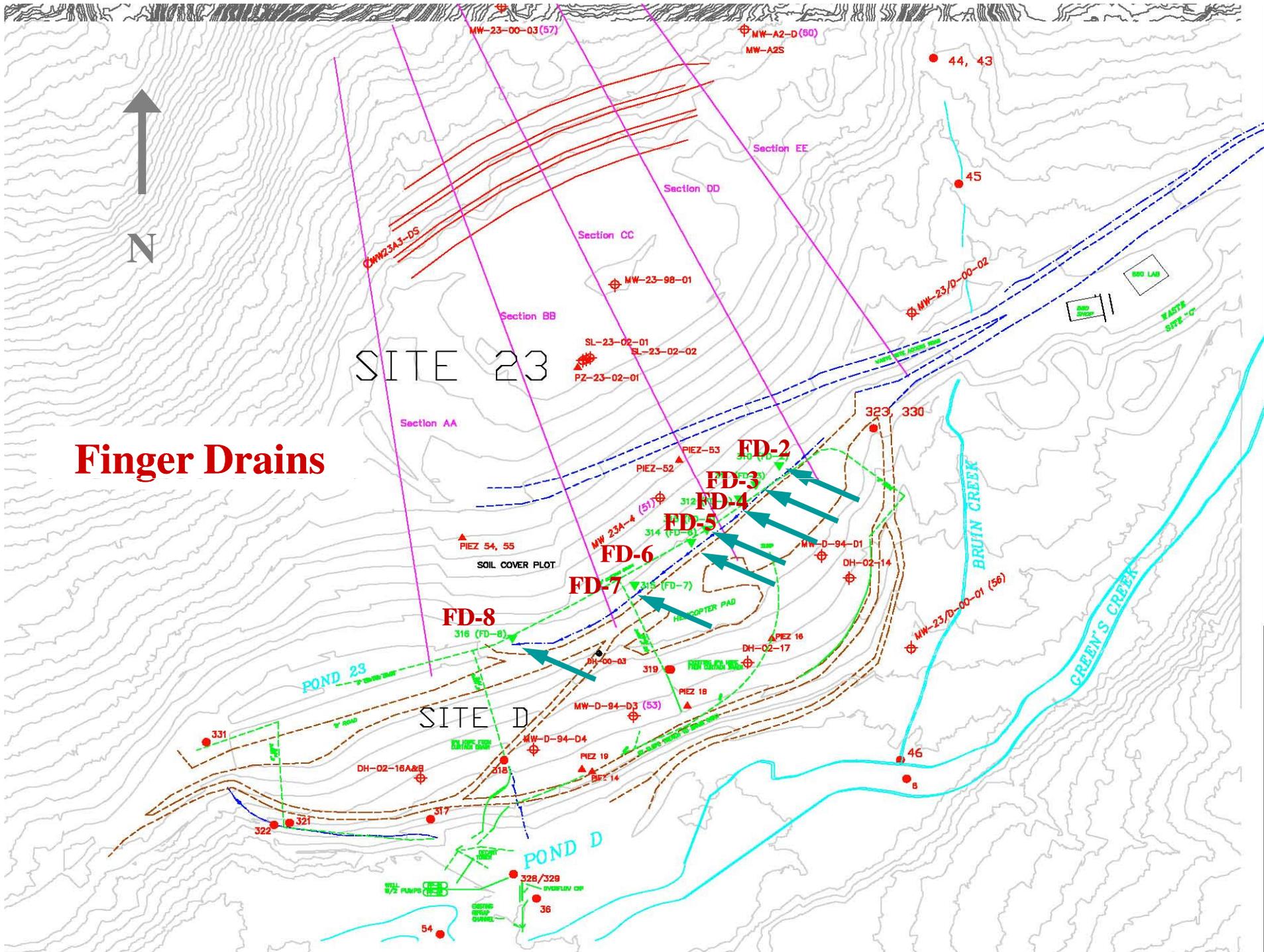
Table 3.2 Monthly Summary of Site 23/D Climate Data

Month	Avg Temp (°C)	Precipitation (in)
January	-4.48	4.17
February	-3.29	3.74
March	-0.06	5.15
April	1.71	5.45
May	6.59	3.8
June	8.32	2.45
July	10.55	7.15
August	11.09	4.76
September	8.28	8.27
October	3.44	15.74
November	0.92	6.02
December	-4.94	3.92
2008	3.18	70.62

Site 23/D Internal Monitoring Sites: Water Quality Data



- Internal site waters are captured, treated and discharged per HGCMC's NPDES permit
- pH values are between 6.0 and 8.5 (high buffering capacity)
- Conductivities are between 200 and 5000 umho/cm
- Variations in conductivity reflect differences in contributions of groundwater and infiltration, seasonal fluctuations
- Zinc concentrations are variable (typically less than 5 mg/l)
- Precipitation, mixing and sorption mechanisms determine metals concentrations



Finger Drains

SITE 23

SITE D

POND 23

POND D

BRUIN CREEK

GREEN'S CREEK



Figure 3.14a Site 23 Finger Drains pH

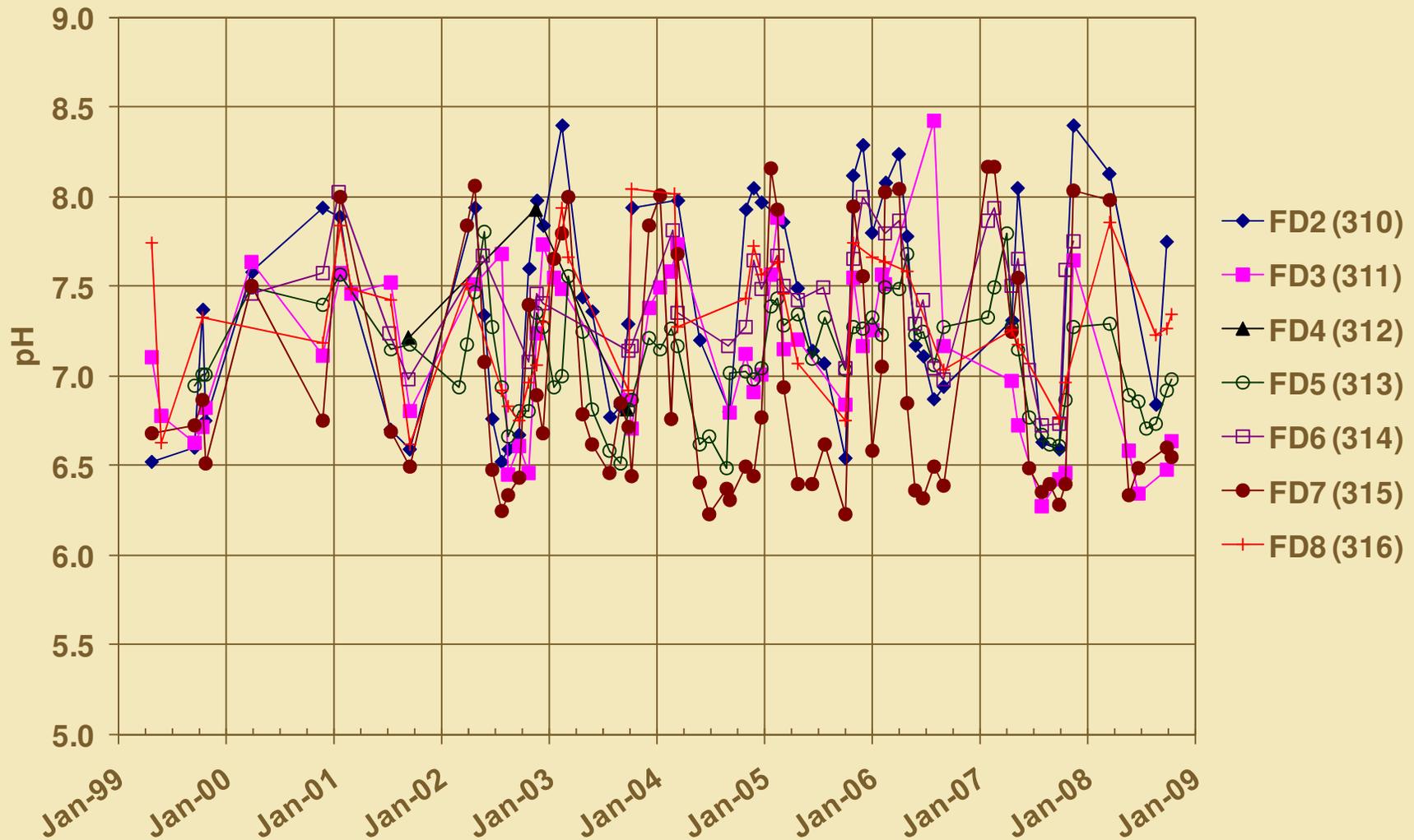
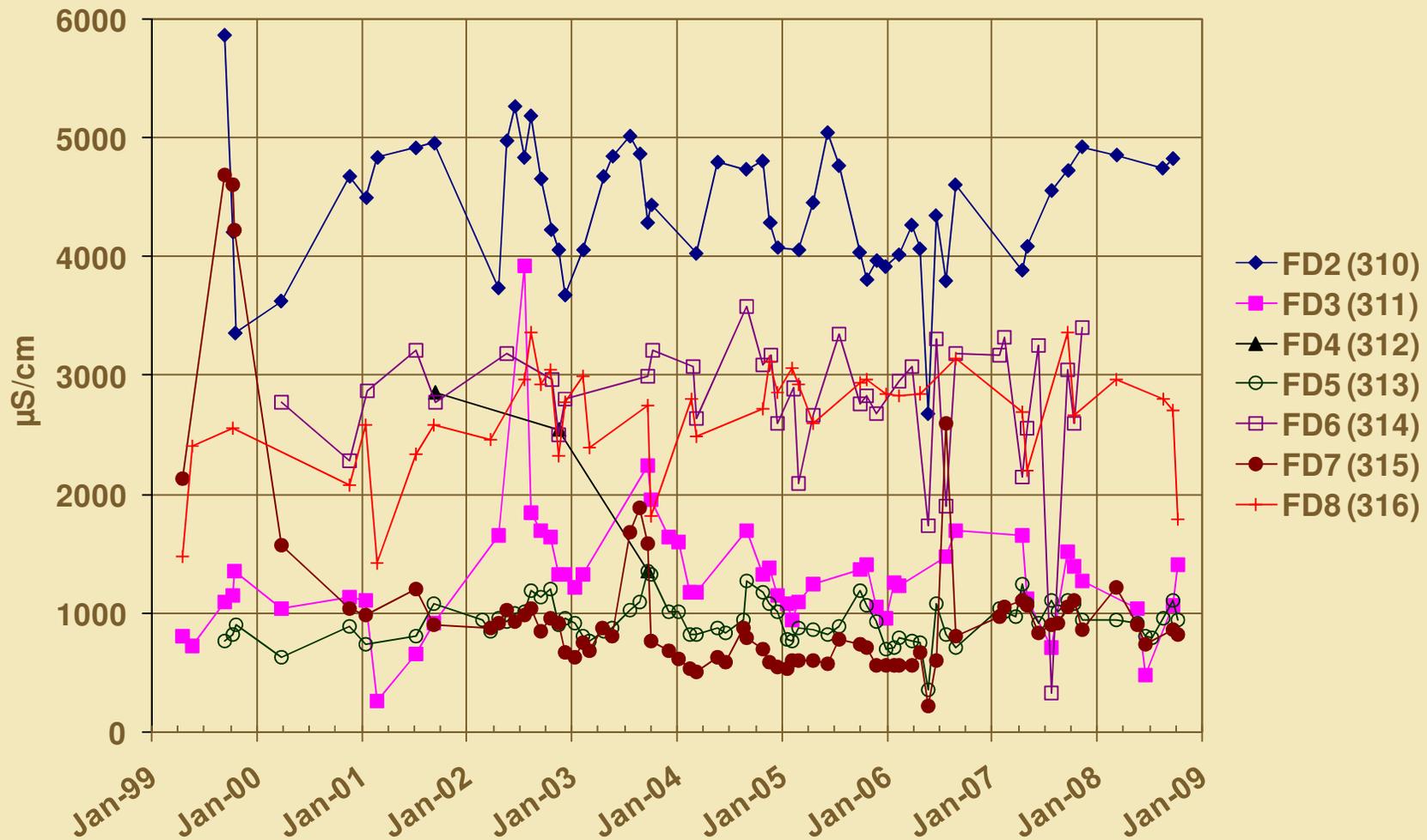
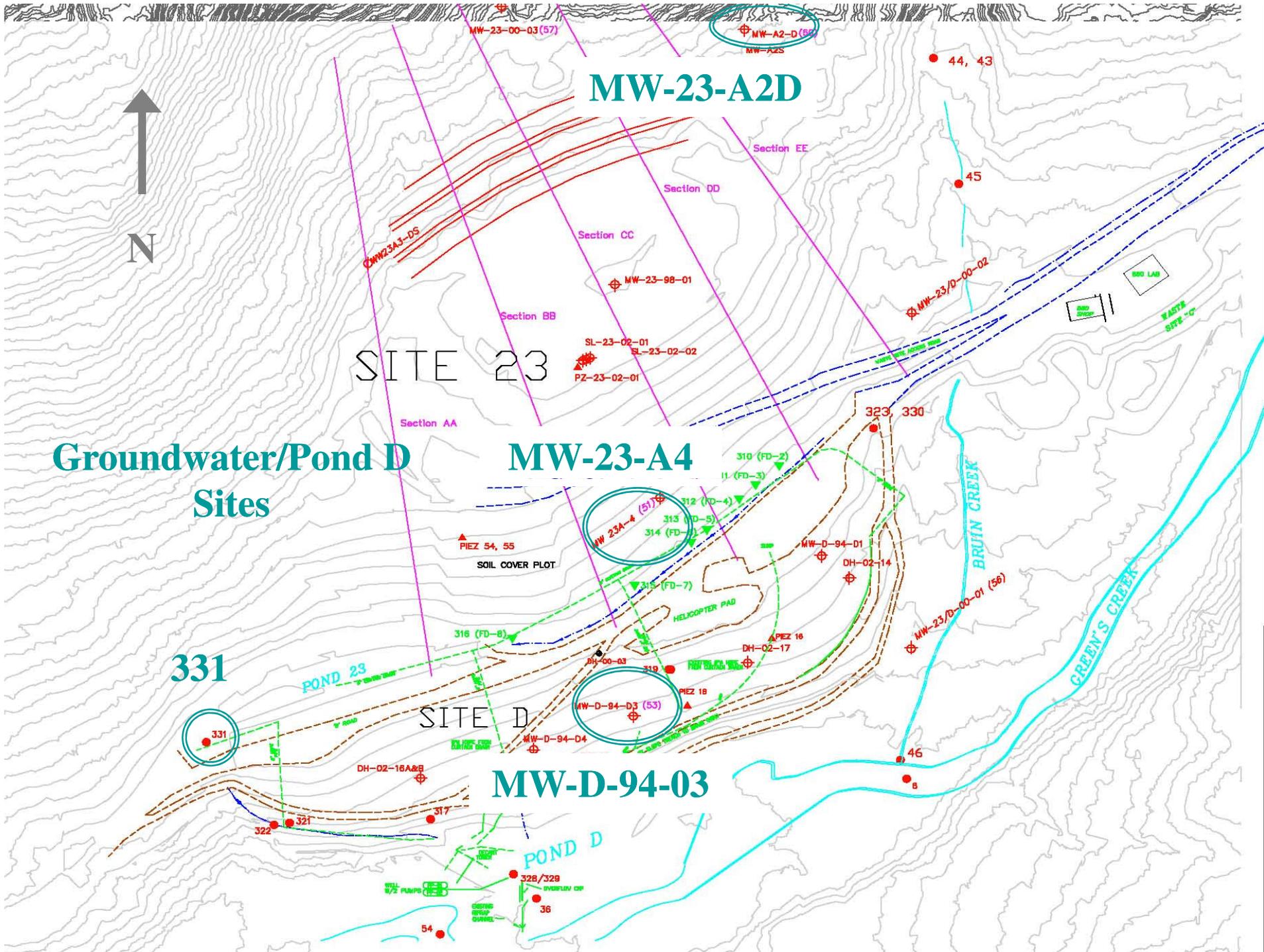


Figure 3.17a Site 23 Finger Drains Conductivity





Groundwater/Pond D Sites

MW-23-A2D

MW-23-A4

MW-D-94-03

SITE 23

SITE D

331

POND 23

POND D

BRUN CREEK

GREEN'S CREEK

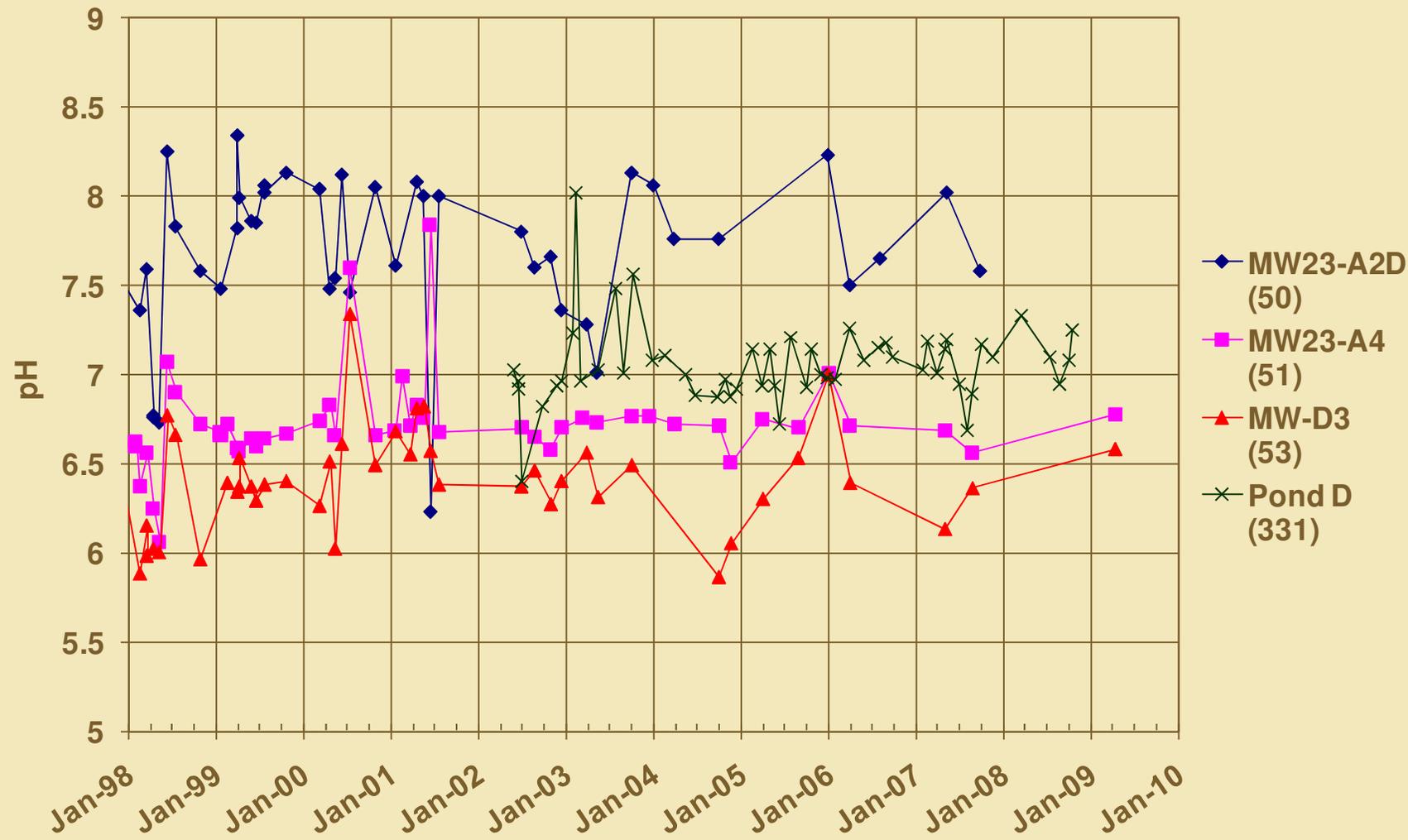
BIO LAB

BIO LAB

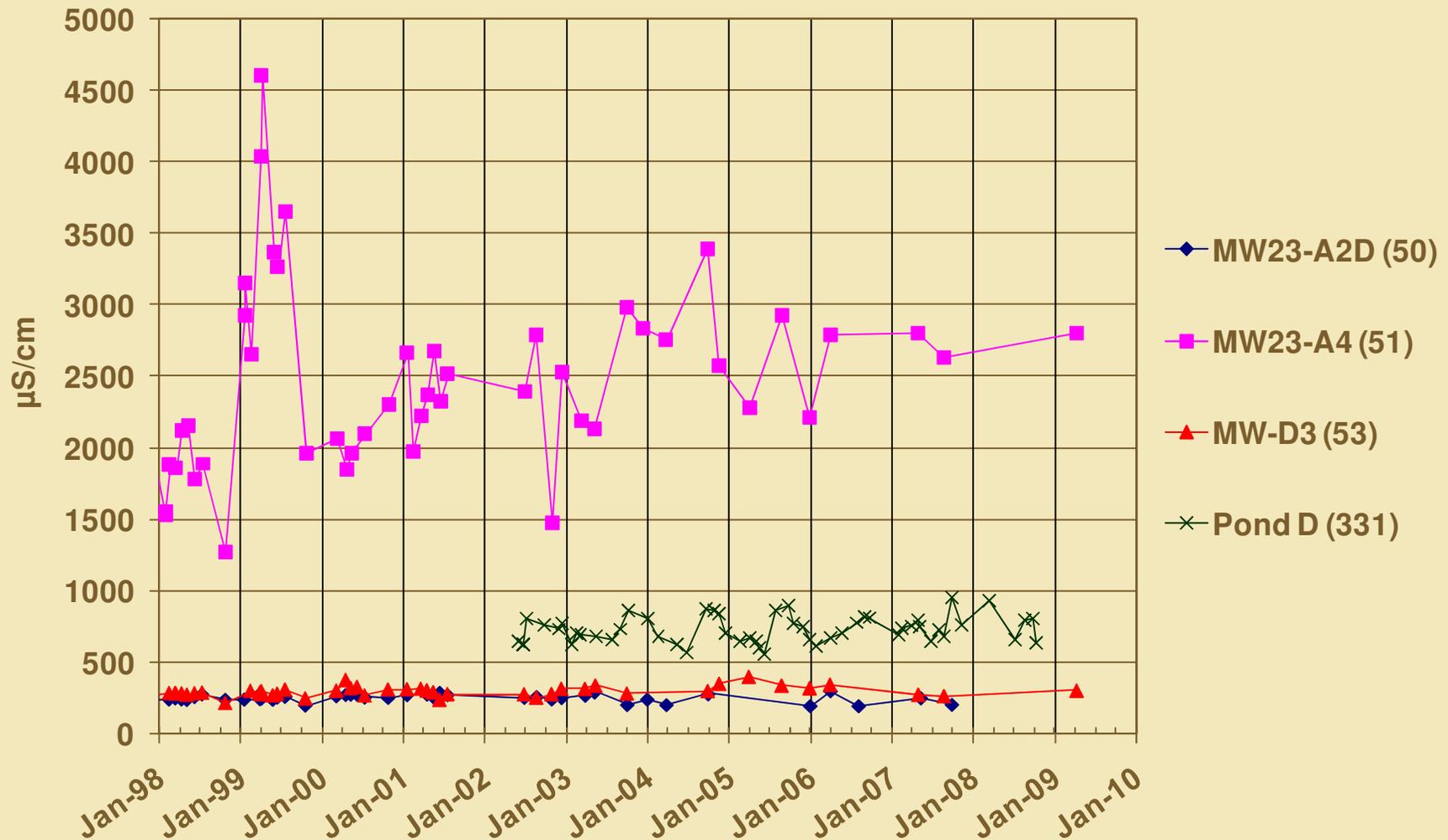
WASTE SITE-C



Site 23/D Wells and D Pond Figure 3.14b pH



Site 23/D Wells and D Pond Figure 3.17b Conductivity



Site 23/D Wells and D Pond

Figure 3.20b Dissolved Zinc

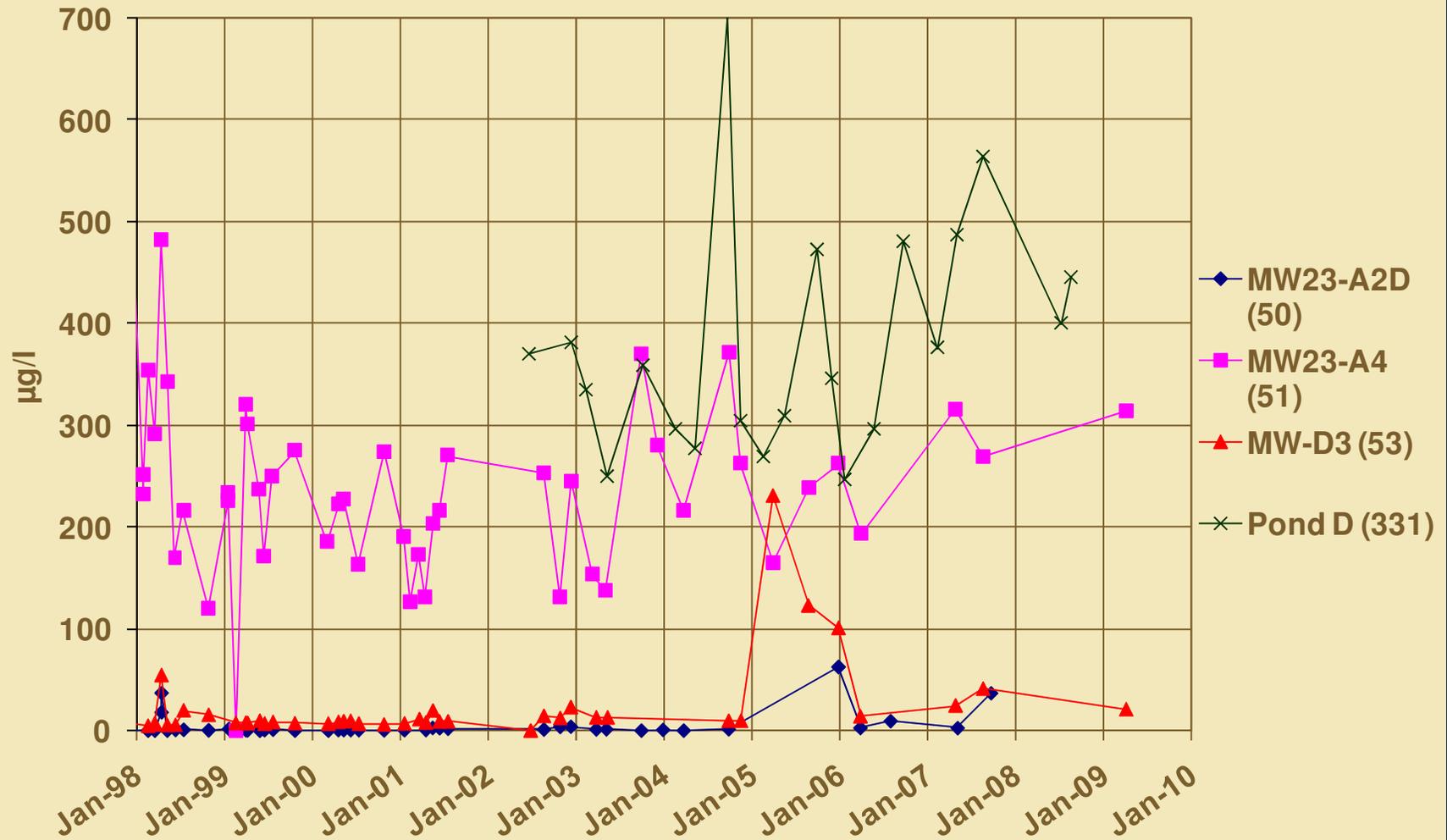
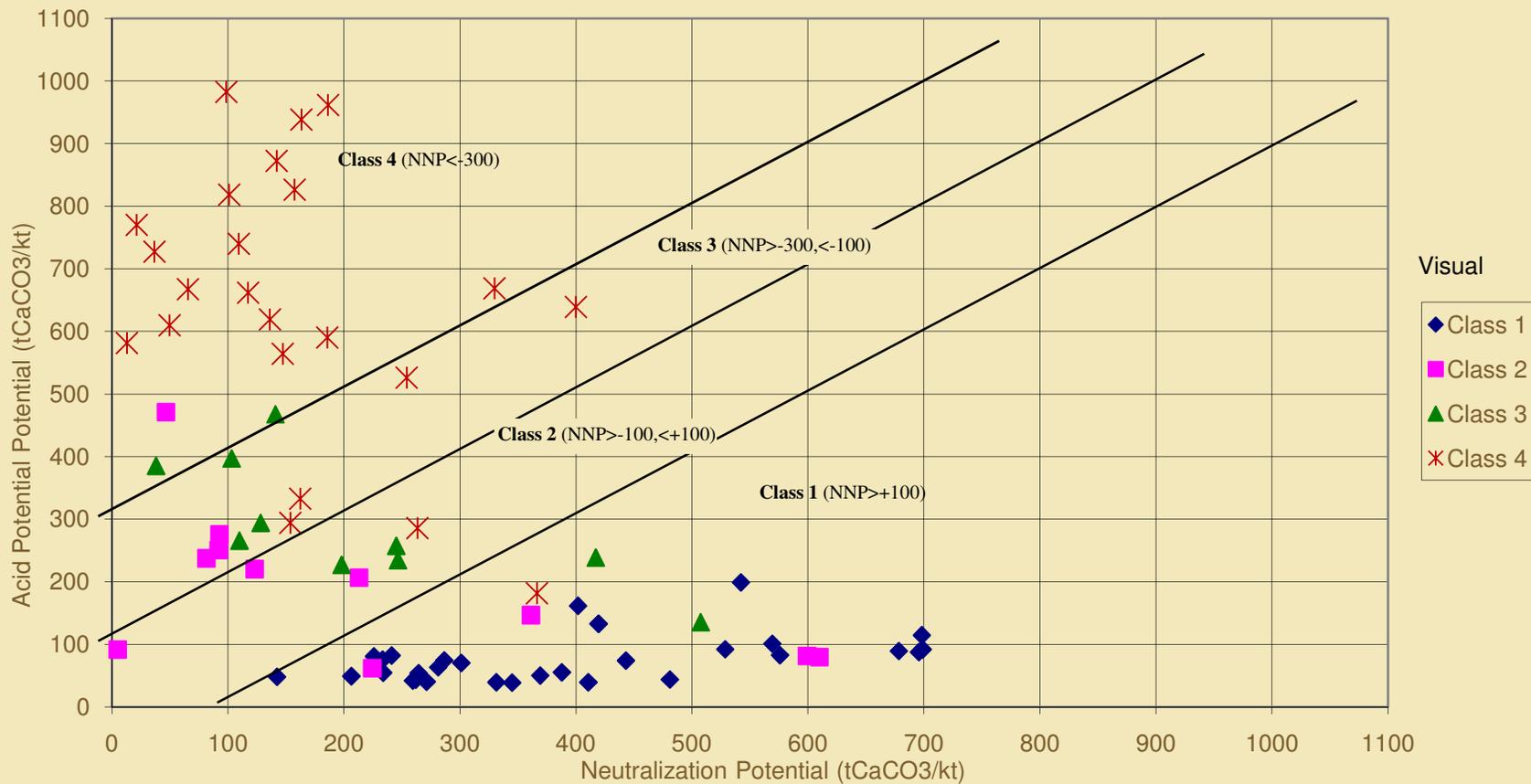


Figure 3.28 ABA Data Underground Rib Sampling

FIGURE 3.28 2008 ABA DATA FROM UNDERGROUND RIB SAMPLES



Site 23/D General Site Management



- Designated placement zones are marked on the active lift of the site and production rock is placed according to class
- Outer surfaces have at least two feet of Class 1 rock
- Class 2 and 3 rock are blended and placed in the center of the pile
- Use of interim storage area for reclamation activities
 - 1350
 - B Pond berm
 - Pipeline excavation

Cover Design



Growth Medium

Capillary Break

Barrier Layer

Capillary Break

2 meters

Site 23 Cover Excavation

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Site 23 Cover Excavation

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Cover Performance Monitoring



- About 85% of the water collected in the chalet trench system reported via the upper capillary break
- The growth medium contributed 15% of trench flow and the barrier layer flow was 0.2%
- The lag time between peak precipitation and peak trench flow is about 6 hours for dry conditions and 2 hours for wet conditions
- Modeling with Hydrus-2D/3D software compares favorably with field results
- Greater than 85% water saturation in barrier layer minimizes oxygen ingress
- Water percolation through barrier layer 15-20% of annual precipitation
- Barrier layer does not freeze during the winter
- Numerical modeling of alternative cover designs indicates that the upper capillary break is necessary to maximize lateral flow and prevent buildup of head pressures in the growth medium and barrier layer

B Road Pipe Bedding Removal and 18" Line Installation

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B Pond Berm Removal and Pump Installation

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1350 Waste Rock Removal

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960 Site Waste Rock Removal

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960 Site Reclamation

Parameter	Units	Before	After
		9/12/1995	6/26/2007
pH	s.u	6.1	7.76
Sulfate	mg/l (tot)	1300	162
Calcium	mg/l (diss)	412	64.1
Magnesium	mg/l (diss)	164	21.6
Iron	mg/l (diss)	5.5	<.25
Manganese	mg/l (diss)	7.1	0.091
Zinc	mg/l (diss)	11	0.044
Lead	mg/l (diss)	0.004	<0.0001
Nickel	mg/l (diss)	0.3	0.004