

APPENDIX 3.5-E

Geologic Logs, Well Construction Diagrams, and Well
Development Forms for Wetlands Investigation, 1987

LOG OF TEST BORING NO.: PZ-1A, 1B							SURFACE ELEVATION: 1103.5			
CLIENT: Kennecott PROJECT: Wetlands PROJECT NUMBER: 87K10-13 LOCATION: River backwater COORDINATES: 40601.44 N 38737.67 E							BORING DEPTH: 6.0			
							DATE: 10/30/87			
MSL ELEV	DEPTH FR LND SURF	SAMP DEPTH INTERVAL	TYPE	#	N	REC (ft)	DESCRIPTION OF MATERIAL	CLASS	LABORATORY TESTS	DRILLING AND SAMPLE NOTES
1103.5	--0	0.0-1.5	ss	1	5	0.7	Dk gray organic silt (4") over lt gray silty SAND, fn, vy soft, saturated (vy fine sand)	SM		
1102.5	--1									
1101.5	--2	1.5-3.0	ss	2	7	0.9	Same to about 2 ft; at 2 ft red brn silty SAND, fn, w/med & cse sand, fn & cse gvl, saturated			
1100.5	--3	3.0-4.5	ss	3	29	1.2	Gray & red brn well graded SAND w/silt, fn sand w/fn gvl, saturated, dense, w/dk yel brn (10YR 4/4) mottles. Very irreg., indistinct bedding	SW-SM		
1099.5	--4									
1098.5	--5	4.5-6.0	ss	4	36	1.0	Same as above except massive			
1097.5	--6						6'-End of Boring in Sand & Gravel			
1096.5	--7						PZ-1A installed in boring PZ-1B installed in unsampled boring about 5 ft south. PZ-1B at 40599.83 N 38739.21 E			
1095.5	--8									
1094.5	--9									
1093.5	--10									
1092.5	--11									

DRILLING DATA

START DATE: 10/30/87
 COMPLETION DATE: 10/30/87
 LOGGED BY: BJS
 DRILLING METHOD: 4 1/4" ID Hollow stem auger
 DRILLING CONTRACTOR: Wisconsin Test Drilling, Inc.

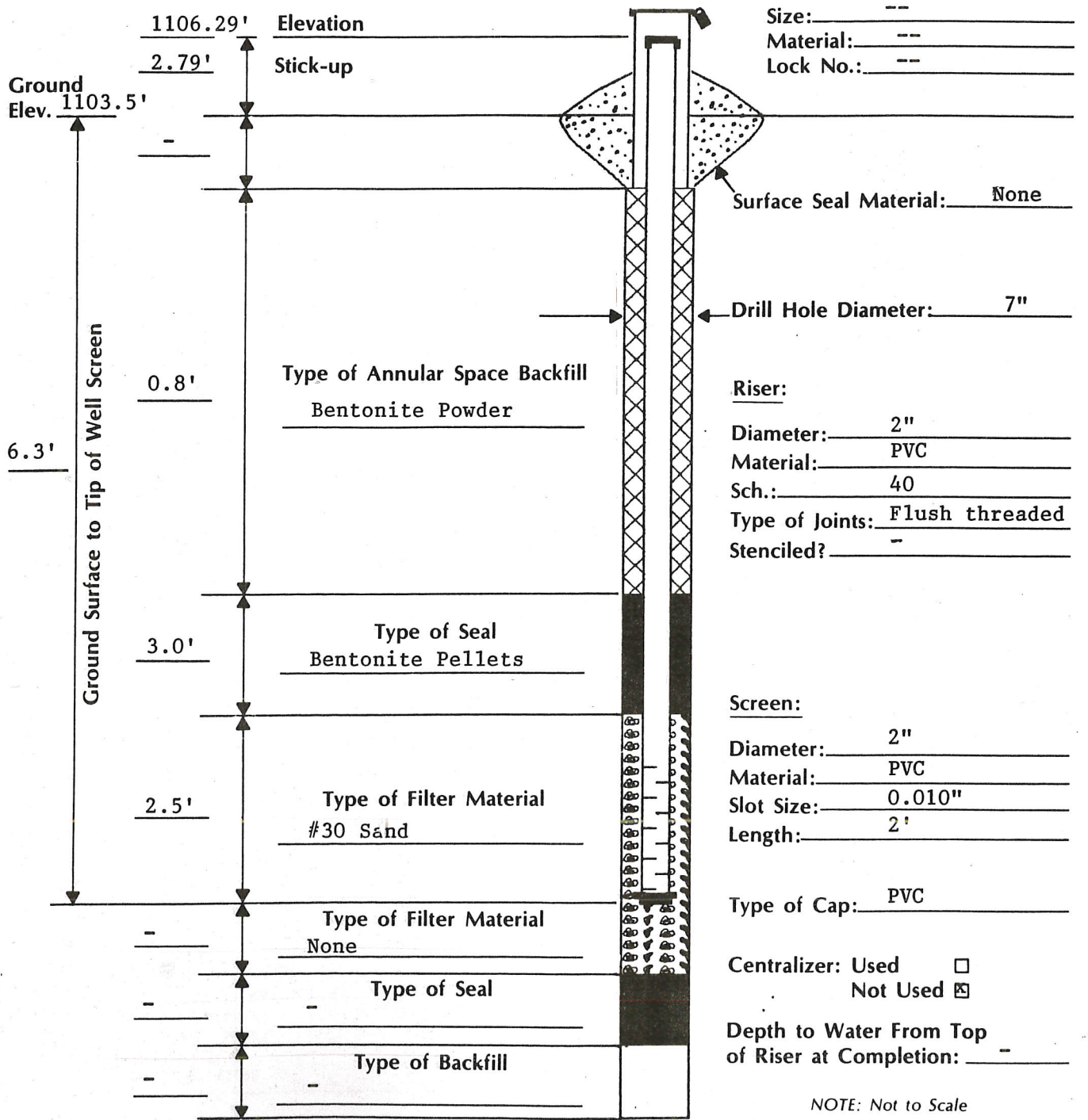
WATER LEVEL INFORMATION

DEPTH AT COMPLETION:
 LATER TIME/DEPTH:
 LATER TIME/DEPTH:
 CAVE IN DEPTH:
 DRILLING LOSSES:

Client: Kennecott Scope I.D.: 87K10
 Project: Wetlands Page: 1
 Prepared by: BJS Date: 10-30-87
 Checked by: BJS Date: 12-14-88

MONITORING WELL CONSTRUCTION DIAGRAM

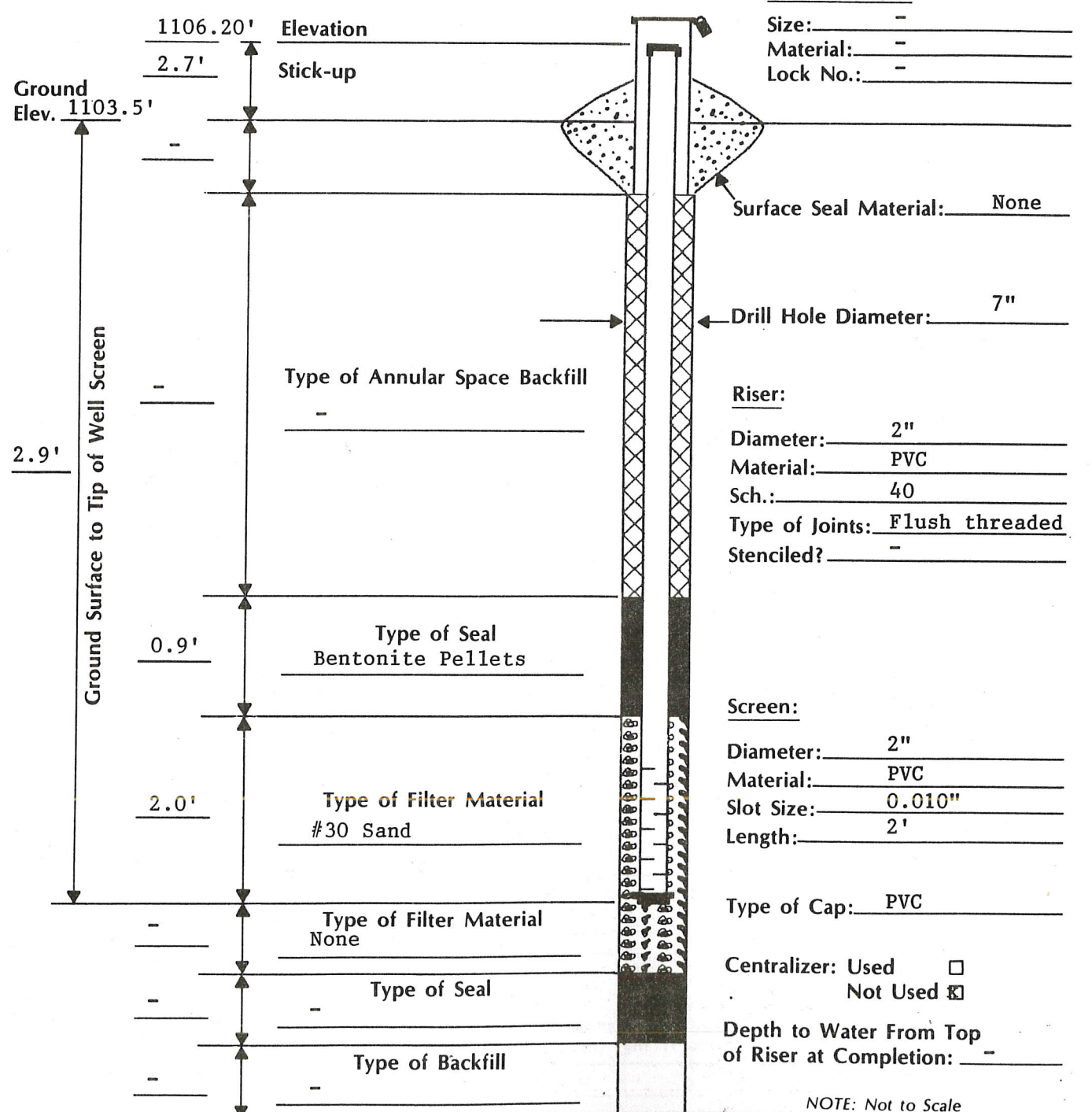
Driller: Wisconsin Test Drilling, Inc. Well No: PZ-1A
 Drilling Method: Hollow Stem Augers 4.25" ID Date Installed: 10-30-87
 Coordinates: 40,601.44N 38,737.67E



Client: Kennecott Scope I.D.: 87K10
 Project: Wetlands Page: 1
 Prepared by: BJS Date: 10-30-87
 Checked by: BJS Date: 12-14-88

MONITORING WELL CONSTRUCTION DIAGRAM

Driller: Wisconsin Test Drilling, Inc. Well No: PZ-1B
 Drilling Method: Hollow Stem Augers 4.25" ID Date Installed: 10-30-87
 Coordinates: 40,599.83 38,739.21



LOG OF TEST BORING NO.: PZ-1006, 1006G, 1006S

CLIENT: Kennecott
 PROJECT: Flambeau-Baseline Ground Water Monitoring
 PROJECT NUMBER: 87K10-7
 LOCATION: West of Hwy 27 100', & north of H & H Bldg 380'
 COORDINATES: 41425 N 41315 E (APPROX)

SURFACE ELEVATION: 1147.5

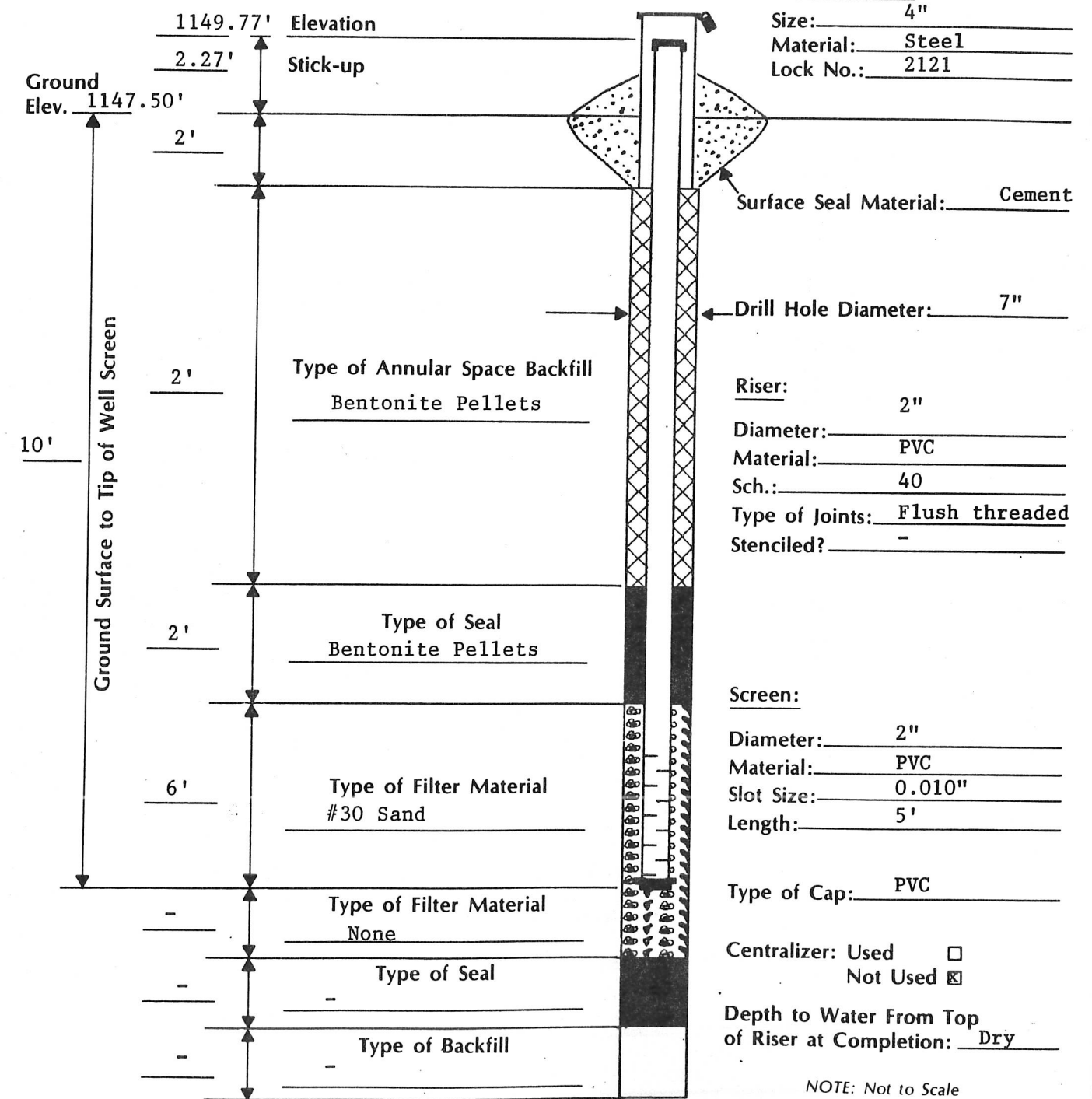
BORING DEPTH: 54.0

DATE: 09/23/87

MONITORING WELL CONSTRUCTION DIAGRAM

Driller: Wisconsin Test Drilling, Inc. Well No: PZ-1006
 Drilling Method: Hollow Stem Augers 4.25" ID Date Installed: 9-24-87
 Coordinates: 41,427.59N 41,318.30E

Protector Pipe:
 Size: 4"
 Material: Steel
 Lock No.: 2121



MSL ELEV	DEPTH FR LND SURF	SAMP DEPTH INTERVAL	TYPE	#	N	REC (ft)	DESCRIPTION OF MATERIAL	CLASS	LABORATORY TESTS	DRILLING AND SAMPLE NOTES
1147.5	--0.0	2.0-3.5	ss	1	36	1.5	Surface - Lt brn prly graded SAND, fn, loose, dry (Aeolian)	SP		
1142.5	--5.0	5.0-6.5	ss	2	78	1.0	Dk yel brn (10YR 4/6) silty SAND/SILT, fn, (vy fn sand & silt), cohes., sltly moist (B-horizon in aeolian sand & silt)	SM/ML		
1137.5	--10.0	10.0-11.5	ss	3	51	1.1	As above to 5.5' w/mottles. At 5.5' poorly graded GRAVEL, cse, loose, dry, w/fn sand, (gravel broken)	GP		
1132.5	--15.0	15.0-16.5	ss	4	68	0.5	Red brn (5YR 4/4) silty SAND, fn w/med & cse sand, fn gvl, moist, diamict w/color & textural laminations & few yel red sand laminae	SM		MW-1006 set in adjacent unsampled boring at depth of 10'
1127.5	--20.0	20.0-21.5	ss	5	12	0.8	Same, moist			
1122.5	--25.0	25.0-26.5	ss	6	16	0.8	Same, except massive, saturated			
1117.5	--30.0	30.0-31.5	ss	7	40	1.0	Same, saturated, vy soft			
1112.5	--35.0	35.0-36.5	ss	8	99	1.0	Same, soft to firm, weath. cobble in shoe, crumbly, soft			
1107.5	--40.0	40.0-41.5	ss	9	41	1.0	Str brn (7.5YR 4/6) to yel red (5YR 4/6) silty SAND, fn diamict w/textural layering			MW-1006G set in adjacent unsampled boring at depth of 33'
1102.5	--45.0	45.0-46.5	ss	10	51	1.6	Same as above, moist, cohesive, firm			
1097.5	--50.0	50.0-51.5	ss	11	95	1.3	Str brn poorly graded SAND, fn, w/trace med & cse, loose, saturated to 45.8' (Mixed glacial & sandstone sand.) At 45.8', lt ol brn (2.5Y 5/6) poorly graded SAND, fn, soft, saturated	SP (SS)		
1092.5	--55.0	52.5-54.0	ss	12	95	1.2	At 50', 1.5' blow-up. Sample mix of cave & blow-up, glacial sand & sandstone. Vy slow drilling from 50 to 52.5' Red, grn, gray varigated lean CLAY, soft wet to 53.5', then hard, brittle, dense, altered schist, foliation apparent 54'-End of Boring in altered schist	SP CL "SM/ML" =====		MW-1006S set in boring at 52'

DRILLING DATA
 START DATE: 09/23/87
 COMPLETION DATE: 09/23/87
 LOGGED BY: BJS
 DRILLING METHOD: Hollow stem augers, 4 1/4" ID
 DRILLING CONTRACTOR: Wisconsin Test Drilling, Inc.

WATER LEVEL INFORMATION
 DEPTH AT COMPLETION: At 45'
 LATER TIME/DEPTH: 0.5 hr/18.2'
 LATER TIME/DEPTH: 1.0 hr/14.5'
 CAVE IN DEPTH:
 DRILLING LOSSES:

MONITORING WELL DEVELOPMENT

WELL NUMBER PZ-1006 CLIENT Kennecott
 WELL DIAMETER 2" PROJECT Baseline G.W. Monitoring
 TOTAL DEPTH OF WELL 10.0' SCOPE I.D. 87K10-7
 DEPTH TO WATER TIME OF MEASUREMENT BY M.M. Wisc. Test Drilling, Inc.
 BEFORE Dry DATE 9-30-87
 AFTER _____

DESCRIPTION OF DEVELOPMENT METHOD

VOLUME OF WATER REMOVED FROM WELL None
 CLARITY OF WATER IN WELL BEFORE DEVELOPMENT -
 CLARITY OF WATER IN WELL AFTER DEVELOPMENT -
 PRESENCE OF SEDIMENT AT THE BOTTOM OF THE WELL -
 VOLUME OF WATER ADDED TO WELL None
 SOURCE OF WATER ADDED TO WELL _____
 TIME SPENT FOR DEVELOPMENT _____

STABILIZATION READINGS

GAL. REMOVED	TIME	FIELD		
		TEMPERATURE	SPEC. COND.	pH

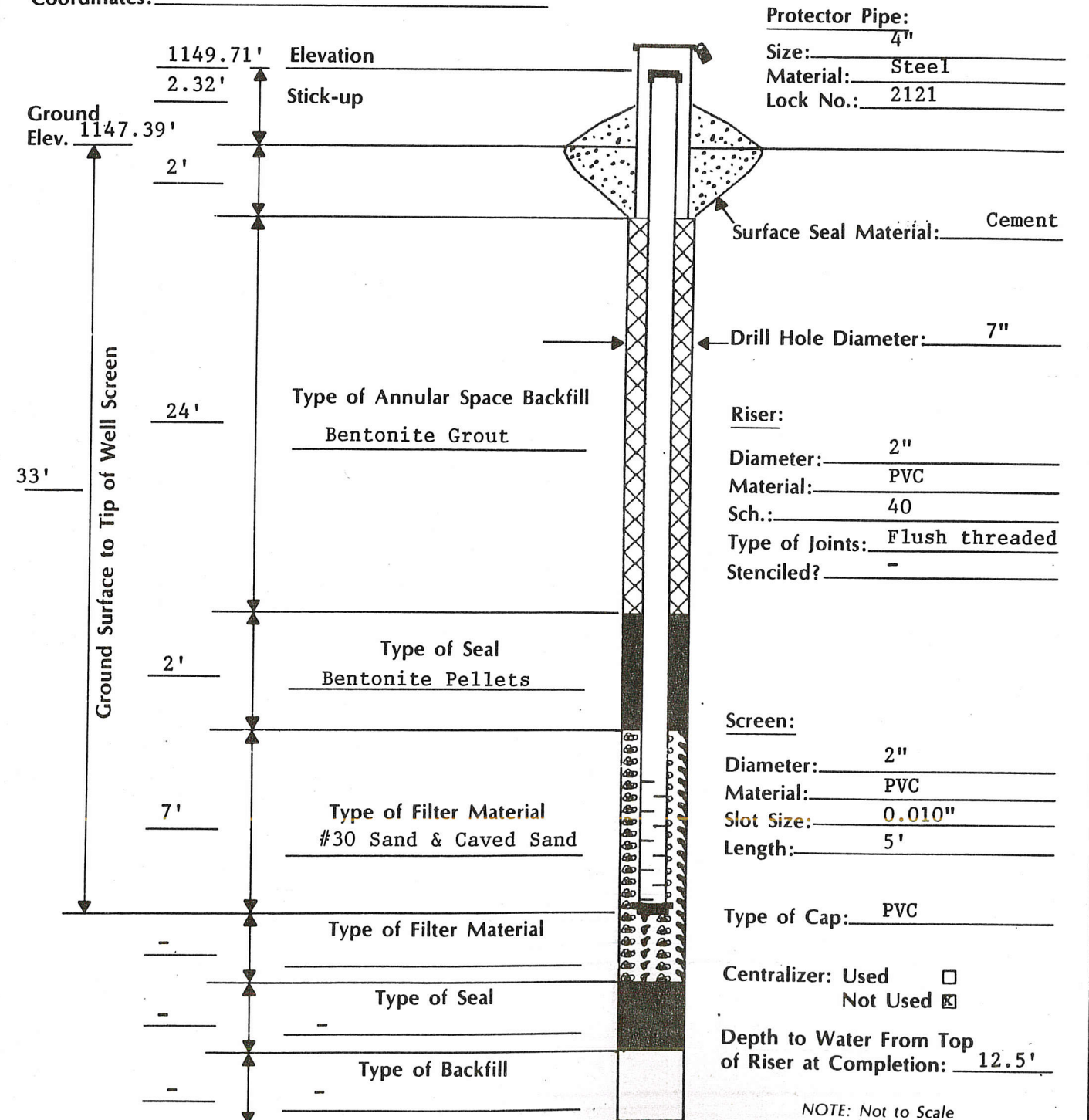
FOTH AND VAN DYKE

Foth & Van Dyke

Client: Kennecott Scope I.D.: 87K10
 Project: Baseline Groundwater Monitoring Page: 1
 Prepared by: BJS Date: 9-24-87
 Checked by: BJS Date: 12-14-88

MONITORING WELL CONSTRUCTION DIAGRAM

Driller: Wisconsin Test Drilling, Inc. Well No: PZ-1006G
 Drilling Method: Hollow Stem Augers Date Installed: 9-24-87
 Coordinates: 41,430.29N 41,311.21E



MONITORING WELL DEVELOPMENT

WELL NUMBER PZ-1006G CLIENT Kennecott
 WELL DIAMETER 2" PROJECT Baseline G.W. Monitoring
 TOTAL DEPTH OF WELL 33.1' SCOPE I.D. 87K10-7
 DEPTH TO WATER TIME OF MEASUREMENT BY M.M. Wisc. Test Drilling, Inc.
 BEFORE 12.8' DATE 9-30-87
 AFTER 33' (Dry)

DESCRIPTION OF DEVELOPMENT METHOD

Well was alternately surged and bailed using a PVC hand pump.

VOLUME OF WATER REMOVED FROM WELL 10 gallons
 CLARITY OF WATER IN WELL BEFORE DEVELOPMENT brown, sandy, silty
 CLARITY OF WATER IN WELL AFTER DEVELOPMENT light brown
 PRESENCE OF SEDIMENT AT THE BOTTOM OF THE WELL _____
 VOLUME OF WATER ADDED TO WELL None
 SOURCE OF WATER ADDED TO WELL _____
 TIME SPENT FOR DEVELOPMENT 15 Minutes

STABILIZATION READINGS

GAL. REMOVED	TIME	TEMPERATURE	FIELD	
			SPEC. COND.	pH
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____

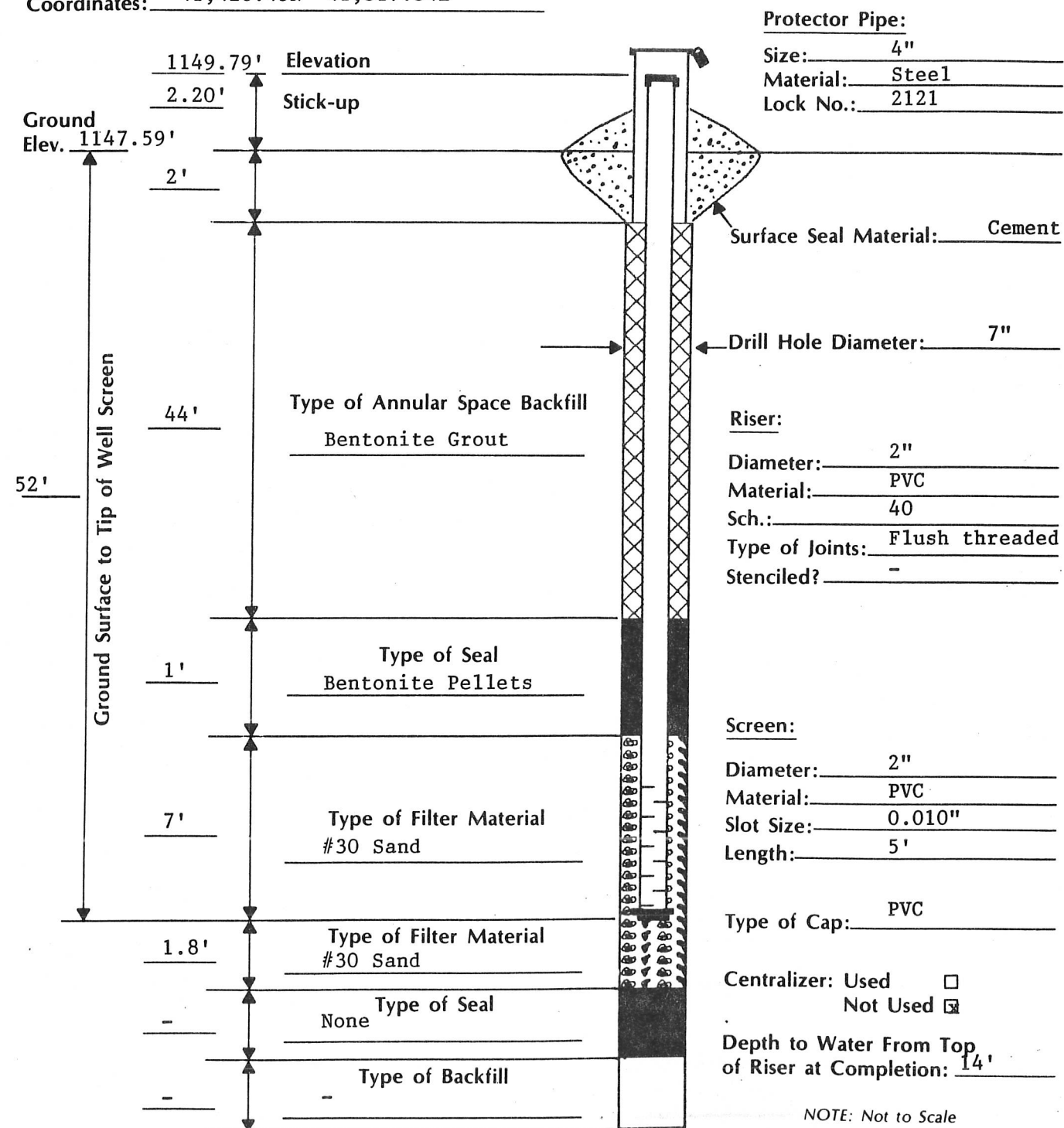
FOTH AND VAN DYKE

Foth & Van Dyke

Client: Kennecott Scope I.D.: 87K10
 Project: Baseline Groundwater Monitoring Page: 1
 Prepared by: BJS Date: 9-23-87
 Checked by: BJS Date: 12-14-88

MONITORING WELL CONSTRUCTION DIAGRAM

Driller: Wisconsin Test Drilling, Inc. Well No.: PZ-1006S
 Drilling Method: Hollow Stem Augers 4.25" ID Date Installed: 9-23-87
 Coordinates: 41,420.45N 41,317.34E



MONITORING WELL DEVELOPMENT

WELL NUMBER <u>PZ-1006S</u>	CLIENT <u>Kennecott</u>
WELL DIAMETER <u>2"</u>	PROJECT <u>Baseline G.W. Monitoring</u>
TOTAL DEPTH OF WELL <u>52.0'</u>	SCOPE I.D. <u>87K10-7</u>
DEPTH TO WATER	TIME OF MEASUREMENT
BEFORE <u>14.2'</u>	BY <u>M.M. Wisc. Test Drilling</u>
AFTER <u>13.5'</u>	DATE <u>9-30-87</u>

DESCRIPTION OF DEVELOPMENT METHOD

Well was alternately surged and bailed using a PVC hand pump.

VOLUME OF WATER REMOVED FROM WELL 50 gallons

CLARITY OF WATER IN WELL BEFORE DEVELOPMENT brown, sandy

CLARITY OF WATER IN WELL AFTER DEVELOPMENT light brown

PRESENCE OF SEDIMENT AT THE BOTTOM OF THE WELL _____

VOLUME OF WATER ADDED TO WELL None

SOURCE OF WATER ADDED TO WELL _____

TIME SPENT FOR DEVELOPMENT 0.5 hours

STABILIZATION READINGS

GAL. REMOVED	TIME	TEMPERATURE	FIELD SPEC. COND.	pH

FOTH AND VAN DYKE

