

APPENDIX L: PLX 09

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Discharge Measurement Notes

Table PLX 09-1: Survey Data

X TBM9A

X TBM9C

X TBM9B

THALWEG
THALWEG LENGTH= 1027 FEET

UPSTREAM CROSS SECTION

FLOW

DOWNSTREAM CROSS SECTION
AT PROPOSED PIPELINE CROSSING

NOTES:

1. THE PRIMARY TEMPORARY BENCH MARK WAS ASSUMED TO HAVE: (1) AN ELEVATION OF 100.00 FEET, (2) A NORTHING OF 5000 FEET, AND (3) AN EASTING OF 5000 FEET. THE PRIMARY TEMPORARY BENCH MARK AT EACH STREAM PROVIDED THE VERTICAL AND HORIZONTAL CONTROL.
2. THE PRIMARY TEMPORARY BENCH MARK ON THIS STREAM IS TBM9A.

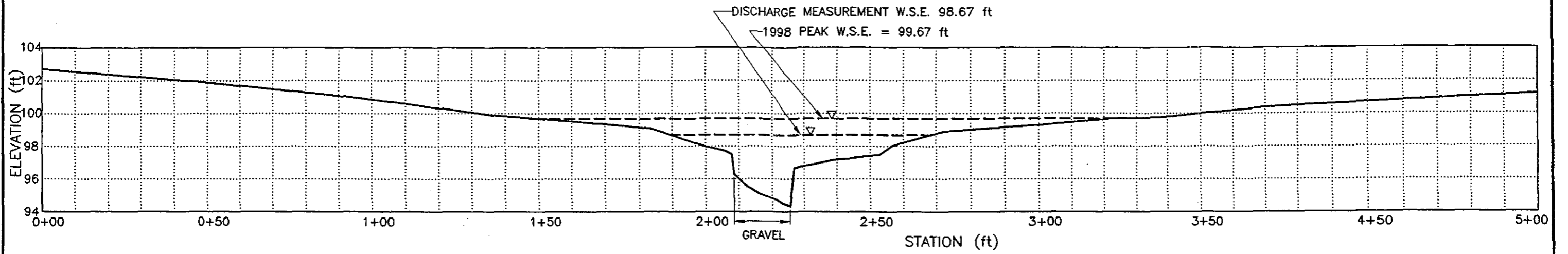
NO.		DATE		REVISION	BY:

STREAM PLX09
PLAN

SOURDOUGH AREA DEVELOPMENT PROJECT
NORTH SLOPE, ALASKA

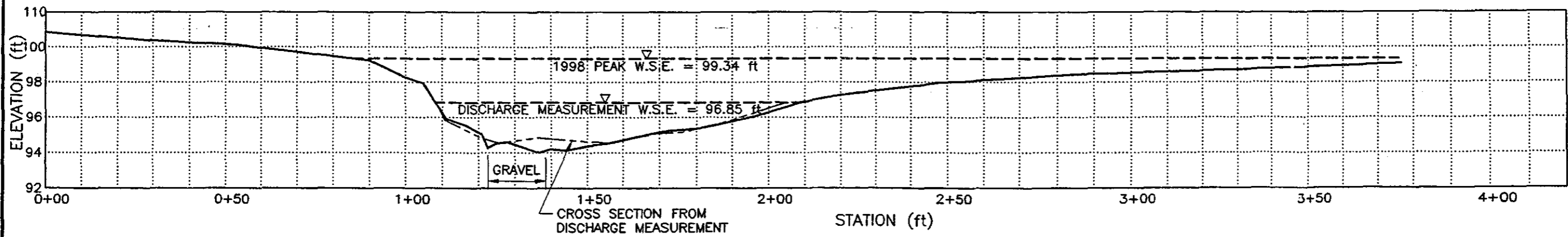
Baker		Michael Baker Jr., Inc.	
DATE: 8/3/98	PROJECT: SADP	FILE: SADP-X9	SCALE: 1" = 80'
DRAWN: BC	CHECKED: JWA		

FIGURE:
**PLX
09-1**



PROFILE: PLX09 UPSTREAM CROSS SECTION

SCALE: H 1" = 30'
V 1" = 6'



PROFILE: PLX09 DOWNSTREAM CROSS SECTION AT PROPOSED PIPELINE CROSSING

SCALE: H 1" = 30'
V 1" = 6'

NOTES:

1. THE ELEVATIONS SHOWN ARE BASED ON AN ASSUMED ELEVATION OF 100.00 AT TBM9A.
2. W.S.E.= WATER SURFACE ELEVATION
3. THE DIFFERENCE IN THE SURVEY AND DISCHARGE MEASUREMENT CROSS SECTIONS IS DUE TO A SLIGHT DIFFERENCE IN WHERE THE MEASUREMENTS WERE MADE.

NO.	DATE	REVISION	BY:

STREAM PLX09
PROFILES
SOURDOUGH AREA DEVELOPMENT PROJECT
NORTH SLOPE, ALASKA

Baker Michael Baker Jr., Inc.	
DATE: 8/3/98	PROJECT: SADP
DRAWN: BC	FILE: SADP-X9
CHECKED: JWA	SCALE: VARIES

FIGURE:
**PLX
09-2**

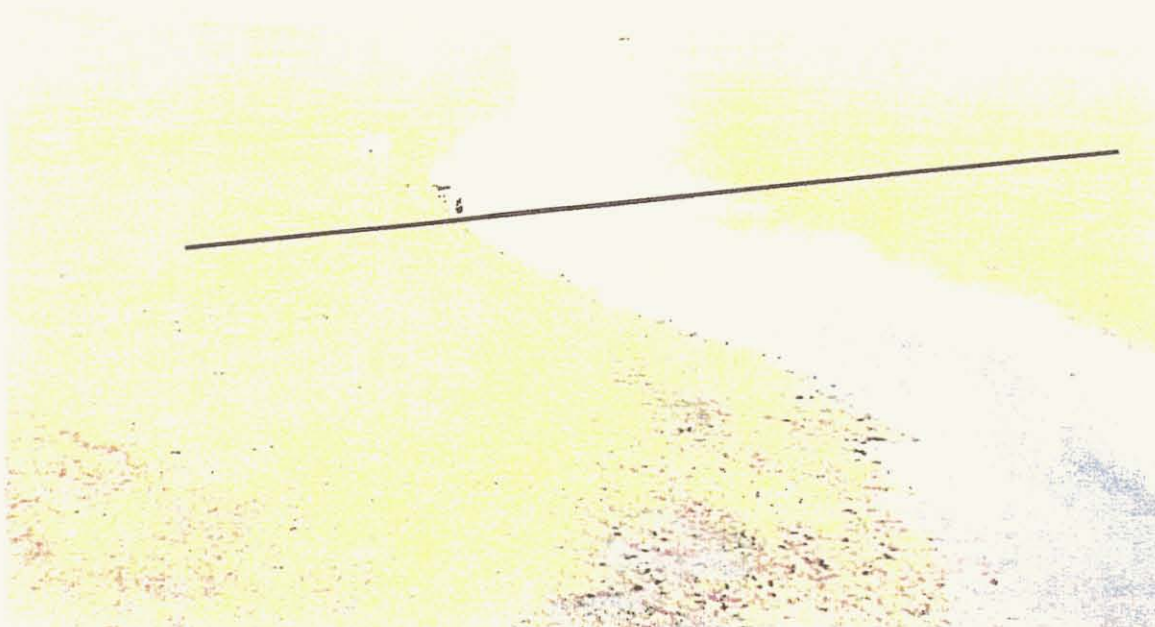


Photo PLX 09-1: Looking northwest at the proposed pipeline crossing (6/11/98).



Photo PLX 09-2: Looking northwest at the proposed pipeline crossing (6/11/98).

STREAM PLX 09
PHOTOGRAPHS

SOURDOUGH AREA DEVELOPMENT PROJECT
NORTH SLOPE, ALASKA

Baker

Michael Baker Jr., Inc.

Date: 6/7/98

Project: 23247

Drawn: JDA

File: photo09

Checked: JWA

Scale:

Photo Number:

PLX
09-1



Photo PLX 09-3: Looking west at the proposed pipeline crossing and staff gage (5/28/98).



Photo PLX 09-4: Looking southwest at the proposed pipeline crossing and staff gage (5/29/98), note change in water surface elevation between this picture and previous picture.

STREAM PLX 09
PHOTOGRAPHS

SOURDOUGH AREA DEVELOPMENT PROJECT
NORTH SLOPE, ALASKA

Baker

Michael Baker Jr., Inc.

Date: 6/7/98

Project: 23247

Drawn: JDA

File: photo09

Checked: JWA

Scale:

Photo Number:

PLX
09-2

DISCHARGE MEASUREMENT NOTES						
LOCATION: PLX 09 at proposed pipeline crossing (Partially Estimated)						
Date:	5/30 ,1998	Party:	J. Meckel, P. McGranahan			
Width:	96.7	Area:	156 ^E	Vel:	3.9 ^E	G.H.:
No Secs.	10	G.H. change:		in.:		hrs.:
Method coef.:	1	Hor. Angle coef.	1	Sus. Coef.:	1	Meter No.
Gage Readings				Type of meter:	Price AA	
Time	Recorder	Inside	Outside	Date rated:	Std No 1	
	downstream x-sec	WSE=	96.85	Meter:	ft. above bottom of weight.	
	upstream x-sec	WSE=	98.67	Spin before meas.	ok	after ok
				Method:	Wading at proposed pipeline crossing, downstream cross section.	
Weighted M.G.H.				Levels obtained		
G.H. corrections						
Correct M.G.H.						
Measurement rated:	Poor (over 8%), Partially Estimated			based on following conditions:		
Cross section:	Uniform grass and cobbles. Some ice on left side.					
Flow:				Weather:	Air °F@:	
Gage:					Water °F@:	
Other:						
Record Removed:				Intake flushed:		
Observer						
Control	Channel clear.					
Remarks	Discharge was partially measured and partially estimated. For stations 91.5 to 116.5 the depth was taken from survey notes, and the velocity was estimated at time of the measurement.					
G.H. of zero flow:				ft.		
	E = Estimated				Page 1 of 2	

DISCHARGE MEASUREMENT NOTES (PLX 09 Continued)

Angle coef.	Dist. From Initial point (ft)	Width (ft)	Depth (ft)	Observ. depth	Revolutions	Time In seconds	VELOCITY		Area (s.f.)	Discharge (cfs)	Description
							At Point (fps)	Mean in-vertical (fps)			
	22.3	9.1	0.0						0.0	0.0	Right Edge water (1515 hr)
	40.5	14.7	1.2	0.6	40	48		1.84	17.6	32.5	
	51.7	10.1	1.7	0.6	50	48		2.29	17.2	39.3	
	60.7	9.9	1.8	0.6	60	43		3.06	17.8	54.5	
	71.5	15.4	2.3	0.6	100	45		4.85	35.4	171.8	
	91.5	15.0	2.0					5.50	30.0	165.0	Estimated
	101.5	7.5	2.3					5.20	17.2	89.4	Estimated
	106.5	7.5	2.0					3.00	15.0	45.0	Estimated
	116.5	6.3	1.0					1.00	6.3	6.3	Estimated
	119.0	1.3	0.0					0.00	0.0	0.0	Left edge water (1545 hr)
	96.7	96.7							156.5	603.8	

Table PLX 09-1: Survey Data

Survey Point Number	Easting (ft)	Northing (ft)	Elevation (ft)	Description
1	5000	5000	100	P09TBMPL (TBM9A)
2	5000	4005.439138	102.089	P09TBMUS (TBM9C)
4	4966.979931	4005.350208	101.343	SGUS
11	4928.236174	4004.931448	101.227	T
12	4885.482897	4008.784505	100.792	T
13	4843.988115	4013.586954	100.382	T
14	4811.322247	4017.131184	99.729	T
15	4796.287198	4017.747062	99.682	T
16	4779.019556	4019.764824	99.366	T
17	4760.476088	4021.968112	99.098	T
18	4746.579982	4024.877109	98.878	T
19	4730.729322	4026.292155	97.996	REW
20	4727.395523	4026.738118	97.48	G
21	4718.593643	4026.196673	97.254	G
22	4713.610557	4026.670823	97.154	G
23	4706.873314	4027.243014	96.88	G
24	4701.302502	4027.475054	96.655	G
25	4699.986544	4027.64328	94.311	C
26	4695.534834	4029.439937	94.732	CTH
27	4690.772048	4029.517784	95.097	C
28	4687.29782	4029.442785	95.488	C
29	4683.143047	4029.778566	96.276	C
30	4683.200479	4029.954424	96.276	C
31	4682.409903	4030.083777	97.488	G
32	4680.114456	4029.995624	97.71	LEW
33	4673.866672	4030.758984	98.005	T
34	4658.21487	4030.873424	99.071	T
35	4638.200571	4032.895248	99.445	T
36	4610.934758	4035.279614	99.901	T
37	4571.638613	4039.639362	100.928	T
38	4522.407532	4043.08543	101.942	T
39	4475.799226	4052.963716	102.71	T
40	4686.014027	3986.11025	96.004	THFL
41	4687.426131	4093.005293	95.964	TH
42	4686.690925	4145.127159	95.645	TH
43	4691.269818	4251.633895	93.804	TH
44	4693.864268	4369.965949	94.296	TH
45	4669.163668	4521.270054	94.847	TH
46	4679.863648	4638.893161	94.026	TH
47	4716.051408	4727.650234	93.812	TH
48	4732.035479	4832.385527	92.063	TH
49	4745.826977	4927.98311	92.084	TH
50	4747.37612	4982.986996	92.51	TH
51	4704.995812	5068.966311	93.366	THFL

Table PLX 09-1: Survey Data (continued)

Survey Point Number	Easting (ft)	Northing (ft)	Elevation (ft)	Description
52	4585.454563	5025.78843	100.851	T
53	4615.594209	5028.734945	100.369	T
54	4637.745698	5030.534308	100.119	T
55	4661.431946	5032.136596	99.566	T
56	4675.103448	5032.16652	99.244	T
57	4684.526117	5033.273622	98.328	T
58	4690.114624	5033.930366	97.95	T
59	4696.100555	5034.639893	95.928	T
60	4701.465409	5035.539379	95.547	T
61	4705.969953	5036.080646	95.04	LEW
62	4707.613871	5036.238691	94.263	G
63	4710.034277	5036.366997	94.53	C
64	4712.941033	5036.957007	94.603	C
65	4717.512436	5036.159652	94.297	CTH
66	4721.805983	5037.098416	94.015	C
67	4724.917464	5037.742762	94.205	G
68	4729.090495	5037.899748	94.133	G
69	4735.099577	5038.310393	94.386	G
70	4741.845966	5038.5302	94.569	G
71	4748.67499	5038.109046	94.875	G
72	4757.03574	5038.862205	95.229	REW
73	4766.870626	5040.489624	95.411	T
74	4782.791083	5041.636757	96.142	T
75	4804.253371	5042.490822	97.249	T
76	4832.681164	5044.207543	97.957	T
77	4869.949568	5047.352338	98.455	T
78	4916.600058	5049.949538	98.72	T
79	4961.090563	5051.165933	99.074	T
80	4812.810866	5050.941005	98.105	P09TBM2 (TBM9B)
81	4793.65213	5041.737179	96.842	N
82	4958.670228	4992.387638	99.27	SG
83	5263.394308	5324.829951	98.794	HV54, Photo Panel - set by others

Legend:

G = grass	TH = thalweg	US = upstream	CL = center line
T = tundra	CG = crest gage	TWET = wet tundra	
C = cobbles	GB = ground break	M = mud	
LEW = left edge of water	SH = shoulder	SB = sand bags	
REW = right edge of water	DS = downstream	PK = "pk" nail	

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APPENDIX M: PLX 10

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Figure PLX 10-1: Plan

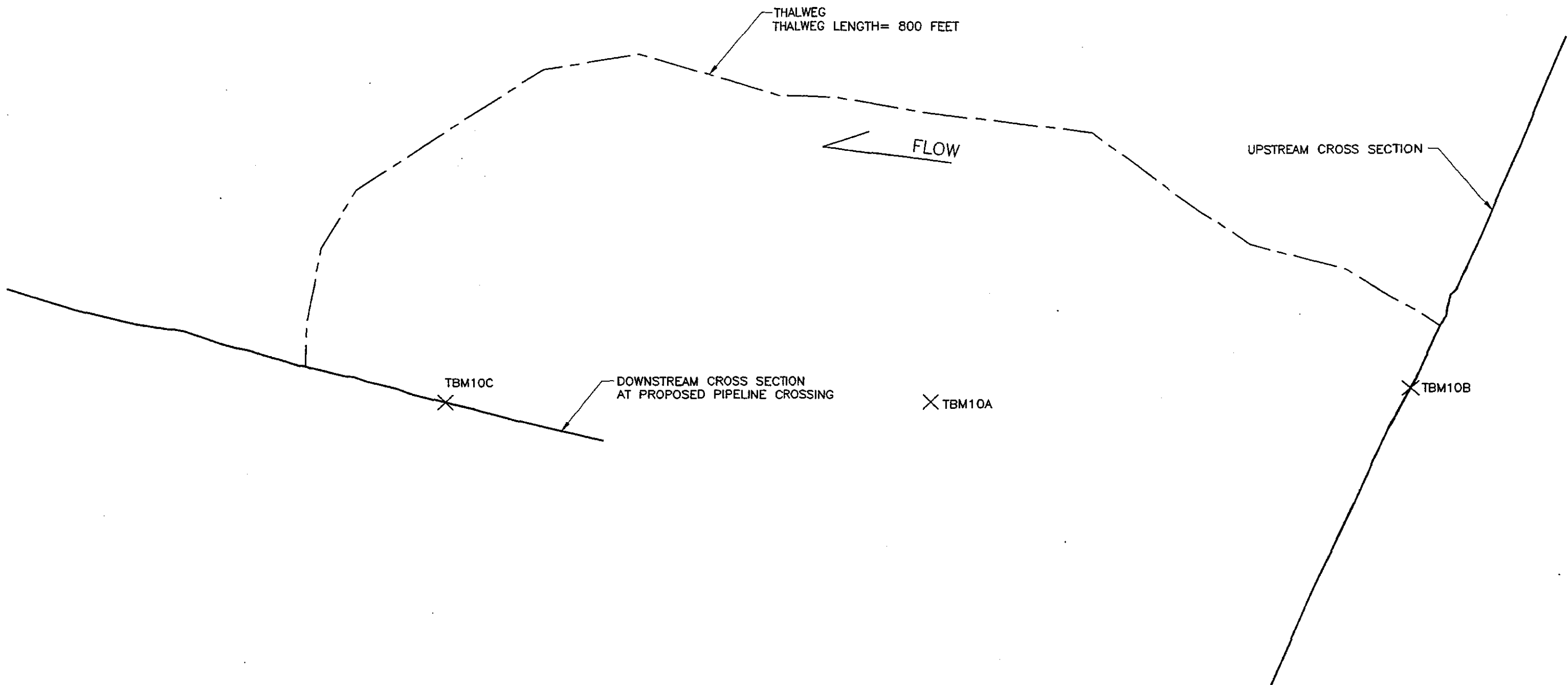
Figure PLX 10-2: Profiles

Photo Sheet PLX 10-1: Stream PLX 10 Photographs

Photo Sheet PLX 10-2: Stream PLX 10 Photographs

Discharge Measurement Notes

Table PLX 10-1: Survey Data



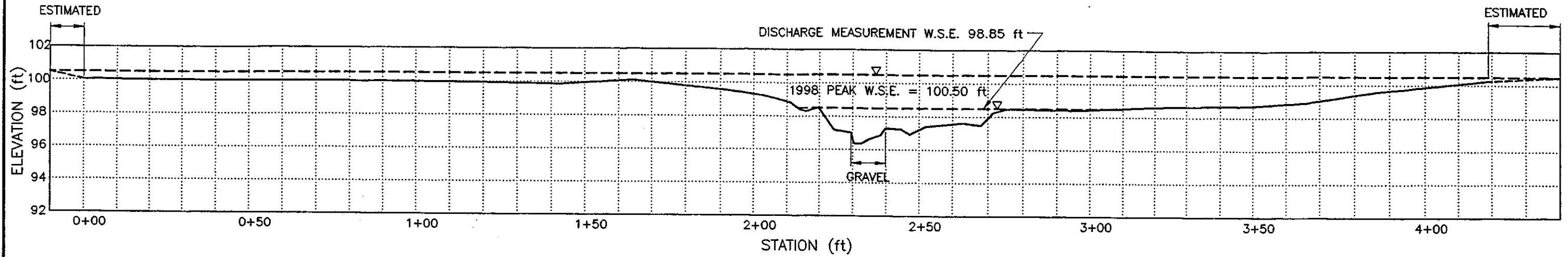
- NOTES:
1. THE PRIMARY TEMPORARY BENCH MARK WAS ASSUMED TO HAVE: (1) AN ELEVATION OF 100.00 FEET, (2) A NORTHING OF 5000 FEET, AND (3) AN EASTING OF 5000 FEET. THE PRIMARY TEMPORARY BENCH MARK AT EACH STREAM PROVIDED THE VERTICAL AND HORIZONTAL CONTROL.
 2. THE PRIMARY TEMPORARY BENCH MARK ON THIS STREAM IS TBM10A.

NO.		DATE		REVISION		BY	

**STREAM PLX10
PLAN**
 SOURDOUGH AREA DEVELOPMENT PROJECT
 NORTH SLOPE, ALASKA

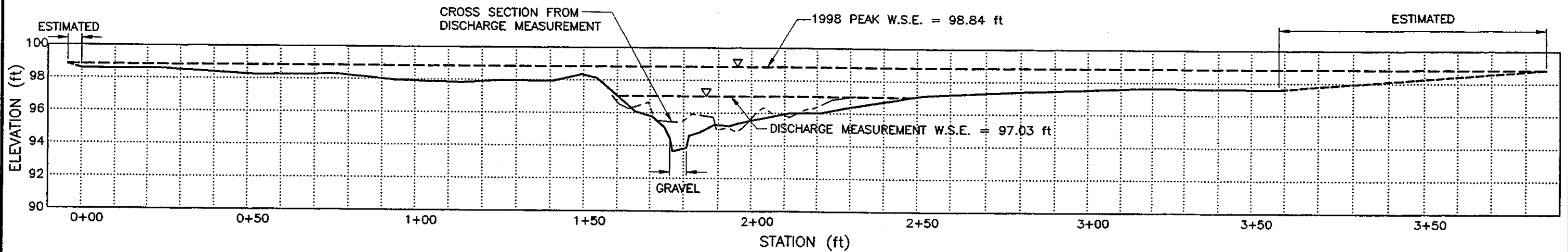
Baker		Michael Baker Jr., Inc.	
DATE: 8/3/98	PROJECT: SADP	FILE: SADP-X10	SCALE: 1" = 60'
DRAWN: BC	CHECKED: JWA		

FIGURE:
**PLX
10-1**



PROFILE: PLX10 UPSTREAM CROSS SECTION

SCALE: H 1" = 30'
V 1" = 6'



PROFILE: PLX10 DOWNSTREAM CROSS SECTION AT PROPOSED PIPELINE CROSSING

SCALE: H 1" = 30'
V 1" = 6'

NOTES:

1. THE ELEVATIONS SHOWN ARE BASED ON AN ASSUMED ELEVATION OF 100.00 AT TBM10A.
2. W.S.E.= WATER SURFACE ELEVATION
3. THE DIFFERENCE IN THE SURVEY AND DISCHARGE MEASUREMENT CROSS SECTIONS IS DUE TO A SLIGHT DIFFERENCE IN WHERE THE MEASUREMENTS WERE MADE.

NO.	DATE	REVISION	BY:

**STREAM PLX10
PROFILES**
 SOURDOUGH AREA DEVELOPMENT PROJECT
 NORTH SLOPE, ALASKA

Baker		Michael Baker Jr., Inc.	
DATE: 8/3/98	PROJECT: SADP		
DRAWN: BC	FILE: SADP-X10		
CHECKED: JWA	SCALE: VARIES		

FIGURE:
**PLX
10-2**



Photo PLX 10-1: Looking north at the proposed pipeline crossing (6/1/98).



Photo PLX 10-2: Looking northwest at the proposed pipeline crossing (6/11/98).

STREAM PLX 10
PHOTOGRAPHS

SOURDOUGH AREA DEVELOPMENT PROJECT
NORTH SLOPE, ALASKA

Baker		Michael Baker Jr., Inc.	
Date: 6/7/98	Project: 23247		
Drawn: JDA	File: photo10		
Checked: JWA	Scale:		

Photo Number:
PLX
10-1



Photo PLX 10-3: Looking east at the proposed pipeline crossing (6/1/98); note crest mark on lath.

STREAM PLX 10
PHOTOGRAPHS

SOURDOUGH AREA DEVELOPMENT PROJECT
NORTH SLOPE, ALASKA

Baker

Michael Baker Jr., Inc.

Photo Number:

Date: 6/7/98

Project: 23247

Drawn: JDA

File: photo10

Checked: JWA

Scale:

PLX
10-2

DISCHARGE MEASUREMENT NOTES

LOCATION: PLX 10 at proposed pipeline crossing

Date: 6/1, 1998 **Party:** J. Meckel, P. McGranahan

Width: 73 **Area:** 76.5 **Vel:** 2.30 **G.H.:** **Disch.:** 176 cfs

No Secs. 26 **G.H. change:** **in.:** **hrs.:** **Susp.:** Rod

Method coef.: 1 **Hor. Angle coef.:** 1 **Sus. Coef.:** Noted **Meter No.:**

Gage Readings **Type of meter:** Price AA

Time **Recorder** **Inside** **Outside** **Date rated:** Std 1

Meter: ft. above bottom of weight.

upstream x-sec WSE= 98.85 **Spin before meas.** ok after ok

downstream x-sec WSE= 97.03 **Method:** Wading at proposed pipeline crossing, downstream cross section.

Weighted M.G.H. **Levels obtained** this time

G.H. corrections

Correct M.G.H.

Measurement rated: Good **based on following conditions:**

Cross section: Irregular - mostly grass 8-10".

Flow: Uneven distribution **Weather:** Air °F@:

Gage: **Water °F@:**

Other:

Record Removed: **Intake flushed:**

Observer

Control Riffle 100-150 downstream clear.

Remarks Grass - rough, small amount of cobble < 2".

G.H. of zero flow: ft.

Table PLX 10-1: Survey Data

Survey Point Number	Easting (ft)	Northing (ft)	Elevation (ft)	Description
1	5000	5000		100 P10.TBM (TBM10A)
2	5000	5282.459824	98.915	P10PCL (TBM10C)
3	4999.630039	5282.628993	97.942	CG.C/L
6	4999.993153	5282.445536	98.914	CK
11	4832.375265	4799.621793	100.044	T
12	4873.210025	4781.715073	99.995	T
13	4893.069439	4773.27477	100.01	T
14	4917.810792	4761.905342	99.986	T
15	4939.572039	4751.983904	99.943	T
16	4963.309403	4742.019108	99.863	T
17	4982.941818	4733.304273	100.116	T
18	5007.893632	4721.753526	99.538	CGUS (TBM10B)
19	5017.639271	4717.115119	99.232	T
20	5025.30885	4713.992707	98.837	T
21	5027.975702	4712.673772	98.432	T
22	5029.900108	4712.163986	98.298	G
23	5033.211422	4710.503816	98.515	LEW
24	5034.392979	4709.957324	98.182	G
25	5037.594419	4708.603561	97.176	G
26	5042.120247	4706.395055	97.025	G
27	5042.844109	4706.114823	96.39	C
28	5045.176276	4705.154136	96.38	CTH
29	5046.910049	4703.914514	96.631	C
30	5050.030566	4702.314825	96.88	C
31	5051.236367	4701.518459	97.286	G
32	5056.0289	4701.053106	97.266	G
33	5058.764655	4700.204788	96.912	G
34	5063.620921	4699.181457	97.393	G
35	5067.241664	4695.364747	97.503	G
36	5073.052136	4693.029173	97.629	G
37	5077.542607	4690.941176	97.488	G
38	5080.667967	4689.725132	98.235	REW
39	5084.564611	4688.033314	98.482	T
40	5102.551618	4679.896104	98.404	T
41	5125.535647	4670.439875	98.626	T
42	5151.987861	4658.718737	98.718	T
43	5167.962721	4652.165182	98.937	T
44	5186.229076	4645.076864	99.581	T
45	5216.340143	4631.911638	100.256	T
46	5021.970496	4639.062569	96.794	THFL
47	5079.339729	4756.360124	96.662	TH
48	5094.456478	4812.906544	96.116	TH
49	5117.601601	4847.841309	96.46	TH
50	5160.41197	4907.188984	95.976	TH
51	5172.809054	5006.005266	95.565	TH

Table PLX 10-1: Survey Data (continued)

Survey Point Number	Easting (ft)	Northing (ft)	Elevation (ft)	Description
52	5181.094028	5053.379972	95.373	TH
53	5182.439741	5088.680906	94.626	TH
54	5206.421929	5169.272159	94.368	TH
55	5197.565103	5224.214115	94.203	TH
56	5164.018387	5277.385983	95.483	TH
57	5126.128272	5334.033646	95.112	TH
58	5091.529594	5354.841122	93.243	TH
59	5047.287817	5363.131111	94.508	TH
60	4986.90034	5390.315761	94.7	THFL
61	4976.767717	5191.0879	98.577	T
62	4982.365857	5215.319108	98.579	T
63	4988.792005	5241.775098	98.248	T
64	4995.455736	5265.880974	98.278	T
65	4999.540918	5282.663878	97.949	CGCL
66	5004.464171	5301.385926	97.818	T
67	5008.14725	5311.997996	97.964	T
68	5011.946616	5327.536522	97.933	T
69	5014.725836	5335.596973	98.339	T
70	5015.421345	5340.150254	98.113	T
71	5018.154025	5351.28717	96.076	LEW
72	5019.422142	5356.379804	95.754	G
73	5020.202345	5359.93646	95.096	G
74	5020.360078	5361.493793	94.492	G
75	5020.826289	5362.263174	93.656	C
76	5021.253056	5363.837283	93.732	CTH
77	5021.821619	5366.24987	93.859	C
78	5021.691473	5367.062852	94.598	G
79	5022.566745	5370.28876	94.823	G
80	5023.692477	5374.120874	95.283	G
81	5024.971118	5378.176226	95.201	G
82	5026.324048	5383.123978	95.472	G
83	5028.086161	5388.520431	95.711	G
84	5030.740771	5395.749362	96.002	REWX
85	5032.644273	5404.993298	96.019	T
86	5035.014061	5413.127868	96.369	T
87	5042.368694	5434.386157	97.129	T
88	5046.653898	5462.084196	97.384	T
89	5055.658283	5497.94815	97.653	T
90	5068.182379	5537.622815	97.602	T

(continued on next page)

Table PLX 10-1: Survey Data (continued)

Survey Point Number	Easting (ft)	Northing (ft)	Elevation (ft)	Description
88	5046.653898	5462.084196	97.384	T
89	5055.658283	5497.94815	97.653	T
90	5068.182379	5537.622815	97.602	T

Legend:

G = grass	TH = thalweg	US = upstream	PK = "pk" nail
T = tundra	CG = crest gage	TWET = wet tundra	
C = cobbles	GB = ground break	M = mud	
LEW = left edge of water	SH = shoulder	SB = sand bags	
REW = right edge of water	DS = downstream	CL = center line	

file:plx10.xls

APPENDIX N: PLX 11

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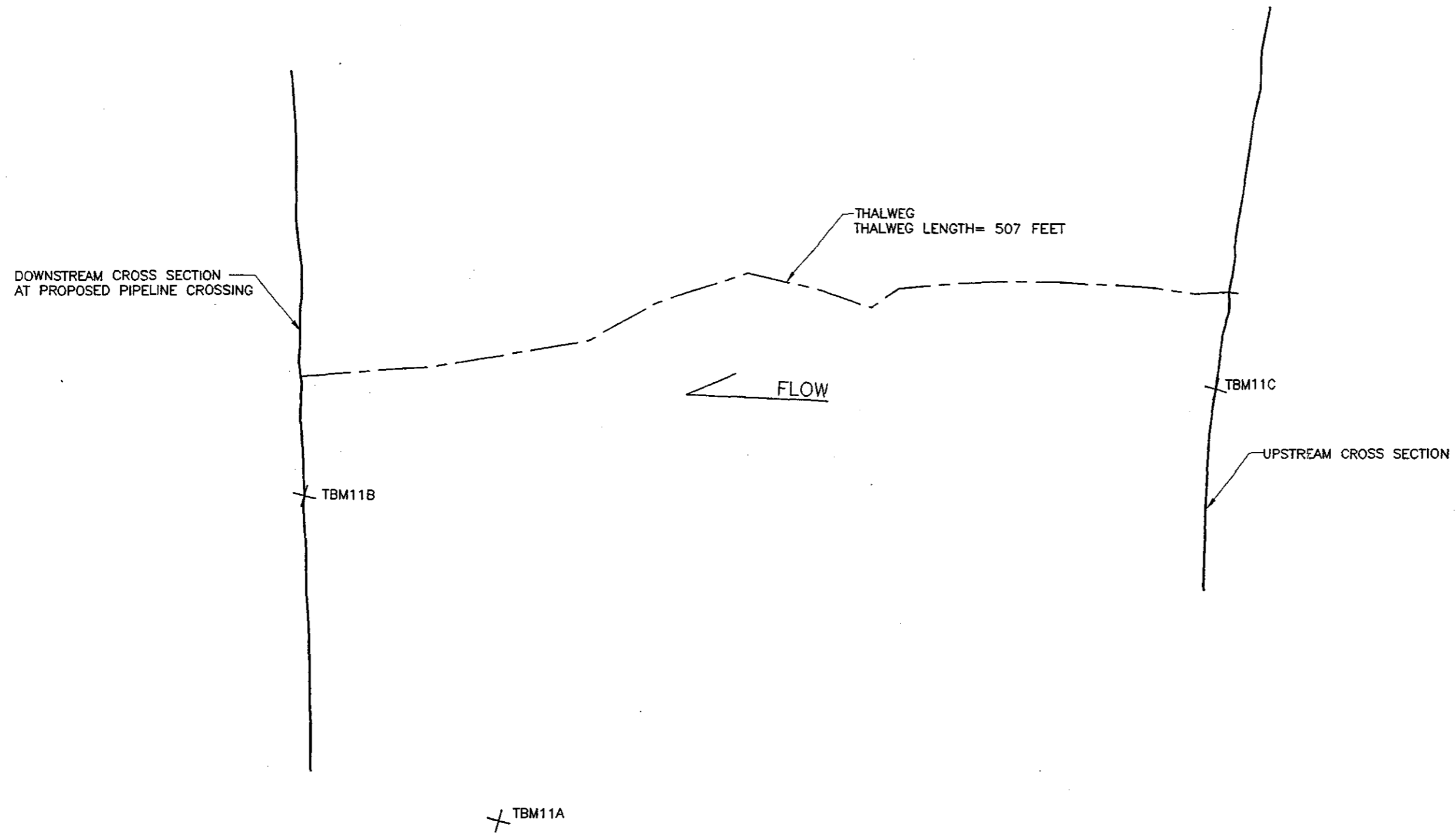
Figure PLX 11-1: Plan

Figure PLX 11-2: Profiles

Photo Sheet PLX 11-1: Stream PLX 11 Photographs

Discharge Measurement Notes

Table PLX 11-1: Survey Data



NOTES:

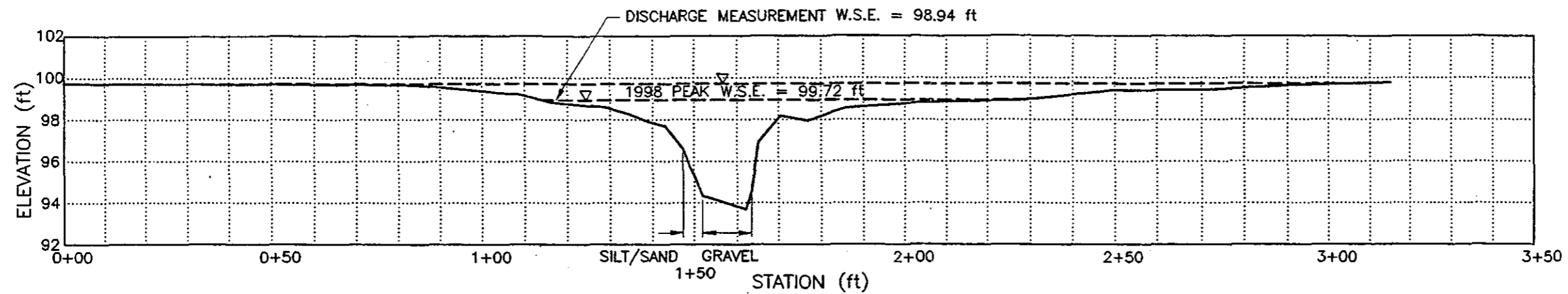
1. THE PRIMARY TEMPORARY BENCH MARK WAS ASSUMED TO HAVE: (1) AN ELEVATION OF 100.00 FEET, (2) A NORTHING OF 5000 FEET, AND (3) AN EASTING OF 5000 FEET. THE PRIMARY TEMPORARY BENCH MARK AT EACH STREAM PROVIDED THE VERTICAL AND HORIZONTAL CONTROL.
2. THE PRIMARY TEMPORARY BENCH MARK ON THIS STREAM IS TBM11A.

NO.		DATE		REVISION		BY:	

**STREAM PLX11
PLAN**
 SOURDOUGH AREA DEVELOPMENT PROJECT
 NORTH SLOPE, ALASKA

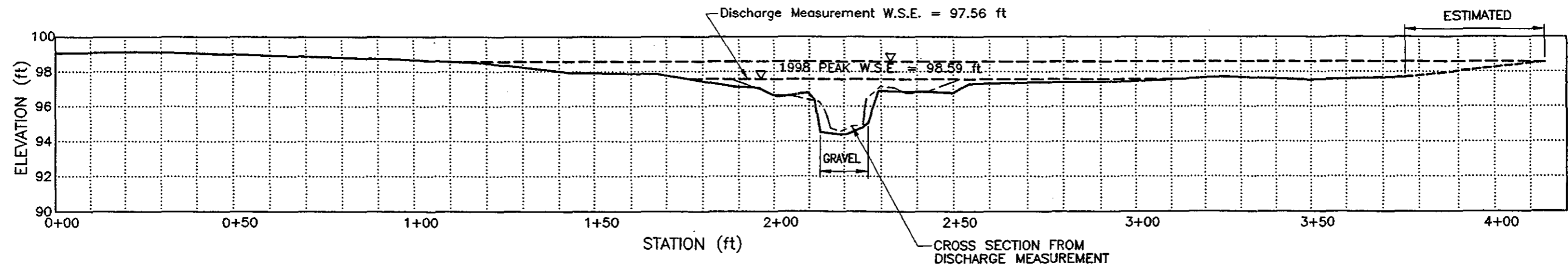
Baker		Michael Baker Jr., Inc.	
DATE: 8/3/98	PROJECT: SADP	FILE: SADP-X11	SCALE: 1" = 60'
DRAWN: BC	CHECKED: JWA		

FIGURE:
**PLX
11-1**



PROFILE: PLX11 UPSTREAM CROSS SECTION

SCALE: H 1" = 30'
V 1" = 6'



PROFILE: PLX11 DOWNSTREAM CROSS SECTION AT PROPOSED PIPELINE CROSSING

SCALE: H 1" = 30'
V 1" = 6'

NOTES:

1. THE ELEVATIONS SHOWN ARE BASED ON AN ASSUMED ELEVATION OF 100.00 AT TBM11A.
2. W.S.E.= WATER SURFACE ELEVATION
3. THE DIFFERENCE IN THE SURVEY AND DISCHARGE MEASUREMENT CROSS SECTIONS IS DUE TO A SLIGHT DIFFERENCE IN WHERE THE MEASUREMENTS WERE MADE.

NO.	DATE	REVISION	BY:

STREAM PLX11 PROFILES
 SOURDOUGH AREA DEVELOPMENT PROJECT
 NORTH SLOPE, ALASKA

Baker		Michael Baker Jr., Inc.	
DATE: 8/3/98	PROJECT: SADP	FILE: SADP-X11	SCALE: VARIES
DRAWN: BC	CHECKED: JWA		

FIGURE:
PLX 11-2



Photo PLX 11-1: Looking north at the proposed pipeline crossing, water depth is 1 foot (6/1/98).



Photo PLX 11-2: Looking north at the proposed pipeline crossing (6/11/98).

STREAM PLX 11
PHOTOGRAPHS

SOURDOUGH AREA DEVELOPMENT PROJECT
NORTH SLOPE, ALASKA

Baker

Michael Baker Jr., Inc.

Date: 6/7/98

Project: 23247

Drawn: JDA

File: phot011

Checked: JWA

Scale:

Photo Number:

PLX
11-1

DISCHARGE MEASUREMENT NOTES

LOCATION: PLX 11 at proposed pipeline crossing

Date: 6/1 ,1998 **Party:** J. Meckel, P. McGranahan

Width: 64 **Area:** 66.2 **Vel:** 0.985 **G.H.:** **Disch.:** 65.2 cfs

No Secs. 17 **G.H. change:** **in.:** **hrs.:** **Susp.:** Rod

Method coef.: 1 **Hor. Angle coef.:** 1 **Sus. Coef.:** 1 **Meter No.:**

Gage Readings **Type of meter:** Price AA

Time **Recorder** **Inside** **Outside** **Date rated:** Std No 1

Meter: ft. above bottom of weight.

Spin before meas. ok **after** ok

Method: Wading at proposed pipeline crossing,
downstream cross section.

upstream x-sec WSE= 98.94

downstream x-sec WSE= 97.56

Weighted M.G.H. **Levels obtained** this day

G.H. corrections

Correct M.G.H.

Measurement rated: Fair **based on following conditions:**

Cross section: Trapazoid with over banks.

Flow: **Weather:** **Air °F@:**

Gage: **Water °F@:**

Other:

Record Removed: **Intake flushed:**

Observer

Control Lake 200 ft downstream. Channel overbanks of grass. Streambed smooth cobble < 3", sand.

Remarks No snow or ice.

G.H. of zero flow: ft.

Table PLX 11-1: Survey Data

Survey Point Number	Easting (ft)	Northing (ft)	Elevation (ft)	Description
1	5000	5000		100 START (TBM11A)
2	5000	5201.772255	99.148	P11PCL (TBM11B)
3	5000	5201.856814	97.931	CG
11	4928.624257	5071.847914	99.071	T
12	4940.683611	5092.785136	99.137	T
13	4952.569471	5114.656762	99.015	T
14	4963.843584	5134.572159	98.873	T
15	4974.220581	5155.253685	98.727	T
16	4985.9893	5176.112397	98.508	T
17	4997.353719	5198.473567	97.923	T
18	5009.339877	5218.661854	97.866	T
19	5018.721504	5237.805568	97.12	LEW
20	5022.083869	5243.642345	97.068	G
21	5024.207054	5246.452025	96.713	G
22	5025.207964	5248.767562	96.55	G
23	5027.86642	5252.97308	96.707	G
24	5029.505543	5255.551509	96.793	G
25	5030.159792	5257.384183	96.38	G
26	5030.894089	5258.872114	94.53	CTH
27	5032.916032	5263.484547	94.406	CTH
28	5034.161371	5266.210393	94.42	C
29	5036.17729	5269.194636	94.771	C
30	5037.014992	5270.508635	95.06	M
31	5038.733381	5272.961241	96.884	G
32	5043.020741	5280.323705	96.847	G
33	5045.619021	5284.764862	96.843	G
34	5049.044595	5290.869455	96.755	G
35	5052.165079	5294.423682	97.287	REW
36	5060.762234	5309.588522	97.376	T
37	5071.38831	5333.469959	97.431	T
38	5085.385459	5356.951813	97.709	T
39	5097.20209	5378.272589	97.531	T
40	5108.437722	5402.159375	97.676	T
41	4990.420522	5296.135	94.927	THFL
42	5094.70199	5228.427199	94.438	TH
43	5171.293783	5200.313312	95.233	TH
44	5211.592942	5200.093498	96.714	TH
45	5261.310303	5189.669227	95.964	TH
46	5291.340877	5161.206805	95.251	TH
47	5309.51977	5140.54917	94.008	TH
48	5326.960567	5142.053425	95.028	TH
49	5350.064236	5131.687038	95.687	TH
50	5374.538154	5119.210331	96.654	TH
51	5401.54819	5103.079301	95.351	TH

Table PLX 11-1: Survey Data (continued)

Survey Point Number	Easting (ft)	Northing (ft)	Elevation (ft)	Description
52	5440.926553	5076.832855	95.57	TH
53	5459.705211	5062.143236	95.608	TH
54	5497.628706	5007.612258	97.401	THFL
55	5570.701126	5174.163221	99.772	T
56	5555.148652	5156.292124	99.639	T
57	5544.428849	5139.068362	99.409	T
58	5529.848847	5123.272611	99.401	T
59	5515.913025	5105.602009	98.907	T
60	5501.629745	5088.77688	98.841	T
61	5489.396293	5074.002096	98.55	T
62	5487.514594	5069.99862	98.29	REW
63	5484.617922	5065.977535	97.941	G
64	5480.627353	5061.04881	98.175	G
65	5476.916023	5057.079857	96.891	G
66	5475.842091	5055.676426	94.586	C
67	5474.826617	5054.717706	93.704	CTH
68	5469.772118	5046.015571	94.333	C
69	5468.195333	5044.623942	95.046	M
70	5466.365773	5042.773192	96.618	M
71	5463.521098	5039.63591	97.673	G
72	5460.522935	5036.704511	97.907	G
73	5457.725024	5033.22281	98.26	LEW
74	5454.313769	5028.704623	98.609	T
75	5446.623673	5018.697387	98.814	T
76	5442.262194	5012.889975	99.204	CGUS (TBM11C)
77	5426.998319	4993.7063	99.657	T
78	5405.135095	4959.800174	99.693	T
79	5381.846693	4921.936405	99.736	T

Legend:

G = grass	TH = thalweg	US = upstream	PK = "pk" nail
T = tundra	CG = crest gage	TWET = wet tundra	
C = cobbles	GB = ground break	M = mud	
LEW = left edge of water	SH = shoulder	SB = sand bags	
REW = right edge of water	DS = downstream	CL = center line	

file:plx11.xls

APPENDIX O: PLX 12

TABLE OF CONTENTS

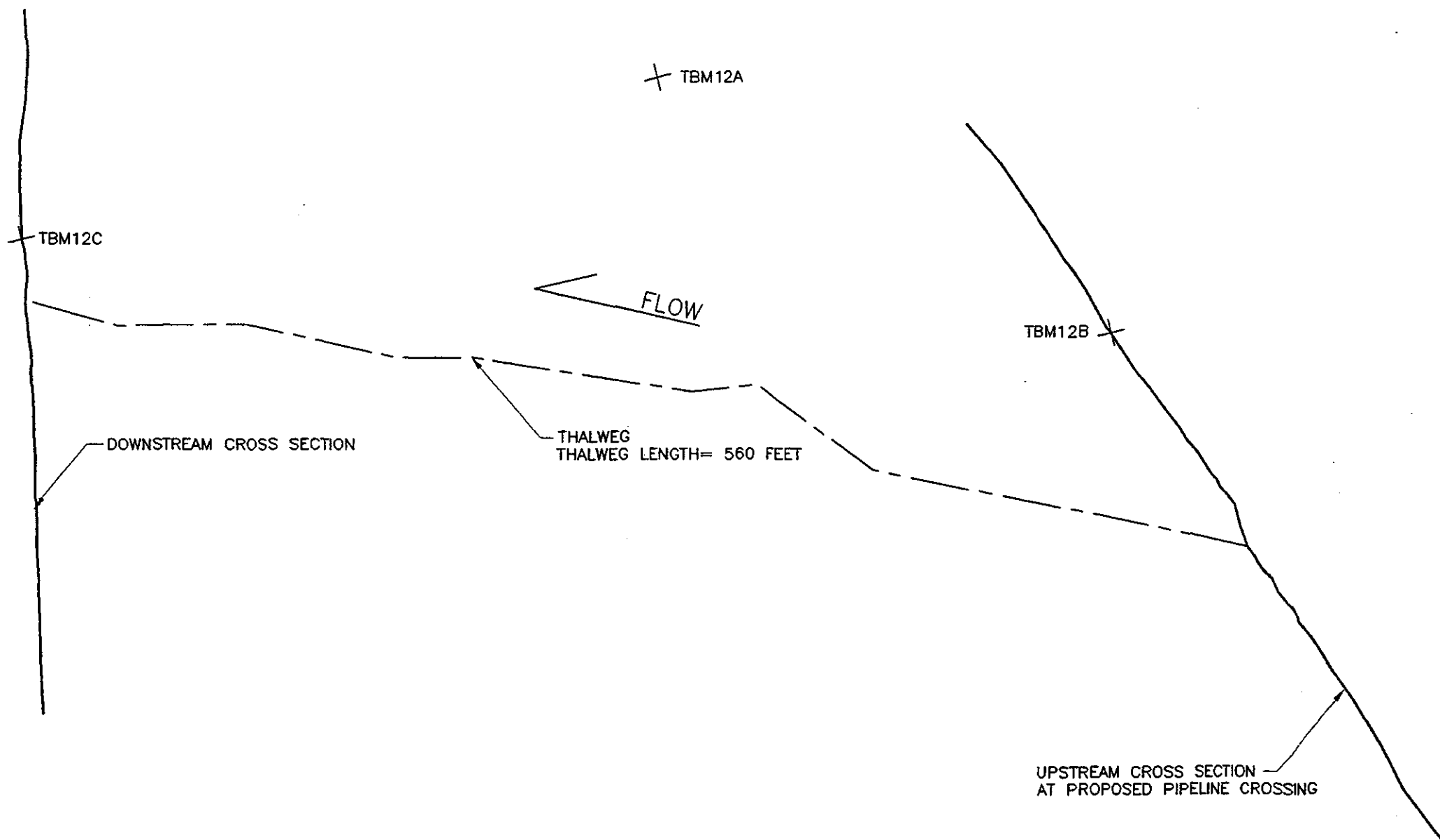
Figure PLX 12-1: Plan

Figure PLX 12-2: Profiles

Photo Sheet PLX 12-1: Stream PLX 12 Photographs

Discharge Measurement Notes

Table PLX 12-1: Survey Data



NOTES:

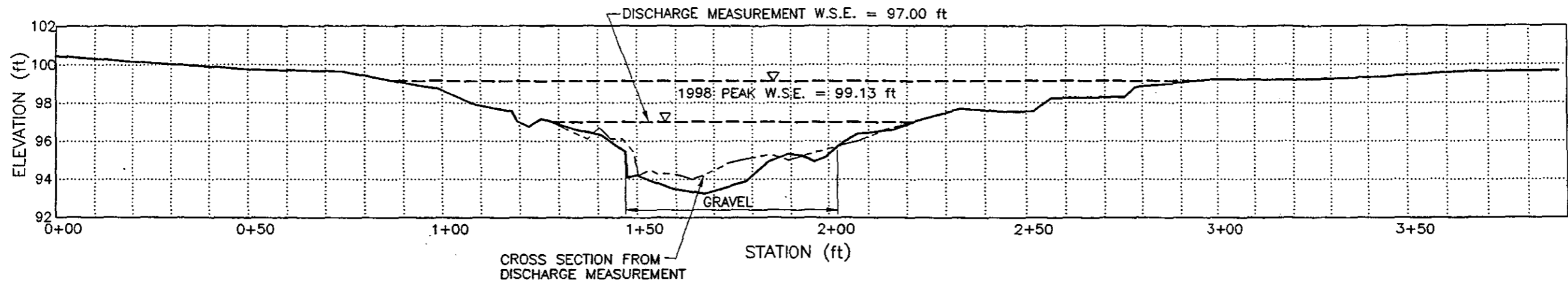
1. THE PRIMARY TEMPORARY BENCH MARK WAS ASSUMED TO HAVE: (1) AN ELEVATION OF 100.00 FEET, (2) A NORTHING OF 5000 FEET, AND (3) AN EASTING OF 5000 FEET. THE PRIMARY TEMPORARY BENCH MARK AT EACH STREAM PROVIDED THE VERTICAL AND HORIZONTAL CONTROL.
2. THE PRIMARY TEMPORARY BENCH MARK ON THIS STREAM IS TBM12A.

NO.	DATE	REVISION	BY:

**STREAM PLX12
PLAN**
 SOURDOUGH AREA DEVELOPMENT PROJECT
 NORTH SLOPE, ALASKA

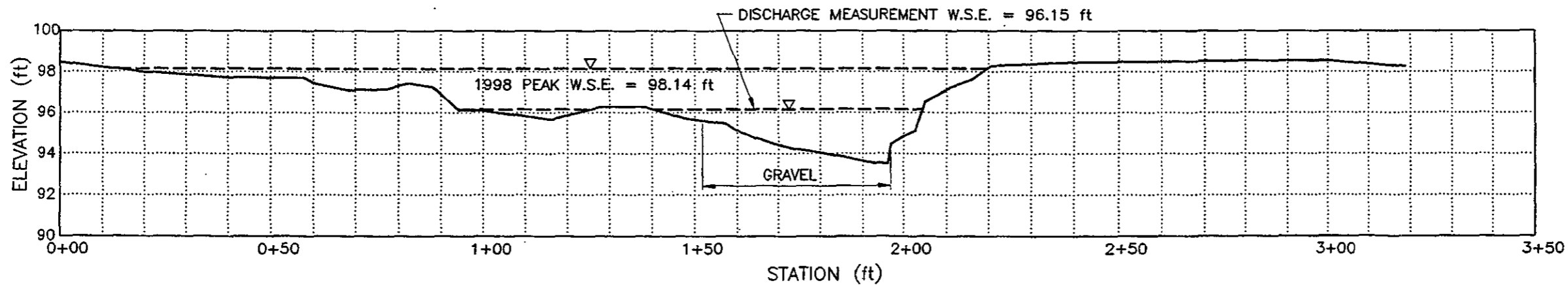
Baker		Michael Baker Jr., Inc.	
DATE: 8/3/98	PROJECT: SADP	FILE: SADP-X12	SCALE: 1" = 60'
DRAWN: BC	CHECKED: JWA		

FIGURE:
**PLX
12-1**



PROFILE: PLX12 UPSTREAM CROSS SECTION AT PROPOSED PIPELINE CROSSING

SCALE: H 1" = 30'
V 1" = 6'



PROFILE: PLX12 DOWNSTREAM CROSS SECTION

SCALE: H 1" = 30'
V 1" = 6'

NOTES:

1. THE ELEVATIONS SHOWN ARE BASED ON AN ASSUMED ELEVATION OF 100.00 AT TBM12A.
2. W.S.E.= WATER SURFACE ELEVATION
3. THE DIFFERENCE IN THE SURVEY AND DISCHARGE MEASUREMENT CROSS SECTIONS IS DUE TO A SLIGHT DIFFERENCE IN WHERE THE MEASUREMENTS WERE MADE.

NO.		DATE		REVISION		BY:	

**STREAM PLX12
PROFILES**
 SOURDOUGH AREA DEVELOPMENT PROJECT
 NORTH SLOPE, ALASKA

Baker		Michael Baker Jr., Inc.	
DATE:	8/3/98	PROJECT:	SADP
DRAWN:	BC	FILE:	SADP-X12
CHECKED:	JWA	SCALE:	VARIES

FIGURE:
**PLX
12-2**



Photo PLX 12-1: Looking north at the proposed pipeline crossing (6/11/98).



Photo PLX 12-2: Looking southeast at the proposed pipeline crossing (6/5/98).

STREAM PLX 12
PHOTOGRAPHS

SOURDOUGH AREA DEVELOPMENT PROJECT
NORTH SLOPE, ALASKA

Baker

Michael Baker Jr., Inc.

Photo Number:

Date: 6/7/98

Project: 23247

Drawn: JDA

File: photo12

Checked: JWA

Scale:

PLX
12-1

DISCHARGE MEASUREMENT NOTES

LOCATION: PLX 12 at proposed pipeline crossing

Date: 6/1, 1998 **Party:** J. Meckel, P. McGanahan

Width: 93 **Area:** 142 **Vel:** 1.73 **G.H.:** **Disch.:** 245 **cfs**

No Secs. 23 **G.H. change:** **in.:** **hrs.:** **Susp.:** **Rod**

Method coef.: 1 **Hor. Angle coef.:** 1 **Sus. Coef.:** Noted **Meter No.:**

Gage Readings **Type of meter:** Price AA

Time **Recorder** **Inside** **Outside** **Date rated:** Std No 1

Meter: ft. above bottom of weight.

Upstream x-sec **WSE=** 97.00 **Spin before meas.** ok after ok

Method: Wading at proposed pipeline crossing, upstream cross section.

downstream x-sec **WSE=** 96.15

Weighted M.G.H. **Levels obtained** this time

G.H. corrections

Correct M.G.H.

Measurement rated: Good **based on following conditions:**

Cross section: Fairly uniform smooth cobbles < 3", short grass.

Flow: **Weather:** **Air °F@:**

Gage: **Water °F@:**

Other:

Record Removed: **Intake flushed:**

Observer

Control Broad riffle 100-150 ft. downstream clear.

Remarks

G.H. of zero flow: ft.

Table PLX 12-1: Survey Data

Survey Point Number	Easting (ft)	Northing (ft)	Elevation (ft)	Description
1	5000	5000	100	P15.TOPO (TBM12A)
2	5000	4770.255932	94.638	P12PCL (TBM12B)
11	4999.99443	4770.235809	98.293	P12PCL
12	5050.515507	4870.896995	99.641	T
13	5042.035566	4849.937183	99.648	T
14	5031.887428	4829.725179	99.336	T
15	5021.292696	4809.295023	99.2	T
16	5011.129685	4789.874564	99.217	T
17	5000.682686	4772.881283	98.789	T
18	4991.494138	4753.338246	98.233	T
19	4989.68005	4749.122271	97.529	T
20	4986.992202	4742.728591	97.531	T
21	4982.41879	4732.656279	97.701	T
22	4977.767167	4722.070656	97.042	T/C
23	4974.953742	4716.882019	96.594	C
24	4971.779946	4708.405388	96.367	REW
25	4969.4499	4704.021952	95.725	G
26	4968.231719	4701.159956	95.167	C
27	4966.90772	4698.444481	94.923	C
28	4965.942418	4694.833987	95.259	C
29	4963.977973	4691.876636	95.34	C
30	4962.448341	4686.761614	94.87	C
31	4960.295339	4681.735153	93.874	C
32	4952.13647	4673.734764	93.238	C
33	4946.700938	4666.777343	93.518	CTH
34	4944.641182	4661.841048	93.913	C
35	4942.518858	4658.894071	94.224	C
36	4941.540992	4656.64777	94.072	C
37	4941.281127	4656.32996	95.42	G
38	4939.320472	4650.11904	96.307	LEW
39	4935.744951	4644.910713	96.593	T
40	4932.356847	4636.897156	97.169	T
41	4931.203473	4633.910703	96.755	T
42	4929.694348	4631.299197	97.019	T
43	4928.475861	4630.221981	97.569	T
44	4925.185017	4621.530807	97.877	T
45	4920.540461	4612.569562	98.766	T
46	4916.519093	4605.419316	99.022	T
47	4909.974694	4590.494094	99.648	T
48	4898.488395	4569.830528	99.73	T
49	4886.387535	4550.68733	100.062	T
50	4875.302238	4524.821189	100.464	T
51	5036.639672	4697.901497	92.649	TH/FL
52	4894.089744	4828.591041	94.976	TH
53	4901.885772	4892.51982	92.625	TH

Table PLX 12-1: Survey Data (continued)

Survey Point Number	Easting (ft)	Northing (ft)	Elevation (ft)	Description
54	4884.695774	4916.124042	93.304	TH
55	4849.356348	5008.535849	93.718	TH
56	4832.802433	5037.283729	92.756	TH
57	4812.985019	5101.97564	92.977	TH
58	4783.860873	5151.217349	93.895	TH
59	4745.822034	5253.108129	93.787	TH/FL
60	4614.279931	5091.565478	98.448	T
61	4630.035692	5102.040242	97.995	T
62	4647.41725	5112.702465	97.721	T
63	4663.198121	5122.234633	97.688	T
64	4665.640955	5123.637098	97.393	T
65	4672.180431	5128.031268	97.108	T
66	4679.720869	5132.864112	97.138	T
67	4684.061604	5135.338852	97.43	T
68	4689.03562	5138.233545	97.249	T
69	4694.169023	5141.565728	96.124	T
70	4699.034601	5144.521526	96.095	T
71	4713.277571	5152.747351	95.665	T/C
72	4722.942004	5159.074211	96.28	C
73	4731.676005	5164.312869	96.277	C
74	4739.590573	5169.668833	95.724	C
75	4747.780978	5174.708056	95.463	C
76	4749.594534	5175.381029	95.187	LEW
77	4753.777131	5178.117409	94.783	C
78	4757.341144	5181.110357	94.469	C
79	4761.355698	5184.029803	94.242	C
80	4766.261336	5187.567166	94.044	C
81	4769.477452	5190.215904	93.891	C
82	4773.355193	5192.520683	93.694	CTH
83	4777.629014	5194.852065	93.546	C
84	4780.405889	5196.04306	93.506	C
85	4781.184298	5196.150261	94.442	G
86	4783.90437	5197.8514	94.861	G
87	4786.451092	5199.234381	95.108	REW
88	4788.162883	5200.596939	96.506	TU
89	4792.904075	5204.14512	97.234	T
90	4796.53809	5207.728165	97.593	P12CGDS (TBM12C)
91	4800.476092	5210.009501	98.28	T
92	4816.479969	5220.213304	98.456	T

(continued on next page)

Table PLX 12-1: Survey Data (continued)

Survey Point Number	Easting (ft)	Northing (ft)	Elevation (ft)	Description
93	4834.17202	5230.255411	98.477	T
94	4851.879603	5237.182894	98.533	T
95	4870.215271	5246.607653	98.542	T
96	4886.330964	5257.637627	98.256	T

Legend:

G = grass	TH = thalweg	DS = downstream	CL = center line
T = tundra	CG = crest gage	US = upstream	PK = "pk" nail
C = cobbles	GB = ground break	TWET = wet tundra	
LEW = left edge of water	SH = shoulder	M = mud	
REW = right edge of water		SB = sand bags	

file:plx12.xls

APPENDIX P: PLX 13

TABLE OF CONTENTS

Photo Sheet PLX 13-1: Stream PLX 13 Photographs



Photo PLX 13-1: Flow is in small indistinct channels (6/5/98).



Photo PLX 13-2: Looking northwest at the proposed pipeline crossing (6/11/98).

STREAM PLX 13
PHOTOGRAPHS

SOURDOUGH AREA DEVELOPMENT PROJECT
NORTH SLOPE, ALASKA

Baker

Michael Baker Jr., Inc.

Date: 6/7/98

Project: 23247

Drawn: JDA

File: photo13

Checked: JWA

Scale:

Photo Number:

PLX
13-1

APPENDIX Q: PLX 14

TABLE OF CONTENTS

Photo Sheet PLX 14-1: Stream PLX 14 Photographs



Photo PLX 14-1: During the 1998 break-up there was no flowing water at this location, only standing water in lakes (6/5/98).

STREAM PLX 14
PHOTOGRAPHS

SOURDOUGH AREA DEVELOPMENT PROJECT
NORTH SLOPE, ALASKA

Baker

Michael Baker Jr., Inc.

Photo Number:

Date: 6/7/98

Project: 23247

Drawn: JDA

File: photo14

Checked: JWA

Scale:

PLX
14-1

APPENDIX R: PLX 15

TABLE OF CONTENTS

Figure PLX 15-1: Plan

Figure PLX 15-2: Profiles

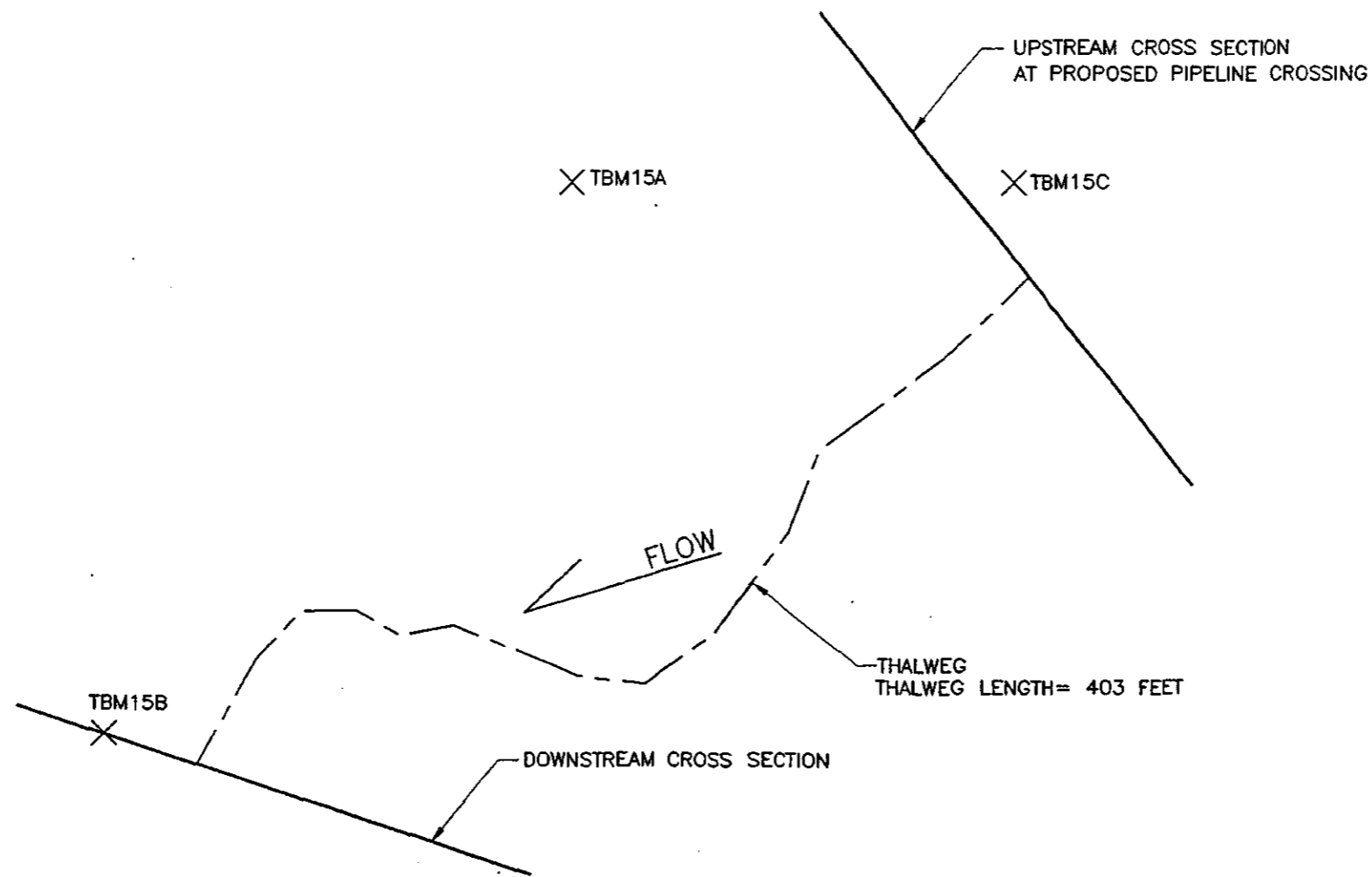
Figure PLX 15-3: Bed Material Gradation

Photo Sheet PLX 15-1: Stream PLX 15 Photographs

Photo Sheet PLX 15-2: Stream PLX 15 Photographs

Discharge Measurement Notes

Table PLX 15-1: Survey Data



NOTES:

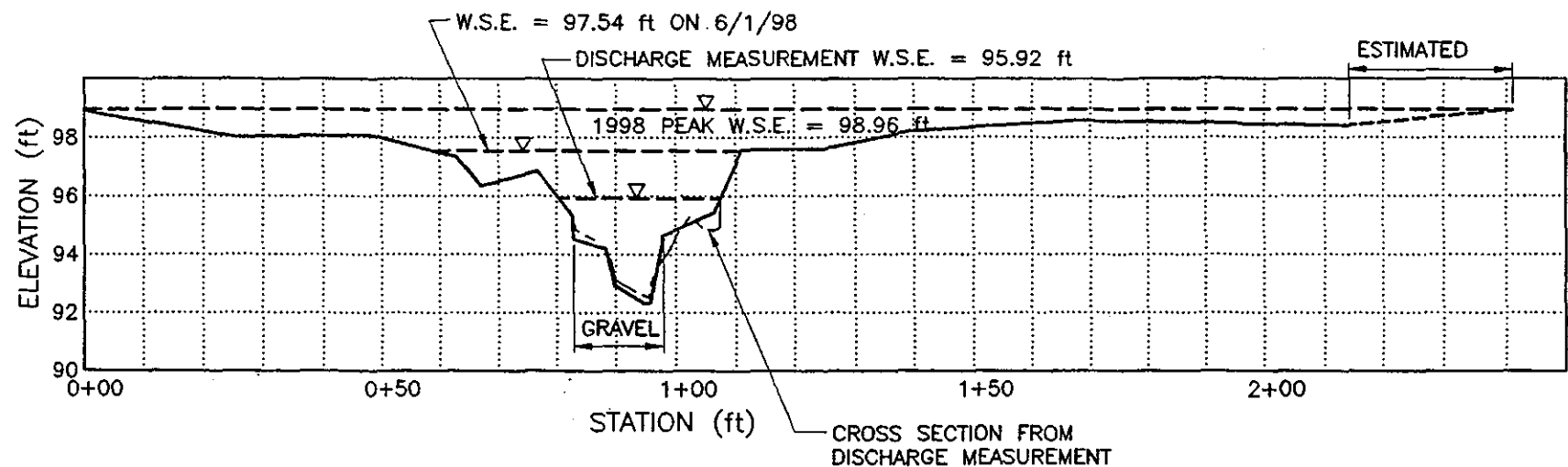
1. THE PRIMARY TEMPORARY BENCH MARK WAS ASSUMED TO HAVE: (1) AN ELEVATION OF 100.00 FEET, (2) A NORTHING OF 5000 FEET, AND (3) AN EASTING OF 5000 FEET.
THE PRIMARY TEMPORARY BENCH MARK AT EACH STREAM PROVIDED THE VERTICAL AND HORIZONTAL CONTROL.
2. THE PRIMARY TEMPORARY BENCH MARK ON THIS STREAM IS TBM15A.

NO.		DATE		REVISION		BY	

**STREAM PLX15
PLAN**
 SOURDOUGH AREA DEVELOPMENT PROJECT
 NORTH SLOPE, ALASKA

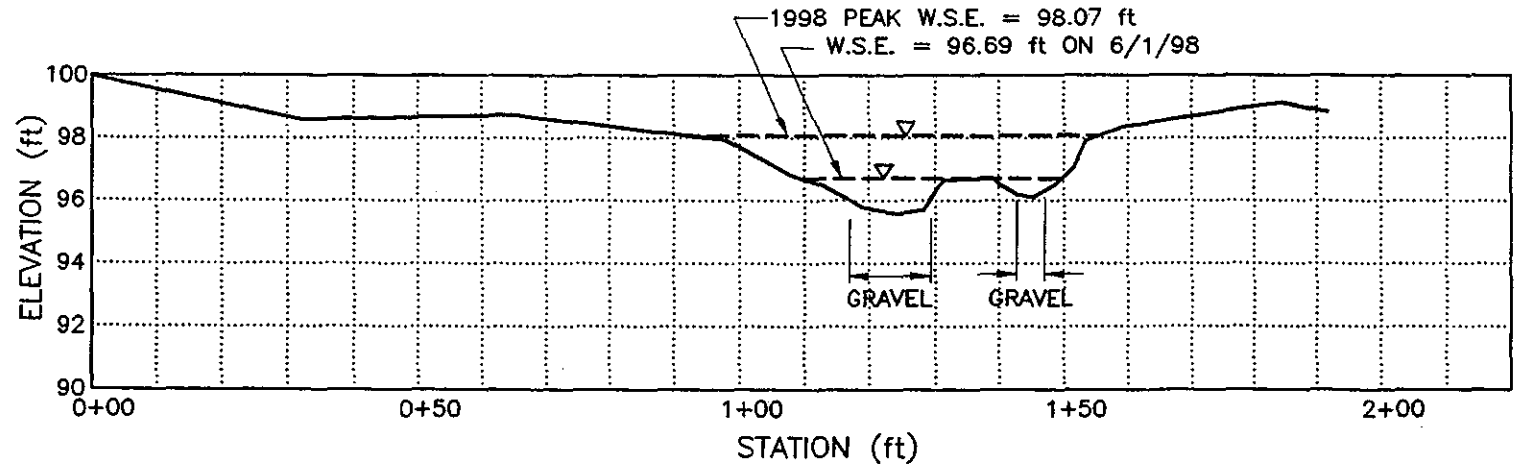
Baker		Michael Baker Jr., Inc.	
DATE: 8/3/98	PROJECT: SADP	FILE: SADP-X15	SCALE: 1" = 60'
DRAWN: BC	CHECKED: JWA		

FIGURE:
**PLX
15-1**



PROFILE: PLX15 UPSTREAM CROSS SECTION AT PROPOSED PIPELINE CROSSING

SCALE: H 1" = 30'
V 1" = 6'



PROFILE: PLX15 DOWNSTREAM CROSS SECTION

SCALE: H 1" = 30'
V 1" = 6'

- NOTES:
1. THE ELEVATIONS SHOWN ARE BASED ON AN ASSUMED ELEVATION OF 100.00 AT TBM15A.
 2. W.S.E.= WATER SURFACE ELEVATION
 3. THE DIFFERENCE IN THE SURVEY AND DISCHARGE MEASUREMENT CROSS SECTIONS IS DUE TO A SLIGHT DIFFERENCE IN WHERE THE MEASUREMENTS WERE MADE.

NO.	DATE	REVISION	BY:

**STREAM PLX15
PROFILES**
 SOURDOUGH AREA DEVELOPMENT PROJECT
 NORTH SLOPE, ALASKA

Baker		Michael Baker Jr., Inc.	
DATE: 8/3/98	PROJECT: SADP		
DRAWN: BC	FILE: SADP-X15		
CHECKED: JWA	SCALE: VARIES		

FIGURE:
**PLX
15-2**

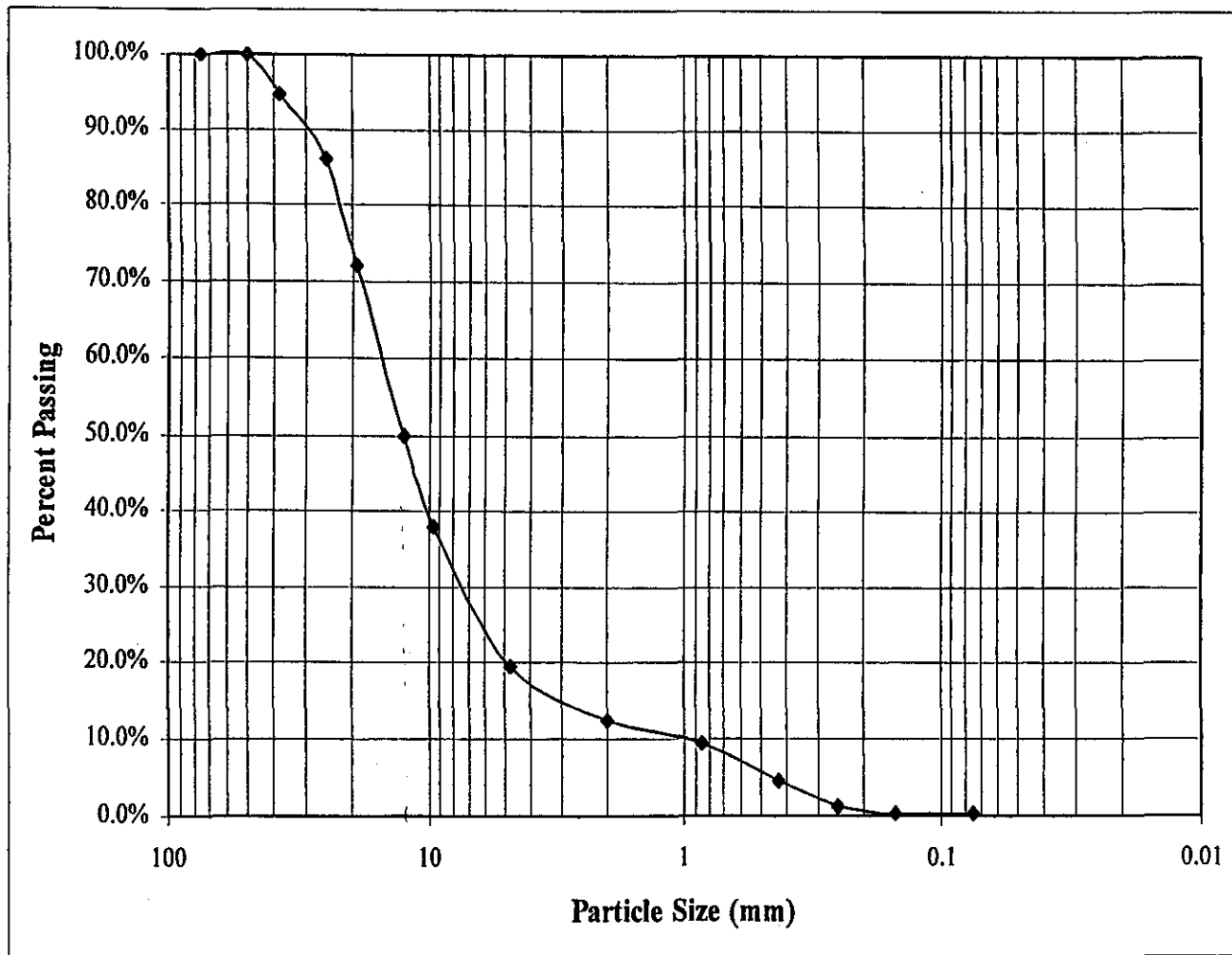


Figure Number:
PLX
15-3

Baker Michael Baker Jr., Inc.	
Date: 8/6/98	Project: 23247
Drawn: JDA	File: gradations.ppt
Checked: JWA	Scale: N/A

STREAM PLX 15
BED MATERIAL GRADATION
SOURDOUGH AREA DEVELOPMENT PROJECT
NORTH SLOPE, ALASKA

REVISION:		
NO:	DATE:	BY:



Photo PLX 15-1: Looking north at the proposed pipeline crossing (6/11/98).



Photo PLX 15-2: Looking north at the upstream cross section (6/11/98).

**STREAM PLX 15
 PHOTOGRAPHS**

**SOURDOUGH AREA DEVELOPMENT PROJECT
 NORTH SLOPE, ALASKA**


 Michael Baker Jr., Inc.	
Date: 6/1/98	Project: 23247
Drawn: JDA	File: photo15
Checked: JWA	Scale:

Photo Number:
**PLX
 15-1**



Photo PLX 15-3: Looking north at the proposed pipeline crossing (6/3/98).

STREAM PLX 15
PHOTOGRAPHS

SOURDOUGH AREA DEVELOPMENT PROJECT
NORTH SLOPE, ALASKA

Baker

Michael Baker Jr., Inc.

Photo Number:

Date: 6/7/98

Project: 23247

Drawn: JDA

File: photo15

Checked: JWA

Scale:

PLX
15-2

DISCHARGE MEASUREMENT NOTES

LOCATION: PLX 15 at proposed pipeline crossing

Date: 6/3, 1998 **Party:** T. Riopelle, J. Meckel

Width: 27.0 **Area:** 45.8 **Vel:** 1.07 **G.H.:** **Disch.:** 48.8 **cfs**

No Secs. 15 **G.H. change:** **in.:** **hrs.:** **Susp.:** Rod

Method coef.: 1 **Hor. Angle coef.** 1 **Sus. Coef.:** Noted **Meter No.**

Gage Readings

Time	Recorder	Inside	Outside
	upstream x-sec	WSE=	95.92
	100 feet downstream of the upstream x-sec	WSE=	95.76
Weighted M.G.H.			
G.H. corrections			
Correct M.G.H.			

Type of meter: Price AA
Date rated: Std No 1
Meter: ft. above bottom of weight.
Spin before meas. ok after ok
Method: Wading at proposed pipeline crossing, upstream cross section.

Levels obtained

Measurement rated: Fair (8%) based on following conditions:

Cross section: Non-uniform long grass/cobbles.

Flow: Fairly well distributed.

Weather: Air °F@:

Gage:

Water °F@: 38.3

Other:

Record Removed:

Intake flushed:

Observer

Control Riffle 100-140 ft downstream, clear no snow or ice. Grass and cobbles.

Remarks Grass in channel \leq 8" long - cobbles round & smooth $<$ 2 1/2".

G.H. of zero flow: ft.

Table PLX 15-1: Survey Data

Survey Point Number	Easting (ft)	Northing (ft)	Elevation (ft)	Description
1	5000	5000		100 P15 TBM (TBM15A)
2	5156.394842	5000	98.581921	P15 P C/L (TBM15C)
3	5156.394842	5000	97.601921	GRN P C/L
11	4984.522847	4747.95347	99.971182	T
12	4954.324231	4759.386967	98.576253	T
13	4923.322943	4769.388282	98.723713	T
14	4891.841599	4778.814242	97.931538	T/GR
15	4882.800259	4782.992215	96.830313	GR
16	4878.080852	4785.007475	96.485044	LEW
17	4872.320071	4787.411542	95.774567	C
18	4867.216298	4789.109049	95.585362	C/TH
19	4863.365056	4789.957516	95.702541	C
20	4860.944111	4790.858081	96.487388	REW
21	4860.28092	4791.32296	96.658009	G
22	4853.005756	4794.00618	96.686026	G
23	4852.011794	4794.178986	96.473766	LEW
24	4849.757772	4795.126701	96.198092	C
25	4847.322499	4795.705356	96.083679	C
26	4843.809281	4796.530004	96.510742	REW
27	4841.135097	4797.321261	97.051849	T
28	4839.348969	4797.732223	97.917498	T
29	4833.739419	4799.372299	98.347349	CG US (TBM15B)
30	4809.723899	4806.879949	99.132323	T
31	4803.030723	4809.558163	98.82581	T
32	4855.065575	4749.331198	94.283021	TH/FL
33	4887.636857	4826.257622	94.812763	TH
34	4903.328682	4843.899307	94.330874	TH
35	4922.902586	4844.318889	93.692613	TH
36	4938.659735	4835.060999	93.321654	TH
37	4957.817992	4838.765975	94.539031	TH
38	5001.905038	4820.170407	94.562483	TH
39	5025.768386	4817.130898	94.332979	TH
40	5051.532175	4835.588563	92.976264	TH
41	5077.50297	4872.905085	94.618863	TH
42	5088.134474	4902.507164	93.736201	TH
43	5132.257147	4936.289694	90.981344	TH
44	5200.727565	4987.097707	94.196436	TH/FL
45	5219.459419	4890.322399	98.921149	T
46	5206.346767	4912.776762	98.035227	T
47	5194.85776	4932.709542	98.08029	T
48	5187.606579	4945.864923	97.340936	T
49	5185.623442	4949.475411	96.338174	T
50	5181.048258	4958.197093	96.8343	T
51	5178.497217	4963.188401	95.49388	LEW

Table PLX 15-1: Survey Data (continued)

Survey Point Number	Easting (ft)	Northing (ft)	Elevation (ft)	Description
52	5178.095967	4963.68953	95.286335	G
53	5178.012185	4963.756048	94.530328	C
54	5175.876184	4968.720063	94.212563	C
55	5175.025078	4970.139179	92.916738	C
56	5173.087492	4974.800684	92.317873	C/TH
57	5172.824818	4975.933168	92.332948	C
58	5171.905908	4977.94446	94.650119	G
59	5169.238062	4982.556555	95.131084	G
60	5167.454514	4985.169639	95.421043	REW
61	5164.904896	4989.219664	97.586484	T
62	5148.105063	5012.049956	98.196572	T
63	5126.451177	5031.456201	98.584207	T
64	5089.165936	5060.919942	98.408904	T

Legend:

G = grass	TH = thalweg	US = upstream	PK = "pk" nail
T = tundra	CG = crest gage	TWET = wet tundra	
C = cobbles	GB = ground break	M = mud	
LEW = left edge of water	SH = shoulder	SB = sand bags	
REW = right edge of water	DS = downstream	CL = center line	

file:plx15.xls

APPENDIX S: PLX 16

TABLE OF CONTENTS

Figure PLX 16-1: Plan

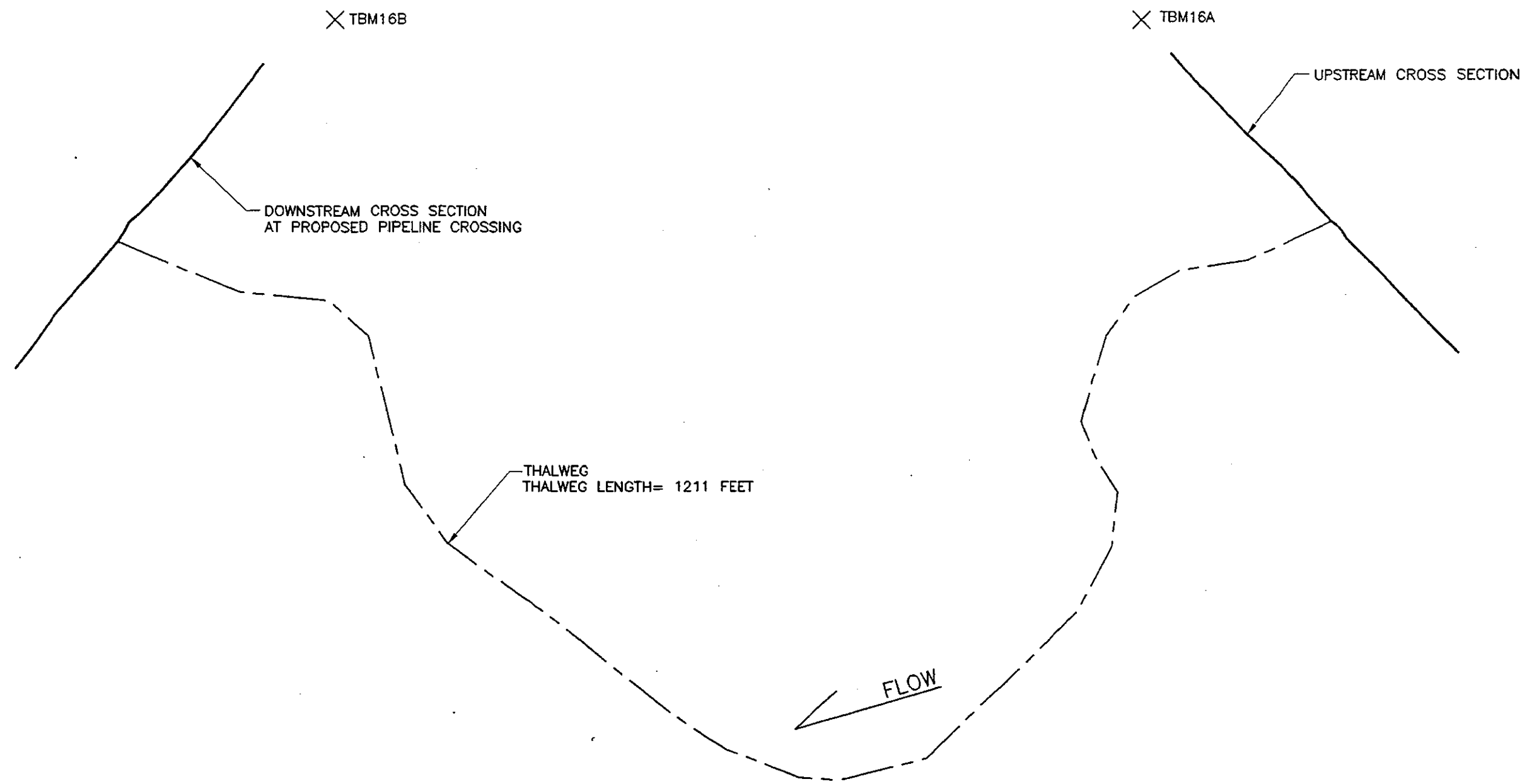
Figure PLX 16-2: Profiles

Figure PLX 16-3: Bed Material Gradation

Photo Sheet PLX 16-1: Stream PLX 16 Photographs

Discharge Measurement Notes

Table PLX 16-1: Survey Data



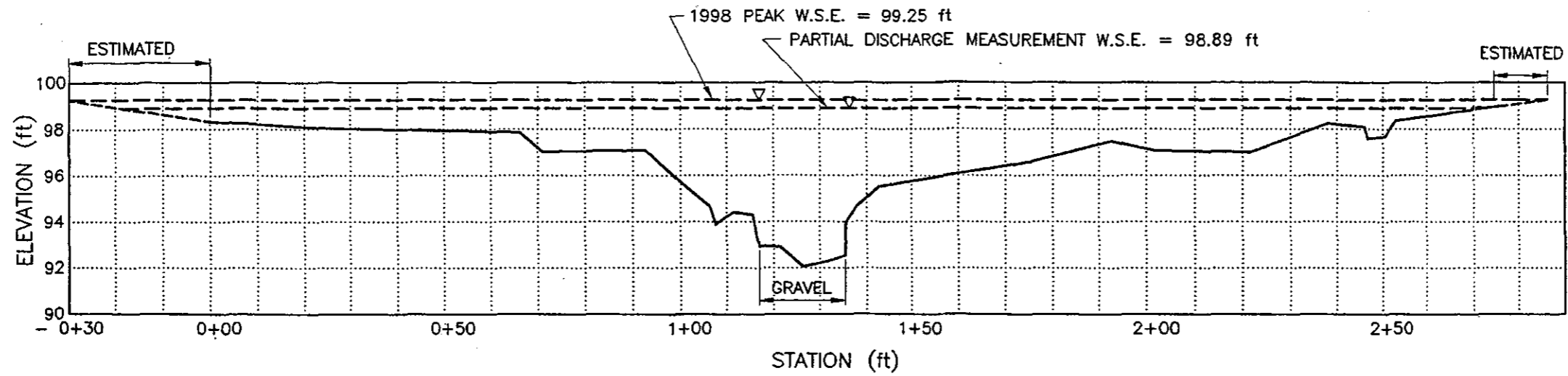
- NOTES:
1. THE PRIMARY TEMPORARY BENCH MARK WAS ASSUMED TO HAVE: (1) AN ELEVATION OF 100.00 FEET, (2) A NORTHING OF 5000 FEET, AND (3) AN EASTING OF 5000 FEET. THE PRIMARY TEMPORARY BENCH MARK AT EACH STREAM PROVIDED THE VERTICAL AND HORIZONTAL CONTROL.
 2. THE PRIMARY TEMPORARY BENCH MARK ON THIS STREAM IS TBM16A.

NO.	DATE	REVISION	BY

**STREAM PLX16
PLAN**
 SOURDOUGH AREA DEVELOPMENT PROJECT
 NORTH SLOPE, ALASKA

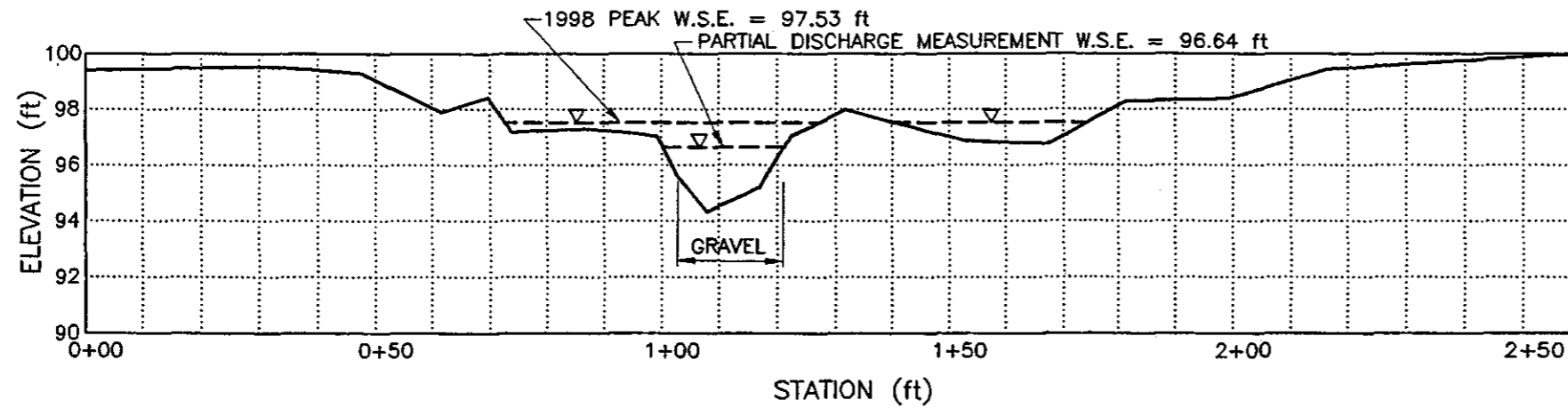
Baker		Michael Baker Jr., Inc.	
DATE: 8/3/98	PROJECT: SADP		
DRAWN: BC	FILE: SADP-X16		
CHECKED: JWA	SCALE: 1" = 80'		

FIGURE:
**PLX
16-1**



PROFILE: PLX16 UPSTREAM CROSS SECTION

SCALE: H 1" = 30'
V 1" = 6'



PROFILE: PLX16 DOWNSTREAM CROSS SECTION AT PROPOSED PIPELINE CROSSING

SCALE: H 1" = 30'
V 1" = 6'

NOTES:

1. THE ELEVATIONS SHOWN ARE BASED ON AN ASSUMED ELEVATION OF 100.00 AT TBM16A.
2. W.S.E. = WATER SURFACE ELEVATION

NO.		DATE		REVISION		BY	

**STREAM PLX16
PROFILES**
 SOURDOUGH AREA DEVELOPMENT PROJECT
 NORTH SLOPE, ALASKA

Baker		Michael Baker Jr., Inc.	
DATE: 8/3/98	PROJECT: SADP	FILE: SADP-X16	SCALE: VARIES
DRAWN: BC	CHECKED: JWA		

FIGURE:
**PLX
16-2**

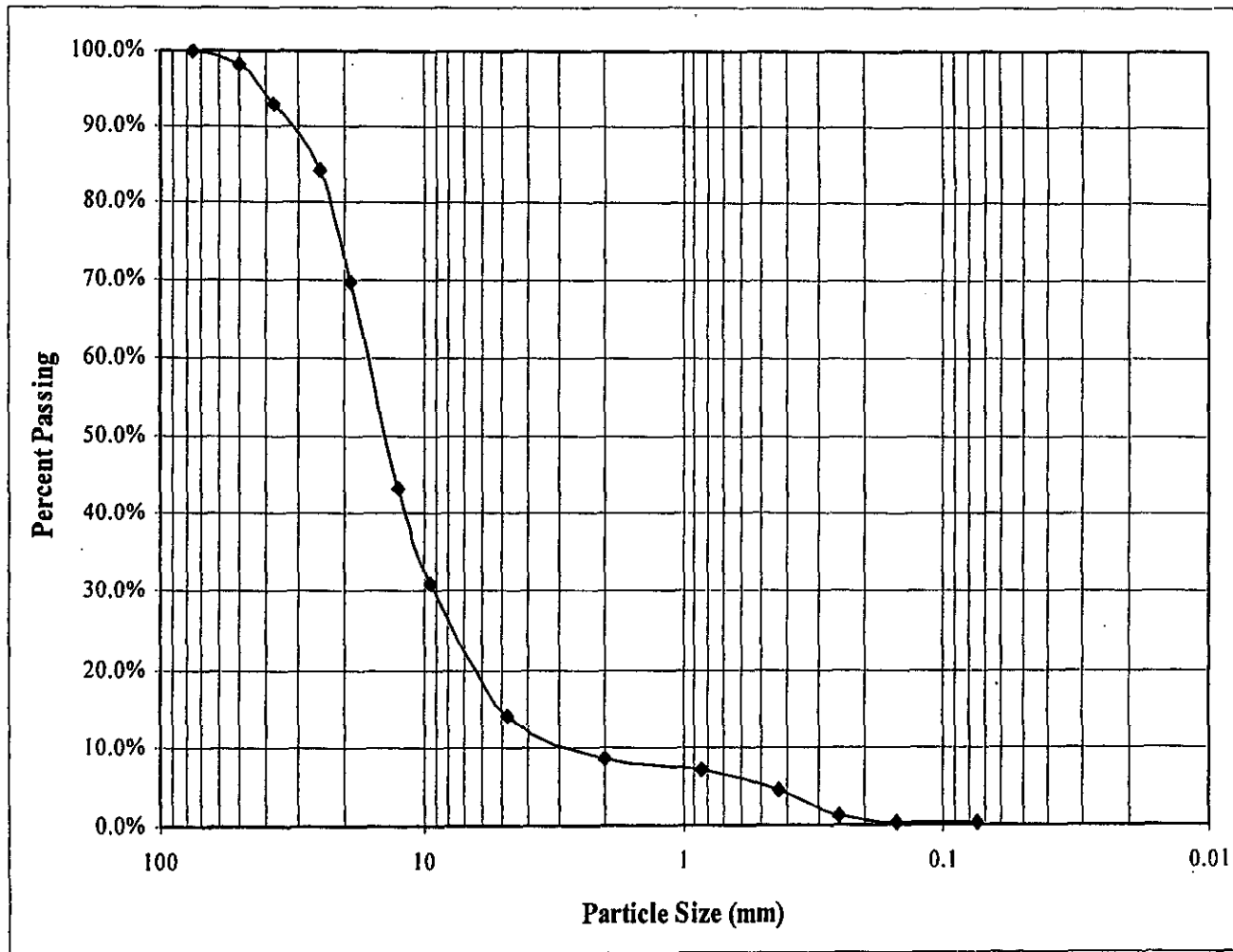


Figure Number:
PLX
16-3

Baker Michael Baker Jr., Inc.	
Date: 8/6/98	Project: 23247
Drawn: JDA	File: gradations.ppt
Checked: JWA	Scale: N/A

STREAM PLX 16
BED MATERIAL GRADATION
SOURDOUGH AREA DEVELOPMENT PROJECT
NORTH SLOPE, ALASKA

REVISION:		
NO:	DATE:	BY:



Photo PLX 16-1: Looking north at the proposed pipeline crossing (6/2/98).



Photo PLX 16-2: Looking north at the proposed pipeline crossing (6/5/98).

STREAM PLX 16
PHOTOGRAPHS

SOURDOUGH AREA DEVELOPMENT PROJECT
NORTH SLOPE, ALASKA

Baker		Michael Baker Jr., Inc.	
Date: 6/7/98	Project: 23247		
Drawn: JDA	File: photo16		
Checked: JWA	Scale:		

Photo Number:
**PLX
16-1**

DISCHARGE MEASUREMENT NOTES

LOCATION: PLX 16 at proposed pipeline crossing (Partially Estimated)

Date: 5/30 ,1998 **Party:** J. Meckel, P. McGranahan

Width: 38 **Area:** 61.7^E **Vel:** 4.1^E **G.H.:** **Disch.:** 254^E cfs

No Secs. 7 **G.H. change:** in.: **hrs.:** **Susp.:** Rod

Method coef.: 1 **Hor. Angle coef.** 1 **Sus. Coef.:** **Meter No.**

Gage Readings

Time	Recorder	Inside	Outside
	upstream x-sec	WSE=	98.89
	downstream x-sec	WSE=	96.64
Weighted M.G.H.			
G.H. corrections			
Correct M.G.H.			

Type of meter: Price A
Date rated: Std
Meter: ft. above bottom of weight.
Spin before meas. ok after ok
Method: Wading at proposed pipeline crossing, downstream cross section.

Levels obtained this date

Measurement rated: poor (over 8%), Partially Estimated **based on following conditions:**

Cross section: Fairly uniform - grass and small cobble.

Flow: 10%⁺ snow affect. **Weather:** Air °F@:

Gage: **Water °F@:**

Other:

Record Removed: **Intake flushed:**

Observer

Control Channel - overbank flow, some ice on bottom.

Remarks Discharge was partially measured and partially estimated.
 At stations 75 to 80 the depth was taken from survey notes, and the velocity was estimated at the time of measurement.

G.H. of zero flow: ft.

E = Estimated

DISCHARGE MEASUREMENT NOTES (PLX 16 Continued)

Angle coef.	Dist. From Initial point (ft)	Width (ft)	Depth (ft)	Observ. depth	Revolutions	Time In seconds	VELOCITY		Area (s.f.)	Discharge (cfs)	Description
							At Point (fps)	Mean in-vertical (fps)			
	42.0	5.5	0.0						0.0	0.0	Right edge water (1630 hr)
	53.0	8.5	1.4	0.6	50	41		2.68	11.9	31.9	
	59.0	7.5	1.8	0.6	80	40		4.37	13.5	59.0	
	68.0	8.0	2.6	0.6	100	48		4.55	20.8	94.6	
	75.0	5.0	2.6	E				5.00	13.0	65.0	Estimated
	78.0	2.5	1.0	E				1.50	2.5	3.8	Estimated
	80.0	1.0	0.0	E				0.00	0.0	0.0	Left edge water (1700 hr)
	38.0	38.0							61.7	254.3	

Table PLX 16-1: Survey Data

Survey Point Number	Easting (ft)	Northing (ft)	Elevation (ft)	Description
1	5000	5000		100 P16 TBM C/L (TBM16A)
2	4472.531131	5000	101.083249	P16 US TBM (TBM16B)
3	4472.536131	5000	100.853281	GROUND P16US
11	4262.768967	4768.062684	99.40077	T
12	4281.31956	4793.752006	99.544981	T
13	4290.324665	4806.889881	99.301371	HWM
14	4299.650097	4817.572515	97.890196	T
15	4304.692407	4823.844908	98.420094	T
16	4307.428774	4827.055095	97.176124	T
17	4316.353612	4837.307573	97.303895	T
18	4323.678531	4846.429734	97.037942	LEW
19	4326.163688	4849.139616	95.572685	G/C
20	4329.664924	4852.923873	94.311606	C/TH
21	4331.910191	4856.807833	94.72895	C
22	4334.572493	4860.463002	95.17761	C
23	4336.317855	4863.564417	96.438432	C
24	4337.089834	4865.397134	97.016292	REW
25	4344.382452	4871.537987	97.977869	T
26	4358.954421	4886.838184	96.847539	T
27	4368.337066	4898.211411	96.757233	T
28	4377.535968	4908.729967	98.28624	T
29	4388.734551	4922.372725	98.386841	T/C.G.U.S.
30	4399.145536	4936.081796	99.449834	T
31	4425.547073	4970.717976	100.019118	T
32	4278.086866	4875.862552	95.73035	TH/FL
33	4408.899045	4819.078598	96.092742	TH
34	4467.697894	4813.228232	95.155153	TH
35	4493.576836	4789.541975	95.217298	TH
36	4517.429229	4689.335381	94.340157	TH
37	4545.952425	4649.195207	93.437131	TH
38	4616.633383	4596.819153	94.666145	TH
39	4690.957266	4535.65958	93.113944	TH
40	4728.129837	4511.071694	93.232675	TH
41	4777.686488	4492.486409	92.574306	TH
42	4805.799211	4490.920068	92.96869	TH
43	4861.020324	4505.518042	92.967765	TH
44	4906.518803	4550.626452	93.056261	TH
45	4957.292102	4602.832461	93.697352	TH
46	4979.991588	4647.791526	93.269593	TH
47	4983.968243	4684.436805	93.802715	TH
48	4969.215019	4707.713891	92.307227	TH
49	4960.276023	4732.157967	91.90693	TH
50	4967.528876	4760.144923	92.147203	TH
51	4976.272548	4789.936115	93.176615	TH

Table PLX 16-1: Survey Data (continued)

Survey Point Number	Easting (ft)	Northing (ft)	Elevation (ft)	Description
52	4994.555712	4815.81	93.40463	TH
53	5025.757499	4834.148563	92.59634	TH
54	5071.380949	4840.92273	91.914413	TH
55	5138.791138	4880.081232	91.956211	TH/FL
56	5210.417885	4778.545512	98.316457	T
57	5193.144941	4797.158141	98.032411	T
58	5165.466084	4827.177035	97.851411	T
59	5162.213756	4830.902505	97.007996	T
60	5146.818751	4845.832606	97.065334	T
61	5141.96017	4850.934372	95.785929	T
62	5137.039196	4855.660909	94.655712	LEW
63	5136.471697	4856.899126	93.876943	G
64	5134.468709	4860.171391	94.394124	G
65	5131.84267	4863.221002	94.301491	G
66	5130.803225	4864.174221	92.948898	C
67	5127.390102	4867.036298	92.908054	C
68	5123.767002	4870.535504	92.048102	C/TH
69	5120.020859	4874.36267	92.280097	C
70	5117.600442	4877.164898	92.534873	C
71	5117.452949	4877.318956	93.964673	G
72	5115.919874	4879.108142	94.649492	REW
73	5112.747043	4882.531115	95.515988	T
74	5102.64849	4894.372544	96.020492	T
75	5090.491233	4906.810327	96.599902	T
76	5078.059339	4918.825291	97.479549	T
77	5071.209783	4924.759899	97.051935	T/S.G.C/L
78	5057.389668	4938.832749	96.985774	T
79	5045.580647	4950.407296	98.238712	T
80	5039.855599	4955.759602	98.098251	T
81	5039.152457	4956.195403	97.567956	T
82	5036.52819	4959.105559	97.675401	T
83	5034.856474	4960.676895	98.348683	T
84	5019.773114	4977.846097	98.966844	T

Legend:

G = grass	REW = right edge of water	DS = downstream	CL = center line
T = tundra	TH = thalweg	US = upstream	PK = "pk" nail
C = cobbles	CG = crest gage	TWET = wet tundra	
LEW = left edge of water	GB = ground break	M = mud	
	SH = shoulder	SB = sand bags	

file:plx16.xls

APPENDIX T: PLX 18

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Photo Sheet PLX 18-1: Stream PLX 18 Photographs



Photo PLX 18-1: Looking east at the proposed pipeline crossing (6/3/98).



Photo PLX 18-2: Looking north at the proposed pipeline crossing (6/3/98).

STREAM PLX 18
PHOTOGRAPHS

SOURDOUGH AREA DEVELOPMENT PROJECT
NORTH SLOPE, ALASKA

Baker

Michael Baker Jr., Inc.

Date: 6/7/98

Project: 23247

Drawn: JDA

File: photo18

Checked: JWA

Scale:

Photo Number:

PLX
18-1

APPENDIX U: PLX 19

TABLE OF CONTENTS

Photo Sheet PLX 19-1: Stream PLX 19 Photographs



Photo PLX 19-1: Looking north at the proposed pipeline crossing (6/11/98).



Photo PLX 19-2: Looking north at the proposed pipeline crossing (6/11/98).

STREAM PLX 19
PHOTOGRAPHS

SOURDOUGH AREA DEVELOPMENT PROJECT
NORTH SLOPE, ALASKA

Baker

Michael Baker Jr., Inc.

Date: 6/7/98

Project: 23247

Drawn: JDA

File: photo19

Checked: JWA

Scale:

Photo Number:

PLX
19-1

APPENDIX V: PLX 20, 20A And 20B

TABLE OF CONTENTS

Photo Sheet PLX 20-1:	Stream PLX 20, 20A Photographs
Photo Sheet PLX 20-2:	Stream PLX 20B And PLX 21 Photographs



Photo PLX 20-1: Looking north at the proposed pipeline crossing of PLX 20 (6/3/98).



Photo PLX 20-2: Looking west at the proposed pipeline crossing of PLX 20A (6/3/98).

STREAM PLX 20
PHOTOGRAPHS

SOURDOUGH AREA DEVELOPMENT PROJECT
NORTH SLOPE, ALASKA

Baker

Michael Baker Jr., Inc.

Date: 6/7/98

Project: 23247

Drawn: JDA

File: photo20

Checked: JWA

Scale:

Photo Number:

PLX
20-1



Photo PLX 20-3: Looking northwest at the proposed pipeline crossing of PLX 20B and PLX 21 (6/11/98).

STREAM PLX 20
PHOTOGRAPHS

SOURDOUGH AREA DEVELOPMENT PROJECT
NORTH SLOPE, ALASKA

Baker

Michael Baker Jr., Inc.

Date: 6/7/98

Project: 23247

Drawn: JDA

File: photo20

Checked: JWA

Scale:

Photo Number:

PLX
20-2

APPENDIX W: PLX 21

TABLE OF CONTENTS

Photo Sheet PLX 21-1: Stream PLX 21 Photograph



Photo PLX 21-1: Looking north at the proposed pipeline crossing (6/11/98).

STREAM PLX 21
PHOTOGRAPHS

SOURDOUGH AREA DEVELOPMENT PROJECT
NORTH SLOPE, ALASKA

Baker

Michael Baker Jr., Inc.

Date: 6/7/98

Project: 23247

Drawn: JDA

File: photo21

Checked: JWA

Scale:

Photo Number:

PLX
21-1

APPENDIX X: PLX 22

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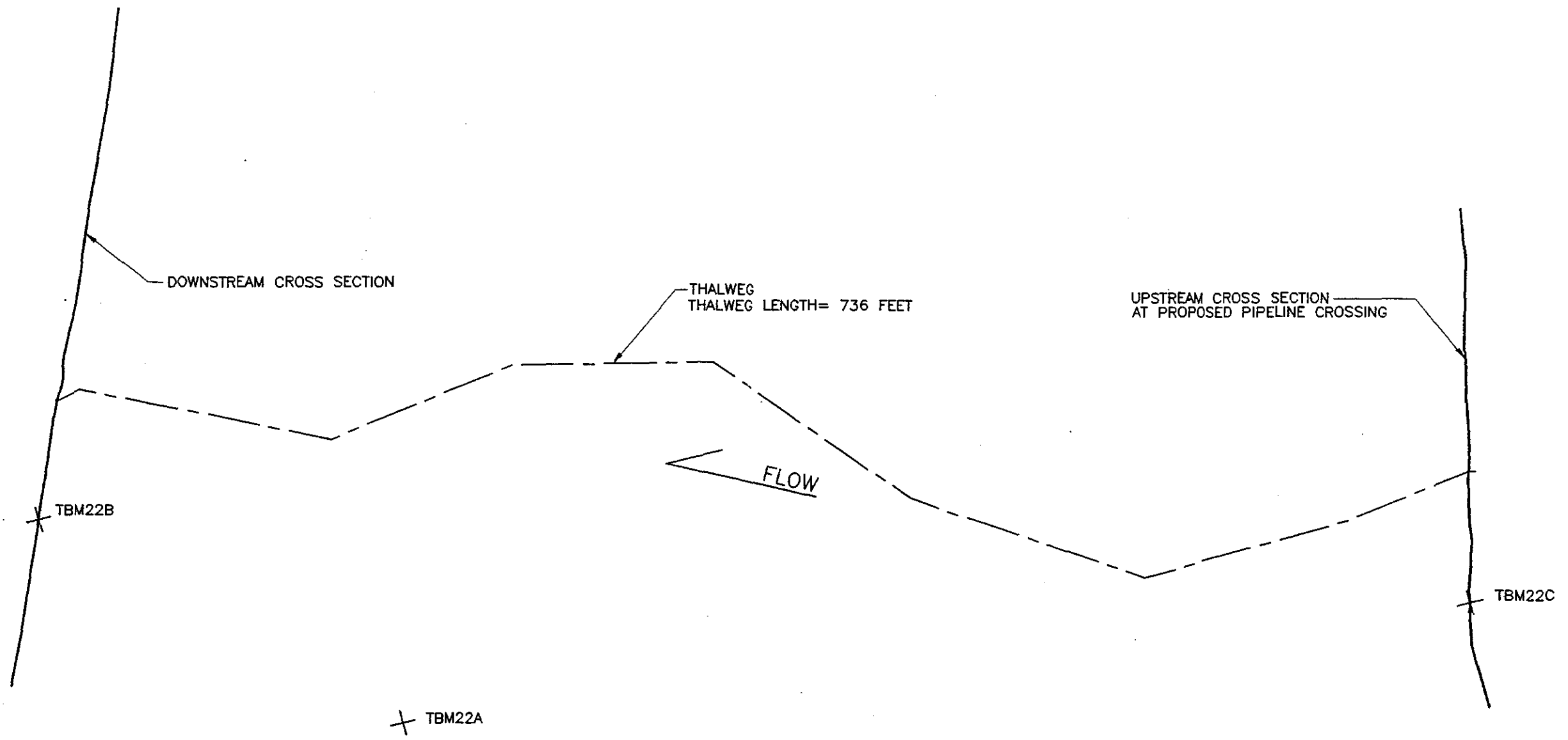
Figure PLX 22-1: Plan

Figure PLX 22-2: Profiles

Photo Sheet PLX 22-1: Stream PLX 22 Photographs

Discharge Measurement Notes

Table PLX 22-1: Survey Data



NOTES:

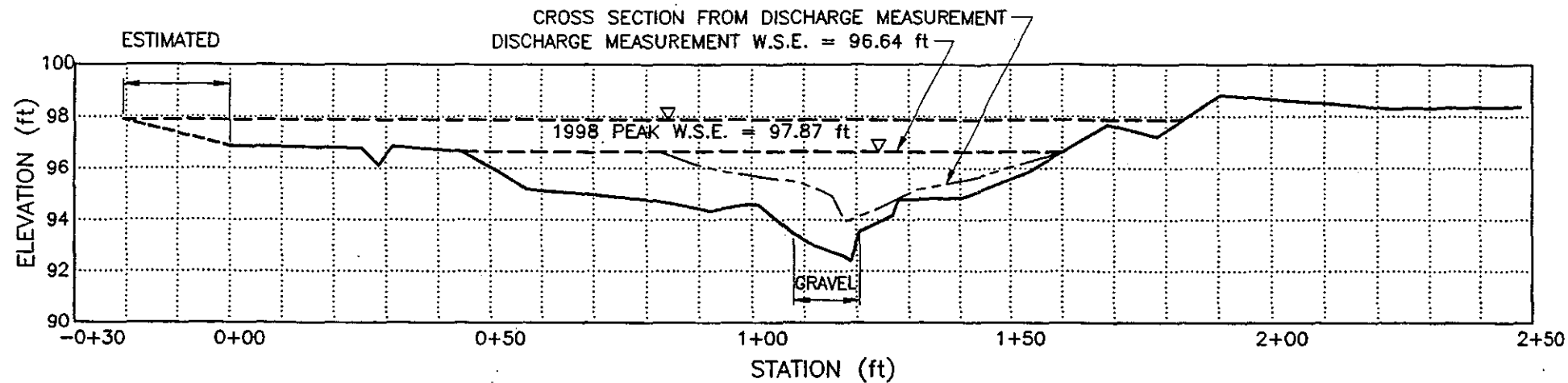
1. THE PRIMARY TEMPORARY BENCH MARK WAS ASSUMED TO HAVE: (1) AN ELEVATION OF 100.00 FEET, (2) A NORTHING OF 5000 FEET, AND (3) AN EASTING OF 5000 FEET. THE PRIMARY TEMPORARY BENCH MARK AT EACH STREAM PROVIDED THE VERTICAL AND HORIZONTAL CONTROL.
2. THE PRIMARY TEMPORARY BENCH MARK ON THIS STREAM IS TBM22A.

NO.	DATE	REVISION	BY

**STREAM PLX22
PLAN**
 SOURDOUGH AREA DEVELOPMENT PROJECT
 NORTH SLOPE, ALASKA

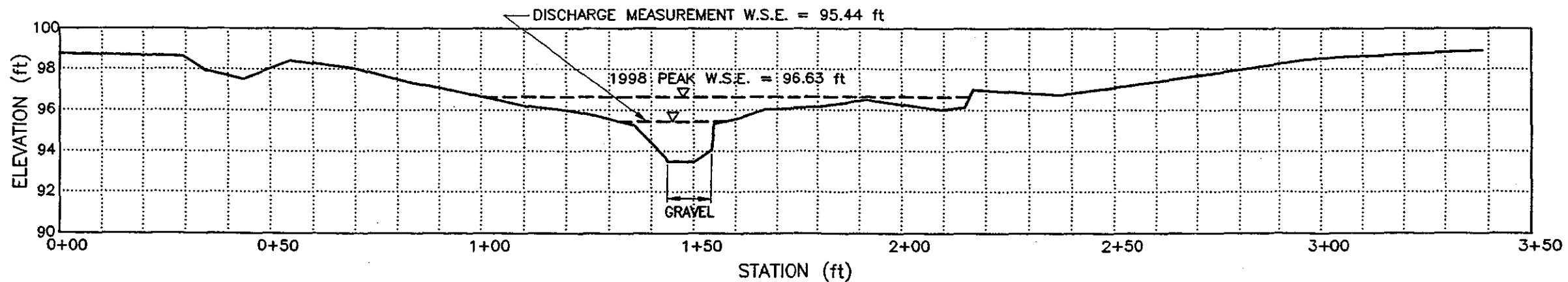
Baker		Michael Baker Jr., Inc.	
DATE: 8/3/98	PROJECT: SADP	FILE: SADP-X22	SCALE: 1" = 60'
DRAWN: BC	CHECKED: JWA		

FIGURE:
**PLX
22-1**



PROFILE: PLX22 UPSTREAM CROSS SECTION AT PROPOSED PIPELINE CROSSING

SCALE: H 1" = 30'
V 1" = 6'



PROFILE: PLX22 DOWNSTREAM CROSS SECTION

SCALE: H 1" = 30'
V 1" = 6'

NOTES:

1. THE ELEVATIONS SHOWN ARE BASED ON AN ASSUMED ELEVATION OF 100.00 AT TBM22A.
2. W.S.E.= WATER SURFACE ELEVATION
3. THE DIFFERENCE IN THE SURVEY AND DISCHARGE MEASUREMENT CROSS SECTIONS IS DUE TO A SLIGHT DIFFERENCE IN WHERE THE MEASUREMENTS WERE MADE.

NO.	DATE	REVISION	BY:

**STREAM PLX22
PROFILES**
 SOURDOUGH AREA DEVELOPMENT PROJECT
 NORTH SLOPE, ALASKA

Baker		Michael Baker Jr., Inc.	
DATE: 8/3/98	PROJECT: SADP	FILE: SADP-X22	SCALE: VARIES
DRAWN: BC	CHECKED: JWA		

FIGURE:
**PLX
22-2**



Photo PLX 22-1: Looking north at the proposed pipeline crossing (6/11/98).



Photo PLX 22-2: Looking north at the proposed pipeline crossing (6/5/98).

STREAM PLX 22
PHOTOGRAPHS

SOURDOUGH AREA DEVELOPMENT PROJECT
NORTH SLOPE, ALASKA

Baker		Michael Baker Jr., Inc.	
Date: 6/7/98	Project: 23247		
Drawn: JDA	File: photo22		
Checked: JWA	Scale:		

Photo Number:
**PLX
22-1**

Table PLX 22-1: Survey Data

Survey Point Number	Easting (ft)	Northing (ft)	Elevation (ft)	Description
1	5000	5000		100 P22 TBM (TBM22A)
2	4797.801083	5000	98.248303	P22 CG PC/L (TBM22B)
3	4797.701163	4999.995096	97.330924	GR
101	4827.099717	4921.988025	98.758263	T
102	4817.323665	4949.606319	98.620603	T
103	4815.292564	4954.674228	97.923393	T
104	4811.874844	4962.996586	97.501733	T
105	4808.101546	4973.210666	98.407435	T
106	4802.800458	4987.377279	98.047788	T
107	4794.216581	5007.93038	97.002989	T
108	4787.904106	5025.28569	96.201888	T
109	4783.910342	5035.025766	95.943471	LEW
110	4781.739136	5040.173225	95.730399	G
111	4779.205848	5046.014597	95.421651	G
112	4778.791891	5048.933778	95.274071	G
113	4776.178777	5055.983581	94.977933	G
114	4775.792991	5056.397805	93.489708	C/TH
115	4774.52745	5062.770463	93.479525	C
116	4773.237103	5066.542886	94.034208	C
117	4773.017583	5067.205331	95.306059	G
118	4769.910901	5072.736951	95.604782	G
119	4767.604429	5078.147041	96.015429	REW
120	4763.537011	5090.598686	96.147635	T
121	4760.28692	5101.711021	96.486029	T
122	4753.852906	5117.919255	96.018646	T
123	4751.709495	5123.357521	96.107402	T
124	4750.810376	5125.132605	96.990313	T
125	4743.068354	5144.068683	96.724966	T
126	4722.205214	5201.449298	98.510727	T
127	4705.848365	5238.187491	98.91	T
128	4704.354619	5009.463203	94.155671	TH/FL
129	4782.590197	5066.301763	93.680294	TH
130	4900.086799	5105.455365	94.253045	TH
131	4957.147269	5180.790358	93.445181	TH
132	5040.625484	5230.496588	94.041421	TH
133	5157.661739	5219.611673	93.719108	TH
134	5275.253003	5241.414014	93.26503	TH
135	5348.4305	5316.091424	93.093722	TH
136	5405.742717	5380.037988	93.438536	TH/FL
137	5318.074698	5477.5596	98.381456	T
138	5332.766348	5456.824866	98.29349	T
139	5348.210841	5429.068041	98.816235	T
140	5354.319789	5418.539438	97.221778	T
141	5359.624716	5410.534896	97.679615	T

Table PLX 22-1: Survey Data (continued)

Survey Point Number	Easting (ft)	Northing (ft)	Elevation (ft)	Description
142	5367.265844	5397.537883	95.853106	T
143	5374.698865	5386.15319	94.840489	T
144	5381.265158	5375.905602	94.76968	REW
145	5381.779941	5374.883147	94.149769	G
146	5384.701777	5369.309769	93.51925	G
147	5385.558562	5367.875989	92.411928	C
148	5386.137945	5366.377863	92.587167	C/TH
149	5388.835383	5361.415969	92.990264	C
150	5390.953228	5358.347251	93.446122	C/G
151	5394.474218	5352.580229	94.574987	G
152	5395.685194	5350.346373	94.579739	G
153	5399.123029	5344.817776	94.345415	G
154	5405.058247	5336.91661	94.720851	LEW
155	5411.874963	5323.241528	95.013574	T
156	5416.616517	5314.24401	95.165596	T
157	5423.292315	5303.373575	96.650278	T
158	5430.503223	5292.554433	96.828135	T
159	5432.263383	5290.560207	96.107095	T
160	5434.588804	5288.163433	96.786435	T
161	5452.863064	5269.752307	96.852788	T
162	5419.375752	5310.038643	96.912492	TOP REBAR (TBM22C)
163	5419.471945	5310.109757	95.811867	GROUND AT CGDS

Legend:

G = grass	REW = right edge of water	DS = downstream	CL = center line
T = tundra	TH = thalweg	US = upstream	PK = "pk" nail
C = cobbles	CG = crest gage	TWET = wet tundra	
LEW = left edge of water	GB = ground break	M = mud	
	SH = shoulder	SB = sand bags	

file:plx22.xls

APPENDIX Y: PLX 23

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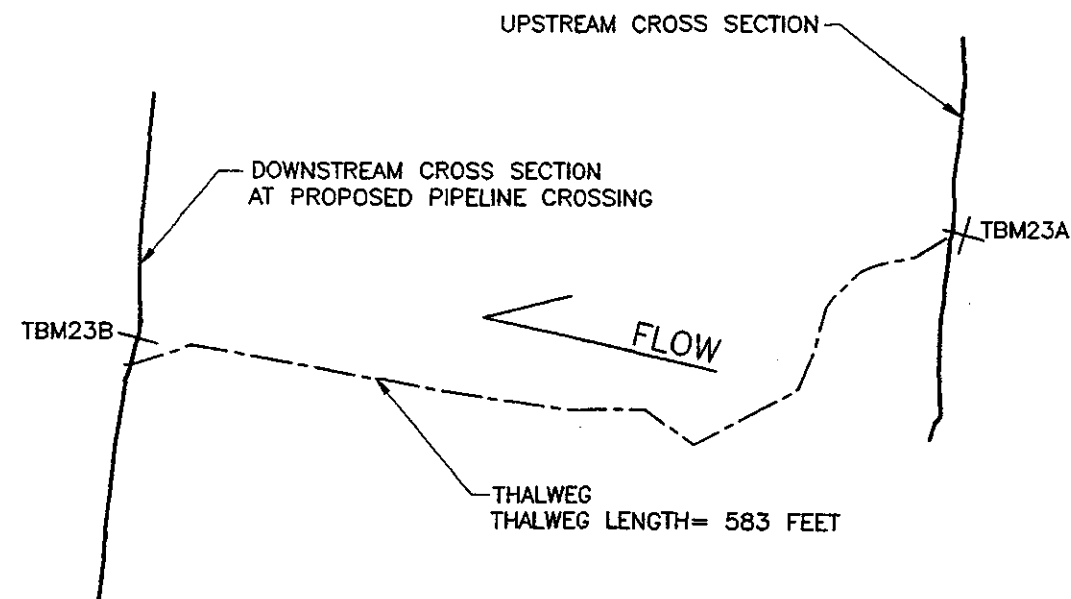
Figure PLX 23-1: Plan

Figure PLX 23-2: Profiles

Photo Sheet PLX 23-1: Stream PLX 23 Photographs

Table PLX 23-1: Survey Data For PLX 23 And PLX 24

+ TBM24A



NOTES:

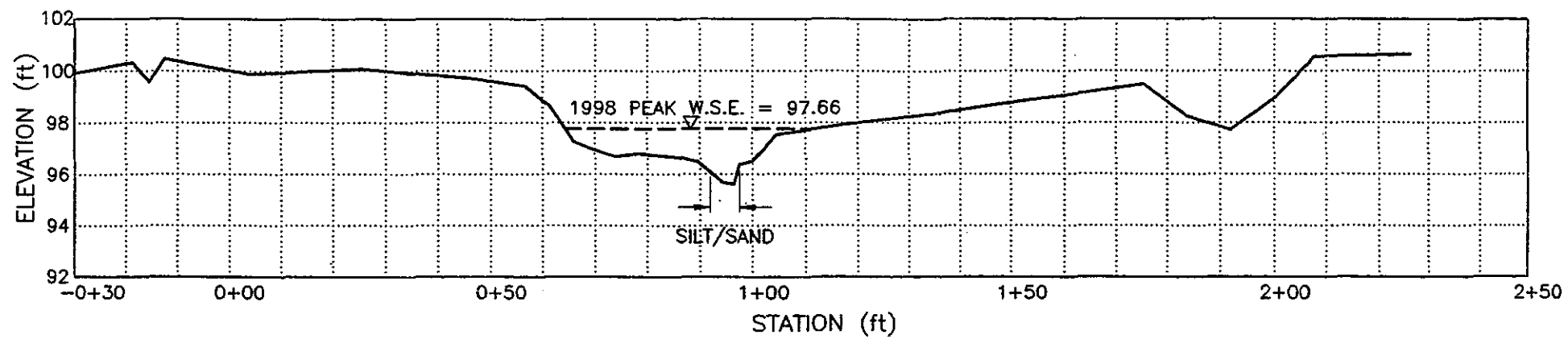
1. THE PRIMARY TEMPORARY BENCH MARK WAS ASSUMED TO HAVE: (1) AN ELEVATION OF 100.00 FEET, (2) A NORTHING OF 5000 FEET, AND (3) AN EASTING OF 5000 FEET. THE PRIMARY TEMPORARY BENCH MARK AT EACH STREAM PROVIDED THE VERTICAL AND HORIZONTAL CONTROL.
2. THE PRIMARY TEMPORARY BENCH MARK ON THIS STREAM IS TBM24A. THIS IS THE SAME TBM USED FOR THE PLX24 SURVEY.

NO.		DATE		REVISION		BY	

**STREAM PLX23
PLAN**
 SOURDOUGH AREA DEVELOPMENT PROJECT
 NORTH SLOPE, ALASKA

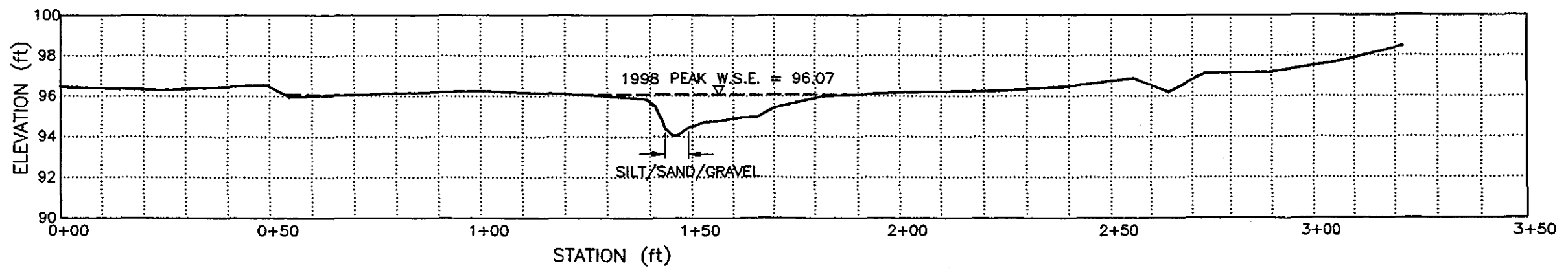
Baker		Michael Baker Jr., Inc.	
DATE: 8/3/98	PROJECT: SADP		
DRAWN: BC	FILE: SADP-X23		
CHECKED: JWA	SCALE: 1" = 120'		

FIGURE:
**PLX
23-1**



PROFILE: PLX23 UPSTREAM CROSS SECTION

SCALE: H 1" = 30'
V 1" = 6'



PROFILE: PLX23 DOWNSTREAM CROSS SECTION AT PROPOSED PIPELINE CROSSING

SCALE: H 1" = 30'
V 1" = 6'

NOTES:

1. THE ELEVATIONS SHOWN ARE BASED ON AN ASSUMED ELEVATION OF 100.00 AT TBM24A.
2. W.S.E.= WATER SURFACE ELEVATION

NO.		DATE		REVISION		BY:	

**STREAM PLX23
PROFILES**
 SOURDOUGH AREA DEVELOPMENT PROJECT
 NORTH SLOPE, ALASKA

Baker		Michael Baker Jr., Inc.	
DATE:	8/3/98	PROJECT:	SADP
DRAWN:	BC	FILE:	SADP-X23
CHECKED:	JWA	SCALE:	VARIES

FIGURE:
**PLX
23-2**



Photo PLX 23-1: Looking west (upstream) at the proposed pipeline crossing (6/11/98).



Photo PLX 23-2: Looking upstream at the proposed pipeline crossing (6/4/98).

STREAM PLX 23
PHOTOGRAPHS

SOURDOUGH AREA DEVELOPMENT PROJECT
NORTH SLOPE, ALASKA

Baker

Michael Baker Jr., Inc.

Date: 6/7/98

Project: 23247

Drawn: JDA

File: phtot23

Checked: JWA

Scale:

Photo Number:

PLX
23-1

Table PLX 23-1: Survey Data For PLX 23 And PLX 24

Survey Point Number	Easting (ft)	Northing (ft)	Elevation (ft)	Description
1	5000	5000	100	TBM/P24 (TBM24A)
2	5000.005002	5206.363351	96.209	P24P/CL (TBM24C)
3	4050.7243	4824.871277	98.713	P23
11	5000.215148	5206.406944	95.142	CG/CL
12	4938.627226	5255.745242	96.675	316/T
13	4923.794945	5164.859872	97.544	T
14	4957.909632	5183.021714	96.818	T
15	4984.761965	5198.161539	96.122	T
16	5019.278108	5217.136397	94.184	T
17	5036.61483	5226.066791	94.699	T
18	5045.247891	5229.71656	91.347	T
19	5051.045674	5231.393314	90.17	T
20	5056.588642	5233.835005	90.189	G
21	5057.50804	5234.498853	89.701	LEW
22	5059.194618	5234.868313	88.814	M
23	5060.443593	5236.029727	88.985	M/C
24	5062.532873	5238.125947	89.408	C
25	5064.00008	5238.689535	89.685	REW
26	5065.275459	5239.519126	89.902	C
27	5072.722401	5244.288474	89.886	C
28	5080.307986	5248.65892	90.143	C
29	5087.103978	5253.687277	89.841	C
30	5091.572613	5255.869645	89.722	LEW
31	5095.064931	5258.127873	89.504	C
32	5096.933689	5259.81758	89.287	C
33	5100.164731	5260.86244	88.713	C
34	5103.021362	5262.523553	88.455	C
35	5105.804149	5263.78717	88.167	C/TH
36	5107.447332	5264.316731	88.181	C
37	5108.631268	5264.778984	88.732	G
38	5111.037464	5266.695708	89.751	REW
39	5115.796365	5269.884026	91.439	T
40	5126.410527	5275.099641	94.793	T
41	5164.87155	5300.797749	96.061	T
42	5208.157726	5318.89071	97.113	T
43	5372.733806	5076.417107	97.225	T
44	5338.565892	5047.607441	96.443	T
45	5313.498374	5024.504641	95.72	T
46	5304.010356	5015.356171	94.771	T
47	5287.916759	5004.020338	91.234	T
48	5284.085037	4999.924249	91.68	T
49	5281.293449	4996.965541	91.511	T
50	5280.412611	4996.193226	91.099	REW
51	5277.447257	4993.676925	90.991	C

Table PLX 23-1: Survey Data For PLX 23 And PLX 24 (continued)

Survey Point Number	Easting (ft)	Northing (ft)	Elevation (ft)	Description
52	5274.343349	4991.005614	90.57	C
53	5270.832271	4988.49092	90.653	C
54	5267.467734	4985.208823	90.529	C
55	5263.987159	4982.253875	90.47	C
56	5260.407635	4978.851134	90.588	C
57	5257.160477	4976.118794	91.021	LEW
58	5255.20985	4974.339214	90.875	C
59	5252.628184	4972.258344	90.757	C
60	5251.73591	4971.398672	90.272	C
61	5251.159638	4970.594276	89.699	C
62	5249.60374	4968.732006	89.569	C
63	5247.686102	4966.38924	89.112	C/TH
64	5245.426157	4964.220499	89.525	C
65	5243.505295	4961.735033	89.905	C
66	5241.398681	4959.266768	90.293	C
67	5240.62349	4958.334982	90.682	LEW
68	5240.49451	4958.002959	91.3	T
69	5238.570407	4956.214137	91.872	T
70	5232.897673	4952.051753	91.836	T
71	5230.472945	4950.111503	93.765	T
72	5225.811709	4946.117288	94.08	T
73	5218.063232	4940.253735	95.465	T
74	5206.119201	4932.353238	95.28	T
75	5187.459468	4919.197158	95.811	T
76	5149.598463	4890.983119	96.586	T
77	5119.627707	4863.410509	96.876	T
78	5202.516647	4935.946994	95.555	US/CG (TBM24B)
79	5281.665286	4930.794651	87.343	TH/FL
80	5200.398305	5002.487317	88.892	TH
81	5168.991746	5103.761237	88.182	TH
82	5136.855395	5173.730134	87.89	TH
83	5120.370355	5232.507568	88.549	TH
84	5089.599264	5282.571494	86.571	TH/FL
101	3985.059053	4603.445377	96.922	CG/US (TBM23A)
102	4094.165768	4540.795795	100.643	T
103	4077.712784	4549.552705	100.558	T
104	4070.91889	4552.941867	98.981	T
105	4064.084528	4557.805393	97.724	T
106	4057.297151	4562.438693	98.251	T
107	4050.37409	4566.885773	99.485	T
108	4018.735465	4590.883075	98.381	T
109	4003.13007	4599.588898	97.942	T
110	3991.889838	4607.114916	97.511	T
112	3988.211942	4609.838527	96.505	G

Table PLX 23-1: Survey Data For PLX 23 And PLX 24 (continued)

Survey Point Number	Easting (ft)	Northing (ft)	Elevation (ft)	Description
113	3986.616352	4611.714108	96.352	G
114	3985.985886	4612.716873	95.599	M/TH
115	3984.176064	4613.932051	95.676	M
116	3980.013076	4616.296991	96.471	G
117	3977.613674	4618.254078	96.643	G
118	3974.190576	4620.489764	96.712	G
119	3971.041237	4622.856938	96.797	G
120	3967.477727	4625.334279	96.677	G
121	3963.922521	4628.104055	96.971	LEW
122	3961.217796	4630.220465	97.25	T
123	3957.219472	4632.531185	98.615	T
124	3953.14919	4635.248141	99.414	T
125	3944.892692	4642.016238	99.719	T
126	3927.076215	4653.095689	100.066	T
127	3908.79276	4664.007363	99.875	T
128	3894.432901	4671.797165	100.453	T
129	3892.059627	4673.630202	99.581	T
130	3890.417528	4677.375559	100.321	T
131	3882.817601	4685.870768	99.916	T
132	3952.389045	4596.600299	96.545	TH/FL
133	3987.141565	4633.300493	95.292	TH
134	3994.877345	4657.841228	96.039	TH
135	3996.483505	4669.125087	95.5	TH
136	3990.315917	4691.821775	95.091	TH
137	3987.685392	4698.69532	93.314	TH
138	3967.924608	4718.345339	93.675	TH
139	3951.058505	4739.464121	94.935	TH
140	3952.096513	4812.960261	95.344	TH
141	3987.132719	4827.701803	95.116	TH
142	4012.817632	4872.134857	92.976	TH
143	4062.270426	4933.835945	94.219	TH
144	4117.228001	4997.095331	94.315	TH
145	4163.869623	5052.191943	94.254	TH
146	4193.253419	5136.660986	94.089	TH/FL
147	4313.871472	4991.65488	98.449	T
148	4300.423352	5001.205014	97.662	T
149	4287.58123	5010.683567	97.178	T
150	4273.998465	5019.664809	97.12	T
151	4267.012329	5025.039354	96.196	T
152	4260.047993	5030.015284	96.873	T
153	4246.914606	5039.256959	96.481	T
154	4233.283479	5048.722024	96.245	T
155	4214.898794	5059.360948	96.199	T
156	4196.979517	5069.380424	95.979	T

Table PLX 23-1: Survey Data For PLX 23 And PLX 24 (continued)

Survey Point Number	Easting (ft)	Northing (ft)	Elevation (ft)	Description
157	4187.39375	5075.338496	95.444	REW
158	4184.179616	5078.140601	94.977	G
159	4181.38563	5081.277844	94.961	G
160	4178.123827	5084.082603	94.796	G
161	4174.67899	5087.52778	94.701	G
162	4171.984897	5090.220062	94.439	M
163	4170.347476	5091.719341	94.097	M/TH
164	4169.375462	5092.95612	94.037	C
165	4168.005522	5094.403059	94.376	C
166	4167.524933	5095.141035	94.884	G
167	4166.3626	5096.054337	95.48	LEW
168	4165.264583	5098.204622	95.862	T
169	4150.855481	5109.363248	96.095	T
170	4133.44518	5123.293583	96.246	T
171	4097.848065	5149.10334	95.962	T
172	4093.680391	5152.443656	96.569	T
173	4073.008108	5165.869725	96.305	T
174	4053.067942	5180.315167	96.452	T
175	4188.414476	5076.599262	95.527	P23/CG/PCL (TBM 23B)
176	4938.382957	5255.841982	96.616	CK361
177	4999.98999	5206.58056	95.151	CKP24PCL
178	5202.859192	4936.316645	95.534	CKP24US

Legend:

G = grass	TH = thalweg	US = upstream	PK = "pk" nail
T = tundra	CG = crest gage	TWET = wet tundra	
C = cobbles	GB = ground break	M = mud	
LEW = left edge of water	SH = shoulder	SB = sand bags	
REW = right edge of water	DS = downstream	CL = center line	

file:plx23&24.xls

APPENDIX Z: PLX 24

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Figure PLX 24-1: Plan

Figure PLX 24-2: Profiles

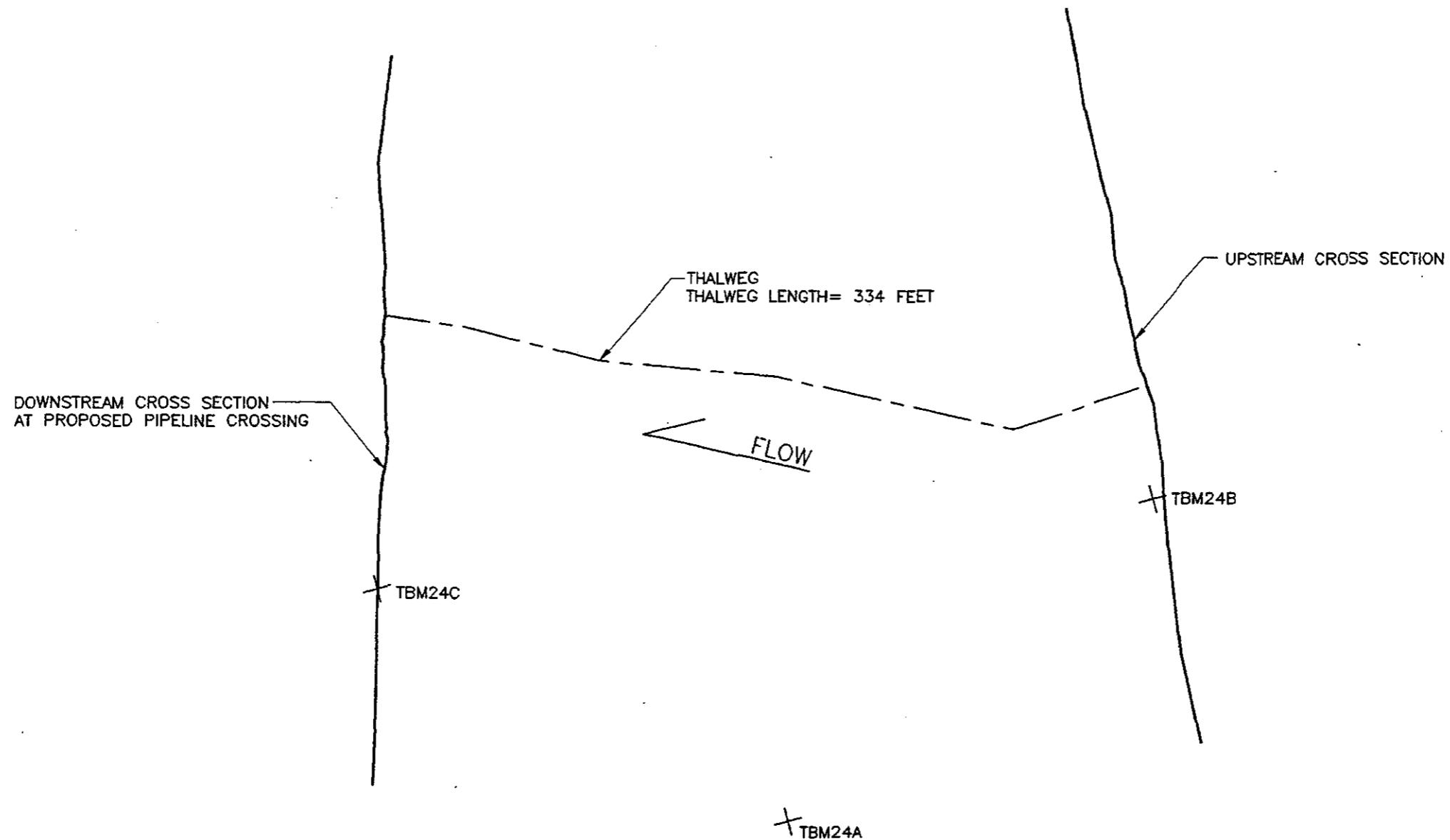
Figure PLX 24-3: Bed Material Gradation

Photo Sheet PLX 24-1: Stream PLX 24 Photographs

Discharge Measurement Notes

Notes:

1. The survey data associated with PLX 024 were collected in combination with the data collected for PLX 23 and are presented in Table PLX 23-1.



NOTES:

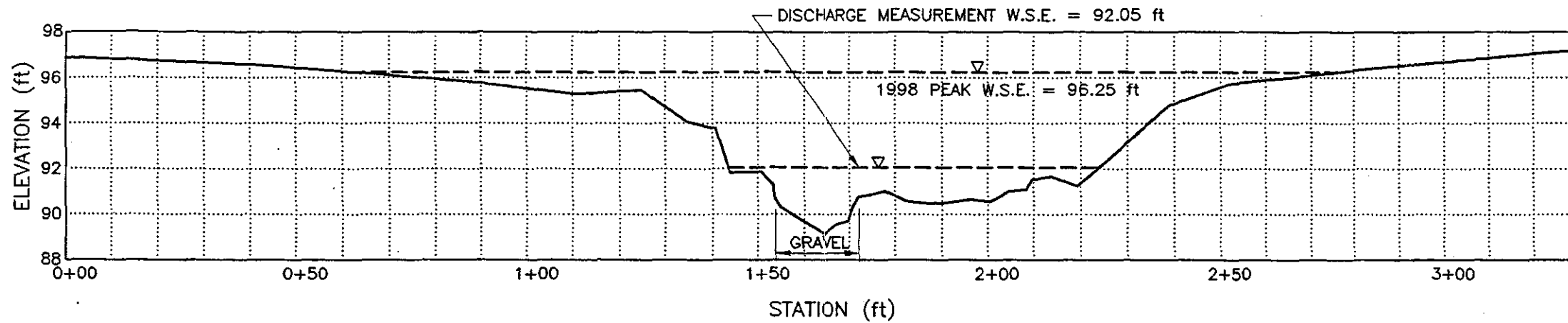
1. THE PRIMARY TEMPORARY BENCH MARK WAS ASSUMED TO HAVE: (1) AN ELEVATION OF 100.00 FEET, (2) A NORTHING OF 5000 FEET, AND (3) AN EASTING OF 5000 FEET. THE PRIMARY TEMPORARY BENCH MARK AT EACH STREAM PROVIDED THE VERTICAL AND HORIZONTAL CONTROL.
2. THE PRIMARY TEMPORARY BENCH MARK ON THIS STREAM IS TBM24A.

NO.	DATE	REVISION	BY

**STREAM PLX24
PLAN**
 SOURDOUGH AREA DEVELOPMENT PROJECT
 NORTH SLOPE, ALASKA

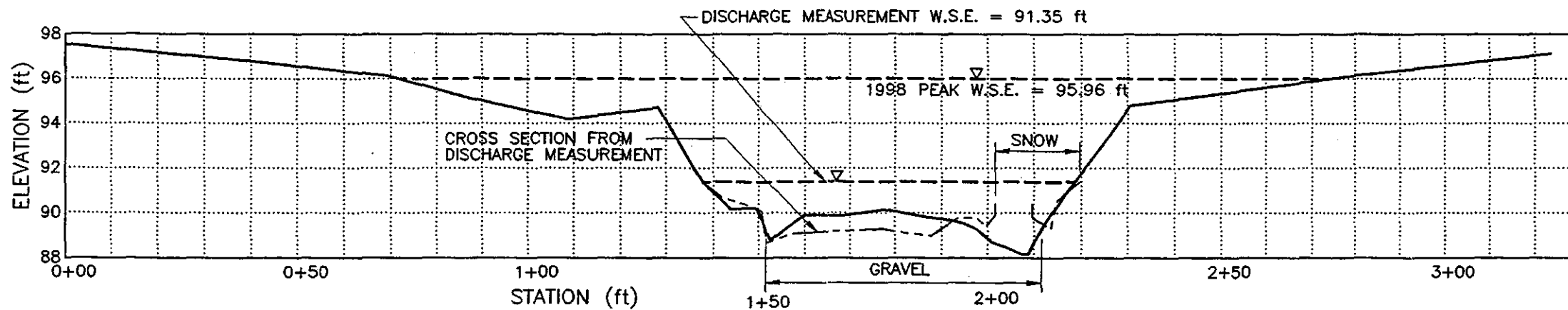
Baker		Michael Baker Jr., Inc.	
DATE: 8/3/98	PROJECT: SADP	FILE: SADP-X24	SCALE: 1" = 60'
DRAWN: BC	CHECKED: JWA		

FIGURE:
**PLX
24-1**



PROFILE: PLX24 UPSTREAM CROSS SECTION

SCALE: H 1" = 30'
V 1" = 6'



PROFILE: PLX24 DOWNSTREAM CROSS SECTION AT PROPOSED PIPELINE CROSSING

SCALE: H 1" = 30'
V 1" = 6'

NOTES:

1. THE ELEVATIONS SHOWN ARE BASED ON AN ASSUMED ELEVATION OF 100.00 AT TBM24A.
2. W.S.E.= WATER SURFACE ELEVATION
3. THE DIFFERENCE IN THE SURVEY AND DISCHARGE MEASUREMENT CROSS SECTIONS IS DUE TO A SLIGHT DIFFERENCE IN WHERE THE MEASUREMENTS WERE MADE.

NO.	DATE	REVISION	BY:

**STREAM PLX24
PROFILES**
 SOURDOUGH AREA DEVELOPMENT PROJECT
 NORTH SLOPE, ALASKA

Baker Michael Baker Jr., Inc.	
DATE: 8/3/98	PROJECT: SADP
DRAWN: BC	FILE: SADP-X24
CHECKED: JWA	SCALE: VARIES

FIGURE:
**PLX
24-2**

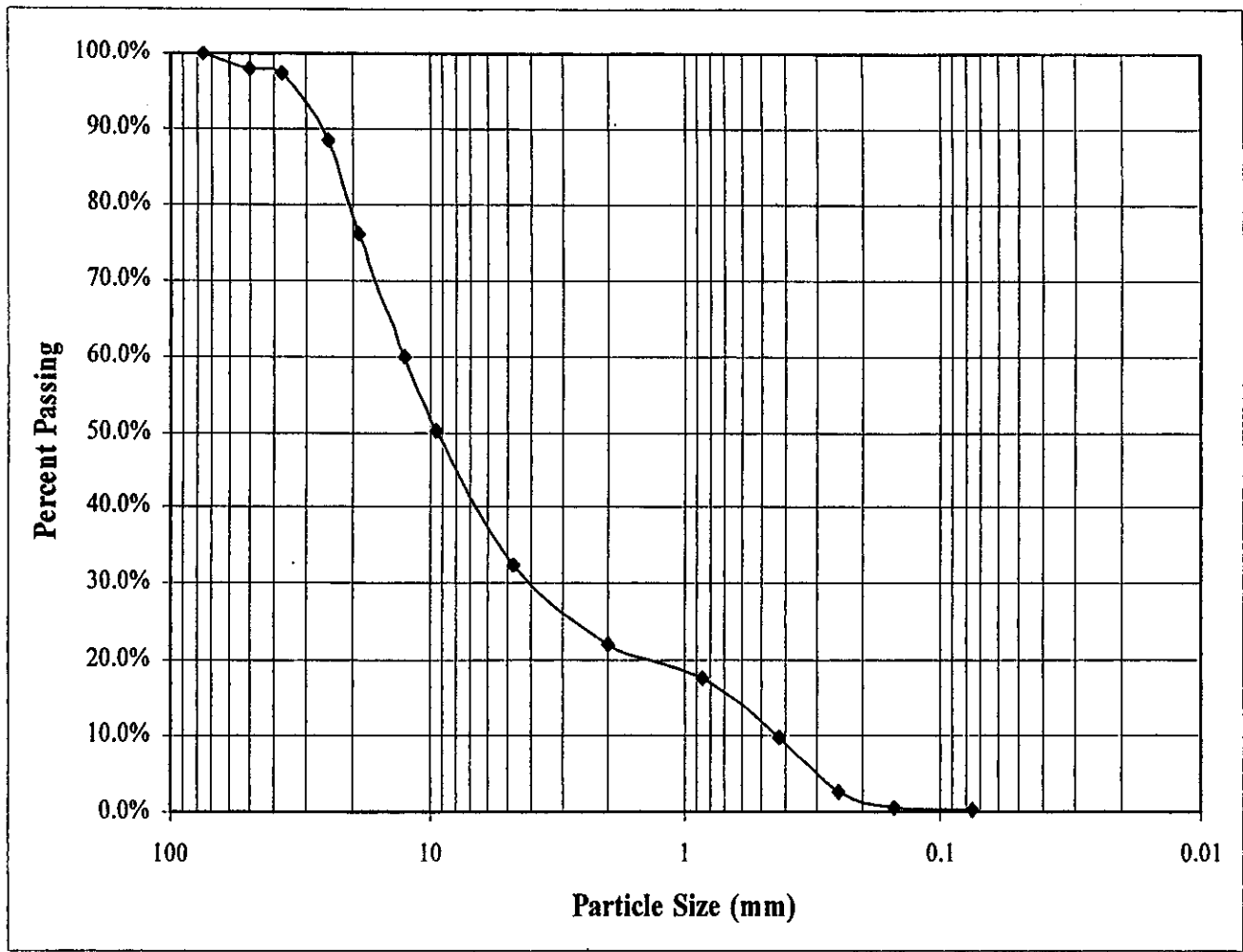


Figure Number:
PLX
24-3

Baker		Michael Baker Jr., Inc.	
Date: 8/6/98	Project: 23247		
Drawn: JDA	File: gradations.ppt		
Checked: JWA	Scale: N/A		

STREAM PLX 24
BED MATERIAL GRADATION

SOURDOUGH AREA DEVELOPMENT PROJECT
NORTH SLOPE, ALASKA

REVISION:			
NO:	DATE:		BY:

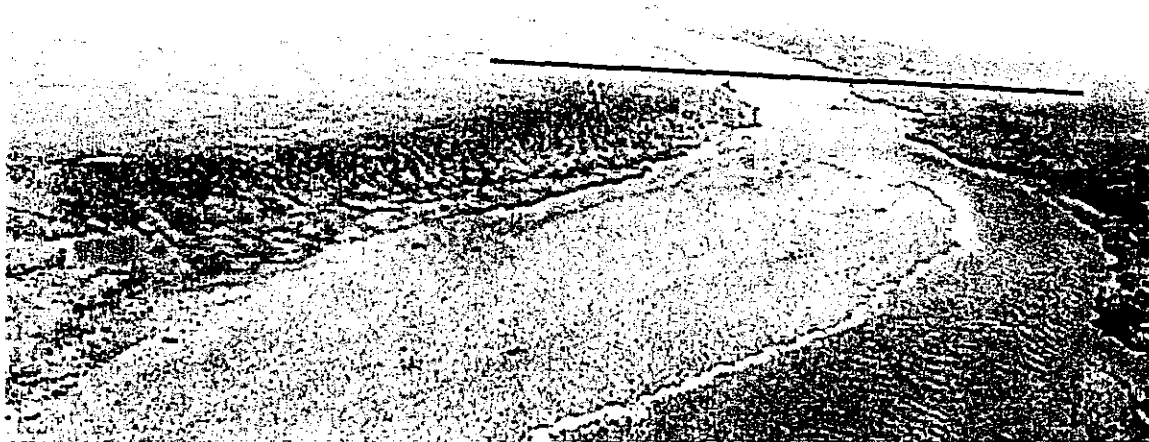


Photo PLX 24-1: Looking northwest at the proposed pipeline crossing (6/11/98).



Photo PLX 24-2: Looking north at the upstream cross section (6/11/98).

STREAM PLX 24
PHOTOGRAPHS

SOURDOUGH AREA DEVELOPMENT PROJECT
NORTH SLOPE, ALASKA

Baker Michael Baker Jr., Inc.	
Date: 6/7/98	Project: 23247
Drawn: JDA	File: photo24
Checked: JWA	Scale:

Photo Number:
**PLX
24-1**

APPENDIX AA: PLX 25

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Photo Sheet PLX 25-1: Stream PLX 25 Photographs



Photo PLX 25-1: Looking north at the proposed pipeline crossing (6/11/98).

STREAM PLX 25
PHOTOGRAPHS

SOURDOUGH AREA DEVELOPMENT PROJECT
NORTH SLOPE, ALASKA

Baker Michael Baker Jr., Inc.	
Date: 6/7/98	Project: 23247
Drawn: JDA	File: photo25
Checked: JWA	Scale:

Photo Number:
**PLX
25-1**

APPENDIX BB: PLX 26

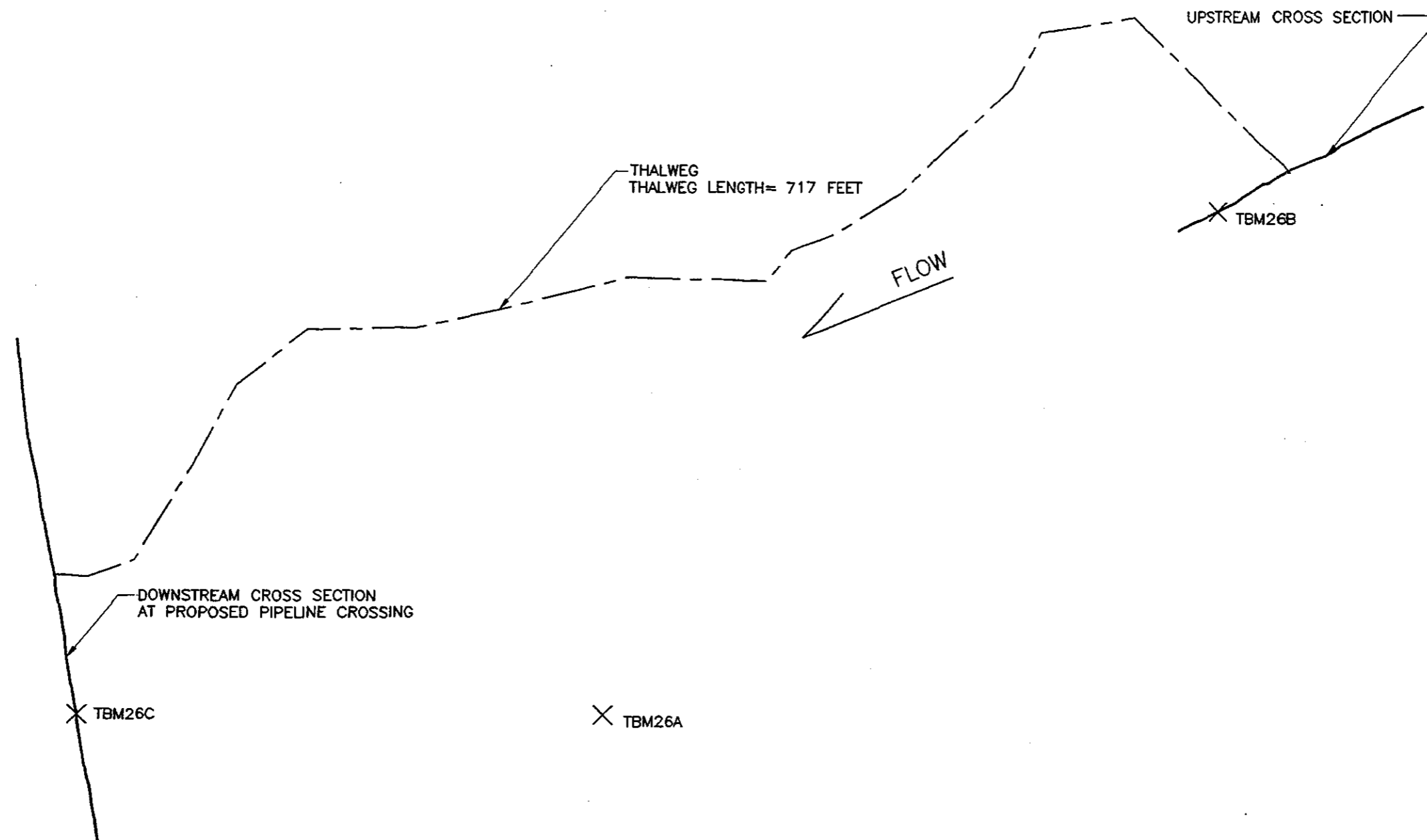
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Figure PLX 26-1: Plan

Figure PLX 26-2: Profiles

Photo Sheet PLX 26-1: Stream PLX 26 Photographs

Table PLX 26-1: Survey Data



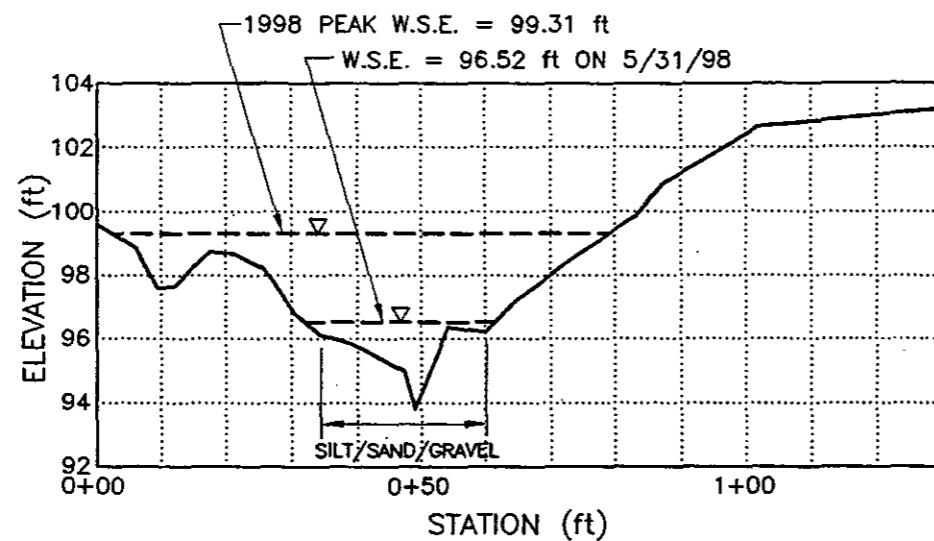
- NOTES:
1. THE PRIMARY TEMPORARY BENCH MARK WAS ASSUMED TO HAVE: (1) AN ELEVATION OF 100.00 FEET, (2) A NORTHING OF 5000 FEET, AND (3) AN EASTING OF 5000 FEET. THE PRIMARY TEMPORARY BENCH MARK AT EACH STREAM PROVIDED THE VERTICAL AND HORIZONTAL CONTROL.
 2. THE PRIMARY TEMPORARY BENCH MARK ON THIS STREAM IS TBM26A.

NO.		DATE		REVISION		BY:	

**STREAM PLX26
PLAN**
 SOURDOUGH AREA DEVELOPMENT PROJECT
 NORTH SLOPE, ALASKA

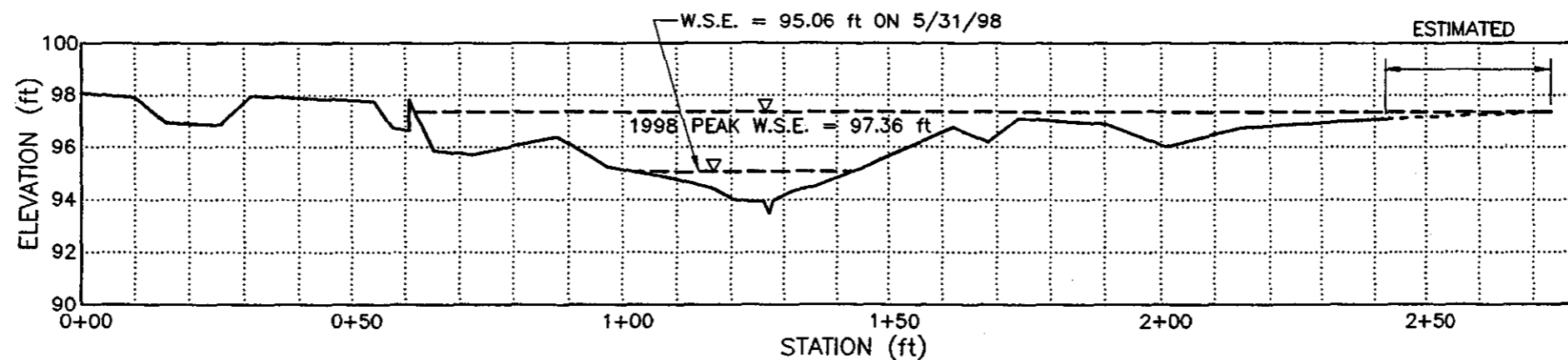
Baker		Michael Baker Jr., Inc.	
DATE: 8/3/98	PROJECT: SADP	FILE: SADP-X26	SCALE: 1" = 60'
DRAWN: BC	CHECKED: JWA		

FIGURE:
**PLX
26-1**



PROFILE: PLX26 UPSTREAM CROSS SECTION

SCALE: H 1" = 30'
V 1" = 6'



PROFILE: PLX26 DOWNSTREAM CROSS SECTION AT PROPOSED PIPELINE CROSSING

SCALE: H 1" = 30'
V 1" = 6'

NOTES:

1. THE ELEVATIONS SHOWN ARE BASED ON AN ASSUMED ELEVATION OF 100.00 AT TBM26A.
2. W.S.E.= WATER SURFACE ELEVATION

NO.	DATE	REVISION	BY:

**STREAM PLX26
PROFILES**
 SOURDOUGH AREA DEVELOPMENT PROJECT
 NORTH SLOPE, ALASKA

Baker		Michael Baker Jr., Inc.	
DATE: 8/3/98	PROJECT: SADP	FILE: SADP-X26	SCALE: VARIES
DRAWN: BC	CHECKED: JWA		

FIGURE:
**PLX
26-2**



Photo PLX 26-1: Looking north at the proposed pipeline crossing (6/11/98).



Photo PLX 26-2: Looking north from upstream of the proposed pipeline crossing (6/11/98).

STREAM PLX 26
PHOTOGRAPHS

SOURDOUGH AREA DEVELOPMENT PROJECT
NORTH SLOPE, ALASKA

Baker

Michael Baker Jr., Inc.

Date: 6/7/98

Project: 23247

Drawn: JDA

File: photo26

Checked: JWA

Scale:

Photo Number:

PLX
26-1

Table PLX 26-1: Survey Data

Survey Point Number	Easting (ft)	Northing (ft)	Elevation (ft)	Description
1	5000	5000	100	TBM.P26 (TBM26A)
2	5000	5242.618129	97.817	P26.P.C/L.REB. (TBM26C)
11	4999.929467	5242.475498	96.625	T.CG.C/L
12	4940.098773	5232.480848	98.06	T
13	4949.974609	5233.873088	97.912	T
14	4955.762017	5235.12247	96.932	T
15	4965.416674	5236.618367	96.851	T
16	4970.864563	5238.052349	97.974	T
17	4993.539686	5242.001632	97.749	T
18	4996.94938	5242.467182	96.724	T
19	5004.423763	5243.622509	95.864	T
20	5011.469703	5244.727352	95.717	T
21	5026.754101	5247.280559	96.394	T
22	5035.742016	5248.245538	95.256	T
23	5048.297517	5250.184834	94.798	T
24	5054.955614	5251.463419	94.433	LEW/G
25	5058.733578	5252.25401	94.017	G
26	5062.145602	5252.535841	93.934	G
27	5064.560293	5252.538261	93.923	G
28	5065.791871	5252.779835	93.482	G/TH
29	5066.292797	5252.967904	93.92	G
30	5070.294115	5253.663402	94.361	G
31	5073.784108	5254.542235	94.491	REW/G
32	5084.633008	5256.42775	95.34	T
33	5099.932677	5259.243504	96.743	T
34	5106.210424	5260.044445	96.189	T
35	5111.762929	5261.024532	97.084	T
36	5127.604293	5264.469158	96.891	T
37	5138.199228	5265.903013	96.002	T
38	5152.116679	5267.501943	96.756	T
39	5178.981388	5270.197866	97.089	T
40	5240.162648	4713.122164	98.679	CG/US (TBM26B)
41	5231.266465	4732.455688	99.576	T
42	5234.255247	4726.997904	98.857	T
43	5235.623836	4724.03867	97.591	T
44	5236.413014	4721.518849	97.663	T
45	5238.773628	4716.55878	98.734	T
46	5242.382406	4709.126616	98.192	T
47	5244.224902	4704.768235	96.773	T
48	5246.730685	4701.739115	96.133	LEW/G
49	5248.999947	4697.909072	95.866	G
50	5253.390568	4690.692674	94.999	G/M
51	5253.642319	4688.803619	93.806	M
52	5256.792471	4684.548497	92.674	M/C

Table PLX 26-1: Survey Data (continued)

Survey Point Number	Easting (ft)	Northing (ft)	Elevation (ft)	Description
53	5259.4215	4679.355162	92.52	TH/C
54	5261.196898	4675.410579	93.454	M
55	5264.648892	4667.621633	94.751	M/G
56	5266.703708	4661.907155	95.571	G
57	5268.610194	4658.2484	96.124	REW/G
58	5271.450486	4655.047963	97.124	T
59	5278.313158	4640.895369	98.947	T
60	5289.56592	4616.352585	99.486	T
61	5190.025616	4651.045823	94.502	TH/FL
62	5331.394415	4753.310969	91.745	TH
63	5324.430331	4796.649586	93.604	TH
64	5298.299723	4810.084084	93.227	TH
65	5248.544624	4861.18797	92.793	TH
66	5230.469871	4889.797073	92.073	TH
67	5221.898745	4911.090809	93.227	TH
68	5207.336041	4924.125784	92.33	TH
69	5208.848796	4988.800855	92.91	TH
70	5193.492271	5048.297847	93.528	TH
71	5184.950392	5086.292913	93.784	TH
72	5184.103454	5135.967126	93.45	TH
73	5157.501742	5169.187499	93.137	TH
74	5118.664429	5189.606057	92.722	TH
75	5073.560956	5216.324504	92.018	TH
76	5065.322931	5237.738555	93.438	TH
77	5059.025761	5294.355159	92.61	TH/FL

Legend:

G = grass	TH = thalweg	US = upstream	PK = "pk" nail
T = tundra	CG = crest gage	TWET = wet tundra	
C = cobbles	GB = ground break	M = mud	
LEW = left edge of water	SH = shoulder	SB = sand bags	
REW = right edge of water	DS = downstream	CL = center line	

file:plx26.xls

APPENDIX CC: PLX 27

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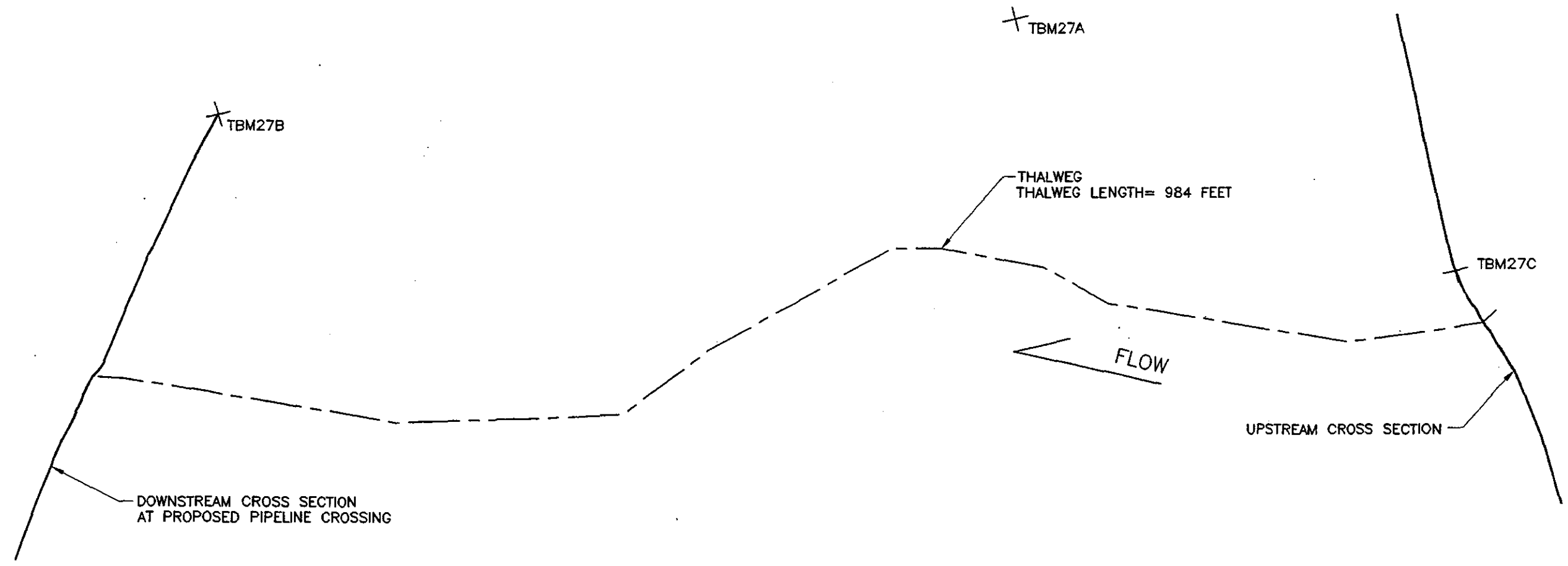
Figure PLX 27-1: Plan

Figure PLX 27-2: Profiles

Photo Sheet PLX 27-1: Stream PLX 27 Photographs

Discharge Measurement Notes

Table PLX 27-1: Survey Data



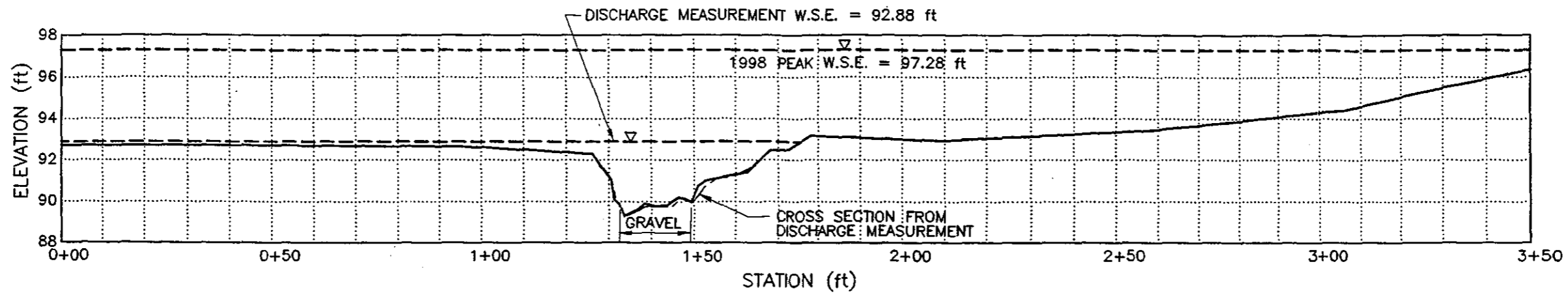
- NOTES:
1. THE PRIMARY TEMPORARY BENCH MARK WAS ASSUMED TO HAVE: (1) AN ELEVATION OF 100.00 FEET, (2) A NORTHING OF 5000 FEET, AND (3) AN EASTING OF 5000 FEET. THE PRIMARY TEMPORARY BENCH MARK AT EACH STREAM PROVIDED THE VERTICAL AND HORIZONTAL CONTROL.
 2. THE PRIMARY TEMPORARY BENCH MARK ON THIS STREAM IS TBM27A.

NO.		DATE		REVISION		BY:	

**STREAM PLX27
PLAN**
 SOURDOUGH AREA DEVELOPMENT PROJECT
 NORTH SLOPE, ALASKA

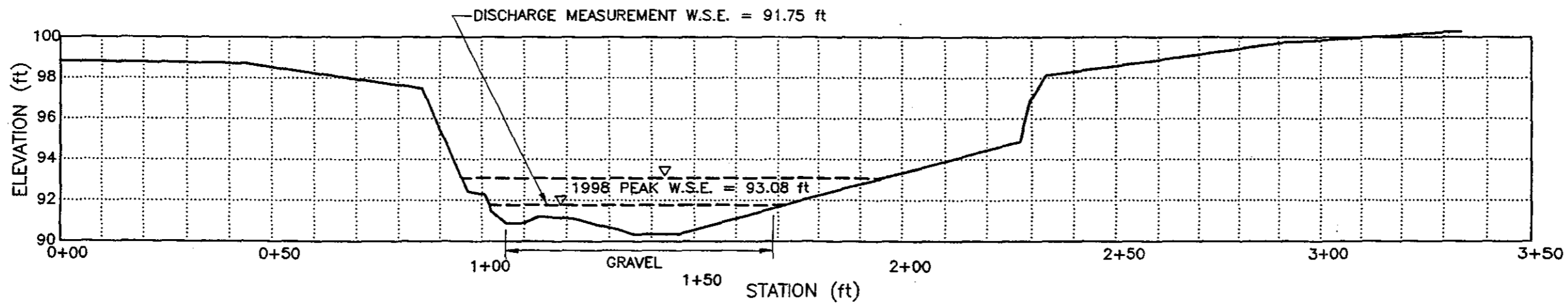
Baker		Michael Baker Jr., Inc.	
DATE: 8/3/98	PROJECT: SADP	FILE: SADP-X27	SCALE: 1" = 80'
DRAWN: BC	CHECKED: JWA		

FIGURE:
**PLX
27-1**



PROFILE: PLX27 UPSTREAM CROSS SECTION

SCALE: H 1" = 30'
V 1" = 6'



PROFILE: PLX27 DOWNSTREAM CROSS SECTION AT PROPOSED PIPELINE CROSSING

SCALE: H 1" = 30'
V 1" = 6'

NOTES:

1. THE ELEVATIONS SHOWN ARE BASED ON AN ASSUMED ELEVATION OF 100.00 AT TBM27A.
2. W.S.E.= WATER SURFACE ELEVATION
3. THE DIFFERENCE IN THE SURVEY AND DISCHARGE MEASUREMENT CROSS SECTIONS IS DUE TO A SLIGHT DIFFERENCE IN WHERE THE MEASUREMENTS WERE MADE.

NO.	DATE	REVISION	BY:

**STREAM PLX27
PROFILES**
 SOURDOUGH AREA DEVELOPMENT PROJECT
 NORTH SLOPE, ALASKA

Baker		Michael Baker Jr., Inc.	
DATE: 8/3/98	PROJECT: SADP	FILE: SADP-X27	SCALE: VARIES
DRAWN: BC	CHECKED: JWA		

FIGURE:
**PLX
27-2**

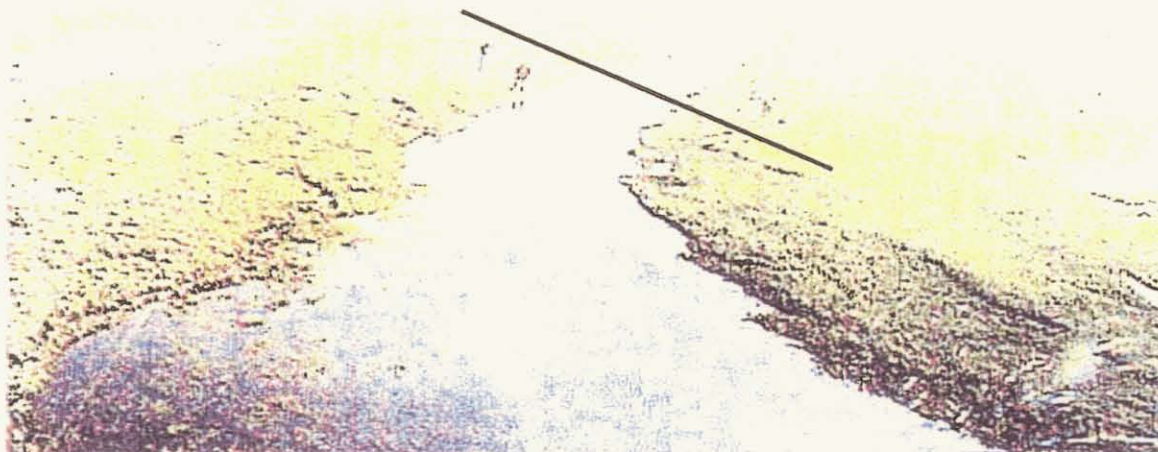


Photo PLX 27-1: Looking north at the proposed pipeline crossing (6/11/98).



Photo PLX 27-2: Looking north at the proposed pipeline crossing (6/4/98).

STREAM PLX 27
 PHOTOGRAPHS

 SOURDOUGH AREA DEVELOPMENT PROJECT
 NORTH SLOPE, ALASKA

Baker		Michael Baker Jr., Inc.	
Date: 6/7/98	Project: 23247		
Drawn: JDA	File: photo27		
Checked: JWA	Scale:		

Photo Number:
 PLX
 27-1

Table PLX 27-1: Survey Data

Survey Point Number	Easting (ft)	Northing (ft)	Elevation (ft)	Description
1	5000	5000		100 TBMP27 (TBM27A)
2	5341.98989	5000	93.375165	P27/CG/CL (TBM27C)
11	5342.119772	5000.033173	92.510296	CG/CL
12	5222.835646	5132.215164	96.361012	T
13	5252.550643	5099.234909	94.41074	T
14	5284.600868	5062.428926	93.399048	T
15	5317.239567	5025.942488	92.934134	T
16	5338.107444	5003.532585	93.167371	T
17	5346.008374	4997.257237	92.445516	T
18	5349.943529	4993.76443	91.403339	T
19	5357.901634	4987.718954	91.003056	REW
20	5359.717734	4986.748628	90.735135	G
21	5361.105164	4985.943642	89.95785	G
22	5363.793564	4984.690693	90.207839	G
23	5365.019799	4984.40862	90.071867	G
24	5366.824392	4983.699003	89.795845	G/C
25	5369.012934	4982.104684	89.775465	C
26	5370.736422	4980.669653	89.893107	C
27	5372.444232	4979.412596	89.578525	C
28	5375.231506	4978.163507	89.288175	C/TH
29	5376.335073	4977.778896	89.844564	G
30	5377.476244	4976.986039	90.109485	G
31	5378.152455	4976.806798	91.049078	LEW
32	5382.650327	4974.975665	92.301634	T
33	5408.329934	4959.063304	92.642489	T
34	5446.54685	4927.886239	92.712542	T
35	5480.4737	4895.081172	92.706664	T
36	4572.360492	4679.113653	100.226015	CG/US (TBM27B)
37	4572.397523	4678.91456	100.26512	T
38	4574.190129	4635.466299	99.718089	T
39	4579.978029	4578.672755	98.122402	T
40	4579.990335	4574.889185	96.829483	CG/US
41	4579.931933	4572.763567	94.86323	T/S
42	4591.41904	4492.558669	90.365824	C
43	4590.882916	4487.202015	90.363918	C
44	4589.607198	4481.516397	90.341042	C/TH
45	4589.729371	4477.336749	90.591162	C
46	4590.101517	4472.381229	90.824641	C
47	4590.53246	4467.975494	91.080068	C
48	4591.472286	4463.514928	91.159786	C
49	4591.884788	4459.449525	91.190994	C
50	4591.959849	4455.910022	90.877638	C
51	4592.499597	4451.439158	90.873341	C
52	4592.914641	4448.010953	91.472525	C

Table PLX 27-1: Survey Data (continued)

Survey Point Number	Easting (ft)	Northing (ft)	Elevation (ft)	Description
53	4593.09967	4447.729535	91.804468	LEW
54	4593.135391	4446.514738	92.282602	T
55	4593.620232	4442.515557	92.420496	T
56	4593.699032	4431.55374	97.465756	T
57	4599.774655	4389.651705	98.715443	T
58	4607.311924	4346.851852	98.813979	T
59	4534.269729	4480.833868	90.10718	TH/FL
60	4607.498164	4490.811282	90.570143	TH
61	4655.871122	4509.141071	90.637918	TH
62	4779.823796	4555.26751	90.297763	TH
63	4869.745817	4610.114609	90.088016	TH
64	4908.074483	4635.301592	90.124138	TH
65	4935.127473	4701.11043	90.202868	TH
66	4945.873704	4720.059214	89.160668	TH
67	5006.334566	4823.746853	88.124961	TH
68	5035.47533	4840.821317	89.629978	TH
69	5099.127097	4862.739315	89.781784	TH
70	5155.968545	4862.562411	88.712151	TH
71	5305.619189	4922.319521	89.175223	TH
72	5355.292481	4961.106576	88.956632	TH
73	5388.084825	5027.440061	89.561611	TH/FL
74	4986.967257	4566.900024	99.97136	HV40, photo control set by others

Legend:

G = grass	REW = right edge of water	DS = downstream	CL = center line
T = tundra	TH = thalweg	US = upstream	PK = "pk" nail
C = cobbles	CG = crest gage	TWET = wet tundra	
LEW = left edge of water	GB = ground break	M = mud	
	SH = shoulder	SB = sand bags	

file:plx27.xls