

Note: This diagram must be used with and in the context of the accompanying report.
All permanent features are located approximately.

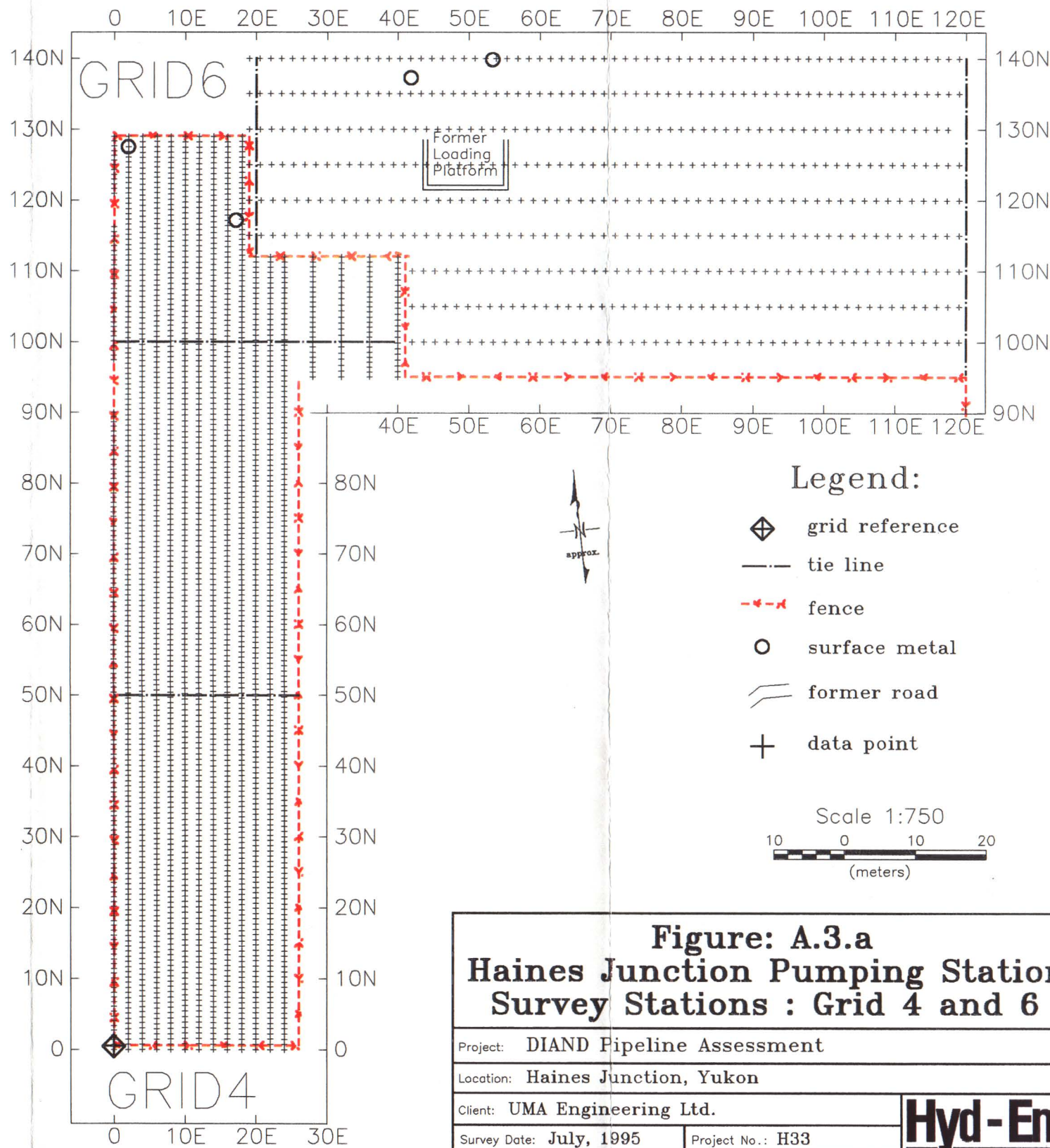


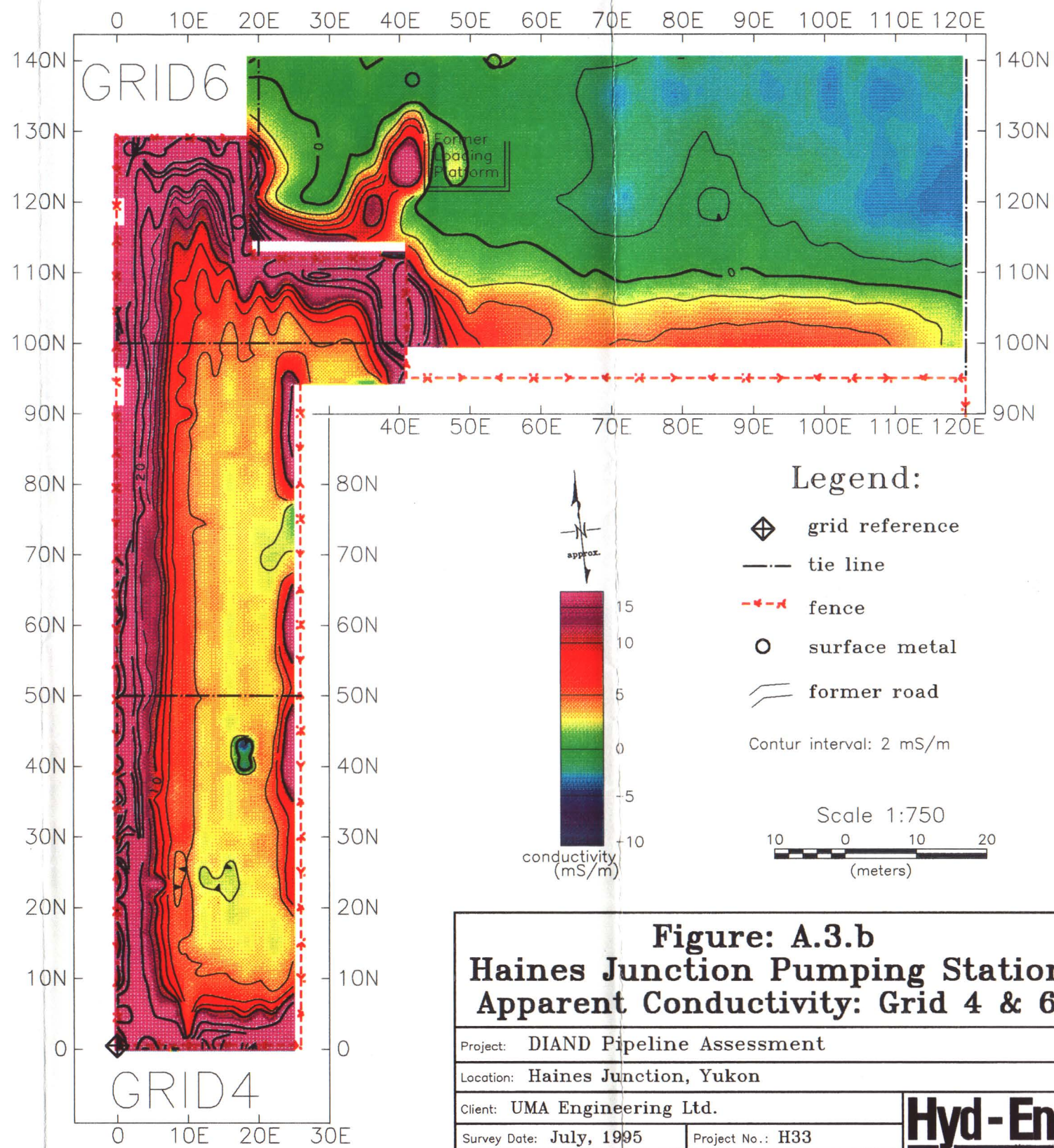
Figure: A.3.a
Haines Junction Pumping Station
Survey Stations : Grid 4 and 6

Project: DIAND Pipeline Assessment
Location: Haines Junction, Yukon
Client: UMA Engineering Ltd.
Survey Date: July, 1995
Instrument: EM31/EM61

Project No.: H33

Hyd-EngTM
GEOPHYSICS INC.

Note: This diagram must be used with and in the context of the accompanying report.
All permanent features are located approximately.



Legend:

- ◊ grid reference
- tie line
- x-x fence
- surface metal
- ══ former road

Contour interval: 2 mS/m

Scale 1:750

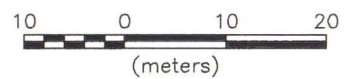
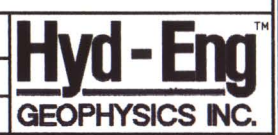


Figure: A.3.b
Haines Junction Pumping Station
Apparent Conductivity: Grid 4 & 6

Project: DIAND Pipeline Assessment	
Location: Haines Junction, Yukon	
Client: UMA Engineering Ltd.	
Survey Date: July, 1995	Project No.: H33
Instrument: EM31/EM61	



Note: This diagram must be used with and in the context of the accompanying report.
All permanent features are located approximately.

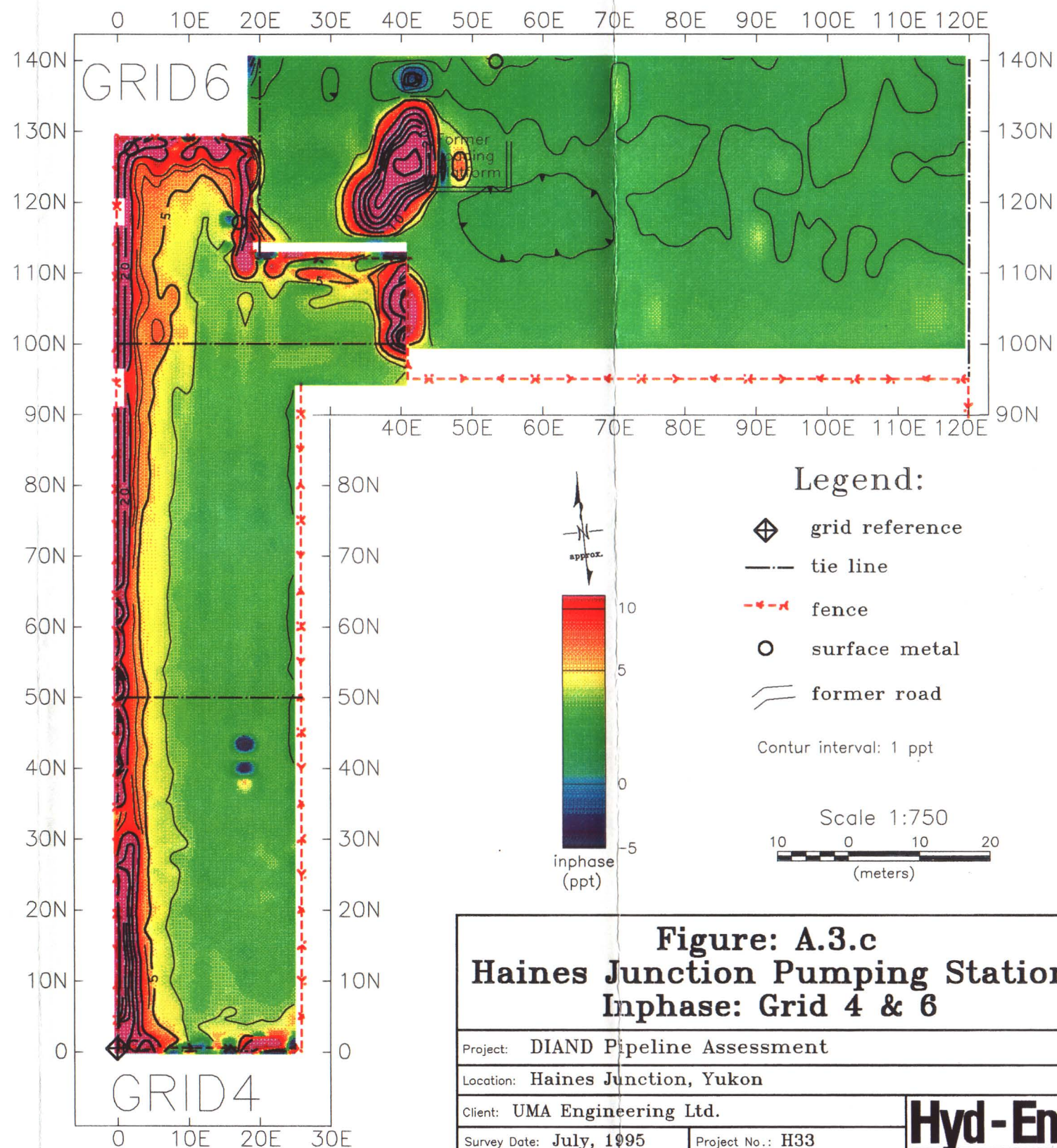
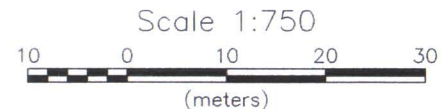
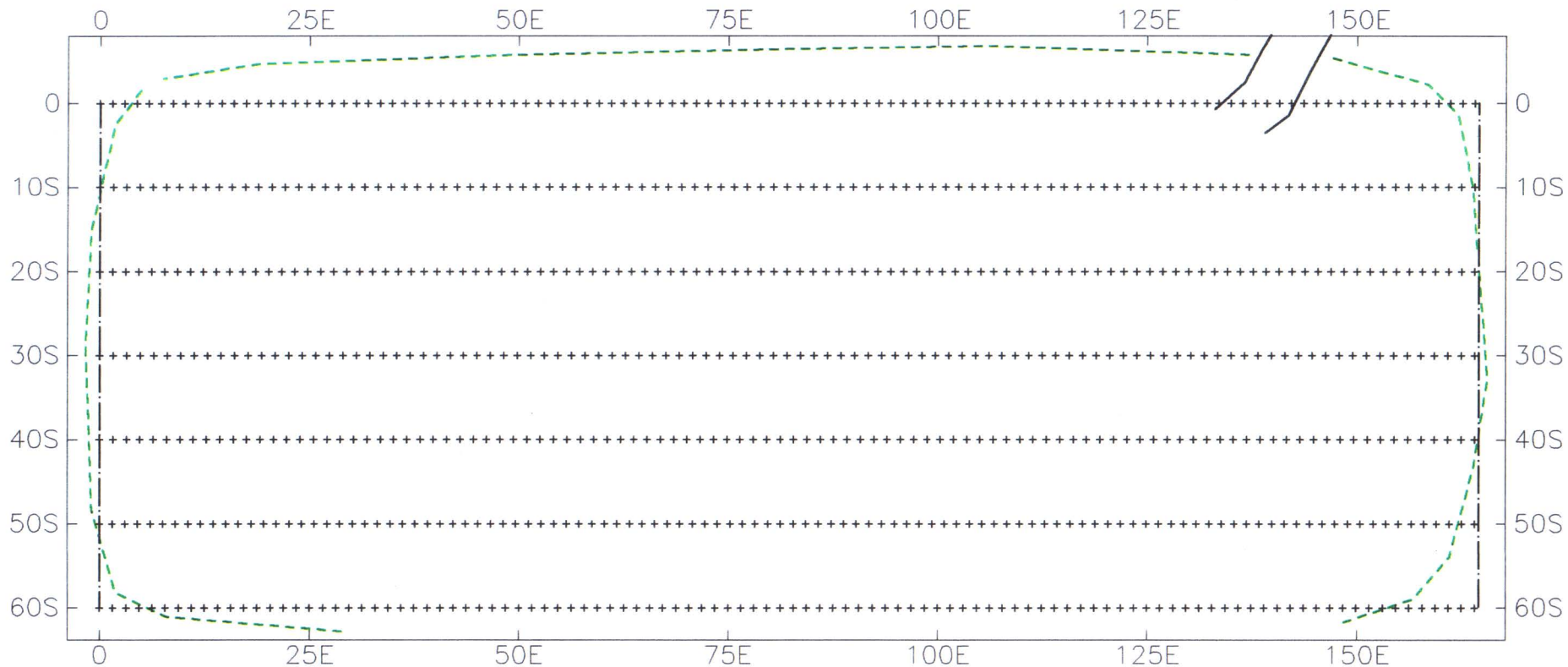


Figure: A.3.c
Haines Junction Pumping Station
Inphase: Grid 4 & 6






Project: DIAND Pipeline Assessment
Location: Haines Junction, Yukon
Client: UMA Engineering Ltd.
Survey Date: July, 1995
Instrument: EM31/EM61

Project No.: H33

Hyd-EngTM
GEOPHYSICS INC.



Legend:

-  grid reference
-  tie line
-  approx. tree line
-  former road
-  data point



Note: This diagram must be used with and in the context of the accompanying report.
All permanent features are located approximately.

Figure: A.4.a
Haines Junction Pumping Station
Survey Stations : Grid 5

Project: DIAND Pipeline Assessment

Location: Haines Junction, Yukon

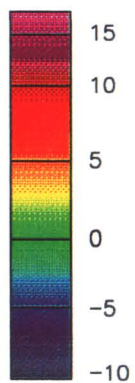
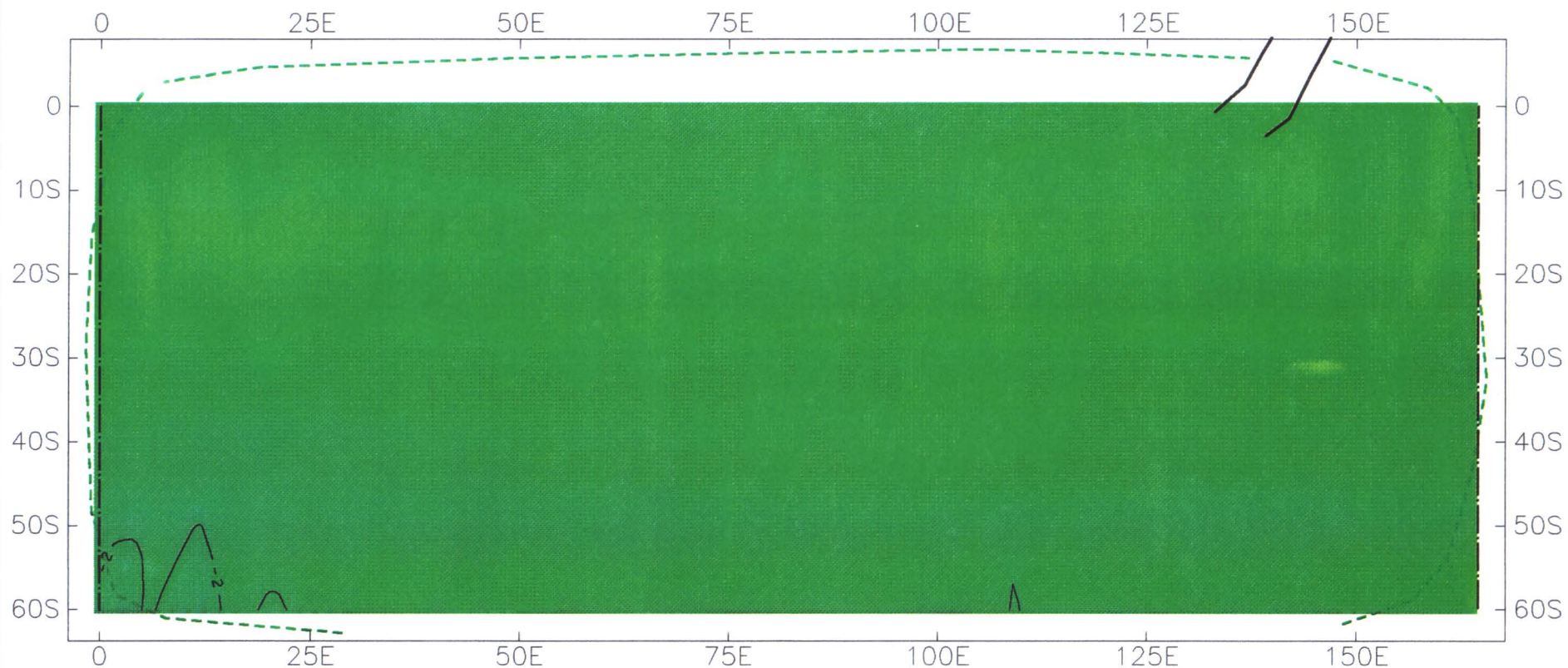
Client: UMA Engineering Ltd.

Survey Date: July, 1995

Project No.: H33





Instrument: EM31/EM61

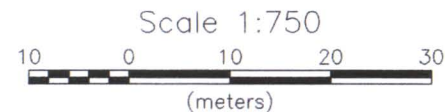
Hyd-EngTM
GEOPHYSICS INC.



conductivity
(mS/m)
Contur interval: 2 mS/m

Legend:

-  grid reference
-  tie line
-  approx. tree line
-  former road



Note: This diagram must be used with and in the context of the accompanying report.
All permanent features are located approximately.

Figure: A.4.b Haines Junction Pumping Station Apparent Conductivity: Grid 5

Project: DIAND Pipeline Assessment

Location: Haines Junction, Yukon

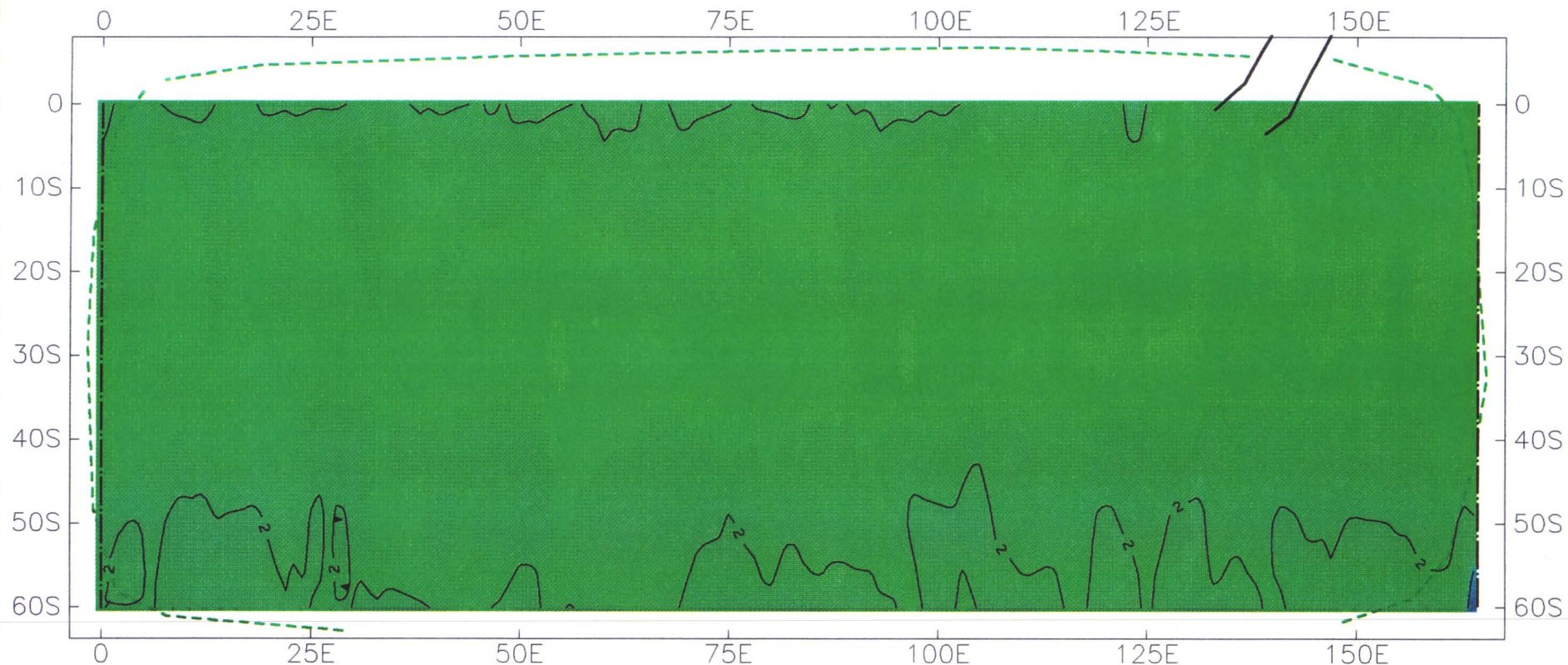
Client: UMA Engineering Ltd.

Survey Date: July, 1995

Project No.: H33





Instrument: EM31/EM61

Hyd-EngTM
GEOPHYSICS INC.



Contur interval: 1 ppt

Legend:

-  grid reference
-  tie line
-  approx. tree line
-  former road

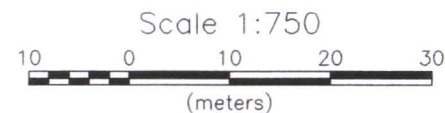


Figure: A.4.c Haines Junction Pumping Station Inphase: Grid 5

Project: DIAND Pipeline Assessment

Location: Haines Junction, Yukon

Client: UMA Engineering Ltd.

Survey Date: July, 1995

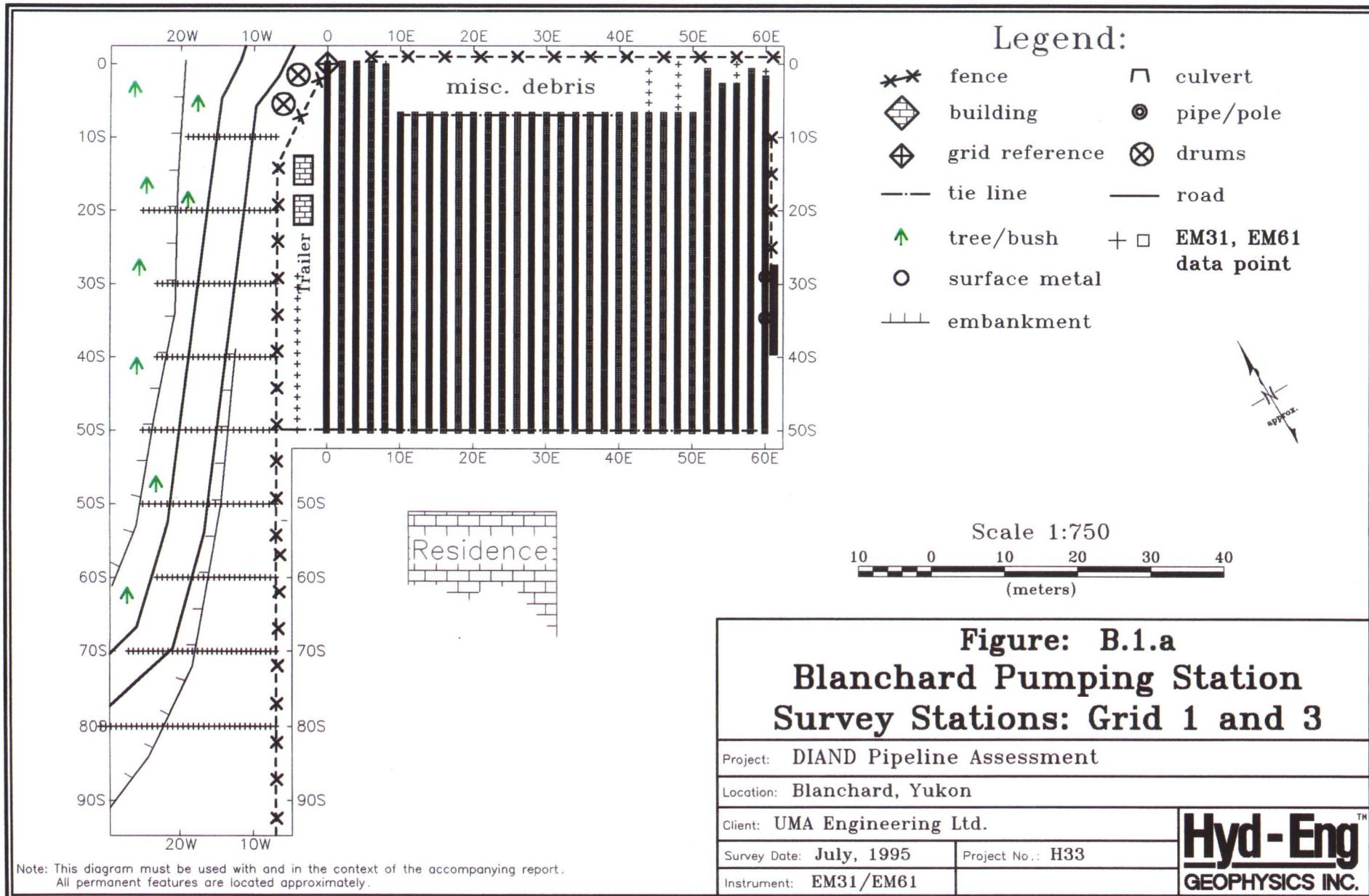
Project No.: H33

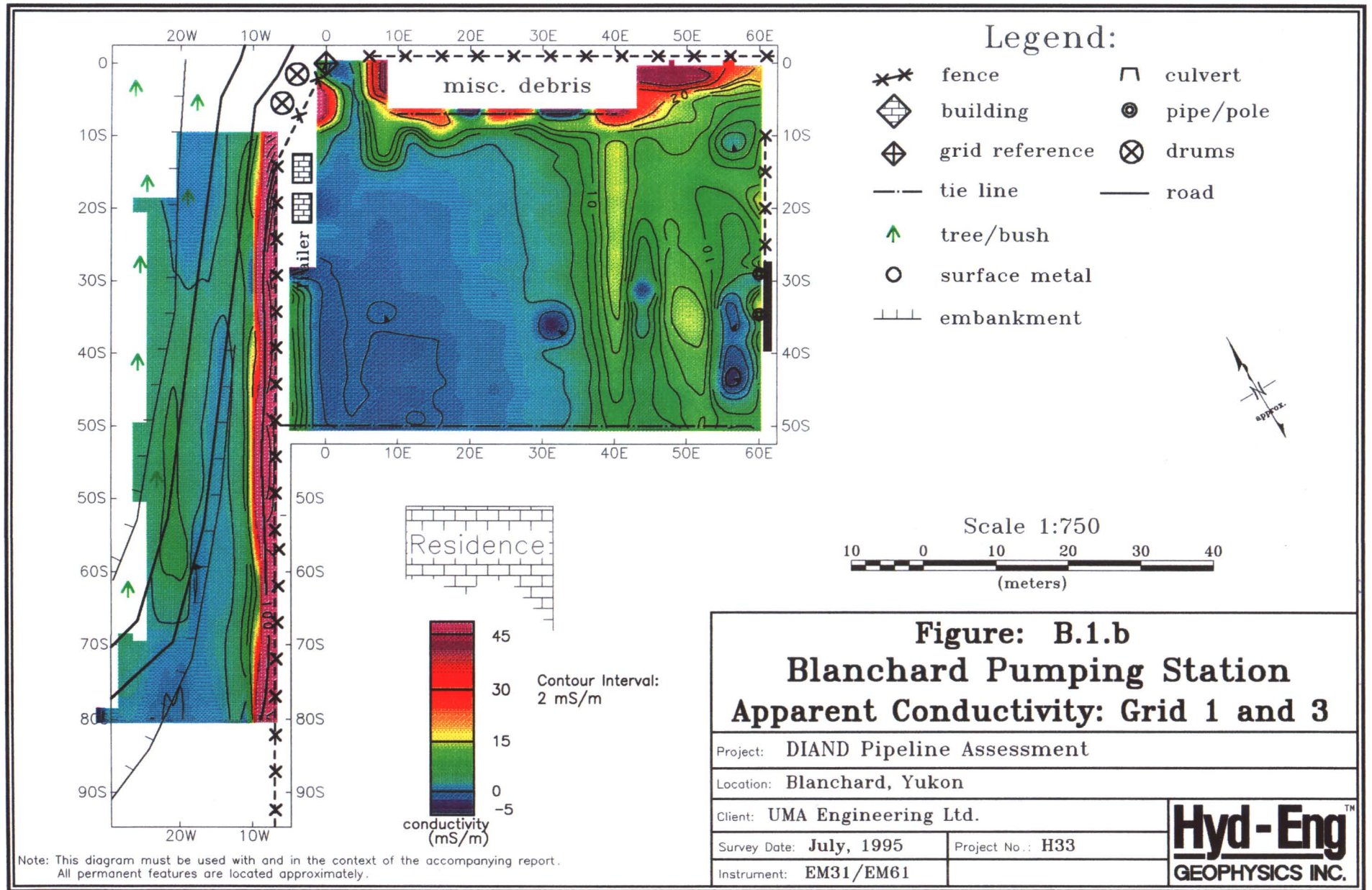
Instrument: EM31/EM61

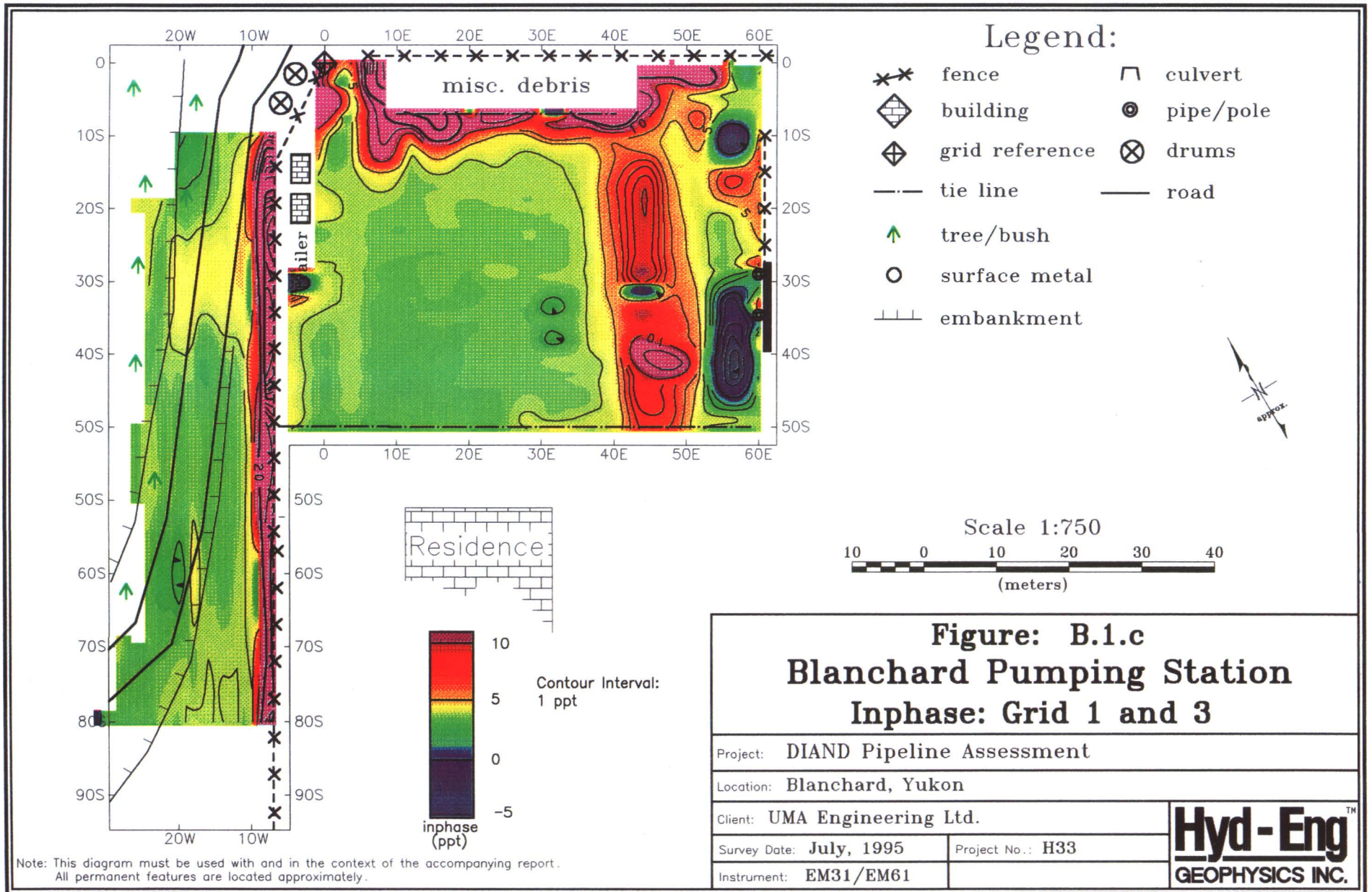
Hyd-EngTM
GEOPHYSICS INC.

Note: This diagram must be used with and in the context of the accompanying report.
All permanent features are located approximately.

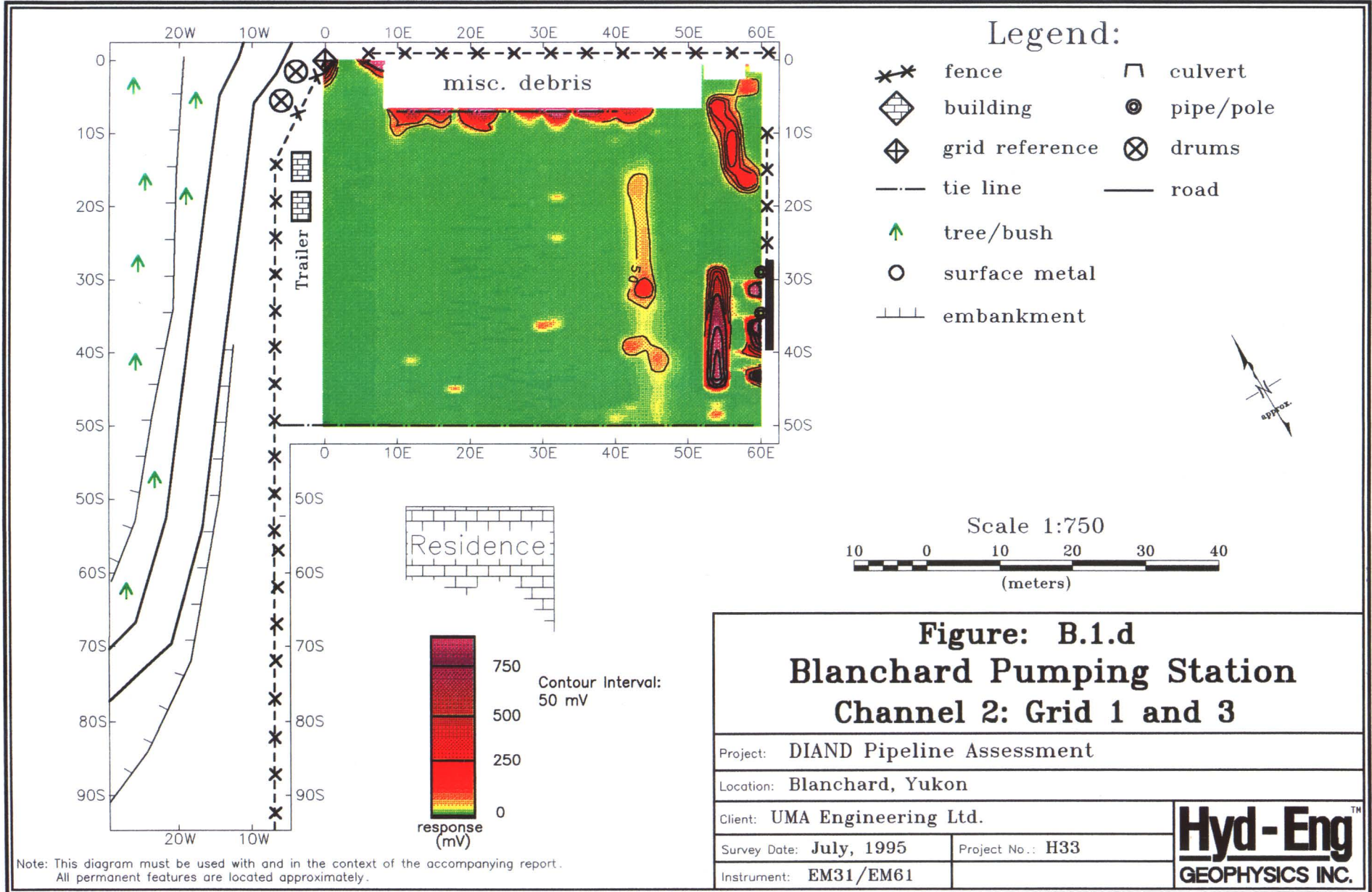
BLANCHARD PUMPING STATION

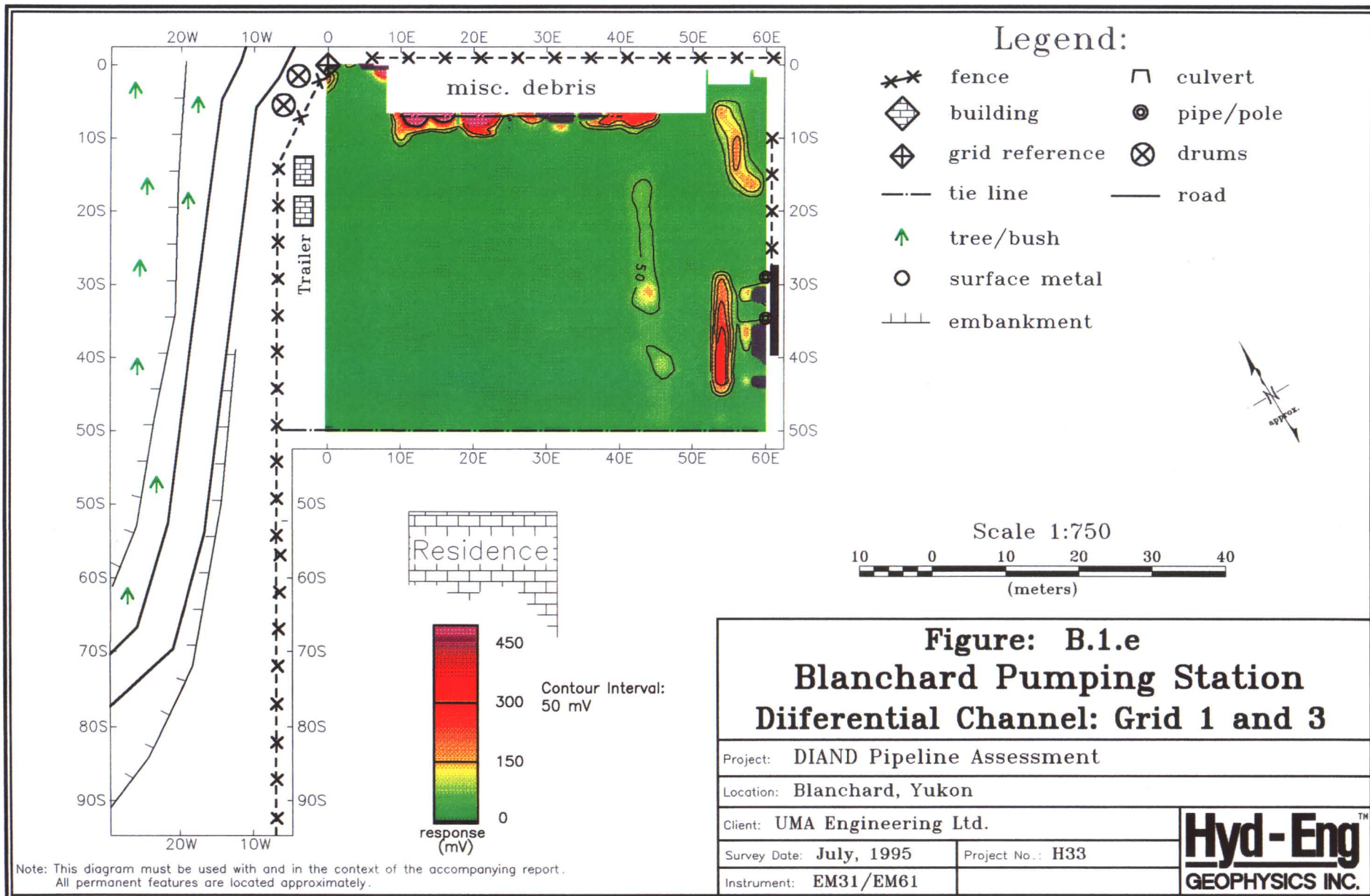


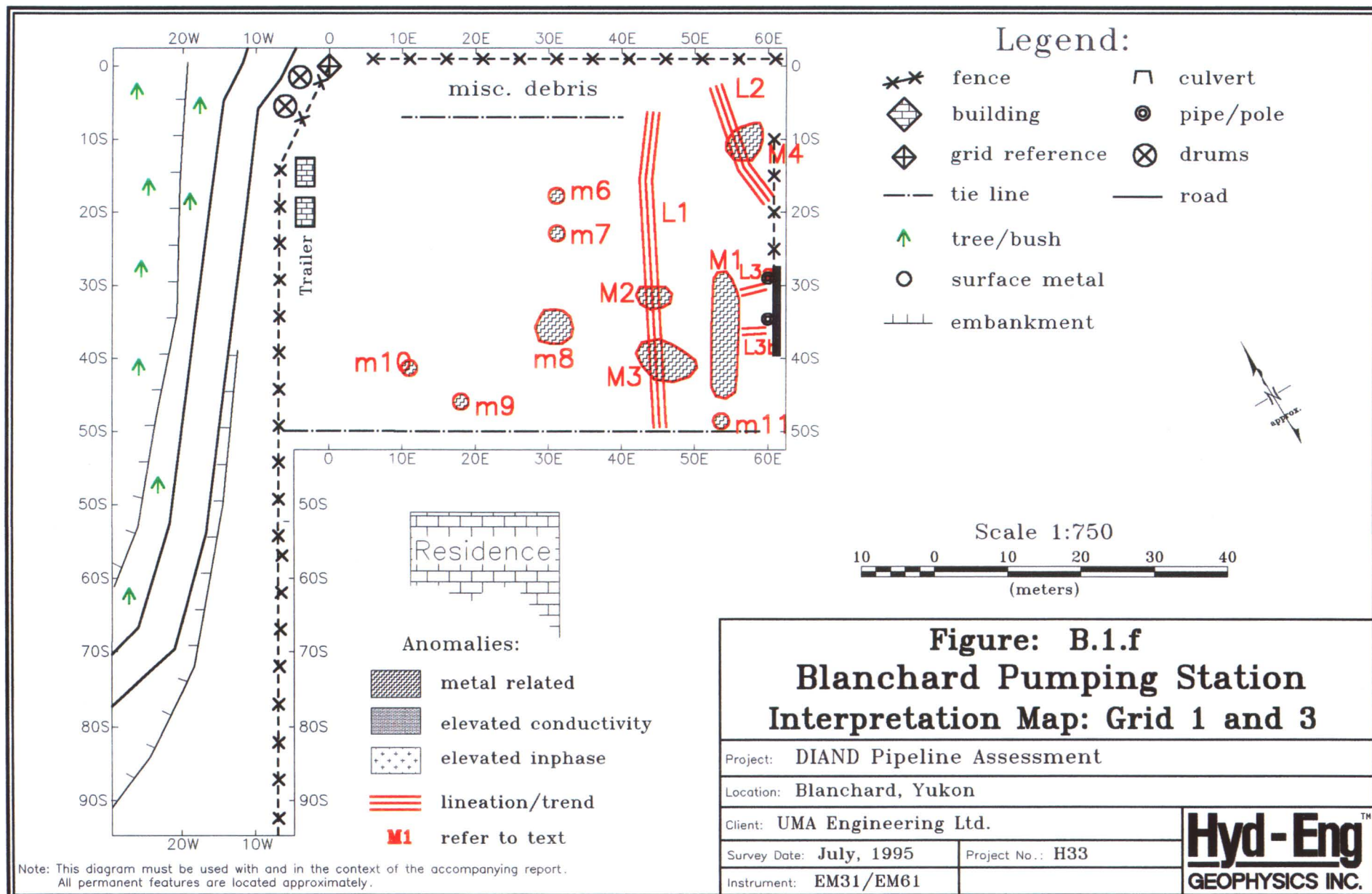


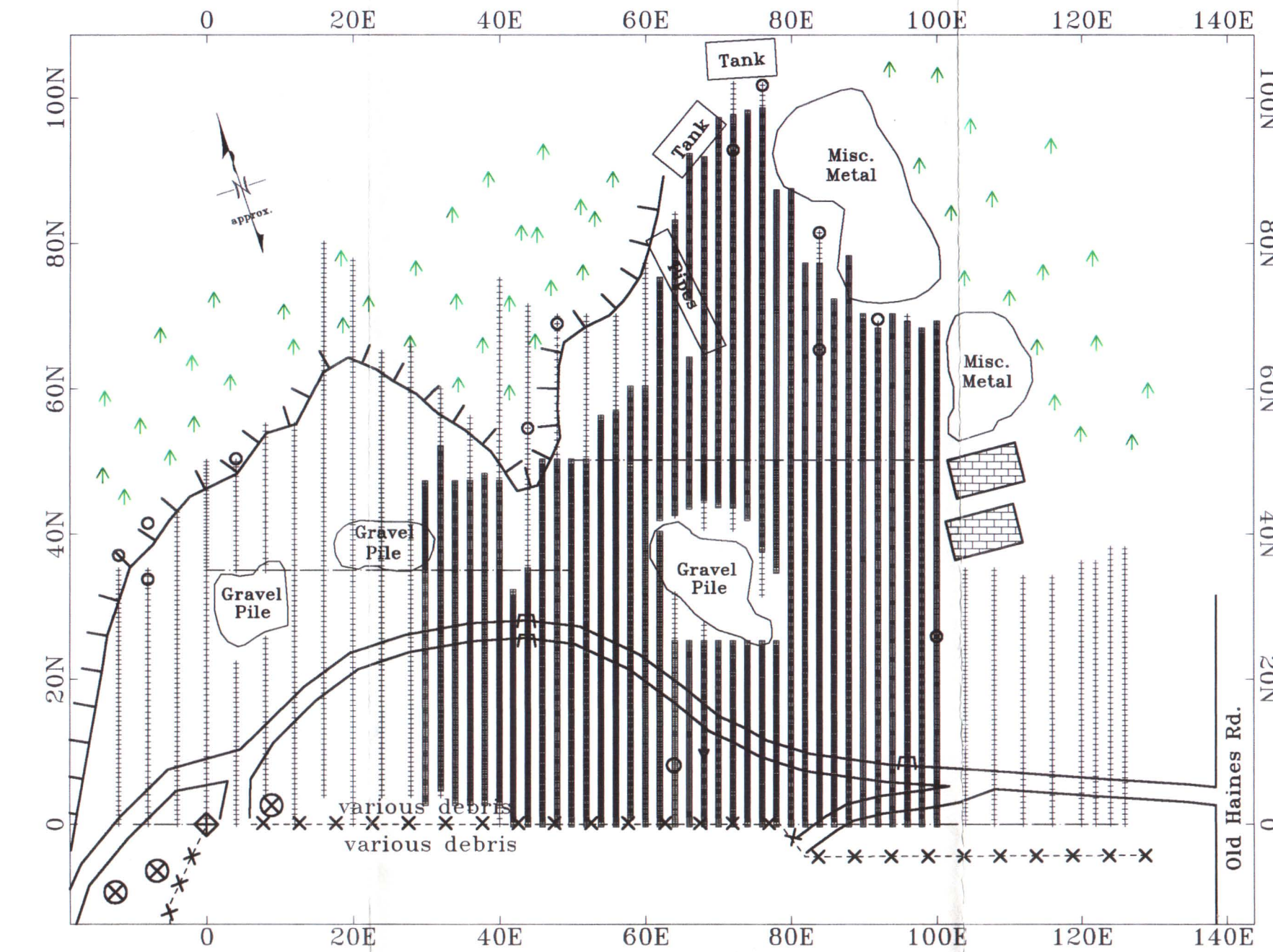
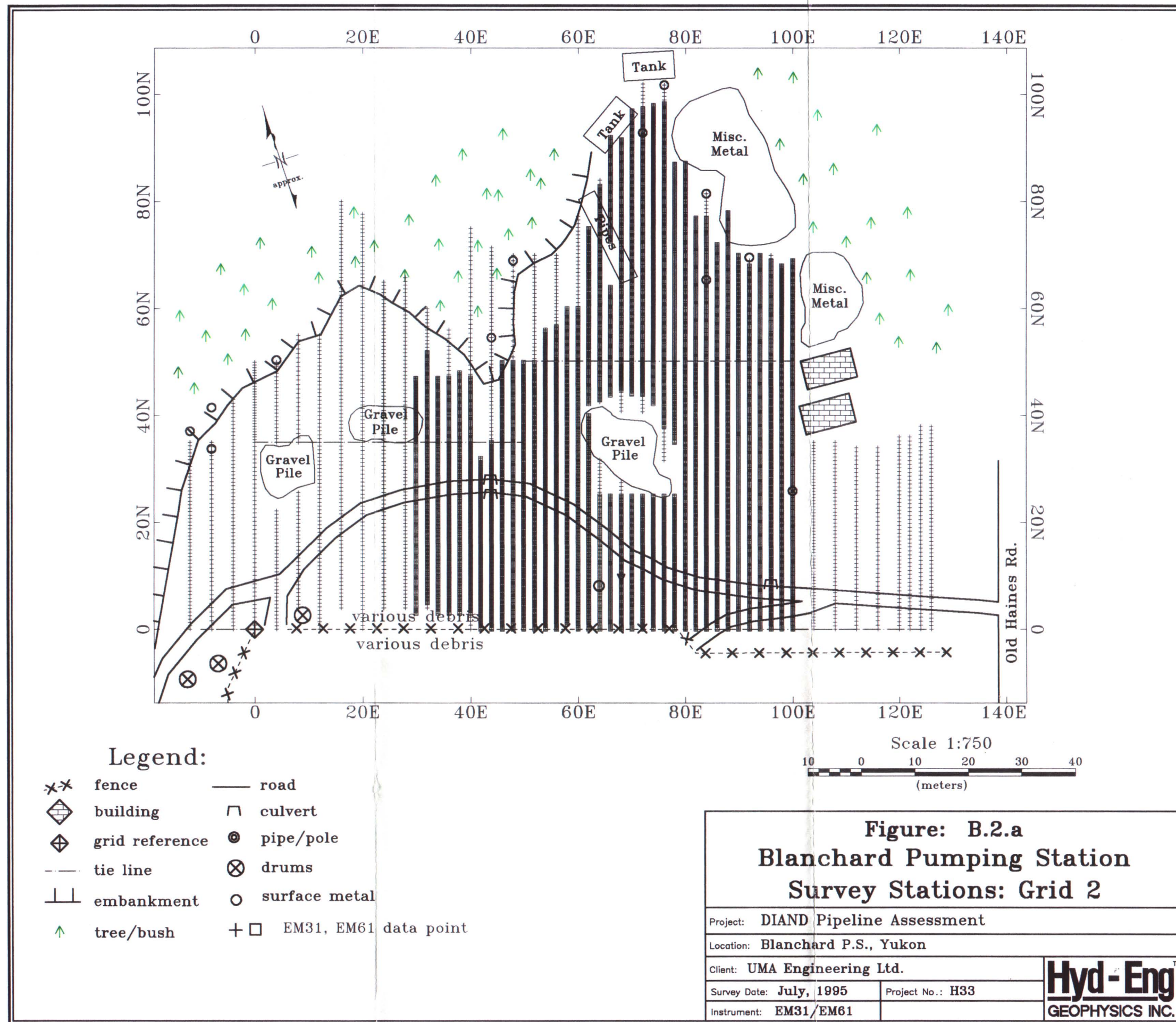


Note: This diagram must be used with and in the context of the accompanying report.
All permanent features are located approximately.

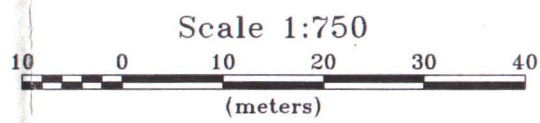


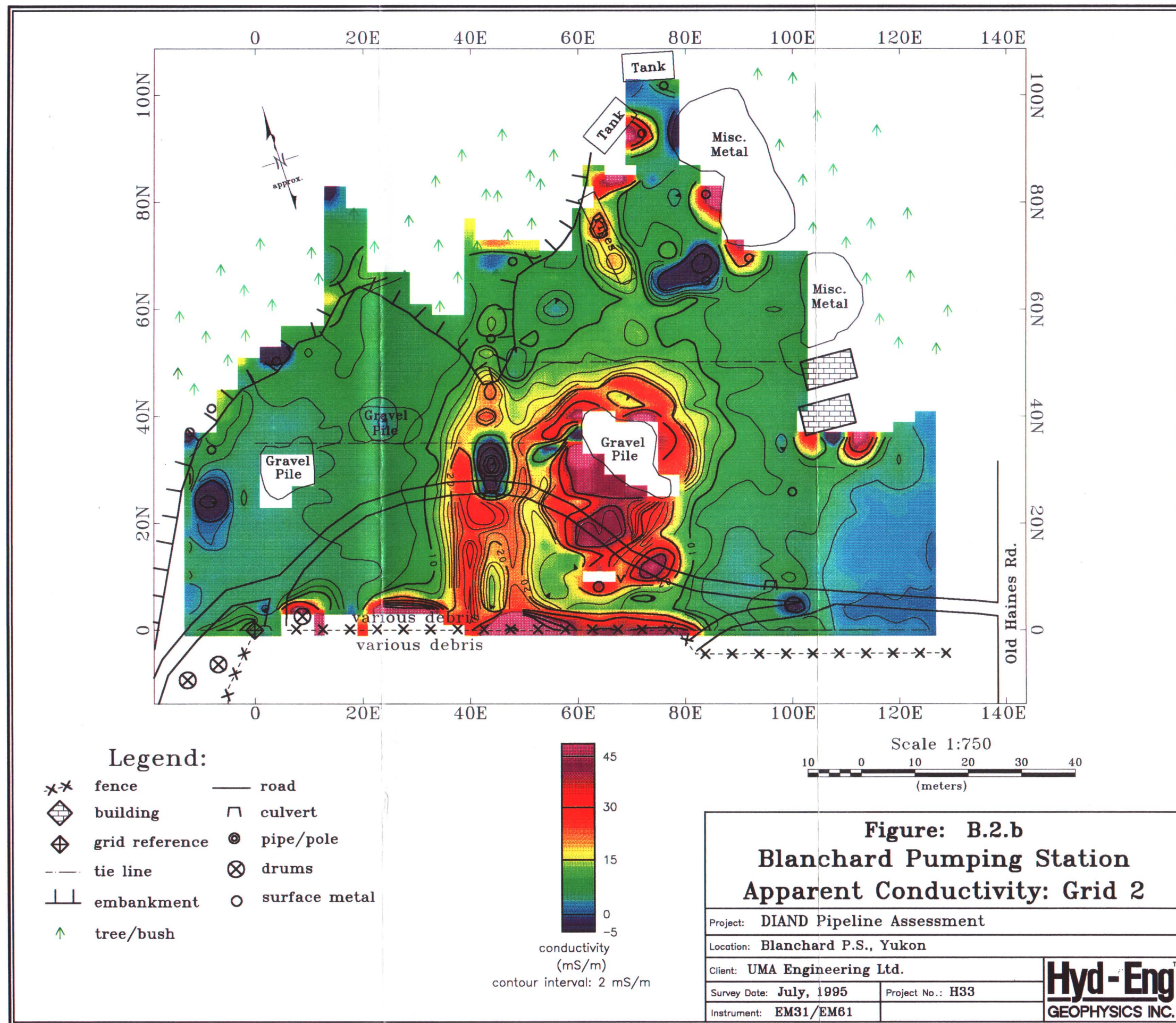


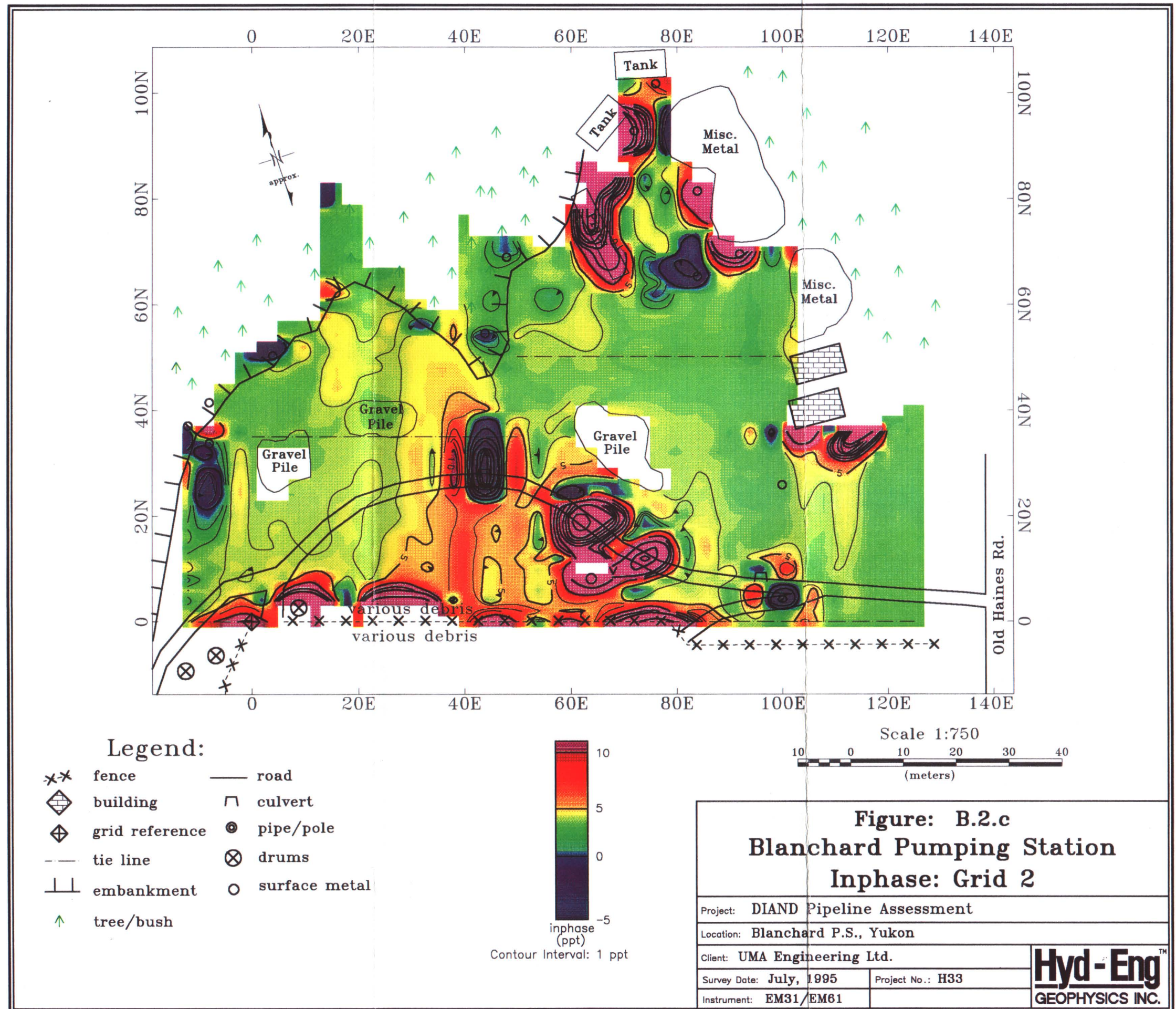


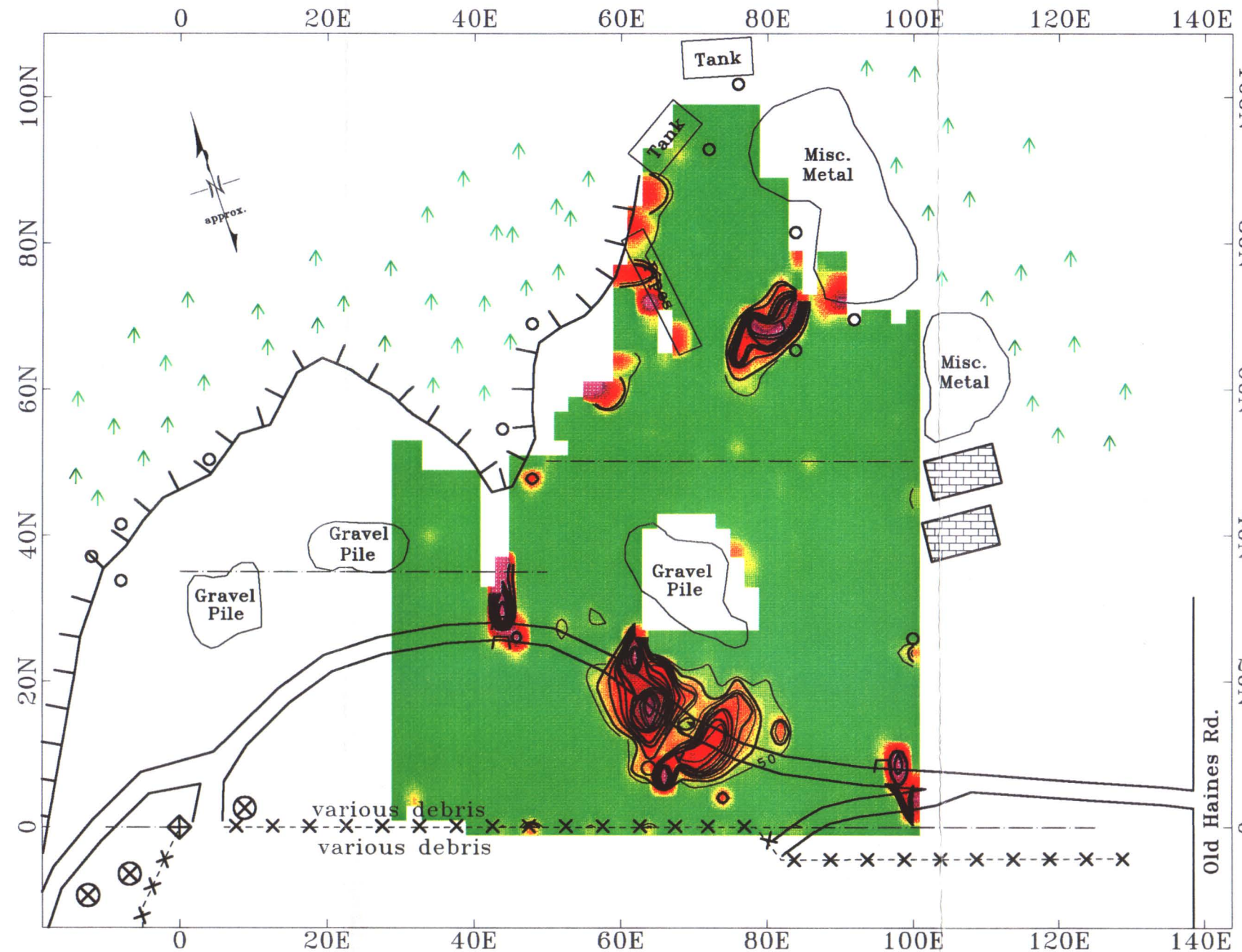


- Legend:**
- xx fence
 - ◇ building
 - ⊕ grid reference
 - tie line
 - || embankment
 - ↑ tree/bush
 - road
 - culvert
 - ⊙ pipe/pole
 - ⊗ drums
 - surface metal
 - + □ EM31, EM61 data point









- Legend:**
- ✕✕ fence
 - ⬠ building
 - ⊕ grid reference
 - tie line
 - ⌌ embankment
 - ↑ tree/bush
 - road
 - ⌌ culvert
 - ⊙ pipe/pole
 - ⊗ drums
 - surface metal

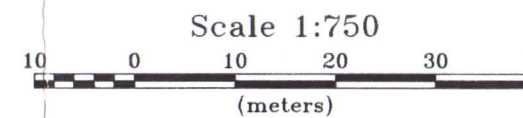
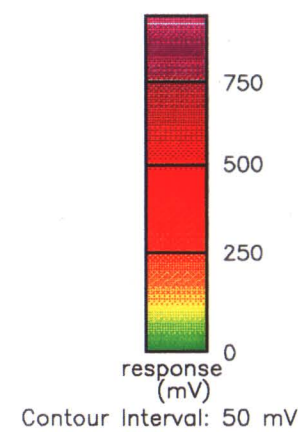
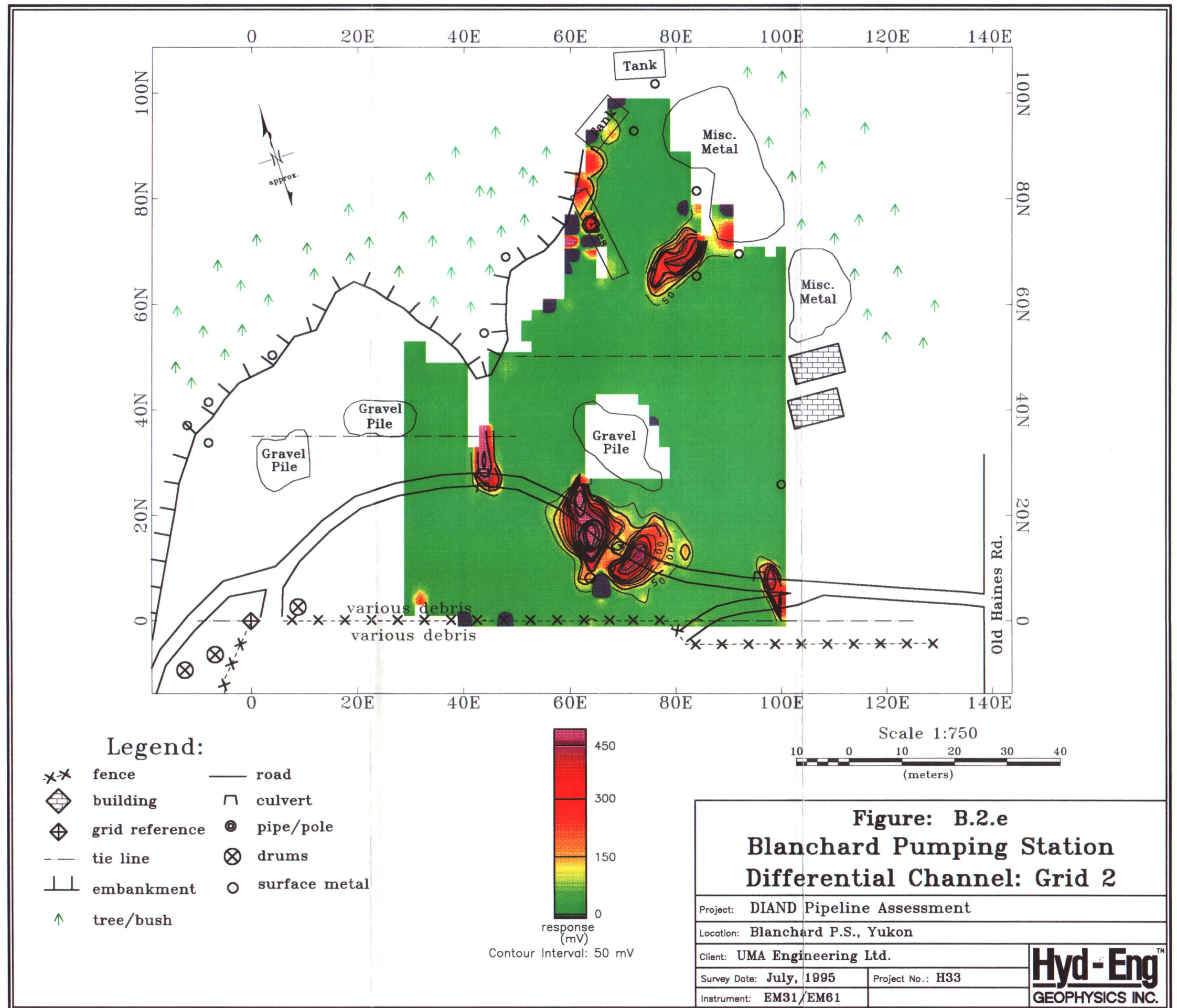
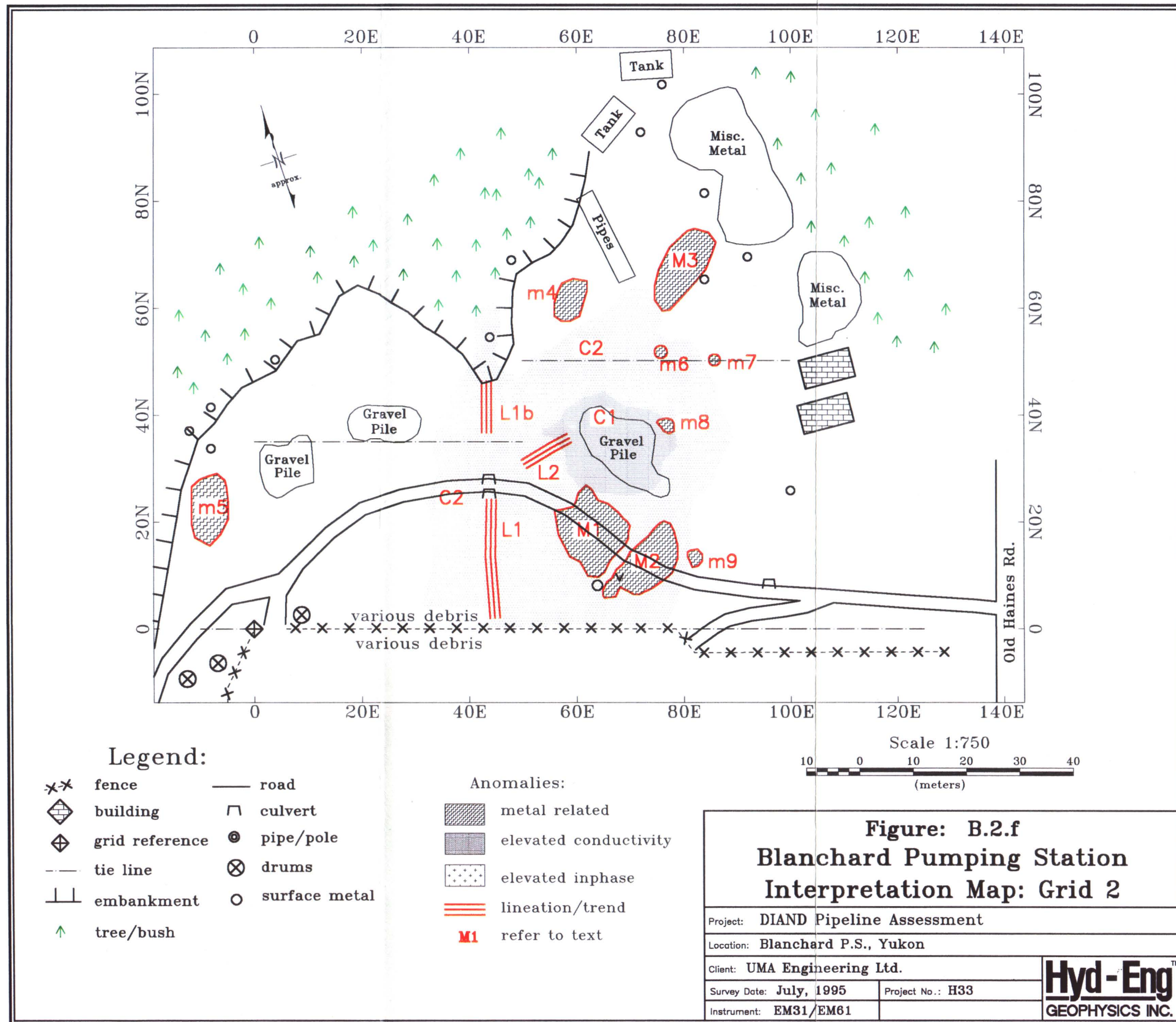


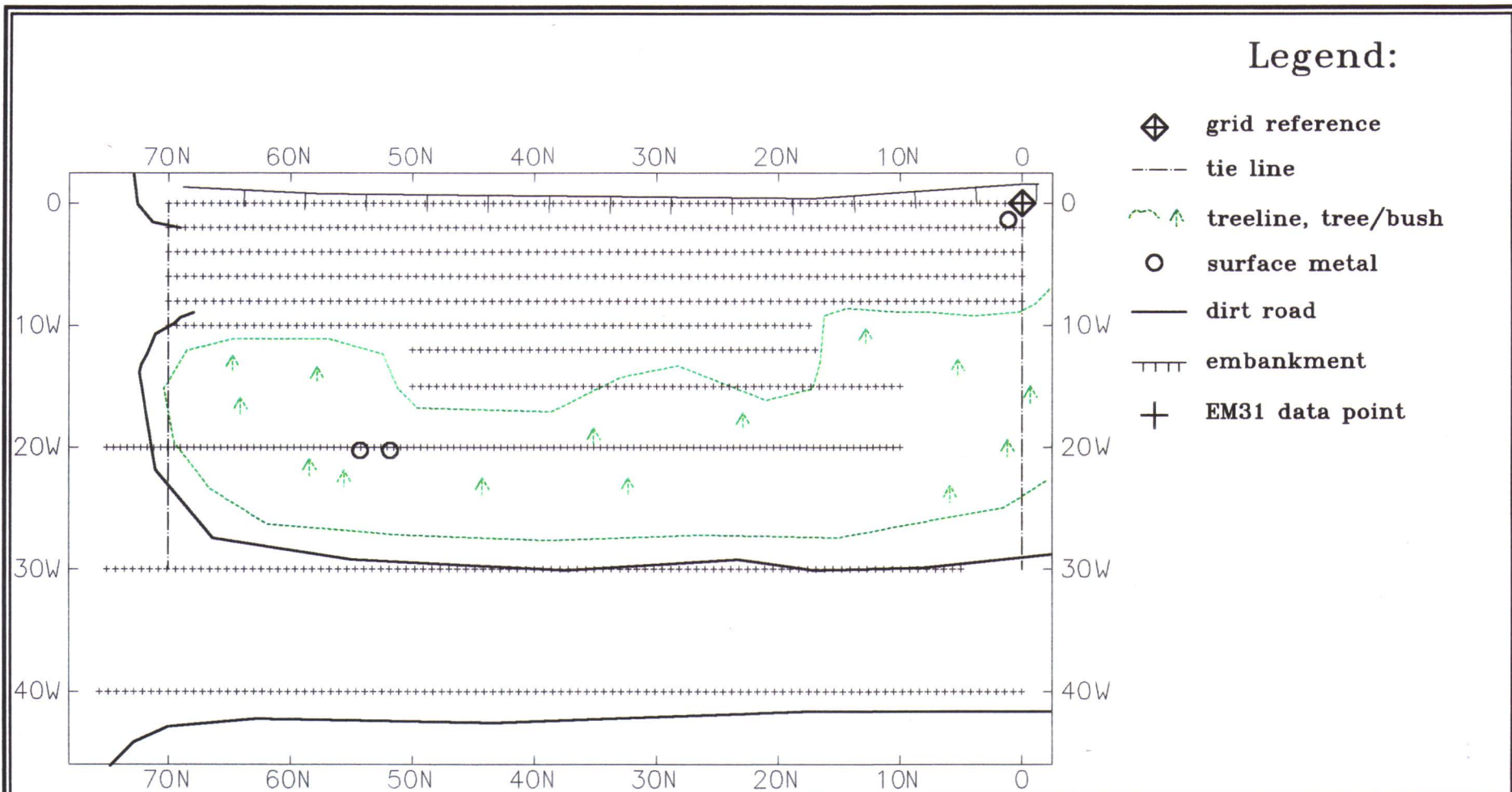
Figure: B.2.d
Blanchard Pumping Station
Channel 2: Grid 2

Project: DIAND Pipeline Assessment	
Location: Blanchard P.S., Yukon	
Client: UMA Engineering Ltd.	
Survey Date: July, 1995	Project No.: H33
Instrument: EM31/EM61	





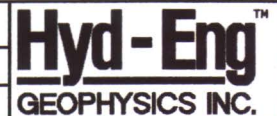


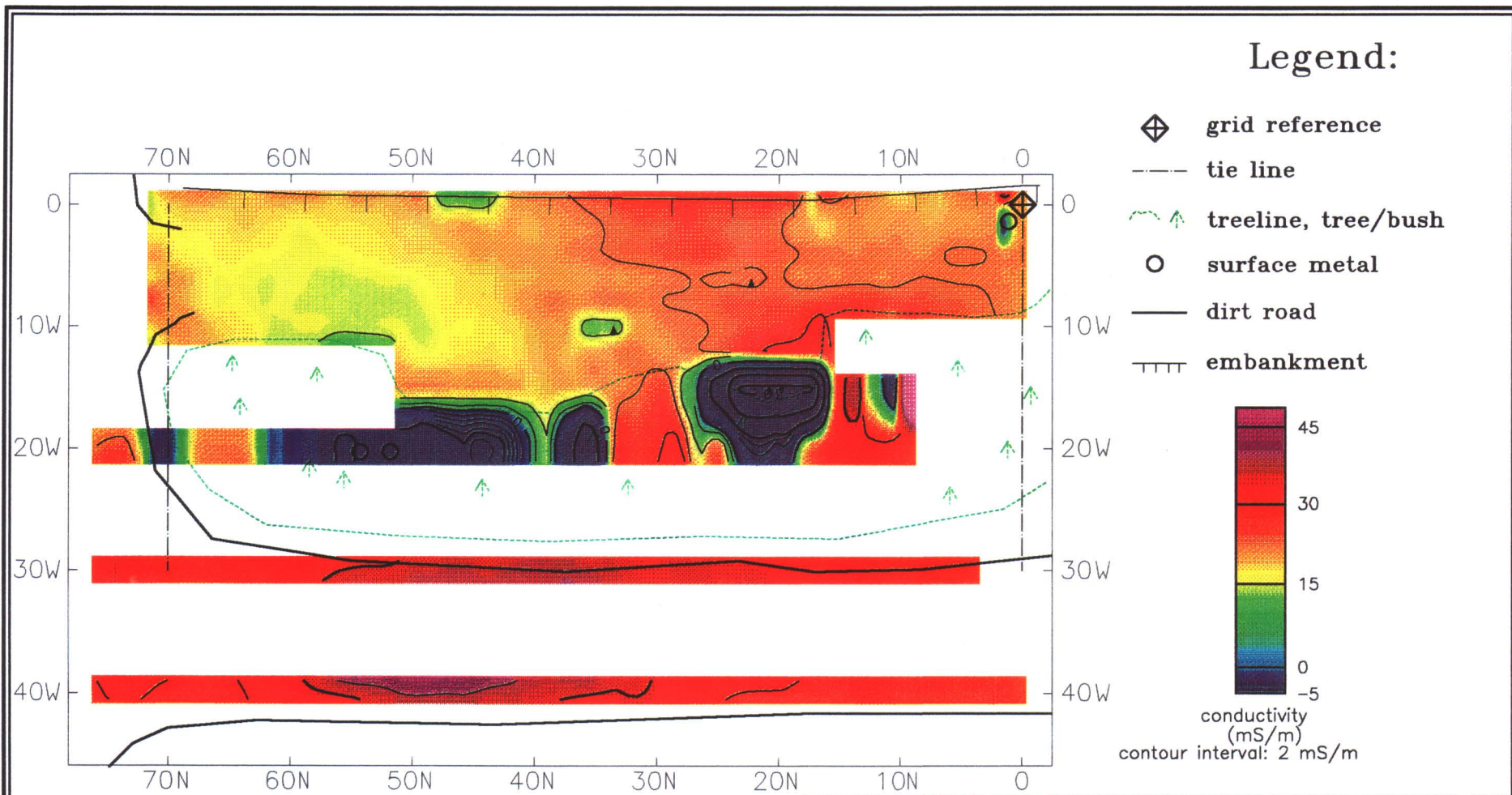


**Figure: B.3.a
Blanchard Pumping Station
Survey Stations: Grid 4**

Project: DIAND Pipeline Assessment	
Location: Blanchard Pumping Station, Yukon	
Client: UMA Engineering Ltd.	
Survey Date: July, 1995	Project No.: H33
Instrument: EM31/EM61	

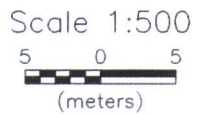
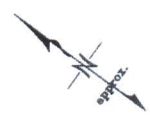
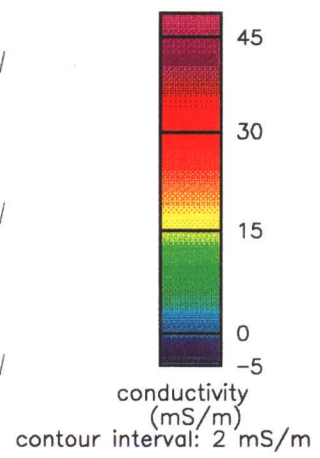
Note: This diagram must be used with and in the context of the accompanying report.
All permanent features are located approximately.





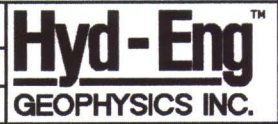
Legend:

- ⊕ grid reference
- tie line
- ↑ treeline, tree/bush
- surface metal
- dirt road
- |||| embankment



**Figure: B.3.b
Blanchard Pumping Station
Apparent Conductivity: Grid 4**

Project: DIAND Pipeline Assessment	
Location: Blanchard Pumping Station, Yukon	
Client: UMA Engineering Ltd.	
Survey Date: July, 1995	Project No.: H33
Instrument: EM31/EM61	



Note: This diagram must be used with and in the context of the accompanying report.
All permanent features are located approximately.

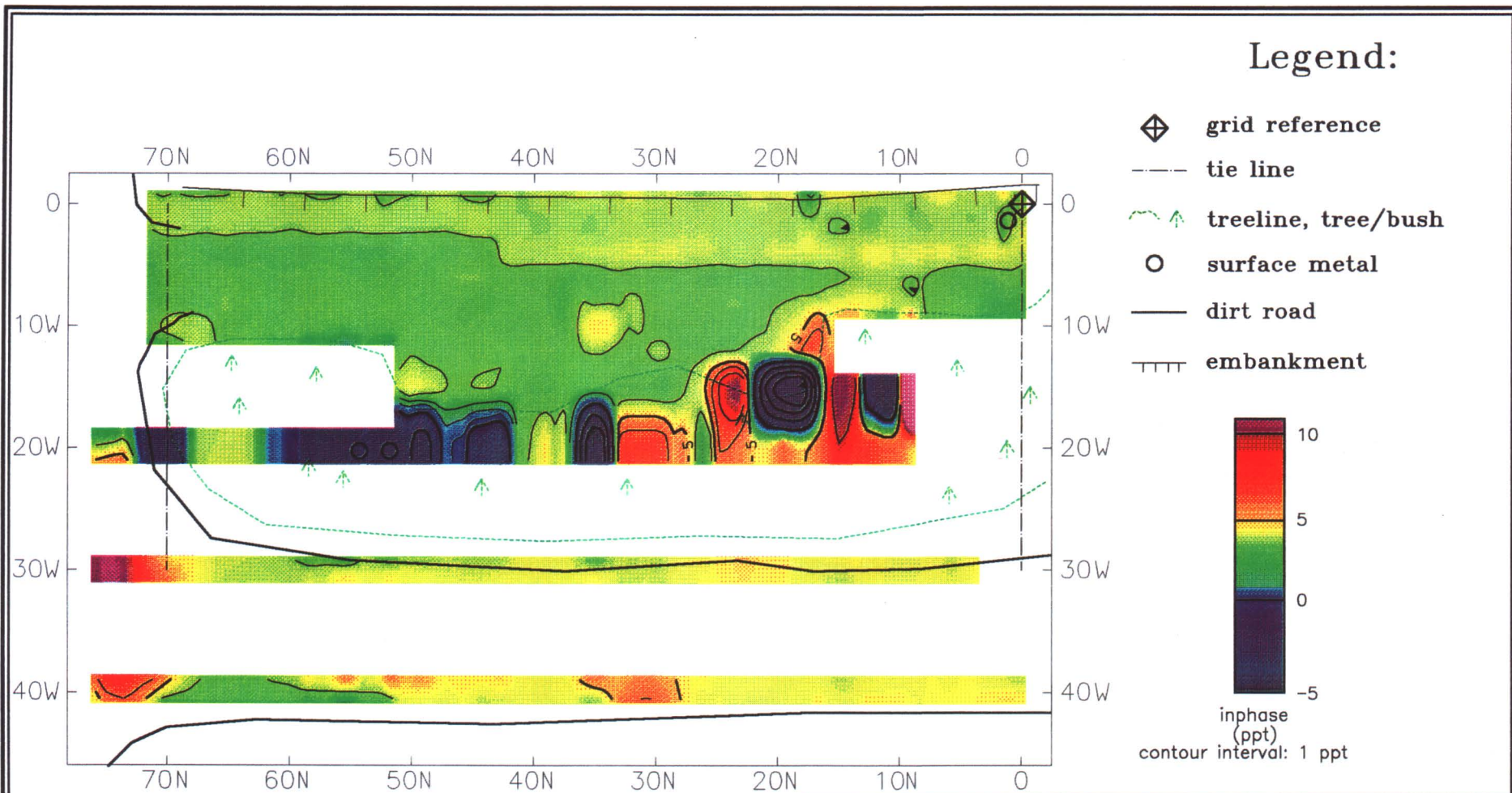
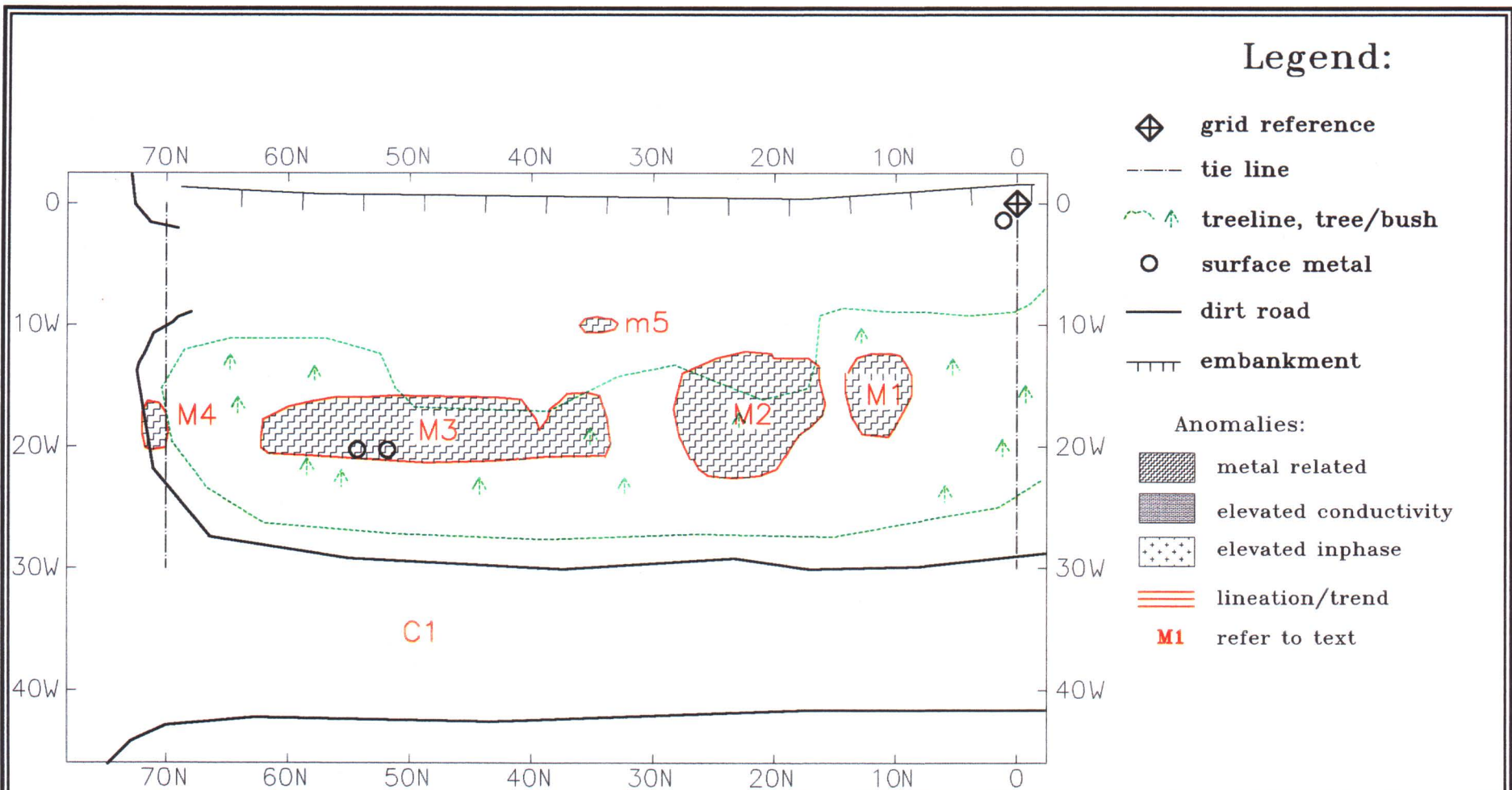


Figure: B.3.c
Blanchard Pumping Station
Inphase: Grid 4

Project: DIAND Pipeline Assessment	
Location: Blanchard Pumping Station, Yukon	
Client: UMA Engineering Ltd.	
Survey Date: July, 1995	Project No.: H33
Instrument: EM31/EM61	

Hyd-Eng™
GEOPHYSICS INC.

Note: This diagram must be used with and in the context of the accompanying report.
 All permanent features are located approximately.

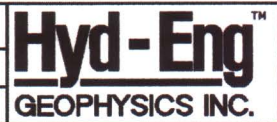


Legend:

- ⊕ grid reference
 - tie line
 - - -> treeline, tree/bush
 - surface metal
 - dirt road
 - - - embankment
- Anomalies:**
- ▨ metal related
 - ▩ elevated conductivity
 - ⋯ elevated inphase
 - ≡ lination/trend
 - M1** refer to text

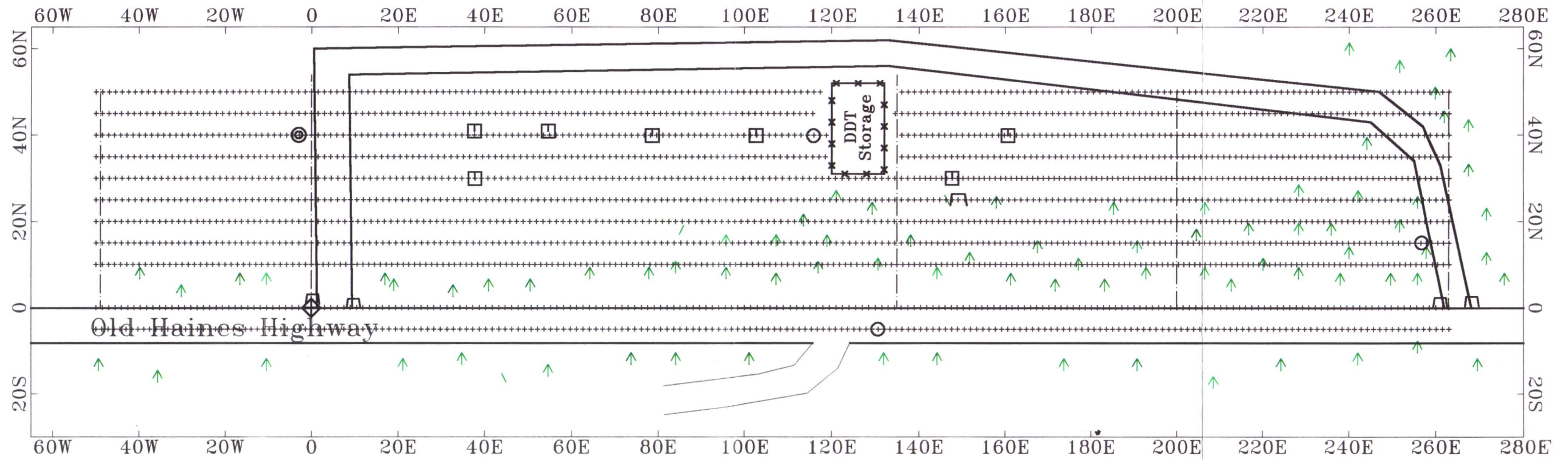
**Figure: B.3.d
Blanchard Pumping Station
Interpretation Map: Grid 4**

Project: DIAND Pipeline Assessment	
Location: Blanchard Pumping Station, Yukon	
Client: UMA Engineering Ltd.	
Survey Date: July, 1995	Project No.: H33
Instrument: EM31/EM61	



Note: This diagram must be used with and in the context of the accompanying report. All permanent features are located approximately.

BORDER PUMPING STATION



Legend:

- *-* fence
- roads
- ⊕ grid reference
- - - tie line
- ↑ tree/bush
- surface metal
- culvert
- ▣ concrete
- ⊙ pipe
- + EM31 data point

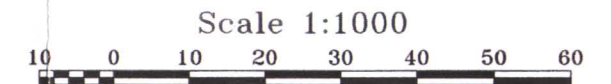
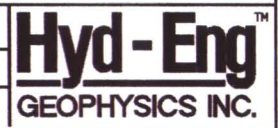
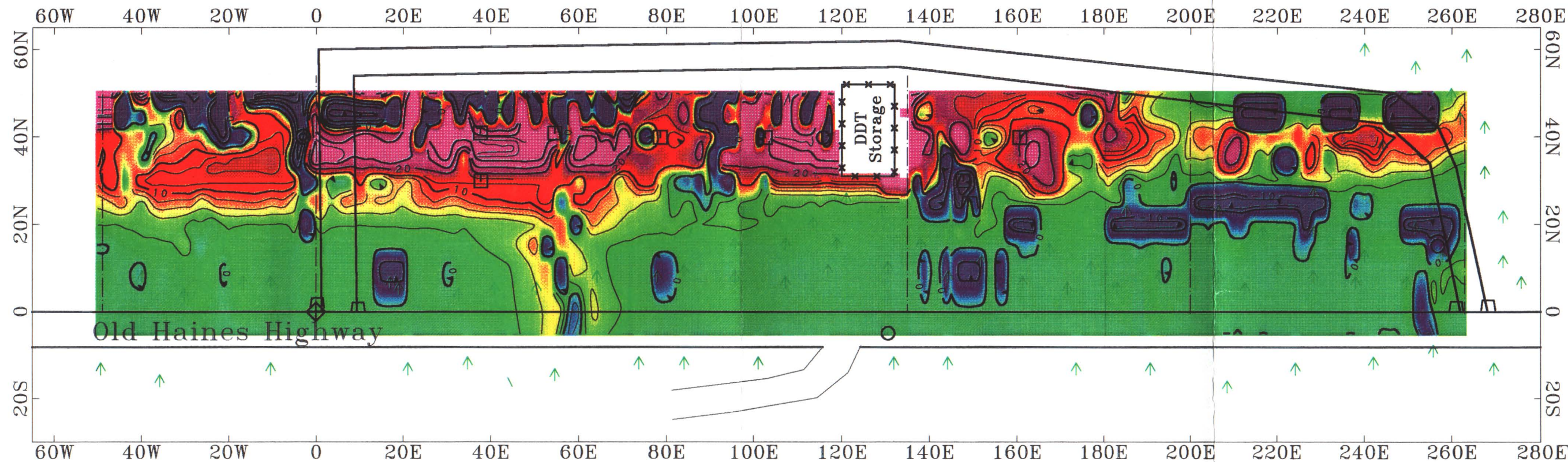


Figure: C.1.a
Border Pumping Station
 Survey Stations : Grid 1

Project: DIAND Pipeline Assessment	
Location: near Haines, Alaska	
Client: UMA Engineering Ltd.	
Survey Date: July, 1995	Project No.: H33
Instrument: EM31/EM61	



Note: This diagram must be used with and in the context of the accompanying report.
 All permanent features are located approximately.



Legend:

- fence
- roads
- ⊕ grid reference
- tie line
- ↑ tree/bush
- surface metal
- culvert
- ▣ concrete
- pipe

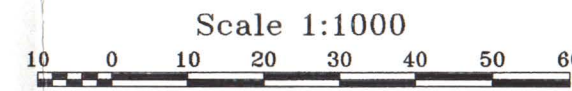
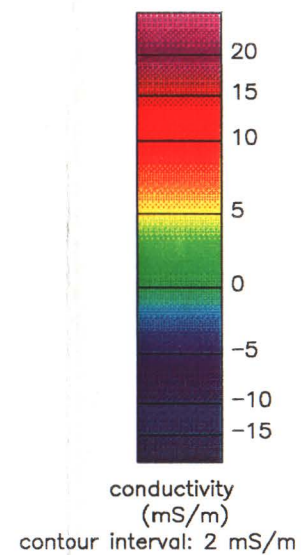
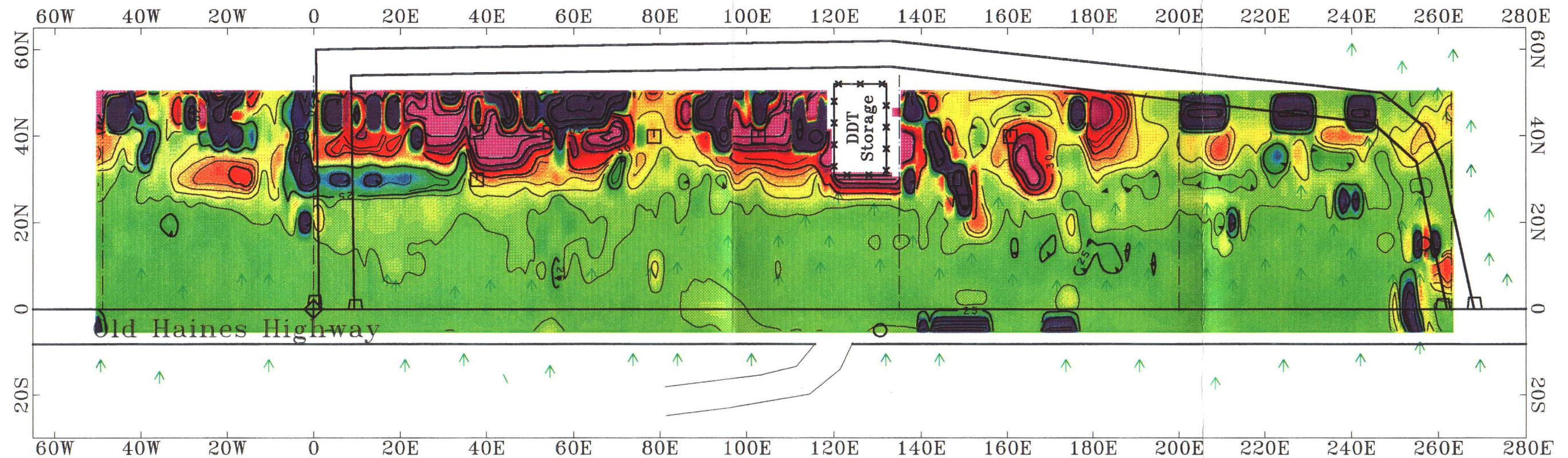


Figure: C.1.b
Border Pumping Station
Apparent Conductivity: Grid 1

Project: DIAND Pipeline Assessment		Hyd-Eng GEOPHYSICS INC.
Location: near Haines, Alaska		
Client: UMA Engineering Ltd.		
Survey Date: July, 1995	Project No.: H33	
Instrument: EM31/EM61		

Note: This diagram must be used with and in the context of the accompanying report.
 All permanent features are located approximately.



Legend:

- *** fence
- roads
- ⊕ grid reference
- tie line
- ↑ tree/bush
- surface metal
- ▭ culvert
- ▣ concrete
- pipe

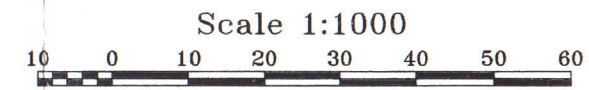
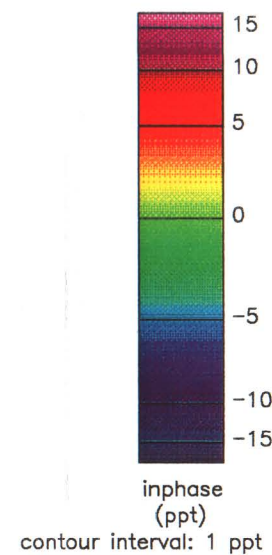
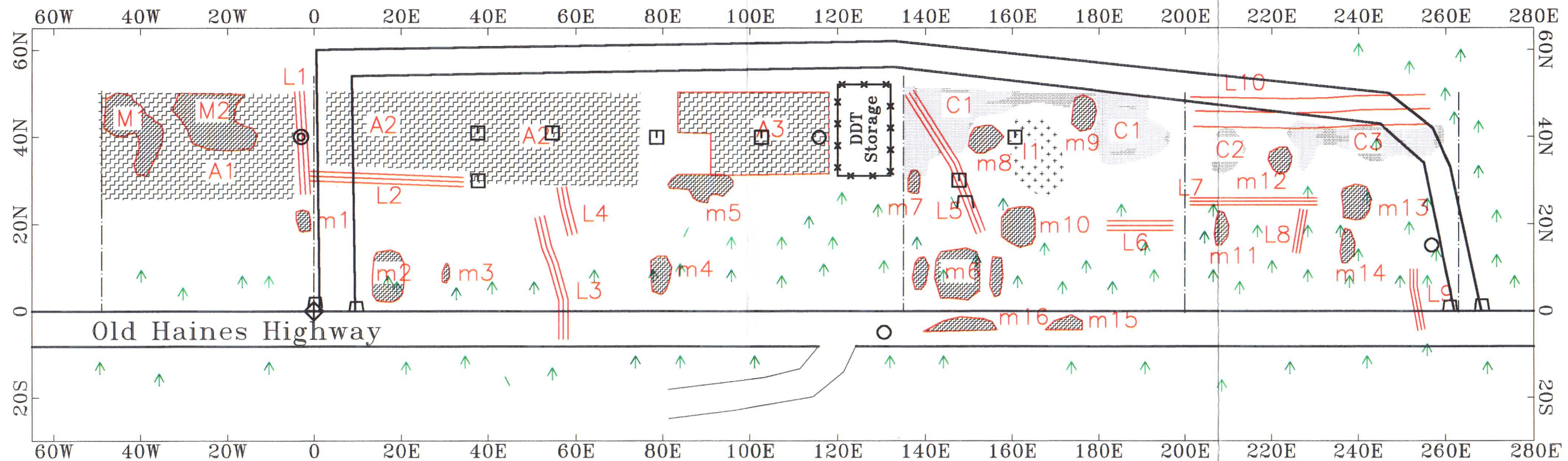


Figure: C.1.c
Border Pumping Station
Inphase: Grid 1

Project: DIAND Pipeline Assessment		Hyd-Eng GEOPHYSICS INC.
Location: near Haines, Alaska		
Client: UMA Engineering Ltd.		
Survey Date: July, 1995	Project No.: H33	
Instrument: EM31/EM61		

Note: This diagram must be used with and in the context of the accompanying report.
 All permanent features are located approximately.



Legend:

- fence
- roads
- ⊕ grid reference
- tie line
- ↑ tree/bush
- surface metal
- culvert
- concrete
- ⊙ pipe

Anomalies:

- ▨ metal related
- ▨ elevated conductivity
- ▨ elevated inphase
- ≡≡≡ lineation/trend
- M1** refer to text

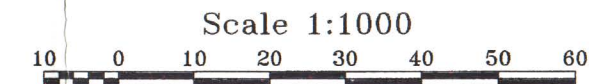
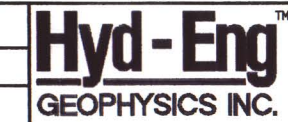


Figure: C.1.d
Border Pumping Station
Interpretation Map: Grid 1

Project: DIAND Pipeline Assessment	
Location: near Haines, Alaska	
Client: UMA Engineering Ltd.	
Survey Date: July, 1995	Project No.: H33
Instrument: EM31/EM61	



Note: This diagram must be used with and in the context of the accompanying report.
 All permanent features are located approximately.

APPENDIX G
ANALYTICAL RESULTS

G. ANALYTICAL RESULTS

a) **Sample Cross Reference Table:** Samples were sequentially labelled in the field using a simple system (SS=soil sample, WS=water sample, a P at the end of a sample name indicates that it was a plant sample, BS=Barrel Sample). The samples were submitted to the analytical laboratory using that name, the lab then issued an internal sample number, the lab prefix for all the numbers in the table was 9514-. The samples were then given a more descriptive label using the following system.

(Site ID)(Sample Set)(Sample Type)(Sample Number)

Site ID

Mile 207.6 Spill Site SP
 Haines Junction Station JU
 Million Dollar Falls MD
 Blanchard River Station BL
 Border Station BO

Sample Set

All samples in this project were coded 1

Sample Type

Surface soil S
 Subsurface soil SS
 Surface water W
 Groundwater GW
 Plant P
 Drum contents DS

Sample Number

Each sample type for each site sequentially numbered.

Report Sample Number	Lab Sample Number	Field Sample Number
SP1SS001		SS-01
SP1SS002		SS-02
SP1SS003		SS-03
SP1SS004		SS-04
SP1SS005		SS-05
SP1SS006	01	SS-11
SP1SS007	02	SS-12
SP1SS008	03	SS-13
SP1SS009	04	SS-14
SP1SS010	05	SS-15
SP1SS011	06	SS-16
SP1SS012	07	SS-17
SP1SS013	08	SS-18
SP1SS014	09	SS-19
SP1SS015	10	SS-20
SP1SS016	11	SS-21
SP1SS017	12	SS-22

Report Sample Number	Lab Sample Number	Field Sample Number
SP1SS018	13	SS-23
SP1SS019	14	SS-24
SP1SS020	15	SS-24B
SP1SS021	16	SS-25
SP1SS022	17	SS-26
SP1SS023	18	SS-27
SP1SS024	19	SS-28
SP1SS025	20	SS-29
SP1SS026	21	SS-30
SP1SS027	22	SS-31
SP1SS028	23	SS-32
SP1SS029	24	SS-33
SP1SS030	25	SS-34
SP1SS031	26	SS-35
SP1SS032	27	SS-36
SP1SS033	160	SS-113
SP1SS034	161	SS-114
SP1SS035	162	SS-115
JU1SS001	28	SS-37
JU1SS002	29	SS-38
JU1SS003	30	SS-39
JU1SS004	31	SS-40
JU1SS005	32	SS-41
JU1SS006	33	SS-42
JU1SS007	34	SS-43
JU1SS008	35	SS-44
JU1SS009	36	SS-45
JU1SS010	37	SS-46
JU1SS011	38	SS-47
JU1SS012	39	SS-48
JU1SS013	40	SS-49
JU1SS014	41	SS-50
JU1SS015	42	SS-51
JU1SS016	43	SS-52
JU1SS017	44	SS-53
JU1SS018	45	SS-54
JU1SS019	46	SS-55
JU1SS020	47	SS-56
JU1DS001	48	BS-1
MD1GW001	100-103	WS-5
MD1GW002	120-123	WS-9
MD1S001		SS-06
MD1S002		SS-07
MD1S003	90	SS-79
MD1S004	91	SS-80
MD1S005	92	SS-81
MD1S006	93	SS-82
MD1S007	94	SS-83
MD1S008	96	SS-85
MD1S009	97	SS-86

Report Sample Number	Lab Sample Number	Field Sample Number
MD1S010	98	SS-87
MD1S011	99	SS-88
MD1SS001		SS-08
MD1SS002	95	SS-84
MD1W001	105-109	WS-6
MD1W002	110-114	WS-7
MD1W003	115-119	WS-8
MD1W004	104	Blank 4
BL1GW001	49-53	WS-1
BL1GW002	54-58	WS-2
BL1GW003	59-62, 241	WS-3
BL1GW004	63-67	WS-4
BL1GW005	173-177	MW1
BL1GW006	178-182	MW2
BL1GW007	183-186	MW3
BL1GW008	173-180	MW4
BL1GW009	196, 198, 200, 202, 204	MW5A
BL1GW010	197, 199, 201, 203, 205	MW5B
BL1P001	124-125	SS-75P1
BL1P002	126-127	SS-75P2S
BL1P003	128-129	SS-75P2R
BL1P004	130-131	SS-76P1
BL1P005	132-133	SS-76P2S
BL1P006	134-135	SS-76P2R
BL1P007	249-250	SS-165P
BL1S001		SS-09
BL1S002		SS-10
BL1S003	80	SS-69
BL1S004	81	SS-70
BL1S005	82	SS-71
BL1S006	83	SS-72
BL1S007	86	SS-75
BL1S008	87	SS-76
BL1S009	88	SS-77
BL1S010	89	SS-78
BL1S011	136	SS-89
BL1S012	137	SS-90
BL1S013	138	SS-91
BL1S014	247	SS-165
BL1S015	248	SS-166
BL1SS001	68	SS-57
BL1SS002	69	SS-58
BL1SS003	70	SS-59
BL1SS004	71	SS-60
BL1SS005	72	SS-61
BL1SS006	73	SS-62
BL1SS007	74	SS-63
BL1SS008	75	SS-64
BL1SS009	76	SS-65
BL1SS010	77	SS-66

Report Sample Number	Lab Sample Number	Field Sample Number
BL1SS011	78	SS-67
BL1SS012	79	SS-68
BL1SS013	84	SS-73
BL1SS014	85	SS-74
BL1SS015	139	SS-92
BL1SS016	140	SS-93
BL1SS017	141	SS-94
BL1SS018	142	SS-95
BL1SS019	143	SS-96
BL1SS020	144	SS-97
BL1SS021	145	SS-98
BL1SS022	146	SS-99
BL1SS023	147	SS-100
BL1SS024	148	SS-101
BL1SS025	149	SS-102
BL1SS026	150	SS-103
BL1SS027	151	SS-104
BL1SS028	152	SS-105
BL1SS029	153	SS-106
BL1SS030	154	SS-107
BL1SS031	155	SS-108
BL1SS032	156	SS-109
BL1SS033	157	SS-110
BL1SS034	158	SS-111
BL1SS035	159	SS-112
BL1SS036	163	SS-116
BL1SS037	164	SS-117
BL1SS038	165	SS-118
BL1SS039	166	SS-119
BL1SS040	167	SS-120
BL1SS041	168	SS-121
BL1SS042	169	SS-122
BL1SS043	170	SS-123
BL1SS044	171	SS-124
BL1SS045	172	SS-125
BL1W001	242-246	WS-10
BO1GW001	264, 266, 268, 270	MW-8A
BO1GW002	265, 267, 269, 271	MW-8B
BO1S001	239	SS-163
BO1S002	240	SS-164
BO1SS001	187	SS-126
BO1SS002	188	SS-127
BO1SS003	189	SS-128
BO1SS004	190	SS-129
BO1SS005	191	SS-130
BO1SS006	207	SS-131
BO1SS007	208	SS-132
BO1SS008	209	SS-133
BO1SS009	210	SS-134
BO1SS010	211	SS-135

Report Sample Number	Lab Sample Number	Field Sample Number
B01SS011	212	SS-136
B01SS012	213	SS-137
B01SS013	214	SS-138
B01SS014	215	SS-139
B01SS015	216	SS-140
B01SS016	217	SS-141
B01SS017	218	SS-142
B01SS018	219	SS-143
B01SS019	220	SS-144
B01SS020	221	SS-145
B01SS021	222	SS-146
B01SS022	223	SS-147
B01SS023	224	SS-148
B01SS024	225	SS-149
B01SS025	226	SS-150
B01SS026	227	SS-151
B01SS027	228	SS-152
B01SS028	229	SS-153
B01SS029	230	SS-154
B01SS030	231	SS-155
B01SS031	232	SS-156
B01SS032	233	SS-157
B01SS033	234	SS-158
B01SS034	235	SS-159
B01SS035	236	SS-160
B01SS036	237	SS-161
B01SS037	238	SS-162
B01SS038	251	SS-167
B01SS039	252	SS-168
B01SS040	253	SS-169
B01SS041	254	SS-170
B01SS042	255	SS-171
B01SS043	256	SS-173
B01SS044	257	SS-174
B01SS045	258	SS-175
B01SS046	259	SS-176
B01SS047	260	SS-177
B01SS048	261	SS-178
B01SS049	262	SS-179
B01SS050	263	SS-180
B01W001	272	Blank 2

b) Field Test Kit Results

Sample	PCBs (ppm)	TPH (ppm)	PAH (ppm)	BTEX (ppm)	PID ¹ (ppm)	Conduc. (mmhos/cm)
SP1SS001	<5	>625	<10	>50		
SP1SS002	<5	25-125	<10	>50		
SP1SS003	<5	>625	10-100	>50		
SP1SS004	<5	>625	<10	>50		
SP1SS005	<5	>625	<10	>50		
SP1SS006					0	
SP1SS007					0	
SP1SS008	<10	50-250	<2.0	20-100	0	
SP1SS009		25-125		<10	0	
SP1SS010		50-250		20-100*	0	
SP1SS011		<50	<2.0	20-100*	0	
SP1SS012		<25		<10	2	
SP1SS013	<10	50-250*		20-100	32	
SP1SS014		125-625	<1.0*	50-300	290	
SP1SS015	>5	>625	>1.0	>300	200	
SP1SS016		250-1250	<2.0*	50-300	200	
SP1SS017						
SP1SS018		<25		<10	1 2	
SP1SS019	<10	>1250	>1.0	>600	290	
SP1SS020		<25	<1.0*	<10	34	
SP1SS021						
SP1SS022						
SP1SS023					7	
SP1SS024		<25		<10	0.5	
SP1SS025					19	
SP1SS026					28	
SP1SS027						
SP1SS028						
SP1SS029	<5	>625	>1.0	>300	290	
SP1SS030		25-125*		<10	120	
SP1SS031		250		>100	230	
SP1SS032		25-125	<1.0*	10-50	64	
SP1SS033	<1		<100		200	
SP1SS034	<1				8	
SP1SS035	<1				210	
JU1DS001						
JU1SS001	<5	5-25	<1.0*	10-50	2	
JU1SS002						
JU1SS003		5-25		10-50	0	
JU1SS004	<5	5-25	<1.0	10-50	42	
JU1SS005						
JU1SS006	<5	5-25	<1.0	10-50	3	
JU1SS007						
JU1SS008		5-25	<1.0	10-50	0	
JU1SS009	<5	25-125	>1.0	10-50	3	

1. Photoionization detector (PID) for volatile organic compounds (VOCs).

Sample	PCBs (ppm)	TPH (ppm)	PAH (ppm)	BTEX (ppm)	PID (ppm)	Conduc. (mmhos/cm)
JU1SS010						
JU1SS011						
JU1SS012	<5	5-25		10-50	0	
JU1SS013	<5	5-25		10-50	0	
JU1SS014						
JU1SS015		5-25		10-50	1	
JU1SS016						
JU1SS017						
JU1SS018						
JU1SS019		5-25	<1.0	10-50	?	
JU1SS020	<5	5-25		10-50	0.5	
MD1GW001						1220
MD1GW002						1220
MD1S001	<5	<25	<10	2-10		
MD1S002	<5	25-125	<10	2-10		
MD1S003					0	
MD1S004						
MD1S005						
MD1S006						
MD1S007						
MD1S008						
MD1S009						
MD1S010						
MD1S011					0	
MD1SS001	<5	25-125	<10	2-10		
MD1SS002					0	
MD1W001						32
MD1W002						30
MD1W003						26
MD1W004						
BL1GW001				<0.1		
BL1GW002				<0.1		
BL1GW003				>3		
BL1GW004				0.1-3		
BL1GW005				>3		188
BL1GW006				>3	172	175
BL1GW007				<0.1		570
BL1GW008				<0.1		310
BL1GW009						
BL1GW010						
BL1P001						
BL1P002						
BL1P003						
BL1P004						
BL1P005						
BL1P006						
BL1P007						

1. Photoionization detector (PID) for volatile organic compounds (VOCs).

Sample	PCBs (ppm)	TPH (ppm)	PAH (ppm)	BTEX (ppm)	PID ¹ (ppm)	Conduc. (mmhos/cm)
BL1S001	>10	<25	<10	2-10		
BL1S002	<5	125-625	10-100	>50		
BL1S003						
BL1S004						
BL1S005	>1	25-125	>1.0		72	
BL1S006	>1	25-125	>1.0		82	
BL1S007	<1	<25	<1.0		0	
BL1S008	<1	<25	<1.0		6.4	
BL1S009						
BL1S010						
BL1S011	>2		<200		110	
BL1S012						
BL1S013						
BL1S014						
BL1S015						
BL1SS001	<1	25-125*	<1.0		0	
BL1SS002						
BL1SS003	<1	25-125*	<1.0		0	
BL1SS004						
BL1SS005	<1	25-125*	<1.0		0	
BL1SS006						
BL1SS007	<1	25-125*	<1.0*		0	
BL1SS008	<1	25-125	<1.0		220	
BL1SS009						
BL1SS010						
BL1SS011	<1	25-125*	<1.0		0	
BL1SS012						
BL1SS013	1-5	25-125	>1.0		88	
BL1SS014	1-5	>625	>1.0		190	
BL1SS015					0.4	
BL1SS016					0.3	
BL1SS017					0.3	
BL1SS018					0.3	
BL1SS019	>1		<100		194	
BL1SS020					145	
BL1SS021					58	
BL1SS022					13	
BL1SS023					8.5	
BL1SS024						
BL1SS025						
BL1SS026					2	
BL1SS027	>1		<100		180	
BL1SS028					80	
BL1SS029						
BL1SS030						
BL1SS031					10	
BL1SS032					52	

1. Photoionization detector (PID) for volatile organic compounds (VOCs).

Sample	PCBs (ppm)	TPH (ppm)	PAH (ppm)	BTEX (ppm)	PID ¹ (ppm)	Conduc. (mmhos/cm)
BL1SS033					1	
BL1SS034					0	
BL1SS035					0.2	
BL1SS036					0.4	
BL1SS037					34	
BL1SS038					110	
BL1SS039	>1		>100		118	
BL1SS040	>1		<100		44	
BL1SS041	<2				28	
BL1SS042						
BL1SS043						
BL1SS044						
BL1SS045					0.4	
BL1W001						
BO1GW001						
BO1GW002						
BO1S001						
BO1S002						
BO1SS001					0	
BO1SS002	<1				0	
BO1SS003					0	
BO1SS004						
BO1SS005						
BO1SS006					0	
BO1SS007					0	
BO1SS008	<1				142	
BO1SS009					38	
BO1SS010					26	
BO1SS011					27	
BO1SS012	<1				21	
BO1SS013					30	
BO1SS014					190	
BO1SS015	<1				220	
BO1SS016					68	
BO1SS017					68	
BO1SS018						
BO1SS019						
BO1SS020						
BO1SS021						
BO1SS022					15	
BO1SS023					2	
BO1SS024	<1				3	
BO1SS025						
BO1SS026						
BO1SS027					0	
BO1SS028					57	
BO1SS029	<1				90	

1. Photoionization detector (PID) for volatile organic compounds (VOCs).

Sample	PCBs (ppm)	TPH (ppm)	PAH (ppm)	BTEX (ppm)	PID (ppm)	Conduc. (mmhos/cm)
B01SS031	<1				138	
B01SS032						
B01SS033						
B01SS034					6	
B01SS035						
B01SS036						
B01SS037						
B01SS038					0.4	
B01SS039					6	
B01SS040					22	
B01SS041					22	
B01SS042					8.8	
B01SS043					6.1	
B01SS044					2.4	
B01SS045					12.8	
B01SS046					2.4	
B01SS047					3.2	
B01SS048					2.8	
B01SS049						
B01SS050						
B01W001						

c) Laboratory Results

Inorganic Elements Results for Soil Samples ($\mu\text{g/g}$)

Sample	SP1SS022	SP1SS028	JU1SS002	JU1SS005	JU1SS007	JU1SS011	JU1SS016
Moisture %	52.8	49.3	9.44	8.28	9.45	8.82	6.62
Arsenic	6.3	8.5	3.2	2.6	3	3.8	3.1
Barium	241	244	148	54	73	59	32
Cadmium	0.39	< 0.25	1.7	0.26	0.29	< 0.25	< 0.25
Chromium	52	53	79	49	84	28	34
Cobalt	16	18	15	11	15	13	11
Copper	62	54	97	52	56	56	52
Lead	5	110	20	18	6	4	2
Mercury	0.019	0.02	0.086	0.029	0.023	0.027	0.023
Molybdenum	< 4	< 4	< 4	< 4	< 4	< 4	< 4
Nickel	43	47	54	34	50	42	29
Selenium	1.2	0.9	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Silver	< 2	< 2	< 2	< 2	< 2	< 2	< 2
Tin	< 5	< 5	46	< 5	< 5	< 5	< 5
Zinc	76	73	259	81	181	67	67
Aluminum	20900	21400	20700	18500	21400	19000	15000
Antimony	< 10	< 10	< 10	< 10	< 10	< 10	< 10
Beryllium	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Boron	23	25	30	19	23	24	17
Calcium	23000	15700	19400	18100	9620	11000	9000
Iron	29300	37500	48100	33200	39500	34700	30300
Magnesium	10100	10100	13300	11800	13500	12800	10900
Manganese	747	594	670	551	621	581	559
Phosphorus	2890	2680	2230	1860	1520	1780	1370
Sodium	470	388	321	198	230	189	58
Strontium	89	73	62	58	43	41	28
Titanium	969	905	757	575	833	506	295
Vanadium	66	77	70	55	74	59	27

Inorganic Elements Results for Soil Samples (cont)

Sample	JU1SS017	JU1SS018	MD1S004	MD1S005	MD1S008	MD1S010	BL1S004
Moisture %	14.1	9.95	43.5	51.9	29.9	55.6	29.4
Arsenic	4.8	1.8	8.7	6.3	3.8	5.9	3.2
Barium	115	75	290	270	200	272	253
Cadmium	< 0.25	< 0.25	0.26	0.27	< 0.25	< 0.25	< 0.25
Chromium	80	65	64	35	35	53	41
Cobalt	21	14	12	9	9	13	12
Copper	41	40	39	47	20	37	32
Lead	5	2	139	57	< 1	< 1	1
Mercury	0.019	0.022	0.31	0.054	0.025	0.055	0.025
Molybdenum	< 4	< 4	< 4	< 4	< 4	< 4	< 4
Nickel	45	46	30	22	22	33	30
Selenium	< 0.5	< 0.5	1.2	0.9	0.6	1.3	< 0.5
Silver	< 2	< 2	< 2	< 2	< 2	< 2	< 2
Tin	< 5	< 5	< 5	6	< 5	< 5	< 5
Zinc	75	39	269	497	52	73	54
Aluminum	29300	19000	18400	16900	15100	20800	17100
Antimony	< 10	< 10	< 10	< 10	< 10	< 10	< 10
Beryllium	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Boron	26	19	31	26	22	35	18
Calcium	10500	5380	15200	84700	11900	20500	31200
Iron	47200	31700	37500	33600	31200	42200	28800
Magnesium	13100	12500	9770	7270	9330	13100	11000
Manganese	737	526	1010	1870	856	869	1640
Phosphorus	2360	1100	2690	3870	2090	3450	1530
Sodium	298	161	476	545	354	528	267
Strontium	52	28	68	120	45	69	49
Titanium	929	180	1220	391	1070	1890	1050
Vanadium	103	12	64	46	52	77	57

Inorganic Elements Results for Soil Samples (cont)

Sample	BL1S010	BL1S013	BL1SS02	BL1SS004	BL1SS006	BL1SS009	BL1SS012
Moisture %	79.7	92.2	13.9	18.5	7.65	13	4.28
Arsenic	85	138	4.6	7.8	5.3	5.6	3.5
Barium	4770	2360	122	215	140	118	115
Cadmium	2.2	< 0.25	< 0.25	< 0.25	< 0.25	0.41	< 0.25
Chromium	58	59	39	62	46	27	34
Cobalt	90	55	9	13	10	9	10
Copper	55	40	25	32	37	30	27
Lead	< 1	< 1	1	13	30	6	4
Mercury	0.19	0.26	0.017	0.029	0.036	0.076	0.016
Molybdenum	< 4	< 4	< 4	< 4	< 4	< 4	< 4
Nickel	138	41	25	35	29	24	26
Selenium	2.2	3.1	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Silver	17	< 2	< 2	< 2	< 2	< 2	< 2
Tin	5	< 5	< 5	< 5	< 5	< 5	< 5
Zinc	3570	1490	51	137	184	166	70
Aluminum	10000	1450	14200	19700	17500	11400	13700
Antimony	< 10	< 10	< 10	< 10	< 10	< 10	< 10
Beryllium	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Boron	153	275	18	24	20	16	16
Calcium	36300	17000	5070	6200	7960	5180	4750
Iron	272000	433000	23200	33300	29700	21900	26100
Magnesium	5830	1180	8660	11700	9970	6830	8620
Manganese	128000	49000	386	531	508	372	490
Phosphorus	2470	1260	1560	1890	1690	1670	2170
Sodium	192	71	285	240	243	176	142
Strontium	220	113	24	28	43	29	20
Titanium	674	47	695	592	716	606	409
Vanadium	85	113	46	56	55	40	41

Inorganic Elements Results for Soil Samples (cont)

Sample	BL1SS025	BL1SS030	BL1SS042	BO1SS004	BO1SS019	BO1SS021	BO1SS026
Moisture %	5.38	4.73	7.15	4.42	16.8	3.69	3.95
Arsenic	2.2	1.4	1.8	2	4	1.2	2
Barium	78	162	140	72	130	58	92
Cadmium	< 0.25	< 0.25	< 0.25	< 0.25	0.37	< 0.25	0.35
Chromium	25	41	28	24	31	35	14
Cobalt	8	10	10	8	11	8	7
Copper	31	31	30	31	45	27	30
Lead	< 1	< 1	< 1	10	8	< 1	5
Mercury	0.029	0.018	0.032	0.006	0.013	0.004	0.003
Molybdenum	< 4	< 4	< 4	< 4	< 4	< 4	< 4
Nickel	22	29	25	12	17	16	15
Selenium	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Silver	< 2	< 2	< 2	< 2	< 2	< 2	< 2
Tin	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Zinc	37	48	42	35	59	38	37
Aluminum	10100	14000	11600	11500	14200	11700	9820
Antimony	< 10	< 10	< 10	< 10	< 10	< 10	< 10
Beryllium	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Boron	14	16	14	12	14	11	8.2
Calcium	5900	5780	30500	4800	8710	6940	20900
Iron	22100	26300	25400	19300	24400	19900	15000
Magnesium	7050	9780	9510	6030	7690	7390	5650
Manganese	304	612	550	313	346	254	220
Phosphorus	3040	1470	1170	1430	1750	1470	1210
Sodium	168	240	245	243	320	409	745
Strontium	19	20	64	27	37	35	48
Titanium	214	515	193	432	736	435	390
Vanadium	39	44	34	41	51	50	32

Inorganic Elements Results for Soil Samples (cont)

Sample	BO1SS036	BO1SS037	BO1S002	BL1S015	BO1SS049	BO1SS050
Moisture %	4.67	4.57	7.76	13.3	4.49	6.56
Arsenic	1.4	1.4	1.3	1.3	2	1.5
Barium	111	108	50	86	85	149
Cadmium	0.37	0.38	< 0.25	< 0.25	< 0.25	< 0.25
Chromium	14	14	13	17	22	45
Cobalt	6	9	6	6	8	12
Copper	33	40	20	12	27	41
Lead	13	11	7	< 1	5	4
Mercury	0.003	0.003	0.009	0.013	0.005	0.015
Molybdenum	< 4	< 4	< 4	< 4	< 4	< 4
Nickel	10	13	9	13	13	24
Selenium	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Silver	< 2	< 2	< 2	< 2	< 2	< 2
Tin	< 5	< 5	< 5	< 5	< 5	< 5
Zinc	54	56	42	30	45	56
Aluminum	10400	11400	9900	7410	10100	16800
Antimony	< 10	< 10	< 10	< 10	< 10	< 10
Beryllium	< 1	< 1	< 1	< 1	< 1	< 1
Boron	9.9	12	8.4	9.5	12	17
Calcium	23600	25300	20100	3700	6580	22300
Iron	18000	20900	16100	14300	19900	29400
Magnesium	7300	7880	8500	4640	6050	11600
Manganese	327	376	389	391	247	491
Phosphorus	1480	1010	1240	1060	1690	1130
Sodium	663	698	150	142	402	599
Strontium	49	51	32	14	26	57
Titanium	266	358	118	277	600	350
Vanadium	39	44	24	19	39	61

Inorganic Element Results for Water Samples (mg/L)

Sample	MD1GW001	MD1W001	MD1GW002	BL1GW001	BL1GW002	BL1GW004	BL1GW003
Aluminum	0.2	0.4	0.2	< 0.15	< 0.15	< 0.15	4.4
Antimony	< 0.15	< 0.15	< 0.15	< 0.15	< 0.15	< 0.15	< 0.15
Arsenic	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	0.002	0.014
Barium	0.031	0.1	0.037	0.066	0.11	0.11	0.58
Beryllium	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003
Boron	13.3	0.16	12.9	0.03	0.04	0.06	0.08
Cadmium	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002
Calcium	6.9	48.1	7.74	29.2	67.2	46.5	124
Chromium	0.001	0.001	< 0.001	< 0.001	< 0.001	< 0.001	0.008
Cobalt	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	0.001	0.007
Copper	0.004	0.004	0.001	0.11	0.004	0.002	0.016
Iron	0.82	0.82	1.04	< 0.0300	< 0.0300	2.27	18.6
Lead	0.001	< 0.001	0.001	0.003	< 0.001	0.001	0.004
Magnesium	1.92	9.12	2.09	5.57	10.5	5.87	16.1
Manganese	0.19	0.045	0.22	< 0.003	< 0.003	1.64	4.9
Mercury	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.0500
Molybdenum	< 0.001	< 0.001	< 0.001	0.003	< 0.001	< 0.001	0.002
Nickel	< 0.001	0.002	< 0.001	0.003	< 0.001	0.003	0.01
Phosphorus	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4	0.6
Potassium	2.23	2.11	2.32	2.37	2.09	2.05	4.82
Selenium	< 0.001	< 0.001	< 0.001	0.003	0.001	0.001	< 0.001
Silicon	12.6	10.7	11.4	7.7	11.4	15.5	36.3
Silver	< 0.001	0.001	< 0.001	0.002	0.002	< 0.001	< 0.001
Sodium	439	5.1	380	2.4	2.8	5.1	5.2
Strontium	0.29	0.13	0.31	0.075	0.18	0.15	0.39
Tin	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
Titanium	< 0.006	0.025	< 0.006	< 0.006	< 0.006	< 0.006	0.32
Vanadium	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	0.02
Zinc	0.052	< 0.01	0.067	0.037	< 0.01	0.017	0.05
Zirconium	< 0.015	< 0.015	< 0.015	< 0.015	< 0.015	< 0.015	< 0.015

Inorganic Element Results for Water Samples (cont)

Sample	BL1GW005	BL1GW009	BL1GW006	BL1GW010	BL1W001	BO1GW001	BO1GW002
Aluminum	15	< 0.15	7.6	< 0.15	< 0.15	166	571
Antimony	< 0.15	< 0.15	< 0.15	< 0.15	< 0.15	< 0.15	< 0.15
Arsenic	0.01	0.002	0.008	0.002	0.001	0.14	0.23
Barium	0.37	0.52	0.31	0.53	0.21	2.45	5.64
Beryllium	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003
Boron	0.05	0.27	0.05	0.28	0.02	0.25	0.47
Cadmium	0.0008	< 0.0002	0.0011	< 0.0002	< 0.0002	0.012	0.0022
Calcium	46.3	149	34	145	96.7	153	318
Chromium	0.04	< 0.001	0.02	< 0.001	< 0.001	0.16	1.3
Cobalt	0.009	0.021	0.015	0.025	0.001	0.074	0.099
Copper	0.09	0.003	0.14	0.002	< 0.001	0.71	2.24
Iron	27.7	0.1	21.2	0.04	0.57	229	790
Lead	0.006	< 0.001	0.007	0.001	< 0.001	0.26	0.28
Magnesium	11.9	17.5	7.83	17.2	14.8	75.6	350
Manganese	3.3	1.97	6.06	2.01	0.059	6.62	15.6
Mercury	0.1	< 0.05	0.12	< 0.05	< 0.05	0.12	0.33
Molybdenum	0.007	0.005	0.003	0.005	< 0.001	0.018	0.007
Nickel	0.05	0.05	0.026	0.05	0.016	0.29	1.1
Phosphorus	1.4	< 0.4	1.3	< 0.4	< 0.4	13	45
Potassium	4.63	4.71	4.29	4.79	3.61	22.3	67.3
Selenium	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
Silicon	68.4	21.3	44.6	20.9	10.4	368	413
Silver	0.001	< 0.001	< 0.001	< 0.001	< 0.001	0.003	0.007
Sodium	10	13.5	5.5	12.6	18.2	35.9	111
Strontium	0.17	0.45	0.18	0.44	0.32	0.77	1.73
Tin	< 0.001	< 0.001	0.001	< 0.001	0.003	< 0.001	< 0.001
Titanium	0.73	< 0.006	0.44	< 0.006	< 0.006	4.08	26.9
Vanadium	0.05	< 0.01	0.03	< 0.01	< 0.01	0.38	1.83
Zinc	0.039	< 0.01	0.024	< 0.01	< 0.01	1.37	2.84
Zirconium	< 0.015	< 0.015	< 0.015	< 0.015	< 0.015	0.02	0.06

TEH Results for Soil Samples ($\mu\text{g/g}$)

Sample	TEH	Notes
SP1SS017	1300	1
SP1SS021	2500	1
SP1SS027	6000	1
JU1SS010	13000	2
MD1S006	<20	
MD1S007	180	2
BL1S012	6800	1
BL1S014	<20	
BL1SS024	360	1
BL1SS029	43	
BL1SS043	370	
BO1SS005	50	2
BOSS018	1300	1
BO1SS020	260	1
BO1SS025	<20	
BO1S001	3200	1
BO1SS041	77	
BO1SS045	35	
BO1SS046	<20	

Notes:

1. Presence of hydrocarbons with bp below C10 detected.
2. Presence of hydrocarbons with bp greater than C30.

TEH Results for Water Samples ($\mu\text{g/L}$)

Sample	TEH	Notes
MD1GW001	< 100	
MD1W001	< 100	
MD1GW002	< 100	
BL1GW003	4700	1
BL1GW004	< 100	
BL1GW005	690	1
BL1GW008	<100	
BL1GW009	3700	1
BL1GW010	4100	1
BL1W001	<100	
BO1GW001	1200	1
BO1GW002	150000	1

Notes:

1. Presence of hydrocarbons with bp below C10 detected.

PAH Results for Soil Samples (ng/g)

	SP1SS027	JU1SS010
Naphthalene	NDR(830)	8.6
Acenaphthylene	NDR(37)	<0.17
Acenaphthene	400	1.5
Fluorene	820	4.5
Phenanthrene	720	35
Anthracene	NDR(36)	5.4
Fluoranthene	12	4.1
Pyrene	31	NDR(24)
Benz(a)anthracene	4.8	NDR(8.5)
Chrysene	16	NDR(26)
Benzofluoranthenes	NDR(9.3)	NDR(7.1)
Benzo(e)pyrene	NDR(8.0)	NDR(5.3)
Benzo(a)pyrene	<4.8	<0.15
Perylene	<4.9	<0.16
Dibenz(ah)anthracene	NDR(9.3)	<0.83
Ideno(1,2,3,cd)pyrene	<4.0	<0.98
Benzo(ghi)perylene	NDR(6.9)	<0.8

NDR - Peak detected but did not meet quantification criteria.

PAH Results for Water Sample (ng/L)

	BL1GW004
Naphthalene	290
Acenaphthylene	4.0
Acenaphthene	39
Fluorene	30
Phenanthrene	<6.2
Anthracene	<2.6
Fluoranthene	<2.0
Pyrene	<1.7
Benz (a) anthracene	<0.75
Chrysene	<0.73
Benzofluoranthenes	<3.5
Benzo (e) pyrene	<3.4
Benzo (a) pyrene	<4.3
Perylene	<4.4
Dibenz (ah) anthracene	<3.2
Ideno (1,2,3,cd) pyrene	<1.7
Benzo (ghi) perylene	1.1

PCBs/Pesticide Results for Soil Samples (ng/g)

Compounds	SP1SS027	JU1SS010	MD1S006	MD1S007	BL1S012	BL1SS024
Dichlorobenzene						
Trichlorobenzene						
Tetrachlorobenzene						
Pentachlorobenzene						
Hexachlorobenzene	<0.32	ND	<0.03	2.6		
alpha HCH	<0.18	ND	<0.016	2.4		
beta HCH	<0.32	ND	<0.024	<0.26		
gamma HCH	<0.24	ND	<0.02	0.31		
Heptachlor	<0.57	<0.15	<0.07	<0.16		
Aldrin	<0.04	<0.02	<0.02	<0.01		
Oxychlorane	<0.1	<0.04	<0.06	<0.05		
trans-Chlordane	<0.03	<0.03	<0.06	<0.05		
cis-Chlordane	<0.04	<0.1	<0.04	0.07		
o,p'-DDE	<0.07	<0.006	<0.09	<0.11		
p,p'-DDE	<0.1	<0.05	1.1	1.3		
trans-Nonachlor	<0.04	<0.01	NDR(0.05)	<0.04		
cis-Nonachlor	<0.03	<0.02	<0.03	<0.04		
o,p'-DDD	<0.11	<0.06	NDR(0.42)	1.2		
p,p'-DDD	<0.13	<0.09	0.81	4.6		
o,p'-DDT	<2.1	<0.02	<0.86	<3.8		
p,p'-DDT	<3.5	<0.04	50	62		
Mirex	<0.03	<0.02	<0.03	<0.05		
Heptachlor Epoxide	<0.4	<0.07	<0.1	<0.05		
alpha-Endosulphan (I)	<0.2	<0.93	<0.03	<0.05		
Dieldrin	<0.2	<1.5	<0.15	<0.05		
Endrin	<0.34	<0.01	<0.05	<0.08		
Methoxychlor	<0.83	<0.23	<0.16	<0.25		
		<0.26				
Aroclor 1242	<0.3	<0.26	<2.4	<0.2	<2.4	<0.15
Aroclor 1254	1.5	<0.44	2	1.7	2.7	0.24
Aroclor 1260	0.82	<0.71	1.3	<0.8	1.1	<0.08

NDR - Peak detected but did not meet quantification criteria.

PCBs/Pesticide Results for Soil Samples (cont)

Compounds	BL1S014	BL1SS043	BO1SS020	BO1S001(1)	BO1S001(2)
Dichlorobenzene			0.68		
Trichlorobenzene			0.14		
Tetrachlorobenzene			<0.04		
Pentachlorobenzene			0.03		
Hexachlorobenzene	<0.05		<0.03	<0.06	<0.1
alpha HCH	<0.04		<0.04	0.06	0.06
beta HCH	<0.05		<0.06	<0.04	<0.04
gamma HCH	<0.05		<0.05	<0.03	<0.03
Heptachlor	<0.04		<0.07	<0.07	<0.12
Aldrin	<0.01		<0.01	<0.004	<0.006
Oxychlorane	<0.06		<0.07	<0.06	<0.04
trans-Chlordane	<0.02		<0.01	<0.07	<0.01
cis-Chlordane	<0.02		<0.02	<0.03	<0.02
o,p'-DDE	<0.09		<0.09	1.1	1.1
p,p'-DDE	<0.14		<0.14	60	64
trans-Nonachlor	<0.03		<0.02	<0.04	<0.02
cis-Nonachlor	<0.03		<0.05	<0.05	<0.06
o,p'-DDD	<0.12		<0.18	12	13
p,p'-DDD	<0.13		<0.2	80	82
o,p'-DDT	<0.5		<0.75	6.4	6.9
p,p'-DDT	NDR(3.8)		<0.93	47	45
Mirex	<0.02		<0.02	<0.05	<0.03
Heptachlor Epoxide	<0.01		<0.01	<0.5	<0.4
alpha-Endosulphan (I)	<0.01		<0.02	<0.26	<0.27
Dieldrin	<0.01		<0.02	<0.26	<0.27
Endrin	<0.02		<0.02	<0.45	<0.46
Methoxychlor	<0.05		<0.07	<1.4	<1.5
Aroclor 1242	<1.1	<0.14	<1.5	<0.31	<0.2
Aroclor 1254	<0.21	<0.21	<0.3	1.1	1.4
Aroclor 1260	<0.14	<0.2	<0.35	<0.6	<0.5

NDR - Peak detected but did not meet quantification criteria.

PCBs/Pesticide Results for Oil Samples

Compounds	JU1DS001
Dichlorobenzene	
Trichlorobenzene	
Tetrachlorobenzene	
Pentachlorobenzene	
Hexachlorobenzene	1.0
alpha HCH	<1.3
beta HCH	<5.2
gamma HCH	<2.6
Heptachlor	<11
Aldrin	<6.2
Oxychlorane	<4.6
trans-Chlordane	<3.8
cis-Chlordane	<4.2
o,p'-DDE	<8.8
p,p'-DDE	<8.2
trans-Nonachlor	<7.0
cis-Nonachlor	<4.0
o,p'-DDD	<8.6
p,p'-DDD	<6.2
o,p'-DDT	
p,p'-DDT	<22
Mirex	<14
Heptachlor Epoxide	<14
alpha-Endosulphan (I)	<18
Dieldrin	<14
Endrin	<130
Methoxychlor	<54
Aroclor 1242	<25
Aroclor 1254	<210
Aroclor 1260	<100

PCBs/Pesticide Results for Water Samples (ng/L)

Compounds	MD1W001	MD1GW001(1)	MD1GW001(2)	MD1GW002	BL1GW006
Hexachlorobenzene	<0.15	<0.16	<0.12	<0.14	
alpha HCH	<0.88	<0.84	<0.81	<0.81	
beta HCH	<1.4	<1.4	<1.3	<1.3	
gamma HCH	<1.1	<1.1	<1.5	<1	
Heptachlor	<0.83	<0.68	<0.83	<0.53	
Aldrin	<0.39	<0.25	<0.45	<0.32	
Oxychlordane	<1.4	<1.5	<2.2	<1.4	
trans-Chlordane	<0.15	<0.11	<0.11	<0.13	
cis-Chlordane	<0.15	<0.12	<0.11	<0.14	
o,p' -DDE	<0.13	<0.12	<0.17	<0.1	
p,p' -DDE	<0.2	<0.4	<0.4	<0.55	
trans-Nonachlor	<0.12	<0.1	<0.11	<0.19	
cis-Nonachlor	<0.13	<0.11	<0.12	<0.2	
o,p' -DDD	<0.15	<0.13	<0.2	<0.17	
p,p' -DDD	<0.15	<0.14	<0.2	<0.18	
o,p' -DDT	<0.26	<0.26	<0.37	<0.33	
p,p' -DDT	<0.32	<0.32	<0.45	<0.4	
Mirex	<3.5	<3.6	<3.5	<3.5	
Heptachlor Epoxide	<0.12	<0.24	<0.14	<0.18	
alpha-Endosulphan (I)	<0.14	<0.27	<0.25	<0.2	
Dieldrin	<0.14	<0.27	<0.16	<0.2	
Endrin	<0.22	<0.43	<0.25	<0.32	
Methoxychlor	<0.73	<1.4	<0.82	<1	
Aroclor 1242	<1.8	<1.2	<1.3	<2.6	<5.4
Aroclor 1254	<2.6	3.5	7.7	5.6	<2.4
Aroclor 1260	<1.7	<1.9	<3.6	<2.0	<2.0

PCBs/Pesticide Results for Water Samples (cont)

Compounds	BL1GW009	BL1GW010	BO1GW002	BL1GW004	BL1GW003
Dichlorobenzenes			1.8		
Tichlorobenzenes			1.8		
Tetrachlorobenzenes			0.8		
Pentachlorobenzenes			<0.8		
Hexachlorobenzene	<0.25		<2.2	<0.15	<0.11
alpha HCH	<0.39		<0.42	<1.4	<0.2
beta HCH	<0.71		<0.76	<2.3	<0.37
gamma HCH	<0.54		<0.58	<1.8	<0.28
Heptachlor	<0.87		<0.96	<0.73	<0.62
Aldrin	<0.15		<0.1	<0.37	<0.05
Oxychlorane	<0.46		<0.95	<1.7	<0.26
trans-Chlordane	<0.23		<0.28	<0.17	<0.1
cis-Chlordane	<0.25		<0.32	<0.18	<0.11
o,p'-DDE	<0.54		<0.56	<0.17	<0.32
p,p'-DDE	<0.82		NDR(1.6)	<0.45	<0.48
trans-Nonachlor	<0.3		<0.38	<0.13	<0.13
cis-Nonachlor	<0.41		<0.24	<0.14	<0.2
o,p'-DDD	<0.29		NDR(1.4)	<0.21	<0.02
p,p'-DDD	<0.36		8.9	<0.22	<0.59
o,p'-DDT	<14		<15	<0.41	<14
p,p'-DDT	<23		<25	<0.5	<23
Mirex	<0.35		<0.2	<3.2	<0.5
Heptachlor Epoxide	<0.64		<0.51	<0.12	<0.19
alpha-Endosulphan (I)	<0.72		<0.58	<0.14	<0.22
Dieldrin	<0.72		<0.58	<0.14	<0.22
Endrin	<1.2		<0.94	<0.22	<0.34
Methoxychlor	<1.4		<1.9	<0.73	<0.99
Aroclor 1242	<2.1	<2.7	<2.6	<1.5	<2.9
Aroclor 1254	<3.5	4.8	<2.4	7.5	<0.63
Aroclor 1260	3.8	<2.1	<0.79	<3.5	<1

NDR - Peak detected but did not meet quantification criteria.

Herbicide Results for Soil Samples (ng/g)

	SP1SS027	JU1SS010	MD1S006	MD1S007	BO1SS020
Dicamba	<0.002	<0.002	<0.002	<0.002	<0.002
2,4-D	<0.005	<0.005	<0.005	<0.005	<0.005
2,4-DB	<0.03	<0.03	<0.03	<0.03	<0.03
MCPA	<0.4	<0.4	<0.4	<0.4	<0.4
MCPP	<2.0	<2.0	<2.0	<2.0	<2.0
Picloram	<0.1	<0.1	<0.1	<0.1	<0.1
2,4,5-T	<0.002	<0.002	<0.002	<0.002	<0.002
2,4,5-TP	<0.002	<0.002	<0.002	<0.002	<0.002

Herbicide Results for Water Samples (ng/L)

	MD1GW002	BL1GW009	BL1GW003	BL1GW004	BO1GW002	MD1GW001
Dicamba	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
2,4-D	<0.4	<0.4	0.58	<0.4	<0.4	<0.4
2,4-DB	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
MCPA	<50	<50	<50	<50	<50	<50
MCPP	<110	<110	<110	<110	<110	<110
Picloram	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
2,4,5-T	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
2,4,5-TP	<0.1	<0.1	0.5	<0.1	<0.1	<0.1
Fenuron	<0.5		-	-		

VOC Results for Soil Samples (ng/g)

Compounds	SP1SS017(1)	SP1SS017(2)	SP1SS021(1)	SP1SS021(2)	SP1SS027	JU1SS010
1,1-Dichloroethane						
t-1,3-Dichloropropene						
1,1-Dichloroethane						
c-1,2-Dichloroethene						
Chloroform						
1,1,1-Trichloroethane						
1,2-Dichloroethane						
1,2-Dichloropropane						
Bromodichloromethane						
Trichloroethylene						
1,1,2-Trichloroethane						
1,1,2,2-Tetrachloroethane						
Bromoform						
Benzene	<0.25	<0.8	<0.3	<0.3	<1.0	4.1
Toluene	<2.7	<2.1	<2.1	<2	<5.0	9.6
Ethylbenzene	NDR(7.4)	12	<0.16	<0.07	<0.36	1.3
p/m -Xylene	130	120	0.21	0.34	<0.65	4.6
o-Xylene	2300 *	2600 *	<0.18	0.17	<0.45	2.8

NDR - Peak detected but did not meet quantification criteria.

VOC Results for Soil Samples (cont)

Compounds	JU1SS014	MD1S006	MD1S007	BL1S012	BL1S014	BL1SS026	BL1SS043(1)	BL1SS024
1,1-Dichloroethane		<0.65	<0.66	<0.2	<0.8		<0.24	<0.13
t-1,3-Dichloropropene		<0.41	<0.44	<0.23	<0.96		<0.27	<0.12
1,1-Dichloroethane		<0.25	<0.32	<0.13	<0.7		<0.18	<0.05
c-1,2-Dichloroethene		<0.31	<0.42	<0.22	<0.73		<0.28	<0.08
Chloroform		<0.25	<0.23	<0.2	<0.64		<0.24	<0.08
1,1,1-Trichloroethane		<0.18	<0.28	<0.16	<0.32		<0.13	<0.04
1,2-Dichloroethane		<0.21	<0.37	<0.14	<0.77		<0.19	<0.06
1,2-Dichloropropane		<0.22	<0.3	<0.13	<0.49		<0.18	<0.05
Bromodichloromethane		<0.18	<0.26	<0.08	<0.44		<0.17	<0.08
Trichloroethylene		<0.2	<0.24	<0.2	<0.52		<0.16	<0.06
1,1,2-Trichloroethane		<0.91	<0.52	<0.07	<0.18		<0.3	<0.12
1,1,2,2-Tetrachloroethane		<0.11	<0.17	NDR(1 2)	<0.24		<0.05	<0.3
Bromoform		<0.37	<0.53	<0.08	<0.29		<0.1	<0.17
Benzene	5					<0.1		<1.5
Toluene	30					<1.0		<8.0
Ethylbenzene	<0.03					<0.05		<0.2
p/m -Xylene	<0.04					<0.2		<0.2
o-Xylene	<0.04					<0.05		<0.1

NDR - Peak detected but did not meet quantification criteria.

VOC Results for Soil Samples (cont)

Compounds	BL1SS043(2)	BO1SS05(1)	BO1SS05(2)	BO1SS025	BO1SS041	BO1SS045
1,1-Dichloroethane	<0.17	<0.34	<0.17	<0.39	<0.24	<0.22
t-1,3-Dichloropropene	<0.17	<0.51	<0.19	<0.37	<0.44	<0.3
1,1-Dichloroethane	<0.16	<0.44	<0.11	<0.32	<0.34	<0.24
c-1,2-Dichloroethene	<0.2	<0.54	<0.19	<0.38	<0.44	<0.2
Chloroform	<0.19	<0.38	<0.18	<0.14	<0.42	<0.25
1,1,1-Trichloroethane	<0.13	<0.3	<0.13	<0.28	<0.24	<0.17
1,2-Dichloroethane	<0.17	<0.54	<0.17	<0.18	<0.28	<0.17
1,2-Dichloropropane	<0.12	<0.24	<0.11	<0.24	<0.2	<0.16
Bromodichloromethane	<0.15	<0.22	<0.14	<0.26	<0.31	<0.15
Trichloroethylene	<0.18	<0.32	<0.13	<0.26	<0.3	<0.2
1,1,2-Trichloroethane	<0.11	<0.21	<0.17	<0.2	<0.43	<0.15
1,1,2,2-Tetrachloroethane	<0.04	<0.25	<0.25	<0.13	<0.31	<0.38
Bromoform	<0.13	<0.14	<0.28	<0.04	<0.23	<0.15
Benzene		<0.1	<0.06			
Toluene		<0.7	<0.7			
Ethylbenzene		<0.05	<0.05			
p/m -Xylene		0.07	<0.02			
o-Xylene		<0.03	<0.02			

VOC Results for Soil Samples (cont)

Compounds	BO1SS046	BO1SS018	BO1SS020
1,1-Dichloroethane	<0.32	<0.4	<0.16
t-1,3-Dichloropropene	<0.34	<0.49	<0.32
1,1-Dichloroethane	<0.29	<0.47	<0.18
c-1,2-Dichloroethene	<0.43	<0.46	<0.25
Chloroform	<0.41	<0.61	<0.22
1,1,1-Trichloroethane	<0.26	<0.27	<0.2
1,2-Dichloroethane	<0.23	<0.41	<0.13
1,2-Dichloropropane	<0.22	<0.29	<0.11
Bromodichloromethane	<0.29	<0.12	<0.05
Trichloroethylene	<0.2	<0.24	<0.2
1,1,2-Trichloroethane	<0.16	<0.16	<0.08
1,1,2,2-Tetrachloroethane	<0.15	NDR(24)	NDR(1.8)
Bromoform	<0.11	<0.2	<0.27
Benzene			
Toluene			
Ethylbenzene			
p/m -Xylene			
o-Xylene			

NDR - Peak detected but did not meet quantification criteria.

VOC Results for Water Samples ($\mu\text{g/L}$)

Compounds	MD1W001	MDD1GW002 (1)	MDD1GW002 (2)	BL1GW001 (1)	BL1GW001 (2)
1,1-Dichloroethane	<0.87	<0.44	<0.41	<0.75	<1.1
t-1,3-Dichloropropene	<0.38	<0.21	<0.17	<0.43	<0.98
1,1-Dichloroethane	<0.26	<0.13	<0.17	<0.39	<0.75
c-1,2-Dichloroethene	<0.34	<0.17	<0.11	<0.42	<0.69
Chloroform	<0.22	<0.09	<0.09	<0.22	<0.61
1,1,1-Trichloroethane	<0.15	<0.07	<0.09	<0.11	<0.21
1,2-Dichloroethane	<0.3	<0.12	<0.13	<0.42	<0.76
1,2-Dichloropropane	<0.14	<0.06	<0.07	<0.15	<0.5
Bromodichloromethane	<0.12	<0.07	<0.08	<0.15	<0.42
Trichloroethylene	<0.11	<0.07	<0.06	<0.16	<0.35
1,1,2-Trichloroethane	<0.09	<0.07	<0.05	<0.13	<0.21
1,1,2,2-Tetrachloroethane	<0.1	<0.05	<0.06	<0.13	<0.38
Bromoform	<0.14	<0.07	<0.06	<0.25	<0.29
Benzene	<0.03	<0.01	<0.02	<0.03	<0.08
Toluene	<0.66	<0.62	<0.64	<1	<0.88
Ethylbenzene	<0.01	<0.01	<0.01	<0.01	<0.02
p/m-Xylene	<0.01	<0.01	<0.01	<0.03	<0.02
o-Xylene	<0.01	<0.01	<0.01	<0.01	<0.02

VOC Results for Water Samples (cont)

Compounds	BL1GW002(1)	BL1GW002(2)	BL1GW003(1)	BL1GW003(2)	BL1GW004(1)
1,1-Dichloroethane	<0.33	<0.46	<0.39	<0.31	<0.89
t-1,3-Dichloropropene	<0.42	<0.54	<0.3	<0.24	<0.64
1,1-Dichloroethane	<0.26	<0.4	<0.35	<0.28	<0.45
c-1,2-Dichloroethene	<0.31	<0.51	<0.32	<0.29	<0.45
Chloroform	<0.24	<0.36	<0.28	<0.18	<0.19
1,1,1-Trichloroethane	<0.2	<0.26	<0.14	<0.14	<0.2
1,2-Dichloroethane	<0.39	<0.63	<0.35	<0.33	<0.43
1,2-Dichloropropane	<0.24	<0.23	<0.15	<0.18	<0.2
Bromodichloromethane	<0.19	<0.23	<0.18	<0.15	<0.21
Trichloroethylene	<0.17	<0.2	<0.15	<0.16	<0.16
1,1,2-Trichloroethane	<0.15	<0.22	<0.17	<0.15	<0.19
1,1,2,2-Tetrachloroethane	<0.16	<0.17	<0.16	<0.13	<0.27
Bromoform	<0.3	<0.22	<0.17	<0.17	<0.22
Benzene	<0.04	<0.05	0.4	0.41	0.52
Toluene	<0.88	<0.78	<1.2	<1.6	<1.2
Ethylbenzene	<0.01	<0.01	1.8	2	1.7
p/m-Xylene	<0.05	<0.05	1.3	1.4	1
o-Xylene	<0.02	<0.01	1.6	1.8	0.15

VOC Results for Water Samples (cont)

Compounds	BL1GW004(2)	MDD1GW001(1)	MDD1GW001(2)	BL1GW006	BL1GW007	BL1GW009
1,1-Dichloroethane	<1	<0.75	<0.41	<0.29		<0.31
t-1,3-Dichloropropene	<0.57	<0.43	<0.12	<0.18		<0.21
1,1-Dichloroethane	<0.48	<0.39	<0.18	<0.1		<0.11
c-1,2-Dichloroethene	<0.52	<0.42	<0.18	<0.11		<0.15
Chloroform	<0.34	<0.22	<0.19	<0.11		<0.1
1,1,1-Trichloroethane	<0.14	<0.11	<0.08	<0.05		<0.08
1,2-Dichloroethane	<0.43	<0.42	<0.16	<0.1		<0.13
1,2-Dichloropropane	<0.16	<0.15	<0.1	<0.05		<0.08
Bromodichloromethane	<0.22	<0.15	<0.08	<0.04		<0.06
Trichloroethylene	<0.16	<0.16	<0.07	<0.04		<0.06
1,1,2-Trichloroethane	<0.21	<0.13	<0.09	<0.06		<0.05
1,1,2,2-Tetrachloroethane	<0.22	<0.13	<0.08	<0.04		<0.05
Bromoform	<0.25	<0.25	<0.12	<0.04		<0.07
Benzene	0.38	<0.03	<0.02	11	<0.1	2.4
Toluene	<0.84	<1	<1	12	<0.5	18
Ethylbenzene	1.7	<0.01	<0.01	42	<0.02	20
p/m-Xylene	0.98	<0.03	<0.03	77	<0.06	68
o-Xylene	0.14	<0.01	<0.01	29	<0.01	49

VOC Results for Water Samples (cont)

Compounds	BL1GW010	BL1W001	BO1GW001	BO1GW002
1,1-Dichloroethane	<0.48	<0.5	<0.61	<0.26
t-1,3-Dichloropropene	<0.24	<0.23	<0.65	<0.14
1,1-Dichloroethane	<0.16	<0.11	<0.68	<0.2
c-1,2-Dichloroethene	<0.17	<0.18	<0.45	<0.11
Chloroform	<0.16	<0.13	<0.4	<0.16
1,1,1-Trichloroethane	<0.07	<0.07	<0.3	<0.15
1,2-Dichloroethane	<0.22	<0.17	<0.7	<0.14
1,2-Dichloropropane	<0.09	<0.08	<0.56	<0.11
Bromodichloromethane	<0.07	<0.1	<0.53	<0.12
Trichloroethylene	<0.08	<0.07	<0.5	0.14
1,1,2-Trichloroethane	<0.07	<0.04	<0.28	<0.22
1,1,2,2-Tetrachloroethane	<0.06	<0.04	<1	<0.1
Bromoform	<0.08	<0.07	<0.25	<0.04
Benzene	2.3	<0.01	<0.09	0.06
Toluene	19	<0.64	<0.8	<0.2
Ethylbenzene	20	<0.01	<0.25	<0.03
p/m-Xylene	69	0.03	<0.39	<0.17
o-Xylene	50	0.02	<0.13	<0.06

VOC Results for Oil Samples

Compounds	JUDS001
1,1-Dichloroethane	
t-1,3-Dichloropropene	
1,1-Dichloroethane	
c-1,2-Dichloroethene	
Chloroform	
1,1,1-Trichloroethane	
1,2-Dichloroethane	
1,2-Dichloropropane	
Bromodichloromethane	
Trichloroethylene	
1,1,2-Trichloroethane	
1,1,2,2-Tetrachloroethane	
Bromoform	
Benzene	<350
Toluene	<5000
Ethylbenzene	170
p/m-Xylene	780
o-Xylene	380

APPENDIX H
PRELIMINARY INVESTIGATIONS (1994)
FOUR ABANDONED PUMP STATIONS

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Action On Waste, Arctic Environmental Strategy.)

H. PRELIMINARY INVESTIGATIONS (1994) - FOUR ABANDONED PUMP STATIONS

In May 1994, the Environmental Sciences Group at Royal Roads Military College was asked to visit to two northwest staging route airstrips and four pump stations in the Yukon Territory. The purpose was to assess the extent of evaluation required and conduct a preliminary sampling program. The six sites were visited between 10 June and 14 June 1994 by four members of the Environmental Sciences Group (ESG). Sampling was conducted in stained areas and areas receiving drainage from stains. Targeted sampling was also carried out in the vicinity of buildings that could have contained PCB fluids, i.e., generator buildings. A limited number of samples were submitted for analysis, concentrating on PCBs and inorganic elements. Following the preliminary survey and review of the initial results by ESG and DIAND representatives, it was decided to target Ashihik Airstrip for a more detailed study. The results are necessarily preliminary and the sampling protocol was not designed to provide a complete characterization of the sites.

This extract only reports the results that are pertinent to the four pump stations.

Sampling Program

A total of 24 soil, 30 building swab, 8 plant, 9 asbestos, 5 paint, 1 water and 5 oil samples were collected at the pump stations. The breakdown by site is given below.

Site	Soil	Swab	Plant	Asbestos	Paint	Water	Oil
Haines Junction Pump Station	10	6	3	4	2	1	-
Beaver Creek Pump Station	6	6	3	-	1	-	-
Destruction Bay Pump Station	5	3	1	2	1	-	4
Donjek River Pump Station	3	15	1	3	1	-	1

Analytical Program

Eight soil samples were analyzed for PCBs as Aroclors and eight soil samples were analyzed for the inorganic elements copper, nickel, cobalt, cadmium, lead, zinc, chromium, arsenic, and mercury. One soil samples was analyzed for PAHs and one soil sample for pesticides.

All five oil samples were analyzed for total chlorine content, PCBs and the inorganic elements lead, chromium and cadmium. Eleven swab samples were analyzed for PCBs as Aroclors.

The preliminary analytical program is summarized below.

Site	Soil PCBs	Soil Inorg	Swabs PCBs	Soil pest	Soil PAHs	Oil
Haines Junction Pump Station	4	4	3	1	1	2
Beaver Creek Pump Station	2	2	2	-	-	1
Destruction Bay Pump Station	1	1	1	-	-	1
Donjek River Pump Station	1	1	5	-	-	1

Results

The layout is similar at all four pump stations. The sites consist of accommodation buildings (2), a pump house, cooling room, generator and maintenance building, storage building and two POL tanks. At Beaver Creek and Destruction Bay, the accommodation buildings were missing and all other operations were contained in one large building.

The walls were swabbed in order to determine PCB levels in all buildings and the results are shown below.

Sample	Site	Aroclor 1242	Aroclor 1254	Aroclor 1260	Total	Description
DJ-01	DJ	NDR(12)	<7.3	<7.6		S wall of Generator room, Pump House
DJ-04	DJ	<16	<12	<12		W wall of kitchen area, Kit/Gar/Gen bldg.
DJ-07	DJ	<10	<7.2	<12		W wall of E room, small living quarters
DJ-10	DJ	<13	<9.2	<9.6		S wall of Boiler room, Main living quarters
DJ-13	DJ	<11	<7.7	<8.0		W wall of Well bldg.
DB-01	DB	<10	10	<7.5	10	SE wall, Generator bldg.
HJ-01	HJ	NDR(16)	<10	<10		S wall in Kitchen of living quarters, Building # 4-106
HJ-03	HJ	<11	<7.5	<7.8		N wall of living room of the foreman's quarters Bldg. #4-103
HJ-05	HJ	<16	<12	<12		From metal frame on S wall of Generator Bldg. # 4-102
BC-02	BC	NDR(4.4)	<6.1	<9.4		N wall, E of entrance, Generator room
BC-04	BC	<9.4	<8.1	<8.5		Beside first aid cabinet, outside bathroom, Main bldg.

- Notes:
- results expressed as ng/100 cm²
 - < - Less than the detection limit indicated
 - NDR - Peak detected but did not meet quantification criteria
 - HJ - Haines Junction Pump Station
 - DJ - Donjek River Pump Station
 - DB - Destruction Bay Pump Station
 - BC - Beaver Creek Pump Station

The only detectable result was obtained at Destruction Bay, this result is very close to the detection limit and significantly less than any applicable criteria (proposed residential standard is 10,000 ng/100 cm² in US; Canada has no formal criteria or guidelines).

Selected soil samples were analyzed for PCBs and the results are summarized below.

Sample	Site	Aroclor 1242	Aroclor 1254	Aroclor 1260	Total	Description
YUK 001	HJ	<3.1	<8.8	<7.2		Stain, N end concrete slab
YUK 005	HJ	<0.41	1.7	0.43	2.1	~ 5 m E of YUK 004, under power poles at W end Pump House
YUK 006	HJ	<0.44	<0.40	<0.32		S POL Tank, 2.5 m from tank inside berm
YUK 027	DB	<0.32	<0.38	<0.25		Collapsed sump, taking drainage from POL
YUK 036	DJ	<0.32	3.9	6.5	10	~ 3m from W side of Garage outside Garage doors
YUK 037	BC	2.0	2.9	3.5	8.4	1 m N of gas refuelling pump foundation
YUK 039	BC	3.2	40	56	99	Underneath exhaust fan from Generator room on W side of Pump House

Notes: results expressed as ng/g or ppb
 < - Less than the detection limit indicated
 NDR - Peak detected but did not meet quantification criteria
 HJ - Haines Junction Pump Station
 DJ - Donjek River Pump Station
 DB - Destruction Bay Pump Station
 BC - Beaver Creek Pump Station

All the results are considerably less than any applicable criteria (CCME residential/parkland) and coupled with the swab results indicate that PCB use on the sites was not widespread.

Selected soil samples were also analyzed for inorganic elements and the results are summarized below.

Sample	Site	Cu	Ni	Co	Cd	Pb	Zn	Cr	As	Hg	Description
YUK 001	HJ	52	57	18	<1.0	75	108	96	5.3	<0.2	Stain, N end concrete slab
YUK 005	HJ	91	67	27	<1.0	22	102	95	6.9	<0.2	~ 5 m E of YUK 004, under power poles at W end Pump House
YUK 006	HJ	65	52	22	<1.0	17	76	89	2.7	<0.2	S POL Tank, 2.5 m from tank inside berm
YUK 009	HJ	26	24	12	<1.0	<10	49	48	4.6	<0.2	~ 200 m E of E side of compound in wooded area
YUK 027	DB	74	123	29	<1.0	29	72	162	12.9	<0.2	Collapsed sump, taking drainage from POL
YUK 036	DJ	79	89	31	1.1	198	198	67	2.4	<0.2	~ 3m from W side of Garage outside Garage doors
YUK 037	BC	92	49	22	4.0	182	222	68	52.2	0.4	1 m N of gas refuelling pump foundation
YUK 039	BC	13 9	38	15	35.3	121	242	77	10.0	<0.2	Underneath exhaust fan from Generator room on W side of Pump House

Notes: All results expressed as $\mu\text{g/g}$ or ppm

< - Less than the detection limit indicated

NDR - Peak detected but did not meet quantification criteria

HJ - Haines Junction Pump Station

DJ - Donjek River Pump Station

DB - Destruction Bay Pump Station

BC - Beaver Creek Pump Station

The concentration of all inorganic elements are less than the CCME R/P criteria although elevated levels of zinc and lead at Donjek River and Beaver Creek (relative to expected background conditions) as well as elevated chromium concentrations at Destruction Bay could warrant further investigation.

Soil - PAH Analysis

Sample	YUK 001		YUK 001
Site	HJ	Compound	
Compound		Benz(a)anthracene	19
Naphthalene	4.0	Chrysene	39
Acenaphthylene	NDR(0.6)	Benzofluoranthenes	NDR(41)
Acenaphthene	NDR(2.0)	Benzo(e)pyrene	NDR(34)
Fluorene	3.0	Benzo(a)pyrene	NDR(23)
Phenanthrene	14	Perylene	NDR(5.0)
Anthracene	1.0	Dibenz(ah)anthracene	<5.0
Fluoranthene	NDR(12)	Indeno(1,2,3-cd)pyrene	NDR(8.0)
Pyrene	37	Benzo(ghi)perylene	NDR(21)

Levels of PAHs in a sample taken in a stained area at the Haines Junction pump station were all low. Similarly, very low levels of pesticides were found in a sample from the same site.

Sample	YUK 009		
Compound			
Hexachlorobenzene	0.25	trans-Nonachlor	<0.12
alpha BHC	0.05	cis-Nonachlor	<0.03
beta BHC	<0.04	o,p'-DDD	<0.05
gamma BHC	<0.02	p,p'-DDD	<0.15
Heptachlor	<0.02	p,p'-DDT	<0.11
Aldrin	<0.07	Mirex	<0.03
Oxychlorane	<0.03	Heptachlor Epoxide	<0.05
trans-Chlordane	<0.02	alpha-Endosulphan	<0.05
cis-Chlordane	<0.08	Dieldrin	<0.07
o,p'-DDE	<0.18	Endrin	<0.11
p,p'-DDE	<0.11	Methoxychlor	<0.37

The oil samples obtained from drums or oil/solvent storage containers were analyzed and the results are summarized below.

Sample	Site	Signature	Cl	PCB	Pb	Cr	Cd	Description
BS-DB1	DB	Varsol	<1000	<2.0	<100	<10	<2.0	Clear fluid, container labelled "solvent"
BS-DB2	DB	Varsol:Lubricating oil and grease 1:99	16000	<2.0	<100	<10	<2.0	Amber fluid, container labelled "Go 80"
BS-DB3	DB	Lubricating oil and grease	<1000	<2.0	<100	<10	<2.0	Dark amber fluid, container labelled "HDO30"
BS-DB4	DB	Lubricating oil and grease	<1000	<2.0	<100	<10	<2.0	Dark amber fluid, container labelled "HDO 10"
DJ-BS1	DJ	Fuel oil:Lubricating oil and grease 1:23	28100	<2.0	<100	<10	<2.0	Brown fluid, oil cabinet labelled "G05"

Notes: results expressed as $\mu\text{g/g}$ or ppm
 < - Less than the detection limit indicated
 NDR - Peak detected but did not meet quantification criteria
 HJ - Haines Junction Pump Station
 DJ - Donjek River Pump Station
 DB - Destruction Bay Pump Station
 BC - Beaver Creek Pump Station

The oils are free of PCBs and any inorganic elements that may restrict incineration. The high chlorine content in the samples from Destruction Bay and Donjek River is an unidentified compound that is not a common chlorine containing compound. This material is currently undergoing further analysis, the contents of these containers should be treated as hazardous until the true nature of the compound or compounds is known.

Conclusion

All sites require further investigation to delineate the extent of contamination and to assess the potential for impact on the food chain. The four pump stations are very similar and representative sampling from each site would be applicable to the other sites. There is no evidence, from the pump station samples already analyzed, of serious site contamination; however, there is a need to analyze samples representative of the entire site. Given the level of concern over the burial of hazardous material, an EM survey would be a wise addition to an assessment of the pump stations. In addition, there is concern over dioxin contaminants in Tordon-101 (a phenoxy acid herbicide) that was used for brush control. A dioxin analytical program may well be advantageous in future investigations.