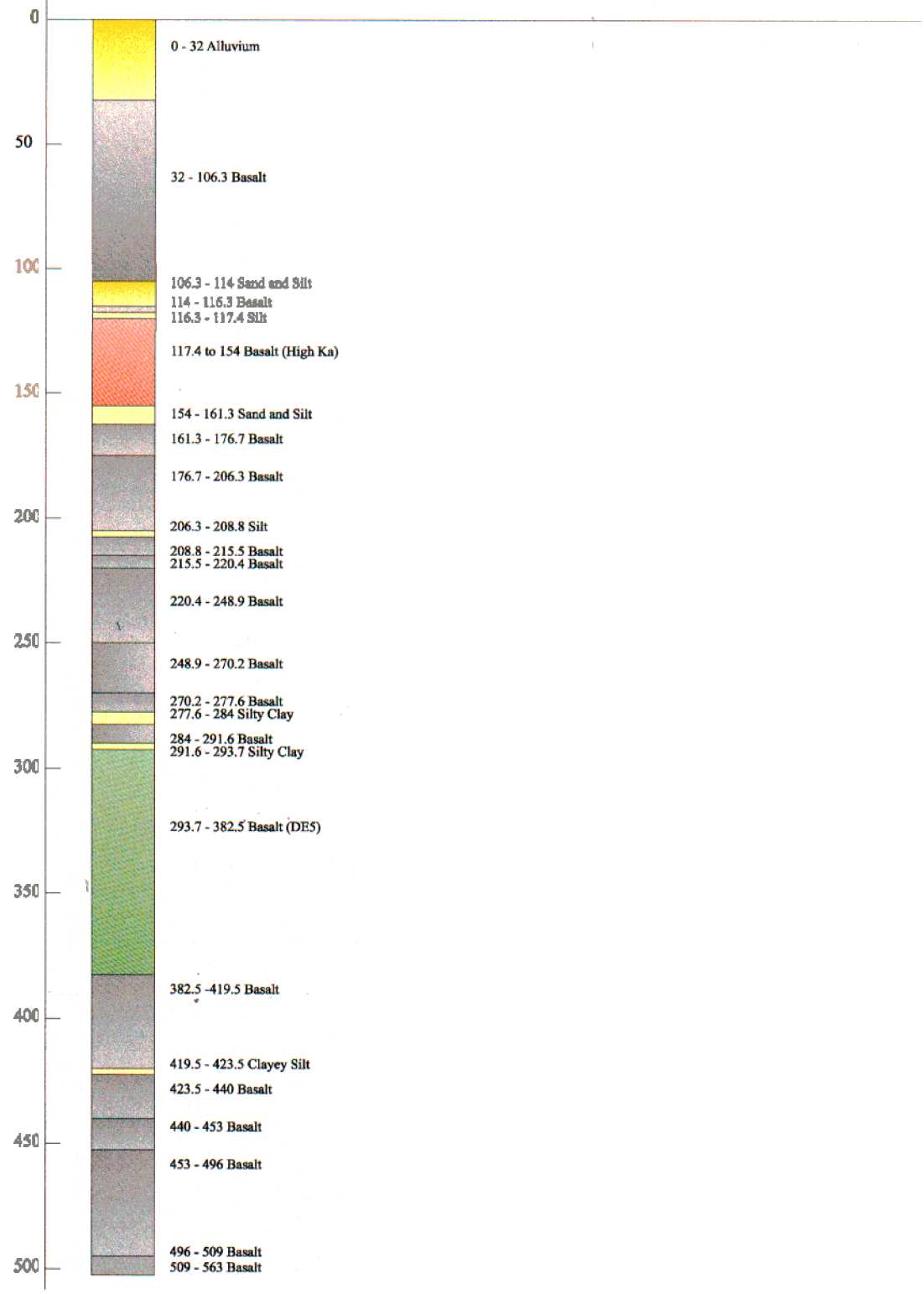
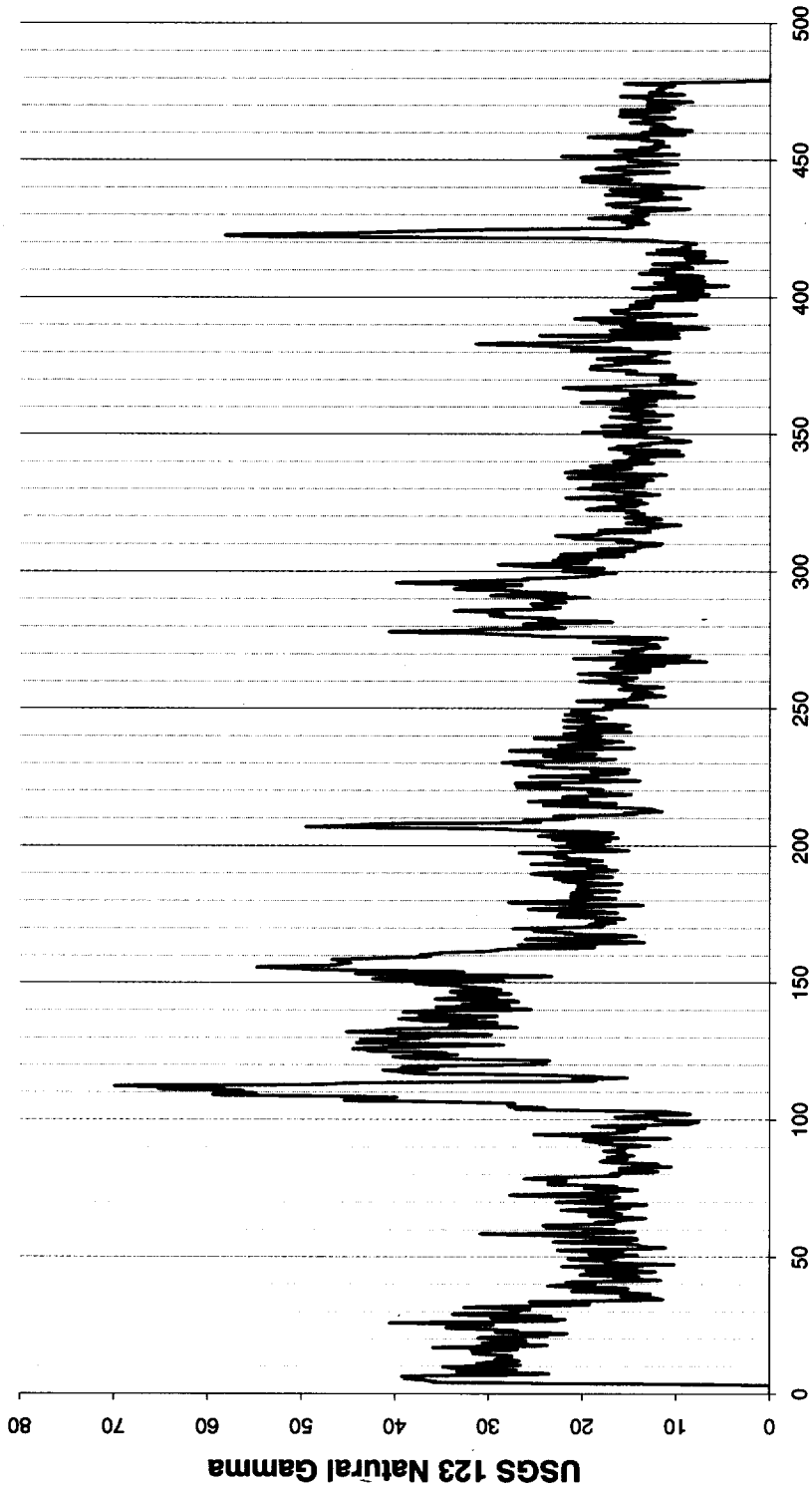
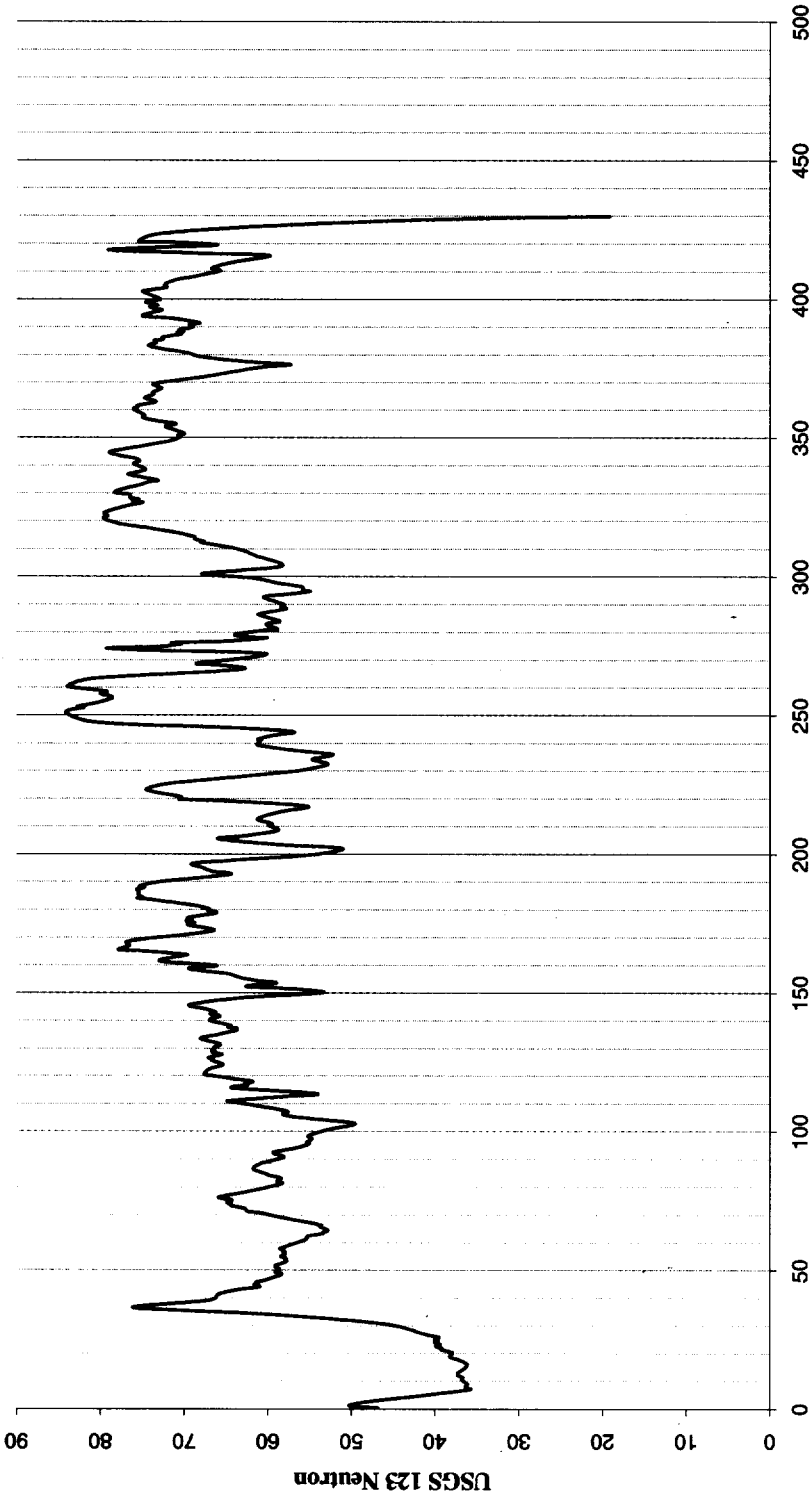
Attachment B-1

Lithologic Details for Well USGS-123

Well USGS-123




USGS 123 Natural Gamma
0
10
20
30
40
50
60
70
80
0
50
100
150
200
250
300
350
400
450
500


USGS 123 Neutron
0
10
20
30
40
50
60
70
80
90
0
50
100
150
200
250
300
350
400
450
500

Anderson Stratigraphy

Primary name: USGS 123
Secondary name:
Well location: 03N 29E 25aaa2
Site Identifier: 433352112561401
Latitude: 433352
Longitude: 1125614

Altitude of well: 4919 ft
Depth of well: 481 ft
Depth of hole: 744 ft
Depth of log: 741 ft
County: Butte
Map: Circular Butte 3 SW

Stratigraphic Unit		Altitude		Depth		Thickness	Layers
Name	Type	Top	Base	Top	Base		
B(1)	Sed	4919	4903	0	16	16	1
B-BC(2)	Sed	4903	4888	16	31	15	1
BC(1)	Bas	4888	4828	31	91	60	2
C(1)	Bas	4828	4814	91	105	14	1
DE1-2(1)	Bas	4814	4762	105	157	52	2
DE2(1)	Bas	4762	4747	157	172	15	1
DE3(1)	Bas	4747	4714	172	205	33	2
DE3-4(4)	Bas	4714	4698	205	221	16	1
DE4(1)	Bas	4698	4661	221	258	37	2
DE4-5(2)	Bas	4661	4633	258	286	28	2
DE4-5(3)	Bas	4633	4609	286	310	24	2
DE5(1)	Bas	4609	4568	310	351	41	3
DE7(1)	Bas	4568	4541	351	378	27	1
DE8(1)	Bas	4541	4502	378	417	39	3
DE9(1)	Sed	4502	4498	417	421	4	1
E(1)	Bas	4498	4472	421	447	26	2
EF(1)	Bas	4472	4445	447	474	27	1
FG(1)	Bas	4445	4418	474	501	27	1
G(1)	Bas	4418	4408	501	511	10	1
H(1)	Bas	4408	4360	511	559	48	3
HI(1)	Sed	4360	4356	559	563	4	1
I(1)	Bas	4356	4327	563	592	29	1
I(2)	Bas	4327	4235	592	684	92	2
IJ(1)	Sed	4235	4230	684	689	5	1
J(1)	Bas	4230	4183	689	736	47	2
K(1)	Sed	4183	<4175	736	>744	>8	1

Departures from Anderson

The Anderson flow break at 27.7 m (91 ft) bgs was omitted. Examination of the core from this zone shows it to be minutely vesicular with no disconformity evident. Both core recovery and RQD are 100% for this zone.

The Anderson basalt flow from 32 to 47.8 m (105 to 157 ft) bgs is not in agreement with the core and geophysical logs. Examination of the core and the original geologist's logs indicate that the zone from 32.4 to 34.7 m (106.3 to 114) ft bgs is composed of a moderate reddish-brown fine sand and silt. This is also indicated by an increase in the natural gamma log and a decrease in the neutron log. This is underlain by a thin basalt flow from 34.7 to 35.4 m (114 to 116.3 ft) bgs. Again, this is supported by the geophysical logs, which show a gamma decrease and a neutron increase. A thin interbed unit is indicated by the core, in the geologist's log, and by the geophysical logs to occupy the 35.4- to 35.8-m (116.3- to 117.4-ft) bgs zone. The high natural gamma count basalt flow extends from 35.8 to 46.9 m (117.4 to 154 ft) bgs.

Anderson misses the interbed unit found from 46.9 to 49.1 m (154 to 161.3 ft) bgs. The core and geologist's logs record this as fine sand grading downward into silt. Additionally, the natural gamma log shows a distinct rise with a corresponding low on the neutron log.

The flow break is indicated in the core at 53.8 m (176.7 ft) and not the 52.4 m (172 ft) shown by Anderson.

A thin interbed is found from 62.9 to 63.6 m (206.3 to 208.8 ft) bgs.

Flow break footages in the zone 63.4 to 84.7 m (208 to 278 ft) bgs were adjusted from Anderson to match the core and Lanphere et al. (1993).

The interbed from 84.6 to 86.6 m (277.6 to 284 ft) bgs was added. Anderson mistakenly identified this zone as a basalt. Core recovery was poor in this zone, but what was recovered indicates a yellowish-gray silty clay. The natural gamma log and the neutron log support this interpretation.

A basalt flow is found from 86.6 to 88.9 m (284 to 291.6 ft) bgs. This is supported by core, the geologist's log, and geophysical logging. This basalt flow is underlain by a thin [0.6 m (2 ft)] interbed.

The core and Lanphere et al. (1993) indicate that the zone from 89.5 116.6 m (293.7 to 382.5 ft) bgs is a single basalt flow. Anderson places flow breaks in this zone at 94.5 and 107 m (310 and 351 ft) bgs. Examination of the core from these depths shows the core to be minutely vesicular with 100% core recovery and RQD. No disconformities or fractures where found on the core at these depths.

Based on the geologist's logs and core, an interbed was added at 127.9 to 129.1 m (419.5 to 423.5 ft). This interbed may also include a thin tephra.

Flow breaks below this interbed were found at 134.1, 138.1, 151.2, 155.1, and 180.7 m (440, 453, 496, 509, and 593 ft) bgs. The core was not evaluated against Anderson below this lower depth.

RECORD OF DRILLHOLE # USGS 123

Sheet 1 of 22

PROJECT: RCRA MONITORING
PROJECT #: 893-1195 (Golder Assoc.)
LOCATION: ICPP
COLLAR ELEVATION: 4920

DRILLING DATE: 1990
DRILL RIG: HX Wireline
AZIMUTH: Not Applicable

DATUM: MEAN SEA LEVEL
COORDINATES: N: 692519 E:295776
INCLINATION: -90 Degrees

J-JOINT, F-FAULT, S-SHEAR; B-BEDDING, DB-DRILL BREAK, PL-PLANAR; C-CURVED, U-UNDULATING, ST-STEPPED; I-IRREGULAR, P-POLISHED, SM-SMOOTH; R-ROUGH, VR-VERY ROUGH, CIF-CLAY INFILLING

DEPTH SCALE	ROCK TYPE DESCRIPTION	GRAPHIC LOG	ELEV.	RUN #	RECOVERY	RQD	FRACTURES PER FOOT	DISCONTINUITY DATA: TYPE AND SURFACE DESCRIPTION	DISCONTINUITY DATA: GRAPHIC LOG	WEATHERING	STRENGTH	POINT LOAD	NOTES: WATER LEVEL: INSTRUMENTATION
20			4900									NOT TESTED	
25	Undifferentiated Alluvial sediments		4895										
30			4890					(Alluvium / Basalt contact)					
35	Slightly weathered to fresh, vesicular, medium gray (N5), aphanitic medium strong, BASALT		4885		CORE LOSS		>5	ALL CIF	CORE LOSS				
				1	3.8 / 5.0	3.5 / 5.0	5	IR/CIF IR/CIF IR/CIF					
							0						
							1	IR/CIF					
40			4880				0						

Depth Scale: 1 Inch = 2 1/2 Feet
Drilling Contractor: P C Exploration

Logged: A. Bailey
Checked: A. Yonk
Date: 30 SEP 95

Golder Federal Services

RECORD OF DRILLHOLE # USGS 123

Sheet 2 of 22

PROJECT: RCRA MONITORING
PROJECT #: 893-1195 (Golder Assoc.)
LOCATION: ICPP
COLLAR ELEVATION: 4920

DRILLING DATE: 1990
DRILL RIG: HX Wireline
AZIMUTH: Not Applicable

DATUM: MEAN SEA LEVEL
COORDINATES: N: 692519 E:295776
INCLINATION: -90 Degrees

J-JOINT, F-FAULT, S-SHEAR, B-BEDDING, DB-DRILL BREAK, PL-PLANAR, C-CURVED, U-UNDULATING, ST-STEPPED, I-IRREGULAR, P-POLISHED, SM-SMOOTH, R-ROUGH, VR-VERY ROUGH, CIF-CLAY INFILLING

DEPTH SCALE	ROCK TYPE / DESCRIPTION	GRAPHIC LOG	ELEV.	RUN #	RECOVERY	RQD	FRACTURES PER FOOT	DISCONTINUITY DATA: TYPE AND SURFACE DESCRIPTION	GRAPHIC LOG	WEATHERING	STRENGTH	POINT LOAD	NOTES: WATER LEVEL: INSTRUMENTATION
40	Fresh, vesicular to slightly vesicular, medium gray (N5), aphanitic medium strong, BASALT		4880				2	IR				NOT TESTED	
								IR					
							2	IR					
				2	5.0 / 5.0	2.5 / 5.0	1	IR		FR	R3		
								IR					
							1	IR					
							2	IR					
								IR					
45			4875				0						
							2	(Greenish gray (5GY 6/1 staining) IR					
				3	5.0 / 5.0	5.0 / 5.0	0	IR					
							0						
							0						
50			4870				1	IR/CIF					
							0						
	52.0: Grades to slightly vesicular			4	5.0 / 5.0	5.0 / 5.0	0						
							0						
							0						
55			4865				0						
							1	IR/CIF		FR	R3		
				5	5.0 / 5.0	5.0 / 5.0	0						
							0						
60			4860				0						

Depth Scale: 1 Inch = 2 1/2 Feet
Drilling Contractor: P C Exploration

Logged: A. Bailey
Checked: A. Yonk
Date: 30 SEP 95

Golder Federal Services

RECORD OF DRILLHOLE # USGS 123

Sheet 3 of 22

PROJECT: RCRA MONITORING
PROJECT #: 893-1195 (Golder Assoc.)
LOCATION: ICPP
COLLAR ELEVATION: 4920

DRILLING DATE: 1990
DRILL RIG: HX Wireline
AZIMUTH: Not Applicable

DATUM: MEAN SEA LEVEL
COORDINATES: N: 692519 E:295776
INCLINATION: -90 Degrees

J-JOINT, F-FAULT, S-SHEAR; B-BEDDING, DB-DRILL BREAK, PL-PLANAR; C-CURVED, U-UNDULATING, ST-STEPPED; I-IRREGULAR, P-POLISHED, SM-SMOOTH; R-ROUGH, VR-VERY ROUGH, CIF-CLAY INFILLING

DEPTH SCALE	ROCK TYPE: DESCRIPTION	GRAPHIC LOG	ELEV.	RUN #	RECOVERY	RQD	FRACTURES PER FOOT	DISCONTINUITY DATA: TYPE AND SURFACE DESCRIPTION	GRAPHIC LOG	WEATHERING	STRENGTH	POINT LOAD	NOTES: WATER LEVEL: INSTRUMENTATION
60	Fresh, minutely vesicular, medium gray (N5), aphanitic, medium strong, BASALT		4860	6	5.0 / 5.0	5.0 / 5.0	1	IR	80	FR	R3	NOT TESTED	
							0						
							0						
							0						
							1	IR/CIF	80				
65			4855	7			0						
	66.5 BGS				CORE 2.8 / 5.0 LOSS	2.8 / 5.0	NA		CORE LOSS				
	Core spun and fractured						NA	Core spun and fractured					
	68.7 BGS						NA						
							1	IR	90				
70			4850	8	5.0 / 5.0	5.0 / 5.0	1	IR	90				
							0						
							0						
							1	ST-R	45	FR	R3		
							1	IR	50				
75			4845	9	5.0 / 5.0	4.6 / 5.0	0						
							2	Spun	90 / 90				
	77.0: Grades to very minutely vesicular						1	IR	75				
	77.5 to 78.0: Slightly vesicular zone						1	IR	80		R2		
	77.0: Grades to weak						1	IR	90				
80			4840										

Depth Scale: 1 Inch = 2 1/2 Feet
Drilling Contractor: P C Exploration

Logged: A. Bailey
Checked: A. Yonk
Date: 30 SEP 95

Golder Federal Services

RECORD OF DRILLHOLE # USGS 123

Sheet 4 of 22

PROJECT: RCRA MONITORING
PROJECT #: 893-1195 (Golder Assoc.)
LOCATION: ICPP
COLLAR ELEVATION: 4920

DRILLING DATE: 1990
DRILL RIG: HX Wireline
AZIMUTH: Not Applicable

DATUM: MEAN SEA LEVEL
COORDINATES: N: 692519 E:295776
INCLINATION: -90 Degrees

J-JOINT, F-FAULT, S-SHEAR, B-BEDDING, DB-DRILL BREAK, PL-PLANAR, C-CURVED, U-UNDULATING, ST-STEPPED, I-IRREGULAR, P-POLISHED, SM-SMOOTH, R-ROUGH, VR-VERY ROUGH, CIF-CLAY INFILLING

DEPTH SCALE	ROCK TYPE DESCRIPTION	GRAPHIC LOG	ELEV.	RUN #	RECOVERY	RQD	FRACTURES PER FOOT	DISCONTINUITY DATA: TYPE AND SURFACE DESCRIPTION	GRAPHIC LOG	WEATHERING	STRENGTH	POINT LOAD	NOTES: WATER LEVEL: INSTRUMENTATION
80	Fresh, minutely vesicular, medium gray (N5), aphanitic, medium strong, BASALT		4840				1	IR	90			NOT TESTED	
							1	IR	90		R2		
	82.0: Grades to medium strong			10	7.0 / 5.0	7.0 / 5.0	0			FR	R3		
	Excess core recovery from 80.0 to 85.0 feet. This likely means that core was dropped in run 7 and all footage between run 7 and 9 are off by 2 feet.						1	IR	90				
							0						
85			4835				0						
							0						
				11	5.0 / 5.0	5.0 / 5.0	2	IR	80				
							1	IR IR	80 80				
							2	IR IR	90 90				
90			4830				0						
							0						
				12	5.0 / 5.0	5.0 / 5.0	1	IR	90				
							0						
							0						
95			4825				0			FR	R3		
							0						
				13	5.0 / 5.0	5.0 / 5.0	0						
							0						
100			4820				0						

Depth Scale: 1 Inch = 2 1/2 Feet
Drilling Contractor: P C Exploration

Logged: A. Bailey
Checked: A. Yonk
Date: 30 SEP 95

Golder Federal Services

RECORD OF DRILLHOLE # USGS 123

Sheet 5 of 22

PROJECT: RCRA MONITORING
PROJECT #: 893-1195 (Golder Assoc.)
LOCATION: ICPP
COLLAR ELEVATION: 4920

DRILLING DATE: 1990
DRILL RIG: HX Wireline
AZIMUTH: Not Applicable

DATUM: MEAN SEA LEVEL
COORDINATES: N: 692519 E:295776
INCLINATION: -90 Degrees

J-JOINT, F-FAULT, S-SHEAR; B-BEDDING, DB-DRILL BREAK, PL-PLANAR; C-CURVED, U-UNDULATING, ST-STEPPED; I-IRREGULAR, P-POLISHED, SM-SMOOTH; R-ROUGH, VR-VERY ROUGH, CIF-CLAY INFILLING

DEPTH SCALE	ROCK TYPE DESCRIPTION	GRAPHIC LOG	ELEV.	RUN #	RECOVERY	RQD	FRACTURES PER FOOT	DISCONTINUITY DATA: TYPE AND SURFACE DESCRIPTION	GRAPHIC LOG	WEATHERING	STRENGTH	POINT LOAD	NOTES: WATER LEVEL: INSTRUMENTATION
100	fresh, minutely vesicular, medium gray(N5), aphanitic, medium strong, BASALT		4820	14	5.0 / 5.0	5.0 / 5.0	0, 2, 0, 0, 0	IR, IR		FR	R3	NOT TESTED	
105	105.5: Grades to vesicular (Inferred flow bottom)		4815				2	IR, IR; (Inferred flow bottom)					
	106.3 BGS Moderate reddish brown (10R 5/4) structurless, fine SAND and SILT			15	4.3 / 5.0	NA	NA, NA, NA, NA			NA	NA		
110	Grades to: grayish orange (10YR 7/4) structureless clayey SILT		4810	16	4.3 / 5.0	NA	NA, NA, NA, NA	(Inferred flow top)					
	114.0 BGS Weathered, vesicular, medium gray (N5), aphanitic, medium strong, BASALT						0	Thin flow or basaltic boulder incorporated into interbed; IR; (Inferred flow bottom)		W	R3		
115			4805				1						
	116.3 BGS Grayish orange (10 YR 7/4) structureless SILT			17	4.4 / 5.0	2.5 / 5.0	NA, NA	(Inferred flow top); IR		NA	NA		
	117.4 BGS Weathered, vesicular, medium gray (N5), medium strong, BASALT						1, 1	IR/CIF; IR		W	R3		
120			4800										

Depth Scale: 1 Inch = 2 1/2 Feet
Drilling Contractor: P C Exploration

Logged: A. Bailey
Checked: A. Yonk
Date: 30 SEP 95

Golder Federal Services

RECORD OF DRILLHOLE # USGS 123

Sheet 6 of 22

PROJECT: RCRA MONITORING
PROJECT #: 893-1195 (Golder Assoc.)
LOCATION: ICPP
COLLAR ELEVATION: 4920

DRILLING DATE: 1990
DRILL RIG: HX Wireline
AZIMUTH: Not Applicable

DATUM: MEAN SEA LEVEL
COORDINATES: N: 692519 E:295776
INCLINATION: -90 Degrees

J-JOINT, F-FAULT, S-SHEAR, B-BEDDING, DB-DRILL BREAK, PL-PLANAR, C-CURVED, U-UNDULATING, ST-STEPPED, I-IRREGULAR, P-POLISHED, SM-SMOOTH, R-ROUGH, VR-VERY ROUGH, CIF-CLAY INFILLING

DEPTH SCALE	ROCK TYPE DESCRIPTION	GRAPHIC LOG	ELEV.	RUN #	RECOVERY	RQD	FRACTURES PER FOOT	DISCONTINUITY DATA: TYPE AND SURFACE DESCRIPTION		GRAPHIC LOG	WEATHERING	STRENGTH	POINT LOAD	NOTES: WATER LEVEL: INSTRUMENTATION
120	Slightly weathered, vesicular, medium gray (N5) aphanitic, medium strong, BASALT		4800				0							
							2		IR/CIF IR/CIF		FR	R3		
				18	5.0	3.5	1	Calcite infilling	IR					
					5.0	5.0	1		IR/CIF				NOT TESTED	
	124.0: Grades to slightly vesicular						2		IR/CIF IR/CIF					
125			4795				1		IR/CIF IR/CIF IR/CIF					
				19	5.0	5.0	2							
					5.0	5.0	1							
	128.0: Grades to minutely vesicular						0							
							0							
130			4790				0							
							0							
				20	5.0	5.0	0							
					5.0	5.0	2		IR/CIF IR/CIF					
							0							
135			4785				0							
							0							
				21	5.0	5.0	0							
					5.0	5.0	2		IR/CIF IR/CIF		FR	R3		
							3		IR/CIF IR/CIF					
140			4780											

Depth Scale: 1 Inch = 2 1/2 Feet
Drilling Contractor: P C Exploration

Logged: A. Bailey
Checked: A. Yonk
Date: 30 SEP 95

Golder Federal Services

RECORD OF DRILLHOLE # USGS 123

Sheet 7 of 22

PROJECT: RCRA MONITORING
PROJECT #: 893-1195 (Golder Assoc.)
LOCATION: ICPP
COLLAR ELEVATION: 4920

DRILLING DATE: 1990
DRILL RIG: HX Wireline
AZIMUTH: Not Applicable

DATUM: MEAN SEA LEVEL
COORDINATES: N: 692519 E:295776
INCLINATION: -90 Degrees

J-JOINT, F-FAULT, S-SHEAR, B-BEDDING, DB-DRILL BREAK, PL-PLANAR, C-CURVED, U-UNDULATING, ST-STEPPED, I-IRREGULAR, P-POLISHED, SM-SMOOTH, R-ROUGH, VR-VERY ROUGH, CIF-CLAY INFILLING

DEPTH SCALE	ROCK TYPE DESCRIPTION	GRAPHIC LOG	ELEV.	RUN #	RECOVERY	RQD	FRACTURES PER FOOT	DISCONTINUITY DATA: TYPE AND SURFACE DESCRIPTION	GRAPHIC LOG	WEATHERING	STRENGTH	POINT LOAD	NOTES: WATER LEVEL: INSTRUMENTATION
140	Fresh, minutely vesicular, medium dark gray (N4), aphanitic, medium strong, BASALT		4780	22	5.0 / 5.0	1.0 / 5.0	4	All fractures from 140.0 to 143.0 are IR with heavy CIF				NOT TESTED	
							4						
							4						
							1	CU/CIF					
							0						
145			4775	23	5.0 / 5.0	4.7 / 5.0	0						
							1	UR/CIF					
							4	IR/CIF IR/CIF IR/CIF UR/CIF					
							1						
							0						
150			4770	24	5.0 / 5.0	4.0 / 5.0	0						
							0						
							0						
	(Inferred flow bottom)						0						
	154.0 BGS						NA		NOT APPLICABLE				
155	Moderate red (5R 5/4), structureless well sorted fine SAND		4765	25	4.0 / 5.0	NA	NA						
							NA						
							NA						
	Grades to pale yellowish brown (10YR 6/2) well sorted SILT						NA						
160			4760				NA						

Depth Scale: 1 Inch = 2 1/2 Feet
Drilling Contractor: P C Exploration

Logged: A. Bailey
Checked: A. Yonk
Date: 30 SEP 95

Golder Federal Services

RECORD OF DRILLHOLE # USGS 123

Sheet 8 of 22

PROJECT: RCRA MONITORING
PROJECT #: 893-1195 (Golder Assoc.)
LOCATION: ICPP
COLLAR ELEVATION: 4920

DRILLING DATE: 1990
DRILL RIG: HX Wireline
AZIMUTH: Not Applicable

DATUM: MEAN SEA LEVEL
COORDINATES: N: 692519 E:295776
INCLINATION: -90 Degrees

J-JOINT, F-FAULT, S-SHEAR; B-BEDDING, DB-DRILL BREAK, PL-PLANAR; C-CURVED, U-UNDULATING, ST-STEPPED; I-IRREGULAR, P-POLISHED, SM-SMOOTH; R-ROUGH, VR-VERY ROUGH, CIF-CLAY INFILLING

DEPTH SCALE	ROCK TYPE DESCRIPTION	GRAPHIC LOG	ELEV.	RUN #	RECOVERY	RQD	FRACTURES PER FOOT	DISCONTINUITY DATA: TYPE AND SURFACE DESCRIPTION	GRAPHIC LOG	WEATHERING	STRENGTH	POINT LOAD	NOTES: WATER LEVEL: INSTRUMENTATION
160	Pale yellowish brown (10YR 6/2) well sorted, massive SILT		4760				NA			NOT APPLICABLE			
	161.3 BGS						1						
	Slightly weathered, vesicular, (3mm diameter) medium gray (N5), aphanitic, medium strong, BASALT			26	5.0 / 5.0	3.7 / 5.0	1	IR		W	R3	NOT TESTED	
							1	IR					
							1	I-VR					
165	165.0: Grades to fresh		4755				0						
	167.0: Grades to minutely vesicular			27	5.0 / 5.0	4.3 / 5.0	0	IR (Calcite IF)		FR	R3		
							3	IR/CIF IR/CIF					
							0						
							1	IR					
170			4750				0						
							2	IR/CIF IR/CIF					
				28	5.0 / 5.0	4.8 / 5.0	1	IR					
							0						
							0						
175	176.0: Grades to slightly vesicular		4745				1	IR IR		FR			
	(Inferred flow top/bottom)						2	IR (Inferred flow bottom / top)					
	176.7 BGS												
	Slightly weathered to fresh, vesicular, medium gray (N5), aphanitic, medium strong, BASALT			29	5.0 / 5.0	4.2 / 5.0	2	IR IR		SW	R3		
							3	IR/CIF IR/CIF IR/CIF					
180			4740				1	IR					

Depth Scale: 1 Inch = 2 1/2 Feet
Drilling Contractor: P C Exploration

Logged: A. Bailey
Checked: A. Yonk
Date: 30 SEP 95

Golder Federal Services

RECORD OF DRILLHOLE # USGS 123

PROJECT: RCRA MONITORING
PROJECT #: 893-1195 (Golder Assoc.)
LOCATION: ICPP
COLLAR ELEVATION: 4920

DRILLING DATE: 1990
DRILL RIG: HX Wireline
AZIMUTH: Not Applicable

DATUM: MEAN SEA LEVEL
COORDINATES: N: 692519 E:295776
INCLINATION: -90 Degrees

J-JOINT, F-FAULT, S-SHEAR; B-BEDDING, DB-DRILL BREAK, PL-PLANAR; C-CURVED, U-UNDULATING, ST-STEPPED; I-IRREGULAR, P-POLISHED, SM-SMOOTH; R-ROUGH, VR-VERY ROUGH, CIF-CLAY INFILLING

DEPTH SCALE	ROCK TYPE DESCRIPTION	GRAPHIC LOG	ELEV.	RUN #	RECOVERY	RQD	FRACTURES PER FOOT	DISCONTINUITY DATA: TYPE AND SURFACE DESCRIPTION	GRAPHIC LOG	WEATHERING	STRENGTH	POINT LOAD	NOTES: WATER LEVEL: INSTRUMENTATION
180	Slightly weathered to fresh, vesicular, medium gray (N5), aphanitic, medium strong, BASALT		4740				0			SW		NOT TESTED	
							1	IR/CIF					
	181.0: Grades to fresh			30	5.0 / 5.0	5.0 / 5.0	1	IR/CIF		FR	R3		
	182.5: Grades to slightly vesicular						0						
							1	IR/CIF					
185			4735				1	IR/CIF					
							0						
	187.5: Grades to minutely vesicular			31	5.0 / 5.0	5.0 / 5.0	0						
							1	IR/CIF					
							1	IR/CIF					
190			4730				2	IR/CIF IR/CIF					
							1	IR					
				32	5.0 / 5.0	5.0 / 5.0	1	IR/CIF					
							0						
							0			FR	R3		
195			4725				1	IR/CIF					
							0						
				33	5.0 / 5.0	5.0 / 5.0	1	IR					
							0						
200			4720				0						

Depth Scale: 1 Inch = 2 1/2 Feet
Drilling Contractor: P C Exploration

Logged: A. Bailey
Checked: A. Yonk
Date: 30 SEP 95

Golder Federal Services

RECORD OF DRILLHOLE # USGS 123

Sheet 10 of 22

PROJECT: RCRA MONITORING
PROJECT #: 893-1195 (Golder Assoc.)
LOCATION: ICPP
COLLAR ELEVATION: 4920

DRILLING DATE: 1990
DRILL RIG: HX Wireline
AZIMUTH: Not Applicable

DATUM: MEAN SEA LEVEL
COORDINATES: N: 692519 E:295776
INCLINATION: -90 Degrees

J-JOINT, F-FAULT, S-SHEAR, B-BEDDING, DB-DRILL BREAK, PL-PLANAR, C-CURVED, U-UNDULATING, ST-STEPPED, I-IRREGULAR, P-POLISHED, SM-SMOOTH, R-ROUGH, VR-VERY ROUGH, CIF-CLAY INFILLING

DEPTH SCALE	ROCK TYPE DESCRIPTION	GRAPHIC LOG	ELEV.	RUN #	RECOVERY	RQD	FRACTURES PER FOOT	DISCONTINUITY DATA: TYPE AND SURFACE DESCRIPTION	GRAPHIC LOG	WEATHERING	STRENGTH	POINT LOAD	NOTES: WATER LEVEL: INSTRUMENTATION
200	Fresh, minutely vesicular, medium gray (N5), aphanitic, medium strong, BASALT		4720	34	5.0 / 5.0	5.0 / 5.0	0, 0, 0, 0, 0			FR	R3	NOT TESTED	
205	205.6: Grades to vesicular		4715				0						
	(Inferred flow bottom)							(Inferred flow bottom)					
	206.3 BGS Moderate reddish orange (10 R 6/6) clayey SILT (Inferred flow top)			35	3.6 / 5.0	1.3 / 5.0	NA, NA, NA		NOT APPLICABLE				
	208.8 BGS Weathered, vesicular, medium gray (N5), aphanitic with 1 to 2 mm lath shaped plagioclase phenocrysts, medium strong, BASALT						>5	(Inferred flow top)					
210	212.0: Grades to fresh, slightly vesicular		4710	36	5.0 / 5.0	5.0 / 5.0	4, 1, 0, 1, 1	All fractures are IR/CIF except where noted. IR		W, FR	R3		
215	(Inferred flow top/bottom)		4705				>5	(Inferred flow top / bottom)					
	215.5 BGS Weathered, vesicular, grayish brown (5YR 3/2), abundant 5mm diameter elutriation pipes, aphanitic with 1 to 2 mm lath shaped plagioclase phenocrysts, medium strong, BASALT (calcite infilling of pipes)			37	5.0 / 5.0	3.2 / 5.0	>5, 4, 1, 0	IR		W			
220	217: Grades to slightly ves.		4700										

Depth Scale: 1 Inch = 2 1/2 Feet
Drilling Contractor: P C Exploration

Logged: A. Bailey
Checked: A. Yonk
Date: 30 SEP 95

Golder Federal Services

RECORD OF DRILLHOLE # USGS 123

Sheet 11 of 22

PROJECT: RCRA MONITORING
PROJECT #: 893-1195 (Golder Assoc.)
LOCATION: ICPP
COLLAR ELEVATION: 4920

DRILLING DATE: 1990
DRILL RIG: HX Wireline
AZIMUTH: Not Applicable

DATUM: MEAN SEA LEVEL
COORDINATES: N: 692519 E:295776
INCLINATION: -90 Degrees

J-JOINT, F-FAULT, S-SHEAR, B-BEDDING, DB-DRILL BREAK, PL-PLANAR, C-CURVED, U-UNDULATING, ST-STEPPED, I-IRREGULAR, P-POLISHED, SM-SMOOTH, R-ROUGH, VR-VERY ROUGH, CIF-CLAY INFILLING

DEPTH SCALE	ROCK TYPE DESCRIPTION	GRAPHIC LOG	ELEV.	RUN #	RECOVERY	RQD	FRACTURES PER FOOT	DISCONTINUITY DATA: TYPE AND SURFACE DESCRIPTION	GRAPHIC LOG	WEATHERING	STRENGTH	POINT LOAD	NOTES: WATER LEVEL: INSTRUMENTATION
220	(Inferred flow top/bottom)		4700				3	(Inferred flow bottom / top)		FR	R3	NOT TESTED	
	220.4 BGS Slightly weathered to fresh, vesicular, dark gray (N3), aphanitic with 1 to 2 mm lath shaped plagioclase phenocrysts, medium strong, BASALT			38	5.0 / 5.0	4.5 / 5.0	3	All fractures 220.4 to 223.0 are IR/CIF		SW			
							1	All fractures 223.0 to 240.0 are: IR		FR			
	222.0: Grades to slightly vesicular, fresh						1						
							3						
225			4695				1						
							1						
				39	5.0 / 5.0	5.0 / 5.0	0						
							1						
							0						
230			4690				0						
							0						
				40	5.0 / 5.0	5.0 / 5.0	0						
							0						
	234.6 to 235.4: Minutely vesicular						0						
235			4685				0						
							0						
				41	5.0 / 5.0	5.0 / 5.0	0						
							0			FR	R3		
240			4680				0						

Depth Scale: 1 Inch = 2 1/2 Feet
Drilling Contractor: P C Exploration

Logged: A. Bailey
Checked: A. Yonk
Date: 30 SEP 95

Golder Federal Services

RECORD OF DRILLHOLE # USGS 123

Sheet 12 of 22

PROJECT: RCRA MONITORING
PROJECT #: 893-1195 (Golder Assoc.)
LOCATION: ICPP
COLLAR ELEVATION: 4920

DRILLING DATE: 1990
DRILL RIG: HX Wireline
AZIMUTH: Not Applicable

DATUM: MEAN SEA LEVEL
COORDINATES: N: 692519 E:295776
INCLINATION: -90 Degrees

J-JOINT, F-FAULT, S-SHEAR; B-BEDDING, DB-DRILL BREAK, PL-PLANAR; C-CURVED, U-UNDULATING, ST-STEPPED; I-IRREGULAR, P-POLISHED, SM-SMOOTH; R-ROUGH, VR-VERY ROUGH, CIF-CLAY INFILLING

DEPTH SCALE	ROCK TYPE DESCRIPTION	GRAPHIC LOG	ELEV.	RUN #	RECOVERY	RQD	FRACTURES PER FOOT	DISCONTINUITY DATA: TYPE AND SURFACE DESCRIPTION	GRAPHIC LOG	WEATHERING	STRENGTH	POINT LOAD	NOTES: WATER LEVEL: INSTRUMENTATION
240	Fresh, slightly vesicular, medium gray (N5), aphanitic with 1 to 2 mm lath shaped plagioclase phenocrysts, medium strong BASALT		4680	42	5.0 / 5.0	4.7 / 5.0	1			FR	R3	NOT TESTED	
							5	All fractures 240.0 to 242.0 are IR with heavy CIF					
							0						
							0						
							1	IR/CIF					
245			4675	43	5.0 / 5.0	4.1 / 5.0	0						
							0						
	248.0: Elutriation pipes, grades to pale red (10R 6/2)						1	ST-R/CIF					
	(Inferred flow bottom/top)						6	(Inferred flow bottom / top)					
	248.9 BGS						6	IR/CIF					
	Slightly weathered, vesicular, light brownish gray (5YR 6/1), aphanitic, medium strong, BASALT							All fractures 249.0 to 252.0 are IR/CIF					
250			4670	44	5.0 / 5.0	4.0 / 5.0	6			SW			
							2						
							0						
							2	IR IR					
							0						
255	255.0: Grades to fresh, slightly vesicular		4665	45	5.0 / 5.0	5.0 / 5.0	0	IR/CIF					
							2	IR/CIF IR/CIF		FR	R3		
							0						
							0						
260			4660				0						

Depth Scale: 1 Inch = 2 1/2 Feet
Drilling Contractor: P C Exploration

Logged: A. Bailey
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Date: 30 SEP 95

Golder Federal Services

RECORD OF DRILLHOLE # USGS 123

Sheet 13 of 22

PROJECT: RCRA MONITORING
PROJECT #: 893-1195 (Golder Assoc.)
LOCATION: ICPP
COLLAR ELEVATION: 4920

DRILLING DATE: 1990
DRILL RIG: HX Wireline
AZIMUTH: Not Applicable

DATUM: MEAN SEA LEVEL
COORDINATES: N: 692519 E:295776
INCLINATION: -90 Degrees

J-JOINT, F-FAULT, S-SHEAR; B-BEDDING, DB-DRILL BREAK, PL-PLANAR; C-CURVED, U-UNDULATING, ST-STEPPED; I-IRREGULAR, P-POLISHED, SM-SMOOTH; R-ROUGH, VR-VERY ROUGH, CIF-CLAY INFILLING

DEPTH SCALE	ROCK TYPE DESCRIPTION	GRAPHIC LOG	ELEV.	RUN #	RECOVERY	RQD	FRACTURES PER FOOT	DISCONTINUITY DATA: TYPE AND SURFACE DESCRIPTION	GRAPHIC LOG	WEATHERING	STRENGTH	POINT LOAD	NOTES: WATER LEVEL: INSTRUMENTATION
260	Fesh, slightly vesicular, medium light gray (N6), aphanitic, medium strong, BASALT		4660	46	5.0 / 5.0	5.0 / 5.0	0					NOT TESTED	
							1	IR/CIF		FR	R3		
							0						
							0						
							0						
265			4655	47	5.0 / 5.0	5.0 / 5.0	0						
							0	IR/CIF					
							1	IR/CIF					
							1						
	270.0: Grades to vesicular (Inferred flow bottom/top)						0	IR/CIF (Inferred flow bottom / top)					
270	270.2 BGS Slightly weathered, vesicular, medium gray (N5), aphanitic, medium strong, BASALT		4650	48	5.0 / 5.0	4.6 / 5.0	3	IR/CIF IR/CIF		SW			
							1	IR/CIF					
							0						
	274.0: Grades to fresh, slightly vesicular						2	IR/CIF IR/CIF					
							0						
275			4645	49	2.6 / 5.0	2.4 / 5.0	1	IR/CIF		FR	R3		
							1	IR/CIF					
	(Inferred flow bottom)							IR/CIF (Inferred flow bottom)					
	277.6 BGS Based on low recovery and overall core loss this interval iinferred to be an inter-bed unit.				CORE LOSS		NA		CORE LOSS				
							NA						
280			4640				NA						

Depth Scale: 1 Inch = 2 1/2 Feet
Drilling Contractor: P C Exploration

Logged: A. Bailey
Checked: A. Yonk
Date: 30 SEP 95

Golder Federal Services

RECORD OF DRILLHOLE # USGS 123

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PROJECT: RCRA MONITORING
PROJECT #: 893-1195 (Golder Assoc.)
LOCATION: ICPP
COLLAR ELEVATION: 4920

DRILLING DATE: 1990
DRILL RIG: HX Wireline
AZIMUTH: Not Applicable

DATUM: MEAN SEA LEVEL
COORDINATES: N: 692519 E:295776
INCLINATION: -90 Degrees

J-JOINT, F-FAULT, S-SHEAR, B-BEDDING, DB-DRILL BREAK, PL-PLANAR, C-CURVED, U-UNDULATING, ST-STEPPED, I-IRREGULAR, P-POLISHED, SM-SMOOTH, R-ROUGH, VR-VERY ROUGH, CIF-CLAY INFILLING

DEPTH SCALE	ROCK TYPE DESCRIPTION	GRAPHIC LOG	ELEV.	RUN #	RECOVERY	RQD	FRACTURES PER FOOT	DISCONTINUITY DATA: TYPE AND SURFACE DESCRIPTION	GRAPHIC LOG	WEATHERING	STRENGTH	POINT LOAD	NOTES: WATER LEVEL: INSTRUMENTATION
280	Very little recovery, what was recovered was: yellowish gray (5Y 7/2), SILTY CLAY		4640	50	CORE LOSS		NA		CORE LOSS			NOT TESTED	
							NA						
							NA						
							NA						
	(Inferred flow top)							(Inferred flow top)					
	284.0 BGS				0.8 / 5.0	0.0 / 5.0	>5						
285	Weathered, vesicular, very fractured with yellowish gray (5Y 7/2) clay infilling, medium gray (N5) to medium light gray (N6) aphanitic, medium strong, BASALT		4635	51	3.9 / 5.0	0.7 / 5.0	>5	All fractures IR with heavy CIF		W	R3		
							>5						
							>5						
							>5						
							>5						
290			4630	52	2.9 / 5.0	0.0 / 5.0	>5						
	(Inferred flow bottom)						NA	(Inferred flow bottom)					
	291.6 BGS				CORE LOSS		NA		CORE LOSS				
	Yellowish gray (5Y 7/2) SILTY CLAY to CLAY						NA						
	(Inferred flow top)						NA	(Inferred flow top)					
	293.7 BGS						>5						
295	Weathered, vesicular, very fractured with yellowish gray (5Y 7/2) clay infilling, medium gray (N5), aphanitic, medium strong, BASALT		4625	53	4.0 / 5.0	0.6 / 5.0	>5	All fractures IR with heavy CIF		W	R3		
							>5						
							>5						
							>5						
300			4620				>5						

Depth Scale: 1 Inch = 2 1/2 Feet
Drilling Contractor: P C Exploration

Logged: A. Bailey
Checked: A. Yonk
Date: 30 SEP 95

Golder Federal Services

RECORD OF DRILLHOLE # USGS 123

Sheet 15 of 22

PROJECT: RCRA MONITORING
PROJECT #: 893-1195 (Golder Assoc.)
LOCATION: ICPP
COLLAR ELEVATION: 4920

DRILLING DATE: 1990
DRILL RIG: HX Wireline
AZIMUTH: Not Applicable

DATUM: MEAN SEA LEVEL
COORDINATES: N: 692519 E:295776
INCLINATION: -90 Degrees

J-JOINT, F-FAULT, S-SHEAR, B-BEDDING, DB-DRILL BREAK, PL-PLANAR, C-CURVED, U-UNDULATING, ST-STEPPED, I-IRREGULAR, P-POLISHED, SM-SMOOTH, R-ROUGH, VR-VERY ROUGH, CIF-CLAY INFILLING

DEPTH SCALE	ROCK TYPE DESCRIPTION	GRAPHIC LOG	ELEV.	RUN #	RECOVERY	RQD	FRACTURES PER FOOT	DISCONTINUITY DATA: TYPE AND SURFACE DESCRIPTION	GRAPHIC LOG	WEATHERING	STRENGTH	POINT LOAD	NOTES: WATER LEVEL: INSTRUMENTATION
300	Weathered, vesicular, very fractured with yellowish gray (5Y 7/2) clay infilling, medium gray (N5), aphanitic, medium strong BASALT		4620	54	5.0 / 5.0	1.8 / 5.0	>5			W		NOT TESTED	
							>5						
							>5						
	303.7: Grades to slightly weathered, slightly vesicular.						1	IR	90				
							0						
305			4615	55	5.0 / 5.0	5.0 / 5.0	3	IR/CIF		SW	R3		
							1	IR	90				
							0						
							0						
	309.0: Grades to slightly to minutely vesicular.						0						
310	310.0: Grades to fresh.		4610	56	5.0 / 5.0	5.0 / 5.0	0			FR	R3		
							0						
							0						
							0						
							0	DB?	90				
315			4605	57	5.0 / 5.0	5.0 / 5.0	0	DB?	90				
							0						
							0						
							0						
320			4600				0						

Depth Scale: 1 Inch = 2 1/2 Feet
Drilling Contractor: P C Exploration

Logged: A. Bailey
Checked: A. Yonk
Date: 30 SEP 95

Golder Federal Services

RECORD OF DRILLHOLE # USGS 123

Sheet 16 of 22

PROJECT: RCRA MONITORING
PROJECT #: 893-1195 (Golder Assoc.)
LOCATION: ICPP
COLLAR ELEVATION: 4920

DRILLING DATE: 1990
DRILL RIG: HX Wireline
AZIMUTH: Not Applicable

DATUM: MEAN SEA LEVEL
COORDINATES: N: 692519 E:295776
INCLINATION: -90 Degrees

J-JOINT, F-FAULT, S-SHEAR, B-BEDDING, DB-DRILL BREAK, PL-PLANAR, C-CURVED, U-UNDULATING, ST-STEPPED, I-IRREGULAR, P-POLISHED, SM-SMOOTH, R-ROUGH, VR-VERY ROUGH, CIF-CLAY INFILLING

DEPTH SCALE	ROCK TYPE DESCRIPTION	GRAPHIC LOG	ELEV.	RUN #	RECOVERY	RQD	FRACTURES PER FOOT	DISCONTINUITY DATA: TYPE AND SURFACE DESCRIPTION	GRAPHIC LOG	WEATHERING	STRENGTH	POINT LOAD	NOTES: WATER LEVEL: INSTRUMENTATION
320	Fresh, slightly vesicular medium gray (N5), aphanitic, medium strong, BASALT		4600	58	5.0/5.0	5.0/5.0	0	IR/CIF				NOT TESTED	
							0						
							0						
							1	IR/CIF	79				
							0						
325			4595	59	5.0/5.0	5.0/5.0	0			FR	R3		
	326.4: Grades to minutely vesicular						0						
							0						
							0						
330	330.0: Grades to slightly vesicular		4590	60	5.0/5.0	5.0/5.0	1	IR/CIF	86				
							0						
							1	IR/CIF	11				
							0						
							0						
335			4585	61	5.0/5.0	5.0/5.0	0	(Sample collected for K/Ar date)					
							0						
							0						
							0						
340			4580				0						

Depth Scale: 1 Inch = 2 1/2 Feet
Drilling Contractor: P C Exploration

Logged: A. Bailey
Checked: A. Yonk
Date: 30 SEP 95

Golder Federal Services

RECORD OF DRILLHOLE # USGS 123

Sheet 17 of 22

PROJECT: RCRA MONITORING
PROJECT #: 893-1195 (Golder Assoc.)
LOCATION: ICPP
COLLAR ELEVATION: 4920

DRILLING DATE: 1990
DRILL RIG: HX Wireline
AZIMUTH: Not Applicable

DATUM: MEAN SEA LEVEL
COORDINATES: N: 692519 E:295776
INCLINATION: -90 Degrees

J-JOINT, F-FAULT, S-SHEAR, B-BEDDING, DB-DRILL BREAK, PL-PLANAR, C-CURVED, U-UNDULATING, ST-STEPPED, I-IRREGULAR, P-POLISHED, SM-SMOOTH, R-ROUGH, VR-VERY ROUGH, CIF-CLAY INFILLING

DEPTH SCALE	ROCK TYPE / DESCRIPTION	GRAPHIC LOG	ELEV.	RUN #	RECOVERY	RQD	FRACTURES PER FOOT	DISCONTINUITY DATA: TYPE AND SURFACE DESCRIPTION	GRAPHIC LOG	WEATHERING	STRENGTH	POINT LOAD	NOTES: WATER LEVEL: INSTRUMENTATION
340	Fresh, slightly vesicular, medium gray (N5), aphanitic, medium strong, BASALT		4580				0					NOT TESTED	
							1	IR/CIF	11				
				62	5.0 / 5.0	5.0 / 5.0	0						
							1	IR/CIF	33				
							1	IR/CIF					
345			4575				0						
							1	IR/CIF	14				
				63	5.0 / 5.0	5.0 / 5.0	0						
							0						
							0			FR	R3		
350			4570				0						
							0						
				64	5.0 / 5.0	5.0 / 5.0	0						
							0						
							1	IR/CIF	18				
355			4565				1	IR/CIF	80				
							0						
				65	5.0 / 5.0	5.0 / 5.0	0						
							0						
360			4560				0						

Depth Scale: 1 Inch = 2 1/2 Feet
Drilling Contractor: P C Exploration

Logged: A. Bailey
Checked: A. Yonk
Date: 30 SEP 95

Golder Federal Services

RECORD OF DRILLHOLE # USGS 123

Sheet 18 of 22

PROJECT: RCRA MONITORING
PROJECT #: 893-1195 (Golder Assoc.)
LOCATION: ICPP
COLLAR ELEVATION: 4920

DRILLING DATE: 1990
DRILL RIG: HX Wireline
AZIMUTH: Not Applicable

DATUM: MEAN SEA LEVEL
COORDINATES: N: 692519 E:295776
INCLINATION: -90 Degrees

J-JOINT, F-FAULT, S-SHEAR; B-BEDDING, DB-DRILL BREAK, PL-PLANAR; C-CURVED, U-UNDULATING, ST-STEPPED; I-IRREGULAR, P-POLISHED, SM-SMOOTH; R-ROUGH, VR-VERY ROUGH, CIF-CLAY INFILLING

DEPTH SCALE	ROCK TYPE / DESCRIPTION	GRAPHIC LOG	ELEV.	RUN #	RECOVERY	RQD	FRACTURES PER FOOT	DISCONTINUITY DATA: TYPE AND SURFACE DESCRIPTION	GRAPHIC LOG	WEATHERING	STRENGTH	POINT LOAD	NOTES: WATER LEVEL: INSTRUMENTATION
360	Fresh, minutely vesicular, medium gray (N5), aphanitic, medium strong to strong, BASALT		4560				0					NOT TESTED	
							1	IR/CIF					
				66	5.0 / 5.0	5.0 / 5.0	1	IR/CIF					
							0						
							1	IR/CIF					
365			4555					IR/CIF					
							1	IR/CIF					
							1	IR/CIF					
				67	5.0 / 5.0	5.0 / 5.0	2	IR/CIF					
							0						
							1	IR/CIF					
370			4550				0			FR	R3 / R4		
							0						
				68	5.0 / 5.0	5.0 / 5.0	1	IR/CIF					
							0						
							0						
375			4545				0						
							0						
				69	5.0 / 5.0	5.0 / 5.0	0						
							2	IR/CIF IR/CIF					
380			4540				0						

Depth Scale: 1 Inch = 2 1/2 Feet
Drilling Contractor: P C Exploration

Logged: A. Bailey
Checked: A. Yonk
Date: 30 SEP 95

Golder Federal Services

RECORD OF DRILLHOLE # USGS 123

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PROJECT: RCRA MONITORING
PROJECT #: 893-1195 (Golder Assoc.)
LOCATION: ICPP
COLLAR ELEVATION: 4920

DRILLING DATE: 1990
DRILL RIG: HX Wireline
AZIMUTH: Not Applicable

DATUM: MEAN SEA LEVEL
COORDINATES: N: 692519 E:295776
INCLINATION: -90 Degrees

J-JOINT, F-FAULT, S-SHEAR, B-BEDDING, DB-DRILL BREAK, PL-PLANAR, C-CURVED, U-UNDULATING, ST-STEPPED, I-IRREGULAR, P-POLISHED, SM-SMOOTH, R-ROUGH, VR-VERY ROUGH, CIF-CLAY INFILLING

DEPTH SCALE	ROCK TYPE DESCRIPTION	GRAPHIC LOG	ELEV.	RUN #	RECOVERY	RQD	FRACTURES PER FOOT	DISCONTINUITY DATA: TYPE AND SURFACE DESCRIPTION		GRAPHIC LOG	WEATHERING	STRENGTH	POINT LOAD	NOTES: WATER LEVEL: INSTRUMENTATION
380	293.7 to 382.5 ft.: Fresh, minutely vesicular, medium gray (N5), aphanitic, medium strong to strong, BASALT						1	IR-CC	45		FR	R3	NOT TESTED	
							5	IR-CC						
				70	5.0 / 5.0	3.8 / 5.0	5	Inferred flow bottom / top						
	382.5 to 419.5 ft.: Slightly weathered, vesicular, medium gray (N5), aphanitic, medium strong BASALT						1	ALL IR-CIF to 386	10		SW	R3		
							2		80 80					
385	385 ft.: grades to slightly vesicualr, fresh						5	All IR-Heavy CIF to 389						
							5							
				71	5.0 / 5.0	1.2 / 5.0	5				FR			
							5							
	390 to 400 ft.: core is covered with light brown (10YR 6/2) fine to medium SAND. Sand is coming "in" from somewhere above this zone. Bit "stuck" at 411 ft. BLS and twisted off						3	IR IR IR	80 80 45					
390							1	IR	25					
							1	IR	25					
				72	5.0 / 5.0	5.0 / 5.0	0							
							0							
							0							
395							1	IR-CC	80					
							0							
				73	5.0 / 5.0	5.0 / 5.0	0	IR (DB?)	85					
							0	IR(DB?)	85					
400							0	IR-(DB?)	85					

Depth Scale: 1 Inch = 2 1/2 Feet
Drilling Contractor: P C Exploration

Logged: A. Bailey
Checked: A Yonk
Date: 30 SEP 95

Golder Federal Services

RECORD OF DRILLHOLE # USGS 123

PROJECT: RCRA MONITORING
PROJECT #: 893-1195 (Golder Assoc.)
LOCATION: ICPP
COLLAR ELEVATION: 4920

DRILLING DATE: 1990
DRILL RIG: HX Wireline
AZIMUTH: Not Applicable

DATUM: MEAN SEA LEVEL
COORDINATES: N: 692519 E:295776
INCLINATION: -90 Degrees

J-JOINT, F-FAULT, S-SHEAR; B-BEDDING, DB-DRILL BREAK, PL-PLANAR; C-CURVED, U-UNDULATING, ST-STEPPED; I-IRREGULAR, P-POLISHED, SM-SMOOTH; R-ROUGH, VR-VERY ROUGH, CIF-CLAY INFILLING

DEPTH SCALE	ROCK TYPE DESCRIPTION	GRAPHIC LOG	ELEV.	RUN #	RECOVERY	RQD	FRACTURES PER FOOT	DISCONTINUITY DATA: TYPE AND SURFACE DESCRIPTION	GRAPHIC LOG	WEATHERING	STRENGTH	POINT LOAD	NOTES: WATER LEVEL: INSTRUMENTATION
400	382.5 to 419.5 ft.: Fresh, slightly to minutely vesicular, medium gray (N5), aphanitic, medium strong, BASALT			74	5.0 / 5.0	5.0 / 5.0	0, 0, 2, 2, 2	All IR-CC; 34, 30, 30, 32, 14, 50		FR	R3	NOT TESTED	
405				75	5.0 / 5.0	5.0 / 5.0	0, 0, 0, 0, 0						
410	Twisted Off			76	5.0 / 5.0	5.0 / 5.0	0, 0, 0, 0, 0	411 ft. Twisted off drill string November 1990					
415	419.5 ft.: grades to slightly vesicular			77	5.0 / 5.0	5.0 / 5.0	0, 0, 0, 0, 0	Inferred flow bottom / top					
420													

Depth Scale: 1 Inch = 2 1/2 Feet
Drilling Contractor: P C Exploration

Logged: A. Bailey
Checked: A Yonk
Date: 30 SEP 95

Golder Federal Services

RECORD OF DRILLHOLE # USGS 123

Sheet 21 of 22

PROJECT: RCRA MONITORING
PROJECT #: 893-1195 (Golder Assoc.)
LOCATION: ICPP
COLLAR ELEVATION: 4920

DRILLING DATE: 1990
DRILL RIG: HX Wireline
AZIMUTH: Not Applicable

DATUM: MEAN SEA LEVEL
COORDINATES: N: 692519 E:295776
INCLINATION: -90 Degrees

J-JOINT, F-FAULT, S-SHEAR, B-BEDDING, DB-DRILL BREAK, PL-PLANAR, C-CURVED, U-UNDULATING, ST-STEPPED, I-IRREGULAR, P-POLISHED, SM-SMOOTH, R-ROUGH, VR-VERY ROUGH, CIF-CLAY INFILLING

DEPTH SCALE	ROCK TYPE / DESCRIPTION	GRAPHIC LOG	ELEV.	RUN #	RECOVERY	RQD	FRACTURES PER FOOT	DISCONTINUITY DATA: TYPE AND SURFACE DESCRIPTION	GRAPHIC LOG	WEATHERING	STRENGTH	POINT LOAD	NOTES: WATER LEVEL: INSTRUMENTATION
420	419.5 to 423.5 ft.: Very limited recovery indicates Dense, light brown (5YR 6/4), clayey SILT			78				Inferred flow bottom / top					
	423.5 to 440 ft.: Slightly weathered, vesicular, medium dark gray (N4), aphanitic, with 1-2 mm lath shaped phenocrysts of plagioclase, medium strong, BASALT				1.5 / 5.0	1.0 / 5.0	2	Fractured Zone		SW	R3	NOT TESTED	
425							4	80, 80, 90, 15, 90, 90, 80					
				79	5.0 / 5.0	5.0 / 5.0	1, 0, 0, 1			FR			
430							0, 0, 0, 0, 0	80					
				80	5.0 / 5.0	5.0 / 5.0							
435				81	5.0 / 5.0	5.0 / 5.0	0, 0, 1, 0, 0	38					
440								Inferred flow bottom / top					

Depth Scale: 1 Inch = 2 1/2 Feet
Drilling Contractor: P C Exploration

Logged: A. Bailey
Checked: A Yonk
Date: 30 SEP 95

Golder Federal Services

RECORD OF DRILLHOLE # USGS 123

PROJECT: RCRA MONITORING
PROJECT #: 893-1195 (Golder Assoc.)
LOCATION: ICPP
COLLAR ELEVATION: 4920

DRILLING DATE: 1990
DRILL RIG: HX Wireline
AZIMUTH: Not Applicable

DATUM: MEAN SEA LEVEL
COORDINATES: N: 692519 E:295776
INCLINATION: -90 Degrees

J-JOINT B-BEDDING C-CURVED I-IRREGULAR R-ROUGH
F-FAULT DB-DRILL BREAK U-UNDULATING P-POLISHED VR-VERY ROUGH
S-SHEAR PL-PLANAR ST-STEPPED SM-SMOOTH CIF-CLAY INFILLING

DEPTH SCALE	ROCK TYPE DESCRIPTION	GRAPHIC LOG	ELEV.	RUN #	RECOVERY	RQD	FRACTURES PER FOOT	DISCONTINUITY DATA TYPE AND SURFACE DESCRIPTION	GRAPHIC LOG	WEATHERING	STRENGTH	POINT LOAD	NOTES: WATER LEVEL: INSTRUMENTATION
440	440 to 441.8 ft. Core loss inferred to be interbed							Inferred flow bottom / top					
	441.8 to 453.0 ft.: Slightly weathered, vesicular, pale red (5R 6/2), aphanitic, medium strong BASALT			82	3.2 / 5.0	1.9 / 5.0	5	All fractures IR-CC		SW	R3	NOT TESTED	
							2		90 90 90				
	NOTE: At 445 ft. 0.5 ft. of very light gray (N8) silicic tuff with obvious glass shards was recovered. However the basalt core from above and below this recovery fit exactly together. This indicates that the recovered tuff is a cobble of sluff from farther up the hole. It is likely that the sluff came from the probable interbed at 440 ft. or perhaps from the 420 zone. It is most likely that the sluff is from the 440 zone as that is within the area that the drill bit would be "swabbed" up and down past to condition the hole						2		90 90				
445							2		90 90				
				83	5.0 / 5.0	5.0 / 5.0	0			FR			
							0						
							0						
							0						
450				84	5.0 / 5.0	2.8 / 5.0	0	Inferred flow bottom / top					
	446 ft.: grades to fresh slightly vesicular						5	All fractures IR- except where noted		SW			
	451.5 ft.: grades to vesicular						3						
455	453 to 496.5 ft.: Slightly weathered to fresh, vesicular, pale red (5R 6/2) to light brownish gray (5YR 6/1), aphanitic medium strong, BASALT			85	5.0 / 5.0	2.5 / 5.0	3				R3		
							2	IR-CIF	All fractures 80 to 90 degrees				
							1						
	457 ft.: grades to fresh, slightly vesicular						1						
460							1			FR			

Depth Scale: 1 Inch = 2 1/2 Feet
Drilling Contractor: P C Exploration

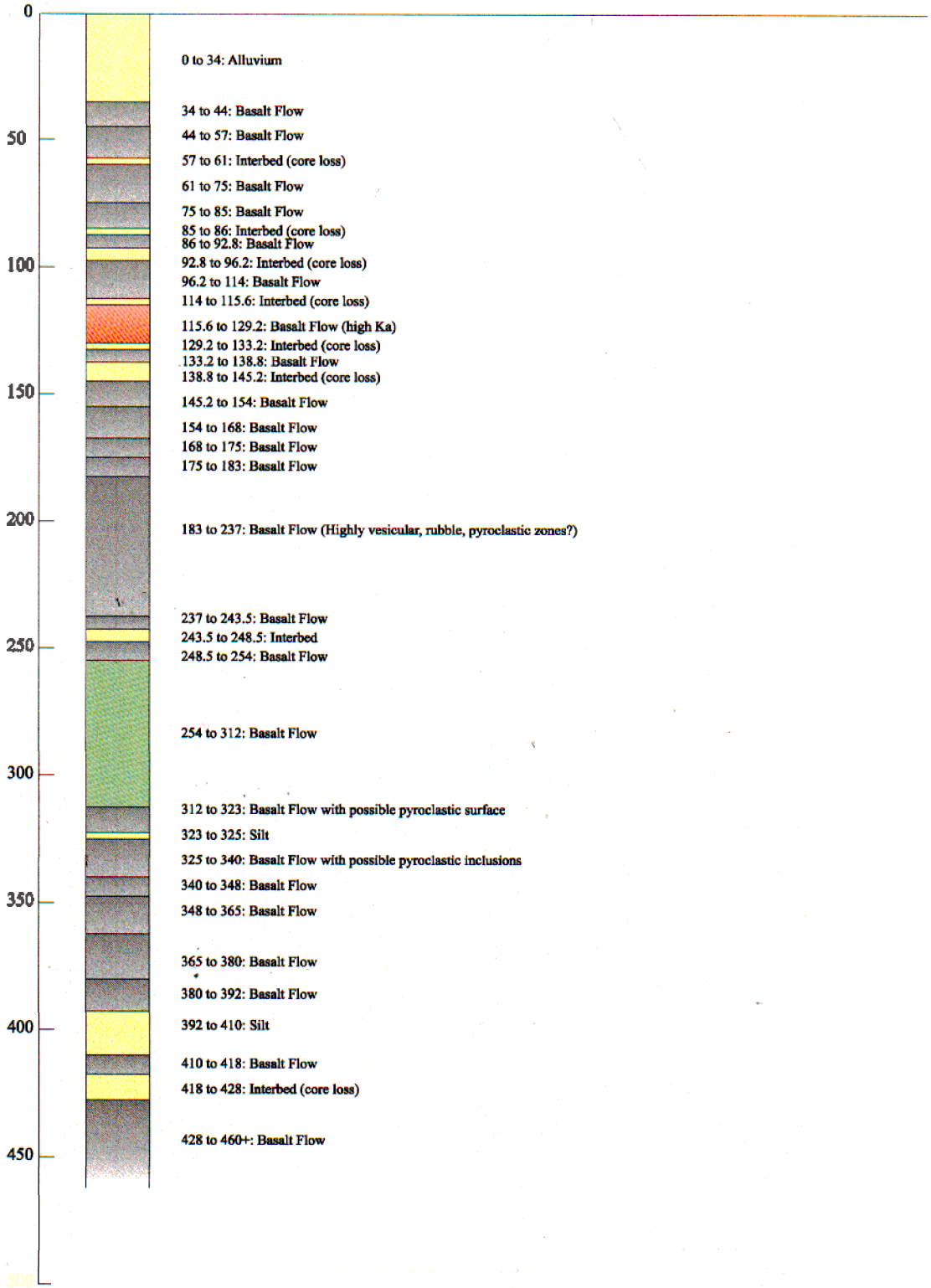
Logged: A. Bailey
Checked: A Yonk
Date: 30 SEP 95

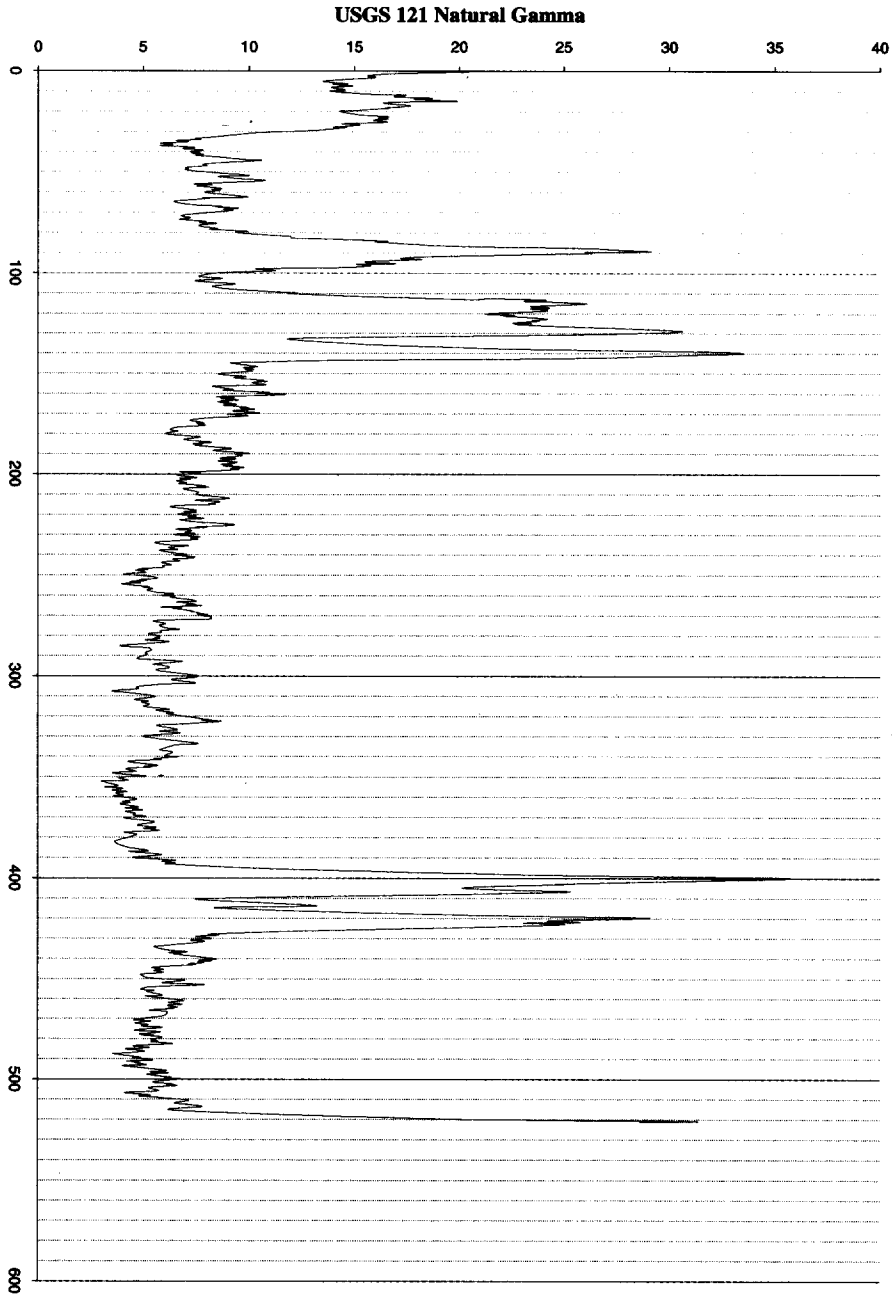
Golder Federal Services

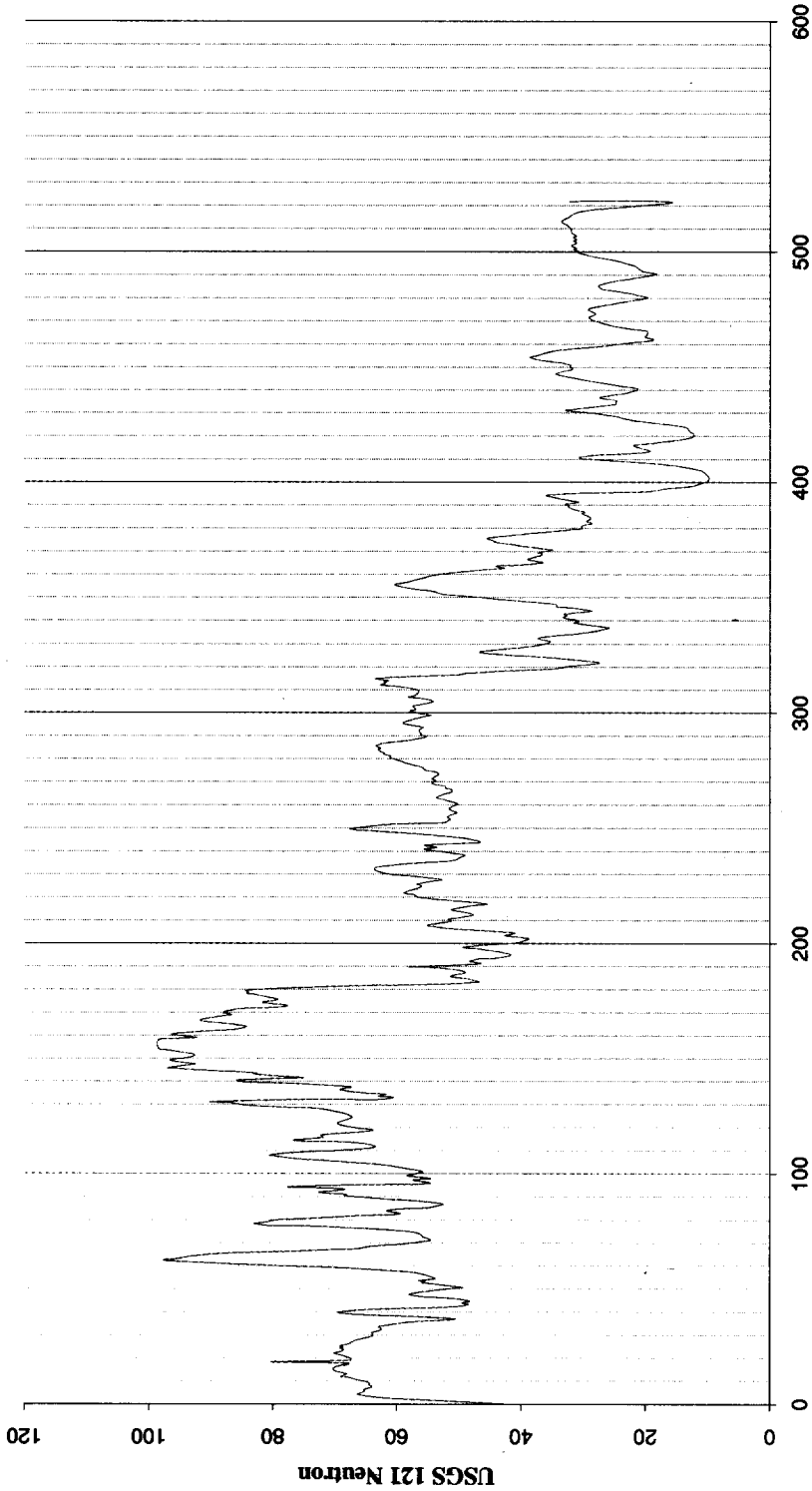
Attachment B-2

Lithologic Details for Well USGS-121

Well USGS-121




USGS 121 Natural Gamma
0
5
10
15
20
25
30
35
40
0
100
200
300
400
500
600


USGS 121 Neutron
0
20
40
60
80
100
120
0
100
200
300
400
500
600

Anderson Stratigraphy

Primary name: USGS 121
Secondary name:
Well location: 03N 30E 18ccc1
Site Identifier: 433450112560301
Latitude: 433450
Longitude: 1125603

Altitude of well: 4909 ft
Depth of well: 475 ft
Depth of hole: 746 ft
Depth of log: 717 ft
County: Butte
Map: Circular Butte 3 SW

Stratigraphic Unit		Altitude		Depth		Thickness	Layers
Name	Type	Top	Base	Top	Base		
Al(1)	Sed	4909	4898	0	11	11	1
AB(1)	Sed	4898	4887	11	22	11	1
B(1)	Sed	4887	4880	22	29	7	1
BC(1)	Bas	4880	4858	29	51	22	1
BC(2)	Bas	4858	4825	51	84	33	2
C(1)	Sed	4825	4818	84	91	7	1
DE1(3)	Bas	4818	4783	91	126	35	2
DE1(4)	Sed	4783	4779	126	130	4	1
DE1-2(1)	Bas	4779	4772	130	137	7	1
DE1-2(2)	Sed	4772	4765	137	144	7	1
DE3-4(3)	Bas	4765	4672	144	237	93	3
DE4-5(3)	Bas	4672	4587	237	322	85	3
DE5(1)	Bas	4587	4529	322	380	58	3
DE6(1)	Bas	4529	4515	380	394	14	2
DE7(1)	Sed	4515	4501	394	408	14	1
DE8(1)	Bas	4501	4490	408	419	11	1
DE9(1)	Sed	4490	4483	419	426	7	1
E(1)	Bas	4483	4458	426	451	25	2
EF(1)	Bas	4458	4429	451	480	29	1
FG(1)	Bas	4429	4404	480	505	25	1
G(1)	Bas	4404	4392	505	517	12	1
HI(1)	Sed	4392	4387	517	522	5	1
I(1)	Bas	4387	4342	522	567	45	2
I(2)	Bas	4342	4265	567	644	77	2
IJ(1)	Bas	4265	4232	644	677	33	1
J(1)	Bas	4232	4175	677	734	57	2
K(1)	Sed	4175	<4163	734	>746	>12	1

Departures from Anderson

Lithologic sequences were based on the attached core log. Examination of the core revealed additional flow units and interbeds.

RECORD OF DRILLHOLE # USGS 121

Sheet 1 of 22

PROJECT: RCRA MONITORING
PROJECT #: 893-1195 (Golder Assoc.)
LOCATION: ICPP
COLLAR ELEVATION: 4910.48

DRILLING DATE: 1990
DRILL RIG: HX Wireline
AZIMUTH: Not Applicable

DATUM: MEAN SEA LEVEL
COORDINATES: N: 698362.05 E:296598.60
INCLINATION: -90 Degrees

J-JOINT, F-FAULT, S-SHEAR, B-BEDDING, DB-DRILL BREAK, PL-PLANAR, C-CURVED, U-UNDULATING, ST-STEPPED, I-IRREGULAR, P-POLISHED, SM-SMOOTH, R-ROUGH, VR-VERY ROUGH, CIF-CLAY INFILLING

DEPTH SCALE	ROCK TYPE / DESCRIPTION	GRAPHIC LOG	ELEV.	RUN #	RECOVERY	RQD	FRACTURES PER FOOT	DISCONTINUITY DATA: TYPE AND SURFACE DESCRIPTION	GRAPHIC LOG	WEATHERING	STRENGTH	POINT LOAD	NOTES: WATER LEVEL: INSTRUMENTATION
20													
25													
	ALLUVIAL DEPOSITS												
30													
	34.0 BGS		4876										
35	Fresh to slightly weathered, vesicular medium gray (N5) aphanitic, medium strong, **BASALT**		4875	1	0.8/0.8	0.5/0.8	3	UR/CIF UR/CIF					
							2	UR/CIF		SW			
					5.0	3.4	2	UR/CIF			R3		
	37.0: Grades to slightly vesicular, fresh			2	5.0	5.0	1						
							0			FR			
40	38.2: Grades to minutely vesicular		4870				1	UR/CIF					

Depth Scale: 1 INCH = 2 1/2 FEET
Drilling Contractor: PC EXPLORATION

Logged: A. Bailey
Checked: A. Yonk
Date: 30 SEP 95

Golder Federal Services

RECORD OF DRILLHOLE # USGS 121

Sheet 2 of 22

PROJECT: RCRA MONITORING
PROJECT #: 893-1195 (Golder Assoc.)
LOCATION: ICPP
COLLAR ELEVATION: 4910.48

DRILLING DATE: 1990
DRILL RIG: HX Wireline
AZIMUTH: Not Applicable

DATUM: MEAN SEA LEVEL
COORDINATES: N: 698362.05 E:296598.60
INCLINATION: -90 Degrees

J-JOINT, F-FAULT, S-SHEAR; B-BEDDING, DB-DRILL BREAK, PL-PLANAR; C-CURVED, U-UNDULATING, ST-STEPPED; I-IRREGULAR, P-POLISHED, SM-SMOOTH; R-ROUGH, VR-VERY ROUGH, CIF-CLAY INFILLING

DEPTH SCALE	ROCK TYPE DESCRIPTION	GRAPHIC LOG	ELEV.	RUN #	RECOVERY	RQD	FRACTURES PER FOOT	DISCONTINUITY DATA: TYPE AND SURFACE DESCRIPTION	GRAPHIC LOG	WEATHERING	STRENGTH	POINT LOAD	NOTES: WATER LEVEL: INSTRUMENTATION
40	Fresh, minutely vesicular, medium gray (N5), aphanitic, medium strong, BASALT		4870	3	5.0 / 5.0	5.0 / 5.0	1, 1, 0, 0	UR/CIF; UR/CIF; (Inferred Flow Bottom / Top)		FR	R3	Not Tested	
	(Inferred flow bottom) 44.2 BGS												
	Weathered, vesicular, dusky red, aphanitic medium strong, BASALT		4865	4	5.0 / 5.0	1.1 / 5.0	4, 2, 3, 3, 4, 8	44.2 to 54.0: All UR/CIF		W			
45	49.0: Grades to fresh												
50	53.5: Grades to-slightly vesicular		4860	5	5.0 / 5.0	2.6 / 5.0	0, 3, 8, 6, 2	52.4: Heavy Clay Infilling; UR; UR/CIF; UR/CIF; UR/CIF; UR; UR		FR	R3		
55	(Inferred flow bottom) 56.8 BGS		4855	6	1.8 / 5.0	1.0 / 5.0	>10, 2	DB ?; DB? UR; (Inferred Flow Top / Bottom)		SW			
	Possible thin vesicular basalt flow within an interbed or a interbed.				CORE LOSS		NA, NA, NA	Some basalt fragments recovered to indicate basalt flow or loss of core may indicate possible interbed.	CORE LOSS				
60			4850										

Depth Scale: 1 Inch = 2 1/2 Feet
Drilling Contractor: PC Exploration

Logged: A. Bailey
Checked: A Yonk
Date: 30SEP 95

Golder Federal Services

RECORD OF DRILLHOLE # USGS 121

Sheet 3 of 22

PROJECT: RCRA MONITORING
PROJECT #: 893-1195 (Golder Assoc.)
LOCATION: ICPP
COLLAR ELEVATION: 4910.48

DRILLING DATE: 1990
DRILL RIG: HX Wireline
AZIMUTH: Not Applicable

DATUM: MEAN SEA LEVEL
COORDINATES: N: 698362.05 E:296598.60
INCLINATION: -90 Degrees

J-JOINT, F-FAULT, S-SHEAR; B-BEDDING, DB-DRILL BREAK, PL-PLANAR; C-CURVED, U-UNDULATING, ST-STEPPED; I-IRREGULAR, P-POLISHED, SM-SMOOTH; R-ROUGH, VR-VERY ROUGH, CIF-CLAY INFILLING

DEPTH SCALE	ROCK TYPE / DESCRIPTION	GRAPHIC LOG	ELEV.	RUN #	RECOVERY	RQD	FRACTURES PER FOOT	DISCONTINUITY DATA: TYPE AND SURFACE DESCRIPTION	GRAPHIC LOG	WEATHERING	STRENGTH	POINT LOAD	NOTES: WATER LEVEL: INSTRUMENTATION
60	Inferred Interbed due to core loss and Basalt flow top directly below interval		4850		CORE LOSS		NA		CORE LOSS			Not Tested	
								(Inferred Interbed / flow top)					
	61.4 BGS Fresh to slightly weathered vesicular to slightly vesicular, light medium gray (N6), Aphanitic with 1 to 2 mm lath shaped plagioclase phenocrysts, medium strong, BASALT			7	3.6 / 5.0	1.7 / 5.0	5	61.4 to 80.0 All UR/CIF		SW	R3		
							1						
							1						
							3						
65			4845				2						
	66.5: Grades to minutely vesicular, fresh						3						
				8	5.0 / 5.0	3.8 / 5.0	2			FR			
							1						
							3						
70	71.5: Grades to slightly vesicular		4840				1						
					5.0 / 5.0	1.9 / 5.0	0						
	73.3: Moderate reddish brown (10YR 4/6) alteration			9			3	Zone of moderate reddish brown (10YR 4/6) alteration/staining		Alteration			74.4: Possible/ Probable flow top/ bottom based on change in vesicles, crystal structure, weathering, and increase in phenocrysts. However, 74.4 to 74.8 was removed for sampling prior to this logging so it is unknown how abrupt the change in lithology is.
	(Inferred flow top / bottom)						2	(Inferred flow top / bottom					
	74.4 BGS Weathered, vesicular, medium gray (N5), aphanitic, medium strong, BASALT						3				R3		
75			4835				1						
							1			W			
	78.0: Grades to fresh			10	5.0 / 5.0	4.8 / 5.0	0	Large clay filled vug					
							0						
							3			FR	R3		
80			4830										

Depth Scale: 1 Inch = 2 1/2 Feet
Drilling Contractor: PC Exploration

Logged: A. Bailey
Checked: A. Yonk
Date: 30 SEP 95

Golder Federal Services

RECORD OF DRILLHOLE # USGS 121

Sheet 4 of 22

PROJECT: RCRA MONITORING
PROJECT #: 893-1195 (Golder Assoc.)
LOCATION: ICPP
COLLAR ELEVATION: 4910.48

DRILLING DATE: 1990
DRILL RIG: HX Wireline
AZIMUTH: Not Applicable

DATUM: MEAN SEA LEVEL
COORDINATES: N: 698362.05 E:296598.60
INCLINATION: -90 Degrees

J-JOINT, F-FAULT, S-SHEAR, B-BEDDING, DB-DRILL BREAK, PL-PLANAR, C-CURVED, U-UNDULATING, ST-STEPPED, I-IRREGULAR, P-POLISHED, SM-SMOOTH, R-ROUGH, VR-VERY ROUGH, CIF-CLAY INFILLING

DEPTH SCALE	ROCK TYPE DESCRIPTION	GRAPHIC LOG	ELEV.	RUN #	RECOVERY	RQD	FRACTURES PER FOOT	DISCONTINUITY DATA: TYPE AND SURFACE DESCRIPTION	GRAPHIC LOG	WEATHERING	STRENGTH	POINT LOAD	NOTES: WATER LEVEL: INSTRUMENTATION
80	Fresh, slightly vesicular, medium gray (N5) aphanitic medium strong BASALT		4830	11	4.9 / 5.0	1.6 / 5.0	1	UR		FR	R3	Not Tested	
							1	UR					
							0						
							0						
							0	Flow bottom					
85	85.0 BGS Probable Interbed 86.8 BGS		4825		Core Loss		NA	Probable Interbed	Core Loss				
							NA						
	Slightly weathered to fresh, vesicular, medium gray (N5), aphanitic, medium strong, BASALT			12	3.2 / 5.0	1.7 / 5.0	0	Flow top		SW	R3		
							0						
							1	UR/CIF					
90	90.0: Grades to fresh		4820		2.8 / 5.0	0.0 / 5.0	2	UR/CIF UR/CIF		FR			
							0						
	92.8 BGS			13			NA	Flow bottom					
	Inferred to be interbed due to core loss and heavy clay infilling below this unit				Core Loss		NA	Probable Interbed	Core Loss				
							NA						
95	96.2 BGS		4815		Core Loss		NA		Core Loss				
	Slightly weathered, vesicular, medium gray (N5), aphanitic, medium strong BASALT			14	3.8 / 5.0	1.2 / 5.0	NA	Flow top		SW	R3		
							3	UR/CIF UR/CIF UR/CIF					
							1						
100			4810				1	UR/CIF					

Depth Scale: 1 Inch = 2 1/2 Feet
Drilling Contractor: PC Exploration

Logged: A. Bailey
Checked: A. Yonk
Date: 30 SEP 95

Golder Federal Services

RECORD OF DRILLHOLE # USGS 121

Sheet 5 of 22

PROJECT: RCRA MONITORING
PROJECT #: 893-1195 (Golder Assoc.)
LOCATION: ICPP
COLLAR ELEVATION: 4910.48

DRILLING DATE: 1990
DRILL RIG: HX Wireline
AZIMUTH: Not Applicable

DATUM: MEAN SEA LEVEL
COORDINATES: N: 698362.05 E:296598.60
INCLINATION: -90 Degrees

J-JOINT, F-FAULT, S-SHEAR, B-BEDDING, DB-DRILL BREAK, PL-PLANAR, C-CURVED, U-UNDULATING, ST-STEPPED, I-IRREGULAR, P-POLISHED, SM-SMOOTH, R-ROUGH, VR-VERY ROUGH, CIF-CLAY INFILLING

DEPTH SCALE	ROCK TYPE DESCRIPTION	GRAPHIC LOG	ELEV.	RUN #	RECOVERY	RQD	FRACTURES PER FOOT	DISCONTINUITY DATA: TYPE AND SURFACE DESCRIPTION	GRAPHIC LOG	WEATHERING	STRENGTH	POINT LOAD	NOTES: WATER LEVEL: INSTRUMENTATION
100	Slightly weathered, vesicular, medium gray (N5), aphanitic, medium strong, BASALT		4810				>5						
							>5			SW	R3		
				15	4.5 / 5.0	0.8 / 5.0	>5	All fractures IR/CIF					
	102.0: Grades to fresh						>5						
							0			FR			
105	105.0: Grades to slightly vesicular		4805				1	UR				Not Tested	
				16	5.0 / 5.0	2.7 / 5.0	0						
	108.0: Grades to minutely vesicular						1	UR/CIF					
110			4800				1	UR					
				17	4.2 / 5.0	4.2 / 5.0	0				R3		
	(Inferred flow bottom)						>5	All fractures IR/CIF					
	114.0 BGS Probable Interbed based on the small amount of silt recovered and over-all core loss.				CORE LOSS		NA	Probable Interbed	CORE LOSS				
115			4795		CORE LOSS		NA		CORE LOSS				
	115.6 BGS Slightly weathered, vesicular, grayish red (5R 4/2), to medium gray (N5), aphanitic, medium strong, BASALT						>5						
				18			>5			SW	R3		
					4.4 / 5.0	3.0 / 5.0	>5	All fractures IR/CIF					
120			4790				>5						

Depth Scale: 1 Inch = 2 1/2 Feet
Drilling Contractor: PC Exploration

Logged: A. Bailey
Checked: A. Yonk
Date: 30 SEP 95

Golder Federal Services

RECORD OF DRILLHOLE # USGS 121

Sheet 6 of 22

PROJECT: RCRA MONITORING
PROJECT #: 893-1195 (Golder Assoc.)
LOCATION: ICPP
COLLAR ELEVATION: 4910.48

DRILLING DATE: 1990
DRILL RIG: HX Wireline
AZIMUTH: Not Applicable

DATUM: MEAN SEA LEVEL
COORDINATES: N: 698362.05 E:296598.60
INCLINATION: -90 Degrees

J-JOINT, F-FAULT, S-SHEAR, B-BEDDING, DB-DRILL BREAK, PL-PLANAR, C-CURVED, U-UNDULATING, ST-STEPPED, I-IRREGULAR, P-POLISHED, SM-SMOOTH, R-ROUGH, VR-VERY ROUGH, CIF-CLAY INFILLING

DEPTH SCALE	ROCK TYPE DESCRIPTION	GRAPHIC LOG	ELEV.	RUN #	RECOVERY	RQD	FRACTURES PER FOOT	DISCONTINUITY DATA: TYPE AND SURFACE DESCRIPTION	GRAPHIC LOG	WEATHERING	STRENGTH	POINT LOAD	NOTES: WATER LEVEL: INSTRUMENTATION
120	Fresh, slightly vesicular, medium gray (N5) aphanitic, medium strong, BASALT		4790				0						
							0						
				19	4.8 / 5.0	4.8 / 5.0	2	UR UR		FR	R3		
							0						
							0						
125			4785				0	UR/CIF				Not Tested	
							4	UR/CIF UR/CIF					
				20	4.6 / 5.0	4.2 / 5.0	0						
							1	UR/CIF					
	(Inferred flow bottom)							(Inferred flow bottom)					
	129.2 BGS				CORE LOSS		NA		CORE LOSS				
130	Probable Interbed based on the limited amount of material recovered and upon the core loss.		4780		CORE LOSS		NA		CORE LOSS				
							NA						
				21			NA						
							NA	(Inferred flow top)					
	133.2 BGS				1.8 / 5.0	0.0 / 5.0	8			W			
	Weathered, vesicular medium gray (N5) aphanitic, medium strong, BASALT							133.2 to 138.8: All IR\CIF					
135			4775				8				R3		
	136.0: Grades to slightly/minutely vesicular, fresh						8						
					4.8 / 5.0	0.6 / 5.0	8						
	139.8: Grades to vesicular.			22			8			FR			
	(Inferred flow bottom)												
	138.8 BGS				CORE LOSS		NA		CORE LOSS				
140			4770										

Depth Scale: 1 Inch = 2 1/2 Feet
Drilling Contractor: PC Exploration

Logged: A. Bailey
Checked: A Yonk
Date: 30 SEP 95

Golder Federal Services

RECORD OF DRILLHOLE # USGS 121

Sheet 7 of 22

PROJECT: RCRA MONITORING
PROJECT #: 893-1195 (Golder Assoc.)
LOCATION: ICPP
COLLAR ELEVATION: 4910.48

DRILLING DATE: 1990
DRILL RIG: HX Wireline
AZIMUTH: Not Applicable

DATUM: MEAN SEA LEVEL
COORDINATES: N: 698362.05 E:296598.60
INCLINATION: -90 Degrees

J-JOINT, F-FAULT, S-SHEAR, B-BEDDING, DB-DRILL BREAK, PL-PLANAR, C-CURVED, U-UNDULATING, ST-STEPPED, I-IRREGULAR, P-POLISHED, SM-SMOOTH, R-ROUGH, VR-VERY ROUGH, CIF-CLAY INFILLING

DEPTH SCALE	ROCK TYPE / DESCRIPTION	GRAPHIC LOG	ELEV.	RUN #	RECOVERY	RQD	FRACTURES PER FOOT	DISCONTINUITY DATA: TYPE AND SURFACE DESCRIPTION	GRAPHIC LOG	WEATHERING	STRENGTH	POINT LOAD	NOTES: WATER LEVEL: INSTRUMENTATION
140	Probable Interbed inferred from the small amount of material recovered and the over-all core loss.		4770	23	0.0 / 0.0	0.0 / 0.0	NA		CORE LOSS			Not Tested	
					CORE LOSS		NA						
							NA						
							NA	(Inferred flow top)					
145	145.2 BGS Weathered to fresh, slightly vesicular, medium gray(N5), aphanitic, medium strong, BASALT		4765	24	4.8 / 5.0	4.0 / 5.0	1	UR/CIF	90	W	R3		
							0	146.0 to 147.2 vesicle clay infilling					
							1	UR/CIF	90				
							0			FR			
							0	UR/CIF	90				
150			4760	25	3.9 / 5.0	3.0 / 5.0	1						
							1	UR	90				
							1	ST-R	45				
	(Inferred flow bottom/top)						0	(Inferred flow bottom / top)					
	154.0 BGS Slightly weathered to fresh, vesicular, reddish (10R 4/2), aphanitic with 1 to 2 mm lath shaped plagioclase phenocrysts, medium strong, BASALT				CORE LOSS		NA		CORE LOSS				
155			4755	26	5.0 / 5.0	4.5 / 5.0	1	UR	90	SW	R3		
							0						
							1	UR	90	FR			
							0						
							1	UR/CIF					
160			4750										

Depth Scale: 1 Inch = 2 1/2 Feet
Drilling Contractor: PC Exploration

Logged: A. Bailey
Checked: A. Yonk
Date: 30 SEP 95

Golder Federal Services

RECORD OF DRILLHOLE # USGS 121

Sheet 8 of 22

PROJECT: RCRA MONITORING
PROJECT #: 893-1195 (Golder Assoc.)
LOCATION: ICPP
COLLAR ELEVATION: 4910.48

DRILLING DATE: 1990
DRILL RIG: HX Wireline
AZIMUTH: Not Applicable

DATUM: MEAN SEA LEVEL
COORDINATES: N: 698362.05 E:296598.60
INCLINATION: -90 Degrees

J-JOINT, F-FAULT, S-SHEAR; B-BEDDING, DB-DRILL BREAK, PL-PLANAR; C-CURVED, U-UNDULATING, ST-STEPPED; I-IRREGULAR, P-POLISHED, SM-SMOOTH; R-ROUGH, VR-VERY ROUGH, CIF-CLAY INFILLING

DEPTH SCALE	ROCK TYPE DESCRIPTION	GRAPHIC LOG	ELEV.	RUN #	RECOVERY	RQD	FRACTURES PER FOOT	DISCONTINUITY DATA: TYPE AND SURFACE DESCRIPTION	GRAPHIC LOG	WEATHERING	STRENGTH	POINT LOAD	NOTES: WATER LEVEL: INSTRUMENTATION
160	Slightly weathered to fresh, vesicular, pale red (5R 6/2), aphanitic with 1 to 2 mm lattice shaped plagioclase phenocrysts, medium strong, BASALT		4750	27	4.0 / 5.0	1.3 / 5.0	>10	IR		SW	R3	Not Tested	
							6	UR/CIF					
							2						
	160.4: Clast of surface cooled "skin" incorporated into flow body.						>10						
					CORE LOSS		NA		CORE LOSS				
165			4745	28	5.0 / 5.0	2.5 / 5.0	1	IR IR		FR	R3		
							2	IR/CIF IR/CIF					
	(Possible flow top / bottom or interlobe contact)						2	IR/CIF					
	167.8 BGS Slightly weathered, vesicular, (less frequent but larger vesicles than overlying unit), aphanitic with 1 mm plagioclase phenocrysts, medium strong, BASALT						3	IR/CIF IR/CIF IR/CIF		SW			
							1	IR/CIF IR/CIF					
170			4740	29	5.0 / 5.0	4.5 / 5.0	1	IR		FR	R3		
	169.0: Grades to slightly vesicular						1	IR IR/CIF					
	171.0: Grades to fresh						1						
	172.0: Grades to vesicular						1	IR					
	(Inferred flow top / bottom)						3	IR					
175	174.5 BGS Slightly weathered, vesicular, medium gray (N5), aphanitic, medium strong, BASALT		4735	30	5.0 / 5.0	4.0 / 5.0	>10	CIF		SW			
							2	IR					
							1	Calcite Infilling IR					
	177.0: Grades to fresh							IR/CIF					
							2	UR/CIF IR/CIF		FR			
180			4730				2	IR/CIF					

Depth Scale: 1 Inch = 2 1/2 Feet
Drilling Contractor: PC Exploration

Logged: A. Bailey
Checked: A. Yonk
Date: 30 SEP 95

Golder Federal Services

RECORD OF DRILLHOLE # USGS 121

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PROJECT: RCRA MONITORING
PROJECT #: 893-1195 (Golder Assoc.)
LOCATION: ICPP
COLLAR ELEVATION: 4910.48

DRILLING DATE: 1990
DRILL RIG: HX Wireline
AZIMUTH: Not Applicable

DATUM: MEAN SEA LEVEL
COORDINATES: N: 698362.05 E:296598.60
INCLINATION: -90 Degrees

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DEPTH SCALE	ROCK TYPE: DESCRIPTION	GRAPHIC LOG	ELEV.	RUN #	RECOVERY	RQD	FRACTURES PER FOOT	DISCONTINUITY DATA: TYPE AND SURFACE DESCRIPTION	GRAPHIC LOG	WEATHERING	STRENGTH	POINT LOAD	NOTES: WATER LEVEL: INSTRUMENTATION
180	Fesh, slightly vesicular, medium gray (N5), medium strong, BASALT		4730	31	3.0 / 5.0	2.2 / 5.0	1	UR/CIF		FR	R3	Not Tested	
							1	IR					
							3	IR					
								IR					
								Flow bottom					
	183.0 BGS Possible interbed or based on appearance of core below, possible pyroclastic deposit.				CORE LOSS			Probable Interbed	CORE LOSS				
185			4725	32	CORE LOSS				CORE LOSS				
								(Inferred AA flow top)					
	188.0 BGS Very fragmented core; appears to be pyroclastic or AA flow top.				2.0 / 3.0	0.0 / 5.0	4	188.0 to 193.0: All IR with light CIF	(VERY FRACTURED)	W	R3		
							4						
190			4720	33	4.0 / 5.0	0.7 / 5.0	4						
							4						
							1	UR/CIF					
	Weathered, vesicular, grayish red (5R 4/2) aphanitic with 1 to 2 mm plagioclase phenocrysts, medium strong, BASALT						1	UR/CIF					
195			4715	34	5.0 / 5.0	2.3 / 5.0	1						
							0	IR/CIF					
							2	IR/CIF					
							0						
							2	IR					
200			4710					IR					

Depth Scale: 1 Inch = 2 1/2 Feet
Drilling Contractor: PC Exploration

Logged: A. Bailey
Checked: A Yonk
Date: 30 SEP 95

Golder Federal Services

RECORD OF DRILLHOLE # USGS 121

Sheet 10 of 22

PROJECT: RCRA MONITORING
PROJECT #: 893-1195 (Golder Assoc.)
LOCATION: ICPP
COLLAR ELEVATION: 4910.48

DRILLING DATE: 1990
DRILL RIG: HX Wireline
AZIMUTH: Not Applicable

DATUM: MEAN SEA LEVEL
COORDINATES: N: 698362.05 E:296598.60
INCLINATION: -90 Degrees

J-JOINT, F-FAULT, S-SHEAR; B-BEDDING, DB-DRILL BREAK, PL-PLANAR; C-CURVED, U-UNDULATING, ST-STEPPED; I-IRREGULAR, P-POLISHED, SM-SMOOTH; R-ROUGH, VR-VERY ROUGH, CIF-CLAY INFILLING

DEPTH SCALE	ROCK TYPE DESCRIPTION	GRAPHIC LOG	ELEV.	RUN #	RECOVERY	RQD	FRACTURES PER FOOT	DISCONTINUITY DATA: TYPE AND SURFACE DESCRIPTION	GRAPHIC LOG	WEATHERING	STRENGTH	POINT LOAD	NOTES: WATER LEVEL: INSTRUMENTATION
200	Weathered, vesicular, grayish red (5R 4/2), aphanitic with 1 mm lath shaped plagioclase phenocrysts, medium strong, BASALT		4710				3	IR IR					
							2	IR IR					
				35	5.0 / 5.0	5.0 / 5.0	2	IR IR					
							1	IR IR					
	204.8 to 205.0: Exhibits air / surface cooling skin characteristics.						6	Exhibits surface cooling skins incorporated down into flow body		W	R3	Not Tested	
205	205.5: Grades to pale reddish brown (10R 5/4).		4705				1	UR					
	207.0: Core has very numerous 1 to 2 mm diameter vesicles, (50% of core is composed of vesicles)			36	5.0 / 5.0	5.0 / 5.0	0						
							2	UR UR					
							2	UR					
	209.0: Vesicles become less numerous but larger in size.						1	UR UR					
210			4700				1	UR					
							2	UR UR		SW	R3		
				37	5.0 / 5.0	4.5 / 5.0	>10	All IR					
	213.0: Surface cooling features incorporated into flow body						1	IR					
							5	IR					
215			4695				3	IR IR					
				38	5.0 / 5.0	4.8 / 5.0	0	IR					
	218.0: Grades to medium gray (N5)						2	IR IR					
	219.0: Grades to fresh						0			FR			
220			4690										

Depth Scale: 1 Inch = 2 1/2 Feet
Drilling Contractor: PC Exploration

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Checked: A Yonk
Date: 30 SEP 95

Golder Federal Services

RECORD OF DRILLHOLE # USGS 121

Sheet 11 of 22

PROJECT: RCRA MONITORING
PROJECT #: 893-1195 (Golder Assoc.)
LOCATION: ICPP
COLLAR ELEVATION: 4910.48

DRILLING DATE: 1990
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DATUM: MEAN SEA LEVEL
COORDINATES: N: 698362.05 E:296598.60
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J-JOINT, F-FAULT, S-SHEAR, B-BEDDING, DB-DRILL BREAK, PL-PLANAR, C-CURVED, U-UNDULATING, ST-STEPPED, I-IRREGULAR, P-POLISHED, SM-SMOOTH, R-ROUGH, VR-VERY ROUGH, CIF-CLAY INFILLING

DEPTH SCALE	ROCK TYPE / DESCRIPTION	GRAPHIC LOG	ELEV.	RUN #	RECOVERY	RQD	FRACTURES PER FOOT	DISCONTINUITY DATA: TYPE AND SURFACE DESCRIPTION	GRAPHIC LOG	WEATHERING	STRENGTH	POINT LOAD	NOTES: WATER LEVEL: INSTRUMENTATION
220	Fresh, vesicular, medium gray (N5), aphanitic with 1 to 2 mm lath shaped plagioclase phenocrysts, medium strong, BASALT		4690				3	IR IR		FR	R3	Not Tested	
							1	UR UR					
				39	5.0 / 5.0	4.1 / 5.0	1						
	220.0: Grades to slightly vesicular.						1	UR					
							1	UR					
225			4685				1	UR					
				40	5.0 / 5.0	5.0 / 5.0	1	IR					
							2	ST-R UR					
							0						
							1	UR					
230			4680				5	IR IR IR IR		FR	R3		
				41	5.0 / 5.0	5.0 / 5.0	0	IR					
							0						
							0						
235			4675				1	IR					
				42	3.0 / 5.0	2.5 / 5.0	1	IR IR					
	(Inferred flow bottom)						2	IR (Inferred flow bottom)					
	237.5 BGS Core Loss inferred to be interbed from limited material recovered.				CORE LOSS		NA		CORE LOSS				
240			4670				NA						

Depth Scale: 1 Inch = 2 1/2 Feet
Drilling Contractor: PC Exploration

Logged: A. Bailey
Checked: A Yonk
Date: 30 SEP 95

Golder Federal Services

RECORD OF DRILLHOLE # USGS 121

PROJECT: RCRA MONITORING
PROJECT #: 893-1195 (Golder Assoc.)
LOCATION: ICPP
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DRILLING DATE: 1990
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DATUM: MEAN SEA LEVEL
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INCLINATION: -90 Degrees

J-JOINT, F-FAULT, S-SHEAR, B-BEDDING, DB-DRILL BREAK, PL-PLANAR, C-CURVED, U-UNDULATING, ST-STEPPED, I-IRREGULAR, P-POLISHED, SM-SMOOTH, R-ROUGH, VR-VERY ROUGH, CIF-CLAY INFILLING

DEPTH SCALE	ROCK TYPE / DESCRIPTION	GRAPHIC LOG	ELEV.	RUN #	RECOVERY	RQD	FRACTURES PER FOOT	DISCONTINUITY DATA: TYPE AND SURFACE DESCRIPTION	GRAPHIC LOG	WEATHERING	STRENGTH	POINT LOAD	NOTES: WATER LEVEL: INSTRUMENTATION
240	Slightly weathered, vesicular, medium gray (N5), aphanitic, medium strong, BASALT		4670	43	3.5	3.0	3	IR, IR, IR		SW	R3	Not Tested	
					5.0	5.0	2	IR, IR					
							1	IR, IR					
	(Inferred flow bottom)						NA	(Inferred flow bottom)					
	243.5 BGS				CORE LOSS		NA		CORE LOSS				
245	Inferred to be interbed based on the limited amount of material recovered as well as the overall core loss. Also the underlying basalt unit apears to be a flow top.		4665	44	CORE LOSS		NA		CORE LOSS				
							NA						
							NA						
	Inferred flow top)						NA	(Inferred flow top)					
	248.5 BGS				1.5	0.0							
	Slightly weathered, vesicular, medium gray (N5) aphanitic with 1 to 2 mm lath shaped plagioclase phenocrysts, medium strong, BASALT				5.0	5.0	6	IR, IR, IR, IR		SW	R3		
250			4660	45			0						
							1	IR					
					5.0	4.0	0						
					5.0	5.0							
	Inferred flow top)						1	IR, (Inferred flow top)					
	254.0 BGS						4	IR/CIF, IR/CIF, IR/CIF					
255	Slightly weathered, vesicular, grayish red (5R 4/2), aphanitic with few 1 to 2 mm lath shaped plagioclase phenocrysts, medium strong, BASALT		4655				3	IR, IR, ST-R		SW	R3		
					5.0	3.8	2	IR, IR					
				46	5.0	5.0	1	IR					
							4	IR, IR, IR					
260			4650				>10						

Depth Scale: 1 Inch = 2 1/2 Feet
Drilling Contractor: PC Exploration

Logged: A. Bailey
Checked: A Yonk
Date: 30 SEP 95

Golder Federal Services

RECORD OF DRILLHOLE # USGS 121

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PROJECT: RCRA MONITORING
PROJECT #: 893-1195 (Golder Assoc.)
LOCATION: ICPP
COLLAR ELEVATION: 4910.48

DRILLING DATE: 1990
DRILL RIG: HX Wireline
AZIMUTH: Not Applicable

DATUM: MEAN SEA LEVEL
COORDINATES: N: 698362.05 E:296598.60
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J-JOINT, F-FAULT, S-SHEAR, B-BEDDING, DB-DRILL BREAK, PL-PLANAR, C-CURVED, U-UNDULATING, ST-STEPPED, I-IRREGULAR, P-POLISHED, SM-SMOOTH, R-ROUGH, VR-VERY ROUGH, CIF-CLAY INFILLING

DEPTH SCALE	ROCK TYPE DESCRIPTION	GRAPHIC LOG	ELEV.	RUN #	RECOVERY	RQD	FRACTURES PER FOOT	DISCONTINUITY DATA: TYPE AND SURFACE DESCRIPTION	GRAPHIC LOG	WEATHERING	STRENGTH	POINT LOAD	NOTES: WATER LEVEL: INSTRUMENTATION
260	Slightly weathered to fresh, pale red (5R 6/2), aphanitic, medium strong, BASALT		4650				>10						
							4	IR		SW / FR			
				47	5.0 / 5.0	3.0 / 5.0	5						
							1	IR			R3		
							3	IR IR IR					
265	265.0: Grades to medium gray (N5)		4645				0					Not Tested	
	266.0: Grades to fresh						1	IR					
				48	5.0 / 5.0	5.0 / 5.0	0	IR		FR			
							1						
							0						
270			4640				0						
							2	Broken at two large vesicles					
				49	5.0 / 5.0	5.0 / 5.0	2	IR IR					
							1	IR					
							1	IR					
275			4635				0						
							2	IR IR					
				50	5.0 / 5.0	5.0 / 5.0	0						
							1	IR					
							0						
280			4630										

Depth Scale: 1 Inch = 2 1/2 Feet
Drilling Contractor: PC Exploration

Logged: A. Bailey
Checked: A. Yonk
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Golder Federal Services

RECORD OF DRILLHOLE # USGS 121

PROJECT: RCRA MONITORING
PROJECT #: 893-1195 (Golder Assoc.)
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J-JOINT, F-FAULT, S-SHEAR, B-BEDDING, DB-DRILL BREAK, PL-PLANAR, C-CURVED, U-UNDULATING, ST-STEPPED, I-IRREGULAR, P-POLISHED, SM-SMOOTH, R-ROUGH, VR-VERY ROUGH, CIF-CLAY INFILLING

DEPTH SCALE	ROCK TYPE: DESCRIPTION	GRAPHIC LOG	ELEV.	RUN #	RECOVERY	RQD	FRACTURES PER FOOT	DISCONTINUITY DATA: TYPE AND SURFACE DESCRIPTION	GRAPHIC LOG	WEATHERING	STRENGTH	POINT LOAD	NOTES: WATER LEVEL: INSTRUMENTATION
280	Fresh, minutely vesicular, medium gray, (N5), aphanitic, medium strong, BASALT		4630				0						
							1	Large vesicle- IR	90				
				51	5.0 / 5.0	5.0 / 5.0	0						
							1	IR	90				
							0						
285			4625				0					Not Tested	
							0						
				52	5.0 / 5.0	5.0 / 5.0	0						
							0						
							0						
290			4620				1	IR	90				
							0						
				53	5.0 / 5.0	5.0 / 5.0	0						
							1	IR	90				
							2	IR IR	90 90				
295			4615				0						
							1	IR	36				
				54	5.0 / 5.0	5.0 / 5.0	1	IR	90				
							0						
300			4610				0						

Depth Scale: 1 Inch = 2 1/2 Feet
Drilling Contractor: PC Exploration

Logged: A. Bailey
Checked: A Yonk
Date: 30 SEP 95

Golder Federal Services

RECORD OF DRILLHOLE # USGS 121

Sheet 15 of 22

PROJECT: RCRA MONITORING
PROJECT #: 893-1195 (Golder Assoc.)
LOCATION: ICPP
COLLAR ELEVATION: 4910.48

DRILLING DATE: 1990
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DEPTH SCALE	ROCK TYPE / DESCRIPTION	GRAPHIC LOG	ELEV.	RUN #	RECOVERY	RQD	FRACTURES PER FOOT	DISCONTINUITY DATA: TYPE AND SURFACE DESCRIPTION	DISCONTINUITY DATA: GRAPHIC LOG	WEATHERING	STRENGTH	POINT LOAD	NOTES: WATER LEVEL: INSTRUMENTATION
300	Fresh, minutely vesicular, medium gray (N5) aphanitic, medium strong, BASALT		4610				0						
					5.0	5.0	0						
				55	5.0	5.0	0						
							0						
							0		FR	R3			
305			4605				0					Not Tested	
					5.0	5.0	0						
				56	5.0	5.0	0						
							0						
310			4600				0						
	(Inferred flow bottom/top)				5.0	2.0	0	(Inferred flow bottom / top)	IR				
	312.0 BGS Weathered to slightly weathered, very vesicular dusky red (5R 3/4), aphanitic, medium strong, BASALT			57	5.0	5.0	>5						
							>5						
							>5			W	R3		
315			4595				>5						
					4.0	0.0	>5						
	Possible pyroclastic zone			58	5.0	5.0	>5						
					CORE LOSS		NA		CORE LOSS				
320			4590				>5			W	R3		

Depth Scale: 1 Inch = 2 1/2 Feet
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Checked: A. Yonk
Date: 30 SEP 95

Golder Federal Services

RECORD OF DRILLHOLE # USGS 121

PROJECT: RCRA MONITORING
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DEPTH SCALE	ROCK TYPE / DESCRIPTION	GRAPHIC LOG	ELEV.	RUN #	RECOVERY	RQD	FRACTURES PER FOOT	DISCONTINUITY DATA: TYPE AND SURFACE DESCRIPTION	GRAPHIC LOG	WEATHERING	STRENGTH	POINT LOAD	NOTES: WATER LEVEL: INSTRUMENTATION
320	Slightly weathered to fresh, slightly vesicular, medium gray (N5), medium strong, BASALT		4590	59	4.0 / 5.0	3.0 / 5.0				FR	R3	NOT TESTED	
	323.0 BGS Yellowish gray (5Y 7/2), SILT				CORE LOSS		NA	Interbed material / Fracture data not relevant	CORE LOSS				
							NA						
325	325.0 BGS Slightly weathered, vesicular, medium gray (N5), aphanitic, medium strong, BASALT		4585	60	5.0 / 5.0	3.1 / 5.0	3	IR/CIF		SW	R3		
							3	IR/CIF					
							1	IR/CIF					
							0	IR/CIF					
							0	IR/CIF					
330	330.0: Grades to slightly vesicular, fresh		4580	61	5.0 / 5.0	5.0 / 5.0	1	IR/CIF		FR	R3		
							2	IR/CIF					
							1						
							0	Large clay filled vug					
							1	IR/CIF					
335			4575	62	5.0 / 5.0	2.2 / 5.0	1	IR/CIF					
							2	IR/CIF					
							4						
	338.0: Apparent pyroclastic inclusions in flow body.						3	IR/CIF					
							1	IR/CIF					
340			4570										

Depth Scale: 1 Inch = 2 1/2 Feet
Drilling Contractor: PC Exploration

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Checked: A. Yonk
Date: 30 SEP 95

Golder Federal Services

RECORD OF DRILLHOLE # USGS 121

Sheet 17 of 22

PROJECT: RCRA MONITORING
PROJECT #: 893-1195 (Golder Assoc.)
LOCATION: ICPP
COLLAR ELEVATION: 4910.48

DRILLING DATE: 1990
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AZIMUTH: Not Applicable

DATUM: MEAN SEA LEVEL
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J-JOINT, F-FAULT, S-SHEAR; B-BEDDING, DB-DRILL BREAK, PL-PLANAR; C-CURVED, U-UNDULATING, ST-STEPPED; I-IRREGULAR, P-POLISHED, SM-SMOOTH; R-ROUGH, VR-VERY ROUGH, CIF-CLAY INFILLING

DEPTH SCALE	ROCK TYPE DESCRIPTION	GRAPHIC LOG	ELEV.	RUN #	RECOVERY	RQD	FRACTURES PER FOOT	DISCONTINUITY DATA: TYPE AND SURFACE DESCRIPTION	WEATHERING	STRENGTH	POINT LOAD	NOTES: WATER LEVEL: INSTRUMENTATION
340	(Inferred flow top/bottom)		4570				>10		SW	R3	NOT TESTED	
	340.6 BGS											
	Slightly weathered, vesicular, medium gray (N5) to pale red (5R 6/2), aphanitic, medium strong, BASALT			67	5.0 / 5.0	2.9 / 5.0	1	IR/CIF				
							1	IR/CIF				
	342.0: Grades to slightly vesicular, fresh						0		FR	R3		
							0	IR/CIF				
345			4565				3	IR/CIF IR/CIF IR/CIF				
							1					
				68	5.0 / 5.0	2.8 / 5.0	0	(Inferred flow top / bottom)				
	(Inferred flow top/bottom)							IR/CIF				
	348.2 BGS						4	IR/CIF IR/CIF				
	Weathered, vesicular, medium gray (N5) to pale red (5R 6/2), aphanitic, medium strong, BASALT						2	IR IR	W	R3		
350			4560				1	IR				
							1	Calcite infilling IR				
				69	5.0 / 5.0	4.2 / 5.0	0					
							1	IR				
							1	ST-R				
355	355.0: Grades to minutely vesicular, fresh		4555				0					
							1	Calcite infilling IR				
				70	5.0 / 5.0	5.0 / 5.0	0		FR	R3		
							0					
							1	ST-R				
360			4550									

Depth Scale: 1 Inch = 2 1/2 Feet
Drilling Contractor: PC Exploration

Logged: A. Bailey
Checked: A. Yonk
Date: 30 SEP 95

Golder Federal Services

RECORD OF DRILLHOLE # USGS 121

Sheet 18 of 22

PROJECT: RCRA MONITORING
PROJECT #: 893-1195 (Golder Assoc.)
LOCATION: ICPP
COLLAR ELEVATION: 4910.48

DRILLING DATE: 1990
DRILL RIG: HX Wireline
AZIMUTH: Not Applicable

DATUM: MEAN SEA LEVEL
COORDINATES: N: 698362.05 E:296598.60
INCLINATION: -90 Degrees

J-JOINT, F-FAULT, S-SHEAR, B-BEDDING, DB-DRILL BREAK, PL-PLANAR, C-CURVED, U-UNDULATING, ST-STEPPED, I-IRREGULAR, P-POLISHED, SM-SMOOTH, R-ROUGH, VR-VERY ROUGH, CIF-CLAY INFILLING

DEPTH SCALE	ROCK TYPE DESCRIPTION	GRAPHIC LOG	ELEV.	RUN #	RECOVERY	RQD	FRACTURES PER FOOT	DISCONTINUITY DATA: TYPE AND SURFACE DESCRIPTION	GRAPHIC LOG	WEATHERING	STRENGTH	POINT LOAD	NOTES: WATER LEVEL, INSTRUMENTATION
360	360.0: 0.2 Vesicular zone Fresh, minutely vesicular, medium gray (N5), aphanitic, medium strong, BASALT		4550	71	4.5 / 5.0	4.0 / 5.0	0			FR	R3	NOT TESTED	
							0						
							0						
	(Inferred flow top/bottom) 364.5 BGS						0						
	Vesicular, dusky red (5R 3/4) aphanitic, pyroclastic						>10	(Inferred flow top / bottom) CIF					
365	365.5 BGS Slightly weathered, vesicular, medium gray (N5) aphanitic medium strong, BASALT		4545	72	5.0 / 5.0	4.0 / 5.0	4	IR/CIF		SW	R3		
							1	IR/CIF, IR/CIF, IR/CIF					
							2	IR/CIF, IR/CIF					
							2	IR/CIF					
							1	IR/CIF, IR/CIF					
370			4540	73	5.0 / 5.0	3.8 / 5.0	1	IR/CIF					
							4	IR/CIF, IR/CIF, IR/CIF, IR/CIF					
							>5						
							1	IR/CIF					
							0						
375			4535	74	5.0 / 5.0	4.8 / 5.0	1	IR/CIF					
							1	IR/CIF					
							0	"Bubble track"					
							0						
380			4530				0						

Depth Scale: 1 Inch = 2 1/2 Feet
Drilling Contractor: PC Exploration

Logged: A. Bailey
Checked: A. Yonk
Date: 30 SEP 95

Golder Federal Services

RECORD OF DRILLHOLE # USGS 121

Sheet 19 of 22

PROJECT: RCRA MONITORING
PROJECT #: 893-1195 (Golder Assoc.)
LOCATION: ICPP
COLLAR ELEVATION: 4910.48

DRILLING DATE: 1990
DRILL RIG: HX Wireline
AZIMUTH: Not Applicable

DATUM: MEAN SEA LEVEL
COORDINATES: N: 698362.05 E:296598.60
INCLINATION: -90 Degrees

J-JOINT, F-FAULT, S-SHEAR, B-BEDDING, DB-DRILL BREAK, PL-PLANAR, C-CURVED, U-UNDULATING, ST-STEPPED, I-IRREGULAR, P-POLISHED, SM-SMOOTH, R-ROUGH, VR-VERY ROUGH, CIF-CLAY INFILLING

DEPTH SCALE	ROCK TYPE DESCRIPTION	GRAPHIC LOG	ELEV.	RUN #	RECOVERY	RQD	FRACTURES PER FOOT	DISCONTINUITY DATA: TYPE AND SURFACE DESCRIPTION	GRAPHIC LOG	WEATHERING	STRENGTH	POINT LOAD	NOTES: WATER LEVEL: INSTRUMENTATION
380	Slightly weathered to fresh, vesicular, medium gray (N5), aphanitic, medium strong, BASALT		4530	75	5.0 / 5.0	0.8 / 5.0	0			SW	R3	NOT TESTED	
							>5	Heavily fractured with silt and clay infilling					
							>5						
							>5						
							0						
385			4525	76	5.0 / 5.0	1.5 / 5.0	1	IR/CIF					
							0						
							>5	All fractures IR/CIF					
							>5						
							>5						
390			4520	77	2.0 / 5.0	0.8 / 5.0	1	IR/CIF					
							0						
	392.0 BGS												
	Unknown material due to core loss. No indication of possible composition				CORE LOSS		NA		CORE LOSS				
							NA						
							NA						
395			4515	78	0.9 / 5.0	0.9 / 5.0	NA		CORE LOSS				
					CORE LOSS		NA						
							NA						
400			4510										

Depth Scale: 1 Inch = 2 1/2 Feet
Drilling Contractor: PC Exploration

Logged: A. Bailey
Checked: A. Yonk
Date: 30 SEP 95

Golder Federal Services

RECORD OF DRILLHOLE # USGS 121

Sheet 20 of 22

PROJECT: RCRA MONITORING
PROJECT #: 893-1195 (Golder Assoc.)
LOCATION: ICPP
COLLAR ELEVATION: 4910.48

DRILLING DATE: 1990
DRILL RIG: HX Wireline
AZIMUTH: Not Applicable

DATUM: MEAN SEA LEVEL
COORDINATES: N: 698362.05 E:296598.60
INCLINATION: -90 Degrees

J-JOINT, F-FAULT, S-SHEAR, B-BEDDING, DB-DRILL BREAK, PL-PLANAR, C-CURVED, U-UNDULATING, ST-STEPPED, I-IRREGULAR, P-POLISHED, SM-SMOOTH, R-ROUGH, VR-VERY ROUGH, CIF-CLAY INFILLING

DEPTH SCALE	ROCK TYPE / DESCRIPTION	GRAPHIC LOG	ELEV.	RUN #	RECOVERY	RQD	FRACTURES PER FOOT	DISCONTINUITY DATA: TYPE AND SURFACE DESCRIPTION	GRAPHIC LOG	WEATHERING	STRENGTH	POINT LOAD	NOTES: WATER LEVEL: INSTRUMENTATION
400	400.7 BGS		4510		CORE LOSS		NA	NOT APPLICABLE	CORE LOSS			NOT TESTED	
	Reddish brown (10R 4/6) Structureless, silt and subangular small to medium basalt gravel			79	4.0 / 5.0	NA	NA		NOT APPLICABLE	NOT APPLICABLE	NOT APPLICABLE		
	402.0: Grades to reddish brown (10R 4/6) massive, (possible occasional thin laminae) silty, CLAY						NA						
							NA						
405			4505				NA		CORE LOSS				
				80	0.5 / 5.0	NA	NA						
					CORE LOSS		NA						
	Grades to pale yellowish brown (10YR 6/2) fine SAND and SILT						NA						
410			4500				NA	(Inferred interbed flow top contact)					
	410.8 BGS Slightly weathered to fresh, vesicular, medium gray (N5), aphanitic, medium strong, BASALT	v					4	All fractures are IR/CIF					
		v		81	4.8 / 5.0	3.2 / 5.0	1						
		v					0						
		v	4495				>10						
415		v					4						
					3.2 / 5.0	0.6 / 5.0	3						
		v					4						
	(Inferred flow bottom)			82									
	417.8 BGS Inferred interbed based upon the material that was recovered and core loss.	v			CORE LOSS		NA		CORE LOSS				
420			4490				NA						

Depth Scale: 1 Inch = 2 1/2 Feet
Drilling Contractor: PC Exploration

Logged: A. Bailey
Checked: A. Yonk
Date: 30 SEP 95

Golder Federal Services

RECORD OF DRILLHOLE # USGS 121

Sheet 21of 22

PROJECT: RCRA MONITORING
PROJECT #: 893-1195 (Golder Assoc.)
LOCATION: ICPP
COLLAR ELEVATION: 4910.48

DRILLING DATE: 1990
DRILL RIG: HX Wireline
AZIMUTH: Not Applicable

DATUM: MEAN SEA LEVEL
COORDINATES: N: 698362.05 E:296598.60
INCLINATION: -90 Degrees

J-JOINT, F-FAULT, S-SHEAR, B-BEDDING, DB-DRILL BREAK, PL-PLANAR, C-CURVED, U-UNDULATING, ST-STEPPED, I-IRREGULAR, P-POLISHED, SM-SMOOTH, R-ROUGH, VR-VERY ROUGH, CIF-CLAY INFILLING

DEPTH SCALE	ROCK TYPE / DESCRIPTION	GRAPHIC LOG	ELEV.	RUN #	RECOVERY	RQD	FRACTURES PER FOOT	DISCONTINUITY DATA: TYPE AND SURFACE DESCRIPTION	GRAPHIC LOG	WEATHERING	STRENGTH	POINT LOAD	NOTES: WATER LEVEL: INSTRUMENTATION
420	Probable Interbed		4490	83	0.0 / 5.0	NA			CORE LOSS			NOT TESTED	
					CORE LOSS								
425			4485	84	CORE LOSS				CORE LOSS				
	(Inferred flow top)												
	427.9 BGS						1	IR/CIF					
	Weathered, vesicular med gray (N5), aphanitic, medium strong, BASALT				2.1 / 5.0	1.8 / 5.0	3	IR/CIF IR/CIF IR/CIF		W			
430			4480	85			1	IR/CIF			R3		
	431.5: Grades to fresh, minutely vesicular				5.0 / 5.0	5.0 / 5.0	0 1	IR/CIF		FR			
							1	IR/CIF					
	434.3: Grades to slightly vesicular						0	(Possible flow top?)					
435	435.0 Grades to vesicular		4475	86			6	IR/CIF					
	437.0: Grades to slightly vesicular				5.0 / 5.0	3.5 / 5.0	4 1	IR/CIF IR/CIF IR/CIF IR/CIF IR/CIF					
	439.0: Grades to vesicular						1 1	IR/CIF IR/CIF					
440			4470										

Depth Scale: 1 Inch = 2 1/2 Feet
Drilling Contractor: PC Exploration

Logged: A. Bailey
Checked: A Yonk
Date: 30 SEP 95

Golder Federal Services

RECORD OF DRILLHOLE # USGS 121

PROJECT: RCRA MONITORING
PROJECT #: 893-1195 (Golder Assoc.)
LOCATION: ICPP
COLLAR ELEVATION: 4910.48

DRILLING DATE: 1990
DRILL RIG: HX Wireline
AZIMUTH: Not Applicable

DATUM: MEAN SEA LEVEL
COORDINATES: N: 698362.05 E:296598.60
INCLINATION: -90 Degrees

J-JOINT B-BEDDING C-CURVED I-IRREGULAR R-ROUGH
F-FAULT DB-DRILL BREAK U-UNDULATING P-POLISHED VR-VERY ROUGH
S-SHEAR PL-PLANAR ST-STEPPED SM-SMOOTH CIF-CLAY INFILLING

DEPTH SCALE	ROCK TYPE / DESCRIPTION	GRAPHIC LOG	ELEV.	RUN #	RECOVERY	RQD	FRACTURES PER FOOT	DISCONTINUITY DATA: TYPE AND SURFACE DESCRIPTION	GRAPHIC LOG	WEATHERING	STRENGTH	POINT LOAD	NOTES: WATER LEVEL: INSTRUMENTATION
440	Slightly weatherd, vesicular, medium gray (N5), aphanitic, medium strong, BASALT		4470					IR/CIF				NOT TESTED	
							3	IR					
								IR/CIF					
							>10	All IR/CIF					
				87			1	IR/CIF					
							1	IR/CIF					
							1						
445			4465					IF/CIF					
							3	IR/CIF					
								IR/CIF					
	446.0: Grades to slightly vesicular, fresh						1	UR					
				88			0						
							0						
							0						
450			4460				0						
							0						
				89	5.0 / 5.0	5.0 / 5.0	0						
							3	IR/CIF IR/CIF IR/CIF					
	454.0: Grades to minutely vesicular						0						
455			4455				0						
							0						
				90	5.0 / 5.0	5.0 / 5.0	0						
							0						
460			4450				0						

Depth Scale: 1 Inch = 2 1/2 Feet
Drilling Contractor: PC Exploration

Logged: A. Bailey
Checked: A. Yonk
Date: 30 SEP 95