

**Key for Shallow Overburden Borehole and Sample Ids**

<b>Golder Borehole ID</b>	<b>Corresponding Site Number in Field Notes</b>	<b>ID on Laboratory Results</b>
SOSH-01	1	SH01
SOSH-02	2	SH02
SOSH-03	3	SH03
SOSH-04	4	SH04
SOSH-05	5	SH05
SOSH-06	6	SH06
SOSH-07	7	SH07
SOSH-08	8	SH08
SOSH-09	9	SH09
SOSH-10	10	SH10
SOSH-11	11	No analyses performed
SOSH-12	12	SH12
SOSH-13	13	SH13
SOSH-14	14	No analyses performed
SOSH-15	15	SH15
SOSH-16	16	SH16
SOSH-17	17	SH17
SOSH-18	18	SH18
SOSH-19	19	No analyses performed
SOSH-20	20	SH20
SOSH-21	21	No analyses performed
SOSH-22	22	SH22
SOSH-23	23	SH23
SOSH-24	24	SH24
SOSH-25	25	SH25
SOSH-26	26	SH26
SOSH-27	27	SH27
SOSH-28	28	SH28
SOSH-29	29	SH29
SOSH-30	30	No analyses performed
SOSH-31	31	No analyses performed
SOSH-32	32	No analyses performed
SOSH-33	33	No analyses performed
SOSH-34	34	No analyses performed
SOSH-35	35	No analyses performed
SOSH-36	36	No analyses performed
SOSH-37	37	No analyses performed
SOSH-38	38	No analyses performed
SOSH-40	40	SH40
SOSH-41	41	SH41
SOSH-42	42	SH42
SOSH-43	43	SH43
SOSH-45	45	SH45
SOSH-46	46	SH46
SOSH-47	47	No analyses performed
SOSH-49	49	No analyses performed
SOSH-50	50	No analyses performed
SOSH-51	51	No analyses performed
SOSH-52	52	No analyses performed
SOSH-53	53	No analyses performed

**SITE NO:**

1

<b>TARGET:</b>	<b>Easting</b>	<b>Northing</b>
	650,660	5,190,434
<b>ACTUAL:</b>	650,663	5,190,427

Interval	Type	Texture	Vis. Salts	Color
000024	unconsolidated/weathered	C/CL	N	2.5Y 4/2
024038	unconsolidated/weathered	C/CL+	N	2.5Y 4/2
038062	unconsolidated/weathered	C	Y2	5Y 4/2
062080	unconsolidated/weathered	C	Y1	5Y 4/2
080092	unconsolidated/weathered	C	Y1	2.5Y 3/2
092110	unconsolidated/weathered	C	N	2.5Y 3/2
110118	unconsolidated/weathered	C	N	2.5Y 3/2
118126	unconsolidated/weathered	C/CL+	Y3	2.5Y 4/2
126134	unconsolidated/weathered	C/CL+	Y2	2.5Y 4/2
134146	unconsolidated/weathered	C	Y2	2.5Y 4/3
146158	unconsolidated/weathered	CL	Y1	2.5Y 4/3
158182	soft sandstone	LFS	N	2.5Y 4/3
182206	soft sandstone	LFS	N	2.5Y 4/3
206230	soft bedrock	SCL	N	2.5Y 4/3
230240	soft bedrock	SCL	N	2.5Y 3/3
	Backfilled to 65 in below ground surface. Flagged.			



**SITE NO:**

**3**

<b>TARGET:</b>	<b>Easting</b>	<b>Northing</b>
<b>ACTUAL:</b>	650,646	5,190,949
	650,647	5,190,947

Interval	Type	Texture	Vis. Salts	Color
000016	unconsolidated/weathered	C/CL+	N	2.5Y 2.5/1
016036	unconsolidated/weathered	C	Y1	2.5Y 4/2
036048	unconsolidated/weathered	C	Y1	2.5Y 3/2
048060	unconsolidated/weathered/BR	C	Y2	2.5Y 3/2
060084	unconsolidated/weathered/BR	C	Y1	2.5Y 3/2
084096	Soft shale w/coal	C	Y2	2.5Y 3/2
096108	Soft shale	C	Y2	2.5Y 3/3
108128	Shale/Siltstone	C/CL	N	2.5Y 5/1
128152	Beds of sand and shale	Clayey	N	2.5Y 5/3
152172	Shale	C	N	2.5Y 4/2
172196	Siltstone	SiC	N	2.5Y 5/3
196216	Siltstone	SiC	N	2.5Y 5/3
216240	Siltstone	SiC	N	2.5Y 5/3
	Heavy wet clay at this site caused some problems with augering and would likely pose some problems for soil handling equipment during salvage and replacement.			











**SITE NO:**

**8**

<b>TARGET:</b>	<b>Easting</b>	<b>Northing</b>
	649,454	5,189,258
<b>ACTUAL:</b>	649,448	5,189,261

<b>Interval</b>	<b>Type</b>	<b>Texture</b>	<b>Vis. Salts</b>	<b>Color</b>
000012	unconsolidated/weathered	CL	N	2.5Y 3/2
012036	unconsolidated/weathered/soft bedrock	CL	N	2.5Y 6/3
036048	soft bedrock	L	N	2.5Y 5/3
048070	soft bedrock	CL/C	N	2.5Y 5/4
070076	Shale	C	N	2.5Y 4/2
076100	soft bedrock	CL+	N	2.5Y 5/3
100106	soft bedrock	CL-	N	2.5Y 5/3
106130	Shale	C	Y1	2.5Y 5/2
130136	Shale	C	Y3	2.5Y 5/2
136148	soft bedrock	VFSC	too mixed	2.5Y 5/3
148172	soft bedrock	LS	N	2.5Y 5/3
172196	soft bedrock	LS	N	2.5Y 5/2
196204	soft bedrock	SL	N	2.5Y 5/2
204216	Shale & Hard SS	CL	Y1	2.5Y 5/2
216240	soft bedrock	SL	Y1	2.5Y 5/2



**SITE NO:** 10

	<b>Easting</b>	<b>Northing</b>
<b>TARGET:</b>	649,395	5,188,779
<b>ACTUAL:</b>	649,401	5,188,763

Interval	Type	Texture	Vis. Salts	Color
000024	unconsolidated/weathered	C	N	2.5Y 4/2
024048	unconsolidated/weathered	C	Y1	2.5Y 4/2
048072	unconsolidated/weathered	CL	Y1	2.5Y 3/2
072096	unconsolidated/weathered/soft bedrock	C	Y1	2.5Y 3/2
096110	unconsolidated/weathered/soft bedrock	CL	Y1	2.5Y 4/3
110128	unconsolidated/weathered/soft bedrock	LS	Saturated - free water	2.5Y 5/3
128152	unconsolidated/weathered/soft bedrock	VFSC	too wet	2.5Y 3/2
152164	Shale	C	too wet	2.5Y 4/2
164168	No Sample	LS	Saturated	2.5Y 5/3
	Excavation ended at 14 ft. A sample was not collected for 164168 due to the saturated nature of the material.			
	The hole was filled with one bag of betonite to a depth of 4 feet below ground surface before backfilling. Remaining cuttings were spread onsite.			







**SITE NO:**

14

<b>TARGET:</b>	<b>Easting</b>	<b>Northing</b>
	648,759	5,188,843
<b>ACTUAL:</b>	648,756	5,188,844

Interval	Type	Texture	Vis. Salts	Color
000024	unconsolidated/weathered	CL+	N	2.5Y 4/3
024048	unconsolidated/weathered	CL-	Y1?	2.5Y 4/3
048072	unconsolidated/weathered/soft bedrock	SiCL	N	2.5Y 5/3
072084	unconsolidated/weathered/soft bedrock	SiL	N	2.5Y 5/3
084092	Coal - no sample collected	--	--	--
092116	soft bedrock	SiC/C	Y3	2.5Y 5/1
116132	soft bedrock	SiC/C	Y3	2.5Y 4/2
132156	soft bedrock	SiC	N	2.5Y 5/3
156172	soft bedrock	C	N	2.5Y 4/3
172196	soft bedrock	SiC/C	N	2.5Y 5/2
196204	soft bedrock	SiC/C	Y1?	2.5Y 5/2
204208	Coal - no sample collected	--	--	--
208222	soft bedrock	SiC/C	Y2	2.5Y 5/3
222240	soft bedrock	SiC/C	N	2.5Y 5/4



















**SITE NO:** 23

<b>TARGET:</b>	<b>Easting</b>	<b>Northing</b>
	649,879	5,189,110
<b>ACTUAL:</b>	649,882	5,189,110

Interval	Type	Texture	Vis. Salts	Color
000024	soil	CL	N	2.5Y 3/3
024036	soil	CL	N	2.5Y 5/3
036060	weathered bedrock	CL+	Y1	2.5Y 4/2
060082	weathered bedrock	CL+	Y2	2.5Y 4/2
082096	soft bedrock	CL+	N	2.5Y 4/2
096120	soft bedrock	C	N	2.5Y 4/1
120144	soft bedrock	CL+	N	2.5Y 3/2
144168	soft bedrock	C	N	2.5Y 4/1
168182	soft bedrock	C	N	2.5Y 3/2
182188	soft bedrock	C	N	2.5Y 3/2
188196	shale w/ hard rock	C	N	10YR 3/6
196202	soft bedrock	C	N	2.5Y 4/2
202224	soft bedrock	CL	N	2.5Y 5/2
224240	soft bedrock	CL	N	2.5Y 4/2



























**SITE NO:** 35

<b>TARGET:</b>	<b>Easting</b>	<b>Northing</b>
	648,707	5,189,302
<b>ACTUAL:</b>	648,707	5,189,297

Interval	Type	Texture	Vis. Salts	Color
000024	soil	SiC-	N	2.5Y 4/1
024048	soft bedrock	SiC-	N	2.5Y 4/2
048060	soft bedrock	SiC	N	2.5Y 4/2
060084	soft bedrock	SiC-	Y1	2.5Y 5/2
084108	soft bedrock	SiC-	Y1	2.5Y 5/2
108130	soft bedrock	SiCL+	N	2.5Y 5/4
130164	coal	coal	coal	coal
164188	soft bedrock	C	N	2.5Y 5/1
188192	soft bedrock	C	N	2.5Y 4/1
192196	coal saturated w/ free water	coal	coal	coal
196216	soft bedrock	C	N	2.5Y 4/1
216240	soft bedrock	C	N	2.5Y 4/1
	Left open - need bentonite			



**SITE NO:** 37

<b>TARGET:</b>	<b>Easting</b>	<b>Northing</b>
<b>ACTUAL:</b>	648,450	5,188,828

Interval	Type	Texture	Vis. Salts	Color
000024	soil	CL-	N	2.5Y 5/3
024048	soft bedrock	L	N	2.5Y 5/4
048072	soft bedrock	SiCL-	N	2.5Y 5/3
072084	soft bedrock	SiCL	N	2.5Y 5/4
084106	soft bedrock	SiCL+	N	2.5Y 5/3
106130	soft bedrock	SiCL	N	2.5Y 4/2
130154	soft bedrock	SiCL+	N	2.5Y 4/3
154176	soft bedrock	SiC	N	2.5Y 4/3
176180	soft bedrock	SiC	N	2.5Y 4/2
180204	soft bedrock	SiCL+	N	2.5Y 4/2
204226	soft bedrock	SiCL+	N	2.5Y 4/3
226240	soft bedrock	VFSL	N	2.5Y 4/3
	backfilled to within 5 inches of surface. Site 37A - attempted to 84 inches			
	648,433 5,188,748			
	very hard bedrock at 84 inches, could not be penetrated, samples discarded			
	textures = VFSL			







**SITE NO:** 41

<b>TARGET:</b>	<b>Easting</b>	<b>Northing</b>
	648,155	5,188,558
<b>ACTUAL:</b>	648,156	5,188,557

Interval	Type	Texture	Vis. Salts	Color
000024	soil	CL	N	2.5Y 6/2
024048	soil	CL-	N	2.5Y 6/3
048072	unconsolidated material	CL-	N	2.5Y 5/3
072096	unconsolidated material	CL	N	2.5Y 4/2
096120	soft bedrock	CL	N	2.5Y 5/2
120132	soft bedrock	CL	N	2.5Y 5/3
132156	soft bedrock	CL+	N	2.5Y 4/3
156180	soft bedrock	C	N	2.5Y 3/1
180202	soft bedrock	C	N	2.5Y 4/2
202226	soft bedrock	CL	N	2.5Y 4/2
226240	soft bedrock	C	N	2.5Y 4/3
	Backfilled to within 3 feet. Flagged			







**SITE NO:** 47

<b>TARGET:</b>	<b>Easting</b>	<b>Northing</b>
	647,937	5,188,875
<b>ACTUAL:</b>	647,933	5,188,874

Interval	Type	Texture	Vis. Salts	Color
000024	soil	CL	N	2.5Y 4/3
024048	soil	CL	N	2.5Y 5/2
048072	soft bedrock	SCL	N	2.5Y 5/4
072096	soft bedrock	SCL	N	2.5Y 5/3
096118	soft bedrock	SCL+	N	2.5Y 5/3
118124	coal	coal	coal	coal
124134	soft bedrock	C	N	2.5Y 7/2
134154	soft bedrock	C	N	2.5Y 7/2
154178	soft bedrock	SiC	N	2.5Y 6/2
178202	soft bedrock	C	N	2.5Y 5/2
202216	soft bedrock	SiC	N	2.5Y 4/2
216240	soft bedrock	SiL	N	2.5Y 5/2
	backfilled to within 1 foot of ground surface. Flagged			



**SITE NO:** 50

<b>TARGET:</b>	<b>Easting</b>	<b>Northing</b>
	648,222	5,188,946
<b>ACTUAL:</b>	648,218	5,188,950

Interval	Type	Texture	Vis. Salts	Color
000024	soil	CL	N	2.5Y 5/2
024048	soft bedrock	SiCL	Y1	2.5Y 4/2
048052	soft bedrock	SiCL	Y2	2.5Y 4/2
052076	soft bedrock	SiCL	N	2.5Y 5/3
076100	soft bedrock	SiCL	N	2.5Y 5/2
100110	soft bedrock	SiCL	N	2.5Y 5/3
110134	soft bedrock	SiCL	N	2.5Y 5/3
134158	soft bedrock	SiCL	N	2.5Y 5/2
158182	soft bedrock	SiCL	N	2.5Y 5/4
182202	soft bedrock	SiL	N	2.5Y 5/3
202216	soft bedrock	SiL	N	2.5Y 5/2
216240	soft bedrock	VFLS	N	2.5Y 5/2
	Backfilled to within 3.5 feet of surface. Flagged			

**SITE NO:** 51

<b>TARGET:</b>	<b>Easting</b>	<b>Northing</b>
	648,041	5,188,969
<b>ACTUAL:</b>	648,042	5,188,973

Interval	Type	Texture	Vis. Salts	Color
000024	soil	C-	N	2.5Y 4/2
024048	soil	C-	Y1	2.5Y 4/2
048054	soil	C-	Y1	2.5Y 4/3
054078	very soft bedrock	SiL	N	2.5Y 6/4
078096	very soft bedrock	Si	N	2.5Y 6/4
096108	very soft bedrock	L	N	2.5Y 6/6
108130	very soft bedrock	L	N	2.5Y 6/3
130154	very soft bedrock	L-	N	2.5Y 6/6
154178	very soft bedrock	L-	N	2.5Y 6/6
178202	very soft bedrock	L-	N	2.5Y 6/4
202216	very soft bedrock	VFSL	N	2.5Y 6/4
216240	very soft bedrock	VFSL	N	2.5Y 6/4
	Backfilled to within 3.5 feet of surface. Flagged			



**SITE NO:** 52

<b>TARGET:</b>	<b>Easting</b>	<b>Northing</b>
	648,421	5,188,919
<b>ACTUAL:</b>	649,419	5,188,919

Interval	Type	Texture	Vis. Salts	Color
000024	soil	CL+	N	2.5Y 4/2
024048	soil	SiCL+	N	2.5Y 5/2
048072	unconsolidated material	SiCL+	Y1	2.5Y 5/3
072096	unconsolidated material	CL+	Y1	2.5Y 5/3
096120	unconsolidated material	CL+	Y1	2.5Y 5/3
120144	unconsolidated material	CL+	Y1	2.5Y 5/3
144168	unconsolidated material	CL+	Y1	2.5Y 5/2
168184	unconsolidated material	CL+	Y1	2.5Y 5/2
184194	coal	coal	coal	coal
194202	soft bedrock	SiC	Y1	2.5Y 6/2
202208	soft bedrock	CL	N	2.5Y 4/2
208230	soft bedrock	SiCL	N	2.5Y 5/2
230240	soft bedrock	SiCL	N	2.5Y 5/3
Backfilled to within 5 feet. Flagged				

**SITE NO:** 53

<b>TARGET:</b>	<b>Easting</b>	<b>Northing</b>
	647,850	5,188,950
<b>ACTUAL:</b>	647,851	5,188,950

Interval	Type	Texture	Vis. Salts	Color
000024	soil	CL	N	2.5Y 4/3
024048	soil	C	N	2.5Y 4/2
048072	soil	C	Y1	2.5Y 4/2
072096	unconsolidated material	C	Y1	2.5Y 4/2
096120	unconsolidated material	C	Y1	2.5Y 4/2
120144	unconsolidated material	C	Y1	2.5Y 4/2
144154	unconsolidated material	CL	Y1	2.5Y 4/3
154170	unconsolidated material	CL	N	2.5Y 5/2
170184	soft bedrock	CL	N	2.5Y 5/2
184198	soft bedrock	CL	N	2.5Y 5/3
198216	soft bedrock	SiCL	N	2.5Y 5/3
216240	soft bedrock	CL	N	2.5Y 5/4
	Backfilled to within 7 feet of surface. Flagged			

**South Heart - Suitable Overburden / Cover Material Sampling**  
**Field Notes**  
**October 25 - 29, 2007**

Coordinates are provided in: NAD 1983 UTM Zone 13 North meters

Depth intervals are six digits with the first three representing the beginning and the second three representing the end of each sample zone.

For example, the interval 048072 represents the zone from 48 to 72 inches below ground surface.

Standard abbreviations were used for all textures.

All textures are estimates that are most accurate in unconsolidated soil and less accurate in zones of soft bedrock.

Field textures are best used for assessing the relative differences between strata in the same profile.

Where textures include a separate texture in parentheses, the texture is borderline (i.e., S(C)L is SL bordering on SCL)

The + and - symbols in the texture field note the abundance of clay within the textural class where a CL+ would be nearly C and a CL- would be nearly L.

The presence of visible salts is qualified by a relative abundance ranking of 1 to 3 where soils with a value of 1 exhibited the lowest abundance of visible crystals and soils with a value of 3 exhibited the highest abundance. Soils with values of 2 and 3 are far less likely to be suitable for salvage.

Salt crystals were often found in the presence of carbonates, making it difficult to discern their abundance. In addition, the churning of soil resulting from the use of an auger for sample collection made it more difficult to observe crystals in natural fractures.

Nearly all deep strata were moist, masking the presence of salts.