

Key for Shallow Overburden Borehole and Sample Ids

Golder Borehole ID	Corresponding Site Number in Field Notes	ID on Laboratory Results
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

LABORATORY ANALYTICAL REPORT

Client: Golder Associates Inc
Project: South Heart Power Suit OB 063-2174/063-2212
Workorder: C07110486

Report Date: 01/01/08
Date Received: 10/30/07

Sample ID	Client Sample ID	Analysis	EC	Saturation	pH	Ca	Mg	Na	SAR	Sand	Silt	Clay	Texture
		Units	mmhos/cm	%	s_u	meq/L	meq/L	meq/L	unitless	%	%	%	Results
C07110486-001	SH01	24-38	0.94	143	8.4	1.1	0.86	6.8	6.80	18	44	38	SiCL
C07110486-002	SH01	38-62	4.61	146	7.8	25	17	21	4.60	19	41	40	SiC - SiCL
C07110486-003	SH01	80-92	3.84	162	8.0	14	10	23	6.64	13	43	44	SiC
C07110486-004	SH01	118-126	4.13	147	8.0	15	11	24	6.92	8.0	48	44	SiC
C07110486-005	SH02	24-48	2.46	162	8.2	3.4	3.5	19	10.0	12	41	47	SiC
C07110486-006	SH02	48-72	2.53	156	8.2	4.4	3.7	19	9.55	11	43	46	SiC
C07110486-007	SH02	96-120	2.17	176	8.2	2.6	1.8	17	11.7	14	41	45	SiC
C07110486-008	SH03	0-16	0.75	163	7.3	3.1	4.3	2.0	1.06	43	25	32	CL
C07110486-009	SH03	38-48	2.49	174	8.4	3.1	8.3	18	7.52	20	42	38	SiCL
C07110486-010	SH03	60-84	4.02	185	7.9	11	19	22	5.71	28	34	38	CL
C07110486-011	SH04	0-24	0.57	145	8.0	2.2	2.2	1.1	0.72	63	17	20	SL - SCL
C07110486-012	SH04	24-48	0.69	157	8.6	0.46	2.0	5.3	4.75	45	27	28	CL
C07110486-013	SH04	48-72	2.66	166	8.3	2.3	11	17	6.82	21	45	34	CL
C07110486-014	SH04	72-96	5.59	166	7.9	20	36	25	4.70	42	32	26	L
C07110486-015	SH04	96-120	5.37	143	7.9	23	33	23	4.35	49	33	18	L
C07110486-016	SH04	120-144	4.05	128	7.9	12	23	20	4.78	61	21	18	SL
C07110486-017	SH04	144-168	4.15	129	8.1	17	23	17	3.94	58	22	20	SL - SCL
C07110486-018	SH04	168-192	4.51	160	7.9	25	25	15	3.07	29	37	34	CL
C07110486-019	SH04	192-216	2.51	176	8.1	6.8	11	12	4.04	18	46	36	SiCL
C07110486-020	SH04	216-240	4.26	159	7.8	23	23	13	2.78	8.0	49	43	SiC
C07110486-021	SH05	0-24	1.12	98.2	7.2	4.8	5.6	2.4	1.05	10	48	42	SiC
C07110486-022	SH05	24-38	3.83	124	7.8	26	23	8.4	1.72	14	39	47	C
C07110486-023	SH05	48-68	4.78	104	7.9	26	34	14	2.56	13	42	45	SiC
C07110486-024	SH05	84-96	4.74	84.3	8.1	21	29	18	3.66	32	46	22	L
C07110486-025	SH05	120-144	3.35	111	8.2	11	15	17	4.66	52	36	12	L
C07110486-026	SH05	192-216	3.03	123	8.4	4.8	7.9	22	8.65	36	49	15	L
C07110486-027	SH06	0-18	0.68	117	7.1	4.8	2.6	0.61	0.32	26	42	32	CL
C07110486-028	SH06	18-30	0.43	88.0	8.3	1.6	1.4	2.4	1.98	18	52	30	SiCL
C07110486-029	SH06	30-40	0.75	78.1	9.1	0.31	0.31	7.8	14.1	34	50	16	SiL - L
C07110486-030	SH06	40-64	2.48	150	8.9	0.54	1.6	22	21.7	37	31	32	CL
C07110486-031	SH06	64-78	5.68	151	8.5	3.1	11	52	19.9	14	43	43	SiC
C07110486-032	SH06	78-102	8.11	134	8.1	7.7	22	76	19.7	36	34	30	CL
C07110486-033	SH07	0-24	0.65	104	7.7	4.7	2.9	0.70	0.36	36	28	36	CL
C07110486-034	SH07	24-48	0.61	105	8.4	2.5	3.4	1.4	0.81	50	34	16	L
C07110486-035	SH07	48-72	0.70	77.7	8.2	2.2	3.2	2.7	1.62	41	34	25	L
C07110486-036	SH07	72-96	1.76	152	8.4	1.5	3.2	14	8.84	< 1.0	44	56	SiC
C07110486-037	SH07	96-108	4.79	154	8.0	17	19	27	6.44	2.0	48	50	SiC
C07110486-038	SH07	108-120	5.48	113	8.0	24	22	30	6.28	49	33	18	L
C07110486-039	SH07	120-136	4.84	124	8.2	9.9	16	35	9.70	20	50	30	SiCL
C07110486-040	SH07	136-160	4.16	128	8.2	3.4	8.3	35	14.5	21	57	22	SiL

TRACK# C07110486
-4-

ENERGY LABORATORIES, INC. • 2393 Sall Creek Highway (82601) • P.O. Box 3268 • Casper, WY 82602
Toll Free 888.235.0515 • 307.235.0515 • Fax 307.234.1639 • casper@energylab.com • www.energylab.com



LABORATORY ANALYTICAL REPORT

Client: Golder Associates Inc
 Project: South Heart Power Suit OB 063-2174/063-2212
 Workorder: C08010436

Report Date: 02/04/08
 Date Received: 10/30/07

Sample ID	Client Sample ID	Analysis	EC	Saturation	pH	Ca	Mg	Na	SAR	Sand	Silt	Clay	Texture
		Units	mmhos/cm	%	s_u_	meq/L	meq/L	meq/L	unitless	%	%	%	Results
		Depth	Results	Results	Results	Results	Results	Results	Results	Results	Results	Results	Results
C08010436-001	SH05	036-048	4.81	70.5	7.2	23	32	15	2.84	15	39	46	C
C08010436-002	SH05	068-084	5.45	61.5	7.4	26	37	17	3.06	27	33	40	C - CL
C08010436-003	SH05	096-120	5.42	24.7	7.8	18	30	25	5.10	60	28	12	SL
C08010436-004	SH05	144-168	4.63	32.4	7.9	13	17	27	7.11	63	27	10	SL
C08010436-005	SH05	168-192	6.12	38.4	8.0	9.5	23	42	10.5	65	25	10	SL
C08010436-006	SH05	216-240	4.16	49.4	8.0	8.9	13	27	8.06	68	14	18	SL
C08010436-007	SH09	038-058	0.64	71.0	8.1	0.9	2.5	1.7	1.32	23	39	38	CL
C08010436-008	SH09	072-096	1.43	56.0	8.1	2.7	7.0	4.7	2.14	47	23	30	SCL
C08010436-009	SH09	120-130	3.28	57.3	8.0	8.3	15	15	4.26	63	15	22	SCL
C08010436-010	SH09	130-154	3.53	75.1	7.6	13	14	15	4.03	43	25	32	CL
C08010436-011	SH09	170-194	0.65	56.0	7.9	1.7	1.2	2.8	2.34	65	10	25	SCL
C08010436-012	SH09	194-218	0.77	59.5	7.9	1.6	1.5	3.6	2.87	67	9.0	24	SCL

ENERGY LABORATORIES, INC. • 2393 Salt Creek Highway (82601) • P.O. Box 3258 • Casper, WY 82602
 Toll Free 888.235.0515 • 307.235.0515 • Fax 307.234.1639 • casper@energylab.com • www.energylab.com

TRACK# C08010436



LABORATORY ANALYTICAL REPORT

Client: Golder Associates Inc
 Project: South Heart Power Suit OB 063-2174/063-2212
 Workorder: C07110486

Report Date: 01/01/08
 Date Received: 10/30/07

Sample ID	Client Sample ID	Analysis	EC	Saturation	pH	Ca	Mg	Na	SAR	Sand	Silt	Clay	Texture
		Units	mmhos/cm	%	s_u	meq/L	meq/L	meq/L	unitless	%	%	%	Results
C07110486-041	SH07	160-184	6.78	154	7.8	21	23	46	9.88	14	55	31	SiCL
C07110486-042	SH07	184-207	5.59	166	7.8	7.1	14	44	13.9	5.0	45	50	SiC
C07110486-043	SH07	207-223	6.94	162	7.6	22	22	49	10.4	30	44	26	L
C07110486-044	SH07	223-240	3.60	201	8.1	2.4	4.4	30	16.3	18	56	26	SiL
C07110486-045	SH08	0-12	0.86	126	7.0	4.2	4.3	0.87	0.42	20	47	33	SiCL
C07110486-046	SH08	12-36	2.76	88.5	8.4	3.7	9.9	19	7.23	28	51	21	SiL
C07110486-047	SH08	36-48	5.78	103	8.3	4.1	27	43	10.9	9.0	66	25	SiL
C07110486-048	SH08	48-70	6.30	94.1	8.2	9.9	30	42	9.54	16	62	22	SiL
C07110486-049	SH08	70-76	6.34	107	7.7	11	31	43	9.48	24	43	33	CL
C07110486-050	SH08	100-106	6.62	99.0	8.1	16	31	41	8.53	23	59	18	SiL
C07110486-051	SH08	106-130	6.88	142	8.0	15	34	45	9.07	8.0	48	44	SiC
C07110486-052	SH08	172-196	5.65	59.6	8.2	10	17	42	11.3	66	24	10	SL
C07110486-053	SH09	0-14	1.14	91.9	5.6	6.2	3.2	0.30	0.14	26	48	26	L
C07110486-054	SH09	14-38	0.39	98.9	8.2	1.8	1.7	0.65	0.50	34	44	22	L
C07110486-055	SH09	58-72	0.64	104	8.3	1.3	4.0	1.8	1.09	10	40	50	SiC
C07110486-056	SH09	96-102	2.68	81.9	8.2	2.6	7.1	19	8.83	36	47	17	L
C07110486-057	SH09	154-170	1.26	91.7	7.6	5.2	4.1	5.0	2.31	28	42	30	CL
C07110486-058	SH09	218-240	0.69	84.5	8.1	1.2	1.7	4.2	3.50	63	15	22	SCL

ENERGY LABORATORIES, INC. • 2393 Salt Creek Highway (82601) • P.O. Box 3258 • Casper, WY 82602
 Toll Free 888.235.0515 • 307.235.0515 • Fax 307.234.1639 • casper@energylab.com • www.energylab.com

LABORATORY ANALYTICAL REPORT

Client: Golder Associates Inc
Project: South Heart Power Suit OB 063-2174/063-2212
Workorder: C07110490

Report Date: 01/01/08
Date Received: 10/30/07

Sample ID	Client Sample ID	Analysis	EC	Saturation	pH	Ca	Mg	Na	SAR	Sand	Silt	Clay	Texture
		Units	SatPst	SatPst	SatPst	SatPst	SatPst	SatPst	SatPst	unitless	%	%	%
		Depth	mmhos/cm	%	s_u	meq/L	meq/L	meq/L		Results	Results	Results	Results
C07110490-001	SH10	0-24	7.05	94.3	7.6	24	32	47	8.90	14	50	36	SiCL
C07110490-002	SH10	24-48	7.69	105	8.0	21	29	58	11.7	6.0	51	43	SiC
C07110490-003	SH10	48-72	6.88	102	8.0	23	27	46	9.35	24	41	35	CL
C07110490-004	SH10	72-96	6.84	116	8.0	21	24	49	10.4	8.0	48	44	SiC
C07110490-005	SH10	96-110	6.97	108	8.0	22	26	49	10.1	12	46	42	SiC
C07110490-006	SH10	110-128	7.00	98.0	8.3	22	23	50	10.6	67	23	10	SL
C07110490-007	SH10	128-152	4.88	116	8.3	5.3	9.0	40	14.9	40	38	22	L
C07110490-008	SH12	0-24	0.81	88.9	7.2	5.4	4.0	0.49	0.23	26	42	32	CL
C07110490-009	SH12	24-48	0.48	86.3	8.3	2.5	2.5	0.67	0.42	38	34	28	CL
C07110490-010	SH12	48-72	0.49	72.9	8.6	1.6	3.0	0.98	0.65	64	20	16	SL
C07110490-011	SH12	72-96	0.48	62.2	8.8	1.1	3.2	1.0	0.69	60	28	12	SL
C07110490-012	SH12	96-108	0.53	72.0	8.7	0.93	3.5	1.4	0.92	53	32	15	SL
C07110490-013	SH12	108-132	0.43	56.4	8.9	0.90	2.7	1.4	1.04	73	19	8.0	SL
C07110490-014	SH12	132-156	0.37	64.0	8.9	0.71	2.3	1.2	0.99	76	16	8.0	SL
C07110490-015	SH12	156-180	0.34	61.4	8.8	0.81	1.8	1.3	1.10	75	19	6.0	SL
C07110490-016	SH12	180-204	0.30	61.6	8.8	0.88	1.4	1.0	0.96	81	15	4.0	LS
C07110490-017	SH12	204-228	0.31	67.7	8.8	1.0	1.4	0.98	0.90	76	18	6.0	SL
C07110490-018	SH12	228-240	0.25	63.3	8.8	0.91	0.97	0.91	0.94	84	14	2.0	LS
C07110490-019	SH13	0-24	0.63	100	7.3	4.1	3.8	0.36	0.18	18	54	28	SiCL
C07110490-020	SH13	24-48	0.42	97.0	8.8	0.86	1.9	2.3	1.95	12	46	42	SiC
C07110490-021	SH13	48-72	0.63	97.0	8.8	0.69	1.6	5.1	4.77	19	37	44	C
C07110490-022	SH13	72-96	6.71	105	7.3	19	22	47	10.4	25	33	42	C
C07110490-023	SH13	96-108	6.46	98.7	7.4	20	23	42	9.02	23	34	43	C
C07110490-024	SH13	108-132	7.30	102	7.5	19	26	54	11.5	17	39	44	C
C07110490-025	SH13	132-156	2.24	99.3	7.3	7.4	7.4	11	4.15	21	35	44	C
C07110490-026	SH13	156-170	2.23	86.3	7.3	6.9	6.9	11	4.39	15	47	38	SiCL
C07110490-027	SH13	170-194	2.69	65.3	7.5	12	11	10	3.02	24	50	26	SiL - L
C07110490-028	SH13	194-218	3.03	62.6	7.5	17	15	8.0	2.02	27	49	24	L
C07110490-029	SH13	218-240	1.96	53.6	7.6	8.5	8.8	5.2	1.78	53	31	16	SL
C07110490-030	SH15	0-24	0.44	57.6	7.4	3.1	1.9	0.52	0.33	55	25	20	SL - SCL
C07110490-031	SH15	24-48	0.98	50.5	7.8	4.1	6.1	1.5	0.68	42	36	22	L
C07110490-032	SH15	48-72	1.82	48.8	8.0	4.4	18	2.2	0.66	61	21	18	SL
C07110490-033	SH15	72-96	0.85	42.6	8.2	2.4	6.3	0.89	0.43	64	24	12	SL
C07110490-034	SH15	96-120	0.40	46.6	8.3	1.1	2.7	0.59	0.43	64	20	16	SL
C07110490-035	SH15	120-144	0.34	48.5	8.4	1.1	1.9	0.97	0.79	52	27	21	SCL
C07110490-036	SH15	144-168	0.33	48.0	8.6	0.98	1.5	1.4	1.26	67	15	18	SL
C07110490-037	SH15	168-192	0.32	45.8	8.8	0.78	0.81	2.3	2.55	77	11	12	SL
C07110490-038	SH15	192-216	0.62	49.1	8.4	0.59	1.1	5.0	5.35	55	21	24	SCL
C07110490-039	SH15	216-240	0.54	57.9	8.7	0.29	0.45	5.0	8.31	46	28	26	L
C07110490-040	SH16	0-24	4.85	86.6	7.8	24	32	19	3.58	10	48	42	SiC

TRACK# C07110490
-3-

ENERGY LABORATORIES, INC. • 2393 Salt Creek Highway (82601) • P.O. Box 3258 • Casper, WY 82602
Toll Free 888.235.0515 • 307.235.0515 • Fax 307.234.1639 • casper@energylab.com • www.energylab.com

LABORATORY ANALYTICAL REPORT

Client: Golder Associates Inc
Project: South Heart Power Suit OB 063-2174/063-2212
Workorder: C07110490

Report Date: 01/01/08
Date Received: 10/30/07

Sample ID	Client Sample ID	Analysis	EC	Saturation	pH	Ca	Mg	Na	SAR	Sand	Silt	Clay	Texture
		Units	SatPst	SatPst	SatPst	SatPst	SatPst	SatPst	SatPst	unitless	%	%	%
		Depth	mmhos/cm	%	s_u	meq/L	meq/L	meq/L		%	%	%	Results
C07110490-041	SH16	24-48	7.22	85.5	8.5	17	57	41	6.81	18	48	36	SiCL
C07110490-042	SH16	48-72	5.41	73.7	8.6	7.9	30	34	7.83	30	41	29	CL
C07110490-043	SH16	72-96	3.07	50.2	8.6	2.9	10	23	8.87	54	27	19	SL
C07110490-044	SH16	96-104	2.68	68.1	8.6	2.9	8.2	19	8.03	50	30	20	L
C07110490-045	SH16	104-128	2.74	119	8.4	3.7	9.0	19	7.59	34	34	32	CL
C07110490-046	SH16	176-200	3.46	125	8.0	8.9	14	21	6.27	38	32	30	CL
C07110490-047	SH16	200-222	3.30	149	7.9	7.3	11	21	6.81	18	51	31	SiCL
C07110490-048	SH16	128-152	2.22	150	8.3	2.0	5.2	16	8.48	16	38	46	C
C07110490-049	SH16	152-176	2.74	157	8.2	5.5	9.6	17	6.31	14	52	34	SiCL
C07110490-050	SH16	222-240	2.21	121	8.0	3.4	5.9	16	7.25	40	36	24	L

ENERGY LABORATORIES, INC. • 2393 Salt Creek Highway (82601) • P.O. Box 3258 • Casper, WY 82602
 Toll Free 888.235.0515 • 307.235.0515 • Fax 307.234.1639 • casper@energylab.com • www.energylab.com

LABORATORY ANALYTICAL REPORT

Client: Golder Associates Inc
Project: South Heart Suit Overburden
Workorder: C08010393

Report Date: 02/04/08
Date Received: 12/26/07

Sample ID	Client Sample ID	Analysis	EC	Saturation	pH	Ca	Mg	Na	SAR	Sand	Silt	Clay	Texture
		Units	mmhos/cm	%	s_u_	meq/L	meq/L	meq/L	unitless	%	%	%	Results
C08010393-001	SH17	0-24	0.71	30	7.4	4.5	1.5	0.3	0.18	63	24	13	SL
C08010393-002	SH17	24-36	0.81	28	7.5	4.5	2.3	0.8	0.46	70	17	13	SL
C08010393-003	SH17	36-60	0.65	23	7.8	3.3	2.2	0.7	0.42	78	14	8.0	SL
C08010393-004	SH17	60-68	0.69	22	7.7	3.3	2.3	0.9	0.55	78	13	9.0	SL
C08010393-005	SH17	92-116	0.45	29	8.0	1.0	2.7	0.6	0.43	74	22	4.0	SL
C08010393-006	SH17	116-140	0.48	33	8.0	1.0	3.0	0.7	0.46	65	32	3.0	SL
C08010393-007	SH17	140-164	0.42	31	8.0	1	2.5	0.8	0.59	73	24	3.0	SL
C08010393-008	SH17	164-188	0.34	31	8.0	0.9	1.7	0.7	0.57	79	18	3.0	LS
C08010393-009	SH17	188-212	0.35	28	7.9	1.2	1.5	0.8	0.70	79	17	4.0	LS
C08010393-010	SH17	212-236	0.31	29	7.9	1.1	1.2	0.7	0.66	80	16	4.0	LS
C08010393-011	SH17	236-240	0.41	25	7.9	1.5	1.7	0.8	0.66	77	17	6.0	LS
C08010393-012	SH18	0-24	0.74	42	7.1	4.3	2.8	0.7	0.37	32	45	23	L
C08010393-013	SH18	24-48	0.59	36	7.6	3.2	2.6	0.4	0.24	41	42	17	L
C08010393-014	SH18	48-72	0.73	33	7.7	2.7	4.3	0.3	0.18	49	38	13	L
C08010393-015	SH18	72-96	0.47	31	7.9	1.3	3.0	0.2	0.16	63	30	7.0	SL
C08010393-016	SH18	96-120	0.45	33	7.9	1.3	2.8	0.3	0.19	45	49	6.0	SL
C08010393-017	SH18	120-144	0.39	33	7.8	1.1	2.3	0.2	0.18	53	44	3.0	SL
C08010393-018	SH18	144-168	0.43	30	7.8	1.2	2.7	0.3	0.21	61	34	5.0	SL
C08010393-019	SH18	168-192	0.41	32	7.9	1	2.5	0.4	0.31	60	34	6.0	SL
C08010393-020	SH18	192-216	0.45	40	8.1	0.9	2.3	0.8	0.61	35	54	11	SiL
C08010393-021	SH18	216-240	0.43	33	8.0	0.8	2.1	1.0	0.84	61	32	7.0	SL
C08010393-022	SH20	0-18	0.98	56	7.1	4.5	4.2	0.6	0.29	19	32	49	C
C08010393-023	SH20	18-32	3.2	54	7.5	27.4	19.1	2.0	0.42	9.0	58	33	SiCL
C08010393-024	SH20	32-46	4.4	60	7.6	26.9	42.2	5.9	1.00	5.0	57	38	SiCL
C08010393-025	SH20	46-66	5.1	51	7.7	23.7	44.0	17.6	3.02	15	66	19	SiL
C08010393-026	SH20	66-72	4.9	58	7.6	12.6	18.5	8.6	2.19	10	60	30	SiCL
C08010393-027	SH20	72-96	6.9	56	7.8	21.6	53.1	40.3	6.60	9.0	70	21	SiL
C08010393-028	SH20	96-120	9.3	54	7.9	21.1	75.8	69.2	9.95	11	66	23	SiL
C08010393-029	SH20	120-134	8.7	53	7.9	21.6	65.0	63.1	9.59	4.0	69	27	SiCL
C08010393-030	SH20	134-158	7.7	61	7.9	22.1	48.9	53.2	8.94	< 1.0	71	29	SiCL
C08010393-031	SH20	158-182	6.8	60	7.8	22.6	38.1	45.8	8.31	2.0	73	25	SiL
C08010393-032	SH20	182-206	6.1	64	7.9	21.8	32.3	39.5	7.59	4.0	73	23	SiL
C08010393-033	SH20	206-230	5.8	55	7.9	17.0	28.3	39.9	8.38	14	61	25	SiL
C08010393-034	SH20	230-240	4.9	53	7.9	12.3	20.7	35.2	8.66	20	63	17	SiL
C08010393-035	SH22	0-12	1.4	45	6.8	7.7	4.9	0.9	0.35	20	57	23	SiL
C08010393-036	SH22	12-24	1.2	52	7.8	2.8	4.2	4.9	2.63	< 1.0	73	27	SiCL
C08010393-037	SH22	24-48	5.0	63	8.0	9.8	20.4	37.6	9.68	4.0	67	29	SiCL
C08010393-038	SH22	48-56	7.7	74	7.8	21.4	41.7	59.4	10.6	< 1.0	66	34	SiCL
C08010393-039	SH22	56-80	9.8	99	7.9	21.8	61.3	83.7	13.0	< 1.0	54	46	SiC
C08010393-040	SH22	80-96	9.6	72	8.2	18.6	53.1	86.8	14.5	2.0	69	29	SiCL

TRACK# C08010393

-7-

ENERGY LABORATORIES, INC. • 2393 Sall Creek Highway (82601) • P.O. Box 3258 • Casper, WY 82602
Toll Free 888.235.0515 • 307.235.0515 • Fax 307.234.1639 • casper@energylab.com • www.energylab.com

LABORATORY ANALYTICAL REPORT

Client: Golder Associates Inc
Project: South Heart Suit Overburden
Workorder: C08010393

Report Date: 02/04/08
Date Received: 12/26/07

Sample ID	Client Sample ID	Analysis	EC SatPst	Saturation	pH SatPst	Ca SatPst	Mg SatPst	Na SatPst	SAR	Sand	Silt	Clay	Texture
		Units	mmhos/cm	%	s_u_	meq/L	meq/L	meq/L	unitless	%	%	%	Results
		Depth	Results	Results	Results	Results	Results	Results	Results	Results	Results	Results	Results
C08010393-041	SH22	96-120	9.0	43	8.1	21.5	49.0	76.6	12.9	26	61	13	SiL
C08010393-042	SH22	120-144	8.2	69	8.1	21.4	42.2	67.1	11.9	8.0	63	29	SiCL
C08010393-043	SH22	144-158	6.6	80	8.0	17.7	28.5	51.9	10.8	< 1.0	65	35	SiCL
C08010393-044	SH22	158-170	5.9	61	8.0	14.8	22.9	47.0	10.8	16	63	21	SiL
C08010393-045	SH22	170-194	3.8	33	8.0	7.4	9.9	29.1	9.90	64	27	9.0	SL
C08010393-046	SH22	194-218	1.1	100	8.3	0.5	0.5	9.7	13.8	6.0	60	34	SiCL
C08010393-047	SH22	218-240	0.65	120	8.4	0.2	0.1	5.9	15.2	11	61	28	SiCL
C08010393-048	SH23	0-24	1.2	43	6.9	5.4	4.1	2.4	1.12	30	42	28	CL
C08010393-049	SH23	24-36	0.82	38	7.8	2.0	2.5	3.9	2.61	31	44	25	L
C08010393-050	SH23	36-60	2.2	140	8.8	0.5	1.4	20.3	21.2	18	54	28	SiCL
C08010393-051	SH23	60-82	5.5	110	8.2	4.0	11.0	52.5	19.2	20	53	27	SiCL
C08010393-052	SH23	82-96	8.4	96	7.8	20.7	29.5	76.1	15.2	12	57	31	SiCL
C08010393-053	SH23	96-120	3.1	190	8.3	0.9	2.2	28.3	22.4	6.0	59	35	SiCL
C08010393-054	SH23	120-144	3.6	200	8.3	2.2	3.9	33.1	19.0	14	51	35	SiCL
C08010393-055	SH23	144-168	2.8	250	8.3	1.2	2.1	25.5	19.7	3.0	59	38	SiCL
C08010393-056	SH23	168-182	2.3	210	8.4	0.4	0.8	21.9	27.9	3.0	59	38	SiCL
C08010393-057	SH23	182-188	3.0	210	8.3	1.4	2.2	27.8	20.6	12	54	34	SiCL
C08010393-058	SH23	188-196	3.4	170	8.3	1.9	2.6	32.7	21.7	20	48	32	SiCL
C08010393-059	SH23	196-202	2.5	200	8.4	0.9	1.3	23.7	23.0	18	48	34	SiCL
C08010393-060	SH23	202-224	2.7	110	8.6	0.6	1.0	26.8	30.1	31	41	28	CL
C08010393-061	SH23	224-240	3.0	100	8.5	0.6	1.3	28.2	29.0	36	40	24	L
C08010393-062	SH24	0-18	0.67	42	6.9	3.2	2.8	0.6	0.32	32	44	24	L
C08010393-063	SH24	18-42	0.66	46	8.4	0.6	1.6	4.6	4.49	12	58	30	SiCL
C08010393-064	SH24	42-66	0.68	43	8.6	0.5	1.5	5.1	5.08	12	69	19	SiL
C08010393-065	SH24	66-80	0.65	52	8.5	0.5	1.5	4.4	4.30	6.0	70	24	SiL
C08010393-066	SH24	80-96	0.97	55	8.5	0.7	2.1	6.8	5.76	18	52	30	SiCL
C08010393-067	SH24	96-104	0.89	65	8.4	0.7	2.0	6.0	5.17	8.0	58	34	SiCL
C08010393-068	SH24	104-128	2.2	41	8.3	2.2	6.0	14.9	7.34	24	60	16	SiL
C08010393-069	SH24	128-136	4.2	38	8.3	5.1	10.7	32.6	11.6	28	60	12	SiL
C08010393-070	SH24	136-158	1.8	110	8.2	0.9	1.4	15.2	14.1	4.0	58	38	SiCL
C08010393-071	SH24	158-182	1.5	130	8.4	0.5	0.5	13.1	18.5	10	64	26	SiL
C08010393-072	SH24	182-202	3.5	130	8.1	4.6	4.8	29.0	13.4	6.0	64	30	SiCL
C08010393-073	SH24	202-226	1.9	160	8.3	0.5	0.8	18.0	21.8	3.0	61	36	SiCL
C08010393-074	SH24	226-240	1.6	190	8.5	0.3	0.5	14.8	23.5	4.0	52	44	SiC
C08010393-075	SH25	0-12	1.5	43	7.1	8.7	3.0	0.9	0.38	24	54	22	SiL
C08010393-076	SH25	12-24	2.2	41	8.3	3.2	3.6	15.5	8.43	18	60	22	SiL
C08010393-077	SH25	24-48	8.4	82	8.3	20.1	28.6	77.5	15.7	3.0	54	43	SiC
C08010393-078	SH25	48-64	10	88	8.3	20.8	39.6	103	18.7	3.0	48	49	SiC
C08010393-079	SH25	64-74	11	80	8.1	21.8	40.6	117	21.0	3.0	55	42	SiC
C08010393-080	SH25	74-98	8.7	83	8.2	15.8	24.0	87.8	19.7	4.0	56	40	SiC

LABORATORY ANALYTICAL REPORT

Client: Golder Associates Inc
Project: South Heart Suit Overburden
Workorder: C08010393

Report Date: 02/04/08
Date Received: 12/26/07

Sample ID	Client Sample ID	Analysis	EC	Saturation	pH	Ca	Mg	Na	SAR	Sand	Silt	Clay	Texture
		Units	SatPst mmhos/cm	%	SatPst s_u	SatPst meq/L	SatPst meq/L	SatPst meq/L	unitless	%	%	%	Results
		Depth	Results	Results	Results	Results	Results	Results	Results	Results	Results	Results	Results
C08010393-081	SH25	98-114	5.7	85	8.4	4.5	9.0	53.3	20.6	12	67	21	SiL
C08010393-082	SH25	114-138	6.6	67	8.4	7.4	14.1	61.8	18.8	8.0	72	20	SiL
C08010393-083	SH25	138-162	2.7	120	8.4	0.9	1.4	24.8	22.8	7.0	63	30	SiCL
C08010393-084	SH25	162-186	1.4	140	8.7	0.2	0.2	12.7	26.1	6.0	68	26	SIL
C08010393-085	SH25	186-210	1.8	140	8.5	0.4	0.5	16.2	24.5	< 1.0	69	31	SiCL
C08010393-086	SH25	210-224	1.8	170	8.5	0.4	0.5	16.3	25.1	< 1.0	63	37	SiCL
C08010393-087	SH25	224-240	1.6	180	8.6	0.3	0.3	14.8	26.3	< 1.0	55	45	SiC
C08010393-088	SH26	0-12	1.2	74	7.5	4.2	4.9	3.5	1.63	8.0	46	46	SiC
C08010393-089	SH26	12-36	4.8	48	7.8	22.7	30.9	19.2	3.71	10	57	33	SiCL
C08010393-090	SH26	36-52	4.6	63	8.1	8.9	26.3	28.0	6.69	< 1.0	67	33	SiCL
C08010393-091	SH26	52-76	4.7	74	8.0	9.1	25.0	30.8	7.46	2.0	61	37	SiCL
C08010393-092	SH26	76-100	1.9	44	8.3	2.2	5.0	13.6	7.22	28	57	15	SiL
C08010393-093	SH26	100-124	1.8	68	8.5	1.7	4.1	14.2	8.36	< 1.0	72	28	SiCL
C08010393-094	SH26	124-148	1.9	78	8.3	1.6	3.2	16.3	10.5	4.0	63	33	SiCL
C08010393-095	SH26	148-172	1.9	72	8.2	1.6	3.3	15.4	9.87	3.0	71	26	SiL
C08010393-096	SH26	172-196	5.5	61	7.8	16.8	19.1	40.5	9.55	18	59	23	SiL
C08010393-097	SH26	196-220	3.9	110	8.0	5.9	8.3	30.6	11.5	< 1.0	63	37	SiCL
C08010393-098	SH26	220-240	6.4	110	7.7	21.1	22.4	48.0	10.3	< 1.0	53	47	SiC
C08010393-099	SH27	0-24	0.66	54	6.3	2.2	2.6	1.2	0.76	6.0	55	39	SiCL
C08010393-100	SH27	24-40	0.89	58	7.8	3.0	4.1	1.9	0.99	8.0	47	45	SiC
C08010393-101	SH27	40-60	0.64	48	8.1	1.3	2.7	2.1	1.52	14	54	32	SiCL
C08010393-102	SH27	60-78	0.89	64	8.3	1.1	3.4	4.6	3.09	< 1.0	58	42	SiC
C08010393-103	SH27	78-88	1.1	120	8.3	1.3	4.1	6.2	3.74	< 1.0	42	58	SiC
C08010393-104	SH27	88-110	2.5	73	7.8	5.7	15.6	9.4	2.89	< 1.0	61	39	SiCL
C08010393-105	SH27	110-134	4.6	83	7.8	20.9	38.6	13.4	2.46	< 1.0	64	36	SiCL
C08010393-106	SH27	134-146	3.7	76	7.8	10.9	25.1	13.8	3.24	18	51	31	SiCL
C08010393-107	SH27	146-170	4.1	46	7.7	14.2	29.5	14.7	3.14	60	17	23	SCL
C08010393-108	SH27	170-194	2.7	47	7.9	6.9	15.0	11.3	3.42	60	17	23	SCL
C08010393-109	SH27	194-218	3.4	44	7.6	12.1	23.5	12.3	2.92	62	17	21	SCL
C08010393-110	SH27	218-240	2.9	45	7.7	8.9	19.3	10.1	2.70	61	18	21	SCL
C08010393-111	SH28	0-12	1.2	43	6.7	6.6	4.4	1.5	0.62	26	46	28	CL
C08010393-112	SH28	12-24	0.64	43	7.7	3.2	1.6	2.1	1.37	38	40	22	L
C08010393-113	SH28	24-48	0.72	56	8.0	1.4	1.1	4.9	4.38	4.0	59	37	SiCL
C08010393-114	SH28	48-68	1.0	74	7.9	1.8	1.8	7.3	5.48	< 1.0	56	44	SiC
C08010393-115	SH28	68-82	1.8	49	8.1	1.8	2.2	15.6	11.0	22	56	22	SiL
C08010393-116	SH28	82-100	4.2	55	8.1	4.7	8.8	38.8	14.9	12	63	25	SiL
C08010393-117	SH28	100-106	1.9	130	8.2	0.8	1.4	18.3	17.3	< 1.0	51	49	SiC
C08010393-118	SH28	106-120	1.8	130	8.2	0.8	1.1	16.9	17.6	< 1.0	55	45	SiC
C08010393-119	SH28	120-144	3.1	110	7.9	3.4	4.3	28.1	14.3	10	63	27	SiCL
C08010393-120	SH28	144-168	4.0	110	7.9	5.8	7.2	36.9	14.5	14	60	26	SIL

TRACK# C08010393



ENERGY LABORATORIES, INC. • 2393 Salt Creek Highway (82601) • P.O. Box 3258 • Casper, WY 82602
 Toll Free 888.235.0515 • 307.235.0515 • Fax 307.234.1639 • casper@energylab.com • www.energylab.com

LABORATORY ANALYTICAL REPORT

Client: Golder Associates Inc
Project: South Heart Suit Overburden
Workorder: C08010393

Report Date: 02/04/08
Date Received: 12/26/07

Sample ID	Client Sample ID	Analysis	EC	Saturation	pH	Ca	Mg	Na	SAR	Sand	Silt	Clay	Texture
		Units	mmhos/cm	%	s_u_	meq/L	meq/L	meq/L	unitless	%	%	%	Results
	Depth	Results	Results	Results	Results	Results	Results	Results	Results	Results	Results	Results	Results
C08010393-121	SH28	168-192	4.7	110	8.1	6.3	8.0	43.2	16.2	2.0	67	31	SiCL
C08010393-122	SH28	192-216	2.7	150	8.4	1.0	1.8	25.9	21.9	1.0	66	33	SiCL
C08010393-123	SH28	216-240	2.3	200	8.5	0.6	1	21.6	24.6	< 1.0	60	40	SiC
C08010393-124	SH29	0-24	0.63	72	7.7	2.3	2.4	2.0	1.32	4.0	48	48	SiC
C08010393-125	SH29	24-44	3.9	61	7.7	27.7	21.7	10.1	2.04	2.0	43	55	SiC
C08010393-126	SH29	44-68	5.0	49	8.0	19.5	30.0	27.8	5.59	6.0	65	29	SiCL
C08010393-127	SH29	68-84	4.6	64	7.9	10.7	18.5	32.8	8.59	< 1.0	63	37	SiCL
C08010393-128	SH29	84-108	4.6	84	8.2	3.6	9.6	43.6	17.0	< 1.0	55	45	SiC
C08010393-129	SH29	108-132	3.2	110	8.4	1.3	3.5	30.1	19.4	< 1.0	70	30	SiCL
C08010393-130	SH29	132-156	3.5	86	8.3	1.6	3.4	33.4	21.3	8.0	66	26	SIL
C08010393-131	SH29	156-180	2.4	170	8.4	0.9	1.6	22.3	20.2	< 1.0	49	51	SiC
C08010393-132	SH29	180-204	5.6	120	7.9	14.2	13.9	48.3	12.9	2.0	68	30	SiCL
C08010393-133	SH29	204-228	4.7	130	8.1	6.2	8.1	42.9	16.0	7.0	65	28	SiCL
C08010393-134	SH29	228-240	3.3	160	8.3	1.8	2.9	30.8	20.1	< 1.0	69	31	SiCL
C08010393-135	SH40	0-24	5.1	60	7.7	12.4	31.2	31.1	6.66	< 1.0	55	45	SiC
C08010393-136	SH40	24-48	4.6	57	8.1	5.8	20.5	34.1	9.41	4.0	57	39	SiCL
C08010393-137	SH40	48-72	4.0	43	8.4	3.3	11.1	33.4	12.4	32	40	28	CL
C08010393-138	SH40	72-96	2.1	34	8.5	1.0	2.5	18.3	13.8	48	35	17	L
C08010393-139	SH40	96-112	1.9	38	8.5	0.8	2.1	17.0	14.0	38	42	20	L
C08010393-140	SH40	112-136	1.2	37	8.8	0.3	0.7	11.4	15.6	43	38	19	L
C08010393-141	SH40	136-160	1.0	31	8.5	0.4	0.6	9.6	13.4	69	18	13	SL
C08010393-142	SH40	160-168	1.0	31	8.5	0.4	0.8	9.5	12.4	65	23	12	SL
C08010393-143	SH40	168-192	0.70	33	8.6	0.3	0.4	6.4	11.3	77	13	10	SL
C08010393-144	SH40	192-216	0.74	32	8.6	0.3	0.4	6.6	11.6	79	12	9.0	SL
C08010393-145	SH40	216-240	0.82	31	8.5	0.4	0.5	7.6	11.6	81	11	8.0	LS
C08010393-146	SH41	0-24	0.62	50	7.8	1.8	1.6	3.6	2.75	10	60	30	SiCL
C08010393-147	SH41	24-48	5.9	55	8.3	4.3	16.7	60.0	18.5	20	50	30	SiCL
C08010393-148	SH41	48-72	8.2	56	8.5	6.1	31.8	85.5	19.6	31	41	28	CL
C08010393-149	SH41	72-96	9.3	68	8.5	6.3	35.9	102	22.3	21	49	30	CL
C08010393-150	SH41	96-120	7.8	74	8.6	3.0	18.4	86.7	26.5	27	47	26	L
C08010393-151	SH41	120-132	12	63	8.6	16.2	48.3	142	24.9	25	47	28	CL
C08010393-152	SH41	132-156	11	97	8.3	23.6	50.6	122	20.0	< 1.0	62	38	SiCL
C08010393-153	SH41	156-180	11	140	7.9	23.2	49.6	113	18.7	< 1.0	31	69	C
C08010393-154	SH41	180-202	11	110	8.0	21.6	47.8	115	19.5	< 1.0	60	40	SiC
C08010393-155	SH41	202-226	11	96	8.0	23.1	50.8	116	19.0	11	55	34	SiCL
C08010393-156	SH41	226-240	8.6	110	7.9	10.7	34.0	87.3	18.4	3.0	58	39	SiCL
C08010393-157	SH43	0-24	0.46	70	7.7	1	1	3.1	3.15	3.0	54	43	SiC
C08010393-158	SH43	24-48	1.3	93	8.4	0.7	1.6	11.4	10.6	1.0	48	51	SiC
C08010393-159	SH43	48-72	3.6	86	8.3	4.9	12.5	28.8	9.75	< 1.0	52	48	SiC
C08010393-160	SH43	72-96	4.2	70	8.2	8.2	15.9	31.3	9.03	7.0	52	41	SiC

TPACK# C08010393
-10-

ENERGY LABORATORIES, INC. • 2393 Salt Creek Highway (82601) • P.O. Box 3258 • Casper, WY 82602
Toll Free 888.235.0515 • 307.235.0515 • Fax 307.234.1639 • casper@energylab.com • www.energylab.com



LABORATORY ANALYTICAL REPORT

Client: Golder Associates Inc
Project: South Heart Suit Overburden
Workorder: C08010393

Report Date: 02/04/08
Date Received: 01/02/08

Sample ID	Client Sample ID	Analysis	EC	Saturation	pH	Ca	Mg	Na	SAR	Sand	Silt	Clay	Texture
		Units	SatPst	%	SatPst	meq/L	meq/L	meq/L	unitless	%	%	%	Results
		Depth	Results	Results	Results	Results	Results	Results	Results	Results	Results	Results	Results
C08010393-161	SH43	96-120	3.1	75	8.1	4.4	8.2	24.3	9.65	7.0	51	42	SiC
C08010393-162	SH43	120-144	2.5	46	8.0	3.0	5.4	20.1	9.82	33	38	29	CL
C08010393-163	SH43	144-168	1.5	46	8.3	0.9	1.6	13.0	11.6	37	43	20	L
C08010393-164	SH43	168-182	1.7	54	8.2	1.4	2.7	13.9	9.72	27	51	22	SIL
C08010393-165	SH43	182-206	1.1	44	8.3	1	1.3	8.3	7.84	39	44	17	L
C08010393-166	SH43	206-216	1.1	58	8.3	0.9	1.5	8.3	7.74	28	54	18	SIL
C08010393-167	SH43	216-240	0.67	32	8.2	0.4	0.8	5.2	6.86	71	19	10	SL
C08010393-168	SH45	0-24	0.47	33	7.3	2.8	1.7	0.5	0.35	51	31	18	L
C08010393-169	SH45	24-48	0.55	39	7.8	1.8	2.6	1.2	0.82	51	26	23	SCL
C08010393-170	SH45	48-72	0.46	30	8.0	0.9	2.5	1.2	0.89	79	14	7.0	LS
C08010393-171	SH45	72-96	1.2	29	8.3	1.4	3.2	6.9	4.57	76	15	9.0	SL
C08010393-172	SH45	96-102	3.0	60	8.0	2.3	8.2	22.6	9.88	41	30	29	CL
C08010393-173	SH45	102-126	1.3	120	8.5	0.4	1.2	10.4	11.6	13	58	29	SiCL
C08010393-174	SH45	126-150	1.7	120	8.2	0.8	2.2	13.8	11.2	2.0	60	38	SiCL
C08010393-175	SH45	150-174	1.7	150	8.1	0.9	2.1	13.8	11.2	7.0	30	63	C
C08010393-176	SH45	174-198	2.6	130	7.9	3.6	5.8	18.8	8.65	7.0	56	37	SiCL
C08010393-177	SH45	198-222	2.1	130	7.9	2.0	3.1	15.7	9.85	5.0	62	33	SiCL
C08010393-178	SH45	222-240	3.4	87	7.8	5.8	8.0	25.4	9.67	29	46	25	L
C08010393-179	SH46	0-24	3.5	84	8.0	4.9	10.3	25.5	9.26	9.0	48	43	SiC
C08010393-180	SH46	24-48	6.8	78	8.0	20.0	33.9	48.0	9.24	5.0	52	43	SiC
C08010393-181	SH46	48-72	5.7	88	8.2	11.2	21.2	45.3	11.3	1.0	53	46	SiC
C08010393-182	SH46	72-96	6.6	87	8.1	20.3	26.1	48.7	10.1	3.0	49	48	SiC
C08010393-183	SH46	96-120	6.5	84	8.0	20.3	25.0	48.0	10.1	1.0	50	49	SiC
C08010393-184	SH46	120-144	6.2	90	7.8	21.1	24.1	44.0	9.25	1.0	48	51	SiC
C08010393-185	SH46	144-166	6.1	88	7.9	21.7	24.2	42.2	8.81	< 1.0	53	47	SiC
C08010393-186	SH46	166-190	6.1	80	7.9	21.4	24.0	42.6	8.94	3.0	56	41	SiC
C08010393-187	SH46	190-194	6.0	76	7.9	21.2	23.3	40.4	8.57	13	49	38	SiCL
C08010393-188	SH46	194-216	5.4	29	7.8	23.1	20.0	32.8	7.06	67	22	11	SL
C08010393-189	SH46	216-240	5.6	31	7.8	23.8	20.4	35.0	7.43	63	25	12	SL
C08010393-190	SH17	68-92	0.46	32	8.1	1.2	2.4	0.5	0.40	69	26	5.0	SL

ENERGY LABORATORIES, INC. • 2393 Salt Creek Highway (82601) • P.O. Box 3258 • Casper, WY 82602
 Toll Free 888.235.0515 • 307.235.0515 • Fax 307.234.1639 • casper@energylab.com • www.energylab.com

TRACK# C08010393
 -11-