

ANALYTICAL REPORT

AMEC Earth & Environmental
5681-70 Street
Edmonton, AB T6B-3P6

Date Received: 2009/06/26
Date Sampled: 2009/06/25
Report Date: 2009/07/17

Soil Analysis

Attention: Turchenek, Larry

Project No. CE03810.07.2000

File No.: EC-56411

Analyst	Date of Analysis (yyyy/m/d)	Analytical Parameter	Units	Reference Method	MDL	09-6618 RA01-1	09-6618-D RA01-1 Duplicate	09-6619 RA01-2	09-6620 RA02-1	09-6621 RA3-1
SM	2009/07/09	pH (1:2 CaCl2)	pH units	McKeague 3.11	0.01	2.72	---	3.54	2.82	3.32
JF	2009/07/13	Cation Exchange Capacity (CEC)	cmol/kg	McKeague 3.32	0.5	44.3	---	25.7	41.0	43.8
LL	2009/07/13	Calcium (Exchangeable)	cmol/kg	McKeague 3.32	0.01	1.82	1.84	0.39	4.28	2.09
LL	2009/07/13	Magnesium (Exchangeable)	cmol/kg	McKeague 3.32	0.01	1.15	1.24	< 0.01	0.94	0.12
LL	2009/07/13	Sodium (Exchangeable)	cmol/kg	McKeague 3.32	0.01	0.04	0.04	0.04	0.04	< 0.01
LL	2009/07/13	Potassium (Exchangeable)	cmol/kg	McKeague 3.32	0.01	0.43	0.44	0.04	0.36	0.63
TY	2009/07/06	Texture - Sand	%	McKeague 2.12	1	---	---	54	---	---
TY	2009/07/06	Texture - Silt	%	McKeague 2.12	1	---	---	33	---	---
TY	2009/07/06	Texture - Clay	%	McKeague 2.12	1	---	---	13	---	---

*Note: pH 1:2 CaCl2 samples 09-6618, 09-6620, 09-6621, 09-6622, 09-6625, 09-6626, 09-6629, 09-6633, 09-6634, 09-6635 were extracted at 1:10, and sample 09-6637 was extracted at 1:4 ratio due to sample matrix.

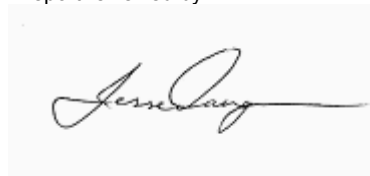
*Note: Samples 09-6622, 09-6623, 09-6634, 09-6635 high in organic matter. Texture-Sand fraction is not representative.

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MDL - Method Detection Limit

Report reviewed by:



Jesse Dang, B.Sc.
 Manager
 Laboratory Services



Charlene Rollheiser
 Director of QA/QC
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SM	2009/07/09	pH (1:2 CaCl2)	pH units	McKeague 3.11	0.01	3.54	3.66	3.77	3.22	3.60
JF	2009/07/13	Cation Exchange Capacity (CEC)	cmol/kg	McKeague 3.32	0.5	61.2	15.6	21.2	44.1	21.1
LL	2009/07/13	Calcium (Exchangeable)	cmol/kg	McKeague 3.32	0.01	0.15	0.08	0.09	2.31	0.28
LL	2009/07/13	Magnesium (Exchangeable)	cmol/kg	McKeague 3.32	0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
LL	2009/07/13	Sodium (Exchangeable)	cmol/kg	McKeague 3.32	0.01	< 0.01	< 0.01	0.03	0.02	0.01
LL	2009/07/13	Potassium (Exchangeable)	cmol/kg	McKeague 3.32	0.01	0.15	0.03	0.03	0.40	0.11
TY	2009/07/06	Texture - Sand	%	McKeague 2.12	1	76	72	64	---	66
TY	2009/07/06	Texture - Silt	%	McKeague 2.12	1	19	23	25	---	31
TY	2009/07/06	Texture - Clay	%	McKeague 2.12	1	6	6	11	---	3

*Note: pH 1:2 CaCl2 samples 09-6618, 09-6620, 09-6621, 09-6622, 09-6625, 09-6626, 09-6629, 09-6633, 09-6634, 09-6635 were extracted at 1:10, and sample 09-6637 was extracted at 1:4 ratio due to sample matrix.

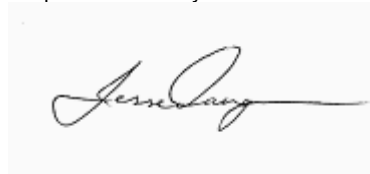
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Analyst	Date of Analysis (yyyy/m/d)	Analytical Parameter	Units	Reference Method	MDL	09-6627 RA4-3	09-6628 RA4-4	09-6629 RA5-1	09-6630 RA5-2	09-6631 RA5-3
SM	2009/07/09	pH (1:2 CaCl2)	pH units	McKeague 3.11	0.01	3.72	3.78	2.96	3.07	3.23
JF	2009/07/13	Cation Exchange Capacity (CEC)	cmol/kg	McKeague 3.32	0.5	35.2	18.6	29.7	28.1	21.0
LL	2009/07/13	Calcium (Exchangeable)	cmol/kg	McKeague 3.32	0.01	0.22	0.34	1.79	0.18	0.04
LL	2009/07/13	Magnesium (Exchangeable)	cmol/kg	McKeague 3.32	0.01	< 0.01	< 0.01	0.50	0.10	< 0.01
LL	2009/07/13	Sodium (Exchangeable)	cmol/kg	McKeague 3.32	0.01	< 0.01	0.05	0.05	0.02	0.02
LL	2009/07/13	Potassium (Exchangeable)	cmol/kg	McKeague 3.32	0.01	0.05	0.07	0.64	0.10	0.05
TY	2009/07/06	Texture - Sand	%	McKeague 2.12	1	58	54	---	68	64
TY	2009/07/06	Texture - Silt	%	McKeague 2.12	1	36	38	---	21	30
TY	2009/07/06	Texture - Clay	%	McKeague 2.12	1	6	8	---	11	6

*Note: pH 1:2 CaCl2 samples 09-6618, 09-6620, 09-6621, 09-6622, 09-6625, 09-6626, 09-6629, 09-6633, 09-6634, 09-6635 were extracted at 1:10, and sample 09-6637 was extracted at 1:4 ratio due to sample matrix.

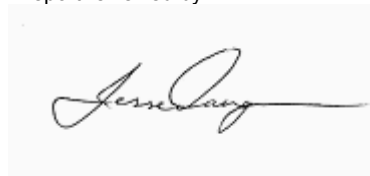
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Analyst	Date of Analysis (yyyy/m/d)	Analytical Parameter	Units	Reference Method	MDL	09-6632 RA5-4	09-6633 RA6-1	09-6633-D RA6-1 Duplicate	09-6634 RA6-2	09-6635 RA6-3
SM	2009/07/09	pH (1:2 CaCl2)	pH units	McKeague 3.11	0.01	4.35	4.64	---	4.10	4.18
JF	2009/07/13	Cation Exchange Capacity (CEC)	cmol/kg	McKeague 3.32	0.5	19.2	20.8	---	13.3	10.1
LL	2009/07/13	Calcium (Exchangeable)	cmol/kg	McKeague 3.32	0.01	0.58	2.76	2.65	1.23	0.76
LL	2009/07/13	Magnesium (Exchangeable)	cmol/kg	McKeague 3.32	0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
LL	2009/07/13	Sodium (Exchangeable)	cmol/kg	McKeague 3.32	0.01	0.06	0.02	0.02	0.04	< 0.01
LL	2009/07/13	Potassium (Exchangeable)	cmol/kg	McKeague 3.32	0.01	0.02	0.40	0.42	0.06	0.02
TY	2009/07/06	Texture - Sand	%	McKeague 2.12	1	71	---	---	75	82
TY	2009/07/06	Texture - Silt	%	McKeague 2.12	1	21	---	---	19	12
TY	2009/07/06	Texture - Clay	%	McKeague 2.12	1	8	---	---	6	6

*Note: pH 1:2 CaCl2 samples 09-6618, 09-6620, 09-6621, 09-6622, 09-6625, 09-6626, 09-6629, 09-6633, 09-6634, 09-6635 were extracted at 1:10, and sample 09-6637 was extracted at 1:4 ratio due to sample matrix.

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Analyst	Date of Analysis (yyyy/m/d)	Analytical Parameter	Units	Reference Method	MDL	09-6636 RA6-4	09-6637 RA6-5	09-6638 RA7-1	09-6639 RA7-2	09-6639-D RA7-2 Duplicate
SM	2009/07/09	pH (1:2 CaCl2)	pH units	McKeague 3.11	0.01	4.08	4.13	3.82	4.16	---
JF	2009/07/13	Cation Exchange Capacity (CEC)	cmol/kg	McKeague 3.32	0.5	11.3	---	18.1	11.8	---
LL	2009/07/13	Calcium (Exchangeable)	cmol/kg	McKeague 3.32	0.01	0.72	---	3.16	0.91	---
LL	2009/07/13	Magnesium (Exchangeable)	cmol/kg	McKeague 3.32	0.01	< 0.01	---	0.24	< 0.01	---
LL	2009/07/13	Sodium (Exchangeable)	cmol/kg	McKeague 3.32	0.01	0.03	---	0.05	0.05	---
LL	2009/07/13	Potassium (Exchangeable)	cmol/kg	McKeague 3.32	0.01	< 0.01	---	0.13	0.03	---
TY	2009/07/06	Texture - Sand	%	McKeague 2.12	1	43	58	---	56	56
TY	2009/07/06	Texture - Silt	%	McKeague 2.12	1	51	33	---	38	38
TY	2009/07/06	Texture - Clay	%	McKeague 2.12	1	6	10	---	6	6

*Note: pH 1:2 CaCl2 samples 09-6618, 09-6620, 09-6621, 09-6622, 09-6625, 09-6626, 09-6629, 09-6633, 09-6634, 09-6635 were extracted at 1:10, and sample 09-6637 was extracted at 1:4 ratio due to sample matrix.

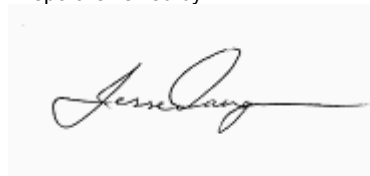
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Analyst	Date of Analysis (yyyy/m/d)	Analytical Parameter	Units	Reference Method	MDL	09-6640 RA7-3	09-6641 RA7-4
SM	2009/07/09	pH (1:2 CaCl2)	pH units	McKeague 3.11	0.01	4.24	4.35
JF	2009/07/13	Cation Exchange Capacity (CEC)	cmol/kg	McKeague 3.32	0.5	6.8	---
LL	2009/07/13	Calcium (Exchangeable)	cmol/kg	McKeague 3.32	0.01	0.49	---
LL	2009/07/13	Magnesium (Exchangeable)	cmol/kg	McKeague 3.32	0.01	< 0.01	---
LL	2009/07/13	Sodium (Exchangeable)	cmol/kg	McKeague 3.32	0.01	< 0.01	---
LL	2009/07/13	Potassium (Exchangeable)	cmol/kg	McKeague 3.32	0.01	0.02	---
TY	2009/07/06	Texture - Sand	%	McKeague 2.12	1	76	97
TY	2009/07/06	Texture - Silt	%	McKeague 2.12	1	21	1
TY	2009/07/06	Texture - Clay	%	McKeague 2.12	1	3	2

*Note: pH 1:2 CaCl2 samples 09-6618, 09-6620, 09-6621, 09-6622, 09-6625, 09-6626, 09-6629, 09-6633, 09-6634, 09-6635 were extracted at 1:10, and sample 09-6637 was extracted at 1:4 ratio due to sample matrix.

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Quality Control Standard

Attention: Turchenek, Larry

Project No. CE03810.07.2000

File No.: EC-56411

Analyst	Date of Analysis (yyyy/m/d)	Analytical Parameter	Units	Reference Method	MDL	Analyzed Value	Advisory Range	Target Value	Reference No.
SM	2009/07/09	pH (1:2 CaCl2)	pH units	McKeague 3.11	0.01	7.09	7.07-7.41	7.24	SS#13
JF	2009/07/13	Cation Exchange Capacity (CEC)	cmol/kg	McKeague 3.32	0.5	12.9	11.49-15.95	13.72	SS#14
LL	2009/07/13	Calcium (Exchangeable)	cmol/kg	McKeague 3.32	0.01	30.2	24.09-32.30	28.20	SS#13
LL	2009/07/13	Magnesium (Exchangeable)	cmol/kg	McKeague 3.32	0.01	5.07	4.02-5.23	4.62	SS#13
LL	2009/07/13	Sodium (Exchangeable)	cmol/kg	McKeague 3.32	0.01	2.61	2.05-3.70	2.87	SS#13
LL	2009/07/13	Potassium (Exchangeable)	cmol/kg	McKeague 3.32	0.01	0.50	0.36-0.56	0.46	SS#13
TY	2009/07/06	Texture - Sand	%	McKeague 2.12	1	44	43.16-48.51	45.83	SS#14
TY	2009/07/06	Texture - Silt	%	McKeague 2.12	1	28	23.75-28.08	25.92	SS#14
TY	2009/07/06	Texture - Clay	%	McKeague 2.12	1	28	26.52-29.98	28.25	SS#14

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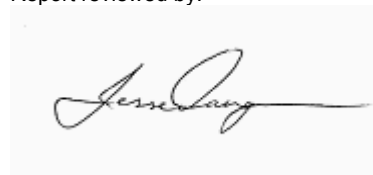
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Analyst	Date of Analysis (yyyy/m/d)	Analytical Parameter	Units	Reference Method	MDL	Analyzed Value	Advisory Range	Target Value	Reference No.
SM	2009/07/09	Carbon (Total Organic)		--					
		Total Nitrogen		--					

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