

# **APPENDIX A**

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## **Field Sampling Report**

# North Jackson Company

## Field Sampling Report

Project Name: GW Discharge Permit Operational

Contact: North Jackson Company  
1004 Harbor Hills Drive, Suite 102  
Marquette, Michigan 49855  
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### Summary of Sampling Activities

Sampling Date(s): 5/13/08, 5/14/08 and 5/15/08

Activities: Collected groundwater samples at QAL008A/D, QAL026A/D, QAL029A/D, QAL050A, QAL051D, QAL052A, QAL053A, QAL055A, QAL056A and QAL057A/D.

Unable to collect a sample from QAL051A because there was insufficient water.

Collected QA/QC samples, including 3 masked duplicates and 3 field (atmospheric) blanks.

### Field Report Attachments

Field Analytical Data Summary	Yes
Flow Measurement	No
Water Sampling Log	14
Chain of Custody Numbers	5-13-08, 5-14-08, 20080515

### Laboratory Analysis

TriMatrix - Metals/Inorganics, LL Hg, major cations & anions

Sampler Name(s): Curt Sheffield (CLS), Chris Cantway (CEC), and Richard Eagle (RRE)

## North Jackson Company Groundwater Field Data Summary

**Project Name:** GW Discharge Permit Operational

Location	Sample ID	KEX ID	Sampling Date	Temp (°C)	Spec Cond (µmhos/cm @ 25°C)	pH (SU)	DO (ppm)	ORP (mV)	Turbidity (NTU)
QAL008A	QALM008A	EAG-1001723	5/13/08	8.4	55	9.4	11.4	86	<1
QAL008D	QALM008D	EAG-1001724	5/13/08	8.9	100	8.8	6.0	90	<1
QAL026A	QALM026A	EAG-1001708	5/15/08	11	31	7.0	10.7	102	8
QAL026D	QALM026D	EAG-1001709	5/13/08	8.0	61	9.2	11.2	114	<1
QAL029A	QALM029A	EAG-1001725	5/14/08	8.9	53	8.4	11.2	111	24
QAL029D	QALM029D	EAG-1001726	5/15/08	9.3	118	8.7	4.0	117	62
QAL050A	QALM050A	EAG-1001710	5/13/08	8.6	76	7.5	10.5	-30	<1
QAL051A	QALM051A	EAG-1001711	No sample	i	i	i	i	i	i
QAL051D	QALM051D	EAG-1001712	5/13/08	9.0	117	7.4	0.2	-183	<1
QAL052A	QALM052A	EAG-1001713	5/14/08	16	116	8.1	4.0	-57	86
QAL053A	QALM053A	EAG-1001714	5/13/08	7.7	113	8.8	2.7	76	<1
QAL055A	QALM055A	EAG-1001715	5/14/08	8.2	75	9.1	9.5	47	<1
QAL056A	QALM056A	EAG-1001716	5/13/08	8.3	57	9.3	11.6	67	<1
QAL057A	QALM057A	EAG-1001717	5/13/08	7.8	66	7.8	11.3	59	1
QAL057D	QALM057D	EAG-1001718	5/13/08	7.9	104	7.6	4.3	29	<1

i Insufficient water to collect field parameters or sample.

## North Jackson Company Quality Control Sampling Summary

**Project Name:** GW Discharge Permit Operational

<b>Sample ID</b>	<b>Sampling Date</b>	<b>Description</b>
DUPM001 (EAG-1001719)	5/13/08	Masked duplicate (QALM053A)
DUPM002 (EAG-1001721)	5/14/08	Masked duplicate (QALM055A)
DUPM003 (EAG-1001727)	5/15/08	Masked duplicate (QALM029D)
FBKM001 (EAG-1001720)	5/13/08	Field blank
FBKM002 (EAG-1001722)	5/14/08	Field blank
FBKM003 (EAG-1001728)	5/15/08	Field blank

## North Jackson Company Groundwater Sampling Log

**Proj. Name:** GW Discharge Permit Operational  
**Weather:** Partly sunny, ~50°s F  
**Location:** QAL008A  
**Sample ID:** QALM008A  
**KEX ID:** EAG-1001723

**Date:** 5/13/08  
**Sampler(s):** CLS/CEC  
**Sampling time:** 1325

**Odor:** None  
**Appearance:** Clear

**Temperature (°C):** 8.4  
**Spec. Cond. (µmhos/cm @ 25°C):** 55  
**Conductivity (µmhos):** 38  
**pH (SU):** 9.4  
**D.O. (ppm):** 11.4  
**ORP(mV):** 86  
**Turbidity (NTU):** <1

**Description of measuring point**

Mark on riser

Total depth: 93 ft  
 Approx. Depth to water: 81 ft  
 Water column in well: 12 ft  
 Volume/foot: 0.16 gal/ft  
 Well volume: 2 gal

Well diameter (in): 2  
 Gallons purged  
 prior to sampling: ~30

**Evacuation method:** Dedicated submersible pump with dedicated tubing

Tag	# Collected	Bottle	Preservative	Parameter	Comment
None	1	500 ml plastic	None	Various	Unfiltered
None	1	500 ml plastic	HNO3	Metals	Unfiltered
None	1	500 ml plastic	H2SO4	Ammonia	Unfiltered
None	2	150 ml glass	None	Mercury	Unfiltered

**Photographs:** None

**Remarks:** Well condition excellent. Pump rate ~1 gpm.

Time	Spec. Cond. (µmhos/cm @ 25°C)	pH (SU)	D.O. (ppm)	ORP (mV)	Turbidity (NTU)	Volume Removed (gal)	Depth to Water (ft)
1250							81.41
1255	55	9.4	11.3	73	<1	5	81.91
1300	55	9.4	11.3	75	<1	10	81.90
1305	55	9.4	11.3	79	<1	15	81.90
1310	55	9.4	11.4	81	<1	20	81.90
1315	55	9.4	11.4	84	<1	25	81.90
1320	55	9.4	11.4	86	<1	30	81.90

## North Jackson Company Groundwater Sampling Log

**Proj. Name:** GW Discharge Permit Operational  
**Weather:** Partly cloudy, windy, ~50°s F  
**Location:** QAL008D  
**Sample ID:** QALM008D  
**KEX ID:** EAG-1001724

**Date:** 5/13/08  
**Sampler(s):** CLS/CEC  
**Sampling time:** 1205

**Odor:** None  
**Appearance:** Clear

**Temperature (°C):** 8.9  
**Spec. Cond. (µmhos/cm @ 25°C):** 100  
**Conductivity (µmhos):** 69  
**pH (SU):** 8.8  
**D.O. (ppm):** 6.0  
**ORP(mV):** 90  
**Turbidity (NTU):** <1

**Description of measuring point**

Mark on riser

**Total depth:** 123 ft  
**Approx. Depth to water:** 115 ft  
**Water column in well:** 8 ft  
**Volume/foot:** 0.26 gal/ft  
**Well volume:** 2 gal

**Well diameter (in):** 2.5  
**Gallons purged prior to sampling:** ~33

**Evacuation method:** Dedicated submersible pump with dedicated tubing

Tag	# Collected	Bottle	Preservative	Parameter	Comment
None	1	500 ml plastic	None	Various	Unfiltered
None	2	500 ml plastic	HNO3	Metals	Unfiltered/Filtered
None	1	500 ml plastic	H2SO4	Ammonia	Unfiltered
None	2	150 ml glass	None	Mercury	Unfiltered

**Photographs:** None

**Remarks:** Well condition excellent. Pump rate ~0.75 gpm.

Time	Spec. Cond. (µmhos/cm @ 25°C)	pH (SU)	D.O. (ppm)	ORP (mV)	Turbidity (NTU)	Volume Removed (gal)	Depth to Water (ft)
1116							114.56
1140	100	8.8	6.0	88	<1	18	116.95
1145	100	8.8	6.0	89	<1	22	116.98
1150	100	8.8	6.0	89	<1	26	116.99
1155	100	8.8	6.0	89	<1	29	116.99
1200	100	8.8	6.0	90	<1	33	116.99

## North Jackson Company Groundwater Sampling Log

**Proj. Name:** GW Discharge Permit Operational  
**Weather:** Clear, ~50°s F  
**Location:** QAL026A  
**Sample ID:** QALM026A  
**KEX ID:** EAG-1001708

**Date:** 5/15/08  
**Sampler(s):** CLS/CEC  
**Sampling time:** 1134

**Odor:** None  
**Appearance:** Clear

**Temperature (°C):** 11  
**Spec. Cond. (µmhos/cm @ 25°C):** 31  
**Conductivity (µmhos):** 26  
**pH (SU):** 7.0  
**D.O. (ppm):** 10.7  
**ORP(mV):** 102  
**Turbidity (NTU):** 8

**Description of measuring point**

**Mark on riser**

Total depth: 48 ft  
 Approx. Depth to water: 44 ft  
 Water column in well: 5 ft  
 Volume/foot: 0.16 gal/ft  
 Well volume: 0.8 gal

Well diameter (in): 2  
 Gallons purged prior to sampling: ~3.5

**Evacuation method:** Dedicated submersible pump with dedicated tubing

Tag	# Collected	Bottle	Preservative	Parameter	Comment
None	1	500 ml plastic	None	Various	Unfiltered
None	1	500 ml plastic	HNO3	Metals	Unfiltered
None	1	500 ml plastic	H2SO4	Ammonia	Unfiltered
None	2	150 ml glass	None	Mercury	Unfiltered

**Photographs:** None

**Remarks:** Well condition excellent. Pump rate ~0.05 gpm.

Time	Spec. Cond. (µmhos/cm @ 25°C)	pH (SU)	D.O. (ppm)	Turbidity (NTU)	Volume Removed (gal)	Depth to Water (ft)
1025						43.52
1035	34	7.5	10.6	18	0.5	44.71
1040	36	7.4	11.2	10	0.8	44.08
1102	32	7.1	11.4	9	1.9	44.43
1114	34	7.2	10.7	20	2.5	44.12
1119	33	7.1	10.7	10	2.7	43.94
1124	32	7.1	10.4	14	3.0	44.15
1129	31	7.0	10.6	13	3.2	44.08
1134	31	7.0	10.7	8	3.5	44.04

## North Jackson Company Groundwater Sampling Log

**Proj. Name:** GW Discharge Permit Operational  
**Weather:** Partly sunny, ~50°s F  
**Location:** QAL026D  
**Sample ID:** QALM026D  
**KEX ID:** EAG-1001709

**Date:** 5/13/08  
**Sampler(s):** CLS/CEC  
**Sampling time:** 1550

**Odor:** None  
**Appearance:** Clear

**Temperature (°C):** 8.0  
**Spec. Cond. (µmhos/cm @ 25°C):** 61  
**Conductivity (µmhos):** 41  
**pH (SU):** 9.2  
**D.O. (ppm):** 11.2  
**ORP(mV):** 114  
**Turbidity (NTU):** <1

**Description of measuring point**

Mark on riser

Total depth: 83 ft  
 Approx. Depth to water: 50 ft  
 Water column in well: 33 ft  
 Volume/foot: 0.26 gal/ft  
 Well volume: 8 gal

Well diameter (in): 2.5  
 Gallons purged  
 prior to sampling: ~45

**Evacuation method:** Dedicated submersible pump with dedicated tubing

Tag	# Collected	Bottle	Preservative	Parameter	Comment
None	1	500 ml plastic	None	Various	Unfiltered
None	1	500 ml plastic	HNO3	Metals	Unfiltered
None	1	500 ml plastic	H2SO4	Ammonia	Unfiltered
None	2	150 ml glass	None	Mercury	Unfiltered

**Photographs:** None

**Remarks:** Well condition excellent. Pump rate ~1 gpm.

Time	Spec. Cond. (µmhos/cm @ 25°C)	pH (SU)	D.O. (ppm)	ORP (mV)	Turbidity (NTU)	Volume Removed (gal)	Depth to Water (ft)
1500							50.00
1510	63	9.1	11.0	106	<1	10	50.24
1515	62	9.1	11.1	107	<1	15	50.24
1520	62	9.2	11.1	108	<1	20	50.24
1525	62	9.2	11.2	109	<1	25	50.24
1530	62	9.2	11.2	111	<1	30	50.24
1535	61	9.2	11.2	112	<1	35	50.24
1540	61	9.2	11.2	113	<1	40	50.24
1545	61	9.2	11.2	114	<1	45	50.24

## North Jackson Company Groundwater Sampling Log

**Proj. Name:** GW Discharge Permit Operational  
**Weather:** Partly cloudy, ~50°s F  
**Location:** QAL029A  
**Sample ID:** QALM029A  
**KEX ID:** EAG-1001725

**Date:** 5/14/08  
**Sampler(s):** CLS/CEC  
**Sampling time:** 1247

**Odor:** None  
**Appearance:** Clear

**Temperature (°C):** 8.9  
**Spec. Cond. (µmhos/cm @ 25°C):** 53  
**Conductivity (µmhos):** 37  
**pH (SU):** 8.4  
**D.O. (ppm):** 11.2  
**ORP(mV):** 111  
**Turbidity (NTU):** 24

**Description of measuring point:** Mark on riser

**Total depth:** 50 ft  
**Approx. Depth to water:** 42 ft  
**Water column in well:** 8 ft  
**Volume/foot:** 0.16 gal/ft  
**Well volume:** 1 gal  
**Well diameter (in):** 2  
**Gallons purged prior to sampling:** ~29

**Evacuation method:** Dedicated submersible pump with dedicated tubing

Tag	# Collected	Bottle	Preservative	Parameter	Comment
None	1	500 ml plastic	None	Various	Unfiltered
None	2	500 ml plastic	HNO3	Metals	Unfiltered/Filtered
None	1	500 ml plastic	H2SO4	Ammonia	Unfiltered
None	2	150 ml glass	None	Mercury	Unfiltered

**Photographs:** None

**Remarks:** Well condition excellent. Pump rate ~0.25 gpm.

Time	Spec. Cond. (µmhos/cm @ 25°C)	pH (SU)	D.O. (ppm)	ORP (mV)	Turbidity (NTU)	Volume Removed (gal)	Depth to Water (ft)
1050							41.54
1147	57	8.8	11.0	79	57	14	42.49
1152	57	8.8	11.1	84	56	15	42.49
1157	56	8.8	11.1	87	52	16	42.48
1202	56	8.7	11.1	90	51	18	42.48
1207	56	8.7	11.1	93	46	19	42.49
1212	55	8.7	11.1	97	43	20	42.49
1217	55	8.6	11.1	99	40	21	42.49
1222	55	8.6	11.1	103	37	23	42.49
1227	54	8.6	11.1	105	35	24	42.49
1232	54	8.5	11.1	97	30	25	42.48
1237	53	8.5	11.1	102	27	26	42.48
1242	53	8.4	11.2	105	27	28	42.49
1247	53	8.4	11.2	111	24	29	42.49

## North Jackson Company Groundwater Sampling Log

**Proj. Name:** GW Discharge Permit Operational  
**Weather:** Clear, ~50°s F  
**Location:** QAL029D  
**Sample ID:** QALM029D  
**KEX ID:** EAG-1001726

**Date:** 5/15/08  
**Sampler(s):** CLS/CEC  
**Sampling time:** 0915

**Odor:** None  
**Appearance:** Cloudy

Temperature (°C): 9.3  
 Spec. Cond. (µmhos/cm @ 25°C): 118  
 Conductivity (µmhos): 83  
 pH (SU): 8.7  
 D.O. (ppm): 4.0  
 ORP(mV): 117  
 Turbidity (NTU): 62

Description of measuring point	Mark on riser
Total depth: <u>77</u> ft	Well diameter (in): <u>2</u>
Approx. Depth to water: <u>51</u> ft	
Water column in well: <u>26</u> ft	Gallons purged
Volume/foot: <u>0.16</u> gal/ft	prior to sampling: <u>~4</u>
Well volume: <u>4</u> gal	

**Evacuation method:** Dedicated submersible pump with dedicated tubing

Tag	# Collected	Bottle	Preservative	Parameter	Comment
None	2	500 ml plastic	None	Various	Unfiltered
None	4	500 ml plastic	HNO3	Metals	Unfiltered/Filtered
None	2	500 ml plastic	H2SO4	Ammonia	Unfiltered
None	4	150 ml glass	None	Mercury	Unfiltered

**Photographs:** None

**Remarks:** Well condition excellent. Pump rate ~0.05 gpm.

Insufficient water for stabilization record. Masked duplicate (DUPM003, EAG-1001727) collected here.

## North Jackson Company Groundwater Sampling Log

**Proj. Name:** GW Discharge Permit Operational  
**Weather:** Cloudy, windy, ~60°s F  
**Location:** QAL050A  
**Sample ID:** QALM050A  
**KEX ID:** EAG-1001710

**Date:** 5/13/08  
**Sampler(s):** CEC/CLS  
**Sampling time:** 1445

**Odor:** None  
**Appearance:** Clear

**Temperature (°C):** 8.6  
**Spec. Cond. (µmhos/cm @ 25°C):** 76  
**Conductivity (µmhos):** 52  
**pH (SU):** 7.5  
**D.O. (ppm):** 10.5  
**ORP(mV):** -30  
**Turbidity (NTU):** <1

**Description of measuring point**

Mark on riser

Total depth: 120 ft  
 Approx. Depth to water: 107 ft  
 Water column in well: 13 ft  
 Volume/foot: 0.26 gal/ft  
 Well volume: 3 gal

Well diameter (in): 2.5  
 Gallons purged  
 prior to sampling: ~21

**Evacuation method:** Dedicated submersible pump with dedicated tubing

Tag	# Collected	Bottle	Preservative	Parameter	Comment
None	1	500 ml plastic	None	Various	Unfiltered
None	1	500 ml plastic	HNO3	Metals	Unfiltered
None	1	500 ml plastic	H2SO4	Ammonia	Unfiltered
None	2	150 ml glass	None	Mercury	Unfiltered

**Photographs:** None

**Remarks:** Well condition excellent. Pump rate ~1 gpm.

Time	Spec. Cond. (µmhos/cm @ 25°C)	pH (SU)	D.O. (ppm)	ORP (mV)	Turbidity (NTU)	Volume Removed (gal)	Depth to Water (ft)
1416							106.85
1422	76	7.5	11.3	-27	<1	6	107.10
1427	76	7.5	10.7	-30	NM	11	107.10
1432	76	7.5	10.6	-30	<1	16	107.11
1435	76	7.5	10.5	-30	<1	21	107.11



## North Jackson Company Groundwater Sampling Log

**Proj. Name:** GW Discharge Permit Operational  
**Weather:** Cloudy, windy, ~50's F  
**Location:** QAL051D  
**Sample ID:** QALM051D  
**KEX ID:** EAG-1001712

**Date:** 5/13/08  
**Sampler(s):** CEC/CLS  
**Sampling time:** 1345

**Odor:** None  
**Appearance:** Clear

**Temperature (°C):** 9.0  
**Spec. Cond. (µmhos/cm @ 25°C):** 117  
**Conductivity (µmhos):** 80  
**pH (SU):** 7.4  
**D.O. (ppm):** 0.2  
**ORP(mV):** -183  
**Turbidity (NTU):** <1

**Description of measuring point**

Mark on riser

Total depth: 120 ft  
 Approx. Depth to water: 104 ft  
 Water column in well: 16 ft  
 Volume/foot: 0.26 gal/ft  
 Well volume: 4 gal

Well diameter (in): 2.5  
 Gallons purged  
 prior to sampling: ~17

**Evacuation method:** Dedicated submersible pump with dedicated tubing

Tag	# Collected	Bottle	Preservative	Parameter	Comment
None	1	500 ml plastic	None	Various	Unfiltered
None	1	500 ml plastic	HNO3	Metals	Unfiltered
None	1	500 ml plastic	H2SO4	Ammonia	Unfiltered
None	2	150 ml glass	None	Mercury	Unfiltered

**Photographs:** None

**Remarks:** Well condition excellent. Pump rate ~0.5 gpm.

Time	Spec. Cond. (µmhos/cm @ 25°C)	pH (SU)	D.O. (ppm)	ORP (mV)	Turbidity (NTU)	Volume Removed (gal)	Depth to Water (ft)
1305							103.82
1315	119	7.5	1.2	-113	2	5	107.26
1320	118	7.5	0.8	-144	1	8	107.29
1325	118	7.4	0.2	-167	<1	10	107.29
1330	118	7.4	0.2	-177	NM	13	107.26
1335	117	7.4	0.2	-183	<1	15	107.29
1338	117	7.4	0.2	-183	<1	17	107.29

## North Jackson Company Groundwater Sampling Log

**Proj. Name:** GW Discharge Permit Operational  
**Weather:** Partly cloudy, breezy, ~50°s F  
**Location:** QAL052A  
**Sample ID:** QALM052A  
**KEX ID:** EAG-1001713

**Date:** 5/14/08  
**Sampler(s):** CEC/CLS  
**Sampling time:** 1205

**Odor:** None  
**Appearance:** Slight cloudy

**Temperature (°C):** 16  
**Spec. Cond. (µmhos/cm @ 25°C):** 116  
**Conductivity (µmhos):** 99  
**pH (SU):** 8.1  
**D.O. (ppm):** 4.0  
**ORP(mV):** -57  
**Turbidity (NTU):** 86

### Description of measuring point

### Mark on riser

**Total depth:** 125 ft  
**Approx. Depth to water:** 117 ft  
**Water column in well:** 8 ft  
**Volume/foot:** 0.26 gal/ft  
**Well volume:** 2 gal

**Well diameter (in):** 2.5  
**Gallons purged prior to sampling:** ~8.5

**Evacuation method:** Dedicated submersible pump with dedicated tubing

Tag	# Collected	Bottle	Preservative	Parameter	Comment
None	1	500 ml plastic	None	Various	Unfiltered
None	2	500 ml plastic	HNO3	Metals	Unfiltered/Filtered
None	1	500 ml plastic	H2SO4	Ammonia	Unfiltered
None	2	150 ml glass	None	Mercury	Unfiltered

**Photographs:** None

**Remarks:** Well condition excellent. Pump rate ~0.1 gpm.

Time	Spec. Cond. (µmhos/cm @ 25°C)	pH (SU)	D.O. (ppm)	ORP (mV)	Volume Removed (gal)	Depth to Water (ft)
1040						117.25
1125	118	8.1	4.5	-71	4.5	119.88
1130	118	8.0	4.4	-74	5.0	119.70
1135	118	8.1	5.7	-65	5.5	119.68
1140	117	8.1	5.5	-57	6.0	119.78
1145	117	8.1	5.1	-59	6.5	119.68
1150	116	8.1	4.6	-58	7.0	119.63
1155	117	8.1	4.3	-60	7.5	119.60
1200	116	8.1	4.1	-57	8.0	119.87
1205	116	8.1	4.0	-57	8.5	119.77

## North Jackson Company Groundwater Sampling Log

**Proj. Name:** GW Discharge Permit Operational  
**Weather:** Sunny, windy, ~50°s F  
**Location:** QAL053A  
**Sample ID:** QALM053A  
**KEX ID:** EAG-1001714

**Date:** 5/13/08  
**Sampler(s):** CLS/RRE  
**Sampling time:** 1015

**Odor:** None  
**Appearance:** Clear

**Temperature (°C):** 7.7  
**Spec. Cond. (µmhos/cm @ 25°C):** 113  
**Conductivity (µmhos):** 76  
**pH (SU):** 8.8  
**D.O. (ppm):** 2.7  
**ORP(mV):** 76  
**Turbidity (NTU):** <1

### Description of measuring point

### Mark on riser

**Total depth:** 93 ft  
**Approx. Depth to water:** 79 ft  
**Water column in well:** 14 ft  
**Volume/foot:** 0.26 gal/ft  
**Well volume:** 4 gal

**Well diameter (in):** 2.5  
**Gallons purged prior to sampling:** ~80

**Evacuation method:** Dedicated submersible pump with dedicated tubing

Tag	# Collected	Bottle	Preservative	Parameter	Comment
None	2	500 ml plastic	None	Various	Unfiltered
None	2	500 ml plastic	HNO3	Metals	Unfiltered
None	2	500 ml plastic	H2SO4	Ammonia	Unfiltered
None	4	150 ml glass	None	Mercury	Unfiltered

**Photographs:** None

**Remarks:** Well condition excellent. Pump rate ~2 gpm.

Masked duplicate (DUPM001, EAG-1001719) collected here.

Time	Spec. Cond. (µmhos/cm @ 25°C)	pH (SU)	D.O. (ppm)	ORP (mV)	Volume Removed (gal)	Depth to Water (ft)
0935						78.74
0940	116	8.2	2.7	67	10	82.05
0945	116	8.7	2.4	69	20	82.02
0950	116	8.7	2.3	70	30	82.02
0955	116	8.7	2.3	71	40	82.02
1000	115	8.7	2.4	73	50	82.02
1005	114	8.7	2.5	74	60	82.02
1010	114	8.7	2.6	76	70	82.07
1015	113	8.8	2.7	76	80	82.06

## North Jackson Company Groundwater Sampling Log

**Proj. Name:** GW Discharge Permit Operational  
**Weather:** Cloudy, windy, ~40°s F  
**Location:** QAL055A  
**Sample ID:** QALM055A  
**KEX ID:** EAG-1001715

**Date:** 5/14/08  
**Sampler(s):** CLS/CEC  
**Sampling time:** 0945

**Odor:** None  
**Appearance:** Clear

**Temperature (°C):** 8.2  
**Spec. Cond. (µmhos/cm @ 25°C):** 75  
**Conductivity (µmhos):** 51  
**pH (SU):** 9.1  
**D.O. (ppm):** 9.5  
**ORP(mV):** 47  
**Turbidity (NTU):** <1

**Description of measuring point**

**Mark on riser**

Total depth: 115 ft  
 Approx. Depth to water: 102 ft  
 Water column in well: 13 ft  
 Volume/foot: 0.26 gal/ft  
 Well volume: 3 gal

Well diameter (in): 2.5  
 Gallons purged prior to sampling: ~22

**Evacuation method:** Dedicated submersible pump with dedicated tubing

Tag	# Collected	Bottle	Preservative	Parameter	Comment
None	2	500 ml plastic	None	Various	Unfiltered
None	2	500 ml plastic	HNO3	Metals	Unfiltered
None	2	500 ml plastic	H2SO4	Ammonia	Unfiltered
None	4	150 ml glass	None	Mercury	Unfiltered

**Photographs:** None

**Remarks:** Well condition excellent. Pump rate ~1 gpm.

Masked duplicate (DUPM002, EAG-1001721) collected here.

Time	Spec. Cond. (µmhos/cm @ 25°C)	pH (SU)	D.O. (ppm)	ORP (mV)	Turbidity (NTU)	Volume Removed (gal)	Depth to Water (ft)
0923							102.28
0935	75	9.0	9.6	38	<1	12	102.52
0938	75	9.0	9.6	42	<1	15	102.52
0941	75	9.0	9.5	45	<1	18	102.53
0945	75	9.1	9.5	47	<1	22	102.53

## North Jackson Company Groundwater Sampling Log

**Proj. Name:** GW Discharge Permit Operational  
**Weather:** Partly sunny, windy, ~50°s F  
**Location:** QAL056A  
**Sample ID:** QALM056A  
**KEX ID:** EAG-1001716

**Date:** 5/13/08  
**Sampler(s):** CLS/CEC  
**Sampling time:** 1425

**Odor:** None  
**Appearance:** Clear

**Temperature (°C):** 8.3  
**Spec. Cond. (µmhos/cm @ 25°C):** 57  
**Conductivity (µmhos):** 39  
**pH (SU):** 9.3  
**D.O. (ppm):** 11.6  
**ORP(mV):** 67  
**Turbidity (NTU):** <1

**Description of measuring point**

**Mark on riser**

Total depth: 92 ft  
 Approx. Depth to water: 77 ft  
 Water column in well: 15 ft  
 Volume/foot: 0.26 gal/ft  
 Well volume: 4 gal

Well diameter (in): 2.5  
 Gallons purged  
 prior to sampling: ~30

**Evacuation method:** Dedicated submersible pump with dedicated tubing

Tag	# Collected	Bottle	Preservative	Parameter	Comment
None	1	500 ml plastic	None	Various	Unfiltered
None	1	500 ml plastic	HNO3	Metals	Unfiltered
None	1	500 ml plastic	H2SO4	Ammonia	Unfiltered
None	2	150 ml glass	None	Mercury	Unfiltered

**Photographs:** None

**Remarks:** Well condition excellent. Pump rate ~1 gpm.

Time	Spec. Cond. (µmhos/cm @ 25°C)	pH (SU)	D.O. (ppm)	Turbidity (NTU)	Volume Removed (gal)	Depth to Water (ft)
1350						76.87
1400	57	9.3	11.6	<1	10	77.92
1405	57	9.3	11.6	<1	15	77.92
1410	57	9.3	11.6	<1	20	77.93
1415	57	9.3	11.6	<1	25	77.93
1420	57	9.3	11.6	<1	30	77.93

## North Jackson Company Groundwater Sampling Log

**Proj. Name:** GW Discharge Permit Operational  
**Weather:** Partly cloudy, windy, ~60°s F  
**Location:** QAL057A  
**Sample ID:** QALM057A  
**KEX ID:** EAG-1001717

**Date:** 5/13/08  
**Sampler(s):** CEC/CLS  
**Sampling time:** 1610

**Odor:** None  
**Appearance:** Clear

**Temperature (°C):** 7.8  
**Spec. Cond. (µmhos/cm @ 25°C):** 66  
**Conductivity (µmhos):** 45  
**pH (SU):** 7.8  
**D.O. (ppm):** 11.3  
**ORP(mV):** 59  
**Turbidity (NTU):** 1

**Description of measuring point**

Mark on riser

Total depth: 118 ft  
 Approx. Depth to water: 106 ft  
 Water column in well: 12 ft  
 Volume/foot: 0.26 gal/ft  
 Well volume: 3 gal

Well diameter (in): 2.5  
 Gallons purged  
 prior to sampling: ~41

**Evacuation method:** Dedicated submersible pump with dedicated tubing

Tag	# Collected	Bottle	Preservative	Parameter	Comment
None	1	500 ml plastic	None	Various	Unfiltered
None	1	500 ml plastic	HNO3	Metals	Unfiltered
None	1	500 ml plastic	H2SO4	Ammonia	Unfiltered
None	2	150 ml glass	None	Mercury	Unfiltered

**Photographs:** None

**Remarks:** Well condition excellent. Pump rate ~1.5 gpm.

Time	Spec. Cond. (µmhos/cm @ 25°C)	pH (SU)	D.O. (ppm)	ORP (mV)	Turbidity (NTU)	Volume Removed (gal)	Depth to Water (ft)
1534							106.20
1537	65	7.6	10.7	42	2	4	106.39
1542	66	7.7	10.9	45	1	11	106.40
1547	66	7.8	11.0	48	1	18	106.40
1554	66	7.7	11.2	58	2	28	106.39
1557	66	7.8	11.2	58	1	32	106.39
1600	66	7.8	11.2	58	1	36	106.39
1603	66	7.8	11.3	59	1	41	106.39

## North Jackson Company Groundwater Sampling Log

**Proj. Name:** GW Discharge Permit Operational  
**Weather:** Partly cloudy, windy, ~60°s F  
**Location:** QAL057D  
**Sample ID:** QALM057D  
**KEX ID:** EAG-1001718

**Date:** 5/13/08  
**Sampler(s):** CEC/CLS  
**Sampling time:** 1525

**Odor:** None  
**Appearance:** Clear

**Temperature (°C):** 7.9  
**Spec. Cond. (µmhos/cm @ 25°C):** 104  
**Conductivity (µmhos):** 71  
**pH (SU):** 7.6  
**D.O. (ppm):** 4.3  
**ORP(mV):** 29  
**Turbidity (NTU):** <1

**Description of measuring point**

Mark on riser

Total depth: 130 ft  
 Approx. Depth to water: 106 ft  
 Water column in well: 24 ft  
 Volume/foot: 0.26 gal/ft  
 Well volume: 6 gal

Well diameter (in): 2.5  
 Gallons purged  
 prior to sampling: ~33

**Evacuation method:** Dedicated submersible pump with dedicated tubing

Tag	# Collected	Bottle	Preservative	Parameter	Comment
None	1	500 ml plastic	None	Various	Unfiltered
None	1	500 ml plastic	HNO3	Metals	Unfiltered
None	1	500 ml plastic	H2SO4	Ammonia	Unfiltered
None	2	150 ml glass	None	Mercury	Unfiltered

**Photographs:** None

**Remarks:** Well condition excellent. Pump rate ~1.5 gpm.

Time	Spec. Cond. (µmhos/cm @ 25°C)	pH (SU)	D.O. (ppm)	ORP (mV)	Turbidity (NTU)	Volume Removed (gal)	Depth to Water (ft)
1459							106.02
1503	106	7.5	6.0	7	<1	6	106.30
1508	105	7.6	4.4	19	<1	14	106.29
1513	104	7.6	4.3	25	<1	21	106.29
1518	104	7.6	4.3	28	<1	29	106.29
1521	104	7.6	4.3	29	<1	33	106.29

# North Jackson Company

## Field Sampling Report

Project Name: GW Discharge Permit Operational

Contact: North Jackson Company  
1004 Harbor Hills Drive, Suite 102  
Marquette, Michigan 49855  
Phone (906) 225-6787

### Summary of Sampling Activities

Sampling Date(s): 6/10/08 and 6/11/08

Activities: Collected groundwater samples at QAL008A/D, QAL026A/D, QAL029A/D, QAL050A, QAL051A/D, QAL052A, QAL053A, QAL055A, QAL056A and QAL057A/D.

Collected QA/QC samples, including 2 masked duplicates and 2 field (atmospheric) blanks.

### Field Report Attachments

Field Analytical Data Summary	Yes
Flow Measurement	No
Water Sampling Log	No
Chain of Custody Numbers	20080610, 20080611

### Laboratory Analysis

TriMatrix - Metals, LL Hg, major cations & anions, general chemistry

Sampler Name(s): Curt Sheffield (CLS) and Chris Cantway (CEC)

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## North Jackson Company Groundwater Field Data Summary

**Project Name:** GW Discharge Permit Operational

Location	Sample ID	KEX ID	Sampling Date	Temp (°C)	Spec Cond (µmhos/cm @ 25°C)	pH (SU)	DO (ppm)	ORP (mV)	Turbidity (NTU)
QAL008A	QALM008A	EAG-1001729	6/11/08	8.1	56	9.3	11.2	53	<1
QAL008D	QALM008D	EAG-1001730	6/10/08	9.8	90	8.7	6.1	235	1
QAL026A	QALM026A	EAG-1001731	6/10/08	8.8	34	7.4	10.8	104	<1
QAL026D	QALM026D	EAG-1001732	6/10/08	8.1	62	9.1	11.1	56	<1
QAL029A	QALM029A	EAG-1001733	6/10/08	8.1	50	9.1	11.1	53	71
QAL029D	QALM029D	EAG-1001734	6/11/08	7.6	102	8.7	5.6	95	90
QAL050A	QALM050A	EAG-1001735	6/11/08	8.1	70	8.8	10.6	59	<1
QAL051A	QALM051A	EAG-1001736	6/11/08	i	i	i	i	i	19
QAL051D	QALM051D	EAG-1001737	6/10/08	10	111	8.7	0.2	-184	<1
QAL052A	QALM052A	EAG-1001738	6/11/08	8.9	111	8.5	7.2	-3	63
QAL053A	QALM053A	EAG-1001739	6/11/08	7.7	102	8.5	2.6	29	<1
QAL055A	QALM055A	EAG-1001740	6/11/08	8.1	65	8.9	10.1	19	1
QAL056A	QALM056A	EAG-1001741	6/10/08	8.6	57	9.3	11.5	44	<1
QAL057A	QALM057A	EAG-1001742	6/11/08	7.7	69	9.1	10.6	60	<1
QAL057D	QALM057D	EAG-1001743	6/11/08	7.5	112	8.7	3.7	58	<1

i Insufficient water to collect field parameters.

## North Jackson Company Quality Control Sampling Summary

**Project Name:** GW Discharge Permit Operational

<b>Sample ID</b>	<b>Sampling Date</b>	<b>Description</b>
DUPM001 (EAG-1001744)	6/10/08	Masked duplicate (QALM026D)
DUPM002 (EAG-1001746)	6/11/08	Masked duplicate (QALM053A)
FBKM001 (EAG-1001745)	6/10/08	Field Blank
FBKM002 (EAG-1001747)	6/11/08	Field Blank

## North Jackson Company Groundwater Sampling Log

**Proj. Name:** GW Discharge Permit Operational  
**Weather:** Cloudy, ~50°s F  
**Location:** QAL008A  
**Sample ID:** QALM008A  
**KEX ID:** EAG-1001729

**Date:** 6/11/08  
**Sampler(s):** CLS/CEC  
**Sampling time:** 1033

**Odor:** None  
**Appearance:** Clear

**Temperature (°C):** 8.1  
**Spec. Cond. (µmhos/cm @ 25°C):** 56  
**Conductivity (µmhos):** 38  
**pH (SU):** 9.3  
**D.O. (ppm):** 11.2  
**ORP(mV):** 53  
**Turbidity (NTU):** <1

**Description of measuring point**

Mark on riser

Total depth: 93 ft  
 Approx. Depth to water: 79 ft  
 Water column in well: 14 ft  
 Volume/foot: 0.16 gal/ft  
 Well volume: 2 gal

Well diameter (in): 2  
 Gallons purged  
 prior to sampling: ~31

**Evacuation method:** Dedicated submersible pump with dedicated tubing

Tag	# Collected	Bottle	Preservative	Parameter	Comment
None	1	500 ml plastic	None	Various	Unfiltered
None	1	500 ml plastic	HNO3	Metals	Unfiltered
None	1	500 ml plastic	H2SO4	Ammonia	Unfiltered
None	2	150 ml glass	None	Mercury	Unfiltered

**Photographs:** None

**Remarks:** Well condition excellent. Pump rate ~1 gpm.

Time	Spec. Cond. (µmhos/cm @ 25°C)	pH (SU)	D.O. (ppm)	ORP (mV)	Turbidity (NTU)	Volume Removed (gal)	Depth to Water (ft)
1002							79.37
1012	57	9.2	11.2	-10	<1	10	81.65
1017	56	9.3	11.2	16	<1	15	81.62
1022	56	9.3	11.2	34	<1	20	81.61
1027	56	9.3	11.2	45	<1	25	81.63
1030	56	9.3	11.2	50	<1	28	81.63
1033	56	9.3	11.2	53	<1	31	81.63

## North Jackson Company Groundwater Sampling Log

**Proj. Name:** GW Discharge Permit Operational  
**Weather:** Cloudy, rain, ~60°s F  
**Location:** QAL008D  
**Sample ID:** QALM008D  
**KEX ID:** EAG-1001730

**Date:** 6/10/08  
**Sampler(s):** CEC/CLS  
**Sampling time:** 1603

**Odor:** None  
**Appearance:** Clear

**Temperature (°C):** 9.8  
**Spec. Cond. (µmhos/cm @ 25°C):** 90  
**Conductivity (µmhos):** 65  
**pH (SU):** 8.7  
**D.O. (ppm):** 6.1  
**ORP(mV):** 235  
**Turbidity (NTU):** 1

**Description of measuring point**

**Mark on riser**

Total depth: 123 ft  
 Approx. Depth to water: 115 ft  
 Water column in well: 8 ft  
 Volume/foot: 0.26 gal/ft  
 Well volume: 2 gal

Well diameter (in): 2.5  
 Gallons purged  
 prior to sampling: ~28

**Evacuation method:** Dedicated submersible pump with dedicated tubing

Tag	# Collected	Bottle	Preservative	Parameter	Comment
None	1	500 ml plastic	None	Various	Unfiltered
None	1	500 ml plastic	HNO3	Metals	Unfiltered
None	1	500 ml plastic	H2SO4	Ammonia	Unfiltered
None	2	150 ml glass	None	Mercury	Unfiltered

**Photographs:** None

**Remarks:** Well condition excellent. Pump rate ~0.5 gpm.

Time	Spec. Cond. (µmhos/cm @ 25°C)	pH (SU)	D.O. (ppm)	ORP (mV)	Turbidity (NTU)	Volume Removed (gal)	Depth to Water (ft)
1508							114.58
1517	89	8.7	9.1	172	2	5	115.65
1522	91	8.7	8.9	218	2	7	115.61
1527	91	8.6	8.6	236	1	10	115.62
1532	90	8.6	8.4	242	1	12	115.68
1537	90	8.6	8.1	247	1	15	115.68
1550	90	8.7	6.7	235	3	21	115.63
1555	90	8.7	6.2	237	2	24	115.63
1600	90	8.7	6.1	236	1	26	115.63
1603	90	8.7	6.1	235	1	28	115.68

## North Jackson Company Groundwater Sampling Log

**Proj. Name:** GW Discharge Permit Operational  
**Weather:** Cloudy, rain, ~60°s F  
**Location:** QAL026A  
**Sample ID:** QALM026A  
**KEX ID:** EAG-1001731

**Date:** 6/10/08  
**Sampler(s):** CLS/CEC  
**Sampling time:** 1440

**Odor:** None  
**Appearance:** Clear

**Temperature (°C):** 8.8  
**Spec. Cond. (µmhos/cm @ 25°C):** 34  
**Conductivity (µmhos):** 25  
**pH (SU):** 7.4  
**D.O. (ppm):** 10.8  
**ORP(mV):** 104  
**Turbidity (NTU):** <1

**Description of measuring point**

**Mark on riser**

Total depth: 48 ft  
 Approx. Depth to water: 42 ft  
 Water column in well: 6 ft  
 Volume/foot: 0.16 gal/ft  
 Well volume: 1 gal

Well diameter (in): 2  
 Gallons purged  
 prior to sampling: ~11

**Evacuation method:** Dedicated submersible pump with dedicated tubing

Tag	# Collected	Bottle	Preservative	Parameter	Comment
None	1	500 ml plastic	None	Various	Unfiltered
None	1	500 ml plastic	HNO3	Metals	Unfiltered
None	1	500 ml plastic	H2SO4	Ammonia	Unfiltered
None	2	150 ml glass	None	Mercury	Unfiltered

**Photographs:** None

**Remarks:** Well condition excellent. Pump rate ~0.25 gpm.

Time	Spec. Cond. (µmhos/cm @ 25°C)	pH (SU)	D.O. (ppm)	ORP (mV)	Turbidity (NTU)	Volume Removed (gal)	Depth to Water (ft)
1358							42.24
1405	38	8.0	12.3	95	16	2	45.96
1410	36	7.9	10.5	91	7	3	45.87
1415	35	7.7	10.6	98	2	4	45.81
1420	34	7.6	10.6	107	<1	6	45.86
1425	35	7.5	10.7	108	<1	7	45.86
1430	35	7.4	10.7	103	<1	8	45.86
1435	34	7.4	10.7	102	<1	9	45.85
1440	34	7.4	10.8	104	<1	11	45.86

## North Jackson Company Groundwater Sampling Log

**Proj. Name:** GW Discharge Permit Operational  
**Weather:** Partly sunny, ~60°s F  
**Location:** QAL026D  
**Sample ID:** QALM026D  
**KEX ID:** EAG-1001732

**Date:** 6/10/08  
**Sampler(s):** CLS/CEC  
**Sampling time:** 1325

**Odor:** None  
**Appearance:** Clear

**Temperature (°C):** 8.1  
**Spec. Cond. (µmhos/cm @ 25°C):** 62  
**Conductivity (µmhos):** 42  
**pH (SU):** 9.1  
**D.O. (ppm):** 11.1  
**ORP(mV):** 56  
**Turbidity (NTU):** <1

**Description of measuring point**

Mark on riser

Total depth: 83 ft  
 Approx. Depth to water: 49 ft  
 Water column in well: 34 ft  
 Volume/foot: 0.26 gal/ft  
 Well volume: 9 gal

Well diameter (in): 2.5  
 Gallons purged  
 prior to sampling: ~32

**Evacuation method:** Dedicated submersible pump with dedicated tubing

Tag	# Collected	Bottle	Preservative	Parameter	Comment
None	2	500 ml plastic	None	Various	Unfiltered
None	2	500 ml plastic	HNO3	Metals	Unfiltered
None	2	500 ml plastic	H2SO4	Ammonia	Unfiltered
None	6	150 ml glass	None	Mercury	Unfiltered

**Photographs:** None

**Remarks:** Well condition excellent. Pump rate ~1 gpm.

Masked duplicate (DUPM001, EAG-1001744) collected here. MS/MSD for lab collected with DUPM001 here.

Time	Spec. Cond. (µmhos/cm @ 25°C)	pH (SU)	D.O. (ppm)	ORP (mV)	Turbidity (NTU)	Volume Removed (gal)	Depth to Water (ft)
1253							49.33
1305	65	9.1	11.1	53	235	12	49.53
1310	64	9.1	11.1	54	<1	17	49.54
1315	63	9.1	11.1	58	<1	22	49.54
1320	63	9.1	11.1	58	<1	27	49.55
1325	62	9.1	11.1	56	<1	32	49.54

## North Jackson Company Groundwater Sampling Log

**Proj. Name:** GW Discharge Permit Operational  
**Weather:** Partly cloudy, ~50°s F  
**Location:** QAL029A  
**Sample ID:** QALM029A  
**KEX ID:** EAG-1001733

**Date:** 6/10/08  
**Sampler(s):** CEC/CLS  
**Sampling time:** 1100

**Odor:** None  
**Appearance:** Slightly cloudy

**Temperature (°C):** 8.1  
**Spec. Cond. (µmhos/cm @ 25°C):** 50  
**Conductivity (µmhos):** 33  
**pH (SU):** 9.1  
**D.O. (ppm):** 11.1  
**ORP(mV):** 53  
**Turbidity (NTU):** 71

**Description of measuring point**

Mark on riser

Total depth: 50 ft  
 Approx. Depth to water: 41 ft  
 Water column in well: 9 ft  
 Volume/foot: 0.16 gal/ft  
 Well volume: 2 gal

Well diameter (in): 2  
 Gallons purged  
 prior to sampling: ~12

**Evacuation method:** Dedicated submersible pump with dedicated tubing

Tag	# Collected	Bottle	Preservative	Parameter	Comment
None	1	500 ml plastic	None	Various	Unfiltered
None	1	500 ml plastic	HNO3	Metals	Filtered
None	1	500 ml plastic	H2SO4	Ammonia	Unfiltered
None	2	150 ml glass	None	Mercury	Filtered

**Photographs:** None

**Remarks:** Well condition excellent. Pump rate ~0.25 gpm.

Time	Spec. Cond. (µmhos/cm @ 25°C)	pH (SU)	D.O. (ppm)	ORP (mV)	Volume Removed (gal)	Depth to Water (ft)
1023						40.77
1040	111	9.5	10.7	8	4	41.88
1053	59	9.2	10.9	18	8	41.61
1056	57	9.2	11.0	30	8	41.53
1059	55	9.2	11.0	36	9	41.56
1102	53	9.1	11.0	45	10	41.53
1105	51	9.1	11.1	48	11	41.53
1110	50	9.1	11.1	53	12	41.53

## North Jackson Company Groundwater Sampling Log

**Proj. Name:** GW Discharge Permit Operational  
**Weather:** Partly cloudy, ~50°s F  
**Location:** QAL029D  
**Sample ID:** QALM029D  
**KEX ID:** EAG-1001734

**Date:** 6/11/08  
**Sampler(s):** CEC/CLS  
**Sampling time:** 0915

**Odor:** None  
**Appearance:** Clear

**Temperature (°C):** 7.6  
**Spec. Cond. (µmhos/cm @ 25°C):** 102  
**Conductivity (µmhos):** 68  
**pH (SU):** 8.7  
**D.O. (ppm):** 5.6  
**ORP(mV):** 95  
**Turbidity (NTU):** 90

Description of measuring point	Mark on riser
Total depth: <u>77</u> ft	Well diameter (in): <u>2</u>
Approx. Depth to water: <u>51</u> ft	
Water column in well: <u>26</u> ft	Gallons purged
Volume/foot: <u>0.16</u> gal/ft	prior to sampling: <u>~4</u>
Well volume: <u>4</u> gal	

**Evacuation method:** Dedicated submersible pump with dedicated tubing

Tag	# Collected	Bottle	Preservative	Parameter	Comment
None	1	500 ml plastic	None	Various	Unfiltered
None	1	500 ml plastic	HNO3	Metals	Filtered
None	1	500 ml plastic	H2SO4	Ammonia	Unfiltered
None	2	150 ml glass	None	Mercury	Filtered

**Photographs:** None

**Remarks:** Well condition excellent. Pump rate ~0.004 gpm (15 ml/min). Pumped dry on 6/10/08 and sampled on 6/11/08.  
Unable to stabilize water level for stabilization record.

## North Jackson Company Groundwater Sampling Log

**Proj. Name:** GW Discharge Permit Operational  
**Weather:** Cloudy, ~50°s F  
**Location:** QAL050A  
**Sample ID:** QALM050A  
**KEX ID:** EAG-1001735

**Date:** 6/11/08  
**Sampler(s):** CEC/CLS  
**Sampling time:** 1235

**Odor:** None  
**Appearance:** Clear

**Temperature (°C):** 8.1  
**Spec. Cond. (µmhos/cm @ 25°C):** 70  
**Conductivity (µmhos):** 48  
**pH (SU):** 8.8  
**D.O. (ppm):** 10.6  
**ORP(mV):** 59  
**Turbidity (NTU):** <1

**Description of measuring point**

Mark on riser

Total depth: 120 ft  
 Approx. Depth to water: 107 ft  
 Water column in well: 13 ft  
 Volume/foot: 0.26 gal/ft  
 Well volume: 3 gal

Well diameter (in): 2.5  
 Gallons purged  
 prior to sampling: ~20

**Evacuation method:** Dedicated submersible pump with dedicated tubing

Tag	# Collected	Bottle	Preservative	Parameter	Comment
None	1	500 ml plastic	None	Various	Unfiltered
None	1	500 ml plastic	HNO3	Metals	Unfiltered
None	1	500 ml plastic	H2SO4	Ammonia	Unfiltered
None	2	150 ml glass	None	Mercury	Unfiltered

**Photographs:** None

**Remarks:** Well condition excellent. Pump rate ~1 gpm.

Time	Spec. Cond. (µmhos/cm @ 25°C)	pH (SU)	D.O. (ppm)	Turbidity (NTU)	Volume Removed (gal)	Depth to Water (ft)
1215						107.36
1220	70	8.9	10.6	3	5	107.61
1225	70	8.8	10.5	3	10	107.61
1230	70	8.8	10.5	1	15	107.62
1235	70	8.8	10.6	<1	20	107.62

## North Jackson Company Groundwater Sampling Log

**Proj. Name:** GW Discharge Permit Operational  
**Weather:** Cloudy, ~60°s F  
**Location:** QAL051A  
**Sample ID:** QALM051A  
**KEX ID:** EAG-1001736

**Date:** 6/11/08  
**Sampler(s):** CEC/CLS  
**Sampling time:** 1330

**Odor:** None  
**Appearance:** Clear

Temperature (°C): i  
 Spec. Cond. (µmhos/cm @ 25°C): i  
 Conductivity (µmhos): i  
 pH (SU): i  
 D.O. (ppm): i  
 ORP(mV): i  
 Turbidity (NTU): 19

Description of measuring point	Mark on riser
Total depth: <u>107</u> ft	Well diameter (in): <u>2.5</u>
Approx. Depth to water: <u>103</u> ft	
Water column in well: <u>4</u> ft	Gallons purged
Volume/foot: <u>0.26</u> gal/ft	prior to sampling: <u>~1</u>
Well volume: <u>1</u> gal	

**Evacuation method:** Dedicated submersible pump with dedicated tubing

Tag	# Collected	Bottle	Preservative	Parameter	Comment
None	1	500 ml plastic	None	Various	Unfiltered
None	1	500 ml plastic	HNO3	Metals	Filtered
None	1	500 ml plastic	H2SO4	Ammonia	Unfiltered
None	2	150 ml glass	None	Mercury	Filtered

**Photographs:** None

**Remarks:** Well condition excellent. Pumped dry on 6/10/08 and sampled on 6/11/08.

Insufficient water for collection of field parameters or stabilization record.

## North Jackson Company Groundwater Sampling Log

**Proj. Name:** GW Discharge Permit Operational  
**Weather:** Cloudy, light rain, ~60°s F  
**Location:** QAL051D  
**Sample ID:** QALM051D  
**KEX ID:** EAG-1001737

**Date:** 6/10/08  
**Sampler(s):** CEC/CLS  
**Sampling time:** 1433

**Odor:** None  
**Appearance:** Clear

**Temperature (°C):** 10  
**Spec. Cond. (µmhos/cm @ 25°C):** 111  
**Conductivity (µmhos):** 79  
**pH (SU):** 8.7  
**D.O. (ppm):** 0.2  
**ORP(mV):** -184  
**Turbidity (NTU):** <1

**Description of measuring point**

Mark on riser

Total depth: 120 ft  
 Approx. Depth to water: 104 ft  
 Water column in well: 16 ft  
 Volume/foot: 0.26 gal/ft  
 Well volume: 4 gal

Well diameter (in): 2.5  
 Gallons purged  
 prior to sampling: ~14

**Evacuation method:** Dedicated submersible pump with dedicated tubing

Tag	# Collected	Bottle	Preservative	Parameter	Comment
None	1	500 ml plastic	None	Various	Unfiltered
None	1	500 ml plastic	HNO3	Metals	Unfiltered
None	1	500 ml plastic	H2SO4	Ammonia	Unfiltered
None	2	150 ml glass	None	Mercury	Unfiltered

**Photographs:** None

**Remarks:** Well condition excellent. Pump rate ~0.5 gpm.

Time	Spec. Cond. (µmhos/cm @ 25°C)	pH (SU)	D.O. (ppm)	ORP (mV)	Turbidity (NTU)	Volume Removed (gal)	Depth to Water (ft)
1405							103.92
1415	111	8.6	0.2	-125	2	5	105.96
1420	111	8.6	0.2	-163	<1	8	105.97
1425	111	8.7	0.2	-178	<1	10	105.97
1430	111	8.6	0.2	-183	<1	13	105.96
1433	111	8.7	0.2	-184	<1	14	105.96

## North Jackson Company Groundwater Sampling Log

**Proj. Name:** GW Discharge Permit Operational  
**Weather:** Cloudy, ~50°s F  
**Location:** QAL052A  
**Sample ID:** QALM052A  
**KEX ID:** EAG-1001738

**Date:** 6/11/08  
**Sampler(s):** CLS/CEC  
**Sampling time:** 1452

**Odor:** None  
**Appearance:** Slightly cloudy

**Temperature (°C):** 8.9  
**Spec. Cond. (µmhos/cm @ 25°C):** 111  
**Conductivity (µmhos):** 86  
**pH (SU):** 8.5  
**D.O. (ppm):** 7.2  
**ORP(mV):** -3  
**Turbidity (NTU):** 63

### Description of measuring point

### Mark on riser

**Total depth:** 125 ft  
**Approx. Depth to water:** 118 ft  
**Water column in well:** 7 ft  
**Volume/foot:** 0.26 gal/ft  
**Well volume:** 2 gal

**Well diameter (in):** 2.5

**Gallons purged  
 prior to sampling:** ~4

**Evacuation method:** Dedicated submersible pump with dedicated tubing

Tag	# Collected	Bottle	Preservative	Parameter	Comment
None	1	500 ml plastic	None	Various	Unfiltered
None	1	500 ml plastic	HNO3	Metals	Filtered
None	1	500 ml plastic	H2SO4	Ammonia	Unfiltered
None	2	150 ml glass	None	Mercury	Filtered

**Photographs:** None

**Remarks:** Well condition excellent. Pump rate ~0.1 gpm.

Time	Spec. Cond. (µmhos/cm @ 25°C)	pH (SU)	D.O. (ppm)	ORP (mV)	Volume Removed (gal)	Depth to Water (ft)
1415						117.59
1427	112	8.6	11.2	-22	1.2	120.05
1432	112	8.6	9.3	-12	1.7	119.72
1437	111	8.5	9.2	-5	2.2	119.79
1442	109	8.5	8.1	-2	2.7	119.71
1447	111	8.5	7.4	-5	3.2	119.79
1452	111	8.5	7.2	-3	3.7	119.74

## North Jackson Company Groundwater Sampling Log

**Proj. Name:** GW Discharge Permit Operational  
**Weather:** Cloudy, ~50°s F  
**Location:** QAL053A  
**Sample ID:** QALM053A  
**KEX ID:** EAG-1001739

**Date:** 6/11/08  
**Sampler(s):** CEC/CLS  
**Sampling time:** 1022

**Odor:** None  
**Appearance:** Clear

**Temperature (°C):** 7.7  
**Spec. Cond. (µmhos/cm @ 25°C):** 102  
**Conductivity (µmhos):** 69  
**pH (SU):** 8.5  
**D.O. (ppm):** 2.6  
**ORP(mV):** 29  
**Turbidity (NTU):** <1

**Description of measuring point**

Mark on riser

Total depth: 93 ft  
 Approx. Depth to water: 79 ft  
 Water column in well: 14 ft  
 Volume/foot: 0.26 gal/ft  
 Well volume: 4 gal

Well diameter (in): 2.5  
 Gallons purged  
 prior to sampling: ~33

**Evacuation method:** Dedicated submersible pump with dedicated tubing

Tag	# Collected	Bottle	Preservative	Parameter	Comment
None	2	500 ml plastic	None	Various	Unfiltered
None	2	500 ml plastic	HNO3	Metals	Unfiltered
None	2	500 ml plastic	H2SO4	Ammonia	Unfiltered
None	6	150 ml glass	None	Mercury	Unfiltered

**Photographs:** None

**Remarks:** Well condition excellent. Pump rate ~1.5 gpm.

Masked duplicate (DUPM002, EAG-1001746) collected here. MS/MSD for lab collected with QALM053A.

Time	Spec. Cond. (µmhos/cm @ 25°C)	pH (SU)	D.O. (ppm)	ORP (mV)	Turbidity (NTU)	Volume Removed (gal)	Depth to Water (ft)
1000							78.97
1006	104	8.5	2.8	17	9	9	81.39
1011	103	8.5	2.6	21	2	17	81.40
1016	103	8.5	2.6	26	<1	24	81.40
1019	103	8.5	2.6	26	<1	29	81.40
1022	102	8.5	2.6	29	<1	33	81.40

## North Jackson Company Groundwater Sampling Log

**Proj. Name:** GW Discharge Permit Operational  
**Weather:** Cloudy, ~50°s F  
**Location:** QAL055A  
**Sample ID:** QALM055A  
**KEX ID:** EAG-1001740

**Date:** 6/11/08  
**Sampler(s):** CEC/CLS  
**Sampling time:** 1133

**Odor:** None  
**Appearance:** Clear

**Temperature (°C):** 8.1  
**Spec. Cond. (µmhos/cm @ 25°C):** 65  
**Conductivity (µmhos):** 44  
**pH (SU):** 8.9  
**D.O. (ppm):** 10.1  
**ORP(mV):** 19  
**Turbidity (NTU):** 1

**Description of measuring point**

Mark on riser

Total depth: 115 ft  
 Approx. Depth to water: 103 ft  
 Water column in well: 12 ft  
 Volume/foot: 0.26 gal/ft  
 Well volume: 3 gal

Well diameter (in): 2.5  
 Gallons purged  
 prior to sampling: ~19

**Evacuation method:** Dedicated submersible pump with dedicated tubing

Tag	# Collected	Bottle	Preservative	Parameter	Comment
None	1	500 ml plastic	None	Various	Unfiltered
None	2	500 ml plastic	HNO3	Metals	Filtered/Unfiltered
None	1	500 ml plastic	H2SO4	Ammonia	Unfiltered
None	4	150 ml glass	None	Mercury	Filtered/Unfiltered

**Photographs:** None

**Remarks:** Well condition excellent. Pump rate ~1 gpm.

Time	Spec. Cond. (µmhos/cm @ 25°C)	pH (SU)	D.O. (ppm)	ORP (mV)	Turbidity (NTU)	Volume Removed (gal)	Depth to Water (ft)
1114							102.62
1120	65	8.9	10.3	10	2	6	102.78
1125	67	8.9	10.2	17	2	11	102.79
1130	66	8.9	10.1	19	2	16	102.79
1133	65	8.9	10.1	19	1	19	102.79

## North Jackson Company Groundwater Sampling Log

**Proj. Name:** GW Discharge Permit Operational  
**Weather:** Cloudy, rain, ~50°s F  
**Location:** QAL056A  
**Sample ID:** QALM056A  
**KEX ID:** EAG-1001741

**Date:** 6/10/08  
**Sampler(s):** CLS/CEC  
**Sampling time:** 1603

**Odor:** None  
**Appearance:** Clear

**Temperature (°C):** 8.6  
**Spec. Cond. (µmhos/cm @ 25°C):** 57  
**Conductivity (µmhos):** 39  
**pH (SU):** 9.3  
**D.O. (ppm):** 11.5  
**ORP(mV):** 44  
**Turbidity (NTU):** <1

**Description of measuring point**

Mark on riser

**Total depth:** 92 ft  
**Approx. Depth to water:** 77 ft  
**Water column in well:** 15 ft  
**Volume/foot:** 0.26 gal/ft  
**Well volume:** 4 gal

**Well diameter (in):** 2.5  
**Gallons purged prior to sampling:** ~42

**Evacuation method:** Dedicated submersible pump with dedicated tubing

Tag	# Collected	Bottle	Preservative	Parameter	Comment
None	1	500 ml plastic	None	Various	Unfiltered
None	1	500 ml plastic	HNO3	Metals	Unfiltered
None	1	500 ml plastic	H2SO4	Ammonia	Unfiltered
None	2	150 ml glass	None	Mercury	Unfiltered

**Photographs:** None

**Remarks:** Well condition excellent. Pump rate ~1 gpm.

Time	Spec. Cond. (µmhos/cm @ 25°C)	pH (SU)	D.O. (ppm)	ORP (mV)	Turbidity (NTU)	Volume Removed (gal)	Depth to Water (ft)
1521							76.79
1538	58	9.3	11.4	74	4	17	77.61
1543	58	9.3	11.5	68	<1	22	77.64
1548	58	9.3	11.5	57	<1	27	77.63
1553	58	9.3	11.5	51	<1	32	77.63
1558	58	9.3	11.5	46	<1	37	77.63
1603	57	9.3	11.5	44	<1	42	77.63

## North Jackson Company Groundwater Sampling Log

**Proj. Name:** GW Discharge Permit Operational  
**Weather:** Cloudy, ~50°s F  
**Location:** QAL057A  
**Sample ID:** QALM057A  
**KEX ID:** EAG-1001742

**Date:** 6/11/08  
**Sampler(s):** CLS/CEC  
**Sampling time:** 1253

**Odor:** None  
**Appearance:** Clear

**Temperature (°C):** 7.7  
**Spec. Cond. (µmhos/cm @ 25°C):** 69  
**Conductivity (µmhos):** 47  
**pH (SU):** 9.1  
**D.O. (ppm):** 10.6  
**ORP(mV):** 60  
**Turbidity (NTU):** <1

**Description of measuring point**

**Mark on riser**

Total depth: 118 ft  
 Approx. Depth to water: 107 ft  
 Water column in well: 11 ft  
 Volume/foot: 0.26 gal/ft  
 Well volume: 3 gal

Well diameter (in): 2.5  
 Gallons purged  
 prior to sampling: ~30

**Evacuation method:** Dedicated submersible pump with dedicated tubing

Tag	# Collected	Bottle	Preservative	Parameter	Comment
None	1	500 ml plastic	None	Various	Unfiltered
None	1	500 ml plastic	HNO3	Metals	Unfiltered
None	1	500 ml plastic	H2SO4	Ammonia	Unfiltered
None	2	150 ml glass	None	Mercury	Unfiltered

**Photographs:** None

**Remarks:** Well condition excellent. Pump rate ~1 gpm.

Time	Spec. Cond. (µmhos/cm @ 25°C)	pH (SU)	D.O. (ppm)	Turbidity (NTU)	Volume Removed (gal)	Depth to Water (ft)
1223						106.74
1228	67	9.1	10.8	<1	5	106.88
1233	69	9.1	10.4	<1	10	106.89
1238	69	9.1	10.4	<1	15	106.89
1243	69	9.1	10.5	<1	20	106.89
1248	69	9.1	10.6	<1	25	106.89
1253	69	9.1	10.6	<1	30	106.88

## North Jackson Company Groundwater Sampling Log

**Proj. Name:** GW Discharge Permit Operational  
**Weather:** Cloudy, rain, ~50°s F  
**Location:** QAL057D  
**Sample ID:** QALM057D  
**KEX ID:** EAG-1001743

**Date:** 6/11/08  
**Sampler(s):** CLS/CEC  
**Sampling time:** 1325

**Odor:** None  
**Appearance:** Clear

**Temperature (°C):** 7.5  
**Spec. Cond. (µmhos/cm @ 25°C):** 112  
**Conductivity (µmhos):** 76  
**pH (SU):** 8.7  
**D.O. (ppm):** 3.7  
**ORP(mV):** 58  
**Turbidity (NTU):** <1

**Description of measuring point**

Mark on riser

Total depth: 130 ft  
 Approx. Depth to water: 106 ft  
 Water column in well: 24 ft  
 Volume/foot: 0.26 gal/ft  
 Well volume: 6 gal

Well diameter (in): 2.5  
 Gallons purged  
 prior to sampling: ~21

**Evacuation method:** Dedicated submersible pump with dedicated tubing

Tag	# Collected	Bottle	Preservative	Parameter	Comment
None	1	500 ml plastic	None	Various	Unfiltered
None	1	500 ml plastic	HNO3	Metals	Unfiltered
None	1	500 ml plastic	H2SO4	Ammonia	Unfiltered
None	2	150 ml glass	None	Mercury	Unfiltered

**Photographs:** None

**Remarks:** Well condition excellent. Pump rate ~1 gpm.

Time	Spec. Cond. (µmhos/cm @ 25°C)	pH (SU)	D.O. (ppm)	ORP (mV)	Turbidity (NTU)	Volume Removed (gal)	Depth to Water (ft)
1304							106.46
1310	114	8.7	3.7	56	<1	6	106.73
1315	113	8.7	3.5	57	<1	11	106.72
1320	113	8.7	3.6	58	<1	16	106.72
1325	112	8.7	3.7	58	<1	21	106.72

# North Jackson Company

## Field Sampling Report

Project Name: GW Discharge Permit Operational

Contact: North Jackson Company  
1004 Harbor Hills Drive, Suite 102  
Marquette, Michigan 49855  
Phone (906) 225-6787

### Summary of Sampling Activities

Sampling Date(s): 7/1/08 and 7/2/08

Activities: Collected groundwater samples at QAL008A/D, QAL026A/D, QAL029A/D, QAL050A, QAL051A/D, QAL052A, QAL053A, QAL055A, QAL056A and QAL057A/D.

Collected QA/QC samples, including 2 masked duplicates and 2 field (atmospheric) blanks.

### Field Report Attachments

Field Analytical Data Summary	Yes
Flow Measurement	No
Water Sampling Log	No
Chain of Custody Numbers	20080701, 20080702

### Laboratory Analysis

TriMatrix - Metals, LL Hg, major cations & anions, general chemistry

Sampler Name(s): Chris Cantway (CEC), Andy Maracini (AJM)  
and Richard Eagle (RRE)

## North Jackson Company Groundwater Field Data Summary

**Project Name:** GW Discharge Permit Operational

Location	Sample ID	KEX ID	Sampling Date	Temp (°C)	Spec Cond (µmhos/cm @ 25°C)	pH (SU)	DO (ppm)	ORP (mV)	Turbidity (NTU)
QAL008A	QALM008A	EAG-1001748	7/2/08	7.7	49	9.4	11.2	75	<1
QAL008D	QALM008D	EAG-1001749	7/1/08	12	94	9.3	5.4	38	<1
QAL026A	QALM026A	EAG-1001750	7/2/08	9.5	25	7.4	10.9	105	<1
QAL026D	QALM026D	EAG-1001751	7/2/08	7.7	55	9.1	11.1	61	<1
QAL029A	QALM029A	EAG-1001752	7/1/08	8.0	68	8.7	11.0	126	54
QAL029D	QALM029D	EAG-1001753	7/2/08	11	94	8.7	6.5	91	15
QAL050A	QALM050A	EAG-1001754	7/2/08	8.5	70	8.9	10.0	112	<1
QAL051A	QALM051A	EAG-1001755	7/2/08	i	i	i	i	i	i
QAL051D	QALM051D	EAG-1001756	7/1/08	10	116	9.5	0.2	-25	<1
QAL052A	QALM052A	EAG-1001757	7/2/08	8.5	109	8.6	1.2	-5	11
QAL053A	QALM053A	EAG-1001758	7/1/08	9.1	113	9.3	3.2	20	<1
QAL055A	QALM055A	EAG-1001759	7/1/08	8.8	69	9.7	9.9	29	<1
QAL056A	QALM056A	EAG-1001760	7/1/08	7.8	50	9.1	11.5	105	<1
QAL057A	QALM057A	EAG-1001761	7/1/08	7.7	60	9.0	10.5	100	<1
QAL057D	QALM057D	EAG-1001762	7/1/08	8.2	97	8.7	3.5	74	<1

i Insufficient water to collect field parameters.

# North Jackson Company Quality Control Sampling Summary

**Project Name:** GW Discharge Permit Operational

<b>Sample ID</b>	<b>Sampling Date</b>	<b>Description</b>
DUPM001 (EAG-1001763)	7/1/08	Masked duplicate (QALM053A)
DUPM002 (EAG-1001765)	7/2/08	Masked duplicate (QALM050A)
FBKM001 (EAG-1001764)	7/1/08	Field Blank
FBKM002 (EAG-1001766)	7/2/08	Field Blank

## North Jackson Company Groundwater Sampling Log

**Proj. Name:** GW Discharge Permit Operational  
**Weather:** Cloudy, breezy, ~80°s F  
**Location:** QAL008A  
**Sample ID:** QALM008A  
**KEX ID:** EAG-1001748

**Date:** 7/2/08  
**Sampler(s):** CEC/RRE  
**Sampling time:** 1314

**Odor:** None  
**Appearance:** Clear

**Temperature (°C):** 7.7  
**Spec. Cond. (µmhos/cm @ 25°C):** 49  
**Conductivity (µmhos):** 33  
**pH (SU):** 9.4  
**D.O. (ppm):** 11.2  
**ORP(mV):** 75  
**Turbidity (NTU):** <1

**Description of measuring point**

Mark on riser

Total depth: 93 ft  
 Approx. Depth to water: 79 ft  
 Water column in well: 14 ft  
 Volume/foot: 0.16 gal/ft  
 Well volume: 2 gal

Well diameter (in): 2  
 Gallons purged  
 prior to sampling: ~14

**Evacuation method:** Dedicated submersible pump with dedicated tubing

Tag	# Collected	Bottle	Preservative	Parameter	Comment
None	1	500 ml plastic	None	Various	Unfiltered
None	1	500 ml plastic	HNO3	Metals	Unfiltered
None	1	500 ml plastic	H2SO4	Ammonia	Unfiltered
None	2	150 ml glass	None	Mercury	Unfiltered

**Photographs:** None

**Remarks:** Well condition excellent. Pump rate ~1 gpm.

Time	Spec. Cond. (µmhos/cm @ 25°C)	pH (SU)	D.O. (ppm)	ORP (mV)	Turbidity (NTU)	Volume Removed (gal)	Depth to Water (ft)
1300							79.21
1303	49	9.2	11.1	72	<1	3	81.44
1308	49	9.3	11.2	74	NM	8	81.46
1311	49	9.4	11.2	75	<1	11	81.46
1314	49	9.4	11.2	75	<1	14	81.46

## North Jackson Company Groundwater Sampling Log

**Proj. Name:** GW Discharge Permit Operational  
**Weather:** Sunny, ~70°s F  
**Location:** QAL008D  
**Sample ID:** QALM008D  
**KEX ID:** EAG-1001749

**Date:** 7/1/08  
**Sampler(s):** CEC/AJM  
**Sampling time:** 1100

**Odor:** None  
**Appearance:** Clear

**Temperature (°C):** 12  
**Spec. Cond. (µmhos/cm @ 25°C):** 94  
**Conductivity (µmhos):** 70  
**pH (SU):** 9.3  
**D.O. (ppm):** 5.4  
**ORP(mV):** 38  
**Turbidity (NTU):** <1

**Description of measuring point**

**Mark on riser**

Total depth: 123 ft  
 Approx. Depth to water: 114 ft  
 Water column in well: 9 ft  
 Volume/foot: 0.26 gal/ft  
 Well volume: 2 gal

Well diameter (in): 2.5  
 Gallons purged  
 prior to sampling: ~2.5

**Evacuation method:** Dedicated submersible pump with dedicated tubing

Tag	# Collected	Bottle	Preservative	Parameter	Comment
None	1	500 ml plastic	None	Various	Unfiltered
None	1	500 ml plastic	HNO3	Metals	Unfiltered
None	1	500 ml plastic	H2SO4	Ammonia	Unfiltered
None	2	150 ml glass	None	Mercury	Unfiltered

**Photographs:** None

**Remarks:** Well condition excellent. Pump rate ~0.1 gpm.

Time	Spec. Cond. (µmhos/cm @ 25°C)	pH (SU)	D.O. (ppm)	ORP (mV)	Turbidity (NTU)	Volume Removed (gal)	Depth to Water (ft)
1035							114.36
1045	94	9.1	6.0	34	2	1.0	114.63
1050	94	9.2	5.6	36	2	1.5	114.63
1055	94	9.3	5.3	38	<1	2.0	114.63
1100	94	9.3	5.4	38	<1	2.5	114.63

## North Jackson Company Groundwater Sampling Log

**Proj. Name:** GW Discharge Permit Operational  
**Weather:** Cloudy, ~70°s F  
**Location:** QAL026A  
**Sample ID:** QALM026A  
**KEX ID:** EAG-1001750

**Date:** 7/2/08  
**Sampler(s):** CEC/RRE  
**Sampling time:** 1506

**Odor:** None  
**Appearance:** Clear

**Temperature (°C):** 9.5  
**Spec. Cond. (µmhos/cm @ 25°C):** 25  
**Conductivity (µmhos):** 19  
**pH (SU):** 7.4  
**D.O. (ppm):** 10.9  
**ORP(mV):** 105  
**Turbidity (NTU):** <1

### Description of measuring point

Mark on riser

**Total depth:** 48 ft  
**Approx. Depth to water:** 42 ft  
**Water column in well:** 6 ft  
**Volume/foot:** 0.16 gal/ft  
**Well volume:** 1 gal

**Well diameter (in):** 2  
**Gallons purged prior to sampling:** ~3

**Evacuation method:** Dedicated submersible pump with dedicated tubing

Tag	# Collected	Bottle	Preservative	Parameter	Comment
None	1	500 ml plastic	None	Various	Unfiltered
None	1	500 ml plastic	HNO3	Metals	Unfiltered
None	1	500 ml plastic	H2SO4	Ammonia	Unfiltered
None	2	150 ml glass	None	Mercury	Unfiltered

**Photographs:** None

**Remarks:** Well condition excellent. Pump rate ~0.1 gpm.

Time	Spec. Cond. (µmhos/cm @ 25°C)	pH (SU)	D.O. (ppm)	ORP (mV)	Turbidity (NTU)	Volume Removed (gal)	Depth to Water (ft)
1436							41.84
1438	24	8.5	10.7	78	<1	0.2	42.91
1443	22	8.2	10.5	91	2	0.7	42.89
1448	24	7.8	10.5	94	10	1.2	42.96
1451	24	7.7	10.8	96	12	1.5	42.96
1454	25	7.6	10.8	98	9	1.8	42.96
1457	25	7.5	10.8	100	4	2.1	NM
1500	26	7.4	11.1	101	2	2.4	42.88
1503	25	7.4	10.9	103	2	2.7	42.83
1506	25	7.4	10.9	105	<1	3.0	42.96

## North Jackson Company Groundwater Sampling Log

**Proj. Name:** GW Discharge Permit Operational  
**Weather:** Cloudy, ~70°s F  
**Location:** QAL026D  
**Sample ID:** QALM026D  
**KEX ID:** EAG-1001751

**Date:** 7/2/08  
**Sampler(s):** CEC/RRE  
**Sampling time:** 1533

**Odor:** None  
**Appearance:** Clear

**Temperature (°C):** 7.7  
**Spec. Cond. (µmhos/cm @ 25°C):** 55  
**Conductivity (µmhos):** 37  
**pH (SU):** 9.1  
**D.O. (ppm):** 11.1  
**ORP(mV):** 61  
**Turbidity (NTU):** <1

**Description of measuring point**

Mark on riser

Total depth: 83 ft  
 Approx. Depth to water: 49 ft  
 Water column in well: 34 ft  
 Volume/foot: 0.26 gal/ft  
 Well volume: 9 gal

Well diameter (in): 2.5  
 Gallons purged  
 prior to sampling: ~16

**Evacuation method:** Dedicated submersible pump with dedicated tubing

Tag	# Collected	Bottle	Preservative	Parameter	Comment
None	1	500 ml plastic	None	Various	Unfiltered
None	1	500 ml plastic	HNO3	Metals	Unfiltered
None	1	500 ml plastic	H2SO4	Ammonia	Unfiltered
None	2	150 ml glass	None	Mercury	Unfiltered

**Photographs:** None

**Remarks:** Well condition excellent. Pump rate ~1 gpm.

Time	Spec. Cond. (µmhos/cm @ 25°C)	pH (SU)	D.O. (ppm)	ORP (mV)	Turbidity (NTU)	Volume Removed (gal)	Depth to Water (ft)
1517							49.05
1519	55	8.4	11.0	73	<1	2	49.21
1522	56	9.0	11.1	62	<1	5	49.21
1527	56	9.1	11.1	60	<1	10	49.21
1530	56	9.1	11.1	60	<1	13	49.21
1533	55	9.1	11.1	61	<1	16	49.21

## North Jackson Company Groundwater Sampling Log

**Proj. Name:** GW Discharge Permit Operational  
**Weather:** Sunny, ~70's F  
**Location:** QAL029A  
**Sample ID:** QALM029A  
**KEX ID:** EAG-1001752

**Date:** 7/1/08  
**Sampler(s):** AJM/CEC  
**Sampling time:** 1055

**Odor:** None  
**Appearance:** Slightly cloudy

**Temperature (°C):** 8.0  
**Spec. Cond. (µmhos/cm @ 25°C):** 68  
**Conductivity (µmhos):** 47  
**pH (SU):** 8.7  
**D.O. (ppm):** 11.0  
**ORP(mV):** 126  
**Turbidity (NTU):** 54

**Description of measuring point**

Mark on riser

Total depth: 50 ft  
 Approx. Depth to water: 40 ft  
 Water column in well: 10 ft  
 Volume/foot: 0.16 gal/ft  
 Well volume: 2 gal

Well diameter (in): 2  
 Gallons purged  
 prior to sampling: ~18

**Evacuation method:** Dedicated submersible pump with dedicated tubing

Tag	# Collected	Bottle	Preservative	Parameter	Comment
None	1	500 ml plastic	None	Various	Unfiltered
None	1	500 ml plastic	HNO3	Metals	Filtered
None	1	500 ml plastic	H2SO4	Ammonia	Unfiltered
None	2	150 ml glass	None	Mercury	Filtered

**Photographs:** None

**Remarks:** Well condition excellent. Pump rate ~0.5 gpm.

Time	Spec. Cond. (µmhos/cm @ 25°C)	pH (SU)	D.O. (ppm)	ORP (mV)	Volume Removed (gal)	Depth to Water (ft)
1020						40.32
1027	83	8.9	10.9	87	4	41.25
1035	78	9.0	11.1	97	8	41.25
1038	74	8.9	10.9	104	9	41.21
1041	73	8.9	11.0	108	11	41.30
1044	72	8.8	11.1	113	12	41.27
1048	70	8.8	11.0	118	14	41.32
1052	69	8.7	10.9	122	16	41.25
1055	68	8.7	11.0	126	18	41.26

## North Jackson Company Groundwater Sampling Log

**Proj. Name:** GW Discharge Permit Operational  
**Weather:** Cloudy, ~70°s F  
**Location:** QAL029D  
**Sample ID:** QALM029D  
**KEX ID:** EAG-1001753

**Date:** 7/2/08  
**Sampler(s):** CEC/RRE  
**Sampling time:** 1030

**Odor:** None  
**Appearance:** Clear

Temperature (°C): 11  
 Spec. Cond. (µmhos/cm @ 25°C): 94  
 Conductivity (µmhos): 70  
 pH (SU): 8.7  
 D.O. (ppm): 6.5  
 ORP(mV): 91  
 Turbidity (NTU): 15

Description of measuring point	Mark on riser
Total depth: <u>77</u> ft	Well diameter (in): <u>2</u>
Approx. Depth to water: <u>53</u> ft	
Water column in well: <u>24</u> ft	Gallons purged
Volume/foot: <u>0.16</u> gal/ft	prior to sampling: <u>~4</u>
Well volume: <u>4</u> gal	

**Evacuation method:** Dedicated submersible pump with dedicated tubing

Tag	# Collected	Bottle	Preservative	Parameter	Comment
None	1	500 ml plastic	None	Various	Unfiltered
None	1	500 ml plastic	HNO3	Metals	Filtered
None	1	500 ml plastic	H2SO4	Ammonia	Unfiltered
None	2	150 ml glass	None	Mercury	Filtered

**Photographs:** None

**Remarks:** Well condition excellent. Pumped dry on 7/1/08 and sampled on 7/2/08.

Insufficient water for stabilization record.

## North Jackson Company Groundwater Sampling Log

**Proj. Name:** GW Discharge Permit Operational  
**Weather:** Cloudy, breezy, ~70°s F  
**Location:** QAL050A  
**Sample ID:** QALM050A  
**KEX ID:** EAG-1001754

**Date:** 7/2/08  
**Sampler(s):** CEC/RRE  
**Sampling time:** 1228

**Odor:** None  
**Appearance:** Clear

**Temperature (°C):** 8.5  
**Spec. Cond. (µmhos/cm @ 25°C):** 70  
**Conductivity (µmhos):** 48  
**pH (SU):** 8.9  
**D.O. (ppm):** 10.0  
**ORP(mV):** 112  
**Turbidity (NTU):** <1

**Description of measuring point**

Mark on riser

Total depth: 120 ft  
 Approx. Depth to water: 107 ft  
 Water column in well: 13 ft  
 Volume/foot: 0.26 gal/ft  
 Well volume: 3 gal

Well diameter (in): 2.5  
 Gallons purged  
 prior to sampling: ~13

**Evacuation method:** Dedicated submersible pump with dedicated tubing

Tag	# Collected	Bottle	Preservative	Parameter	Comment
None	2	500 ml plastic	None	Various	Unfiltered
None	2	500 ml plastic	HNO3	Metals	Unfiltered
None	2	500 ml plastic	H2SO4	Ammonia	Unfiltered
None	6	150 ml glass	None	Mercury	Unfiltered

**Photographs:** None

**Remarks:** Well condition excellent. Pump rate ~1 gpm.

Masked duplicate (DUPM002, EAG-1001765) collected here. MS/MSD for lab collected here.

Time	Spec. Cond. (µmhos/cm @ 25°C)	pH (SU)	D.O. (ppm)	ORP (mV)	Turbidity (NTU)	Volume Removed (gal)	Depth to Water (ft)
1215							106.79
1220	69	9.0	10.0	115	<1	5	107.06
1225	70	9.0	10.0	110	<1	10	107.07
1228	70	9.0	10.0	112	<1	13	107.08

## North Jackson Company Groundwater Sampling Log

**Proj. Name:** GW Discharge Permit Operational  
**Weather:** Sunny, ~80°s F  
**Location:** QAL051A  
**Sample ID:** QALM051A  
**KEX ID:** EAG-1001755

**Date:** 7/2/08  
**Sampler(s):** CEC/AJM  
**Sampling time:** 1115

**Odor:** None  
**Appearance:** Clear

Temperature (°C): i  
 Spec. Cond. (µmhos/cm @ 25°C): i  
 Conductivity (µmhos): i  
 pH (SU): i  
 D.O. (ppm): i  
 ORP(mV): i  
 Turbidity (NTU): i

Description of measuring point	Mark on riser
Total depth: <u>107</u> ft	Well diameter (in): <u>2.5</u>
Approx. Depth to water: <u>104</u> ft	
Water column in well: <u>3</u> ft	Gallons purged
Volume/foot: <u>0.26</u> gal/ft	prior to sampling: <u>~1</u>
Well volume: <u>0.9</u> gal	

**Evacuation method:** Dedicated submersible pump with dedicated tubing

Tag	# Collected	Bottle	Preservative	Parameter	Comment
None	1	500 ml plastic	None	Various	Unfiltered
None	1	500 ml plastic	HNO3	Metals	Filtered
None	1	500 ml plastic	H2SO4	Ammonia	Unfiltered
None	2	150 ml glass	None	Mercury	Filtered

**Photographs:** None

**Remarks:** Well condition excellent. Pumped dry on 7/1/08 and sampled on 7/2/08.  
Insufficient water for collection of field parameters or stabilization record.

## North Jackson Company Groundwater Sampling Log

**Proj. Name:** GW Discharge Permit Operational  
**Weather:** Sunny, ~80°s F  
**Location:** QAL051D  
**Sample ID:** QALM051D  
**KEX ID:** EAG-1001756

**Date:** 7/1/08  
**Sampler(s):** CEC/AJM  
**Sampling time:** 1334

**Odor:** None  
**Appearance:** Clear

**Temperature (°C):** 9.8  
**Spec. Cond. (µmhos/cm @ 25°C):** 116  
**Conductivity (µmhos):** 81  
**pH (SU):** 9.5  
**D.O. (ppm):** 0.2  
**ORP(mV):** -25  
**Turbidity (NTU):** <1

**Description of measuring point**

Mark on riser

Total depth: 120 ft  
 Approx. Depth to water: 104 ft  
 Water column in well: 16 ft  
 Volume/foot: 0.26 gal/ft  
 Well volume: 4 gal

Well diameter (in): 2.5  
 Gallons purged  
 prior to sampling: ~15

**Evacuation method:** Dedicated submersible pump with dedicated tubing

Tag	# Collected	Bottle	Preservative	Parameter	Comment
None	1	500 ml plastic	None	Various	Unfiltered
None	1	500 ml plastic	HNO3	Metals	Unfiltered
None	1	500 ml plastic	H2SO4	Ammonia	Unfiltered
None	2	150 ml glass	None	Mercury	Unfiltered

**Photographs:** None

**Remarks:** Well condition excellent. Pump rate ~0.5 gpm.

Time	Spec. Cond. (µmhos/cm @ 25°C)	pH (SU)	D.O. (ppm)	ORP (mV)	Turbidity (NTU)	Volume Removed (gal)	Depth to Water (ft)
1305							103.74
1321	116	9.3	0.2	-11	NM	8	106.56
1326	116	9.4	0.2	-18	<1	11	106.49
1331	117	9.5	0.2	-23	<1	13	106.53
1334	116	9.5	0.2	-25	<1	15	106.54

## North Jackson Company Groundwater Sampling Log

**Proj. Name:** GW Discharge Permit Operational  
**Weather:** Cloudy, ~80°s F  
**Location:** QAL052A  
**Sample ID:** QALM052A  
**KEX ID:** EAG-1001757

**Date:** 7/2/08  
**Sampler(s):** CEC/RRE  
**Sampling time:** 1402

**Odor:** None  
**Appearance:** Clear

**Temperature (°C):** 8.5  
**Spec. Cond. (µmhos/cm @ 25°C):** 109  
**Conductivity (µmhos):** 81  
**pH (SU):** 8.6  
**D.O. (ppm):** 1.2  
**ORP(mV):** -5  
**Turbidity (NTU):** 11

**Description of measuring point**

**Mark on riser**

Total depth: 125 ft  
 Approx. Depth to water: 117 ft  
 Water column in well: 8 ft  
 Volume/foot: 0.26 gal/ft  
 Well volume: 2 gal

Well diameter (in): 2.5  
 Gallons purged  
 prior to sampling: ~2

**Evacuation method:** Dedicated submersible pump with dedicated tubing

Tag	# Collected	Bottle	Preservative	Parameter	Comment
None	1	500 ml plastic	None	Various	Unfiltered
None	1	500 ml plastic	HNO3	Metals	Filtered
None	1	500 ml plastic	H2SO4	Ammonia	Unfiltered
None	2	150 ml glass	None	Mercury	Filtered

**Photographs:** None

**Remarks:** Well condition excellent. Pump rate ~0.1 gpm.

Time	Spec. Cond. (µmhos/cm @ 25°C)	pH (SU)	D.O. (ppm)	ORP (mV)	Turbidity (NTU)	Volume Removed (gal)	Depth to Water (ft)
1340							117.07
1345	109	8.7	2.0	20	<1	0.5	119.84
1348	109	8.7	1.2	16	6	0.8	119.88
1351	109	8.7	1.0	11	10	1.1	120.05
1356	109	8.6	1.0	0	10	1.6	119.81
1359	108	8.6	1.0	-5	10	1.9	119.61
1402	109	8.6	1.2	-5	11	2.2	119.61

## North Jackson Company Groundwater Sampling Log

**Proj. Name:** GW Discharge Permit Operational  
**Weather:** Sunny, ~70°s F  
**Location:** QAL053A  
**Sample ID:** QALM053A  
**KEX ID:** EAG-1001758

**Date:** 7/1/08  
**Sampler(s):** CEC/AJM  
**Sampling time:** 1156

**Odor:** None  
**Appearance:** Clear

**Temperature (°C):** 9.1  
**Spec. Cond. (µmhos/cm @ 25°C):** 113  
**Conductivity (µmhos):** 77  
**pH (SU):** 9.3  
**D.O. (ppm):** 3.2  
**ORP(mV):** 20  
**Turbidity (NTU):** <1

**Description of measuring point**

Mark on riser

Total depth: 93 ft  
 Approx. Depth to water: 78 ft  
 Water column in well: 15 ft  
 Volume/foot: 0.26 gal/ft  
 Well volume: 4 gal

Well diameter (in): 2.5  
 Gallons purged  
 prior to sampling: ~16

**Evacuation method:** Dedicated submersible pump with dedicated tubing

Tag	# Collected	Bottle	Preservative	Parameter	Comment
None	2	500 ml plastic	None	Various	Unfiltered
None	2	500 ml plastic	HNO3	Metals	Unfiltered
None	2	500 ml plastic	H2SO4	Ammonia	Unfiltered
None	6	150 ml glass	None	Mercury	Unfiltered

**Photographs:** None

**Remarks:** Well condition excellent. Pump rate ~0.75 gpm.

Masked duplicate (DUPM001, EAG-1001763) collected here. MS/MSD for lab collected here.

Time	Spec. Cond. (µmhos/cm @ 25°C)	pH (SU)	D.O. (ppm)	ORP (mV)	Turbidity (NTU)	Volume Removed (gal)	Depth to Water (ft)
1135							78.41
1140	NM	8.8	4.5	29	6	4	79.15
1145	NM	9.1	4.0	19	2	8	79.17
1150	112	9.2	3.6	20	<1	11	79.17
1153	113	9.3	3.3	20	<1	14	79.17
1156	113	9.3	3.2	20	<1	16	79.17

## North Jackson Company Groundwater Sampling Log

**Proj. Name:** GW Discharge Permit Operational  
**Weather:** Sunny, ~80°s F  
**Location:** QAL055A  
**Sample ID:** QALM055A  
**KEX ID:** EAG-1001759

**Date:** 7/1/08  
**Sampler(s):** CEC/AJM  
**Sampling time:** 1505

**Odor:** None  
**Appearance:** Clear

**Temperature (°C):** 8.8  
**Spec. Cond. (µmhos/cm @ 25°C):** 69  
**Conductivity (µmhos):** 47  
**pH (SU):** 9.7  
**D.O. (ppm):** 9.9  
**ORP(mV):** 29  
**Turbidity (NTU):** <1

**Description of measuring point**

Mark on riser

Total depth: 115 ft  
 Approx. Depth to water: 102 ft  
 Water column in well: 13 ft  
 Volume/foot: 0.26 gal/ft  
 Well volume: 3 gal

Well diameter (in): 2.5  
 Gallons purged  
 prior to sampling: ~23

**Evacuation method:** Dedicated submersible pump with dedicated tubing

Tag	# Collected	Bottle	Preservative	Parameter	Comment
None	1	500 ml plastic	None	Various	Unfiltered
None	1	500 ml plastic	HNO3	Metals	Unfiltered
None	1	500 ml plastic	H2SO4	Ammonia	Unfiltered
None	2	150 ml glass	None	Mercury	Unfiltered

**Photographs:** None

**Remarks:** Well condition excellent. Pump rate ~1 gpm.

Time	Spec. Cond. (µmhos/cm @ 25°C)	pH (SU)	D.O. (ppm)	ORP (mV)	Turbidity (NTU)	Volume Removed (gal)	Depth to Water (ft)
1442							102.09
1446	68	8.9	10.4	37	1	4	102.33
1451	68	9.4	10.0	27	1	9	102.34
1456	69	9.6	9.9	28	1	14	102.34
1459	69	9.7	9.9	28	<1	17	102.34
1502	70	9.7	9.9	28	1	20	102.34
1505	69	9.7	9.9	29	<1	23	102.34

## North Jackson Company Groundwater Sampling Log

**Proj. Name:** GW Discharge Permit Operational  
**Weather:** Sunny, ~80°s F  
**Location:** QAL056A  
**Sample ID:** QALM056A  
**KEX ID:** EAG-1001760

**Date:** 7/1/08  
**Sampler(s):** AJM/CEC  
**Sampling time:** 1534

**Odor:** None  
**Appearance:** Clear

**Temperature (°C):** 7.8  
**Spec. Cond. (µmhos/cm @ 25°C):** 50  
**Conductivity (µmhos):** 34  
**pH (SU):** 9.1  
**D.O. (ppm):** 11.5  
**ORP(mV):** 105  
**Turbidity (NTU):** <1

**Description of measuring point**

**Mark on riser**

Total depth: 92 ft  
 Approx. Depth to water: 76 ft  
 Water column in well: 16 ft  
 Volume/foot: 0.26 gal/ft  
 Well volume: 4 gal

Well diameter (in): 2.5  
 Gallons purged  
 prior to sampling: ~13

**Evacuation method:** Dedicated submersible pump with dedicated tubing

Tag	# Collected	Bottle	Preservative	Parameter	Comment
None	1	500 ml plastic	None	Various	Unfiltered
None	1	500 ml plastic	HNO3	Metals	Unfiltered
None	1	500 ml plastic	H2SO4	Ammonia	Unfiltered
None	2	150 ml glass	None	Mercury	Unfiltered

**Photographs:** None

**Remarks:** Well condition excellent. Pump rate ~1 gpm.

Time	Spec. Cond. (µmhos/cm @ 25°C)	pH (SU)	D.O. (ppm)	Turbidity (NTU)	Volume Removed (gal)	Depth to Water (ft)
1521						76.49
1525	50	9.1	11.4	<1	4	77.69
1528	50	9.1	11.4	<1	7	77.67
1531	50	9.1	11.5	<1	10	77.67
1534	50	9.1	11.5	<1	13	77.67

## North Jackson Company Groundwater Sampling Log

**Proj. Name:** GW Discharge Permit Operational  
**Weather:** Sunny, ~80°s F  
**Location:** QAL057A  
**Sample ID:** QALM057A  
**KEX ID:** EAG-1001761

**Date:** 7/1/08  
**Sampler(s):** AJM/CEC  
**Sampling time:** 1404

**Odor:** None  
**Appearance:** Clear

**Temperature (°C):** 7.7  
**Spec. Cond. (µmhos/cm @ 25°C):** 60  
**Conductivity (µmhos):** 41  
**pH (SU):** 9.0  
**D.O. (ppm):** 10.5  
**ORP(mV):** 100  
**Turbidity (NTU):** <1

**Description of measuring point**

Mark on riser

Total depth: 118 ft  
 Approx. Depth to water: 106 ft  
 Water column in well: 12 ft  
 Volume/foot: 0.26 gal/ft  
 Well volume: 3 gal

Well diameter (in): 2.5  
 Gallons purged  
 prior to sampling: ~15

**Evacuation method:** Dedicated submersible pump with dedicated tubing

Tag	# Collected	Bottle	Preservative	Parameter	Comment
None	1	500 ml plastic	None	Various	Unfiltered
None	1	500 ml plastic	HNO3	Metals	Unfiltered
None	1	500 ml plastic	H2SO4	Ammonia	Unfiltered
None	2	150 ml glass	None	Mercury	Unfiltered

**Photographs:** None

**Remarks:** Well condition excellent. Pump rate ~1 gpm.

Time	Spec. Cond. (µmhos/cm @ 25°C)	pH (SU)	D.O. (ppm)	ORP (mV)	Turbidity (NTU)	Volume Removed (gal)	Depth to Water (ft)
1349							106.26
1352	57	9.1	10.5	85	<1	3	106.42
1355	59	9.0	10.4	90	<1	6	106.43
1358	60	9.0	10.4	94	<1	9	106.43
1401	60	9.0	10.5	97	<1	12	106.43
1404	60	9.0	10.5	100	<1	15	106.43

## North Jackson Company Groundwater Sampling Log

**Proj. Name:** GW Discharge Permit Operational  
**Weather:** Sunny, ~80°s F  
**Location:** QAL057D  
**Sample ID:** QALM057D  
**KEX ID:** EAG-1001762

**Date:** 7/1/08  
**Sampler(s):** AJM/CEC  
**Sampling time:** 1333

**Odor:** None  
**Appearance:** Clear

**Temperature (°C):** 8.2  
**Spec. Cond. (µmhos/cm @ 25°C):** 97  
**Conductivity (µmhos):** 67  
**pH (SU):** 8.7  
**D.O. (ppm):** 3.5  
**ORP(mV):** 74  
**Turbidity (NTU):** <1

**Description of measuring point**

**Mark on riser**

Total depth: 130 ft  
 Approx. Depth to water: 106 ft  
 Water column in well: 24 ft  
 Volume/foot: 0.26 gal/ft  
 Well volume: 6 gal

Well diameter (in): 2.5  
 Gallons purged  
 prior to sampling: ~14

**Evacuation method:** Dedicated submersible pump with dedicated tubing

Tag	# Collected	Bottle	Preservative	Parameter	Comment
None	1	500 ml plastic	None	Various	Unfiltered
None	1	500 ml plastic	HNO3	Metals	Unfiltered
None	1	500 ml plastic	H2SO4	Ammonia	Unfiltered
None	2	150 ml glass	None	Mercury	Unfiltered

**Photographs:** None

**Remarks:** Well condition excellent. Pump rate ~1 gpm.

Time	Spec. Cond. (µmhos/cm @ 25°C)	pH (SU)	D.O. (ppm)	ORP (mV)	Turbidity (NTU)	Volume Removed (gal)	Depth to Water (ft)
1319							106.05
1324	98	8.6	3.5	62	<1	5	106.28
1327	98	8.6	3.5	67	<1	8	106.29
1330	97	8.7	3.5	71	<1	11	106.29
1333	97	8.7	3.5	74	<1	14	106.28

# North Jackson Company

## Field Sampling Report

Project Name: GW Discharge Permit Operational

Contact: North Jackson Company  
1004 Harbor Hills Drive, Suite 102  
Marquette, Michigan 49855  
Phone (906) 225-6787

### Summary of Sampling Activities

Sampling Date(s): 8/12/08, 8/13/08, 8/21/08

Activities: Collected groundwater samples at QAL008A/D, QAL026A/D, QAL029A/D, QAL050A, QAL051A/D, QAL052A, QAL053A, QAL055A, QAL056A and QAL057A/D.

Collected QA/QC samples, including 3 masked duplicates and 3 field (atmospheric) blanks.

### Field Report Attachments

Field Analytical Data Summary	Yes
Flow Measurement	No
Water Sampling Log	No
Chain of Custody Numbers	20080812, 20080813, 20080821

### Laboratory Analysis

TriMatrix - Metals, LL Hg, major cations & anions, general chemistry

Sampler Name(s): Curt Sheffield (CLS) and Richard Eagle (RRE)

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## North Jackson Company Groundwater Field Data Summary

**Project Name:** GW Discharge Permit Operational

Location	Sample ID	KEX ID	Sampling Date	Temp (°C)	Spec Cond (µmhos/cm @ 25°C)	pH (SU)	DO (ppm)	ORP (mV)	Turbidity (NTU)
QAL008A	QALM008A	EAG-1001767	8/13/08	9.3	53	9.3	11.4	59	<1
QAL008D	QALM008D	EAG-1001768	8/13/08	11	65	8.6	7.8	82	<1
QAL026A	QALM026A	EAG-1001769	8/12/08	8.3	27	7.4	11.4	164	<1
QAL026D	QALM026D	EAG-1001770	8/12/08	8.0	61	9.0	11.7	106	<1
QAL029A	QALM029A	EAG-1001771	8/12/08	8.8	57	7.4	NM	126	10
QAL029D	QALM029D	EAG-1001772	8/13/08	9.1	110	8.5	4.8	130	42
QAL050A	QALM050A	EAG-1001773	8/13/08	8.4	79	8.8	10.5	103	<1
QAL051A	QALM051A	EAG-1001774	8/21/08	i	i	i	i	i	13
QAL051D	QALM051D	EAG-1001775	8/12/08	8.7	80	8.5	0.2	-1	<1
QAL052A	QALM052A	EAG-1001776	8/13/08	8.5	78	8.5	6.2	60	23
QAL053A	QALM053A	EAG-1001777	8/13/08	8.7	114	8.5	2.6	60	<1
QAL055A	QALM055A	EAG-1001778	8/12/08	8.9	47	8.8	NM	56	2
QAL056A	QALM056A	EAG-1001779	8/12/08	8.3	56	9.2	11.8	103	<1
QAL057A	QALM057A	EAG-1001780	8/12/08	8.5	43	8.8	NM	72	<1
QAL057D	QALM057D	EAG-1001781	8/12/08	8.6	107	8.8	3.7	91	<1

i Insufficient water to collect field parameters.

## North Jackson Company Quality Control Sampling Summary

**Project Name:** GW Discharge Permit Operational

<b>Sample ID</b>	<b>Sampling Date</b>	<b>Description</b>
DUPM001 (EAG-1001782)	8/13/08	Masked duplicate (QALM057D)
DUPM002 (EAG-1001784)	8/13/08	Masked duplicate (QALM008A)
DUPM003 (EAG-1001826)	8/21/08	Masked duplicate (QALM051A)
FBKM001 (EAG-1001783)	8/12/08	Field Blank
FBKM002 (EAG-1001785)	8/13/08	Field Blank
FBKM003 (EAG-1001827)	8/21/08	Field Blank

## North Jackson Company Groundwater Sampling Log

**Proj. Name:** GW Discharge Permit Operational  
**Weather:** Sunny, ~70°s F  
**Location:** QAL008A  
**Sample ID:** QALM008A  
**KEX ID:** EAG-1001767

**Date:** 8/13/08  
**Sampler(s):** CLS/RRE  
**Sampling time:** 1133

**Odor:** None  
**Appearance:** Clear

**Temperature (°C):** 9.3  
**Spec. Cond. (µmhos/cm @ 25°C):** 53  
**Conductivity (µmhos):** 36  
**pH (SU):** 9.3  
**D.O. (ppm):** 11.4  
**ORP(mV):** 59  
**Turbidity (NTU):** <1

**Description of measuring point**

Mark on riser

Total depth: 93 ft  
 Approx. Depth to water: 79 ft  
 Water column in well: 14 ft  
 Volume/foot: 0.16 gal/ft  
 Well volume: 2 gal

Well diameter (in): 2  
 Gallons purged  
 prior to sampling: ~19

**Evacuation method:** Dedicated submersible pump with dedicated tubing

Tag	# Collected	Bottle	Preservative	Parameter	Comment
None	2	500 ml plastic	None	Various	Unfiltered
None	2	500 ml plastic	HNO3	Metals	Unfiltered
None	2	500 ml plastic	H2SO4	Ammonia	Unfiltered
None	4	150 ml glass	None	Mercury	Unfiltered

**Photographs:** None

**Remarks:** Well condition excellent. Pump rate ~0.75 gpm.

Masked duplicate (DUPM002, EAG-1001784) collected here

Time	Spec. Cond. (µmhos/cm @ 25°C)	pH (SU)	D.O. (ppm)	ORP (mV)	Turbidity (NTU)	Volume Removed (gal)	Depth to Water (ft)
1108							79.00
1113	53	9.2	11.6	41	<1	4	80.29
1118	53	9.2	11.6	46	<1	8	80.30
1123	53	9.3	11.8	51	<1	11	80.30
1128	53	9.3	11.6	55	<1	15	80.29
1133	53	9.3	11.4	59	<1	19	80.30

## North Jackson Company Groundwater Sampling Log

**Proj. Name:** GW Discharge Permit Operational  
**Weather:** Clear, ~70°s F  
**Location:** QAL008D  
**Sample ID:** QALM008D  
**KEX ID:** EAG-1001768

**Date:** 8/13/08  
**Sampler(s):** RRE/CLS  
**Sampling time:** 1125

**Odor:** None  
**Appearance:** Clear

**Temperature (°C):** 11  
**Spec. Cond. (µmhos/cm @ 25°C):** 65  
**Conductivity (µmhos):** 47  
**pH (SU):** 8.6  
**D.O. (ppm):** 7.8  
**ORP(mV):** 82  
**Turbidity (NTU):** <1

**Description of measuring point**

Mark on riser

**Total depth:** 123 ft  
**Approx. Depth to water:** 114 ft  
**Water column in well:** 9 ft  
**Volume/foot:** 0.26 gal/ft  
**Well volume:** 2 gal

**Well diameter (in):** 2.5  
**Gallons purged prior to sampling:** 6

**Evacuation method:** Dedicated submersible pump with dedicated tubing

Tag	# Collected	Bottle	Preservative	Parameter	Comment
None	1	500 ml plastic	None	Various	Unfiltered
None	1	500 ml plastic	HNO3	Metals	Unfiltered
None	1	500 ml plastic	H2SO4	Ammonia	Unfiltered
None	2	150 ml glass	None	Mercury	Unfiltered

**Photographs:** None

**Remarks:** Well condition excellent. Pump rate ~0.25 gpm.

Time	Spec. Cond. (µmhos/cm @ 25°C)	pH (SU)	D.O. (ppm)	ORP (mV)	Turbidity (NTU)	Volume Removed (gal)	Depth to Water (ft)
1100							114.14
1110	66	8.7	7.9	82	<1	3	114.91
1115	66	8.7	7.9	80	<1	4	114.84
1120	65	8.6	7.8	83	<1	5	114.83
1125	65	8.6	7.8	82	<1	6	114.82

## North Jackson Company Groundwater Sampling Log

**Proj. Name:** GW Discharge Permit Operational  
**Weather:** Partly sunny, ~80°s F  
**Location:** QAL026A  
**Sample ID:** QALM026A  
**KEX ID:** EAG-1001769

**Date:** 8/12/08  
**Sampler(s):** CLS/RRE  
**Sampling time:** 1541

**Odor:** None  
**Appearance:** Cloudy to clear

**Temperature (°C):** 8.3  
**Spec. Cond. (µmhos/cm @ 25°C):** 27  
**Conductivity (µmhos):** 18  
**pH (SU):** 7.4  
**D.O. (ppm):** 11.4  
**ORP(mV):** 164  
**Turbidity (NTU):** <1

### Description of measuring point

Mark on riser

Total depth: 48 ft  
 Approx. Depth to water: 42 ft  
 Water column in well: 7 ft  
 Volume/foot: 0.16 gal/ft  
 Well volume: 1 gal

Well diameter (in): 2  
 Gallons purged  
 prior to sampling: ~8

**Evacuation method:** Dedicated submersible pump with dedicated tubing

Tag	# Collected	Bottle	Preservative	Parameter	Comment
None	1	500 ml plastic	None	Various	Unfiltered
None	1	500 ml plastic	HNO3	Metals	Unfiltered
None	1	500 ml plastic	H2SO4	Ammonia	Unfiltered
None	2	150 ml glass	None	Mercury	Unfiltered

**Photographs:** None

**Remarks:** Well condition excellent. Pump rate ~0.25 gpm.

Time	Spec. Cond. (µmhos/cm @ 25°C)	pH (SU)	D.O. (ppm)	ORP (mV)	Turbidity (NTU)	Volume Removed (gal)	Depth to Water (ft)
1510							41.62
1515	24	8.4	11.4	130	22	1	44.00
1520	25	8.1	11.4	143	22	3	44.12
1525	25	7.8	11.4	154	6	4	44.14
1530	26	7.7	11.6	157	3	5	44.13
1535	26	7.5	11.6	161	1	6	44.13
1538	26	7.5	11.5	163	<1	7	44.14
1541	27	7.4	11.4	164	<1	8	44.13

## North Jackson Company Groundwater Sampling Log

**Proj. Name:** GW Discharge Permit Operational  
**Weather:** Sunny, ~80°s F  
**Location:** QAL026D  
**Sample ID:** QALM026D  
**KEX ID:** EAG-1001770

**Date:** 8/12/08  
**Sampler(s):** CLS/RRE  
**Sampling time:** 1500

**Odor:** None  
**Appearance:** Clear

**Temperature (°C):** 8.0  
**Spec. Cond. (µmhos/cm @ 25°C):** 61  
**Conductivity (µmhos):** 40  
**pH (SU):** 9.0  
**D.O. (ppm):** 11.7  
**ORP(mV):** 106  
**Turbidity (NTU):** <1

**Description of measuring point**

Mark on riser

Total depth: 83 ft  
 Approx. Depth to water: 49 ft  
 Water column in well: 34 ft  
 Volume/foot: 0.26 gal/ft  
 Well volume: 9 gal

Well diameter (in): 2.5  
 Gallons purged  
 prior to sampling: ~25

**Evacuation method:** Dedicated submersible pump with dedicated tubing

Tag	# Collected	Bottle	Preservative	Parameter	Comment
None	1	500 ml plastic	None	Various	Unfiltered
None	1	500 ml plastic	HNO3	Metals	Unfiltered
None	1	500 ml plastic	H2SO4	Ammonia	Unfiltered
None	2	150 ml glass	None	Mercury	Unfiltered

**Photographs:** None

**Remarks:** Well condition excellent. Pump rate ~1 gpm.

Time	Spec. Cond. (µmhos/cm @ 25°C)	pH (SU)	D.O. (ppm)	Turbidity (NTU)	Volume Removed (gal)	Depth to Water (ft)
1435						49.01
1440	62	9.0	11.3	<1	5	49.21
1445	62	9.0	11.7	<1	10	49.20
1450	61	9.0	11.7	<1	15	49.21
1455	61	9.0	11.7	<1	20	49.21
1500	61	9.0	11.7	<1	25	49.21

## North Jackson Company Groundwater Sampling Log

**Proj. Name:** GW Discharge Permit Operational  
**Weather:** Clear, ~60°s F  
**Location:** QAL029A  
**Sample ID:** QALM029A  
**KEX ID:** EAG-1001771

**Date:** 8/12/08  
**Sampler(s):** RRE/CLS  
**Sampling time:** 1015

**Odor:** None  
**Appearance:** Clear

**Temperature (°C):** 8.8  
**Spec. Cond. (µmhos/cm @ 25°C):** 57  
**Conductivity (µmhos):** 39  
**pH (SU):** 7.4  
**D.O. (ppm):** NM  
**ORP(mV):** 126  
**Turbidity (NTU):** 10

**Description of measuring point**

Mark on riser

Total depth: 50 ft  
 Approx. Depth to water: 40 ft  
 Water column in well: 10 ft  
 Volume/foot: 0.16 gal/ft  
 Well volume: 2 gal

Well diameter (in): 2  
 Gallons purged  
 prior to sampling: ~23

**Evacuation method:** Dedicated submersible pump with dedicated tubing

Tag	# Collected	Bottle	Preservative	Parameter	Comment
None	1	500 ml plastic	None	Various	Unfiltered
None	2	500 ml plastic	HNO3	Metals	Filtered/Unfiltered
None	1	500 ml plastic	H2SO4	Ammonia	Unfiltered
None	4	150 ml glass	None	Mercury	Filtered/Unfiltered

**Photographs:** None

**Remarks:** Well condition excellent. Pump rate ~0.5 gpm.

D.O. instrument malfunction so DO not used for stabilization.

Time	Spec. Cond. (µmhos/cm @ 25°C)	pH (SU)	ORP (mV)	Turbidity (NTU)	Volume Removed (gal)	Depth to Water (ft)
0930						40.25
0945	60	7.4	120	17	8	41.06
0950	60	7.4	126	13	10	41.06
0955	61	7.4	128	13	13	41.02
1000	63	7.3	129	12	15	41.00
1005	57	7.3	129	12	18	40.98
1010	56	7.4	125	10	20	40.97
1015	57	7.4	126	10	23	40.95

## North Jackson Company Groundwater Sampling Log

**Proj. Name:** GW Discharge Permit Operational  
**Weather:** Sunny, ~70°s F  
**Location:** QAL029D  
**Sample ID:** QALM029D  
**KEX ID:** EAG-1001772

**Date:** 8/13/08  
**Sampler(s):** RRE/CLS  
**Sampling time:** 0915

**Odor:** None  
**Appearance:** Cloudy

**Temperature (°C):** 9.1  
**Spec. Cond. (µmhos/cm @ 25°C):** 110  
**Conductivity (µmhos):** 75  
**pH (SU):** 8.5  
**D.O. (ppm):** 4.8  
**ORP(mV):** 130  
**Turbidity (NTU):** 42

Description of measuring point	Mark on riser
Total depth: <u>77</u> ft	Well diameter (in): <u>2</u>
Approx. Depth to water: <u>52</u> ft	
Water column in well: <u>25</u> ft	Gallons purged
Volume/foot: <u>0.16</u> gal/ft	prior to sampling: <u>~4</u>
Well volume: <u>4</u> gal	

**Evacuation method:** Dedicated submersible pump with dedicated tubing

Tag	# Collected	Bottle	Preservative	Parameter	Comment
None	1	500 ml plastic	None	Various	Unfiltered
None	1	500 ml plastic	HNO3	Metals	Filtered
None	1	500 ml plastic	H2SO4	Ammonia	Unfiltered
None	2	150 ml glass	None	Mercury	Filtered

**Photographs:** None

**Remarks:** Well condition excellent. Pumped dry on 8/12/08 and sampled on 8/13/08.

Insufficient water for stabilization record.

## North Jackson Company Groundwater Sampling Log

**Proj. Name:** GW Discharge Permit Operational  
**Weather:** Sunny, ~70's F  
**Location:** QAL050A  
**Sample ID:** QALM050A  
**KEX ID:** EAG-1001773

**Date:** 8/13/08  
**Sampler(s):** CLS/RRE  
**Sampling time:** 1324

**Odor:** None  
**Appearance:** Clear

**Temperature (°C):** 8.4  
**Spec. Cond. (µmhos/cm @ 25°C):** 79  
**Conductivity (µmhos):** 53  
**pH (SU):** 8.8  
**D.O. (ppm):** 10.5  
**ORP(mV):** 103  
**Turbidity (NTU):** <1

**Description of measuring point**

Mark on riser

Total depth: 120 ft  
 Approx. Depth to water: 107 ft  
 Water column in well: 13 ft  
 Volume/foot: 0.26 gal/ft  
 Well volume: 3 gal

Well diameter (in): 2.5  
 Gallons purged  
 prior to sampling: ~14

**Evacuation method:** Dedicated submersible pump with dedicated tubing

Tag	# Collected	Bottle	Preservative	Parameter	Comment
None	1	500 ml plastic	None	Various	Unfiltered
None	1	500 ml plastic	HNO3	Metals	Unfiltered
None	1	500 ml plastic	H2SO4	Ammonia	Unfiltered
None	4	150 ml glass	None	Mercury	Unfiltered

**Photographs:** None

**Remarks:** Well condition excellent. Pump rate ~1 gpm.

MS/MSD for lab collected here.

Time	Spec. Cond. (µmhos/cm @ 25°C)	pH (SU)	D.O. (ppm)	Turbidity (NTU)	Volume Removed (gal)	Depth to Water (ft)
1310						106.59
1315	77	8.7	10.5	<1	5	106.82
1318	79	8.7	10.5	<1	8	106.82
1321	79	8.8	10.5	<1	11	106.81
1324	79	8.8	10.5	<1	14	106.82

## North Jackson Company Groundwater Sampling Log

**Proj. Name:** GW Discharge Permit Operational  
**Weather:** Sunny, ~70°s F  
**Location:** QAL051A  
**Sample ID:** QALM051A  
**KEX ID:** EAG-1001774

**Date:** 8/21/08  
**Sampler(s):** RRE/KHS  
**Sampling time:** 1021

**Odor:** None  
**Appearance:** Clear

Temperature (°C): i  
 Spec. Cond. (µmhos/cm @ 25°C): i  
 Conductivity (µmhos): i  
 pH (SU): i  
 D.O. (ppm): i  
 ORP(mV): i  
 Turbidity (NTU): 13

Description of measuring point	Mark on riser
Total depth: <u>107</u> ft	Well diameter (in): <u>2.5</u>
Approx. Depth to water: <u>104</u> ft	
Water column in well: <u>3</u> ft	Gallons purged
Volume/foot: <u>0.26</u> gal/ft	prior to sampling: <u>~1</u>
Well volume: <u>0.8</u> gal	

**Evacuation method:** Dedicated submersible pump with dedicated tubing

Tag	# Collected	Bottle	Preservative	Parameter	Comment
None	2	500 ml plastic	None	Various	Unfiltered
None	2	500 ml plastic	HNO3	Metals	Filtered
None	2	500 ml plastic	H2SO4	Ammonia	Unfiltered
None	4	150 ml glass	None	Mercury	Filtered

**Photographs:** None

**Remarks:** Well condition excellent. Pumped dry on 8/20/08 and sampled on 8/21/08. Insufficient water for collection of field parameters or stabilization record. Masked duplicate (DUPM003, EAG-1001826) collected here.

## North Jackson Company Groundwater Sampling Log

**Proj. Name:** GW Discharge Permit Operational  
**Weather:** Partly cloudy, ~80°s F  
**Location:** QAL051D  
**Sample ID:** QALM051D  
**KEX ID:** EAG-1001775

**Date:** 8/12/08  
**Sampler(s):** RRE/CLS  
**Sampling time:** 1325

**Odor:** None  
**Appearance:** Clear

**Temperature (°C):** 8.7  
**Spec. Cond. (µmhos/cm @ 25°C):** 80  
**Conductivity (µmhos):** 54  
**pH (SU):** 8.5  
**D.O. (ppm):** 0.2  
**ORP(mV):** -1  
**Turbidity (NTU):** <1

**Description of measuring point**

Mark on riser

Total depth: 120 ft  
 Approx. Depth to water: 104 ft  
 Water column in well: 16 ft  
 Volume/foot: 0.26 gal/ft  
 Well volume: 4 gal

Well diameter (in): 2.5  
 Gallons purged  
 prior to sampling: ~18

**Evacuation method:** Dedicated submersible pump with dedicated tubing

Tag	# Collected	Bottle	Preservative	Parameter	Comment
None	1	500 ml plastic	None	Various	Unfiltered
None	1	500 ml plastic	HNO3	Metals	Unfiltered
None	1	500 ml plastic	H2SO4	Ammonia	Unfiltered
None	2	150 ml glass	None	Mercury	Unfiltered

**Photographs:** None

**Remarks:** Well condition excellent. Pump rate ~0.5 gpm.

Time	Spec. Cond. (µmhos/cm @ 25°C)	pH (SU)	D.O. (ppm)	Turbidity (NTU)	Volume Removed (gal)	Depth to Water (ft)
1250						103.58
1255	81	8.6	0.6	<1	3	108.18
1300	81	8.5	0.3	<1	5	108.18
1305	81	8.5	0.2	<1	8	108.20
1310	81	8.5	1.5	<1	10	107.87
1315	81	8.5	0.2	<1	13	107.92
1320	80	8.5	0.2	<1	15	107.96
1325	80	8.5	0.2	<1	18	107.98

## North Jackson Company Groundwater Sampling Log

**Proj. Name:** GW Discharge Permit Operational  
**Weather:** Partly cloudy, ~70°s F  
**Location:** QAL052A  
**Sample ID:** QALM052A  
**KEX ID:** EAG-1001776

**Date:** 8/13/08  
**Sampler(s):** RRE/CLS  
**Sampling time:** 1435

**Odor:** None  
**Appearance:** Clear

**Temperature (°C):** 8.5  
**Spec. Cond. (µmhos/cm @ 25°C):** 78  
**Conductivity (µmhos):** 52  
**pH (SU):** 8.5  
**D.O. (ppm):** 6.2  
**ORP(mV):** 60  
**Turbidity (NTU):** 23

**Description of measuring point**

Mark on riser

**Total depth:** 125 ft  
**Approx. Depth to water:** 119 ft  
**Water column in well:** 6 ft  
**Volume/foot:** 0.26 gal/ft  
**Well volume:** 2 gal

**Well diameter (in):** 2.5  
**Gallons purged prior to sampling:** ~20

**Evacuation method:** Dedicated submersible pump with dedicated tubing

Tag	# Collected	Bottle	Preservative	Parameter	Comment
None	1	500 ml plastic	None	Various	Unfiltered
None	1	500 ml plastic	HNO3	Metals	Filtered
None	1	500 ml plastic	H2SO4	Ammonia	Unfiltered
None	2	150 ml glass	None	Mercury	Filtered

**Photographs:** None

**Remarks:** Well condition excellent. Pump rate ~0.2 gpm.

Time	Spec. Cond. (µmhos/cm @ 25°C)	pH (SU)	D.O. (ppm)	ORP (mV)	Turbidity (NTU)	Volume Removed (gal)	Depth to Water (ft)
1255							118.92
1300	81	8.5	1.2	55	28	1	121.20
1305	79	8.5	1.3	53	27	2	121.20
1310	79	8.5	1.7	47	16	3	121.29
1410	78	8.5	8.1	66	68	15	120.73
1415	78	8.5	8.0	64	67	16	120.80
1420	77	8.5	7.9	62	67	17	120.78
1425	78	8.5	6.9	61	35	18	120.76
1430	78	8.5	6.3	62	24	19	120.74
1435	78	8.5	6.2	60	23	20	120.74

## North Jackson Company Groundwater Sampling Log

**Proj. Name:** GW Discharge Permit Operational  
**Weather:** Sunny, ~70°s F  
**Location:** QAL053A  
**Sample ID:** QALM053A  
**KEX ID:** EAG-1001777

**Date:** 8/13/08  
**Sampler(s):** CLS/RRE  
**Sampling time:** 1430

**Odor:** None  
**Appearance:** Clear

**Temperature (°C):** 8.7  
**Spec. Cond. (µmhos/cm @ 25°C):** 114  
**Conductivity (µmhos):** 77  
**pH (SU):** 8.5  
**D.O. (ppm):** 2.6  
**ORP(mV):** 60  
**Turbidity (NTU):** <1

**Description of measuring point**

Mark on riser

Total depth: 93 ft  
 Approx. Depth to water: 78 ft  
 Water column in well: 15 ft  
 Volume/foot: 0.26 gal/ft  
 Well volume: 4 gal

Well diameter (in): 2.5  
 Gallons purged  
 prior to sampling: ~23

**Evacuation method:** Dedicated submersible pump with dedicated tubing

Tag	# Collected	Bottle	Preservative	Parameter	Comment
None	1	500 ml plastic	None	Various	Unfiltered
None	1	500 ml plastic	HNO3	Metals	Unfiltered
None	1	500 ml plastic	H2SO4	Ammonia	Unfiltered
None	2	150 ml glass	None	Mercury	Unfiltered

**Photographs:** None

**Remarks:** Well condition excellent. Pump rate ~0.75 gpm.

Time	Spec. Cond. (µmhos/cm @ 25°C)	pH (SU)	D.O. (ppm)	ORP (mV)	Turbidity (NTU)	Volume Removed (gal)	Depth to Water (ft)
1400							78.17
1410	115	8.5	3.1	20	<1	8	79.31
1415	114	8.5	2.8	36	<1	11	79.28
1420	114	8.6	2.7	46	<1	15	79.29
1425	114	8.6	2.6	55	<1	19	79.29
1430	114	8.5	2.6	60	<1	23	79.29

## North Jackson Company Groundwater Sampling Log

**Proj. Name:** GW Discharge Permit Operational  
**Weather:** Partly cloudy, ~80°s F  
**Location:** QAL055A  
**Sample ID:** QALM055A  
**KEX ID:** EAG-1001778

**Date:** 8/12/08  
**Sampler(s):** RRE/CLS  
**Sampling time:** 1425

**Odor:** None  
**Appearance:** Clear

**Temperature (°C):** 8.9  
**Spec. Cond. (µmhos/cm @ 25°C):** 47  
**Conductivity (µmhos):** 32  
**pH (SU):** 8.8  
**D.O. (ppm):** NM  
**ORP(mV):** 56  
**Turbidity (NTU):** 2

**Description of measuring point**

Mark on riser

Total depth: 115 ft  
 Approx. Depth to water: 100 ft  
 Water column in well: 15 ft  
 Volume/foot: 0.26 gal/ft  
 Well volume: 4 gal

Well diameter (in): 2.5  
 Gallons purged  
 prior to sampling: ~20

**Evacuation method:** Dedicated submersible pump with dedicated tubing

Tag	# Collected	Bottle	Preservative	Parameter	Comment
None	1	500 ml plastic	None	Various	Unfiltered
None	1	500 ml plastic	HNO3	Metals	Unfiltered
None	1	500 ml plastic	H2SO4	Ammonia	Unfiltered
None	2	150 ml glass	None	Mercury	Unfiltered

**Photographs:** None

**Remarks:** Well condition excellent. Pump rate ~1 gpm.

DO instrument malfunction so DO not used for stabilization.

Time	Spec. Cond. (µmhos/cm @ 25°C)	pH (SU)	ORP (mV)	Turbidity (NTU)	Volume Removed (gal)	Depth to Water (ft)
1405						100.16
1410	47	8.9	62	2	5	101.89
1415	47	8.8	57	2	10	101.85
1420	47	8.8	56	2	15	101.84
1425	47	8.8	56	2	20	101.82

## North Jackson Company Groundwater Sampling Log

**Proj. Name:** GW Discharge Permit Operational  
**Weather:** Sunny, ~70°s F  
**Location:** QAL056A  
**Sample ID:** QALM056A  
**KEX ID:** EAG-1001779

**Date:** 8/12/08  
**Sampler(s):** CLS/RRE  
**Sampling time:** 1410

**Odor:** None  
**Appearance:** Clear

**Temperature (°C):** 8.3  
**Spec. Cond. (µmhos/cm @ 25°C):** 56  
**Conductivity (µmhos):** 37  
**pH (SU):** 9.2  
**D.O. (ppm):** 11.8  
**ORP(mV):** 103  
**Turbidity (NTU):** <1

**Description of measuring point**

Mark on riser

Total depth: 92 ft  
 Approx. Depth to water: 76 ft  
 Water column in well: 16 ft  
 Volume/foot: 0.26 gal/ft  
 Well volume: 4 gal

Well diameter (in): 2.5  
 Gallons purged  
 prior to sampling: ~25

**Evacuation method:** Dedicated submersible pump with dedicated tubing

Tag	# Collected	Bottle	Preservative	Parameter	Comment
None	1	500 ml plastic	None	Various	Unfiltered
None	1	500 ml plastic	HNO3	Metals	Unfiltered
None	1	500 ml plastic	H2SO4	Ammonia	Unfiltered
None	2	150 ml glass	None	Mercury	Unfiltered

**Photographs:** None

**Remarks:** Well condition excellent. Pump rate ~1 gpm.

Time	Spec. Cond. (µmhos/cm @ 25°C)	pH (SU)	D.O. (ppm)	Turbidity (NTU)	Volume Removed (gal)	Depth to Water (ft)
1345						75.94
1350	56	9.1	11.3	<1	5	76.69
1355	57	9.2	11.8	<1	10	76.79
1400	56	9.2	11.8	<1	15	76.78
1405	56	9.2	11.8	<1	20	76.79
1410	56	9.2	11.8	<1	25	76.79

## North Jackson Company Groundwater Sampling Log

**Proj. Name:** GW Discharge Permit Operational  
**Weather:** Partly cloudy, ~70°s F  
**Location:** QAL057A  
**Sample ID:** QALM057A  
**KEX ID:** EAG-1001780

**Date:** 8/12/08  
**Sampler(s):** RRE/CLS  
**Sampling time:** 1150

**Odor:** None  
**Appearance:** Clear

**Temperature (°C):** 8.5  
**Spec. Cond. (µmhos/cm @ 25°C):** 43  
**Conductivity (µmhos):** 29  
**pH (SU):** 8.8  
**D.O. (ppm):** NM  
**ORP(mV):** 72  
**Turbidity (NTU):** <1

**Description of measuring point**

**Mark on riser**

Total depth: 118 ft  
 Approx. Depth to water: 106 ft  
 Water column in well: 12 ft  
 Volume/foot: 0.26 gal/ft  
 Well volume: 3 gal

Well diameter (in): 2.5  
 Gallons purged  
 prior to sampling: ~20

**Evacuation method:** Dedicated submersible pump with dedicated tubing

Tag	# Collected	Bottle	Preservative	Parameter	Comment
None	1	500 ml plastic	None	Various	Unfiltered
None	1	500 ml plastic	HNO3	Metals	Unfiltered
None	1	500 ml plastic	H2SO4	Ammonia	Unfiltered
None	2	150 ml glass	None	Mercury	Unfiltered

**Photographs:** None

**Remarks:** Well condition excellent. Pump rate ~1 gpm.

Time	Spec. Cond. (µmhos/cm @ 25°C)	pH (SU)	ORP (mV)	Turbidity (NTU)	Volume Removed (gal)	Depth to Water (ft)
1130						105.96
1135	44	8.8	68	<1	5	106.15
1140	43	8.8	69	<1	10	106.15
1145	43	8.8	71	<1	15	106.15
1150	43	8.8	72	NM	20	106.15

## North Jackson Company Groundwater Sampling Log

**Proj. Name:** GW Discharge Permit Operational  
**Weather:** Sunny, ~70°s F  
**Location:** QAL057D  
**Sample ID:** QALM057D  
**KEX ID:** EAG-1001781

**Date:** 8/12/08  
**Sampler(s):** CLS/RRE  
**Sampling time:** 1200

**Odor:** None  
**Appearance:** Clear

**Temperature (°C):** 8.6  
**Spec. Cond. (µmhos/cm @ 25°C):** 107  
**Conductivity (µmhos):** 72  
**pH (SU):** 8.8  
**D.O. (ppm):** 3.7  
**ORP(mV):** 91  
**Turbidity (NTU):** <1

**Description of measuring point**

Mark on riser

Total depth: 130 ft  
 Approx. Depth to water: 106 ft  
 Water column in well: 24 ft  
 Volume/foot: 0.26 gal/ft  
 Well volume: 6 gal

Well diameter (in): 2.5  
 Gallons purged  
 prior to sampling: ~15

**Evacuation method:** Dedicated submersible pump with dedicated tubing

Tag	# Collected	Bottle	Preservative	Parameter	Comment
None	2	500 ml plastic	None	Various	Unfiltered
None	2	500 ml plastic	HNO3	Metals	Unfiltered
None	2	500 ml plastic	H2SO4	Ammonia	Unfiltered
None	4	150 ml glass	None	Mercury	Unfiltered

**Photographs:** None

**Remarks:** Well condition excellent. Pump rate ~0.75 gpm.

Masked duplicate (DUPM001, EAG-1001782) collected here.

Time	Spec. Cond. (µmhos/cm @ 25°C)	pH (SU)	D.O. (ppm)	Turbidity (NTU)	Volume Removed (gal)	Depth to Water (ft)
1140						105.71
1145	108	8.6	4.1	<1	4	105.89
1150	108	8.6	3.9	<1	8	105.89
1155	107	8.9	3.7	<1	11	105.89
1200	107	8.8	3.7	<1	15	105.89

# North Jackson Company

## Field Sampling Report

Project Name: GW Discharge Permit Operational

Contact: North Jackson Company  
1004 Harbor Hills Drive, Suite 102  
Marquette, Michigan 49855  
Phone (906) 225-6787

### Summary of Sampling Activities

Sampling Date(s): 9/16/08, 9/17/08 and 9/18/08

Activities: Collected groundwater samples at QAL008A/D, QAL026A/D, QAL029A/D, QAL050A, QAL051A/D, QAL052A, QAL053A, QAL055A, QAL056A and QAL057A/D.

Collected QA/QC samples, including 2 masked duplicates and 3 field (atmospheric) blanks.

### Field Report Attachments

Field Analytical Data Summary	Yes
Flow Measurement	No
Water Sampling Log	No
Chain of Custody Numbers	20080916, 20080917, 20080918

### Laboratory Analysis

TriMatrix - Metals, LL Hg, major cations & anions, general chemistry

Sampler Name(s): Curt Sheffield (CLS), Richard Eagle (RRE) and Kamran Syed (KHS)

## North Jackson Company Groundwater Field Data Summary

**Project Name:** GW Discharge Permit Operational

Location	Sample ID	KEX ID	Sampling Date	Temp (°C)	Spec Cond (µmhos/cm @ 25°C)	pH (SU)	DO (ppm)	ORP (mV)	Turbidity (NTU)
QAL008A	QALM008A	EAG-1001786	9/16/08	8.6	74	9.3	11.7	95	<1
QAL008D	QALM008D	EAG-1001787	9/16/08	9.4	139	8.7	6.4	136	<1
QAL026A	QALM026A	EAG-1001788	9/17/08	8.6	41	7.3	11.6	175	<1
QAL026D	QALM026D	EAG-1001789	9/17/08	7.7	60	7.8	NM	231	<1
QAL029A	QALM029A	EAG-1001790	9/16/08	7.6	32	7.1	NM	158	6
QAL029D	QALM029D	EAG-1001791	9/17/08	8.5	100	8.1	5.5	204	45
QAL050A	QALM050A	EAG-1001792	9/17/08	7.6	NM	8.5	11.2	188	<1
QAL051A	QALM051A	EAG-1001793	9/17/08	i	i	i	i	i	17
QAL051D	QALM051D	EAG-1001794	9/16/08	8.7	172	8.5	0.3	-97	<1
QAL052A	QALM052A	EAG-1001795	9/18/08	9.7	170	8.5	7.5	90	36
QAL053A	QALM053A	EAG-1001796	9/17/08	7.7	161	8.7	2.6	58	<1
QAL055A	QALM055A	EAG-1001778	9/17/08	7.8	104	9.0	10.2	118	<1
QAL056A	QALM056A	EAG-1001798	9/17/08	8.1	80	9.2	11.8	91	<1
QAL057A	QALM057A	EAG-1001799	9/16/08	8.5	95	9.1	11.0	97	<1
QAL057D	QALM057D	EAG-1001800	9/16/08	8.1	174	8.3	5.5	166	<1

i Insufficient water to collect field parameters.  
 NM Not measured.

**North Jackson Company**  
**Quality Control Sampling Summary**

**Project Name:** GW Discharge Permit Operational

<b>Sample ID</b>	<b>Sampling Date</b>	<b>Description</b>
DUPM001 (EAG-1001801)	9/16/08	Masked duplicate (QALM057A)
DUPM002 (EAG-1001803)	9/17/08	Masked duplicate (QALM026D)
FBKM001 (EAG-1001802)	9/16/08	Field Blank
FBKM002 (EAG-1001804)	9/17/08	Field Blank
FBKM003 (EAG-1001828)	9/18/08	Field Blank

## North Jackson Company Groundwater Sampling Log

**Proj. Name:** GW Discharge Permit Operational  
**Weather:** Clear, ~70°s F  
**Location:** QAL008A  
**Sample ID:** QALM008A  
**KEX ID:** EAG-1001786

**Date:** 9/16/08  
**Sampler(s):** CLS/RRE  
**Sampling time:** 1605

**Odor:** None  
**Appearance:** Clear

**Temperature (°C):** 8.6  
**Spec. Cond. (µmhos/cm @ 25°C):** 74  
**Conductivity (µmhos):** 50  
**pH (SU):** 9.3  
**D.O. (ppm):** 11.7  
**ORP(mV):** 95  
**Turbidity (NTU):** <1

<b>Description of measuring point</b>	<b>Mark on riser</b>	
Total depth: <u>93</u> ft		Well diameter (in): <u>2</u>
Approx. Depth to water: <u>78</u> ft		
Water column in well: <u>15</u> ft		Gallons purged prior to sampling: <u>~24</u>
Volume/foot: <u>0.16</u> gal/ft		
Well volume: <u>2</u> gal		

**Evacuation method:** Dedicated submersible pump with dedicated tubing

Tag	# Collected	Bottle	Preservative	Parameter	Comment
None	1	500 ml plastic	None	Various	Unfiltered
None	1	500 ml plastic	HNO3	Metals	Unfiltered
None	1	500 ml plastic	H2SO4	Ammonia	Unfiltered
None	2	150 ml glass	None	Mercury	Unfiltered

**Photographs:** None

**Remarks:** Well condition excellent. Pump rate ~0.8 gpm.

Time	Spec. Cond. (µmhos/cm @ 25°C)	pH (SU)	D.O. (ppm)	Turbidity (NTU)	Volume Removed (gal)	Depth to Water (ft)
1535						78.38
1540	74	9.3	11.2	<1	4	79.45
1545	74	9.3	11.4	<1	8	79.45
1550	74	9.4	11.5	<1	12	79.46
1555	74	9.2	11.6	<1	16	79.47
1600	74	9.2	11.6	<1	20	79.47
1605	74	9.3	11.7	<1	24	79.48

## North Jackson Company Groundwater Sampling Log

**Proj. Name:** GW Discharge Permit Operational  
**Weather:** Sunny, ~60°s F  
**Location:** QAL008D  
**Sample ID:** QALM008D  
**KEX ID:** EAG-1001787

**Date:** 9/16/08  
**Sampler(s):** CLS/RRE  
**Sampling time:** 1520

**Odor:** None  
**Appearance:** Clear

**Temperature (°C):** 9.4  
**Spec. Cond. (µmhos/cm @ 25°C):** 139  
**Conductivity (µmhos):** 96  
**pH (SU):** 8.7  
**D.O. (ppm):** 6.4  
**ORP(mV):** 136  
**Turbidity (NTU):** <1

<b>Description of measuring point</b>	<b>Mark on riser</b>
Total depth: <u>123</u> ft	Well diameter (in): <u>2.5</u>
Approx. Depth to water: <u>114</u> ft	
Water column in well: <u>9</u> ft	Gallons purged prior to sampling: <u>~2</u>
Volume/foot: <u>0.26</u> gal/ft	
Well volume: <u>2</u> gal	

**Evacuation method:** Dedicated submersible pump with dedicated tubing

Tag	# Collected	Bottle	Preservative	Parameter	Comment
None	1	500 ml plastic	None	Various	Unfiltered
None	1	500 ml plastic	HNO3	Metals	Unfiltered
None	1	500 ml plastic	H2SO4	Ammonia	Unfiltered
None	2	150 ml glass	None	Mercury	Unfiltered

**Photographs:** None

**Remarks:** Well condition excellent. Pump rate ~0.1 gpm.

Time	Spec. Cond. (µmhos/cm @ 25°C)	pH (SU)	D.O. (ppm)	ORP (mV)	Turbidity (NTU)	Volume Removed (gal)	Depth to Water (ft)
1455							114.07
1500	141	8.7	8.4	102	<1	0.5	114.42
1505	138	8.7	7.5	115	<1	1.0	114.43
1510	139	8.7	6.5	129	<1	1.5	114.85
1515	139	8.7	6.5	134	<1	2.0	114.86
1520	139	8.7	6.4	136	<1	2.5	114.87

## North Jackson Company Groundwater Sampling Log

**Proj. Name:** GW Discharge Permit Operational  
**Weather:** Partly cloudy, ~30°s F  
**Location:** QAL026A  
**Sample ID:** QALM026A  
**KEX ID:** EAG-1001788

**Date:** 9/17/08  
**Sampler(s):** CLS/RRE  
**Sampling time:** 0935

**Odor:** None  
**Appearance:** Clear

**Temperature (°C):** 8.6  
**Spec. Cond. (µmhos/cm @ 25°C):** 41  
**Conductivity (µmhos):** 28  
**pH (SU):** 7.3  
**D.O. (ppm):** 11.6  
**ORP(mV):** 175  
**Turbidity (NTU):** <1

<b>Description of measuring point</b>	<b>Mark on riser</b>	
Total depth: <u>48</u> ft		Well diameter (in): <u>2</u>
Approx. Depth to water: <u>42</u> ft		
Water column in well: <u>6</u> ft		Gallons purged
Volume/foot: <u>0.16</u> gal/ft		prior to sampling: <u>~6</u>
Well volume: <u>1</u> gal		

**Evacuation method:** Dedicated submersible pump with dedicated tubing

Tag	# Collected	Bottle	Preservative	Parameter	Comment
None	1	500 ml plastic	None	Various	Unfiltered
None	1	500 ml plastic	HNO3	Metals	Unfiltered
None	1	500 ml plastic	H2SO4	Ammonia	Unfiltered
None	2	150 ml glass	None	Mercury	Unfiltered

**Photographs:** None

**Remarks:** Well condition excellent. Pump rate ~0.2 gpm.

Time	Spec. Cond. (µmhos/cm @ 25°C)	pH (SU)	D.O. (ppm)	ORP (mV)	Turbidity (NTU)	Volume Removed (gal)	Depth to Water (ft)
0905							42.06
0910	40	7.8	11.3	155	5	1	44.16
0915	40	7.6	11.5	167	<1	2	44.14
0920	41	7.5	11.5	173	<1	3	44.12
0925	41	7.3	11.6	175	<1	4	44.10
0930	41	7.3	11.6	175	<1	5	44.10
0935	41	7.3	11.6	175	<1	6	44.10

## North Jackson Company Groundwater Sampling Log

**Proj. Name:** GW Discharge Permit Operational  
**Weather:** Sunny, ~50°s F  
**Location:** QAL026D  
**Sample ID:** QALM026D  
**KEX ID:** EAG-1001789

**Date:** 9/17/08  
**Sampler(s):** CLS/RRE  
**Sampling time:** 0930

**Odor:** None  
**Appearance:** Clear

**Temperature (°C):** 7.7  
**Spec. Cond. (µmhos/cm @ 25°C):** 60  
**Conductivity (µmhos):** 39  
**pH (SU):** 7.8  
**D.O. (ppm):** NM  
**ORP(mV):** 231  
**Turbidity (NTU):** <1

**Description of measuring point**

Mark on riser

**Total depth:** 83 ft  
**Approx. Depth to water:** 50 ft  
**Water column in well:** 33 ft  
**Volume/foot:** 0.26 gal/ft  
**Well volume:** 9 gal

**Well diameter (in):** 2.5  
**Gallons purged prior to sampling:** ~25

**Evacuation method:** Dedicated submersible pump with dedicated tubing

Tag	# Collected	Bottle	Preservative	Parameter	Comment
None	2	500 ml plastic	None	Various	Unfiltered
None	2	500 ml plastic	HNO3	Metals	Unfiltered
None	2	500 ml plastic	H2SO4	Ammonia	Unfiltered
None	4	150 ml glass	None	Mercury	Unfiltered

**Photographs:** None

**Remarks:** Well condition excellent. Pump rate ~1 gpm. Instrument failure for D.O. measurement.  
Masked duplicate (DUPM002, EAG-1001803) collected here.

Time	Spec. Cond. (µmhos/cm @ 25°C)	pH (SU)	ORP (mV)	Turbidity (NTU)	Volume Removed (gal)	Depth to Water (ft)
0905						49.35
0910	59	7.9	207	1	5	49.51
0915	60	7.8	217	<1	10	49.50
0920	60	7.8	224	<1	15	49.50
0925	59	7.8	228	<1	20	49.50
0930	60	7.8	231	<1	25	49.50

## North Jackson Company Groundwater Sampling Log

**Proj. Name:** GW Discharge Permit Operational  
**Weather:** Clear, ~70°s F  
**Location:** QAL029A  
**Sample ID:** QALM029A  
**KEX ID:** EAG-1001790

**Date:** 9/16/08  
**Sampler(s):** CLS/RRE  
**Sampling time:** 1030

**Odor:** None  
**Appearance:** Clear

**Temperature (°C):** 7.6  
**Spec. Cond. (µmhos/cm @ 25°C):** 32  
**Conductivity (µmhos):** 21  
**pH (SU):** 7.1  
**D.O. (ppm):** NM  
**ORP(mV):** 158  
**Turbidity (NTU):** 6

**Description of measuring point:** Mark on riser

**Total depth:** 50 ft  
**Approx. Depth to water:** 41 ft  
**Water column in well:** 9 ft  
**Volume/foot:** 0.16 gal/ft  
**Well volume:** 2 gal

**Well diameter (in):** 2  
**Gallons purged prior to sampling:** ~18

**Evacuation method:** Dedicated submersible pump with dedicated tubing

Tag	# Collected	Bottle	Preservative	Parameter	Comment
None	1	500 ml plastic	None	Various	Unfiltered
None	2	500 ml plastic	HNO3	Metals	Filtered/Unfilterec
None	1	500 ml plastic	H2SO4	Ammonia	Unfiltered
None	8	150 ml glass	None	Mercury	Filtered/Unfilterec

**Photographs:** None

**Remarks:** Well condition excellent. Pump rate ~0.5 gpm. Instrument failure for D.O. measurement.  
FBKM001 and lab MS/MSD collected here.

Time	Spec. Cond. (µmhos/cm @ 25°C)	pH (SU)	ORP (mV)	Turbidity (NTU)	Volume Removed (gal)	Depth to Water (ft)
0955						40.70
1000	62	7.6	165	11	3	42.30
1005	37	7.4	166	12	5	42.10
1010	35	7.3	163	8	8	42.10
1015	33	7.2	160	9	10	42.19
1020	33	7.2	159	7	13	42.19
1025	31	7.2	158	7	15	42.19
1030	32	7.1	158	7	18	42.19

## North Jackson Company Groundwater Sampling Log

**Proj. Name:** GW Discharge Permit Operational  
**Weather:** Sunny, ~70°s F  
**Location:** QAL029D  
**Sample ID:** QALM029D  
**KEX ID:** EAG-1001791

**Date:** 9/17/08  
**Sampler(s):** RRE/CLS  
**Sampling time:** 1050

**Odor:** None  
**Appearance:** Cloudy

**Temperature (°C):** 8.5  
**Spec. Cond. (µmhos/cm @ 25°C):** 100  
**Conductivity (µmhos):** 67  
**pH (SU):** 8.1  
**D.O. (ppm):** 5.5  
**ORP(mV):** 204  
**Turbidity (NTU):** 45

Description of measuring point	Mark on riser
Total depth: <u>77</u> ft	Well diameter (in): <u>2</u>
Approx. Depth to water: <u>51</u> ft	
Water column in well: <u>26</u> ft	Gallons purged
Volume/foot: <u>0.16</u> gal/ft	prior to sampling: <u>~4</u>
Well volume: <u>4</u> gal	

**Evacuation method:** Dedicated submersible pump with dedicated tubing

Tag	# Collected	Bottle	Preservative	Parameter	Comment
None	1	500 ml plastic	None	Various	Unfiltered
None	1	500 ml plastic	HNO3	Metals	Filtered
None	1	500 ml plastic	H2SO4	Ammonia	Unfiltered
None	2	150 ml glass	None	Mercury	Filtered

**Photographs:** None

**Remarks:** Well condition excellent. Pumped dry on 9/16/08 and sampled on 9/17/08.  
Insufficient water for stabilization record.

## North Jackson Company Groundwater Sampling Log

**Proj. Name:** GW Discharge Permit Operational  
**Weather:** Sunny, ~60°s F  
**Location:** QAL050A  
**Sample ID:** QALM050A  
**KEX ID:** EAG-1001792

**Date:** 9/17/08  
**Sampler(s):** CLS/RRE  
**Sampling time:** 1349

**Odor:** None  
**Appearance:** Clear

**Temperature (°C):** 7.6  
**Spec. Cond. (µmhos/cm @ 25°C):** NM  
**Conductivity (µmhos):** NM  
**pH (SU):** 8.5  
**D.O. (ppm):** 11.2  
**ORP(mV):** 188  
**Turbidity (NTU):** <1

<b>Description of measuring point</b>	<b>Mark on riser</b>
Total depth: <u>120</u> ft	Well diameter (in): <u>2.5</u>
Approx. Depth to water: <u>107</u> ft	
Water column in well: <u>13</u> ft	Gallons purged
Volume/foot: <u>0.26</u> gal/ft	prior to sampling: <u>~29</u>
Well volume: <u>3</u> gal	

**Evacuation method:** Dedicated submersible pump with dedicated tubing

Tag	# Collected	Bottle	Preservative	Parameter	Comment
None	1	500 ml plastic	None	Various	Unfiltered
None	1	500 ml plastic	HNO3	Metals	Unfiltered
None	1	500 ml plastic	H2SO4	Ammonia	Unfiltered
None	4	150 ml glass	None	Mercury	Unfiltered

**Photographs:** None

**Remarks:** Well condition excellent. Pump rate ~1 gpm. MS/MSD for lab collected here.  
Instrument malfunction for specific conductivity measurement so no spec cond values recorded for stabilization.

Time	pH (SU)	D.O. (ppm)	ORP (mV)	Turbidity (NTU)	Volume Removed (gal)	Depth to Water (ft)
1320						106.61
1325	8.7	12.0	172	3	5	106.86
1330	8.7	11.7	173	<1	10	106.84
1335	8.6	11.4	178	<1	15	106.85
1340	8.6	11.3	182	<1	20	106.84
1343	8.6	11.2	184	<1	23	106.84
1346	8.5	11.2	187	<1	26	106.84
1349	8.5	11.2	188	<1	29	106.84

## North Jackson Company Groundwater Sampling Log

**Proj. Name:** GW Discharge Permit Operational  
**Weather:** Sunny, ~60°s F  
**Location:** QAL051A  
**Sample ID:** QALM051A  
**KEX ID:** EAG-1001793

**Date:** 9/17/08  
**Sampler(s):** RRE/KHS  
**Sampling time:** 1135

**Odor:** None  
**Appearance:** Clear

Temperature (°C): i  
 Spec. Cond. (µmhos/cm @ 25°C): i  
 Conductivity (µmhos): i  
 pH (SU): i  
 D.O. (ppm): i  
 ORP(mV): i  
 Turbidity (NTU): 17

Description of measuring point	Mark on riser
Total depth: <u>107</u> ft	Well diameter (in): <u>2.5</u>
Approx. Depth to water: <u>103</u> ft	
Water column in well: <u>4</u> ft	Gallons purged
Volume/foot: <u>0.26</u> gal/ft	prior to sampling: <u>~1</u>
Well volume: <u>0.9</u> gal	

**Evacuation method:** Dedicated submersible pump with dedicated tubing

Tag	# Collected	Bottle	Preservative	Parameter	Comment
None	1	500 ml plastic	None	Various	Unfiltered
None	1	500 ml plastic	HNO3	Metals	Filtered
None	1	500 ml plastic	H2SO4	Ammonia	Unfiltered
None	2	150 ml glass	None	Mercury	Filtered

**Photographs:** None

**Remarks:** Well condition excellent. Pumped dry on 9/16/08 and sampled on 9/17/08. Insufficient water for collection of field parameters or stabilization record.

## North Jackson Company Groundwater Sampling Log

**Proj. Name:** GW Discharge Permit Operational  
**Weather:** Clear, ~70°s F  
**Location:** QAL051D  
**Sample ID:** QALM051D  
**KEX ID:** EAG-1001794

**Date:** 9/16/08  
**Sampler(s):** CLS/RRE  
**Sampling time:** 1305

**Odor:** None  
**Appearance:** Clear

**Temperature (°C):** 8.7  
**Spec. Cond. (µmhos/cm @ 25°C):** 172  
**Conductivity (µmhos):** 116  
**pH (SU):** 8.5  
**D.O. (ppm):** 0.3  
**ORP(mV):** -97  
**Turbidity (NTU):** <1

**Description of measuring point**

Mark on riser

**Total depth:** 120 ft  
**Approx. Depth to water:** 104 ft  
**Water column in well:** 16 ft  
**Volume/foot:** 0.26 gal/ft  
**Well volume:** 4 gal

**Well diameter (in):** 2.5  
**Gallons purged prior to sampling:** ~8

**Evacuation method:** Dedicated submersible pump with dedicated tubing

Tag	# Collected	Bottle	Preservative	Parameter	Comment
None	1	500 ml plastic	None	Various	Unfiltered
None	1	500 ml plastic	HNO3	Metals	Unfiltered
None	1	500 ml plastic	H2SO4	Ammonia	Unfiltered
None	2	150 ml glass	None	Mercury	Unfiltered

**Photographs:** None

**Remarks:** Well condition excellent. Pump rate ~0.4 gpm.

Time	Spec. Cond. (µmhos/cm @ 25°C)	pH (SU)	D.O. (ppm)	ORP (mV)	Turbidity (NTU)	Volume Removed (gal)	Depth to Water (ft)
1245							103.52
1250	174	8.4	0.7	-59	<1	2	105.10
1255	173	8.5	0.4	-81	<1	4	105.14
1300	172	8.6	0.4	-90	<1	6	105.15
1305	172	8.5	0.3	-97	<1	8	105.16

## North Jackson Company Groundwater Sampling Log

**Proj. Name:** GW Discharge Permit Operational  
**Weather:** Clear, ~50°s F  
**Location:** QAL052A  
**Sample ID:** QALM052A  
**KEX ID:** EAG-1001795

**Date:** 9/18/08  
**Sampler(s):** RRE/KHS  
**Sampling time:** 1600

**Odor:** None  
**Appearance:** Silty clay

**Temperature (°C):** 9.7  
**Spec. Cond. (µmhos/cm @ 25°C):** 170  
**Conductivity (µmhos):** 118  
**pH (SU):** 8.5  
**D.O. (ppm):** 7.5  
**ORP(mV):** 90  
**Turbidity (NTU):** 36

**Description of measuring point:** Mark on riser

Total depth: <u>125</u> ft	Well diameter (in): <u>2.5</u>
Approx. Depth to water: <u>117</u> ft	
Water column in well: <u>8</u> ft	
Volume/foot: <u>0.26</u> gal/ft	Gallons purged prior to sampling: <u>-8</u>
Well volume: <u>2</u> gal	

**Evacuation method:** Dedicated submersible pump with dedicated tubing

Tag	# Collected	Bottle	Preservative	Parameter	Comment
None	1	500 ml plastic	None	Various	Unfiltered
None	1	500 ml plastic	HNO3	Metals	Filtered
None	1	500 ml plastic	H2SO4	Ammonia	Unfiltered
None	2	150 ml glass	None	Mercury	Filtered

**Photographs:** None

**Remarks:** Well condition excellent. Pump rate ~0.1 gpm.

Time	Spec. Cond. (µmhos/cm @ 25°C)	pH (SU)	D.O. (ppm)	ORP (mV)	Turbidity (NTU)	Volume Removed (gal)	Depth to Water (ft)
1440							116.89
1445	174	8.0	5.3	37	47	0.5	120.28
1450	172	8.3	5.2	52	46	1.0	120.23
1455	173	8.4	5.6	65	30	1.5	120.20
1500	176	8.4	5.9	72	NM	2.0	120.05
1510	172	8.4	8.5	87	49	3.0	120.04
1515	172	8.5	7.7	75	55	3.5	120.10
1520	172	8.5	7.7	73	60	4.0	119.07
1540	175	8.4	8.4	NM	45	6.0	199.55
1545	171	8.5	7.8	68	43	6.5	199.50
1550	172	8.5	7.8	80	42	7.0	119.48
1555	171	8.5	7.6	86	38	7.5	119.46

## North Jackson Company Groundwater Sampling Log

**Proj. Name:** GW Discharge Permit Operational  
**Weather:** Partly cloudy, ~60°s F  
**Location:** QAL053A  
**Sample ID:** QALM053A  
**KEX ID:** EAG-1001796

**Date:** 9/17/08  
**Sampler(s):** CLS/RRE  
**Sampling time:** 1405

**Odor:** None  
**Appearance:** Clear

**Temperature (°C):** 7.7  
**Spec. Cond. (µmhos/cm @ 25°C):** 161  
**Conductivity (µmhos):** 105  
**pH (SU):** 8.7  
**D.O. (ppm):** 2.6  
**ORP(mV):** 58  
**Turbidity (NTU):** <1

<b>Description of measuring point</b>	<b>Mark on riser</b>	
Total depth: <u>93</u> ft		Well diameter (in): <u>2.5</u>
Approx. Depth to water: <u>79</u> ft		
Water column in well: <u>14</u> ft		Gallons purged prior to sampling: <u>~20</u>
Volume/foot: <u>0.26</u> gal/ft		
Well volume: <u>3</u> gal		

**Evacuation method:** Dedicated submersible pump with dedicated tubing

Tag	# Collected	Bottle	Preservative	Parameter	Comment
None	1	500 ml plastic	None	Various	Unfiltered
None	1	500 ml plastic	HNO3	Metals	Unfiltered
None	1	500 ml plastic	H2SO4	Ammonia	Unfiltered
None	2	150 ml glass	None	Mercury	Unfiltered

**Photographs:** None

**Remarks:** Well condition excellent. Pump rate ~1 gpm.

Time	Spec. Cond. (µmhos/cm @ 25°C)	pH (SU)	D.O. (ppm)	Turbidity (NTU)	Volume Removed (gal)	Depth to Water (ft)
1345						79.40
1350	161	8.7	3.3	<1	5	80.14
1355	161	8.7	2.7	<1	10	80.14
1400	161	8.7	2.7	<1	15	80.14
1405	161	8.7	2.6	<1	20	80.14

## North Jackson Company Groundwater Sampling Log

**Proj. Name:** GW Discharge Permit Operational  
**Weather:** Partly cloudy, ~60°s F  
**Location:** QAL055A  
**Sample ID:** QALM055A  
**KEX ID:** EAG-1001778

**Date:** 9/17/08  
**Sampler(s):** RRE/CLS  
**Sampling time:** 1320

**Odor:** None  
**Appearance:** Clear

**Temperature (°C):** 7.8  
**Spec. Cond. (µmhos/cm @ 25°C):** 104  
**Conductivity (µmhos):** 68  
**pH (SU):** 9.0  
**D.O. (ppm):** 10.2  
**ORP(mV):** 118  
**Turbidity (NTU):** <1

**Description of measuring point**

Mark on riser

Total depth: 115 ft  
 Approx. Depth to water: 102 ft  
 Water column in well: 13 ft  
 Volume/foot: 0.26 gal/ft  
 Well volume: 3 gal

Well diameter (in): 2.5  
 Gallons purged  
 prior to sampling: ~40

**Evacuation method:** Dedicated submersible pump with dedicated tubing

Tag	# Collected	Bottle	Preservative	Parameter	Comment
None	1	500 ml plastic	None	Various	Unfiltered
None	1	500 ml plastic	HNO3	Metals	Unfiltered
None	1	500 ml plastic	H2SO4	Ammonia	Unfiltered
None	2	150 ml glass	None	Mercury	Unfiltered

**Photographs:** None

**Remarks:** Well condition excellent. Pump rate ~2 gpm.

Time	Spec. Cond. (µmhos/cm @ 25°C)	pH (SU)	D.O. (ppm)	ORP (mV)	Turbidity (NTU)	Volume Removed (gal)	Depth to Water (ft)
1300							101.60
1305	103	9.0	10.3	122	<1	10	102.09
1310	103	9.0	10.2	120	<1	20	102.09
1315	103	9.0	10.2	116	<1	30	102.09
1320	104	9.0	10.2	118	<1	40	102.09

## North Jackson Company Groundwater Sampling Log

**Proj. Name:** GW Discharge Permit Operational  
**Weather:** Partly cloudy, ~60°s F  
**Location:** QAL056A  
**Sample ID:** QALM056A  
**KEX ID:** EAG-1001798

**Date:** 9/17/08  
**Sampler(s):** CLS/RRE  
**Sampling time:** 1050

**Odor:** None  
**Appearance:** Clear

**Temperature (°C):** 8.1  
**Spec. Cond. (µmhos/cm @ 25°C):** 80  
**Conductivity (µmhos):** 53  
**pH (SU):** 9.2  
**D.O. (ppm):** 11.8  
**ORP(mV):** 91  
**Turbidity (NTU):** <1

<b>Description of measuring point</b>	<b>Mark on riser</b>	
Total depth: <u>92</u> ft		Well diameter (in): <u>2.5</u>
Approx. Depth to water: <u>76</u> ft		
Water column in well: <u>16</u> ft		Gallons purged prior to sampling: <u>~20</u>
Volume/foot: <u>0.26</u> gal/ft		
Well volume: <u>4</u> gal		

**Evacuation method:** Dedicated submersible pump with dedicated tubing

Tag	# Collected	Bottle	Preservative	Parameter	Comment
None	1	500 ml plastic	None	Various	Unfiltered
None	1	500 ml plastic	HNO3	Metals	Unfiltered
None	1	500 ml plastic	H2SO4	Ammonia	Unfiltered
None	2	150 ml glass	None	Mercury	Unfiltered

**Photographs:** None

**Remarks:** Well condition excellent. Pump rate ~1 gpm.

Time	Spec. Cond. (µmhos/cm @ 25°C)	pH (SU)	D.O. (ppm)	Turbidity (NTU)	Volume Removed (gal)	Depth to Water (ft)
1030						75.75
1035	80	9.0	11.7	<1	5	76.76
1040	80	9.1	11.8	<1	10	76.76
1045	80	9.2	11.9	<1	15	76.77
1050	80	9.2	11.8	<1	20	76.78

## North Jackson Company Groundwater Sampling Log

**Proj. Name:** GW Discharge Permit Operational  
**Weather:** Sunny, ~60°s F  
**Location:** QAL057A  
**Sample ID:** QALM057A  
**KEX ID:** EAG-1001799

**Date:** 9/16/08  
**Sampler(s):** CLS/RRE  
**Sampling time:** 1415

**Odor:** None  
**Appearance:** Clear

**Temperature (°C):** 8.5  
**Spec. Cond. (µmhos/cm @ 25°C):** 95  
**Conductivity (µmhos):** 64  
**pH (SU):** 9.1  
**D.O. (ppm):** 11.0  
**ORP(mV):** 97  
**Turbidity (NTU):** <1

<b>Description of measuring point</b>	<b>Mark on riser</b>
Total depth: <u>118</u> ft	Well diameter (in): <u>2.5</u>
Approx. Depth to water: <u>106</u> ft	
Water column in well: <u>12</u> ft	Gallons purged
Volume/foot: <u>0.26</u> gal/ft	prior to sampling: <u>~19</u>
Well volume: <u>3</u> gal	

**Evacuation method:** Dedicated submersible pump with dedicated tubing

Tag	# Collected	Bottle	Preservative	Parameter	Comment
None	2	500 ml plastic	None	Various	Unfiltered
None	2	500 ml plastic	HNO3	Metals	Unfiltered
None	2	500 ml plastic	H2SO4	Ammonia	Unfiltered
None	4	150 ml glass	None	Mercury	Unfiltered

**Photographs:** None

**Remarks:** Well condition excellent. Pump rate ~0.75 gpm.

Masked duplicate (DUPM001, EAG-1001801) collected here.

Time	Spec. Cond. (µmhos/cm @ 25°C)	pH (SU)	D.O. (ppm)	ORP (mV)	Turbidity (NTU)	Volume Removed (gal)	Depth to Water (ft)
1350							105.67
1355	95	9.0	10.3	52	<1	4	105.84
1400	95	9.0	10.8	71	<1	8	105.85
1405	95	9.1	10.9	85	<1	11	105.84
1410	95	9.1	10.9	93	<1	15	105.84
1415	95	9.1	11.0	97	<1	19	105.84

## North Jackson Company Groundwater Sampling Log

**Proj. Name:** GW Discharge Permit Operational  
**Weather:** Clear, ~70°s F  
**Location:** QAL057D  
**Sample ID:** QALM057D  
**KEX ID:** EAG-1001800

**Date:** 9/16/08  
**Sampler(s):** CLS/RRE  
**Sampling time:** 1405

**Odor:** None  
**Appearance:** Clear

**Temperature (°C):** 8.1  
**Spec. Cond. (µmhos/cm @ 25°C):** 174  
**Conductivity (µmhos):** 115  
**pH (SU):** 8.3  
**D.O. (ppm):** 5.5  
**ORP(mV):** 166  
**Turbidity (NTU):** <1

**Description of measuring point**

Mark on riser

**Total depth:** 130 ft  
**Approx. Depth to water:** 105 ft  
**Water column in well:** 25 ft  
**Volume/foot:** 0.26 gal/ft  
**Well volume:** 6 gal

**Well diameter (in):** 2.5  
**Gallons purged prior to sampling:** ~25

**Evacuation method:** Dedicated submersible pump with dedicated tubing

Tag	# Collected	Bottle	Preservative	Parameter	Comment
None	1	500 ml plastic	None	Various	Unfiltered
None	1	500 ml plastic	HNO3	Metals	Unfiltered
None	1	500 ml plastic	H2SO4	Ammonia	Unfiltered
None	2	150 ml glass	None	Mercury	Unfiltered

**Photographs:** None

**Remarks:** Well condition excellent. Pump rate ~1 gpm.

Time	Spec. Cond. (µmhos/cm @ 25°C)	pH (SU)	D.O. (ppm)	ORP (mV)	Turbidity (NTU)	Volume Removed (gal)	Depth to Water (ft)
1340							105.46
1345	177	8.4	6.3	137	2	5	105.72
1350	174	8.3	5.7	151	<1	10	105.72
1355	174	8.3	5.6	159	<1	15	105.72
1400	174	8.3	5.5	162	<1	20	105.72
1405	174	8.3	5.5	166	<1	25	105.72

# North Jackson Company

## Field Sampling Report

Project Name: GW Discharge Permit Operational

Contact: North Jackson Company  
1004 Harbor Hills Drive, Suite 102  
Marquette, Michigan 49855  
Phone (906) 225-6787

### Summary of Sampling Activities

Sampling Date(s): 10/1/08 and 10/2/08

Activities: Collected groundwater samples at QAL008A/D, QAL026A/D, QAL029A/D, QAL050A, QAL051A/D, QAL052A, QAL053A, QAL055A, QAL056A and QAL057A/D.

Collected QA/QC samples, including 2 masked duplicates and 2 field (atmospheric) blanks.

### Field Report Attachments

Field Analytical Data Summary	Yes
Flow Measurement	No
Water Sampling Log	No
Chain of Custody Numbers	20081001, 20081002

### Laboratory Analysis

TriMatrix - Metals, LL Hg, major cations & anions, general chemistry

Sampler Name(s): Curt Sheffield (CLS) and Andy Maracini (AJM)

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## North Jackson Company Groundwater Field Data Summary

**Project Name:** GW Discharge Permit Operational

Location	Sample ID	KEX ID	Sampling Date	Temp (°C)	Spec Cond (µmhos/cm @ 25°C)	pH (SU)	DO (ppm)	ORP (mV)	Turbidity (NTU)
QAL008A	QALM008A	EAG-1001805	10/1/08	7.7	76	9.4	8	109	<1
QAL008D	QALM008D	EAG-1001806	10/1/08	7.9	143	8.8	4	117	<1
QAL026A	QALM026A	EAG-1001807	10/1/08	8.1	44	7.3	8	154	<1
QAL026D	QALM026D	EAG-1001808	10/1/08	7.5	88	9.1	8	93	<1
QAL029A	QALM029A	EAG-1001809	10/1/08	7.8	61	7.2	11.5	283	9
QAL029D	QALM029D	EAG-1001810	10/1/08	7.0	94	9.0	5.2	283	12
QAL050A	QALM050A	EAG-1001811	10/1/08	7.5	118	9.0	10	53	<1
QAL051A	QALM051A	EAG-1001812	10/2/08	i	i	i	i	i	12
QAL051D	QALM051D	EAG-1001813	10/2/08	8.6	180	8.7	0.3	-64	<1
QAL052A	QALM052A	EAG-1001814	10/1/08	7.7	180	8.6	1	34	6
QAL053A	QALM053A	EAG-1001815	10/1/08	8.3	101	9.0	2.5	209	<1
QAL055A	QALM055A	EAG-1001816	10/2/08	8.3	113	9.1	9.9	70	<1
QAL056A	QALM056A	EAG-1001817	10/1/08	7.9	51	9.7	11.4	234	<1
QAL057A	QALM057A	EAG-1001818	10/1/08	7.4	99	9.2	11	62	<1
QAL057D	QALM057D	EAG-1001819	10/2/08	7.9	151	8.8	5.3	73	<1

i Insufficient water to collect field parameters.

# North Jackson Company

## Quality Control Sampling Summary

**Project Name:** GW Discharge Permit Operational

<b>Sample ID</b>	<b>Sampling Date</b>	<b>Description</b>
DUPM001 (EAG-1001820)	10/1/08	Masked duplicate (QALM008A)
DUPM002 (EAG-1001822)	10/2/08	Masked duplicate (QALM057D)
FBKM001 (EAG-1001821)	10/1/08	Field Blank
FBKM002 (EAG-1001823)	10/2/08	Field Blank

## North Jackson Company Groundwater Sampling Log

**Proj. Name:** GW Discharge Permit Operational  
**Weather:** Cloudy, ~40°s F  
**Location:** QAL008A  
**Sample ID:** QALM008A  
**KEX ID:** EAG-1001805

**Date:** 10/1/08  
**Sampler(s):** CLS/AJM  
**Sampling time:** 1019

**Odor:** None  
**Appearance:** Clear

**Temperature (°C):** 7.7  
**Spec. Cond. (µmhos/cm @ 25°C):** 76  
**Conductivity (µmhos):** 50  
**pH (SU):** 9.4  
**D.O. (ppm):** 8  
**ORP(mV):** 109  
**Turbidity (NTU):** <1

<b>Description of measuring point</b>	<b>Mark on riser</b>
Total depth: <u>93</u> ft	Well diameter (in): <u>2</u>
Approx. Depth to water: <u>78</u> ft	
Water column in well: <u>15</u> ft	Gallons purged prior to sampling: <u>~10</u>
Volume/foot: <u>0.16</u> gal/ft	
Well volume: <u>2</u> gal	

**Evacuation method:** Dedicated submersible pump with dedicated tubing

Tag	# Collected	Bottle	Preservative	Parameter	Comment
None	2	500 ml plastic	None	Various	Unfiltered
None	2	500 ml plastic	HNO3	Metals	Unfiltered
None	2	500 ml plastic	H2SO4	Ammonia	Unfiltered
None	4	150 ml glass	None	Mercury	Unfiltered

**Photographs:** None

**Remarks:** Well condition excellent. Pump rate ~0.5 gpm. Instrument malfunction so turbidity not used for stabilization.  
Masked duplicate (DUPM001, EAG-1001920) collected here.

Time	Spec. Cond. (µmhos/cm @ 25°C)	pH (SU)	D.O. (ppm)	ORP (mV)	Volume Removed (gal)	Depth to Water (ft)
1000						78.38
1005	77	8.7	8	126	3	79.88
1010	76	9.3	8	115	5	79.88
1013	76	9.3	8	111	7	79.88
1016	76	9.4	8	109	8	79.88
1019	76	9.4	8	109	10	79.88

## North Jackson Company Groundwater Sampling Log

**Proj. Name:** GW Discharge Permit Operational  
**Weather:** Cloudy, ~40°s F  
**Location:** QAL008D  
**Sample ID:** QALM008D  
**KEX ID:** EAG-1001806

**Date:** 10/1/08  
**Sampler(s):** CLS/AJM  
**Sampling time:** 1102

**Odor:** None  
**Appearance:** Clear

**Temperature (°C):** 7.9  
**Spec. Cond. (µmhos/cm @ 25°C):** 143  
**Conductivity (µmhos):** 94  
**pH (SU):** 8.8  
**D.O. (ppm):** 4  
**ORP(mV):** 117  
**Turbidity (NTU):** <1

**Description of measuring point**

Mark on riser

**Total depth:** 123 ft  
**Approx. Depth to water:** 114 ft  
**Water column in well:** 9 ft  
**Volume/foot:** 0.26 gal/ft  
**Well volume:** 2 gal

**Well diameter (in):** 2.5  
**Gallons purged prior to sampling:** ~6

**Evacuation method:** Dedicated submersible pump with dedicated tubing

Tag	# Collected	Bottle	Preservative	Parameter	Comment
None	1	500 ml plastic	None	Various	Unfiltered
None	1	500 ml plastic	HNO3	Metals	Unfiltered
None	1	500 ml plastic	H2SO4	Ammonia	Unfiltered
None	2	150 ml glass	None	Mercury	Unfiltered

**Photographs:** None

**Remarks:** Well condition excellent. Pump rate ~0.5 gpm.

Time	Spec. Cond. (µmhos/cm @ 25°C)	D.O. (ppm)	ORP (mV)	Turbidity (NTU)	Volume Removed (gal)	Depth to Water (ft)
1050						114.06
1053	143	4	115	<1	2	115.71
1056	142	4	116	<1	3	115.71
1059	143	4	116	<1	5	115.71
1102	143	4	117	<1	6	115.69

## North Jackson Company Groundwater Sampling Log

**Proj. Name:** GW Discharge Permit Operational  
**Weather:** Rain, ~40°s F  
**Location:** QAL026A  
**Sample ID:** QALM026A  
**KEX ID:** EAG-1001807

**Date:** 10/1/08  
**Sampler(s):** CLS/AJM  
**Sampling time:** 1015

**Odor:** None  
**Appearance:** Clear, cloudy at start

**Temperature (°C):** 8.1  
**Spec. Cond. (µmhos/cm @ 25°C):** 44  
**Conductivity (µmhos):** 29  
**pH (SU):** 7.3  
**D.O. (ppm):** 8  
**ORP(mV):** 154  
**Turbidity (NTU):** <1

<b>Description of measuring point</b>	<b>Mark on riser</b>	
Total depth: <u>48</u> ft		Well diameter (in): <u>2</u>
Approx. Depth to water: <u>42</u> ft		
Water column in well: <u>6</u> ft		Gallons purged prior to sampling: <u>~8</u>
Volume/foot: <u>0.16</u> gal/ft		
Well volume: <u>1</u> gal		

**Evacuation method:** Dedicated submersible pump with dedicated tubing

Tag	# Collected	Bottle	Preservative	Parameter	Comment
None	1	500 ml plastic	None	Various	Unfiltered
None	1	500 ml plastic	HNO3	Metals	Unfiltered
None	1	500 ml plastic	H2SO4	Ammonia	Unfiltered
None	2	150 ml glass	None	Mercury	Unfiltered

**Photographs:** None

**Remarks:** Well condition excellent. Pump rate ~0.2 gpm.

Time	Spec. Cond. (µmhos/cm @ 25°C)	pH (SU)	D.O. (ppm)	ORP (mV)	Turbidity (NTU)	Volume Removed (gal)	Depth to Water (ft)
0935							42.20
0953	44	7.7	8	95	20	3.6	45.05
0956	43	7.6	8	109	11	4.2	44.81
1000	45	7.5	8	105	10	4.8	45.05
1003	45	7.5	8	135	4	5.4	44.98
1006	46	7.4	8	140	4	6.0	44.81
1009	43	7.4	8	144	2	6.6	44.82
1012	43	7.3	8	151	<1	7.2	44.91
1015	44	7.3	8	154	<1	7.8	44.90

## North Jackson Company Groundwater Sampling Log

**Proj. Name:** GW Discharge Permit Operational  
**Weather:** Light rain, ~40°s F  
**Location:** QAL026D  
**Sample ID:** QALM026D  
**KEX ID:** EAG-1001808

**Date:** 10/1/08  
**Sampler(s):** CLS/AJM  
**Sampling time:** 0905

**Odor:** None  
**Appearance:** Clear

**Temperature (°C):** 7.5  
**Spec. Cond. (µmhos/cm @ 25°C):** 88  
**Conductivity (µmhos):** 57  
**pH (SU):** 9.1  
**D.O. (ppm):** 8  
**ORP(mV):** 93  
**Turbidity (NTU):** <1

**Description of measuring point**

Mark on riser

**Total depth:** 83 ft  
**Approx. Depth to water:** 50 ft  
**Water column in well:** 33 ft  
**Volume/foot:** 0.26 gal/ft  
**Well volume:** 9 gal

**Well diameter (in):** 2.5  
**Gallons purged prior to sampling:** ~20

**Evacuation method:** Dedicated submersible pump with dedicated tubing

Tag	# Collected	Bottle	Preservative	Parameter	Comment
None	1	500 ml plastic	None	Various	Unfiltered
None	1	500 ml plastic	HNO3	Metals	Unfiltered
None	1	500 ml plastic	H2SO4	Ammonia	Unfiltered
None	2	150 ml glass	None	Mercury	Unfiltered

**Photographs:** None

**Remarks:** Well condition excellent. Pump rate ~1 gpm.

Time	Spec. Cond. (µmhos/cm @ 25°C)	pH (SU)	D.O. (ppm)	ORP (mV)	Turbidity (NTU)	Volume Removed (gal)	Depth to Water (ft)
0845							49.43
0850	91	9.0	8	76	<1	5	49.65
0855	91	9.1	8	84	<1	10	49.65
0900	89	9.1	8	88	<1	15	49.65
0905	89	9.1	8	93	<1	20	49.65

## North Jackson Company Groundwater Sampling Log

**Proj. Name:** GW Discharge Permit Operational  
**Weather:** Cloudy, rain, ~40°s F  
**Location:** QAL029A  
**Sample ID:** QALM029A  
**KEX ID:** EAG-1001809

**Date:** 10/1/08  
**Sampler(s):** CLS/AJM  
**Sampling time:** 0935

**Odor:** None  
**Appearance:** Clear

**Temperature (°C):** 7.8  
**Spec. Cond. (µmhos/cm @ 25°C):** 61  
**Conductivity (µmhos):** 40  
**pH (SU):** 7.2  
**D.O. (ppm):** 11.5  
**ORP(mV):** 283  
**Turbidity (NTU):** 9

**Description of measuring point:** Mark on riser

**Total depth:** 50 ft  
**Approx. Depth to water:** 41 ft  
**Water column in well:** 9 ft  
**Volume/foot:** 0.16 gal/ft  
**Well volume:** 1 gal

**Well diameter (in):** 2  
**Gallons purged prior to sampling:** ~13

**Evacuation method:** Dedicated submersible pump with dedicated tubing

Tag	# Collected	Bottle	Preservative	Parameter	Comment
None	1	500 ml plastic	None	Various	Unfiltered
None	2	500 ml plastic	HNO3	Metals	Filtered/Unfilterec
None	1	500 ml plastic	H2SO4	Ammonia	Unfiltered
None	4	150 ml glass	None	Mercury	Filtered/Unfilterec

**Photographs:** None

**Remarks:** Well condition excellent. Pump rate ~0.5 gpm.

Time	Spec. Cond. (µmhos/cm @ 25°C)	pH (SU)	D.O. (ppm)	ORP (mV)	Turbidity (NTU)	Volume Removed (gal)	Depth to Water (ft)
0905							40.96
0915	79	6.4	11.4	292	42	3	42.13
0920	69	6.9	11.5	280	16	5	42.19
0923	68	7.0	11.5	282	16	7	42.18
0926	66	7.1	11.5	280	13	8	42.19
0929	65	7.2	11.5	279	7	10	42.18
0932	62	7.2	11.5	281	3	11	42.18
0935	61	7.2	11.5	283	9	13	42.18

## North Jackson Company Groundwater Sampling Log

**Proj. Name:** GW Discharge Permit Operational  
**Weather:** Cloudy, ~40°s F  
**Location:** QAL029D  
**Sample ID:** QALM029D  
**KEX ID:** EAG-1001810

**Date:** 10/1/08  
**Sampler(s):** CLS/AJM  
**Sampling time:** 1016

**Odor:** None  
**Appearance:** Clear

**Temperature (°C):** 7.0  
**Spec. Cond. (µmhos/cm @ 25°C):** 94  
**Conductivity (µmhos):** 60  
**pH (SU):** 9.0  
**D.O. (ppm):** 5.2  
**ORP(mV):** 283  
**Turbidity (NTU):** 12

Description of measuring point	Mark on riser
Total depth: <u>77</u> ft	Well diameter (in): <u>2</u>
Approx. Depth to water: <u>52</u> ft	
Water column in well: <u>25</u> ft	Gallons purged
Volume/foot: <u>0.16</u> gal/ft	prior to sampling: <u>~4</u>
Well volume: <u>4</u> gal	

**Evacuation method:** Dedicated submersible pump with dedicated tubing

Tag	# Collected	Bottle	Preservative	Parameter	Comment
None	1	500 ml plastic	None	Various	Unfiltered
None	1	500 ml plastic	HNO3	Metals	Filtered
None	1	500 ml plastic	H2SO4	Ammonia	Unfiltered
None	2	150 ml glass	None	Mercury	Filtered

**Photographs:** None

**Remarks:** Well condition excellent. Pumped dry on 9/30/08 and sampled on 10/1/08.  
Insufficient water for stabilization record.

## North Jackson Company Groundwater Sampling Log

**Proj. Name:** GW Discharge Permit Operational  
**Weather:** Cloudy, ~40°s F  
**Location:** QAL050A  
**Sample ID:** QALM050A  
**KEX ID:** EAG-1001811

**Date:** 10/1/08  
**Sampler(s):** CLS/AJM  
**Sampling time:** 1447

**Odor:** None  
**Appearance:** Clear

**Temperature (°C):** 7.5  
**Spec. Cond. (µmhos/cm @ 25°C):** 118  
**Conductivity (µmhos):** 77  
**pH (SU):** 9.0  
**D.O. (ppm):** 10  
**ORP(mV):** 53  
**Turbidity (NTU):** <1

**Description of measuring point**

Mark on riser

**Total depth:** 120 ft  
**Approx. Depth to water:** 106 ft  
**Water column in well:** 14 ft  
**Volume/foot:** 0.26 gal/ft  
**Well volume:** 3 gal

**Well diameter (in):** 2.5  
**Gallons purged prior to sampling:** ~12

**Evacuation method:** Dedicated submersible pump with dedicated tubing

Tag	# Collected	Bottle	Preservative	Parameter	Comment
None	1	500 ml plastic	None	Various	Unfiltered
None	1	500 ml plastic	HNO3	Metals	Unfiltered
None	1	500 ml plastic	H2SO4	Ammonia	Unfiltered
None	4	150 ml glass	None	Mercury	Unfiltered

**Photographs:** None

**Remarks:** Well condition excellent. Pump rate ~1 gpm.

Time	Spec. Cond. (µmhos/cm @ 25°C)	pH (SU)	D.O. (ppm)	Turbidity (NTU)	Volume Removed (gal)	Depth to Water (ft)
1432						106.28
1435	113	8.6	10	<1	3	106.61
1438	115	8.9	10	<1	6	106.62
1441	115	9.0	10	<1	9	106.63
1444	118	9.0	10	<1	12	106.63

## North Jackson Company Groundwater Sampling Log

**Proj. Name:** GW Discharge Permit Operational  
**Weather:** Cloudy, ~40°s F  
**Location:** QAL051A  
**Sample ID:** QALM051A  
**KEX ID:** EAG-1001812

**Date:** 10/2/08  
**Sampler(s):** CLS/AJM  
**Sampling time:** 0935

**Odor:** None  
**Appearance:** Clear

Temperature (°C): i  
 Spec. Cond. (µmhos/cm @ 25°C): i  
 Conductivity (µmhos): i  
 pH (SU): i  
 D.O. (ppm): i  
 ORP(mV): i  
 Turbidity (NTU): 12

<b>Description of measuring point</b>	<b>Mark on riser</b>	
Total depth: <u>107</u> ft		Well diameter (in): <u>2.5</u>
Approx. Depth to water: <u>103</u> ft		
Water column in well: <u>4</u> ft		Gallons purged
Volume/foot: <u>0.26</u> gal/ft		prior to sampling: <u>~1</u>
Well volume: <u>1.0</u> gal		

**Evacuation method:** Dedicated submersible pump with dedicated tubing

Tag	# Collected	Bottle	Preservative	Parameter	Comment
None	1	500 ml plastic	None	Various	Unfiltered
None	1	500 ml plastic	HNO3	Metals	Filtered
None	1	500 ml plastic	H2SO4	Ammonia	Unfiltered
None	2	150 ml glass	None	Mercury	Filtered

**Photographs:** None

**Remarks:** Well condition excellent. Pumped dry on 10/1/08 and sampled on 10/2/08. Insufficient water for collection of field parameters or stabilization record.

## North Jackson Company Groundwater Sampling Log

**Proj. Name:** GW Discharge Permit Operational  
**Weather:** Cloudy, ~40°s F  
**Location:** QAL051D  
**Sample ID:** QALM051D  
**KEX ID:** EAG-1001813

**Date:** 10/2/08  
**Sampler(s):** CLS/AJM  
**Sampling time:** 1056

**Odor:** None  
**Appearance:** Clear

**Temperature (°C):** 8.6  
**Spec. Cond. (µmhos/cm @ 25°C):** 180  
**Conductivity (µmhos):** 121  
**pH (SU):** 8.7  
**D.O. (ppm):** 0.3  
**ORP(mV):** -64  
**Turbidity (NTU):** <1

<b>Description of measuring point</b>	<b>Mark on riser</b>
Total depth: <u>120</u> ft	Well diameter (in): <u>2.5</u>
Approx. Depth to water: <u>103</u> ft	
Water column in well: <u>17</u> ft	Gallons purged
Volume/foot: <u>0.26</u> gal/ft	prior to sampling: <u>~21</u>
Well volume: <u>4</u> gal	

**Evacuation method:** Dedicated submersible pump with dedicated tubing

Tag	# Collected	Bottle	Preservative	Parameter	Comment
None	1	500 ml plastic	None	Various	Unfiltered
None	1	500 ml plastic	HNO3	Metals	Unfiltered
None	1	500 ml plastic	H2SO4	Ammonia	Unfiltered
None	4	150 ml glass	None	Mercury	Unfiltered

**Photographs:** None

**Remarks:** Well condition excellent. Pump rate ~0.5 gpm.  
Field blank (FBKM002, EAG-1001823) and lab MS/MSD collected here.

Time	Spec. Cond. (µmhos/cm @ 25°C)	pH (SU)	D.O. (ppm)	ORP (mV)	Turbidity (NTU)	Volume Removed (gal)	Depth to Water (ft)
1015							103.22
1020	181	8.3	3.5	75	<1	3	105.14
1025	180	8.5	1.5	35	<1	5	105.14
1030	180	8.6	0.3	11	<1	8	105.15
1035	180	8.6	0.3	2	<1	10	105.16
1040	180	8.6	0.3	3	<1	13	105.16
1045	179	8.7	0.3	-40	<1	15	105.16
1050	180	8.7	0.3	-62	<1	18	105.16
1053	180	8.7	0.3	-65	<1	19	105.16
1056	180	8.7	0.3	-64	<1	21	105.16

## North Jackson Company Groundwater Sampling Log

**Proj. Name:** GW Discharge Permit Operational  
**Weather:** Cloudy, ~40°s F  
**Location:** QAL052A  
**Sample ID:** QALM052A  
**KEX ID:** EAG-1001814

**Date:** 10/1/08  
**Sampler(s):** CLS/AJM  
**Sampling time:** 1354

**Odor:** None  
**Appearance:** Slightly cloudy

**Temperature (°C):** 7.7  
**Spec. Cond. (µmhos/cm @ 25°C):** 180  
**Conductivity (µmhos):** 118  
**pH (SU):** 8.6  
**D.O. (ppm):** 1  
**ORP(mV):** 34  
**Turbidity (NTU):** 6

<b>Description of measuring point</b>	<b>Mark on riser</b>	
Total depth: <u>125</u> ft		Well diameter (in): <u>2.5</u>
Approx. Depth to water: <u>117</u> ft		
Water column in well: <u>8</u> ft		Gallons purged
Volume/foot: <u>0.26</u> gal/ft		prior to sampling: <u>~2</u>
Well volume: <u>2</u> gal		

**Evacuation method:** Dedicated submersible pump with dedicated tubing

Tag	# Collected	Bottle	Preservative	Parameter	Comment
None	1	500 ml plastic	None	Various	Unfiltered
None	2	500 ml plastic	HNO3	Metals	Filtered/Unfiltered
None	1	500 ml plastic	H2SO4	Ammonia	Unfiltered
None	4	150 ml glass	None	Mercury	Filtered/Unfiltered

**Photographs:** None

**Remarks:** Well condition excellent. Pump rate ~0.1 gpm.

Time	Spec. Cond. (µmhos/cm @ 25°C)	pH (SU)	D.O. (ppm)	Turbidity (NTU)	Volume Removed (gal)	Depth to Water (ft)
1330						116.82
1335	177	8.1	1	20	0.5	121.32
1338	179	8.4	1	19	0.8	121.39
1341	175	8.5	1	12	1.1	121.42
1348	174	8.6	1	9	1.4	121.63
1351	180	8.6	1	8	1.7	121.63
1354	180	8.6	1	6	2.0	121.68

## North Jackson Company Groundwater Sampling Log

**Proj. Name:** GW Discharge Permit Operational  
**Weather:** Cloudy, ~50°s F  
**Location:** QAL053A  
**Sample ID:** QALM053A  
**KEX ID:** EAG-1001815

**Date:** 10/1/08  
**Sampler(s):** CLS/AJM  
**Sampling time:** 1427

**Odor:** None  
**Appearance:** Clear

**Temperature (°C):** 8.3  
**Spec. Cond. (µmhos/cm @ 25°C):** 101  
**Conductivity (µmhos):** 67  
**pH (SU):** 9.0  
**D.O. (ppm):** 2.5  
**ORP(mV):** 209  
**Turbidity (NTU):** <1

**Description of measuring point**

Mark on riser

**Total depth:** 93 ft  
**Approx. Depth to water:** 78 ft  
**Water column in well:** 15 ft  
**Volume/foot:** 0.26 gal/ft  
**Well volume:** 4 gal

**Well diameter (in):** 2.5  
**Gallons purged prior to sampling:** ~25

**Evacuation method:** Dedicated submersible pump with dedicated tubing

Tag	# Collected	Bottle	Preservative	Parameter	Comment
None	1	500 ml plastic	None	Various	Unfiltered
None	1	500 ml plastic	HNO3	Metals	Unfiltered
None	1	500 ml plastic	H2SO4	Ammonia	Unfiltered
None	2	150 ml glass	None	Mercury	Unfiltered

**Photographs:** None

**Remarks:** Well condition excellent. Pump rate ~0.75 gpm.

Time	Spec. Cond. (µmhos/cm @ 25°C)	pH (SU)	D.O. (ppm)	ORP (mV)	Turbidity (NTU)	Volume Removed (gal)	Depth to Water (ft)
1354							78.14
1359	102	9.3	2.4	184	4	4	79.49
1404	101	9.0	2.4	207	3	8	79.50
1412	102	9.0	2.5	197	<1	14	79.49
1417	101	9.0	2.6	211	<1	17	79.49
1422	101	9.0	2.5	211	<1	21	79.49
1427	101	9.0	2.5	209	<1	25	79.49

## North Jackson Company Groundwater Sampling Log

**Proj. Name:** GW Discharge Permit Operational  
**Weather:** Cloudy, rain, ~60°s F  
**Location:** QAL055A  
**Sample ID:** QALM055A  
**KEX ID:** EAG-1001816

**Date:** 10/2/08  
**Sampler(s):** CLS/AJM  
**Sampling time:** 1319

**Odor:** None  
**Appearance:** Clear

**Temperature (°C):** 8.3  
**Spec. Cond. (µmhos/cm @ 25°C):** 113  
**Conductivity (µmhos):** 75  
**pH (SU):** 9.1  
**D.O. (ppm):** 9.9  
**ORP(mV):** 70  
**Turbidity (NTU):** <1

**Description of measuring point**

Mark on riser

**Total depth:** 115 ft  
**Approx. Depth to water:** 101 ft  
**Water column in well:** 14 ft  
**Volume/foot:** 0.26 gal/ft  
**Well volume:** 4 gal

**Well diameter (in):** 2.5  
**Gallons purged prior to sampling:** ~18

**Evacuation method:** Dedicated submersible pump with dedicated tubing

Tag	# Collected	Bottle	Preservative	Parameter	Comment
None	1	500 ml plastic	None	Various	Unfiltered
None	1	500 ml plastic	HNO3	Metals	Unfiltered
None	1	500 ml plastic	H2SO4	Ammonia	Unfiltered
None	2	150 ml glass	None	Mercury	Unfiltered

**Photographs:** None

**Remarks:** Well condition excellent. Pump rate ~0.75 gpm.

Time	Spec. Cond. (µmhos/cm @ 25°C)	pH (SU)	D.O. (ppm)	ORP (mV)	Turbidity (NTU)	Volume Removed (gal)	Depth to Water (ft)
1255							101.11
1300	113	9.0	9.5	19	<1	4	101.31
1305	113	9.0	9.9	49	<1	8	101.30
1310	113	9.1	9.9	64	<1	11	101.31
1313	113	9.1	9.8	68	<1	14	101.31
1316	113	9.1	9.9	71	<1	16	101.31
1319	113	9.1	9.9	70	<1	18	101.31

## North Jackson Company Groundwater Sampling Log

**Proj. Name:** GW Discharge Permit Operational  
**Weather:** Cloudy, windy, ~50°s F  
**Location:** QAL056A  
**Sample ID:** QALM056A  
**KEX ID:** EAG-1001817

**Date:** 10/1/08  
**Sampler(s):** CLS/AJM  
**Sampling time:** 1200

**Odor:** None  
**Appearance:** Clear

**Temperature (°C):** 7.9  
**Spec. Cond. (µmhos/cm @ 25°C):** 51  
**Conductivity (µmhos):** 34  
**pH (SU):** 9.7  
**D.O. (ppm):** 11.4  
**ORP(mV):** 234  
**Turbidity (NTU):** <1

<b>Description of measuring point</b>	<b>Mark on riser</b>
Total depth: <u>92</u> ft	Well diameter (in): <u>2.5</u>
Approx. Depth to water: <u>78</u> ft	
Water column in well: <u>14</u> ft	Gallons purged prior to sampling: <u>~15</u>
Volume/foot: <u>0.26</u> gal/ft	
Well volume: <u>4</u> gal	

**Evacuation method:** Dedicated submersible pump with dedicated tubing

Tag	# Collected	Bottle	Preservative	Parameter	Comment
None	1	500 ml plastic	None	Various	Unfiltered
None	1	500 ml plastic	HNO3	Metals	Unfiltered
None	1	500 ml plastic	H2SO4	Ammonia	Unfiltered
None	4	150 ml glass	None	Mercury	Unfiltered

**Photographs:** None

**Remarks:** Well condition excellent. Pump rate ~0.5 gpm.  
Field blank (FBKM001, EAG-1001821) and lab MS/MSD collected here.

Time	Spec. Cond. (µmhos/cm @ 25°C)	pH (SU)	D.O. (ppm)	ORP (mV)	Turbidity (NTU)	Volume Removed (gal)	Depth to Water (ft)
1130							77.71
1135	52	9.3	11.5	216	5	3	76.24
1140	51	9.6	11.4	228	3	5	76.23
1145	50	9.7	11.5	227	1	8	76.22
1150	51	9.7	11.4	230	<1	10	76.22
1155	52	9.7	11.4	232	<1	13	76.22
1200	51	9.7	11.4	234	<1	15	76.22

## North Jackson Company Groundwater Sampling Log

**Proj. Name:** GW Discharge Permit Operational  
**Weather:** Cloudy, rain, ~50°s F  
**Location:** QAL057A  
**Sample ID:** QALM057A  
**KEX ID:** EAG-1001818

**Date:** 10/1/08  
**Sampler(s):** CLS/AJM  
**Sampling time:** 1514

**Odor:** None  
**Appearance:** Clear

**Temperature (°C):** 7.4  
**Spec. Cond. (µmhos/cm @ 25°C):** 99  
**Conductivity (µmhos):** 64  
**pH (SU):** 9.2  
**D.O. (ppm):** 11  
**ORP(mV):** 62  
**Turbidity (NTU):** <1

<b>Description of measuring point</b>	<b>Mark on riser</b>	
Total depth: <u>118</u> ft		Well diameter (in): <u>2.5</u>
Approx. Depth to water: <u>106</u> ft		
Water column in well: <u>12</u> ft		Gallons purged
Volume/foot: <u>0.26</u> gal/ft		prior to sampling: <u>~12</u>
Well volume: <u>3</u> gal		

**Evacuation method:** Dedicated submersible pump with dedicated tubing

Tag	# Collected	Bottle	Preservative	Parameter	Comment
None	1	500 ml plastic	None	Various	Unfiltered
None	1	500 ml plastic	HNO3	Metals	Unfiltered
None	1	500 ml plastic	H2SO4	Ammonia	Unfiltered
None	2	150 ml glass	None	Mercury	Unfiltered

**Photographs:** None

**Remarks:** Well condition excellent. Pump rate ~1 gpm.

Time	Spec. Cond. (µmhos/cm @ 25°C)	pH (SU)	D.O. (ppm)	ORP (mV)	Turbidity (NTU)	Volume Removed (gal)	Depth to Water (ft)
1502							105.58
1505	96	9.1	11	45	<1	3	105.71
1508	97	9.2	11	51	<1	6	105.71
1511	99	9.2	11	58	<1	9	105.71
1514	99	9.2	11	62	<1	12	105.71

## North Jackson Company Groundwater Sampling Log

**Proj. Name:** GW Discharge Permit Operational  
**Weather:** Cloudy, ~40°s F  
**Location:** QAL057D  
**Sample ID:** QALM057D  
**KEX ID:** EAG-1001819

**Date:** 10/2/08  
**Sampler(s):** CLS/AJM  
**Sampling time:** 1220

**Odor:** None  
**Appearance:** Clear

**Temperature (°C):** 7.9  
**Spec. Cond. (µmhos/cm @ 25°C):** 151  
**Conductivity (µmhos):** 99  
**pH (SU):** 8.8  
**D.O. (ppm):** 5.3  
**ORP(mV):** 73  
**Turbidity (NTU):** <1

**Description of measuring point**

Mark on riser

**Total depth:** 130 ft  
**Approx. Depth to water:** 105 ft  
**Water column in well:** 25 ft  
**Volume/foot:** 0.26 gal/ft  
**Well volume:** 6 gal

**Well diameter (in):** 2.5  
**Gallons purged prior to sampling:** ~30

**Evacuation method:** Dedicated submersible pump with dedicated tubing

Tag	# Collected	Bottle	Preservative	Parameter	Comment
None	2	500 ml plastic	None	Various	Unfiltered
None	2	500 ml plastic	HNO3	Metals	Unfiltered
None	2	500 ml plastic	H2SO4	Ammonia	Unfiltered
None	4	150 ml glass	None	Mercury	Unfiltered

**Photographs:** None

**Remarks:** Well condition excellent. Pump rate ~1 gpm.  
Masked duplicate (DUPM002, EAG-1001822) collected here.

Time	Spec. Cond. (µmhos/cm @ 25°C)	pH (SU)	D.O. (ppm)	ORP (mV)	Turbidity (NTU)	Volume Removed (gal)	Depth to Water (ft)
1150							105.15
1155	153	8.6	5.8	57	<1	5	105.32
1200	151	8.7	5.5	63	<1	10	105.32
1205	151	8.8	5.4	58	<1	15	105.33
1210	151	8.8	5.4	65	<1	20	105.32
1215	151	8.8	5.3	68	<1	25	105.33
1220	151	8.8	5.3	73	<1	30	105.33