DAILY FIELD FORM – J.R. Whiting Ponds 1 and 2 Closure

PROJECT OVERVIEW			
Project Title:	J.R. Whiting Ponds 1 and 2 Closure CQA	**Project Number:** 1788523	**Date:** 9/24/2019
Client:	Consumers Energy	**Site/Location:** Erie, MI	
GAI Personnel:	David Hutchinson	**Arrival/Departure Time:** 0630/1300	
Contractor(s):	Ryan Central Inc.	**Contractor(s) Rep:** John Johnson (Ryan Central)	

SITE CONDITIONS	
Weather (AM): Sunny	**Temperature:** 57
Weather (PM): Sunny	**Temperature:** 70
Precipitation: None	**Wind:** W, 4-12 mph

EQUIPMENT ON SITE

1-Kubota RTV X112OD; 1-CAT Water Truck; 1-CAT A200 LGP Dozer; 1-John Deere 644G Loader; 1-Cat CS56B Smooth Drum Roller; 1-Cat D6T Dozers; 1-John Deere 9520 Tractor; 1-Cat 326F Excavator; 1-Cat 299D Skid Steer; 1-JLG 10054 Sky-Trak.

SUMMARY OF CONSTRUCTION

Work performed while Golder was onsite:

Ryan Central -1 Foreman, 3 Operators, 2 Laborers

- Continued placement of protective cover in Pond 1.
- Placed structural fill outside of Pond 2.
- Began placement of topsoil in Chemical Ponds.
- Import structural.
- Import protective cover.
- Import topsoil.
- Water truck used for dust control and to maintain fill moisture.

Summary of Dewatering:

Week 1	Week 2	Week 3	Week 4
05/06/19: 281,988 gal.	05/13/19: 399,021 gal.	05/20/19: 328,687 gal.	05/27/19: Holiday
05/07/19: 387,165 gal.	05/14/19: 484,537 gal.	05/21/19: 402,720 gal.	05/28/19: 386,176 gal.
05/08/19: 405,104 gal.	05/15/19: 486,473 gal.	05/22/19: 487,716 gal.	05/29/19: 468,094 gal.
05/09/19: 404,705 gal.	05/16/19: 481,499 gal.	05/23/19: 408,516 gal.	05/30/19: 357,569 gal.
05/10/19: 410,498 gal.	05/17/19: 484,331 gal.	05/24/19: 484,613 gal.	05/31/19: 161,965 gal.
05/11/19: 64,691 gal.	05/18/19: 249,566 gal.	05/25/19: None	06/01/19: None

Week 5	Week 6	Week 7	Week 8
06/03/19: 185,365 gal.	06/10/19: 175,022 gal.	06/17/2019: 247,813 gal.	06/24/2019: 218,008 gal.
06/04/19: 409,662 gal.	06/11/19: 184,365 gal.	06/18/2019: 68,510 gal.	06/25/2019: 208,371 gal.
06/05/19: 345,122 gal.	06/12/19: 178,934 gal.	06/19/2019: 215,872 gal.	06/26/2019: 181,215 gal.
06/06/19: 311,007 gal.	06/13/19: 147,219 gal.	06/20/2019: 207,117 gal.	06/27/2019: 216,650 gal.
06/07/19: 276,790 gal.	06/14/19: 13,156 gal.	06/21/2019: 200,874 gal.	06/28/2019: 208,921 gal.
06/08/19: 65,064 gal.	06/15/19: 142,063 gal.	06/22/2019: 102,207 gal.	06/29/2019: 135,907 gal.

Week 9	Week 10	Week 11	Week 12
07/01/19: 175,586 gal.	07/08/19: 107,894 gal.	07/15/19: None	07/22/19: 15,890 gal.
07/02/19: 129,459 gal.	07/09/19: 44,007 gal.	07/16/19: 17,852 gal.	07/23/19: 15,310 gal.
07/03/19: 13,878 gal.	07/10/19: 25,922 gal.	07/17/19: 20,293 gal.	07/24/19: 23,572 gal.
07/04/19: None	07/11/19: 27,943 gal.	07/18/19: None	07/25/19: None
07/05/19: 137,112 gal.	07/12/19: 18,335 gal.	07/19/19: 20,316 gal.	07/26/19: None
07/06/19: 95,100 gal.	07/13/19: None	07/20/19: None	07/27/19: None

Week 13	Week 14
07/29/19: None	08/16/19: 49,780 gal.
07/30/19: 23,124 gal.	08/22/19: 94,717 gal.
	Total: 14,006,131 gal.

GAI CQA ACTIVITIES AND TEST RESULTS

Construction:

- Golder onsite documenting the construction progress.
- Golder observed placement of protective cover in Pond 1 in minimum 18 inch loose lift using D6T LGP dozer.
- Golder observed placement of structural fill outside liner limits of Pond 2's southeast corner and compacted using Cat 815.
- Golder observed placement of single 6 inch lift of topsoil in the Chemical Pond work area.

SUMMARY OF SURVEYOR'S ACTIVITIES

None

SUMMARY OF PROBLEMS AND RESOLUTIONS

None

SUMMARY OF MEETINGS/DISCUSSIONS HELD (ATTENDEES AND ISSUES)

None

SUMMARY OF INCIDENTS / ACCIDENTS / HEALTH AND SAFETY ISSUES

None

SUBMITTED BY GOLDER:

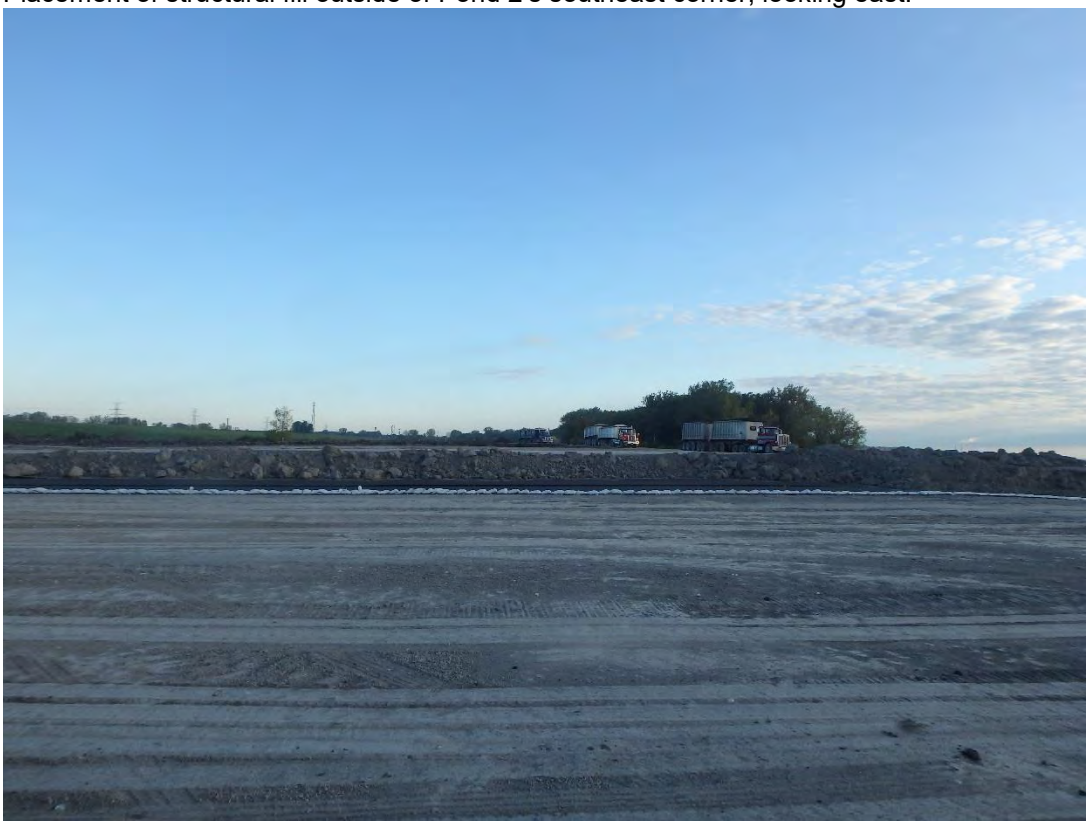
CQA Field Manager: David Hutchinson **Signature:** 

PHOTOGRAPHS

Placement of topsoil in the Chemical Pond work area, looking west.

Protective cover on Pond 1 geotextile, looking east.

Placement of structural fill outside of Pond 2's southeast corner, looking east.



Finished liner sub-grade in Pond 2, looking north.

DAILY FIELD FORM – J.R. Whiting Ponds 1 and 2 Closure

PROJECT OVERVIEW			
Project Title:	J.R. Whiting Ponds 1 and 2 Closure CQA	**Project Number:** 1788523	**Date:** 9/25/2019
Client:	Consumers Energy	**Site/Location:** Erie, MI	
GAI Personnel:	David Hutchinson	**Arrival/Departure Time:** 0630/1500	
Contractor(s):	Ryan Central Inc.	**Contractor(s) Rep:** John Johnson (Ryan Central)	

SITE CONDITIONS	
Weather (AM): Partly Sunny	**Temperature:** 63
Weather (PM): Mostly Cloudy	**Temperature:** 70
Precipitation: None	**Wind:** NW, 3-15 mph

EQUIPMENT ON SITE
1-Kubota RTV X112OD; 1-CAT Water Truck; 1-CAT A200 LGP Dozer; 1-John Deere 644G Loader; 1-Cat CS56B Smooth Drum Roller; 1-Cat D6T Dozers; 1-John Deere 9520 Tractor; 1-Cat 326F Excavator; 1-Cat 299D Skid Steer; 1-JLG 10054 Sky-Trak.

SUMMARY OF CONSTRUCTION

Work performed while Golder was onsite:

Ryan Central -1 Foreman, 3 Operators, 2 Laborers

- Continued placement of protective cover in Pond 1.
- Continued placement of topsoil in Chemical Ponds.
- Leistered textile for the burrito used on the above-cap pipe in Pond 1.
- Import protective cover.
- Import topsoil.
- Water truck used for dust control and to maintain fill moisture.

Summary of Dewatering:

Week 1	Week 2	Week 3	Week 4
05/06/19: 281,988 gal.	05/13/19: 399,021 gal.	05/20/19: 328,687 gal.	05/27/19: Holiday
05/07/19: 387,165 gal.	05/14/19: 484,537 gal.	05/21/19: 402,720 gal.	05/28/19: 386,176 gal.
05/08/19: 405,104 gal.	05/15/19: 486,473 gal.	05/22/19: 487,716 gal.	05/29/19: 468,094 gal.
05/09/19: 404,705 gal.	05/16/19: 481,499 gal.	05/23/19: 408,516 gal.	05/30/19: 357,569 gal.
05/10/19: 410,498 gal.	05/17/19: 484,331 gal.	05/24/19: 484,613 gal.	05/31/19: 161,965 gal.
05/11/19: 64,691 gal.	05/18/19: 249,566 gal.	05/25/19: None	06/01/19: None

Week 5	Week 6	Week 7	Week 8
06/03/19: 185,365 gal.	06/10/19: 175,022 gal.	06/17/2019: 247,813 gal.	06/24/2019: 218,008 gal.
06/04/19: 409,662 gal.	06/11/19: 184,365 gal.	06/18/2019: 68,510 gal.	06/25/2019: 208,371 gal.
06/05/19: 345,122 gal.	06/12/19: 178,934 gal.	06/19/2019: 215,872 gal.	06/26/2019: 181,215 gal.
06/06/19: 311,007 gal.	06/13/19: 147,219 gal.	06/20/2019: 207,117 gal.	06/27/2019: 216,650 gal.
06/07/19: 276,790 gal.	06/14/19: 13,156 gal.	06/21/2019: 200,874 gal.	06/28/2019: 208,921 gal.
06/08/19: 65,064 gal.	06/15/19: 142,063 gal.	06/22/2019: 102,207 gal.	06/29/2019: 135,907 gal.

Week 9		Week 10		Week 11		Week 12	
07/01/19:	175,586 gal.	07/08/19:	107,894 gal.	07/15/19:	None	07/22/19:	15,890 gal.
07/02/19:	129,459 gal.	07/09/19:	44,007 gal.	07/16/19:	17,852 gal.	07/23/19:	15,310 gal.
07/03/19:	13,878 gal.	07/10/19:	25,922 gal.	07/17/19:	20,293 gal.	07/24/19:	23,572 gal.
07/04/19:	None	07/11/19:	27,943 gal.	07/18/19:	None	07/25/19:	None
07/05/19:	137,112 gal.	07/12/19:	18,335 gal.	07/19/19:	20,316 gal.	07/26/19:	None
07/06/19:	95,100 gal.	07/13/19:	None	07/20/19:	None	07/27/19:	None

Week 13		Week 14	
07/29/19:	None	08/16/19:	49,780 gal.
07/30/19:	23,124 gal.	08/22/19:	94,717 gal.
		Total: 14,006,131 gal.	

GAI CQA ACTIVITIES AND TEST RESULTS

Construction:

- Golder onsite documenting the construction progress.
- Golder observed placement of protective cover in Pond 1 in minimum 18 inch loose lift using D6T LGP dozer.
- Golder observed placement of single 6 inch lift of topsoil in the Chemical Pond work area.
- Golder monitored leistering of the textile used to burrito the 6-AA stone used to cover the solid ADS pipe used for the above-cap drain pipe in Pond 1.
- Golder collected and shipped protective samples PC-7 and PC-8.

SUMMARY OF SURVEYOR'S ACTIVITIES

None

SUMMARY OF PROBLEMS AND RESOLUTIONS

None

SUMMARY OF MEETINGS/DISCUSSIONS HELD (ATTENDEES AND ISSUES)

Aubrey Proctor (EGLE) and Michelle Marion (CEC) onsite for site visit.

SUMMARY OF INCIDENTS / ACCIDENTS / HEALTH AND SAFETY ISSUES

None

SUBMITTED BY GOLDER:

CQA Field Manager: David Hutchinson **Signature:** 

PHOTOGRAPHS

6AA placed around the solid above-cap drain pipe in Pond 1, looking east.

Burrito of the above-cap drain pipe stone, looking east.

Placement of protective cover in Pond 1, looking east.

Import of protective cover in Pond 1, looking south.

DAILY FIELD FORM – J.R. Whiting Ponds 1 and 2 Closure

PROJECT OVERVIEW			
Project Title:	J.R. Whiting Ponds 1 and 2 Closure CQA	**Project Number:** 1788523	**Date:** 9/26/2019
Client:	Consumers Energy	**Site/Location:** Erie, MI	
GAI Personnel:	David Hutchinson	**Arrival/Departure Time:** 0630/1930	
Contractor(s):	Ryan Central Inc.	**Contractor(s) Rep:** John Johnson (Ryan Central)	

SITE CONDITIONS	
Weather (AM): Partly Sunny	**Temperature:** 64
Weather (PM): Mostly Sunny	**Temperature:** 72
Precipitation: Rain	**Wind:** NW, 2-18 mph

EQUIPMENT ON SITE

1-Kubota RTV X112OD; 1-CAT Water Truck; 1-CAT A200 LGP Dozer; 1-John Deere 644G Loader; 1-Cat CS56B Smooth Drum Roller; 1-Cat D6T Dozers; 1-John Deere 9520 Tractor; 1-Cat 326F Excavator; 1-Cat 299D Skid Steer; 1-JLG 10054 Sky-Trak.

SUMMARY OF CONSTRUCTION

Work performed while Golder was onsite:

Ryan Central -1 Foreman, 3 Operators, 2 Laborers

- Continued placement of protective cover in Pond 1.
- Continued placement of topsoil in Chemical Ponds.
- Rolled liner sub-grade in Pond 2.
- Walked Pond 2 liner sub-grade to remove rocks over 0.75 inches.
- Import protective cover.
- Import topsoil.
- Water truck used for dust control and to maintain fill moisture.

GAI CQA ACTIVITIES AND TEST RESULTS

Construction:

- Golder onsite documenting the construction progress.
- Golder observed placement of protective cover in Pond 1 in minimum 18 inch loose lift using D6T LGP dozer.
- Golder observed placement of single 6 inch lift of topsoil in the Chemical Pond work area.
- Golder observed rolling of the liner sub-grade in Pond 2 with Cat CS56B smooth drum roller.
- Golder observed removal of rock over 0.75 inches or with sharp edges from surface of Pond 2's liner sub-grade.
- Golder along with CEC and Ryan representatives completed visual inspection of Pond 2 liner sub-grade. Pond 2 sub-grade approved for deployment of geomembrane.

SUMMARY OF SURVEYOR'S ACTIVITIES
None

SUMMARY OF PROBLEMS AND RESOLUTIONS
None

SUMMARY OF MEETINGS/DISCUSSIONS HELD (ATTENDEES AND ISSUES)
None

SUMMARY OF INCIDENTS / ACCIDENTS / HEALTH AND SAFETY ISSUES
None

SUBMITTED BY GOLDER:	
CQA Field Manager: David Hutchinson	**Signature:** 

PHOTOGRAPHS

Rolling of liner sub-grade in Pond 2, looking north.

Placement of protective cover in Pond 1, looking northeast.

Placement of protective cover over the above-cap drain pipe in Pond 1, looking northeast.

Overview of rolled liner sub-grade in Pond 2, looking west.

Overview of protective cover being placed in Pond 1, looking northeast.

DAILY FIELD FORM – J.R. Whiting Ponds 1 and 2 Closure

PROJECT OVERVIEW			
Project Title:	J.R. Whiting Ponds 1 and 2 Closure CQA	**Project Number:** 1788523	**Date:** 9/27/2019
Client:	Consumers Energy	**Site/Location:** Erie, MI	
GAI Personnel:	David Hutchinson	**Arrival/Departure Time:** 0630/1930	
Contractor(s):	Ryan Central Inc. Chesapeake	**Contractor(s) Rep:** John Johnson (Ryan Central) Greg Parrott	

SITE CONDITIONS	
Weather (AM): Mostly Sunny	**Temperature:** 59
Weather (PM): Overcast	**Temperature:** 72
Precipitation: Rain	**Wind:** S, 2-10 mph

EQUIPMENT ON SITE
1-Kubota RTV X112OD; 1-CAT Water Truck; 1-CAT A200 LGP Dozer; 1-John Deere 644G Loader; 1-Cat CS56B Smooth Drum Roller; 1-Cat D6T Dozers; 1-John Deere 9520 Tractor; 1-Cat 326F Excavator; 1-Cat 299D Skid Steer; 1-JLG 10054 Sky-Trak.

SUMMARY OF CONSTRUCTION

Work performed while Golder was onsite:

Ryan Central -1 Foreman, 3 Operators, 2 Laborers

- Continued placement of protective cover in Pond 1.
- Continued placement of topsoil in Chemical Ponds.
- Rolled liner sub-grade in Pond 2 ahead of geomembrane deployment.
- Import protective cover.
- Import topsoil.
- Water truck used for dust control and to maintain fill moisture.

Chesapeake – 1 Superintendent, 11 Technicians, 1 operator

- Chesapeake began deployment of geomembrane in Pond 2 deploying panels P-26 thru P-32.
- Chesapeake preformed trial welds for fusion and extrusion prior to any seaming or repairs.
- Chesapeake seamed panels P-26 thru P-31 deployed today using the fusion method.

GAI CQA ACTIVITIES AND TEST RESULTS

Construction:

- Golder onsite documenting the construction progress.
- Golder observed placement of protective cover in Pond 1 in minimum 18 inch loose lift using D6T LGP dozer.
- Golder observed placement of single 6 inch lift of topsoil in the Chemical Pond work area.

- Golder observed rolling of the liner sub-grade in Pond 2 prior to deployment of geomembrane using a Cat CS56B smooth drum roller.
- Performed CQA oversight and documentation on 40mil HDPE micro-spike geomembrane deployed today.
- Chesapeake installed approximately 117,530sf of geomembrane on Pond 2 today for a total of 498,680sf to date.
- Golder monitored deployment of 40mil micro-spike geomembrane panels P-26 thru P-32.
- Golder monitored and documented trial seams for fusion in P.M. preformed prior to seaming activities.
- Golder observed seaming of deployed panels P-26 thru P-31 on Ponds by fusion seaming method using 3 wedges.
- Golder marked destructive test locations DS-39 thru DS-47 on geomembrane for removal by Chesapeake and destructive field testing onsite.
- Worked ceased rather suddenly due to weather.

SUMMARY OF SURVEYOR'S ACTIVITIES
None

SUMMARY OF PROBLEMS AND RESOLUTIONS
None

SUMMARY OF MEETINGS/DISCUSSIONS HELD (ATTENDEES AND ISSUES)
Pre-Construction meeting on geomembrane installation with CEC, Ryan, Chesapeake and Golder.

SUMMARY OF INCIDENTS / ACCIDENTS / HEALTH AND SAFETY ISSUES
None

SUBMITTED BY GOLDER:

CQA Field Manager: David Hutchinson **Signature:** 

PHOTOGRAPHS

Protective cover in Pond 1, looking north.

Deployment of 40mil geomembrane in Pond 2, looking southeast.

Seaming of geomembrane by fusion method, looking east.

Rub sheet/Tub for generators while on liner, looking south.

Destructive test and defect number.

Destruct ready to be removed for field testing.

PHOTOGRAPHS

Protective cover in Pond 1, looking north.

Deployment of 40mil geomembrane in Pond 2, looking southeast.

Seaming of geomembrane by fusion method, looking east.

Rub sheet/Tub for generators while on liner, looking south.

Destructive test and defect number.

Destruct ready to be removed for field testing.

DAILY FIELD FORM – J.R. Whiting Ponds 1 and 2 Closure

PROJECT OVERVIEW			
Project Title:	J.R. Whiting Ponds 1 and 2 Closure CQA	**Project Number:** 1788523	**Date:** 9/30/2019
Client:	Consumers Energy	**Site/Location:** Erie, MI	
GAI Personnel:	David Hutchinson	**Arrival/Departure Time:** 0630/1730	
Contractor(s):	Ryan Central Inc. Chesapeake	**Contractor(s) Rep:** John Johnson (Ryan Central) Greg Parrott	

SITE CONDITIONS	
Weather (AM): Cloudy	**Temperature:** 62
Weather (PM): Mostly Sunny	**Temperature:** 75
Precipitation: Rain	**Wind:** W, 2-7 mph

EQUIPMENT ON SITE
1-Kubota RTV X112OD; 1-CAT Water Truck; 1-CAT A200 LGP Dozer; 1-John Deere 644G Loader; 1-Cat CS56B Smooth Drum Roller; 1-Cat D6T Dozers; 1-John Deere 9520 Tractor; 1-Cat 326F Excavator; 1-Cat 299D Skid Steer; 1-JLG 10054 Sky-Trak.

SUMMARY OF CONSTRUCTION
Work performed while Golder was onsite: **Ryan Central** -1 Foreman, 1 Operator • No Construction due to rain. • Standby to assist Chesapeake as needed. **Chesapeake** – 1 Superintendent, 11 Technicians, 1 operator • Chesapeake preformed trial welds for extrusion prior to starting repairs. • Chesapeake preformed air pressure testing of all fusion seams on deployed geomembrane panels P-26 thru P-31. • Chesapeake made repairs to all defects on panels P-26 thru P-31 deployed. • Chesapeake vacuum tested repairs. • Chesapeake field tested destructs DS-39 thru DS-47.

GAI CQA ACTIVITIES AND TEST RESULTS
Construction: • Golder onsite documenting the construction progress. • Golder monitored and documented trial seams for extrusion in P.M. preformed prior to start of repairs. • Golder monitored non-destructive testing of all fusion seams by air pressure testing to a minimum of 30psi for 5 minutes with a loss of no more than 4psi in accordance to specifications.

- Golder observed repairs to defects by extrusion method.
- Golder monitored vacuum testing of repairs.
- Golder monitored field testing of destructs DS-39 thru DS-47 prior to shipping for third party testing.
- Golder shipped destructs DS-39 thru DS-42, DS-45 and DS-46 to laboratory for testing.

SUMMARY OF SURVEYOR'S ACTIVITIES

None

SUMMARY OF PROBLEMS AND RESOLUTIONS

DS-44 on seam P-27/28 and DS-47 on seam P-30/31 both failed field testing. Both of the seams to be cut out and reconstructed using fusion method, seam P-27/28 will also include removal of DS-43 that passed field testing. Both seams were welded using fusion welder M-65 which is in progress of being inspected and repaired.

SUMMARY OF MEETINGS/DISCUSSIONS HELD (ATTENDEES AND ISSUES)

None

SUMMARY OF INCIDENTS / ACCIDENTS / HEALTH AND SAFETY ISSUES

None

SUBMITTED BY GOLDER:

CQA Field Manager: David Hutchinson **Signature:** 

PHOTOGRAPHS

Air pressure testing of fusion seam.

Preparing trial weld.

Destructive samples removed for sampling.


Field test of destructive sample.

DAILY FIELD FORM – J.R. Whiting Ponds 1 and 2 Closure

PROJECT OVERVIEW			
Project Title:	J.R. Whiting Ponds 1 and 2 Closure CQA	**Project Number:** 1788523	**Date:** 10/1/2019
Client:	Consumers Energy	**Site/Location:** Erie, MI	
GAI Personnel:	David Hutchinson	**Arrival/Departure Time:** 0630/1930	
Contractor(s):	Ryan Central Inc. Chesapeake	**Contractor(s) Rep:** John Johnson (Ryan Central) Greg Parrott	

SITE CONDITIONS	
Weather (AM): Mostly Sunny	**Temperature:** 70
Weather (PM): Mostly Cloudy	**Temperature:** 87
Precipitation: None	**Wind:** SW, 2-10 mph

EQUIPMENT ON SITE
1-Kubota RTV X112OD; 1-CAT Water Truck; 1-CAT A200 LGP Dozer; 1-John Deere 644G Loader; 1-Cat CS56B Smooth Drum Roller; 1-Cat D6T Dozers; 1-John Deere 9520 Tractor; 1-Cat 326F Excavator; 1-Cat 299D Skid Steer; 1-JLG 10054 Sky-Trak.

SUMMARY OF CONSTRUCTION

Work performed while Golder was onsite:

Ryan Central -1 Foreman, 2 Operator

- Continued placement of protective cover in Pond 1.
- Standby to assist Chesapeake as needed.

Chesapeake – 1 Superintendent, 11 Technicians, 1 operator

- Chesapeake preformed trial welds for fusion and extrusion prior to any seaming or repairs.
- Chesapeake preformed seaming using the fusion method.
- Chesapeake preformed air pressure testing of all fusion seams performed today.
- Chesapeake made repairs to all defects on panels P-27 thru P-32.
- Chesapeake continued vacuum testing of repairs.
- Chesapeake field tested destructs DS-43, DS-44, DS-47 thru DS-49.
- Chesapeake continued deployment of geotextile in Pond 2.
- Chesapeake sewed all panels of geotextile deployed today.
- Chesapeake made repairs to all defects on geotextile panels deployed.
- Chesapeake placed sandbags around the outside edges of all deployed geotextile.
- Chesapeake QC shot panel layout and defects.

GAI CQA ACTIVITIES AND TEST RESULTS

Construction:

- Golder onsite documenting the construction progress.
- Golder observed placement of protective cover in Pond 1.
- Golder monitored and documented trial seams for fusion and extrusion in P.M. preformed prior to start of seaming or repairs.
- Golder observed reconstruction of seam 27/28, 30/31 and 31/32 using the fusion method.
- Golder monitored non-destructive testing of fusion seams completed today by air pressure testing to a minimum of 30psi for 5 minutes with a loss of no more than 4psi in accordance to specifications.
- Golder marked destructive test locations DS-43, DS-44 and DS-47 thru DS-49 on geomembrane for removal by Chesapeake and destructive field testing onsite.
- Golder observed repairs to defects by extrusion method.
- Golder monitored vacuum testing of repairs.
- Golder monitored field testing of destructs DS-43, DS-44 and DS-47 thru DS-49 prior to shipping for third party testing.
- Golder shipped destructs DS-43, DS-44 and DS-47 thru DS-49 to laboratory for testing.
- Golder monitored deployment of 8oz. geotextile.
- Golder observed sewing of all deployed panels on Pond 2.
- Golder observed repairs to damage of geotextile by patch placed over defect by leistering of 8oz. textile patch over defect.

SUMMARY OF SURVEYOR'S ACTIVITIES

None

SUMMARY OF PROBLEMS AND RESOLUTIONS

None

SUMMARY OF MEETINGS/DISCUSSIONS HELD (ATTENDEES AND ISSUES)

None

SUMMARY OF INCIDENTS / ACCIDENTS / HEALTH AND SAFETY ISSUES

None

SUBMITTED BY GOLDER:

CQA Field Manager: David Hutchinson **Signature:** 

PHOTOGRAPHS

Deployment of geotextile in Pond 2, looking east.

Sewing of geotextile panels.

Fusion seaming of geomembrane panels.

Repair using extrusion method.

Vacuum testing of extrusion weld.

Placement of protective cover in Pond 1, looking north.

DAILY FIELD FORM – J.R. Whiting Ponds 1 and 2 Closure

PROJECT OVERVIEW			
Project Title:	J.R. Whiting Ponds 1 and 2 Closure CQA	**Project Number:** 1788523	**Date:** 10/2/2019
Client:	Consumers Energy	**Site/Location:** Erie, MI	
GAI Personnel:	David Hutchinson	**Arrival/Departure Time:** 0630/1530	
Contractor(s):	Ryan Central Inc. Chesapeake	**Contractor(s) Rep:** John Johnson (Ryan Central) Greg Parrott	

SITE CONDITIONS	
Weather (AM): Mostly Cloudy	**Temperature:** 70
Weather (PM): Overcast	**Temperature:** 72
Precipitation: Rain	**Wind:** W, 1-12 mph

EQUIPMENT ON SITE
1-Kubota RTV X112OD; 1-CAT Water Truck; 1-CAT A200 LGP Dozer; 1-John Deere 644G Loader; 1-Cat CS56B Smooth Drum Roller; 1-Cat D6T Dozers; 1-John Deere 9520 Tractor; 1-Cat 326F Excavator; 1-Cat 299D Skid Steer; 1-JLG 10054 Sky-Trak.

SUMMARY OF CONSTRUCTION

Work performed while Golder was onsite:

Ryan Central -1 Foreman, 2 Operator

- Continued placement of protective cover in Pond 1.
- Rolled liner sub-grade in Pond 2.
- Standby to assist Chesapeake as needed.

Chesapeake – 1 Superintendent, 11 Technicians, 1 operator

- Chesapeake preformed trial welds for fusion prior to seaming.
- Chesapeake preformed seaming using the fusion method.
- Chesapeake preformed air pressure testing of all fusion seams performed today.
- Chesapeake continued vacuum testing of repairs.
- Chesapeake continued deployment of geotextile in Pond 2.
- Chesapeake sewed all panels of geotextile deployed today.
- Chesapeake made repairs to all defects on geotextile panels deployed.
- Chesapeake placed sandbags around the outside edges of all deployed geotextile.
- Chesapeake QC shot panel layout and defects.

DAILY FIELD FORM – J.R. Whiting Ponds 1 and 2 Closure

GAI CQA ACTIVITIES AND TEST RESULTS

Construction:

- Golder onsite documenting the construction progress.
- Golder observed placement of protective cover in Pond 1.
- Golder observed deployment of 40mil geomembrane panels P-33 thru P-38 in Pond 2.
- Golder monitored and documented trial seams for fusion in A.M. preformed prior to start of seaming.
- Golder monitored non-destructive testing of fusion seams completed today by air pressure testing to a minimum of 30psi for 5 minutes with a loss of no more than 4psi in accordance to specifications.
- Golder marked destructive test locations DS-50 thru DS-58 on geomembrane for removal by Chesapeake and destructive field testing onsite.
- Golder monitored vacuum testing of repairs.
- Golder monitored deployment of 8oz. geotextile.
- Golder observed sewing of all deployed panels on Pond 2.
- Golder observed repairs to damage of geotextile by patch placed over defect by leistering of 8oz. textile patch over defect.

SUMMARY OF SURVEYOR'S ACTIVITIES

None

SUMMARY OF PROBLEMS AND RESOLUTIONS

None

SUMMARY OF MEETINGS/DISCUSSIONS HELD (ATTENDEES AND ISSUES)

Bi-Weekly progress/construction meeting with CEC, Ryan, Chesapeake and Golder.

SUMMARY OF INCIDENTS / ACCIDENTS / HEALTH AND SAFETY ISSUES

None

SUBMITTED BY GOLDER:

CQA Field Manager: David Hutchinson **Signature:** 

PHOTOGRAPHS

Rolling sub-grade ahead of liner deployment, looking south

Deployment of geomembrane in Pond 2, looking east

Fusion seaming of geomembrane panel seam in Pond 2.

Sewing of geotextile panel seams in Pond 2.

Overview of geosynthetics in Pond 2, looking south

Overview of protective cover in Pond 1, looking north.

DAILY FIELD FORM – J.R. Whiting Ponds 1 and 2 Closure

PROJECT OVERVIEW			
Project Title:	J.R. Whiting Ponds 1 and 2 Closure CQA	**Project Number:** 1788523	**Date:** 10/4/2019
Client:	Consumers Energy	**Site/Location:** Erie, MI	
GAI Personnel:	David Hutchinson	**Arrival/Departure Time:** 0630/1900	
Contractor(s):	Ryan Central Inc. Chesapeake	**Contractor(s) Rep:** John Johnson (Ryan Central) Greg Parrott	

SITE CONDITIONS	
Weather (AM): Mostly Cloudy	**Temperature:** 58
Weather (PM): Partly Sunny	**Temperature:** 67
Precipitation: None	**Wind:** NE, 4-13 mph

EQUIPMENT ON SITE
1-Kubota RTV X112OD; 1-CAT Water Truck; 1-CAT A200 LGP Dozer; 1-John Deere 644G Loader; 1-Cat CS56B Smooth Drum Roller; 1-Cat D6T Dozers; 1-John Deere 9520 Tractor; 1-Cat 326F Excavator; 1-Cat 299D Skid Steer; 1-JLG 10054 Sky-Trak.

SUMMARY OF CONSTRUCTION

Work performed while Golder was onsite:

Ryan Central -1 Foreman, 2 Operator

- Continued placement of protective cover in Pond 1.
- Rolled liner sub-grade in Pond 2.
- Assist Chesapeake as needed.

Chesapeake – 1 Superintendent, 11 Technicians, 1 operator

- Chesapeake continued deployment of geomembrane in Pond 1.
- Chesapeake preformed trial welds for extrusion before start of repairs.
- Chesapeake preformed trial welds for fusion prior to start of seaming and end of day.
- Chesapeake preformed seaming using the fusion method.
- Chesapeake preformed air pressure testing of fusion seams.
- Chesapeake continued vacuum testing of repairs.
- Chesapeake removed and field tested destructs DS-50 thru DS-58 and DS-44P.
- Chesapeake continued deployment of geotextile in Pond 2.
- Chesapeake sewed all panels of geotextile deployed today.
- Chesapeake made repairs to all defects on geotextile panels deployed.
- Chesapeake placed sandbags around the outside edges of all deployed geotextile.

- Chesapeake QC shot panel layout and defects.

GAI CQA ACTIVITIES AND TEST RESULTS

Construction:

- Golder onsite documenting the construction progress.
- Golder observed placement of protective cover in Pond 1.
- Golder observed deployment of 40mil geomembrane panels P-39 thru P-44 in Pond 2.
- Golder monitored and documented trial seams for extrusion in A.M. preformed before beginning repairs.
- Golder monitored and documented trial seams for fusion in P.M. preformed prior to start of seaming and end of day.
- Golder observed seaming of all deployed panels on Pond 2 by fusion seaming method using 3 wedges.
- Golder monitored non-destructive testing of fusion seams completed today by air pressure testing to a minimum of 30psi for 5 minutes with a loss of no more than 4psi in accordance to specifications.
- Golder marked destructive test locations DS-59 thru DS-67, DS-44P and DS-44N on geomembrane for removal by Chesapeake and destructive field testing onsite.
- Golder monitored vacuum testing of repairs.
- Golder monitored field testing of destructive samples DS-50 thru DS-58 and Ds-44P, samples sent to lab for further testing.
- Golder monitored deployment of 8oz. geotextile.
- Golder observed sewing of all deployed panels on Pond 2.
- Golder observed repairs to damage of geotextile by patch placed over defect by leistering of 8oz. textile patch over defect.
- Chesapeake installed approximately 100,740sf of geomembrane on Pond 2 today for a total of 700,160sf to date for Ponds 1 and 2.

SUMMARY OF SURVEYOR'S ACTIVITIES

None

SUMMARY OF PROBLEMS AND RESOLUTIONS

Destructive test sample DS-44 on seam 27/28 failed testing in lab, procedures for failing destructive test followed in accordance to specifications with two additional samples being marked for testing to identify the section of seam to be capped. One sample collected previous to failed destructive sample DS-44 and one after.

SUMMARY OF MEETINGS/DISCUSSIONS HELD (ATTENDEES AND ISSUES)

None

SUMMARY OF INCIDENTS / ACCIDENTS / HEALTH AND SAFETY ISSUES

None

DAILY FIELD FORM – J.R. Whiting Ponds 1 and 2 Closure

SUBMITTED BY GOLDER:	
CQA Field Manager: David Hutchinson	**Signature:**

PHOTOGRAPHS

Destructive sample removed for field and lab testing

Shooting location of destructive sample and prepping patch, looking west

Vacuum testing of extrusion weld on repair patch

Tracking of failed destructive test seam for capping, looking east

Rolling sub-grade ahead of liner deployment, looking southeast

DAILY FIELD FORM – J.R. Whiting Ponds 1 and 2 Closure

PROJECT OVERVIEW			
Project Title:	J.R. Whiting Ponds 1 and 2 Closure CQA	**Project Number:** 1788523	**Date:** 10/5/2019
Client:	Consumers Energy	**Site/Location:** Erie, MI	
GAI Personnel:	David Hutchinson	**Arrival/Departure Time:** 0630/1700	
Contractor(s):	Ryan Central Inc. Chesapeake	**Contractor(s) Rep:** John Johnson (Ryan Central) Greg Parrott	

SITE CONDITIONS	
Weather (AM): Mostly Cloudy	**Temperature:** 56
Weather (PM): Mostly Cloudy	**Temperature:** 62
Precipitation: None	**Wind:** NE, 6-15 mph

EQUIPMENT ON SITE
1-Kubota RTV X112OD; 1-CAT Water Truck; 1-CAT A200 LGP Dozer; 1-John Deere 644G Loader; 1-Cat CS56B Smooth Drum Roller; 1-Cat D6T Dozers; 1-John Deere 9520 Tractor; 1-Cat 326F Excavator; 1-Cat 299D Skid Steer; 1-JLG 10054 Sky-Trak.

SUMMARY OF CONSTRUCTION
Work performed while Golder was onsite:

Ryan Central -1 Foreman, 2 Operator

- Rolled liner sub-grade in Pond 2.
- Assist Chesapeake as needed.
- Demobilized John Deere Tractor.

Chesapeake – 1 Superintendent, 11 Technicians, 1 operator

- Chesapeake completed deployment of geomembrane in Pond 2.
- Chesapeake preformed trial welds for extrusion before start of repairs.
- Chesapeake preformed trial welds for fusion prior to start of seaming and end of day.
- Chesapeake preformed seaming using the fusion method.
- Chesapeake preformed air pressure testing of fusion seams.
- Chesapeake made repairs by the extrusion method.
- Chesapeake removed destruct DS-44N.
- Chesapeake placed sandbags around the outside edges of all deployed panels.
- Chesapeake QC shot panel layout and defects.

GAI CQA ACTIVITIES AND TEST RESULTS
Construction:

- Golder onsite documenting the construction progress.

- Golder observed deployment of 40mil geomembrane panels P-45 thru P-52 in Pond 2. Geomembrane deployment completed for Ponds 1 and 2.
- Golder monitored and documented trial seams for extrusion in P.M. preformed before beginning repairs.
- Golder monitored and documented trial seams for fusion in A.M., P.M. preformed prior to start of seaming and end of day.
- Golder observed seaming of all deployed panels on Pond 2 by fusion seaming method using 3 wedges.
- Golder monitored non-destructive testing of fusion seams completed today by air pressure testing to a minimum of 30psi for 5 minutes with a loss of no more than 4psi in accordance to specifications.
- Golder marked destructive test locations DS-68 thru DS-77 and DX-2 on geomembrane for removal by Chesapeake and destructive field testing onsite.
- Golder observed repairs by extrusion method.
- Chesapeake installed approximately 90,559sf of geomembrane on Pond 2 today for a total of 790,719sf to date for Ponds 1 and 2.

SUMMARY OF SURVEYOR'S ACTIVITIES
None

SUMMARY OF PROBLEMS AND RESOLUTIONS
None

SUMMARY OF MEETINGS/DISCUSSIONS HELD (ATTENDEES AND ISSUES)
None

SUMMARY OF INCIDENTS / ACCIDENTS / HEALTH AND SAFETY ISSUES
None

SUBMITTED BY GOLDER:

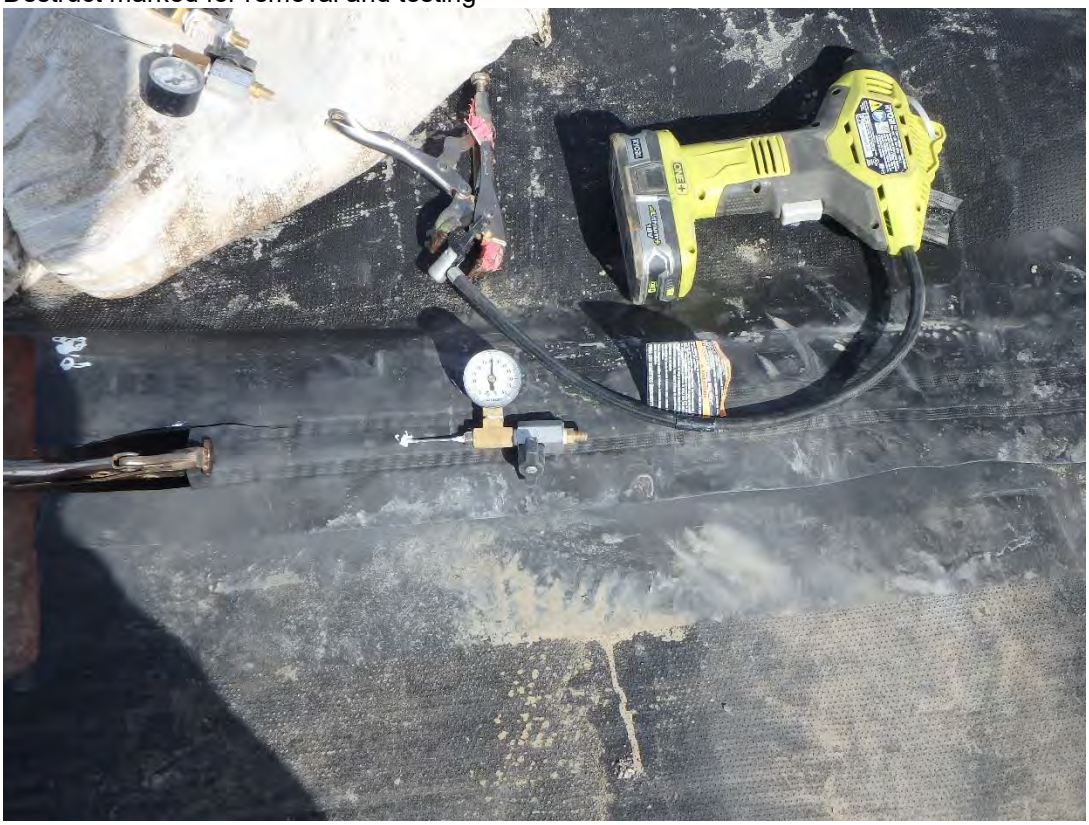
CQA Field Manager: David Hutchinson **Signature:** 

PHOTOGRAPHS

Rolling sub-grade ahead of liner deployment, looking east

Fusion welding of seam in Pond 2, looking southeast

Destruct marked for removal and testing


Air pressure testing of fusion seam

Welding cap over failed seam by extrusion method

Overview of Pond 2, looking northeast

DAILY FIELD FORM – J.R. Whiting Ponds 1 and 2 Closure

PROJECT OVERVIEW			
Project Title:	J.R. Whiting Ponds 1 and 2 Closure CQA	**Project Number:** 1788523	**Date:** 10/7/2019
Client:	Consumers Energy	**Site/Location:** Erie, MI	
GAI Personnel:	David Hutchinson	**Arrival/Departure Time:** 0630/1930	
Contractor(s):	Ryan Central Inc. Chesapeake	**Contractor(s) Rep:** John Johnson (Ryan Central) Greg Parrott	

SITE CONDITIONS	
Weather (AM): Mostly Cloudy	**Temperature:** 58
Weather (PM): Mostly Sunny	**Temperature:** 67
Precipitation: None	**Wind:** W, 0-8 mph

EQUIPMENT ON SITE
1-Kubota RTV X112OD; 1-CAT Water Truck; 1-CAT A200 LGP Dozer; 1-John Deere 644G Loader; 1-Cat CS56B Smooth Drum Roller; 1-Cat D6T Dozer; 1-Cat 326F Excavator; 1-Cat 299D Skid Steer; 1-JLG 10054 Sky-Trak.

SUMMARY OF CONSTRUCTION
Work performed while Golder was onsite: **Ryan Central** -1 Foreman, 1 Operator, 2 Laborers • Protective cover import. • Placed protective cover in Ponds 1 and 2. • Assist Chesapeake as needed. • Demobilized Cat 815 Compactor. **Chesapeake** – 1 Superintendent, 11 Technicians, 1 operator • Chesapeake preformed trial welds for extrusion before start of repairs. • Chesapeake preformed air pressure testing of fusion seams. • Chesapeake continued vacuum testing of repairs. • Chesapeake removed and field tested destructs DS-59 thru DS-77, DS-44N, DX-2 and DX-3. • Chesapeake continued deployment of geotextile in Pond 2. • Chesapeake sewed panels of geotextile deployed today. • Chesapeake made repairs to defects on geotextile panels deployed. • Chesapeake placed sandbags around the outside edges of all deployed geotextile. • Chesapeake QC shot panel layout and defects.
GAI CQA ACTIVITIES AND TEST RESULTS
Construction:

- Golder onsite documenting the construction progress.
- Golder observed import and placement of Protective cover to Ponds 1 and 2.
- Golder monitored and documented trial seams for extrusion in A.M. and P.M. preformed before beginning repairs.
- Golder monitored non-destructive testing of fusion seams completed today by air pressure testing to a minimum of 30psi for 5 minutes with a loss of no more than 4psi in accordance to specifications.
- Golder monitored field destructive tests for DS-59 thru DS-77, DS-44N, DX-2 and DX-3 removed by Chesapeake.
- Golder observed deployment of geotextile in Pond 2.
- Golder observed sewing of geotextile seams.
- Golder observed repairs by extrusion method.

SUMMARY OF SURVEYOR'S ACTIVITIES
None

SUMMARY OF PROBLEMS AND RESOLUTIONS
None

SUMMARY OF MEETINGS/DISCUSSIONS HELD (ATTENDEES AND ISSUES)
None

SUMMARY OF INCIDENTS / ACCIDENTS / HEALTH AND SAFETY ISSUES
None

SUBMITTED BY GOLDER:

CQA Field Manager: David Hutchinson **Signature:** 

PHOTOGRAPHS

Air pressure testing of fusion seam in Pond 2

Import of protective cover in Pond 2, looking north

Leistering patch in preparation of extrusion welding


Deploying geotextile in Pond 2, looking east

Sewing of geotextile seam in Pond 2, looking north

CEC observing field test of destructive sample

DAILY FIELD FORM – J.R. Whiting Ponds 1 and 2 Closure

PROJECT OVERVIEW			
Project Title:	J.R. Whiting Ponds 1 and 2 Closure CQA	**Project Number:** 1788523	**Date:** 10/8/2019
Client:	Consumers Energy	**Site/Location:** Erie, MI	
GAI Personnel:	David Hutchinson	**Arrival/Departure Time:** 0630/1630	
Contractor(s):	Ryan Central Inc. Chesapeake	**Contractor(s) Rep:** John Johnson (Ryan Central) Greg Parrott	

SITE CONDITIONS	
Weather (AM): Sunny	**Temperature:** 45
Weather (PM): Sunny	**Temperature:** 68
Precipitation: None	**Wind:** W, 0-6 mph

EQUIPMENT ON SITE
1-Kubota RTV X112OD; 1-CAT Water Truck; 1-CAT A200 LGP Dozer; 1-John Deere 644G Loader; 1-Cat CS56B Smooth Drum Roller; 1-Cat D6T Dozer; 1-Cat 299D Skid Steer; 1-JLG 10054 Sky-Trak.

SUMMARY OF CONSTRUCTION
Work performed while Golder was onsite:

Ryan Central -1 Foreman, 2 Operator, 2 Laborers

- Protective cover import.
- Placed protective cover in Pond 2.
- Finish grading of protective cover in Pond 1.
- Assist Chesapeake as needed.
- Demobilized Cat 326F Excavator.

Chesapeake – 1 Superintendent, 11 Technicians, 1 operator

- Chesapeake completed deployment of geotextile in Pond 2.
- Chesapeake sewed all panels of geotextile.
- Chesapeake made repairs to defects on geotextile panels deployed.
- Chesapeake placed sandbags around the outside edges of all deployed geotextile.
- Chesapeake of the Pond 2 work area.

GAI CQA ACTIVITIES AND TEST RESULTS
Construction:

- Golder onsite documenting the construction progress.
- Golder observed import and placement of Protective cover to Pond 2.
- Golder observed finish grading of protective cover in Pond 1.
- Golder observed deployment of geotextile in Pond 2.

- Golder observed sewing of geotextile seams.

SUMMARY OF SURVEYOR'S ACTIVITIES
None

SUMMARY OF PROBLEMS AND RESOLUTIONS
None

SUMMARY OF MEETINGS/DISCUSSIONS HELD (ATTENDEES AND ISSUES)
None

SUMMARY OF INCIDENTS / ACCIDENTS / HEALTH AND SAFETY ISSUES
None

SUBMITTED BY GOLDER:

CQA Field Manager: David Hutchinson **Signature:**

PHOTOGRAPHS

Sewing textile seam in Pond 2

Above-Cap drain pipe installed in Pond 2

Finish grading of protective cover in Pond 1, looking east

Deployment of geotextile in Pond 2, looking north

Overview of protective cover in Pond 1, looking north

DAILY FIELD FORM – J.R. Whiting Ponds 1 and 2 Closure

PROJECT OVERVIEW			
Project Title:	J.R. Whiting Ponds 1 and 2 Closure CQA	**Project Number:** 1788523	**Date:** 10/9/2019
Client:	Consumers Energy	**Site/Location:** Erie, MI	
GAI Personnel:	David Hutchinson	**Arrival/Departure Time:** 0630/1930	
Contractor(s):	Ryan Central Inc.	**Contractor(s) Rep:** John Johnson (Ryan Central)	

SITE CONDITIONS	
Weather (AM): Sunny	**Temperature:** 45
Weather (PM): Sunny	**Temperature:** 67
Precipitation: None	**Wind:** E, 1-6 mph

EQUIPMENT ON SITE
1-Kubota RTV X112OD; 1-CAT Water Truck; 1-CAT A200 LGP Dozer; 1-John Deere 644G Loader; 1-Cat CS56B Smooth Drum Roller; 1-Cat D6T Dozer; 1-Cat 299D Skid Steer; 1-JLG 10054 Sky-Trak.

SUMMARY OF CONSTRUCTION
Work performed while Golder was onsite: **Ryan Central** -1 Foreman, 2 Operator, 2 Laborers • Protective cover import to Pond 2. • Placed protective cover in Pond 2. • Finish grading of protective cover in Pond 1. • Topsoil import to Pond 1. • Placed topsoil in Pond 1. • Continued install of the above-cap drain pipe in Pond 2.
GAI CQA ACTIVITIES AND TEST RESULTS
Construction: • Golder onsite documenting the construction progress. • Golder observed import and placement of Protective cover to Pond 2. • Golder observed finish grading of protective cover in Pond 1. • Golder observed import and placement of topsoil to Pond 1. • Golder observed installation of the above-cap drain pipe in Pond 2. • Golder observed surveyor from Rowe shoot protective cover in Pond 1, liner limits and the placed above-cap drain pipe in Pond 2.

SUMMARY OF SURVEYOR'S ACTIVITIES
Rowe surveyor shot protective cover in Pond 1, edge of liner placed in Pond 2 and above-cap drain pipe installed in Pond 2.

SUMMARY OF PROBLEMS AND RESOLUTIONS
None

DAILY FIELD FORM – J.R. Whiting Ponds 1 and 2 Closure

SUMMARY OF MEETINGS/DISCUSSIONS HELD (ATTENDEES AND ISSUES)
None

SUMMARY OF INCIDENTS / ACCIDENTS / HEALTH AND SAFETY ISSUES
None

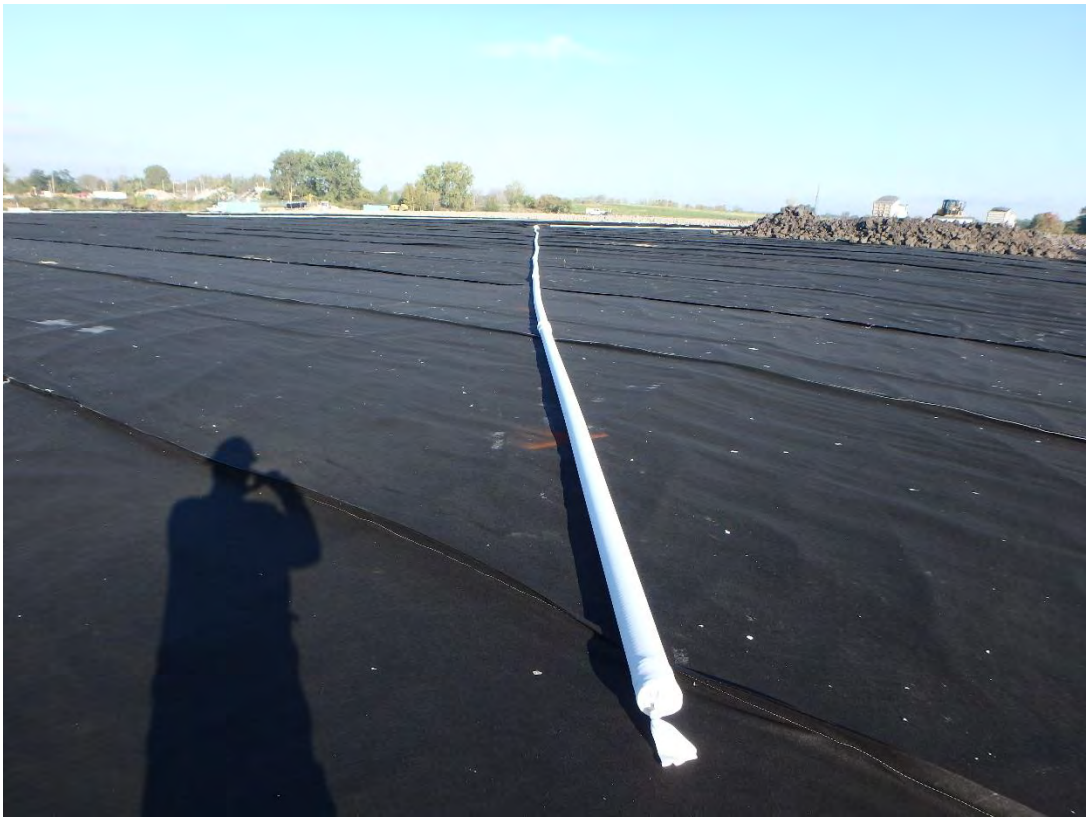
SUBMITTED BY GOLDER:
CQA Field Manager: David Hutchinson **Signature:**

PHOTOGRAPHS

Placing protective cover in Pond 2, looking west

Import of protective cover to Pond 2, looking north

Rowe shooting protective cover placed in Pond 1, looking east



Above-cap drain pipe installed in Pond 2, looking northwest

First load of topsoil received and placed in Pond 1, looking northwest

DAILY FIELD FORM – J.R. Whiting Ponds 1 and 2 Closure

PROJECT OVERVIEW			
Project Title:	J.R. Whiting Ponds 1 and 2 Closure CQA	**Project Number:** 1788523	**Date:** 10/10/2019
Client:	Consumers Energy	**Site/Location:** Erie, MI	
GAI Personnel:	David Hutchinson	**Arrival/Departure Time:** 0630/1530	
Contractor(s):	Ryan Central Inc.	**Contractor(s) Rep:** John Johnson (Ryan Central)	

SITE CONDITIONS	
Weather (AM): Mostly Sunny	**Temperature:** 50
Weather (PM): Mostly Sunny	**Temperature:** 70
Precipitation: None	**Wind:** E, 3-12 mph

EQUIPMENT ON SITE
1-Kubota RTV X112OD; 1-CAT Water Truck; 1-CAT A200 LGP Dozer; 1-Cat CS56B Smooth Drum Roller; 1-Cat D6T Dozer; 1-Cat 299D Skid Steer.

SUMMARY OF CONSTRUCTION
Work performed while Golder was onsite: **Ryan Central** -1 Foreman, 1 Operator, 1 Laborer • Protective cover import to Pond 2. • Placed protective cover in Pond 2. • Topsoil import to Pond 1. • Placed topsoil in Pond 1. • Continued install of the above-cap drain pipe in Pond 2.
GAI CQA ACTIVITIES AND TEST RESULTS
Construction: • Golder onsite documenting the construction progress. • Golder observed import and placement of Protective cover to Pond 2. • Golder observed import and placement of topsoil to Pond 1. • Golder observed installation of the above-cap drain pipe in Pond 2. • Golder collected protective cover samples PC-13 and PC-14 from imported material.

DAILY FIELD FORM – J.R. Whiting Ponds 1 and 2 Closure

SUMMARY OF SURVEYOR'S ACTIVITIES
None

SUMMARY OF PROBLEMS AND RESOLUTIONS
None

SUMMARY OF MEETINGS/DISCUSSIONS HELD (ATTENDEES AND ISSUES)
None

SUMMARY OF INCIDENTS / ACCIDENTS / HEALTH AND SAFETY ISSUES
None

SUBMITTED BY GOLDER:
CQA Field Manager: David Hutchinson **Signature:** 

PHOTOGRAPHS

Placing protective cover in Pond 2, looking northeast

Above-Cap drain pipe with sock

Above-cap drain pipe installed in Pond 2, looking northwest

Overview of Pond 2, looking southeast

DAILY FIELD FORM – J.R. Whiting Ponds 1 and 2 Closure

PROJECT OVERVIEW			
Project Title:	J.R. Whiting Ponds 1 and 2 Closure CQA	**Project Number:** 1788523	**Date:** 10/11/2019
Client:	Consumers Energy	**Site/Location:** Erie, MI	
GAI Personnel:	David Hutchinson	**Arrival/Departure Time:** 1030/1400	
Contractor(s):	Ryan Central Inc.	**Contractor(s) Rep:** John Johnson (Ryan Central)	

SITE CONDITIONS	
Weather (AM): Overcast	**Temperature:** 60
Weather (PM): Overcast	**Temperature:** 66
Precipitation: Rain	**Wind:** W, 2-6 mph

EQUIPMENT ON SITE
1-Kubota RTV X112OD; 1-CAT Water Truck; 1-CAT A200 LGP Dozer; 1-Cat CS56B Smooth Drum Roller; 1-Cat D6T Dozer; 1-Cat 299D Skid Steer.

SUMMARY OF CONSTRUCTION
Work performed while Golder was onsite: **Ryan Central** -1 Foreman, 1 Operator, 1 Laborer • Protective cover import to Pond 2. • Placed protective cover in Pond 2. • Topsoil import to Pond 1. • Shut down due to rain.
GAI CQA ACTIVITIES AND TEST RESULTS
Construction: • Golder onsite documenting the construction progress. • Golder observed import and placement of Protective cover to Pond 2. • Golder observed import of topsoil to Pond 1. • Golder observed Rowe surveyor shoot remaining Pond 2 above-cap drain pipe not already surveyed. • Golder shipped protective cover samples PC-9 and PC-14 from imported material to lab for sieve analysis.

SUMMARY OF SURVEYOR'S ACTIVITIES
Rowe onsite, shot remaining above-cap drain pipe for Pond 2.

DAILY FIELD FORM – J.R. Whiting Ponds 1 and 2 Closure

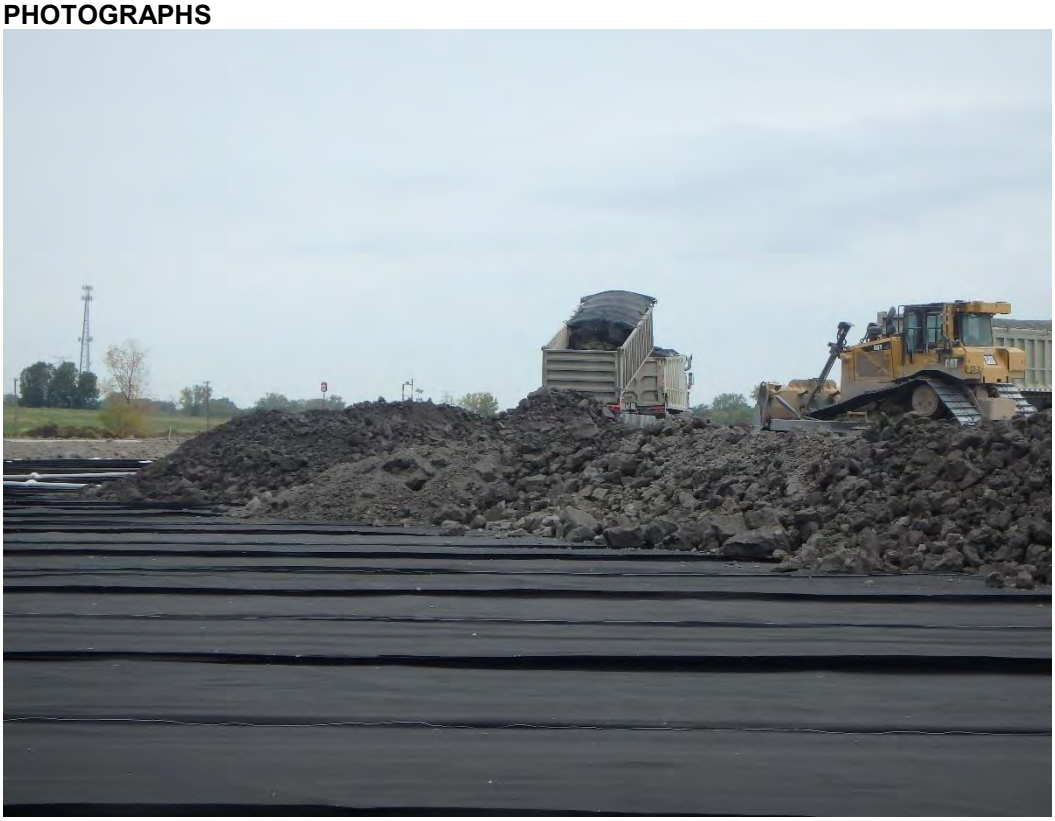
SUMMARY OF PROBLEMS AND RESOLUTIONS
None

SUMMARY OF MEETINGS/DISCUSSIONS HELD (ATTENDEES AND ISSUES)
None

SUMMARY OF INCIDENTS / ACCIDENTS / HEALTH AND SAFETY ISSUES
None

SUBMITTED BY GOLDER:
CQA Field Manager: David Hutchinson **Signature:** 

PHOTOGRAPHS



Import and placement of protective cover in Pond 2, looking north

Overview Pond 2 , looking east

Overview Pond 2, looking northwest

DAILY FIELD FORM – J.R. Whiting Ponds 1 and 2 Closure

PROJECT OVERVIEW			
Project Title:	J.R. Whiting Ponds 1 and 2 Closure CQA	**Project Number:** 1788523	**Date:** 10/14/2019
Client:	Consumers Energy	**Site/Location:** Erie, MI	
GAI Personnel:	David Hutchinson	**Arrival/Departure Time:** 0630/1530	
Contractor(s):	Ryan Central Inc.	**Contractor(s) Rep:** John Johnson (Ryan Central)	

SITE CONDITIONS	
Weather (AM): Mostly Cloudy	**Temperature:** 45
Weather (PM): Partly Sunny	**Temperature:** 63
Precipitation: None	**Wind:** NW, 5-10 mph

EQUIPMENT ON SITE
1-Kubota RTV X112OD; 1-CAT Water Truck; 1-CAT A200 LGP Dozer; 1-Cat CS56B Smooth Drum Roller; 1-Cat D6T Dozer; 1-Cat 299D Skid Steer.

SUMMARY OF CONSTRUCTION
Work performed while Golder was onsite: **Ryan Central** -1 Foreman, 1 Operator, 1 Laborer • Protective cover import to Pond 2. • Placed protective cover in Pond 1 and Pond 2. • Topsoil import to Pond 1. • Placed topsoil in Pond 1.
GAI CQA ACTIVITIES AND TEST RESULTS
Construction: • Golder onsite documenting the construction progress. • Golder observed import of Protective cover to Pond 2. • Golder observed placement of protective cover in Pond 1 and Pond 2. • Golder observed import of topsoil to Pond 1. • Golder observed placement of topsoil in Pond 1.

SUMMARY OF SURVEYOR'S ACTIVITIES
None

DAILY FIELD FORM – J.R. Whiting Ponds 1 and 2 Closure

SUMMARY OF PROBLEMS AND RESOLUTIONS
None

SUMMARY OF MEETINGS/DISCUSSIONS HELD (ATTENDEES AND ISSUES)
None

SUMMARY OF INCIDENTS / ACCIDENTS / HEALTH AND SAFETY ISSUES
None

SUBMITTED BY GOLDER:
CQA Field Manager: David Hutchinson **Signature:** 

PHOTOGRAPHS

Import of protective cover to Pond 2, looking southwest

Placement of protective cover east side of Pond 2

Overview Pond 2, looking southwest

DAILY FIELD FORM – J.R. Whiting Ponds 1 and 2 Closure

PROJECT OVERVIEW			
Project Title:	J.R. Whiting Ponds 1 and 2 Closure CQA	**Project Number:** 1788523	**Date:** 10/15/2019
Client:	Consumers Energy	**Site/Location:** Erie, MI	
GAI Personnel:	David Hutchinson	**Arrival/Departure Time:** 0630/1230	
Contractor(s):	Ryan Central Inc.	**Contractor(s) Rep:** John Johnson (Ryan Central)	

SITE CONDITIONS	
Weather (AM): Mostly Sunny	**Temperature:** 37
Weather (PM): Mostly Sunny	**Temperature:** 52
Precipitation: None	**Wind:** NW, 3-9 mph

EQUIPMENT ON SITE
1-Kubota RTV X112OD; 1-CAT Water Truck; 1-CAT A200 LGP Dozer; 1-Cat CS56B Smooth Drum Roller; 1-Cat D6T Dozer; 1-Cat 299D Skid Steer.

SUMMARY OF CONSTRUCTION
Work performed while Golder was onsite: **Ryan Central** -1 Foreman, 2 Operator, 1 Laborer • Protective cover import to Pond 2. • Placed protective cover in Pond 2. • Topsoil import to Pond 1. • Placed topsoil in Pond 1.
GAI CQA ACTIVITIES AND TEST RESULTS
Construction: • Golder onsite documenting the construction progress. • Golder observed import of Protective cover to Pond 2. • Golder observed placement of protective cover in Pond 1 and Pond 2. • Golder observed import of topsoil to Pond 1. • Golder observed placement of topsoil in Pond 1.

SUMMARY OF SURVEYOR'S ACTIVITIES
None

DAILY FIELD FORM – J.R. Whiting Ponds 1 and 2 Closure

SUMMARY OF PROBLEMS AND RESOLUTIONS
None

SUMMARY OF MEETINGS/DISCUSSIONS HELD (ATTENDEES AND ISSUES)
None

SUMMARY OF INCIDENTS / ACCIDENTS / HEALTH AND SAFETY ISSUES
None

SUBMITTED BY GOLDER:
CQA Field Manager: David Hutchinson **Signature:** 

PHOTOGRAPHS

Placement of protective cover in Pond 2, looking northeast

Overview of Pond 2's southeast corner, looking north

Overview from Pond 2's southwest corner, looking northeast

DAILY FIELD FORM – J.R. Whiting Ponds 1 and 2 Closure

PROJECT OVERVIEW			
Project Title:	J.R. Whiting Ponds 1 and 2 Closure CQA	**Project Number:** 1788523	**Date:** 10/16/2019
Client:	Consumers Energy	**Site/Location:** Erie, MI	
GAI Personnel:	David Hutchinson	**Arrival/Departure Time:** 0630/1630	
Contractor(s):	Ryan Central Inc.	**Contractor(s) Rep:** John Johnson (Ryan Central)	

SITE CONDITIONS	
Weather (AM): Cloudy	**Temperature:** 50
Weather (PM): Cloudy	**Temperature:** 52
Precipitation: Rain	**Wind:** W, 10-22 mph

EQUIPMENT ON SITE
1-Kubota RTV X112OD; 1-CAT Water Truck; 1-CAT A200 LGP Dozer; 1-Cat CS56B Smooth Drum Roller; 1-Cat D6T Dozer; 1-Cat 299D Skid Steer.

SUMMARY OF CONSTRUCTION
Work performed while Golder was onsite: **Ryan Central** -1 Foreman, 2 Operator, 1 Laborer • Protective cover import to Pond 2. • Placed protective cover in Pond 2. • Topsoil import to Pond 1. • Placed topsoil in Pond 1. • Class II sand import for access road.
GAI CQA ACTIVITIES AND TEST RESULTS
Construction: • Golder onsite documenting the construction progress. • Golder observed import of Protective cover to Pond 2. • Golder observed placement of protective cover in Pond 1 and Pond 2. • Golder observed import of topsoil to Pond 1. • Golder observed placement of topsoil in Pond 1. • Golder observed import of Class II sand for access road.

DAILY FIELD FORM – J.R. Whiting Ponds 1 and 2 Closure

SUMMARY OF SURVEYOR'S ACTIVITIES
None

SUMMARY OF PROBLEMS AND RESOLUTIONS
None

SUMMARY OF MEETINGS/DISCUSSIONS HELD (ATTENDEES AND ISSUES)
Bi-Weekly construction meeting with CEC, Ryan and Golder.

SUMMARY OF INCIDENTS / ACCIDENTS / HEALTH AND SAFETY ISSUES
None

SUBMITTED BY GOLDER:
CQA Field Manager: David Hutchinson **Signature:**

PHOTOGRAPHS

23A imported stone for access road placed atop 10 oz. textile in chemical ponds, looking south

Class II sand imported for access road, looking north from southeast corner of Pond 2

Overview of Pond 2, looking south from Pond 1

DAILY FIELD FORM – J.R. Whiting Ponds 1 and 2 Closure

PROJECT OVERVIEW			
Project Title:	J.R. Whiting Ponds 1 and 2 Closure CQA	**Project Number:** 1788523	**Date:** 10/17/2019
Client:	Consumers Energy	**Site/Location:** Erie, MI	
GAI Personnel:	David Hutchinson	**Arrival/Departure Time:** 0630/1630	
Contractor(s):	Ryan Central Inc.	**Contractor(s) Rep:** John Johnson (Ryan Central)	

SITE CONDITIONS	
Weather (AM): Mostly Sunny	**Temperature:** 43
Weather (PM): Mostly Cloudy	**Temperature:** 54
Precipitation: None	**Wind:** NW, 3-10 mph

EQUIPMENT ON SITE
1-Kubota RTV X112OD; 1-CAT Water Truck; 1-CAT A200 LGP Dozer; 1-Cat CS56B Smooth Drum Roller; 1-Cat D6T Dozer; 1-Cat 299D Skid Steer.

SUMMARY OF CONSTRUCTION
Work performed while Golder was onsite: **Ryan Central** -1 Foreman, 2 Operator, 1 Laborer • Protective cover import to Pond 2. • Placed protective cover in Pond 2. • Topsoil import to Pond 1. • Placed topsoil in Pond 1. • Class II sand import for access road. • Placed class II sand on east access road. • Compacted class II sand using smooth drum roller.

GAI CQA ACTIVITIES AND TEST RESULTS
Construction: • Golder onsite documenting the construction progress. • Golder observed import of Protective cover to Pond 2. • Golder monitored placement of protective cover in Pond 2 in single 18 inch lift using GPS dozer. • Golder observed import of topsoil to Pond 1, material stockpiled along western edge of Pond 1. • Golder observed import of Class II sand for access road. • Golder monitored placement of Class II sand along east access road (see attached lift/test map) in single 12 inch lift and compacted using a Cat CS56B smooth drum roller. • Golder performed Standard test on Troxler 3440 prior to density testing.

- Performed density test's SBDT-1 thru SBDT-3 on 12-inch compacted class II fill lift 1 placed along east access road east of Pond 2 using a Troxler 3440 Nuclear Gauge (see density test map). Compacted and tested class II fill met all specifications.

SUMMARY OF SURVEYOR'S ACTIVITIES
None

SUMMARY OF PROBLEMS AND RESOLUTIONS
None

SUMMARY OF MEETINGS/DISCUSSIONS HELD (ATTENDEES AND ISSUES)
None

SUMMARY OF INCIDENTS / ACCIDENTS / HEALTH AND SAFETY ISSUES
None

SUBMITTED BY GOLDER:

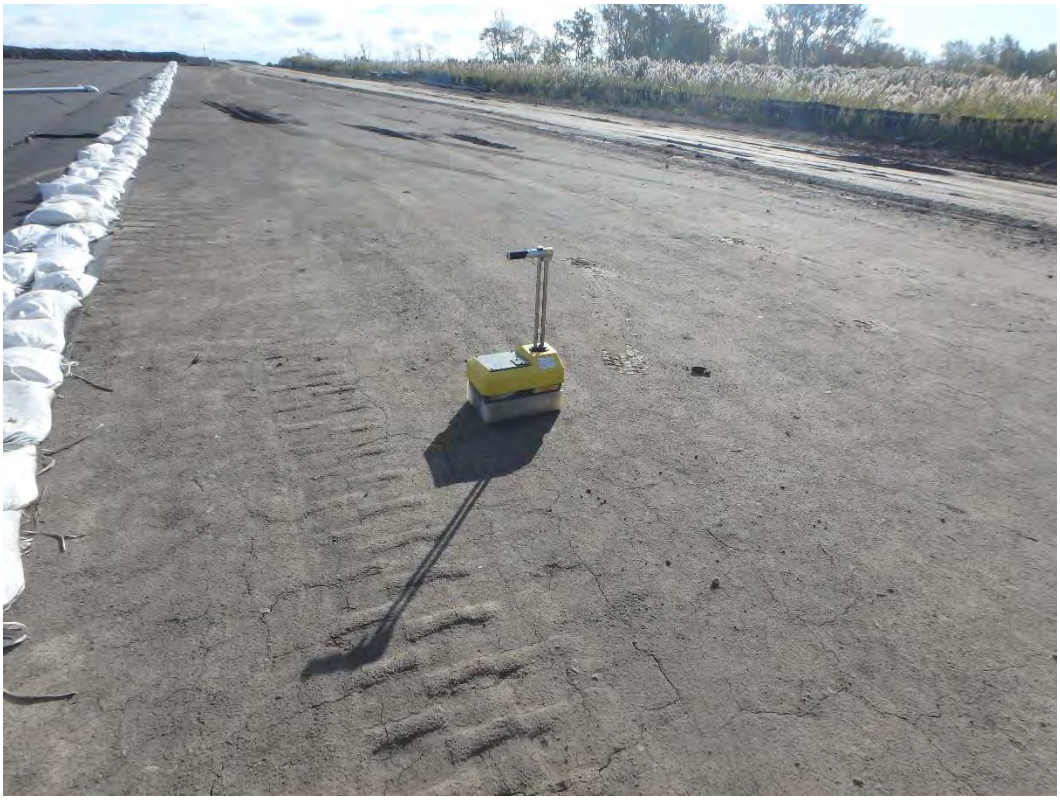
CQA Field Manager: David Hutchinson **Signature:**

PHOTOGRAPHS

Protective cover import to Pond 2, looking southwest

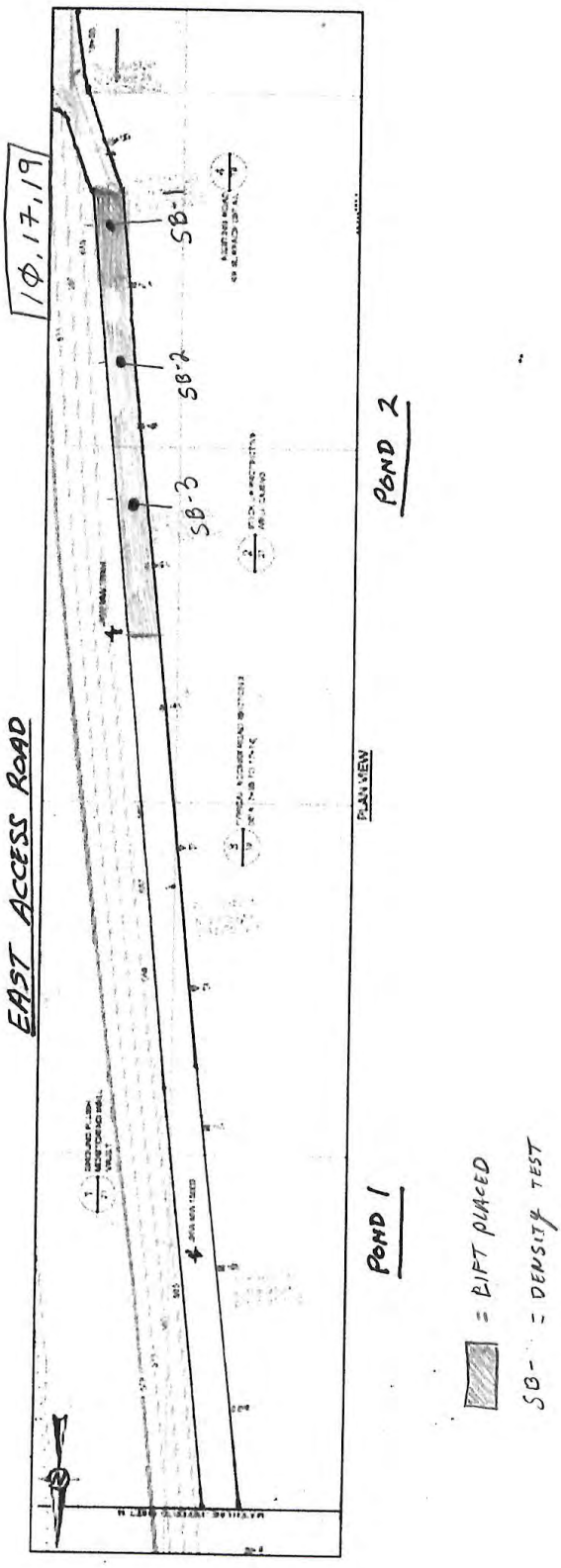
Class II sand imported for access road, looking east from Pond 2

Topsoil placed in Pond 1, looking northeast



Preforming standard on nuclear density gauge prior to testing, looking east

Density test of class II sand placed and compacted for east access road, looking north



Lift/Density Test Map

DAILY FIELD FORM – J.R. Whiting Ponds 1 and 2 Closure

PROJECT OVERVIEW			
Project Title:	J.R. Whiting Ponds 1 and 2 Closure CQA	**Project Number:** 1788523	**Date:** 10/18/2019
Client:	Consumers Energy	**Site/Location:** Erie, MI	
GAI Personnel:	David Hutchinson	**Arrival/Departure Time:** 0630/1230	
Contractor(s):	Ryan Central Inc.	**Contractor(s) Rep:** John Johnson (Ryan Central)	

SITE CONDITIONS	
Weather (AM): Sunny	**Temperature:** 37
Weather (PM): Sunny	**Temperature:** 42
Precipitation: None	**Wind:** NW, 2-7 mph

EQUIPMENT ON SITE
1-Kubota RTV X112OD; 1-CAT Water Truck; 1-CAT A200 LGP Dozer; 1-Cat CS56B Smooth Drum Roller; 1-Cat D6T Dozer; 1-Cat 299D Skid Steer.

SUMMARY OF CONSTRUCTION
Work performed while Golder was onsite: **Ryan Central** -1 Foreman, 1 Operator, 1 Laborer • Placed protective cover in Pond 2. • Topsoil import to Pond 1. • Placed topsoil in Pond 1. • Class II sand import for access road. • Placed class II sand on east access road.
GAI CQA ACTIVITIES AND TEST RESULTS
Construction: • Golder onsite documenting the construction progress. • Golder monitored placement of protective cover in Pond 2 in single 18 inch lift using GPS dozer. • Golder observed import of topsoil to Pond 1, material stockpiled along western edge of Pond 1. • Golder observed import of Class II sand for access road. • Golder monitored placement of Class II sand along east access road (see attached lift/test map) in single 12 inch lift and compacted using a Cat CS56B smooth drum roller. • Golder performed Standard test on Troxler 3440 prior to density testing. • Performed density test's SBDT-4 and SBDT-5 on 12-inch compacted class II fill lift 1 placed along east access road east of Pond 2 using a Troxler 3440 Nuclear Gauge (see density test map). Compacted and tested class II fill met all specifications.

SUMMARY OF SURVEYOR'S ACTIVITIES
None

DAILY FIELD FORM – J.R. Whiting Ponds 1 and 2 Closure

SUMMARY OF PROBLEMS AND RESOLUTIONS
None

SUMMARY OF MEETINGS/DISCUSSIONS HELD (ATTENDEES AND ISSUES)
None

SUMMARY OF INCIDENTS / ACCIDENTS / HEALTH AND SAFETY ISSUES
None

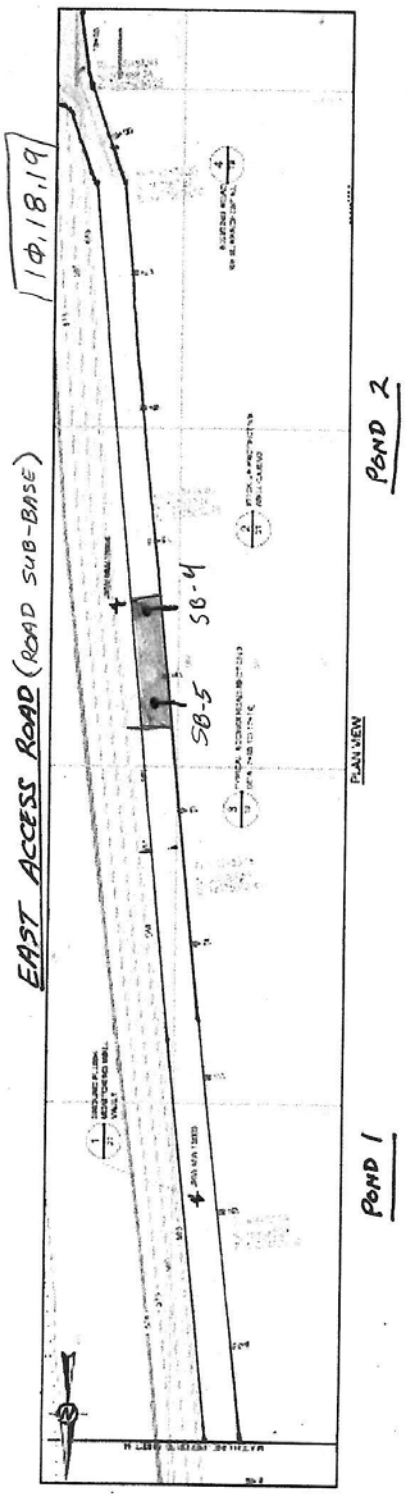
SUBMITTED BY GOLDER:
CQA Field Manager: David Hutchinson **Signature:** 

PHOTOGRAPHS

Class II placed for east access road sub-base east of Pond 2, looking south

Protective cover placed along east side of Pond's 1 and 2, looking north

Overview of protective cover in Pond 2, looking southwest



Lift/Density Test Map

DAILY FIELD FORM – J.R. Whiting Ponds 1 and 2 Closure

PROJECT OVERVIEW			
Project Title:	J.R. Whiting Ponds 1 and 2 Closure CQA	**Project Number:** 1788523	**Date:** 10/21/2019
Client:	Consumers Energy	**Site/Location:** Erie, MI	
GAI Personnel:	David Hutchinson	**Arrival/Departure Time:** 0630/1430	
Contractor(s):	Ryan Central Inc.	**Contractor(s) Rep:** John Johnson (Ryan Central)	

SITE CONDITIONS	
Weather (AM): Mostly Cloudy	**Temperature:** 53
Weather (PM): Cloudy	**Temperature:** 60
Precipitation: None	**Wind:** NE, 4-15 mph

EQUIPMENT ON SITE
1-Kubota RTV X112OD; 1-CAT Water Truck; 1-CAT A200 LGP Dozer; 1-Cat CS56B Smooth Drum Roller; 1-Cat D6T Dozer; 1-Cat 299D Skid Steer; 1-Cat 326F Excavator.

SUMMARY OF CONSTRUCTION
Work performed while Golder was onsite: **Ryan Central** -1 Foreman, 1 Operator, 1 Laborer • Placed protective cover in Pond 2. • Topsoil import to Pond 1. • Placed topsoil in Pond 1. • Class II sand import for access road sub-base. • Placed class II sand on east access road. • Mobilized Cat 326F Excavator.
GAI CQA ACTIVITIES AND TEST RESULTS
Construction: • Golder onsite documenting the construction progress. • Golder monitored placement of protective cover in Pond 2 in single 18 inch lift using GPS dozer. • Golder observed import of topsoil to Pond 1, material being pushed in 3 foot lift for haul road from the western edge of Pond 1. • Golder observed import of Class II sand for access road sub-base layer. • Golder monitored placement of Class II sand along east access road (see attached lift/test map) in single 12 inch lift. • Golder performed Standard test on Troxler 3440 prior to density testing. • Performed density test's SBDT-6 and SBDT-7 on 12-inch compacted class II fill lift 1 placed along east access road east of Pond 2 using a Troxler 3440 Nuclear Gauge (see density test map). Compacted and tested class II fill met all specifications for road sub-base.

DAILY FIELD FORM – J.R. Whiting Ponds 1 and 2 Closure

SUMMARY OF SURVEYOR'S ACTIVITIES
None

SUMMARY OF PROBLEMS AND RESOLUTIONS
None

SUMMARY OF MEETINGS/DISCUSSIONS HELD (ATTENDEES AND ISSUES)
None

SUMMARY OF INCIDENTS / ACCIDENTS / HEALTH AND SAFETY ISSUES
None

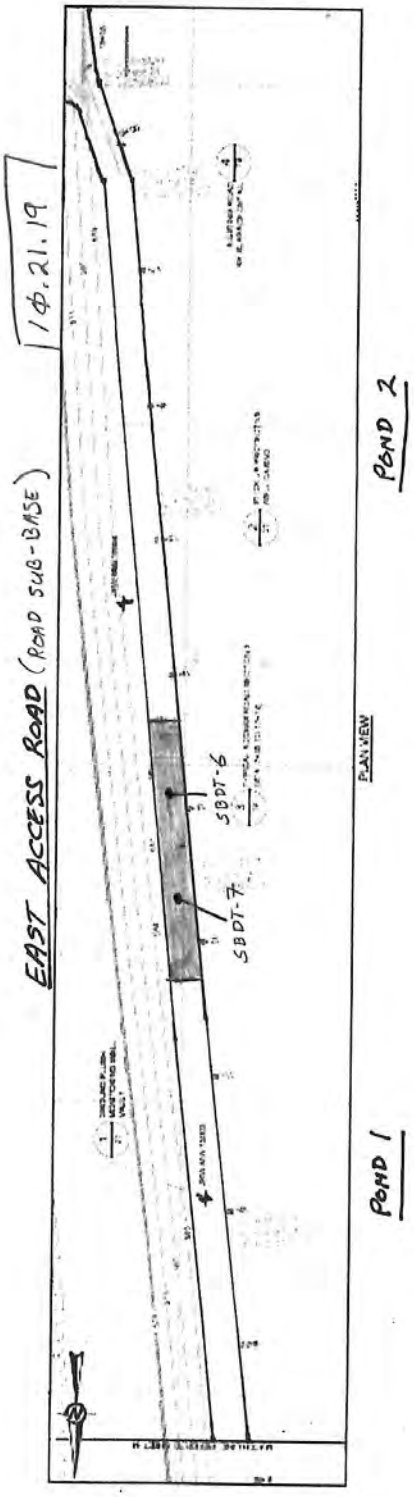
SUBMITTED BY GOLDER:	
CQA Field Manager: David Hutchinson	**Signature:** 

PHOTOGRAPHS

Placement of protective cover over Pond 2 geosynthetics, looking northeast

East access road sub-base, looking south

Import of protective cover to Pond 2, looking northeast



Lift/Density Test Map

DAILY FIELD FORM – J.R. Whiting Ponds 1 and 2 Closure

PROJECT OVERVIEW			
Project Title:	J.R. Whiting Ponds 1 and 2 Closure CQA	**Project Number:** 1788523	**Date:** 10/22/2019
Client:	Consumers Energy	**Site/Location:** Erie, MI	
GAI Personnel:	David Hutchinson	**Arrival/Departure Time:** 0630/1430	
Contractor(s):	Ryan Central Inc.	**Contractor(s) Rep:** John Johnson (Ryan Central)	

SITE CONDITIONS	
Weather (AM): Sunny	**Temperature:** 52
Weather (PM): Mostly Cloudy	**Temperature:** 57
Precipitation: None	**Wind:** W, 3-20 mph

EQUIPMENT ON SITE
1-Kubota RTV X112OD; 1-CAT Water Truck; 1-CAT A200 LGP Dozer; 1-Cat CS56B Smooth Drum Roller; 1-Cat D6T Dozer; 1-Cat 299D Skid Steer; 1-Cat 326F Excavator.

SUMMARY OF CONSTRUCTION
Work performed while Golder was onsite: **Ryan Central** -1 Foreman, 1 Operator, 1 Laborer • Protective cover import to Pond 2. • Placed protective cover in Pond 2. • Topsoil import to Pond 1. • Placed topsoil in Pond 1.
GAI CQA ACTIVITIES AND TEST RESULTS
Construction: • Golder onsite documenting the construction progress. • Golder monitored placement of protective cover in Pond 2 in single 18 inch lift using GPS dozer. • Golder observed import of topsoil to Pond 1, material being pushed in 3 foot lift for haul road from the western edge of Pond 1.

SUMMARY OF SURVEYOR'S ACTIVITIES
None

SUMMARY OF PROBLEMS AND RESOLUTIONS
None

SUMMARY OF MEETINGS/DISCUSSIONS HELD (ATTENDEES AND ISSUES)
None

DAILY FIELD FORM – J.R. Whiting Ponds 1 and 2 Closure

SUMMARY OF INCIDENTS / ACCIDENTS / HEALTH AND SAFETY ISSUES
None

SUBMITTED BY GOLDER:	
CQA Field Manager: David Hutchinson	**Signature:** 

PHOTOGRAPHS

Resurfacing of access road to chemical ponds, looking south

East access road sub-base, looking north

Building topsoil haul road in Pond 1, looking east

DAILY FIELD FORM – J.R. Whiting Ponds 1 and 2 Closure

PROJECT OVERVIEW			
Project Title:	J.R. Whiting Ponds 1 and 2 Closure CQA	**Project Number:** 1788523	**Date:** 10/23/2019
Client:	Consumers Energy	**Site/Location:** Erie, MI	
GAI Personnel:	David Hutchinson	**Arrival/Departure Time:** 0630/1430	
Contractor(s):	Ryan Central Inc.	**Contractor(s) Rep:** John Johnson (Ryan Central)	

SITE CONDITIONS	
Weather (AM): Mostly Sunny	**Temperature:** 43
Weather (PM): Mostly Sunny	**Temperature:** 50
Precipitation: None	**Wind:** W, 4-22 mph

EQUIPMENT ON SITE
1-Kubota RTV X112OD; 1-CAT Water Truck; 1-CAT A200 LGP Dozer; 1-Cat CS56B Smooth Drum Roller; 1-Cat D6T Dozer; 1-Cat 299D Skid Steer; 1-Cat 326F Excavator.

SUMMARY OF CONSTRUCTION
Work performed while Golder was onsite: **Ryan Central** -1 Foreman, 1 Operator, 1 Laborer • Protective cover import to Pond 2. • Placed protective cover in Pond 2. • Topsoil import to Pond 1. • Placed topsoil in Pond 1. • Road base import and placement for east access road.
GAI CQA ACTIVITIES AND TEST RESULTS
Construction: • Golder onsite documenting the construction progress. • Golder monitored placement of protective cover in Pond 2 in single 18 inch lift using GPS dozer. • Golder observed import of topsoil to Pond 1, material being pushed in 3 foot lift for haul road from the western edge of Pond 1. • Golder observed deployment of 10oz textile above east access road sub-base. • Golder observed import of 23A stone for access road base, material placed in single 10 inch loose lift atop of the 10oz textile along the east access road. No compaction or testing done.

SUMMARY OF SURVEYOR'S ACTIVITIES
None

SUMMARY OF PROBLEMS AND RESOLUTIONS
None

DAILY FIELD FORM – J.R. Whiting Ponds 1 and 2 Closure

SUMMARY OF MEETINGS/DISCUSSIONS HELD (ATTENDEES AND ISSUES)
None

SUMMARY OF INCIDENTS / ACCIDENTS / HEALTH AND SAFETY ISSUES
None

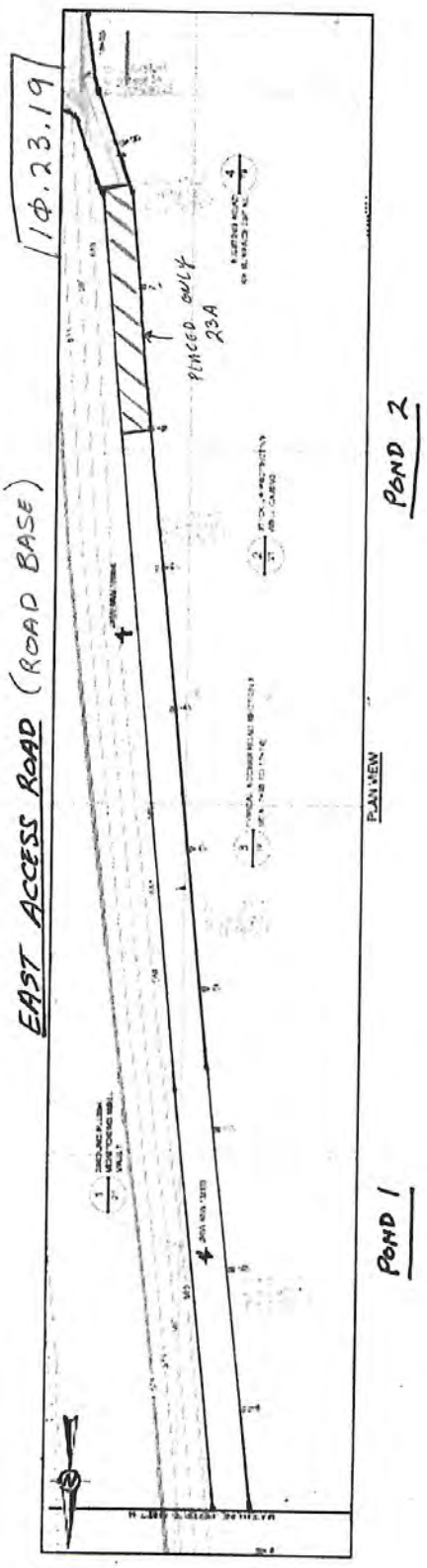
SUBMITTED BY GOLDER:
CQA Field Manager: David Hutchinson **Signature:** 

PHOTOGRAPHS

Placement of protective cover in Pond 2, looking northwest

Overview of remaining area of Pond 2 to be covered with protective cover, looking southwest

Road base placed for east access road, looking north



Lift/Density Test Map

DAILY FIELD FORM – J.R. Whiting Ponds 1 and 2 Closure

PROJECT OVERVIEW			
Project Title:	J.R. Whiting Ponds 1 and 2 Closure CQA	**Project Number:** 1788523	**Date:** 10/24/2019
Client:	Consumers Energy	**Site/Location:** Erie, MI	
GAI Personnel:	David Hutchinson	**Arrival/Departure Time:** 0630/1430	
Contractor(s):	Ryan Central Inc. Rowe	**Contractor(s) Rep:** John Johnson (Ryan Central) Will Smith (Rowe)	

SITE CONDITIONS	
Weather (AM): Partly Sunny	**Temperature:** 54
Weather (PM): Mostly Cloudy	**Temperature:** 58
Precipitation: None	**Wind:** W, 5-12 mph

EQUIPMENT ON SITE
1-Kubota RTV X112OD; 1-CAT Water Truck; 1-CAT A200 LGP Dozer; 1-Cat CS56B Smooth Drum Roller; 1-Cat D6T Dozer; 1-Cat 299D Skid Steer; 1-Cat 326F Excavator.

SUMMARY OF CONSTRUCTION
Work performed while Golder was onsite: **Ryan Central** -1 Foreman, 1 Operator, 1 Laborer • Protective cover import to Pond 2. • Placed protective cover in Pond 2. • Topsoil import to Pond 1. • Placed topsoil in Pond 1. • Road base import and placement for east access road. • Road sub-base import and placement for east access road. • Cut and removed 15 foot section of 24 inch steel pipe in discharge channel. • Demobilized Cat 326F Excavator.
GAI CQA ACTIVITIES AND TEST RESULTS
Construction: • Golder onsite documenting the construction progress. • Golder monitored placement of protective cover in Pond 2 in single 18 inch lift using GPS dozer. • Golder observed import of topsoil to Pond 1, material being pushed in 3 foot lift for haul road from the western edge of Pond 1. • Golder observed deployment of 10oz textile on east access road for placement of road sub-base and road base material. • Golder monitored placement of Class II sand along east access road (see attached lift/test map) in single 12 inch lift.

- Golder observed import of 23A stone for access road base (see attached lift/test map), material placed in single 10 inch loose lift atop of the 10oz textile along the east access road. No compaction or testing done.
- Golder performed Standard test on Troxler 3440 prior to density testing.
- Performed density test's SBDT-8 thru SBDT-10 on 12-inch compacted class II fill lift 1 placed along east access road east of Pond 2 using a Troxler 3440 Nuclear Gauge (see density test map). Compacted and tested class II fill met all specifications for road sub-base.
- Golder observed cutting and removal of a 15 foot section of 24 inch steel pipe located in discharge channel (see attached map for location).

SUMMARY OF SURVEYOR'S ACTIVITIES

Rowe shot protective cover in Pond 2.

SUMMARY OF PROBLEMS AND RESOLUTIONS

Unidentified 24 inch steel pipe found running from the northeast corner of the discharge channel toward the north (see attached map). Pipe was found due to water level in discharge channel dropping and fully exposing the pipe. Ryan cut off and removed the section of pipe exposed, section removed was approximately 15 feet in length. Tom Shields with CEC was asked how they wanted to deal with the remaining pipe running north, Tom told Ryan to place sandbags into the pipe and install a 4 to 6 inch grout cap.

SUMMARY OF MEETINGS/DISCUSSIONS HELD (ATTENDEES AND ISSUES)

None

SUMMARY OF INCIDENTS / ACCIDENTS / HEALTH AND SAFETY ISSUES

None

SUBMITTED BY GOLDER:

CQA Field Manager: David Hutchinson **Signature:** 

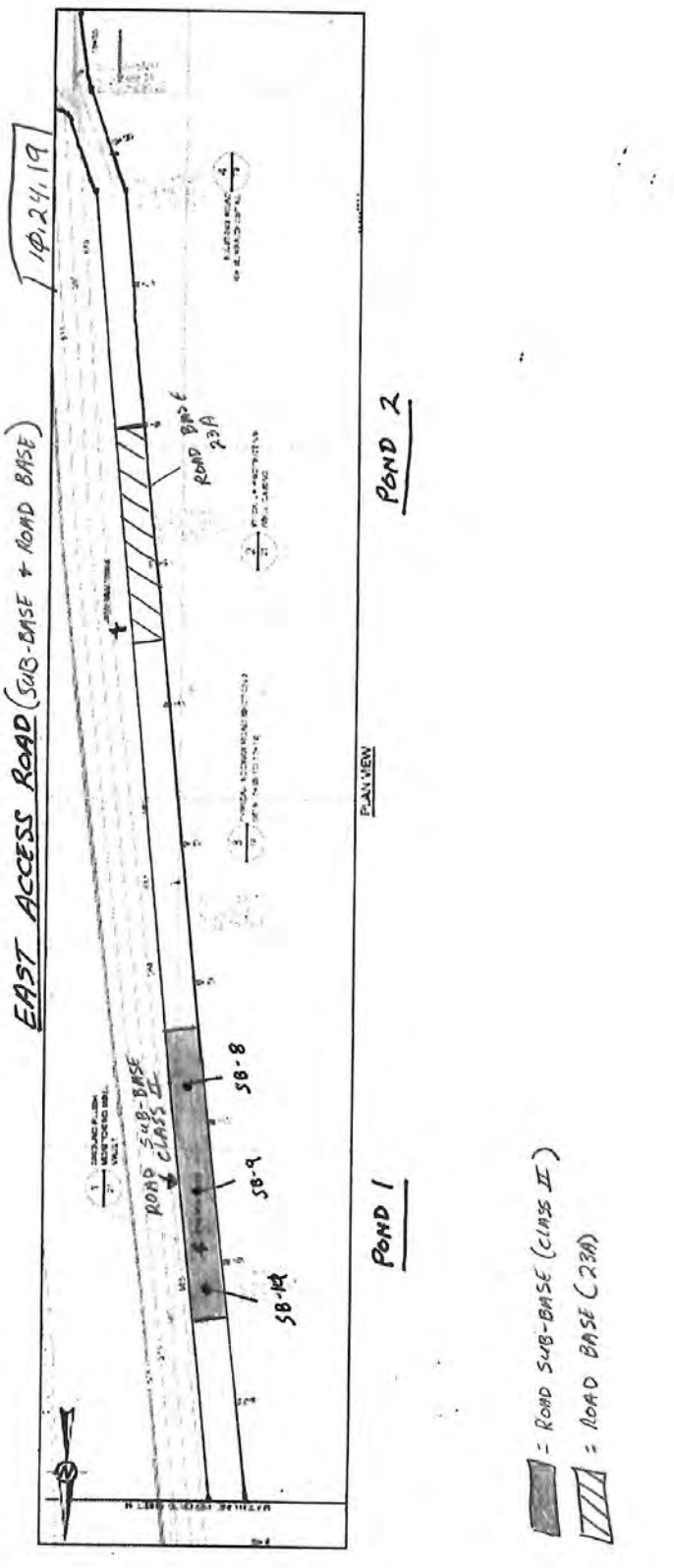
PHOTOGRAPHS

Topsoil import to Pond 1, looking northeast

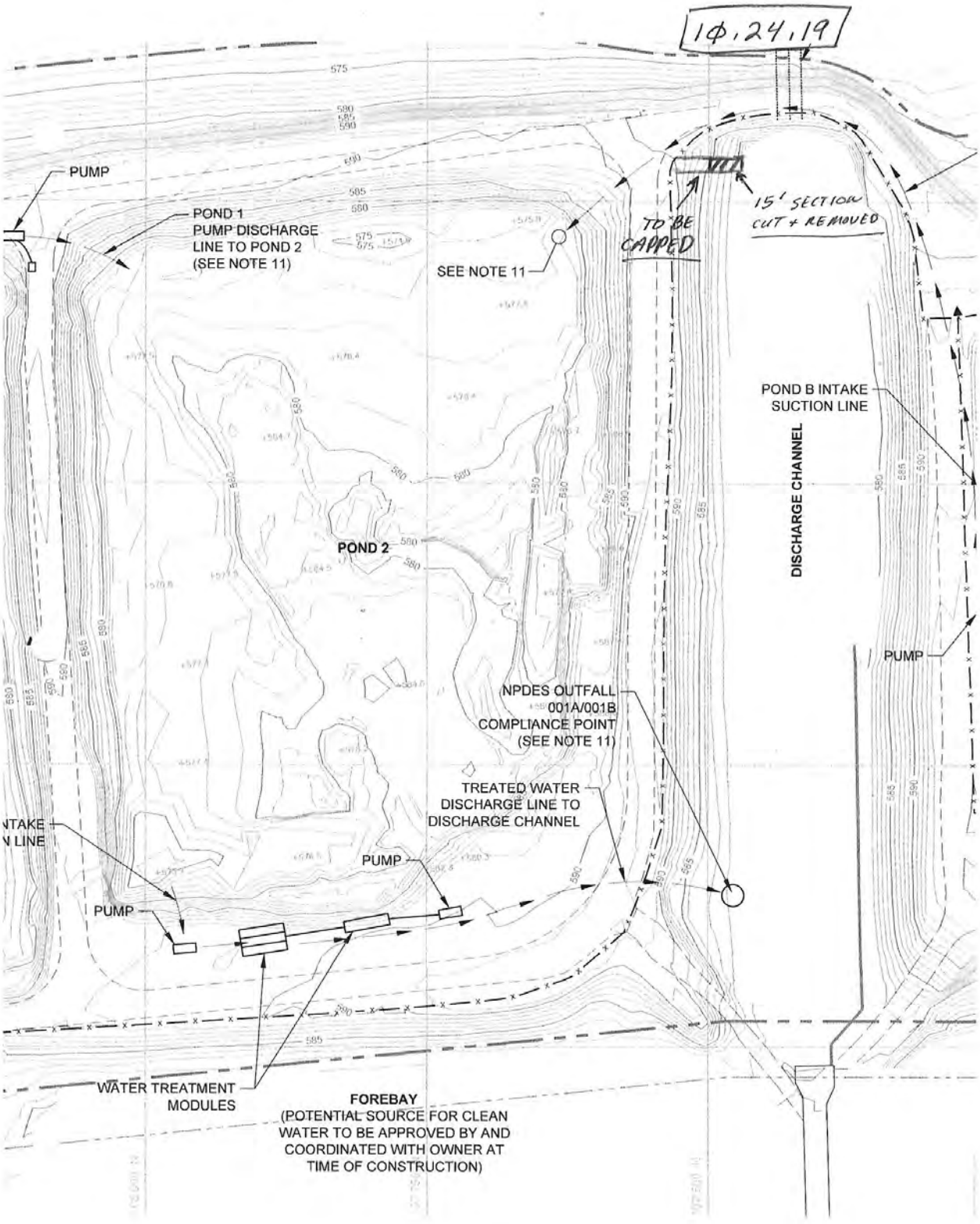
24 inch steel pipe discovered in the northeast corner of the discharge channel, looking north

Cutting 24 inch pipe into discharge channel for removal, looking south

End of 24 inch pipe from discharge channel to be capped, looking west



Lift/Density Test Map



Location of 24 inch steel pipe found in discharge channel

DAILY FIELD FORM – J.R. Whiting Ponds 1 and 2 Closure

PROJECT OVERVIEW			
Project Title:	J.R. Whiting Ponds 1 and 2 Closure CQA	**Project Number:** 1788523	**Date:** 10/25/2019
Client:	Consumers Energy	**Site/Location:** Erie, MI	
GAI Personnel:	David Hutchinson	**Arrival/Departure Time:** 0630/1830	
Contractor(s):	Ryan Central Inc. Rowe	**Contractor(s) Rep:** John Johnson (Ryan Central) Will Smith (Rowe)	

SITE CONDITIONS	
Weather (AM): Cloudy	**Temperature:** 46
Weather (PM): Cloudy	**Temperature:** 52
Precipitation: None	**Wind:** E, 3-9 mph

EQUIPMENT ON SITE
1-Kubota RTV X112OD; 1-CAT Water Truck; 1-CAT A200 LGP Dozer; 1-Cat CS56B Smooth Drum Roller; 1-Cat D6T Dozer; 1-Cat 299D Skid Steer.

SUMMARY OF CONSTRUCTION
Work performed while Golder was onsite: **Ryan Central** -1 Foreman, 1 Operator, 1 Laborer • Protective cover import to Pond 2. • Placed protective cover in Pond 2. • Topsoil import to Pond 1. • Placed topsoil in Pond 1. • Road base import and placement for east access road. • Road sub-base import and placement for east access road. • Capped 24 inch steel pipe in discharge channel.
GAI CQA ACTIVITIES AND TEST RESULTS
Construction: • Golder onsite documenting the construction progress. • Golder monitored placement of protective cover in Pond 2 in single 18 inch lift using GPS dozer. • Golder observed import of topsoil to Pond 1, material being pushed in 3 foot lift for haul road from the western edge of Pond 1. • Golder observed deployment of 10oz textile on east access road for placement of road sub-base and road base material. • Golder monitored placement of Class II sand along east access road (see attached lift/test map) in single 12 inch lift. • Golder observed import of 23A stone for access road base (see attached lift/test map), material placed in single 10 inch loose lift atop of the 10oz textile along the east access road. No compaction or testing done.

- Golder performed Standard test on Troxler 3440 prior to density testing.
- Performed density test's SBDT-11 thru SBDT-13 on 12-inch compacted class II fill lift 1 placed along east access road east of Pond 2 using a Troxler 3440 Nuclear Gauge (see density test map). Compacted and tested class II fill met all specifications for road sub-base.
- Golder monitored capping of 24 inch steel pipe in discharge channel. Ryan placed sandbags to fill pipe starting 6 inches back from open end then installed a 6 inch cap using grout.

SUMMARY OF SURVEYOR'S ACTIVITIES

Rowe shot protective cover in Pond 2.

SUMMARY OF PROBLEMS AND RESOLUTIONS

None

SUMMARY OF MEETINGS/DISCUSSIONS HELD (ATTENDEES AND ISSUES)

None

SUMMARY OF INCIDENTS / ACCIDENTS / HEALTH AND SAFETY ISSUES

None

SUBMITTED BY GOLDER:

CQA Field Manager: David Hutchinson **Signature:** 

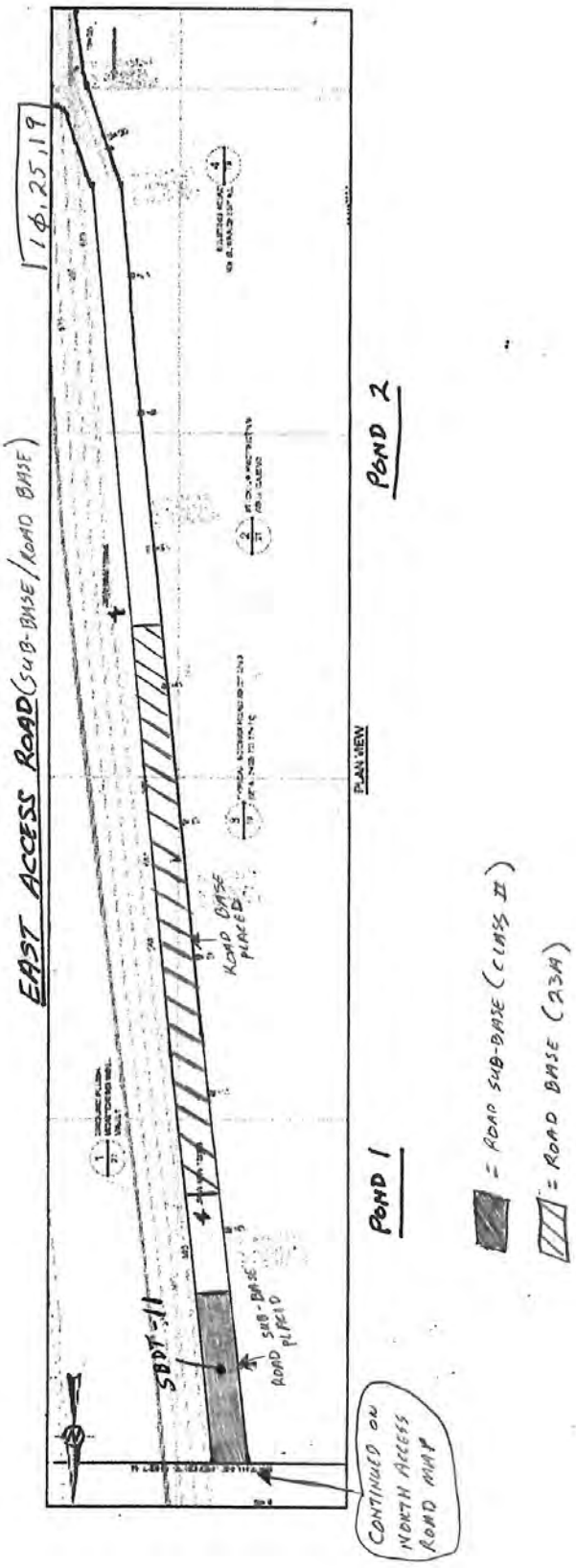
PHOTOGRAPHS

East access road, looking north

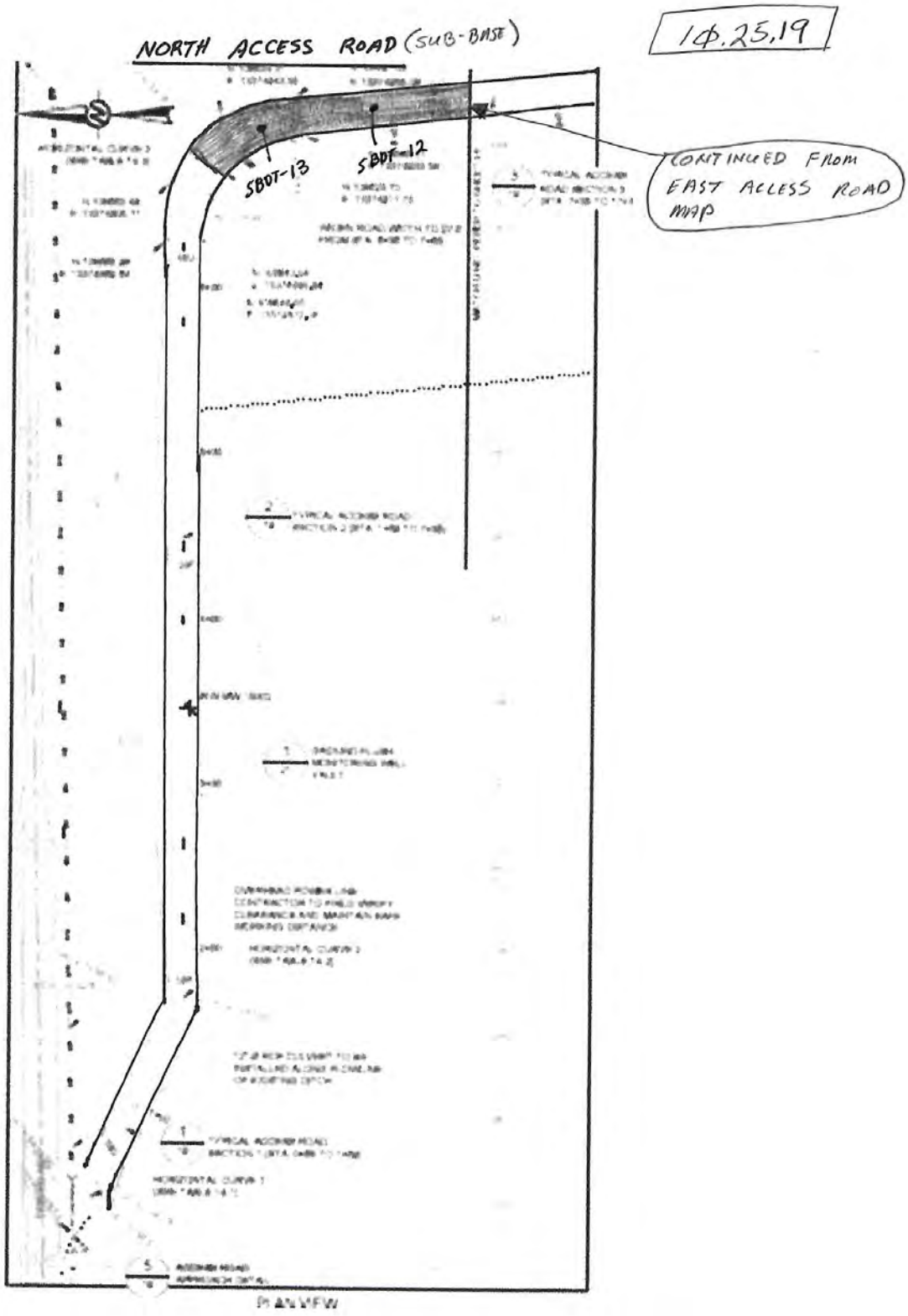
Sandbags placed in 24 inch steel pipe being capped

Grout being placed to cap 24 inch steel pipe

Finished 24 inch pipe cap



Lift/Density Test Map



Lift/Density Test Map

DAILY FIELD FORM – J.R. Whiting Ponds 1 and 2 Closure

PROJECT OVERVIEW			
Project Title:	J.R. Whiting Ponds 1 and 2 Closure CQA	**Project Number:** 1788523	**Date:** 10/29/2019
Client:	Consumers Energy	**Site/Location:** Erie, MI	
GAI Personnel:	David Hutchinson	**Arrival/Departure Time:** 0630/1530	
Contractor(s):	Ryan Central Inc. Rowe	**Contractor(s) Rep:** John Johnson (Ryan Central) Will Smith (Rowe)	

SITE CONDITIONS	
Weather (AM): Sunny	**Temperature:** 50
Weather (PM): Mostly Cloudy	**Temperature:** 58
Precipitation: None	**Wind:** S, 1-8 mph

EQUIPMENT ON SITE
1-Kubota RTV X112OD; 1-CAT Water Truck; 1-CAT A200 LGP Dozer; 1-Cat CS56B Smooth Drum Roller; 1-Cat D6T Dozer; 1-Cat 299D Skid Steer.

SUMMARY OF CONSTRUCTION
Work performed while Golder was onsite: **Ryan Central** -1 Foreman, 1 Operator, 1 Laborer • Topsoil import to Pond 1. • Placed topsoil in Pond 1. • Road sub-base import and placement for east access road.

GAI CQA ACTIVITIES AND TEST RESULTS
Construction: • Golder onsite documenting the construction progress. • Golder observed import of topsoil to Pond 1, material being pushed in 3 foot lift for haul road from the western edge of Pond 1. • Golder observed import of Class II sand for the access road, material stockpiled outside Pond 1's northeast corner. • Golder performed Standard test on Troxler 3440 prior to density testing. • Performed density test's RBDT-1 thru RBDT-9 on 12-inch compacted lift of 23A along east access road east of Pond's 1 and 2 using a Troxler 3440 Nuclear Gauge (see density test map). Compacted and tested 23A fill met all specifications for road sub-base. • Golder collected samples PC-15 thru PC-18 from protective cover for grain size analysis and classification. • Golder observed Young Environmental cleaning Frack Tank for removal.

SUMMARY OF SURVEYOR'S ACTIVITIES
Rowe shot protective cover in Pond's 1 and 2.

DAILY FIELD FORM – J.R. Whiting Ponds 1 and 2 Closure

SUMMARY OF PROBLEMS AND RESOLUTIONS
None

SUMMARY OF MEETINGS/DISCUSSIONS HELD (ATTENDEES AND ISSUES)
None

SUMMARY OF INCIDENTS / ACCIDENTS / HEALTH AND SAFETY ISSUES
None

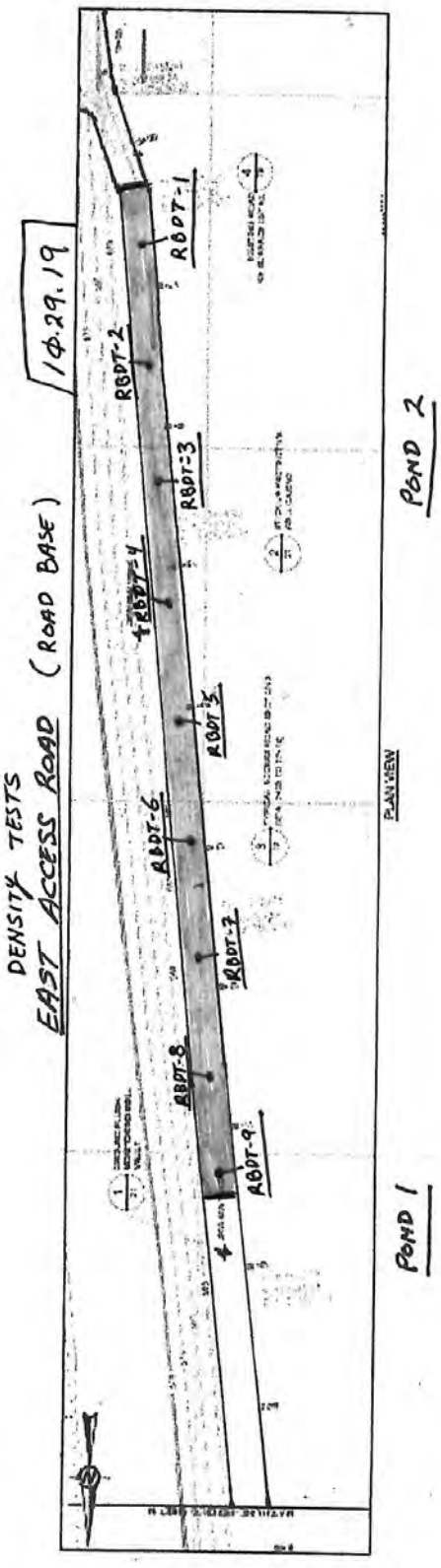
SUBMITTED BY GOLDER:
CQA Field Manager: David Hutchinson **Signature:**

PHOTOGRAPHS

Import of topsoil to Pond 1, looking north

Standard test of Troxler prior to testing

Rowe set-up for survey of protective cover, looking south



Lift/Density Test Map

DAILY FIELD FORM – J.R. Whiting Ponds 1 and 2 Closure

PROJECT OVERVIEW			
Project Title:	J.R. Whiting Ponds 1 and 2 Closure CQA	**Project Number:** 1788523	**Date:** 11/05/2019
Client:	Consumers Energy	**Site/Location:** Erie, MI	
GAI Personnel:	David Hutchinson	**Arrival/Departure Time:** 0900/1600	
Contractor(s):	Ryan Central Inc.	**Contractor(s) Rep:** John Johnson (Ryan Central)	

SITE CONDITIONS	
Weather (AM): Partly Cloudy	**Temperature:** 44
Weather (PM): Partly Sunny	**Temperature:** 52
Precipitation: None	**Wind:** NW, 5-12 mph

EQUIPMENT ON SITE
1-Kubota RTV X112OD; 1-CAT Water Truck; 1-CAT A200 LGP Dozer; 1-Cat CS56B Smooth Drum Roller; 1-Cat D6T Dozer; 1-Cat 299D Skid Steer.

SUMMARY OF CONSTRUCTION
Work performed while Golder was onsite: **Ryan Central** -1 Foreman, 2 Operator, 1 Laborer • Topsoil import to Pond's 1 and 2. • Placed topsoil in Pond's 1 and 2. • Road sub-base import and placement for north access road.

GAI CQA ACTIVITIES AND TEST RESULTS
Construction: • Golder onsite documenting the construction progress. • Golder observed import of topsoil to Pond's 1 and 2, material being placed in 6 inch lift from the western edge of Pond's 1 and 2. • Golder observed import of Class II sand for the access road, material placed on north access road in single 12 inch lift. • Golder performed Standard test on Troxler 3440 prior to density testing. • Performed density test's SBDT-14 thru SBDT-22 on 12-inch compacted lift of Class II/III sand along north access road north of Pond 1 using a Troxler 3440 Nuclear Gauge (see density test map). Compacted and tested Class II/III fill met all specifications for road sub-base. • Golder observed Young Environmental cleaning Frack Tank for removal.

SUMMARY OF SURVEYOR'S ACTIVITIES
None

DAILY FIELD FORM – J.R. Whiting Ponds 1 and 2 Closure

SUMMARY OF PROBLEMS AND RESOLUTIONS
None

SUMMARY OF MEETINGS/DISCUSSIONS HELD (ATTENDEES AND ISSUES)
None

SUMMARY OF INCIDENTS / ACCIDENTS / HEALTH AND SAFETY ISSUES
None

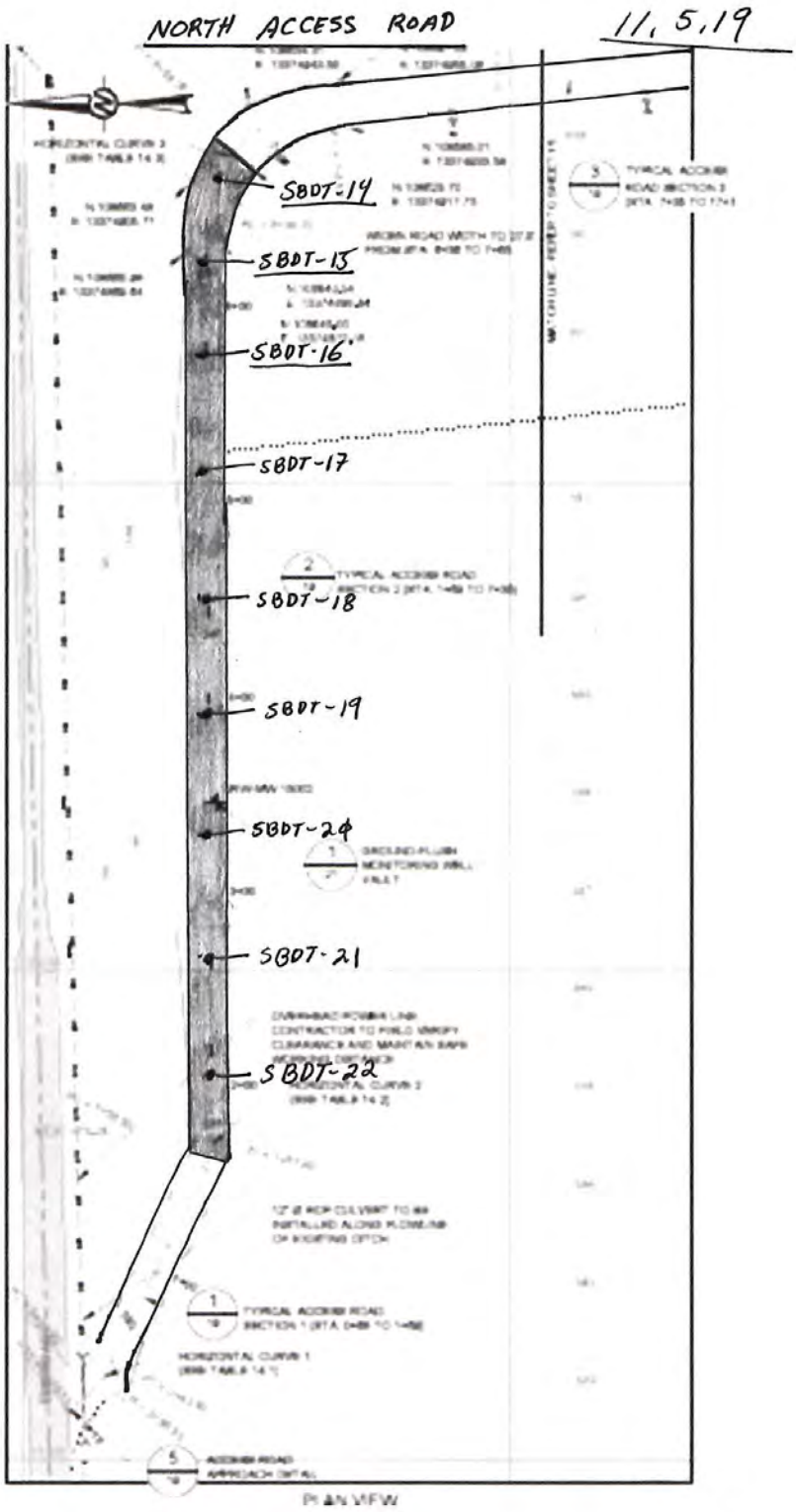
SUBMITTED BY GOLDER:
CQA Field Manager: David Hutchinson **Signature:**

PHOTOGRAPHS

Import of Class II/III sand for north access road sub-base, looking northeast

Overview of completed north access road sub-base, looking east

Density testing of north access road sub-base, looking east



Lift/Density Test Map

DAILY FIELD FORM – J.R. Whiting Ponds 1 and 2 Closure

PROJECT OVERVIEW			
Project Title:	J.R. Whiting Ponds 1 and 2 Closure CQA	**Project Number:** 1788523	**Date:** 11/08/2019
Client:	Consumers Energy	**Site/Location:** Erie, MI	
GAI Personnel:	David Hutchinson	**Arrival/Departure Time:** 0700/1330	
Contractor(s):	Ryan Central Inc. Rowe	**Contractor(s) Rep:** John Johnson (Ryan Central) Will Smith (Rowe)	

SITE CONDITIONS	
Weather (AM): Sunny	**Temperature:** 24
Weather (PM): Sunny	**Temperature:** 37
Precipitation: None	**Wind:** NW, 6-15 mph

EQUIPMENT ON SITE
1-Kubota RTV X112OD; 1-CAT Water Truck; 1-CAT A200 LGP Dozer; 1-Cat CS56B Smooth Drum Roller; 1-Cat D6T Dozer; 1-Cat 299D Skid Steer.

SUMMARY OF CONSTRUCTION
Work performed while Golder was onsite: **Ryan Central** -1 Foreman, 3 Operator, 1 Laborer • Topsoil import to Pond's 1 and 2. • Placed topsoil in Pond's 1 and 2. • Road base import and placement for north access road.
GAI CQA ACTIVITIES AND TEST RESULTS
Construction: • Golder onsite documenting the construction progress. • Golder observed import of topsoil to Pond's 1 and 2, material being placed in 6 inch lift from the western edge of Pond's 1 and 2. • Golder observed import of 23A for the north access road, material placed on north access road in single 12 inch lift.

SUMMARY OF SURVEYOR'S ACTIVITIES
Shot topsoil of Pond 1 in limited area of western half of pond ready

SUMMARY OF PROBLEMS AND RESOLUTIONS
None

SUMMARY OF MEETINGS/DISCUSSIONS HELD (ATTENDEES AND ISSUES)
None

DAILY FIELD FORM – J.R. Whiting Ponds 1 and 2 Closure

SUMMARY OF INCIDENTS / ACCIDENTS / HEALTH AND SAFETY ISSUES
None

SUBMITTED BY GOLDER:	
CQA Field Manager: David Hutchinson	**Signature:**

PHOTOGRAPHS

Rowe shooting cert points in Pond 1, looking north

Placement of topsoil in Pond 2, looking south

Overview of topsoil placement in Pond 1, looking east

DAILY FIELD FORM – J.R. Whiting Ponds 1 and 2 Closure

PROJECT OVERVIEW			
Project Title:	J.R. Whiting Ponds 1 and 2 Closure CQA	**Project Number:** 1788523	**Date:** 11/13/2019
Client:	Consumers Energy	**Site/Location:** Erie, MI	
GAI Personnel:	David Hutchinson	**Arrival/Departure Time:** 0930/1430	
Contractor(s):	Ryan Central Inc.	**Contractor(s) Rep:** John Johnson (Ryan Central)	

SITE CONDITIONS	
Weather (AM): Cloudy	**Temperature:** 24
Weather (PM): Cloudy	**Temperature:** 25
Precipitation: None	**Wind:** NE, 5-9 mph

EQUIPMENT ON SITE
1-Kubota RTV X112OD; 1-CAT Water Truck; 1-CAT A200 LGP Dozer; 1-Cat CS56B Smooth Drum Roller; 1-Cat D6T Dozer; 1-Cat 299D Skid Steer.

SUMMARY OF CONSTRUCTION
Work performed while Golder was onsite: **Ryan Central** -1 Foreman, 3 Operator, 1 Laborer • Placed topsoil in Pond's 1 and 2.
GAI CQA ACTIVITIES AND TEST RESULTS
Construction: • Golder onsite documenting the construction progress. • Golder observed placement of topsoil in Pond's 1 and 2, material being placed in 6 inch lift from the western edge of Pond's 1 and 2. • Golder performed Standard test on Troxler 3440 prior to density testing. • Performed density test's RBDT-10 thru RBDT-25 on 12-inch compacted lift of 23A road base along the east and north access roads of Pond 1 using a Troxler 3440 Nuclear Gauge (see density test map). Compacted and tested 23A fill met all specifications for road base material.

SUMMARY OF SURVEYOR'S ACTIVITIES
None

SUMMARY OF PROBLEMS AND RESOLUTIONS
None

SUMMARY OF MEETINGS/DISCUSSIONS HELD (ATTENDEES AND ISSUES)
Bi-Weekly construction meeting with CEC, Ryan and Golder.

DAILY FIELD FORM – J.R. Whiting Ponds 1 and 2 Closure

SUMMARY OF INCIDENTS / ACCIDENTS / HEALTH AND SAFETY ISSUES
None

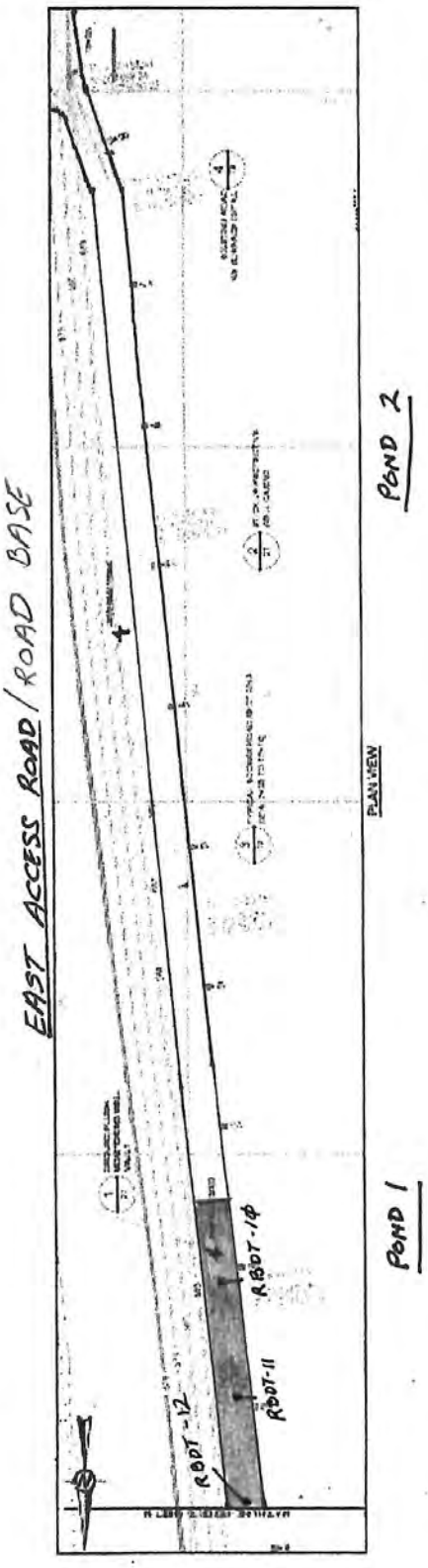
SUBMITTED BY GOLDER:	
CQA Field Manager: David Hutchinson	**Signature:**

PHOTOGRAPHS

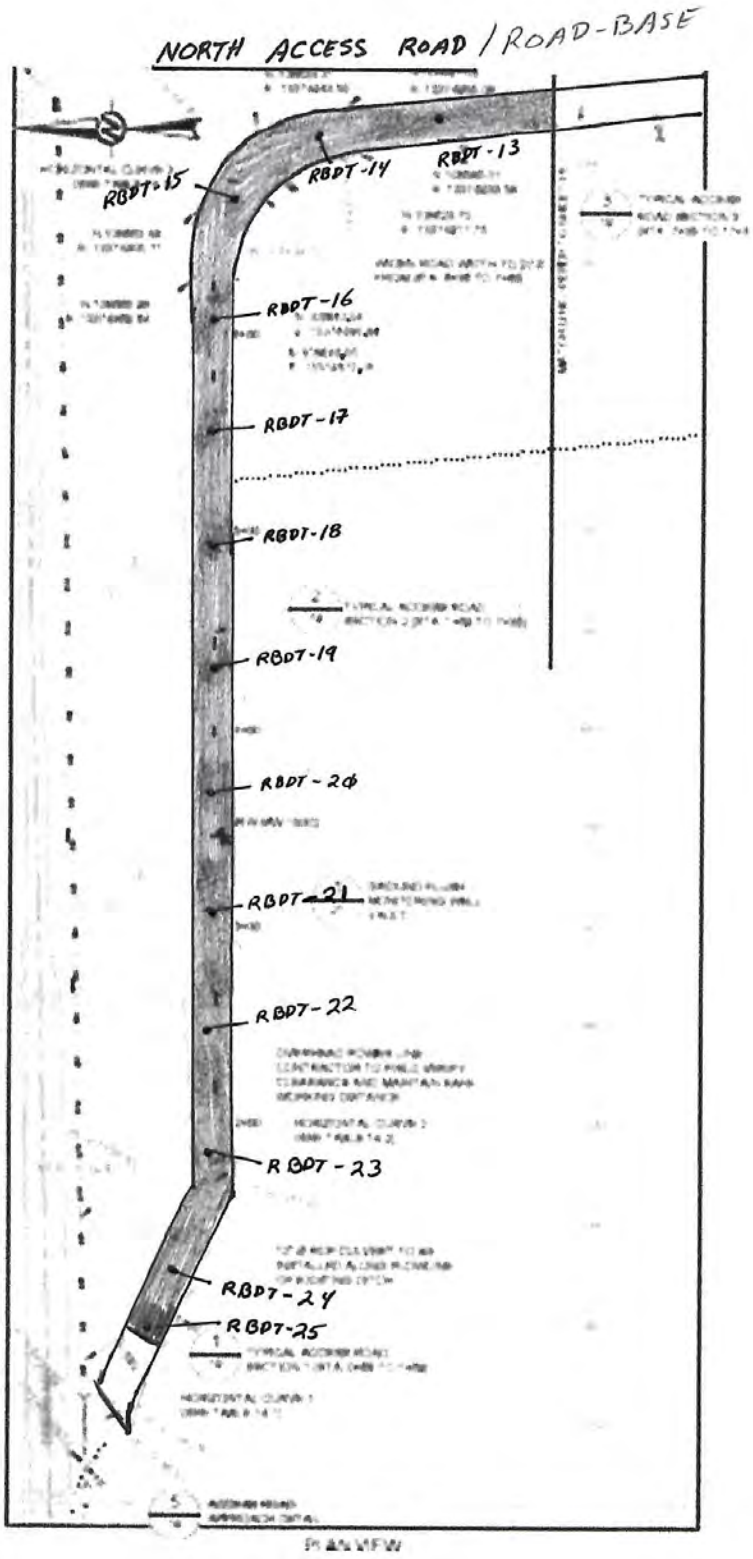
Placement of topsoil along east side of Ponds 1 and 2, looking south

Overview of topsoil placed in Pond's 1 and 2, looking southwest

Density testing of road base material for north access road, looking east



Road Base Density Test Map 1 of 2



Road Base Density Test Map 2 of 2

DAILY FIELD FORM – J.R. Whiting Ponds 1 and 2 Closure

PROJECT OVERVIEW			
Project Title:	J.R. Whiting Ponds 1 and 2 Closure CQA	**Project Number:** 1788523	**Date:** 11/14/2019
Client:	Consumers Energy	**Site/Location:** Erie, MI	
GAI Personnel:	David Hutchinson	**Arrival/Departure Time:** 0930/1430	
Contractor(s):	Ryan Central Inc. Rowe	**Contractor(s) Rep:** John Johnson (Ryan Central) Will Smith (Rowe)	

SITE CONDITIONS	
Weather (AM): Cloudy	**Temperature:** 24
Weather (PM): Cloudy	**Temperature:** 28
Precipitation: None	**Wind:** W, 2-6 mph

EQUIPMENT ON SITE
1-Kubota RTV X112OD; 1-CAT Water Truck; 1-CAT A200 LGP Dozer; 1-Cat CS56B Smooth Drum Roller; 1-Cat D6T Dozer; 1-Cat 299D Skid Steer.

SUMMARY OF CONSTRUCTION
Work performed while Golder was onsite: **Ryan Central** -1 Foreman, 3 Operator, 1 Laborer • Placed topsoil in Pond's 1 and 2. • Finish grading topsoil placed in Pond's 1 and 2. **FK Engineering** – 2 Techs • Scoped MW-15006. • Flushed MW-15006

GAI CQA ACTIVITIES AND TEST RESULTS
Construction: • Golder onsite documenting the construction progress. • Golder observed placement of topsoil in Pond's 1 and 2, material being placed in 6 inch lift from the western edge of Pond's 1 and 2. • Golder observed finish grading of placed topsoil to specifications. • Golder observed survey of protective cover and topsoil certification points in Pond 1. • Golder preformed depth checks of topsoil to verify minimum 6 inch thickness. • Golder monitored flushing of MW-15006 to remove plug and prep for well development on Monday, November 18, 2019.

DAILY FIELD FORM – J.R. Whiting Ponds 1 and 2 Closure

SUMMARY OF SURVEYOR'S ACTIVITIES
Rowe shot remaining certification points for the protective cover in Pond 1 and continued shooting topsoil certification points within pond 1.

SUMMARY OF PROBLEMS AND RESOLUTIONS
None

SUMMARY OF MEETINGS/DISCUSSIONS HELD (ATTENDEES AND ISSUES)
Bi-Weekly construction meeting with CEC, Ryan and Golder.

SUMMARY OF INCIDENTS / ACCIDENTS / HEALTH AND SAFETY ISSUES
None

SUBMITTED BY GOLDER:
CQA Field Manager: David Hutchinson **Signature:**

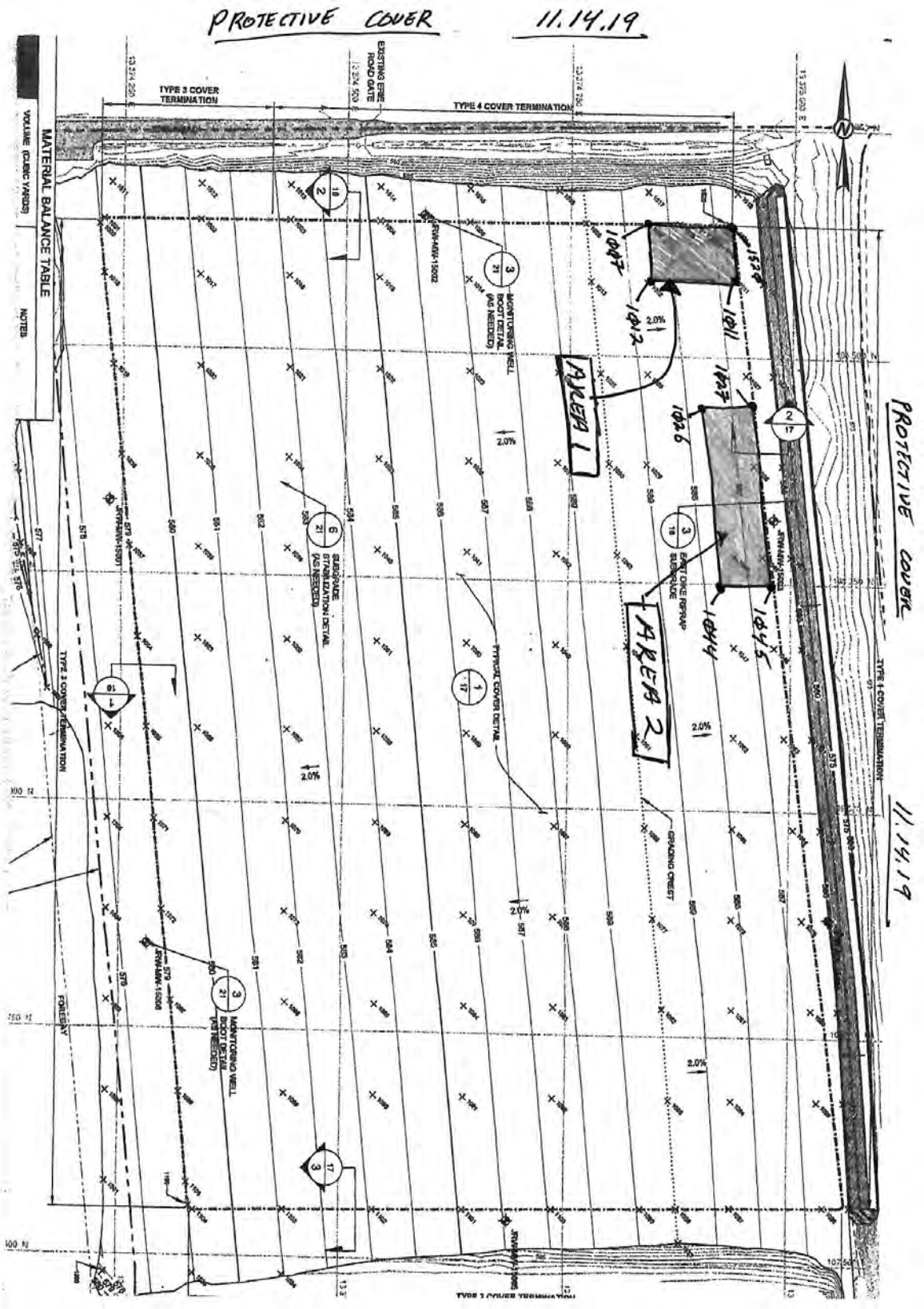
PHOTOGRAPHS

Loading topsoil from onsite stockpile for placement in Pond 2, looking northeast

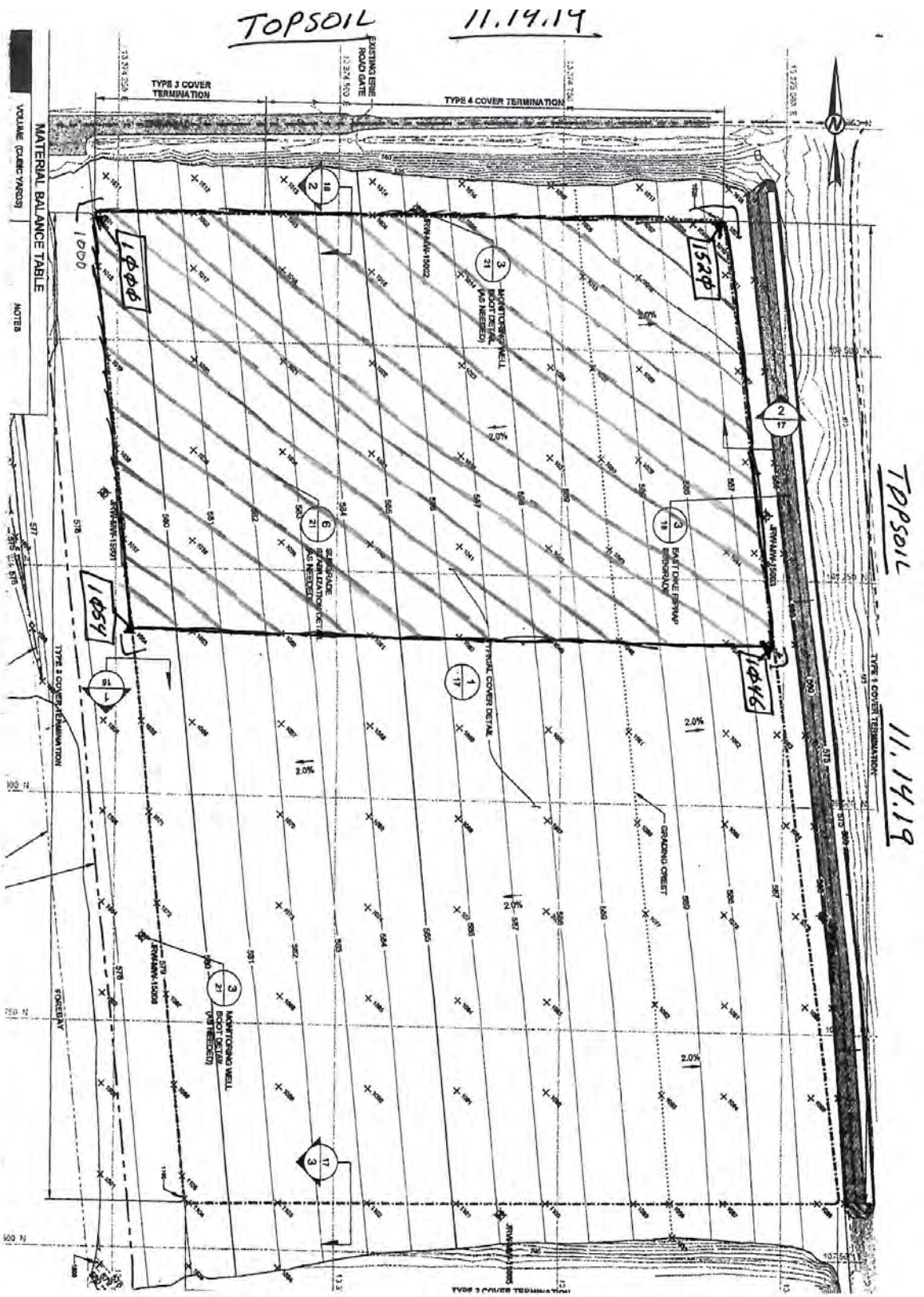
Preparing to flush MW-15006

Flushing MW-15006

DAILY FIELD FORM – J.R. Whiting Ponds 1 and 2 Closure



Protective Cover area surveyed



Topsoil area surveyed

DAILY FIELD FORM – J.R. Whiting Ponds 1 and 2 Closure

PROJECT OVERVIEW			
Project Title:	J.R. Whiting Ponds 1 and 2 Closure CQA	**Project Number:** 1788523	**Date:** 11/16/2019
Client:	Consumers Energy	**Site/Location:** Erie, MI	
GAI Personnel:	David Hutchinson	**Arrival/Departure Time:** 0730/1400	
Contractor(s):	Ryan Central Inc.	**Contractor(s) Rep:** John Johnson (Ryan Central)	

SITE CONDITIONS	
Weather (AM): Mostly Cloudy	**Temperature:** 25
Weather (PM): Mostly Cloudy	**Temperature:** 34
Precipitation: None	**Wind:** N, 3-8 mph

EQUIPMENT ON SITE
1-Kubota RTV X112OD; 1-CAT Water Truck; 1-CAT A200 LGP Dozer; 1-Cat CS56B Smooth Drum Roller; 1-Cat D6T Dozer; 1-Cat 299D Skid Steer.

SUMMARY OF CONSTRUCTION
Work performed while Golder was onsite: **Ryan Central** -1 Foreman, 3 Operator • Placed topsoil in Pond 2. • Finish grading topsoil placed in Pond 2. • Import 21AA for asphalt base. • Placed and compacted asphalt base for access ramp.

GAI CQA ACTIVITIES AND TEST RESULTS
Construction: • Golder onsite documenting the construction progress. • Golder observed placement of topsoil in Pond 2, material being placed in 6 inch lift. • Golder observed finish grading of placed topsoil to specifications. • Golder performed Standard test on Troxler 3440 prior to density testing. • Performed density test ABDT-1 on 8-inch compacted lift of 21AA asphalt base for access ramp using a Troxler 3440 Nuclear Gauge (see density test map). Compacted and tested 21AA fill met all specifications for asphalt base material.

SUMMARY OF SURVEYOR'S ACTIVITIES
None

DAILY FIELD FORM – J.R. Whiting Ponds 1 and 2 Closure

SUMMARY OF PROBLEMS AND RESOLUTIONS
None

SUMMARY OF MEETINGS/DISCUSSIONS HELD (ATTENDEES AND ISSUES)
None

SUMMARY OF INCIDENTS / ACCIDENTS / HEALTH AND SAFETY ISSUES
None

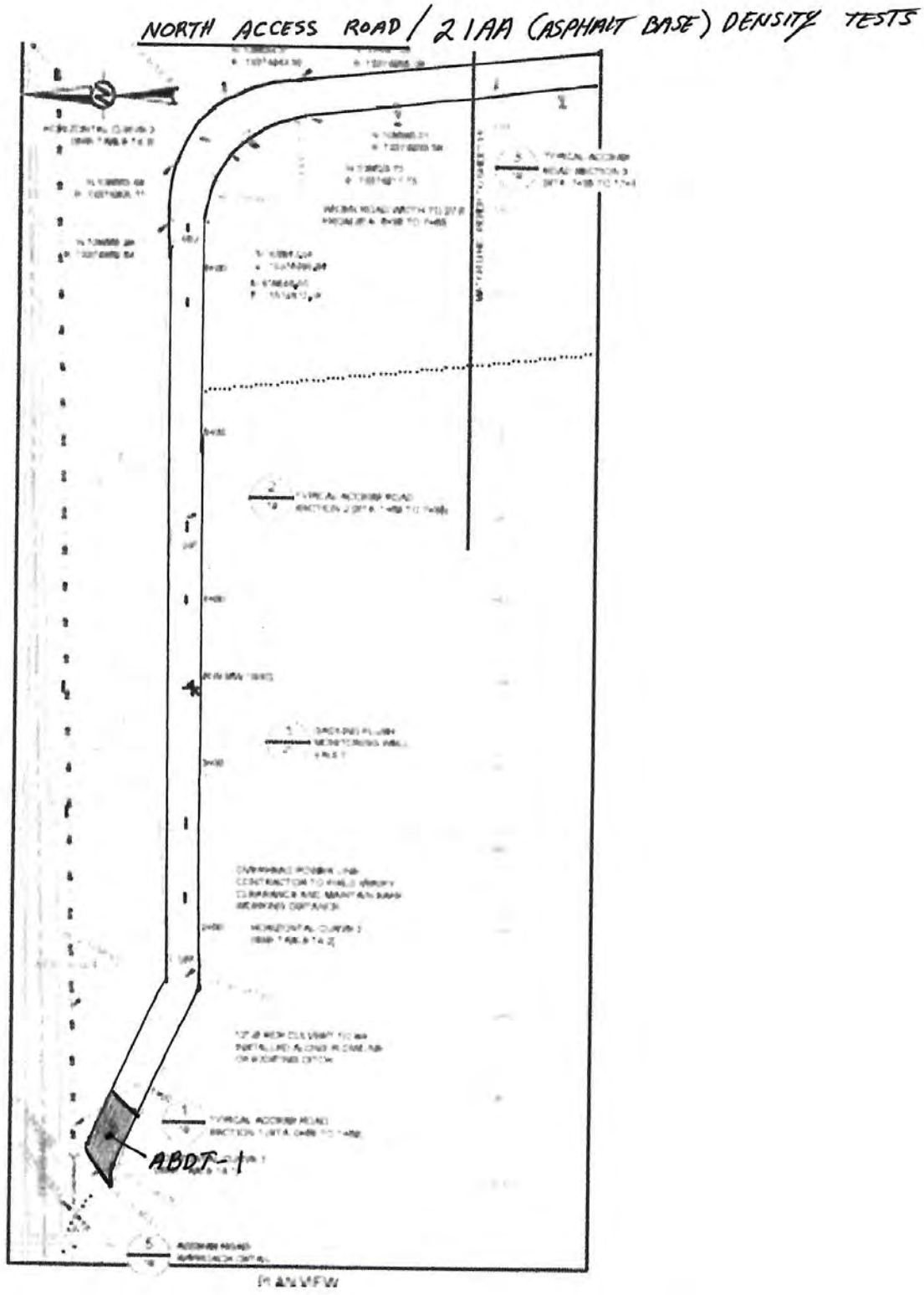
SUBMITTED BY GOLDER:
CQA Field Manager: David Hutchinson **Signature:**

PHOTOGRAPHS

Placing 8 inch lift of 21AA for access ramps asphalt base, looking northwest

Compacting 21AA placed for access ramp using smooth drum roller, looking north

Fabric and 21AA placed for Access Ramp, looking northwest



Protective Cover area surveyed

DAILY FIELD FORM – J.R. Whiting Ponds 1 and 2 Closure

PROJECT OVERVIEW			
Project Title:	J.R. Whiting Ponds 1 and 2 Closure CQA	**Project Number:** 1788523	**Date:** 11/19/2019
Client:	Consumers Energy	**Site/Location:** Erie, MI	
GAI Personnel:	David Hutchinson	**Arrival/Departure Time:** 0700/1400	
Contractor(s):	Ryan Central Inc.	**Contractor(s) Rep:** John Johnson (Ryan Central)	

SITE CONDITIONS	
Weather (AM): Cloudy	**Temperature:** 35
Weather (PM): Cloudy	**Temperature:** 38
Precipitation: None	**Wind:** N, 3-6 mph

EQUIPMENT ON SITE
1-Kubota RTV X112OD; 1-CAT Water Truck; 1-CAT A200 LGP Dozer; 1-Cat CS56B Smooth Drum Roller; 1-Cat D6T Dozer; 1-Cat 299D Skid Steer.

SUMMARY OF CONSTRUCTION

Work performed while Golder was onsite:

Ryan Central -1 Foreman, 2 Operators, 1 Laborer

- Place and finish grading topsoil in Pond 2.
- Installed Jersey Barriers around horseshoe.

Ebony

- Placed and compacted asphalt for access ramp.

NERC

- Seeded, fertilized and covered with straw topsoil in Pond 1.

Future Fence

- Installing fence posts for perimeter fence along west side of Ponds 1 and 2.

GAI CQA ACTIVITIES AND TEST RESULTS

Construction:

- Golder onsite documenting the construction progress.
- Golder observed placement of topsoil in Pond 2, material being placed in 6 inch lift.
- Golder observed finish grading of placed topsoil to specifications.
- Golder observed installation of posts for the perimeter fence along west side of Ponds 1 and 2.
- Golder observed seeding, fertilizing of topsoil of Pond 1 in accordance to specifications, straw placed over seeded area.
- Golder observed installation and compaction of asphalt for access ramp.

DAILY FIELD FORM – J.R. Whiting Ponds 1 and 2 Closure

SUMMARY OF SURVEYOR'S ACTIVITIES
None

SUMMARY OF PROBLEMS AND RESOLUTIONS
None

SUMMARY OF MEETINGS/DISCUSSIONS HELD (ATTENDEES AND ISSUES)
None

SUMMARY OF INCIDENTS / ACCIDENTS / HEALTH AND SAFETY ISSUES
None

SUBMITTED BY GOLDER:

CQA Field Manager: David Hutchinson **Signature:**

PHOTOGRAPHS

Installing Jersey barriers around horseshoe between Pond 2 and Chemical Pond, looking south

Placement and compaction of asphalt for access ramp, looking southwest

Asphalt being placed for access ramp, looking southwest

DAILY FIELD FORM – J.R. Whiting Ponds 1 and 2 Closure

PROJECT OVERVIEW			
Project Title:	J.R. Whiting Ponds 1 and 2 Closure CQA	**Project Number:** 1788523	**Date:** 11/21/2019
Client:	Consumers Energy	**Site/Location:** Erie, MI	
GAI Personnel:	David Hutchinson	**Arrival/Departure Time:** 0700/1400	
Contractor(s):	Ryan Central Inc.	**Contractor(s) Rep:** John Johnson (Ryan Central)	

SITE CONDITIONS	
Weather (AM): Cloudy	**Temperature:** 38
Weather (PM): Cloudy	**Temperature:** 48
Precipitation: Rain	**Wind:** NW, 6-10 mph

EQUIPMENT ON SITE
1-Kubota RTV X112OD; 1-CAT Water Truck; 1-CAT A200 LGP Dozer; 1-Cat CS56B Smooth Drum Roller; 1-Cat D6T Dozer; 1-Cat 299D Skid Steer.

SUMMARY OF CONSTRUCTION

Work performed while Golder was onsite:

Ryan Central -1 Foreman, 2 Operators, 1 Laborer

- Import topsoil to chemical pond.
- Place topsoil east end of chemical pond and access road.
- Import 23AA for access road.
- Place 23AA along shoulders of access road asphalt ramp.
- Level sub-grade around monitoring wells.
- Demobilized Cat D6 dozer.

NERC

- Began seed/mulch, fertilize and straw of topsoil in Pond 2.

Future Fence

- Continued installing fence posts for the east and north perimeter.

GAI CQA ACTIVITIES AND TEST RESULTS

Construction:

- Golder onsite documenting the construction progress.
- Golder observed placement of topsoil in chemical pond, material being placed in 6 inch lift.
- Golder observed leveling of sub-grade around monitoring wells for concrete pads.
- Golder observed installation of posts for the east and north perimeter fence of Ponds 1 and 2.
- Golder observed seeding, fertilizing of topsoil of Pond 2 in accordance to specifications, straw placed over seeded area.
- Golder preformed depth checks of topsoil to verify minimum 6 inch thickness.

- Golder observed installation and compaction of asphalt for access ramp.

SUMMARY OF SURVEYOR'S ACTIVITIES

Rowe shot remaining certification points for topsoil in Pond 2.

SUMMARY OF PROBLEMS AND RESOLUTIONS

None

SUMMARY OF MEETINGS/DISCUSSIONS HELD (ATTENDEES AND ISSUES)

None

SUMMARY OF INCIDENTS / ACCIDENTS / HEALTH AND SAFETY ISSUES

None

SUBMITTED BY GOLDER:

CQA Field Manager: David Hutchinson **Signature:**

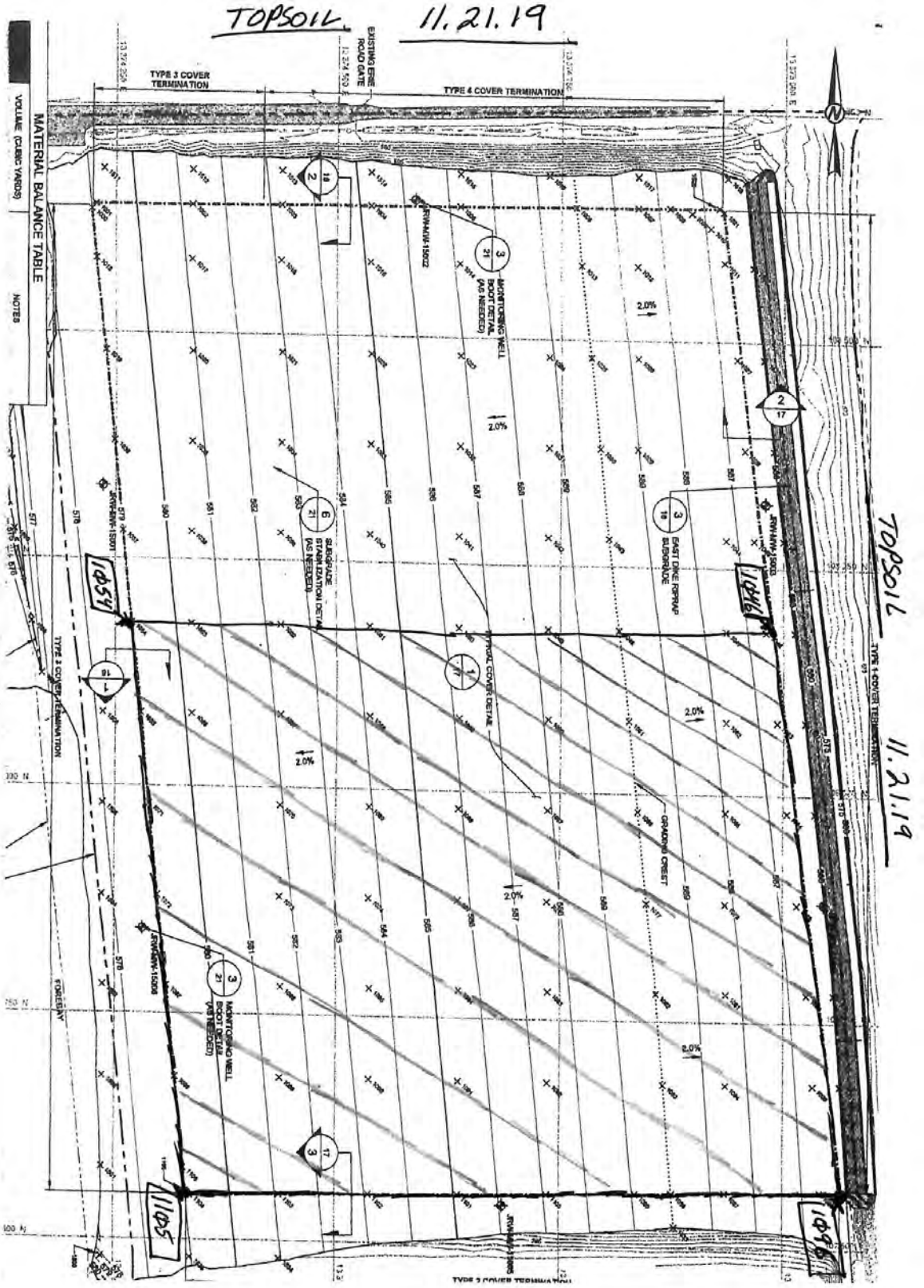
PHOTOGRAPHS

Import of 23AA for shoulder of asphalt access ramp, looking south

23AA placed along shoulder of asphalt access ramp, looking southeast

Overview of Pond 1's seed/mulch progress, looking south

DAILY FIELD FORM – J.R. Whiting Ponds 1 and 2 Closure



Area surveyed prior to seeding

DAILY FIELD FORM – J.R. Whiting Ponds 1 and 2 Closure

PROJECT OVERVIEW			
Project Title:	J.R. Whiting Ponds 1 and 2 Closure CQA	**Project Number:** 1788523	**Date:** 11/27/2019
Client:	Consumers Energy	**Site/Location:** Erie, MI	
GAI Personnel:	David Hutchinson	**Arrival/Departure Time:** 0700/1300	
Contractor(s):	Ryan Central Inc. Rowe	**Contractor(s) Rep:** John Johnson (Ryan Central) Will Smith (Rowe)	

SITE CONDITIONS	
Weather (AM): Cloudy	**Temperature:** 47
Weather (PM): Cloudy	**Temperature:** 53
Precipitation: Rain	**Wind:** W, 8-22 mph

EQUIPMENT ON SITE
1-Kubota RTV X112OD; 1-Cat D6T Dozer; 1-Cat 299D Skid Steer.

SUMMARY OF CONSTRUCTION

Work performed while Golder was onsite:

Ryan Central -1 Foreman, 1 Operator

- Touch-up of access road.
- General clean-up of pond construction area.

Future Fence

- Continued installing perimeter fence.

GAI CQA ACTIVITIES AND TEST RESULTS

Construction:

- Golder onsite documenting the construction progress.
- Golder observed installation of perimeter fence around Ponds 1 and 2.
- Golder observed Rowe shooting top of monitoring well pipe casings.
- Golder observed Rowe survey of access road and control points along top of rip-rap.

SUMMARY OF SURVEYOR'S ACTIVITIES

Rowe shot top of pipe for monitoring wells, surveyed access road and control points along top of rip-rap.

SUMMARY OF PROBLEMS AND RESOLUTIONS

None

SUMMARY OF MEETINGS/DISCUSSIONS HELD (ATTENDEES AND ISSUES)

None

SUMMARY OF INCIDENTS / ACCIDENTS / HEALTH AND SAFETY ISSUES

DAILY FIELD FORM – J.R. Whiting Ponds 1 and 2 Closure

None

SUBMITTED BY GOLDER:

CQA Field Manager: David Hutchinson **Signature:**

PHOTOGRAPHS

MW-15002 with protective casing and bollards installed

MW-15003 ground flush in east access road

Overview of perimeter fence along north side of Pond 1

APPENDIX D

Soil Laboratory Testing

Pond 1 and 2
Geotechnical Laboratory Test Results

Sample Identification / Sample No.	Sample Type	Sample Depth (ft)	Soil Classification	In-situ Moisture %	Atterberg Limits LL	PL	PI	LI	Grain Size Distribution % Finer #4 sieve	% Finer #200 sieve	Standard Proctor Maximum Dry Density (pcf)	Optimum Moisture %	Specific Gravity	Unit Weight Dry (pcf)	Unit Weight Moisture %	Hydraulic Conductivity (cm/sec)	Additional Tests Conducted (See Notes)
AB-1	Bulk	-	GW	3.1	-	-	-	-	47.2	4.1	133.2	8.2	-	-	-	-	
											Modified Proctor						
CS-1	Bulk	-	SP-SM	8.1	-	-	-	-	100.0	6.4	112.4	8.9	-	-	-	-	
CS-2	Bulk	-	SP-SM	16.2	-	-	-	-	99.9	7.9	-	-	-	-	-	-	
CS-3	Bulk	-	SP-SM	16.5	-	-	-	-	99.8	7.4	-	-	-	-	-	-	
PC-01	Bag	0.5-1.0	CL	11.5	23	13	10	-0.15	97.1	70.8	-	-	-	-	-	-	
PC-02	Bag	0.5-1.0	CL	11.9	23	14	9	-0.24	96.6	70.7	-	-	-	-	-		
PC-03	Bulk	0.5-1.0	CL	9.4	24	14	10	-0.46	95.3	67.8	-	-	-	-	-		
PC-04	Bulk	0.5-1.0	CL	9.1	25	14	11	-0.44	96.9	67.3	-	-	-	-	-		
PC-05	Bulk	0.5-1.0	CL	6.7	26	13	13	-0.48	96.7	73.0	-	-	-	-	-		
PC-06	Bulk	-	CL	8.3	26	13	13	-0.36	98.5	73.7	-	-	-	-	-		
PC-07	Bulk	-	CL	8.5	25	14	11	-0.50	94.5	66.8	-	-	-	-	-		
PC-08	Bulk	-	CL	10.4	24	12	12	-0.13	95.1	68.5	-	-	-	-	-		
PC-09	Bulk	0.5-1.5	CL	10.8	28	16	12	-0.44	98.9	71.5	-	-	-	-	-		
PC-10	Bulk	0.5-1.0	CL	10.1	25	15	10	-0.49	95.1	68.3	-	-	-	-	-		
PC-11	Bulk	0.5-1.0	CL	10.2	26	15	11	-0.43	97.5	69.8	-	-	-	-	-		
PC-12	Bulk	0.5-1.0	CL	18.3	25	12	13	0.48	98.3	70.4	-	-	-	-	-		
PC-13	Bulk	0.5-1.0	CL	11.7	27	13	14	-0.09	97.0	69.1	-	-	-	-	-		
PC-14	Bulk	0.5-1.0	CL	12.0	27	13	14	-0.07	97.8	71.7	-	-	-	-	-		
PC-15	Bulk	0.5-1.0	CL	13.1	25	15	10	-0.19	97.6	71.7	-	-	-	-	-		
PC-16	Bulk	0.5-1.0	CL	13.3	25	15	10	-0.17	98.7	71.2	-	-	-	-	-		
PC-17	Bulk	0.5-1.0	CL	14.1	24	14	10	0.01	98.3	71.4	-	-	-	-	-		
PC-18	Bulk	0.5-1.0	CL	11.6	24	15	9	-0.38	98.4	71.5	-	-	-	-	-		
RB-1	Bulk	-	GW-GM	3.4	-	-	-	-	46.7	5.6	139.0	8.4	-	-	-	-	
RB-2	Bulk	2.0"-6.0"	GW-GM	2.6	-	-	-	-	49.7	8.9	134.4	2.5	-	-	-	-	
SB-01	Bulk	-	SM	7.4	-	-	-	-	100.0	13.4	107.0	12.2	-	-	-	-	
SF-01	Bulk	-	CL	11.5	25	15	10	-0.35	95.3	69.2	128.6	8.2	-	-	-	-	
SF-02	Bulk	-	CL-ML	12.4	19	13	6	-0.10	93.9	65.4	133.0	8.3	-	-	-	-	
SF-03	Bulk	-	CL	11.1	25	15	10	-0.39	96.2	74.9	128.2	9.8	-	-	-	-	
SF-04	Bulk	-	CL	11.3	24	14	10	-0.27	96.2	67.1	131.9	9.1	-	-	-	-	
VB-1	Bulk	-	SP	2.3	-	-	-	-	57.0	0.4	-	-	-	-	-	-	
6AA-1	Bulk	-	GP	0.4	-	-	-	-	0.6	0.2	-	-	-	-	-	-	
6AA-2	Bulk	-	GP	0.4	-	-	-	-	2.2	0.7	-	-	-	-	-	-	

APPENDIX D.1

Structural Fill

JR Whiting
Pond 1 and 2
Geotechnical Laboratory Test Results

Sample Identification	Sample Type	Sample Depth (ft)	Soil Classi-fication	In-situ Moisture %	Atterberg Limits				Grain Size Distribution		Modified Proctor		Specific Gravity	Unit Weight		Hydraulic Conductivity (cm/sec)	Additional Tests Conducted (See Notes)
Sample No.					LL	PL	PI	LI	% Finer #4 sieve	% Finer #200 sieve	Maximum Dry Density (pcf)	Optimum Moisture %		Dry (pcf)	Moisture %		
SF-01	Bulk	-	CL	11.5	25	15	10	-0.35	95.3	69.2	128.6	8.2	-	-	-	-	
SF-02	Bulk	-	CL-ML	12.4	19	13	6	-0.10	93.9	65.4	133.0	8.3	-	-	-	-	
SF-03	Bulk	-	CL	11.1	25	15	10	-0.39	96.2	74.9	128.2	9.8	-	-	-	-	
SF-04	Bulk	-	CL	11.3	24	14	10	-0.27	96.2	67.1	131.9	9.1	-	-	-	-	

ABBREVIATIONS: LIQUID LIMIT (LL)
PLASTIC LIMIT (PL)
PLASTICITY INDEX (PI)
LIQUIDITY INDEX (LI)
SPECIFIC GRAVITY (Gs)
MOISTURE (Mc)

NOTES: T = TRIAXIAL TEST
U = UNCONFINED COMPRESSION TEST
C = CONSOLIDATION TEST
DS = DIRECT SHEAR TEST
O = ORGANIC CONTENT
P = pH
NP = NON-PLASTIC
*Classified Visually

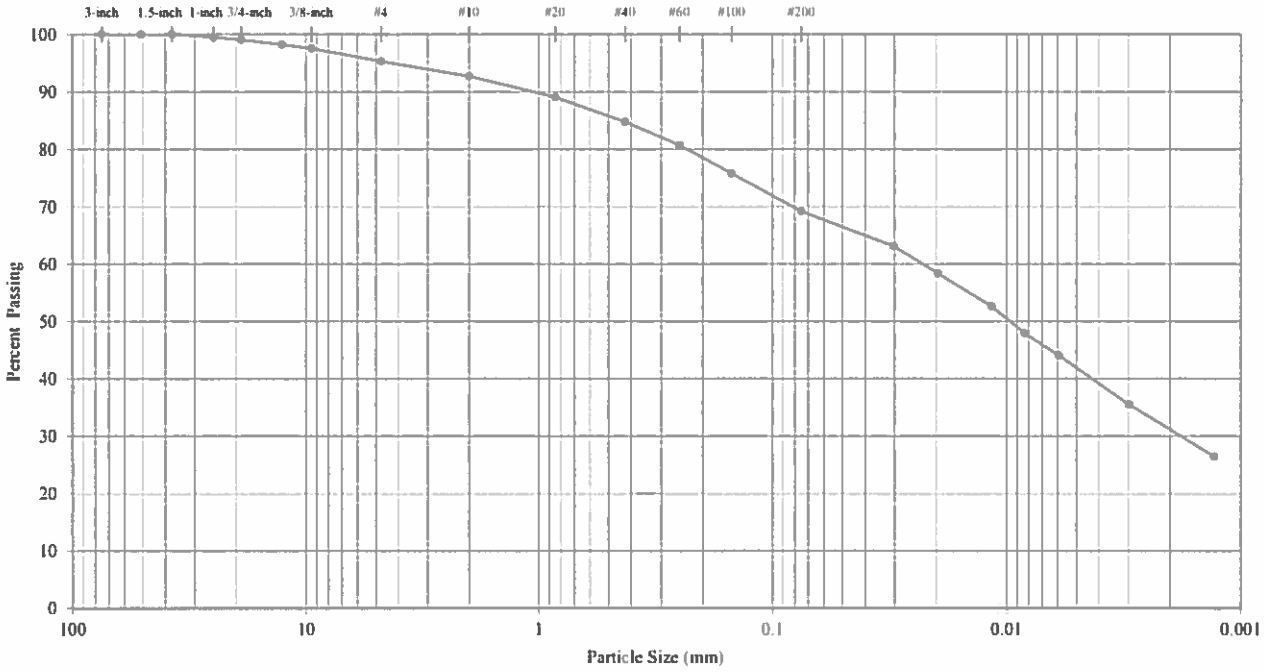
GOLDER

May-19 1788523

PARTICLE SIZE DISTRIBUTION & ATTERBERG LIMITS

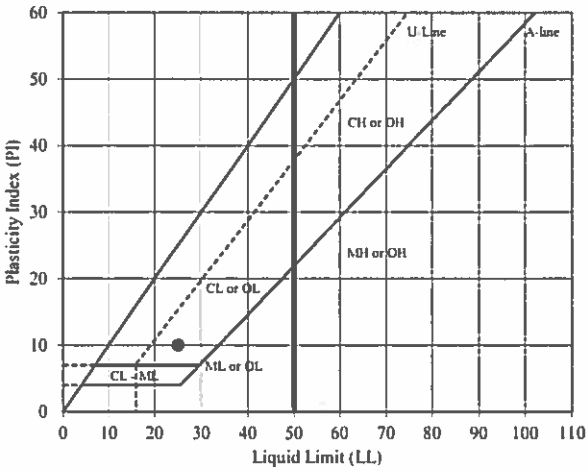
ASTM D421, D422, D4318

PROJECT NAME: **JR Whiting Pond 1&2**
SAMPLE ID: **SF-01** DEPTH (ft): -
TYPE: **Bulk**



Sieve	Particle Size (mm)	% Passing	Description	Percentage	
3-inch	75.0	100.0	Cobbles	0.00	
2-inch	50.8	100.0	Coarse Gravel	0.95	4.68
1.5-inch	37.5	100.0			
1-inch	25.0	99.5			
3/4-inch	19.0	99.1			
1/2-inch	12.7	98.2	Fine Gravel	3.73	
3/8-inch	9.5	97.6			
#4	4.75	95.3			
#10	2.0	92.7	Coarse Sand	2.60	26.17
#20	0.85	89.1	Medium Sand	7.95	
#40	0.425	84.8			
#60	0.25	80.7	Fine Sand	15.63	
#100	0.15	75.8			
#200	0.075	69.2			
Hydrometer Analysis	0.030	63.1	Silt or Clay Fines	69.15	
	0.020	58.3			
	0.012	52.6			
	0.008	47.9			
	0.006	44.1			
	0.003	35.5			
	0.001	26.4			

Sieve Analysis (Initial Separation on No. 4 Sieve)



LL	PL	PI	LI
25	15	10	-0.35

USCS Description (ASTM D 2487):

Grayish brown, SANDY LEAN CLAY, trace gravel

As-Received Moisture Content (%): 11.5

USCS Group Symbol: CL

Notes: (1) Particle size analysis sample Mechanically dispersed using Stirring Apparatus A for about 1 Minute.

(2) Sample prepared for Atterberg Limits testing by the dry method. Material retained on No. 40 sieve removed from Atterberg Limits sample by dry sieving. Plastic Limit test performed by hand rolling. Method A Liquid Limit test performed using manual device.

TECH	BB
DATE	5/30/2019
CHECK	
REVIEW	

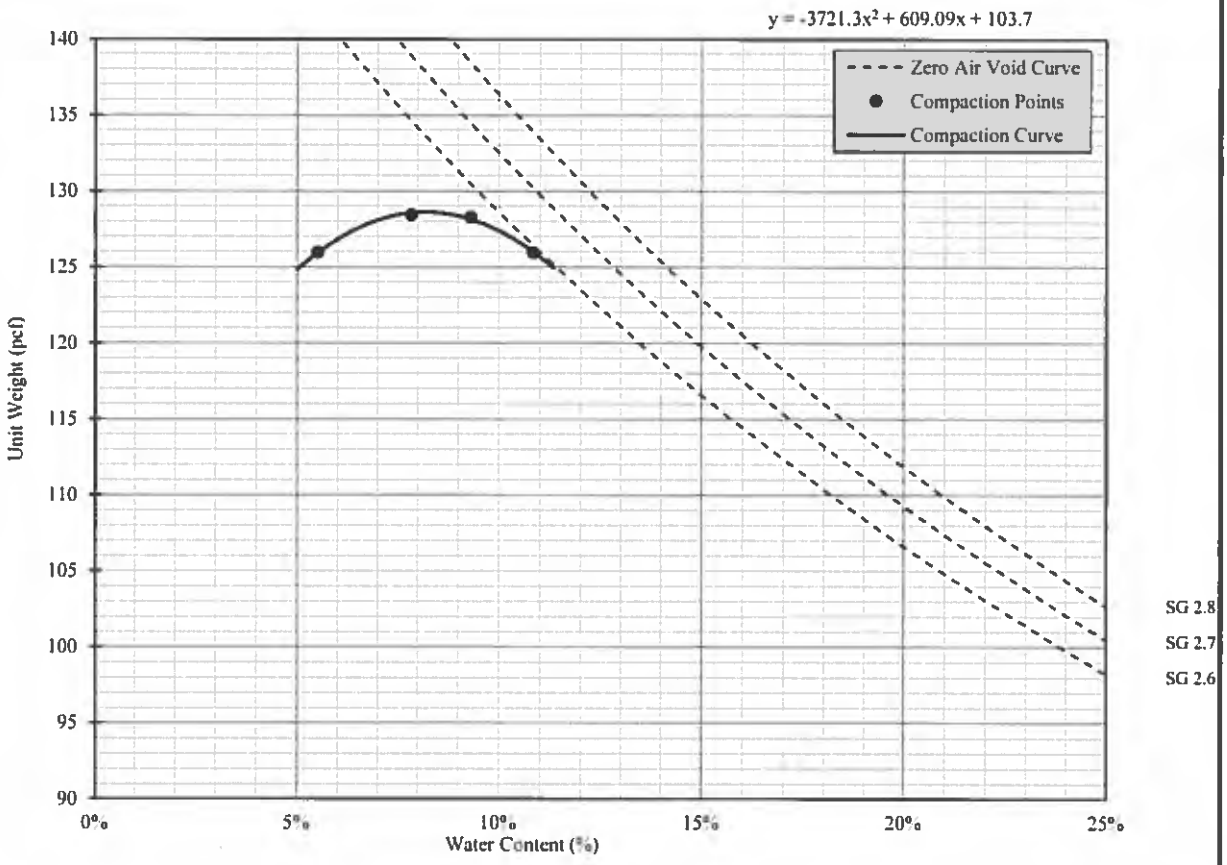
GOLDER

May-19 1788523

LABORATORY COMPACTION CHARACTERISTICS OF SOIL
ASTM D1557 - Method A

Mechanical Rammer	Moist Preparation

PROJECT NAME: JR Whiting Pond 1&2
SAMPLE ID: SF-01 DEPTH (ft): -
TYPE: Bulk



% Test Fraction Passing #4 Sieve	95%
As-Received Moisture Content	11%
Specific Gravity (assumed)	2.65

Modified Maximum Dry Unit Weight (pcf)	128.6
Modified Optimum Water Content (%)	8.2%

USCS Description (ASTM D 2487): Grayish brown, SANDY LEAN CLAY, trace gravel

USCS: CL

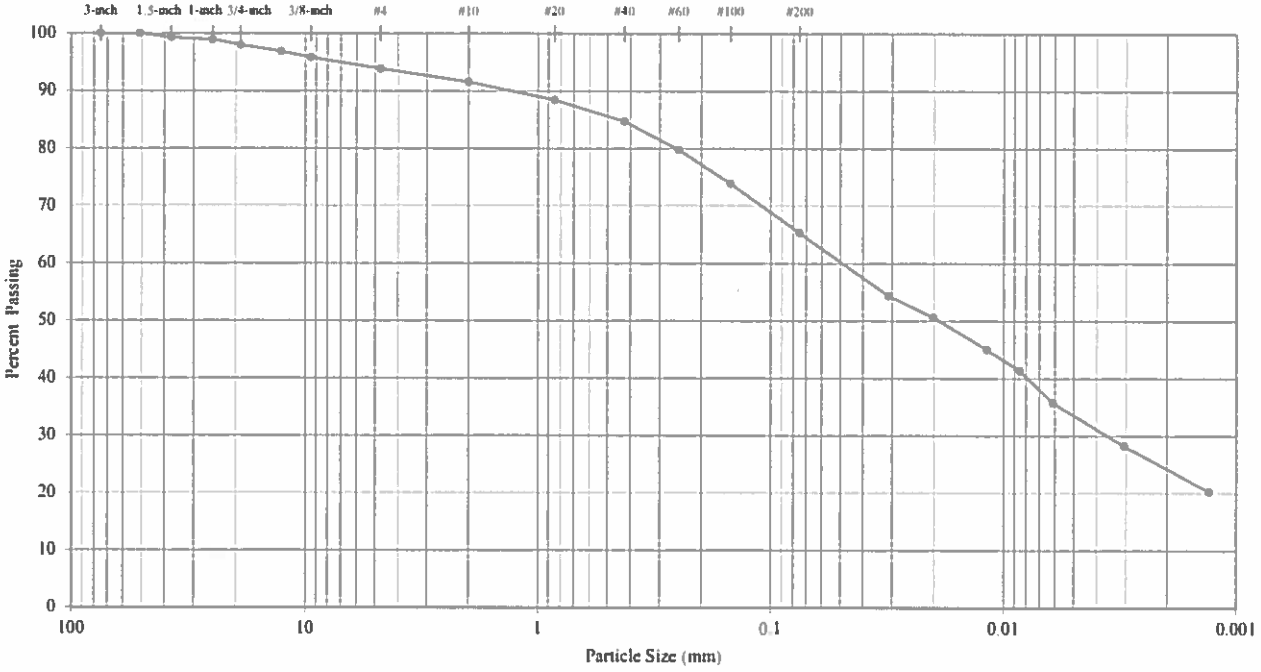
TECH	BB
DATE	5/31/2019
CHECK	
REVIEW	

GOLDER

May-19 1788523

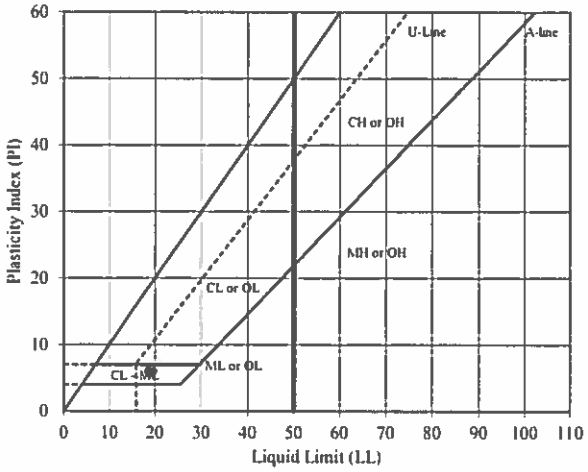
PARTICLE SIZE DISTRIBUTION & ATTERBERG LIMITS
ASTM D421, D422, D4318

PROJECT NAME: **JR Whiting Pond 1&2**
SAMPLE ID: **SF-02** DEPTH (ft): -
TYPE: **Bulk**



Sieve	Particle Size (mm)	% Passing	Description	Percentage	
3-inch	75.0	100.0	Cobbles	0.00	
2-inch	50.8	100.0	Coarse Gravel	2.04	6.11
1.5-inch	37.5	99.3			
1-inch	25.0	99.0			
3/4-inch	19.0	98.0			
1/2-inch	12.7	96.9	Fine Gravel	4.06	
3/8-inch	9.5	95.9			
#4	4.75	93.9			
#10	2.0	91.6	Coarse Sand	2.31	28.51
#20	0.85	88.4	Medium Sand	6.84	
#40	0.425	84.7			
#60	0.25	79.8	Fine Sand	19.37	
#100	0.15	73.9			
#200	0.075	65.4			
Hydrometer Analysis	0.031	54.4	Silt or Clay Fines	65.38	
	0.020	50.7			
	0.012	45.0			
	0.008	41.4			
	0.006	35.7			
	0.003	28.3			
	0.001	20.3			

Sieve Analysis (Initial Separation on No. 4 Sieve)



LL	PL	PI	LI
19	13	6	-0.10

USCS Description (ASTM D 2487):
Grayish brown, SANDY SILTY CLAY, little gravel

As-Received Moisture Content (%): 12.4

USCS Group Symbol: CL-ML

Notes: (1) Particle size analysis sample Mechanically dispersed using Stirring Apparatus A for about 1 Minute.

(2) Sample prepared for Atterberg Limits testing by the dry method. Material retained on No. 40 sieve removed from Atterberg Limits sample by dry sieving. Plastic Limit test performed by hand rolling. Method A Liquid Limit test performed using manual device.

TECH	BB
DATE	5/30/2019
CHECK	
REVIEW	

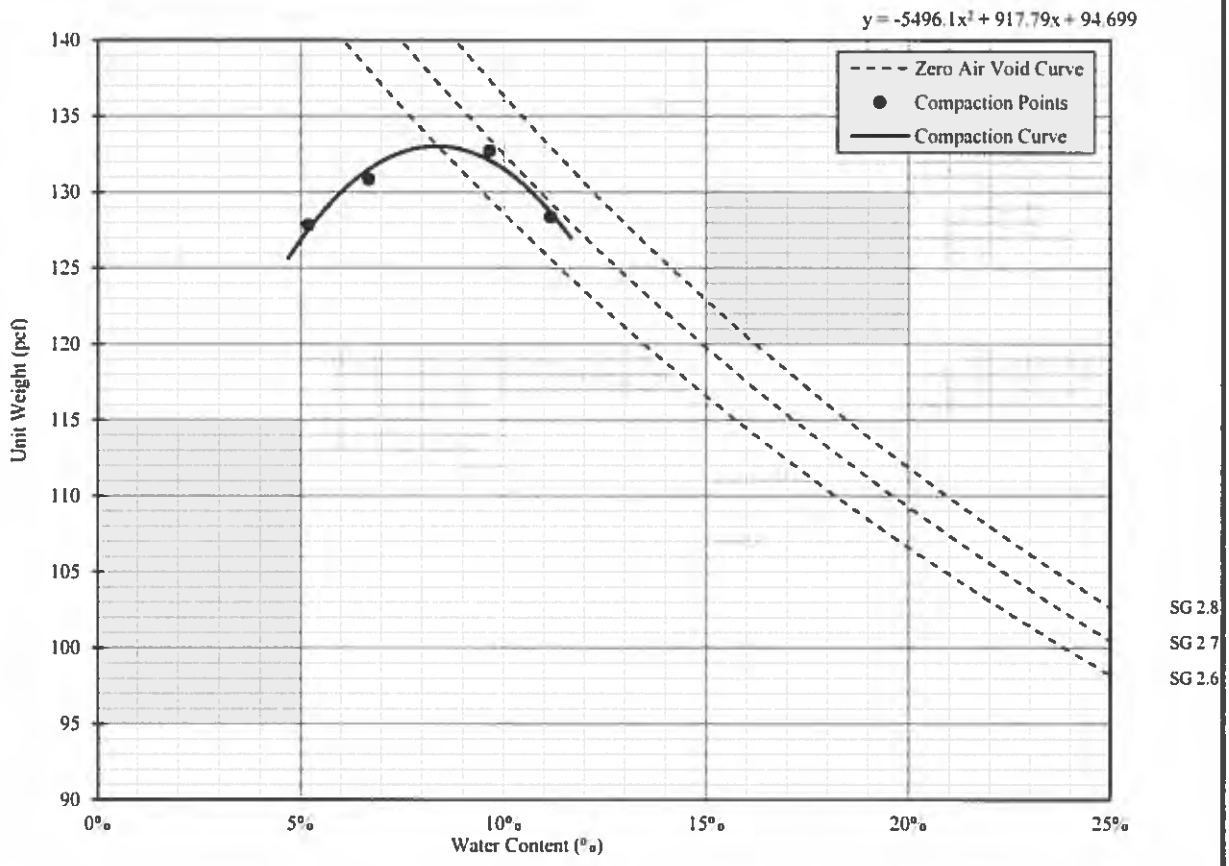
GOLDER

May-19 1788523

LABORATORY COMPACTION CHARACTERISTICS OF SOIL
ASTM D1557 - Method A

Mechanical Rammer	Moist Preparation

PROJECT NAME: JR Whiting Pond 1&2
SAMPLE ID: SF-02 DEPTH (ft): -
TYPE: Bulk



% Test Fraction Passing #4 Sieve	94%
As-Received Moisture Content	12%
Specific Gravity (assumed)	2.65

Modified Maximum Dry Unit Weight (pcf)	133.0
Modified Optimum Water Content (%)	8.3%

USCS Description (ASTM D 2487): Grayish brown, SANDY SILTY CLAY, little gravel

USCS CL-ML

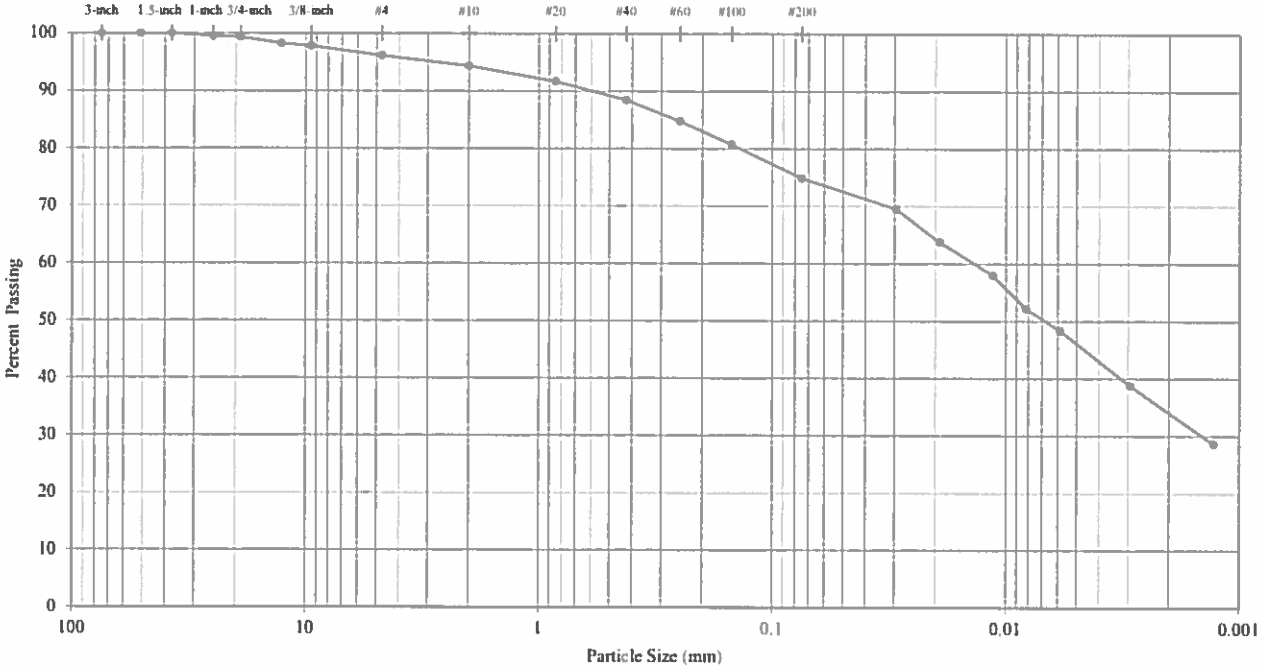
TECH	BB
DATE	5/31/2019
CHECK	
REVIEW	

GOLDER

May-19 1788523

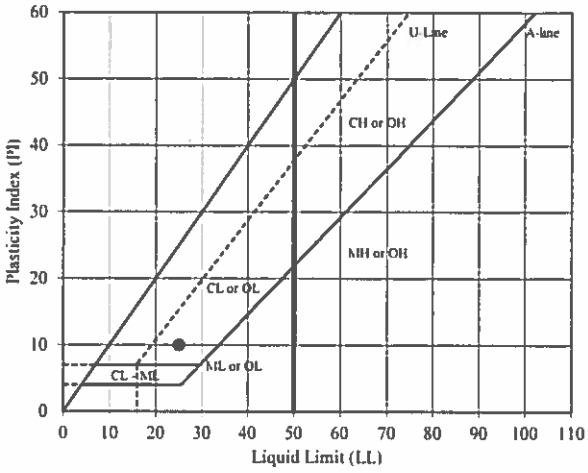
PARTICLE SIZE DISTRIBUTION & ATTERBERG LIMITS
ASTM D421, D422, D4318

PROJECT NAME: **JR Whiting Pond 1&2**
SAMPLE ID: **SF-03** DEPTH (ft): -
TYPE: **Bulk**



Sieve	Particle Size (mm)	% Passing	Description	Percentage	
3-inch	75.0	100.0	Cobbles	0.00	
2-inch	50.8	100.0	Coarse Gravel	0.65	3.83
1.5-inch	37.5	100.0			
1-inch	25.0	99.6			
3/4-inch	19.0	99.4			
1/2-inch	12.7	98.3	Fine Gravel	3.18	
3/8-inch	9.5	97.8			
#4	4.75	96.2			
#10	2.0	94.4	Coarse Sand	1.81	21.29
#20	0.85	91.7	Medium Sand	5.93	
#40	0.425	88.4			
#60	0.25	84.8	Fine Sand	13.55	
#100	0.15	80.7			
#200	0.075	74.9			
Hydrometer Analysis	0.030	69.5	Silt or Clay Fines	74.88	
	0.019	63.7			
	0.011	58.0			
	0.008	52.2			
	0.006	48.4			
	0.003	38.8			
	0.001	28.6			

Sieve Analysis (Initial Separation on No. 4 Sieve)



USCS Description (ASTM D 2487):
Grayish brown, LEAN CLAY WITH SAND, trace gravel

LL	PL	PI	LI
25	15	10	-0.39

As-Received Moisture Content (%): 11.1

USCS Group Symbol: CL

Notes: (1) Particle size analysis sample Mechanically dispersed using Stirring Apparatus A for about 1 Minute.
(2) Sample prepared for Atterberg Limits testing by the dry method. Material retained on No. 40 sieve removed from Atterberg Limits sample by dry sieving. Plastic Limit test performed by hand rolling. Method A Liquid Limit test performed using manual device.

TECH	BB
DATE	5/30/2019
CHECK	
REVIEW	

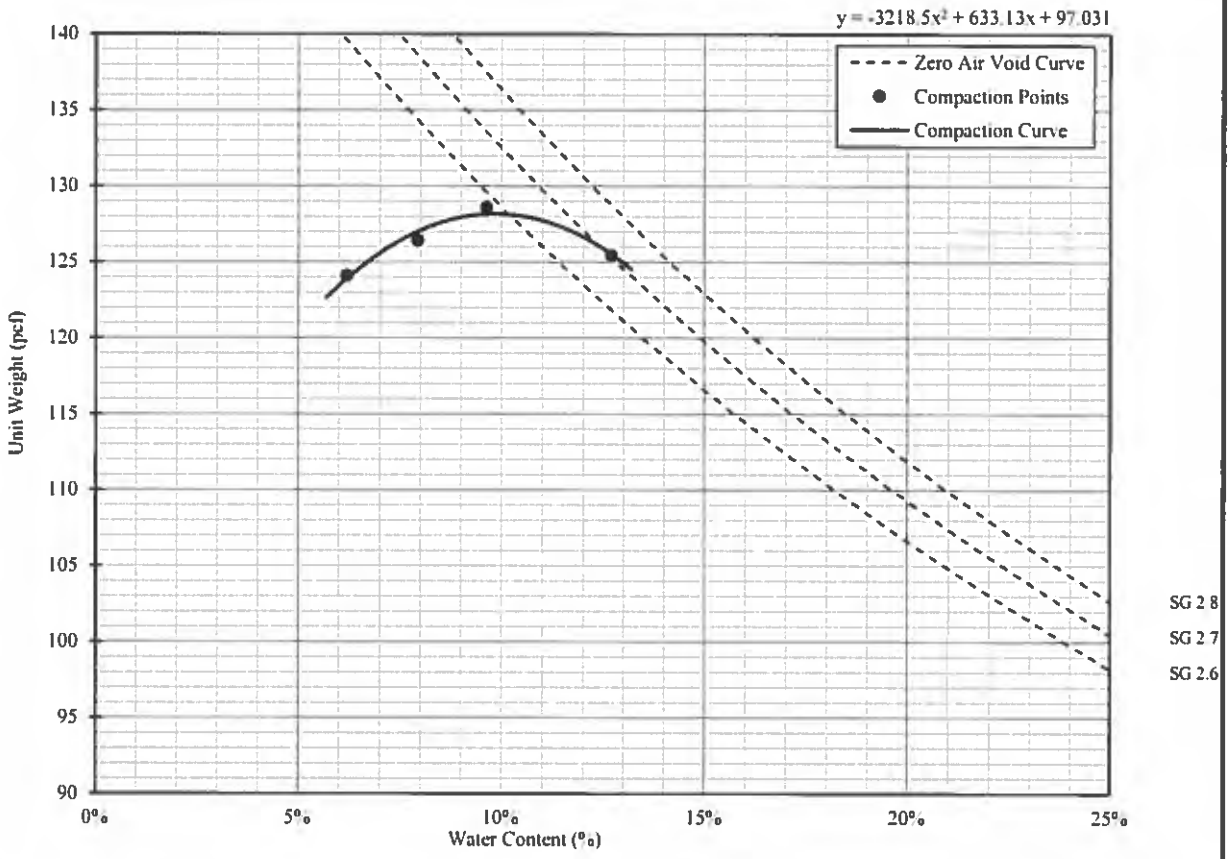
GOLDER

May-19 1788523

LABORATORY COMPACTION CHARACTERISTICS OF SOIL
ASTM D1557 - Method A

Mechanical Rammer	Moist Preparation

PROJECT NAME: JR Whiting Pond 1&2
SAMPLE ID: SF-03 DEPTH (ft): -
TYPE: Bulk



% Test Fraction Passing #4 Sieve	96%
As-Received Moisture Content	11%
Specific Gravity (assumed)	2.65

Modified Maximum Dry Unit Weight (pcf)	128.2
Modified Optimum Water Content (%)	9.8%

USCS Description (ASTM D 2487): Grayish brown, LEAN CLAY WITH SAND, trace gravel

USCS: CL

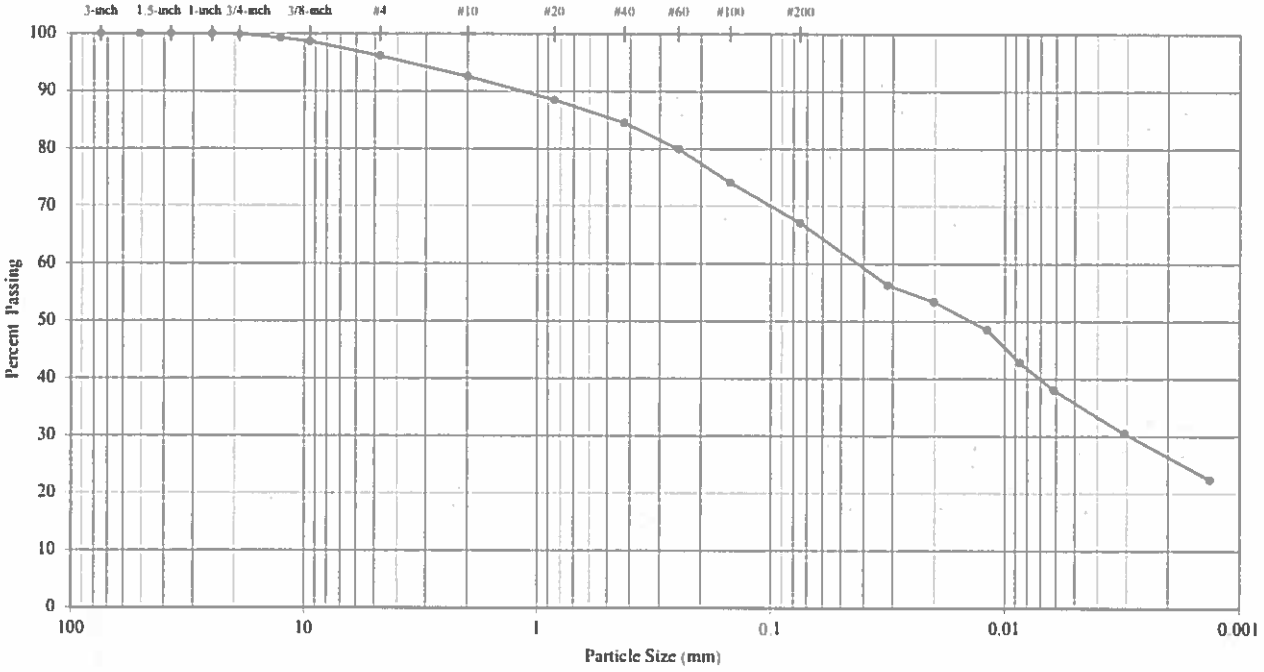
TECH	BB
DATE	5/31/2019
CHECK	
REVIEW	

GOLDER

July-19 1788523

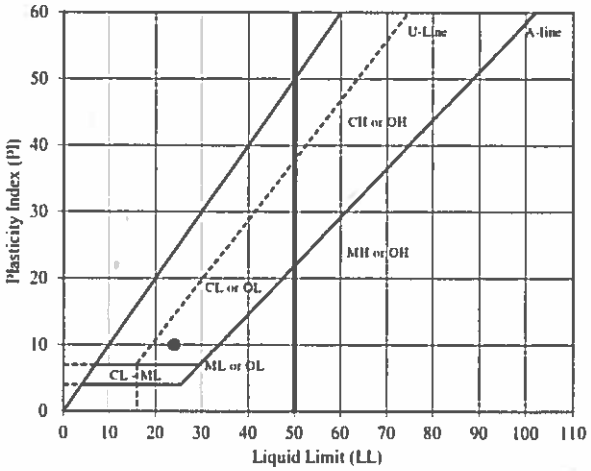
PARTICLE SIZE DISTRIBUTION & ATTERBERG LIMITS
ASTM D421, D422, D4318

PROJECT NAME: **JR Whiting Pond 1&2**
SAMPLE ID: **SF-04** DEPTH (ft): -
TYPE: **Bulk**



Sieve	Particle Size (mm)	% Passing	Description	Percentage	
3-inch	75.0	100.0	Cobbles	0.00	
2-inch	50.8	100.0	Coarse Gravel	0.11	3.81
1.5-inch	37.5	100.0			
1-inch	25.0	100.0			
3/4-inch	19.0	99.9			
1/2-inch	12.7	99.3	Fine Gravel	3.69	
3/8-inch	9.5	98.7			
#4	4.75	96.2			
#10	2.0	92.6	Coarse Sand	3.64	29.08
#20	0.85	88.5	Medium Sand	8.02	
#40	0.425	84.5			
#60	0.25	80.0	Fine Sand	17.42	
#100	0.15	74.2			
#200	0.075	67.1			
	0.032	56.3	Silt or Clay Fines	67.11	
	0.020	53.4			
	0.012	48.6			
	0.009	42.8			
	0.006	38.1			
	0.003	30.5			
	0.001	22.4			

Sieve Analysis (Initial Separation on No. 4 Sieve)
Hydrometer Analysis



LL	PL	PI	LI
24	14	10	-0.27

USCS Description (ASTM D 2487):
Grayish brown, SANDY LEAN CLAY, trace gravel

As-Received Moisture Content (%): 11.3

USCS Group Symbol: CL

Notes: (1) Particle size analysis sample Mechanically dispersed using Stirring Apparatus A for about 1 Minute.
(2) Sample prepared for Atterberg Limits testing by the dry method. Material retained on No 40 sieve removed from Atterberg Limits sample by dry sieving. Plastic Limit test performed by hand rolling. Method A Liquid Limit test performed using manual device.

TECH	BB
DATE	7/28/2019
CHECK	DS
REVIEW	

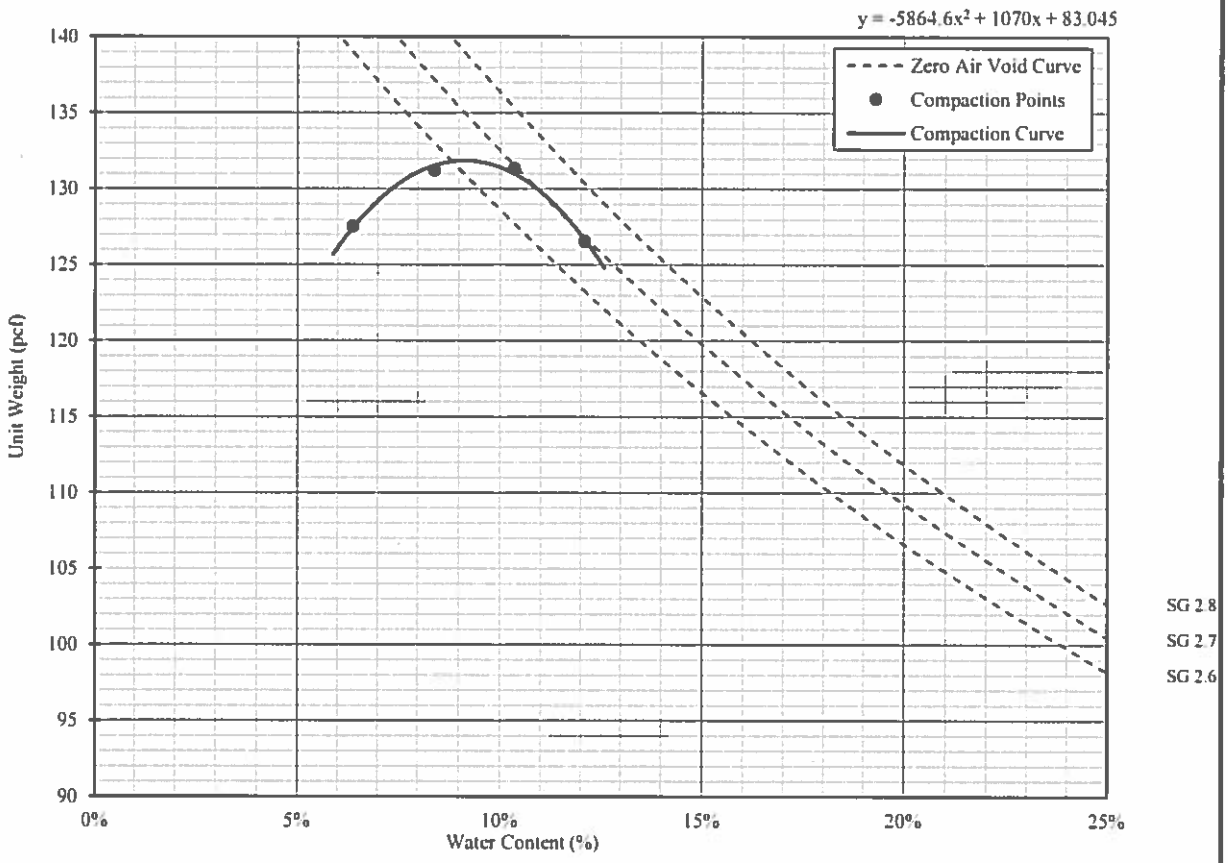
GOLDER

July-19 1788523

LABORATORY COMPACTION CHARACTERISTICS OF SOIL
ASTM D1557 - Method A

Mechanical Rammer	Moist Preparation

PROJECT NAME: JR Whiting Pond 1&2
SAMPLE ID: SF-04 DEPTH (ft): -
TYPE: Bulk



% Test Fraction Passing #4 Sieve	96%
As-Received Moisture Content	11%
Specific Gravity (assumed)	2.65

Modified Maximum Dry Unit Weight (pcf)	131.9
Modified Optimum Water Content (%)	9.1%

USCS Description (ASTM D 2487): Grayish brown, SANDY LEAN CLAY, trace gravel

USCS: CL

TECH	BB
DATE	7/29/2019
CHECK	
REVIEW	

APPENDIX D.2

Protective Cover Material

AGGREGATE
INDUSTRIES

822 Schuster Ave
Kalamazoo, MI. 49001
269-321-3800

5.10.2019

The following letter serves to communicate at this time that the 100% Natural bank material designated as **Clay Overburden** out of the following location is a naturally occurring, non-processed, non-synthetic material.

Dundee-Holcim Limestone Quarry
(MDOT Pit #58-006)
Aggregate Industries
15215 Day Rd
Dundee, MI 48131
734*529*5876

To the knowledge of Aggregate Industries this material is virgin, clean, free of external contamination and mirrors all similar naturally occurring clay material in the surrounding region.

Sincerely,

John Crawley
Technical Services Manager

JR Whiting
Pond 1 and 2
Geotechnical Laboratory Test Results

Sample Identification	Sample Type	Sample Depth (ft)	Soil Classi-fication	In-situ Moisture %	Atterberg Limits				Grain Size Distribution		Modified Proctor		Specific Gravity	Unit Weight		Hydraulic Conductivity (cm/sec)	Additional Tests Conducted (See Notes)
Sample No.					LL	PL	PI	LI	% Finer #4 sieve	% Finer #200 sieve	Maximum Dry Density (pcf)	Optimum Moisture %		Dry (pcf)	Moisture %		
PC-01	Bag	0.5-1.0	CL	11.5	23	13	10	-0.15	97.1	70.8	-	-	-	-	-	-	
PC-02	Bag	0.5-1.0	CL	11.9	23	14	9	-0.24	96.6	70.7	-	-	-	-	-		
PC-03	Bulk	0.5-1.0	CL	9.4	24	14	10	-0.46	95.3	67.8	-	-	-	-	-		
PC-04	Bulk	0.5-1.0	CL	9.1	25	14	11	-0.44	96.9	67.3	-	-	-	-	-		
PC-05	Bulk	0.5-1.0	CL	6.7	26	13	13	-0.48	96.7	73.0	-	-	-	-	-		
PC-06	Bulk	-	CL	8.3	26	13	13	-0.36	98.5	73.7	-	-	-	-	-		
PC-07	Bulk	-	CL	8.5	25	14	11	-0.50	94.5	66.8	-	-	-	-	-		
PC-08	Bulk	-	CL	10.4	24	12	12	-0.13	95.1	68.5	-	-	-	-	-		
PC-09	Bulk	0.5-1.5	CL	10.8	28	16	12	-0.44	98.9	71.5	-	-	-	-	-		
PC-10	Bulk	0.5-1.0	CL	10.1	25	15	10	-0.49	95.1	68.3	-	-	-	-	-		
PC-11	Bulk	0.5-1.0	CL	10.2	26	15	11	-0.43	97.5	69.8	-	-	-	-	-		
PC-12	Bulk	0.5-1.0	CL	18.3	25	12	13	0.48	98.3	70.4	-	-	-	-	-		
PC-13	Bulk	0.5-1.0	CL	11.7	27	13	14	-0.09	97.0	69.1	-	-	-	-	-		
PC-14	Bulk	0.5-1.0	CL	12.0	27	13	14	-0.07	97.8	71.7	-	-	-	-	-		
PC-15	Bulk	0.5-1.0	CL	13.1	25	15	10	-0.19	97.6	71.7	-	-	-	-	-		
PC-16	Bulk	0.5-1.0	CL	13.3	25	15	10	-0.17	98.7	71.2	-	-	-	-	-		
PC-17	Bulk	0.5-1.0	CL	14.1	24	14	10	0.01	98.3	71.4	-	-	-	-	-		
PC-18	Bulk	0.5-1.0	CL	11.6	24	15	9	-0.38	98.4	71.5	-	-	-	-	-		

ABBREVIATIONS:
LIQUID LIMIT (LL)
PLASTIC LIMIT (PL)
PLASTICITY INDEX (PI)
LIQUIDITY INDEX (LI)
SPECIFIC GRAVITY (Gs)
MOISTURE (Mc)

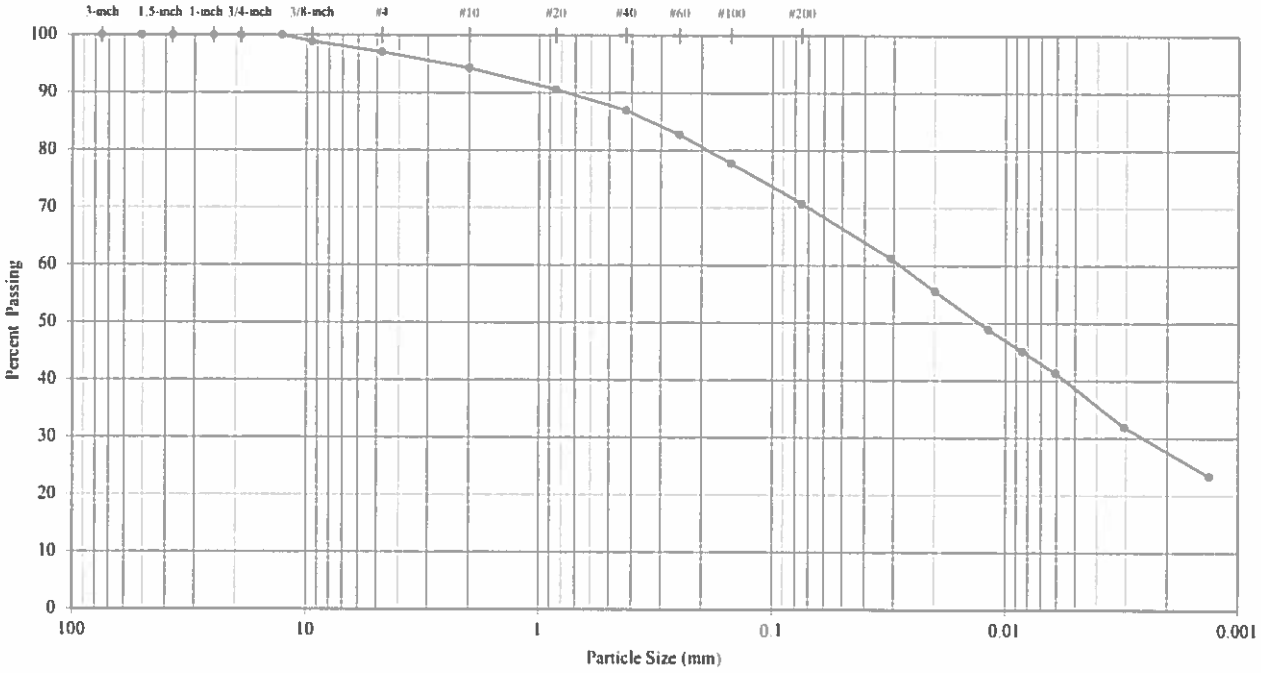
NOTES:
T = TRIAXIAL TEST
U = UNCONFINED COMPRESSION TEST
C = CONSOLIDATION TEST
DS = DIRECT SHEAR TEST
O = ORGANIC CONTENT
P = pH
NP = NON-PLASTIC
*Classified Visually

GOLDER

September-19 1788523

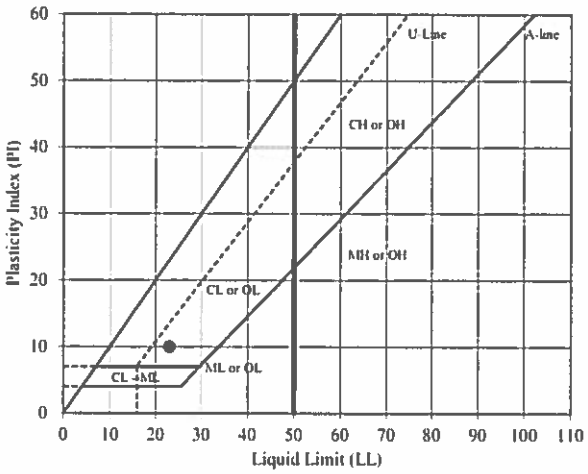
PARTICLE SIZE DISTRIBUTION & ATTERBERG LIMITS
ASTM D421, D422, D4318

PROJECT NAME: JR Whiting Pond 1&2
SAMPLE ID: PC-01 DEPTH (ft): 0.5-1.0
TYPE: Bag



Sieve	Particle Size (mm)	% Passing	Description	Percentage	
3-inch	75.0	100.0	Cobbles	0.00	
2-inch	50.8	100.0	Coarse Gravel	0.00	2.90
1.5-inch	37.5	100.0			
1-inch	25.0	100.0			
3/4-inch	19.0	100.0			
1/2-inch	12.7	100.0	Fine Gravel	2.90	
3/8-inch	9.5	98.9			
#4	4.75	97.1			
#10	2.0	94.3	Coarse Sand	2.77	26.30
#20	0.85	90.6	Medium Sand	7.35	
#40	0.425	87.0			
#60	0.25	82.7	Fine Sand	16.19	
#100	0.15	77.7			
#200	0.075	70.8			
	0.031	61.2	Silt or Clay Fines	70.79	
	0.020	55.5			
	0.012	48.9			
	0.008	45.1			
	0.006	41.3			
	0.003	31.9			
	0.001	23.3			

Sieve Analysis (Initial Separation on No. 4 Sieve)
Hydrometer Analysis



LL	PL	PI	LI
23	13	10	-0.15

USCS Description (ASTM D 2487):
Dark grayish brown, LEAN CLAY WITH SAND, trace gravel

As-Received Moisture Content (%): 11.5

USCS Group Symbol: CL

Notes: (1) Particle size analysis sample Mechanically dispersed using Stirring Apparatus A for about 1 Minute.
(2) Sample prepared for Atterberg Limits testing by the dry method. Material retained on No 40 sieve removed from Atterberg Limits sample by dry sieving. Plastic Limit test performed by hand rolling. Method A Liquid Limit test performed using manual device.

TECH	TDS
DATE	9/8/2019
CHECK	BAB
REVIEW	

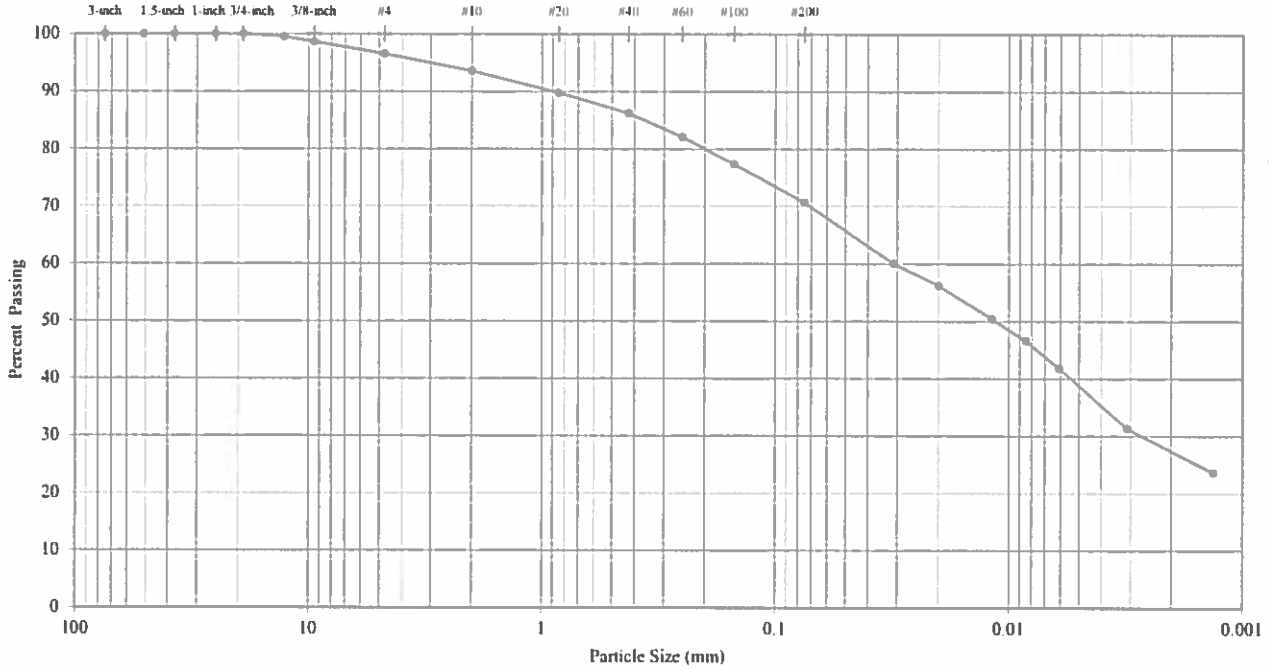
GOLDER

September-19 1788523

PARTICLE SIZE DISTRIBUTION & ATTERBERG LIMITS

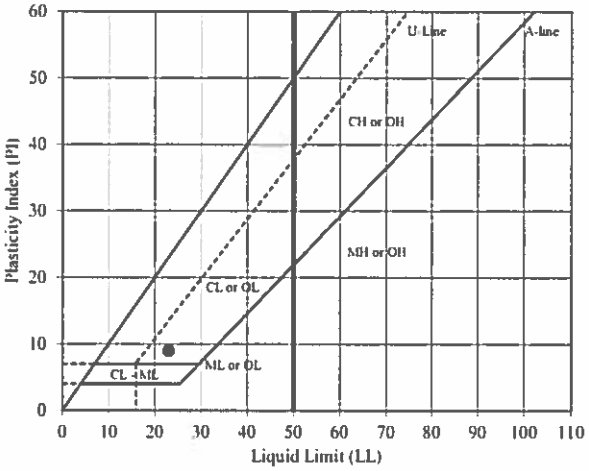
ASTM D421, D422, D4318

PROJECT NAME: **JR Whiting Pond 1&2**
SAMPLE ID: **PC-02** DEPTH (ft): **0.5-1.0**
TYPE: **Bag**



Sieve	Particle Size (mm)	% Passing	Description	Percentage	
3-inch	75.0	100.0	Cobbles	0.00	
2-inch	50.8	100.0	Coarse Gravel	0.00	3.44
1.5-inch	37.5	100.0			
1-inch	25.0	100.0			
3/4-inch	19.0	100.0			
1/2-inch	12.7	99.6	Fine Gravel	3.44	
3/8-inch	9.5	98.7			
#4	4.75	96.6			
#10	2.0	93.6	Coarse Sand	2.94	25.90
#20	0.85	89.8	Medium Sand	7.42	
#40	0.425	86.2			
#60	0.25	82.1	Fine Sand	15.55	
#100	0.15	77.4			
#200	0.075	70.7			
	0.031	60.1	Silt or Clay Fines	70.66	
	0.020	56.2			
	0.012	50.5			
	0.008	46.6			
	0.006	41.8			
	0.003	31.3			
	0.001	23.6			

Sieve Analysis (Initial Separation on No. 4 Sieve)
Hydrometer Analysis



LL	PL	PI	LI
23	14	9	-0.24

USCS Description (ASTM D 2487):
Dark grayish brown, LEAN CLAY WITH SAND, trace gravel

As-Received Moisture Content (%): 11.9

USCS Group Symbol: CL

Notes: (1) Particle size analysis sample Mechanically dispersed using Stirring Apparatus A for about 1 Minute.

(2) Sample prepared for Atterberg Limits testing by the dry method. Material retained on No 40 sieve removed from Atterberg Limits sample by dry sieving. Plastic Limit test performed by hand rolling. Method A Liquid Limit test performed using manual device.

TECH	TDS
DATE	9/8/2019
CHECK	BAP
REVIEW	

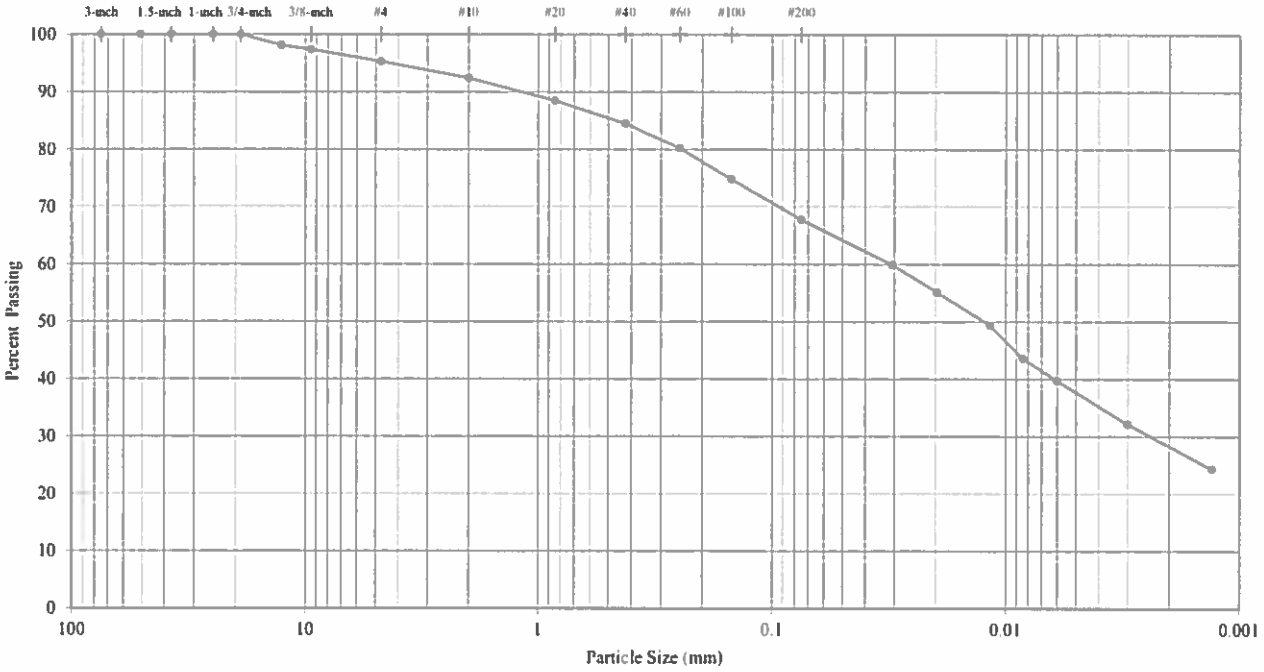
GOLDER

September-19 1788523

PARTICLE SIZE DISTRIBUTION & ATTERBERG LIMITS

ASTM D421, D422, D4318

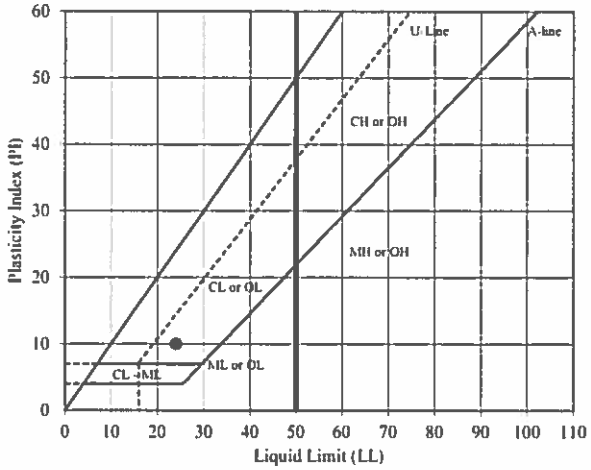
PROJECT NAME: **JR Whiting Pond 1&2**
SAMPLE ID: **PC-03** DEPTH (ft): **0.5-1.0**
TYPE: **Bulk**



Sieve	Particle Size (mm)	% Passing	Description	Percentage	
3-inch	75.0	100.0	Cobbles	0.00	
2-inch	50.8	100.0	Coarse Gravel	0.00	4.69
1.5-inch	37.5	100.0			
1-inch	25.0	100.0			
3/4-inch	19.0	100.0			
1/2-inch	12.7	98.1	Fine Gravel	4.69	
3/8-inch	9.5	97.4			
#4	4.75	95.3			
#10	2.0	92.4	Coarse Sand	2.88	27.55
#20	0.85	88.5	Medium Sand	7.96	
#40	0.425	84.5			
#60	0.25	80.2	Fine Sand	16.72	
#100	0.15	74.8			
#200	0.075	67.8			
	0.031	59.9	Silt or Clay Fines	67.76	
	0.020	55.1			
	0.012	49.4			
	0.008	43.6			
	0.006	39.8			
	0.003	32.1			
	0.001	24.3			

Sieve Analysis (Initial Separation on No. 4 Sieve)

Hydrometer Analysis



LL	PL	PI	LI
24	14	10	-0.46

USCS Description (ASTM D 2487):

Dark gray, SANDY LEAN CLAY, trace gravel

As-Received Moisture Content (%): 9.4

USCS Group Symbol: CL

Notes: (1) Particle size analysis sample Mechanically dispersed using Stirring Apparatus A for about 1 Minute.

(2) Sample prepared for Atterberg Limits testing by the dry method. Material retained on No. 40 sieve removed from Atterberg Limits sample by dry sieving. Plastic Limit test performed by hand rolling. Method A Liquid Limit test performed using manual device.

TECH	TDS/DW
DATE	9/13/2019
CHECK	AB
REVIEW	DML

GOLDER

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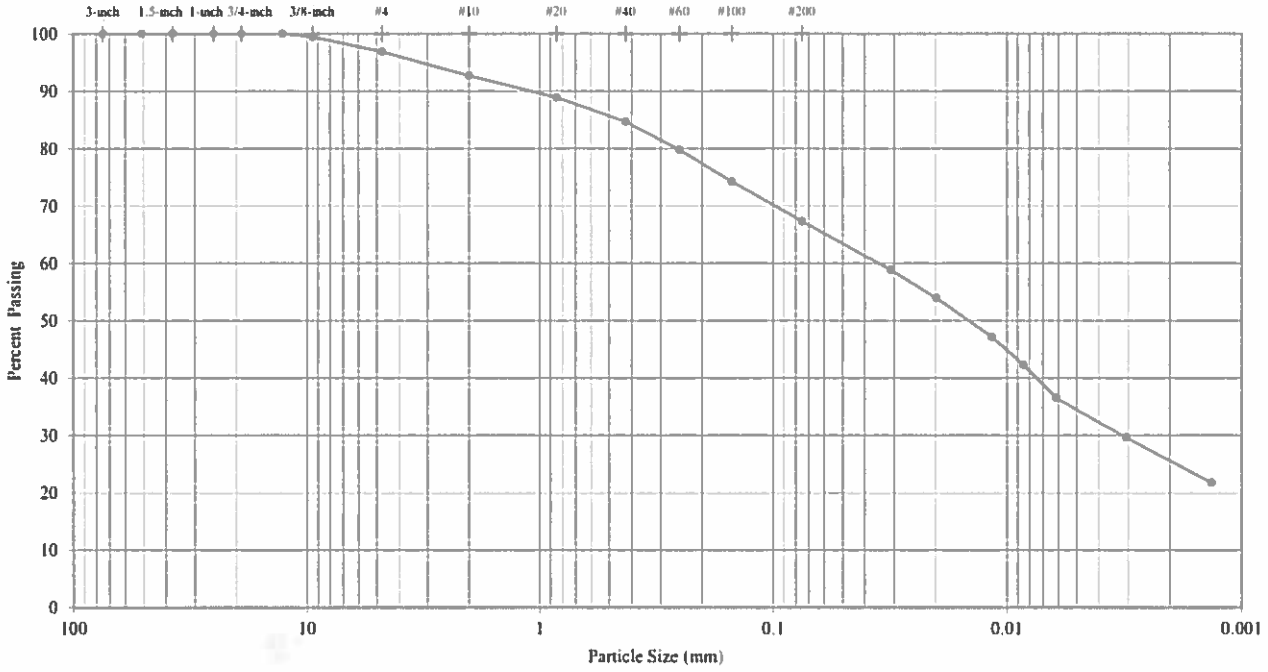
PARTICLE SIZE DISTRIBUTION & ATTERBERG LIMITS
ASTM D421, D422, D4318

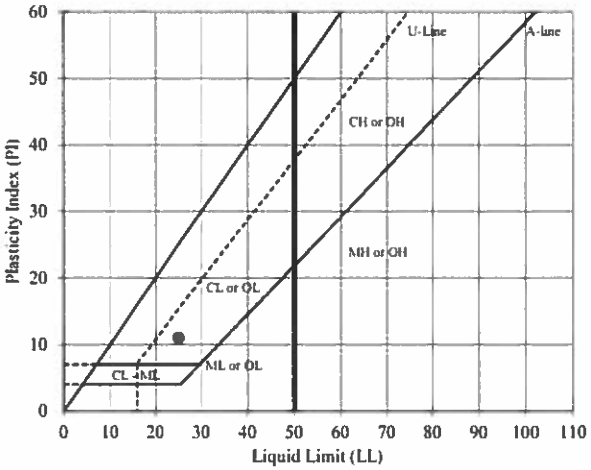
PROJECT NAME: **JR Whiting Pond 1&2**
SAMPLE ID: **PC-04** DEPTH (ft): **0.5-1.0**
TYPE: **Bulk**



Sieve	Particle Size (mm)	% Passing	Description	Percentage	
3-inch	75.0	100.0	Cobbles	0.00	
2-inch	50.8	100.0	Coarse Gravel	0.00	
1.5-inch	37.5	100.0			
1-inch	25.0	100.0			
3/4-inch	19.0	100.0			3.12
1/2-inch	12.7	100.0	Fine Gravel	3.12	
3/8-inch	9.5	99.4			
#4	4.75	96.9			
#10	2.0	92.7	Coarse Sand	4.14	
#20	0.85	88.9	Medium Sand	8.03	
#40	0.425	84.7			29.58
#60	0.25	79.8	Fine Sand	17.41	
#100	0.15	74.3			
#200	0.075	67.3			
	0.031	58.9	Silt or Clay Fines	67.29	
	0.020	54.0			
	0.012	47.2			
	0.008	42.3			
	0.006	36.5			
	0.003	29.7			
	0.001	21.8			

Sieve Analysis (Initial Separation on No. 4 Sieve)

Hydrometer Analysis



LL	PL	PI	LI
25	14	11	-0.44

USCS Description (ASTM D 2487):
Dark gray, SANDY LEAN CLAY, trace gravel

As-Received Moisture Content (%): 9.1

USCS Group Symbol: CL

Notes: (1) Particle size analysis sample Mechanically dispersed using Stirring Apparatus A for about 1 Minute.

(2) Sample prepared for Atterberg Limits testing by the dry method. Material retained on No. 40 sieve removed from Atterberg Limits sample by dry sieving. Plastic Limit test performed by hand rolling. Method A Liquid Limit test performed using manual device.

TECH	TDS/DW
DATE	9/13/2019
CHECK	AB
REVIEW	

GOLDER

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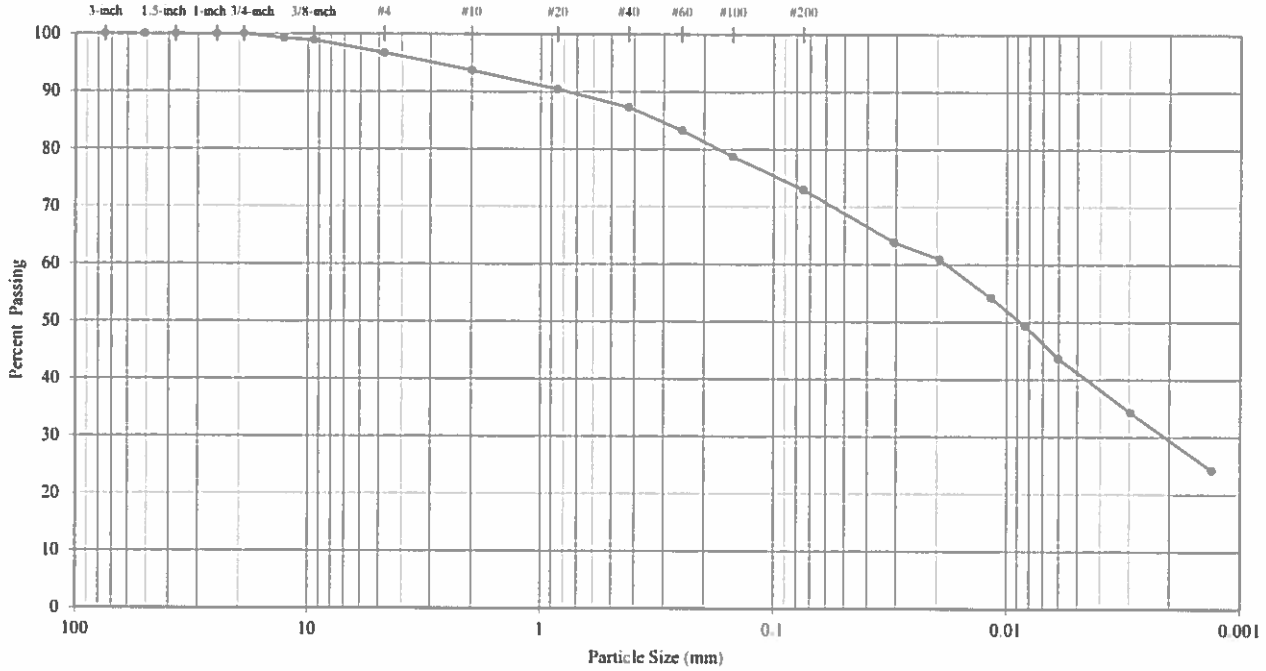
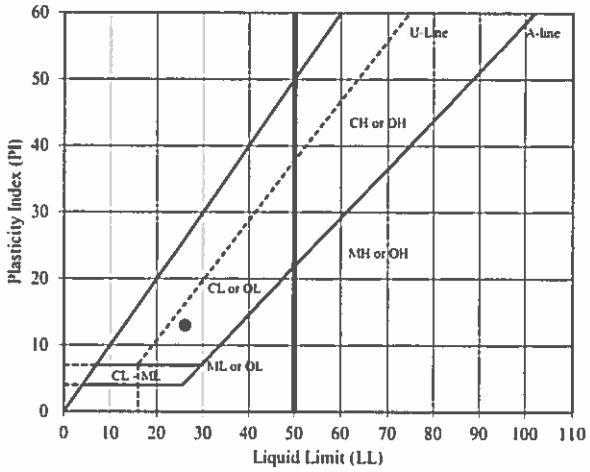
PARTICLE SIZE DISTRIBUTION & ATTERBERG LIMITS
ASTM D421, D422, D4318

PROJECT NAME: **JR Whiting Pond 1&2**
SAMPLE ID: **PC-05** DEPTH (ft): **0.5-1.0**
TYPE: **Bulk**



Sieve	Particle Size (mm)	% Passing	Description	Percentage	
3-inch	75.0	100.0	Cobbles	0.00	
2-inch	50.8	100.0	Coarse Gravel	0.00	3.33
1.5-inch	37.5	100.0			
1-inch	25.0	100.0			
3/4-inch	19.0	100.0			
1/2-inch	12.7	99.3	Fine Gravel	3.33	
3/8-inch	9.5	99.0			
#4	4.75	96.7			
#10	2.0	93.7	Coarse Sand	2.99	23.67
#20	0.85	90.5	Medium Sand	6.39	
#40	0.425	87.3			
#60	0.25	83.3	Fine Sand	14.30	
#100	0.15	78.7			
#200	0.075	73.0			
Hydrometer Analysis	0.031	63.8	Silt or Clay Fines	73.00	
	0.020	60.9			
	0.012	54.2			
	0.008	49.4			
	0.006	43.7			
	0.003	34.3			
	0.001	24.2			

Sieve Analysis (Initial Separation on No. 4 Sieve)



LL	PL	PI	LI
26	13	13	-0.48

USCS Description (ASTM D 2487):
Dark grayish brown, LEAN CLAY WITH SAND, trace gravel

As-Received Moisture Content (%): 6.7

USCS Group Symbol: CL

Notes: (1) Particle size analysis sample Mechanically dispersed using Stirring Apparatus A for about 1 Minute.
(2) Sample prepared for Atterberg Limits testing by the dry method. Material retained on No 40 sieve removed from Atterberg Limits sample by dry sieving. Plastic Limit test performed by hand rolling. Method A Liquid Limit test performed using manual device.

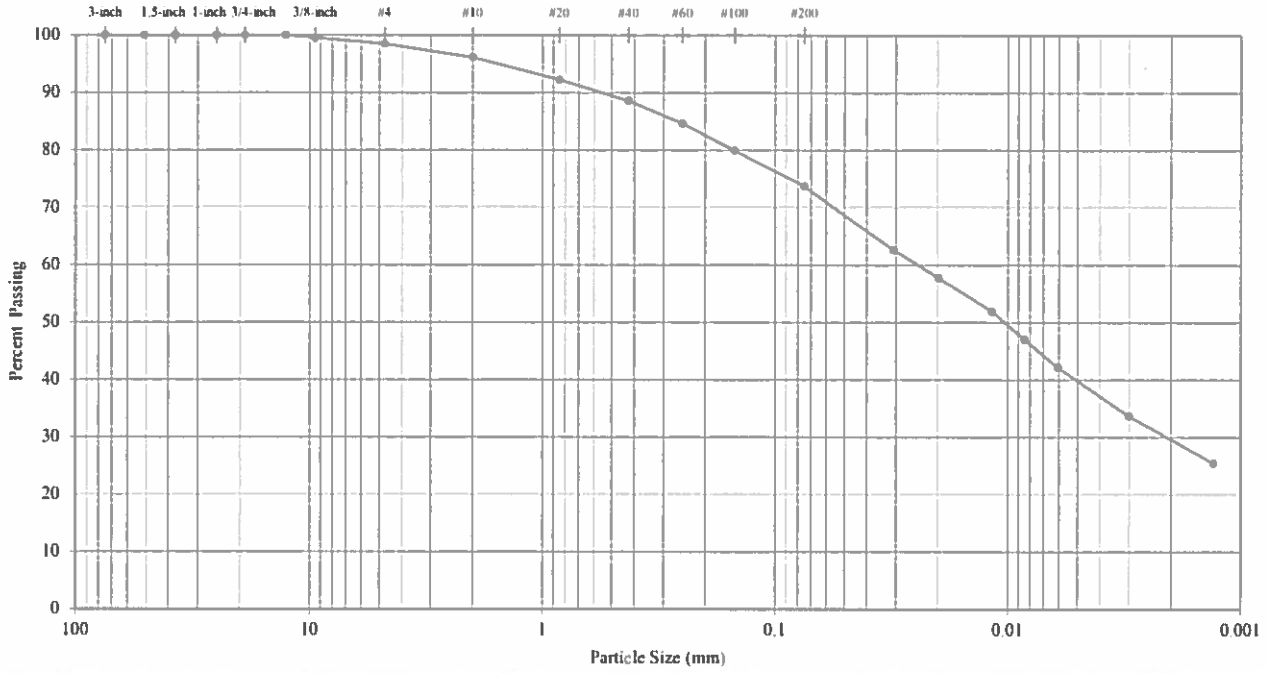
TECH	TDS/DW
DATE	9/24/2019
CHECK	AB
REVIEW	

GOLDER

September-19 1788523

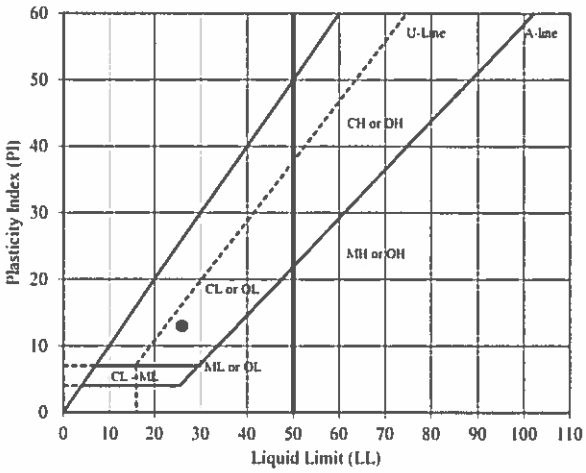
PARTICLE SIZE DISTRIBUTION & ATTERBERG LIMITS
ASTM D421, D422, D4318

PROJECT NAME: **JR Whiting Pond 1&2**
SAMPLE ID: **PC-06** DEPTH (ft): -
TYPE: **Bulk**



Sieve	Particle Size (mm)	% Passing	Description	Percentage	
3-inch	75.0	100.0	Cobbles	0.00	
2-inch	50.8	100.0	Coarse Gravel	0.00	1.50
1.5-inch	37.5	100.0			
1-inch	25.0	100.0			
3/4-inch	19.0	100.0			
1/2-inch	12.7	100.0	Fine Gravel	1.50	
3/8-inch	9.5	99.5			
#4	4.75	98.5			
#10	2.0	96.2	Coarse Sand	2.34	24.78
#20	0.85	92.3	Medium Sand	7.54	
#40	0.425	88.6			
#60	0.25	84.7	Fine Sand	14.90	
#100	0.15	79.9			
#200	0.075	73.7			
	0.031	62.7	Silt or Clay Fines	73.73	
	0.020	57.8			
	0.012	51.9			
	0.008	47.0			
	0.006	42.2			
	0.003	33.7			
	0.001	25.5			

Sieve Analysis (Initial Separation on No. 4 Sieve)
Hydrometer Analysis



LL	PL	PI	LI
26	13	13	-0.36

USCS Description (ASTM D 2487):
Dark grayish brown, LEAN CLAY WITH SAND, trace gravel

As-Received Moisture Content (%): 8.3

USCS Group Symbol: CL

Notes: (1) Particle size analysis sample Mechanically dispersed using Stirring Apparatus A for about 1 Minute.

(2) Sample prepared for Atterberg Limits testing by the dry method. Material retained on No. 40 sieve removed from Atterberg Limits sample by dry sieving. Plastic Limit test performed by hand rolling. Method A Liquid Limit test performed using manual device.

TECH	TDS/DW
DATE	9/24/2019
CHECK	
REVIEW	

GOLDER

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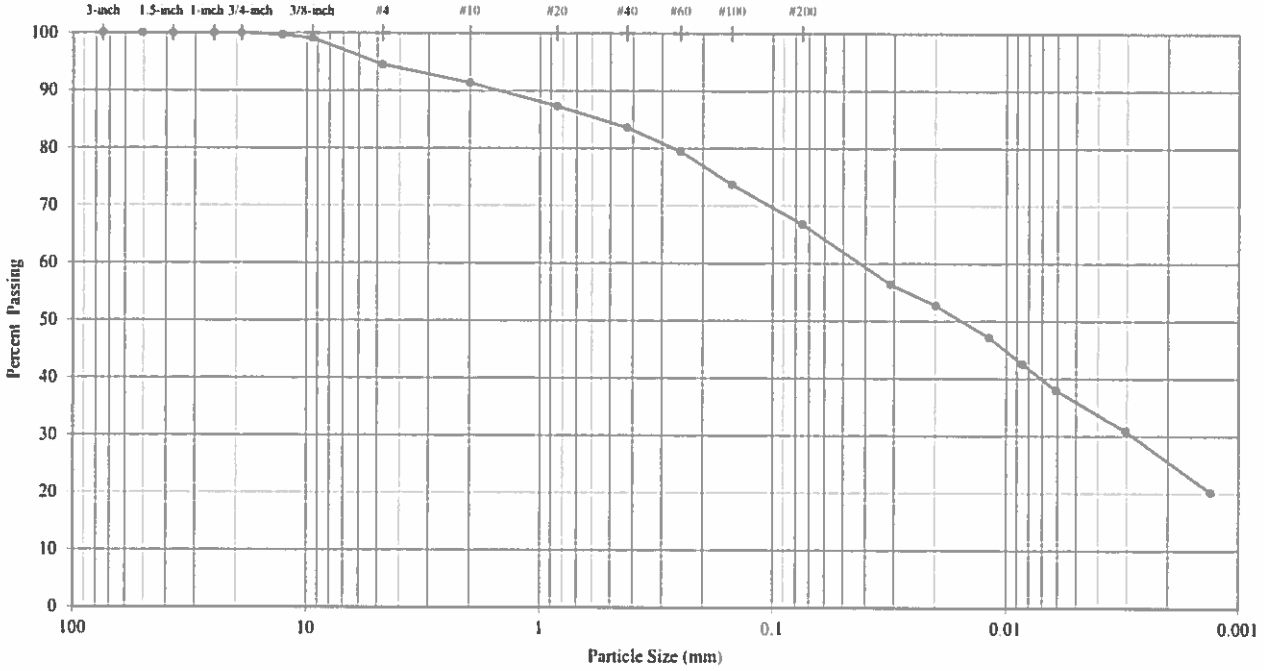
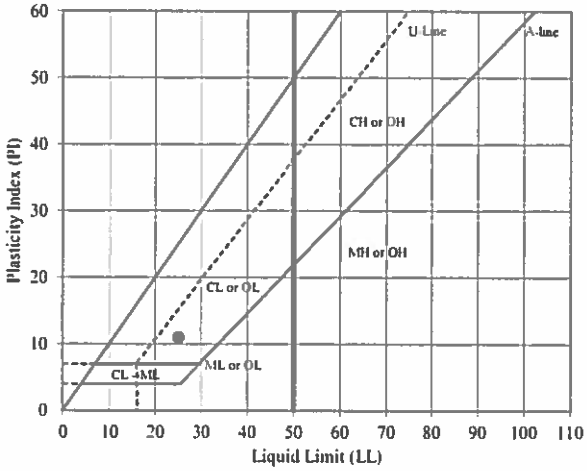
PARTICLE SIZE DISTRIBUTION & ATTERBERG LIMITS
ASTM D421, D422, D4318

PROJECT NAME: **JR Whiting Pond 1&2**
SAMPLE ID: **PC-07** DEPTH (ft): -
TYPE: **Bulk**



Sieve	Particle Size (mm)	% Passing	Description	Percentage	
3-inch	75.0	100.0	Cobbles	0.00	
2-inch	50.8	100.0	Coarse Gravel	0.00	5.50
1.5-inch	37.5	100.0			
1-inch	25.0	100.0			
3/4-inch	19.0	100.0			
1/2-inch	12.7	99.7	Fine Gravel	5.50	
3/8-inch	9.5	99.1			
#4	4.75	94.5			
#10	2.0	91.4	Coarse Sand	3.12	27.69
#20	0.85	87.3	Medium Sand	7.79	
#40	0.425	83.6			
#60	0.25	79.5	Fine Sand	16.79	
#100	0.15	73.7			
#200	0.075	66.8			
	0.031	56.4	Silt or Clay Fines	66.81	
	0.020	52.7			
	0.012	47.2			
	0.009	42.5			
	0.006	38.0			
	0.003	30.9			
	0.001	20.2			

Sieve Analysis (Initial Separation on No. 4 Sieve)
Hydrometer Analysis



LL	PL	PI	LI
25	14	11	-0.50

USCS Description (ASTM D 2487):
Dark grayish brown, SANDY LEAN CLAY, little gravel

As-Received Moisture Content (%): 8.5

USCS Group Symbol: CL

Notes: (1) Particle size analysis sample Mechanically dispersed using Stirring Apparatus A for about 1 Minute.
(2) Sample prepared for Atterberg Limits testing by the dry method. Material retained on No. 40 sieve removed from Atterberg Limits sample by dry sieving. Plastic Limit test performed by hand rolling. Method A Liquid Limit test performed using manual device.

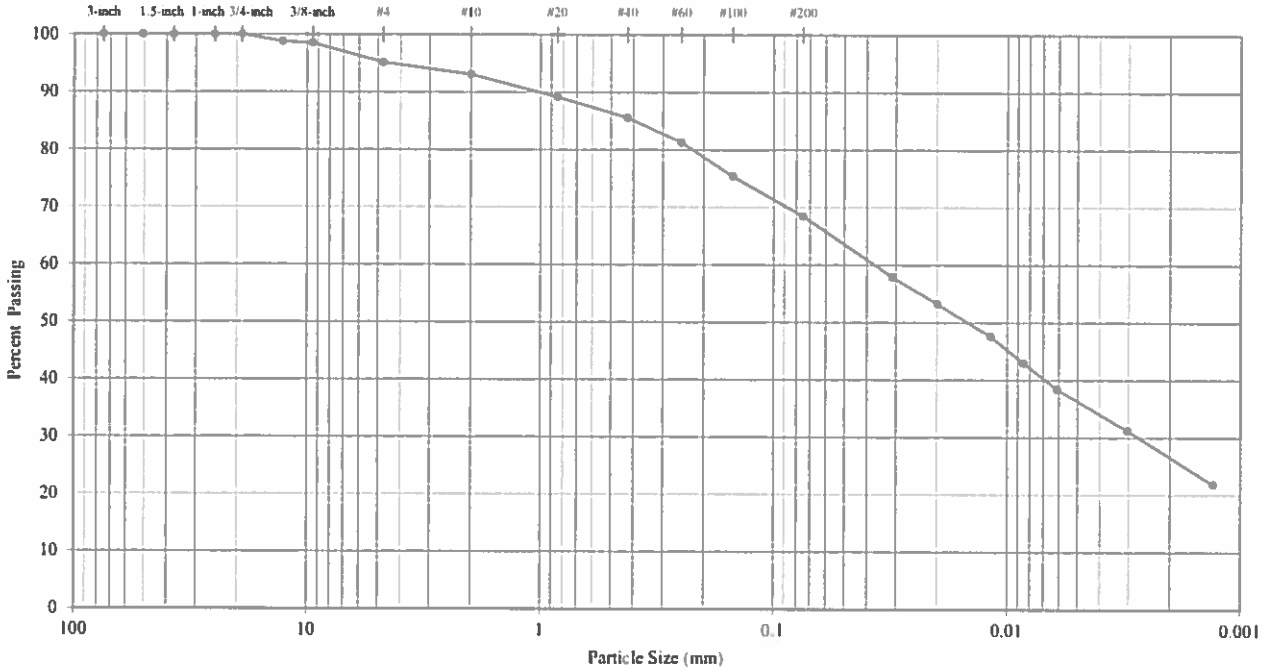
TECH	TDS/DW
DATE	9/27/2019
CHECK	
REVIEW	

GOLDER

September-19 1788523

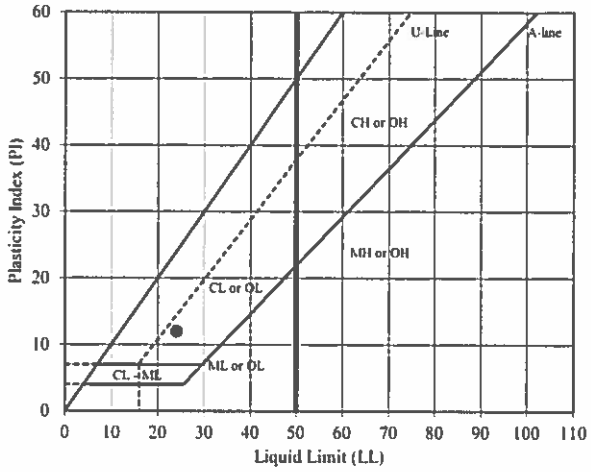
PARTICLE SIZE DISTRIBUTION & ATTERBERG LIMITS
ASTM D421, D422, D4318

PROJECT NAME: JR Whiting Pond 1&2
SAMPLE ID: PC-08 DEPTH (ft): -
TYPE: Bulk



Sieve	Particle Size (mm)	% Passing	Description	Percentage	
3-inch	75.0	100.0	Cobbles	0.00	
2-inch	50.8	100.0	Coarse Gravel	0.00	4.88
1.5-inch	37.5	100.0			
1-inch	25.0	100.0			
3/4-inch	19.0	100.0			
1/2-inch	12.7	98.8	Fine Gravel	4.88	
3/8-inch	9.5	98.5			
#4	4.75	95.1			
#10	2.0	93.1	Coarse Sand	2.01	26.66
#20	0.85	89.2	Medium Sand	7.59	
#40	0.425	85.5			
#60	0.25	81.3	Fine Sand	17.06	
#100	0.15	75.4			
#200	0.075	68.5			
Hydrometer Analysis	0.031	57.9	Silt or Clay Fines	68.46	
	0.020	53.2			
	0.012	47.6			
	0.009	43.0			
	0.006	38.4			
	0.003	31.2			
	0.001	21.9			

Sieve Analysis (Initial Separation on No. 4 Sieve)



USCS Description (ASTM D 2487):
Dark grayish brown, SANDY LEAN CLAY, trace gravel

LL	PL	PI	LI
24	12	12	-0.13

As-Received Moisture Content (%): 10.4

USCS Group Symbol: CL

Notes: (1) Particle size analysis sample Mechanically dispersed using Stirring Apparatus A for about 1 Minute.
(2) Sample prepared for Atterberg Limits testing by the dry method. Material retained on No 40 sieve removed from Atterberg Limits sample by dry sieving. Plastic Limit test performed by hand rolling. Method A Liquid Limit test performed using manual device.

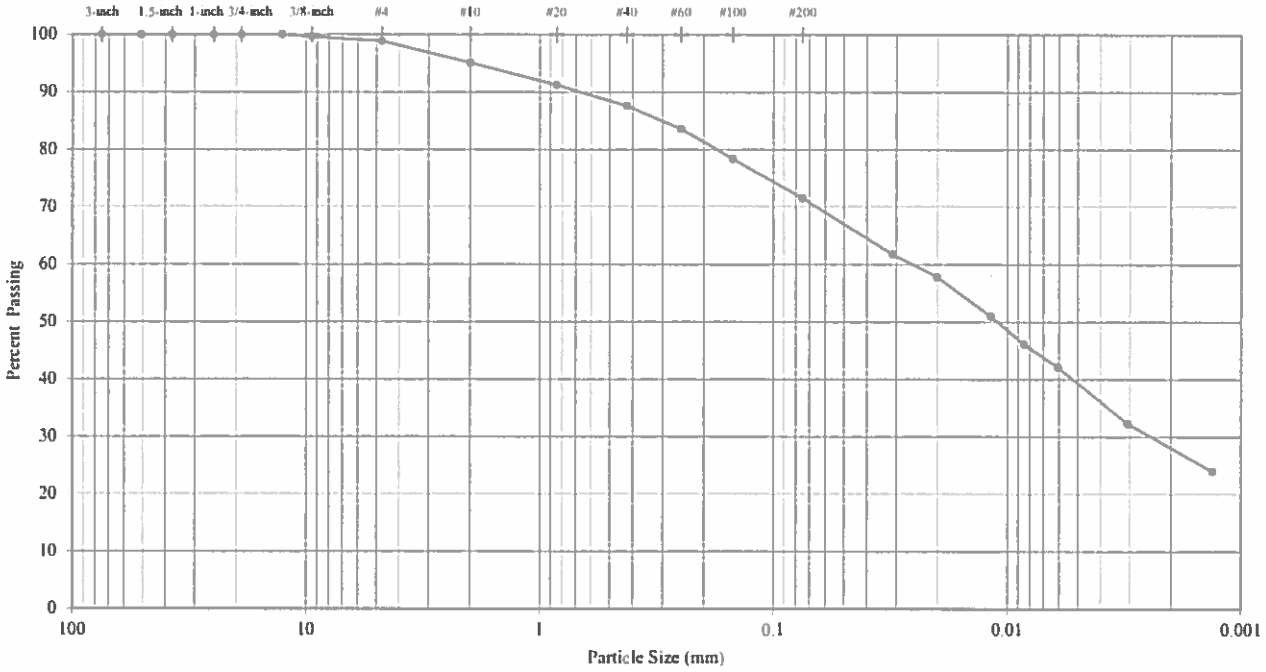
TECH	TDS/DW
DATE	9/27/2019
CHECK	
REVIEW	

GOLDER

October-19 1788523

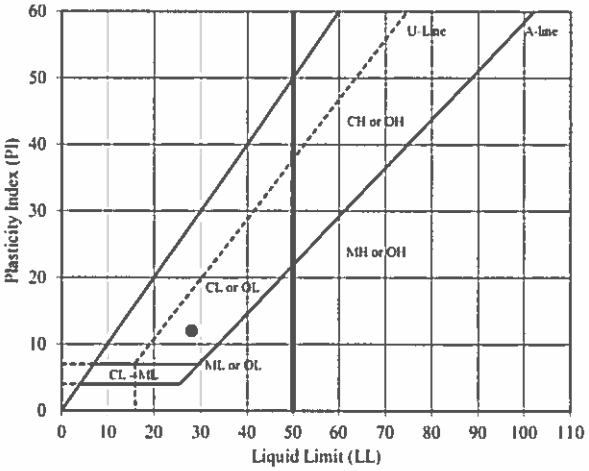
PARTICLE SIZE DISTRIBUTION & ATTERBERG LIMITS
ASTM D421, D422, D4318

PROJECT NAME: **JR Whiting Pond 1&2**
SAMPLE ID: **PC-09** DEPTH (ft): **0.5-1.5**
TYPE: **Bulk**



Sieve	Particle Size (mm)	% Passing	Description	Percentage	
3-inch	75.0	100.0	Cobbles	0.00	
2-inch	50.8	100.0	Coarse Gravel	0.00	1.10
1.5-inch	37.5	100.0			
1-inch	25.0	100.0			
3/4-inch	19.0	100.0			
1/2-inch	12.7	100.0	Fine Gravel	1.10	
3/8-inch	9.5	99.7			
#4	4.75	98.9			
#10	2.0	95.1	Coarse Sand	3.80	27.38
#20	0.85	91.3	Medium Sand	7.46	
#40	0.425	87.7			
#60	0.25	83.6	Fine Sand	16.13	
#100	0.15	78.4			
#200	0.075	71.5			
Hydrometer Analysis	0.031	61.7	Silt or Clay Fines	71.52	
	0.020	57.8			
	0.012	51.0			
	0.008	46.1			
	0.006	42.1			
	0.003	32.3			
	0.001	24.0			

Sieve Analysis (Initial Separation on No. 4 Sieve)



USCS Description (ASTM D 2487):

Dark grayish brown, LEAN CLAY WITH SAND, trace gravel

LL	PL	PI	LI
28	16	12	-0.44

As-Received Moisture Content (%): **10.8**

USCS Group Symbol: **CL**

Notes: (1) Particle size analysis sample Mechanically dispersed using Stirring Apparatus A for about 1 Minute.

(2) Sample prepared for Atterberg Limits testing by the dry method. Material retained on No. 40 sieve removed from Atterberg Limits sample by dry sieving. Plastic Limit test performed by hand rolling. Method A Liquid Limit test performed using manual device.

TECH	TDS/DW
DATE	10/11/2019
CHECK	
REVIEW	

GOLDER

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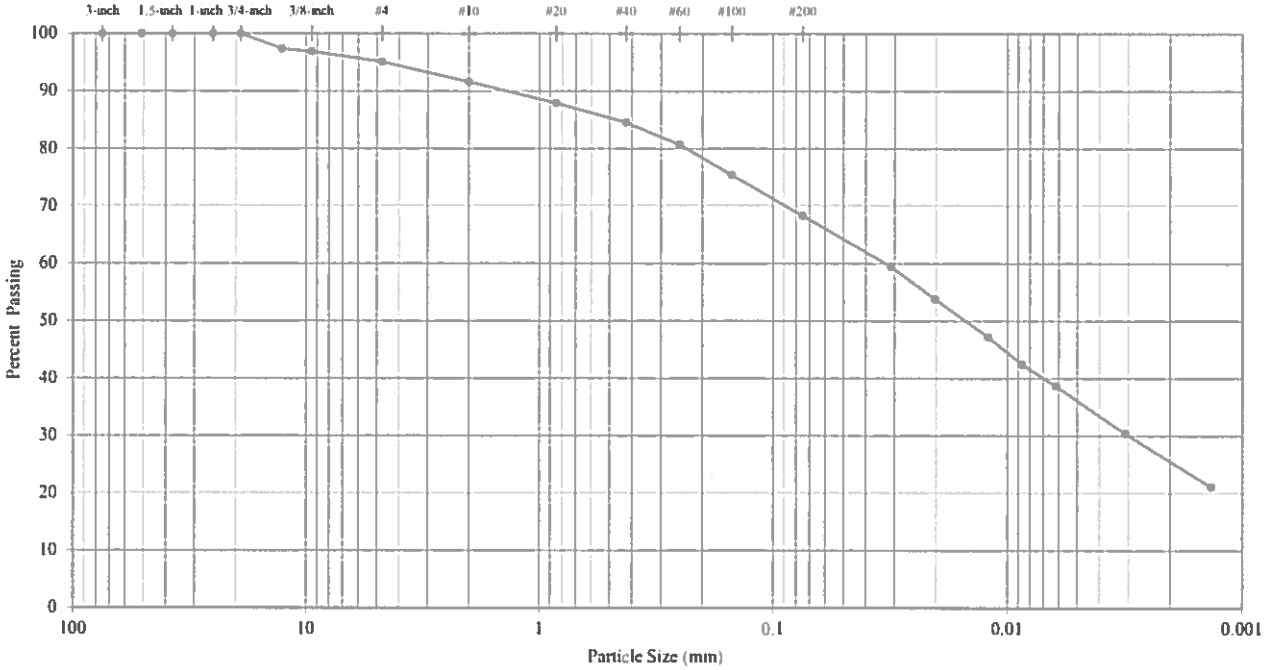
PARTICLE SIZE DISTRIBUTION & ATTERBERG LIMITS

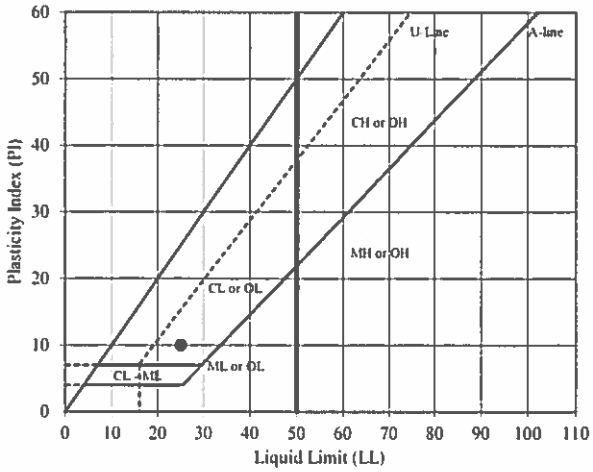
ASTM D421, D422, D4318

PROJECT NAME: **JR Whiting Pond 1&2**
SAMPLE ID: **PC-10** DEPTH (ft): **0.5-1.0**
TYPE: **Bulk**



Sieve	Particle Size (mm)	% Passing	Description	Percentage	
3-inch	75.0	100.0	Cobbles	0.00	
2-inch	50.8	100.0	Coarse Gravel	0.00	4.91
1.5-inch	37.5	100.0			
1-inch	25.0	100.0			
3/4-inch	19.0	100.0			
1/2-inch	12.7	97.4	Fine Gravel	4.91	
3/8-inch	9.5	96.9			
#4	4.75	95.1			
#10	2.0	91.6	Coarse Sand	3.49	26.79
#20	0.85	87.9	Medium Sand	7.04	
#40	0.425	84.6			
#60	0.25	80.7	Fine Sand	16.25	
#100	0.15	75.4			
#200	0.075	68.3			
Hydrometer Analysis	0.031	59.5	Silt or Clay Fines	68.30	
	0.020	53.8			
	0.012	47.2			
	0.009	42.4			
	0.006	38.7			
	0.003	30.4			
	0.001	21.1			

Sieve Analysis (Initial Separation on No. 4 Sieve)



USCS Description (ASTM D 2487):

Dark grayish brown, SANDY LEAN CLAY, trace gravel

LL	PL	PI	LI
25	15	10	-0.49

As-Received Moisture Content (%): **10.1**

USCS Group Symbol: **CL**

Notes: (1) Particle size analysis sample Mechanically dispersed using Stirring Apparatus A for about 1 Minute.

(2) Sample prepared for Atterberg Limits testing by the dry method. Material retained on No. 40 sieve removed from Atterberg Limits sample by dry sieving. Plastic Limit test performed by hand rolling. Method A Liquid Limit test performed using manual device.

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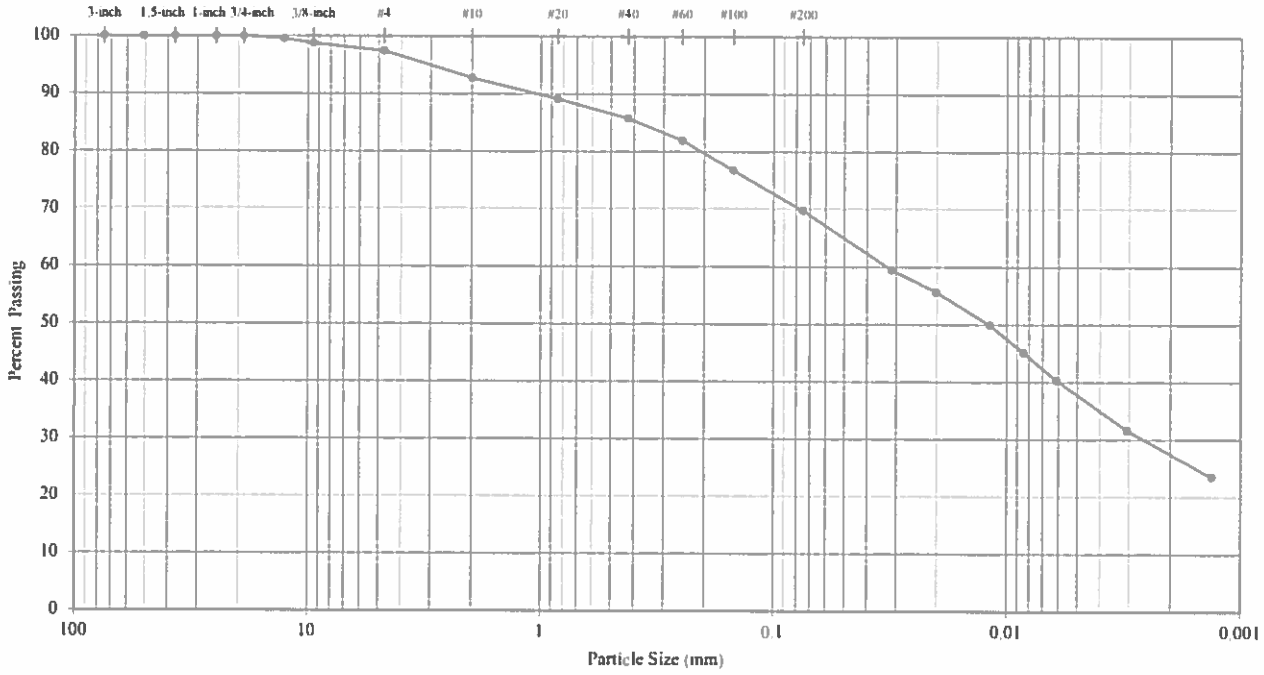
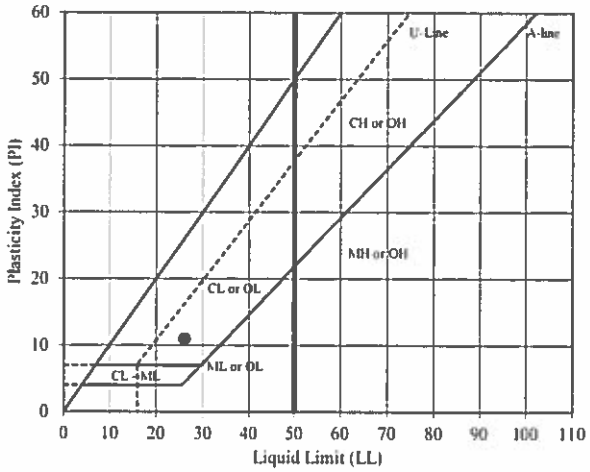
PARTICLE SIZE DISTRIBUTION & ATTERBERG LIMITS
ASTM D421, D422, D4318

PROJECT NAME: **JR Whiting Pond 1&2**
SAMPLE ID: **PC-11** DEPTH (ft): **0.5-1.0**
TYPE: **Bulk**



Sieve	Particle Size (mm)	% Passing	Description	Percentage	
3-inch	75.0	100.0	Cobbles	0.00	
2-inch	50.8	100.0	Coarse Gravel	0.00	2.55
1.5-inch	37.5	100.0			
1-inch	25.0	100.0			
3/4-inch	19.0	100.0			
1/2-inch	12.7	99.5	Fine Gravel	2.55	
3/8-inch	9.5	98.8			
#4	4.75	97.5			
#10	2.0	92.7	Coarse Sand	4.72	27.69
#20	0.85	89.2	Medium Sand	6.95	
#40	0.425	85.8			
#60	0.25	81.9	Fine Sand	16.02	
#100	0.15	76.8			
#200	0.075	69.8			
Hydrometer Analysis	0.032	59.5	Silt or Clay Fines	69.76	
	0.020	55.6			
	0.012	49.9			
	0.008	45.1			
	0.006	40.3			
	0.003	31.6			
	0.001	23.5			

Sieve Analysis (Initial Separation on No. 4 Sieve)



LL	PL	PI	LI
26	15	11	-0.43

USCS Description (ASTM D 2487):
Dark grayish brown, SANDY LEAN CLAY, trace gravel

As-Received Moisture Content (%): 10.2

USCS Group Symbol: CL

Notes: (1) Particle size analysis sample Mechanically dispersed using Stirring Apparatus A for about 1 Minute.

(2) Sample prepared for Atterberg Limits testing by the dry method. Material retained on No. 40 sieve removed from Atterberg Limits sample by dry sieving. Plastic Limit test performed by hand rolling. Method A Liquid Limit test performed using manual device.

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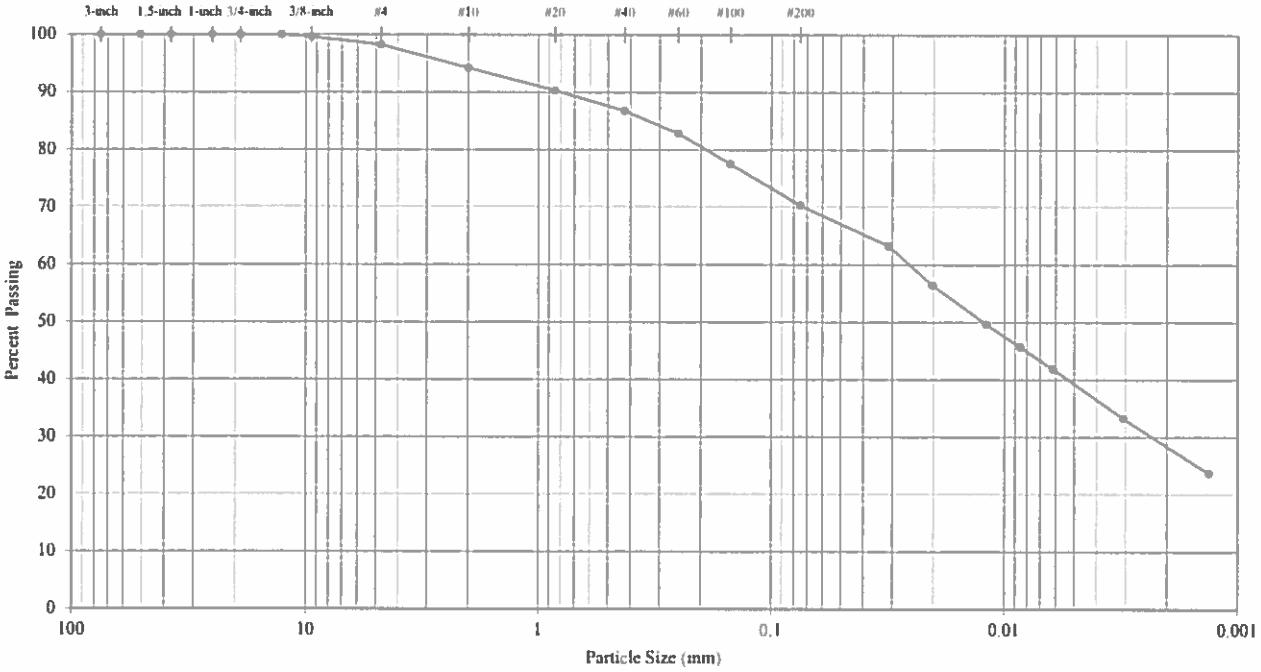
PARTICLE SIZE DISTRIBUTION & ATTERBERG LIMITS

ASTM D421, D422, D4318

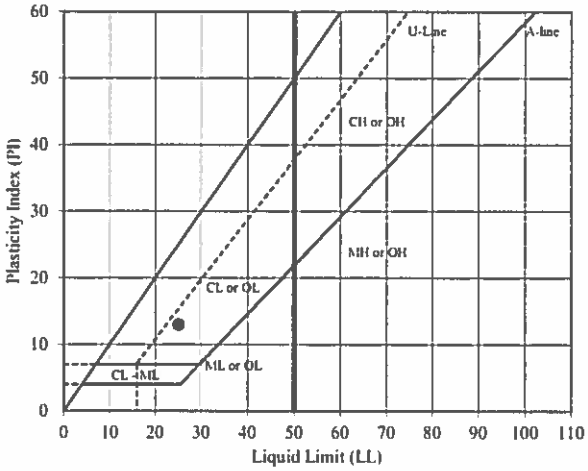
PROJECT NAME: **JR Whiting Pond 1&2**
SAMPLE ID: **PC-12** DEPTH (ft): **0.5-1.0**
TYPE: **Bulk**



Sieve	Particle Size (mm)	% Passing	Description	Percentage	
3-inch	75.0	100.0	Cobbles	0.00	
2-inch	50.8	100.0	Coarse Gravel	0.00	
1.5-inch	37.5	100.0			
1-inch	25.0	100.0			
3/4-inch	19.0	100.0			1.72
1/2-inch	12.7	100.0	Fine Gravel	1.72	
3/8-inch	9.5	99.6			
#4	4.75	98.3			
#10	2.0	94.2	Coarse Sand	4.07	
#20	0.85	90.3	Medium Sand	7.42	
#40	0.425	86.8			27.92
#60	0.25	82.8	Fine Sand	16.43	
#100	0.15	77.5			
#200	0.075	70.4			
	0.031	63.3	Silt or Clay Fines	70.36	
	0.020	56.4			
	0.012	49.6			
	0.009	45.7			
	0.006	41.9			
	0.003	33.3			
	0.001	23.7			

Sieve Analysis (Initial Separation on No. 4 Sieve)

Hydrometer Analysis



USCS Description (ASTM D 2487):

Dark grayish brown, LEAN CLAY WITH SAND, trace gravel

LL	PL	PI	LI
25	12	13	0.48

As-Received Moisture Content (%): 18.3

USCS Group Symbol: CL

Notes: (1) Particle size analysis sample Mechanically dispersed using Stirring Apparatus A for about 1 Minute.

(2) Sample prepared for Atterberg Limits testing by the dry method. Material retained on No. 40 sieve removed from Atterberg Limits sample by dry sieving. Plastic Limit test performed by hand rolling. Method A Liquid Limit test performed using manual device.

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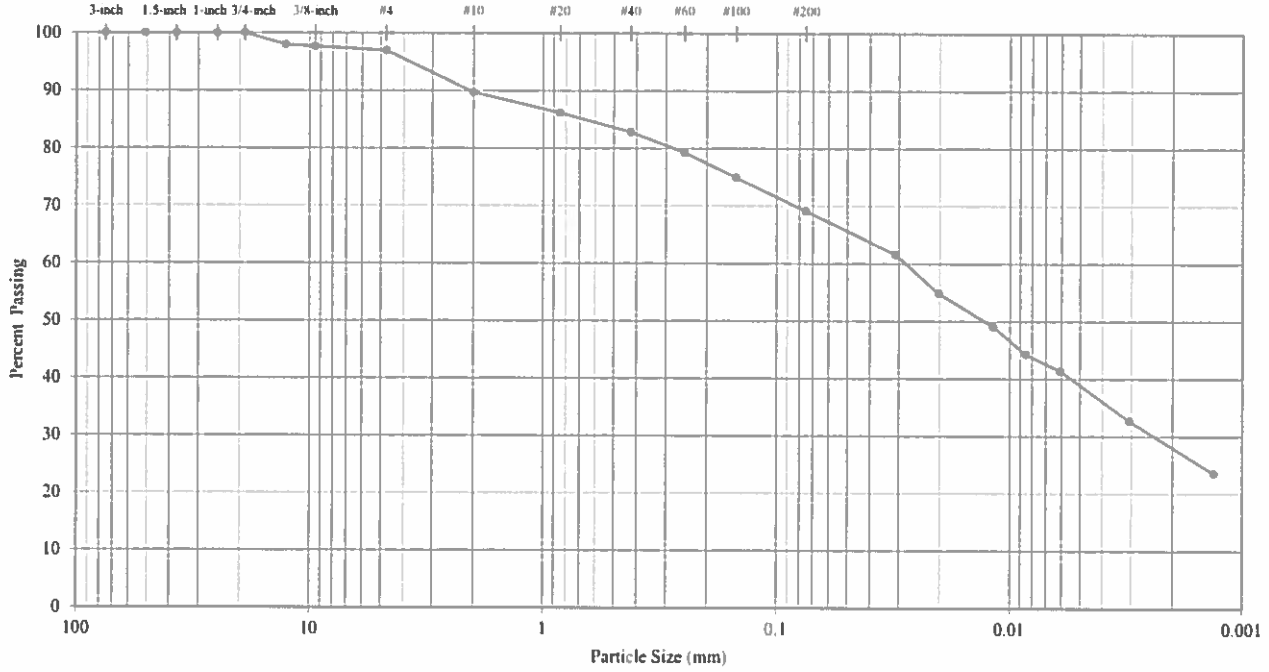
PARTICLE SIZE DISTRIBUTION & ATTERBERG LIMITS

ASTM D421, D422, D4318

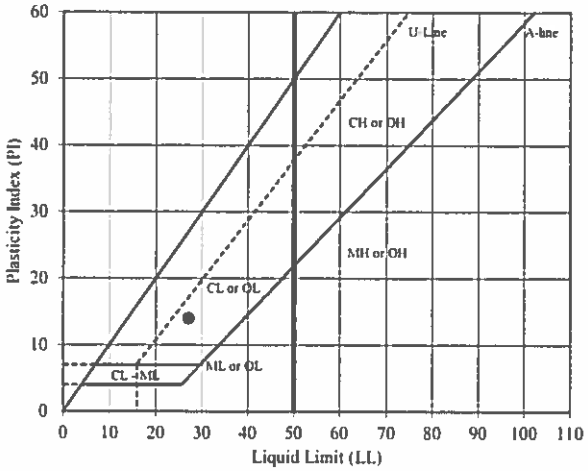
PROJECT NAME: **JR Whiting Pond 1&2**
SAMPLE ID: **PC-13**
TYPE: **Bulk**
DEPTH (ft): **0.5-1.0**



Sieve	Particle Size (mm)	% Passing	Description	Percentage	
3-inch	75.0	100.0	Cobbles	0.00	
2-inch	50.8	100.0	Coarse Gravel	0.00	3.04
1.5-inch	37.5	100.0			
1-inch	25.0	100.0			
3/4-inch	19.0	100.0			
1/2-inch	12.7	98.0	Fine Gravel	3.04	
3/8-inch	9.5	97.7			
#4	4.75	97.0			
#10	2.0	89.7	Coarse Sand	7.24	27.83
#20	0.85	86.1	Medium Sand	6.88	
#40	0.425	82.8			
#60	0.25	79.3	Fine Sand	13.71	
#100	0.15	74.9			
#200	0.075	69.1			
	0.031	61.6	Silt or Clay Fines	69.13	
	0.020	54.8			
	0.012	49.1			
	0.009	44.3			
	0.006	41.4			
	0.003	32.7			
	0.001	23.6			

Sieve Analysis (Initial Separation on No. 4 Sieve)

Hydrometer Analysis



LL	PL	PI	LI
27	13	14	-0.09

USCS Description (ASTM D 2487):
Dark grayish brown, SANDY LEAN CLAY, trace gravel

As-Received Moisture Content (%): 11.7

USCS Group Symbol: CL

Notes: (1) Particle size analysis sample Mechanically dispersed using Stirring Apparatus A for about 1 Minute.

(2) Sample prepared for Atterberg Limits testing by the dry method. Material retained on No. 40 sieve removed from Atterberg Limits sample by dry sieving. Plastic Limit test performed by hand rolling. Method A Liquid Limit test performed using manual device.

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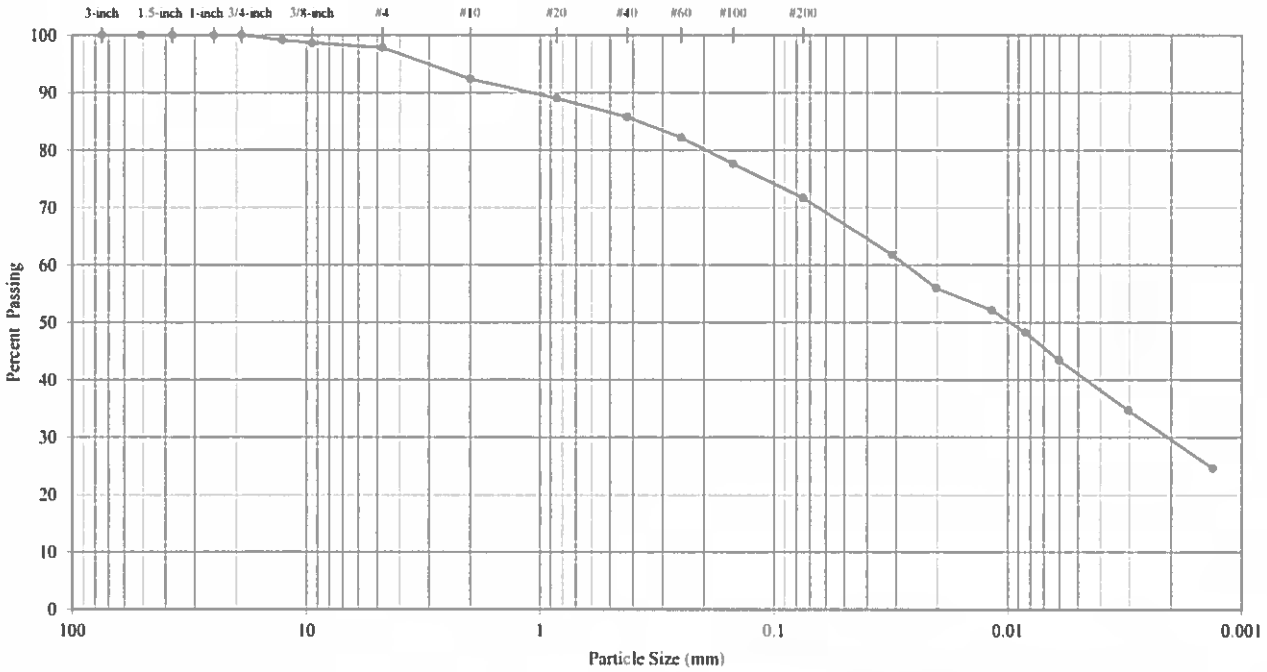
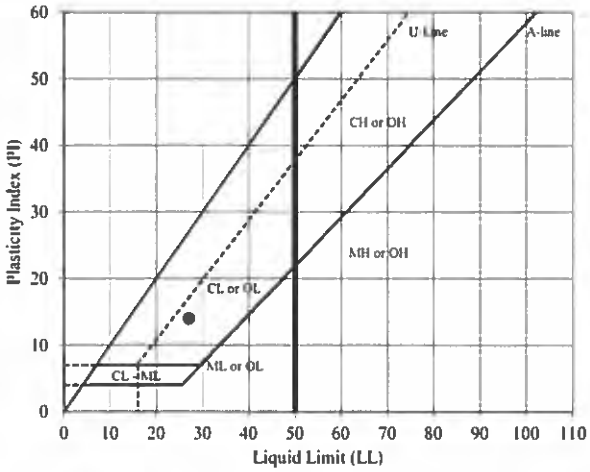
PARTICLE SIZE DISTRIBUTION & ATTERBERG LIMITS

ASTM D421, D422, D4318

PROJECT NAME: **JR Whiting Pond 1&2**
SAMPLE ID: **PC-14** DEPTH (ft): **0.5-1.0**
TYPE: **Bulk**



	Sieve	Particle Size (mm)	% Passing	Description	Percentage	
Sieve Analysis (Initial Separation on No. 4 Sieve)	3-inch	75.0	100.0	Cobbles	0.00	
	2-inch	50.8	100.0	Coarse Gravel	0.00	2.16
	1.5-inch	37.5	100.0			
	1-inch	25.0	100.0			
	3/4-inch	19.0	100.0			
	1/2-inch	12.7	99.1	Fine Gravel	2.16	
	3/8-inch	9.5	98.6			
	#4	4.75	97.8			
	#10	2.0	92.4	Coarse Sand	5.46	26.16
	#20	0.85	89.0	Medium Sand	6.60	
	#40	0.425	85.8			
	#60	0.25	82.1	Fine Sand	14.10	
	#100	0.15	77.6			
	#200	0.075	71.7			
Hydrometer Analysis		0.031	61.8	Silt or Clay Fines	71.67	
		0.020	55.9			
		0.012	52.1			
		0.008	48.3			
		0.006	43.4			
		0.003	34.7			
		0.001	24.6			



LL	PL	PI	LI
27	13	14	-0.07

USCS Description (ASTM D 2487):
Dark grayish brown, LEAN CLAY WITH SAND, trace gravel

As-Received Moisture Content (%): 12.0

USCS Group Symbol: CL

Notes: (1) Particle size analysis sample Mechanically dispersed using Stirring Apparatus A for about 1 Minute.

(2) Sample prepared for Atterberg Limits testing by the dry method. Material retained on No 40 sieve removed from Atterberg Limits sample by dry sieving. Plastic Limit test performed by hand rolling. Method A Liquid Limit test performed using manual device.

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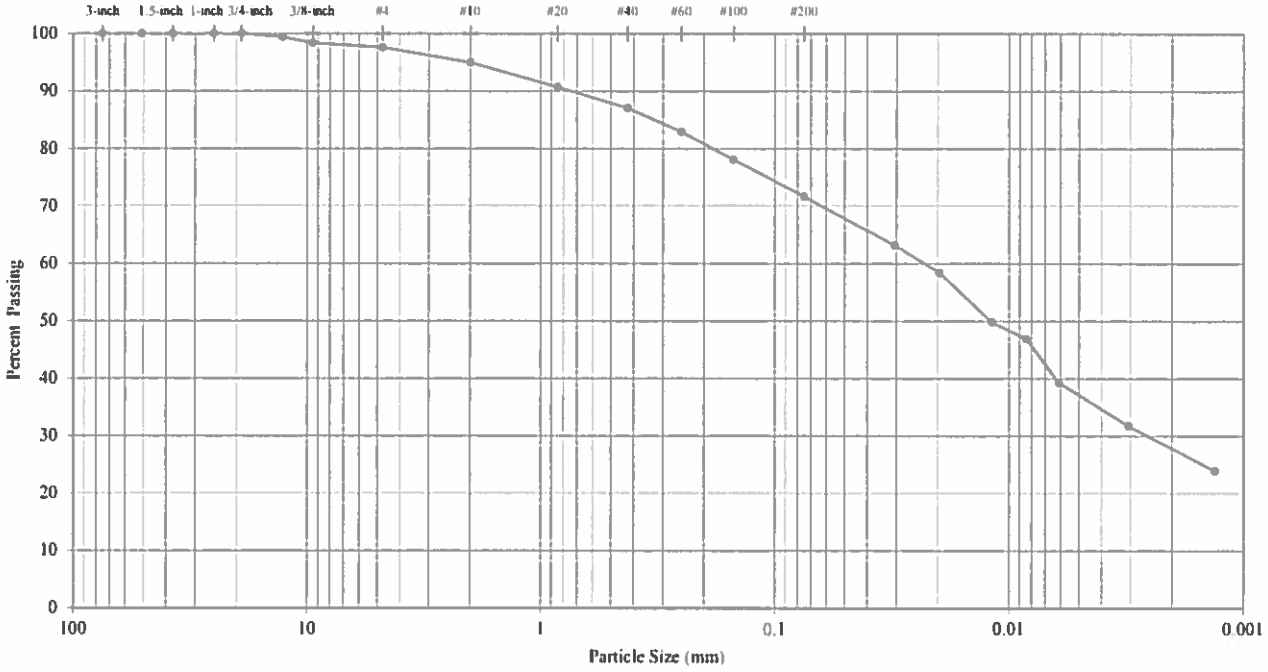
PARTICLE SIZE DISTRIBUTION & ATTERBERG LIMITS

ASTM D421, D422, D4318

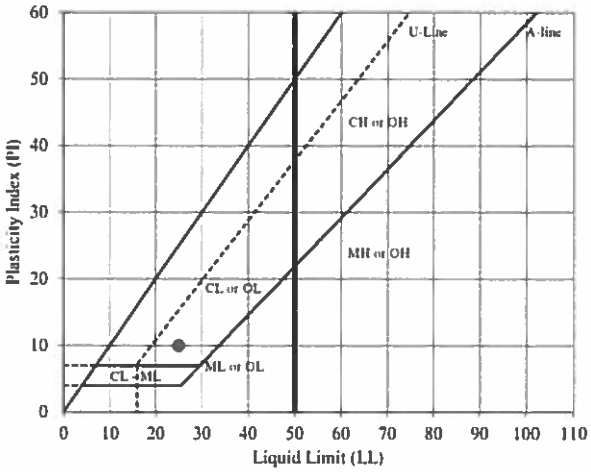
PROJECT NAME: **JR Whiting Pond 1&2**
SAMPLE ID: **PC-15** DEPTH (ft): **0.5-1.0**
TYPE: **Bulk**



Sieve	Particle Size (mm)	% Passing	Description	Percentage	
3-inch	75.0	100.0	Cobbles	0.00	
2-inch	50.8	100.0	Coarse Gravel	0.00	2.39
1.5-inch	37.5	100.0			
1-inch	25.0	100.0			
3/4-inch	19.0	100.0			
1/2-inch	12.7	99.4	Fine Gravel	2.39	
3/8-inch	9.5	98.4			
#4	4.75	97.6			
#10	2.0	95.0	Coarse Sand	2.64	25.92
#20	0.85	90.7	Medium Sand	7.92	
#40	0.425	87.1			
#60	0.25	82.9	Fine Sand	15.36	
#100	0.15	78.1			
#200	0.075	71.7			
	0.031	63.2	Silt or Clay Fines	71.69	
	0.020	58.4			
	0.012	49.8			
	0.008	46.9			
	0.006	39.3			
	0.003	31.8			
	0.001	24.0			

Sieve Analysis (Initial Separation on No. 4 Sieve)

Hydrometer Analysis



LL	PL	PI	LI
25	15	10	-0.19

USCS Description (ASTM D 2487):

Dark gray, LEAN CLAY WITH SAND, trace gravel

As-Received Moisture Content (%): 13.1

USCS Group Symbol: CL

Notes: (1) Particle size analysis sample Mechanically dispersed using Stirring Apparatus A for about 1 Minute.

(2) Sample prepared for Atterberg Limits testing by the dry method. Material retained on No. 40 sieve removed from Atterberg Limits sample by dry sieving. Plastic Limit test performed by hand rolling. Method A Liquid Limit test performed using manual device.

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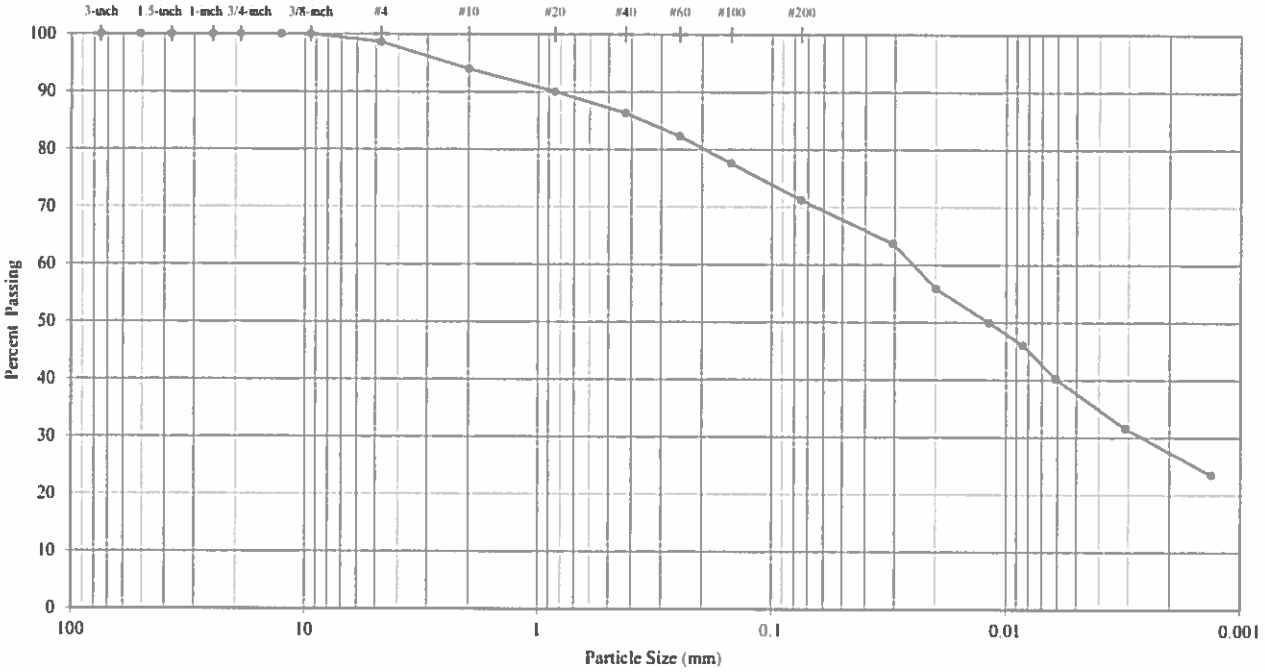
PARTICLE SIZE DISTRIBUTION & ATTERBERG LIMITS

ASTM D421, D422, D4318

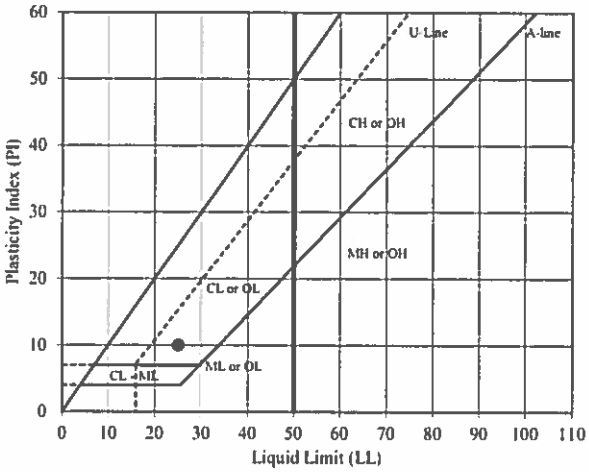
PROJECT NAME: JR Whiting Pond 1&2
SAMPLE ID: PC-16 DEPTH (ft): 0.5-1.0
TYPE: Bulk



Sieve	Particle Size (mm)	% Passing	Description	Percentage	
3-inch	75.0	100.0	Cobbles	0.00	
2-inch	50.8	100.0	Coarse Gravel	0.00	1.34
1.5-inch	37.5	100.0			
1-inch	25.0	100.0			
3/4-inch	19.0	100.0			
1/2-inch	12.7	100.0	Fine Gravel	1.34	
3/8-inch	9.5	100.0			
#4	4.75	98.7			
#10	2.0	94.0	Coarse Sand	4.66	27.43
#20	0.85	90.0	Medium Sand	7.67	
#40	0.425	86.3			
#60	0.25	82.3	Fine Sand	15.10	
#100	0.15	77.6			
#200	0.075	71.2			
	0.031	63.7	Silt or Clay Fines	71.23	
	0.020	55.9			
	0.012	50.0			
	0.008	46.0			
	0.006	40.2			
	0.003	31.5			
	0.001	23.5			

Sieve Analysis (Initial Separation on No. 4 Sieve)

Hydrometer Analysis



USCS Description (ASTM D 2487):

Dark gray, LEAN CLAY WITH SAND, trace gravel

LL	PL	PI	LI
25	15	10	-0.17

As-Received Moisture Content (%): 13.3

USCS Group Symbol: CL

Notes: (1) Particle size analysis sample Mechanically dispersed using Stirring Apparatus A for about 1 Minute.

(2) Sample prepared for Atterberg Limits testing by the dry method. Material retained on No. 40 sieve removed from Atterberg Limits sample by dry sieving. Plastic Limit test performed by hand rolling. Method A Liquid Limit test performed using manual device.

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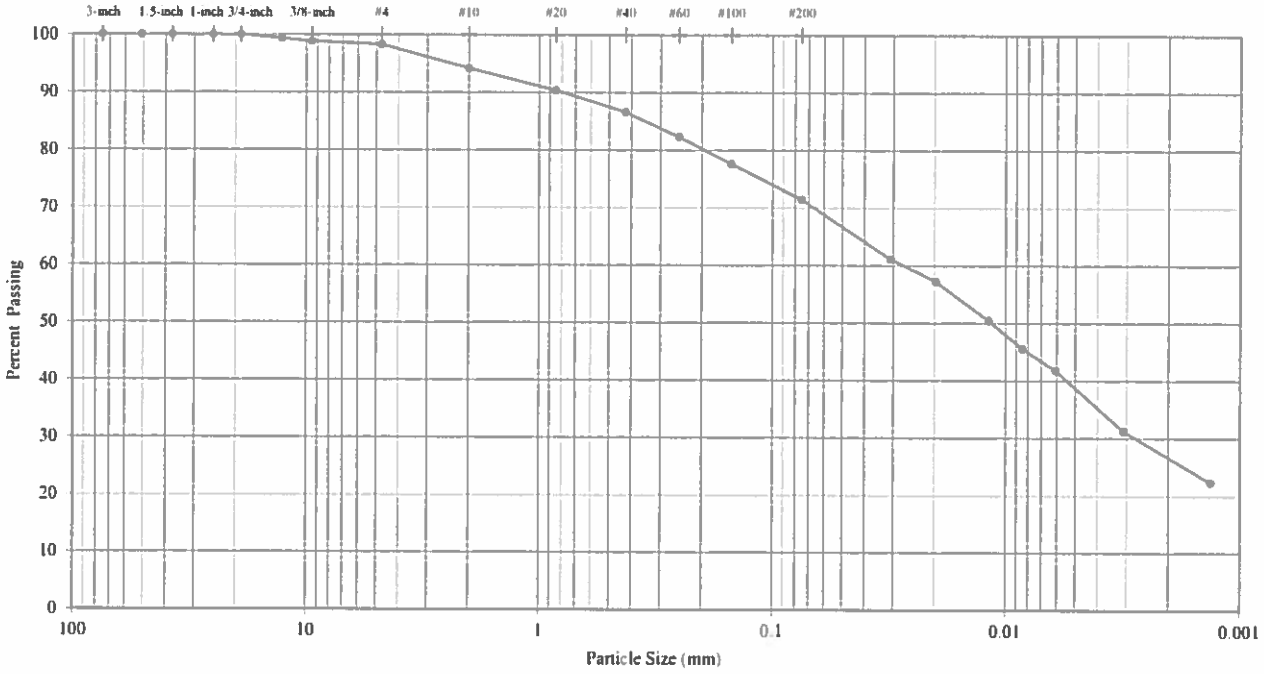
PARTICLE SIZE DISTRIBUTION & ATTERBERG LIMITS

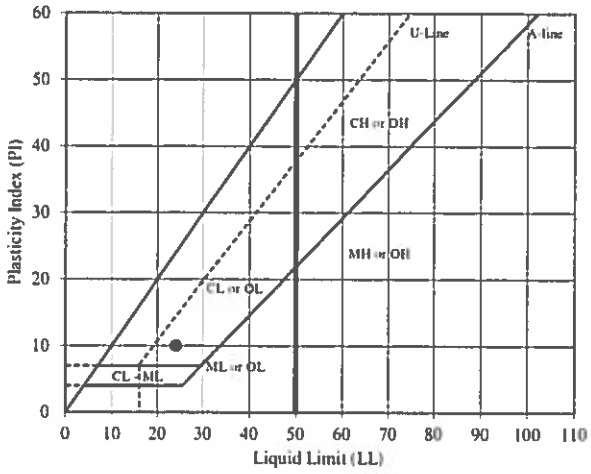
ASTM D421, D422, D4318

PROJECT NAME: JR Whiting Pond 1&2
SAMPLE ID: PC-17 DEPTH (ft): 0.5-1.0
TYPE: Bulk



Sieve	Particle Size (mm)	% Passing	Description	Percentage	
3-inch	75.0	100.0	Cobbles	0.00	
2-inch	50.8	100.0	Coarse Gravel	0.00	1.68
1.5-inch	37.5	100.0			
1-inch	25.0	100.0			
3/4-inch	19.0	100.0			
1/2-inch	12.7	99.4	Fine Gravel	1.68	
3/8-inch	9.5	98.9			
#4	4.75	98.3			
#10	2.0	94.2	Coarse Sand	4.13	26.94
#20	0.85	90.3	Medium Sand	7.61	
#40	0.425	86.6			
#60	0.25	82.3	Fine Sand	15.20	
#100	0.15	77.6			
#200	0.075	71.4			
Hydrometer Analysis	0.031	61.1	Silt or Clay Fines	71.38	
	0.020	57.2			
	0.012	50.5			
	0.008	45.6			
	0.006	41.7			
	0.003	31.2			
	0.001	22.3			

Sieve Analysis (Initial Separation on No. 4 Sieve)



USCS Description (ASTM D 2487):

Dark gray, LEAN CLAY WITH SAND, trace gravel

LL	PL	PI	LI
24	14	10	0.01

As-Received Moisture Content (%): 14.1

USCS Group Symbol: CL

Notes: (1) Particle size analysis sample Mechanically dispersed using Stirring Apparatus A for about 1 Minute.

(2) Sample prepared for Atterberg Limits testing by the dry method. Material retained on No. 40 sieve removed from Atterberg Limits sample by dry sieving. Plastic Limit test performed by hand rolling. Method A Liquid Limit test performed using manual device.

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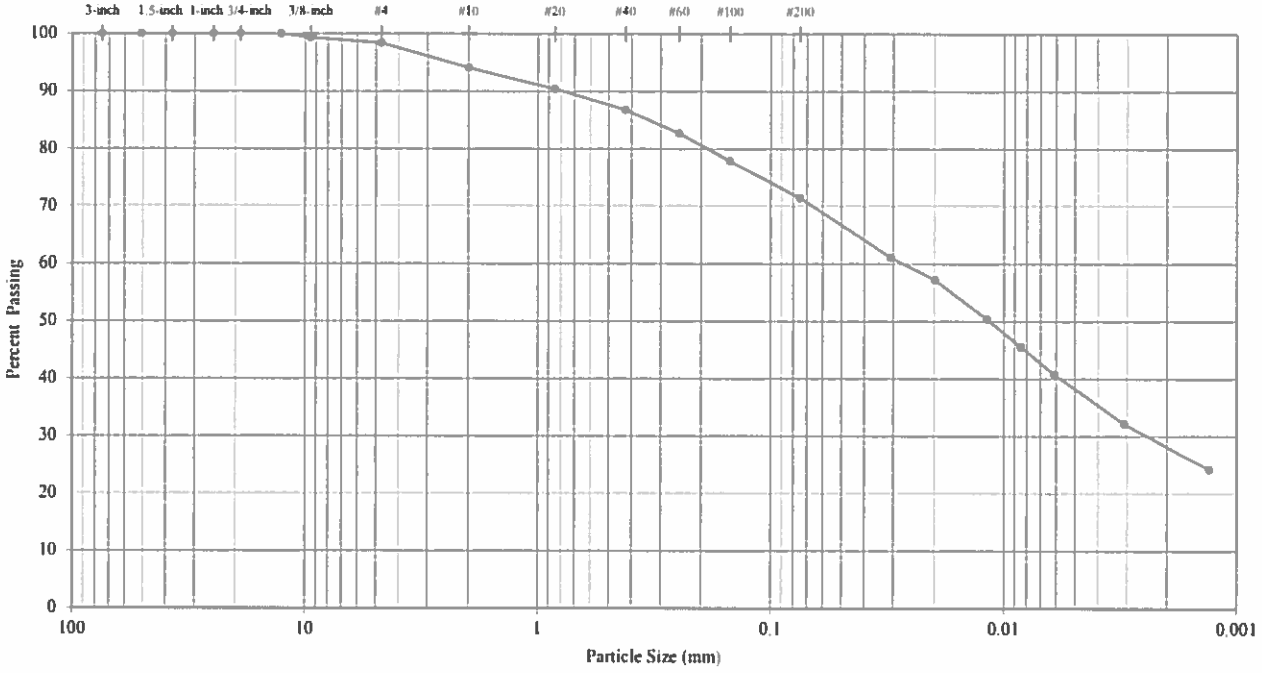
PARTICLE SIZE DISTRIBUTION & ATTERBERG LIMITS

ASTM D421, D422, D4318

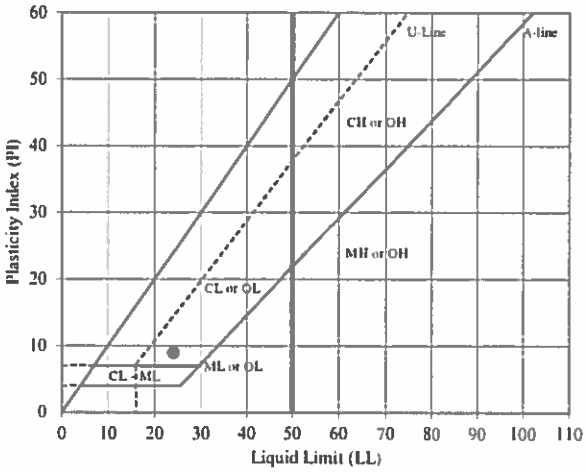
PROJECT NAME: **JR Whiting Pond 1&2**
SAMPLE ID: **PC-18** DEPTH (ft): **0.5-1.0**
TYPE: **Bulk**



Sieve	Particle Size (mm)	% Passing	Description	Percentage	
3-inch	75.0	100.0	Cobbles	0.00	
2-inch	50.8	100.0	Coarse Gravel	0.00	
1.5-inch	37.5	100.0			
1-inch	25.0	100.0			
3/4-inch	19.0	100.0			1.61
1/2-inch	12.7	100.0	Fine Gravel	1.61	
3/8-inch	9.5	99.3			
#4	4.75	98.4			
#10	2.0	94.1	Coarse Sand	4.32	
#20	0.85	90.4	Medium Sand	7.28	
#40	0.425	86.8			26.92
#60	0.25	82.7	Fine Sand	15.32	
#100	0.15	77.9			
#200	0.075	71.5			
	0.031	61.1	Silt or Clay Fines	71.47	
	0.020	57.2			
	0.012	50.5			
	0.008	45.5			
	0.006	40.8			
	0.003	32.2			
	0.001	24.2			

Sieve Analysis (Initial Separation on No. 4 Sieve)

Hydrometer Analysis



USCS Description (ASTM D 2487):

Dark gray, LEAN CLAY WITH SAND, trace gravel

LL	PL	PI	LI
24	15	9	-0.38

As-Received Moisture Content (%): 11.6

USCS Group Symbol: CL

Notes: (1) Particle size analysis sample Mechanically dispersed using Stirring Apparatus A for about 1 Minute.

(2) Sample prepared for Atterberg Limits testing by the dry method. Material retained on No. 40 sieve removed from Atterberg Limits sample by dry sieving. Plastic Limit test performed by hand rolling. Method A Liquid Limit test performed using manual device.

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APPENDIX D.3

Culvert Sand

Pond 1 and 2
Geotechnical Laboratory Test Results

Sample Identification	Sample Type	Sample Depth (ft)	Soil Classi-fication	In-situ Moisture %	Atterberg Limits				Grain Size Distribution		Modified Proctor		Specific Gravity	Unit Weight		Hydraulic Conductivity (cm/sec)	Additional Tests Conducted (See Notes)
Sample No.					LL	PL	PI	LI	% Finer #4 sieve	% Finer #200 sieve	Maximum Dry Density (pcf)	Optimum Moisture %		Dry (pcf)	Moisture %		
CS-1	Bulk	-	SP-SM	8.1	-	-	-	-	100.0	6.4	112.4	8.9	-	-	-	-	
CS-2	Bulk	-	SP-SM	16.2	-	-	-	-	99.9	7.9	-	-	-	-	-	-	
CS-3	Bulk	-	SP-SM	16.5	-	-	-	-	99.8	7.4	-	-	-	-	-	-	

ABBREVIATIONS:
LIQUID LIMIT (LL)
PLASTIC LIMIT (PL)
PLASTICITY INDEX (PI)
LIQUIDITY INDEX (LI)
SPECIFIC GRAVITY (Gs)
MOISTURE (Mc)

NOTES:
T = TRIAXIAL TEST
U = UNCONFINED COMPRESSION TEST
C = CONSOLIDATION TEST
DS = DIRECT SHEAR TEST
O = ORGANIC CONTENT
P = pH
NP = NON-PLASTIC
*Classified Visually

ASTM GRAIN SIZE ANALYSIS
ASTM D 421, D 2217, D 1140, C 117, D 422, C 136, C 142

PROJECT TITLE	JR Whiting Ponds 1 & 2	**SAMPLE ID**	CS-1
PROJECT NO.	1788523	**SAMPLE TYPE**	Bulk
REMARKS	Class IIA & Class IIIA	**SAMPLE DEPTH (ft)**	-

WATER CONTENT (Delivered Moisture)

Wt Wet Soil & Tare (gm)	(w1)	171.59
Wt Dry Soil & Tare (gm)	(w2)	162.57
Weight of Tare (gm)	(w3)	51.26
Weight of Water (gm)	(w4=w1-w2)	9.02
Weight of Dry Soil (gm)	(w5=w2-w3)	111.31
Moisture Content (%)	(w4/w5)*100	8.10

Hygroscopic Moisture For Sieve Sample

Wet Soil & Tare (gm)	1.00
Dry Soil & Tare (gm)	1.00
Tare Weight (gm)	0.00
Moisture Content (%)	0.00%

Total Weight Of Sample Used For Sieve Corrected For Hygroscopic Moisture

	Weight Of Sample (gm)	1129.04
	Tare Weight (gm)	369.75
(W6)	Total Dry Weight (gm)	759.29

SIEVE ANALYSIS

Tare Weight: 369.75

	Wt Ret +Tare	Cum. Ret. (Wt-Tare) (dry)	Cumulative (%Retained) {(wt ret/w6)*100}	% PASS (100-%ret)	SIEVE	
3.0"	369.75	0.00	0.00	100.00	3.0"	coarse gravel
2.5"	369.75	0.00	0.00	100.00	2.5"	coarse gravel
2.0"	369.75	0.00	0.00	100.00	2.0"	coarse gravel
1.5"	369.75	0.00	0.00	100.00	1.5"	coarse gravel
1.0"	369.75	0.00	0.00	100.00	1.0"	coarse gravel
0.75"	369.75	0.00	0.00	100.00	0.75"	fine gravel
0.50"	369.75	0.00	0.00	100.00	0.50"	fine gravel
0.375"	369.75	0.00	0.00	100.00	0.375"	fine gravel
#4	369.93	0.18	0.02	99.98	#4	coarse sand
#10	373.20	3.45	0.45	99.55	#10	medium sand
#20	382.68	12.93	1.70	98.30	#20	medium sand
#40	432.25	62.50	8.23	91.77	#40	fine sand
#60	631.94	262.19	34.53	65.47	#60	fine sand
#100	960.17	590.42	77.76	22.24	#100	fine sand
#200	1080.50	710.75	93.61	6.39	#200	fines

% C GRAVEL	0.00
% F GRAVEL	0.02
% C SAND	0.43
% M SAND	7.78
% F SAND	85.38
% FINES	6.39
% TOTAL	100.00

Descriptive Terms		
trace	0 to 5%	> 10% mostly coarse (c)
little	5 to 12%	> 10% mostly medium (m)
some	12 to 30%	< 10% fine (c-m)
and	30 to 50%	< 10% coarse (m-f)
		< 10% coarse and fine (m)
		< 10% coarse and medium (f)
		> 10% equal amounts each (c-f)

LL	-
PL	-
PI	-
Gs	-

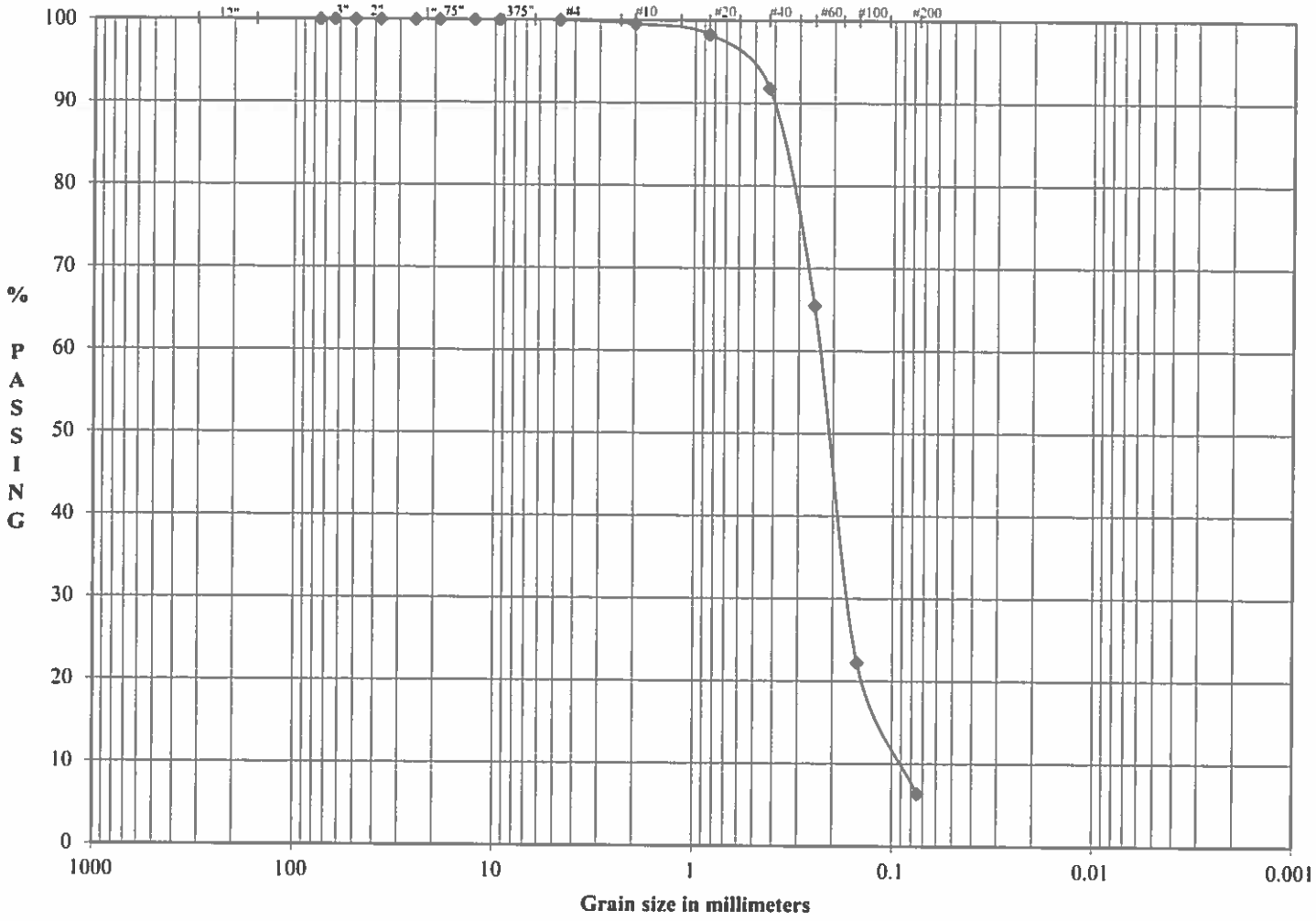
VISUAL DESCRIPTION: Brown, POORLY GRADED SAND WITH SILT, trace gravel

USCS: SP-SM

TECH	BB
DATE	6/17/2019
CHECK	
REVIEW	

** material finer than #4 sieve corrected for hygroscopic moisture.*

PARTICLE SIZE DISTRIBUTION ASTM D 421 AND D 422
US STANDARD SIEVE OPENING SIZES



		Coarse	Fine	Cor	Med	Fine	SILT OR CLAY
Boulders	Cobbles	GRAVEL		SAND			FINES
	0.00	0.00	0.02	0.43	7.78	85.38	6.39
		0.02		93.58			

SAMPLE ID	CS-1
SAMPLE TYPE	Bulk
SAMPLE DEPTH (ft)	-

LL	-
PL	-
PI	-

VISUAL DESCRIPTION	Brown, POORLY GRADED SAND WITH SILT, trace gravel
USCS	SP-SM

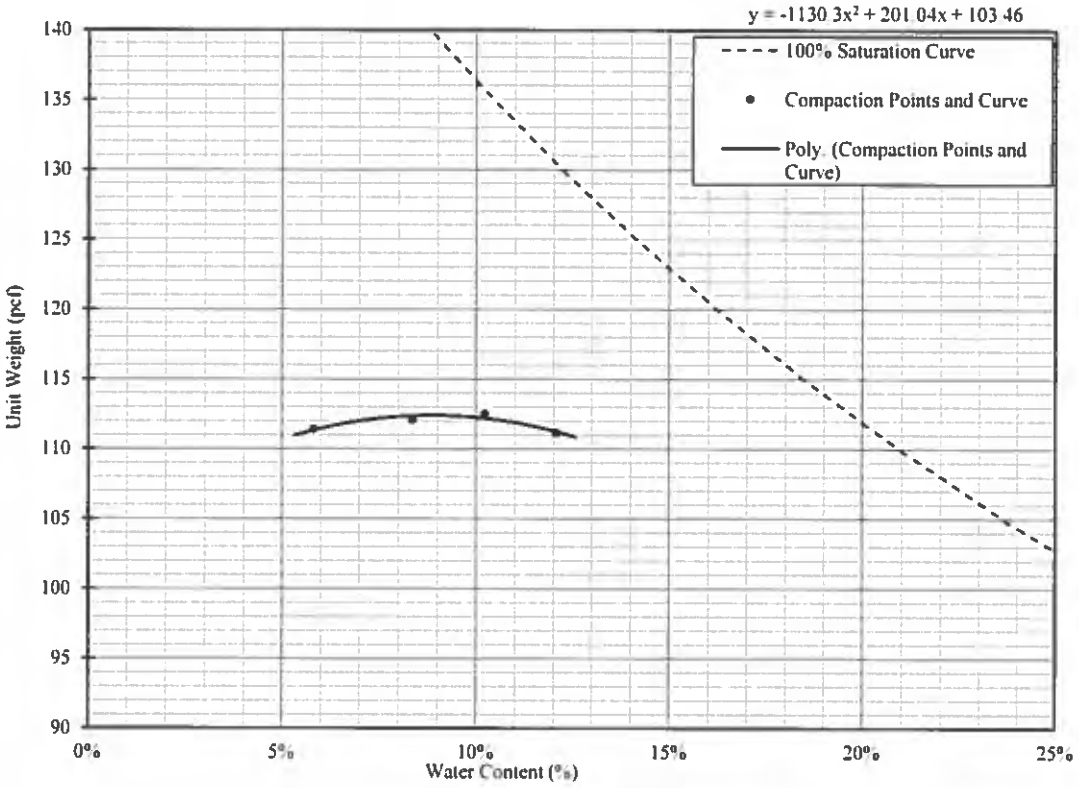
TECH	BB
DATE	6/17/2019
CHECK	BBS
REVIEW	JPJ

1788523

LABORATORY COMPACTION CHARACTERISTICS OF SOIL
ASTM D1557 - Method A

Mechanical Rammer	Moist Preparation

PROJECT NAME: JR Whiting Ponds 1 & 2
SAMPLE ID: CS-1
TYPE: Bulk
DEPTH (ft): -



% Test Fraction Passing #4 Sieve	99.98%
As-Received Moisture Content	8.1%
Specific Gravity (assumed)	2.80

Modified Maximum Dry Unit Weight (pcf)	112.4
Modified Optimum Water Content (%)	8.9%

Description: Brown, POORLY GRADED SAND WITH SILT, trace gravel

USCS: SP-SM

TECH	BB
DATE	6/17/2019
CHECK	
REVIEW	

ASTM GRAIN SIZE ANALYSIS
ASTM D 421, D 2217, D 1140, C 117, D 422, C 136, C 142

PROJECT TITLE	JR Whiting Ponds 1 & 2	**SAMPLE ID**	CS-2
PROJECT NO.	1788523	**SAMPLE TYPE**	Bulk
REMARKS	Class IIA & Class IIIA	**SAMPLE DEPTH (ft)**	0.5-1.0

WATER CONTENT (Delivered Moisture)

Wt Wet Soil & Tare (gm)	(w1)	1237.09
Wt Dry Soil & Tare (gm)	(w2)	1105.52
Weight of Tare (gm)	(w3)	295.11
Weight of Water (gm)	(w4=w1-w2)	131.57
Weight of Dry Soil (gm)	(w5=w2-w3)	810.41
Moisture Content (%)	(w4/w5)*100	16.23

Hygroscopic Moisture For Sieve Sample

Wet Soil & Tare (gm)	1.00
Dry Soil & Tare (gm)	1.00
Tare Weight (gm)	0.00
Moisture Content (%)	0.00%

Total Weight Of Sample Used For Sieve Corrected For Hygroscopic Moisture

	Weight Of Sample (gm)	1105.52
	Tare Weight (gm)	295.11
(W6)	Total Dry Weight (gm)	810.41

SIEVE ANALYSIS

Tare Weight: 295.11

	Wt Ret +Tare	Cum. Ret. (Wt-Tare) (dry)	Cumulative (%Retained) ((wt ret/w6)*100)	% PASS (100-%ret)	SIEVE	
3.0"	295.11	0.00	0.00	100.00	3.0"	coarse gravel
2.5"	295.11	0.00	0.00	100.00	2.5"	coarse gravel
2.0"	295.11	0.00	0.00	100.00	2.0"	coarse gravel
1.5"	295.11	0.00	0.00	100.00	1.5"	coarse gravel
1.0"	295.11	0.00	0.00	100.00	1.0"	coarse gravel
0.75"	295.11	0.00	0.00	100.00	0.75"	fine gravel
0.50"	295.11	0.00	0.00	100.00	0.50"	fine gravel
0.375"	295.11	0.00	0.00	100.00	0.375"	fine gravel
#4	296.00	0.89	0.11	99.89	#4	coarse sand
#10	297.05	1.94	0.24	99.76	#10	medium sand
#20	302.97	7.86	0.97	99.03	#20	medium sand
#40	336.70	41.59	5.13	94.87	#40	fine sand
#60	493.40	198.29	24.47	75.53	#60	fine sand
#100	780.05	484.94	59.84	40.16	#100	fine sand
#200	1041.42	746.31	92.09	7.91	#200	fines

% C GRAVEL	0.00
% F GRAVEL	0.11
% C SAND	0.13
% M SAND	4.89
% F SAND	86.96
% FINES	7.91
% TOTAL	100.00

Descriptive Terms		
trace	0 to 5%	
little	5 to 12%	
some	12 to 30%	
and	30 to 50%	

> 10% mostly coarse (c)
> 10% mostly medium (m)
< 10% fine (c-m)
< 10% coarse (m-f)
< 10% coarse and fine (m)
< 10% coarse and medium (f)
> 10% equal amounts each (c-f)

LL	-
PL	-
PI	-
Gs	-

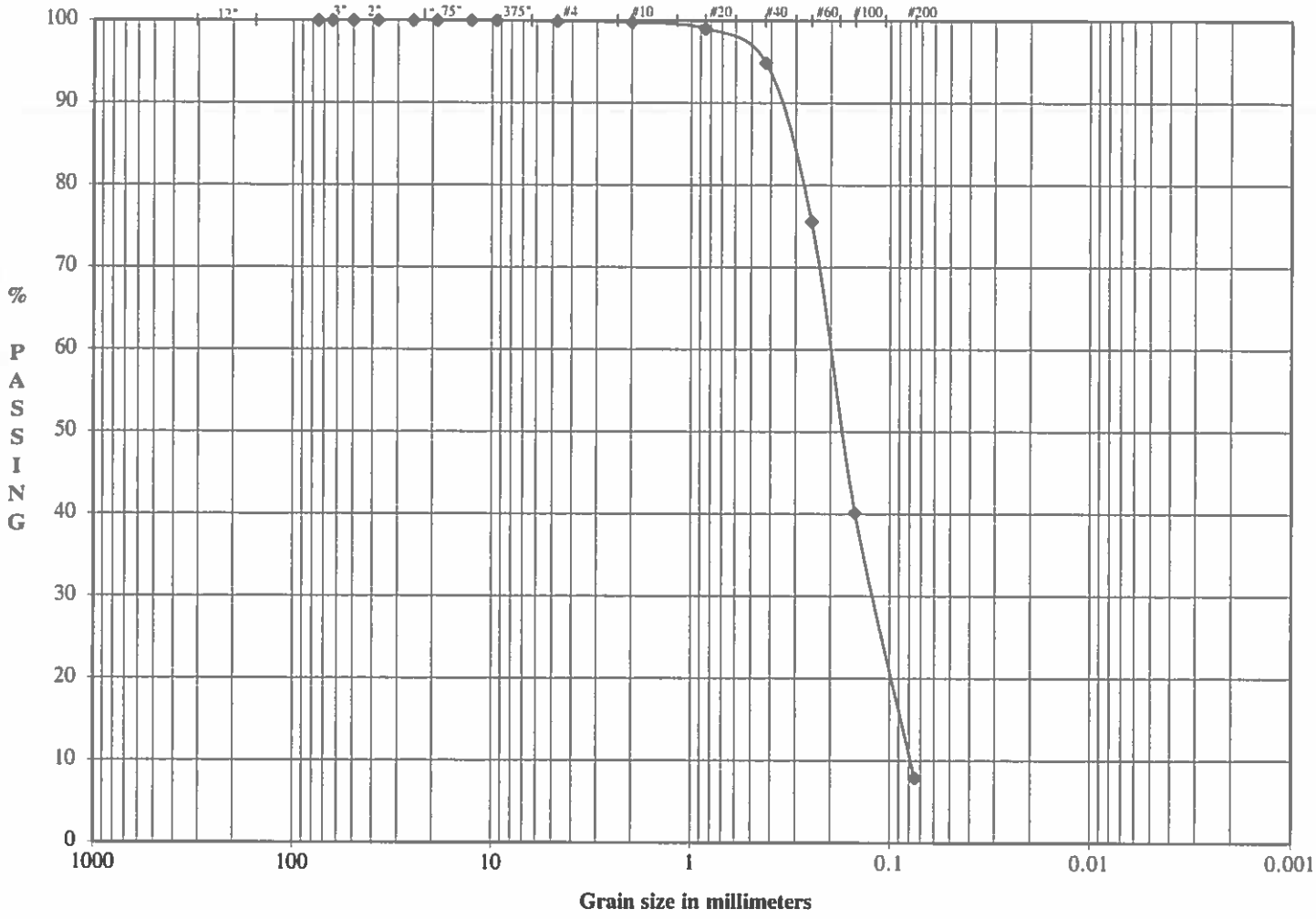
VISUAL DESCRIPTION: Brown, POORLY GRADED SAND WITH SILT, trace gravel

USCS: SP-SM

TECH	TDS
DATE	10/22/2019
CHECK	
REVIEW	

** material finer than #4 sieve corrected for hygroscopic moisture.*

PARTICLE SIZE DISTRIBUTION ASTM D 421 AND D 422
US STANDARD SIEVE OPENING SIZES



		Coarse	Fine	Cor	Med	Fine	SILT OR CLAY
Boulders	Cobbles	GRAVEL		SAND			FINES
	0.00	0.00	0.11	0.13	4.89	86.96	7.91
		0.11		91.98			

SAMPLE ID	CS-2
SAMPLE TYPE	Bulk
SAMPLE DEPTH (ft)	0.5-1.0

LL	-
PL	-
PI	-

VISUAL DESCRIPTION	Brown, POORLY GRADED SAND WITH SILT, trace gravel
USCS	SP-SM

TECH	TDS
DATE	10/22/2019
CHECK	
REVIEW	

ASTM GRAIN SIZE ANALYSIS
ASTM D 421, D 2217, D 1140, C 117, D 422, C 136, C 142

PROJECT TITLE	JR Whiting Ponds 1 & 2	**SAMPLE ID**	CS-3
PROJECT NO.	1788523	**SAMPLE TYPE**	Bulk
REMARKS	Class IIA & Class IIIA	**SAMPLE DEPTH (ft)**	0.5-1.0

WATER CONTENT (Delivered Moisture)

Wt Wet Soil & Tare (gm)	(w1)	1402.99
Wt Dry Soil & Tare (gm)	(w2)	1256.86
Weight of Tare (gm)	(w3)	373.15
Weight of Water (gm)	(w4=w1-w2)	146.13
Weight of Dry Soil (gm)	(w5=w2-w3)	883.71
Moisture Content (%)	(w4/w5)*100	16.54

Hygroscopic Moisture For Sieve Sample

Wet Soil & Tare (gm)	1.00
Dry Soil & Tare (gm)	1.00
Tare Weight (gm)	0.00
Moisture Content (%)	0.00%

Total Weight Of Sample Used For Sieve Corrected For Hygroscopic Moisture

	Weight Of Sample (gm)	1256.86
	Tare Weight (gm)	373.15
(W6)	Total Dry Weight (gm)	883.71

SIEVE ANALYSIS

Tare Weight: 373.15

	Wt Ret +Tare	Cum. Ret. (Wt-Tare) (dry)	Cumulative (%Retained) {(wt ret/w6)*100}	% PASS (100-%ret)	SIEVE	
3.0"	373.15	0.00	0.00	100.00	3.0"	coarse gravel
2.5"	373.15	0.00	0.00	100.00	2.5"	coarse gravel
2.0"	373.15	0.00	0.00	100.00	2.0"	coarse gravel
1.5"	373.15	0.00	0.00	100.00	1.5"	coarse gravel
1.0"	373.15	0.00	0.00	100.00	1.0"	coarse gravel
0.75"	373.15	0.00	0.00	100.00	0.75"	fine gravel
0.50"	373.15	0.00	0.00	100.00	0.50"	fine gravel
0.375"	373.15	0.00	0.00	100.00	0.375"	fine gravel
#4	373.30	0.15	0.02	99.98	#4	coarse sand
#10	373.81	0.66	0.07	99.93	#10	medium sand
#20	377.73	4.58	0.52	99.48	#20	medium sand
#40	407.28	34.13	3.86	96.14	#40	fine sand
#60	557.43	184.28	20.85	79.15	#60	fine sand
#100	892.39	519.24	58.76	41.24	#100	fine sand
#200	1191.81	818.66	92.64	7.36	#200	fines

% C GRAVEL	0.00
% F GRAVEL	0.02
% C SAND	0.06
% M SAND	3.79
% F SAND	88.78
% FINES	7.36
% TOTAL	100.00

Descriptive Terms	
trace	0 to 5%
little	5 to 12%
some	12 to 30%
and	30 to 50%

> 10% mostly coarse (c)
> 10% mostly medium (m)
< 10% fine (c-m)
< 10% coarse (m-f)
< 10% coarse and fine (m)
< 10% coarse and medium (f)
> 10% equal amounts each (c-f)

LL	-
PL	-
PI	-
Gs	-

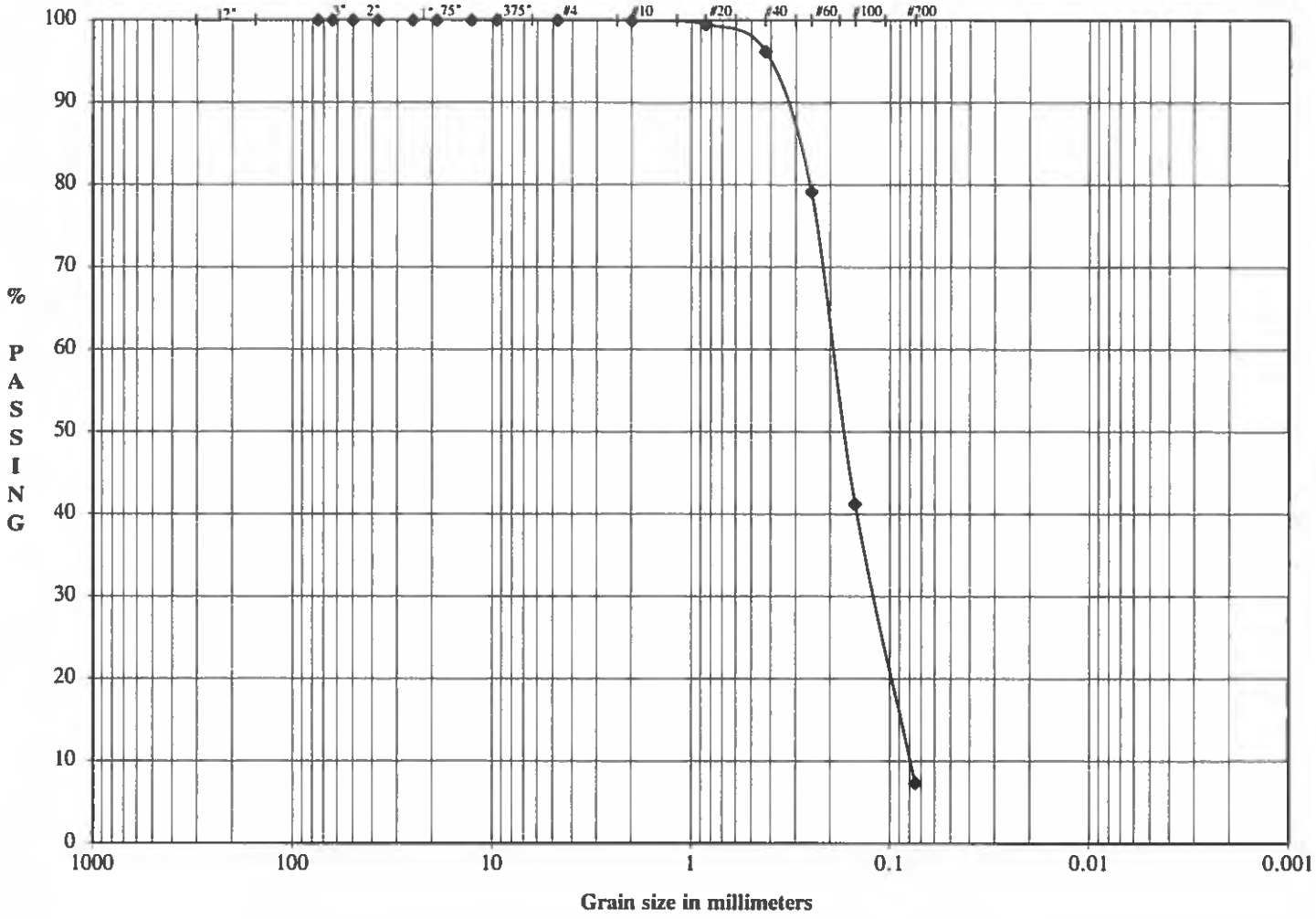
VISUAL DESCRIPTION: Brown, POORLY GRADED SAND WITH SILT, trace gravel

USCS: SP-SM

TECH	TDS
DATE	10/22/2019
CHECK	
REVIEW	

**** material finer than #4 sieve corrected for hygroscopic moisture.***

PARTICLE SIZE DISTRIBUTION ASTM D 421 AND D 422
US STANDARD SIEVE OPENING SIZES



		Coarse	Fine	Cor	Med	Fine	SILT OR CLAY
Boulders	Cobbles	GRAVEL		SAND			FINES
	0.00	0.00	0.02	0.06	3.79	88.78	7.36
		0.02		92.62			

SAMPLE ID	CS-3
SAMPLE TYPE	Bulk
SAMPLE DEPTH (ft)	0.5-1.0

LL	-
PL	-
PI	-

VISUAL DESCRIPTION	Brown, POORLY GRADED SAND WITH SILT, trace gravel
USCS	SP-SM

TECH	TDS
DATE	10/22/2019
CHECK	
REVIEW	

APPENDIX D.4

Sub-Base for Road

Pond 1 and 2

Geotechnical Laboratory Test Results

Sample Identification	Sample Type	Sample Depth (ft)	Soil Classi-fication	In-situ Moisture %	Atterberg Limits				Grain Size Distribution		Modified Proctor		Specific Gravity	Unit Weight		Hydraulic Conductivity (cm/sec)	Additional Tests Conducted (See Notes)
Sample No.					LL	PL	PI	LI	% Finer #4 sieve	% Finer #200 sieve	Maximum Dry Density (pcf)	Optimum Moisture %		Dry (pcf)	Moisture %		
CS-1	Bulk	-	SP-SM	8.1	-	-	-	-	100.0	6.4	112.4	8.9	-	-	-	-	

ABBREVIATIONS:
- LIQUID LIMIT (LL)
- PLASTIC LIMIT (PL)
- PLASTICITY INDEX (PI)
- LIQUIDITY INDEX (LI)
- SPECIFIC GRAVITY (Gs)
- MOISTURE (Mc)

NOTES:
- T = TRIAXIAL TEST
- U = UNCONFINED COMPRESSION TEST
- C = CONSOLIDATION TEST
- DS = DIRECT SHEAR TEST
- O = ORGANIC CONTENT
- P = pH
- NP = NON-PLASTIC
- * Classified Visually

ASTM GRAIN SIZE ANALYSIS
ASTM D 421, D 2217, D 1140, C 117, D 422, C 136, C 142

PROJECT TITLE	JR Whiting Ponds 1 & 2	**SAMPLE ID**	CS-1
PROJECT NO.	1788523	**SAMPLE TYPE**	Bulk
REMARKS	Class IIA & Class IIIA	**SAMPLE DEPTH (ft)**	-

WATER CONTENT (Delivered Moisture)

Wt Wet Soil & Tare (gm)	(w1)	171.59
Wt Dry Soil & Tare (gm)	(w2)	162.57
Weight of Tare (gm)	(w3)	51.26
Weight of Water (gm)	(w4=w1-w2)	9.02
Weight of Dry Soil (gm)	(w5=w2-w3)	111.31
Moisture Content (%)	(w4/w5)*100	8.10

Hygroscopic Moisture For Sieve Sample

Wet Soil & Tare (gm)	1.00
Dry Soil & Tare (gm)	1.00
Tare Weight (gm)	0.00
Moisture Content (%)	0.00%

Total Weight Of Sample Used For Sieve Corrected For Hygroscopic Moisture

	Weight Of Sample (gm)	1129.04
	Tare Weight (gm)	369.75
(W6)	Total Dry Weight (gm)	759.29

SIEVE ANALYSIS

Tare Weight: 369.75

	Wt Ret +Tare	Cum. Ret. (Wt-Tare) (dry)	Cumulative (%Retained) ((wt ret/w6)*100)	% PASS (100-%ret)	SIEVE	
3.0"	369.75	0.00	0.00	100.00	3.0"	coarse gravel
2.5"	369.75	0.00	0.00	100.00	2.5"	coarse gravel
2.0"	369.75	0.00	0.00	100.00	2.0"	coarse gravel
1.5"	369.75	0.00	0.00	100.00	1.5"	coarse gravel
1.0"	369.75	0.00	0.00	100.00	1.0"	coarse gravel
0.75"	369.75	0.00	0.00	100.00	0.75"	fine gravel
0.50"	369.75	0.00	0.00	100.00	0.50"	fine gravel
0.375"	369.75	0.00	0.00	100.00	0.375"	fine gravel
#4	369.93	0.18	0.02	99.98	#4	coarse sand
#10	373.20	3.45	0.45	99.55	#10	medium sand
#20	382.68	12.93	1.70	98.30	#20	medium sand
#40	432.25	62.50	8.23	91.77	#40	fine sand
#60	631.94	262.19	34.53	65.47	#60	fine sand
#100	960.17	590.42	77.76	22.24	#100	fine sand
#200	1080.50	710.75	93.61	6.39	#200	fines

% C GRAVEL	0.00
% F GRAVEL	0.02
% C SAND	0.43
% M SAND	7.78
% F SAND	85.38
% FINES	6.39
% TOTAL	100.00

Descriptive Terms		
trace	0 to 5%	> 10% mostly coarse (c)
little	5 to 12%	> 10% mostly medium (m)
some	12 to 30%	< 10% fine (c-m)
and	30 to 50%	< 10% coarse (m-f)
		< 10% coarse and fine (m)
		< 10% coarse and medium (f)
		> 10% equal amounts each (c-f)

LL	-
PL	-
PI	-
Gs	-

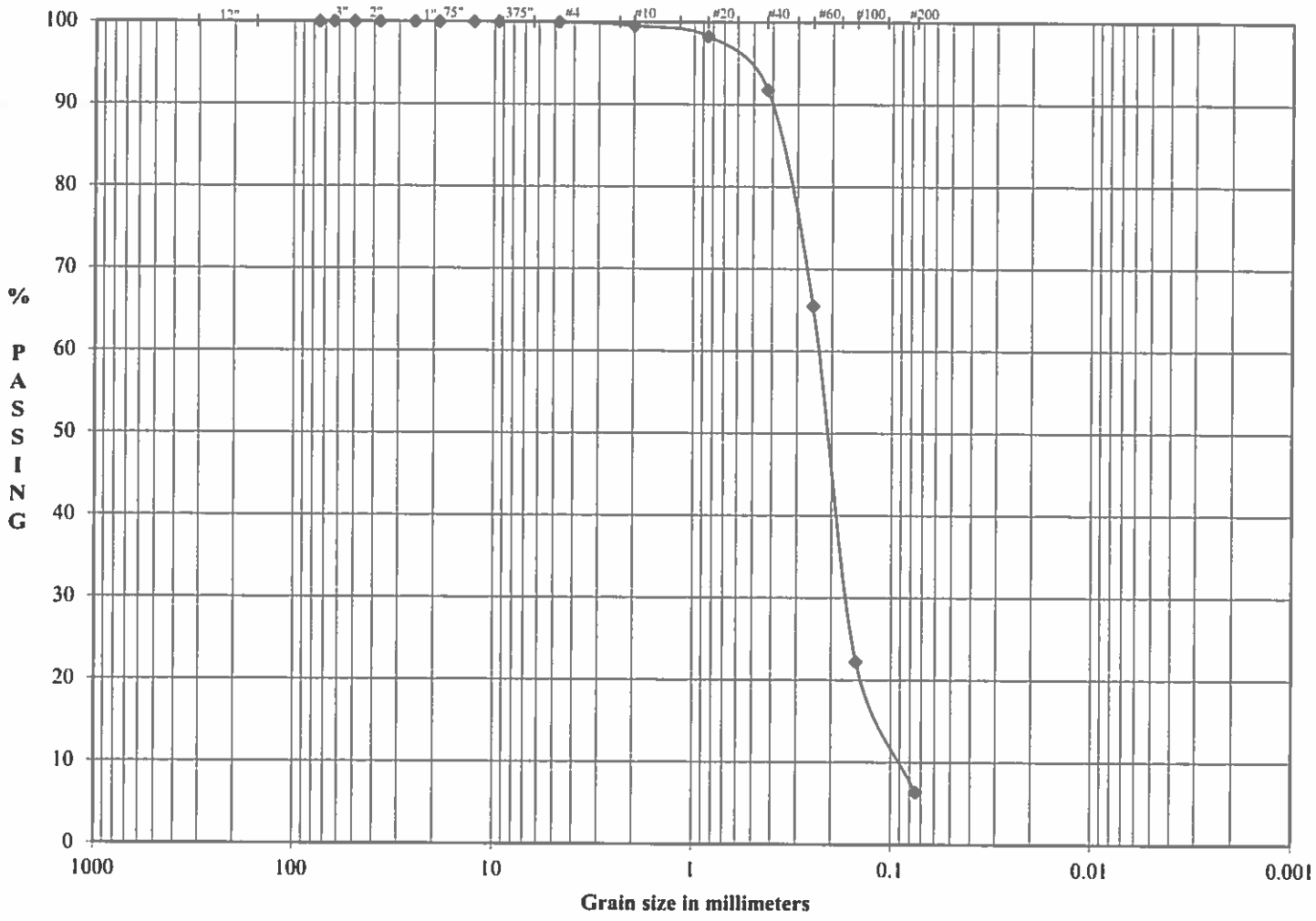
VISUAL DESCRIPTION: Brown, POORLY GRADED SAND WITH SILT, trace gravel

USCS: SP-SM

TECH	BB
DATE	6/17/2019
CHECK	
REVIEW	

** material finer than #4 sieve corrected for hygroscopic moisture.*

PARTICLE SIZE DISTRIBUTION ASTM D 421 AND D 422
US STANDARD SIEVE OPENING SIZES



		Coarse	Fine	Cor	Med	Fine	SILT OR CLAY
Boulders	Cobbles	GRAVEL		SAND			FINES
	0.00	0.00	0.02	0.43	7.78	85.38	6.39
		0.02		93.58			

SAMPLE ID	CS-1
SAMPLE TYPE	Bulk
SAMPLE DEPTH (ft)	-

LL	-
PL	-
PI	-

VISUAL DESCRIPTION	Brown, POORLY GRADED SAND WITH SILT, trace gravel
USCS	SP-SM

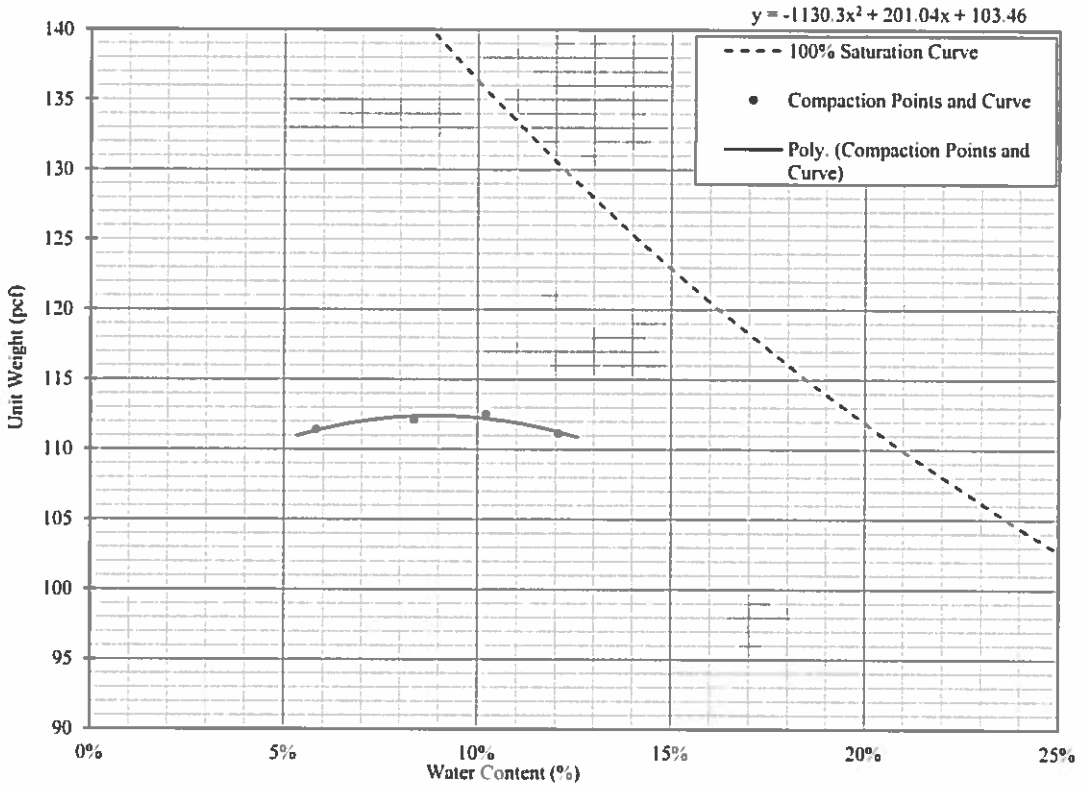
TECH	BB
DATE	6/17/2019
CHECK	BBS
REVIEW	JPO

1788523

LABORATORY COMPACTION CHARACTERISTICS OF SOIL
ASTM D1557 - Method A

Mechanical Rammer	Moist Preparation

PROJECT NAME: JR Whiting Ponds 1 & 2
SAMPLE ID: CS-1
TYPE: Bulk
DEPTH (ft): -



% Test Fraction Passing #4 Sieve	99.98%
As-Received Moisture Content	8.1%
Specific Gravity (assumed)	2.80

Modified Maximum Dry Unit Weight (pcf)	112.4
Modified Optimum Water Content (%)	8.9%

Description	Brown, POORLY GRADED SAND WITH SILT, trace gravel
USCS	SP-SM

TECH	BB
DATE	6/17/2019
CHECK	
REVIEW	

APPENDIX D.5

Road Base Material

Pond 1 and 2
Geotechnical Laboratory Test Results

Sample Identification	Sample Type	Sample Depth (ft)	Soil Classi-fication	In-situ Moisture %	Atterberg Limits				Grain Size Distribution		Modified Proctor		Specific Gravity	Unit Weight		Hydraulic Conductivity (cm/sec)	Additional Tests Conducted (See Notes)
Sample No.					LL	PL	PI	LI	% Finer #4 sieve	% Finer #200 sieve	Maximum Dry Density (pcf)	Optimum Moisture %		Dry (pcf)	Moisture %		
RB-1	Bulk	-	GW-GM	3.4	-	-	-	-	46.7	5.6	139.0	8.4	-	-	-	-	
RB-2	Bulk	2.0"-6.0"	GW-GM	2.6	-	-	-	-	49.7	8.9	134.4	2.5	-	-	-	-	

ABBREVIATIONS:
LIQUID LIMIT (LL)
PLASTIC LIMIT (PL)
PLASTICITY INDEX (PI)
LIQUIDITY INDEX (LI)
SPECIFIC GRAVITY (Gs)
MOISTURE (Mc)

NOTES:
T = TRIAXIAL TEST
U = UNCONFINED COMPRESSION TEST
C = CONSOLIDATION TEST
DS = DIRECT SHEAR TEST
O = ORGANIC CONTENT
P = pH
NP = NON-PLASTIC
*Classified Visually

ASTM GRAIN SIZE ANALYSIS
ASTM D 421, D 2217, D 1140, C 117, D 422, C 136, C 142

PROJECT TITLE	JR Whiting Ponds 1&2	**SAMPLE ID**	RB-1
PROJECT NO.	1788523	**SAMPLE TYPE**	Bulk
REMARKS	23A	**SAMPLE DEPTH (ft)**	-

WATER CONTENT (Delivered Moisture)

Wt Wet Soil & Tare (gm)	(w1)	3298.20
Wt Dry Soil & Tare (gm)	(w2)	3203.75
Weight of Tare (gm)	(w3)	426.60
Weight of Water (gm)	(w4=w1-w2)	94.45
Weight of Dry Soil (gm)	(w5=w2-w3)	2777.15
Moisture Content (%)	(w4/w5)*100	3.40

Hygroscopic Moisture For Sieve Sample

Wet Soil & Tare (gm)	1.00
Dry Soil & Tare (gm)	1.00
Tare Weight (gm)	0.00
Moisture Content (%)	0.00%

Total Weight Of Sample Used For Sieve Corrected For Hygroscopic Moisture

	Weight Of Sample (gm)	3203.75
	Tare Weight (gm)	426.60
(W6)	Total Dry Weight (gm)	2777.15

SIEVE ANALYSIS

Tare Weight: 426.60

	Wt Ret +Tare	Cum. Ret. (Wt-Tare) (dry)	Cumulative (%Retained) [(wt ret/w6)*100]	% PASS (100-%ret)	SIEVE	
3.0"	426.60	0.00	0.00	100.00	3.0"	coarse gravel
2.5"	426.60	0.00	0.00	100.00	2.5"	coarse gravel
2.0"	426.60	0.00	0.00	100.00	2.0"	coarse gravel
1.5"	426.60	0.00	0.00	100.00	1.5"	coarse gravel
1.0"	426.60	0.00	0.00	100.00	1.0"	coarse gravel
0.75"	641.60	215.00	7.74	92.26	0.75"	fine gravel
0.50"	1188.23	761.63	27.42	72.58	0.50"	fine gravel
0.375"	1432.08	1005.48	36.21	63.79	0.375"	fine gravel
#4	1905.58	1478.98	53.26	46.74	#4	coarse sand
#8	2256.66	1830.06	65.90	34.10	#8	coarse sand
#20	2578.94	2152.34	77.50	22.50	#20	medium sand
#40	2723.18	2296.58	82.70	17.30	#40	fine sand
#60	2804.73	2378.13	85.63	14.37	#60	fine sand
#100	2917.18	2490.58	89.68	10.32	#100	fine sand
#200	3048.49	2621.89	94.41	5.59	#200	fines

% C GRAVEL	7.74
% F GRAVEL	45.51
% C SAND	12.64
% M SAND	16.80
% F SAND	11.71
% FINES	5.59
% TOTAL	100.00

Descriptive Terms		
trace	0 to 5%	> 10% mostly coarse (c)
little	5 to 12%	> 10% mostly medium (m)
some	12 to 30%	< 10% fine (c-m)
and	30 to 50%	< 10% coarse (m-f)
		< 10% coarse and fine (m)
		< 10% coarse and medium (f)
		> 10% equal amounts each (c-f)

LL	-
PL	-
PI	-
Gs	-

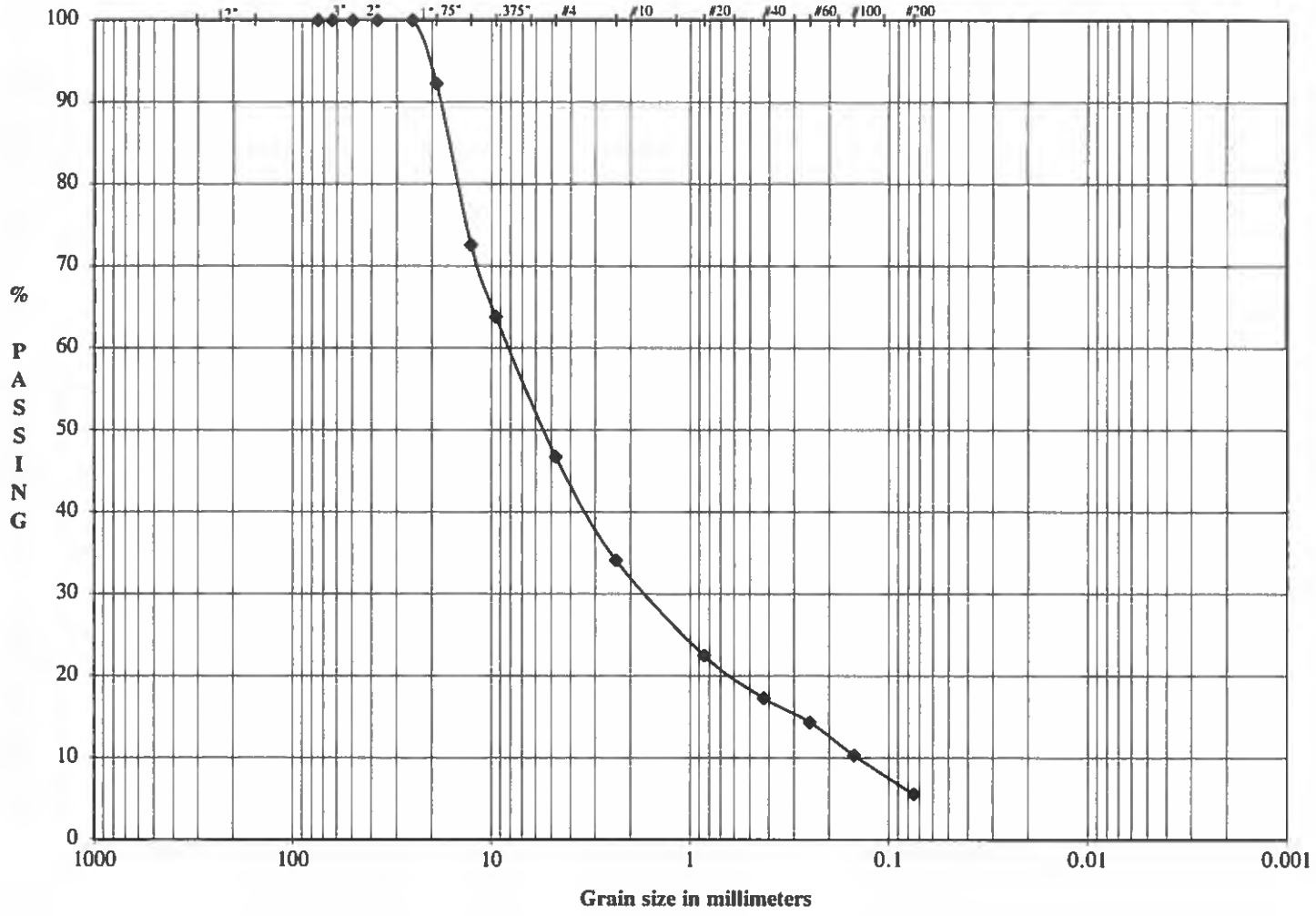
VISUAL DESCRIPTION: Gray, WELL GRADED GRAVEL WITH SILT AND SAND

USCS: GW-GM

TECH	BB
DATE	6/21/2019
CHECK	
REVIEW	

**** material finer than #4 sieve corrected for hygroscopic moisture.***

PARTICLE SIZE DISTRIBUTION ASTM D 421 AND D 422
US STANDARD SIEVE OPENING SIZES



		Coarse	Fine	Cor	Med	Fine	SILT OR CLAY
Boulders	Cobbles	GRAVEL		SAND			FINES
	0.00	7.74	45.51	12.64	16.80	11.71	5.59
		53.26		41.15			

SAMPLE ID	RB-1
SAMPLE TYPE	Bulk
SAMPLE DEPTH (ft)	-

LL	-
PL	-
PI	-

VISUAL DESCRIPTION	Gray, WELL GRADED GRAVEL WITH SILT AND SAND
USCS	GW-GM

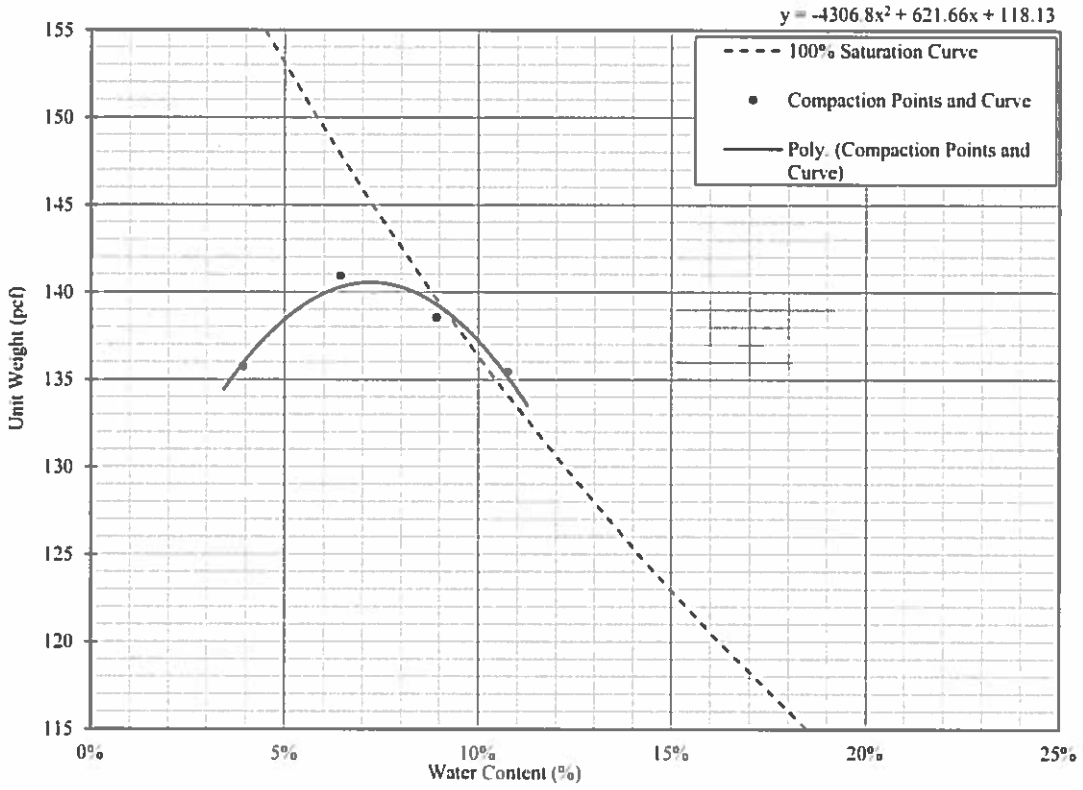
TECH	BB
DATE	6/21/2019
CHECK	
REVIEW	

1788523

LABORATORY COMPACTION CHARACTERISTICS OF SOIL
ASTM D1557 - Method C

Manual Rammer	Preparation

PROJECT NAME: JR Whiting Ponds 1&2
SAMPLE ID: RB-1 DEPTH (ft): -
TYPE: Bulk



% Test Fraction Passing 3/4-inch Sieve	37%
As-Received Moisture Content	3%
Specific Gravity (assumed)	2.80

Modified Maximum Dry Unit Weight (pcf)	139.0
Modified Optimum Water Content (%)	8.4%

Visual Description: Gray, WELL GRADED GRAVEL WITH SILT AND SAND

USCS: GW-GM

TECH	BB
DATE	6/20/2019
CHECK	
REVIEW	

ASTM GRAIN SIZE ANALYSIS
ASTM D 421, D 2217, D 1140, C 117, D 422, C 136, C 142

PROJECT TITLE	JR Whiting Ponds 1&2	**SAMPLE ID**	RB-2
PROJECT NO.	1788523	**SAMPLE TYPE**	Bulk
REMARKS	23A	**SAMPLE DEPTH (ft)**	2.0"-6.0"

WATER CONTENT (Delivered Moisture)

Wt Wet Soil & Tare (gm)	(w1)	3574.78
Wt Dry Soil & Tare (gm)	(w2)	3494.06
Weight of Tare (gm)	(w3)	358.68
Weight of Water (gm)	(w4=w1-w2)	80.72
Weight of Dry Soil (gm)	(w5=w2-w3)	3135.38
Moisture Content (%)	(w4/w5)*100	2.57

Hygroscopic Moisture For Sieve Sample

Wet Soil & Tare (gm)	1.00
Dry Soil & Tare (gm)	1.00
Tare Weight (gm)	0.00
Moisture Content (%)	0.00%

Total Weight Of Sample Used For Sieve Corrected For Hygroscopic Moisture

	Weight Of Sample (gm)	3494.06
	Tare Weight (gm)	358.68
(W6)	Total Dry Weight (gm)	3135.38

SIEVE ANALYSIS

Tare Weight: 358.68

	Wt Ret +Tare	Cum. Ret. (Wt-Tare) (dry)	Cumulative (%Retained) [(wt ret/w6)*100]	% PASS (100-%ret)	SIEVE	
3.0"	358.68	0.00	0.00	100.00	3.0"	coarse gravel
2.5"	358.68	0.00	0.00	100.00	2.5"	coarse gravel
2.0"	358.68	0.00	0.00	100.00	2.0"	coarse gravel
1.5"	358.68	0.00	0.00	100.00	1.5"	coarse gravel
1.0"	358.68	0.00	0.00	100.00	1.0"	coarse gravel
0.75"	498.63	139.95	4.46	95.54	0.75"	fine gravel
0.50"	1006.82	648.14	20.67	79.33	0.50"	fine gravel
0.375"	1321.92	963.24	30.72	69.28	0.375"	fine gravel
#4	1937.06	1578.38	50.34	49.66	#4	coarse sand
#8	2338.75	1980.07	63.15	36.85	#8	coarse sand
#20	2710.43	2351.75	75.01	24.99	#20	medium sand
#40	2882.43	2523.75	80.49	19.51	#40	fine sand
#60	2973.53	2614.85	83.40	16.60	#60	fine sand
#100	3054.66	2695.98	85.99	14.01	#100	fine sand
#200	3215.59	2856.91	91.12	8.88	#200	fines

% C GRAVEL	4.46
% F GRAVEL	45.88
% C SAND	12.81
% M SAND	17.34
% F SAND	10.63
% FINES	8.88
% TOTAL	100.00

Descriptive Terms		
trace	0 to 5%	
little	5 to 12%	
some	12 to 30%	
and	30 to 50%	

> 10% mostly coarse (c)
> 10% mostly medium (m)
< 10% fine (c-m)
< 10% coarse (m-f)
< 10% coarse and fine (m)
< 10% coarse and medium (f)
> 10% equal amounts each (c-f)

LL	-
PL	-
PI	-
Gs	-

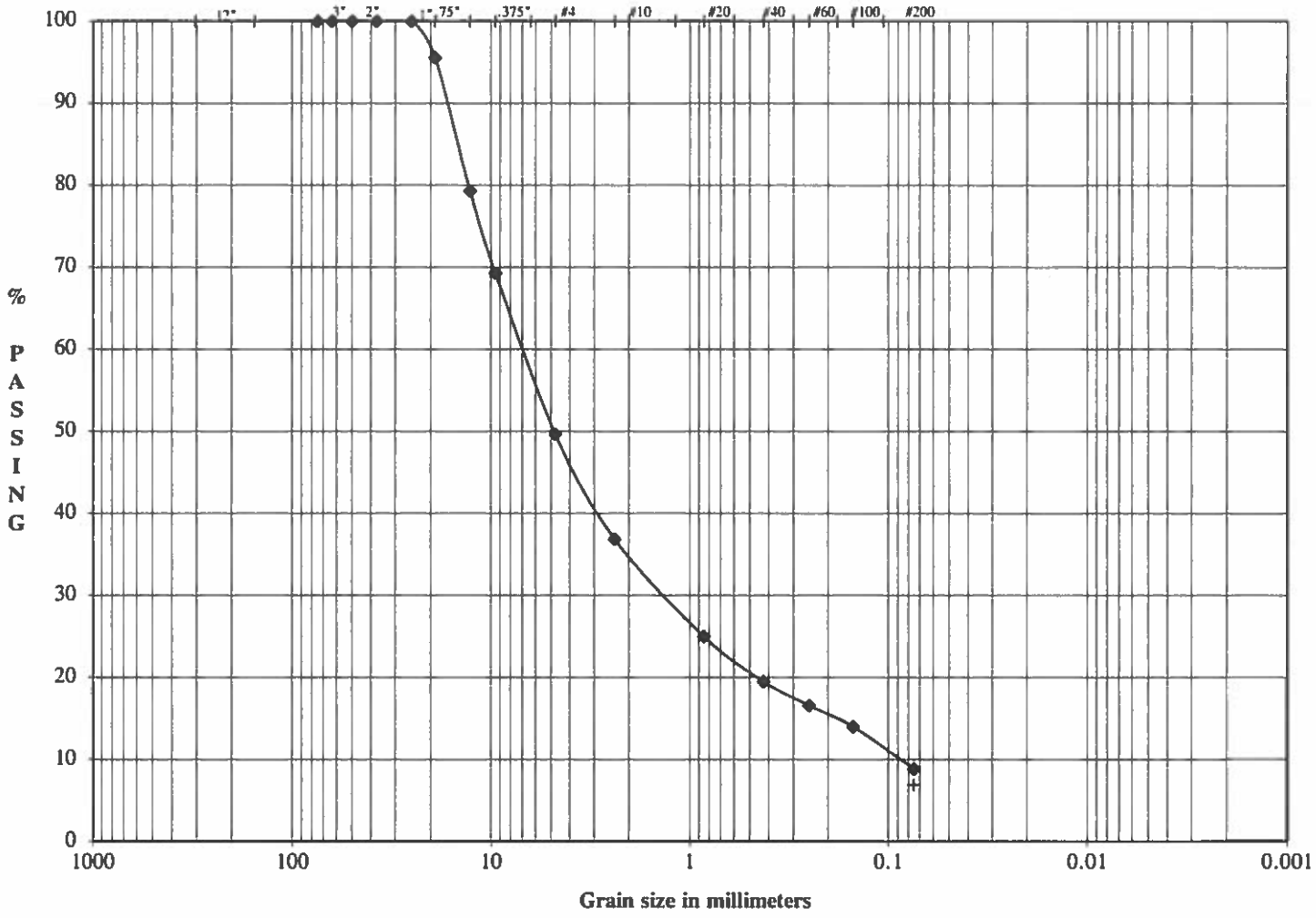
VISUAL DESCRIPTION: Gray, WELL GRADED GRAVEL WITH SILT AND SAND

USCS: GW-GM

TECH	TDS
DATE	10/31/2019
CHECK	
REVIEW	

** material finer than #4 sieve corrected for hygroscopic moisture.*

PARTICLE SIZE DISTRIBUTION ASTM D 421 AND D 422
US STANDARD SIEVE OPENING SIZES



		Coarse	Fine	Cor	Med	Fine	SILT OR CLAY
Boulders	Cobbles	GRAVEL		SAND			FINES
	0.00	4.46	45.88	12.81	17.34	10.63	8.88
		50.34		40.78			

SAMPLE ID	RB-2
SAMPLE TYPE	Bulk
SAMPLE DEPTH (ft)	2.0"-6.0"

LL	-
PL	-
PI	-

VISUAL DESCRIPTION	Gray, WELL GRADED GRAVEL WITH SILT AND SAND
USCS	GW-GM

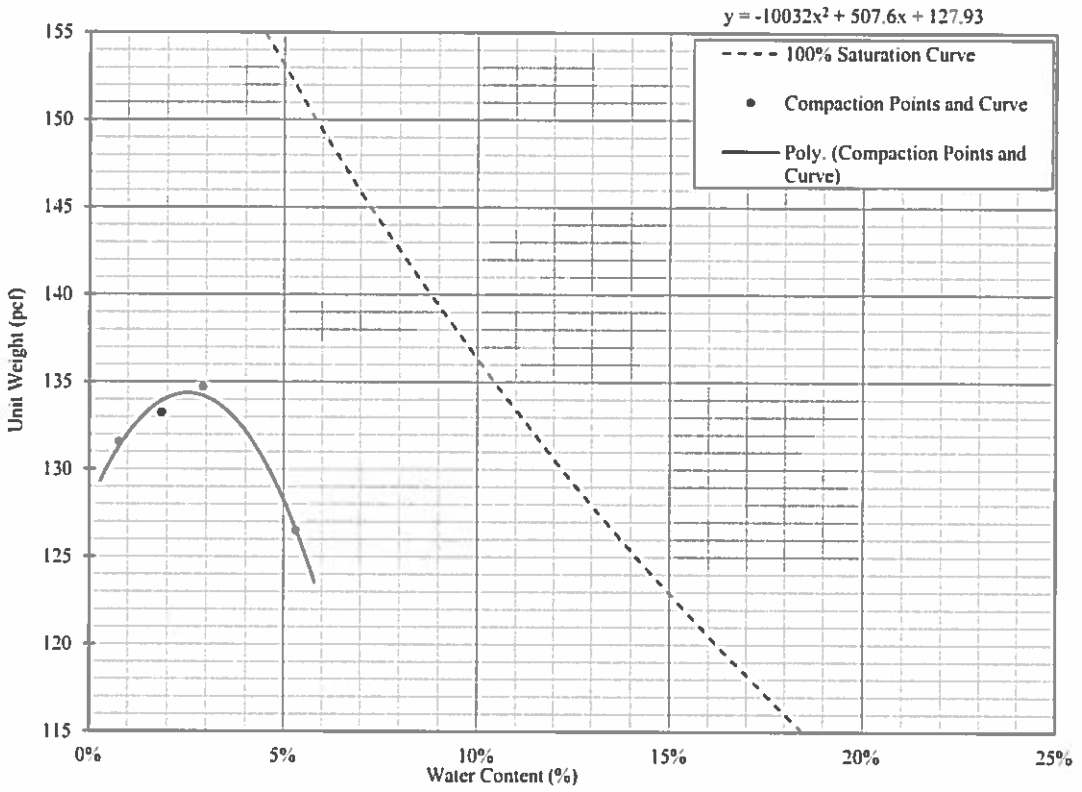
TECH	TDS
DATE	10/31/2019
CHECK	
REVIEW	

1788523

LABORATORY COMPACTION CHARACTERISTICS OF SOIL
ASTM D1557 - Method C

Manual Rammer	Preparation

PROJECT NAME: JR Whiting Ponds 1&2
SAMPLE ID: RB-2 DEPTH (ft): 2.0"-6.0"
TYPE: Bulk



% Test Fraction Passing 3/4-inch Sieve	96%
As-Received Moisture Content	3%
Specific Gravity (assumed)	2.80

Modified Maximum Dry Unit Weight (pcf)	134.4
Modified Optimum Water Content (%)	2.5%

Visual Description: Gray, WELL GRADED GRAVEL WITH SILT AND SAND

USCS: GW-GM

TECH	RH
DATE	10/31/2019
CHECK	
REVIEW	

APPENDIX D.6

MDOT 6AA Aggregate

JR Whiting
Pond 1 and 2
Geotechnical Laboratory Test Results

Sample Identification	Sample Type	Sample Depth (ft)	Soil Classi-fication	In-situ Moisture %	Atterberg Limits				Grain Size Distribution		Modified Proctor		Specific Gravity	Unit Weight		Hydraulic Conductivity (cm/sec)	Additional Tests Conducted (See Notes)
Sample No.					LL	PL	PI	LI	% Finer #4 sieve	% Finer #200 sieve	Maximum Dry Density (pcf)	Optimum Moisture %		Dry (pcf)	Moisture %		
6AA-1	Bulk	-	GP	0.4	-	-	-	-	0.6	0.2	-	-	-	-	-	-	
6AA-2	Bulk	-	GP	0.4	-	-	-	-	2.2	0.7	-	-	-	-	-	-	

ABBREVIATIONS:
LIQUID LIMIT (LL)
PLASTIC LIMIT (PL)
PLASTICITY INDEX (PI)
LIQUIDITY INDEX (LI)
SPECIFIC GRAVITY (Gs)
MOISTURE (Mc)

NOTES:
T = TRIAXIAL TEST
U = UNCONFINED COMPRESSION TEST
C = CONSOLIDATION TEST
DS = DIRECT SHEAR TEST
O = ORGANIC CONTENT
P = pH
NP = NON-PLASTIC
*Classified Visually

ASTM GRAIN SIZE ANALYSIS
ASTM D 421, D 2217, D 1140, C 117, D 422, C 136, C 142

PROJECT TITLE	JR Whiting Ponds 1&2	**SAMPLE ID**	6AA-1
PROJECT NO.	17888523	**SAMPLE TYPE**	Bulk
REMARKS	6AA	**SAMPLE DEPTH (ft)**	-

WATER CONTENT (Delivered Moisture)

Wt Wet Soil & Tare (gm)	(w1)	2698.69
Wt Dry Soil & Tare (gm)	(w2)	2689.05
Weight of Tare (gm)	(w3)	458.07
Weight of Water (gm)	(w4=w1-w2)	9.64
Weight of Dry Soil (gm)	(w5=w2-w3)	2230.98
Moisture Content (%)	(w4/w5)*100	0.43

Hygroscopic Moisture For Sieve Sample

Wet Soil & Tare (gm)	1.00
Dry Soil & Tare (gm)	1.00
Tare Weight (gm)	0.00
Moisture Content (%)	0.00%

Total Weight Of Sample Used For Sieve Corrected For Hygroscopic Moisture

	Weight Of Sample (gm)	2689.05
	Tare Weight (gm)	458.07
(W6)	Total Dry Weight (gm)	2230.98

SIEVE ANALYSIS

Tare Weight: 458.07

	Wt Ret +Tare	Cum. Ret. (Wt-Tare) (dry)	Cumulative (%Retained) ((wt ret w6)*100)	% PASS (100-%ret)	SIEVE	
3.0"	458.07	0.00	0.00	100.00	3.0"	coarse gravel
2.5"	458.07	0.00	0.00	100.00	2.5"	coarse gravel
2.0"	458.07	0.00	0.00	100.00	2.0"	coarse gravel
1.5"	458.07	0.00	0.00	100.00	1.5"	coarse gravel
1.0"	458.07	0.00	0.00	100.00	1.0"	coarse gravel
0.75"	1206.78	748.71	33.56	66.44	0.75"	fine gravel
0.50"	2231.76	1773.69	79.50	20.50	0.50"	fine gravel
0.375"	2475.39	2017.32	90.42	9.58	0.375"	fine gravel
#4	2675.00	2216.93	99.37	0.63	#4	coarse sand
#10	2678.62	2220.55	99.53	0.47	#10	medium sand
#20	2679.15	2221.08	99.56	0.44	#20	medium sand
#40	2680.61	2222.54	99.62	0.38	#40	fine sand
#60	2681.69	2223.62	99.67	0.33	#60	fine sand
#100	2682.72	2224.65	99.72	0.28	#100	fine sand
#200	2685.36	2227.29	99.83	0.17	#200	fines

% C GRAVEL	33.56
% F GRAVEL	65.81
% C SAND	0.16
% M SAND	0.09
% F SAND	0.21
% FINES	0.17
% TOTAL	100.00

Descriptive Terms		
trace	0 to 5%	> 10% mostly coarse (c)
little	5 to 12%	> 10% mostly medium (m)
some	12 to 30%	< 10% fine (c-m)
and	30 to 50%	< 10% coarse (m-f)
		< 10% coarse and fine (m)
		< 10% coarse and medium (f)
		> 10% equal amounts each (c-f)

LL	-
PL	-
PI	-
Gs	-

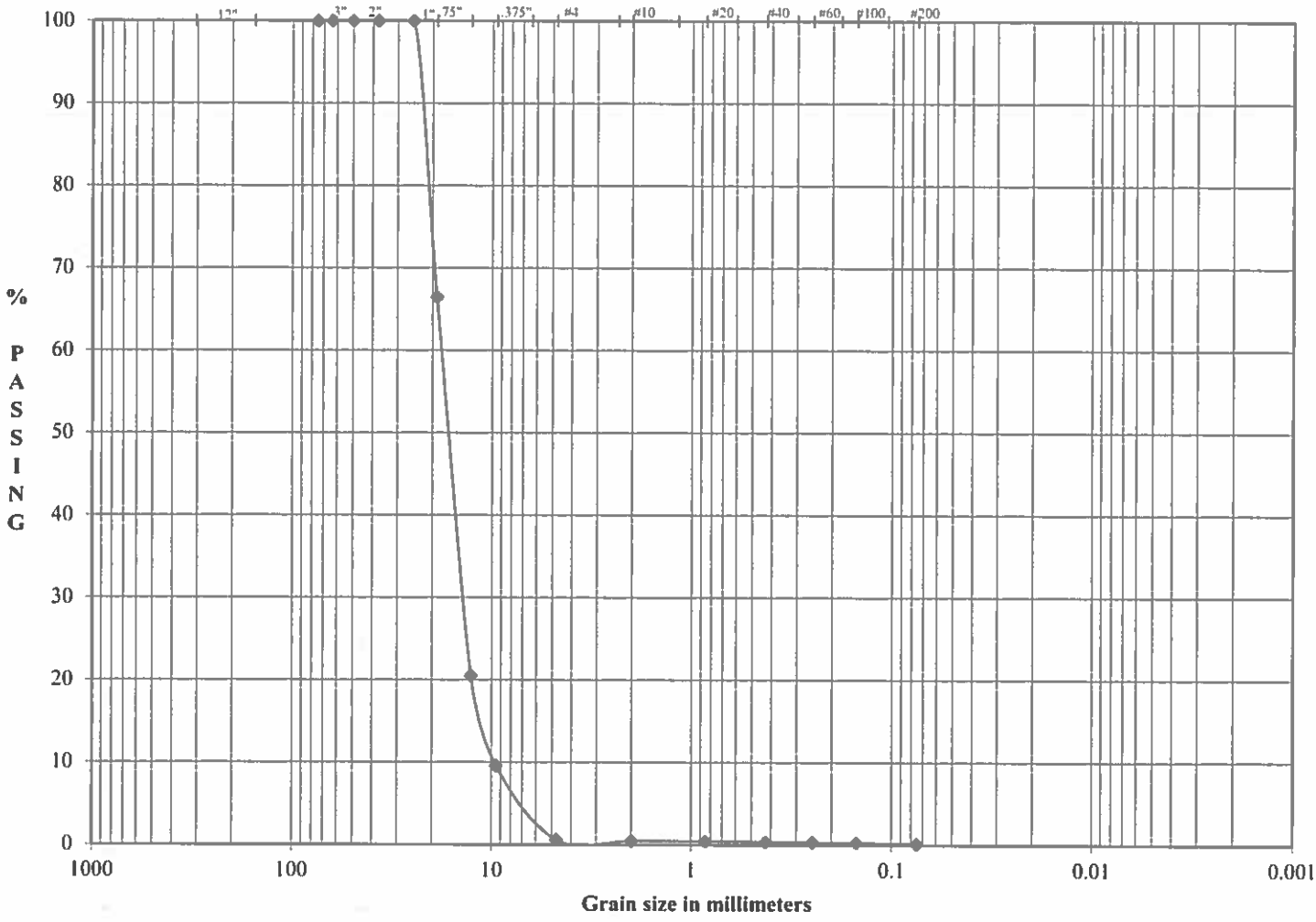
DESCRIPTION: Gray, POORLY GRADED GRAVEL, trace sand, trace fines

USCS: GP

TECH	TDS
DATE	9/12/2019
CHECK	BAB
REVIEW	JB

**** material finer than #4 sieve corrected for hygroscopic moisture.***

PARTICLE SIZE DISTRIBUTION ASTM D 421 AND D 422
US STANDARD SIEVE OPENING SIZES



		Coarse	Fine	Cor	Med	Fine	SILT OR CLAY
Boulders	Cobbles	GRAVEL		SAND			FINES
	0.00	33.56	65.81	0.16	0.09	0.21	0.17
		99.37		0.46			

SAMPLE ID	6AA-1
SAMPLE TYPE	Bulk
SAMPLE DEPTH (ft)	-

LL	-
PL	-
PI	-

DESCRIPTION	Gray, POORLY GRADED GRAVEL, trace sand, trace fines
USCS	GP

TECH	TDS
DATE	9/12/2019
CHECK	
REVIEW	

ASTM GRAIN SIZE ANALYSIS
ASTM D 421, D 2217, D 1140, C 117, D 422, C 136, C 142

PROJECT TITLE	JR Whiting Ponds 1&2	**SAMPLE ID**	6AA-2
PROJECT NO.	17888523	**SAMPLE TYPE**	Bulk
REMARKS	6AA	**SAMPLE DEPTH (ft)**	-

WATER CONTENT (Delivered Moisture)

Wt Wet Soil & Tare (gm)	(w1)	3551.99
Wt Dry Soil & Tare (gm)	(w2)	3539.48
Weight of Tare (gm)	(w3)	443.82
Weight of Water (gm)	(w4=w1-w2)	12.51
Weight of Dry Soil (gm)	(w5=w2-w3)	3095.66
Moisture Content (%)	(w4/w5)*100	0.40

Hygroscopic Moisture For Sieve Sample

Wet Soil & Tare (gm)	1.00
Dry Soil & Tare (gm)	1.00
Tare Weight (gm)	0.00
Moisture Content (%)	0.00%

Total Weight Of Sample Used For Sieve Corrected For Hygroscopic Moisture

	Weight Of Sample (gm)	3539.48
	Tare Weight (gm)	443.82
(W6)	Total Dry Weight (gm)	3095.66

SIEVE ANALYSIS

Tare Weight: 443.82

	Wt Ret +Tare	Cum. Ret. (Wt-Tare) (dry)	Cumulative (%Retained) {(wt ret/w6)*100}	% PASS (100-%ret)	SIEVE	
3.0"	443.82	0.00	0.00	100.00	3.0"	coarse gravel
2.5"	443.82	0.00	0.00	100.00	2.5"	coarse gravel
2.0"	443.82	0.00	0.00	100.00	2.0"	coarse gravel
1.5"	443.82	0.00	0.00	100.00	1.5"	coarse gravel
1.0"	443.82	0.00	0.00	100.00	1.0"	coarse gravel
0.75"	775.78	331.96	10.72	89.28	0.75"	fine gravel
0.50"	2003.97	1560.15	50.40	49.60	0.50"	fine gravel
0.375"	2643.93	2200.11	71.07	28.93	0.375"	fine gravel
#4	3472.72	3028.90	97.84	2.16	#4	coarse sand
#10	3509.39	3065.57	99.03	0.97	#10	medium sand
#20	3511.88	3068.06	99.11	0.89	#20	medium sand
#40	3512.89	3069.07	99.14	0.86	#40	fine sand
#60	3514.04	3070.22	99.18	0.82	#60	fine sand
#100	3515.15	3071.33	99.21	0.79	#100	fine sand
#200	3519.22	3075.40	99.35	0.65	#200	fines

% C GRAVEL	10.72
% F GRAVEL	87.12
% C SAND	1.18
% M SAND	0.11
% F SAND	0.20
% FINES	0.65
% TOTAL	100.00

Descriptive Terms	
trace	0 to 5%
little	5 to 12%
some	12 to 30%
and	30 to 50%

> 10% mostly coarse (c)
> 10% mostly medium (m)
< 10% fine (c-m)
< 10% coarse (m-f)
< 10% coarse and fine (m)
< 10% coarse and medium (f)
> 10% equal amounts each (c-f)

LL	-
PL	-
PI	-
Gs	-

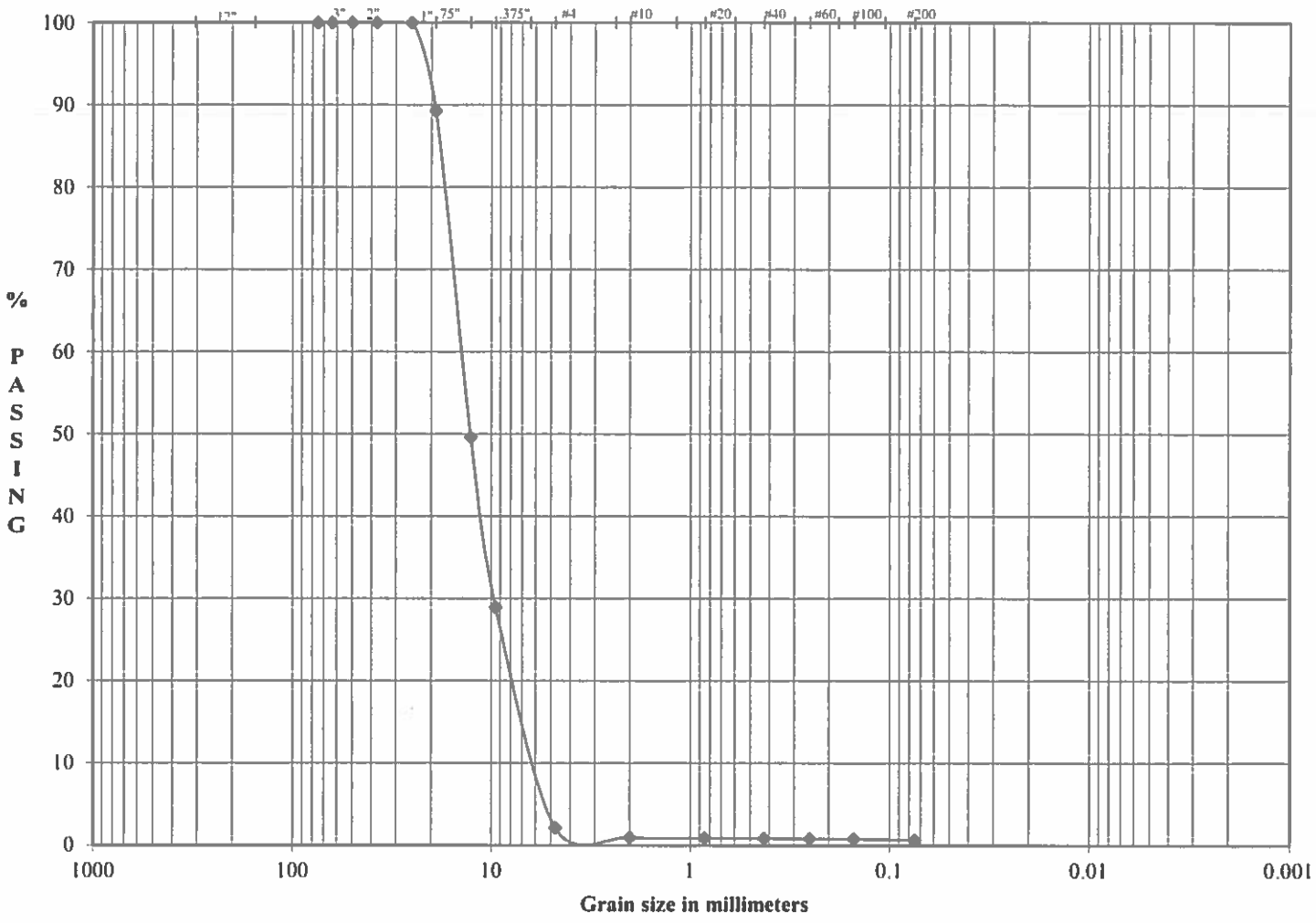
DESCRIPTION: Gray, POORLY GRADED GRAVEL, trace sand, trace fines

USCS: GP

TECH	TDS
DATE	9/19/2019
CHECK	AB
REVIEW	

**** material finer than #4 sieve corrected for hygroscopic moisture.***

PARTICLE SIZE DISTRIBUTION ASTM D 421 AND D 422
US STANDARD SIEVE OPENING SIZES



		Coarse	Fine	Cor	Med	Fine	SILT OR CLAY
Boulders	Cobbles	GRAVEL		SAND			FINES
	0.00	10.72	87.12	1.18	0.11	0.20	0.65
		97.84		1.50			

SAMPLE ID	6AA-2
SAMPLE TYPE	Bulk
SAMPLE DEPTH (ft)	-

LL	-
PL	-
PI	-

DESCRIPTION Gray, POORLY GRADED GRAVEL, trace sand, trace fines

USCS GP

TECH	TDS
DATE	9/19/2019
CHECK	AB
REVIEW	

APPENDIX D.7

Topsoil Results

TYLER
TRUCKING, LLC

15070 S. Telegraph Rd. Monroe, MI 48161
Ph: 734-241-1051 Fax: 734-457-5606

Certification of Virgin Topsoil

Certification provided to: Ryan Incorporated Central

In consideration of the "fresh farming" of dirt located at the property known as

CANTON TOPSOIL ,by the address of

50530 CHERRY HILL ROAD CANTON, MI 48187

Tyler General Trucking, LLC. does hereby certify the topsoil delivered to the consumer was extracted from fresh "virgin soil" which has never before been cultivated and is free of contamination.

Signed:	
	Tyler General Trucking, LLC.
Print:	David L. Lorton
Phone #:	(734) 241-1051
Date:	July 24, 2019

MICHIGAN STATE UNIVERSITY

Tyler Trucking - Intersection of Cherry Hill and Ridge Rd, Canton, MI

MICHIGAN STATE UNIVERSITY
SOIL AND PLANT NUTRIENT LABORATORY
EAST LANSING, MICHIGAN 48824-1325
(517) 355-0218

SOIL TEST REPORT FOR:	CONSULTANT
CONSUMERS ENERGY 4525 E. ERIE RD. ERIE MI 48133	MONROE COUNTY MSU EXTENSION 963 S RAISINVILLE ROAD MONROE MI 48161 734-240-3170

DATE	LAB #	COUNTY	GROWER'S EMAIL	ACRES	FIELD ID	SOIL	TEXTURE
8/23/2019	237956	Monroe	scott.rogers@ryancentral.com		Cherry Hill	Mineral	

Next to Lake or Stream?	Year Area Planted	Fertilizer Tilled in Prior to Planting?	How Deep?
			3 Inches

SOIL NUTRIENT LEVELS			Below Optimum	Optimum	Above Optimum
[1]Soil pH 7.1	Lime Index				
[2]Phosphorus (P)	51	ppm			
[3]Potassium (K)	153	ppm			
[3]Magnesium (Mg)	218	ppm			

ADDITIONAL RESULTS:

Calcium (Ca) (ppm)	CEC (meq/100 g)	% of Exchangeable Bases K	Mg	Ca	Micronutrients (ppm) B	Cu	Mn	Zn	Fe	Organic Matter %	Nitrate-N ppm
1704	10.7	3.7	16.9	79.4						2.7	

Optional Tests:

RECOMMENDATIONS FOR: *Lawn, mixed grasses*

Limestone: NONE

NUTRIENT NEEDS:

Nitrogen (N)	Phosphate (P_2O_5):	Potassium (K_2O):
2-3 lb/1000 sq ft	NONE	NONE

FERTILIZER OPTIONS:

MESSAGES

scott.rogers@ryancentral.com

Test Methods: 1- 1:1 soil:water pH, 2- Bray P1 Extractant, 3- 1N Ammonium Acetate Extractant

Brighton Analytical LLC
2105 Pless Drive
Brighton, Michigan 48114
Phone: (810)229-7575 (810)229-8650
e-mail:bai-brighton@sbcglobal.net
MDNRE Certified #9404
NELAC Accredited #176507

Sample Date: 08/08/2019
Submit Date: 08/08/2019
Report Date: 08/20/2019

To:
Golder Associates Inc.
27200 Haggerty Road
Suite B-12
Farmington Hills, MI 48331-5719

BA Report Number: **60313**
BA Sample ID: **CK07736**
Project Name: **JRW**
Project Number: **1788523**
Sample ID: **TS-1**

Tyler Trucking - Intersection of Cherry Hill and Ridge Rd, Canton, MI

Parameters	Result	Units	DL	Method Reference	Analyst	Analysis Date
Total Metal Analysis						
Total Arsenic	**1600**	ug/Kg	100	SW846 6020A	LT	08/12/2019
Total Barium	**13000**	ug/Kg	1000	SW846 6020A	LT	08/12/2019
Total Cadmium	**60**	ug/Kg	50	SW846 6020A	LT	08/12/2019
Total Chromium	**4300**	ug/Kg	500	SW846 6020A	LT	08/12/2019
Total Copper	**2400**	ug/Kg	1000	SW846 6020A	LT	08/12/2019
Total Lead	**6200**	ug/Kg	1000	SW846 6020A	LT	08/12/2019
Total Mercury	**Not detected**	ug/Kg	50	SW846 7471A	LS	08/12/2019
Total Selenium	**Not detected**	ug/Kg	200	SW846 6020A	LT	08/12/2019
Total Silver	**Not detected**	ug/Kg	100	SW846 6020A	LT	08/12/2019
Total Zinc	**9100**	ug/Kg	1000	SW846 6020A	LT	08/12/2019
Metal Soil (digestion)	**Digested**			3050	EB	08/12/2019
Mercury (digestion)	**Digested**			7470/7471	LS	08/12/2019
Pesticide Analysis						
a-BHC	**Not detected**	ug/Kg	20	SW846 8081B	BY	08/16/2019
Aldrin	**Not detected**	ug/Kg	20	SW846 8081B	BY	08/16/2019
b-BHC	**Not detected**	ug/Kg	20	SW846 8081B	BY	08/16/2019
BP-6(PBB)	**Not detected**	ug/Kg	50	SW846 8081B	BY	08/16/2019
cis-Chlordane(a)	**Not detected**	ug/Kg	25	SW846 8081B	BY	08/16/2019
d-BHC	**Not detected**	ug/Kg	20	SW846 8081B	BY	08/16/2019
4,4-DDD	**Not detected**	ug/Kg	20	SW846 8081B	BY	08/16/2019
4,4-DDE	**Not detected**	ug/Kg	20	SW846 8081B	BY	08/16/2019
4,4-DDT	**Not detected**	ug/Kg	20	SW846 8081B	BY	08/16/2019
Dieldrin	**Not detected**	ug/Kg	20	SW846 8081B	BY	08/16/2019
Endosulfan I	**Not detected**	ug/Kg	20	SW846 8081B	BY	08/16/2019
Endosulfan II	**Not detected**	ug/Kg	20	SW846 8081B	BY	08/16/2019
Endosulfan sulfate	**Not detected**	ug/Kg	20	SW846 8081B	BY	08/16/2019
Endrin	**Not detected**	ug/Kg	20	SW846 8081B	BY	08/16/2019
Endrin aldehyde	**Not detected**	ug/Kg	20	SW846 8081B	BY	08/16/2019
Endrin ketone	**Not detected**	ug/Kg	20	SW846 8081B	BY	08/16/2019
g-BHC(Lindane)	**Not detected**	ug/Kg	20	SW846 8081B	BY	08/16/2019
Heptachlor	**Not detected**	ug/Kg	20	SW846 8081B	BY	08/16/2019
Heptachlor epoxide	**Not detected**	ug/Kg	20	SW846 8081B	BY	08/16/2019
Hexabromobenzene	**Not detected**	ug/Kg	100	SW846 8081B	BY	08/16/2019
Methoxychlor	**Not detected**	ug/Kg	50	SW846 8081B	BY	08/16/2019
Mirex	**Not detected**	ug/Kg	50	SW846 8081B	BY	08/16/2019
Toxaphene	**Not detected**	ug/Kg	170	SW846 8081B	BY	08/16/2019

Brighton Analytical LLC
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e-mail:bai-brighton@sbcglobal.net
MDNRE Certified #9404
NELAC Accredited #176507

Sample Date: 08/08/2019
Submit Date: 08/08/2019
Report Date: 08/20/2019

To:
Golder Associates Inc.
27200 Haggerty Road
Suite B-12
Farmington Hills, MI 48331-5719

BA Report Number: **60313**
BA Sample ID: **CK07736**
Project Name: **JRW**
Project Number: **1788523**
Sample ID: **TS-1**

Parameters	Result	Units	DL	Method Reference	Analyst	Analysis Date
Pesticide Analysis						
trans-Chlordane(g)	**Not detected**	ug/Kg	25	SW846 8081B	BY	08/16/2019
Pesticide solid (extraction)	**Extracted**			3510C/3545	MB	08/13/2019
Volatile Analysis(Methanol Preserved)						
Benzene	**Not detected**	ug/Kg	50	SW846 8260C	RG	08/13/2019
Ethylbenzene	**Not detected**	ug/Kg	50	SW846 8260C	RG	08/13/2019
Toluene	**Not detected**	ug/Kg	50	SW846 8260C	RG	08/13/2019
Xylenes(total)	**Not detected**	ug/Kg	150	SW846 8260C	RG	08/13/2019
EPA Method 5035 Methanol Preserv	**Extracted**			EPA 5035	GAI	08/08/2019
%Solid	**91**	%			EB	08/12/2019

DL=Reported detection limit for analytical method requested. Some compounds require special analytical methods to achieve MDNR designated target detection limits (TDL).

All soil results based on dry weight.

Released by

Date 8/20/2019

SALENBIEN MATERIALS

Salenbien Materials - 14467 Ida West Rd, Petersburg, MI

9217 ANN ARBOR RD

DUNDEE MI, 48131

734-529-3823 EXT 114

ANDY & BETH SALENBIEN

To whom it may concern,

The proposed topsoil to be hauled from Salenbien Materials pit located at 11467 Ida West Rd Petersburg MI, used for capping the Consumers Energy ash landfills is from a virgin pit and is non-contaminated. We look forward to working with you on this project.

Thank you,

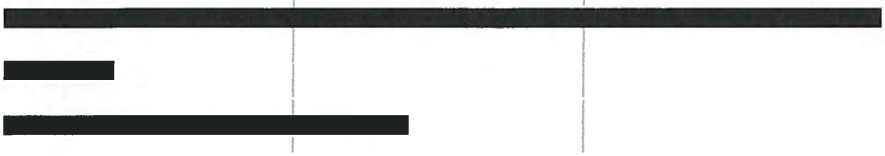
Beth Salenbien

Beth Ann Salenbien

Salenbien Materials - 14467 Ida West Rd, Petersburg, MI

"Lawn" Soil Test Report for John Johnson "chem pond" (Oct 16, 2019, #5J5K34)

		Below Optimum	Optimum	Above Optimum
Phosphorus (P)	67 ppm			
Potassium (K)	45 ppm			
Magnesium (Mg)	86 ppm			
Calcium (Ca)	771 ppm			
CEC	4.7 meq/100 g			
Soil Type	Mineral (Loamy sand)			
Soil pH	6.4			
Lime Index	70			
Organic Matter	3 %			



**For more information on each individual nutrient, or the bar graph, click on the underlined word.*

Follow Your Personalized Recommendations

Important: Always apply fertilizers according to label instructions

Your soil test indicates, on a yearly basis

per 1,000 sq. feet:

- **Nitrogen** (3 to 4 lb) is needed
- **Potassium** (3 lb) is needed
- No lime required

See below for more information on each

Lawn Organic Matter

Organic matter in your soil is 3%. Your soil has an adequate level of organic matter and no further actions need to be taken. To maintain organic matter in this range make sure to return clippings to the lawn.

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MDNRE Certified #9404
NELAC Accredited #176507

Sample Date: 08/08/2019
Submit Date: 08/08/2019
Report Date: 08/20/2019

To:
Golder Associates Inc.
27200 Haggerty Road
Suite B-12
Farmington Hills, MI 48331-5719

BA Report Number: **60313**
BA Sample ID: **CK07737**
Project Name: **JRW**
Project Number: **1788523**
Sample ID: **TS-2**

Salenbien Materials - 14467 Ida West Rd, Petersburg, MI

Parameters	Result	Units	DL	Method Reference	Analyst	Analysis Date
Total Metal Analysis						
Total Arsenic	**3200**	ug/Kg	100	SW846 6020A	LT	08/12/2019
Total Barium	**31000**	ug/Kg	1000	SW846 6020A	LT	08/12/2019
Total Cadmium	**170**	ug/Kg	50	SW846 6020A	LT	08/12/2019
Total Chromium	**8000**	ug/Kg	500	SW846 6020A	LT	08/12/2019
Total Copper	**7100**	ug/Kg	1000	SW846 6020A	LT	08/12/2019
Total Lead	**9400**	ug/Kg	1000	SW846 6020A	LT	08/12/2019
Total Mercury	**Not detected**	ug/Kg	50	SW846 7471A	LS	08/12/2019
Total Selenium	**Not detected**	ug/Kg	200	SW846 6020A	LT	08/12/2019
Total Silver	**Not detected**	ug/Kg	100	SW846 6020A	LT	08/12/2019
Total Zinc	**27000**	ug/Kg	1000	SW846 6020A	LT	08/12/2019
Metal Soil (digestion)	**Digested**			3050	EB	08/12/2019
Mercury (digestion)	**Digested**			7470/7471	LS	08/12/2019
Pesticide Analysis						
a-BHC	**Not detected**	ug/Kg	20	SW846 8081B	BY	08/16/2019
Aldrin	**Not detected**	ug/Kg	20	SW846 8081B	BY	08/16/2019
b-BHC	**Not detected**	ug/Kg	20	SW846 8081B	BY	08/16/2019
BP-6(PBB)	**Not detected**	ug/Kg	50	SW846 8081B	BY	08/16/2019
cis-Chlordane(a)	**Not detected**	ug/Kg	25	SW846 8081B	BY	08/16/2019
d-BHC	**Not detected**	ug/Kg	20	SW846 8081B	BY	08/16/2019
4,4-DDD	**Not detected**	ug/Kg	20	SW846 8081B	BY	08/16/2019
4,4-DDE	**26**	ug/Kg	20	SW846 8081B	BY	08/16/2019
4,4-DDT	**22**	ug/Kg	20	SW846 8081B	BY	08/16/2019
Dieldrin	**Not detected**	ug/Kg	20	SW846 8081B	BY	08/16/2019
Endosulfan I	**Not detected**	ug/Kg	20	SW846 8081B	BY	08/16/2019
Endosulfan II	**Not detected**	ug/Kg	20	SW846 8081B	BY	08/16/2019
Endosulfan sulfate	**Not detected**	ug/Kg	20	SW846 8081B	BY	08/16/2019
Endrin	**Not detected**	ug/Kg	20	SW846 8081B	BY	08/16/2019
Endrin aldehyde	**Not detected**	ug/Kg	20	SW846 8081B	BY	08/16/2019
Endrin ketone	**Not detected**	ug/Kg	20	SW846 8081B	BY	08/16/2019
g-BHC(Lindane)	**Not detected**	ug/Kg	20	SW846 8081B	BY	08/16/2019
Heptachlor	**Not detected**	ug/Kg	20	SW846 8081B	BY	08/16/2019
Heptachlor epoxide	**Not detected**	ug/Kg	20	SW846 8081B	BY	08/16/2019
Hexabromobenzene	**Not detected**	ug/Kg	100	SW846 8081B	BY	08/16/2019
Methoxychlor	**Not detected**	ug/Kg	50	SW846 8081B	BY	08/16/2019
Mirex	**Not detected**	ug/Kg	50	SW846 8081B	BY	08/16/2019
Toxaphene	**Not detected**	ug/Kg	170	SW846 8081B	BY	08/16/2019

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NELAC Accredited #176507

Sample Date: 08/08/2019
Submit Date: 08/08/2019
Report Date: 08/20/2019

To:
Golder Associates Inc.
27200 Haggerty Road
Suite B-12
Farmington Hills, MI 48331-5719

BA Report Number: **60313**
BA Sample ID: **CK07737**
Project Name: **JRW**
Project Number: **1788523**
Sample ID: **TS-2**

Parameters	Result	Units	DL	Method Reference	Analyst	Analysis Date
Pesticide Analysis						
trans-Chlordane(g)	**Not detected**	ug/Kg	25	SW846 8081B	BY	08/16/2019
Pesticide solid (extraction)	**Extracted**			3510C/3545	MB	08/13/2019
Volatile Analysis(Methanol Preserved)						
Benzene	**Not detected**	ug/Kg	50	SW846 8260C	RG	08/13/2019
Ethylbenzene	**Not detected**	ug/Kg	50	SW846 8260C	RG	08/13/2019
Toluene	**Not detected**	ug/Kg	50	SW846 8260C	RG	08/13/2019
Xylenes(total)	**Not detected**	ug/Kg	150	SW846 8260C	RG	08/13/2019
EPA Method 5035 Methanol Preserv	**Extracted**			EPA 5035	GAI	08/08/2019
%Solid	**86**	%			EB	08/12/2019

DL=Reported detection limit for analytical method requested. Some compounds require special analytical methods to achieve MDNR designated target detection limits (TDL).

All soil results based on dry weight.

Released by

Date 8/20/2019

MICHIGAN STATE UNIVERSITY

MICHIGAN STATE UNIVERSITY
SOIL AND PLANT NUTRIENT LABORATORY
EAST LANSING, MICHIGAN 48824-1325
(517) 355-0218

SOIL TEST REPORT FOR:	CONSULTANT
RYAN INC CENTRAL 2700 E. RACINE ST. JANESVILLE WI 53545	

DATE	LAB #	COUNTY	GROWER'S EMAIL	ACRES	FIELD ID	SOIL	TEXTURE
10/21/2019	239823		scott.rogers@ryancentral.com		Devos	Mineral	

Next to Lake or Stream?	Year Area Planted	Fertilizer Tilled in Prior to Planting?	How Deep?
			3 Inches

SOIL NUTRIENT LEVELS			Below Optimum	Optimum	Above Optimum
[1]Soil pH	7.7	Lime Index			
[2]Phosphorus (P)	22	ppm			
[3]Potassium (K)	108	ppm			
[3]Magnesium (Mg)	276	ppm			

ADDITIONAL RESULTS:

Calcium (Ca) (ppm)	CEC (meq/100 g)	% of Exchangeable Bases K	Mg	Ca	Micronutrients (ppm) B	Cu	Mn	Zn	Fe	Organic Matter %	Nitrate-N ppm
3776	21.5	1.3	10.7	88.0						2.9	

Optional Tests:

RECOMMENDATIONS FOR: ***Lawn, mixed grasses***

Limestone: NONE

NUTRIENT NEEDS:

Nitrogen (N)	Phosphate (P_2O_5):	Potassium (K_2O):
2-3 lb/1000 sq ft	NONE	.5 lb/1000 square feet

FERTILIZER OPTIONS:

MESSAGES

Consumers Energy JR Whiting

Test Methods: 1- 1:1 soil:water pH, 2- Bray P1 Extractant, 3- 1N Ammonium Acetate Extractant

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e-mail:bai-brighton@sbcglobal.net
EGLE Certified #9404
NELAC Accredited #176507

Sample Date: 10/17/2019
Submit Date: 10/17/2019
Report Date: 10/22/2019

To:
Ryan Inc. Central
P.O. Box 206
Jamesville, WI 53547

BA Report Number: **61737**
BA Sample ID: **CL02522**
Project Name: **JR Whiting Ponds 1&2**
Project Number: **3909.1**
Sample ID: **Devos**

Parameters	Result	Units	DL	Method Reference	Analyst	Analysis Date
Total Metal Analysis						
Total Arsenic	**3500**	ug/Kg	100	SW846 6020A	LT	10/21/2019
Total Barium	**47000**	ug/Kg	1000	SW846 6020A	LT	10/21/2019
Total Cadmium	**300**	ug/Kg	50	SW846 6020A	LT	10/21/2019
Total Chromium	**8600**	ug/Kg	500	SW846 6020A	LT	10/21/2019
Total Copper	**14000**	ug/Kg	1000	SW846 6020A	LT	10/21/2019
Total Lead	**27000**	ug/Kg	1000	SW846 6020A	LT	10/21/2019
Total Mercury	**Not detected**	ug/Kg	50	SW846 7471A	LS	10/21/2019
Total Selenium	**280**	ug/Kg	200	SW846 6020A	LT	10/21/2019
Total Silver	**Not detected**	ug/Kg	100	SW846 6020A	LT	10/21/2019
Total Zinc	**51000**	ug/Kg	1000	SW846 6020A	LT	10/21/2019
Metal Soil (digestion)	**Digested**			3050	EB	10/18/2019
Mercury (digestion)	**Digested**			7470/7471	LS	10/21/2019
Herbicide Analysis						
2,4-D	**Not detected**	ug/Kg	200	SW846 8151A	BY	10/21/2019
Dicamba	**Not detected**	ug/Kg	50	SW846 8151A	BY	10/21/2019
Dinoseb	**Not detected**	ug/Kg	20	SW846 8151A	BY	10/21/2019
2,4,5-T	**Not detected**	ug/Kg	50	SW846 8151A	BY	10/21/2019
2,4,5-TP(Silvex)	**Not detected**	ug/Kg	50	SW846 8151A	BY	10/21/2019
Herbicide solid (extraction)	**Extracted**			8151/615	BY	10/18/2019
Volatile Analysis(Methanol Preserved)						
Benzene	**Not detected**	ug/Kg	50	SW846 8260C	CW	10/18/2019
Ethylbenzene	**Not detected**	ug/Kg	50	SW846 8260C	CW	10/18/2019
Toluene	**Not detected**	ug/Kg	50	SW846 8260C	CW	10/18/2019
Xylenes(total)	**Not detected**	ug/Kg	150	SW846 8260C	CW	10/18/2019
EPA Method 5035 Methanol Preserv	**Extracted**			EPA 5035	BAL	10/17/2019
%Solid	**84**	%			MH	10/18/2019

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Brighton, Michigan 48114
Phone: (810)229-7575 (810)229-8650
e-mail:bai-brighton@sbcglobal.net
EGLE Certified #9404
NELAC Accredited #176507

Sample Date: 10/17/2019
Submit Date: 10/17/2019
Report Date: 10/22/2019

To:
Ryan Inc. Central
P.O. Box 206
Jamesville, WI 53547

BA Report Number: **61737**
BA Sample ID: **CL02522**
Project Name: **JR Whiting Ponds 1&2**
Project Number: **3909.1**
Sample ID: **Devos**

Parameters	Result	Units	DL	Method Reference	Analyst	Analysis Date

DL=Reported detection limit for analytical method requested. Some compounds require special analytical methods to achieve EGLE designated target detection limits (TDL).

All soil results based on dry weight.

Released by

Date 10/22/2019

Brighton Analytical LLC
2105 Pless Drive
Brighton, Michigan 48114
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e-mail:bai-brighton@sbcglobal.net
EGLE Certified #9404
NELAC Accredited #176507

Sample Date: 10/17/2019
Submit Date: 10/17/2019
Report Date: 10/24/2019

To:
Ryan Inc. Central
P.O. Box 206
Jamesville, WI 53547

BA Report Number: **61737B**
BA Sample ID: **CL02522**
Project Name: **JR Whiting Ponds 1&2**
Project Number: **3909.1**
Sample ID: **Devos**

Parameters	Result	Units	DL	Method Reference	Analyst	Analysis Date
Total Metal Analysis						
Total Arsenic	**3500**	ug/Kg	100	SW846 6020A	LT	10/21/2019
Total Barium	**47000**	ug/Kg	1000	SW846 6020A	LT	10/21/2019
Total Cadmium	**300**	ug/Kg	50	SW846 6020A	LT	10/21/2019
Total Chromium	**8600**	ug/Kg	500	SW846 6020A	LT	10/21/2019
Total Copper	**14000**	ug/Kg	1000	SW846 6020A	LT	10/21/2019
Total Lead	**27000**	ug/Kg	1000	SW846 6020A	LT	10/21/2019
Total Mercury	**Not detected**	ug/Kg	50	SW846 7471A	LS	10/21/2019
Total Selenium	**280**	ug/Kg	200	SW846 6020A	LT	10/21/2019
Total Silver	**Not detected**	ug/Kg	100	SW846 6020A	LT	10/21/2019
Total Zinc	**51000**	ug/Kg	1000	SW846 6020A	LT	10/21/2019
Metal Soil (digestion)	**Digested**			3050	EB	10/18/2019
Mercury (digestion)	**Digested**			7470/7471	LS	10/21/2019
Pesticide Analysis						
a-BHC	**Not detected**	ug/Kg	20	SW846 8081B	BY	10/23/2019
Aldrin	**Not detected**	ug/Kg	20	SW846 8081B	BY	10/23/2019
b-BHC	**Not detected**	ug/Kg	20	SW846 8081B	BY	10/23/2019
BP-6(PBB)	**Not detected**	ug/Kg	50	SW846 8081B	BY	10/23/2019
cis-Chlordane(a)	**Not detected**	ug/Kg	25	SW846 8081B	BY	10/23/2019
d-BHC	**Not detected**	ug/Kg	20	SW846 8081B	BY	10/23/2019
4,4-DDD	**Not detected**	ug/Kg	20	SW846 8081B	BY	10/23/2019
4,4-DDE	**Not detected**	ug/Kg	20	SW846 8081B	BY	10/23/2019
4,4-DDT	**24**	ug/Kg	20	SW846 8081B	BY	10/23/2019
Dieldrin	**Not detected**	ug/Kg	20	SW846 8081B	BY	10/23/2019
Endosulfan I	**Not detected**	ug/Kg	20	SW846 8081B	BY	10/23/2019
Endosulfan II	**Not detected**	ug/Kg	20	SW846 8081B	BY	10/23/2019
Endosulfan sulfate	**Not detected**	ug/Kg	20	SW846 8081B	BY	10/23/2019
Endrin	**Not detected**	ug/Kg	20	SW846 8081B	BY	10/23/2019
Endrin aldehyde	**Not detected**	ug/Kg	20	SW846 8081B	BY	10/23/2019
Endrin ketone	**Not detected**	ug/Kg	20	SW846 8081B	BY	10/23/2019
g-BHC(Lindane)	**Not detected**	ug/Kg	20	SW846 8081B	BY	10/23/2019
Heptachlor	**Not detected**	ug/Kg	20	SW846 8081B	BY	10/23/2019
Heptachlor epoxide	**Not detected**	ug/Kg	20	SW846 8081B	BY	10/23/2019
Hexabromobenzene	**Not detected**	ug/Kg	100	SW846 8081B	BY	10/23/2019
Methoxychlor	**Not detected**	ug/Kg	50	SW846 8081B	BY	10/23/2019
Mirex	**Not detected**	ug/Kg	50	SW846 8081B	BY	10/23/2019
Toxaphene	**Not detected**	ug/Kg	170	SW846 8081B	BY	10/23/2019

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Sample Date: 10/17/2019
Submit Date: 10/17/2019
Report Date: 10/24/2019

To:
Ryan Inc. Central
P.O. Box 206
Jamesville, WI 53547

BA Report Number: **61737B**
BA Sample ID: **CL02522**
Project Name: **JR Whiting Ponds 1&2**
Project Number: **3909.1**
Sample ID: **Devos**

Parameters	Result	Units	DL	Method Reference	Analyst	Analysis Date
Pesticide Analysis						
trans-Chlordane(g)	**Not detected**	ug/Kg	25	SW846 8081B	BY	10/23/2019
Pesticide solid (extraction)	**Extracted**			3510C/3545	MB	10/22/2019
Herbicide Analysis						
2,4-D	**Not detected**	ug/Kg	200	SW846 8151A	BY	10/21/2019
Dicamba	**Not detected**	ug/Kg	50	SW846 8151A	BY	10/21/2019
Dinoseb	**Not detected**	ug/Kg	20	SW846 8151A	BY	10/21/2019
2,4,5-T	**Not detected**	ug/Kg	50	SW846 8151A	BY	10/21/2019
2,4,5-TP(Silvex)	**Not detected**	ug/Kg	50	SW846 8151A	BY	10/21/2019
Herbicide solid (extraction)	**Extracted**			8151/615	BY	10/18/2019
Volatile Analysis(Methanol Preserved)						
Benzene	**Not detected**	ug/Kg	50	SW846 8260C	CW	10/18/2019
Ethylbenzene	**Not detected**	ug/Kg	50	SW846 8260C	CW	10/18/2019
Toluene	**Not detected**	ug/Kg	50	SW846 8260C	CW	10/18/2019
Xylenes(total)	**Not detected**	ug/Kg	150	SW846 8260C	CW	10/18/2019
EPA Method 5035 Methanol Preserv	**Extracted**			EPA 5035	BAL	10/17/2019
%Solid	**84**	%			MH	10/18/2019

DL=Reported detection limit for analytical method requested. Some compounds require special analytical methods to achieve EGLE designated target detection limits (TDL).

All soil results based on dry weight.

Released by

Date 10/24/2019

APPENDIX E

Material Testing for 40-mil Textured HDPE FML

APPENDIX E.1

Geomembrane Inventory Log

GEOSYNTHETIC INVENTORY CONTROL LOG

PROJECT NUMBER: 1788523 **PROJECT TITLE:** JRW Ash & Chemical Pond Clousure
OWNER: CEC **CONTRACTOR:** FLSI
LOCATION: Erie, Mi.

MATERIAL TYPE: (GEOMEMBRANE) GEONET GEOTEXTILE OTHER
DATE OF ARRIVAL: 6/28/19 **DATE OF INVENTORY:** 6/28/19
MATERIAL MANUFACTURER: AGRU **INVENTORY MONITOR:** DH
PRODUCT IDENTIFICATION: 40 MIL HDPE MICROSPIKE **CONDITION IN TRUCK:** GOOD
TRUCK TYPE: SEMI W/FLATBED **UNLOADING METHOD:** EXCAVATOR

	ROLL NUMBER	BATCH OR LOT NO.	MATERIAL DIMENSIONS LENGTH	WIDTH	THICKNESS OR WEIGHT	QC CERT Y / N	CONF. SAMP. Y / N	OTHER	REMARKS
1	GTD00338-4000340	—	740'	23'	40 MIL	Y	NA		TRUCK #1
2	-400011	—	↓	↓	↓	Y	↓		↓
3	-400043	—				Y			
4	-400045	—				Y			
5	-400042	—				Y			
6	-400035	—				Y			
7	-400033	—				Y			
8	-400050	—				Y			
9	-400052	—				Y			
10	-400037	—				Y			
11	-400038	—	↓	↓	↓	Y	↓		
12	-400034	—	740'	23'	40 MIL	Y	NA		↓
13	-400012	—	↓	↓	↓	Y	↓		TRUCK #2
14	-400016	—				Y			↓
15	-400008	—				Y			
16	-400018	—				Y			
17	-400002	—				Y			
18	-400028	—				Y			
19	-400019	—				Y			
20	-400032	—				Y			
21	-400007	—				Y			
22	-400049	—				Y			
23	-400004	—	↓	↓	↓	Y			
24	-400009	—	740'	23'	40 MIL	Y	↓		↓
25	GTWR200345000001	—	—	—	—	Y	NA	10 SPOILS	WELDING ROD

Golder Form: G2 (July 2000)

REVIEWED BY: DS **DATE:** 12-2-19

GOLDER ASSOCIATES INC.

GTWR100345-800001 x 10 (Truck #1)

GEOSYNTHETIC INVENTORY CONTROL LOG

PROJECT NUMBER: 1738852 3 **PROJECT TITLE:** ASH AND CHEMICAL PONDS CLOSURE
OWNER: CEC **CONTRACTOR:** RYAN
LOCATION: ERIE, MI

MATERIAL TYPE : (GEOMEMBRANE) GEONET GEOTEXTILE OTHER
DATE OF ARRIVAL:
MATERIAL MANUFACTURER: AGRU
PRODUCT IDENTIFICATION: 40 MIL HDPE MICRO-SPIKE
TRUCK TYPE: SEMI-W/TRAILER

DATE OF INVENTORY: 7.1.19
INVENTORY MONITOR: DH
CONDITION IN TRUCK: GOOD
UNLOADING METHOD: EXCAVATOR

	ROLL NUMBER	BATCH OR LOT NO.	MATERIAL DIMENSIONS LENGTH	WIDTH	THICKNESS OR WEIGHT	QC CERT Y/N	CONF. SAMP. Y/N	OTHER	REMARKS
1	GTD00003384-0001	—	740'	23'	40 mil	Y	NA		
2	-0005	—				Y			
3	-0010	—				Y			
4	-0013	—				Y			
5	-0014	—				Y			
6	-0015	—				Y			
7	-0017	—				Y			
8	-0020	—				Y			
9	-0021	—				Y			
10	-0024	—				Y			
11	-0025	—				Y			
12	-0026	—				Y			
13	-0027	—				Y			
14	-0031	—				Y			
15	-0036	—				Y			
16	-0039	—				Y			
17	-0040	—				Y			
18	-0041	—				Y			
19	-0044	—				Y			
20	-0046	—				Y			
21	-0047	—				Y			
22	-0048	—				Y			
23	-0051	—				Y			
24	-0029	—				Y			
25									

Golder Form: G2
(July 2000)

REVIEWED BY: RDS **DATE:** 12-2-19

GOLDER ASSOCIATES INC.

TRUCK #1 & #2

GEOSYNTHETIC INVENTORY CONTROL LOG

PROJECT NUMBER: 1788523 **PROJECT TITLE:** JRW Ash & Chemical Pond Clousure
OWNER: CEC **CONTRACTOR:** FLSI
LOCATION: Erie, Mi.

MATERIAL TYPE : (GEOMEMBRANE) GEONET GEOTEXTILE OTHER
DATE OF ARRIVAL: 7.8.19 **DATE OF INVENTORY:** 7.8.19
MATERIAL MANUFACTURER: AGRU **INVENTORY MONITOR:** DH
PRODUCT IDENTIFICATION: 40 MIL HDPE MICROSPIKE **CONDITION IN TRUCK:** GOOD
TRUCK TYPE: SEMI-TRUCK **UNLOADING METHOD:** EXCAVATOR

	ROLL NUMBER	BATCH OR LOT NO.	MATERIAL DIMENSIONS LENGTH	WIDTH	THICKNESS OR WEIGHT	QC CERT Y / N	CONF. SAMP. Y / N	OTHER	REMARKS
1	GTD 003384-0006	—	740'	23'	40mil	Y	NA		
2	-0003	—	〃	〃	〃	Y	〃		
3	-0022	—	〃	〃	〃	Y	〃		
4	-0023	—	740'	23'	40mil	Y	NA		
5									
6									
7									
8									
9									
10									
11									
12									
13									
14									
15									
16									
17									
18									
19									
20									
21									
22									
23									
24									
25									

Golder Form: G2
(July 2000)

REVIEWED BY: PS **DATE:** 12-2-19

GOLDER ASSOCIATES INC.

JR Whiting - Ash Ponds 1 & 2 Closures
Chesapeake Containment Systems, Inc.
4525 Erie Road
Erie, MI 48133

SO#: 00003022

40 mil HD

FG-HDMSDS040BBBEA	52 rolls @ 740	885,040 ft².

roll #	width	English length	area	Item	Count	weight	resin lot #
	ft.	ft.	ft².			lbs.	
GTD0033840001	23	740	17,020	FG-HDMSDS040BBBEA	1	3766	HJM810460
GTD0033840002	23	740	17,020	FG-HDMSDS040BBBEA	2	3806	HJM810460
GTD0033840003	23	740	17,020	FG-HDMSDS040BBBEA	3	3798	HJM810460
GTD0033840004	23	740	17,020	FG-HDMSDS040BBBEA	4	3810	HJM810510
GTD0033840005	23	740	17,020	FG-HDMSDS040BBBEA	5	3800	HJM810510
GTD0033840006	23	740	17,020	FG-HDMSDS040BBBEA	6	3800	HJM810510
GTD0033840007	23	740	17,020	FG-HDMSDS040BBBEA	7	3808	HJM810510
GTD0033840008	23	740	17,020	FG-HDMSDS040BBBEA	8	3810	HJM810510
GTD0033840009	23	740	17,020	FG-HDMSDS040BBBEA	9	3810	HJM810510
GTD0033840010	23	740	17,020	FG-HDMSDS040BBBEA	10	3798	HJM810510
GTD0033840011	23	740	17,020	FG-HDMSDS040BBBEA	11	3802	HJM810510
GTD0033840012	23	740	17,020	FG-HDMSDS040BBBEA	12	3800	HJM810510
GTD0033840013	23	740	17,020	FG-HDMSDS040BBBEA	13	3794	HJM810510
GTD0033840014	23	740	17,020	FG-HDMSDS040BBBEA	14	3800	HJM810510
GTD0033840015	23	740	17,020	FG-HDMSDS040BBBEA	15	3802	HJM810510
GTD0033840016	23	740	17,020	FG-HDMSDS040BBBEA	16	3806	HJM810510
GTD0033840017	23	740	17,020	FG-HDMSDS040BBBEA	17	3810	HJM810510
GTD0033840018	23	740	17,020	FG-HDMSDS040BBBEA	18	3810	HJM810510
GTD0033840019	23	740	17,020	FG-HDMSDS040BBBEA	19	3814	HJM810510
GTD0033840020	23	740	17,020	FG-HDMSDS040BBBEA	20	3812	HJM810510
GTD0033840021	23	740	17,020	FG-HDMSDS040BBBEA	21	3806	HJM810510
GTD0033840022	23	740	17,020	FG-HDMSDS040BBBEA	22	3806	HJM810510
GTD0033840023	23	740	17,020	FG-HDMSDS040BBBEA	23	3810	HJM810510
GTD0033840024	23	740	17,020	FG-HDMSDS040BBBEA	24	3810	HJM810510
GTD0033840025	23	740	17,020	FG-HDMSDS040BBBEA	25	3804	HJM810510
GTD0033840026	23	740	17,020	FG-HDMSDS040BBBEA	26	3804	HJM810510
GTD0033840027	23	740	17,020	FG-HDMSDS040BBBEA	27	3800	HJM810510
GTD0033840028	23	740	17,020	FG-HDMSDS040BBBEA	28	3796	HJM810510
GTD0033840029	23	740	17,020	FG-HDMSDS040BBBEA	29	3796	HJM810510
GTD0033840030	23	740	17,020	FG-HDMSDS040BBBEA	30	3802	HJM810510
GTD0033840031	23	740	17,020	FG-HDMSDS040BBBEA	31	3810	HJM810510
GTD0033840032	23	740	17,020	FG-HDMSDS040BBBEA	32	3800	HJM810510
GTD0033840033	23	740	17,020	FG-HDMSDS040BBBEA	33	3814	HJM810510
GTD0033840034	23	740	17,020	FG-HDMSDS040BBBEA	34	3812	HJK810050
GTD0033840035	23	740	17,020	FG-HDMSDS040BBBEA	35	3804	HJK810050
GTD0033840036	23	740	17,020	FG-HDMSDS040BBBEA	36	3780	HJK810050
GTD0033840037	23	740	17,020	FG-HDMSDS040BBBEA	37	3794	HJK810050
GTD0033840038	23	740	17,020	FG-HDMSDS040BBBEA	38	3794	HJK810050
GTD0033840039	23	740	17,020	FG-HDMSDS040BBBEA	39	3794	HJK810050
GTD0033840040	23	740	17,020	FG-HDMSDS040BBBEA	40	3796	HJK810050
GTD0033840041	23	740	17,020	FG-HDMSDS040BBBEA	41	3798	HJK810050
GTD0033840042	23	740	17,020	FG-HDMSDS040BBBEA	42	3804	HJK810050
GTD0033840043	23	740	17,020	FG-HDMSDS040BBBEA	43	3808	HJK810050
GTD0033840044	23	740	17,020	FG-HDMSDS040BBBEA	44	3820	HJK810050
GTD0033840045	23	740	17,020	FG-HDMSDS040BBBEA	45	3754	HJK810050
GTD0033840046	23	740	17,020	FG-HDMSDS040BBBEA	46	3746	HJK810050
GTD0033840047	23	740	17,020	FG-HDMSDS040BBBEA	47	3738	HJK810050
GTD0033840048	23	740	17,020	FG-HDMSDS040BBBEA	48	3744	HJK810050
GTD0033840049	23	740	17,020	FG-HDMSDS040BBBEA	49	3746	HJK810050
GTD0033840050	23	740	17,020	FG-HDMSDS040BBBEA	50	3738	HJK810050
GTD0033840051	23	740	17,020	FG-HDMSDS040BBBEA	51	3722	HJK810050
GTD0033840052	23	740	17,020	FG-HDMSDS040BBBEA	52	3718	HJK810050

885,040
total for order

1 of 1

APPENDIX E.2

Geomembrane Quality Control Certificates

CHESAPEAKE CONTAINMENT SYSTEMS, INC.

2690-D Salisbury Hwy
Statesville, NC 28677
P: 704.208.3440
www.ccsliners.com

SUBMITTAL COVER SHEET

DATE: 5/23/2019

SUBMITTAL NUMBER: 05 Rev A - Geomembrane MQC Certs - Response to Golder Review Dated 5/16/19

PROJECT NUMBER:	I19-032
PROJECT NAME:	JR Whiting Ponds 1&2 Closure
ATTENTION TO:	Steve Ganong

OWNER: Consumers Energy J.R. Whiting Generating Facility 4525 E. Erie Road Erie, MI 48133	CONTRACTOR: Ryan Central Inc 2700 East Racine Street Janesville, WI 53545

MANUFACTURER: Agru America 40 mil HDPE Microspike

Revised to include Stress Crack (NCTL) certification and information regarding Oven Aging and UV test results

SPEC. SECTION	SUBMITTAL ITEM DESCRIPTION
313800	Polyethylene Geomembrane Manufacturer Submittals
313800 1.04 A.2	Copies of dated quality control certificates issued by resin supplier.
313800 1.04 A.3	Results of tests conducted by geomembrane manufacturer to verify that resin used to manufacture geomembrane meets Specifications.
313800 1.04 A.8	Quality control certificates, signed by geomembrane manufacturer. Each quality control certificate shall include applicable roll identification numbers, testing procedures, and results of quality control tests.
313800 1.04 B.6	Certificate that extrudate to be used is comprised of same resin as geomembrane to be used.

SUBCONTRACTOR REVIEW: *These are submitted as checked below:* For Approval: X For Your Use: As Requested: Signature of CCS Reviewer: Jennifer Battle	ENGINEER APPROVAL:

Geomembrane Certification Package for

J.R. Whiting Ash Pond Closure

Erie, MI

Executive Offices: 500 Garrison Road, Georgetown, SC 29440 • 843 546-0600 • 800 321-1379
Sales Office: 700 Rockmead, Suite 103, Kingwood, TX 77339 • 281 358-4741 • 800 373-2478
Email: salesmkg@agruamerica.com

MATERIAL CERTIFICATIONS IN THIS PACKAGE:

- 40 MIL HDPE MICROSPIKE

Executive Offices: 500 Garrison Road, Georgetown, SC 29440 • 843 546-0600 • 800 321-1379
Sales Office: 700 Rockmead, Suite 103, Kingwood, TX 77339 • 281 358-4741 • 800 373-2478
Email: salesmkg@agruamerica.com

16 May 2019

Jennifer Battle
Chesapeake Containment Systems, Inc.
2690 D Salisbury Hwy
Statesville, NC 28677

RE: J.R. Whiting Generating Facility Ponds 1 & 2 Closure – UV/Oven Aging Testing Per Formulation and NCTL Testing – Golder Submittal 313800-02,03,04

Dear Ms. Battle,

Please find below AGRU's response to Golder's concerns indicated by item 3 in the referenced Submittal 313800-02, 03, 04:

- GRI GM 13 and GRI GM 17 require that UV Resistance and Oven Aging Testing be performed once per formulation. A formulation is described as a unique combination of virgin resin and carbon black. This testing is not specific to a particular thickness, surface characteristic or resin lot number, but rather describes properties intrinsic to the raw materials used to manufacture the finished product. Even though this testing is only required per formulation, we send samples of finished geomembrane to our resin supplier(s) periodically for testing to confirm continued compliance with standards. All rolls manufactured for the J.R. Whiting Generating Facility Ponds 1 & 2 Closure were produced from the same resin formulation as that for which UV/Oven Aging results were provided.

- NCTL testing is on-going, however AGRU does certify that all rolls supplied to this project shall achieve or surpass an NCTL transition time of 500 hours.

Sincerely,

Anthony Johnson
Technical Review Specialist
AGRU America

10 May 2019

Jennifer Battle
Chesapeake Containment Systems, Inc.
2690D Salisbury Hwy
Statesville, NC 28677

RE: AGRU OA #03022 JR Whiting Ash Pond Closure – Weld Rod Compatibility

Dear Ms. Battle,

Please see below the requested certifications for the above referenced Project:

- All weld rod produced and supplied for this Project is fully compatible with all geomembrane produced and supplied for this Project.

Sincerely,

Anthony Johnson
Technical Review Specialist
AGRU America

SECTION 1

List of Materials

Executive Offices: 500 Garrison Road, Georgetown, SC 29440 • 843 546-0600 • 800 321-1379
Sales Office: 700 Rockmead, Suite 103, Kingwood, TX 77339 • 281 358-4741 • 800 373-2478
Email: salesmkg@agruamerica.com

agru america
quality control dept

JR Whiting - Ash Ponds 1 & 2 Closures
Chesapeake Containment Systems, Inc.
4525 Erie Road
Erie, MI 48133

SO#: 00003022

FG-HDMSDS040BBBEA	52 rolls @ 740	885,040 ft².	

roll #	width	English length	area	Item	Count	weight	resin lot #
	ft.	ft.	ft².			lbs.	
GTD0033840001	23	740	17,020	**FG-HDMSDS040BBBEA**	1	**3766**	**HJM810460**
GTD0033840002	23	740	17,020	**FG-HDMSDS040BBBEA**	2	**3806**	**HJM810460**
GTD0033840003	23	740	17,020	**FG-HDMSDS040BBBEA**	3	**3798**	**HJM810460**
GTD0033840004	23	740	17,020	**FG-HDMSDS040BBBEA**	4	**3810**	**HJM810510**
GTD0033840005	23	740	17,020	**FG-HDMSDS040BBBEA**	5	**3800**	**HJM810510**
GTD0033840006	23	740	17,020	**FG-HDMSDS040BBBEA**	6	**3800**	**HJM810510**
GTD0033840007	23	740	17,020	**FG-HDMSDS040BBBEA**	7	**3808**	**HJM810510**
GTD0033840008	23	740	17,020	**FG-HDMSDS040BBBEA**	8	**3810**	**HJM810510**
GTD0033840009	23	740	17,020	**FG-HDMSDS040BBBEA**	9	**3810**	**HJM810510**
GTD0033840010	23	740	17,020	**FG-HDMSDS040BBBEA**	10	**3798**	**HJM810510**
GTD0033840011	23	740	17,020	**FG-HDMSDS040BBBEA**	11	**3802**	**HJM810510**
GTD0033840012	23	740	17,020	**FG-HDMSDS040BBBEA**	12	**3800**	**HJM810510**
GTD0033840013	23	740	17,020	**FG-HDMSDS040BBBEA**	13	**3794**	**HJM810510**
GTD0033840014	23	740	17,020	**FG-HDMSDS040BBBEA**	14	**3800**	**HJM810510**
GTD0033840015	23	740	17,020	**FG-HDMSDS040BBBEA**	15	**3802**	**HJM810510**
GTD0033840016	23	740	17,020	**FG-HDMSDS040BBBEA**	16	**3806**	**HJM810510**
GTD0033840017	23	740	17,020	**FG-HDMSDS040BBBEA**	17	**3810**	**HJM810510**
GTD0033840018	23	740	17,020	**FG-HDMSDS040BBBEA**	18	**3810**	**HJM810510**
GTD0033840019	23	740	17,020	**FG-HDMSDS040BBBEA**	19	**3814**	**HJM810510**
GTD0033840020	23	740	17,020	**FG-HDMSDS040BBBEA**	20	**3812**	**HJM810510**
GTD0033840021	23	740	17,020	**FG-HDMSDS040BBBEA**	21	**3806**	**HJM810510**
GTD0033840022	23	740	17,020	**FG-HDMSDS040BBBEA**	22	**3806**	**HJM810510**
GTD0033840023	23	740	17,020	**FG-HDMSDS040BBBEA**	23	**3810**	**HJM810510**
GTD0033840024	23	740	17,020	**FG-HDMSDS040BBBEA**	24	**3810**	**HJM810510**
GTD0033840025	23	740	17,020	**FG-HDMSDS040BBBEA**	25	**3804**	**HJM810510**
GTD0033840026	23	740	17,020	**FG-HDMSDS040BBBEA**	26	**3804**	**HJM810510**
GTD0033840027	23	740	17,020	**FG-HDMSDS040BBBEA**	27	**3800**	**HJM810510**
GTD0033840028	23	740	17,020	**FG-HDMSDS040BBBEA**	28	**3796**	**HJM810510**
GTD0033840029	23	740	17,020	**FG-HDMSDS040BBBEA**	29	**3796**	**HJM810510**
GTD0033840030	23	740	17,020	**FG-HDMSDS040BBBEA**	30	**3802**	**HJM810510**
GTD0033840031	23	740	17,020	**FG-HDMSDS040BBBEA**	31	**3810**	**HJM810510**
GTD0033840032	23	740	17,020	**FG-HDMSDS040BBBEA**	32	**3800**	**HJM810510**
GTD0033840033	23	740	17,020	**FG-HDMSDS040BBBEA**	33	**3814**	**HJM810510**
GTD0033840034	23	740	17,020	**FG-HDMSDS040BBBEA**	34	**3812**	**HJK810050**
GTD0033840035	23	740	17,020	**FG-HDMSDS040BBBEA**	35	**3804**	**HJK810050**
GTD0033840036	23	740	17,020	**FG-HDMSDS040BBBEA**	36	**3780**	**HJK810050**
GTD0033840037	23	740	17,020	**FG-HDMSDS040BBBEA**	37	**3794**	**HJK810050**
GTD0033840038	23	740	17,020	**FG-HDMSDS040BBBEA**	38	**3794**	**HJK810050**
GTD0033840039	23	740	17,020	**FG-HDMSDS040BBBEA**	39	**3794**	**HJK810050**
GTD0033840040	23	740	17,020	**FG-HDMSDS040BBBEA**	40	**3796**	**HJK810050**
GTD0033840041	23	740	17,020	**FG-HDMSDS040BBBEA**	41	**3798**	**HJK810050**
GTD0033840042	23	740	17,020	**FG-HDMSDS040BBBEA**	42	**3804**	**HJK810050**
GTD0033840043	23	740	17,020	**FG-HDMSDS040BBBEA**	43	**3808**	**HJK810050**
GTD0033840044	23	740	17,020	**FG-HDMSDS040BBBEA**	44	**3820**	**HJK810050**
GTD0033840045	23	740	17,020	**FG-HDMSDS040BBBEA**	45	**3754**	**HJK810050**
GTD0033840046	23	740	17,020	**FG-HDMSDS040BBBEA**	46	**3746**	**HJK810050**
GTD0033840047	23	740	17,020	**FG-HDMSDS040BBBEA**	47	**3738**	**HJK810050**
GTD0033840048	23	740	17,020	**FG-HDMSDS040BBBEA**	48	**3744**	**HJK810050**
GTD0033840049	23	740	17,020	**FG-HDMSDS040BBBEA**	49	**3746**	**HJK810050**
GTD0033840050	23	740	17,020	**FG-HDMSDS040BBBEA**	50	**3738**	**HJK810050**
GTD0033840051	23	740	17,020	**FG-HDMSDS040BBBEA**	51	**3722**	**HJK810050**
GTD0033840052	23	740	17,020	**FG-HDMSDS040BBBEA**	52	**3718**	**HJK810050**

885,040
total for order

SECTION 2

Geomembrane Quality Control Certifications

Executive Offices: 500 Garrison Road, Georgetown, SC 29440 • 843 546-0600 • 800 321-1379
Sales Office: 700 Rockmead, Suite 103, Kingwood, TX 77339 • 281 358-4741 • 800 373-2478
Email: salesmkg@agruamerica.com

These manufacturer quality control values were reviewed and meet GRI-GM13 minimum recommended properties for 40-mil textured geomembrane.

agru america quality control dept

JR Whiting - Ash Ponds 1 & 2 Closures
Chesapeake Containment Systems, Inc.
4525 Erie Road
Erie, MI 48133

SO#: **00003022**
Liner Type: **40HD micro**
Item: **FG-HDMSDS040BBBEA**
Current # of Rolls: **52**
Roll Count: **1-52** **(all)**
ENGLISH Measurements

					ASTM D5994 (Modified)			ASTM D7466				ASTM D3895	ASTM D792	ASTM D1238	ASTM D4218	ASTM D5596	ASTM D6693	ASTM D6693	ASTM D6693	ASTM D6693	ASTM D6693	ASTM D6693	ASTM D6693	ASTM D6693	ASTM D1004		ASTM D4833	ASTM D5397	
Count	Roll #	(English)			Thickness (English)			Asperity (Top)	Asperity (Bottom)	Weight	Lot #	OIT (Standard)	Specific Gravity	Melt Flow Index	Carbon Black Content	Carbon Black Disp.	Tensile Str. @Yield (MD)	Tensile Str. @Yield (TD)	Tensile Str. @Break (MD)	Tensile Str. @Break (TD)	Elong. @Yield (MD)	Elong. @Yield (TD)	Elong. @Break (MD)	Elong. @Break (TD)	Tear Resistance (MD)	Tear Resistance (TD)	Puncture Resistance	NCTL (500hrs.)	Production Date
		Width	Length	Area	Min.	Max.	Ave.																						
		ft.	ft.	ft².	mils	mils	mils	mils	mils	lbs.		min	g/cc	g/10 min.	%	(# in Cat. 1)	ppi	ppi	ppi	ppi	%	%	%	%	lbs.	lbs.	lbs.		
	Minimum Results (ea. Col.)				37	42	40	29	29	3502		192	0.944	0.26	2.3	10	94	101	117	113	15	14	384	495	33	30	90		
1	GTD0033840001	23	740	17,020	38	47	43	36	33	3766	HJM810460	192	0.944	0.26	2.5	10	94	101	117	113	17	15	392	512	33	30	90	ONGOING	5/4/2019
2	GTD0033840002	23	740	17,020	39	47	43	37	33	3806	HJM810460	192	0.944	0.26	2.5	10	94	101	117	113	17	15	392	512	33	30	90	ONGOING	5/4/2019
3	GTD0033840003	23	740	17,020	38	48	42	37	33	3798	HJM810460	192	0.944	0.26	2.4	10	104	116	136	126	15	14	411	521	33	30	90	ONGOING	5/5/2019
4	GTD0033840004	23	740	17,020	40	46	43	40	33	3810	HJM810510	192	0.944	0.26	2.4	10	104	116	136	126	15	14	411	521	33	30	90	ONGOING	5/5/2019
5	GTD0033840005	23	740	17,020	39	45	43	32	33	3800	HJM810510	192	0.944	0.26	2.5	10	104	116	136	126	15	14	411	521	33	30	90	ONGOING	5/5/2019
6	GTD0033840006	23	740	17,020	39	46	41	33	33	3800	HJM810510	192	0.944	0.26	2.5	10	104	116	136	126	15	14	411	521	33	30	90	ONGOING	5/5/2019
7	GTD0033840007	23	740	17,020	39	44	41	34	34	3808	HJM810510	192	0.944	0.26	2.4	10	104	116	136	126	15	14	411	521	33	30	90	ONGOING	5/5/2019
8	GTD0033840008	23	740	17,020	39	45	42	32	33	3810	HJM810510	192	0.944	0.26	2.3	10	108	115	129	132	19	15	403	550	39	35	96	ONGOING	5/5/2019
9	GTD0033840009	23	740	17,020	39	46	42	32	32	3810	HJM810510	192	0.944	0.26	2.3	10	108	115	129	132	19	15	403	550	39	35	96	ONGOING	5/5/2019
10	GTD0033840010	23	740	17,020	41	46	44	30	32	3798	HJM810510	192	0.944	0.26	2.3	10	108	115	129	132	19	15	403	550	39	35	96	ONGOING	5/5/2019
11	GTD0033840011	23	740	17,020	38	45	43	34	34	3802	HJM810510	192	0.944	0.26	2.5	10	108	115	129	132	19	15	403	550	39	35	96	ONGOING	5/5/2019
12	GTD0033840012	23	740	17,020	40	45	42	33	34	3800	HJM810510	192	0.944	0.26	2.5	10	108	115	129	132	19	15	403	550	39	35	96	ONGOING	5/5/2019
13	GTD0033840013	23	740	17,020	39	43	41	30	33	3794	HJM810510	192	0.944	0.26	2.5	10	105	111	122	129	21	15	390	546	39	35	96	ONGOING	5/5/2019
14	GTD0033840014	23	740	17,020	39	44	42	31	33	3800	HJM810510	192	0.944	0.26	2.5	10	105	111	122	129	21	15	390	546	39	35	96	ONGOING	5/5/2019
15	GTD0033840015	23	740	17,020	38	45	41	32	32	3802	HJM810510	192	0.944	0.26	2.6	10	105	111	122	129	21	15	390	546	39	35	96	ONGOING	5/5/2019
16	GTD0033840016	23	740	17,020	39	44	42	30	33	3806	HJM810510	192	0.944	0.26	2.6	10	105	111	122	129	21	15	390	546	39	35	96	ONGOING	5/6/2019
17	GTD0033840017	23	740	17,020	40	43	41	31	32	3810	HJM810510	192	0.944	0.26	2.5	10	105	111	122	129	21	15	390	546	39	35	96	ONGOING	5/6/2019
18	GTD0033840018	23	740	17,020	38	43	41	30	33	3810	HJM810510	192	0.944	0.26	2.5	10	105	113	127	127	19	14	421	528	39	35	98	ONGOING	5/6/2019
19	GTD0033840019	23	740	17,020	37	44	41	31	33	3814	HJM810510	192	0.944	0.26	2.6	10	105	113	127	127	19	14	421	528	39	35	98	ONGOING	5/6/2019
20	GTD0033840020	23	740	17,020	40	47	42	32	34	3812	HJM810510	192	0.944	0.26	2.6	10	105	113	127	127	19	14	421	528	39	35	98	ONGOING	5/6/2019
21	GTD0033840021	23	740	17,020	39	45	42	34	33	3806	HJM810510	192	0.944	0.26	2.4	10	105	113	127	127	19	14	421	528	39	35	98	ONGOING	5/6/2019
22	GTD0033840022	23	740	17,020	40	45	42	33	34	3806	HJM810510	192	0.944	0.26	2.4	10	105	113	127	127	19	14	421	528	39	35	98	ONGOING	5/6/2019
23	GTD0033840023	23	740	17,020	40	46	43	35	35	3810	HJM810510	192	0.944	0.26	2.5	10	112	116	143	128	20	16	426	518	56	60	98	ONGOING	5/6/2019
24	GTD0033840024	23	740	17,020	38	44	42	34	36	3810	HJM810510	192	0.944	0.26	2.4	10	112	116	143	128	20	16	426	518	56	60	98	ONGOING	5/6/2019
25	GTD0033840025	23	740	17,020	40	45	43	31	29	3804	HJM810510	192	0.944	0.26	2.4	10	112	116	143	128	20	16	426	518	56	60	98	ONGOING	5/6/2019
26	GTD0033840026	23	740	17,020	41	50	45	36	34	3804	HJM810510	192	0.944	0.26	2.5	10	112	116	143	128	20	16	426	518	56	60	98	ONGOING	5/6/2019
27	GTD0033840027	23	740	17,020	40	47	43	37	33	3800	HJM810510	192	0.944	0.26	2.5	10	112	116	143	128	20	16	426	518	56	60	98	ONGOING	5/6/2019
28	GTD0033840028	23	740	17,020	42	48	44	35	35	3796	HJM810510	192	0.944	0.26	2.5	10	107	111	139	132	21	15	445	550	35	35	100	ONGOING	5/6/2019
29	GTD0033840029	23	740	17,020	40	46	43	37	34	3796	HJM810510	192	0.944	0.26	2.5	10	107	111	139	132	21	15	445	550	35	35	100	ONGOING	5/6/2019
30	GTD0033840030	23	740	17,020	41	45	43	35	34	3802	HJM810510	192	0.944	0.26	2.5	10	107	111	139	132	21	15	445	550	35	35	100	ONGOING	5/6/2019
31	GTD0033840031	23	740	17,020	40	45	43	35	35	3810	HJM810510	192	0.944	0.26	2.5	10	107	111	139	132	21	15	445	550	35	35	100	ONGOING	5/7/2019
32	GTD0033840032	23	740	17,020	40	45	43	31	30	3800	HJM810510	192	0.944	0.26	2.4	10	107	111	139	132	21	15	445	550	35	35	100	ONGOING	5/7/2019
33	GTD0033840033	23	740	17,020	42	46	45	37	35	3814	HJM810510	192	0.944	0.26	2.4	10	107	113	130	136	23	16	384	550	35	35	100	ONGOING	5/7/2019
34	GTD0033840034	23	740	17,020	39	48	43	35	35	3812	HJK810050	200	0.944	0.26	2.6	10	107	113	130	136	23	16	384	550	35	35	100	ONGOING	5/7/2019
35	GTD0033840035	23	740	17,020	39	47	43	38	36	3804	HJK810050	200	0.944	0.26	2.6	10	107	113	130	136	23	16	384	550	35	35	100	ONGOING	5/7/2019

JR Whiting - Ash Ponds 1 & 2 Closures
Chesapeake Containment Systems, Inc.
4525 Erie Road
Erie, MI 48133

SO#: **00003022**
Liner Type: **40HD micro**
Item: **FG-HDMSDS040BBBEA**
Current # of Rolls: **52**
Roll Count: **1-52** **(all)**
ENGLISH Measurements

					ASTM D5994 (Modified)			ASTM D7466				ASTM D3895	ASTM D792	ASTM D1238	ASTM D4218	ASTM D5596	ASTM D6693	ASTM D6693	ASTM D6693	ASTM D6693	ASTM D6693	ASTM D6693	ASTM D6693	ASTM D6693	ASTM D1004		ASTM D4833	ASTM D5397	
Count	Roll #	(English)			Thickness (English)			Asperity (Top)	Asperity (Bottom)	Weight	Lot #	OIT (Standard)	Specific Gravity	Melt Flow Index	Carbon Black Content	Carbon Black Disp.	Tensile Str. @Yield (MD)	Tensile Str. @Yield (TD)	Tensile Str. @Break (MD)	Tensile Str. @Break (TD)	Elong. @Yield (MD)	Elong. @Yield (TD)	Elong. @Break (MD)	Elong. @Break (TD)	Tear Resistance (MD)	Tear Resistance (TD)	Puncture Resistance	NCTL (500hrs.)	Production Date
		Width	Length	Area	Min.	Max.	Ave.																						
		ft.	ft.	ft².	mils	mils	mils	mils	mils	lbs.		min	g/cc	g/10 min.	%	(# in Cat. 1)	ppi	ppi	ppi	ppi	%	%	%	%	lbs.	lbs.	lbs.		
	Minimum Results (ea. Col.)				37	42	40	29	29	3502		192	0.944	0.26	2.3	10	94	101	117	113	15	14	384	495	33	30	90		
36	GTD0033840036	23	740	17,020	39	49	43	38	36	3780	HJK810050	200	0.945	0.26	2.4	10	107	113	130	136	23	16	384	550	35	35	100	ONGOING	5/7/2019
37	GTD0033840037	23	740	17,020	39	43	41	30	33	3794	HJK810050	200	0.945	0.26	2.4	10	107	113	130	136	23	16	384	550	35	35	100	ONGOING	5/7/2019
38	GTD0033840038	23	740	17,020	38	44	41	29	32	3794	HJK810050	200	0.945	0.26	2.4	10	105	112	126	121	20	15	402	495	38	32	92	ONGOING	5/7/2019
39	GTD0033840039	23	740	17,020	38	48	42	33	32	3794	HJK810050	200	0.945	0.26	2.4	10	105	112	126	121	20	15	402	495	38	32	92	ONGOING	5/7/2019
40	GTD0033840040	23	740	17,020	38	42	41	30	33	3796	HJK810050	200	0.945	0.26	2.4	10	105	112	126	121	20	15	402	495	38	32	92	ONGOING	5/7/2019
41	GTD0033840041	23	740	17,020	39	42	41	30	33	3798	HJK810050	200	0.945	0.26	2.4	10	105	112	126	121	20	15	402	495	38	32	92	ONGOING	5/7/2019
42	GTD0033840042	23	740	17,020	41	48	44	36	34	3804	HJK810050	200	0.945	0.26	2.5	10	105	112	126	121	20	15	402	495	38	32	92	ONGOING	5/7/2019
43	GTD0033840043	23	740	17,020	43	48	46	38	34	3808	HJK810050	200	0.945	0.26	2.6	10	114	123	142	145	21	14	405	560	38	32	92	ONGOING	5/7/2019
44	GTD0033840044	23	740	17,020	38	48	43	33	33	3820	HJK810050	200	0.945	0.26	2.6	10	114	123	142	145	21	14	405	560	38	32	92	ONGOING	5/7/2019
45	GTD0033840045	23	740	17,020	41	47	44	31	33	3754	HJK810050	200	0.945	0.26	2.6	10	114	123	142	145	21	14	405	560	38	32	92	ONGOING	5/8/2019
46	GTD0033840046	23	740	17,020	42	47	44	37	33	3746	HJK810050	200	0.945	0.26	2.5	10	114	123	142	145	21	14	405	560	38	32	92	ONGOING	5/8/2019
47	GTD0033840047	23	740	17,020	42	47	44	35	34	3738	HJK810050	200	0.945	0.26	2.5	10	114	123	142	145	21	14	405	560	38	32	92	ONGOING	5/8/2019
48	GTD0033840048	23	740	17,020	42	45	43	31	33	3744	HJK810050	200	0.945	0.26	2.5	10	112	118	146	137	21	15	416	547	39	33	97	ONGOING	5/8/2019
49	GTD0033840049	23	740	17,020	39	48	43	36	37	3746	HJK810050	200	0.945	0.26	2.5	10	112	118	146	137	21	15	416	547	39	33	97	ONGOING	5/8/2019
50	GTD0033840050	23	740	17,020	42	48	45	40	34	3738	HJK810050	200	0.945	0.26	2.4	10	112	118	146	137	21	15	416	547	39	33	97	ONGOING	5/8/2019
51	GTD0033840051	23	740	17,020	38	49	42	38	35	3722	HJK810050	200	0.945	0.26	2.4	10	112	118	146	137	21	15	416	547	39	33	97	ONGOING	5/8/2019
52	GTD0033840052	23	740	17,020	38	42	40	30	33	3718	HJK810050	200	0.945	0.26	2.4	10	112	118	146	137	21	15	416	547	39	33	97	ONGOING	5/8/2019

These manufacturer quality control values were reviewed and meet GRI-GM13 minimum recommended properties for 40-mil textured geomembrane.

SECTION 3

Resin Certifications

Executive Offices: 500 Garrison Road, Georgetown, SC 29440 • 843 546-0600 • 800 321-1379
Sales Office: 700 Rockmead, Suite 103, Kingwood, TX 77339 • 281 358-4741 • 800 373-2478
Email: salesmkg@agruamerica.com

CoA Date: 04/06/2019

Certificate of Analysis

Shipped To: AGRU AMERICA INC:GEORGETOWN
500 GARRISON RD
GEORGETOWN SC 29440
USA

Recipient: PALMER
Fax:

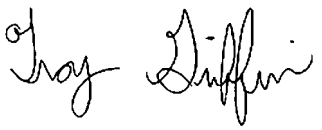
Delivery #: 89874473
PO #: 15893
Weight: 187100.000 LB
Ship Date: 04/06/2019
Package: BULK
Mode: Hopper Car
Car #: NAHX610138
Seal No: 143201

Product:
MARLEX K307 POLYETHYLENE in Bulk

Lot Number: HJM810460

Property	Test Method	Value	Unit
Melt Index	ASTM D1238	0.26	g/10min
HLMI Flow Rate	ASTM D1238	20	g/10min
Density	D1505 or D4883	0.937	g/cm3
Pellet Count	P02.08.03	28	pelet/gram
Production Date		11/08/2018	

The data set forth herein have been carefully compiled by Chevron Phillips Chemical Company LP (CPChem).
However, there is no warranty of any kind, either expressed or implied, applicable to its use, and the user assumes all risk and liability in connection therewith.



Troy Griffin
Quality Systems Coordinator

For CoA questions contact Patricia Royall at +1-832-813-4806

CoA Date: 04/11/2019

Certificate of Analysis

Shipped To: AGRU AMERICA INC:GEORGETOWN
500 GARRISON RD
GEORGETOWN SC 29440
USA

Recipient: PALMER
Fax:

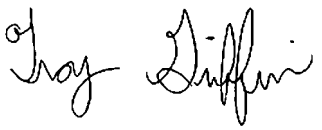
Delivery #: 89877535
PO #: 15893
Weight: 189300.000 LB
Ship Date: 04/11/2019
Package: BULK
Mode: Hopper Car
Car #: SHQX041464
Seal No: 143423

Product:
MARLEX K307 POLYETHYLENE in Bulk

Lot Number: HJM810510

Property	Test Method	Value	Unit
Melt Index	ASTM D1238	0.26	g/10min
HLMI Flow Rate	ASTM D1238	21	g/10min
Density	D1505 or D4883	0.938	g/cm3
Pellet Count	P02.08.03	27	pelet/gram
Production Date		11/09/2018	

The data set forth herein have been carefully compiled by Chevron Phillips Chemical Company LP (CPChem).
However, there is no warranty of any kind, either expressed or implied, applicable to its use, and the user assumes all risk and liability in connection therewith.



Troy Griffin
Quality Systems Coordinator

For CoA questions contact Patricia Royall at +1-832-813-4806

CoA Date: 04/13/2019

Certificate of Analysis

Shipped To: AGRU AMERICA INC:GEORGETOWN
500 GARRISON RD
GEORGETOWN SC 29440
USA

Recipient: PALMER
Fax:

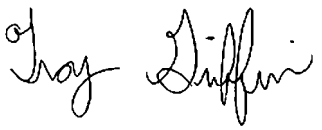
Delivery #: 89879178
PO #: 15893
Weight: 181300.000 LB
Ship Date: 04/13/2019
Package: BULK
Mode: Hopper Car
Car #: CEFX054011
Seal No: 85788

Product:
MARLEX K307 POLYETHYLENE in Bulk

Lot Number: HJK810050

Property	Test Method	Value	Unit
Melt Index	ASTM D1238	0.26	g/10min
HLMI Flow Rate	ASTM D1238	22	g/10min
Density	D1505 or D4883	0.938	g/cm3
Pellet Count	P02.08.03	28	pelet/gram
Production Date		10/01/2018	

The data set forth herein have been carefully compiled by Chevron Phillips Chemical Company LP (CPChem).
However, there is no warranty of any kind, either expressed or implied, applicable to its use, and the user assumes all risk and liability in connection therewith.



Troy Griffin
Quality Systems Coordinator

For CoA questions contact Patricia Royall at +1-832-813-4806

Chevron Phillips Chemical Company LP

Vergil H. Rhodes, PE, CPlasT - Tech Svc & App Dev Engineer, Geomembranes
Highways 60 & 123, Bartlesville Research and Technology Center, Room 103 PTC
Bartlesville, OK 74003
■ 918-977-4229 ■ rhodevh@cpchem.com ■ Fax: 918-977-7599 ■ www.cpchem.com

October 31, 2017
Filename: Agru Oven and QUV Exposure Testing_103117.pdf

Nathan Ivy - Corporate Quality Control/Technical Manager
Agru America, Inc.
800 Rockmead #122
Kingwood, TX 77339
281-358-4741

Dear Mr. Ivy:

Please recall your request for testing of oven-exposed and UV-exposed geomembrane samples produced primarily from Marlex® 7104 LLDPE and Marlex® K307 HDPE. Agru blended other components with each of these polyethylenes to produce the geomembrane samples for testing. Smooth geomembrane samples have been received from Agru and test results are reported below. The samples were tested for HP-OIT in their as-received condition, and were also tested after oven and UV exposures of 90 days and 1600 hours of irradiance, respectively, in accordance with GRI-GM13 and GRI-GM17.
The following geomembrane sheet samples were received from Agru in mid-June 2017 and were reported to be primarily composed of each of the Chevron Phillips Chemical Company grades in the description below:

- K307 Lot #HHB620720, Agru Roll #G17D000534, black sheet, smooth, nominal 0.040" thick.
- 7104 Lot #CFJ810540, Agru Roll #G15B434055, black sheet, smooth, nominal 0.040" thick.

Exposure and testing conditions, along with the test results are tabulated on the next page. GM-13 and GM-17 require minimum % HP-OIT retention after a 90-day oven exposure and after a 1600 hour UV irradiance exposure. These test results indicate these GM-13 and GM-17 minimum % HP-OIT retentions were exceeded by these Agru-supplied K307 and 7104 sheet samples, respectively.

If you have any questions, please feel free to contact me (contact information given above).

Sincerely,

Vergil Rhodes
Polyethylene Technical Service and Applications Development, Geomembrane

The GRI-GM13 minimum recommended oven-exposed and UV-exposed values are the same for textured and smooth geomembrane. The testing results for the K307 formulation are acceptable per GRI-GM13 and therefore the K307 formulation can be used to manufacturer textured and smooth geomembrane. A signed letter from AGRU dated May 16, 2019 confirms this understanding.

NOTICES
Technical Information - By using any Technical Information contained herein, Recipient agrees that said Technical Information is given by CPChem for convenience only, without any warranty or guarantee of any kind, and is accepted and used at your sole risk. Recipients are encouraged to verify independently any such information to their reasonable satisfaction. As used in this paragraph, "Technical Information" includes any technical advice, recommendations, testing, or analysis, including, without limitation, information as it may relate to the selection of a product for a specific use and application.

The following oven aging and UV exposure test methods were conducted in accordance with the GRI-GM13 (HDPE) and GRI-GM17 (LLDPE) requirements:

Test Name	**Exposure Conditions**	**Test Method**
Oven Aging	90 days in an oven at 85 °C	ASTM D5721
UV Exposure	1600 UV irradiance hours. Cycle: 20 hours UVA-340 at 75 °C followed by 4 hours dark with condensation at 60 °C. Irradiance was 0.78 W/m^2 at wavelength 340 nm. Note: This implies a total UV chamber residence time of 1920 hours, e.g., 1600 hours of irradiance and 320 hours of dark/condensation.	ASTM D7238
HP-OIT	150 °C in an oxygen atmosphere at 500 psi	ASTM D5885

Oven Aging Results:

Sample	Initial HP-OIT (min)	HP-OIT after 90 days of oven aging. (min)	% HP-OIT Retained after 90 days of oven aging.	GRI-GM13 and GRI-GM17 minimum % HP-OIT retained after 90 days of oven aging.
K307 Lot #HHB620720, Agru Roll #G17D000534, black sheet, smooth, nominal 0.040" thick	1264	1123	89	GRI-GM13: 80 minimum
7104 Lot #CFJ810540, Agru Roll #G15B434055, black sheet, smooth, nominal 0.040" thick	550	508	92	GRI-GM17: 60 minimum

UV Aging Results:

Sample	Initial HP-OIT (min)	HP-OIT after 1600 hrs of UV exposure. (min)	% HP-OIT Retained after 1600 hrs of UV exposure.	GRI-GM13 and GRI-GM17 minimum % HP-OIT retained after 1600 hrs of UV exposure.
K307 Lot #HHB620720, Agru Roll #G17D000534, black sheet, smooth, nominal 0.040" thick	1264	1024	81	GRI-GM13: 50 minimum
7104 Lot #CFJ810540, Agru Roll #G15B434055, black sheet, smooth, nominal 0.040" thick	550	470	85	GRI-GM17: 35 minimum

Note: 1600 hours of UV exposure in accordance with ASTM D7238 implies a total UV chamber residence time of 1920 hours, e.g., 1600 hours of irradiance and 320 hours of darkness with condensation.

NOTICES
Technical Information - By using any Technical Information contained herein, Recipient agrees that said Technical Information is given by CPChem for convenience only, without any warranty or guarantee of any kind, and is accepted and used at your sole risk. Recipients are encouraged to verify independently any such information to their reasonable satisfaction. As used in this paragraph, "Technical Information" includes any technical advice, recommendations, testing, or analysis, including, without limitation, information as it may relate to the selection of a product for a specific use and application.