

Location <b>Lemex/MW-3D</b>		Date(s) Drilled <b>2/2/15 Monday</b>		Drilling Contractor <b>Cascade Drilling</b>		Bearing (Azimuth)	
Ground Surface Elevation (ft)		Logged by <b>J. Sobolew</b>		Drill Rig Type <b>Prosonic 600T</b>		Plunge (Degrees) <b>Vert</b>	
Horizontal/Vertical Datum		Reviewed by		Borehole Diameter (in) <b>10 3/4" sc 16" core</b>		Total Depth (ft) <b>332</b>	
Depth (ft)	Notes	Sample Information		<div style="text-align: center;"> <b>CONFIDENTIAL DRAFT</b>  <b>Subject to Revision</b>  <b>MATERIAL DESCRIPTION</b> </div>			
		Penetration (Graphic)	Geologic Unit				
		Type and No.		SOIL COLOR			
		Blows per 6 in.					
		Penetration (in)					
		Recovery (in)					

Depth (ft)	Soil Description	Soil Color
0	Excavated material recompacted for first two feet,	
1		
2		
3	(SP) Sand, 100% F-M sand, well sorted, angular to subangular, QFA	10YR 5/3 Brown
4	(SP) Sand, 100% F-M sand, angular to subrounded, well sorted, QFA, trace gravel up to 10mm	10YR 5/4 Yellowish Brown
5		
6		
7	(SM) Silty Sand, 80% F-C sand, medium sorting, subangular to subrounded, 20% silt, QFA	10YR 5/3 Brown
8		
9		
10		
11		
12		
13		
14	13.4' (SP) Sand, 100% F-C sand, predominantly F-M sand, medium to well sorted, subangular to subrounded, QFA	10YR 6/4 Light Yellowish Brown
15		
16		
17	17.0' (SM) Silty Sand, 85% F-M sand, medium sorting, subangular to subrounded, QFA, 15% silt	10YR 5/3 Brown
18		
19	18.0' (SP) Sand, 95% F-M sand, well sorted, subangular to subrounded, 5% silt, QFA	10YR 6/4 Light Yellowish Brown
20		
21		
22		
23	23.0' (SP) Sand, 100% F-C sand, predominantly medium grained and quartz, well sorted, subangular to subrounded, trace silt	10YR 6/6 Brownish Yellow
24		
25		
26		
27	27.0' (SP-SM) Sand with silt, 90% F-M sand, 10% silt, medium sorting, subangular to subrounded, QFA	10YR 5/3 Brown
28		
29		
30		

Location <b>Comez/MW-3D</b>	Date(s) Drilled <b>2/2/15 Monday</b>	Drilling Contractor <b>Cascade Drilling</b>	Bearing (Azimuth)
Ground Surface Elevation (ft)	Logged by <b>J. Sebalew</b>	Drill Rig Type <b>Prosenic 600T</b>	Plunge (Degrees) <b>Vert</b>
Horizontal/Vertical Datum	Reviewed by	Borehole Diameter (in) <b>10 3/4" / 6" core</b>	Total Depth (ft) <b>332</b>

Depth (ft)	Notes	Sample Information					Geologic Unit	<b>CONFIDENTIAL DRAFT</b> Subject to Revision MATERIAL DESCRIPTION	SOIL COLOR
		Penetration (Graphic)	Type and No.	Blows per 6 in.	Penetration (in)	Recovery (in)			

30									
31									
32									
33									
34									
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59									
60									

(SP) Sand, 100% F-C Sand, predominantly F-M, medium sorting, angular to subangular, QFA  
WL at ~30ft bgs

10YR6/3  
Pale  
Brown

(SP) Sand, 95% F-C sand, 5% fine gravel, trace silt, angular to subangular

10YR  
6/3

Pale  
Brown

10% gravel up to 4mm (50.1-52.4ft bgs)

52.4'

(SP) Sand, 100% F-C sand, trace silt, medium sorting, subangular, QFMA, F-M sand (52.4-54.6ft bgs)  
Coarse sand (54.6-60.7ft bgs) grading

5Y 6/2  
Light  
olive  
gray



@1338

@1430

@1455

Location <i>Cemex/MW-30</i>	Date(s) Drilled <i>2/2/15 Monday</i>	Drilling Contractor <i>Cascade Drilling</i>	Bearing (Azimuth)
Ground Surface Elevation (ft)	Logged by <i>J. Sobolew</i>	Drill Rig Type <i>Prosonic 600T</i>	Plunge (Degrees) <i>Vert</i>
Horizontal/Vertical Datum	Reviewed by	Borehole Diameter (in) <i>10 3/4" x 6" core</i>	Total Depth (ft) <i>332</i>

Depth (ft)	Notes	Sample Information					Geologic Unit	<b>CONFIDENTIAL DRAFT</b> Subject to Revision MATERIAL DESCRIPTION	SOIL COLOR
		Penetration (Graphic)	Type and No.	Blows per 6 in.	Penetration (in)	Recovery (in)			

60									
61									
62									
63									
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65									
66									
67	<i>@ 1516</i>								
68									
69									
70									
71									
72									
73									
74									
75									
76									
77	<i>@ 1547</i>								
78									
79									
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81									
82									
83									
84									
85									
86									
87	<i>@ 1630</i>								
88	<i>@ 0800</i>								
89	<i>2/2/15</i>								
90									

60.7' (SP) Sand, 100% very fine to fine sand, trace silt, subangular to subrounded, well sorted, QFMA, high mica and biotite content.

54 6/3  
Olive

67.0' (SP) Sand, 95% very fine to fine sand, trace medium grained, 5% silt, well sorted, subrounded, QMA, high mica content.

2.54  
4/3  
Olive  
Brown

87' (SW) Well graded sand, 100% f.c sand, poorly sorted, subangular to subrounded, trace gravel up to 7mm, trace silt, QFA 2:1000

104-564  
5/2  
JF 2/15/15  
Olive



Location <b>Cemex/MW-30</b>	Date(s) Drilled <b>2/3/15 Tuesday</b>	Drilling Contractor <b>Cascade Drilling</b>	Bearing (Azimuth)
Ground Surface Elevation (ft)	Logged by <b>J. Sobolew</b>	Drill Rig Type <b>Prosonic 600T</b>	Plunge (Degrees) <b>Vert</b>
Horizontal/Vertical Datum	Reviewed by	Borehole Diameter (in) <b>10 3/4" sc / 6" cor</b>	Total Depth (ft) <b>332</b>

Depth (ft)	Notes	Sample Information					Geologic Unit	MATERIAL DESCRIPTION	SOIL COLOR
		Penetration (Graphic)	Type and No.	Blows per 6 in.	Penetration (in)	Recovery (in)			

**CONFIDENTIAL DRAFT**

Subject to Revision

MATERIAL DESCRIPTION

SOIL COLOR

90									
91									
92									
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120									

10.2' (SP) Sand, 95% F-C sand, predominantly M-C sand, medium sorting, subangular to subrounded, 5% F-C gravel up to 17mm, trace silt, RFA

91.5' (SP-SM) Sand with silt, 90% fine sand, 10% silt, well sorted, angular to subangular, RFA

95.2' (SP) Sand, 90% F-C sand, 5% gravel F-C up to 15mm, 5% silt, medium sorting, subangular to subrounded, RFA

104.4' (SP) Sand, 95% F-M sand, 5% silt, well sorted, subangular to subrounded, RFA

107' (SP-SM) Sand with silt, 90% very fine to fine sand, 10% silt, well sorted, angular to subangular, RFA

117'

2.54 6/4  
Light Yellowish  
Brown

2.54 5/3  
Light Olive  
Brown

2.54 6/3  
Light  
Yellowish  
Brown

54 6/3  
Pale  
Olive

54  
5/3  
Olive

@0845  
2/4/15  
@1000

@1021

@1125  
@1228

SHEET 5 OF 12

[illegible]

Location <b>Cemex/MW-3D</b>		Date(s) Drilled <b>2/4/15 Wednesday</b>	Drilling Contractor <b>Cascade Drilling</b>	Bearing (Azimuth)	
Ground Surface Elevation (ft)		Logged by <b>J. Sebalew</b>	Drill Rig Type <b>Prosonic 600T</b>	Plunge (Degrees) <b>Vert</b>	
Horizontal/Vertical Datum		Reviewed by	Borehole Diameter (in) <b>9 7/8" SC 1 1/2" LOR</b>	Total Depth (ft) <b>332</b>	
Depth (ft)	Notes	<div><div>CONFIDENTIAL DRAFT</div><div>Subject to Revision</div><div>MATERIAL DESCRIPTION</div></div>			SOIL COLOR
Sample Information					
	Penetration (Graphic)				
Type and No.					
Blows per 6 in.					
Penetration (in)					
Recovery (in)					
Geologic Unit					

**CONFIDENTIAL DRAFT**  
Subject to Revision  
MATERIAL DESCRIPTION

150							
151							
152							
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154							
155							
156							
157	@1450						
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167	@1526						
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180							

(SP-5M) Sand with silt, 90% very fine to fine sand, 10% silt, well sorted, subrounded, QFA

10YR  
5/6  
Yellowish  
Brown

160.3' (SP) Sand, 95% very fine to fine sand, 5% silt, well sorted, subangular to subrounded, weakly cemented clasts, QFA

10YR 4/6  
Dark yellowish  
Brown

162.3' (CH) Fat clay, 100% clay, fine mica trace amount, high plasticity

10YR  
4/3  
Brown

167' (SM) Silty Sand, 85% fine sand, 15% silt, well sorted, subangular to subrounded, QMA

5Y 6/3  
Pale  
Olive

170.5' (ML) Silt, 100% silt, low plasticity, brittle

2.5Y 5/4  
Light olive  
Brown

172.5' (SP) Sand, 95% F-M sand, 5% silt, well sorted, QMA  
Interbeds of high to medium plasticity clay

5Y 5/3  
Olive

177'



Location <b>Lemex / MW-30</b>		Date(s) Drilled <b>2/4/15 Wednesday</b>	Drilling Contractor <b>Cascade Drilling</b>	Bearing (Azimuth)			
Ground Surface Elevation (ft)		Logged by <b>J. Sabdeu</b>	Drill Rig Type <b>Prosonic 600T</b>	Plunge (Degrees) <b>Vert</b>			
Horizontal/Vertical Datum		Reviewed by	Borehole Diameter (in) <b>9 7/8" SC / 6" Core</b>	Total Depth (ft) <b>332</b>			
Depth (ft)	Notes	Sample Information			Geologic Unit	<b>CONFIDENTIAL DRAFT</b> Subject to Revision MATERIAL DESCRIPTION	SOIL COLOR
		Penetration (Graphic)	Type and No.	Blows per 6 in.			

180									
181									
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209									
210									

(SP) Sand, 100% F-M sand, well sorted, subangular to subrounded, weakly cemented clasts, QMA, high dark mineral content, trace silt

10YR 4/4  
Brown

194.6' (SC) Clayey sand, 60% fine sand, 40% clay well sorted, subrounded, weakly cemented clasts, QFA, low plasticity

7.5YR 4/4  
Brown

197' (CL) Sandy clay, 60% clay, 40% fine sand, subangular to subrounded, QFA, low to medium plasticity

10YR 5/6  
Yellowish Brown

(CL) Sandy clay, 60% clay, 40% fine sand, well sorted, subangular to subrounded, QFA, low plasticity, high content of dark minerals

10YR 4/6  
Dark yellowish Brown

(ML) Sandy silt, 55% silt, 45% fine sand, well sorted, subangular to subrounded, weakly cemented clasts, QFA, high dark mineral content

10YR 5/3  
Brown

204.9' (SM) Silty Sand, 60% F-M sand, 40% silt, medium to well sorted, subangular to subrounded weakly cemented, QFA, high dark mineral content

2.5Y 5/3  
Light Olive Brown

(SP-SM) Sand with silt, 90% F-M sand, 10% silt, well sorted, subangular to subrounded, weakly cemented, QFA, Oxidation, high dark mineral content

2.5Y 4/3  
Olive Brown

@1705  
2/5/15  
@0710

@0733

@0832







SHEET 9 OF 12

@ 0738

Location <b>Cemex/MW-3D</b>		Date(s) Drilled <b>2/6/15 Friday</b>		Drilling Contractor <b>Cascade Drilling</b>		Bearing (Azimuth)		
Ground Surface Elevation (ft)		Logged by <b>J. Sobolew</b>		Drill Rig Type <b>Prosonic 600T</b>		Plunge (Degrees) <b>Vert</b>		
Horizontal/Vertical Datum		Reviewed by		Borehole Diameter (in) <b>8"sc/6"core</b>		Total Depth (ft) <b>332</b>		
Depth (ft)	Notes	Sample Information					Geologic Unit	<div><div><div>CONFIDENTIAL DRAFT</div><div>Subject to Revision</div><div>MATERIAL DESCRIPTION</div></div><div>SOIL COLOR</div></div>
		Penetration (Graphic)	Type and No.	Blows per 6 in.	Penetration (in)	Recovery (in)		

270							
271							
272							
273							
274							
275							
276							
277	@0837					275.8' (CL) Gravelly clay, 60% clay, 30% F-C gravel, 10% F-C sand, subrounded, poor sorting, medium plasticity, QFA	5Y 6/3 pale olive
278						277' (SP-SC) Sand with clay, 90% fine sand, trace medium, 10% clay, medium to well sorting, subangular to subrounded, none to low plasticity, QMA	5Y 5/2 blue gray
279						277.5' (CL) Sandy lean clay with gravel, 55% clay, 30% F-C sand, 15% F-C gravel, poor sorting, subangular to subrounded, low plasticity, QMA, grading with depth	5Y 6/3 pale olive
280							
281							
282							
283						Gravel content increases to ~35%, sand ~10%	
284						283.2' (CH) Fat clay, 100% clay medium to high plasticity.	2.5Y 5/4 light olive brown
285						284' (SP) Sand, 95% F-M sand, well sorted, subangular to subrounded, QFMA, 5% clay	2.5Y 5/4 light olive brown
286	@0920						
287						287' (SP) Sand, 95% F-C sand, 5% F-C gravel, up to 40mm, well sorted, subangular to subrounded, QFMA	2.5Y 5/2 grayish brown
288							
289							
290							
291						290.7' (SP) Sand with gravel, 70% M-C sand, 25% F-C gravel, 5% clay, well sorted, subangular to subrounded, QFMA	2.5Y 6/3 light yellowish brown
292							
293							
294							
295						294.4' (CH) Fat clay, 100% clay, medium plasticity, interbeds of M-C sand (SP)	10YR 5/6 yellowish brown
296							
297	@1009					297' (SP-SC) Sand with clay and gravel, 65% F-C sand, 25% F-C gravel, 10% clay, medium sorting, subangular to subrounded, QFMA	2.5Y 5/3 light olive brown
298							
299							
300							



Project: RBF/MPWSP  
Monitoring Well  
Project No.: 13027-14

# LOG OF BORING

SHEET 11 OF 12

Location <b>Cemex / MW-30</b>		Date(s) Drilled <b>2/16/15 Friday</b>	Drilling Contractor <b>Cascade Drilling</b>	Bearing (Azimuth)			
Ground Surface Elevation (ft)		Logged by <b>J. Schaefer</b>	Drill Rig Type <b>Prosenic 600T</b>	Plunge (Degrees) <b>Vert</b>			
Horizontal/Vertical Datum		Reviewed by	Borehole Diameter (in) <b>8" SC / 6" Core</b>	Total Depth (ft) <b>332</b>			
Depth (ft)	Notes	Sample Information			Geologic Unit	<b>CONFIDENTIAL DRAFT</b> Subject to Revision MATERIAL DESCRIPTION	SOIL COLOR
		Penetration (ft)	Type and No.	Blows per 6 in.			
300							
301						(SP) Sand, 95% F-M sand, 5% clay, well sorted, subangular to subrounded, QFMA	2.5Y 5/6 Light Olive Brown
302							
303							
304							
305							
306							
307						(SP) Sand, 85% F-C sand, 10% fine gravel, 5% clay, medium sorting, QFMA	2.5Y 4/3 Olive Brown
308							
309							
310							
311							
312						(SP) Sand with gravel, 80% F-C sand, 15% F-C gravel, 5% clay, medium sorting, angular to subangular, QFMA	2.5Y 4/4 Olive Brown
313						(GC) Clayey gravel with sand, 45% F-C gravel, 30% clay, 25% F-C sand, poor sorting, subrounded, medium plasticity, QFA	2.5Y 5/4 Light Olive Brown
314							
315						(SP) Sand, 85% F-C sand, 10% fine gravel, 5% clay, medium sorting, subangular to subrounded, low plasticity, QFMA Gravel up to 75mm (315.2-315.5)	2.5Y 5/3 Light Olive Brown
316							
317						(SP) Sand with gravel	2.5Y 5/4 Light Olive Brown
318							
319							
320							
321						(GP-GC) Gravel with clay and sand, 55% F-C gravel, 35% F-C sand, 10% clay, poor to medium sorting, low plasticity, QFMA	5Y 6/3 Pale Olive
322							
323						(SP) Sand, 85% F-C sand, 10% gravel, 5% clay, medium to well sorting, QFMA	5Y 6/3 Pale Olive
324							
325							
326							
327							
328							
329							
330							



Location <i>Lemex/MW-30</i>	Date(s) Drilled <i>2/6/15 Friday</i>	Drilling Contractor <i>Cascade Drilling</i>	Bearing (Azimuth)
Ground Surface Elevation (ft)	Logged by <i>J. Soden</i>	Drill Rig Type <i>Prosonic 600T</i>	Plunge (Degrees) <i>Vert</i>
Horizontal/Vertical Datum	Reviewed by	Borehole Diameter (in) <i>8"SC/6"core</i>	Total Depth (ft) <i>332</i>

Depth (ft)	Notes	Sample Information					Geologic Unit	<b>CONFIDENTIAL DRAFT</b> Subject to Revision MATERIAL DESCRIPTION	SOIL COLOR
		Penetration (Graphic)	Type and No.	Blows per 6 in.	Penetration (in)	Recovery (in)			

330								(SP) Sand, 95% F-M sand, 5% clay, well sorted, subangular to sub rounded, QFMA	2.57 S/3
331									Light Olive Brown
332								332'	
333								Total Depth @ 332 ft bgs.	
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@1345