mcc-2

STATE OF NEVADA
DIVISION OF WATER RESOURCES
WELL DRILLER'S REPORT

Log No. 108599
Permit No.
Basin 212

PRINT OR TYPE ONLY
DO NOT WRITE ON BACK

Please complete this form in its entirety in accordance with NRS 534.170 and NAC 534.340

NOTICE OF INTENT NO. 32182

1. OWNER USA
MAILING ADDRESS Washington DC

ADDRESS AT WELL LOCATION Henderson 89015
Subdivision Name: County: CLARK

2. LOCATION S ¼ SE ¼ Sec 30 T 21 N/S R 63 E
PERMIT/WAIVER No. H-000688 | 1603000003
Issued by Water Resources | Parcel No.

Latitude 36.04.973 | UTM E | ☐ NAD 27
Longitude 114.59.565 | N | ☒ NAD 83/WGS 84

3. WORKED PERFORMED
☒ New Well ☐ Replace ☐ Recondition
☐ Deepen ☐ Other

4. PROPOSED USE
☐ Domestic ☐ Irrigation ☐ Test
☐ Municipal/Industrial ☒ Monitor ☐ Stock

5. WELL TYPE
☐ Cable ☐ Rotary ☐ RVC
☐ Air ☒ Other Sonic Dri

6. LITHOLOGIC LOG

Material	Water Strata	From	To	Thickness
attached Log				

DCNR/DWR RECEIVED
SEP 01 2009
LAS VEGAS OFFICE

Date started: 3-23, 20 09
Date completed: 5-5, 20 09

7. Static water level: 3.1" feet below land surface
Artesian Flow: G.P.M. P.S.I.
Water Temperature: °F
Quality:

8. WELL TEST DATA
TEST METHOD: ☐ Bailer ☐ Pump ☐ Air Lift

G.P.M.	Draw Down (Feet Below Static)	Time (Hours)

9. WELL CONSTRUCTION
Depth Drilled 390 Feet Depth Cased 390 Feet

HOLE DIAMETER (BIT SIZE)

		From		To	
8"	Inches	0	Feet	390	Feet
	Inches		Feet		Feet
	Inches		Feet		Feet

CASING SCHEDULE

Size O.D. (Inches)	Weight/Ft. (Pounds)	Wall Thickness (Inches)	From (Feet)	To (Feet)
4"	PVC	SCH 80	0	390

Perforations:
Type of perforation Slotted SLRiech
Size of perforation 0.010
From 370 feet to 390 feet
From feet to feet
From feet to feet
From feet to feet
From feet to feet

Annular Seal: ☐ Yes ☐ No
☐ Neat Cement to ☐ Pumped ☐ Poured
☐ Cement Grout to ☐ Pumped ☐ Poured
☒ Concrete Grout 0 to 355 ☒ Pumped ☐ Poured
☐ =30% Bentonite Grout to ☐ Pumped ☐ Poured

Gravel Pack: ☒ Yes ☐ No 355 to 397 ☐ Pumped ☒ Poured
Type: CEMEX sand 2/16
Bentonite Chips: ☐ Yes ☒ No to ☐ Pumped ☐ Poured
Type:

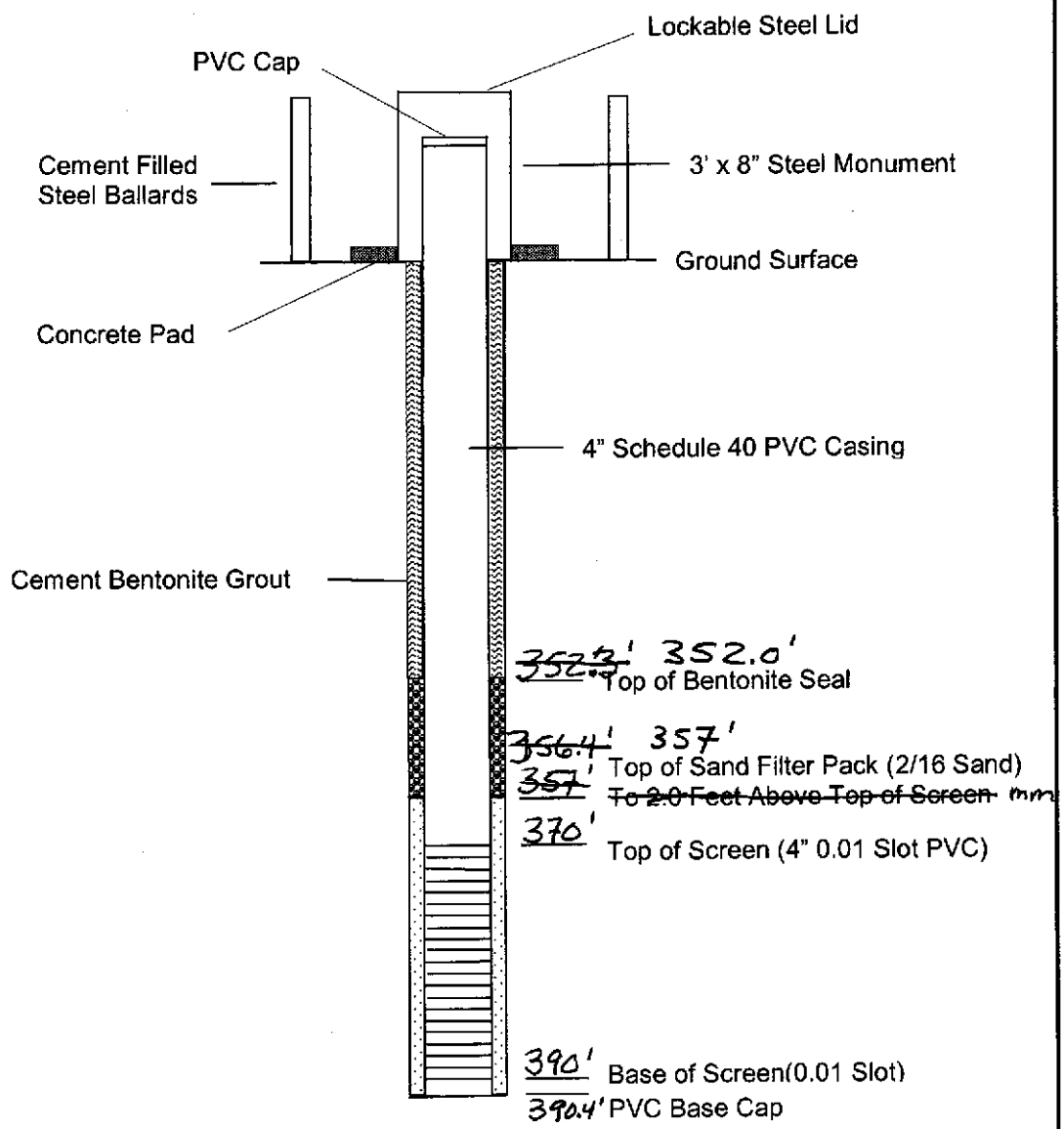
10. DRILLER'S CERTIFICATION
This well was drilled under my supervision and the report is true to the best of my knowledge.
Name EAGLE DRILLING (Contractor)
Address 7150 Placid Street (Contractor)
Las Vegas NV 89119
Nevada contractor's license number issued by the *State Contractor's Board* 51266
Nevada driller's license number issued by the Division of Water Resources, the *on-site driller* 2097
Signed (By driller performing actual drilling on site or contractor)
Date 9-1-09

(Rev. 06-08)

USE ADDITIONAL SHEETS IF NECESSARY

MCF-28A

MCF - SERIES MONITOR WELL CONSTRUCTION DIAGRAM



GES	Job Name: BRC MONITOR WELLS	Boring No. MCF-28A

Job No. 20092509V1	Start:	Location: See fig. 2
	End:	
Total Depth: 397	Groundwater Depth:	Comments:
Elevation:	Date:	
	Time:	
Equipment: Sonic Drill Rig	Type of Bit: 6.0" Sonic Core Barrel	
Hammer (lbs/inches): 140 #/30"	Driller: Tim Thompsen	Surface Dry Density (pcf):
Surface Condition: Leveled Pond	Logger: Monty Mehlhorn	Surface Moisture Content (%):

Depth (feet)	REC	Sample Type	Blows/ 6 Inches	USCS	Description	Pene-trometer	Depth (feet)
				SM	Brown (7.5 YR 5/4) silty SAND (~15% silt, ~85% sand (subrounded, poorly graded, ~10% cs, 20% ms, 70% fs), trace gravel (subangular, 100% fg) moist, med. dense, homogeneous, strong reaction to HCL sand is ~10% mafics, 90% felsics, gravel is ~100% basalt Abrupt contact w:/ sequence below.		1, 2, 3, 4, 5, 6, 7
7					...wet @ 7.0'	wet	7
8				SM	Brown (7.5YR 5/4) silty SAND w/gravel (~20% silt, 60% sand (subround, ~10% cs, 20% ms, 70% fs), 20% gravel (subangular, poorly graded, 80% cg (as broken gravel), ~20% fg), wet, med dense, stratified (6" thick beds),		8, 9, 10, 11, 12
10		MCF-28A-10,					

GES	Job Name:	Boring No. MCF-28A

Job No.	Start:	Location: See fig. 2
20092509N	End:	

Depth (feet)	REC	Sample Type	Blows/ 6 inches	USCS	Description	Pene-trometer	Depth (feet)
					strong reaction to HCl, sand:	Wet	
13					~10% mafics, ~90% felsics,		13
					gravel: ~30% basaltic andesite		
14					70% vesicular basalt.		14
					...from 12'-14': sand is ~100%		
15					c.s.		15
16							16
17					...Same as above		17
18							18
19							19
20					...silt lense.		20
21							21
22							22
23							23
24					...Same as above	wet	24
25							25
26							26
27							27
28							28

GES	Job Name: BRC Monitor Wells	Boring No. MCF-28A
Job No. 20092509V1	Start: / End:	Location: See fig. 2

Depth (feet)	REC	Sample Type	Blows/ 6 inches	USCS	Description	Pene-trometer	Depth (feet)
				SM	...same as above.	Wet	
29							29
30					...grades into:		30
31	Run #7			SW-SM	Dark brown (7.5YR 3/3) well-graded SAND w/silt and gravel (~10% silt, ~70% sand (subround, ~40% cs, 30% ms, 30% fs), ~20% gravel (sub-angular to sub-round poorly graded, ~100% fg)), wet, dense, stratified (0.5' to 1.0' thick beds), no reaction to HCl, sand: ~30% matics (basalt, andesite), gravel: ~30% latite, ~40% basalt, 30% andesite.		31
32							32
33							33
34							34
35		MCF-28A-34' 10' above TMCF					35
36	Run #8						36
37							37
38							38
39							39
40							40
41	Run #9						41
42							42
43							43
44					...abrupt contact with:		44

GES	Job Name: BRC Monitor Wells	Boring No. MCF-28A
Job No. 20092509V1	Start: / End:	Location:

Depth (feet)	REC	Sample Type	Blows/ 6 inches	USCS	Description	Pene-trometer	Depth (feet)
45	Run #9			ML	Tertiary Muddy Creek Formation: Pale olive (5Y 6/4) mottled lt. olive brown (2.5Y 5/4) SILT (~95% silt, trace sand, gypsum as fs-sized crystals), moist, very stiff, weak reaction to HCl, laminated.		45
46	Run #10						46
47							47
48							48
49		MCF-28A-48 (wet)		ML Wet	Pale olive (2.5Y 6/4) SILT w/ sand (~80% silt, ~20% sand (subround, poorly graded, 100% fs), trace gypsum), wet, few 0.25" wide weakly cemented gypsum nodules, weak reaction w/ HCl, laminated.	wet	49
50				ML			50
51	Run #11				49': Lt. greenish gray (Gley 1, 8/1) SILT (~95% silt, trace sand, ~5% gypsum), moist, very stiff, laminated.		51
52							52
53							53
54 / 54.5'		MCF-28A-55 (wet, 1' below contact)		Wet ML	...50': same as above, except: lt. yellowish brown (10YR 6/4), weakly cemented in layers, abrupt contact with:		54
55				CL	53'-54.5': Light bluish gray (Gley 2, 7/5B) sandy SILT (~70% silt, 25% sand (subround, poorly graded, 100% fs)), wet, weakly to moderately cemented in 0.5" thick layers, no reaction to HCl, laminated, abrupt contact with:	5% gypsum as cement	55
56	Run #12						56
57							57
58							58
59							59
60							60

GES	Job Name:	Boring No. MCF-28A
Job No. 20092509V1	Start: / End:	Location:

Depth (feet)	REC	Sample Type	Blows/ 6 inches	USCS	Description	Pene-trometer	Depth (feet)
61	Run #13-Lost			CH	54.5': Lt. brown (7.5YR 6/4) CLAY (~90% lean clay, trace sand, ~10% gypsum as cemented layers), moist, weakly cemented in 0.5" thick layers, very stiff, strong reaction to HCl, laminated, w/nodules of Fe OX, exact position of contact unknown due to core loss.	lean	61
62							62
63							63
64							64
65							65
66	Run #14-Lost				~60': Bluish gray (Gley 2, 5/10B) fat. CLAY (≈80% lean clay, 20% gypsum (as fibrous X-stals, 0.5" long euhedral crystals), trace organic matter)), moist, very stiff, no reaction to HCl, laminated to stratified (1mm to 0.5' thick beds), moderate sulfur odor.		66
67							67
68							68
69							69
70					...becomes mottled lt. greenish gray (Gley 1 8/1).		70
71	Run #15	MCF-28A-71 (moved 2' due to core loss)					71
72					...abrupt contact with:		72
73				CL	Pale brown (10YR 6/3) lean CLAY (~85% lean clay, trace sand, ~15% gypsum as cs-fs-sized crystals), moist, very stiff, weak reaction to HCl, laminated.		73
74							74
75							75
76	Run #16				...2" thick granular gypsum		76

GES	Job Name: BRC Monitor Wells	Boring No. MCF-28A
Job No. 20092509V1	Start: / End:	Location:

Depth (feet)	REC	Sample Type	Blows/ 6 inches	USCS	Description	Pene-trometer	Depth (feet)
				CL	layer, also at 77.0'		
77							77
78	Run #16				...randomly-oriented euhedral 0.5" long gypsum crystals.		78
79					...weak cross-bedding.		79
80							80
81	Run #17				...~6.0" thick layer of granulose gypsum; at ~81': 1.0"-0.5" long, clear, doubly terminated clear		81
82				ML	gypsum crystals.		82
83					82': Light brownish gray (10YR 6/2) sandy SILT (~65% silt, 25% sand (subround, poorly		83
84				CL	graded, ~10%ms, 90%fs), 10%		84
85					gypsum as ms-sized grains), moist, very stiff, weak reaction		85
86	Run #18				to HCl, laminated.		86
87					84': Lt. brown (7.5YR 6/3) lean CLAY (~90% clay, trace sand,		87
88					10% gypsum as fs-sized crystals), moist, very stiff,		88
89					weak reaction to HCl, laminated.		89
90					...at ~87': mottled lt. greenish gray (Gley 1, 7/5Gy), has		90
91	Run #19				~1.5" long, doubly terminated euhedral gypsum crystals (~30%, randomly-oriented.)		91
92							92

GES	Job Name: BRC Monitor Wells	Boring No. MCF-28A
Job No. 20092509V1	Start: / End:	Location:

Depth (feet)	REC	Sample Type	Blows/ 6 inches	USCS	Description	Pene-trometer	Depth (feet)
93	Run #19			CL	...cs-ms-sized gypsum crystals.		93
94		MCF-28A-94 (regular Sample, 50' below TMCF			...thin, contorted laminae (cross-bedding		94
95					...1/4" thick sandy SILT laminae.		95
96					...clear, randomly oriented, 1.5" long gypsum crystals to ~40%.		96
97							97
98							98
99					...clear gypsum crystals cross core, appear to be randomly-oriented.		99
100							100
101	Run #20						101
102							102
103					...gypsum content and crystal size decreases, only ~10% as cs to ms-sized grains.		103
104							104
105					...light greenish gray (Gley1, 7/5Gy), weak reaction to HCl, weakly-cemented in 0.5" thick layers.		105
106							106
107					...becomes mottled reddish yellow (7.5YR 6/6).		107
108					...at ~107.5': lt. brown (7.5YR 6/3).		108

GES	Job Name: BRC Monitor Wells	Boring No. MCF-28A
Job No. 20092509V1	Start: / End:	Location:

Depth (feet)	REC	Sample Type	Blows/ 6 inches	USCS	Description	Pene-trometer	Depth (feet)
				CL	gypsum occurs as 0.5"-1.0" thick granulose layers with chicken wire texture.		
109	Run #20						109
110							110
					...~5" thick banded gypsum layer.		
111							111
112					...abrupt contact with:		112
				ML	Reddish yellow (7.5YR 6/6) SILT (~80% silt, trace sand, 20% gypsum as cs-ms sized grains), moist, weakly cemented, v.stiff, weak reaction to HCl, laminated, abrupt contact w/:		
113							113
114							114
115	Run #21						115
116		Sample # MCF-28A-115 (wet)		wet ML	Mottled light greenish gray (Gley1 7/5Gy) and reddish yellow (7.5YR 6/6) SILT w/sand (~80% 70% silt, 20% sand (subround, poorly graded, 100% fs), 10% gypsum as cs-ms sized grains), wet, very stiff, weak reaction to HCl, laminated	wet	116
117							117
118							118
119				CL	118': Brown (10YR 5/3) lean CLAY (~90% lean clay, trace sand, ~10% gypsum as fs-sized grains), moist, v.stiff, no reaction to HCl, laminated		119
120				ML			120
121							121
122	Run #22				...119': light brownish gray (10YR 6/2), abrupt contact with:		122
123				CL	119.5': Brown (7.5YR 5/4) SILT (~80% silt, trace sand, ~20% gypsum as cs-		123
124							124

GES	Job Name: BRC Monitor Wells	Boring No. MCF-28A
Job No. 20092509V1	Start: / End:	Location:

Depth (feet)	REC	Sample Type	Blows/ 6 inches	USCS	Description	Pene-trometer	Depth (feet)
	Run #22			CL	-fs sized grains)), moist, v. stiff, weakly cemented, weak reaction w/HCl, laminated.		
125							125
126					122': Brown (7.5YR 5/4) lean CLAY (~80% lean clay, trace sand, 20% gypsum as cs-sized grains and euhedral crystals 0.5"-2.0" long (clear, randomly-oriented)), moist, v. stiff, weak reaction to HCl, laminated. ...123': reddish brown (5YR 4/4). ...from 126' on: gypsum occurs as cs-ms-sized crystals, contact at 133' marked by a ~0.5" thick granulose gypsum layer.		126
127	Run #23						127
128							128
129							129
130							130
131							131
132							132
133							133
134		MCF-28A-133, wet, pH= 7.90		SM wet	Gray (10YR 5/1) silty SAND (~20% silt, 80% sand (sub-rounded, poorly graded, ~20% ms, 80% fs)), wet, dense, weak reaction with HCl, laminated, water content decreases near contact w/: 134.5': 8mm Reddish brown (5YR 4/4) lean CLAY (~80% lean clay, trace sand, 20% gypsum as cs-sized grains to 0.5" euhedral, clear gypsum crystals)), moist, v. stiff, weak reaction to HCl, laminated.	wet	134
135				CL			135
136							136
137							137
138	Run #24						138
139							139
140				ML			140

GES	Job Name: BRC Monitor Wells	Boring No. MCF-28A
Job No. 20092509U1	Start: / End:	Location:

Depth (feet)	REC	Sample Type	Blows/ 6 inches	USCS	Description	Pene-trometer	Depth (feet)
	Run #24			ML	139': ML: Brown (7.5YR 5/3) SILT w/sand (~80% silt, ~15% sand (subrounded, poorly graded, ~100% fs), ~5% gypsum as 0.25" thick layers and ms-sized grains), moist, v. stiff, weakly cemented, weak reaction to HCl, laminated w/randomly-spaced SM lenses (2-5 mm thick).		
141							141
142							142
143							143
144		MCF-28A-144, (100' below top of mw) pH=6.74 (TMCF).		CL			144
145							145
	Run #25				144': CL: Brown (7.5YR 5/4) lean CLAY (~80% lean clay, trace sand, ~20% gypsum as euhedral, randomly-oriented and clear 1.0" X-tals and grains), moist, v. stiff, weakly cemented, weak reaction to HCl, laminated.		
146							146
147							147
				ML	147': ML: Brown (7.5YR 5/4) SILT (~75% silt, trace sand, ~25% gypsum as ms-fs sized grains), moist, weakly cemented, v. stiff, weak reaction to HCl, laminated.		
148							148
149							149
150				CL	149.5': CL: Brown (7.5YR 5/4) lean CLAY (~80% lean clay, trace sand, ~20% gypsum granules), moist, weakly cemented, very stiff, weak reaction to HCl, laminated.		150
151	Run #26						151
152							152
153							153
154		pH = 7.71		ML	...@ 150'-153.5': 0.5" thick SILT laminae, randomly-oriented, clear, doubly-terminated		154
155				CL			155
156							156

GES	Job Name: BRC Monitor Wells	Boring No. MCF-28A
Job No. 20092509V1	Start: / End:	Location:

Depth (feet)	REC	Sample Type	Blows/ 6 inches	USCS	Description	Pene-trometer	Depth (feet)
157	Run #26			CL	gypsum crystals, abrupt contact w/: 153.5': ML: Light brownish gray (10YR 6/2) SILT with sand (~80% silt, 20% sand (subround, poorly graded, ~100% fs), trace gypsum), moist, v. stiff, weak reaction to HCl, laminated, abrupt contact w/: 154.5': CL: Reddish brown (5YR 5/4) lean CLAY (~65% lean clay, trace sand, ~35% gypsum as twinned, doubly terminated, randomly oriented euhedral crystals and fs-sized grains), moist, very stiff, weak reaction to HCl, laminated w/0.25" thick silt beds.		157
158							158
159							159
160							160
161	Run #27				... 161': yellowish brown (10YR 5/4); gypsum as ~~cs~~ mm cs-sized crystals.		161
162							162
163							163
164							164
165							165
166							166
167					... stratified w/ lt. reddish brown (5YR 5/4) layers (~0.5" thick).		167
168							168
169					...@166': 0.25" silt stringers.		169
170					...168.5': @20% gypsum as cs-sized crystals; brown (10YR 5/3).		170
171	Run #28						171
172					...same as above.		172

GES	Job Name: BRC Monitor Wells	Boring No. MCF-28A
Job No. 20092509V1	Start: / End:	Location:

Depth (feet)	REC	Sample Type	Blows/ 6 Inches	USCS	Description	Pene-trometer	Depth (feet)
173	Run #28			CL	...Same as above		173
174							174
175					...contact marked by increasing percentage and thickness of silt beds.		175
176				Wet ML, mm	175': ML: Light brownish gray (10YR 6/2) sandy SILT (~60% silt, 35% sand (subround, poorly graded, 100% fs), 5% gypsum as cement), wet, weakly cemented, v. stiff, no rxn to HCl, laminated.	Wet	176
177				SM			177
178		MCF-28A-178 (wet)					178
179		pH=7.81			176.5': SM: Lt. gray (10YR 7/1) silty SAND (~20% silt, 80% sand (~~poor~~ mm subround, poorly graded, ~100% fs), trace gypsum), wet, weakly cemented in ~0.5" wide nodules, very dense, no reaction to HCl, laminated.		179
180				CL	179': CL: Reddish brown (5YR 5/4) lean CLAY (~75% lean clay, trace sand, ~25% gypsum as 2" long randomly-oriented, clear ehhedral crystals), moist, very stiff, no reaction to HCl, laminated, with 0.25" silt stringers ~0.25' below contact.		180
181	Run #29						181
182							182
183							183
184							184
185							185
186							186
187							187
188					182.0 thin silt beds > 0.25", strong rxn to HCl ... 185.0: CL: Light Reddish		188

GES	Job Name: BRC Monitor Wells	Boring No. MCE-28A
Job No. 20092509V1	Start: / End:	Location:

Depth (feet)	REC	Sample Type	Blows/ 6 inches	USCS	Description	Pene-trometer	Depth (feet)
	Run #29			CL	...Brown (5YR 6/4).		
189					...186.0: Light yellowish brown (10YR 6/4)		189
190					...188.0': yellowish brown (10YR 5/4)		190
191							191
192					... decreasing gypsum Percentage to ~10% as fs sized grains.		192
193							193
194							194
195					... strong brown (7.5YR 4/6)		195
196	Run #30						196
197					...Reddish brown (5YR 4/3)		197
198							198
199					... gypsum crystals ms - cs sized poorly formed crystals.		199
200							200
201							201
202							202
203	Run #31			—SC— CL	...202.0': ~0.25" thick bed: Grayish brown (10YR 5/2) SC: Clayey SAND (~30% lean clay, 100% poorly graded SAND (100% fs)		203
204							204

GES	Job Name: BRC monitor Wells	Boring No. MCF-28A
Job No. 20092509V1	Start: / End:	Location:

Depth (feet)	REC	Sample Type	Blows/ 6 inches	USCS	Description	Pene-trometer	Depth (feet)
				CL	Trace gypsum), moist, laminated		
205					...202.25': CL: Reddish Brown		205
					(5YR 4/4) Lean CLAY (60%		
206					Lean clay, 40% poorly graded		206
					SAND (100% FS), & Trace gypsum),		
207					moist, very stiff, laminated.		207
208	Run #31						208
					...yellowish brown (10YR 5/4)		
209							209
210							210
211							211
212							212
213							213
214							214
				SC	Pale ~~slight~~ brown (10YR 6/3) clayey		
215					SAND (30% Lean clay, 70% poorly		215
					graded SAND (~100% FS), trace		
216	Run #32				gypsum as cement), moist,		216
					weakly cemented, very dense,		
217					laminated.		217
218							218
219				CL	Yellowish brown (10YR 5/4)		219
					Lean CLAY (60% Lean CLAY,		
220					35% poorly graded SAND (~100% FS)		220

GES	Job Name: BRC monitor wells	Boring No. MCF-28A
Job No. 20092509V1	Start: End:	Location:

Depth (feet)	REC	Sample Type	Blows/ 6 inches	USCS	Description	Pene-trometer	Depth (feet)
221	Run #33			CL	~5% gypsum as fs sized crystals & cement.), moist, weakly cemented, very stiff, laminated.		221
222							222
223							223
224					... silt lamina ~0.5" thick gray (10YR 5/1), moist, no reaction with HCl.		224
225							225
226					... increasing gypsum percent ~10% as fs to ms sized crystals.		226
227							227
228							228
229							229
230							230
231	Run #34				... increasing gypsum percent to ~20% as fs to ms sized crystals & matrix.		231
232					... Reddish brown (5YR 4/4)		232
233							233
234							234
235					... with interbedded silt stringers ~0.25" thick		235
236							236

GES	Job Name: BRC monitor wells	Boring No. MCF-28A
Job No. 20092509V1	Start: End:	Location:

Depth (feet)	REC	Sample Type	Blows/ 6 inches	USCS	Description	Pene-trometer	Depth (feet)
				CL	...Cont.		
237							237
238	Run #34						238
239							239
240							240
241					...0.5" thick lense of light gray (Gley1 7/N) SILT		241
242							242
243							243
244							244
245		MCF-28A-244 (regular sample 200' below Qal/TMC contact) pH=			...Same as above.		245
246	Run #35						246
247							247
248							248
249							249
250							250
251	Run #36						251
252							252

GES	Job Name: BRC Monitor Wells	Boring No. MCF-28A
Job No. 20092509U1	Start: / End:	Location:

Depth (feet)	REC	Sample Type	Blows/ 6 inches	USCS	Description	Pene-trometer	Depth (feet)
				CL	...same as above; monolithic sequence w/uniform lean clay laminae. @ 253': 0.5"-2.0" thick granulose gypsum layers, ~~also at~~ mm,		
253							253
254							254
255					...2.0" thick granulose gypsum layer, underlain by a ~0.5"-1.0" thick SILT lense.		255
256							256
257	Run #36						257
258							258
259							259
260							260
261							261
262							262
					...transition is gradational.		
263				ML	Strong brown (7.5YR 5/6) SILT (~95% silt, trace sand,		263
264					~5% gypsum as fs-sized grains), moist, v. stiff, weak		264
265	Run #37				reaction to HCl, laminated (individual beds are 2mm-5mm thick, some are lean clay),		265
266							266
267					...at 265': 0.5" thick layer of SILT w/sand, 7.5YR 6/2, trace water;		267
268					becomes spaced at irregular		268

GES	Job Name: BRC Monitor Wells	Boring No. MCF-28A
Job No. 20092509VI	Start: End:	Location:

Depth (feet)	REC	Sample Type	Blows/ 6 inches	USCS	Description	Pene-trometer	Depth (feet)
269	Run #37			ML	intervals downhole. Sample not collected @ 265' due to lack of material, contact gradational w/:		269
270							270
271	Run #38			CL	Brownish yellow (10YR 6/6) lean CLAY (~90% lean clay, trace sand, ~10% gypsum as ms-fs sized grains), moist, v. stiff, weak reaction to HCl, laminated, abrupt contact with:		271
272							272
273							273
274				ML	273': ML: Reddish yellow (7.5YR 6/6) SILT (~85% silt, trace sand, ~15% gypsum as cs-sized grains, veinlets, and granulose 0.5" thick lenses at ~274', ~276', and ~278'), moist, weakly cemented in layers, v. stiff, laminated (2mm - 5mm thick layers), has irregularly-spaced layers of ~~SA~~ mm SILT w/ sand.		274
275							275
276							276
277							277
278							278
279							279
280							280
281	Run #39						281
282							282
283					Contact gradational with/:		283
284				CL	Reddish brown (5YR 4/4) Lean CLAY (~70% lean CLAY,		284

GES	Job Name: Bcc monitor wells	Boring No. MCF-28A
Job No. 20092509V1	Start: / End:	Location:

Depth (feet)	REC	Sample Type	Blows/ 6 inches	USCS	Description	Pene-trometer	Depth (feet)
285	Run #39			CL	~20% Sand (poorly graded (100% FS), 15% gypsum as FS sized crystals and cement), moist, weakly cemented (with well cemented layers at 284', 286', & 289', layers > ~2"), very stiff, laminated.		285
286					... 286': Strong brown (7.5 YR 4/6).		286
287					... 288': well cemented nodules >2.0".		287
288							288
289							289
290							290
291	Run #40						291
292							292
293							293
294					... interbedded layers white (10 YR 8/1), moderate to // ... yellowish brown (10 YR 5/4) // well cemented gypsum, no reaction to HCl.		294
295							295
296							296
297							297
298					... Driller informs that hard drilling beginning at ~297.0'		298
299							299
300							300

GES	Job Name: BRC monitor wells	Boring No. MCF-28A
Job No. 20092509V1	Start: / End:	Location:

Depth (feet)	REC	Sample Type	Blows/ 6 inches	USCS	Description	Pene-trometer	Depth (feet)
				CL	...cont.		
301							301
302							302
303					...moderat to well cemented		303
304	Run #41						304
305				BNL	Yellowish brown (10YR 5/4) SILT (~70% silt, ~30% poorly		305
306		Sample # MCF-28A-305		wet	graded (~100% FS) sand, moist, weakly cemented, very stiff,		306
307				CL	no reaction with HCl, laminated. ...305.0-305.5: wet, Sample		307
308					#MCF-28A-305 ...306.0': CL: Yellowish		308
309					brown (10YR 5/4) Lean		309
310					CLAY (~60% lean clay, ~25% poorly graded SAND (100% FS), ~15% gypsum as FS sized		310
311				ML	crystals and cement), moist, moderate to well cemented, very stiff, laminated.		311
312	Run #42				310.0': ML: Yellowish brown		312
313					(10YR 5/4) SILT (~70% silt, ~20% poorly graded sand (100%		313
314					FS), 10% gypsum as FS sized crystals and cement),		314
315					moist, weak to moderate cementation, no reaction with		315
316					HCl., laminated.		316

GES	Job Name:	Boring No. MCF-28A
Job No. 20092509V1	Start: / End:	Location:

Depth (feet)	REC	Sample Type	Blows/ 6 inches	USCS	Description	Pene-trometer	Depth (feet)
				ML			
317							317
					...grayish green (GLEY1 5/2)		
318				CL	moderate to well cemented		318
					Layer ~4"		
319					317.5: CL: Yellowish brown		319
					(10YR 5/4) Lean CLAY (~70%		
320					lean clay, ~20% poorly graded		320
					sand (100% FS), ~10% gypsum		
321					as FS sized grains &		321
					cement), moist, weakly		
322					cemented, very stiff, laminated.		322
323							323
324							324
					...light reddish brown (5YR		
325					6/4), stratified (0.5' thick		325
					beds), and has ~20% gypsum		
326					as 0.25" long euhedral and		326
					doubly-terminated crystals.		
327	Run #43				...abrupt contact w/:		327
				ML	Pinkish gray (7.5YR 7/2)		
328					SILT with sand (~80%		328
					silt, 20% sand (subround,		
329					poorly graded, ~100% fs),		329
				CL	moist, weakly cemented,		
330					v. stiff, no reaction to HCl,		330
					laminated (1-3 mm thick		
331	Run #44				beds of lt. reddish brown		331
					(5YR 6/3) SILT, grades		
332					into:		332

GES	Job Name: BRC Monitor Wells	Boring No. MCF-28A
Job No. 20092509V1	Start: / End:	Location:

Depth (feet)	REC	Sample Type	Blows/ 6 inches	USCS	Description	Pene-trometer	Depth (feet)
333	Run #44				329': CL: Light brown (7.5YR 6/4) lean CLAY (~85% lean CLAY, trace sand, ~15% gypsum as fs-sized grains), ~~mm~~ mm moist, weakly cemented, v. stiff, no reaction to HCl, homogeneous.		333
334							334
335							335
336					...from ~330'-333': becomes laminated/stratified w/ individual bedding thickness ranging from ~1mm to 0.5" with layers ranging in color from reddish brown (5YR 5/4) to light brown (7.5YR 6/3); ~75% of run #44 was lost, extruded core was very moist but not sampled due to disruption.		336
337							337
338							338
339							339
340							340
341	Run #45						341
342				CL	Pale brown (10YR 6/3) sandy lean CLAY (~50% lean clay, ~25% sand (subrounded, poorly graded, ~20% ms, 80% fs), ~25% gypsum as cs-sized grains, matrix cement, and layers)), ~~moist~~ wet (w/ 0.25" "mud layers @ ~342', 343'), weakly cemented (as layers and 0.5" thick nodules), v. stiff, weak reaction to HCl, laminated/lensed (1-3 mm beds), ~~abrupt~~ gradational contact w/: 346': ML: Brownish yellow)		342
343				wet			343
344		MCF-28A-344 (300' below TMCf/Qal contact + wet zones @ 342', 343'					344
345							345
346							346
347				ML			347
348							348

GES	Job Name: BRC Monitor Wells	Boring No. MCF-28A
Job No. 20092509VI	Start: / End:	Location:

Depth (feet)	REC	Sample Type	Blows/ 6 inches	USCS	Description	Pene-trometer	Depth (feet)
349	Run #46			ML	(10YR 6/6) SILT (~80% silt, ~trace sand, ~20% gypsum as ms to fs-sized grains), moist, weakly cemented, v.		349
350				CL	stiff, laminated (1-3mm thick beds), weak reaction to HCl, gradational contact w/:		350
351							351
352							352
353		ASTM-D2488-00, X4.1: 18min for fines to settle.		ML	350': CL: Reddish brown (5YR 5/4) lean CLAY (~90% lean CLAY, trace sand, ~10% gypsum as fs-sized grains), moist, very stiff, laminated to stratified (3mm-0.5" thick beds), weak reaction to HCl. 352': ML: Brown (7.5YR 4/4) SILT (~95% silt, trace sand, ~5% gypsum as fs-sized grains), moist, v. stiff, laminated (1mm-4mm thick laminae), weak reaction to HCl, from ~353'-356': ~30% gypsum as cs-sized grains and layers, mod. cemented; from 356'-358': granulose gypsum as layers and laminae, mod. to strong cementation, abrupt contact w/: 359': CALI: Pale brown (10YR 6/3) CALICHE (~10% silt, trace sand, ~90% gypsum as cs to fs-sized grains		353
354							354
355							355
356							356
357							357
358							358
359	Run #47						359
360		MCF-28A-360 (wet zone)		CALI Wet along crystal surfaces			360
361							361
362	0% recovery past 362'						362
363							363
364							364

GES	Job Name: BRC Monitor Wells	Boring No. MCF-28A
Job No. 20092509VI	Start: / End:	Location:

Depth (feet)	REC	Sample Type	Blows/ 6 inches	USCS	Description	Pene-trometer	Depth (feet)
				CL	(texurally resembles a SW)), wet from 359.5'-360.5 along grain boundaries and cementation planes, strongly cemented and very hard (~240s/ft drill rate), weak reaction to HCl, stratified (1" thick layers) core lost from 362'-367', exact location of contact w/ upper section uncertain. 365': CL: Strong brown (7.5 YR 5/6) lean CLAY (~80% lean CLAY, trace sand, ~20% gypsum as cs-fs sized grains, 0.5' thick layers, and clear randomly oriented, euhedral 0.25" long crystals past 372'), moist, weakly to strongly cemented, v. stiff, laminated, weak reaction to HCl, abrupt contact w/: 373.5': ML: Gray (10YR 5/1) sandy SILT (~60% silt, 35% sand (subrounded, ~20% ms, 80% fs, poorly graded)), trace gypsum), wet, v. stiff, laminated (1-3mm thick beds), strong reaction to HCl, abrupt contact w/: 374.5': ML: Strong brown (7.5YR 5/6) SILT (~80%		
365	0% 362-367' Run#47						365
366							366
367							367
368	Run#48						368
369							369
370							370
371							371
372							372
373							373
374		MCF-28A-374', wet		ML wet			374
375				ML			375
376	Run#49						376
377							377
378							378
379							379
380							380

GES	Job Name: BRC Monitor Wells	Boring No. MCF-28A
Job No. 20092509V1	Start: / End:	Location:

Depth (feet)	REC	Sample Type	Blows/ 6 inches	USCS	Description	Pene-trometer	Depth (feet)
381	Run #49			ML	silt, trace sand, ~80% gypsum as fs-sized grains and matrix cement), moist, weakly to moderately cemented, laminated lensed (2mm-5mm thick beds), weak reaction to HCl.		381
382							382
383							383
384	Run #50				...378'-380': 0.5"-0.5' stratified beds of clear, granulose gypsum to cs sized grains and cement w/gypsum content increasing to ~80%, ~~tran~~ mm		384
385							385
386							386
387					...380': reddish yellow (7.5YR 6/6, strong reaction to HCl.		387
388					...382': ~~to~~ mm 1.0' thick layer of clear, granulose gypsum		388
389					...384': ~~H~~ mm light yellowish brown (10YR 6/4), ripple marks present along bedding surfaces.		389
390							390
391					End of Boring @ 390		391
392							392
393							393
394							394
395							395
396							396