

**EXPLANATION**

- PUMP TEST WELLS
- OBSERVATION WELLS

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**ALWAYS THINK SAFETY**

UNITED STATES  
DEPARTMENT OF THE INTERIOR  
BUREAU OF RECLAMATION  
COLORADO RIVER BASIN SALINITY CONTROL PROJECT  
POINT SOURCE DIVISION, LAS VEGAS WASH UNIT - NEVADA

**EXPLORATORY WELLS**

LOCATION MAP

COMPILED *Butte* / DRAWN *Butte* / CHECKED *Robert*

BOULDER CITY, NEVADA      JUNE 11, 1979      1297-300-121

4-6-41 300-441 "AS BUILT" BY DOUG TRUDEAU

RECORDED AUG 8 1979  
INDEXED APR 7 1981

Appendix 1 - Geologic Logs of Exploratory  
Drill Holes

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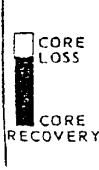
LG236

LG237

# GEOLOGIC LOG OF DRILL HOLE

FEATURE Exploratory Wells PROJECT CRBSCP Las Vegas Wash Unit Title II STATE Nevada  
 HOLE NO. LG200 LOCATION Warm Springs Road T225, R62E, Sec. 08 abal est. 1950' DIP (ANGLE FROM HORIZ) 90°  
 BEGUN 2/8/80 COORDS. N. 2/8/80 E. 2/8/80 GROUND ELEV. 165.0' TOTAL DEPTH. 165.0' BEARING.           
 DEPTH AND ELEV. OF WATER See Notes LOGGED BY D.A. Trudeau LOG REVIEWED BY D. Branstetter  
 LEVEL AND DATE MEASURED.         

NOTES ON WATER LOSSES AND LEVELS, CASING, CEMENTING, CAVING, AND OTHER DRILLING CONDITIONS	TYPE AND SIZE OF HOLE	CORE RECOVERY (%)	PERCOLATION TESTS				ELEVATION (FEET)	DEPTH (FEET)	GRAPHIC LOG	SAMPLES FOR TESTING	CLASSIFICATION AND PHYSICAL CONDITION	
			DEPTH (FEET)		LOSS (G.P.M.)	PRESSURE (P.S.I.)						LENGTH OF TEST (MIN.)
			FROM (P, C, or Cm)	TO								
<p><u>Drilling Equipment</u></p> <p>Failing 1250</p> <p><u>Drilling Procedure</u></p> <p>7.875" Tricone rockbit 0-165.0'. Wash samples every 5'.</p> <p><u>Drilling Fluid</u></p> <p>Baroid Lo-Loss</p> <p><u>Hole Stability</u></p> <p>Hole stable 0-165.0'</p> <p><u>Water Levels</u></p> <p>47.55' 2/29/80 stickup 1.95'.</p> <p><u>Purpose of Hole</u></p> <p>Observation well for aquifer test.</p> <p><u>Drill Site</u></p> <p>warm springs road east of Paradise Valley Country Club</p> <p><u>Hole Completion</u></p> <p>Set 2" galvanized steel casing 0-160' with backwash valve on end. Set No. 50 slot screens, 35'-37', 63'-60', 81'-63', 115'-117', and 138'-140'. Back-filled with pea gravel and developed well.</p>	<p>RB</p> <p>7.9</p> <p>10</p> <p>20</p> <p>30</p> <p>40</p> <p>50</p> <p>60</p> <p>70</p> <p>80</p> <p>90</p>						<p>0</p> <p>10</p> <p>20</p> <p>30</p> <p>40</p> <p>50</p> <p>60</p> <p>70</p> <p>80</p> <p>90</p>			<p>0.0'-15.0' <u>Quaternary Las Vegas Formation</u></p> <p>Consists of caliche, silty sands, and sandy clay which are tan in color. Contact with underlying Muddy Creek Fm. is tentative, based on color change.</p> <p><u>0.0'-5.0' Rockbits to Silty Sand and Caliche</u></p> <p>About 5% subangular caliche gravel, max. size 1.25"; 75% poorly graded fine sand; 20% low plastic fines. Tan. Limy. Light dry strength. Caliche bed encountered at the surface.</p> <p><u>5.0'-10.0' Rockbits to Sandy Clay</u></p> <p>About 5% subrounded caliche gravel, max. size 1/2"; 40% mostly fine sand some coarse caliche sand; 55% medium plastic fines. Color tan. Limy. Low dry strength.</p> <p><u>10.0'-15.0' Rockbits to clayey sand</u></p> <p>About 70% mostly fine sand max. size coarse sand, 30% medium plasticity fines. Color tan. Limy. Low dry strength.</p> <p><u>15.0'-165.' Tertiary Muddy Creek Formation</u></p> <p>Rockbits to clayey sand, gravels, sandy clays, and mudstone. Description based on wash samples.</p> <p><u>15.0'-30' Rockbits to Sandy Clay, Mudstone and Caliche</u></p> <p>Some fine subrounded caliche gravel max. size 5/8"; 30% poorly graded fine sand; 70% fines of medium plasticity. Color reddish brown. Limy. Medium to high dry strength. Mudstone fragments encountered in cuttings from 15-25'. Numerous platy caliche fragments encountered in cuttings from 25-30'. Caliche consists of well cemented sandstone.</p>		



Note: Gamma Ray Log available on Hole.  
RB = Rockbit

### EXPLANATION

Type of hole . . . . . D = Diamond, H = Haystellite, S = Shot, C = Churn  
 Hole sealed . . . . . P = Packer, Cm = Cemented, Cs = Bottom of casing  
 Approx. size of hole (X-series) . . . Ex = 1-1/2", Ax = 1-7/8", Bx = 2-3/8", Nx = 3"  
 Approx. size of core (X-series) . . . Ex = 7/8", Ax = 1-1/8", Bx = 1-5/8", Nx = 2-1/8"  
 Outside dia. of casing (X-series) . . Ex = 1-13/16", Ax = 2-1/4", Bx = 2-7/8", Nx = 3-1/2"



# GEOLOGIC LOG OF DRILL HOLE

FEATURE	Exploratory Wells	PROJECT	CRBSCP Las Vegas Wash Unit Title II	STATE	Nevada
HOLE NO.	LG200	LOCATION	Warm Springs Road T2S, R62E, Sec. 08 abal	GROUND ELEV.	est. 1959' ... 90°
BEGUN	2/8/80	FINISHED	2/8/80	DEPTH OF OVERBURDEN	N/A
DEPTH AND ELEV. OF WATER LEVEL AND DATE MEASURED				LOGGED BY	D. Branstetter
LOG REVIEWED BY				D. Branstetter	

NOTES ON WATER LOSSES AND LEVELS, CASING, CEMENTING, CAVING, AND OTHER DRILLING CONDITIONS	TYPE AND SIZE OF HOLE	CORE RECOVERY (%)	PERCOLATION TESTS				ELEVATION (FEET)	DEPTH (FEET)	GRAPHIC LOG	SAMPLES FOR TESTING	CLASSIFICATION AND PHYSICAL CONDITION	
			DEPTH (FEET)		LOSS (G.P.M.)	PRESSURE (P.S.I.)						LENGTH OF TEST (MIN.)
			FROM (P, Cs, or Cm)	TO								
	RB										<p>30.0'-40.0' Rockbits to Clayey Sand and Gravels</p> <p>Clayey sand consists of about 10% fine subrounded basalt gravel, max. size 5/8"; 60% fine to coarse, mostly fine sand, coarse grains consists of rounded basalt; 30% fines with medium plasticity. Color light brown to brown. Limy. Gravels indicated by excessive drill bit chatter 35-37'. Gravels are fine subrounded basalt, caliche, and limestone, max. size 1/2".</p> <p>40.0'-50.0' Rockbits to Clayey Grave</p> <p>About 40% fine subrounded limestone, basalt and caliche gravel, max. size 3/4"; 25% poorly graded fine sand; 35% fines with medium plasticity. Color reddish brown. Limy. Low to medium dry strength.</p> <p>50.0'-70.0' Rockbits to Gravels and Sandy Clay</p> <p>Sandy clay consists of some subrounded caliche gravel, max. size 5/8". About 40% poorly graded fine sand; and 60% fines of medium plasticity. Gravels indicated by excessive drill chatter 58-60' and 63-64'. Gravels are fine subrounded basalt and platy caliche with max. size of 3/4". Color brown. Limy.</p> <p>70.0'-140.0' Rockbits to Clayey Sand and Gravels</p> <p>Clayey sands consist of about 60% well graded sands, coarser particles composed of subrounded basalt and caliche, 40% clays of medium plasticity. Color brown-tan brown. Limy. Gravels indicated by excessive drill bit chatter 81-84', 85-87', 90', 92', 95', 97-98', 100-103', 116-118', 130', 135', 138', 139', 140'. Gravels consist of fine subrounded caliche and basalt, max. size 5/8".</p> <p>140'-165' Rockbits to Sandy Clay</p> <p>About 30% poorly graded fine sand, 70% clays of medium plasticity. Color brown. Limy. Drilling was slow and smooth.</p>	
	7.9'										TD=165.0'	

	EXPLANATION
CORE LOSS	RB = Rockbit
CORE RECOVERY	Type of hole . . . . . D = Diamond, H = Haysrellite, S = Shor, C = Churn Hole sealed . . . . . P = Packer, Cm = Cemented, Cs = Bottom of casing Approx. size of hole (X-series) . . Ex = 1-1/2", Ax = 1-7/8", Bx = 2-3/8", Nx = 3" Approx. size of core (X-series) . . Ex = 7/8", Ax = 1-1/8", Bx = 1-5/8", Nx = 2-1/8" Outside dia. of casing (X-series) . Ex = 1-13/16", Ax = 2-1/4", Bx = 2-7/8", Nx = 3-1/2" Inside dia. of casing (X-series) . Ex = 1-1/2", Ax = 1-29/32", Bx = 2-3/8", Nx = 3"

# GEOLOGIC LOG OF DRILL HOLE

**FEATURE** Exploratory Wells **PROJECT** CRBSCP Las Vegas Wash Unit **STATE** Nevada  
**HOLE NO.** 100-201 **LOCATION** Warm Springs Road, T22S, R62E, Sec. 09, Taba 2 **GROUND ELEV.** Est. 1950' **DIP (ANGLE FROM HORIZ.)** .90°  
**BEGUN** 2/06/80 **FINISHED** 2/06/80 **DEPTH OF OVERBURDEN** 1/4" **TOTAL DEPTH** 125.0' **BEARING** .....  
**DEPTH AND ELEV. OF WATER LEVEL AND DATE MEASURED** See Remarks Below **LOGGED BY** D.A. Trudeau **LOG REVIEWED BY** D. Branstetter

NOTES ON WATER LOSSES AND LEVELS, CASING, CEMENTING, CAVING, AND OTHER DRILLING CONDITIONS	TYPE AND SIZE OF HOLE	CORE RECOVERY (%)	PERCOLATION TESTS				ELEVATION (FEET)	DEPTH (FEET)	GRAPHIC LOG	SAMPLES FOR TESTING	CLASSIFICATION AND PHYSICAL CONDITION	
			DEPTH (FEET)		LOSS (G.P.M.)	PRESSURE (P.S.I.)						LENGTH OF TEST (MIN.)
			FROM (P, Cs, or Cm)	TO								
<p><u>Drilling Equipment</u> Schram T66B</p> <p><u>Drilling and Sampling Procedure</u> 7.875 inch Tricone rockbit 0' to 125.0 ft. Wash samples collected every 5 f.</p> <p><u>Drilling Fluid</u> Air and foam.</p> <p><u>Hole Stability</u> Hole stable 0 to 125.0 feet.</p> <p><u>Water Levels</u> Depth in Ft. Date</p> <p>41            2/06/80 43.15*       2/29/80 *stickup 1.7'</p> <p><u>Purpose of Hole</u> Observation well for aquifer test.</p> <p><u>Drill Site</u> Warm Springs Road east of Paradise Valley Country Club</p> <p><u>Hole Completion</u> Set 2 inch galvanized steel casing 0 to 110 ft. with backwash valve at 110. Set No. 50 slot screens 40-42', 54-56', 64-66', 108-110'. Backfilled with pea gravel 5-125'. Grouted 0-5'.</p>	<p>RB</p> <p>7.9"</p> <p>10</p> <p>70</p> <p>30</p> <p>40</p> <p>50</p> <p>60</p> <p>70</p> <p>80</p> <p>90</p>	<p>7.9</p> <p>10</p> <p>70</p> <p>30</p> <p>40</p> <p>50</p> <p>60</p> <p>70</p> <p>80</p> <p>90</p>	<p>FROM</p> <p>TO</p> <p>LOSS</p> <p>PRESSURE</p> <p>LENGTH</p>	<p>TO</p> <p>(G.P.M.)</p> <p>(P.S.I.)</p> <p>(MIN.)</p>	<p>ELEVATION</p> <p>(FEET)</p>	<p>DEPTH</p> <p>(FEET)</p>	<p>GRAPHIC</p> <p>LOG</p>	<p>SAMPLES</p> <p>FOR</p> <p>TESTING</p>	<p>0 to 12.5' Quaternary Las Vegas Formation Rockbits to silty sand and gravelly sandy clay which is white to tan. Contact with underlying Muddy Creek Fm based on change in color. Description based on wash samples.</p> <p>0.5' Rockbits to silty sand. Consists of about 5% fine to coarse mostly fine subangular caliche gravel, max size 1-1/4 inch; 75% poorly graded fine sand; 20% low plastic fines. Color white to tan. Violent HCL reaction.</p> <p>5-8' Rockbits to gravelly sandy clay. Consists of about 30% fine to coarse mostly fine subangular to subrounded caliche gravel, max size 1-1/4 inch; 30% poorly graded sand; 40% medium plastic fines. Color tan white. Violent HCL reaction. Low dry strength.</p> <p>8.0-125.0' Tertiary Muddy Cr. Fm. Rockbits to sandy clay, clayey sandy gravel, gravelly clayey sand, sandy gravel, and gravelly sand which are dark gray to black to light brown in color. Description based on wash samples.</p> <p>8-12.5' Rockbits to sandy clay. Consists of about 10% subrounded caliche gravel; max size 1 inch; 40% poorly graded fine sand; and 50% medium plastic fines. Color red brown. Violent HCL reaction. Medium dry strength.</p> <p>12.5'-17.5' Rockbits to sandy clay. Consists of about 10% fine subrounded caliche gravel, max size 7/8 inch; 40% poorly graded fine sand; 50% medium plastic fines. Color reddish brown. Violent HCL reaction. Medium dry strength.</p> <p>17.5-38' Rockbits to clayey sandy gravel. Consists of about 60% fine subrounded platy sandstone, volcanic and caliche gravel, max size 3/4"; 25% well graded sand; 15% medium plastic fines. Color reddish brown to black speckled to light brown. Violent HCL reaction.</p>			

**EXPLANATION**

Note SP, Resistivity and Gamma ray logs available on this hole.  
 Geologic Log probably not representative due to drilling equipment and procedures  
 RB = Rockbit

<input type="checkbox"/> CORE LOSS	Type of hole . . . . . D = Diamond, H = Hoystellite, S = Shot, C = Churn
<input type="checkbox"/> CORE RECOVERY	Hole sealed . . . . . P = Packer, Cm = Cemented, Cs = Bottom of casing
	Approx. size of hole (X-series) . . . Ex = 1-1/2", Ax = 1-7/8", Bx = 2-3/8", Nx = 3"
	Approx. size of core (X-series) . . . Ex = 7/8", Ax = 1-1/8", Bx = 1-5/8", Nx = 2-1/8"
	Outside dia. of casing (X-series) . . Ex = 1-13/16", Ax = 2-1/4", Bx = 2-7/8", Nx = 3-1/2"
	Inside dia. of casing (X-series) . . . Ex = 1-1/2", Ax = 1-29/32", Bx = 2-3/8", Nx = 3"

# GEOLOGIC LOG OF DRILL HOLE

FEATURE Exploratory Wells PROJECT CRBSCP Las Vegas Wash Unit STATE Nevada  
 HOLE NO. LC-201 LOCATION Warm Springs Road T22S, R6E, Sec 08 aba 2 GROUND ELEV. Est. 1950' DIP (ANGLE FROM HORIZ.) 90°  
 BEGUN 2/06/80 COORDS. N. . . . . E. . . . . TOTAL DEPTH. 125.0' BEARING. . . . .  
 FINISHED 2/06/80 DEPTH OF OVERBURDEN . . . . .  
 DEPTH AND ELEV. OF WATER . . . . . LOGGED BY D.A. Trudeau LOG REVIEWED BY D. Branstetter  
 LEVEL AND DATE MEASURED . . . . . See Remarks Below

NOTES ON WATER LOSSES AND LEVELS, CASING, CEMENTING, CAVING, AND OTHER DRILLING CONDITIONS	TYPE AND SIZE OF HOLE	CORE RECOVERY (%)	PERCOLATION TESTS					ELEVATION (FEET)	DEPTH (FEET)	GRAPHIC LOG	SAMPLES FOR TESTING	CLASSIFICATION AND PHYSICAL CONDITION
			DEPTH (FEET)		LOSS (G.P.M.)	PRESSURE (P.S.I.)	LENGTH OF TEST (MIN.)					
			FROM (P, Cs, or Cm)	TO								
	RB 7.9'							10				38'-43.5' Rockbits to gravelly clayey sand. Consists of about 30% fine subrounded basaltic gravel with some mudstone and limestone; max size 7/8 inch; 45% well graded sand, 25% medium plastic fines. Color reddish brown. Violent HCL reaction.
								70				43.5'-79' Rockbits to sandy gravel. Consists of about 70% fine subrounded to rounded volcanic, limestone, caliche and some platy sandstone gravel, max size 5/8 inch; 30% well graded sand; trace of plastic fines. Color light brown to dark gray. Violent HCL reaction.
							TD=125.0'					79'-89.5' Rockbits to gravelly sand. Consists of about 30% well graded black volcanic, limestone, and sandstone gravel, max. size 5/8 inch; 70% well graded sand, and a trace of plastic fines. Color black to dark gray. Violent HCL reaction.
												89.5'-105' Rockbits to sandy gravel. Consists of about 80% fine rounded black volcanic, limestone, and caliche gravel, max size 1 inch; 20% well graded sand. Color dark gray to black. Violent HCL reaction.
												105.0'-125.0' Rockbits to gravelly sand. Consists of about 50% fine rounded volcanic and platy sandstone and some limestone gravel, max size 5/8 inch; and 50% medium to coarse sand. Color dark gray. Violent HCL reaction.

**EXPLANATION**

CORE LOSS  
 CORE RECOVERY

RB = Rockbit  
 Type of hole . . . . . D = Diamond, H = Haystellite, S = Shot, C = Churn  
 Hole sealed . . . . . P = Packer, Cm = Cemented, Cs = Bottom of casing  
 Approx. size of hole (X-series) . . . Ex = 1-1/2", Ax = 1-7/8", Bx = 2-3/8", Nx = 3"  
 Approx. size of core (X-series) . . . Ex = 7/8", Ax = 1-1/8", Bx = 1-5/8", Nx = 2-1/8"  
 Outside dia. of casing (X-series) . . Ex = 1-13/16", Ax = 2-1/4", Bx = 2-7/8", Nx = 3-1/2"

# GEOLOGIC LOG OF DRILL HOLE

FEATURE	Exploratory Wells	PROJECT	CRBSCP Las Vegas Wash Unit	STATE	Nevada
HOLE NO.	LG-202	LOCATION	Warm Springs Road T22S, R62E, Sec. 08 abas	Est.	1950'
BEGUN	2/5/80	FINISHED	2/5/80	DEPTH OF OVERBURDEN	N/A
COORDS. N. E.		GROUND ELEV.		DIP (ANGLE FROM HORIZ.)	
				90°	
DEPTH AND ELEV. OF WATER LEVEL AND DATE MEASURED			LOGGED BY		
See Below			D. A. Trudeau		
LOG REVIEWED BY			D. Branstetter		

NOTES ON WATER LOSSES AND LEVELS, CASING, CEMENTING, CAVING, AND OTHER DRILLING CONDITIONS	TYPE AND SIZE OF HOLE	CORE RECOVERY (%)	PERCOLATION TESTS				ELEVATION (FEET)	DEPTH (FEET)	GRAPHIC LOG	SAMPLES FOR TESTING	CLASSIFICATION AND PHYSICAL CONDITION	
			DEPTH (FEET)		LOSS (G.P.M.)	PRESSURE (P.S.I.)						LENGTH OF TEST (MIN.)
			FROM (P. Cs. or Cm)	TO								
<p><u>Drilling Equipment</u> Schram T66B</p> <p><u>Drilling and Sampling Procedure</u> Tricone rockbit 7.875 inch diameter 0-125 ft. Wash samples every 5 ft.</p> <p><u>Drilling Fluid</u> Air and Foam</p> <p><u>Hole Stability</u> Hole stable</p> <p><u>Water Level</u> Depth      Date 39'        2/5/80 *40.90' 2/29/80 *stickup 1.10'</p> <p><u>Purpose of Hole</u> Observation hole for pump test.</p> <p><u>Drill Site</u> Unfinished portion of Warm Springs Rd. east of Paradise Valley Golf Course.</p> <p><u>Hole Completion</u> Set 2" gal. steel casing 0-115' with backwash valve at 115'. Set No. 50 slot screens 39-41', 51-53', 95-97', 113-115'. Back-filled with pea gravel 5-125'. Grouted 0-5'.</p>	RB 7.9"  10  20  30  40  50  60  70  80  90	10  20  30  40  50  60  70  80  90	10  20  30  40  50  60  70  80  90	10  20  30  40  50  60  70  80  90	10  20  30  40  50  60  70  80  90	10  20  30  40  50  60  70  80  90	10  20  30  40  50  60  70  80  90	10  20  30  40  50  60  70  80  90	<p><u>0'-8' Quarternary Las Vegas Formation</u> Rockbits to silty sand and gravelly clayey sand which are white to tan in color. Contact with underlying Muddy Creek Fm. tentative based on change in color. Descriptions based on wash samples.</p> <p><u>0-5' Rockbits to silty sand and caliche.</u> Consists of about 5% fine subangular caliche gravel, max. size 1-1/2 inch; 75% poorly graded fine sand, and 20% low plastic fines. Color white to tan. Violent HCL reaction. Encountered sandstone like caliche at 5'.</p> <p><u>5'-8' Rockbits to gravelly clayey sand.</u> Consists of about 30% fine subangular caliche gravel; max. size 1-inch; 40% poorly graded fine sand; and 30% medium plastic fines. Color tan white. Violent HCL reaction.</p> <p><u>8'-125' Tertiary Muddy Creek Fm.</u> Rockbits to sandy clay, clayey sand, sandy gravel, gravelly sandy clay and clayey sandy gravel which are red brown, brown, black, and white speckled to dark gray to black in color. Description based on wash samples.</p> <p><u>8'-12.5' Rockbits to sandy clay;</u> consists of about 10% subrounded caliche gravel, max. size 1-inch; 40% poorly graded fine sand; and 50% medium plastic fines. Color red brown. Violent HCL reaction. Medium dry strength.</p> <p><u>12.5'-23' Rockbits to clayey sand;</u> consists of about 10% subangular caliche gravel, max. size 3/4"; 50% fine to coarse mostly fine sand; 40% medium plastic fines. Color brown. Violent HCL reaction. Low dry strength. Coarser sand encountered at 12.5'.</p> <p><u>23'-28' Rockbits to sandy gravel.</u> Consists of abot 50% fine subangular caliche and subrounded volcanic and limestone gravel; max. size 3/4"; 30% well graded sand; 20% medium plastic fines. Color brown. Violent HCL reaction.</p>			

### EXPLANATION

CORE LOSS  
 CORE RECOVERY

Note Geologic Log probably not representative due to drilling equipment and procedures

RB = Rockbit

Type of hole: D = Diamond, H = Haystack, S = Shot, C = Churn  
 Hole sealed: P = Packer, Cm = Cemented, Cs = Bottom of casing  
 Approx. size of hole (X-series): Ex = 1-1/2", Ax = 1-7/8", Bx = 2-3/8", Nx = 3"  
 Approx. size of core (X-series): Ex = 7/8", Ax = 1-1/8", Bx = 1-5/8", Nx = 2-1/8"  
 Outside dia. of casing (X-series): Ex = 1-13/16", Ax = 2-1/4", Bx = 2-7/8", Nx = 3-1/2"  
 Inside dia. of casing (X-series): Ex = 1-1/2", Ax = 1-29/32", Bx = 2-3/8", Nx = 3"

# GEOLOGIC LOG OF DRILL HOLE

FEATURE... Exploratory Wells... PROJECT... CRBSCP Las Vegas Wash Unit... STATE... Nevada  
 HOLE NO. LG-202 LOCATION... Warm Springs Road T22S, R62E Sec. 08, T43S, R62E... GROUND ELEV. Est. 1950' DIP (ANGLE FROM HORIZ.)... 90°  
 COORDS. N. ... E. ...  
 BEGUN... 2/5/80... FINISHED... 2/5/80... DEPTH OF OVERBURDEN... TOTAL DEPTH... 125.0'... BEARING...  
 DEPTH AND ELEV. OF WATER... See Below... LOGGED BY... D.A. Trudeau... LOG REVIEWED BY... D. Branstetter

NOTES ON WATER LOSSES AND LEVELS, CASING, CEMENTING, CAVING, AND OTHER DRILLING CONDITIONS	TYPE AND SIZE OF HOLE	CORE RECOVERY (%)	PERCOLATION TESTS					ELEVATION (FEET)	DEPTH (FEET)	GRAPHIC LOG	SAMPLES FOR TESTING	CLASSIFICATION AND PHYSICAL CONDITION
			DEPTH (FEET)		LOSS (G.P.M.)	PRESSURE (P.S.I.)	LENGTH OF TEST (MIN.)					
			FROM (P, Cs, or Cm)	TO								
	RB											<p>28'-38' Rockbits to gravelly sandy clay. Consists of about 30% fine subrounded caliche gravel, max. size 1/2-inch; 30% well graded sand; 40% medium plastic fines. Color brown. Violent HCL reaction.</p> <p>38'-100' Rockbits to clayey sandy gravel. Consists of about 50% fine to coarse mostly coarse subrounded to subangular caliche, limestone, and volcanic gravel, max. size 1-1/2 inch; 30% well graded sand; 20% medium plastic fines. Color black and white speckled to brown and black. Violent HCL reaction. Larger percentage of gravel in 38'-64' interval. Little fines in 58'-64' interval.</p> <p>100'-110' Rockbits to sandy gravel. Consists of about 80% well graded subrounded to subangular volcanic, limestone, and caliche gravel, max. size 1-3/8 inch; 20% well graded sand; trace of plastic fines. Color dark gray to black. Violent HCL reaction.</p> <p>110'-125' Rockbits to clayey sandy gravel. Consists of about 60% well graded subangular to subrounded volcanic and limestone gravel, max. size 1-3/4 inch; 20% well graded sand; 20% medium plastic fines. Color brown. Violent HCL reaction.</p>
												TD=125'

**EXPLANATION**

CORE LOSS  
 CORE RECOVERY

RB = Rockbit  
 Type of hole... D = Diamond, H = Haystellite, S = Shot, C = Churn  
 Hole sealed... P = Packer, Cm = Cemented, Cs = Bottom of casing  
 Approx. size of hole (X-series)... Ex = 1-1/2", Ax = 1-7/8", Bx = 2-3/8", Nx = 3"  
 Approx. size of core (X-series)... Ex = 7/8", Ax = 1-1/8", Bx = 1-5/8", Nx = 2-1/8"  
 Outside dia. of casing (X-series)... Ex = 1-13/16", Ax = 2-1/4", Bx = 2-7/8", Nx = 3-1/2"  
 Inside dia. of casing (X-series)... Ex = 1-1/2", Ax = 1-29/32", Bx = 2-3/8", Nx = 3"

# GEOLOGIC LOG OF DRILL HOLE

Exploratory Wells		PROJECT CRBSCP Las Vegas Wash Unit		STATE Nevada	
FEATURE LG203	LOCATION Warm Springs Road T228, R62E, Sec. 08 T44S, R62E, Sec. 08	GROUND ELEV. Est. 1950'		DIP (ANGLE FROM HORIZ.) 90°	
HOLE NO. 3/10/80	COORDS. N 4716780	DEPTH OF OVERBURDEN 180.0'		BEARING	
DEPTH AND ELEV. OF WATER See Remarks Below		LOGGED BY D.A. Trudeau		LOG REVIEWED BY D. Branstetter	

NOTES ON WATER LOSSES AND LEVELS, CASING, CEMENTING, CAVING, AND OTHER DRILLING CONDITIONS	TYPE AND SIZE OF HOLE	CORE RECOVERY (%)	PERCOLATION TESTS					DEPTH (FEET)	GRAPHIC LOG	SAMPLES FOR TESTING	CLASSIFICATION AND PHYSICAL CONDITION
			DEPTH (FEET)		LOSS (G.P.M.)	PRESSURE (P.S.I.)	LENGTH OF TEST (MIN.)				
			FROM (P, Cs, or Cm)	TO							
<p><u>Drilling Equipment</u> Scham T66G and Failing 1250 <u>Drilling and Sampling Procedure:</u> Drilled pilot hole for geophysical logs using 7.875 inch Tricone rock bit 0 to 180 ft. Went to 180' rather than 160' to allow for slough. Sample description from these cuttings. Finished hole on the 10th. Reamed hole with 16 inch Tricone Rockbit. 0 to 155 feet.</p> <p><u>Drilling Fluid</u> Schram-Baroid Quick Foam and Air Failing-Lo-Loss</p> <p><u>Hole Stability</u> 10-20 ft of sloughing each run</p> <p><u>Water Level</u> Depth Date 44.8 5/29/80 Stickup 0.7 ft.</p> <p><u>Purpose of Hole</u> Pump test well.</p> <p><u>Drill Site</u> Warm Springs Road east of Paradise Valley Country Club</p> <p><u>Hole Completion</u> Set 6.625 inch mild steel casing 0 to 150 feet. Set 100 feet of 50 slot, slottec casing 50 to 150 feet. Gravel packed well. Set surface seal 0 to 5 feet. Gravel pack has D<sub>50</sub> = 2.40mm and C<sub>50</sub> = 2.15.</p>	RB 7.9"						10 20 30 40 50 60 70 80 90			<p>0 to 13.0 Ft Quaternary Las Vegas Fm Rockbits to silty sands, sandy clay and clayey sand. Some Quaternary valley F might be included within. Contact based on color change.</p> <p>0 to 3 Ft Silty Sand - Consists of about 5% of fine subangular caliche gravel, max size 1.25 inch; 75% poorly graded fine sand; 20% low plastic fine. Color tan. Violent HCL reaction.</p> <p>3.0 to 8.0 Ft. - Rockbits to sandy clay. About 5% fine subangular caliche gravel, max size 1 inch; 45% poorly graded fine sand, 50% medium plastic fines. Color Tan. Violent HCL reaction, gypsum crystals encountered in cuttings.</p> <p>8.0 to 13.0 Ft. - Rockbits to clayey sand. Some caliche gravel max size 0.5 inch; about 30% poorly graded fine sand, about 20% medium plastic fines. Color light brown. Violent HCL reaction.</p> <p>13.0 to 180.0 Ft. Tertiary Muddy Cr. Fm. Rockbits to sandy gravels, gravels, clayey gravel, and sand. Description based on wash samples.</p> <p>13.0 to 30.0 Ft. - Rockbits to sandy gravels. About 60% fine subrounded to subangular caliche gravel, max size 0.75 inch. Caliche consists of CaCO<sub>3</sub> and some fine to coarse grained sandstone. About 30% fine to coarse, mostly fine sand, 10% Med plastic fines. Color light brown to reddish brown. Violent HCL reaction.</p> <p>30.0 to 40.0 Ft. - Rock bits to gravels. About 90% fine subrounded volcanic and some caliche gravel, max size 0.75 inch; 10% mostly coarse rounded volcanic sand, some fines. Color dark gray to black. Violent HCL reaction.</p> <p>40.0 to 50.0 Ft. - Rock bits to clayey gravel. About 50% fine sub-angular volcanic and subrounded caliche gravel max size 0.875 inch; about 20% fine to coarse mostly fine sand; 30% medium plastic fines. Color brown. Violent HCL reaction.</p>	

EXPLANATION



Note Geophysical Logs available.  
RB = Rockbit


Type of hole . . . . . D = Diamond, H = Haystellite, S = Shot, C = Churn  
 Hole sealed . . . . . P = Packer, Cm = Cemented, Cs = Bottom of casing  
 Approx. size of hole (X-series) . . . Ex = 1-1/2", Ax = 1-7/8", Bx = 2-3/8", Nx = 3"  
 Approx. size of core (X-series) . . . Ex = 7/8", Ax = 1-1/8", Bx = 1-5/8", Nx = 2-1/8"  
 Outside dia. of casing (X-series) . . Ex = 1-13/16", Ax = 2-1/4", Bx = 2-7/8", Nx = 3-1/2"  
 Inside dia. of casing (X-series) . . Ex = 1-1/2", Ax = 1-29/32", Bx = 2-3/8", Nx = 3"

**GEOLOGIC LOG OF DRILL HOLE**

FEATURE Exploratory Wells PROJECT CRBSCP Las Vegas Wash Unit STATE Nevada  
 HOLE NO. L6203 LOCATION Warm Springs Road T22S.862E. Sec. 08 T44N. R. 12E. S. 04 GROUND ELEV. 1950' DIP (ANGLE FROM HORIZ.) 90°  
 BEGUN 3/10/80 COORDS. N. 4/16/80 FINISHED 4/16/80 DEPTH OF OVERBURDEN N/A TOTAL DEPTH 180' BEARING   
 DEPTH AND ELEV. OF WATER LEVEL AND DATE MEASURED  LOGGED BY D.A. Trudeau LOG REVIEWED BY D. Braastetter

NOTES ON WATER LOSSES AND LEVELS, CASING, CEMENTING, CAVING, AND OTHER DRILLING CONDITIONS	TYPE AND SIZE OF HOLE	CORE RECOVERY (%)	PERCOLATION TESTS				ELEVATION (FEET)	DEPTH (FEET)	GRAPHIC LOG	SAMPLES FOR TESTING	CLASSIFICATION AND PHYSICAL CONDITION	
			DEPTH (FEET)		LOSS (G.P.M.)	PRESSURE (P.S.I.)						LENGTH OF TEST (MIN.)
			FROM (P, Cs, or Cm)	TO								
	RB 7.9"									<p>50.0 to 55.0 Ft. - Rockbits to sandy gravel. About 50% fine rounded volcanic, caliche, and limestone gravel, max size 0.5 inch; 50% fine to coarse mostly coarse rounded volcanic, caliche, and limestone sand; some clays. Color black and brown speckled. Violent HCL reaction.</p> <p>55.0 to 85.0 Ft. - Rockbits to sandy gravel. About 70% fine to coarse, mostly fine gravel, max size 1.25 inch; 20% fine to coarse mostly fine sand; 10% med. plastic fines. Color light brown. Violent HCL reaction.</p> <p>85.0 to 95.0 Ft. - Rockbits to clayey gravel. About 50% fine subrounded caliche and volcanic gravel, max size 0.75 inch; 20% poorly graded fine sand; 30% low to medium plastic fines. Color light brown. Violent HCL reaction.</p> <p>95.0 to 100.0 Ft. - Rockbits to sandy gravels. About 50% fine subrounded, caliche, limestone and volcanic gravel. Max size 1.0 inch. About 40% well graded sand, coarser grains composed of subrounded caliche, limestone and volcanic rock, 10% fines. Color light brown to dark gray. Violent HCL reaction.</p> <p>100.0 to 105.0 Ft. - Rockbits to clayey gravel. About 50% fine to coarse subrounded caliche, volcanic, and limestone gravel, max size 1.0 inch, 30% well graded sand, 20% low to medium plastic fines. Violent HCL reaction.</p> <p>105.0 to 120.0 Ft. - Rockbits to sandy gravels. About 50% fine rounded to subrounded caliche, limestone, and volcanic gravel, max size 1.25 inch; 40% well graded sand, 10% fines. Color speckled gray. Violent HCL reaction.</p> <p>120.0 to 130.0 Ft. - Rockbits to clayey gravel. About 50% fine subrounded gravel, max size 0.5 inch, 30% well graded sand, 20% fines. Violent HCL reaction.</p>		
							TD=180.0'					

**EXPLANATION**

 CORE LOSS  
CORE RECOVERY

PB = Rockbit

Type of hole . . . . . D = Diamond, H = Haystellite, S = Shot, C = Churn  
 Hole sealed . . . . . P = Packer, Cm = Cemented, Cs = Bottom of casing  
 Approx. size of hole (X-series) . . . Ex = 1-1/2", Ax = 1-7/8", Bx = 2-3/8", Nx = 3"  
 Approx. size of core (X-series) . . . Ex = 7/8", Ax = 1-1/8", Bx = 1-5/8", Nx = 2-1/8"  
 Outside dia. of casing (X-series) . . Ex = 1-13/16", Ax = 2-1/4", Bx = 2-7/8", Nx = 3-1/2"  
 Inside dia. of casing (X-series) . . Ex = 1-1/2", Ax = 1-29/32", Bx = 2-3/8", Nx = 3"

# GEOLOGIC LOG OF DRILL HOLE

FEATURE Exploratory Wells PROJECT CRBSCP, Las Vegas Wash Unit STATE Nevada  
 HOLE NO. LG 203 LOCATION Warm Springs Road T22S, R62E, Sec. 08 aba 4 GROUND ELEV. Est. 1950' DIP (ANGLE FROM HORIZ.) 90  
 COORDS. N. E. S. W. 1/A TOTAL DEPTH 180' BEARING. \_\_\_\_\_  
 BEGUN 3/10/80 FINISHED 4/16/80 DEPTH OF OVERBURDEN \_\_\_\_\_

DEPTH AND ELEV. OF WATER \_\_\_\_\_ LOGGED BY D. A. Trudeau LOG REVIEWED BY D. Branspeter  
 LEVEL AND DATE MEASURED \_\_\_\_\_

NOTES ON WATER LOSSES AND LEVELS, CASING, CEMENTING, CAVING, AND OTHER DRILLING CONDITIONS	TYPE AND SIZE OF HOLE	CORE RECOVERY (%)	PERCOLATION TESTS					ELEVATION (FEET)	DEPTH (FEET)	GRAPHIC LOG	SAMPLES FOR TESTING	CLASSIFICATION AND PHYSICAL CONDITION
			DEPTH (FEET)		LOSS (G.P.M.)	PRESSURE (P.S.I.)	LENGTH OF TEST (MIN.)					
			FROM (P, C, or Cm)	TO								
<p>RB 7.9"</p>	<p>RB 7.9"</p>	<p>RB 7.9"</p>						<p>10</p> <p>20</p> <p>30</p> <p>40</p> <p>50</p> <p>60</p> <p>70</p> <p>80</p> <p>90</p>	<p>10</p> <p>20</p> <p>30</p> <p>40</p> <p>50</p> <p>60</p> <p>70</p> <p>80</p> <p>90</p>		<p>130.0 to 140.0 Ft. - Rockbits to sandy gravels. About 50% fine subrounded volcanic gravel, max size 0.5 inch; about 40% well graded subrounded volcanic sand; 10% medium plastic fines. Color brown black. Violent HCL reaction.</p> <p>140.0 to 180.0 Ft. - Rockbits to gravelly sand. About 40% fine rounded to subrounded mostly volcanic (basalt) gravel, max size 0.75 inch, 60% well graded rounded volcanic sand. Trace of fines. Color gray black. Violent HCL reaction.</p>	

### EXPLANATION

<p><input type="checkbox"/> CORE LOSS</p> <p><input type="checkbox"/> CORE RECOVERY</p>	<p>RB = Rockbit</p> <p>Type of hole . . . . . D = Diamond, H = Haystellite, S = Shot, C = Churn                  Hole sealed . . . . . P = Packer, Cm = Cemented, Cs = Bottom of casing                  Approx. size of hole (X-series) . . . Ex = 1-1/2", Ax = 1-7/8", Bx = 2-3/8", Nx = 3"                  Approx. size of core (X-series) . . . Ex = 7/8", Ax = 1-1/8", Bx = 1-5/8", Nx = 2-1/8"                  Outside dia. of casing (X-series) . . Ex = 1-13/16", Ax = 2-1/4", Bx = 2-7/8", Nx = 3-1/2"                  Inside dia. of casing (X-series) . . . Ex = 1-1/2", Ax = 1-29/32", Bx = 2-3/8", Nx = 3"</p>
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**GEOLOGIC LOG OF DRILL HOLE**

FEATURE Exploratory Wells PROJECT CRBSCP Las Vegas Wash Unit Title II STATE Nevada  
 HOLE NO. LG205 LOCATION T21S, R61E, Sec. 25, d. 4d1 GROUND ELEV. Est 1940' DIP (ANGLE FROM HORIZ.) 90°  
 COORDS. N. E. S. W. W/A BEARING. W/A  
 BEGUN 2/22/79 FINISHED 2/23/79 DEPTH OF OVERBURDEN W/A TOTAL DEPTH 165'  
 DEPTH AND ELEV. OF WATER LEVEL AND DATE MEASURED See Remarks Below LOGGED BY O.A. Trudeau LOG REVIEWED BY D. Branstetter

NOTES ON WATER LOSSES AND LEVELS, CASING, CEMENTING, CAVING, AND OTHER DRILLING CONDITIONS	TYPE AND SIZE OF HOLE	CORE RECOVERY (%)	PERCOLATION TESTS					ELEVATION (FEET)	DEPTH (FEET)	GRAPHIC LOG	SAMPLES FOR TESTING	CLASSIFICATION AND PHYSICAL CONDITION
			DEPTH (FEET)		LOSS (G.P.M.)	PRESSURE (P.S.I.)	LENGTH OF TEST (MIN.)					
			FROM (P. C.s. or Cm)	TO								
<u>Drilling Equipment</u>	RB										0.0'-5.0' Quaternary Eolian Sand Deposits	
<u>Failing 1250</u>	7.9"										Rockbits to 100% poorly graded fine subrounded to rounded sand. Tan, white in color. Very limy.	
<u>Drilling and Sampling Procedure</u>	10							10			5.0'-20.0' Quaternary Valley Fill	
<u>7.875" Tricone Rockbit 0-165' Wash sample every 5'.</u>											Rockbits to sandy clay and gravelly clay which are tanwhite in color. Contact with underlying Muddy Creek Fm. is tentative. This unit may include the Las Vegas Formation. Description based on wash samples.	
<u>Drilling Fluid</u>	20							20			5.0'-10.0' Rockbits to Sandy Clay	
<u>Baroid Lo-Loss</u>											About 40% poorly graded fine sand, 60% medium plastic fines. Color tan white. Limy. Medium dry strength.	
<u>Hole Stability</u>											10.0'-15.0' Rockbits to gravelly clay. About 20% fine subrounded limestone and caliche gravel, max. size 1/2"; 30% poorly graded fine sand; 50% medium plastic fines. Color tan white. Limy. Medium to high dry strength.	
<u>Hole stable 0-165'</u>	30							30			15.0'-20.0' Rockbits to Sandy Clay. About 40% poorly graded fine sand; 60% medium plastic fines. Color tan white. Limy. Low to medium dry strength.	
<u>Water Levels</u>											20.0'-30.0' Rockbits to sandy clay. About 30% poorly graded fine sand, 70% medium to high plastic fines. Color red brown to white. Medium to high dry strength.	
<u>1.8' 2/29/80 stickup 0.90'.</u>	40							40			30.0'-165.0' Tertiary Muddy Creek Fm. Rockbits to sandy clay and sands which are red brown to white in color. Contact with overlying material tentative. Description based on wash samples.	
<u>Purpose of Hole</u>											30.0'-165.0' Rockbits to sandy clay and sand. About 5% fine subrounded caliche and mudstone gravel, max. size 3/4", 40% poorly graded	
<u>Observation well for aquifer test.</u>												
<u>Drill Site</u>	50							50				
<u>Along wash near Doris French school, corner of Pecos and Hacienda.</u>												
<u>Hole Completion</u>	60							60				
<u>Set 2" galvanized steel casing 0-150 with backwash valve at 150.' No. 50 slot screens. Set screens at 37-39, 64-66, 83-85, 148-150. Back-filled with pea gravel and developed to remove sand. Grouted upper 5'.</u>												
	70							70				
	80							80				
	90							90				

**EXPLANATION**

Note  
 SP, Resistivity, and Gamma Ray Logs available  
 RB = Rockbit

CORE LOSS  
 CORE RECOVERY

Type of hole . . . . . D = Diamond, H = Hoystellite, S = Shot, C = Churn  
 Hole sealed . . . . . P = Packer, Cm = Cemented, Cs = Bottom of casing  
 Approx. size of hole (X-series) . . . Ex = 1-1/2", Ax = 1-7/8", Bx = 2-3/8", Nx = 3"  
 Approx. size of core (X-series) . . . Ex = 7/8", Ax = 1-1/8", Bx = 1-5/8", Nx = 2-1/8"  
 Outside dia. of casing (X-series) . . Ex = 1-13/16", Ax = 2-1/4", Bx = 2-7/8", Nx = 3-1/2"  
 Inside dia. of casing (X-series) . . Ex = 1-1/2", Ax = 1-29/32", Bx = 2-3/8", Nx = 3"

# GEOLOGIC LOG OF DRILL HOLE

FEATURE	Exploratory Wells	PROJECT	CRBSCP Las Vegas Wash Unit Title II	STATE	Nevada
HOLE NO.	LG-205	LOCATION	T21S, R61E, Sec. 25, d4d1	GROUND ELEV.	Est. 1940'
BEGUN	2/22/79	COORDS.	N. E.	DIP (ANGLE FROM HORIZ.)	90°
FINISHED	2/23/79	DEPTH OF OVERBURDEN	N/A	TOTAL DEPTH	165'
DEPTH AND ELEV. OF WATER LEVEL AND DATE MEASURED		LOGGED BY		LOG REVIEWED BY	
		D.A. Trudeau		D. Branstetter	

NOTES ON WATER LOSSES AND LEVELS, CASING, CEMENTING, CAVING, AND OTHER DRILLING CONDITIONS	TYPE AND SIZE OF HOLE	CORE RECOVERY (%)	PERCOLATION TESTS				ELEVATION (FEET)	DEPTH (FEET)	GRAPHIC LOG	SAMPLES FOR TESTING	CLASSIFICATION AND PHYSICAL CONDITION	
			DEPTH (FEET)		LOSS (G.P.M.)	PRESSURE (P.S.I.)						LENGTH OF TEST (MIN.)
			FROM (P, Cs, or Cm)	TO								
	RB 7.9										30.0'-165.0' (con't) fine sand; 55% medium plastic fines. Color red brown to white. Limy. Sand occlusion indicated by drill tailings.	
							TD=165'					

 CORE LOSS  CORE RECOVERY	RB = Rockbit	<b>EXPLANATION</b>
Type of hole: D = Diamond, H = Haystellite, S = Shot, C = Churn Hole sealed: P = Packer, Cm = Cemented, Cs = Bottom of casing Approx. size of hole (X-series): Ex = 1-1/2", Ax = 1-7/8", Bx = 2-3/8", Nx = 3" Approx. size of core (X-series): Ex = 7/8", Ax = 1-1/8", Bx = 1-5/8", Nx = 2-1/8" Outside dia. of casing (X-series): Ex = 1-13/16", Ax = 2-1/4", Bx = 2-7/8", Nx = 3-1/2" Inside dia. of casing (X-series): Ex = 1-1/2", Ax = 1-29/32", Bx = 2-3/8", Nx = 3"		

# GEOLOGIC LOG OF DRILL HOLE

FEATURE Exploratory Wells PROJECT CRBSCP Las Vegas Wash Unit Title II STATE Nevada  
 HOLE NO. LC206 LOCATION Doris French School T21S, R61E, Sec. 25 dad 2 GROUND ELEV. Est. 1940 DIP (ANGLE FROM HORIZ.) 90°  
 BEGUN 2/23/80 FINISHED 2/25/80 COORDS. N. E. DEPTH OF OVERBURDEN N/A TOTAL DEPTH 125' BEARING.....  
 DEPTH AND ELEV. OF WATER LEVEL AND DATE MEASURED. See Remarks Below LOGGED BY D. A. Trudeau LOG REVIEWED BY D Branstetter

NOTES ON WATER LOSSES AND LEVELS, CASING, CEMENTING, CAVING, AND OTHER DRILLING CONDITIONS	TYPE AND SIZE OF HOLE	CORE RECOVERY (%)	PERCOLATION TESTS				ELEVATION (FEET)	DEPTH (FEET)	GRAPHIC LOG	SAMPLES FOR TESTING	CLASSIFICATION AND PHYSICAL CONDITION	
			DEPTH (FEET)		LOSS (G.P.M.)	PRESSURE (P.S.I.)						LENGTH OF TEST (MIN.)
			FROM (P, C, or Cm)	TO								
<p><u>Drilling Equipment</u></p> <p>Failing 1250</p> <p><u>Drilling and Sampling Procedure</u></p> <p>7.875" Tricone Rockbit 0-125' Wash sample every 5'.</p> <p><u>Drilling Fluid</u></p> <p>Baroid Lo-Loss</p> <p><u>Hole Stability</u></p> <p>unstable, hole caving 0-25'</p> <p><u>Water Levels</u></p> <p>9.2' 2/25/80 stickup 1.20'</p> <p><u>Purpose of Hole</u></p> <p>Observation well for aquifer test</p> <p><u>Drill Site</u></p> <p>Along wash near Doris French School Pecos and Hacienda</p> <p><u>Hole Completion</u></p> <p>Set 2" galvanized steel pipe 0-120, with No. 50 slot screen 39'-41', 53'-55', 76'-78', 86'-88', and 118'-120'. Backfilled with pea gravel 5'-120', set concrete 0-5'</p>	<p>RB</p> <p>7.9"</p> <p>10</p> <p>20</p> <p>30</p> <p>40</p> <p>50</p> <p>60</p> <p>70</p> <p>80</p> <p>90</p>						<p>10</p> <p>20</p> <p>30</p> <p>40</p> <p>50</p> <p>60</p> <p>70</p> <p>80</p> <p>90</p>			<p><u>0.0'-35.0' Quaternary Valley Fill</u> Rockbits to Gravelly clay, clayey gravel, and sandy clay which is tan brown, tan, tan white, red brown, to white in color. Contact with underlying Muddy Creek Fm. is tentative. Portions of the Quaternary Las Vegas Wash Fm. may be included in this interval. Descriptions based on wash samples.</p> <p><u>0.0'-5.0' Rockbits to sandy clay.</u> About 10% fine subrounded white to dark gray limestone and caliche gravel max. size 1/2"; 40% poorly graded fine sand, about 50% medium plastic fines. Color tan brown. Limy.</p> <p><u>5.0'-15.0' Rockbits to Clayey Gravel</u> About 50% fine subrounded mostly elongate white and dark gray limestone gravel, max. size 1/2"; 30% fine to coarse sand, longer particles are subrounded white and dark gray limestone; 20% medium plastic fines. Color tan. Very Limy.</p> <p><u>15.0'-25.0' Rockbits to Gravelly Clay</u> About 30% fine subrounded mostly elongate white and dark gray limestone gravel, max. size 5/8"; About 30% fine to coarse sand, 40% medium plastic fines. Color tan white Limy.</p> <p><u>25.0'-35.0' Rockbits to Sandy Clay.</u> About 10% fine subrounded white and dark limestone gravel, max. size 5/8"; 40% poorly graded fine sand; 50% medium plastic fines. Color red brown to white. Limy.</p> <p><u>35.0'-125.0' Tertiary Muddy Creek Fm.</u> Rockbits to sandy clay and sands which are red brown to white in color. Contact with overlying valley fill is tentative. Description based on wash samples.</p> <p><u>35.0'-125.0' Rockbits to sandy clay and sands.</u> Some fine subrounded caliche gravel (max. size 3/4") encountered in cutting, about 30% poorly graded fine sand, 70% medium plastic fines. Color red brown to white. Limy. Sand occurrence indicated by drill tailings, sand consist of fine to coarse limestone particles.</p>		

**EXPLANATION**

Note: SP, Resistivity, and Gamma Ray Logs available on this hole.  
RB = Rockbit

Type of hole	D = Diamond, H = Haystellite, S = Shot, C = Churn
Hole sealed	P = Packer, Cm = Cemented, Cs = Bottom of casing
Approx. size of hole (X-series)	Ex = 1-1/2", Ax = 1-7/8", Bx = 2-3/8", Nx = 3"
Approx. size of core (X-series)	Ex = 7/8", Ax = 1-1/8", Bx = 1-5/8", Nx = 2-1/8"
Outside dia. of casing (X-series)	Ex = 1-13/16", Ax = 2-1/4", Bx = 2-7/8", Nx = 3-1/2"
Inside dia. of casing (X-series)	Ex = 1-1/2", Ax = 1-29/32", Bx = 2-3/8", Nx = 3"

# GEOLOGIC LOG OF DRILL HOLE

FEATURE Exploratory Wells PROJECT Las Vegas Wash Unit STATE Nevada  
 HOLE NO. LG206 LOCATION Doris French School T21S, R61E, Sec. 25, T4d 2  
 BEGUN 2/23/80 FINISHED 2/25/80 DEPTH OF OVERBURDEN H/A GROUND ELEV. Est. 1960 DIP (ANGLE FROM HORIZ.) 90°  
 TOTAL DEPTH 125.0' BEARING \_\_\_\_\_  
 DEPTH AND ELEV. OF WATER \_\_\_\_\_ LOGGED BY D.A. Trudeau LOG REVIEWED BY D. Branstetter  
 LEVEL AND DATE MEASURED \_\_\_\_\_

NOTES ON WATER LOSSES AND LEVELS, CASING, CEMENTING, CAVING, AND OTHER DRILLING CONDITIONS	TYPE AND SIZE OF HOLE	CORE RECOVERY (%)	PERCOLATION TESTS					ELEVATION (FEET)	DEPTH (FEET)	GRAPHIC LOG	SAMPLES FOR TESTING	CLASSIFICATION AND PHYSICAL CONDITION
			DEPTH (FEET)		LOSS (G.P.M.)	PRESSURE (P.S.I.)	LENGTH OF TEST (MIN.)					
			FROM (P, Cs, or Cm)	TO								
<p style="margin-top: 0;">PB 7.9'</p> <p style="text-align: center; margin-top: 250px;">TD=125.0'</p>												

**EXPLANATION**

CORE LOSS  
 CORE RECOVERY

PB = Rockbit

Type of hole . . . . . D = Diamond, H = Haystellite, S = Shot, C = Churn  
 Hole sealed . . . . . P = Packer, Cm = Cemented, Cs = Bottom of casing  
 Approx. size of hole (X-series) . . . Ex = 1-1/2", Ax = 1-7/8", Bx = 2-3/8", Nx = 3"  
 Approx. size of core (X-series) . . . Ex = 7/8", Ax = 1-1/8", Bx = 1-5/8", Nx = 2-1/8"  
 Outside dia. of casing (X-series) . . Ex = 1-13/16", Ax = 2-1/4", Bx = 2-7/8", Nx = 3-1/2"  
 Inside dia. of casing (X-series) . . Ex = 1-1/2", Ax = 1-29/32", Bx = 2-3/8", Nx = 3"

# GEOLOGIC LOG OF DRILL HOLE

**FEATURE** Exploratory Wells      **PROJECT** CRBSCP Las Vegas Wash Unit      **STATE** Nevada  
**HOLE NO.** LG-207      **LOCATION** Doris French School T21S, R61E Sec 25 dad3      **GROUND ELEV.** ..... Est. 1940'      **DIP (ANGLE FROM HORIZ.)** 90°  
**BEGUN** 3/25/80      **FINISHED** 3/26/80      **DEPTH OF OVERBURDEN** N/A      **TOTAL DEPTH** 125'      **BEARING** .....  
**DEPTH AND ELEV. OF WATER** See Remarks Below      **LOGGED BY** D.A. Trudeau      **LOG REVIEWED BY** D. Branstetter  
**LEVEL AND DATE MEASURED** .....

NOTES ON WATER LOSSES AND LEVELS, CASING, CEMENTING, CAVING, AND OTHER DRILLING CONDITIONS	TYPE AND SIZE OF HOLE	CORE RECOVERY (%)	PERCOLATION TESTS				ELEVATION (FEET)	DEPTH (FEET)	GRAPHIC LOG	SAMPLES FOR TESTING	CLASSIFICATION AND PHYSICAL CONDITION	
			DEPTH (FEET)		LOSS (G.P.M.)	PRESSURE (P.S.I.)						LENGTH OF TEST (MIN.)
			FROM (P. C. of Cm)	TO								
<p><u>Drilling Equipment</u> Failing 1250</p> <p><u>Drilling and Sampling Procedure</u> 7.875" Tricone Rockbit 0-125'. Wash sample every 5'.</p> <p><u>Drilling Fluid</u> Baroid Lo-Loss.</p> <p><u>Hole Stability</u> Hole Stable</p> <p><u>Water Levels</u> <u>Depth in ft. Date</u> 10.80'      2.29/80 stickup 1.75'.</p> <p><u>Purpose of Hole</u> Observation well for aquifer test.</p> <p><u>Drill Site</u> Along wash near Doris French School. Pecos and Hacienda.</p> <p><u>Hole Completion</u> Set 2" galvanized steel pipe 0-120' with backwash valve on the end. Set No. 10 slot screens 18-20', 43-45', 58-60', and 71-73', 87-89' 105-107, 118-120, backfilled with pea gravel.</p>	RB	7.9'					10 20 30 40 50 60 70 80 90			<p>0-35.0' <u>Quaternary Valley Fill</u> Rockbits to sandy clay and clayey sand which are tan brown, tan, light brown, white, to brown in color. Contact with underlying Muddy Creek Fm. tentative.</p> <p>0-5.0' Rockbits to sandy clay. About 10% fine to coarse subrounded to subangular whitelimestone and caliche sandstone gravel, max. size 0.875"; 40% poorly graded fine sand; 50% medium plastic fines. Color tan brown. Violent HCL reaction.</p> <p>5.0'-30.0' Rockbits to sandy clay. About 5% fine caliche and white limestone gravel, max. size 0.75"; 40% poorly graded fine sand, 55% low to medium plastic fines. Color tan to light brown to white. Violent HCL reaction.</p> <p>30.0'-35.0' Rockbits to clayey sand. About 50% poorly graded fine sand; 50% of low to medium plastic fines. Color brown. Violent HCL reaction.</p> <p>35.0'-125.0' <u>Tertiary Muddy Creek Fm.</u> Rockbits to sandy clay and sands which are redbrown to white in color. Contact with overlying Valley fill is tentative. Description based on wash samples.</p> <p>35.0'-125.0' Rockbits to sandy clay and sands. Some fine subrounded caliche gravel, max. size 0.75"; 40% poorly graded fine sand, 60% clays of medium plasticity. Color redbrown to brown to white. Violent HCL reaction. Sand consisting of fine to coarse limestone rock encountered as indicated by tailings and geophysical logs.</p>		

### EXPLANATION

**NOTE**  
 SP, Resistivity, and Gamma Ray Logs available  
 RB = Rockbit  
 Type of hole ..... D = Diamond, H = Moystellite, S = Shot, C = Churn  
 Hole sealed ..... P = Packer, Cm = Cemented, Cs = Bottom of casing  
 Approx. size of hole (X-series) .. Ex = 1-1/2", Ax = 1-7/8", Bx = 2-3/8", Nx = 3"  
 Approx. size of core (X-series) .. Ex = 7/8", Ax = 1-1/8", Bx = 1-5/8", Nx = 2-1/8"  
 Outside dia. of casing (X-series): Ex = 1-13/16", Ax = 2-1/4", Bx = 2-7/8", Nx = 3-1/2"  
 Inside dia. of casing (X-series): Ex = 1-1/2", Ax = 1-29/32", Bx = 2-3/8", Nx = 3"

# GEOLOGIC LOG OF DRILL HOLE

**FEATURE** .. Exploratory Wells .. **PROJECT** CRBSCP Las Vegas Wash Unit Title II **STATE** Nevada  
**HOLE NO.** LG207 **LOCATION** Doris French School T21S, R61E Sec 25 dad3 **GROUND ELEV.** .. Est. 1940' **DIP (ANGLE FROM HORIZ.)** .. 90°  
**BEGUN** 3/25/80 **FINISHED** 3/26/80 **DEPTH OF OVERBURDEN** .. N/A **TOTAL DEPTH** .. 125' **BEARING** ..  
**DEPTH AND ELEV. OF WATER LEVEL AND DATE MEASURED** .. **LOGGED BY** .. D.A. Trudeau **LOG REVIEWED BY** .. D. Branstetter

NOTES ON WATER LOSSES AND LEVELS, CASING, CEMENTING, CAVING, AND OTHER DRILLING CONDITIONS	TYPE AND SIZE OF HOLE	CORE RECOVERY (%)	PERCOLATION TESTS				ELEVATION (FEET)	DEPTH (FEET)	GRAPHIC LOG	SAMPLES FOR TESTING	CLASSIFICATION AND PHYSICAL CONDITION	
			DEPTH (FEET)		LOSS (G.P.M.)	PRESSURE (P.S.I.)						LENGTH OF TEST (MIN.)
			FROM (P, C, or Cm)	TO								
	RB 7.8"											
	10											
	20											
	30											
	40											
	50											
	60											
	70											
	80											
	90											
				TD=125.0'								

**EXPLANATION**

CORE LOSS  
 CORE RECOVERY

**RB = Rockbit**  
 Type of hole: D = Diamond, H = Haystellite, S = Shot, C = Churn  
 Hole sealed: P = Packer, Cm = Cemented, Cs = Bottom of casing  
 Approx. size of hole (X-series): Ex = 1-1/2", Ax = 1-7/8", Bx = 2-3/8", Nx = 3"  
 Approx. size of core (X-series): Ex = 7/8", Ax = 1-1/8", Bx = 1-5/8", Nx = 2-1/8"  
 Outside dia. of casing (X-series): Ex = 1-13/16", Ax = 2-1/4", Bx = 2-7/8", Nx = 3-1/2"  
 Inside dia. of casing (X-series): Ex = 1-1/2", Ax = 1-29/32", Bx = 2-3/8", Nx = 3"

# GEOLOGIC LOG OF DRILL HOLE

FEATURE Exploratory Wells PROJECT CRBSCP Las Vegas Wash Unit Title II STATE Nevada  
 HOLE NO. LG208 LOCATION T21 S, R62E, Sec. 25 dad 4 GROUND ELEV. Est. 1940 DIP (ANGLE FROM HORIZ.) 90°  
 BEGUN 3/11/80 FINISHED 3/16/80 DEPTH OF OVERBURDEN N/A TOTAL DEPTH 160' BEARING.....  
 DEPTH AND ELEV. OF WATER LEVEL AND DATE MEASURED See Remarks Below LOGGED BY D.A. Trudeau LOG REVIEWED BY D. Bransfeiler

NOTES ON WATER LOSSES AND LEVELS, CASING, CEMENTING, CAVING, AND OTHER DRILLING CONDITIONS	TYPE AND SIZE OF HOLE	CORE RECOVERY (%)	PERCOLATION TESTS				ELEVATION (FEET)	DEPTH (FEET)	GRAPHIC LOG	SAMPLES FOR TESTING	CLASSIFICATION AND PHYSICAL CONDITION	
			DEPTH (FEET)		LOSS (G.P.M.)	PRESSURE (P.S.I.)						LENGTH OF TEST (MIN.)
			FROM (P. C <sub>s</sub> or Cm)	TO								
<p><u>Drilling Equipment</u> Schram Failing</p> <p><u>Drilling and Sampling Procedure</u> 5 7/8" tricone rockbit 0-140', wash samples every 5'. Reamed 0 to 40 with 17.25" bit. Reamed 0 to 160' with 7 7/8 inch bit for Geophysical logging. Completed by reaming 0 to 133' ft. with 17.25 inch rockbit.</p> <p><u>Drilling Fluid</u> 0-140' with 5 7/8 inch air and baroid quick foam. Remainder of drilling done with quat gum.</p> <p><u>Hole Stability</u> Hole unstable. Sloughing in hole after each run.</p> <p><u>Water Levels</u> Not measured.</p> <p><u>Purpose Hole</u> Production hole for aquifer test.</p> <p><u>Drill Site</u> Along wash near Doris French School near corner of Pecos and Hacienda.</p> <p><u>Hole Completion</u> Set 6 5/8" steel casing 0-125'. Set No. 50 slot screen with a net 6 sq. in. per ft. open area. 55-125ft. backfilled with gravel with a</p>	<p>RB</p> <p>5.9'</p> <p>10'</p> <p>20'</p> <p>30'</p> <p>40'</p> <p>50'</p> <p>60'</p> <p>70'</p> <p>80'</p> <p>90'</p>									<p>0.0'-5.0' <u>Quarternary Eolian Sand Deposits</u> Rockbits to sand. About 100% poorly graded fine rounded sand. Tan white in color. Very limy.</p> <p>5.0'-35.0' <u>Quarternary Valley Fill</u> Rockbits to gravelly clay, clayey gravel and sandy clay which is tan, tan white, red brown, to white in color. Contact with underlying Muddy Creek Fm is tentative. Portions of the Quarternary Las Vegas Fm. may be included in this interval. Description based on wash samples.</p> <p>5.0'-15.0' <u>Rockbits to Clayey Gravel</u> About 50% fine subrounded mostly elongate white and dark gray limestone gravel and subangular caliche gravel, max. size 1"; 30% well graded sand; 20% medium plastic fines. Color tan. Violent Hcl reaction.</p> <p>15.0'-25.0' <u>Rockbits to Gravelly Clay</u> About 30% fine subrounded mostly elongate white and dark gray limestone gravel, max. size 5/8"; 30% well graded sand; 40% medium plastic fines. Color Tan white. Limy.</p> <p>25.0'-35.0' <u>Rockbits to Sandy Clay</u> About 10% fine subrounded white and dark gray limestone gravel, max. size 5/8"; 40% poorly graded fine sand; 50% medium plastic fines. Color red brown to white. Limy.</p> <p>35.0'-160.0' <u>Tertiary Muddy Creek Fm</u> Rockbits to sandy clay and sands which are redbrown to white in color. Contact with overlying Valley Fill is tentative. Description based on wash samples.</p> <p>35.0'-160.0' <u>Rockbits to Sandy Clay and Sands.</u> Some fine subrounded caliche gravels max. size 3/4" encountered in sandy clay. Sandy clay composed of about 30% poorly graded fine sand and 70% medium plastic fines. Color is redbrown to white. Limy. Sand occurrence indicated by drill tailings.</p>		

D<sub>50</sub>=2.40mm and C<sub>u</sub>=2.15. Set concrete 0-5ft.  
 Note: Suite of Geophysical Logs available  
 RB = Rockbit

CORE LOSS  
 CORE RECOVERY

Type of hole ..... D = Diamond, H = Haystellite, S = Shot, C = Churn  
 Hole sealed ..... P = Packer, Cm = Cemented, Cs = Bottom of casing  
 Approx. size of hole (X-series) Ex = 1-1/2", Ax = 1-7/8", Bx = 2-3/8", Nx = 3"  
 Approx. size of core (X-series) Ex = 7-8", Ax = 1-1/8", Bx = 1-5/8", Nx = 2-1/8"  
 Outside dia. of casing (X-series) Ex = 1-13/16", Ax = 2-1/4", Bx = 2-7/8", Nx = 3-1/2"  
 Inside dia. of casing (X-series) Ex = 1-1/2", Ax = 1-29/32", Bx = 2-3/8", Nx = 3"

**EXPLANATION**

# GEOLOGIC LOG OF DRILL HOLE

FEATURE Exploratory Wells PROJECT Las Vegas Wash Unit Title II STATE Nevada  
 HOLE NO. LG208 LOCATION T21 S., R62E, Sec 25 dad 4 GROUND ELEV. Est. 1940 DIP (ANGLE FROM HORIZ.) \_\_\_\_\_  
 BEGUN 3/11/80 COORDS. N. \_\_\_\_\_ E. \_\_\_\_\_ FINISHED 3/16/80 DEPTH OF OVERBURDEN N/A TOTAL DEPTH 160' BEARING \_\_\_\_\_  
 DEPTH AND ELEV. OF WATER \_\_\_\_\_ LOGGED BY D.A. Trudeau LOG REVIEWED BY D. Branstetter  
 LEVEL AND DATE MEASURED See Remarks Below

NOTES ON WATER LOSSES AND LEVELS, CASING, CEMENTING, CAVING, AND OTHER DRILLING CONDITIONS	TYPE AND SIZE OF HOLE	CORE RECOVERY (%)	PERCOLATION TESTS				ELEVATION (FEET)	DEPTH (FEET)	GRAPHIC LOG	SAMPLES FOR TESTING	CLASSIFICATION AND PHYSICAL CONDITION	
			DEPTH (FEET)		LOSS (G.P.M.)	PRESSURE (P.S.I.)						LENGTH OF TEST (MIN.)
			FROM (P. Cs. or Cm)	TO								
	RB 5.9"						10 20 30 40 50 60 70 80 90			35.0' - 160'.0 (con't) Consist of fine to coarse grained particles, largest clasts are rounded limestone.		
						TD=160.0'						

**CORE LOSS**

**CORE RECOVERY**

EXPLANATION

RB = Rockbit

Type of hole . . . . . D = Diamond, H = Haystellite, S = Shot, C = Churn  
 Hole sealed . . . . . P = Packer, Cm = Cemented, Cs = Bottom of casing  
 Approx. size of hole (X-series) . . . Ex = 1-1/2", Ax = 1-7/8", Bx = 2-3/8", Nx = 3"  
 Approx. size of core (X-series) . . . Ex = 7/8", Ax = 1-1/8", Bx = 1-5/8", Nx = 2-1/8"  
 Outside dia. of casing (X-series) . . Ex = 1-13/16", Ax = 2-1/4", Bx = 2-7/8", Nx = 3-1/2"  
 Inside dia. of casing (X-series) . . Ex = 1-1/2", Ax = 1-29/32", Bx = 2-3/8", Nx = 3"



**GEOLOGIC LOG OF DRILL HOLE**

FEATURE Exploratory Wells PROJECT CRBSCP Las Vegas Wash Unit Title II STATE Nevada  
 HOLE NO. LG210 LOCATION Flamingo Wash T215, R621, Sec. 07 bbd1 GROUND ELEV. 997, 1800' DIP (ANGLE FROM HORIZ.) 90°  
 BEGUN 1/17/80 FINISHED 1/18/80 DEPTH OF OVERBURDEN N/A TOTAL DEPTH 165' BEARING \_\_\_\_\_  
 DEPTH AND ELEV. OF WATER LEVEL AND DATE MEASURED See notes LOGGED BY D. A. Trudeau LOG REVIEWED BY D. R449911

NOTES ON WATER LOSSES AND LEVELS, CASING, CEMENTING, CAVING, AND OTHER DRILLING CONDITIONS	TYPE AND SIZE OF HOLE	CORE RECOVERY (%)	PERCOLATION TESTS					ELEVATION (FEET)	DEPTH (FEET)	GRAPHIC LOG	SAMPLES FOR TESTING	CLASSIFICATION AND PHYSICAL CONDITION
			DEPTH (FEET)		LOSS (G.P.M.)	PRESSURE (P.S.I.)	LENGTH OF TEST (MIN.)					
			FROM (P. Cs. or Cm)	TO								
<u>Drilling Equipment</u>	RB											
Failing 1250	12.3"											
<u>Drilling Procedure</u>												
Tricone rockbit 12.25" to 20"; 7.875" to 165'.												
<u>Drilling Fluid</u>												
Baroid lo-loss												
<u>Unstable Intervals</u>	RB											
0-40'	7.9"											
<u>Water Levels</u>												
2.75' 1/21/80												
7.50' 1/22/80												
6.70' 1/23/80												
9.25' 1/25/80												
8.75' 1/29/80												
<u>Purpose of Hole</u>												
Observation well for aquifer test.												
<u>Drill Site</u>												
Along Flamingo Wash, next to Boulder Highway												
<u>Hole Completion</u>												
set 2" galvanized steel casing from -1.5' to 155' below ground with backwash valve at 155', set No. 10 slot screens at 33 to 35, 56 to 58, 79-81, 102-104, 153-155. Gravel packed with pea gravel to within 4 ft of surface. Sealed upper 4ft. with concrete.												

Note: SP, resistivity and Gamma Ray logs available.

EXPLANATION

RB = Rockbit

Type of hole . . . . . D = Diamond, H = Haystellite, S = Shot, C = Churn  
 Hole sealed . . . . . P = Packer, Cm = Cemented, Cs = Bottom of casing  
 Approx. size of hole (X-series) . . . Ex = 1-1/2", Ax = 1-7/8", Bx = 2-3/8", Nx = 3"  
 Approx. size of core (X-series) . . . Ex = 7/8", Ax = 1-1/8", Bx = 1-5/8", Nx = 2-1/8"  
 Outside dia. of casing (X-series) . . Ex = 1-13/16", Ax = 2-1/4", Bx = 2-7/8", Nx = 3-1/2"  
 Inside dia. of casing (X-series) . . Ex = 1-1/2", Ax = 1-29/32", Bx = 2-3/8", Nx = 3"

# GEOLOGIC LOG OF DRILL HOLE

FEATURE Exploratory Wells PROJECT CRBSCP Las Vegas Wash Unit Title II STATE Nevada  
 LOCATION Flamingo Wash T21S, R62E, Sec. 07 66d1  
 HOLE NO. LG210 COORDS. N. 1/17/79 E. 1/18/79 GROUND ELEV. Est. 1800' DIP (ANGLE FROM HORIZ.) 90°  
 BEGUN 1/17/79 FINISHED 1/18/79 DEPTH OF OVERBURDEN N/A TOTAL DEPTH 165' BEARING   
 DEPTH AND ELEV. OF WATER  LOGGED BY D. A. Trudeau LOG REVIEWED BY D. Russell

NOTES ON WATER LOSSES AND LEVELS, CASING, CEMENTING, CAVING, AND OTHER DRILLING CONDITIONS	TYPE AND SIZE OF HOLE	CORE RECOVERY (%)	PERCOLATION TESTS				ELEVATION (FEET)	DEPTH (FEET)	GRAPHIC LOG	SAMPLES FOR TESTING	CLASSIFICATION AND PHYSICAL CONDITION	
			DEPTH (FEET)		LOSS (G.P.M.)	PRESSURE (P.S.I.)						LENGTH OF TEST (MIN.)
			FROM (P, Cs, or Cm)	TO								
	RB 7.9"									<p>45.0'-165.0' Tertiary Muddy Creek Fm                      Contact with overlying alluvium is tentative. Upper part of this unit may include portions of Quarternary Las Vegas Fm. Gravelly clays and sandy clays from white to red brown in color. Description based on wash samples.</p> <p style="text-align: center;"><u>45.0'-65.0' Gravelly Clay</u></p> <p>About 30% fine subrounded dark gray and white limestone gravel, max. size 1"; 30% fine to coarse, mostly fine sand, 40% medium plastic fines. Unit is white to light green to red brown in color. Fines have medium to high dry strength. Light reaction to HCL.</p> <p style="text-align: center;"><u>65.0'-105' Gravelly Clay</u></p> <p>About 10% fine subrounded dark gray and white limestone gravel, max. size 1.25"; 40% fine sand, some coarse; 50% medium plastic fines. Red brown to white in color. Medium to high dry strength. Light HCL reaction.</p> <p style="text-align: center;"><u>105.0'-165.0' Sandy Clay</u></p> <p>Less than 5% fine subrounded dark gray and white limestone gravel, max size 1"; 45% fine, some coarse, sand; 50% medium plastic fines. Red brown in color. Medium dry strength. Light HCL reaction.</p>		
					TD= 165.0'							

**CORE LOSS**

**CORE RECOVERY**

**EXPLANATION**

RB = Rockbit

Type of hole . . . . . D = Diamond, H = Hoystellite, S = Shot, C = Churn  
 Hole sealed . . . . . P = Packer, Cm = Cemented, Cs = Bottom of casing  
 Approx. size of hole (X-series) . . . Ex = 1-1/2", Ax = 1-7/8", Bx = 2-3/8", Nx = 3"  
 Approx. size of core (X-series) . . . Ex = 7/8", Ax = 1-1/8", Bx = 1-5/8", Nx = 2-1/8"  
 Outside dia. of casing (X-series) . . Ex = 1-13/16", Ax = 2-1/4", Bx = 2-7/8", Nx = 3-1/2"  
 Inside dia. of casing (X-series) . . Ex = 1-1/2", Ax = 1-29/32", Bx = 2-3/8", Nx = 3"

# GEOLOGIC LOG OF DRILL HOLE

SHEET 1 OF 2

FEATURE: Exploratory Wells PROJECT: CRBSCP Las Vegas Wash Unit Title II STATE: Nevada  
 HOLE NO.: LG211 LOCATION: Flamingo Wash T21S, R62E, Sec. 07 bbd2 Est. 1000' DIP (ANGLE FROM HORIZ.): 90°  
 BEGUN: 1/21/80 COORDS. N. E. GROUND ELEV.: N/A TOTAL DEPTH: 105' BEARING: \_\_\_\_\_  
 FINISHED: 1/21/80 DEPTH OF OVERBURDEN: \_\_\_\_\_  
 DEPTH AND ELEV. OF WATER: see remarks below LOGGED BY: D. A. Trudeau LOG REVIEWED BY: D. Russell

NOTES ON WATER LOSSES AND LEVELS, CASING, CEMENTING, CAVING, AND OTHER DRILLING CONDITIONS	TYPE AND SIZE OF HOLE	CORE RECOVERY (%)	PERCOLATION TESTS					ELEVATION (FEET)	DEPTH (FEET)	GRAPHIC LOG	SAMPLES FOR TESTING	CLASSIFICATION AND PHYSICAL CONDITION
			DEPTH (FEET)		LOSS (S.F.M.)	PRESSURE (P.S.I.)	LENGTH OF TEST (MIN.)					
			FROM (P, Cs, or Cm)	TO								
<u>Drilling Equipment</u> Failing 1250 <u>Drilling and Sampling Procedure</u> Tricone Rockbit 7.875". 0 to 105' Wash sample every 5'. <u>Drilling Fluid</u> Baroid 10-loss <u>Unstable or soft areas</u> Hole stable 0 to 105' <u>Water levels</u> 11.35' 1/22/80 10.10' 1/23/80 10.30' 1/25/80 10.0' 1/29/80 <u>Purpose of Hole</u> Observation well for aquifer test. <u>Drill Site</u> Along Flamingo Wash near Boulder Highway. <u>Hole Completion</u> Set 2" galvanized steel casing to 100' put backwash valve at 100' Set No. 10 slot screens at 20' to 22, 28-30, 56-58 and 98-100. Back-filled with pea gravel.	RB	7.9"						10			0.0'-35' Quaternary Stream Alluvium  Contact with underlying Muddy Creek Fm tentative. Silty sand, clayey gravel, and gravels are tan, brown to dark gray and white in color. Description based on wash samples.  0.0'-15.0' Rockbits to Silty Sand  About 80% fine sand and 20% nonplastic fines. Tan in color. Light reaction to Hcl.  15.0'-30.0' Rockbits to Gravels  About 90% fine subrounded to sub-angular dark gray and white limestone gravel, max size 1"; 10% fine to coarse, mostly fine sand; some medium plastic fines. Dark gray to white to brown in color. Limy. 500gm sample collected for sieve analysis.  30.0'-35.0' Rockbits to Clayey Gravel  About 60% fine subrounded to sub-angular dark gray and white limestone gravel; max size 3/4", 20% fine to coarse mostly fine sand; 20% medium plastic fines. Color brown. Limy.	

### EXPLANATION

<div style="border: 1px solid black; width: 10px; height: 10px; margin-bottom: 5px;"></div> CORE LOSS  <div style="border: 1px solid black; width: 10px; height: 10px; margin-bottom: 5px;"></div> CORE RECOVERY	<p>RB = Rockbit</p> <p>Type of hole: D = Diamond, H = Haystellite, S = Shot, C = Churn          Hole sealed: P = Packer, Cm = Cemented, Cs = Bottom of casing          Approx. size of hole (X-series): Ax = 1-1/2", Bx = 2-3/8", Nx = 3"          Approx. size of core (X-series): Ax = 1-1/8", Bx = 1-5/8", Nx = 2-1/8"          Outside dia. of casing (X-series): Ax = 7/8", Bx = 1-1/4", Nx = 1-1/2"          Inside dia. of casing (X-series): Ax = 1-13/16", Bx = 2-7/8", Nx = 3-1/2"          Ax = 1-1/2", Bx = 2-3/8", Nx = 3"</p>
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# GEOLOGIC LOG OF DRILL HOLE

FEATURE Exploratory Wells PROJECT CRBSCP Las Vegas Wash Unit Title II STATE Nevada  
 HOLE NO. LG211 LOCATION Flamingo Wash T21S, R62E, Sec. 07 bbd2  
 COORDS. N. E. GROUND ELEV. Est. 1800' DIP (ANGLE FROM HORIZ.) .....  
 BEGUN 1/21/80 FINISHED 1/21/80 DEPTH OF OVERBURDEN N/A TOTAL DEPTH 105' BEARING .....

DEPTH AND ELEV. OF WATER LEVEL AND DATE MEASURED ..... LOGGED BY D. A. Trudeau LOG REVIEWED BY D. Russell

NOTES ON WATER LOSSES AND LEVELS, CASING, CEMENTING, CAVING, AND OTHER DRILLING CONDITIONS	TYPE AND SIZE OF HOLE	CORE RECOVERY (%)	PERCOLATION TESTS				ELEVATION (FEET)	DEPTH (FEET)	GRAPHIC LOG	SAMPLES FOR TESTING	CLASSIFICATION AND PHYSICAL CONDITION	
			DEPTH (FEET)		LOSS (G.P.M.)	PRESSURE (P.S.I.)						LENGTH OF TEST (MIN.)
			FROM (P. C <sub>s</sub> or Cm)	TO								
	RB 7.9"									<p>35.0'-105.0' Tertiary Muddy Creek Formation</p> <p>Contact with overlying alluvium is tentative. Upper part of this unit may include portions of the Quarternary Las Vegas Fm. Gravelly clays are brown, red brown to white. Description based on wash samples.</p> <p>35.0'-40.0' Rockbits to Gravelly Clay</p> <p>About 30% fine subrounded dark gray to white limestone gravel, max size 1"; 30% poorly graded fine sand; 40% medium plastic fines. Color brown. Limy.</p> <p>40.0'-105.0' Rockbits to Sandy Clay</p> <p>About 5% fine subrounded dark gray to white limestone gravel, max size 3/4"; 35% poorly graded fine sand; 60% medium plastic fines. Red brown to white in color. Limy.</p>		
	10						10					
	20						20					
	30						30					
	40						40					
	50						50					
	60						60					
	70						70					
	80						80					
	90						90					

**CORE LOSS**

**CORE RECOVERY**

**EXPLANATION**

RB = Rockbit

Type of hole . . . . . D = Diamond, H = Haystellite, S = Shot, C = Churn  
 Hole sealed . . . . . P = Packer, Cm = Cemented, Cs = Bottom of casing  
 Approx. size of hole (X-series) . . . Ex = 1-1/2", Ax = 1-7/8", Bx = 2-3/8", Nx = 3"  
 Approx. size of core (X-series) . . . Ex = 7/8", Ax = 1-1/8", Bx = 1-5/8", Nx = 2-1/8"  
 Outside dia. of casing (X-series) . . Ex = 1-13/16", Ax = 2-1/4", Bx = 2-7/8", Nx = 3-1/2"  
 Inside dia. of casing (X-series) . . . Ex = 1-1/2", Ax = 1-29/32", Bx = 2-3/8", Nx = 3"

# GEOLOGIC LOG OF DRILL HOLE

FEATURE Exploratory Wells PROJECT CRBSCP, Las Vegas Wash Unit Title II STATE Nevada  
 HOLE NO. LG212 LOCATION Flamingo Wash T21S, R62E, Sec. 07 bbd3 GROUND ELEV. est. 1800' DIP (ANGLE FROM HORIZ.) 90°  
 BEGUN 1/23/80 COORDS. N. 1/23/80 E.  DEPTH OF OVERBURDEN 2.0' TOTAL DEPTH 105' BEARING N/A  
 LEVEL AND DATE MEASURED see notes below LOGGED BY D. A. Trudeau LOG REVIEWED BY D. Russell

NOTES ON WATER LOSSES AND LEVELS, CASING, CEMENTING, CAVING, AND OTHER DRILLING CONDITIONS	TYPE AND SIZE OF HOLE	CORE RECOVERY (%)	PERCOLATION TESTS				ELEVATION (FEET)	DEPTH (FEET)	GRAPHIC LOG	SAMPLES FOR TESTING	CLASSIFICATION AND PHYSICAL CONDITION	
			DEPTH (FEET)		LOSS (G.P.M.)	PRESSURE (P.S.I.)						LENGTH OF TEST (MIN.)
			FROM (P, Cs, or Cm)	TO								
<p><u>Drilling Equipment</u></p> <p>Failing 1250</p> <p><u>Drilling and Sampling Procedure:</u> Rock bit 7.875 inch. to 105'. Wash sample every 5 ft.</p> <p><u>Drilling Fluid</u></p> <p>Baroid 10 loss</p> <p><u>Unstable or soft intervals</u></p> <p>Hole stable</p> <p><u>Water levels</u></p> <table style="width: 100%; border: none;"> <tr> <td style="border: none;"><u>Depth</u></td> <td style="border: none;"><u>Date</u></td> </tr> <tr> <td style="border: none;">9.80'</td> <td style="border: none;">1/25/80</td> </tr> <tr> <td style="border: none;">9.45'</td> <td style="border: none;">1/29/80</td> </tr> </table> <p><u>Purpose of Hole</u></p> <p>Observation Well for aquifer test.</p> <p><u>Drill Site</u></p> <p>Flamingo Wash near Boulder Highway</p> <p><u>Hole Completion</u></p> <p>Set 2" galvanized steel casing -1.5' to 100 ft. Set backwash valve at 100 ft. Set No. 10 slot screen 15-17, 25-27, 54-56, 98-100. Backfilled with pea gravel.</p>	<u>Depth</u>	<u>Date</u>	9.80'	1/25/80	9.45'	1/29/80	PB 7.9" 10 20 30 40 50 60 70 80 90	100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350 360 370 380 390 400 410 420 430 440 450 460 470 480 490 500 510 520 530 540 550 560 570 580 590 600 610 620 630 640 650 660 670 680 690 700 710 720 730 740 750 760 770 780 790 800 810 820 830 840 850 860 870 880 890 900 910 920 930 940 950 960 970 980 990 1000 1010 1020 1030 1040 1050	0-2.0' Backfill 2.0'-33.0' Quarternary Stream Alluvium; Contact with underlying Muddy Creek Fm tentative. Clayey gravels, gravel and sandy gravel are white to dark gray to tan. Description based on Wash samples.  2.0'-10.0' Clayey Gravel  About 50% fine subrounded, dark gray to black and white limestone gravel max size 3/4"; 30% fine to coarse sand, mostly fine; 20% low to medium plastic fines. Color white, tan brown, Light HCL reaction.  10.0'-15.0' Gravel  About 80% fine angular to subangular dark gray and white limestone gravel max size 5/8"; 15% fine to coarse sand, mostly fine; 5% plastic fines. Color dark gray to white. Violent HCL reaction.  15.0'-20.0' Clayey Gravel  About 60% fine rounded to angular dark gray to white limestone gravel, max size 7/8"; 20% fine to coarse mostly fine sand; 20% low to medium plastic fines. White to dark gray in color. Violent HCL reaction.  20.0'-33.0' Sandy Gravel  About 80% fine subrounded dark gray to white Limestone gravel, max size 1". About 20% fine to coarse sand, mostly coarse but some medium and fine. Color dark gray to white Violent reaction to HCL.			
<u>Depth</u>	<u>Date</u>											
9.80'	1/25/80											
9.45'	1/29/80											

EXPLANATION

CORE LOSS  
 CORE RECOVERY

PB = Rockbit

Type of hole . . . . . D = Diamond, H = Haystellite, S = Shot, C = Churn  
 Hole sealed . . . . . P = Packer, Cm = Cemented, Cs = Bottom of casing  
 Approx. size of hole (X-series) . . . Ex = 1-1/2", Ax = 1-7/8", Bx = 2-3/8", Nx = 3"  
 Approx. size of core (X-series) . . . Ex = 7/8", Ax = 1-1/8", Bx = 1-5/8", Nx = 2-1/8"  
 Outside dia. of casing (X-series) . . Ex = 1-13/16", Ax = 2-1/4", Bx = 2-7/8", Nx = 3-1/2"  
 Inside dia. of casing (X-series) . . Ex = 1-1/2", Ax = 1-29/32", Bx = 2-3/8", Nx = 3"

# GEOLOGIC LOG OF DRILL HOLE

FEATURE Exploratory Wells PROJECT CRBSCP, Las Vegas, Wash. Unit, Title II STATE Nevada  
 HOLE NO. LG212 LOCATION Flamingo Wash T21S, R62E, Sec. 07 bbd3 GROUND ELEV. est. 1800' DIP (ANGLE FROM HORIZ.) 90°  
 BEGUN 1/23/80 FINISHED 1/23/80 DEPTH OF OVERBURDEN 2.0' TOTAL DEPTH 105' BEARING.....  
 DEPTH AND ELEV. OF WATER LOGGED BY D. A. Trudeau LOG REVIEWED BY D. P. Russell  
 LEVEL AND DATE MEASURED.....

NOTES ON WATER LOSSES AND LEVELS, CASING, CEMENTING, CAVING, AND OTHER DRILLING CONDITIONS	TYPE AND SIZE OF HOLE	CORE RECOVERY (%)	PERCOLATION TESTS					ELEVATION (FEET)	DEPTH (FEET)	GRAPHIC LOG	SAMPLES FOR TESTING	CLASSIFICATION AND PHYSICAL CONDITION
			DEPTH (FEET)		LOSS (G.P.M.)	PRESSURE (P.S.I.)	LENGTH OF TEST (MIN.)					
			FROM (P, C, or Cm)	TO								
	RB 7.9'											33.0'-105.' Tertiary Muddy Creek Fm
					TD=105'							<p>Contact with overlying <u>alluvium</u> sediments is tentative. Upper part of this unit may include portions of Quarternary Las Vegas Fm. Sandy clay, caliche, gravels and mudstone fragments generally red brown in color. Description based on wash samples.</p> <p><u>33.0-40.</u> Rock bits to sandy clay.</p> <p>About 5% subangular white limestone gravel max size 1/2"; 35% fine sand; 60% medium plastic fines. Color red brown. Violent HCL reaction. Medium to high dry strength.</p> <p><u>40.0'-65.0'</u> Rock bits to sandy clay with mudstone fragments.</p> <p>About 30% fine sand with 70% medium plastic fines. Color red brown. Violent HCL reaction; medium, high dry strength. Occasional gravel streak in interval. Numerous sub-rounded white mudstone fragments maximum size 1/2".</p> <p><u>65.0-105.</u> Rock bits to Sandy Clay caliche and gravel.</p> <p>About 30% fine sand with 70% medium plastic fines. Color red brown to white in 60 to 70 ft. interval. Violent HCL reaction. Medium dry strength. Numerous caliche fragments occur as plates and nodules. Bed of caliche 70 to 72 ft. Bed of fine rounded white and dark gray limestone gravel maximum size 1/2" at 95 ft.</p>

**EXPLANATION**



RB = Rockbit

Type of hole . . . . . D = Diamond, H = Haystellite, S = Shot, C = Churn  
 Hole sealed . . . . . P = Packer, Cm = Cemented, Cs = Bottom of casing  
 Approx. size of hole (X-series) . . Ex = 1-1/2", Ax = 1-7/8", Bx = 2-3/8", Nx = 3"  
 Approx. size of core (X-series) . . Ex = 7/8", Ax = 1-1/8", Bx = 1-5/8", Nx = 2-1/8"  
 Outside dia. of casing (X-series) . Ex = 1-13/16", Ax = 2-1/4", Bx = 2-7/8", Nx = 3-1/2"  
 Inside dia. of casing (X-series) . . Ex = 1-1/2", Ax = 1-29/32", Bx = 2-3/8", Nx = 3"

# GEOLOGIC LOG OF DRILL HOLE

FEATURE... Exploratory Wells... PROJECT CRBSCR, Las Vegas Wash Unit... STATE Nevada...  
 HOLE NO... LG-213... LOCATION... Flamingo Wash T21S, R62E, Sec. 07 bbd4... GROUND ELEV... est. 1800'... DIP (ANGLE FROM HORIZ.)... 90°  
 COORDS. N... E...  
 BEGUN... 6/4/80... FINISHED... 8/1/80... DEPTH OF OVERBURDEN... N/A... TOTAL DEPTH... 1750'... BEARING...  
 DEPTH AND ELEV. OF WATER LEVEL AND DATE MEASURED... see below... LOGGED BY... D. A. Trudeau... LOG REVIEWED BY... Transtetter

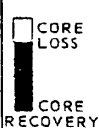
NOTES ON WATER LOSSES AND LEVELS, CASING, CEMENTING, CAVING, AND OTHER DRILLING CONDITIONS	TYPE AND SIZE OF HOLE	CORE RECOVERY (%)	PERCOLATION TESTS				ELEVATION (FEET)	DEPTH (FEET)	GRAPHIC LOG	SAMPLES FOR TESTING	CLASSIFICATION AND PHYSICAL CONDITION	
			DEPTH (FEET)		LOSS (G.P.M.)	PRESSURE (P.S.I.)						LENGTH OF TEST (MIN.)
			FROM (P. C. or Cm)	TO								
<p><u>Drilling Equipment:</u> Failing 1250</p> <p><u>Drilling &amp; Sampling Procedure:</u> Drill 12-inch hole with drag bit, 0-76 ft. Tricone Rock bit 76-175, Reamed 0-125 with 16 inch tricone Rockbit. Wash samples every 5 ft</p> <p><u>Drill Fluid:</u> Baroid Lo-Loss</p> <p><u>Hole Stability:</u> when changing bits had sluff to 30</p> <p><u>Water Level:</u> Depth in ft. Date 11.3 9/2/80 stickup</p> <p><u>Purpose of Hole</u> Production well for aquifer test.</p> <p><u>Hole Location:</u> North side of Flamingo Wash above intersection with Boulder Highway</p>	<p>DB 12"</p> <p>10-12-1/4</p> <p>70</p> <p>30</p> <p>40</p> <p>50</p> <p>60</p> <p>70</p> <p>80</p> <p>90</p> <p>RB 12"</p>									<p>0-300 ft. Quaternary Alluvium: Rockbits to clayey gravel, gravelly sand which are light brown in color. Contact with underlying Muddy Cr. Fm based on change in lithology and drill characteristics.</p> <p>0'-10.0' Rockbits to Clayey Gravel</p> <p>About 50% fine subrounded to sub-angular limestone gravel, max. size 5/8 inch; 30% fine and coarse sand; 20% fines of medium plasticity. Color light brown. Violent Hcl reaction.</p> <p>10.0'-15.0' Rockbits to Gravelly Sand</p> <p>About 30% fine subrounded to subangular caliche gravel, max. size 3/4", 50% fine to coarse mostly fine sand; 20% fines of low to medium plasticity. Color light brown. Violent Hcl reaction.</p> <p>15.0'-25.0' Rockbits to Gravel</p> <p>About 80% fine to coarse subrounded to subangular limestone gravel, max. size 1 3/4"; 10% fine to coarse sand, 10% medium plastic fines. Color light brown to gray. Violent Hcl reaction.</p> <p>25.0'-30.0' Rockbits to Clayey Gravel</p> <p>About 50% fine subrounded to subangular limestone gravel, max. size 1/2"; About 30% fine to coarse mostly fine gravel; 20% fines of medium plasticity. Color light Brown. Violent Hcl reaction.</p>		

### EXPLANATION

Note: Geophysical logs available

DB = Drarbit  
RB = Rockbit

Type of hole... D = Diamond, H = Haystellite, S = Shot, C = Churn  
 Hole sealed... P = Packer, Cm = Cemented, Cs = Bottom of casing  
 Approx. size of hole (X-series)... Ex = 1-1/2", Ax = 1-7/8", Bx = 2-3/8", Nx = 3"  
 Approx. size of core (X-series)... Ex = 7/8", Ax = 1-1/8", Bx = 1-3/8", Nx = 2-1/8"  
 Outside dia. of casing (X-series)... Ex = 1-13/16", Ax = 2-1/4", Bx = 2-7/8", Nx = 3-1/2"  
 Inside dia. of casing (X-series)... Ex = 1-1/2", Ax = 1-29/32", Bx = 2-3/8", Nx = 3"



# GEOLOGIC LOG OF DRILL HOLE

FEATURE Exploratory Wells PROJECT CRBSCP Las Vegas Wash Unit Title II STATE Nevada  
 HOLE NO. LG213 LOCATION Flamingo Wash T213, R62E, 07 bbd4 GROUND ELEV. est. 1800' DIP (ANGLE FROM HORIZ.) 90°  
 BEGUN 6/4/80 COORDS. N 8/80 E TOTAL DEPTH 175.0' BEARING N/A  
 DEPTH AND ELEV. OF WATER LEVEL AND DATE MEASURED \_\_\_\_\_ LOGGED BY D.A. Trudeau LOG REVIEWED BY D. Branstetter

NOTES ON WATER LOSSES AND LEVELS, CASING, CEMENTING, CAVING, AND OTHER DRILLING CONDITIONS	TYPE AND SIZE OF HOLE	CORE RECOVERY (%)	PERCOLATION TESTS				ELEVATION (FEET)	DEPTH (FEET)	GRAPHIC LOG	SAMPLES FOR TESTING	CLASSIFICATION AND PHYSICAL CONDITION	
			DEPTH (FEET)		LOSS (G.P.M.)	PRESSURE (P.S.I.)						LENGTH OF TEST (MIN.)
			FROM (P, Cs, or Cm)	TO								
<p>Hole Completion</p> <p>set 95/8 inch casing 0 to 115'                      set No. 100 slot screen 15-55, set No. 40 slot screen 55'-115'.</p>	<p>RB 12"</p>						<p>10</p> <p>20</p> <p>30</p> <p>40</p> <p>50</p> <p>60</p> <p>70</p> <p>80</p> <p>90</p>			<p>30.0'-120.0' Tertiary Muddy Creek Fm</p> <p>Rockbits to gravelly clay, sandy clays, and caliche which are white to cream to reddish brown in color. Description based on wash samples.</p> <p><u>30.0'-40.0' Rockbits to Gravelly Clay</u></p> <p>About 20% fine subrounded to sub-angular limestone gravel, max. size 5/8"; 30% poorly graded fine sand; 50% fines of medium to high plasticity. Color reddish brown to white. Moderate Hcl reaction.</p> <p><u>40.0'-73.0' Rockbits to Sandy Clay</u></p> <p>About 10% fine subrounded to sub-angular limestone and caliche gravel max. size 0.5"; 30% poorly graded fine sand; 60% fines of medium to high plasticity. Color cream to reddish brown to white. Moderate Hcl reaction.</p> <p><u>73.0'-76.0' Rockbits to Caliche</u></p> <p>Caliche is moderately well cemented fine sand. Color ligh brown. Violent Hcl reaction. Caliche indicated by inability to drill with drag bit.</p> <p><u>76.0'-120.0' Rockbits to Clayey Sand</u></p> <p>About 10% fine subrounded to sub-angular limestone gravel; max. size 1/2"; 60% poorly graded fine sand; 30% fines of low plasticity. Color light to reddish brown. Violent Hcl reaction.</p>		
						TD=175.0'						

EXPLANATION

Note: Geophysical Logs available  
 RD = Rockbit

CORE LOSS  
 CORE RECOVERY

Type of hole . . . . . D = Diamond, H = Haystellite, S = Shot, C = Churn  
 Hole sealed . . . . . P = Packer, Cm = Cemented, Cs = Bottom of casing  
 Approx. size of hole (X-series) . . . Ex = 1-1/2", Ax = 1-7/8", Bx = 2-3/8", Nx = 3"  
 Approx. size of core (X-series) . . . Ex = 7/8", Ax = 1-1/8", Bx = 1-5/8", Nx = 2-1/8"  
 Outside dia. of casing (X-series) . . Ex = 1-13/16", Ax = 2-1/4", Bx = 2-7/8", Nx = 3-1/2"  
 Inside dia. of casing (X-series) . . Ex = 1-1/2", Ax = 1-29/32", Bx = 2-3/8", Nx = 3"



**GEOLOGIC LOG OF DRILL HOLE**

FEATURE Exploratory Wells PROJECT CRBSCP Las Vegas Wash Unit Title 2 STATE Nevada  
 HOLE NO. LC-215 LOCATION Winterwood Golf Course T21S, R62E, Sec. 04 dcd1  
 COORDS. N. E. GROUND ELEV. Est. 1710' DIP (ANGLE FROM HORIZ.) 90°  
 BEGUN 1/28/80 FINISHED 1/30/80 DEPTH OF OVERBURDEN N/A TOTAL DEPTH 125.0' BEARING .....  
 DEPTH AND ELEV. OF WATER See Below LOGGED BY D.A. Trudeau LOG REVIEWED BY D. Branstetter

NOTES ON WATER LOSSES AND LEVELS, CASING, CEMENTING, CAVING, AND OTHER DRILLING CONDITIONS	TYPE AND SIZE OF HOLE	CORE RECOVERY (%)	PERCOLATION TESTS				ELEVATION (FEET)	DEPTH (FEET)	GRAPHIC LOG	SAMPLES FOR TESTING	CLASSIFICATION AND PHYSICAL CONDITION	
			DEPTH (FEET)		LOSS (G.P.M.)	PRESSURE (P.S.I.)						LENGTH OF TEST (MIN.)
			FROM (P. C. or Cm)	TO								
<p><u>Drilling Equipment</u> Schram T66 Band Failing 1250</p> <p><u>Drilling and Sampling Procedure</u> Tricone rockbit 7.875 in dia. 0-125 feet. Wash sample every 5 ft. Drilled 0-80 ft. with Schram. Drilled 80-125 ft. with failing.</p> <p><u>Drilling Fluid</u> Schram: air and foam failing: Baroid LoLoss.</p> <p><u>Hole Stability</u> Hole open 0-124 ft.</p> <p><u>Water Levels</u> Depth in ft. Date 21.6 2/29/79 Stickup 1.4 ft.</p> <p><u>Purpose of Hole</u> Observation well for aquifer test.</p> <p><u>Drill Site</u> Winterwood Golf Course</p> <p><u>Hole Completion</u> Set 2-inch galvanized steel pipe 0-117 ft. with backwash valve at bottom. Set No. 10 slot screen at 36-38, 59-61, 82-84, and 115-117 ft. Backfilled with pea gravel, 5-125 ft. Set concrete 0-5 ft.</p>	<p>PB 7.0"</p> <p>10</p> <p>70</p> <p>30</p> <p>40</p> <p>50</p> <p>60</p> <p>70</p> <p>80</p> <p>90</p>									<p><u>0.0-117.0'</u> Quaternary Stream Alluvium Rockbits to silty sand, clayey sand, sandy gravel, and gravels which vary from whitish tan, tan, tan brown, to brown. Contact with underlying Muddy Creek based on change in lithology and drilling characteristic but is tentative. Description is based on wash samples.</p> <p><u>0.0-10.0'</u> Rockbits to Silty Sand. About 95% poorly graded fine sand, 5% low plastic fines. Color whitish tan, Limy.</p> <p><u>10.0'-20.0'</u> Rockbits to Silty Sand and Clayey Sand. Silty sand is about 95% poorly graded fine and 5% low plastic fines. Color tan. Limy. Clayey sand occurs as rounded nodules up to 1-inch diameter in cutting. Consists of 70% poorly graded fine sand and 30% medium plastic fines. Color tan brown. Limy.</p> <p><u>20.0'-45.0'</u> Rockbits to Clayey Sand. About 5% fine subangular sandstone and limestone gravel, max. size 7/8 inch, 60% poorly graded fine sand, 35% medium plastic fines. Color tan brown to whitish tan. Limy.</p> <p><u>45.0'-60.0'</u> Rockbits to Sandy Clay. Some fine subangular sandstone gravel, max. size 1-inch, 40% poorly graded fine sand; 60% medium plastic fines. Color tan to brown. Limy. Medium dry strength.</p> <p><u>60.0'-85.0'</u> Rockbits to sandy gravel. About 70% fine rounded to subrounded limestone gravel. max. size 1.0-inch, 25% fine and coarse sand (little medium grained), about 5% plastic fines. Color whitish tan. Violent HCL reaction. Gravels at 85 ft. as indicated by drill bit chatter.</p>		

**EXPLANATION**

CORE LOSS  
 CORE RECOVERY

PB = Rockbit

Type of hole ..... D = Diamond, H = Haystellite, S = Shot, C = Churn  
 Hole sealed ..... P = Packer, Cm = Cemented, Cs = Bottom of casing  
 Approx. size of hole (X-series) .. Ex = 1-1/2", Ax = 1-7/8", Bx = 2-3/8", Nx = 3"  
 Approx. size of core (X-series) .. Ex = 7/8", Ax = 1-1/8", Bx = 1-5/8", Nx = 2-1/8"  
 Outside dia. of casing (X-series) .. Ex = 1-13/16", Ax = 2-1/4", Bx = 2-7/8", Nx = 3-1/2"  
 Inside dia. of casing (X-series) .. Ex = 1-1/2", Ax = 1-29/32", Bx = 2-3/8", Nx = 3"

# GEOLOGIC LOG OF DRILL HOLE

**FEATURE** . . . . Exploratory Wells . . . . **PROJECT** . . . . CRBSCP, Las Vegas, Wash. Unit, Title. 2. . . . **STATE** . . . . Nevada . . . .  
**HOLE NO.** . . . . LG 215 . . . . **LOCATION** . . . . Winterwood Golf Course, T21S, R62E, Sec 04 dcd1 . . . .  
**COORDS.** . . . . N . . . . E . . . . **GROUND ELEV.** . . . . Est. . . . 1710' . . . . **DIP (ANGLE FROM HORIZ.)** . . . . 90° . . . .  
**BEGUN** . . . . 1/28/80 . . . . **FINISHED** . . . . 1/30/80 . . . . **DEPTH OF OVERBURDEN** . . . . N/A . . . . **TOTAL DEPTH** . . . . 125.0' . . . . **BEARING** . . . .  
**DEPTH AND ELEV. OF WATER LEVEL AND DATE MEASURED** . . . . See Below . . . . **LOGGED BY** . . . . D.A. Trudeau . . . . **LOG REVIEWED BY** . . . . D. Branspetter . . . .

NOTES ON WATER LOSSES AND LEVELS, CASING, CEMENTING, CAVING, AND OTHER DRILLING CONDITIONS	TYPE AND SIZE OF HOLE	CORE RECOVERY (%)	PERCOLATION TESTS					ELEVATION (FEET)	DEPTH (FEET)	GRAPHIC LOG	SAMPLES FOR TESTING	CLASSIFICATION AND PHYSICAL CONDITION
			DEPTH (FEET)		LOSS (G.P.M.)	PRESSURE (P.S.I.)	LENGTH OF TEST (MIN.)					
			FROM (P, Cs, Cm)	TO								
	RB 7.9'											85.0'-117.0' Rockbits to clayey sand and gravels. Clayey sand consists of 20% fine rounded to subrounded limestone gravel, max. size 0.25 in.; 60% fine to coarse, mostly fine to medium sand; 20% low to medium plastic fines. Color whitish tan. Violent HCL reaction. Gravels indicated by drill bit chatter 85-87, some in interval 95-100, and 100-105 ft. Note very little cuttings from interval 85-105 ft.
					TD 125'							117.0'-125.0' Tertiary Muddy Creek Fm. Rockbits to sandy clay which is red brown in color. Contact is based on change in lithology and drill characteristic. Description based on wash samples.
												117.0'-125.0' Rockbits to sandy clay. About 40% poorly graded fine sand, 60% low to medium plastic fines. Color red brown. Violent HCL reaction. Unit drills slow and smooth.

### EXPLANATION

CORE LOSS  
 CORE RECOVERY

RB = Rockbit

Type of hole . . . . . D = Diamond, H = Haystellite, S = Shot, C = Churn  
 Hole sealed . . . . . P = Packer, Cm = Cemented, Cs = Bottom of casing  
 Approx. size of hole (X-series) . . . Ex = 1-1/2", Ax = 1-7/8", Bx = 2-3/8", Nx = 3"  
 Approx. size of core (X-series) . . . Ex = 7/8", Ax = 1-1/8", Bx = 1-5/8", Nx = 2-1/8"  
 Outside dia. of casing (X-series) . . Ex = 1-13/16", Ax = 2-1/4", Bx = 2-7/8", Nx = 3-1/2"  
 Inside dia. of casing (X-series) . . Ex = 1-1/2", Ax = 1-29/32", Bx = 2-3/8", Nx = 3"

# GEOLOGIC LOG OF DRILL HOLE

FEATURE .. Exploratory Wells .. PROJECT .. CRBSCB, Las. Vegas. Wash. Unit .. STATE .. Nevada ..  
 HOLE NO. .. LG216 .. LOCATION .. Winterwood GCIT215, R62E. Sec. 04 dcd2 .. GROUND ELEV. .. est. 1710 .. DIP (ANGLE FROM HORIZ.) .. 90° ..  
 BEGUN .. 1/28/80 .. FINISHED .. 1/28/80 .. DEPTH OF OVERBURDEN .. N/A .. TOTAL DEPTH .. 145.0' .. BEARING ..  
 DEPTH AND ELEV. OF WATER LEVEL AND DATE MEASURED .. See Below .. LOGGED BY .. D. A. Trudeau .. LOG REVIEWED BY .. Q. Branstetter ..

NOTES ON WATER LOSSES AND LEVELS, CASING, CEMENTING, CAVING, AND OTHER DRILLING CONDITIONS	TYPE AND SIZE OF HOLE	CORE RECOVERY (%)	PERCOLATION TESTS					ELEVATION (FEET)	DEPTH (FEET)	GRAPHIC LOG	SAMPLES FOR TESTING	CLASSIFICATION AND PHYSICAL CONDITION		
			DEPTH (FEET)		LOSS (G.P.M.)	PRESSURE (P.S.I.)	LENGTH OF TEST (MIN.)							
			FROM (P. C <sub>s</sub> or C <sub>m</sub> )	TO										
<p><u>Drilling Equipment</u></p> <p>Schram T66B Failing 1250</p> <p><u>Drilling and Sampling Procedure</u></p> <p>Tricone Rockbit, 7.875 in. 0 to 145 ft. Wash samples every 5 ft. Schram 0 to 60 ft. Failing 60 to 145.</p> <p><u>Drilling Fluid</u></p> <p>Schram: Air Foam and Failing: Baroid Lo LOS5.</p> <p><u>Hole Stability</u></p> <p>Hole open 0 to 145 ft.</p> <p><u>Water Levels</u></p> <table border="1"> <tr> <th>Depth in Ft</th> <th>Date</th> </tr> <tr> <td>24.05'</td> <td>2/29/80</td> </tr> </table> <p>Stickup 1.2 ft.</p> <p><u>Purpose of Hole</u></p> <p>Observation Well for aquifer test.</p> <p><u>Drill Site</u></p> <p>Winterwood Golf Course</p> <p><u>Hole Completion</u></p> <p>Set 2 in. galvanized steel casing 0 to 115' with backwash valve on the bottom. Set No. 10 slot screen 30 to 32', 58 to 60', 80 to 82', and 113 to 115 ft. Backfilled with gravel to 145. Set concrete from 0 to 5 ft.</p>	Depth in Ft	Date	24.05'	2/29/80	<p>RB 7.9"</p>									<p>0.0 to 118.0 Ft. Quaternary Stream Alluvium Rockbits to sand, gravelly sand, clayey sand, sandy clay, gravels and mudstone which vary from brown, to tan brown, to reddish brown to whitish tan. Contact with underlying Muddy Creek Fm. Tentative.</p> <p>0 to 12 ft Rockbits to silty sand. About 95% fine sand, and 5% low plastic fines. Color tan brown. Limy.</p> <p>12 to 20 ft. Rockbits to Sandy Clay. About 30% poorly graded fine sand, 70% medium plastic fines. Color brown. Limy. Medium dry strength.</p> <p>20 to 50 ft. Rockbits to Clayey Sand and Mudstone. About 5% fine subrounded to subangular sandstone gravel, and subrounded gray limestone gravel, max. size ½ in; 65% poorly graded fine sand; about 30% medium plastic fines. Color reddish brown. Limy. Mudstone plates up to 1½ in. dia. from 45 to 50 ft.</p> <p>50 to 65 ft. Rockbits to Clayey Sand and Mudstone. About 10% fine to coarse subrounded limestone, sandstone and caliche gravel, max size 1½ in; 60% fine to coarse sand: 30% medium plastic fines. Color brown. Limy. Find elongate mudstone plates up to 1 in. dia. reddish brown color in cuttings.</p> <p>65 to 90.0 ft. Rockbits to Gravelly Sand, Mudstone and Gravels. About 30% fine subrounded chert, limestone and sandstone gravel, max. size ¾ in.; 50% coarse to fine, mostly fine sand; 20% medium plastic fines. Color brown to whitish tan. Limy. Red brown, elongate mudstone chunks, max. size ½ in. encountered in cuttings from 80 to 85 ft. Gravels were encountered at depths</p>
Depth in Ft	Date													
24.05'	2/29/80													

**EXPLANATION**

Note: Sp, GammaRay and Resistivity logs available on this hole.  
 RB = Rockbit

CORE LOSS  
 CORE RECOVERY

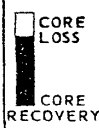
Type of hole .. D = Diamond, H = Haystellite, S = Shot, C = Churn  
 Hole sealed .. P = Packer, Cm = Cemented, Cs = Bottom of casing  
 Approx. size of hole (X-series) .. Ex = 1-1/2", Ax = 1-7/8", Bx = 2-3/8", Nx = 3"  
 Approx. size of core (X-series) .. Ex = 7/8", Ax = 1-1/8", Bx = 1-5/8", Nx = 2-1/8"  
 Outside dia. of casing (X-series) .. Ex = 1-13/16", Ax = 2-1/4", Bx = 2-7/8", Nx = 3-1/2"  
 Inside dia. of casing (X-series) .. Ex = 1-1/2", Ax = 1-29/32", Bx = 2-1/8", Nx = 3"

# GEOLOGIC LOG OF DRILL HOLE

FEATURE Exploratory Wells PROJECT CRBSCB Las Vegas Wash Unit STATE Nevada  
 HOLE NO. LG216 LOCATION Winterwood GC T215 R62E Sec. 04 dcd2 GROUND ELEV. est 1710 DIP (ANGLE FROM HORIZ.) 90  
 BEGUN 1/29/80 FINISHED 1/28/80 DEPTH OF OVERBURDEN 1/4 TOTAL DEPTH 145.0' BEARING \_\_\_\_\_  
 DEPTH AND ELEV. OF WATER LEVEL AND DATE MEASURED See Below LOGGED BY D. A. Trudeau LOG REVIEWED BY D. Branstetter

NOTES ON WATER LOSSES AND LEVELS, CASING, CEMENTING, CAVING, AND OTHER DRILLING CONDITIONS	TYPE AND SIZE OF HOLE	CORE RECOVERY (%)	PERCOLATION TESTS				ELEVATION (FEET)	DEPTH (FEET)	GRAPHIC LOG	SAMPLES FOR TESTING	CLASSIFICATION AND PHYSICAL CONDITION	
			DEPTH (FEET)		LOSS (G.P.M.)	PRESSURE (P.S.I.)						LENGTH OF TEST (MIN.)
			FROM (P, Ca, or Cm)	TO								
	RB 7.9"						10 20 30 40			<p>65 to 90.0 ft. (con't) of 80 to 82, 85 to 87 ft. as indicated by drill bit chatter.</p> <p>90.0 to 105.0 ft. Rockbits to Clayey Sand and Gravels. About 10% fine subrounded to subangular limestone, chert, and sandstone gravel, max. size 3/8 in.; about 65% poorly graded fine sand; 25% medium plastic fines. Color whitish tan. Limy. Gravels encountered from 100 to 103.0 as indicated by drill bit chatter.</p> <p>105.0 - 118.0 ft. Rockbits to Gravelly Sand and Gravels. About 30% fine subrounded limestone gravel, max. size 3/8 in.; 50% fine to coarse sand; and 20% medium plastic fines. Color White. Limy.</p>		
				TO 145'			50 60 70 80 90			<p>118.0 to 145.0 ft. Tertiary Muddy Creek Formation Consists of sandy clay which is red brown in color. Materials drill like a good clay, slow smooth drilling. Contact based on change in drilling characteristics. Description based on wash samples.</p> <p>118.0 - 145.0 ft. Rockbits to Sandy Clay. Consists of 20% fine subrounded limestone gravel, max. size 3/8 in.; 30% poorly graded fine sand; and 50% medium plastic fines. Color red brown. Violent HCL reaction. Materials drill slow and smooth. Gravels may be from above intervals.</p>		

### EXPLANATION



RB = Rockbit  
 Type of hole . . . . . D = Diamond, H = Haysellite, S = Shot, C = Churn  
 Hole sealed . . . . . P = Packer, Cm = Cemented, Cs = Bottom of casing  
 Approx. size of hole (X-series) . . . Ex = 1-1/2", Ax = 1-7/8", Bx = 2-3/8", Nx = 3"  
 Approx. size of core (X-series) . . . Ex = 7/8", Ax = 1-1/8", Bx = 1-5/8", Nx = 2-1/8"  
 Outside dia. of casing (X-series) . . Ex = 1-13/16", Ax = 2-1/4", Bx = 2-7/8", Nx = 3-1/2"  
 Inside dia. of casing (X-series) . . . Ex = 1-1/2", Ax = 1-29/32", Bx = 2-3/8", Nx = 3"

# GEOLOGIC LOG OF DRILL HOLE

FEATURE . . . Exploratory Wells . . . PROJECT Las Vegas Wash Unit . . . STATE Nev.  
 HOLE NO. LG217 . . . LOCATION Winterwood Golf Course . . . GROUND ELEV. Est. 1710' . . . DIP (ANGLE FROM HORIZ.) 90°  
 BEGUN 1/26/80 . . . FINISHED 1/26/80 . . . DEPTH OF OVERBURDEN N/A . . . TOTAL DEPTH 125.0' . . . BEARING . . .  
 DEPTH AND ELEV. OF WATER LEVEL AND DATE MEASURED . . . See below . . . LOGGED BY D. A. Trudeau . . . LOG REVIEWED BY D. Branstetter

NOTES ON WATER LOSSES AND LEVELS, CASING, CEMENTING, CAVING, AND OTHER DRILLING CONDITIONS	TYPE AND SIZE OF HOLE	CORE RECOVERY (%)	PERCOLATION TESTS				ELEVATION (FEET)	DEPTH (FEET)	GRAPHIC LOG	SAMPLES FOR TESTING	CLASSIFICATION AND PHYSICAL CONDITION	
			DEPTH (FEET)		LOSS (G.P.M.)	PRESSURE (P.S.I.)						LENGTH OF TEST (MIN.)
			FROM (P, C, or Cm)	TO								
Drilling Equipment	7.9									0.0 to 125.0 ft. Quaternary Alluvium		
Failing 1250										Contact with underlying Muddy Cr. fm undeterminable in this hole. Silty sand, gravelly sand, clayey sands, and gravels are tan to reddish brown, to tan brown in color. Description based on wash samples.		
Drilling and Samples	10						10					
Tricone 7-7/8 inch rock to 125.0 ft. wash samples collected at 5 ft. intervals.							20			0 to 250 ft. Silty Sand and Limestone boulders. About 80% poorly graded fine sand and 20% low plastic fines. Color tan, limy. Limestone boulders are gray and occur from 1.0' to 3.0'.		
Drilling Fluid												
Baroid LoLoss												
Hole Stability												
Hole Stable TD	30						30			25.0 to 35.0 ft. Rock bits to Gravelly Sand and Gravel.		
Water Levels												
Depth in ft. Date												
24.9 2/29/80							40			About 30% fine subrounded to angular dark gray black and white limestone gravel, max size 1/2 inch; 50% fine and coarse subrounded sand; 20% low plastic fines. Color tan to reddish brown. Limy. Gravel lense encountered at 30-31 ft. as indicated by drill bit chatter.		
Stickup 0.9 ft.	40											
Purpose of Hole												
Statelite Observation well for aquifer test												
Hole Completion	50						50			35.0 to 60.0 ft Rock bits to Clavev Sand and Gravel. About 5% fine rounded dark gray, black and white limestone gravel, max size 1/2 inch; 60% poorly graded fine sand; 35% low to medium plastic fines. Color red brown to whitish tan to tan brown. Limy. Low dry strength. Gravel at 58 - 59 ft as indicated by excessive drill bit chatter.		
Set 2 inch galvanized steel pipe 0 to 120 ft with backwash valve at 120'												
Set 10 slot screen 29 to 31, 62 to 64 95 to 97, and 118 to 120 feet. Back-filled with gravel from 5 to 125. Set concrete 0-5 ft	60						60			60 to 65.0 ft. Clavev Gravel. About 50% fine subrounded dark gray, black, and white limestone gravel, max size 1/2 inch; 30% coarse and fine sand; 20% medium plastic fines. Color tan brown. Limy. Excessive drill bit chatter. 60' to 65 ft.		
	70						70					
	80						80					
	90						90					

EXPLANATION

CORE LOSS
   
CORE RECOVERY

RB = Rockbit

Type of hole . . . . . D = Diamond, H = Haystellite, S = Shot, C = Churn  
 Hole sealed . . . . . P = Packer, Cm = Cemented, Cs = Bottom of casing  
 Approx. size of hole (X-series) . . . Ex = 1-1/2", Ax = 1-7/8", Bx = 2-3/8", Nx = 3"  
 Approx. size of core (X-series) . . . Ex = 7-8", Ax = 1-1/8", Bx = 1-5/8", Nx = 2-1/8"  
 Outside dia. of casing (X-series) . . Ex = 1-13/16", Ax = 2-1/4", Bx = 2-7/8", Nx = 3-1/2"  
 Inside dia. of casing (X-series) . . Ex = 1-1/2", Ax = 1-29/32", Bx = 2-3/8", Nx = 3"

# GEOLOGIC LOG OF DRILL HOLE

FEATURE . . . Exploratory Wells . . . PROJECT CRBSCP Las Vegas Wash Unit . . . STATE Nevada  
 HOLE NO. LG 217 LOCATION Winterwood Golf Course T21S, R62E, Sec. 04 dcd 3  
 COORDS. N. . . . . E. . . . . GROUND ELEV. Est. 1710' DIP (ANGLE FROM HORIZ.) . . . 55'  
 BEGUN 1/26/80 . . . FINISHED 1/26/80 . . . DEPTH OF OVERBURDEN . . . . . TOTAL DEPTH . . . . . BEARING . . . . .

DEPTH AND ELEV. OF WATER . . . . . LOGGED BY D.A. Trudeau . . . . . LOG REVIEWED BY D. Branstetter  
 LEVEL AND DATE MEASURED . . . . .

NOTES ON WATER LOSSES AND LEVELS, CASING, CEMENTING, CAVING, AND OTHER DRILLING CONDITIONS	TYPE AND SIZE OF HOLE	CORE RECOVERY (%)	PERCOLATION TESTS					ELEVATION (FEET)	DEPTH (FEET)	GRAPHIC LOG	SAMPLES FOR TESTING	CLASSIFICATION AND PHYSICAL CONDITION
			DEPTH (FEET)		LOSS (G.P.M.)	PRESSURE (P.S.I.)	LENGTH OF TEST (MIN.)					
			FROM (P, Cs, or Cm)	TO								
	RB 7.9'											<p>65.0 to 95.0 ft. Clavev Sand. About 5% fine subrounded dark gray, black and white limestone gravel, max size 1/2 inch; 65% fine sand; 30% medium plastic fines. Color whitish tan. Limy. Low dry strength.</p> <p>95.0 to 105.0 ft Gravelly Sand and Gravels. About 30% fine subrounded dark gray, black and white limestone gravel, max. size 1/2 inch; 50% fine and coarse subrounded sand; 20% medium plastic fines. Color whitish tan. Gravels between 97.0 - 100 ft as indicated by excessive drill bit chatter.</p> <p>105.0 to 125.0 ft Rock bits to Clavev Sand and Gravels. About 10% subrounded dark gray, black and white limestone gravel; 60% fine sand; 30% medium plastic fines. Color Whitish tan to red brown. Limy. Gravels encountered 110 to 115 ft. and 122 to 123 ft as indicated by excessive drill bit chatter.</p>
					TD= 125.0'							

**CORE LOSS**

**CORE RECOVERY**

EXPLANATION

PB = Rockbit

Type of hole . . . . . D = Diamond, H = Haystellite, S = Shot, C = Churn  
 Hole sealed . . . . . P = Packer, Cm = Cemented, Cs = Bottom of casing  
 Approx. size of hole (X-series) . . . Ex = 1-1/2", Ax = 1-7/8", Bx = 2-3/8", Nx = 3"  
 Approx. size of core (X-series) . . . Ex = 7/8", Ax = 1-1/8", Bx = 1-5/8", Nx = 2-1/8"  
 Outside dia. of casing (X-series) . . Ex = 1-13/16", Ax = 2-1/4", Bx = 2-7/8", Nx = 3-1/2"  
 Inside dia. of casing (X-series) . . Ex = 1-1/2", Ax = 1-29/32", Bx = 2-3/8", Nx = 3"

# GEOLOGIC LOG OF DRILL HOLE

FEATURE: Exploratory Wells PROJECT: CRBSCP Las Vegas Wash Unit STATE: Nevada  
 HOLE NO.: LG218 LOCATION: Winterwood Golf Course T21S, R62E, Sec. 04 dcd4  
 COORDS. N. E. GROUND ELEV.: Est. 1710' DIP (ANGLE FROM HORIZ.): 90°  
 BEGUN: FINISHED: DEPTH OF OVERBURDEN: N/A TOTAL DEPTH: 150.0' BEARING:  
 DEPTH AND ELEV. OF WATER: See Remarks Below LOGGED BY: D.A. Trudeau LOG REVIEWED BY: D. Branstetter

NOTES ON WATER LOSSES AND LEVELS, CASING, CEMENTING, CAVING, AND OTHER DRILLING CONDITIONS	TYPE AND SIZE OF HOLE	CORE RECOVERY (%)	PERCOLATION TESTS					ELEVATION (FEET)	DEPTH (FEET)	GRAPHIC LOG	SAMPLES FOR TESTING	CLASSIFICATION AND PHYSICAL CONDITION
			DEPTH (FEET)		LOSS (G.P.M.)	PRESSURE (P.S.I.)	LENGTH OF TEST (MIN.)					
			FROM (P. Cs, of Cm)	TO								
<p><u>Drill Equipment</u> Failing 1250</p> <p><u>Drilling and Sampling Procedure</u> 7-7/8" tricone rockbit 0-140'. Reamed 0-150' with 16" tricone rockbit. Reamed 0-120' with 19' rockbit. Wash sample every 5'.</p> <p><u>Drill Fluid</u> Quar Gum</p> <p><u>Hole Stability</u> Minor sluffing in hole.</p> <p><u>Water Level</u> Depth in ft. Date 24.0'* 10/31/80 *Stickup about 2'</p> <p><u>Purpose of Hole</u> Pump Well for Aquifer Test.</p> <p><u>Drill Site</u> East of Las Vegas Wash inside Winterwood Golf Course.</p> <p><u>Hole Completion</u> Set 48' of 12" blank steel-casing with 70' of 12" No. 100 slotted steel casing below that with a steel plate on the bottom. Gravel packed with local pea gravel 5-130'. Grouted 0-5'.</p> <p><u>Special Note</u> This hole drilled within 5' of a 60'-80' hole abandoned because Schram washed too large a hole to complete. Contractor</p>	7.9 10 20 30 40 50 60 70 80 90	7.9 10 20 30 40 50 60 70 80 90					1710 1700 1690 1680 1670 1660 1650 1640 1630 1620 1610 1600 1590 1580 1570 1560 1550 1540 1530 1520 1510 1500	0 10 20 30 40 50 60 70 80 90	0.0'-120.0' 10.0'-20.0' 20.0'-60.0' 60.0'-80.0' 80.0'-100.0' 100.0'-120.0' 120.0'-150.0'	<p>0.0'-120.0' Quaternary Alluvium Rockbits to clayey sands, clayey gravels and gravelly sands which are tan to tan brown to cream to white in color. Contact with Muddy Creek Fm. not reached. Description based on wash samples.</p> <p>0.0'-20.0' Rockbits to clayey sand. A trace of fine subrounded caliche gravel, max. size 1/2 in.; 70% poorly graded fine sand; 30% low to medium plastic fines. Color tan to tan brown. Violent HCL reaction.</p> <p>20.0'-60.0' No sample recovery because of lost circulation.</p> <p>60.0'-80.0' Rockbits to clayey sands. About 5% fine subrounded angular limestone and caliche gravel, max. size 1/2 in.; 70% fine to coarse mostly fine sand; 25% low to medium plastic fines. Color tan brown. Violent HCL reaction.</p> <p>80.0'-100.0' Rockbits to Clayey gravels. About 30% fine subrounded to rounded limestone gravel, max. size 1/2 in.; 30% poorly graded fine sand; 40% medium plastic fines. Color cream to white. Violent HCL reaction.</p> <p>100.0'-120.0' Rockbits to gravelly sands. About 30% fine rounded black and white limestone gravel, max. size 1/2 in.; 60% fine to coarse sand; 10% low to medium plastic fines. Color tan. Violent HCL reaction.</p> <p>120.0'-150.0' No samples available.</p>		

### EXPLANATION

Geophysical Logs available on this hole. Contractor drilled this hole 5' away from where he attempted to drill hole in 1/81. That hole abandoned because too large a dia. to complete. Abandoned hole partially filled in with pea gravel and cuttings. Above Geologic Log may not be representative.

CORE LOSS  
 CORE RECOVERY

Type of hole . . . . . D = Diamond, H = Haystellite, S = Shot, C = Churn  
 Hole sealed . . . . . P = Packer, Cm = Cemented, Cs = Bottom of casing  
 Approx. size of hole (X-series) . . . Ex = 1-1/2", Ax = 1-7/8", Bx = 2-3/8", Nx = 3"  
 Approx. size of core (X-series) . . . Ex = 7/8", Ax = 1-1/8", Bx = 1-5/8", Nx = 2-1/8"  
 Outside dia. of casing (X-series) . . Ex = 1-13/16", Ax = 2-1/4", Bx = 2-7/8", Nx = 3-1/2"  
 Inside dia. of casing (X-series) . . Ex = 1-1/2", Ax = 1-29/32", Bx = 2-3/8", Nx = 3"

RB = Rockbit

# GEOLOGIC LOG OF DRILL HOLE

FEATURE Exploratory Wells PROJECT CRBSCP Las Vegas Wash Unit STATE Nevada  
 HOLE NO. LG218 LOCATION Winterwood Golf Course T21s R62E Sec.04 dcd4 E8E 1710' DIP (ANGLE FROM HORIZ.) 90°  
 COORDS. N. . . . . E. . . . . GROUND ELEV. . . . . EST. . . . .  
 BEGUN . . . . . FINISHED. . . . . DEPTH OF OVERBURDEN 150' TOTAL DEPTH. . . . . BEARING. . . . .  
 DEPTH AND ELEV. OF WATER . . . . . See Remarks Below . . . . . LOGGED BY D.A. Trudeau . . . . . LOG REVIEWED BY D. Branstetter

NOTES ON WATER LOSSES AND LEVELS, CASING, CEMENTING, CAVING, AND OTHER DRILLING CONDITIONS	TYPE AND SIZE OF HOLE	CORE RECOVERY (%)	PERCOLATION TESTS				ELEVATION (FEET)	DEPTH (FEET)	GRAPHIC LOG	SAMPLES FOR TESTING	CLASSIFICATION AND PHYSICAL CONDITION	
			DEPTH (FEET)		LOSS (G.P.M.)	PRESSURE (P.S.I.)						LENGTH OF TEST (MIN.)
			FROM (P. C., or Cm)	TO								
<p><u>Special Note (con't)</u>                      partially filled in abandoned hole with pea gravel and cuttings. Lost circulation in LG218 probably due to this situation. Geologic logs may not be representative.</p>	RB						70=150'					

### EXPLANATION

CORE LOSS  
 CORE RECOVERY

Geophysical Logs available on this hole. Contractor drilled this hole 5' away from where he attempted to drill hole in 1/81. That hole abandoned because too large a dia. to complete. Abandoned hole partially filled in with pea gravel and cuttings. Above Geologic Log may not be representative.

Type of hole . . . . . D = Diamond, H = Hoytellite, S = Shot, C = Chum, RB = ROCKBIT  
 Hole sealed . . . . . P = Packer, Cm = Cemented, Cs = Bottom of casing  
 Approx. size of hole (X-series) . . . Ex = 1-1/2", Ax = 1-7/8", Bx = 2-3/8", Nx = 3"  
 Approx. size of core (X-series) . . . Ex = 7/8", Ax = 1-1/8", Bx = 1-5/8", Nx = 2-1/8"  
 Outside dia. of casing (X-series) . . Ex = 1-13/16", Ax = 2-1/4", Bx = 2-7/8", Nx = 3-1/2"  
 Inside dia. of casing (X-series) . . Ex = 1-1/2", Ax = 1-29/32", Bx = 2-3/8", Nx = 3"



# GEOLOGIC LOG OF DRILL HOLE

**FEATURE** Exploratory Wells      **PROJECT** CRBSCP Las Vegas Wash Unit      **STATE** Nevada  
**HOLE NO.** LG-219      **LOCATION** Clark County STP T215, R62E, Sec. 22 bcd1      **GROUND ELEV.** Est. 1665      **DIP (ANGLE FROM HORIZ.)** 90°  
**BEGUN** 5/24/80      **FINISHED** 5/27/80      **DEPTH OF OVERBURDEN** N/A      **TOTAL DEPTH** 103.5      **BEARING** \_\_\_\_\_  
**DEPTH AND ELEV. OF WATER LEVEL AND DATE MEASURED** See Below      **LOGGED BY** D. A. Trudeau      **LOG REVIEWED BY** D. Branstetter

NOTES ON WATER LOSSES AND LEVELS, CASING, CEMENTING, CAVING, AND OTHER DRILLING CONDITIONS	TYPE AND SIZE OF HOLE	CORE RECOVERY (%)	PERCOLATION TESTS				ELEVATION (FEET)	DEPTH (FEET)	GRAPHIC LOG	SAMPLES FOR TESTING	CLASSIFICATION AND PHYSICAL CONDITION	
			DEPTH (FEET)		LOSS (G.P.M.)	PRESSURE (P.S.I.)						LENGTH OF TEST (MIN.)
			FROM (P, Cs, or Cm)	TO								
<p><u>Drilling Equipment</u></p> <p>Failing 1250</p> <p><u>Drilling and Sampling Procedure:</u></p> <p>12.0 inch drag bit 0 to 103.5'. Wash sample every 5 ft.</p> <p><u>Drill Fluid</u></p> <p>Baroid Lo Loss and water.</p> <p><u>Hole Stability</u></p> <p>Hole Stable</p> <p><u>Water Level</u></p> <p>5.25'      5/15/80</p> <p><u>Purpose of Hole</u></p> <p>Shallow observation well.</p> <p><u>Description of Area</u></p> <p>In field south of Clark Co. STP along Monsoon Rd. Floodway</p> <p><u>Hole Completion</u></p> <p>Set 90' of 6" mild steel casing with 5ft. field slotted 30-35', 85-90', and plate on bottom. Backfilled with pea gravel and grouted 0-5'.</p>	DB 12"  10  70  30  40  50  60  70  80  90						0-95.0'  10  70  30  40  50  60  70  80  90			<p><u>0-95.0' Quarternary Stream Alluvium</u></p> <p>Rockbits to clayey sands and caliche which are whitish tan to tan brown in color. Contact with underlying Muddy Creek Fm. based on change in lithology. Description based on wash samples.</p> <p><u>0.0'-95.0'</u> Rockbits to clayey sands and caliche. Clayey sand consists of about 70% fine to coarse mostly fine sand; 30% low to medium plastic fines. Color brown, tan brown, whitish tan, whitish brown and dark brown. Violent Hcl reaction. Caliche indicated by excessive drill, bit chatter 30-35', and 60-65'.</p> <p><u>95.0'-103.5' Tertiary Muddy Creek Fm.</u></p> <p>Consists of sandy clays which are blue to green in color. Description based on wash samples.</p> <p><u>95.0'-100'</u> Rockbits to sandy clay. About 10% poorly graded fine sand and 90% high plastic fines. Color blue to blue green. Violent Hcl reaction.</p>		

**EXPLANATION**

CORE LOSS  
 CORE RECOVERY

DB = Drag Bit

Type of hole . . . . . D = Diamond, H = Haystellite, S = Shot, C = Churn  
 Hole sealed . . . . . P = Packer, Cm = Cemented, Cs = Bottom of casing  
 Approx. size of hole (X-series) . . . . . Ex = 1-1/2", Ax = 1-7/8", Bx = 2-3/8", Nx = 3"  
 Approx. size of core (X-series) . . . . . Ex = 7/8", Ax = 1-1/8", Bx = 1-5/8", Nx = 2-1/8"  
 Outside dia. of casing (X-series) . . . . . Ex = 1-13/16", Ax = 2-1/4", Bx = 2-7/8", Nx = 3-1/2"  
 Inside dia. of casing (X-series) . . . . . Ex = 1-1/2", Ax = 1-29/32", Bx = 2-3/8", Nx = 3"

**GEOLOGIC LOG OF DRILL HOLE**

FEATURE: Exploratory Wells PROJECT: CRBSCP Las Vegas Wash Unit STATE: Nevada  
 HOLE NO.: LG-220A LOCATION: CCSTP, T21S, R62E, Sec. 22, bcd GROUND ELEV. Est 1665' DIP (ANGLE FROM HORIZ.): 90°  
 BEGUN: 4/23/81 COORDS. N. E. FINISHED: 6/05/81 DEPTH OF OVERBURDEN: N/A TOTAL DEPTH: 230' BEARING:  
 DEPTH AND ELEV. OF WATER: See Remarks Below LOGGED BY: D.A. Trudeau LOG REVIEWED BY: D. Branstetter

NOTES ON WATER LOSSES AND LEVELS, CASING, CEMENTING, CAVING, AND OTHER DRILLING CONDITIONS	TYPE AND SIZE OF HOLE	CORE RECOVERY (%)	PERCOLATION TESTS				ELEVATION (FEET)	DEPTH (FEET)	GRAPHIC LOG	SAMPLES FOR TESTING	CLASSIFICATION AND PHYSICAL CONDITION	
			DEPTH (FEET)		LOSS (G.P.M.)	PRESSURE (P.S.I.)						LENGTH OF TEST (MIN.)
			FROM (P. C. or Cm)	TO								
Drilling Equipment Failing 1250 BuCyrus 12" Erie Cable Tool.	RB									0.0' - 100.0' Quaternary Stream		
Drilling and Sampling Procedure 12 inch tricone rockbit 0-230'. 4" Core 50'-54, 50% recovery; 100-104', 100% recovery. 12" percussion bit attempted to open hole. Wash sample every 5'.	10						10			Alluvium Rockbits and cores to clayey sands, sandy clays, and caliche which are tan to brown to tan brown to dark brown. Contact with underlying Muddy Creek Fm. based on appearance of greenish blue clays and gypsum. Materials called stream alluvium based on location. Description based on wash samples and core.		
Drill Fluid Failing-Baroid Lo Loss & Lost circulation material. Cable Tool-Water	30						30			0.0 - 100.0' Rockbits to clayey sands, sandy clays, and caliche. Clayey sands occurred in interval 0' - 20', 30' - 40', 65' - 100'. Consists of about 60% fine to coarse mostly fine rounded sand and 40% low to medium plastic fines. Colors ranged from tan to brown to tan brown to dark brown. Sandy clay occurs in interval 20' - 30', and 40' - 65'. Consists of about 40% fine to coarse mostly fine sand, coarser particles are limestone and some gypsum; and 60% medium plastic fines. Color tan to brown to tan brown. Sandy clay and clayey sand both have violent HCL reaction. Caliche encountered in interval 55' - 65'. Caliche indicated by the rough drilling and by subangular caliche fragments recovered in the drill cuttings.		
Hole Stability Extreme caving conditions from 70'-TD. Lost circulation at 140'.	40						40			50.0' - 54.0' Sandy clay. Consists of 40% fine to coarse, mostly fine sand, and 60% medium plastic. Fines. Color tan brown. Violent HCL reaction.		
Water Levels Depth in Ft. Date 8' 5/7/80 64' 5/8/80 60' 5/25/80	50	50					50			100.0' - 230.0' Tertiary Muddy Creek Formation Rockbits and cores to gravelly sandy clay, clayey gravel, gravel, gypsum, claystone, sand stone, and sandy clay which are green to brown in color. Description based on wash sample and core.		
Purpose of Hole Deep aquifer observation hole.	60						60			100.0' - 110.0' Rockbits to sandy clay. Consists of a trace of rounded to subrounded caliche gravel, max. size 3/16"; 20% fine to medium, mostly fine grained sand; 80% medium to high plastic Fines. Color green to brown		
Drill Site Well located 280 yds east of intersection of Monson Road floodway and Rd (N-S) which passes by Clark County Sewage Treatment Plant. Well located in field south of CCSTP.	70						70			Violent HCL reaction.		
	80						80					
	90						90					

**EXPLANATION**

CORE LOSS  
 CORE RECOVERY

RB=Rockbit  
 C=Core

Type of hole . . . . . D = Diamond, H = Haystellite, S = Shot, C = Churn  
 Hole sealed . . . . . P = Packer, Cm = Cemented, Cs = Bottom of casing  
 Approx. size of hole (X-series) . . Ex = 1-1/2", Ax = 1-7/8", Bx = 2-3/8", Nx = 3"  
 Approx. size of core (X-series) . . Ex = 7/8", Ax = 1-1/8", Bx = 1-5/8", Nx = 2-1/8"  
 Outside dia. of casing (X-series) . Ex = 1-13/16", Ax = 2-1/4", Bx = 2-7/8", Nx = 3-1/2"  
 Inside dia. of casing (X-series) . Ex = 1-1/2", Ax = 1-29/32", Bx = 2-3/8", Nx = 3"

# GEOLOGIC LOG OF DRILL HOLE

FEATURE .. EXPLORATORY WELLS .. PROJECT .. CRBSCP Las Vegas Wash .. STATE .. Nevada ..  
 HOLE NO. .. LG220A .. LOCATION .. CCSTP, T21S, R62E, Sec. 22, bcd .. GROUND ELEV. .. 1665' .. DIP (ANGLE FROM HORIZ.) ..  
 COORDS. N. .. E. .. TOTAL DEPTH .. 230.0' .. BEARING ..  
 BEGUN .. 4/23/81 .. FINISHED .. 6/05/81 .. DEPTH OF OVERBURDEN .. N/A ..  
 DEPTH AND ELEV. OF WATER LEVEL AND DATE MEASURED .. See Remarks Below .. LOGGED BY .. D.A. Trudeau .. LOG REVIEWED BY .. D. Branstetter ..

NOTES ON WATER LOSSES AND LEVELS, CASING, CEMENTING, CAVING, AND OTHER DRILLING CONDITIONS	TYPE AND SIZE OF HOLE	CORE RECOVERY (%)	PERCOLATION TESTS				ELEVATION (FEET)	DEPTH (FEET)	GRAPHIC LOG	SAMPLES FOR TESTING	CLASSIFICATION AND PHYSICAL CONDITION	
			DEPTH (FEET)		LOSS (G.P.M.)	PRESSURE (P.S.I.)						LENGTH OF TEST (MIN.)
			FROM (P, Cs, or Cm)	TO								
<p><u>Hole Completion</u>                      Hole abandoned after losing circulation 4 times in intervals between 140' - 230' and being unable to regain it at 230'; and after moving cable tool rig over hole and making no progress at removing sluff. Another hole was drilled approx. 500' east of here starting 6/05/81 and was geophysically logged and cored but was abandoned on 6/18/81 when hole collapsed on bit, the log of this well is presented as LG220. The completed hole was started on 6/27/80 and cased and gravel packed a short time later. It is located between the two abandoned holes. The completed wells log was so similar to the second attempted hole that only one log was prepared.</p>	4" C  10" RB 12"	100					0 10 20 30 40 50 60 70 80 90			<p><u>100.0 - 104.0'</u> Gravelly sandy clay and clayey gravel. Gravelly sandy clay consists of trace of subrounded limestone gravel (up to 20% in places), max size 0.6"; 10% poorly graded fine sand; and 90% medium to high plastic fines. Color green with yellow brown streaks and nodules. Light to violent HCL reaction. Clayey gravel occurs from 101.5-102', consists of 80% fine rounded to subrounded limestone gravel and 20% sandy clay like above.</p> <p><u>110.0' - 115.0'</u> Rockbits to sandy clay. Consists of about 50% fine to coarse, mostly coarse subrounded to subangular white caliche sand, max size 3/16" and 50% medium to high plastic fines. Color green. Violent HCL reaction.</p> <p><u>115.0' - 140.0'</u> Rockbits to sandy clay. Consists of about 5% subrounded to subangular caliche gravel, max size 1/4"; 20% fine to medium, mostly fine grained sand; 75% medium to high plastic fines. Color green with yellow brown stains. Violent HCL reaction.</p> <p><u>140.0' - 141.0'</u> Rockbits to gravel(?) No sample recovery. Extreme drill bit chatter at this zone. Drill bit samples at this zone show fine subrounded to rounded limestone an caliche gravel, max size 0.75". Circulation lost after drilling through this hard zone.</p> <p><u>141.0 - 160.0</u> No sample recovery. Believe this to be cavernous gypsum. Drill would drill hard for a foot or two then drop a foot or two then repeat. Sample recovered from bit showed fibrous gypsum and green clay.</p>		

**EXPLANATION**

CORE LOSS  
 CORE RECOVERY

RB=Rockbit  
 C=Core

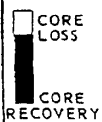
Type of hole .. D = Diamond, H = Haystellite, S = Shot, C = Churn  
 Hole sealed .. P = Packer, Cm = Cemented, Cs = Bottom of casing  
 Approx. size of hole (X-series) .. Ex = 1-1/2", Ax = 1-7/8", Bx = 2-3/8", Nx = 3"  
 Approx. size of core (X-series) .. Ex = 7/8", Ax = 1-1/8", Bx = 1-5/8", Nx = 2-1/8"  
 Outside dia. of casing (X-series) .. Ex = 1-13/16", Ax = 2-1/4", Bx = 2-7/8", Nx = 3-1/2"  
 Inside dia. of casing (Y-series) .. Ex = 1-1/2", Ax = 1-7/8", Bx = 2-3/8", Nx = 3"

# GEOLOGIC LOG OF DRILL HOLE

FEATURE .. EXPLORATORY WELLS .. PROJECT .. CRBSCP, Las Vegas, Wash. .. STATE .. Nevada ..  
 HOLE NO. LG220A LOCATION .. CCSTP T21S, R62E, Sec. 22, bcd GROUND ELEV. .. 1665' DIP (ANGLE FROM HORIZ.) .. 90°  
 BEGUN .. 4/23/81 FINISHED .. 6/05/81 DEPTH OF OVERBURDEN .. N/A TOTAL DEPTH .. 230.0' BEARING ..  
 DEPTH AND ELEV. OF WATER .. See Remarks Below .. LOGGED BY .. D. A. Trudeau .. LOG REVIEWED BY .. D. Branstetter

NOTES ON WATER LOSSES AND LEVELS, CASING, CEMENTING, CAVING, AND OTHER DRILLING CONDITIONS	TYPE AND SIZE OF HOLE	CORE RECOVERY (%)	PERCOLATION TESTS				ELEVATION (FEET)	DEPTH (FEET)	GRAPHIC LOG	SAMPLES FOR TESTING	CLASSIFICATION AND PHYSICAL CONDITION	
			DEPTH (FEET)		LOSS (G.P.M.)	PRESSURE (P.S.I.)						LENGTH OF TEST (MIN.)
			FROM (P, C, or Cm)	TO								
	RB 12"						10 20 30 40 50 60 70 80 90			<p><u>160.0 - 200.0</u> Rockbits to gypsum claystone, and sand stone. Gypsum composes 50% of sample 160' - 170', 80% 170' - 175', and 90% 175' - 200'. Mostly translucent to white crystalline form but some fibrous. Remaining portion of sample is claystone which is composed of sandy clay occurring as blocky fragments and consisting of about 20% mostly fine sand and 80% medium to high plastic fines. Color green to red brown. Violent HCL reaction, Can be broken with intermediate finger pressure. Find reddish tan fine grained sandstone particles in zone 170'-175'.</p> <p><u>200.0' - 230.0'</u> No sample recovery.</p>		
				TD=230.0								

**EXPLANATION**



RB=Rockbit

Type of hole . . . . . D = Diamond, H = Haystellite, S = Shot, C = Churn  
 Hole sealed . . . . . P = Packer, Cm = Cemented, Cs = Bottom of casing  
 Approx. size of hole (X-series) . . . Ex = 1-1/2", Ax = 1-7/8", Bx = 2-3/8", Nx = 3"  
 Approx. size of core (X-series) . . . Ex = 7-8", Ax = 1-1/8", Bx = 1-5/8", Nx = 2-1/8"  
 Outside dia. of casing (X-series) . . Ex = 1-13/16", Ax = 2-1/4", Bx = 2-7/8", Nx = 3-1/2"  
 . . . . . Ex = 1-1/2", Ax = 1-29/32", Bx = 2-3/8", Nx = 3"

# GEOLOGIC LOG OF DRILL HOLE

FEATURE Exploratory Wells PROJECT CRBSCP Las Vegas Wash Unit STATE Nevada  
 LOCATION Clark County STP T21S, R62E, Sec. 22 bcd 2 GROUND ELEV. Est. 1665' DIP (ANGLE FROM HORIZ.) 90°  
 HOLE NO. LG 220 COORDS. N. 7114/80 E.          TOTAL DEPTH. 305.0'  
 BEGUN 6/5/80 FINISHED 7/14/80 DEPTH OF OVERBURDEN N/A BEARING           
 DEPTH AND ELEV. OF WATER LEVEL AND DATE MEASURED See Below LOGGED BY D. A. Trudeau LOG REVIEWED BY D. Branstetter

NOTES ON WATER LOSSES AND LEVELS, CASING, CEMENTING, CAVING, AND OTHER DRILLING CONDITIONS	TYPE AND SIZE OF HOLE	CORE RECOVERY (%)	PERCOLATION TESTS				ELEVATION (FEET)	DEPTH (FEET)	GRAPHIC LOG	SAMPLES FOR TESTING	CLASSIFICATION AND PHYSICAL CONDITION	
			DEPTH (FEET)		LOSS (G.P.M.)	PRESSURE (P.S.I.)						LENGTH OF TEST (MIN.)
			FROM (P. Cs. or Cm)	TO								
<p><u>Drilling Equipment</u></p> <p>Failing 1250</p> <p><u>Drilling and Sampling Procedure</u></p> <p>7 7/8 inch dragbit 0-305.0 ft. Reamed with 12 inch dragbit 0-305.0 ft. 4" Core 250'-254' 100% recovery; 300'-304 with 100% recovery.</p> <p><u>Drilling Fluid</u></p> <p>Baroid Lo-Loss</p> <p><u>Hole Stability</u></p> <p>Hole stable</p> <p><u>Water Level</u></p> <p>Depth in ft. <u>        </u> Date <u>        </u></p> <p>Not measured</p> <p><u>Purpose of Hole</u></p> <p>Deep aquifer observation well.</p> <p><u>Well Location</u></p> <p>In field south of Clark Co. STP</p> <p><u>Hole Completion</u></p> <p>Set 6" mild steel casing 0-300 ft. with a plate on the bottom. field slotted 290'-300'. Back-filled with pea gravel 150'-305' and grouted 0'-150'.</p> <p>Presented here is the log of the second attempted hole at this site. There were a total of 3 holes drilled.</p>	DE 7.9'  10  20  30  40  50  60  70  80  90								<p><u>0-78.0' Quarternary Stream Alluvium</u> Rockbits to sandy clay and clayey sand which are brown to light brown to reddish brown. Contact with Muddy Cr. Fm based on lithologic change. Descriptions based on wash samples.</p> <p><u>0'-15.0' Rockbits to sandy clay.</u> About 40% mostly fine sand; 60% medium plastic fines. Color light brown. Violent Hcl reaction.</p> <p><u>15.0'-25.0' Rockbits to clayey sand</u> About 80% fine to coarse mostly fine sand; 20% medium plastic fines. Color brown. Violent Hcl reaction.</p> <p><u>25.0'-65.0' Rockbits to sandy clay and mudstone and some gravel.</u> Sandy clay is about 40% mostly fine sand; 60% medium to high plastic fines. Color brown to reddish brown. Violent Hcl reaction. Mudstone chunks encountered in cutting. Fine subrounded caliche gravel encountered 45'-50'.</p> <p><u>65.0'-78.0' Rockbits to clayey sand.</u> About 60% fine to coarse mostly fine sand; 40% medium plastic fines. Color light brown. Violent Hcl reaction.</p> <p><u>78.0'-305.0' Tertiary Muddy Creek Fm</u> Rockbits to clay, claystone, gypsum and sandy clay which are green to blue green to blue to cream to brown to red brown. Description based on wash samples and core.</p> <p><u>78.0'-96.0' Rockbits to clay and claystone.</u> About 100% high plastic fines. Particles of claystone encountered in the cuttings. Color green to bluegreen to blue to cream Little Hcl reaction.</p> <p><u>96.0'-175.0' Rockbits to gypsum with some claystone and clays.</u> Gypsum occurs as crystals and sand sized particles. Clay and claystone encountered to a lesser extent in the cuttings. Color blue to brown to white. Little or no Hcl reaction</p> <p><u>175.0'-305.0' Rockbits to gypsum and sandy clay.</u> Gypsum occurs as crystals and sand sized particles.</p>			

### EXPLANATION

Note: Geophysical logs available on this hole. Also, this is the second attempt at drilling this hole. The first attempt was logged LG220A. The third attempt was not logged.

- DE=Dragbit
- Type of hole . . . . . D = Diamond, H = Haystellite, S = Shot, C = Churn  
 Hole sealed . . . . . P = Packer, Cm = Cemented, Cs = Bottom of casing  
 Approx. size of hole (X-series) . . . Ex = 1-1/2", Ax = 1-7/8", Bx = 2-3/8", Nx = 3"  
 Approx. size of core (X-series) . . . Ex = 7/8", Ax = 1-1/8", Bx = 1-5/8", Nx = 2-1/8"  
 Outside dia. of casing (X-series) . . Ex = 1-13/16", Ax = 2-1/4", Bx = 2-7/8", Nx = 3-1/2"  
 Inside dia. of casing (X-series) . . Ex = 1-1/2", Ax = 1-29/32", Bx = 2-3/8", Nx = 3"



# GEOLOGIC LOG OF DRILL HOLE

FEATURE Exploratory Wells PROJECT CRBSCP Las Vegas Wash Unit STATE Nevada  
 HOLE NO. LG 220 LOCATION Clark Co. STP T21S, E62E, Sec. 22 bcd2 Est 1665'  
 COORDS. N. 7714780 E.                      GROUND ELEV.                      DIP (ANGLE FROM HORIZ.) 90°  
 BEGUN 6/5/80 FINISHED                      DEPTH OF OVERBURDEN                      TOTAL DEPTH 305.0' BEARING                       
 DEPTH AND ELEV. OF WATER See Below LOGGED BY D. A. Trudea LOG REVIEWED BY D. Branstetter  
 LEVEL AND DATE MEASURED                     

NOTES ON WATER LOSSES AND LEVELS, CASING, CEMENTING, CAVING, AND OTHER DRILLING CONDITIONS	TYPE AND SIZE OF HOLE	CORE RECOVERY (%)	PERCOLATION TESTS					ELEVATION (FEET)	DEPTH (FEET)	GRAPHIC LOG	SAMPLES FOR TESTING	CLASSIFICATION AND PHYSICAL CONDITION
			DEPTH (FEET)		LOSS (G.P.M.)	PRESSURE (P.S.I.)	LENGTH OF TEST (MIN.)					
			FROM (P, C, or Cm)	TO								
<p>Hole Completion (cont)</p> <p>The second hole was drilled approx. 500' east of first hole starting 6/05/80 and was geophysically logged and cored but was abandoned on 6/18/80 when hole collapsed on bit. The log of this well is presented here as LG220. The completed hole was started on 6/27/80 and cased and gravel packed a short time later. It is located between the two abandoned holes. The completed wells log was so similar to the second attempted hole that only one log was prepared. LG219 is 107' west of this second hole. The completed well is 17' west of the second hole whose geologic log is presented here.</p>	<p>DB</p> <p>12"</p> <p>10</p> <p>20</p> <p>30</p> <p>40</p> <p>50</p> <p>60</p> <p>70</p> <p>80</p> <p>90</p>										<p>Sandy clay consists of 30% poorly graded fine sand; and 70% medium plastic fines. Color brown. Little Hcl reaction.</p> <p><u>250'-251.6'</u> Gypsum and sandy clay. About 95% crystalline gypsum. Crystals for most part are not well formed. About 5% sandy clay occurs between individual crystal masses. Color light brown to white. Some light Hcl reaction.</p> <p><u>251.6'-254.0'</u> Sandy clay and gypsum. About 80% occurs as sandy clay. Sandy clay is about 20% poorly graded fine sand and about 80% medium plastic fines. Color brown to red brown. Violent Hcl reaction. Gypsum occurs as crystals interspersed throughout. A 1 inch bed of crystals occurs at 252.6 ft.</p> <p><u>300'-304'</u> Gypsum and sandy clay. About 80% mostly large massive crystalline gypsum occurs in masses interspersed with 20% sandy clay. Sandy clay is about 20% poorly graded fine sand; 80% medium plastic fines. Color brown to red brown from 300' to 303' and green from 303' to 304'.</p>	

EXPLANATION

CORE LOSS  
 CORE RECOVERY

DB=Dragbit  
 Type of hole . . . . . D = Diamond, H = Haystellite, S = Shot, C = Churn  
 Hole sealed . . . . . P = Packer, Cm = Cemented, Cs = Bottom of casing  
 Approx. size of hole (X-series) . . . Ex = 1-1/2", Ax = 1-7/8", Bx = 2-3/8", Nx = 3"  
 Approx. size of core (X-series) . . . Ex = 7/8", Ax = 1-1/8", Bx = 1-5/8", Nx = 2-1/8"  
 Outside dia. of casing (X-series) . . Ex = 1-13/16", Ax = 2-1/4", Bx = 2-7/8", Nx = 3-1/2"  
 Inside dia. of casing (X-series) . . Ex = 1-1/2", Ax = 1-29/32", Bx = 2-3/8", Nx = 3"

# GEOLOGIC LOG OF DRILL HOLE

**FEATURE** Exploratory Wells      **PROJECT** CRBSCP      **STATE** Nevada  
**HOLE NO.** LG 220    **LOCATION** Clark Co. STP. T21S, R62E., Sec. 22 bcd<sup>2</sup>    **Est** 1665'    **DIP (ANGLE FROM HORIZ.)** 90°  
**BEGUN** 6/5/80    **FINISHED** 7/14/80    **DEPTH OF OVERBURDEN** N/A    **TOTAL DEPTH** 305.0'    **BEARING**  
**DEPTH AND ELEV. OF WATER** See Below    **LOGGED BY** D. A. Trudeau    **LOG REVIEWED BY** D. Branstetter

NOTES ON WATER LOSSES AND LEVELS, CASING, CEMENTING, CAVING, AND OTHER DRILLING CONDITIONS	TYPE AND SIZE OF HOLE	CORE RECOVERY (%)	PERCOLATION TESTS				ELEVATION (FEET)	DEPTH (FEET)	GRAPHIC LOG	SAMPLES FOR TESTING	CLASSIFICATION AND PHYSICAL CONDITION	
			DEPTH (FEET)		LOSS (G.P.M.)	PRESSURE (P.S.I.)						LENGTH OF TEST (MIN.)
			FROM (P, Cs, of Cm)	TO								
DB 12  10  20  30  40  50 4" C  60  70  80  90 4" C	100	100	TD=305.0'									

**EXPLANATION**

DB=Dragbit  
 C=Core

Type of hole . . . . . D = Diamond, H = Haystellite, S = Shot, C = Churn  
 Hole sealed . . . . . P = Packer, Cm = Cemented, Cs = Bottom of casing  
 Approx. size of hole (X-series) . . Ex = 1-1/2", Ax = 1-7/8", Bx = 2-3/8", Nx = 3"  
 Approx. size of core (X-series) . . Ex = 7/8", Ax = 1-1/8", Bx = 1-5/8", Nx = 2-1/8"  
 Outside dia. of casing (X-series) . Ex = 1-13/16", Ax = 2-1/4", Bx = 2-7/8", Nx = 3-1/2"  
 Inside dia. of casing (X-series) . . Ex = 1-1/2", Ax = 1-29/32", Bx = 2-3/8", Nx = 3"

GEOLOGIC LOG OF DRILL HOLE

FEATURE Exploratory Wells PROJECT CRBSCP, Las Vegas Wash Unit STATE NV  
 HOLE NO. LG221 LOCATION Nevada Power (Clark Station) 21S, R62E, Sec. 28 ccd1  
 COORDS. N.                      E.                      GROUND ELEV.                      Est. 1740 DIP (ANGLE FROM HORIZ.) 90°  
 BEGUN 3/25/80 FINISHED 3/25/80 DEPTH OF OVERBURDEN N/A TOTAL DEPTH 105' BEARING                       
 DEPTH AND ELEV. OF WATER LEVEL AND DATE MEASURED See Below LOGGED BY D. A. Trudeau LOG REVIEWED BY D. Branstetter

NOTES ON WATER LOSSES AND LEVELS, CASING, CEMENTING, CAVING, AND OTHER DRILLING CONDITIONS	TYPE AND SIZE OF HOLE	CORE RECOVERY (%)	PERCOLATION TESTS				ELEVATION (FEET)	DEPTH (FEET)	GRAPHIC LOG	SAMPLES FOR TESTING	CLASSIFICATION AND PHYSICAL CONDITION	
			DEPTH (FEET)		LOSS (G.P.M.)	PRESSURE (P.S.I.)						LENGTH OF TEST (MIN.)
			FROM (P. Cs. or Cm)	TO								
<p><u>Drilling Equipment:</u> Failing 1250</p> <p><u>Drilling and Sampling Procedure:</u> 12.25 inch tricorne Rock bit o' to 105. A Wash Sample every 5 ft.</p> <p><u>Drill Fluid:</u> Quar-Gum</p> <p><u>Hole Stability:</u> Hole stable, TD.</p> <p><u>Water Levels</u> Depth in ft.      Date 21.75              3/26/80</p> <p><u>Purpose of Hole:</u> Shallow aquifer observation hole.</p> <p><u>Drill site:</u> 1/4 mi. west of Nevada Power Clark Station.</p> <p><u>Hole Completion:</u> 6 5/8 in casing with 5 ft of slots at bottom set to 100 ft. Back filled with pea gravel. Grouted 0-5'.</p>	RB 123"									<p><u>0.0 to 5.0 ft. Quaternary Valley Fill:</u> Consists of thin mantle of gravelly silty sand overlying the Muddy Cr. Fm. <u>0.0 to 2.0 ft.</u> Cobbles in gravelly sand. Rounded black basalt cobbles up to 1 1/2 ft, caliche cobbles up to 0.75 ft. Gravelly sand is 40% fine subrounded basalt, subangular caliche gravel, max size 3 inches; 40% well graded subrounded to subangular caliche basaltic, and quartz sand; 20% low plastic fines. Color tan. Limy.</p> <p><u>2.0 to 5.0 ft.</u> Rock bits to silty sand. About 10% fine subrounded caliche gravel, max size 1.0 inch; 60% fine to coarse subrounded to subangular basalt, caliche, and quartz sand (mostly fine); 30% low plastic fines. Color tan. Limy.</p> <p><u>5.0 to 100 ft Tertiary Muddy Creek Fm.</u> Rock bits to Mudstone, Gypsum, Sandy Clay, Clayey Sands and Sandstone.</p> <p><u>5.0 to 10.0 ft.</u> Rock bits to Mudstone, Gypsum, and Sandy clay. Sandy clay consists of 40% poorly graded fine sand; 60% medium plastic fines. Color red brown. Limy. Crystalline gypsum (selenite) and mudstone fragments encountered in the cuttings.</p> <p><u>10.0 to 20.0 ft.</u> Rock bit to clayey sand. A <del>trace</del> of subrounded caliche gravel, max. size 0.5 inch, 80% poorly graded fine sand; 20% clays of low plasticity. Color brown. Limy.</p>		

EXPLANATION



RB = Rockbit

Type of hole . . . . . D = Diamond, H = Haystellite, S = Shot, C = Churn  
 Hole sealed . . . . . P = Packer, Cm = Cemented, Cs = Bottom of casing  
 Approx. size of hole (X-series) . . . Ex = 1-1/2", Ax = 1-7/8", Bx = 2-3/8", Nx = 3"  
 Approx. size of core (X-series) . . . Ex = 7/8", Ax = 1-1/8", Bx = 1-5/8", Nx = 2-1/8"  
 Outside dia. of casing (X-series) . . Ex = 1-13/16", Ax = 2-1/4", Bx = 2-7/8", Nx = 3-1/2"  
 Inside dia. of casing (X-series) . . Ex = 1-1/2", Ax = 1-29/32", Bx = 2-3/8", Nx = 3"



# GEOLOGIC LOG OF DRILL HOLE

FEATURE Exploratory Wells PROJECT CRBSCP Las Vegas Wash Unit STATE NV  
 LOCATION Nevada Power (Clark Station) T21S, R62E, Sec. 28 ccd  
 HOLE NO. LG221 COORDS. N. E. GROUND ELEV. Est. 1740 DIP (ANGLE FROM HORIZ.) 90  
 BEGUN 3/25/80 FINISHED 3/25/80 DEPTH OF OVERBURDEN N/A TOTAL DEPTH 105' BEARING \_\_\_\_\_  
 DEPTH AND ELEV. OF WATER LEVEL AND DATE MEASURED See Below LOGGED BY D. A. Trudeau LOG REVIEWED BY D. Branstetter

NOTES ON WATER LOSSES AND LEVELS, CASING, CEMENTING, CAVING, AND OTHER DRILLING CONDITIONS	TYPE AND SIZE OF HOLE	CORE RECOVERY (%)	PERCOLATION TESTS				ELEVATION (FEET)	DEPTH (FEET)	GRAPHIC LOG	SAMPLES FOR TESTING	CLASSIFICATION AND PHYSICAL CONDITION	
			DEPTH (FEET)		LOSS (G.P.M.)	PRESSURE (P.S.I.)						LENGTH OF TEST (MIN.)
			FROM (P, Cs, or Cm)	TO								
	RB 123'				TD = 105'						<p>20.0 to 25.0 ft. Rock bits to sandy clay. Some fine subrounded caliche gravel, max. size 1/2 in; 20% poorly graded fine sand; 80% medium plastic fines. Color brown. Limy.</p> <p>25.0 to 48.0 ft. Rock bits to clayey sand and sandstone. Clayey sand is about 60% poorly graded fine sand; 40% low to medium plastic fines. Cuttings include chunks of poorly calcium carbonate cemented sandstone.</p> <p>48.0 to 65.0 ft. Rock bits to Sandy Clay. About 40% poorly graded fine sand; 60% large to medium plastic fines. Color red brown to brown. Limy.</p> <p>65.0 to 70.0 ft. Rock bits to Clayey Sand and Sandstone. About 80% fine to medium grained sand; 20% low to medium plastic fines. Color brown. Limy. Encountered some well cemented well graded sand composed of rounded volcanics in cutting.</p>	

EXPLANATION

CORE LOSS  
 CORE RECOVERY

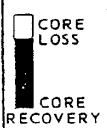
RB = Rockbit  
 Type of hole . . . . . D = Diamond, H = Haystellite, S = Shot, C = Churn  
 Hole sealed . . . . . P = Packer, Cm = Cemented, Cs = Bottom of casing  
 Approx. size of hole (X-series) . . . Ex = 1-1/2", Ax = 1-7/8", Bx = 2-3/8", Nx = 3"  
 Approx. size of core (X-series) . . . Ex = 7/8", Ax = 1-1/8", Bx = 1-5/8", Nx = 2-1/8"  
 Outside dia. of casing (X-series) . . Ex = 1-13/16", Ax = 2-1/4", Bx = 2-7/8", Nx = 3-1/2"  
 Inside dia. of casing (X-series) . . . Ex = 1-1/2", Ax = 1-29/32", Bx = 2-3/8", Nx = 3"

# GEOLOGIC LOG OF DRILL HOLE

FEATURE... Exploratory Wells... PROJECT... CRBSCP... Las Vegas Wash Unit... STATE... NV  
 HOLE NO. LC221... LOCATION... Nevada Power (Clark Station) T21S, R62E, Sec. 28 ccd  
 BEGUN... 3/25/80... FINISHED... 3/25/80... GROUND ELEV... Est. 1740... DIP (ANGLE FROM HORIZ)... 90°  
 COORDS. N... E... TOTAL DEPTH... 105... BEARING...  
 DEPTH AND ELEV. OF WATER... See Below... LOGGED BY... D. A. Trudeau... LOG REVIEWED BY... D. Branstetter

NOTES ON WATER LOSSES AND LEVELS, CASING, CEMENTING, CAVING, AND OTHER DRILLING CONDITIONS	TYPE AND SIZE OF HOLE	CORE RECOVERY (%)	PERCOLATION TESTS				ELEVATION (FEET)	DEPTH (FEET)	GRAPHIC LOG	SAMPLES FOR TESTING	CLASSIFICATION AND PHYSICAL CONDITION	
			DEPTH (FEET)		LOSS (G.P.M.)	PRESSURE (P.S.I.)						LENGTH OF TEST (MIN.)
			FROM (P, Cs, or Cm)	TO								
	RB 23"						10 20 30 40 50 60 70 80 90			<p>70.0 to 105.0 ft. Rock bits to Sandy Clay with some Clayey Sand. Sandy clay has about 5% fine subrounded caliche and basalt gravel, max. size 3/4 inch; 40% poorly graded fine sand; 55% low to medium plastic fines. Color brown. Limy. Clayey sand occurs as elongate plates in cuttings. Consists of 80% poorly graded fine sand and 20% medium plastic fines.</p>		

**EXPLANATION**



RB = Rockbit  
 Type of hole... D = Diamond, H = Haystellite, S = Shot, C = Churn  
 Hole sealed... P = Packer, Cm = Cemented, Cs = Bottom of casing  
 Approx. size of hole (X-series) Ex = 1-1/2", Ax = 1-7/8", Bx = 2-3/8", Nx = 3"  
 Approx. size of core (X-series) Ex = 7/8", Ax = 1-1/8", Bx = 1-5/8", Nx = 2-1/8"  
 Outside dia. of casing (X-series) Ex = 1-13/16", Ax = 2-1/4", Bx = 2-7/8", Nx = 3-1/2"  
 Inside dia. of casing (X-series) Ex = 1-1/2", Ax = 1-29/32", Bx = 2-3/8", Nx = 3"

# GEOLOGIC LOG OF DRILL HOLE

FEATURE: Exploratory Wells PROJECT: CRBSCP Las Vegas Wash Unit STATE: Nevada  
 HOLE NO.: 10222 LOCATION: Nevada Power, T21S, R02E, Sec. 28 ccd2 GROUND ELEV.: Est. 1740' DIP (ANGLE FROM HORIZ.): 90°  
 BEGUN: 3/3/80 FINISHED: 3/28/80 DEPTH OF OVERBURDEN: N/A TOTAL DEPTH: 205' BEARING:  
 DEPTH AND ELEV. OF WATER: See Remarks Below LOGGED BY: D.A. Trudeau LOG REVIEWED BY: D. Braaschetter

NOTES ON WATER LOSSES AND LEVELS, CASING, CEMENTING, CAVING, AND OTHER DRILLING CONDITIONS	TYPE AND SIZE OF HOLE	CORE RECOVERY (%)	PERCOLATION TESTS				ELEVATION (FEET)	DEPTH (FEET)	GRAPHIC LOG	SAMPLES FOR TESTING	CLASSIFICATION AND PHYSICAL CONDITION	
			DEPTH (FEET)		LOSS (G.P.M.)	PRESSURE (P.S.I.)						LENGTH OF TEST (MIN.)
			FROM (P., Cs, or Cm)	TO								
<p><u>Drilling Equipment</u> Failing 1250</p> <p><u>Drilling and Sampling Procedure</u> 12 1/2" tricore rockbit 0'-205'. 4-inch core 160'-175' with following recovery. 160'-164' 100% 164'-167' 0% Core had to be dug out of barrel. 167'-172' 100% 172'-175' 100%</p> <p><u>Drill Fluid</u> Baroid Lo Loss</p> <p><u>Hole Stability</u> Hole collapsed at 86' and 106'</p> <p><u>Water Levels</u> Flowing Well. Water is 1.5' above land surface. 11/12/80</p> <p><u>Purpose of Hole</u> Deeper aquifer observation well.</p> <p><u>Drill Site</u> 1/4 mi. west of Nevada Power Clark Station.</p> <p><u>Hole Completion</u> Set 6 5/8" on casing 0'-200' with plate on bottom. Field slotted lower 5'. Hole back-filled with peagravel to 150'. Hole cemented by pouring cement from surface 0'-150'(?).</p>	RB									<p>0.0'-5.0' <u>Quaternary Valley Fill</u> Rockbits to cobbly gravelly sand and silty sand which are tan in color. These deposits form a thin mantle over the Muddy Creek Formation. Contact with Muddy Creek Fm. based on first appearance of reddish brown sandy clay and gypsum. Description based on wash samples.</p> <p>0.0'-2.0' Rockbits to cobbly gravelly sand. Basalt cobbles up to 1.5' dia. and caliches 9" in diameter exposed at surface in gravelly sandy matrix. Matrix consists of 40% fine subrounded basaltic and subangular caliche gravel, max size 3"; 40% well graded sand; 20% low plastic fines. Color tan. Violent HCL reaction.</p> <p>2.0'-5.0' Rockbits to silty sand. About 10% fine subrounded caliche gravel, max size 1"; 60% fine to coarse mostly fine sand; 30% low plastic fines, Color tan. Violent HCL reaction.</p> <p>5.0'-205.0' <u>Tertiary Muddy Creek Fm.</u> Rockbits and cores to mudstone, gypsum, sandy clay, silty sand, clayey sand and sandstone which are red brown to brown to white to light green in color. Description based on wash samples.</p> <p>5.0'-10.0' Rockbits to mudstone, gypsum and sandy clay. Sandy clay consists of 40% poorly graded fine sand and 60% medium plastic fines. Color red brown. Violent HCL reaction. Crystalline gypsum, mudstone, and basalt fragments also recovered in cuttings.</p> <p>10.0'-15.0' Rockbits to silty sand. Consists of 5% fine subrounded caliche gravel; max size 3/4"; 85% poorly graded fine sand; and 10% low plastic fines. Color brown. Violent HCL reaction.</p>		

EXPLANATION

CORE LOSS  
 CORE RECOVERY

PB=Rockbit

Type of hole . . . . . D = Diamond, H = Hoystellite, S = Shot, C = Churn  
 Hole sealed . . . . . P = Packer, Cm = Cemented, Cs = Bottom of casing  
 Approx. size of hole (X-series) . . . Ex = 1-1/2", Ax = 1-7/8", Bx = 2-3/8", Nx = 3"  
 Approx. size of core (X-series) . . . Ex = 7/8", Ax = 1-1/8", Bx = 1-5/8", Nx = 2-1/8"  
 Outside dia. of casing (X-series) . . Ex = 1-13/16", Ax = 2-1/4", Bx = 2-7/8", Nx = 3-1/2"  
 Inside dia. of casing (X-series) . . Ex = 1-1/2", Ax = 1-29/32", Bx = 2-3/8", Nx = 3"

**GEOLOGIC LOG OF DRILL HOLE**

PROJECT: CRBSCP Las Vegas Wash Unit STATE: Nevada  
 FEATURE: Exploratory Wells LOCATION: Nevada Power T21S, R62E, Sec. 28 ccd2  
 HOLE NO.: LC222 GROUND ELEV.: 1740' DIP (ANGLE FROM HORIZ.): 90°  
 COORDS. N. E. TOTAL DEPTH: 205' BEARING: N/A  
 BEGUN: 3/3/80. FINISHED: 3/28/80 DEPTH OF OVERBURDEN: N/A  
 LOGGED BY: D.A. Trudeau LOG REVIEWED BY: D. Branstetter  
 DEPTH AND ELEV. OF WATER: See Remarks Below

NOTES ON WATER LOSSES AND LEVELS, CASING, CEMENTING, CAVING, AND OTHER DRILLING CONDITIONS	TYPE AND SIZE OF HOLE	CORE RECOVERY (%)	PERCOLATION TESTS					ELEVATION (FEET)	DEPTH (FEET)	GRAPHIC LOG	SAMPLES FOR TESTING	CLASSIFICATION AND PHYSICAL CONDITION
			DEPTH (FEET)		LOSS (G.P.M.)	PRESSURE (P.S.I.)	LENGTH OF TEST (MIN.)					
			FROM (P, C, or Cm)	TO								
	PB 1234										15.0'-205.0' Rockbits to clayey sand and sandy clay with some gravel and sandstone. Clayey sand consists of about 70% poorly graded fine sands and 30% low to medium plastic fines with a trace of fine subangular caliche gravel, max. size 0.5 inch. Clayey sands most notably encountered in following intervals with the respective color: 15'-20' brown; 30-45' red brown to brown; and a minor amount in 65'-100' zone, white. Sandy clay consists of about 40% poorly graded fine sands and 60% low to high plastic fines. A trace of caliche gravel is common. Color is as follows for the respective zones: 20'-30' red brown to brown; 45'-100' red brown to brown; 100'-205' red brown to brown to light green. Clayey sand and sandy clay both have violent HCL reaction. Gravel encountered in following intervals; 90'-100', 164'-167'. Consists of vesicular basalt and limestone. Occurred in 1-inch bands in interval 164'-167'. Sandstone encountered in 30'-45' interval as chunks of fine grained poorly cemented sandstone.	
	C 4"	100									160.0'-175.0' Sandy Clay consists of about 20% poorly graded fine sand and 80% medium plastic fines. Color red brown with 2" band of green at 170'. Violent HCL reaction Core moist. Gravel encountered in interval 164'-167' in 1-inch bands in a sandy clay matrix.	
											TD=205'	

**EXPLANATION**



PB=Rockbit  
 C=Core  
 Type of hole: D = Diamond, H = Haystellite, S = Shot, C = Churn  
 Hole sealed: P = Packer, Cm = Cemented, Cs = Bottom of casing  
 Approx. size of hole (X-series): Ex = 1-1/2", Ax = 1-7/8", Bx = 2-3/8", Nx = 3"  
 Approx. size of core (X-series): Ex = 7/8", Ax = 1-1/8", Bx = 1-5/8", Nx = 2-1/8"  
 Outside dia. of casing (X-series): Ex = 1-13/16", Ax = 2-1/4", Bx = 2-7/8", Nx = 3-1/2"  
 Inside dia. of casing (X-series): Ex = 1-1/2", Ax = 1-29/32", Bx = 2-3/8", Nx = 3"

# GEOLOGIC LOG OF DRILL HOLE

**FEATURE** Exploratory Wells      **PROJECT** CRBSCP Las Vegas Wash Unit      **STATE** Nevada  
**HOLE NO.** LG 223      **LOCATION** Near AWT Plant 21S, R62E, Sec. 24 T16N(?)      **GROUND ELEV.** Est. 1660'      **DIP (ANGLE FROM HORIZ.)** 90°  
**BEGUN** 6/25/80      **FINISHED** 6/26/80      **DEPTH OF OVERBURDEN** N/A      **TOTAL DEPTH** 105'      **BEARING** .....  
**DEPTH AND ELEV. OF WATER LEVEL AND DATE MEASURED** See Below      **LOGGED BY** D. A. Trudeau      **LOG REVIEWED BY** D. Branstetter

NOTES ON WATER LOSSES AND LEVELS, CASING, CEMENTING, CAVING, AND OTHER DRILLING CONDITIONS	TYPE AND SIZE OF HOLE	CORE RECOVERY (%)	PERCOLATION TESTS					ELEVATION (FEET)	DEPTH (FEET)	GRAPHIC LOG	SAMPLES FOR TESTING	CLASSIFICATION AND PHYSICAL CONDITION
			DEPTH (FEET)		LOSS (G.P.M.)	PRESSURE (P.S.I.)	LENGTH OF TEST (MIN.)					
			FROM (P, Cs, or Cm)	TO								
<p><u>Drilling Equipment</u></p> <p>28L Bucyrus Erie Cable Tool</p> <p><u>Drilling and Sampling Procedure</u></p> <p>Drilled using 12 inch tool 0-105'. Sample every 5'.</p> <p><u>Drill Fluid</u></p> <p>Water</p> <p><u>Hole Stability</u></p> <p>Hole stood open over night.</p> <p><u>Water Level</u></p> <p><u>Depth in ft.</u>      <u>Date</u></p> <p>Not measured</p> <p><u>Purpose of Hole</u></p> <p>Shallow observation hole.</p> <p><u>Hole Completion</u></p> <p>Set 6" mild steel casing 0-100' with plate on bottom, field slotted 90-100, backfilled with pea gravel 5-105', grouted 0-5'.</p>	PB 12"  10  20  30  40  50  60  70  80  90										<p>0'-105.0' Tertiary Muddy Creek Fm Rockbits to sandy silt and clays which are reddish brown to white to green in color. Description based on bailed cuttings.</p> <p>0'-20' Sandy silt. Consists of trace of subangular limestone gravel; about 30% poorly graded fine sand; 70% low plastic fines. Color white to greenish white. Moderate HCl reaction.</p> <p>20.0'-105.0' Gypsiferous sandy clay. Consists of about 5% crystalline gypsum (selenite); 30% poorly graded fine sand; 65% of low to medium plastic fines. Color red brown to cream to brown. Little HCl reaction.</p>	
TD = 105.0'												

**EXPLANATION**

CORE LOSS  
 CORE RECOVERY

Type of hole: D = Diamond, H = Haysrillite, S = Shot, C = Churn  
 Hole sealed: P = Packer, Cm = Cemented, Cs = Bottom of casing  
 Approx. size of hole (X-series): Ex = 1-1 2", Ax = 1-7 8", Bx = 2-3 8", Nx = 3"  
 Approx. size of core (X-series): Ex = 7 8", Ax = 1-1 8", Bx = 1-5 8", Nx = 2-1 8"  
 Outside dia. of casing (X-series): Ex = 1-13 16", Ax = 2-1 4", Bx = 2-7 8", Nx = 3-1 2"  
 Inside dia. of casing (X-series): Ex = 1-1 2", Ax = 1-29 32", Bx = 2-3 8", Nx = 3"

# GEOLOGIC LOG OF DRILL HOLE

SHEET \_\_\_\_\_ OF \_\_\_\_\_

**FEATURE** Exploratory Wells      **PROJECT** CRBSCP, Las Vegas Wash Unit      **STATE** Nevada  
**POLE NO.** LG-224      **LOCATION** A.W.T. Plant TRIS, R02E, Sec. 24, T36N      **Est.** 1660'      **DIP (ANGLE FROM HORIZ.)** 90°  
**COORDS.** N. \_\_\_\_\_ E. \_\_\_\_\_      **GROUND ELEV.** \_\_\_\_\_      **TOTAL DEPTH** 304.0'      **BEARING** \_\_\_\_\_  
**BEGUN** 3/29/80      **FINISHED** 7/1/80      **DEPTH OF OVERBURDEN** N/A

**DEPTH AND ELEV. OF WATER LEVEL AND DATE MEASURED** See Remarks Below      **LOGGED BY** D.A. Trudeau      **LOG REVIEWED BY** J. Bannister

NOTES ON WATER LOSSES AND LEVELS, CASING, CEMENTING, CAVING, AND OTHER DRILLING CONDITIONS	TYPE AND SIZE OF HOLE	CORE RECOVERY (%)	PERCOLATION TESTS					ELEVATION (FEET)	DEPTH (FEET)	GRAPHIC LOG	SAMPLES FOR TESTING	CLASSIFICATION AND PHYSICAL CONDITION
			DEPTH (FEET)		LOSS (G.P.M.)	PRESSURE (P.S.I.)	LENGTH OF TEST (MIN.)					
			FROM (P. Cs. of Cm)	TO								
<p><u>Drilling Equipment</u></p> <p>Failing 1250</p> <p><u>Drill and Sampling procedure</u></p> <p>12.25 inch tricone rockbit 0'-303.5' wash samples every 5ft. Cored with 4" core barrel following intervals with recovery.</p> <p>25.0'-28.0' 30% (lost) 100.0'-104.0' 100% 150.0'-153.5' 100% 200.0'-204.0' 100% 250.0'-254.0' 6% 300.0'-304.0' 100%</p> <p><u>Drill Fluid</u></p> <p>Soda ash, baroid Lo Loss, baroid CC-16 dispersant using natural mud from about 150' to TD.</p> <p><u>Hole Stability</u></p> <p>Sluff 0-150' Depth to Water approx. 40ft. 4/8/80 38ft. 11/10/80</p> <p><u>Purpose of Hole</u></p> <p>deep aquifer observation well.</p> <p><u>Drill site</u></p> <p>East of Las Vegas Wash along Las Vegas Valley Lateral near A.W.T. Plant</p> <p><u>Hole Completion</u></p> <p>Set 6" mild steel casing 0-300' with plate on bottom. Field slotted 290'-300' backfilled with pea gravel 110'-305' grouted 0-110'</p>	RB 12 10 70 30 40 50 60 70 80 90	30					12 10 70 30 40 50 60 70 80 90			<p>0-5.0' Quaternary Valley fill</p> <p>Rockbits to silty sand which is tan brown. Contact with underlying Muddy Creek Fm. based on lithologic change.</p> <p>0.0-5.0' Rockbits to silty sand. About 20% subrounded to subangular caliche gravel; 70% fine to coarse, mostly fine gypsiferous sand; and 10% low plastic fines. Color tan brown. Limy.</p> <p>5.0'-304.0' Tertiary Muddy Creek Fm</p> <p>5.0'-10.0' Rockbits to gypsum. Non crystalline. Color white.</p> <p>10.0'-20.0' Rockbits to sandy clay and gypsum. Sandy clay is about 20% poorly graded fine sand; 80% low to medium plastic fines. Crystalline gypsum (selenite) encountered in cuttings. Color white to light green. Violent HCl reaction.</p> <p>20.0'-25.0' Rockbits to sandy clay About 40% mostly fine sand, 60% low to medium plastic fines. Color red brown. Violent HCl reaction.</p> <p>25.0'-175.0' Rockbits to sandy clay and gypsum with minor amounts of clayey sand and gravel. Sandy clay is about 30% coarse to fine mostly fine sand; 70% low to medium plastic fines. Color mostly red brown some white and green. Violent HCl reaction. Gypsum encountered in cuttings as crystals throughout interval. Crystals up to 3 inches long, found in interval. 25.0'-28.0. Clayey sand encountered as chunks up to 2 inches throughout intervals. Consists of about 60% fine to coarse, mostly fine sand; 40% low to medium plastic fines. Gravel encountered 97-98' as indicated by hard drilling and drill bit chatter. Consists of fine to coarse subrounded to rounded limestone gravel, max. size 2 inch. Color gray.</p> <p>100.0'-104.0' Sandy clay and gypsum. Sandy clay consists of about 30% poorly graded fine sand, 70% medium to high plastic fines. Color</p>		

**C=Core**      **EXPLANATION**  
**RB=Rockbit**  
 Note suite of Geophysical logs available on this hole.

Type of hole: D = Diamond, H = Haysrellire, S = Shot, C = Churn  
 Hole sealed: P = Packer, Cm = Cemented, Cs = Bottom of casing  
 Approx. size of hole (X-series): Ex = 1.1 2", Ax = 1.7 8", Bx = 2.3 8", Nx = 3"  
 Approx. size of core (X-series): Ex = 7/8", Ax = 1.1 8", Bx = 1.5 8", Nx = 2.1 3"  
 Outside dia. of casing (X-series): Ex = 1.13 16", Ax = 2.1 4", Bx = 2.7 8", Nx = 3.1 2"  
 Inside dia. of casing (X-series): Ex = 1.1 2", Ax = 1.29 32", Bx = 2.3 8", Nx = 3"

# GEOLOGIC LOG OF DRILL HOLE

SHEET 1 OF 1

FEATURE: Exploratory Wells PROJECT: GIBSON Las Vegas Wash Unit STATE: Nevada  
 HOLE NO.: LG-224 LOCATION: A.W.F. Plant T21S, R62E, Sec. 24 (400)  
 BEGUN: 7/29/80 FINISHED: DEPTH OF OVERBURDEN: N/A TOTAL DEPTH: 304.0' BEARING:  
 DEPTH AND ELEV. OF WATER: See Remarks Below LOGGED BY: D.A. Trudeau LOG REVIEWED BY: D. Branstetter

NOTES ON WATER LOSSES AND LEVELS, CASING, CEMENTING, CAVING, AND OTHER DRILLING CONDITIONS	TYPE AND SIZE OF HOLE	CORE RECOVERY (%)	PERCOLATION TESTS				ELEVATION (FEET)	DEPTH (FEET)	GRAPHIC LOG	SAMPLES FOR TESTING	CLASSIFICATION AND PHYSICAL CONDITION	
			DEPTH (FEET)		LOSS (G.P.M.)	PRESSURE (P.S.I.)						LENGTH OF TEST (MIN.)
			FROM (P, Cs, or Cm)	TO								
	4" C	100								<p>red brown. Little or no Hcl reaction. Gypsum which makes up 20% of sample occurs as coarse sand sized crystals interspersed throughout. Notable exception is at 100.5' where large crystals up to 3 inches long occur. Note coarse subangular limestone and sandstone gravel encountered on top of core.</p> <p><u>150.0'-153.5'</u> Sandy clay. Consists of 40% fine to medium grained sand and about 60% medium to high plastic fines. Color brown. little or no Hcl reaction. Some minor gypsum.</p> <p><u>175.0'-210.0'</u> Rockbits to sandy clay and gypsum and some sandstone. Sandy clay consists of 40% fine to coarse mostly fine sand; and 60% low to medium plastic fines. Color brown. Moderate Hcl reaction. Up to 40% of cuttings are crystalline gypsum with some fine grained well cemented sandstone fragments.</p> <p><u>200'-204'</u> Claystone sandy clay and sandstone. Claystone occurs from 200'-201.1'. Sandy clay consisting of about 20% poorly graded fine sand and 80% of medium to high plastic fines occur from 201.1'-202.3' and 203.7'-204'. Sandy clay is believed to be weathered claystone. Sandstone occurs from 202.3'-203.7' is fine grained sand in a clay matrix and is lightly consolidated. Color varies from light green to cream to light brown. No Hcl reaction.</p> <p><u>210.0'-304.0'</u> Rockbits to clayey sand and sandy clay with sandstone and gypsum. Clayey sands consist of 80% fine to coarse well rounded quartz sand, 20% low to medium plastic fines. Color brown. Occurs from 210.0'-220', 225-230' and 240'-250'. Sandy clay which is found in the remainder of the interval consists of 30% fine to medium, mostly fine grained sand; and 70% medium plastic fines. Color red brown to white to brown. Moderate Hcl reaction. Up to</p>		
	4" C	100										

**EXPLANATION**

CORE LOSS  
 CORE RECOVERY

RB=Rockbit  
 C=Core

Type of hole: D = Diamond, H = Haystellite, S = Shot, C = Churn  
 Hole sealed: P = Packer, Cm = Cemented, Cs = Bottom of casing  
 Approx. size of hole (X-series): Ex = 1-1 2", Ax = 1-7 8", Bx = 2-3 8", Nx = 3"  
 Approx. size of core (X-series): Ex = 7 8", Ax = 1-1 8", Bx = 1-5 8", Nx = 2-1 8"  
 Outside dia. of casing (X-series): Ex = 1-13 16", Ax = 2-1 4", Bx = 2-7 8", Nx = 3-1 2"  
 Inside dia. of casing (X-series): Ex = 1-1 2", Ax = 1-29 32", Bx = 2-3 8", Nx = 3"

# GEOLOGIC LOG OF DRILL HOLE

SHEET 3 OF 3

FEATURE: Exploratory Wells PROJECT: CRBSCP, Las Vegas Wash Unit STATE: Nevada  
 HOLE NO.: 100-224 LOCATION: A.W.T. Plant, T11s, R62E, Sec 24, T34N, R62E, E. GROUND ELEV.: Est. 1660' DIP (ANGLE FROM HORIZ.): 90°  
 BEGUN: 3/29/80 FINISHED: DEPTH OF OVERBURDEN: N/A TOTAL DEPTH: 304.0' BEARING:  
 DEPTH AND ELEV. OF WATER: See Remarks Below LOGGED BY: D.A. Trudeau LOG REVIEWED BY: D. Brandstetter

NOTES ON WATER LOSSES AND LEVELS, CASING, CEMENTING, CAVING, AND OTHER DRILLING CONDITIONS	TYPE AND SIZE OF HOLE	CORE RECOVERY (%)	PERCOLATION TESTS				ELEVATION (FEET)	DEPTH (FEET)	GRAPHIC LOG	SAMPLES FOR TESTING	CLASSIFICATION AND PHYSICAL CONDITION	
			DEPTH (FEET)		LOSS (G.P.M.)	PRESSURE (P.S.I.)						LENGTH OF TEST (MIN.)
			FROM (P, Cs, or Cm)	TO								
	4" C	100								10% of cuttings consist of crystalline gypsum or well cemented subangular fine grained sandstone.		
	PB						10			250.-254' Gypsum and sandy clay. Sandy clay occurs as 50% of sample, the other 50% of sample is sand sized gypsum crystals. Sandy clay is about 20% poorly graded fine sand, and 80% medium plastic fines. Color red brown. No Hcl reaction.		
	1 1/2" B						30			300-304' Sandstone gypsum and clayey sand. Sandstone is composed of poorly graded fine sand which is lightly consolidated and occurs from 300.0'-300.7'. Gypsum occurs as a sandstone like mass with the coarse sand sized particals made up of gypsum crystals. gypsum occurs from 300.7'-301.8', 302.2-302.8', 302.9'-303.2 and 303.4'-303.7'. Remainder of core is clayey sand composed of 80% fine sand and 20% medium plastic fines. Color light brown to white. No Hcl reaction.		
	4" C	6					50					
	4" C	100					304			TD=304'		

**EXPLANATION**

CORE LOSS: [Symbol] CORE RECOVERY: [Symbol]  
 RB=Rockbit C=Core  
 Type of hole: D = Diamond, H = Haystellite, S = Shot, C = Churn  
 Hole sealed: P = Packer, Cm = Cemented, Cs = Bottom of casing  
 Approx. size of hole (X-series): Ex = 1-1 2", Ax = 1-7 8", Bx = 2-3 8", Nx = 3"  
 Approx. size of core (X-series): Ex = 7 8", Ax = 1-1 8", Bx = 1-5 8", Nx = 2-1 8"  
 Outside dia. of casing (X-series): Ex = 1-13 16", Ax = 2-1 4", Bx = 2-7 8", Nx = 3-1 2"  
 Ins de dia. of casing (X-series): Ex = 1-1 2", Ax = 1-29 32", Bx = 2-3 8", Nx = 3"



# GEOLOGIC LOG OF DRILL HOLE

SHEET 1 OF 1

FEATURE: Exploratory Wells PROJECT: CRBSCP Las Vegas Wash Unit Title II STATE: Nevada  
 HOLE NO.: LG225 LOCATION: Gibson Road North, T22S, R62E, Sec. 02, T43N, R62E, GROUND ELEV. 1738 DIP (ANGLE FROM HORIZ.): 20°  
 BEGUN: 5/15/80 FINISHED: 5/20/80 DEPTH OF OVERBURDEN: N/A TOTAL DEPTH: 50' BEARING: \_\_\_\_\_  
 DEPTH AND ELEV. OF WATER LEVEL AND DATE MEASURED: See Remarks Below LOGGED BY: D.A. Trudeau LOG REVIEWED BY: D. Branstetter

NOTES ON WATER LOSSES AND LEVELS, CASING, CEMENTING, CAVING, AND OTHER DRILLING CONDITIONS	TYPE AND SIZE OF HOLE	CORE RECOVERY (%)	PERCOLATION TESTS				ELEVATION (FEET)	DEPTH (FEET)	GRAPHIC LOG	SAMPLES FOR TESTING	CLASSIFICATION AND PHYSICAL CONDITION	
			DEPTH (FEET)		LOSS (G.P.M.)	PRESSURE (P.S.I.)						LENGTH OF TEST (MIN.)
			FROM (P. Cs. or Cm)	TO								
<p><u>Drilling Equipment</u></p> <p>28L BeCyrus Erie Cable Tool</p> <p><u>Drilling and Sampling Procedure</u></p> <p>12.0" cable tool 0-50' Wash sample every 5'. Drove casing 0-20'</p> <p><u>Hole Stability</u></p> <p>Hole unstable 0-40'</p> <p><u>Water Level</u></p> <p>22.0' 5/16/80</p> <p><u>Purpose of Hole</u></p> <p>Shallow aquifer observation well</p> <p><u>Drill Site</u></p> <p>Gibson Road 1/8mi. south of intersection with Sunset, on east side of rd.</p> <p><u>Hole Completion</u></p> <p>Set 6" galvanized steel pipe 0-45'. Field slotted lower 5'. Put cap on bottom. Gravel packed 5-50 with pea gravel. Pulled 12" conductor casing.</p>	<p>PB</p> <p>12"</p> <p>10</p> <p>70</p> <p>30</p> <p>40</p> <p>50</p> <p>60</p> <p>70</p> <p>80</p> <p>90</p>						<p>10</p> <p>20</p> <p>30</p> <p>40</p> <p>50</p> <p>60</p> <p>70</p> <p>80</p> <p>90</p>			<p>0.0'-43.0' Quaternary Alluvial Fan Deposits</p> <p>Consists of Bouldery, cobbly sands and gravels and gravelly sands. Which are gray to brown. Cobbles and boulders visible in hole. Contact with Muddy Creek Fm. based on lithologic change.</p> <p>0.0'-23.0' Rockbits to Boulders, Cobbles in a Well graded Gravelly Sandy Matrix. Gravels consist of mostly fine to coarse subangular to subrounded volcanic gravel. Sand consists of fine to coarse subrounded volcanic grains. Matrix has up to 10% low plastic fines. Color light gray. Violent Hcl reaction. Boulders up to 3' in diameter visible in the hole. First water at 23.0'.</p> <p>23.0'-43.0' Rockbits to Gravelly Sand. About 20% fine subangular volcanic gravel, max. size 3/8"; 60% fine to coarse subangular to subrounded mostly volcanic sand, 20% medium plastic fines. Color gray brown. Moderate Hcl reaction.</p> <p>43.0'-50.0' Tertiary Muddy Creek Fm.</p> <p>Consist of gravelly clay which is brown in color. Contact based on change in drilling from hard to easy. Description based on wash samples.</p> <p>43.0'-50.0' Rockbits to Gravelly Clay. About 20% fine to coarse subrounded to subangular mostly caliche gravel, max. size 1 3/4"; 30% fine to coarse, mostly fine sand; 50% medium plastic fines. Color brown. Light to moderate Hcl reaction.</p>		

EXPLANATION

CORE LOSS  
 CORE RECOVERY

PB = Percussion bit

Type of hole: D = Diamond, H = Haystellite, S = Shot, C = Churn  
 Hole sealed: P = Packer, Cm = Cemented, Cs = Bottom of casing  
 Approx. size of hole (X-series): Ex = 1-1 2", Ax = 1-7 8", Bx = 2-3 8", Nx = 3"  
 Approx. size of core (X-series): Ex = 7 8", Ax = 1-1 8", Bx = 1-5 8", Nx = 2-1 8"  
 Outside dia. of casing (X-series): Ex = 1-13 16", Ax = 2-1 4", Bx = 2-7 8", Nx = 3-1 2"  
 Inside dia. of casing (X-series): Ex = 1-1 2", Ax = 1-29 32", Bx = 2-3 8", Nx = 3"

**GEOLOGIC LOG OF DRILL HOLE**

FEATURE: Exploratory Wells PROJECT: CRBSCP, Las Vegas Wash Unit STATE: NV  
 HOLE NO. LG226 LOCATION: Gibson Road North T22S, R62E, Sec. 02, Tbb2 GROUND ELEV. 1738' DIP (ANGLE FROM HORIZ.) 22°  
 BEGUN 4/12/80 FINISHED 6/26/80 DEPTH OF OVERBURDEN N/A TOTAL DEPTH 305.0' BEARING  
 DEPTH AND ELEV. OF WATER See Remarks Below LOGGED BY D. A. Trudeau LOG REVIEWED BY J. Brunstetter

NOTES ON WATER LOSSES AND LEVELS, CASING, CEMENTING, CAVING, AND OTHER DRILLING CONDITIONS	TYPE AND SIZE OF HOLE	CORE RECOVERY (%)	PERCOLATION TESTS				ELEVATION (FEET)	DEPTH (FEET)	GRAPHIC LOG	SAMPLES FOR TESTING	CLASSIFICATION AND PHYSICAL CONDITION	
			DEPTH (FEET)		LOSS (G.P.M.)	PRESSURE (P.S.I.)						LENGTH OF TEST (MIN.)
			FROM (P.C.S. or C.A.)	TO								
<p><b>Drilling Equipment</b>                      Failing 1250 BuCyrus Erie cable tool</p> <p><b>Drilling Sampling Procedure:</b>                      Drilled 12" hole with tricone rock-bit 0'-20' and 100'-305' with failing. Cable tool rig used because of caving. Used 12" percussion bit 10'-100'. Surface casing set 0'-16'. Cored (4" 100'-103' 100% recovery; 150'-154' 58% recovery; 200'-204' 88% recovery; 250'-254' 38% recovery; 300'-301.5' 100% recovery. Wash sample every 5'.</p> <p><b>Drilling Fluid</b>                      Failing-Baroid Lo-Loss Cable Tool-Water</p> <p><b>Hole Stability:</b>                      Hole caving 0'-30'.</p> <p><b>Water Level</b>                      Depth in Date                      ft. 9.6 5/21/80                      Note water level is higher than adjacent shallow well.</p> <p><b>Purpose of Hole</b>                      Deep aquifer observation hole.</p> <p><b>Location:</b> Hole is on east side of Gibson Road about 1/8 mile south from intersection with Gibson Road.</p>	PB 12"									<p>0.0'-40.0' Quaternary Alluvial Fan Deposits Rockbits to boulders, cobbles, gravels and sand; and gravelly sandy clay which are light gray to brown to white brown. Materials very hard to drill. Deposits grade downward into fined grained Tertiary Muddy Creek Formation Descriptions based on wash samples.</p> <p>0.0'-28.0' Rockbits to boulders, cobbles, gravels and sand. Boulders 3' in dia. visible in hole to 18'. Boulders, cobbles, gravels and sand are subrounded to subangular and volcanic (basalt?). Some caliche and limestone clasts. Gravels and sand are well graded. Up to 10" fines in matrix. Color light gray. Moderate HCL reaction. First water at 28.0'.</p> <p>28.0'-40.0' Rockbits to gravelly sandy clay. About 10% subangular volcanic and caliche gravel max size 3/8 inch; 40% well graded subrounded to rounded volcanic and caliche sand; 50% low to medium plastic fines. Color brown to white brown. Violent HCL reaction.</p> <p>40.0' to 305.0 Tertiary Muddy Creek Formation Rockbits and cores to sandy clay, sandstone, gravelly sand, gravelly clay, sand, clay, caliche, clayey gravel and mudstone which are brown to white brown to red brown in color. Description based on wash sample and core.</p> <p>40.0'-100.0' Rockbits to sandy clay. About 10% fine subrounded volcanic, limestone and caliche gravel, max. size 1.0 inch; 20% fine to coarse volcanic, limestone, and caliche sand; 70% low to medium plastic fines. Color brown to white brown to red brown. Violent HCL reaction.</p> <p>100.0'-305.0' Rockbits to sands, clay, and caliche. Cuttings composed mostly of fine to coarse sand with lesser amounts of low to medium plastic fines. Caliche indicated by drill bit chatter. Color brown. Violent HCL reaction. For a detailed description of the interval refer to core descriptions below.</p>		

**EXPLANATION**

CORE LOSS  
 CORE RECOVERY  
 RB=Rockbit  
 PB=Pernsion bit  
 Note suite of geophysical logs available on this hole.  
 Type of hole: D = Diamond, H = Haystellite, S = Shot, C = Churn  
 Hole sealed: P = Packer, Cm = Cemented, Cs = Bottom of casing  
 Approx. size of hole (X-series): Ex = 1-1 2", Ax = 1-7 8", Bx = 2-3 8", Nx = 3"  
 Approx. size of core (X-series): Ex = 7 8", Ax = 1-1 8", Bx = 1-5 8", Nx = 2-1 8"  
 Outside dia. of casing (X-series): Ex = 1-13 16", Ax = 2-1 4", Bx = 2-7 8", Nx = 3-1 2"  
 Inside dia. of casing (X-series): Ex = 1-1 2", Ax = 1-29 32", Bx = 2-3 8", Nx = 3"

# GEOLOGIC LOG OF DRILL HOLE

FEATURE: Exploratory Wells PROJECT: CRBSCP, Las Vegas Wash Unit STATE: NV  
 HOLE NO. LG226 LOCATION: Gibson Road North T22S, R62E, Sec. 02 cbb2 GROUND ELEV. Est. 1738' DIP (ANGLE FROM HORIZ.): 90°  
 BEGUN: 4/12/80 COORDS. N. E. FINISHED: 6/26/80 DEPTH OF OVERBURDEN: TOTAL DEPTH: 305.0' BEARING:

DEPTH AND ELEV. OF WATER: See Remarks Below LOGGED BY: D. A. Trudeau LOG REVIEWED BY: D. Branstetter

NOTES ON WATER LOSSES AND LEVELS, CASING, CEMENTING, CAVING, AND OTHER DRILLING CONDITIONS	TYPE AND SIZE OF HOLE	CORE RECOVERY (%)	PERCOLATION TESTS					ELEVATION (FEET)	DEPTH (FEET)	GRAPHIC LOG	SAMPLES FOR TESTING	CLASSIFICATION AND PHYSICAL CONDITION
			DEPTH (FEET)		LOSS (G.P.M.)	PRESSURE (P.S.I.)	LENGTH OF TEST (MIN.)					
			FROM (P. Cs, or Cm)	TO								
Hole Completion: Set 6 5/8" OD steel casing 0'-301.4' with plate on bottom. Lower 10' field slotted. Developed and placed pea gravel 150'-305'. Cemented by tremie pipe 0'-150'.	4"	100										100.0'-100.5' Gravelly sand. About 30% fine subrounded limestone and volcanic gravel, max. size 1 inch; 50% fine to coarse, mostly fine sand; 20% low plastic fines. Color brown. Little HCL reaction. Damp.
	10" RB							10				100.5'-103.0' Sandstone and gravelly sand. Sandstone consists of 5% caliche gravel, max. size 1/2 inch; 75% poorly graded fine sand; 20% low plastic fines. Sandstone is poorly consolidated and can be broken with light finger pressure. At 102.5' find 2 inch bed of coarse gravel in a sandy matrix. Gravel max. size is 1 inch and is mostly rounded limestone, caliche, and basalt(?). Interval has violent HCL reaction. Damp.
	12" C	58						50				103.0'-104.0' Sandy clay and gravelly clay. Sandy clay consists of some fine to coarse caliche gravel, max. size 1.5 inch; 40% poorly graded fine sand; 60% medium plastic fines. Color brown. Little HCL reaction. Gravelly clay found from 103.5'-104.0'. Gravelly clay is like above except there is up to 30% gravel. Damp.
	4"											150.0'-154.0' Sandstone and caliche, sandstone is composed of 60% fine to coarse, mostly fine sand; and 40% low to medium plastic fines. Color brown. Violent HCL reaction. Sandstone is moderate consolidated and can be broken with light to hard hand pressure. Caliche in a 2 inch bed encountered at bottom of core. It has irregular contact with sandstone, and can be broken with moderate hammer blow. Damp.

### EXPLANATION

Note suite of Geophysical logs available on this hole.

- ☐ CORE LOSS
- CORE RECOVERY

R=Fockbit  
 C=Core

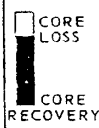
Type of hole: D = Diamond, H = Haystellite, S = Shot, C = Churn  
 Hole sealed: P = Packer, Cm = Cemented, Cs = Bottom of casing  
 Approx. size of hole (X-series): Ex = 1.1 2", Ax = 1.7 8", Bx = 2.3 8", Nx = 3"  
 Approx. size of core (X-series): Ex = 7 8", Ax = 1.1 8", Bx = 1.5 8", Nx = 2.1 8"  
 Outside dia. of casing (X-series): Ex = 1.13 16", Ax = 2.1 4", Bx = 2.7 8", Nx = 3.1 2"  
 Inside dia. of casing (X-series): Ex = 1.1 2", Ax = 1.29 32", Bx = 2.3 8", Nx = 3"

# GEOLOGIC LOG OF DRILL HOLE

FEATURE Exploratory Wells PROJECT CRBSCP, Las Vegas Wash Unit STATE NV  
 HOLE NO. LG226 LOCATION Gibson Road North T22S, R62E, Sec. 02 cbb2 GROUND ELEV. Est. 1738' DIP (ANGLE FROM HORIZ.) 90°  
 BEGUN 4/12/80 COORDS. N. 6/26/80 E. \_\_\_\_\_ TOTAL DEPTH 305.0' BEARING \_\_\_\_\_  
 DEPTH AND ELEV. OF WATER LEVEL AND DATE MEASURED See Remarks Below LOGGED BY D. A. Trudeau LOG REVIEWED BY D. Branstetter

NOTES ON WATER LOSSES AND LEVELS, CASING, CEMENTING, CAVING, AND OTHER DRILLING CONDITIONS	TYPE AND SIZE OF HOLE	CORE RECOVERY (%)	PERCOLATION TESTS				ELEVATION (FEET)	DEPTH (FEET)	GRAPHIC LOG	SAMPLES FOR TESTING	CLASSIFICATION AND PHYSICAL CONDITION	
			DEPTH (FEET)		LOSS (G.P.M.)	PRESSURE (P.S.I.)						LENGTH OF TEST (MIN.)
			FROM (P, C, or Cm)	TO								
	4" C	88									<p><u>200.0'-204.0'</u> Sandstone and caliche. Sandstone is composed of fine to coarse grained sand in a clay matrix. Sandstone is competent, it takes medium to hard hand pressure to break. A 3 inch bed of caliche occurs at bottom of core. It takes a hard hammer blow to break. Color brown. Violent HCL reaction. Note caliche nodules and gravel up to 2" diameter encountered at top of core.</p> <p><u>250.0'-254.0'</u> Mudstone and sandstone. One ft. of mudstone was recovered composed of 30% poorly graded fine sand and 70% clay. Color brown. Violent HCL reaction. Can be broken with light finger pressure. Lower 5 inches recovered was sandstone composed of 70% fine to coarse grained sand and 30% clay matrix. Color brown. Violent HCL reaction. Can be broken with medium to hard hand pressure. Note 2" diameter piece of volcanic gravel recovered in top of core.</p> <p><u>300.0'-301.25'</u> Clayey gravel. Consists of 50% fine to coarse subrounded and subangular caliche and volcanic gravel, max. size 2 1/2 inches; 20% poorly graded fine sand; and 30% medium plastic fines. Color brown. Violent HCL reaction. Damp.</p> <p><u>301.25'-301.5'</u> Mudstone. Consists of mostly clay sized particles. It is very competent, it is very hard to break with hand pressure. Color white to red. Violent HCL reaction. Damp.</p>	
	4" C	38										
	4" C	100										
			TD=305									

**EXPLANATION**



Note suite of Geophysical logs available on this hole.

FB=Rockbit  
 C=Core  
 Type of hole: D = Diamond, H = Haystellite, S = Shot, C = Churn  
 Hole sealed: P = Packer, Cm = Cemented, Cs = Bottom of casing  
 Approx. size of hole (X-series): Ex = 1-1 2", Ax = 1-7 8", Bx = 2-3 8", Nx = 3"  
 Approx. size of core (X-series): Ex = 7-8", Ax = 1-1 8", Bx = 1-5 8", Nx = 2-1 8"  
 Outside dia. of casing (X-series): Ex = 1-13 16", Ax = 2-1 4", Bx = 2-7 8", Nx = 3-1 2"  
 Inside dia. of casing (X-series): Ex = 1-1 2", Ax = 1-29 32", Bx = 2-3 8", Nx = 3"

# GEOLOGIC LOG OF DRILL HOLE

FEATURE	Exploratory Wells	PROJECT	CRBSCP Las Vegas Wash Unit	STATE	Nevada
HOLE NO.	W227	LOCATION	Gibson Road South T22S, R62E, Sec 14 bbe 1	GROUND ELEV.	Est. 1830'
BEGUN	6/19/80	FINISHED	7/17/81	DEPTH OF OVERBURDEN	7 1/2'
DEPTH AND ELEV. OF WATER LEVEL AND DATE MEASURED		LOGGED BY		D. A. Trudeau	
				LOG REVIEWED BY	
				D. Branstetter	

NOTES ON WATER LOSSES AND LEVELS, CASING, CEMENTING, CAVING, AND OTHER DRILLING CONDITIONS	TYPE AND SIZE OF HOLE	CORE RECOVERY (%)	PERCOLATION TESTS					ELEVATION (FEET)	DEPTH (FEET)	GRAPHIC LOG	SAMPLES FOR TESTING	CLASSIFICATION AND PHYSICAL CONDITION
			DEPTH (FEET)		LOSS (G.P.M.)	PRESSURE (P.S.I.)	LENGTH OF TEST (MIN.)					
			FROM (P, Ca, or Cm)	TO								
<p><u>Drilling Equipment</u> Failing 1250</p> <p><u>Drilling and Sampling Procedure</u> Drilled 7-7/8" hole for geologic logging to 305'. Dragbit 0-170', rockbit 170'-TD. Reamed 0-105' with 12" rockbit. Wash sample every 5'.</p> <p><u>Drill Fluid</u> Failing - water, Guar Gum.</p> <p><u>Hole Stability</u> Caving 0-18'.</p> <p><u>Water level</u> <u>Depth in Water</u> ft.      Date Not Measured</p> <p><u>Purpose of Hole</u> Shallow aquifer observation well.</p> <p><u>Drill Site</u> East side of Gilson Road, 1/2 mi. north of intersection with Lake Mead Drive.</p> <p><u>Hole Completion</u> Backfilled hole with gravel to 110 ft. grouted 105-110. Set 6" mild steel casing with plate on bottom to 100'. Field Slotted 90'-100'. Backfilled with pea gravel 5-105'. Grouted 0-5'.</p> <p><u>Note</u> Set of Geologic Logs available. Geophysical Logs labeled LG 228.</p>	<p>7.9'</p> <p>10'</p> <p>20'</p> <p>30'</p> <p>40'</p> <p>50'</p> <p>60'</p> <p>70'</p> <p>80'</p> <p>90'</p>	<p></p> <p></p> <p></p> <p></p> <p></p> <p></p> <p></p> <p></p> <p></p>	<p></p> <p></p> <p></p> <p></p> <p></p> <p></p> <p></p> <p></p> <p></p>	<p></p> <p></p> <p></p> <p></p> <p></p> <p></p> <p></p> <p></p> <p></p>	<p></p> <p></p> <p></p> <p></p> <p></p> <p></p> <p></p> <p></p> <p></p>	<p></p> <p></p> <p></p> <p></p> <p></p> <p></p> <p></p> <p></p> <p></p>	<p></p> <p></p> <p></p> <p></p> <p></p> <p></p> <p></p> <p></p> <p></p>	<p></p> <p></p> <p></p> <p></p> <p></p> <p></p> <p></p> <p></p> <p></p>	<p>0-18.0' Quaternary Alluvial Fan Deposits Consists of boulders and cobbles in a gravelly sand matrix which grades downward into a gravelly sandy clay. Color light gray to gray brown. Contact with underlying Muddy Creek Fm. is tentative and is based on change in drill characteristics. Description based on wash samples.</p> <p>0.0-18.0' Rockbits to boulders and cobbles and gravelly sand. Subrounded igneous cobbles and boulders up to 3 feet in dia. encountered on ground surface and visible down the hole. Gravelly sands consist of 50% mostly fine subrounded to subangular volcanic gravel, max. size 1/2 in.; 50% fine to coarse mostly coarse sand. Color light gray to dark brown. Light HCL reaction.</p> <p>18.0'-305.0' Tertiary Muddy Cr. Fm. Rockbits and cores to Sandy Clay, Gravelly Sandy Clays, Gravelly Sands and Sands which are brown to gray brown to dark gray to cream in color. Contact tentative based on lithologic change. Description based on wash samples.</p> <p>18.0'-125.0' Rockbits to Gravelly Sandy Clay. Consists of about 40% fine subrounded to subangular volcanic gravel, max. size 3/4 in.; 30% fine sand; 30% med plastic fines. Color brown. Violent HCL reaction. Gravel may be from zones above.</p> <p>125.0'-170.0' Rockbits to Gravelly Sand. Consists of about 40% fine subrounded to subangular volcanic gravel, max. size 1/2 in.; 50% fine to coarse, mostly coarse sand; 10% medium plastic fines. Color brown. Violent HCL reaction. Gravels may be from zones above. Materials drilled with drag bit.</p>			

### EXPLANATION

<p>■ CORE LOSS</p> <p>■ CORE RECOVERY</p>	<p>HB = Rockbit</p> <p>Note suite of Geophysical logs available on this hole (labeled LG228)</p> <p>Type of hole . . . . . D = Diamond, H = Haystellite, S = Shot, C = Chum                  Hole sealed . . . . . P = Packer, Cm = Cemented, Cs = Bottom of casing                  Approx. size of hole (X-series) . . . Ex = 1-1/2", Ax = 1-7/8", Bx = 2-3/8", Nx = 3"                  Approx. size of core (X-series) . . . Ex = 7/8", Ax = 1-1/8", Bx = 1-5/8", Nx = 2-1/8"                  Outside dia. of casing (X-series) . . Ex = 1-13/16", Ax = 2-1/4", Bx = 2-7/8", Nx = 3-1/2"                  Inside dia. of casing (X-series) . . Ex = 1-1/2", Ax = 1-29/32", Bx = 2-3/8", Nx = 3"</p>
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# GEOLOGIC LOG OF DRILL HOLE

FEATURE Exploratory Wells PROJECT CRBSCP Las Vegas Wash Unit STATE Nevada  
 HOLE NO. LG 227 LOCATION Gibson Road, South T225, B62E Sec. 14 T16E1 Est. 1832' DIP (ANGLE FROM HORIZ.) 90  
 BEGUN 6/19/80 FINISHED 7/17/80 DEPTH OF OVERBURDEN 17A TOTAL DEPTH 305.0' BEARING   
 DEPTH AND ELEV. OF WATER See Remarks Below LOGGED BY D.A. Trudeau LOG REVIEWED BY D. Branstetter

NOTES ON WATER LOSSES AND LEVELS, CASING, CEMENTING, CAVING, AND OTHER DRILLING CONDITIONS	TYPE AND SIZE OF HOLE	CORE RECOVERY (%)	PERCOLATION TESTS					ELEVATION (FEET)	DEPTH (FEET)	GRAPHIC LOG	SAMPLES FOR TESTING	CLASSIFICATION AND PHYSICAL CONDITION
			DEPTH (FEET)		LOSS (G.P.M.)	PRESSURE (P.S.I.)	LENGTH OF TEST (MIN.)					
			FROM (P, C, or Cm)	TO								
	RB 7.9							10			<p><u>170.0'-270.0'</u> Rockbits to Gravelly Clayey Sand and Sand. Gravelly clayey sand consists of 30% fine subrounded to subangular volcanic gravel, max. size 1/2 in.; 40% fine to coarse, mostly coarse sand; and 30% medium plastic fines. Color brown to gray brown. Violent HCL reaction. Materials hard from 170'-235.0'. Had to change to rockbit to drill. Increasing clay from 235.0'-270.0'.</p> <p><u>270.0'-290.0'</u> Rockbits to Sandy Clay. Consists of a trace of fine volcanic gravel; max. size 1/2 in.; 40% fine to coarse mostly fine sand; 60% low to medium plastic fines. Color light brown to cream.</p> <p><u>290.0'-305.0'</u> Rockbits to Gravelly Clayey Sand. Consists of 30% fine subrounded to subangular volcanic gravel, max. size 1/2 in.; 40% fine to coarse, mostly coarse sand; 30% medium plastic fines. Color brown to gray brown. Violent HCL reaction.</p>	
								20				
								30				
								40				
								50				
								60				
								70				
								80				
								90				
								100				
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								240				
								250				
								260				
								270				
								280				
								290				
								300				
								305				

CORE LOSS

CORE RECOVERY

**EXPLANATION**

Type of hole . . . . . D = Diamond, H = Haystellite, S = Shot, C = Churn  
 Hole sealed . . . . . P = Packer, Cm = Cemented, Cs = Bottom of casing  
 Approx. size of hole (X-series) . . . Ex = 1-1/2", Ax = 1-7/8", Bx = 2-3/8", Nx = 3"  
 Approx. size of core (X-series) . . . Ex = 7/8", Ax = 1-1/8", Bx = 1-5/8", Nx = 2-1/8"  
 Outside dia. of casing (X-series) . . Ex = 1-13/16", Ax = 2-1/4", Bx = 2-7/8", Nx = 3-1/2"  
 Inside dia. of casing (X-series) . . Ex = 1-1/2", Ax = 1-29/32", Bx = 2-3/8", Nx = 3"

# GEOLOGIC LOG OF DRILL HOLE

FEATURE Exploratory Wells PROJECT CRSOP, Las Vegas Wash Unit STATE Nevada  
 LOCATION Gibson Road, South T228, R62E, Sec. 14 bbc 2 Est. 1832' DIP (ANGLE FROM HORIZ.) 0°  
 HOLE NO. 10228 COORDS. N. . . . . E. . . . . GROUND ELEV. . . . . . TOTAL DEPTH 305.0' BEARING . . . . .  
 BEGUN 7/17/80 FINISHED 7/1/80 DEPTH OF OVERBURDEN N/A. LOGGED BY D.A. Trudeau LOG REVIEWED BY D. Braostetter  
 DEPTH AND ELEV. OF WATER LEVEL AND DATE MEASURED Not Measured

NOTES ON WATER LOSSES AND LEVELS, CASING, CEMENTING, CAVING, AND OTHER DRILLING CONDITIONS	TYPE AND SIZE OF HOLE	CORE RECOVERY (%)	PERCOLATION TESTS				ELEVATION (FEET)	DEPTH (FEET)	GRAPHIC LOG	SAMPLES FOR TESTING	CLASSIFICATION AND PHYSICAL CONDITION	
			DEPTH (FEET)		LOSS (G.P.M.)	PRESSURE (P.S.I.)						LENGTH OF TEST (MIN.)
			FROM (P. Cs. or Cm)	TO								
<p><u>Drill Equipment</u> Failing 1250 and DeCyrus Erie</p> <p><u>Drilling and Sampling Procedure</u> Drilled 12 in. hole with DeCyrus cable tool 0-50 ft. and 240-280 ft. Drilled with 1 1/2 inch drag bit. 50-170. 1 1/2 inch rock bit 170-265, 265-305'. Cored (4") 50-55'; 60% recovery and 260-265', 60% recovery. Wash sample every 5 ft.</p> <p><u>Drill Fluid</u> DeCyrus Erie - Water Failing - Water QuarGum, Bentonite and Bara Floss.</p> <p><u>Hole Stability</u> Hole stable</p> <p><u>Water Level</u> Depth in ft. Date Not measured.</p> <p><u>Drill Site</u> East side of Gibson road, 1/2 mile north of intersection with Lake Mead Drive.</p> <p><u>Hole Completion</u> Set 6" mild steel casing 0-300' with plate on bottom. Field slotted 290-300'. Backfilled with pea gravel 50-300' and grouted 0-150'.</p>	<p>PB</p> <p>12"</p> <p>10</p> <p>70</p> <p>30</p> <p>40</p> <p>50</p> <p>4"</p> <p>C</p> <p>60</p> <p>12"</p> <p>70</p> <p>80</p> <p>90</p>	<p>60</p>					<p>10</p> <p>70</p> <p>30</p> <p>40</p> <p>50</p> <p>60</p> <p>70</p> <p>80</p> <p>90</p>			<p>0.0-20.0 Quaternary Alluvial Fan Deposits Rockbits to Boulders Cobbles in a gravelly sand matrix which are light gray to brown. Contact with underlying Muddy Cr. Fm. is tentative based on change in Lithology. Description based on wash samples.</p> <p>0-20'0 Rockbits to Boulders and Cobbles in a gravelly sand matrix. Subrounded volcanic boulders visible on the surface and down the hole. Gravelly sand consists of 50% mostly fine subrounded to subangular volcanic gravel, max. size 1/2-inch; and 50% fine to coarse mostly coarse sand. Color light gray to dark brown. Light HCL reaction.</p> <p>20.0' - 305.0' Tertiary Muddy Cr. Fm. Rockbits to Sandy Clay, clayey sand, sandy gravels, sands, gravel, clayey gravel, and gravelly clay which are tan to brown to brown to gray brown to dark gray to cream in color. Description based on wash samples and core.</p> <p>20.0' - 55.0' Rockbits to Sandy Clay. About 30% poorly graded fine sand and 70% low to medium plastic fines. Color brown to tan brown. Violent HCL reaction.</p> <p>50' - 55.0' Sandy clay. About 20% poorly graded fine sand, and 80% low to medium plastic fines. Color tan brown. Violent HCL reaction.</p> <p>55.0' - 100.0' Rockbits to Clayey Sand. Consists of a trace of fine subangular volcanic gravel; 80% well graded sand; and 20% low to medium plastic fines. Violent HCL reaction.</p> <p>100.0 - 185.0' Rockbits to sandy gravels. Consists of about 50% fine subrounded to subangular igneous gravel, max. size 0.5 in; 30% well graded sand; 20% low plastic fines. Color gray brown. Violent HCL reaction.</p>		

	<p>PB=Per percussion bit RB=Rockbit C=Core</p>	<p><b>EXPLANATION</b></p>
	<p>Type of hole . . . . . D = Diamond, H = Haystallite, S = Shar, C = Churn Hole sealed . . . . . P = Packer, Cm = Cemented, Cs = Bottom of casing Approx. size of hole (X-series) . . . Ex = 1-1/2", Ax = 1-7/8", Bx = 2-3/8", Nx = 3" Approx. size of core (X-series) . . . Ex = 7/8", Ax = 1-1/8", Bx = 1-5/8", Nx = 2-1/8" Outside dia. of casing (X-series) . . Ex = 1-13/16", Ax = 2-1/4", Bx = 2-7/8", Nx = 3-1/2" Inside dia. of casing (X-series) . . Ex = 1-1/2", Ax = 1-29/32", Bx = 2-3/8", Nx = 3"</p>	

# GEOLOGIC LOG OF DRILL HOLE

FEATURE Exploratory Wells PROJECT CRBSCP Las Vegas Wash Unit STATE Nevada  
 HOLE NO. 10223 LOCATION Gibson Road, South T22S, R62E, Sec. 14 bbc 2 E8E, 1872' DIP (ANGLE FROM HORIZ.) 90'  
 BEGUN 7/17/80 FINISHED 7/17/80 DEPTH OF OVERBURDEN N/A TOTAL DEPTH 293.0' BEARING   
 DEPTH AND ELEV. OF WATER LEVEL AND DATE MEASURED Not Measured LOGGED BY D.A. Trudeau LOG REVIEWED BY D. Kesteven

NOTES ON WATER LOSSES AND LEVELS, CASING, CEMENTING, CAVING, AND OTHER DRILLING CONDITIONS	TYPE AND SIZE OF HOLE	CORE RECOVERY (%)	PERCOLATION TESTS					ELEVATION (FEET)	DEPTH (FEET)	GRAPHIC LOG	SAMPLES FOR TESTING	CLASSIFICATION AND PHYSICAL CONDITION
			DEPTH (FEET)		LOSS (G.P.M.)	PRESSURE (P.S.I.)	LENGTH OF TEST (MIN.)					
			FROM (P, Cs, or Cm)	TO								
	RB 12							10			<p><u>185.0' - 225.0'</u> Rockbits to Sands. Consists of about 5% fine subrounded to subangular volcanic gravel, max. size 3/8 in.; 95% fine to coarse mostly medium grained sand; and a trace of plastic fines. Color gray brown. Violent HCL reaction.</p> <p><u>225.0' - 240.0'</u> Rockbits to Gravel. Consists of about 90% poorly graded fine subrounded to subangular igneous gravel; max. size 3/8 in. 5% well graded sand; 5% medium plastic fines. Color dark gray. Violent HCL reaction.</p> <p><u>240.0' - 255.0'</u> Rockbits to Clayey Gravel. Consists of about 50% poorly graded fine subrounded to subangular igneous gravel; max. size 3/8 inch.; 20% well graded sand; 30% medium plastic fines. Color brown. Violent HCL reaction.</p> <p><u>255.0' - 260.0'</u> Rockbits to Gravelly Clay. Consists of about 30% fine subrounded to subangular igneous gravel, max. size 3/8 in.; 20% poorly graded mostly fine sand; 50% medium plastic fines. Color brown. Violent HCL reaction.</p> <p><u>260'0 - 290.0'</u> Rockbits to Sandy Clay and Sand. Sandy Clay consists of a trace of fine igneous gravel; about 50% fine to coarse mostly fine grained sand; 50% low to medium plastic fines. Color cream to light brown. Moderate HCL reaction. Sand described below.</p> <p><u>260.0 - 265.0 ft.</u> Sand About 100% fine to medium grained sand, mostly subangular igneous and medium grained. Trace of fines. Color dark gray to cream. Violent HCL reaction. Unit is lightly consolidated.</p>	
								30				
								40				
								50				
								60				
								70				
								80				
								90				

**EXPLANATION**

CORE LOSS  CORE RECOVERY

Type of hole . . . . . D = Diamond, H = Haystellite, S = Shot, C = Churn  
 Hole sealed . . . . . P = Packer, Cm = Cemented, Cs = Bottom of casing  
 Approx. size of hole (X-series) . . Ex = 1-1/2", Ax = 1-7/8", Bx = 2-3/8", Nx = 3"  
 Approx. size of core (X-series) . . Ex = 7/8", Ax = 1-1/8", Bx = 1-5/8", Nx = 2-1/8"  
 Outside dia. of casing (X-series) . Ex = 1-13/16", Ax = 2-1/4", Bx = 2-7/8", Nx = 3-1/2"  
 Inside dia. of casing (X-series) . . Ex = 1-1/2", Ax = 1-29/32", Bx = 2-3/8", Nx = 3"



# GEOLOGIC LOG OF DRILL HOLE

FEATURE Exploratory Wells PROJECT CRBSCP Las Vegas Wash Unit STATE Nevada  
 HOLE NO. LG228 LOCATION Gibson Road South, 1225, R62E Sec. 14 bbe 2 GROUND ELEV. 1832' DIP (ANGLE FROM HORIZ.)  
 BEGUN 7/17/80 FINISHED 7/18/80 DEPTH OF OVERBURDEN N/A TOTAL DEPTH 305.0' BEARING  
 DEPTH AND ELEV. OF WATER Not Measured LOGGED BY D.A. Trudeau LOG REVIEWED BY D. Branstetter

NOTES ON WATER LOSSES AND LEVELS, CASING, CEMENTING, CAVING, AND OTHER DRILLING CONDITIONS	TYPE AND SIZE OF HOLE	CORE RECOVERY (%)	PERCOLATION TESTS				ELEVATION (FEET)	DEPTH (FEET)	GRAPHIC LOG	SAMPLES FOR TESTING	CLASSIFICATION AND PHYSICAL CONDITION	
			DEPTH (FEET)		LOSS (G.P.M.)	PRESSURE (P.S.I.)						LENGTH OF TEST (MIN.)
			FROM (P. Cs. or Cm)	TO								
	RB 12"						10 20 30 40 50 60 70 80 90			<p>290.0' - 305.0' Rockbits to Gravelly, Clayey Sand. Consists of about 30% fine subrounded to subangular igneous gravel, max. size 1/2-inch; 40% fine to coarse mostly coarse sand; 30% low to medium plastic fines. Color brown to gray brown. Violent HCL reaction.</p>		
	4" C	60								TD=305'		

**CORE LOSS**

**CORE RECOVERY**

**EXPLANATION**

RB=Pockbit  
C=Core

Type of hole . . . . . D = Diamond, H = Haystellite, S = Shot, C = Churn  
 Hole sealed . . . . . P = Packer, Cm = Cemented, Cs = Bottom of casing  
 Approx. size of hole (X-series) . . . Ex = 1-1/2", Ax = 1-7/8", Bx = 2-3/8", Nx = 3"  
 Approx. size of core (X-series) . . . Ex = 7/8", Ax = 1-1/8", Bx = 1-5/8", Nx = 2-1/8"  
 Outside dia. of casing (X-series) . . Ex = 1-13/16", Ax = 2-1/4", Bx = 2-7/8", Nx = 3-1/2"  
 Inside dia. of casing (X-series) . . Ex = 1-1/2", Ax = 1-29/32", Bx = 2-3/8", Nx = 3"

# GEOLOGIC LOG OF DRILL HOLE

FEATURE Exploratory Wells PROJECT CRBSCP, Las Vegas Wash Unit STATE NV  
 HOLE NO. LG230 LOCATION Basic High School T22S, R63E, Sec. 16 cabl GROUND ELEV. Est. 1940' DIP (ANGLE FROM HORIZ.) 90°  
 BEGUN 6/14/80 FINISHED 7/ /80 DEPTH OF OVERBURDEN N/A TOTAL DEPTH 400 ft. BEARING

DEPTH AND ELEV. OF WATER LEVEL AND DATE MEASURED See Remarks Below LOGGED BY D. A. Trudeau LOG REVIEWED BY D. Braustetter

NOTES ON WATER LOSSES AND LEVELS, CASING, CEMENTING, CAVING, AND OTHER DRILLING CONDITIONS	TYPE AND SIZE OF HOLE	CORE RECOVERY (%)	PERCOLATION TESTS				ELEVATION (FEET)	DEPTH (FEET)	GRAPHIC LOG	SAMPLES FOR TESTING	CLASSIFICATION AND PHYSICAL CONDITION	
			DEPTH (FEET)		LOSS (G.P.M.)	PRESSURE (P.S.I.)						LENGTH OF TEST (MIN.)
			FROM (P, Cs, or Cm)	TO								
<p><u>Drilling Equipment:</u> Failing 1250</p> <p><u>Drilling and Sampling Procedure:</u> 5 5/8 inch Tricone rock bit 0' to 400'. Reamed with 12 inch Rock bit 0' to 425'. Wash sample every 5 feet to 400'.</p> <p><u>Drill Fluid:</u> Baroid Wyo-Gel (Bentonite) on 5 5/8 inch hole. Baroid Lo loss in 12 inch hole.</p> <p><u>Hole Stability:</u> Hole Stable.</p> <p><u>Water level</u> Depth in ft.      Date</p> <p>Not measured.</p> <p><u>Purpose of hole:</u> Water table observation hole.</p> <p><u>Well Location:</u> 1/2 mile south of Basic High School.</p>	<p>RB</p> <p>5-9"</p> <p>10</p> <p>20</p> <p>30</p> <p>40</p> <p>50</p> <p>60</p> <p>70</p> <p>80</p> <p>90</p>						<p>0</p> <p>10</p> <p>20</p> <p>30</p> <p>40</p> <p>50</p> <p>60</p> <p>70</p> <p>80</p> <p>90</p>			<p>0 to 255.0 ft. <u>Quaternary Alluvial Fan Deposits:</u> Rock bits to sands, gravels, cobbles and boulders which are unconsolidated. Contact with underlying Muddy Cr. Fm. based on change in drill characteristics.</p> <p>0 to 255.0 Rock bits to sands, gravels, cobbles, and boulders. Gravels are fine to coarse sub-angular and igneous. Sands are mostly medium to coarse grained. Color Light Gray. Little to moderate Hcl reaction. Cobbles and boulders indicated by extreme drill bit chatter. Trace of plastic fines in cuttings.</p>		

**EXPLANATION**

CORE LOSS      Geophysical Logs Available.  
 CORE RECOVERY      RB = Rockbit

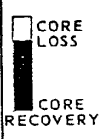
Type of hole . . . . . D = Diamond, H = Haystellite, S = Shot, C = Churn  
 Hole sealed . . . . . P = Packer, Cm = Cemented, Cs = Bottom of casing  
 Approx. size of hole (X-series) . . . Ex = 1-1/2", Ax = 1-7/8", Bx = 2-3/8", Nx = 3"  
 Approx. size of core (X-series) . . . Ex = 7/8", Ax = 1-1/8", Bx = 1-5/8", Nx = 2-1/8"  
 Outside dia. of casing (X-series) . . Ex = 1-13/16", Ax = 2-1/4", Bx = 2-7/8", Nx = 3-1/2"  
 Inside dia. of casing (X-series) . . Ex = 1-1/2", Ax = 1-29/32", Bx = 2-3/8", Nx = 3"

# GEOLOGIC LOG OF DRILL HOLE

FEATURE... Exploratory Wells... PROJECT. CRBSCP... Las Vegas Wash. Unit... STATE. NV  
 HOLE NO. LG230... LOCATION... Basic High School. T22S. R63E, Sec. 16 cabl Est. 1940'  
 BEGUN 6/14/80... FINISHED 7/7/80... GROUND ELEV. ... DIP (ANGLE FROM HORIZ.) 90°  
 DEPTH OF OVERBURDEN N/A... TOTAL DEPTH 400'... BEARING...  
 DEPTH AND ELEV. OF WATER LEVEL AND DATE MEASURED... LOGGED BY D. A. Trudeau... LOG REVIEWED BY D. Branstetter

NOTES ON WATER LOSSES AND LEVELS, CASING, CEMENTING, CAVING, AND OTHER DRILLING CONDITIONS	TYPE AND SIZE OF HOLE	CORE RECOVERY (%)	PERCOLATION TESTS					ELEV. TOP (FEET)	DEPTH (FEET)	GRAPHIC LOG	SAMPLES FOR TESTING	CLASSIFICATION AND PHYSICAL CONDITION
			DEPTH (FEET)		LOSS (G.P.M.)	PRESSURE (P.S.I.)	LENGTH OF TEST (MIN.)					
			FROM (P, C, or Cm)	TO								
Hole Completion: Set 6 5/8 inch steel casing 0-400 feet with bottom 10 feet field slotted. Back filled with pea gravel. Set concrete 0-5 ft.	RB 5.0'							0 10 20 30 40 50 60 70 80 90			255.0 to 400.0 Ft. Tertiary Muddy Cr. Fm. Rock bits to sand, gravels, and an occasional cobble. Contact based on change from significant drill bit chatter to smoother drilling which is indicative of a greater degree of consolidation. Description based on wash samples.  255.0 to 400.0 Ft. Rock bits to sands, gravels, and cobbles (?). Gravels are mostly fine subangular and igneous. Sands are mostly medium to coarse grained and igneous. Little to significant amounts of plastic fines. Cobbles indicated by occasional drill bit chatter. Color light gray to light brown. Little to moderate HCL reaction.	
								TD=400.0'				

**EXPLANATION**



RB = Rockbit

Type of hole . . . . . D = Diamond, H = Haystellite, S = Shot, C = Churn  
 Hole sealed . . . . . P = Packer, Cm = Cemented, Cs = Bottom of casing  
 Approx. size of hole (X-series) . . . Ex = 1-1/2", Ax = 1-7/8", Bx = 2-3/8", Nx = 3"  
 Approx. size of core (X-series) . . . Ex = 7/8", Ax = 1-1/8", Bx = 1-5/8", Nx = 2-1/8"  
 Outside dia. of casing (X-series) . . Ex = 1-13/16", Ax = 2-1/4", Bx = 2-7/8", Nx = 3-1/2"  
 Inside dia. of casing (X-series) . . Ex = 1-1/2", Ax = 1-29/32", Bx = 2-3/8", Nx = 3"

# GEOLOGIC LOG OF DRILL HOLE

**FEATURE** Exploratory Wells **PROJECT** CRBSCP Las Vegas Wash Unit **STATE** Nevada  
**HOLE NO.** LC231 **LOCATION** KDWN Towers, T21S., R6E., Sec. 32 edel Est 1660' **DIP (ANGLE FROM HORIZ.)** 90°  
**BEGUN** 7/02/80 **COORDS.** N. 17° 180 E. **GROUND ELEV.** **TOTAL DEPTH** 105.0' **BEARING** . . . . .  
**DEPTH AND ELEV. OF WATER LEVEL AND DATE MEASURED** See Remarks Below **LOGGED BY** D.A. Trudeau **LOG REVIEWED BY** D. Branstetter

NOTES ON WATER LOSSES AND LEVELS, CASING, CEMENTING, CAVING, AND OTHER DRILLING CONDITIONS	TYPE AND SIZE OF HOLE	CORE RECOVERY (%)	PERCOLATION TESTS					ELEVATION (FEET)	DEPTH (FEET)	GRAPHIC LOG	SAMPLES FOR TESTING	CLASSIFICATION AND PHYSICAL CONDITION
			DEPTH (FEET)		LOSS (G.P.M.)	PRESSURE (P.S.I.)	LENGTH OF TEST (MIN.)					
			FROM (P, Cs, or Cm)	TO								
<p><u>Drilling Equipment</u></p> <p>BuCyvus Erie Cable Tool</p> <p><u>Drilling Sampling Procedure</u></p> <p>12 inch percussion bit 0'-105' Wash sample every 5" (?).</p> <p><u>Drill Fluid</u></p> <p>Water</p> <p><u>Hole Stability</u> Sluffing 0-30'</p> <p><u>Water Level</u> not measured</p> <p><u>Drill Site</u> Near KDWN Towers in Henderson.</p> <p><u>Hole Completion</u> Set 6" mild steel casing 0-98.5' with plate on bottom, and lower 10' field slotted. Backfilled with gravel and grouted 0-5'.</p>	<p>12"</p> <p>10</p> <p>70</p> <p>30</p> <p>40</p> <p>50</p> <p>60</p> <p>70</p> <p>80</p> <p>90</p>	<p>100</p>						<p>10</p> <p>20</p> <p>30</p> <p>40</p> <p>50</p> <p>60</p> <p>70</p> <p>80</p> <p>90</p>			<p>For approximately similar geologic conditions refer to the well logs at LC232, and LC232A.</p>	

	EXPLANATION
<div style="display: flex; align-items: center;"> <div style="width: 10px; height: 10px; border: 1px solid black; margin-right: 5px;"></div> <span style="font-size: 8px;">CORE LOSS</span> </div>	<p>□ = Doubtful</p>
<div style="display: flex; align-items: center;"> <div style="width: 10px; height: 10px; border: 1px solid black; margin-right: 5px;"></div> <span style="font-size: 8px;">CORE RECOVERY</span> </div>	<p>Type of hole . . . . . D = Diamond, H = Hoystellite, S = Shot, C = Churn                      Hole sealed . . . . . P = Packer, Cm = Cemented, Cs = Bottom of casing                      Approx. size of hole (X-series) . . . Ex = 1-1/2", Ax = 1-7/8", Bx = 2-3/8", Nx = 3"                      Approx. size of core (X-series) . . . Ex = 7/8", Ax = 1-1/8", Bx = 1-5/8", Nx = 2-1/8"                      Outside dia. of casing (X-series) . . Ex = 1-13/16", Ax = 2-1/4", Bx = 2-7/8", Nx = 3-1/2"                      Inside dia. of casing (X-series) . . Ex = 1-1/2", Ax = 1-29/32", Bx = 2-3/8", Nx = 3"</p>

# GEOLOGIC LOG OF DRILL HOLE

FEATURE Exploratory Wells PROJECT Las Vegas Wash Unit STATE Nevada  
 HOLE NO. LG 232 LOCATION KDWN Towers T21S, R63E, Sec. 32, Tdc 2 GROUND ELEV. Est. 1660' DIP (ANGLE FROM HORIZ.) 90°  
 BEGUN 7/02/80 FINISHED 7/30/80 DEPTH OF OVERBURDEN N/A TOTAL DEPTH 305.0' BEARING  
 DEPTH AND ELEV. OF WATER LEVEL AND DATE MEASURED See Below LOGGED BY D.A. Trudeau LOG REVIEWED BY D. Branstetter

NOTES ON WATER LOSSES AND LEVELS, CASING, CEMENTING, CAVING, AND OTHER DRILLING CONDITIONS	TYPE AND SIZE OF HOLE	CORE RECOVERY (%)	PERCOLATION TESTS				ELEVATION (FEET)	DEPTH (FEET)	GRAPHIC LOG	SAMPLES FOR TESTING	CLASSIFICATION AND PHYSICAL CONDITION	
			DEPTH (FEET)		LOSS (G.P.M.)	PRESSURE (P.S.I.)						LENGTH OF TEST (MIN.)
			FROM (P. C. or Cm)	TO								
Drilling Equipment Failing 1250	Db 12"									0-30.0' Quarternary Alluvial Fan and Valley Fill Mixtures Rockbits to sand and sandy gravel which are dark gray in color. Contact with underlying Muddy Creek Fm. based on change in lithology. Description based on wash samples.		
Drilling and Sampling Procedure 12 inch dragbit 0-305.0'. Wash sample every 5 ft. Cored following depth with respective recovery.	10						10			0-20' Rockbits to sand. Consists of about 100% poorly graded medium grain subangular volcanic sand. Trace of plastic fines. Color dark gray. Moderate to high HCL reaction.		
45'-50' 100% 100'-105' 20% 150'-155' 100% 200'-205' 80% 250'-255' 100% 300'-305' 100%	70						70			20-30' Rockbits to sandy gravel. Consists of about 80% poorly graded fine gravel, max. size 0.2'; 20% well graded volcanic sand, trace of plastic fines. Color dark gray. Low to high HCL reaction.		
Drilling Fluid Water, Quar Gum, and native clays										30.0'-305.' Tertiary Muddy Creek Fm		
Hole Stability Hole open with minor sluffing	40						40			Rockbits and cores to gravelly clay, sandy clay, clayey gravel, clayey sand and gypsum which are brown to light green to reddish brown to cream to tan brown to turquoise in color. Contact based on change in lithology. Description based on wash samples and core.		
Water Level Depth in ft. Date Not measured	C 4" Db 12"	100					50			30.0'-55.0' Rockbits to gravelly clay and sandy clay. Consists of about 30% poorly graded fine gravel; max. size 0.2 inch; about 20% fine to coarse mostly fine sand; 50% medium plastic fines. Color green to greenish white. Violent HCL reaction. Note no samples 35-50 ft.		
Purpose of Hole Deep Aquifer Observation Well.	60						60			45'-50' Sandy clay and gypsum. Sandy clay consists of a trace of subrounded igneous gravel max. size 0.5 inch; about 20% poorly graded fine sand; 80% medium to high plastic fines. Color brown 45-46', light green 46-48.5' and reddish brown 48.5'-50.0'. Low to high HCL reaction 45'-48.5'. Low reaction 48.5-50.0'. Gypsum occurs as small crystals throughout interval and makes up about 10% of core. Vein of gypsum 0.5 inch thick, 4 inch long at 45.5'. One inch bed of crystals at 48 ft.		
Drill Site D02 east of KDWN Towers in Henderson												
Hole Completion Set 6" mild steel casing 0-300' with plate on bottom. Field slotted 290'-300'. Backfilled with gravel 150'-305' grouted 0-150'.	70						70					
	80						80					
	90						90					

**EXPLANATION**

CORE LOSS  
 CORE RECOVERY

Db=Dragbit  
 C=Core

Type of hole . . . . . D = Diamond, H = Haystellite, S = Shot, C = Churn  
 Hole sealed . . . . . P = Packer, Cm = Cemented, Cz = Bottom of casing  
 Approx. size of hole (X-series) . . . Ex = 1-1/2", Ax = 1-7/8", Bx = 2-3/8", Nx = 3"  
 Approx. size of core (X-series) . . . Ex = 7/8", Ax = 1-1/8", Bx = 1-5/8", Nx = 2-1/8"  
 Outside dia. of casing (X-series) . . Ex = 1-13/16", Ax = 2-1/4", Bx = 2-7/8", Nx = 3-1/2"  
 Inside dia. of casing (X-series) . . Ex = 1-1/2", Ax = 1-29/32", Bx = 2-3/8", Nx = 3"

# GEOLOGIC LOG OF DRILL HOLE

FEATURE	Exploratory Wells	PROJECT	CRBSCP Las Vegas Wash Unit	STATE	Nevada
HOLE NO.	LG232	LOCATION	KDWN Towers T21S, R63E Sec. 32 ddc2	GROUND ELEV.	Est. 1660'
BEGUN	FINISHED	DEPTH OF OVERBURDEN	N/A	TOTAL DEPTH	305.0'
DEPTH AND ELEV. OF WATER LEVEL AND DATE MEASURED		See Below		LOGGED BY	D. A. Trudeau
				LOG REVIEWED BY	D. Branstetter

NOTES ON WATER LOSSES AND LEVELS, CASING, CEMENTING, CAVING, AND OTHER DRILLING CONDITIONS	TYPE AND SIZE OF HOLE	CORE RECOVERY (%)	PERCOLATION TESTS				ELEVATION (FEET)	DEPTH (FEET)	GRAPHIC LOG	SAMPLES FOR TESTING	CLASSIFICATION AND PHYSICAL CONDITION	
			DEPTH (FEET)		LOSS (G.P.M.)	PRESSURE (P.S.I.)						LENGTH OF TEST (MIN.)
			FROM (P, Ca, or Cm)	TO								
	4" C	20									<p><u>55.0'-305.0'</u> Rockbits to gypsum, sandy clay and clayey gravel. Consists of about 50% crystallin gypsum occurring in pieces up to 0.2 inch thick. Sandy Clay is about 30% poorly graded fine sand; 70% medium plastic fines. Color reddish brown to green. Little HCL reaction. No samples 85-105 ft. See core description for additional information.</p>	
	Db 10" 12"						10					
	20" 30" 40" 50" 4" C	100					20 30 40 50					<p><u>100'-105'</u> Sandy Clay, Gypsum and Clayey Gravel. Sandy clay consists of about 20% poorly graded fine sand; and 80% medium to high plastic fines. Color brown to 101.8 and light green 101.8 to 102.8 ft. No Hcl reaction. Gypsum occurs as crystal interspersed throughout Sandy Clay. Crystals are up to 3 inches. long and make up 50% of sample to 101.8' and are coarse sand sized and make up 20% of sample 101.8' to 102.8'. Clayey gravel occurs from 102.8' to 105.0 and consists of about 70% fine subrounded igneous and gypsum gravel, max size 0.3 inch; and 30% sandy clay. Color light brown. No Hcl reaction.</p>
	Db 60" 12"						60				<p><u>150.0'-155.0'</u> Gravel, sandy clay, and gypsum. About 50% of core composed of sandy clay. 50% of core from 150'-152.5' is gravel; gravel is poorly graded fine subangular igneous and crystalline gypsum max size 0.5 inch. Sandy clay consists of about 20% poorly graded fine sand and 80% medium plastic fines. Color tan brown to brown. Little or no HCL reaction. Gypsum occurs as moderately well formed crystals up to 1 inch long interspersed throughout and as crystals in a bed 0.5 inch thick at 154.5'.</p>	
	70" 80" 90"						70 80 90				<p><u>200.0'-205.0'</u> Gypsi-ferous gravel, sandy clay, and gypsum. Gypsiferous gravels occur in first 1 ft. recovered and middle section of core. Gypsiferous gravels consist of</p>	

<p style="font-size: small;">CORE LOSS</p> <p style="font-size: small;">CORE RECOVERY</p>	<p>Db=Dragbit C=Core</p>	<p><b>EXPLANATION</b></p> <p style="font-size: x-small;">Type of hole . . . . . D = Diamond, H = Haystellite, S = Shot, C = Churn                  Hole sealed . . . . . P = Packer, Cm = Cemented, Cs = Bottom of casing                  Approx. size of hole (X-series) . . . Ex = 1-1/2", Ax = 1-7/8", Bx = 2-3/8", Nx = 3"                  Approx. size of core (X-series) . . . Ex = 7/8", Ax = 1-1/8", Bx = 1-5/8", Nx = 2-1/8"                  Outside dia. of casing (X-series) . . Ex = 1-13/16", Ax = 2-1/4", Bx = 2-7/8", Nx = 3-1/2"                  Inside dia. of casing (X-series) . . Ex = 1-1/2", Ax = 1-29/32", Bx = 2-3/8", Nx = 3"</p>
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**GEOLOGIC LOG OF DRILL HOLE**

FEATURE Exploratory Wells PROJECT CRBSCP STATE NEVADA  
 HOLE NO. LG232 LOCATION KDWN Towers T21S,R63E, Sec. 32 cdc 2 GROUND ELEV. Est. 1660' DIP (ANGLE FROM HORIZ.) 90°  
 COORDS. N..... E.....  
 BEGUN..... FINISHED..... DEPTH OF OVERBURDEN N/A TOTAL DEPTH 305.0' BEARING.....  
 DEPTH AND ELEV. OF WATER LEVEL AND DATE MEASURED See Below LOGGED BY D. A. Trudeau LOG REVIEWED BY D. Branstetter

NOTES ON WATER LOSSES AND LEVELS, CASING, CEMENTING, CAVING, AND OTHER DRILLING CONDITIONS	TYPE AND SIZE OF HOLE	CORE RECOVERY (%)	PERCOLATION TESTS				ELEVATION (FEET)	DEPTH (FEET)	GRAPHIC LOG	SAMPLES FOR TESTING	CLASSIFICATION AND PHYSICAL CONDITION	
			DEPTH (FEET)		LOSS (G.P.M.)	PRESSURE (P.S.I.)						LENGTH OF TEST (MIN.)
			FROM (P, Cs, or Cm)	TO								
	4" C	80								70% fine to coarse subangular igneous and gypsum gravel up to 1.5 inch in diameter; 20% sandy clay. Color brown. No HCL reaction. Gypsum occurs as crystals and makes up 50% of gypsiferous gravels.		
	Db 10" 12"						10			Sandy clay consists of about 10% poorly graded fine sand and 90% medium to high plastic fines. Color dark brown at beginning and end of core run and cream in between. No Hcl reaction. Gypsum occurs as 0.1 inch diameter crystal interspersed throughout and as bed 0.1 ft. thick 1.5 ft. from bottom of core.		
							20					
							30					
							40					
							50					
	4" C	100					50			250.0'-255.0' Sandy clay and gypsum. Sandy clay consists of about 20% poorly graded fine sand and 80% medium to high plastic fines. Color light green to turquoise to cream colored. Gypsum occurs as crystals up to 1.5 inch long interspersed throughout making up 30% of core. Beds of almost 100% gypsum crystals that are 0.5 ft. thick occur at 250.8' and 252.8'.		
	Db						60					
	12"						70					
							80					
							90					

**EXPLANATION**



Db=Dragbit  
C=Core

Type of hole . . . . . D = Diamond, H = Haystellite, S = Shot, C = Churn  
 Hole sealed . . . . . P = Packer, Cm = Cemented, Cs = Bottom of casing  
 Approx. size of hole (X-series) . . . Ex = 1-1/2", Ax = 1-7/8", Bx = 2-3/8", Nx = 3"  
 Approx. size of core (X-series) . . . Ex = 7/8", Ax = 1-1/8", Bx = 1-5/8", Nx = 2-1/8"  
 Outside dia. of casing (X-series) . . Ex = 1-13/16", Ax = 2-1/4", Bx = 2-7/8", Nx = 3-1/2"  
 Inside dia. of casing (X-series) . . Ex = 1-1/2", Ax = 1-29/32", Bx = 2-3/8", Nx = 3"

# GEOLOGIC LOG OF DRILL HOLE

CRBSCP Las Vegas Wash

FEATURE . . . Exploratory Wells . . . PROJECT . . . STATE . . . Nevada . . .  
 HOLE NO. . . LG-232 . . . LOCATION . . . KDMN. Towers. T21S. R63E. Sec. 32 cdc2 . . . GROUND ELEV. . . 1660' . . . DIP (ANGLE FROM HORIZ.) . . . 90°  
 BEGUN . . . FINISHED . . . DEPTH OF OVERBURDEN . . . N/A . . . TOTAL DEPTH . . . 305.0' . . . BEARING . . .  
 DEPTH AND ELEV. OF WATER . . . LOGGED BY . . . D.A. Trudeau . . . LOG REVIEWED BY . . . D. Branstetter  
 LEVEL AND DATE MEASURED . . .

NOTES ON WATER LOSSES AND LEVELS, CASING, CEMENTING, AND OTHER DRILLING CONDITIONS	TYPE AND SIZE OF HOLE	CORE RECOVERY (%)	PERCOLATION TESTS				ELEVATION (FEET)	DEPTH (FEET)	GRAPHIC LOG	SAMPLES FOR TESTING	CLASSIFICATION AND PHYSICAL CONDITION	
			DEPTH (FEET)		LOSS (G.P.M.)	PRESSURE (P.S.I.)						LENGTH OF TEST (MIN.)
			FROM (P. Co. or Cm)	TO								
	4" C	100			TD=305'						occurs from 304.2'-305.0' Sandy clay consists of about 10% poorly graded fine sand and 90% medium plastic fines. Color light green. No HCL reaction gypsum occur as crystals up to 3 inch long interspersed in sandy clay and is 10% of total sample.	

**CORE LOSS**

**CORE RECOVERY**

**EXPLANATION**

C=Core

Type of hole . . . . . D = Diamond, H = Haystellite, S = Shot, C = Churn  
 Hole sealed . . . . . P = Packer, Cm = Cemented, Cs = Bottom of casing  
 Approx. size of hole (X-series) . . . Ex = 1-1/2", Ax = 1-7/8", Bx = 2-3/8", Nx = 3"  
 Approx. size of core (X-series) . . . Ex = 7/8", Ax = 1-1/8", Bx = 1-5/8", Nx = 2-1/8"  
 Outside dia. of casing (X-series) . . Ex = 1-13/16", Ax = 2-1/4", Bx = 2-7/8", Nx = 3-1/2"  
 Inside dia. of casing (X-series) . . Ex = 1-1/2", Ax = 1-29/32", Bx = 2-3/8", Nx = 3"



# GEOLOGIC LOG OF DRILL HOLE

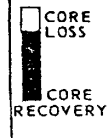
FEATURE Exploratory Wells PROJECT CRBSCP Las Vegas Wash Unit STATE Nevada  
 HOLE NO. LG232A LOCATION KDWN Towers T21S., R63E, Sec 32 ccdc 3 GROUND ELEV. Est. 1660' DIP (ANGLE FROM HORIZ.) .....  
 BEGUN 4/9/81 COORDS. N. 4/9/81 E. M/A TOTAL DEPTH 305.0' BEARING.....  
 DEPTH AND ELEV. OF WATER LEVEL AND DATE MEASURED See Remarks Below LOGGED BY D.A. Trudeau LOG REVIEWED BY D. Branstetter

NOTES ON WATER LOSSES AND LEVELS, CASING, CEMENTING, CAVING, AND OTHER DRILLING CONDITIONS	TYPE AND SIZE OF HOLE	CORE RECOVERY (%)	PERCOLATION TESTS				ELEVATION (FEET)	DEPTH (FEET)	GRAPHIC LOG	SAMPLES FOR TESTING	CLASSIFICATION AND PHYSICAL CONDITION	
			DEPTH (FEET)		LOSS (G.P.M.)	PRESSURE (P.S.I.)						LENGTH OF TEST (MIN.)
			FROM (P. Ct. or Cm)	TO								
<p><u>Drilling Equipment</u> Failing 1250</p> <p><u>Drilling and Sampling Procedure</u> 5 7/8" tricone rockbit 0'-40'. 7 7/8" tricone rockbit 0'-60'. 7.5" 3 prong drag bit 0'-305.0'. Wash sample every 5'.</p> <p><u>Drill Fluid</u> Bentonite, Soda Ash, CC-16 dispersant.</p> <p><u>Hole Stability</u> Minor caving 0'-40'.</p> <p><u>Water Level</u> Depth in ft Date about 86.0' 7/8/80</p> <p><u>Purpose of Hole</u> Pilot hole for Geophysical Logging</p> <p><u>Drill Site</u> Vicinity of BMI ponds, about 500' from the KDWN towers.</p> <p><u>Hole Completion</u> Hole abandoned since no coring was done when first drilled. LG232A was geophysically logged (called LG232). LG231 was drilled 104' east of LG 232A.</p>	RB 5.9'  10'  70'  30'  40' RB 7.9'  50'  60'  70' DB 7.5'  80'  90'						10 20 30 40 50 60 70 80 90			<p><u>0.0'-30.0' Quaternary Alluvial Fan and Valley Fill Mixtures</u> Rockbits to cobbly, gravelly sand. Color brown to purplish brown to black to reddish brown. Contact with underlying Tertiary Muddy Creek distinct, change from coarse grained to fine grained sediments.</p> <p><u>0.0'-30.0' Rockbits to cobbly gravelly sand.</u> Cobbles visible on surface and down hole. Noticeable clatter of rig when encountered (0'-2'; 20'-30'). Cobbles are volcanic. Majority of cuttings recovered are gravel and sand and are subrounded to subangular and volcanic. Max. size gravel recovered, 1 inch. Sands are fine to coarse grained. Color brown to purplish brown, to black to reddish brown. HCL reaction not tested.</p> <p><u>30.0'-305.0' Tertiary Muddy Creek Fm.</u> Rockbits to gypsiferous sandy clay which ranged in color from red brown to white to green to brown to blue to black to gray and many intermediate colors. Description based on wash samples.</p> <p><u>30.0'-305.0' Rockbits to gypsiferous sandy clay.</u> About 30% poorly graded fine sand and 70% medium to high plastic fines. Colors as listed below. Gypsum occurs in crystalline and fibrous forms in cuttings. 30'-50' red brown, some white; 50'-85' light green; 85'-105' tan brown to white; 105'-115' brown; 115'-130' cream; 130'-150' brown, minor amount of clayey sand encountered; 150'-160' light blue to black to cream, has organic smell; 160'-170' light green; 170'-175' white; 175'-180' gray; 180'-240' brown, some cream and white around 200'-220'; 240'-250' blue gray; 250'-260' dark gray; 260'-280' dark gray with greenish hue. Abundant gypsum recovered, also drill bit chatter; 280'-305' dark gray to greenish gray, abundant gypsum and drill bit chatter also.</p>		

**EXPLANATION**

Note Geophysical Logs available labeled LG232

DB = Dragbit  
RB = Rockbit



Type of hole . . . . . D = Diamond, H = Haystellite, S = Shot, C = Churn  
 Hole sealed . . . . . P = Packer, Cm = Cemented, Cs = Bottom of casing  
 Approx. size of hole (X-series) . . . Ex = 1-1/2", Ax = 1-7/8", Bx = 2-3/8", Nx = 3"  
 Approx. size of core (X-series) . . . Ex = 7/8", Ax = 1-1/8", Bx = 1-5/8", Nx = 2-1/8"  
 Outside dia. of casing (X-series) . . Ex = 1-13/16", Ax = 2-1/4", Bx = 2-7/8", Nx = 3-1/2"

# GEOLOGIC LOG OF DRILL HOLE

**FEATURE** Exploratory Wells      **PROJECT** CRBSCP Las Vegas Wash Unit      **STATE** Nevada  
**HOLE NO.** LG235      **LOCATION** Las Vegas Wash T21S, R63E, Sec. 29 ccbl      **Est** 1535'      **DIP (ANGLE FROM HORIZ.)** 90°  
**BEGUN** 2/11/80      **COORDS.** N..... E.....      **GROUND ELEV.** .....      **TOTAL DEPTH** 145.0'      **BEARING** .....  
**FINISHED** 2/12/80      **DEPTH OF OVERBURDEN** N/A      **LOGGED BY** D.A. Trudeau      **LOG REVIEWED BY** D. Branstetter  
**DEPTH AND ELEV. OF WATER LEVEL AND DATE MEASURED** Ground Level

NOTES ON WATER LOSSES AND LEVELS, CASING, CEMENTING, CAVING, AND OTHER DRILLING CONDITIONS	TYPE AND SIZE OF HOLE	CORE RECOVERY (%)	PERCOLATION TESTS					ELEVATION (FEET)	DEPTH (FEET)	GRAPHIC LOG	SAMPLES FOR TESTING	CLASSIFICATION AND PHYSICAL CONDITION
			DEPTH (FEET)		LOSS (G.P.M.)	PRESSURE (P.S.I.)	LENGTH OF TEST (MIN.)					
			FROM (P, Ca, Cm)	TO								
<p><u>Drilling Equipment</u></p> <p>Failing 1250</p> <p><u>Drilling and Sampling Procedure</u></p> <p>7-7/8" Rockbit 0'-145'. Wash Sample every 5'.</p> <p><u>Drill Fluid</u></p> <p>Baroid Lo-Loss</p> <p><u>Hole Stability</u></p> <p>Hole unstable 0-60'</p> <p><u>Water Level</u></p> <p>Depth in ft. Date 0' 2/11/80 7.2* 2/29/80 *Stickup 1.0' Note headcut occurred on Las Vegas Wash between readings.</p> <p><u>Drill Site</u></p> <p>Las Vegas Wash at Las Vegas Valley Lateral crossing</p> <p><u>Purpose of Hole</u></p> <p>Pump test observation well.</p> <p><u>Hole Completion</u></p> <p>Set 2" gal. steel pipe to 124' with backwash valve on bottom. Set No. 10 slot screen 19'-21', 42'-44', 65'-67', 88'-90', and 120'-122' backfilled with gravel 5-TD, and grouted 0-1'.</p>	RB 7.9  10  70  30  40 40 50 50 60 60 70 70 80 80 90 90							0-61.0' Quaternary Stream Alluvium  61.0'-145.0' Tertiary Muddy Creek Formation  61.0'-145.0'	<p>Rockbits to Cobbles, Gravels, and Sands which are tan to dark gray in color. Contact with underlying Muddy Creek Fm. based on change in lithology. Description based on wash samples.</p> <p>0-61.0' Rockbits to Cobbles, Sands and Gravels. Cobbles indicated by drill characteristic. Gravels recovered consist of fine to coarse mostly fine volcanic and some sedimentary gravel, max. size 1". Sands consist mostly medium to coarse grained, mostly volcanic grains. Up to 10% medium plastic fines recovered in cuttings. Color tan to dark gray. Violent HCL reaction.</p> <p>61.0'-145.0' Rockbits to clayey sand which is tan to gray to white. Gypsum crystals abundant in cuttings. Description based on wash samples.</p> <p>61.0'-145.0' Rockbits to gypsiferous clayey sand. Consists of a trace of fine gravel; 60% fine sand; and 40% medium plastic fines. Color tan to gray to white mottled. High HCL reaction. Gypsum occurs as crystals throughout cuttings, most notably at 80'. Organic smell noticeable in material with dark streaks.</p>			
TD = 145'												

<p>CORE LOSS</p> <p>CORE RECOVERY</p>	<p><b>EXPLANATION</b></p> <p>RB = Rockbit</p> <p>Type of hole ..... D = Diamond, H = Haystellite, S = Shot, C = Churn                  Hole sealed ..... P = Packer, Cm = Cemented, Cs = Bottom of casing                  Approx. size of hole (X-series) .. Ex = 1-1/2", Ax = 1-7/8", Bx = 2-3/8", Nx = 3"                  Approx. size of core (X-series) .. Ex = 7/8", Ax = 1-1/8", Bx = 1-5/8", Nx = 2-1/8"                  Outside dia. of casing (X-series) .. Ex = 1-13/16", Ax = 2-1/4", Bx = 2-7/8", Nx = 3-1/2"                  Inside dia. of casing (X-series) .. Ex = 1-1/2", Ax = 1-29/32", Bx = 2-3/8", Nx = 3"</p>
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# GEOLOGIC LOG OF DRILL HOLE

FEATURE Exploratory Wells PROJECT \_\_\_\_\_ STATE \_\_\_\_\_  
 HOLE NO. LG 236 LOCATION Las Vegas Wash T21S, R63E, Sec. 29 ccb2 GROUND ELEV. Est. 1535' DIP (ANGLE FROM HORIZ.) \_\_\_\_\_  
 BEGUN 2/13/80 FINISHED 2/13/80 DEPTH OF OVERBURDEN N/A TOTAL DEPTH 125.0' BEARING \_\_\_\_\_  
 DEPTH AND ELEV. OF WATER 2/13/80 Water at 1' LOGGED BY D. Russell LOG REVIEWED BY D. Trudeau  
 LEVEL AND DATE MEASURED \_\_\_\_\_

NOTES ON WATER LOSSES AND LEVELS, CASING, CEMENTING, CAVING, AND OTHER DRILLING CONDITIONS	TYPE AND SIZE OF HOLE	CORE RECOVERY (%)	PERCOLATION TESTS					ELEVATION (FEET)	DEPTH (FEET)	GRAPHIC LOG	SAMPLES FOR TESTING	CLASSIFICATION AND PHYSICAL CONDITION			
			DEPTH (FEET)		LOSS (G.P.M.)	PRESSURE (P.S.I.)	LENGTH OF TEST (MIN.)								
			FROM (P. Ca. or Cm)	TO											
<p><u>Drilling Equipment</u></p> <p>Failing 1250</p> <p><u>Drilling Procedure</u></p> <p>7-7/8" rockbit to 125'</p> <p><u>Drilling Fluid</u></p> <p>Baroid Lo-Loss</p> <p><u>Ustable Intervals</u></p> <p>0 to 60' hole raveled and caved</p> <p><u>Water Levels</u></p> <table style="width: 100%; border-collapse: collapse;"> <tr> <th style="text-align: left;">Depth</th> <th style="text-align: left;">Date</th> </tr> <tr> <td>1'</td> <td>2/13/80</td> </tr> </table> <p><u>Drill Site</u></p> <p>Las Vegas Wash 1500 M N of Nevada Rock &amp; Sand Gravel pit.</p> <p><u>Purpose of Hole</u></p> <p>Observation well for aquifer test</p> <p><u>Hole Completion</u></p> <p>Set 2" galvanized steel pipe to 120' with 2' No. 10 slot screen at 21,44,67 &amp; 120 with a check valve on the bottom. Backfilled with pea gravel. Sealed upper 1' with concrete. Left approx. 2' stickup. Ran Natural Gamma Ray Log</p>	Depth	Date	1'	2/13/80	DB 7.9" 10 20 30 40 50 60 70 80 90	125'						125.0'	125.0'	125.0'	<p><u>0.0-61.0' Quaternary Stream Alluvium</u> Rockbits to clayey gravel, coarse sand and cobbles which are tan to gray. Contact with underlying Muddy Creek Fm. based on change in lithology. Description based on wash samples.</p> <p><u>0-61.0' Rockbits to clay gravel, coarse sand with some cobbles.</u> Gravels are subangular to subrounded igneous and sedimentary. Cobbles indicated by drill characteristics. Seems to be stratified beds of sand, gravel, and clay. Clay bed at 16'. Clayey fines increase with depth. Color tan to gray. Violent HCL reaction.</p> <p><u>61.0-125.0' Tertiary Muddy Creek Fm</u> Rockbits to gypsiferous clayey sand which is gray to white to mottled. Description based on wash samples.</p> <p><u>61-125' Rockbits to gypsiferous clayey sand.</u> Consists of a trace of gravel; 60% poorly graded fine sand; and 40% medium plastic fines. Color tan gray to white mottled. Violent HCL reaction. Organic odor. Gypsum occurs as crystals throughout.</p>
Depth	Date														
1'	2/13/80														

**EXPLANATION**

Note: Gamma Ray Log available on this hole.  
 RB = Rockbit

CORE LOSS  
 CORE RECOVERY

Type of hole . . . . . D = Diamond, H = Haystellite, S = Shot, C = Churn  
 Hole sealed . . . . . P = Packer, Cm = Cemented, Ca = Bottom of casing  
 Approx. size of hole (X-series) . . . Ex = 1-1/2", Ax = 1-7/8", Bx = 2-3/8", Nx = 3"  
 Approx. size of core (X-series) . . . Ex = 7/8", Ax = 1-1/8", Bx = 1-5/8", Nx = 2-1/8"  
 Outside dia. of casing (X-series) . . Ex = 1-13/16", Ax = 2-1/4", Bx = 2-7/8", Nx = 3-1/2"  
 Inside dia. of casing (X-series) . . Ex = 1-1/2", Ax = 1-29/32", Bx = 2-3/8", Nx = 3"

# GEOLOGIC LOG OF DRILL HOLE

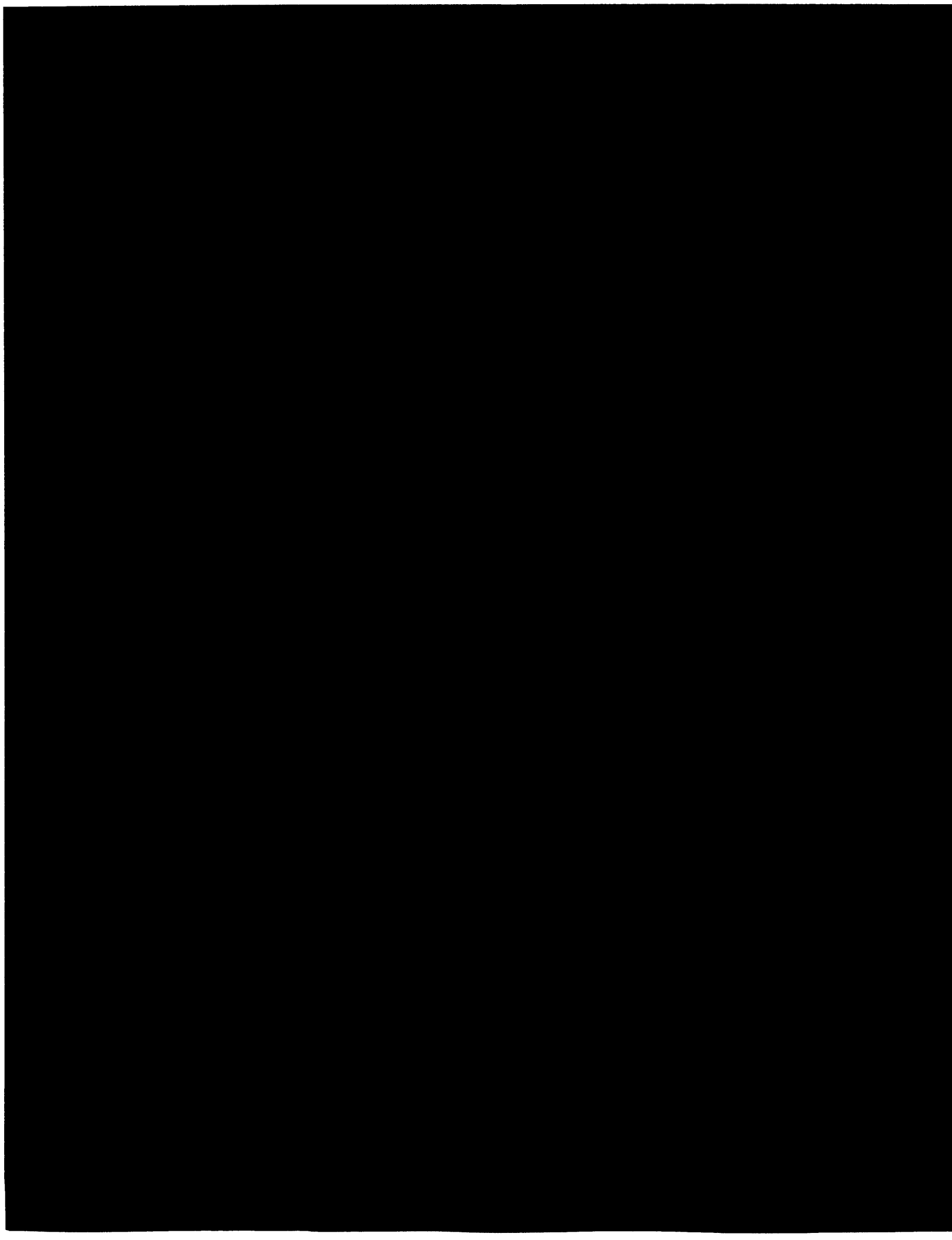
FEATURE: Exploratory Wells PROJECT: CRBSCP Las Vegas Wash Unit STATE: Nevada  
 HOLE NO.: LG237 LOCATION: Las Vegas Wash T21S, R63E, Sec. 29 ccb3 Est. 1535' DIP (ANGLE FROM HORIZ.): 90°  
 BEGUN: 8/23/80 FINISHED: \_\_\_\_\_ DEPTH OF OVERBURDEN: N/A TOTAL DEPTH: 120' BEARING: \_\_\_\_\_  
 DEPTH AND ELEV. OF WATER LEVEL AND DATE MEASURED: See Remarks Below LOGGED BY: D.A. Trudeau LOG REVIEWED BY: D. Branstetter

NOTES ON WATER LOSSES AND LEVELS, CASING, CEMENTING, CAVING, AND OTHER DRILLING CONDITIONS	TYPE AND SIZE OF HOLE	CORE RECOVERY (%)	PERCOLATION TESTS				ELEVATION (FEET)	DEPTH (FEET)	GRAPHIC LOG	SAMPLES FOR TESTING	CLASSIFICATION AND PHYSICAL CONDITION	
			DEPTH (FEET)		LOSS (G.P.M.)	PRESSURE (P.S.I.)						LENGTH OF TEST (MIN.)
			FROM (P, Cs, or Cm)	TO								
<p><u>Drilling Equipment</u> Failing 1250</p> <p><u>Drilling and Sampling Procedure</u> 7-7/8" rockbit 0' to 120'. Reamed 0 140' with 12" rockbit. Reamed 0 to 85' with 16" rockbit. Wash sample every 5'</p> <p><u>Drill Fluid</u> Water, Quar Gum, Bentonite, and Bara Floss.</p> <p><u>Hole Stability</u> Hole caves 0 to 60'</p> <p><u>Water Level</u> Depth in Ft. Date 10.8' 10/19/80</p> <p>Stickup about 1.0'</p> <p><u>Drill Site</u> Along Las Vegas Valley Lateral at intersection with Las Vegas Wash.</p> <p><u>Purpose</u> Pumping Well for Pump Test.</p> <p><u>Hole Completion</u> Set 12" mild steel casing 0 to 25' with 25' to 80' No. 120 slotted steel casing with a plate on the bottom. Gravel packed 5'-80' with gravel pack with <math>D_{50} = 7</math> mm and <math>C_u = 1.5</math>. Grouted 0-3'.</p>	TB 7.9"  10  20  30  40  50  60  70  80  90						TD=120.0'			<p>0.0 to 60.0' Quaternary Stream Alluvium Rockbits to cobbles, sands, and gravels which are tan to gray. Contact with underlying Muddy Creek Fm. based on change in lithology. Description based on wash samples.</p> <p>0 to 60' Rockbits to cobbles, sands, and gravels. Cobbles indicated by drill characteristic. Gravels recovered consist of fine to coarse mostly fine volcanic and some sedimentary gravel, max size 1". Sands consist of mostly medium to coarse grained sand of igneous (volcanic) grains. Up to 10% medium plastic fines recovered in cuttings. Color tan to dark gray. Violent HCL reaction.</p> <p>60' - 120' Tertiary Muddy Creek Fm. Rockbits to clayey sand, sandy clay, and gypsum which are cream to light green to brown in color. Description based on Wash samples.</p> <p>60' - 120' Rockbits to clayey sand, sandy clay, and gypsum. Clayey sand consists of about 60% poorly graded fine sand, and 40% medium plastic fines. Color tan brown. Moderate HCL reaction. Clayey sand makes up over 50% of cuttings in interval 60-70', 20% of cuttings in interval 75-120'. Sandy clay consists of 20% poorly graded fine sand; 80% medium to high plastic fines. Color green to light green to cream. Moderate HCL reaction. Gypsum occurs in cuttings throughout intervals in crystalline forms in pieces up to 1/2" diameter. Trace of fine subrounded igneous and limestone gravel encountered, max size 3/8".</p>		

**EXPLANATION**

Note  $D_{50}$  = diameter of 50% size  
 $C_u$  = coefficient of uniformity  
 TB = rockbit

Type of hole: D = Diamond, H = Haystallite, S = Shot, C = Churn  
 Hole sealed: P = Packer, Cm = Cemented, Cs = Bottom of casing  
 Approx. size of hole (X-series): Ex = 1-1/2", Ax = 1-7/8", Bx = 2-3/8", Nx = 3"  
 Approx. size of core (X-series): Ex = 7/8", Ax = 1-1/8", Bx = 1-5/8", Nx = 2-1/8"  
 Outside dia. of casing (X-series): Ex = 1-13/16", Ax = 2-1/4", Bx = 2-7/8", Nx = 3-1/2"  
 Inside dia. of casing (X-series): Ex = 1-1/2", Ax = 1-29/32", Bx = 2-3/8", Nx = 3"



# BOREHOLE LOG

Sheet 1 OF 1



Location of Borehole:	Job No.:	001-063304	Borehole Designation:	BKG-1
	Client:	Timet	Surface Elevation:	
	Site:	Henderson, Nevada	Depth to Water:	
	Subsite:		Logged by:	D. Venable
	Drilling Co.:	The Verde Companies	Drilling Date(s):	06/10/97
	Drilling Method:	Hollow-stem auger drill rig equipped with a California modified split-spoon (SS) sampler.		

Sampler Type	Sample Depth Top to Bottom	Blows 6-in. Samp. Recovered	Driven	Time	PID Info. (ppm)	Analysis	Lithology	Depth	USCS Soil Type	Soil Description							
SS	0-2'	8	18/12	1100				1	SM	- Not logged; core in brass liner							
		11								10/12	1125						Gravelly fine sand with abundant silt, and some cobbles (2 to 3 inches ) light yellowish brown (10 YR 6/4), moderately sorted, nonplastic, dry to slightly moist, mafics - Gravelly medium sand at 1.5 to 2.0 feet
		14															
SS	2-4'	20	24/24	1110				2	SP	Medium to coarse sand with some gravel (0.3 to 1 inch), yellowish brown (10 YR 5/4), well to moderately sorted, nonplastic, dry to slightly moist, mafics, arkosics, caliche fragments							
		15															
		20															
		25															
SS	4-5'	14	10/12	1115				4		Not logged; core in brass liner							
		28															
								5		Total Depth of Boring = 5.0 feet BGS							

# BOREHOLE LOG

Sheet 1 OF 1



Location of Borehole:	Job No.:	001-063304	Borehole Designation:	BKG-2
	Client:	Timet	Surface Elevation:	
	Site:	Henderson, Nevada	Depth to Water:	
	Subsite:		Logged by:	D. Venable
	Drilling Co.:	The Verde Companies	Drilling Date(s):	06/10/97
	Drilling Method: Hollow-stem auger drill rig equipped with a California modified split-spoon (SS) sampler.			

Sampler Type	Sample Depth Top to Bottom	Blows 6-in. Samp. Recovered	Driven	Time	PID Info. (ppm)	Analysis	Lithology	Depth	USCS Soil Type	Soil Description
SS	0-2'	10	18/24	1010				1	SW-SP	Not logged; core in brass liner
		22								Gravely fine to medium sand with trace silt, brown (10 YR 5/3 to 5/4), moderately sorted, nonplastic, dry to slightly moist, medium dense, mafics, volcanics, caliche fragments
		35								
		24								
SS	2-4'	15	24/24	1015				2	ML	Fine sandy silt with trace gravel (0.25 inch), pale brown (10 YR 6/3), well sorted, nonplastic, dry, medium dense, volcanics, caliche fragments
		16								
		16								
		25								
SS	4-5'	19	12/12	1020				4		Not logged; core in brass liner
		27								
								5		Total Depth of Boring = 5.0 feet BGS

# BOREHOLE LOG

Sheet 1 OF 1



Location of Borehole:	Job No.:	001-063304	Borehole Designation:	BKG-3
	Client:	Timet	Surface Elevation:	
	Site:	Henderson, Nevada	Depth to Water:	
	Subsite:		Logged by:	D. Venable
	Drilling Co.:	The Verde Companies	Drilling Date(s):	06/10/97
	Drilling Method: Hollow-stem auger drill rig equipped with a California modified split-spoon (SS) sampler.			

Sampler Type	Sample Depth Top to Bottom	Blows 6-in. Samp.	Recovered	Driven	Time	PID Info. (ppm)	Analysis	Lithology	Depth	USCS Soil Type	Soil Description	
		12									Not logged; core in brass liner	
		22										
SS	0-2'	24	18/24		0830				1	SM	Silty fine to coarse sand and trace gravels (0.25 to 0.5 inch), pinkish gray (7.5 YR 6/2), well sorted, nonplastic, dry to slightly moist, medium dense, some mafics, subrounded	
		26									SP	Medium to coarse sand with trace gravels (0.25 to 0.5 inch), brown, (7.5 YR 5/3 to 5/4), well sorted, nonplastic, dry to slightly moist, medium dense, volcanics, mafics, subrounded
		27								2	SM	Silty fine sand with trace gravel, light brown (7.5 YR 6/3 to 6/4), well sorted, nonplastic, dry to slightly moist, medium dense, mafics, subangular
		33										
SS	2-4'	35	24/24		0830				3	SW	Medium sand with a trace of silt and cobbles, some gravel (0.25 to 3.0 inch), brown (7.5 YR 5/3 to 5/4), moderately to poorly sorted, nonplastic, slightly moist to moist, medium dense, felsics, caliche fragments	
		40										
		32							4		Not logged; core in brass liner	
SS	4-5'	33	12/12		0845							
									5		Total Depth of Boring = 5.0 feet BGS	





# BOREHOLE LOG

Sheet 1 OF 1



Location of Borehole:	Job No.:	001-063304	Borehole Designation:	BKG-5
	Client:	Timet	Surface Elevation:	
	Site:	Henderson, Nevada	Depth to Water:	
	Subsite:		Logged by:	D. Venable
	Drilling Co.:	The Verde Companies	Drilling Date(s):	06/10/97
	Drilling Method:	Hollow-stem auger drill rig equipped with a California modified split-spoon (SS) sampler.		

Sampler Type	Sample Depth Top to Bottom	Blows 6-in. Samp.	Recovered	Driven	Time	PID Info. (ppm)	Analysis	Lithology	Depth	USCS Soil Type	Soil Description
SS	0-2'	18	18/24	0645					1	SP	Not logged; core in brass liner
		30									Fine to coarse sand with a trace of silt and gravel (0.5 to 3 inches), yellowish brown (10 YR 5/4), moderately sorted, nonplastic, dry to slightly moist, medium dense to dense, mafics, volcanics, subangular to subrounded
		37									
		40									
SS	2-4'	18	24/24	0700				2	SM	Fine to coarse sandy silt with trace of gravel, pale brown (10 YR 6/3), moderately sorted, nonplastic, dry to slightly moist, medium dense to dense, mafics, subangular to subrounded	
		26									
		33									
		4									
SS	4-5'	20	12/12	0710				4		Not logged; core in brass liner	
		38									
								5		Total Depth of Boring = 5.0 feet BGS	

# BOREHOLE LOG

Sheet 1 OF 1



Location of Borehole:		Job No.:	001-063304	Borehole Designation:	BKG-6
		Client:	Timet	Surface Elevation:	
		Site:	Henderson, Nevada	Depth to Water:	
		Subsite:		Logged by:	D. Venable
		Drilling Co.:	The Verde Companies	Drilling Date(s):	06/09/97
		Drilling Method:			
		Hollow-stem auger drill rig equipped with a California modified split-spoon (SS) sampler.			

Sampler Type	Sample Depth Top to Bottom	Blows 6-in. Samp. Recovered	Driven	Time	PID Info. (ppm)	Analysis	Lithology	Depth	USCS Soil Type	Soil Description
		14								- Not logged; core in brass liner
SS	0-2'	19	15/24	1115				1	ML	Medium to coarse sandy silt with trace gravel (0.25 to 1 inch), pale light yellowish brown (10 YR 6/3 to 6/4), well sorted, nonplastic, dry, medium dense
		21								
		21								
		21								
SS	2-4'	14	24/24	1125				2	SP	Medium to coarse sand with trace gravel (0.25 to 2 inch), dark yellowish brown (10 YR 6/4), well sorted, nonplastic, slightly moist to moist, medium dense, felsic
		14								
		15								
		19								
SS	4-5'	23	14/12	1135				4		- Not logged; core in brass liner
		54								
								5		Total Depth of Boring = 5.0 feet BGS

# BOREHOLE LOG

Sheet 1 OF 1



Location of Borehole:	Job No.:	001-063304	Borehole Designation:	BKG-7
	Client:	Timet	Surface Elevation:	
	Site:	Henderson, Nevada	Depth to Water:	
	Subsite:		Logged by:	D. Venable
	Drilling Co.:	The Verde Companies	Drilling Date(s):	06/09/97
	Drilling Method:	Hollow-stem auger drill rig equipped with a California modified split-spoon (SS) sampler.		

Sampler Type	Sample Depth Top to Bottom	Blows 6-in. Samp. Recovered	Driven	Time	PID Info. (ppm)	Analysis	Lithology	Depth	USCS Soil Type	Soil Description
SS	0-2'	8	18/24	1030				1	SW-SP	- Not logged; core in brass liner
		11								Medium to coarse sand with trace gravels (0.5 inch), yellow -brown (10 YR 5/4 to 5/6), moderately sorted, nonplastic, dry, loose to medium dense, felsics with some mafics
		14								
		21								
SS	2-4'	14	24/24	1037				2	GM	- Some silt at 2 to 3 feet
		35								
		37								
		37								
SS	4-5'	35	12/12	1045				4		- Not logged; core in brass liner
		45								
								5		Total Depth of Boring = 5.0 feet BGS
								6		
								7		
								8		
								9		
								10		
								11		
								12		

# BOREHOLE LOG

Sheet 1 OF 1



Location of Borehole:	Job No.:	001-063304	Borehole Designation:	BKG-8
	Client:	Timet	Surface Elevation:	
	Site:	Henderson, Nevada	Depth to Water:	
	Subsite:		Logged by:	D. Venable
	Drilling Co.:	The Verde Companies	Drilling Date(s):	06/09/97
	Drilling Method:	Hollow-stem auger drill rig equipped with a California modified split-spoon (SS) sampler.		

Sampler Type	Sample Depth Top to Bottom	Blows 6-in. Samp.	Recovered	Driven	Time	PID Info. (ppm)	Analysis	Lithology	Depth	USCS Soil Type	Soil Description
		16									- Not logged, core in brass liner
SS	0-2'	18	18/24		0930				1	SP	Fine to coarse sand with a few cobbles (1 to 2 inches), yellowish brown (10 YR 5/6), moderately sorted, nonplastic, dry, medium dense, subangular to angular, basaltic
		24									
		27									
SS	2-4'	19	24/24		0945				2		- Slightly moist, pebbles, basaltics, felsics at 2.5 feet
		30									
		33									
SS	4-5'	35	12/12		0950				3		- Not logged, core in brass liner
		50									
		70							4		- Not logged, core in brass liner
									5		Total Depth of Boring = 5.0 feet BGS
									6		
									7		
									8		
									9		
									10		
									11		
									12		

# BOREHOLE LOG

Sheet 1 OF 1



Location of Borehole:	Job No.:	001-063304	Borehole Designation:	S-17-1
	Client:	Timet	Surface Elevation:	
	Site:	Henderson, Nevada	Depth to Water:	
	Subsite:		Logged by:	D. Venable
	Drilling Co.:	The Verde Companies	Drilling Date(s):	06/12/97
	Drilling Method: Hollow-stem auger drill rig equipped with a California modified split-spoon (SS) sampler.			

Sampler Type	Sample Depth Top to Bottom	Blows 6-in. Samp.	Recovered	Driven	Time	PID Info. (ppm)	Analysis	Lithology	Depth	USCS Soil Type	Soil Description
SS	0-2'	27	24/24		0945				1	SM	Silty fine sand with some gravel (0.25 to 0.75 inch), brown (7.5 YR 5/3), poorly sorted, nonplastic, dry, medium dense to dense, mafics, volcanics, angular to subrounded
		30									
		33									
SS	2-4'	36	23/24		0955				2	SW	Fine to coarse sand with gravel (0.5 to 0.75 inch), brown to strong brown (7.5 YR 5/3), moderately to poorly sorted, slightly moist, medium to very dense, subangular to subrounded
		17									
		38									
		62									
SS	4-5'	167	12/12		1000				4		- Not logged; core in brass liner
		60									
		50							5		Total Depth of Boring = 5.0 feet BGS

# BOREHOLE LOG

Sheet 1 OF 1



Location of Borehole:	Job No.:	001-063304	Borehole Designation:	S-17-2
	Client:	Timet	Surface Elevation:	
	Site:	Henderson, Nevada	Depth to Water:	
	Subsite:		Logged by:	D. Venable
	Drilling Co.:	The Verde Companies	Drilling Date(s):	06/12/97
	Drilling Method:	Hollow-stem auger drill rig equipped with a California modified split-spoon (SS) sampler.		

Sampler Type	Sample Depth Top to Bottom	Blows 6-in. Samp. Recovered	Driven	Time	PID Info. (ppm)	Analysis	Lithology	Depth	USCS Soil Type	Soil Description	
SS	0-2'	28	22/24	0730				1	SM	Fill, silty fine sand with abundant gravel (0.2 to 0.3 inch), brown (7.5 YR 5/3), poorly sorted, nonplastic, dry, medium dense to dense, mafics, volcanics, angular to subrounded	
		45									
		34							2	SW	Fine to coarse sand with gravel (0.2 to 0.75 inch), brown to strong brown (7.5 YR 5/4 to 5/6), moderately sorted, nonplastic, slightly moist, medium to very dense, mafics, subangular to subrounded
		47									
SS	2-4'	19	24/24	0740			3				
		57									
		38									
		90									
SS	4-6'	30	24/24	0747			4		- Not logged; core in brass liner		
		36									
		45									
		53									
SS	6-8'	28	24/24	0805			5		SP	Fine sand with some gravel (0.2 to 1 inch), brown to strong brown (7.5 YR 5/4 to 5/6), well sorted, nonplastic, slightly moist to moist, dense to very dense, plutonic, mafic, subangular to subrounded	
		30									
		31									
		43									
							8		Total Depth of Boring = 8.0 feet BGS		
								9			
								10			
								11			
								12			

# BOREHOLE LOG

Sheet 1 OF 1



Location of Borehole:	Job No.:	001-063304	Borehole Designation:	S-17-3
	Client:	Timet	Surface Elevation:	
	Site:	Henderson, Nevada	Depth to Water:	
	Subsite:		Logged by:	D. Venable
	Drilling Co.:	The Verde Companies	Drilling Date(s):	06/12/97
	Drilling Method: Hollow-stem auger drill rig equipped with a California modified split-spoon (SS) sampler.			

Sampler Type	Sample Depth Top to Bottom	Blows 6-in. Samp. Recovered	Driven	Time	PID Info. (ppm)	Analysis	Lithology	Depth	USCS Soil Type	Soil Description
SS	0-2'	14	22/24	0857				1	SM	Silty fine sand with abundant gravel (0.25 to 0.75 inch), brown (7.5 YR 5/3), poorly sorted, nonplastic, dry, medium dense to dense, mafics, volcanics, angular to subrounded
		20								
		20								
SS	2-4'	30	24/24	0910				2	SW	Fine to medium sand with abundant coarse gravel (0.2 to 0.75 inch), brown to strong brown (7.5 YR 5/4 to 5/6), poorly sorted, slightly moist, medium to very dense, subangular to subrounded
		18								
		32								
		50								
SS	4-5'	104	10/12	0920				4		- Not logged; core in brass liner
		28								
		34						5		Total Depth of Boring = 5.0 feet BGS
								6		
								7		
								8		
								9		
								10		
								11		
								12		



# BOREHOLE LOG

Sheet 1 OF 3



Location of Borehole:	Job No.:	001-063304	Borehole Designation:	UST-01
	Client:	Timet	Surface Elevation:	
	Site:	Henderson, Nevada	Depth to Water:	
	Subsite:		Logged by:	D. Venable
	Drilling Co.:	The Verde Companies	Drilling Date(s):	06/19/97
	Drilling Method: Hollow-stem auger drill rig equipped with a California modified split-spoon (SS) sampler. Boring drilled at an angle of 34 degrees from the vertical.			

Sampler Type	Sample Depth Top to Bottom	Blows 6-in. Samp.	Recovered	Driven	Time	PID Info. (ppm)	Analysis	Lithology	Depth	USCS Soil Type	Soil Description
	0-10'									-	- Not logged; drilled through from 0 to 10.5 feet
									1		
									2		
									3		
									4		
									5		
									6		
									7		
									8		
									9		
									10		
SS	10-12.5'	16			1353				11	SW	Gravelly (0.2 to 1 inch) fine to coarse sand, brown (10 YR 5/3), moderately to poorly sorted, nonplastic, slightly moist to moist, medium dense to dense, mafics, caliche, subangular to angular
		16							12		
		27									
		38				0					

# BOREHOLE LOG

Sheet 2 OF 3



Location of Borehole:	Job No.:	001-063304	Borehole Designation:	UST-01
	Client:	Timet	Surface Elevation:	
	Site:	Henderson, Nevada	Depth to Water:	
	Subsite:		Logged by:	D. Venable
	Drilling Co.:	The Verde Companies	Drilling Date(s):	06/19/97
Drilling Method: Hollow-stem auger drill rig equipped with a California modified split-spoon (SS) sampler. Boring drilled at an angle of 34 degrees from the vertical.				

Sampler Type	Sample Depth Top to Bottom	Blows 6-in. Samp. Recovered	Driven	Time	PID Info. (ppm)	Analysis	Lithology	Depth	USCS Soil Type	Soil Description	
SS	12.5-14.5'	16		1403	0			13		- Not logged; drilled through from 13 to 14 feet, sample submitted to lab for analysis	
		22				14		SW	Gravelly (0.2 to 1 inch) fine to coarse sand, brown (10 YR 5/3), poorly sorted, nonplastic, slightly moist to moist, medium dense to dense, mafics, caliche, subangular to subrounded		
		45									
		47			0						
	14.5-25'							15			
								16			
								17			
								18			
								19			
								20			
								21			
								22			
								23			
								24			

# BOREHOLE LOG

Sheet 3 OF 3



Location of Borehole:	Job No.:	001-063304	Borehole Designation:	UST-01
	Client:	Timet	Surface Elevation:	
	Site:	Henderson, Nevada	Depth to Water:	
	Subsite:		Logged by:	D. Venable
	Drilling Co.:	The Verde Companies	Drilling Date(s):	06/19/97
	Drilling Method: Hollow-stem auger drill rig equipped with a California modified split-spoon (SS) sampler. Boring drilled at an angle of 34 degrees from the vertical.			

Sampler Type	Sample Depth Top to Bottom	Blows 6-in. Samp. Recovered	Driven	Time	PID Info. (ppm)	Analysis	Lithology	Depth	USCS Soil Type	Soil Description
SS	25-27'	92		1515				25		- Sloughing in boring, drilled through to 27 feet
		74						26		
		96								
		174						41.5		
SS	27-29'	22			1.8			27		- Not logged; drilled through from 27 to 28 feet, sample submitted to lab for analysis
		46						28	SW	Gravelly (0.2 to 1 inch) fine to coarse sand, brown (10 YR 5/2), moderately to poorly sorted, nonplastic, slightly moist to moist, very dense, mafics, caliche, subangular to subrounded
		87								
		107								
								29		Total depth of Boring = 29 feet BGS
								30		
								31		
								32		
								33		
								34		
								35		
								36		
								37		



# BOREHOLE LOG

Sheet 2 OF 2



Location of Borehole:	Job No.:	001-063304	Borehole Designation:	UST-02
	Client:	Timet	Surface Elevation:	
	Site:	Henderson, Nevada	Depth to Water:	
	Subsite:		Logged by:	D. Venable
	Drilling Co.:	The Verde Companies	Drilling Date(s):	06/19/97
	Drilling Method: Hollow-stem auger drill rig equipped with a California modified split-spoon (SS) sampler. Boring drilled at an angle of 34 degrees from the vertical.			

Sampler Type	Sample Depth Top to Bottom	Blows 6-in. Samp.	Recovered	Driven	Time	PID Info. (ppm)	Analysis	Lithology	Depth	USCS Soil Type	Soil Description		
SS	12.5-13.5'	36	18/24		0945	0.1			13	SP	- Fine to medium sand with some gravel (0.2 to 0.5 inches), brown (10 YR 5/3), moderately sorted, nonplastic, moist, dense to very dense, arkosics, mafics, caliche, subangular to subrounded		
		97									14		- Not logged; drilled through from 13.5 to 21 feet; sample submitted to lab for analysis
	13.5-21'								15				
									16				
									17				
									18				
									19				
									20				
									21				
SS	21-23'	27	24/24		1043				21	SW	- Fine to coarse sand with some gravel (0.2 to 0.75 inches) and a cobble (2 inches), yellowish brown (10 YR 5/4), moderately sorted, nonplastic, moist, dense to very dense, mafics, caliche, subangular to subrounded		
		38									22		
		44					0.6						
		196				0.3			23		- Not logged; drilled through from 22.5 to 23.5 feet; sample submitted to lab for analysis		
SS	23-24'	67	12/12		1100				23				
		89									24	SW	- Fine to coarse sand with some gravel (0.2 to 1 inch), yellowish brown (10 YR 5/4), moderately sorted, nonplastic, moist, dense to very dense, mafics, subrounded
Total Depth of Boring = 24 feet BGS													

# BOREHOLE LOG

Sheet 1 OF 1



Location of Borehole:	Job No.:	001-063304	Borehole Designation:	UST-FL01
	Client:	Timet	Surface Elevation:	
	Site:	Henderson, Nevada	Depth to Water:	
	Subsite:		Logged by:	D. Venable
	Drilling Co.:	The Verde Companies	Drilling Date(s):	06/18/97
	Drilling Method: Hollow-stem auger drill rig equipped with a California modified split-spoon (SS) sampler.			

Sampler Type	Sample Depth Top to Bottom	Blows 6-in. Samp. Recovered	Driven	Time	PID Info. (ppm)	Analysis	Lithology	Depth	USCS Soil Type	Soil Description
SS	0-2'	36	24/24	1525				1	SM	Silty fine sand with abundant gravel (0.1 to 0.5 inch), brown (10 YR 5/3), poorly sorted, nonplastic, dry to slightly moist, dense, mafics, caliche, arkosics, subangular to subrounded
		45						2	SW	Fine to medium sand with trace silt and abundant gravel, brown (10 YR 5/3), poorly sorted, nonplastic, dry to slightly moist, dense to very dense, mafics, caliche, arkosics, subangular to subrounded
		25								
SS	2-4'	24	24/24	1540				3	SM	Silty fine sand with abundant gravel (0.1 to 0.5 inch), and a cobble (2.5 inch), brown (10 YR 5/3), moderately to poorly sorted, moist, very dense, mafics, caliche, arkosics, subrounded
		38						4		- Not logged; sample in brass liner
		200						5		Total Depth of Boring = 5.0 feet BGS
SS	4-5'	250	12/12	1545				6		
		90						7		
		9						8		
		12						9		
								10		
								11		
								12		

# BOREHOLE LOG

Sheet 1 OF 2



Location of Borehole:		Job No.:	001-063304	Borehole Designation:	UST-03
		Client:	Timet	Surface Elevation:	
		Site:	Henderson, Nevada	Depth to Water:	
		Subsite:		Logged by:	D. Venable
		Drilling Co.:	The Verde Companies	Drilling Date(s):	06/20/97
		Drilling Method:		Hollow-stem auger drill rig equipped with a California modified split-spoon (SS) sampler.	

Sampler Type	Sample Depth Top to Bottom	Blows 6-in. Samp.	Recovered	Driven	Time	PID Info. (ppm)	Analysis	Lithology	Depth	USCS Soil Type	Soil Description
SS	0-2'	11	23/24		0635	1.3			1	SC	Fine to coarse sandy silt with some gravel (0.1 to 1 inch), sorted, dry, loose, medium dense, mafics, subangular to subrounded
		14				1.1	1		SC	Silty fine to coarse sand with abundant gravel (0.2 to 1 inch), brown (7.5 YR 5/3), poorly sorted, nonplastic, slightly moist, loose to medium dense, mafics, caliche, angular to subrounded, asphalt chips,	
		10				1.1	2				
		9				1.1	2				
SS	2-4'	6	23/24		0640	1.1			3		
		7				0.8	3				
		10				0.8	3				
		11				0.6	4				
SS	4-6'	135	22/24		0653	0.6			4		- roots to 4.5 feet
		65				0.6	5			- Felsic/mafic gravels and cobbles (0.3 to 2.5 inches), with quartz, biotite, muscovite at 4.5 to 5 feet	
		40				0.3	5				
		69				0.3	6				
SS	6-8'	47	24/24		0703				7		- Not logged; drilled through from 6.5 to 7.5 feet, sample submitted to lab for analysis
		40					7				
		44					7				
		94				0.8	8		SP	Fine to medium sand with some to abundant gravel, yellowish brown (10 YR 5/4), well sorted, nonplastic, moist, dense to very dense	
SS	8-10'	30	24/24		0715	0.8			9		- Not logged; drilled through from 9 to 10 feet, sample submitted to lab for analysis
		90				0.3	9				
		90					9				
		85					9				
SS	10-12'	36	23/24		0723	0.1			10		
		47				0.1	11				
		50					11			- Not logged; drilled through from 11 to 12 feet, sample submitted to lab for analysis	
		50					11				
SS	12-12.5'	40				0.1			12		

# BOREHOLE LOG

Sheet 2 OF 2



Location of Borehole:	Job No.:	001-063304	Borehole Designation:	UST-03
	Client:	Timet	Surface Elevation:	
	Site:	Henderson, Nevada	Depth to Water:	
	Subsite:		Logged by:	D. Venable
	Drilling Co.:	The Verde Companies	Drilling Date(s):	06/20/97
	Drilling Method:	Hollow-stem auger drill rig equipped with a California modified split-spoon (SS) sampler.		

Sampler Type	Sample Depth Top to Bottom	Blows 6-in. Samp. Recovered	Driven	Time	PID Info. (ppm)	Analysis	Lithology	Depth	USCS Soil Type	Soil Description
SS	12.5-14'	60	24/24	0735	0			13		Total Depth of Boring = 14 feet BGS
		80			0					
		90			0					
								14		
								15		
								16		
								17		
								18		
								19		
								20		
								21		
								22		
								23		
								24		



# BOREHOLE LOG

Sheet 1 OF 2



Location of Borehole:	Job No.:	001-063304	Borehole Designation:	UST-04
	Client:	Timet	Surface Elevation:	
	Site:	Henderson, Nevada	Depth to Water:	
	Subsite:		Logged by:	D. Venable
	Drilling Co.:	The Verde Companies	Drilling Date(s):	06/13/97
	Drilling Method:	Hollow-stem auger drill rig equipped with a California modified split-spoon (SS) sampler.		

Sampler Type	Sample Depth Top to Bottom	Blows 6-in. Samp. Recovered	Driven	Time	PID Info. (ppm)	Analysis	Lithology	Depth	USCS Soil Type	Soil Description
SS	0-2'	20	23/24	1230				1	FILL	Silty fine to medium sand with abundant gravel (0.2 to 1 inch), brown (7.5 YR 5/3), poorly sorted, nonplastic, dry, medium dense, angular to subrounded, asphalt chips, rootlets, caliche
		30								
		30								
		27								
SS	2-4'	7	23/24	1240				2		
		11								
		7								
		14								
SS	4-6'	66	22/24	1250				3		
		107								
		76								
		96								
SS	6-8'	19	23/24	1300				4		
		56								
		46								
		69						5		- Not logged, core in brass liner - Black unidentifiable (asphalt) chips (0.5 to 1 inch) at 7.3 to 7.6
SS	8-10'	16	20/24	1320				6		
		66								
		93								
								7		- Not logged, drilled through from 9 to 10 feet, submitted to lab for analysis
SS	10-12'	37	21/24	1333				8	SP	Fine to medium sand with some gravel (0.2 to 0.3 inch), yellowish brown (10 YR 5/4), well sorted, nonplastic, moist, dense to very dense.
		63								
		70								
		90								
								9		- Not logged, drilled through from 11 to 12 feet, submitted to lab for analysis
SS	12-14'	47						10	SP	Fine to medium sand with some gravel (0.2 to 0.3 inch), yellowish brown (10 YR 5/4), well sorted, nonplastic, moist, dense to very dense.
								11		- Not logged, drilled through from 11 to 12 feet, submitted to lab for analysis
								12	SP	Fine to medium sand with some gravel (0.2 to 0.3 inch), yellowish brown (10 YR 5/4), well sorted, nonplastic, moist, dense to very dense.

# BOREHOLE LOG

Sheet 2 OF 2



Location of Borehole:	Job No.:	001-063304	Borehole Designation:	UST-04
	Client:	Timet	Surface Elevation:	
	Site:	Henderson, Nevada	Depth to Water:	
	Subsite:		Logged by:	D. Venable
	Drilling Co.:	The Verde Companies	Drilling Date(s):	06/13/97
	Drilling Method: Hollow-stem auger drill rig equipped with a California modified split-spoon (SS) sampler.			

Sampler Type	Sample Depth Top to Bottom	Blows 6-in. Samp.	Recovered	Driven	Time	PID Info. (ppm)	Analysis	Lithology	Depth	USCS Soil Type	Soil Description
SS	12-14'	66	24/24	1400				[Lithology pattern]	13		Total Depth of Boring = 14 feet BGS
		82							14		
		170							15		
									16		
									17		
									18		
									19		
									20		
									21		
									22		
									23		
									24		



# BOREHOLE LOG

Sheet 1 OF 4



Location of Borehole:	Job No.:	001-063304	Borehole Designation:	UST-05
	Client:	Timet	Surface Elevation:	
	Site:	Henderson, Nevada	Depth to Water:	
	Subsite:		Logged by:	D. Venable
	Drilling Co.:	The Verde Companies	Drilling Date(s):	06/18/97
	Drilling Method:	Hollow-stem auger drill rig equipped with a California modified split-spoon (SS) sampler.		

Sampler Type	Sample Depth Top to Bottom	Blows 6-in. Samp. Recovered	Driven	Time	PID Info. (ppm)	Analysis	Lithology	Depth	USCS Soil Type	Soil Description
	0-4'							1		- Not logged; drilled through from 0 to 4 feet
								2		
								3		
								4	SM	Silty fine to coarse sand with gravel (0.1 to 0.3 inch), yellowish brown (10 YR 4/4), moderately sorted, nonplastic, slightly moist, loose, mafics, arkosics, subangular to subrounded
SS	4-5.5'	10 47 57	18/18	0900				5	SP	Fine to medium sand with abundant gravel (0.1 to 0.5 inch), dark yellowish brown (10 YR 4/4), well to moderately sorted, nonplastic, slightly moist, dense to very dense
								6		- Not logged; drilled through from 5.5 to 9 feet
	5.5-9'							7		
								8		
								9	SW	Gravelly fine to medium sand with abundant coarse gravel (0.1 to 1 inch) and a few cobbles (0.3 inch), moderately to poorly sorted nonplastic, slightly moist to moist, medium dense, mafics, arkosics, subangular to subrounded
SS	9-10.5'	23 23 16	18/18	0903				10		- Not logged; drilled through from 9.5 to 10.5 feet sample submitted to lab for analysis
								11		- Not logged; drilled through from 10.5 to 14 feet
	10.5-14'							12		

# BOREHOLE LOG

Sheet 2 OF 4



Location of Borehole:	Job No.:	001-063304	Borehole Designation:	UST-05
	Client:	Timet	Surface Elevation:	
	Site:	Henderson, Nevada	Depth to Water:	
	Subsite:		Logged by:	D. Venable
	Drilling Co.:	The Verde Companies	Drilling Date(s):	06/18/97
	Drilling Method:	Hollow-stem auger drill rig equipped with a California modified split-spoon (SS) sampler.		

Sampler Type	Sample Depth Top to Bottom	Blows 6-in. Samp. Recovered	Driven	Time	PID Info. (ppm)	Analysis	Lithology	Depth	USCS Soil Type	Soil Description
	10.5-14'							13		
SS	14-15.5'	36 50 53	18/18	0917				14	SM	Silty fine sand with trace gravel (0.2 to 1 inch), brown (10 YR 4/3), well sorted, nonplastic, dry to slightly moist, dense, mafics, subangular
								15	SW	Fine to coarse sand with trace silt and gravel, dark yellowish brown (10 YR 4/4), moderately sorted, nonplastic, slightly moist to moist, very dense, mafics, subangular to subrounded
								16		- Not logged; drilled through from 15.5 - 19 feet
	15.5-19'							17		
								18		
SS	19-20.5'	46 50 65	18/18	0929				19		- Silty fine to coarse sand with abundant gravel (0.1 to 2 inch) at 19.0 to 19.5 feet
								20	SW	Fine to coarse sand with trace silt and gravel (0.1 to 0.75 inch), dark yellowish brown (10 YR 4/4), moderately sorted, nonplastic, slightly moist, very dense, mafics, subangular to subrounded
								21		- Not logged; drilled through from 20.5 to 24 feet
	20.5-24'							22		
								23		
SS	24-25.5'	43 53	18/18	0943				24	SM	Silty fine to medium sand with abundant gravel (0.1 to 0.5 inch), dark yellowish brown (10 YR 4/4), well sorted, nonplastic, dry to slightly moist, very dense, mafics, arkosics, subrounded to rounded

# BOREHOLE LOG

Sheet 3 OF 4



Location of Borehole:	Job No.:	001-063304	Borehole Designation:	UST-05
	Client:	Timet	Surface Elevation:	
	Site:	Henderson, Nevada	Depth to Water:	
	Subsite:		Logged by:	D. Venable
	Drilling Co.:	The Verde Companies	Drilling Date(s):	06/18/97
	Drilling Method:	Hollow-stem auger drill rig equipped with a California modified split-spoon (SS) sampler.		

Sampler Type	Sample Depth Top to Bottom	Blows 6-in. Samp.	Recovered	Driven	Time	PID Info. (ppm)	Analysis	Lithology	Depth	USCS Soil Type	Soil Description
SS	24-25.5'	65	18/18		0943				25		
	25.5-29'		18/18		1018				26		- Not logged; drilled through from 25.5 to 29 feet
		27									
		28									
		29							SM	Silty fine to medium sand with abundant gravel (0.1 to 0.5 inch), dark yellowish brown (10 YR 4/4), well sorted, nonplastic, dry to slightly moist, very dense, mafics, arkosics, subrounded to subangular	
SS	29-30.5'	90	18/18		1018				30		- Gravel at 30.0 - 30.5 feet
	30.5-34'	75	18/18		1035				31		- Not logged; drilled through from 30.5 to 34 feet
		32									
		33									
		34							SP	Fine to medium sand with trace silt and abundant gravel (0.1 to 0.2 inch), dark yellowish brown (10 YR 4/4), well sorted, nonplastic, dry to slightly moist, very dense, mafics, arkosics, subrounded to subangular	
SS	34-35.5'	80	18/18		1035				35		- Gravelly sand at 35.0 to 35.5 feet
	35.5-39'	95	18/18						36		- Not logged; drilled through from 35.5 to 39 feet
		37									

# BOREHOLE LOG

Sheet 4 OF 4



Location of Borehole:	Job No.:	001-063304	Borehole Designation:	UST-05
	Client:	Timet	Surface Elevation:	
	Site:	Henderson, Nevada	Depth to Water:	
	Subsite:		Logged by:	D. Venable
	Drilling Co.:	The Verde Companies	Drilling Date(s):	06/18/97
	Drilling Method: Hollow-stem auger drill rig equipped with a California modified split-spoon (SS) sampler.			

Sampler Type	Sample Depth Top to Bottom	Blows 6-in. Samp. Recovered	Driven	Time	PID Info. (ppm)	Analysis	Lithology	Depth	USCS Soil Type	Soil Description
	35.5-39'							38		
								39		- Not logged; core in brass liner
SS	39-41'	100	24/24	1100				40	SP	Fine to medium sand with abundant gravel (0.1 to 0.7 inch), dark yellowish brown (10 YR 4/4), well sorted, nonplastic, very wet, very dense, mafics, subrounded
		50						41		Total Depth of Boring = 41 feet BGS
		53						42		
		120						43		
								44		
								45		
								46		
								47		
								48		
								49		

# BOREHOLE LOG

Sheet 1 OF 5



Location of Borehole:	Job No.:	001-063304	Borehole Designation:	UST-06
	Client:	Timet	Surface Elevation:	
	Site:	Henderson, Nevada	Depth to Water:	
	Subsite:		Logged by:	D. Venable
	Drilling Co.:	The Verde Companies	Drilling Date(s):	06/16/97
	Drilling Method:	Hollow-stem auger drill rig equipped with a California modified split-spoon (SS) sampler.		

Sampler Type	Sample Depth Top to Bottom	Blows 6-in. Samp. Recovered	Driven	Time	PID Info. (ppm)	Analysis	Lithology	Depth	USCS Soil Type	Soil Description
SS	0-2'	15	22/24	0840				1	SW	Fine to medium sand with trace silt and some gravel (0.2 to 2 inch), yellowish brown (10 YR 5/4), moderately sorted, nonplastic, slightly moist to moist, medium dense to dense, angular to subrounded, mafic, micaceous
		35								
		44								
		80								
SS	2-4'	50	21/24	0855				3		
		52								
		36								
		80								
SS	4-6'	12	24/24	0905				5		
		24								
		52								
		56								
SS	6-8'	31	23/24	0917				7	SW	Gravelly fine to coarse sand with gravel (0.1 to 1 inch), brown (10 YR 4/5), moderately sorted, nonplastic, slightly moist to moist, mafics, subangular to subrounded, medium dense to very dense
		95								
		57								
		75								
SS	8-10'	32	24/24	0925				9	SW	Silty fine to medium sand with abundant gravel (0.2 to 1 inch), yellowish brown (10 YR 5/4), moderately sorted, nonplastic, dry, medium dense to very dense, mafics, subangular to subrounded
		22								
		22								
		50								
SS	10-12'	50	23/24	0945				11	SM	Gravelly fine to medium sand with abundant coarse gravel (0.1 to 0.5 inch) yellowish brown (10 YR 5/4), moderately sorted, nonplastic, slightly moist, very dense, mafics, subrounded, arkosics
		52								
		63								
		75								
SS	12-14'	26	18/24	1002				12	SM	Silty fine sand with trace gravel (0.2 to 1 inch), brown (10 YR 4/3), well sorted, nonplastic, dry to slightly moist, mafics, subangular to subrounded, medium dense to very dense



# BOREHOLE LOG

Sheet 2 OF 5



Location of Borehole:	Job No.:	001-063304	Borehole Designation:	UST-06
	Client:	Timet	Surface Elevation:	
	Site:	Henderson, Nevada	Depth to Water:	
	Subsite:		Logged by:	D. Venable
	Drilling Co.:	The Verde Companies	Drilling Date(s):	06/16/97
	Drilling Method: Hollow-stem auger drill rig equipped with a California modified split-spoon (SS) sampler.			

Sampler Type	Sample Depth Top to Bottom	Blows 6-in. Samp.	Recovered	Driven	Time	PID Info. (ppm)	Analysis	Lithology	Depth	USCS Soil Type	Soil Description
SS	12-14'	37		18/24	1002				13		
		70							14		
		105									
SS	14-16'	143		23/24	1025				14	SM	Fine to coarse sand with some silt, and trace gravel (0.2 to 0.5 inch), dark yellowish brown (10 YR 4/4), moderately sorted, nonplastic, slightly moist to dry, very dense, mafics, subangular to subrounded
		73							15		
		73							16		
		87							17		
SS	16-18'	56		24/24	1050				17		
		87							18		
		70							19		
		130							20		
SS	18-20'	55		22/24	1110				19		
		74							20		
		85							21		
		187							22		
SS	20-22'	80		23/24	1130				21		- Silty fine to coarse sand with trace gravel (0.2 to 0.5 inch), at 20.50 to 21.0 feet
		140							22		
		152							23		
		260							24		
SS	22-24'	75		23/24	1150				22		- Silty fine to coarse sand with trace gravel (0.2 to 0.5 inch) at 22.0 to 22.5 feet
		80							23		
		190							24		
		300									
SS	24-26'	80		24/24	1205				24		- Silty fine to coarse sand with abundant gravel (0.2 to 0.5 inch), at 24 to 25.5 feet
		110									





# BOREHOLE LOG

Sheet 5 OF 5



Location of Borehole:	Job No.:	001-063304	Borehole Designation:	UST-06
	Client:	Timet	Surface Elevation:	
	Site:	Henderson, Nevada	Depth to Water:	
	Subsite:		Logged by:	D. Venable
	Drilling Co.:	The Verde Companies	Drilling Date(s):	06/17/97
	Drilling Method:	Hollow-stem auger drill rig equipped with a California modified split-spoon (SS) sampler.		

Sampler Type	Sample Depth Top to Bottom	Blows 6-in. Samp. Recovered	Driven	Time	PID Info. (ppm)	Analysis	Lithology	Depth	USCS Soil Type	Soil Description
SS	50-52'	67	23/24	0905				50		
		58						51		
		27								
SS	52-54'	50	18/24	0935				52	ML-CL	Clayey silt to silty clay, brown (7.5 YR 4/4), slightly plastic, moist, very dense, hard
		33						53		
		75						54		
		200						55		
SS	54-56'	153	18/24	0957				56		
		32						57		
		72						58		
		119						59		
SS	56-57'	123	12/12	1020				60		
		70						61		
		150						62		
									Total Depth of Boring = 57.0 feet BGS	



# BOREHOLE LOG

Sheet 1 OF 3



Location of Borehole:	Job No.:	001-063304	Borehole Designation:	MW-01
	Client:	Timet	Surface Elevation:	
	Site:	Henderson, Nevada	Depth to Water:	
	Subsite:		Logged by:	D. Venable
	Drilling Co.:	The Verde Companies	Drilling Date(s):	08/05/97
	Drilling Method:	Hollow-stem auger drill rig equipped with a California modified split-spoon (SS) sampler.		

Sampler Type	Sample Depth Top to Bottom	Blows 6-in. Samp. Recovered	Driven	Time	PID Info. (ppm)	Analysis	Lithology	Depth	USCS Soil Type	Soil Description	
SS/BL	0-37'							31		- Not logged; drilled through from 0 to 37 feet (See Converse Consultants log well construction diagram for location B-1 [now called MW-1])	
								32			
									33		
									34		
									35		
									36		
									37		
SS/BL	37-38.5'	36	1	0740				37	SP	Fine to medium sand with a trace of silt and abundant gravel (0.1 to 0.7 inch), dark yellowish brown (10 YR 4/4), well sorted, nonplastic, moist, dense, mafics, arkosics, subrounded to subangular	
		40									
		32									
SS/BL	38.5-41	12	18/18	0822				39	SW	Medium to coarse sand with abundant gravel (0.1 to 0.5 inches), dark brown, poorly sorted, non plastic, wet to saturated, dense, mafics, subrounded to subangular	
		26									
		30									
		32									
SS/BL	41-43	17	24/24	0839				41		- Silty medium sand at 41.8 to 42.5 feet	
		23									
		30									

# BOREHOLE LOG

Sheet 2 OF 3



Location of Borehole:	Job No.:	001-063304	Borehole Designation:	MW-01
	Client:	Timet	Surface Elevation:	
	Site:	Henderson, Nevada	Depth to Water:	
	Subsite:		Logged by:	D. Venable
	Drilling Co.:	The Verde Companies	Drilling Date(s):	08/05/97
	Drilling Method:	Hollow-stem auger drill rig equipped with a California modified split-spoon (SS) sampler.		

Sampler Type	Sample Depth Top to Bottom	Blows 6-in. Samp. Recovered	Driven	Time	PID Info. (ppm)	Analysis	Lithology	Depth	USCS Soil Type	Soil Description
SS/BL	43-45'	36	24/24	0852				43	SP	- Fine to medium silty sand with a trace of gravel at 42.5 to 43.0 feet Medium to coarse sand, well sorted, wet to saturated, dense to very dense, mafics
		11						SM-ML	Silty sand to sandy silt with a trace of clay and a trace of gravel, well sorted, non plastic, moist, very dense, subrounded	
		24								
		75								
		125								
SS/BL	50-52'	40	18/24	0925				50	ML-CL	- Not logged; drilled through from 45 to 50 feet (Water present)
		75						CL	Sandy clay with a trace of gravel (0.1 inch), dark yellowish brown, plastic, wet to saturated, soft (blow counts may be a function of gravel), subrounded	
		60								
		160								
		35								
SS/BL	52-54'	66	24/24	0944				52	ML	Sandy silt with a trace of clay and gravel (0.1 inch), dark yellowish brown, plastic, saturated, soft to very soft, subrounded to subangular
		137								
		170								
		43								
SS/BL	54-56'	50		1000				54		

# BOREHOLE LOG

Sheet 3 OF 3



Location of Borehole:	Job No.:	001-063304	Borehole Designation:	MW-01
	Client:	Timet	Surface Elevation:	
	Site:	Henderson, Nevada	Depth to Water:	
	Subsite:		Logged by:	D. Venable
	Drilling Co.:	The Verde Companies	Drilling Date(s):	08/05/97
	Drilling Method: Hollow-stem auger drill rig equipped with a California modified split-spoon (SS) sampler.			

Sampler Type	Sample Depth Top to Bottom	Blows 6-in. Samp	Recovered	Driven	Time	PID Info. (ppm)	Analysis	Lithology	Depth	USCS Soil Type	Soil Description
SS/BL	54-56'	136							55	CL	Silty clay with a trace of sand, dark yellowish brown, slightly plastic, moist, hard
									56		
SS/BL	56-58'	250		10/12	1030				57		
									58		- Not logged; drilled through from 58 to 61 feet
									59		
	58-61'								60		
									61		- Total depth of boring = 61 feet
									62		
									63		
									64		
									65		
									66		
									67		





# BOREHOLE LOG

Sheet 2 OF 3



Location of Borehole:	Job No.:	001-063304	Borehole Designation:	MW-02
	Client:	Timet	Surface Elevation:	
	Site:	Henderson, Nevada	Depth to Water:	
	Subsite:		Logged by:	D. Venable
	Drilling Co.:	The Verde Companies	Drilling Date(s):	08/04/97
	Drilling Method: Hollow-stem auger drill rig equipped with a California modified split-spoon (SS) sampler.			

Sampler Type	Sample Depth Top to Bottom	Blows 6-in. Samp. Recovered	Driven	Time	PID Info. (ppm)	Analysis	Lithology	Depth	USCS Soil Type	Soil Description
	42-49.5'							43		
								44		
								45		
								46		
								47		
								48		
								49		
SS/BL	49.5-51.5'	18 52 75	1/18	0952				50		- Not logged; drilled through from 49.5 to 51.5 feet, driller lost sample
		17						51	SC	- Clayey fine sand, brown (7.5 YR 4/4), well sorted at 51.5 feet (May be slough)
SS/BL	51.5-52.5'	80 125		1005				52	ML/CL	- Clayey silt/silty clay, brown (7.5 YR 4/4), slightly plastic, moist, dense to hard - Top of Muddy Creek at 52 feet
								53		- Not logged; drilled through from 52.5 to 57.8 feet - Muddy Creek continues
	52.5-57.8'							54		

# BOREHOLE LOG

Sheet 3 OF 3



Location of Borehole:	Job No.:	001-063304	Borehole Designation:	MW-02
	Client:	Timet	Surface Elevation:	
	Site:	Henderson, Nevada	Depth to Water:	
	Subsite:		Logged by:	D. Venable
	Drilling Co.:	The Verde Companies	Drilling Date(s):	08/04/97
	Drilling Method: Hollow-stem auger drill rig equipped with a California modified split-spoon (SS) sampler.			

Sampler Type	Sample Depth Top to Bottom	Blows 6-in. Samp. Recovered	Driven	Time	PID Info. (ppm)	Analysis	Lithology	Depth	USCS Soil Type	Soil Description
	52.8-57.8'							55		
								56		
								57		
								58		- Total depth of boring = 57.8 feet
								59		
								60		
								61		
								62		
								63		
								64		
								65		
								66		
								67		



# BOREHOLE LOG

Sheet 1 OF 1



Location of Borehole:	Job No.:	001-063304	Borehole Designation:	C-2
	Client:	Timet	Surface Elevation:	
	Site:	Henderson, Nevada	Depth to Water:	
	Subsite:		Logged by:	D. Venable
	Drilling Co.:	The Verde Companies	Drilling Date(s):	06/09/97
	Drilling Method: Hollow-stem auger drill rig equipped with a California modified split-spoon (SS) sampler.			

Sampler Type	Sample Depth Top to Bottom	Blows 6-in. Samp. Recovered	Driven	Time	PID Info. (ppm)	Analysis	Lithology	Depth	USCS Soil Type	Soil Description
SS	0-2'	19	23/24	0220				1	SM	- Not logged; core in brass liner
		30								Silty fine to coarse sand with gravel (0.25 to 0.5), dark yellowish brown (10 YR 4/4), well sorted, nonplastic, slightly moist, dense to very dense, caliche fragments
		42								
		52								
SS	2-4'	37	24/24	0225				2		
		44								
		46								
		64								
SS	4-5'	34	12/12	0232				4		- Not logged; core in brass liner
		40								
								5		Total Depth of Boring = 5.0 feet BGS
								6		
								7		
								8		
								9		
								10		
								11		
								12		

# BOREHOLE LOG

Sheet 1 OF 1



Location of Borehole:	Job No.:	001-063304	Borehole Designation:	C-3
	Client:	Timet	Surface Elevation:	
	Site:	Henderson, Nevada	Depth to Water:	
	Subsite:		Logged by:	D. Venable
	Drilling Co.:	The Verde Companies	Drilling Date(s):	06/11/97
	Drilling Method:	Hollow-stem auger drill rig equipped with a California modified split-spoon (SS) sampler.		

Sampler Type	Sample Depth Top to Bottom	Blows 6-in. Samp. Recovered	Driven	Time	PID Info. (ppm)	Analysis	Lithology	Depth	USCS Soil Type	Soil Description
		20								- Not logged; core in brass liner
SS	0-2'	27	23/24	0300				1	SP	Fine to medium sand with trace gravel (0.1 to 0.5 inch) and cobble (1 inch), dark yellowish brown (10 YR 4/4), well sorted, nonplastic, slightly moist, dense to very dense, mafics, subangular
		30						2		
		32								
SS	2-4'	21	23/24	0310				3		
		51						4		
		61								
		43								
SS	4-5'	45	11/12	0320				5		- Not logged; core in brass liner
		55						6		
										Total Depth of Boring = 5.0 feet BGS

# BOREHOLE LOG

Sheet 1 OF 1



Location of Borehole:	Job No.:	001-063304	Borehole Designation:	J9-1
	Client:	Timet	Surface Elevation:	
	Site:	Henderson, Nevada	Depth to Water:	
	Subsite:		Logged by:	D. Venable
	Drilling Co.:	The Verde Companies	Drilling Date(s):	06/11/97
	Drilling Method:	Hollow-stem auger drill rig equipped with a California modified split-spoon (SS) sampler.		

Sampler Type	Sample Depth Top to Bottom	Blows 6-in. Samp. Recovered	Driven	Time	PID Info. (ppm)	Analysis	Lithology	Depth	USCS Soil Type	Soil Description
SS	0-2'	35	24/24	0750				1	SP	- Not logged; core in brass liner
		60								Fine to medium sand with trace gravels and cobbles (0.25 to 2 inches), brown (7.5 YR 5/4 to 5/6), well sorted, nonplastic, moist to slightly moist, dense to very dense, mafic, plutonic, subangular
		72								- Fine to medium sand with abundant silt, trace gravels and cobbles at 2 to 2.5 feet
		72								- Medium to coarse sand with some gravel (0.1 to 0.5 inch) and a few cobbles at 2.5 to 4.0 feet
SS	2-4'	48	24/24	0700				2		- Not logged; core in brass liner
		70								
		25								
		32								
SS	4-5'	19	24/24	0705				3		- Not logged; core in brass liner
		35								
								4		
								5		Total Depth of Boring = 5.0 feet BGS
								6		
								7		
								8		
								9		
								10		
								11		
								12		

# BOREHOLE LOG

Sheet 1 OF 1



Location of Borehole:	Job No.:	001-063304	Borehole Designation:	J9-2
	Client:	Timet	Surface Elevation:	
	Site:	Henderson, Nevada	Depth to Water:	
	Subsite:		Logged by:	D. Venable
	Drilling Co.:	The Verde Companies	Drilling Date(s):	06/11/97
	Drilling Method:			
	Hollow-stem auger drill rig equipped with a California modified split-spoon (SS) sampler.			

Sampler Type	Sample Depth Top to Bottom	Blows 6-in. Samp.	Recovered	Driven	Time	PID Info. (ppm)	Analysis	Lithology	Depth	USCS Soil Type	Soil Description						
SS	0-2'	39		23/24	1035				1	SP	- Not logged; core in brass liner						
		43									Fine sand with abundant gravel (0.1 to 0.2 inch) and a trace of silt, brown, (7.5 YR 5/3), well sorted, nonplastic, slightly moist, dense to very dense, mafics, angular to subangular, caliche fragments						
		75															
		102															
SS	2-4'	21		24/24	1045				2	SM	Silty fine to coarse sand with trace gravel (0.2 to 0.5 inch), brown (7.5 YR 5/3), well sorted, nonplastic, dry to slightly moist, dense, mafics, angular to subangular, caliche						
		3								SP	Medium sand with abundant gravel (0.25 to 2 inches), brown to strong brown (7.5 YR 4/4 to 4/6), well sorted, nonplastic, slightly moist, medium dense to dense, mafics, angular to subangular, caliche fragments						
									47							4	
		43															
SS	4-5'	30		12/12	1050				5		Total Depth of Boring = 5.0 feet BGS						
		20															
									6								
									7								
									8								
									9								
									10								
									11								
									12								



# BOREHOLE LOG

Sheet 1 OF 1



Location of Borehole:	Job No.:	001-063304	Borehole Designation:	IDN10-01
	Client:	Timet	Surface Elevation:	
	Site:	Henderson, Nevada	Depth to Water:	
	Subsite:		Logged by:	D. Venable
	Drilling Co.:	The Verde Companies	Drilling Date(s):	06/11/97
	Drilling Method: Hollow-stem auger drill rig equipped with a California modified split-spoon (SS) sampler.			

Sampler Type	Sample Depth Top to Bottom	Blows 6-in. Samp.	Recovered	Driven	Time	PID Info. (ppm)	Analysis	Lithology	Depth	USCS Soil Type	Soil Description
		6									Not logged; core in brass liner
SS	0-2'	9	22/24		0720				1	SP	Fine to medium sand with a trace of gravel (0.1 to 0.5 inch), brown (10 YR 4/3), well sorted, nonplastic, slightly moist, loose, subangular to subrounded
									SM	Silty fine sand, dark grayish brown (10 YR 4/2), well sorted, nonplastic, moist, loose, rootlets	
		2							ML	Silt with a trace of fine sand, and a cobble (4 inches), brown (10 YR 5/3) nonplastic, dry to slightly moist, dense to very dense, caliche	
SS	2-4'	32	23/24		0725				3	SP	Fine to medium sand with abundant caliche gravels, strong brown (7.5 YR 4/6), well sorted, nonplastic, moist, dense to very dense
		4								Not logged; core in brass liner	
SS	4-5'	16	12/12		0740				5		Total Depth of Boring = 5 feet BGS
		88									
									6		
									7		
									8		
									9		
									10		
									11		
									12		

# BOREHOLE LOG

Sheet 1 OF 1



Location of Borehole:	Job No.:	001-063304	Borehole Designation:	IDN10-02
	Client:	Timet	Surface Elevation:	
	Site:	Henderson, Nevada	Depth to Water:	
	Subsite:		Logged by:	D. Venable
	Drilling Co.:	The Verde Companies	Drilling Date(s):	06/10/97
	Drilling Method: Hollow-stem auger drill rig equipped with a California modified split-spoon (SS) sampler.			

Sampler Type	Sample Depth Top to Bottom	Blows 6-in. Samp. Recovered	Driven	Time	PID Info. (ppm)	Analysis	Lithology	Depth	USCS Soil Type	Soil Description
SS	0-2'	18	22/24	1310				1		Not logged; core in brass liner
		27						SP	Medium sand with trace gravel (0.25 to 0.5 inch), dark yellowish brown (10 YR 4/4), well sorted, nonplastic, slightly moist, medium dense, subangular to subrounded	
		20						SM	Silty fine sand with trace gravel (0.25 to 0.75 inch), brown (10 YR 4/3), well sorted, nonplastic, slightly moist, medium dense, mafics, volcanics and caliche - Yellowish brown (10 YR 5/4) at 2 to 2.5 feet	
SS	2-4'	18	23/24	1315				2		
		24								
		27						SP	Fine to medium sand with some gravel, (0.25 to 1 inch), dark yellowish brown (10 YR 4/6), well to moderately sorted, nonplastic, slightly moist to moist, medium dense to dense, mafics, micaceous, caliche, subangular to angular	
SS	4-5'	30		1320				3		
		27								
		42						4		Not logged; core in brass liner
								5		Total Depth of Boring = 5 feet BGS
								6		
								7		
								8		
								9		
								10		
								11		
								12		

# BOREHOLE LOG

Sheet 1 OF 1



Location of Borehole:	Job No.:	001-063304	Borehole Designation:	IDN12-01
	Client:	Timet	Surface Elevation:	
	Site:	Henderson, Nevada	Depth to Water:	
	Subsite:		Logged by:	D. Venable
	Drilling Co.:	The Verde Companies	Drilling Date(s):	06/10/97
	Drilling Method:	Hollow-stem auger drill rig equipped with a California modified split-spoon (SS) sampler.		

Sampler Type	Sample Depth Top to Bottom	Blows 6-in. Samp.	Recovered	Driven	Time	PID Info. (ppm)	Analysis	Lithology	Depth	USCS Soil Type	Soil Description	
		52									Not logged; core in brass liner	
SS	0-2'	70		23/24	1405				1	SW	Fine to medium sand with abundant gravel and granules (to 1 inch), brown (7.5 YR 5/3), moderately sorted, nonplastic, slightly moist, very dense, arkosics, mafics, olivine and caliche	
		82							2			
		59							3			
		11							4			
SS	2-4'	20		23/24	1410							
		21										
		31										
SS	4-5'	11		10/12	1415						Not logged; core in brass liner	
		48							5		Total Depth of Boring = 5 feet BGS	
									6			
									7			
									8			
									9			
									10			
									11			
									12			

# BOREHOLE LOG

Sheet 1 OF 1



Location of Borehole:	Job No.:	001-063304	Borehole Designation:	IDN16-01
	Client:	Timet	Surface Elevation:	
	Site:	Henderson, Nevada	Depth to Water:	
	Subsite:		Logged by:	D. Venable
	Drilling Co.:	The Verde Companies	Drilling Date(s):	06/13/97
	Drilling Method:	Hollow-stem auger drill rig equipped with a California modified split-spoon (SS) sampler.		

Sampler Type	Sample Depth Top to Bottom	Blows 6-in. Samp. Recovered	Driven	Time	PID Info. (ppm)	Analysis	Lithology	Depth	USCS Soil Type	Soil Description
SS	0-2'	15	24/24	0750				1	FILL	Silty fine sand with abundant gravel, brown (7.5 YR 5/3), poorly sorted, nonplastic, dry, medium dense, angular
		20						2	SP	Medium to coarse sand with some gravel and trace silt, brown (7.5 YR 5/4), well sorted, nonplastic, dry medium dense to dense, angular, rootlets
		25							3	SW
40	4	5	- Rootlets at 5.5 to 6.0 feet							
SS				2-4'	11	24/24	0700			
					15				7	- Mafics at 7.5 to 8.0 feet
	21	8	Total Depth of Boring = 8.0 feet BGS							
50	9									
SS					4-6'	60	24/24	0705		
		80	11							
	94	12								
174										
SS					6-8'		24/24	0820		
				12						

# BOREHOLE LOG

Sheet 1 OF 1



Location of Borehole:	Job No.:	001-063304	Borehole Designation:	IDN16-02
	Client:	Timet	Surface Elevation:	
	Site:	Henderson, Nevada	Depth to Water:	
	Subsite:		Logged by:	D. Venable
	Drilling Co.:	The Verde Companies	Drilling Date(s):	06/10/97
	Drilling Method: Hollow-stem auger drill rig equipped with a California modified split-spoon (SS) sampler.			

Sampler Type	Sample Depth Top to Bottom	Blows 6-in. Samp. Recovered	Driven	Time	PID Info. (ppm)	Analysis	Lithology	Depth	USCS Soil Type	Soil Description
		15								Not logged; core in brass liner
SS	0-2'	32	22/24	1450				1	SP	Gravelly medium to coarse sand, yellowish brown (10 YR 5/4), well sorted, nonplastic, slightly moist, medium dense to dense, caliche, mafics, subangular to subrounded
		47								
		52								
SS	2-4'	27	24/24	1500				2	SM	Silty fine to medium sand with some granules to gravels, light yellowish brown (10 YR 6/4), moderately sorted, nonplastic, slightly moist, medium dense to dense, caliche, mafics, subangular to subrounded
		54								
		42								
SS	4-5'	48	9/12	1505				3	SP	Medium sand with abundant gravel (0.25 to 1 inch), brown (10 YR 7/4), well sorted, nonplastic, moist, medium dense to dense, mafics, caliche, subangular to subrounded
		27								
		32						4		Not logged; core in brass liner
								5		Total Depth of Boring = 5 feet BGS
								6		
								7		
								8		
								9		
								10		
								11		
								12		

# BOREHOLE LOG

Sheet 1 OF 1



Location of Borehole:	Job No.:	001-063304	Borehole Designation:	MD-01
	Client:	Timet	Surface Elevation:	
	Site:	Henderson, Nevada	Depth to Water:	
	Subsite:		Logged by:	D. Venable
	Drilling Co.:	The Verde Companies	Drilling Date(s):	06/13/97
	Drilling Method:	Hollow-stem auger drill rig equipped with a California modified split-spoon (SS) sampler.		

Sampler Type	Sample Depth Top to Bottom	Blows 6-in. Samp. Recovered	Driven	Time	PID Info. (ppm)	Analysis	Lithology	Depth	USCS Soil Type	Soil Description
SS	0-2'	19	22/24	0925				1		- Not logged; core in brass liner
		60								
		60								
SS	2-4'	58	23/24	1030				2	SW	Fine to coarse sand with gravel (0.2 to 0.5 inch), brown (7.5 YR 4/4), well sorted, nonplastic, moist to very moist, dense to very dense, subangular
		46								
		33								
		58								
SS	4-6'	75	9/12	1035				4		- Not logged; core in brass liner
		60								
		73								
		95								
		104	10/12	1105				6		Total Depth of Boring = 6.0 feet BGS
								7		
								8		
								9		
								10		
								11		
								12		

# BOREHOLE LOG

Sheet 1 OF 1



Location of Borehole:	Job No.:	001-063304	Borehole Designation:	T3-1
	Client:	Timet	Surface Elevation:	
	Site:	Henderson, Nevada	Depth to Water:	
	Subsite:		Logged by:	D. Venable
	Drilling Co.:	The Verde Companies	Drilling Date(s):	06/20/97
	Drilling Method: Hollow-stem auger drill rig equipped with a California modified split-spoon (SS) sampler.			

Sampler Type	Sample Depth Top to Bottom	Blows 6-in. Samp.	Recovered	Driven	Time	PID Info. (ppm)	Analysis	Lithology	Depth	USCS Soil Type	Soil Description
SS	0-2'	51	24/24		1140	0.3			1	SM	Fine to coarse sand with some silt and abundant gravel (0.1 to 1 inch), brown (10 YR 4/3), moderately sorted, nonplastic, moist, medium dense to dense, mafics, subangular to subrounded
		55				0	2				
		38				0	3		SW	Medium sand with abundant gravel (0.1 to 1 inch) cobbles (2 to 2.5 inches), brown (10 YR 4/3), moderately sorted, nonplastic, medium to very dense, slightly moist, angular - mafics horizon at 3.5 to 4.5 feet	
		44				0					
SS	2-4'	14	24/24		1115	0			4		
		18				0	5		SM	Fine to coarse sand with some silt and abundant gravel (0.1 to 1 inch), brown (10 YR 4/3), moderately sorted, nonplastic, moist, very dense, caliche, mafics, subangular to angular	
		96				0					
		50				0					
SS	4-6'	60	21/24		1127	0			6	Total Depth of Boring = 6.0 feet BGS	
		80				0	7				
		71				0	8				
		50				0	9				
								10			
								11			
								12			







# BOREHOLE LOG

Sheet 1 OF 1



Location of Borehole:		Job No.:	001-063304	Borehole Designation:	OWS-01
		Client:	Timet	Surface Elevation:	
		Site:	Henderson, Nevada	Depth to Water:	
		Subsite:		Logged by:	D. Venable
		Drilling Co.:	The Verde Companies	Drilling Date(s):	06/11/97
		Drilling Method:		Hollow-stem auger drill rig equipped with a California modified split-spoon (SS) sampler.	

Sampler Type	Sample Depth Top to Bottom	Blows 6-in. Samp.	Recovered	Driven	Time	PID Info. (ppm)	Analysis	Lithology	Depth	USCS Soil Type	Soil Description
SS	0-2'	33	24/24	0815					1	SP	- Not logged; core in brass liner
		37									Fine to coarse sand with a trace of gravel (0.25 to 0.5 inch), dark yellowish brown (10 YR 4/6), moderately sorted, nonplastic, slightly moist, dense, caliche, subrounded
		33									
		36									
SS	2-4'	12	23/24	0820				3	SM-SW	Fine sand with some gravel and silt, dark yellowish brown (10 YR 4/6), moderately sorted, nonplastic, slightly moist, medium to very dense, mafics, caliche	
		18									
		35									
		80									
SS	4-5'	12	10/12	0825				4		- Not logged; core in brass liner	
		24									
								5		Total Depth of Boring = 5.0 feet BGS	
									6		
									7		
									8		
									9		
									10		
									11		
									12		

# BOREHOLE LOG

Sheet 1 OF 1



Location of Borehole:	Job No.:	001-063304	Borehole Designation:	PM-1
	Client:	Timet	Surface Elevation:	
	Site:	Henderson, Nevada	Depth to Water:	
	Subsite:		Logged by:	D. Venable
	Drilling Co.:	The Verde Companies	Drilling Date(s):	06/12/97
	Drilling Method:	Hollow-stem auger drill rig equipped with a California modified split-spoon (SS) sampler.		

Sampler Type	Sample Depth Top to Bottom	Blows 6-in. Samp.	Recovered	Driven	Time	PID Info. (ppm)	Analysis	Lithology	Depth	USCS Soil Type	Soil Description
SS	0-2'	29	23/24	1305					1		- Not logged, core in brass liner
		70									
		129									
SS	2-4'	105	22/24	1315					2	SP	Fine to coarse sand with some gravel and trace of silt, brown (7.5 YR 4/3 to 4/4), moderately sorted, nonplastic, dry, dense to very dense, mafics, subangular to angular
		29								- Not logged; drilled through from 2 to 3 feet, submitted to lab for analysis	
		30							3	SP	Fine to medium sand with a trace of gravel, brown (7.5 YR 4/3), well sorted, nonplastic, moist, medium dense to dense, subangular
		40									
SS	4-5'	42	23/24	1325					4		
		20									
		23							5		
		30									
58	6	-Not logged; core in brass liner									
											Total Depth of Boring = 6.0 feet BGS

# BOREHOLE LOG

Sheet 1 OF 1



Location of Borehole:	Job No.:	001-063304	Borehole Designation:	PM-2
	Client:	Timet	Surface Elevation:	
	Site:	Henderson, Nevada	Depth to Water:	
	Subsite:		Logged by:	D. Venable
	Drilling Co.:	The Verde Companies	Drilling Date(s):	06/12/97
	Drilling Method: Hollow-stem auger drill rig equipped with a California modified split-spoon (SS) sampler.			

Sampler Type	Sample Depth Top to Bottom	Blows 6-in. Samp. Recovered	Driven	Time	PID Info. (ppm)	Analysis	Lithology	Depth	USCS Soil Type	Soil Description
SS	0-2'	27	23/24	1145				1	SW	Fine to coarse sand, some gravel, and trace cobbles, brown to strong brown (7.5 YR 4/4 to 4/6), moderately sorted, nonplastic, moist, medium to very dense, mafics, subangular to angular
		30								
		71								
		129								
SS	2-4'	33	23/24	1155				2		
		45								
		47								
		49								
SS	4-5'	20	12/12	1202				4	SW	Fine to coarse sand, some gravel, and trace cobbles, brown to strong brown (7.5 YR 4.4 to 4.6), moderately sorted, nonplastic, moist, medium dense to dense, mafics, subangular to angular
		43								
								5		Total Depth of Boring = 5.0 feet BGS
								6		
								7		
								8		
								9		
								10		
								11		
								12		

# BOREHOLE LOG

Sheet 1 OF 1



Location of Borehole:	Job No.:	001-063304	Borehole Designation:	PM-3
	Client:	Timet	Surface Elevation:	
	Site:	Henderson, Nevada	Depth to Water:	
	Subsite:		Logged by:	D. Venable
	Drilling Co.:	The Verde Companies	Drilling Date(s):	06/12/97
	Drilling Method: Hollow-stem auger drill rig equipped with a California modified split-spoon (SS) sampler.			

Sampler Type	Sample Depth Top to Bottom	Blows 6-in. Samp.	Recovered	Driven	Time	PID Info. (ppm)	Analysis	Lithology	Depth	USCS Soil Type	Soil Description
		45									- Not logged; core in brass liner
SS	0-2'	47	23/24		1045				1	SP	Fine to coarse sand with some gravel (0.2 to 0.5 inch), brown (7.5 YR 5/3), well sorted, nonplastic, moist, dense to very dense, volcanics, caliche, subangular to subrounded
		32							2		
		30							3		- Not logged; core in brass liner
		21							4	SW	Fine to coarse sand with gravel (0.25 to 0.5 inch), some cobbles (1 to 2 inches), strong brown (7.5 YR 4/6), moderately sorted, nonplastic, moist, dense, mafics, plutonics, micaceous, angular to subangular
SS	2-4'	54	24/24		1050				5		Total Depth of Boring = 5.0 feet BGS
		56							6		
		99							7		
SS	4-5'	46	12/12		1055				8		
		41							9		
									10		
									11		
									12		



# BOREHOLE LOG

Sheet 1 OF 5



Location of Borehole:	Job No.:	001-063304	Borehole Designation:	J2U2
	Client:	Timet	Surface Elevation:	
	Site:	Henderson, Nevada	Depth to Water:	
	Subsite:		Logged by:	D. Venable
	Drilling Co.:	The Verde Companies	Drilling Date(s):	08/06/97
	Drilling Method: Hollow-stem auger drill rig equipped with a California modified split-spoon (SS) sampler.			

Sampler Type	Sample Depth Top to Bottom	Blows 6-in. Samp.	Recovered	Driven	Time	PID Info. (ppm)	Analysis	Lithology	Depth	USCS Soil Type	Soil Description
	0-24'								21		- Not logged; drilled through from 0 to 24 feet (See Hydrosearch log for J2U2 dated 12/18/96 and 12/19/96)
									22		
									23		
									24		
SS/BL	24-26'	40 89 118 123		24/24	0904				24 25	SM	Gravelly fine to medium sand with some silt, moderately saturated, nonplastic, moist, dense to very dense, arkosics, mafics, subangular to subrounded
	26-38'								26		- Not logged; drilled through from 26 to 38 feet
									27		
									28		
									29		
									30		
									31		
									32		

# BOREHOLE LOG

Sheet 2 OF 5



Location of Borehole:	Job No.:	001-063304	Borehole Designation:	J2U2
	Client:	Timet	Surface Elevation:	
	Site:	Henderson, Nevada	Depth to Water:	
	Subsite:		Logged by:	D. Venable
	Drilling Co.:	The Verde Companies	Drilling Date(s):	08/06/97
	Drilling Method: Hollow-stem auger drill rig equipped with a California modified split-spoon (SS) sampler.			

Sampler Type	Sample Depth Top to Bottom	Blows 6-in. Samp. Recovered	Driven	Time	PID Info. (ppm)	Analysis	Lithology	Depth	USCS Soil Type	Soil Description
	26-38'							33		
								34		
								35		
								36		
								37		
SS/BL	38-38.5'	210	6/6	0935				38	SM	Silty fine to medium sand with a trace of gravel, well sorted, non plastic, moist, very dense, mafics, subangular
SS/BL	38.5-40.5'	17 23 27 40	21/24	0945				39	SM	Silty fine to coarse sand with a trace of gravel (1 inch), well sorted, nonplastic, wet, medium dense to dense, arkosics, subrounded
								40		- Saturated at 40.5 to 41 feet
SS	40.5-42.5'		21/24	0958				41		
								42		
		44						43	SP-SM	Gravelly silty fine sand, brown, well sorted, non plastic, dense to very dense, saturated, arkosics, subrounded
SS	42.5-44.5'	66 89 105	22/24	1012				44	SM-ML	Silty sand/sandy silt, yellowish brown, fine, well sorted, nonplastic, wet, medium dense to dense
SS	44.5-46.5'	88							SM-ML	Silty fine sand with some gravel (0.1 to 2 inches) and a trace of clay, yellowish brown to brown, moderately sorted, nonplastic, medium dense to dense, wet



# BOREHOLE LOG

Sheet 3 OF 5



Location of Borehole:	Job No.:	001-063304	Borehole Designation:	J2U2
	Client:	Timet	Surface Elevation:	
	Site:	Henderson, Nevada	Depth to Water:	
	Subsite:		Logged by:	D. Venable
	Drilling Co.:	The Verde Companies	Drilling Date(s):	08/06/97
	Drilling Method: Hollow-stem auger drill rig equipped with a California modified split-spoon (SS) sampler.			

Sampler Type	Sample Depth Top to Bottom	Blows 6 in. Samp.	Recovered	Driven	Time	PID Info. (ppm)	Analysis	Lithology	Depth	USCS Soil Type	Soil Description
SS	44.5-46.5'	120		20/24	1027				45		- Saturated at 45.0 to 46.0 feet
		170							46		- Some coarse, saturated at 46.5 to 47.0 feet
SS	46.5-48.5'		24/24		1050				47		
									48		- Clayey sand with gravel and some silt at 48.0 to 48.5 feet
	48.5-51.5'								49		- Not logged; drilled through from 48.5 to 51.5 feet
									50		
										51	
SS	51.5-53'	70		6/18	1110				52	CL	Sandy clay with some coarse sand, brown, moderately to well sorted, plastic, wet to saturated, soft
									53		- Silty clay, hard at 53 feet
	53-55.5'								54		- Not logged; drilled through from 53 to 55.5 feet
									55		
										56	SP
SS	55.5-57'	12		18/18	1145				56		
		17							57	CL	Silty clay, yellowish brown, nonplastic, moist, hard
SS	57-58.5'	20									
		15									- Not logged; drilled through from 57 to 58.5 feet

# BOREHOLE LOG

Sheet 4 OF 5



Location of Borehole:	Job No.:	001-063304	Borehole Designation:	J2U2
	Client:	Timet	Surface Elevation:	
	Site:	Henderson, Nevada	Depth to Water:	
	Subsite:		Logged by:	D. Venable
	Drilling Co.:	The Verde Companies	Drilling Date(s):	08/06/97
	Drilling Method: Hollow-stem auger drill rig equipped with a California modified split-spoon (SS) sampler.			

Sample Type	Sample Depth Top to Bottom	Blows 6-in. Samp. Recovered	Driven	Time	PID Info. (ppm)	Analysis	Lithology	Depth	USCS Soil Type	Soil Description
SS	57-58.5'	17 30	12/18	1153				58		- Slough
SS	58.5-60'		12/18	1208				59	GC	Gravelly clay to clayey gravel, dark yellowish brown, plastic, saturated, subrounded to rounded
								60	CL	Silty clay, dark yellowish brown, nonplastic, moist, hard
	60-63'							61		- Not logged; drilled through from 60 to 63.5 feet
								62		
								63		
	63-64.5'	43 76 90		1223				64	CH	Clay, dark yellowish brown, non plastic, moist, hard
								64	GC	Sandy clay with some abundant coarse gravel, yellowish brown, plastic, wet to saturated, soft
								64	CH	Clay, yellowish brown, non plastic, moist, hard
SS	64.5-65'							65		- Not logged; drilled through from 65 to 69 feet
								66		
SS	65-69'							67		
								68		
								69		
SS	69-70.5'							69	CL	Silty clay, dark yellowish brown to brown, moist, stiff, hard





# BOREHOLE LOG

Sheet 2 OF 3



Location of Borehole:	Job No.:	001-063304	Borehole Designation:	J2D2-R2
	Client:	Timet	Surface Elevation:	
	Site:	Henderson, Nevada	Depth to Water:	
	Subsite:		Logged by:	D. Venable
	Drilling Co.:	The Verde Companies	Drilling Date(s):	08/18/97
	Drilling Method: Hollow-stem auger drill rig equipped with a California modified split-spoon (SS) sampler.			

Sampler Type	Sample Depth Top to Bottom	Blows 6-in. Samp. Recovered	Driven	Time	PID Info. (ppm)	Analysis	Lithology	Depth	USCS Soil Type	Soil Description
SS	30.5-39'							33		
								34		
								35		
								36		
								37		
SS	39-40'	70	15/18	0925				39	SP	Gravelly medium to coarse sand (0.1 to 0.5 inches), dark brown (7.5 YR 3/4), moderately sorted, non plastic, wet to saturated, very dense, volcanic, basaltic, subangular to subrounded - Silty medium sand, brown (7.5 YR 5/3), moderately sorted, non plastic, wet to saturated, very dense, caliche - Sandy clay, brown (7.5 YR 5/3), well sorted, slightly plastic, wet to saturated, very dense at 40 feet - Not logged; drilled through from 40 to 44 feet
		70						40		
SS	40-44'							41		
								42		
								43		
SS	44-45.5'	15 20	16/18	0943				44	SP	- Medium to coarse sand with a trace of fine sand and gravel (.1 to 2 inches), medium dense to dense, basaltic, volcanics, subangular to subrounded

# BOREHOLE LOG

Sheet 3 OF 3



Location of Borehole:	Job No.:	001-063304	Borehole Designation:	J2D2-R2
	Client:	Timet	Surface Elevation:	
	Site:	Henderson, Nevada	Depth to Water:	
	Subsite:		Logged by:	D. Venable
	Drilling Co.:	The Verde Companies	Drilling Date(s):	08/18/97
	Drilling Method: Hollow-stem auger drill rig equipped with a California modified split-spoon (SS) sampler.			

Sampler Type	Sample Depth Top to Bottom	Blows 6-in. Samp. Recovered	Driven	Time	PID Info. (ppm)	Analysis	Lithology	Depth	USCS Soil Type	Soil Description
SS	44-45.5'	37						45		
								46		- Not logged; drilled through from 45.5 to 49 feet
								47		
SS	45.5-49'							48		
								49	CL	- Silty clay with a trace of fine sand, yellowish brown (10 YR 5/4), slightly plastic, hard, trace of fine mica
SS	49-50.5'	40		1009				50		
		80								- Total depth of boring = 50.5 feet









# BOREHOLE LOG

Sheet 1 OF 4



Location of Borehole:		Job No.:	001-063304	Borehole Designation:	J2D4
		Client:	Timet	Surface Elevation:	
		Site:	Henderson, Nevada	Depth to Water:	
		Subsite:		Logged by:	D. Brogmann
		Drilling Co.:	The Verde Companies	Drilling Date(s):	12/17/97
		Drilling Method:			

Sample Type	Sample Depth Top to Bottom	Blows 6-in. Samp.	Recovered	Driven	Time	PID Info. (ppm)	Analysis	Lithology	Depth	USCS Soil Type	Soil Description
									1		
									2		
									3		
									4		
									5		
SS	5-6.5'	13 25 25		8/18	0820				5		Silty fine to coarse sand, some gravel (0.25 to 0.33 inch), brown, dry, cemented
									6		
									7		
									8		
									9		
									10		
									11		Silty fine to coarse sand, gravel (0.25 to 1.5 inch), brown, dry, cemented, trace caliche
SS	11-13.0'	14 20 21		12/24	0830				11		
									12		

# BOREHOLE LOG

Sheet 2 OF 4



Location of Borehole:	Job No.:	001-063304	Borehole Designation:	J2D4
	Client:	Timet	Surface Elevation:	
	Site:	Henderson, Nevada	Depth to Water:	
	Subsite:		Logged by:	D. Brogmann
	Drilling Co.:	The Verde Companies	Drilling Date(s):	12/17/97
	Drilling Method:	Hollow-stem auger drill rig equipped with a California modified split-spoon (SS) sampler.		

Sampler Type	Sample Depth Top to Bottom	Blows 6-in. Samp.	Recovered Driven	Time	PID Info. (ppm)	Analysis	Lithology	Depth	USCS Soil Type	Soil Description
SS	11-13.0'	27	12/24	0830				13		
								14		
								15		Silty gravelly sand, brown, dry, cemented, trace caliche
SS	15-16.5'	19 27 32	18/18	0850				16		
								17		
								18		
								19		Gravelly (0.25 to 0.75 inch) sand with silt, brown, dry, dense, caliche, angular to subrounded,
SS	19-20.5'	17 28 28	18/18	0915				20		
								21		
								22		
								23		
								24		

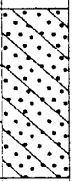



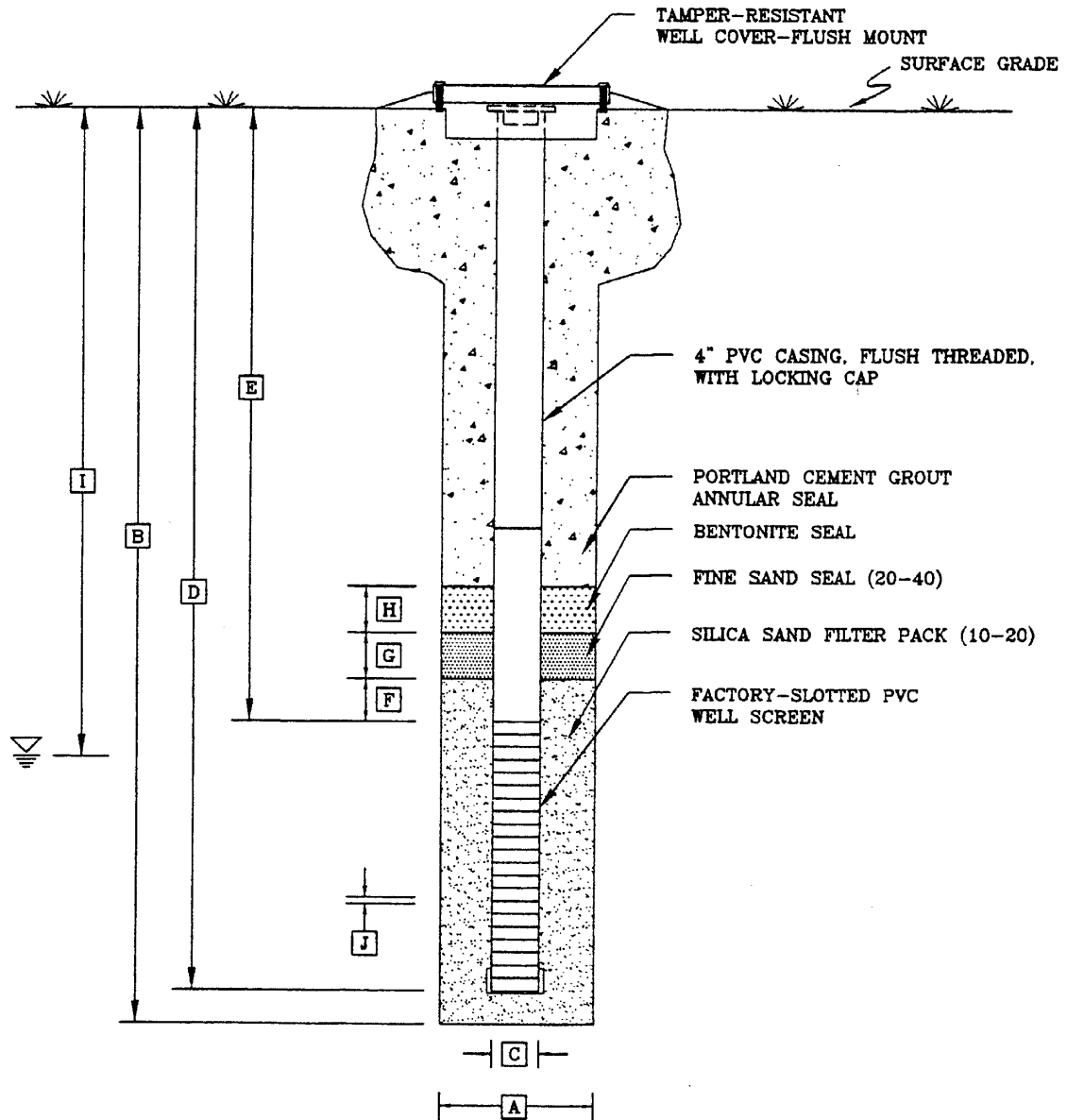
# BOREHOLE LOG

Sheet 4 OF 4



Location of Borehole:	Job No.:	001-063304	Borehole Designation:	J2D4
	Client:	Timet	Surface Elevation:	
	Site:	Henderson, Nevada	Depth to Water:	
	Subsite:		Logged by:	D. Brogmann
	Drilling Co.:	The Verde Companies	Drilling Date(s):	12/17/97
	Drilling Method: Hollow-stem auger drill rig equipped with a California modified split-spoon (SS) sampler.			

Sampler Type	Sample Depth Top to Bottom	Blows 6-in. Samp. Recovered	Driven	Time	PID Info. (ppm)	Analysis	Lithology	Depth	USCS Soil Type	Soil Description	
								38			
SS	39-41.5'		18/18	1043				39		Clayey fine to medium sand, brown, wet, increasing clay with depth	
								40			
								41			
								42			
								43			
								44			
SS	45-46.5'	15	18/18	1100				45		Clay to fine to very fine sandy clay, brown, wet	
		18							46		
		21							47		
								48			
								49			
Total Depth of Boring = 46.5 feet BGS											



**DIMENSIONS**

- (A) BOREHOLE DIAMETER 11 INCHES
- (B) BOREHOLE DEPTH 61 FEET
- (C) CASING DIAMETER 4 INCHES
- (D) DEPTH TO BOTTOM OF SCREEN 60 FEET
- (E) DEPTH TO TOP OF SCREEN 30 FEET
- (F) TOP OF SCREEN TO TOP OF FILTER PACK 3.0 FEET
- (G) TOP OF 10-20 FILTER PACK TO TOP OF 20-40 FILTER PACK 2 FEET
- (H) THICKNESS OF BENTONITE SEAL 3 FEET
- (I) DEPTH TO WATER TABLE 38.5 FEET (8/21/97)
- (J) SLOT APERTURE .020 INCHES

*Not to Scale*

TITANIUM METALS CORPORATION  
HENDERSON, NEVADA

DATE: 08/27/97

**GROUNDWATER  
MONITOR  
WELL MW-1**

DESIGNED:

CHECKED:

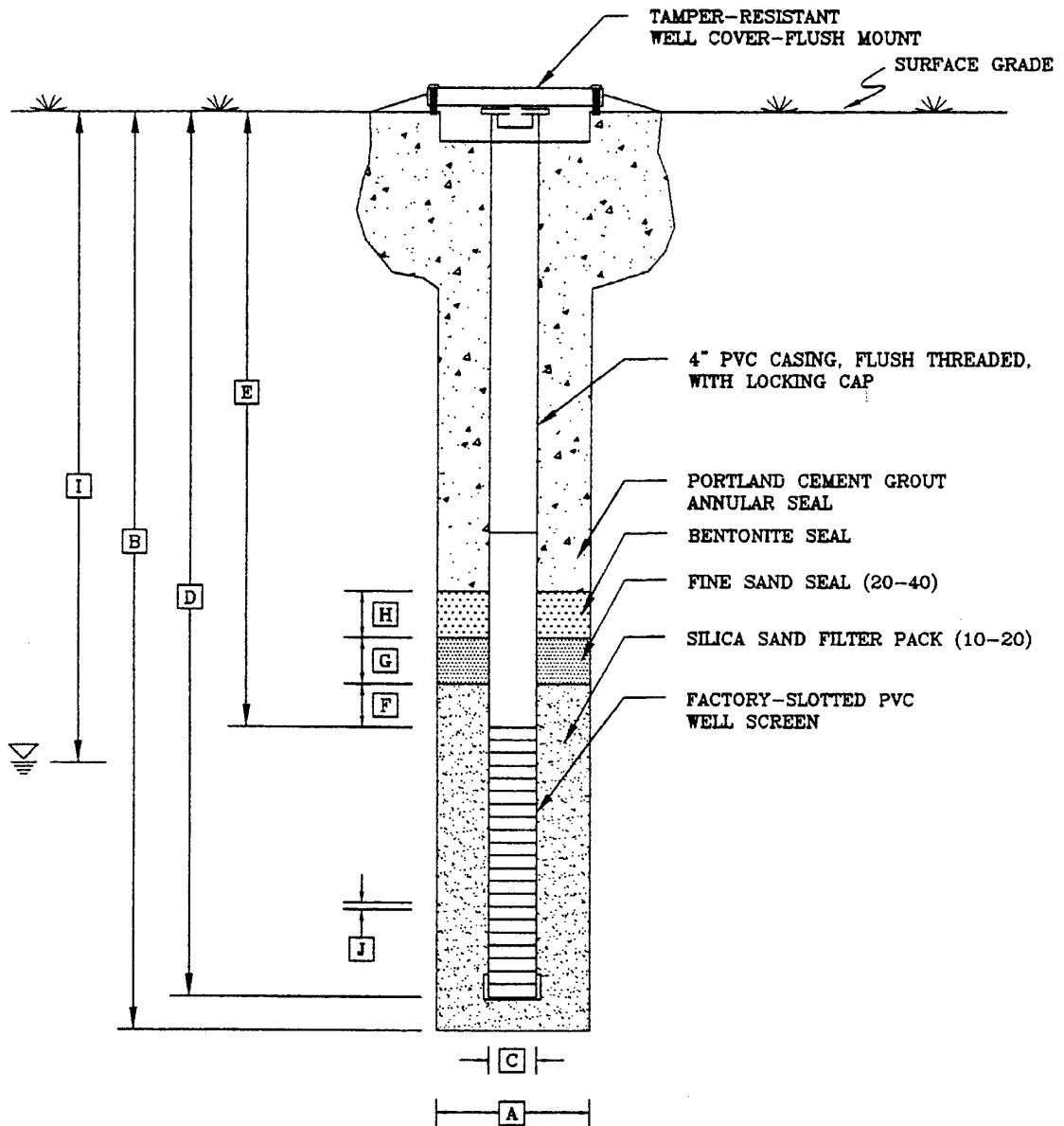
APPROVED:

DRAWN: RTF

PROJ.: 001-062109



**TETRA TECH EMI**  
A Tetra Tech Company



**DIMENSIONS**

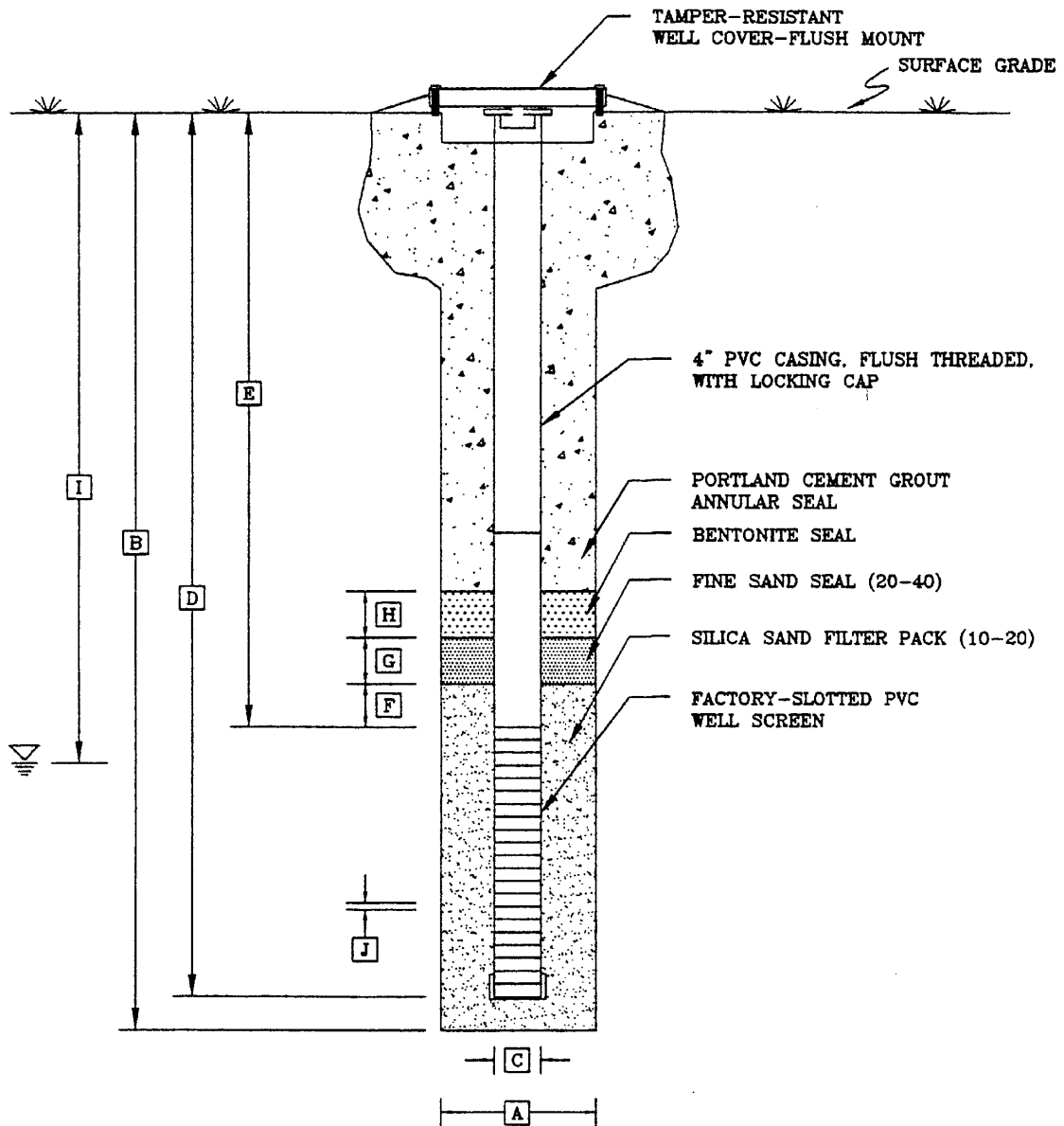
- (A) BOREHOLE DIAMETER 11 INCHES
- (B) BOREHOLE DEPTH 57.8 FEET
- (C) CASING DIAMETER 4 INCHES
- (D) DEPTH TO BOTTOM OF SCREEN 57 FEET
- (E) DEPTH TO TOP OF SCREEN 32 FEET
- (F) TOP OF SCREEN TO TOP OF FILTER PACK 3.0 FEET
- (G) TOP OF 10-20 FILTER PACK TO TOP OF 20-40 FILTER PACK 2 FEET
- (H) THICKNESS OF BENTONITE SEAL 4 FEET
- (I) DEPTH TO WATER TABLE 40 FEET (8/21/97)
- (J) SLOT APERTURE .020 INCHES

*Not to Scale*

TITANIUM METALS CORPORATION HENDERSON, NEVADA		DATE: 08/27/97
<b>GROUNDWATER MONITOR WELL MW-2</b>		DESIGNED:
		CHECKED:
		APPROVED:
		DRAWN: RTF
		PROJ.: 001-082109



**TETRA TECH EMI**  
A Tetra Tech Company



**DIMENSIONS**

- (A) BOREHOLE DIAMETER 11 INCHES
- (B) BOREHOLE DEPTH 69 FEET
- (C) CASING DIAMETER 4 INCHES
- (D) DEPTH TO BOTTOM OF SCREEN 68.5 FEET
- (E) DEPTH TO TOP OF SCREEN 33.5 FEET
- (F) TOP OF SCREEN TO TOP OF FILTER PACK 3.0 FEET
- (G) TOP OF 10-20 FILTER PACK TO TOP OF 20-40 FILTER PACK 2.7 FEET
- (H) THICKNESS OF BENTONITE SEAL 8.3 FEET
- (I) DEPTH TO WATER TABLE 38.5 FEET (8/21/97)
- (J) SLOT APERTURE .020 INCHES

*Not to Scale*

TITANIUM METALS CORPORATION  
HENDERSON, NEVADA

DATE: 08/27/97

**GROUNDWATER  
MONITOR  
WELL J2U2**

DESIGNED:

CHECKED:

APPROVED:

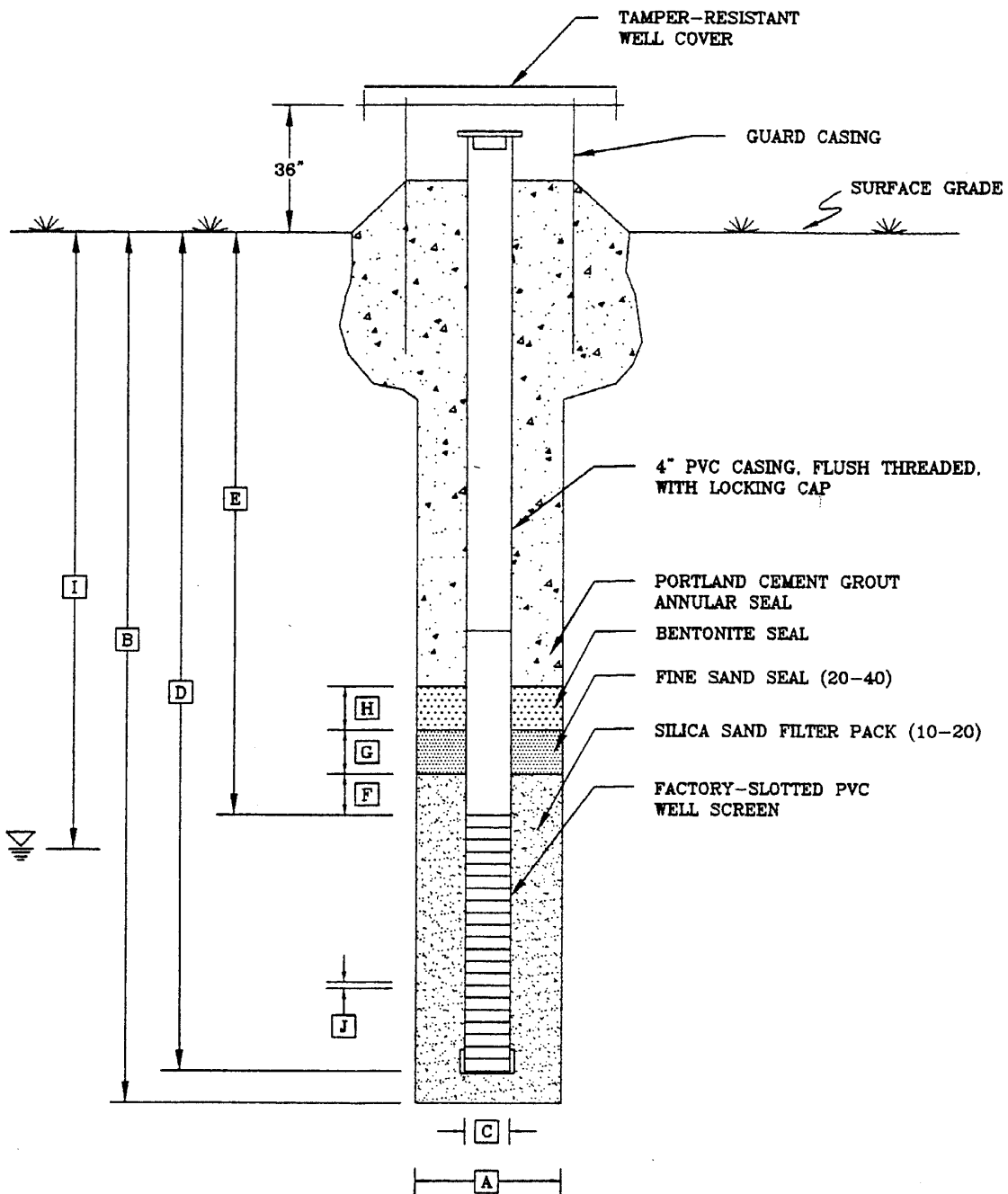
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PROJ.: 001-062109



**TETRA TECH EMI**  
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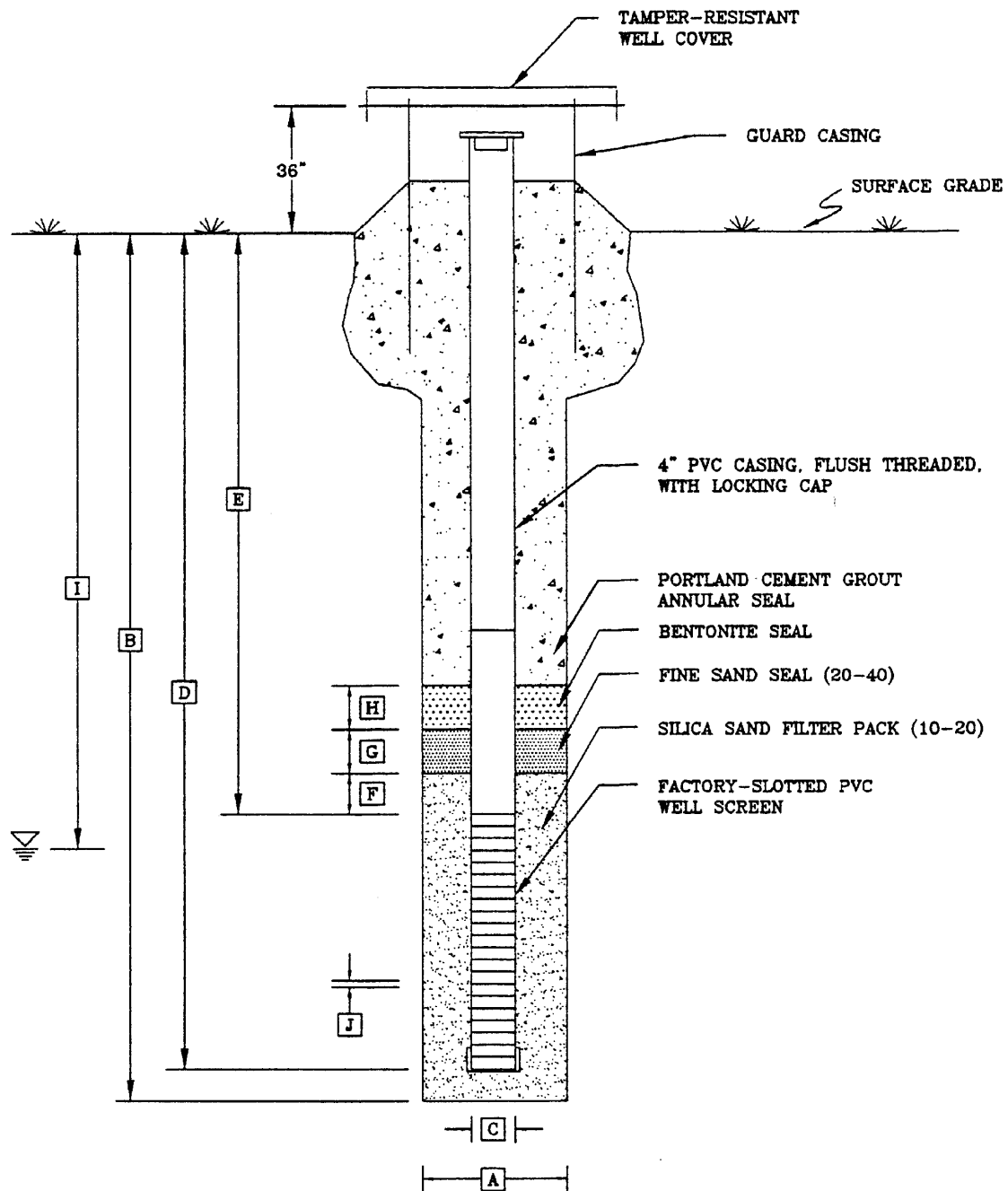


**DIMENSIONS**

- (A) BOREHOLE DIAMETER 11 INCHES
- (B) BOREHOLE DEPTH 45.5 FEET
- (C) CASING DIAMETER 4 INCHES
- (D) DEPTH TO BOTTOM OF SCREEN 44 FEET
- (E) DEPTH TO TOP OF SCREEN 19 FEET
- (F) TOP OF SCREEN TO TOP OF FILTER PACK 3 FEET
- (G) TOP OF 10-20 FILTER PACK TO TOP OF 20-40 FILTER PACK 2 FEET
- (H) THICKNESS OF BENTONITE SEAL 3.25 FEET
- (I) DEPTH TO WATER TABLE 28.5 FEET (8/21/97)
- (J) SLOT APERTURE .020 INCHES

*Not to Scale*

TITANIUM METALS CORPORATION HENDERSON, NEVADA	DATE: 08/27/97
<b>GROUNDWATER MONITOR WELL J2D1-R2</b>	DESIGNED:
	CHECKED:
	APPROVED:
	DRAWN: RTF
PROJ.: 001-062109	
 <b>TETRA TECH EMI</b> A Tetra Tech Company	



#### DIMENSIONS

- (A) BOREHOLE DIAMETER 11 INCHES
- (B) BOREHOLE DEPTH 50.5 FEET
- (C) CASING DIAMETER 4 INCHES
- (D) DEPTH TO BOTTOM OF SCREEN 48.5 FEET
- (E) DEPTH TO TOP OF SCREEN 23.5 FEET
- (F) TOP OF SCREEN TO TOP OF FILTER PACK 2.9 FEET
- (G) TOP OF 10-20 FILTER PACK TO TOP OF 20-40 FILTER PACK 2.7 FEET
- (H) THICKNESS OF BENTONITE SEAL 3.9 FEET
- (I) DEPTH TO WATER TABLE 26 FEET (8/21/97)
- (J) SLOT APERTURE .020 INCHES

*Not to Scale*

TITANIUM METALS CORPORATION  
HENDERSON, NEVADA

DATE: 08/27/97

DESIGNED:

CHECKED:

APPROVED:

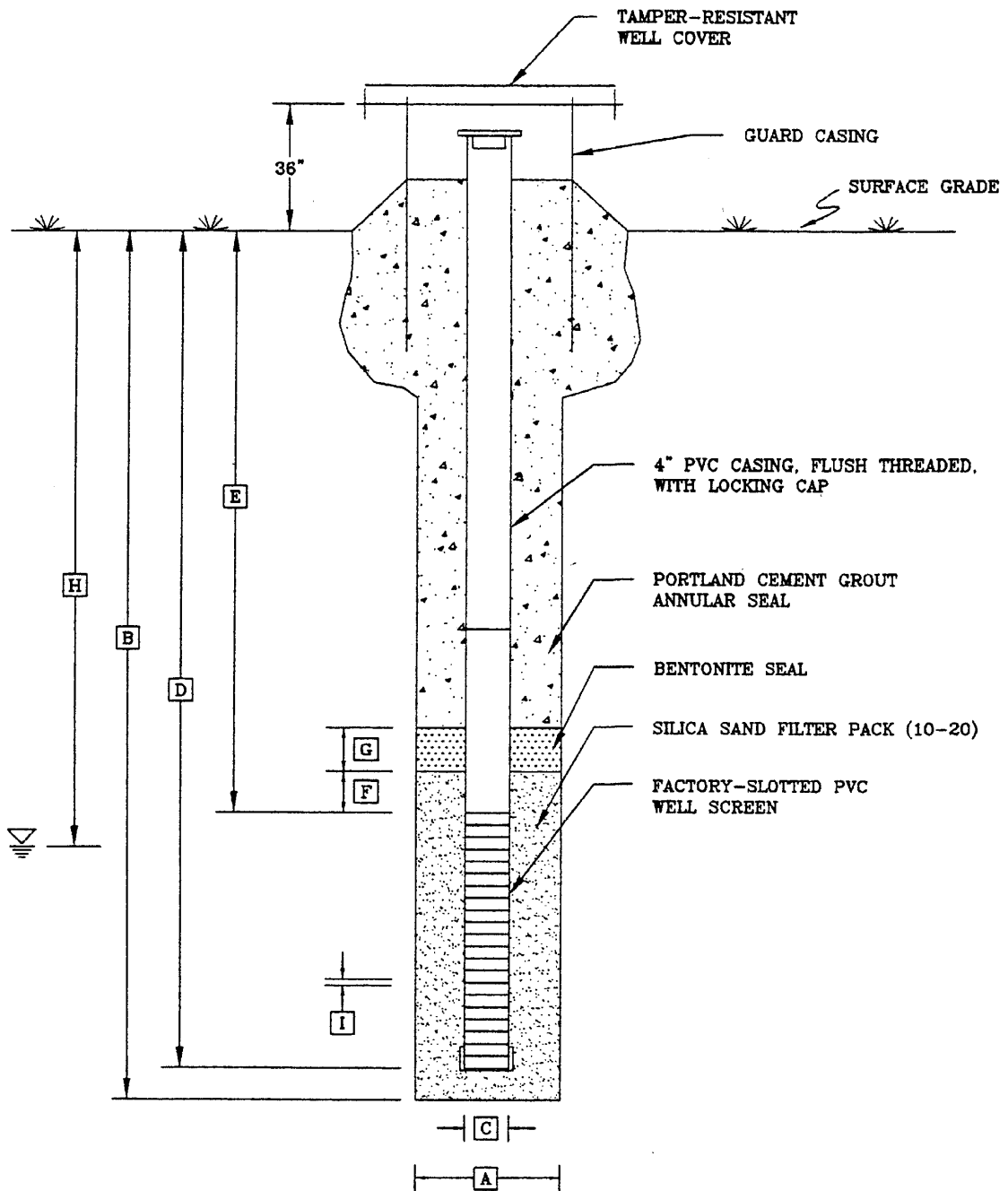
DRAWN: RTF

PROJ.: 001-062109

**GROUNDWATER  
MONITOR  
WELL J2D2-R2**



**TETRA TECH EMI**  
A Tetra Tech Company



**DIMENSIONS**

- (A) BOREHOLE DIAMETER 11 INCHES
- (B) BOREHOLE DEPTH 45 FEET
- (C) CASING DIAMETER 4 INCHES
- (D) DEPTH TO BOTTOM OF SCREEN 45 FEET
- (E) DEPTH TO TOP OF SCREEN 15 FEET
- (F) TOP OF SCREEN TO TOP OF FILTER PACK 2.0 FEET
- (G) THICKNESS OF BENTONITE SEAL 6 FEET
- (H) DEPTH TO WATER TABLE 33.25 FEET (8/21/97)
- (I) SLOT APERTURE .020 INCHES

*Not to Scale*

TITANIUM METALS CORPORATION  
HENDERSON, NEVADA

**GROUNDWATER  
MONITOR  
WELL J2D4**

DATE: 08/27/97

DESIGNED:

CHECKED:

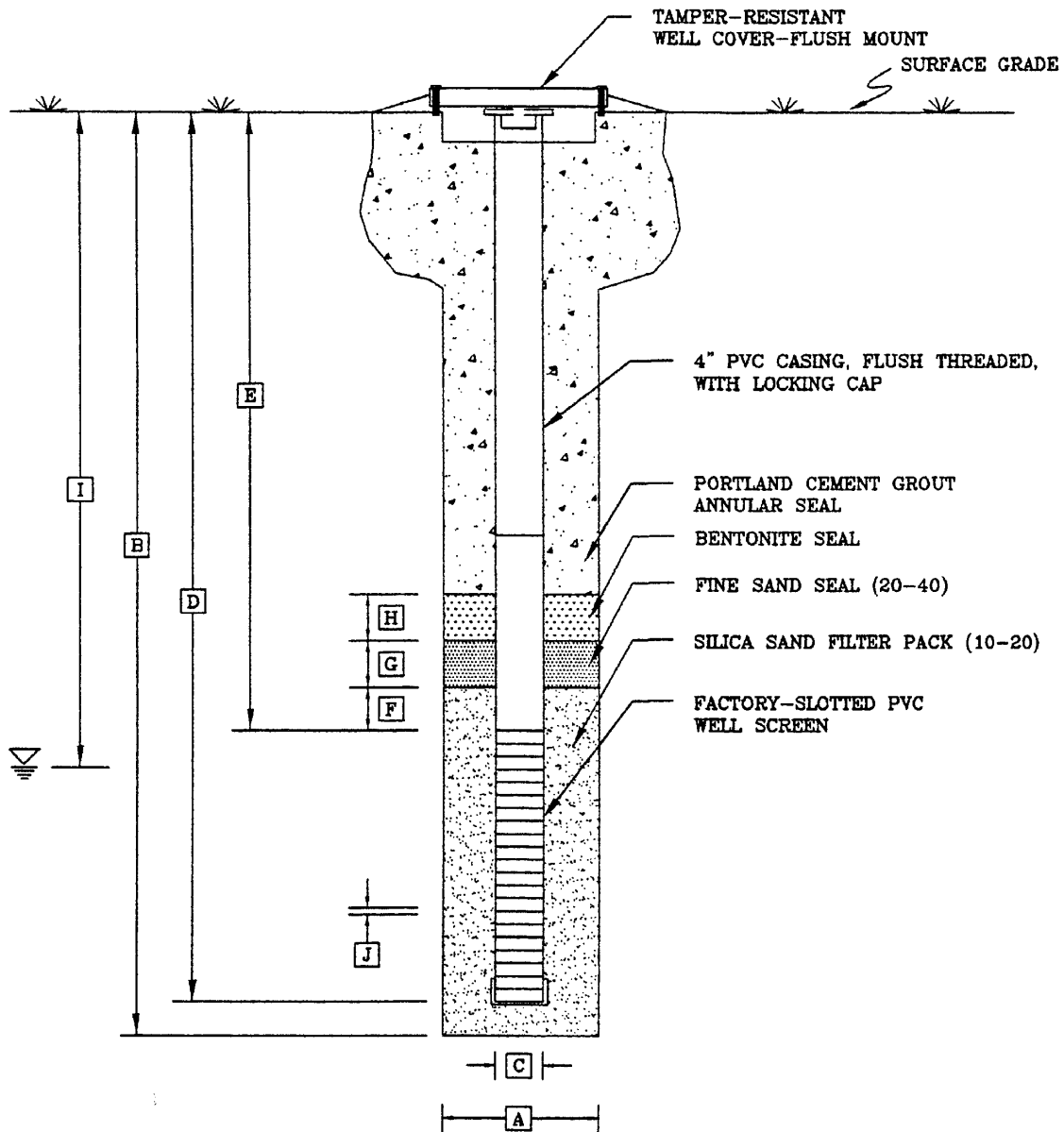
APPROVED:

DRAWN: RTF

PROJ.: 001-082109



**TETRA TECH EMI**  
A Tetra Tech Company



**DIMENSIONS**

- (A) BOREHOLE DIAMETER 11 INCHES
- (B) BOREHOLE DEPTH 72 FEET
- (C) CASING DIAMETER 4 INCHES
- (D) DEPTH TO BOTTOM OF SCREEN 60 FEET
- (E) DEPTH TO TOP OF SCREEN 40 FEET
- (F) TOP OF SCREEN TO TOP OF FILTER PACK 6.5 FEET
- (G) TOP OF FILTER PACK TO TOP OF SAND 2 FEET
- (H) THICKNESS OF BENTONITE SEAL 3 FEET
- (I) DEPTH TO WATER TABLE 47.47 FEET (5/3/99)
- (J) SLOT APERTURE .020 INCHES

*Not to Scale*

ENVIRONMENTAL CONDITION INVESTIGATION ADDENDUM REPORT TITANIUM METALS CORPORATION HENDERSON, NEVADA	DATE: 09/01/99
GROUNDWATER MONITOR WELL BRW-R1	DESIGNED: —
	CHECKED: WPG
	APPROVED: KTA
	DRAWN: RTF
PROJ.: P0655-04	

**TETRA TECH EMI**  
A Tetra Tech Company

Figure 2.2b

# BOREHOLE LOG

Sheet 1 OF 3



Location of Borehole:		Job No.:	P065502	Borehole Designation:	BRW-R1
		Client:	Timet	Surface Elevation:	
		Site:	Henderson, Nevada	Depth to Water:	
		Subsite:		Logged by:	W.P. Gagnon
		Drilling Co.:	The Verde Companies	Drilling Date(s):	03/23/99 and 03/24/99
		Drilling Method:	Hollow-stem auger. Split Spoon Sampler (SS)		

Sampler Type	Sample Depth Top to Bottom	Blows Recovered	Blows Driven	Time	PID Info. (ppm)	Analysis	Lithology	Depth	USCS Soil Type	Soil Description
								1		
								2		
SS	3-5'	50	2/24		0			3	SP	Sand, fine to coarse, light brown, minor rounded pebbles (0.25 inch), slightly moist, nonplastic, poorly sorted, loose
								4		
								5		
								6		
								7		
SS	8-10'	50	8/24		0			8	SP	Sand, as previously described above, pebbles (0.25 - 0.50 inch), subangular, minor caliche layers 9 - 10 feet, slightly moist
								9		
								10		
								11		
								12		
SS	13-15'	60	8/24		0			13	SM	Sand, as previously described, 0.50 inch clumps of brown clay dispersed in sand at 15 - 15.5 feet, brown color
								14		
								15		
								16		
								17		
SS	18-20'	72	10/24		0			18	SP	Sand, as previously described, no clay clumps, bottom 4 inches of is hard, caliche cement
								19		
								20		
								21		
								22		
								23		
								24		

# BOREHOLE LOG

Sheet 2 OF 3



Location of Borehole:	Job No.:	P065502	Borehole Designation:	BRW-R1
	Client:	Timet	Surface Elevation:	
	Site:	Henderson, Nevada	Depth to Water:	
	Subsite:		Logged by:	W.P. Gagnon
	Drilling Co.:	The Verde Companies	Drilling Date(s):	03/23/99 and 03/24/99
	Drilling Method:	Hollow-stem auger. Split Spoon Sampler (SS)		

Sampler Type	Sample Depth Top to Bottom	Blows Recovered	Blows Driven	Time	PID Info. (ppm)	Analysis	Lithology	Depth	USCS Soil Type	Soil Description
SS	25-27'	60	8/24		0			25	SM	Sand to fine sand, brown with mixture of small pebbles (< 0.25 inch), nonplastic, loose, slightly plastic, gravelly sand layer 25.5 - 25.7 feet, hard, gravel (< 0.25 inch) are subangular to rounded, poorly sorted
								26		
								27		
SS	30-32'	100	10/24		0			30	SM	Sand, as previously described
								31		
								32		
SS	35-37'	100	9/24		0			35	SM	Sand, as previously described
								36		
								37		
SS	40-42'	100	14/24		0			40	SM	Sand, as previously described
								41		
								42		
SS	45-47'	100	16/24		0			45	SM	Sand, as previously described, gradational contact with:
								46	SM	
								47		
								48		
								49		

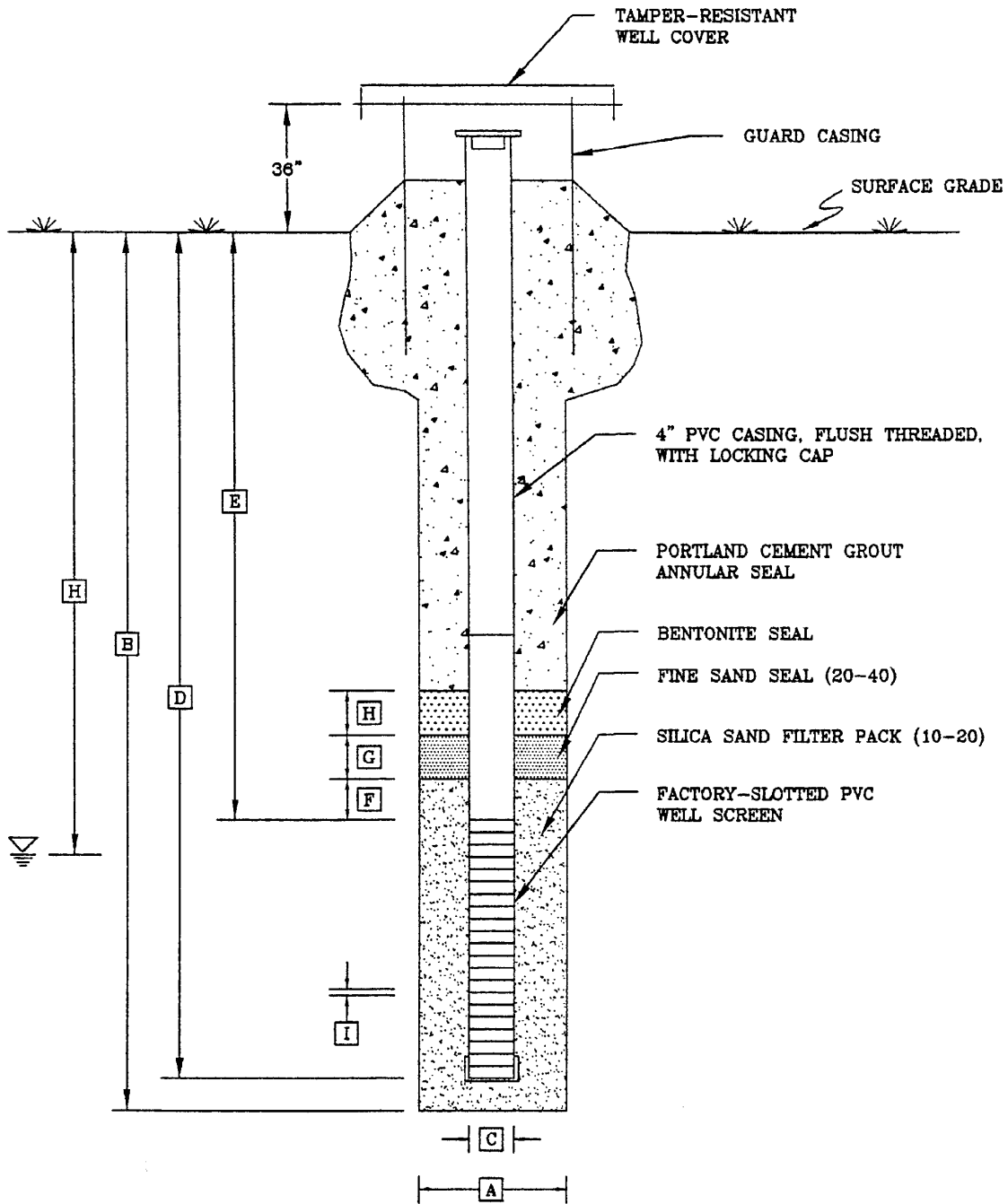
# BOREHOLE LOG

Sheet 2 OF 3



Location of Borehole:	Job No.:	P065502	Borehole Designation:	BRW-R1
	Client:	Timet	Surface Elevation:	
	Site:	Henderson, Nevada	Depth to Water:	
	Subsite:		Logged by:	W.P. Gagnon
	Drilling Co.:	The Verde Companies	Drilling Date(s):	03/23/99 and 03/24/99
	Drilling Method:	Hollow-stem auger. Split Spoon Sampler (SS)		

Sampler Type	Sample Depth Top to Bottom	Blows	Recovered	Driven	Time	PID Info. (ppm)	Analysis	Lithology	Depth	USCS Soil Type	Soil Description
SS	50-52'	50	18/24			0			50	SP	Fine sand, dark brown, loose, very poorly sorted with coarse sand and small pebbles (< 0.125 inch), slightly moist, nonplastic, abrupt contact with:
									51	CL	
									52		Silty clay, reddish brown, slightly plastic, dense, slightly moist, moderately well sorted
									53		- Water at 53 feet
									54		
SS	55-57'	70	18/24			0			55	CL	Clay to silty clay, brown with tan to light tan mottling near top, plastic, laminated, slightly moist, 2 inch zone of coarse sand and pebbles at 56 - 56 feet 2 inches, light tan, slightly moist, poorly graded
									56		
									57		
									58		
									59		
SS	60-62'	65	18/24			0			60	CL	Clay, brown with tan mottling, plastic, coarse reddish brown gravelly sand from 60 - 60 feet 3 inches, loose, poorly sorted, slightly moist
									61		
									62		
									63		
									64		
SS	65-67'	30	3/24			0			65	CL	Clay to silty clay, brown, plastic, moist, trace pebbles (< 0.125 inch), rounded
									66		
									67		
									68		
									69		
SS	70-72'	55	18/24			0			70	CL	Clay to silty clay, as previously described, hard, moist
									71		
									72		Total depth of boring: 72 feet
									73		
									74		



#### DIMENSIONS

- (A) BOREHOLE DIAMETER 11 INCHES
- (B) BOREHOLE DEPTH 69 FEET
- (C) CASING DIAMETER 4 INCHES
- (D) DEPTH TO BOTTOM OF SCREEN 67 FEET
- (E) DEPTH TO TOP OF SCREEN 37 FEET
- (F) TOP OF SCREEN TO TOP OF FILTER PACK 8 FEET
- (G) TOP OF FILTER PACK TO TOP OF SAND 2 FEET
- (H) THICKNESS OF BENTONITE SEAL 3 FEET
- (I) DEPTH TO WATER TABLE 55.62 FEET (5/3/99)
- (J) SLOT APERTURE .020 INCHES

Not to Scale

ENVIRONMENTAL CONDITION INVESTIGATION ADDENDUM REPORT TITANIUM METALS CORPORATION HENDERSON, NEVADA	DATE: 09/01/99
GROUNDWATER MONITOR WELL MW-3	DESIGNED: —
	CHECKED: WPG
	APPROVED: KTA
	DRAWN: RTF
	PROJ.: P0655-04



**TETRA TECH EMI**  
A Tetra Tech Company

Figure 2.2c



# BOREHOLE LOG

Sheet 1 OF 3



Location of Borehole:	Job No.:	P065502	Borehole Designation:	MW-3
	Client:	Timet	Surface Elevation:	
	Site:	Henderson, Nevada	Depth to Water:	
	Subsite:		Logged by:	W.P. Gagnon
	Drilling Co.:	The Verde Companies	Drilling Date(s):	03/23/99
	Drilling Method:	Hollow-stem auger. Split Spoon Sampler (SS)		

Sampler Type	Sample Depth Top to Bottom	Blows	Recovered	Driven	Time	PID Info. (ppm)	Analysis	Lithology	Depth	USCS Soil Type	Soil Description
SS	5-7	71	9/24			0			5 6	SM	Sand, buff to light brown with medium gravel, loose, nonplastic, slightly moist, poorly sorted, angular to subangular
									7 8 9		
SS	10-12'	124	24/24			0			10 11	SM	Sand, as previously described, but more gravelly
									12 13 14		
SS	15-17'	85	6/24			0			15 16	SM	Sand, as previously described, more dense, minor caliche stringers
									17 18 19		
SS	20-22'	100	12/24			0			20 21	SM	Sand, light brown, moderately well sorted, slightly plastic, loose, slightly moist, minor rounded gravel
									22 23 24		
	25-27'	100	8/24			0			25 26	SP	Gravelly sand, brown, poorly sorted, nonplastic, dry, moderately hard
									27 28		

# BOREHOLE LOG

Sheet 2 OF 3



Location of Borehole:		Job No.:	P065502	Borehole Designation:	MW-3
		Client:	Timet	Surface Elevation:	
		Site:	Henderson, Nevada	Depth to Water:	
		Subsite:		Logged by:	W.P. Gagnon
		Drilling Co.:	The Verde Companies	Drilling Date(s):	03/23/99
		Drilling Method:			
		Hollow-stem auger.			
		Split Spoon Sampler (SS)			

Sampler Type	Sample Depth Top to Bottom	Blows Recovered	Blows Driven	Time	PID Info. (ppm)	Analysis	Lithology	Depth	USCS Soil Type	Soil Description
								29		
SS	30-32'	51	12/24		0			30	SM	Sand, as previously described, but slightly moist
								31		
								32		
								33		
								34		
SS	35-37'	100	12/24		0			35	SM	Sand, as previously described, light reddish brown, hard, gypsum crystals in sand 35-36 feet, caliche stringers, slightly moist
								36		
								37		
								38		
								39		
SS	40-42'	100	10/24		0			40	SW	Fine sand, brown, moderately well sorted, slightly plastic, moderately hard, dense, slightly moist, minor rounded gravels
								41		
								42		
								43		
								44		
SS	45-47'		12/24		0			45	ML	Silt, brown, well sorted, slightly plastic, loose, moist, minor gypsum crystals 45-46 feet
								46		
								47		
								48		
								49		
								50		
	50-52'	100	14/24		0			51	ML	Clayey silt, brown, well graded, well sorted, moderately plastic, moist, dense, slightly micaceous 51-52 feet, cross-bedded 51-52 feet
								52		
								53		

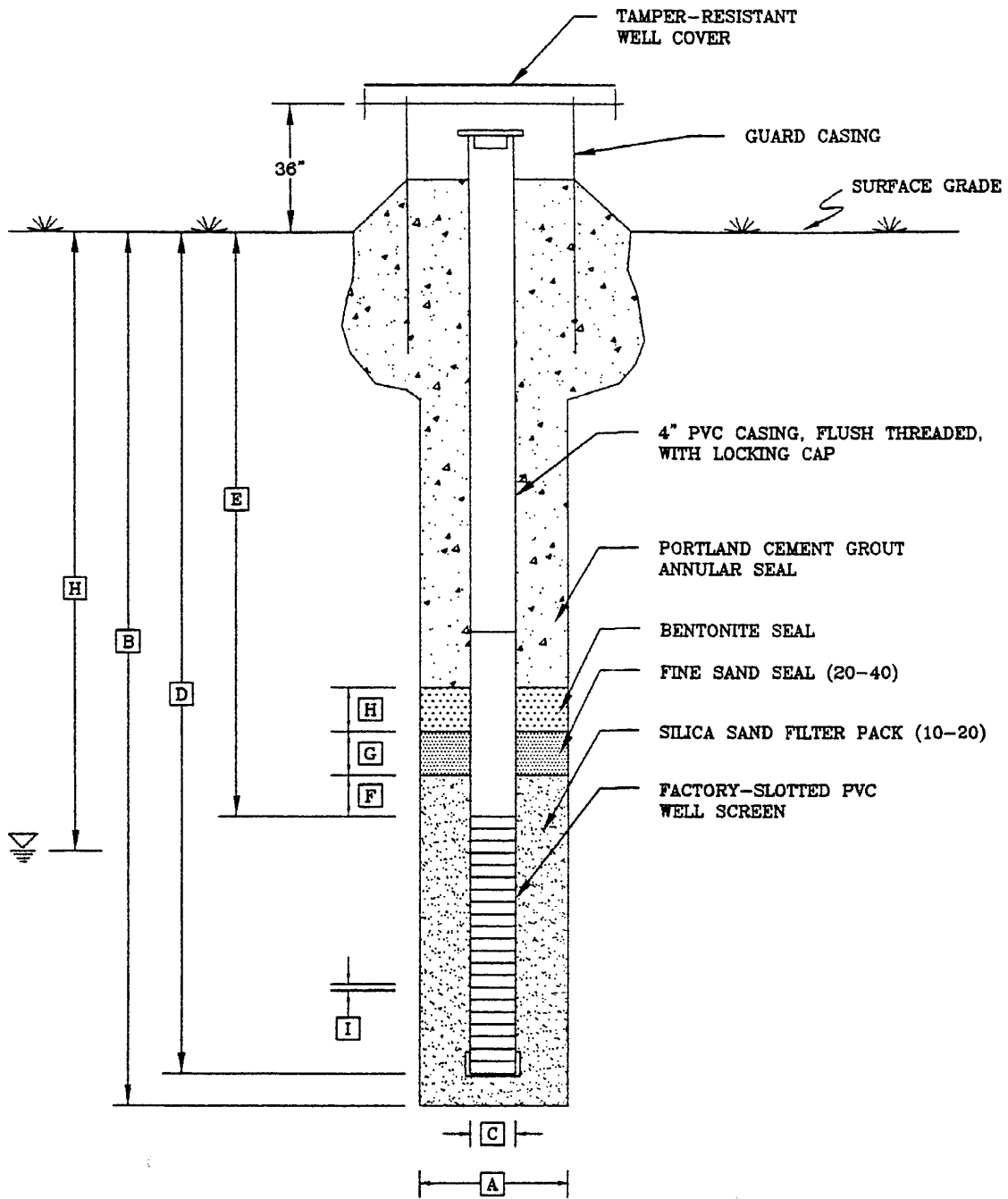
# BOREHOLE LOG

Sheet 3 OF 3



Location of Borehole:		Job No.:	P065502	Borehole Designation:	MW-3
		Client:	Timet	Surface Elevation:	
		Site:	Henderson, Nevada	Depth to Water:	
		Subsite:		Logged by:	W.P. Gagnon
		Drilling Co.:	The Verde Companies	Drilling Date(s):	03/23/99
Drilling Method:					
Hollow-stem auger.					
Split Spoon Sampler (SS)					


Sampler Type	Sample Depth Top to Bottom	Blows Recovered	Blows Driven	Time	PID Info. (ppm)	Analysis	Lithology	Depth	USCS Soil Type	Soil Description
								54		
SS	55-57	90	16/24		0			55		Clayey silt, brown, well graded, well sorted, moderately plastic, very moist, dense, slightly micaceous, cross-bedded
								56		
								57		
								58		
								59		
SS	60-62'	90	16/24		0			60	ML	Clayey silt, brown, well graded, well sorted, moderately plastic, very moist to wet, dense, slightly micaceous, cross-bedded
								61		
								62		
								63		
								64		
SS	65-67	90	16/24		0			65	CL	Silty clay, brown, plastic, wet
								66		
SS	67-69'	90	16/24		0			67	CL	Silty clay, brown, plastic, very moist
								68		
								69		- Total depth of boring: 69 feet
								70		
								71		
								72		
								73		
								74		
								75		
								76		
								77		
								78		



**DIMENSIONS**

- (A) BOREHOLE DIAMETER 11 INCHES
- (B) BOREHOLE DEPTH 67 FEET
- (C) CASING DIAMETER 4 INCHES
- (D) DEPTH TO BOTTOM OF SCREEN 58 FEET
- (E) DEPTH TO TOP OF SCREEN 38 FEET
- (F) TOP OF SCREEN TO TOP OF FILTER PACK 7 FEET
- (G) TOP OF FILTER PACK TO TOP OF SAND 2.5 FEET
- (H) THICKNESS OF BENTONITE SEAL 3 FEET
- (I) DEPTH TO WATER TABLE 48.92 FEET (5/3/99)
- (J) SLOT APERTURE .020 INCHES

*Not to Scale*

ENVIRONMENTAL CONDITION INVESTIGATION ADDENDUM REPORT TITANIUM METALS CORPORATION HENDERSON, NEVADA	DATE: 09/01/99
GROUNDWATER MONITOR WELL MW-4	DESIGNED: —
	CHECKED: WPG
	APPROVED: KTA
	DRAWN: RTF
	PROJ.: P0655-04
 <b>TETRA TECH EMI</b> A Tetra Tech Company	Figure 2.2d

# BOREHOLE LOG

Sheet 1 OF 3



Location of Borehole:	Job No.:	P065502	Borehole Designation:	MW-4
	Client:	Timet	Surface Elevation:	
	Site:	Henderson, Nevada	Depth to Water:	
	Subsite:		Logged by:	W.P. Gagnon
	Drilling Co.:	The Verde Companies	Drilling Date(s):	03/24/99 and 03/25/99
	Drilling Method:	Hollow-stem auger. Split Spoon Sampler (SS)		

Sampler Type	Sample Depth Top to Bottom	Blows Recovered	Blows Driven	Time	PID Info. (ppm)	Analysis	Lithology	Depth	USCS Soil Type	Soil Description
								1		
								2		
SS	3-5'	35	12/24		0			3	ML	Gravelly silt, brownish gray, very poorly sorted, gravel (< 0.25 inch), subrounded, all soil is friable, loose, dry
								4		
								5		
								6		
								7		
								8	ML	Gravelly silt, as previously described, brownish gray and brown
	8-10'	30	6/24		0			9		
								10		
								11		
								12		
								13		
SS	14-16'	40	12/24		0			14	SP	Gravelly sand, brownish gray, very poorly sorted, gravel sand ratio: 30/70 loose dry gravel (< 0.25 inch), subangular to rounded, 1 inch caliche zone at 15 feet
								15		
								16		
								17		
								18		
SS	19-21'	60	12/24		0			19	SM	Gravelly sand, brownish gray, very poorly sorted gravel sand ratio: 5/95, loose, dry, gravel (< 0.25 inch) subangular to rounded, hard zone of same from 20 - 20 feet 3 inches
								20		
								21		
								22		
								23		
SS	24-26'	60	8/24		0			24	SP	Gravelly sand, brownish gray, very poorly sorted gravel sand ratio: 5/95 loose, dry, gravel (< 0.25 inch) subangular to rounded
								25		

# BOREHOLE LOG

Sheet 2 OF 3



Location of Borehole:		Job No.:	P065502	Borehole Designation:	MW-4
		Client:	Timet	Surface Elevation:	
		Site:	Henderson, Nevada	Depth to Water:	
		Subsite:		Logged by:	W.P. Gagnon
		Drilling Co.:	The Verde Companies	Drilling Date(s):	03/24/99 and 03/25/99
		Drilling Method:	Hollow-stem auger. Split Spoon Sampler (SS)		

Sampler Type	Sample Depth Top to Bottom	Blows	Recovered	Driven	Time	PID Info. (ppm)	Analysis	Lithology	Depth	USCS Soil Type	Soil Description
									26		
									27		
									28		
SS	29-31'	100	12/24			0			29	SP	Gravelly sand, as previously described, grades into:
									30		
									31	ML	Gravelly silt, brown, nonplastic, poorly sorted, loose, slightly moist
									32		
									33		
									34		
SS	35-37'	50	14/24			0			35	ML	Gravelly silt, as previously described
									36	SP	Gravelly sand, brown, nonplastic, dry, gravel sand ratio: 15/85, gravel (< 0.25 inch) subangular to subrounded, gypsum cemented layer 36 - 36 feet 2 inches
									37		
									38		
									39		
SS	40-42'	50	10/24			0			40	SC	Fine sand to silty sand, brown, minor gravel (< 0.25 inch), rounded, slightly plastic, poorly sorted, slightly moist, loose, hard 41 - 41 feet 3 inches
									41		
									42		
									43		
									44		
SS	45-47'	60	15/24			0			45	SC	Fine sand to silty sand, brown, minor gravel (< 0.25 inch), rounded, slightly plastic, poorly sorted, hard, wet at 45.5 feet
									46	SP	Sand with minor gravel, brown, loose, wet, nonplastic, gypsum layers in upper 3 inches, poorly sorted
									47		
									48		
									49		
SS	50-52'	30	18/24			0			50	SM	Fine sand, brown, trace gravel, moderately plastic, moderately well sorted, wet

# BOREHOLE LOG

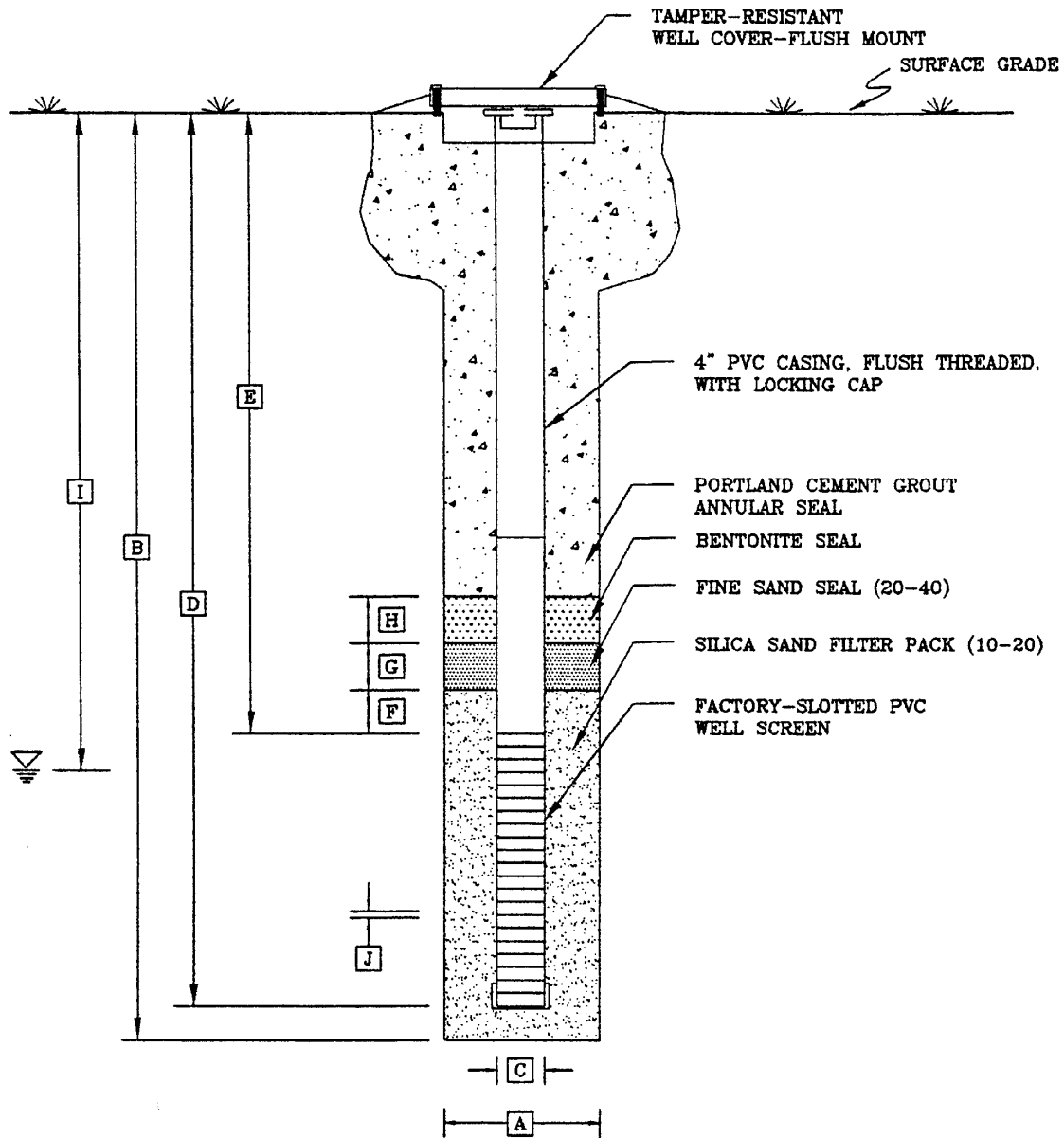
Sheet 2 OF 3



Location of Borehole:

Job No.: P065502 Borehole Designation: MW-4  
 Client: Timet Surface Elevation:  
 Site: Henderson, Nevada Depth to Water:  
 Subsite: Logged by: W.P. Gagnon  
 Drilling Co.: The Vrede Companies Drilling Date(s): 03/24/99 and 03/25/99  
 Drilling Method:  
 Hollow-stem auger.  
 Split Spoon Sampler (SS)

Sampler Type	Sample Depth Top to Bottom	Blows	Recovered Driven	Time	PID Info. (ppm)	Analysis	Lithology	Depth	USCS Soil Type	Soil Description
SS	50-52'	30	18/24		0			51	SM	Fine sand, brown, trace gravel, moderately plastic, moderately well sorted, wet
								52		
								53		
								54		
SS	55-57'	35	6/24		0			55	ML-CL	Silty clay to clayey silt, brown, plastic, trace pebbles, rounded, saturated, more silty toward bottom
								56		
								57		
								58		
								59		
SS	60-62'	55	8/24		0			60	ML-CL	Silty clay, brown, moderately plastic, moderately hard, very moist to wet
								61		
SS	62-64'	45	14/24		0			62	ML	Clayey silt, brown, slightly plastic, moist
								63		
								64		
SS	65-67'	47	16/24		0			65	CL	Silty clay, brown, moderately plastic, moist
								66		
								67		- Total depth of boring: 67 feet
								68		
								69		
								70		
								71		
								72		
								73		
								74		
								75		



#### DIMENSIONS

- (A) BOREHOLE DIAMETER 11 INCHES
- (B) BOREHOLE DEPTH 65 FEET
- (C) CASING DIAMETER 4 INCHES
- (D) DEPTH TO BOTTOM OF SCREEN 60 FEET
- (E) DEPTH TO TOP OF SCREEN 40 FEET
- (F) TOP OF SCREEN TO TOP OF FILTER PACK 5 FEET
- (G) TOP OF FILTER PACK TO TOP OF SAND 2 FEET
- (H) THICKNESS OF BENTONITE SEAL 3 FEET
- (I) DEPTH TO WATER TABLE 48.97 FEET (5/3/99)
- (J) SLOT APERTURE .020 INCHES

*Not to Scale*

ENVIRONMENTAL CONDITION INVESTIGATION ADDENDUM REPORT  
TITANIUM METALS CORPORATION  
HENDERSON, NEVADA

DATE: 09/01/99

DESIGNED: —

CHECKED: WPG

APPROVED: KTA

DRAWN: RTF

PROJ.: P0655-04

GROUNDWATER  
MONITOR  
WELL MW-5



**TETRA TECH EMI**  
A Tetra Tech Company

Figure 2.2e



# BOREHOLE LOG

Sheet 1 OF 3



Location of Borehole:	Job No.:	P065502	Borehole Designation:	MW-5
	Client:	Timet	Surface Elevation:	
	Site:	Henderson, Nevada	Depth to Water:	
	Subsite:		Logged by:	W.P. Gagnon
	Drilling Co.:	The Verde Companies	Drilling Date(s):	03/30/99
	Drilling Method:	Hollow-stem auger. Split Spoon Sampler (SS)		

Sampler Type	Sample Depth Top to Bottom	Blows	Recoverec	Driven	Time	PID Info. (ppm)	Analysis	Lithology	Depth	USCS Soil Type	Soil Description
SS	10-12'	40	14/24			0			10 11	SM	Coarse sand, brown to reddish brown, very poorly sorted with fine sand and silt, trace pebbles (0.2 inch), nonplastic, loose, slightly moist
									12 13 14 15 16 17 18 19		
SS	20-22'	45	10/24			0.3			20 21	ML	Sandy silt, brown, trace pebbles (<0.2 inch), rounded, moderately well sorted, dry, no odor
									22 23 24 25 26 27 28 29		
SS	30-32'	50	10/24			0			30 31	GM	Gravelly, silty sand, brown, minor purple volcanic gravel (0.1 - 0.75 inch) with green zeolites, very poorly sorted, loose, dry
									32 33		

# BOREHOLE LOG

Sheet 2 OF 3



Location of Borehole:	Job No.:	P065502	Borehole Designation:	MW-5
	Client:	Timet	Surface Elevation:	
	Site:	Henderson, Nevada	Depth to Water:	
	Subsite:		Logged by:	W.P. Gagnon
	Drilling Co.:	The Verde Companies	Drilling Date(s):	03/30/99
	Drilling Method:	Hollow-stem auger. Split Spoon Sampler (SS)		

Sampler Type	Sample Depth Top to Bottom	Blows	Recovered Driven	Time	PID Info. (ppm)	Analysis	Lithology	Depth h	USCS Soil Type	Soil Description
								34		
SS	35-37'	48	11/24		17			35-36	GM	Gravelly, silty sand, gravel is subangular (0.1 - 0.3 inch), loose, slightly moist, no odor
								37		
								38		
								39		
SS	40-42'	50	10/24		10.1			40-41	ML	Sandy silt, brown, minor pebbles (<0.24 inch), rounded, slightly hard, dry, no odor
								42		
								43		
								44		
SS	45-47'	80	8/24		6.2			45-46	GM	Gravelly, silty sand, brown, gravel is rounded to subangular (0.1 - 0.4 inch), loose, nonplastic, wet, no odor
								47		
								48		
								49		
SS	50-52'	48	18/24		8.1			50-51	MH	Clayey silt, brown, minor trace pebbles (<0.2 inch), subrounded, slightly plastic, wet, no odor
								52		
								53		
								54		
	55-57'	70	18/24		7.0			55-56	MH	Clayey silt, as previously described, no pebbles
								57		
								58		

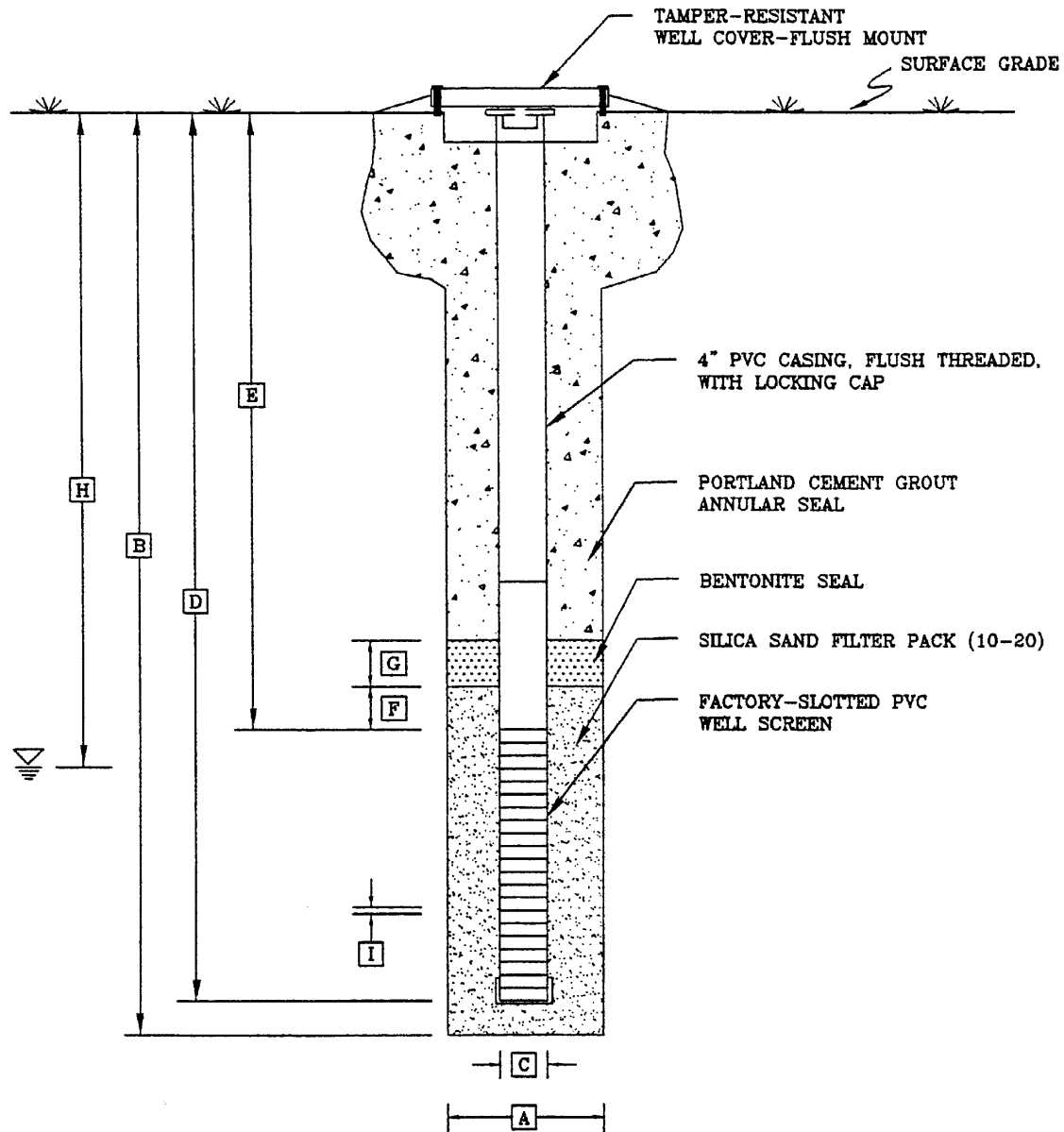
# BOREHOLE LOG

Sheet 3 OF 3



Location of Borehole:	Job No.:	P065502	Borehole Designation:	MW-5
	Client:	Timet	Surface Elevation:	
	Site:	Henderson, Nevada	Depth to Water:	
	Subsite:		Logged by:	W.P. Gagnon
	Drilling Co.:	The Verde Companies	Drilling Date(s):	03/30/99
	Drilling Method:	Hollow-stem auger. Split Spoon Sampler (SS)		

Sampler Type	Sample Depth Top to Bottom	Blows	Recovered	Driven	Time	PID Info. (ppm)	Analysis	Lithology	Depth	USCS Soil Type	Soil Description
									59		
SS	60-62'	80	18/24			9.1			60	MH	Silty clay, brown, moderately plastic, wet, no odor
									61		
									62		
									63		
									64		
									65		- Total depth of boring: 65 feet
									66		
									67		
									68		
									69		
									70		
									71		
									72		
									73		
									74		
									75		
									76		
									77		
									78		
									79		
									80		
									81		
									82		
									83		



**DIMENSIONS**

- (A) BOREHOLE DIAMETER 11 INCHES
- (B) BOREHOLE DEPTH 60 FEET
- (C) CASING DIAMETER 4 INCHES
- (D) DEPTH TO BOTTOM OF SCREEN 59 FEET 8 INCHES
- (E) DEPTH TO TOP OF SCREEN 39 FEET 8 INCHES
- (F) TOP OF SCREEN TO TOP OF FILTER PACK 6 FEET 8 INCHES
- (G) THICKNESS OF BENTONITE SEAL 3 FEET
- (H) DEPTH TO WATER TABLE 43.23 FEET (8/19/99)
- (I) SLOT APERTURE 0.20 INCHES

*Not to Scale*

ENVIRONMENTAL CONDITION INVESTIGATION ADDENDUM REPORT TITANIUM METALS CORPORATION HENDERSON, NEVADA	DATE: 09/01/99
GROUNDWATER MONITOR WELL MW-6R	DESIGNED: —
	CHECKED: WPG
	APPROVED: KTA
	DRAWN: RTF
	PROJ.: P0653-04



**TETRA TECH EMI**  
A Tetra Tech Company

Figure 2.2f

# BOREHOLE LOG

Sheet 1 OF 2



Location of Borehole:

Job No.: P065502 Borehole Designation: MW-6  
 Client: Timet Surface Elevation:  
 Site: Henderson, Nevada Depth to Water:  
 Subsite: Logged by: W.P. Gagnon  
 Drilling Co.: The Verde Companies Drilling Date(s): 03/31/99 and 04/01/99  
 Drilling Method:  
 Hollow-stem auger.  
 Split Spoon Sampler (SS)

Sampler Type	Sample Depth Top to Bottom	Blows	Recovered Driven	Time	PID Info. (ppm)	Analysis	Lithology	Depth	USCS Soil Type	Soil Description
SS	10-10.5'	30	6/6		0			10		Gravelly silty sand, brown, very poorly sorted, sorted, pebbles (0.1 - 0.3 inch), subrounded, loose, dry, trace asphaltic material
								11		
								12		
								13		
								14		
								15		
								16		
								17		
								18		
								19		
SS	20-22'	60	12/24		0			20	ML	Gravelly silt, light brown, gravel (0.2 - 0.3 inch), subrounded, loose, dry, moderately well sorted, nonplastic
								21		
								22		
								23		
								24		
								25		
								26		
								27		
								28		
								29		
	30-32'	60	6/24		0.1			30		Gravelly silt, light brown, trace large gravel (0.75 inch), subrounded, loose, dry, moderately well sorted, nonplastic
								31		
								32		
								33		

# BOREHOLE LOG

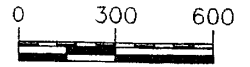
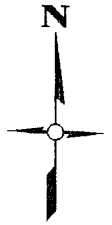
Sheet 2 OF 2



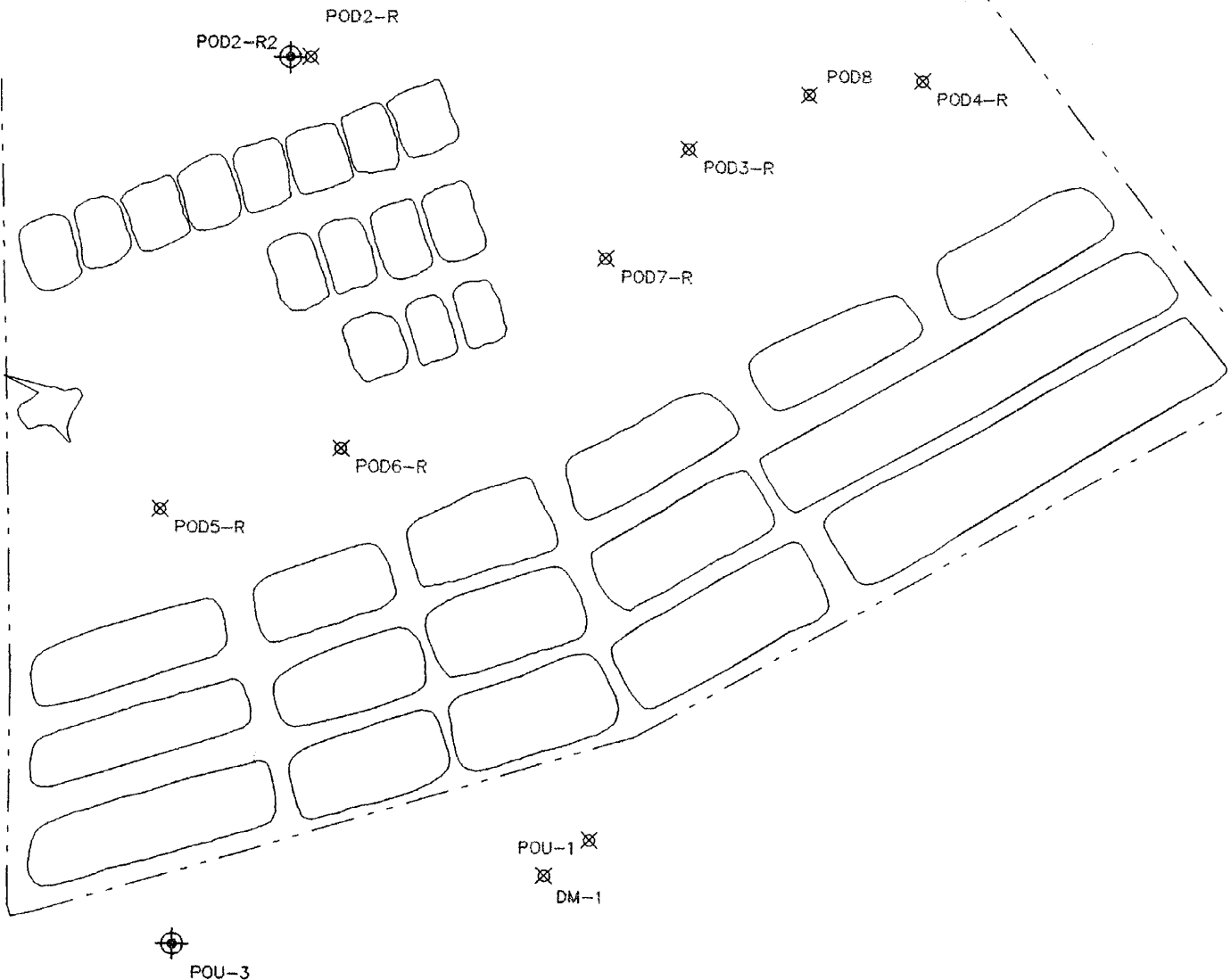
Location of Borehole:	Job No.:	P065502	Borehole Designation:	MW-6
	Client:	Timet	Surface Elevation:	
	Site:	Henderson, Nevada	Depth to Water:	
	Subsite:		Logged by:	W.P. Gagnon
	Drilling Co.:	The Verde Companies	Drilling Date(s):	03/31/99 and 04/01/99
	Drilling Method:	Hollow-stem auger. Split Spoon Sampler (SS)		

Sampler Type	Sample Depth Top to Bottom	Blows	Recovered	Driven	Time	PID Info. (ppm)	Analysis	Lithology	Depth	USCS Soil Type	Soil Description
									34		
									35		
									36		
									37		
									38		
									39		
SS	40-42'	100	6/24			0			40	ML	Gravelly fine sand, brown, slightly hard, slightly moist, poorly sorted, gravel (0.1 - 0.3 inch), subrounded, trace of gypsum, nonplastic
									41		
									42		
									43		
									44		
SS	45-47'	80	0/24			0			45		- No recovery
									46		
									47		
									48		
									49		
SS	50-52'	160	0/24			0			50		- No recovery
									51		
									52		
									53		
									54		
									55	CL	Clay to silty clay, brown, plastic, moist, loose
	55-57'	35	14/24						56		
									57		- Total depth of boring: 57 feet
									58		



**DRAFT**



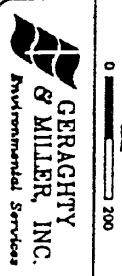
Scale: 1"=600'



**EXPLANATION**

-  NEW WELL LOCATIONS
-  GROUNDWATER MONITOR WELL

ENVIRONMENTAL CONDITION INVESTIGATION ADDENDUM REPORT TITANIUM METALS CORPORATION HENDERSON, NEVADA		REVISED: 09/01/99
PABCO ROAD AREA MONITOR WELL LOCATIONS		DATE: 10/12/98
		DESIGNED: KTA
TETRA TECH EMI A Tetra Tech Company		CHECKED: KTA
		APPROVED: KTA
		DRAWN: RTF
		PROJ.: P0655-04
		Figure 4.2-1



SCALE  
0 200

EXPLANATION  
 + SAMPLE COLLECTED JAN. 1990  
 ● SAMPLE COLLECTED MAY 1990

### SAMPLE LOCATIONS

PIONEER CHLOR ALKALI COMPANY HENDERSON, NEVADA

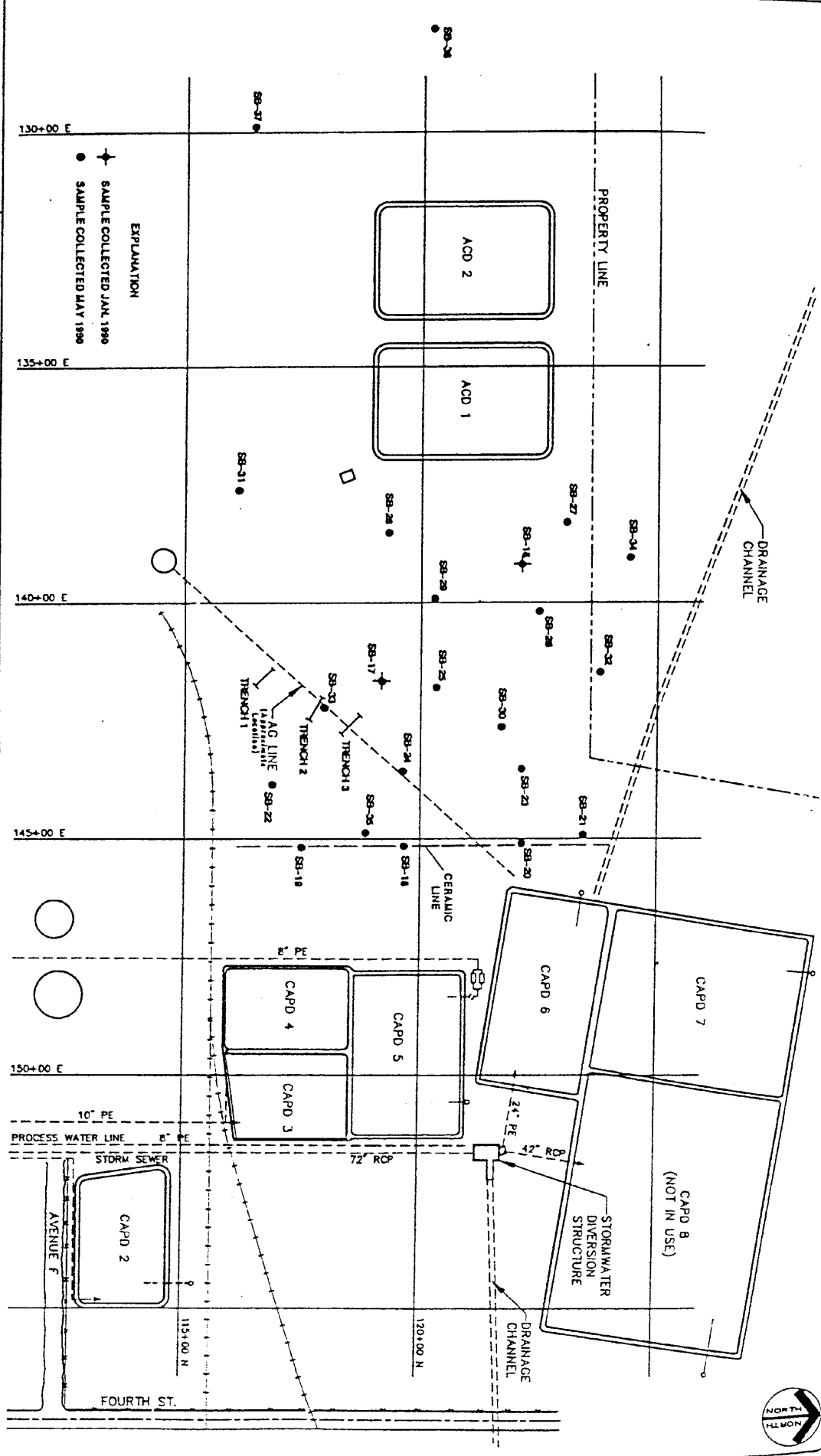


FIGURE 1



APPENDIX A

Sample Core/Log Sheets - May 1990

**SAMPLE/CORE LOG**

Boring/Well SB-18 Project/No. C0079.01 Page 1 of 1  
 Site Location Pioneer Chlor Alkali Drilling Started 5/7/90 10:00 Drilling Completed 11:30  
 Total Depth Drilled 20.9 feet Hole Diameter 7" inches Type of Sample/ Coring Device split spoon  
 Length and Diameter of Coring Device 2" x 1.5' Sampling Interval 5 feet  
 Land-Surface Elev. \_\_\_\_\_ feet  Surveyed  Estimated Datum NA  
 Drilling Fluid Used NONE Drilling Method H.S. Auger  
 Drilling Contractor Western Technologies Inc. Driller Greg Helper Kurt  
 Prepared By R. Sipe Hammer Weight 140 Hammer Drop 30 inches

Sample/Core Depth (feet below land surface)		Core Recovery (feet)	Time/Hydraulic Pressure or Blows per 6 inches	Sample/Core Description
From	To			

Sample/Core Depth (feet below land surface)		Core Recovery (feet)	Time/Hydraulic Pressure or Blows per 6 inches	Sample/Core Description
From	To			
5	6.5	1.5	15/15/20	Sand (60%) lt. brown (7.5YR 6/4) fine to coarse. Gravel (40%) sub angular to sub round, up to 1 1/2" diam; poorly sorted; dry
10.0	10.5	1.5	24/47/13	Sand (70%) pale brown (10YR 7/4) fine to med. some coarse; Gravel (30%) sub angular, up to 1" diam; poorly sorted; dry
20.0	20.9	0.9	50/4/13	Sand (60%) AS ABOVE; Gravel (30%) AS ABOVE up to > 2" diam; Clay (10%) dk. grayish brown (10YR 3/2) in small lenses; poorly sorted; dry
				Tip - Open off samples in spoon & cuttings

**SAMPLE/CORE LOG**

Boring/Well SB 19 Project/No. C0079.01 Page 1 of 1  
 Site Location Pioneer Chalk Alkali Henderson NV Drilling Started 5/7/90 Drilling Completed 5/7/90 1:30  
 Total Depth Drilled 21.5 feet Hole Diameter 7" inches Type of Sample/ Coring Device split spoon  
 Length and Diameter of Coring Device 2" x 1.5' Sampling Interval 5' feet  
 Land-Surface Elev. \_\_\_\_\_ feet  Surveyed  Estimated Datum n/a  
 Drilling Fluid Used None Drilling Method H.S. Auger  
 Drilling Contractor Western Technologies Inc. Driller Greg Helper Kurt  
 Prepared By R. Sipe Hammer Weight 140 Hammer Drop 30 inches

Sample/Core Depth (feet below land surface)      Time/Hydraulic Pressure or Blows per 6 inches  
 From      To      Core Recovery (feet)

Sample/Core Description

From	To	Core Recovery (feet)	Time/Hydraulic Pressure or Blows per 6 inches	Sample/Core Description
5	5.9	0.9	38/50-5'	Sand (70%) lt. yellowish brown (10YR 6/4) fine to v. coarse; Gravel (30%) subangular up to 1" diam; v. poorly sorted, dry
10.0	11.5	1.5	35/34/28	Sand (60%) as above, some brown (10YR 4/3); Gravel (40%) subangular most < 3/4" diam. occ > 2" diam.; v. poorly sorted, dry, some odor
20	21.5	1.5	16/20/23	Sand (70%) yellowish brown (10YR 5/4) fine to v. coarse; Gravel (30%) subangular, up to 1" diam.; v. poorly sorted dry
				Tip - Open with samples in spoon + cuttings

**SAMPLE/CORE LOG**

Boring/Well SB 20 Project/No. C0079.01 Page 1 of 1  
 Site Location Pioneer Chlor Alkali Drilling Started 5/7/90 Drilling Completed 5/7/90  
 2:30 3:30  
 Total Depth Drilled 21.5 feet Hole Diameter 7 inches Type of Sample/ Coring Device split spoon  
 Length and Diameter of Coring Device 2" x 1.5" Sampling Interval 5 feet  
 Land-Surface Elev. \_\_\_\_\_ feet  Surveyed  Estimated Datum N/A  
 Drilling Fluid Used NONE Drilling Method H. S. Auger  
 Drilling Contractor Western Technologies, Inc. Driller Gary Helper Kurt  
 Prepared By R. Sipi Hammer Weight 140 Hammer Drop 30 inches

Sample/Core Depth (feet below land surface)		Core Recovery (feet)	Time/Hydraulic Pressure or Blows per 6 inches	Sample/Core Description
From	To			
5	6.5	0.4	31/23/28	Silt (50%) brown (10 YR 4/3) SANDY; GRAVEL (50%) sub angular, up to 1 1/2" diam.; v. poorly sorted, clay; some calcite cementation(?); some odor
10	11.5	1.5	20/25/30.5"	Silt (80%) AS ABOVE, v. sandy grading into a fine <sup>to coarse</sup> sand; GRAVEL (20%) sub angular, up to 1/2" diam.; v. poorly sorted, clay some cementation
20	21.5	1.0	41/50/35	SAND (80%) olive brown (2.5 Y 5/6) v. COARSE to fine; GRAVEL (20%) subround to sub angular, up to 1" diam., v. poorly sorted, clay
				Tip - Open off samples in spoon and settings.















**SAMPLE/CORE LOG**

Boring/Well SB-27 Project/No. C007901 TASK 10 Page 1 of 1

Site Location Pioneer Chlor Alkali Drilling Started 5-9-90 07:30 Drilling Completed 5-9-90 09:50

Total Depth Drilled 20 feet Hole Diameter 8 1/2 inches Type of Sample/ Coring Device Split Spoon

Length and Diameter of Coring Device 18" x 2" Sampling Interval 5 feet

Land-Surface Elev. \_\_\_\_\_ feet  Surveyed  Estimated Datum N/A

Drilling Fluid Used N/A Drilling Method Hollow Stem Auger

Drilling Contractor Western Technologies Driller Greg Ogic Helper Kurt Herman

Prepared By B. Batford Hammer Weight 140# Hammer Drop 30 inches

Sample/Core Depth (feet below land surface)		Core Recovery (feet)	Time/Hydraulic Pressure or Blows per 6 inches	Sample/Core Description
From	To			
0		@6-9%	16-24-36	silty, Sand little gravel Sand ~60% silt ~30%, gravel ~10%, loose to dense, dry, 5YR 6/3 Lt. reddish-brn. No odor Tip read 0.3 by 0.2
		@10-4%	16-11-15	Same as above Sand ~60% silt ~20% gravel ~20% v. loose to loose, dry 5YR 6/3 Lt red-brn
	12			Slight odor Tip read - 1.5 by - 0.2
12		@15-6%	36-25-20	Sand, Silt some gravel - silt 50%, Sand ~25% gravel fine to coarse (cobbles) ~25% sub angular to sub round, loose (high blow count due to cobble), dry, 5YR 6/3 Very slight odor Tip read 6.9 by - 0.2
	17-18	@20-	21-30-34	silty, Sandy, Gravel - Gravel ~50%, sub angular to sub round fine, Sand well graded to gravel ~30% silt ~20% dense to v. dense, humid, 7.5YR 7/2
18				Pinkish gray - slight odor Tip read - 0.4 by 0.3
	20		30-24-50%	bag sample same as above -

**SAMPLE/CORE LOG**

Boring/Well SB-28 Project/No. C007901 TASK 10 Page 1 of 1

Site Location Pioneer Chlor Alkali Drilling Started 5-9-90 Drilling Completed 5-9-90  
09:10 10:20

Total Depth Drilled 20 feet Hole Diameter 8 1/2 inches Type of Sample/  
 Length and Diameter of Coring Device 18" x 2" Coring Device split spoon

Sampling Interval 5 feet

Land-Surface Elev. \_\_\_\_\_ feet  Surveyed  Estimated Datum 4/A

Drilling Fluid Used N/A Drilling Method Hollow stem Auger

Drilling Contractor Western Technologies Driller Greg Ogle Helper Kurt Herman

Prepared By B. Botsford Hammer Weight 140\* Hammer Drop 30 inches

Sample/Core Depth (feet below land surface)		Core Recovery (feet)	Time/Hydraulic Pressure or Blows per 6 inches	Sample/Core Description
From	To			

Sample/Core Depth (feet below land surface)		Core Recovery (feet)	Time/Hydraulic Pressure or Blows per 6 inches	Sample/Core Description
From	To			
0		25-60%	14-14-12	Silty, Sandy Gravel Gravel ~ 40% well graded to well graded sand sub angular to sub round Sand ~ 30%, silt ~ 30%, loose, humid, 5YR 7/2 pinkish gray No Odor Tip read 4.6 bg 0.4
	14	10-90%	24-23-23	Same as above Silt increases to 40% Sand-gravel ~ 60% Tip read - 2.0. bg 0.2 (loose to dense - moist)
	14	15-90%	27-37-42	gravelly sandy silt Silt 50%, Sand - 30%, Gravel - 20% Sand & gravel well graded - dense to v. dense, moist 7.5YR 6/4 Lt. brn Slight odor Tip read - 6.0 bg 0.2 No odor
	20	20-90%	23-38-33	Same as above - Tip read 2.1 bg - 0.2
			41-39-43	bag Sample @ 20' - Same

**SAMPLE/CORE LOG**

Boring/Well SB-29 Project/No. C007901 TASK 10 Page 1 of 1

Site Location Pioneer Clow Alkali Drilling Started 5-9-90 Drilling Completed 5-9-90  
10:40 12:10

Total Depth Drilled 20 feet Hole Diameter 8 1/2 inches Type of Sample/  
Coring Device split spoon

Length and Diameter of Coring Device 18" x 2" Sampling Interval 5 feet

Land-Surface Elev. \_\_\_\_\_ feet  Surveyed  Estimated Datum \_\_\_\_\_

Drilling Fluid Used N/A Drilling Method Hollow stem Auger

Drilling Contractor Western Technologies Driller Greg Ogle Helper Kurt Herman

Prepared By V. Buttsford Hammer Weight 140 # Hammer Drop 30 inches

Sample/Core Depth (feet below land surface)		Core Recovery (feet)	Time/Hydraulic Pressure or Blows per 6 inches	Sample/Core Description
From	To			
0		0.5-10'	59' - 64' - 35	Pushing Rock - Silty, Gravelly, silt silt 60% - gravel 20% Sand 20% - Sand gravel well graded, sub angular to sub rounded, loose, dry, SYR 7/2 pinkish gray slight organic odor Tip read 10.1 by 0.3
7				
7		10-90'	27-29-35	Silty Gravelly Sand Sand ~50%, Gravel ~30%, Silt 20% Well graded fine sand to gravel, dense to v. dense humid SYR 7/4 Pink 7% odor Tip -12.3 by 0.2
15				
15		10-100'	29-50-50/3	Gravelly, silt little Sand - silt 60%, Gravel 30% Sand 10% Sand-Gravel well graded sub angular to sub round - v. dense, dry to humid, SYR 7/2 Pink slight to moderate (chloride) odor Tip read 0.8, by 0.2
17				
17		20-90'	28-30-35	Silty Sand some gravel Sand ~50%, silt 50%, Gravel ~20% Loose to dense humid SYR 6/3 Lt reddish brown no odor Tip read 0.0 - by 0.2
		20	30-35-50/5	bag sample Pushing Rock same as above cobbles Probably through out from 15' depth

**SAMPLE/CORE LOG**

Boring/Well SB-30 Project/No. C007901 TASK 10 Page 1 of 1

Site Location PIONEER CLUB ALKALI Drilling Started 5-9-90 Drilling Completed 5-9-90  
13:40 14:50

Total Depth Drilled 20 feet Hole Diameter 8 1/2 inches Type of Sample/  
 Coring Device Split Spoon

Length and Diameter of Coring Device 18" x 2" Sampling Interval 5 feet

Land-Surface Elev. \_\_\_\_\_ feet  Surveyed  Estimated Datum N/A

Drilling Fluid Used N/A Drilling Method Hollow stem Auger

Drilling Contractor Western Technologies Driller Greg Oyle Helper Kurt Herman

Prepared By B. Batford Hammer Weight 140 # Hammer Drop 30 inches

Sample/Core Depth (feet below land surface)		Core Recovery (feet)	Time/Hydraulic Pressure or Blows per 6 inches	Sample/Core Description
From	To			

0	0.5			fine sandy silt, - loose dry 5YR 8/2
0.5		05-9%	18-43-36	Silty, sand - sand ~70% well graded fine to coarse (fine gravel)
				Sub angular, silt ~30%, loose to v. dense, damp
				5YR 6/3 lt. reddish brown slight organic odor
		10-5%	47-33-32	Silty, sand, some gravel Sandy 50% - gravel 20%
				Silt 30% - sand and gravel well graded - fine sand
				to med gravel (Cobbles present throughout)
				dense, damp 5YR 6/3 slight organic odor
	13			Tip read 0.0 by 0.3 (?)
13		15-9%	35-41-37	Gravelly sand, little silt sand - gravel ~80%
				Silt ~20% sand-gravel well graded from fine sand
				to med gravel (Cobbles present) Sub angular to
				Sub round (102% mica), dense to v. dense
				damp to moist, 2.5 YR 6/2 pale red v. slight
				odor Tip read 0.9 by 0.0
		20-9%	18-20-20	Same as above <sup>Loose</sup> Moist Tip read 0.0 by 0.3 (?)
	20		30-22-22	bag sample @ 20



### SAMPLE/CORE LOG

Boring/Well SB-32 Project/No. C007901 TASK 10 Page 1 of 1

Site Location PIONEER (Chlor Alkali) Drilling Started 5-9-90 16:30 Drilling Completed 5-9-90 17:35

Total Depth Drilled 20 feet Hole Diameter 8 1/2" inches Type of Sample/  
Coring Device Split Spoon

Length and Diameter of Coring Device 18" x 2" Sampling Interval 5 feet

Land-Surface Elev. \_\_\_\_\_ feet  Surveyed  Estimated Datum N/A

Drilling Fluid Used N/A Drilling Method Hollow Stem Auger

Drilling Contractor Western Technology Driller Greg Ogic Helper Kurt Herman

Prepared By B. Botzford Hammer Weight 140 II Hammer Drop 30 inches

Sample/Core Depth (feet below land surface)		Core Recovery (feet)	Time/Hydraulic Pressure or Blows per 6 inches	Sample/Core Description
From	To			
		<u>Pushing rock @</u> <u>@6-9%</u>	<u>24-21-14</u>	<u>Gravelly Sand Little Silt - Sand ~60% well graded to fine Gravel ~30% Sub angular to Sub round, Silt ~10%, Loose, humid to damp, 5YR 4/2 Pinkish gray - No Odor Tip read 0.9 by 0.8</u>
		<u>@19-2%</u>	<u>25-30-30</u>	<u>Pushing Rocks Same as above (Cobbles to boulders Present) Tip read 0.7 by 0.3</u>
		<u>@15-7%</u>	<u>20-26-5 1/2"</u>	<u>Same as above (breaking through rocks @ end of flush) Tip read 0.2 by 0.4</u>
		<u>@20-9%</u>	<u>20-17-15</u>	<u>Same as above (entire 20' varies slightly in Silt and Gravel Concentration ~5% + Moisture increases w/depth to moist) Tip read 0.1 by 0.0</u>
				<u>@ 20' bag Sample Tip read 0.1 by 0.2</u>



**SAMPLE/CORE LOG**

Boring/Well S B 33 Project/No. 10077.01 Page 1 of 1

Site Location Pioneer Calumet Pit #1 Drilling Started 5/10/90 Drilling Completed 8:50  
7:50

Total Depth Drilled 16.5 feet Hole Diameter 7" inches Type of Sample/ Coring Device split spoon

Length and Diameter of Coring Device 1.5' x 2" Sampling Interval 5 feet

Land-Surface Elev. \_\_\_\_\_ feet  Surveyed  Estimated Datum N/A

Drilling Fluid Used \_\_\_\_\_ Drilling Method H.S. Auger

Drilling Contractor Western Technologies Inc. Driller Greg Helper Kurt

Prepared By R. Sipe Hammer Weight 140 Hammer Drop 30 inches

Sample/Core Depth (feet below land surface)	Core Recovery (feet)	Time/Hydraulic Pressure or Blows per 6 inches	Sample/Core Description
From	To		

6	7.5	1.2	44/25/37	Sand (70%), brown to dk brown (7.5YR 5/4 to 7.5YR 4.2) v. fine to coarse, silty Silt (20%); Gravel (10%) subangular, up to 1" diam; v. poorly sorted, dry to <u>lc. moist</u>
10	11.5	1.3	25/25/25	Sand (80%) brown (7.5YR 5/4) v. fine to v. coarse; Silt (10%); Gravel (10%) subangular, up to 1/2" diam; poorly sorted dry to <u>lc. moist</u>
15	16.5	1.5	35/27/38	Sand (70%) as above; Gravel (20%) subangular, up to 1" diam; Silt (10%); v. poorly sorted <u>lc. moist to dry</u>
				OUM - Oppm of samples in spoon
				2-3ppm from inside of
				auger @ 15'

**SAMPLE/CORE LOG**

Boring/Well S034 Project/No. CC079.01 TASK 10 Page 1 of 1

Site Location Pioneer Chlor Alkali Drilling Started 5/10/80 Drilling Completed 5/10/80  
9:20 10:15

Total Depth Drilled 21.5 feet Hole Diameter 7" inches Type of Sample/ Coring Device split spoon

Length and Diameter of Coring Device 1.5' x 2" Sampling Interval 5 feet

Land-Surface Elev. \_\_\_\_\_ feet  Surveyed  Estimated Datum n/a

Drilling Fluid Used WATER Drilling Method H.S. Auger

Drilling Contractor Western Technologies, Inc. Driller Greg Helper Kurt

Prepared By R. Sipe Hammer Weight 140 Hammer Drop 30 inches

Sample/Core Depth (feet below land surface)		Core Recovery (feet)	Time/Hydraulic Pressure or Blows per 6 inches	Sample/Core Description
From	To			

5	6.5	1.5	25/29/36	SAND (80%) lt. yellowish brown (10YR 8/4) v fine to coarse; Gravel (10%) subangular to subround up to 1/2" diam; Silt (10%); poorly sorted dry
10	11.5	1.1	42/35/50-54"	SAND (70%) lt. brown (7.5 YR 8/4) fine to coarse; Gravel (20%) subround to subangular up to 3/4" diam; Silt (10%); poorly sorted; to moist to dry
15	16.5	1.3	22/28/41	SAND (80%) AS ABOVE; Gravel (20%) AS ABOVE; Silt (10%); poorly sorted; +r-moist
20	21.5	1.0	22/21/35	SAND (60%) grayish brown (2.5 Y 5/2) fine to v. coarse; Gravel (30%) subangular to subround up to 1.5" diam; Silt (10%); v. poorly sorted +r. moist; cl. odor
				OUM - Open off samples in spoon - 4 ppm from bagged sample @ 10'

**SAMPLE/CORE LOG**

Boring/Well SB35 Project/No. C0079-01 Page 1 of 1  
 Site Location Pioneer Chlor Alkali Drilling Started 5/10/90 Drilling Completed 11:30  
 Total Depth Drilled 21.5 feet Hole Diameter 7 inches Type of Sample/ Coring Device split spoon  
 Length and Diameter of Coring Device 2 x 1.5' Sampling Interval 5 feet  
 Land-Surface Elev. \_\_\_\_\_ feet  Surveyed  Estimated Datum N/A  
 Drilling Fluid Used NONE Drilling Method H.S. Auger  
 Drilling Contractor WESTERN TECHNOLOGIES INC. Driller GREG Helper KURT  
 Prepared By R. Sipe Hammer Weight 140 Hammer Drop 30 inches

Sample/Core Depth (feet below land surface)		Core Recovery (feet)	Time/Hydraulic Pressure or Blows per 6 inches	Sample/Core Description
From	To			
5	6.5	1.2	5/18/23	Sand (80%) grayish brown (10YR 4/2) fine to v. coarse; Gravel (10%) subangular to subround; up to 1/2 dia; Silt (10%); poorly sorted, fine moist; no odor
10	11.5	1.3	2/13/43	Sand (70%) brown (10YR 5/2) fine to v. coarse; Gravel (20%) subangular; up to 2" dia; Silt (10%); v. poorly sorted, fine moist; sl. odor
15	16.5	1.1	19/35/35	Sand (70%) as above brown (10YR 4/3) Gravel (30%) as above; Silt (10%) v. poorly sorted, fine moist
20	21.5	1.1	20/38/39	Sand (60%) as above; Gravel (30%) as above up to 1" dia; Silt (10%) v. poorly sorted, fine moist
				OVUM - Dipper off samples in spoon - 29 ppm off bagged sample @ 10' - 25 ppm off bagged sample @ 20'





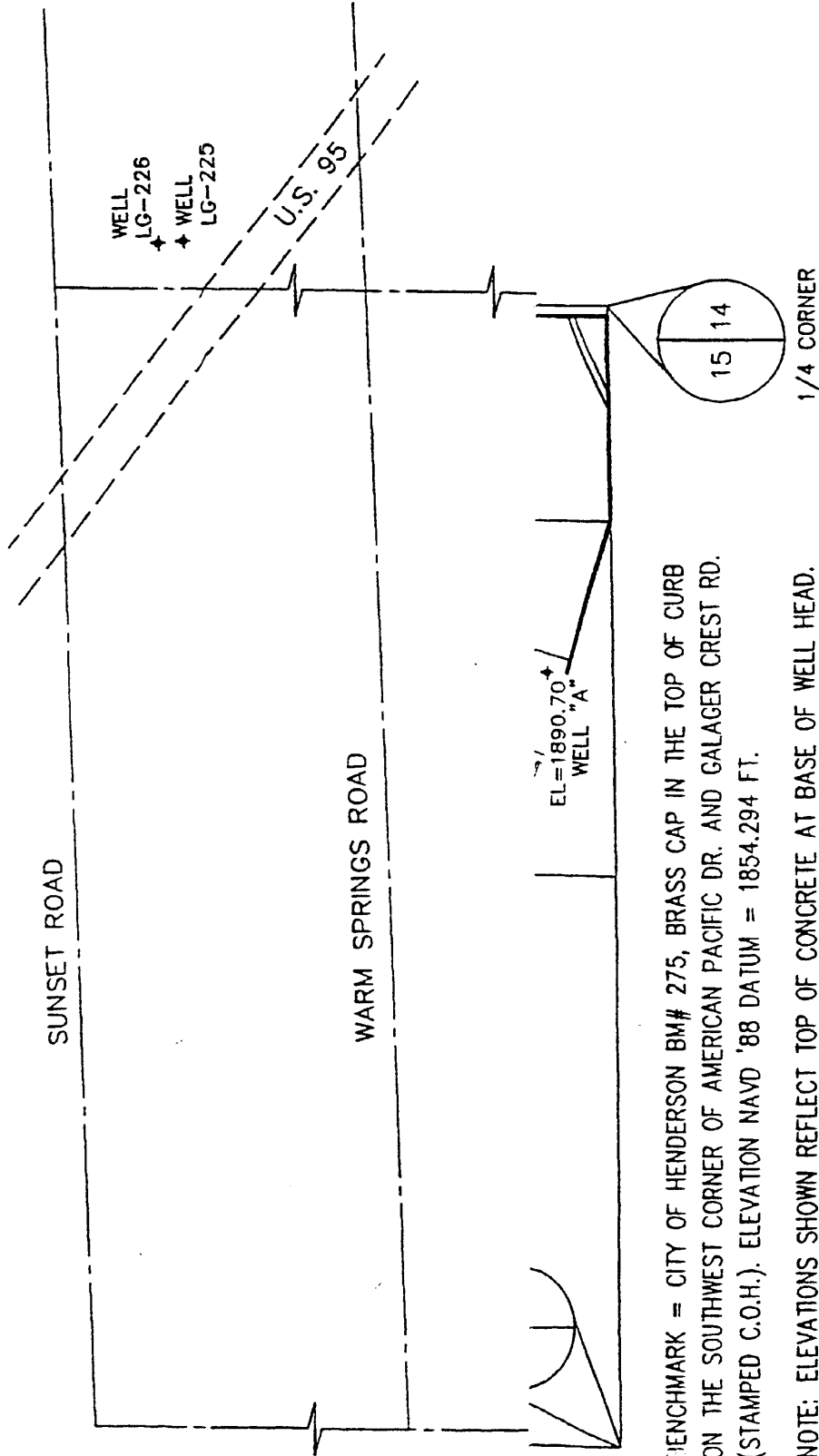
# SAMPLE/CORE LOG

Boring/Well SB37 Project/No. C0679.01 Page 1 of 1  
 Site Location Pioneer Chlor Alkali Drilling Started 5/10/90 Drilling Completed 5/10/90  
1:10 1:30  
 Total Depth Drilled 11.5 feet Hole Diameter 7 inches Type of Sample/Coring Device split spoon  
 Length and Diameter of Coring Device 2" x 1.5' Sampling Interval 5 feet  
 Land-Surface Elev. \_\_\_\_\_ feet  Surveyed  Estimated Datum n/a  
 Drilling Fluid Used none Drilling Method H.S.  
 Drilling Contractor Western Technologies, Inc Driller Gueg Helper Kurt  
 Prepared By R. Sipe Hammer Weight 140 Hammer Drop 30 inches

Sample/Core Depth (feet below land surface)		Core Recovery (feet)	Time/Hydraulic Pressure or Blows per 6 inches	Sample/Core Description
From	To			
5	6.5	1.0	10/15/15	Sand (50%) lt. brownish grey (10YR 6/2); v. fine to v. coarse; Gravel (30%) sub angular to sub round up to 3/4" diam. Silt (20%) v. poorly sorted, dry Oppen - OUM
0	11.5	1.4	20/14/22	Sand (50%) as above; Gravel (30%) as above; Silt (20%); v. poorly sorted, dry Oppen w/ OUM of samples in spoon

# GIBSON BUSINESS PARK

## WELL LOCATION EXHIBIT



BENCHMARK = CITY OF HENDERSON BM# 275, BRASS CAP IN THE TOP OF CURB ON THE SOUTHWEST CORNER OF AMERICAN PACIFIC DR. AND GALAGER CREST RD. (STAMPED C.O.H.). ELEVATION NAVD '88 DATUM = 1854.294 FT.

NOTE: ELEVATIONS SHOWN REFLECT TOP OF CONCRETE AT BASE OF WELL HEAD.

NOTE: WELLS LG-225 & LG-226 ARE APPROXIMATE LOCATION ONLY PER G.E.S.

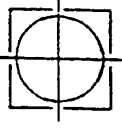
NOTE: SEE ATTACHED SHEET FOR STATE PLANE COORDINATES INFORMATION.

GRAPHIC SCALE

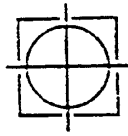


( IN FEET )  
1 inch = 800 ft.

SCALE: 1" = 800'



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**SURVEYOR'S NOTE:** The State Plane Coordinates shown hereon are derived from Clark County's Record of Survey recorded in File 88, Page 53 of Surveys. The reference points, which this survey was based upon, were "Whitney 2" and "W51" as shown per said Survey. The coordinates shown hereon are in U.S. Survey feet and are Grid Coordinates rotated and translated to the North American Datum of 1983 (NAD 83), Nevada East Zone, #2701. See the E.S.I. exhibit labeled A320EX62.DWG for the location of the well heads as referenced to local streets within the City of Henderson.

**BENCHMARK -** City of Henderson BM# 275, Brass Cap in the top of curb on the southwest corner of American Pacific Drive and Galager Crest Road (Stamped C.O.H.).  
Elevation NAVD 88' Datum = 1854.294 ft.

<u>POINT</u>	<u>NORTHING</u>	<u>EASTING</u>	<u>ELEVATION</u>	<u>DESCRIPTION</u>
2000	26719788.77	819909.85	1783.71	WELL "F"
2001	26717131.48	819059.66	1838.99	WELL "D"
2002	26715809.72	819813.04	1851.92	WELL "C"
2003	26715849.02	818114.18	1873.04	WELL "B"
2004	26714962.98	818267.11	1890.70	WELL "A"
2005	26715804.75	815276.80	1894.70	WELL "E"

# EXPLORATION LOG A

PROJECT: PEPCON MONITORING WELLS PROJECT NO.: 96189V2  
 SITE LOCATION: SEE SITE PLAN EXPLORATION DATE: 8-28-97  
 EXPLORATION SIZE (diameter): 4" MONITORING WELL EQUIPMENT: MOBILE B-53  
 G.S. ELEVATION: 1890.7 LOGGED BY: S. JOHNSON

INITIAL DEPTH TO WATER: 89 DATE MEASURED: 8-30-97  
 FINAL DEPTH TO WATER: 75 DATE MEASURED: 9-15-97

ELEVATION/ DEPTH	SOIL & SAMPLE SYMBOLS	USCS	DESCRIPTION	WELL CONSTRUCTION
1890 0		GP- GM	Pale brown poorly graded gravel with silt and sand, dry and dense to very dense.	
1885 5		C/G	Pale brown cemented sand and gravel, dry, cemented and hard.  ...cemented material, no sample taken	
1880 10		SP	Dark brown poorly graded sand with gravel, slightly moist and dense to very dense.  ...dry and light brown from 19.0 to 31.0	
1875 15				
1870 20		C/G	Light grey cemented sand and gravel, dry, strongly cemented and very hard.	
1865 25				
1860 30		SP	Brown poorly graded sand with gravel, dry to slightly moist, partially cemented and very dense.	
1855 35				



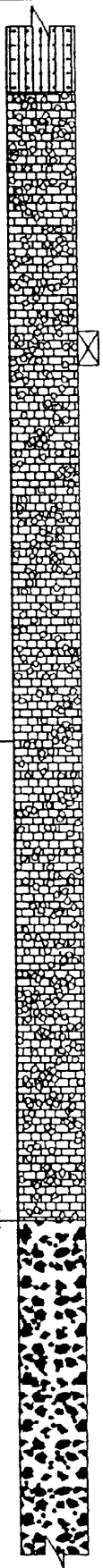
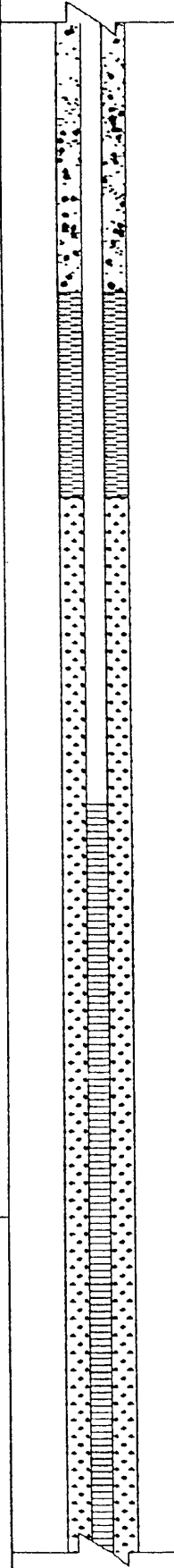
# EXPLORATION LOG B

PROJECT: PEPCON MONITORING WELLS PROJECT NO.: 96189V2  
 HOLE LOCATION: SEE SITE PLAN EXPLORATION DATE: 9-5-97  
 EXPLORATION SIZE (diameter): 4" MONITORING WELL EQUIPMENT: MOBILE B-53  
 G.S. ELEVATION: 1873.04 LOGGED BY: S. JOHNSON

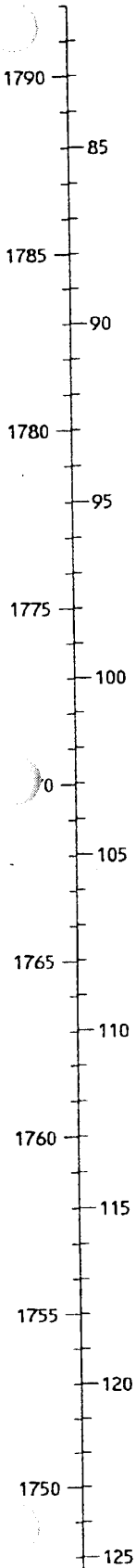


INITIAL DEPTH TO WATER: 71 DATE MEASURED: 9-5-97  
 FINAL DEPTH TO WATER: 57 DATE MEASURED: 9-11-97

ELEVATION/ DEPTH	SOIL & SAMPLE SYMBOLS	USCS	DESCRIPTION	WELL CONSTRUCTION
1875 0		GP	Brown poorly graded gravel with sand and cobbles, slightly moist to moist and dense.	
1870 5		GP-GM	Light brown poorly graded gravel with silt and sand, slightly moist to moist and dense.	
1865 10		SP	Brown poorly graded sand with fine gravel, moist and dense.  ...slightly moist to moist from 9.5 to 17.5	
1850 15			...dry from 17.5 to 33.0	
1845 30			...cobble	
1840 35		SP-SM	Brown poorly graded sand with silt and gravel, slightly moist and dense.	

# EXPLORATION LOG B

ELEVATION/ DEPTH	SOIL & SAMPLE SYMBOLS	USCS	DESCRIPTION	WELL CONSTRUCTION
<div style="display: flex; flex-direction: column; align-items: center;"> <div style="margin-bottom: 10px;">1835</div> <div style="margin-bottom: 10px;">40</div> <div style="margin-bottom: 10px;">1830</div> <div style="margin-bottom: 10px;">45</div> <div style="margin-bottom: 10px;">1825</div> <div style="margin-bottom: 10px;">50</div> <div style="margin-bottom: 10px;">1820</div> <div style="margin-bottom: 10px;">55</div> <div style="margin-bottom: 10px;">5</div> <div style="margin-bottom: 10px;">60</div> <div style="margin-bottom: 10px;">1810</div> <div style="margin-bottom: 10px;">65</div> <div style="margin-bottom: 10px;">1805</div> <div style="margin-bottom: 10px;">70</div> <div style="margin-bottom: 10px;">1800</div> <div style="margin-bottom: 10px;">75</div> <div style="margin-bottom: 10px;">1795</div> <div style="margin-bottom: 10px;">80</div> </div>		<div style="margin-bottom: 10px;">C/G</div> <div style="margin-bottom: 10px;">GW</div>	<p>...more gravel and very dense from 37.0 to 38.0</p> <p>Brown cemented sand and gravel, dry to slightly moist, moderately cemented and medium hard.</p> <p>...cuttings</p> <p><b>GROUNDWATER ENCOUNTERED</b> Dark brown well graded gravel with sand, wet and dense.</p>	

# EXPLORATION LOG B

ELEVATION/ DEPTH	SOIL & SAMPLE SYMBOLS	USCS	DESCRIPTION	WELL CONSTRUCTION
 <p>1790 85 1785 90 1780 95 1775 100 1770 105 1765 110 1760 115 1755 120 1750 125</p>			<p>END OF BORING AT 83 FEET</p>	

# EXPLORATION LOG

## C

PROJECT: PEPCON MONITORING WELLS PROJECT NO.: 96189V2  
 HOLE LOCATION: SEE SITE PLAN EXPLORATION DATE: 9-5&6-97  
 EXPLORATION SIZE (diameter): 4" MONITORING WELL EQUIPMENT: MOBILE B-53  
 G.S. ELEVATION: 1851.92 LOGGED BY: S. JOHNSON

INITIAL DEPTH TO WATER: 59 DATE MEASURED: 9-6-97  
 FINAL DEPTH TO WATER: 41 DATE MEASURED: 9-15-97

ELEVATION/ DEPTH	SOIL & SAMPLE SYMBOLS	USCS	DESCRIPTION	WELL CONSTRUCTION
<div style="text-align: right; padding-right: 5px;">           0 1850 5 1845 10 1840 15 1835 20 1830 25 1825 30 1820 35         </div>		GP       GP-GM  SP-SC  CL     CL	Brown poorly graded gravel with sand, cobbles and boulders, moist and dense. ...light brown and dry to slightly moist to 12.0  ...sampler on rock  ...more fine gravel and sand, no boulders and isolated cobbles to 12.0  Light brown poorly graded gravel with silt and sand, dry to slightly moist and dense.  Light brown poorly graded sand with clay, slightly moist and dense.  Reddish brown lean clay with sand, moist and stiff.  ...sandy lean clay with minor gypsum from 19.0 to 31.5    ...small gravel lense from 31.5 to 32.0	

# EXPLORATION LOG C



ELEVATION/ DEPTH	SOIL & SAMPLE SYMBOLS	USCS	DESCRIPTION	WELL CONSTRUCTION
<div style="display: flex; flex-direction: column; align-items: center;"> <div style="margin-bottom: 10px;">15</div> <div style="margin-bottom: 10px;">40</div> <div style="margin-bottom: 10px;">1810</div> <div style="margin-bottom: 10px;">45</div> <div style="margin-bottom: 10px;">1805</div> <div style="margin-bottom: 10px;">50</div> <div style="margin-bottom: 10px;">1800</div> <div style="margin-bottom: 10px;">55</div> <div style="margin-bottom: 10px;">1795</div> <div style="margin-bottom: 10px;">60</div> <div style="margin-bottom: 10px;">1790</div> <div style="margin-bottom: 10px;">65</div> <div style="margin-bottom: 10px;">1785</div> <div style="margin-bottom: 10px;">70</div> <div style="margin-bottom: 10px;">1780</div> <div style="margin-bottom: 10px;">75</div> <div style="margin-bottom: 10px;">1775</div> <div style="margin-bottom: 10px;">80</div> </div>		<div style="margin-bottom: 10px;"></div> <div style="margin-bottom: 10px;">GP</div> <div style="margin-bottom: 10px;">GP-GC</div> <div style="margin-bottom: 10px;">SP</div> <div style="margin-bottom: 10px;">GP</div> <div style="margin-bottom: 10px;"></div>	<div style="margin-bottom: 10px;"></div> <div style="margin-bottom: 10px;">Dark brown poorly graded gravel with sand, very moist to wet and dense to very dense.</div> <div style="margin-bottom: 10px;">Brown poorly graded gravel with sand and clay, very moist to wet and dense to very dense.</div> <div style="margin-bottom: 10px;">GROUNDWATER ENCOUNTERED Dark brown poorly graded sand with gravel, wet and dense.</div> <div style="margin-bottom: 10px;">Dark brown poorly graded gravel with sand and cobbles, wet and dense.</div> <div style="margin-bottom: 10px;"></div> <div style="margin-bottom: 10px; text-align: center;"><b>END OF BORING AT 73 FEET</b></div>	

# EXPLORATION LOG D

PROJECT: PEPCON MONITORING WELLS  
 HOLE LOCATION: SEE SITE PLAN  
 EXPLORATION SIZE (diameter): 4" MONITORING WELL  
 G.S. ELEVATION: 1838.99

PROJECT NO.: 96189V2  
 EXPLORATION DATE: 9-2-97  
 EQUIPMENT: MOBILE B-53  
 LOGGED BY: S. JOHNSON

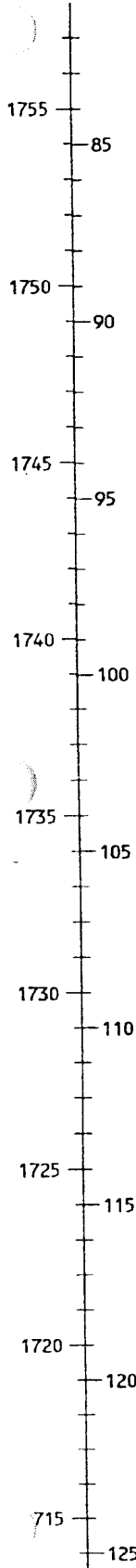


INITIAL DEPTH TO WATER: 65      DATE MEASURED: 9-2-97  
 FINAL DEPTH TO WATER: 31      DATE MEASURED: 9-15-97

LEVATION/ DEPTH	SOIL & SAMPLE SYMBOLS	USCS	DESCRIPTION	WELL CONSTRUCTION
1840 0		GP- GM	Light brown poorly graded gravel with silt and sand, slightly moist and very dense.	
1835 5			...sampler on rock	
1830 10		SC	Reddish brown clayey sand, moist and dense.	
1825 15		CL	Reddish brown sandy lean clay, moist and stiff.	
		SC	Reddish brown clayey sand, moist and dense.	
		CL	Reddish brown sandy lean clay, moist and stiff.	
1820 20			...light brown and slightly moist from 19.5 to 33.0	
1815 25				
1810 30				
805 35		SC	Brown clayey sand, slightly moist to moist and dense.	

# EXPLORATION LOG D

ELEVATION/ DEPTH	SOIL & SAMPLE SYMBOLS	USCS	DESCRIPTION	WELL CONSTRUCTION
<div style="display: flex; flex-direction: column; align-items: center;"> <div style="margin-bottom: 10px;">1800</div> <div style="margin-bottom: 10px;">40</div> <div style="margin-bottom: 10px;">1795</div> <div style="margin-bottom: 10px;">45</div> <div style="margin-bottom: 10px;">1790</div> <div style="margin-bottom: 10px;">50</div> <div style="margin-bottom: 10px;">1785</div> <div style="margin-bottom: 10px;">55</div> <div style="margin-bottom: 10px;">1780</div> <div style="margin-bottom: 10px;">60</div> <div style="margin-bottom: 10px;">1775</div> <div style="margin-bottom: 10px;">65</div> <div style="margin-bottom: 10px;">1770</div> <div style="margin-bottom: 10px;">70</div> <div style="margin-bottom: 10px;">1765</div> <div style="margin-bottom: 10px;">75</div> <div style="margin-bottom: 10px;">1760</div> <div style="margin-bottom: 10px;">80</div> </div>		<div style="margin-bottom: 10px;"></div> <div style="margin-bottom: 10px;">GP</div> <div style="margin-bottom: 10px;">SC</div> <div style="margin-bottom: 10px;"></div> <div style="margin-bottom: 10px;">GP</div>	<div style="margin-bottom: 10px;"></div> <div style="margin-bottom: 10px;">Brown poorly graded gravel with sand, very moist to wet and dense.</div> <div style="margin-bottom: 10px;">Brown clayey sand, moist to very moist and dense.</div> <div style="margin-bottom: 10px;"></div> <div style="margin-bottom: 10px;">GROUNDWATER ENCOUNTERED Dark brown poorly graded gravel with sand, wet and dense.</div>	

# EXPLORATION LOG D

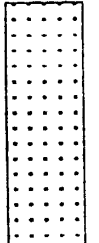
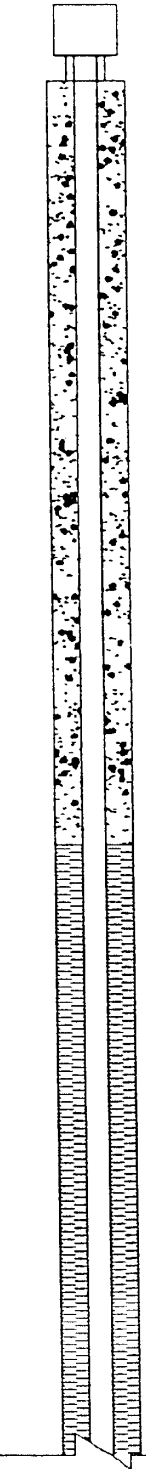
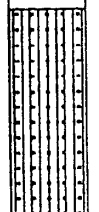

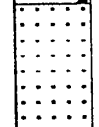

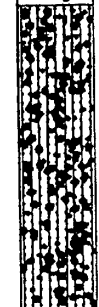


ELEVATION/ DEPTH	SOIL & SAMPLE SYMBOLS	USCS	DESCRIPTION	WELL CONSTRUCTION
 <p>1755 85 1750 90 1745 95 1740 100 1735 105 1730 110 1725 115 1720 120 715 125</p>			<p>END OF BORING AT 82 FEET</p>	



# EXPLORATION LOG E

PROJECT: PEPCON MONITORING WELLS PROJECT NO.: 96189V2  
 HOLE LOCATION: SEE SITE PLAN EXPLORATION DATE: 8-28-97  
 EXPLORATION SIZE (diameter): 4" MONITORING WELL EQUIPMENT: MOBILE B-53  
 G.S. ELEVATION: 1894.7 LOGGED BY: S. JOHNSON


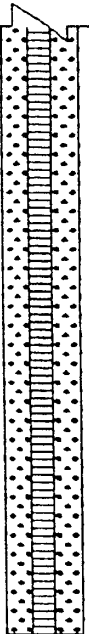
INITIAL DEPTH TO WATER: 87 DATE MEASURED: 8-28-97  
 FINAL DEPTH TO WATER: 74 DATE MEASURED: 9-11-97

LEVATION/ DEPTH	SOIL & SAMPLE SYMBOLS	USCS	DESCRIPTION	WELL CONSTRUCTION
1895 0		SP	Brown poorly graded sand with gravel, slightly moist and dense.  ...slightly moist to moist from 4.0 to 6.5	
1890 5		SP-SM	Brown poorly graded sand with silt and fine gravel, slightly moist to moist and dense.	
1885 10		GP	Brown poorly graded gravel with sand, slightly moist to moist and dense. Stratified with sandy layers.  ...boulder	
1880 15		SP	Brown poorly graded sand with gravel, slightly moist to moist and dense.	
1875 20		GP	Brown poorly graded gravel, with sand, slightly moist to moist and dense to very dense.	
1870 25		GP-GM	Brown poorly graded fine gravel with silt and sand, slightly moist to moist and dense to very dense.  ...very dense from 27.5 to 31.0 ...partially cemented from 29.0 to 31.0	
1865 30		C/G	Greyish brown cemented sand and gravel, dry, cemented and hard.	
1860 35				

# EXPLORATION LOG E

ELEVATION/ DEPTH	SOIL & SAMPLE SYMBOLS	USCS	DESCRIPTION	WELL CONSTRUCTION
<div style="display: flex; flex-direction: column; align-items: center;"> <div style="margin-bottom: 10px;">1855</div> <div style="margin-bottom: 10px;">-40</div> <div style="margin-bottom: 10px;">1850</div> <div style="margin-bottom: 10px;">-45</div> <div style="margin-bottom: 10px;">1845</div> <div style="margin-bottom: 10px;">-50</div> <div style="margin-bottom: 10px;">1840</div> <div style="margin-bottom: 10px;">-55</div> <div style="margin-bottom: 10px;">1835</div> <div style="margin-bottom: 10px;">-60</div> <div style="margin-bottom: 10px;">1830</div> <div style="margin-bottom: 10px;">-65</div> <div style="margin-bottom: 10px;">1825</div> <div style="margin-bottom: 10px;">-70</div> <div style="margin-bottom: 10px;">1820</div> <div style="margin-bottom: 10px;">-75</div> <div style="margin-bottom: 10px;">15</div> <div style="margin-bottom: 10px;">-80</div> </div>		<div style="margin-bottom: 100px;">GP</div> <div style="margin-bottom: 100px;">SP</div> <div style="margin-bottom: 100px;">C/G</div> <div style="margin-bottom: 100px;">GP</div> <div style="margin-bottom: 100px;">C/G</div>	<div style="margin-bottom: 100px;">Greyish brown poorly graded gravel with sand, dry, partially cemented and medium hard.</div> <div style="margin-bottom: 100px;">Dark brown poorly graded sand with gravel, slightly moist, partially cemented and very dense. Stratified sandy and gravelly levels.</div> <div style="margin-bottom: 100px;">Greyish brown cemented sand and gravel, dry, cemented and hard to very hard.</div> <div style="margin-bottom: 100px;">Greyish brown poorly graded gravel with sand, dry to slightly moist, partially cemented and dense.</div> <div style="margin-bottom: 100px;">Greyish brown cemented sand and gravel, dry to slightly moist, cemented and hard to very hard.</div> <div style="margin-bottom: 100px;">...dark brown and slightly moist from 78.0 to 87.0 ...moderately cemented and medium hard from 79.0 to 87.0</div>	

# EXPLORATION LOG E

ELEVATION/ DEPTH	SOIL & SAMPLE SYMBOLS	USCS	DESCRIPTION	WELL CONSTRUCTION
<div style="display: flex; flex-direction: column; align-items: center;"> <div style="margin-bottom: 10px;">1810 — 85</div> <div style="margin-bottom: 10px;">1805 — 90</div> <div style="margin-bottom: 10px;">1800 — 95</div> <div style="margin-bottom: 10px;">1795 — 100</div> <div style="margin-bottom: 10px;">1790 — 105</div> <div style="margin-bottom: 10px;">1785 — 110</div> <div style="margin-bottom: 10px;">1780 — 115</div> <div style="margin-bottom: 10px;">1775 — 120</div> <div style="margin-bottom: 10px;">1770 — 125</div> </div>		<div style="margin-bottom: 10px;">GP</div>	<p>GROUNDWATER ENCOUNTERED Dark brown poorly graded gravel with sand, wet, partially cemented and dense.</p> <p>...larger gravel from 96.5 to 97.0</p> <p style="text-align: center;">END OF BORING AT 97 FEET</p>	

# EXPLORATION LOG F

PROJECT: PEPCON MONITORING WELLS PROJECT NO.: 96189V2  
 HOLE LOCATION: SEE SITE PLAN EXPLORATION DATE: 9-6-97  
 EXPLORATION SIZE (diameter): 4" MONITORING WELL EQUIPMENT: MOBILE B-53  
 G.S. ELEVATION: 1783.71 LOGGED BY: S. JOHNSON

INITIAL DEPTH TO WATER: 43 DATE MEASURED: 9-6-97  
 FINAL DEPTH TO WATER: 29 DATE MEASURED: 9-11-97

ELEVATION/ DEPTH	SOIL & SAMPLE SYMBOLS	USCS	DESCRIPTION	WELL CONSTRUCTION
1785 0 1780 5 1775 10 1770 15 1765 20 1760 25 1755 30 1750 35		F  GP-GM  C/G  GP-GM  C/G  CL	Brown poorly graded gravel with sand, cobbles and boulders, slightly moist and dense. ...light brown and dry to slightly moist to 4.0  Light brown poorly graded gravel with silt, sand and cobbles, dry to slightly moist and dense to very dense.  ...boulder  Dark brown cemented sand and gravel, cemented and hard to very hard.  Dark brown poorly graded gravel with sand, cobbles and boulders, dry to slightly moist and dense to very dense.  Dark brown cemented sand and gravel, dry and hard. Isolated boulders.  Reddish brown sandy lean clay with gravel, moist and stiff.	

# EXPLORATION LOG F

ELEVATION/ DEPTH	SOIL & SAMPLE SYMBOLS	USCS	DESCRIPTION	WELL CONSTRUCTION
			<p style="text-align: center;">GROUNDWATER ENCOUNTERED Light brown clayey sand with gravel, wet, partially cemented and dense.</p> <p style="text-align: center;">...no longer partially cemented</p>	
		SC		
		GP-GC	Brown poorly graded gravel with clay and sand, wet, partially cemented and dense. Stratified.	
			<b>END OF BORING AT 63 FEET</b>	

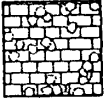
# KEY TO SYMBOLS

Symbol Description

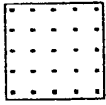
## Strata symbols



Poorly graded gravel  
with silt



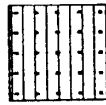
Strongly cemented sand and gravel



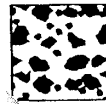
Poorly graded sand



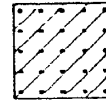
Poorly graded gravel



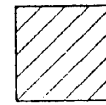
Poorly graded sand  
with silt



Well graded gravel



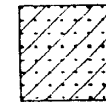
Poorly graded sand  
with clay



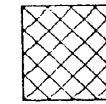
Low plasticity  
clay



Poorly graded gravel  
with clay



Clayey sand



Fill

## Misc. Symbols



Boring continues

# KEY TO SYMBOLS

Symbol Description



Final water level at date indicated



Initial water level at date indicated

## Soil Samplers



Standard penetration test



No recovery



Bulk sample

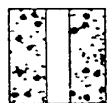


California sampler

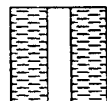
## Monitor Well Details



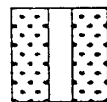
riser with cover  
and protective  
casing



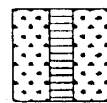
Neat Cement seal



bentonite pellets



silica sand, blank PVC



slotted pipe w/ sand

# KEY TO SYMBOLS

## Notes:

1. Exploratory borings were drilled on date shown using a Mobile B-53 drill rig.
2. California sampler or Standard Penetration Test sampler driven with 140 pound hammer falling 30 inches as noted.
3. Boring locations and elevations were determined by an E.S.I. survey crew.
4. Four-inch diameter PVC monitoring wells with .020 inch slotted screen sections set at depths noted in exploration logs.
5. These logs are subject to the limitations, conclusions, and recommendations in this report.
6. Results of tests conducted on samples recovered are reported on the logs and attached plates/figures.

FIGURE No. 8



# EXPLORATION LOG MW-A

# CONFIDENTIAL

PROJECT: FORMER PEPCON FACILITY PROJECT NO.: 97664V1  
 SITE LOCATION: SEE SITE PLAN EXPLORATION DATE: 8-28-97  
 EXPLORATION SIZE (diameter): 4" MONITORING WELL EQUIPMENT: MOBILE B-53  
 G.S. ELEVATION: 1890.7 LOGGED BY: S. JOHNSON

INITIAL DEPTH TO WATER: 89 DATE MEASURED: 8-30-97  
 FINAL DEPTH TO WATER: 75 DATE MEASURED: 9-15-97

ELEVATION/ DEPTH	SOIL & SAMPLE SYMBOLS	USCS	DESCRIPTION	WELL CONSTRUCTION
892.5  0 1890  2.5 1887.5  5 1885  7.5 882.5  10 1880  12.5 1877.5  15 75		  GP- GM        C/G        SP	  Pale brown poorly graded gravel with silt and sand, dry and dense to very dense.           Pale brown cemented sand and gravel, dry, cemented and hard.  ...cemented material, no sample taken    Dark brown poorly graded sand with gravel, slightly moist and dense to very dense.	

# EXPLORATION LOG MW-A

# CONFIDENTIAL

ELEVATION/ DEPTH	SOIL & SAMPLE SYMBOLS	USCS	DESCRIPTION	WELL CONSTRUCTION
<div style="display: flex; flex-direction: column; align-items: center;"> <div style="margin-bottom: 10px;">17.5</div> <div style="margin-bottom: 10px;">1872.5</div> <div style="margin-bottom: 10px;">20</div> <div style="margin-bottom: 10px;">1870</div> <div style="margin-bottom: 10px;">22.5</div> <div style="margin-bottom: 10px;">867.5</div> <div style="margin-bottom: 10px;">25</div> <div style="margin-bottom: 10px;">1865</div> <div style="margin-bottom: 10px;">27.5</div> <div style="margin-bottom: 10px;">1862.5</div> <div style="margin-bottom: 10px;">30</div> <div style="margin-bottom: 10px;">1860</div> <div style="margin-bottom: 10px;">32.5</div> <div style="margin-bottom: 10px;">1857.5</div> <div style="margin-bottom: 10px;">35</div> <div style="margin-bottom: 10px;">1855</div> <div style="margin-bottom: 10px;">37.5</div> <div style="margin-bottom: 10px;">2.5</div> </div>			<p>...dry and light brown from 19.0 to 31.0</p>	
		C/G	Light grey cemented sand and gravel, dry, strongly cemented and very hard.	
		SP	Brown poorly graded sand with gravel, dry to slightly moist, partially cemented and very dense.	

# EXPLORATION LOG MW-A

# CONFIDENTIAL

ELEVATION/ DEPTH	SOIL & SAMPLE SYMBOLS	USCS	DESCRIPTION	WELL CONSTRUCTION
<div style="display: flex; flex-direction: column; align-items: center;"> <div style="margin-bottom: 10px;">40</div> <div style="margin-bottom: 10px;">1850</div> <div style="margin-bottom: 10px;">42.5</div> <div style="margin-bottom: 10px;">1847.5</div> <div style="margin-bottom: 10px;">45</div> <div style="margin-bottom: 10px;">1845</div> <div style="margin-bottom: 10px;">47.5</div> <div style="margin-bottom: 10px;">1842.5</div> <div style="margin-bottom: 10px;">50</div> <div style="margin-bottom: 10px;">1840</div> <div style="margin-bottom: 10px;">52.5</div> <div style="margin-bottom: 10px;">1837.5</div> <div style="margin-bottom: 10px;">55</div> <div style="margin-bottom: 10px;">1835</div> <div style="margin-bottom: 10px;">57.5</div> <div style="margin-bottom: 10px;">1832.5</div> <div style="margin-bottom: 10px;">60</div> <div style="margin-bottom: 10px;">1830</div> </div>		<div style="margin-top: 100px;">C/G</div>	<div style="margin-top: 100px;">Dark brown cemented sand and gravel, dry, cemented and hard to very hard.</div>	


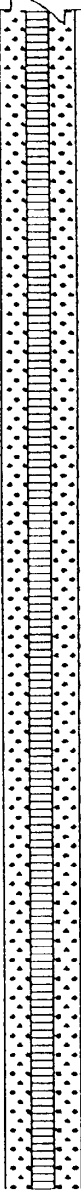
# EXPLORATION LOG MW-A

# CONFIDENTIAL

ELEVATION/ DEPTH	SOIL & SAMPLE SYMBOLS	USCS	DESCRIPTION	WELL CONSTRUCTION
<div style="display: flex; flex-direction: column; align-items: center;"> <div style="margin-bottom: 10px;">62.5</div> <div style="margin-bottom: 10px;">1827.5</div> <div style="margin-bottom: 10px;">65</div> <div style="margin-bottom: 10px;">1825</div> <div style="margin-bottom: 10px;">67.5</div> <div style="margin-bottom: 10px;">322.5</div> <div style="margin-bottom: 10px;">70</div> <div style="margin-bottom: 10px;">1820</div> <div style="margin-bottom: 10px;">72.5</div> <div style="margin-bottom: 10px;">1817.5</div> <div style="margin-bottom: 10px;">75</div> <div style="margin-bottom: 10px;">1815</div> <div style="margin-bottom: 10px;">77.5</div> <div style="margin-bottom: 10px;">812.5</div> <div style="margin-bottom: 10px;">80</div> <div style="margin-bottom: 10px;">1810</div> <div style="margin-bottom: 10px;">82.5</div> <div style="margin-bottom: 10px;">85</div> </div>		<div style="margin-top: 880px;">GP</div>	<div style="margin-top: 560px;">...less gravel from 74.0 to 78.0</div> <div style="margin-top: 880px;">Dark brown poorly graded gravel with sand, very moist to wet, partially cemented and dense.</div>	

# EXPLORATION LOG MW-A

# CONFIDENTIAL

ELEVATION/ DEPTH	SOIL & SAMPLE SYMBOLS	USCS	DESCRIPTION	WELL CONSTRUCTION
<div style="display: flex; flex-direction: column; align-items: center;"> <div style="margin-bottom: 10px;">85</div> <div style="margin-bottom: 10px;">1805</div> <div style="margin-bottom: 10px;">87.5</div> <div style="margin-bottom: 10px;">90.25</div> <div style="margin-bottom: 10px;">90</div> <div style="margin-bottom: 10px;">1800</div> <div style="margin-bottom: 10px;">92.5</div> <div style="margin-bottom: 10px;">1797.5</div> <div style="margin-bottom: 10px;">95</div> <div style="margin-bottom: 10px;">1795</div> <div style="margin-bottom: 10px;">97.5</div> <div style="margin-bottom: 10px;">99.25</div> <div style="margin-bottom: 10px;">100</div> <div style="margin-bottom: 10px;">1790</div> <div style="margin-bottom: 10px;">102.5</div> <div style="margin-bottom: 10px;">1787.5</div> <div style="margin-bottom: 10px;">105</div> <div style="margin-bottom: 10px;">105.5</div> </div>			<p>GROUNDWATER ENCOUNTERED ...very few fines, predominantly coarse sand and larger</p> <p>...more coarse gravel and very dense from 90.0 to 93.0</p> <p style="text-align: center;">END OF EXPLORATION END OF BORING AT 100 FEET</p>	

# EXPLORATION LOG MW-B

# CONFIDENTIAL

**PROJECT:** FORMER PEPCON FACILITY  
**HOLE LOCATION:** SEE SITE PLAN  
**EXPLORATION SIZE (diameter):** 4" MONITORING WELL  
**G.S. ELEVATION:** 1873.04

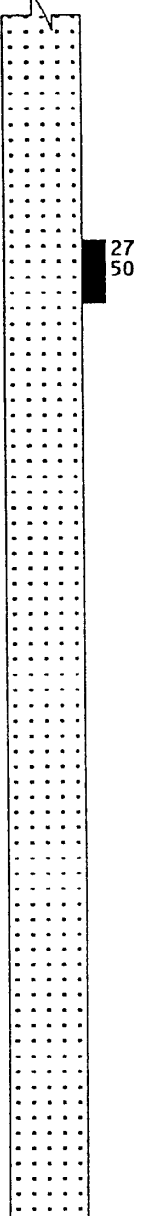
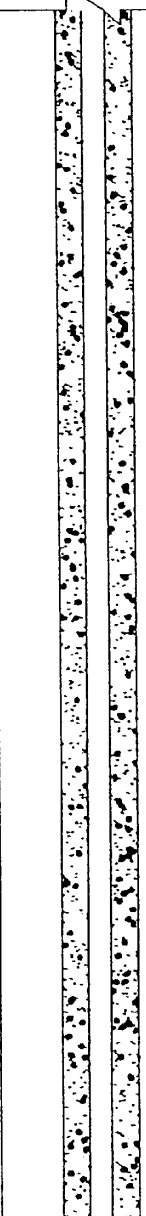
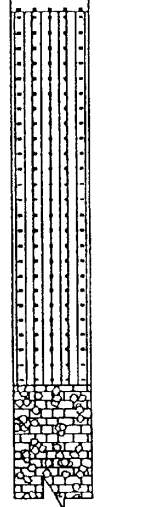
**PROJECT NO.:** 97664V1  
**EXPLORATION DATE:** 9-5-97  
**EQUIPMENT:** MOBILE B-53  
**LOGGED BY:** S. JOHNSON

**INITIAL DEPTH TO WATER:** 71      **DATE MEASURED:** 9-5-97  
**FINAL DEPTH TO WATER:** 57      **DATE MEASURED:** 9-11-97

ELEVATION/ DEPTH	SOIL & SAMPLE SYMBOLS	USCS	DESCRIPTION	WELL CONSTRUCTION
<div style="display: flex; flex-direction: column; align-items: center;"> <div style="margin-bottom: 10px;">1875</div> <div style="margin-bottom: 10px;">0</div> <div style="margin-bottom: 10px;">1872.5</div> <div style="margin-bottom: 10px;">2.5</div> <div style="margin-bottom: 10px;">1870</div> <div style="margin-bottom: 10px;">5</div> <div style="margin-bottom: 10px;">1867.5</div> <div style="margin-bottom: 10px;">7.5</div> <div style="margin-bottom: 10px;">1865</div> <div style="margin-bottom: 10px;">10</div> <div style="margin-bottom: 10px;">862.5</div> <div style="margin-bottom: 10px;">12.5</div> <div style="margin-bottom: 10px;">1860</div> <div style="margin-bottom: 10px;">15</div> <div style="margin-bottom: 10px;">5</div> </div>		<p>GP</p> <hr/> <p>GP-GM</p> <hr/> <p>SP</p>	<p>Brown poorly graded gravel with sand and cobbles, slightly moist to moist and dense.</p> <hr/> <p>Light brown poorly graded gravel with silt and sand, slightly moist to moist and dense.</p> <hr/> <p>Brown poorly graded sand with fine gravel, moist and dense.</p> <p>...slightly moist to moist from 9.5 to 17.5</p>	

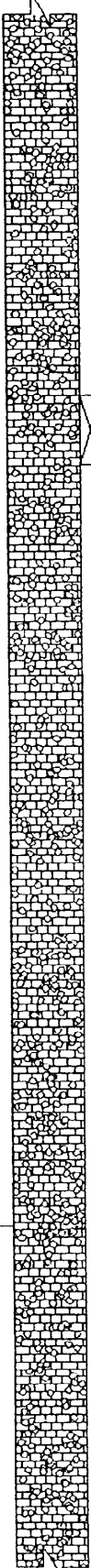
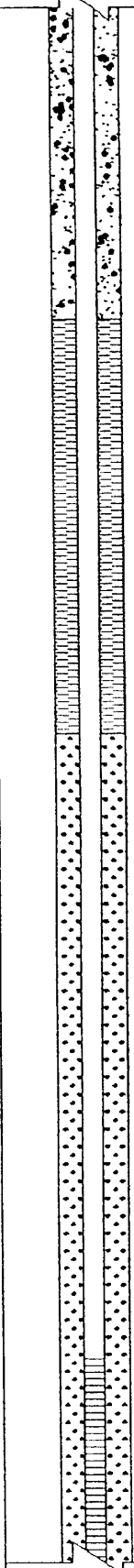
# EXPLORATION LOG MW-B

CONFIDENTIAL

ELEVATION/ DEPTH	SOIL & SAMPLE SYMBOLS	USCS	DESCRIPTION	WELL CONSTRUCTION
17.5 1855			...dry from 17.5 to 33.0	
20 1852.5				
22.5 1850				
25 1847.5				
27.5 1845			...cobble	
30 1842.5				
32.5 1840		SP- SM	Brown poorly graded sand with silt and gravel, slightly moist and dense.	
35 1837.5			...more gravel and very dense from 37.0 to 38.0	
37.5 35		C/G	Brown cemented sand and gravel, dry to slightly moist, moderately cemented and medium hard.	

# EXPLORATION LOG MW-B

CONFIDENTIAL

ELEVATION/ DEPTH	SOIL & SAMPLE SYMBOLS	USCS	DESCRIPTION	WELL CONSTRUCTION
<div style="display: flex; flex-direction: column; align-items: center;"> <div style="margin-bottom: 10px;">40</div> <div style="margin-bottom: 10px;">1832.5</div> <div style="margin-bottom: 10px;">42.5</div> <div style="margin-bottom: 10px;">1830</div> <div style="margin-bottom: 10px;">45</div> <div style="margin-bottom: 10px;">1827.5</div> <div style="margin-bottom: 10px;">47.5</div> <div style="margin-bottom: 10px;">1825</div> <div style="margin-bottom: 10px;">50</div> <div style="margin-bottom: 10px;">1822.5</div> <div style="margin-bottom: 10px;">52.5</div> <div style="margin-bottom: 10px;">1820</div> <div style="margin-bottom: 10px;">55</div> <div style="margin-bottom: 10px;">1817.5</div> <div style="margin-bottom: 10px;">57.5</div> <div style="margin-bottom: 10px;">1815</div> <div style="margin-bottom: 10px;">60</div> <div style="margin-bottom: 10px;">62.5</div> </div>		<div style="margin-bottom: 10px;"></div> <div style="margin-bottom: 10px;"></div> <div style="margin-bottom: 10px;"></div> <div style="margin-bottom: 10px;"></div> <div style="margin-bottom: 10px;"></div> <div style="margin-bottom: 10px;"></div> <div style="margin-bottom: 10px;"></div> <div style="margin-bottom: 10px;"></div> <div style="margin-bottom: 10px;"></div> <div style="margin-bottom: 10px;"></div> <div style="margin-bottom: 10px;"></div> <div style="margin-bottom: 10px;"></div> <div style="margin-bottom: 10px;"></div> <div style="margin-bottom: 10px;"></div> <div style="margin-bottom: 10px;"></div> <div style="margin-bottom: 10px;"></div> <div style="margin-bottom: 10px;"></div> <div style="margin-bottom: 10px;"></div> <div style="margin-bottom: 10px;"></div> <div style="margin-bottom: 10px;"></div>	<div style="margin-bottom: 10px;"></div> <div style="margin-bottom: 10px;"></div> <div style="margin-bottom: 10px;"></div> <div style="margin-bottom: 10px;"></div> <div style="margin-bottom: 10px;"></div> <div style="margin-bottom: 10px;"></div> <div style="margin-bottom: 10px;"></div> <div style="margin-bottom: 10px;"></div> <div style="margin-bottom: 10px;"></div> <div style="margin-bottom: 10px;"></div> <div style="margin-bottom: 10px;"></div> <div style="margin-bottom: 10px;"></div> <div style="margin-bottom: 10px;"></div> <div style="margin-bottom: 10px;"></div> <div style="margin-bottom: 10px;"></div> <div style="margin-bottom: 10px;"></div> <div style="margin-bottom: 10px;"></div> <div style="margin-bottom: 10px;"></div> <div style="margin-bottom: 10px;"></div> <div style="margin-bottom: 10px;"></div>	
			...cuttings	



# EXPLORATION LOG MW-B

# CONFIDENTIAL

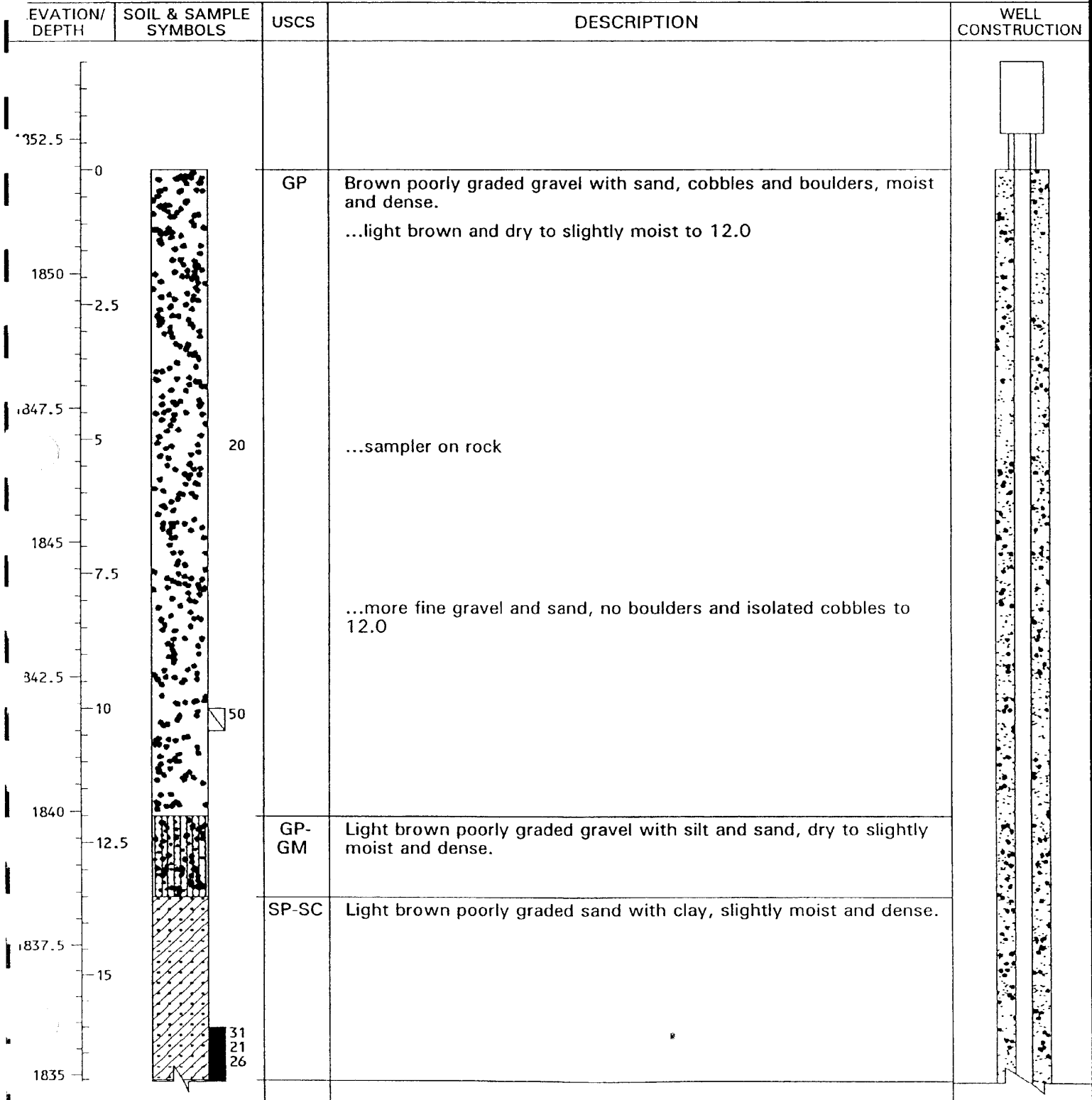
ELEVATION/ DEPTH	SOIL & SAMPLE SYMBOLS	USCS	DESCRIPTION	WELL CONSTRUCTION
<div style="display: flex; flex-direction: column; align-items: center;"> <div style="margin-bottom: 10px;">62.5</div> <div style="margin-bottom: 10px;">1810</div> <div style="margin-bottom: 10px;">65</div> <div style="margin-bottom: 10px;">1807.5</div> <div style="margin-bottom: 10px;">67.5</div> <div style="margin-bottom: 10px;">1805</div> <div style="margin-bottom: 10px;">70</div> <div style="margin-bottom: 10px;">1802.5</div> <div style="margin-bottom: 10px;">72.5</div> <div style="margin-bottom: 10px;">1800</div> <div style="margin-bottom: 10px;">75</div> <div style="margin-bottom: 10px;">1797.5</div> <div style="margin-bottom: 10px;">77.5</div> <div style="margin-bottom: 10px;">1795</div> <div style="margin-bottom: 10px;">80</div> <div style="margin-bottom: 10px;">1792.5</div> <div style="margin-bottom: 10px;">82.5</div> <div style="margin-bottom: 10px;">90</div> </div>		<div style="margin-bottom: 10px;">GW</div>	<p>GROUNDWATER ENCOUNTERED Dark brown well graded gravel with sand, wet and dense.</p>	
<p>END OF BORING AT 83 FEET</p>				

# EXPLORATION LOG MW-C

CONFIDENTIAL

PROJECT: FORMER PEPCON FACILITY	PROJECT NO.: 97664V1
SITE LOCATION: SEE SITE PLAN	EXPLORATION DATE: 9-5&6-97
EXPLORATION SIZE (diameter): 4" MONITORING WELL	EQUIPMENT: MOBILE B-53
G.S. ELEVATION: 1851.92	LOGGED BY: S. JOHNSON

INITIAL DEPTH TO WATER: 59	DATE MEASURED: 9-6-97
FINAL DEPTH TO WATER: 41	DATE MEASURED: 9-15-97



# EXPLORATION LOG MW-C

CONFIDENTIAL

ELEVATION/ DEPTH	SOIL & SAMPLE SYMBOLS	USCS	DESCRIPTION	WELL CONSTRUCTION
<div style="display: flex; flex-direction: column; align-items: center;"> <div style="margin-bottom: 10px;">17.5</div> <div style="margin-bottom: 10px;">32.5</div> <div style="margin-bottom: 10px;">20</div> <div style="margin-bottom: 10px;">1830</div> <div style="margin-bottom: 10px;">22.5</div> <div style="margin-bottom: 10px;">1827.5</div> <div style="margin-bottom: 10px;">25</div> <div style="margin-bottom: 10px;">1825</div> <div style="margin-bottom: 10px;">27.5</div> <div style="margin-bottom: 10px;">1822.5</div> <div style="margin-bottom: 10px;">30</div> <div style="margin-bottom: 10px;">1820</div> <div style="margin-bottom: 10px;">32.5</div> <div style="margin-bottom: 10px;">1817.5</div> <div style="margin-bottom: 10px;">35</div> <div style="margin-bottom: 10px;">1815</div> <div style="margin-bottom: 10px;">37.5</div> <div style="margin-bottom: 10px;">312.5</div> </div>		<p>CL</p>	<p>Reddish brown lean clay with sand, moist and stiff.</p> <p>...sandy lean clay with minor gypsum from 19.0 to 31.5</p> <p>...small gravel lense from 31.5 to 32.0</p>	


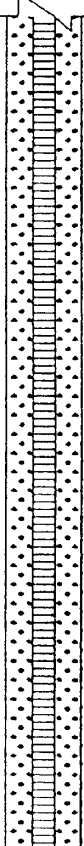
# EXPLORATION LOG MW-C

CONFIDENTIAL

ELEVATION/ DEPTH	SOIL & SAMPLE SYMBOLS	USCS	DESCRIPTION	WELL CONSTRUCTION
<div style="display: flex; flex-direction: column; align-items: center;"> <div style="margin-bottom: 10px;">40</div> <div style="margin-bottom: 10px;">1810</div> <div style="margin-bottom: 10px;">42.5</div> <div style="margin-bottom: 10px;">1807.5</div> <div style="margin-bottom: 10px;">45</div> <div style="margin-bottom: 10px;">1805</div> <div style="margin-bottom: 10px;">47.5</div> <div style="margin-bottom: 10px;">1802.5</div> <div style="margin-bottom: 10px;">50</div> <div style="margin-bottom: 10px;">1800</div> <div style="margin-bottom: 10px;">52.5</div> <div style="margin-bottom: 10px;">1797.5</div> <div style="margin-bottom: 10px;">55</div> <div style="margin-bottom: 10px;">1795</div> <div style="margin-bottom: 10px;">57.5</div> <div style="margin-bottom: 10px;">1792.5</div> <div style="margin-bottom: 10px;">60</div> <div style="margin-bottom: 10px;">1790</div> </div>		<div style="margin-bottom: 10px;"></div> <div style="margin-bottom: 10px;">GP</div> <div style="margin-bottom: 10px;">GP-GC</div> <div style="margin-bottom: 10px;">SP</div>	<div style="margin-bottom: 10px;"></div> <div style="margin-bottom: 10px;">Dark brown poorly graded gravel with sand, very moist to wet and dense to very dense.</div> <div style="margin-bottom: 10px;">Brown poorly graded gravel with sand and clay, very moist to wet and dense to very dense.</div> <div style="margin-bottom: 10px;">GROUNDWATER ENCOUNTERED Dark brown poorly graded sand with gravel, wet and dense.</div>	

# EXPLORATION LOG MW-C

CONFIDENTIAL

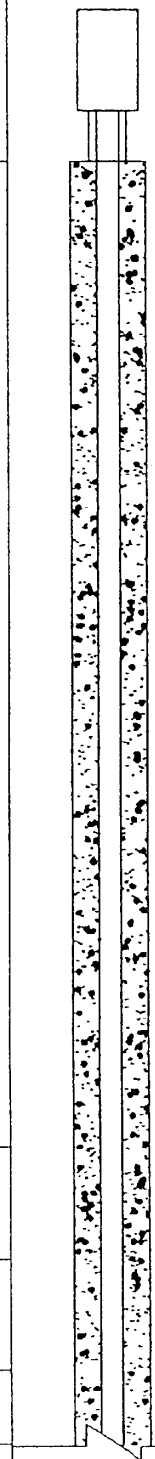
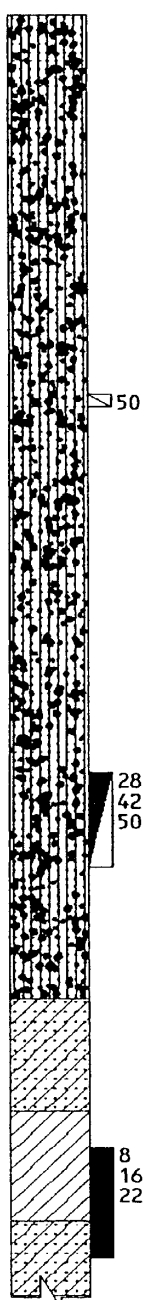
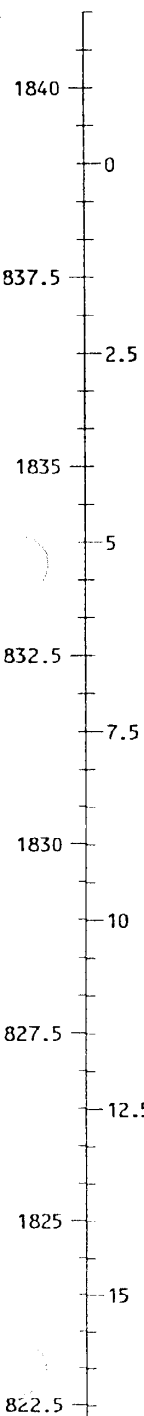
ELEVATION/ DEPTH	SOIL & SAMPLE SYMBOLS	USCS	DESCRIPTION	WELL CONSTRUCTION
<div style="display: flex; flex-direction: column; align-items: center;"> <div style="margin-bottom: 10px;">62.5</div> <div style="margin-bottom: 10px;">787.5</div> <div style="margin-bottom: 10px;">65</div> <div style="margin-bottom: 10px;">1785</div> <div style="margin-bottom: 10px;">67.5</div> <div style="margin-bottom: 10px;">1782.5</div> <div style="margin-bottom: 10px;">70</div> <div style="margin-bottom: 10px;">1780</div> <div style="margin-bottom: 10px;">72.5</div> <div style="margin-bottom: 10px;">777.5</div> <div style="margin-bottom: 10px;">75</div> <div style="margin-bottom: 10px;">1775</div> <div style="margin-bottom: 10px;">77.5</div> <div style="margin-bottom: 10px;">1772.5</div> <div style="margin-bottom: 10px;">80</div> <div style="margin-bottom: 10px;">1770</div> <div style="margin-bottom: 10px;">82.5</div> <div style="margin-bottom: 10px;">767.5</div> </div>		<div style="margin-bottom: 10px;">GP</div>	<div style="margin-bottom: 10px;">Dark brown poorly graded gravel with sand and cobbles, wet and dense.</div> <div style="text-align: center; margin-top: 10px;">END OF BORING AT 73 FEET</div>	

# EXPLORATION LOG MW-D

# CONFIDENTIAL

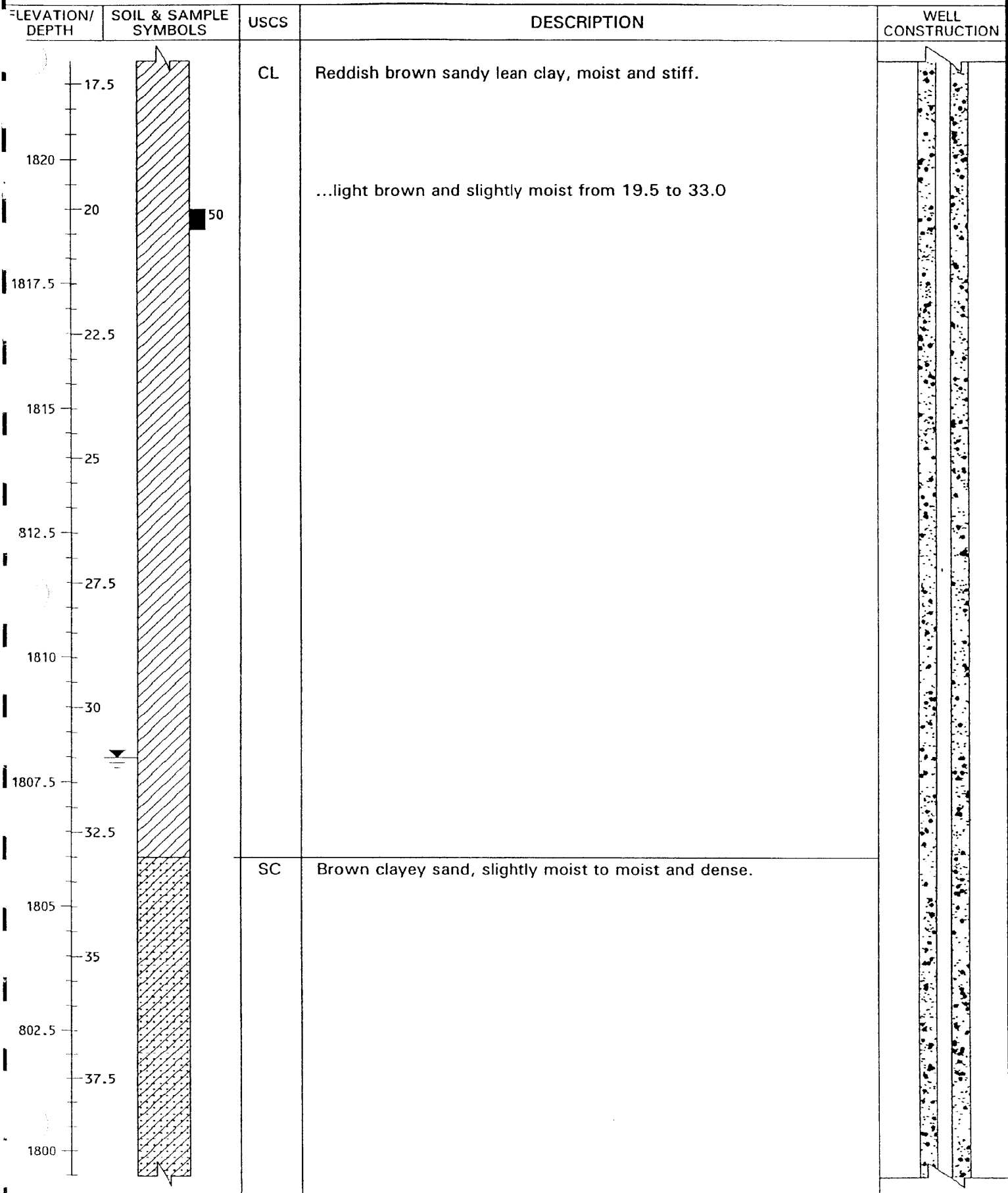
PROJECT: FORMER PEPCON FACILITY PROJECT NO.: 97664V1  
 SITE LOCATION: SEE SITE PLAN EXPLORATION DATE: 9-2-97  
 EXPLORATION SIZE (diameter): 4" MONITORING WELL EQUIPMENT: MOBILE B-53  
 G.S. ELEVATION: 1838.99 LOGGED BY: S. JOHNSON  
 INITIAL DEPTH TO WATER: 65 DATE MEASURED: 9-2-97  
 FINAL DEPTH TO WATER: 31 DATE MEASURED: 9-15-97

ELEVATION/DEPTH	SOIL & SAMPLE SYMBOLS	USCS	DESCRIPTION	WELL CONSTRUCTION
1840				
0				
837.5		GP-GM	Light brown poorly graded gravel with silt and sand, slightly moist and very dense.	
2.5				
1835				
5			...sampler on rock	
832.5				
7.5				
1830				
10				
827.5				
12.5				
1825		SC	Reddish brown clayey sand, moist and dense.	
15		CL	Reddish brown sandy lean clay, moist and stiff.	
822.5		SC	Reddish brown clayey sand, moist and dense.	



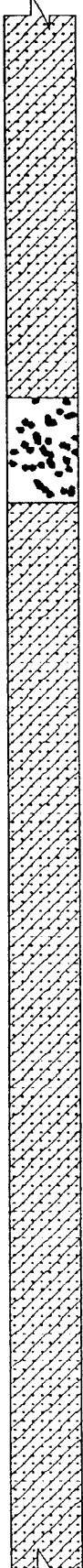
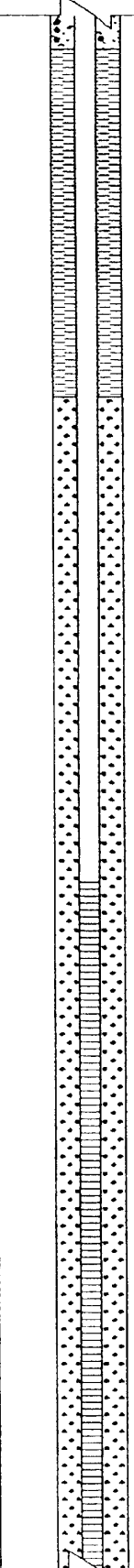
# EXPLORATION LOG MW-D

# CONFIDENTIAL



# EXPLORATION LOG MW-D

CONFIDENTIAL

ELEVATION/ DEPTH	SOIL & SAMPLE SYMBOLS	USCS	DESCRIPTION	WELL CONSTRUCTION
<div style="display: flex; flex-direction: column; align-items: center;"> <div style="margin-bottom: 10px;">40</div> <div style="margin-bottom: 10px;">1797.5</div> <div style="margin-bottom: 10px;">42.5</div> <div style="margin-bottom: 10px;">1795</div> <div style="margin-bottom: 10px;">45</div> <div style="margin-bottom: 10px;">1792.5</div> <div style="margin-bottom: 10px;">47.5</div> <div style="margin-bottom: 10px;">1790</div> <div style="margin-bottom: 10px;">50</div> <div style="margin-bottom: 10px;">1787.5</div> <div style="margin-bottom: 10px;">52.5</div> <div style="margin-bottom: 10px;">1785</div> <div style="margin-bottom: 10px;">55</div> <div style="margin-bottom: 10px;">1782.5</div> <div style="margin-bottom: 10px;">57.5</div> <div style="margin-bottom: 10px;">1780</div> <div style="margin-bottom: 10px;">60</div> <div style="margin-bottom: 10px;">1777.5</div> </div>		<div style="margin-bottom: 10px;"></div> <div style="margin-bottom: 10px;">GP</div> <div style="margin-bottom: 10px;">SC</div>	<div style="margin-bottom: 10px;"></div> <div style="margin-bottom: 10px;">Brown poorly graded gravel with sand, very moist to wet and dense.</div> <div style="margin-bottom: 10px;">Brown clayey sand, moist to very moist and dense.</div>	



# EXPLORATION LOG MW-D

# CONFIDENTIAL

ELEVATION/ DEPTH	SOIL & SAMPLE SYMBOLS	USCS	DESCRIPTION	WELL CONSTRUCTION
<p>62.5 1775 65 1772.5 67.5 1770 70 667.5 72.5 1765 75 1762.5 77.5 1760 80 757.5 82.5 1755</p>		<p>GP</p>	<p>GROUNDWATER ENCOUNTERED Dark brown poorly graded gravel with sand, wet and dense.</p> <p style="text-align: center; margin-top: 20px;">END OF BORING AT 82 FEET</p>	

# EXPLORATION LOG MW-E

# CONFIDENTIAL

PROJECT: FORMER PEPCON FACILITY  
 SITE LOCATION: SEE SITE PLAN  
 EXPLORATION SIZE (diameter): 4" MONITORING WELL  
 G.S. ELEVATION: 1894.7

PROJECT NO.: 97664V1  
 EXPLORATION DATE: 8-28-97  
 EQUIPMENT: MOBILE B-53  
 LOGGED BY: S. JOHNSON


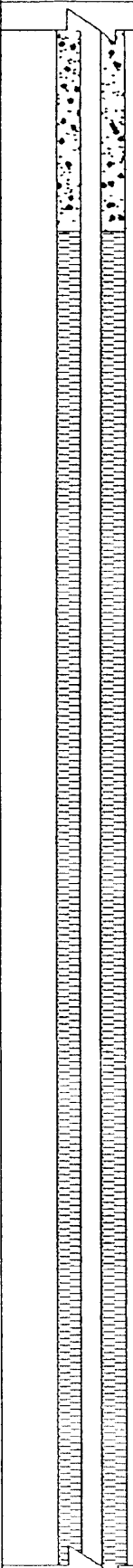
INITIAL DEPTH TO WATER: 87  
 FINAL DEPTH TO WATER: 74

DATE MEASURED: 8-28-97  
 DATE MEASURED: 9-11-97

ELEVATION/ DEPTH	SOIL & SAMPLE SYMBOLS	USCS	DESCRIPTION	WELL CONSTRUCTION
			<p>SP Brown poorly graded sand with gravel, slightly moist and dense.</p> <p>...slightly moist to moist from 4.0 to 6.5</p> <p>SP-SM Brown poorly graded sand with silt and fine gravel, slightly moist to moist and dense.</p> <p>GP Brown poorly graded gravel with sand, slightly moist to moist and dense. Stratified with sandy layers.</p>	

# EXPLORATION LOG MW-E

# CONFIDENTIAL

ELEVATION/ DEPTH	SOIL & SAMPLE SYMBOLS	USCS	DESCRIPTION	WELL CONSTRUCTION
<div style="display: flex; flex-direction: column; align-items: center;"> <div style="margin-bottom: 10px;">17.5</div> <div style="margin-bottom: 10px;">1875</div> <div style="margin-bottom: 10px;">1872.5</div> <div style="margin-bottom: 10px;">1870</div> <div style="margin-bottom: 10px;">867.5</div> <div style="margin-bottom: 10px;">1865</div> <div style="margin-bottom: 10px;">362.5</div> <div style="margin-bottom: 10px;">1860</div> <div style="margin-bottom: 10px;">857.5</div> </div>		<p>SP</p> <p>GP</p> <p>GP-GM</p> <p>C/G</p>	<p>...boulder</p> <p>Brown poorly graded sand with gravel, slightly moist to moist and dense.</p> <p>Brown poorly graded gravel, with sand, slightly moist to moist and dense to very dense.</p> <p>Brown poorly graded fine gravel with silt and sand, slightly moist to moist and dense to very dense.</p> <p>...very dense from 27.5 to 31.0</p> <p>...partially cemented from 29.0 to 31.0</p> <p>Greyish brown cemented sand and gravel, dry, cemented and hard.</p>	

# EXPLORATION LOG MW-E

**CONFIDENTIAL**

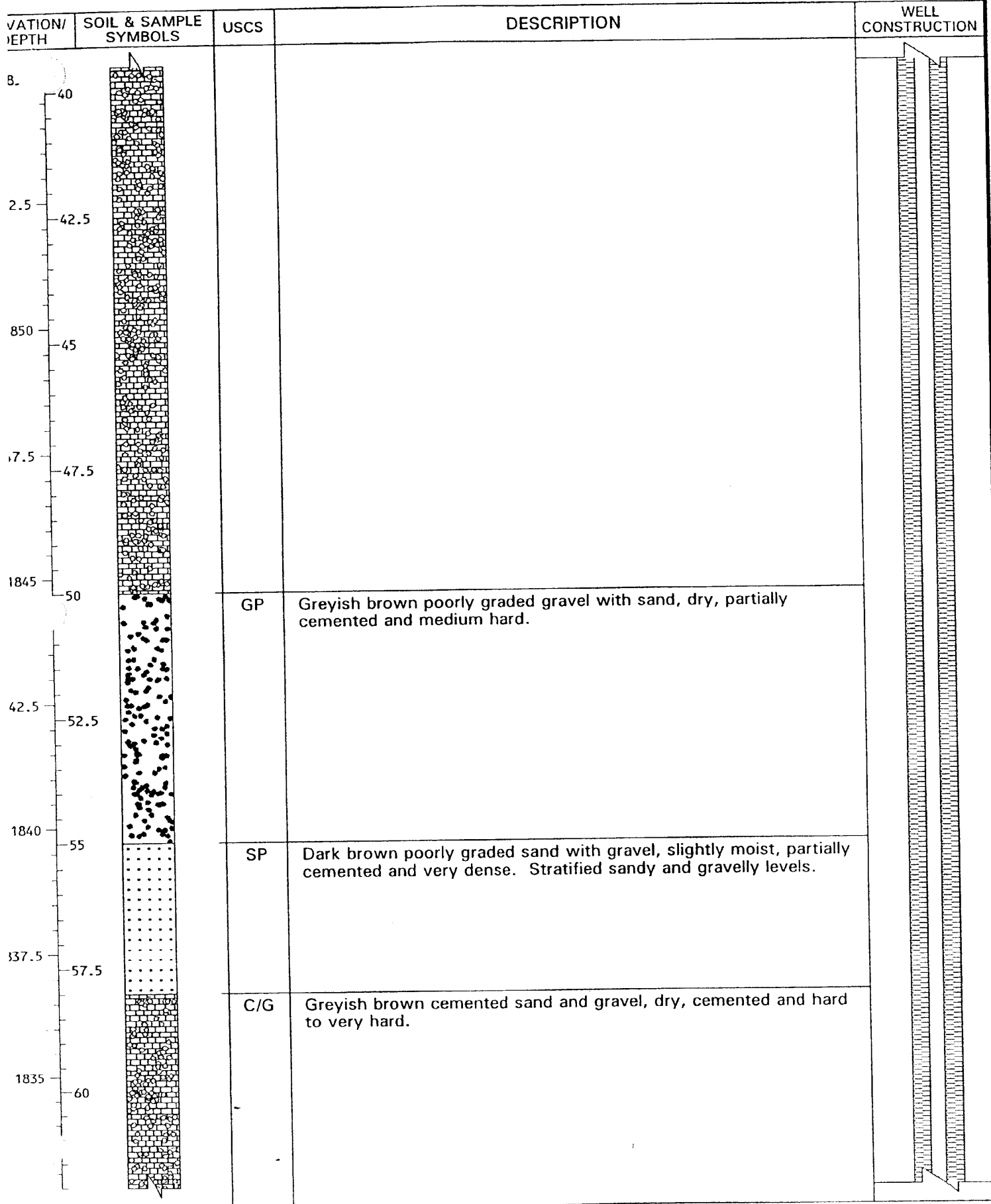


Figure No. 8

# EXPLORATION LOG MW-E

# CONFIDENTIAL

ELEVATION/ DEPTH	SOIL & SAMPLE SYMBOLS	USCS	DESCRIPTION	WELL CONSTRUCTION
<div style="display: flex; flex-direction: column; align-items: center;"> <div style="margin-bottom: 10px;">62.5</div> <div style="margin-bottom: 10px;">1830</div> <div style="margin-bottom: 10px;">65</div> <div style="margin-bottom: 10px;">1827.5</div> <div style="margin-bottom: 10px;">67.5</div> <div style="margin-bottom: 10px;">1825</div> <div style="margin-bottom: 10px;">70</div> <div style="margin-bottom: 10px;">1822.5</div> <div style="margin-bottom: 10px;">72.5</div> <div style="margin-bottom: 10px;">1820</div> <div style="margin-bottom: 10px;">75</div> <div style="margin-bottom: 10px;">1817.5</div> <div style="margin-bottom: 10px;">77.5</div> <div style="margin-bottom: 10px;">1815</div> <div style="margin-bottom: 10px;">80</div> <div style="margin-bottom: 10px;">1812.5</div> <div style="margin-bottom: 10px;">82.5</div> </div>		<div style="margin-bottom: 100px;">GP</div> <div>C/G</div>	<div style="margin-bottom: 100px;">Greyish brown poorly graded gravel with sand, dry to slightly moist, partially cemented and dense.</div> <div>Greyish brown cemented sand and gravel, dry to slightly moist, cemented and hard to very hard.</div> <div style="margin-left: 20px;">...dark brown and slightly moist from 78.0 to 87.0</div> <div style="margin-left: 20px;">...moderately cemented and medium hard from 79.0 to 87.0</div>	

# EXPLORATION LOG MW-E

CONFIDENTIAL

ELEVATION/ DEPTH	SOIL & SAMPLE SYMBOLS	USCS	DESCRIPTION	WELL CONSTRUCTION
0 85 807.5 1805 802.5 1800 1797.5 1795 1792.5 1790		GP	<p>GROUNDWATER ENCOUNTERED Dark brown poorly graded gravel with sand, wet, partially cemented and dense.</p> <p>...larger gravel from 96.5 to 97.0</p> <p style="text-align: center;"><b>END OF BORING AT 97 FEET</b></p>	

# EXPLORATION LOG MW-F

# CONFIDENTIAL

**PROJECT:** FORMER PEPCON FACILITY **PROJECT NO.:** 97664V1  
**LOCATION:** SEE SITE PLAN **EXPLORATION DATE:** 9-6-97  
**EXPLORATION SIZE (diameter):** 4" MONITORING WELL **EQUIPMENT:** MOBILE B-53  
**G.S. ELEVATION:** 1783.71 **LOGGED BY:** S. JOHNSON

**INITIAL DEPTH TO WATER:** 43 **DATE MEASURED:** 9-6-97  
**FINAL DEPTH TO WATER:** 29 **DATE MEASURED:** 9-11-97

ELEVATION/ DEPTH	SOIL & SAMPLE SYMBOLS	USCS	DESCRIPTION	WELL CONSTRUCTION
		F	Brown poorly graded gravel with sand, cobbles and boulders, slightly moist and dense.  ...light brown and dry to slightly moist to 4.0	
		GP-GM	Light brown poorly graded gravel with silt, sand and cobbles, dry to slightly moist and dense to very dense.  ...boulder	
		C/G	Dark brown cemented sand and gravel, cemented and hard to very hard.	

# EXPLORATION LOG MW-F

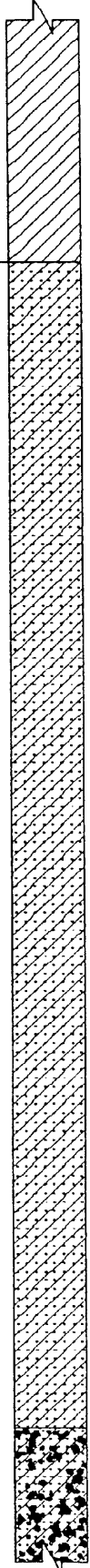
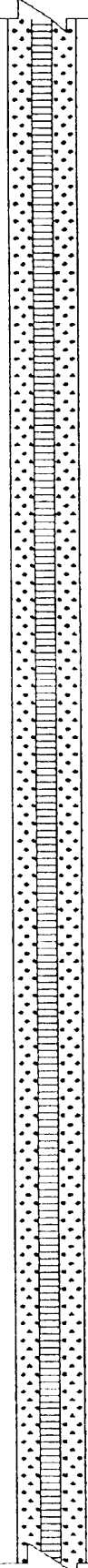
**CONFIDENTIAL**

ELEVATION/ DEPTH	SOIL & SAMPLE SYMBOLS	USCS	DESCRIPTION	WELL CONSTRUCTION
<div style="display: flex; flex-direction: column; align-items: center;"> <div style="margin-bottom: 10px;">17.5</div> <div style="margin-bottom: 10px;">1765</div> <div style="margin-bottom: 10px;">20</div> <div style="margin-bottom: 10px;">1762.5</div> <div style="margin-bottom: 10px;">22.5</div> <div style="margin-bottom: 10px;">1760</div> <div style="margin-bottom: 10px;">25</div> <div style="margin-bottom: 10px;">1757.5</div> <div style="margin-bottom: 10px;">27.5</div> <div style="margin-bottom: 10px;">1755</div> <div style="margin-bottom: 10px;">30</div> <div style="margin-bottom: 10px;">1752.5</div> <div style="margin-bottom: 10px;">32.5</div> <div style="margin-bottom: 10px;">1750</div> <div style="margin-bottom: 10px;">35</div> <div style="margin-bottom: 10px;">1747.5</div> <div style="margin-bottom: 10px;">37.5</div> <div style="margin-bottom: 10px;">1745</div> </div>		<div style="margin-bottom: 100px;">GP-GM</div> <div style="margin-bottom: 100px;">C/G</div> <div>CL</div>	<div style="margin-bottom: 100px;">Dark brown poorly graded gravel with sand, cobbles and boulders, dry to slightly moist and dense to very dense.</div> <div style="margin-bottom: 100px;">Dark brown cemented sand and gravel, dry and hard. Isolated boulders.</div> <div>Reddish brown sandy lean clay with gravel, moist and stiff.</div>	





# EXPLORATION LOG MW-F

CONFIDENTIAL

ELEVATION/ DEPTH	SOIL & SAMPLE SYMBOLS	USCS	DESCRIPTION	WELL CONSTRUCTION
<div style="display: flex; flex-direction: column; align-items: center;"> <div style="margin-bottom: 10px;">40</div> <div style="margin-bottom: 10px;">1742.5</div> <div style="margin-bottom: 10px;">42.5</div> <div style="margin-bottom: 10px;">1740</div> <div style="margin-bottom: 10px;">45</div> <div style="margin-bottom: 10px;">1737.5</div> <div style="margin-bottom: 10px;">47.5</div> <div style="margin-bottom: 10px;">1735</div> <div style="margin-bottom: 10px;">50</div> <div style="margin-bottom: 10px;">1732.5</div> <div style="margin-bottom: 10px;">52.5</div> <div style="margin-bottom: 10px;">1730</div> <div style="margin-bottom: 10px;">55</div> <div style="margin-bottom: 10px;">1727.5</div> <div style="margin-bottom: 10px;">57.5</div> <div style="margin-bottom: 10px;">1725</div> <div style="margin-bottom: 10px;">60</div> <div style="margin-bottom: 10px;">1722.5</div> </div>		<div style="margin-bottom: 100px;">SC</div> <div>GP-GC</div>	<div style="margin-bottom: 100px;"> <p><b>GROUNDWATER ENCOUNTERED</b> Light brown clayey sand with gravel, wet, partially cemented and dense.</p> <p>...no longer partially cemented</p> </div> <div> <p>Brown poorly graded gravel with clay and sand, wet, partially cemented and dense. Stratified.</p> </div>	

# EXPLORATION LOG MW-F

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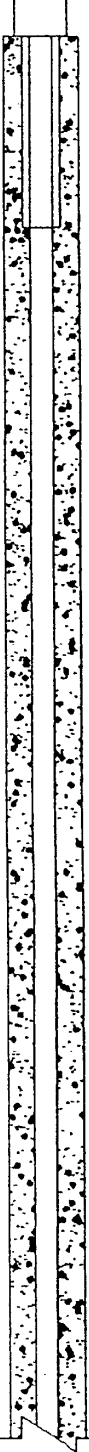
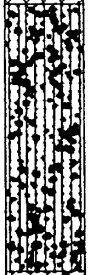
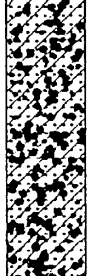





LOCATION/ DEPTH	SOIL & SAMPLE SYMBOLS	USCS	DESCRIPTION	WELL CONSTRUCTION
<div style="display: flex; flex-direction: column; align-items: center;"> <div style="margin-bottom: 10px;">62.5</div> <div style="margin-bottom: 10px;">720</div> <div style="margin-bottom: 10px;">65</div> <div style="margin-bottom: 10px;">7.5</div> <div style="margin-bottom: 10px;">67.5</div> <div style="margin-bottom: 10px;">715</div> <div style="margin-bottom: 10px;">70</div> <div style="margin-bottom: 10px;">2.5</div> <div style="margin-bottom: 10px;">72.5</div> <div style="margin-bottom: 10px;">710</div> <div style="margin-bottom: 10px;">75</div> <div style="margin-bottom: 10px;">7.5</div> <div style="margin-bottom: 10px;">77.5</div> <div style="margin-bottom: 10px;">705</div> <div style="margin-bottom: 10px;">80</div> <div style="margin-bottom: 10px;">2.5</div> <div style="margin-bottom: 10px;">82.5</div> <div style="margin-bottom: 10px;">700</div> </div>			<p style="margin-top: 100px;">END OF BORING AT 63 FEET</p>	

# EXPLORATION LOG MW-F2

# CONFIDENTIAL

PROJECT: FORMER PEPCON FACILITY      PROJECT NO.: 97664V1  
 LOCATION: SEE SITE PLAN      EXPLORATION DATE: 2-23-98  
 EXPLORATION SIZE (diameter): 2" MONITORING WELL      EQUIPMENT: MOBILE B-61 HDX  
 FINISH ELEVATION: 1782.12      LOGGED BY: S. JOHNSON

INITIAL DEPTH TO WATER: 35'      DATE MEASURED: 2-23-98  
 FINAL DEPTH TO WATER: 35.18'      DATE MEASURED: 2-26-98

ELEVATION/DEPTH	SOIL & SAMPLE SYMBOLS	USCS	DESCRIPTION	WELL CONSTRUCTION
0		F	Fill: Asphalt and roadbed.	
780 -2.5		GP-GM	Brown poorly graded gravel with silt and sand, slightly moist and dense (mostly subrounded - subangular basalt).	
7.5 -5		GP-GC	Pale brown poorly graded gravel with clay and sand, dry to slightly moist and dense (stratified sandy and gravelly layers).	
7.5 -7.5		GP	Brown poorly graded gravel with sand, slightly moist and dense to very dense (mostly subrounded basalt, stratified).	
2.5 -10			...boulder to 11.0	
770 -12.5			...light brown, less clay, slightly moist to 14.5	
7.5 -15				
765 -17.5				

## EXPLORATION LOG MW-F2

**CONFIDENTIAL**

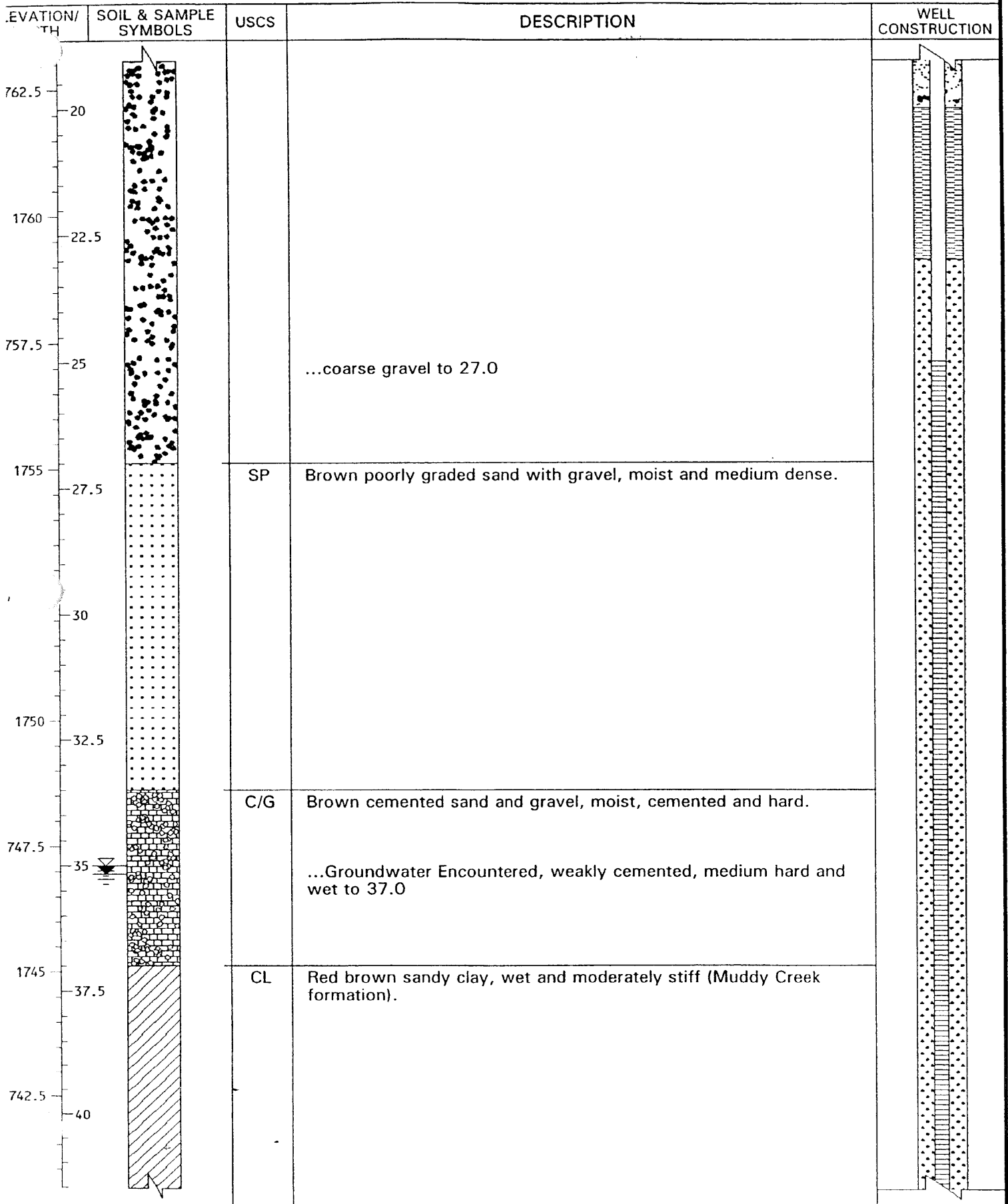
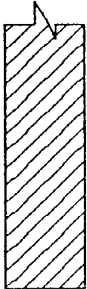
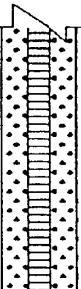


Figure No. 10

# EXPLORATION LOG MW-F2

# CONFIDENTIAL

ELEVATION/ DEPTH	SOIL & SAMPLE SYMBOLS	USCS	DESCRIPTION	WELL CONSTRUCTION
1740 42.5  737.5 45  1735 47.5  732.5 50  727.5 52.5  722.5 55  1725 57.5  722.5 60  1720 62.5			END OF BORING AT 45 FEET	

# EXPLORATION LOG MW-G

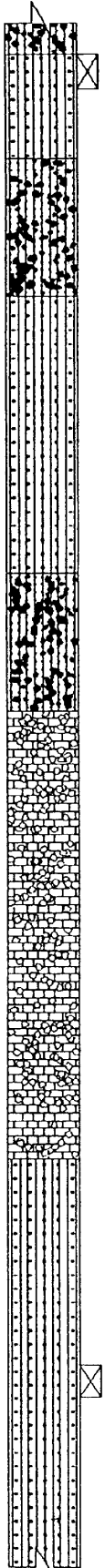
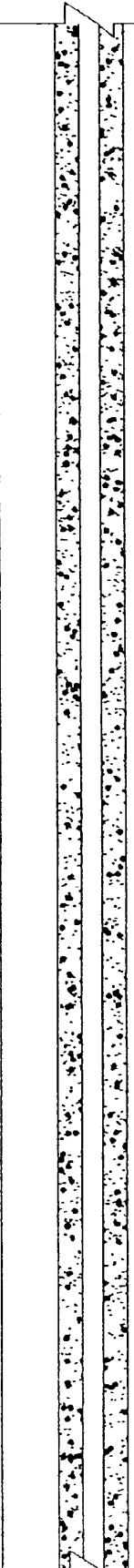
CONFIDENTIAL

PROJECT: FORMER PEPCON FACILITY	PROJECT NO.: 97664V1
WELL LOCATION: SEE SITE PLAN	EXPLORATION DATE: 12/1/97
EXPLORATION SIZE (diameter): 2" MONITORING WELL	EQUIPMENT: MOBILE B-53
G.S. ELEVATION: 1904.99	LOGGED BY: S. ORNDORFF
INITIAL DEPTH TO WATER: 100.0	DATE MEASURED: 12/2/97
FINAL DEPTH TO WATER: 92.4	DATE MEASURED: 12/4/97

ELEVATION/ DEPTH	SOIL & SAMPLE SYMBOLS	USCS	DESCRIPTION	WELL CONSTRUCTION
<div style="display: flex; flex-direction: column; align-items: center;"> <div style="margin-bottom: 10px;">0</div> <div style="margin-bottom: 10px;">1902.5 — 2.5</div> <div style="margin-bottom: 10px;">1900 — 5</div> <div style="margin-bottom: 10px;">1895 — 7.5</div> <div style="margin-bottom: 10px;">1895 — 10</div> <div style="margin-bottom: 10px;">892.5 — 12.5</div> <div style="margin-bottom: 10px;">1890 — 15</div> <div style="margin-bottom: 10px;">887.5 — 17.5</div> </div>		<p>F</p> <hr/> <p>GP-GM</p> <hr/> <p>SP-SM</p> <hr/> <p>GP-GM</p>	<p>Pale yellow brown silty gravel with sand, cobbles and boulders, dry and very dense. Calcium carbonate rinds on gravel.</p> <p>...light brown to 10.5 and dry to slightly moist to 5.0</p> <p>...gravel with sand, cobbles and boulders to 6.5, dry to 10.5</p> <p>...poorly graded gravel with sand to 9.5</p> <p>...with silt to 9.5</p> <p>...silty gravel with sand to 10.5</p> <hr/> <p>Pale brown poorly graded gravel with silt and sand, dry and very dense.</p> <hr/> <p>Light reddish brown poorly graded sand with silt and gravel, dry to slightly moist and very dense.</p> <hr/> <p>Light reddish brown poorly graded fine gravel with silt and sand, dry to slightly moist and very dense.</p>	



# EXPLORATION LOG MW-G

CONFIDENTIAL

ELEVATION/ DEPTH	SOIL & SAMPLE SYMBOLS	USCS	DESCRIPTION	WELL CONSTRUCTION
<div style="display: flex; flex-direction: column; align-items: center;"> <div style="margin-bottom: 10px;">1885 — 20</div> <div style="margin-bottom: 10px;">382.5 — 22.5</div> <div style="margin-bottom: 10px;">1880 — 25</div> <div style="margin-bottom: 10px;">1877.5 — 27.5</div> <div style="margin-bottom: 10px;">1875 — 30</div> <div style="margin-bottom: 10px;">1872.5 — 32.5</div> <div style="margin-bottom: 10px;">1870 — 35</div> <div style="margin-bottom: 10px;">1867.5 — 37.5</div> <div style="margin-bottom: 10px;">1865 — 40</div> </div>		<div style="display: flex; flex-direction: column; align-items: center;"> <div style="margin-bottom: 10px;">SP- SM</div> <div style="margin-bottom: 10px;">GP- GM</div> <div style="margin-bottom: 10px;">SP- SM</div> <div style="margin-bottom: 10px;">GP- GM</div> <div style="margin-bottom: 10px;">C/G</div> <div style="margin-bottom: 10px;">SP- SM</div> </div>	<p>Light reddish brown poorly graded sand with silt and gravel, dry to slightly moist and very dense.</p> <p>Light reddish brown poorly graded gravel with silt and sand, dry to slightly moist and very dense.</p> <p>Light reddish brown poorly graded coarse sand with silt and gravel, dry to slightly moist and very dense.</p> <p>Reddish brown poorly graded gravel with silt and sand, dry to slightly moist and very dense.</p> <p>Reddish brown cemented sand and gravel, dry to slightly moist, cemented and moderately hard to hard.</p> <p style="margin-left: 20px;">...% gravel &gt; % sand</p> <p style="margin-left: 20px;">...% sand &gt; % gravel</p> <p style="margin-left: 20px;">...% gravel &gt; % sand</p> <p>Reddish brown poorly graded coarse sand with silt and gravel, dry, partially cemented and very dense.</p> <p style="margin-left: 20px;">...boulder</p>	

# EXPLORATION LOG MW-G

# CONFIDENTIAL

ELEVATION/ DEPTH	SOIL & SAMPLE SYMBOLS	USCS	DESCRIPTION	WELL CONSTRUCTION
<div style="display: flex; flex-direction: column; align-items: center;"> <div style="margin-bottom: 10px;">62.5 — 42.5</div> <div style="margin-bottom: 10px;">1860 — 45</div> <div style="margin-bottom: 10px;">157.5 — 47.5</div> <div style="margin-bottom: 10px;">1855 — 50</div> <div style="margin-bottom: 10px;">352.5 — 52.5</div> <div style="margin-bottom: 10px;">1850 — 55</div> <div style="margin-bottom: 10px;">347.5 — 57.5</div> <div style="margin-bottom: 10px;">1845 — 60</div> <div style="margin-bottom: 10px;">62.5</div> </div>		<div style="display: flex; flex-direction: column; align-items: center;"> <div style="margin-bottom: 10px;">GP-GM</div> <div style="margin-bottom: 10px;">SP-SM</div> <div style="margin-bottom: 10px;">GP-GM</div> <div style="margin-bottom: 10px;">C/G</div> <div style="margin-bottom: 10px;">GP-GM</div> <div style="margin-bottom: 10px;">SP-SM</div> <div style="margin-bottom: 10px;">C/G</div> </div>	<div style="display: flex; flex-direction: column; align-items: center;"> <div style="margin-bottom: 10px;">Reddish brown poorly graded gravel with silt and sand, dry, partially cemented and very dense.</div> <div style="margin-bottom: 10px;">Reddish brown poorly graded sand with silt and gravel, dry, partially cemented and very dense. Calcium carbonate rinds on gravel.</div> <div style="margin-bottom: 10px;">...boulder</div> <div style="margin-bottom: 10px;">Medium brown poorly graded gravel with silt and sand, dry and very dense.</div> <div style="margin-bottom: 10px;">Medium brown cemented sand and gravel, dry, moderately cemented to cemented and medium hard. Extensive calcium carbonate rinds.</div> <div style="margin-bottom: 10px;">Medium brown poorly graded gravel with silt and sand, dry and very dense. Calcium carbonate rinds.</div> <div style="margin-bottom: 10px;">Reddish brown poorly graded sand with silt and gravel, dry and very dense.</div> <div style="margin-bottom: 10px;">...partially cemented to 61.5</div> <div style="margin-bottom: 10px;">Light brown cemented sand and gravel, dry to slightly moist, moderately cemented and medium hard.</div> <div style="margin-bottom: 10px;">...medium hard to hard to 66.0</div> </div>	



EXPLORATION LOG  
MW-G

CONFIDENTIAL

ELEVATION/ DEPTH	SOIL & SAMPLE SYMBOLS	USCS	DESCRIPTION	WELL CONSTRUCTION
1840	65		Light grayish brown cemented sand and gravel, dry, cemented to strongly cemented and hard. Calcium carbonate rinds.	
137.5	67.5			
1835	70		...weakly cemented to 71.0	
			...% gravel > % sand	
832.5	72.5			
			...medium hard to hard to 80.5	
1830	75			
827.5	77.5			
1825	80			
		GP-GM	Reddish brown poorly graded gravel with silt and sand, dry and dense.	
1822.5	82.5			
			...moist (sandstone, gravel pieces moist inside)	
	85			


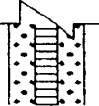
# EXPLORATION LOG MW-G

CONFIDENTIAL

ELEVATION/ DEPTH	SOIL & SAMPLE SYMBOLS	USCS	DESCRIPTION	WELL CONSTRUCTION
<div style="display: flex; flex-direction: column; align-items: center;"> <div style="margin-bottom: 10px;">317.5 — 87.5</div> <div style="margin-bottom: 10px;">1815 — 90</div> <div style="margin-bottom: 10px;">812.5 — 92.5</div> <div style="margin-bottom: 10px;">1810 — 95</div> <div style="margin-bottom: 10px;">1807.5 — 97.5</div> <div style="margin-bottom: 10px;">1805 — 100</div> <div style="margin-bottom: 10px;">1802.5 — 102.5</div> <div style="margin-bottom: 10px;">1800 — 105</div> <div style="margin-bottom: 10px;">107.5</div> </div>		<div style="margin-bottom: 10px;"></div> <div style="margin-bottom: 10px;"></div> <div style="margin-bottom: 10px;"></div> <div style="margin-bottom: 10px;"></div> <div style="margin-bottom: 10px;"></div> <div style="margin-bottom: 10px;">C/G</div> <div style="margin-bottom: 10px;">SP-SM</div> <div style="margin-bottom: 10px;">GP</div>	<div style="margin-bottom: 10px;">...cobbles and slightly moist to moist to 103.0</div> <div style="margin-bottom: 10px;">GROUNDWATER ENCOUNTERED</div> <div style="margin-bottom: 10px;">Reddish brown cemented sand and gravel with cobbles, wet, moderately cemented and medium hard.</div> <div style="margin-bottom: 10px;">Medium brown poorly graded sand with silt and gravel, wet and very dense.</div> <div style="margin-bottom: 10px;">Reddish brown poorly graded gravel with sand, wet and very dense. High flow groundwater.</div>	

# EXPLORATION LOG MW-G



**CONFIDENTIAL**

ELEVATION/ DEPTH	SOIL & SAMPLE SYMBOLS	USCS	DESCRIPTION	WELL CONSTRUCTION
1795 — 110  1792.5 — 112.5  1790 — 115  1787.5 — 117.5  1785 — 120  1782.5 — 122.5  1780 — 125  1777.5 — 127.5  — 130			END OF BORING AT 110 FEET	

# EXPLORATION LOG MW-H

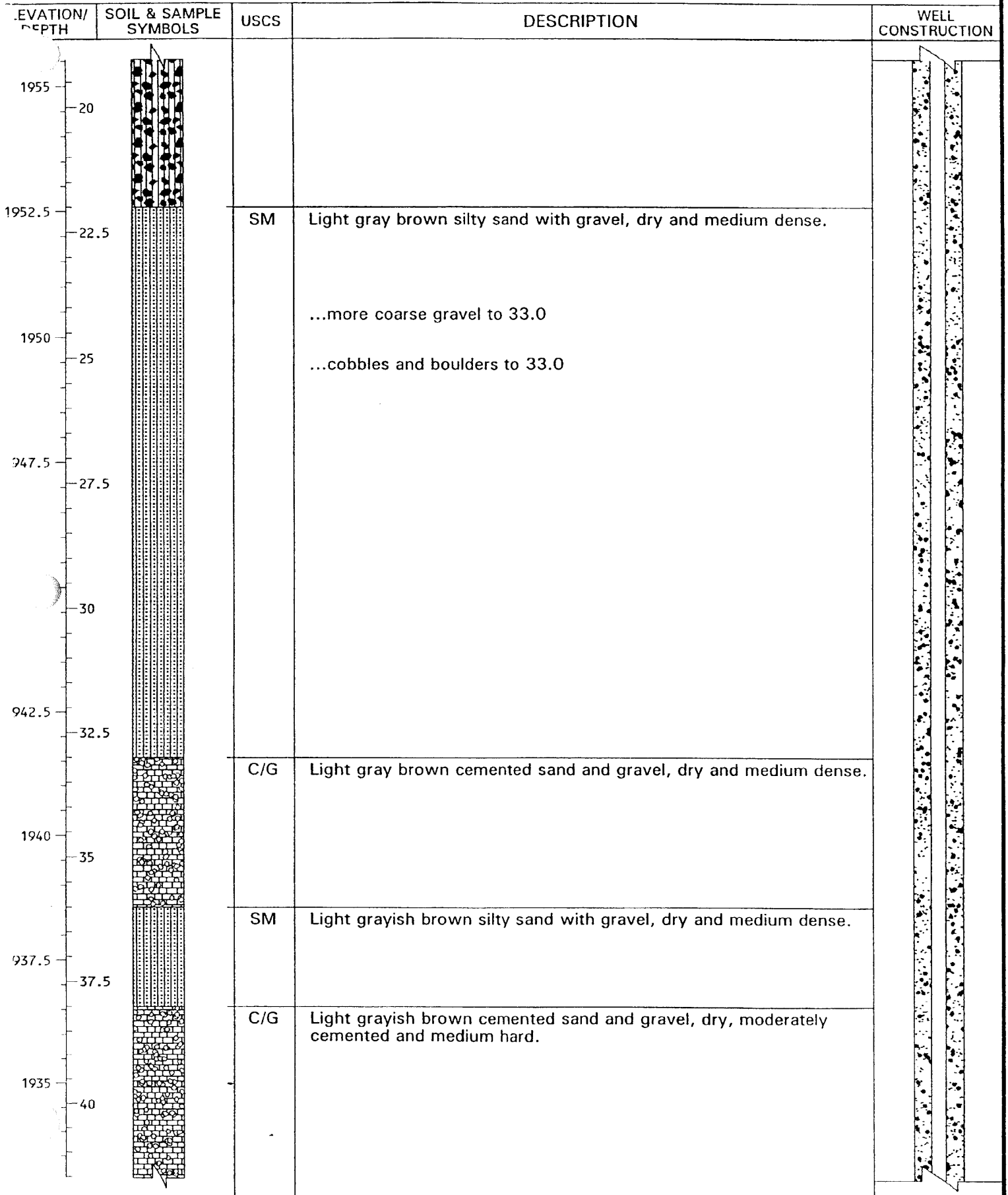
CONFIDENTIAL

PROJECT: <u>FORMER PEPCON FACILITY</u>	PROJECT NO.: <u>97664V1</u>
LOCATION: <u>SEE SITE PLAN</u>	EXPLORATION DATE: <u>11/24/97</u>
EXPLORATION SIZE (diameter): <u>2" MONITORING WELL</u>	EQUIPMENT: <u>MOBILE B-53</u>
G.S. ELEVATION: <u>1974.58</u>	LOGGED BY: <u>S. ADAMS-LOWE</u>
INITIAL DEPTH TO WATER: <u>185.0</u>	DATE MEASURED: <u>11/28/97</u>
FINAL DEPTH TO WATER: <u>148.0</u>	DATE MEASURED: <u>12/5/97</u>

ELEVATION/ DEPTH	SOIL & SAMPLE SYMBOLS	USCS	DESCRIPTION	WELL CONSTRUCTION
<div style="display: flex; flex-direction: column; align-items: center;"> <div style="margin-bottom: 10px;">0</div> <div style="margin-bottom: 10px;">972.5</div> <div style="margin-bottom: 10px;">2.5</div> <div style="margin-bottom: 10px;">1970</div> <div style="margin-bottom: 10px;">5</div> <div style="margin-bottom: 10px;">7.5</div> <div style="margin-bottom: 10px;">1965</div> <div style="margin-bottom: 10px;">10</div> <div style="margin-bottom: 10px;">962.5</div> <div style="margin-bottom: 10px;">12.5</div> <div style="margin-bottom: 10px;">1960</div> <div style="margin-bottom: 10px;">15</div> <div style="margin-bottom: 10px;">957.5</div> <div style="margin-bottom: 10px;">17.5</div> </div>		GM	Light gray silty gravel with sand, dry and medium dense. Basalt gravel with calcium carbonate rinds. ...14" basalt boulder with a calcium carbonate rind	

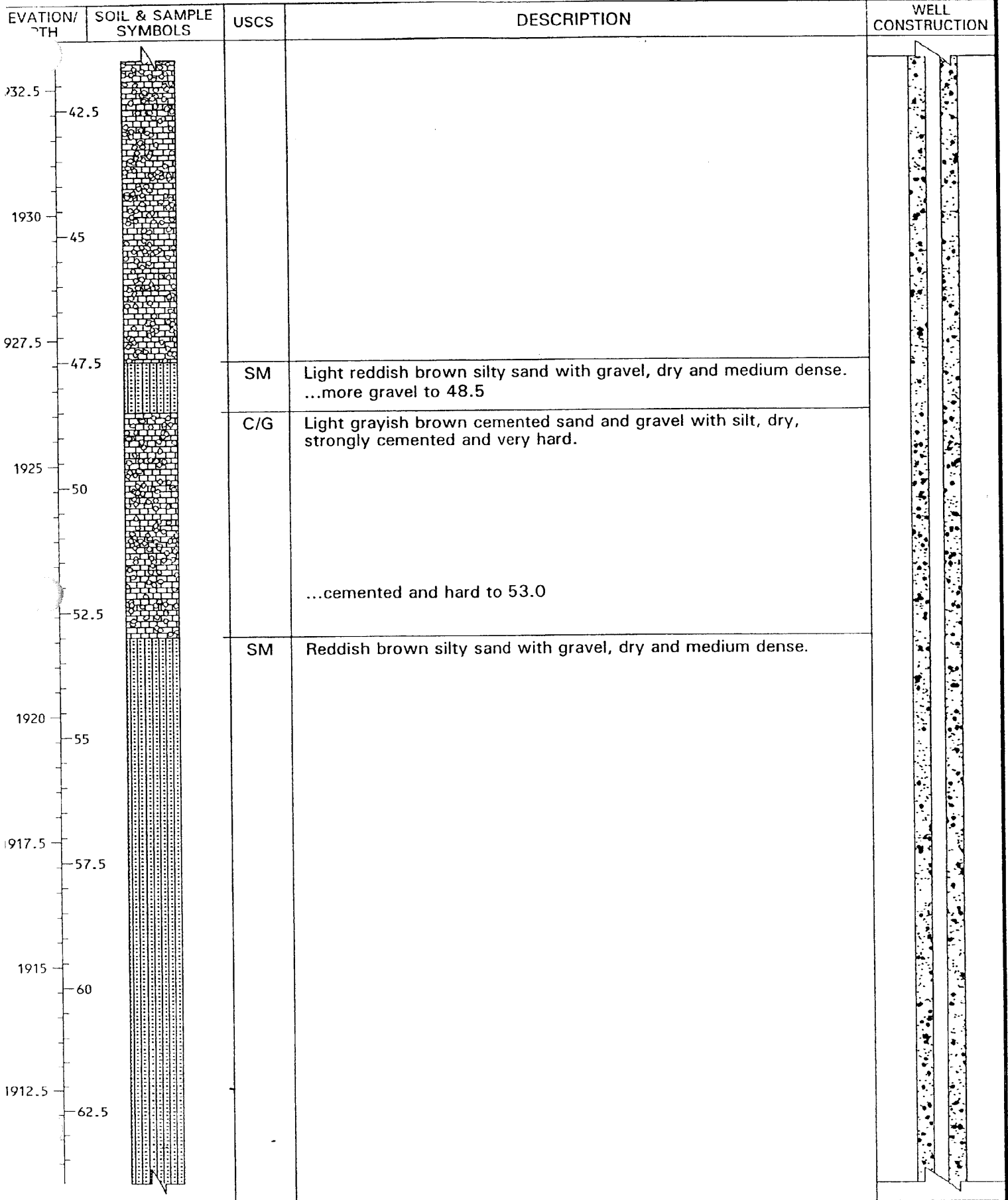
# EXPLORATION LOG MW-H

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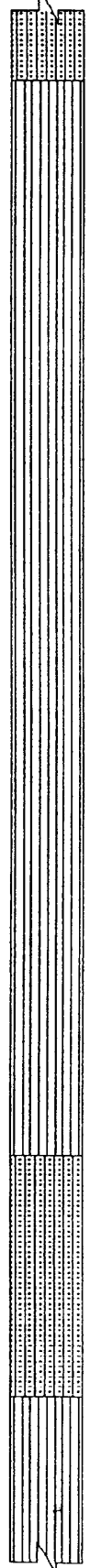
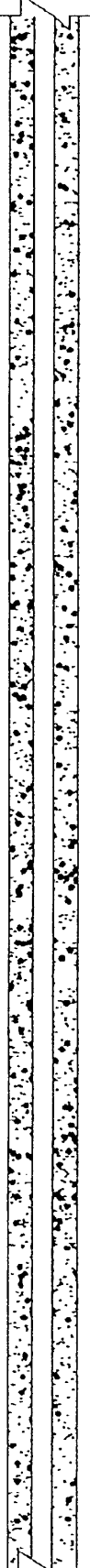
# EXPLORATION LOG MW-H

# CONFIDENTIAL



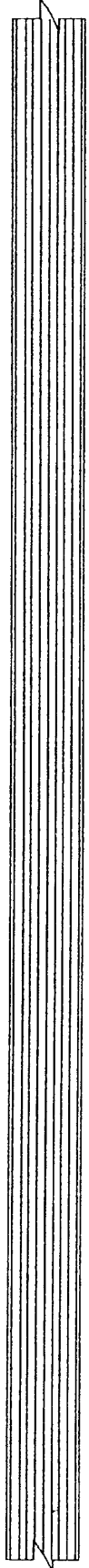

# EXPLORATION LOG MW-H

CONFIDENTIAL

ELEVATION/ DEPTH	SOIL & SAMPLE SYMBOLS	USCS	DESCRIPTION	WELL CONSTRUCTION
<div style="display: flex; flex-direction: column; align-items: center;"> <div style="margin-bottom: 10px;">1910</div> <div style="margin-bottom: 10px;">65</div> <div style="margin-bottom: 10px;">1907.5</div> <div style="margin-bottom: 10px;">67.5</div> <div style="margin-bottom: 10px;">1905</div> <div style="margin-bottom: 10px;">70</div> <div style="margin-bottom: 10px;">1902.5</div> <div style="margin-bottom: 10px;">72.5</div> <div style="margin-bottom: 10px;">75</div> <div style="margin-bottom: 10px;">1897.5</div> <div style="margin-bottom: 10px;">77.5</div> <div style="margin-bottom: 10px;">1895</div> <div style="margin-bottom: 10px;">80</div> <div style="margin-bottom: 10px;">1892.5</div> <div style="margin-bottom: 10px;">82.5</div> <div style="margin-bottom: 10px;">1890</div> <div style="margin-bottom: 10px;">85</div> </div> 		<div style="margin-bottom: 10px;">ML</div> <div style="margin-bottom: 10px;">SM</div> <div style="margin-bottom: 10px;">ML</div>	<div style="margin-bottom: 10px;">Reddish brown sandy silt, dry and stiff.</div> <div style="margin-bottom: 10px;">...stiff to very stiff to 80.5</div> <div style="margin-bottom: 10px;">Reddish brown silty sand with gravel, dry and very dense.</div> <div style="margin-bottom: 10px;">Reddish brown sandy silt, dry and very stiff.</div>	

# EXPLORATION LOG MW-H

CONFIDENTIAL

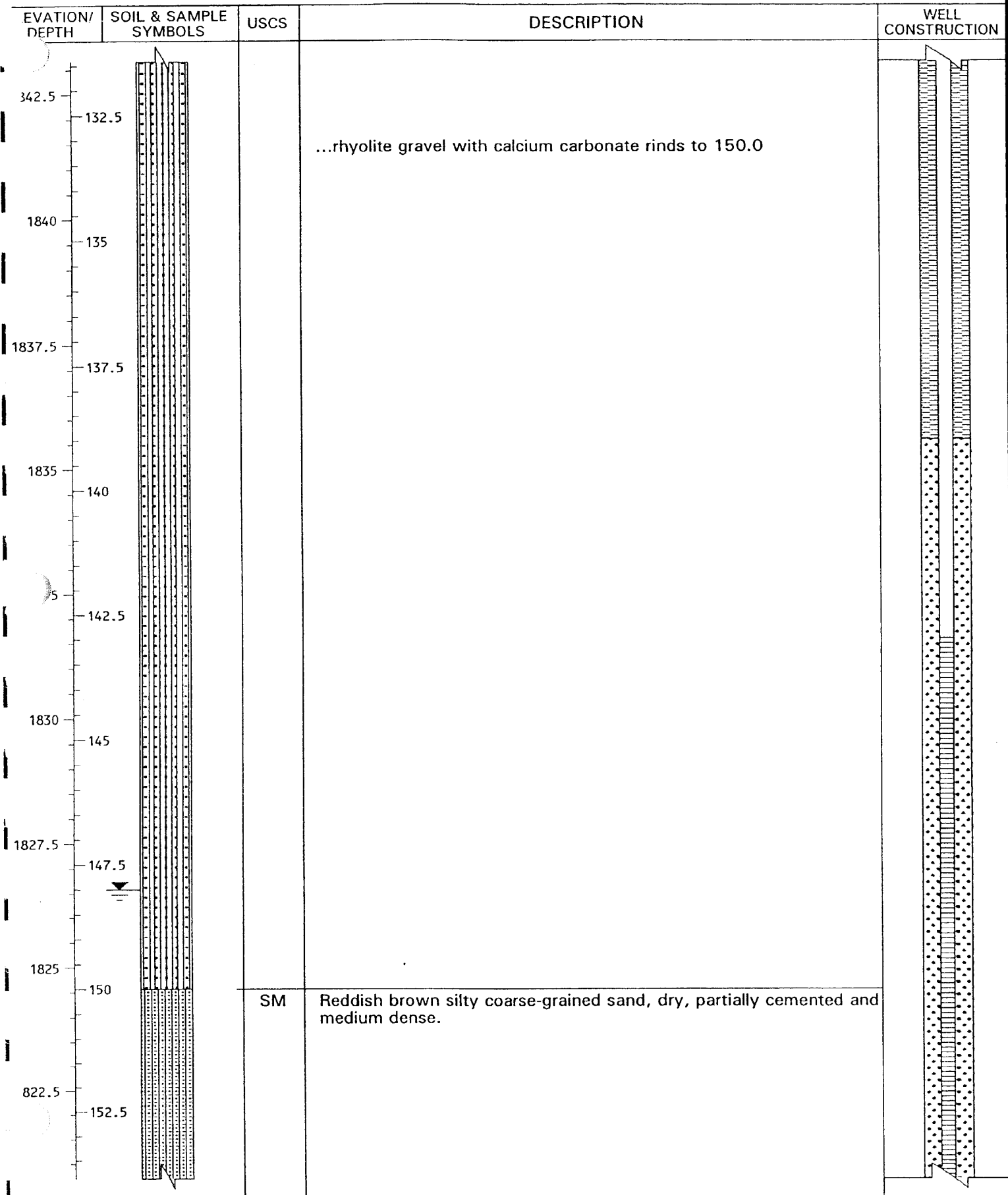
ELEVATION/ DEPTH	SOIL & SAMPLE SYMBOLS	USCS	DESCRIPTION	WELL CONSTRUCTION
<div style="display: flex; flex-direction: column; align-items: center;"> <div style="margin-bottom: 10px;">887.5</div> <div style="margin-bottom: 10px;">87.5</div> <div style="margin-bottom: 10px;">1885</div> <div style="margin-bottom: 10px;">90</div> <div style="margin-bottom: 10px;">1882.5</div> <div style="margin-bottom: 10px;">92.5</div> <div style="margin-bottom: 10px;">1880</div> <div style="margin-bottom: 10px;">95</div> <div style="margin-bottom: 10px;">97.5</div> <div style="margin-bottom: 10px;">1875</div> <div style="margin-bottom: 10px;">100</div> <div style="margin-bottom: 10px;">1872.5</div> <div style="margin-bottom: 10px;">102.5</div> <div style="margin-bottom: 10px;">1870</div> <div style="margin-bottom: 10px;">105</div> <div style="margin-bottom: 10px;">1867.5</div> <div style="margin-bottom: 10px;">107.5</div> </div>		<div style="display: flex; flex-direction: column; align-items: center;"> <div style="margin-bottom: 10px;">1885</div> <div style="margin-bottom: 10px;">1882.5</div> <div style="margin-bottom: 10px;">1880</div> <div style="margin-bottom: 10px;">1875</div> <div style="margin-bottom: 10px;">1872.5</div> <div style="margin-bottom: 10px;">1870</div> <div style="margin-bottom: 10px;">1867.5</div> </div>	<p style="text-align: center; margin-top: 200px;">...isolated cobbles to 125.0</p>	





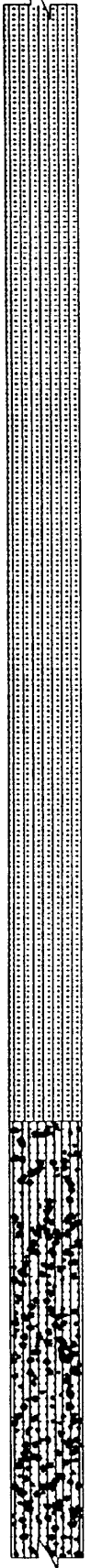
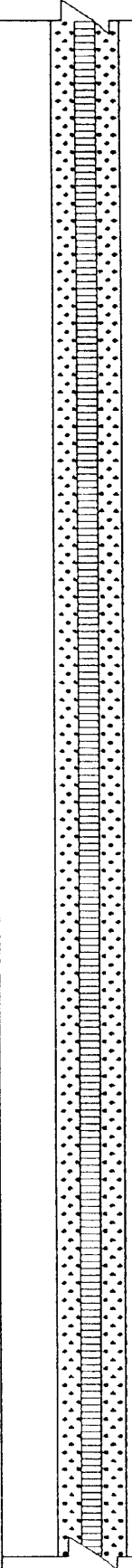
# EXPLORATION LOG MW-H

CONFIDENTIAL



# EXPLORATION LOG MW-H

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ELEVATION/ DEPTH	SOIL & SAMPLE SYMBOLS	USCS	DESCRIPTION	WELL CONSTRUCTION
<div style="display: flex; flex-direction: column; align-items: center;"> <div style="margin-bottom: 10px;">1820</div> <div style="margin-bottom: 10px;">155</div> <div style="margin-bottom: 10px;">1817.5</div> <div style="margin-bottom: 10px;">157.5</div> <div style="margin-bottom: 10px;">1815</div> <div style="margin-bottom: 10px;">160</div> <div style="margin-bottom: 10px;">1812.5</div> <div style="margin-bottom: 10px;">162.5</div> <div style="margin-bottom: 10px;">1810</div> <div style="margin-bottom: 10px;">165</div> <div style="margin-bottom: 10px;">1807.5</div> <div style="margin-bottom: 10px;">167.5</div> <div style="margin-bottom: 10px;">1805</div> <div style="margin-bottom: 10px;">170</div> <div style="margin-bottom: 10px;">1802.5</div> <div style="margin-bottom: 10px;">172.5</div> <div style="margin-bottom: 10px;">1800</div> <div style="margin-bottom: 10px;">175</div> </div>		<div style="margin-bottom: 100px;"></div> <p>GP- GM</p>	<div style="margin-bottom: 100px;"> <p>...slightly moist to 170.0</p> </div> <p>Reddish brown poorly graded gravel with silt and sand, moist to very moist and medium dense.</p> <div style="margin-top: 100px;"> <p>...cobbles to 178.0</p> </div>	

# EXPLORATION LOG MW-H

CONFIDENTIAL

ELEVATION/ DEPTH	SOIL & SAMPLE SYMBOLS	USCS	DESCRIPTION	WELL CONSTRUCTION
<div style="display: flex; flex-direction: column; align-items: center;"> <div style="margin-bottom: 10px;">797.5</div> <div style="margin-bottom: 10px;">177.5</div> <div style="margin-bottom: 10px;">1795</div> <div style="margin-bottom: 10px;">180</div> <div style="margin-bottom: 10px;">1792.5</div> <div style="margin-bottom: 10px;">182.5</div> <div style="margin-bottom: 10px;">1790</div> <div style="margin-bottom: 10px;">185</div> <div style="margin-bottom: 10px;">187.5</div> <div style="margin-bottom: 10px;">1785</div> <div style="margin-bottom: 10px;">190</div> <div style="margin-bottom: 10px;">1782.5</div> <div style="margin-bottom: 10px;">192.5</div> <div style="margin-bottom: 10px;">1780</div> <div style="margin-bottom: 10px;">195</div> <div style="margin-bottom: 10px;">1777.5</div> <div style="margin-bottom: 10px;">197.5</div> </div>		<div style="display: flex; flex-direction: column; align-items: center;"> <div style="margin-bottom: 10px;">SP</div> <div style="margin-bottom: 10px;">GROUNDWATER ENCOUNTERED</div> </div>	<div style="margin-bottom: 10px;">REDDISH BROWN POORLY GRADED SAND WITH GRAVEL, VERY MOIST AND MEDIUM DENSE.</div> <div style="margin-bottom: 10px;">END OF BORING AT 188 FEET</div>	

# EXPLORATION LOG MW-I

# CONFIDENTIAL

**PROJECT:** FORMER PEPCON FACILITY      **PROJECT NO.:** 97664V1  
**LOCATION:** SEE SITE PLAN      **EXPLORATION DATE:** 11/18/97  
**EXPLORATION SIZE (diameter):** 4" MONITORING WELL      **EQUIPMENT:** MOBILE B-53  
**FINISH ELEVATION:** 1859.22      **LOGGED BY:** S. JOHNSON  
**INITIAL DEPTH TO WATER:** 49.0      **DATE MEASURED:** 11/19/97  
**FINAL DEPTH TO WATER:** 41.0      **DATE MEASURED:** 12/3/97

ELEVATION/ DEPTH	SOIL & SAMPLE SYMBOLS	USCS	DESCRIPTION	WELL CONSTRUCTION
0		F	Asphalt and subgrade material, dark brown well graded sand with gravel, slightly moist and dense.	
37.5		SP	Brown poorly graded sand with isolated gravel, dense to very dense.	
-2.5		GW	Brown well graded gravel with sand and cobbles, slightly moist and dense to very dense.	
1855		GW	Brown well graded gravel with sand and cobbles, slightly moist and dense to very dense.	
5		GW	Brown well graded gravel with sand and cobbles, slightly moist and dense to very dense.	
5		GW	Brown well graded gravel with sand and cobbles, slightly moist and dense to very dense.	
7.5		GW	Brown well graded gravel with sand and cobbles, slightly moist and dense to very dense.	
1850		GW	Brown well graded gravel with sand and cobbles, slightly moist and dense to very dense.	
10		GW	Brown well graded gravel with sand and cobbles, slightly moist and dense to very dense.	
47.5		SW- SC	Brown well graded sand with clay and gravel, slightly moist to moist and dense to very dense. Hard clay nodules.	
12.5		SW- SC	Brown well graded sand with clay and gravel, slightly moist to moist and dense to very dense. Hard clay nodules.	
1845		SW- SC	Brown well graded sand with clay and gravel, slightly moist to moist and dense to very dense. Hard clay nodules.	
15		SW- SC	Brown well graded sand with clay and gravel, slightly moist to moist and dense to very dense. Hard clay nodules.	
842.5		SW- SC	Brown well graded sand with clay and gravel, slightly moist to moist and dense to very dense. Hard clay nodules.	
17.5		SW- SC	Brown well graded sand with clay and gravel, slightly moist to moist and dense to very dense. Hard clay nodules.	

# EXPLORATION LOG MW-1

CONFIDENTIAL

ELEVATION/ DEPTH	SOIL & SAMPLE SYMBOLS	USCS	DESCRIPTION	WELL CONSTRUCTION
1840 20 1837.5 22.5 1835 25 832.5 27.5 30 30 1827.5 32.5 1825 35 1822.5 37.5 1820 40 			<p>...stratified, light brown hard clayey layers and reddish brown sandy layers to 31.0</p> <p>...more gravel to 40.0</p> <p>Static Groundwater Level</p>	

# EXPLORATION LOG MW-1

CONFIDENTIAL

ELEVATION/ DEPTH	SOIL & SAMPLE SYMBOLS	USCS	DESCRIPTION	WELL CONSTRUCTION
<div style="display: flex; flex-direction: column; align-items: center;"> <div style="margin-bottom: 10px;">1817.5</div> <div style="margin-bottom: 10px;">-42.5</div> <div style="margin-bottom: 10px;">1815</div> <div style="margin-bottom: 10px;">-45</div> <div style="margin-bottom: 10px;">1812.5</div> <div style="margin-bottom: 10px;">-47.5</div> <div style="margin-bottom: 10px;">1810</div> <div style="margin-bottom: 10px;">-50</div> <div style="margin-bottom: 10px;">-52.5</div> <div style="margin-bottom: 10px;">1805</div> <div style="margin-bottom: 10px;">-55</div> <div style="margin-bottom: 10px;">1802.5</div> <div style="margin-bottom: 10px;">-57.5</div> <div style="margin-bottom: 10px;">1800</div> <div style="margin-bottom: 10px;">-60</div> <div style="margin-bottom: 10px;">1797.5</div> <div style="margin-bottom: 10px;">-62.5</div> </div>			<p>...dark brown and slightly moist to moist to 49.0</p> <p>GROUNDWATER ENCOUNTERED ...light brown, more gravel and wet to 55.0</p> <p style="text-align: center; font-weight: bold;">END OF BORING AT 55 FEET</p>	

# EXPLORATION LOG MW-J

# CONFIDENTIAL

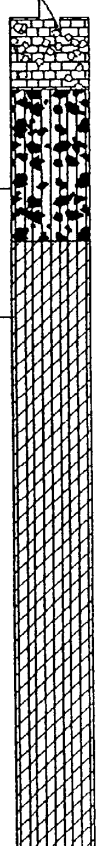
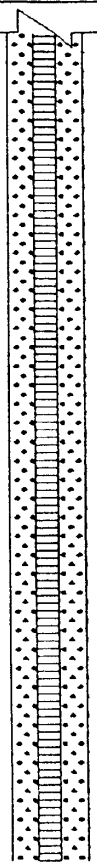
PROJECT: FORMER PEPCON FACILITY PROJECT NO.: 97664V1  
 SITE LOCATION: SEE SITE PLAN EXPLORATION DATE: 11/23/97  
 EXPLORATION SIZE (diameter): 2" MONITORING WELL EQUIPMENT: MOBILE B-53  
 G.S. ELEVATION: 8669.77 LOGGED BY: S. ADAMS-LOWE  
 INITIAL DEPTH TO WATER: 23.0 DATE MEASURED: 11/23/97  
 FINAL DEPTH TO WATER: 21.3 DATE MEASURED: 12/3/97

ELEVATION/ DEPTH	SOIL & SAMPLE SYMBOLS	USCS	DESCRIPTION	WELL CONSTRUCTION
		<p>SM</p>	<p>Yellowish red silty sand with gravel, slightly moist and medium dense. Vesicular basalt and trachyte gravel with calcium carbonate rinds.</p> <p>...more gravel and some cobbles to 11.0</p> <p>...sampler on rock</p> <p>...more fine gravel to 11.0</p>	
		<p>GM</p>	<p>Yellowish red silty gravel with sand and cobbles, slightly moist and dense. Trachyte cobbles.</p>	
		<p>C/G</p>	<p>Yellowish red cemented sand and gravel with silt, dry, cemented and hard. Basalt and trachyte gravel.</p>	



# EXPLORATION LOG MW-J

CONFIDENTIAL

ELEVATION/ DEPTH	SOIL & SAMPLE SYMBOLS	USCS	DESCRIPTION	WELL CONSTRUCTION
<div style="display: flex; flex-direction: column; align-items: center;"> <div style="margin-bottom: 10px;">8650</div> <div style="margin-bottom: 10px;">20</div> <div style="margin-bottom: 10px;">647.5</div> <div style="margin-bottom: 10px;">22.5</div> <div style="margin-bottom: 10px;">8645</div> <div style="margin-bottom: 10px;">25</div> <div style="margin-bottom: 10px;">642.5</div> <div style="margin-bottom: 10px;">27.5</div> <div style="margin-bottom: 10px;">8640</div> <div style="margin-bottom: 10px;">30</div> <div style="margin-bottom: 10px;">8637.5</div> <div style="margin-bottom: 10px;">32.5</div> <div style="margin-bottom: 10px;">8635</div> <div style="margin-bottom: 10px;">35</div> <div style="margin-bottom: 10px;">8632.5</div> <div style="margin-bottom: 10px;">37.5</div> <div style="margin-bottom: 10px;">8630</div> <div style="margin-bottom: 10px;">40</div> </div>		<div style="margin-bottom: 10px;">GW-GM</div> <div style="margin-bottom: 10px;">CL-ML</div>	<div style="margin-bottom: 10px;">Light brown well graded gravel with silt and coarse sand, slightly moist and medium dense. Basalt and latite gravel with calcium carbonate rinds.</div> <div style="margin-bottom: 10px;">Yellowish red silty clay, slightly moist and stiff.</div> <div style="margin-bottom: 10px;">GROUNDWATER ENCOUNTERED</div> <div style="margin-bottom: 10px;">END OF BORING AT 30 FEET</div>	

# EXPLORATION LOG MW-K

CONFIDENTIAL

PROJECT: FORMER PEPCON FACILITY  
 PROJECT NO.: 97664V1  
 SITE LOCATION: SEE SITE PLAN  
 EXPLORATION DATE: 11/22/97  
 EXPLORATION SIZE (diameter): 2" MONITORING WELL  
 EQUIPMENT: MOBILE B-53  
 G.S. ELEVATION: 1668.03  
 LOGGED BY: S. ADAMS-LOWE  
 INITIAL DEPTH TO WATER: 21.0  
 DATE MEASURED: 11/22/97  
 FINAL DEPTH TO WATER: 20.6  
 DATE MEASURED: 12/4/97

ELEVATION/ DEPTH	SOIL & SAMPLE SYMBOLS	USCS	DESCRIPTION	WELL CONSTRUCTION
0		SM	Light brown silty medium-grained sand with gravel, dry and medium dense.	
0.67.5		GM	Light brown silty gravel with sand and cobbles, dry to slightly moist and medium dense. Massive, basalt gravel with calcium carbonate rinds and trace mica.	
2.5				
1665				
5				
6.2.5				
7.5		GW	Brown well graded gravel, slightly moist and medium dense.	
1660		SM	Brown silty medium to coarse-grained sand, slightly moist and medium dense. Massive, with trace mica.	
10		GW	Brown well graded gravel with cobbles, dry to slightly moist and dense.	
10.67.5	24 30	SM	Gray silty coarse grained sand with fine gravel, dry to slightly moist and dense.	
12.5		C/G	Brown cemented sand and gravel, dry to slightly moist, cemented and hard. ...more sand and silt to 21.0	
1655				
15				
1652.5				
17.5				
20				

# EXPLORATION LOG MW-K

CONFIDENTIAL

ELEVATION/ DEPTH	SOIL & SAMPLE SYMBOLS	USCS	DESCRIPTION	WELL CONSTRUCTION
<div style="display: flex; flex-direction: column; align-items: center;"> <div style="margin-bottom: 10px;">20</div> <div style="margin-bottom: 10px;">1647.5</div> <div style="margin-bottom: 10px;">22.5</div> <div style="margin-bottom: 10px;">1645</div> <div style="margin-bottom: 10px;">25</div> <div style="margin-bottom: 10px;">642.5</div> <div style="margin-bottom: 10px;">27.5</div> <div style="margin-bottom: 10px;">1640</div> <div style="margin-bottom: 10px;">30</div> <div style="margin-bottom: 10px;">1637.5</div> <div style="margin-bottom: 10px;">32.5</div> <div style="margin-bottom: 10px;">1635</div> <div style="margin-bottom: 10px;">35</div> <div style="margin-bottom: 10px;">632.5</div> <div style="margin-bottom: 10px;">37.5</div> <div style="margin-bottom: 10px;">1630</div> <div style="margin-bottom: 10px;">40</div> <div style="margin-bottom: 10px;">1627.5</div> </div>		<div style="margin-bottom: 10px;">CL-ML</div> <div style="margin-bottom: 10px;"></div> <div style="margin-bottom: 10px;">SC</div> <div style="margin-bottom: 10px;"></div>	<div style="margin-bottom: 10px;">Light yellowish red silty clay with some cemented gravel, very moist and stiff. Trace mica.</div> <div style="margin-bottom: 10px;"></div> <div style="margin-bottom: 10px;">Light yellowish red clayey sand, wet and dense.</div> <div style="margin-bottom: 10px;">END OF BORING AT 30 FEET</div>	

# EXPLORATION LOG MW-K1


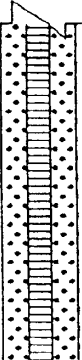
CONFIDENTIAL

PROJECT: FORMER PEPCON FACILITY PROJECT NO.: 97664V1  
 HOLE LOCATION: SEE SITE PLAN EXPLORATION DATE: 2-23-98  
 EXPLORATION SIZE (diameter): 2" MONITORING WELL EQUIPMENT: MOBILE B-61 HDX  
 G.S. ELEVATION: 1634.37 LOGGED BY: S. JOHNSON  
 INITIAL DEPTH TO WATER: 13' DATE MEASURED: 2-23-98  
 FINAL DEPTH TO WATER: 10.05' DATE MEASURED: 2-26-98

ELEVATION/ DEPTH	SOIL & SAMPLE SYMBOLS	USCS	DESCRIPTION	WELL CONSTRUCTION
0		F	Fill: Asphalt and roadbed.	
-2.5		SP	Brown poorly graded sand with gravel, dry to slightly moist and dense.	
-632.5		SP-SC	Brown poorly graded sand with clay, slightly moist and dense.  ...with white moist clay nodules to 5.0  ...partially cemented to 6.0	
-5		SC	Brown clayey sand, slightly moist to moist and medium dense to dense.  ...moist and medium dense to 12.5	
-12.5		SP-SC	Brown poorly graded sand with clay, wet and medium dense. Groundwater Encountered	
-17.5			...with gravel to 21.0	

# EXPLORATION LOG MW-K1

CONFIDENTIAL

ELEVATION/ DEPTH	SOIL & SAMPLE SYMBOLS	USCS	DESCRIPTION	WELL CONSTRUCTION
<div style="display: flex; flex-direction: column; align-items: center;"> <div style="margin-bottom: 10px;">1615</div> <div style="margin-bottom: 10px;">-20</div> <div style="margin-bottom: 10px;">1612.5</div> <div style="margin-bottom: 10px;">-22.5</div> <div style="margin-bottom: 10px;">1610</div> <div style="margin-bottom: 10px;">-25</div> <div style="margin-bottom: 10px;">1607.5</div> <div style="margin-bottom: 10px;">-27.5</div> <div style="margin-bottom: 10px;">1605</div> <div style="margin-bottom: 10px;">-30</div> <div style="margin-bottom: 10px;">1602.5</div> <div style="margin-bottom: 10px;">-32.5</div> <div style="margin-bottom: 10px;">1600</div> <div style="margin-bottom: 10px;">-35</div> <div style="margin-bottom: 10px;">1597.5</div> <div style="margin-bottom: 10px;">-37.5</div> <div style="margin-bottom: 10px;">1595</div> <div style="margin-bottom: 10px;">-40</div> </div>		<div style="margin-bottom: 10px;">C</div>	<div style="margin-bottom: 10px;">White caliche, wet, cemented and hard.</div> <div style="text-align: center; margin-top: 20px;"> <b>END OF BORING AT 23.5 FEET</b> </div>	

# EXPLORATION LOG MW-K2


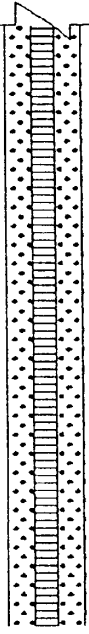
CONFIDENTIAL

PROJECT: FORMER PEPCON FACILITY PROJECT NO.: 97664V1  
 SITE LOCATION: SEE SITE PLAN EXPLORATION DATE: 2-24-98  
 EXPLORATION SIZE (diameter): 2" MONITORING WELL EQUIPMENT: MOBILE B-61 HDX  
 G.S. ELEVATION: 1619.27 LOGGED BY: S. JOHNSON  
 INITIAL DEPTH TO WATER: 17' DATE MEASURED: 2-24-98  
 FINAL DEPTH TO WATER: 18.95' DATE MEASURED: 3-2-98

ELEVATION/ DEPTH	SOIL & SAMPLE SYMBOLS	USCS	DESCRIPTION	WELL CONSTRUCTION
		SP	Brown poorly graded sand with gravel, moist and dense. (subangular basalt and andesite)	
		SP-SC	Light brown poorly graded sand with clay and gravel, moist and dense.  ...gravel lense to 12.0	
		SP-SC	Gray brown poorly graded sand with clay and gravel, wet and medium dense. Groundwater Encountered	
		SP	Light brown poorly graded sand, wet and medium dense.	

# EXPLORATION LOG MW-K2


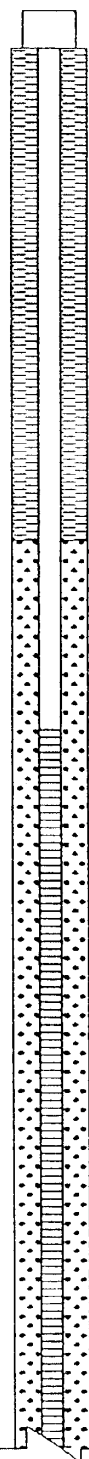
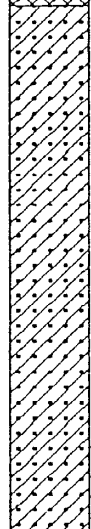
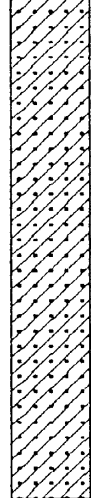

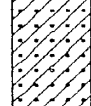


CONFIDENTIAL

ELEVATION/ DEPTH	SOIL & SAMPLE SYMBOLS	USCS	DESCRIPTION	WELL CONSTRUCTION
<div style="display: flex; flex-direction: column; align-items: center;"> <div style="margin-bottom: 10px;">1600</div> <div style="margin-bottom: 10px;">20</div> <div style="margin-bottom: 10px;">1597.5</div> <div style="margin-bottom: 10px;">22.5</div> <div style="margin-bottom: 10px;">1595</div> <div style="margin-bottom: 10px;">25</div> <div style="margin-bottom: 10px;">1592.5</div> <div style="margin-bottom: 10px;">27.5</div> <div style="margin-bottom: 10px;">30</div> <div style="margin-bottom: 10px;">1587.5</div> <div style="margin-bottom: 10px;">32.5</div> <div style="margin-bottom: 10px;">1585</div> <div style="margin-bottom: 10px;">35</div> <div style="margin-bottom: 10px;">1582.5</div> <div style="margin-bottom: 10px;">37.5</div> <div style="margin-bottom: 10px;">1580</div> <div style="margin-bottom: 10px;">40</div> </div>		<div style="margin-bottom: 10px;"></div> <div style="margin-bottom: 10px;">GP</div> <div style="margin-bottom: 10px;">C</div>	<div style="margin-bottom: 10px;"></div> <div style="margin-bottom: 10px;">Gray brown poorly graded gravel with sand, wet and medium dense.</div> <div style="margin-bottom: 10px;">White caliche, wet, moderately cemented and medium hard.</div> <div style="text-align: center; margin-top: 10px;">END OF BORING AT 27 FEET</div>	

# EXPLORATION LOG MW-K4

# CONFIDENTIAL

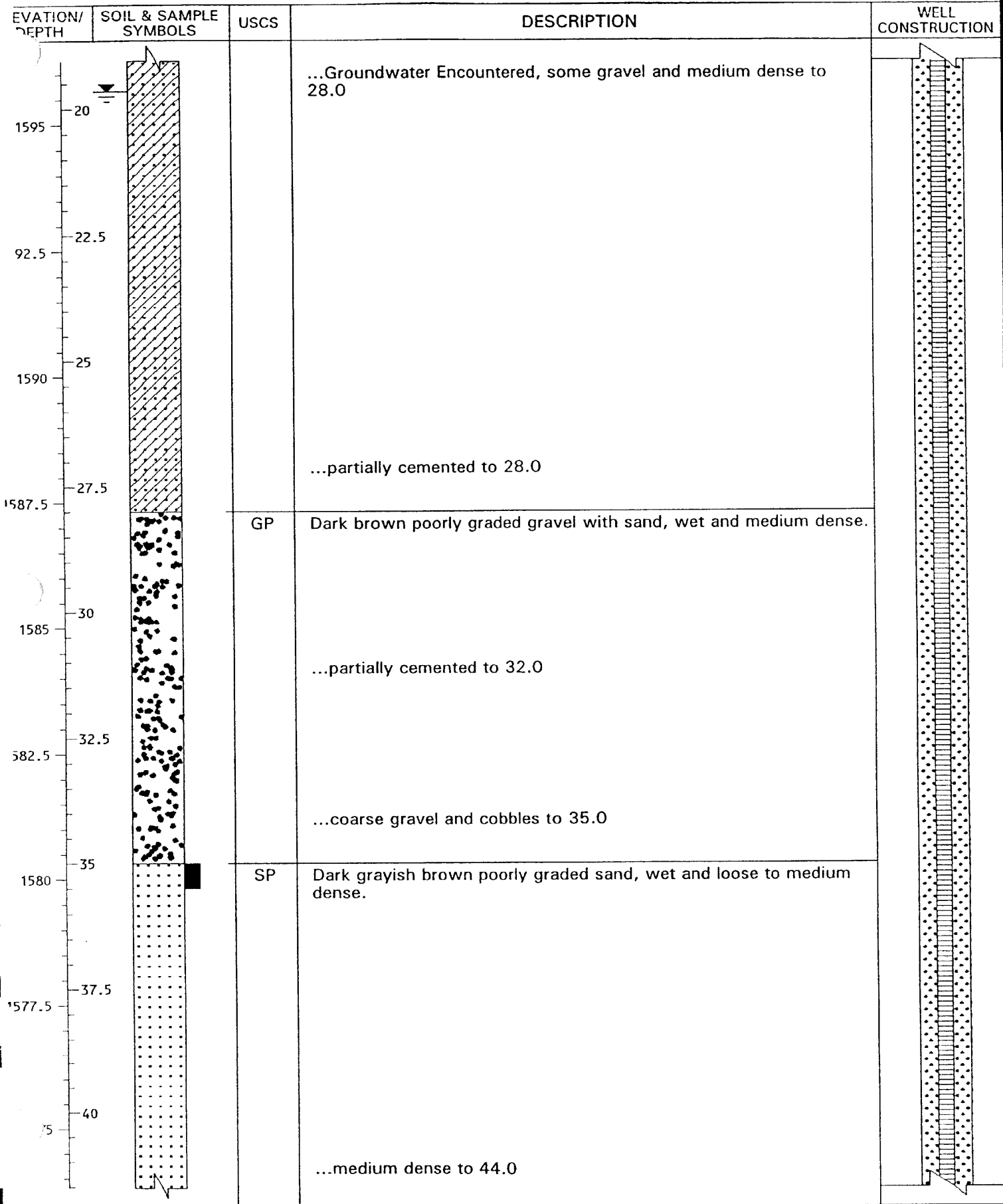
PROJECT: FORMER PEPCON FACILITY PROJECT NO.: 97664V1  
 SITE LOCATION: SEE SITE PLAN EXPLORATION DATE: 4-1-98  
 EXPLORATION SIZE (diameter): 2" MONITORING WELL EQUIPMENT: MOBILE B-61-HDX  
 G.S. ELEVATION: 1615.32 LOGGED BY: S. JOHNSON  
 INITIAL DEPTH TO WATER: 19 DATE MEASURED: 4-1-98  
 FINAL DEPTH TO WATER: 19.65 DATE MEASURED: 4-3-98

ELEVATION/ DEPTH	SOIL & SAMPLE SYMBOLS	USCS	DESCRIPTION	WELL CONSTRUCTION
1615 0		F	asphalt paving and roadbed gravel	
1612.5 2.5		SP-SC	Dark reddish brown poorly graded sand with clay and gravel, slightly moist and dense. ...minor gravel to 14.0	
1610 5			...more clay and very dense to 14.0	
1607.5 7.5				
1605 10		GP-GC	Dark reddish brown poorly graded gravel with clay and sand, moist and dense to very dense.	
1602.5 12.5		SP-SC	Dark reddish brown poorly graded sand with clay, moist to very moist and dense to very dense.	
1600 15				
1575 17.5				



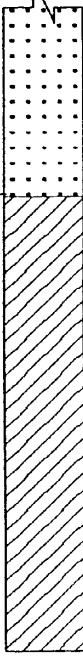
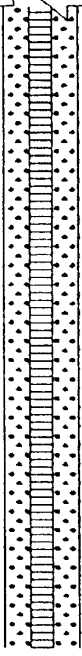
# EXPLORATION LOG MW-K4

CONFIDENTIAL



# EXPLORATION LOG MW-K4

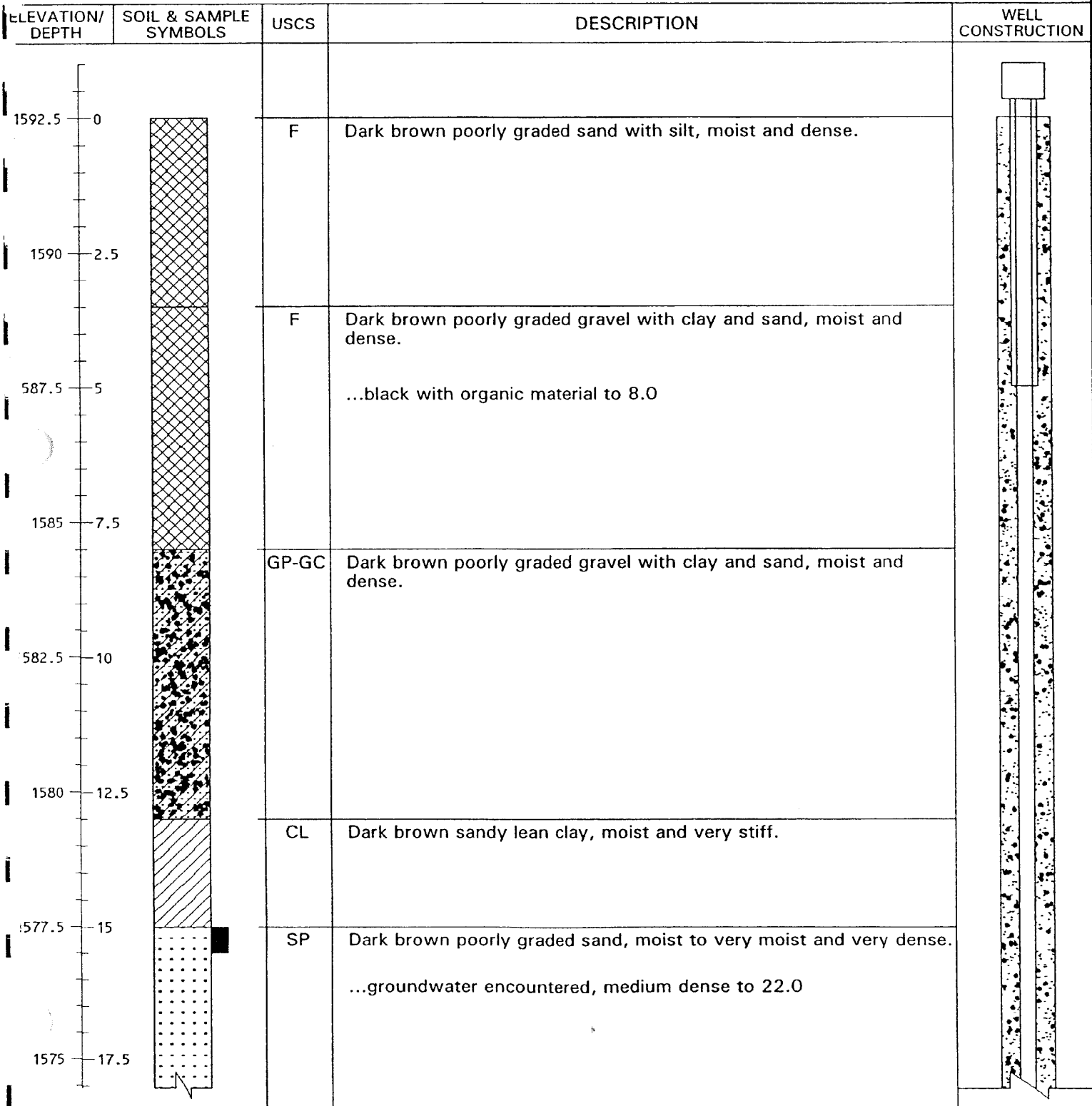
CONFIDENTIAL

ELEVATION/ DEPTH	SOIL & SAMPLE SYMBOLS	USCS	DESCRIPTION	WELL CONSTRUCTION
<div style="display: flex; flex-direction: column; align-items: center;"> <div style="margin-bottom: 10px;">1572.5</div> <div style="margin-bottom: 10px;">42.5</div> <div style="margin-bottom: 10px;">1570</div> <div style="margin-bottom: 10px;">45</div> <div style="margin-bottom: 10px;">1567.5</div> <div style="margin-bottom: 10px;">47.5</div> <div style="margin-bottom: 10px;">1565</div> <div style="margin-bottom: 10px;">50</div> <div style="margin-bottom: 10px;">1562.5</div> <div style="margin-bottom: 10px;">52.5</div> <div style="margin-bottom: 10px;">1560</div> <div style="margin-bottom: 10px;">55</div> <div style="margin-bottom: 10px;">1557.5</div> <div style="margin-bottom: 10px;">57.5</div> <div style="margin-bottom: 10px;">1555</div> <div style="margin-bottom: 10px;">60</div> <div style="margin-bottom: 10px;">1552.5</div> <div style="margin-bottom: 10px;">62.5</div> </div>		<div style="margin-bottom: 10px;">CL</div>	<div style="margin-bottom: 10px;">Pale grayish brown sandy lean clay, wet and stiff.</div> <div style="margin-bottom: 10px;">END OF BORING AT 50 FEET</div>	

# EXPLORATION LOG MW-K5

CONFIDENTIAL

PROJECT: <u>FORMER PEPCON FACILITY</u>	PROJECT NO.: <u>97664V1</u>
WELL LOCATION: <u>SEE SITE PLAN</u>	EXPLORATION DATE: <u>4-2-98</u>
EXPLORATION SIZE (diameter): <u>2" MONITORING WELL</u>	EQUIPMENT: <u>MOBILE B-61-HDX</u>
G.S. ELEVATION: <u>1592.49</u>	LOGGED BY: <u>S. JOHNSON</u>
INITIAL DEPTH TO WATER: <u>24</u>	DATE MEASURED: <u>4-2-98</u>
FINAL DEPTH TO WATER: <u>18.7</u>	DATE MEASURED: <u>4-3-98</u>



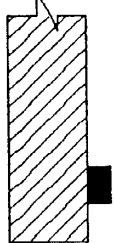
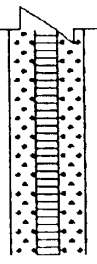
# EXPLORATION LOG MW-K5

CONFIDENTIAL

ELEVATION/ DEPTH	SOIL & SAMPLE SYMBOLS	USCS	DESCRIPTION	WELL CONSTRUCTION
<p>1572.5 — 20 1570 — 22.5 1567.5 — 25 1565 — 27.5 1562.5 — 30 1560 — 32.5 1557.5 — 35 1555 — 37.5 1552.5 — 40</p>			<p>...gravel lense to 22.0</p>	
		SP-SC	<p>Dark reddish brown clayey sand, wet and medium dense to dense.</p> <p>...gravel lense to 27.5</p> <p>... dense to 32.5</p> <p>...gravel lense to 32.5</p> <p>...dense to very dense to 35.0</p> <p>...medium dense to 38.0</p>	
		CL	<p>White and green mottled sandy lean clay, moist to very moist and stiff.</p>	

# EXPLORATION LOG MW-K5

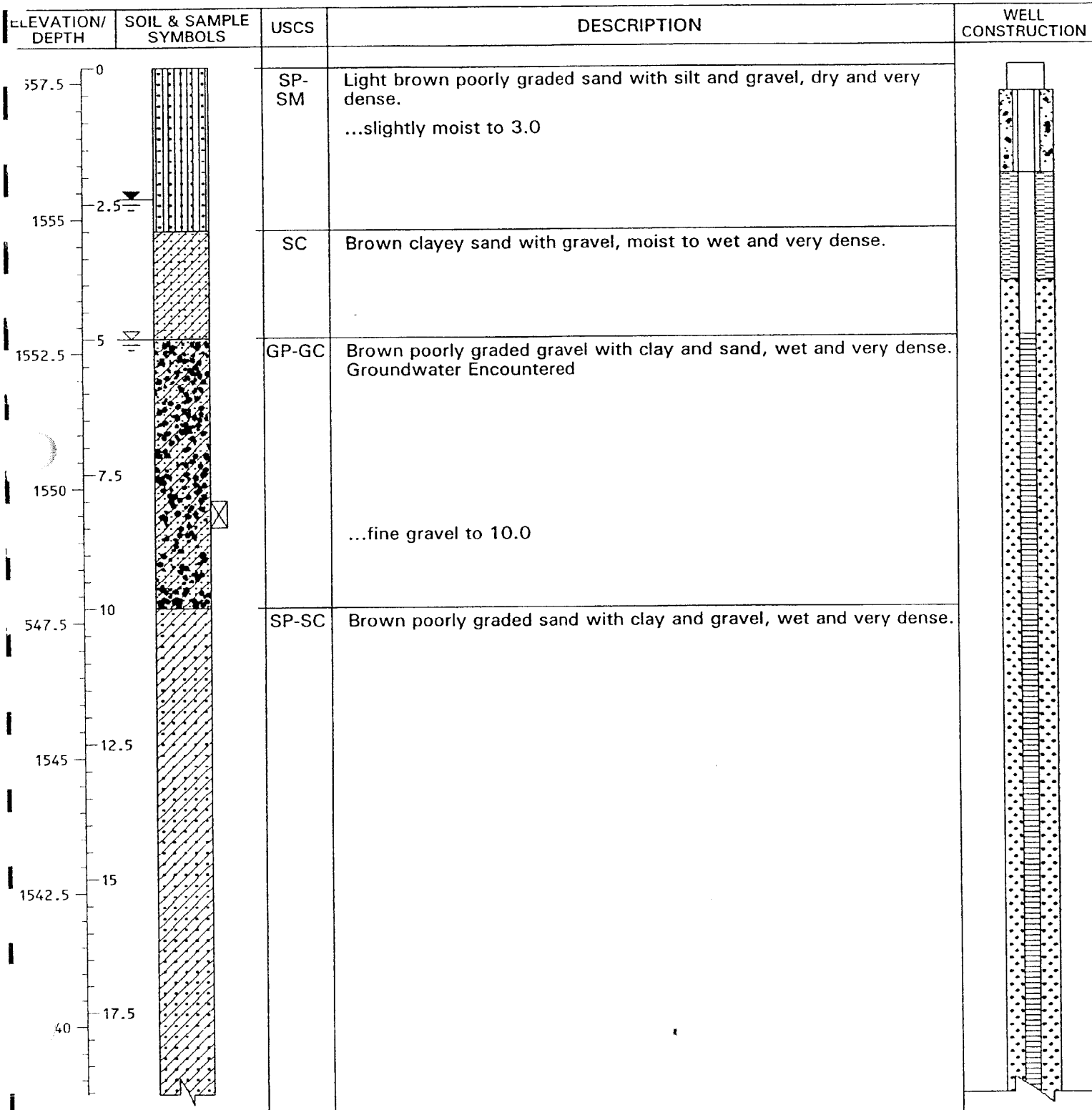
CONFIDENTIAL

ELEVATION/ DEPTH	SOIL & SAMPLE SYMBOLS	USCS	DESCRIPTION	WELL CONSTRUCTION
<div style="display: flex; flex-direction: column; align-items: center;"> <div style="margin-bottom: 10px;">1550 — 42.5</div> <div style="margin-bottom: 10px;">1547.5 — 45</div> <div style="margin-bottom: 10px;">1545 — 47.5</div> <div style="margin-bottom: 10px;">1542.5 — 50</div> <div style="margin-bottom: 10px;">1540 — 52.5</div> <div style="margin-bottom: 10px;">1537.5 — 55</div> <div style="margin-bottom: 10px;">1535 — 57.5</div> <div style="margin-bottom: 10px;">1532.5 — 60</div> <div style="margin-bottom: 10px;">1530 — 62.5</div> </div>			<p>END OF BORING AT 43.5 FEET</p>	

# EXPLORATION LOG MW-K6

CONFIDENTIAL

PROJECT: FORMER PEPCON FACILITY	PROJECT NO.: 97664V1
SITE LOCATION: SEE SITE PLAN	EXPLORATION DATE: 3-12-98
EXPLORATION SIZE (diameter): 2" MONITORING WELL	EQUIPMENT: MOBILE B-53
G.S. ELEVATION: 1557.77	LOGGED BY: S. ORNDORFF
INITIAL DEPTH TO WATER: 5	DATE MEASURED: 3-12-98
FINAL DEPTH TO WATER: 2.40	DATE MEASURED: 3-16-98



# EXPLORATION LOG MW-K6

CONFIDENTIAL

ELEVATION/ DEPTH	SOIL & SAMPLE SYMBOLS	USCS	DESCRIPTION	WELL CONSTRUCTION
<div style="display: flex; flex-direction: column; align-items: center;"> <div style="margin-bottom: 10px;">20</div> <div style="margin-bottom: 10px;">1537.5</div> <div style="margin-bottom: 10px;">22.5</div> <div style="margin-bottom: 10px;">1535</div> <div style="margin-bottom: 10px;">25</div> <div style="margin-bottom: 10px;">32.5</div> <div style="margin-bottom: 10px;">27.5</div> <div style="margin-bottom: 10px;">1530</div> <div style="margin-bottom: 10px;">30</div> <div style="margin-bottom: 10px;">1527.5</div> <div style="margin-bottom: 10px;">32.5</div> <div style="margin-bottom: 10px;">1525</div> <div style="margin-bottom: 10px;">35</div> <div style="margin-bottom: 10px;">522.5</div> <div style="margin-bottom: 10px;">37.5</div> <div style="margin-bottom: 10px;">1520</div> <div style="margin-bottom: 10px;">40</div> <div style="margin-bottom: 10px;">1515</div> </div>		<div style="margin-bottom: 10px;"></div> <div style="margin-bottom: 10px;">GP-GC</div> <div style="margin-bottom: 10px;"></div> <div style="margin-bottom: 10px;">SP</div> <div style="margin-bottom: 10px;"></div> <div style="margin-bottom: 10px;">SC</div> <div style="margin-bottom: 10px;"></div> <div style="margin-bottom: 10px;">CL</div> <div style="margin-bottom: 10px;"></div>	<div style="margin-bottom: 10px;"></div> <div style="margin-bottom: 10px;">Brown poorly graded gravel with clay and sand, wet and very dense.</div> <div style="margin-bottom: 10px;"></div> <div style="margin-bottom: 10px;">Brown poorly graded sand, wet and very dense.</div> <div style="margin-bottom: 10px;"></div> <div style="margin-bottom: 10px;">Pale pinkish brown clayey sand, wet and very dense.</div> <div style="margin-bottom: 10px;"></div> <div style="margin-bottom: 10px;">White and pink mottled sandy lean clay, wet and stiff.</div> <div style="margin-bottom: 10px;"></div>	
END OF BORING AT 41 FEET				

# EXPLORATION LOG MW-K7

# CONFIDENTIAL

PROJECT: FORMER PEPCON FACILITY

PROJECT NO.: 97664V1

LOCATION: SEE SITE PLAN

EXPLORATION DATE: 3-11-98

EXPLORATION SIZE (diameter): 2" MONITORING WELL

EQUIPMENT: MOBILE B-53

G.S. ELEVATION: 1554.45

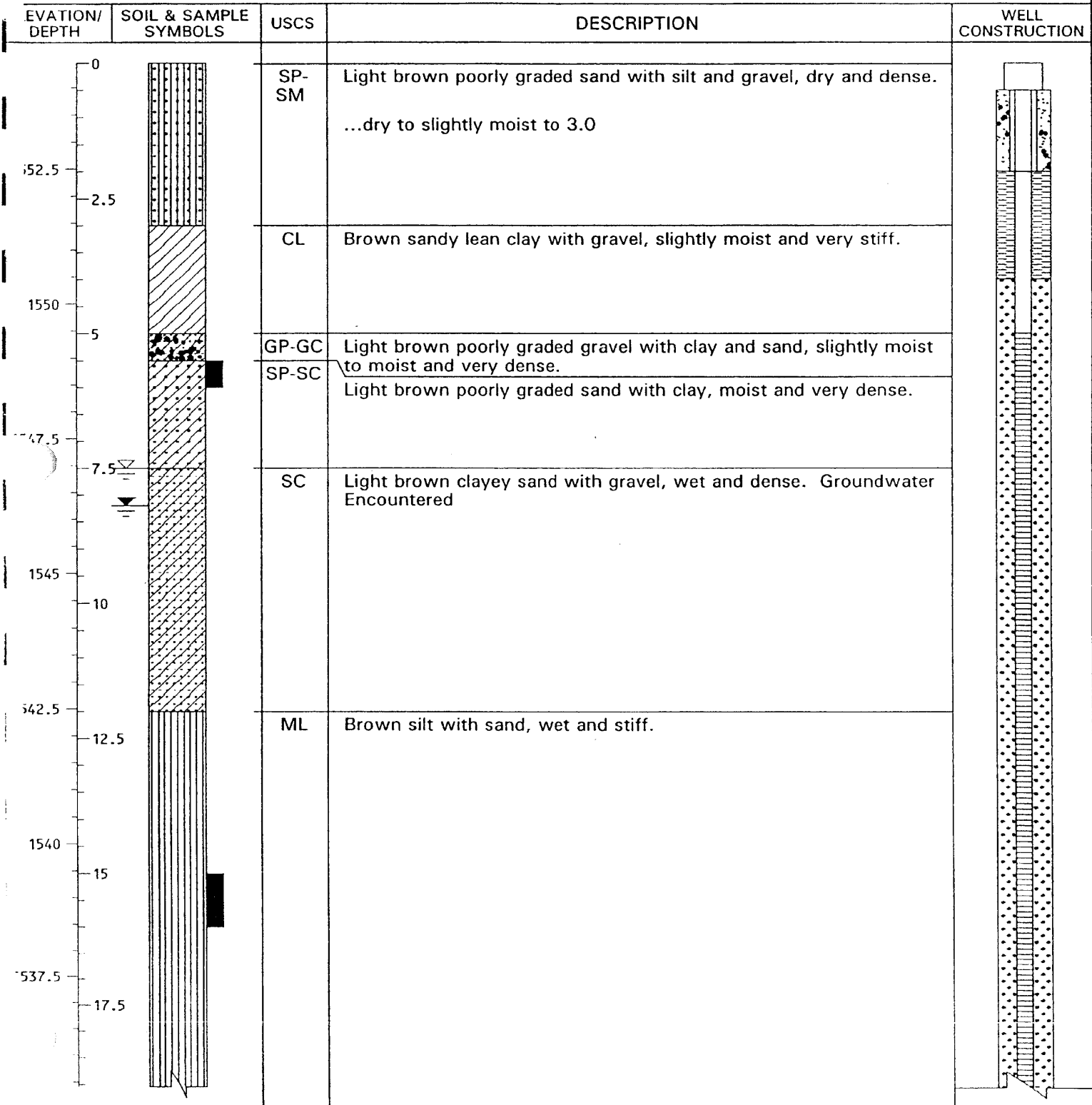
LOGGED BY: S. ORNDORFF

INITIAL DEPTH TO WATER: 7.5

DATE MEASURED: 3-11-98

FINAL DEPTH TO WATER: 8.19

DATE MEASURED: 3-16-98





# EXPLORATION LOG MW-K7

# CONFIDENTIAL

ELEVATION/ DEPTH	SOIL & SAMPLE SYMBOLS	USCS	DESCRIPTION	WELL CONSTRUCTION
<div style="display: flex; flex-direction: column; align-items: center;"> <div style="margin-bottom: 10px;">1535</div> <div style="margin-bottom: 10px;">20</div> <div style="margin-bottom: 10px;">1532.5</div> <div style="margin-bottom: 10px;">22.5</div> <div style="margin-bottom: 10px;">1530</div> <div style="margin-bottom: 10px;">25</div> <div style="margin-bottom: 10px;">1527.5</div> <div style="margin-bottom: 10px;">27.5</div> <div style="margin-bottom: 10px;">1525</div> <div style="margin-bottom: 10px;">30</div> <div style="margin-bottom: 10px;">1522.5</div> <div style="margin-bottom: 10px;">32.5</div> <div style="margin-bottom: 10px;">1520</div> <div style="margin-bottom: 10px;">35</div> <div style="margin-bottom: 10px;">1517.5</div> <div style="margin-bottom: 10px;">37.5</div> <div style="margin-bottom: 10px;">1515</div> <div style="margin-bottom: 10px;">40</div> </div>		<div style="margin-bottom: 10px;"></div> <div style="margin-bottom: 10px;">SP-SM</div> <div style="margin-bottom: 10px;">GP-GM</div> <div style="margin-bottom: 10px;">SP</div> <div style="margin-bottom: 10px;"></div>	<div style="margin-bottom: 10px;">...6" clay lense</div> <div style="margin-bottom: 10px;">Light brown poorly graded sand with silt, wet and very dense.</div> <div style="margin-bottom: 10px;">Very pale brown poorly graded gravel with silt and sand, wet and very dense.</div> <div style="margin-bottom: 10px;">Very pale brown poorly graded sand with gravel, wet and dense.</div> <div style="margin-bottom: 10px;">END OF BORING AT 41 FEET</div>	

# EXPLORATION LOG MW-K8

# CONFIDENTIAL

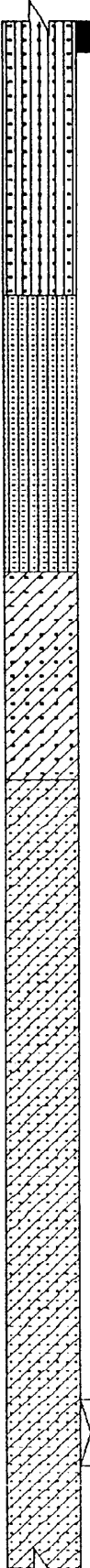
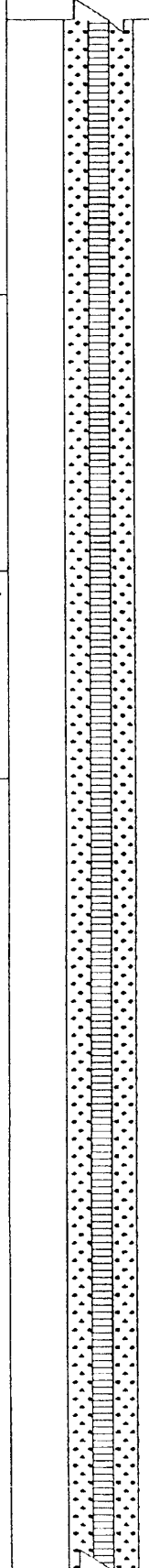
**PROJECT:** FORMER PEPCON FACILITY                              **PROJECT NO.:** 97664V1  
**SITE LOCATION:** SEE SITE PLAN                              **EXPLORATION DATE:** 3-10-98  
**EXPLORATION SIZE (diameter):** 2" MONITORING WELL      **EQUIPMENT:** MOBILE B-53  
**G.S. ELEVATION:** 1560.25                              **LOGGED BY:** S. ORNDORFF

**INITIAL DEPTH TO WATER:** 18.0                              **DATE MEASURED:** 3-10-98  
**FINAL DEPTH TO WATER:** 18.88                              **DATE MEASURED:** 3-16-98

ELEVATION/DEPTH	SOIL & SAMPLE SYMBOLS	USCS	DESCRIPTION	WELL CONSTRUCTION
1560 — 0  1557.5 — 2.5  1555 — 5  1552.5 — 7.5  1550 — 10  1547.5 — 12.5  1545 — 15  1542.5 — 17.5		<p>GP-GM</p> <hr/> <p>SP</p> <hr/> <p>GP</p> <hr/> <p>SP</p> <hr/> <p>SP-SM</p>	<p>Light brown poorly graded gravel with silt and sand, dry and very dense.</p> <p>...reddish brown and dry to slightly moist to 3.0</p> <hr/> <p>Reddish brown poorly graded sand with gravel, dry to slightly moist and very dense.</p> <p>...slightly moist to 13.5</p> <p>...with coarse gravel to 9.5</p> <hr/> <p>Reddish brown poorly graded gravel with sand, slightly moist and very dense.</p> <hr/> <p>Reddish brown poorly graded sand with gravel, slightly moist to moist and very dense.</p> <hr/> <p>Brown poorly graded sand with silt and gravel, wet and very dense. Groundwater Encountered</p>	

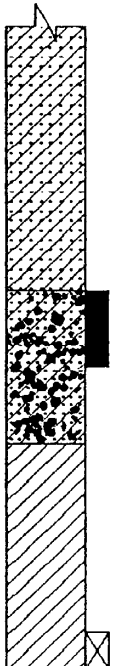
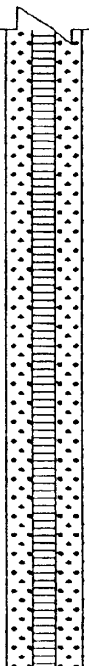
# EXPLORATION LOG MW-K8

CONFIDENTIAL

ELEVATION/ DEPTH	SOIL & SAMPLE SYMBOLS	USCS	DESCRIPTION	WELL CONSTRUCTION
<div style="display: flex; flex-direction: column; align-items: center;"> <div style="margin-bottom: 10px;">1540</div> <div style="margin-bottom: 10px;">20</div> <div style="margin-bottom: 10px;">537.5</div> <div style="margin-bottom: 10px;">22.5</div> <div style="margin-bottom: 10px;">1535</div> <div style="margin-bottom: 10px;">25</div> <div style="margin-bottom: 10px;">1532.5</div> <div style="margin-bottom: 10px;">27.5</div> <div style="margin-bottom: 10px;">1530</div> <div style="margin-bottom: 10px;">30</div> <div style="margin-bottom: 10px;">527.5</div> <div style="margin-bottom: 10px;">32.5</div> <div style="margin-bottom: 10px;">1525</div> <div style="margin-bottom: 10px;">35</div> <div style="margin-bottom: 10px;">1522.5</div> <div style="margin-bottom: 10px;">37.5</div> <div style="margin-bottom: 10px;">40</div> </div>		<div style="margin-bottom: 100px;">SM</div> <div style="margin-bottom: 100px;">SP-SC</div> <div>SC</div>	<div style="margin-bottom: 100px;">Brown silty sand with gravel, wet and very dense.</div> <div style="margin-bottom: 100px;">Brown poorly graded sand with clay and gravel, wet and very dense.</div> <div>Brown poorly graded clayey sand, wet and dense.</div>	

# EXPLORATION LOG MW-K8

CONFIDENTIAL

ELEVATION/ DEPTH	SOIL & SAMPLE SYMBOLS	USCS	DESCRIPTION	WELL CONSTRUCTION
<div style="display: flex; flex-direction: column; align-items: center;"> <div style="margin-bottom: 10px;">517.5</div> <div style="margin-bottom: 10px;">42.5</div> <div style="margin-bottom: 10px;">1515</div> <div style="margin-bottom: 10px;">45</div> <div style="margin-bottom: 10px;">1512.5</div> <div style="margin-bottom: 10px;">47.5</div> <div style="margin-bottom: 10px;">1510</div> <div style="margin-bottom: 10px;">50</div> <div style="margin-bottom: 10px;">1507.5</div> <div style="margin-bottom: 10px;">52.5</div> <div style="margin-bottom: 10px;">1505</div> <div style="margin-bottom: 10px;">55</div> <div style="margin-bottom: 10px;">1502.5</div> <div style="margin-bottom: 10px;">57.5</div> <div style="margin-bottom: 10px;">1500</div> <div style="margin-bottom: 10px;">60</div> <div style="margin-bottom: 10px;">5</div> <div style="margin-bottom: 10px;">62.5</div> </div>		<div style="margin-bottom: 10px;">GP-GC</div> <div style="margin-bottom: 10px;">CL</div>	<div style="margin-bottom: 10px;">Light brown poorly graded gravel with clay and sand, wet and very dense.</div> <div style="margin-bottom: 10px;">White gravelly clay with sand, wet and very stiff.</div> <div style="text-align: center; margin-top: 10px;">END OF BORING AT 50 FEET</div>	

# EXPLORATION LOG MW-L

CONFIDENTIAL

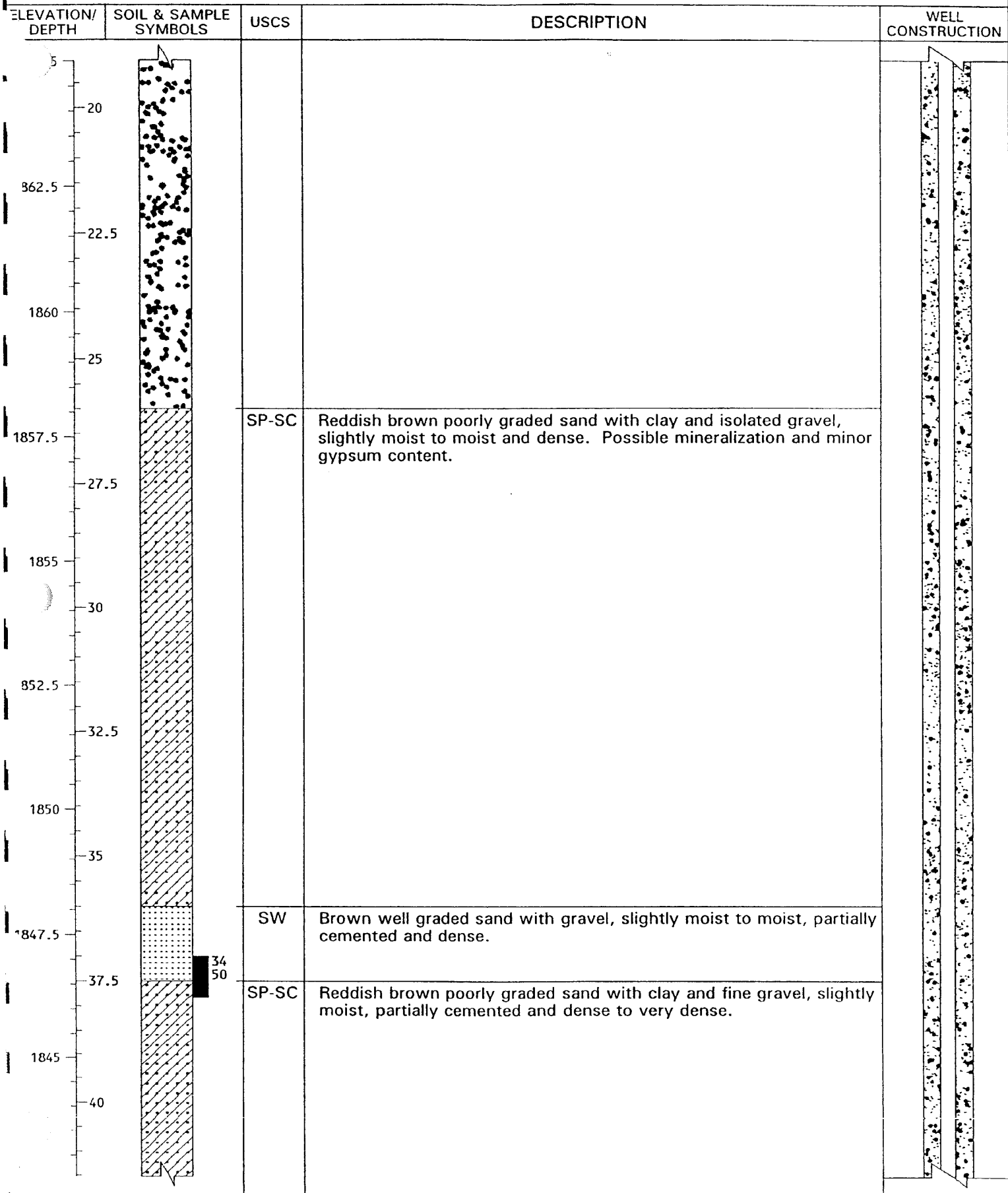
**PROJECT:** FORMER PEPCON FACILITY      **PROJECT NO.:** 97664V1  
**LOCATION:** SEE SITE PLAN      **EXPLORATION DATE:** 11/20/97  
**EXPLORATION SIZE (diameter):** 2" MONITORING WELL      **EQUIPMENT:** MOBILE B-53  
**G.S. ELEVATION:** 1884.07      **LOGGED BY:** S. JOHNSON

**INITIAL DEPTH TO WATER:** 80.0      **DATE MEASURED:** 11/20/97  
**FINAL DEPTH TO WATER:** 59.0      **DATE MEASURED:** 12/2/97

ELEVATION/ DEPTH	SOIL & SAMPLE SYMBOLS	USCS	DESCRIPTION	WELL CONSTRUCTION
0		F	Asphalt and roadbed material, light brown poorly graded sand with silt and gravel, dry and dense.	
82.5		GP	Light brown poorly graded gravel with sand, cobbles and boulders, dry and dense to very dense.	
1880 2.5			...boulder to 5.0	
1877.5	<span style="font-size: 0.8em; vertical-align: middle;">21 50</span>		...boulder to 9.0	
1875 7.5			...boulder to 15.0	
1870 10			...more sand, fewer cobbles and boulders to 26.0	
1867.5 12.5				
15				
17.5				

# EXPLORATION LOG MW-L

CONFIDENTIAL



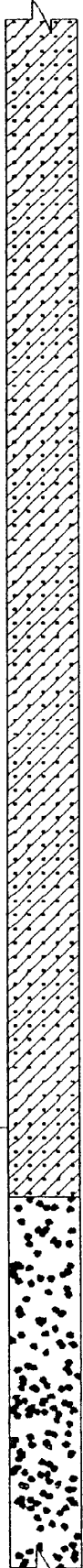
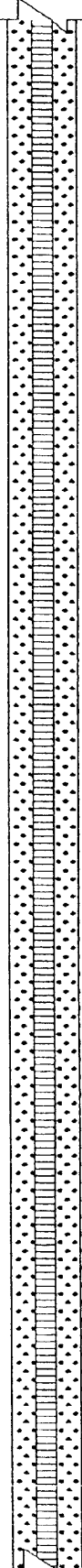
# EXPLORATION LOG MW-L

CONFIDENTIAL

ELEVATION/ DEPTH	SOIL & SAMPLE SYMBOLS	USCS	DESCRIPTION	WELL CONSTRUCTION
<div style="display: flex; flex-direction: column; align-items: center;"> <div style="margin-bottom: 10px;">42.5</div> <div style="margin-bottom: 10px;">1840</div> <div style="margin-bottom: 10px;">45</div> <div style="margin-bottom: 10px;">337.5</div> <div style="margin-bottom: 10px;">47.5</div> <div style="margin-bottom: 10px;">1835</div> <div style="margin-bottom: 10px;">50</div> <div style="margin-bottom: 10px;">1832.5</div> <div style="margin-bottom: 10px;">52.5</div> <div style="margin-bottom: 10px;">1830</div> <div style="margin-bottom: 10px;">55</div> <div style="margin-bottom: 10px;">327.5</div> <div style="margin-bottom: 10px;">57.5</div> <div style="margin-bottom: 10px;">1825</div> <div style="margin-bottom: 10px;">60</div> <div style="margin-bottom: 10px;">1822.5</div> <div style="margin-bottom: 10px;">62.5</div> </div>			<p style="text-align: center;">...moist to 70.0</p>	

# EXPLORATION LOG MW-L



CONFIDENTIAL

ELEVATION/ DEPTH	SOIL & SAMPLE SYMBOLS	USCS	DESCRIPTION	WELL CONSTRUCTION
<div style="display: flex; flex-direction: column; align-items: center;"> <div style="margin-bottom: 10px;">65</div> <div style="margin-bottom: 10px;">1817.5</div> <div style="margin-bottom: 10px;">67.5</div> <div style="margin-bottom: 10px;">1815</div> <div style="margin-bottom: 10px;">70</div> <div style="margin-bottom: 10px;">1812.5</div> <div style="margin-bottom: 10px;">72.5</div> <div style="margin-bottom: 10px;">1810</div> <div style="margin-bottom: 10px;">75</div> <div style="margin-bottom: 10px;">1807.5</div> <div style="margin-bottom: 10px;">77.5</div> <div style="margin-bottom: 10px;">1805</div> <div style="margin-bottom: 10px;">80</div> <div style="margin-bottom: 10px;">1802.5</div> <div style="margin-bottom: 10px;">82.5</div> <div style="margin-bottom: 10px;">1800</div> <div style="margin-bottom: 10px;">85</div> </div>		<div style="margin-bottom: 10px;"></div> <div style="margin-bottom: 10px;"></div> <div style="margin-bottom: 10px;"></div> <div style="margin-bottom: 10px;"></div> <div style="margin-bottom: 10px;"></div> <div style="margin-bottom: 10px;"></div> <div style="margin-bottom: 10px;"></div> <div style="margin-bottom: 10px;"></div> <div style="margin-bottom: 10px;"></div> <div style="margin-bottom: 10px;"></div> <div style="margin-bottom: 10px;"></div> <div style="margin-bottom: 10px;"></div> <div style="margin-bottom: 10px;">GP</div>	<div style="margin-bottom: 10px;"></div> <div style="margin-bottom: 10px;">...dark brown to 81.0</div> <div style="margin-bottom: 10px;"></div> <div style="margin-bottom: 10px;">...very moist to 71.5</div> <div style="margin-bottom: 10px;"></div> <div style="margin-bottom: 10px;">...moist to 80.0</div> <div style="margin-bottom: 10px;"></div> <div style="margin-bottom: 10px;">GROUNDWATER ENCOUNTERED</div> <div style="margin-bottom: 10px;"></div> <div style="margin-bottom: 10px;">Dark brown poorly graded gravel with sand, wet, partially cemented and dense.</div>	



# EXPLORATION LOG MW-L

CONFIDENTIAL

ELEVATION/ DEPTH	SOIL & SAMPLE SYMBOLS	USCS	DESCRIPTION	WELL CONSTRUCTION
<div style="display: flex; flex-direction: column; align-items: center;"> <div style="margin-bottom: 10px;">86.5</div> <div style="margin-bottom: 10px;">87.5</div> <div style="margin-bottom: 10px;">1795</div> <div style="margin-bottom: 10px;">90</div> <div style="margin-bottom: 10px;">92.5</div> <div style="margin-bottom: 10px;">92.5</div> <div style="margin-bottom: 10px;">1790</div> <div style="margin-bottom: 10px;">95</div> <div style="margin-bottom: 10px;">1787.5</div> <div style="margin-bottom: 10px;">97.5</div> <div style="margin-bottom: 10px;">1785</div> <div style="margin-bottom: 10px;">100</div> <div style="margin-bottom: 10px;">82.5</div> <div style="margin-bottom: 10px;">102.5</div> <div style="margin-bottom: 10px;">1780</div> <div style="margin-bottom: 10px;">105</div> <div style="margin-bottom: 10px;">1777.5</div> <div style="margin-bottom: 10px;">107.5</div> </div>			<p>END OF BORING AT 86.5 FEET</p>	

# EXPLORATION LOG MW-M

CONFIDENTIAL

PROJECT: FORMER PEPCON FACILITY  
 LOCATION: SEE SITE PLAN  
 EXPLORATION SIZE (diameter): 2" MONITORING WELL  
 G.S. ELEVATION: 1879.93

PROJECT NO.: 97664V1  
 EXPLORATION DATE: 3-09-98  
 EQUIPMENT: MOBILE B-61-HDX  
 LOGGED BY: S. JOHNSON

INITIAL DEPTH TO WATER: 97  
 FINAL DEPTH TO WATER: 92.58

DATE MEASURED: 3-09-98  
 DATE MEASURED: 3-20-98

ELEVATION/ DEPTH	SOIL & SAMPLE SYMBOLS	USCS	DESCRIPTION	WELL CONSTRUCTION
<div style="display: flex; flex-direction: column; align-items: center;"> <div style="margin-bottom: 5px;">0</div> <div style="margin-bottom: 15px;"></div> <div style="margin-bottom: 5px;">1877.5</div> <div style="margin-bottom: 15px;"></div> <div style="margin-bottom: 5px;">1875</div> <div style="margin-bottom: 15px;"></div> <div style="margin-bottom: 5px;">1872.5</div> <div style="margin-bottom: 15px;"></div> <div style="margin-bottom: 5px;">1870</div> <div style="margin-bottom: 15px;"></div> <div style="margin-bottom: 5px;">1867.5</div> <div style="margin-bottom: 15px;"></div> <div style="margin-bottom: 5px;">1865</div> <div style="margin-bottom: 15px;"></div> <div style="margin-bottom: 5px;">1862.5</div> </div>		<p>GP</p> <hr/> <p>GP- GM</p>	<p>Pale brown poorly graded gravel with sand and cobbles, dry and medium dense to dense. (angular to subangular basalt and andesite)</p>  <p>...more fine-grained and partially cemented to 15.0</p>  <p>Pale brown poorly graded gravel with silt and sand, dry, partially cemented and dense.</p>	

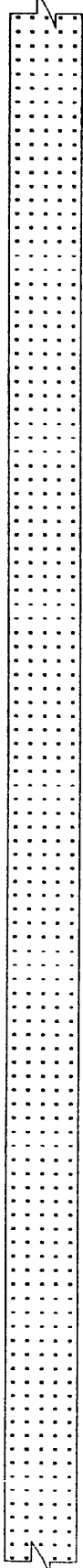
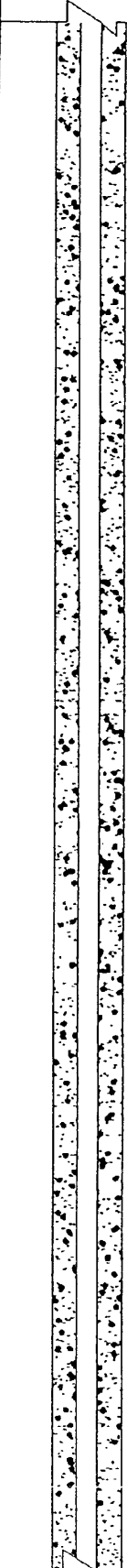
# EXPLORATION LOG MW-M

# CONFIDENTIAL

ELEVATION/ DEPTH	SOIL & SAMPLE SYMBOLS	USCS	DESCRIPTION	WELL CONSTRUCTION
<div style="display: flex; flex-direction: column; align-items: center;"> <div style="margin-bottom: 10px;">1860 — 20</div> <div style="margin-bottom: 10px;">1857.5 — 22.5</div> <div style="margin-bottom: 10px;">1855 — 25</div> <div style="margin-bottom: 10px;">1852.5 — 27.5</div> <div style="margin-bottom: 10px;">1850 — 30</div> <div style="margin-bottom: 10px;">1847.5 — 32.5</div> <div style="margin-bottom: 10px;">1845 — 35</div> <div style="margin-bottom: 10px;">1842.5 — 37.5</div> <div style="margin-bottom: 10px;">1840 — 40</div> </div>		<p style="margin-top: 100px;">GP</p> <p style="margin-top: 100px;">SP</p>	<p style="margin-top: 100px;">...switch to air rotary</p> <p style="margin-top: 100px;">Pale brown poorly graded gravel with sand, dry and medium dense to dense.</p> <p style="margin-top: 100px;">...adding foam</p> <p style="margin-top: 100px;">Pale brown poorly graded sand with gravel and isolated cobbles, dry and medium dense. (stratified)</p>	

# EXPLORATION LOG MW-M

# CONFIDENTIAL

ELEVATION/ DEPTH	SOIL & SAMPLE SYMBOLS	USCS	DESCRIPTION	WELL CONSTRUCTION	
37.5 — 42.5			<p>...no gravel and partially cemented to 61.0</p>		
1835 — 45					
1832.5 — 47.5					
1830 — 50					
— 52.5					
1825 — 55					
1822.5 — 57.5					
1820 — 60					
17.5 — 62.5					<p>...gravel lense to 61.5</p>

# EXPLORATION LOG MW-M

# CONFIDENTIAL

ELEVATION/ DEPTH	SOIL & SAMPLE SYMBOLS	USCS	DESCRIPTION	WELL CONSTRUCTION
<div style="display: flex; flex-direction: column; align-items: center;"> <div style="margin-bottom: 10px;">1815 — 65</div> <div style="margin-bottom: 10px;">1812.5 — 67.5</div> <div style="margin-bottom: 10px;">1810 — 70</div> <div style="margin-bottom: 10px;">1807.5 — 72.5</div> <div style="margin-bottom: 10px;">1805 — 75</div> <div style="margin-bottom: 10px;">1802.5 — 77.5</div> <div style="margin-bottom: 10px;">1800 — 80</div> <div style="margin-bottom: 10px;">1797.5 — 82.5</div> <div style="margin-bottom: 10px;">1795 — 85</div> </div>		<p style="text-align: center;">GP</p>	<p style="text-align: center;">...gravel lens to 67.0</p> <p style="text-align: center;">Pale brown poorly graded gravel with sand, wet and dense.</p> <p style="text-align: center;">...partially cemented to 89.0</p>	

# FACSIMILE

Broadbent & Associates, Inc.  
8 West Pacific Avenue  
Henderson, Nevada 89015  
Voice: (702) 563-0600  
Fax: (702) 563-0610

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To: Todd Craft Date: 2-2-99  
NDFP

Fax #: 486-2863

From: Bob Broadbent

Fax #: (702) 563-0610

Number of Pages Including Transmittal Sheet: 2

## COMMENTS

Todd

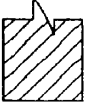

I can't find the first page of  
E. Greg DeSart should have  
it.

Bob

IF ALL PAGES ARE NOT RECEIVED, PLEASE NOTIFY US IMMEDIATELY

# EXPLORATION LOG MW-M

CONFIDENTIAL

ELEVATION/ DEPTH	SOIL & SAMPLE SYMBOLS	USCS	DESCRIPTION	WELL CONSTRUCTION
<div style="display: flex; flex-direction: column; align-items: center;"> <div style="margin-bottom: 10px;">1770</div> <div style="margin-bottom: 10px;">1767.5</div> <div style="margin-bottom: 10px;">1765</div> <div style="margin-bottom: 10px;">1762.5</div> <div style="margin-bottom: 10px;">1760</div> <div style="margin-bottom: 10px;">1757.5</div> <div style="margin-bottom: 10px;">1755</div> <div style="margin-bottom: 10px;">1752.5</div> <div style="margin-bottom: 10px;">1750</div> </div>	<div style="margin-bottom: 10px;">110</div> <div style="margin-bottom: 10px;">112.5</div> <div style="margin-bottom: 10px;">115</div> <div style="margin-bottom: 10px;">117.5</div> <div style="margin-bottom: 10px;">120</div> <div style="margin-bottom: 10px;">122.5</div> <div style="margin-bottom: 10px;">125</div> <div style="margin-bottom: 10px;">127.5</div> <div style="margin-bottom: 10px;">130</div>	<div style="margin-bottom: 10px;"></div>	<div style="margin-bottom: 10px;">END OF BORING AT 110 FEET</div>	<div style="margin-bottom: 10px;"></div>

# EXPLORATION LOG MW-M

# CONFIDENTIAL

ELEVATION/ DEPTH	SOIL & SAMPLE SYMBOLS	USCS	DESCRIPTION	WELL CONSTRUCTION
<div style="display: flex; flex-direction: column; align-items: center;"> <div style="margin-bottom: 10px;">792.5 — 87.5</div> <div style="margin-bottom: 10px;">1790 — 90</div> <div style="margin-bottom: 10px;">1787.5 — 92</div> <div style="margin-bottom: 10px;">1785 — 95</div> <div style="margin-bottom: 10px;">1782.5 — 97.5</div> <div style="margin-bottom: 10px;">1780 — 100</div> <div style="margin-bottom: 10px;">1777.5 — 102.5</div> <div style="margin-bottom: 10px;">1775 — 105</div> <div style="margin-bottom: 10px;">1772.5 — 107.5</div> </div>		<div style="margin-bottom: 10px;"></div> <div style="margin-bottom: 10px;"></div> <div style="margin-bottom: 10px;"></div> <div style="margin-bottom: 10px;"></div> <div style="margin-bottom: 10px;"></div> <div style="margin-bottom: 10px;">CL</div> <div style="margin-bottom: 10px;"></div>	<div style="margin-bottom: 10px;"></div> <div style="margin-bottom: 10px;"></div> <div style="margin-bottom: 10px;">...partially cemented to 97.0</div> <div style="margin-bottom: 10px;"></div> <div style="margin-bottom: 10px;">...Groundwater Encountered</div> <div style="margin-bottom: 10px;"></div> <div style="margin-bottom: 10px;"></div> <div style="margin-bottom: 10px;">Reddish brown lean clay with sand, very moist to wet and stiff to very stiff.</div>	



















# EXPLORATION LOG MW-N

# CONFIDENTIAL

PROJECT: FORMER PEPCON FACILITY  
 SITE LOCATION: SEE SITE PLAN  
 EXPLORATION SIZE (diameter): 2" MONITORING WELL  
 G.S. ELEVATION: 1649.24

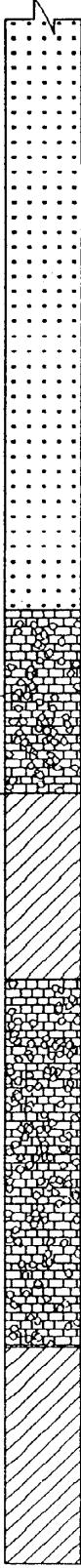
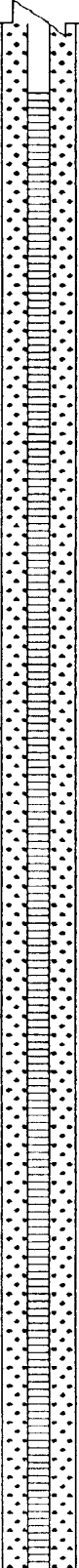
PROJECT NO.: 97664V1  
 EXPLORATION DATE: 12/22/97  
 EQUIPMENT: MOBILE B-53  
 LOGGED BY: S. JOHNSON

INITIAL DEPTH TO WATER: 29.5      DATE MEASURED: 12/22/97  
 FINAL DEPTH TO WATER: 28.17      DATE MEASURED: 12/29/97

ELEVATION/ DEPTH	SOIL & SAMPLE SYMBOLS	USCS	DESCRIPTION	WELL CONSTRUCTION
0		F	Asphalt and roadbed aggregate.	
47.5		GP- GM	Brown poorly graded gravel with silt and sand, slightly moist and dense. Gravel subrounded to subangular, mostly basalt. ...more fine gravel and sand to 2.5  ...more coarse gravel to 5.0 (some rhyolite gravel)	
2.5				
1645				
5				
1642.5				
7.5		C/G	Brown cemented sand and gravel, dry to slightly moist, moderately cemented and medium hard to hard.	
1640				
10				
37.5		SP- SM	Light brown poorly graded sand with silt and fine gravel, dry to slightly moist and dense.	
1635				
15		GP- GM	Light brown poorly graded gravel with silt and sand, dry to slightly moist, partially cemented and dense. ...cobble	
1632.5				
17.5		C/G	Light brown cemented sand and gravel, dry, cemented and medium hard to hard.	
1630				

# EXPLORATION LOG MW-N

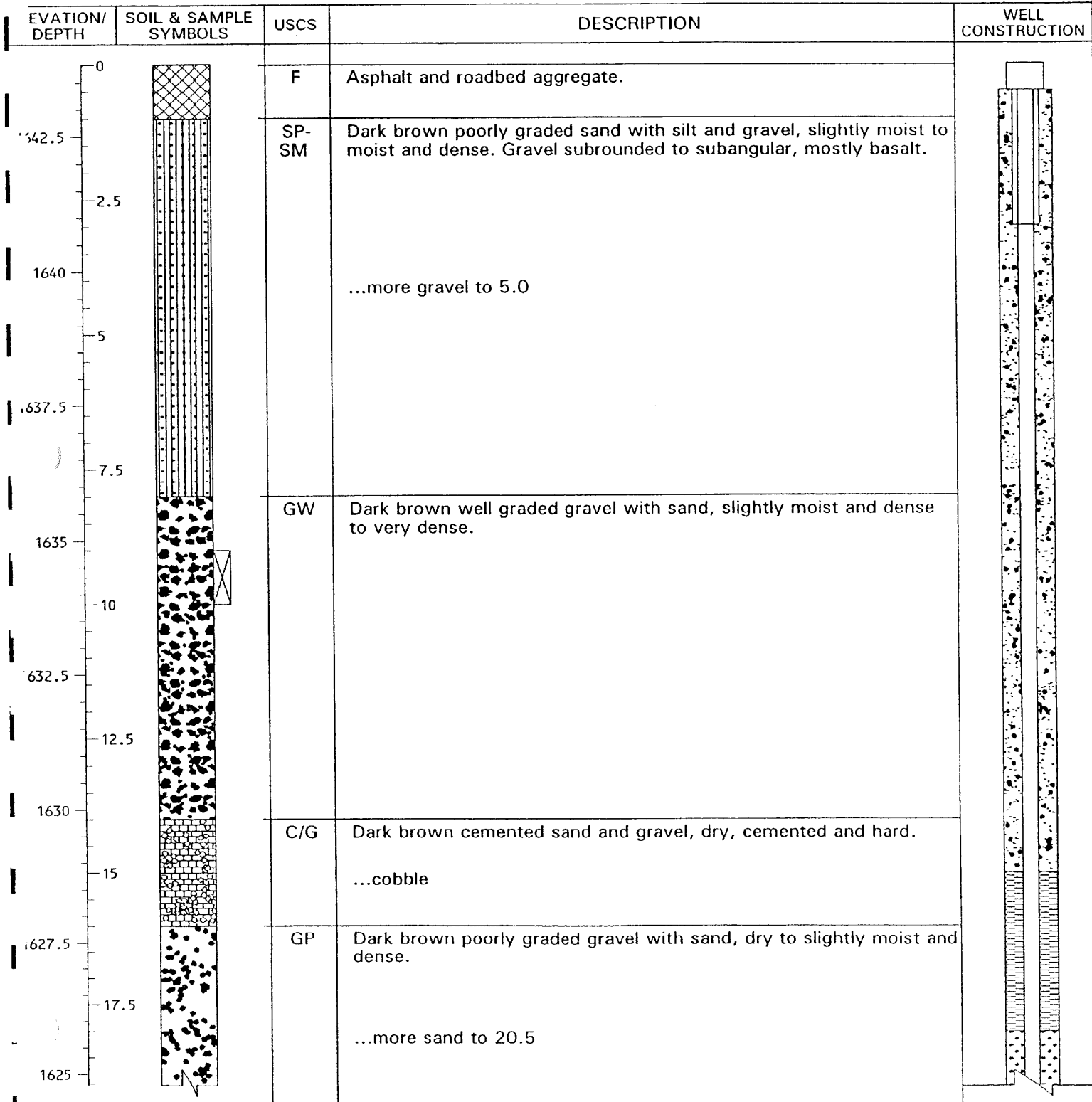
## CONFIDENTIAL

ELEVATION/ DEPTH	SOIL & SAMPLE SYMBOLS	USCS	DESCRIPTION	WELL CONSTRUCTION
0 20 27.5 22.5 1625 25 22.5 27.5 1620 30 17.5 32.5 1615 35 32.5 37.5 1610 40		SP         C/G  CL   C/G      CL	Dark brown poorly graded sand with fine gravel, dry to slightly moist and dense.          Pale brown cemented sand and gravel, dry to slightly moist, moderately cemented and medium hard. Calcium carbonate rinds and some limestone clasts.  GROUNDWATER ENCOUNTERED ... Dark brown sandy lean clay, wet and stiff  Dark brown cemented sand and gravel, wet, cemented and hard.  ...strongly cemented and very hard to 35.5 ...weakly cemented and medium hard to 36.0 strongly cemented and very hard to 37.0  Reddish brown lean clay with sand, wet and stiff to very stiff.	
			END OF BORING AT 40 FEET	

# EXPLORATION LOG MW-0


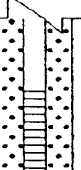



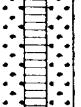
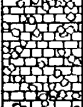
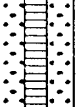
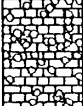
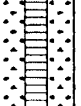



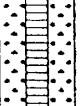
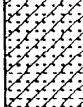
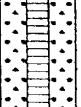

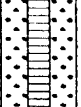

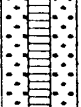

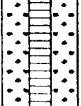
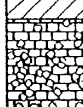
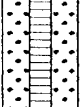

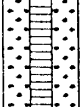

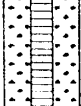
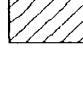



# CONFIDENTIAL

PROJECT: FORMER PEPCON FACILITY PROJECT NO.: 97664V1  
 SITE LOCATION: SEE SITE PLAN EXPLORATION DATE: 12/22/97  
 EXPLORATION SIZE (diameter): 2" MONITORING WELL EQUIPMENT: MOBILE B-53  
 G.S. ELEVATION: 1643.82 LOGGED BY: S. JOHNSON  
 INITIAL DEPTH TO WATER: 27.0 DATE MEASURED: 12/22/97  
 FINAL DEPTH TO WATER: 27.32 DATE MEASURED: 12/29/97



# EXPLORATION LOG MW-0

# CONFIDENTIAL



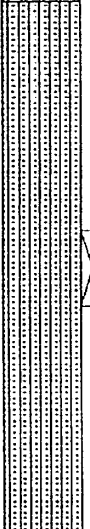
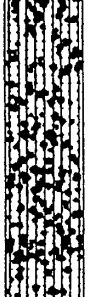




ELEVATION/ DEPTH	SOIL & SAMPLE SYMBOLS	USCS	DESCRIPTION	WELL CONSTRUCTION
20				
22.5		C/G	Dark brown cemented sand and gravel, dry, cemented and hard.	
22.5		GP	Dark brown poorly graded gravel with sand, slightly moist and dense. Fine to medium grained gravel.	
1620		C/G	Dark brown cemented sand and gravel, moist, moderately cemented and medium hard. Mostly fine gravel and well-graded sand.	
25				
1617.5				
27.5		SW- SC	GROUNDWATER ENCOUNTERED ... Dark brown well graded sand with clay, wet and dense.	
1615				
30				
312.5		C/G	Dark brown cemented sand and gravel, wet, moderately cemented and medium hard to hard.	
32.5				
1610		CL	Dark brown sandy lean clay with gravel, wet and stiff to very stiff.	
35				
1607.5		C/G	Dark brown cemented sand and gravel, wet, cemented and hard.	
37.5				
1605		CL	Reddish brown sandy lean clay, wet and stiff.	
40			END OF BORING AT 40 FEET	
602.5				

# EXPLORATION LOG MW-P

# CONFIDENTIAL

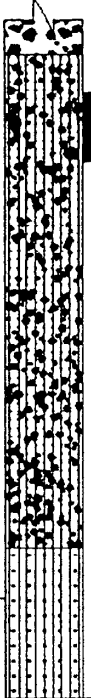
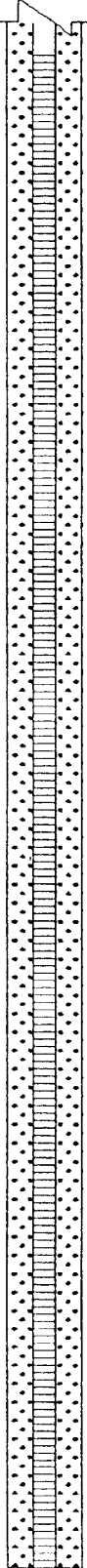

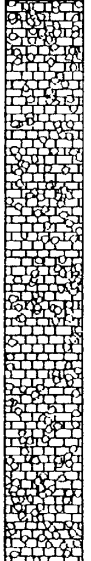
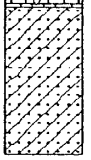
PROJECT: FORMER PEPCON FACILITY  
 PROJECT NO.: 97664V1  
 SITE LOCATION: SEE SITE PLAN  
 EXPLORATION DATE: 12/22/97  
 EXPLORATION SIZE (diameter): 2" MONITORING WELL  
 EQUIPMENT: MOBILE B-61  
 G.S. ELEVATION: 1640.87  
 LOGGED BY: S. JOHNSON

INITIAL DEPTH TO WATER: 29.5      DATE MEASURED: 12/22/97  
 FINAL DEPTH TO WATER: 26.67      DATE MEASURED: 12/29/97

ELEVATION/ DEPTH	SOIL & SAMPLE SYMBOLS	USCS	DESCRIPTION	WELL CONSTRUCTION
0		F	Asphalt and roadbed aggregate.	
1640		SM	Brown silty sand, slightly moist and dense. Fines are slightly plastic. Gravel subrounded to subangular, mostly basalt.  ...more gravel to 5.0	
-2.5				
1637.5				
-5				
1635				
-7.5				
1632.5		GP-GM	Dark brown poorly graded gravel with silt and sand, slightly moist and dense to very dense.	
-10				
1630				
-12.5		C/G	Dark brown cemented sand and gravel, dry, moderately cemented and medium hard to hard.	
1627.5		GP	Dark brown poorly graded gravel with sand, slightly moist and dense. Coarse gravel.	
-15				
1625		C/G	Dark brown cemented sand and gravel, dry to slightly moist, cemented and hard.	
-17.5				
1622.5		GW	Dark brown well graded gravel with sand, slightly moist and dense.	

# EXPLORATION LOG MW-P

# CONFIDENTIAL

ELEVATION/ DEPTH	SOIL & SAMPLE SYMBOLS	USCS	DESCRIPTION	WELL CONSTRUCTION
20 1620		GP- GM	Dark brown poorly graded gravel with silt and sand, slightly moist and dense.	
22.5 1617.5				
25 1615		SP- SM	Dark brown poorly graded sand with silt and gravel, slightly moist to moist and dense.	
27.5		C/G	Dark brown cemented sand and gravel, moist, cemented and hard.	
30 1610		CL	GROUNDWATER ENCOUNTERED ... Light brown sandy lean clay, wet and stiff.	
32.5 1607.5		C/G	Light brown cemented sand and gravel, wet, cemented and hard.	
35 1605				
37.5				
40 1602.5		SC	Light brown clayey sand, wet and medium dense.	
40			END OF BORING AT 40 FEET	

# EXPLORATION LOG MW-Q

# CONFIDENTIAL

**PROJECT:** FORMER PEPCON FACILITY **PROJECT NO.:** 97664V1  
**FILE LOCATION:** SEE SITE PLAN **EXPLORATION DATE:** 12/23/97  
**EXPLORATION SIZE (diameter):** 2" MONITORING WELL **EQUIPMENT:** MOBILE B-53  
**G.S. ELEVATION:** 1633.46 **LOGGED BY:** S. JOHNSON

**INITIAL DEPTH TO WATER:** 36.0 **DATE MEASURED:** 12/31/97  
**FINAL DEPTH TO WATER:** 31.45 **DATE MEASURED:** 12/31/97

ELEVATION/ DEPTH	SOIL & SAMPLE SYMBOLS	USCS	DESCRIPTION	WELL CONSTRUCTION
0 1632.5 -2.5 1630 -5 1627.5 -7.5 1625 -10 1622.5 -12.5 1620 -15 1617.5 -17.5 1615		GP-GM  SW-SM  GP  C/G  C  SC	Pale brown poorly graded gravel with silt and sand, dry and medium dense to dense.  Brown well graded sand with silt and gravel, slightly moist to moist and dense.  Brown poorly graded gravel with sand, slightly moist to moist and dense. Minor silt/clay content, basalt gravel.  Brown cemented sand and gravel, dry, cemented and hard.  Pale brown caliche, dry, strongly cemented and very hard.  ...white to 16.0  Brown clayey sand, slightly moist to moist and dense.	

# EXPLORATION LOG MW-Q

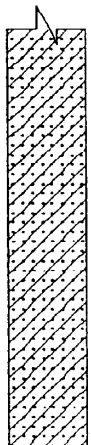
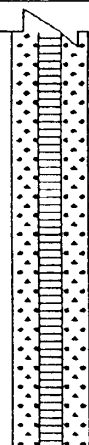
CONFIDENTIAL

ELEVATION/ DEPTH	SOIL & SAMPLE SYMBOLS	USCS	DESCRIPTION	WELL CONSTRUCTION
<div style="display: flex; flex-direction: column; align-items: center;"> <div style="margin-bottom: 10px;">20</div> <div style="margin-bottom: 10px;">1612.5</div> <div style="margin-bottom: 10px;">22.5</div> <div style="margin-bottom: 10px;">1610</div> <div style="margin-bottom: 10px;">25</div> <div style="margin-bottom: 10px;">507.5</div> <div style="margin-bottom: 10px;">27.5</div> <div style="margin-bottom: 10px;">1605</div> <div style="margin-bottom: 10px;">30</div> <div style="margin-bottom: 10px;">1602.5</div> <div style="margin-bottom: 10px;">32.5</div> <div style="margin-bottom: 10px;">1600</div> <div style="margin-bottom: 10px;">35</div> <div style="margin-bottom: 10px;">597.5</div> <div style="margin-bottom: 10px;">37.5</div> <div style="margin-bottom: 10px;">1595</div> <div style="margin-bottom: 10px;">40</div> <div style="margin-bottom: 10px;">1592.5</div> </div>		<p>CL</p> <p>SC</p>	<p>Pale brown sandy lean clay with nodules, moist and stiff to very stiff. ...white to 32.0</p> <p>...dry to slightly moist with gravel and dry hard clay nodules to 32.0</p> <p>...moist with no nodules or gravel to 36.0</p> <p>GROUNDWATER ENCOUNTERED ... Reddish brown clayey sand, wet and stiff.</p> <p>...light brown to 47.0</p>	



# EXPLORATION LOG MW-Q

CONFIDENTIAL

ELEVATION/ DEPTH	SOIL & SAMPLE SYMBOLS	USCS	DESCRIPTION	WELL CONSTRUCTION
<div style="display: flex; flex-direction: column; align-items: center;"> <div style="margin-bottom: 10px;">1590</div> <div style="margin-bottom: 10px;">42.5</div> <div style="margin-bottom: 10px;">45</div> <div style="margin-bottom: 10px;">1587.5</div> <div style="margin-bottom: 10px;">47.5</div> <div style="margin-bottom: 10px;">1585</div> <div style="margin-bottom: 10px;">50</div> <div style="margin-bottom: 10px;">82.5</div> <div style="margin-bottom: 10px;">52.5</div> <div style="margin-bottom: 10px;">1580</div> <div style="margin-bottom: 10px;">55</div> <div style="margin-bottom: 10px;">1577.5</div> <div style="margin-bottom: 10px;">57.5</div> <div style="margin-bottom: 10px;">1575</div> <div style="margin-bottom: 10px;">60</div> <div style="margin-bottom: 10px;">572.5</div> <div style="margin-bottom: 10px;">62.5</div> <div style="margin-bottom: 10px;">1570</div> </div>			<p><b>END OF BORING AT 47 FEET</b></p>	

# EXPLORATION LOG MW-QS

# CONFIDENTIAL

PROJECT: FORMER PEPCON FACILITY

PROJECT NO.: 97664V1

LOCATION: SEE SITE PLAN

EXPLORATION DATE: 12/23/97

EXPLORATION SIZE (diameter): 2" MONITORING WELL

EQUIPMENT: MOBILE B-53

3.S. ELEVATION: 1633.46

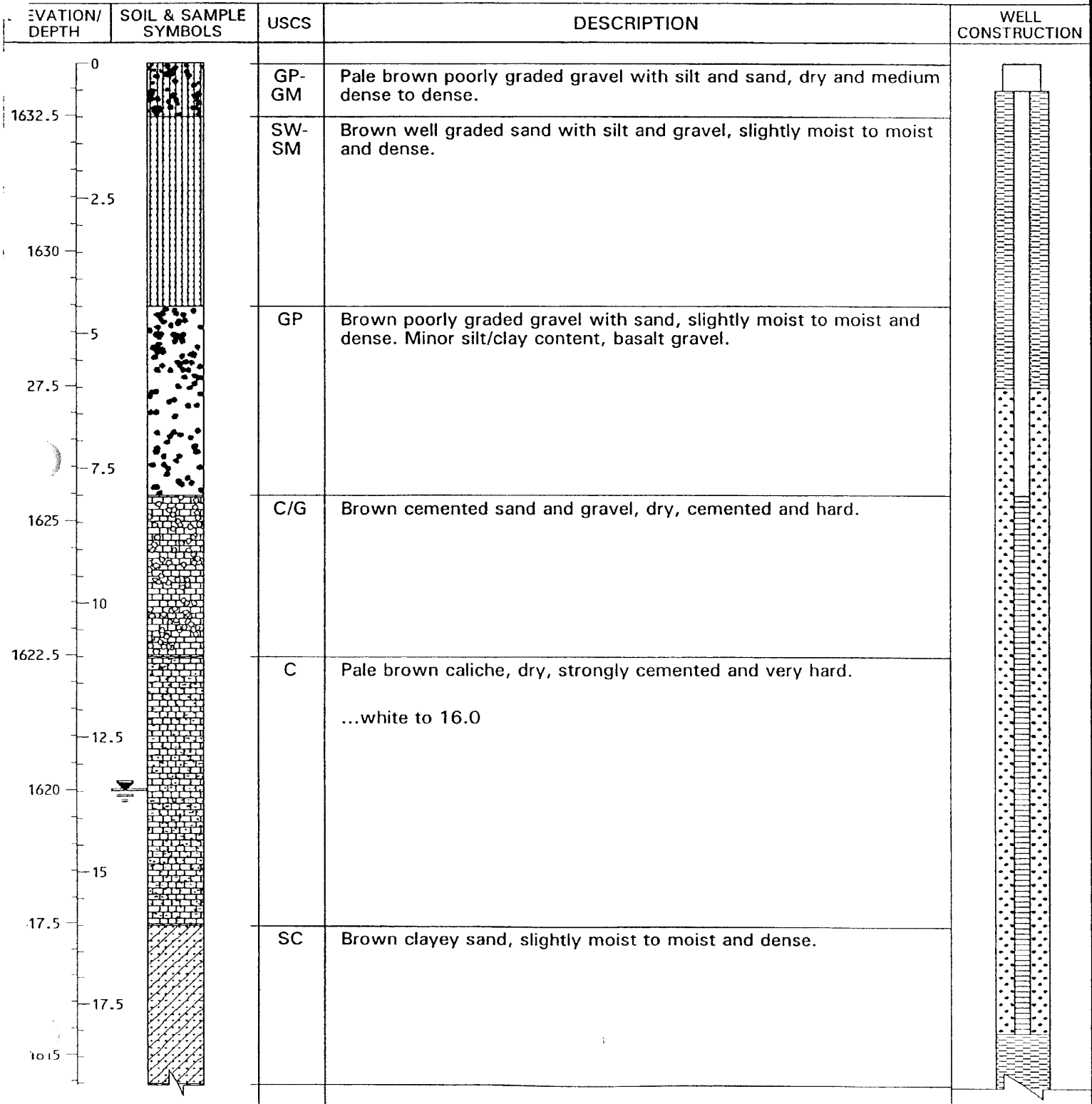
LOGGED BY: S. JOHNSON

INITIAL DEPTH TO WATER: 13.45

DATE MEASURED: 4/16/98

FINAL DEPTH TO WATER: 13.49

DATE MEASURED: 4/20/98



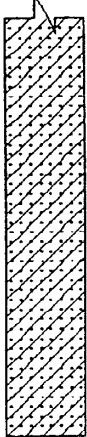

# EXPLORATION LOG MW-QS

**CONFIDENTIAL**

ELEVATION/ DEPTH	SOIL & SAMPLE SYMBOLS	USCS	DESCRIPTION	WELL CONSTRUCTION
<div style="display: flex; flex-direction: column; align-items: center;"> <div style="margin-bottom: 10px;">20</div> <div style="margin-bottom: 10px;">1612.5</div> <div style="margin-bottom: 10px;">22.5</div> <div style="margin-bottom: 10px;">1610</div> <div style="margin-bottom: 10px;">25</div> <div style="margin-bottom: 10px;">507.5</div> <div style="margin-bottom: 10px;">27.5</div> <div style="margin-bottom: 10px;">1605</div> <div style="margin-bottom: 10px;">30</div> <div style="margin-bottom: 10px;">1602.5</div> <div style="margin-bottom: 10px;">32.5</div> <div style="margin-bottom: 10px;">1600</div> <div style="margin-bottom: 10px;">35</div> <div style="margin-bottom: 10px;">597.5</div> <div style="margin-bottom: 10px;">37.5</div> <div style="margin-bottom: 10px;">1595</div> <div style="margin-bottom: 10px;">40</div> <div style="margin-bottom: 10px;">1592.5</div> </div>		<p>CL</p> <p>SC</p>	<p>Pale brown sandy lean clay with nodules, moist and stiff to very stiff. ...white to 32.0</p> <p>...dry to slightly moist with gravel and dry hard clay nodules to 32.0</p> <p>...moist with no nodules or gravel to 36.0</p> <p>... Reddish brown clayey sand, wet and stiff.</p> <p>...light brown to 47.0</p>	

# EXPLORATION LOG MW-QS

# CONFIDENTIAL

ELEVATION/ DEPTH	SOIL & SAMPLE SYMBOLS	USCS	DESCRIPTION	WELL CONSTRUCTION
<div style="display: flex; flex-direction: column; align-items: center;"> <div style="margin-bottom: 10px;">1590</div> <div style="margin-bottom: 10px;">-42.5</div> <div style="margin-bottom: 10px;">-45</div> <div style="margin-bottom: 10px;">1587.5</div> <div style="margin-bottom: 10px;">-47.5</div> <div style="margin-bottom: 10px;">1585</div> <div style="margin-bottom: 10px;">-50</div> <div style="margin-bottom: 10px;">582.5</div> <div style="margin-bottom: 10px;">-52.5</div> <div style="margin-bottom: 10px;">1580</div> <div style="margin-bottom: 10px;">-55</div> <div style="margin-bottom: 10px;">1577.5</div> <div style="margin-bottom: 10px;">-57.5</div> <div style="margin-bottom: 10px;">1575</div> <div style="margin-bottom: 10px;">-60</div> <div style="margin-bottom: 10px;">1572.5</div> <div style="margin-bottom: 10px;">-62.5</div> <div style="margin-bottom: 10px;">1570</div> </div>			<p>END OF BORING AT 47 FEET</p>	

# EXPLORATION LOG MW-QD

# CONFIDENTIAL

**PROJECT:** FORMER PEPCON FACILITY **PROJECT NO.:** 97664V1  
**SITE LOCATION:** SEE SITE PLAN **EXPLORATION DATE:** 12/23/97  
**EXPLORATION SIZE (diameter):** 2" MONITORING WELL **EQUIPMENT:** MOBILE B-53  
**G.S. ELEVATION:** 1633.46 **LOGGED BY:** S. JOHNSON

**INITIAL DEPTH TO WATER:** 14.55 **DATE MEASURED:** 4/16/98  
**FINAL DEPTH TO WATER:** 13.86 **DATE MEASURED:** 4/20/98

ELEVATION/ DEPTH	SOIL & SAMPLE SYMBOLS	USCS	DESCRIPTION	WELL CONSTRUCTION
<div style="display: flex; flex-direction: column; align-items: center;"> <div style="margin-bottom: 10px;">0</div> <div style="margin-bottom: 10px;">1632.5</div> <div style="margin-bottom: 10px;">2.5</div> <div style="margin-bottom: 10px;">1630</div> <div style="margin-bottom: 10px;">5</div> <div style="margin-bottom: 10px;">527.5</div> <div style="margin-bottom: 10px;">7.5</div> <div style="margin-bottom: 10px;">1625</div> <div style="margin-bottom: 10px;">10</div> <div style="margin-bottom: 10px;">1622.5</div> <div style="margin-bottom: 10px;">12.5</div> <div style="margin-bottom: 10px;">1620</div> <div style="margin-bottom: 10px;">15</div> <div style="margin-bottom: 10px;">617.5</div> <div style="margin-bottom: 10px;">17.5</div> <div style="margin-bottom: 10px;">1615</div> </div>				
		GP-GM	Pale brown poorly graded gravel with silt and sand, dry and medium dense to dense.	
		SW-SM	Brown well graded sand with silt and gravel, slightly moist to moist and dense.	
		GP	Brown poorly graded gravel with sand, slightly moist to moist and dense. Minor silt/clay content, basalt gravel.	
		C/G	Brown cemented sand and gravel, dry, cemented and hard.	
		C	Pale brown caliche, dry, strongly cemented and very hard.  ...white to 16.0	
		SC	Brown clayey sand, slightly moist to moist and dense.	


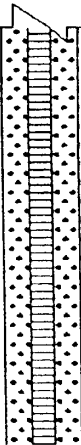
# EXPLORATION LOG MW-QD

**CONFIDENTIAL**

ELEVATION/ DEPTH	SOIL & SAMPLE SYMBOLS	USCS	DESCRIPTION	WELL CONSTRUCTION
<div style="display: flex; flex-direction: column; align-items: center;"> <div style="margin-bottom: 5px;">20</div> <div style="margin-bottom: 5px;">1612.5</div> <div style="margin-bottom: 5px;">22.5</div> <div style="margin-bottom: 5px;">1610</div> <div style="margin-bottom: 5px;">25</div> <div style="margin-bottom: 5px;">07.5</div> <div style="margin-bottom: 5px;">27.5</div> <div style="margin-bottom: 5px;">1605</div> <div style="margin-bottom: 5px;">30</div> <div style="margin-bottom: 5px;">1602.5</div> <div style="margin-bottom: 5px;">32.5</div> <div style="margin-bottom: 5px;">1600</div> <div style="margin-bottom: 5px;">35</div> <div style="margin-bottom: 5px;">97.5</div> <div style="margin-bottom: 5px;">37.5</div> <div style="margin-bottom: 5px;">1595</div> <div style="margin-bottom: 5px;">40</div> <div style="margin-bottom: 5px;">592.5</div> </div>		<p>CL</p> <hr/> <p>SC</p>	<p>Pale brown sandy lean clay with nodules, moist and stiff to very stiff. ...white to 32.0</p> <p>...dry to slightly moist with gravel and dry hard clay nodules to 32.0</p> <p>...moist with no nodules or gravel to 36.0</p> <p>... Reddish brown clayey sand, wet and stiff.</p> <p>...light brown to 47.0</p>	

# EXPLORATION LOG MW-QD

**CONFIDENTIAL**

ELEVATION/ DEPTH	SOIL & SAMPLE SYMBOLS	USCS	DESCRIPTION	WELL CONSTRUCTION
<div style="display: flex; flex-direction: column; align-items: center;"> <div style="margin-bottom: 10px;">1590</div> <div style="margin-bottom: 10px;">42.5</div> <div style="margin-bottom: 10px;">45</div> <div style="margin-bottom: 10px;">1587.5</div> <div style="margin-bottom: 10px;">47.5</div> <div style="margin-bottom: 10px;">1585</div> <div style="margin-bottom: 10px;">50</div> <div style="margin-bottom: 10px;">582.5</div> <div style="margin-bottom: 10px;">52.5</div> <div style="margin-bottom: 10px;">1580</div> <div style="margin-bottom: 10px;">55</div> <div style="margin-bottom: 10px;">577.5</div> <div style="margin-bottom: 10px;">57.5</div> <div style="margin-bottom: 10px;">1575</div> <div style="margin-bottom: 10px;">60</div> <div style="margin-bottom: 10px;">572.5</div> <div style="margin-bottom: 10px;">62.5</div> <div style="margin-bottom: 10px;">1570</div> </div>			<p style="margin-top: 100px;">END OF BORING AT 47 FEET</p>	

# EXPLORATION LOG MW-R

CONFIDENTIAL

PROJECT: FORMER PEPCON FACILITY  
 SITE LOCATION: SEE SITE PLAN  
 EXPLORATION SIZE (diameter): 2" MONITORING WELL  
 G.S. ELEVATION: 1667.7

PROJECT NO.: 97664V1  
 EXPLORATION DATE: 12/23/97  
 EQUIPMENT: MOBILE B-61  
 LOGGED BY: S. JOHNSON

INITIAL DEPTH TO WATER: 31.0      DATE MEASURED: 12/23/97  
 FINAL DEPTH TO WATER: 21.40      DATE MEASURED: 12/30/97

ELEVATION/ DEPTH	SOIL & SAMPLE SYMBOLS	USCS	DESCRIPTION	WELL CONSTRUCTION
<div style="display: flex; flex-direction: column; align-items: center;"> <div style="margin-bottom: 10px;">667.5</div> <div style="margin-bottom: 10px;">0</div> <div style="margin-bottom: 10px;">1665</div> <div style="margin-bottom: 10px;">2.5</div> <div style="margin-bottom: 10px;">1662.5</div> <div style="margin-bottom: 10px;">5</div> <div style="margin-bottom: 10px;">1660</div> <div style="margin-bottom: 10px;">7.5</div> <div style="margin-bottom: 10px;">657.5</div> <div style="margin-bottom: 10px;">10</div> <div style="margin-bottom: 10px;">1655</div> <div style="margin-bottom: 10px;">12.5</div> <div style="margin-bottom: 10px;">1652.5</div> <div style="margin-bottom: 10px;">15</div> <div style="margin-bottom: 10px;">50</div> <div style="margin-bottom: 10px;">17.5</div> </div>		<p>SW</p> <p>SP-SM</p> <p>GP</p> <p>C/G</p>	<p>Pale brown well graded sand with gravel, dry and dense. Basalt gravel. ...brown, slightly moist to moist to 2.0</p> <p>Brown poorly graded sand with silt and fine gravel, slightly moist and dense.</p> <p>Brown poorly graded gravel with sand, slightly moist and dense. Basalt and rhyolite gravel, subrounded to subangular.</p> <p>...more fine gravel and sand, dark brown and slightly moist to moist to 16.0</p> <p>Dark brown cemented sand and gravel, slightly moist, cemented and hard. Sand with fine gravel.</p> <p>...light grayish brown, dry to slightly moist and strongly cemented and hard to very hard to 22.0</p> <p>...more medium gravel to 20.0</p>	



# EXPLORATION LOG MW-R

CONFIDENTIAL

ELEVATION/ DEPTH	SOIL & SAMPLE SYMBOLS	USCS	DESCRIPTION	WELL CONSTRUCTION
<div style="display: flex; flex-direction: column; align-items: center;"> <div style="margin-bottom: 10px;">1647.5</div> <div style="margin-bottom: 10px;">20</div> <div style="margin-bottom: 10px;">1645</div> <div style="margin-bottom: 10px;">22.5</div> <div style="margin-bottom: 10px;">1642.5</div> <div style="margin-bottom: 10px;">25</div> <div style="margin-bottom: 10px;">1640</div> <div style="margin-bottom: 10px;">27.5</div> <div style="margin-bottom: 10px;">1637.5</div> <div style="margin-bottom: 10px;">30</div> <div style="margin-bottom: 10px;">1635</div> <div style="margin-bottom: 10px;">32.5</div> <div style="margin-bottom: 10px;">1632.5</div> <div style="margin-bottom: 10px;">35</div> <div style="margin-bottom: 10px;">1630</div> <div style="margin-bottom: 10px;">37.5</div> <div style="margin-bottom: 10px;">40</div> <div style="margin-bottom: 10px;">.5</div> </div>		<div style="margin-bottom: 10px;"></div> <div style="margin-bottom: 10px;">CL</div> <div style="margin-bottom: 10px;"></div> <div style="margin-bottom: 10px;">SP-SC</div> <div style="margin-bottom: 10px;">CL</div> <div style="margin-bottom: 10px;">SP-SC</div> <div style="margin-bottom: 10px;"></div>	<p>...more fine gravel and sand, plastic fines to 22.0</p> <p>Light brown sandy lean clay, moist and stiff</p> <p>...very moist, soft to firm to 24.0</p> <p>...moist and stiff to very stiff to 31.0</p> <p>GROUNDWATER ENCOUNTERED ... Light greenish brown poorly graded sand with clay, wet and loose to medium dense.</p> <p>Light green sandy lean clay, very moist to wet and firm</p> <p>Reddish brown poorly graded sand with clay, very moist and stiff to very stiff.</p> <p style="text-align: center;">END OF BORING AT 38 FEET</p>	

# EXPLORATION LOG MW-S

CONFIDENTIAL

PROJECT: FORMER PEPCON FACILITY PROJECT NO.: 97664V1  
 SITE LOCATION: SEE SITE PLAN EXPLORATION DATE: 4-1-98  
 EXPLORATION SIZE (diameter): 2" MONITORING WELL EQUIPMENT: MOBILE B-61-HDX  
 G.S. ELEVATION: 1606.2 LOGGED BY: S. JOHNSON

INITIAL DEPTH TO WATER: 24 DATE MEASURED: 4-1-98  
 FINAL DEPTH TO WATER: 23.75 DATE MEASURED: 4-3-98

ELEVATION/ DEPTH	SOIL & SAMPLE SYMBOLS	USCS	DESCRIPTION	WELL CONSTRUCTION
			<p>ML Light grayish brown sandy silt, dry to slightly moist and stiff.</p> <p>SP-SM Brown poorly graded sand with silt, dry to slightly moist and dense.  ...with gravel to 9.0</p> <p>GP Brown poorly graded gravel with sand, dry to slightly moist and dense. (stratified)  ...more sand and fine gravel to 29.0</p>	

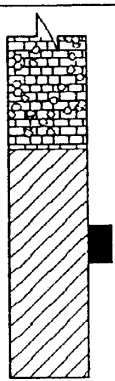
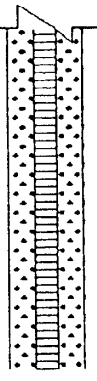
# EXPLORATION LOG MW-S

DATE: 11/10/10  
DRAWN BY: [Signature]

ELEVATION/ DEPTH	SOIL & SAMPLE SYMBOLS	USCS	DESCRIPTION	WELL CONSTRUCTION
<div style="display: flex; flex-direction: column; align-items: center;"> <div style="margin-bottom: 10px;">87.5</div> <div style="margin-bottom: 10px;">20</div> <div style="margin-bottom: 10px;">1585</div> <div style="margin-bottom: 10px;">22.5</div> <div style="margin-bottom: 10px;">1582.5</div> <div style="margin-bottom: 10px;">25</div> <div style="margin-bottom: 10px;">1580</div> <div style="margin-bottom: 10px;">27.5</div> <div style="margin-bottom: 10px;">30</div> <div style="margin-bottom: 10px;">1575</div> <div style="margin-bottom: 10px;">32.5</div> <div style="margin-bottom: 10px;">1572.5</div> <div style="margin-bottom: 10px;">35</div> <div style="margin-bottom: 10px;">1570</div> <div style="margin-bottom: 10px;">37.5</div> <div style="margin-bottom: 10px;">567.5</div> <div style="margin-bottom: 10px;">40</div> </div>		<div style="margin-bottom: 10px;"></div> <div style="margin-bottom: 10px;"></div> <div style="margin-bottom: 10px;"></div> <div style="margin-bottom: 10px;"></div> <div style="margin-bottom: 10px;"></div> <div style="margin-bottom: 10px;"></div> <div style="margin-bottom: 10px;">C/G</div> <div style="margin-bottom: 10px;"></div> <div style="margin-bottom: 10px;"></div> <div style="margin-bottom: 10px;"></div> <div style="margin-bottom: 10px;"></div> <div style="margin-bottom: 10px;"></div> <div style="margin-bottom: 10px;"></div> <div style="margin-bottom: 10px;"></div> <div style="margin-bottom: 10px;"></div> <div style="margin-bottom: 10px;"></div>	<div style="margin-bottom: 10px;"></div> <div style="margin-bottom: 10px;"></div> <div style="margin-bottom: 10px;">...Groundwater Encountered</div> <div style="margin-bottom: 10px;"></div> <div style="margin-bottom: 10px;"></div> <div style="margin-bottom: 10px;">...dark grayish brown, with coarse gravel to 31.0</div> <div style="margin-bottom: 10px;"></div> <div style="margin-bottom: 10px;">Dark grayish brown cemented sand and gravel, wet, strongly cemented and very hard.</div> <div style="margin-bottom: 10px;"></div> <div style="margin-bottom: 10px;"></div> <div style="margin-bottom: 10px;"></div> <div style="margin-bottom: 10px;"></div> <div style="margin-bottom: 10px;"></div> <div style="margin-bottom: 10px;"></div> <div style="margin-bottom: 10px;"></div> <div style="margin-bottom: 10px;"></div> <div style="margin-bottom: 10px;"></div>	

# EXPLORATION LOG MW-S

CONFIDENTIAL

ELEVATION/ DEPTH	SOIL & SAMPLE SYMBOLS	USCS	DESCRIPTION	WELL CONSTRUCTION
<div style="display: flex; flex-direction: column; align-items: center;"> <div style="margin-bottom: 10px;">1565</div> <div style="margin-bottom: 10px;">-42.5</div> <div style="margin-bottom: 10px;">1562.5</div> <div style="margin-bottom: 10px;">-45</div> <div style="margin-bottom: 10px;">1560</div> <div style="margin-bottom: 10px;">-47.5</div> <div style="margin-bottom: 10px;">1557.5</div> <div style="margin-bottom: 10px;">-50</div> <div style="margin-bottom: 10px;">1555</div> <div style="margin-bottom: 10px;">-52.5</div> <div style="margin-bottom: 10px;">1552.5</div> <div style="margin-bottom: 10px;">-55</div> <div style="margin-bottom: 10px;">1550</div> <div style="margin-bottom: 10px;">-57.5</div> <div style="margin-bottom: 10px;">1547.5</div> <div style="margin-bottom: 10px;">-60</div> <div style="margin-bottom: 10px;">1545</div> <div style="margin-bottom: 10px;">-62.5</div> </div>		<div style="margin-bottom: 10px;">CL</div>	<div style="margin-bottom: 10px;">Reddish brown sandy lean clay, very moist and stiff to very stiff.</div> <div style="text-align: center; margin-top: 20px;"> <p><b>END OF BORING AT 45 FEET</b></p> </div>	

# EXPLORATION LOG MW-T

# CONFIDENTIAL

**PROJECT:** FORMER PEPCON FACILITY  
**PROJECT NO.:** 97664V1  
**SITE LOCATION:** SEE SITE PLAN  
**EXPLORATION DATE:** 3-12-98  
**EXPLORATION SIZE (diameter):** 2" MONITORING WELL  
**EQUIPMENT:** MOBILE B-53  
**G.S. ELEVATION:** 1592.02  
**LOGGED BY:** S. ORNDORFF  
**INITIAL DEPTH TO WATER:** 19.5  
**DATE MEASURED:** 3-12-98  
**FINAL DEPTH TO WATER:** 19.48  
**DATE MEASURED:** 3-16-98

ELEVATION/ DEPTH	SOIL & SAMPLE SYMBOLS	USCS	DESCRIPTION	WELL CONSTRUCTION
<div style="display: flex; flex-direction: column; align-items: center;"> <div style="margin-bottom: 10px;">0</div> <div style="margin-bottom: 10px;">1590</div> <div style="margin-bottom: 10px;">2.5</div> <div style="margin-bottom: 10px;">1587.5</div> <div style="margin-bottom: 10px;">5</div> <div style="margin-bottom: 10px;">7.5</div> <div style="margin-bottom: 10px;">1582.5</div> <div style="margin-bottom: 10px;">10</div> <div style="margin-bottom: 10px;">1580</div> <div style="margin-bottom: 10px;">12.5</div> <div style="margin-bottom: 10px;">1577.5</div> <div style="margin-bottom: 10px;">15</div> <div style="margin-bottom: 10px;">1575</div> <div style="margin-bottom: 10px;">17.5</div> </div>		<p>SP-SM</p> <p>GP</p> <p>SP</p> <p>GP</p> <p>C/G</p> <p>SC</p>	<p>Pale brown poorly graded sand with silt and gravel, dry and very dense.</p> <p>Brown poorly graded gravel with sand, slightly moist and very dense.</p> <p>...without sand to 6.0</p> <p>...with more sand to 9.0</p> <p>Brown poorly graded sand with gravel, slightly moist and very dense.</p> <p>Brown poorly graded fine gravel with sand, slightly moist and very dense.</p> <p>Brown cemented sand and gravel, slightly moist, moderately cemented and medium hard.</p> <p>Brown clayey poorly graded sand, wet and very dense.</p>	

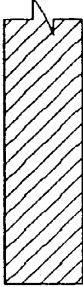
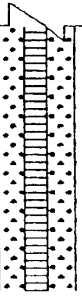
# EXPLORATION LOG MW-T

CONFIDENTIAL

ELEVATION/ DEPTH	SOIL & SAMPLE SYMBOLS	USCS	DESCRIPTION	WELL CONSTRUCTION
<div style="display: flex; flex-direction: column; align-items: center;"> <div style="margin-bottom: 10px;">1572.5</div> <div style="margin-bottom: 10px;">20</div> <div style="margin-bottom: 10px;">1570</div> <div style="margin-bottom: 10px;">22.5</div> <div style="margin-bottom: 10px;">1567.5</div> <div style="margin-bottom: 10px;">25</div> <div style="margin-bottom: 10px;">1565</div> <div style="margin-bottom: 10px;">27.5</div> <div style="margin-bottom: 10px;">30</div> <div style="margin-bottom: 10px;">1560</div> <div style="margin-bottom: 10px;">32.5</div> <div style="margin-bottom: 10px;">1557.5</div> <div style="margin-bottom: 10px;">35</div> <div style="margin-bottom: 10px;">1555</div> <div style="margin-bottom: 10px;">37.5</div> <div style="margin-bottom: 10px;">1552.5</div> <div style="margin-bottom: 10px;">40</div> </div>		<p style="text-align: center;">C/G</p>	<p>Groundwater Encountered</p> <p>Brown cemented sand and gravel, moist, moderately cemented and medium hard.</p> <p>...hard to 25.0</p> <p>...weakly cemented to 31.5</p> <p>...weakly cemented to 39.0</p> <p>Pinkish brown lean clay with sand, wet and firm.</p>	

# EXPLORATION LOG MW-T

CONFIDENTIAL

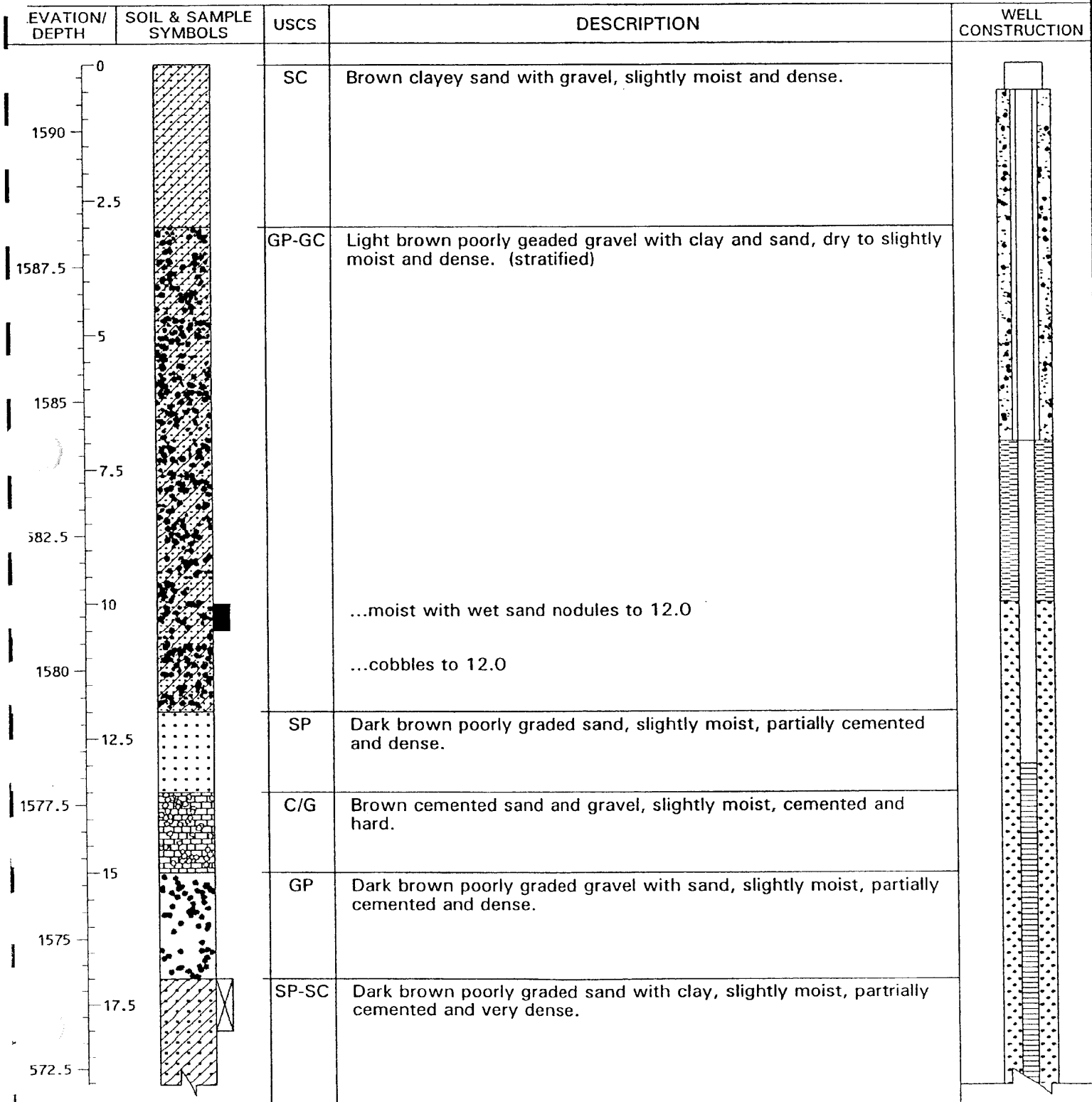
ELEVATION/ DEPTH	SOIL & SAMPLE SYMBOLS	USCS	DESCRIPTION	WELL CONSTRUCTION
<div style="display: flex; flex-direction: column; align-items: center;"> <div style="margin-bottom: 10px;">1550</div> <div style="margin-bottom: 10px;">-42.5</div> <div style="margin-bottom: 10px;">1547.5</div> <div style="margin-bottom: 10px;">-45</div> <div style="margin-bottom: 10px;">1545</div> <div style="margin-bottom: 10px;">-47.5</div> <div style="margin-bottom: 10px;">1542.5</div> <div style="margin-bottom: 10px;">-50</div> <div style="margin-bottom: 10px;">1537.5</div> <div style="margin-bottom: 10px;">-52.5</div> <div style="margin-bottom: 10px;">1535</div> <div style="margin-bottom: 10px;">-55</div> <div style="margin-bottom: 10px;">1532.5</div> <div style="margin-bottom: 10px;">-57.5</div> <div style="margin-bottom: 10px;">1530</div> <div style="margin-bottom: 10px;">-60</div> <div style="margin-bottom: 10px;">1530</div> <div style="margin-bottom: 10px;">-62.5</div> </div>			<p>END OF BORING AT 45 FEET</p>	

# EXPLORATION LOG MW-U

# CONFIDENTIAL

PROJECT: FORMER PEPCON FACILITY  
 PROJECT NO.: 97664V1  
 SITE LOCATION: SEE SITE PLAN  
 EXPLORATION DATE: 3-13-98  
 EXPLORATION SIZE (diameter): 2" MONITORING WELL  
 EQUIPMENT: MOBILE B-61-HDX  
 G.S. ELEVATION: 1591.23  
 LOGGED BY: S. JOHNSON

INITIAL DEPTH TO WATER: 23  
 DATE MEASURED: 3-13-98  
 FINAL DEPTH TO WATER: 20.95  
 DATE MEASURED: 3-13-98





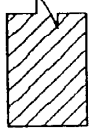
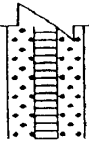
# EXPLORATION LOG MW-U

CONFIDENTIAL

ELEVATION/ DEPTH	SOIL & SAMPLE SYMBOLS	USCS	DESCRIPTION	WELL CONSTRUCTION
<div style="display: flex; flex-direction: column; align-items: center;"> <div style="margin-bottom: 10px;">20</div> <div style="margin-bottom: 10px;">1570</div> <div style="margin-bottom: 10px;">22.5</div> <div style="margin-bottom: 10px;">567.5</div> <div style="margin-bottom: 10px;">25</div> <div style="margin-bottom: 10px;">1565</div> <div style="margin-bottom: 10px;">27.5</div> <div style="margin-bottom: 10px;">62.5</div> <div style="margin-bottom: 10px;">30</div> <div style="margin-bottom: 10px;">1560</div> <div style="margin-bottom: 10px;">32.5</div> <div style="margin-bottom: 10px;">57.5</div> <div style="margin-bottom: 10px;">35</div> <div style="margin-bottom: 10px;">1555</div> <div style="margin-bottom: 10px;">37.5</div> <div style="margin-bottom: 10px;">52.5</div> <div style="margin-bottom: 10px;">40</div> <div style="margin-bottom: 10px;">1550</div> </div>		<p style="text-align: center;">C/G</p> <p style="text-align: center;">C/G</p> <p style="text-align: center;">CL</p>	<p>...very moist to 20.0</p> <p>Brown cemented sand and gravel, moist, moderately cemented and medium hard.</p> <p>Light yellowish brown clayey sand, moist to very moist and dense to very dense.</p> <p>...Groundwater Encountered, loose to 24.0</p> <p>...dense to 26.0</p> <p>...soft to 32.0</p> <p>Dark brown cemented sand and gravel, wet, cemented and hard.</p> <p>Dark brown poorly graded gravel with clay and sand, wet and medium dense.</p> <p>Light reddish brown sandy clay, wet and stiff.</p>	

# EXPLORATION LOG MW-U

CONFIDENTIAL

ELEVATION/ DEPTH	SOIL & SAMPLE SYMBOLS	USCS	DESCRIPTION	WELL CONSTRUCTION
<div style="display: flex; flex-direction: column; align-items: center;"> <div style="margin-bottom: 10px;">42.5</div> <div style="margin-bottom: 10px;">47.5</div> <div style="margin-bottom: 10px;">45</div> <div style="margin-bottom: 10px;">1545</div> <div style="margin-bottom: 10px;">47.5</div> <div style="margin-bottom: 10px;">1542.5</div> <div style="margin-bottom: 10px;">50</div> <div style="margin-bottom: 10px;">1540</div> <div style="margin-bottom: 10px;">52.5</div> <div style="margin-bottom: 10px;">537.5</div> <div style="margin-bottom: 10px;">55</div> <div style="margin-bottom: 10px;">1535</div> <div style="margin-bottom: 10px;">57.5</div> <div style="margin-bottom: 10px;">1532.5</div> <div style="margin-bottom: 10px;">60</div> <div style="margin-bottom: 10px;">1530</div> <div style="margin-bottom: 10px;">62.5</div> <div style="margin-bottom: 10px;">1527.5</div> </div>			<p style="margin-top: 100px;">END OF BORING AT 43 FEET</p>	

# EXPLORATION LOG MW-V

CONFIDENTIAL

PROJECT: FORMER PEPCON FACILITY PROJECT NO.: 97664V1  
 SITE LOCATION: SEE SITE PLAN EXPLORATION DATE: 3-13-98  
 EXPLORATION SIZE (diameter): 2" MONITORING WELL EQUIPMENT: MOBILE B-61-HDX  
 G.S. ELEVATION: 1597.47 LOGGED BY: S. JOHNSON

INITIAL DEPTH TO WATER: 24.5 DATE MEASURED: 3-30-98  
 FINAL DEPTH TO WATER: 22.30 DATE MEASURED: 3-31-98

ELEVATION/ DEPTH	SOIL & SAMPLE SYMBOLS	USCS	DESCRIPTION	WELL CONSTRUCTION
		SC	Light brown clayey sand, dry and medium dense. (with caliche nodules)	
1595 2.5  1592.5 5  1590 7.5  187.5 10  1585 12.5  1582.5 15  1580 17.5		CL	Light reddish brown sandy lean clay, slightly moist and stiff to very stiff. (with caliche nodules)  ...Groundwater Encountered, very low flow, wet and soft to 11.0  ...with sand, very moist to wet and firm to 19.0	

# EXPLORATION LOG MW-V

CONFIDENTIAL



ELEVATION/ DEPTH	SOIL & SAMPLE SYMBOLS	USCS	DESCRIPTION	WELL CONSTRUCTION
<div style="display: flex; flex-direction: column; align-items: center;"> <div style="margin-bottom: 10px;">177.5 — 20</div> <div style="margin-bottom: 10px;">1575 — 22.5</div> <div style="margin-bottom: 10px;">1572.5 — 25</div> <div style="margin-bottom: 10px;">1570 — 27.5</div> <div style="margin-bottom: 10px;">1567.5 — 30</div> <div style="margin-bottom: 10px;">1565 — 32.5</div> <div style="margin-bottom: 10px;">1562.5 — 35</div> <div style="margin-bottom: 10px;">1560 — 37.5</div> <div style="margin-bottom: 10px;">1557.5 — 40</div> </div>			<p>...moist and stiff to 21.5</p> <p>...very moist and firm to 24.5</p> <p>...Groundwater Encountered, very moist to wet to 30.0</p>	
			END OF BORING AT 30 FEET	

# EXPLORATION LOG MW-W

# CONFIDENTIAL


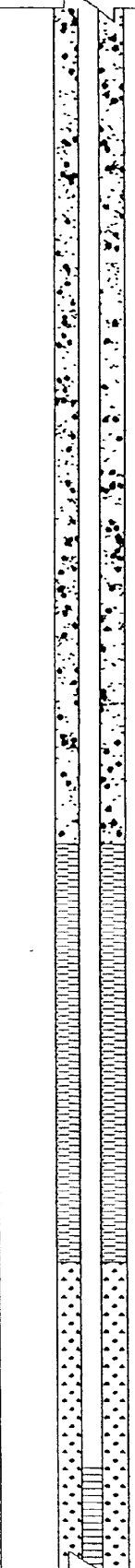
**PROJECT:** FORMER PEPCON FACILITY **PROJECT NO.:** 97664V1  
**SITE LOCATION:** SEE SITE PLAN **EXPLORATION DATE:** 3-11-98  
**EXPLORATION SIZE (diameter):** 2" MONITORING WELL **EQUIPMENT:** MOBILE B-61-HDX  
**G.S. ELEVATION:** 1777.08 **LOGGED BY:** C. SCHMIDT

**INITIAL DEPTH TO WATER:** 53 **DATE MEASURED:** 3-11-98  
**FINAL DEPTH TO WATER:** 45.45 **DATE MEASURED:** 3-16-98

ELEVATION/ DEPTH	SOIL & SAMPLE SYMBOLS	USCS	DESCRIPTION	WELL CONSTRUCTION
<div style="display: flex; flex-direction: column; align-items: center;"> <div style="margin-bottom: 10px;">0</div> <div style="margin-bottom: 10px;">1775</div> <div style="margin-bottom: 10px;">2.5</div> <div style="margin-bottom: 10px;">72.5</div> <div style="margin-bottom: 10px;">5</div> <div style="margin-bottom: 10px;">7.5</div> <div style="margin-bottom: 10px;">1767.5</div> <div style="margin-bottom: 10px;">10</div> <div style="margin-bottom: 10px;">1765</div> <div style="margin-bottom: 10px;">12.5</div> <div style="margin-bottom: 10px;">32.5</div> <div style="margin-bottom: 10px;">15</div> <div style="margin-bottom: 10px;">1760</div> <div style="margin-bottom: 10px;">17.5</div> </div>		<p>GP-GM</p> <p>...partially cemented to 7.0</p> <p>...partially cemented to 11.5</p> <p>C/G</p> <p>GP-GM</p>	<p>Brown poorly graded gravel with silt, sand and cobbles, dry and dense.</p> <p>Light brown cemented sand and gravel, dry, strongly cemented and very hard.</p> <p>Brown poorly graded gravel with silt, sand and cobbles, dry and dense.</p>	

# EXPLORATION LOG MW-W

CONFIDENTIAL

ELEVATION/ DEPTH	SOIL & SAMPLE SYMBOLS	USCS	DESCRIPTION	WELL CONSTRUCTION
1757.5 -20  1755 -22.5  1752.5 -25  1750 -27.5  1747.5 -30  1745 -32.5  1742.5 -35  1740 -37.5  1737.5 -40			<p>...cobbles to 24.0</p> <p>...medium dense to 33.0</p> <p>...partially cemented to 43.0</p> <p>...moist and very dense to 43.0</p>	


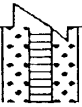
# EXPLORATION LOG MW-W

CONFIDENTIAL

ELEVATION/ DEPTH	SOIL & SAMPLE SYMBOLS	USCS	DESCRIPTION	WELL CONSTRUCTION
<div style="display: flex; flex-direction: column; align-items: center;"> <div style="margin-bottom: 10px;">1735</div> <div style="margin-bottom: 10px;">-42.5</div> <div style="margin-bottom: 10px;">1732.5</div> <div style="margin-bottom: 10px;">-45</div> <div style="margin-bottom: 10px;">1730</div> <div style="margin-bottom: 10px;">-47.5</div> <div style="margin-bottom: 10px;">1727.5</div> <div style="margin-bottom: 10px;">-50</div> <div style="margin-bottom: 10px;">-52.5</div> <div style="margin-bottom: 10px;">1722.5</div> <div style="margin-bottom: 10px;">-55</div> <div style="margin-bottom: 10px;">1720</div> <div style="margin-bottom: 10px;">-57.5</div> <div style="margin-bottom: 10px;">1717.5</div> <div style="margin-bottom: 10px;">-60</div> <div style="margin-bottom: 10px;">1715</div> <div style="margin-bottom: 10px;">-62.5</div> </div>		<div style="margin-bottom: 100px;">ML</div> <div style="margin-bottom: 100px;">...Groundwater Encountered</div> <div>CL-ML</div>	<div style="margin-bottom: 100px;">Brown sandy silt, moist, partially cemented and firm.</div> <div>...</div> <div>Brown silty clay with sand, moist and very stiff.</div>	

# EXPLORATION LOG MW-W

CONFIDENTIAL

ELEVATION/ DEPTH	SOIL & SAMPLE SYMBOLS	USCS	DESCRIPTION	WELL CONSTRUCTION
<div style="display: flex; flex-direction: column; align-items: center;"> <div style="margin-bottom: 10px;">712.5</div> <div style="margin-bottom: 10px;">65</div> <div style="margin-bottom: 10px;">1710</div> <div style="margin-bottom: 10px;">67.5</div> <div style="margin-bottom: 10px;">1707.5</div> <div style="margin-bottom: 10px;">70</div> <div style="margin-bottom: 10px;">1705</div> <div style="margin-bottom: 10px;">72.5</div> <div style="margin-bottom: 10px;">75</div> <div style="margin-bottom: 10px;">1700</div> <div style="margin-bottom: 10px;">77.5</div> <div style="margin-bottom: 10px;">1697.5</div> <div style="margin-bottom: 10px;">80</div> <div style="margin-bottom: 10px;">1695</div> <div style="margin-bottom: 10px;">82.5</div> <div style="margin-bottom: 10px;">1692.5</div> <div style="margin-bottom: 10px;">85</div> </div>			<p>END OF BORING AT 65 FEET</p>	



# EXPLORATION LOG MW-X

CONFIDENTIAL

OBJECT: FORMER PEPCON FACILITY  
 PROJECT NO.: 97664V1  
 SITE LOCATION: SEE SITE PLAN  
 EXPLORATION DATE: 2-6-98  
 EXPLORATION SIZE (diameter): 2" MONITORING WELL  
 EQUIPMENT: MOBILE B-61 HDX  
 G.S. ELEVATION: 1818.53  
 LOGGED BY: S. JOHNSON

INITIAL DEPTH TO WATER: 23'  
 DATE MEASURED: 2-6-98  
 FINAL DEPTH TO WATER: 12.91'  
 DATE MEASURED: 2-18-98

ELEVATION/ DEPTH	SOIL & SAMPLE SYMBOLS	USCS	DESCRIPTION	WELL CONSTRUCTION
0 1817.5 2.5 1815 5 812.5 7.5 1810 10 1807.5 12.5 1805 15 1802.5 17.5 1800		F  SP-SC  GP-GM  SP  SW-SC  CL	Fill: Dark brown poorly graded gravel with silt and sand, slightly moist and dense.  Dark brown poorly graded sand with clay and gravel, slightly moist and dense.  Dark brown poorly graded gravel with silt and sand, slightly moist to moist and dense.  Dark brown poorly graded sand, slightly moist to moist and dense.  Dark brown well graded sand with clay, moist and dense.  ...switched to air rotary at 8:00 a.m.  Dark brown sandy lean clay, moist to very moist and stiff.  ...dark gray poorly graded sand lense (3 inches), very moist	

# EXPLORATION LOG MW-X

## CONFIDENTIAL

ELEVATION/ DEPTH	SOIL & SAMPLE SYMBOLS	USCS	DESCRIPTION	WELL CONSTRUCTION
<div style="text-align: center;"> </div>			<p>...groundwater encountered, low flow, wet to 33.0</p> <p>...gravel-size caliche nodules to 31.5</p> <p style="text-align: center;">END OF BORING AT 33 FEET</p>	

# EXPLORATION LOG MW-Z


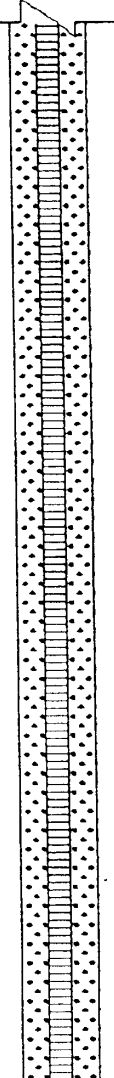
# CONFIDENTIAL

**PROJECT:** FORMER PEPCON FACILITY **PROJECT NO.:** 97664V1  
**WELL LOCATION:** SEE SITE PLAN **EXPLORATION DATE:** 2-6-98  
**EXPLORATION SIZE (diameter):** 2" MONITORING WELL **EQUIPMENT:** MOBILE B-61 HDX  
**G.S. ELEVATION:** 1738.20 **LOGGED BY:** S. JOHNSON  
**INITIAL DEPTH TO WATER:** 23' **DATE MEASURED:** 2-6-98  
**FINAL DEPTH TO WATER:** 16.70' **DATE MEASURED:** 2-18-98

ELEVATION/ DEPTH	SOIL & SAMPLE SYMBOLS	USCS	DESCRIPTION	WELL CONSTRUCTION
<div style="display: flex; flex-direction: column; align-items: center;"> <div style="margin-bottom: 10px;">0</div> <div style="margin-bottom: 10px;">1737.5</div> <div style="margin-bottom: 10px;">2.5</div> <div style="margin-bottom: 10px;">1735</div> <div style="margin-bottom: 10px;">5</div> <div style="margin-bottom: 10px;">732.5</div> <div style="margin-bottom: 10px;">7.5</div> <div style="margin-bottom: 10px;">1730</div> <div style="margin-bottom: 10px;">10</div> <div style="margin-bottom: 10px;">1727.5</div> <div style="margin-bottom: 10px;">12.5</div> <div style="margin-bottom: 10px;">1725</div> <div style="margin-bottom: 10px;">15</div> <div style="margin-bottom: 10px;">1722.5</div> <div style="margin-bottom: 10px;">17.5</div> <div style="margin-bottom: 10px;">1720</div> </div>		<p>F</p> <p>SW</p>	<p>Fill: Dark brown poorly graded gravel with clay and sand, slightly moist and dense.</p> <p>Dark brown well graded sand, slightly moist and dense. (minor silt and gravel, mostly black basalt and andesite with some quartz) ...switched to air rotary at 11:01 a.m.</p> <p>...with gravel to 9.0</p> <p>...brown, dry to slightly moist to 9.0</p> <p>...dark brown, slightly moist, minor cementation chips present, more fine grained to 14.0, (stratified yellow brown fine sand laminations)</p> <p>...very moist to 21.0</p>	

# EXPLORATION LOG MW-Z

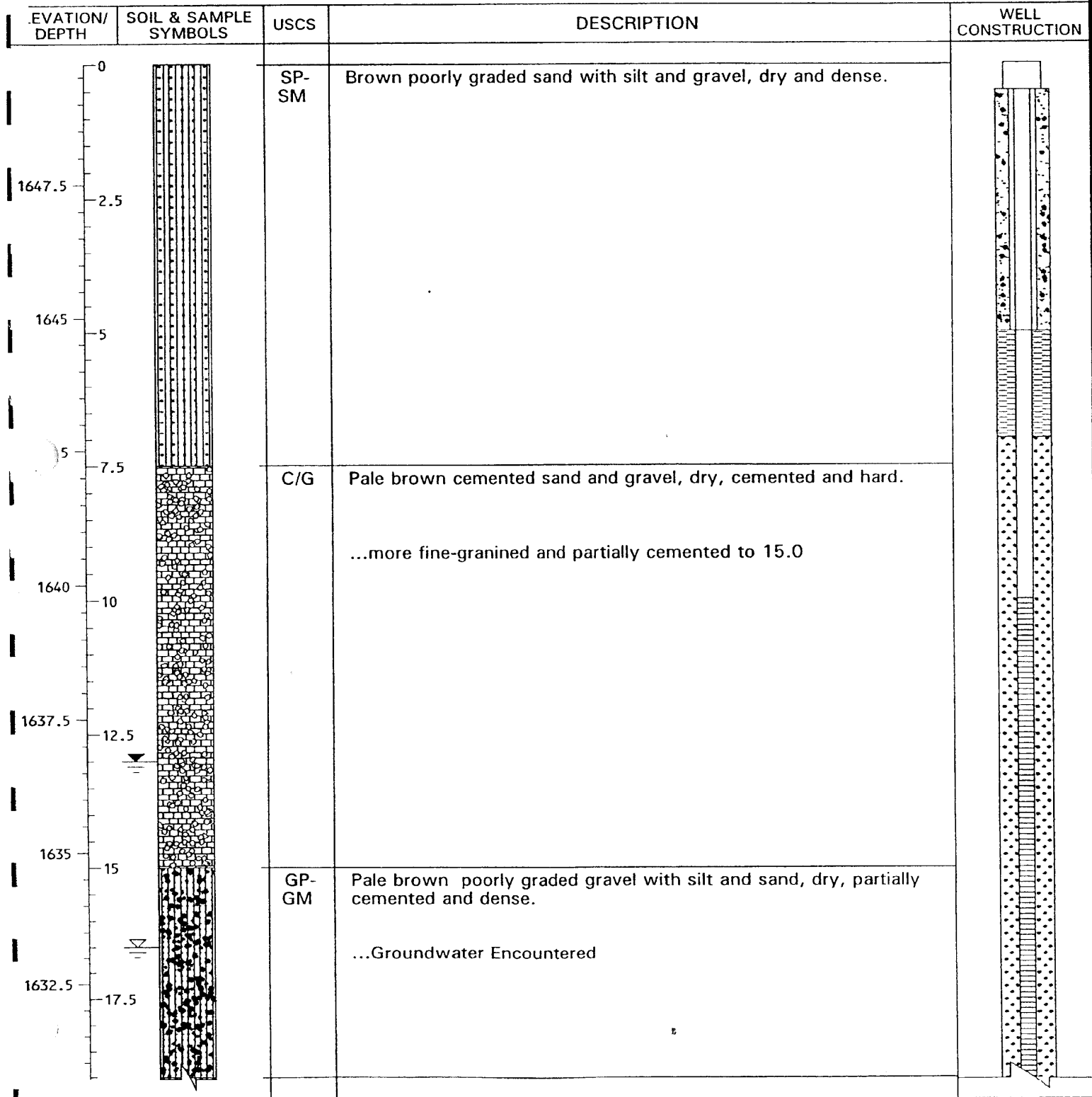
CONFIDENTIAL

ELEVATION/ DEPTH	SOIL & SAMPLE SYMBOLS	USCS	DESCRIPTION	WELL CONSTRUCTION
<div style="display: flex; flex-direction: column; align-items: center;"> <div style="margin-bottom: 10px;">20</div> <div style="margin-bottom: 10px;">1717.5</div> <div style="margin-bottom: 10px;">22.5</div> <div style="margin-bottom: 10px;">1715</div> <div style="margin-bottom: 10px;">25</div> <div style="margin-bottom: 10px;">712.5</div> <div style="margin-bottom: 10px;">27.5</div> <div style="margin-bottom: 10px;">1710</div> <div style="margin-bottom: 10px;">30</div> <div style="margin-bottom: 10px;">1707.5</div> <div style="margin-bottom: 10px;">32.5</div> <div style="margin-bottom: 10px;">1705</div> <div style="margin-bottom: 10px;">35</div> <div style="margin-bottom: 10px;">1702.5</div> <div style="margin-bottom: 10px;">37.5</div> <div style="margin-bottom: 10px;">1700</div> <div style="margin-bottom: 10px;">40</div> <div style="margin-bottom: 10px;">1697.5</div> </div>		<div style="margin-bottom: 100px;">C/G</div> <div style="margin-bottom: 100px;">GW</div>	<div style="margin-bottom: 100px;">Dark brown cemented sand and gravel, moist, cemented, medium hard to hard.</div> <div style="margin-bottom: 100px;">Dark brown well graded gravel with sand, wet and medium dense. Groundwater Encountered. (subangular basalt with isolated cobbles)</div> <div style="text-align: center;">END OF BORING AT 33 FEET</div>	

# EXPLORATION LOG MW-AA

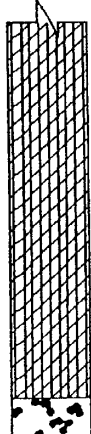
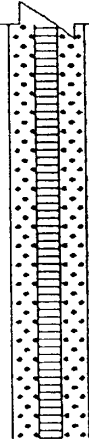
# CONFIDENTIAL

**PROJECT:** FORMER PEPCON FACILITY  
**PROJECT NO.:** 97664V1  
**LOCATION:** SEE SITE PLAN  
**EXPLORATION DATE:** 2-26-98  
**EXPLORATION SIZE (diameter):** 2" MONITORING WELL  
**EQUIPMENT:** MOBILE B-61-HDX  
**G.S. ELEVATION:** 1649.72  
**LOGGED BY:** R. WARD  
  
**INITIAL DEPTH TO WATER:** 16.5  
**DATE MEASURED:** 2-26-98  
**FINAL DEPTH TO WATER:** 13.00  
**DATE MEASURED:** 3-20-98



# EXPLORATION LOG MW-AA

CONFIDENTIAL

ELEVATION/ DEPTH	SOIL & SAMPLE SYMBOLS	USCS	DESCRIPTION	WELL CONSTRUCTION
<div style="display: flex; flex-direction: column; align-items: center;"> <div style="margin-bottom: 10px;">1630</div> <div style="margin-bottom: 10px;">20</div> <div style="margin-bottom: 10px;">1627.5</div> <div style="margin-bottom: 10px;">22.5</div> <div style="margin-bottom: 10px;">1625</div> <div style="margin-bottom: 10px;">25</div> <div style="margin-bottom: 10px;">1622.5</div> <div style="margin-bottom: 10px;">27.5</div> <div style="margin-bottom: 10px;">1620</div> <div style="margin-bottom: 10px;">30</div> <div style="margin-bottom: 10px;">1617.5</div> <div style="margin-bottom: 10px;">32.5</div> <div style="margin-bottom: 10px;">1615</div> <div style="margin-bottom: 10px;">35</div> <div style="margin-bottom: 10px;">1612.5</div> <div style="margin-bottom: 10px;">37.5</div> <div style="margin-bottom: 10px;">1610</div> <div style="margin-bottom: 10px;">40</div> </div>		<div style="margin-bottom: 10px;">CL-ML</div> <hr/> <div style="margin-bottom: 10px;">GP</div>	<div style="margin-bottom: 10px;">Brown silty clay with gravel, wet and stiff. (Muddy Creek Formation)</div> <div style="margin-bottom: 10px;">...switch to air rotary</div> <hr/> <div style="margin-bottom: 10px;">Pale brown poorly graded gravel with sand, dry and medium dense to dense.</div> <div style="margin-bottom: 10px;">END OF BORING AT 24.5 FEET</div>	

# EXPLORATION LOG MW-AB

CONFIDENTIAL

**PROJECT:** FORMER PEPCON FACILITY **PROJECT NO.:** 97664V1  
**LOCATION:** SEE SITE PLAN **EXPLORATION DATE:** 2-12-98  
**EXPLORATION SIZE (diameter):** 2" MONITORING WELL **EQUIPMENT:** MOBILE B-61 HDX  
**G.S. ELEVATION:** 1676.03 **LOGGED BY:** S. JOHNSON

**INITIAL DEPTH TO WATER:** 23' **DATE MEASURED:** 2-12-98  
**FINAL DEPTH TO WATER:** 16.75' **DATE MEASURED:** 2-26-98

ELEVATION/ DEPTH	SOIL & SAMPLE SYMBOLS	USCS	DESCRIPTION	WELL CONSTRUCTION
0		F	Fill: Asphalt and roadbed.	
1675		GP	Brown poorly graded gravel with sand, slightly moist and dense.	
2.5		SP-SC	Brown poorly graded sand with clay and gravel, dry to slightly moist and dense (basalt, subrounded, subangular).	
1672.5		GP	Brown poorly graded gravel with sand, dry to slightly moist and dense.	
5		GP	Brown poorly graded gravel with sand, dry to slightly moist and dense.	
1670		C/G	Light brown cemented sand and gravel, dry, cemented and hard. ...switch to air rotary	
7.5		C/G	...pale brown cemented, hard to very hard to 17.0	
1667.5		C/G	...pale brown cemented, hard to very hard to 17.0	
10		C/G	...pale brown cemented, hard to very hard to 17.0	
1665		C/G	...pale brown cemented, hard to very hard to 17.0	
12.5		C/G	...pale brown cemented, hard to very hard to 17.0	
1662.5		C/G	...pale brown cemented, hard to very hard to 17.0	
15		C/G	...pale brown cemented, hard to very hard to 17.0	
1660		C/G	...pale brown cemented, hard to very hard to 17.0	
17.5		GP	Pale brown poorly graded gravel with sand, dry and dense.	
1657.5		C/G	Pale brown cemented sand and gravel, dry, cemented and hard.	

# EXPLORATION LOG MW-AB

CONFIDENTIAL

ELEVATION/ DEPTH	SOIL & SAMPLE SYMBOLS	USCS	DESCRIPTION	WELL CONSTRUCTION
<div style="display: flex; flex-direction: column; align-items: center;"> <div style="margin-bottom: 10px;">20</div> <div style="margin-bottom: 10px;">1655</div> <div style="margin-bottom: 10px;">22.5</div> <div style="margin-bottom: 10px;">1652.5</div> <div style="margin-bottom: 10px;">25</div> <div style="margin-bottom: 10px;">1650</div> <div style="margin-bottom: 10px;">27.5</div> <div style="margin-bottom: 10px;">1647.5</div> <div style="margin-bottom: 10px;">30</div> <div style="margin-bottom: 10px;">1645</div> <div style="margin-bottom: 10px;">32.5</div> <div style="margin-bottom: 10px;">1642.5</div> <div style="margin-bottom: 10px;">35</div> <div style="margin-bottom: 10px;">1640</div> <div style="margin-bottom: 10px;">37.5</div> <div style="margin-bottom: 10px;">1637.5</div> <div style="margin-bottom: 10px;">40</div> <div style="margin-bottom: 10px;">1635</div> </div>		<div style="margin-bottom: 10px;"></div> <div style="margin-bottom: 10px;">GP-GC</div> <div style="margin-bottom: 10px;">CL</div> <div style="margin-bottom: 10px;"></div>	<div style="margin-bottom: 10px;">...weakly cemented to 21.5</div> <div style="margin-bottom: 10px;">...cemented hard to very hard to 23.0</div> <div style="margin-bottom: 10px;">Brown poorly graded gravel with sand and clay, wet and dense to very dense. Groundwater Encountered</div> <div style="margin-bottom: 10px;">Greenish brown sandy lean clay with gravel, wet and stiff.</div> <div style="margin-bottom: 10px; text-align: center;">END OF BORING AT 28.5 FEET</div>	



# EXPLORATION LOG MW-AC

CONFIDENTIAL


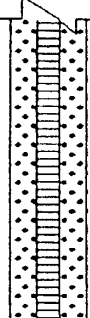
PROJECT: FORMER PEPCON FACILITY PROJECT NO.: 97664V1  
 SITE LOCATION: SEE SITE PLAN EXPLORATION DATE: 2-11-98  
 EXPLORATION SIZE (diameter): 2" MONITORING WELL EQUIPMENT: MOBILE B-61 HDX  
 G.S. ELEVATION: 1697.94 LOGGED BY: S. JOHNSON

INITIAL DEPTH TO WATER: 18' DATE MEASURED: 2-11-98  
 FINAL DEPTH TO WATER: 17.12' DATE MEASURED: 2-11-98

ELEVATION/ DEPTH	SOIL & SAMPLE SYMBOLS	USCS	DESCRIPTION	WELL CONSTRUCTION
<div style="display: flex; flex-direction: column; align-items: center;"> <div style="margin-bottom: 10px;">0</div> <div style="margin-bottom: 10px;">597.5</div> <div style="margin-bottom: 10px;">2.5</div> <div style="margin-bottom: 10px;">1695</div> <div style="margin-bottom: 10px;">5</div> <div style="margin-bottom: 10px;">1692.5</div> <div style="margin-bottom: 10px;">7.5</div> <div style="margin-bottom: 10px;">1690</div> <div style="margin-bottom: 10px;">10</div> <div style="margin-bottom: 10px;">687.5</div> <div style="margin-bottom: 10px;">12.5</div> <div style="margin-bottom: 10px;">1685</div> <div style="margin-bottom: 10px;">15</div> <div style="margin-bottom: 10px;">1682.5</div> <div style="margin-bottom: 10px;">17.5</div> <div style="margin-bottom: 10px;">30</div> </div>		<p>F</p> <p>GP-GM</p> <p>SP-SM</p> <p>GP-GM</p> <p>C/G</p> <p>GP-GM</p>	<p>Fill: Light brown poorly graded gravel with silt and sand, slightly moist and dense.</p> <p>Brown poorly graded gravel with silt, sand, and cobbles, dry to slightly moist and dense. ...cobble</p> <p>Brown poorly graded sand with silt and gravel, slightly moist and dense (slightly plastic).</p> <p>Brown poorly graded gravel with silt, sand and cobbles, slightly moist and dense.</p> <p>Gray cemented sand and gravel, dry, cemented and hard. ...switched to air rotary at 10:30 a.m. (re-drilled with auger).</p> <p>Dark brown poorly graded gravel with silt, sand and cobbles, dry to slightly moist and dense. ...cobble ...boulder to 13.0</p> <p>...Groundwater Encountered, wet to 21.0</p>	

# EXPLORATION LOG MW-AC

CONFIDENTIAL

ELEVATION/ DEPTH	SOIL & SAMPLE SYMBOLS	USCS	DESCRIPTION	WELL CONSTRUCTION
<div style="display: flex; flex-direction: column; align-items: center;"> <div style="margin-bottom: 10px;">20</div> <div style="margin-bottom: 10px;">1677.5</div> <div style="margin-bottom: 10px;">22.5</div> <div style="margin-bottom: 10px;">1675</div> <div style="margin-bottom: 10px;">25</div> <div style="margin-bottom: 10px;">572.5</div> <div style="margin-bottom: 10px;">27.5</div> <div style="margin-bottom: 10px;">1670</div> <div style="margin-bottom: 10px;">30</div> <div style="margin-bottom: 10px;">1667.5</div> <div style="margin-bottom: 10px;">32.5</div> <div style="margin-bottom: 10px;">1665</div> <div style="margin-bottom: 10px;">35</div> <div style="margin-bottom: 10px;">562.5</div> <div style="margin-bottom: 10px;">37.5</div> <div style="margin-bottom: 10px;">1660</div> <div style="margin-bottom: 10px;">40</div> <div style="margin-bottom: 10px;">5</div> </div>		<div style="margin-bottom: 10px;">SC</div>	<div style="margin-bottom: 10px;">Light brown clayey sand, moist and dense.</div> <div style="text-align: center; font-weight: bold;">END OF BORING AT 23 FEET</div>	



# EXPLORATION LOG MW-AD

CONFIDENTIAL

PROJECT: FORMER PEPCON FACILITY  
 SITE LOCATION: SEE SITE PLAN  
 EXPLORATION SIZE (diameter): 2" MONITORING WELL  
 G.S. ELEVATION: 1807.65

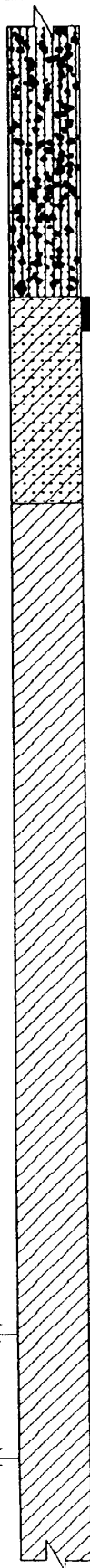
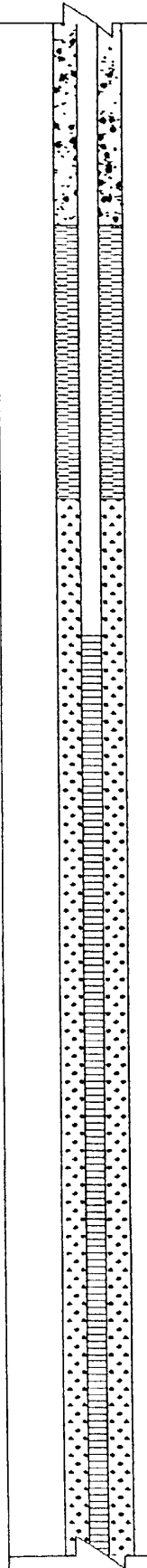
PROJECT NO.: 97664V1  
 EXPLORATION DATE: 2-4-98  
 EQUIPMENT: MOBILE B-61 HDX  
 LOGGED BY: S. JOHNSON

INITIAL DEPTH TO WATER: 40'      DATE MEASURED: 2-4-98  
 FINAL DEPTH TO WATER: 38.14'      DATE MEASURED: 2-4-98

ELEVATION/ DEPTH	SOIL & SAMPLE SYMBOLS	USCS	DESCRIPTION	WELL CONSTRUCTION
<div style="display: flex; flex-direction: column; align-items: center;"> <div style="margin-bottom: 10px;">807.5 — 0</div> <div style="margin-bottom: 10px;">1805 — 2.5</div> <div style="margin-bottom: 10px;">1802.5 — 5</div> <div style="margin-bottom: 10px;">1800 — 7.5</div> <div style="margin-bottom: 10px;">1797.5 — 10</div> <div style="margin-bottom: 10px;">1795 — 12.5</div> <div style="margin-bottom: 10px;">1792.5 — 15</div> <div style="margin-bottom: 10px;">1790 — 17.5</div> </div>		<p>F</p> <hr/> <p>GP-GM</p>	<p>Fill: Brown poorly graded gravel with sand, slightly moist and dense.</p> <hr/> <p>Light brown poorly graded gravel with silt, sand, and cobbles, slightly moist and dense.                  ...coarse black basalt (also dark red)</p> <p>...boulder to 5.5</p> <p>...brown to 23.0</p> <p>...boulder to 15.0</p> <p>...more sand to 19.5</p>	

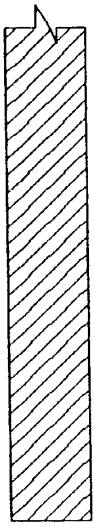
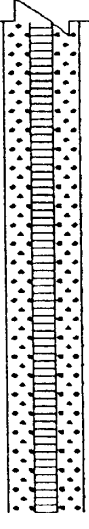
# EXPLORATION LOG MW-AD

CONFIDENTIAL

ELEVATION/ DEPTH	SOIL & SAMPLE SYMBOLS	USCS	DESCRIPTION	WELL CONSTRUCTION
<div style="display: flex; flex-direction: column; align-items: center;"> <div style="margin-bottom: 10px;">1787.5</div> <div style="margin-bottom: 10px;">20</div> <div style="margin-bottom: 10px;">1785</div> <div style="margin-bottom: 10px;">22.5</div> <div style="margin-bottom: 10px;">1782.5</div> <div style="margin-bottom: 10px;">25</div> <div style="margin-bottom: 10px;">1780</div> <div style="margin-bottom: 10px;">27.5</div> <div style="margin-bottom: 10px;">1777.5</div> <div style="margin-bottom: 10px;">30</div> <div style="margin-bottom: 10px;">1775</div> <div style="margin-bottom: 10px;">32.5</div> <div style="margin-bottom: 10px;">1772.5</div> <div style="margin-bottom: 10px;">35</div> <div style="margin-bottom: 10px;">1770</div> <div style="margin-bottom: 10px;">37.5</div> <div style="margin-bottom: 10px;">1767.5</div> <div style="margin-bottom: 10px;">40</div> </div> 			<p>...no cobbles to 23.0</p> <hr/> <p>SC Yellow brown clayey sand, slightly moist to moist and dense.</p> <hr/> <p>CL Red brown sandy clay, moist and stiff to very stiff.</p> <p>...switched to air rotary at 9:05 a.m.</p> <p>...red, less sand, moist to very moist to 39.5</p> <p>...light red brown and very moist, with sand-sized pink hard clay/ caliche nodules to 48.0</p>	

# EXPLORATION LOG MW-AD

CONFIDENTIAL


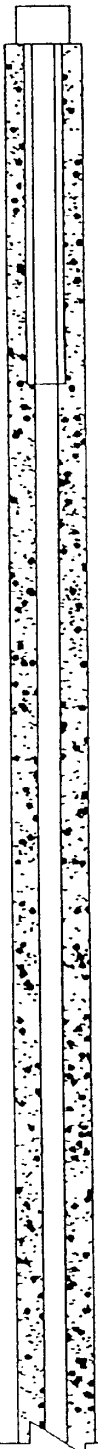
ELEVATION/ DEPTH	SOIL & SAMPLE SYMBOLS	USCS	DESCRIPTION	WELL CONSTRUCTION
<div style="display: flex; flex-direction: column; align-items: center;"> <div style="margin-bottom: 10px;">1765 — 42.5</div> <div style="margin-bottom: 10px;">762.5 — 45</div> <div style="margin-bottom: 10px;">1760 — 47.5</div> <div style="margin-bottom: 10px;">1757.5 — 50</div> <div style="margin-bottom: 10px;">1755 — 52.5</div> <div style="margin-bottom: 10px;">1752.5 — 55</div> <div style="margin-bottom: 10px;">1750 — 57.5</div> <div style="margin-bottom: 10px;">1747.5 — 60</div> <div style="margin-bottom: 10px;">1745 — 62.5</div> </div>			<p>END OF BORING AT 48 FEET</p>	

# EXPLORATION LOG MW-AE

CONFIDENTIAL

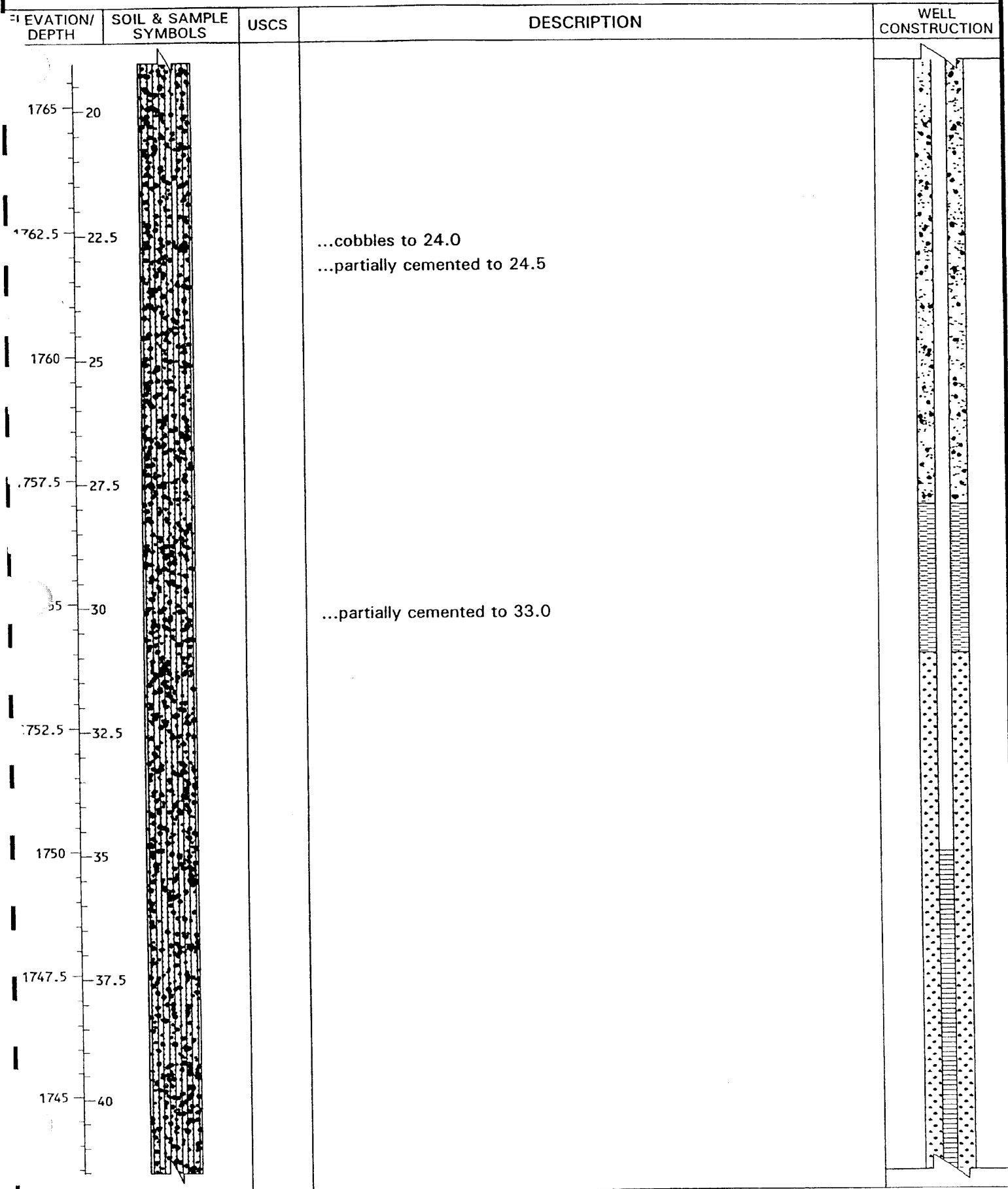
PROJECT: FORMER PEPCON FACILITY PROJECT NO.: 97664V1  
 SITE LOCATION: SEE SITE PLAN EXPLORATION DATE: 3-12-98  
 EXPLORATION SIZE (diameter): 2" MONITORING WELL EQUIPMENT: MOBILE B-61-HDX  
 G.S. ELEVATION: 1784.92 LOGGED BY: C. SCHMIDT

INITIAL DEPTH TO WATER: 45 DATE MEASURED: 3-12-98  
 FINAL DEPTH TO WATER: 43.75 DATE MEASURED: 3-17-98

ELEVATION/ DEPTH	SOIL & SAMPLE SYMBOLS	USCS	DESCRIPTION	WELL CONSTRUCTION
<div style="display: flex; flex-direction: column; align-items: center;"> <div style="margin-bottom: 10px;">0</div> <div style="margin-bottom: 10px;">1782.5 — 2.5</div> <div style="margin-bottom: 10px;">1780 — 5</div> <div style="margin-bottom: 10px;">1777.5 — 7.5</div> <div style="margin-bottom: 10px;">1775 — 10</div> <div style="margin-bottom: 10px;">1772.5 — 12.5</div> <div style="margin-bottom: 10px;">1770 — 15</div> <div>1767.5 — 17.5</div> </div> 		GP- GM	Brown poorly graded gravel with silt and sand, dry and dense.  ...partially cemented to 9.0        ...partially cemented to 17.0	
		GP- GM	Brown poorly graded gravel with silt, sand and cobbles, dry and dense.	

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ELEVATION/ DEPTH	SOIL & SAMPLE SYMBOLS	USCS	DESCRIPTION	WELL CONSTRUCTION
<div style="display: flex; flex-direction: column; align-items: center;"> <div style="margin-bottom: 10px;">742.5 — 42.5</div> <div style="margin-bottom: 10px;">1740 — 45</div> <div style="margin-bottom: 10px;">1737.5 — 47.5</div> <div style="margin-bottom: 10px;">1735 — 50</div> <div style="margin-bottom: 10px;">1732.5 — 52.5</div> <div style="margin-bottom: 10px;">1730 — 55</div> <div style="margin-bottom: 10px;">1727.5 — 57.5</div> <div style="margin-bottom: 10px;">1725 — 60</div> <div style="margin-bottom: 10px;">1722.5 — 62.5</div> </div>		<div style="margin-bottom: 10px;"></div> <div style="margin-bottom: 10px;">CL-ML</div> <div style="margin-bottom: 10px;"></div> <div style="margin-bottom: 10px;"></div> <div style="margin-bottom: 10px;"></div> <div style="margin-bottom: 10px;"></div> <div style="margin-bottom: 10px;"></div> <div style="margin-bottom: 10px;"></div> <div style="margin-bottom: 10px;"></div> <div style="margin-bottom: 10px;"></div>	<div style="margin-bottom: 10px;"></div> <div style="margin-bottom: 10px;">...with cobbles, wet, Groundwater Encountered</div> <div style="margin-bottom: 10px;">Brown silty clay with sand, wet and stiff.</div> <div style="margin-bottom: 10px;">END OF BORING AT 55 FEET</div> <div style="margin-bottom: 10px;"></div> <div style="margin-bottom: 10px;"></div> <div style="margin-bottom: 10px;"></div> <div style="margin-bottom: 10px;"></div> <div style="margin-bottom: 10px;"></div> <div style="margin-bottom: 10px;"></div>	


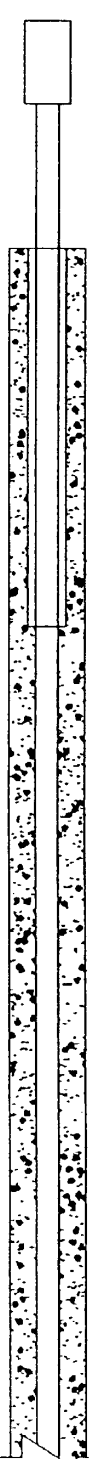


# EXPLORATION LOG MW-AG

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PROJECT: FORMER PEPCON FACILITY PROJECT NO.: 97664V1  
 SITE LOCATION: SEE SITE PLAN EXPLORATION DATE: 3-4-98  
 EXPLORATION SIZE (diameter): 2" MONITORING WELL EQUIPMENT: MOBILE B-61 HDX  
 G.S. ELEVATION: 1744.66 LOGGED BY: S. JOHNSON

INITIAL DEPTH TO WATER: 51' DATE MEASURED: 3-5-98  
 FINAL DEPTH TO WATER: 38.10' DATE MEASURED: 3-9-98

ELEVATION/ DEPTH	SOIL & SAMPLE SYMBOLS	USCS	DESCRIPTION	WELL CONSTRUCTION
<div style="display: flex; flex-direction: column; align-items: center;"> <div style="margin-bottom: 10px;">47.5</div> <div style="margin-bottom: 10px;">2.5</div> <div style="margin-bottom: 10px;">1745</div> <div style="margin-bottom: 10px;">0</div> <div style="margin-bottom: 10px;">1742.5</div> <div style="margin-bottom: 10px;">2.5</div> <div style="margin-bottom: 10px;">1740</div> <div style="margin-bottom: 10px;">5</div> <div style="margin-bottom: 10px;">37.5</div> <div style="margin-bottom: 10px;">7.5</div> <div style="margin-bottom: 10px;">1735</div> <div style="margin-bottom: 10px;">10</div> <div style="margin-bottom: 10px;">1732.5</div> <div style="margin-bottom: 10px;">12.5</div> <div style="margin-bottom: 10px;">1730</div> <div style="margin-bottom: 10px;">15</div> </div>		<p>GP</p>	<p>Pale brown poorly graded gravel with sand, cobbles and boulders, dry and dense (subangular to subrounded basalt and andesite).</p> <p>...boulder to 6.0</p> <p>...boulder to 12.0</p> <p>...more fine grained, fewer cobbles, more sand to 17.0</p>	

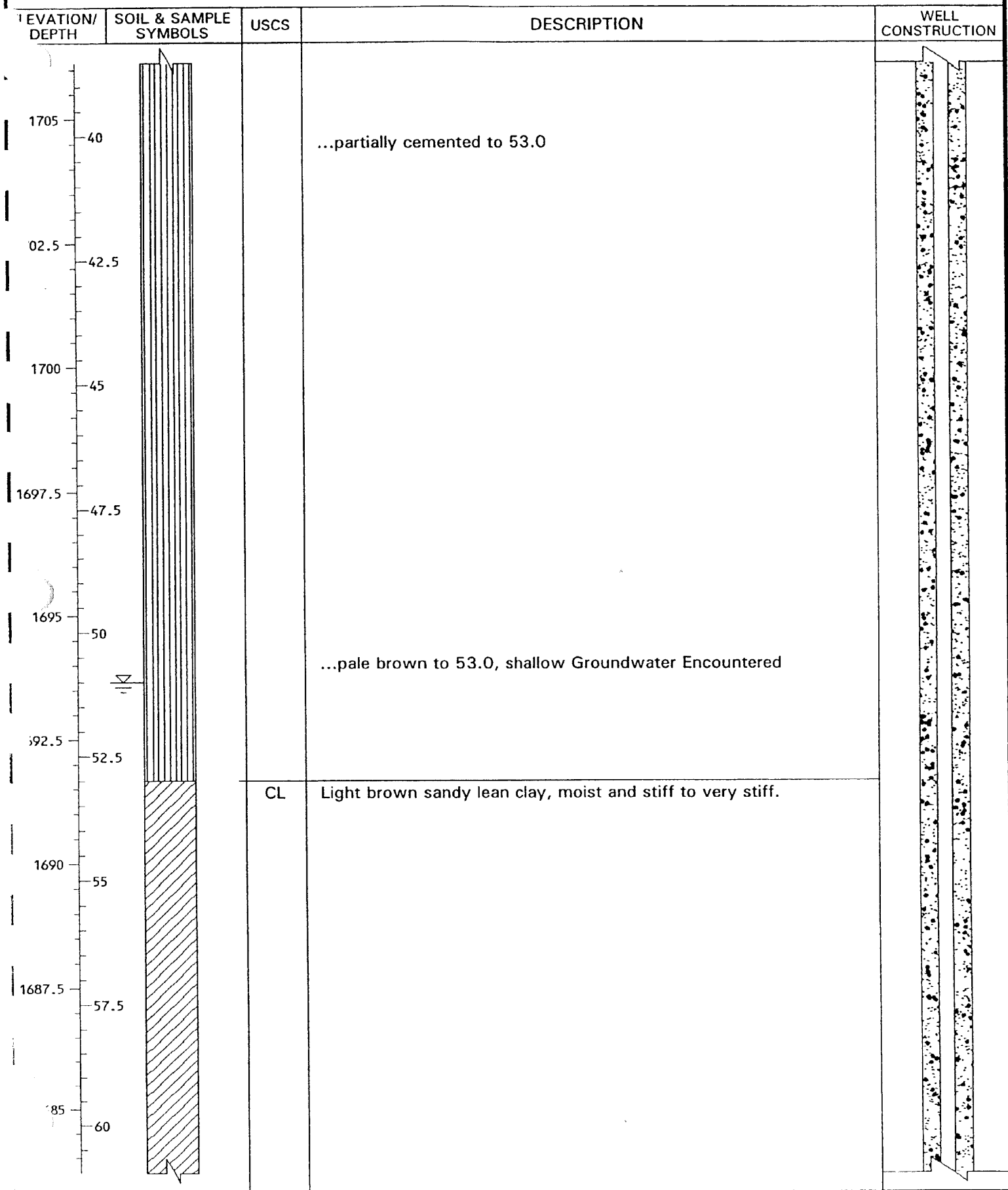
# EXPLORATION LOG MW-AG

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ELEVATION/ DEPTH	SOIL & SAMPLE SYMBOLS	USCS	DESCRIPTION	WELL CONSTRUCTION
<div style="display: flex; flex-direction: column; align-items: center;"> <div style="margin-bottom: 10px;">27.5</div> <div style="margin-bottom: 10px;">17.5</div> <div style="margin-bottom: 10px;">1725</div> <div style="margin-bottom: 10px;">20</div> <div style="margin-bottom: 10px;">1722.5</div> <div style="margin-bottom: 10px;">22.5</div> <div style="margin-bottom: 10px;">1720</div> <div style="margin-bottom: 10px;">25</div> <div style="margin-bottom: 10px;">1717.5</div> <div style="margin-bottom: 10px;">27.5</div> <div style="margin-bottom: 10px;">1715</div> <div style="margin-bottom: 10px;">30</div> <div style="margin-bottom: 10px;">1712.5</div> <div style="margin-bottom: 10px;">32.5</div> <div style="margin-bottom: 10px;">1710</div> <div style="margin-bottom: 10px;">35</div> <div style="margin-bottom: 10px;">1707.5</div> <div style="margin-bottom: 10px;">37.5</div> </div>	<div style="display: flex; flex-direction: column; align-items: center;"> <div style="margin-bottom: 10px;">17.5</div> <div style="margin-bottom: 10px;">20</div> <div style="margin-bottom: 10px;">22.5</div> <div style="margin-bottom: 10px;">25</div> <div style="margin-bottom: 10px;">27.5</div> <div style="margin-bottom: 10px;">30</div> <div style="margin-bottom: 10px;">32.5</div> <div style="margin-bottom: 10px;">35</div> <div style="margin-bottom: 10px;">37.5</div> </div>	<div style="margin-bottom: 10px;"></div> <div style="margin-bottom: 10px;"></div> <div style="margin-bottom: 10px;"></div> <div style="margin-bottom: 10px;">C/G</div> <div style="margin-bottom: 10px;"></div> <div style="margin-bottom: 10px;">SP</div> <div style="margin-bottom: 10px;">C/G</div> <div style="margin-bottom: 10px;">ML</div>	<p>...light brown, dry to slightly moist and dense to very dense to 24.0</p> <p>...partially cemented to 24.0</p> <p>...switched to air rotary</p> <p>White cemented sand and gravel, dry, strongly cemented and very hard.</p> <p>...weakly cemented, medium hard to 28.5</p> <p>Brown poorly graded sand, slightly moist and medium dense.</p> <p>Pale brown cemented sand and gravel, dry, cemented and hard.</p> <p>Light brown sandy silt, dry to slightly moist and stiff. ...adding foam</p>	<div style="margin-bottom: 10px;"></div> <div style="margin-bottom: 10px;"></div> <div style="margin-bottom: 10px;"></div> <div style="margin-bottom: 10px;"></div> <div style="margin-bottom: 10px;"></div> <div style="margin-bottom: 10px;"></div> <div style="margin-bottom: 10px;"></div> <div style="margin-bottom: 10px;"></div> <div style="margin-bottom: 10px;"></div>

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ELEVATION/ DEPTH	SOIL & SAMPLE SYMBOLS	USCS	DESCRIPTION	WELL CONSTRUCTION
<div style="display: flex; flex-direction: column; align-items: center;"> <div style="margin-bottom: 10px;">82.5</div> <div style="margin-bottom: 20px;">62.5</div> <div style="margin-bottom: 20px;">1680</div> <div style="margin-bottom: 20px;">65</div> <div style="margin-bottom: 20px;">1677.5</div> <div style="margin-bottom: 20px;">67.5</div> <div style="margin-bottom: 20px;">1675</div> <div style="margin-bottom: 20px;">70</div> <div style="margin-bottom: 20px;">1672.5</div> <div style="margin-bottom: 20px;">72.5</div> <div style="margin-bottom: 20px;">1670</div> <div style="margin-bottom: 20px;">75</div> <div style="margin-bottom: 20px;">1667.5</div> <div style="margin-bottom: 20px;">77.5</div> <div style="margin-bottom: 20px;">1665</div> <div style="margin-bottom: 20px;">80</div> <div style="margin-bottom: 20px;">1662.5</div> <div style="margin-bottom: 20px;">82.5</div> </div>			<p>...light reddish brown, less sand, firm to stiff to 68.0</p>          <p>...pale reddish brown with sand-size caliche nodules to 81.0</p>          <p>...partially cemented, stiff to very stiff to 97.0</p>	

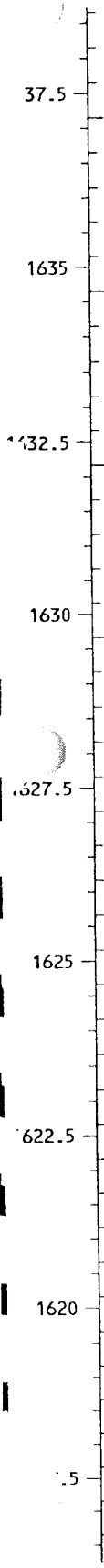
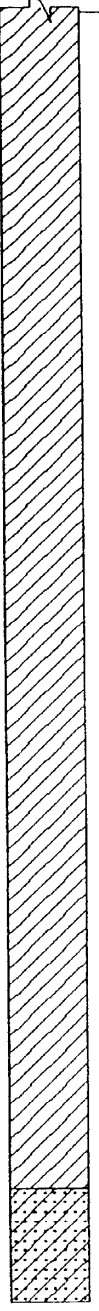
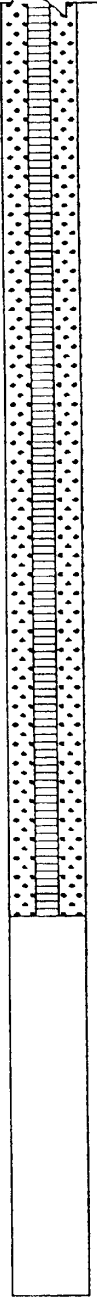
# EXPLORATION LOG MW-AG

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ELEVATION/ DEPTH	SOIL & SAMPLE SYMBOLS	USCS	DESCRIPTION	WELL CONSTRUCTION
<div style="display: flex; flex-direction: column; align-items: center;"> <div style="margin-bottom: 10px;">1660</div> <div style="margin-bottom: 10px;">85</div> <div style="margin-bottom: 10px;">57.5</div> <div style="margin-bottom: 10px;">87.5</div> <div style="margin-bottom: 10px;">1655</div> <div style="margin-bottom: 10px;">90</div> <div style="margin-bottom: 10px;">1652.5</div> <div style="margin-bottom: 10px;">92.5</div> <div style="margin-bottom: 10px;">1650</div> <div style="margin-bottom: 10px;">95</div> <div style="margin-bottom: 10px;">1647.5</div> <div style="margin-bottom: 10px;">97.5</div> <div style="margin-bottom: 10px;">1645</div> <div style="margin-bottom: 10px;">100</div> <div style="margin-bottom: 10px;">1642.5</div> <div style="margin-bottom: 10px;">102.5</div> <div style="margin-bottom: 10px;">1640</div> <div style="margin-bottom: 10px;">105</div> </div>			<p>...partially cemented, very stiff to 102.0</p> <p>...6" gravel lense, deep Groundwater Encountered</p> <p>...intermittent gravel layers to 108.0</p>	

# EXPLORATION LOG MW-AG

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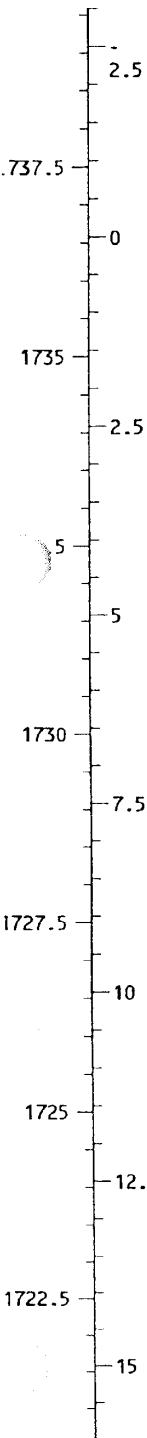
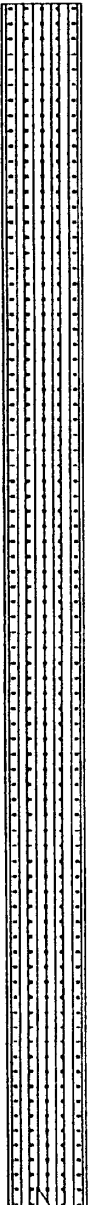
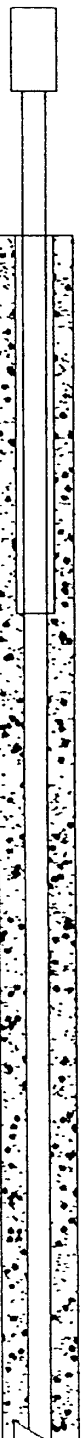
ELEVATION/ DEPTH	SOIL & SAMPLE SYMBOLS	USCS	DESCRIPTION	WELL CONSTRUCTION
 <p>1637.5 1635 1632.5 1630 1627.5</p>	 <p>107.5 110 112.5 115 117.5 120 122.5</p>		<p>...soft layer to 121.5</p> <hr/> <p>SC Pale reddish brown clayey sand, wet and medium dense.</p> <hr/> <p style="text-align: center;">END OF BORING AT 123 FEET</p>	
<p>1625 1620 1615</p>	<p>125 127.5</p>			

# EXPLORATION LOG MW-AH

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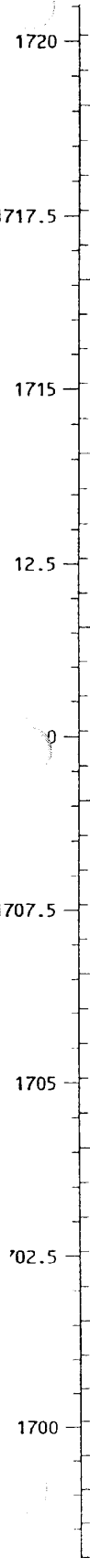
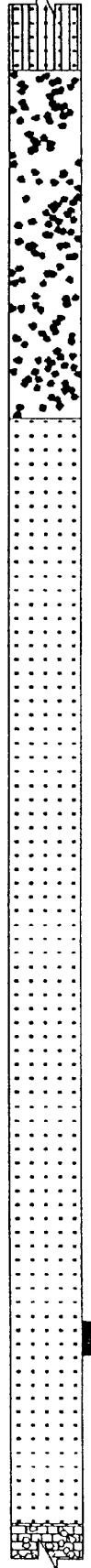
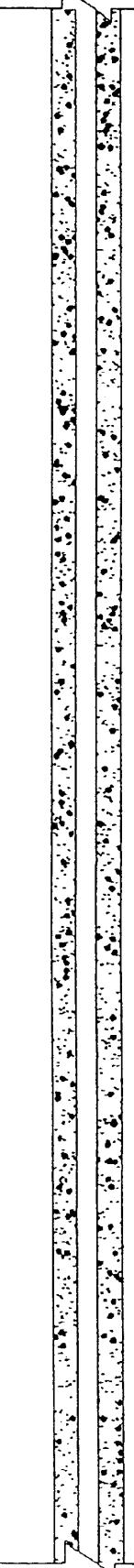
PROJECT: FORMER PEPCON FACILITY PROJECT NO.: 97664V1  
 SITE LOCATION: SEE SITE PLAN EXPLORATION DATE: 3-4-98  
 EXPLORATION SIZE (diameter): 2" MONITORING WELL EQUIPMENT: MOBILE B-61 HDX  
 G.S. ELEVATION: 1736.58 LOGGED BY: S. JOHNSON

INITIAL DEPTH TO WATER: 52' DATE MEASURED: 3-4-98  
 FINAL DEPTH TO WATER: 43.70' DATE MEASURED: 3-9-98

ELEVATION/ DEPTH	SOIL & SAMPLE SYMBOLS	USCS	DESCRIPTION	WELL CONSTRUCTION
		<p>SP-SM</p>	<p>Brown poorly graded sand with silt and isolated gravel, slightly moist and dense (mostly basalt and andesite).</p> <p>...pale brown and dry to slightly moist to 17.0</p> <p>...with gravel to 16.0</p> <p>...partially cemented to 14.5</p>	

# EXPLORATION LOG MW-AH

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ELEVATION/ DEPTH	SOIL & SAMPLE SYMBOLS	USCS	DESCRIPTION	WELL CONSTRUCTION
				
1720				
17.5		GP	Pale brown poorly graded gravel with sand, dry and dense.	
1717.5				
20				
1715				
22.5		SP	Pale brown poorly graded sand with gravel, dry and medium dense to dense (stratified sandy and gravelly layers).	
12.5				
25				
27.5				
1707.5				
30			...cobble	
1705				
32.5				
35				
1702.5				
37.5			...more coarse gravel to 38.0	
1700		C/G	Very pale brown cemented sand and gravel, dry, moderately	




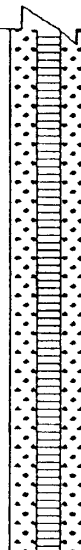
# EXPLORATION LOG MW-AH

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ELEVATION/ DEPTH	SOIL & SAMPLE SYMBOLS	USCS	DESCRIPTION	WELL CONSTRUCTION
<div style="display: flex; flex-direction: column; align-items: center;"> <div style="margin-bottom: 10px;">1697.5</div> <div style="margin-bottom: 10px;">40</div> <div style="margin-bottom: 10px;">1695</div> <div style="margin-bottom: 10px;">42.5</div> <div style="margin-bottom: 10px;">1692.5</div> <div style="margin-bottom: 10px;">45</div> <div style="margin-bottom: 10px;">1690</div> <div style="margin-bottom: 10px;">47.5</div> <div style="margin-bottom: 10px;">50</div> <div style="margin-bottom: 10px;">1685</div> <div style="margin-bottom: 10px;">52.5</div> <div style="margin-bottom: 10px;">1682.5</div> <div style="margin-bottom: 10px;">55</div> <div style="margin-bottom: 10px;">1680</div> <div style="margin-bottom: 10px;">57.5</div> <div style="margin-bottom: 10px;">677.5</div> <div style="margin-bottom: 10px;">60</div> </div>		<div style="margin-bottom: 100px;"></div> <p style="text-align: center;">CL</p>	<p>cemented and medium hard.</p> <p>...strongly cemented and very hard, switched to air rotary</p> <p>...3" non-cemented layer</p> <p>...3" non-cemented layer, moist brown fine sand</p> <p>...light brown, dry to slightly moist, moderately cemented and medium hard to 52.0</p> <hr/> <p>Light brown lean clay with sand, wet and stiff with isolated wet caliche nodules. <b>GROUNDWATER ENCOUNTERED</b></p> <p>...light reddish brown and very moist to wet to 68.0</p>	

# EXPLORATION LOG MW-AH

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ELEVATION/ DEPTH	SOIL & SAMPLE SYMBOLS	USCS	DESCRIPTION	WELL CONSTRUCTION
<div style="display: flex; flex-direction: column; align-items: center;"> <div style="margin-bottom: 10px;">1675</div> <div style="margin-bottom: 10px;">62.5</div> <div style="margin-bottom: 10px;">1672.5</div> <div style="margin-bottom: 10px;">65</div> <div style="margin-bottom: 10px;">1670</div> <div style="margin-bottom: 10px;">67.5</div> <div style="margin-bottom: 10px;">67.5</div> <div style="margin-bottom: 10px;">70</div> <div style="margin-bottom: 10px;">72.5</div> <div style="margin-bottom: 10px;">1662.5</div> <div style="margin-bottom: 10px;">75</div> <div style="margin-bottom: 10px;">1660</div> <div style="margin-bottom: 10px;">77.5</div> <div style="margin-bottom: 10px;">657.5</div> <div style="margin-bottom: 10px;">80</div> <div style="margin-bottom: 10px;">1655</div> <div style="margin-bottom: 10px;">82.5</div> </div>			<p>END OF BORING AT 68 FEET</p>	

# EXPLORATION LOG MW-AJ

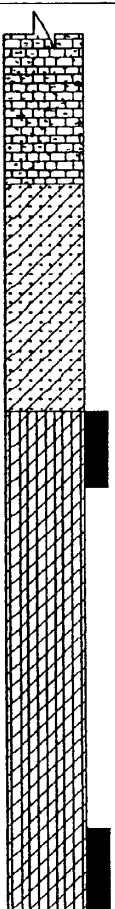
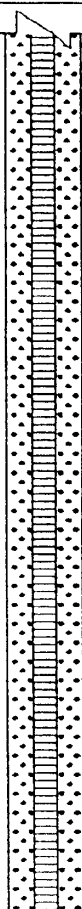
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**PROJECT:** FORMER PEPCON FACILITY **PROJECT NO.:** 97664V1  
**LOCATION:** SEE SITE PLAN **EXPLORATION DATE:** 2-12-98  
**EXPLORATION SIZE (diameter):** 2" MONITORING WELL **EQUIPMENT:** MOBILE B-61 HDX  
**G.S. ELEVATION:** 1649.30 **LOGGED BY:** S. JOHNSON  
**INITIAL DEPTH TO WATER:** 13' **DATE MEASURED:** 2-12-98  
**FINAL DEPTH TO WATER:** 12.65' **DATE MEASURED:** 4-16-98

ELEVATION/ DEPTH	SOIL & SAMPLE SYMBOLS	USCS	DESCRIPTION	WELL CONSTRUCTION
0		F	Fill: Asphalt and roadbed.	
47.5		SP-SC	Brown poorly graded sand with clay and gravel (fine), dry to slightly moist and dense (mostly subrounded basalt).	
2.5			...6" gravel lense	
1645				
5				
1642.5				
7.5				
1640		GP	Brown poorly graded gravel (fine) with clay and sand, dry to slightly moist and dense.	
10		SP	Dark brown poorly graded sand with gravel (fine), very moist to wet and very dense.	
537.5			...small gravel layer (3")	
12.5			...Groundwater Encountered	
1635		SC	Very pale brown clayey sand, wet and medium dense.	
15		C	White caliche, dry, cemented and hard to very hard.	
1632.5			...strongly cemented and very hard to 19.0	
17.5				

# EXPLORATION LOG MW-AJ

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ELEVATION/ DEPTH	SOIL & SAMPLE SYMBOLS	USCS	DESCRIPTION	WELL CONSTRUCTION
<div style="display: flex; flex-direction: column; align-items: center;"> <div style="margin-bottom: 10px;">1625</div> <div style="margin-bottom: 10px;">20</div> <div style="margin-bottom: 10px;">27.5</div> <div style="margin-bottom: 10px;">22.5</div> <div style="margin-bottom: 10px;">1625</div> <div style="margin-bottom: 10px;">25</div> <div style="margin-bottom: 10px;">22.5</div> <div style="margin-bottom: 10px;">27.5</div> <div style="margin-bottom: 10px;">1620</div> <div style="margin-bottom: 10px;">30</div> <div style="margin-bottom: 10px;">1617.5</div> <div style="margin-bottom: 10px;">32.5</div> <div style="margin-bottom: 10px;">1615</div> <div style="margin-bottom: 10px;">35</div> <div style="margin-bottom: 10px;">1612.5</div> <div style="margin-bottom: 10px;">37.5</div> <div style="margin-bottom: 10px;">1610</div> <div style="margin-bottom: 10px;">40</div> </div>		<div style="margin-bottom: 10px;"></div> <div style="margin-bottom: 10px;">SC</div> <div style="margin-bottom: 10px;">CL-ML</div> <div style="margin-bottom: 10px;"></div>	<p>...wet and weakly cemented to 19.5 ...strongly cemented and hard to very hard to 21.0</p> <p>Brown clayey sand, wet and medium dense.</p> <p>Pale grayish brown silty clay, very moist to wet and firm to stiff.</p> <p>...green and partially cemented to 30.6</p> <p style="text-align: center;"><b>END OF BORING AT 30.6 FEET</b></p>	

# EXPLORATION LOG MW-AL

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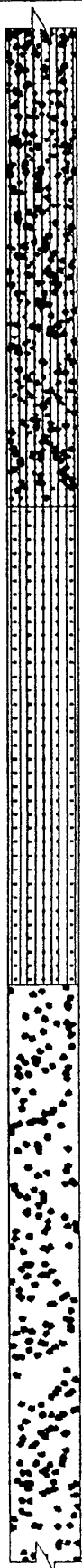
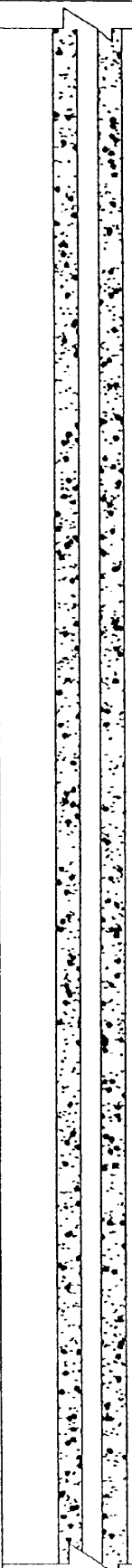
PROJECT: FORMER PEPCON FACILITY PROJECT NO.: 97664V1  
 SITE LOCATION: SEE SITE PLAN EXPLORATION DATE: 2-19-98  
 EXPLORATION SIZE (diameter): 4" MONITORING WELL EQUIPMENT: CHICAGO PNEUMATIC 700  
 G.S. ELEVATION: 1951.81 LOGGED BY: S. JOHNSON

INITIAL DEPTH TO WATER: 210' DATE MEASURED: 2-20-98  
 FINAL DEPTH TO WATER: 166.65' DATE MEASURED: 2-20-98

ELEVATION/ DEPTH	SOIL & SAMPLE SYMBOLS	USCS	DESCRIPTION	WELL CONSTRUCTION
0		F	Fill: Asphalt and roadbed.	
1950		GP- GM	Brown poorly graded gravel with silt and sand, dense to very dense (adding water), mostly subangular basalt.  ...adding foam to maintain hole	
2.5				
1947.5				
5				
1945				
7.5				
1942.5				
10				
1940				
12.5				
1937.5				
15				
1935				
17.5				

# EXPLORATION LOG MW-AL

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ELEVATION/ DEPTH	SOIL & SAMPLE SYMBOLS	USCS	DESCRIPTION	WELL CONSTRUCTION
<div style="display: flex; flex-direction: column; align-items: center;"> <div style="margin-bottom: 10px;">1935</div> <div style="margin-bottom: 10px;">20</div> <div style="margin-bottom: 10px;">1930</div> <div style="margin-bottom: 10px;">22.5</div> <div style="margin-bottom: 10px;">27.5</div> <div style="margin-bottom: 10px;">25</div> <div style="margin-bottom: 10px;">1925</div> <div style="margin-bottom: 10px;">27.5</div> <div style="margin-bottom: 10px;">1922.5</div> <div style="margin-bottom: 10px;">30</div> <div style="margin-bottom: 10px;">1920</div> <div style="margin-bottom: 10px;">32.5</div> <div style="margin-bottom: 10px;">1917.5</div> <div style="margin-bottom: 10px;">35</div> <div style="margin-bottom: 10px;">1915</div> <div style="margin-bottom: 10px;">37.5</div> <div style="margin-bottom: 10px;">1912.5</div> <div style="margin-bottom: 10px;">40</div> </div>		<div style="margin-bottom: 100px;"></div> <p>SP-SM</p> <div style="margin-bottom: 100px;"></div> <p>GP</p>	<div style="margin-bottom: 100px;"></div> <p>Brown poorly graded sand with silt and gravel, dry and medium dense to dense.</p> <p>...less gravel to 33.0</p> <div style="margin-bottom: 100px;"></div> <p>Brown poorly graded gravel with sand, dry and dense.</p>	



# EXPLORATION LOG MW-AL


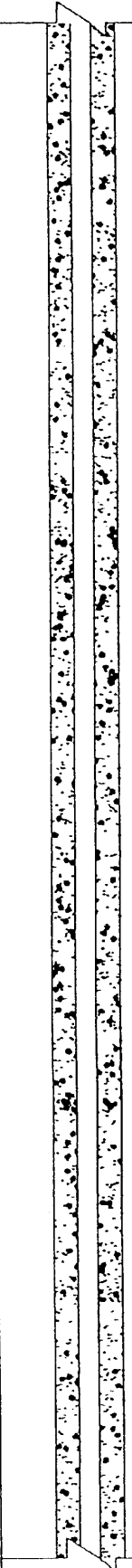
CONFIDENTIAL

ELEVATION/ DEPTH	SOIL & SAMPLE SYMBOLS	USCS	DESCRIPTION	WELL CONSTRUCTION
<div style="display: flex; flex-direction: column; align-items: center;"> <div style="margin-bottom: 10px;">1867.5</div> <div style="margin-bottom: 10px;">65</div> <div style="margin-bottom: 10px;">1885</div> <div style="margin-bottom: 10px;">67.5</div> <div style="margin-bottom: 10px;">182.5</div> <div style="margin-bottom: 10px;">70</div> <div style="margin-bottom: 10px;">1880</div> <div style="margin-bottom: 10px;">72.5</div> <div style="margin-bottom: 10px;">1877.5</div> <div style="margin-bottom: 10px;">75</div> <div style="margin-bottom: 10px;">1875</div> <div style="margin-bottom: 10px;">77.5</div> <div style="margin-bottom: 10px;">1872.5</div> <div style="margin-bottom: 10px;">80</div> <div style="margin-bottom: 10px;">1870</div> <div style="margin-bottom: 10px;">82.5</div> <div style="margin-bottom: 10px;">1867.5</div> <div style="margin-bottom: 10px;">85</div> </div>		<div style="margin-bottom: 10px;"></div> <div style="margin-bottom: 10px;">SP</div> <div style="margin-bottom: 10px;"></div> <div style="margin-bottom: 10px;"></div> <div style="margin-bottom: 10px;"></div> <div style="margin-bottom: 10px;"></div> <div style="margin-bottom: 10px;"></div> <div style="margin-bottom: 10px;"></div> <div style="margin-bottom: 10px;"></div> <div style="margin-bottom: 10px;"></div> <div style="margin-bottom: 10px;"></div> <div style="margin-bottom: 10px;"></div> <div style="margin-bottom: 10px;"></div> <div style="margin-bottom: 10px;"></div> <div style="margin-bottom: 10px;"></div> <div style="margin-bottom: 10px;"></div> <div style="margin-bottom: 10px;"></div> <div style="margin-bottom: 10px;"></div> <div style="margin-bottom: 10px;"></div> <div style="margin-bottom: 10px;"></div> <div style="margin-bottom: 10px;"></div>	<div style="margin-bottom: 10px;"></div> <div style="margin-bottom: 10px;"></div> <div style="margin-bottom: 10px;"></div> <div style="margin-bottom: 10px;"></div> <div style="margin-bottom: 10px;"></div> <div style="margin-bottom: 10px;"></div> <div style="margin-bottom: 10px;"></div> <div style="margin-bottom: 10px;"></div> <div style="margin-bottom: 10px;"></div> <div style="margin-bottom: 10px;"></div> <div style="margin-bottom: 10px;"></div> <div style="margin-bottom: 10px;"></div> <div style="margin-bottom: 10px;"></div> <div style="margin-bottom: 10px;"></div> <div style="margin-bottom: 10px;"></div> <div style="margin-bottom: 10px;"></div> <div style="margin-bottom: 10px;"></div> <div style="margin-bottom: 10px;"></div> <div style="margin-bottom: 10px;"></div> <div style="margin-bottom: 10px;"></div> <div style="margin-bottom: 10px;"></div>	
			<p>Brown poorly graded sand with gravel, dry, partially cemented and dense to very dense.</p> <p>...stratified, hard and soft layers to 87.0</p>	



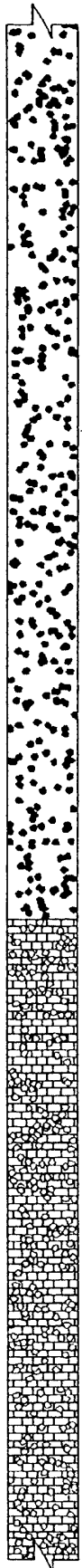

# EXPLORATION LOG MW-AL

CONFIDENTIAL

ELEVATION/ DEPTH	SOIL & SAMPLE SYMBOLS	USCS	DESCRIPTION	WELL CONSTRUCTION
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# EXPLORATION LOG MW-AL

CONFIDENTIAL

ELEVATION/ DEPTH	SOIL & SAMPLE SYMBOLS	USCS	DESCRIPTION	WELL CONSTRUCTION
<div style="display: flex; flex-direction: column; align-items: center;"> <div style="margin-bottom: 10px;">142.5</div> <div style="margin-bottom: 10px;">110</div> <div style="margin-bottom: 10px;">1840</div> <div style="margin-bottom: 10px;">112.5</div> <div style="margin-bottom: 10px;">1837.5</div> <div style="margin-bottom: 10px;">115</div> <div style="margin-bottom: 10px;">1835</div> <div style="margin-bottom: 10px;">117.5</div> <div style="margin-bottom: 10px;">120</div> <div style="margin-bottom: 10px;">1830</div> <div style="margin-bottom: 10px;">122.5</div> <div style="margin-bottom: 10px;">1827.5</div> <div style="margin-bottom: 10px;">125</div> <div style="margin-bottom: 10px;">1825</div> <div style="margin-bottom: 10px;">127.5</div> <div style="margin-bottom: 10px;">22.5</div> <div style="margin-bottom: 10px;">130</div> </div>		<div style="margin-bottom: 10px;"></div> <div style="margin-bottom: 10px;"></div> <div style="margin-bottom: 10px;"></div> <div style="margin-bottom: 10px;"></div> <div style="margin-bottom: 10px;"></div> <div style="margin-bottom: 10px;"></div> <div style="margin-bottom: 10px;"></div> <div style="margin-bottom: 10px;"></div> <div style="margin-bottom: 10px;"></div> <div style="margin-bottom: 10px;">C/G</div> <div style="margin-bottom: 10px;"></div> <div style="margin-bottom: 10px;"></div> <div style="margin-bottom: 10px;"></div> <div style="margin-bottom: 10px;"></div> <div style="margin-bottom: 10px;"></div> <div style="margin-bottom: 10px;"></div> <div style="margin-bottom: 10px;"></div>	<div style="margin-bottom: 10px;"></div> <div style="margin-bottom: 10px;"></div> <div style="margin-bottom: 10px;"></div> <div style="margin-bottom: 10px;"></div> <div style="margin-bottom: 10px;"></div> <div style="margin-bottom: 10px;"></div> <div style="margin-bottom: 10px;"></div> <div style="margin-bottom: 10px;"></div> <div style="margin-bottom: 10px;"></div> <div style="margin-bottom: 10px;">Brown cemented sand and gravel, slightly moist, moderately cemented and medium hard.</div> <div style="margin-bottom: 10px;"></div> <div style="margin-bottom: 10px;"></div> <div style="margin-bottom: 10px;"></div> <div style="margin-bottom: 10px;"></div> <div style="margin-bottom: 10px;"></div> <div style="margin-bottom: 10px;"></div> <div style="margin-bottom: 10px;"></div>	

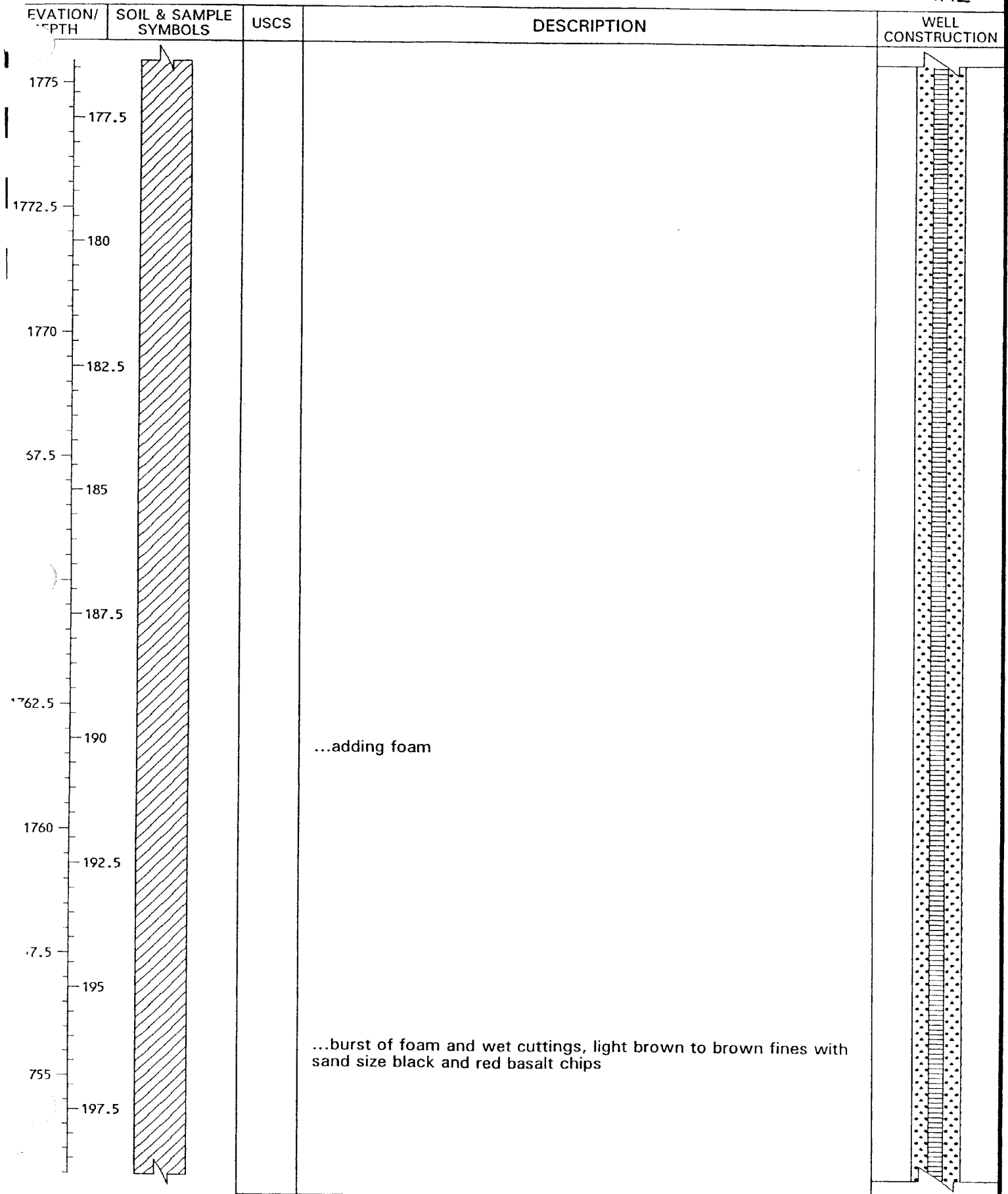
# EXPLORATION LOG MW-AL

CONFIDENTIAL

ELEVATION/ DEPTH	SOIL & SAMPLE SYMBOLS	USCS	DESCRIPTION	WELL CONSTRUCTION
<div style="display: flex; flex-direction: column; align-items: center;"> <div style="margin-bottom: 10px;">1820</div> <div style="margin-bottom: 10px;">132.5</div> <div style="margin-bottom: 10px;">1817.5</div> <div style="margin-bottom: 10px;">135</div> <div style="margin-bottom: 10px;">1815</div> <div style="margin-bottom: 10px;">137.5</div> <div style="margin-bottom: 10px;">12.5</div> <div style="margin-bottom: 10px;">140</div> <div style="margin-bottom: 10px;">142.5</div> <div style="margin-bottom: 10px;">1397.5</div> <div style="margin-bottom: 10px;">145</div> <div style="margin-bottom: 10px;">1805</div> <div style="margin-bottom: 10px;">147.5</div> <div style="margin-bottom: 10px;">2.5</div> <div style="margin-bottom: 10px;">150</div> <div style="margin-bottom: 10px;">800</div> <div style="margin-bottom: 10px;">152.5</div> </div>		<div style="margin-top: 200px;">CL</div>	<p>...no foam added to 190.0</p> <p>...cemented hard to very hard to 150.0</p> <p>Brown sandy clay, moist and stiff to very stiff (isolated cemented layers less than 4" thick).</p> <p>...cemented layer</p>	

EXPLORATION LOG  
MW-AL

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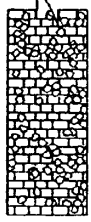
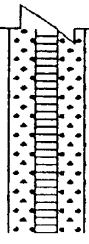
# EXPLORATION LOG MW-AL

CONFIDENTIAL

ELEVATION/ DEPTH	SOIL & SAMPLE SYMBOLS	USCS	DESCRIPTION	WELL CONSTRUCTION
<div style="display: flex; flex-direction: column; align-items: center;"> <div style="margin-bottom: 10px;">752.5</div> <div style="margin-bottom: 10px;">200</div> <div style="margin-bottom: 10px;">1750</div> <div style="margin-bottom: 10px;">202.5</div> <div style="margin-bottom: 10px;">1747.5</div> <div style="margin-bottom: 10px;">205</div> <div style="margin-bottom: 10px;">1745</div> <div style="margin-bottom: 10px;">207.5</div> <div style="margin-bottom: 10px;">210</div> <div style="margin-bottom: 10px;">1740</div> <div style="margin-bottom: 10px;">212.5</div> <div style="margin-bottom: 10px;">1737.5</div> <div style="margin-bottom: 10px;">215</div> <div style="margin-bottom: 10px;">1735</div> <div style="margin-bottom: 10px;">217.5</div> <div style="margin-bottom: 10px;">732.5</div> <div style="margin-bottom: 10px;">220</div> </div>		<div style="margin-bottom: 100px;"> <p style="text-align: center;">...groundwater encountered</p> </div> <div> <p style="text-align: center;">C/G</p> </div>	<p style="text-align: center;">Light brown cemented sand and gravel, wet, moderately cemented and hard.</p> <p style="text-align: center;">...brown, finer grained to 214.0</p> <p style="text-align: center;">...lighter brown to 218.0</p> <p style="text-align: center;">...brown to 224.0</p>	

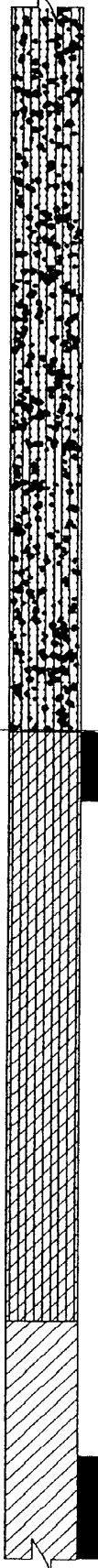
# EXPLORATION LOG MW-AL

CONFIDENTIAL

ELEVATION/ DEPTH	SOIL & SAMPLE SYMBOLS	USCS	DESCRIPTION	WELL CONSTRUCTION
<div style="display: flex; flex-direction: column; align-items: center;"> <div style="margin-bottom: 10px;">1730</div> <div style="margin-bottom: 10px;">-222.5</div> <div style="margin-bottom: 10px;">1727.5</div> <div style="margin-bottom: 10px;">-225</div> <div style="margin-bottom: 10px;">1725</div> <div style="margin-bottom: 10px;">-227.5</div> <div style="margin-bottom: 10px;">22.5</div> <div style="margin-bottom: 10px;">-230</div> <div style="margin-bottom: 10px;">-232.5</div> <div style="margin-bottom: 10px;">1717.5</div> <div style="margin-bottom: 10px;">-235</div> <div style="margin-bottom: 10px;">1715</div> <div style="margin-bottom: 10px;">-237.5</div> <div style="margin-bottom: 10px;">12.5</div> <div style="margin-bottom: 10px;">-240</div> <div style="margin-bottom: 10px;">1710</div> <div style="margin-bottom: 10px;">-242.5</div> </div>			<p style="margin-top: 100px; font-weight: bold;">END OF BORING AT 224 FEET</p>	

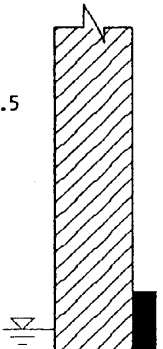
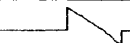
# EXPLORATION LOG B-1

CONFIDENTIAL

ELEVATION/ DEPTH	SOIL & SAMPLE SYMBOLS	USCS	DESCRIPTION	WELL CONSTRUCTION
<div style="display: flex; flex-direction: column; align-items: center;"> <div style="margin-bottom: 10px;">20</div> <div style="margin-bottom: 10px;">1742.5</div> <div style="margin-bottom: 10px;">22.5</div> <div style="margin-bottom: 10px;">1740</div> <div style="margin-bottom: 10px;">25</div> <div style="margin-bottom: 10px;">37.5</div> <div style="margin-bottom: 10px;">27.5</div> <div style="margin-bottom: 10px;">1735</div> <div style="margin-bottom: 10px;">30</div> <div style="margin-bottom: 10px;">1732.5</div> <div style="margin-bottom: 10px;">32.5</div> <div style="margin-bottom: 10px;">1730</div> <div style="margin-bottom: 10px;">35</div> <div style="margin-bottom: 10px;">27.5</div> <div style="margin-bottom: 10px;">37.5</div> <div style="margin-bottom: 10px;">1725</div> <div style="margin-bottom: 10px;">40</div> <div style="margin-bottom: 10px;">22.5</div> </div>		<div style="margin-bottom: 10px;"></div> <div style="margin-bottom: 10px;"></div> <div style="margin-bottom: 10px;"></div> <div style="margin-bottom: 10px;"></div> <div style="margin-bottom: 10px;"></div> <div style="margin-bottom: 10px;"></div> <div style="margin-bottom: 10px;"></div> <div style="margin-bottom: 10px;">CL-ML</div> <div style="margin-bottom: 10px;"></div> <div style="margin-bottom: 10px;"></div> <div style="margin-bottom: 10px;"></div> <div style="margin-bottom: 10px;"></div> <div style="margin-bottom: 10px;"></div> <div style="margin-bottom: 10px;"></div> <div style="margin-bottom: 10px;">CL</div>	<div style="margin-bottom: 10px;"></div> <div style="margin-bottom: 10px;">...cobble layer</div> <div style="margin-bottom: 10px;"></div> <div style="margin-bottom: 10px;"></div> <div style="margin-bottom: 10px;"></div> <div style="margin-bottom: 10px;"></div> <div style="margin-bottom: 10px;"></div> <div style="margin-bottom: 10px;">Brown clayey silt with trace sand, slightly moist, partial intermittent cementation and stiff. (clay content increases with depth)</div> <div style="margin-bottom: 10px;"></div> <div style="margin-bottom: 10px;">...moist to 38.0</div> <div style="margin-bottom: 10px;"></div> <div style="margin-bottom: 10px;"></div> <div style="margin-bottom: 10px;">Brown lean clay with trace sand, very moist and stiff.</div>	<div style="margin-bottom: 10px;"></div> <div style="margin-bottom: 10px;"></div> <div style="margin-bottom: 10px;"></div> <div style="margin-bottom: 10px;"></div> <div style="margin-bottom: 10px;"></div> <div style="margin-bottom: 10px;"></div> <div style="margin-bottom: 10px;"></div> <div style="margin-bottom: 10px;"></div> <div style="margin-bottom: 10px;"></div> <div style="margin-bottom: 10px;"></div> <div style="margin-bottom: 10px;"></div> <div style="margin-bottom: 10px;"></div> <div style="margin-bottom: 10px;"></div> <div style="margin-bottom: 10px;"></div> <div style="margin-bottom: 10px;"></div>

# EXPLORATION LOG B-1

CONFIDENTIAL

ELEVATION/ DEPTH	SOIL & SAMPLE SYMBOLS	USCS	DESCRIPTION	WELL CONSTRUCTION
<div style="display: flex; flex-direction: column; align-items: center;"> <div style="margin-bottom: 10px;">1720</div> <div style="margin-bottom: 10px;">42.5</div> <div style="margin-bottom: 10px;">45</div> <div style="margin-bottom: 10px;">1717.5</div> <div style="margin-bottom: 10px;">47.5</div> <div style="margin-bottom: 10px;">1715</div> <div style="margin-bottom: 10px;">50</div> <div style="margin-bottom: 10px;">712.5</div> <div style="margin-bottom: 10px;">52.5</div> <div style="margin-bottom: 10px;">1710</div> <div style="margin-bottom: 10px;">55</div> <div style="margin-bottom: 10px;">1707.5</div> <div style="margin-bottom: 10px;">57.5</div> <div style="margin-bottom: 10px;">1705</div> <div style="margin-bottom: 10px;">60</div> <div style="margin-bottom: 10px;">702.5</div> <div style="margin-bottom: 10px;">62.5</div> <div style="margin-bottom: 10px;">1700</div> </div>			<p style="text-align: center;">**</p> <p>...partially cemented to 45.8 ...Groundwater Encountered</p> <p style="text-align: center;"><b>END OF BORING AT 45.8 FEET</b></p>	




# KEY TO SYMBOLS


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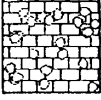
Symbol      Description

Symbol      Description

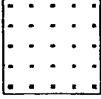
Strata symbols

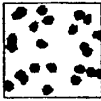
 Poorly graded gravel with silt

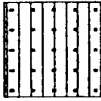
 Silty sand


 Strongly cemented sand and gravel

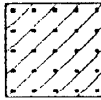
 Silt

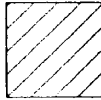
 Poorly graded sand

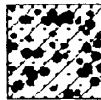
 Poorly graded gravel

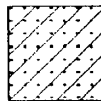
 Poorly graded sand with silt

 Well graded gravel


 Poorly graded sand with clay

 Low plasticity clay

 Poorly graded gravel with clay





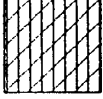
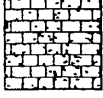

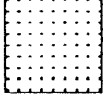


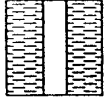
 Clayey sand

 Fill




 Silty gravel

# KEY TO SYMBOLS




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Symbol	Description	Symbol	Description
	Well graded sand with clay		California sampler
	Well graded gravel with silt		Bulk/Grab sample
	Silty low plasticity clay	<u>Monitor Well Details</u>	
	Caliche		riser with cover and protective casing
	Well graded sand		Neat Cement seal
	Well graded sand with silt		bentonite pellets

Misc. Symbols



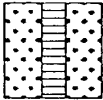
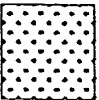

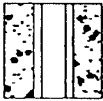
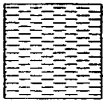
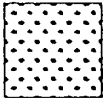
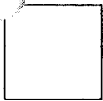
	Boring continues
	Final water level at date indicated
	Initial water level at date indicated

Soil Samplers

	Standard penetration test
	No recovery
	Bulk sample

## KEY TO SYMBOLS

CONFIDENTIAL

Symbol	Description	Symbol	Description
	silica sand, blank PVC		covered riser
	slotted pipe w/ sand		no pipe, filler material
	flush-mount cover		
	protective casing set in concrete		
	Bentonite pellet seal		
	silica sand, no pipe (end plug)		
	end of well installation		

Notes:

1. Exploratory borings were drilled on date shown using a Mobile B-61 drill rig.
2. California sampler or Standard Penetration Test sampler driven with 140 pound hammer falling 30 inches as noted.
3. Boring locations shown on site plan estimated by pacing from existing features.
4. Two-inch diameter PVC monitoring wells with .020 inch slotted screen sections set at depths noted in exploration logs.
5. These logs are subject to the limitations, conclusions, and recommendations in this report.
6. Results of tests conducted on samples recovered are reported on the logs and attached plates/figures.

DATE DRILLED: 4-16-91  
 LOCATION: SEE MAP NO. 2

BORING NO. 1

ELEVATION: G.S.

THIS SUMMARY APPLIES ONLY AT THIS LOCATION AND AT THE TIME OF LOGGING. CONDITIONS MAY DIFFER AT OTHER LOCATIONS AND MAY CHANGE AT THIS LOCATION WITH TIME. DATA PRESENTED IS A SIMPLIFICATION.

DEPTH IN FEET	FIELD MOISTURE %	DRY DENSITY PCF	OTHER TESTS **	BLOWS/FT. **	SAMPLES	SYMBOL	SOIL DESCRIPTION	MOISTURE	CONSIST.
0							SANDY GRAVEL/GRAVELLY SAND -w/silt, lt. brown (Quarternary Alluvium)		
			OVM Oppm				S-1A		
			OVM Oppm					sl.	
25			OVM Oppm					moist	dense
			OVM Oppm						
			OVM Oppm						
50			OVM Oppm				SILTY CLAY/CLAYEY SAND -w/gypsum, red brown (Muddy Creek Formation)	moist	stiff
			OVM Oppm				▼ S-1B		to
								wet	dense
							Bottom at 66 feet		
75									

\* OTHER TESTS: C-CONSOLIDATION, A-ATTERBERG, S-SHEAR  
 G-GRAIN SIZE, E-EXPANSION, CH-CHEMICAL

\*\* USING LB. DRIVING WEIGHT AND INCH (I.D.)  
 DIAMETER SAMPLER

NOTES: Groundwater measured at 55 feet after 24 hours.



**WT ENVIRONMENTAL CONSULTANTS**

**BORING LOG AND TEST SUMMARY**

PLATE  
1

PROJECT NO. 7471K079

BY: / APPROV: /

DATE DRILLED: 4-16-91

BORING NO. 2

ELEVATION: G.S.

LOCATION: SEE MAP NO. 2

THIS SUMMARY APPLIES ONLY AT THIS LOCATION AND AT THE TIME OF LOGGING. CONDITIONS MAY DIFFER AT OTHER LOCATIONS AND MAY CHANGE AT THIS LOCATION WITH TIME. DATA PRESENTED IS A SIMPLIFICATION.

DEPTH IN FEET	FIELD MOISTURE %	DRY DENSITY PCF	OTHER TESTS *	BLOWS/FT. **	SAMPLES	SYMBOL	SOIL DESCRIPTION	MOISTURE	CONSIST.
0							SANDY GRAVEL/GRAVELLY SAND -w/silt lt. brown (Quarternary Alluvium)		
			OVM Oppm				S-2A	sl.	dense
25			OVM Oppm					moist	
								v.moist to wet	
			OVM 10.5 ppm				SILTY CLAY/CLAYEY SAND -w/gypsum, red brown (Muddy Creek Formation) S-2B	wet	stiff to dense
50							Bottom at 47 feet		
75									

\* OTHER TESTS: C-CONSOLIDATION, A-ATTERBERG, S-SHEAR  
G-GRAIN SIZE, E-EXPANSION, CH-CHEMICAL

\*\* USING LB. DRIVING WEIGHT AND INCH (I.D.)  
DIAMETER SAMPLER

NOTES: Groundwater measured  
at 33.5 feet after 24 hours.



WT  
ENVIRONMENTAL  
CONSULTANTS

BORING LOG  
AND  
TEST SUMMARY

PLATE

2

PROJECT NO. 7471K079

DATE DRILLED: 4-17-91  
 LOCATION: SEE MAP NO. 2

BORING NO. 3

ELEVATION: G.S.

THIS SUMMARY APPLIES ONLY AT THIS LOCATION AND AT THE TIME OF LOGGING. CONDITIONS MAY DIFFER AT OTHER LOCATIONS AND MAY CHANGE AT THIS LOCATION WITH TIME. DATA PRESENTED IS A SIMPLIFICATION.

DEPTH IN FEET	FIELD MOISTURE %	DRY DENSITY PCF	OTHER TESTS *	BLOWS/FT. **	SAMPLES SYMBOL	SOIL DESCRIPTION	MOISTURE	CONSIST.
0						SANDY GRVEL/GRAVELLY SAND -w/silt, lt. brown (Quarternary Alluvium)		
			OVM			S-5A	sl.	
			Oppm					
25			OVM				moist	dense
			Oppm					
						SILTY CLAY/CLAYEY SAND -w/gypsum, red brown (Muddy Creek Formation)		stiff to dense
			OVM				wet	
			46.0			CALICHE -gray		hard
50			ppm					
			Auger Shaft			Bottom at 48.5 feet		
75								

\* OTHER TESTS: C-CONSOLIDATION, A-ATTERBERG, S-SHEAR  
 G-GRAIN SIZE, E-EXPANSION, CH-CHEMICAL

\*\* USING LB. DRIVING WEIGHT AND INCH (I.D.)  
 DIAMETER SAMPLER

NOTES: Water level measured at 36.5 feet after 24 hours.



**WT ENVIRONMENTAL CONSULTANTS**

**BORING LOG AND TEST SUMMARY**

PLATE

3

PROJECT NO. 7471K079

DATE DRILLED: 4-17-91  
 LOCATION: SEE MAP NO. 2

BORING NO. 4

ELEVATION: G.S.

THIS SUMMARY APPLIES ONLY AT THIS LOCATION AND AT THE TIME OF LOGGING. CONDITIONS MAY DIFFER AT OTHER LOCATIONS AND MAY CHANGE AT THIS LOCATION WITH TIME. DATA PRESENTED IS A SIMPLIFICATION.

DEPTH IN FEET	FIELD MOISTURE %	DRY DENSITY PCF	OTHER TESTS *	BLOWS/FT. **	SAMPLES SYMBOL	SOIL DESCRIPTION	MOISTURE	CONSIST.
0						SANDY GRAVEL/GRAVELLY SAND -w/silt, lt. brown (Quarternary Alluvium)	sl.	
		OVM Oppm				S-4A		dense
25		OVM Oppm					moist	
		OVM Oppm				SILTY CLAY/CLAYEY SAND -w/gypsum, red brown, (Muddy Creek Formation)	moist	stiff
		OVM Oppm			▼ S-4B		wet	to dense
50		OVM 32ppm				Bottom at 51 feet		
		Auger Shaft						
75								

\* OTHER TESTS: C-CONSOLIDATION, A-ATTERBERG, S-SHEAR  
 G-GRAIN SIZE, E-EXPANSION, CH-CHEMICAL  
 \*\* USING LB. DRIVING WEIGHT AND INCH (I.D.)  
 DIAMETER SAMPLER

NOTES: Water level measured at 43.3 feet after 24 hours.



BORING LOG AND TEST SUMMARY

PLATE  
4

PROJECT NO. 7471K079

DATE DRILLED: 4-16-91  
 LOCATION: SEE MAP NO. 2

BORING NO. 5

ELEVATION: G.S.

THIS SUMMARY APPLIES ONLY AT THIS LOCATION AND AT THE TIME OF LOGGING. CONDITIONS MAY DIFFER AT OTHER LOCATIONS AND MAY CHANGE AT THIS LOCATION WITH TIME. DATA PRESENTED IS A SIMPLIFICATION.

DEPTH IN FEET	FIELD MOISTURE %	DRY DENSITY PCF	OTHER TESTS	BLOWS/FT. **	SAMPLES SYMBOL	SOIL DESCRIPTION	MOISTURE	CONSIST.
0						SANDY GRAVEL/GRAVELLY SAND -w/silt, lt. brown (Quarternary Alluvium) S-5A	sl. moist	dense
			OVM Oppm					
			OVM Oppm					
25						SITLY CLAY/CLAYEY SAND -w/gypsum, red brown, (Muddy Creed Formation)	moist	stiff
			OVM Oppm					
			OVM Oppm					
			OVM Oppm					
50						Bottom at 47 feet		
75								

\* OTHER TESTS: C-CONSOLIDATION, A-ATTERBERG, S-SHEAR  
 G-GRAIN SIZE, E-EXPANSION, CH-CHEMICAL

\*\* USING LB. DRIVING WEIGHT AND INCH (I.D.)  
 DIAMETER SAMPLER

NOTES: Water level measured at 34.1 feet after 24 hours



**WT ENVIRONMENTAL CONSULTANTS**

**BORING LOG AND TEST SUMMARY**

PLATE  
5

PROJECT NO. 7471K079



DATE DRILLED: 4-18-91

BORING NO.6

ELEVATION:

G.S.

LOCATION: SEE MAP NO. 2

THIS SUMMARY APPLIES ONLY AT THIS LOCATION AND AT THE TIME OF LOGGING. CONDITIONS MAY DIFFER AT OTHER LOCATIONS AND MAY CHANGE AT THIS LOCATION WITH TIME. DATA PRESENTED IS A SIMPLIFICATION.

DEPTH IN FEET	FIELD MOISTURE %	DRY DENSITY PCF	OTHER TESTS *	BLOWS/FT. **	SYMBOL	SOIL DESCRIPTION	MOISTURE	CONSIST.
0						SANDY GRAVEL/GRAVELLY SAND -w/silt, lt. brown (Quaternary Alluvium)		
		OVM 24.9 ppm				S-6A	sl.	dense
25							moist	
		OVM 9.0 ppm				SITLY CLAY/CLAYEY SAND -w/gypsum, red brown (Muddy Creek Formation)		stiff
		OVM 80 ppm			▼ S-6B		moist	to
50		Auger Shaft					wet	dense
						Bottom at 51 feet		
75								

\* OTHER TESTS: C-CONSOLIDATION, A-ATTERBERG, S-SHEAR  
 G-GRAIN SIZE, E-EXPANSION, CH-CHEMICAL

\*\* USING LB. DRIVING WEIGHT AND INCH (I.D.)  
 DIAMETER SAMPLER

NOTES: Water level measured at 41.5 feet after 24 hours



**WT ENVIRONMENTAL CONSULTANTS**

**BORING LOG AND TEST SUMMARY**

PLATE

PROJECT NO. 7471K079

BY: APPROV:

DATE DRILLED: 4-17-91

BORING NO. 7

ELEVATION: G.S.

LOCATION: SEE MAP NO. 2

THIS SUMMARY APPLIES ONLY AT THIS LOC. JN AND AT THE TIME OF LOGGING. CONDITIONS MAY DIFFER A. J. OTHER LOCATIONS AND MAY CHANGE AT THIS LOCATION WITH TIME. DATA PRESENTED IS A SIMPLIFICATION.

DEPTH IN FEET	FIELD MOISTURE %	DRY DENSITY PCF	OTHER TESTS	BLOWS/FT. **	SAMPLES	SYMBOL	SOIL DESCRIPTION	MOISTURE	CONSIST.
0							SANDY GRAVEL/GRAVELLY SAND -w/silt, lt. brown (Quaternary Alluvium)		
			OVM Oppm				S-7A	sl.	dense
25			OVM Oppm					moist	
			OVM Oppm						
50			OVM 3.0 ppm				SILTY CLAY/CLAYEY SAND-w/gypsum, red brown, (Muddy Creek Formation)	wet	dense to stiff
			Auger Shaft				S-7B		
							Bottom at 56 feet		
> 75									

\* OTHER TESTS: C-CONSOLIDATION, A-ATTERBERG, S-SHEAR G-GRAIN SIZE, E-EXPANSION, CH-CHEMICAL

NOTES: Water level measured at 47.0 feet after 24 hours.

\*\* USING LB. DRIVING WEIGHT AND INCH (I.D.) DIAMETER SAMPLER



WT ENVIRONMENTAL CONSULTANTS

BORING LOG AND TEST SUMMARY

PLATE 7

PROJECT NO. 7471K079

DATE DRILLED: 4-18-91

BORING NO. 8

ELEVATION: G.S.

LOCATION: SEE MAP NO. 2

DEPTH IN FEET

FIELD MOISTURE %

DRY DENSITY PCF

OTHER TESTS \*

BLOWS/FT. \*\*

SAMPLES SYMBOL

SOIL DESCRIPTION

MOISTURE

CONSIST.

SANDY GRAVEL/GRAVELLY SAND -w/silt, lt. brown (Quaternary Alluvium)

OVM Oppm

S-8A

loose

OVM Oppm

OVM Oppm

25

50

SILTY CLAY/CLAYEY SAND -w/gypsum, red brown (Muddy Creek Formation)

OVM Oppm

S-8B

sl.

dense

Bottom at 71 feet

75

\* OTHER TESTS: C-CONSOLIDATION, A-ATTERBERG, S-SHEAR G-GRAIN SIZE, E-EXPANSION, CH-CHEMICAL

\*\* USING LB DRIVING WEIGHT AND INCH (I.D.) DIAMETER SAMPLER

NOTES: Water level measured at 62.1 feet after 24 hours



WT ENVIRONMENTAL CONSULTANTS

BORING LOG AND TEST SUMMARY

PLATE

8

PROJECT NO. 7471K079

THIS SUMMARY APPLIES ONLY AT THIS LOCATION AND AT THE TIME OF LOGGING. CONDITIONS MAY DIFFER AT OTHER LOCATIONS AND MAY CHANGE AT THIS LOCATION WITH TIME. DATA PRESENTED IS A SIMPLIFICATION.

APPROV: 8

BY: 8

DATE DRILLED: 4-19-91

BORING NO. 9

ELEVATION: G.S.

LOCATION: SEE MAP NO. 2

THIS SUMMARY APPLIES ONLY AT THIS LOCATION AND AT THE TIME OF LOGGING. CONDITIONS MAY DIFFER AT OTHER LOCATIONS AND MAY CHANGE AT THIS LOCATION WITH TIME. DATA PRESENTED IS A SIMPLIFICATION.

DEPTH IN FEET	FIELD MOISTURE %	DRY DENSITY PCF	OTHER TESTS *	BLOWS/FT. **	SYMBOL	SOIL DESCRIPTION	MOISTURE	CONSIST.
0			OVM Oppm			SANDY GRAVEL/GRAVELLY SAND -w/silt, lt. brown (Quaternary Alluvium)		
					S-9A		sl.	dense
25			OVM Oppm				moist	
						SILTY CLAY/CLAYEY SAND -w/gypsum, red brown (Muddy Creek Formation)	very moist	stiff
50					S-9B		wet	sl. dense
						Bottom at 55 feet		
75								

\* OTHER TESTS: C-CONSOLIDATION, A-ATTERBERG, S-SHEAR G-GRAIN SIZE, E-EXPANSION, CH-CHEMICAL

NOTES: Water level measured at 44.1 feet after 24 hours.

\*\* USING LB. DRIVING WEIGHT AND INCH (I.D.) DIAMETER SAMPLER



WT ENVIRONMENTAL CONSULTANTS

BORING LOG AND TEST SUMMARY

PLATE 9

PROJECT NO. 7471K079

GS14 P00 Printing (202) / 5

APPROV: BY: 7

DATE DRILLED: 4-17-91

BORING NO. 10

ELEVATION: G.S.

LOCATION: SEE MAP NO. 2

OTHER  
THIS SUMMARY APPLIES ONLY AT THIS LOCATION AND AT THE TIME OF LOGGING. CONDITIONS MAY DIFFER  
LOCATIONS AND MAY CHANGE AT THIS LOCATION WITH TIME. DATA PRESENTED IS A SIMPLIFICATION.

DEPTH IN FEET	FIELD MOISTURE %	DRY DENSITY PCF	OTHER TESTS*	BLOWS/FT.** SAMPLES SYMBOL	SOIL DESCRIPTION	MOISTURE		CONSIST.
0					SANDY GRAVEL/GRAVELLY SAND -w/silt, lt. brown (Quaternary Alluvium)			
				█	S-10A		sl.	dense
25							moist	
							very moist	
				▼	SILTY CLAY/CLAYEY SAND -w/gypsum, red brown (Muddy Creek Formation)			
50				█	S-10B		wet	dense to stiff
					Bottom at 54 feet			
75								

\* OTHER TESTS: C-CONSOLIDATION, A-ATTERBERG, S-SHEAR  
G-GRAIN SIZE, E-EXPANSION, CH-CHEMICAL

\*\* USING LB. DRIVING WEIGHT AND INCH (I.D.)  
DIAMETER SAMPLER

NOTES: Water level measured at  
39.4 feet after 24 hours.



WT  
ENVIRONMENTAL  
CONSULTANTS

BORING LOG  
AND  
TEST SUMMARY

PLATE

10

PROJECT NO.

7471K079

APPROV: \_\_\_\_\_  
BY: \_\_\_\_\_

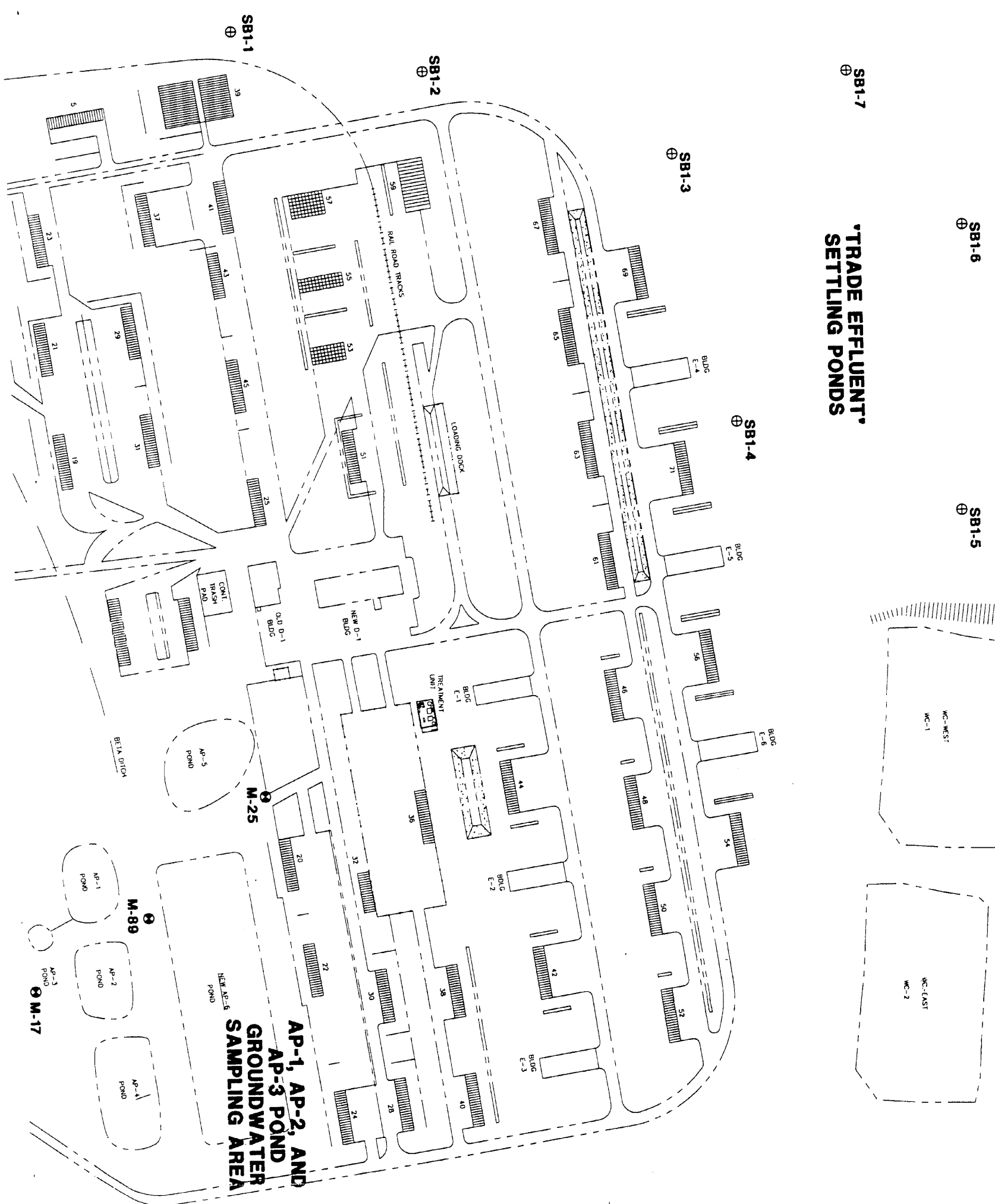
**APPENDIX B**

**Boring Logs and Monitoring Well  
Completion Diagrams**

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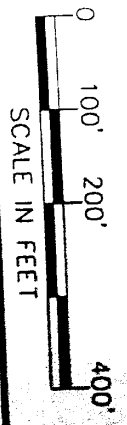
APPROXIMATE LOCATION  
OF HAZARDOUS WASTE  
LANDFILL (CLOSED) KMCC-013

**'TRADE EFFLUENT'  
SETTLING PONDS**



**AP-1, AP-2, AND  
AP-3 POND  
GROUNDWATER  
SAMPLING AREA**

- LEGEND**
- ⊕ SOIL SAMPLING LOCATION
  - ⊙ MONITORING WELL LOCATION
  - ||||| ESTIMATED LOCATION OF EARTH BERM



**ENSR**

**FIGURE 3-1  
TRADE EFFLUENT SETTLING PONDS  
SAMPLING LOCATIONS**

Kerr McGee Chemical Corp  
Henderson, Nevada

DRAWN: M. SCOP	DATE: 7/18/97	PROJECT NO. 4020-004-250	REV. 1
FILE NO. 4020004L	CHK BY: [Signature]		

Project No. 4020-004-250

Client: Kerr McGee Chemical Site: Hendersen, NV

Well No. **M97**

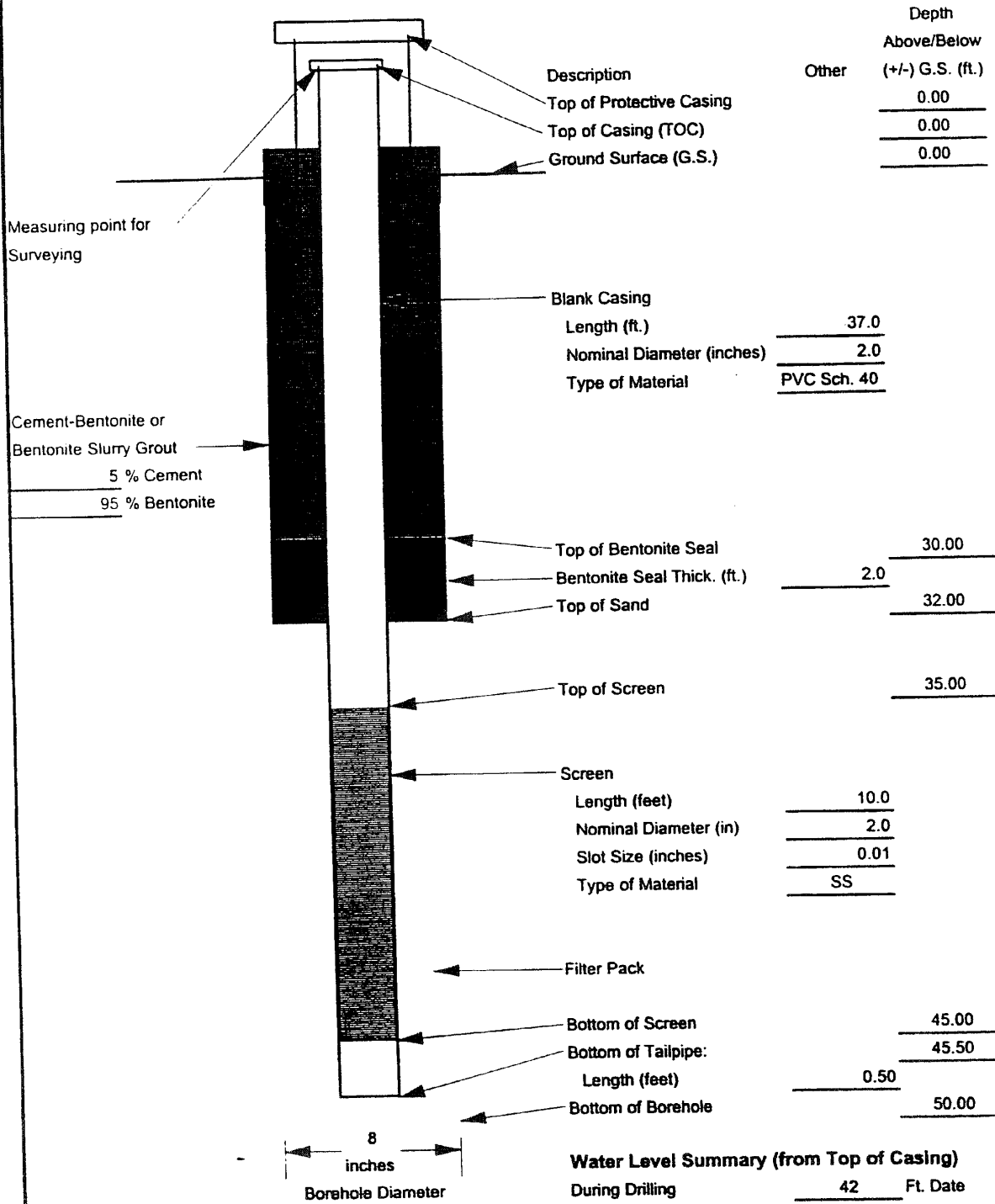
Well Loc. Hardesty Chemical

Date Inst. 8-Apr-97

Contractor: Gregg Drilling & Testing

Method: Hollow-Stem Auger

Well No. **M97**



**Water Level Summary (from Top of Casing)**

During Drilling	42	Ft. Date	4/8/97
Before Development	39.28	Ft. Date	4/8/97
After Development		Ft. Date	





# SUBSURFACE EXPLORATION LOG

## BORING NUMBER: SB1-1

CLIENT: Kerr McGee Chemical Corporation  
 JOB NUMBER: 4020-004-250  
 LOCATION: Henderson, NV  
 BORING LOCATION: Trade Effluent Settling Ponds

GEOLOGIST: DJ Poehls  
 DATE DRILLED: 4/9/97  
 DRILLING COMPANY: Gregg Drilling & Testing  
 NORTHING: 19471.568

TOTAL DEPTH: 10 Feet  
 DRILLING METHOD: HSA  
 SAMPLE METHOD: SS  
 EASTING: 26316.777

DEPTH (feet)	SAMPLES	SAMPLE NUMBER	TIME	PID (ppm)	BLOW COUNT	RECOVERY %	GEOLOGIC DESCRIPTION	SOIL CLASS	GRAPHIC LOG	DEPTH (feet)
0					7					
15		SB1-1-1	1705	0	15	70	<u>SILTY SAND</u> -grayish black with white powdery inclusions, very poorly graded, fine-grain sand, mildly reacts with HCL, no odor.			
5					7					
10		SB1-1-5	1710	0	10	60	<u>SILTY SAND</u> -very poorly graded, 85% fine grain sand, trace gravel to 2cm, dry, non-consolidated, no staining, no odor.	SM		5
6					5					
10		SB1-1-10	1715	0	5	80	Same as above - no staining, no odor.			10
15			1720				Soil boring terminated by field geologist at 10 feet bgs. Groundwater not encountered. Soil cuttings contained in a DOT approved 55-gallon drum. Soil boring backfilled with hydrated bentonite chips.			15

### SAMPLER TYPE

SS - SPLIT SPOON  
 PS - PRESSED SHELBY TUBE  
 HA - HAND SAMPLER  
 CC - CONTINUOUS CORE

### BORING METHOD

HSA - HOLLOW STEM AUGER  
 CFA - CONTINUOUS FLIGHT AUGER  
 HA - HAND AUGER  
 MD - MUD DRILLING



# SUBSURFACE EXPLORATION LOG

BORING NUMBER: SB1-3

CLIENT: Kerr McGee Chemical Corporation  
 JOB NUMBER: 4020-004-250  
 LOCATION: Henderson, NV  
 BORING LOCATION: Trade Effluent Settling Ponds

GEOLOGIST: DJ Poehls  
 DATE DRILLED: 4/9/97  
 DRILLING COMPANY: Gregg Drilling & Testing  
 NORTHING: 20241.750

TOTAL DEPTH: 10 Feet  
 DRILLING METHOD: HSA  
 SAMPLE METHOD: SS  
 EASTING: 26555.432

DEPTH (feet)	SAMPLER	SAMPLE NUMBER	TIME	PIID (ppm)	BLOW COUNT	RECOVERY %	GEOLOGIC DESCRIPTION	SOIL CLASS.	GRAPHIC LOG	DEPTH feet
6					9	100	GRAVELLY SILT-light brown, dry, soft, fine grain gravel < 8%. non-consolidated, no staining, no odor.	ML		
9					9					
9					9					
7					12	90	SILTY SAND-moderate brown, dry, loose, very fine to medium grain sand (60%), no staining, no odor.	SM		5
12					17					
20					17	80	SILTY SAND-moderate brown, dry, loose, very fine to medium grain sand (60%), trace fine grain gravel, subrounded, no staining, no odor.			10
17					18					
18					18	80	Soil boring terminated by field geologist at 10 feet bgs.  Groundwater not encountered.  Soil cuttings contained in a DOT approved 55-gallon drum.  Soil boring backfilled with hydrated bentonite chips.			15
18					18					
18					18					
18					18					

**SAMPLER TYPE**

**BORING METHOD**

SS - SPLIT SPOON  
 ST - PRESSED SHELBY TUBE  
 HA - HAND SAMPLER  
 CC - CONTINUOUS CORE

HSA - HOLLOW STEM AUGER  
 CFA - CONTINUOUS FLIGHT AUGER  
 HA - HAND AUGER  
 MD - MUD DRILLING



# SUBSURFACE EXPLORATION LOG

BORING NUMBER: SB1-5

CLIENT: Kerr McGee Chemical Corporation  
 JOB NUMBER: 4020-004-250  
 LOCATION: Henderson, NV  
 BORING LOCATION: Trade Effluent Settling Ponds

GEOLOGIST: DJ Poehls  
 DATE DRILLED: 4/10/97  
 DRILLING COMPANY: Gregg Drilling & Testing  
 NORTHING: 20733.155

TOTAL DEPTH: 10 Feet  
 DRILLING METHOD: HSA  
 SAMPLE METHOD: SS  
 EASTING: 27193.819

SAMPLE'S	SAMPLE NUMBER	TIME	PID (ppm)	BLOW COUNT	RECOVERY %	GEOLOGIC DESCRIPTION	SOIL CLASS.	GRAPHIC LOG	DEPTH feet
	SB1-5-1	0943	0	7 12 17	75	<u>SILT</u> -dark blackish gray, dry, parts well indurated, non plastic, musty odor.	ML		
	SB1-5-5	0949	0	10 14 20	65	<u>SILT</u> -dark blackish gray, dry, parts well indurated, non plastic, musty odor, small inclusions of white powder material, HCL reactive color change yellow to blue, non-cohesive, slight musty odor.			5
						<u>SILTY SAND</u> -medium to light brown, observed from soil cuttings.			
	SB1-5-10	10955	0	7 7 23	50	<u>SILTY SAND / SANDY SILT</u> -light brown, dry, dense, very poorly graded fine grain sand, non-consolidated, no staining, no odor.	SM		10
		1000				Soil boring terminated by field geologist at 10 feet bgs. Groundwater not encountered. Soil cuttings contained in a DOT approved 55-gallon drum. Soil boring backfilled with hydrated bentonite chips.			15

SAMPLER TYPE

SS - SPLIT SPOON  
 ST - PRESSED SHELBY TUBE  
 HA - HAND SAMPLER  
 CC - CONTINUOUS CORE

BORING METHOD

HSA - HOLLOW STEM AUGER  
 CFA - CONTINUOUS FLIGHT AUGER  
 HA - HAND AUGER  
 MD - MUD DRILLING



# SUBSURFACE EXPLORATION LOG

BORING NUMBER: SB1-7

CLIENT: Kerr McGee Chemical Corporation  
 JOB NUMBER: 4020-004-250  
 LOCATION: Henderson, NV  
 BORING LOCATION: Trade Effluent Settling Ponds

GEOLOGIST: DJ Poehls  
 DATE DRILLED: 4/10/97  
 DRILLING COMPANY: Gregg Drilling & Testing  
 NORTHING: 20549.135

TOTAL DEPTH: 10 Feet  
 DRILLING METHOD: HSA  
 SAMPLE METHOD: SS  
 EASTING: 26416.037

DEPTH feet	SAMPLES	SAMPLE NUMBER	TIME	P10 (ppm)	BLOW COUNT	RECOVERY %	GEOLOGIC DESCRIPTION	SOIL CLASS.	GRAPHIC LOG	DEPTH feet
0					7		<u>SILT</u> -blackish gray with white inclusions, no staining, no odor.	ML		0
1		SB1-7-1	1120	0	8	60	<u>SILTY SAND</u> -medium brown, dry, some gravel, very fine to fine grain sand, no staining, no odor.	SM		1
2					7					2
3					6					3
4					9		<u>SILT</u> -blackish gray with white inclusions.	ML		4
5		SB1-7-2	1121	0	10	70	<u>SILTY SAND</u> -medium brown, dry, some gravel, very fine to fine grain sand, no staining, no odor.	SM		5
6										6
7										7
8					16		<u>GRAVELLY SILTY SAND</u> -light brown, dry, dense, poorly graded, very fine grain sand, subangular gravel, no staining, no odor.			8
9					17					9
10		SB1-7-10	1126	0	15	70	Soil boring terminated by field geologist at 10 feet bgs.  Groundwater not encountered.  Soil cuttings contained in a DOT approved 55-gallon drum.  Soil boring backfilled with hydrated bentonite chips.			10
11										11
12										12
13										13
14										14
15										15

**SAMPLER TYPE**

**BORING METHOD**

SS - SPLIT SPOON  
 ST - PRESSED SHELBY TUBE  
 HA - HAND SAMPLER  
 CC - CONTINUOUS CORE

HSA - HOLLOW STEM AUGER  
 CFA - CONTINUOUS FLIGHT AUGER  
 HA - HAND AUGER  
 MD - MUD DRILLING



**SUBSURFACE EXPLORATION LOG**

**BORING NUMBER: SB2-2**

CLIENT: Kerr McGee Chemical Corporation  
 JOB NUMBER: 4020-004-250  
 LOCATION: Henderson, NV  
 BORING LOCATION: Old P3 Pond

GEOLOGIST: D. Dirkin  
 DATE DRILLED: 4/9/97  
 DRILLING COMPANY: NA  
 NORTHING: 18447.975

TOTAL DEPTH: 2.33 Feet  
 DRILLING METHOD: Hand Auger  
 SAMPLE METHOD: HA  
 EASTING: 27633.717

DEPTH	SAMPLER TYPE	SAMPLE NUMBER	TIME	PIID (ppm)	BLOW COUNT	RECOVERY %	GEOLOGIC DESCRIPTION	SOIL CLASS	GRAPHIC LOG	DEPTH feet
1.00		SB2-2S	1536	NA	NA	NA	<u>SILTY SAND</u> - medium brown, dry, moderately loose, fine to medium grain, no staining, earthy odor.	SM		1
1.80		SB2-2C	1646	NA	NA	NA	<u>ORGANIC SILT</u> - dark brown, very dense, dry, abundant organics, no staining, musty odor.	OL		2
2.33							Refusal at 2.33 feet bgs. Groundwater not encountered. Soil cuttings contained in a DOT approved 55-gallon drum. Soil boring backfilled with bentonite chips.			3
										4
										5
										6
										7
										8
										9
										10

SAMPLER TYPE

BORING METHOD

SS - SPLIT SPOON  
 PS - PRESSED SHELBY TUBE  
 HA - HAND SAMPLER  
 CC - CONTINUOUS CORE

HSA - HOLLOW STEM AUGER  
 CFA - CONTINUOUS FLIGHT AUGER  
 HA - HAND AUGER  
 MD - MUD DRILLING



# SUBSURFACE EXPLORATION LOG

BORING NUMBER: SB2-4

CLIENT: Kerr McGee Chemical Corporation  
 JOB NUMBER: 402G-004-250  
 LOCATION: Henderson, NV  
 BORING LOCATION: Old P3 Pond

GEOLOGIST: D. Dirkin  
 DATE DRILLED: 4/9/97  
 DRILLING COMPANY: NA  
 NORTHING: 18390.012

TOTAL DEPTH: 3 Feet  
 DRILLING METHOD: Hand Auger  
 SAMPLE METHOD: HA  
 EASTING: 27619.994

DEPTH feet	SAMPLES	SAMPLE NUMBER	TIME	PIU (ppm)	BLOW COUNT	RECOVERY %	GEOLOGIC DESCRIPTION	SOIL CLASS.	GRAPHIC LOG	DEPTH feet
0		SB2-4S	1509	NA	NA	NA	SILTY SAND - medium brown, dry, moderately loose, no staining, earthy odor.	SM		0
1										1
2							ORGANIC SILT - dark brown, dry, very dense, abundant organics, non plastic, no staining, musty odor.	OL		2
3		SB2-4C	1702	NA	NA	NA	Soil boring terminated by field geologist at 3 feet bgs.  Groundwater not encountered.  Soil cuttings contained in a DOT approved 55-gallon drum.  Soil boring backfilled with bentonite chips.			3
4										4
5										5
6										6
7										7
8										8
9										9
10										10

**SAMPLER TYPE**

**BORING METHOD**

SS - SPLIT SPOON  
 ST - PRESSED SHELBY TUBE  
 HA - HAND SAMPLER  
 CC - CONTINUOUS CORE

HSA - HOLLOW STEM AUGER  
 CFA - CONTINUOUS FLIGHT AUGER  
 HA - HAND AUGER  
 MD - MUD DRILLING



BORING NUMBER: SB2-6

SUBSURFACE EXPLORATION LOG

CLIENT: Kerr McGee Chemical Corporation  
 JOB NUMBER: 4020-004-250  
 LOCATION: Henderson, NV  
 BORING LOCATION: Old P3 Pond

GEOLOGIST: D. Dirkin  
 DATE DRILLED: 4/9/97  
 DRILLING COMPANY: NA  
 NORTHING: 18374.451

TOTAL DEPTH: 3 Feet  
 DRILLING METHOD: Hand Auger  
 SAMPLE METHOD: HA  
 EASTING: 27559.447

DEPTH feet	SAMPLES	SAMPLE NUMBER	TIME	PID (ppm)	BLOW COUNT	RECOVERY %	GEOLOGIC DESCRIPTION	SOIL CLASS.	GRAPHIC LOG	DEPTH feet
0		SB2-69	1731	NA	NA	NA	<u>SILTY SAND</u> - tannish brown, moderately loose, earthy odor.	SM		0
1							<u>ORGANIC SILT</u> - dark brown, dry, very dense, abundant organics, non plastic, siltstone gravel or rock fragments, some silty sand stringers, no staining, musty odor.	OL		1
2										2
3		SB2-80	1753	NA	NA	NA	Soil boring terminated by field geologist at 3 feet bgs.  Groundwater not encountered.  Soil cuttings contained in a DOT approved 55-gallon drum.  Soil boring backfilled with bentonite chips.			3
4										4
5										5
6										6
7										7
8										8
9										9
10										10

SAMPLER TYPE

BORING METHOD

SS - SPLIT SPOON  
 ST - PRESSED SHELBY TUBE  
 HA - HAND SAMPLER  
 CC - CONTINUOUS CORE

HSA - HOLLOW STEM AUGER  
 CFA - CONTINUOUS FLIGHT AUGER  
 HA - HAND AUGER  
 MD - MUD DRILLING



# SUBSURFACE EXPLORATION LOG

BORING NUMBER: SB2-8

CLIENT: Kerr McGee Chemical Corporation  
 JOB NUMBER: 4020-004-250  
 LOCATION: Henderson, NV  
 BORING LOCATION: Old P3 Pond

GEOLOGIST: D. Dirkin  
 DATE DRILLED: 4/9/97  
 DRILLING COMPANY: NA  
 NORTHING: 18443.946

TOTAL DEPTH: 3 Feet  
 DRILLING METHOD: Hand Auger  
 SAMPLE METHOD: HA  
 EASTING: 27581.796

DEPTH feet	SAMPLES	SAMPLE NUMBER	TIME	PID (ppm)	BLOW COUNT	RECOVERY %	GEOLOGIC DESCRIPTION	SOIL CLASS	GRAPHIC LOG	DEPTH feet
0		SB2-8S	1737	NA	NA	NA	<u>SILTY SAND</u> -medium brown, dry, moderately loose, medium grain, some siltstone gravel or rock fragments, earthy odor.	SM		0
1		SB2-8S - DUP.	1813	NA	NA	NA	<u>ORGANIC SILT</u> -dark brown, dry, very dense, organics, some sand and silt stringers, no staining, musty odor.	OL		1
2										2
3		SB2-8C	1827	NA	NA	NA	Soil boring terminated by field geologist at 3 feet bgs.  Groundwater not encountered.  Soil cuttings contained in a DOT approved 55-gallon drum.  Soil boring backfilled with bentonite chips.			3
4										4
5										5
6										6
7										7
8										8
9										9
10										10

SAMPLER TYPE

BORING METHOD

SS - SPLIT SPOON      HA - HAND SAMPLER  
 ST - PRESSED SHELBY TUBE      CC - CONTINUOUS CORE

HSA - HOLLOW STEM AUGER      HA - HAND AUGER  
 CFA - CONTINUOUS FLIGHT AUGER      MD - MUD DRILLING





# SUBSURFACE EXPLORATION LOG

## BORING NUMBER: SB2-10

CLIENT: Kerr McGee Chemical Corporation  
 JOB NUMBER: 4020-004-250  
 LOCATION: Henderson, NV  
 BORING LOCATION: Old P2 Pond

GEOLOGIST: D. Dirkin  
 DATE DRILLED: 4/10/97  
 DRILLING COMPANY: NA  
 NORTHING: 18459.027

TOTAL DEPTH: 1.7 Feet  
 DRILLING METHOD: Hand Auger  
 SAMPLE METHOD: HA  
 EASTING: 27805.678

DEPTH feet	SAMPLES	SAMPLE NUMBER	TIME	PID (ppm)	BLOW COUNT	RECOVERY %	GEOLOGIC DESCRIPTION	SOIL CLASS	GRAPHIC LOG	DEPTH feet
0		SB2-10S	0904	NA	NA	NA	SANDY SILT-pinkish tan, dry, very dense, medium to coarse grain sand, trace gravels, gravels up to 20 mm.	ML		1
1		SB2-10C	0924	NA	NA	NA	Same as above.			2
1.7							Refusal at 1.7 feet bgs.			3
							Groundwater not encountered.			4
							Soil cuttings contained in a DOT approved 55-gallon drum.			5
							Soil boring backfilled with bentonite chips.			6
										7
										8
										9
										10

### SAMPLER TYPE

### BORING METHOD

SS - SPLIT SPOON  
 ST - PRESSED SHELBY TUBE  
 HA - HAND SAMPLER  
 CC - CONTINUOUS CORE

HSA - HOLLOW STEM AUGER  
 CFA - CONTINUOUS FLIGHT AUGER  
 HA - HAND AUGER  
 MD - MUD DRILLING



BORING NUMBER: SB2-12

SUBSURFACE EXPLORATION LOG

CLIENT: Kerr McGee Chemical Corporation  
 JOB NUMBER: 4020-004-250  
 LOCATION: Henderson, NV  
 BORING LOCATION: Old P2 Pond

GEOLOGIST: D. Dirkin  
 DATE DRILLED: 4/10/97  
 DRILLING COMPANY: NA  
 NORTHING: 18447.267

TOTAL DEPTH: 3 Feet  
 DRILLING METHOD: Hand Auger  
 SAMPLE METHOD: HA  
 EASTING: 27746.989

DEPTH feet	SAMPLES	SAMPLE NUMBER	TIME	PIID (ppm)	BLOW COUNT	RECOVERY %	GEOLOGIC DESCRIPTION	SOIL CLASS.	GRAPHIC LOG	DEPTH feet
1		SB2-12S	0943	NA	NA	NA	<u>SANDY SILT</u> -medium brown, upper siltstone layer approximately 3 inches thick, well stratified and cemented with calcium carbonate. augering difficult from 0.75 to 1.0 ft. bgs, no staining, earthy odor.	ML		1
2							<u>SILTY SAND</u> -dark brown, dry, fine to medium grain, some siltstone gravel or rocks, no staining, earthy odor.	SM		2
3		SB2-12D	1107	NA	NA	NA	Soil boring terminated by field geologist at 3 feet bgs.  No groundwater encountered.  Soil cuttings contained in a DOT approved 55-gallon drum.  Soil boring backfilled with bentonite chips.			3
4										4
5										5
6										6
7										7
8										8
9										9
10										10

SAMPLER TYPE

SS - SPLIT SPOON      HA - HAND SAMPLER  
 ST - PRESSED SHELBY TUBE      CC - CONTINUOUS CORE

BORING METHOD

HSA - HOLLOW STEM AUGER      HA - HAND AUGER  
 CFA - CONTINUOUS FLIGHT AUGER      MD - MUD DRILLING



# SUBSURFACE EXPLORATION LOG

BORING NUMBER: SB4-1

CLIENT: Kerr McGee Chemical Corporation  
 JOB NUMBER: 4020-004-250  
 LOCATION: Henderson, NV  
 BORING LOCATION: Truck Unloading Area

GEOLOGIST: D. Dirkin  
 DATE DRILLED: 4/8/97  
 DRILLING COMPANY: NA  
 NORTHING: 18118.238

TOTAL DEPTH: 3 Feet  
 DRILLING METHOD: Hand Auger  
 SAMPLE METHOD: HA  
 EASTING: 26577.620

feet	SAMPLES	SAMPLE NUMBER	TIME	PID (ppm)	BLOW COUNT	RECOVERY %	GEOLOGIC DESCRIPTION	SOIL CLASS	GRAPHIC LOG	DEPTH feet
0		SB4-18	1522	NA	NA	NA	<u>SILTY SAND</u> -tan, dry, loose, fine to medium grain, no staining, earthy odor.	SM		0
1										1
2							<u>SANDY GRAVEL</u> -tan, dry, loose, subangular to subrounded, no staining, earthy odor.	GW		2
3		SB4-10	1616	NA	NA	NA	Soil boring terminated by field geologist at 3 feet bgs. Groundwater not encountered. Soil cuttings contained in a DOT approved 55-gallon drum. Soil boring backfilled with bentonite chips.			3
4										4
5										5
6										6
7										7
8										8
9										9
10										10

SAMPLER TYPE

BORING METHOD

SS - SPLIT SPOON      HA - HAND SAMPLER  
 PS - PRESSED SHELBY TUBE      CC - CONTINUOUS CORE

HSA - HOLLOW STEM AUGER      HA - HAND AUGER  
 CFA - CONTINUOUS FLIGHT AUGER      MD - MUD DRILLING



# SUBSURFACE EXPLORATION LOG

BORING NUMBER: SB4-3

CLIENT: Kerr McGee Chemical Corporation  
 JOB NUMBER: 4020-004-250  
 LOCATION: Henderson, NV  
 BORING LOCATION: Truck Unloading Area

GEOLOGIST: D. Dirkin  
 DATE DRILLED: 4/8/97  
 DRILLING COMPANY: NA  
 NORTHING: 18055.318

TOTAL DEPTH: 3 Feet  
 DRILLING METHOD: Hand Auger  
 SAMPLE METHOD: HA  
 EASTING: 26644.253

DEPTH feet	SAMPLES	SAMPLE NUMBER	TIME	PI0 (ppm)	BLOW COUNT	RECOVERY %	GEOLOGIC DESCRIPTION	SOIL CLASS.	GRAPHIC LOG	DEPTH feet
0										0
1		SB4-30	17:11	NA	NA	NA	<u>SILTY SAND</u> -tan, dry, loose, fine to medium grain, no staining, earthy odor.	SM		1
2							<u>SANDY GRAVEL</u> -tan, dry, loose, subangular to subrounded, no odor.	GW		2
3		SB4-32	17:32	NA	NA	NA	Soil boring terminated by field geologist at 3 feet bgs.  Groundwater not encountered.  Soil cuttings contained in a DOT approved 55-gallon drum.  Soil boring backfilled with bentonite chips.			3
4										4
5										5
6										6
7										7
8										8
9										9
10										10

**SAMPLER TYPE**

**BORING METHOD**

SS - SPLIT SPOON      HA - HAND SAMPLER  
 ST - PRESSED SHELBY TUBE      CC - CONTINUOUS CORE

HSA - HOLLOW STEM AUGER      HA - HAND AUGER  
 CFA - CONTINUOUS FLIGHT AUGER      MD - MUD DRILLING



# SUBSURFACE EXPLORATION LOG

CLIENT: Kerr McGee Chemical Corporation  
 JOB NUMBER: 4020-004-250  
 LOCATION: Henderson, NV  
 BORING LOCATION: Truck Unloading Area

GEOLOGIST: D. Dirkin  
 DATE DRILLED: 4/9/97  
 DRILLING COMPANY: NA  
 NORTHING: 18089.653

BORING NUMBER: SB4-5

TOTAL DEPTH: 3 Feet  
 DRILLING METHOD: Hand Auger  
 SAMPLE METHOD: HA  
 EASTING: 26522.756

DEPTH feet	SAMPLES	SAMPLE NUMBER	TIME	PIID (ppm)	BLOW COUNT	RECOVERY %	GEOLOGIC DESCRIPTION	SOIL CLASS.	GRAPHIC LOG	DEPTH feet
0	▲	SB4-50	0837	NA	NA	NA	<p><u>SILTY SAND</u>-brownish tan, dry, moderately loose, medium grain, little gravel (G=5%, S=80%, Silt=15%), earthy odor.</p>	SM		0
1										
2										2
3	▲	SB4-50	1133	NA	NA	NA	<p>Soil boring terminated by field geologist at 3 feet bgs.</p> <p>Groundwater not encountered.</p> <p>Soil cuttings contained in a DOT approved 55-gallon drum.</p> <p>Soil boring backfilled with bentonite chips.</p>			3
4										4
5										5
6										6
7										7
8										8
9										9
10										10

**SAMPLER TYPE**

SSS - SPLIT SPOON  
 STS - PRESSED SHELBY TUBE  
 HA - HAND SAMPLER  
 CC - CONTINUOUS CORE

**BORING METHOD**

HSA - HOLLOW STEM AUGER  
 CFA - CONTINUOUS FLIGHT AUGER  
 HA - HAND AUGER  
 MD - MUD DRILLING



**SUBSURFACE EXPLORATION LOG**

**BORING NUMBER: SB4-7**

CLIENT: Kerr McGee Chemical Corporation  
 JOB NUMBER: 4020-004-250  
 LOCATION: Henderson, NV  
 BORING LOCATION: Truck Unloading Area

GEOLOGIST: D. Dirkin  
 DATE DRILLED: 4/9/97  
 DRILLING COMPANY: NA  
 NORTHING: 18055.189

TOTAL DEPTH: 3 Feet  
 DRILLING METHOD: Hand Auger  
 SAMPLE METHOD: HA  
 EASTING: 26450.990

DEPTH (feet)	SAMPLES	SAMPLE NUMBER	TIME	PID (ppm)	BLOW COUNT	RECOVERY %	GEOLOGIC DESCRIPTION	SOIL CLASS.	GRAPHIC LOG	DEPTH (feet)
0										0
0 - 1		SB4-79	10344	NA	NA	NA	<u>GRAVELLY SAND</u> -tannish brown, dry, difficult augering, medium to coarse grain, subrounded gravels up to 50 mm, poorly sorted, earthy odor.	SP		1
1 - 3		SB4-70	1101	NA	NA	NA	Soil boring terminated by field geologist at 3 feet bgs.  No groundwater encountered.  Soil cuttings contained in a DOT approved 55-gallon drum.  Soil boring backfilled with bentonite chips.			3
3 - 4										4
4 - 5										5
5 - 6										6
6 - 7										7
7 - 8										8
8 - 9										9
9 - 10										10

SAMPLER TYPE

SS - SPLIT SPOON  
 ST - PRESSED SHELBY TUBE  
 HA - HAND SAMPLER  
 CC - CONTINUOUS CORE

BORING METHOD

HSA - HOLLOW STEM AUGER  
 CFA - CONTINUOUS FLIGHT AUGER  
 HA - HAND AUGER  
 MD - MUD DRILLING



# SUBSURFACE EXPLORATION LOG

BORING NUMBER: M97

CLIENT: Kerr McGee Chemical Corporation  
 JOB NUMBER: 4020-004-250  
 LOCATION: Henderson, NV  
 BORING LOCATION: Hardesty Chemical Site

GEOLOGIST: DJ Poehls  
 DATE DRILLED: 4/8/97  
 DRILLING COMPANY: Gregg Drilling & Testing  
 NORTHING: 17793.352

TOTAL DEPTH: 50 Feet  
 DRILLING METHOD: HSA  
 SAMPLE METHOD: SS  
 EASTING: 27491.925

DEPTH feet	SAMPLES	SAMPLE NUMBER	TIME	PID (ppm)	BLOW COUNT	RECOVERY %	GEOLOGIC DESCRIPTION	SOIL CLASS.	GRAPHIC LOG	DEPTH feet
0										0
5		NA			12 8	85	<u>GRAVELLY SILT</u> -well rounded gravel (up to 2cm), moderately loose, non plastic, dry, no structure, medium orangish brown, no stain, no odor.	ML		5
10		NA	1136	NA	12 21 27	80	<u>GRAVELLY SILTY SAND</u> -alternating with silty sand, very poorly graded, gravel rounded to subrounded, loose, dry, medium brown, no stain, no odor.  Same as above with 6 inch zone of sandy gravel - well graded angular gravel to 3cm - dark gray, dry, moderately dense.	SM		10
15		NA	1157	NA	10 12 16	70	<u>SILTY SAND</u> -trace medium grain gravel, increasing silt (30%), dry, medium brown, no stain, earthy odor.	SM		15
20		NA	1155	NA	24 14 10	40	<u>CALICHE</u> <u>GRAVELLY SILT</u> -little sand, soft caliche nodules, carbonate gravel, angular to 3cm, very well graded, dry, light reddish brown.	Caliche		20
25		NA	1200	NA	5 14 15	0	<u>GRAVELLY SILTY</u> -possibly very fine grain sand, little very fine grain gravel, subangular, HCL reactive, dry, light brown.	ML		25
30		NA	1215	NA	16 50/5"	10	<u>SILT</u> -compacted, stratified, HCL reactive, dry, firm to very firm.			30
35		NA	1220	NA	5 5 5	40	<u>CLAY - SILTY CLAY</u> -moist, no gravel, very slightly plastic, soft, orangish brown, no stain, no odor.	CL		35
40		NA	1235		5 5	100				40

SAMPLER TYPE 9

BORING METHOD

SS - SPLIT SPOON  
 ST - PRESSED SHELBY TUBE  
 HA - HAND SAMPLER  
 CC - CONTINUOUS CORE

HSA - HOLLOW STEM AUGER  
 CFA - CONTINUOUS FLIGHT AUGER  
 HA - HAND AUGER  
 MD - MUD DRILLING

# EXPLORATION LOG SRB-1

PROJECT: SOUTHERN RAPID INFILTRATION BASIN

PROJECT NO.: 20011195V1

HOLE LOCATION: SEE FIGURE 1

EXPLORATION DATE: 05/25/01

EXPLORATION SIZE: 4 1/4" I.D. H.S. AUGER

EQUIPMENT: DIEDRICH D-50 TURBO

ELEVATION: EGS

DRILLER/LOGGER: CLINE/COOKE

INITIAL DEPTH TO WATER: 50.0 FEET

DATE MEASURED: 05/25/01

FINAL DEPTH TO WATER: 51.44

DATE MEASURED: 05/29/01

ELEVATION/ DEPTH	SOIL & SAMPLE SYMBOLS	USCS	DESCRIPTION	PI	LL	MOISTURE CONTENT (%)	DRY DENSITY (pcf)	SWELL (%)
0 2.5 5 7.5 10 12.5 15 17.5		GM	<p>Pale brown (10 YR 6/3) silty gravel with sand, dry and dense. PID = 0.0 ppmV. No odors or stains.</p>					
		GP	<p>Brown (10 YR 5/3) poorly graded gravel with sand, slightly moist and very dense.</p> <p>...dark yellowish brown (10 YR 4/4)</p> <p>...PID = 0.0 ppmV, no odors or stains</p>					



# EXPLORATION LOG SRB-1

PROJECT: SOUTHERN RAPID INFILTRATION BASIN

PROJECT NO.: 20011195V1

HOLE LOCATION: SEE FIGURE 1

EXPLORATION DATE: 05/25/01

EXPLORATION SIZE: 4 1/4" I.D. H.S. AUGER

EQUIPMENT: DIEDRICH D-50 TURBO

ELEVATION: EGS

DRILLER/LOGGER: CLINE/COOKE

INITIAL DEPTH TO WATER: 50.0 FEET

DATE MEASURED: 05/25/01

FINAL DEPTH TO WATER: 51.44

DATE MEASURED: 05/29/01

ELEVATION/ DEPTH	SOIL & SAMPLE SYMBOLS	USCS	DESCRIPTION	PI	LL	MOISTURE CONTENT (%)	DRY DENSITY (pcf)	SWELL (%)
20	60 112	SM	Dark yellowish brown (10 YR 4/4) silty sand with gravel, slightly moist and very dense. PID = 0.0 ppmV, no odors or stains.					
22.5		GP	Dark yellowish brown (10 YR 4/4) poorly graded gravel with sand, slightly moist and very dense.					
25		SM	Dark yellowish brown (10 YR 4/4) silty sand with gravel, slightly moist and very dense.					
27.5								
30	90 140		...PID = 0.0 ppmV, no odors or stains					
32.5								
35								
37.5								

# EXPLORATION LOG SRB-1

PROJECT: SOUTHERN RAPID INFILTRATION BASIN

PROJECT NO.: 20011195V1

HOLE LOCATION: SEE FIGURE 1

EXPLORATION DATE: 05/25/01

EXPLORATION SIZE: 4 1/4" I.D. H.S. AUGER

EQUIPMENT: DIEDRICH D-50 TURBO

ELEVATION: EGS

DRILLER/LOGGER: CLINE/COOKE

INITIAL DEPTH TO WATER: 50.0 FEET

DATE MEASURED: 05/25/01

FINAL DEPTH TO WATER: 51.44

DATE MEASURED: 05/29/01

ELEVATION/ DEPTH	SOIL & SAMPLE SYMBOLS	USCS	DESCRIPTION	PI	LL	MOISTURE CONTENT (%)	DRY DENSITY (pcf)	SWELL (%)
40			...PID = 0.0 ppmV, no odors or stains					
42.5								
45								
47.5								
50			...PID = 0.0 ppmV, no odors or stains					
52.5		GP	Dark yellowish brown (10 YR 4/4) poorly graded gravel with sand, moist and very dense.					
55		SC-SM	Strong brown (7.5 YR 5/6) silty, clayey sand, moist to wet and very stiff.					
57.5								

# EXPLORATION LOG SRB-1

PROJECT: SOUTHERN RAPID INFILTRATION BASIN

PROJECT NO.: 20011195V1

HOLE LOCATION: SEE FIGURE 1

EXPLORATION DATE: 05/25/01

EXPLORATION SIZE: 4 1/4" I.D. H.S. AUGER

EQUIPMENT: DIEDRICH D-50 TURBO

ELEVATION: EGS

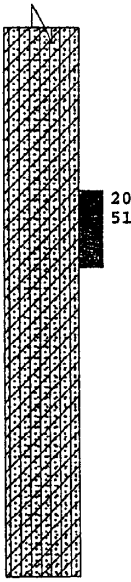
DRILLER/LOGGER: CLINE/COOKE

INITIAL DEPTH TO WATER: 50.0 FEET

DATE MEASURED: 05/25/01

FINAL DEPTH TO WATER: 51.44

DATE MEASURED: 05/29/01

ELEVATION/ DEPTH	SOIL & SAMPLE SYMBOLS	USCS	DESCRIPTION	PI	LL	MOISTURE CONTENT (%)	DRY DENSITY (pcf)	SWELL (%)
60			...wet ...hard drilling					
62.5			...abruptly easier drilling ...hard drilling					
65			END OF BORING AT 65 FEET GROUNDWATER ENCOUNTERED AT 60.0					
67.5								
70								
72.5								
75								

# EXPLORATION LOG SRB-2

PROJECT: SOUTHERN RAPID INFILTRATION BASIN  
 HOLE LOCATION: SEE FIGURE 1  
 BORING LOCATION SIZE: 4 1/4" I.D. H.S. AUGER  
 ELEVATION: EGS

PROJECT NO.: 20011195V1  
 EXPLORATION DATE: 05/25/01  
 EQUIPMENT: DIEDRICH D-50 TURBO  
 DRILLER/LOGGER: CLINE/COOKE

INITIAL DEPTH TO WATER: 70.0 FEET  
 FINAL DEPTH TO WATER: 56.26

DATE MEASURED: 05/25/01  
 DATE MEASURED: 05/29/01

ELEVATION/ DEPTH	SOIL & SAMPLE SYMBOLS	USCS	DESCRIPTION	PI	LL	MOISTURE CONTENT (%)	DRY DENSITY (pcf)	SWELL (%)
0		GM	Pale brown (10 YR 6/3) silty gravel with sand, dry and dense. PID = 0.0 ppmV, no odors or stains.					
2.5		GP	Brown (10 YR 5/3) poorly graded gravel with sand, slightly moist and very dense.  ...dark yellowish brown (10 YR 4/4)  ...brown (10 YR 5/3). PID = 0.0 ppmV, no odors or stains					
5								
7.5								
10								
12.5								
15								
17.5								

# EXPLORATION LOG SRB-2

PROJECT: SOUTHERN RAPID INFILTRATION BASIN

PROJECT NO.: 20011195V1

HOLE LOCATION: SEE FIGURE 1

EXPLORATION DATE: 05/25/01

EXPLORATION SIZE: 4 1/4" I.D. H.S. AUGER

EQUIPMENT: DIEDRICH D-50 TURBO

ELEVATION: EGS

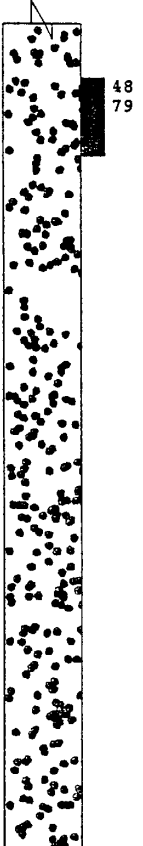
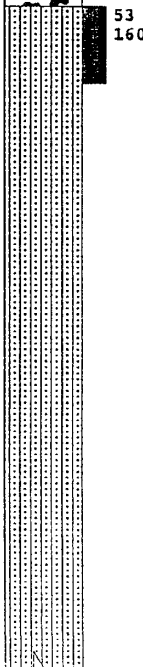
DRILLER/LOGGER: CLINE/COOKE

INITIAL DEPTH TO WATER: 70.0 FEET

DATE MEASURED: 05/25/01

FINAL DEPTH TO WATER: 56.26

DATE MEASURED: 05/29/01

ELEVATION/ DEPTH	SOIL & SAMPLE SYMBOLS	USCS	DESCRIPTION	PI	LL	MOISTURE CONTENT (%)	DRY DENSITY (pcf)	SWELL (%)
20			...PID = 0.0 ppmV, no odors or stains					
22.5								
25								
27.5								
30		SM	brown (10 YR 5/3) silty sand with gravel, slightly moist and very dense. PID = 0.0 ppmV, no odors or stains.					
32.5								
35								
37.5								

# EXPLORATION LOG SRB-2

PROJECT: SOUTHERN RAPID INFILTRATION BASIN

PROJECT NO.: 20011195V1

HOLE LOCATION: SEE FIGURE 1

EXPLORATION DATE: 05/25/01

EXPLORATION SIZE: 4 1/4" I.D. H.S. AUGER

EQUIPMENT: DIEDRICH D-50 TURBO

ELEVATION: EGS

DRILLER/LOGGER: CLINE/COOKE

INITIAL DEPTH TO WATER: 70.0 FEET

DATE MEASURED: 05/25/01

FINAL DEPTH TO WATER: 56.26

DATE MEASURED: 05/29/01

ELEVATION/ DEPTH	SOIL & SAMPLE SYMBOLS	USCS	DESCRIPTION	PI	LL	MOISTURE CONTENT (%)	DRY DENSITY (pcf)	SWELL (%)
40	39 84		...PID = 0.0 ppmV, no odors or stains					
42.5								
45								
47.5								
50	74 136		...PID = 0.0 ppmV, no odors or stains					
52.5								
55								
57.5								



# KEY TO SYMBOLS

Symbol Description

Symbol Description

## Strata symbols

## Soil Samplers



Silty gravel



California sampler



Poorly graded gravel



Silty sand



Silty, clayey sand

## Misc. Symbols



Boring continues



Water table at date  
indicated

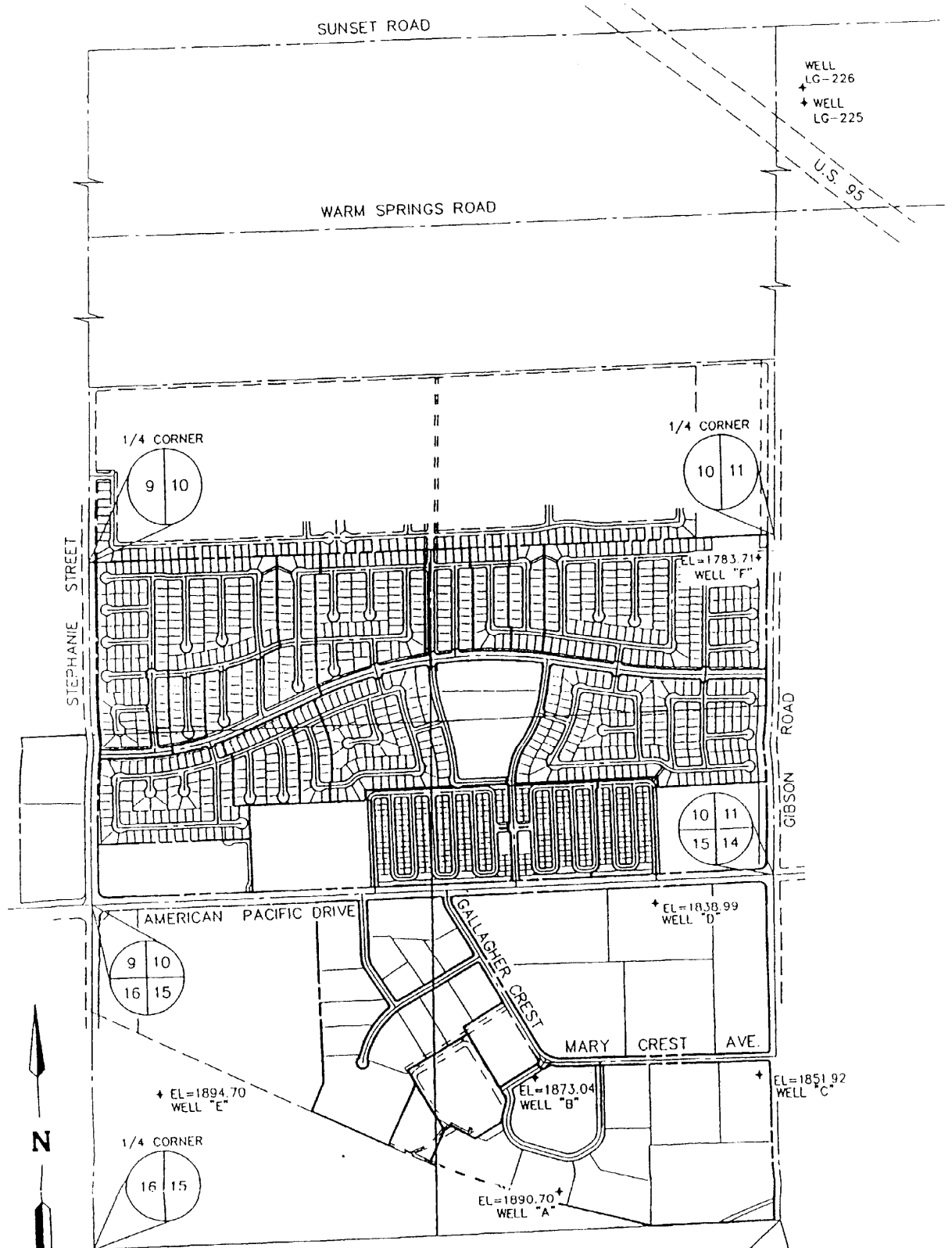


Water table at date  
indicated

## Notes:

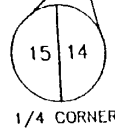
1. Exploratory borings were drilled on date shown on the logs with a Diedrich D-50 Turbo track rig using 4 1/4 inch inside diameter hollow stem augers.
2. California sampler driven with a 140 pound hammer falling 30 inches.
3. Boring locations shown on site plan estimated by pacing from existing features.
4. This log is subject to the limitations, conclusions, and recommendations in this report.
5. Results of tests conducted on samples recovered are reported on the logs and attached plates/figures.

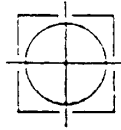




BENCHMARK = CITY OF HENDERSON BM# 275, BRASS CAP IN THE TOP OF CURB ON THE SOUTHWEST CORNER OF AMERICAN PACIFIC DR. AND GALAGER CREST RD. (STAMPED C.O.H.). ELEVATION NAVD '88 DATUM = 1854.294 FT.

NOTE: ELEVATIONS SHOWN REFLECT TOP OF CONCRETE AT BASE OF WELL HEAD.  
 NOTE: WELLS LG-225 & LG-226 ARE APPROXIMATE LOCATION ONLY PER G.E.S.  
 NOTE: SEE ATTACHED SHEET FOR STATE PLANE COORDINATES INFORMATION.





ESI ENGINEERING, INC.  
SURVEYING & MAPPING  
1000 EAST FLORISSANT AVE., SUITE 100  
LAS VEGAS, NEVADA 89119

W.O. #503-C375  
File: C375EX06.DOC  
September 30, 1997  
By: TLH  
Checked By: GDR

**SURVEYOR'S NOTE:** The State Plane Coordinates shown hereon are derived from Clark County's Record of Survey recorded in File 88, Page 53 of Surveys. The reference points, which this survey was based upon, were "Whitney 2" and "W51" as shown per said Survey. The coordinates shown hereon are in U.S. Survey feet and are Grid Coordinates rotated and translated to the North American Datum of 1983 (NAD 83), Nevada East Zone, #2701. See the E.S.I. exhibit labeled A320EX62.DWG for the location of the well heads as referenced to local streets within the City of Henderson.

**BENCHMARK -** City of Henderson BM# 275, Brass Cap in the top of curb on the southwest corner of American Pacific Drive and Galager Crest Road (Stamped C.O.H.).  
Elevation NAVD 88' Datum = 1854.294 ft.

<u>POINT</u>	<u>NORTHING</u>	<u>EASTING</u>	<u>ELEVATION</u>	<u>DESCRIPTION</u>
2000	26719788.77	819909.85	1783.71	WELL "F"
2001	26717131.48	819059.66	1838.99	WELL "D"
2002	26715809.72	819813.04	1851.92	WELL "C"
2003	26715849.02	818114.18	1873.04	WELL "B"
2004	26714962.98	818267.11	1890.70	WELL "A"
2005	26715804.75	815276.80	1894.70	WELL "E"

# EXPLORATION LOG A


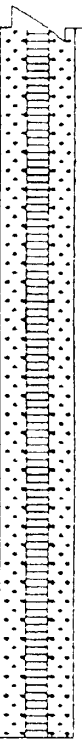
PROJECT: PEPCON MONITORING WELLS PROJECT NO.: 96189V2  
 HOLE LOCATION: SEE SITE PLAN EXPLORATION DATE: 8-28-97  
 EXPLORATION SIZE (diameter): 4" MONITORING WELL EQUIPMENT: MOBILE B-53  
 G.S. ELEVATION: 1890.7 LOGGED BY: S. JOHNSON

INITIAL DEPTH TO WATER: 89 DATE MEASURED: 8-30-97  
 FINAL DEPTH TO WATER: 75 DATE MEASURED: 9-15-97

ELEVATION / DEPTH	SOIL & SAMPLE SYMBOLS	USCS	DESCRIPTION	WELL CONSTRUCTIVE
1890				
1885		GP-GM	Pale brown poorly graded gravel with silt and sand, dry and dense to very dense.	
1880		C/G	Pale brown cemented sand and gravel, dry, cemented and hard. ...cemented material, no sample taken	
1875		SP	Dark brown poorly graded sand with gravel, slightly moist and dense to very dense.  ...dry and light brown from 19.0 to 31.0	
1860		C/G	Light grey cemented sand and gravel, dry, strongly cemented and very hard.	
1855		SP	Brown poorly graded sand with gravel, dry to slightly moist, partially cemented and very dense.	

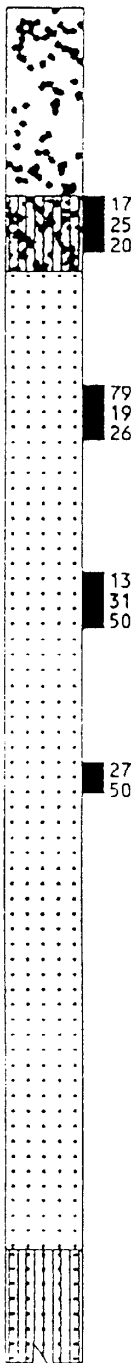
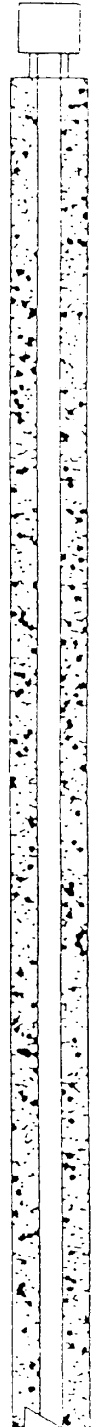


# EXPLORATION LOG A

ELEVATION/ DEPTH	SOIL & SAMPLE SYMBOLS	USCS	DESCRIPTION	WELL CONSTRUCTION
<div style="display: flex; flex-direction: column; align-items: center;"> <div style="margin-bottom: 10px;">85</div> <div style="margin-bottom: 10px;">1805</div> <div style="margin-bottom: 10px;">90</div> <div style="margin-bottom: 10px;">1800</div> <div style="margin-bottom: 10px;">95</div> <div style="margin-bottom: 10px;">1795</div> <div style="margin-bottom: 10px;">100</div> <div style="margin-bottom: 10px;">1790</div> <div style="margin-bottom: 10px;">105</div> <div style="margin-bottom: 10px;">1785</div> <div style="margin-bottom: 10px;">110</div> <div style="margin-bottom: 10px;">1780</div> <div style="margin-bottom: 10px;">115</div> <div style="margin-bottom: 10px;">1775</div> <div style="margin-bottom: 10px;">120</div> <div style="margin-bottom: 10px;">1770</div> <div style="margin-bottom: 10px;">125</div> <div style="margin-bottom: 10px;">1765</div> </div>		<p>GP</p>	<p>Dark brown poorly graded gravel with sand, very moist to wet, partially cemented and dense.</p>  <p>GROUNDWATER ENCOUNTERED ...very few fines, predominantly coarse sand and larger ...more coarse gravel and very dense from 90.0 to 93.0</p>	
			<p>END OF EXPLORATION END OF BORING AT 100 FEET</p>	


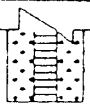
# EXPLORATION LOG B

PROJECT: PEPCON MONITORING WELLS	PROJECT NO.: 96189V2
HOLE LOCATION: SEE SITE PLAN	EXPLORATION DATE: 9-5-97
EXPLORATION SIZE (diameter): 4" MONITORING WELL	EQUIPMENT: MOBILE B-53
G.S. ELEVATION: 1873.04	LOGGED BY: S. JOHNSON
INITIAL DEPTH TO WATER: 71	DATE MEASURED: 9-5-97
FINAL DEPTH TO WATER: 57	DATE MEASURED: 9-11-97

ELEVATION/ DEPTH	SOIL & SAMPLE SYMBOLS	USCS	DESCRIPTION	WELL CONSTRUCTIO
1875 0 1870 5 1865 10 1860 15 1855 20 1850 25 1845 30 1840 35		 GP GP-GM SP SP-SM	 Brown poorly graded gravel with sand and cobbles, slightly moist to moist and dense. Light brown poorly graded gravel with silt and sand, slightly moist to moist and dense. Brown poorly graded sand with fine gravel, moist and dense. ...slightly moist to moist from 9.5 to 17.5 ...dry from 17.5 to 33.0 ...cobble Brown poorly graded sand with silt and gravel, slightly moist and dense.	



# EXPLORATION LOG B

ELEVATION/ DEPTH	SOIL & SAMPLE SYMBOLS	USCS	DESCRIPTION	WELL CONSTRUCTION
1790 85 1785 90 1780 95 1775 100 1770 105 1765 110 1760 115 1755 120 1750 125			END OF BORING AT 83 FEET	



# EXPLORATION LOG C



PROJECT: <u>PEPCON MONITORING WELLS</u>	PROJECT NO.: <u>96189V2</u>
HOLE LOCATION: <u>SEE SITE PLAN</u>	EXPLORATION DATE: <u>9-5&amp;6-97</u>
EXPLORATION SIZE (diameter): <u>4" MONITORING WELL</u>	EQUIPMENT: <u>MOBILE B-53</u>
G.S. ELEVATION: <u>1851.92</u>	LOGGED BY: <u>S. JOHNSON</u>
INITIAL DEPTH TO WATER: <u>59</u>	DATE MEASURED: <u>9-6-97</u>
FINAL DEPTH TO WATER: <u>41</u>	DATE MEASURED: <u>9-15-97</u>

ELEVATION/ DEPTH	SOIL & SAMPLE SYMBOLS	USCS	DESCRIPTION	WELL CONSTRUCTIO
<div style="display: flex; flex-direction: column; align-items: center;"> <div style="margin-bottom: 10px;">1850</div> <div style="margin-bottom: 10px;">5</div> <div style="margin-bottom: 10px;">1845</div> <div style="margin-bottom: 10px;">10</div> <div style="margin-bottom: 10px;">1840</div> <div style="margin-bottom: 10px;">15</div> <div style="margin-bottom: 10px;">1835</div> <div style="margin-bottom: 10px;">20</div> <div style="margin-bottom: 10px;">1830</div> <div style="margin-bottom: 10px;">25</div> <div style="margin-bottom: 10px;">1825</div> <div style="margin-bottom: 10px;">30</div> <div style="margin-bottom: 10px;">1820</div> <div style="margin-bottom: 10px;">35</div> </div>		<p>GP</p> <p>GP-GM</p> <p>SP-SC</p> <p>CL</p>	<p>Brown poorly graded gravel with sand, cobbles and boulders, moist and dense. ...light brown and dry to slightly moist to 12.0</p> <p>...sampler on rock</p> <p>...more fine gravel and sand, no boulders and isolated cobbles to 12.0</p> <p>Light brown poorly graded gravel with silt and sand, dry to slightly moist and dense.</p> <p>Light brown poorly graded sand with clay, slightly moist and dense.</p> <p>Reddish brown lean clay with sand, moist and stiff. ...sandy lean clay with minor gypsum from 19.0 to 31.5</p> <p>...small gravel lense from 31.5 to 32.0</p>	



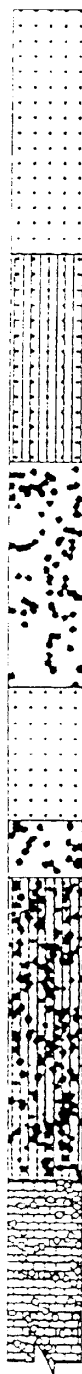



# EXPLORATION LOG D

ELEVATION/ DEPTH	SOIL & SAMPLE SYMBOLS	USCS	DESCRIPTION	WELL CONSTRUCTIO
<div style="text-align: center;">  </div> <div style="display: flex; flex-direction: column; align-items: center;"> <div style="margin-bottom: 10px;">1755</div> <div style="margin-bottom: 10px;">85</div> <div style="margin-bottom: 10px;">1750</div> <div style="margin-bottom: 10px;">90</div> <div style="margin-bottom: 10px;">1745</div> <div style="margin-bottom: 10px;">95</div> <div style="margin-bottom: 10px;">1740</div> <div style="margin-bottom: 10px;">100</div> <div style="margin-bottom: 10px;">1735</div> <div style="margin-bottom: 10px;">105</div> <div style="margin-bottom: 10px;">1730</div> <div style="margin-bottom: 10px;">110</div> <div style="margin-bottom: 10px;">1725</div> <div style="margin-bottom: 10px;">115</div> <div style="margin-bottom: 10px;">1720</div> <div style="margin-bottom: 10px;">120</div> <div style="margin-bottom: 10px;">1715</div> <div style="margin-bottom: 10px;">125</div> </div>			<p>END OF BORING AT 82 FEET</p>	<div style="text-align: center;">  </div>

# EXPLORATION LOG E

PROJECT: PEPCON MONITORING WELLS PROJECT NO.: 96189V2  
 HOLE LOCATION: SEE SITE PLAN EXPLORATION DATE: 8-28-97  
 EXPLORATION SIZE (diameter): 4" MONITORING WELL EQUIPMENT: MOBILE B-53  
 G.S. ELEVATION: 1894.7 LOGGED BY: S. JOHNSON  
 INITIAL DEPTH TO WATER: 87 DATE MEASURED: 8-28-97  
 FINAL DEPTH TO WATER: 74 DATE MEASURED: 9-11-97

ELEVATION / SOIL & SAMPLE DEPTH / SYMBOLS	USCS	DESCRIPTION	WELL CONSTRUCTION
			
1895 — 0	SP	Brown poorly graded sand with gravel, slightly moist and dense.  ...slightly moist to moist from 4.0 to 6.5	
1890 — 5	SP-SM	Brown poorly graded sand with silt and fine gravel, slightly moist to moist and dense.	
1885 — 10	GP	Brown poorly graded gravel with sand, slightly moist to moist and dense. Stratified with sandy layers.  ...boulder	
1880 — 15	SP	Brown poorly graded sand with gravel, slightly moist to moist and dense.	
1875 — 20	GP	Brown poorly graded gravel, with sand, slightly moist to moist and dense to very dense.	
1870 — 25	GP-GM	Brown poorly graded fine gravel with silt and sand, slightly moist to moist and dense to very dense.  ...very dense from 27.5 to 31.0  ...partially cemented from 29.0 to 31.0	
1865 — 30	C/G	Greyish brown cemented sand and gravel, dry, cemented and hard.	
1860 — 35			

# EXPLORATION LOG E











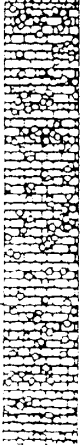
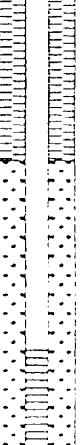

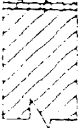

ELEVATION/DEPTH	SOIL & SAMPLE SYMBOLS	USCS	DESCRIPTION	WELL CONSTRUCTIO
1855 40  1850 45  1845 50  1840 55  1835 60  1830 65  1825 70  1820 75  1815 80				
		GP	Greyish brown poorly graded gravel with sand, dry, partially cemented and medium hard.	
		SP	Dark brown poorly graded sand with gravel, slightly moist, partially cemented and very dense. Stratified sandy and gravelly levels.	
		C/G	Greyish brown cemented sand and gravel, dry, cemented and hard to very hard.	
		GP	Greyish brown poorly graded gravel with sand, dry to slightly moist, partially cemented and dense.	
		C/G	Greyish brown cemented sand and gravel, dry to slightly moist, cemented and hard to very hard.	
			...dark brown and slightly moist from 78.0 to 87.0 ...moderately cemented and medium hard from 79.0 to 87.0	



# EXPLORATION LOG F

PROJECT: PEPCON MONITORING WELLS PROJECT NO.: 96189V2  
 HOLE LOCATION: SEE SITE PLAN EXPLORATION DATE: 9-6-97  
 EXPLORATION SIZE (diameter): 4" MONITORING WELL EQUIPMENT: MOBILE B-53  
 G.S. ELEVATION: 1783.71 LOGGED BY: S. JOHNSON

INITIAL DEPTH TO WATER: 43 DATE MEASURED: 9-6-97  
 FINAL DEPTH TO WATER: 29 DATE MEASURED: 9-11-97

ELEVATION: DEPTH	SOIL & SAMPLE SYMBOLS	USCS	DESCRIPTION	WELL CONSTRUCTIC
1785		F	Brown poorly graded gravel with sand, cobbles and boulders, slightly moist and dense. ...light brown and dry to slightly moist to 4.0	
1780	 50	GP-GM	Light brown poorly graded gravel with silt, sand and cobbles, dry to slightly moist and dense to very dense. ...boulder	
1775	 50	GP-GM	Light brown poorly graded gravel with silt, sand and cobbles, dry to slightly moist and dense to very dense. ...boulder	
1770		C/G	Dark brown cemented sand and gravel, cemented and hard to very hard.	
1765		GP-GM	Dark brown poorly graded gravel with sand, cobbles and boulders, dry to slightly moist and dense to very dense.	
1760		C/G	Dark brown cemented sand and gravel, dry and hard. Isolated boulders.	
1755				
1750		CL	Reddish brown sandy lean clay with gravel, moist and stiff.	





# KEY TO SYMBOLS

Symbol Description

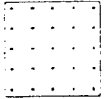
## Strata symbols



Poorly graded gravel  
with silt



Strongly cemented sand and gravel



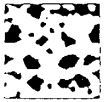
Poorly graded sand



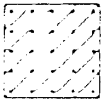
Poorly graded gravel



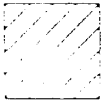
Poorly graded sand  
with silt



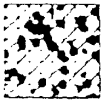
Well graded gravel



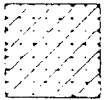
Poorly graded sand  
with clay



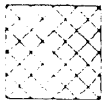
Low plasticity  
clay



Poorly graded gravel  
with clay

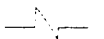


Clayey sand



Fill

## Misc. Symbols



Boring continues

# KEY TO SYMBOLS

Symbol Description



Final water level at date indicated



Initial water level at date indicated

## Soil Samplers



Standard penetration test



No recovery



Bulk sample

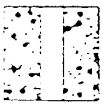


California sampler

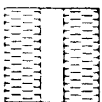
## Monitor Well Details



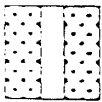
riser with cover  
and protective  
casing



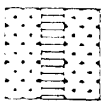
Neat Cement seal



bentonite pellets



silica sand, blank PVC



slotted pipe w/ sand

## KEY TO SYMBOLS

### Notes:

1. Exploratory borings were drilled on date shown using a Mobile B-53 drill rig.
2. California sampler or Standard Penetration Test sampler driven with 140 pound hammer falling 30 inches as noted.
3. Boring locations and elevations were determined by an E.S.I. survey crew.
4. Four-inch diameter PVC monitoring wells with .020 inch slotted screen sections set at depths noted in exploration logs.
5. These logs are subject to the limitations, conclusions, and recommendations in this report.
6. Results of tests conducted on samples recovered are reported on the logs and attached plates/figures.

FIGURE No. 8

# EXPLORATION LOG G

# CONFIDENTIAL

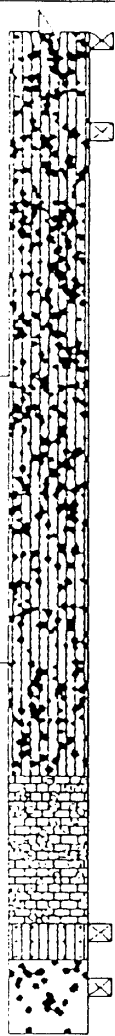
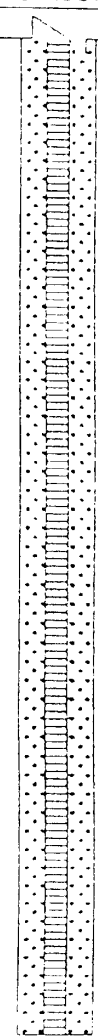
PROJECT: FORMER PEPCON FACILITY PROJECT NO.: 96189V2  
 HOLE LOCATION: SEE SITE PLAN EXPLORATION DATE: 12/1/97  
 EXPLORATION SIZE (diameter): 2" MONITORING WELL EQUIPMENT: MOBILE B-53  
 G.S. ELEVATION: EGS LOGGED BY: S. ORNDORFF  
 INITIAL DEPTH TO WATER: 100.0 DATE MEASURED: 12/2/97  
 FINAL DEPTH TO WATER: 92.4 DATE MEASURED: 12/4/97

DEPTH (FEET)	SOIL & SAMPLE SYMBOLS	USCS	DESCRIPTION	WELL CONSTRUCTION
100.0		F	Pale yellow brown silty gravel with sand, cobbles and boulders, dry and very dense. Calcium carbonate rinds on gravel. ...light brown to 10.5 and dry to slightly moist to 5.0  ...gravel with sand, cobbles and boulders to 6.5, dry to 10.5  ...poorly graded gravel with sand to 9.5  ...with silt to 9.5 ...silty gravel with sand to 10.5	
92.4		GP-GM	Pale brown poorly graded gravel with silt and sand, dry and very dense.	
		SP-SM	Light reddish brown poorly graded sand with silt and gravel, dry to slightly moist and very dense.	
		GP-GM	Light reddish brown poorly graded fine gravel with silt and sand, dry to slightly moist and very dense.	
		SP-SM	Light reddish brown poorly graded sand with silt and gravel, dry to slightly moist and very dense.	
		GP-GM	Light reddish brown poorly graded gravel with silt and sand, dry to slightly moist and very dense.	
		SP-SM	Light reddish brown poorly graded coarse sand with silt and gravel, dry to slightly moist and very dense.	
		GP-GM	Reddish brown poorly graded gravel with silt and sand, dry to slightly moist and very dense.	
		C/G	Reddish brown cemented sand and gravel, dry to slightly moist, cemented and moderately hard to hard. ...% gravel > % sand  ...% sand > % gravel  ...% gravel > % sand	
		SP-SM	Reddish brown poorly graded coarse sand with silt and gravel, dry, partially cemented and very dense. ...boulder	



# EXPLORATION LOG G

CONFIDENTIAL

ELEVATION-DEPTH	SOIL & SAMPLE SYMBOLS	USCS	DESCRIPTION	WELL CONSTRUCTION
<div style="display: flex; flex-direction: column; align-items: center;"> <div style="margin-bottom: 10px;">--85</div> <div style="margin-bottom: 10px;">--90</div> <div style="margin-bottom: 10px;">--95</div> <div style="margin-bottom: 10px;">--100</div> <div style="margin-bottom: 10px;">--105</div> <div style="margin-bottom: 10px;">--110</div> <div style="margin-bottom: 10px;">--115</div> <div style="margin-bottom: 10px;">--120</div> <div style="margin-bottom: 10px;">--125</div> </div>			<p>...moist (sandstone, gravel pieces moist inside)</p> <p>...cobbles and slightly moist to moist to 103.0</p> <p>GROUNDWATER ENCOUNTERED</p> <p>C/G Reddish brown cemented sand and gravel with cobbles, wet, moderately cemented and medium hard.</p> <p>SP-SM Medium brown poorly graded sand with silt and gravel, wet and very dense.</p> <p>GP Reddish brown poorly graded gravel with sand, wet and very dense. High flow groundwater.</p> <p style="text-align: center;">END OF BORING AT 110 FEET</p>	




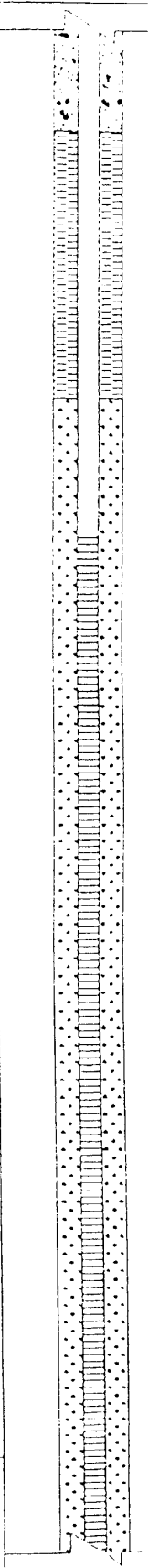







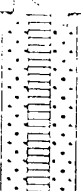
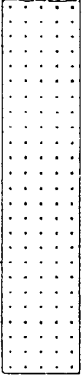
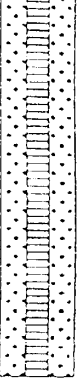


# EXPLORATION LOG H

CONFIDENTIAL

ELEVATION DEPTH	SOIL & SAMPLE SYMBOLS	USCS	DESCRIPTION	WELL CONSTRUCTION
<div style="display: flex; flex-direction: column; align-items: center;"> <div style="margin-bottom: 10px;">130</div> <div style="margin-bottom: 10px;">135</div> <div style="margin-bottom: 10px;">140</div> <div style="margin-bottom: 10px;">145</div> <div style="margin-bottom: 10px;">150</div> <div style="margin-bottom: 10px;">155</div> <div style="margin-bottom: 10px;">160</div> <div style="margin-bottom: 10px;">165</div> <div style="margin-bottom: 10px;">170</div> </div>		<div style="margin-bottom: 100px;"></div> <div style="margin-bottom: 100px;">SM</div> <div>GP-GM</div>	<div style="margin-bottom: 100px;">                     ...rhyolite gravel with calcium carbonate rinds to 150.0                 </div> <div style="margin-bottom: 100px;">                     Reddish brown silty coarse-grained sand, dry, partially cemented and medium dense.                 </div> <div>                     ...slightly moist to 170.0                       Reddish brown poorly graded gravel with silt and sand, moist to very moist and medium dense.                 </div>	

# EXPLORATION LOG H

CONFIDENTIAL

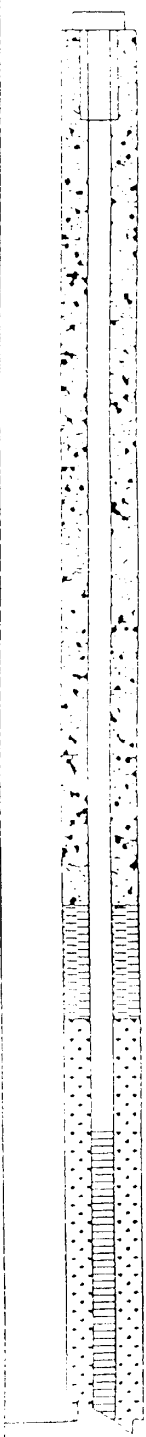
ELEVATION DEPTH	SOIL & SAMPLE SYMBOLS	USCS	DESCRIPTION	WELL CONSTRUCTION
<div style="text-align: center;">  </div>			<p>...cobbles to 178.0</p>	<div style="text-align: center;">  </div>
<div style="text-align: center;">  </div>	<p>SP</p>	<p>Reddish brown poorly graded sand with gravel, very moist and medium dense.</p>	<p>GROUNDWATER ENCOUNTERED</p>	<div style="text-align: center;">  </div>
<div style="text-align: center;">  </div>			<p style="text-align: center;">END OF BORING AT 188 FEET</p>	<div style="text-align: center;">  </div>
<div style="text-align: center;">  </div>				<div style="text-align: center;">  </div>

# EXPLORATION LOG

# CONFIDENTIAL


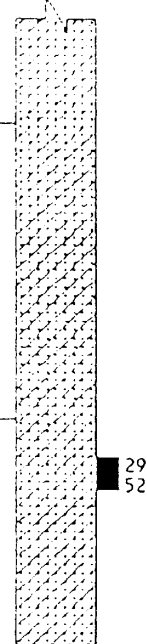

PROJECT: FORMER PEPCON FACILITY PROJECT NO.: 96189V2  
 SITE LOCATION: SEE SITE PLAN EXPLORATION DATE: 11/18/97  
 EXPLORATION SIZE (diameter): 4" MONITORING WELL EQUIPMENT: MOBILE B-53  
 G.S. ELEVATION: EGS LOGGED BY: S. JOHNSON

INITIAL DEPTH TO WATER: 49.0 DATE MEASURED: 11/19/97  
 FINAL DEPTH TO WATER: 41.0 DATE MEASURED: 12/3/97

DEPTH	SOIL & SAMPLE SYMBOLS	USCS	DESCRIPTION	WELL CONSTRUCTION
0		F	Asphalt and subgrade material, dark brown well graded sand with gravel, slightly moist and dense.	
-5		SP	Brown poorly graded sand with isolated gravel, dense to very dense.	
-10	X	GW	Brown well graded gravel with sand and cobbles, slightly moist and dense to very dense.	
-15	35 35	SW-SC	Brown well graded sand with clay and gravel, slightly moist to moist and dense to very dense. Hard clay nodules.	
-20			...stratified, light brown hard clayey layers and reddish brown sandy layers to 31.0	
-25			...more gravel to 40.0	
-30				
-35				

# EXPLORATION LOG

CONFIDENTIAL

ELEVATION / DEPTH	SOIL & SAMPLE SYMBOLS	USCS	DESCRIPTION	WELL CONSTRUCTION
<div style="display: flex; flex-direction: column; align-items: center;"> <div style="margin-bottom: 10px;">-40</div>  <div style="margin-bottom: 10px;">-45</div> <div style="margin-bottom: 10px;">-50</div> <div style="margin-bottom: 10px;">-55</div> <div style="margin-bottom: 10px;">-60</div> <div style="margin-bottom: 10px;">-65</div> <div style="margin-bottom: 10px;">-70</div> <div style="margin-bottom: 10px;">-75</div> <div style="margin-bottom: 10px;">-80</div> <div style="margin-bottom: 10px;">-85</div> <div style="margin-bottom: 10px;">-90</div> <div style="margin-bottom: 10px;">-95</div> <div style="margin-bottom: 10px;">-100</div> <div style="margin-bottom: 10px;">-105</div> <div style="margin-bottom: 10px;">-110</div> <div style="margin-bottom: 10px;">-115</div> <div style="margin-bottom: 10px;">-120</div> <div style="margin-bottom: 10px;">-125</div> <div style="margin-bottom: 10px;">-130</div> <div style="margin-bottom: 10px;">-135</div> <div style="margin-bottom: 10px;">-140</div> <div style="margin-bottom: 10px;">-145</div> <div style="margin-bottom: 10px;">-150</div> <div style="margin-bottom: 10px;">-155</div> <div style="margin-bottom: 10px;">-160</div> <div style="margin-bottom: 10px;">-165</div> <div style="margin-bottom: 10px;">-170</div> <div style="margin-bottom: 10px;">-175</div> <div style="margin-bottom: 10px;">-180</div> <div style="margin-bottom: 10px;">-185</div> <div style="margin-bottom: 10px;">-190</div> <div style="margin-bottom: 10px;">-195</div> <div style="margin-bottom: 10px;">-200</div> <div style="margin-bottom: 10px;">-205</div> <div style="margin-bottom: 10px;">-210</div> <div style="margin-bottom: 10px;">-215</div> <div style="margin-bottom: 10px;">-220</div> <div style="margin-bottom: 10px;">-225</div> <div style="margin-bottom: 10px;">-230</div> <div style="margin-bottom: 10px;">-235</div> <div style="margin-bottom: 10px;">-240</div> <div style="margin-bottom: 10px;">-245</div> <div style="margin-bottom: 10px;">-250</div> <div style="margin-bottom: 10px;">-255</div> <div style="margin-bottom: 10px;">-260</div> <div style="margin-bottom: 10px;">-265</div> <div style="margin-bottom: 10px;">-270</div> <div style="margin-bottom: 10px;">-275</div> <div style="margin-bottom: 10px;">-280</div> <div style="margin-bottom: 10px;">-285</div> <div style="margin-bottom: 10px;">-290</div> <div style="margin-bottom: 10px;">-295</div> <div style="margin-bottom: 10px;">-300</div> </div>			<p>Static Groundwater Level</p> <p>...dark brown and slightly moist to moist to 49.0</p> <p>GROUNDWATER ENCOUNTERED ...light brown, more gravel and wet to 55.0</p> <p style="text-align: center;">END OF BORING AT 55 FEET</p>	



# EXPLORATION LOG K

# CONFIDENTIAL

PROJECT: FORMER PEPCON FACILITY PROJECT NO.: 96189V2  
 HOLE LOCATION: SEE SITE PLAN EXPLORATION DATE: 11/22/97  
 EXPLORATION SIZE (diameter): 2" MONITORING WELL EQUIPMENT: MOBILE B-53  
 G.S. ELEVATION: EGS LOGGED BY: S. ADAMS-LOWE

INITIAL DEPTH TO WATER: 21.0 DATE MEASURED: 11/22/97  
 FINAL DEPTH TO WATER: 20.6 DATE MEASURED: 12/4/97

DEPTH	SOIL & SAMPLE SYMBOLS	USCS	DESCRIPTION	WELL CONSTRUCTION
0 5 10 15 20 25 30 35		SM GM  GW SM GW SM C/G  CL-ML  SC	Light brown silty medium-grained sand with gravel, dry and medium dense. Light brown silty gravel with sand and cobbles, dry to slightly moist and medium dense. Massive, basalt gravel with calcium carbonate rinds and trace mica. Brown well graded gravel, slightly moist and medium dense. Brown silty medium to coarse-grained sand, slightly moist and medium dense. Massive, with trace mica. Brown well graded gravel with cobbles, dry to slightly moist and dense. Gray silty coarse grained sand with fine gravel, dry to slightly moist and dense. Brown cemented sand and gravel, dry to slightly moist, cemented and hard. ...more sand and silt to 21.0 Light yellowish red silty clay with some cemented gravel, very moist and stiff. Trace mica. Light yellowish red clayey sand, wet and dense.	
			END OF BORING AT 30 FEET	



# EXPLORATION LOG

L

CONFIDENTIAL

PROJECT: FORMER PEPCON FACILITY	PROJECT NO.: 96189V2
HOLE LOCATION: SEE SITE PLAN	EXPLORATION DATE: 11/20/97
EXPLORATION SIZE (diameter): 2" MONITORING WELL	EQUIPMENT: MOBILE B-53
G.S. ELEVATION: EGS	LOGGED BY: S. JOHNSON


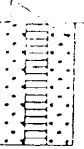
INITIAL DEPTH TO WATER: 80.0	DATE MEASURED: 11/20/97
FINAL DEPTH TO WATER: 59.0	DATE MEASURED: 12/2/97

ELEVATION / SOIL & SAMPLE DEPTH	SOIL & SAMPLE SYMBOLS	USCS	DESCRIPTION	WELL CONSTRUCTION
0	[Cross-hatch symbol]	F	Asphalt and roadbed material, light brown poorly graded sand with silt and gravel, dry and dense.	[Well casing symbol]
-5	[Dotted symbol]	GP	Light brown poorly graded gravel with sand, cobbles and boulders, dry and dense to very dense. ...boulder to 5.0	[Well casing symbol]
-10	[Dotted symbol]		...boulder to 9.0	[Well casing symbol]
-15	[Dotted symbol]		...boulder to 15.0	[Well casing symbol]
-20	[Dotted symbol]		...more sand, fewer cobbles and boulders to 26.0	[Well casing symbol]
-25	[Dotted symbol]			[Well casing symbol]
-30	[Diagonal lines symbol]	SP-SC	Reddish brown poorly graded sand with clay and isolated gravel, slightly moist to moist and dense. Possible mineralization and minor gypsum content.	[Well casing symbol]
-35	[Diagonal lines symbol]			[Well casing symbol]
-40	[Dotted symbol]	SW	Brown well graded sand with gravel, slightly moist to moist, partially cemented and dense.	[Well casing symbol]
-45	[Dotted symbol]			[Well casing symbol]
-50	[Dotted symbol]			[Well casing symbol]



# EXPLORATION LOG L

CONFIDENTIAL

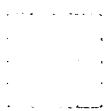
DEPTH FEET	SOIL & SAMPLE SYMBOLS	USCS	DESCRIPTION	WELL CONSTRUCTION
<div style="display: flex; flex-direction: column; align-items: center;"> <div style="margin-bottom: 10px;">— 85</div> <div style="margin-bottom: 10px;">— 90</div> <div style="margin-bottom: 10px;">— 95</div> <div style="margin-bottom: 10px;">— 100</div> <div style="margin-bottom: 10px;">— 105</div> <div style="margin-bottom: 10px;">— 110</div> <div style="margin-bottom: 10px;">— 115</div> <div style="margin-bottom: 10px;">— 120</div> <div style="margin-bottom: 10px;">— 125</div> </div>			<p style="margin-top: 100px;">END OF BORING AT 86.5 FEET</p>	

# KEY TO SYMBOLS

Symbol Description

Symbol Description

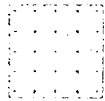
Soil symbols



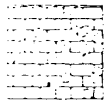
Fill



Poorly graded gravel with silt



Poorly graded sand with silt



Strongly cemented sand and gravel



Poorly graded gravel



Silty gravel



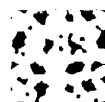
Silty sand



Silt



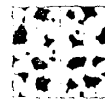
Poorly graded sand



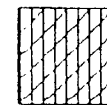
Well graded gravel



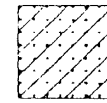
Well graded sand with clay



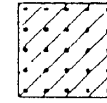
Well graded gravel with silt



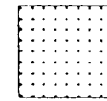
Silty low plasticity clay



Clayey sand



Poorly graded sand with clay



Well graded sand


Misc. Symbols




Boring continues


# KEY TO SYMBOLS


Symbol Description


 Final water level at date indicated

 Initial water level at date indicated

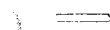
## Soil Samplers


 Bulk sample

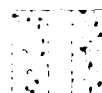
 California sampler

 No recovery


## Monitor Well Details


 flush-mount  
cover

 protective casing  
set in concrete

 Neat Cement seal

 bentonite pellets

 silica sand, blank PVC

 slotted pipe w/ sand

## KEY TO SYMBOLS

Notes:

1. Exploratory borings were drilled on date shown using a Mobile B-53 drill rig.
2. California sampler or Standard Penetration Test sampler driven with 140 pound hammer falling 30 inches as noted.
3. Spring locations shown on site plan estimated by pacing from existing features.
4. Two-inch diameter PVC monitoring wells with .020 inch slotted screen sections set at depths noted in exploration logs.
5. These logs are subject to the limitations, conclusions, and recommendations in this report.
6. Results of tests conducted on samples recovered are reported in the logs and attached plates/figures.

FIGURE No. 8

# EXPLORATION LOG N

# CONFIDENTIAL



SUBJECT: FORMER PEPCON FACILITY  
 HOLE LOCATION: SEE SITE PLAN  
 PROJECT NO.: 97664V1  
 EXPLORATION DATE: 12.22.97  
 EXPLORATION SIZE (diameter): 2" MONITORING WELL  
 EQUIPMENT: MOBILE B-53  
 G.S. ELEVATION: 1649.24  
 LOGGED BY: S. JOHNSON

INITIAL DEPTH TO WATER: 29.5  
 DATE MEASURED: 12/22/97  
 FINAL DEPTH TO WATER: 28.17  
 DATE MEASURED: 12/29/97

DEPTH (ft)	SOIL & SAMPLE SYMBOLS	USCS	DESCRIPTION	WELL CONSTRUCTION
		F	Asphalt and roadbed aggregate.	
		GP-GM	Brown poorly graded gravel with silt and sand, slightly moist and dense. Gravel subrounded to subangular, mostly basalt. ...more fine gravel and sand to 2.5 ...more coarse gravel to 5.0 (some rhyolite gravel)	
		C/G	Brown cemented sand and gravel, dry to slightly moist, moderately cemented and medium hard to hard.	
		SP-SM	Light brown poorly graded sand with silt and fine gravel, dry to slightly moist and dense.	
		GP-GM	Light brown poorly graded gravel with silt and sand, dry to slightly moist, partially cemented and dense. ...cobble	
		C/G	Light brown cemented sand and gravel, dry, cemented and medium hard to hard.	
		SP	Dark brown poorly graded sand with fine gravel, dry to slightly moist and dense.	
		C/G	Pale brown cemented sand and gravel, dry to slightly moist, moderately cemented and medium hard. Calcium carbonate rinds and some limestone clasts.	
		CL	GROUNDWATER ENCOUNTERED ... Dark brown sandy lean clay, wet and stiff	
		C/G	Dark brown cemented sand and gravel, wet, cemented and hard.  ...strongly cemented and very hard to 35.5 ...weakly cemented and medium hard to 36.0 strongly cemented and very hard to 37.0	
		CL	Reddish brown lean clay with sand, wet and stiff to very stiff.	

# EXPLORATION LOG N

CONFIDENTIAL

DEPTH	SOIL & SAMPLE SYMBOLS	USCS	DESCRIPTION	WELL CONSTRUCTION
1610 1605 1600 1595 1590 1585 1580 1575 1570			END OF BORING AT 40 FEET	



# EXPLORATION LOG

0

CONFIDENTIAL

PROJECT: FORMER PEPCON FACILITY	PROJECT NO.: 97664V1
HOLE LOCATION: SEE SITE PLAN	EXPLORATION DATE: 12/22/97
EXPLORATION SIZE (diameter): 2" MONITORING WELL	EQUIPMENT: MOBILE B-53
G.S. ELEVATION: 1643.82	LOGGED BY: S. JOHNSON
INITIAL DEPTH TO WATER: 27.0	DATE MEASURED: 12/22/97
FINAL DEPTH TO WATER: 27.32	DATE MEASURED: 12/29/97

ELEVATION (FEET)	SOIL & SAMPLE SYMBOLS	USCS	DESCRIPTION	WELL CONSTRUCTION
		F	Asphalt and roadbed aggregate.	
		SP-SM	Dark brown poorly graded sand with silt and gravel, slightly moist to moist and dense. Gravel subrounded to subangular, mostly basalt.  ...more gravel to 5.0	
		GW	Dark brown well graded gravel with sand, slightly moist and dense to very dense.	
		C/G	Dark brown cemented sand and gravel, dry, cemented and hard. ...cobble	
		GP	Dark brown poorly graded gravel with sand, dry to slightly moist and dense.  ...more sand to 20.5	
		C/G	Dark brown cemented sand and gravel, dry, cemented and hard.	
		GP	Dark brown poorly graded gravel with sand, slightly moist and dense. Fine to medium grained gravel.	
		C/G	Dark brown cemented sand and gravel, moist, moderately cemented and medium hard. Mostly fine gravel and well-graded sand.	
		SW-SC	GROUNDWATER ENCOUNTERED ... Dark brown well graded sand with clay, wet and dense.	
		C/G	Dark brown cemented sand and gravel, wet, moderately cemented and medium hard to hard.	
		CL	Dark brown sandy lean clay with gravel, wet and stiff to very stiff.	
		C/G	Dark brown cemented sand and gravel, wet, cemented and hard.	



# EXPLORATION LOG P

CONFIDENTIAL

PROJECT: FORMER PEPCON FACILITY  
 HOLE LOCATION: SEE SITE PLAN  
 EXPLORATION SIZE (diameter): 2" MONITORING WELL  
 ELEVATION: 1640.87


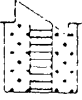
PROJECT NO.: 97664V1  
 EXPLORATION DATE: 12/22/97  
 EQUIPMENT: MOBILE B-61  
 LOGGED BY: S. JOHNSON

INITIAL DEPTH TO WATER: 29.5      DATE MEASURED: 12/22/97  
 FINAL DEPTH TO WATER: 26.67      DATE MEASURED: 12/29/97

ELEVATION (FEET)	SOIL & SAMPLE SYMBOLS	USCS	DESCRIPTION	WELL CONSTRUCTION
1640.87	[Cross-hatch pattern]	F	Asphalt and roadbed aggregate.	
1635	[Vertical lines pattern]	SM	Brown silty sand, slightly moist and dense. Fines are slightly plastic. Gravel subrounded to subangular, mostly basalt.  ...more gravel to 5.0	
1630	[Vertical lines pattern]	GP-GM	Dark brown poorly graded gravel with silt and sand, slightly moist and dense to very dense.	
1625	[Vertical lines pattern]	C/G	Dark brown cemented sand and gravel, dry, moderately cemented and medium hard to hard.	
1620	[Vertical lines pattern]	GP	Dark brown poorly graded gravel with sand, slightly moist and dense. Coarse gravel.	
1615	[Vertical lines pattern]	C/G	Dark brown cemented sand and gravel, dry to slightly moist, cemented and hard.	
1610	[Vertical lines pattern]	GW	Dark brown well graded gravel with sand, slightly moist and dense.	
1605	[Vertical lines pattern]	GP-GM	Dark brown poorly graded gravel with silt and sand, slightly moist and dense.	
1600	[Vertical lines pattern]	SP-SM	Dark brown poorly graded sand with silt and gravel, slightly moist to moist and dense.	
1595	[Vertical lines pattern]	C/G	Dark brown cemented sand and gravel, moist, cemented and hard.	
1590	[Vertical lines pattern]	CL	GROUNDWATER ENCOUNTERED ... Light brown sandy lean clay, wet and stiff.	
1585	[Vertical lines pattern]	C/G	Light brown cemented sand and gravel, wet, cemented and hard.	

# EXPLORATION LOG P

CONFIDENTIAL

ELEVATION DEPTH	SOIL & SAMPLE SYMBOLS	USCS	DESCRIPTION	WELL CONSTRUCTION
<div style="display: flex; flex-direction: column; align-items: center;"> <div style="margin-bottom: 10px;">40</div> <div style="margin-bottom: 10px;">1590</div> <div style="margin-bottom: 10px;">45</div> <div style="margin-bottom: 10px;">1595</div> <div style="margin-bottom: 10px;">50</div> <div style="margin-bottom: 10px;">1599</div> <div style="margin-bottom: 10px;">55</div> <div style="margin-bottom: 10px;">1585</div> <div style="margin-bottom: 10px;">60</div> <div style="margin-bottom: 10px;">1580</div> <div style="margin-bottom: 10px;">65</div> <div style="margin-bottom: 10px;">1575</div> <div style="margin-bottom: 10px;">70</div> <div style="margin-bottom: 10px;">1570</div> <div style="margin-bottom: 10px;">75</div> <div style="margin-bottom: 10px;">1565</div> <div style="margin-bottom: 10px;">80</div> <div style="margin-bottom: 10px;">1560</div> </div>		SC	Light brown clayey sand, wet and medium dense.  END OF BORING AT 40 FEET	

# EXPLORATION LOG Q

CONFIDENTIAL

PROJECT: FORMER PEPCON FACILITY PROJECT NO.: 97664V1  
 HOLE LOCATION: SEE SITE PLAN EXPLORATION DATE: 12/23/97  
 EXPLORATION SIZE (diameter): 2" MONITORING WELL EQUIPMENT: MOBILE B-53  
 G.S. ELEVATION: 1633.46 LOGGED BY: S. JOHNSON

INITIAL DEPTH TO WATER: 36.0 DATE MEASURED: 12/31/97  
 FINAL DEPTH TO WATER: 31.45 DATE MEASURED: 12/31/97

DEPTH (ft)	SOIL & SAMPLE SYMBOLS	USCS	DESCRIPTION	WELL CONSTRUCTION
0 - 1		GP-GM	Pale brown poorly graded gravel with silt and sand, dry and medium dense to dense.	
1 - 5		SW-SM	Brown well graded sand with silt and gravel, slightly moist to moist and dense.	
5 - 10		GP	Brown poorly graded gravel with sand, slightly moist to moist and dense. Minor silt/clay content, basalt gravel.	
10 - 15		C/G	Brown cemented sand and gravel, dry, cemented and hard.	
15 - 20		C	Pale brown caliche, dry, strongly cemented and very hard. ...white to 16.0	
20 - 25		SC	Brown clayey sand, slightly moist to moist and dense.	
25 - 36.0		CL	Pale brown sandy lean clay with nodules, moist and stiff to very stiff. ...white to 32.0  ...dry to slightly moist with gravel and dry hard clay nodules to 32.0  ...moist with no nodules or gravel to 36.0	
36.0		SC	GROUNDWATER ENCOUNTERED ... Reddish brown clayey sand, wet and stiff.	



# EXPLORATION LOG R

CONFIDENTIAL

PROJECT: FORMER PEPCON FACILITY

PROJECT NO.: 97664V1

HOLE LOCATION: SEE SITE PLAN

EXPLORATION DATE: 12/23/97

EXPLORATION SIZE (diameter): 2" MONITORING WELL

EQUIPMENT: MOBILE B-61

ASS. ELEVATION: 1667.7

LOGGED BY: S. JOHNSON

INITIAL DEPTH TO WATER: 31.0

DATE MEASURED: 12/23/97

FINAL DEPTH TO WATER: 21.40

DATE MEASURED: 12/30/97

ELEVATION (FEET)	SOIL & SAMPLE SYMBOLS	USCS	DESCRIPTION	WELL CONSTRUCTION
1670		SW	Pale brown well graded sand with gravel, dry and dense. Basalt gravel. ...brown, slightly moist to moist to 2.0	
1667		SP-SM	Brown poorly graded sand with silt and fine gravel, slightly moist and dense.	
1662		GP	Brown poorly graded gravel with sand, slightly moist and dense. Basalt and rhyolite gravel, subrounded to subangular. ...more fine gravel and sand, dark brown and slightly moist to moist to 16.0	
1652		C/G	Dark brown cemented sand and gravel, slightly moist, cemented and hard. Sand with fine gravel. ...light grayish brown, dry to slightly moist and strongly cemented and hard to very hard to 22.0 ...more medium gravel to 20.0 ...more fine gravel and sand, plastic fines to 22.0	
1645		CL	Light brown sandy lean clay, moist and stiff ...very moist, soft to firm to 24.0 ...moist and stiff to very stiff to 31.0	
1635		SP-SC	GROUNDWATER ENCOUNTERED ... Light greenish brown poorly graded sand with clay, wet and loose to medium dense.	
1635		CL	Light green sandy lean clay, very moist to wet and firm	
1635		SP-SC	Reddish brown poorly graded sand with clay, very moist and stiff to very stiff.	
			END OF BORING AT 35.99 FEET	

# KEY TO SYMBOLS

CONFIDENTIAL

Symbol      Description

Symbol      Description

Strata symbols



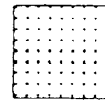
Fill



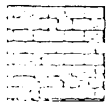
Caliche



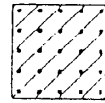
Poorly graded gravel  
with silt



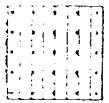
Well graded sand



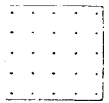
Strongly cemented sand and gravel



Poorly graded sand  
with clay



Poorly graded sand  
with silt



Poorly graded sand



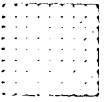
Low plasticity  
clay



Well graded gravel



Poorly graded gravel



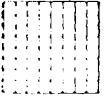
Well graded sand with clay



Silty sand



Clayey sand






Well graded sand with silt






# KEY TO SYMBOLS

Symbol Description


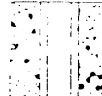
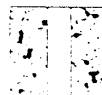

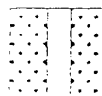
## Misc. Symbols

-  Final water level at date indicated
-  Initial water level at date indicated
-  Boring continues

## Soil Samplers

-  Bulk sample
-  California sampler
-  No recovery

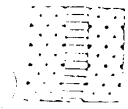
## Monitor Well Details

-  flush-mount cover
-  protective casing set in concrete
-  Neat Cement seal
-  bentonite pellets
-  silica sand, blank PVC

# KEY TO SYMBOLS

CONFIDENTIAL

Symbol Description



slotted pipe w/ sand

## Notes:

1. Exploratory borings were drilled on date shown using a Mobile B-61 drill rig.
2. California sampler or Standard Penetration Test sampler driven with 140 pound hammer falling 30 inches as noted.
3. Boring locations shown on site plan estimated by pacing from existing features.
4. Two-inch diameter PVC monitoring wells with .020 inch slotted screen sections set at depths noted in exploration logs.
5. These logs are subject to the limitations, conclusions, and recommendations in this report.
6. Results of tests conducted on samples recovered are reported on the logs and attached plates/figures.

FIGURE No. 7

**VOLUME I**

**DRAFT  
PHASE II ENVIRONMENTAL  
CONDITIONS INVESTIGATION  
REPORT  
FORMER MONTROSE FACILITY  
HENDERSON, NEVADA**

Submitted by  
**SECOR International Incorporated**  
1830 West University Drive, Suite 106  
Tempe, Arizona 85281

for  
**Montrose Chemical Corporation of California**  
600 Ericksen Avenue, NE, Suite 380  
Bainbridge Island, WA 98110

August 21, 1997

sampling and analysis results, to further address (by drilling and sampling deeper soil borings) various portions of the former Montrose plant site.

## 1.2 SITE LOCATION AND HISTORY

The former Montrose facility is located approximately 13 miles southeast of Las Vegas, Nevada and immediately northwest of the City of Henderson, Nevada. Features of note at the former Montrose facility with respect to the ECI include:

- The former plant site, which includes the following areas:
  - The process sewers;
  - The former chemical production plant;
  - The hydrochloric acid (HCL) truck loading station and "Second Avenue" area;
  - The former "f-storage" tank;
  - The plant perimeter drainage ditch system;
  - The storm water sewer system;
  - The redwood tank;
  - The settling basin; and
  - A former transformer area north of the settling basin.
- The rail car loading area and the former benzene storage tank.
- The still bottoms residue (SBR) area and the former SBR drum storage area.
- The ponds area.
- The former tank farm area.
- The monochlorobenzene (MCB) spill area.
- The demolition debris disposal area.

The locations of these features (with the exception of the demolition debris disposal area, for which the location is not certain) are shown on Figure 1-1 and Figure 1-2. A detailed discussion of former Montrose operations in these areas is presented in the Phase I ECA report.

Organic chemicals produced by Montrose at the facility included:

- MCB;
- polychlorinated benzenes;
- chloral; and
- dichlorobenzil.

In 1975, Montrose began discharging wastewater from the production facility to four wastewater evaporation ponds (Ponds 1 through 4). A fifth pond (Pond 5) was added in 1979 to handle HCL wastes. In 1976, Montrose added a sixth pond (Pond 6) to accept polychlorinated benzene SBRs. All six ponds have been closed in a reportedly dry condition (Ponds 1 through 5 in 1989, and Pond 6 in 1981) according to NDEP-approved closure plans. Several phases of soil and groundwater investigations have been performed in the vicinity of these ponds. The results from these investigations indicate that chemicals from the ponds have impacted groundwater. However, the exact migration pathway of the chemicals to groundwater is not known. The ponds are now closed with an engineered cover that prevents infiltration of storm water, and prevents future chemical movement from the ponds. A joint groundwater remediation program in an area downgradient of the ponds has been performed by Montrose and Pioneer/Stauffer since 1983.

Production of organic chemicals at the facility ceased in 1983 and the production portion of the facility was dismantled in 1983 and 1984. All process areas and approximately one foot of underlying soil were removed at that time and properly disposed off-site. Reportedly, approximately one foot of clean fill soil was placed over the excavated area.

### 1.3 INVESTIGATION OBJECTIVES AND APPROACH

A substantial amount of environmental work has been performed at the former Montrose facility, including:

- Significant investigation of soil and groundwater conditions in the vicinity of the lined wastewater evaporation ponds;
- Closure of the lined wastewater evaporation ponds;
- Demolition of the tank farm and other storage areas;
- Demolition of the plant manufacturing areas, including removal of the top one foot of soil; and
- Construction of a groundwater containment, treatment and infiltration system downgradient from the facility.


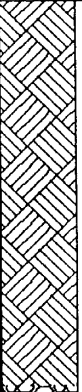


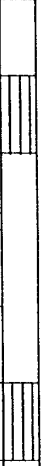
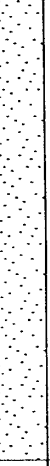
The ECI Workplan required additional activities to be performed at certain study items on the former Montrose facility to: 1) supplement the information provided in the Phase I ECA Report; and 2) to determine if some of these study items may contain residual concentrations that, over time, may represent a potential threat to public health and the environment.

The primary objectives of the ECI are to: 1) satisfy the requirements of the Phase II Consent Agreement; and 2) to collect data of adequate technical quality to support the development and evaluation of potential remedial alternatives at the former Montrose facility, if such an evaluation is deemed necessary.

Based on information presented in the Phase I ECA report, the LOU and the Initial ECI Project Workplan, the ECI for the former Montrose facility focused on activities at the 24 study items, as summarized on Table 1-1. As shown on Table 1-1, activities for certain study items required the review of additional documentation, while activities at other study items required the collection of soil samples. Study items where the review of additional information was the primary task (i.e., no sampling was to be performed) included:

- The SBR residue storage tank area (study item 6);

**APPENDIX C**  
**EDITED BORING LOGS**

Logged By: <b>CAROLE FARR</b>		Date Drilled: <b>12/20/96</b>		Drilling Contractor: <b>WEST HAZMAT</b>		Method/Equipment: <b>HSA CME 75</b>		Boring Number: <b>FBT-1</b>					
See "Legend to Logs" for sampling method, classifications and laboratory test methods		Boring Diam. (in.): <b>4</b>		Ground Elev. (ft.): <b>1792.49</b>		Groundwater Elevation (ft.): 		Total Depth (ft.): <b>6.0</b>		Drive wt. (lbs.): <b>140</b>		Drop Dist. (in.): <b>30</b>	
Well Construction		Depth (ft.)	Sample Type	Blows/6"	Description				PID Reading (ppmV)	Soil pH (S.U.)	Sample Depth (ft.)		
 Bentonite   Sluff				11 17		POORLY GRADED SAND WITH GRAVEL (SP), moderate yellowish brown (10YR5/4), dry, medium grained, medium dense, approx. 20% gravel, subangular				0	7-8	1-2	
				5		32 50/6"	-Very dense, increase gravel				0	8	5-6
					Boring terminated at 6 feet below ground surface (bgs). Backfilled on 12/20/96.								

The substrata descriptions above are generalized representations and based upon visual/manual classification of cuttings and/or samples obtained during drilling. Predominant material types shown on the log may contain different materials and the change from one predominant material type to another could be different than indicated. Descriptions on this log apply only at the specific location at the time of drilling and may not be representative of subsurface conditions at other locations or times.

Project No. **M0071-001-01**


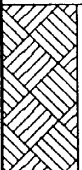

Date

**Log of Boring**

Figure








**1**

(sheet 1 of 1)


Logged By: <b>CAROLE FARR</b>		Date Drilled: <b>12/20/96</b>		Drilling Contractor: <b>WEST HAZMAT</b>		Method/Equipment: <b>HSA CME 75</b>		Boring Number: <b>FBT-2</b>	
See "Legend to Logs" for sampling method, classifications and laboratory test methods		Boring Diam. (in.): <b>4</b>	Ground Elev. (ft.): <b>1793.14</b>	Groundwater Elevation (ft.): 		Total Depth (ft.): <b>6.0</b>	Drive wt. (lbs.): <b>140</b>	Drop Dist. (in.): <b>30</b>	
Well Construction	Depth (ft.)	Sample Type	Blows/6"	Description			PID Reading (ppmV)	Soil pH (S.U.)	Sample Depth (ft.)
 Bentonite   Sluff			11 15	SILTY SAND WITH GRAVEL (SM), pale yellowish brown (10YR6/2), dry, medium grained, 35% silt, medium dense, approx. 10% gravel, subangular			3		1-2
	5		36 50/6"	-Very dense to hard			0		5-6
				Boring terminated at 6 feet below ground surface (bgs). Backfilled on 12/20/96.					

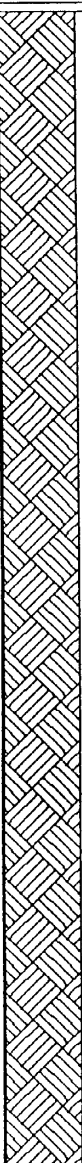
The substrata descriptions above are generalized representations and based upon visual/manual classification of cuttings and/or samples obtained during drilling. Predominant material types shown on the log may contain different materials and the change from one predominant material type to another could be different than indicated. Descriptions on this log apply only at the specific location at the time of drilling and may not be representative of subsurface conditions at other locations or times.





Logged By: <b>CAROLE FARR</b>		Date Drilled: <b>12/18/96</b>		Drilling Contractor: <b>WEST HAZMAT</b>		Method/Equipment: <b>HSA CME 75</b>		Boring Number: <b>FPS-1</b>			
See "Legend to Logs" for sampling method, classifications and laboratory test methods		Boring Diam. (in.): <b>4</b>	Ground Elev. (ft.): <b>1807.16</b>	Groundwater Elevation (ft.): 		Total Depth (ft.): <b>10.0</b>	Drive wt. (lbs.): <b>140</b>	Drop Dist. (in.): <b>30</b>			
Well Construction	Depth (ft.)	Sample Type	Blows/6"	Description				PID Reading (ppmV)	Soil pH (S.U.)	Sample Depth (ft.)	
 Bentonite			> 50/6" > 50/6"		ASPHALT				310	7	0-1
			> 50/6" > 50/6"		POORLY GRADED SAND WITH GRAVEL (SP), moderate brown (5YR4/4), dry, fine to medium grained, very dense, approx. 20% gravel, subangular -Color changes to pale yellowish brown (10YR6/2)				450	11	1-2
	5		31 > 50/6"		-Yellow clumps (dichlorobenzil?)				760	4-5	5-6
 Sluff	10		9 21 32		-No yellow clumps						9-10
Boring terminated at 10 feet below ground surface (bgs). Backfilled on 12/18/96.											

The substrata descriptions above are generalized representations and based upon visual/manual classification of cuttings and/or samples obtained during drilling. Predominant material types shown on the log may contain different materials and the change from one predominant material type to another could be different than indicated. Descriptions on this log apply only at the specific location at the time of drilling and may not be representative of subsurface conditions at other locations or times.

Logged By: <b>Carole Farr</b>	Date Drilled: <b>6/4/97</b>	Drilling Contractor: <b>Weber Drilling</b>	Method/Equipment: <b>HSA Mobile Drill B-61</b>	Boring Number: <b>FPS-1D</b>		
See "Legend to Logs" for sampling method, classifications and laboratory test methods	Boring Diam. (in.): <b>8"</b>	Ground Elev. (ft.): <b>1806.69</b>	Groundwater Elevation (ft.): 	Total Depth (ft.): <b>41.5</b>	Drive wt. (lbs.): <b>140</b>	Drop Dist. (in.): <b>30</b>

Well Construction	Depth (ft.)	Sample Type	Blows/6"	Description	PID Reading (ppm V)	Soil pH (S. U.)	Sample Depth (ft.)
	5			POORLY GRADED SAND (SP) WITH GRAVEL, dry, moderate yellowish brown (10YR5/4), dense, medium grained, approx. 20% gravel -Abundant yellow crystals (dichlorobenzil?)			
	10			-No yellow crystals			
Bentonite/Concrete slurry	15		28 50/5"	-Coarse grained, approx. 30% gravel, trace silt -Color change to pale yellowish brown (10YR6/2)			
	20		8 16 24	-Color change to dark yellowish brown (10YR4/2)	400		4.5
				SILTY SAND WITH GRAVEL (SM), dry, moderate yellowish brown (10YR5/4), medium to fine grained,			

The substrata descriptions above are generalized representations and based upon visual/manual classification of cuttings and/or samples obtained during drilling. Predominant material types shown on the log may contain different materials and the change from one predominant material type to another could be different than indicated. Descriptions on this log apply only at the specific location at the time of drilling and may not be representative of subsurface conditions at other locations or times.

Logged By:		Date Drilled:		Drilling Contractor:		Method/Equipment:		Boring Number:		
Carole Farr		6/4/97		Weber Drilling		HSA Mobile Drill B-61		FPS-1D		
See "Legend to Logs" for sampling method, classifications and laboratory test methods		Boring Diam. (in.): 8"		Ground Elev. (ft.): 1806.69		Groundwater Elevation (ft.): 		Total Depth (ft.): 41.5		
						Drive wt. (lbs.): 140		Drop Dist. (in.): 30		
Well Construction	Depth (ft.)	Sample Type	Blows/6"	Description				PID Reading (ppmV)	Soil pH (S.U.)	Sample Depth (ft.)
	4		4	approx. 20% gravel, dark brown mottling -Color change to grayish orange (10YR7/4), decrease gravel, medium dense to dense				300		7
	7		7							
	22		22							
	30		8							
			24							
			26							
	35		25	SILT, dry, grayish orange (10YR7/4), dense, trace sand -Color change to dark yellowish brown (10YR4/2)						
			37							
			31	-Color change to moderate yellowish brown (10YR5/4)						
			31							
	40		10					780		6
Sluff			24							
			46							
	45			Boring terminated at 41.5 feet. Backfilled on 6/5/97.						

The substrata descriptions above are generalized representations and based upon visual/manual classification of cuttings and/or samples obtained during drilling. Predominant material types shown on the log may contain different materials and the change from one predominant material type to another could be different than indicated. Descriptions on this log apply only at the specific location at the time of drilling and may not be representative of subsurface conditions at other locations or times.

Project No. M0071-001-01

Date

Log of Boring

Figure

4

(sheet 2 of 2)

Logged By: <b>CAROLE FARR</b>		Date Drilled: <b>12/19/96</b>		Drilling Contractor: <b>WEST HAZMAT</b>		Method/Equipment: <b>HSA CME 75</b>		Boring Number: <b>FPS-2</b>					
See "Legend to Logs" for sampling method, classifications and laboratory test methods		Boring Diam. (in.): <b>4</b>		Ground Elev. (ft.): <b>1806.95</b>		Groundwater Elevation (ft.): <b>1806.95</b>		Total Depth (ft.): <b>10.0</b>		Drive wt. (lbs.): <b>140</b>		Drop Dist. (in.): <b>30</b>	
Well Construction	Depth (ft.)	Sample Type	Blows/6"	Description				PID Reading (ppmV)	Soil pH (S.U.)	Sample Depth (ft.)			
Bentonite	0-1		> 50/6"		POORLY GRADED SAND WITH GRAVEL (SP), moderate yellowish brown (10YR5/4), dry, fine to medium grained, very dense, approx. 20% gravel, subangular -Dense				4.8	10	0-1		
			19 25						5.6	9	1-2		
			5						16 20	5.3	8	5-6	
Sluff	10		25 22		Boring terminated at 10 feet below ground surface (bgs). Backfilled on 12/19/96.				5	7	9-10		

The substrata descriptions above are generalized representations and based upon visual/manual classification of cuttings and/or samples obtained during drilling. Predominant material types shown on the log may contain different materials and the change from one predominant material type to another could be different than indicated. Descriptions on this log apply only at the specific location at the time of drilling and may not be representative of subsurface conditions at other locations or times.

Project No. **M0071-001-01**




Date

Log of Boring

Figure

5

(sheet 1 of 1)

Logged By: <b>CAROLE FARR</b>		Date Drilled: <b>12/17/96</b>		Drilling Contractor: <b>WEST HAZMAT</b>		Method/Equipment: <b>HSA CME 75</b>		Boring Number: <b>FPS-3</b>	
See "Legend to Logs" for sampling method, classifications and laboratory test methods		Boring Diam. (in.): <b>4</b>	Ground Elev. (ft.): <b>1807.21</b>	Groundwater Elevation (ft.): 		Total Depth (ft.): <b>10.0</b>	Drive wt. (lbs.): <b>140</b>	Drop Dist. (in.): <b>30</b>	
Well Construction	Depth (ft.)	Sample Type	Blows/6"	Description			PID Reading (ppmV)	Soil pH (S.U.)	Sample Depth (ft.)
 Bentonite			> 50/6" > 50/6"	POORLY GRADED SAND WITH GRAVEL (SP), pale yellowish brown (10YR6/2), dry, fine to medium grained, very dense, approx. 20% gravel, subangular			8		0-1
			12 16	POORLY GRADED GRAVEL WITH SAND (GP), moderate brown (5YR4/4), medium dense to dense, approx. 20% sand			81	5	1-2
 Sluff				-Very dense			140	9	5-6
			5 > 50/6" > 50/6"				20		9-10
	10		> 50/6" > 50/6"	Boring terminated at 10 feet below ground surface (bgs). Backfilled on 12/17/96.					

The substrata descriptions above are generalized representations and based upon visual/manual classification of cuttings and/or samples obtained during drilling. Predominant material types shown on the log may contain different materials and the change from one predominant material type to another could be different than indicated. Descriptions on this log apply only at the specific location at the time of drilling and may not be representative of subsurface conditions at other locations or times.

Project No. **M0071-001-01**


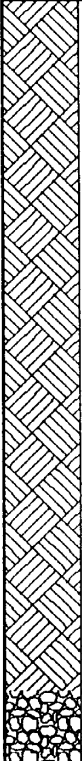



Date

Log of Boring



Figure

6

(sheet 1 of 1)

Logged By: <b>CAROLE FARR</b>		Date Drilled: <b>12/18/96</b>		Drilling Contractor: <b>WEST HAZMAT</b>		Method/Equipment: <b>HSA CME 75</b>		Boring Number: <b>FPS-4</b>		
See "Legend to Logs" for sampling method, classifications and laboratory test methods		Boring Diam. (in.): <b>4</b>	Ground Elev. (ft.): <b>1809.15</b>	Groundwater Elevation (ft.): 		Total Depth (ft.): <b>10.0</b>	Drive wt. (lbs.): <b>140</b>	Drop Dist. (in.): <b>30</b>		
Well Construction	Depth (ft.)	Sample Type	Blows/6"	Description			PID Reading (ppmV)	Soil pH (S.U.)	Sample Depth (ft.)	
 Bentonite			> 50/6"		POORLY GRADED SAND WITH GRAVEL (SP), grayish orange (10YR7/4), dry, fine grained, very dense, approx. 20% gravel, subangular	94	7	0-1		
			> 50/6"					110	7	1-2
			14 19 28							
 Sluff	5		21 50/4"		-Very dense	92	8	5-6		
			21 > 50/6"					95	7	9-10
	10			Boring terminated at 10 feet below ground surface (bgs). Backfilled on 12/18/96.						

The substrata descriptions above are generalized representations and based upon visual/manual classification of cuttings and/or samples obtained during drilling. Predominant material types shown on the log may contain different materials and the change from one predominant material type to another could be different than indicated. Descriptions on this log apply only at the specific location at the time of drilling and may not be representative of subsurface conditions at other locations or times.

Logged By: <b>Carole Farr</b>		Date Drilled: <b>6/4/97</b>		Drilling Contractor: <b>Weber Drilling</b>		Method/Equipment: <b>HSA Mobile Drill B-61</b>		Boring Number: <b>FPS-4D</b>		
See "Legend to Logs" for sampling method, classifications and laboratory test methods		Boring Diam. (in.): <b>8"</b>	Ground Elev. (ft.): <b>1808.46</b>	Groundwater Elevation (ft.): 	Total Depth (ft.): <b>41.5</b>	Drive wt. (lbs.): <b>140</b>	Drop Dist. (in.): <b>30</b>			
Well Construction	Depth (ft.)	Sample Type	Blows/6"	Description				PID Reading (ppmV)	Soil pH (S.U.)	Sample Depth (ft.)
	5			POORLY GRADED SAND WITH GRAVEL (SP), dry, moderate yellowish brown (10YR5/4), dense, medium grained, approx. 20% gravel						
	10			-Color change to dark yellowish orange (10YR6/6)						
Bentonite/Concrete slurry	15		50/5"	-Some silt						
	20		50/5"	-Color change to moderate yellowish brown (10YR5/4)						
				-Increase gravel, trace silt						
<p>The substrata descriptions above are generalized representations and based upon visual/manual classification of cuttings and/or samples obtained during drilling. Predominant material types shown on the log may contain different materials and the change from one predominant material type to another could be different than indicated. Descriptions on this log apply only at the specific location at the time of drilling and may not be representative of subsurface conditions at other locations or times.</p>										

Project No. **M0071-001-01**



Date

### Log of Boring

Figure

8

(sheet 1 of 2)

Logged By: <b>Carole Farr</b>		Date Drilled: <b>6/4/97</b>		Drilling Contractor: <b>Weber Drilling</b>		Method/Equipment: <b>HSA Mobile Drill B-61</b>		Boring Number: <b>FPS-4D</b>		
See "Legend to Logs" for sampling method, classifications and laboratory test methods		Boring Diam.(in.): <b>8"</b>		Ground Elev.(ft.): <b>1808.46</b>		Groundwater Elevation (ft.): 		Total Depth (ft.): <b>41.5</b>		
						Drive wt.(lbs.): <b>140</b>		Drop Dist.(in.): <b>30</b>		
Well Construction	Depth (ft.)	Sample Type	Blows/6"	Description				PID Reading (ppmV)	Soil pH (S.U.)	Sample Depth (ft.)
	30		34 50/5"	-Medium to coarse grained, no silt				270		7-8
			8 21 26							
	35		8 12 26	SILT (ML), dry, grayish orange (10YR7/4), dense, trace sand and gravel						
40		8 14 34	Boring terminated at 41.5 feet. Backfilled on 6/5/97.							
45										
<p>The substrata descriptions above are generalized representations and based upon visual/manual classification of cuttings and/or samples obtained during drilling. Predominant material types shown on the log may contain different materials and the change from one predominant material type to another could be different than indicated. Descriptions on this log apply only at the specific location at the time of drilling and may not be representative of subsurface conditions at other locations or times.</p>										

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Date




### Log of Boring

Figure

**8**

(sheet 2 of 2)



Logged By: <b>CAROLE FARR</b>		Date Drilled: <b>12/18/96</b>		Drilling Contractor: <b>WEST HAZMAT</b>		Method/Equipment: <b>HSA CME 75</b>		Boring Number: <b>FPS-5</b>					
See "Legend to Logs" for sampling method, classifications and laboratory test methods		Boring Diam. (in.): <b>4</b>		Ground Elev. (ft.): <b>1808.80</b>		Groundwater Elevation (ft.): 		Total Depth (ft.): <b>10.0</b>		Drive wt. (lbs.): <b>140</b>		Drop Dist. (in.): <b>30</b>	
Well Construction	Depth (ft.)	Sample Type	Blows/6"	Description				PID Reading (ppmV)	Soil pH (S.U.)	Sample Depth (ft.)			
 Bentonite			> 50/6" > 50/6"	POORLY GRADED SAND WITH GRAVEL (SP), moderate yellowish brown (10YR5/4), dry, fine grained, 5-10% silt, very dense, approx. 20% gravel, subangular				60	7	0-1			
			45 23	-Color change to pale yellowish brown (10YR6/2), dense				84		1-2			
	5		4 6	-Color change to moderate yellowish brown (10YR5/4)  -Color change to dark yellowish orange (10YR6/6), loose				62	8	5-6			
 Sluff			35 50/5"	-Very dense					8	9-10			
	10			Boring terminated at 10 feet below ground surface (bgs). Backfilled on 12/18/96.									

The substrata descriptions above are generalized representations and based upon visual/manual classification of cuttings and/or samples obtained during drilling. Predominant material types shown on the log may contain different materials and the change from one predominant material type to another could be different than indicated. Descriptions on this log apply only at the specific location at the time of drilling and may not be representative of subsurface conditions at other locations or times.

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Date

Log of Boring

Figure

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(sheet 1 of 1)



Logged By: <b>CAROLE FARR</b>		Date Drilled: <b>12/19/96</b>		Drilling Contractor: <b>WEST HAZMAT</b>		Method/Equipment: <b>HSA CME 75</b>		Boring Number: <b>FPS-6</b>					
See "Legend to Logs" for sampling method, classifications and laboratory test methods		Boring Diam.(in.): <b>4</b>		Ground Elev.(ft.): <b>1807.72</b>		Groundwater Elevation (ft.): 		Total Depth (ft.): <b>10.0</b>		Drive wt.(lbs.): <b>140</b>		Drop Dist.(in.): <b>30</b>	
Well Construction	Depth (ft.)	Sample Type	Blows/6"	Description				PID Reading (ppmV)	Soil pH (S.U.)	Sample Depth (ft.)			
 Bentonite			> 50/6"	POORLY GRADED SAND WITH GRAVEL (SP), moderate brown (5YR4/4), dry, medium grained, very dense, approx. 30% gravel, subangular				6	7	0-1			
			20 32					3	8	1-2			
	5		> 50/6" > 50/6"	-Color change to grayish orange (10YR7/4), 5-10% silt  -Very dense -No silt				4	8	5-6			
 Sluff	10		> 50/6" > 50/6"					4	8	9-10			
				Boring terminated at 10 feet below ground surface (bgs). Backfilled on 12/19/96.									

The substrata descriptions above are generalized representations and based upon visual/manual classification of cuttings and/or samples obtained during drilling. Predominant material types shown on the log may contain different materials and the change from one predominant material type to another could be different than indicated. Descriptions on this log apply only at the specific location at the time of drilling and may not be representative of subsurface conditions at other locations or times.

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### Log of Boring

Figure

Logged By: <b>Carole Farr</b>		Date Drilled: <b>6/3/97</b>		Drilling Contractor: <b>Weber Drilling</b>		Method/Equipment: <b>HSA Mobile Drill B-61</b>		Boring Number: <b>FPS-6D</b>		
See "Legend to Logs" for sampling method, classifications and laboratory test methods		Boring Diam. (in.): <b>8"</b>	Ground Elev. (ft.): <b>1807.11</b>	Groundwater Elevation (ft.): 	Total Depth (ft.): <b>41.5</b>	Drive wt. (lbs.): <b>140</b>	Drop Dist. (in.): <b>30</b>			
Well Construction	Depth (ft.)	Sample Type	Blows/6"	Description				PID Reading (ppmV)	Soil pH (S.U.)	Sample Depth (ft.)
	5			POORLY GRADED SAND WITH GRAVEL (SP), dry, moderate yellowish brown (10YR5/4), dense, medium grained, approx. 20% gravel						
	10			-Color change to moderate brown (5YR4/4)						
	15		33 33 45	-Color change to moderate yellowish brown (10YR5/4), decrease gravel						
	20		10 14 23	SILTY SAND WITH GRAVEL (SM), dry, moderate yellowish brown (10YR5/4), dense, medium to fine grained, approx. 10% gravel				680		6
				-Color change to light brown (5YR6/4)						
<p>The substrata descriptions above are generalized representations and based upon visual/manual classification of cuttings and/or samples obtained during drilling. Predominant material types shown on the log may contain different materials and the change from one predominant material type to another could be different than indicated. Descriptions on this log apply only at the specific location at the time of drilling and may not be representative of subsurface conditions at other locations or times.</p>										

Project No. **M0071-001-01**



Date

Log of Boring




Figure

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(sheet 1 of 2)

Logged By: <b>Carole Farr</b>		Date Drilled: <b>6/3/97</b>		Drilling Contractor: <b>Weber Drilling</b>		Method/Equipment: <b>HSA Mobile Drill B-61</b>		Boring Number: <b>FPS-6D</b>		
See "Legend to Logs" for sampling method, classifications and laboratory test methods		Boring Diam. (in.): <b>8"</b>	Ground Elev. (ft.): <b>1807.11</b>	Groundwater Elevation (ft.): 		Total Depth (ft.): <b>41.5</b>	Drive wt. (lbs.): <b>140</b>	Drop Dist. (in.): <b>30</b>		
Well Construction	Depth (ft.)	Sample Type	Blows/6"	Description				PID Reading (ppmV)	Soil pH (S.U.)	Sample Depth (ft.)
	9		9	-Color change to dark yellowish orange (10YR6/6), 20% gravel				300		6-7
	16		16							
	22		22							
	30		14	-Increase silt Sandy silt (ML), dry, grayish orange (10YR7/4), dense, approx. 20% sand, few gravel -Trace gravel				300		6-7
33		8								
35		5	-Color change to moderate yellowish brown (10YR5/4)				300		6-7	
36		9								
40		8	Boring terminated at 41.5 feet. Backfilled on 6/5/97				620		7	
41		18								
45		23								

The substrata descriptions above are generalized representations and based upon visual/manual classification of cuttings and/or samples obtained during drilling. Predominant material types shown on the log may contain different materials and the change from one predominant material type to another could be different than indicated. Descriptions on this log apply only at the specific location at the time of drilling and may not be representative of subsurface conditions at other locations or times.

Logged By: <b>CAROLE FARR</b>		Date Drilled: <b>12/18/96</b>		Drilling Contractor: <b>WEST HAZMAT</b>		Method/Equipment: <b>HSA CME 75</b>		Boring Number: <b>FPS-7</b>		
See "Legend to Logs" for sampling method, classifications and laboratory test methods		Boring Diam. (in.): <b>4</b>	Ground Elev. (ft.): <b>1807.40</b>	Groundwater Elevation (ft.): 		Total Depth (ft.): <b>10.0</b>	Drive wt. (lbs.): <b>140</b>	Drop Dist. (in.): <b>30</b>		
Well Construction	Depth (ft.)	Sample Type	Blows/6"	Description				PID Reading (ppmV)	Soil pH (S.U.)	Sample Depth (ft.)
 Bentonite			> 50/6" > 50/6"	POORLY GRADED SAND WITH GRAVEL (SP), pale yellowish brown (10YR6/2), dry, fine to medium grained, 5-10% silt, very dense, approx. 20% gravel, subangular				190	7	0-1
			> 50/6" > 50/6"	-Color change to light brown (5YR5/6)				500	5	1-2
	5		> 50/6" > 50/6"	-Color change to dark yellowish orange (10YR6/6)				920	7	5-6
 Sluff	10		> 50/6" > 50/6"	Boring terminated at 10 feet below ground surface (bgs). Backfilled on 12/18/96.				350	7	9-10

The substrata descriptions above are generalized representations and based upon visual/manual classification of cuttings and/or samples obtained during drilling. Predominant material types shown on the log may contain different materials and the change from one predominant material type to another could be different than indicated. Descriptions on this log apply only at the specific location at the time of drilling and may not be representative of subsurface conditions at other locations or times.

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Date

Log of Boring




Figure

12






(sheet 1 of 1)

Logged By: <b>CAROLE FARR</b>		Date Drilled: <b>12/18/96</b>		Drilling Contractor: <b>WEST HAZMAT</b>		Method/Equipment: <b>HSA CME 75</b>		Boring Number: <b>FPS-8</b>					
See "Legend to Logs" for sampling method, classifications and laboratory test methods		Boring Diam. (in.): <b>4</b>		Ground Elev. (ft.): <b>1810.52</b>		Groundwater Elevation (ft.): 		Total Depth (ft.): <b>10.0</b>		Drive wt. (lbs.): <b>140</b>		Drop Dist. (in.): <b>30</b>	
Well Construction	Depth (ft.)	Sample Type	Blows/6"	Description				PID Reading (ppmV)	Soil pH (S.U.)	Sample Depth (ft.)			
	5		> 50/6"				POORLY GRADED SAND WITH GRAVEL (SP), yellowish brown (10YR6/2), dry, fine grained, 5-10% silt, very dense, approx. 20% gravel, subangular	21	8	0-1			
			> 50/6"					> 50/6"	118	8	1-2		
Bentonite	5		> 50/6"				-Color change to moderate yellowish brown (10YR5/4), medium grained, no silt	79	8	5-6			
			> 50/6"				> 50/6"				-Fine grained, dense		
	10		> 50/6"				-Very dense	82	8	9-10			
			> 50/6"				> 50/6"						
				Boring terminated at 10 feet below ground surface (bgs). Backfilled on 12/18/96.									

The substrata descriptions above are generalized representations and based upon visual/manual classification of cuttings and/or samples obtained during drilling. Predominant material types shown on the log may contain different materials and the change from one predominant material type to another could be different than indicated. Descriptions on this log apply only at the specific location at the time of drilling and may not be representative of subsurface conditions at other locations or times.




Logged By: <b>CAROLE FARR</b>		Date Drilled: <b>12/17/96</b>		Drilling Contractor: <b>WEST HAZMAT</b>		Method/Equipment: <b>HSA CME 75</b>		Boring Number: <b>FPS-9</b>	
See "Legend to Logs" for sampling method, classifications and laboratory test methods		Boring Diam. (in.): <b>4</b>	Ground Elev. (ft.): <b>1809.29</b>	Groundwater Elevation (ft.): 		Total Depth (ft.): <b>10.0</b>	Drive wt. (lbs.): <b>140</b>	Drop Dist. (in.): <b>30</b>	
Well Construction	Depth (ft.)	Sample Type	Blows/6"	Description			PID Reading (ppmV)	Soil pH (S.U.)	Sample Depth (ft.)
 Bentonite	0-5	19 38	19 38	POORLY GRADED SAND (SP) WITH GRAVEL, pale yellowish brown (10YR6/2), dry, fine to medium grained, dense, approx. 20% gravel, subangular			8	8	0-1
				-Very dense			1.8	7	1-2
 Sluff	5-10	19 38	19 38	-Color change to dark yellowish orange (10YR6/6)			3.4	9	5-6
				-Color change to pale yellowish brown (10YR6/2), dense					
	10	50/6" 50/6"	50/6" 50/6"	-Very dense					9-10
Boring terminated at 10 feet below ground surface (bgs). Backfilled on 12/17/96.									

The substrata descriptions above are generalized representations and based upon visual/manual classification of cuttings and/or samples obtained during drilling. Predominant material types shown on the log may contain different materials and the change from one predominant material type to another could be different than indicated. Descriptions on this log apply only at the specific location at the time of drilling and may not be representative of subsurface conditions at other locations or times.



Logged By:		Date Drilled:		Drilling Contractor:		Method/Equipment:		Boring Number:			
CAROLE FARR		12/17/96		WEST HAZMAT		HSA CME 75		FPS-10			
See "Legend to Logs" for sampling method, classifications and laboratory test methods		Boring Diam. (in.): 4		Ground Elev. (ft.): 1809.63		Groundwater Elevation (ft.): 		Total Depth (ft.): 10.0			
						Drive wt. (lbs.): 140		Drop Dist. (in.): 30			
Well Construction	Depth (ft.)	Sample Type	Blows/6"	Description				PID Reading (ppmV)	Soil pH (S.U.)	Sample Depth (ft.)	
	11		11		POORLY GRADED SAND (SP) WITH GRAVEL, grayish orange (10YR7/4), dry, fine grained, medium dense, approx. 20% gravel, subangular				1	7	0-1
	16		16								
Bentonite	50/6"		50/6"		-Color change to dark yellowish orange (10YR6/6), very dense				0.4		1-2
	50/6"		50/6"								
Sluff	5		26		-dark orange mottling				0.3	7	5-6
	40		40								
	10		> 50/6"		Boring terminated at 10 feet below ground surface (bgs). Backfilled on 12/17/96.				2.2	9	9-10
			> 50/6"								

The substrata descriptions above are generalized representations and based upon visual/manual classification of cuttings and/or samples obtained during drilling. Predominant material types shown on the log may contain different materials and the change from one predominant material type to another could be different than indicated. Descriptions on this log apply only at the specific location at the time of drilling and may not be representative of subsurface conditions at other locations or times.





Logged By: <b>CAROLE FARR</b>		Date Drilled: <b>12/17/96</b>		Drilling Contractor: <b>WEST HAZMAT</b>		Method/Equipment: <b>HSA CME 75</b>		Boring Number: <b>FPS-11</b>	
See "Legend to Logs" for sampling method, classifications and laboratory test methods		Boring Diam. (in.): <b>4</b>	Ground Elev. (ft.): <b>1807.97</b>	Groundwater Elevation (ft.): 		Total Depth (ft.): <b>10.0</b>	Drive wt. (lbs.): <b>140</b>	Drop Dist. (in.): <b>30</b>	
Well Construction	Depth (ft.)	Sample Type	Blows/6"	Description			PID Reading (ppmV)	Soil pH (S.U.)	Sample Depth (ft.)
 Bentonite	0-1 1-2		> 50/6" > 50/6"	POORLY GRADED SAND (SP) WITH GRAVEL, pale yellowish brown (10YR6/2), dry, fine to medium grained, very dense (well compacted), approx. 20% gravel, subangular			39	9	0-1
							18		1-2
 Sluff	5		17 17	-Dense			320	9	5-6
	10		13 18	-Medium dense			170		9-10
				-Color change to dark yellowish orange (10YR6/6)					
				Boring terminated at 10 feet below ground surface (bgs). Backfilled on 12/17/96.					

The substrata descriptions above are generalized representations and based upon visual/manual classification of cuttings and/or samples obtained during drilling. Predominant material types shown on the log may contain different materials and the change from one predominant material type to another could be different than indicated. Descriptions on this log apply only at the specific location at the time of drilling and may not be representative of subsurface conditions at other locations or times.

Logged By:		Date Drilled:		Drilling Contractor:		Method/Equipment:		Boring Number:	
Carole Farr		6/3/97		Weber Drilling		HSA Mobile Drill B-61		FPS-11D	
See "Legend to Logs" for sampling method, classifications and laboratory test methods		Boring Diam. (in.):	Ground Elev. (ft.):	Groundwater Elevation (ft.):	Total Depth (ft.):	Drive wt. (lbs.):	Drop Dist. (in.):		
		8"	1807.53		41.5	140	30		
Well Construction	Depth (ft.)	Sample Type	Blows/6"	Description			PID Reading (ppmV)	Soil pH (S.U.)	Sample Depth (ft.)
	5			POORLY GRADED SAND WITH GRAVEL (SP), dry, moderate yellowish brown (10YR5/4), dry, dense, medium grained, approx. 20% gravel					
				-Color change to pale brown (5YR5/2) -Color change to light brown (5YR5/6)					
Bentonite/Concrete slurry	10			-Color change to moderate brown (5YR4/4)					
				-Some silt, color change to dark yellowish orange (10YR6/6), very dense, medium to fine grained, 15-20% silt, few gravel, dark orange mottling					
	15		38 50/4"	-Color change to moderate yellowish brown (10YR5/4), increase silt, dense			6	4	
	20		6 7 14	SANDY SILT (ML), dry, grayish orange (10YR7/4), dense, approx. 20% very fine sand					

The substrata descriptions above are generalized representations and based upon visual/manual classification of cuttings and/or samples obtained during drilling. Predominant material types shown on the log may contain different materials and the change from one predominant material type to another could be different than indicated. Descriptions on this log apply only at the specific location at the time of drilling and may not be representative of subsurface conditions at other locations or times.

Logged By: <b>Carole Farr</b>		Date Drilled: <b>6/3/97</b>		Drilling Contractor: <b>Weber Drilling</b>		Method/Equipment: <b>HSA Mobile Drill B-61</b>		Boring Number: <b>FPS-11D</b>		
See "Legend to Logs" for sampling method, classifications and laboratory test methods		Boring Diam.(in.): <b>8"</b>		Ground Elev.(ft.): <b>1807.53</b>		Groundwater Elevation (ft.): 		Total Depth (ft.): <b>41.5</b>		
						Drive wt.(lbs.): <b>140</b>		Drop Dist.(in.): <b>30</b>		
Well Construction	Depth (ft.)	Sample Type	Blows/6"	Description				PID Reading (ppmV)	Soil pH (S.U.)	Sample Depth (ft.)
	16		38	-Color change to dark yellowish orange (10YR6/6)						
	30		16 19 24							
	35		16 21 24	Boring terminated at 41.5 feet bgs. Backfilled on 6/5/97.				220		6
	40		12 24 31							
Sluff	45									

The substrata descriptions above are generalized representations and based upon visual/manual classification of cuttings and/or samples obtained during drilling. Predominant material types shown on the log may contain different materials and the change from one predominant material type to another could be different than indicated. Descriptions on this log apply only at the specific location at the time of drilling and may not be representative of subsurface conditions at other locations or times.

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Date

Log of Boring




Figure

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(sheet 2 of 2)

Logged By:		Date Drilled:		Drilling Contractor:		Method/Equipment:		Boring Number:	
CAROLE FARR		12/17/96		WEST HAZMAT		HSA CME 75		FPS-12	
See "Legend to Logs" for sampling method, classifications and laboratory test methods		Boring Diam. (in.):	Ground Elev. (ft.):	Groundwater Elevation (ft.):	Total Depth (ft.):	Drive wt. (lbs.):	Drop Dist. (in.):		
		4	1810.80		10.0	140	30		
Well Construction	Depth (ft.)	Sample Type	Blows/6"	Description	PID Reading (ppmV)	Soil pH (S.U.)	Sample Depth (ft.)		
	0-1		23	POORLY GRADED SAND (SP) WITH GRAVEL, pale yellowish brown (10YR6/2), dry, fine to medium grained, medium dense, approx. 20% gravel, subangular -Very dense (well compacted)	69	7	0-1		
			29		41	7	1-2		
			> 50/6"						
	5-6		> 50/6"	-Color change to light brown (5YR5/6), mottled	25	7	5-6		
			> 50/6"						
	9-10			-Color change to dark yellowish orange (10YR6/6)	3	9	9-10		
				Boring terminated at 10 feet below ground surface (bgs). Backfilled on 12/17/96.					

The substrata descriptions above are generalized representations and based upon visual/manual classification of cuttings and/or samples obtained during drilling. Predominant material types shown on the log may contain different materials and the change from one predominant material type to another could be different than indicated. Descriptions on this log apply only at the specific location at the time of drilling and may not be representative of subsurface conditions at other locations or times.

Logged By: <b>CAROLE FARR</b>		Date Drilled: <b>12/17/96</b>		Drilling Contractor: <b>WEST HAZMAT</b>		Method/Equipment: <b>HSA CME 75</b>		Boring Number: <b>FPS-13</b>		
See "Legend to Logs" for sampling method, classifications and laboratory test methods		Boring Diam. (in.): <b>4</b>	Ground Elev. (ft.): <b>1807.97</b>	Groundwater Elevation (ft.): 		Total Depth (ft.): <b>21.5</b>	Drive wt. (lbs.): <b>140</b>	Drop Dist. (in.): <b>30</b>		
Well Construction	Depth (ft.)	Sample Type	Blows/6"	Description			PID Reading (ppmV)	Soil pH (S.U.)	Sample Depth (ft.)	
 Bentonite			22		ARTIFICIAL FILL (AF): POORLY GRADED SAND (SP) WITH GRAVEL, moderate yellowish brown (10YR5/4), dry, fine grained, 5-10% silt, very dense, approx. 20% gravel, subangular	1.4	9	0-1		
			38							
			13					1.1		1-2
			21							
	5				-Dense					
					-Color change to dark yellowish orange (10YR6/6)					
						58	7	5-6		
					-Color change to moderate brown (5YR4/4), dense					
							7	9-10		
					-Dense					
						36	7	11-12		
					ARTIFICIAL FILL (AF), dark yellowish brown (10YR4/2), some sand and gravel, wet, oily, loose	300	7	14-15		

The substrata descriptions above are generalized representations and based upon visual/manual classification of cuttings and/or samples obtained during drilling. Predominant material types shown on the log may contain different materials and the change from one predominant material type to another could be different than indicated. Descriptions on this log apply only at the specific location at the time of drilling and may not be representative of subsurface conditions at other locations or times.

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Date

Log of Boring

Figure

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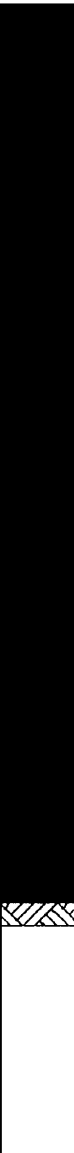

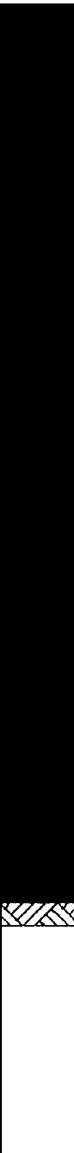

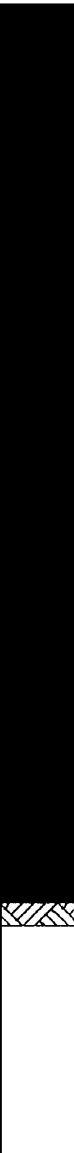

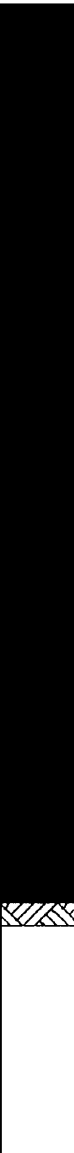

Logged By: <b>CAROLE FARR</b>		Date Drilled: <b>12/17/96</b>		Drilling Contractor: <b>WEST HAZMAT</b>		Method/Equipment: <b>HSA CME 75</b>		Boring Number: <b>FPS-13</b>		
See "Legend to Logs" for sampling method, classifications and laboratory test methods		Boring Diam. (in.): <b>4</b>	Ground Elev. (ft.): <b>1807.97</b>	Groundwater Elevation (ft.): 		Total Depth (ft.): <b>21.5</b>	Drive wt. (lbs.): <b>140</b>	Drop Dist. (in.): <b>30</b>		
Well Construction	Depth (ft.)	Sample Type	Blows/6"	Description				PID Reading (ppmV)	Soil pH (S.U.)	Sample Depth (ft.)
 Sluff										
	20		9 13 18	Concrete						
				POORLY GRADED GRAVEL (GP), moderate brown (5YR3/4), moist, 5-10% sand, dense				21	7	20-21
				Boring terminated at 21.5 feet below ground surface (bgs). Backfilled on 12/17/96.						
	25									

The substrata descriptions above are generalized representations and based upon visual/manual classification of cuttings and/or samples obtained during drilling. Predominant material types shown on the log may contain different materials and the change from one predominant material type to another could be different than indicated. Descriptions on this log apply only at the specific location at the time of drilling and may not be representative of subsurface conditions at other locations or times.



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**Log of Boring**

Figure

Logged By: <b>Carole Farr</b>		Date Drilled: <b>6/2/97</b>		Drilling Contractor: <b>Weber Drilling</b>		Method/Equipment: <b>HSA Mobile Drill B-61</b>		Boring Number: <b>FPS-13D</b>		
See "Legend to Logs" for sampling method, classifications and laboratory test methods		Boring Diam. (in.): <b>8"</b>	Ground Elev. (ft.): <b>1807.39</b>	Groundwater Elevation (ft.): 		Total Depth (ft.): <b>20.0</b>	Drive wt. (lbs.): <b>140</b>	Drop Dist. (in.): <b>30</b>		
Well Construction	Depth (ft.)	Sample Type	Blows/6"	Description				PID Reading (ppmV)	Soil pH (S.U.)	Sample Depth (ft.)
	5		7	POORLY GRADED SAND WITH GRAVEL (SP), dry, moderate yellowish brown (10YR5/4), dense, medium to fine grained, approx. 20% gravel  -Some cobbles  -Color change to dark yellowish brown (10YR4/2), medium dense, some white crystals  -Some silt  -Black staining						
			7							
	10		7	ARTIFICIAL FILL (FILL), moist to wet, moderate to dark yellowish brown (10YR5/4 to 10YR4/2), soft, grayish brown (5YR3/2) mottling, (oily)						
			7							
	15		4	Boring terminated due to unsafe drilling conditions. Breathing zone vapor readings exceeded acceptable levels (150 ppmV). Backfilled on 6/5/97.						
			3							
	20		3							
			3							

The substrata descriptions above are generalized representations and based upon visual/manual classification of cuttings and/or samples obtained during drilling. Predominant material types shown on the log may contain different materials and the change from one predominant material type to another could be different than indicated. Descriptions on this log apply only at the specific location at the time of drilling and may not be representative of subsurface conditions at other locations or times.

Logged By: <b>Carole Farr</b>		Date Drilled: <b>6/3/97</b>		Drilling Contractor: <b>Weber Drilling</b>		Method/Equipment: <b>HSA Mobile Drill B-61</b>		Boring Number: <b>FPS-13D2</b>		
See "Legend to Logs" for sampling method, classifications and laboratory test methods		Boring Diam. (in.): <b>8"</b>	Ground Elev. (ft.): <b>1807.71</b>	Groundwater Elevation (ft.): 		Total Depth (ft.): <b>41.5</b>	Drive wt. (lbs.): <b>140</b>	Drop Dist. (in.): <b>30</b>		
Well Construction	Depth (ft.)	Sample Type	Blows/6"	Description				PID Reading (ppmV)	Soil pH (S.U.)	Sample Depth (ft.)
	5		50/5"	POORLY GRADED SAND WITH GRAVEL (SP), dry, grayish orange (10YR7/4), dense, medium grained, approx. 20% gravel  -Color change to moderate yellowish brown (10YR5/4)  -Fine to medium grained, approx. 10% silt						
	10		18 50/5"							
Bentonite/Concrete slurry	15		27 50/4"	SILTY SAND WITH GRAVEL (SM), dry, moderate yellowish brown (10YR5/4), dense, fine grained, approx. 20% gravel				0.2		
	20		18 50/4"					8.5		7
<p>The substrata descriptions above are generalized representations and based upon visual/manual classification of cuttings and/or samples obtained during drilling. Predominant material types shown on the log may contain different materials and the change from one predominant material type to another could be different than indicated. Descriptions on this log apply only at the specific location at the time of drilling and may not be representative of subsurface conditions at other locations or times.</p>										

Project No. **M0071-001-01**

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### Log of Boring


Figure

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Logged By: <b>Carole Farr</b>	Date Drilled: <b>6/3/97</b>	Drilling Contractor: <b>Weber Drilling</b>	Method/Equipment: <b>HSA Mobile Drill B-61</b>	Boring Number: <b>FPS-13D2</b>
See "Legend to Logs" for sampling method, classifications and laboratory test methods	Boring Diam. (in.): <b>8"</b>	Ground Elev. (ft.): <b>1807.71</b>	Groundwater Elevation (ft.):  <b>41.5</b>	Total Depth (ft.): <b>41.5</b>
				Drive wt. (lbs.): <b>140</b>
				Drop Dist. (in.): <b>30</b>

Well Construction	Depth (ft.)	Sample Type	Blows/6"	Description	PID Reading (ppmV)	Soil pH (S.U.)	Sample Depth (ft.)
	12			POORLY GRADED SAND WITH GRAVEL (SP), dry, moderate yellowish brown (10YR5/4), dense, approx. 20 to 30% gravel, trace clay and silt	24		7
	16						
	27						
	30		12	SANDY SILT (ML), dry, moderate yellowish brown (10YR5/4), dense, trace gravel	6.5	7	
27		27					
	35		10	-Color change to dark yellowish orange (10YR6/6), dense, trace clay			
	39		27				
	40		7	-Medium dense			
			8				
Sluff			12	Boring terminated at 41.5 feet. Backfilled on 6/5/97.			
	45						

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Logged By: <b>CAROLE FARR</b>		Date Drilled: <b>12/17/96</b>		Drilling Contractor: <b>WEST HAZMAT</b>		Method/Equipment: <b>HSA CME 75</b>		Boring Number: <b>FPS-14</b>		
See "Legend to Logs" for sampling method, classifications and laboratory test methods		Boring Diam. (in.): <b>4</b>	Ground Elev. (ft.): <b>1809.48</b>	Groundwater Elevation (ft.): 		Total Depth (ft.): <b>10.0</b>	Drive wt. (lbs.): <b>140</b>	Drop Dist. (in.): <b>30</b>		
Well Construction	Depth (ft.)	Sample Type	Blows/6"	Description				PID Reading (ppmV)	Soil pH (S.U.)	Sample Depth (ft.)
 Bentonite	5		> 50/6"	POORLY GRADED SAND (SP) WITH GRAVEL, pale yellowish brown (10YR6/2), dry, fine to medium grained, very dense, approx. 20% gravel, subangular						0-1
			17 23	-Dense  -Color change to dark yellowish orange (10YR6/6)						1-2
 Sluff	10		50/6" > 50/6"	-Very dense  -Color change to pale yellowish brown (10YR6/2), very dense						5-6
			26 34	Boring terminated at 10 feet below ground surface (bgs). Backfilled on 12/17/96.						9-10

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Logged By: <b>CAROLE FARR</b>		Date Drilled: <b>12/18/96</b>		Drilling Contractor: <b>WEST HAZMAT</b>		Method/Equipment: <b>HSA CME 75</b>		Boring Number: <b>FPS-15</b>		
See "Legend to Logs" for sampling method, classifications and laboratory test methods		Boring Diam. (in.): <b>4</b>	Ground Elev. (ft.): <b>1810.45</b>	Groundwater Elevation (ft.): 		Total Depth (ft.): <b>10.0</b>	Drive wt. (lbs.): <b>140</b>	Drop Dist. (in.): <b>30</b>		
Well Construction	Depth (ft.)	Sample Type	Blows/6"	Description			PID Reading (ppmV)	Soil pH (S.U.)	Sample Depth (ft.)	
 Concrete			> 50/6" > 50/6"	ASPHALT			10	7	0-1	
			> 50/6" > 50/6"	POORLY GRADED SAND WITH GRAVEL (SP), dark yellowish brown (10YR4/2), dry, fine to medium grained, very dense, approx. 20% gravel, subangular -Color change to grayish orange (10YR7/4) - dark yellowish orange (10YR6/6)			1.2	7	1-2	
	5		> 50/6" > 50/6"				4.2	7	5-6	
 Sluff			> 50/6" > 50/6"				2	7	9-10	
	10	Boring terminated at 10 feet below ground surface (bgs). Backfilled on 12/18/96.								

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Date

Log of Boring


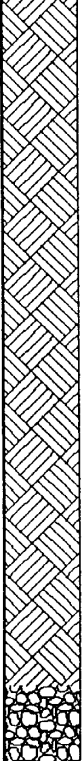

Figure

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Logged By: <b>CAROLE FARR</b>		Date Drilled: <b>12/17/96</b>		Drilling Contractor: <b>WEST HAZMAT</b>		Method/Equipment: <b>HSA CME 75</b>		Boring Number: <b>FPS-16</b>	
See "Legend to Logs" for sampling method, classifications and laboratory test methods		Boring Diam. (in.): <b>4</b>	Ground Elev. (ft.): <b>1810.41</b>	Groundwater Elevation (ft.): 		Total Depth (ft.): <b>10.0</b>	Drive wt. (lbs.): <b>140</b>	Drop Dist. (in.): <b>30</b>	
Well Construction	Depth (ft.)	Sample Type	Blows/6"	Description			PID Reading (ppmV)	Soil pH (S.U.)	Sample Depth (ft.)
 Bentonite			300/6"	POORLY GRADED SAND (SP) WITH GRAVEL, pale yellowish brown (10YR6/2), dry, medium grained, very dense, approx. 20% gravel, subangular -Color change to dark yellowish orange (10YR6/6), mottled			200	7	0-1
				-Color change to moderate yellowish brown (10YR5/4)  -Fine grained, trace silt			300	7	1-2  5-6
 Sluff			50/6 50/6 50/6	WELL GRADED SAND (SW) WITH GRAVEL, moderate yellowish brown (10YR5/4), dry, very dense, fine to coarse grained, approx. 20% gravel, subrounded gravel			65	7	9-10
				Boring terminated at 10 feet below ground surface (bgs). Backfilled on 12/17/96.					

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Logged By: <b>CAROLE FARR</b>		Date Drilled: <b>12/19/96</b>		Drilling Contractor: <b>WEST HAZMAT</b>		Method/Equipment: <b>HSA CME 75</b>		Boring Number: <b>FPS-17</b>					
See "Legend to Logs" for sampling method, classifications and laboratory test methods		Boring Diam. (in.): <b>4</b>		Ground Elev. (ft.): <b>1806.27</b>		Groundwater Elevation (ft.): 		Total Depth (ft.): <b>10.0</b>		Drive wt. (lbs.): <b>140</b>		Drop Dist. (in.): <b>30</b>	
Well Construction		Depth (ft.)	Sample Type	Blows/6"	Description				PID Reading (ppmV)	Soil pH (S.U.)	Sample Depth (ft.)		
	Bentonite	0-1	22 23	8 11	POORLY GRADED SAND (SP) WITH GRAVEL, dark yellowish orange (10YR6/6), dry, fine grained, few silt, medium dense, approx. 20% gravel, subangular -Medium dense				9	7	0-1		
					-Fine to very fine grained				7	7-8	1-2		
					-No silt, medium grained				4.9	7-8	5-6		
	Sluff	5-6	9 13	38 46	-Very dense						9-10		
					Boring terminated at 10 feet below ground surface (bgs). Backfilled on 12/19/96.								

The substrata descriptions above are generalized representations and based upon visual/manual classification of cuttings and/or samples obtained during drilling. Predominant material types shown on the log may contain different materials and the change from one predominant material type to another could be different than indicated. Descriptions on this log apply only at the specific location at the time of drilling and may not be representative of subsurface conditions at other locations or times.

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Date

Log of Boring

Figure

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(sheet 1 of 1)

Logged By: <b>CAROLE FARR</b>		Date Drilled: <b>12/19/96</b>		Drilling Contractor: <b>WEST HAZMAT</b>		Method/Equipment: <b>HSA CME 75</b>		Boring Number: <b>FTF-1</b>	
See "Legend to Logs" for sampling method, classifications and laboratory test methods		Boring Diam.(in.): <b>4</b>	Ground Elev.(ft.): <b>1819.95</b>	Groundwater Elevation (ft.): 		Total Depth (ft.): <b>10.0</b>	Drive wt.(lbs.): <b>140</b>	Drop Dist.(in.): <b>30</b>	
Well Construction	Depth (ft.)	Sample Type	Blows/6"	Description			PID Reading (ppmV)	Soil pH (S.U.)	Sample Depth (ft.)
 Bentonite   Sluff			9 12	POORLY GRADED SAND (SP) WITH GRAVEL, light brown (10YR5/4), dry, fine grained, 5-10% silt, loose to medium dense, approx. 20% gravel, subangular			4	8	1-2
	5		> 50/6" > 50/6"	-Color change to moderate yellowish brown (10YR5/4), very dense			6	8	5-6
	10		> 50/6" > 50/6"	Boring terminated at 10 feet below ground surface (bgs). Backfilled on 12/19/96.			7	8	9-10
<p>The substrata descriptions above are generalized representations and based upon visual/manual classification of cuttings and/or samples obtained during drilling. Predominant material types shown on the log may contain different materials and the change from one predominant material type to another could be different than indicated. Descriptions on this log apply only at the specific location at the time of drilling and may not be representative of subsurface conditions at other locations or times.</p>									

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Date




Log of Boring

Figure

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
(sheet 1 of 1)






Logged By: <b>CAROLE FARR</b>		Date Drilled: <b>12/19/96</b>		Drilling Contractor: <b>WEST HAZMAT</b>		Method/Equipment: <b>HSA CME 75</b>		Boring Number: <b>FTF-3</b>					
See "Legend to Logs" for sampling method, classifications and laboratory test methods		Boring Diam. (in.): <b>4</b>		Ground Elev. (ft.): <b>1820.85</b>		Groundwater Elevation (ft.): 		Total Depth (ft.): <b>10.0</b>		Drive wt. (lbs.): <b>140</b>		Drop Dist. (in.): <b>30</b>	
Well Construction	Depth (ft.)	Sample Type	Blows/6"	Description				PID Reading (ppmV)	Soil pH (S.U.)	Sample Depth (ft.)			
 Bentonite			19 18	POORLY GRADED SAND WITH GRAVEL (SP), moderate yellowish brown (10YR5/4), dry, fine grained, 5-10% silt, dense, approx. 20% gravel, subangular				7	5	1-2			
	5		> 50/6" > 50/6"	-Very dense				10	4	5-6			
			> 50/6" > 50/6"	-Color change to light brown (5YR5/6), orange mottling				6	5	9-10			
 Sluff	10			Boring terminated at 10 feet below ground surface (bgs). Backfilled on 12/19/96.									

The substrata descriptions above are generalized representations and based upon visual/manual classification of cuttings and/or samples obtained during drilling. Predominant material types shown on the log may contain different materials and the change from one predominant material type to another could be different than indicated. Descriptions on this log apply only at the specific location at the time of drilling and may not be representative of subsurface conditions at other locations or times.



Logged By: <b>CAROLE FARR</b>		Date Drilled: <b>12/19/96</b>		Drilling Contractor: <b>WEST HAZMAT</b>		Method/Equipment: <b>HSA CME 75</b>		Boring Number: <b>FTF-4</b>	
See "Legend to Logs" for sampling method, classifications and laboratory test methods		Boring Diam. (in.): <b>4</b>		Ground Elev. (ft.): <b>1819.56</b>	Groundwater Elevation (ft.): 	Total Depth (ft.): <b>10.5</b>	Drive wt. (lbs.): <b>140</b>	Drop Dist. (in.): <b>30</b>	
Well Construction	Depth (ft.)	Sample Type	Blows/6"	Description			PID Reading (ppmV)	Soil pH (S.U.)	Sample Depth (ft.)
 Bentonite			19 23	POORLY GRADED SAND WITH GRAVEL (SP), moderate yellowish brown (10YR5/4), dry, fine to medium grained, dense, approx. 20% gravel, 5-10% silt, subangular			6	7	1-2
	5		23 34	-Color change to grayish orange (10YR7/4)  -Very dense -No silt, medium grained			50	7-8	5-6
 Stuff	10		19 23 31	Boring terminated at 10.5 feet below ground surface (bgs). Backfilled on 12/19/96.			30	7	9-10

The substrata descriptions above are generalized representations and based upon visual/manual classification of cuttings and/or samples obtained during drilling. Predominant material types shown on the log may contain different materials and the change from one predominant material type to another could be different than indicated. Descriptions on this log apply only at the specific location at the time of drilling and may not be representative of subsurface conditions at other locations or times.

Logged By: <b>CAROLE FARR</b>		Date Drilled: <b>12/19/96</b>		Drilling Contractor: <b>WEST HAZMAT</b>		Method/Equipment: <b>HSA CME 75</b>		Boring Number: <b>FTF-5</b>	
See "Legend to Logs" for sampling method, classifications and laboratory test methods		Boring Diam. (in.): <b>4</b>	Ground Elev. (ft.): <b>1822.64</b>	Groundwater Elevation (ft.): 		Total Depth (ft.): <b>10.0</b>	Drive wt. (lbs.): <b>140</b>	Drop Dist. (in.): <b>30</b>	
Well Construction	Depth (ft.)	Sample Type	Blows/6"	Description			PID Reading (ppmV)	Soil pH (S.U.)	Sample Depth (ft.)
 Bentonite			22 26	POORLY GRADED SAND WITH GRAVEL (SP), grayish orange (10YR7/4), dry, fine grained, dense, approx. 20% gravel, subangular, approx. 20% silt			2.5	8	1-2
	5		50/6" > 50/6"	-Color change to light brown (5YR5/6), few silt, very dense			2	8	5-6
	10		> 50/6" > 50/6"	-Color change to dark yellowish orange (10YR6/6)			2	8	9-10
 Sluff				Boring terminated at 10 feet below ground surface (bgs). Backfilled on 12/19/96.					

The substrata descriptions above are generalized representations and based upon visual/manual classification of cuttings and/or samples obtained during drilling. Predominant material types shown on the log may contain different materials and the change from one predominant material type to another could be different than indicated. Descriptions on this log apply only at the specific location at the time of drilling and may not be representative of subsurface conditions at other locations or times.

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Date

Log of Boring


Figure



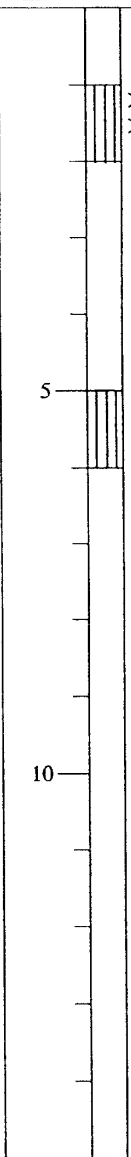




**30**

(sheet 1 of 1)

Logged By: <b>CAROLE FARR</b>		Date Drilled: <b>12/19/96</b>		Drilling Contractor: <b>WEST HAZMAT</b>		Method/Equipment: <b>HSA CME 75</b>		Boring Number: <b>FTF-6</b>	
See "Legend to Logs" for sampling method, classifications and laboratory test methods		Boring Diam.(in.): <b>4</b>	Ground Elev.(ft.): <b>1821.91</b>	Groundwater Elevation (ft.): 		Total Depth (ft.): <b>10.0</b>	Drive wt.(lbs.): <b>140</b>	Drop Dist.(in.): <b>30</b>	
Well Construction	Depth (ft.)	Sample Type	Blows/6"	Description			PID Reading (ppmV)	Soil pH (S.U.)	Sample Depth (ft.)
 Bentonite   Sluff			30 27	POORLY GRADED SAND WITH GRAVEL (SP), moderate yellowish brown (10YR5/4), dry, medium grained, very dense, approx. 20% gravel, subangular			4	9	1-2
	5		> 50/6" > 50/6"	-Color change to dark yellowish orange (10YR6/6)			5	8	5-6
	10		> 50/6" > 50/6"	-Few silt			6	8	9-10
				Boring terminated at 10 feet below ground surface (bgs). Backfilled on 12/19/96.					

The substrata descriptions above are generalized representations and based upon visual/manual classification of cuttings and/or samples obtained during drilling. Predominant material types shown on the log may contain different materials and the change from one predominant material type to another could be different than indicated. Descriptions on this log apply only at the specific location at the time of drilling and may not be representative of subsurface conditions at other locations or times.

Logged By: <b>CAROLE FARR</b>	Date Drilled: <b>12/18/96</b>	Drilling Contractor: <b>WEST HAZMAT</b>	Method/Equipment: <b>HSA CME 75</b>	Boring Number: <b>MSA-1</b>		
See "Legend to Logs" for sampling method, classifications and laboratory test methods	Boring Diam. (in.):	Ground Elev. (ft.): <b>1811.48</b>	Groundwater Elevation (ft.): 	Total Depth (ft.): <b>6.0</b>	Drive wt. (lbs.): <b>140</b>	Drop Dist. (in.): <b>30</b>




Well Construction	Depth (ft.)	Sample Type	Blows/6"	Description	PID Reading (ppmV)	Soil pH (S.U.)	Sample Depth (ft.)
 Concrete   Sluff				 ASPHALT  POORLY GRADED SAND WITH GRAVEL (SP), light brown (5YR5/6), dry, fine to medium grained, very dense, approx. 20% gravel, subangular	0	7-8	1-2
				Boring terminated at 6 feet below ground surface (bgs). Backfilled on 12/18/96.	1	7	5-6

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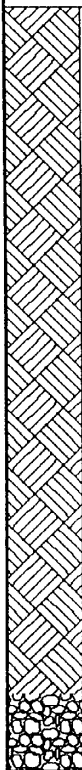




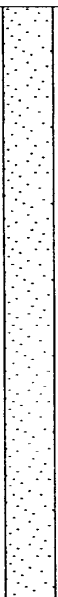

Project No. **M0071-001-01**      Date

### Log of Boring




Figure

Logged By: <b>CAROLE FARR</b>		Date Drilled: <b>12/18/96</b>		Drilling Contractor: <b>WEST HAZMAT</b>		Method/Equipment: <b>HSA CME 75</b>		Boring Number: <b>MSA-2</b>					
See "Legend to Logs" for sampling method, classifications and laboratory test methods		Boring Diam. (in.):		Ground Elev. (ft.): <b>1811.33</b>		Groundwater Elevation (ft.): 		Total Depth (ft.): <b>6.0</b>		Drive wt. (lbs.): <b>140</b>		Drop Dist. (in.): <b>30</b>	
Well Construction		Depth (ft.)	Sample Type	Blows/6"	Description				PID Reading (ppmV)	Soil pH (S.U.)	Sample Depth (ft.)		
 Concrete	5	50/6"	50/6"	<b>ASPHALT</b>				0.3	7-8	1-2			
				POORLY GRADED SAND WITH GRAVEL (SP), moderate brown (5YR4/4), dry, medium grained, very dense, approx. 20% gravel, subangular									
 Sluff			> 50/6"	-Fine to very fine grained				3.2	7-8	5-6			
					Boring terminated at 6 feet below ground surface (bgs). Backfilled on 12/18/96.								




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Logged By: <b>CAROLE FARR</b>		Date Drilled: <b>12/19/96</b>		Drilling Contractor: <b>WEST HAZMAT</b>		Method/Equipment: <b>HSA CME 75</b>		Boring Number: <b>PSS-1</b>	
See "Legend to Logs" for sampling method, classifications and laboratory test methods		Boring Diam.(in.): <b>4</b>	Ground Elev.(ft.): <b>1811.14</b>	Groundwater Elevation (ft.): 		Total Depth (ft.): <b>10.0</b>	Drive wt.(lbs.): <b>140</b>	Drop Dist.(in.): <b>30</b>	
Well Construction	Depth (ft.)	Sample Type	Blows/6"	Description			PID Reading (ppmV)	Soil pH (S.U.)	Sample Depth (ft.)
 Concrete   Sluff				 POORLY GRADED SAND WITH GRAVEL (SP), dark yellowish orange (10YR6/6), dry, fine grained, 5-10% silt, very dense, approx. 20% gravel, subangular			11	7-8	5-6
				 SILTY SAND (SM), grayish orange (10YR7/4), dry, 5-10% gravel, very dense, approx. 20% silt					
Boring terminated at 10 feet below ground surface (bgs). Backfilled on 12/19/96.									

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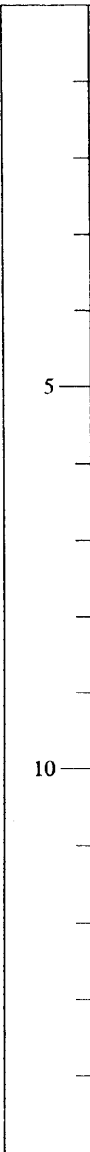


Logged By: <b>CAROLE FARR</b>		Date Drilled: <b>12/20/96</b>		Drilling Contractor: <b>WEST HAZMAT</b>		Method/Equipment: <b>HSA CME 75</b>		Boring Number: <b>PSS-2</b>	
See "Legend to Logs" for sampling method, classifications and laboratory test methods		Boring Diam.(in.): <b>4</b>	Ground Elev.(ft.): <b>1819.52</b>	Groundwater Elevation (ft.): 		Total Depth (ft.): <b>10.0</b>	Drive wt.(lbs.): <b>140</b>	Drop Dist.(in.): <b>30</b>	
Well Construction	Depth (ft.)	Sample Type	Blows/6"	Description			PID Reading (ppmV)	Soil pH (S.U.)	Sample Depth (ft.)
 Concrete   Sluff	5		19 11	POORLY GRADED SAND WITH GRAVEL (SP), pale yellowish brown (10YR6/2), dry, medium grained, medium dense, approx. 20% gravel, subangular			0	6-7	5-6
	10		6 8				Boring terminated at 10 feet below ground surface (bgs). Backfilled on 12/20/96.		

The substrata descriptions above are generalized representations and based upon visual/manual classification of cuttings and/or samples obtained during drilling. Predominant material types shown on the log may contain different materials and the change from one predominant material type to another could be different than indicated. Descriptions on this log apply only at the specific location at the time of drilling and may not be representative of subsurface conditions at other locations or times.

Logged By: <b>CAROLE FARR</b>		Date Drilled: <b>12/19/96</b>		Drilling Contractor: <b>WEST HAZMAT</b>		Method/Equipment: <b>HSA CME 75</b>		Boring Number: <b>PSS-3</b>		
See "Legend to Logs" for sampling method, classifications and laboratory test methods		Boring Diam. (in.): <b>4</b>	Ground Elev. (ft.): <b>1822.74</b>	Groundwater Elevation (ft.): 		Total Depth (ft.): <b>10.0</b>	Drive wt. (lbs.): <b>140</b>	Drop Dist. (in.): <b>30</b>		
Well Construction	Depth (ft.)	Sample Type	Blows/6"	Description				PID Reading (ppmV)	Soil pH (S.U.)	Sample Depth (ft.)
 Bentonite	5		38 45	POORLY GRADED SAND WITH GRAVEL (SP), moderate yellowish brown (10YR5/4), dry, fine grained, dense, approx. 20% gravel, subangular, 5-10% silt				3.5	8	5-6
				-Very dense						
 Sluff	10		> 50/6" > 50/6"	-Color change to moderate brown (5YR4/4)				4	7-8	9-10
Boring terminated at 10 feet below ground surface (bgs). Backfilled on 12/19/96.										

The substrata descriptions above are generalized representations and based upon visual/manual classification of cuttings and/or samples obtained during drilling. Predominant material types shown on the log may contain different materials and the change from one predominant material type to another could be different than indicated. Descriptions on this log apply only at the specific location at the time of drilling and may not be representative of subsurface conditions at other locations or times.



Logged By: <b>CAROLE FARR</b>		Date Drilled: <b>12/20/96</b>		Drilling Contractor: <b>WEST HAZMAT</b>		Method/Equipment: <b>HSA CME 75</b>		Boring Number: <b>RCL-1</b>					
See "Legend to Logs" for sampling method, classifications and laboratory test methods		Boring Diam. (in.): <b>4</b>		Ground Elev. (ft.): <b>1796.37</b>		Groundwater Elevation (ft.): 		Total Depth (ft.): <b>6.0</b>		Drive wt. (lbs.): <b>140</b>		Drop Dist. (in.): <b>30</b>	
Well Construction		Depth (ft.)	Sample Type	Blows/6"	Description				PID Reading (ppmV)	Soil pH (S.U.)	Sample Depth (ft.)		
 Bentonite   Sluff					POORLY GRADED SAND WITH GRAVEL (SP), moderate yellowish brown (10YR5/4), dry, medium to coarse grained, medium dense, approx. 20% gravel, subangular  -Color change to dark yellowish brown (10YR4/2), decrease gravel						1-2		
					RCL-1 was advanced using a hand auger and sampled using a slide hammer. Boring terminated at 6 feet below ground surface (bgs). Backfilled on 12/20/96.						5-6		

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Logged By: <b>CAROLE FARR</b>		Date Drilled: <b>12/20/96</b>		Drilling Contractor: <b>WEST HAZMAT</b>		Method/Equipment: <b>HSA CME 75</b>		Boring Number: <b>RCL-2</b>					
See "Legend to Logs" for sampling method, classifications and laboratory test methods		Boring Diam. (in.): <b>4</b>		Ground Elev. (ft.): <b>1793.90</b>		Groundwater Elevation (ft.): 		Total Depth (ft.): <b>6.0</b>		Drive wt. (lbs.): <b>140</b>		Drop Dist. (in.): <b>30</b>	
Well Construction		Depth (ft.)	Sample Type	Blows/6"	Description				PID Reading (ppm V)	Soil pH (S.U.)	Sample Depth (ft.)		
Bentonite Sluff				12 29	SILTY SAND SAND (SM), pale yellowish brown (10YR6/2), dry, fine grained, 35% silt, medium dense, approx. 10% gravel, subangular				0	7	1-2		
		5		34 50/6"	-Very dense				0	8	5-6		
					Boring terminated at 6 feet below ground surface (bgs). Backfilled on 12/20/96.								

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E

PROJECT: PEPCON MONITORING WELLS PROJECT NO.: 96189V2  
 HOLE LOCATION: SEE SITE PLAN EXPLORATION DATE: 8-28-97  
 ORATION SIZE (diameter): 4" MONITORING WELL EQUIPMENT: MOBILE B-53  
 G.S. ELEVATION: 1894.7 LOGGED BY: S. JOHNSON  
 INITIAL DEPTH TO WATER: 87 DATE MEASURED: 8-28-97  
 FINAL DEPTH TO WATER: 74 DATE MEASURED: 9-11-97

ELEVATION/ DEPTH	SOIL & SAMPLE SYMBOLS	USCS	DESCRIPTION	WELL CONSTRUCTION
1895 0		SP	Brown poorly graded sand with gravel, slightly moist and dense.  ...slightly moist to moist from 4.0 to 6.5	
1890 5		SP-SM	Brown poorly graded sand with silt and fine gravel, slightly moist to moist and dense.	
1885 10		GP	Brown poorly graded gravel with sand, slightly moist to moist and dense. Stratified with sandy layers.  ...boulder	
1880 15		SP	Brown poorly graded sand with gravel, slightly moist to moist and dense.	
1875 20		GP	Brown poorly graded gravel, with sand, slightly moist to moist and dense to very dense.	
1870 25		GP-GM	Brown poorly graded fine gravel with silt and sand, slightly moist to moist and dense to very dense.  ...very dense from 27.5 to 31.0 ...partially cemented from 29.0 to 31.0	
1865 30		C/G	Greyish brown cemented sand and gravel, dry, cemented and hard.	
1860 35		C/G		

FACSIMILE

Broadbent & Associates, Inc.  
8 West Pacific Avenue  
Henderson, Nevada 89015  
Voice: (702) 563-0600  
Fax: (702) 563-0610

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To: Todd Craft Date: 2/2/98  
NDEP  
Fax #: 486-2863  
From: Bob Broadbent  
Fax #: (702) 563-0610

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