

DEPTH (feet)	WELL CONSTRUCTION	WATER LEVEL	CORE RUN	RECOVERY (%)	U.S.C.S.		SOIL DESCRIPTION
					NAME	SYMBOL	
0					AS	GM	ASPHALT - 2" pavement with base SILTY GRAVEL - with fine to coarse sand, brown (7.5 yr 5/2), very dense, dry, gravel to 1", highly calcareous
5							
10					SM		SILTY SAND - with fine to 1/2" gravel, fine to coarse sand, light brown (7.5 yr 6/4), medium dense, dry, highly calcareous
15					GM		SILTY SANDY GRAVEL - (20:20:60) Silty sand and gravel (20:30:50) less gravel, decrease in gravel size (20:40:40)
20					SM		SILTY SAND - with trace gravel (20:70:10), fine to medium sand, yellow brown, medium dense, damp
25					GP		SANDY GRAVEL - brown (10 yr 5/4), very dense - color change to dark brown (10 yr 3/3)
30					SM		SILTY SAND - with little gravel, sand, medium dense, dry, yellow brown (10 yr 5/6), highly calcareous
35					CAL		CALICHE - cemented sand with silt, light gray (10 yr 7/2), very dense, dry, hard to drive casing - harder zone
40					ML		SANDY SILT - MUDDY CREEK FORMATION, with some clay and little gravel to 1/2", fine to coarse sand, (50:30:10) with 10% clay, light brown (7 yr 5/4), soft to medium stiff, moist, occasional caliche fragments - slightly reddish hue (7 yr 6/4)
45							
50							

Bentonite grout from 3' to 151.1'



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STATE ENGINEER'S OFFICE

DATE DRILLED: 10-28-99 SURFACE ELEVATION (feet): DRILLING METHOD: ARCH
 LOGGED BY: Randy Harris TOTAL DEPTH (feet): 201.0 SCREEN SIZE: 0.02"
 REVIEWED BY: Scott Ball DIAMETER OF BORING: 9-5/8" CASING SIZE: 4"

 KLEINFELDER GEOTECHNICAL AND ENVIRONMENTAL ENGINEERS SOILS AND MATERIALS TESTING PROJECT NUMBER 31-309302-009	PROJECT: AMPAC	PLATE
	MONITORING WELL	3a
	FX180	PAGE 1 of 4

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: BY:

DEPTH (feet)	WELL CONSTRUCTION	WATER LEVEL	CORE RUN	RECOVERY (%)	U.S.C.S.		SOIL DESCRIPTION
					NAME	SYMBOL	
							Groundwater under artesian condition at 13 psi.
50					GM	GM	SILTY GRAVEL - with sand (30:10:60), light brown (7.5 yr 6/4), very dense, wet, non calcareous
					ML	ML	CLAYEY SILT - with little coarse sand and trace fine gravel, few caliche fragments, light brown (7.5 yr 6/4), soft, moist to wet, non calcareous matrix
55					ML	ML	SILT -with some sand, fine, light brown (7.5 yr 6/4), soft, moist, and caliche cement siltstone, light gray (10 yr 7/2)
65					CL	CL	SILTY CLAY - brown (7.5 yr 5/4), soft, moist, slight to medium plasticity with coarse sand to gravel, caliche clasts (siltstone) - silt, cemented than above - increasing sand, decreasing gravel
75	Bentonite grout				CL	CL	- moderate to highly calcareous, occasional coarse sand to 3/4" fine gravel, fragments of caliche siltstone
80					CL	CL	CLAY - with little silt and occasional coarse sand to fine gravel, caliche siltstone, brown (7.5 yr 5/4), soft, moist, slight to medium plasticity, moderately calcareous - decreasing caliche from 83' to 87'
85					ML	ML	- moderately plastic, no gravel, trace sand - driller reports some water SANDY SILT - caliche (siltstone) cemented, brown (7.5 yr 5/4), very hard, moist to wet, silt-soft, moderate calcareous; caliche-very calcareous; prop. layers of ml, caliche, ml
90							
95							
100							

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Received
JAN 24 2000
LAS VEGAS OFFICE

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LOGGED BY: Randy Harris
REVIEWED BY: Scott Ball

SURFACE ELEVATION (feet):
TOTAL DEPTH (feet): 201.0
DIAMETER OF BORING: 9-5/8"

DRILLING METHOD: ARCH
SCREEN SIZE: 0.02"
CASING SIZE: 4"

KLEINFELDER
GEOTECHNICAL AND ENVIRONMENTAL ENGINEERS
SOILS AND MATERIALS TESTING
PROJECT NUMBER 31-309302-009

PROJECT: AMPAC
MONITORING WELL
FX180

PLATE
3b
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DEPTH (feet)	WELL CONSTRUCTION	WATER LEVEL	CORE RUN	RECOVERY(%)	U.S.C.S.		SOIL DESCRIPTION
					NAME	SYMBOL	
							Groundwater under artesian condition at 13 psi.
					ML	CL	CLAYEY SILT - highly cemented clasts to 1.5", brown (75 yr 5/4), very hard, moist, very calcareous
					ML	ML	SILTY CLAY - brown, 75 yr 5/4, stiff to very stiff, moist, moderately calcareous - highly calcareous soft silt @101.6, sandy silt @102.1
105					CL	ML	SANDY SILT - fine, very dense, damp; caliche cemented; brittle; breaks into angular 1/2" to 3/4" clasts; highly calcareous caliche in layers 1/4" to 1/2" wide - Hard, white, caliche zone @104.2'; Caliche cemented sandy silt @104.5'
					ML	ML	SILTY CLAY - brown (75 yr 5/4), stiff to very stiff, moist, slightly plastic, very slightly calcareous; caliche zone @ 105.8-105.9'
110					CL	ML	CLAYEY SILT - with trace sand, fine grained, light brown (75 yr 6/4), dense, moist, moderate calcareous; increasing sand below 106.5'
					ML	ML	SANDY SILT - fine grained, light brown (75 yr 6/4), dense, moist, highly calcareous; caliche zone @ 108.2'-108.5'
					ML	ML	- occasional coarse sand, dense to very dense where cemented (109.8'-110.6')
115					ML	ML	SILTY CLAY - with trace fine sand, brown (75 yr 5/4), stiff, moist
					ML	ML	SILT - with little clay, brown (75 yr 5/4), stiff, moist to wet, slight to non calcareous; caliche zone in silt @115.5'
					ML	ML	- increase in clay @117'; Caliche nodules and trace fine sand at 118'
120					ML	ML	- caliche cemented sandy silt @119.5'; silty sand layer @120', moisture increasing
					ML	ML	- clayey silt @120.5'; 0.1' thick caliche layer @121'; clayey silt, brown, medium stiff, moist to wet, little fine sand @122'
					ML	ML	- @122.6' - silt with little clay, soft, saturated
125					ML	ML	- soft where non CO3, stiff where CO3, clay content increased toward 125'
					ML	ML	- caliche cemented silt with little clay, mottled brown (75 yr 5/4); white (10 yr 8/2) caliche, caliche alternates between soft (can roll threads) to well indurated
					ML	ML	- slight to non calcareous @126.2'; silt with little clay @126.5'; some clay @128'
130					ML	ML	@128.7' - caliche cemented zone of silty sand, with little clay, brown, very dense, moist layer 1/4" to .1' thick; @129' - some with coarse sand and trace gravel, black andesite; caliche layer at 130'
					ML	ML	- high calcareous clayey silt w/fine sand, lt brown(75yr6/4),hard,moist @130.5'
					ML	ML	SILTY CLAY - brown(75 yr 5/4),very stiff,moist to wet,slight to mod calcareous
135					ML	ML	CLAYEY SILT - caliche cemented, brown with white (10 yr 8/2) caliche zones
					ML	ML	SILT - with some clay, brown (75 yr 5/4), stiff, moist; moderately calcareous; breaks up into 1/4" to 1" layers and fragments to 2" due to brittleness from CO3 cement
					ML	ML	- @134.1 - non calcareous, soft to stiff massive (no parting planes)
					ML	ML	- caliche cemented with some fine sand, little clay, light brown (75 yr 6/4), dense, moist, highly calcareous (5:80:15)
140					ML	ML	- non calcareous, loose to dense, moist at 136'
					ML	ML	- sand increasingly fine, slight calcareous 1/4" layers at 137'
					ML	ML	- clayey silt, brown, soft, moist to wet, non calcareous at 138.2'
					ML	ML	- very stiff, wet with caliche nodules at 138.5'
					ML	ML	- little clay, brown, very soft, wet; 0.1' wide layers of CaCO3 cemented ml are very hard, brittle and highly calcareous; soft zones less calcareous
145					ML	ML	- calcareous sandstone, fine with silt matrix, well indurated; silt with little clay, brown, caliche sandstone blocked barrel
					ML	ML	SANDY SILT - with some clay, fine, brown (75 yr 5/4), medium dense, moist, non calcareous; less sand, more silt and clay @143.7'
					ML	ML	@144.1' - hard, mod indurated, slightly friable, cemented siltstone, with fine sand, light brown(75 yr 6/4) to pinkish white(5 yr 8/2), very calcareous, damp
					ML	ML	- hard @145'; light brown (75 yr 6/4) @145.7'
150					ML	ML	- @146.9' - trace fine sand, trace clay, brown (75 yr 5/4), soft to moderately stiff, moderately calcareous, sand increasing to 148' and decreasing to 149'
					ML	ML	- clayey silt @148.9'; caliche cemented silt @150.9'

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Rentonite grout

DCNR/DWR
Received
JAN 24 2000
LAS VEGAS OFFICE

00 JAN 10 PM 2:20

STATE ENGINEERS OFFICE

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REVIEWED BY: Scott Ball

SURFACE ELEVATION (feet):
TOTAL DEPTH (feet): 201.0
DIAMETER OF BORING: 9-5/8"

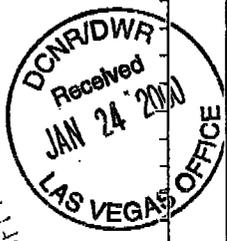
DRILLING METHOD: ARCH
SCREEN SIZE: 0.02"
CASING SIZE: 4"

 KLEINFELDER GEOTECHNICAL AND ENVIRONMENTAL ENGINEERS SOILS AND MATERIALS TESTING PROJECT NUMBER 31-309302-009	PROJECT: AMPAC	PLATE 3c
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							Groundwater under artesian condition at 13 psi.
155	Bentonite chips from 151.1' to 168'				ML		SILT - with little clay, trace fine sand, brown (75 yr 5/4), soft, moist, slightly to moderately calcareous; soft but breaks into layers; brittle - soft to moderately stiff, moist to wet, high calcareous caliche nodules to 3/4" at 153.2', sand increasing with depth to 154.3' - hard, moist, highly calcareous, broken into 1/4" varves
160					ML		SANDY SILT - with some clay, fine, brown (75 yr 5/4), loose to medium dense, moist, clay increase to 158'; caliche cemented, well indurated, highly calcareous @158'
165					SM		SILTY SAND - with fine gravel, fine to coarse grained, brown (75 yr 5/4), wet; clasts predominantly black andesite SILTY CLAY - brown (75 yr 5/4), very stiff to hard, moist; slightly calcareous, slightly plastic, moderate dry strength; soft clayey silt @162.7' - cemented zone, light brown gray, very hard @163.9'
170					ML		SILT - with little clay, trace fine sand, brown (75 yr 5/4), loose to medium dense, moist; non to moderately calcareous
175	#3 sand from 168' to 200.5'				SM		SILTY SAND - with gravel, red gray (5 yr 5/2), dense, wet to saturated; slight to moderately calcareous; sand and gravel predominantly black andesite, occasional red basalt coarse sand
180					SM		SILTY SAND - fine to coarse grained, with fine gravel, brown, loose to medium dense, wet, slightly calcareous - dense to very dense - weakly cemented with carbonate, friable, breaks into 1/4" to 3/4" varves, moderately calcareous - loose, saturated with cemented zones
185					SM		SILTY SAND - fine to coarse grained, with some fine gravel, consolidated top 0.4'; finer and carbonate cemented weakly to bottom, calcareous silty sandstone - brown (75 yr 5/4), loose to medium dense (where cemented), saturated, cemented zones 0.2 to 0.4' wide and occur approximately 0.5' apart - medium to coarse grained, loose to medium dense, weakly cemented
190					SP		GRAVELLY SAND - with some silt, brown, mottled due to black and red gravel, medium dense, saturated, moderately cemented - with little silt
195					SP		SAND - with some gravel, little silt, strongly cemented in 1/4" to 2" gravel sized pieces - probably fractured
200							

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