

BASELINE

Boring ID: E023

5900 Hollis Street, D
Emeryville, CA 94608
(510) 420-8686
(510) 420-1707 fax

Date: 4/15/09
Project no.: Y0239-04.A3
Driller: Gregg Drilling
Method: HSA

Location: Doyle Drive, San Francisco
Logger: WK Scott, P.G. #6104
Groundwater depth (bgs): 7.0 feet
Bore size: 6.5 inches

Reviewed by:

page 1 of 2

Depth (feet)	Water Level	Sample	USCS	Graphic	PID (ppm)	DESCRIPTION	REMARKS
0						Very dark gray (10YR 3/1) SAND with gravel, fine grained, medium dense, gravel clasts of brick (red) and concrete <2 inches thick, moist (Fill)	Removed 2" asphalt, 4" base Used 2.5" diameter Cal modified sampler
1			SP		0		
2						Concrete pieces at 2.0 feet	
3						Very dark gray (5YR 3/1) GRAVEL with sand-SAND with gravel, fine grained sand, 1/3 to 3/4 inch diameter rounded to angular clasts of chert, sandstone, hard rock, medium dense, moist (Fill)	
4			SP/GP				
5						Dark greenish gray (GLE Y1 5GY 4/1) clayey SAND, loose, wet (Fill)	
6							
7	▼						
8			SP				
9							
10							
11							
12			CL			Very dark greenish gray (GLE Y1 10Y 3/1) CLAY, soft, high plasticity, wet, some black vegetation and thin sand lenses (Bay Mud)	

BASELINE

Boring ID: E023

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Date: 4/15/09
Project no.: Y0239-04.A3
Driller: Gregg Drilling
Method: HSA

Location: Doyle Drive, San Francisco
Logger: WK Scott, P.G. #6104
Groundwater depth (bgs): 7.0 feet
Bore size: 6.5 inches

Reviewed by:

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Depth (feet)	Water Level	Sample	USCS	Graphic	PID (ppm)	DESCRIPTION	REMARKS
12							
13							
14			CL				
15							
16							
17						Dark bluish gray (GLE Y2 10B 4/1) SAND, fine grained, loose, wet, rootlets, areas of Bay Mud inclusions, shell fragments (Alluvium?)	
18							
19			SP				
20							
21							
22					0	Dark bluish gray (GLE Y2 10B 4/1) SAND, fine to medium grained, loose, shell fragments, wet (Alluvium)	
23			SP				
Total depth = 23.0 feet						Backfilled boring with bentonite chips capped with concrete Collected groundwater sample	
24							

BASELINE

Boring ID: E024

5900 Hollis Street, D
Emeryville, CA 94608
(510) 420-8686
(510) 420-1707 fax

Date: 4/16/09
Project no.: Y0239-04.A3
Driller: Gregg Drilling
Method: HSA

Location: Doyle Drive, San Francisco
Logger: WK Scott, P.G. #6104
Groundwater depth (bgs): None observed
Bore size: 6.5 inches

Reviewed by:

Depth (feet)	Sample	USCS	Graphic	PID (ppm)	DESCRIPTION	REMARKS
0		GC		0	Dark reddish gray (2.5YR 3/1) clayey GRAVEL, 1/3 to 1.5 inch diameter angular clasts of chert, dense, moist (Fill)	Removed 3" asphalt, 3" base Used 2.5" diameter Cal modified sampler
1		SC			Very dark gray (GLE Y1 3/N) clayey SAND with gravel, fine grained, medium dense, gravel clasts of sandstone (graywacke), moist (Fill)	12" recovery from 0 to 1.5 feet
2						
3						No recovery from 1.5 to 3.0 feet Pushed graywacke cobble Will move 3.5 feet eastward to attempt to collect 2.5 foot sample
4		SP			Dark greenish gray (GLE Y2 5BG 3/1) SAND with clay, fine grained, loose, wet (Fill)	
5						
6						
7		CH			Black (GLE Y1 2.5N) CLAY, soft, high plasticity, wet (Bay Mud), abundant vegetation pieces, peat, at contact (mottled)	
8		CH			Dark greenish gray (GLE Y1 10GY 4/1) CLAY, very soft, wet (Bay Mud), abundant vegetation pieces scattered throughout	
9						
10						
11						
12						

BASELINE

Boring ID: E024

5900 Hollis Street, D
Emeryville, CA 94608
(510) 420-8686
(510) 420-1707 fax

Date: 4/16/09
Project no.: Y0239-04.A3
Driller: Gregg Drilling
Method: HSA

Location: Doyle Drive, San Francisco
Logger: WK Scott, P.G. #6104
Groundwater depth (bgs): None observed
Bore size: 6.5 inches

Reviewed by:

page 2 of 2

Depth (feet)	Sample	USCS	Graphic	PID (ppm)	DESCRIPTION	REMARKS
12		CH				
13					Dark greenish gray (GLE Y1 10GY 4/1) SAND, fine grained, loose, wet, some interbedding of Bay Mud at 13.0 feet	
14						
15						
16						
17		SP			No interbedding of Bay Mud	No recovery from 16.5 to 18 feet Will move 3.5 feet eastward to collect sample E24A
18						
19						
20						
21						
22		SP			Very dark greenish gray (GLE Y2 5BG 3/1) SAND, fine to medium grained, dense, small shell fragments, wet (Alluvium)	
23					Becoming gray (2.5Y 5/1)	
Total depth = 23.0 feet						Backfilled boring with bentonite chips capped with concrete Collected groundwater sample
24						

BASELINE

Boring ID: E025

5900 Hollis Street, D
Emeryville, CA 94608
(510) 420-8686
(510) 420-1707 fax

Date: 4/16/09
Project no.: Y0239-04.A3
Driller: Gregg Drilling
Method: HSA

Location: Doyle Drive, San Francisco
Logger: WK Scott, P.G. #6104
Groundwater depth (bgs): None observed
Bore size: 6.5 inches

Reviewed by:

page 1 of 2

Depth (feet)	Water Level	Sample	USCS	Graphic	PID (ppm)	DESCRIPTION	REMARKS
0						Dark reddish gray (2.5YR 3/1) clayey GRAVEL, 1/3 to 1.5 inch diameter angular clasts of chert, dense, moist (Fill)	Removed 4" asphalt, 8" base Used 2.5" diameter Cal modified sampler
1			GC		0		
2			SC		0	Very dark gray (GLE Y1 3/N) clayey SAND, trace gravel, fine grained, medium dense, moist (Fill)	
3						Brown (10YR 4/3) CLAY, medium stiff, high plasticity, moist (Fill)	
4						Becoming dark greenish gray at 3.0 feet with lenses of sand with shell fragments and soft	
5			CH				
6							
7							
8			CH		0	Black (GLE Y1 2.5N) CLAY, soft, high plasticity, wet (Bay Mud), abundant vegetation pieces at contact	
9						Dark greenish gray (GLE Y1 10GY 4/1) CLAY, very soft, wet (Bay Mud)	
10			CH				
11							
12			SC			Dark greenish gray (GLE Y1 4/1 10GY) clayey SAND, fine grained, very loose, wet, interbedded with Bay Mud few inches thick (Alluvium)	

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BASELINE

Boring ID: E025

5900 Hollis Street, D
Emeryville, CA 94608
(510) 420-8686
(510) 420-1707 fax

Date: 4/16/09
Project no.: Y0239-04.A3
Driller: Gregg Drilling
Method: HSA

Location: Doyle Drive, San Francisco
Logger: WK Scott, P.G. #6104
Groundwater depth (bgs): None observed
Bore size: 6.5 inches

Reviewed by:

page 2 of 2

Depth (feet)	Water Level	Sample	USCS	Graphic	PID (ppm)	DESCRIPTION	REMARKS
12					0		
13			SC				
14							
15						Very dark greenish gray (GLE Y2 5BG 3/1) SAND, fine grained, loose, shell fragments, wet (Alluvium), some Bay Mud lenses	
16							
17							
18							
19			SP				
20							
21							
22					0		
23							
Total depth = 23.0 feet						Backfilled boring with bentonite chips capped with concrete Collected groundwater sample	
24							

BASELINE

Boring ID: E026

5900 Hollis Street, D
Emeryville, CA 94608
(510) 420-8686
(510) 420-1707 fax

Date: 4/14/09
Project no.: Y0239-04.A3
Driller: Gregg Drilling
Method: HSA

Location: Doyle Drive, San Francisco
Logger: WK Scott, P.G. #6104
Groundwater depth (bgs): 4.5 feet
Bore size: 6.5 inches

Reviewed by:

page 1 of 2

Depth (feet)	Water Level	Sample	USCS	Graphic	PID (ppm)	DESCRIPTION	REMARKS
0						Reddish brown (5YR 4/3) crushed ROCK with sand, fine grained, dense sand, chert clasts, dry (Fill)	Removed surface vegetation Used 2.5" diameter Cal modified sampler
1		X	GW				
2		X				Brown (10YR 4/3) SAND, fine grained, medium dense, moist (Fill) Light olive brown (2.5Y 5/6) SAND, fine to medium grained, medium dense, moist (Fill)	
3			SP				
4	▼						
5						Bluish black (GLE Y2 10B 2.5/1) SAND, fine grained, very loose, wet, Alluvium	
6							
7		X					6" recovery
8			SP				
9							
10							
11							
12			SP			Very dark bluish gray (GLE Y2 10B 3/1) SAND, fine grained, very loose, wet, trace silt, shell fragments, some pieces as large as 1 inch, Marin sand (Alluvium)	

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5900 Hollis Street, D
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Date: 4/14/09
Project no.: Y0239-04.A3
Driller: Gregg Drilling
Method: HSA

Location: Doyle Drive, San Francisco
Logger: WK Scott, P.G. #6104
Groundwater depth (bgs): 4.5 feet
Bore size: 6.5 inches

Reviewed by:

page 2 of 2

Depth (feet)	Water Level	Sample	USCS	Graphic	PID (ppm)	DESCRIPTION	REMARKS
12					0		
13							
14							
15							
16							
17			SP			Same as above; no shell fragments	
18							
19							
20							
21							
22			SP		0	Dark greenish gray (GLE Y2 5BG 4/1) SAND, fine grained, loose, wet, trace shell fragments (Alluvium)	
23							
Total depth = 23.0 feet						Backfilled boring with bentonite chips	
24							

BASELINE

Boring ID: E027

5900 Hollis Street, D
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(510) 420-8686
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Date: 4/14/09
Project no.: Y0239-04.A3
Driller: Gregg Drilling
Method: HSA

Location: Doyle Drive, San Francisco
Logger: WK Scott, P.G. #6104
Groundwater depth (bgs): 5.0 feet
Bore size: 6.5 inches

Reviewed by:

page 1 of 2

Depth (feet)	Water Level	Sample	USCS	Graphic	PID (ppm)	DESCRIPTION	REMARKS
0						Mottled dark yellowish brown (10YR 4/6) and very dark grayish brown (10YR 3/2) SAND with silt, trace clay, dense, moist (Fill)	Removed surface vegetation Used 2.5" diameter Cal modified sampler
1		X	SP		0		
2		X	SP		0	Grayish brown (10YR 5/2) SAND, fine grained, loose, moist (Fill)	
3						Brown (10YR 4/3) mottled with dark brown (10YR 3/3) clayey SAND, fine grained, dense, moist (Fill)	
4			SC				
5	▼					Dark bluish gray (GLE Y2 5B 4/1) SAND, fine grained, loose, wet (hydraulic fill?) Marin sand? (Alluvium)	
6							
7		X			0		12" recovery
8			SP				
9							
10							
11							
12			SP			Very dark bluish gray (GLE Y2 10B 3/1) SAND, fine grained, loose, wet, abundant shell fragments up to 3/4 inch, Marin sand (Alluvium)	

BASELINE

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5900 Hollis Street, D
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(510) 420-8686
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Date: 4/14/09
Project no.: Y0239-04.A3
Driller: Gregg Drilling
Method: HSA

Location: Doyle Drive, San Francisco
Logger: WK Scott, P.G. #6104
Groundwater depth (bgs): 5.0 feet
Bore size: 6.5 inches

Reviewed by:

page 2 of 2

Depth (feet)	Water Level	Sample	USCS	Graphic	PID (ppm)	DESCRIPTION	REMARKS
12					0		
13							
14							
15							
16							
17			SP		0	Same as above, except some medium grained SAND, no shell fragments (Alluvium)	
18							
19							
20							
21							
22					0	Same as above, some shell fragments, Marin sand (Alluvium)	
23							
Total depth = 23.0 feet						Backfilled boring with bentonite chips	
24							

BASELINE

Boring ID: E049

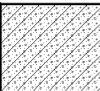
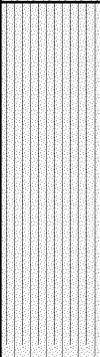
5900 Hollis Street, D
Emeryville, CA 94608
(510) 420-8686
(510) 420-1707 fax

Date: 2/18/09
Project no.: Y0239-04.A3
Driller: Gregg Drilling
Method: HSA

Location: Doyle Drive, San Francisco
Logger: WK Scott, P.G. #6104
Groundwater depth (bgs): 11.5 feet
Bore size: 7.75 inches

Reviewed by:

page 1 of 1

Depth (feet)	Water Level	Sample	USCS	Graphic	PID (ppm)	DESCRIPTION	REMARKS
0			GC		0	Dark reddish gray (2.5Y 3/1) clayey GRAVEL, 1/3 to >2 inch diameter angular to subangular clasts, medium dense, moist, clasts of chert, shale sandstone (Fill)	Removed 2" asphalt, 10" concrete Used 2.5" diameter Cal modified sampler
1			SM		0	Dark yellowish brown (10YR 3/4) SAND with silt, fine grained, medium dense, moist, areas of dark red (2.5 3/6) and dark greenish gray (5GY 4/1) silty SAND	
2							
3			CL		0	Very dark greenish gray (10Y 3/1) silty CLAY, trace gravel, very soft, medium plasticity, wet, 1/3 inch diameter angular clasts of shale (Fill?) (Bay Mud?)	
4							
5							
6			CL		0	Same as above, pieces of vegetation and shell fragments at 13 feet	
7							
8							
9							
10			CL		0	Total depth = 13.5 feet	Measured water level at 11.5 feet bgs prior to collecting water sample
11							
12							
13							
14							
15							Backfilled boring with bentonite chips once water was removed from boring as result of groundwater collection

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BASELINE

Boring ID: E050

5900 Hollis Street, D
Emeryville, CA 94608
(510) 420-8686
(510) 420-1707 fax

Date: 2/19/09
Project no.: Y0239-04.A3
Driller: Gregg Drilling
Method: HSA

Location: Doyle Drive, San Francisco
Logger: WK Scott, P.G. #6104
Groundwater depth (bgs): 11.5 feet
Bore size: 7.75 inches

Reviewed by:

page 1 of 1

Depth (feet)	Water Level	Sample	USCS	Graphic	PID (ppm)	DESCRIPTION	REMARKS
0			SP			Very dark brown (10YR 2/2) SAND with gravel, fine grained, medium dense, moist (Fill)	Removed 3" asphalt, 1" base
1		X	SC			Dark yellowish brown (10YR 3/4) clayey SAND, fine grained, loose, moist, trace of brick fragments (Fill)	
2		X			218	Dark bluish gray (5B 4/1) clayey SILT with gravel, medium stiff, low plasticity, 1/3 to 3/4 inch diameter subangular to angular clasts of shale and sandstone (Fill)	
3			ML				
4							
5						Dark greenish gray (10Y 4/1) clayey SAND, fine grained, loose, moist, trace gravel (Fill)	
6							
7							
8		X			368		
9							
10			SC				
11							
12	▼	X			0	Piece of wood at 12.5 feet; small piece of shell fragment (hydraulic fill?)	Collected water sample
13							
14							
15						Total depth = 15.0 feet	Drilled to 15 feet to collect water sample
16							Backfilled boring with neat cement topped off with concrete

BASELINE

Boring ID: E051

5900 Hollis Street, D
Emeryville, CA 94608
(510) 420-8686
(510) 420-1707 fax

Date: 2/17/09
Project no.: Y0239-04.A3
Driller: Gregg Drilling
Method: HSA

Location: Doyle Drive, San Francisco
Logger: WK Scott, P.G. #6104
Groundwater depth (bgs): 8.0 feet
Bore size: 7.75 inches

Reviewed by:

page 1 of 1

Depth (feet)	Water Level	Sample	USCS	Graphic	PID (ppm)	DESCRIPTION	REMARKS
0			GC			Very dusky red (10R 2.5/2) clayey GRAVEL, 1/3 to 3/4 inch diameter subangular to angular clasts, medium dense, moist, clasts of chert (Fill)	Removed 3" asphalt, 1" base Used 2.5" diameter Cal modified sampler Strong petroleum odor
1					25	Dark bluish gray (10B 4/1) clayey SAND, fine grained, medium dense, moist (Fill), trace gravel, 1/2 to 3/4 inch diameter angular clasts of sandstone	
2					40		
3							
4							
5							
6			SC				
7					3695	Dark bluish gray (10B 4/1) SAND, trace clay, fine grained, loose, wet	
8	▽						
9							
10							
11							
12	▼		OL		2.4	Black (10YR 2/1) PEAT (Bay Mud)	2/17/09: waited 1/2 hour for water to accumulate in boring; very little Placed temporary casing; let stand overnight Placed bentonite chips around borehole to prevent surface water intrusion 2/18/09: water level was 11.5+ feet bgs
13						Total depth = 13.0 feet	
14							

BASELINE

Boring ID: E054

5900 Hollis Street, D
Emeryville, CA 94608
(510) 420-8686
(510) 420-1707 fax

Date: 2/17/09
Project no.: Y0239-04.A3
Driller: Gregg Drilling
Method: HSA

Location: Doyle Drive, San Francisco
Logger: WK Scott, P.G. #6104
Groundwater depth (bgs): 5.5 feet
Bore size: 7.75 inches

Reviewed by:

page 1 of 1

Depth (feet)	Water Level	Sample	USCS	Graphic	PID (ppm)	DESCRIPTION	REMARKS
0			GM/GC			Dark brown (7.5YR 3/3) silty GRAVEL-clayey GRAVEL, 1/2 to >2 inch diameter subangular to angular clasts, medium dense, moist, clasts of sandstone (Fill)	Removed 2" asphalt, 10" base Used 2.5" diameter Cal modified sampler to 2.5 feet, then 2" diameter sampler
1		GC			Dark reddish brown (2.5YR 2.5/4) clayey GRAVEL, 1/3 to 1.5 inch diameter angular clasts, medium dense, moist, crushed chert and shale (Fill)		
2					0	Dark yellowish brown (10YR 4/6) SAND with clay, medium dense, moist Crushed serpentinite at 2.5 feet	
3					0		
4			SC				
5							
6							
7			SP				
8					0		
9							
10							
11							
12			CH				
13					0		
14							
15							
16							

Total depth = 15.0 feet

Drilled to 15 feet to collect water sample
Collected water sample
Bay Mud on tip of auger

Backfilled boring with neat cement using tremie method; used concrete at surface

BASELINE

Boring ID: E056

5900 Hollis Street, D
Emeryville, CA 94608
(510) 420-8686
(510) 420-1707 fax

Date: 2/17/09
Project no.: Y0239-04.A3
Driller: Gregg Drilling
Method: HSA

Location: Doyle Drive, San Francisco
Logger: WK Scott, P.G. #6104
Groundwater depth (bgs): 5.5 feet
Bore size: 7.75 inches

Reviewed by:

page 1 of 1

Depth (feet)	Water Level	Sample	USCS	Graphic	PID (ppm)	DESCRIPTION	REMARKS
0					0	Brown (10YR 4/3) SAND, trace gravel, fine grained, loose, moist, large pieces of concrete, some brick (Fill)	Removed 2" asphalt, 2" base Used 2.5" diameter Cal modified sampler Moved 1 foot east to collect 1.0 and 7.5 foot samples
1		X					
2		X					
3			SP				
4							
5							
5.5	▽					Very dark gray (10YR 3/1) SAND, fine grained, loose, wet (Fill) hydraulic fill	Collected groundwater sample
6							
7		X					Flowing sands in auger No recovery at 7.5 on first attempt
8			SP				
9							
10							
11		X					Flowing sands; could not get to 12.5 feet
Total depth = 11.5 feet							Grouted boring with neat cement, finished with concrete
12							
13							
14							
15							

BASELINE

Boring ID: E060

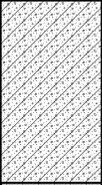
5900 Hollis Street, D
Emeryville, CA 94608
(510) 420-8686
(510) 420-1707 fax

Date: 1/23/09
Project no.: Y0239-04.A3
Driller: Gregg Drilling
Method: HSA

Location: Doyle Drive, San Francisco
Logger: WK Scott, P.G. #6104
Groundwater depth (bgs): ~8-9 feet
Bore size: 7.75 inches

Reviewed by:

page 1 of 1

Depth (feet)	Water Level	Sample	USCS	Graphic	PID (ppm)	DESCRIPTION	REMARKS
0			SP			Very dark brown (10YR 2/2) SAND, fine grained, loose to very loose, moist, rootlets (Fill)	Removed surface vegetation Used 2.5" diameter Cal modified sampler to 2.5 feet, then 2" diameter sampler
1			GC		0	Dark reddish brown (5YR 3/2) clayey GRAVEL, 1/3 to >1.5 inch diameter angular clasts of chert, serpentinite, dense, moist (Fill)	
2					0	Very dark gray (10YR 3/1) SAND, fine grained, loose, moist (Fill)	
3			SP				
4							
5							
6							
7							
8			SP			Dark olive gray (5Y 3/2) SAND, fine grained, loose, moist (Fill) (hydraulic fill)	
9							
10							
Total depth = 10.0 feet							
11							

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BASELINE

Boring ID: E074

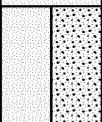
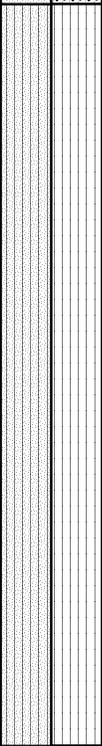
5900 Hollis Street, D
Emeryville, CA 94608
(510) 420-8686
(510) 420-1707 fax

Date: 1/12/09
Project no.: Y0239-04.A3
Driller: Gregg Drilling
Method: HSA

Location: Doyle Drive, San Francisco
Logger: WK Scott, P.G. #6104
Groundwater depth (bgs): 34.75 feet
Bore size: 6.5 inches

Reviewed by:

page 1 of 3

Depth (feet)	Water Level	Sample	USCS	Graphic	PID (ppm)	DESCRIPTION	REMARKS
0							
0 - 1		X	SP		0	Very dark brown (10YR 2/2) SAND with gravel, trace clay, fine grained, medium dense, moist, 1/3 to 3/4 inch diameter angular gravel clasts of sandstone, asphalt, hard rock, wood pieces (Fill)	
1 - 2							
2 - 3		X	SP/GP		0	Dark reddish brown SAND with gravel-GRAVEL with sand, 1/3 to 3/4 inch diameter clasts of shale, chert, dry, crushed rock? (Fill)	
3 - 7							
7 - 11		X	SM/ML		0	Mottled dark yellowish brown (10YR 4/4) and light yellowish brown (10YR 6/4) silty SAND-sandy SILT, fine to very fine grained, medium dense, medium stiff, low plasticity, oxide stained, moist, rootlets, Alluvium	
11 - 12							
12 - 13		X	SP		0	Dark yellowish brown (10YR 4/4) SAND with clay, fine grained, medium dense, moist, oxide stained (Alluvium grading to Colma?)	
13 - 14							
							Sand becoming coarser at 13.5 feet with black grains

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Date: 1/12/09
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Driller: Gregg Drilling
Method: HSA

Location: Doyle Drive, San Francisco
Logger: WK Scott, P.G. #6104
Groundwater depth (bgs): 34.75 feet
Bore size: 6.5 inches

Reviewed by:

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Depth (feet)	Water Level	Sample	USCS	Graphic	PID (ppm)	DESCRIPTION	REMARKS
14							
15							
16			SP				
17		X					
18						Dark yellowish brown (10YR 4/4) SAND, trace clay, fine grained, medium dense, moist, Colma	
19							
20							
21							
22		X	SP		0		
23							
24							
25							
26							
27		X	SP		0	Brown (10YR 4/3) SAND, fine to medium grained, dense, moist, Colma, trace of clay in some areas	
28							

BASELINE

Boring ID: E074

5900 Hollis Street, D
Emeryville, CA 94608
(510) 420-8686
(510) 420-1707 fax

Date: 1/12/09
Project no.: Y0239-04.A3
Driller: Gregg Drilling
Method: HSA

Location: Doyle Drive, San Francisco
Logger: WK Scott, P.G. #6104
Groundwater depth (bgs): 34.75 feet
Bore size: 6.5 inches

Reviewed by:

page 3 of 3

Depth (feet)	Water Level	Sample	USCS	Graphic	PID (ppm)	DESCRIPTION	REMARKS
28							
29							
30							
31							
32			SP		0		
33							
34							
35	▽						
36							
37					0	Grayish brown (2.5Y 5/2) SAND with silt, fine grained, dense, wet, Colma	
38			SP				
39							
40							
Total depth = 40.0 feet						Backfilled boring with neat cement to 30 feet; remainder with bentonite chips to 0.5 foot bgs	
41							
42							

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BASELINE

Boring ID: E078

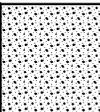
5900 Hollis Street, D
Emeryville, CA 94608
(510) 420-8686
(510) 420-1707 fax

Date: 1/14/09
Project no.: Y0239-04.A3
Driller: Gregg Drilling
Method: HSA

Location: Doyle Drive, San Francisco
Logger: WK Scott, P.G. #6104
Groundwater depth (bgs): ~20.5 feet
Bore size: 6.5 inches

Reviewed by:

page 1 of 2

Depth (feet)	Water Level	Sample	USCS	Graphic	PID (ppm)	DESCRIPTION	REMARKS
0							
0 - 1		X	GP		0	Dark reddish brown (5YR 3/2) crushed chert GRAVEL with sand, 1/3 to >1.5 inch diameter angular clasts, dense, dry (Fill)	Removed 3" asphalt, 9" concrete Used 2.5" diameter Cal modified sampler to 2.5 feet, then 1.5" diameter sampler
1 - 2		X			0	Dark grayish brown (10YR 4/2) SAND, fine grained, loose, moist, Fill?? Alluvium?	
6 - 7		X			0	Becoming dark yellowish brown (10YR 4/4)	
11 - 12		X	SP		0	Becoming yellowish brown (10YR 5/4)	

BASELINE

Boring ID: E078

5900 Hollis Street, D
Emeryville, CA 94608
(510) 420-8686
(510) 420-1707 fax

Date: 1/14/09
Project no.: Y0239-04.A3
Driller: Gregg Drilling
Method: HSA

Location: Doyle Drive, San Francisco
Logger: WK Scott, P.G. #6104
Groundwater depth (bgs): ~20.5 feet
Bore size: 6.5 inches

Reviewed by:

page 2 of 2

Depth (feet)	Water Level	Sample	USCS	Graphic	PID (ppm)	DESCRIPTION	REMARKS
15							
16							
17							
18			SP				
19							
20							
21	▽						
22			CL			Black (10YR 2/1) CLAY with sand, soft, medium plasticity, wet, trace yellowish brown sand inclusions	
23							
24							
25						Mottled brown (10YR 4/3) and dark yellowish brown (10YR 4/4) CLAY with sand, medium stiff, medium plasticity, wet, fine grained sand, oxide stained	
26			CL				
27							
28						Total depth = 27.5 feet	Backfilled boring with bentonite chips
29							
30							

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BASELINE

Boring ID: E092

5900 Hollis Street, D
Emeryville, CA 94608
(510) 420-8686
(510) 420-1707 fax

Date: 12/15/08
Project no.: Y0239-04.A3
Driller: Gregg Drilling
Method: HSA/MR

Location: Doyle Drive, San Francisco
Logger: WK Scott, P.G. #6104
Groundwater depth (bgs): 32.75 feet
Bore size:

Reviewed by: *Kevin Page*

Depth (feet)	Water Level	Sample	USCS	Graphic	PID (ppm)	DESCRIPTION	REMARKS
0						Dark yellowish brown (10YR 3/6) SAND, fine to medium grained, loose, moist becoming dry at depth (dune sand)	Removed vegetation Cal modified sampler
1		X			0		
2		X			0		Cal modified sampler
3							
4							
5							
6						Brown (10YR 4/3) SAND, fine to medium grained, very loose, dry (dune sand)	
7		X			0		Cal modified sampler
8			SP				
9							
10							
11						Same as above, becoming moist	
12		X					Cal modified sampler
13							
14							
15							

BASELINE

Boring ID: E092

5900 Hollis Street, D
 Emeryville, CA 94608
 (510) 420-8686
 (510) 420-1707 fax

Date: 12/15/08
 Project no.: Y0239-04.A3
 Driller: Gregg Drilling
 Method: HSA/MR

Location: Doyle Drive, San Francisco
 Logger: WK Scott, P.G. #6104
 Groundwater depth (bgs): 32.75 feet
 Bore size:

Reviewed by: *Kevin Page*

Depth (feet)	Water Level	Sample	USCS	Graphic	PID (ppm)	DESCRIPTION	REMARKS
15							
16						Same as above	
17							Cal modified sampler
18							
19							
20							
21							
22			SP				Cal modified sampler
23							
24							
25							
26							
27							Cal modified sampler
28							
29							
30							

BASELINE

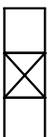
Boring ID: E092

5900 Hollis Street, D
Emeryville, CA 94608
(510) 420-8686
(510) 420-1707 fax

Date: 12/15/08
Project no.: Y0239-04.A3
Driller: Gregg Drilling
Method: HSA/MR

Location: Doyle Drive, San Francisco
Logger: WK Scott, P.G. #6104
Groundwater depth (bgs): 32.75 feet
Bore size:

Reviewed by: *Kevin Page*

Depth (feet)	Water Level	Sample	USCS	Graphic	PID (ppm)	DESCRIPTION	REMARKS
30							
31							
32						Very dark gray SAND, fine grained, medium dense, wet	Cal modified sampler
33							
34							
35							
36							
37			SP			Becoming very dense	Cal modified sampler Flowing sands; switched to mud rotary; used 4" diameter drag bit
38							
39							
40							
41							
42							Cal modified sampler
43							
44							
45							

BASELINE

Boring ID: E092

5900 Hollis Street, D
Emeryville, CA 94608
(510) 420-8686
(510) 420-1707 fax

Date: 12/15/08
Project no.: Y0239-04.A3
Driller: Gregg Drilling
Method: HSA/MR

Location: Doyle Drive, San Francisco
Logger: WK Scott, P.G. #6104
Groundwater depth (bgs): 32.75 feet
Bore size:

Reviewed by: *Kevin Page*

Depth (feet)	Water Level	Sample	USCS	Graphic	PID (ppm)	DESCRIPTION	REMARKS
45							
46			SP				
47		X				Dark grayish brown (10YR 4/2) SAND, fine grained, very dense, wet	Cal modified sampler
48							
49			SP				
50							
51							
52		X				Very dark gray (GLE Y1 3/N) CLAY, stiff, high plasticity, trace silt, gravel up to 1/3 inch diameter, greenish gray in color, Old Bay Mud? Peat(?) layer at 51.5 feet bgs	Cal modified sampler
53							
54			CH				
55							
56							
57		X				Very dark greenish gray (GLE Y1 GY 3/10) CLAY with sand and gravel, very stiff, medium plasticity, some serpentine gravel clasts up to 2 inches in diameter, Bay Mud complex? Alluvium?	Cal modified sampler
58			CH				
59							
60							

BASELINE

Boring ID: E092

5900 Hollis Street, D
Emeryville, CA 94608
(510) 420-8686
(510) 420-1707 fax

Date: 12/15/08
Project no.: Y0239-04.A3
Driller: Gregg Drilling
Method: HSA/MR

Location: Doyle Drive, San Francisco
Logger: WK Scott, P.G. #6104
Groundwater depth (bgs): 32.75 feet
Bore size:

Reviewed by: *Heri Page*

Depth (feet)	Water Level	Sample	USCS	Graphic	PID (ppm)	DESCRIPTION	REMARKS
60							
61							
62		X				Increase in gravel content and size	Cal modified sampler
63		X					Driller indicates hit rock at 63 feet
64			CH				
65							
66							
67		X				Yellowish brown (10YR 5/4) SANDSTONE weathered bedrock with clay seams	Cal modified sampler
68							
69			Rock				
70							
71							
72		X	Rock			Dark greenish gray (GLE1 4/1 5G) SANDSTONE bedrock	
						Total depth = 72.0 feet	Tremied grout to 1 foot from surface
73							
74							
75							

LOGGED BY S. McLandrich	BEGIN DATE 1-17-08	COMPLETION DATE 1-22-08	BOREHOLE LOCATION (Lat/Long or North/East and Datum) N2120323.729 / E5994396.263 (NAD83)	HOLE ID BTSB-R1-PZ
DRILLING CONTRACTOR Gregg Drilling and Testing, Inc.	BOREHOLE LOCATION (Offset, Station, Line) Offset 35ft L Sta 82+30 SB Alignment		SURFACE ELEVATION 101.030 ft (NAVD88)	
DRILLING METHOD Mud Rotary	DRILL RIG Failing 1500		BOREHOLE DIAMETER 5 in. (soil); 4 in. (rock)	
SAMPLER TYPE(S) AND SIZE(S) (ID) MC (2.4"), SPT (1.4"), Shelby (2.87"), HQ Core		SPT HAMMER TYPE Automatic, 140 lbs., 30-inch drop		HAMMER EFFICIENCY, ERI 72.8%
BOREHOLE BACKFILL AND COMPLETION 2" dia. Standpipe Piezo Screened 23.5 to 33.5 ft		GROUNDWATER DURING DRILLING AFTER DRILLING (DATE) READINGS		TOTAL DEPTH OF BORING 75.5 ft

ELEVATION (ft)	DEPTH (ft)	Material Graphics	Description	Sample Location	Sample Number	Blows per 6 In	Blows per Foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
	0		CLAYEY SAND (SC), loose, dark brown, dry, fine, with GRAVEL. [FILL]												
	1		Grades dry to moist.												
99.03	2		Grades no GRAVEL, grades with pockets of yellowish brown CLAY.		S1	4	13	100							
	3		Poorly graded SAND (SP), loose, reddish brown, dry to moist, fine.			6									
97.03	4		Grades dark yellowish brown.		S2	2	7	78							
	5					2									
	6					2									
95.03	7					5									
	8		Grades yellowish brown to light yellowish brown, medium dense.		S3	10	24	100							
93.03	9		SAND grades fine to medium.			14									
	10		SAND grades fine.		S4	4	20	100							
91.03	11					9									
	12					13									
89.03	13				S5	9	40	100							
	14					27				15.0	105.8				PA
87.03	15				S6	6	25	44							
	16					11									
	17					14									
85.03	18		Grades moist.		S7	8	33	67							
	19					14									
83.03	20				S8	5	22	56							
	21					9									
81.03	22					13									
79.03	23				S9	10	12	33		26.4	100.5	DS = 1.1			PA
	24		Lean CLAY with SAND (CL), soft, very dark gray to black, wet, with brown mottling, occasional small decayed vegetation. [BURIED SOIL HORIZON]			6				25.9	100.7	DS = 12.5			
77.03	25				S10	3	67			30.8	95.9	DS =			

(continued)

CALTRANS FORMAT DOYLEDRIVE_ARUPLOGS.GPJ ARUP LIBRARY_CALTRANS FORMAT.GLB 6/1/09



Department of Transportation
Division of Engineering Services
Geotechnical Services

REPORT TITLE BORING RECORD				HOLE ID BTSB-R1-PZ	
DIST. 4	COUNTY S.F.	ROUTE 101	POSTMILE 8.3/9.4	EA 163701	
PROJECT OR BRIDGE NAME Doyle Drive Replacement Project					
BRIDGE NUMBER 34-0161L		PREPARED BY T. Carroll		DATE 6-1-09	SHEET 1 of 3

CALTRANS FORMAT DOYLEDRIVE_ARUPLOGS.GPJ ARUP LIBRARY_CALTRANS FORMAT.GLB 6/1/09

ELEVATION (ft)	DEPTH (ft)	Material Graphics	Description	Sample Location	Sample Number	Blows per 6 in	Blows per Foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
75.03	25		Lean CLAY with SAND (CL), soft, very dark gray to black, wet, with brown mottling, occasional small decayed vegetation. [BURIED SOIL HORIZON]			0						1.51			
	26					1									
	27					2									
73.03	28		Lean CLAY with SAND (CL), soft, brown, wet. [SANDY CLAY]		U11		225 psi	97		22.0	106.5	PP = 1.25 UU = 0.74			
	29									22.8	100.6				
71.03	30		Grades yellowish brown with gray clay lenses and pocket of very stiff gray CLAYEY SAND.												
	31														
69.03	32														
	33		Grades with black organic mottling, medium stiff to stiff.		S12	8	50/2"	100				PP = 0.5			
67.03	34		SEDIMENTARY ROCK (Sandstone), fine to medium grained, massive, gray to dark gray, moderately weathered, moderately hard, intensely fractured, anastomizing white secondary mineral vein infilling. [BEDROCK]		C13			90	33						
	35														
65.03	36		35.2', slightly weathered, moderately to intensely fractured.												
	37														
63.03	38		37.6' - 37.9', intensely fractured.		C14			100	60			UC = 780			
	39														
61.03	40														
	41														
59.03	42		41.8', slightly weathered to fresh.		C15			100	55						
	43														
57.03	44		SEDIMENTARY ROCK (Sandstone and Shale), sandstone is medium to fine grained, laminated to moderately bedded (distorted by soft sediment deformation and micro faulting white secondary mineral vein infilling occurs along faults), gray to dark gray, slightly weathered to fresh, moderately hard, moderately fractured, surface of core is occasionally pitted, ractures are commonly polished and slickensided.		C16			90	40			UC = 908			
	45														
55.03	46														
	47														
53.03	48		47.3' - 47.6', surface of core is commonly pitted.												
	49														
51.03	50		SEDIMENTARY ROCK (Mélange Matrix), very dark gray gravel, slightly weathered to fresh, very soft, very intensely fractured (hard meta-sandstone fragments in sheared shale matrix)(lean clay with gravel (CL), soft, gravel is fine to coarse, angular, moist to wet).		C17			20	0						
	51				C18			40	0						
49.03	52				C19			100	0						
	53				C20			60	0						
47.03	54				C21			65	0						
	55														

(continued)



Department of Transportation
Division of Engineering Services
Geotechnical Services

REPORT TITLE BORING RECORD				HOLE ID BTSSB-R1-PZ	
DIST. 4	COUNTY S.F.	ROUTE 101	POSTMILE 8.3/9.4	EA 163701	
PROJECT OR BRIDGE NAME Doyle Drive Replacement Project					
BRIDGE NUMBER 34-0161L		PREPARED BY T. Carroll		DATE 6-1-09	SHEET 2 of 3

End of Box 1 at 49.0'
Lost circulation at 49.0' on Run C17, recovered core consists primarily of harder fragments with occasional intervals of intact core consisting of sheared/brecciated meta-sandstone and shale. We install 4' casing to 52'.

ELEVATION (ft)	DEPTH (ft)	Material Graphics	Description	Sample Location	Sample Number	Blows per 6 in	Blows per Foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
55	55														
45.03	56		SEDIMENTARY ROCK (Mélange Matrix), very dark gray gravel, slightly weathered to fresh, very soft, very intensely fractured (hard meta-sandstone fragments in sheared shale matrix)(lean clay with gravel (CL), soft, gravel is fine to coarse, angular, moist to wet).												Hole is consistently caving to about 54'; we drill with tricone to 58' and install 4" casing to 58'
	57														
43.03	58				C22			53	0						Hole caved to 60' after drilling to 67', switch to 101-system.
	59		59.3', hard piece of meta-sandstone (0.3' diameter).												
41.03	60				C23			90	0						
39.03	62				C24			63	0						
37.03	64														Straight drill to 75.5' and monitor cuttings - all melange matrix; the aggregate is mostly siltstone
35.03	66														
33.03	68														
31.03	70														
29.03	72														
27.03	74														
25.03	76		Borehole terminated at a depth of 75.5 feet on 1/22/2008.												
	77		See Boring Record Legend for soil classification chart and key to test data and sampler type.												
23.03	78														
21.03	80														
19.03	82														
17.03	84														
	85														



Department of Transportation
 Division of Engineering Services
 Geotechnical Services

REPORT TITLE BORING RECORD				HOLE ID BTSSB-R1-PZ	
DIST. 4	COUNTY S.F.	ROUTE 101	POSTMILE 8.3/9.4	EA 163701	
PROJECT OR BRIDGE NAME Doyle Drive Replacement Project					
BRIDGE NUMBER 34-0161L		PREPARED BY T. Carroll		DATE 6-1-09	SHEET 3 of 3

LOGGED BY T. Carroll	BEGIN DATE 4-23-08	COMPLETION DATE 4-23-08	BOREHOLE LOCATION (Lat/Long or North/East and Datum) N2120227.544 / E5994550.875 (NAD83)	HOLE ID BTSSB-R3A-PZ-S
DRILLING CONTRACTOR Gregg Drilling and Testing, Inc.		BOREHOLE LOCATION (Offset, Station, Line) Offset 92ft L Sta 80+54 SB Alignment		SURFACE ELEVATION 98.049 ft (NAVD88)
DRILLING METHOD Mud Rotary		DRILL RIG Fraste Multi-drill (track)		BOREHOLE DIAMETER 5 in.
SAMPLER TYPE(S) AND SIZE(S) (ID) MC (2.4"), SPT (1.4"), Grab, Bulk		SPT HAMMER TYPE Automatic, 140 lbs., 30-inch drop		HAMMER EFFICIENCY, ERI 72.9%
BOREHOLE BACKFILL AND COMPLETION 2" dia. Standpipe Piezo Screened 9.0 to 18.0 ft		GROUNDWATER DURING DRILLING AFTER DRILLING (DATE) READINGS		TOTAL DEPTH OF BORING 19.3 ft

ELEVATION (ft)	DEPTH (ft)	Material Graphics	Description	Sample Location	Sample Number	Blows per 6 In	Blows per Foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
0	0		SILTY SAND (SM), poorly compacted, dark brown, moist to wet, fine, slight organic odor, trace fine roots. [FILL]		B1										
96.05	1		CLAY with GRAVEL (CL), poorly compacted, dark brown, moist, gravel is subangular, with chert fragments, with veins of yellowish brown clay and roots.		S2									CR	
	2		Poorly compacted, dark yellowish brown, moist.		S3	2	7	83		6.7	115.6			PA	
94.05	3				S4	3									
	4				S5	4									
92.05	5				S6	2	9	100							
	6				S7	3									
90.05	7		Grades medium dense, yellowish brown.		S8	9	29	100							
	8				S9	13									
88.05	9				S10	16				9.2	109.7	DS = 0.47			
	10				S11	4	11	83		10.4	109.7	DS = 0.52			
	11					7				9.3	109.7	DS = 0.75			
86.05	12		Lean CLAY with SAND (CL), medium stiff, dark brown, moist, SAND is fine to medium with dark yellowish brown mottling. [BURIED SOIL HORIZON]		S8	5	14	83		18.6	131.8	UU = 0.39		PI	
	13				S9	6									
84.05	14		Lean CLAY with SAND (CL), medium stiff, yellowish brown, moist, with iron-oxide nodules and mottling. [SANDY CLAY]		S9	8	9	100							
	15				S10	2									
82.05	16				S11	4									
	17		SEDIMENTARY ROCK (Sandstone), very soft, fine to medium grained, decomposed, intensely fractured, with light yellowish brown clay infilling (Poorly graded SAND with CLAY (SP-SC), moist, with iron-oxide mottling and nodules). [BEDROCK]		S10	28	50/4"	80							Rods bouncing at 16.5'
80.05	18				S11	50/4"									
	19				S11	65	50/6"	17		10.5	142.2	UU = 1.28		PA	
	20		Borehole terminated at a depth of 19.3 feet on 4/23/2008.												
78.05	21		See Boring Record Legend for soil classification chart and key to test data and sampler type.												
	22														
76.05	23														
	24														
74.05	25														

CALTRANS FORMAT DOYLEDRIVE_ARUPLOGS.GPJ ARUP LIBRARY_CALTRANS FORMAT.GLB 6/1/09



Department of Transportation
Division of Engineering Services
Geotechnical Services

REPORT TITLE BORING RECORD				HOLE ID BTSSB-R3A-PZ-S
DIST. 4	COUNTY S.F.	ROUTE 101	POSTMILE 8.3/9.4	EA 163701
PROJECT OR BRIDGE NAME Doyle Drive Replacement Project				
BRIDGE NUMBER 34-0161L	PREPARED BY T. Carroll	DATE 6-1-09	SHEET 1 of 1	

LOGGED BY T. Carroll	BEGIN DATE 4-18-08	COMPLETION DATE 4-22-08	BOREHOLE LOCATION (Lat/Long or North/East and Datum) N2120225.975 / E5994556.115 (NAD83)	HOLE ID BTSB-R3-PZ-D
DRILLING CONTRACTOR Gregg Drilling and Testing, Inc.		BOREHOLE LOCATION (Offset, Station, Line) Offset 93ft L Sta 80+49 SB Alignment		SURFACE ELEVATION 97.900 ft (NAVD88)
DRILLING METHOD Mud Rotary		DRILL RIG Fraste Multi-drill (track)		BOREHOLE DIAMETER 5 in. (soil); 4 in. (rock)
SAMPLER TYPE(S) AND SIZE(S) (ID) SPT (1.4"), HQ Core		SPT HAMMER TYPE Automatic, 140 lbs., 30-inch drop		HAMMER EFFICIENCY, ERI 72.9%
BOREHOLE BACKFILL AND COMPLETION 2" dia. Standpipe Piezo Screened 50.0 to 70.0 ft		GROUNDWATER DURING DRILLING AFTER DRILLING (DATE) READINGS		TOTAL DEPTH OF BORING 113 ft

ELEVATION (ft)	DEPTH (ft)	Material Graphics	Description	Sample Location	Sample Number	Blows per 6 In	Blows per Foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
0	0		SILTY SAND (SM), poorly compacted, very dark brown, moist, fine, occasional fine gravel and coarse sand, slight organic odor, trace fine roots. [FILL]												Very wet at ground surface due to lawn watering
95.90	2		Poorly graded SAND (SP), poorly compacted, dark yellowish brown, moist, fine to very fine, occasional roots (up to 1/8" thick).	S1	2	4	83								
93.90	4				2										
					2										
89.90	8		Grades with dark gray to black laminations (horizontal), with occasional dark brown CLAY.	S2	7	26	50								
87.90	10				12										
					14										
85.90	12		Lean CLAY with SAND (CL), medium stiff, dark brown, moist, SAND is fine. [BURIED SOIL HORIZON]	S3	3	8	100								
83.90	14		Lean CLAY with SAND (CL), medium stiff, yellowish brown, moist, with iron-oxide nodules and mottling. [SANDY CLAY]		4										
81.90	16				4										
79.90	18		SEDIMENTARY ROCK (Sandstone), fine to medium grained, yellowish brown, very soft, decomposed, intensely fractured, with vertical and sub-horizontal partings, with manganese-oxide staining on vertical fracture planes, angular to subangular gravels, individual grains commonly altered around perimeter (poorly graded SAND with CLAY (SP-SC), moist, with iron-oxide mottling and nodules). [BEDROCK]	S4	30	50/3.5	63								Drilling slowed at 16.5'
77.90	20				50/3.5										
75.90	22		SEDIMENTARY ROCK (Sandstone), fine to medium grained, no indication of bedding, yellowish brown, intensely to moderately weathered, moderately hard, intensely fractured, manganese-oxide staining on fracture planes. 21.1', approximately 1/2 face manganese-oxide stained separated by fracture from thin clay filling.	S5	50/5	50/5	80								21.1', 330/31E
73.90	24		23.0', fine to coarse grained, pitted texture, continued manganese-oxide staining of fractures at 23.3', 23.5', and 24.3'; clay filling on fractures (up to 0.01' thick), fracture dips range from sub-horizontal to 30° with occasional up to 80°.	C6			88	0							21.2', 38/67S
					C7		100	19							21.65', 48/63N
															21.8', 90/79S
															22.0', 305/70W
															22.25', 200/61E
															22.6', 76/90

(continued)

CALTRANS FORMAT DOYLEDRIVE_ARUPLOGS.GPJ ARUP LIBRARY_CALTRANS FORMAT.GLB 6/1/09



Department of Transportation
Division of Engineering Services
Geotechnical Services

REPORT TITLE BORING RECORD				HOLE ID BTSB-R3-PZ-D	
DIST. 4	COUNTY S.F.	ROUTE 101	POSTMILE 8.3/9.4	EA 163701	
PROJECT OR BRIDGE NAME Doyle Drive Replacement Project					
BRIDGE NUMBER 34-0161L		PREPARED BY T. Carroll		DATE 6-1-09	SHEET 1 of 4

ELEVATION (ft)	DEPTH (ft)	Material Graphics	Description	Sample Location	Sample Number	Blows per 6 in	Blows per Foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
71.90	25	•••••	SEDIMENTARY ROCK (Sandstone), fine to medium grained, no indication of bedding, yellowish brown, intensely to moderately weathered, moderately hard, intensely fractured, manganese-oxide staining on fracture planes. 26.5', increase in darker minerals, fracture dips range from horizontal to 45°.	C8				91	86			UC = 351	◇◇◇◇◇	PL	
69.90	26	•••••						30.0', intensely fractured.	C9						
67.90	27	•••••	33.0', bluish gray, moderately weathered.	C10				100	0			◇◇◇◇◇	◇◇◇◇◇	PL	30.5', 38/41W 30.65', 296/42N 30.9', 310/45N 31.2', 60/28N 31.5', 285W/37S 31.9', 20/57E and 309/37S 32.1', 285W/37S PL 32.9', 60/34W 33.2', 26/42E 34.0', 32/76E 34.8', 288/37S
65.90	28	•••••						38.0' - 38.8', very intensely fractured (crushed), with localized mylonization (variably oriented fractures with clay filling), minor pitting along some fractures, most fractures dip 20° to 40° with occasional vertical fractures.	C11						
63.90	29	•••••	Common near vertical fractures, continued localized pitting, grain size is variable and mixed suggesting soft sediment deposition.	C12				94	10			◇◇◇◇◇	◇◇◇◇◇	PL	40.2', 357/62W From 40.3' to 41.4' fracture is curvilinear 40.3' to 40.8', 58/79S 40.8' to 41.4', 67/83N 41.6', 47/78S 41.7', 334/40N 42.95', 56/34S 43.2', 85/25S 43.4', 30/21N
61.90	30	•••••						42.4' - 43.0', irregular fracture not measured (sub-vertical).	C13						
59.90	31	•••••	Iron-oxide staining only, limited to fracture planes, very intensely fractured zones 45.6' to 45.8' and 47.2' to 47.6'.	C14				100	93			◇◇◇◇◇	◇◇◇◇◇	PL	45.2', 24E/29E 45.4', 8/49E 45.7', 90/82S 46.0', 290/67N 46.1', 359/44E 46.2' - 46.8', sub-vertical fracture 46.8', 33/73W 47.1', 90/75N (shearing along plane) 47.4', 352/49W
57.90	32	•••••						46.2' - 46.8', sub-vertical.	C13						
55.90	33	•••••	48.0', occasional white (quartz?) veins, aphanitic dark rock fragments (fine grained sized) within fine to medium matrix, slightly weathered.	C14				100	93			◇◇◇◇◇	◇◇◇◇◇	PL	
53.90	34	•••••						50.0', elongated rock fragments (aphanitic) are sub-parallel, dark minerals predominate, moderately fractured, hard. Increased iron-oxide staining at 51.0'.	C14						
51.90	35	•••••	Very slight iron-oxide staining, moderately to slightly fractured.	C14				100	93			◇◇◇◇◇	◇◇◇◇◇	PL	
49.90	36	•••••						50.0', elongated rock fragments (aphanitic) are sub-parallel, dark minerals predominate, moderately fractured, hard. Increased iron-oxide staining at 51.0'.	C14						
47.90	37	•••••													
45.90	38	•••••													
43.90	39	•••••													

(continued)



Department of Transportation
Division of Engineering Services
Geotechnical Services

REPORT TITLE BORING RECORD				HOLE ID BTSB-R3-PZ-D	
DIST. 4	COUNTY S.F.	ROUTE 101	POSTMILE 8.3/9.4	EA 163701	
PROJECT OR BRIDGE NAME Doyle Drive Replacement Project					
BRIDGE NUMBER 34-0161L		PREPARED BY T. Carroll		DATE 6-1-09	SHEET 2 of 4

ELEVATION (ft)	DEPTH (ft)	Material Graphics	Description	Sample Location	Sample Number	Blows per 6 in	Blows per Foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
41.90	55	•••••	SEDIMENTARY ROCK (Sandstone), fine to medium grained, no indication of bedding, yellowish brown, intensely to moderately weathered, moderately hard, intensely fractured, manganese-oxide staining on fracture planes.												54.85', 16/38E
	56	•••••													54.95', 72/63N
	57	•••••													55.1', 0/17E
	58	•••••													56.0', 75/18S
39.90	59	•••••	Very intensely fractured zones at 59.4' to 59.8' and 61.6' to 62.1'. Localized banding appearance of dark mineral fragments.												PL
	60	•••••													
	61	•••••													
35.90	62	•••••	Unfractured, continued <0.02' thick quartz veins, continued localized dark mineral "banding", strong, fresh to slightly weathered.												PL
	63	•••••													
33.90	64	•••••	64.9', mechanical break.												PL
	65	•••••													
	66	•••••													
	67	•••••													
29.90	68	•••••	One core break is mechanical.												PL
	69	•••••													
	70	•••••													
27.90	71	•••••	SEDIMENTARY ROCK (Shale), aphanitic, no indication of bedding, dark gray, fresh, moderately hard where intact otherwise sheared, very intensely to intensely fractured, weak to moderately strong. 71.7' - 72.3', crushed. 71.8', 0.1' thick clay zone <50°.												
	72	•••••													
	73	•••••	73.0' - 73.2', hard. 73.2' - 75.1', crushed/sheared, highly variable orientation to shears, minor green serpentine fragments.												
23.90	74	•••••													
	75	•••••													
21.90	76	•••••													
	77	•••••													
19.90	78	•••••	SEDIMENTARY ROCK (Sandstone), fine to medium grained, dark gray, slightly weathered, moderately hard, intensely fractured, slight iron-oxide staining on some fractures, fractures ~45-90°.												
	79	•••••													
17.90	80	•••••	80.0', fresh, continued quartz veins, with dark mineral veins, localized soft sediment deposition.												
	81	•••••													
15.90	82	•••••	82.5' - 87.9', sheared zone (clayey).												81.4', 330/36W
	83	•••••													82.7', 7/28E
13.90	84	•••••	83.9', slickensides parallel to strike, rake is 18° down to SE.												83.5', 346/23E
	85	•••••													83.9', 322/46E 84.3', 335/22E

(continued)



Department of Transportation
Division of Engineering Services
Geotechnical Services

REPORT TITLE BORING RECORD				HOLE ID BTSB-R3-PZ-D	
DIST. 4	COUNTY S.F.	ROUTE 101	POSTMILE 8.3/9.4	EA 163701	
PROJECT OR BRIDGE NAME Doyle Drive Replacement Project					
BRIDGE NUMBER 34-0161L		PREPARED BY T. Carroll		DATE 6-1-09	SHEET 3 of 4

CALTRANS FORMAT DOYLEDRIVE_ARUPLOGS.GPJ ARUP LIBRARY_CALTRANS FORMAT.GLB 6/1/09

ELEVATION (ft)	DEPTH (ft)	Material Graphics	Description	Sample Location	Sample Number	Blows per 6 in	Blows per Foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
85			85.15', dip ~18° with slickensides on fracture surface.		C23			70	0						84.5', 288/54N
11.90	86		85.5', dip ~37°.												84.8', 4/44E
	87		SEDIMENTARY ROCK (Sandstone and Shale), commonly crushed to fragments up to 0.1' diameter. SANDSTONE is fine grained, variably oriented quartz veins within SANDSTONE intervals, light green mineral (chlorite?) within SHALE intervals, soft, moderately weathered.		C24			0							
	88				C25			85	0						
9.90	89			86.1', 0.2' clay zone.											
	89		88.1' - 88.6', crushed (not clayey).												
	90		88.8' - 89.3', sheared zone (clayey).												
7.90	91		Iron-oxide along fracture planes.												
	92		SEDIMENTARY ROCK (Sandstone), fine to medium grained, laminated to thinly bedded (contact between fine to medium grained and very fine gravel at 91.9' ~60° to 80° dip), dark gray, moderately to slightly weathered, moderately hard to moderately soft, intensely fractured, numerous closed fractures, fractures are randomly oriented, numerous healed micro faults.		C26			100	0						PL
5.90	93														
	94		94.5', moderately fractured with localized very intensely fractured (crushed) zones along fractures, limited to fracture planes.		C27			91	0						
3.90	95														
	96		97.0', contact to medium to fine grained, moderately hard, dipping ~45°.												
1.90	97														
	98		98.0', slightly to moderately weathered. From 99.0' to 99.8', fracture with localized crushing and slickensides. Increase in iron-oxide staining.		C28			100	33						98.4', 3/58E and 321/40W PL
	99														99.4', 297/70N and 348/71W
-2.10	100														99.6', 74/44W
	101		101.0' - 102.2', fine to very fine grained, moderately soft, indicating soft sediment disposition.												99.9', 286/59S
	102														100.1', 352/50W
-4.10	103		102.4' - 102.9', very intensely fractured (crushed), moderately weathered, with evidence of shearing.		C29			96	24						100.8', 25/42E
	104														101.2', 335/33E
	105		104.1', quartz vein infilling.												102.0', (contact) 4/83W
	106		105.0' - 105.5', contact to fine grained.												102.4', N42W/63SW
-6.10	107		105.5', frequent closed/healed fractures, ruggy, (occasional iron-oxide stained openings in the core that are not, through fractures up to 0.2' in length and 0.03' wide oriented near vertical to dipping ~80°).												105.5', 304/21S
	108														106.25', (parallel to bedding) 90/54S
-8.10	109		108.0', near parallel, sub-vertical fractures (to 110.5'), fine to medium grained from 109.2' to 110.0' and 111.0' to 111.2'. 108.0' - 109.2', very thinly bedded.		C30			96	0						106.75', 13/62E and 342/44E
	110														106.9', 90/34S
	111		111.0' to 112.8', frequent randomly oriented white mineral veins (calcite?).												
-10.10	112														
	113		Borehole terminated at a depth of 113 feet on 4/22/2008.												
-16.10	114		See Boring Record Legend for soil classification chart and key to test data and sampler type.												
	115														



Department of Transportation
Division of Engineering Services
Geotechnical Services

REPORT TITLE BORING RECORD				HOLE ID BTSB-R3-PZ-D	
DIST. 4	COUNTY S.F.	ROUTE 101	POSTMILE 8.3/9.4	EA 163701	
PROJECT OR BRIDGE NAME Doyle Drive Replacement Project					
BRIDGE NUMBER 34-0161L		PREPARED BY T. Carroll		DATE 6-1-09	SHEET 4 of 4



EXPLORATION BORING FIELD LOG

Date 3/18/08 Boring No. _____

Location Doyle Drive Replacement

Lot No. _____ EA No. 163701 Page 2 of 6

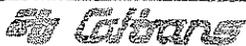
Dist. 04 Co. 5F Rt. 101 P.M. _____ Br. No. _____ Purpose of Work Geotechnical Investigation

Rt. _____ Line. Sta. _____ Northings. _____ Eastings. _____ Elev. _____

Ground Water Data	Date _____	Water Level _____	Bot. of Boring _____	Logged By: <u>E. Ortega</u>	Drill Crew: <u>Brad Johnson, Jarrod, Randy</u>
	Time _____			Drill rig: <u>CME 75</u>	Hammer and Weight: _____
				Drilling Method: <u>Rotary Wash</u>	Casing: _____
				Hole Completion: <u>3/20/08</u>	

34-015125-B3L

Depth	Sample Interval (Top)	Blows	ROD	Sample I.D.	% Rec.	Strength	Graphic Log	Description	Remarks
30		5						Sandy Sat. Clay (CH), stiff. Brown, moist, high pls. $q_u = 1.5 - 3.0 \text{ Ton/ft}^2$	
31		5							
32									
33									
34									
35		4						Same with oxidation spots $q_u = 1.0 - 2.0 \text{ Ton/ft}^2$	
36		6							
37		5							
38									
39									
40								Same $q_u = 1.0 - 2.0 \text{ Ton/ft}^2$	
41		4							
42		5							
43		6							
44									
45		9						Same $q_u = 1.0 - 2.0 \text{ Ton/ft}^2$	
46		13							
47		10							
48									
49									
50								Same but stiff, dark gray $q_u = 1.75 - 3.5 \text{ Ton/ft}^2$	
51		5							
52		4							
53		5						Same but very stiff $q_u = 2.25 - 2.75 \text{ Ton/ft}^2$	
54		11							



EXPLORATION BORING FIELD LOG

Date 3/18/08

Boring No.

Location Doyle Drive Replacement

Lab No.

EA No. 163701

Page 3 of 6

Dist. 04 Co. SF Rt. 101 P.M.

Br. No.

Purpose of Work

Geotechnical Investigation

Rt. Ft., Lt. Line Sta. Northings. Eastings. Elev.

Ground Water Data
 Date: _____ Time: _____ Water Level: _____ Bot. of Boring: _____
 Logged By: E. Ortega
 Drill rig: CMETS
 Drilling Method: Rotary Wash
 Hole Completion: 3/20/08
 Drill Crew: Brad Johnson, Terredy, Randy
 Hammer and Weight: _____
 Coaling: _____

Depth	Sample Interval (Top)	Blows ROD	Sample I.D.	% Rec.	Strength	Graphic Log	Description	Remarks
57								
58								
59								
60								
61		1						
62		7						
63		8						
64								
65								
66		21						
67		28						
68		30						
69								
70								
71		14						
72		12						
73		9						
74								
75								
76		4						
77		5						
78		5						
79								
80								
81		1						
82		2						
83		3						
84								
85								

3A-01575B-B3L

Same
 $q_u = 1.0 - 2.0 \text{ Ton/ft}^2$

Partly graded sand with clay (SP-SC), very dense, dark gray, moist, med. sand, low pls, weak cementation.

9" upper - Same
 9" bottom - Sandy fat clay (CH), very stiff, dark gray, moist, high pls.
 $q_u = 1.5 \text{ Ton/ft}^2$

Sandy fat clay (CH), stiff, dark gray, moist, high pls
 $q_u = 2.5 \text{ Ton/ft}^2$

Same but firm
 $q_u = 1.5 \text{ Ton/ft}^2$



EXPLORATION BORING FIELD LOG

Date 3/19/08 Boring No. _____

Location Doyle Drive Replacement

Log No. _____ EA No. 163701 Page 4 of 6

Dist. 04 Co. SE Rt. 101 P.M. _____ Sr. No. _____

Purpose of Work Geotechnical Investigation

Rt. _____ Line. Sta. _____ Northings. _____ Eastings. _____ Elev. _____

Ground Water Data	Date _____	Water Level _____	Bot. of Boring _____	Logged By: <u>E. Ortega</u>	Drill Crew: _____
	Time _____	_____	_____	Drill rig: <u>CME75</u>	Hammer and Weight: _____
	_____	_____	_____	Drilling Method: <u>Rotatory Wash</u>	Type of Bit: <u>Brad Johnson, Jarrod, Randy</u>
	_____	_____	_____	Hole Completion: <u>3/20/08</u>	Casing: _____

34-01515B-133L

Depth	Sample Interval	Blow	ROD Sample I.D.	% Rec.	Strength	Graphic Log	Description	Remarks
85		4					Sandy fat clay (CH), stiff, very dark gray, moist, high pls, with wood chips $q_u = 2.5 \text{ Ton/ft}^2$	← 3/19/08
86		3						
87		6						
88								
89								
90		3					Sandy fat clay with gravel (CH), stiff, very dark gray, moist, high pls, with wood chips and some gravel up to 1". $q_u = 2.5 \text{ Ton/ft}^2$	
91		4						
92		5						
93								
94								
95		6					Sandy fat clay with gravel (CH), very stiff, dark gray to light olive green, moist, high pls, with wood chips and some gravel (Serpentine?). $q_u = 2.5 \text{ Ton/ft}^2$	
96		6						
97		10						
98								
99								
100							Same	
101		8						
102		10						
103		13						
104								
105							No recovery	Cannot do push samples due to the bit
106								
107								
108								
109								
110		6						
		2						



EXPLORATION BORING FIELD LOG

Date 3/19/08 Boring No. _____

Location Doyle Drive Redevelopment Lot No. _____ EA No. 163701 Page 5 of 6

Dist. 04 Co. SE Rt. 101 P.M. Br. No. _____ Purpose of Work Geotechnical Investigation

Rt. _____ Line. Sta. _____ Northings. _____ Eastings. _____ Elev. _____

Ground Water Data	Date	Water Level	Bot. of Boring	Logged By: <u>E. Ortega</u>	Drill Crew: <u>Brad Johnson, Jarrod, Randy</u>
	Time			Drill rig: <u>CME 75</u>	Hammer Type
				Drilling Method: <u>Rotatory Wash</u>	Casing:
				Hole Completion: <u>3/20/08</u>	

Depth	Sample Interval	Blow ROD	Sample I.D.	% Rec.	Strength	Graphic Log	Description	Remarks
110		6					Sandy fat clay (CH), very stiff, dark gray, moist, high pls, with marine shells $q_u = 3.5 - 4.0 \text{ Ton/ft}^2$	
111		9						
112		11						
113							Same with wood chips and oxidation spots $q_u = 3.5 - 4.0 \text{ Ton/ft}^2$	
114		7						
115		10						
116		14						
117							Same $q_u > 4.5 \text{ Ton/ft}^2$	
118								
119								
120							Sedimentary rock, (shale) decomposed, light brown, soft, not heated (Fat clay, h. pls)	
121		9						
122		13						
123		17						
124							Shale, dark to very dark grayish brown, decomposed, very soft, not heated. $R.R.D = 0$	
125		20						
126		38						
127		50	4"					
128							Same $R.R.D = 0$	
129								
130								
131								
132								
133								
134								
135								
136								
137								
138								
139								
140								
141								
142								
143								
144								
145								
146								
147								
148								
149								
150								

34-01575B-1532

3/20/08
Millsell HUB 2.5 Y
4/2 to 3/2



EXPLORATION BORING FIELD LOG

Date 3/20/08 Boring No. _____

Location Doyle Drive Replacement

Lab No. _____ EA No. 163701 Page 6 of 6

Dist. 04 Co. 5F Rt. 101 P.M. _____ Br. No. _____ Purpose of Work Geotechnical Investigation

Rt. _____ Lt. _____ Line Sta. _____ Northings. _____ Eastings. _____ Elev. _____

Ground Water Data	Date _____	Water Level _____	Bot. of Boring _____	Logged By: <u>E. Ortega</u>	Drill Crew: _____
	Time _____	_____	_____	Drill rig: _____	Hammer Type and Weight: _____
	_____	_____	_____	Drilling Method: <u>Rotary Wash</u>	Casing: _____
	_____	_____	_____	Hole Completion: _____	_____

34-01575B-B3L

Depth	Sample Interval (ft)	Blows ROD	Sample I.D.	% Rec.	Strength	Graphic Log	Description	Remarks
140							Same but dark bluish gray	Munsell 2 for GLE 4/1
141							Same but decomposed to very intensely fractured, soft, not heated	
142							RQD = 0	
143							Same but intensely to very intensely fractured, soft, isolated with clay	
144							RQD = $5.5 + 8.5 \times 4 / 60 = 38.3\%$	
145							Same with calcium spots	
146							RQD = $8.5 + 25 + 6.5 / 60 = 66.6\%$	
147							Same but moderately to intensely fractured, soft, heated with clay	
148							RQD = $5 + 8 + 5 + 4.5 + 10 + 6 / 60 = 64.2\%$	
149							Same but very intensely fractured	
150							RQD = $6 + 8.5 / 60 = 24.2\%$	
151								
152								
153								
154								
155								
156								
157								
158								
159								
160								
161								
162								
163								
164								
165								
166								
167								
168								
169								
170							Bottom of boring @ 170 ft	E-logged