PARAGON GEOTECHNICAL, INC.
CONSULTING ENGINEERS

MEMORANDUM

DATE: May 28, 2007

TO: Hidden Lakes Estates Homeowners Association
c/o Frei Real Estate Services
8340 Auburn Boulevard, Suite 100
Citrus Heights, CA 95610

ATTN: Ms. Jackie Gregory

FROM: Frederick J. Wentz, Jr., G.E.

RE: **Preliminary Findings and Conclusions – Evaluation of Pond Seepage**
Hidden Lakes Estates North Pond Dam
Granite Bay, CA
(Proj. No. 1383-01-07)

No. of Pages: 10 plus attachments (13 plates)

This memorandum presents the preliminary results of our seepage evaluation of a small earth dam located at the north end of the north lake in the Hidden Lakes Estates residential subdivision in Granite Bay, California. The scope of our work included: 1) reviewing selected geologic and project references; 2) drilling 4 exploratory borings in the area of the north dam; and 3) performing laboratory testing and engineering analyses. The purpose of this memorandum is to provide an update on the progress of our work. A final report summarizing our geotechnical findings, conclusions and recommendations will be produced upon completion of our work. Our scope of work was outlined in our Professional Services Agreement with the Hidden Lakes Estates Homeowners Association (HLEHA) dated February 16, 2007.

PROJECT DESCRIPTION

The dam is located at the north end of the northernmost of two ponds, and immediately south of Lots 25 through 27 and 55 (see attached boring location plan). The ponds are each approximately 1-acre in surface area, and lie within a 5-acre common area near the center of the subdivision. The ponds are located within a pre-existing drainage and were created by constructing 2 earth dams in about 1978: 1 at the north end of the north (upper) pond, and 1 at

the south end of the south (lower) pond. The south dam also supports a Placer County maintained paved road in the subdivision. We understand that the ponds are supplied mainly with piped water (San Juan Irrigation District), with only a small amount of seasonal runoff coming into the ponds via a minor swale in the southeast corner of the north pond.

Our understanding of the project is based on our discussions with representatives of the HLEHA and our review of as-built (GW Consulting Engineers, 1978) improvement plans for Hidden Lakes Unit No. 1 and 2 provided by the HLEHA. We understand that no construction records for the dams have been found other than the As-built drawings (1 sheet for each dam).

WORK PERFORMED

Exploratory Borings

Prior to our investigation, we reviewed selected geologic references, as well as as-built information for the dam and associated pond. Four exploratory borings were drilled to depths of approximately 6 to 15 feet below existing site grade under the supervision of our Senior Engineer at the approximate locations shown in attached boring location plan. The borings were advanced with a CME-45 truck-mounted drill rig equipped with 6-inch-diameter hollow-stem augers.

During drilling, representative samples were obtained using California (2.5-inch I.D.) and Standard Penetration Test - SPT (1-3/8-inch I.D.) split-spoon samplers. The samplers were driven into the soil a distance of 18 inches using a 140-pound hammer dropped from a height of 30 inches. The number of blows required for each 6-inch increment of sampler drive was recorded. The California sampler blow counts were correlated to the equivalent SPT blow counts. The blow count for each 6-inch drive, and the cumulative blow count for the last 12 inches of drive, or fraction thereof, presented on the boring logs represent the number of SPT (or correlated) blows required to drive the sampler.

Logs of the borings (attached) were prepared based on the field logging, visual examination of the samples in the laboratory and the results of laboratory testing. The logs depict our interpretation of the subsurface conditions found in the borings on the date and at the depth indicated. The stratification lines on the logs represent approximate boundaries between soil types, and the actual transitions may be gradual.

Piezometer Installation

Upon completion of the borings, a standpipe piezometer consisting of 2-inch-diameter schedule 40 PVC pipe with a capped bottom was installed in each boring. The screened interval of each piezometer consisted of machine-slotted pipe, and the annulus between the screened interval and the wall of the boring was filled with No. 3 Monterey sand. The screened intervals were sealed at the top with about 12 to 18 inches of bentonite chips, and the remainder of the annulus was backfilled with cement grout to within about 12 inches of the ground surface. Water was added

to hydrate the bentonite chips prior to placing the grout. The piezometers were cut off just below the existing site grade and capped. A flush-mount box with a locking cover was set in concrete over each piezometer. The depth of each piezometer and associated screened interval is shown in the following table:

PIEZOMETER INSTALLATION SUMMARY

Boring No.	B1A	B2A	B3	B4
Depth of Boring (ft)	15	8	6	10
Depth of Piezometer (ft)	15	8	6	10
Screened Interval (ft)	11 to 15	5 to 8	4 to 6	7.3 to 10
Location of Screened Interval	Bedrock	Embankment	Bedrock	Bedrock

Groundwater Level Monitoring

Groundwater level measurements were made at the time of drilling, and again on April 10 and 17, and on May 9, 2007.

Field Permeability Testing

In-situ constant head permeability testing was performed in piezometers B1A and B2A. Piezometer B1A was screened between depths of about 11 and 15 feet within highly weathered bedrock. Piezometer B2A was screened between depths of about 5 and 8 feet within embankment material. The test apparatus consisted of a water reservoir located approximately 4 feet above each piezometer casing and connected to the top of the casing with rigid pipe. On April 18, 2007, the reservoirs were filled with water several times to saturate the test zone. The permeability tests were performed on April 19, 2007. During each test, a constant head of water was maintained in the reservoir, and the volume of water introduced into the piezometer over a given time interval was recorded. Three tests were performed in piezometer B1A and 4 tests were performed in piezometer B2A.

Laboratory Testing

Laboratory testing was conducted on disturbed soil samples recovered during the site investigation. Tests conducted included:

- Standard Test Method for Laboratory Determination of Water (Moisture) Content of Soil, Rock and Soil Aggregate Mixtures (ASTM D 2216);
- Standard Test Method for Density of Soil in Place by the Drive-Cylinder Method (ASTM D 2937);
- Standard Test Method for Amount of Material in Soils Finer Than the No. 200 Sieve (ASTM D 1140);
- Standard Test Method for Particle-Size Analysis of Soils (ASTM D 422);
- Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (ASTM D 1557); and
- Standard Test Method for Measurement of Hydraulic Conductivity of Porous Material Using a Rigid-Wall, Compaction-Mold Permeameter (ASTM D 5856).

The results of the laboratory testing are attached.

The laboratory permeability testing was performed on "undisturbed" liner samples collected from borings B1 and B3, and on a bulk sample (Bulk B from boring B1A) of embankment material obtained during exploratory drilling. The bulk sample was remolded in the laboratory to approximately 90 percent of the theoretical maximum dry density of the material based on the results of the laboratory compaction testing.

PRELIMINARY FINDINGS

Site Conditions

At the time of our field exploration, the north dam was approximately 6 to 7 feet high, as measured from the downstream toe to the crest of the embankment. The crest of the embankment was about 20 feet wide, and was nearly level. The water level in the pond was located about 1.5 to 2 feet below the crest of the embankment.

The downstream slope into Lot 25 had an overall inclination of about 4H:1V (horizontal:vertical) or flatter. The slope in Lot 25 was not uniform due to a walkway and steps cut into the slope and a soil berm approximately 3 feet in height running approximately northeast-southwest across the slope. The berm appeared to be material excavated from the walkway. The slope contained about 7 evergreen trees up to about 10 inches in diameter, and 3 small shrubs located at the toe in

the southwest portion of the lot. The ground across the slope was generally bare (i.e., no grass, weeds, or ground cover).

The face of the downstream slope in Lots 25 and 26 appeared to be dry. The ground surface within and adjacent to the southeastern portion of the lawn area beyond the toe of the slope in Lot 25 was observed to be damp (not wet), and moss indicative of damp ground conditions was present near a wood fence marking the property boundary. Standing water was observed in an irrigation valve box located adjacent to the lawn in this area.

The downstream slope in Lot 26 was inclined at about 3H:1V or flatter. A wood retaining wall about 3-foot-high was located along the toe of the embankment; extending from the west property line several feet to the east. The central and eastern portions of the embankment slope contained a rock retaining wall about 2 feet in height. The slope in Lot 26 was landscaped with scattered small shrubs and trees, and a short hedge near the top of the slope, and contained a ground cover of landscape bark.

The end of a corrugated metal pipe (CMP) was located at the upstream edge of the embankment, south of Lot 26, and the presumed downstream end of the same pipe was exposed at the toe of the downstream slope near the western property boundary of Lot 26. The exposed upstream end of the CMP was partially crushed and nearly filled with sediment and debris. The downstream end was also deformed and partially buried. The swale running along the boundary between Lots 25 and 26 into which the CMP was supposed to drain (based on Sheet 7 of 12 of the June 28, 1978 As-built drawings) was not visible, and is presumed to have been filled in at some point.

Four standpipe piezometers and 1 "monitoring well" which we understand were installed by HTA Science & Engineering, Inc. (2006) were observed within the embankment slope and backyard on Lot 25. A standpipe piezometer was also observed on the embankment slope on Lot 26. The piezometers are numbered P1 through P5 in the HTA document, and the "monitoring well" is numbered MW1. A second monitoring well reported to have been installed in the backyard of Lot 26 could not be located.

Subsurface Conditions

The site is located within the foothills of the Sierra Nevada geomorphic province. The foothills bedrock generally consists of fault-bounded lithologic terranes of Paleozoic- and Mesozoic-age marine sedimentary and volcanic rock that have been isoclinally folded, deformed and metamorphosed. Structural orientations (bedding, foliation, fault/shear zones) generally have a north to northwest trend, and dip steeply east. Bedrock within the vicinity of the site has been previously mapped as Mesozoic-era granodiorite intrusive rock associated with the Rocklin Pluton (Loyd, et al., 1995).

Our exploratory borings generally encountered very loose to medium dense silty sands (locally known as "DG") overlying completely to highly weathered granitic bedrock. In borings B1 and B2 in the embankment, the upper approximately 6 feet of material was generally medium dense,

and there was a change in color of the soil from a light orange-brown to a light gray at depth of about 4 feet. In boring B2, a zone of wet, very loose, dark grey/black, organic-laden soil was found at a depth of about 6.5 feet. This material was estimated to extend to a depth of about 8.5 feet. Dark gray, loose silty sand was also found in boring B4 at a depth of about 2.5 feet. The material became wet at about 3.5 feet, and contained some organics.

Bedrock was found in borings B1 and B2 at a depth of about 9 feet below existing grade, in boring B3 at a depth of about 3.5 feet, and in B4 at a depth of about 6 feet. The rock encountered was generally completely weathered and friable at the surface, and became less weathered and stronger with depth.

Groundwater

Free groundwater was measured in borings B1 and B1A, and wet soil was logged in borings B2 and B4, at the time of drilling. Groundwater level measurements were made in each boring at the time of drilling, and in the piezometers on April 10 and 17, and May 9, 2007 as summarized below:

March 29 and 30, 2007 (during drilling)						
Boring	B1	B1A	B2	B2A	B3	B4
Depth to Groundwater Below Ground Surface (ft)	8.5	8.5	none	none	none	none
Groundwater Elevation (ft)	463.5	463.5	N/A	N/A	N/A	N/A

April 10, 2007				
Boring	B1A	B2A	B3	B4
Depth to Groundwater Below Casing (ft)	5.17	4.50	4.08	4.33
Groundwater Elevation (ft)	466.5	467.2	467.6	467.3

April 17, 2007				
Boring	B1A	B2A	B3	B4
Depth to Groundwater Below Casing (ft)	5.08	4.50	3.92	4.17
Groundwater Elevation (ft)	466.6	467.2	467.9	467.5

May 9, 2007				
Boring	B1A	B2A	B3	B4
Depth to Groundwater Below Casing (ft)	4.83	4.67	4.25	4.33
Groundwater Elevation (ft)	466.8	467.0	467.4	467.3

The groundwater elevations shown in the above tables are based on assumed ground surface elevation of 472.0 feet at each piezometer which is the crest elevation shown on the as-built drawing of the north dam.

Permeability

The results of our laboratory and field permeability testing within the dam and dam foundation are summarized below:

Embankment (Soil)

Depth	Permeability	Test Type
6 feet	7.0×10^{-7} cm/sec	Laboratory – "undisturbed" sample
5 to 8 feet	8.8×10^{-4} cm/sec	In situ
N/A	4.6×10^{-6} cm/sec	Laboratory – sample remolded to 90 percent of the max. dry density

Foundation (Rock)

Depth	Permeability	Test Type
5 feet	8.0×10^{-4} cm/sec	Laboratory – "undisturbed" sample
11 to 15 feet	9.9×10^{-5} cm/sec	In situ

PRELIMINARY CONCLUSIONS

Based on the results of our field and laboratory testing and on our review of information generated by others regarding seepage in the area of the north dam, we have developed the following preliminary conclusions:

- The zone of dark grey, loose, saturated soil found between depths of about 6.5 and 8.5 feet found in our boring B2 is likely original soil that was part of the pre-existing drainage swale which the dam crosses. This material should have been removed as part of the foundation preparation prior to construction of the embankment. The rate of seepage through this material would be expected to be higher than that of well-compacted portions of the embankment and foundation.

- The embankment material comprising the dam appears to be relatively well compacted. A comparison of in situ dry density with the laboratory maximum dry density indicates a relative compaction on the order of 90 to 91 percent. However this is less than the minimum compaction of 95 percent specified on the As-built drawing for the dam.

- The laboratory measured permeability rates for the "undisturbed" and remolded samples of embankment material are somewhat lower than what would be expected for well compacted silty sand "DG" material. The lower permeabilities may be the result of the embankment materials containing some bentonite clay which was reportedly used to line the upstream face of the embankment.

- The density and saturation of the embankment foundation is judged to be relatively variable, based on the results of our field exploration, and on the results of a field resistivity survey of the embankment performed by others (Shaw Environmental, Inc., 2006). However, we did not observe indications of slope instability or seepage on the downstream face, or at the toe of the dam.

- Seepage is occurring through the north dam; mainly at the interface between the bedrock surface and the bottom of the embankment/soil portion of the foundation. This conclusion is supported by the fact that the soil samples we collected from higher up in the embankment were not wet, combined with our observations of free water and/or wet soils near the base of the embankment. Further evidence of the seepage is the presence of groundwater in the piezometers installed (by others) in the downstream slope of the dam in Lots 25 and 26.

- The phreatic surface associated with the seepage through the dam is judged to be on the order of 6 to 8 feet below the crest of the dam with a relatively flat gradient.

- The seepage occurring in the dam embankment and foundation is not judged to be excessive relative to what would be expected for the as-constructed condition of the embankment and foundation.

  If the dam foundation had been completely stripped of the unsuitable materials, and the bottom of the embankment keyed several feet into firm rock, the seepage at the embankment/foundation interface would probably be somewhat less than currently exists. However, all earth dams can be expected to have some seepage, and the subject dam does not appear to be performing poorly based on the results of our investigation.

- The dimensions and slope inclinations of the north dam appear to be quite different from those identified in the 1978 As-built drawing. Specifically, the crest appears to be wider, the slopes flatter, and the dam height lower than is indicated in the As-built. We also understand that the overall depth of the north (upper) pond has been found to be considerably less than the depth of 17 feet shown on the As-built.

  To develop representative cross sections through the dam and perform a seepage analysis to quantify the rate and quantity of seepage through the dam, an accurate topographic map of the embankment, including the up- and downstream areas, would need to be developed.

- Given the shallow bedrock throughout the site area, it would likely require lining the entire pond area with an impermeable liner to significantly reduce seepage through the north dam. Lining only the upstream face of the dam, or even a portion of the pond bottom beyond the base of the dam would reduce seepage through the embankment, but not through the interface between the dam foundation and embankment, or through the underlying bedrock.

- It may be possible to install a curtain drain along the downstream toe of the existing embankment to capture some of the seepage and pump it either back into the pond, or into the existing drainage downstream of Lots 25 and 26.

The above conclusions are subject to change as more information becomes available. If you have any questions, please do not hesitate to call us.

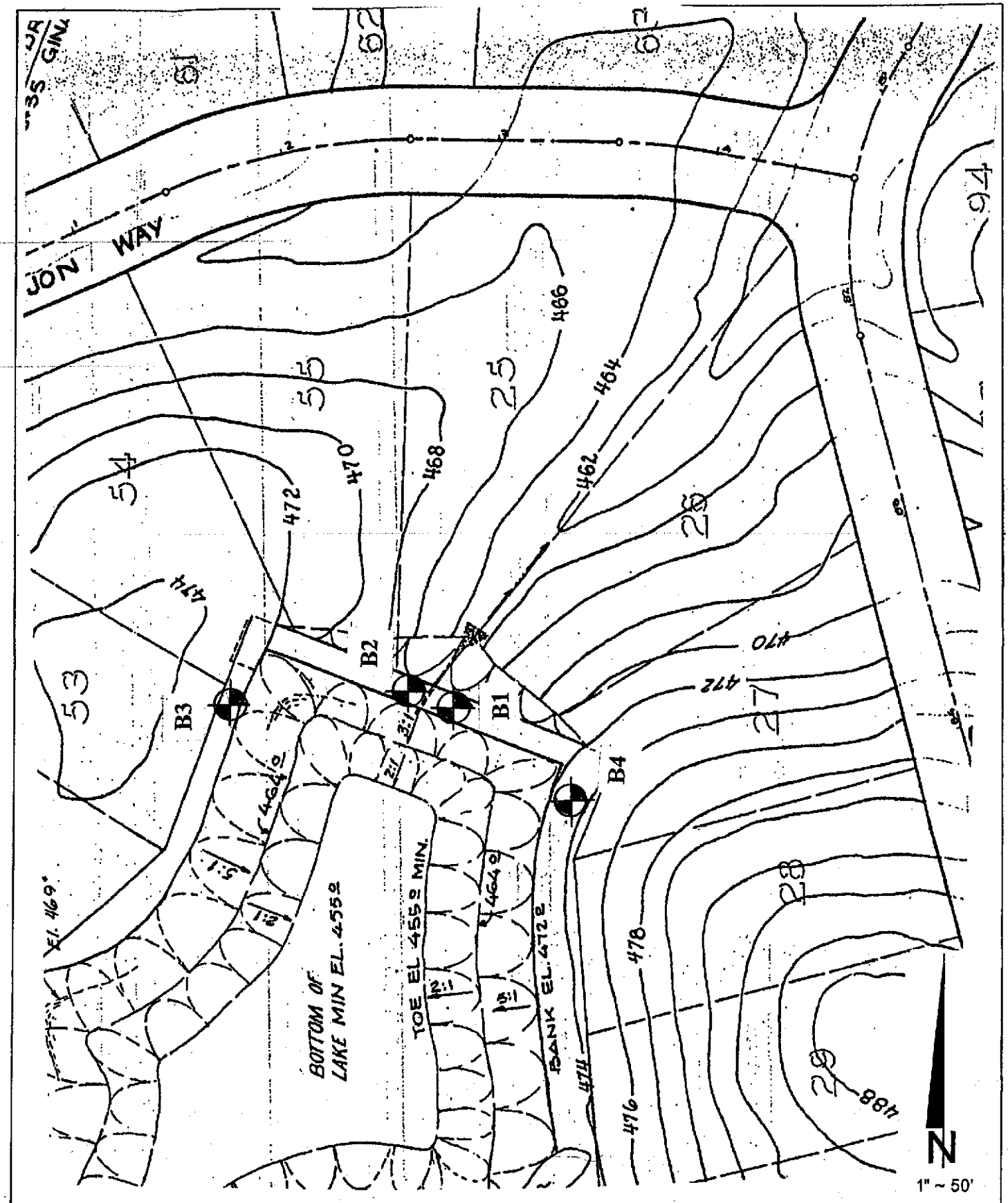
REFERENCES

G W Consulting Engineers, 1978. Improvement Plans for Hidden Lakes Unit No. 2. Placer County, California. Sheets 1 through 12. Stamped "As Built" on June 28, 1978.

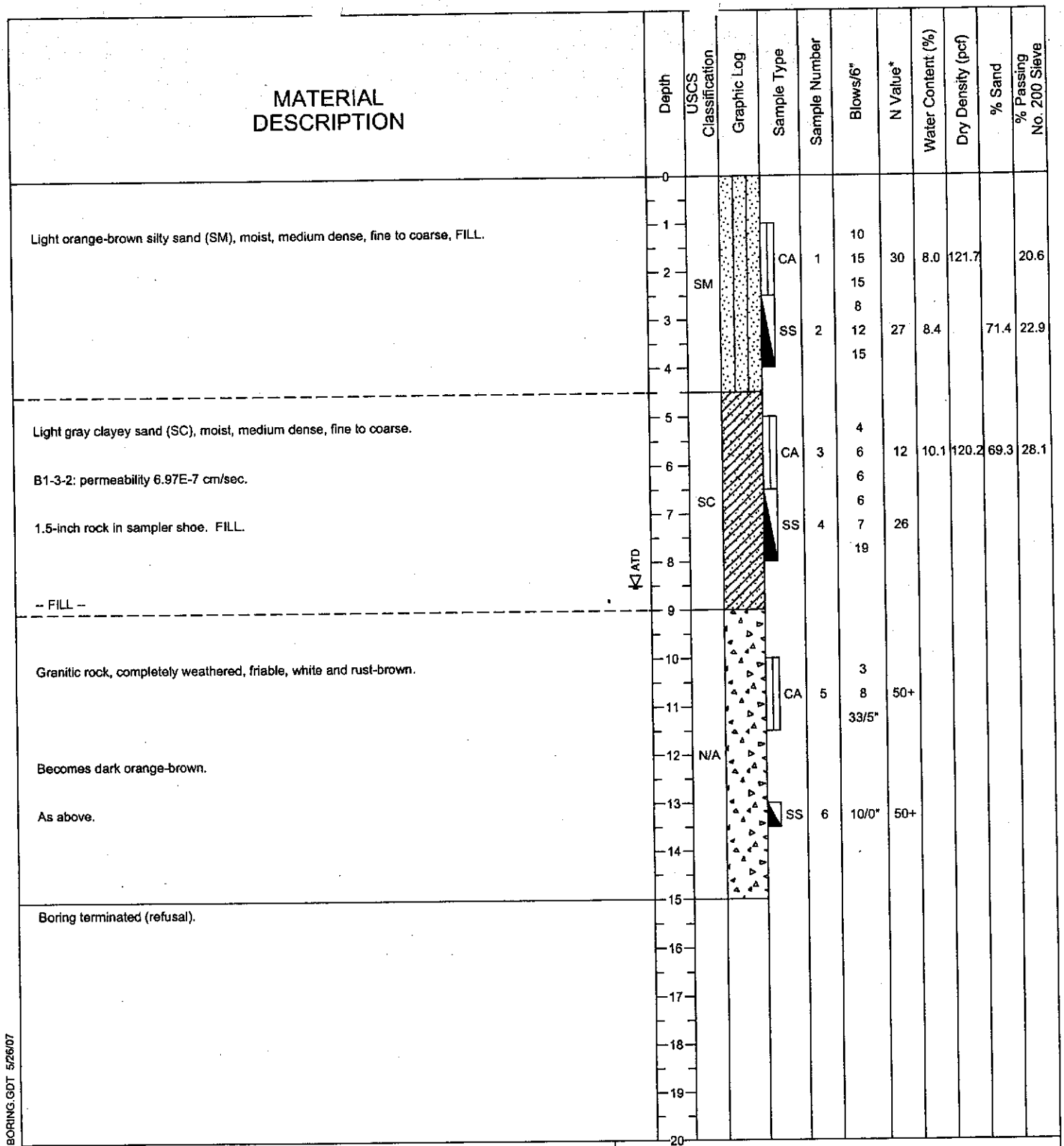
HTA Science & Engineering, Inc. (2006). 7884 Jon Way backyard shallow groundwater assessment associated with Hidden Lake berm. April 6.

Loyd, R.C., 1995. Mineral Land Classification of Placer County, California. Open-File Report 95-10. California Division of Mines and Geology.

Shaw Environmental, Inc., 2006. Draft – Geophysical Survey Report – Electrical Resistivity Imaging for Evaluating Earthen Dam Materials – Hidden Lakes Estates, Granite Bay, California. Revision 1, November 30.



PARAGON GEOTECHNICAL CONSULTING ENGINEERS	Project No.: 1383-01-07 Reviewed: RW Drawn: DD Date: May 2007	**BORING LOCATION PLAN** Hidden Lakes Estates Pond Seepage Evaluation Granite Bay, California	PLATE -



Start Date:	3/29/07	Finish Date:	3/29/07
Drilling Method:	6-inch Hollow Stem Auger	Drilling Contractor:	Cal Nev Geoexploration
Drill Rig:	CME-45	Hammer Type:	140 lb. Automatic
Logged By:	D. Dean	Reviewed By:	R. Wentz
		Elevation:	472 ft **

Comments: Backfilled with cement grout.

* Converted to equivalent standard penetration blow counts.

** Assumed

PARAGON GEOTECHNICAL CONSULTING ENGINEERS

Project No.: 1383-01-07
Reviewed by: R. Wentz
Drawn by: R. Church
Date: 5/26/2007

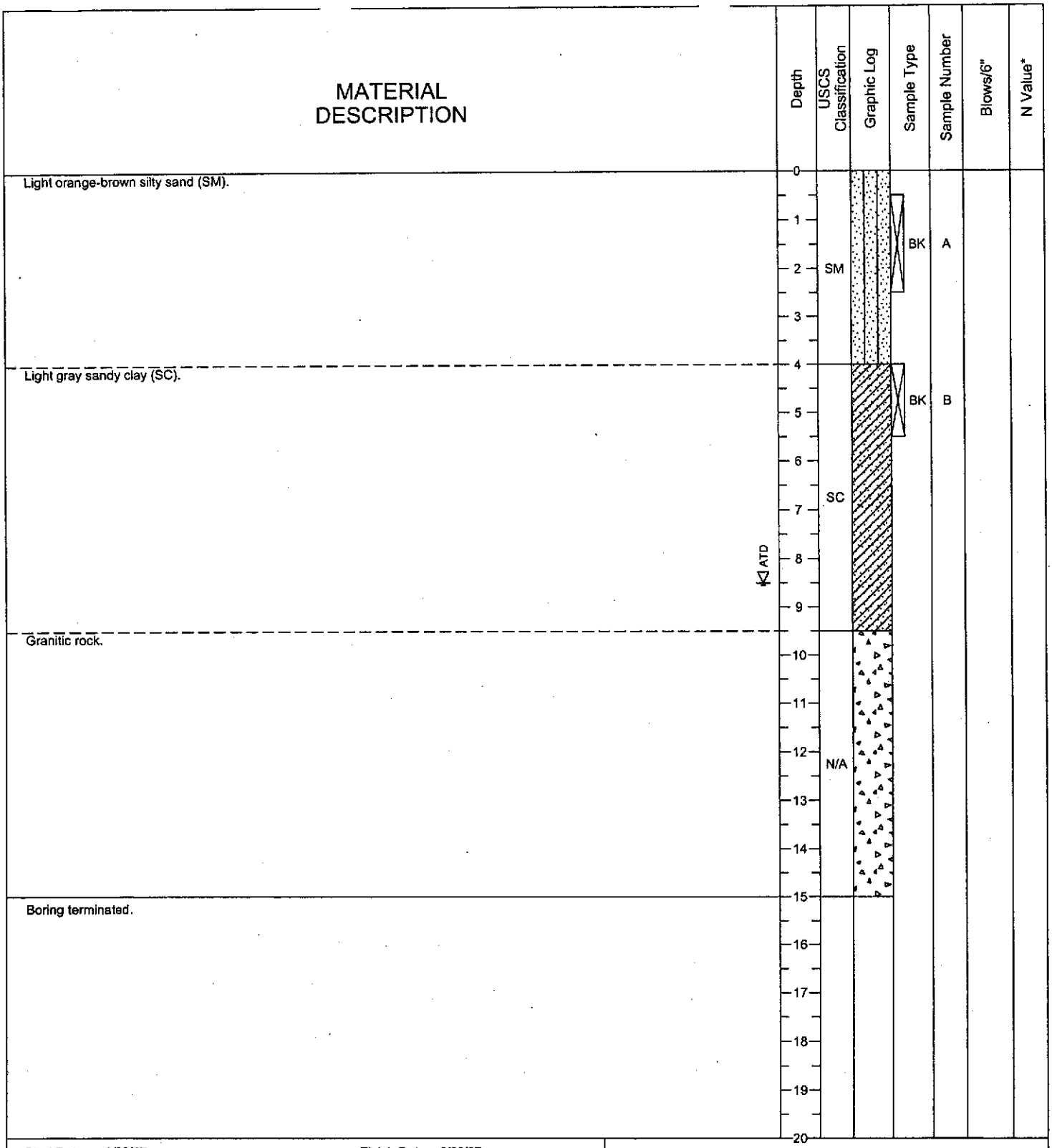
LOG OF BORING B1

Hidden Lakes Estates Pond Seepage Evaluation

Granite Bay, CA

PLATE 6

PG COMMON W/EL 1383-01-07 LOGS.GPJ SOIL BORING.GDT 5/26/07



Start Date:	3/30/07	Finish Date:	3/30/07
Drilling Method:	8-inch Hollow Stem Auger	Drilling Contractor:	Cal Nev Geoexploration
Drill Rig:	CME-45	Hammer Type:	140 lb. Automatic
Logged By:	D. Dean	Reviewed By:	R. Wentz
		Elevation:	472 ft **

Comments: Piezometer installed. Screened interval from 11 feet to 15 feet.

* Converted to equivalent standard penetration blow counts.

** Assumed

PARAGON GEOTECHNICAL
CONSULTING ENGINEERS

Project No.: 1383-01-07
Reviewed by: R. Wentz
Drawn by: R. Church
Date: 5/26/2007

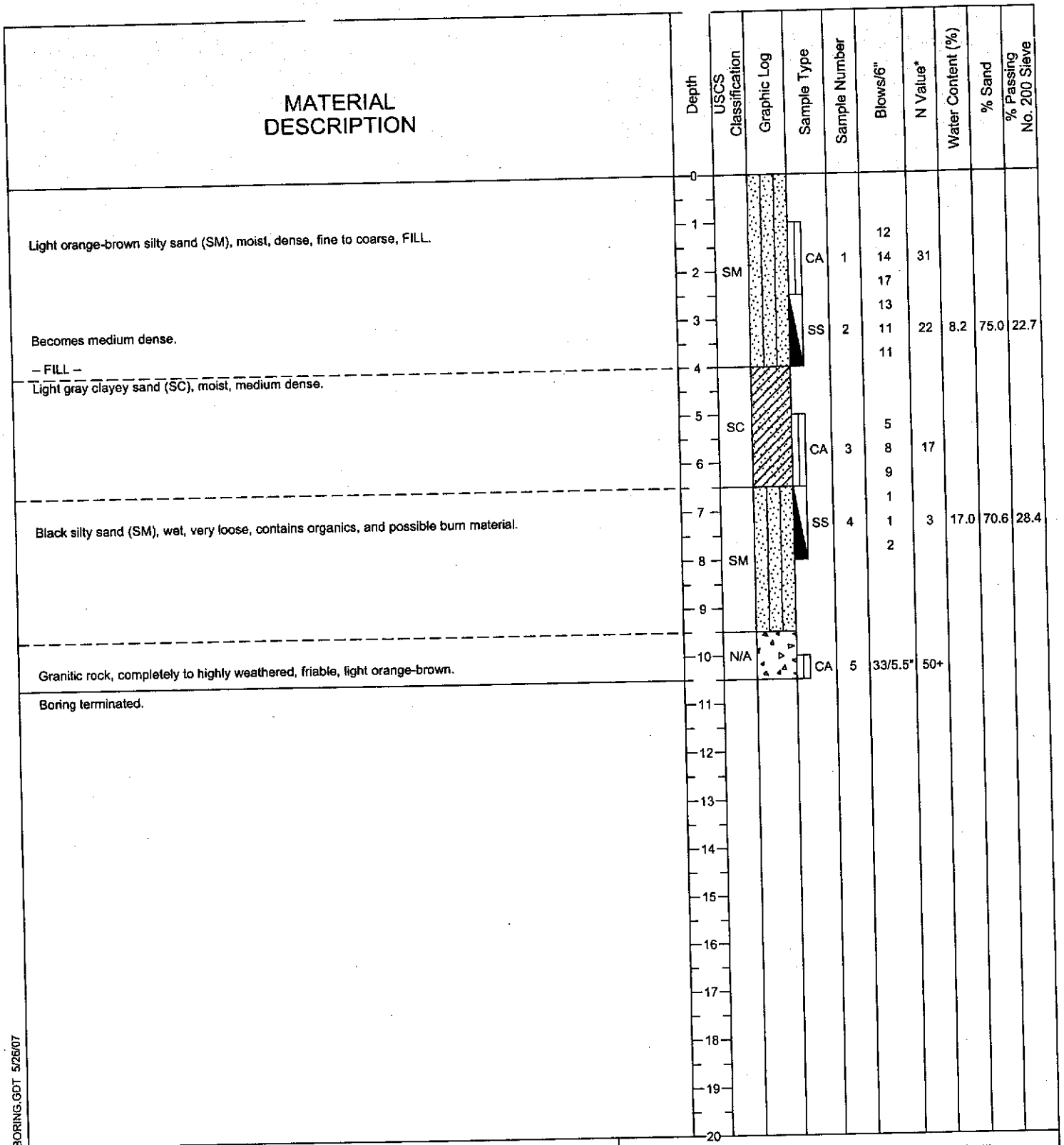
LOG OF BORING B1A

Hidden Lakes Estates Pond Seepage Evaluation

Granite Bay, CA

PLATE 7

PG COMMON W/EL 1383-01-07 LOGS.GPJ SOIL BORING.GDT 5/26/07



Start Date:	3/29/07	Finish Date:	3/29/07
Drilling Method:	6-Inch Hollow Stem Auger	Drilling Contractor:	Cal Nev Geoexploration
Drill Rig:	CME-45	Hammer Type:	140 lb. Automatic
Logged By:	D. Dean	Reviewed By:	R. Wentz
		Elevation:	472 ft **

Comments: No groundwater encountered. Backfilled with cement grout.

* Converted to equivalent standard penetration blow counts.

** Assumed

PARAGON GEOTECHNICAL CONSULTING ENGINEERS

Project No.: 1383-01-07
Reviewed by: R. Wentz
Drawn by: R. Church
Date: 5/26/2007

LOG OF BORING B2

Hidden Lakes Estates Pond Seepage Evaluation

Granite Bay, CA

PLATE 8

PG COMMON WELL 1383-01-07 LOGS.GPJ SOIL BORING.GDT 5/26/07

MATERIAL DESCRIPTION	Depth	USCS Classification	Graphic Log	Sample Type	Sample Number	Blows/6"	N Value*
Light orange-brown silty sand (SM).	0–4	SM					
Light gray clayey sand (SC).	4–8	SC					
Boring terminated.	8						

Start Date:	3/30/07	Finish Date:	3/30/07
Drilling Method:	8-Inch Hollow Stem Auger	Drilling Contractor:	Cal Nev Geoexploration
Drill Rig:	CME-45	Hammer Type:	140 lb. Automatic
Logged By:	D. Dean	Reviewed By:	R. Wentz
		Elevation:	472 ft **

Comments: No groundwater encountered. Piezometer installed. Screened interval from 5 feet to 8 feet.

* Converted to equivalent standard penetration blow counts.

** Assumed

PARAGON GEOTECHNICAL
CONSULTING ENGINEERS

Project No.: 1383-01-07
Reviewed by: R. Wentz
Drawn by: R. Church
Date: 5/26/2007

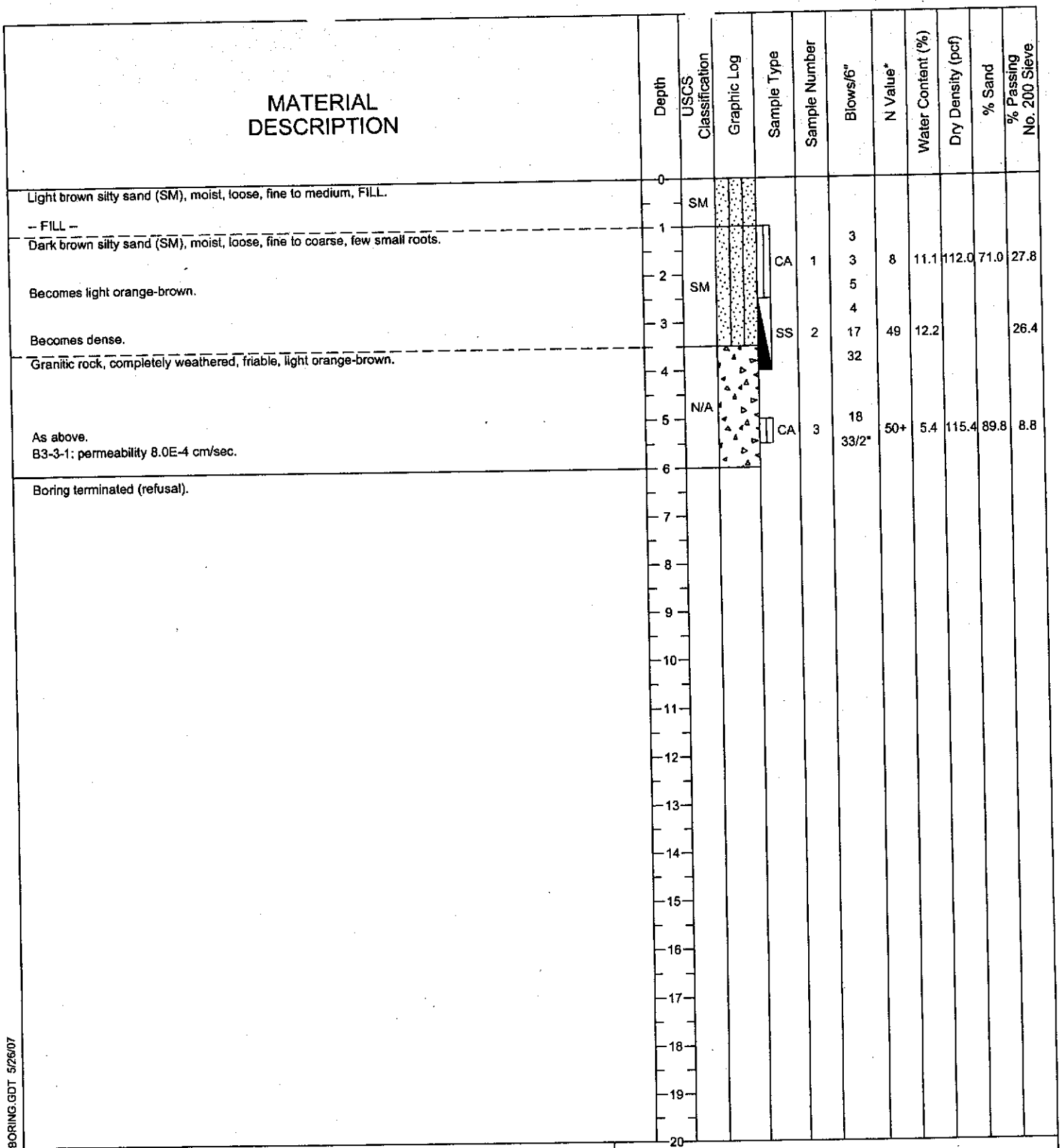
LOG OF BORING B2A

Hidden Lakes Estates Pond Seepage Evaluation

Granite Bay, CA

PLATE 9

PG COMMON W/EL 1383-01-07 LOGS.GPJ SOIL BORING.GDT 5/26/07



Start Date:	3/29/07	Finish Date:	3/29/07
Drilling Method:	6-Inch Hollow Stem Auger	Drilling Contractor:	Cal Nev Geoexploration
Drill Rig:	CME-45	Hammer Type:	140 lb. Automatic
Logged By:	D. Dean	Reviewed By:	R. Wentz
		Elevation:	472 ft **

Comments: No groundwater encountered. Piezometer installed. Screened interval from 4 feet to 6 feet.

* Converted to equivalent standard penetration blow counts.

** Assumed

PARAGON GEOTECHNICAL
CONSULTING ENGINEERS

Project No.: 1383-01-07
Reviewed by: R. Wentz
Drawn by: R. Church
Date: 5/26/2007

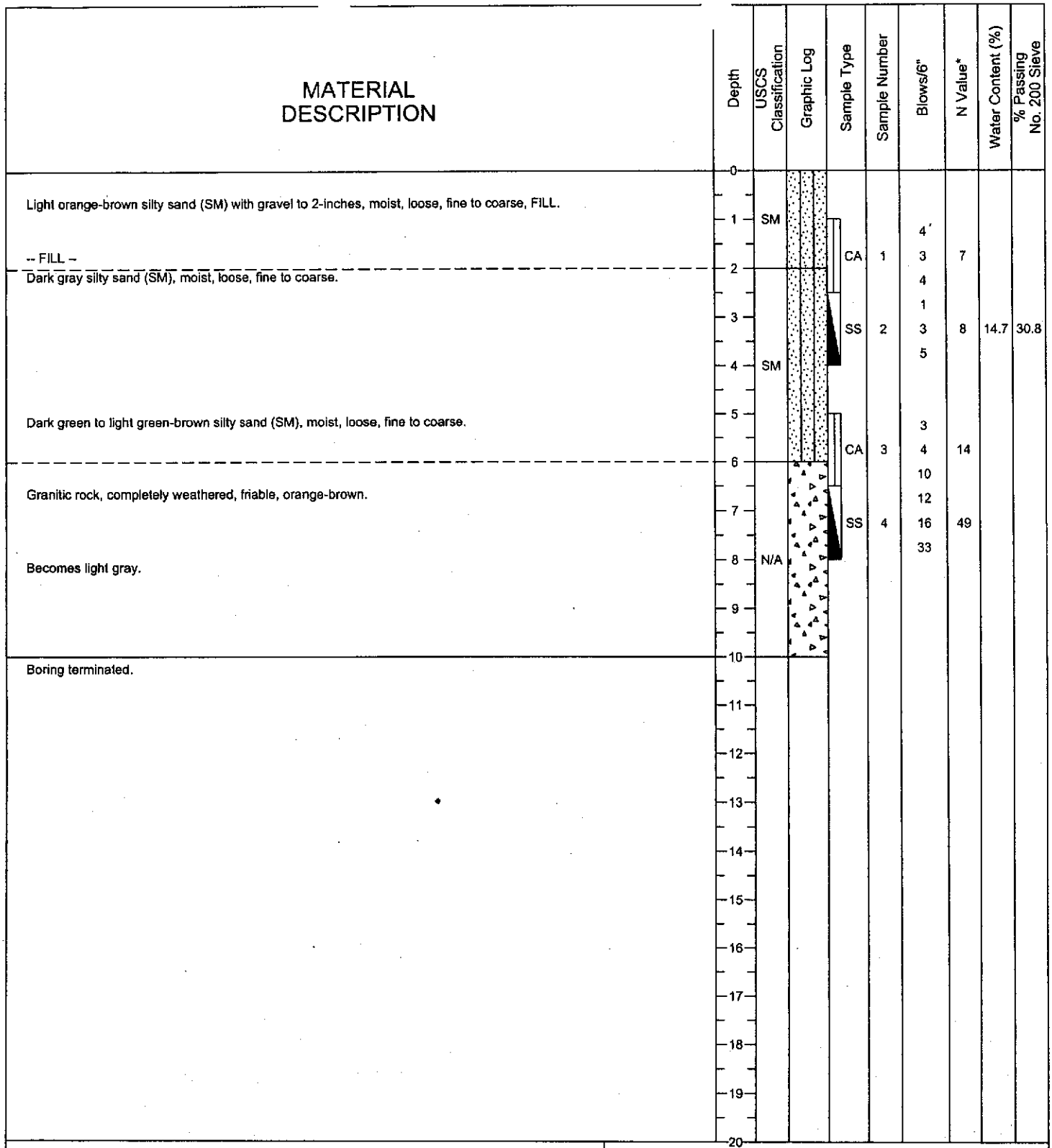
LOG OF BORING B3

Hidden Lakes Estates Pond Seepage Evaluation

Granite Bay, CA

PLATE 10

PG COMMON WEL 1383-01-07 LOGS.GPJ SOIL BORING.GDT 5/26/07



Start Date:	3/29/07	Finish Date:	3/29/07
Drilling Method:	6-inch Hollow Stem Auger	Drilling Contractor:	Cal Nev Geoexploration
Drill Rig:	CME-45	Hammer Type:	140 lb. Automatic
Logged By:	D. Dean	Reviewed By:	R. Wentz
		Elevation:	472 ft **

Comments: No groundwater encountered. Piezometer installed. Screened interval from 7.3 feet to 10 feet.

* Converted to equivalent standard penetration blow counts.

** Assumed

PARAGON GEOTECHNICAL CONSULTING ENGINEERS

Project No.: 1383-01-07
Reviewed by: R. Wentz
Drawn by: R. Church
Date: 5/26/2007

LOG OF BORING B4

Hidden Lakes Estates Pond Seepage Evaluation

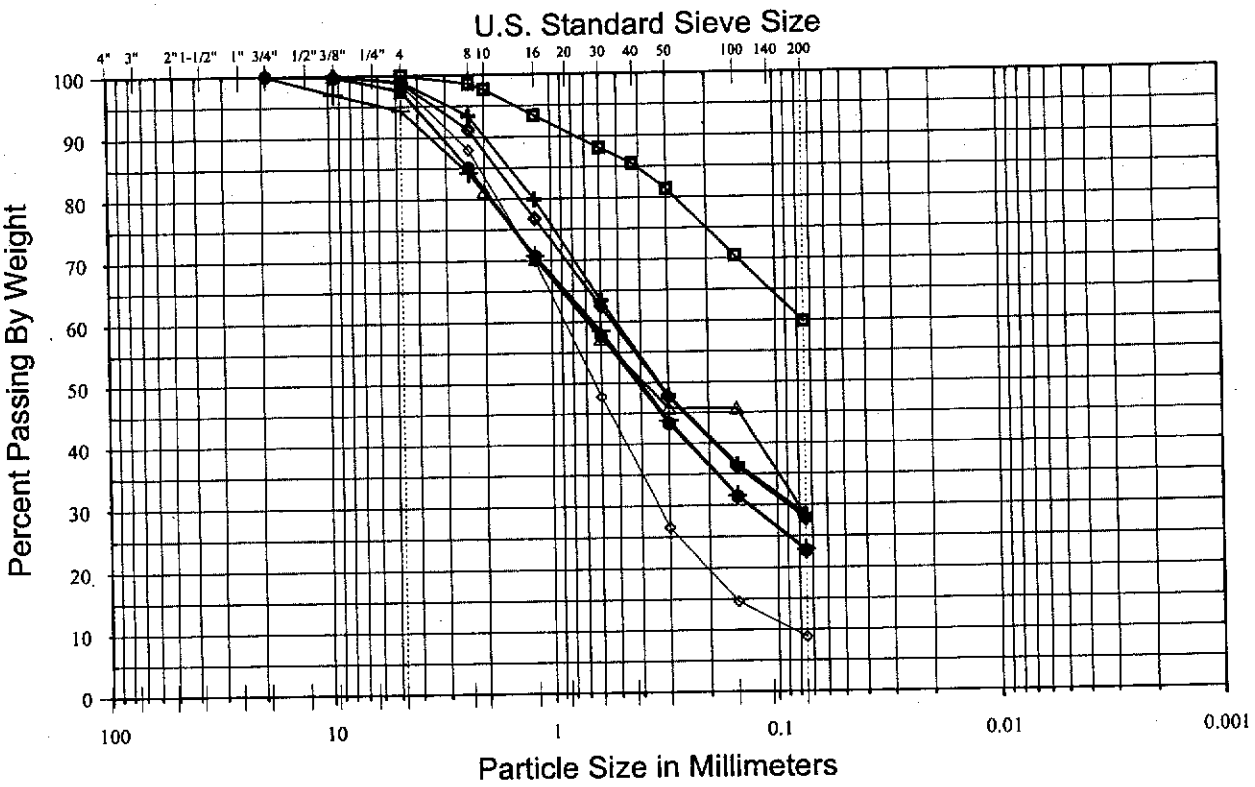
Granite Bay, CA

PLATE 11

PG COMMON W/EL 1383-01-07 LOGS.GPJ SOIL BORING.GDT 5/26/07

Particle-Size Distribution

COBBLES	GRAVEL		SAND			SILT OR CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE	



Sample B1-2 2.5 - 4.0 ft
Sample B1-3-2 6.0 - 6.5 ft
Sample B2-2 2.5 - 4.0 ft
Sample B2-4 6.5 - 8.0 ft
Sample B3-1-1 1.5 - 2.0 ft
Sample B3-3-1 5.0-5.5 ft

1383-01-07 Lab Grad.GRF with gsa.xls, gradation.xls 05/28/07/ fjw

PARAGON GEOTECHNICAL
CONSULTING ENGINEERS

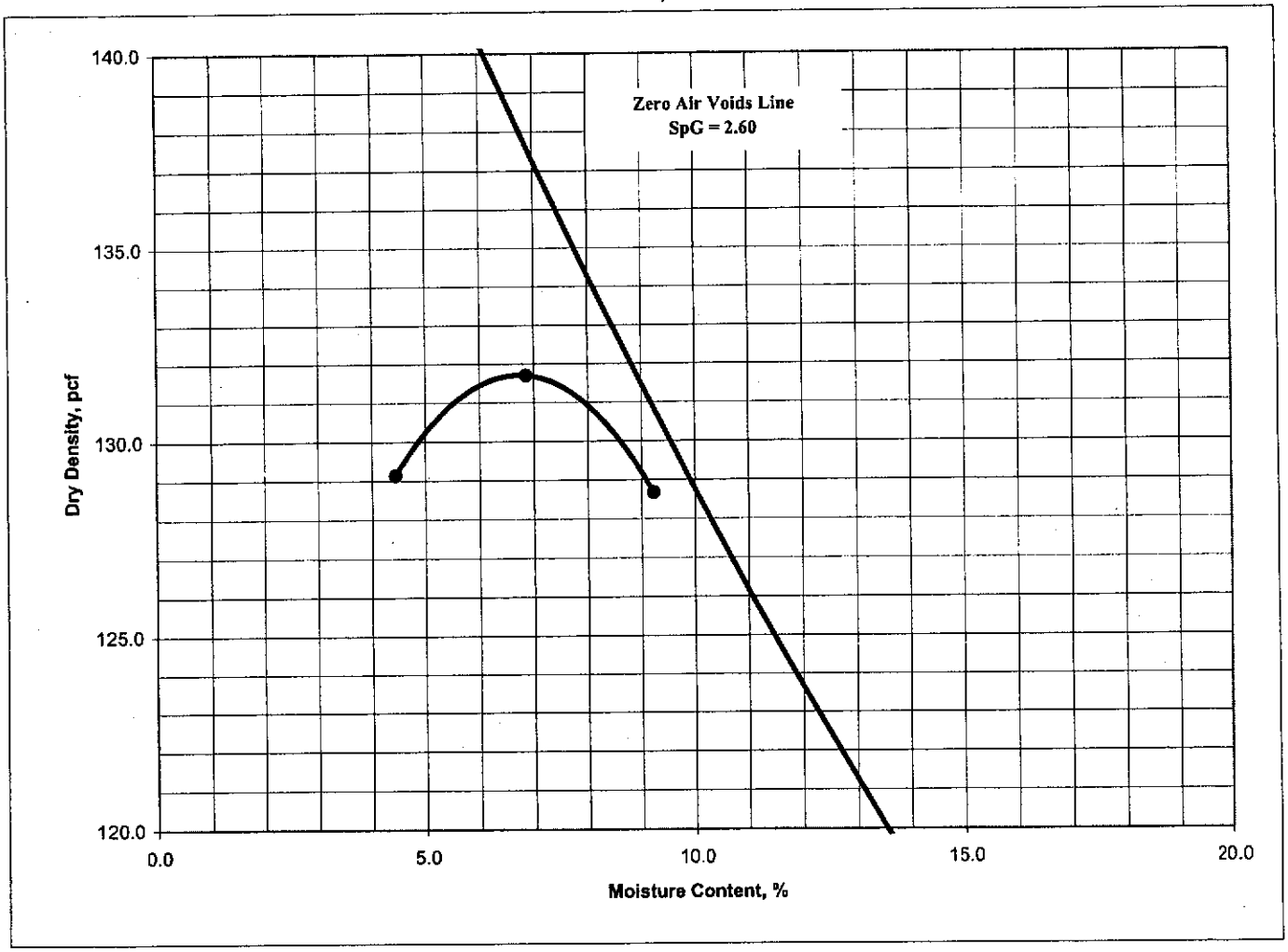
Project No.: 1383-01-07
Reviewed: RW
Drawn: RC
Date: May 2007

PARTICLE SIZE DATA
Hidden Lakes Estates Pond
Seepage Evaluation
Granite Bay, California

PLATE
13

MOISTURE DENSITY RELATIONSHIP CURVE

ASTM D 1557, Method A



TESTING DATA

	1	2	3	4	5
Moisture (%)	4.4	6.9	9.2	0.0	0.0
Dry Density (pcf)	129.1	131.7	128.7	0.0	0.0

Assumed SpG: 2.60

Maximum Dry Density = 131.5 pcf

Optimum Moisture Content = 6.5 %

Curve No.: 1

Sample Location: Boring B1A 0.5 ft - 2.5 ft

Sample No. : Bulk A

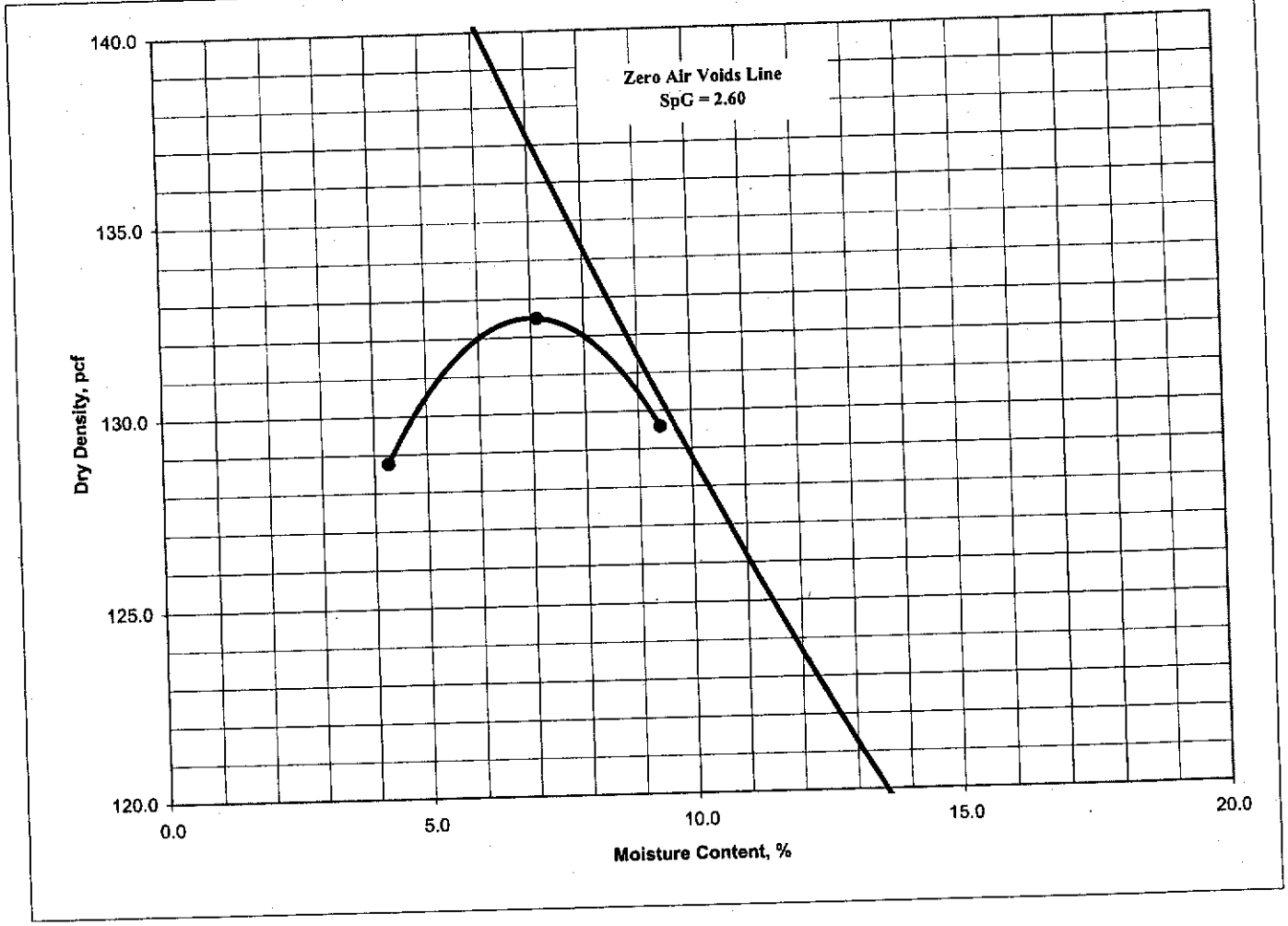
Sample Desc.: Light brown silty sand

Sample Source: Auger Cuttings

PARAGON GEOTECHNICAL CONSULTING ENGINEERS	Project No.: 1383-01-07 Reviewed: RW Drawn: RC Date: 4/18/2007	**LABORATORY COMPACTION DATA** Hidden Lakes Estates Pond Seepage Evaluation Granite Bay, CA	PLATE 14

MOISTURE DENSITY RELATIONSHIP CURVE

ASTM D 1557, Method A



TESTING DATA

	1	2	3	4	5
Moisture (%)	4.3	7.1	9.4	0.0	0.0
Dry Density (pcf)	128.8	132.5	129.6	0.0	0.0

Assumed SpG: 2.60

Maximum Dry Density = 132.5 pcf

Optimum Moisture Content = 7.0 %

Curve No.: 2

Sample Location: Boring B1A 4 ft - 5.5 ft

Sample No. : Bulk B

Sample Desc.: Light brown silty sand

Sample Source: Auger Cuttings

PARAGON GEOTECHNICAL
CONSULTING ENGINEERS

Project No.: 1383-01-07
Reviewed: RW
Drawn: RC
Date: 4/18/2007

LABORATORY COMPACTION DATA
Hidden Lakes Estates Pond Seepage Evaluation
Granite Bay, CA

PLATE 15

SAMPLE DATA

Sample Identification: B1A Bulk B
Visual Description: B1A Bulk B
Remarks: Remolded to 120pcf at 8.0% MC

Sample Depth, ft.: 4-5.5
Sample Type: Remold

TEST RESULTS

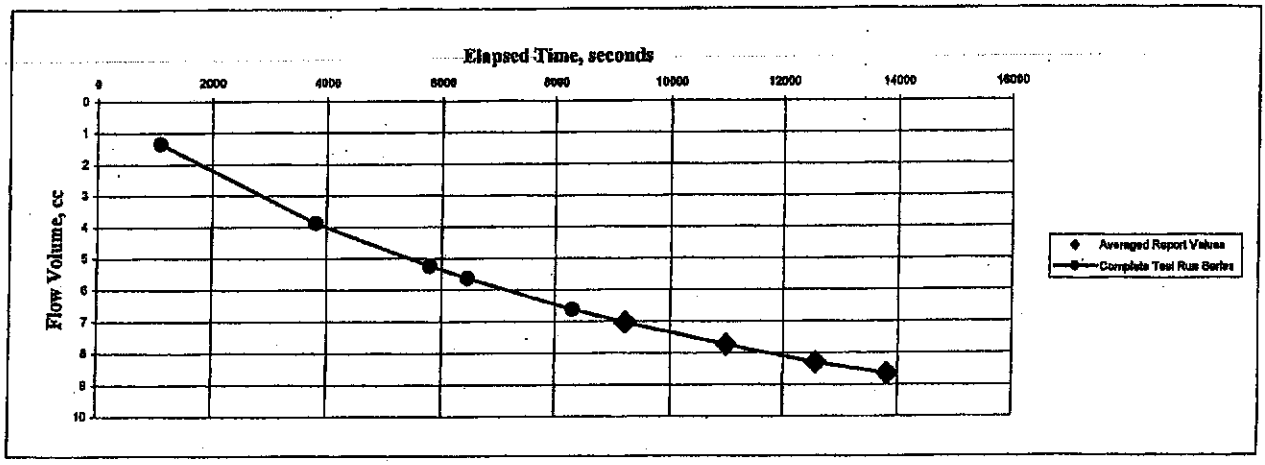
Permeability, cm/sec.: 4.58E-06

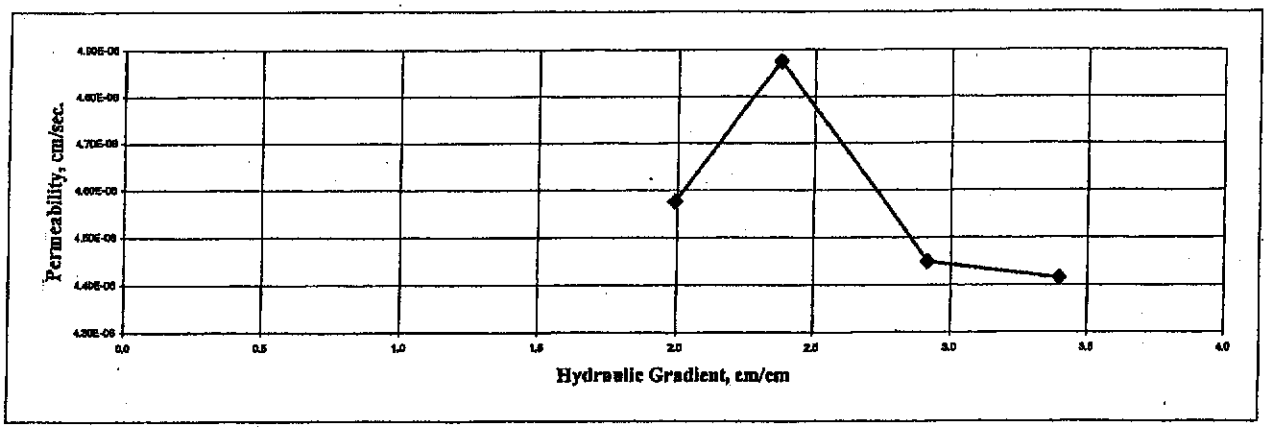
Average Hydraulic Gradient: 2.7

Effective Cell Pressure, psi: 5.21

TEST SAMPLE DATA

Before Test		After Test	
Specimen Height, cm:	7.62	Specimen Height, cm:	
Specimen Diameter, cm:	6.17	Specimen Diameter, cm:	
Dry Unit Weight, pcf:	119.9	Dry Unit Weight, pcf:	
Moisture Content, %	8.0	Moisture Content, %	
Specific Gravity, Assumed			
Percent Saturation:			





Test Method: ASTM D 5856

PARAGON GEOTECHNICAL CONSULTING ENGINEERS	Project No.: 1383-01-07 Reviewed: RW Drawn: MW Date: May 2007	**LABORATORY HYDRAULIC CONDUCTIVITY TEST DATA** Hidden Lakes Estates Pond Seepage Evaluation Granite Bay, California	PLATE 16

SAMPLE DATA

Sample Identification: B1-3-2
Visual Description: B1-3-2
Remarks:

Sample Depth, ft.: 6-6.5
Sample Type: Sample Liner

TEST RESULTS

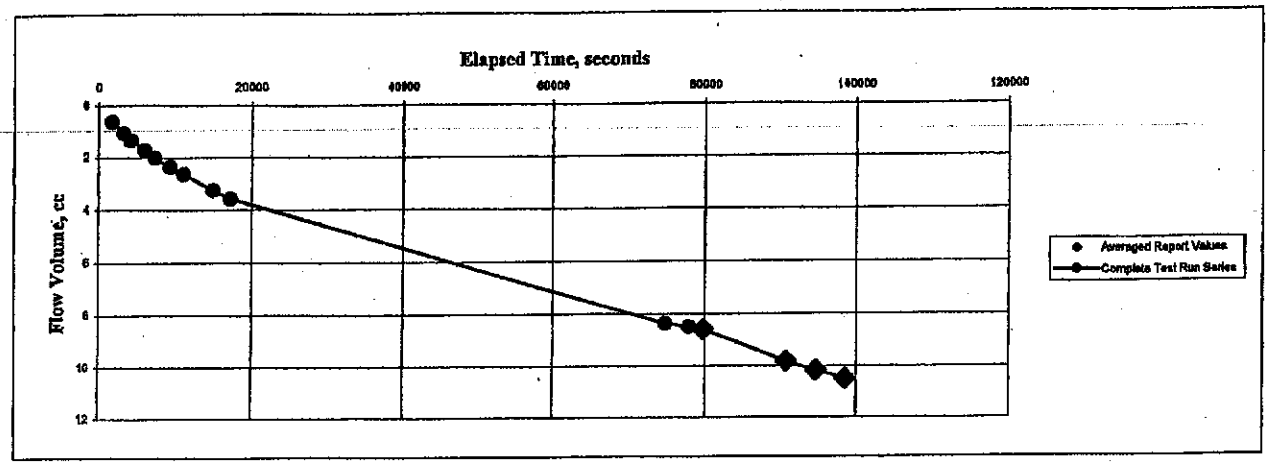
Permeability, cm/sec.: 6.97E-07

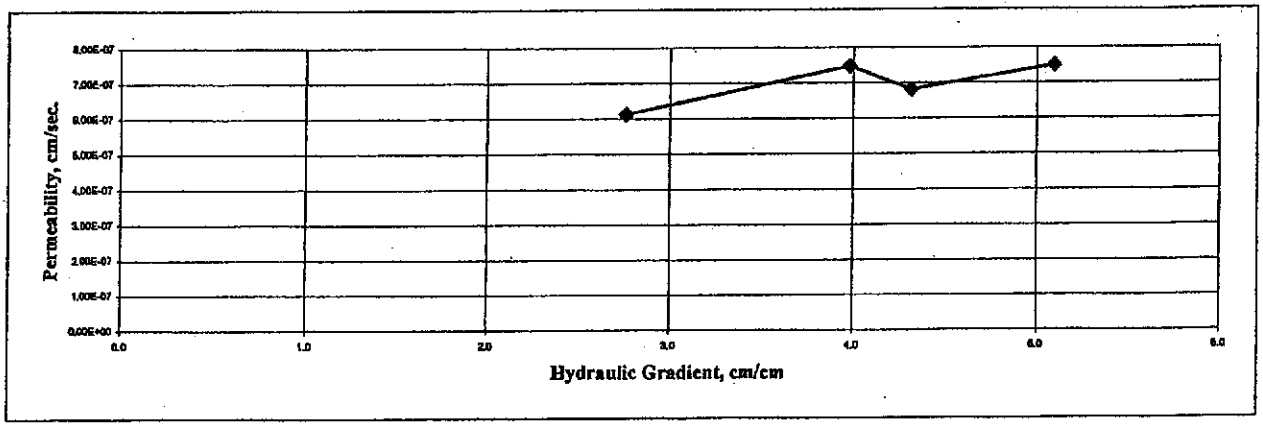
Average Hydraulic Gradient: 4.0

Effective Cell Pressure, psi: 5.21

TEST SAMPLE DATA

Before Test		After Test	
Specimen Height, cm:	6.91	Specimen Height, cm:	6.73
Specimen Diameter, cm:	6.12	Specimen Diameter, cm:	6.12
Dry Unit Weight, pcf:	120.2	Dry Unit Weight, pcf:	128.7
Moisture Content, %	10.1	Moisture Content, %	12.9
Specific Gravity, Assumed			
Percent Saturation:			





Test Method: ASTM D 5856

PARAGON GEOTECHNICAL CONSULTING ENGINEERS	Project No.: 1383-01-07 Reviewed: RW Drawn: MW Date: May 2007	**LABORATORY HYDRAULIC CONDUCTIVITY TEST DATA** Hidden Lakes Estates Pond Seepage Evaluation Granite Bay, California	PLATE 17

SAMPLE DATA

Sample Identification: B3-3-1
Visual Description: B3-3-1
Remarks:

Sample Depth, ft.: 5-5.5
Sample Type: Sample Liner

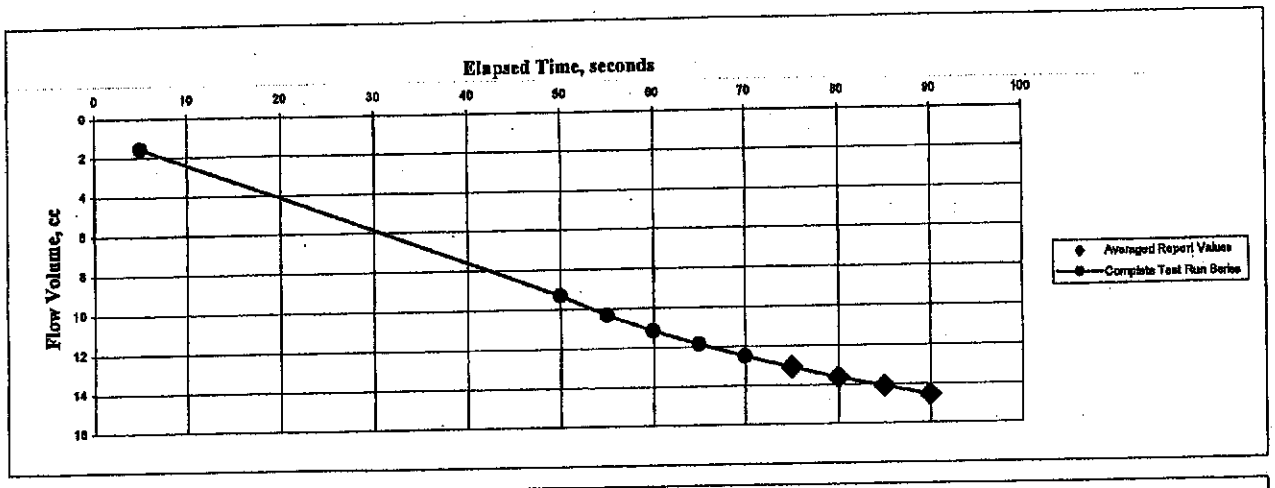
TEST RESULTS

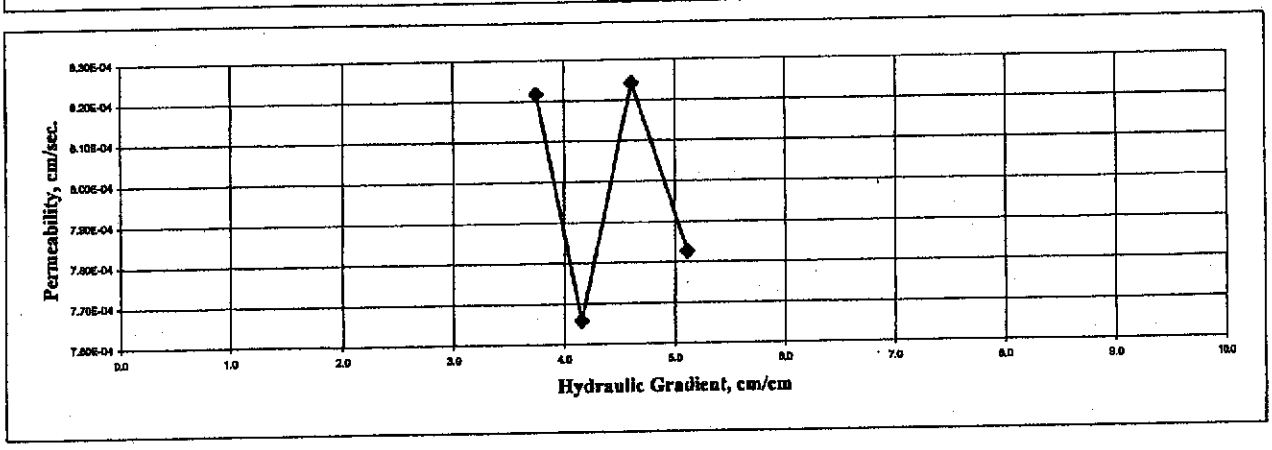
Permeability, cm/sec.: 7.99E-04 **Average Hydraulic Gradient:** 4.4

Effective Cell Pressure, psi: 17.36

TEST SAMPLE DATA

Before Test		After Test	
Specimen Height, cm:	8.13	Specimen Height, cm:	7.49
Specimen Diameter, cm:	6.10	Specimen Diameter, cm:	6.10
Dry Unit Weight, pcf:	115.4	Dry Unit Weight, pcf:	105.7
Moisture Content, %	5.4	Moisture Content, %	16.7
Specific Gravity, Assumed			
Percent Saturation:			





Test Method: ASTM D 5856

PARAGON GEOTECHNICAL CONSULTING ENGINEERS	Project No.: 1383-01-07 Reviewed: RW Drawn: MW Date: May 2007	**LABORATORY HYDRAULIC CONDUCTIVITY TEST DATA** Hidden Lakes Estates Pond Seepage Evaluation Granite Bay, California	PLATE 18