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DRAFT GEOTECHNICAL ENGINEERING STUDY
WOODMEN HILLS METRO DISTRICT
REGIONAL WATER RECLAMATION FACILITY
STORMWATER IMPROVEMENTS
11866 STAPLETON DRIVE, PEYTON, COLORADO

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Project No: 26-2-169

June 19, 2026

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SUMMARY

1. At the client’s request, this draft report has been issued prior to the completion of our laboratory testing and should be used for preliminary information only. The information presented herein may change in the final draft.

2. A total of 6 borings were drilled for this study, including 3 for the proposed stormwater line, and 3 for proposed paved areas.

   Below an intermittent layer of topsoil, existing fill was encountered in all of the borings and extended to depths of 1 to 7 feet below the existing ground surface. The underlying native soils were predominately clean to silty sand but also included zones/lenses of sandy lean clay and clayey sand. Bedrock consisted of sandstone and claystone and was found at depths ranging from 10 to 21 feet. Bedrock extended to the maximum depth explored of 25 feet where it was encountered.

3. Groundwater was encountered in Borings 5 and 6 when measured the day of drilling. Follow-up water measurements will be included with the final draft.

4. Existing undocumented fill is present at this site and should be entirely removed and replaced where it is encountered below new construction such as the proposed RCP storm drain. No over-excavation will be necessary if such structures bear on native soils. Since pavements can generally tolerate settlement better than structures, and are easier to repair if movement occurs, a reduced over-excavation depth of 12 inches can be considered in these areas. Based on the samples of fill collected, it should be suitable for reuse if it is processed, moisture conditioned, and recompacted as described in the “Site Grading and Earthwork” section of this report.

5. For the design of the pipeline and drainpipe, we recommend a horizontal modulus of soil reaction (E’) of 2,000 psi be used for initial deflection of the pipe zone material that has been compacted in accordance with the specifications listed in the “Site Grading and Earthwork” section.

6. Above a depth of 10 feet, thrust blocks used to resist thrust forces at horizontal bends in the pipe should be designed using a passive bearing pressure based on an equivalent fluid density of 250 pcf. The passive pressure should be calculated by multiplying the equivalent fluid density value by the depth in feet below the ground surface corresponding to the midpoint height of the face of the thrust block. For thrust blocks with a midpoint depth of 10 feet or more, a maximum allowable soil bearing pressure of 2,500 psf should be used.

7. The following pavement section (HMA over ABC, and PCC over ABC) were determined using the AASHTO 1993 design method for flexible and rigid pavements. Details regarding binder type, and other considerations can be found within the body of this report.

Area	HMA[1] over ABC[2] (inches)	PCCP[3] over ABC[2] (inches)
Site Pavements	5 over 6	6 over 4

1: HMA = Hot mix Asphalt
2: ABC = Aggregate base course
3: PCC = Portland cement concrete pavement

PURPOSE AND SCOPE OF STUDY

This draft report presents the preliminary results of a geotechnical engineering study for the regional water reclamation facility expansion project. The project location is shown on Figure 1. The study was conducted in general accordance with the scope of work in our Proposal No. C26-173.R, dated April 14, 2026 for the purpose of providing geotechnical recommendations related to the proposed improvements.

This report has been prepared to summarize the data obtained during this study, and to present our conclusions and recommendations based on the proposed construction and the subsurface conditions encountered. Design parameters and a discussion of geotechnical engineering considerations related to the proposed construction are included in the report.

PROPOSED CONSTRUCTION

We understand that the site improvements will include about 1,029 lineal feet of new 18 to 24-inch diameter RCP storm line, which will have invert elevations ranging from about 5 to 20 feet below the ground surface. Paved drive areas will encompass the facility, and will include three connecting paths.

If the proposed construction varies significantly from that described above or depicted herein, we should be notified to reevaluate our recommendations.

SITE CONDITIONS

The existing site is located at the northeast corner of Meridian Ranch Boulevard and Stapleton Drive, and is about 12 acres in area. The native topography generally consists of rolling hills and prairie land, but the site has been graded flat to accommodate the facility. Slopes at the pond basins are about 3:1, and a shallower embankment slope exists around the north perimeter of the site. An operations and mechanical building is located near the northeast corner of the site, and is just north of concrete-walled treatment areas. Three aeration basins/polishing ponds are located to the east. An ephemeral tributary branch of the Gieck Ranch Drainage Basin is located just north of the site.

SUBSURFACE CONDITIONS

The field exploration for this study was conducted on June 8, 2026. Six exploratory borings were drilled at the locations shown on Fig. 1 to explore subsurface conditions and estimate groundwater levels. The borings conducted for this study were advanced through the soils and into the underlying bedrock with 4-inch diameter continuous flight augers. The borings were logged by a representative of Kumar & Associates, Inc.

Samples of the soils and bedrock materials were taken with a 2-inch I.D. California barrel sampler. The sampler was driven into the various strata with blows from a 140-pound hammer falling 30 inches. This test is similar to the standard penetration test described by ASTM Method D 1586. Penetration resistance values, when properly evaluated, indicate the relative density or consistency of the soils. Depths at which the samples were taken and the penetration resistance values are shown on the Logs of Exploratory Borings, Fig. 2.

Measurements of the water level were made in the borings by lowering a weighted tape measure into the open hole. Measurements were made shortly after completion of drilling, and will be made again at a later date. The additional water levels will be presented in the final draft of this report. The depths at which water was encountered are shown on the following table. Groundwater will fluctuate over time due to seasonal and other factors. Additionally, perched groundwater may develop within the granular soils overlying the less permeable bedrock, especially during wetter seasons, or after precipitation events.

Table: Measured Water Levels

Boring	Water Level at Time of Drilling (feet)	Water Level During Final Measurement (feet)
1	(dry)	(backfilled)
2	(dry)	(TBD)
3	(dry)	(backfilled)
4	(dry)	(backfilled)
5	19.0	(TBD)
6	14.0	(TBD)

Below an intermittent layer of topsoil, existing fill was encountered in all of the borings, and extended to depths of 1 to 7 feet below the existing ground surface. The underlying native soils were predominately clean to silty sand but also included zones/lenses of clayey sand and sandy lean clay. Bedrock consisted of sandstone and claystone and was found at depths ranging from 10 to 21 feet. Bedrock extended to the maximum depth explored of 25 feet where it was encountered. The following paragraphs provide more detailed descriptions of the major soil and bedrock types encountered. Figs 2 and 3 provide additional information, and detailed depictions of the depths at which each material was encountered.

The existing fill included clayey sand, silty sand, and well graded gravel with silt. These soils were fine to coarse grained, and included gravel. They were dry to moist, and mottled browns and grays. The exact vertical and lateral extents of the existing fill are unknown, and were not considered the scope of this study.

The predominant soil type encountered was well graded sand with silt. This soil was fine to coarse grained, medium dense to dense, moist to wet, and light brown to gray. Occasional lenses/zones of sandy lean clay, clayey sand, and silty sand were also encountered throughout the overburden layer. The sandy lean clay was fine to coarse grained with occasional gravel, medium stiff to very stiff, moist, and dark brown in color. The clayey sand was fine to coarse grained, medium dense, moist to wet, and light gray to brown. The silty sand was fine to coarse grained, loose, moist, and light gray.

The underlying bedrock was predominantly sandstone, but claystone was found near the bottom of Boring 5. The sandstone was poorly cemented, fine to coarse grained, hard to very hard, moist to very moist, and light gray to brown. The claystone was fine grained, very hard, moist, and blue-gray.

GEOTECHNICAL CONSIDERATIONS

Based on the data collected during our subsurface exploration, the subsurface materials do not appear to present a significant risk of heave related movement, but this will be confirmed with laboratory testing.

Existing undocumented fill is present at this site, and should be entirely removed and replaced where it is encountered below new construction such as the proposed RCP storm drain. No over-excavation will be necessary if such structures bear on native soils. Since pavements can generally tolerate settlement better than structures, and are easier to repair if movement occurs, a reduced over-excavation depth of 12 inches can be considered in these areas. Based on the samples of fill collected, it should be suitable for reuse if it is processed, moisture conditioned, and recompacted as described in the “Site Grading and Earthwork” section of this report. If minor amounts of clay are encountered, it should be thoroughly mixed with the sand to provide a consistent material, but where large zones of clay is encountered, it should be removed, and should not be reused under pipelines, or other structures that are sensitive to movement.

PIPELINE DESIGN PARAMETERS

As discussed in this report, we understand that the new stormwater line will be an 18 to 24-inch diameter RCP line installed using traditional cut and cover trenching methods. We recommend a horizontal modulus of soil reaction (E') of 2,000 psi be used for initial deflection of the pipe zone material that has been compacted in accordance with the specifications listed in the "Site Grading and Earthwork" section below.

Above a depth of 10 feet, thrust blocks used to resist thrust forces at horizontal bends in the pipe should be designed using a passive bearing pressure based on an equivalent fluid density of 250 pcf. The passive pressure should be calculated by multiplying the equivalent fluid density value by the depth in feet below the ground surface corresponding to the midpoint height of the face of the thrust block. For thrust blocks with a midpoint depth of 10 feet or more, a maximum allowable soil bearing pressure of 2,500 psf should be used.

Where clay is encountered at the base of the proposed pipeline excavation, it should be removed and replaced with suitable material to a depth of at least 3 feet. Clay fill should only be reused if it can be demonstrated to meet the requirements listed in Item 6 (Material Suitability) of the "Site Grading and Earthwork" section.

SITE GRADING AND EARTHWORK

Fill Material Specifications: The following material specifications are presented for fills on the project site.

1. *Select Fill*: The on-site soils, including minor amounts of clay will be suitable for reuse as select fill. Import soils if used, should consist of a non-expansive soil, consisting of a minus 2-inch material that has a maximum of 35 percent passing the No. 200 sieve, and a maximum plasticity index of 15. New fill should extend down from the edges of the foundations at a minimum 1:1 horizontal to vertical projection.

2. *Common Fill*: The sands and clays encountered at this site will be suitable for reuse as backfill material within areas where no structures or movement sensitive construction will occur if it is properly processed and adequately moisture conditioned and compacted. If imported material is needed for common fill areas, additional testing may be necessary to ensure it meets the suitability requirements outlined in Item 6 below.

3. *Pipe Bedding Material*: The use and requirements for bedding material should be in accordance with the pipe manufacturer's recommendations, local building authority, or utility district requirements. In the absence of such guidance, we recommend the pipe bedding consist of imported granular bedding material intended for bedding and pipe embedment zone fill. Bedding and embedment zone material may consist of a rounded granular gravel or sand with a maximum size of 3/8 inch, less than 25% passing the No. 50 sieve, and less than 5% passing the No. 200 sieve. The on-site soils encountered do not meet these criteria. The bedding layer should be of adequate thickness to fully support the pipes when seated on top of the bedding.

4. *Pipe Zone Backfill:* The pipe-zone material placed above the bedding and surrounding the pipe should consist of granular material similar to that described above for pipe bedding, and should be compacted to at least 75% relative density (as determined by ASTM D 4253 and ASTM D 4254), and in accordance with requirements of the pipe manufacturer, to provide the required support around the pipe and to help mitigate potential bedding settlement zones. Portions of the pipeline bedding not below current or proposed roadways should be compacted to at least 70% relative density. Special care should be taken to provide adequate compaction below the haunches of the pipe using a concrete vibrator, vibratory plates or other light compaction equipment as needed. In confined areas of the pipeline where compaction is difficult, placement of a cementitious flowable fill around the pipe should be considered. Seepage collars should also be considered in trenches where a significant flow path may develop.

5. *Trench Backfill:* The on-site soils or suitable soil imported to the site can be used as backfill above the pipe zone. Clays should not be placed within 2 feet below pavement subgrade. The use of claystone bedrock that does not break down into a soil-like material may be considered as trench backfill above the embedment material in undeveloped areas where a greater amount of heave can be tolerated at the surface. The backfill should be compacted according to the specifications listed in the "Compaction Requirements"

subsection below. The moisture content of the in-situ materials will need to be adjusted prior to placement.

6. *Material Suitability*: Unless otherwise defined herein, all fill material should be non- to low-swelling, free of vegetation, brush, sod, trash and debris, and other deleterious substances, and should not contain rocks or lumps having a diameter of more than 4 inches. A fill material should be considered non-expansive if the swell potential under a 200 psf surcharge pressure does not exceed ½ percent when a sample remolded to 95 percent of the standard Proctor (ASTM D 698) maximum dry density at optimum moisture content is wetted.

7. *Subgrade Preparation*: The ground surface shall be stripped of all vegetation/organics or other deleterious material prior to fill placement. The resulting ground surface should be scarified to a depth of 12 inches, moisture conditioned as necessary, and compacted in a manner specified below for the subsequent layers of fill. Loose or unstable soils shall be removed, where present, in order to provide a stable platform prior to placement of fill. Scarification and re-compaction will not be necessary at the bases of trenches.

<u>Compaction Requirements</u>: A representative of the geotechnical engineer should observe fill placement operations on a full-time basis. We recommend the following minimum compaction criteria be used on the project.

Table: Compaction Specifications

Area	Percentage of Proctor Maximum Dry Density	
	Standard (ASTM D698)	Modified (ASTM D1557)
Aggregate Base Course	-	95%
Utility Trenches, Exterior Flatwork, Fill placed for Site Grading, and Beneath Paved Areas	95%	90%
Landscape and Other Misc. Overlot Fill Areas	95%	90%
Compaction of fill materials should be achieved at a moisture content within +0 to +3% of the optimum moisture content for cohesive soils, and within -2 to +2 percent for granular soils.		

<u>Grading During Inclement Weather</u>: If grading occurs during the time of year with freezing temperatures, fill should not contain frost or be placed on frozen ground. A loose lift or blanket of

soil should be placed on prepared subgrade at the end of day to protect against frost, and the presence of frost should be checked at the beginning of each day. Any frost should be removed prior to placement of new fill. During periods of precipitation, excessive wetting of building pad and pavement subgrades should be avoided. Measures should be implemented to keep surface runoff from ponding in subgrade areas, to include usage of diversion berms, creation of temporary low areas where water can be directed and removed by pumping, or other methods as appropriate.

<u>Permanent Cut and Fill Slopes:</u> Permanent unretained cuts in the soils and bedrock may be constructed at slopes of up to 3 horizontal to 1 vertical. The risk of slope instability will be significantly increased if seepage is encountered in cuts. If seepage is encountered, we should be retained to evaluate if the seepage will adversely affect the slope stability cut slopes. No formal stability analyses were performed to evaluate the slopes recommended above. Published literature and our experience with similar cuts and fills indicate the recommended slopes should have adequate factors of safety. If a detailed stability analysis is required, we should be notified.

To provide a uniform base for fill placement, the ground surface underlying all fills should be carefully prepared as specified in this section (Subgrade Preparation, above). Fills should be benched into cuts or natural slopes exceeding 4H:1V. Vertical bench heights should be between 2 and 4 feet.

Good surface drainage should be provided around all permanent cuts and fills to direct surface runoff away from the slope faces. Fill slopes cut slopes and other stripped areas should be protected against erosion by revegetation or other methods.

<u>Excavation Considerations</u>: It is our opinion that the soils and bedrock can be excavated with conventional heavy-duty equipment. Specialized excavation methods such as pneumatic chiseling may be necessary for confined areas, or if well cemented bedrock is encountered.

All excavations should be made in accordance with OSHA, State, and local requirements. The contractor should follow appropriate safety precautions. The following guidelines are provided for planning purposes. Actual soil conditions should be verified at the time of excavation. If subsurface conditions that are different from those indicated in this report are encountered, the OSHA soil type may vary, and the required cut slopes may need to be adjusted. The contractor's "competent person" should make decisions regarding excavation slopes.

Based on the subsurface conditions encountered in our borings, the soils will generally classify as Type C materials. The bedrock will likely classify as a Type B material. Per OSHA criteria, temporary unretained excavations should have slopes no steeper than those listed in the following table for each soil type.

Table: Maximum Temporary Cut Slopes

OSHA Soil Type	Maximum Temporary Cut Slope (H:V)
A	¾:1
B	1:1
C	1½:1

A properly braced excavation or the use of an approved trench box should be used where the indicated unretained slopes cannot be accommodated. Flatter slopes will be required where groundwater seepage or fissuring is encountered, or where static or vibratory loads are present. OSHA regulations require that excavations greater than 20 feet in depth be designed by a professional engineer.

Groundwater will likely be a consideration during excavation in some areas, and a dewatering system may be necessary. A dewatering system consisting of trenches flowing into sumps where the water can be discharged using pumps will likely be adequate, but a more robust system such as well points may be necessary if high volumes of water are encountered.

It is assumed site dewatering would occur in advance of the excavation and be maintained the entire duration that the excavation is open. Surface drainage should be diverted away from all temporary cut slopes in order to reduce the potential for slope erosion and instability.

Subgrade Stabilization: Unstable subgrade material is not anticipated, but may be encountered at the base of the proposed fill in some areas. Unstable soils may be stabilized by scarifying/ripping the subgrade and allowing them to dry, or by over-excavation and replacement of the subgrade with suitable, imported, angular, well-graded materials if they are encountered. Other alternatives include the use of Type 2 biaxial geogrid reinforcement in combination with a layer of Class 6 aggregate base course. It has been our experience that the use of a crushed concrete product meeting a Class 6 gradation can perform well when trying to achieve stabilization. Specific stabilization requirements should be evaluated at the time of construction.

Proof Rolling: Wherever possible, the foundation subgrade should be proof rolled with a heavily loaded pneumatic-tired vehicle with a gross vehicle weight of at least 50,000 pounds, a single axle weight of 18,000 pounds, and a tire pressure of 100 psi. Pavement design procedures assume a stable subgrade. Areas that deform under heavy wheel loads are not stable and should be removed and replaced to achieve a stable subgrade.

WATER SOLUBLE SULFATES

The concentration of water-soluble sulfates will be determined via laboratory testing and will be presented in the final draft of this report.

PAVEMENT DESIGN

A pavement section is a layered system designed to distribute concentrated traffic loads to the subgrade. Performance of the pavement structure is directly related to the physical properties of the subgrade soils, pavement section, and traffic loadings. The number and magnitude of wheel loads are major factors for pavement design.

Subgrade Materials: For the purpose of this draft report, a resilient modulus of 3,562 psi, based on an estimated R-value of 10 was used for design of the flexible sections, and a corrected modulus of subgrade reaction of 23 pci was used for the design of rigid sections.

Design Traffic: For the purpose of our study, we have considered an 18-kip, 20 year ESAL value of 73,000 based on the assumption that traffic would largely consist of automobiles and light trucks, with occasional heavy trucks and service vehicles. If it is determined that actual traffic volume is significantly different from the estimated values presented, we should be contacted to reevaluate the pavement thickness design presented in this report.

Pavement Sections: The following pavement section (HMA over ABC, and PCC over ABC) were determined using the AASHTO 1993 design method for flexible and rigid pavements.

Table: Flexible Pavement Section Thickness

Area	HMA[1] over ABC[2] (inches)	PCCP[3] over ABC[2] (inches)
Site Pavements	5 over 6	6 over 4

1: HMA = Hot mix Asphalt
2: ABC = Aggregate base course
3: PCC = Portland cement concrete pavement

Pavement Materials: The asphalt pavement should consist of a bituminous material which meets the local jurisdictional requirements, and CDOT Specifications for Road and Bridge Construction. Aggregate base course should meet the requirements of a CDOT Class 6. A Superpave S or SX mix with a design gyration N value of 75, and a binder performance grade of 58-28 should be used.

A minimum lift thickness of 2-inches for SX and 3-inches for S mixes are recommended. Lift thickness should not exceed 3 inches unless pneumatic or vibratory rollers are used.

SURFACE DRAINAGE

The collection and diversion of surface drainage away from paved and constructed areas is extremely important to their satisfactory performance. Drainage design should provide for the removal of water from paved areas and prevent the wetting of the subgrade soils both during and after construction, and should follow recommendations provided by local, state and national entities. The following recommendations should be used as guidelines and changes should be made only after consultation with the geotechnical engineer.

1. Excessive wetting or drying of the pavement subgrades should be avoided both during and after construction. It may be necessary to grade temporary drainage paths, and to construct berms to facilitate this during construction.

2. Good surface drainage should be provided within all ground surfaces and pavements, and around all cuts and fills to direct surface runoff away from these areas. Slopes and other stripped areas should be protected against erosion by paving, re-vegetation or other means.

DESIGN AND SUPPORT SERVICES

Kumar & Associates, Inc. should be retained to review the project plans and specifications for conformance with the recommendations provided in this report. We are also available to assist the design team in preparing specifications for geotechnical aspects of the project and, if necessary, perform additional studies to accommodate any changes in the proposed construction.

We recommend that Kumar & Associates, Inc. be retained to provide observation and testing services to document that the requirements of the plans and specifications are being followed during construction, and to identify possible variations in subsurface conditions from those encountered in this study.

LIMITATIONS

This study has been conducted for exclusive use by the client for geotechnical related design and construction criteria for the project. The preliminary conclusions and recommendations submitted in this report are based upon the data obtained from the exploratory borings at the locations indicated on Fig. 1 or as described in the report, and the proposed type of construction. This report may not reflect subsurface variations that occur between the exploratory borings, and the nature and extent of variations across the site may not become evident until site grading and excavations are performed. If during construction, fill, soil, rock or water conditions appear to be different from those described herein, Kumar & Associates, Inc. should be advised at once so that a re-evaluation of the recommendations presented in this report can be made. Kumar & Associates, Inc. is not responsible for liability associated with interpretation of subsurface data by others.

The scope of services for this project does not include any environmental assessment of the site or identification of contaminated or hazardous materials or conditions, or the presence, prevention or possibility of mold or other biological contaminants (MOBC) developing in the future. If the owner is concerned about the potential for such contamination, other studies should be undertaken.

AFK/sw

60 0 60 120

APPROXIMATE SCALE–FEET

VICINITY MAP
NOT TO SCALE

26-2-169	Kumar & Associates		LOCATION OF EXPLORATORY BORINGS	Fig. 1

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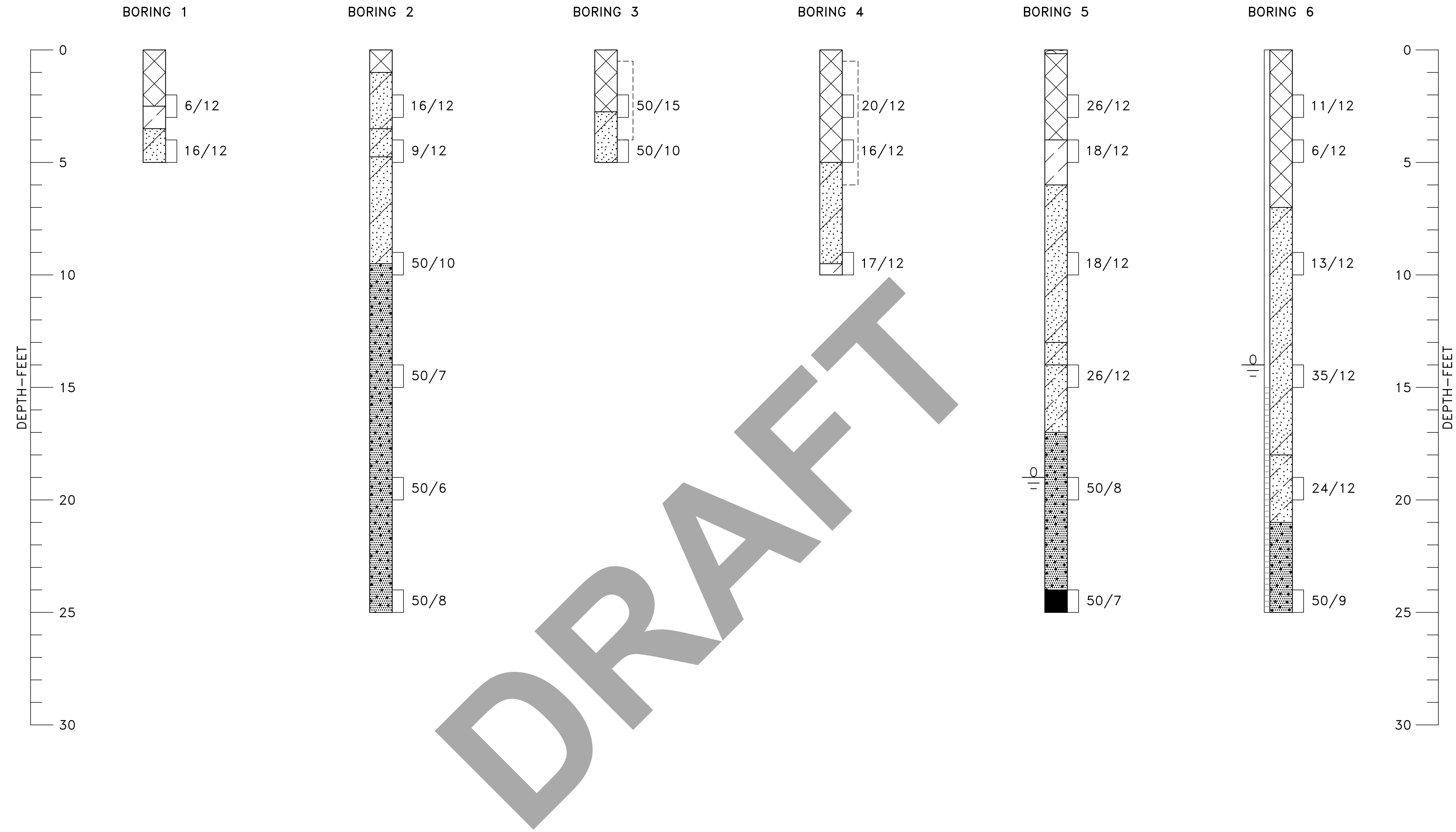

26-2-169	Kumar & Associates		LOGS OF EXPLORATORY BORINGS	Fig. 2

LEGEND

TOPSOIL.

FILL: CLAYEY SAND (SC), SILTY SAND (SM), WELL GRADED GRAVEL WITH SILT (GW–GM), FINE TO COARSE GRAINED WITH GRAVEL, DRY TO MOIST, MOTTLED BROWNS AND GRAYS.

SANDY LEAN CLAY (CL), FINE TO COARSE GRAINED, WITH OCCASIONAL GRAVEL, MEDIUM STIFF TO VERY STIFF, MOIST, DARK BROWN.

CLAYEY SAND (SC), FINE TO COARSE GRAINED, MEDIUM DENSE, MOIST TO WET, LIGHT GREY TO BROWN.

SILTY SAND (SM), FINE TO COARSE GRAINED, LOOSE, MOIST, LIGHT GRAY.

WELL GRADED SAND WITH SILT (SW–SM), WITH OCCASIONAL LENSES OF CLAY, FINE TO COARSE GRAINED, MEDIUM DENSE TO DENSE, MOIST TO WET, LIGHT BROWN TO GRAY.

SANDSTONE BEDROCK, FINE TO COARSE GRAINED, HARD TO VERY HARD MOIST TO VERY MOIST, LIGHT GRAY TO BROWN.

CLAYSTONE BEDROCK, FINE GRAINED, VERY HARD, MOIST, BLUE–GRAY.

DRIVE SAMPLE, 2–INCH I.D. CALIFORNIA LINER SAMPLE.

DISTURBED BULK SAMPLE.

INDICATES PERFORATED PVC PIPE INSTALLED IN BORING TO DEPTH SHOWN.

6/12 DRIVE SAMPLE BLOW COUNT. INDICATES THAT 6 BLOWS OF A 140–POUND HAMMER FALLING 30 INCHES WERE REQUIRED TO DRIVE THE SAMPLER 12 INCHES.

DEPTH TO WATER LEVEL ENCOUNTERED AT THE TIME OF DRILLING.

NOTES

1. THE EXPLORATORY BORINGS WERE DRILLED ON JUNE 8, 2026 WITH A 4–INCH–DIAMETER CONTINUOUS–FLIGHT POWER AUGER.

2. THE LOCATIONS OF THE EXPLORATORY BORINGS WERE MEASURED APPROXIMATELY BY HANDHELD GPS DEVICE.

3. THE ELEVATIONS OF THE EXPLORATORY BORINGS WERE NOT MEASURED AND THE LOGS OF THE EXPLORATORY BORINGS ARE PLOTTED TO DEPTH.

4. THE LINES BETWEEN MATERIALS SHOWN ON THE EXPLORATORY BORING LOGS REPRESENT THE APPROXIMATE BOUNDARIES BETWEEN MATERIAL TYPES AND THE TRANSITIONS MAY BE GRADUAL.

5. GROUNDWATER LEVELS SHOWN ON THE LOGS WERE MEASURED AT THE TIME AND UNDER CONDITIONS INDICATED. FLUCTUATIONS IN THE WATER LEVEL MAY OCCUR WITH TIME.

6. LABORATORY TEST RESULTS:
   WC = WATER CONTENT (%) (ASTM D2216);
   DD = DRY DENSITY (pcf) (ASTM D2216);
   +4 = PERCENTAGE RETAINED ON NO. 4 SIEVE (ASTM D6913);
   –200= PERCENTAGE PASSING NO. 200 SIEVE (ASTM D1140);
   LL = LIQUID LIMIT (ASTM D4318);
   PI = PLASTICITY INDEX (ASTM D4318);
   NV = NO LIQUID LIMIT VALUE (ASTM D4318);
   NP = NON–PLASTIC (ASTM D4318);
   WSS = WATER SOLUBLE SULFATES (%) (CP–L 2103).