GEOTECHNICAL ENGINEERING REPORT
BIA ROUTE N15 (2-3) (3-1) (4-1) 2&4
GREASEWOOD TO BURNSIDE, ARIZONA
NV5/ALLWYN PROJECT NO. 20151221

OCTOBER 2, 2015

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BIA ROUTE N15 (2-3) (3-1) (4-1) 2&4
GREASEWOOD TO BURNSIDE, ARIZONA
NV5/ALLWYN PROJECT NO. 2015122

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October 2, 2015
NV5/Allwyn Environmental Project No.: 20151221

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1. INTRODUCTION

1.1 GENERAL

This report presents the results of the geotechnical study for the proposed design and reconstruction of Bureau of Indian Affairs (BIA) Route N15, BIA Project N15(2-3)(3-1)(4-1)2&4 on the Navajo Nation from Greasewood to Burnside, Arizona. The location of the site is shown on Figure 1, Site Location Map, in Appendix A of this report. The draft of this report, dated December 31, 2014, was prepared by Kleinfelder, Inc. In May 2015, Kleinfelder's New Mexico Operations were acquired by Allwyn Environmental (Allwyn), who was then acquired by NV5, Inc. Kleinfelder engineers assisted in preparation of the final report to include comments provided by the BIA

The recommendations and conclusions of this report are based on the results of our boring and laboratory testing programs. They also are subject to the provisions stated in Section 6.1 "Limitations" of this report. Our findings, conclusions, and recommendations for this evaluation may not be extrapolated to other adjacent sites or used for other projects without our written approval.

1.2 PROJECT DESCRIPTION

The project consists of reconstruction and widening of the existing Navajo Region Department of Transportation (NRDOT) Route N15 to an all-weather paved route. The subject section of road connects Greasewood and Burnside, Arizona within the Navajo Nation. The beginning of project (BOP) is located at station 0+000 near Greasewood and the end of project (EOP) is located at station 34+015.394 near Burnside. The project consists of three sections designated (2-3), (3-1), and (4-1), each approximately 11.26 kilometers (7 miles) long for a total project length of 34.015 kilometers (21.136 miles). We understand the existing pavement section will be completely removed and replaced. The new alignment will follow the existing alignment with minor changes to horizontal alignment. The proposed final alignment is shown on Figure 2 of this report. The current roadway is an asphalt-paved, two-lane road that has been in service for many years and is in various stages of degradation. There are no existing bridges along the alignment and it is our

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understanding that no new bridges are planned. There are approximately 100 existing culverts passing beneath the existing route, but none of them are considered major drainage facilities. The N15 road carries primarily local vehicular traffic consisting of passenger cars and light trucks; however, heavy traffic from the gravel pit uses the entire route. The N15 design traffic count was provided in the BIA Design Analysis Report dated April 8, 2014 as follows:

- Section (2-3): 2011 design traffic count of 3,979 vehicles per day (VPD), projected 2041 traffic of 7,207 VPD, 4% trucks plus factor for overweight vehicles
- Sections (3-1) and (4-1): 2011 design traffic count of 1,885 VPD, projected 2041 traffic of 3,414 VPD, 3% trucks plus factor for overweight vehicles

1.3 PURPOSE AND SCOPE

The purpose of this geotechnical evaluation was to observe the general geologic and geotechnical conditions along the alignment, to provide an engineering and geologic assessment of those conditions, and to provide WHPacific and the owner (BIA) with a summary of significant geologic and/or geotechnical issues that could substantially affect the realignment and design of the roadway. The conclusions and recommendations in this report are based on analysis of the data from our field exploration and laboratory tests. Specifically, our scope included the following:

- Completion of a field reconnaissance to observe existing site and surrounding conditions
- Drilling of 174 test borings on approximately 200-meter centers along the proposed new alignment
- Laboratory testing of selected soil samples returned from the boring program
- Evaluation and engineering analysis of the field and laboratory data to develop our geotechnical conclusions and recommendations
- Preparation of this report

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2. EVALUATION PROCEDURES

2.1 FIELD EXPLORATION

The subsurface conditions along the project alignment were explored by drilling a total of 174 borings along the alignment. The borings were spaced approximately 200 meters (656 feet) apart along the route, with three (3) additional borings at a slope located adjacent to the Pueblo Colorado Wash. All borings were located in the field by the Client. The borings were drilled to an approximate depth of 3 meters (10 feet) below existing grade, and the borings near Pueblo Colorado Wash were drilled to an approximate depth of 10 meters (33 feet) below existing grade. The coordinates of the boring locations were determined using a plan-view drawing provided by the Client.

During the exploratory boring program, the soils encountered were continuously examined, visually classified, and logged. Logs of the borings are presented in Appendix B. Visual classifications of the soils encountered in our exploratory borings were made in general accordance with the Unified Soil Classification System (ASTM D2487). A log key for the classification of the soil is presented in Appendix B.

Exploratory drilling was accomplished using a truck-mounted CME-75 drill rig equipped with a 95 mm (3¾-inch) inside diameter (I.D.) 178 mm (7-inch) outer diameter (O.D.) hollow-stem auger. Soil samples were obtained using a standard split-spoon sampler (SPT) with a 35 mm (1.375-inch) I.D. The sampler was driven 457 mm (18 inches) with a 64-kilogram (140-pound) CME automatic hammer free-falling through a distance of 762 mm (30 inches). The sampler driving resistance was recorded as the number of blows per 0.3 meters (1 foot) of penetration, the results of which are presented on the boring logs in Appendix B. This data was used to determine a relative consistency of the soil based on blow count values. Bulk samples of drill cuttings and Shelby tube samples were also collected at selected depths from the borings.

Soil samples recovered from the borings were classified in the field by our field engineer, packaged, and transported to our laboratory for further analysis. The borings were backfilled with soil cuttings and topped with asphaltic cold patch.

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2.2 GEOTECHNICAL LABORATORY TESTING

The laboratory testing program consisted of performing visual soil classifications, index property testing, and R-value testing on recovered samples. Soil classification was aided with laboratory tests performed in general accordance with accepted AASHTO specifications. The following tests were performed according to the indicated AASHTO methods:

TABLE 2.1 – AASHTO LABORATORY TEST METHODS

LABORATORY TEST	AASHTO TEST METHOD
Moisture Content	T265
Particle Size Analysis	T11 and T27
Atterberg Limits	T89 and T90
R-Value	T190

The results of these tests are presented in Appendix C of this report.

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3. GENERAL SITE CONDITIONS

3.1 LIMITS OF ALIGNMENT

Please note that all station numbers are in meters and that the station numbering as shown in this report is based on the Arizona East state plane coordinate system. The BOP is located at station 0+000 near Greasewood and the EOP is located at station 34+015.394 near Burnside.

3.2 SURFACE CONDITIONS

Within the project limits, the Route N15 alignment traverses relatively undulating topography with gentle gradients uphill to the central portion of the alignment and then proceeds downhill towards the north. The immediate project alignment is covered primarily by asphalt concrete (AC) pavement with unpaved shoulders for the majority of the alignment. A sparse growth of small trees and shrubs is present beyond the asphalt pavement along the alignment. The alignment is generally bordered by sparsely-populated residential lands and vacant or agricultural lands of the Navajo Reservation. Gullies are present at several locations east and west of the existing pavement. Sandstone rock outcrops are sporadically present within 3 meters (10 feet) to 30 meters (100 feet) east and west of N15.

The existing Route N15 roadway consists of a 7.92 meter (25.98-foot) wide roadway with one northbound and one southbound lane. There is no median separating the existing roadway. A turn-lane is present within 91.4 meters (300 feet) south of the cattle guard at the EOP and the town of Burnside. Local access is provided to the surrounding residences via unpaved dirt roads. Approximately 100 steel culverts generally ranging from 0.60 meters (2 feet) to 0.914 meters (3 feet) in diameter are present along the Route N15 alignment; there are several other larger culverts up to 2.13 meters (7 feet) in diameter. Many of the existing culverts are partially to completely blocked by soil and vegetation debris.

Overhead electric and underground electric, fiber optic, water lines, and possibly gas lines are present within 3 meters (10 feet) to 30 meters (100 feet) east and west of the existing Route N15 alignment. The utilities appear to be located east of Route N15 for approximately half of the

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alignment beginning from the south at Greasewood. Utilities appeared to be present both east and west of Route N15 for the remaining half of the alignment north to Burnside.

At approximately 15 kilometers (9.3 miles) north of Greasewood, there are some locations where the wash slopes have been eroded to within 1.5 meters (5 feet) of the existing Route N15 right-of-way. The existing slopes are estimated to be 3 to 6 meters (10 to 20 feet) high.

The AC pavement along Route N15 exhibited moderate to high severity raveling, low to moderate severity longitudinal and transverse cracking and minor areas with potholes, swelling and uneven pavement. A seal coat has been recently applied to the Route N15 pavement. Concrete curbs are present within 45.7m (150 feet) northeast of the cattle guard providing access to the town of Burnside.

3.3 GEOLOGIC SETTING

The BIA N15 roadway project is located on the Navajo Indian Reservation between Greasewood and Burnside, Arizona in the north central to northeast portion of the Navajo reservation.

The Navajo reservation consists of approximately 25,000 square miles that spans portions of the states of Arizona, New Mexico, and Utah. The reservation is located in the south-central part of the Colorado Plateau Physiographic Province (Cooley et al., 1969). The Colorado Plateau Physiographic Province is generally characterized by nearly flat-laying sedimentary strata that are deeply incised by major stream systems and interrupted by generally north-south trending monoclines and structural domes. Extrusive and intrusive igneous features are found intermittently throughout the province (Blanchard, 1986).

The N15 project is underlain by Mesozoic bedrock of the Moenave Formation which is also exposed at the surface at various locations adjacent to the roadway (Amoroso et al. 2013). An erosional basin was formed in the Cenozoic era and was subsequently filled with Miocene and Pliocene-age lacustrine and fluvial sediment (mudstone and sandstone) deposited from the Bidahochi Formation. These deposits were later overlain by alluvial and eolian deposits eroded from nearby hillsides.

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3.4 GEOLOGIC HAZARDS

The Navajo Indian Reservation is located near the southern end of the Intermountain Seismic Belt, a seismically active region that extends from Arizona to Montana (Smith and others, 1991). Active faults in the region are potential sources for seismic loading hazards for the site. Active earthquake faults are considered as faults that have moved during the past 10,000 years.

The US Geological Survey (USGS) Quaternary Faults and Folds database, accessed December 19, 2014, indicates that the closest faults in that database are in the vicinity of Flagstaff, Arizona some 117 kilometers (73 miles) southwest of the site and in the vicinity of Show Low, Arizona approximately 120 kilometers (75 miles) south of the site.

The immediate area of the N15 alignment is situated in a statistically seismically inactive area. The USGS database predicts a 2% in 50 years probability of occurrence of an earthquake of 0.125g Peak Ground Acceleration (PGA) or greater. Seismic risks are considered low for the N15 alignment.

3.5 LIQUEFACTION

In conjunction with the ground shaking potential of seismic events, some areas may also possess a potential for liquefaction during a high-magnitude event. Liquefaction is a phenomenon whereby loose, saturated, granular soil deposits lose a significant portion of their shear strength due to excess pore water pressure buildup resulting from dynamic loading, such as that caused by an earthquake.

Liquefaction can result in densification of such deposits causing settlements of overlying layers after an earthquake as excess pore water pressures are dissipated. Horizontally continuous liquefied layers may also have a potential to spread laterally where sufficient slope or free-face conditions exist. The primary factors affecting liquefaction potential of a soil deposit are: (1) magnitude and duration of seismic ground motions; (2) soil type and consistency; and (3) depth-to-groundwater.

No recently published literature was found regarding liquefaction potential along or near the alignment. Based on the results of our site reconnaissance, the results of the boring program, and

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the laboratory testing program, it is our opinion that the potential for liquefaction to occur is very low to negligible, due to low risk for a seismic "triggering" event, the presence of shallow bedrock and apparent absence of shallow groundwater along the alignment.

3.6 OTHER GEOLOGIC HAZARDS

Based on our review of available literature and geological maps, and our preliminary site reconnaissance, the alignment does not appear to be exposed to shallow groundwater hazards. Rock formations are present on some areas of the alignment and may present a risk for rock-fall hazards. A moderately-steep slope is located adjacent to the roadway at the Pueblo Colorado Wash. The slope shows evidence of erosion and may pose a risk of landsliding along this section of the alignment. Recommendations for slope stability of this area are provided in later sections of this report.

3.7 SUBSURFACE CONDITIONS

The general description of the soil conditions encountered at the soil boring locations are described below. For specific information at each soil boring location, please refer to the soil boring logs presented in Appendix B.

The existing asphalt pavement at the site ranged from 51 to 178 millimeters (2 to 7 inches) thick with an average thickness of 113 millimeters (4.5 inches). The asphalt pavement was underlain by an aggregate base course layer ranging from 0 to 229 millimeters (0 to 9 inches) thick with an average thickness of 98 millimeters (4 inches). Evidence of a past asphalt overlay (a brown-colored asphalt layer beneath a black-colored asphalt layer) was observed in the geotechnical borings from Station 17+000 to Station 33+000. A geotextile fabric was observed beneath the asphalt at borings B-52, B-82, B-83, B-88, and B-168.

The subsurface soil conditions encountered in the shallow (3 meter) borings drilled at the site generally consisted of silty sand, clayey sand, and poorly graded sand with varying amounts of silt, clay, sandstone, and caliche fragments. The sandy soils were generally in a loose condition with some medium dense to very loose zones. Some areas of the site contained soft lean to fat (low to high plasticity) clay, which may provide unsuitable support for pavements.

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The subsurface conditions encountered in the deep (10 meter) borings near the Pueblo Colorado Wash (B-69, B-71, and B-72) generally consisted of loose to very loose sand with varying amounts of silt and clay and sandstone fragments to the total explored depth of 10 meters below existing grade. However, sandstone bedrock was encountered at a depth of approximately 1 meter (3 feet) below existing grades in boring B-72. The drilling crew was able to auger through the sandstone to the target depth of the boring. The bedrock was laminated, weakly cemented, and very dense according to a soil relative density description.

Groundwater was not encountered in any of the borings to the maximum depth explored. Groundwater levels commonly vary over time and space depending upon seasonal precipitation, land use, and runoff conditions. The groundwater levels indicated by the borings represent conditions at the time the borings were drilled. The groundwater levels at the time of construction may vary.

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4. CONCLUSIONS AND RECOMMENDATIONS

4.1 GENERAL

Based on the information presented herein, it is Allwyn's opinion that the roadway may be developed as proposed and described in this report, provided that the recommendations presented in this report are incorporated into design and construction. These opinions, conclusions, and recommendations are based on our field exploration, engineering analysis, the properties of the materials encountered in our borings, the results of the laboratory testing program, and our understanding of the proposed development of the site. These opinions and conclusions are subject to revision based on the final plans and specifications for the project.

The primary geotechnical concern associated with the site is the presence of low to high plasticity soft clays and loose sandy soils that provide poor subgrade support for pavements. We have provided recommendations for geo-grid reinforcement below the project pavements for these conditions.

4.2 EARTHWORK

The following sections summarize the recommendations related to earthwork construction. The recommendations are based on the subsurface conditions encountered.

4.2.1 Site Clearing and Excavations

All existing pavement, aggregate base course, surface debris, bushes, vegetation, roots, organic matter, and other objectionable material and protruding obstructions within the pavement area should be cleared or removed as required. Buried utilities that are currently in use must be protected or relocated. Any voids, depressions, or holes in the subgrade resulting from the removal of unsuitable materials shall be cleaned and backfilled in accordance with Section 4.2.5 "Fill Placement and Compaction" of this report.

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4.2.2 Subgrade Preparation

After clearing, stripping, and excavation operations are complete, exposed native subgrade soils should be scarified to a minimum depth of 12 inches. Subgrade should be moisture conditioned to within +/-2 percent of optimum moisture content, and compacted in accordance with the recommendations presented below under Section 4.2.5 "Fill Placement and Compaction." Moisture conditioning of subgrade soils, as well as fill soils, may include drying or the addition of water.

4.2.3 Proofrolling

In order to identify soft/loose areas of the subgrade, we recommend that exposed soil along the length of the alignment be proofrolled prior to placement of structural fill and following required subgrade preparation. Proofrolling of the subgrade aids in identifying soft or disturbed areas. Proofrolling can be accomplished through the use of a fully-loaded, tandem-axle dump truck or similar piece of equipment providing an equivalent subgrade loading condition. Geo-grid reinforcement should be used in unsuitable areas identified by proofrolling.

4.2.4 Structural Fill

Structural fill is defined as soil that is placed, moisture conditioned, compacted to a specified minimum density, and tested by the geotechnical engineer. Structural fill should meet the requirements outlined in Federal Highway Administration (FHWA) document FP-03 Section 704.06, Unclassified Borrow. The material selected for structural fill should be free of frozen soil, root mat material, organic and deleterious matter, rock particles larger than 75 mm (3-inches), and large pieces of cemented soils. In addition, some blending of soils and removal of debris may be required to achieve a uniform soil consistency.

Based on our visual identification of the soils, supplemented with limited laboratory testing, it is our opinion that some of the on-site soils are acceptable for re-use as structural fill. In areas that have high fines content and high plasticity index however, the on-site soils will require blending with imported soils that meet the requirements outlined in FHWA document FP-03 Section 704.06, Unclassified Borrow. We recommend that all fill material should consist of soils that meet the requirements outlined in FHWA document FP-03 Section 704.06, Unclassified Borrow.

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4.2.5 Fill Placement and Compaction

Structural fill should be placed and compacted in layers not exceeding six inches in un-compacted thickness, moisture-conditioned, processed as necessary, and compacted. The optimum moisture content and maximum dry density for each soil type should be determined in accordance with AASHTO T180 Standard Method of Test for Moisture-Density Relations of Soil Using a 4.54-kg (10-lb.) Rammer and a 457-mm (18-in.) Drop. Not less than 95 percent of the AASHTO T180 Proctor maximum dry density should be obtained during compaction. The material should be either moistened or dried (depending on actual moisture content) and thoroughly mixed. Mixing should be performed by reprocessing to the full depth of the lift and compacting to achieve the minimum compaction requirement. Density readings should be taken at each 150 mm (6-inch) lift just prior to placing fill on the succeeding lift.

All utility trenches should be backfilled with compacted, structural fill. Special care should be taken during backfill of soils located above any existing utility lines that run underneath the site. The capacity of existing lines should be evaluated to ensure that additional stresses due to construction activities do not affect the integrity of the lines. In this regard, the Contractor should be made aware of the location of all utility lines and take extra precautions when placing and compacting fill soils in the vicinity of utilities. It may be necessary to reduce the compactive effort depending on the capacity of the existing lines to accommodate the expected compaction loads.

We recommend that a representative of the geotechnical engineer provide continuous on-site observation and testing during excavation, subgrade preparation, and placement of structural fill to document compliance with the recommendations contained herein.

4.2.6 Excavation and Trenches

Based on the subsurface conditions disclosed by the borings drilled at this site, it is our opinion that site excavations may be accomplished with conventional excavation equipment. If temporary excavations are required for construction, temporary slopes may be cut at a maximum inclination of 1.5:1 (H:V) or be supported in accordance with OSHA recommendations for a Type C soil (*Federal Register 29 CFR, Part 1927*). Cuts below groundwater are not anticipated.

The suggested layback of temporary excavations may require modification after the start of construction based on field conditions. The Contractor is responsible for the safety of workers and

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should strictly observe federal and local OSHA requirements for safety. Due to the granular nature of the near-surface soils, raveling of temporary cut slopes should be anticipated. Temporary erosion control measures, such as a flash coating, may be required for excavations open for extended periods. It is also the Contractor's responsibility to assess the actual conditions in the field at the time of construction and to make its own interpretation of the OSHA soil/rock type for design of the excavation and trench slopes or the need for excavation shoring.

All excavations should be located so that no adjacent structures or utilities, existing or new, are located above a plane projected 45 degrees upward from any point in an excavation, regardless of whether it is shored or unshored.

4.2.7 Construction in Wet or Cold Weather

Structural fill should not be placed on frosted or frozen ground, nor should frozen material be placed as fill. Frozen ground should be allowed to thaw or be completely removed prior to placement of fill. If earthwork is performed during the winter months when freezing is a possibility, a good practice is to cover the compacted fill with a "blanket" of loose fill each evening to help reduce the potential for freezing of the underlying compacted fill. Prior to commencement of fill placement operations the next morning, the loose fill blanket must be entirely removed and allowed to thaw before incorporating it into the fill.

During construction, the site should be graded so that surface water can drain readily away from the roadway. Ponding of water in or near excavations should be avoided. Water that accumulates in excavations or on subgrades should be promptly pumped out or otherwise directed to appropriate discharge facilities, and these areas should be allowed to dry out before resuming construction. Berms, ditches, and other similar means should be used to prevent storm water from entering work areas and to convey water off-site efficiently.

4.2.8 Construction Testing and Observation

Field testing and construction observation should take place under the observation of Allwyn to support our engineer's professional opinion as to whether the earthwork does or does not substantially conform to the recommendations in this report.

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Furthermore, the opinions and conclusions of a geotechnical report are based on interpretation of a limited amount of information obtained from the field exploration. It is therefore common to find that actual site conditions differ somewhat from those indicated in the report. Allwyn should remain involved throughout the project to evaluate such differing conditions as they appear, and to modify or add to the geotechnical recommendations as necessary.

4.3 GEOTECHNICAL CONSIDERATIONS

4.3.1 General Considerations

A geotechnical consideration associated with the site is erosion of the shoulders and roadway itself due to large surface water flows in the drainages along the alignment. The amount of rainfall and water runoff is expected to fluctuate throughout the year. In addition to the direct erosion potential, surface water flows may also influence the moisture content of the subsurface soils along and underneath the roadway. Water infiltration into the native sandy and silty clay subsoils may also cause swelling of the subgrade soils and possible heave of the roadway.

4.3.2 Soft/Loose Subgrade Soils

Soft clayey and loose granular surface soils were encountered at various locations along the N-15 alignment, which are unfavorable subgrade materials for pavement support. Based on existing and planned roadway profile data we understand that the majority of the alignment will be raised, with fill material, between 1 and 2 feet above the existing top of asphalt elevation. Due to the proposed grade changes and the difficulty in determining the horizontal extent of soft areas we recommend that the finished subgrade be proofrolled along the entire alignment as described in Section 4.2.3 "Proofrolling". Soft clayey soils, which may result in unsuitable subgrade conditions, were identified in the following geotechnical borings. We have also estimated the horizontal extent of the soft zones for estimating purposes. However, the true extent of any potential soft zones should be confirmed in the field by proofrolling the entire subgrade alignment following the alignment grading.

- Boring B-12 (Sta. 2+100 to 2+300)
- Boring B-24 (Sta. 4+500 to 4+700)
- Boring B-138 (Sta. 26+700 to 26+900)
- Boring B-146 (Sta. 28+300 to 28+500)

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- Boring B-149 (Sta. 28+900 to 29+100)
- Borings B-153 to B-154 (Sta. 29+700 to 30+100)
- Borings B-170 to B-172 (Sta. 33+100 to 33+600)

If soft, unstable, clayey subgrade is identified during proofrolling a geo-grid material such as Tensar® TriAx TX5™ geo-grid can be used to improve the subgrade conditions. The geo-grid should be placed above the zones of unstable subgrade soils after they are prepared as described in Section 4.2 "Earthwork". Aggregate base course may then be placed above the geo-grid, followed by asphalt concrete. Specific pavement recommendations are provided in Section 5 "Pavements".

We understand that the NRDOT has adopted Roadbond EN-1 as the preferred chemical stabilization for clayey subgrades A-7, A-6, A-2-7 with a PI greater than 15. If this option is considered, the soft clayey subgrade should be treated to a minimum depth of 6 inches and prepared as directed by the manufacturer.

If proofrolling shows unstable conditions in predominately loose granular soils, these areas may be stabilized by either using the geo-grid as described above or by overexcavation and recompaction of the native soils. For the overexcavation option a minimum of 2 feet of the loose soils should be removed, then the exposed subgrade should be scarified a depth of 12 inches and recompacted in accordance with Section 4.2.2 "Subgrade Preparation". The native granular soils may then be replaced and compacted in accordance with Section 4.2.5 "Fill Placement and Compaction".

4.3.3 Collapse Potential of Soils

Hydro-collapse potential is the potential for vertical settlement caused by inundation of moisture into the roadway bearing soils after construction. Areas of hydro-collapsible soils located in the top meter (3 feet+/-) of the soil profile are common in the desert southwest and on the Navajo reservation. These soils become mildly cemented by calcium minerals. When the soils become wetted the cementation breaks down and the soils can experience sudden moderate to large settlements. Evidence of soils susceptible to hydro-collapse (i.e. low to moderate cementation, low relative density, etc.) was found in the borings advanced during our geotechnical exploration.

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We recommend that subgrade soils be protected against moisture infiltration through proper drainage to avoid hydro-collapse.

4.3.4 Drainage

Long-term performance of the roadway will require that the subgrade soils and engineered fill be protected against excessive water infiltration and/or saturation. We recommend the civil engineering design include measures to keep the subgrade dry and to include measures to divert water generated by drainage channels crossing the roadway away from the subgrade.

4.3.5 Erodibility

The silty and clayey fine sands and sandy silts and clays that are predominant along the alignment are considered to be highly erodible by wind and flowing water. Proper consideration to drainage measures will be required during design and construction. Erosion adjacent to the roadway is considered to be one of the more significant geotechnical issues to be addressed during design.

4.4 PUEBLO COLORADO WASH EMBANKMENT SLOPE STABILITY

4.4.1 Existing Conditions

The existing Pueblo Colorado Wash runs parallel with the N15 roadway for most of the project length. Along approximately 150 meters (492 feet) of the road alignment, from Sta. 13+600 to 13+750, the wash channel approaches near the roadway, scouring the side embankment of the wash which supports N15. The embankment in this area is approximately 10 meters (33 feet) in height from the bottom of the wash to the roadway and is composed of very loose to dense poorly graded sands. The scouring of the embankment has steepened the slope near its base from an overall slope angle of 3 horizontal to 1 vertical (3:1) to a much steeper 2:1 angle.

Currently these slopes are lightly vegetated with shrubs and small trees common to the area. Along the lower half of the slope, cobble sized rip-rap material was observed possibly as a prior attempt at slope stabilization. Near the toe of the slope, little to no vegetation was present which indicates recent scour activity.

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4.4.2 Slope Stability Evaluation

Allwyn performed a slope stability analysis of the slopes along the roadway alignment between Sta. 13+600 to 13+750. We used the limit equilibrium slope stability analysis program, SLIDE version 5.0 developed by RocScience, Inc. Based on our review of the most recent topographic survey information, Allwyn determined a typical cross section representative of the slope configuration and developed a model for analysis. The cross section is shown in Appendix D of this report. The soil parameters used for this evaluation were based on the results of our deep soil borings performed in this area of the project (B-69, B-71, and B-72).

The slope stability of the cross sections was analyzed for both dry and saturated loading conditions. For each of the cases, we analyzed several different possible failure planes including shallow or surficial sliding of the wash side slopes, failure through the toe of the wash, and global failure that could propagate back to the roadway. The results of our slope stability analysis are shown in Appendix D.

Typically, the stability of a slope is expressed by establishing a ratio of the forces resisting slope movements and the forces acting to cause the slope to fail or slide. This ratio is commonly called a factor of safety. In general, a factor of safety of 1.5 or greater is considered adequate for most non-critical slopes. The results of our slope stability analysis for the existing slope conditions indicate that the slopes are fairly stable for global failure planes that propagate to the roadway (factors of safety from 2.0 when dry to 1.7 when saturated); however, for shallower, surficial sliding zones along the slope face or through the toe of the arroyo slope potentially unstable slope conditions are shown (factors of safety from 1.2 when dry to 0.9 when saturated). The low factor of safety values indicate the slope is potentially unstable and shallow failures of the slope are likely to occur in the future if no slope stabilization measures are implemented. Although these failures are unlikely to affect the N15 roadway at the present, progressive slope failures could propagate back to the roadway.

4.4.3 Conclusions and Recommendations

The slope stability analysis performed on the wash embankment between Sta. 13+600 and 13+750 indicates the following conclusions:

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- Shallow slope failures of the wash embankment are likely to occur if no slope stabilization methods are employed, particularly as future rain events and flows in the wash erode the toe of the slope.
- Global slope failures of the wash that would affect the roadway are unlikely with the current site conditions; however, progressive slope failure of the wash embankment due to continued scouring of the slope toe is likely to propagate back towards the alignment leading to subsidence of the roadway.

Based on the conclusions discussed above, we recommend that the slope below the roadway be improved from Sta. 13+600 to 13+750. The improvements should buttress the toe of the slope and prevent future scour of the embankment. Several options are available including the following:

- Buttress the existing slope with 2:1 boulder fill (rip-rap); underlay boulder fill with filter fabric. Boulder fill should be embedded a minimum of 1 meter below the bottom of the wash and extend to a minimum height of the design water level for the wash.
- Reinforce the slope with a stepped gabion basket wall; underlay wall with filter fabric. The gabion basket wall should be embedded a minimum of 1 meter (3.3 feet) below the bottom of the wash and extend to a minimum height of the design water level for the wash. For design of the gabion wall an equivalent lateral fluid pressure of 1.676 kilopascals (35 pounds per cubic foot) may be used.
- Clear loose slope debris and vegetation; overlay slope with filter fabric; overlay slope with anchored wire-mesh cobble-filled baskets (Gabion Mattress). Reinforcement should be embedded a minimum of 1 meter (3.3 feet) below the bottom of the wash and extend to a minimum height of the design water level for the wash.
- Recommended embedment depths for the slope stabilization options listed above are based on minimum values and not on a site specific scour analysis which was beyond the scope of our proposal. A site specific scour analysis for the wash should be performed during the design of the slope stabilization system and the embedment depth increased if necessary.

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5. PAVEMENTS

Allwyn performed pavement design calculations for pavements according to AASHTO 1993 design methods. Preliminary pavement design recommendations for the proposed project are provided in the following sections.

A total of six (6) pavement design sections were developed for the project:

- Section (2-3)
- Section (3-1)
- Section (4-1)
- Soft/Loose zones in Section (2-3) identified through proofrolling
- Soft/Loose zones in Section (3-1) identified through proofrolling
- Soft/Loose zones in Section (4-1) identified through proofrolling

5.1 SUBGRADE SUPPORT

The subsurface soils encountered at the proposed pavement subgrade depths generally consisted of silty sand (AASHTO classification A-2-4), clayey sand (AASHTO classifications A-2-6 to A-6), poorly graded sand with varying amounts of clay and silt (AASHTO classifications A-2-6 to A-3), and some zones of lean to fat clay (AASHTO classifications A-6 to A-7-6). R-value tests were performed on select soils samples along the N15 alignment. The results of the R-value tests are shown in the following table.

TABLE 5.1 – R-VALUE LABORATORY TEST RESULTS

APPROXIMATE STATION AND OFFSET	BORING NUMBER	DEPTH (METERS)	DEPTH (FEET)	USCS	AASHTO	LABORATORY R-VALUE AT 300 PSI EXUDATION PRESSURE
				SOIL CLASSIFICATION		
0+000, 6' E of CL	B-1	0.3 – 1.5	1 - 5	Silty Sand (SM)	A-2-4	54
1+000, 3' W of CL	B-6	0.3 – 1.5	1 - 5	Silty Sand (SM)	A-2-4	34
4+000, 6' E of CL	B-21	0.3 – 1.5	1 - 5	Clayey Sand (SC)	A-2-6	25
5+000, 3' W of CL	B-26	0.3 – 1.5	0 - 5	Clayey Sand (SC)	A-6	21

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TABLE 5.1 – R-VALUE LABORATORY TEST RESULTS (continued)

APPROXIMATE STATION AND OFFSET	BORING NUMBER	DEPTH (METERS)	DEPTH (FEET)	USCS	AASHTO	LABORATORY R-VALUE AT 300 PSI EXUDATION PRESSURE
				SOIL CLASSIFICATION		
6+000, 6' E of CL	B-31	0.3 – 1.5	0 - 5	Clayey Sand (SC)	A-6	16
7+000, 3' W of CL	B-36	0.3 – 1.5	1 - 5	Clayey Sand (SC)	A-2-6	22
8+000, 6' E of CL	B-41	0.3 – 1.5	1 - 5	Silty Sand (SM)	A-2-4	41
10+000, 6' E of CL	B-51	0.3 – 1.5	1 - 5	Silty Sand (SM)	A-2-4	21
11+000, 6' W of CL	B-56	0.3 – 1.5	1 - 5	Clayey Sand (SC)	A-2-4	27
13+420, 12' E of CL	B-69	0.3 – 1.5	1 - 5	Clayey Sand (SC)	A-2-6	19
13+655,12' E of CL	B-71	0.3 – 1.5	1 - 5	Silty Sand (SM)	A-2-4	68
15+400, 3' W of CL	B-81	0.3 – 1.5	1 - 5	Clayey Sand (SC)	A-2-4	53
16+200, 3' W of CL	B-85	0.3 – 1.5	1 - 5	Silty Sand (SM)	A-2-4	65
17+400, 6' W of CL	B-91	0.3 – 1.5	1 - 5	Clayey Sand (SC)	A-2-6	15
18+400, 6' E of CL	B-96	0.3 – 1.5	1 - 5	Silty Clayey Sand (SC-SM)	A-2-4	38
21 + 400, 3' W of CL	B-111	0.3 – 1.5	1 - 5	Clayey Sand (SC)	A-2-4	34
22 + 400, 6' E of CL	B-116	0.3 – 1.5	1 - 5	Clayey Sand (SC)	A-2-4	16
23 + 400, 3' W of CL	B-121	0.3 – 1.5	1 - 5	Clayey Sand (SC)	A-4	25
26 + 400, 6' E of CL	B-136	0.3 – 1.5	1 - 5	Clayey Sand (SC)	A-4	17
29 + 400, 3' W of CL	B-151	0.3 – 1.5	1 - 5	Clayey Sand (SC)	A-6	17
33 + 800, 6' W of CL	B-173	0.3 – 1.5	1 - 5	Clayey Sand (SC)	A-6	13

In addition to laboratory R-value testing, published R-value correlations from The New Mexico Department of Transportation (NMDOT) were used to correlate additional R-values for design. The laboratory and correlated R-values were then compiled and used to calculate subgrade resilient modulus (Mr) using the Arizona Department of Transportation (AZDOT) methodology found in the AZDOT engineering and design manual.

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Based on the subsurface soil types, the results of our laboratory testing, and using published correlations between soil classification and plasticity index, the following R-values and corresponding subgrade resilient modulus (Mr) values were used to determine the pavement design sections:

- Section (2-3): Mean R-value = 20, Mr = 82.7 MPa (12,000 psi)
- Section (3-1): Mean R-value = 39, Mr = 155.8 MPa (22,600 psi)
- Section (4-1): Mean R-value = 30, Mr = 121.7 MPa (17,650 psi)
- Soft/loose zones: Mean R-value = 9, Mr = 41.4 MPa (6,000 psi)

These Mr values are based on the mean R-value calculated for the given section. If areas within the given section have R-value deviations from those listed above greater than 10 those areas should be evaluated to determine the extent of the unsuitable soils and the most effective means of remediation. Development of the correlated R-values using the NMDOT table and the calculation of Mr using the AZDOT methodology can be found in Appendix E.

5.2 TRAFFIC LOADING & EQUIVALENT SINGLE AXLE LOAD (ESAL) APPLICATIONS

Annual average daily traffic (ADT) values and percentage of trucks was provided in the BIA Design Analysis Report dated April 8, 2014 as follows:

- Section (2-3)
    - Existing ADT (2011): 3,979 vehicles per day (vpd)
    - Projected ADT (2041): 7,207 vpd
    - Annual Growth Rate: 2%
    - Percentage of Trucks: 4% + factor for overweight vehicles
- Sections (3-1) and (4-1)
    - Existing ADT (2011): 1,885 vpd
    - Projected ADT (2041): 3,414 vpd
    - Annual Growth Rate: 2%
    - Percentage of Trucks: 3% + factor for overweight vehicles

Under direction from the BIA the existing 2011 ADT value was projected to 2016 and that value was used for the initial ADT for the 20-year design. The weight of the trucks was not provided in the Design Analysis Report, so we assumed the truck traffic consists of 3-axle tractor semi-trailers.

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A 2% increase was applied to the ESAL factor for the trucks in order to account for overweight vehicles.

5.3 PAVEMENT INPUT PARAMETERS

We used the following parameters as inputs to the AASHTO 1993 pavement design:

TABLE 5.2 – SUMMARY OF PAVEMENT INPUT PARAMETERS

PARAMETER	SECTION (2-3) Station 22+751.75 to 34+017.159	SECTION (3-1) Sta 11+300 to 22+751.75	SECTION (4-1)	SOFT/LOOSE ZONES		
				SECTION (2-3) Station 22+751.75 to 34+017.159	SECTION (3-1)	SECTION (4-1)
Subgrade resilient modulus (MPa)	82.7	155.8	121.7	41.4		
Subgrade resilient modulus (psi)	12,000	22,600	17,650	6,000		
Existing ADT, vpd (2011)	3,979	1,885		3,979	1,885	
ESALs:	1,250,000	440,000		1,250,000	440,000	
Growth Rate, %	2.0					
Reliability, %	80					
Overall deviation	0.45					
Initial serviceability	4.2					
Terminal serviceability	2.0					
Structural number new hot mix asphalt pavement	0.42					
Structural number crushed rock aggregate base course	0.12					
Drainage coefficient asphalt pavement	1.0					
Drainage coefficient crushed rock aggregate base course	1.0					

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Using the input parameters described above, the minimum required structural number (SN) for the project sections are:

- Section (2-3): minimum required SN = 2.72
- Section (3-1): minimum required SN = 1.81
- Section (4-1): minimum required SN = 2.00
- Section (2-3), Geo-grid Reinforced Areas: minimum required SN = 3.47
- Sections (3-1) & (4-1), Geo-grid Reinforced Areas: minimum required SN = 2.96

ESAL calculations are included in Appendix E.

5.4 PAVEMENT DESIGN SECTIONS

Using the parameters described above, Allwyn determined the following design pavement sections. The pavement sections are also summarized in Appendix E.

TABLE 5.3 – RECOMMENDED PAVEMENT DESIGN SECTIONS

MATERIAL LAYER	SECTION (2-3) Station 22+751.75 to 34+017.159	SECTION (3-1) Station 11+300 to 22+751.75	SECTION (4-1) Station 0+000 to 11+300	SOFT / LOOSE ZONES		
				SECTION (2-3) Station 22+751.75 to 34+017.159	SECTION (3-1) Station 11+300 to 22+751.75	SECTION (4-1) Station 0+000 to 11+300
New Hot Mix Asphalt Pavement (HMA)	102 mm (4 inches)	76 mm (3 inches)	76 mm (3 inches)	102 mm (4 inches)	76 mm (3 inches)	76 mm (3 inches)
Crushed Rock Aggregate Base Course	254 mm (10 inches)	203 mm (8 inches)	203 mm (8 inches)	254 mm (10 inches)	216 mm (8.5 inches)	216 mm (8.5 inches)
Geo-Grid (Tensar® TX5™ or equivalent)	No	No	No	Yes	Yes	Yes
Compacted Subgrade	305 mm (12 inches)	305 mm (12 inches)	305 mm (12 inches)	305 mm (12 inches)	305 mm (12 inches)	305 mm (12 inches)

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The required minimum pavement section provided by the BIA in the Design Analysis Report is 76 mm (3 inches) of asphalt over 203 mm (8 inches) of aggregate base course. Our recommended pavement sections accounted for this minimum section.

New HMA should meet appropriate BIA specifications, or alternately, appropriate AZDOT specifications. Crushed rock aggregate base course should be compacted to at least 95 percent of AASHTO T180. Base course should meet appropriate BIA specifications, or alternately, appropriate AZDOT specifications. Subgrade soils beneath the pavement section should consist of engineered fill consisting of native soils or approved imported granular materials, compacted to at least 95 percent AASHTO T180.

5.5 GEO-GRID REINFORCEMENT

We recommend that geo-grid reinforcement be used on soft/loose areas within the project roadway as identified through proof-rolling. Allwyn designed the geo-grid reinforced sections shown in the previous table using the Tensar® software SpectraPave4-PRO™. We assumed the use of Tensar TriAx™ TX5 geo-grid in our analysis. We recommend that the geo-grid sections overlap a minimum of 0.3 meters (1 foot) and that the crushed aggregate base course conform to a median size (D50) of 27 mm (1 inch) or less.

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6. CLOSURE

6.1 LIMITATIONS

This work was performed in a manner consistent with that level of care and skill ordinarily exercised by other members of Allwyn's profession practicing in the same locality, under similar conditions and at the date the services are provided. Our conclusions, opinions, and recommendations are based on a limited number of observations and data. It is possible that conditions could vary between or beyond the data evaluated. Allwyn makes no other representation, guarantee, or warranty, expressed or implied, regarding the services, communication (oral or written), report, opinion, or instrument of service provided.

The scope of our services does not include services related to construction safety precautions and our recommendations are not intended to direct the contractor's methods, techniques, sequences, or procedures except as specifically described in our report for consideration in design. The scope of our services for this report did not include any environmental assessment or evaluation regarding the presence or absence of wetlands or hazardous or toxic materials in the soil, surface water, groundwater, air, or below or around the site.

This report may be used only by the Client and the registered design professional in charge and only for the purposes stated for this specific engagement within a reasonable time from its issuance, but in no event later than two (2) years from the date of the report.

The work performed was based on project information provided by the Client. If the Client does not retain Allwyn to review any plans and specifications, including any revisions or modifications to the plans and specifications, Allwyn assumes no responsibility for the suitability of our recommendations. In addition, if there are any changes in the field to the plans and specifications, the Client must obtain written approval from Allwyn's engineer that such changes do not affect our recommendations. Failure to do so will vitiate Allwyn's recommendations.

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6.2 ADDITIONAL SERVICES

The recommendations provided in this report are based on the assumption that an adequate program of tests and observations will be performed during construction to verify compliance with these recommendations. These tests and observations should include, but not necessarily be limited to, the following:

- Observations and testing during site preparation and earthwork operations; and
- Consultation as may be required during construction.

It is also recommend that the project plans and specifications be reviewed by NV5/Allwyn to verify compatibility with the conclusions and recommendations presented in this report. Additional information concerning the scope and cost of these services can be provided by this office upon request.

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U.S. Department of Transportation, Federal Highway Administration, FP-03 (Metric Units), Standard Specifications for Construction of Roads and Bridges on Federal Highway Projects.

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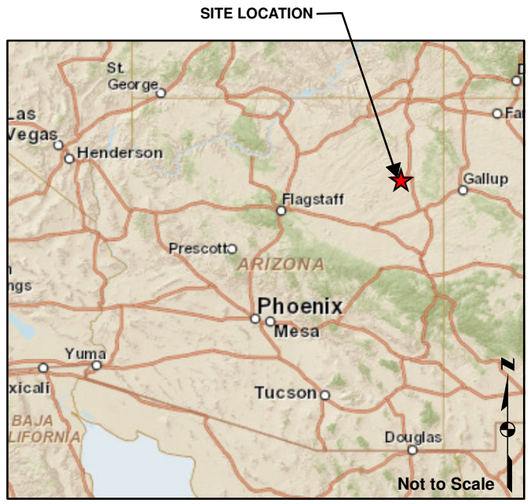
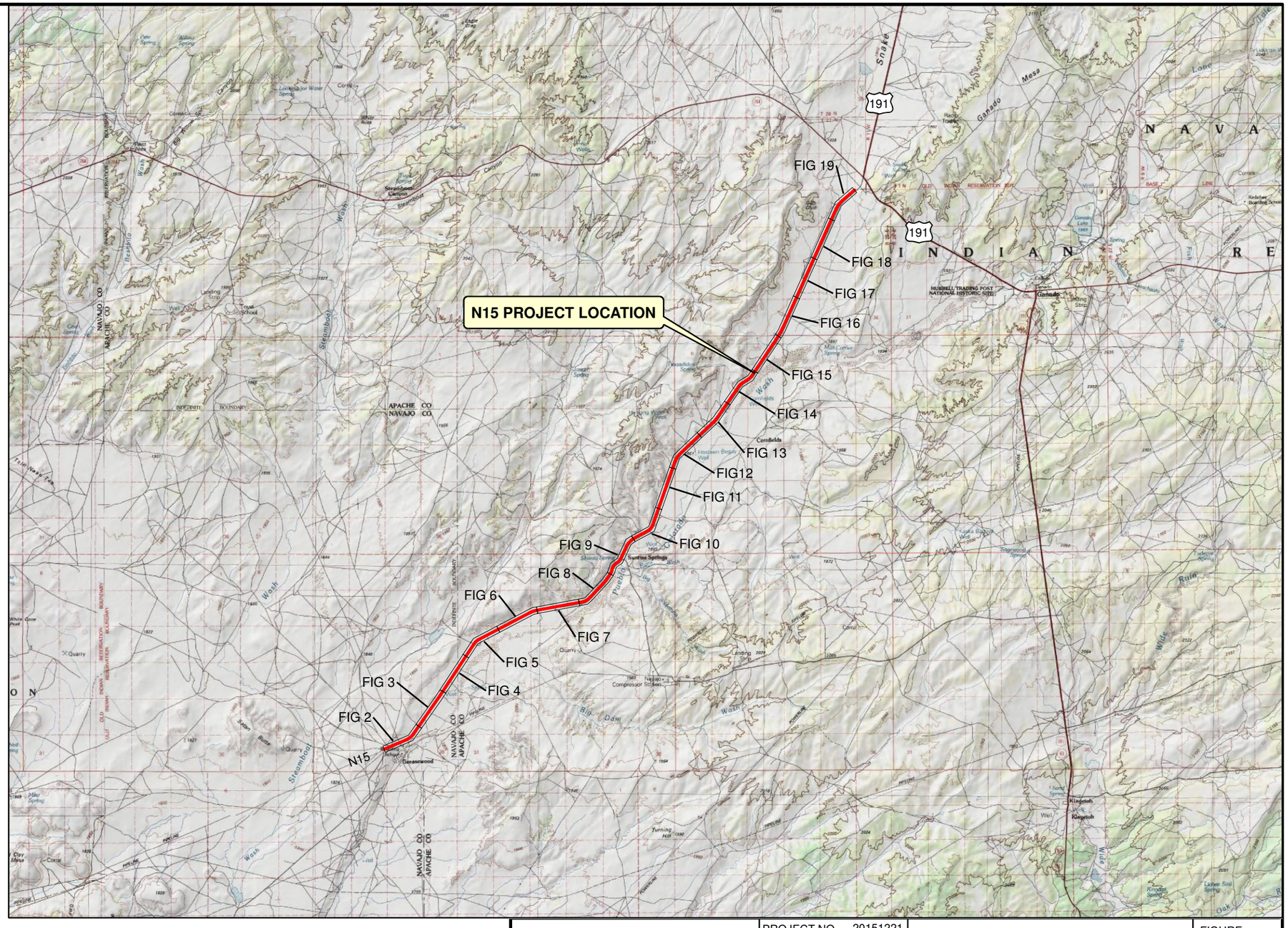
APPENDIX A

Figure 1 – Site Location Map
Figures 2 through 19 – Boring Location Map





LEGEND

- APPROXIMATE SITE LOCATION
- APPROXIMATE N15 ROADWAY LOCATION

Base Map:
Esri WORLD MAPS (USA TOPOGRAPHY AND USA STREET)

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N

0 2.5 5 10 Kilometers

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SITE LOCATION MAP

BIA N15(2-3) (3-1) (4-1) 2&4
GREASEWOOD TO BURNSIDE, ARIZONA

FIGURE

1

LEGEND

- PROPOSED BORING LOCATION (3m)
- PROPOSED BORING LOCATION (10m)
- 1+200 STATION LOCATION

SOURCE:
N15 ALIGNMENT AND AERIAL SID IMAGES FROM WHPacific, AUG. 2014

0 30 60 120 Meters

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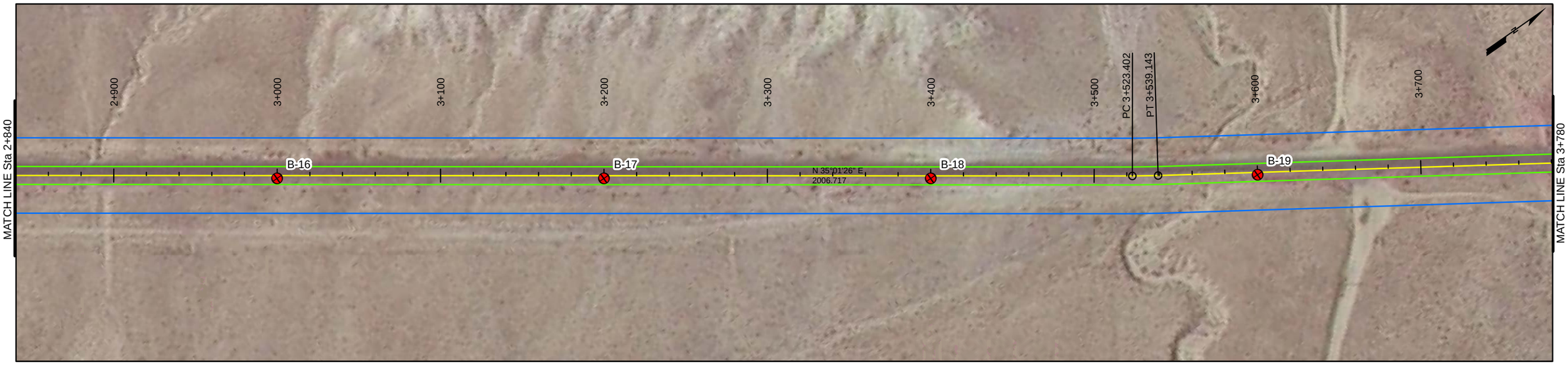
BORING LOCATION MAP

BIA N15(2-3) (3-1) (4-1)2&4
GREASEWOOD TO BURNSIDE, ARIZONA

FIGURE
2



LEGEND

- PROPOSED BORING LOCATION (3m)
- PROPOSED BORING LOCATION (10m)
- 1+200 STATION LOCATION

SOURCE:
N15 ALIGNMENT AND AERIAL SID IMAGES FROM WHPacific, AUG. 2014

0 30 60 120 Meters

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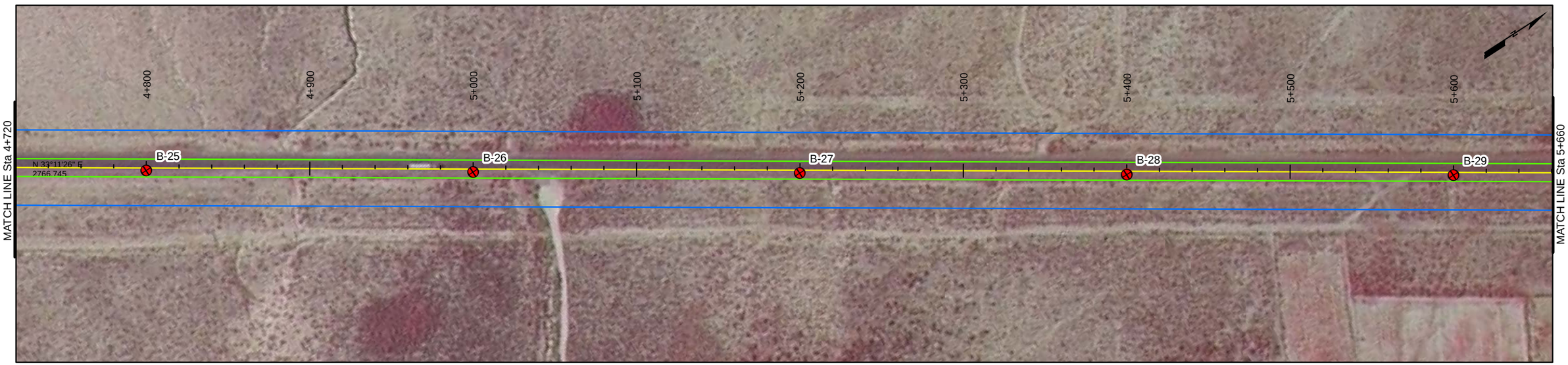
BORING LOCATION MAP

BIA N15(2-3) (3-1) (4-1)2&4
GREASEWOOD TO BURNSIDE, ARIZONA

FIGURE
3



LEGEND

PROPOSED BORING LOCATION (3m)

PROPOSED BORING LOCATION (10m)

1+200 STATION LOCATION

SOURCE:
N15 ALIGNMENT AND AERIAL SID IMAGES FROM WHPacific, AUG. 2014

0 30 60 120 Meters

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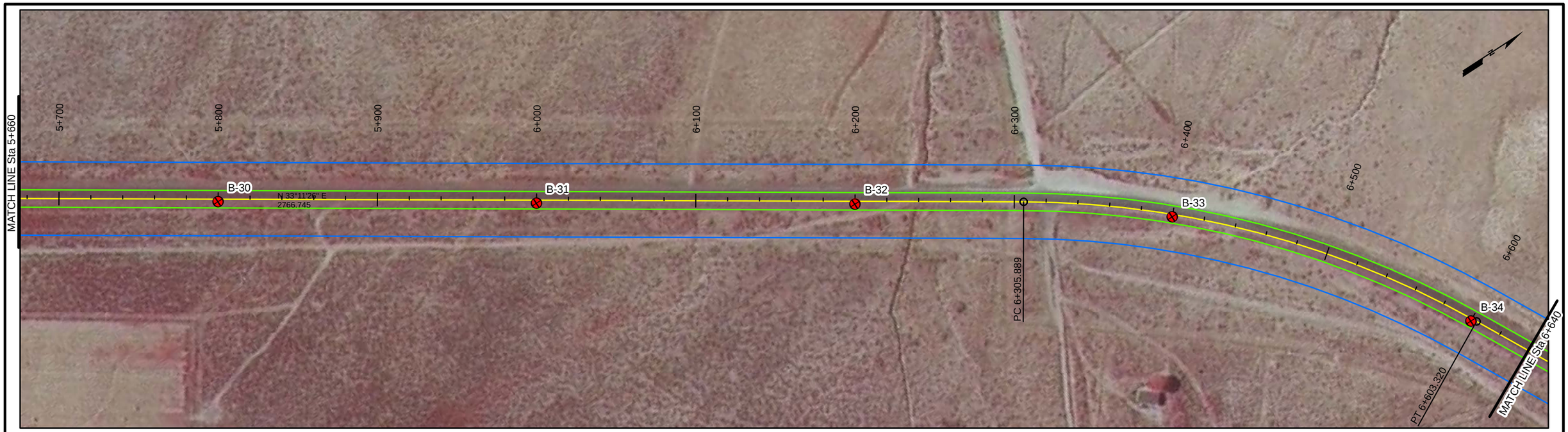
CHECKED BY:	MJM
FILE NAME:	20151221_SP3.MXD

BORING LOCATION MAP

BIA N15(2-3) (3-1) (4-1)2&4
GREASEWOOD TO BURNSIDE, ARIZONA

FIGURE
4



LEGEND

- PROPOSED BORING LOCATION (3m)
- PROPOSED BORING LOCATION (10m)
- 1+200 STATION LOCATION

SOURCE:
N15 ALIGNMENT AND AERIAL SID IMAGES FROM WHPacific, AUG. 2014

0 30 60 120 Meters

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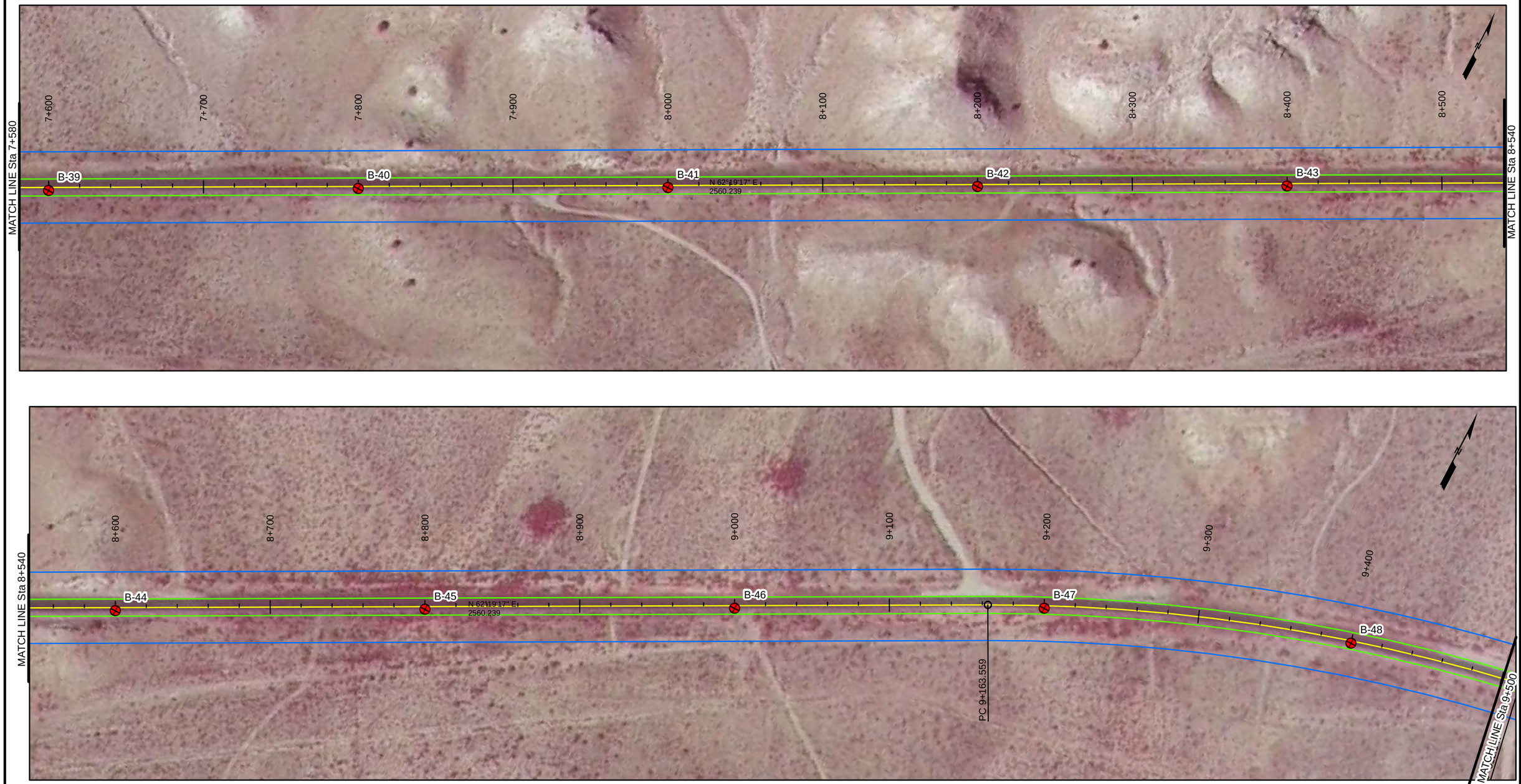
PROJECT NO.	20151221
DRAWN:	9/12/14
DRAWN BY:	PD
CHECKED BY:	MJM
FILE NAME:	20151221_SP4.MXD

BORING LOCATION MAP

BIA N15(2-3) (3-1) (4-1)2&4
GREASEWOOD TO BURNSIDE, ARIZONA

FIGURE 5



LEGEND

- PROPOSED BORING LOCATION (3m)
- PROPOSED BORING LOCATION (10m)
- 1+200 STATION LOCATION

SOURCE:
N15 ALIGNMENT AND AERIAL SID IMAGES FROM WHPacific, AUG. 2014

0 30 60 120 Meters

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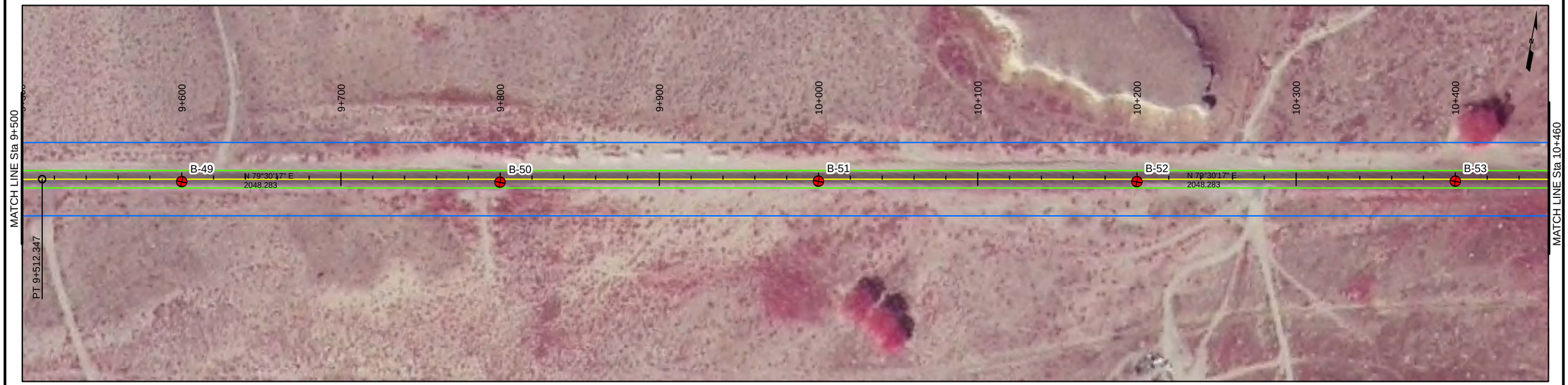
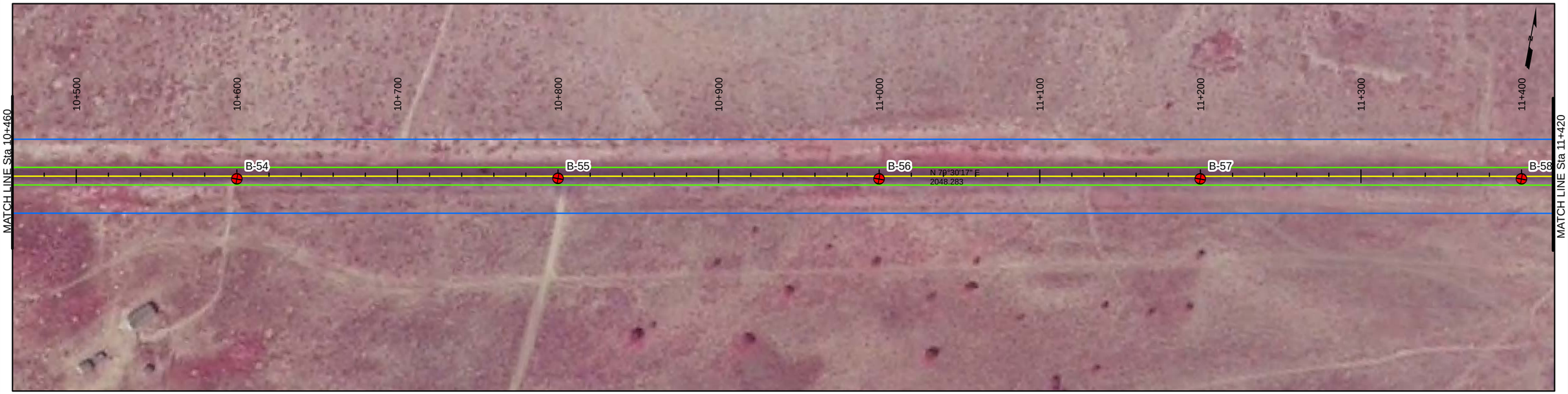
PROJECT NO.	20151221
DRAWN:	9/12/14
DRAWN BY:	PD
CHECKED BY:	MJM
FILE NAME:	20151221_SP5.MXD

BORING LOCATION MAP

BIA N15(2-3) (3-1) (4-1)2&4
GREASEWOOD TO BURNSIDE, ARIZONA

FIGURE
6





LEGEND

- PROPOSED BORING LOCATION (3m)
- PROPOSED BORING LOCATION (10m)
- 1+200 STATION LOCATION

SOURCE:
N15 ALIGNMENT AND AERIAL SID IMAGES FROM WHPacific, AUG. 2014

0 30 60 120 Meters

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PROJECT NO.	20151221
DRAWN:	9/12/14
DRAWN BY:	PD
CHECKED BY:	MJM
FILE NAME:	20151221_SP6.MXD

BORING LOCATION MAP

BIA N15(2-3) (3-1) (4-1)2&4
GREASEWOOD TO BURNSIDE, ARIZONA

FIGURE
7

REVISION 1 For BIA Review

LEGEND

- PROPOSED BORING LOCATION (3m)
- PROPOSED BORING LOCATION (10m)
- 1+200 STATION LOCATION

SOURCE:
N15 ALIGNMENT AND AERIAL SID IMAGES FROM WHPacific, AUG. 2014

0 30 60 120 Meters

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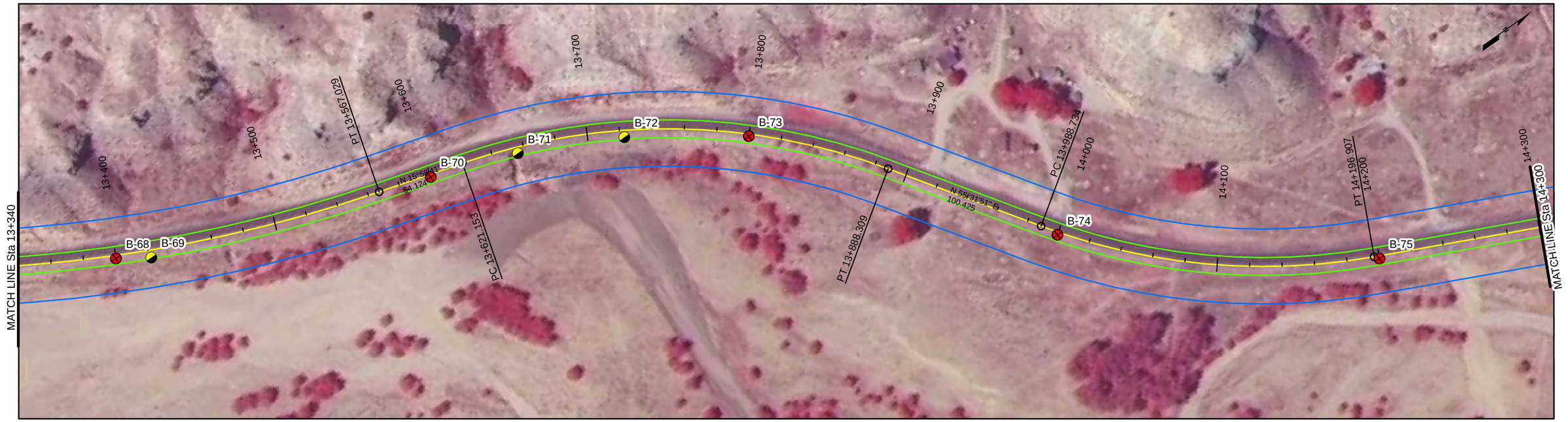
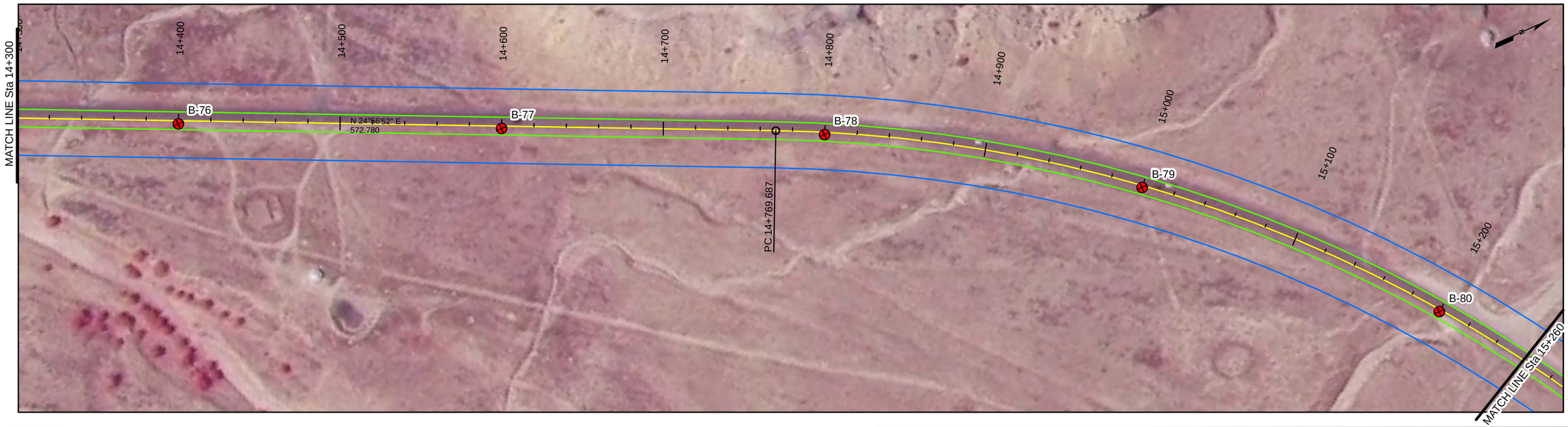
PROJECT NO.	20151221
DRAWN:	9/12/14
DRAWN BY:	PD
CHECKED BY:	MJM
FILE NAME:	20151221_SP7.MXD

BORING LOCATION MAP

BIA N15(2-3) (3-1) (4-1)2&4
GREASEWOOD TO BURNSIDE, ARIZONA

FIGURE
8





LEGEND

- PROPOSED BORING LOCATION (3m)
- PROPOSED BORING LOCATION (10m)
- 1+200 STATION LOCATION

SOURCE:
N15 ALIGNMENT AND AERIAL SID IMAGES FROM WHPacific, AUG. 2014

0 30 60 120 Meters

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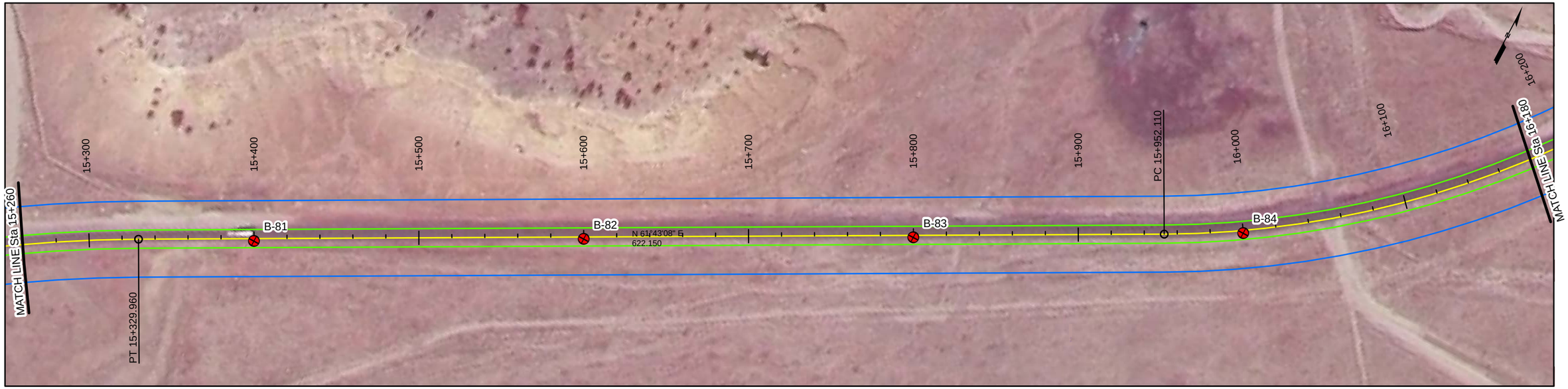
PROJECT NO.	20151221
DRAWN:	9/12/14
DRAWN BY:	PD
CHECKED BY:	MJM
FILE NAME:	20151221_SP8.MXD

BORING LOCATION MAP

BIA N15(2-3) (3-1) (4-1)2&4
GREASEWOOD TO BURNSIDE, ARIZONA

FIGURE 9



LEGEND

- PROPOSED BORING LOCATION (3m)
- PROPOSED BORING LOCATION (10m)
- 1+200 STATION LOCATION

SOURCE:
N15 ALIGNMENT AND AERIAL SID IMAGES FROM WHPacific, AUG. 2014

0 30 60 120 Meters

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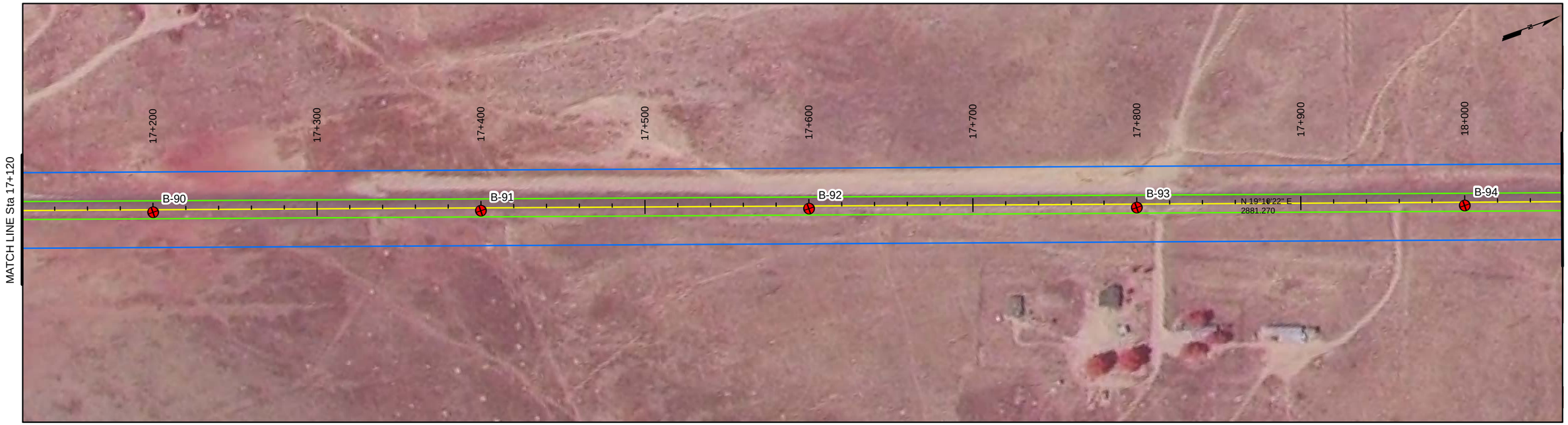
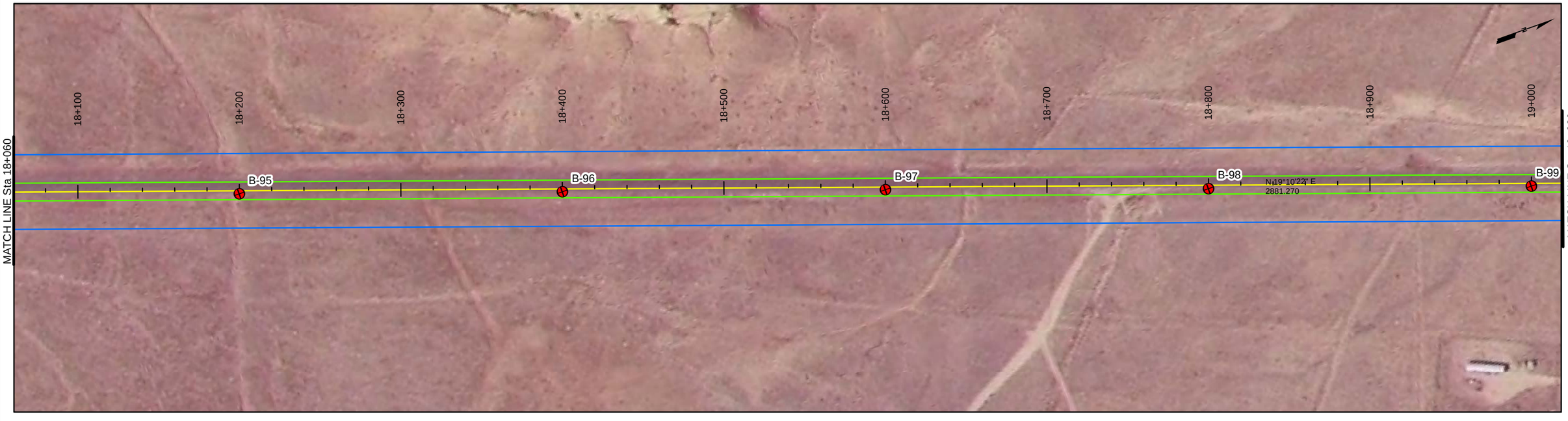
PROJECT NO.	20151221
DRAWN:	9/12/14
DRAWN BY:	PD
CHECKED BY:	MJM
FILE NAME:	20151221_SP9.MXD

BORING LOCATION MAP

BIA N15(2-3) (3-1) (4-1)2&4
GREASEWOOD TO BURNSIDE, ARIZONA

FIGURE
10





LEGEND

PROPOSED BORING LOCATION (3m)

PROPOSED BORING LOCATION (10m)

1+200 STATION LOCATION

SOURCE:
N15 ALIGNMENT AND AERIAL SID IMAGES FROM WHPacific, AUG. 2014

0 30 60 120 Meters

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PROJECT NO.	20151221
DRAWN:	9/12/14
DRAWN BY:	PD
CHECKED BY:	MJM
FILE NAME:	20151221_SP10.MXD

BORING LOCATION MAP

BIA N15(2-3) (3-1) (4-1)2&4
GREASEWOOD TO BURNSIDE, ARIZONA

FIGURE
11

LEGEND

- PROPOSED BORING LOCATION (3m)
- PROPOSED BORING LOCATION (10m)
- 1+200 STATION LOCATION

SOURCE:
N15 ALIGNMENT AND AERIAL SID IMAGES FROM WHPacific, AUG. 2014

0 30 60 120 Meters

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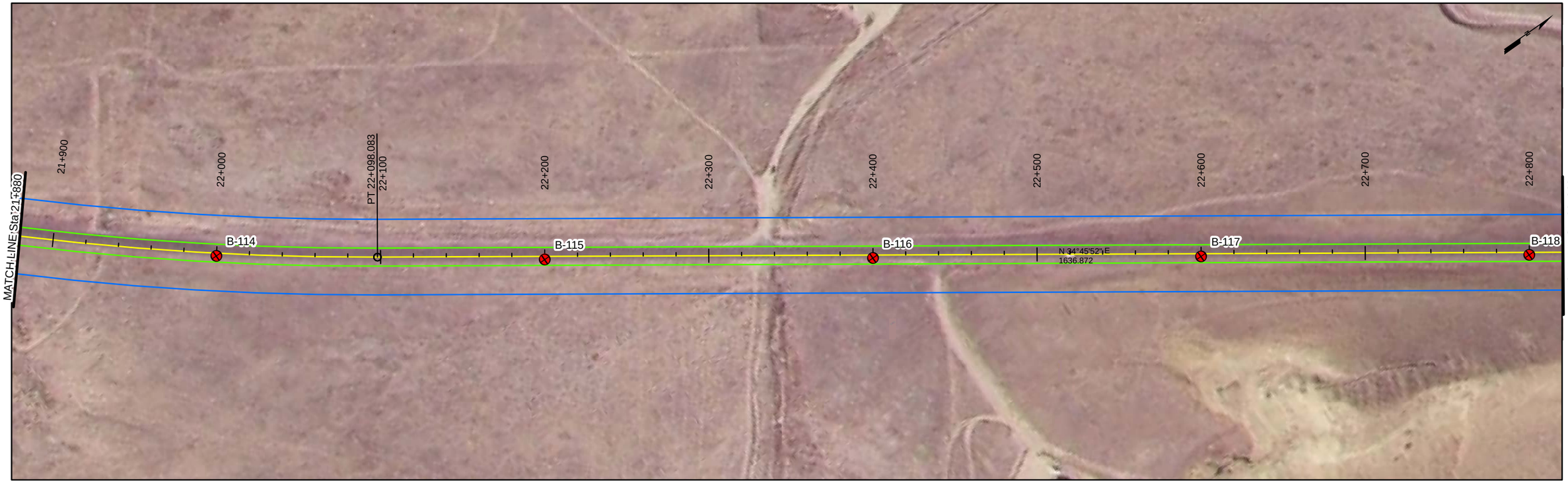
PROJECT NO.	20151221
DRAWN:	9/12/14
DRAWN BY:	PD
CHECKED BY:	MJM
FILE NAME:	20151221_SP11.MXD

BORING LOCATION MAP

BIA N15(2-3) (3-1) (4-1)2&4
GREASEWOOD TO BURNSIDE, ARIZONA

FIGURE 12



LEGEND

- PROPOSED BORING LOCATION (3m)
- PROPOSED BORING LOCATION (10m)
- 1+200 STATION LOCATION

SOURCE:
N15 ALIGNMENT AND AERIAL SID IMAGES FROM WHPacific, AUG. 2014

0 30 60 120 Meters

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PROJECT NO.	20151221
DRAWN:	9/12/14
DRAWN BY:	PD
CHECKED BY:	MJM
FILE NAME:	20151221_SP12.MXD

BORING LOCATION MAP

BIA N15(2-3) (3-1) (4-1)2&4
GREASEWOOD TO BURNSIDE, ARIZONA

FIGURE 13

LEGEND

- PROPOSED BORING LOCATION (3m)
- PROPOSED BORING LOCATION (10m)
- 1+200 STATION LOCATION

SOURCE:
N15 ALIGNMENT AND AERIAL SID IMAGES FROM WHPacific, AUG. 2014

0 30 60 120 Meters

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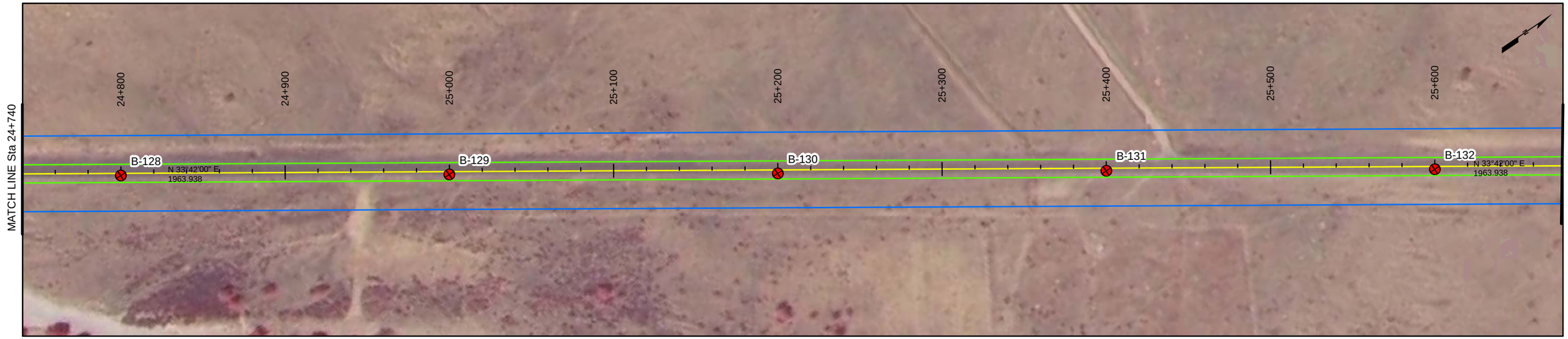
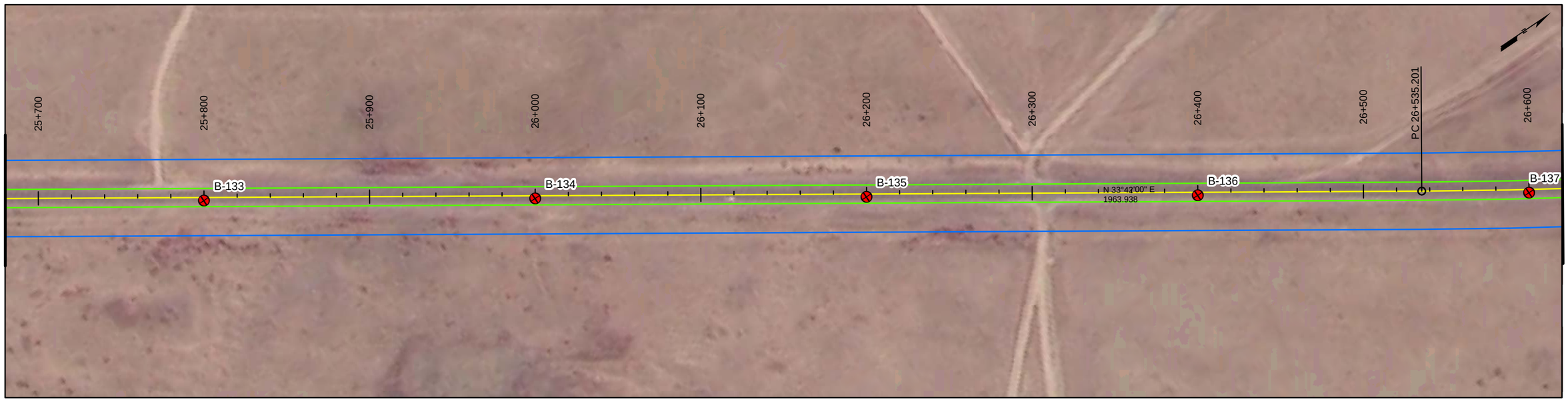
PROJECT NO.	20151221
DRAWN:	9/12/14
DRAWN BY:	PD
CHECKED BY:	MJM
FILE NAME:	20151221_SP13.MXD

BORING LOCATION MAP

BIA N15(2-3) (3-1) (4-1)2&4
GREASEWOOD TO BURNSIDE, ARIZONA

FIGURE
14





LEGEND

- PROPOSED BORING LOCATION (3m)
- PROPOSED BORING LOCATION (10m)
- 1+200 STATION LOCATION

SOURCE:
N15 ALIGNMENT AND AERIAL SID IMAGES FROM WHPacific, AUG. 2014

0 30 60 120 Meters

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PROJECT NO.	20151221
DRAWN:	9/12/14
DRAWN BY:	PD
CHECKED BY:	MJM
FILE NAME:	20151221_SP14.MXD

BORING LOCATION MAP

BIA N15(2-3) (3-1) (4-1)2&4
GREASEWOOD TO BURNSIDE, ARIZONA

FIGURE
15

LEGEND

- PROPOSED BORING LOCATION (3m)
- PROPOSED BORING LOCATION (10m)
- 1+200 STATION LOCATION

SOURCE:
N15 ALIGNMENT AND AERIAL SID IMAGES FROM WHPacific, AUG. 2014

0 30 60 120 Meters

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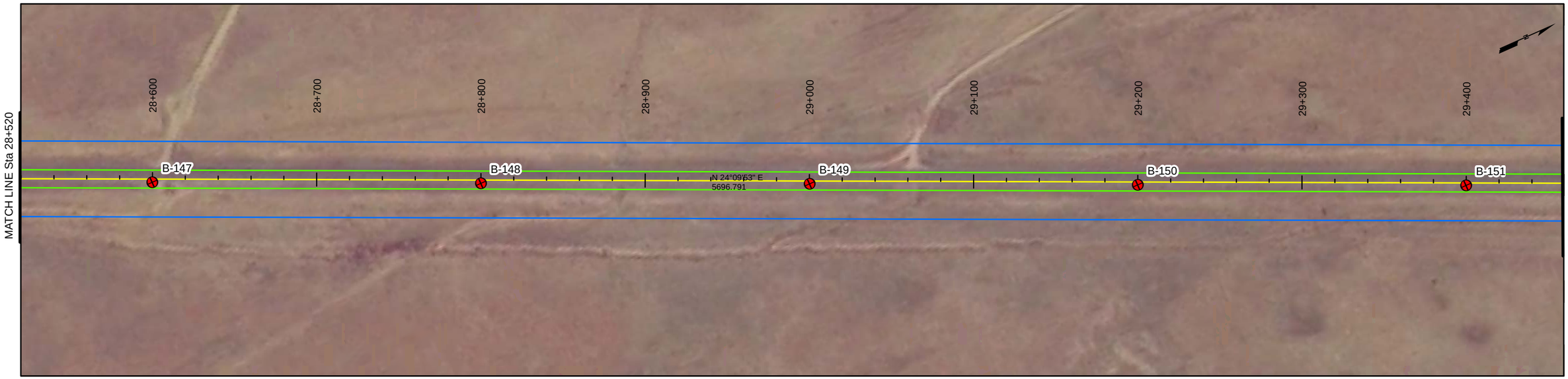
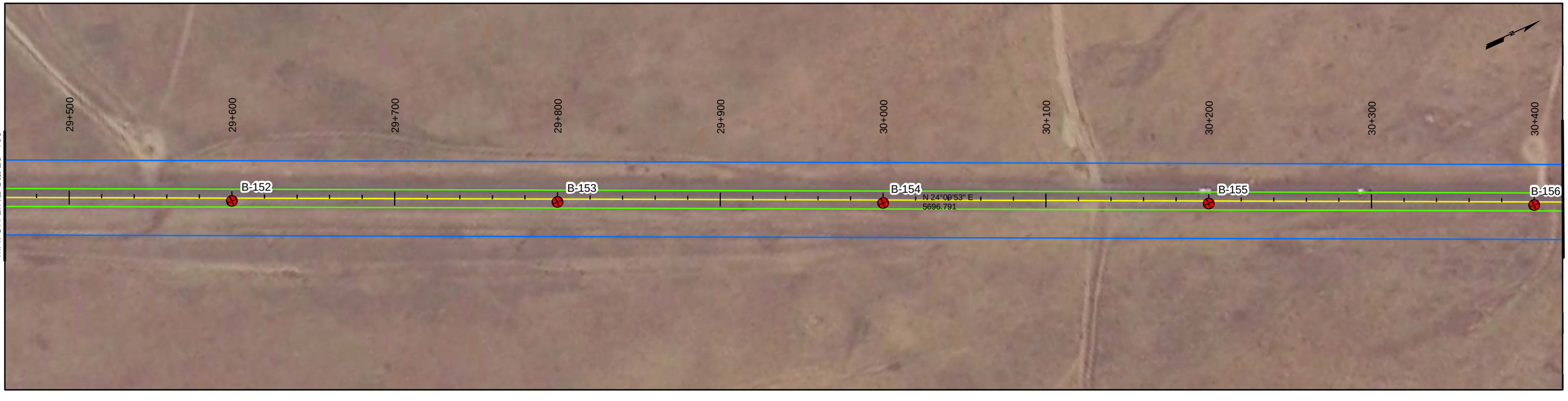
PROJECT NO.	20151221
DRAWN:	9/12/14
DRAWN BY:	PD
CHECKED BY:	MJM
FILE NAME:	20151221_SP15.MXD

BORING LOCATION MAP

BIA N15(2-3) (3-1) (4-1)2&4
GREASEWOOD TO BURNSIDE, ARIZONA

FIGURE
16





LEGEND

PROPOSED BORING LOCATION (3m)

PROPOSED BORING LOCATION (10m)

1+200 STATION LOCATION

SOURCE:
N15 ALIGNMENT AND AERIAL SID IMAGES FROM WHPacific, AUG. 2014

0 30 60 120 Meters

Allwyn ENVIRONMENTAL
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PROJECT NO.	20151221
DRAWN:	9/12/14
DRAWN BY:	PD
CHECKED BY:	MJM
FILE NAME:	20151221_SP16.MXD

BORING LOCATION MAP

BIA N15(2-3) (3-1) (4-1)2&4
GREASEWOOD TO BURNSIDE, ARIZONA

FIGURE
17

LEGEND

PROPOSED BORING LOCATION (3m)

PROPOSED BORING LOCATION (10m)

1+200 STATION LOCATION

SOURCE:
N15 ALIGNMENT AND AERIAL SID IMAGES FROM WHPacific, AUG. 2014

0 30 60 120 Meters

Allwyn ENVIRONMENTAL
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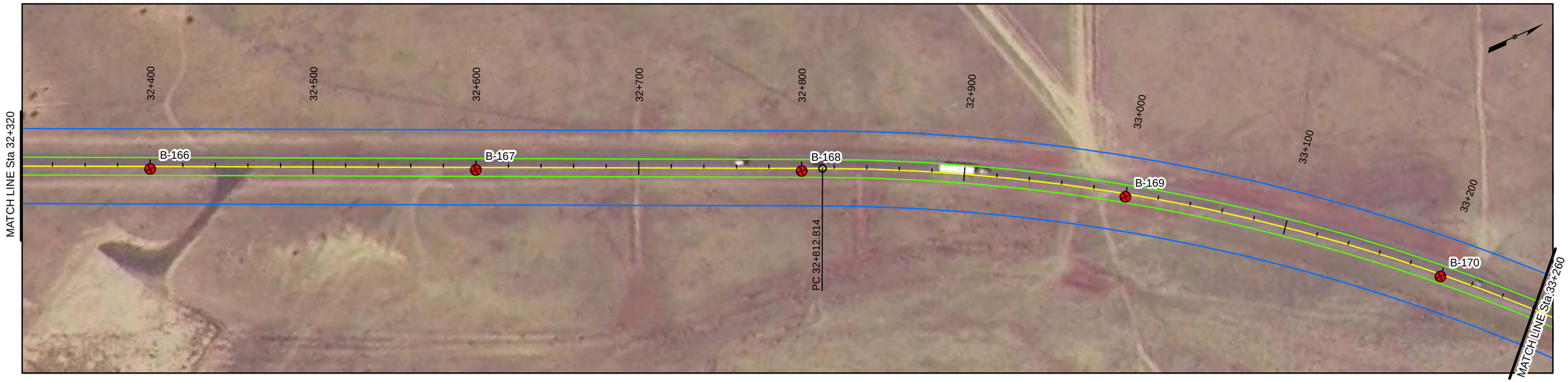
PROJECT NO.	20151221
DRAWN:	9/12/14
DRAWN BY:	PD
CHECKED BY:	MJM
FILE NAME:	20151221_SP17.MXD

BORING LOCATION MAP

BIA N15(2-3) (3-1) (4-1)2&4
GREASEWOOD TO BURNSIDE, ARIZONA

FIGURE
18



LEGEND

PROPOSED BORING LOCATION (3m)

PROPOSED BORING LOCATION (10m)

1+200 STATION LOCATION

SOURCE:
N15 ALIGNMENT AND AERIAL SID IMAGES FROM WHPacific, AUG. 2014

0 30 60 120 Meters

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PROJECT NO.	20151221
DRAWN:	9/12/14
DRAWN BY:	PD
CHECKED BY:	MJM
FILE NAME:	20151221_SP18.MXD

BORING LOCATION MAP

BIA N15(2-3) (3-1) (4-1)2&4
GREASEWOOD TO BURNSIDE, ARIZONA

FIGURE
19

APPENDIX B

Boring Logs

PLOTTED: 12/22/2014 11:24 AM BY: mcote

AASHTO CLASSIFICATION OF SOILS AND SOIL AGGREGATE MIXTURES

General Classification			Granular Materials (35% or less passing 0.075 mm)					Silt-Clay Materials (more than 35% passing 0.075 mm)			
Group Classification	A-1			A-2							A-7
	A-1-a	A-1-b	A-3	A-2-4	A-2-5	A-2-6	A-2-7	A-4	A-5	A-6	A-7-5, A-7-6
Sieve Analysis: Percent Passing											
2.00 mm (No. 10)	50 max.	---	---	---	---	---	---	---	---	---	---
0.425 mm (No.40)	30 max.	50 max.	51 min.	---	---	---	---	---	---	---	---
0.075 mm (No. 200)	15 max.	25 max.	10 max.	35 max.	35 max.	35 max.	35 max.	36 min.	36 min.	36 min.	36 min.
Characteristics of Fraction: Passing 0.425 mm (No. 40 mm)											
Liquid Limits	---		---	40 max.	41 min.	40 max.	40 min.	40 max.	41 min.	40 max.	41 max.
Plasticity Index	6 max.		NP*	10 max.	10 max.	11 min.	11 min.	10 max.	10 max.	11 min.	11 max.
Usual types of significant constituent materials	Stone fragments, gravels, and sand		Fine Sand	Silty or clayey gravel and sand				Silty soils		Clayey soils	
General rating of subgrade	Excellent to good							Fair to poor			

* NP, nonplastic
* Plasticity Index of A-7-5 subgroup is equal to or less than LL minus 30. Plasticity index of A-7-6 subgroup is greater that LL minus 30.
* Reference AASHTO M145 Table 2

SAMPLE/SAMPLER TYPE GRAPHICS

BULK SAMPLE

SHELBY TUBE SAMPLE

STANDARD PENETRATION SPLIT SPOON SAMPLE
(2 in. (50.8 mm.) outer diameter and 1-3/8 in. (34.9 mm.) inner diameter)

GROUND WATER GRAPHICS

WATER LEVEL (level where first observed)

WATER LEVEL (level after exploration completion)

WATER LEVEL (additional levels after exploration)

OBSERVED SEEPAGE

NOTES

1. The report and graphics key are an integral part of these logs. All data and interpretations in this log are subject to the explanations and limitations stated in the report.

2. Lines separating strata on the logs represent approximate boundaries only. Actual transitions may be gradual or differ from those shown.

3. No warranty is provided as to the continuity of soil or rock conditions between individual sample locations.

4. Logs represent general soil or rock conditions observed at the point of exploration on the date indicated.

5. If sampler is not able to be driven at least 152 millimeters then 50/X indicates number of blows required to drive the identified sampler X millimeters with a 63.4 kg hammer falling 762 millimeters.

Allwyn ENVIRONMENTAL

PROJECT NO.:	20151221
DRAWN BY:	PD
CHECKED BY:	MJM
DATE:	12/5/2014
REVISED:	12/17/2014

GRAPHICS KEY

BIA N15(2-3)(3-1)(4-1)2&4
GREASEWOOD TO BURNSIDE, ARIZONA

PLATE

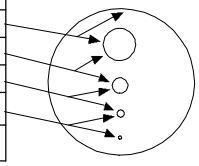
KEY-1

gINT FILE: G:\geotech\projects\20151221 - Whp-Bia N15\2.0 Technical Information\2.4 - Field Activity Records\20151221_n15.gpj
gINT TEMPLATE: R:\KLF_STANDARD_GINT_LIBRARY_2014.GLB [GEO-LEGEND 1 (GRAPHICS KEY) WITH AASHTO]

PLOTTED: 12/22/2014 11:25 AM BY: mcote

GRAIN SIZE

DESCRIPTION		SIEVE SIZE	GRAIN SIZE	APPROXIMATE SIZE
Boulders		>12 in. (304.8 mm.)	>12 in. (304.8 mm.)	Larger than basketball-sized
Cobbles		3 - 12 in. (76.2 - 304.8 mm.)	3 - 12 in. (76.2 - 304.8 mm.)	Fist-sized to basketball-sized
Gravel	coarse	3/4 -3 in. (19 - 76.2 mm.)	3/4 -3 in. (19 - 76.2 mm.)	Thumb-sized to fist-sized
	fine	#4 - 3/4 in. (#4 - 19 mm.)	0.19 - 0.75 in. (4.8 - 19 mm.)	Pea-sized to thumb-sized
Sand	coarse	#10 - #4	0.079 - 0.19 in. (2 - 4.9 mm.)	Rock salt-sized to pea-sized
	medium	#40 - #10	0.017 - 0.079 in. (0.43 - 2 mm.)	Sugar-sized to rock salt-sized
	fine	#200 - #10	0.0029 - 0.017 in. (0.07 - 0.43 mm.)	Flour-sized to sugar-sized
Fines		Passing #200	<0.0029 in. (<0.07 mm.)	Flour-sized and smaller



Munsell Color

NAME	ABBR
Red	R
Yellow Red	YR
Yellow	Y
Green Yellow	GY
Green	G
Blue Green	BG
Blue	B
Purple Blue	PB
Purple	P
Red Purple	RP
Black	N

ANGULARITY

DESCRIPTION	CRITERIA
Angular	Particles have sharp edges and relatively plane sides with unpolished surfaces
Subangular	Particles are similar to angular description but have rounded edges
Subrounded	Particles have nearly plane sides but have well-rounded corners and edges
Rounded	Particles have smoothly curved sides and no edges

PLASTICITY

DESCRIPTION	LL	FIELD TEST
Non-plastic	NP	A 1/8-in. (3 mm.) thread cannot be rolled at any water content.
Low (L)	< 30	The thread can barely be rolled and the lump or thread cannot be formed when drier than the plastic limit.
Medium (M)	30 - 50	The thread is easy to roll and not much time is required to reach the plastic limit. The thread cannot be rerolled after reaching the plastic limit. The lump or thread crumbles when drier than the plastic limit
High (H)	> 50	It takes considerable time rolling and kneading to reach the plastic limit. The thread can be rerolled several times after reaching the plastic limit. The lump or thread can be formed without crumbling when drier than the plastic limit

MOISTURE CONTENT

DESCRIPTION	FIELD TEST
Dry	Absence of moisture, dusty, dry to the touch
Moist	Damp but no visible water
Wet	Visible free water, usually soil is below water table

REACTION WITH HYDROCHLORIC ACID

DESCRIPTION	FIELD TEST
None	No visible reaction
Weak	Some reaction, with bubbles forming slowly
Strong	Violent reaction, with bubbles forming immediately

APPARENT / RELATIVE DENSITY - COARSE-GRAINED SOIL

APPARENT DENSITY	SPT-N_{60} (#blows/0.3m)	MODIFIED CA SAMPLER (#blows/0.3m)	CALIFORNIA SAMPLER (#blows/0.3m)	RELATIVE DENSITY (%)
Very Loose	<4	<4	<5	0 - 15
Loose	4 - 10	5 - 12	5 - 15	15 - 35
Medium Dense	10 - 30	12 - 35	15 - 40	35 - 65
Dense	30 - 50	35 - 60	40 - 70	65 - 85
Very Dense	>50	>60	>70	85 - 100

NOTE: AFTER TERZAGHI AND PECK, 1948

CONSISTENCY - FINE-GRAINED SOIL

CONSISTENCY	UNCONFINED COMPRESSIVE STRENGTH (q_u)(psf)	CRITERIA
Very Soft	< 1000	Thumb will penetrate soil more than 1 in. (25 mm.)
Soft	1000 - 2000	Thumb will penetrate soil about 1 in. (25 mm.)
Firm	2000 - 4000	Thumb will indent soil about 1/4-in. (6 mm.)
Hard	4000 - 8000	Thumb will not indent soil but readily indented with thumbnail
Very Hard	> 8000	Thumbnail will not indent soil

STRUCTURE

DESCRIPTION	CRITERIA
Stratified	Alternating layers of varying material or color with layers at least 1/4-in. thick, note thickness
Laminated	Alternating layers of varying material or color with the layer less than 1/4-in. thick, note thickness
Fissured	Breaks along definite planes of fracture with little resistance to fracturing
Slickensided	Fracture planes appear polished or glossy, sometimes striated
Blocky	Cohesive soil that can be broken down into small angular lumps which resist further breakdown
Lensed	Inclusion of small pockets of different soils, such as small lenses of sand scattered through a mass of clay; note thickness
Homogeneous	Same color and appearance throughout

CEMENTATION

DESCRIPTION	FIELD TEST
Weakly	Crumbles or breaks with handling or slight finger pressure
Moderately	Crumbles or breaks with considerable finger pressure
Strongly	Will not crumble or break with finger pressure

Allwyn ENVIRONMENTAL

PROJECT NO.:	20151221
DRAWN BY:	PD
CHECKED BY:	MJM
DATE:	12/5/2014
REVISED:	12/17/2014

SOIL DESCRIPTION KEY

BIA N15(2-3)(3-1)(4-1)2&4
GREASEWOOD TO BURNSIDE, ARIZONA

PLATE

KEY-2

gINT FILE: G:\geotech\projects\20151221 - Whp-Bia N152.0 Technical Information\2.4 - Field Activity Records\20151221_n15.gpj
gINT TEMPLATE: R:\KLF_STANDARD_GINT_LIBRARY_2014.GLB [GEO-LEGEND 2 (SOIL DESCRIPTION KEY)]

PLOTTED: 07/07/2015 02:00 PM BY: clbeck

BORING LOG B-1

Date Begin - End:	10/07/2014 - 10/07/2014	**Drilling Company:**	Enviro-Drill		
Logged By:	M. Cote	**Drill Crew:**	Ed & Juan		
Hor.-Vert. Datum:	NAD83	**Drilling Equipment:**	CME-75	**Hammer Type - Drop:**	63.5 kg. Auto - 762 mm.
Plunge:	-90 degrees	**Drilling Method:**	Hollow Stem Auger		
Weather:	partly cloudy, cool	**Exploration Diameter:**	184 mm. O.D.		

FIELD EXPLORATION

Northing: 502,009.36 (m)
Easting: 240,900.91 (m)
Ground Surface Elevation (m.): 1,838.4
Location Offset: Sta. 0+000/1.83m Rt CL
Surface Condition: Asphalt

Elevation (meters)	Depth (meters)	Graphical Log	Lithologic Description	Sample Type	Blow Counts(BC)= Uncorr. Blows/152 mm. Pocket Pen(PP)= T/m²	Recovery (NR=No Recovery)	AASHTO Symbol	Water Content (%)	Dry Unit Wt. (pcf)	Passing #4 (%)	Passing #200 (%)	Liquid Limit	Plasticity Index (NP=NonPlastic)	Additional Tests/ Remarks
			Field engineer measured 0.15m asphalt; no base course											
1838			**Silty SAND (SM)**: non-plastic, yellowish brown, moist, medium dense		BC=7 12 13 PP=0	457 mm	A-2-4(0)	4.9		97	17	NP	NP	**R-Value=** 54 Bulk sample obtained from depth of 0.3 to 1.52m bgs
1837	1		**Poorly-graded SAND (SP)**: non-plastic, yellowish brown, dry to moist, loose, trace to some clay		BC=4 4 5 PP=1.5	457 mm	A-3(0)	3.7		100	3.2	NP	NP	
1836	2		Moist, medium dense below 1.83m bgs		BC=5 7 9 PP=0	457 mm								
1835	3		Yellowish brown with reddish brown staining below 2.74m bgs		BC=4 8 8 PP=0.4	457 mm								
1834	4													
1833	5													
	6													

The exploration was terminated at approximately 3.2 m. below ground surface. The exploration was backfilled with auger cuttings and asphalt patch on October 07, 2014.

GROUNDWATER LEVEL INFORMATION:
Groundwater was not encountered during drilling or after completion.

GENERAL NOTES:
Coordinates obtained from WHPacific N15 Alignment CAD file; Surface elevation provided by WHPacific.

Allwyn ENVIRONMENTAL

PROJECT NO.:	20151221
DRAWN BY:	PD
CHECKED BY:	MJM
DATE:	12/5/2014
REVISED:	12/17/2014

BORING LOG B-1

BIA N15(2-3)(3-1)(4-1)2&4
GREASEWOOD TO BURNSIDE, ARIZONA

PLATE

B-1

PAGE: 1 of 1

gINT FILE: PROJECTWISE: 20151221_n1520151221.gpj
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BORING LOG B-2

Date Begin - End:	10/08/2014 - 10/08/2014	**Drilling Company:**	Enviro-Drill		
Logged By:	M. Cote	**Drill Crew:**	Ed & Juan		
Hor.-Vert. Datum:	NAD83	**Drilling Equipment:**	CME-75	**Hammer Type - Drop:**	63.5 kg. Auto - 762 mm.
Plunge:	-90 degrees	**Drilling Method:**	Hollow Stem Auger		
Weather:	cloudy	**Exploration Diameter:**	184 mm. O.D.		

FIELD EXPLORATION

Northing: 502,089.99 (m)
Easting: 241,083.95 (m)
Ground Surface Elevation (m.): 1,838.9
Location Offset: Sta. 0+200/1.83m Lt CL
Surface Condition: Asphalt

Elevation (meters)	Depth (meters)	Graphical Log	Lithologic Description	Sample Type	Blow Counts(BC)= Uncorr. Blows/152 mm. Pocket Pen(PP)= T/m²	Recovery (NR=No Recovery)	AASHTO Symbol	Water Content (%)	Dry Unit Wt. (pcf)	Passing #4 (%)	Passing #200 (%)	Liquid Limit	Plasticity Index (NP=NonPlastic)	Additional Tests/ Remarks
			Field engineer measured 0.13m asphalt											
			Field engineer measured 0.10m base course											
			Poorly-graded SAND with Clay (SP-SC): fine grained, low plasticity, reddish yellowish brown, moist, medium dense		BC=5 9 9	406 mm								
1838	1		Loose, slight increase in clay content at 0.91m bgs		BC=2 2 5	457 mm								
1837	2		**Poorly-graded SAND (SP)**: fine grained, non-plastic, yellowish brown, dry to moist, dense		BC=4 15 23	457 mm	A-3(0)	4.8		100	1.3	NP	NP	
			Seam of pale olive, moderately cemented poorly-graded sand with clay in sluff from 2.59 to 2.74m bgs											
1836	3		**Poorly-graded SAND with Clay (SP-SC)**: fine to medium grained, reddish yellowish brown, moist, dense		BC=7 8 37	457 mm								
1835	4													
1834	5													
1833	6													

The exploration was terminated at approximately 3.2 m. below ground surface. The exploration was backfilled with auger cuttings and asphalt patch on October 08, 2014.

GROUNDWATER LEVEL INFORMATION:
Groundwater was not encountered during drilling or after completion.
GENERAL NOTES:
Coordinates obtained from WHPacific N15 Alignment CAD file; Surface elevation provided by WHPacific.

Allwyn ENVIRONMENTAL

PROJECT NO.:	20151221
DRAWN BY:	PD
CHECKED BY:	MJM
DATE:	12/5/2014
REVISED:	12/17/2014

BORING LOG B-2

BIA N15(2-3)(3-1)(4-1)2&4
GREASEWOOD TO BURNSIDE, ARIZONA

PLATE
B-2
PAGE: 1 of 1

gINT FILE: PROJECTWISE: 20151221_n1520151221.gpj
gINT TEMPLATE: PROJECTWISE: KLF_STANDARD_GINT_LIBRARY_2014.GLB [KLF_BORING/TEST PIT SOIL LOG]

PLOTTED: 07/07/2015 02:00 PM BY: clbeck

BORING LOG B-3

Date Begin - End:	10/07/2014 - 10/07/2014	**Drilling Company:**	Enviro-Drill		
Logged By:	M. Cote	**Drill Crew:**	Ed & Juan		
Hor.-Vert. Datum:	NAD83	**Drilling Equipment:**	CME-75	**Hammer Type - Drop:**	63.5 kg. Auto - 762 mm.
Plunge:	-90 degrees	**Drilling Method:**	Hollow Stem Auger		
Weather:	partly cloudy, cool	**Exploration Diameter:**	184 mm. O.D.		

FIELD EXPLORATION

Northing: 502,165.8 (m)
Easting: 241,269.05 (m)
Ground Surface Elevation (m.): 1,835.4
Location Offset: Sta. 0+400/1.83m Rt CL
Surface Condition: Asphalt

Elevation (meters)	Depth (meters)	Graphical Log	Lithologic Description	Sample Type	Blow Counts(BC)= Uncorr. Blows/152 mm. Pocket Pen(PP)= T/m²	Recovery (NR=No Recovery)	AASHTO Symbol	Water Content (%)	Dry Unit Wt. (pcf)	Passing #4 (%)	Passing #200 (%)	Liquid Limit	Plasticity Index (NP=NonPlastic)	Additional Tests/ Remarks
			Field engineer measured 0.15m asphalt											
			Field engineer measured 0.05m base course											
1835			**Poorly-graded SAND (SP)**: reddish yellowish brown, moist, loose, fine to medium grained		BC=4 3 4 PP=0.2	457 mm								
	1		**Fat CLAY (CH)**: high plasticity, reddish yellowish brown, moist, hard		BC=3 5 4 PP=2.5	457 mm								
1834			**Poorly-graded SAND (SP)**: yellow, moist, loose, fine to coarse grained											
	2		fine to medium grained, yellow to reddish yellow, medium dense from 0.91m bgs		BC=4 6 5	457 mm								
1833														
	3		**Poorly-Graded SAND with Clay (SP-SC)**: low plasticity, yellowish brown, moist, medium dense, fine sand		BC=4 7 13 PP=2.0	457 mm	A-2-6(0)	16.2		100	9.9	32	13	
1832														
	4													
1831														
	5													
1830														
	6													

The exploration was terminated at approximately 3.2 m. below ground surface. The exploration was backfilled with auger cuttings and asphalt patch on October 07, 2014.

GROUNDWATER LEVEL INFORMATION:
Groundwater was not encountered during drilling or after completion.

GENERAL NOTES:
Coordinates obtained from WHPacific N15 Alignment CAD file; Surface elevation provided by WHPacific.

Allwyn ENVIRONMENTAL

PROJECT NO.:	20151221
DRAWN BY:	PD
CHECKED BY:	MJM
DATE:	12/5/2014
REVISED:	12/17/2014

BORING LOG B-3

BIA N15(2-3)(3-1)(4-1)2&4
GREASEWOOD TO BURNSIDE, ARIZONA

PLATE

B-3

PAGE: 1 of 1

gINT FILE: PROJECTWISE: 20151221_n1520151221.gpj
gINT TEMPLATE: PROJECTWISE: KLF_STANDARD_GINT_LIBRARY_2014.GLB [KLF_BORING/TEST PIT SOIL LOG]

PLOTTED: 07/07/2015 02:00 PM BY: clbeck

BORING LOG B-4

Date Begin - End:	10/08/2014 - 10/08/2014	**Drilling Company:**	Enviro-Drill		
Logged By:	M. Cote	**Drill Crew:**	Ed & Juan		
Hor.-Vert. Datum:	NAD83	**Drilling Equipment:**	CME-75	**Hammer Type - Drop:**	63.5 kg. Auto - 762 mm.
Plunge:	-90 degrees	**Drilling Method:**	Hollow Stem Auger		
Weather:	cloudy	**Exploration Diameter:**	184 mm. O.D.		

FIELD EXPLORATION

Northing: 502,246.66 (m)
Easting: 241,452.0 (m)
Ground Surface Elevation (m.): 1,825.1
Location Offset: Sta. 0+600/1.83m Lt CL
Surface Condition: Asphalt

Elevation (meters)	Depth (meters)	Graphical Log	Lithologic Description	Sample Type	Blow Counts(BC)= Uncorr. Blows/152 mm. Pocket Pen(PP)= T/m²	Recovery (NR=No Recovery)	AASHTO Symbol	Water Content (%)	Dry Unit Wt. (pcf)	Passing #4 (%)	Passing #200 (%)	Liquid Limit	Plasticity Index (NP=NonPlastic)	Additional Tests/ Remarks
1825	0		Field engineer measured 0.13m asphalt											
			Field engineer measured 0.08m base course											
			Poorly-graded SAND (SP): fine to coarse grained, reddish yellow, dry to moist, medium dense, with seams of poorly-graded sand		BC=9 10 7	457 mm								
1824	1		loose from 0.9 to 1.8m bgs		BC=3 3 4	381 mm	A-3(0)	3.0		100	3.5	NP	NP	
			With seam of well-graded sand at 1.31m bgs											
1823	2		**Well-graded SAND with Gravel (SW)**: fine to coarse grained, reddish brownish yellow, dry to moist, medium dense		BC=7 10 11	457 mm								
1822	3		yellowish white, very dense below 2.7 m bgs		BC=18 37 26									
1821	4													
1820	5													
	6													

The exploration was terminated at approximately 3.2 m. below ground surface. The exploration was backfilled with auger cuttings and asphalt patch on October 08, 2014.

GROUNDWATER LEVEL INFORMATION:
Groundwater was not encountered during drilling or after completion.

GENERAL NOTES:
Coordinates obtained from WHPacific N15 Alignment CAD file; Surface elevation provided by WHPacific.

Allwyn ENVIRONMENTAL

PROJECT NO.:	20151221
DRAWN BY:	PD
CHECKED BY:	MJM
DATE:	12/5/2014
REVISED:	12/17/2014

BORING LOG B-4

BIA N15(2-3)(3-1)(4-1)2&4
GREASEWOOD TO BURNSIDE, ARIZONA

PLATE

B-4

PAGE: 1 of 1

gINT FILE: PROJECTWISE: 20151221_n1520151221.gpj
gINT TEMPLATE: PROJECTWISE: KLF_STANDARD_GINT_LIBRARY_2014.GLB [KLF_BORING/TEST PIT SOIL LOG]

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BORING LOG B-5

Date Begin - End:	10/07/2014 - 10/07/2014	**Drilling Company:**	Enviro-Drill		
Logged By:	M. Cote	**Drill Crew:**	Ed & Juan		
Hor.-Vert. Datum:	NAD83	**Drilling Equipment:**	CME-75	**Hammer Type - Drop:**	63.5 kg. Auto - 762 mm.
Plunge:	-90 degrees	**Drilling Method:**	Hollow Stem Auger		
Weather:	partly cloudy, cool	**Exploration Diameter:**	184 mm. O.D.		

Northing: 502,322.37 (m)
Easting: 241,637.13 (m)
Ground Surface Elevation (m.): 1,816.3
Location Offset: Sta. 0+800/1.83m Rt CL
Surface Condition: Asphalt

Elevation (meters)	Depth (meters)	Graphical Log	Lithologic Description	Sample Type	Blow Counts(BC)= Uncorr. Blows/152 mm. Pocket Pen(PP)= T/m²	Recovery (NR=No Recovery)	AASHTO Symbol	Water Content (%)	Dry Unit Wt. (pcf)	Passing #4 (%)	Passing #200 (%)	Liquid Limit	Plasticity Index (NP=NonPlastic)	Additional Tests/ Remarks
			Field engineer measured 0.15m asphalt											
			Field engineer measured 0.10m base coarse											
1816			**Poorly-Graded SAND with Clay (SP-SC)**: fine grained, high plasticity, yellowish brown, moist, medium dense		BC=6 7 10 PP=>4.5	457 mm	A-2-7(0)	23.6		99	8.1	71	51	
1815	1		**Poorly-graded SAND (SP)**: low plasticity, pale olive, dry to moist, moderate cemented, fine grained, trace clay		PP=>4.5	457 mm								
1814	2		**Clayey SAND (SC)**: fine grained, low plasticity, brown with white patches, moist, dense		BC=4 12 21 PP=3.5	457 mm								
1813	3				BC=12 19 28	457 mm								
1812	4													
1811	5													
	6													

The exploration was terminated at approximately 3.2 m. below ground surface. The exploration was backfilled with auger cuttings and asphalt patch on October 07, 2014.

GROUNDWATER LEVEL INFORMATION:
Groundwater was not encountered during drilling or after completion.
GENERAL NOTES:
Coordinates obtained from WHPacific N15 Alignment CAD file; Surface elevation provided by WHPacific.

Allwyn ENVIRONMENTAL

PROJECT NO.:	20151221
DRAWN BY:	PD
CHECKED BY:	MJM
DATE:	12/5/2014
REVISED:	12/17/2014

BORING LOG B-5

BIA N15(2-3)(3-1)(4-1)2&4
GREASEWOOD TO BURNSIDE, ARIZONA

PLATE
B-5
PAGE: 1 of 1

gINT FILE: PROJECTWISE: 20151221_n1520151221.gpj
gINT TEMPLATE: PROJECTWISE: KLF_STANDARD_GINT_LIBRARY_2014.GLB [KLF_BORING/TEST PIT SOIL LOG]

PLOTTED: 07/07/2015 02:00 PM BY: clbeck

BORING LOG B-6

Date Begin - End:	10/08/2014 - 10/08/2014	**Drilling Company:**	Enviro-Drill		
Logged By:	M. Cote	**Drill Crew:**	Ed & Juan		
Hor.-Vert. Datum:	NAD83	**Drilling Equipment:**	CME-75	**Hammer Type - Drop:**	63.5 kg. Auto - 762 mm.
Plunge:	-90 degrees	**Drilling Method:**	Hollow Stem Auger		
Weather:	cloudy, breezy	**Exploration Diameter:**	184 mm. O.D.		

FIELD EXPLORATION

Northing: 502,402.89 (m)
Easting: 241,820.22 (m)
Ground Surface Elevation (m.): 1,812.8
Location Offset: Sta. 1+000/1.83m Lt CL
Surface Condition: Asphalt

Elevation (meters)	Depth (meters)	Graphical Log	Lithologic Description	Sample Type	Blow Counts(BC)= Uncorr. Blows/152 mm. Pocket Pen(PP)= T/m²	Recovery (NR=No Recovery)	AASHTO Symbol	Water Content (%)	Dry Unit Wt. (pcf)	Passing #4 (%)	Passing #200 (%)	Liquid Limit	Plasticity Index (NP=NonPlastic)	Additional Tests/ Remarks
			Field engineer measured 0.13m asphalt											
			Field engineer measured 0.10m base course											
1812			**Silty SAND (SM)**: fine to medium grained, low plasticity, yellowish brown, laminated and weakly cemented, moist, medium dense, trace moderately cemented white caliche nodules		BC=7 10 10	381 mm	A-2-4(0)	4.6		96	31	NP	NP	**R-Value=** 34 Bulk sample obtained from depth of 0.3 to 1.52m bgs
	1		Loose below 0.91m bgs		BC=5 4 3	406 mm								
1811														
	2				BC=2 5 3	432 mm								
1810			Very loose below 2.74m bgs		BC=2 2 2	406 mm								
	3													
1809	4													
1808	5													
1807	6													

The exploration was terminated at approximately 3.2 m. below ground surface. The exploration was backfilled with auger cuttings and asphalt patch on October 08, 2014.

GROUNDWATER LEVEL INFORMATION:
Groundwater was not encountered during drilling or after completion.

GENERAL NOTES:
Coordinates obtained from WHPacific N15 Alignment CAD file; Surface elevation provided by WHPacific.

Allwyn ENVIRONMENTAL

PROJECT NO.:	20151221
DRAWN BY:	PD
CHECKED BY:	MJM
DATE:	12/5/2014
REVISED:	12/17/2014

BORING LOG B-6

BIA N15(2-3)(3-1)(4-1)2&4
GREASEWOOD TO BURNSIDE, ARIZONA

PLATE

B-6

PAGE: 1 of 1

gINT FILE: PROJECTWISE: 20151221_n1520151221.gpj
gINT TEMPLATE: PROJECTWISE: KLF_STANDARD_GINT_LIBRARY_2014.GLB [KLF_BORING/TEST PIT SOIL LOG]

PLOTTED: 07/07/2015 02:00 PM BY: clbeck

BORING LOG B-7

Date Begin - End:	10/07/2014 - 10/07/2014	**Drilling Company:**	Enviro-Drill		
Logged By:	M. Cote	**Drill Crew:**	Ed & Juan		
Hor.-Vert. Datum:	NAD83	**Drilling Equipment:**	CME-75	**Hammer Type - Drop:**	63.5 kg. Auto - 762 mm.
Plunge:	-90 degrees	**Drilling Method:**	Hollow Stem Auger		
Weather:	partly cloudy, cool	**Exploration Diameter:**	184 mm. O.D.		

FIELD EXPLORATION

Northing: 502,493.45 (m)
Easting: 241,998.24 (m)
Ground Surface Elevation (m.): 1,810.1
Location Offset: Sta. 1+200/1.83m Rt CL
Surface Condition: Asphalt

Elevation (meters)	Depth (meters)	Graphical Log	Lithologic Description	Sample Type	Blow Counts(BC)= Uncorr. Blows/152 mm. Pocket Pen(PP)= T/m²	Recovery (NR=No Recovery)	AASHTO Symbol	Water Content (%)	Dry Unit Wt. (pcf)	Passing #4 (%)	Passing #200 (%)	Liquid Limit	Plasticity Index (NP=NonPlastic)	Additional Tests/ Remarks
1810	0		Field engineer measured 0.18m asphalt											
			Field engineer measured 0.08m base course											
			Poorly-graded SAND with Silt (SP-SM): yellowish brown with white patches, moist, medium dense, laminated, weakly cemented		BC=6 7 8	457 mm								
1809	1		Brownish yellow, dry to moist, loose, increase in weakly cemented white patches from 1m bgs		BC=2 3 3	356 mm								
1808	2		Reddish yellowish brown, very loose from 1.83m bgs		BC=3 2 2	406 mm								
1807	3		loose from 2.74m bgs		BC=2 5 3	406 mm	A-3(0)	7.0		97	8.1	NP	NP	
1806	4													
1805	5													
	6													

LABORATORY RESULTS

The exploration was terminated at approximately 3.2 m. below ground surface. The exploration was backfilled with auger cuttings and asphalt patch on October 07, 2014.

GROUNDWATER LEVEL INFORMATION:
Groundwater was not encountered during drilling or after completion.

GENERAL NOTES:
Coordinates obtained from WHPacific N15 Alignment CAD file; Surface elevation provided by WHPacific.

Allwyn ENVIRONMENTAL

PROJECT NO.:	20151221
DRAWN BY:	PD
CHECKED BY:	MJM
DATE:	12/5/2014
REVISED:	12/17/2014

BORING LOG B-7

BIA N15(2-3)(3-1)(4-1)2&4
GREASEWOOD TO BURNSIDE, ARIZONA

PLATE

B-7

PAGE: 1 of 1

gINT FILE: PROJECTWISE: 20151221_n1520151221.gpj
gINT TEMPLATE: PROJECTWISE: KLF_STANDARD_GINT_LIBRARY_2014.GLB [KLF_BORING/TEST PIT SOIL LOG]

PLOTTED: 07/07/2015 02:00 PM BY: clbeck

BORING LOG B-8

Date Begin - End:	10/08/2014 - 10/08/2014	**Drilling Company:**	Enviro-Drill		
Logged By:	M. Cote	**Drill Crew:**	Ed & Juan		
Hor.-Vert. Datum:	NAD83	**Drilling Equipment:**	CME-75	**Hammer Type - Drop:**	63.5 kg. Auto - 762 mm.
Plunge:	-90 degrees	**Drilling Method:**	Hollow Stem Auger		
Weather:	cloudy, breezy	**Exploration Diameter:**	184 mm. O.D.		

FIELD EXPLORATION

Northing: 502,626.19 (m)
Easting: 242,147.35 (m)
Ground Surface Elevation (m.): 1,809.1
Location Offset: Sta. 1+400/1.83m Lt CL
Surface Condition: Asphalt

Elevation (meters)	Depth (meters)	Graphical Log	Lithologic Description	Sample Type	Blow Counts(BC)= Uncorr. Blows/152 mm. Pocket Pen(PP)= T/m²	Recovery (NR=No Recovery)
1809			Field engineer measured 0.10m asphalt			
			Field engineer measured 0.10m base course			
			Clayey SAND (SC): fine grained, medium plasticity, yellowish brown, moist, loose, trace moderately cemented white caliche nodules		BC=4 3 2	457 mm
1808	1		Yellow, moderately cemented seam at 1.23m bgs		BC=2 3 3	381 mm
1807	2		**Poorly-graded SAND with Clay (SP-SC)**: fine grained, low plasticity, yellowish brown, moist, loose		BC=2 2 3	406 mm
1806	3		Flat, white, moderately cemented nodules and thin (~1/8" thick) seams at 2.74m bgs			381 mm
1805	4					
1804	5					
1803	6					

LABORATORY RESULTS

AASHTO Symbol	Water Content (%)	Dry Unit Wt. (pcf)	Passing #4 (%)	Passing #200 (%)	Liquid Limit	Plasticity Index (NP=NonPlastic)	Additional Tests/ Remarks
							Blow counts not recorded at 2.74m bgs

The exploration was terminated at approximately 3.2 m. below ground surface. The exploration was backfilled with auger cuttings and asphalt patch on October 08, 2014.

GROUNDWATER LEVEL INFORMATION:
Groundwater was not encountered during drilling or after completion.
GENERAL NOTES:
Coordinates obtained from WHPacific N15 Alignment CAD file; Surface elevation provided by WHPacific.

Allwyn ENVIRONMENTAL

PROJECT NO.:	20151221
DRAWN BY:	PD
CHECKED BY:	MJM
DATE:	12/5/2014
REVISED:	12/17/2014

BORING LOG B-8

BIA N15(2-3)(3-1)(4-1)2&4
GREASEWOOD TO BURNSIDE, ARIZONA

PLATE

B-8

PAGE: 1 of 1

gINT FILE: PROJECTWISE: 20151221_n1520151221.gpj
gINT TEMPLATE: PROJECTWISE: KLF_STANDARD_GINT_LIBRARY_2014.GLB [KLF_BORING/TEST PIT SOIL LOG]

PLOTTED: 07/07/2015 02:00 PM BY: clbeck

BORING LOG B-9

Date Begin - End:	10/07/2014 - 10/07/2014	**Drilling Company:**	Enviro-Drill		
Logged By:	M. Cote	**Drill Crew:**	Ed & Juan		
Hor.-Vert. Datum:	NAD83	**Drilling Equipment:**	CME-75	**Hammer Type - Drop:**	63.5 kg. Auto - 762 mm.
Plunge:	-90 degrees	**Drilling Method:**	Hollow Stem Auger		
Weather:	partly cloudy, cool	**Exploration Diameter:**	184 mm. O.D.		

FIELD EXPLORATION

Northing: 502,783.36 (m)
Easting: 242,270.66 (m)
Ground Surface Elevation (m.): 1,809.0
Location Offset: Sta. 1+600/1.83m Rt CL
Surface Condition: Asphalt

Elevation (meters)	Depth (meters)	Graphical Log	Lithologic Description	Sample Type	Blow Counts(BC)= Uncorr. Blows/152 mm. Pocket Pen(PP)= T/m²	Recovery (NR=No Recovery)	AASHTO Symbol	Water Content (%)	Dry Unit Wt. (pcf)	Passing #4 (%)	Passing #200 (%)	Liquid Limit	Plasticity Index (NP=NonPlastic)	Additional Tests/ Remarks
			Field engineer measured 0.15m asphalt											
			Field engineer measured 0.05m base coarse											
			Poorly-Graded SAND with Clay (SP-SC): low plasticity, reddish yellowish brown, dry to moist, medium dense, with white cemented nodules		BC=4 9 5	432 mm	A-2-6(0)	7.3		100	10	28	12	
1808	1		**Poorly-graded SAND (SP)**: dry to moist, loose, trace silt, fine sand, laminated, very weakly cemented, moderately cemented white caliche nodules		BC=2 3 4	279 mm								
1807	2		Increase in moisture content below 1.83m bgs		BC=3 4 3	432 mm								
1806	3		With large flat moderately cemented white caliche nodules, slight decrease in fines at 2.74m bgs		BC=3 4 5									
1805	4													
1804	5													
1803	6													

The exploration was terminated at approximately 3.2 m. below ground surface. The exploration was backfilled with auger cuttings and asphalt patch on October 07, 2014.

GROUNDWATER LEVEL INFORMATION:
Groundwater was not encountered during drilling or after completion.

GENERAL NOTES:
Coordinates obtained from WHPacific N15 Alignment CAD file; Surface elevation provided by WHPacific.

Allwyn ENVIRONMENTAL

PROJECT NO.:	20151221
DRAWN BY:	PD
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DATE:	12/5/2014
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BORING LOG B-9

BIA N15(2-3)(3-1)(4-1)2&4
GREASEWOOD TO BURNSIDE, ARIZONA

PLATE

B-9

PAGE: 1 of 1

gINT FILE: PROJECTWISE: 20151221_n1520151221.gpj
gINT TEMPLATE: PROJECTWISE: KLF_STANDARD_GINT_LIBRARY_2014.GLB [KLF_BORING/TEST PIT SOIL LOG]

PLOTTED: 07/07/2015 02:00 PM BY: clbeck

BORING LOG B-10

Date Begin - End:	10/08/2014 - 10/08/2014	**Drilling Company:**	Enviro-Drill		
Logged By:	M. Cote	**Drill Crew:**	Ed & Juan		
Hor.-Vert. Datum:	NAD83	**Drilling Equipment:**	CME-75	**Hammer Type - Drop:**	63.5 kg. Auto - 762 mm.
Plunge:	-90 degrees	**Drilling Method:**	Hollow Stem Auger		
Weather:	cloudy, windy	**Exploration Diameter:**	184 mm. O.D.		

FIELD EXPLORATION

Northing: 502,948.93 (m)
Easting: 242,382.89 (m)
Ground Surface Elevation (m.): 1,808.7
Location Offset: Sta. 1+800/1.83m Lt CL
Surface Condition: Asphalt

Elevation (meters)	Depth (meters)	Graphical Log	Lithologic Description	Sample Type	Blow Counts(BC)= Uncorr. Blows/152 mm. Pocket Pen(PP)= T/m²	Recovery (NR=No Recovery)
			Field engineer measured 0.10m asphalt			
			Field engineer measured 0.08m base course			
1808			**Clayey SAND (SC)**: fine grained, medium plasticity, reddish yellowish brown, dry to moist, medium dense, weakly to moderately cemented, small white caliche nodules		BC=6 12 9	356 mm
	1		Very weakly cemented, laminated at 0.91m bgs		BC=4 6 7	330 mm
1807			**Poorly-graded SAND (SP)**: fine grained, yellowish brown, dry to moist, loose		BC=3 3 2	381 mm
1806	2					
	3		Trace flat, white, moderately cemented caliche nodules at 2.74m bgs		BC=4 8 9	381 mm
1805	4					
1804	5					
1803	6					

LABORATORY RESULTS

AASHTO Symbol	Water Content (%)	Dry Unit Wt. (pcf)	Passing #4 (%)	Passing #200 (%)	Liquid Limit	Plasticity Index (NP=NonPlastic)	Additional Tests/ Remarks

The exploration was terminated at approximately 3.2 m. below ground surface. The exploration was backfilled with auger cuttings and asphalt patch on October 08, 2014.

GROUNDWATER LEVEL INFORMATION:
Groundwater was not encountered during drilling or after completion.
GENERAL NOTES:
Coordinates obtained from WHPacific N15 Alignment CAD file; Surface elevation provided by WHPacific.

Allwyn ENVIRONMENTAL

PROJECT NO.:	20151221
DRAWN BY:	PD
CHECKED BY:	MJM
DATE:	12/5/2014
REVISED:	12/17/2014

BORING LOG B-10

BIA N15(2-3)(3-1)(4-1)2&4
GREASEWOOD TO BURNSIDE, ARIZONA

PLATE

B-10

gINT FILE: PROJECTWISE: 20151221_n1520151221.gpj
gINT TEMPLATE: PROJECTWISE: KLF_STANDARD_GINT_LIBRARY_2014.GLB [KLF_BORING/TEST PIT SOIL LOG]

PLOTTED: 07/07/2015 02:00 PM BY: clbeck

BORING LOG B-11

Date Begin - End:	10/07/2014 - 10/07/2014	**Drilling Company:**	Enviro-Drill		
Logged By:	M. Cote	**Drill Crew:**	Ed & Juan		
Hor.-Vert. Datum:	NAD83	**Drilling Equipment:**	CME-75	**Hammer Type - Drop:**	63.5 kg. Auto - 762 mm.
Plunge:	-90 degrees	**Drilling Method:**	Hollow Stem Auger		
Weather:	partly cloudy, cool	**Exploration Diameter:**	184 mm. O.D.		

FIELD EXPLORATION

Northing: 503,110.81 (m)
Easting: 242,500.4 (m)
Ground Surface Elevation (m.): 1,808.8
Location Offset: Sta. 2+000/1.83m Rt CL
Surface Condition: Asphalt

Elevation (meters)	Depth (meters)	Graphical Log	Lithologic Description	Sample Type	Blow Counts(BC)= Uncorr. Blows/152 mm. Pocket Pen(PP)= T/m²	Recovery (NR=No Recovery)	AASHTO Symbol	Water Content (%)	Dry Unit Wt. (pcf)	Passing #4 (%)	Passing #200 (%)	Liquid Limit	Plasticity Index (NP=NonPlastic)	Additional Tests/ Remarks
			Field engineer measured 0.15m asphalt											
			Field engineer measured 0.08m base course											
1808			**Poorly-Graded SAND with Clay (SP-SC)**: low plasticity, yellowish brown, dry to moist, medium dense, fine sand, laminated/weakly cemented, trace moderately cemented white caliche nodules		BC=7 8 8	457 mm	A-2-4(0)	7.6		100	12	24	8	Bulk sample obtained from depth of 0.3 to 1.52m bgs
1807	1		Weakly to moderately cemented, very dense at 0.91mbgs		BC=50/5"	127 mm								
1806	2		**Poorly-graded SAND with Silt (SP-SM)**: yellowish brown, dry to moist, loose, fine sand, nodules of moderately cemented white caliche nodules		BC=2 3 3	457 mm								
1805	3		Laminated, very weakly cemented below 2.74m bgs		BC=3 5 5									
1804	4													
1803	5													
	6													

The exploration was terminated at approximately 3.2 m. below ground surface. The exploration was backfilled with auger cuttings and asphalt patch on October 07, 2014.

GROUNDWATER LEVEL INFORMATION:
Groundwater was not encountered during drilling or after completion.

GENERAL NOTES:
Coordinates obtained from WHPacific N15 Alignment CAD file; Surface elevation provided by WHPacific.

Allwyn ENVIRONMENTAL

PROJECT NO.:	20151221
DRAWN BY:	PD
CHECKED BY:	MJM
DATE:	12/5/2014
REVISED:	12/17/2014

BORING LOG B-11

BIA N15(2-3)(3-1)(4-1)2&4
GREASEWOOD TO BURNSIDE, ARIZONA

PLATE

B-11

PAGE: 1 of 1

gINT FILE: PROJECTWISE: 20151221_n1520151221.gpj
gINT TEMPLATE: PROJECTWISE: KLF_STANDARD_GINT_LIBRARY_2014.GLB [KLF_BORING/TEST PIT SOIL LOG]

PLOTTED: 07/07/2015 02:00 PM BY: clbeck

BORING LOG B-12

Date Begin - End:	10/08/2014 - 10/08/2014	**Drilling Company:**	Enviro-Drill		
Logged By:	M. Cote	**Drill Crew:**	Ed & Juan		
Hor.-Vert. Datum:	NAD83	**Drilling Equipment:**	CME-75	**Hammer Type - Drop:**	63.5 kg. Auto - 762 mm.
Plunge:	-90 degrees	**Drilling Method:**	Hollow Stem Auger		
Weather:	cloudy, windy	**Exploration Diameter:**	184 mm. O.D.		

FIELD EXPLORATION

Northing: 503,276.38 (m)
Easting: 242,612.63 (m)
Ground Surface Elevation (m.): 1,810.2
Location Offset: Sta. 2+200/1.83m Lt CL
Surface Condition: Asphalt

Elevation (meters)	Depth (meters)	Graphical Log	Lithologic Description	Sample Type	Blow Counts(BC)= Uncorr. Blows/152 mm. Pocket Pen(PP)= T/m²	Recovery (NR=No Recovery)
1810			Field engineer measured 0.13m asphalt			
			Field engineer measured 0.08m base course			
			Sandy Lean CLAY (CL): fine grained, low to medium plasticity, brown, dry to moist, hard, weakly to moderately cemented white caliche nodules		BC=5 6 8	330 mm
	1		**Clayey SAND (SC)**: fine grained, low plasticity, brown, dry, medium dense, laminated, very weakly cemented cemented, trace white moderately cemented caliche nodules		BC=8 12 11	381 mm
1809						
	2		**Poorly-graded SAND with Silt (SP-SM)**: fine grained, yellowish brown, dry to moist, loose, trace large white cemented nodules		BC=3 2 4	406 mm
1808						
			Small flat white nodules at 2.74m bgs		BC=1 1 2	381 mm
	3					
1807						
	4					
1806						
	5					
1805						
	6					

LABORATORY RESULTS

AASHTO Symbol	Water Content (%)	Dry Unit Wt. (pcf)	Passing #4 (%)	Passing #200 (%)	Liquid Limit	Plasticity Index (NP=NonPlastic)	Additional Tests/ Remarks

The exploration was terminated at approximately 3.2 m. below ground surface. The exploration was backfilled with auger cuttings and asphalt patch on October 08, 2014.

GROUNDWATER LEVEL INFORMATION:
Groundwater was not encountered during drilling or after completion.
GENERAL NOTES:
Coordinates obtained from WHPacific N15 Alignment CAD file; Surface elevation provided by WHPacific.

Allwyn ENVIRONMENTAL

PROJECT NO.:	20151221
DRAWN BY:	PD
CHECKED BY:	MJM
DATE:	12/5/2014
REVISED:	12/17/2014

BORING LOG B-12

BIA N15(2-3)(3-1)(4-1)2&4
GREASEWOOD TO BURNSIDE, ARIZONA

PLATE

B-12

PAGE: 1 of 1

gINT FILE: PROJECTWISE: 20151221_n1520151221.gpj
gINT TEMPLATE: PROJECTWISE: KLF_STANDARD_GINT_LIBRARY_2014.GLB [KLF_BORING/TEST PIT SOIL LOG]

PLOTTED: 07/07/2015 02:00 PM BY: clbeck

BORING LOG B-13

Date Begin - End:	10/07/2014 - 10/07/2014	**Drilling Company:**	Enviro-Drill		
Logged By:	M. Cote	**Drill Crew:**	Ed & Juan		
Hor.-Vert. Datum:	NAD83	**Drilling Equipment:**	CME-75	**Hammer Type - Drop:**	63.5 kg. Auto - 762 mm.
Plunge:	-90 degrees	**Drilling Method:**	Hollow Stem Auger		
Weather:	partly cloudy, cool	**Exploration Diameter:**	184 mm. O.D.		

FIELD EXPLORATION

Northing: 503,438.38 (m)
Easting: 242,729.95 (m)
Ground Surface Elevation (m.): 1,812.9
Location Offset: Sta. 2+400/1.83m Rt CL
Surface Condition: Asphalt

Elevation (meters)	Depth (meters)	Graphical Log	Lithologic Description	Sample Type	Blow Counts(BC)= Uncorr. Blows/152 mm. Pocket Pen(PP)= T/m²	Recovery (NR=No Recovery)	AASHTO Symbol	Water Content (%)	Dry Unit Wt. (pcf)	Passing #4 (%)	Passing #200 (%)	Liquid Limit	Plasticity Index (NP=NonPlastic)	Additional Tests/ Remarks
			Field engineer measured 0.136m asphalt											
			Field engineer measured 0.10m base coarse											
			Poorly-graded SAND with Silt (SP-SM): reddish yellowish brown, moist, loose, fine to medium grained, trace moderately cemented caliche nodules		BC=2 4 4	457 mm								
1812	1		Dry to moist, medium dense, weakly cemented below 0.91m bgs 0.13m thick seam of fine to coarse well graded sand at 1.23m bgs		BC=10 15 15	406 mm	A-3(0)	4.2		100	6.2	NP	NP	
1811	2		**Clayey SAND (SC)**: medium plasticity, yellowish brown, dry to moist, loose, laminated, weakly cemented, fine grained, trace moderately cemented white caliche nodules		BC=4 4 4	432 mm								
1810	3		Increase in white caliche nodules at 2.74m bgs		BC=3 5 4	457 mm								
1809	4													
1808	5													
1807	6													

The exploration was terminated at approximately 3.2 m. below ground surface. The exploration was backfilled with auger cuttings and asphalt patch on October 07, 2014.

GROUNDWATER LEVEL INFORMATION:
Groundwater was not encountered during drilling or after completion.
GENERAL NOTES:
Coordinates obtained from WHPacific N15 Alignment CAD file; Surface elevation provided by WHPacific.

Allwyn ENVIRONMENTAL

PROJECT NO.:	20151221
DRAWN BY:	PD
CHECKED BY:	MJM
DATE:	12/5/2014
REVISED:	12/17/2014

BORING LOG B-13

BIA N15(2-3)(3-1)(4-1)2&4
GREASEWOOD TO BURNSIDE, ARIZONA

PLATE

B-13

PAGE: 1 of 1

gINT FILE: PROJECTWISE: 20151221_n1520151221.gpj
gINT TEMPLATE: PROJECTWISE: KLF_STANDARD_GINT_LIBRARY_2014.GLB [KLF_BORING/TEST PIT SOIL LOG]

PLOTTED: 07/07/2015 02:00 PM BY: clbeck

BORING LOG B-14

Date Begin - End:	10/08/2014 - 10/08/2014	**Drilling Company:**	Enviro-Drill		
Logged By:	M. Cote	**Drill Crew:**	Ed & Juan		
Hor.-Vert. Datum:	NAD83	**Drilling Equipment:**	CME-75	**Hammer Type - Drop:**	63.5 kg. Auto - 762 mm.
Plunge:	-90 degrees	**Drilling Method:**	Hollow Stem Auger		
Weather:	cloudy, windy	**Exploration Diameter:**	184 mm. O.D.		

FIELD EXPLORATION

Northing: 503,603.87 (m)
Easting: 242,842.29 (m)
Ground Surface Elevation (m.): 1,813.8
Location Offset: Sta. 2+600/1.83m Lt CL
Surface Condition: Asphalt

Elevation (meters)	Depth (meters)	Graphical Log	Lithologic Description	Sample Type	Blow Counts(BC)= Uncorr. Blows/152 mm. Pocket Pen(PP)= T/m²	Recovery (NR=No Recovery)
			Field engineer measured 0.13m asphalt			
			Field engineer measured 0.08m base course			
1813			**Poorly-graded SAND with Clay (SP-SC)**: fine to coarse grained, low plasticity, brown to yellowish brown, moist, medium dense, with seams of well-graded sand, with weakly to moderately cemented caliche nodules		BC=6 6 6	356 mm
	1		**Poorly-graded SAND (SP)**: fine grained, reddish yellowish brown, moist, loose, trace flat white moderately cemented caliche nodules		BC=8 4 3	356 mm
1812						
	2				BC=2 3 2	381 mm
1811						
	3				BC=3 7 6	406 mm
			Medium dense, fine to coarse subrounded to rounded sand, with large (~0.05m long) patch of caliche at 3.05m bgs			
1810	4		The exploration was terminated at approximately 3.2 m. below ground surface. The exploration was backfilled with auger cuttings and asphalt patch on October 08, 2014.			
1809	5					
1808	6					

LABORATORY RESULTS

AASHTO Symbol	Water Content (%)	Dry Unit Wt. (pcf)	Passing #4 (%)	Passing #200 (%)	Liquid Limit	Plasticity Index (NP=NonPlastic)	Additional Tests/ Remarks

GROUNDWATER LEVEL INFORMATION:
Groundwater was not encountered during drilling or after completion.

GENERAL NOTES:
Coordinates obtained from WHPacific N15 Alignment CAD file; Surface elevation provided by WHPacific.

Allwyn ENVIRONMENTAL

PROJECT NO.:	20151221
DRAWN BY:	PD
CHECKED BY:	MJM
DATE:	12/5/2014
REVISED:	12/17/2014

BORING LOG B-14

BIA N15(2-3)(3-1)(4-1)2&4
GREASEWOOD TO BURNSIDE, ARIZONA

PLATE

B-14

PAGE: 1 of 1

gINT FILE: PROJECTWISE: 20151221_n1520151221.gpj
gINT TEMPLATE: PROJECTWISE: KLF_STANDARD_GINT_LIBRARY_2014.GLB [KLF_BORING/TEST PIT SOIL LOG]

PLOTTED: 07/07/2015 02:00 PM BY: clbeck

BORING LOG B-15

Date Begin - End:	10/07/2014 - 10/07/2014	**Drilling Company:**	Enviro-Drill		
Logged By:	M. Cote	**Drill Crew:**	Ed & Juan		
Hor.-Vert. Datum:	NAD83	**Drilling Equipment:**	CME-75	**Hammer Type - Drop:**	63.5 kg. Auto - 762 mm.
Plunge:	-90 degrees	**Drilling Method:**	Hollow Stem Auger		
Weather:	partly cloudy, cool	**Exploration Diameter:**	184 mm. O.D.		

FIELD EXPLORATION

Northing: 503,766.04 (m)
Easting: 242,959.39 (m)
Ground Surface Elevation (m.): 1,814.8
Location Offset: Sta. 2+800/1.83m Rt CL
Surface Condition: Asphalt

Elevation (meters)	Depth (meters)	Graphical Log	Lithologic Description	Sample Type	Blow Counts(BC)= Uncorr. Blows/152 mm. Pocket Pen(PP)= T/m²	Recovery (NR=No Recovery)	AASHTO Symbol	Water Content (%)	Dry Unit Wt. (pcf)	Passing #4 (%)	Passing #200 (%)	Liquid Limit	Plasticity Index (NP=NonPlastic)	Additional Tests/ Remarks
			Field engineer measured 0.13m asphalt											
			Field engineer measured 0.13m base course											
			Poorly-graded SAND with Clay (SP-SC): low plasticity, brown, moist, medium dense, fine sand, trace moderately cemented caliche nodules		BC=4 6 7	457 mm								
1814			**Poorly-graded SAND (SW)**: reddish yellowish brown, dry to moist, loose, fine to coarse, subrounded to rounded sand, trace subrounded gravel, trace clay, trace caliche nodules											
	1				BC=4 4 3	457 mm								
			(SP): reddish yellowish brown, dry to moist, loose, Trace rootlets at 1.52m bgs											
1813														
	2				BC=2 3 3	432 mm	A-3(0)	3.6		99	4.4	NP	NP	
1812			Fine to medium sand, no caliche below 2.74m bgs											
	3				BC=4 4 3									
1811	4													
1810	5													
1809	6													

The exploration was terminated at approximately 3.2 m. below ground surface. The exploration was backfilled with auger cuttings and asphalt patch on October 07, 2014.

GROUNDWATER LEVEL INFORMATION:
Groundwater was not encountered during drilling or after completion.

GENERAL NOTES:
Coordinates obtained from WHPacific N15 Alignment CAD file; Surface elevation provided by WHPacific.

Allwyn ENVIRONMENTAL

PROJECT NO.:	20151221
DRAWN BY:	PD
CHECKED BY:	MJM
DATE:	12/5/2014
REVISED:	12/17/2014

BORING LOG B-15

BIA N15(2-3)(3-1)(4-1)2&4
GREASEWOOD TO BURNSIDE, ARIZONA

PLATE

B-15

gINT FILE: PROJECTWISE: 20151221_n1520151221.gpj
gINT TEMPLATE: PROJECTWISE: KLF_STANDARD_GINT_LIBRARY_2014.GLB [KLF_BORING/TEST PIT SOIL LOG]

PLOTTED: 07/07/2015 02:00 PM BY: clbeck

BORING LOG B-16

Date Begin - End:	10/08/2014 - 10/08/2014	**Drilling Company:**	Enviro-Drill		
Logged By:	M. Cote	**Drill Crew:**	Ed & Juan		
Hor.-Vert. Datum:	NAD83	**Drilling Equipment:**	CME-75	**Hammer Type - Drop:**	63.5 kg. Auto - 762 mm.
Plunge:	-90 degrees	**Drilling Method:**	Hollow Stem Auger		
Weather:	cloudy, windy	**Exploration Diameter:**	184 mm. O.D.		

Northing: 503,931.55 (m)
Easting: 243,071.7 (m)
Ground Surface Elevation (m.): 1,816.6
Location Offset: Sta. 3+000/1.83m Lt CL
Surface Condition: Asphalt

Elevation (meters)	Depth (meters)	Graphical Log	Lithologic Description	Sample Type	Blow Counts(BC)= Uncorr. Blows/152 mm. Pocket Pen(PP)= T/m²	Recovery (NR=No Recovery)	AASHTO Symbol	Water Content (%)	Dry Unit Wt. (pcf)	Passing #4 (%)	Passing #200 (%)	Liquid Limit	Plasticity Index (NP=NonPlastic)	Additional Tests/ Remarks
			Field engineer measured 0.10m asphalt											
			Field engineer measured 0.08m base course											
1816			**Poorly-graded SAND (SP)**: fine grained, brown, moist, medium dense, weakly cemented, trace clay, trace white caliche		BC=11 13 11	406 mm								
	1		Yellowish brown, very weakly cemented below 0.91m bgs		BC=5 12 13	356 mm								
1815														
	2		yellow with reddish yellow staining at 1.83m bgs		BC=4 5 11	457 mm								
1814														
	3				BC=6 13 13	457 mm								
1813														
	4													
1812														
	5													
1811														
	6													

The exploration was terminated at approximately 3.2 m. below ground surface. The exploration was backfilled with auger cuttings and asphalt patch on October 08, 2014.

GROUNDWATER LEVEL INFORMATION:
Groundwater was not encountered during drilling or after completion.

GENERAL NOTES:
Coordinates obtained from WHPacific N15 Alignment CAD file; Surface elevation provided by WHPacific.

Allwyn ENVIRONMENTAL

PROJECT NO.:	20151221
DRAWN BY:	PD
CHECKED BY:	MJM
DATE:	12/5/2014
REVISED:	12/17/2014

BORING LOG B-16

BIA N15(2-3)(3-1)(4-1)2&4
GREASEWOOD TO BURNSIDE, ARIZONA

PLATE

B-16

gINT FILE: PROJECTWISE: 20151221_n1520151221.gpj
gINT TEMPLATE: PROJECTWISE: KLF_STANDARD_GINT_LIBRARY_2014.GLB [KLF_BORING/TEST PIT SOIL LOG]

PLOTTED: 07/07/2015 02:00 PM BY: clbeck

BORING LOG B-17

Date Begin - End:	10/07/2014 - 10/07/2014	**Drilling Company:**	Enviro-Drill		
Logged By:	M. Cote	**Drill Crew:**	Ed & Juan		
Hor.-Vert. Datum:	NAD83	**Drilling Equipment:**	CME-75	**Hammer Type - Drop:**	63.5 kg. Auto - 762 mm.
Plunge:	-90 degrees	**Drilling Method:**	Hollow Stem Auger		
Weather:	partly cloudy, cool	**Exploration Diameter:**	184 mm. O.D.		

Northing: 504,093.58 (m)
Easting: 243,188.98 (m)
Ground Surface Elevation (m.): 1,818.2
Location Offset: Sta. 3+200/1.83m Rt CL
Surface Condition: Asphalt

Elevation (meters)	Depth (meters)	Graphical Log	Lithologic Description	Sample Type	Blow Counts(BC)= Uncorr. Blows/152 mm. Pocket Pen(PP)= T/m²	Recovery (NR=No Recovery)	AASHTO Symbol	Water Content (%)	Dry Unit Wt. (pcf)	Passing #4 (%)	Passing #200 (%)	Liquid Limit	Plasticity Index (NP=NonPlastic)	Additional Tests/ Remarks
			Field engineer measured 0.13m asphalt											
1818			Field engineer measured 0.08m base course											
			Poorly-graded SAND with Clay (SP-SC): reddish yellowish brown, dry to moist, medium dense, trace white and gray nodules		BC=10 12 11	457 mm								Bulk sample obtained from depth of 0.3 to 1.52m bgs
	1		**Poorly-graded SAND (SP)**: reddish yellowish brown, dry to moist, loose, fine to coarse sand, loose		BC=4 4 5	457 mm								
1817														
	2		**Poorly-graded SAND with Silt (SP-SM)**: fine sand, white moderately cemented caliche nodules, trace rootlets, loose below 6 ft bgs		BC=1 3 3	432 mm								
1816														
	3		White flat moderately cemented caliche nodules, medium dense below 2.74m bgs		BC=3 6 7	457 mm								
1815														
	4													
1814														
	5													
1813														
	6													

The exploration was terminated at approximately 3.2 m. below ground surface. The exploration was backfilled with auger cuttings and asphalt patch on October 07, 2014.

GROUNDWATER LEVEL INFORMATION:
Groundwater was not encountered during drilling or after completion.
GENERAL NOTES:
Coordinates obtained from WHPacific N15 Alignment CAD file; Surface elevation provided by WHPacific.

Allwyn ENVIRONMENTAL

PROJECT NO.:	20151221
DRAWN BY:	PD
CHECKED BY:	MJM
DATE:	12/5/2014
REVISED:	12/17/2014

BORING LOG B-17

BIA N15(2-3)(3-1)(4-1)2&4
GREASEWOOD TO BURNSIDE, ARIZONA

PLATE

B-17

gINT FILE: PROJECTWISE: 20151221_n1520151221.gpj
gINT TEMPLATE: PROJECTWISE: KLF_STANDARD_GINT_LIBRARY_2014.GLB [KLF_BORING/TEST PIT SOIL LOG]

PLOTTED: 07/07/2015 02:00 PM BY: clbeck

BORING LOG B-18

Date Begin - End:	10/08/2014 - 10/08/2014	**Drilling Company:**	Enviro-Drill		
Logged By:	M. Cote	**Drill Crew:**	Ed & Juan		
Hor.-Vert. Datum:	NAD83	**Drilling Equipment:**	CME-75	**Hammer Type - Drop:**	63.5 kg. Auto - 762 mm.
Plunge:	-90 degrees	**Drilling Method:**	Hollow Stem Auger		
Weather:	cloudy	**Exploration Diameter:**	184 mm. O.D.		

FIELD EXPLORATION

Northing: 504,259.17 (m)
Easting: 243,301.19 (m)
Ground Surface Elevation (m.): 1,817.2
Location Offset: Sta. 3+400/1.83m Lt CL
Surface Condition: Asphalt

Elevation (meters)	Depth (meters)	Graphical Log	Lithologic Description	Sample Type	Blow Counts(BC)= Uncorr. Blows/152 mm. Pocket Pen(PP)= T/m²	Recovery (NR=No Recovery)	AASHTO Symbol	Water Content (%)	Dry Unit Wt. (pcf)	Passing #4 (%)	Passing #200 (%)	Liquid Limit	Plasticity Index (NP=NonPlastic)	Additional Tests/ Remarks
1817			Field engineer measured 0.13m asphalt											
			Field engineer measured 0.08m base course											
			Poorly-graded SAND with Clay (SP-SC): fine to coarse grained, medium plasticity, brown, moist, medium dense, white to gray flat caliche nodules		BC=5 7 7	457 mm								
1816	1		**Poorly-graded SAND (SP)**: fine to medium grained, pale olive to light brownish gray, moist, dense		BC=7 14 16	457 mm	A-3(0)	12.4		98	2.7	NP	NP	
1815	2		Fine grained, yellowish brown, trace clay below 1.83m bgs		BC=5 11 6	457 mm								
1814	3				BC=2 8 12	457 mm								
1813	4													
1812	5													
	6													

The exploration was terminated at approximately 3.2 m. below ground surface. The exploration was backfilled with auger cuttings and asphalt patch on October 08, 2014.

GROUNDWATER LEVEL INFORMATION:
Groundwater was not encountered during drilling or after completion.

GENERAL NOTES:
Coordinates obtained from WHPacific N15 Alignment CAD file; Surface elevation provided by WHPacific.

Allwyn ENVIRONMENTAL

PROJECT NO.:	20151221
DRAWN BY:	PD
CHECKED BY:	MJM
DATE:	12/5/2014
REVISED:	12/17/2014

BORING LOG B-18

BIA N15(2-3)(3-1)(4-1)2&4
GREASEWOOD TO BURNSIDE, ARIZONA

PLATE

B-18

PAGE: 1 of 1

gINT FILE: PROJECTWISE: 20151221_n1520151221.gpj
gINT TEMPLATE: PROJECTWISE: KLF_STANDARD_GINT_LIBRARY_2014.GLB [KLF_BORING/TEST PIT SOIL LOG]

PLOTTED: 07/07/2015 02:00 PM BY: clbeck

BORING LOG B-19

Date Begin - End:	10/09/2014 - 10/09/2014	**Drilling Company:**	Enviro-Drill		
Logged By:	M. Cote	**Drill Crew:**	Ed & Juan		
Hor.-Vert. Datum:	NAD83	**Drilling Equipment:**	CME-75	**Hammer Type - Drop:**	63.5 kg. Auto - 762 mm.
Plunge:	-90 degrees	**Drilling Method:**	Hollow Stem Auger		
Weather:	humid, cloudy	**Exploration Diameter:**	184 mm. O.D.		

Northing: 504,422.53 (m)
Easting: 243,416.61 (m)
Ground Surface Elevation (m.): 1,816.4
Location Offset: Sta. 3+600/1.83m Rt CL
Surface Condition: Asphalt

Elevation (meters)	Depth (meters)	Graphical Log	Lithologic Description	Sample Type	Blow Counts(BC)= Uncorr. Blows/152 mm. Pocket Pen(PP)= T/m²	Recovery (NR=No Recovery)	AASHTO Symbol	Water Content (%)	Dry Unit Wt. (pcf)	Passing #4 (%)	Passing #200 (%)	Liquid Limit	Plasticity Index (NP=NonPlastic)	Additional Tests/ Remarks
			Field engineer measured 0.13m asphalt											
			Field engineer measured 0.10m base course											
1816			**Poorly-Graded SAND (SP)**: fine grained, pale olive with reddish brown, moist, medium dense, trace moderately cemented flat caliche		BC=4 8 9	457 mm	A-3(0)	9.8		100	5.0	NP	NP	
	1		**Clayey SAND (SC)**: fine grained, low plasticity, brown with few pale olive patches, moist, medium dense, white to gray, moderately cemented patches		BC=6 9 8	457 mm								
1815														
	2		**Well-graded SAND with Gravel (SW)**: fine to coarse grained, fine, subrounded gravel, low plasticity, reddish brown, moist, medium dense		BC=9 14 8	432 mm								
1814														
	3		Loose, with seams of poorly-graded sand below 2.74m bgs		BC=5 4 5	457 mm								
1813														
	4													
1812														
	5													
1811														
	6													

The exploration was terminated at approximately 3.2 m. below ground surface. The exploration was backfilled with auger cuttings and asphalt patch on October 09, 2014.

GROUNDWATER LEVEL INFORMATION:
Groundwater was not encountered during drilling or after completion.

GENERAL NOTES:
Coordinates obtained from WHPacific N15 Alignment CAD file; Surface elevation provided by WHPacific.

Allwyn ENVIRONMENTAL

PROJECT NO.:	20151221
DRAWN BY:	PD
CHECKED BY:	MJM
DATE:	12/5/2014
REVISED:	12/17/2014

BORING LOG B-19

BIA N15(2-3)(3-1)(4-1)2&4
GREASEWOOD TO BURNSIDE, ARIZONA

PLATE

B-19

PAGE: 1 of 1

gINT FILE: PROJECTWISE: 20151221_n1520151221.gpj
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BORING LOG B-20

Date Begin - End:	10/08/2014 - 10/08/2014	**Drilling Company:**	Enviro-Drill		
Logged By:	M. Cote	**Drill Crew:**	Ed & Juan		
Hor.-Vert. Datum:	NAD83	**Drilling Equipment:**	CME-75	**Hammer Type - Drop:**	63.5 kg. Auto - 762 mm.
Plunge:	-90 degrees	**Drilling Method:**	Hollow Stem Auger		
Weather:	cloudy, spinkling	**Exploration Diameter:**	184 mm. O.D.		

FIELD EXPLORATION

Northing: 504,591.45 (m)
Easting: 243,523.72 (m)
Ground Surface Elevation (m.): 1,819.3
Location Offset: Sta. 3+800/1.83m Lt CL
Surface Condition: Asphalt

Elevation (meters)	Depth (meters)	Graphical Log	Lithologic Description	Sample Type	Blow Counts(BC)= Uncorr. Blows/152 mm. Pocket Pen(PP)= T/m²	Recovery (NR=No Recovery)
			Field engineer measured 0.18m asphalt			
			Field engineer measured 0.08 base course			
1819			**Clayey SAND (SC)**: fine grained, medium plasticity, brown, moist, medium dense		BC=7 8 13	457 mm
	1		**Poorly-graded SAND with Clay (SP-SC)**: fine grained, low plasticity, yellowish brown, moist, medium dense, moderately cemented flat gray caliche nodules		BC=10 11 11	406 mm
1818						
	2		Loose, some white caliche nodules below 1.83m bgs		BC=3 3 3	406 mm
1817						
	3		Loose, abundant white caliche nodules below 2.74m bgs		BC=4 6 4	457 mm
1816						
	4					
1815						
	5					
1814						
	6					

LABORATORY RESULTS

AASHTO Symbol	Water Content (%)	Dry Unit Wt. (pcf)	Passing #4 (%)	Passing #200 (%)	Liquid Limit	Plasticity Index (NP=NonPlastic)	Additional Tests/ Remarks

The exploration was terminated at approximately 3.2 m. below ground surface. The exploration was backfilled with auger cuttings and asphalt patch on October 08, 2014.

GROUNDWATER LEVEL INFORMATION:
Groundwater was not encountered during drilling or after completion.
GENERAL NOTES:
Coordinates obtained from WHPacific N15 Alignment CAD file; Surface elevation provided by WHPacific.

Allwyn ENVIRONMENTAL

PROJECT NO.:	20151221
DRAWN BY:	PD
CHECKED BY:	MJM
DATE:	12/5/2014
REVISED:	12/17/2014

BORING LOG B-20

BIA N15(2-3)(3-1)(4-1)2&4
GREASEWOOD TO BURNSIDE, ARIZONA

PLATE

B-20

gINT FILE: PROJECTWISE: 20151221_n1520151221.gpj
gINT TEMPLATE: PROJECTWISE: KLF_STANDARD_GINT_LIBRARY_2014.GLB [KLF_BORING/TEST PIT SOIL LOG]

Date Begin - End:	10/09/2014 - 10/09/2014	**Drilling Company:**	Enviro-Drill	**BORING LOG B-21**	
Logged By:	M. Cote	**Drill Crew:**	Ed & Juan		
Hor.-Vert. Datum:	NAD83	**Drilling Equipment:**	CME-75	**Hammer Type - Drop:**	63.5 kg. Auto - 762 mm.
Plunge:	-90 degrees	**Drilling Method:**	Hollow Stem Auger		
Weather:	humid, partly cloudy	**Exploration Diameter:**	184 mm. O.D.		

Northing: 504,757.33 (m)
Easting: 243,635.49 (m)
Ground Surface Elevation (m.): 1,824.0
Location Offset: Sta. 4+000/1.83m Rt CL
Surface Condition: Asphalt

Elevation (meters)	Depth (meters)	Graphical Log	Lithologic Description	Sample Type	Blow Counts(BC)= Uncorr. Blows/152 mm. Pocket Pen(PP)= T/m²	Recovery (NR=No Recovery)	AASHTO Symbol	Water Content (%)	Dry Unit Wt. (pcf)	Passing #4 (%)	Passing #200 (%)	Liquid Limit	Plasticity Index (NP=NonPlastic)	Additional Tests/ Remarks
			Field engineer measured 0.13m asphalt											
			Field engineer measured 0.10m base course											
			Clayey SAND (SC): fine to coarse grained, fine, subrounded to rounded gravel, low plasticity, brown to reddish brown, moist, loose, with some gravel		BC=5 5 4	457 mm	A-2-6(1)	10.7		89	32	29	14	**R-Value=** 25 Bulk sample obtained from depth of 0.3 to 1.52m bgs
1823	1		**Lean CLAY (CL)**: low plasticity, pale olive, moist, hard, with abundant patches of reddish brown, clayey sand		BC=3 4 6 PP=0.7	356 mm								
			Clayey SAND (SC): fine grained, low plasticity, reddish yellowish brown, moist, loose											
1822	2				BC=3 3 2	203 mm								
1821	3		**Poorly-graded SAND with Clay (SP-SC)**: fine grained, low plasticity, yellowish brown, moist, dense		BC=2 3 10	457 mm								
1820	4													
1819	5													
1818	6													

The exploration was terminated at approximately 3.2 m. below ground surface. The exploration was backfilled with auger cuttings and asphalt patch on October 09, 2014.

GROUNDWATER LEVEL INFORMATION:
Groundwater was not encountered during drilling or after completion.
GENERAL NOTES:
Coordinates obtained from WHPacific N15 Alignment CAD file; Surface elevation provided by WHPacific.

Allwyn ENVIRONMENTAL

PROJECT NO.:	20151221
DRAWN BY:	PD
CHECKED BY:	MJM
DATE:	12/5/2014
REVISED:	12/17/2014

BORING LOG B-21

BIA N15(2-3)(3-1)(4-1)2&4
GREASEWOOD TO BURNSIDE, ARIZONA

PLATE
B-21
PAGE: 1 of 1

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gINT FILE: PROJECTWISE: 20151221_n1520151221.gpj
gINT TEMPLATE: PROJECTWISE: KLF_STANDARD_GINT_LIBRARY_2014.GLB [KLF_BORING/TEST PIT SOIL LOG]

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BORING LOG B-22

Date Begin - End:	10/09/2014 - 10/09/2014	**Drilling Company:**	Enviro-Drill		
Logged By:	M. Cote	**Drill Crew:**	Ed & Juan		
Hor.-Vert. Datum:	NAD83	**Drilling Equipment:**	CME-75	**Hammer Type - Drop:**	63.5 kg. Auto - 762 mm.
Plunge:	-90 degrees	**Drilling Method:**	Hollow Stem Auger		
Weather:	partly cloudy	**Exploration Diameter:**	184 mm. O.D.		

FIELD EXPLORATION

Northing: 504,926.21 (m)
Easting: 243,742.67 (m)
Ground Surface Elevation (m.): 1,823.8
Location Offset: Sta. 4+200/1.83m Lt CL
Surface Condition: Asphalt

Elevation (meters)	Depth (meters)	Graphical Log	Lithologic Description	Sample Type	Blow Counts(BC)= Uncorr. Blows/152 mm. Pocket Pen(PP)= T/m²	Recovery (NR=No Recovery)
			Field engineer measured 0.10m asphalt			
			Field engineer measured 0.13m base course			
1823			**Clayey SAND (SC)**: fine grained, low plasticity, brown, dry to moist, medium dense, trace white to pale olive caliche or sandstone nodules		BC=5 10 12	305 mm
	1		**Poorly-graded SAND with Clay (SP-SC)**: fine grained, low plasticity, reddish yellow, dry to moist, medium dense, few white and pale olive patches		BC=12 12 14	457 mm
1822						
	2		Trace fine rootlets, fine to coarse grained, loose below 1.83m bgs		BC=2 3 3	356 mm
1821						
	3		Medium dense below 2.74m bgs		BC=8 11 16	
1820	4					
1819	5					
1818	6					

LABORATORY RESULTS

AASHTO Symbol	Water Content (%)	Dry Unit Wt. (pcf)	Passing #4 (%)	Passing #200 (%)	Liquid Limit	Plasticity Index (NP=NonPlastic)	Additional Tests/ Remarks

The exploration was terminated at approximately 3.2 m. below ground surface. The exploration was backfilled with auger cuttings and asphalt patch on October 09, 2014.

GROUNDWATER LEVEL INFORMATION:
Groundwater was not encountered during drilling or after completion.
GENERAL NOTES:
Coordinates obtained from WHPacific N15 Alignment CAD file; Surface elevation provided by WHPacific.

Allwyn ENVIRONMENTAL

PROJECT NO.:	20151221
DRAWN BY:	PD
CHECKED BY:	MJM
DATE:	12/5/2014
REVISED:	12/17/2014

BORING LOG B-22

BIA N15(2-3)(3-1)(4-1)2&4
GREASEWOOD TO BURNSIDE, ARIZONA

PLATE

B-22

gINT FILE: PROJECTWISE: 20151221_n1520151221.gpj
gINT TEMPLATE: PROJECTWISE: KLF_STANDARD_GINT_LIBRARY_2014.GLB [KLF_BORING/TEST PIT SOIL LOG]

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BORING LOG B-23

Date Begin - End:	10/09/2014 - 10/09/2014	**Drilling Company:**	Enviro-Drill		
Logged By:	M. Cote	**Drill Crew:**	Ed & Juan		
Hor.-Vert. Datum:	NAD83	**Drilling Equipment:**	CME-75	**Hammer Type - Drop:**	63.5 kg. Auto - 762 mm.
Plunge:	-90 degrees	**Drilling Method:**	Hollow Stem Auger		
Weather:	partly cloudy	**Exploration Diameter:**	184 mm. O.D.		

FIELD EXPLORATION

Northing: 505,091.86 (m)
Easting: 243,854.78 (m)
Ground Surface Elevation (m.): 1,820.0
Location Offset: Sta. 4+400/1.83m Rt CL
Surface Condition: Asphalt

Elevation (meters)	Depth (meters)	Graphical Log	Lithologic Description	Sample Type	Blow Counts(BC)= Uncorr. Blows/152 mm. Pocket Pen(PP)= T/m²	Recovery (NR=No Recovery)	AASHTO Symbol	Water Content (%)	Dry Unit Wt. (pcf)	Passing #4 (%)	Passing #200 (%)	Liquid Limit	Plasticity Index (NP=NonPlastic)	Additional Tests/ Remarks
			Field engineer measured 0.13m asphalt											
			Field engineer measured 0.10m base course											
			Poorly-Graded SAND with Clay (SP-SC): fine grained, medium plasticity, brown, moist, loose		BC=3 5 3	356 mm	A-2-6(0)	10.6		97	9.1	30	16	
1819	1		Low plasticity, yellowish brown, trace moderately cemented white sandstone fragments and caliche nodules from 1.76m bgs		BC=4 4 3	229 mm								
1818	2		reddish brown, very loose, trace rootlets from 1.83m bgs		BC=2 1 2	279 mm								
1817	3		Loose, trace white moderately cemented caliche nodules and sandstone fragments at 2.74m bgs		BC=5 4 5									
1816	4													
1815	5													
1814	6													

The exploration was terminated at approximately 3.2 m. below ground surface. The exploration was backfilled with auger cuttings and asphalt patch on October 09, 2014.

GROUNDWATER LEVEL INFORMATION:
Groundwater was not encountered during drilling or after completion.

GENERAL NOTES:
Coordinates obtained from WHPacific N15 Alignment CAD file; Surface elevation provided by WHPacific.

Allwyn ENVIRONMENTAL

PROJECT NO.:	20151221
DRAWN BY:	PD
CHECKED BY:	MJM
DATE:	12/5/2014
REVISED:	12/17/2014

BORING LOG B-23

BIA N15(2-3)(3-1)(4-1)2&4
GREASEWOOD TO BURNSIDE, ARIZONA

PLATE

B-23

PAGE: 1 of 1

gINT FILE: PROJECTWISE: 20151221_n1520151221.gpj
gINT TEMPLATE: PROJECTWISE: KLF_STANDARD_GINT_LIBRARY_2014.GLB [KLF_BORING/TEST PIT SOIL LOG]

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BORING LOG B-24

Date Begin - End:	10/09/2014 - 10/09/2014	**Drilling Company:**	Enviro-Drill		
Logged By:	M. Cote	**Drill Crew:**	Ed & Juan		
Hor.-Vert. Datum:	NAD83	**Drilling Equipment:**	CME-75	**Hammer Type - Drop:**	63.5 kg. Auto - 762 mm.
Plunge:	-90 degrees	**Drilling Method:**	Hollow Stem Auger		
Weather:	partly cloudy	**Exploration Diameter:**	184 mm. O.D.		

FIELD EXPLORATION

Northing: 505,260.88 (m)
Easting: 243,961.75 (m)
Ground Surface Elevation (m.): 1,817.6
Location Offset: Sta. 4+600/1.83m Lt CL
Surface Condition: Asphalt

Elevation (meters)	Depth (meters)	Graphical Log	Lithologic Description	Sample Type	Blow Counts(BC)= Uncorr. Blows/152 mm. Pocket Pen(PP)= T/m²	Recovery (NR=No Recovery)
			Field engineer measured 0.10m asphalt			
			Field engineer measured 0.10m base course			
1817			**Sandy Lean CLAY (CL)**: fine grained, low plasticity, reddish brown, moist, firm to hard, up to 0.02m patches of white moderately cemented caliche		BC=3 4 6	330 mm
	1		**Clayey SAND (SC)**: fine grained, low plasticity, pale olive, dry to moist Reddish yellowish brown from 1.23m bgs			305 mm
1816			White, flat, moderately cemented caliche from 1.83m bgs		BC=3 4 5	457 mm
1815	2					
	3				BC=3 5 4	356 mm
1814	4					
1813	5					
1812	6					

LABORATORY RESULTS

AASHTO Symbol	Water Content (%)	Dry Unit Wt. (pcf)	Passing #4 (%)	Passing #200 (%)	Liquid Limit	Plasticity Index (NP=NonPlastic)	Additional Tests/ Remarks

The exploration was terminated at approximately 3.2 m. below ground surface. The exploration was backfilled with auger cuttings and asphalt patch on October 09, 2014.

GROUNDWATER LEVEL INFORMATION:
Groundwater was not encountered during drilling or after completion.
GENERAL NOTES:
Coordinates obtained from WHPacific N15 Alignment CAD file; Surface elevation provided by WHPacific.

Allwyn ENVIRONMENTAL

PROJECT NO.:	20151221
DRAWN BY:	PD
CHECKED BY:	MJM
DATE:	12/5/2014
REVISED:	12/17/2014

BORING LOG B-24

BIA N15(2-3)(3-1)(4-1)2&4
GREASEWOOD TO BURNSIDE, ARIZONA

PLATE

B-24

PAGE: 1 of 1

gINT FILE: PROJECTWISE: 20151221_n1520151221.gpj
gINT TEMPLATE: PROJECTWISE: KLF_STANDARD_GINT_LIBRARY_2014.GLB [KLF_BORING/TEST PIT SOIL LOG]

Date Begin - End:	10/09/2014 - 10/09/2014	**Drilling Company:**	Enviro-Drill	**BORING LOG B-25**	
Logged By:	M. Cote	**Drill Crew:**	Ed & Juan		
Hor.-Vert. Datum:	NAD83	**Drilling Equipment:**	CME-75	**Hammer Type - Drop:**	63.5 kg. Auto - 762 mm.
Plunge:	-90 degrees	**Drilling Method:**	Hollow Stem Auger		
Weather:	partly cloudy, breezy	**Exploration Diameter:**	184 mm. O.D.		

Northing: 505,426.76 (m)
Easting: 244,073.51 (m)
Ground Surface Elevation (m.): 1,816.6
Location Offset: Sta. 4+800/1.83m Rt CL
Surface Condition: Asphalt

Elevation (meters)	Depth (meters)	Graphical Log	Lithologic Description	Sample Type	Blow Counts(BC)= Uncorr. Blows/152 mm. Pocket Pen(PP)= T/m²	Recovery (NR=No Recovery)	AASHTO Symbol	Water Content (%)	Dry Unit Wt. (pcf)	Passing #4 (%)	Passing #200 (%)	Liquid Limit	Plasticity Index (NP=NonPlastic)	Additional Tests/ Remarks
			Field engineer measured 0.13m asphalt											
			Field engineer measured 0.10m base course											
1816			**Poorly-graded SAND with Clay (SP-SC)**: fine grained, low to medium plasticity, brown to reddish brown, moist, very loose to loose, trace white caliche		BC=3 2 3	356 mm								
	1				BC=2 2 1	NR								
1815														
	2				BC=2 1 1	406 mm	A-2-7(0)	14.0		99	7.3	41	25	
1814			**Poorly-graded SAND (SP)**: fine grained, yellowish brown, moist, very loose, trace rootlets											
	3		**Clayey SAND (SC)**: fine grained, low to medium plasticity, reddish brown, moist, loose		BC=3 3 4	254 mm								
1813			**Poorly-graded SAND (SP)**: pale olive, moist, loose, weakly cemented											
	4													
1812														
	5													
1811														
	6													

The exploration was terminated at approximately 3.2 m. below ground surface. The exploration was backfilled with auger cuttings and asphalt patch on October 09, 2014.

GROUNDWATER LEVEL INFORMATION:
Groundwater was not encountered during drilling or after completion.
GENERAL NOTES:
Coordinates obtained from WHPacific N15 Alignment CAD file; Surface elevation provided by WHPacific.

Allwyn ENVIRONMENTAL

PROJECT NO.:	20151221
DRAWN BY:	PD
CHECKED BY:	MJM
DATE:	12/5/2014
REVISED:	12/17/2014

BORING LOG B-25

BIA N15(2-3)(3-1)(4-1)2&4
GREASEWOOD TO BURNSIDE, ARIZONA

PLATE
B-25
PAGE: 1 of 1

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gINT FILE: PROJECTWISE: 20151221_n1520151221.gpj
gINT TEMPLATE: PROJECTWISE: KLF_STANDARD_GINT_LIBRARY_2014.GLB [KLF_BORING/TEST PIT SOIL LOG]

Date Begin - End:	10/09/2014 - 10/09/2014	**Drilling Company:**	Enviro-Drill	**BORING LOG B-26**	
Logged By:	M. Cote	**Drill Crew:**	Ed & Juan		
Hor.-Vert. Datum:	NAD83	**Drilling Equipment:**	CME-75	**Hammer Type - Drop:**	63.5 kg. Auto - 762 mm.
Plunge:	-90 degrees	**Drilling Method:**	Hollow Stem Auger		
Weather:	partly cloudy	**Exploration Diameter:**	184 mm. O.D.		

Northing: 505,595.69 (m)
Easting: 244,180.62 (m)
Ground Surface Elevation (m.): 1,815.7
Location Offset: Sta. 5+000/1.83m Lt CL
Surface Condition: Asphalt

Elevation (meters)	Depth (meters)	Graphical Log	Lithologic Description	Sample Type	Blow Counts(BC)= Uncorr. Blows/152 mm. Pocket Pen(PP)= T/m²	Recovery (NR=No Recovery)	AASHTO Symbol	Water Content (%)	Dry Unit Wt. (pcf)	Passing #4 (%)	Passing #200 (%)	Liquid Limit	Plasticity Index (NP=NonPlastic)	Additional Tests/ Remarks
			Field engineer measured 0.10m asphalt											
			Field engineer measured 0.10m base course											
1815			**Clayey SAND (SC)**: fine grained, low plasticity, brown, moist, medium dense		BC=2 4 8 PP=4.5	330 mm	A-6(3)	9.0		91	38	36	22	**R-Value=** 21 Bulk sample obtained from depth of 0.3 to 1.52m bgs
	1		**Poorly-graded SAND (SP)**: fine grained, yellowish brown, dry to moist, loose, trace white moderately cemented caliche		BC=3 3 3	254 mm								
1814														
	2		**Clayey SAND (SC)**: fine grained, reddish brown, dry to moist, medium dense, moderately cemented		BC=3 5 6	203 mm								
1813			Yellowish reddish brown, weakly cemented, slight decrease in fines below 2.74m bgs		BC=3 6 6	381 mm								
	3													
1812	4													
1811	5													
1810	6													

The exploration was terminated at approximately 3.2 m. below ground surface. The exploration was backfilled with auger cuttings and asphalt patch on October 09, 2014.

GROUNDWATER LEVEL INFORMATION:
Groundwater was not encountered during drilling or after completion.
GENERAL NOTES:
Coordinates obtained from WHPacific N15 Alignment CAD file; Surface elevation provided by WHPacific.

Allwyn ENVIRONMENTAL

PROJECT NO.:	20151221
DRAWN BY:	PD
CHECKED BY:	MJM
DATE:	12/5/2014
REVISED:	12/17/2014

BORING LOG B-26

BIA N15(2-3)(3-1)(4-1)2&4
GREASEWOOD TO BURNSIDE, ARIZONA

PLATE
B-26
PAGE: 1 of 1

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gINT FILE: PROJECTWISE: 20151221_n1520151221.gpj
gINT TEMPLATE: PROJECTWISE: KLF_STANDARD_GINT_LIBRARY_2014.GLB [KLF_BORING/TEST PIT SOIL LOG]

PLOTTED: 07/07/2015 02:00 PM BY: clbeck

BORING LOG B-27

Date Begin - End:	10/09/2014 - 10/09/2014	**Drilling Company:**	Enviro-Drill		
Logged By:	M. Cote	**Drill Crew:**	Ed & Juan		
Hor.-Vert. Datum:	NAD83	**Drilling Equipment:**	CME-75	**Hammer Type - Drop:**	63.5 kg. Auto - 762 mm.
Plunge:	-90 degrees	**Drilling Method:**	Hollow Stem Auger		
Weather:	partly cloudy	**Exploration Diameter:**	184 mm. O.D.		

FIELD EXPLORATION

Northing: 505,761.34 (m)
Easting: 244,292.73 (m)
Ground Surface Elevation (m.): 1,815.4
Location Offset: Sta. 5+200/1.83m Rt CL
Surface Condition: Asphalt

Elevation (meters)	Depth (meters)	Graphical Log	Lithologic Description	Sample Type	Blow Counts(BC)= Uncorr. Blows/152 mm. Pocket Pen(PP)= T/m²	Recovery (NR=No Recovery)	AASHTO Symbol	Water Content (%)	Dry Unit Wt. (pcf)	Passing #4 (%)	Passing #200 (%)	Liquid Limit	Plasticity Index (NP=NonPlastic)	Additional Tests/ Remarks
			Field engineer measured 0.13m asphalt											
			Field engineer measured 0.13m base course											
1815			**Poorly-Graded SAND with Clay (SP-SC)**: fine grained, low to medium plasticity, brown, moist, medium dense, trace white small caliche patches		BC=4 5 6	457 mm								
	1				BC=3 4 6 PP=>4.5	356 mm	A-2-6(0)	12.0		100	6.5	34	20	
1814														
	2		**Poorly-graded SAND (SP)**: fine grained, yellowish brown, moist, loose, trace white caliche, trace clay		BC=3 2 2	381 mm								
1813														
	3		Laminated, weakly cemented below 2.74m bgs		BC=4 3 4									
1812			The exploration was terminated at approximately 3.2 m. below ground surface. The exploration was backfilled with auger cuttings and asphalt patch on October 09, 2014.											
	4													
1811														
	5													
1810														
	6													

GROUNDWATER LEVEL INFORMATION:
Groundwater was not encountered during drilling or after completion.

GENERAL NOTES:
Coordinates obtained from WHPacific N15 Alignment CAD file; Surface elevation provided by WHPacific.

Allwyn ENVIRONMENTAL

PROJECT NO.:	20151221
DRAWN BY:	PD
CHECKED BY:	MJM
DATE:	12/5/2014
REVISED:	12/17/2014

BORING LOG B-27

BIA N15(2-3)(3-1)(4-1)2&4
GREASEWOOD TO BURNSIDE, ARIZONA

PLATE

B-27

gINT FILE: PROJECTWISE: 20151221_n1520151221.gpj
gINT TEMPLATE: PROJECTWISE: KLF_STANDARD_GINT_LIBRARY_2014.GLB [KLF_BORING/TEST PIT SOIL LOG]

PLOTTED: 07/07/2015 02:00 PM BY: clbeck

BORING LOG B-28

Date Begin - End:	10/09/2014 - 10/09/2014	**Drilling Company:**	Enviro-Drill		
Logged By:	M. Cote	**Drill Crew:**	Ed & Juan		
Hor.-Vert. Datum:	NAD83	**Drilling Equipment:**	CME-75	**Hammer Type - Drop:**	63.5 kg. Auto - 762 mm.
Plunge:	-90 degrees	**Drilling Method:**	Hollow Stem Auger		
Weather:	cloudy, windy	**Exploration Diameter:**	184 mm. O.D.		

FIELD EXPLORATION

Northing: 505,930.47 (m)
Easting: 244,399.53 (m)
Ground Surface Elevation (m.): 1,816.6
Location Offset: Sta. 5+400/1.83m Lt CL
Surface Condition: Asphalt

Elevation (meters)	Depth (meters)	Graphical Log	Lithologic Description	Sample Type	Blow Counts(BC)= Uncorr. Blows/152 mm. Pocket Pen(PP)= T/m²	Recovery (NR=No Recovery)	Additional Tests/ Remarks
			Field engineer measured 0.15m asphalt				
			Field engineer measured 0.10m base course				
1816			**Clayey SAND (SC)**: fine grained, low to medium plasticity, yellowish brown, moist, very loose to loose, few pale olive patches		BC=3 2 2	457 mm	
	1				BC=1 1 1	NR	Driller noted piece of asphalt stuck in sampler, no recovery at 0.91m bgs
1815							
	2		**Poorly-graded SAND with Clay (SP-SC)**: fine grained, low plasticity, yellowish brown, moist, very loose		BC=2 2 2	356 mm	
1814							
	3		Few pale olive patches below 2.74m bgs		BC=2 1 1	406 mm	
1813							
	4						
1812							
	5						
1811							
	6						

LABORATORY RESULTS

AASHTO Symbol	Water Content (%)	Dry Unit Wt. (pcf)	Passing #4 (%)	Passing #200 (%)	Liquid Limit	Plasticity Index (NP=NonPlastic)

The exploration was terminated at approximately 3.2 m. below ground surface. The exploration was backfilled with auger cuttings and asphalt patch on October 09, 2014.

GROUNDWATER LEVEL INFORMATION:
Groundwater was not encountered during drilling or after completion.

GENERAL NOTES:
Coordinates obtained from WHPacific N15 Alignment CAD file; Surface elevation provided by WHPacific.

Allwyn ENVIRONMENTAL

PROJECT NO.:	20151221
DRAWN BY:	PD
CHECKED BY:	MJM
DATE:	12/5/2014
REVISED:	12/17/2014

BORING LOG B-28

BIA N15(2-3)(3-1)(4-1)2&4
GREASEWOOD TO BURNSIDE, ARIZONA

PLATE

B-28

gINT FILE: PROJECTWISE: 20151221_n1520151221.gpj
gINT TEMPLATE: PROJECTWISE: KLF_STANDARD_GINT_LIBRARY_2014.GLB [KLF_BORING/TEST PIT SOIL LOG]

PLOTTED: 07/07/2015 02:00 PM BY: clbeck

BORING LOG B-29

Date Begin - End:	10/09/2014 - 10/09/2014	**Drilling Company:**	Enviro-Drill		
Logged By:	M. Cote	**Drill Crew:**	Ed & Juan		
Hor.-Vert. Datum:	NAD83	**Drilling Equipment:**	CME-75	**Hammer Type - Drop:**	63.5 kg. Auto - 762 mm.
Plunge:	-90 degrees	**Drilling Method:**	Hollow Stem Auger		
Weather:	partly cloudy	**Exploration Diameter:**	184 mm. O.D.		

FIELD EXPLORATION

Northing: 506,096.16 (m)
Easting: 244,511.57 (m)
Ground Surface Elevation (m.): 1,816.0
Location Offset: Sta. 5+600/1.83m Rt CL
Surface Condition: Asphalt

Elevation (meters)	Depth (meters)	Graphical Log	Lithologic Description	Sample Type	Blow Counts(BC)= Uncorr. Blows/152 mm. Pocket Pen(PP)= T/m²	Recovery (NR=No Recovery)	AASHTO Symbol	Water Content (%)	Dry Unit Wt. (pcf)	Passing #4 (%)	Passing #200 (%)	Liquid Limit	Plasticity Index (NP=NonPlastic)	Additional Tests/ Remarks
			Field engineer measured 0.13m asphalt											
			Field engineer measured 0.13m base course											
			Poorly-Graded SAND with Clay (SP-SC): fine grained, medium plasticity, brown, moist, loose		BC=3 2 4 PP=3.0	305 mm	A-2-6(0)	17.4		100	8.0	31	18	
1815	1		Decreas in clay content below 0.91m bgs		BC=2 2 4	254 mm								
1814	2		**Clayey SAND (SC)**: fine grained, low plasticity, yellowish brown with pale olive patches, moist, loose		BC=3 2 4	305 mm								
1813	3		**Poorly-graded SAND with Clay (SP-SC)**: low plasticity, yellowish brown, moist, loose, seam of well defined black gravel at 2.90m bgs		BC=3 4 3	356 mm								
1812	4													
1811	5													
1810	6													

The exploration was terminated at approximately 3.2 m. below ground surface. The exploration was backfilled with auger cuttings and asphalt patch on October 09, 2014.

GROUNDWATER LEVEL INFORMATION:
Groundwater was not encountered during drilling or after completion.

GENERAL NOTES:
Coordinates obtained from WHPacific N15 Alignment CAD file; Surface elevation provided by WHPacific.

Allwyn ENVIRONMENTAL

PROJECT NO.:	20151221
DRAWN BY:	PD
CHECKED BY:	MJM
DATE:	12/5/2014
REVISED:	12/17/2014

BORING LOG B-29

BIA N15(2-3)(3-1)(4-1)2&4
GREASEWOOD TO BURNSIDE, ARIZONA

PLATE

B-29

PAGE: 1 of 1

gINT FILE: PROJECTWISE: 20151221_n1520151221.gpj
gINT TEMPLATE: PROJECTWISE: KLF_STANDARD_GINT_LIBRARY_2014.GLB [KLF_BORING/TEST PIT SOIL LOG]

PLOTTED: 07/07/2015 02:00 PM BY: clbeck

BORING LOG B-30

Date Begin - End:	10/09/2014 - 10/09/2014	**Drilling Company:**	Enviro-Drill		
Logged By:	M. Cote	**Drill Crew:**	Ed & Juan		
Hor.-Vert. Datum:	NAD83	**Drilling Equipment:**	CME-75	**Hammer Type - Drop:**	63.5 kg. Auto - 762 mm.
Plunge:	-90 degrees	**Drilling Method:**	Hollow Stem Auger		
Weather:	cloudy, windy	**Exploration Diameter:**	184 mm. O.D.		

FIELD EXPLORATION

Northing: 506,265.29 (m)
Easting: 244,618.37 (m)
Ground Surface Elevation (m.): 1,817.3
Location Offset: Sta. 5+800/1.83m Lt CL
Surface Condition: Asphalt

Elevation (meters)	Depth (meters)	Graphical Log	Lithologic Description	Sample Type	Blow Counts(BC)= Uncorr. Blows/152 mm. Pocket Pen(PP)= T/m²	Recovery (NR=No Recovery)	AASHTO Symbol	Water Content (%)	Dry Unit Wt. (pcf)	Passing #4 (%)	Passing #200 (%)	Liquid Limit	Plasticity Index (NP=NonPlastic)	Additional Tests/ Remarks
			Field engineer measured 0.13m asphalt											
			Field engineer measured 0.10m base course											
1817			**Clayey SAND with Gravel (SC)**: fine grained, medium plasticity, brown with distinct ight brownish gray patch, moist, firm to hard		BC=3 2 4	279 mm		13.9						
			Clayey SAND (SC): fine grained, low plasticity, yellowish brown, dry to moist, loose											
	1				BC=2 3 1	305 mm	A-2-6(0)			100	35	25	12	
1816														
			Distinct pale olive patches below 1.83m bgs		BC=3 4 4	203 mm								
	2													
1815														
					BC=3 3 2	381 mm								
	3													
1814														
	4													
1813														
	5													
1812														
	6													

The exploration was terminated at approximately 3.2 m. below ground surface. The exploration was backfilled with auger cuttings and asphalt patch on October 09, 2014.

GROUNDWATER LEVEL INFORMATION:
Groundwater was not encountered during drilling or after completion.

GENERAL NOTES:
Coordinates obtained from WHPacific N15 Alignment CAD file; Surface elevation provided by WHPacific.

Allwyn ENVIRONMENTAL

PROJECT NO.:	20151221
DRAWN BY:	PD
CHECKED BY:	MJM
DATE:	12/5/2014
REVISED:	12/17/2014

BORING LOG B-30

BIA N15(2-3)(3-1)(4-1)2&4
GREASEWOOD TO BURNSIDE, ARIZONA

PLATE

B-30

PAGE: 1 of 1

gINT FILE: PROJECTWISE: 20151221_n1520151221.gpj
gINT TEMPLATE: PROJECTWISE: KLF_STANDARD_GINT_LIBRARY_2014.GLB [KLF_BORING/TEST PIT SOIL LOG]

PLOTTED: 07/07/2015 02:00 PM BY: clbeck

BORING LOG B-31

Date Begin - End:	10/10/2014 - 10/10/2014	**Drilling Company:**	Enviro-Drill		
Logged By:	M. Cote	**Drill Crew:**	Ed & Juan		
Hor.-Vert. Datum:	NAD83	**Drilling Equipment:**	CME-75	**Hammer Type - Drop:**	63.5 kg. Auto - 762 mm.
Plunge:	-90 degrees	**Drilling Method:**	Hollow Stem Auger		
Weather:	partly cloudy	**Exploration Diameter:**	184 mm. O.D.		

FIELD EXPLORATION

Northing: 506,430.9 (m)
Easting: 244,730.56 (m)
Ground Surface Elevation (m.): 1,818.9
Location Offset: Sta. 6+000/1.83m Rt CL
Surface Condition: Asphalt

Elevation (meters)	Depth (meters)	Graphical Log	Lithologic Description	Sample Type	Blow Counts(BC)= Uncorr. Blows/152 mm. Pocket Pen(PP)= T/m²	Recovery (NR=No Recovery)	AASHTO Symbol	Water Content (%)	Dry Unit Wt. (pcf)	Passing #4 (%)	Passing #200 (%)	Liquid Limit	Plasticity Index (NP=NonPlastic)	Additional Tests/ Remarks
			Field engineer measured 0.13m asphalt											
			Field engineer measured 0.10m base course											
			Clayey SAND (SC): fine to medium grained, low to medium plasticity, brown to reddish brown, moist, medium dense		BC=3 6 6 PP=>4.5	330 mm	A-6(3)	10.3		90	38	34	19	**R-Value=** 16 Bulk sample obtained from depth of 0.3 to 1.52m bgs
1818	1		**Poorly-graded SAND with Clay (SP-SC)**: fine grained, low plasticity, reddish yellowish brown, dry, loose, weakly cemented		BC=5 4 4	356 mm								
1817	2		Trace pale olive and white patches below 1.83m bgs		BC=3 3 3	229 mm								
1816	3		Slightly moist below 2.74m bgs		BC=1 2 2	432 mm								
1815	4													
1814	5													
1813	6													

The exploration was terminated at approximately 3.2 m. below ground surface. The exploration was backfilled with auger cuttings and asphalt patch on October 10, 2014.

GROUNDWATER LEVEL INFORMATION:
Groundwater was not encountered during drilling or after completion.
GENERAL NOTES:
Coordinates obtained from WHPacific N15 Alignment CAD file; Surface elevation provided by WHPacific.

Allwyn ENVIRONMENTAL

PROJECT NO.:	20151221
DRAWN BY:	PD
CHECKED BY:	MJM
DATE:	12/5/2014
REVISED:	12/17/2014

BORING LOG B-31

BIA N15(2-3)(3-1)(4-1)2&4
GREASEWOOD TO BURNSIDE, ARIZONA

PLATE

B-31

PAGE: 1 of 1

gINT FILE: PROJECTWISE: 20151221_n1520151221.gpj
gINT TEMPLATE: PROJECTWISE: KLF_STANDARD_GINT_LIBRARY_2014.GLB [KLF_BORING/TEST PIT SOIL LOG]

PLOTTED: 07/07/2015 02:00 PM BY: clbeck

BORING LOG B-32

Date Begin - End:	10/10/2014 - 10/10/2014	**Drilling Company:**	Enviro-Drill		
Logged By:	M. Cote	**Drill Crew:**	Ed & Juan		
Hor.-Vert. Datum:	NAD83	**Drilling Equipment:**	CME-75	**Hammer Type - Drop:**	63.5 kg. Auto - 762 mm.
Plunge:	-90 degrees	**Drilling Method:**	Hollow Stem Auger		
Weather:	sunny	**Exploration Diameter:**	184 mm. O.D.		

FIELD EXPLORATION

Northing: 506,600.11 (m)
Easting: 244,837.23 (m)
Ground Surface Elevation (m.): 1,821.6
Location Offset: Sta. 6+200/1.83m Lt CL
Surface Condition: Asphalt

Elevation (meters)	Depth (meters)	Graphical Log	Lithologic Description	Sample Type	Blow Counts(BC)= Uncorr. Blows/152 mm. Pocket Pen(PP)= T/m²	Recovery (NR=No Recovery)
			Field engineer measured 0.10m asphalt			
			Field engineer measured 0.13m base course			
1821			**Poorly-graded SAND with Clay (SP-SC)**: fine grained, reddish yellowish brown, moist, loose, trace moderately cemented sandstone fragments		BC=7 4 4	330 mm
	1		**Poorly-graded SAND (SP)**: fine to medium grained, reddish yellowish brown, moist, loose, trace moderately cemented white sandstone fragments		BC=2 2 3	330 mm
1820						
	2		Fine sand below 1.83m bgs		BC=2 3 3	305 mm
1819						
	3		**Sandy Lean CLAY (CL)**: fine grained, low plasticity, reddish brown with specks of white, dry, soft		BC=2 2 2	254 mm
1818						
	4					
1817						
	5					
1816						
	6					

LABORATORY RESULTS

AASHTO Symbol	Water Content (%)	Dry Unit Wt. (pcf)	Passing #4 (%)	Passing #200 (%)	Liquid Limit	Plasticity Index (NP=NonPlastic)	Additional Tests/ Remarks

The exploration was terminated at approximately 3.2 m. below ground surface. The exploration was backfilled with auger cuttings and asphalt patch on October 10, 2014.

GROUNDWATER LEVEL INFORMATION:
Groundwater was not encountered during drilling or after completion.

GENERAL NOTES:
Coordinates obtained from WHPacific N15 Alignment CAD file; Surface elevation provided by WHPacific.

Allwyn ENVIRONMENTAL

PROJECT NO.:	20151221
DRAWN BY:	PD
CHECKED BY:	MJM
DATE:	12/5/2014
REVISED:	12/17/2014

BORING LOG B-32

BIA N15(2-3)(3-1)(4-1)2&4
GREASEWOOD TO BURNSIDE, ARIZONA

PLATE

B-32

gINT FILE: PROJECTWISE: 20151221_n1520151221.gpj
gINT TEMPLATE: PROJECTWISE: KLF_STANDARD_GINT_LIBRARY_2014.GLB [KLF_BORING/TEST PIT SOIL LOG]

PLOTTED: 07/07/2015 02:00 PM BY: clbeck

BORING LOG B-33

Date Begin - End:	10/10/2014 - 10/10/2014	**Drilling Company:**	Enviro-Drill		
Logged By:	M. Cote	**Drill Crew:**	Ed & Juan		
Hor.-Vert. Datum:	NAD83	**Drilling Equipment:**	CME-75	**Hammer Type - Drop:**	63.5 kg. Auto - 762 mm.
Plunge:	-90 degrees	**Drilling Method:**	Hollow Stem Auger		
Weather:	sunny	**Exploration Diameter:**	184 mm. O.D.		

FIELD EXPLORATION

Northing: 506,761.05 (m)
Easting: 244,955.34 (m)
Ground Surface Elevation (m.): 1,824.4
Location Offset: Sta. 6+400/1.83m Rt CL
Surface Condition: Asphalt

Elevation (meters)	Depth (meters)	Graphical Log	Lithologic Description	Sample Type	Blow Counts(BC)= Uncorr. Blows/152 mm. Pocket Pen(PP)= T/m²	Recovery (NR=No Recovery)	AASHTO Symbol	Water Content (%)	Dry Unit Wt. (pcf)	Passing #4 (%)	Passing #200 (%)	Liquid Limit	Plasticity Index (NP=NonPlastic)	Additional Tests/ Remarks
			Field engineer measured 0.13m asphalt											
			Field engineer measured 0.10m base course											
1824			**Clayey SAND (SC)**: low plasticity, brown to reddish brown, moist, medium dense, some olive gray patches, trace moderately cemented sandstone fragments		BC=3 4 10	406 mm	A-6(1)			97	36	28	12	
	1		**Poorly-graded SAND with Clay (SP-SC)**: fine grained, low plasticity, yellowish brown, dry to moist, loose		BC=4 5 5	381 mm		12.3						
1823			**Poorly-graded SAND (SP)**: fine grained, reddish yellow, dry, loose, trace clay seams											
	2				BC=2 2 2	279 mm								
1822														
	3				BC=2 2 2	457 mm								
1821														
	4													
1820														
	5													
1819														
	6													

The exploration was terminated at approximately 3.2 m. below ground surface. The exploration was backfilled with auger cuttings and asphalt patch on October 10, 2014.

GROUNDWATER LEVEL INFORMATION:
Groundwater was not encountered during drilling or after completion.

GENERAL NOTES:
Coordinates obtained from WHPacific N15 Alignment CAD file; Surface elevation provided by WHPacific.

Allwyn ENVIRONMENTAL

PROJECT NO.:	20151221
DRAWN BY:	PD
CHECKED BY:	MJM
DATE:	12/5/2014
REVISED:	12/17/2014

BORING LOG B-33

BIA N15(2-3)(3-1)(4-1)2&4
GREASEWOOD TO BURNSIDE, ARIZONA

PLATE

B-33

PAGE: 1 of 1

gINT FILE: PROJECTWISE: 20151221_n1520151221.gpj
gINT TEMPLATE: PROJECTWISE: KLF_STANDARD_GINT_LIBRARY_2014.GLB [KLF_BORING/TEST PIT SOIL LOG]

PLOTTED: 07/07/2015 02:00 PM BY: clbeck

BORING LOG B-34

Date Begin - End:	10/10/2014 - 10/10/2014	**Drilling Company:**	Enviro-Drill		
Logged By:	M. Cote	**Drill Crew:**	Ed & Juan		
Hor.-Vert. Datum:	NAD83	**Drilling Equipment:**	CME-75	**Hammer Type - Drop:**	63.5 kg. Auto - 762 mm.
Plunge:	-90 degrees	**Drilling Method:**	Hollow Stem Auger		
Weather:	sunny, breezy	**Exploration Diameter:**	184 mm. O.D.		

FIELD EXPLORATION

Northing: 506,885.66 (m)
Easting: 245,110.62 (m)
Ground Surface Elevation (m.): 1,824.6
Location Offset: Sta. 6+600/1.83m Lt CL
Surface Condition: Asphalt

Elevation (meters)	Depth (meters)	Graphical Log	Lithologic Description	Sample Type	Blow Counts(BC)= Uncorr. Blows/152 mm. Pocket Pen(PP)= T/m²	Recovery (NR=No Recovery)
			Field engineer measured 0.10m asphalt			
			Field engineer measured 0.13m base course			
1824			**Clayey SAND (SC)**: fine grained, low plasticity, brown, moist, loose, with seams of medium grained sand		BC=3 2 2	279 mm
	1		**Poorly-graded SAND with Clay (SP-SC)**: fine grained, low plasticity, yellowish brown, moist, loose, trace moderately cemented white to pink sandstone gravel Seams of well-graded, fine to coarse sand from 1.23m to 2.44m bgs		BC=2 2 3	254 mm
1823						
	2				BC=1 2 1	305 mm
1822						
	3		**Poorly-graded SAND (SP)**: fine to medium grained, yellowish brown, moist, loose		BC=1 1 1	330 mm
1821						
	4					
1820						
	5					
1819						
	6					

LABORATORY RESULTS

AASHTO Symbol	Water Content (%)	Dry Unit Wt. (pcf)	Passing #4 (%)	Passing #200 (%)	Liquid Limit	Plasticity Index (NP=NonPlastic)	Additional Tests/ Remarks

The exploration was terminated at approximately 3.2 m. below ground surface. The exploration was backfilled with auger cuttings and asphalt patch on October 10, 2014.

GROUNDWATER LEVEL INFORMATION:
Groundwater was not encountered during drilling or after completion.

GENERAL NOTES:
Coordinates obtained from WHPacific N15 Alignment CAD file; Surface elevation provided by WHPacific.

Allwyn ENVIRONMENTAL

PROJECT NO.:	20151221
DRAWN BY:	PD
CHECKED BY:	MJM
DATE:	12/5/2014
REVISED:	12/17/2014

BORING LOG B-34

BIA N15(2-3)(3-1)(4-1)2&4
GREASEWOOD TO BURNSIDE, ARIZONA

PLATE

B-34

PAGE: 1 of 1

gINT FILE: PROJECTWISE: 20151221_n1520151221.gpj
gINT TEMPLATE: PROJECTWISE: KLF_STANDARD_GINT_LIBRARY_2014.GLB [KLF_BORING/TEST PIT SOIL LOG]

PLOTTED: 07/07/2015 02:01 PM BY: clbeck

BORING LOG B-35

Date Begin - End:	10/10/2014 - 10/10/2014	**Drilling Company:**	Enviro-Drill		
Logged By:	M. Cote	**Drill Crew:**	Ed & Juan		
Hor.-Vert. Datum:	NAD83	**Drilling Equipment:**	CME-75	**Hammer Type - Drop:**	63.5 kg. Auto - 762 mm.
Plunge:	-90 degrees	**Drilling Method:**	Hollow Stem Auger		
Weather:	sunny	**Exploration Diameter:**	184 mm. O.D.		

FIELD EXPLORATION

Northing: 506,975.43 (m)
Easting: 245,289.39 (m)
Ground Surface Elevation (m.): 1,822.9
Location Offset: Sta. 6+800/1.83m Rt CL
Surface Condition: Asphalt

Elevation (meters)	Depth (meters)	Graphical Log	Lithologic Description	Sample Type	Blow Counts(BC)= Uncorr. Blows/152 mm. Pocket Pen(PP)= T/m²	Recovery (NR=No Recovery)
			Field engineer measured 0.13m asphalt			
			Field engineer measured 0.13m base course			
			Clayey SAND (SC): fine to medium grained, low plasticity, brown, moist, loose		BC=3 4 6	406 mm
1822	1		**Poorly-graded SAND (SP)**: fine grained, yellowish brown, dry, loose, weakly cemented, some white patches, trace clay seams		BC=2 2 3	254 mm
1821	2		Trace white, moderately cemented patches, possible caliche below 1.83m bgs		BC=2 3 2	457 mm
1820	3		Moderately cemented white sandstone, slightly moist below 2.74m bgs		BC=2 3 2	432 mm
1819	4					
1818	5					
1817	6					

LABORATORY RESULTS

AASHTO Symbol	Water Content (%)	Dry Unit Wt. (pcf)	Passing #4 (%)	Passing #200 (%)	Liquid Limit	Plasticity Index (NP=NonPlastic)	Additional Tests/ Remarks

The exploration was terminated at approximately 3.2 m. below ground surface. The exploration was backfilled with auger cuttings and asphalt patch on October 10, 2014.

GROUNDWATER LEVEL INFORMATION:
Groundwater was not encountered during drilling or after completion.
GENERAL NOTES:
Coordinates obtained from WHPacific N15 Alignment CAD file; Surface elevation provided by WHPacific.

Allwyn ENVIRONMENTAL

PROJECT NO.:	20151221
DRAWN BY:	PD
CHECKED BY:	MJM
DATE:	12/5/2014
REVISED:	12/17/2014

BORING LOG B-35

BIA N15(2-3)(3-1)(4-1)2&4
GREASEWOOD TO BURNSIDE, ARIZONA

PLATE

B-35

gINT FILE: PROJECTWISE: 20151221_n1520151221.gpj
gINT TEMPLATE: PROJECTWISE: KLF_STANDARD_GINT_LIBRARY_2014.GLB [KLF_BORING/TEST PIT SOIL LOG]

PLOTTED: 07/07/2015 02:01 PM BY: clbeck

BORING LOG B-36

Date Begin - End:	10/10/2014 - 10/10/2014	**Drilling Company:**	Enviro-Drill		
Logged By:	M. Cote	**Drill Crew:**	Ed & Juan		
Hor.-Vert. Datum:	NAD83	**Drilling Equipment:**	CME-75	**Hammer Type - Drop:**	63.5 kg. Auto - 762 mm.
Plunge:	-90 degrees	**Drilling Method:**	Hollow Stem Auger		
Weather:	sunny, breezy	**Exploration Diameter:**	184 mm. O.D.		

FIELD EXPLORATION

Northing: 507,071.59 (m)
Easting: 245,464.79 (m)
Ground Surface Elevation (m.): 1,824.5
Location Offset: Sta. 7+000/1.83m Lt CL
Surface Condition: Asphalt

Elevation (meters)	Depth (meters)	Graphical Log	Lithologic Description	Sample Type	Blow Counts(BC)= Uncorr. Blows/152 mm. Pocket Pen(PP)= T/m²	Recovery (NR=No Recovery)	AASHTO Symbol	Water Content (%)	Dry Unit Wt. (pcf)	Passing #4 (%)	Passing #200 (%)	Liquid Limit	Plasticity Index (NP=NonPlastic)	Additional Tests/ Remarks
			Field engineer measured 0.13m of asphalt											
			Field engineer measured 0.10m of base course											
1824			**Clayey SAND (SC)**: fine to medium grained, low plasticity, brown, moist, loose		BC=2 2 6	457 mm	A-2-6(1)	15.0		96	26	31	15	**R-Value=** 22 Bulk sample obtained from depth of 0.3 to 1.52m bgs
	1		Up to 0.02m wide trace pieces of weakly to moderately cemented white sandstone below 0.91m bgs		BC=3 3 3	381 mm								
1823														
	2		**Poorly-graded SAND (SP)**: reddish yellowish brown with white specks, dry, loose, trace clay seams		BC=1 2 2	406 mm								
1822														
	3		Abundant white to grayish white to pale olive specks, weakly cemented at 2.74m bgs		BC=2 4 4									
1821														
	4													
1820														
	5													
1819														
	6													

The exploration was terminated at approximately 3.2 m. below ground surface. The exploration was backfilled with auger cuttings and asphalt patch on October 10, 2014.

GROUNDWATER LEVEL INFORMATION:
Groundwater was not encountered during drilling or after completion.
GENERAL NOTES:
Coordinates obtained from WHPacific N15 Alignment CAD file; Surface elevation provided by WHPacific.

Allwyn ENVIRONMENTAL

PROJECT NO.:	20151221
DRAWN BY:	PD
CHECKED BY:	MJM
DATE:	12/5/2014
REVISED:	12/17/2014

BORING LOG B-36

BIA N15(2-3)(3-1)(4-1)2&4
GREASEWOOD TO BURNSIDE, ARIZONA

PLATE

B-36

PAGE: 1 of 1

gINT FILE: PROJECTWISE: 20151221_n1520151221.gpj
gINT TEMPLATE: PROJECTWISE: KLF_STANDARD_GINT_LIBRARY_2014.GLB [KLF_BORING/TEST PIT SOIL LOG]

PLOTTED: 07/07/2015 02:01 PM BY: clbeck

BORING LOG B-37

Date Begin - End:	10/10/2014 - 10/10/2014	**Drilling Company:**	Enviro-Drill		
Logged By:	M. Cote	**Drill Crew:**	Ed & Juan		
Hor.-Vert. Datum:	NAD83	**Drilling Equipment:**	CME-75	**Hammer Type - Drop:**	63.5 kg. Auto - 762 mm.
Plunge:	-90 degrees	**Drilling Method:**	Hollow Stem Auger		
Weather:	sunny	**Exploration Diameter:**	184 mm. O.D.		

FIELD EXPLORATION

Northing: 507,161.19 (m)
Easting: 245,643.64 (m)
Ground Surface Elevation (m.): 1,825.7
Location Offset: Sta. 7+200/1.83m Rt CL
Surface Condition: Asphalt

Elevation (meters)	Depth (meters)	Graphical Log	Lithologic Description	Sample Type	Blow Counts(BC)= Uncorr. Blows/152 mm. Pocket Pen(PP)= T/m²	Recovery (NR=No Recovery)
			Field engineer measured 0.13m asphalt			
			Field engineer measured 0.13m base course			
1825			**Clayey SAND (SC)**: fine to medium grained, low plasticity, reddish yellowish brown, moist, loose, white moderately cemented sandstone fragments		BC=3 3 4	356 mm
	1				BC=3 4 3	NR
1824						
	2		0.10m seam of pale olive, moderately cemented sandstone at 1.83m bgs **Clayey SAND (SC)**: fine to medium grained, low plasticity, yellowish brown, moist, loose		BC=1 2 2	406 mm
1823						
	3		Few, small patches of pale olive below 2.74m bgs		BC=2 2 3	254 mm
1822						
	4					
1821						
	5					
1820						
	6					

LABORATORY RESULTS

AASHTO Symbol	Water Content (%)	Dry Unit Wt. (pcf)	Passing #4 (%)	Passing #200 (%)	Liquid Limit	Plasticity Index (NP=NonPlastic)	Additional Tests/ Remarks

The exploration was terminated at approximately 3.2 m. below ground surface. The exploration was backfilled with auger cuttings and asphalt patch on October 10, 2014.

GROUNDWATER LEVEL INFORMATION:
Groundwater was not encountered during drilling or after completion.
GENERAL NOTES:
Coordinates obtained from WHPacific N15 Alignment CAD file; Surface elevation provided by WHPacific.

Allwyn ENVIRONMENTAL

PROJECT NO.:	20151221
DRAWN BY:	PD
CHECKED BY:	MJM
DATE:	12/5/2014
REVISED:	12/17/2014

BORING LOG B-37

BIA N15(2-3)(3-1)(4-1)2&4
GREASEWOOD TO BURNSIDE, ARIZONA

PLATE

B-37

gINT FILE: PROJECTWISE: 20151221_n1520151221.gpj
gINT TEMPLATE: PROJECTWISE: KLF_STANDARD_GINT_LIBRARY_2014.GLB [KLF_BORING/TEST PIT SOIL LOG]

PLOTTED: 07/07/2015 02:01 PM BY: clbeck

BORING LOG B-38

Date Begin - End:	10/10/2014 - 10/10/2014	**Drilling Company:**	Enviro-Drill		
Logged By:	M. Cote	**Drill Crew:**	Ed & Juan		
Hor.-Vert. Datum:	NAD83	**Drilling Equipment:**	CME-75	**Hammer Type - Drop:**	63.5 kg. Auto - 762 mm.
Plunge:	-90 degrees	**Drilling Method:**	Hollow Stem Auger		
Weather:	partly cloudy	**Exploration Diameter:**	184 mm. O.D.		

FIELD EXPLORATION

Northing: 507,257.34 (m)
Easting: 245,819.05 (m)
Ground Surface Elevation (m.): 1,825.7
Location Offset: Sta. 7+400/1.83m Lt CL
Surface Condition: Asphalt

Elevation (meters)	Depth (meters)	Graphical Log	Lithologic Description	Sample Type	Blow Counts(BC)= Uncorr. Blows/152 mm. Pocket Pen(PP)= T/m²	Recovery (NR=No Recovery)
			Field engineer measured 0.13m asphalt			
			Field engineer measured 0.10m base course			
1825			**Clayey SAND (SC)**: fine grained, brown, moist, loose, trace light grayish brown moderately cemented sandstone fragments		BC=2 4 5 PP=1.0	432 mm
	1		**Poorly-graded SAND with Clay (SP-SC)**: fine grained, yellowish brown, dry to moist, loose, some small white specks		BC=4 5 5	279 mm
1824			**Poorly-graded SAND (SP)**: fine grained, reddish yellowish brown, dry, loose, trace clay seams			
	2				BC=2 2 3	457 mm
1823						
	3		Slightly moist below at 2.74m bgs		BC=2 3 3	406 mm
1822	4					
1821	5					
1820	6					

LABORATORY RESULTS

AASHTO Symbol	Water Content (%)	Dry Unit Wt. (pcf)	Passing #4 (%)	Passing #200 (%)	Liquid Limit	Plasticity Index (NP=NonPlastic)	Additional Tests/ Remarks

The exploration was terminated at approximately 3.2 m. below ground surface. The exploration was backfilled with auger cuttings and asphalt patch on October 10, 2014.

GROUNDWATER LEVEL INFORMATION:
Groundwater was not encountered during drilling or after completion.
GENERAL NOTES:
Coordinates obtained from WHPacific N15 Alignment CAD file; Surface elevation provided by WHPacific.

Allwyn ENVIRONMENTAL

PROJECT NO.:	20151221
DRAWN BY:	PD
CHECKED BY:	MJM
DATE:	12/5/2014
REVISED:	12/17/2014

BORING LOG B-38

BIA N15(2-3)(3-1)(4-1)2&4
GREASEWOOD TO BURNSIDE, ARIZONA

PLATE

B-38

PAGE: 1 of 1

gINT FILE: PROJECTWISE: 20151221_n1520151221.gpj
gINT TEMPLATE: PROJECTWISE: KLF_STANDARD_GINT_LIBRARY_2014.GLB [KLF_BORING/TEST PIT SOIL LOG]

PLOTTED: 07/07/2015 02:01 PM BY: clbeck

BORING LOG B-39

Date Begin - End:	10/10/2014 - 10/10/2014	**Drilling Company:**	Enviro-Drill		
Logged By:	M. Cote	**Drill Crew:**	Ed & Juan		
Hor.-Vert. Datum:	NAD83	**Drilling Equipment:**	CME-75	**Hammer Type - Drop:**	63.5 kg. Auto - 762 mm.
Plunge:	-90 degrees	**Drilling Method:**	Hollow Stem Auger		
Weather:	sunny, breezy	**Exploration Diameter:**	184 mm. O.D.		

FIELD EXPLORATION

Northing: 507,346.9 (m)
Easting: 245,997.91 (m)
Ground Surface Elevation (m.): 1,826.2
Location Offset: Sta. 7+600/1.83m Rt CL
Surface Condition: Asphalt

LABORATORY RESULTS

Elevation (meters)	Depth (meters)	Graphical Log	Lithologic Description	Sample Type	Blow Counts(BC)= Uncorr. Blows/152 mm. Pocket Pen(PP)= T/m²	Recovery (NR=No Recovery)	AASHTO Symbol	Water Content (%)	Dry Unit Wt. (pcf)	Passing #4 (%)	Passing #200 (%)	Liquid Limit	Plasticity Index (NP=NonPlastic)	Additional Tests/ Remarks
1826	0		Field engineer measured 0.13m asphalt											
			Field engineer measured 0.13m base course											
			Poorly-graded SAND with Clay (SP-SC): fine to medium grained, low plasticity, yellowish brown, moist, loose, trace small white sandstone fragments		BC=6 6 3	457 mm								
1825	1		**Poorly-graded SAND (SP)**: fine grained, low plasticity, yellowish brown, moist, loose, trace clay seams		BC=3 2 3	330 mm								
			Trace rootlets at 1.83m bgs		BC=1 2 1	356 mm								
1824	2													
			Moderately cemented sandstone fragments below 2.74m bgs		BC=3 6 7	432 mm								
1823	3													
1822	4													
1821	5													
	6													

The exploration was terminated at approximately 3.2 m. below ground surface. The exploration was backfilled with auger cuttings and asphalt patch on October 10, 2014.

GROUNDWATER LEVEL INFORMATION:
Groundwater was not encountered during drilling or after completion.

GENERAL NOTES:
Coordinates obtained from WHPacific N15 Alignment CAD file; Surface elevation provided by WHPacific.

Allwyn ENVIRONMENTAL

PROJECT NO.:	20151221
DRAWN BY:	PD
CHECKED BY:	MJM
DATE:	12/5/2014
REVISED:	12/17/2014

BORING LOG B-39

BIA N15(2-3)(3-1)(4-1)2&4
GREASEWOOD TO BURNSIDE, ARIZONA

PLATE

B-39

PAGE: 1 of 1

gINT FILE: PROJECTWISE: 20151221_n1520151221.gpj
gINT TEMPLATE: PROJECTWISE: KLF_STANDARD_GINT_LIBRARY_2014.GLB [KLF_BORING/TEST PIT SOIL LOG]

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BORING LOG B-40

Date Begin - End:	10/10/2014 - 10/10/2014	**Drilling Company:**	Enviro-Drill		
Logged By:	M. Cote	**Drill Crew:**	Ed & Juan		
Hor.-Vert. Datum:	NAD83	**Drilling Equipment:**	CME-75	**Hammer Type - Drop:**	63.5 kg. Auto - 762 mm.
Plunge:	-90 degrees	**Drilling Method:**	Hollow Stem Auger		
Weather:	partly cloudy	**Exploration Diameter:**	184 mm. O.D.		

FIELD EXPLORATION

Northing: 507,443.34 (m)
Easting: 246,173.17 (m)
Ground Surface Elevation (m.): 1,829.5
Location Offset: Sta. 7+800/1.83m Lt CL
Surface Condition: Asphalt

Elevation (meters)	Depth (meters)	Graphical Log	Lithologic Description	Sample Type	Blow Counts(BC)= Uncorr. Blows/152 mm. Pocket Pen(PP)= T/m²	Recovery (NR=No Recovery)
			Field engineer measured 0.10m asphalt			
			Field engineer measured 0.13m base course			
1829			**Poorly-graded SAND (SP)**: fine grained, yellow, dry, medium dense, moderate cemented		BC=8 17 11	279 mm
	1		White clayey sand seam at 1.07m bgs		BC=4 6 11	356 mm
1828						
	2		Slightly moist at 1.83m bgs		BC=4 14 26	457 mm
1827						
	3				BC=7 23 19	457 mm
1826						
	4					
1825						
	5					
1824						
	6					

LABORATORY RESULTS

AASHTO Symbol	Water Content (%)	Dry Unit Wt. (pcf)	Passing #4 (%)	Passing #200 (%)	Liquid Limit	Plasticity Index (NP=NonPlastic)	Additional Tests/ Remarks

The exploration was terminated at approximately 3.2 m. below ground surface. The exploration was backfilled with auger cuttings and asphalt patch on October 10, 2014.

GROUNDWATER LEVEL INFORMATION:
Groundwater was not encountered during drilling or after completion.
GENERAL NOTES:
Coordinates obtained from WHPacific N15 Alignment CAD file; Surface elevation provided by WHPacific.

Allwyn ENVIRONMENTAL

PROJECT NO.:	20151221
DRAWN BY:	PD
CHECKED BY:	MJM
DATE:	12/5/2014
REVISED:	12/17/2014

BORING LOG B-40

BIA N15(2-3)(3-1)(4-1)2&4
GREASEWOOD TO BURNSIDE, ARIZONA

PLATE

B-40

PAGE: 1 of 1

gINT FILE: PROJECTWISE: 20151221_n1520151221.gpj
gINT TEMPLATE: PROJECTWISE: KLF_STANDARD_GINT_LIBRARY_2014.GLB [KLF_BORING/TEST PIT SOIL LOG]

Date Begin - End:	10/10/2014 - 10/10/2014	**Drilling Company:**	Enviro-Drill	**BORING LOG B-41**	
Logged By:	M. Cote	**Drill Crew:**	Ed & Juan		
Hor.-Vert. Datum:	NAD83	**Drilling Equipment:**	CME-75	**Hammer Type - Drop:**	63.5 kg. Auto - 762 mm.
Plunge:	-90 degrees	**Drilling Method:**	Hollow Stem Auger		
Weather:	sunny	**Exploration Diameter:**	184 mm. O.D.		

Northing: 507,533.21 (m)
Easting: 246,351.88 (m)
Ground Surface Elevation (m.): 1,832.9
Location Offset: Sta. 8+000/1.83m Rt CL
Surface Condition: Asphalt

Elevation (meters)	Depth (meters)	Graphical Log	Lithologic Description	Sample Type	Blow Counts(BC)= Uncorr. Blows/152 mm. Pocket Pen(PP)= T/m²	Recovery (NR=No Recovery)	AASHTO Symbol	Water Content (%)	Dry Unit Wt. (pcf)	Passing #4 (%)	Passing #200 (%)	Liquid Limit	Plasticity Index (NP=NonPlastic)	Additional Tests/ Remarks
			Field engineer measured 0.15m asphalt											
			Field engineer measured 0.05m base course											
1832	1		**Silty SAND (SM)**: fine grained, yellow, dry, medium dense, moderate cemented		BC=6 24 17	457 mm	A-2-4(0)	5.6		91	22	NP	NP	**R-Value=** 41 Bulk sample obtained from depth of 0.3 to 1.52m bgs
					BC=2 5 7	356 mm								
1831	2		**Poorly-graded SAND**: fine grained, yellowish brown, dry, loose		BC=3 3 2	356 mm								
1830	3		Trace rootlets, trace moderately cemented white sandstone fragments at 3.05m bgs		BC=2 3 3	406 mm								
1829	4													
1828	5													
1827	6													

The exploration was terminated at approximately 3.2 m. below ground surface. The exploration was backfilled with auger cuttings and asphalt patch on October 10, 2014.

GROUNDWATER LEVEL INFORMATION:
Groundwater was not encountered during drilling or after completion.
GENERAL NOTES:
Coordinates obtained from WHPacific N15 Alignment CAD file; Surface elevation provided by WHPacific.

Allwyn ENVIRONMENTAL

PROJECT NO.:	20151221
DRAWN BY:	PD
CHECKED BY:	MJM
DATE:	12/5/2014
REVISED:	12/17/2014

BORING LOG B-41

BIA N15(2-3)(3-1)(4-1)2&4
GREASEWOOD TO BURNSIDE, ARIZONA

PLATE
B-41
PAGE: 1 of 1

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PLOTTED: 07/07/2015 02:01 PM BY: clbeck

BORING LOG B-42

Date Begin - End:	10/10/2014 - 10/10/2014	**Drilling Company:**	Enviro-Drill		
Logged By:	M. Cote	**Drill Crew:**	Ed & Juan		
Hor.-Vert. Datum:	NAD83	**Drilling Equipment:**	CME-75	**Hammer Type - Drop:**	63.5 kg. Auto - 762 mm.
Plunge:	-90 degrees	**Drilling Method:**	Hollow Stem Auger		
Weather:	partly cloudy	**Exploration Diameter:**	184 mm. O.D.		

FIELD EXPLORATION

Northing: 507,628.21 (m)
Easting: 246,527.89 (m)
Ground Surface Elevation (m.): 1,834.8
Location Offset: Sta. 8+200/1.83m Lt CL
Surface Condition: Asphalt

Elevation (meters)	Depth (meters)	Graphical Log	Lithologic Description	Sample Type	Blow Counts(BC)= Uncorr. Blows/152 mm. Pocket Pen(PP)= T/m²	Recovery (NR=No Recovery)
			Field engineer measured 0.13m asphalt			
			Field engineer measured 0.13m base course			
			Poorly-graded SAND (SP): fine to medium grained, rounded, yellowish brown to yellow, moist, medium dense, trace fines		BC=4 6 6	457 mm
1834						
	1		Fine sand below 0.91m bgs		BC=3 3 5	457 mm
1833						
	2		Fine to medium, rounded sand, trace rootlets below 1.83m bgs		BC=7 4 5	457 mm
1832						
	3		Fine sand below 2.74m bgs		BC=5 7 7	457 mm
1831	4					
1830	5					
1829	6					

LABORATORY RESULTS

AASHTO Symbol	Water Content (%)	Dry Unit Wt. (pcf)	Passing #4 (%)	Passing #200 (%)	Liquid Limit	Plasticity Index (NP=NonPlastic)	Additional Tests/ Remarks

The exploration was terminated at approximately 3.2 m. below ground surface. The exploration was backfilled with auger cuttings and asphalt patch on October 10, 2014.

GROUNDWATER LEVEL INFORMATION:
Groundwater was not encountered during drilling or after completion.
GENERAL NOTES:
Coordinates obtained from WHPacific N15 Alignment CAD file; Surface elevation provided by WHPacific.

Allwyn ENVIRONMENTAL

PROJECT NO.:	20151221
DRAWN BY:	PD
CHECKED BY:	MJM
DATE:	12/5/2014
REVISED:	12/17/2014

BORING LOG B-42

BIA N15(2-3)(3-1)(4-1)2&4
GREASEWOOD TO BURNSIDE, ARIZONA

PLATE

B-42

PAGE: 1 of 1

gINT FILE: PROJECTWISE: 20151221_n1520151221.gpj
gINT TEMPLATE: PROJECTWISE: KLF_STANDARD_GINT_LIBRARY_2014.GLB [KLF_BORING/TEST PIT SOIL LOG]

PLOTTED: 07/07/2015 02:01 PM BY: clbeck

BORING LOG B-43

Date Begin - End:	10/11/2014 - 10/11/2014	**Drilling Company:**	Enviro-Drill		
Logged By:	M. Cote	**Drill Crew:**	Ed & Juan		
Hor.-Vert. Datum:	NAD83	**Drilling Equipment:**	CME-75	**Hammer Type - Drop:**	63.5 kg. Auto - 762 mm.
Plunge:	-90 degrees	**Drilling Method:**	Hollow Stem Auger		
Weather:	sunny	**Exploration Diameter:**	184 mm. O.D.		

FIELD EXPLORATION

Northing: 507,718.86 (m)
Easting: 246,706.18 (m)
Ground Surface Elevation (m.): 1,830.3
Location Offset: Sta. 8+400/1.83m Rt CL
Surface Condition: Asphalt

Elevation (meters)	Depth (meters)	Graphical Log	Lithologic Description	Sample Type	Blow Counts(BC)= Uncorr. Blows/152 mm. Pocket Pen(PP)= T/m²	Recovery (NR=No Recovery)	AASHTO Symbol	Water Content (%)	Dry Unit Wt. (pcf)	Passing #4 (%)	Passing #200 (%)	Liquid Limit	Plasticity Index (NP=NonPlastic)	Additional Tests/ Remarks
			Field engineer measured 0.10m asphalt											
			Field engineer measured 0.15m base course											
1830			**Poorly-graded SAND with Clay (SP-SC)**: fine grained, low plasticity, brown, moist, medium dense		BC=5 8 5	406 mm								Bulk sample from .30 to 1.52m bgs
	1		Decrease in moisture content, weakly cemented, blocky areas at 0.91m bgs		BC=5 10 9	356 mm								
1829			**Poorly-graded SAND (SP)**: fine grained, reddish yellowish brown, dry to moist, loose, trace rootlets, trace fines											
	2				BC=1 2 3	406 mm								
1828			Dry, moderately cemented, light grayish brown sandstone (up to 0.02m wide) at 2.74m bgs		BC=2 3 2	356 mm								
	3													
1827														
	4													
1826														
	5													
1825														
	6													

The exploration was terminated at approximately 3.2 m. below ground surface. The exploration was backfilled with auger cuttings and asphalt patch on October 11, 2014.

GROUNDWATER LEVEL INFORMATION:
Groundwater was not encountered during drilling or after completion.

GENERAL NOTES:
Coordinates obtained from WHPacific N15 Alignment CAD file; Surface elevation provided by WHPacific.

Allwyn ENVIRONMENTAL

PROJECT NO.:	20151221
DRAWN BY:	PD
CHECKED BY:	MJM
DATE:	12/5/2014
REVISED:	12/17/2014

BORING LOG B-43

BIA N15(2-3)(3-1)(4-1)2&4
GREASEWOOD TO BURNSIDE, ARIZONA

PLATE

B-43

PAGE: 1 of 1

gINT FILE: PROJECTWISE: 20151221_n1520151221.gpj
gINT TEMPLATE: PROJECTWISE: KLF_STANDARD_GINT_LIBRARY_2014.GLB [KLF_BORING/TEST PIT SOIL LOG]

PLOTTED: 07/07/2015 02:01 PM BY: clbeck

BORING LOG B-44

Date Begin - End:	10/11/2014 - 10/11/2014	**Drilling Company:**	Enviro-Drill
Logged By:	M. Cote	**Drill Crew:**	Ed & Juan
Hor.-Vert. Datum:	NAD83	**Drilling Equipment:**	CME-75
Plunge:	-90 degrees	**Drilling Method:**	Hollow Stem Auger
Weather:	sunny	**Exploration Diameter:**	184 mm. O.D.

Hammer Type - Drop: 63.5 kg. Auto - 762 mm.

FIELD EXPLORATION

Northing: 507,814.54 (m)
Easting: 246,881.84 (m)
Ground Surface Elevation (m.): 1,829.0
Location Offset: Sta. 8+600/1.83m Lt CL
Surface Condition: Asphalt

Elevation (meters)	Depth (meters)	Graphical Log	Lithologic Description	Sample Type	Blow Counts(BC)= Uncorr. Blows/152 mm. Pocket Pen(PP)= T/m²	Recovery (NR=No Recovery)	AASHTO Symbol	Water Content (%)	Dry Unit Wt. (pcf)	Passing #4 (%)	Passing #200 (%)	Liquid Limit	Plasticity Index (NP=NonPlastic)	Additional Tests/ Remarks
			Field engineer measured 0.13m asphalt											
			Field engineer measured 0.13m base course											
			Poorly-graded SAND (SP): fine to medium grained, yellowish brown with patches of olive and light brownish gray, moist, loose, weakly cemented		BC=3 4 3	356 mm								Bulk sample from .30 to 1.52m bgs
1828	1		Yellow, fine to medium, well rounded sand at 0.91m bgs		BC=3 5 5	457 mm								
1827	2		Very loose below 1.83m bgs		BC=1 2 1	432 mm								
1826	3		Loose below 2.74m bgs		BC=1 2 2									
1825	4													
1824	5													
1823	6													

LABORATORY RESULTS

The exploration was terminated at approximately 3.2 m. below ground surface. The exploration was backfilled with auger cuttings and asphalt patch on October 11, 2014.

GROUNDWATER LEVEL INFORMATION:
Groundwater was not encountered during drilling or after completion.

GENERAL NOTES:
Coordinates obtained from WHPacific N15 Alignment CAD file; Surface elevation provided by WHPacific.

Allwyn ENVIRONMENTAL

PROJECT NO.:	20151221
DRAWN BY:	PD
CHECKED BY:	MJM
DATE:	12/5/2014
REVISED:	12/17/2014

BORING LOG B-44

BIA N15(2-3)(3-1)(4-1)2&4
GREASEWOOD TO BURNSIDE, ARIZONA

PLATE

B-44

gINT FILE: PROJECTWISE: 20151221_n1520151221.gpj
gINT TEMPLATE: PROJECTWISE: KLF_STANDARD_GINT_LIBRARY_2014.GLB [KLF_BORING/TEST PIT SOIL LOG]

PLOTTED: 07/07/2015 02:01 PM BY: clbeck

BORING LOG B-45

Date Begin - End:	10/11/2014 - 10/11/2014	**Drilling Company:**	Enviro-Drill		
Logged By:	M. Cote	**Drill Crew:**	Ed & Juan		
Hor.-Vert. Datum:	NAD83	**Drilling Equipment:**	CME-75	**Hammer Type - Drop:**	63.5 kg. Auto - 762 mm.
Plunge:	-90 degrees	**Drilling Method:**	Hollow Stem Auger		
Weather:	sunny	**Exploration Diameter:**	184 mm. O.D.		

FIELD EXPLORATION

Northing: 507,904.42 (m)
Easting: 247,060.54 (m)
Ground Surface Elevation (m.): 1,828.5
Location Offset: Sta. 8+800/1.83m Rt CL
Surface Condition: Asphalt

Elevation (meters)	Depth (meters)	Graphical Log	Lithologic Description	Sample Type	Blow Counts(BC)= Uncorr. Blows/152 mm. Pocket Pen(PP)= T/m²	Recovery (NR=No Recovery)
			Field engineer measured 0.15m asphalt			
			Field engineer measured 0.10m base course			
1828			**Clayey SAND (SC)**: fine grained, low plasticity, brown, moist, medium dense, trace white, moderatel cemented sandstone fragments (up to 0.03m wide)		BC=4 10 10	406 mm
	1		Slight decrease in fines below 0.91m bgs		BC=4 10 13	457 mm
1827						
			Poorly-graded SAND (SP): fine grained, low plasticity, reddish yellowish brown, dry, medium dense, trace clay		BC=5 7 8	279 mm
	2		Seams of dry, moderately cemented, laminated brown sandy lean clay below 2.13m bgs			
1826						
			Loose, trace rootlets below 2.74m bgs		BC=4 4 4	
	3					
1825						
	4					
1824						
	5					
1823						
	6					

LABORATORY RESULTS

AASHTO Symbol	Water Content (%)	Dry Unit Wt. (pcf)	Passing #4 (%)	Passing #200 (%)	Liquid Limit	Plasticity Index (NP=NonPlastic)	Additional Tests/ Remarks

The exploration was terminated at approximately 3.2 m. below ground surface. The exploration was backfilled with auger cuttings and asphalt patch on October 11, 2014.

GROUNDWATER LEVEL INFORMATION:
Groundwater was not encountered during drilling or after completion.

GENERAL NOTES:
Coordinates obtained from WHPacific N15 Alignment CAD file; Surface elevation provided by WHPacific.

Allwyn ENVIRONMENTAL

PROJECT NO.:	20151221
DRAWN BY:	PD
CHECKED BY:	MJM
DATE:	12/5/2014
REVISED:	12/17/2014

BORING LOG B-45

BIA N15(2-3)(3-1)(4-1)2&4
GREASEWOOD TO BURNSIDE, ARIZONA

PLATE

B-45

PAGE: 1 of 1

gINT FILE: PROJECTWISE: 20151221_n1520151221.gpj
gINT TEMPLATE: PROJECTWISE: KLF_STANDARD_GINT_LIBRARY_2014.GLB [KLF_BORING/TEST PIT SOIL LOG]

PLOTTED: 07/07/2015 02:01 PM BY: clbeck

BORING LOG B-46

Date Begin - End:	10/11/2014 - 10/11/2014	**Drilling Company:**	Enviro-Drill		
Logged By:	M. Cote	**Drill Crew:**	Ed & Juan		
Hor.-Vert. Datum:	NAD83	**Drilling Equipment:**	CME-75	**Hammer Type - Drop:**	63.5 kg. Auto - 762 mm.
Plunge:	-90 degrees	**Drilling Method:**	Hollow Stem Auger		
Weather:	sunny, breezy	**Exploration Diameter:**	184 mm. O.D.		

FIELD EXPLORATION

Northing: 508,000.47 (m)
Easting: 247,236.0 (m)
Ground Surface Elevation (m.): 1,828.7
Location Offset: Sta. 9+000/1.83m Lt CL
Surface Condition: Asphalt

Elevation (meters)	Depth (meters)	Graphical Log	Lithologic Description	Sample Type	Blow Counts(BC)= Uncorr. Blows/152 mm. Pocket Pen(PP)= T/m²	Recovery (NR=No Recovery)
			Field engineer measured 0.05m asphalt over black geofabric			
			Field engineer measured 0.18m base course			
1828			**Poorly-graded SAND (SP)**: fine grained, yellowish brown, moist, loose, trace clay		BC=2 2 2	229 mm
	1		Brownish yellow, very loose below 0.91m bgs		BC=2 2 1	51 mm
1827						
	2		Reddish yellowish brown below 1.83m bgs		BC=1 2 1	356 mm
1826						
	3		Dry to moist, loose, weakly cemented, laminated below 2.74 bgs		BC=1 3 2	
1825						
	4					
1824						
	5					
1823						
	6					

LABORATORY RESULTS

AASHTO Symbol	Water Content (%)	Dry Unit Wt. (pcf)	Passing #4 (%)	Passing #200 (%)	Liquid Limit	Plasticity Index (NP=NonPlastic)	Additional Tests/ Remarks
							Bulk sample obtained from depth of 0.3 to 1.52m bgs

The exploration was terminated at approximately 3.2 m. below ground surface. The exploration was backfilled with auger cuttings and asphalt patch on October 11, 2014.

GROUNDWATER LEVEL INFORMATION:
Groundwater was not encountered during drilling or after completion.
GENERAL NOTES:
Coordinates obtained from WHPacific N15 Alignment CAD file; Surface elevation provided by WHPacific.

Allwyn ENVIRONMENTAL

PROJECT NO.:	20151221
DRAWN BY:	PD
CHECKED BY:	MJM
DATE:	12/5/2014
REVISED:	12/17/2014

BORING LOG B-46

BIA N15(2-3)(3-1)(4-1)2&4
GREASEWOOD TO BURNSIDE, ARIZONA

PLATE

B-46

gINT FILE: PROJECTWISE: 20151221_n1520151221.gpj
gINT TEMPLATE: PROJECTWISE: KLF_STANDARD_GINT_LIBRARY_2014.GLB [KLF_BORING/TEST PIT SOIL LOG]

PLOTTED: 07/07/2015 02:01 PM BY: clbeck

BORING LOG B-47

Date Begin - End:	10/11/2014 - 10/11/2014	**Drilling Company:**	Enviro-Drill		
Logged By:	M. Cote	**Drill Crew:**	Ed & Juan		
Hor.-Vert. Datum:	NAD83	**Drilling Equipment:**	CME-75	**Hammer Type - Drop:**	63.5 kg. Auto - 762 mm.
Plunge:	-90 degrees	**Drilling Method:**	Hollow Stem Auger		
Weather:	sunny	**Exploration Diameter:**	184 mm. O.D.		

FIELD EXPLORATION

Northing: 508,089.83 (m)
Easting: 247,414.91 (m)
Ground Surface Elevation (m.): 1,828.7
Location Offset: Sta. 9+200/1.83m Rt CL
Surface Condition: Asphalt

Elevation (meters)	Depth (meters)	Graphical Log	Lithologic Description	Sample Type	Blow Counts(BC)= Uncorr. Blows/152 mm. Pocket Pen(PP)= T/m²	Recovery (NR=No Recovery)	AASHTO Symbol	Water Content (%)	Dry Unit Wt. (pcf)	Passing #4 (%)	Passing #200 (%)	Liquid Limit	Plasticity Index (NP=NonPlastic)	Additional Tests/ Remarks
			Field engineer measured 0.13m asphalt											
			Field engineer measured 0.13m base course											
1828			**Clayey SAND (SC)**: fine grained, low plasticity, brown, moist, medium dense Trace olive sandy patches from 0.30m bgs		BC=7 8 6 PP=4.5	457 mm								
	1		**Silty SAND (SM)**: fine grained, reddish yellowish brown, dry to moist, loose, trace rootlets		BC=5 3 3	406 mm		10.3						
1827														
	2		Dry, weakly cemented below 1.83m bgs		BC=2 3 2	432 mm	A-2-4(0)			100	18	20	2	
1826														
	3		Reddish yellow to olive, moderately cemented, medium grained sandstone (up to 0.02m wide)		BC=2 4 3	432 mm								
1825	4													
1824	5													
1823	6													

The exploration was terminated at approximately 3.2 m. below ground surface. The exploration was backfilled with auger cuttings and asphalt patch on October 11, 2014.

GROUNDWATER LEVEL INFORMATION:
Groundwater was not encountered during drilling or after completion.

GENERAL NOTES:
Coordinates obtained from WHPacific N15 Alignment CAD file; Surface elevation provided by WHPacific.

Allwyn ENVIRONMENTAL

PROJECT NO.:	20151221
DRAWN BY:	PD
CHECKED BY:	MJM
DATE:	12/5/2014
REVISED:	12/17/2014

BORING LOG B-47

BIA N15(2-3)(3-1)(4-1)2&4
GREASEWOOD TO BURNSIDE, ARIZONA

PLATE

B-47

PAGE: 1 of 1

gINT FILE: PROJECTWISE: 20151221_n1520151221.gpj
gINT TEMPLATE: PROJECTWISE: KLF_STANDARD_GINT_LIBRARY_2014.GLB [KLF_BORING/TEST PIT SOIL LOG]

PLOTTED: 07/07/2015 02:01 PM BY: clbeck

BORING LOG B-48

Date Begin - End:	10/11/2014 - 10/11/2014	**Drilling Company:**	Enviro-Drill		
Logged By:	M. Cote	**Drill Crew:**	Ed & Juan		
Hor.-Vert. Datum:	NAD83	**Drilling Equipment:**	CME-75	**Hammer Type - Drop:**	63.5 kg. Auto - 762 mm.
Plunge:	-90 degrees	**Drilling Method:**	Hollow Stem Auger		
Weather:	sunny	**Exploration Diameter:**	184 mm. O.D.		

FIELD EXPLORATION

Northing: 508,164.39 (m)
Easting: 247,600.26 (m)
Ground Surface Elevation (m.): 1,828.7
Location Offset: Sta. 9+400/1.83m Lt CL
Surface Condition: Asphalt

Elevation (meters)	Depth (meters)	Graphical Log	Lithologic Description	Sample Type	Blow Counts(BC)= Uncorr. Blows/152 mm. Pocket Pen(PP)= T/m²	Recovery (NR=No Recovery)
			Field engineer measured 0.13m asphalt			
			Field engineer measured 0.13m base course			
			Clayey SAND (SC): fine grained, low plasticity, brown, moist, loose		BC=3 3 1	330 mm
1828			**Silty SAND (SM)**: fine grained, yellowish brown, moist, loose			
	1		Reddish yellowish brown below 0.91m bgs		BC=2 2 2	178 mm
1827						
	2		Very loose, trace white, moderately cemented sandstone fragments below 1.83m bgs		BC=1 1 1	406 mm
1826						
	3		Very loose, fine to coarse grained, trace gravel below 3.05m bgs		BC=1 1 2	406 mm
1825						
	4					
1824						
	5					
1823						
	6					

LABORATORY RESULTS

AASHTO Symbol	Water Content (%)	Dry Unit Wt. (pcf)	Passing #4 (%)	Passing #200 (%)	Liquid Limit	Plasticity Index (NP=NonPlastic)	Additional Tests/ Remarks

The exploration was terminated at approximately 3.2 m. below ground surface. The exploration was backfilled with auger cuttings and asphalt patch on October 11, 2014.

GROUNDWATER LEVEL INFORMATION:
Groundwater was not encountered during drilling or after completion.
GENERAL NOTES:
Coordinates obtained from WHPacific N15 Alignment CAD file; Surface elevation provided by WHPacific.

Allwyn ENVIRONMENTAL

PROJECT NO.:	20151221
DRAWN BY:	PD
CHECKED BY:	MJM
DATE:	12/5/2014
REVISED:	12/17/2014

BORING LOG B-48

BIA N15(2-3)(3-1)(4-1)2&4
GREASEWOOD TO BURNSIDE, ARIZONA

PLATE

B-48

gINT FILE: PROJECTWISE: 20151221_n1520151221.gpj
gINT TEMPLATE: PROJECTWISE: KLF_STANDARD_GINT_LIBRARY_2014.GLB [KLF_BORING/TEST PIT SOIL LOG]

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BORING LOG B-49

Date Begin - End:	10/11/2014 - 10/11/2014	**Drilling Company:**	Enviro-Drill		
Logged By:	M. Cote	**Drill Crew:**	Ed & Juan		
Hor.-Vert. Datum:	NAD83	**Drilling Equipment:**	CME-75	**Hammer Type - Drop:**	63.5 kg. Auto - 762 mm.
Plunge:	-90 degrees	**Drilling Method:**	Hollow Stem Auger		
Weather:	sunny	**Exploration Diameter:**	184 mm. O.D.		

FIELD EXPLORATION

Northing: 508,203.13 (m)
Easting: 247,796.47 (m)
Ground Surface Elevation (m.): 1,828.7
Location Offset: Sta. 9+600/1.83m Rt CL
Surface Condition: Asphalt

Elevation (meters)	Depth (meters)	Graphical Log	Lithologic Description	Sample Type	Blow Counts(BC)= Uncorr. Blows/152 mm. Pocket Pen(PP)= T/m²	Recovery (NR=No Recovery)
			Field engineer measured 0.13m asphalt			
			Field engineer measured 0.13m base course			
1828			**Poorly-graded SAND with Clay (SP-SC)**: fine grained, low plasticity, yellowish brown, moist, loose		BC=4 2 2	406 mm
	1		**Silty SAND (SM)**: fine to medium grained, reddish yellowish brown, moist, loose		BC=2 2 1	51 mm
1827						
	2				BC=1 1 1	305 mm
1826						
	3		**Poorly-graded SAND with Clay (SP-SC)**: fine grained, reddish yellowish brown, moist, loose		BC=1 1 1	356 mm
1825	4					
1824	5					
1823	6					

LABORATORY RESULTS

AASHTO Symbol	Water Content (%)	Dry Unit Wt. (pcf)	Passing #4 (%)	Passing #200 (%)	Liquid Limit	Plasticity Index (NP=NonPlastic)	Additional Tests/ Remarks

The exploration was terminated at approximately 3.2 m. below ground surface. The exploration was backfilled with auger cuttings and asphalt patch on October 11, 2014.

GROUNDWATER LEVEL INFORMATION:
Groundwater was not encountered during drilling or after completion.
GENERAL NOTES:
Coordinates obtained from WHPacific N15 Alignment CAD file; Surface elevation provided by WHPacific.

Allwyn ENVIRONMENTAL

PROJECT NO.:	20151221
DRAWN BY:	PD
CHECKED BY:	MJM
DATE:	12/5/2014
REVISED:	12/17/2014

BORING LOG B-49

BIA N15(2-3)(3-1)(4-1)2&4
GREASEWOOD TO BURNSIDE, ARIZONA

PLATE

B-49

PAGE: 1 of 1

gINT FILE: PROJECTWISE: 20151221_n1520151221.gpj
gINT TEMPLATE: PROJECTWISE: KLF_STANDARD_GINT_LIBRARY_2014.GLB [KLF_BORING/TEST PIT SOIL LOG]

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BORING LOG B-50

Date Begin - End:	10/11/2014 - 10/11/2014	**Drilling Company:**	Enviro-Drill		
Logged By:	M. Cote	**Drill Crew:**	Ed & Juan		
Hor.-Vert. Datum:	NAD83	**Drilling Equipment:**	CME-75	**Hammer Type - Drop:**	63.5 kg. Auto - 762 mm.
Plunge:	-90 degrees	**Drilling Method:**	Hollow Stem Auger		
Weather:	sunny, breezy	**Exploration Diameter:**	184 mm. O.D.		

FIELD EXPLORATION

Northing: 508,242.45 (m)
Easting: 247,992.59 (m)
Ground Surface Elevation (m.): 1,829.1
Location Offset: Sta. 9+800/1.83m Lt CL
Surface Condition: Asphalt

Elevation (meters)	Depth (meters)	Graphical Log	Lithologic Description	Sample Type	Blow Counts(BC)= Uncorr. Blows/152 mm. Pocket Pen(PP)= T/m²	Recovery (NR=No Recovery)
1829			Field engineer measured 0.13m asphalt			
			Field engineer measured 0.13m base course			
			Clayey SAND (SC): fine grained, low plasticity, olive brown to brown, moist, medium dense		BC=4 7 7	457 mm
1828	1		Trace white, moderately cemented sandstone below 0.91m		BC=2 4 9	432 mm
1827	2		Loose, increase in fines below 1.83m bgs		BC=3 2 2	432 mm
			Poorly-graded SAND (SP): fine grained, yellowish brown, moist, loose			
1826	3		**Sandy Lean CLAY (CL)**: fine sand, medium plasticity, brown, moist, hard		BC=3 5 4	279 mm
1825	4					
1824	5					
1823	6					

LABORATORY RESULTS

AASHTO Symbol	Water Content (%)	Dry Unit Wt. (pcf)	Passing #4 (%)	Passing #200 (%)	Liquid Limit	Plasticity Index (NP=NonPlastic)	Additional Tests/ Remarks

The exploration was terminated at approximately 3.2 m. below ground surface. The exploration was backfilled with auger cuttings and asphalt patch on October 11, 2014.

GROUNDWATER LEVEL INFORMATION:
Groundwater was not encountered during drilling or after completion.
GENERAL NOTES:
Coordinates obtained from WHPacific N15 Alignment CAD file; Surface elevation provided by WHPacific.

Allwyn ENVIRONMENTAL

PROJECT NO.:	20151221
DRAWN BY:	PD
CHECKED BY:	MJM
DATE:	12/5/2014
REVISED:	12/17/2014

BORING LOG B-50

BIA N15(2-3)(3-1)(4-1)2&4
GREASEWOOD TO BURNSIDE, ARIZONA

PLATE

B-50

PAGE: 1 of 1

gINT FILE: PROJECTWISE: 20151221_n1520151221.gpj
gINT TEMPLATE: PROJECTWISE: KLF_STANDARD_GINT_LIBRARY_2014.GLB [KLF_BORING/TEST PIT SOIL LOG]

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BORING LOG B-51

Date Begin - End:	10/11/2014 - 10/11/2014	**Drilling Company:**	Enviro-Drill		
Logged By:	M. Cote	**Drill Crew:**	Ed & Juan		
Hor.-Vert. Datum:	NAD83	**Drilling Equipment:**	CME-75	**Hammer Type - Drop:**	63.5 kg. Auto - 762 mm.
Plunge:	-90 degrees	**Drilling Method:**	Hollow Stem Auger		
Weather:	sunny	**Exploration Diameter:**	184 mm. O.D.		

FIELD EXPLORATION

Northing: 508,276.16 (m)
Easting: 248,189.75 (m)
Ground Surface Elevation (m.): 1,830.3
Location Offset: Sta. 10+000/1.83m Rt CL
Surface Condition: Asphalt

Elevation (meters)	Depth (meters)	Graphical Log	Lithologic Description	Sample Type	Blow Counts(BC)= Uncorr. Blows/152 mm. Pocket Pen(PP)= T/m²	Recovery (NR=No Recovery)	AASHTO Symbol	Water Content (%)	Dry Unit Wt. (pcf)	Passing #4 (%)	Passing #200 (%)	Liquid Limit	Plasticity Index (NP=NonPlastic)	Additional Tests/ Remarks
			Field engineer measured 0.13m asphalt											
			Field engineer measured 0.08m base course											
1830			**Silty SAND (SM)**: fine grained, low plasticity, olive brown, moist, medium dense		BC=7 12 12	432 mm	A-2-4(0)	9.0		95	29	NP	NP	**R-Value=** 21 Bulk sample obtained from depth of 0.3 to 1.52m bgs
	1		**Poorly-graded SAND with Silt (SP-SM)**: fine grained, low plasticity, yellowish brown, moist, medium dense, trace clay		BC=4 11 9	432 mm								
1829			Brown, slight clayey seams from 1.37 to 1.83m bgs		PP=>4.5									
	2		Reddish yellowish brown, loose below 1.83m bgs		BC=1 2 1	457 mm								
1828														
	3				BC=2 3 4	457 mm								
1827														
	4													
1826														
	5													
1825														
	6													

The exploration was terminated at approximately 3.2 m. below ground surface. The exploration was backfilled with auger cuttings and asphalt patch on October 11, 2014.

GROUNDWATER LEVEL INFORMATION:
Groundwater was not encountered during drilling or after completion.

GENERAL NOTES:
Coordinates obtained from WHPacific N15 Alignment CAD file; Surface elevation provided by WHPacific.

Allwyn ENVIRONMENTAL

PROJECT NO.:	20151221
DRAWN BY:	PD
CHECKED BY:	MJM
DATE:	12/5/2014
REVISED:	12/17/2014

BORING LOG B-51

BIA N15(2-3)(3-1)(4-1)2&4
GREASEWOOD TO BURNSIDE, ARIZONA

PLATE

B-51

gINT FILE: PROJECTWISE: 20151221_n1520151221.gpj
gINT TEMPLATE: PROJECTWISE: KLF_STANDARD_GINT_LIBRARY_2014.GLB [KLF_BORING/TEST PIT SOIL LOG]

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BORING LOG B-52

Date Begin - End:	10/11/2014 - 10/11/2014	**Drilling Company:**	Enviro-Drill		
Logged By:	M. Cote	**Drill Crew:**	Ed & Juan		
Hor.-Vert. Datum:	NAD83	**Drilling Equipment:**	CME-75	**Hammer Type - Drop:**	63.5 kg. Auto - 762 mm.
Plunge:	-90 degrees	**Drilling Method:**	Hollow Stem Auger		
Weather:	sunny	**Exploration Diameter:**	184 mm. O.D.		

FIELD EXPLORATION

Northing: 508,315.42 (m)
Easting: 248,385.88 (m)
Ground Surface Elevation (m.): 1,834.0
Location Offset: Sta. 10+200/1.83m Lt CL
Surface Condition: Asphalt

Elevation (meters)	Depth (meters)	Graphical Log	Lithologic Description	Sample Type	Blow Counts(BC)= Uncorr. Blows/152 mm. Pocket Pen(PP)= T/m²	Recovery (NR=No Recovery)
			Field engineer measured 0.05m asphalt over black geotextile			
			Field engineer measured 0.18m base course			
			Poorly-graded SAND with Clay (SP-SC): fine grained, low plasticity, yellowish brown, moist, medium dense		BC=2 5 6	406 mm
1833	1				BC=3 6 11	356 mm
			Silty SAND (SM): fine grained, yellowish brown, moist, very loose			
1832	2				BC=2 1 1	432 mm
			Loose, trace fine rootlets at 2.74m bgs			
1831	3				BC=2 2 2	432 mm
1830	4					
1829	5					
1828	6					

LABORATORY RESULTS

AASHTO Symbol	Water Content (%)	Dry Unit Wt. (pcf)	Passing #4 (%)	Passing #200 (%)	Liquid Limit	Plasticity Index (NP=NonPlastic)	Additional Tests/ Remarks

The exploration was terminated at approximately 3.2 m. below ground surface. The exploration was backfilled with auger cuttings and asphalt patch on October 11, 2014.

GROUNDWATER LEVEL INFORMATION:
Groundwater was not encountered during drilling or after completion.
GENERAL NOTES:
Coordinates obtained from WHPacific N15 Alignment CAD file; Surface elevation provided by WHPacific.

Allwyn ENVIRONMENTAL

PROJECT NO.:	20151221
DRAWN BY:	PD
CHECKED BY:	MJM
DATE:	12/5/2014
REVISED:	12/17/2014

BORING LOG B-52

BIA N15(2-3)(3-1)(4-1)2&4
GREASEWOOD TO BURNSIDE, ARIZONA

PLATE

B-52

PAGE: 1 of 1

gINT FILE: PROJECTWISE: 20151221_n1520151221.gpj
gINT TEMPLATE: PROJECTWISE: KLF_STANDARD_GINT_LIBRARY_2014.GLB [KLF_BORING/TEST PIT SOIL LOG]

PLOTTED: 07/07/2015 02:01 PM BY: clbeck

BORING LOG B-53

Date Begin - End:	10/13/2014 - 10/13/2014	**Drilling Company:**	Enviro-Drill		
Logged By:	M. Cote	**Drill Crew:**	Ed & Juan		
Hor.-Vert. Datum:	NAD83	**Drilling Equipment:**	CME-75	**Hammer Type - Drop:**	63.5 kg. Auto - 762 mm.
Plunge:	-90 degrees	**Drilling Method:**	Hollow Stem Auger		
Weather:	sunny	**Exploration Diameter:**	184 mm. O.D.		

FIELD EXPLORATION

Northing: 508,349.03 (m)
Easting: 248,583.06 (m)
Ground Surface Elevation (m.): 1,835.3
Location Offset: Sta. 10+400/1.83m Rt CL
Surface Condition: Asphalt

Elevation (meters)	Depth (meters)	Graphical Log	Lithologic Description	Sample Type	Blow Counts(BC)= Uncorr. Blows/152 mm. Pocket Pen(PP)= T/m²	Recovery (NR=No Recovery)
			Field engineer measured 0.13m asphalt			
			Field engineer measured 0.10m base course			
1835			**Poorly-graded SAND with Clay (SP-SC)**: fine grained, low plasticity, reddish yellowish brown, dry to moist, medium dense		BC=5 6 5	330 mm
	1		Dry, loose, weakly cemented below 0.91m bgs		BC=4 3 2	254 mm
1834						
	2		**Poorly-graded SAND (SP)**: fine grained, reddish yellowish brown, dry, loose, trace fines		BC=1 2 2	432 mm
1833						
	3				BC=2 2 3	432 mm
1832						
	4					
1831						
	5					
1830						
	6					

LABORATORY RESULTS

AASHTO Symbol	Water Content (%)	Dry Unit Wt. (pcf)	Passing #4 (%)	Passing #200 (%)	Liquid Limit	Plasticity Index (NP=NonPlastic)	Additional Tests/ Remarks

The exploration was terminated at approximately 3.2 m. below ground surface. The exploration was backfilled with auger cuttings and asphalt patch on October 13, 2014.

GROUNDWATER LEVEL INFORMATION:
Groundwater was not encountered during drilling or after completion.

GENERAL NOTES:
Coordinates obtained from WHPacific N15 Alignment CAD file; Surface elevation provided by WHPacific.

Allwyn ENVIRONMENTAL

PROJECT NO.:	20151221
DRAWN BY:	PD
CHECKED BY:	MJM
DATE:	12/5/2014
REVISED:	12/17/2014

BORING LOG B-53

BIA N15(2-3)(3-1)(4-1)2&4
GREASEWOOD TO BURNSIDE, ARIZONA

PLATE

B-53

gINT FILE: PROJECTWISE: 20151221_n1520151221.gpj
gINT TEMPLATE: PROJECTWISE: KLF_STANDARD_GINT_LIBRARY_2014.GLB [KLF_BORING/TEST PIT SOIL LOG]

PLOTTED: 07/07/2015 02:01 PM BY: clbeck

BORING LOG B-54

Date Begin - End:	10/13/2014 - 10/13/2014	**Drilling Company:**	Enviro-Drill
Logged By:	M. Cote	**Drill Crew:**	Ed & Juan
Hor.-Vert. Datum:	NAD83	**Drilling Equipment:**	CME-75
Plunge:	-90 degrees	**Drilling Method:**	Hollow Stem Auger
Weather:	sunny, breezy	**Exploration Diameter:**	184 mm. O.D.

Hammer Type - Drop: 63.5 kg. Auto - 762 mm.

FIELD EXPLORATION

Northing: 508,388.59 (m)
Easting: 248,779.13 (m)
Ground Surface Elevation (m.): 1,835.3
Location Offset: Sta. 10+600/1.83m Lt CL
Surface Condition: Asphalt

Elevation (meters)	Depth (meters)	Graphical Log	Lithologic Description	Sample Type	Blow Counts(BC)= Uncorr. Blows/152 mm. Pocket Pen(PP)= T/m²	Recovery (NR=No Recovery)
			Field engineer measured 0.10m asphalt			
			Field engineer measured 0.13m base course			
1835			**Poorly-graded SAND with Silt (SP-SM)**: fine grained, non-plastic, yellowish brown, moist, medium dense		BC=6 9 5	406 mm
	1		**Poorly-graded SAND (SP)**: fine to medium grained, yellowish brown, moist, very loose, trace fine rootlets, trace silt		BC=2 1 1	305 mm
1834						
	2		Trace yellow, coarse, rounded sandstone gravel, no rootlets below 1.83m bgs		BC=1 0 0	381 mm
1833						
	3				BC=1 1 1	457 mm
1832						
	4					
1831						
	5					
1830						
	6					

LABORATORY RESULTS

AASHTO Symbol	Water Content (%)	Dry Unit Wt. (pcf)	Passing #4 (%)	Passing #200 (%)	Liquid Limit	Plasticity Index (NP=NonPlastic)	Additional Tests/ Remarks
	7.8						

The exploration was terminated at approximately 3.2 m. below ground surface. The exploration was backfilled with auger cuttings and asphalt patch on October 13, 2014.

GROUNDWATER LEVEL INFORMATION:
Groundwater was not encountered during drilling or after completion.

GENERAL NOTES:
Coordinates obtained from WHPacific N15 Alignment CAD file; Surface elevation provided by WHPacific.

Allwyn ENVIRONMENTAL

PROJECT NO.:	20151221
DRAWN BY:	PD
CHECKED BY:	MJM
DATE:	12/5/2014
REVISED:	12/17/2014

BORING LOG B-54

BIA N15(2-3)(3-1)(4-1)2&4
GREASEWOOD TO BURNSIDE, ARIZONA

PLATE

B-54

gINT FILE: PROJECTWISE: 20151221_n1520151221.gpj
gINT TEMPLATE: PROJECTWISE: KLF_STANDARD_GINT_LIBRARY_2014.GLB [KLF_BORING/TEST PIT SOIL LOG]

PLOTTED: 07/07/2015 02:01 PM BY: clbeck

BORING LOG B-55

Date Begin - End:	10/13/2014 - 10/13/2014	**Drilling Company:**	Enviro-Drill		
Logged By:	M. Cote	**Drill Crew:**	Ed & Juan		
Hor.-Vert. Datum:	NAD83	**Drilling Equipment:**	CME-75	**Hammer Type - Drop:**	63.5 kg. Auto - 762 mm.
Plunge:	-90 degrees	**Drilling Method:**	Hollow Stem Auger		
Weather:	sunny, cool	**Exploration Diameter:**	184 mm. O.D.		

FIELD EXPLORATION

Northing: 508,421.72 (m)
Easting: 248,976.4 (m)
Ground Surface Elevation (m.): 1,835.2
Location Offset: Sta. 10+800/1.83m Rt CL
Surface Condition: Asphalt

Elevation (meters)	Depth (meters)	Graphical Log	Lithologic Description	Sample Type	Blow Counts(BC)= Uncorr. Blows/152 mm. Pocket Pen(PP)= T/m²	Recovery (NR=No Recovery)
1835	0		Field engineer measured 0.13m asphalt			
			Field engineer measured 0.10m base course			
			Poorly-graded SAND with Clay (SP-SC): fine grained, low plasticity, reddish yellowish brown, moist, loose		BC=4 4 5	406 mm
	1		Very loose below 0.91m bgs		BC=2 1 0	432 mm
1834						
	2				BC=1 1 0	330 mm
1833						
	3				BC=1 1 1	457 mm
1832						
	4					
1831						
	5					
1830						
	6					

LABORATORY RESULTS

AASHTO Symbol	Water Content (%)	Dry Unit Wt. (pcf)	Passing #4 (%)	Passing #200 (%)	Liquid Limit	Plasticity Index (NP=NonPlastic)	Additional Tests/ Remarks

The exploration was terminated at approximately 3.2 m. below ground surface. The exploration was backfilled with auger cuttings and asphalt patch on October 13, 2014.

GROUNDWATER LEVEL INFORMATION:
Groundwater was not encountered during drilling or after completion.

GENERAL NOTES:
Coordinates obtained from WHPacific N15 Alignment CAD file; Surface elevation provided by WHPacific.

Allwyn ENVIRONMENTAL

PROJECT NO.:	20151221
DRAWN BY:	PD
CHECKED BY:	MJM
DATE:	12/5/2014
REVISED:	12/17/2014

BORING LOG B-55

BIA N15(2-3)(3-1)(4-1)2&4
GREASEWOOD TO BURNSIDE, ARIZONA

PLATE

B-55

gINT FILE: PROJECTWISE: 20151221_n1520151221.gpj
gINT TEMPLATE: PROJECTWISE: KLF_STANDARD_GINT_LIBRARY_2014.GLB [KLF_BORING/TEST PIT SOIL LOG]

PLOTTED: 07/07/2015 02:01 PM BY: clbeck

BORING LOG B-56

Date Begin - End:	10/13/2014 - 10/13/2014	**Drilling Company:**	Enviro-Drill
Logged By:	M. Cote	**Drill Crew:**	Ed & Juan
Hor.-Vert. Datum:	NAD83	**Drilling Equipment:**	CME-75
Plunge:	-90 degrees	**Drilling Method:**	Hollow Stem Auger
Weather:	sunny	**Exploration Diameter:**	184 mm. O.D.

Hammer Type - Drop: 63.5 kg. Auto - 762 mm.

FIELD EXPLORATION

Northing: 508,461.15 (m)
Easting: 249,172.5 (m)
Ground Surface Elevation (m.): 1,835.0
Location Offset: Sta. 11+000/1.83m Lt CL
Surface Condition: Asphalt

Elevation (meters)	Depth (meters)	Graphical Log	Lithologic Description	Sample Type	Blow Counts(BC)= Uncorr. Blows/152 mm. Pocket Pen(PP)= T/m²	Recovery (NR=No Recovery)	AASHTO Symbol	Water Content (%)	Dry Unit Wt. (pcf)	Passing #4 (%)	Passing #200 (%)	Liquid Limit	Plasticity Index (NP=NonPlastic)	Additional Tests/ Remarks
			Field engineer measured 0.13m asphalt											
			Field engineer measured 0.13m base course											
			Clayey SAND (SC): fine grained, low plasticity, brown, moist, loose, laminated		BC=2 2 6	457 mm	A-2-4(0)			91	33	25	10	**R-Value=** 27 Bulk sample obtained from depth of 0.3 to 1.52m bgs
1834	1		Olive brown to olive gray, dry to moist, medium dense, weakly cemented, relic rock-like structure, laminted below 0.91m bgs		BC=6 13 14	457 mm								
1833	2		fine-grained, low plasticity, reddish yellow, dry to moist, loose, weakly cemented, increase in clay content below 1.83m bgs		BC=2 2 2	457 mm								
1832	3		**Poorly-graded SAND (SP)**: fine grained, light reddish yellow, dry to moist, loose, weakly cemented		BC=3 4 3	432 mm								
1831	4													
1830	5													
1829	6													

The exploration was terminated at approximately 3.2 m. below ground surface. The exploration was backfilled with auger cuttings and asphalt patch on October 13, 2014.

GROUNDWATER LEVEL INFORMATION:
Groundwater was not encountered during drilling or after completion.

GENERAL NOTES:
Coordinates obtained from WHPacific N15 Alignment CAD file; Surface elevation provided by WHPacific.

Allwyn ENVIRONMENTAL

PROJECT NO.:	20151221
DRAWN BY:	PD
CHECKED BY:	MJM
DATE:	12/5/2014
REVISED:	12/17/2014

BORING LOG B-56

BIA N15(2-3)(3-1)(4-1)2&4
GREASEWOOD TO BURNSIDE, ARIZONA

PLATE

B-56

gINT FILE: PROJECTWISE: 20151221_n1520151221.gpj
gINT TEMPLATE: PROJECTWISE: KLF_STANDARD_GINT_LIBRARY_2014.GLB [KLF_BORING/TEST PIT SOIL LOG]

PLOTTED: 07/07/2015 02:01 PM BY: clbeck

BORING LOG B-57

Date Begin - End:	10/13/2014 - 10/13/2014	**Drilling Company:**	Enviro-Drill		
Logged By:	M. Cote	**Drill Crew:**	Ed & Juan		
Hor.-Vert. Datum:	NAD83	**Drilling Equipment:**	CME-75	**Hammer Type - Drop:**	63.5 kg. Auto - 762 mm.
Plunge:	-90 degrees	**Drilling Method:**	Hollow Stem Auger		
Weather:	sunny, cool	**Exploration Diameter:**	184 mm. O.D.		

FIELD EXPLORATION

Northing: 508,494.46 (m)
Easting: 249,369.73 (m)
Ground Surface Elevation (m.): 1,835.1
Location Offset: Sta. 11+200/1.83m Rt CL
Surface Condition: Asphalt

Elevation (meters)	Depth (meters)	Graphical Log	Lithologic Description	Sample Type	Blow Counts(BC)= Uncorr. Blows/152 mm. Pocket Pen(PP)= T/m²	Recovery (NR=No Recovery)
1835			Field engineer measured 0.13m asphalt			
			Field engineer measured 0.13m base course			
			Poorly-graded SAND with Silt (SP-SM): fine grained, non-plastic, reddish yellowish brown, moist, medium dense		BC=6 10 8	356 mm
1834	1		**Poorly-graded SAND (SP)**: fine grained, reddish yellow, moist, medium dense		BC=6 6 10	381 mm
			Dry, loose, clean below 1.83m bgs		BC=3 5 5	406 mm
1833	2					
			Fine to medium grained, dry, loose, trace rootlets, weakly cemented below 2.74m bgs		BC=3 5 4	381 mm
1832	3					
1831	4					
1830	5					
1829	6					

LABORATORY RESULTS

AASHTO Symbol	Water Content (%)	Dry Unit Wt. (pcf)	Passing #4 (%)	Passing #200 (%)	Liquid Limit	Plasticity Index (NP=NonPlastic)	Additional Tests/ Remarks

The exploration was terminated at approximately 3.2 m. below ground surface. The exploration was backfilled with auger cuttings and asphalt patch on October 13, 2014.

GROUNDWATER LEVEL INFORMATION:
Groundwater was not encountered during drilling or after completion.
GENERAL NOTES:
Coordinates obtained from WHPacific N15 Alignment CAD file; Surface elevation provided by WHPacific.

Allwyn ENVIRONMENTAL

PROJECT NO.:	20151221
DRAWN BY:	PD
CHECKED BY:	MJM
DATE:	12/5/2014
REVISED:	12/17/2014

BORING LOG B-57

BIA N15(2-3)(3-1)(4-1)2&4
GREASEWOOD TO BURNSIDE, ARIZONA

PLATE

B-57

gINT FILE: PROJECTWISE: 20151221_n1520151221.gpj
gINT TEMPLATE: PROJECTWISE: KLF_STANDARD_GINT_LIBRARY_2014.GLB [KLF_BORING/TEST PIT SOIL LOG]

PLOTTED: 07/07/2015 02:01 PM BY: clbeck

BORING LOG B-58

Date Begin - End:	10/13/2014 - 10/13/2014	**Drilling Company:**	Enviro-Drill		
Logged By:	M. Cote	**Drill Crew:**	Ed & Juan		
Hor.-Vert. Datum:	NAD83	**Drilling Equipment:**	CME-75	**Hammer Type - Drop:**	63.5 kg. Auto - 762 mm.
Plunge:	-90 degrees	**Drilling Method:**	Hollow Stem Auger		
Weather:	sunny	**Exploration Diameter:**	184 mm. O.D.		

FIELD EXPLORATION

Northing: 508,534.12 (m)
Easting: 249,565.78 (m)
Ground Surface Elevation (m.): 1,837.2
Location Offset: Sta. 11+400/1.83m Lt CL
Surface Condition: Asphalt

Elevation (meters)	Depth (meters)	Graphical Log	Lithologic Description	Sample Type	Blow Counts(BC)= Uncorr. Blows/152 mm. Pocket Pen(PP)= T/m²	Recovery (NR=No Recovery)
1837	0		Field engineer measured 0.10m asphalt			
			Field engineer measured 0.10 base course			
			Poorly-graded SAND (SP): fine grained, yellowish brown, moist, loose, trace silt		BC=3 6 4	457 mm
	1		Very loose from 0.91m bgs		BC=2 1 1	432 mm
1836						
	2		Reddish yellowish brown, trace fine, yellow, subrounded sandstone gravel from 1.83m bgs		BC=1 1 1	254 mm
1835						
	3		Trace patches of olive gray fine sand below 2.74m bgs		BC=1 1 1	457 mm
1834						
	4					
1833						
	5					
1832						
	6					

LABORATORY RESULTS

AASHTO Symbol	Water Content (%)	Dry Unit Wt. (pcf)	Passing #4 (%)	Passing #200 (%)	Liquid Limit	Plasticity Index (NP=NonPlastic)	Additional Tests/ Remarks

The exploration was terminated at approximately 3.2 m. below ground surface. The exploration was backfilled with auger cuttings and asphalt patch on October 13, 2014.

GROUNDWATER LEVEL INFORMATION:
Groundwater was not encountered during drilling or after completion.
GENERAL NOTES:
Coordinates obtained from WHPacific N15 Alignment CAD file; Surface elevation provided by WHPacific.

Allwyn ENVIRONMENTAL

PROJECT NO.:	20151221
DRAWN BY:	PD
CHECKED BY:	MJM
DATE:	12/5/2014
REVISED:	12/17/2014

BORING LOG B-58

BIA N15(2-3)(3-1)(4-1)2&4
GREASEWOOD TO BURNSIDE, ARIZONA

PLATE

B-58

PAGE: 1 of 1

gINT FILE: PROJECTWISE: 20151221_n1520151221.gpj
gINT TEMPLATE: PROJECTWISE: KLF_STANDARD_GINT_LIBRARY_2014.GLB [KLF_BORING/TEST PIT SOIL LOG]

PLOTTED: 07/07/2015 02:01 PM BY: clbeck

BORING LOG B-59

Date Begin - End:	10/13/2014 - 10/13/2014	**Drilling Company:**	Enviro-Drill		
Logged By:	M. Cote	**Drill Crew:**	Ed & Juan		
Hor.-Vert. Datum:	NAD83	**Drilling Equipment:**	CME-75	**Hammer Type - Drop:**	63.5 kg. Auto - 762 mm.
Plunge:	-90 degrees	**Drilling Method:**	Hollow Stem Auger		
Weather:	sunny, cool	**Exploration Diameter:**	184 mm. O.D.		

FIELD EXPLORATION

Northing: 508,568.1 (m)
Easting: 249,763.0 (m)
Ground Surface Elevation (m.): 1,840.3
Location Offset: Sta. 11+600/1.83m Rt CL
Surface Condition: Asphalt

Elevation (meters)	Depth (meters)	Graphical Log	Lithologic Description	Sample Type	Blow Counts(BC)= Uncorr. Blows/152 mm. Pocket Pen(PP)= T/m²	Recovery (NR=No Recovery)
			Field engineer meausred 0.13m asphalt			
			Field engineer meausred 0.08m base course			
1840			**Poorly-graded SAND with Silt (SP-SM)**: fine grained, non-plastic, yellowish brown, moist, medium dense		BC=5 10 8	381 mm
	1		**Poorly-graded SAND (SP)**: fine grained, reddish yellowish brown, moist, loose, trace fines		BC=2 3 3	356 mm
1839						
			Dry to moist, trace white to gray well cemented sandstone gravel from 1.83m bgs		BC=2 3 2	457 mm
	2					
1838						
			Moist, trace gray well cemented sandstone gravel, trace thin white wavy caliche lines below 2.74m bgs		BC=2 2 2	
	3					
1837						
	4					
1836						
	5					
1835						
	6					

LABORATORY RESULTS

AASHTO Symbol	Water Content (%)	Dry Unit Wt. (pcf)	Passing #4 (%)	Passing #200 (%)	Liquid Limit	Plasticity Index (NP=NonPlastic)	Additional Tests/ Remarks

The exploration was terminated at approximately 3.2 m. below ground surface. The exploration was backfilled with auger cuttings and asphalt patch on October 13, 2014.

GROUNDWATER LEVEL INFORMATION:
Groundwater was not encountered during drilling or after completion.
GENERAL NOTES:
Coordinates obtained from WHPacific N15 Alignment CAD file; Surface elevation provided by WHPacific.

Allwyn ENVIRONMENTAL

PROJECT NO.:	20151221
DRAWN BY:	PD
CHECKED BY:	MJM
DATE:	12/5/2014
REVISED:	12/17/2014

BORING LOG B-59

BIA N15(2-3)(3-1)(4-1)2&4
GREASEWOOD TO BURNSIDE, ARIZONA

PLATE

B-59

gINT FILE: PROJECTWISE: 20151221_n1520151221.gpj
gINT TEMPLATE: PROJECTWISE: KLF_STANDARD_GINT_LIBRARY_2014.GLB [KLF_BORING/TEST PIT SOIL LOG]

PLOTTED: 07/07/2015 02:01 PM BY: clbeck

BORING LOG B-60

Date Begin - End:	10/13/2014 - 10/13/2014	**Drilling Company:**	Enviro-Drill		
Logged By:	M. Cote	**Drill Crew:**	Ed & Juan		
Hor.-Vert. Datum:	NAD83	**Drilling Equipment:**	CME-75	**Hammer Type - Drop:**	63.5 kg. Auto - 762 mm.
Plunge:	-90 degrees	**Drilling Method:**	Hollow Stem Auger		
Weather:	sunny	**Exploration Diameter:**	184 mm. O.D.		

FIELD EXPLORATION

Northing: 508,653.33 (m)
Easting: 249,942.96 (m)
Ground Surface Elevation (m.): 1,842.5
Location Offset: Sta. 11+800/1.83m Lt CL
Surface Condition: Asphalt

Elevation (meters)	Depth (meters)	Graphical Log	Lithologic Description	Sample Type	Blow Counts(BC)= Uncorr. Blows/152 mm. Pocket Pen(PP)= T/m²	Recovery (NR=No Recovery)
			Field engineer measured 0.10m asphalt			
			Field engineer measured 0.13m base course			
1842			**Poorly-graded SAND with Clay (SP-SC)**: fine to medium grained, low plasticity, brown, dry to moist, loose, weakly cemented		BC=5 5 4	305 mm
	1		**Poorly-graded SAND (SP)**: fine grained, reddish yellowish brown, moist, very loose		BC=2 1 2	457 mm
1841						
	2		Trace fine rootlets at 1.83m bgs		BC=2 2 1	356 mm
1840						
	3		Fine to medium, subrounded to rounded below 2.74m bgs		BC=2 1 2	
1839						
	4					
1838						
	5					
1837						
	6					

LABORATORY RESULTS

AASHTO Symbol	Water Content (%)	Dry Unit Wt. (pcf)	Passing #4 (%)	Passing #200 (%)	Liquid Limit	Plasticity Index (NP=NonPlastic)	Additional Tests/ Remarks
	4.8						

The exploration was terminated at approximately 3.2 m. below ground surface. The exploration was backfilled with auger cuttings and asphalt patch on October 13, 2014.

GROUNDWATER LEVEL INFORMATION:
Groundwater was not encountered during drilling or after completion.

GENERAL NOTES:
Coordinates obtained from WHPacific N15 Alignment CAD file; Surface elevation provided by WHPacific.

Allwyn ENVIRONMENTAL

PROJECT NO.:	20151221
DRAWN BY:	PD
CHECKED BY:	MJM
DATE:	12/5/2014
REVISED:	12/17/2014

BORING LOG B-60

BIA N15(2-3)(3-1)(4-1)2&4
GREASEWOOD TO BURNSIDE, ARIZONA

PLATE

B-60

gINT FILE: PROJECTWISE: 20151221_n1520151221.gpj
gINT TEMPLATE: PROJECTWISE: KLF_STANDARD_GINT_LIBRARY_2014.GLB [KLF_BORING/TEST PIT SOIL LOG]

PLOTTED: 07/07/2015 02:01 PM BY: clbeck

BORING LOG B-61

Date Begin - End:	10/13/2014 - 10/13/2014	**Drilling Company:**	Enviro-Drill
Logged By:	M. Cote	**Drill Crew:**	Ed & Juan
Hor.-Vert. Datum:	NAD83	**Drilling Equipment:**	CME-75
Plunge:	-90 degrees	**Drilling Method:**	Hollow Stem Auger
Weather:	sunny	**Exploration Diameter:**	184 mm. O.D.

Hammer Type - Drop: 63.5 kg. Auto - 762 mm.

FIELD EXPLORATION

Northing: 508,786.18 (m)
Easting: 250,091.65 (m)
Ground Surface Elevation (m.): 1,844.0
Location Offset: Sta. 12+000/1.83m Rt CL
Surface Condition: Asphalt

Elevation (meters)	Depth (meters)	Graphical Log	Lithologic Description	Sample Type	Blow Counts(BC)= Uncorr. Blows/152 mm. Pocket Pen(PP)= T/m²	Recovery (NR=No Recovery)	AASHTO Symbol	Water Content (%)	Dry Unit Wt. (pcf)	Passing #4 (%)	Passing #200 (%)	Liquid Limit	Plasticity Index (NP=NonPlastic)	Additional Tests/ Remarks
			Field engineer measured 0.13m asphalt											
			Field engineer measured 0.13m base course											
			Poorly-graded SAND with Clay (SP-SC): fine grained, low plasticity, yellowish brown, moist, medium dense, trace white well cemented fine subrounded sandstone gravel		BC=5 7 7	432 mm								Bulk sample obtained from depth of 0.3 to 1.52m bgs
1843	1		**Poorly-graded SAND (SP)**: moist, medium dense, trace white moderately cemented coarse subrounded sandstone gravel, trace fines		BC=3 8 10	356 mm								
1842	2		**Clayey SAND (SC)**: fine to coarse grained, low plasticity, moist, medium dense, not homogenous mostly brown with patches of pale red, decomposed yellowish brown sandstone		BC=8 8 9	457 mm								
1841	3				BC=12 20 17	457 mm								Driller couldn't feel change in density, felt "reasonably smooth" throughout the drilling of this borehole
1840	4													
1839	5													
1838	6													

The exploration was terminated at approximately 3.2 m. below ground surface. The exploration was backfilled with auger cuttings and asphalt patch on October 13, 2014.

GROUNDWATER LEVEL INFORMATION:
Groundwater was not encountered during drilling or after completion.

GENERAL NOTES:
Coordinates obtained from WHPacific N15 Alignment CAD file; Surface elevation provided by WHPacific.

Allwyn ENVIRONMENTAL

PROJECT NO.:	20151221
DRAWN BY:	PD
CHECKED BY:	MJM
DATE:	12/5/2014
REVISED:	12/17/2014

BORING LOG B-61

BIA N15(2-3)(3-1)(4-1)2&4
GREASEWOOD TO BURNSIDE, ARIZONA

PLATE

B-61

PAGE: 1 of 1

gINT FILE: PROJECTWISE: 20151221_n1520151221.gpj
gINT TEMPLATE: PROJECTWISE: KLF_STANDARD_GINT_LIBRARY_2014.GLB [KLF_BORING/TEST PIT SOIL LOG]

PLOTTED: 07/07/2015 02:01 PM BY: clbeck

BORING LOG B-62

Date Begin - End:	10/13/2014 - 10/13/2014	**Drilling Company:**	Enviro-Drill		
Logged By:	M. Cote	**Drill Crew:**	Ed & Juan		
Hor.-Vert. Datum:	NAD83	**Drilling Equipment:**	CME-75	**Hammer Type - Drop:**	63.5 kg. Auto - 762 mm.
Plunge:	-90 degrees	**Drilling Method:**	Hollow Stem Auger		
Weather:	sunny	**Exploration Diameter:**	184 mm. O.D.		

FIELD EXPLORATION

Northing: 508,932.93 (m)
Easting: 250,227.56 (m)
Ground Surface Elevation (m.): 1,844.7
Location Offset: Sta. 12+200/1.83m Lt CL
Surface Condition: Asphalt

Elevation (meters)	Depth (meters)	Graphical Log	Lithologic Description	Sample Type	Blow Counts(BC)= Uncorr. Blows/152 mm. Pocket Pen(PP)= T/m²	Recovery (NR=No Recovery)
			Field engineer measured 0.13m asphalt			
			Field engineer measured 0.13m base course			
1844	0		**Poorly-graded SAND (SP)**: fine grained, yellowish brown to olive brown, moist, medium dense, trace clay seams		BC=5 13 11	457 mm
	1		Yellowish brown, loose below 0.91m bgs		BC=2 4 3	432 mm
1843						
	2		Very loose below 1.83m bgs		BC=1 0 1	457 mm
1842						
	3		Fine to medium grained below 2.74m bgs		BC=1 0 1	
1841	4					
1840	5					
1839	6					

LABORATORY RESULTS

AASHTO Symbol	Water Content (%)	Dry Unit Wt. (pcf)	Passing #4 (%)	Passing #200 (%)	Liquid Limit	Plasticity Index (NP=NonPlastic)	Additional Tests/ Remarks

The exploration was terminated at approximately 3.2 m. below ground surface. The exploration was backfilled with auger cuttings and asphalt patch on October 13, 2014.

GROUNDWATER LEVEL INFORMATION:
Groundwater was not encountered during drilling or after completion.
GENERAL NOTES:
Coordinates obtained from WHPacific N15 Alignment CAD file; Surface elevation provided by WHPacific.

Allwyn ENVIRONMENTAL

PROJECT NO.:	20151221
DRAWN BY:	PD
CHECKED BY:	MJM
DATE:	12/5/2014
REVISED:	12/17/2014

BORING LOG B-62

BIA N15(2-3)(3-1)(4-1)2&4
GREASEWOOD TO BURNSIDE, ARIZONA

PLATE

B-62

PAGE: 1 of 1

gINT FILE: PROJECTWISE: 20151221_n1520151221.gpj
gINT TEMPLATE: PROJECTWISE: KLF_STANDARD_GINT_LIBRARY_2014.GLB [KLF_BORING/TEST PIT SOIL LOG]

PLOTTED: 07/07/2015 02:01 PM BY: clbeck

BORING LOG B-63

Date Begin - End:	10/13/2014 - 10/13/2014	**Drilling Company:**	Enviro-Drill		
Logged By:	M. Cote	**Drill Crew:**	Ed & Juan		
Hor.-Vert. Datum:	NAD83	**Drilling Equipment:**	CME-75	**Hammer Type - Drop:**	63.5 kg. Auto - 762 mm.
Plunge:	-90 degrees	**Drilling Method:**	Hollow Stem Auger		
Weather:	sunny	**Exploration Diameter:**	184 mm. O.D.		

FIELD EXPLORATION

Northing: 509,075.66 (m)
Easting: 250,367.7 (m)
Ground Surface Elevation (m.): 1,845.2
Location Offset: Sta. 12+400/1.83m Rt CL
Surface Condition: Asphalt

Elevation (meters)	Depth (meters)	Graphical Log	Lithologic Description	Sample Type	Blow Counts(BC)= Uncorr. Blows/152 mm. Pocket Pen(PP)= T/m²	Recovery (NR=No Recovery)
1845			Field engineer measured 0.13m asphalt			
			Field engineer measured 0.13m base course			
			Poorly-graded SAND with Clay (SP-SC): fine to coarse grained, low plasticity, reddish yellowish brown, moist, loose, with gray coarse sandstone gravel		BC=6 6 4	254 mm
1844	1		**Poorly-graded SAND (SP)**: fine to coarse grained, yellowish brown, moist, very loose		BC=1 0 1	305 mm
1843	2		Trace gray, moderately cemented sandstone gravel below 1.98m bgs		BC=1 0 1	457 mm
1842	3		Seams of moderately cemented, fine gray sandstone fragments at 2.74m bgs		BC=1 1 0	
1841	4					
1840	5					
	6					

LABORATORY RESULTS

AASHTO Symbol	Water Content (%)	Dry Unit Wt. (pcf)	Passing #4 (%)	Passing #200 (%)	Liquid Limit	Plasticity Index (NP=NonPlastic)	Additional Tests/ Remarks

The exploration was terminated at approximately 3.2 m. below ground surface. The exploration was backfilled with auger cuttings and asphalt patch on October 13, 2014.

GROUNDWATER LEVEL INFORMATION:
Groundwater was not encountered during drilling or after completion.

GENERAL NOTES:
Coordinates obtained from WHPacific N15 Alignment CAD file; Surface elevation provided by WHPacific.

Allwyn ENVIRONMENTAL

PROJECT NO.:	20151221
DRAWN BY:	PD
CHECKED BY:	MJM
DATE:	12/5/2014
REVISED:	12/17/2014

BORING LOG B-63

BIA N15(2-3)(3-1)(4-1)2&4
GREASEWOOD TO BURNSIDE, ARIZONA

PLATE

B-63

gINT FILE: PROJECTWISE: 20151221_n1520151221.gpj
gINT TEMPLATE: PROJECTWISE: KLF_STANDARD_GINT_LIBRARY_2014.GLB [KLF_BORING/TEST PIT SOIL LOG]

PLOTTED: 07/07/2015 02:01 PM BY: clbeck

BORING LOG B-64

Date Begin - End:	10/13/2014 - 10/13/2014	**Drilling Company:**	Enviro-Drill		
Logged By:	M. Cote	**Drill Crew:**	Ed & Juan		
Hor.-Vert. Datum:	NAD83	**Drilling Equipment:**	CME-75	**Hammer Type - Drop:**	63.5 kg. Auto - 762 mm.
Plunge:	-90 degrees	**Drilling Method:**	Hollow Stem Auger		
Weather:	sunny, breezy	**Exploration Diameter:**	184 mm. O.D.		

FIELD EXPLORATION

Northing: 509,222.48 (m)
Easting: 250,503.54 (m)
Ground Surface Elevation (m.): 1,844.5
Location Offset: Sta. 12+600/1.83m Lt CL
Surface Condition: Asphalt

Elevation (meters)	Depth (meters)	Graphical Log	Lithologic Description	Sample Type	Blow Counts(BC)= Uncorr. Blows/152 mm. Pocket Pen(PP)= T/m²	Recovery (NR=No Recovery)
			Field engineer measured 0.10m asphalt			
			Field engineer measured 0.13m base course			
1844			**Poorly-graded SAND (SP)**: fine grained, yellowish brown, moist, loose, with gray moderately cemented sandstone gravel		BC=5 4 2	279 mm
	1		Very loose from 0.91m bgs Yellow, weakly cemented sandstone fragments at 1m bgs		BC=1 1 1	457 mm
1843						
	2		Trace pink, well cemented claystone gravel at 1.83m bgs		BC=1 0 1	457 mm
1842						
	3		Trace weakly to moderately cemented, olive gray sandstone gravel at 2.74m bgs		BC=1 0 1	457 mm
1841						
	4					
1840						
	5					
1839						
	6					

LABORATORY RESULTS

AASHTO Symbol	Water Content (%)	Dry Unit Wt. (pcf)	Passing #4 (%)	Passing #200 (%)	Liquid Limit	Plasticity Index (NP=NonPlastic)	Additional Tests/ Remarks

The exploration was terminated at approximately 3.2 m. below ground surface. The exploration was backfilled with auger cuttings and asphalt patch on October 13, 2014.

GROUNDWATER LEVEL INFORMATION:
Groundwater was not encountered during drilling or after completion.
GENERAL NOTES:
Coordinates obtained from WHPacific N15 Alignment CAD file; Surface elevation provided by WHPacific.

Allwyn ENVIRONMENTAL

PROJECT NO.:	20151221
DRAWN BY:	PD
CHECKED BY:	MJM
DATE:	12/5/2014
REVISED:	12/17/2014

BORING LOG B-64

BIA N15(2-3)(3-1)(4-1)2&4
GREASEWOOD TO BURNSIDE, ARIZONA

PLATE

B-64

gINT FILE: PROJECTWISE: 20151221_n1520151221.gpj
gINT TEMPLATE: PROJECTWISE: KLF_STANDARD_GINT_LIBRARY_2014.GLB [KLF_BORING/TEST PIT SOIL LOG]

PLOTTED: 07/07/2015 02:01 PM BY: clbeck

BORING LOG B-65

Date Begin - End:	10/13/2014 - 10/13/2014	**Drilling Company:**	Enviro-Drill
Logged By:	M. Cote	**Drill Crew:**	Ed & Juan
Hor.-Vert. Datum:	NAD83	**Drilling Equipment:**	CME-75
Plunge:	-90 degrees	**Drilling Method:**	Hollow Stem Auger
Weather:	sunny	**Exploration Diameter:**	184 mm. O.D.

Hammer Type - Drop: 63.5 kg. Auto - 762 mm.

FIELD EXPLORATION

Northing: 509,365.13 (m)
Easting: 250,643.76 (m)
Ground Surface Elevation (m.): 1,846.4
Location Offset: Sta. 12+800/1.83m Rt CL
Surface Condition: Asphalt

Elevation (meters)	Depth (meters)	Graphical Log	Lithologic Description	Sample Type	Blow Counts(BC)= Uncorr. Blows/152 mm. Pocket Pen(PP)= T/m²	Recovery (NR=No Recovery)
			Field engineer measured 0.13m asphalt			
			Field engineer measured 0.13m base course			
1846			**Poorly-graded SAND (SP)**: fine to coarse grained, yellowish brown to brown, moist, medium dense, trace fine subrounded weakly to moderately cemented pink white sandstone gravel		BC=10 14 9	457 mm
	1		Trace coarse subrounded to rounded sandstone gravel below 1.07m bgs		BC=5 10 8	381 mm
1845			Very loose below 1.83m bgs		BC=1 1 1	406 mm
	2		Fine, pink angular sandstone gravel below 2.74m bgs		BC=1 1 1	305 mm
1844						
1843	3					
1842	4					
1841	5					
	6					

LABORATORY RESULTS

AASHTO Symbol	Water Content (%)	Dry Unit Wt. (pcf)	Passing #4 (%)	Passing #200 (%)	Liquid Limit	Plasticity Index (NP=NonPlastic)	Additional Tests/ Remarks

The exploration was terminated at approximately 3.2 m. below ground surface. The exploration was backfilled with auger cuttings and asphalt patch on October 13, 2014.

GROUNDWATER LEVEL INFORMATION:
Groundwater was not encountered during drilling or after completion.

GENERAL NOTES:
Coordinates obtained from WHPacific N15 Alignment CAD file; Surface elevation provided by WHPacific.

Allwyn ENVIRONMENTAL

PROJECT NO.:	20151221
DRAWN BY:	PD
CHECKED BY:	MJM
DATE:	12/5/2014
REVISED:	12/17/2014

BORING LOG B-65

BIA N15(2-3)(3-1)(4-1)2&4
GREASEWOOD TO BURNSIDE, ARIZONA

PLATE

B-65

gINT FILE: PROJECTWISE: 20151221_n1520151221.gpj
gINT TEMPLATE: PROJECTWISE: KLF_STANDARD_GINT_LIBRARY_2014.GLB [KLF_BORING/TEST PIT SOIL LOG]

PLOTTED: 07/07/2015 02:01 PM BY: clbeck

BORING LOG B-66

Date Begin - End:	10/13/2014 - 10/13/2014	**Drilling Company:**	Enviro-Drill		
Logged By:	M. Cote	**Drill Crew:**	Ed & Juan		
Hor.-Vert. Datum:	NAD83	**Drilling Equipment:**	CME-75	**Hammer Type - Drop:**	63.5 kg. Auto - 762 mm.
Plunge:	-90 degrees	**Drilling Method:**	Hollow Stem Auger		
Weather:	sunny, breezy	**Exploration Diameter:**	184 mm. O.D.		

FIELD EXPLORATION

Northing: 509,516.18 (m)
Easting: 250,774.69 (m)
Ground Surface Elevation (m.): 1,848.6
Location Offset: Sta. 13+000/1.83m Lt CL
Surface Condition: Asphalt

Elevation (meters)	Depth (meters)	Graphical Log	Lithologic Description	Sample Type	Blow Counts(BC)= Uncorr. Blows/152 mm. Pocket Pen(PP)= T/m²	Recovery (NR=No Recovery)	AASHTO Symbol	Water Content (%)	Dry Unit Wt. (pcf)	Passing #4 (%)	Passing #200 (%)	Liquid Limit	Plasticity Index (NP=NonPlastic)	Additional Tests/ Remarks
			Field engineer measured 0.10m asphalt											
			Field engineer measured 0.13m base course											
1848			**Poorly-graded SAND (SP)**: fine to medium grained, yellowish brown, moist, loose, trace weakly to moderately cemented gray and yellow subrounded sandstone gravel		BC=4 4 4	457 mm								Bulk sample obtained from depth of 0.3 to 1.52m bgs
	1				BC=6 7 7	457 mm								
1847														
	2		Very loose, slight increase in gravel content from 1.83m bgs		BC=1 1 1	356 mm								
1846														
	3		Fine grained, very loose from 2.74m bgs		BC=1 0 1	457 mm								
1845														
	4													
1844														
	5													
1843														
	6													

The exploration was terminated at approximately 3.2 m. below ground surface. The exploration was backfilled with auger cuttings and asphalt patch on October 13, 2014.

GROUNDWATER LEVEL INFORMATION:
Groundwater was not encountered during drilling or after completion.

GENERAL NOTES:
Coordinates obtained from WHPacific N15 Alignment CAD file; Surface elevation provided by WHPacific.

Allwyn ENVIRONMENTAL

PROJECT NO.:	20151221
DRAWN BY:	PD
CHECKED BY:	MJM
DATE:	12/5/2014
REVISED:	12/17/2014

BORING LOG B-66

BIA N15(2-3)(3-1)(4-1)2&4
GREASEWOOD TO BURNSIDE, ARIZONA

PLATE

B-66

gINT FILE: PROJECTWISE: 20151221_n1520151221.gpj
gINT TEMPLATE: PROJECTWISE: KLF_STANDARD_GINT_LIBRARY_2014.GLB [KLF_BORING/TEST PIT SOIL LOG]

PLOTTED: 07/07/2015 02:01 PM BY: clbeck

BORING LOG B-67

Date Begin - End:	10/14/2014 - 10/14/2014	**Drilling Company:**	Enviro-Drill		
Logged By:	M. Cote	**Drill Crew:**	Ed & Juan		
Hor.-Vert. Datum:	NAD83	**Drilling Equipment:**	CME-75	**Hammer Type - Drop:**	63.5 kg. Auto - 762 mm.
Plunge:	-90 degrees	**Drilling Method:**	Hollow Stem Auger		
Weather:	clear, cool	**Exploration Diameter:**	184 mm. O.D.		

FIELD EXPLORATION

Northing: 509,675.79 (m)
Easting: 250,895.09 (m)
Ground Surface Elevation (m.): 1,849.3
Location Offset: Sta. 13+200/1.83m Rt CL
Surface Condition: Asphalt

Elevation (meters)	Depth (meters)	Graphical Log	Lithologic Description	Sample Type	Blow Counts(BC)= Uncorr. Blows/152 mm. Pocket Pen(PP)= T/m²	Recovery (NR=No Recovery)
			Field engineer measured 0.10m asphalt			
			Field engineer measured 0.13m base course			
1849			**Clayey SAND (SC)**: fine grained, low plasticity, reddish brown, moist, medium dense, trace fine to coarse moderately cemented subrounded yellow sandstone gravel		BC=5 5 7	406 mm
	1		Loose, decrease in clay and gravel content at 0.91m bgs		BC=3 5 5	432 mm
1848						
	2		**Poorly-graded SAND (SP)**: fine grained, yellowish brown, moist, very loose		BC=2 1 1	406 mm
1847						
	3		Trace white, moderately cemented, subrounded, fine sandstone gravel at 2.74m bgs		BC=2 2 3	381 mm
1846						
	4					
1845						
	5					
1844						
	6					

LABORATORY RESULTS

AASHTO Symbol	Water Content (%)	Dry Unit Wt. (pcf)	Passing #4 (%)	Passing #200 (%)	Liquid Limit	Plasticity Index (NP=NonPlastic)	Additional Tests/ Remarks

The exploration was terminated at approximately 3.2 m. below ground surface. The exploration was backfilled with auger cuttings and asphalt patch on October 14, 2014.

GROUNDWATER LEVEL INFORMATION:
Groundwater was not encountered during drilling or after completion.
GENERAL NOTES:
Coordinates obtained from WHPacific N15 Alignment CAD file; Surface elevation provided by WHPacific.

Allwyn ENVIRONMENTAL

PROJECT NO.:	20151221
DRAWN BY:	PD
CHECKED BY:	MJM
DATE:	12/5/2014
REVISED:	12/17/2014

BORING LOG B-67

BIA N15(2-3)(3-1)(4-1)2&4
GREASEWOOD TO BURNSIDE, ARIZONA

PLATE

B-67

gINT FILE: PROJECTWISE: 20151221_n1520151221.gpj
gINT TEMPLATE: PROJECTWISE: KLF_STANDARD_GINT_LIBRARY_2014.GLB [KLF_BORING/TEST PIT SOIL LOG]

PLOTTED: 07/07/2015 02:01 PM BY: clbeck

BORING LOG B-68

Date Begin - End:	10/14/2014 - 10/14/2014	**Drilling Company:**	Enviro-Drill		
Logged By:	M. Cote	**Drill Crew:**	Ed & Juan		
Hor.-Vert. Datum:	NAD83	**Drilling Equipment:**	CME-75	**Hammer Type - Drop:**	63.5 kg. Auto - 762 mm.
Plunge:	-90 degrees	**Drilling Method:**	Hollow Stem Auger		
Weather:	sunny	**Exploration Diameter:**	184 mm. O.D.		

Northing: 509,845.23 (m)
Easting: 251,000.79 (m)
Ground Surface Elevation (m.): 1,849.6
Location Offset: Sta. 13+400/1.83m Lt CL
Surface Condition: Asphalt

Elevation (meters)	Depth (meters)	Graphical Log	Lithologic Description	Sample Type	Blow Counts(BC)= Uncorr. Blows/152 mm. Pocket Pen(PP)= T/m²	Recovery (NR=No Recovery)	AASHTO Symbol	Water Content (%)	Dry Unit Wt. (pcf)	Passing #4 (%)	Passing #200 (%)	Liquid Limit	Plasticity Index (NP=NonPlastic)	Additional Tests/ Remarks
			Field engineer measured 0.10m asphalt											
			Field engineer measured 0.13m base course											
1849			**Clayey SAND (SC)**: fine grained, low plasticity, reddish brown, moist, medium dense, trace yellow sandy patches up to 0.03m wide		BC=5 7 8	457 mm								
	1		**Poorly-graded SAND (SP)**: fine grained, non-plastic, yellowish brown, moist, medium dense, trace fine gray sandstone gravel 0.03m wide seam of light brownish gray, well cemented, fine sand at 1.22m bgs		BC=4 5 4	457 mm								
1848														
	2		Reddish yellowish brown, dense below 1.98m bgs Well cemented sandstone seam at 1.98m bgs		BC=11 15 16	305 mm	A-2-4(0)	9.1		96	4.5	23	3	
1847														
	3		Yellowish brown, loose, trace fine white sandstone gravel at 2.74m bgs		BC=3 2 2	457 mm								
1846														
	4		**Poorly-graded SAND with Clay (SP-SC)**: fine grained, low plasticity, yellowish brown, moist, very loose		BC=1 1 1	254 mm								
1845														
			Poorly-graded SAND with Silt (SP-SM): non-plastic, orange to light brownish gray, moist, very dense		BC=5 6 50/1"	330 mm								
	5		Blocky and weakly cemented at 4.88m bgs											
1844														
	6													

The exploration was terminated at approximately 4.9 m. below ground surface. The exploration was backfilled with auger cuttings and asphalt patch on October 14, 2014.

GROUNDWATER LEVEL INFORMATION:
Groundwater was not encountered during drilling or after completion.

GENERAL NOTES:
Coordinates obtained from WHPacific N15 Alignment CAD file; Surface elevation provided by WHPacific.

Allwyn ENVIRONMENTAL

PROJECT NO.:	20151221
DRAWN BY:	PD
CHECKED BY:	MJM
DATE:	12/5/2014
REVISED:	12/17/2014

BORING LOG B-68

BIA N15(2-3)(3-1)(4-1)2&4
GREASEWOOD TO BURNSIDE, ARIZONA

PLATE

B-68

PAGE: 1 of 1

gINT FILE: PROJECTWISE: 20151221_n1520151221.gpj
gINT TEMPLATE: PROJECTWISE: KLF_STANDARD_GINT_LIBRARY_2014.GLB [KLF_BORING/TEST PIT SOIL LOG]

PLOTTED: 07/07/2015 02:01 PM BY: clbeck

BORING LOG B-69

Date Begin - End:	10/14/2014 - 10/14/2014	**Drilling Company:**	Enviro-Drill		
Logged By:	M. Cote	**Drill Crew:**	Ed & Juan		
Hor.-Vert. Datum:	NAD83	**Drilling Equipment:**	CME-75	**Hammer Type - Drop:**	63.5 kg. Auto - 762 mm.
Plunge:	-90 degrees	**Drilling Method:**	Hollow Stem Auger		
Weather:	sunny, cool	**Exploration Diameter:**	184 mm. O.D.		

FIELD EXPLORATION

Northing: 509,861.87 (m)
Easting: 251,015.56 (m)
Ground Surface Elevation (m.): 1,849.7
Location Offset: Sta. 13+420/3.7m Rt CL
Surface Condition: Asphalt

Elevation (meters)	Depth (meters)	Graphical Log	Lithologic Description	Sample Type	Blow Counts(BC)= Uncorr. Blows/152 mm. Pocket Pen(PP)= T/m²	Recovery (NR=No Recovery)	AASHTO Symbol	Water Content (%)	Dry Unit Wt. (pcf)	Passing #4 (%)	Passing #200 (%)	Liquid Limit	Plasticity Index (NP=NonPlastic)	Additional Tests/ Remarks
			Field engineer measured 0.13m asphalt											
			Field engineer measured 0.10m base course											
1849			**Clayey SAND (SC)**: fine to medium grained, medium plasticity, reddish brown, moist, medium dense, trace white moderately cemented coarse subrounded sandstone gravel		BC=4 8 11	432 mm	A-2-6(0)			87	26	29	14	**R-Value=** 19 Bulk sample obtained from depth of 0.3 to 1.52m bgs
	1		Seam of white moderately cemented sandstone at 1.07m bgs		BC=5 12 10	381 mm								
1848			**Poorly-graded SAND (SP)**: fine grained, non-plastic, reddish brown to yellowish brown, dry to moist, medium dense, trace fine white subrounded sandstone gravel											
	2				BC=5 6 9	406 mm								
1847			Trace fine, gray sandstone gravel at 2.74m bgs		BC=3 8 7	457 mm								
	3													
1846			Fine to coarse grained, loose, trace clay from 3.66m bgs		BC=6 6 4	457 mm								
	4													
1845			Fine to medium grained, yellowish brown, loose, trace weakly cemented sandstone fragments at 4.57m bgs		BC=4 5 5	457 mm								
	5		Well rounded at 5.18m bgs											
1844					BC=3 2 2	457 mm								
	6													

Allwyn ENVIRONMENTAL

PROJECT NO.:	20151221
DRAWN BY:	PD
CHECKED BY:	MJM
DATE:	12/5/2014
REVISED:	12/17/2014

BORING LOG B-69

BIA N15(2-3)(3-1)(4-1)2&4
GREASEWOOD TO BURNSIDE, ARIZONA

PLATE

B-69

gINT FILE: PROJECTWISE: 20151221_n1520151221.gpj
gINT TEMPLATE: PROJECTWISE: KLF_STANDARD_GINT_LIBRARY_2014.GLB [KLF_BORING/TEST PIT SOIL LOG]

BORING LOG B-69

Date Begin - End:	10/14/2014 - 10/14/2014	**Drilling Company:**	Enviro-Drill		
Logged By:	M. Cote	**Drill Crew:**	Ed & Juan		
Hor.-Vert. Datum:	NAD83	**Drilling Equipment:**	CME-75	**Hammer Type - Drop:**	63.5 kg. Auto - 762 mm.
Plunge:	-90 degrees	**Drilling Method:**	Hollow Stem Auger		
Weather:	sunny, cool	**Exploration Diameter:**	184 mm. O.D.		

FIELD EXPLORATION

Northing: 509,861.87 (m)
Easting: 251,015.56 (m)
Ground Surface Elevation (m.): 1,849.7
Location Offset: Sta. 13+420/3.7m Rt CL
Surface Condition: Asphalt

Elevation (meters)	Depth (meters)	Graphical Log	Lithologic Description	Sample Type	Blow Counts(BC)= Uncorr. Blows/152 mm. Pocket Pen(PP)= T/m²	Recovery (NR=No Recovery)	AASHTO Symbol	Water Content (%)	Dry Unit Wt. (pcf)	Passing #4 (%)	Passing #200 (%)	Liquid Limit	Plasticity Index (NP=NonPlastic)	Additional Tests/ Remarks
			Poorly-graded SAND (SP): fine grained, non-plastic, reddish brown to yellowish brown, dry to moist, loose, trace fine white subrounded sandstone gravel				A-3(0)	4.7		100	3.2	NP	NP	
					BC=1 2 2	457 mm								
1843			0.03m brown clayey sand seam at 6.71m bgs											
	7		Grades to medium to coarse grained at 6.86m bgs											
					BC=2 5 4	457 mm								
1842			Trace clay, seam of well-graded sand with fine to coarse grained subangular to subrounded gravel from 7.62 to 7.77m bgs											
	8													
			Well-graded SAND (SW): fine to coarse grained, moist, loose, trace subrounded, well cemented sandstone gravel		BC=2 2 4	457 mm								
1841														
	9													
					BC=6 9 6	457 mm								
			Poorly-graded SAND (SP): fine to coarse grained sub angular to subrounded, moist, medium dense, trace fine to coarse subangular to subrounded gravel											
1840														
	10				BC=8 9 5	457 mm	A-3(0)	5.8		86	3.5	NP	NP	
1839			The exploration was terminated at approximately 10.5 m. below ground surface. The exploration was backfilled with auger cuttings and asphalt patch on October 14, 2014.											
	11													
1838														
	12													

GROUNDWATER LEVEL INFORMATION:
Groundwater was not encountered during drilling or after completion.

GENERAL NOTES:
Coordinates obtained from WHPacific N15 Alignment CAD file; Surface elevation provided by WHPacific.

Allwyn ENVIRONMENTAL

PROJECT NO.:	20151221
DRAWN BY:	PD
CHECKED BY:	MJM
DATE:	12/5/2014
REVISED:	12/17/2014

BORING LOG B-69

BIA N15(2-3)(3-1)(4-1)2&4
GREASEWOOD TO BURNSIDE, ARIZONA

PLATE

B-69

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gINT FILE: PROJECTWISE: 20151221_n1520151221.gpj
gINT TEMPLATE: PROJECTWISE: KLF_STANDARD_GINT_LIBRARY_2014.GLB [KLF_BORING/TEST PIT SOIL LOG]

PLOTTED: 07/07/2015 02:01 PM BY: clbeck

BORING LOG B-70

Date Begin - End:	10/14/2014 - 10/14/2014	**Drilling Company:**	Enviro-Drill		
Logged By:	M. Cote	**Drill Crew:**	Ed & Juan		
Hor.-Vert. Datum:	NAD83	**Drilling Equipment:**	CME-75	**Hammer Type - Drop:**	63.5 kg. Auto - 762 mm.
Plunge:	-90 degrees	**Drilling Method:**	Hollow Stem Auger		
Weather:	sunny	**Exploration Diameter:**	184 mm. O.D.		

FIELD EXPLORATION

Northing: 510,031.07 (m)
Easting: 251,073.65 (m)
Ground Surface Elevation (m.): 1,850.8
Location Offset: Sta. 13+600/1.83m Rt CL
Surface Condition: Asphalt

Elevation (meters)	Depth (meters)	Graphical Log	Lithologic Description	Sample Type	Blow Counts(BC)= Uncorr. Blows/152 mm. Pocket Pen(PP)= T/m²	Recovery (NR=No Recovery)
			Field engineer measured 0.13m asphalt			
			Field engineer measured 0.10m base course			
			Clayey SAND (SC): fine grained, low plasticity, reddish brown with patches of yellowish brown, moist, medium dense		BC=11 10 10	457 mm
1850						
	1		Light brownish gray sandy patches at 0.91m bgs			610 mm
			Poorly-graded SAND (SP): fine grained, yellowish brown, moist, very loose			
1849						
	2		Patches of reddish brown from 1.83m bgs		BC=1 1 2	457 mm
1848						
	3		Trace reddish yellow to yellow moderately cemented sandstone fragments at 2.74m bgs		BC=1 1 1	457 mm
1847	4					
1846	5					
1845	6					

LABORATORY RESULTS

AASHTO Symbol	Water Content (%)	Dry Unit Wt. (pcf)	Passing #4 (%)	Passing #200 (%)	Liquid Limit	Plasticity Index (NP=NonPlastic)	Additional Tests/ Remarks

The exploration was terminated at approximately 3.2 m. below ground surface. The exploration was backfilled with auger cuttings and asphalt patch on October 14, 2014.

GROUNDWATER LEVEL INFORMATION:
Groundwater was not encountered during drilling or after completion.
GENERAL NOTES:
Coordinates obtained from WHPacific N15 Alignment CAD file; Surface elevation provided by WHPacific.

Allwyn ENVIRONMENTAL

PROJECT NO.:	20151221
DRAWN BY:	PD
CHECKED BY:	MJM
DATE:	12/5/2014
REVISED:	12/17/2014

BORING LOG B-70

BIA N15(2-3)(3-1)(4-1)2&4
GREASEWOOD TO BURNSIDE, ARIZONA

PLATE

B-70

gINT FILE: PROJECTWISE: 20151221_n1520151221.gpj
gINT TEMPLATE: PROJECTWISE: KLF_STANDARD_GINT_LIBRARY_2014.GLB [KLF_BORING/TEST PIT SOIL LOG]

Date Begin - End:	10/14/2014 - 10/14/2014	**Drilling Company:**	Enviro-Drill	**BORING LOG B-71**	
Logged By:	M. Cote	**Drill Crew:**	Ed & Juan		
Hor.-Vert. Datum:	NAD83	**Drilling Equipment:**	CME-75	**Hammer Type - Drop:**	63.5 kg. Auto - 762 mm.
Plunge:	-90 degrees	**Drilling Method:**	Hollow Stem Auger		
Weather:	sunny	**Exploration Diameter:**	184 mm. O.D.		

FIELD EXPLORATION

Northing: 510,083.16 (m)
Easting: 251,092.62 (m)
Ground Surface Elevation (m.): 1,850.8
Location Offset: Sta. 13+660/3.7m Rt CL
Surface Condition: Asphalt

Elevation (meters)	Depth (meters)	Graphical Log	Lithologic Description	Sample Type	Blow Counts(BC)= Uncorr. Blows/152 mm. Pocket Pen(PP)= T/m²	Recovery (NR=No Recovery)	AASHTO Symbol	Water Content (%)	Dry Unit Wt. (pcf)	Passing #4 (%)	Passing #200 (%)	Liquid Limit	Plasticity Index (NP=NonPlastic)	Additional Tests/ Remarks
			Field engineer measured 0.10m asphalt											
			Field engineer measured 0.13m base course											
			Poorly-graded SAND (SP): fine to coarse grained, yellowish brown, moist, loose, trace fines		BC=3 3 4	381 mm								**R-Value**= 68 Bulk sample obtained from depth of 0.3 to 1.52m bgs
1850														
	1		**Poorly-Graded SAND with Silt (SP-SM)**: fine to coarse grained, yellowish brown, moist, very loose, trace coarse, olive gray, moderately cemented sandstone gravel at 0.91m bgs		BC=2 2 1	279 mm	A-3(0)	10.0		96	6.4	NP	NP	
1849														
	2		Trace yellow subrounded weakly cemented sandstone fragments, trace fine red angular claystone fragments at 1.83m bgs		BC=1 0 1	406 mm								
1848			Medium dense from 2.74m bgs		BC=8 7 3	381 mm								
	3		Seam of gray sandstone at 2.90m bgs Sandstone fragments at 3.20m bgs											
1847					BC=6 7 7	381 mm								
	4		Seam of poorly graded sand with gravel from 3.81 to 4.11m bgs Yellowish brown to olive yellow below 4.11m bgs											
1846			Sandstone fragments from 4.5m bgs		BC=6 4 6	457 mm								
	5													
			Poorly-graded SAND (SP): fine to coarse grained, yellowish brown, moist, very loose		BC=1 1 1	457 mm	A-3(0)	6.8		91	3.9	NP	NP	
1845														
	6													

Allwyn ENVIRONMENTAL

PROJECT NO.:	20151221
DRAWN BY:	PD
CHECKED BY:	MJM
DATE:	12/5/2014
REVISED:	12/17/2014

BORING LOG B-71

BIA N15(2-3)(3-1)(4-1)2&4
GREASEWOOD TO BURNSIDE, ARIZONA

PLATE

B-71

PLOTTED: 07/07/2015 02:01 PM BY: clbeck
gINT FILE: PROJECTWISE: 20151221_n1520151221.gpj
gINT TEMPLATE: PROJECTWISE: KLF_STANDARD_GINT_LIBRARY_2014.GLB [KLF_BORING/TEST PIT SOIL LOG]

PLOTTED: 07/07/2015 02:01 PM BY: clbeck

BORING LOG B-71

Date Begin - End:	10/14/2014 - 10/14/2014	**Drilling Company:**	Enviro-Drill		
Logged By:	M. Cote	**Drill Crew:**	Ed & Juan		
Hor.-Vert. Datum:	NAD83	**Drilling Equipment:**	CME-75	**Hammer Type - Drop:**	63.5 kg. Auto - 762 mm.
Plunge:	-90 degrees	**Drilling Method:**	Hollow Stem Auger		
Weather:	sunny	**Exploration Diameter:**	184 mm. O.D.		

FIELD EXPLORATION

Northing: 510,083.16 (m)
Easting: 251,092.62 (m)
Ground Surface Elevation (m.): 1,850.8
Location Offset: Sta. 13+660/3.7m Rt CL
Surface Condition: Asphalt

Elevation (meters)	Depth (meters)	Graphical Log	Lithologic Description	Sample Type	Blow Counts(BC)= Uncorr. Blows/152 mm. Pocket Pen(PP)= T/m²	Recovery (NR=No Recovery)	AASHTO Symbol	Water Content (%)	Dry Unit Wt. (pcf)	Passing #4 (%)	Passing #200 (%)	Liquid Limit	Plasticity Index (NP=NonPlastic)	Additional Tests/ Remarks
			Poorly-graded SAND (SP): fine to coarse grained, yellowish brown, moist, medium dense											
			With sandstone fragments at 6.40m bgs		BC=3 6 5	457 mm								
1844	7		Fine grained, loose, trace olive gray, sandstone fragments from 7.5m bgs		BC=3 2 3	457 mm								
1843	8		Medium grained, olive gray grains in gray cement matrix, very dense, well cemented, trace siltstone seams		BC=50/1" BC=50/1"	25 mm								Driller noted heavy auger grinding at 8.23m bgs
1842	9		The exploration was terminated at approximately 8.5 m. below ground surface. The exploration was backfilled with auger cuttings and asphalt patch on October 14, 2014.											
1841	10													
1840	11													
1839	12													

LABORATORY RESULTS

GROUNDWATER LEVEL INFORMATION:
Groundwater was not encountered during drilling or after completion.

GENERAL NOTES:
Coordinates obtained from WHPacific N15 Alignment CAD file; Surface elevation provided by WHPacific.

Allwyn ENVIRONMENTAL

PROJECT NO.:	20151221
DRAWN BY:	PD
CHECKED BY:	MJM
DATE:	12/5/2014
REVISED:	12/17/2014

BORING LOG B-71

BIA N15(2-3)(3-1)(4-1)2&4
GREASEWOOD TO BURNSIDE, ARIZONA

PLATE

B-71

gINT FILE: PROJECTWISE: 20151221_n1520151221.gpj
gINT TEMPLATE: PROJECTWISE: KLF_STANDARD_GINT_LIBRARY_2014.GLB [KLF_BORING/TEST PIT SOIL LOG]

PLOTTED: 07/07/2015 02:01 PM BY: clbeck

BORING LOG B-72

Date Begin - End:	10/14/2014 - 10/14/2014	**Drilling Company:**	Enviro-Drill		
Logged By:	M. Cote	**Drill Crew:**	Ed & Juan		
Hor.-Vert. Datum:	NAD83	**Drilling Equipment:**	CME-75	**Hammer Type - Drop:**	63.5 kg. Auto - 762 mm.
Plunge:	-90 degrees	**Drilling Method:**	Hollow Stem Auger		
Weather:	sunny	**Exploration Diameter:**	184 mm. O.D.		

FIELD EXPLORATION

Northing: 510,142.65 (m)
Easting: 251,122.02 (m)
Ground Surface Elevation (m.): 1,850.4
Location Offset: Sta. 13+720/3.7m Lt CL
Surface Condition: Asphalt

Elevation (meters)	Depth (meters)	Graphical Log	Lithologic Description	Sample Type	Blow Counts(BC)= Uncorr. Blows/152 mm. Pocket Pen(PP)= T/m²	Recovery (NR=No Recovery)	AASHTO Symbol	Water Content (%)	Dry Unit Wt. (pcf)	Passing #4 (%)	Passing #200 (%)	Liquid Limit	Plasticity Index (NP=NonPlastic)	Additional Tests/ Remarks
			Field engineer measured 0.08m asphalt											Driller noted aphalt lifting a bit as drilling through
			Field engineer measured 0.13m base course											
1850			**Silty SAND (SM)**: non-plastic, yellowish brown with reddish brown patches, moist, medium dense, trace fine to medium, subrounded to rounded sandstone gravel		BC=3 10 10	457 mm	A-2-4(0)			89	17	NP	NP	
	1		Light grayish brown, with patches of brown, well-graded sand at 0.91m			102 mm								Shelby tube sample at 0.91m only pushed 0.15m, becoming more clayey
			Very dense from 1.22m bgs		BC=10 26 50/5"	457 mm								
1849			**SANDSTONE**: fine sand, thinly laminated, very weakly cemented, yellowish brown stain, some siltstone seams											
	2				BC=50 50/1"	178 mm								
1848														
					BC=36 50/1"	178 mm								
	3		Seam of light gray from 2.90 to 3.05m bgs											
1847														
			Slight decrease in moisture at 3.81m bgs		BC=50/2"	51 mm								
	4													
1846														
			Slight decrease in siltstone content at 4.57m bgs		BC=50/2"	51 mm								
	5													
1845														
			Fine grained, light gray, thinly laminated, weakly cemented at 5.49m bgs		BC=50/2"	51 mm								
	6													

LABORATORY RESULTS

Allwyn ENVIRONMENTAL

PROJECT NO.:	20151221
DRAWN BY:	PD
CHECKED BY:	MJM
DATE:	12/5/2014
REVISED:	12/17/2014

BORING LOG B-72

BIA N15(2-3)(3-1)(4-1)2&4
GREASEWOOD TO BURNSIDE, ARIZONA

PLATE

B-72

gINT FILE: PROJECTWISE: 20151221_n1520151221.gpj
gINT TEMPLATE: PROJECTWISE: KLF_STANDARD_GINT_LIBRARY_2014.GLB [KLF_BORING/TEST PIT SOIL LOG]

PLOTTED: 07/07/2015 02:01 PM BY: clbeck

BORING LOG B-72

Date Begin - End:	10/14/2014 - 10/14/2014	**Drilling Company:**	Enviro-Drill		
Logged By:	M. Cote	**Drill Crew:**	Ed & Juan		
Hor.-Vert. Datum:	NAD83	**Drilling Equipment:**	CME-75	**Hammer Type - Drop:**	63.5 kg. Auto - 762 mm.
Plunge:	-90 degrees	**Drilling Method:**	Hollow Stem Auger		
Weather:	sunny	**Exploration Diameter:**	184 mm. O.D.		

FIELD EXPLORATION

Northing: 510,142.65 (m)
Easting: 251,122.02 (m)
Ground Surface Elevation (m.): 1,850.4
Location Offset: Sta. 13+720/3.7m Lt CL
Surface Condition: Asphalt

Elevation (meters)	Depth (meters)	Graphical Log	Lithologic Description	Sample Type	Blow Counts(BC)= Uncorr. Blows/152 mm. Pocket Pen(PP)= T/m²	Recovery (NR=No Recovery)
1844			**SANDSTONE**: Fine grained, orange stained, weakly cemented, thinly laminated, trace clay, low plasticity at 6.40m bgs			
					BC=50/5"	127 mm
	7					
1843			Light gray to yellowish brown stained at 7.32m bgs		BC=50/3"	76 mm
	8					
1842					BC=50/4"	102 mm
	9					
					BC=50/3"	
1841			The exploration was terminated at approximately 9.2 m. below ground surface. The exploration was backfilled with auger cuttings and asphalt patch on October 14, 2014.			
	10					
1840						
	11					
1839						
	12					

LABORATORY RESULTS

AASHTO Symbol	Water Content (%)	Dry Unit Wt. (pcf)	Passing #4 (%)	Passing #200 (%)	Liquid Limit	Plasticity Index (NP=NonPlastic)	Additional Tests/ Remarks

GROUNDWATER LEVEL INFORMATION:
Groundwater was not encountered during drilling or after completion.

GENERAL NOTES:
Coordinates obtained from WHPacific N15 Alignment CAD file; Surface elevation provided by WHPacific.

Allwyn ENVIRONMENTAL

PROJECT NO.:	20151221
DRAWN BY:	PD
CHECKED BY:	MJM
DATE:	12/5/2014
REVISED:	12/17/2014

BORING LOG B-72

BIA N15(2-3)(3-1)(4-1)2&4
GREASEWOOD TO BURNSIDE, ARIZONA

PLATE

B-72

gINT FILE: PROJECTWISE: 20151221_n1520151221.gpj
gINT TEMPLATE: PROJECTWISE: KLF_STANDARD_GINT_LIBRARY_2014.GLB [KLF_BORING/TEST PIT SOIL LOG]

PLOTTED: 07/07/2015 02:02 PM BY: clbeck

BORING LOG B-73

Date Begin - End:	10/15/2014 - 10/15/2014	**Drilling Company:**	Enviro-Drill		
Logged By:	M. Cote	**Drill Crew:**	Ed & Juan		
Hor.-Vert. Datum:	NAD83	**Drilling Equipment:**	CME-75	**Hammer Type - Drop:**	63.5 kg. Auto - 762 mm.
Plunge:	-90 degrees	**Drilling Method:**	Hollow Stem Auger		
Weather:	sunny, windy	**Exploration Diameter:**	184 mm. O.D.		

FIELD EXPLORATION

Northing: 510,207.55 (m)
Easting: 251,163.39 (m)
Ground Surface Elevation (m.): 1,850.2
Location Offset: Sta. 13+800/1.83m Lt CL
Surface Condition: Asphalt

Elevation (meters)	Depth (meters)	Graphical Log	Lithologic Description	Sample Type	Blow Counts(BC)= Uncorr. Blows/152 mm. Pocket Pen(PP)= T/m²	Recovery (NR=No Recovery)
1850	0		Field engineer measured 0.13 asphalt			
			Field engineer measured 0.10m base course			
			Poorly-graded SAND with Clay (SP-SC): fine grained, low plasticity, reddish brown, moist, medium dense, trace light brownish gray sandstone fragments		BC=4 6 7	432 mm
	1		Yellowish brown at 0.91m bgs		BC=7 9 10	203 mm
1849			Seam of white, moderately to well cemented sandstone at 1.22m bgs			
	2		Trace yellow to olive gray sandstone fragments at 1.75m bgs		BC=7 11 10	457 mm
1848						
	3		Reddish brown with patches of olive yellow at 2.74m bgs		BC=7 5 6	406 mm
1847						
	4					
1846						
	5					
1845						
	6					

LABORATORY RESULTS

AASHTO Symbol	Water Content (%)	Dry Unit Wt. (pcf)	Passing #4 (%)	Passing #200 (%)	Liquid Limit	Plasticity Index (NP=NonPlastic)	Additional Tests/ Remarks

The exploration was terminated at approximately 3.2 m. below ground surface. The exploration was backfilled with auger cuttings and asphalt patch on October 15, 2014.

GROUNDWATER LEVEL INFORMATION:
Groundwater was not encountered during drilling or after completion.

GENERAL NOTES:
Coordinates obtained from WHPacific N15 Alignment CAD file; Surface elevation provided by WHPacific.

Allwyn ENVIRONMENTAL

PROJECT NO.:	20151221
DRAWN BY:	PD
CHECKED BY:	MJM
DATE:	12/5/2014
REVISED:	12/17/2014

BORING LOG B-73

BIA N15(2-3)(3-1)(4-1)2&4
GREASEWOOD TO BURNSIDE, ARIZONA

PLATE

B-73

gINT FILE: PROJECTWISE: 20151221_n1520151221.gpj
gINT TEMPLATE: PROJECTWISE: KLF_STANDARD_GINT_LIBRARY_2014.GLB [KLF_BORING/TEST PIT SOIL LOG]

PLOTTED: 07/07/2015 02:02 PM BY: clbeck

BORING LOG B-74

Date Begin - End:	10/15/2014 - 10/15/2014	**Drilling Company:**	Enviro-Drill		
Logged By:	M. Cote	**Drill Crew:**	Ed & Juan		
Hor.-Vert. Datum:	NAD83	**Drilling Equipment:**	CME-75	**Hammer Type - Drop:**	63.5 kg. Auto - 762 mm.
Plunge:	-90 degrees	**Drilling Method:**	Hollow Stem Auger		
Weather:	sunny, cool	**Exploration Diameter:**	184 mm. O.D.		

FIELD EXPLORATION

Northing: 510,326.37 (m)
Easting: 251,323.96 (m)
Ground Surface Elevation (m.): 1,847.2
Location Offset: Sta. 13+000/1.83m Rt CL
Surface Condition: Asphalt

Elevation (meters)	Depth (meters)	Graphical Log	Lithologic Description	Sample Type	Blow Counts(BC)= Uncorr. Blows/152 mm. Pocket Pen(PP)= T/m²	Recovery (NR=No Recovery)	AASHTO Symbol	Water Content (%)	Dry Unit Wt. (pcf)	Passing #4 (%)	Passing #200 (%)	Liquid Limit	Plasticity Index (NP=NonPlastic)	Additional Tests/ Remarks
			Field engineer measured 0.13m asphalt											
1847			Field engineer measured 0.10m base course											
			Poorly-graded SAND with Silt (SP-SM): fine grained, non-plastic, yellowish brown to reddish brown, moist, medium dense		BC=5 8 8	457 mm								
	1		Loose, trace yellow sandstone fragments below 0.91m bgs		BC=3 4 4	406 mm								
1846														
			Clayey SAND (SC): fine grained, low to medium plasticity, reddish brown, moist, loose		BC=2 3 3	356 mm		19.5						
	2		**Poorly-graded SAND (SP)**: fine grained, non-plastic, yellowish brown, moist, loose, trace silt											
1845														
			Very loose, non-plastic at 2.74m bgs		BC=1 2 2	457 mm								
	3													
1844														
			Fine to medium grained, loose, decrease in fines below 3.66m bgs		BC=2 2 4	432 mm								
	4													
1843														
					BC=2 3 2	457 mm								
	5		**Sandy Lean CLAY (CL)**: fine grained, medium plasticity, brown, moist, soft											
1842														
	6													

The exploration was terminated at approximately 5 m. below ground surface. The exploration was backfilled with auger cuttings and asphalt patch on October 15, 2014.

GROUNDWATER LEVEL INFORMATION:
Groundwater was not encountered during drilling or after completion.
GENERAL NOTES:
Coordinates obtained from WHPacific N15 Alignment CAD file; Surface elevation provided by WHPacific.

Allwyn ENVIRONMENTAL

PROJECT NO.:	20151221
DRAWN BY:	PD
CHECKED BY:	MJM
DATE:	12/5/2014
REVISED:	12/17/2014

BORING LOG B-74

BIA N15(2-3)(3-1)(4-1)2&4
GREASEWOOD TO BURNSIDE, ARIZONA

PLATE

B-74

PAGE: 1 of 1

gINT FILE: PROJECTWISE: 20151221_n1520151221.gpj
gINT TEMPLATE: PROJECTWISE: KLF_STANDARD_GINT_LIBRARY_2014.GLB [KLF_BORING/TEST PIT SOIL LOG]

PLOTTED: 07/07/2015 02:02 PM BY: clbeck

BORING LOG B-75

Date Begin - End:	10/15/2014 - 10/15/2014	**Drilling Company:**	Enviro-Drill		
Logged By:	M. Cote	**Drill Crew:**	Ed & Juan		
Hor.-Vert. Datum:	NAD83	**Drilling Equipment:**	CME-75	**Hammer Type - Drop:**	63.5 kg. Auto - 762 mm.
Plunge:	-90 degrees	**Drilling Method:**	Hollow Stem Auger		
Weather:	sunny, breezy	**Exploration Diameter:**	184 mm. O.D.		

Northing: 510,481.61 (m)
Easting: 251,446.73 (m)
Ground Surface Elevation (m.): 1,846.4
Location Offset: Sta. 13+200/1.83m Lt CL
Surface Condition: Asphalt

Elevation (meters)	Depth (meters)	Graphical Log	Lithologic Description	Sample Type	Blow Counts(BC)= Uncorr. Blows/152 mm. Pocket Pen(PP)= T/m²	Recovery (NR=No Recovery)	AASHTO Symbol	Water Content (%)	Dry Unit Wt. (pcf)	Passing #4 (%)	Passing #200 (%)	Liquid Limit	Plasticity Index (NP=NonPlastic)	Additional Tests/ Remarks
			Field engineer measured 0.10m asphalt											
			Field engineer measured 0.10m base course											
1846			**Poorly-graded SAND (SP)**: fine grained, non-plastic, brown, moist, medium dense, occasional white patches		BC=4 4 7	381 mm								
	1		**Sandy Lean CLAY (CL)**: fine grained, low to medium plasticity, reddish brown, moist, soft		BC=2 2 3	254 mm								
1845			**Poorly-graded SAND with Clay (SP-SC)**: fine grained, yellowish brown, moist, loose											
	2				BC=2 2 2	432 mm								
1844			**Fat CLAY (CH)**: high plasticity, reddish brown, moist, soft, trace fine grained sand											
	3				BC=2 4 4	457 mm						63	38	
1843														
	4													
1842														
	5													
1841														
	6													

The exploration was terminated at approximately 3.2 m. below ground surface. The exploration was backfilled with auger cuttings and asphalt patch on October 15, 2014.

GROUNDWATER LEVEL INFORMATION:
Groundwater was not encountered during drilling or after completion.
GENERAL NOTES:
Coordinates obtained from WHPacific N15 Alignment CAD file; Surface elevation provided by WHPacific.

Allwyn ENVIRONMENTAL	PROJECT NO.: 20151221 DRAWN BY: PD CHECKED BY: MJM DATE: 12/5/2014 REVISED: 12/17/2014	BORING LOG B-75 BIA N15(2-3)(3-1)(4-1)2&4 GREASEWOOD TO BURNSIDE, ARIZONA	PLATE B-75 PAGE: 1 of 1

gINT FILE: PROJECTWISE: 20151221_n1520151221.gpj
gINT TEMPLATE: PROJECTWISE: KLF_STANDARD_GINT_LIBRARY_2014.GLB [KLF_BORING/TEST PIT SOIL LOG]

PLOTTED: 07/07/2015 02:02 PM BY: clbeck

Date Begin - End: 10/15/2014 - 10/15/2014 **Drilling Company:** Enviro-Drill

BORING LOG B-76

Logged By: M. Cote **Drill Crew:** Ed & Juan

Hor.-Vert. Datum: NAD83 **Drilling Equipment:** CME-75 **Hammer Type - Drop:** 63.5 kg. Auto - 762 mm.

Plunge: -90 degrees **Drilling Method:** Hollow Stem Auger

Weather: sunny **Exploration Diameter:** 184 mm. O.D.

FIELD EXPLORATION

Northing: 510,661.57 (m)
Easting: 251,534.04 (m)
Ground Surface Elevation (m.): 1,851.0
Location Offset: Sta. 13+400/1.83m Rt CL
Surface Condition: Asphalt

LABORATORY RESULTS

Elevation (meters)	Depth (meters)	Graphical Log	Lithologic Description	Sample Type	Blow Counts(BC)= Uncorr. Blows/152 mm. Pocket Pen(PP)= T/m²	Recovery (NR=No Recovery)	AASHTO Symbol	Water Content (%)	Dry Unit Wt. (pcf)	Passing #4 (%)	Passing #200 (%)	Liquid Limit	Plasticity Index (NP=NonPlastic)	Additional Tests/ Remarks
			Field engineer measured 0.13m asphalt											
			Field engineer measured 0.13m base course											
			Silty SAND (SM): fine grained, non-plastic, yellowish brown, moist, loose		BC=6 6 3	432 mm	A-2-4(0)			100	18	NP	NP	Bulk sample obtained from depth of 0.3 to 1.52m bgs
1850	1		Trace yellow moderately cemented sandstone fragments at 0.91m		BC=2 2 2	NR								
1849	2		Slight decrease in fines at 1.83m bgs		BC=1 1 2	432 mm								
1848	3				BC=1 2 2	432 mm								
1847	4		Very loose, trace yellow sandstone fragments from 3.66m bgs		BC=1 1 1	457 mm		10.1						
1846	5				BC=1 1 1	457 mm								
1845	6													

The exploration was terminated at approximately 5 m. below ground surface. The exploration was backfilled with auger cuttings and asphalt patch on October 15, 2014.

GROUNDWATER LEVEL INFORMATION:
Groundwater was not encountered during drilling or after completion.

GENERAL NOTES:
Coordinates obtained from WHPacific N15 Alignment CAD file; Surface elevation provided by WHPacific.

Allwyn ENVIRONMENTAL

PROJECT NO.:	20151221
DRAWN BY:	PD
CHECKED BY:	MJM
DATE:	12/5/2014
REVISED:	12/17/2014

BORING LOG B-76

BIA N15(2-3)(3-1)(4-1)2&4
GREASEWOOD TO BURNSIDE, ARIZONA

PLATE

B-76

PAGE: 1 of 1

gINT FILE: PROJECTWISE: 20151221_n1520151221.gpj
gINT TEMPLATE: PROJECTWISE: KLF_STANDARD_GINT_LIBRARY_2014.GLB [KLF_BORING/TEST PIT SOIL LOG]

PLOTTED: 07/07/2015 02:02 PM BY: clbeck

BORING LOG B-77

Date Begin - End:	10/15/2014 - 10/15/2014	**Drilling Company:**	Enviro-Drill		
Logged By:	M. Cote	**Drill Crew:**	Ed & Juan		
Hor.-Vert. Datum:	NAD83	**Drilling Equipment:**	CME-75	**Hammer Type - Drop:**	63.5 kg. Auto - 762 mm.
Plunge:	-90 degrees	**Drilling Method:**	Hollow Stem Auger		
Weather:	sunny, windy	**Exploration Diameter:**	184 mm. O.D.		

FIELD EXPLORATION

Northing: 510,844.32 (m)
Easting: 251,615.38 (m)
Ground Surface Elevation (m.): 1,852.5
Location Offset: Sta. 13+600/1.83m Lt CL
Surface Condition: Asphalt

Elevation (meters)	Depth (meters)	Graphical Log	Lithologic Description	Sample Type	Blow Counts(BC)= Uncorr. Blows/152 mm. Pocket Pen(PP)= T/m²	Recovery (NR=No Recovery)
			Field engineer measured 0.05m asphalt			
			Field engineer measured 0.18m base course			
1852			**Poorly-graded SAND with Clay (SP-SC)**: fine to coarse grained, low plasticity, brown, moist, medium dense, trace yellow to pale red weakly cemented sandstone fragments		BC=6 12 11	432 mm
	1		Fine to medium grained from 0.91m bgs		BC=8 9 9	457 mm
1851			**Poorly-graded SAND (SP)**: fine grained, rounded, non-plastic, yellowish brown, moist, very loose, trace coarse, yellow moderately cemented sandstone fragments			
	2				BC=2 2 1	457 mm
1850						
	3		Fine to medium grained sand, trace silt at 2.74m bgs 0.03m thick seam of medium to coarse grained, light gray, moderately cemented sandstone at 2.90m bgs		BC=1 0 0	457 mm
1849						
	4					
1848						
	5					
1847						
	6					

LABORATORY RESULTS

AASHTO Symbol	Water Content (%)	Dry Unit Wt. (pcf)	Passing #4 (%)	Passing #200 (%)	Liquid Limit	Plasticity Index (NP=NonPlastic)	Additional Tests/ Remarks

The exploration was terminated at approximately 3.2 m. below ground surface. The exploration was backfilled with auger cuttings and asphalt patch on October 15, 2014.

GROUNDWATER LEVEL INFORMATION:
Groundwater was not encountered during drilling or after completion.

GENERAL NOTES:
Coordinates obtained from WHPacific N15 Alignment CAD file; Surface elevation provided by WHPacific.

Allwyn ENVIRONMENTAL

PROJECT NO.:	20151221
DRAWN BY:	PD
CHECKED BY:	MJM
DATE:	12/5/2014
REVISED:	12/17/2014

BORING LOG B-77

BIA N15(2-3)(3-1)(4-1)2&4
GREASEWOOD TO BURNSIDE, ARIZONA

PLATE

B-77

gINT FILE: PROJECTWISE: 20151221_n1520151221.gpj
gINT TEMPLATE: PROJECTWISE: KLF_STANDARD_GINT_LIBRARY_2014.GLB [KLF_BORING/TEST PIT SOIL LOG]

PLOTTED: 07/07/2015 02:02 PM BY: clbeck

BORING LOG B-78

Date Begin - End:	10/15/2014 - 10/15/2014	**Drilling Company:**	Enviro-Drill		
Logged By:	M. Cote	**Drill Crew:**	Ed & Juan		
Hor.-Vert. Datum:	NAD83	**Drilling Equipment:**	CME-75	**Hammer Type - Drop:**	63.5 kg. Auto - 762 mm.
Plunge:	-90 degrees	**Drilling Method:**	Hollow Stem Auger		
Weather:	sunny	**Exploration Diameter:**	184 mm. O.D.		

FIELD EXPLORATION

Northing: 511,024.21 (m)
Easting: 251,702.72 (m)
Ground Surface Elevation (m.): 1,855.4
Location Offset: Sta. 13+800/1.83m Rt CL
Surface Condition: Asphalt

Elevation (meters)	Depth (meters)	Graphical Log	Lithologic Description	Sample Type	Blow Counts(BC)= Uncorr. Blows/152 mm. Pocket Pen(PP)= T/m²	Recovery (NR=No Recovery)
			Field engineer measured 0.13m asphalt			
			Field engineer measured 0.13m base course			
1855			**Poorly-graded SAND (SP)**: fine to medium grained, rounded, non-plastic, yellowish brown, moist, loose to very loose		BC=4 2 2	305 mm
			Light grayish brown, dry, weakly cemented at 0.76m bgs			
	1				BC=1 1 0	381 mm
1854						
			Fine to coarse grained, light brownish gray to olive gray sandstone gravel at 1.83m bgs		BC=1 1 0	406 mm
	2					
1853						
					BC=1 0 1	457 mm
	3					
1852						
			Trace olive gray to light brownish gray sandstone fragments at 3.66m bgs		BC=1 0 1	457 mm
	4					
1851						
			Reddish yellowish brown at 4.57m bgs		BC=1 1 2	457 mm
	5					
1850			The exploration was terminated at approximately 5 m. below ground surface. The exploration was backfilled with auger cuttings and asphalt patch on October 15, 2014.			
	6					

LABORATORY RESULTS

AASHTO Symbol	Water Content (%)	Dry Unit Wt. (pcf)	Passing #4 (%)	Passing #200 (%)	Liquid Limit	Plasticity Index (NP=NonPlastic)	Additional Tests/ Remarks

GROUNDWATER LEVEL INFORMATION:
Groundwater was not encountered during drilling or after completion.

GENERAL NOTES:
Coordinates obtained from WHPacific N15 Alignment CAD file; Surface elevation provided by WHPacific.

Allwyn ENVIRONMENTAL

PROJECT NO.:	20151221
DRAWN BY:	PD
CHECKED BY:	MJM
DATE:	12/5/2014
REVISED:	12/17/2014

BORING LOG B-78

BIA N15(2-3)(3-1)(4-1)2&4
GREASEWOOD TO BURNSIDE, ARIZONA

PLATE

B-78

PAGE: 1 of 1

gINT FILE: PROJECTWISE: 20151221_n1520151221.gpj
gINT TEMPLATE: PROJECTWISE: KLF_STANDARD_GINT_LIBRARY_2014.GLB [KLF_BORING/TEST PIT SOIL LOG]

PLOTTED: 07/07/2015 02:02 PM BY: clbeck

BORING LOG B-79

Date Begin - End:	10/15/2014 - 10/15/2014	**Drilling Company:**	Enviro-Drill		
Logged By:	M. Cote	**Drill Crew:**	Ed & Juan		
Hor.-Vert. Datum:	NAD83	**Drilling Equipment:**	CME-75	**Hammer Type - Drop:**	63.5 kg. Auto - 762 mm.
Plunge:	-90 degrees	**Drilling Method:**	Hollow Stem Auger		
Weather:	sunny, windy	**Exploration Diameter:**	184 mm. O.D.		

FIELD EXPLORATION

Northing: 511,192.2 (m)
Easting: 251,810.52 (m)
Ground Surface Elevation (m.): 1,858.2
Location Offset: Sta. 14+000/1.83m Lt CL
Surface Condition: Asphalt

Elevation (meters)	Depth (meters)	Graphical Log	Lithologic Description	Sample Type	Blow Counts(BC)= Uncorr. Blows/152 mm. Pocket Pen(PP)= T/m²	Recovery (NR=No Recovery)
1858	0		Field engineer measured 0.10m asphalt			
			Field engineer measured 0.13m base course			
			Poorly-graded SAND (SP): fine to medium grained, well-rounded, non-plastic, yellowish brown, moist, loose, trace silt		BC=4 4 2	457 mm
	1		Trace rootlets, slight increase in moisture at 0.91m bgs		BC=2 1 1	127 mm
1857						
	2		Trace yellow sandstone fragments at 1.83m bgs		BC=1 0 1	457 mm
1856						
	3		Seam of clayey sand at 2.90m bgs		BC=1 1 1	457 mm
1855						
	4					
1854						
	5					
1853						
	6					

LABORATORY RESULTS

AASHTO Symbol	Water Content (%)	Dry Unit Wt. (pcf)	Passing #4 (%)	Passing #200 (%)	Liquid Limit	Plasticity Index (NP=NonPlastic)	Additional Tests/ Remarks

The exploration was terminated at approximately 3.2 m. below ground surface. The exploration was backfilled with auger cuttings and asphalt patch on October 15, 2014.

GROUNDWATER LEVEL INFORMATION:
Groundwater was not encountered during drilling or after completion.
GENERAL NOTES:
Coordinates obtained from WHPacific N15 Alignment CAD file; Surface elevation provided by WHPacific.

Allwyn ENVIRONMENTAL

PROJECT NO.:	20151221
DRAWN BY:	PD
CHECKED BY:	MJM
DATE:	12/5/2014
REVISED:	12/17/2014

BORING LOG B-79

BIA N15(2-3)(3-1)(4-1)2&4
GREASEWOOD TO BURNSIDE, ARIZONA

PLATE

B-79

PAGE: 1 of 1

gINT FILE: PROJECTWISE: 20151221_n1520151221.gpj
gINT TEMPLATE: PROJECTWISE: KLF_STANDARD_GINT_LIBRARY_2014.GLB [KLF_BORING/TEST PIT SOIL LOG]

PLOTTED: 07/07/2015 02:02 PM BY: clbeck

BORING LOG B-80

Date Begin - End:	10/15/2014 - 10/15/2014	**Drilling Company:**	Enviro-Drill		
Logged By:	M. Cote	**Drill Crew:**	Ed & Juan		
Hor.-Vert. Datum:	NAD83	**Drilling Equipment:**	CME-75	**Hammer Type - Drop:**	63.5 kg. Auto - 762 mm.
Plunge:	-90 degrees	**Drilling Method:**	Hollow Stem Auger		
Weather:	sunny	**Exploration Diameter:**	184 mm. O.D.		

FIELD EXPLORATION

Northing: 511,327.16 (m)
Easting: 251,957.57 (m)
Ground Surface Elevation (m.): 1,858.7
Location Offset: Sta. 14+200/1.83m Rt CL
Surface Condition: Asphalt

Elevation (meters)	Depth (meters)	Graphical Log	Lithologic Description	Sample Type	Blow Counts(BC)= Uncorr. Blows/152 mm. Pocket Pen(PP)= T/m^2	Recovery (NR=No Recovery)
			Field engineer measured 0.10m asphalt			
			Field engineer measured 0.15m base course			
			Poorly-graded SAND (SP): fine to medium grained, non-plastic, yellowish brown, moist, medium dense, trace silt		BC=6 6 14	432 mm
1858						
			Seam of yellow, moderately to weakly cemented sandstone (~0.04m thick) at 0.76m bgs			
	1		**Poorly-graded SAND with Clay (SP-SC)**: fine to medium grained, low plasticity, yellowish brown, moist, medium dense		BC=4 7 4	356 mm
			Poorly-graded SAND (SP): fine grained, non-plastic, yellowish brown, moist, very loose			
1857						
	2				BC=1 0 1	432 mm
1856						
	3				BC=1 1 1	457 mm
			Seam of clayey sand from 3.1 to 3.2m bgs			
1855						
	4				BC=2 1 1	457 mm
1854			Fine to medium grained at 4.57m bgs		BC=2 1 1	457 mm
	5					
1853						
	6					

LABORATORY RESULTS

AASHTO Symbol	Water Content (%)	Dry Unit Wt. (pcf)	Passing #4 (%)	Passing #200 (%)	Liquid Limit	Plasticity Index (NP=NonPlastic)	Additional Tests/ Remarks

The exploration was terminated at approximately 5 m. below ground surface. The exploration was backfilled with auger cuttings and asphalt patch on October 15, 2014.

GROUNDWATER LEVEL INFORMATION:
Groundwater was not encountered during drilling or after completion.
GENERAL NOTES:
Coordinates obtained from WHPacific N15 Alignment CAD file; Surface elevation provided by WHPacific.

Allwyn ENVIRONMENTAL

PROJECT NO.:	20151221
DRAWN BY:	PD
CHECKED BY:	MJM
DATE:	12/5/2014
REVISED:	12/17/2014

BORING LOG B-80

BIA N15(2-3)(3-1)(4-1)2&4
GREASEWOOD TO BURNSIDE, ARIZONA

PLATE

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PAGE: 1 of 1

gINT FILE: PROJECTWISE: 20151221_n1520151221.gpj
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BORING LOG B-81

Date Begin - End:	10/15/2014 - 10/15/2014	**Drilling Company:**	Enviro-Drill		
Logged By:	M. Cote	**Drill Crew:**	Ed & Juan		
Hor.-Vert. Datum:	NAD83	**Drilling Equipment:**	CME-75	**Hammer Type - Drop:**	63.5 kg. Auto - 762 mm.
Plunge:	-90 degrees	**Drilling Method:**	Hollow Stem Auger		
Weather:	partly cloudy	**Exploration Diameter:**	184 mm. O.D.		

FIELD EXPLORATION

Northing: 511,432.33 (m)
Easting: 252,127.32 (m)
Ground Surface Elevation (m.): 1,858.7
Location Offset: Sta. 14+400/1.83m Lt CL
Surface Condition: Asphalt

Elevation (meters)	Depth (meters)	Graphical Log	Lithologic Description	Sample Type	Blow Counts(BC)= Uncorr. Blows/152 mm. Pocket Pen(PP)= T/m²	Recovery (NR=No Recovery)	AASHTO Symbol	Water Content (%)	Dry Unit Wt. (pcf)	Passing #4 (%)	Passing #200 (%)	Liquid Limit	Plasticity Index (NP=NonPlastic)	Additional Tests/ Remarks
			Field engineer measured 0.10m asphalt											
			Field engineer measured 0.15m base course											
1858			**Clayey SAND (SC)**: fine to medium grained, low plasticity, olive yellow, moist, medium dense, trace silt		BC=4 8 8	406 mm	A-2-4(0)			94	26	25	8	**R-Value=** 53 Bulk sample obtained from depth of 0.3 to 1.52m bgs
	1				BC=8 5 5	406 mm								
			Reddish yellow from 1.22m bgs											
1857														
	2		Very loose clayey brown lense at 2m bgs		BC=1 0 1	457 mm								
			Poorly-graded SAND (SP): fine grained, low plasticity, yellowish brown, moist, very loose, trace fine yellow sandstone fragments											
1856														
	3				BC=1 2 1	457 mm								
1855														
	4													
1854														
	5													
1853														
	6													

The exploration was terminated at approximately 3.2 m. below ground surface. The exploration was backfilled with auger cuttings and asphalt patch on October 15, 2014.

GROUNDWATER LEVEL INFORMATION:
Groundwater was not encountered during drilling or after completion.

GENERAL NOTES:
Coordinates obtained from WHPacific N15 Alignment CAD file; Surface elevation provided by WHPacific.

Allwyn ENVIRONMENTAL

PROJECT NO.:	20151221
DRAWN BY:	PD
CHECKED BY:	MJM
DATE:	12/5/2014
REVISED:	12/17/2014

BORING LOG B-81

BIA N15(2-3)(3-1)(4-1)2&4
GREASEWOOD TO BURNSIDE, ARIZONA

PLATE

B-81

gINT FILE: PROJECTWISE: 20151221_n1520151221.gpj
gINT TEMPLATE: PROJECTWISE: KLF_STANDARD_GINT_LIBRARY_2014.GLB [KLF_BORING/TEST PIT SOIL LOG]

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BORING LOG B-82

Date Begin - End:	10/15/2014 - 10/15/2014	**Drilling Company:**	Enviro-Drill		
Logged By:	M. Cote	**Drill Crew:**	Ed & Juan		
Hor.-Vert. Datum:	NAD83	**Drilling Equipment:**	CME-75	**Hammer Type - Drop:**	63.5 kg. Auto - 762 mm.
Plunge:	-90 degrees	**Drilling Method:**	Hollow Stem Auger		
Weather:	sunny, breezy	**Exploration Diameter:**	184 mm. O.D.		

FIELD EXPLORATION

Northing: 511,525.06 (m)
Easting: 252,304.54 (m)
Ground Surface Elevation (m.): 1,861.1
Location Offset: Sta. 14+600/1.83m Rt CL
Surface Condition: Asphalt

Elevation (meters)	Depth (meters)	Graphical Log	Lithologic Description	Sample Type	Blow Counts(BC)= Uncorr. Blows/152 mm. Pocket Pen(PP)= T/m^2	Recovery (NR=No Recovery)
1861	0		Field engineer measured 0.05m asphalt over geotextile			
			Field engineer measured 0.13m base course			
			Poorly-graded SAND with Silt (SP-SM): fine to coarse grained, non-plastic to low plasticity, yellowish brown to reddish brown, moist, medium dense		BC=5 8 10	457 mm
1860	1		Trace fine gravel at 0.91m bgs		BC=6 12 10	457 mm
1859	2		Fine to medium grained, rounded, light yellowish brown, loose from 1.83m bgs		BC=2 2 3	406 mm
1858	3		Light yellowish brown to reddish yellow, very loose from 2.74m bgs		BC=1 0 0	305 mm
1857	4				BC=1 0 1	381 mm
1856	5				BC=1 1 1	
1855	6					

LABORATORY RESULTS

AASHTO Symbol	Water Content (%)	Dry Unit Wt. (pcf)	Passing #4 (%)	Passing #200 (%)	Liquid Limit	Plasticity Index (NP=NonPlastic)	Additional Tests/ Remarks

The exploration was terminated at approximately 5 m. below ground surface. The exploration was backfilled with auger cuttings and asphalt patch on October 15, 2014.

GROUNDWATER LEVEL INFORMATION:
Groundwater was not encountered during drilling or after completion.
GENERAL NOTES:
Coordinates obtained from WHPacific N15 Alignment CAD file; Surface elevation provided by WHPacific.

Allwyn ENVIRONMENTAL

PROJECT NO.:	20151221
DRAWN BY:	PD
CHECKED BY:	MJM
DATE:	12/5/2014
REVISED:	12/17/2014

BORING LOG B-82

BIA N15(2-3)(3-1)(4-1)2&4
GREASEWOOD TO BURNSIDE, ARIZONA

PLATE

B-82

PAGE: 1 of 1

gINT FILE: PROJECTWISE: 20151221_n1520151221.gpj
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BORING LOG B-83

Date Begin - End:	10/15/2014 - 10/15/2014	**Drilling Company:**	Enviro-Drill		
Logged By:	M. Cote	**Drill Crew:**	Ed & Juan		
Hor.-Vert. Datum:	NAD83	**Drilling Equipment:**	CME-75	**Hammer Type - Drop:**	63.5 kg. Auto - 762 mm.
Plunge:	-90 degrees	**Drilling Method:**	Hollow Stem Auger		
Weather:	partly cloudy	**Exploration Diameter:**	184 mm. O.D.		

FIELD EXPLORATION

Northing: 511,622.03 (m)
Easting: 252,479.48 (m)
Ground Surface Elevation (m.): 1,863.7
Location Offset: Sta. 14+818/1.83m Lt CL
Surface Condition: Asphalt

Elevation (meters)	Depth (meters)	Graphical Log	Lithologic Description	Sample Type	Blow Counts(BC)= Uncorr. Blows/152 mm. Pocket Pen(PP)= T/m²	Recovery (NR=No Recovery)
			Field engineer measured 0.05m asphalt over geotextile			
			Field engineer measured 0.23m base course			
1863			**Poorly-graded SAND with Silt (SP-SM)**: fine grained, non-plastic, yellowish brown to olive yellow, moist, medium dense, trace fine yellow sandstone gravel		BC=9 14 12	356 mm
	1		Fine to medium grained, rounded, loose, no gravel from 0.91m bgs		BC=3 5 3	457 mm
1862						
	2		Fine grained, light yellowish brown at 1.83m bgs		BC=2 1 3	457 mm
1861						
	3		Seam of yellowish brown silty sand (~0.03m thick) at 3.05m bgs		BC=2 1 2	
1860	4		The exploration was terminated at approximately 3.2 m. below ground surface. The exploration was backfilled with auger cuttings and asphalt patch on October 15, 2014.			
1859	5					
1858	6					

LABORATORY RESULTS

AASHTO Symbol	Water Content (%)	Dry Unit Wt. (pcf)	Passing #4 (%)	Passing #200 (%)	Liquid Limit	Plasticity Index (NP=NonPlastic)	Additional Tests/ Remarks

GROUNDWATER LEVEL INFORMATION:
Groundwater was not encountered during drilling or after completion.

GENERAL NOTES:
Coordinates obtained from WHPacific N15 Alignment CAD file; Surface elevation provided by WHPacific.

Allwyn ENVIRONMENTAL

PROJECT NO.:	20151221
DRAWN BY:	PD
CHECKED BY:	MJM
DATE:	12/5/2014
REVISED:	12/17/2014

BORING LOG B-83

BIA N15(2-3)(3-1)(4-1)2&4
GREASEWOOD TO BURNSIDE, ARIZONA

PLATE

B-83

gINT FILE: PROJECTWISE: 20151221_n1520151221.gpj
gINT TEMPLATE: PROJECTWISE: KLF_STANDARD_GINT_LIBRARY_2014.GLB [KLF_BORING/TEST PIT SOIL LOG]

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BORING LOG B-84

Date Begin - End:	10/15/2014 - 10/15/2014	**Drilling Company:**	Enviro-Drill		
Logged By:	M. Cote	**Drill Crew:**	Ed & Juan		
Hor.-Vert. Datum:	NAD83	**Drilling Equipment:**	CME-75	**Hammer Type - Drop:**	63.5 kg. Auto - 762 mm.
Plunge:	-90 degrees	**Drilling Method:**	Hollow Stem Auger		
Weather:	sunny, windy	**Exploration Diameter:**	184 mm. O.D.		

FIELD EXPLORATION

Northing: 511,716.02 (m)
Easting: 252,656.1 (m)
Ground Surface Elevation (m.): 1,864.1
Location Offset: Sta. 15+000/1.83m Rt CL
Surface Condition: Asphalt

Elevation (meters)	Depth (meters)	Graphical Log	Lithologic Description	Sample Type	Blow Counts(BC)= Uncorr. Blows/152 mm. Pocket Pen(PP)= T/m^2	Recovery (NR=No Recovery)
1864			Field engineer measured 0.13m asphalt			
			Field engineer measured 0.13m base course			
			Poorly-graded SAND with Silt (SP-SM): fine grained, non-plastic, light yellowish brown, moist, medium dense		BC=5 5 7	457 mm
1863	1		Loose, decrease in fines at 0.91m bgs		BC=2 2 2	457 mm
1862	2		Very loose from 1.83m bgs		BC=1 1 1	457 mm
1861	3				BC=1 0 1	457 mm
1860	4				BC=1 0 1	457 mm
1859	5				BC=1 0 0	
1858	6					

LABORATORY RESULTS

AASHTO Symbol	Water Content (%)	Dry Unit Wt. (pcf)	Passing #4 (%)	Passing #200 (%)	Liquid Limit	Plasticity Index (NP=NonPlastic)	Additional Tests/ Remarks

The exploration was terminated at approximately 5 m. below ground surface. The exploration was backfilled with auger cuttings and asphalt patch on October 15, 2014.

GROUNDWATER LEVEL INFORMATION:
Groundwater was not encountered during drilling or after completion.
GENERAL NOTES:
Coordinates obtained from WHPacific N15 Alignment CAD file; Surface elevation provided by WHPacific.

Allwyn ENVIRONMENTAL

PROJECT NO.:	20151221
DRAWN BY:	PD
CHECKED BY:	MJM
DATE:	12/5/2014
REVISED:	12/17/2014

BORING LOG B-84

BIA N15(2-3)(3-1)(4-1)2&4
GREASEWOOD TO BURNSIDE, ARIZONA

PLATE

B-84

gINT FILE: PROJECTWISE: 20151221_n1520151221.gpj
gINT TEMPLATE: PROJECTWISE: KLF_STANDARD_GINT_LIBRARY_2014.GLB [KLF_BORING/TEST PIT SOIL LOG]

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BORING LOG B-85

Date Begin - End:	10/16/2014 - 10/16/2014	**Drilling Company:**	Enviro-Drill		
Logged By:	M. Cote	**Drill Crew:**	Ed & Juan		
Hor.-Vert. Datum:	NAD83	**Drilling Equipment:**	CME-75	**Hammer Type - Drop:**	63.5 kg. Auto - 762 mm.
Plunge:	-90 degrees	**Drilling Method:**	Hollow Stem Auger		
Weather:	sunny, breezy	**Exploration Diameter:**	184 mm. O.D.		

FIELD EXPLORATION

Northing: 511,853.51 (m)
Easting: 252,800.04 (m)
Ground Surface Elevation (m.): 1,863.1
Location Offset: Sta. 15+200/1.83m Lt CL
Surface Condition: Asphalt

Elevation (meters)	Depth (meters)	Graphical Log	Lithologic Description	Sample Type	Blow Counts(BC)= Uncorr. Blows/152 mm. Pocket Pen(PP)= T/m²	Recovery (NR=No Recovery)
1863	0		Field engineer measured 0.13m asphalt			
			Field engineer measured 0.15m base course			
			Silty SAND (SM): fine grained, rounded, non-plastic, yellowish brown, moist, medium dense, trace subrounded, yellow sandstone fragments		BC=7 11 9	457 mm
1862	1		Olive yellow to yellowish brown, very loose, no gravel, decrease in silt from 0.91m bgs		BC=1 1 2	305 mm
1861	2		Olive yellow, very loose from 1.83m bgs		BC=1 0 0	432 mm
1860	3				BC=1 0 1	457 mm
1859	4					
1858	5					
1857	6					

LABORATORY RESULTS

AASHTO Symbol	Water Content (%)	Dry Unit Wt. (pcf)	Passing #4 (%)	Passing #200 (%)	Liquid Limit	Plasticity Index (NP=NonPlastic)	Additional Tests/ Remarks
A-2-4(0)			92	20	NP	NP	**R-Value=** 65 Bulk sample obtained from depth of 0.3 to 1.52m bgs

The exploration was terminated at approximately 3.2 m. below ground surface. The exploration was backfilled with auger cuttings and asphalt patch on October 16, 2014.

GROUNDWATER LEVEL INFORMATION:
Groundwater was not encountered during drilling or after completion.
GENERAL NOTES:
Coordinates obtained from WHPacific N15 Alignment CAD file; Surface elevation provided by WHPacific.

Allwyn ENVIRONMENTAL

PROJECT NO.:	20151221
DRAWN BY:	PD
CHECKED BY:	MJM
DATE:	12/5/2014
REVISED:	12/17/2014

BORING LOG B-85

BIA N15(2-3)(3-1)(4-1)2&4
GREASEWOOD TO BURNSIDE, ARIZONA

PLATE

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gINT FILE: PROJECTWISE: 20151221_n1520151221.gpj
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BORING LOG B-86

Date Begin - End:	10/16/2014 - 10/16/2014	**Drilling Company:**	Enviro-Drill		
Logged By:	M. Cote	**Drill Crew:**	Ed & Juan		
Hor.-Vert. Datum:	NAD83	**Drilling Equipment:**	CME-75	**Hammer Type - Drop:**	63.5 kg. Auto - 762 mm.
Plunge:	-90 degrees	**Drilling Method:**	Hollow Stem Auger		
Weather:	sunny	**Exploration Diameter:**	184 mm. O.D.		

FIELD EXPLORATION

Northing: 512,028.52 (m)
Easting: 252,894.96 (m)
Ground Surface Elevation (m.): 1,862.0
Location Offset: Sta. 15+400/1.83m Rt CL
Surface Condition: Asphalt

Elevation (meters)	Depth (meters)	Graphical Log	Lithologic Description	Sample Type	Blow Counts(BC)= Uncorr. Blows/152 mm. Pocket Pen(PP)= T/m²	Recovery (NR=No Recovery)
			Field engineer measured 0.13m asphalt			
			Field engineer measured 0.08m base course			
			Poorly-graded SAND with Silt (SP-SM): fine grained, non-plastic, yellowish brown to reddish yellow, moist, loose, trace fine, yellow sandstone fragments		BC=5 7 7	457 mm
1861	1		Fine to medium grained, loose, trace yellow sandstone fragments at 0.91m bgs		BC=3 3 2	381 mm
1860	2		Very loose, some reddish brown sandstone fragments from 1.83m bgs		BC=1 1 2	457 mm
1859	3				BC=1 2 1	457 mm
1858	4					
1857	5					
1856	6					

LABORATORY RESULTS

AASHTO Symbol	Water Content (%)	Dry Unit Wt. (pcf)	Passing #4 (%)	Passing #200 (%)	Liquid Limit	Plasticity Index (NP=NonPlastic)	Additional Tests/ Remarks
	4.8						

The exploration was terminated at approximately 3.2 m. below ground surface. The exploration was backfilled with auger cuttings and asphalt patch on October 16, 2014.

GROUNDWATER LEVEL INFORMATION:
Groundwater was not encountered during drilling or after completion.

GENERAL NOTES:
Coordinates obtained from WHPacific N15 Alignment CAD file; Surface elevation provided by WHPacific.

Allwyn ENVIRONMENTAL

PROJECT NO.:	20151221
DRAWN BY:	PD
CHECKED BY:	MJM
DATE:	12/5/2014
REVISED:	12/17/2014

BORING LOG B-86

BIA N15(2-3)(3-1)(4-1)2&4
GREASEWOOD TO BURNSIDE, ARIZONA

PLATE

B-86

PAGE: 1 of 1

gINT FILE: PROJECTWISE: 20151221_n1520151221.gpj
gINT TEMPLATE: PROJECTWISE: KLF_STANDARD_GINT_LIBRARY_2014.GLB [KLF_BORING/TEST PIT SOIL LOG]

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BORING LOG B-87

Date Begin - End:	10/16/2014 - 10/16/2014	**Drilling Company:**	Enviro-Drill		
Logged By:	M. Cote	**Drill Crew:**	Ed & Juan		
Hor.-Vert. Datum:	NAD83	**Drilling Equipment:**	CME-75	**Hammer Type - Drop:**	63.5 kg. Auto - 762 mm.
Plunge:	-90 degrees	**Drilling Method:**	Hollow Stem Auger		
Weather:	sunny, breezy	**Exploration Diameter:**	184 mm. O.D.		

FIELD EXPLORATION

Northing: 512,218.56 (m)
Easting: 252,957.38 (m)
Ground Surface Elevation (m.): 1,859.6
Location Offset: Sta. 15+600/1.83m Lt CL
Surface Condition: Asphalt

Elevation (meters)	Depth (meters)	Graphical Log	Lithologic Description	Sample Type	Blow Counts(BC)= Uncorr. Blows/152 mm. Pocket Pen(PP)= T/m²	Recovery (NR=No Recovery)
			Field engineer measured 0.13m asphalt			
			Field engineer measured 0.13m base course			
1859			**Poorly-graded SAND (SP)**: fine grained, non-plastic, yellowish brown, moist, very loose, trace silt		BC=3 2 1	432 mm
	1		Reddish yellowish brown from 0.91m bgs		BC=1 0 1	457 mm
1858						
	2		Trace yellow sandstone fragments from 1.83 to 2.74m bgs		BC=1 1 1	457 mm
1857						
	3				BC=1 2 2	457 mm
1856						
	4					
1855						
	5					
1854						
	6					

LABORATORY RESULTS

AASHTO Symbol	Water Content (%)	Dry Unit Wt. (pcf)	Passing #4 (%)	Passing #200 (%)	Liquid Limit	Plasticity Index (NP=NonPlastic)	Additional Tests/ Remarks

The exploration was terminated at approximately 3.2 m. below ground surface. The exploration was backfilled with auger cuttings and asphalt patch on October 16, 2014.

GROUNDWATER LEVEL INFORMATION:
Groundwater was not encountered during drilling or after completion.
GENERAL NOTES:
Coordinates obtained from WHPacific N15 Alignment CAD file; Surface elevation provided by WHPacific.

Allwyn ENVIRONMENTAL

PROJECT NO.:	20151221
DRAWN BY:	PD
CHECKED BY:	MJM
DATE:	12/5/2014
REVISED:	12/17/2014

BORING LOG B-87

BIA N15(2-3)(3-1)(4-1)2&4
GREASEWOOD TO BURNSIDE, ARIZONA

PLATE

B-87

gINT FILE: PROJECTWISE: 20151221_n1520151221.gpj
gINT TEMPLATE: PROJECTWISE: KLF_STANDARD_GINT_LIBRARY_2014.GLB [KLF_BORING/TEST PIT SOIL LOG]

PLOTTED: 07/07/2015 02:02 PM BY: clbeck

BORING LOG B-88

Date Begin - End:	10/16/2014 - 10/16/2014	**Drilling Company:**	Enviro-Drill		
Logged By:	M. Cote	**Drill Crew:**	Ed & Juan		
Hor.-Vert. Datum:	NAD83	**Drilling Equipment:**	CME-75	**Hammer Type - Drop:**	63.5 kg. Auto - 762 mm.
Plunge:	-90 degrees	**Drilling Method:**	Hollow Stem Auger		
Weather:	sunny	**Exploration Diameter:**	184 mm. O.D.		

FIELD EXPLORATION

Northing: 512,406.4 (m)
Easting: 253,026.15 (m)
Ground Surface Elevation (m.): 1,855.5
Location Offset: Sta. 15+800/1.83m Rt CL
Surface Condition: Asphalt

Elevation (meters)	Depth (meters)	Graphical Log	Lithologic Description	Sample Type	Blow Counts(BC)= Uncorr. Blows/152 mm. Pocket Pen(PP)= T/m²	Recovery (NR=No Recovery)
			Field engineer measured 0.05m asphalt over black geotextile			
			Field engineer measured 0.08m base course			
1855			**Silty Clayey SAND (SC-SM)**: fine grained, non-plastic, reddish yellowish brown, moist, loose		BC=5 5 5	457 mm
	1		Fine to medium grained, well-rounded, medium dense, trace yellow sandstone fragments from 0.91m bgs		BC=5 8 11	457 mm
1854						
	2		Very loose, no gravel from 1.83m bgs		BC=1 1 1	406 mm
1853						
	3		Very loose, trace yellow sandstone fragments at 2.74m bgs		BC=1 0 1	457 mm
1852						
	4					
1851						
	5					
1850						
	6					

LABORATORY RESULTS

AASHTO Symbol	Water Content (%)	Dry Unit Wt. (pcf)	Passing #4 (%)	Passing #200 (%)	Liquid Limit	Plasticity Index (NP=NonPlastic)	Additional Tests/ Remarks

The exploration was terminated at approximately 3.2 m. below ground surface. The exploration was backfilled with auger cuttings and asphalt patch on October 16, 2014.

GROUNDWATER LEVEL INFORMATION:
Groundwater was not encountered during drilling or after completion.
GENERAL NOTES:
Coordinates obtained from WHPacific N15 Alignment CAD file; Surface elevation provided by WHPacific.

Allwyn ENVIRONMENTAL

PROJECT NO.:	20151221
DRAWN BY:	PD
CHECKED BY:	MJM
DATE:	12/5/2014
REVISED:	12/17/2014

BORING LOG B-88

BIA N15(2-3)(3-1)(4-1)2&4
GREASEWOOD TO BURNSIDE, ARIZONA

PLATE

B-88

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gINT FILE: PROJECTWISE: 20151221_n1520151221.gpj
gINT TEMPLATE: PROJECTWISE: KLF_STANDARD_GINT_LIBRARY_2014.GLB [KLF_BORING/TEST PIT SOIL LOG]

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BORING LOG B-89

Date Begin - End:	10/16/2014 - 10/16/2014	**Drilling Company:**	Enviro-Drill		
Logged By:	M. Cote	**Drill Crew:**	Ed & Juan		
Hor.-Vert. Datum:	NAD83	**Drilling Equipment:**	CME-75	**Hammer Type - Drop:**	63.5 kg. Auto - 762 mm.
Plunge:	-90 degrees	**Drilling Method:**	Hollow Stem Auger		
Weather:	sunny, breezy	**Exploration Diameter:**	184 mm. O.D.		

FIELD EXPLORATION

Northing: 512,596.31 (m)
Easting: 253,088.94 (m)
Ground Surface Elevation (m.): 1,853.8
Location Offset: Sta. 16+000/1.83m Lt CL
Surface Condition: Asphalt

Elevation (meters)	Depth (meters)	Graphical Log	Lithologic Description	Sample Type	Blow Counts(BC)= Uncorr. Blows/152 mm. Pocket Pen(PP)= T/m²	Recovery (NR=No Recovery)
			Field engineer measured 0.05m black asphalt; 0.05m brown asphalt			
			Field engineer measured 0.10m base course			
			Silty SAND (SP): fine grained, non-plastic, yellowish brown, moist, medium dense, trace white sandstone fragments		BC=5 10 10	432 mm
1853						
	1				BC=5 2 1	25 mm
1852			Fine to coarse, rounded, reddish yellowish brown, very loose from 1.83m bgs		BC=1 1 1	356 mm
	2					
1851			Loose from 2.74m bgs		BC=1 2 2	
	3		Seam of ~0.08m thick of dark reddish brown clayey sand at 2.90m bgs			
1850	4					
1849	5					
1848	6					

LABORATORY RESULTS

AASHTO Symbol	Water Content (%)	Dry Unit Wt. (pcf)	Passing #4 (%)	Passing #200 (%)	Liquid Limit	Plasticity Index (NP=NonPlastic)	Additional Tests/ Remarks
							Driller noted pieces of asphalt and sandstone lodged in toe at 0.91m bgs

The exploration was terminated at approximately 3.2 m. below ground surface. The exploration was backfilled with auger cuttings and asphalt patch on October 16, 2014.

GROUNDWATER LEVEL INFORMATION:
Groundwater was not encountered during drilling or after completion.
GENERAL NOTES:
Coordinates obtained from WHPacific N15 Alignment CAD file; Surface elevation provided by WHPacific.

Allwyn ENVIRONMENTAL

PROJECT NO.:	20151221
DRAWN BY:	PD
CHECKED BY:	MJM
DATE:	12/5/2014
REVISED:	12/17/2014

BORING LOG B-89

BIA N15(2-3)(3-1)(4-1)2&4
GREASEWOOD TO BURNSIDE, ARIZONA

PLATE

B-89

gINT FILE: PROJECTWISE: 20151221_n1520151221.gpj
gINT TEMPLATE: PROJECTWISE: KLF_STANDARD_GINT_LIBRARY_2014.GLB [KLF_BORING/TEST PIT SOIL LOG]

PLOTTED: 07/07/2015 02:02 PM BY: clbeck

BORING LOG B-90

Date Begin - End:	10/16/2014 - 10/16/2014	**Drilling Company:**	Enviro-Drill		
Logged By:	M. Cote	**Drill Crew:**	Ed & Juan		
Hor.-Vert. Datum:	NAD83	**Drilling Equipment:**	CME-75	**Hammer Type - Drop:**	63.5 kg. Auto - 762 mm.
Plunge:	-90 degrees	**Drilling Method:**	Hollow Stem Auger		
Weather:	sunny	**Exploration Diameter:**	184 mm. O.D.		

FIELD EXPLORATION

Northing: 512,784.23 (m)
Easting: 253,157.45 (m)
Ground Surface Elevation (m.): 1,854.1
Location Offset: Sta. 16+200/1.83m Rt CL
Surface Condition: Asphalt

Elevation (meters)	Depth (meters)	Graphical Log	Lithologic Description	Sample Type	Blow Counts(BC)= Uncorr. Blows/152 mm. Pocket Pen(PP)= T/m²	Recovery (NR=No Recovery)	AASHTO Symbol	Water Content (%)	Dry Unit Wt. (pcf)	Passing #4 (%)	Passing #200 (%)	Liquid Limit	Plasticity Index (NP=NonPlastic)	Additional Tests/ Remarks
1854			Field engineer measured 0.10m asphalt											
			Field engineer measured 0.10m base course											
			Poorly-graded SAND (SP): fine to medium grained, well-rounded, non-plastic, yellowish brown, moist, medium dense		BC=5 6 5	457 mm								
1853	1		**Poorly-graded SAND with Clay (SP-SC)**: fine to medium grained, low plasticity, yellowish brown to brown, moist, loose		BC=3 3 2	406 mm		11.6						
1852	2		**Fat CLAY (CH)**: medium plasticity, dark reddish brown, moist, firm, fine sand			584 mm								
1851	3				BC=3 4 7	254 mm	A-7-6(15)			100	59	67	43	
1850	4													
1849	5													
	6													

The exploration was terminated at approximately 3.2 m. below ground surface. The exploration was backfilled with auger cuttings and asphalt patch on October 16, 2014.

GROUNDWATER LEVEL INFORMATION:
Groundwater was not encountered during drilling or after completion.
GENERAL NOTES:
Coordinates obtained from WHPacific N15 Alignment CAD file; Surface elevation provided by WHPacific.

Allwyn ENVIRONMENTAL

PROJECT NO.:	20151221
DRAWN BY:	PD
CHECKED BY:	MJM
DATE:	12/5/2014
REVISED:	12/17/2014

BORING LOG B-90

BIA N15(2-3)(3-1)(4-1)2&4
GREASEWOOD TO BURNSIDE, ARIZONA

PLATE

B-90

PAGE: 1 of 1

gINT FILE: PROJECTWISE: 20151221_n1520151221.gpj
gINT TEMPLATE: PROJECTWISE: KLF_STANDARD_GINT_LIBRARY_2014.GLB [KLF_BORING/TEST PIT SOIL LOG]

PLOTTED: 07/07/2015 02:02 PM BY: clbeck

BORING LOG B-91

Date Begin - End:	10/16/2014 - 10/16/2014	**Drilling Company:**	Enviro-Drill		
Logged By:	M. Cote	**Drill Crew:**	Ed & Juan		
Hor.-Vert. Datum:	NAD83	**Drilling Equipment:**	CME-75	**Hammer Type - Drop:**	63.5 kg. Auto - 762 mm.
Plunge:	-90 degrees	**Drilling Method:**	Hollow Stem Auger		
Weather:	sunny, breezy	**Exploration Diameter:**	184 mm. O.D.		

FIELD EXPLORATION

Northing: 512,974.15 (m)
Easting: 253,220.23 (m)
Ground Surface Elevation (m.): 1,854.6
Location Offset: Sta. 16+400/1.83m Lt CL
Surface Condition: Asphalt

Elevation (meters)	Depth (meters)	Graphical Log	Lithologic Description	Sample Type	Blow Counts(BC)= Uncorr. Blows/152 mm. Pocket Pen(PP)= T/m²	Recovery (NR=No Recovery)	AASHTO Symbol	Water Content (%)	Dry Unit Wt. (pcf)	Passing #4 (%)	Passing #200 (%)	Liquid Limit	Plasticity Index (NP=NonPlastic)	Additional Tests/ Remarks
1854	0		Field engineer measured 0.05m black asphalt; 0.05m brown asphalt Field engineer measured 0.10m base course **Clayey SAND (SC)**: fine grained, low plasticity, red, moist, loose		BC=6 5 4	457 mm	A-2-6(0)			97	30	28	12	**R-Value=** 15 Bulk sample obtained from depth of 0.3 to 1.52m bgs
	1				BC=5 3 1	229 mm								
1853			**Sandy Fat CLAY (CH)**: medium plasticity, reddish brown, moist, very soft, fine sand											
	2		**Poorly-graded SAND (SP)**: fine grained, well-rounded, non-plastic, yellowish brown, moist, very loose, with seams of fine to coarse sand, trace subrounded weakly cemented sandstone fragments		BC=1 0 0	457 mm								
1852														
	3				BC=1 1 1	457 mm								
1851	4													
1850	5													
1849	6													

The exploration was terminated at approximately 3.2 m. below ground surface. The exploration was backfilled with auger cuttings and asphalt patch on October 16, 2014.

GROUNDWATER LEVEL INFORMATION:
Groundwater was not encountered during drilling or after completion.

GENERAL NOTES:
Coordinates obtained from WHPacific N15 Alignment CAD file; Surface elevation provided by WHPacific.

Allwyn ENVIRONMENTAL

PROJECT NO.:	20151221
DRAWN BY:	PD
CHECKED BY:	MJM
DATE:	12/5/2014
REVISED:	12/17/2014

BORING LOG B-91

BIA N15(2-3)(3-1)(4-1)2&4
GREASEWOOD TO BURNSIDE, ARIZONA

PLATE

B-91

PAGE: 1 of 1

gINT FILE: PROJECTWISE: 20151221_n1520151221.gpj
gINT TEMPLATE: PROJECTWISE: KLF_STANDARD_GINT_LIBRARY_2014.GLB [KLF_BORING/TEST PIT SOIL LOG]

PLOTTED: 07/07/2015 02:02 PM BY: clbeck

BORING LOG B-92

Date Begin - End:	10/16/2014 - 10/16/2014	**Drilling Company:**	Enviro-Drill		
Logged By:	M. Cote	**Drill Crew:**	Ed & Juan		
Hor.-Vert. Datum:	NAD83	**Drilling Equipment:**	CME-75	**Hammer Type - Drop:**	63.5 kg. Auto - 762 mm.
Plunge:	-90 degrees	**Drilling Method:**	Hollow Stem Auger		
Weather:	sunny	**Exploration Diameter:**	184 mm. O.D.		

FIELD EXPLORATION

Northing: 513,162.04 (m)
Easting: 253,288.92 (m)
Ground Surface Elevation (m.): 1,857.8
Location Offset: Sta. 16+600/1.83m Rt CL
Surface Condition: Asphalt

Elevation (meters)	Depth (meters)	Graphical Log	Lithologic Description	Sample Type	Blow Counts(BC)= Uncorr. Blows/152 mm. Pocket Pen(PP)= T/m²	Recovery (NR=No Recovery)	AASHTO Symbol	Water Content (%)	Dry Unit Wt. (pcf)	Passing #4 (%)	Passing #200 (%)	Liquid Limit	Plasticity Index (NP=NonPlastic)	Additional Tests/ Remarks
			Field engineer measured 0.05m asphalt; no geotextile observed											
			Field engineer measured 0.13m base course											
1857			**Clayey SAND (SC)**: fine to medium grained, well-rounded, low plasticity, reddish yellowish brown, moist, loose, weakly cemented		BC=4 6 5	381 mm	A-2-4			100	32			
	1		Slight decrease in moisture content, very weakly cemented at 0.91m bgs		BC=3 3 1	203 mm		10.6						
1856			**Poorly-graded SAND (SP)**: fine to medium grained, rounded, low plasticity, light yellowish brown, moist, loose, trace clay											
	2				BC=1 2 2	457 mm								
1855			Very loose at 2.74m bgs											
	3				BC=2 1 2	457 mm								
1854	4													
1853	5													
1852	6													

The exploration was terminated at approximately 3.2 m. below ground surface. The exploration was backfilled with auger cuttings and asphalt patch on October 16, 2014.

GROUNDWATER LEVEL INFORMATION:
Groundwater was not encountered during drilling or after completion.

GENERAL NOTES:
Coordinates obtained from WHPacific N15 Alignment CAD file; Surface elevation provided by WHPacific.

Allwyn ENVIRONMENTAL

PROJECT NO.:	20151221
DRAWN BY:	PD
CHECKED BY:	MJM
DATE:	12/5/2014
REVISED:	12/17/2014

BORING LOG B-92

BIA N15(2-3)(3-1)(4-1)2&4
GREASEWOOD TO BURNSIDE, ARIZONA

PLATE

B-92

PAGE: 1 of 1

gINT FILE: PROJECTWISE: 20151221_n1520151221.gpj
gINT TEMPLATE: PROJECTWISE: KLF_STANDARD_GINT_LIBRARY_2014.GLB [KLF_BORING/TEST PIT SOIL LOG]

PLOTTED: 07/07/2015 02:02 PM BY: clbeck

BORING LOG B-93

Date Begin - End:	10/16/2014 - 10/16/2014	**Drilling Company:**	Enviro-Drill		
Logged By:	M. Cote	**Drill Crew:**	Ed & Juan		
Hor.-Vert. Datum:	NAD83	**Drilling Equipment:**	CME-75	**Hammer Type - Drop:**	63.5 kg. Auto - 762 mm.
Plunge:	-90 degrees	**Drilling Method:**	Hollow Stem Auger		
Weather:	sunny, breezy	**Exploration Diameter:**	184 mm. O.D.		

FIELD EXPLORATION

Northing: 513,351.96 (m)
Easting: 253,351.6 (m)
Ground Surface Elevation (m.): 1,861.4
Location Offset: Sta. 16+800/1.83m Lt CL
Surface Condition: Asphalt

Elevation (meters)	Depth (meters)	Graphical Log	Lithologic Description	Sample Type	Blow Counts(BC)= Uncorr. Blows/152 mm. Pocket Pen(PP)= T/m²	Recovery (NR=No Recovery)	AASHTO Symbol	Water Content (%)	Dry Unit Wt. (pcf)	Passing #4 (%)	Passing #200 (%)	Liquid Limit	Plasticity Index (NP=NonPlastic)	Additional Tests/ Remarks
			Field engineer measured 0.05m black asphalt; 0.05m brown asphalt											
			Field engineer measured 0.10m base course											
1861			**Poorly-graded SAND with Silt (SP-SM)**: fine to coarse grained, non-plastic, yellowish brown to reddish brown, moist, loose		BC=5 3 1	457 mm								
	1				BC=4 3 2	NR								Pieces of asphalt lodge in samples at 0.91m bgs
1860														
	2		Trace flakes of dry, reddish brown clay from 1.83m bgs		BC=1 3 1	457 mm	A-2-4(0)			99	11	NP	NP	
1859														
	3				BC=2 3 3	457 mm		3.5						
1858														
	4													
1857														
	5													
1856														
	6													

The exploration was terminated at approximately 3.2 m. below ground surface. The exploration was backfilled with auger cuttings and asphalt patch on October 16, 2014.

GROUNDWATER LEVEL INFORMATION:
Groundwater was not encountered during drilling or after completion.

GENERAL NOTES:
Coordinates obtained from WHPacific N15 Alignment CAD file; Surface elevation provided by WHPacific.

Allwyn ENVIRONMENTAL

PROJECT NO.:	20151221
DRAWN BY:	PD
CHECKED BY:	MJM
DATE:	12/5/2014
REVISED:	12/17/2014

BORING LOG B-93

BIA N15(2-3)(3-1)(4-1)2&4
GREASEWOOD TO BURNSIDE, ARIZONA

PLATE

B-93

PAGE: 1 of 1

gINT FILE: PROJECTWISE: 20151221_n1520151221.gpj
gINT TEMPLATE: PROJECTWISE: KLF_STANDARD_GINT_LIBRARY_2014.GLB [KLF_BORING/TEST PIT SOIL LOG]

PLOTTED: 07/07/2015 02:02 PM BY: clbeck

BORING LOG B-94

Date Begin - End:	10/16/2014 - 10/16/2014	**Drilling Company:**	Enviro-Drill		
Logged By:	M. Cote	**Drill Crew:**	Ed & Juan		
Hor.-Vert. Datum:	NAD83	**Drilling Equipment:**	CME-75	**Hammer Type - Drop:**	63.5 kg. Auto - 762 mm.
Plunge:	-90 degrees	**Drilling Method:**	Hollow Stem Auger		
Weather:	sunny, breezy	**Exploration Diameter:**	184 mm. O.D.		

FIELD EXPLORATION

Northing: 513,539.75 (m)
Easting: 253,420.5 (m)
Ground Surface Elevation (m.): 1,863.6
Location Offset: Sta. 17+000/1.83m Rt CL
Surface Condition: Asphalt

Elevation (meters)	Depth (meters)	Graphical Log	Lithologic Description	Sample Type	Blow Counts(BC)= Uncorr. Blows/152 mm. Pocket Pen(PP)= T/m²	Recovery (NR=No Recovery)
			Field engineer measured 0.13m asphalt			
			Field engineer measured 0.10m base course			
1863			**Poorly-graded SAND with Clay (SP-SC)**: fine to medium grained, subangular to subrounded, low plasticity, reddish yellowish brown, moist, medium dense, trace sandstone fragments		BC=6 6 6	457 mm
	1		Trace flakes of reddish brown clay at 0.91m bgs		BC=5 5 3	279 mm
1862			**Poorly-graded SAND (SP)**: fine to medium grained, well-rounded, yellowish brown, moist, very loose			
	2				BC=2 2 1	203 mm
1861			Fine grained, reddish yellowish brown at 2.74m bgs		BC=1 0 1	
1860	4					
1859	5					
1858	6					

LABORATORY RESULTS

AASHTO Symbol	Water Content (%)	Dry Unit Wt. (pcf)	Passing #4 (%)	Passing #200 (%)	Liquid Limit	Plasticity Index (NP=NonPlastic)	Additional Tests/ Remarks

The exploration was terminated at approximately 3.2 m. below ground surface. The exploration was backfilled with auger cuttings and asphalt patch on October 16, 2014.

GROUNDWATER LEVEL INFORMATION:
Groundwater was not encountered during drilling or after completion.
GENERAL NOTES:
Coordinates obtained from WHPacific N15 Alignment CAD file; Surface elevation provided by WHPacific.

Allwyn ENVIRONMENTAL

PROJECT NO.:	20151221
DRAWN BY:	PD
CHECKED BY:	MJM
DATE:	12/5/2014
REVISED:	12/17/2014

BORING LOG B-94

BIA N15(2-3)(3-1)(4-1)2&4
GREASEWOOD TO BURNSIDE, ARIZONA

PLATE

B-94

PAGE: 1 of 1

gINT FILE: PROJECTWISE: 20151221_n1520151221.gpj
gINT TEMPLATE: PROJECTWISE: KLF_STANDARD_GINT_LIBRARY_2014.GLB [KLF_BORING/TEST PIT SOIL LOG]

PLOTTED: 07/07/2015 02:02 PM BY: clbeck

BORING LOG B-95

Date Begin - End:	10/16/2014 - 10/16/2014	**Drilling Company:**	Enviro-Drill		
Logged By:	M. Cote	**Drill Crew:**	Ed & Juan		
Hor.-Vert. Datum:	NAD83	**Drilling Equipment:**	CME-75	**Hammer Type - Drop:**	63.5 kg. Auto - 762 mm.
Plunge:	-90 degrees	**Drilling Method:**	Hollow Stem Auger		
Weather:	sunny, breezy	**Exploration Diameter:**	184 mm. O.D.		

FIELD EXPLORATION

Northing: 513,729.79 (m)
Easting: 253,482.91 (m)
Ground Surface Elevation (m.): 1,863.5
Location Offset: Sta. 17+200/1.83m Lt CL
Surface Condition: Asphalt

Elevation (meters)	Depth (meters)	Graphical Log	Lithologic Description	Sample Type	Blow Counts(BC)= Uncorr. Blows/152 mm. Pocket Pen(PP)= T/m²	Recovery (NR=No Recovery)
			Field engineer measured 0.08m black asphalt; 0.03m brown asphalt			
			Field engineer measured 0.10m base course			
1863			**Poorly-graded SAND with Silt (SP-SM)**: fine to coarse grained, well-rounded, non-plastic to low plasticity, reddish yellowish brown, moist, medium dense		BC=5 6 9	457 mm
	1		**Poorly-graded SAND (SP)**: fine to coarse grained, rounded, non-plastic, reddish yellowish brown, moist, loose, trace flat gray sandstone fragments		BC=2 4 2	381 mm
1862						
	2		Fine grained, very loose, no gravel from 1.83m bgs		BC=1 1 2	457 mm
1861						
	3		Fine to medium grained, very loose, no gravel from 2.74m bgs		BC=1 1 2	457 mm
1860						
	4					
1859						
	5					
1858						
	6					

LABORATORY RESULTS

AASHTO Symbol	Water Content (%)	Dry Unit Wt. (pcf)	Passing #4 (%)	Passing #200 (%)	Liquid Limit	Plasticity Index (NP=NonPlastic)	Additional Tests/ Remarks

The exploration was terminated at approximately 3.2 m. below ground surface. The exploration was backfilled with auger cuttings and asphalt patch on October 16, 2014.

GROUNDWATER LEVEL INFORMATION:
Groundwater was not encountered during drilling or after completion.

GENERAL NOTES:
Coordinates obtained from WHPacific N15 Alignment CAD file; Surface elevation provided by WHPacific.

Allwyn ENVIRONMENTAL

PROJECT NO.:	20151221
DRAWN BY:	PD
CHECKED BY:	MJM
DATE:	12/5/2014
REVISED:	12/17/2014

BORING LOG B-95

BIA N15(2-3)(3-1)(4-1)2&4
GREASEWOOD TO BURNSIDE, ARIZONA

PLATE

B-95

gINT FILE: PROJECTWISE: 20151221_n1520151221.gpj
gINT TEMPLATE: PROJECTWISE: KLF_STANDARD_GINT_LIBRARY_2014.GLB [KLF_BORING/TEST PIT SOIL LOG]

PLOTTED: 07/07/2015 02:02 PM BY: clbeck

BORING LOG B-96

Date Begin - End:	10/16/2014 - 10/16/2014	**Drilling Company:**	Enviro-Drill		
Logged By:	M. Cote	**Drill Crew:**	Ed & Juan		
Hor.-Vert. Datum:	NAD83	**Drilling Equipment:**	CME-75	**Hammer Type - Drop:**	63.5 kg. Auto - 762 mm.
Plunge:	-90 degrees	**Drilling Method:**	Hollow Stem Auger		
Weather:	sunny	**Exploration Diameter:**	184 mm. O.D.		

FIELD EXPLORATION

Northing: 513,917.63 (m)
Easting: 253,551.67 (m)
Ground Surface Elevation (m.): 1,862.4
Location Offset: Sta. 17+400/1.83m Rt CL
Surface Condition: Asphalt

Elevation (meters)	Depth (meters)	Graphical Log	Lithologic Description	Sample Type	Blow Counts(BC)= Uncorr. Blows/152 mm. Pocket Pen(PP)= T/m²	Recovery (NR=No Recovery)	AASHTO Symbol	Water Content (%)	Dry Unit Wt. (pcf)	Passing #4 (%)	Passing #200 (%)	Liquid Limit	Plasticity Index (NP=NonPlastic)	Additional Tests/ Remarks
			Field engineer measured 0.05m black asphalt; 0.08m brown asphalt											
			Field engineer measured 0.13m base course											
1862			**Silty Clayey SAND (SC-SM)**: fine to medium grained, subrounded to rounded, low plasticity, reddish yellowish brown, moist, firm, trace fine to coarse, yellow, moderately cemented sandstone gravel		BC=7 7 8	457 mm	A-2-4(0)			98	26	23	5	**R-Value=** 38 Bulk sample obtained from depth of 0.3 to 1.52m bgs
	1		Loose, becoming more reddish due to increase in dry clay flakes at 0.91m bgs		BC=3 3 3	457 mm								
1861														
	2		Very loose from 1.83m bgs		BC=1 1 1	356 mm								
1860														
	3		Fine grained, no gravel from 2.74m bgs		BC=1 0 1	457 mm								
1859														
	4													
1858														
	5													
1857														
	6													

The exploration was terminated at approximately 3.2 m. below ground surface. The exploration was backfilled with auger cuttings and asphalt patch on October 16, 2014.

GROUNDWATER LEVEL INFORMATION:
Groundwater was not encountered during drilling or after completion.

GENERAL NOTES:
Coordinates obtained from WHPacific N15 Alignment CAD file; Surface elevation provided by WHPacific.

Allwyn ENVIRONMENTAL

PROJECT NO.:	20151221
DRAWN BY:	PD
CHECKED BY:	MJM
DATE:	12/5/2014
REVISED:	12/17/2014

BORING LOG B-96

BIA N15(2-3)(3-1)(4-1)2&4
GREASEWOOD TO BURNSIDE, ARIZONA

PLATE

B-96

gINT FILE: PROJECTWISE: 20151221_n1520151221.gpj
gINT TEMPLATE: PROJECTWISE: KLF_STANDARD_GINT_LIBRARY_2014.GLB [KLF_BORING/TEST PIT SOIL LOG]

PLOTTED: 07/07/2015 02:02 PM BY: clbeck

BORING LOG B-97

Date Begin - End:	10/16/2014 - 10/16/2014	**Drilling Company:**	Enviro-Drill		
Logged By:	M. Cote	**Drill Crew:**	Ed & Juan		
Hor.-Vert. Datum:	NAD83	**Drilling Equipment:**	CME-75	**Hammer Type - Drop:**	63.5 kg. Auto - 762 mm.
Plunge:	-90 degrees	**Drilling Method:**	Hollow Stem Auger		
Weather:	sunny, breezy	**Exploration Diameter:**	184 mm. O.D.		

FIELD EXPLORATION

Northing: 514,107.62 (m)
Easting: 253,614.24 (m)
Ground Surface Elevation (m.): 1,864.0
Location Offset: Sta. 17+600/1.83m Lt CL
Surface Condition: Asphalt

Elevation (meters)	Depth (meters)	Graphical Log	Lithologic Description	Sample Type	Blow Counts(BC)= Uncorr. Blows/152 mm. Pocket Pen(PP)= T/m²	Recovery (NR=No Recovery)
			Field engineer measured 0.10m asphalt			
			Field engineer measured 0.13m base course			
			Poorly-graded SAND with Silt (SP-SM): fine grained, non-plastic to low plasticity, reddish yellowish brown, moist, loose		BC=3 3 3	406 mm
1863	1		Fine to coarse grained, very loose from 0.91m bgs		BC=1 1 0	457 mm
1862	2		Very loose, trace subrounded pale olive to light gray sandstone fragments at 1.83m bgs		BC=1 0 1	457 mm
1861	3				BC=1 1 2	457 mm
1860	4					
1859	5					
1858	6					

LABORATORY RESULTS

AASHTO Symbol	Water Content (%)	Dry Unit Wt. (pcf)	Passing #4 (%)	Passing #200 (%)	Liquid Limit	Plasticity Index (NP=NonPlastic)	Additional Tests/ Remarks

The exploration was terminated at approximately 3.2 m. below ground surface. The exploration was backfilled with auger cuttings and asphalt patch on October 16, 2014.

GROUNDWATER LEVEL INFORMATION:
Groundwater was not encountered during drilling or after completion.
GENERAL NOTES:
Coordinates obtained from WHPacific N15 Alignment CAD file; Surface elevation provided by WHPacific.

Allwyn ENVIRONMENTAL

PROJECT NO.:	20151221
DRAWN BY:	PD
CHECKED BY:	MJM
DATE:	12/5/2014
REVISED:	12/17/2014

BORING LOG B-97

BIA N15(2-3)(3-1)(4-1)2&4
GREASEWOOD TO BURNSIDE, ARIZONA

PLATE

B-97

gINT FILE: PROJECTWISE: 20151221_n1520151221.gpj
gINT TEMPLATE: PROJECTWISE: KLF_STANDARD_GINT_LIBRARY_2014.GLB [KLF_BORING/TEST PIT SOIL LOG]

PLOTTED: 07/07/2015 02:02 PM BY: clbeck

BORING LOG B-98

Date Begin - End:	10/16/2014 - 10/16/2014	**Drilling Company:**	Enviro-Drill		
Logged By:	M. Cote	**Drill Crew:**	Ed & Juan		
Hor.-Vert. Datum:	NAD83	**Drilling Equipment:**	CME-75	**Hammer Type - Drop:**	63.5 kg. Auto - 762 mm.
Plunge:	-90 degrees	**Drilling Method:**	Hollow Stem Auger		
Weather:	sunny, breezy	**Exploration Diameter:**	184 mm. O.D.		

FIELD EXPLORATION

Northing: 514,295.38 (m)
Easting: 253,683.22 (m)
Ground Surface Elevation (m.): 1,866.4
Location Offset: Sta. 17+800/1.83m Rt CL
Surface Condition: Asphalt

Elevation (meters)	Depth (meters)	Graphical Log	Lithologic Description	Sample Type	Blow Counts(BC)= Uncorr. Blows/152 mm. Pocket Pen(PP)= T/m²	Recovery (NR=No Recovery)
			Field engineer measured 0.03m black asphalt; 0.08m brown asphalt			
			Field engineer measured 0.05m base course			
1866			**Poorly-graded SAND with Clay (SP-SC)**: fine to medium grained, low plasticity, reddish yellowish brown, moist, medium dense, some dry, reddish brown clay flakes		BC=6 7 5	457 mm
	1		Loose, trace pale olive to yellow sandstone fragments at 0.91m bgs		BC=5 5 2	457 mm
1865						
	2		**Poorly-graded SAND (SP)**: fine grained, non-plastic, moist, very loose, trace red clay flakes		BC=1 1 1	203 mm
1864						
	3		Fine to medium grained, patches of yellow brown with no clay flakes at 2.74m bgs		BC=1 1 1	
1863						
	4					
1862						
	5					
1861						
	6					

LABORATORY RESULTS

AASHTO Symbol	Water Content (%)	Dry Unit Wt. (pcf)	Passing #4 (%)	Passing #200 (%)	Liquid Limit	Plasticity Index (NP=NonPlastic)	Additional Tests/ Remarks

The exploration was terminated at approximately 3.2 m. below ground surface. The exploration was backfilled with auger cuttings and asphalt patch on October 16, 2014.

GROUNDWATER LEVEL INFORMATION:
Groundwater was not encountered during drilling or after completion.
GENERAL NOTES:
Coordinates obtained from WHPacific N15 Alignment CAD file; Surface elevation provided by WHPacific.

Allwyn ENVIRONMENTAL

PROJECT NO.:	20151221
DRAWN BY:	PD
CHECKED BY:	MJM
DATE:	12/5/2014
REVISED:	12/17/2014

BORING LOG B-98

BIA N15(2-3)(3-1)(4-1)2&4
GREASEWOOD TO BURNSIDE, ARIZONA

PLATE

B-98

gINT FILE: PROJECTWISE: 20151221_n1520151221.gpj
gINT TEMPLATE: PROJECTWISE: KLF_STANDARD_GINT_LIBRARY_2014.GLB [KLF_BORING/TEST PIT SOIL LOG]

BORING LOG B-99

Date Begin - End:	10/17/2014 - 10/17/2014	**Drilling Company:**	Enviro-Drill		
Logged By:	M. Cote	**Drill Crew:**	Ed & Juan		
Hor.-Vert. Datum:	NAD83	**Drilling Equipment:**	CME-75	**Hammer Type - Drop:**	63.5 kg. Auto - 762 mm.
Plunge:	-90 degrees	**Drilling Method:**	Hollow Stem Auger		
Weather:	cloudy	**Exploration Diameter:**	184 mm. O.D.		

FIELD EXPLORATION

Northing: 514,485.39 (m)
Easting: 253,745.72 (m)
Ground Surface Elevation (m.): 1,869.5
Location Offset: Sta. 18+000/1.83m Lt CL
Surface Condition: Asphalt

Elevation (meters)	Depth (meters)	Graphical Log	Lithologic Description	Sample Type	Blow Counts(BC)= Uncorr. Blows/152 mm. Pocket Pen(PP)= T/m²	Recovery (NR=No Recovery)
			Field engineer measured 0.05m black asphalt; 0.08m brown asphalt			
			Field engineer measured 0.08m base course			
1869			**Poorly-graded SAND with Silt (SP-SM)**: fine to medium grained, rounded, non-plastic to low plasticity, reddish yellowish brown, moist, medium dense, trace patches of white medium grained sand		BC=5 6 6	432 mm
	1		**Poorly-graded SAND (SP)**: fine grained, non-plastic, reddish yellowish brown, moist, very loose		BC=1 1 1	457 mm
1868						
	2		Trace subrounded yellow sandstone fragments at 1.83m bgs		BC=2 1 1	406 mm
1867						
	3				BC=1 2 1	
1866						
	4					
1865						
	5					
1864						
	6					

LABORATORY RESULTS

AASHTO Symbol	Water Content (%)	Dry Unit Wt. (pcf)	Passing #4 (%)	Passing #200 (%)	Liquid Limit	Plasticity Index (NP=NonPlastic)	Additional Tests/ Remarks

The exploration was terminated at approximately 3.2 m. below ground surface. The exploration was backfilled with auger cuttings and asphalt patch on October 17, 2014.

GROUNDWATER LEVEL INFORMATION:
Groundwater was not encountered during drilling or after completion.

GENERAL NOTES:
Coordinates obtained from WHPacific N15 Alignment CAD file; Surface elevation provided by WHPacific.

Allwyn ENVIRONMENTAL

PROJECT NO.:	20151221
DRAWN BY:	PD
CHECKED BY:	MJM
DATE:	12/5/2014
REVISED:	12/17/2014

BORING LOG B-99

BIA N15(2-3)(3-1)(4-1)2&4
GREASEWOOD TO BURNSIDE, ARIZONA

PLATE

B-99

PAGE: 1 of 1

PLOTTED: 07/07/2015 02:02 PM BY: clbeck
gINT FILE: PROJECTWISE: 20151221_n1520151221.gpj
gINT TEMPLATE: PROJECTWISE: KLF_STANDARD_GINT_LIBRARY_2014.GLB [KLF_BORING/TEST PIT SOIL LOG]

PLOTTED: 07/07/2015 02:02 PM BY: clbeck

BORING LOG B-100

Date Begin - End:	10/17/2014 - 10/17/2014	**Drilling Company:**	Enviro-Drill		
Logged By:	M. Cote	**Drill Crew:**	Ed & Juan		
Hor.-Vert. Datum:	NAD83	**Drilling Equipment:**	CME-75	**Hammer Type - Drop:**	63.5 kg. Auto - 762 mm.
Plunge:	-90 degrees	**Drilling Method:**	Hollow Stem Auger		
Weather:	cloudy	**Exploration Diameter:**	184 mm. O.D.		

FIELD EXPLORATION

Northing: 514,673.17 (m)
Easting: 253,814.66 (m)
Ground Surface Elevation (m.): 1,870.1
Location Offset: Sta. 18+200/1.83m Rt CL
Surface Condition: Asphalt

Elevation (meters)	Depth (meters)	Graphical Log	Lithologic Description	Sample Type	Blow Counts(BC)= Uncorr. Blows/152 mm. Pocket Pen(PP)= T/m²	Recovery (NR=No Recovery)
1870	0		Field engineer measured 0.05m black asphalt; 0.05m brown asphalt			
			Field engineer measured 0.08m base course			
			Silty Clayey SAND (SC-SM): fine grained, low plasticity, reddish yellowish brown, moist, medium dense, trace fine subrounded yellow sandstone fragments		BC=5 7 5	432 mm
1869	1				BC=5 8 9	457 mm
1868	2		**Poorly-graded SAND (SP)**: fine grained, non-plastic, reddish yellowish brown, moist, very loose, trace silt		BC=3 1 2	457 mm
1867	3		Patches of dry, white, weakly cemented clay at 2.74m bgs		BC=2 2 2	305 mm
1866	4					
1865	5					
1864	6					

LABORATORY RESULTS

AASHTO Symbol	Water Content (%)	Dry Unit Wt. (pcf)	Passing #4 (%)	Passing #200 (%)	Liquid Limit	Plasticity Index (NP=NonPlastic)	Additional Tests/ Remarks

The exploration was terminated at approximately 3.2 m. below ground surface. The exploration was backfilled with auger cuttings and asphalt patch on October 17, 2014.

GROUNDWATER LEVEL INFORMATION:
Groundwater was not encountered during drilling or after completion.

GENERAL NOTES:
Coordinates obtained from WHPacific N15 Alignment CAD file; Surface elevation provided by WHPacific.

Allwyn ENVIRONMENTAL

PROJECT NO.:	20151221
DRAWN BY:	PD
CHECKED BY:	MJM
DATE:	12/5/2014
REVISED:	12/17/2014

BORING LOG B-100

BIA N15(2-3)(3-1)(4-1)2&4
GREASEWOOD TO BURNSIDE, ARIZONA

PLATE

B-100

gINT FILE: PROJECTWISE: 20151221_n1520151221.gpj
gINT TEMPLATE: PROJECTWISE: KLF_STANDARD_GINT_LIBRARY_2014.GLB [KLF_BORING/TEST PIT SOIL LOG]

PLOTTED: 07/07/2015 02:02 PM BY: clbeck

BORING LOG B-101

Date Begin - End:	10/17/2014 - 10/17/2014	**Drilling Company:**	Enviro-Drill		
Logged By:	M. Cote	**Drill Crew:**	Ed & Juan		
Hor.-Vert. Datum:	NAD83	**Drilling Equipment:**	CME-75	**Hammer Type - Drop:**	63.5 kg. Auto - 762 mm.
Plunge:	-90 degrees	**Drilling Method:**	Hollow Stem Auger		
Weather:	cloudy	**Exploration Diameter:**	184 mm. O.D.		

FIELD EXPLORATION

Northing: 514,860.56 (m)
Easting: 253,884.33 (m)
Ground Surface Elevation (m.): 1,869.8
Location Offset: Sta. 18+400/1.83m Lt CL
Surface Condition: Asphalt

Elevation (meters)	Depth (meters)	Graphical Log	Lithologic Description	Sample Type	Blow Counts(BC)= Uncorr. Blows/152 mm. Pocket Pen(PP)= T/m²	Recovery (NR=No Recovery)	AASHTO Symbol	Water Content (%)	Dry Unit Wt. (pcf)	Passing #4 (%)	Passing #200 (%)	Liquid Limit	Plasticity Index (NP=NonPlastic)	Additional Tests/ Remarks
			Field engineer measured 0.08m black asphalt; 0.05m brown asphalt											
			Field engineer measured 0.05m base course											
1869			**Silty Clayey SAND (SC-SM)**: fine grained, low plasticity, reddish yellowish brown to brown, moist, loose ~15° bedding plane at 0.30m bgs		BC=5 3 5	457 mm	A-4(1)			100	40	22	6	Bulk sample obtained from depth of 0.3 to 1.52m bgs
	1		**Poorly-graded SAND (SP)**: fine grained, non-plastic, reddish yellowish brown, moist, medium dense		BC=3 6 7	381 mm		7.7						
1868														
	2				BC=1 1 1	457 mm								
1867			Slight increase in moisture, trace subrounded pale olive to light gray sandstone fragments at 2.74m bgs		BC=1 1 1	457 mm								
	3													
1866	4													
1865	5													
1864	6													

The exploration was terminated at approximately 3.2 m. below ground surface. The exploration was backfilled with auger cuttings and asphalt patch on October 17, 2014.

GROUNDWATER LEVEL INFORMATION:
Groundwater was not encountered during drilling or after completion.

GENERAL NOTES:
Coordinates obtained from WHPacific N15 Alignment CAD file; Surface elevation provided by WHPacific.

Allwyn ENVIRONMENTAL

PROJECT NO.:	20151221
DRAWN BY:	PD
CHECKED BY:	MJM
DATE:	12/5/2014
REVISED:	12/17/2014

BORING LOG B-101

BIA N15(2-3)(3-1)(4-1)2&4
GREASEWOOD TO BURNSIDE, ARIZONA

PLATE

B-101

gINT FILE: PROJECTWISE: 20151221_n1520151221.gpj
gINT TEMPLATE: PROJECTWISE: KLF_STANDARD_GINT_LIBRARY_2014.GLB [KLF_BORING/TEST PIT SOIL LOG]

PLOTTED: 07/07/2015 02:02 PM BY: clbeck

BORING LOG B-102

Date Begin - End:	10/17/2014 - 10/17/2014	**Drilling Company:**	Enviro-Drill		
Logged By:	M. Cote	**Drill Crew:**	Ed & Juan		
Hor.-Vert. Datum:	NAD83	**Drilling Equipment:**	CME-75	**Hammer Type - Drop:**	63.5 kg. Auto - 762 mm.
Plunge:	-90 degrees	**Drilling Method:**	Hollow Stem Auger		
Weather:	cloudy	**Exploration Diameter:**	184 mm. O.D.		

FIELD EXPLORATION

Northing: 515,030.57 (m)
Easting: 253,989.02 (m)
Ground Surface Elevation (m.): 1,872.4
Location Offset: Sta. 18+600/1.83m Rt CL
Surface Condition: Asphalt

Elevation (meters)	Depth (meters)	Graphical Log	Lithologic Description	Sample Type	Blow Counts(BC)= Uncorr. Blows/152 mm. Pocket Pen(PP)= T/m²	Recovery (NR=No Recovery)
			Field engineer measured 0.03m black asphalt; 0.08m brown asphalt			
			Field engineer measured 0.05m base course			
1872			**Poorly-graded SAND with Silt (SP-SM)**: fine grained, non-plastic, moist, loose		BC=4 4 3	432 mm
	1		**Poorly-graded SAND (SP)**: fine grained, non-plastic, reddish yellowish brown, moist, very loose, trace silt		BC=2 1 1	305 mm
1871						
	2		Trace light brownish gray sandstone fragments at 1.83m bgs		BC=1 1 2	457 mm
1870						
	3		Darker reddish yellowish brown at 2.74m bgs		BC=1 0 1	457 mm
1869						
	4					
1868						
	5					
1867						
	6					

LABORATORY RESULTS

AASHTO Symbol	Water Content (%)	Dry Unit Wt. (pcf)	Passing #4 (%)	Passing #200 (%)	Liquid Limit	Plasticity Index (NP=NonPlastic)	Additional Tests/ Remarks

The exploration was terminated at approximately 3.2 m. below ground surface. The exploration was backfilled with auger cuttings and asphalt patch on October 17, 2014.

GROUNDWATER LEVEL INFORMATION:
Groundwater was not encountered during drilling or after completion.

GENERAL NOTES:
Coordinates obtained from WHPacific N15 Alignment CAD file; Surface elevation provided by WHPacific.

Allwyn ENVIRONMENTAL

PROJECT NO.:	20151221
DRAWN BY:	PD
CHECKED BY:	MJM
DATE:	12/5/2014
REVISED:	12/17/2014

BORING LOG B-102

BIA N15(2-3)(3-1)(4-1)2&4
GREASEWOOD TO BURNSIDE, ARIZONA

PLATE

B-102

PAGE: 1 of 1

gINT FILE: PROJECTWISE: 20151221_n1520151221.gpj
gINT TEMPLATE: PROJECTWISE: KLF_STANDARD_GINT_LIBRARY_2014.GLB [KLF_BORING/TEST PIT SOIL LOG]

PLOTTED: 07/07/2015 02:02 PM BY: clbeck

BORING LOG B-103

Date Begin - End:	10/17/2014 - 10/17/2014	**Drilling Company:**	Enviro-Drill		
Logged By:	M. Cote	**Drill Crew:**	Ed & Juan		
Hor.-Vert. Datum:	NAD83	**Drilling Equipment:**	CME-75	**Hammer Type - Drop:**	63.5 kg. Auto - 762 mm.
Plunge:	-90 degrees	**Drilling Method:**	Hollow Stem Auger		
Weather:	cloudy	**Exploration Diameter:**	184 mm. O.D.		

FIELD EXPLORATION

Northing: 515,184.54 (m)
Easting: 254,116.45 (m)
Ground Surface Elevation (m.): 1,870.1
Location Offset: Sta. 18+800/1.83m Lt CL
Surface Condition: Asphalt

Elevation (meters)	Depth (meters)	Graphical Log	Lithologic Description	Sample Type	Blow Counts(BC)= Uncorr. Blows/152 mm. Pocket Pen(PP)= T/m²	Recovery (NR=No Recovery)
1870			Field engineer measured 0.13m asphalt			
			Field engineer measured 0.05m base course			
			Silty Clayey SAND (SC-SM): fine grained, non-plastic to low plasticity, reddish yellowish brown, moist, medium dense Bedding plane (~30°) at 0.46m bgs		BC=7 9 11	457 mm
1869	1		Loose, trace subrounded yellow sandstone fragments at 0.91m bgs		BC=6 5 5	457 mm
			Poorly-graded SAND (SP): fine grained, non-plastic to low plasticity, reddish yellowish brown, moist, very loose, trace fine, subrounded, yellow sandstone gravel			
1868	2				BC=1 2 1	457 mm
			Loose, no sandstone fragments at 2.74m bgs		BC=2 2 2	457 mm
1867	3					
1866	4					
1865	5					
1864	6					

LABORATORY RESULTS

AASHTO Symbol	Water Content (%)	Dry Unit Wt. (pcf)	Passing #4 (%)	Passing #200 (%)	Liquid Limit	Plasticity Index (NP=NonPlastic)	Additional Tests/ Remarks

The exploration was terminated at approximately 3.2 m. below ground surface. The exploration was backfilled with auger cuttings and asphalt patch on October 17, 2014.

GROUNDWATER LEVEL INFORMATION:
Groundwater was not encountered during drilling or after completion.
GENERAL NOTES:
Coordinates obtained from WHPacific N15 Alignment CAD file; Surface elevation provided by WHPacific.

Allwyn ENVIRONMENTAL

PROJECT NO.:	20151221
DRAWN BY:	PD
CHECKED BY:	MJM
DATE:	12/5/2014
REVISED:	12/17/2014

BORING LOG B-103

BIA N15(2-3)(3-1)(4-1)2&4
GREASEWOOD TO BURNSIDE, ARIZONA

PLATE

B-103

PAGE: 1 of 1

gINT FILE: PROJECTWISE: 20151221_n1520151221.gpj
gINT TEMPLATE: PROJECTWISE: KLF_STANDARD_GINT_LIBRARY_2014.GLB [KLF_BORING/TEST PIT SOIL LOG]

PLOTTED: 07/07/2015 02:02 PM BY: clbeck

BORING LOG B-104

Date Begin - End:	10/17/2014 - 10/17/2014	**Drilling Company:**	Enviro-Drill		
Logged By:	M. Cote	**Drill Crew:**	Ed & Juan		
Hor.-Vert. Datum:	NAD83	**Drilling Equipment:**	CME-75	**Hammer Type - Drop:**	63.5 kg. Auto - 762 mm.
Plunge:	-90 degrees	**Drilling Method:**	Hollow Stem Auger		
Weather:	cloudy	**Exploration Diameter:**	184 mm. O.D.		

FIELD EXPLORATION

Northing: 515,319.64 (m)
Easting: 254,263.99 (m)
Ground Surface Elevation (m.): 1,868.6
Location Offset: Sta. 19+000/1.83m Rt CL
Surface Condition: Asphalt

Elevation (meters)	Depth (meters)	Graphical Log	Lithologic Description	Sample Type	Blow Counts(BC)= Uncorr. Blows/152 mm. Pocket Pen(PP)= T/m²	Recovery (NR=No Recovery)
			Field engineer measured 0.03m black asphalt; 0.08m brown asphalt			
			Field engineer measured 0.03m base course			
1868			**Poorly-graded SAND with Clay (SP-SC)**: fine grained, low plasticity, reddish yellowish brown, moist, loose		BC=5 4 4	457 mm
	1		Medium grained, well-rounded, medium dense from 0.91m bgs		BC=3 8 7	330 mm
1867			**Poorly-graded SAND (SP)**: fine grained, non-plastic, reddish yellowish brown, moist, very loose, trace fines		BC=1 1 2	457 mm
1866	2					
	3		Fine to medium grained, subangular to subrounded, loose from 2.74m bgs		BC=2 2 2	457 mm
1865						
	4					
1864						
	5					
1863						
	6					

LABORATORY RESULTS

AASHTO Symbol	Water Content (%)	Dry Unit Wt. (pcf)	Passing #4 (%)	Passing #200 (%)	Liquid Limit	Plasticity Index (NP=NonPlastic)	Additional Tests/ Remarks

The exploration was terminated at approximately 3.2 m. below ground surface. The exploration was backfilled with auger cuttings and asphalt patch on October 17, 2014.

GROUNDWATER LEVEL INFORMATION:
Groundwater was not encountered during drilling or after completion.
GENERAL NOTES:
Coordinates obtained from WHPacific N15 Alignment CAD file; Surface elevation provided by WHPacific.

Allwyn ENVIRONMENTAL

PROJECT NO.:	20151221
DRAWN BY:	PD
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DATE:	12/5/2014
REVISED:	12/17/2014

BORING LOG B-104

BIA N15(2-3)(3-1)(4-1)2&4
GREASEWOOD TO BURNSIDE, ARIZONA

PLATE

B-104

PAGE: 1 of 1

gINT FILE: PROJECTWISE: 20151221_n1520151221.gpj
gINT TEMPLATE: PROJECTWISE: KLF_STANDARD_GINT_LIBRARY_2014.GLB [KLF_BORING/TEST PIT SOIL LOG]

PLOTTED: 07/07/2015 02:02 PM BY: clbeck

BORING LOG B-105

Date Begin - End:	10/17/2014 - 10/17/2014	**Drilling Company:**	Enviro-Drill		
Logged By:	M. Cote	**Drill Crew:**	Ed & Juan		
Hor.-Vert. Datum:	NAD83	**Drilling Equipment:**	CME-75	**Hammer Type - Drop:**	63.5 kg. Auto - 762 mm.
Plunge:	-90 degrees	**Drilling Method:**	Hollow Stem Auger		
Weather:	cloudy	**Exploration Diameter:**	184 mm. O.D.		

FIELD EXPLORATION

Northing: 515,458.82 (m)
Easting: 254,407.65 (m)
Ground Surface Elevation (m.): 1,869.6
Location Offset: Sta. 19+200/1.83m Lt CL
Surface Condition: Asphalt

Elevation (meters)	Depth (meters)	Graphical Log	Lithologic Description	Sample Type	Blow Counts(BC)= Uncorr. Blows/152 mm. Pocket Pen(PP)= T/m²	Recovery (NR=No Recovery)
			Field engineer measured 0.13m asphalt			
			Field engineer measured 0.05m base course			
1869			**Poorly-graded SAND with Silt (SP-SM)**: fine to medium grained, non-plastic to low plasticity, reddish yellowish brown, moist, loose, trace subrounded yellow to pale olive sandstone fragments		BC=4 4 3	457 mm
	1		**Poorly-graded SAND (SP)**: fine grained, non-plastic, reddish yellowish brown, moist, very loose		BC=2 1 0	330 mm
1868						
	2		Trace subrounded white sandstone fragments at 1.83m bgs		BC=1 1 2	330 mm
			Seam of soft sandy lean clay at 2.29m bgs			
1867						
	3				BC=1 1 2	457 mm
1866						
	4					
1865						
	5					
1864						
	6					

LABORATORY RESULTS

AASHTO Symbol	Water Content (%)	Dry Unit Wt. (pcf)	Passing #4 (%)	Passing #200 (%)	Liquid Limit	Plasticity Index (NP=NonPlastic)	Additional Tests/ Remarks

The exploration was terminated at approximately 3.2 m. below ground surface. The exploration was backfilled with auger cuttings and asphalt patch on October 17, 2014.

GROUNDWATER LEVEL INFORMATION:
Groundwater was not encountered during drilling or after completion.
GENERAL NOTES:
Coordinates obtained from WHPacific N15 Alignment CAD file; Surface elevation provided by WHPacific.

Allwyn ENVIRONMENTAL

PROJECT NO.:	20151221
DRAWN BY:	PD
CHECKED BY:	MJM
DATE:	12/5/2014
REVISED:	12/17/2014

BORING LOG B-105

BIA N15(2-3)(3-1)(4-1)2&4
GREASEWOOD TO BURNSIDE, ARIZONA

PLATE

B-105

gINT FILE: PROJECTWISE: 20151221_n1520151221.gpj
gINT TEMPLATE: PROJECTWISE: KLF_STANDARD_GINT_LIBRARY_2014.GLB [KLF_BORING/TEST PIT SOIL LOG]

PLOTTED: 07/07/2015 02:02 PM BY: clbeck

BORING LOG B-106

Date Begin - End:	10/17/2014 - 10/17/2014	**Drilling Company:**	Enviro-Drill		
Logged By:	M. Cote	**Drill Crew:**	Ed & Juan		
Hor.-Vert. Datum:	NAD83	**Drilling Equipment:**	CME-75	**Hammer Type - Drop:**	63.5 kg. Auto - 762 mm.
Plunge:	-90 degrees	**Drilling Method:**	Hollow Stem Auger		
Weather:	cloudy	**Exploration Diameter:**	184 mm. O.D.		

FIELD EXPLORATION

Northing: 515,593.44 (m)
Easting: 254,555.59 (m)
Ground Surface Elevation (m.): 1,869.2
Location Offset: Sta. 19+400/1.83m Rt CL
Surface Condition: Asphalt

Elevation (meters)	Depth (meters)	Graphical Log	Lithologic Description	Sample Type	Blow Counts(BC)= Uncorr. Blows/152 mm. Pocket Pen(PP)= T/m²	Recovery (NR=No Recovery)	AASHTO Symbol	Water Content (%)	Dry Unit Wt. (pcf)	Passing #4 (%)	Passing #200 (%)	Liquid Limit	Plasticity Index (NP=NonPlastic)	Additional Tests/ Remarks
1869	0		Field engineer measured 0.05m black asphalt; 0.05m brown asphalt											
			Field engineer measured 0.05m base course											
			Poorly-graded SAND (SP): fine grained, non-plastic, reddish yellow, moist, loose, trace black specks		BC=5 4 6	457 mm		7.7						Bulk sample obtained from depth of 0.3 to 1.52m bgs
	1		Reddish yellow, trace fine white lines at 0.91m bgs		BC=2 3 2	457 mm						NP	NP	
1868			Becoming yellow at 1.22m bgs											
	2		Fine to medium grained, yellow, very loose, trace weakly to moderately cemented sandstone fragments from 1.83m bgs		BC=2 1 1	406 mm								
1867														
	3		Fine grained, reddish yellow brown, very loose from 2.74m bgs		BC=1 2 1	381 mm								
1866														
	4													
1865														
	5													
1864														
	6													

The exploration was terminated at approximately 3.2 m. below ground surface. The exploration was backfilled with auger cuttings and asphalt patch on October 17, 2014.

GROUNDWATER LEVEL INFORMATION:
Groundwater was not encountered during drilling or after completion.

GENERAL NOTES:
Coordinates obtained from WHPacific N15 Alignment CAD file; Surface elevation provided by WHPacific.

Allwyn ENVIRONMENTAL

PROJECT NO.:	20151221
DRAWN BY:	PD
CHECKED BY:	MJM
DATE:	12/5/2014
REVISED:	12/17/2014

BORING LOG B-106

BIA N15(2-3)(3-1)(4-1)2&4
GREASEWOOD TO BURNSIDE, ARIZONA

PLATE

B-106

PAGE: 1 of 1

gINT FILE: PROJECTWISE: 20151221_n1520151221.gpj
gINT TEMPLATE: PROJECTWISE: KLF_STANDARD_GINT_LIBRARY_2014.GLB [KLF_BORING/TEST PIT SOIL LOG]

PLOTTED: 07/07/2015 02:02 PM BY: clbeck

BORING LOG B-107

Date Begin - End:	10/17/2014 - 10/17/2014	**Drilling Company:**	Enviro-Drill		
Logged By:	M. Cote	**Drill Crew:**	Ed & Juan		
Hor.-Vert. Datum:	NAD83	**Drilling Equipment:**	CME-75	**Hammer Type - Drop:**	63.5 kg. Auto - 762 mm.
Plunge:	-90 degrees	**Drilling Method:**	Hollow Stem Auger		
Weather:	cloudy	**Exploration Diameter:**	184 mm. O.D.		

FIELD EXPLORATION

Northing: 515,732.63 (m)
Easting: 254,699.24 (m)
Ground Surface Elevation (m.): 1,867.6
Location Offset: Sta. 19+600/1.83m Lt CL
Surface Condition: Asphalt

Elevation (meters)	Depth (meters)	Graphical Log	Lithologic Description	Sample Type	Blow Counts(BC)= Uncorr. Blows/152 mm. Pocket Pen(PP)= T/m²	Recovery (NR=No Recovery)
			Field measured 0.05m black asphalt; 0.05m brown asphalt			
			Field engineer measured 0.08m base course			
1867			**Poorly-graded SAND (SP)**: fine to medium grained, non-plastic, olive yellow to reddish yellowish brown, moist, loose, weakly cemented, trace fine rootlets		BC=5 3 5	432 mm
	1		Fine grained, reddish yellowish brown, trace black specks at 0.91m bgs		BC=4 2 2	279 mm
1866						
	2				BC=2 2 3	457 mm
1865			Becoming slightly clayey and weakly cemented at 2.29m bgs			
	3		Fine grained, yellowish brown at 2.74m bgs		BC=2 2 2	457 mm
1864						
	4					
1863						
	5					
1862						
	6					

LABORATORY RESULTS

AASHTO Symbol	Water Content (%)	Dry Unit Wt. (pcf)	Passing #4 (%)	Passing #200 (%)	Liquid Limit	Plasticity Index (NP=NonPlastic)	Additional Tests/ Remarks

The exploration was terminated at approximately 3.2 m. below ground surface. The exploration was backfilled with auger cuttings and asphalt patch on October 17, 2014.

GROUNDWATER LEVEL INFORMATION:
Groundwater was not encountered during drilling or after completion.

GENERAL NOTES:
Coordinates obtained from WHPacific N15 Alignment CAD file; Surface elevation provided by WHPacific.

Allwyn ENVIRONMENTAL

PROJECT NO.:	20151221
DRAWN BY:	PD
CHECKED BY:	MJM
DATE:	12/5/2014
REVISED:	12/17/2014

BORING LOG B-107

BIA N15(2-3)(3-1)(4-1)2&4
GREASEWOOD TO BURNSIDE, ARIZONA

PLATE

B-107

PAGE: 1 of 1

gINT FILE: PROJECTWISE: 20151221_n1520151221.gpj
gINT TEMPLATE: PROJECTWISE: KLF_STANDARD_GINT_LIBRARY_2014.GLB [KLF_BORING/TEST PIT SOIL LOG]

PLOTTED: 07/07/2015 02:02 PM BY: clbeck

BORING LOG B-108

Date Begin - End:	10/17/2014 - 10/17/2014	**Drilling Company:**	Enviro-Drill
Logged By:	M. Cote	**Drill Crew:**	Ed & Juan
Hor.-Vert. Datum:	NAD83	**Drilling Equipment:**	CME-75
Plunge:	-90 degrees	**Drilling Method:**	Hollow Stem Auger
Weather:	cloudy	**Exploration Diameter:**	184 mm. O.D.

Hammer Type - Drop: 63.5 kg. Auto - 762 mm.

FIELD EXPLORATION

Northing: 515,867.21 (m)
Easting: 254,847.22 (m)
Ground Surface Elevation (m.): 1,867.7
Location Offset: Sta. 19+800/1.83m Rt CL
Surface Condition: Asphalt

Elevation (meters)	Depth (meters)	Graphical Log	Lithologic Description	Sample Type	Blow Counts(BC)= Uncorr. Blows/152 mm. Pocket Pen(PP)= T/m²	Recovery (NR=No Recovery)
			Field engineer measured 0.08m black asphalt; 0.05m brown asphalt			
			Field engineer measured 0.10m base course			
			Poorly-graded SAND (SP): fine to medium grained, non-plastic, yellowish brown, moist, medium dense		BC=4 7 4	381 mm
1867			**Clayey SAND (SC)**: fine grained, low plasticity, reddish yellowish brown, moist, medium dense			
	1		**Poorly-graded SAND (SP)**: fine grained, reddish yellow, dry to moist, medium dense, weakly cemented		BC=5 6 5	432 mm
1866						
	2		Fine to medium grained, moist, loose, rounded sand below 1.83m bgs		BC=2 2 2	457 mm
1865						
	3		Fine grained, moist, loose below 2.74m bgs		BC=2 1 1	457 mm
1864	4					
1863	5					
1862	6					

LABORATORY RESULTS

AASHTO Symbol	Water Content (%)	Dry Unit Wt. (pcf)	Passing #4 (%)	Passing #200 (%)	Liquid Limit	Plasticity Index (NP=NonPlastic)	Additional Tests/ Remarks

The exploration was terminated at approximately 3.2 m. below ground surface. The exploration was backfilled with auger cuttings and asphalt patch on October 17, 2014.

GROUNDWATER LEVEL INFORMATION:
Groundwater was not encountered during drilling or after completion.
GENERAL NOTES:
Coordinates obtained from WHPacific N15 Alignment CAD file; Surface elevation provided by WHPacific.

Allwyn ENVIRONMENTAL

PROJECT NO.:	20151221
DRAWN BY:	PD
CHECKED BY:	MJM
DATE:	12/5/2014
REVISED:	12/17/2014

BORING LOG B-108

BIA N15(2-3)(3-1)(4-1)2&4
GREASEWOOD TO BURNSIDE, ARIZONA

PLATE

B-108

gINT FILE: PROJECTWISE: 20151221_n1520151221.gpj
gINT TEMPLATE: PROJECTWISE: KLF_STANDARD_GINT_LIBRARY_2014.GLB [KLF_BORING/TEST PIT SOIL LOG]

PLOTTED: 07/07/2015 02:02 PM BY: clbeck

BORING LOG B-109

Date Begin - End:	10/17/2014 - 10/17/2014	**Drilling Company:**	Enviro-Drill		
Logged By:	M. Cote	**Drill Crew:**	Ed & Juan		
Hor.-Vert. Datum:	NAD83	**Drilling Equipment:**	CME-75	**Hammer Type - Drop:**	63.5 kg. Auto - 762 mm.
Plunge:	-90 degrees	**Drilling Method:**	Hollow Stem Auger		
Weather:	cloudy	**Exploration Diameter:**	184 mm. O.D.		

FIELD EXPLORATION

Northing: 516,006.61 (m)
Easting: 254,990.67 (m)
Ground Surface Elevation (m.): 1,866.2
Location Offset: Sta. 21+000/1.83m Lt CL
Surface Condition: Asphalt

Elevation (meters)	Depth (meters)	Graphical Log	Lithologic Description	Sample Type	Blow Counts(BC)= Uncorr. Blows/152 mm. Pocket Pen(PP)= T/m²	Recovery (NR=No Recovery)
1866	0		Field engineer measured 0.05m black asphalt; 0.05m brown asphalt			
			Field engineer measured 0.13m base course			
			Poorly-graded SAND (SP): fine to coarse grained, reddish brown, moist, medium dense		BC=5 7 7	457 mm
			Poorly-graded SAND with Silt (SP-SM): fine grained, low plasticity, reddish yellowish brown, moist, medium dense, trace black specks no black specks at 0.91m bgs		BC=4 5 4	381 mm
1865	1					
			Poorly-graded SAND (SP): reddish yellowish brown, moist, very loose, trace silt, trace subrounded yellow sandstone fragments		BC=1 2 1	457 mm
1864	2					
			Light reddish yellowish brown, no sandstone fragments at 2.74m bgs		BC=2 1 2	457 mm
1863	3					
1862	4					
1861	5					
	6					

LABORATORY RESULTS

AASHTO Symbol	Water Content (%)	Dry Unit Wt. (pcf)	Passing #4 (%)	Passing #200 (%)	Liquid Limit	Plasticity Index (NP=NonPlastic)	Additional Tests/ Remarks

The exploration was terminated at approximately 3.2 m. below ground surface. The exploration was backfilled with auger cuttings and asphalt patch on October 17, 2014.

GROUNDWATER LEVEL INFORMATION:
Groundwater was not encountered during drilling or after completion.

GENERAL NOTES:
Coordinates obtained from WHPacific N15 Alignment CAD file; Surface elevation provided by WHPacific.

Allwyn ENVIRONMENTAL

PROJECT NO.:	20151221
DRAWN BY:	PD
CHECKED BY:	MJM
DATE:	12/5/2014
REVISED:	12/17/2014

BORING LOG B-109

BIA N15(2-3)(3-1)(4-1)2&4
GREASEWOOD TO BURNSIDE, ARIZONA

PLATE

B-109

gINT FILE: PROJECTWISE: 20151221_n1520151221.gpj
gINT TEMPLATE: PROJECTWISE: KLF_STANDARD_GINT_LIBRARY_2014.GLB [KLF_BORING/TEST PIT SOIL LOG]

PLOTTED: 07/07/2015 02:02 PM BY: clbeck

BORING LOG B-110

Date Begin - End:	10/17/2014 - 10/17/2014	**Drilling Company:**	Enviro-Drill		
Logged By:	M. Cote	**Drill Crew:**	Ed & Juan		
Hor.-Vert. Datum:	NAD83	**Drilling Equipment:**	CME-75	**Hammer Type - Drop:**	63.5 kg. Auto - 762 mm.
Plunge:	-90 degrees	**Drilling Method:**	Hollow Stem Auger		
Weather:	cloudy	**Exploration Diameter:**	184 mm. O.D.		

FIELD EXPLORATION

Northing: 516,141.39 (m)
Easting: 255,138.47 (m)
Ground Surface Elevation (m.): 1,866.5
Location Offset: Sta. 21+200/1.83m Rt CL
Surface Condition: Asphalt

Elevation (meters)	Depth (meters)	Graphical Log	Lithologic Description	Sample Type	Blow Counts(BC)= Uncorr. Blows/152 mm. Pocket Pen(PP)= T/m²	Recovery (NR=No Recovery)
			Field engineer measured 0.05m black asphalt; 0.08m brown asphalt			
			Field engineer measured 0.08m base course			
1866			**Poorly-graded SAND with Silt (SP-SM)**: fine grained, non-plastic, reddish yellowish brown, moist, medium dense		BC=6 5 6	432 mm
	1		Trace light gray weakly cemented sandstone fragments at 0.91m bgs		BC=6 6 6	178 mm
1865						
	2				BC=1 1 1	406 mm
			Sandy Lean CLAY (CL): fine grained, low plasticity, reddish brown, moist, soft			
1864			**Poorly-graded SAND with Silt (SP-SM)**: fine grained, non-plastic, reddish yellowish brown, moist, medium dense			
	3				BC=2 3 3	
			Sandy Lean CLAY (CL): fine grained, low plasticity, brown, moist, firm, distinct white, straight line markings			
1863			The exploration was terminated at approximately 3.2 m. below ground surface. The exploration was backfilled with auger cuttings and asphalt patch on October 17, 2014.			
	4					
1862						
	5					
1861						
	6					

LABORATORY RESULTS

AASHTO Symbol	Water Content (%)	Dry Unit Wt. (pcf)	Passing #4 (%)	Passing #200 (%)	Liquid Limit	Plasticity Index (NP=NonPlastic)	Additional Tests/ Remarks

GROUNDWATER LEVEL INFORMATION:
Groundwater was not encountered during drilling or after completion.

GENERAL NOTES:
Coordinates obtained from WHPacific N15 Alignment CAD file; Surface elevation provided by WHPacific.

Allwyn ENVIRONMENTAL	PROJECT NO.: 20151221 DRAWN BY: PD CHECKED BY: MJM DATE: 12/5/2014 REVISED: 12/17/2014	BORING LOG B-110 BIA N15(2-3)(3-1)(4-1)2&4 GREASEWOOD TO BURNSIDE, ARIZONA	PLATE B-110 PAGE: 1 of 1

gINT FILE: PROJECTWISE: 20151221_n1520151221.gpj
gINT TEMPLATE: PROJECTWISE: KLF_STANDARD_GINT_LIBRARY_2014.GLB [KLF_BORING/TEST PIT SOIL LOG]

Date Begin - End:	10/17/2014 - 10/17/2014	**Drilling Company:**	Enviro-Drill	**BORING LOG B-111**	
Logged By:	M. Cote	**Drill Crew:**	Ed & Juan		
Hor.-Vert. Datum:	NAD83	**Drilling Equipment:**	CME-75	**Hammer Type - Drop:**	63.5 kg. Auto - 762 mm.
Plunge:	-90 degrees	**Drilling Method:**	Hollow Stem Auger		
Weather:	cloudy	**Exploration Diameter:**	184 mm. O.D.		

Northing: 516,280.4 (m)
Easting: 255,282.29 (m)
Ground Surface Elevation (m.): 1,868.5
Location Offset: Sta. 21+400/1.83m Lt CL
Surface Condition: Asphalt

Elevation (meters)	Depth (meters)	Lithologic Description	Sample Type	Blow Counts(BC)= Uncorr. Blows/152 mm. Pocket Pen(PP)= T/m²	Recovery (NR=No Recovery)	AASHTO Symbol	Water Content (%)	Dry Unit Wt. (pcf)	Passing #4 (%)	Passing #200 (%)	Liquid Limit	Plasticity Index (NP=NonPlastic)	Additional Tests/ Remarks
		Field engineer measured 0.05m black asphalt; 0.05m brown asphalt											
		Field engineer measured 0.08m base course											
1868		**Clayey SAND (SC)**: fine grained, low plasticity, yellowish brown, moist, loose Vertical bedding plane with black staining from 0.30 to 0.61m bgs		BC=4 4 5	457 mm	A-2-4(0)			97	34	27	10	**R-Value=** 34 Bulk sample obtained from depth of 0.3 to 1.52m bgs
	1	Reddish yellowish brown, medium dense, bedding plane (~20°) at 0.91m bgs		BC=2 8 8	457 mm								
1867		Reddish yellowish brown, distinct undulating white line markings at 1.52m bgs											
	2			BC=1 2 2	305 mm								
1866													
		Sandy Lean CLAY (CL): fine grained, low plasticity, reddish brown, moist, firm		BC=2 5 3	432 mm								
	3	**Poorly-graded SAND (SP)**: fine grained, olive yellow, moist, loose											
		Sandy Lean CLAY (CL): fine grained, low plasticity, olive yellow, moist, firm											
1865		The exploration was terminated at approximately 3.2 m. below ground surface. The exploration was backfilled with auger cuttings and asphalt patch on October 17, 2014.											
	4												
1864													
	5												
1863													
	6												

GROUNDWATER LEVEL INFORMATION:
Groundwater was not encountered during drilling or after completion.
GENERAL NOTES:
Coordinates obtained from WHPacific N15 Alignment CAD file; Surface elevation provided by WHPacific.

Allwyn ENVIRONMENTAL	PROJECT NO.: 20151221 DRAWN BY: PD CHECKED BY: MJM DATE: 12/5/2014 REVISED: 12/17/2014	BORING LOG B-111 BIA N15(2-3)(3-1)(4-1)2&4 GREASEWOOD TO BURNSIDE, ARIZONA	PLATE B-111 PAGE: 1 of 1

PLOTTED: 07/07/2015 02:02 PM BY: clbeck
gINT FILE: PROJECTWISE: 20151221_n1520151221.gpj
gINT TEMPLATE: PROJECTWISE: KLF_STANDARD_GINT_LIBRARY_2014.GLB [KLF_BORING/TEST PIT SOIL LOG]

PLOTTED: 07/07/2015 02:02 PM BY: clbeck

BORING LOG B-112

Date Begin - End:	10/17/2014 - 10/17/2014	**Drilling Company:**	Enviro-Drill		
Logged By:	M. Cote	**Drill Crew:**	Ed & Juan		
Hor.-Vert. Datum:	NAD83	**Drilling Equipment:**	CME-75	**Hammer Type - Drop:**	63.5 kg. Auto - 762 mm.
Plunge:	-90 degrees	**Drilling Method:**	Hollow Stem Auger		
Weather:	cloudy	**Exploration Diameter:**	184 mm. O.D.		

FIELD EXPLORATION

Northing: 516,415.13 (m)
Easting: 255,430.13 (m)
Ground Surface Elevation (m.): 1,870.4
Location Offset: Sta. 21+600/1.83m Rt CL
Surface Condition: Asphalt

Elevation (meters)	Depth (meters)	Graphical Log	Lithologic Description	Sample Type	Blow Counts(BC)= Uncorr. Blows/152 mm. Pocket Pen(PP)= T/m²	Recovery (NR=No Recovery)
			Field engineer measured 0.08m black asphalt; 0.03m brown asphalt			
			Field engineer measured 0.10m base course			
1870			**Clayey SAND (SC)**: fine grained, low to medium plasticity, reddish with yellowish browns stains, moist, loose		BC=4 4 4	432 mm
	1		**Poorly-graded SAND with Clay (SP-SC)**: fine grained, low plasticity, reddish yellowish brown, moist, medium dense		BC=4 6 7	457 mm
1869						
			~0.05m seam of reddish brown sandy lean clay at 1.83m bgs		BC=3 5 3	457 mm
	2		~0.08m seam of reddish brown sandy lean clay at 2.13m bgs			
1868						
						711 mm
	3		**Poorly-graded SAND (SP)**: fine grained, yellow, moist, very loose			
1867						
	4					
1866						
	5					
1865						
	6					

LABORATORY RESULTS

AASHTO Symbol	Water Content (%)	Dry Unit Wt. (pcf)	Passing #4 (%)	Passing #200 (%)	Liquid Limit	Plasticity Index (NP=NonPlastic)	Additional Tests/ Remarks
							Driller noted clay at 2.44m bgs

The exploration was terminated at approximately 3.4 m. below ground surface. The exploration was backfilled with auger cuttings and asphalt patch on October 17, 2014.

GROUNDWATER LEVEL INFORMATION:
Groundwater was not encountered during drilling or after completion.
GENERAL NOTES:
Coordinates obtained from WHPacific N15 Alignment CAD file; Surface elevation provided by WHPacific.

Allwyn ENVIRONMENTAL

PROJECT NO.:	20151221
DRAWN BY:	PD
CHECKED BY:	MJM
DATE:	12/5/2014
REVISED:	12/17/2014

BORING LOG B-112

BIA N15(2-3)(3-1)(4-1)2&4
GREASEWOOD TO BURNSIDE, ARIZONA

PLATE

B-112

PAGE: 1 of 1

gINT FILE: PROJECTWISE: 20151221_n1520151221.gpj
gINT TEMPLATE: PROJECTWISE: KLF_STANDARD_GINT_LIBRARY_2014.GLB [KLF_BORING/TEST PIT SOIL LOG]

PLOTTED: 07/07/2015 02:03 PM BY: clbeck

BORING LOG B-113

Date Begin - End:	10/17/2014 - 10/17/2014	**Drilling Company:**	Enviro-Drill		
Logged By:	M. Cote	**Drill Crew:**	Ed & Juan		
Hor.-Vert. Datum:	NAD83	**Drilling Equipment:**	CME-75	**Hammer Type - Drop:**	63.5 kg. Auto - 762 mm.
Plunge:	-90 degrees	**Drilling Method:**	Hollow Stem Auger		
Weather:	cloudy	**Exploration Diameter:**	184 mm. O.D.		

FIELD EXPLORATION

Northing: 516,555.24 (m)
Easting: 255,572.81 (m)
Ground Surface Elevation (m.): 1,872.4
Location Offset: Sta. 21+800/1.83m Lt CL
Surface Condition: Asphalt

Elevation (meters)	Depth (meters)	Graphical Log	Lithologic Description	Sample Type	Blow Counts(BC)= Uncorr. Blows/152 mm. Pocket Pen(PP)= T/m²	Recovery (NR=No Recovery)
			Field engineer measured 0.05m black asphalt; 0.08m brown asphalt			
			Field engineer measured 0.05m base course			
1872			**Poorly-graded SAND (SP)**: fine grained, brown with to yellowish brown, moist, medium dense		BC=7 7 7	457 mm
			~0.05m thick clayey sand seam at 0.76m bgs			
	1		Yellowish brown, trace to some silt at 0.91m bgs		BC=3 7 11	457 mm
1871						
					BC=3 3 5	356 mm
	2		**Clayey SAND (SC)**: fine grained, low plasticity, dark brown, moist, loose			
1870						
			Poorly-graded SAND (SP): fine grained, olive yellow, moist, loose, clean			
	3				BC=2 3 2	457 mm
1869						
	4					
1868						
	5					
1867						
	6					

LABORATORY RESULTS

AASHTO Symbol	Water Content (%)	Dry Unit Wt. (pcf)	Passing #4 (%)	Passing #200 (%)	Liquid Limit	Plasticity Index (NP=NonPlastic)	Additional Tests/ Remarks

The exploration was terminated at approximately 3.2 m. below ground surface. The exploration was backfilled with auger cuttings and asphalt patch on October 17, 2014.

GROUNDWATER LEVEL INFORMATION:
Groundwater was not encountered during drilling or after completion.

GENERAL NOTES:
Coordinates obtained from WHPacific N15 Alignment CAD file; Surface elevation provided by WHPacific.

Allwyn ENVIRONMENTAL

PROJECT NO.:	20151221
DRAWN BY:	PD
CHECKED BY:	MJM
DATE:	12/5/2014
REVISED:	12/17/2014

BORING LOG B-113

BIA N15(2-3)(3-1)(4-1)2&4
GREASEWOOD TO BURNSIDE, ARIZONA

PLATE

B-113

PAGE: 1 of 1

gINT FILE: PROJECTWISE: 20151221_n1520151221.gpj
gINT TEMPLATE: PROJECTWISE: KLF_STANDARD_GINT_LIBRARY_2014.GLB [KLF_BORING/TEST PIT SOIL LOG]

PLOTTED: 07/07/2015 02:03 PM BY: clbeck

BORING LOG B-114

Date Begin - End:	10/18/2014 - 10/18/2014	**Drilling Company:**	Enviro-Drill		
Logged By:	M. Cote	**Drill Crew:**	Ed & Juan		
Hor.-Vert. Datum:	NAD83	**Drilling Equipment:**	CME-75	**Hammer Type - Drop:**	63.5 kg. Auto - 762 mm.
Plunge:	-90 degrees	**Drilling Method:**	Hollow Stem Auger		
Weather:	cloudy	**Exploration Diameter:**	184 mm. O.D.		

FIELD EXPLORATION

Northing: 516,703.35 (m)
Easting: 255,707.08 (m)
Ground Surface Elevation (m.): 1,874.4
Location Offset: Sta. 22+000/1.83m Rt CL
Surface Condition: Asphalt

Elevation (meters)	Depth (meters)	Graphical Log	Lithologic Description	Sample Type	Blow Counts(BC)= Uncorr. Blows/152 mm. Pocket Pen(PP)= T/m²	Recovery (NR=No Recovery)
			Field engineer measured 0.05m black asphalt; 0.05m brown asphlat			
			Field engineer measured 0.08m base course			
1874			**Poorly-graded SAND with Silt (SP-SM)**: fine grained, non-plastic to low plasticity, light yellowish brown, moist, loose		BC=6 3 6	457 mm
	1		Medium dense, increase in fines below 0.91m bgs		BC=5 10 8	457 mm
1873						
	2		Very loose, seam of fine to coarse grained poorly graded sand, trace fine subangular to subrounded gravel at 1.83m bgs		BC=2 1 2	457 mm
1872						
	3		**Poorly-graded SAND (SP)**: fine grained, yellowish brown to olive yellow, moist, loose		BC=3 2 2	457 mm
1871						
	4					
1870						
	5					
1869						
	6					

LABORATORY RESULTS

AASHTO Symbol	Water Content (%)	Dry Unit Wt. (pcf)	Passing #4 (%)	Passing #200 (%)	Liquid Limit	Plasticity Index (NP=NonPlastic)	Additional Tests/ Remarks

The exploration was terminated at approximately 3.2 m. below ground surface. The exploration was backfilled with auger cuttings and asphalt patch on October 18, 2014.

GROUNDWATER LEVEL INFORMATION:
Groundwater was not encountered during drilling or after completion.

GENERAL NOTES:
Coordinates obtained from WHPacific N15 Alignment CAD file; Surface elevation provided by WHPacific.

Allwyn ENVIRONMENTAL

PROJECT NO.:	20151221
DRAWN BY:	PD
CHECKED BY:	MJM
DATE:	12/5/2014
REVISED:	12/17/2014

BORING LOG B-114

BIA N15(2-3)(3-1)(4-1)2&4
GREASEWOOD TO BURNSIDE, ARIZONA

PLATE

B-114

PAGE: 1 of 1

gINT FILE: PROJECTWISE: 20151221_n1520151221.gpj
gINT TEMPLATE: PROJECTWISE: KLF_STANDARD_GINT_LIBRARY_2014.GLB [KLF_BORING/TEST PIT SOIL LOG]

PLOTTED: 07/07/2015 02:03 PM BY: clbeck

BORING LOG B-115

Date Begin - End:	10/18/2014 - 10/18/2014	**Drilling Company:**	Enviro-Drill		
Logged By:	M. Cote	**Drill Crew:**	Ed & Juan		
Hor.-Vert. Datum:	NAD83	**Drilling Equipment:**	CME-75	**Hammer Type - Drop:**	63.5 kg. Auto - 762 mm.
Plunge:	-90 degrees	**Drilling Method:**	Hollow Stem Auger		
Weather:	cloudy	**Exploration Diameter:**	184 mm. O.D.		

FIELD EXPLORATION

Northing: 516,867.97 (m)
Easting: 255,820.73 (m)
Ground Surface Elevation (m.): 1,876.3
Location Offset: Sta. 22+200/1.83m Lt CL
Surface Condition: Asphalt

Elevation (meters)	Depth (meters)	Graphical Log	Lithologic Description	Sample Type	Blow Counts(BC)= Uncorr. Blows/152 mm. Pocket Pen(PP)= T/m²	Recovery (NR=No Recovery)
1876	0		Field engineer measured 0.05m black asphalt; 0.08m brown asphalt			
			Field engineer measured 0.08m base course			
			Poorly-graded SAND with Silt (SP-SM): fine grained, non-plastic, yellowish brown to olive yellow, moist, medium dense		BC=4 6 5	432 mm
			Seam of brown, clayey sand at 0.76m bgs			
1875	1				BC=3 5 8	406 mm
			Poorly-graded SAND with Clay (SP-SC): fine grained, low plasticity, yellowish brown, moist, very loose			
1874	2		Lenses of brown, thinly bedded sandy lean clay at 2.04m and 2.16m bgs		BC=2 2 1	356 mm
1873	3		Yellow to reddish yellowish brown at 2.74m bgs		BC=2 1 2	457 mm
1872	4					
1871	5					
	6					

LABORATORY RESULTS

AASHTO Symbol	Water Content (%)	Dry Unit Wt. (pcf)	Passing #4 (%)	Passing #200 (%)	Liquid Limit	Plasticity Index (NP=NonPlastic)	Additional Tests/ Remarks

The exploration was terminated at approximately 3.2 m. below ground surface. The exploration was backfilled with auger cuttings and asphalt patch on October 18, 2014.

GROUNDWATER LEVEL INFORMATION:
Groundwater was not encountered during drilling or after completion.

GENERAL NOTES:
Coordinates obtained from WHPacific N15 Alignment CAD file; Surface elevation provided by WHPacific.

Allwyn ENVIRONMENTAL

PROJECT NO.:	20151221
DRAWN BY:	PD
CHECKED BY:	MJM
DATE:	12/5/2014
REVISED:	12/17/2014

BORING LOG B-115

BIA N15(2-3)(3-1)(4-1)2&4
GREASEWOOD TO BURNSIDE, ARIZONA

PLATE

B-115

PAGE: 1 of 1

gINT FILE: PROJECTWISE: 20151221_n1520151221.gpj
gINT TEMPLATE: PROJECTWISE: KLF_STANDARD_GINT_LIBRARY_2014.GLB [KLF_BORING/TEST PIT SOIL LOG]

PLOTTED: 07/07/2015 02:03 PM BY: clbeck

BORING LOG B-116

Date Begin - End:	10/18/2014 - 10/18/2014	**Drilling Company:**	Enviro-Drill		
Logged By:	M. Cote	**Drill Crew:**	Ed & Juan		
Hor.-Vert. Datum:	NAD83	**Drilling Equipment:**	CME-75	**Hammer Type - Drop:**	63.5 kg. Auto - 762 mm.
Plunge:	-90 degrees	**Drilling Method:**	Hollow Stem Auger		
Weather:	cloudy	**Exploration Diameter:**	184 mm. O.D.		

FIELD EXPLORATION

Northing: 517,030.26 (m)
Easting: 255,937.66 (m)
Ground Surface Elevation (m.): 1,878.1
Location Offset: Sta. 22+400/1.83m Rt CL
Surface Condition: Asphalt

Elevation (meters)	Depth (meters)	Graphical Log	Lithologic Description	Sample Type	Blow Counts(BC)= Uncorr. Blows/152 mm. Pocket Pen(PP)= T/m²	Recovery (NR=No Recovery)	AASHTO Symbol	Water Content (%)	Dry Unit Wt. (pcf)	Passing #4 (%)	Passing #200 (%)	Liquid Limit	Plasticity Index (NP=NonPlastic)	Additional Tests/ Remarks
1878			Field engineer measured 0.10m asphalt											
			Field engineer measured 0.10m base course											
			Clayey SAND (SC): fine grained, low plasticity, brown with olive yellow staining, moist, medium dense		BC=5 6 8	432 mm	A-2-4(0)			98	34	27	10	**R-Value=** 16 Bulk sample obtained from depth of 0.3 to 1.52m bgs
1877	1		**Poorly-graded SAND (SP)**: fine grained, non-plastic, yellowish brown to olive yellow, moist, medium dense, trace clay		BC=6 6 10	457 mm								
1876	2		**Clayey SAND (SC)**: fine grained, low plasticity, reddish brown, moist, very loose		BC=2 1 2	330 mm		14.7						
1875	3		**Silty Clayey SAND (SC-SM)**: fine grained, olive yellow, moist, loose		BC=2 2 2	457 mm	A-2-4(0)				21	23	4	
1874	4													
1873	5													
	6													

The exploration was terminated at approximately 3.2 m. below ground surface. The exploration was backfilled with auger cuttings and asphalt patch on October 18, 2014.

GROUNDWATER LEVEL INFORMATION:
Groundwater was not encountered during drilling or after completion.

GENERAL NOTES:
Coordinates obtained from WHPacific N15 Alignment CAD file; Surface elevation provided by WHPacific.

Allwyn ENVIRONMENTAL

PROJECT NO.:	20151221
DRAWN BY:	PD
CHECKED BY:	MJM
DATE:	12/5/2014
REVISED:	12/17/2014

BORING LOG B-116

BIA N15(2-3)(3-1)(4-1)2&4
GREASEWOOD TO BURNSIDE, ARIZONA

PLATE

B-116

PAGE: 1 of 1

gINT FILE: PROJECTWISE: 20151221_n1520151221.gpj
gINT TEMPLATE: PROJECTWISE: KLF_STANDARD_GINT_LIBRARY_2014.GLB [KLF_BORING/TEST PIT SOIL LOG]

PLOTTED: 07/07/2015 02:03 PM BY: clbeck

BORING LOG B-117

Date Begin - End:	10/18/2014 - 10/18/2014	**Drilling Company:**	Enviro-Drill		
Logged By:	M. Cote	**Drill Crew:**	Ed & Juan		
Hor.-Vert. Datum:	NAD83	**Drilling Equipment:**	CME-75	**Hammer Type - Drop:**	63.5 kg. Auto - 762 mm.
Plunge:	-90 degrees	**Drilling Method:**	Hollow Stem Auger		
Weather:	cloudy	**Exploration Diameter:**	184 mm. O.D.		

FIELD EXPLORATION

Northing: 517,196.6 (m)
Easting: 256,048.77 (m)
Ground Surface Elevation (m.): 1,884.2
Location Offset: Sta. 22+600/1.83m Lt CL
Surface Condition: Asphalt

Elevation (meters)	Depth (meters)	Graphical Log	Lithologic Description	Sample Type	Blow Counts(BC)= Uncorr. Blows/152 mm. Pocket Pen(PP)= T/m²	Recovery (NR=No Recovery)
			Field engineer measured 0.13m asphalt			
			Field engineer measured 0.10m base course			
1884			**Poorly-graded SAND with Silt (SP-SM)**: fine grained, non-plastic to low plasticity, reddish yellowish brown, moist, loose		BC=6 4 4	457 mm
			Light olive yellow at 0.76m bgs			
	1				BC=4 5 4	457 mm
1883			Bedding plane (~15°) at 1.22m bgs			
			Poorly-graded SAND (SP): fine grained, non-plastic, reddish yellowish brown, moist, very loose		BC=1 1 1	457 mm
1882	2					
					BC=2 1 1	305 mm
1881	3					
	4					
1880						
	5					
1879						
	6					

LABORATORY RESULTS

AASHTO Symbol	Water Content (%)	Dry Unit Wt. (pcf)	Passing #4 (%)	Passing #200 (%)	Liquid Limit	Plasticity Index (NP=NonPlastic)	Additional Tests/ Remarks

The exploration was terminated at approximately 3.2 m. below ground surface. The exploration was backfilled with auger cuttings and asphalt patch on October 18, 2014.

GROUNDWATER LEVEL INFORMATION:
Groundwater was not encountered during drilling or after completion.

GENERAL NOTES:
Coordinates obtained from WHPacific N15 Alignment CAD file; Surface elevation provided by WHPacific.

Allwyn ENVIRONMENTAL

PROJECT NO.:	20151221
DRAWN BY:	PD
CHECKED BY:	MJM
DATE:	12/5/2014
REVISED:	12/17/2014

BORING LOG B-117

BIA N15(2-3)(3-1)(4-1)2&4
GREASEWOOD TO BURNSIDE, ARIZONA

PLATE

B-117

gINT FILE: PROJECTWISE: 20151221_n1520151221.gpj
gINT TEMPLATE: PROJECTWISE: KLF_STANDARD_GINT_LIBRARY_2014.GLB [KLF_BORING/TEST PIT SOIL LOG]

PLOTTED: 07/07/2015 02:03 PM BY: clbeck

BORING LOG B-118

Date Begin - End:	10/18/2014 - 10/18/2014	**Drilling Company:**	Enviro-Drill		
Logged By:	M. Cote	**Drill Crew:**	Ed & Juan		
Hor.-Vert. Datum:	NAD83	**Drilling Equipment:**	CME-75	**Hammer Type - Drop:**	63.5 kg. Auto - 762 mm.
Plunge:	-90 degrees	**Drilling Method:**	Hollow Stem Auger		
Weather:	cloudy	**Exploration Diameter:**	184 mm. O.D.		

FIELD EXPLORATION

Northing: 517,358.97 (m)
Easting: 256,165.58 (m)
Ground Surface Elevation (m.): 1,887.6
Location Offset: Sta. 22+800/1.83m Rt CL
Surface Condition: Asphalt

Elevation (meters)	Depth (meters)	Graphical Log	Lithologic Description	Sample Type	Blow Counts(BC)= Uncorr. Blows/152 mm. Pocket Pen(PP)= T/m²	Recovery (NR=No Recovery)
			Field engineer measured 0.03m black asphalt; 0.08m brown asphalt			
			Field engineer measured 0.08m base course			
1887			**Silty Clayey SAND (SP-SC)**: fine grained, non-plastic, yellowish dark brown, moist, loose Bedding plane (~10°) at 0.30m bgs		BC=7 5 3	457 mm
	1		Very loose, light yellowish brown, decrease in silt content at 0.91m bgs		BC=2 2 1	356 mm
1886						
	2		Loose from 1.83m bgs		BC=3 2 2	229 mm
1885						
	3				BC=2 2 1	457 mm
1884						
	4					
1883						
	5					
1882						
	6					

LABORATORY RESULTS

AASHTO Symbol	Water Content (%)	Dry Unit Wt. (pcf)	Passing #4 (%)	Passing #200 (%)	Liquid Limit	Plasticity Index (NP=NonPlastic)	Additional Tests/ Remarks

The exploration was terminated at approximately 3.2 m. below ground surface. The exploration was backfilled with auger cuttings and asphalt patch on October 18, 2014.

GROUNDWATER LEVEL INFORMATION:
Groundwater was not encountered during drilling or after completion.
GENERAL NOTES:
Coordinates obtained from WHPacific N15 Alignment CAD file; Surface elevation provided by WHPacific.

Allwyn ENVIRONMENTAL

PROJECT NO.:	20151221
DRAWN BY:	PD
CHECKED BY:	MJM
DATE:	12/5/2014
REVISED:	12/17/2014

BORING LOG B-118

BIA N15(2-3)(3-1)(4-1)2&4
GREASEWOOD TO BURNSIDE, ARIZONA

PLATE

B-118

gINT FILE: PROJECTWISE: 20151221_n1520151221.gpj
gINT TEMPLATE: PROJECTWISE: KLF_STANDARD_GINT_LIBRARY_2014.GLB [KLF_BORING/TEST PIT SOIL LOG]

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BORING LOG B-119

Date Begin - End:	10/18/2014 - 10/18/2014	**Drilling Company:**	Enviro-Drill		
Logged By:	M. Cote	**Drill Crew:**	Ed & Juan		
Hor.-Vert. Datum:	NAD83	**Drilling Equipment:**	CME-75	**Hammer Type - Drop:**	63.5 kg. Auto - 762 mm.
Plunge:	-90 degrees	**Drilling Method:**	Hollow Stem Auger		
Weather:	cloudy	**Exploration Diameter:**	184 mm. O.D.		

FIELD EXPLORATION

Northing: 517,525.05 (m)
Easting: 256,277.06 (m)
Ground Surface Elevation (m.): 1,886.1
Location Offset: Sta. 23+000/1.83m Lt CL
Surface Condition: Asphalt

Elevation (meters)	Depth (meters)	Graphical Log	Lithologic Description	Sample Type	Blow Counts(BC)= Uncorr. Blows/152 mm. Pocket Pen(PP)= T/m²	Recovery (NR=No Recovery)	AASHTO Symbol	Water Content (%)	Dry Unit Wt. (pcf)	Passing #4 (%)	Passing #200 (%)	Liquid Limit	Plasticity Index (NP=NonPlastic)	Additional Tests/ Remarks
1886	0		Field engineer measured 0.03m black asphalt; 0.08m brown asphalt											
			Field engineer measured 0.08m base course											
			Poorly-graded SAND with Silt (SP-SM): fine grained, low plasticity, reddish yellowish brown, moist, medium dense Bedding plane (~20°) at 0.46m bgs		BC=5 6 8	457 mm								
1885	1		Bedding plane (~30°) at 0.98m bgs Loose, patch of yellow, clean poorly-graded sand at 1.22m bgs		BC=4 4 2	457 mm		6.7						
1884	2		**Sandy Lean CLAY (CL)**: fine grained, low plasticity, reddish brown, moist, hard, glittering white specks		BC=4 7 6	356 mm	A-6(7)			100	52	34	20	
1883	3		**Poorly-graded SAND (SP)**: fine grained, light olive yellow, moist, loose		BC=2 3 3	305 mm								
1882	4													
1881	5													
	6													

The exploration was terminated at approximately 3.2 m. below ground surface. The exploration was backfilled with auger cuttings and asphalt patch on October 18, 2014.

GROUNDWATER LEVEL INFORMATION:
Groundwater was not encountered during drilling or after completion.

GENERAL NOTES:
Coordinates obtained from WHPacific N15 Alignment CAD file; Surface elevation provided by WHPacific.

Allwyn ENVIRONMENTAL

PROJECT NO.:	20151221
DRAWN BY:	PD
CHECKED BY:	MJM
DATE:	12/5/2014
REVISED:	12/17/2014

BORING LOG B-119

BIA N15(2-3)(3-1)(4-1)2&4
GREASEWOOD TO BURNSIDE, ARIZONA

PLATE

B-119

PAGE: 1 of 1

gINT FILE: PROJECTWISE: 20151221_n1520151221.gpj
gINT TEMPLATE: PROJECTWISE: KLF_STANDARD_GINT_LIBRARY_2014.GLB [KLF_BORING/TEST PIT SOIL LOG]

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BORING LOG B-120

Date Begin - End:	10/18/2014 - 10/18/2014	**Drilling Company:**	Enviro-Drill		
Logged By:	M. Cote	**Drill Crew:**	Ed & Juan		
Hor.-Vert. Datum:	NAD83	**Drilling Equipment:**	CME-75	**Hammer Type - Drop:**	63.5 kg. Auto - 762 mm.
Plunge:	-90 degrees	**Drilling Method:**	Hollow Stem Auger		
Weather:	cloudy	**Exploration Diameter:**	184 mm. O.D.		

FIELD EXPLORATION

Northing: 517,687.45 (m)
Easting: 256,393.84 (m)
Ground Surface Elevation (m.): 1,889.3
Location Offset: Sta. 23+200/1.83m Rt CL
Surface Condition: Asphalt

Elevation (meters)	Depth (meters)	Graphical Log	Lithologic Description	Sample Type	Blow Counts(BC)= Uncorr. Blows/152 mm. Pocket Pen(PP)= T/m²	Recovery (NR=No Recovery)
1889	0		Field engineer measured 0.03m black asphalt; 0.08m brown asphalt			
			Field engineer measured 0.10m base course			
			Silty SAND (SM): fine grained, non-plastic to low plasticity, reddish yellowish brown, moist, medium dense		BC=7 6 6	457 mm
			Bedding plane (~7°) at 0.46m bgs			
	1		Very loose from 0.91m bgs		BC=3 7 4	457 mm
1888			Slight decrease in silt, possible bedding plane (~15) at 1.31m bgs			
	2				BC=1 1 2	432 mm
1887						
	3		Fine to coarse white to clear quartz gravel at 2.74m bgs		BC=1 1 2	457 mm
1886						
	4					
1885						
	5					
1884						
	6					

LABORATORY RESULTS

AASHTO Symbol	Water Content (%)	Dry Unit Wt. (pcf)	Passing #4 (%)	Passing #200 (%)	Liquid Limit	Plasticity Index (NP=NonPlastic)	Additional Tests/ Remarks

The exploration was terminated at approximately 3.2 m. below ground surface. The exploration was backfilled with auger cuttings and asphalt patch on October 18, 2014.

GROUNDWATER LEVEL INFORMATION:
Groundwater was not encountered during drilling or after completion.
GENERAL NOTES:
Coordinates obtained from WHPacific N15 Alignment CAD file; Surface elevation provided by WHPacific.

Allwyn ENVIRONMENTAL

PROJECT NO.:	20151221
DRAWN BY:	PD
CHECKED BY:	MJM
DATE:	12/5/2014
REVISED:	12/17/2014

BORING LOG B-120

BIA N15(2-3)(3-1)(4-1)2&4
GREASEWOOD TO BURNSIDE, ARIZONA

PLATE

B-120

PAGE: 1 of 1

gINT FILE: PROJECTWISE: 20151221_n1520151221.gpj
gINT TEMPLATE: PROJECTWISE: KLF_STANDARD_GINT_LIBRARY_2014.GLB [KLF_BORING/TEST PIT SOIL LOG]

PLOTTED: 07/07/2015 02:03 PM BY: clbeck

BORING LOG B-121

Date Begin - End:	10/18/2014 - 10/18/2014	**Drilling Company:**	Enviro-Drill		
Logged By:	M. Cote	**Drill Crew:**	Ed & Juan		
Hor.-Vert. Datum:	NAD83	**Drilling Equipment:**	CME-75	**Hammer Type - Drop:**	63.5 kg. Auto - 762 mm.
Plunge:	-90 degrees	**Drilling Method:**	Hollow Stem Auger		
Weather:	cloudy	**Exploration Diameter:**	184 mm. O.D.		

FIELD EXPLORATION

Northing: 517,853.6 (m)
Easting: 256,505.23 (m)
Ground Surface Elevation (m.): 1,895.7
Location Offset: Sta. 23+400/1.83m Lt CL
Surface Condition: Asphalt

Elevation (meters)	Depth (meters)	Graphical Log	Lithologic Description	Sample Type	Blow Counts(BC)= Uncorr. Blows/152 mm. Pocket Pen(PP)= T/m²	Recovery (NR=No Recovery)	AASHTO Symbol	Water Content (%)	Dry Unit Wt. (pcf)	Passing #4 (%)	Passing #200 (%)	Liquid Limit	Plasticity Index (NP=NonPlastic)	Additional Tests/ Remarks
			Field engineer measured 0.05m black asphalt; 0.08m brown asphalt											
			Field engineer measured 0.08m base course											
1895			**Clayey SAND (SC)**: fine grained, low plasticity, dark reddish yellowish brown, moist, medium dense Bedding plane (~10°) at 0.46m bgs Bedding plane (~10°) at 0.52m bgs		BC=4 6 6	457 mm	A-4(0)			97	36	25	9	**R-Value=** 25 Bulk sample obtained from depth of 0.3 to 1.52m bgs
	1		Bedding plane (~20°), reddish yellowish brown, loose at 0.91m bgs		BC=4 5 3	457 mm								
1894														
	2		**Silty SAND (SM)**: fine grained, light reddish yellowish brown, moist, very loose		BC=4 2 1	279 mm		4.8						
1893														
	3		Dry to moist at 2.74m bgs		BC=1 1 1	457 mm	A-4(0)			100	45	NP	NP	
1892														
	4													
1891														
	5													
1890														
	6													

The exploration was terminated at approximately 3.2 m. below ground surface. The exploration was backfilled with auger cuttings and asphalt patch on October 18, 2014.

GROUNDWATER LEVEL INFORMATION:
Groundwater was not encountered during drilling or after completion.

GENERAL NOTES:
Coordinates obtained from WHPacific N15 Alignment CAD file; Surface elevation provided by WHPacific.

Allwyn ENVIRONMENTAL

PROJECT NO.:	20151221
DRAWN BY:	PD
CHECKED BY:	MJM
DATE:	12/5/2014
REVISED:	12/17/2014

BORING LOG B-121

BIA N15(2-3)(3-1)(4-1)2&4
GREASEWOOD TO BURNSIDE, ARIZONA

PLATE

B-121

PAGE: 1 of 1

gINT FILE: PROJECTWISE: 20151221_n1520151221.gpj
gINT TEMPLATE: PROJECTWISE: KLF_STANDARD_GINT_LIBRARY_2014.GLB [KLF_BORING/TEST PIT SOIL LOG]

PLOTTED: 07/07/2015 02:03 PM BY: clbeck

BORING LOG B-122

Date Begin - End:	10/18/2014 - 10/18/2014	**Drilling Company:**	Enviro-Drill		
Logged By:	M. Cote	**Drill Crew:**	Ed & Juan		
Hor.-Vert. Datum:	NAD83	**Drilling Equipment:**	CME-75	**Hammer Type - Drop:**	63.5 kg. Auto - 762 mm.
Plunge:	-90 degrees	**Drilling Method:**	Hollow Stem Auger		
Weather:	cloudy	**Exploration Diameter:**	184 mm. O.D.		

FIELD EXPLORATION

Northing: 518,016.13 (m)
Easting: 256,621.81 (m)
Ground Surface Elevation (m.): 1,897.1
Location Offset: Sta. 23+600/1.83m Rt CL
Surface Condition: Asphalt

Elevation (meters)	Depth (meters)	Graphical Log	Lithologic Description	Sample Type	Blow Counts(BC)= Uncorr. Blows/152 mm. Pocket Pen(PP)= T/m²	Recovery (NR=No Recovery)
1897			Field engineer measured 0.10m asphalt			
			Field engineer measured 0.08m base course			
			Silty SAND (SM): fine grained, dark red, dry to moist, dense, weakly cemented		BC=5 11 35	457 mm
1896	1		Moist, very dense, weakly cemented, laminated from 0.91m bgs		BC=14 50/6"	305 mm
			Poorly-graded SAND with Silt (SP-SM): fine grained, very light gray, moist, very dense		BC=24 50/4"	254 mm
1895	2		Dark red from 2.13m bgs			
					BC=50/4"	102 mm
1894	3					
1893	4					
1892	5					
	6					

LABORATORY RESULTS

AASHTO Symbol	Water Content (%)	Dry Unit Wt. (pcf)	Passing #4 (%)	Passing #200 (%)	Liquid Limit	Plasticity Index (NP=NonPlastic)	Additional Tests/ Remarks

The exploration was terminated at approximately 3.2 m. below ground surface. The exploration was backfilled with auger cuttings and asphalt patch on October 18, 2014.

GROUNDWATER LEVEL INFORMATION:
Groundwater was not encountered during drilling or after completion.
GENERAL NOTES:
Coordinates obtained from WHPacific N15 Alignment CAD file; Surface elevation provided by WHPacific.

Allwyn ENVIRONMENTAL

PROJECT NO.:	20151221
DRAWN BY:	PD
CHECKED BY:	MJM
DATE:	12/5/2014
REVISED:	12/17/2014

BORING LOG B-122

BIA N15(2-3)(3-1)(4-1)2&4
GREASEWOOD TO BURNSIDE, ARIZONA

PLATE

B-122

gINT FILE: PROJECTWISE: 20151221_n1520151221.gpj
gINT TEMPLATE: PROJECTWISE: KLF_STANDARD_GINT_LIBRARY_2014.GLB [KLF_BORING/TEST PIT SOIL LOG]

PLOTTED: 07/07/2015 02:03 PM BY: clbeck

BORING LOG B-123

Date Begin - End:	10/18/2014 - 10/18/2014	**Drilling Company:**	Enviro-Drill		
Logged By:	M. Cote	**Drill Crew:**	Ed & Juan		
Hor.-Vert. Datum:	NAD83	**Drilling Equipment:**	CME-75	**Hammer Type - Drop:**	63.5 kg. Auto - 762 mm.
Plunge:	-90 degrees	**Drilling Method:**	Hollow Stem Auger		
Weather:	cloudy	**Exploration Diameter:**	184 mm. O.D.		

FIELD EXPLORATION

Northing: 518,180.39 (m)
Easting: 256,736.02 (m)
Ground Surface Elevation (m.): 1,891.1
Location Offset: Sta. 23+800/1.83m Lt CL
Surface Condition: Asphalt

Elevation (meters)	Depth (meters)	Graphical Log	Lithologic Description	Sample Type	Blow Counts(BC)= Uncorr. Blows/152 mm. Pocket Pen(PP)= T/m²	Recovery (NR=No Recovery)
1891	0		Field engineer measured 0.03m black asphalt; 0.08m brown asphalt (hard)			
			Field engineer measured 0.10m base course			
			Poorly-graded SAND (SP): fine to coarse grained, reddish brown, moist, medium dense, trace subrounded gravel		BC=6 8 12	457 mm
			Silty SAND (SM): fine grained, low plasticity, reddish yellowish brown, moist, medium dense, weakly cemented, trace black charcoal like specks			
1890	1		Trace very light gray spots, no black specks, laminated		BC=6 12 17	406 mm
			Dark red sandstone fragments at 1.83m bgs		BC=8 14 15	457 mm
1889	2					
			Some laminated patches at 2.74m bgs		BC=12 18 16	457 mm
1888	3					
1887	4					
1886	5					
1885	6					

LABORATORY RESULTS

AASHTO Symbol	Water Content (%)	Dry Unit Wt. (pcf)	Passing #4 (%)	Passing #200 (%)	Liquid Limit	Plasticity Index (NP=NonPlastic)	Additional Tests/ Remarks

The exploration was terminated at approximately 3.2 m. below ground surface. The exploration was backfilled with auger cuttings and asphalt patch on October 18, 2014.

GROUNDWATER LEVEL INFORMATION:
Groundwater was not encountered during drilling or after completion.
GENERAL NOTES:
Coordinates obtained from WHPacific N15 Alignment CAD file; Surface elevation provided by WHPacific.

Allwyn ENVIRONMENTAL

PROJECT NO.:	20151221
DRAWN BY:	PD
CHECKED BY:	MJM
DATE:	12/5/2014
REVISED:	12/17/2014

BORING LOG B-123

BIA N15(2-3)(3-1)(4-1)2&4
GREASEWOOD TO BURNSIDE, ARIZONA

PLATE

B-123

PAGE: 1 of 1

gINT FILE: PROJECTWISE: 20151221_n1520151221.gpj
gINT TEMPLATE: PROJECTWISE: KLF_STANDARD_GINT_LIBRARY_2014.GLB [KLF_BORING/TEST PIT SOIL LOG]

PLOTTED: 07/07/2015 02:03 PM BY: clbeck

BORING LOG B-124

Date Begin - End:	10/18/2014 - 10/18/2014	**Drilling Company:**	Enviro-Drill		
Logged By:	M. Cote	**Drill Crew:**	Ed & Juan		
Hor.-Vert. Datum:	NAD83	**Drilling Equipment:**	CME-75	**Hammer Type - Drop:**	63.5 kg. Auto - 762 mm.
Plunge:	-90 degrees	**Drilling Method:**	Hollow Stem Auger		
Weather:	cloudy	**Exploration Diameter:**	184 mm. O.D.		

FIELD EXPLORATION

Northing: 518,303.72 (m)
Easting: 256,892.49 (m)
Ground Surface Elevation (m.): 1,882.1
Location Offset: Sta. 24+000/1.83m Rt CL
Surface Condition: Asphalt

Elevation (meters)	Depth (meters)	Graphical Log	Lithologic Description	Sample Type	Blow Counts(BC)= Uncorr. Blows/152 mm. Pocket Pen(PP)= T/m²	Recovery (NR=No Recovery)
1882	0		Field engineer measured 0.05m black asphalt; 0.05m brown asphalt (hard)			
			Field engineer measured 0.13m base course			
			Silty SAND (SM): fine grained, reddish yellowish brown, moist, medium dense		BC=11 8 9	457 mm
1881	1		Very loose, light reddish yellowish brown, slight decrease in fines from 0.91m bgs		BC=3 1 1	203 mm
1880	2				BC=1 1 2	457 mm
1879	3				BC=2 1 1	457 mm
1878	4					
1877	5					
	6					

LABORATORY RESULTS

AASHTO Symbol	Water Content (%)	Dry Unit Wt. (pcf)	Passing #4 (%)	Passing #200 (%)	Liquid Limit	Plasticity Index (NP=NonPlastic)	Additional Tests/ Remarks

The exploration was terminated at approximately 3.2 m. below ground surface. The exploration was backfilled with auger cuttings and asphalt patch on October 18, 2014.

GROUNDWATER LEVEL INFORMATION:
Groundwater was not encountered during drilling or after completion.

GENERAL NOTES:
Coordinates obtained from WHPacific N15 Alignment CAD file; Surface elevation provided by WHPacific.

Allwyn ENVIRONMENTAL

PROJECT NO.:	20151221
DRAWN BY:	PD
CHECKED BY:	MJM
DATE:	12/5/2014
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BORING LOG B-124

BIA N15(2-3)(3-1)(4-1)2&4
GREASEWOOD TO BURNSIDE, ARIZONA

PLATE

B-124

PAGE: 1 of 1

gINT FILE: PROJECTWISE: 20151221_n1520151221.gpj
gINT TEMPLATE: PROJECTWISE: KLF_STANDARD_GINT_LIBRARY_2014.GLB [KLF_BORING/TEST PIT SOIL LOG]

PLOTTED: 07/07/2015 02:03 PM BY: clbeck

BORING LOG B-125

Date Begin - End:	10/20/2014 - 10/20/2014	**Drilling Company:**	Enviro-Drill		
Logged By:	M. Cote	**Drill Crew:**	Ed & Juan		
Hor.-Vert. Datum:	NAD83	**Drilling Equipment:**	CME-75	**Hammer Type - Drop:**	63.5 kg. Auto - 762 mm.
Plunge:	-90 degrees	**Drilling Method:**	Hollow Stem Auger		
Weather:	partly cloudy, breezy	**Exploration Diameter:**	184 mm. O.D.		

FIELD EXPLORATION

Northing: 518,410.92 (m)
Easting: 257,061.35 (m)
Ground Surface Elevation (m.): 1,879.7
Location Offset: Sta. 24+200/1.83m Lt CL
Surface Condition: Asphalt

Elevation (meters)	Depth (meters)	Graphical Log	Lithologic Description	Sample Type	Blow Counts(BC)= Uncorr. Blows/152 mm. Pocket Pen(PP)= T/m²	Recovery (NR=No Recovery)
			Field engineer measured 0.13m asphalt			
			Field engineer measured 0.08m base course			
1879			**Silty SAND (SM)**: fine grained, non-plastic, reddish yellowish brown, moist, loose, weakly cemented		BC=4 3 2	432 mm
	1		Very loose from 0.91m bgs		BC=1 1 1	381 mm
1878						
	2		Trace patches of fine white sand at 1.83m bgs		BC=1 1 2	457 mm
1877						
	3		Weakly to moderately cemented, subrounded, reddish brown siltstone and white sandstone fragments at 3.05m bgs		BC=1 1 1	457 mm
1876			The exploration was terminated at approximately 3.2 m. below ground surface. The exploration was backfilled with auger cuttings and asphalt patch on October 20, 2014.			
	4					
1875						
	5					
1874						
	6					

LABORATORY RESULTS

AASHTO Symbol	Water Content (%)	Dry Unit Wt. (pcf)	Passing #4 (%)	Passing #200 (%)	Liquid Limit	Plasticity Index (NP=NonPlastic)	Additional Tests/ Remarks

GROUNDWATER LEVEL INFORMATION:
Groundwater was not encountered during drilling or after completion.

GENERAL NOTES:
Coordinates obtained from WHPacific N15 Alignment CAD file; Surface elevation provided by WHPacific.

Allwyn ENVIRONMENTAL

PROJECT NO.:	20151221
DRAWN BY:	PD
CHECKED BY:	MJM
DATE:	12/5/2014
REVISED:	12/17/2014

BORING LOG B-125

BIA N15(2-3)(3-1)(4-1)2&4
GREASEWOOD TO BURNSIDE, ARIZONA

PLATE

B-125

PAGE: 1 of 1

gINT FILE: PROJECTWISE: 20151221_n1520151221.gpj
gINT TEMPLATE: PROJECTWISE: KLF_STANDARD_GINT_LIBRARY_2014.GLB [KLF_BORING/TEST PIT SOIL LOG]

PLOTTED: 07/07/2015 02:03 PM BY: clbeck

BORING LOG B-126

Date Begin - End:	10/20/2014 - 10/20/2014	**Drilling Company:**	Enviro-Drill		
Logged By:	M. Cote	**Drill Crew:**	Ed & Juan		
Hor.-Vert. Datum:	NAD83	**Drilling Equipment:**	CME-75	**Hammer Type - Drop:**	63.5 kg. Auto - 762 mm.
Plunge:	-90 degrees	**Drilling Method:**	Hollow Stem Auger		
Weather:	partly cloudy	**Exploration Diameter:**	184 mm. O.D.		

FIELD EXPLORATION

Northing: 518,532.88 (m)
Easting: 257,219.42 (m)
Ground Surface Elevation (m.): 1,879.3
Location Offset: Sta. 24+400/1.83m Rt CL
Surface Condition: Asphalt

Elevation (meters)	Depth (meters)	Graphical Log	Lithologic Description	Sample Type	Blow Counts(BC)= Uncorr. Blows/152 mm. Pocket Pen(PP)= T/m²	Recovery (NR=No Recovery)	AASHTO Symbol	Water Content (%)	Dry Unit Wt. (pcf)	Passing #4 (%)	Passing #200 (%)	Liquid Limit	Plasticity Index (NP=NonPlastic)	Additional Tests/ Remarks
			Field engineer measured 0.08m asphalt											
			Field engineer measured 0.10m base course											
1879			**Silty SAND (SM)**: fine grained, non-plastic to low plasticity, reddish yellow, moist, medium dense, weakly cemented Bedding plane (~10°) at 0.37m bgs		BC=6 8 8	432 mm								Bulk sample obtained from depth of 0.3 to 1.52m bgs
	1		Trace subrounded dark red siltstone fragments at 0.91m bgs		BC=2 3 2	381 mm								
1878														
	2		Trace subrounded pale olive sandstone fragments from 1.83m bgs		BC=2 1 2	432 mm								
1877			Seam of clayey sand with distinct white lines at 2.13m bgs											
	3		Medium dense, slight decrease in moisture content at 2.74m bgs		BC=1 2 1	457 mm								
1876														
			The exploration was terminated at approximately 3.2 m. below ground surface. The exploration was backfilled with auger cuttings and asphalt patch on October 20, 2014.											
	4													
1875														
	5													
1874														
	6													

GROUNDWATER LEVEL INFORMATION:
Groundwater was not encountered during drilling or after completion.

GENERAL NOTES:
Coordinates obtained from WHPacific N15 Alignment CAD file; Surface elevation provided by WHPacific.

Allwyn ENVIRONMENTAL

PROJECT NO.:	20151221
DRAWN BY:	PD
CHECKED BY:	MJM
DATE:	12/5/2014
REVISED:	12/17/2014

BORING LOG B-126

BIA N15(2-3)(3-1)(4-1)2&4
GREASEWOOD TO BURNSIDE, ARIZONA

PLATE

B-126

PAGE: 1 of 1

gINT FILE: PROJECTWISE: 20151221_n1520151221.gpj
gINT TEMPLATE: PROJECTWISE: KLF_STANDARD_GINT_LIBRARY_2014.GLB [KLF_BORING/TEST PIT SOIL LOG]

PLOTTED: 07/07/2015 02:03 PM BY: clbeck

BORING LOG B-127

Date Begin - End:	10/20/2014 - 10/20/2014	**Drilling Company:**	Enviro-Drill		
Logged By:	M. Cote	**Drill Crew:**	Ed & Juan		
Hor.-Vert. Datum:	NAD83	**Drilling Equipment:**	CME-75	**Hammer Type - Drop:**	63.5 kg. Auto - 762 mm.
Plunge:	-90 degrees	**Drilling Method:**	Hollow Stem Auger		
Weather:	partly cloudy	**Exploration Diameter:**	184 mm. O.D.		

FIELD EXPLORATION

Northing: 518,691.21 (m)
Easting: 257,341.12 (m)
Ground Surface Elevation (m.): 1,880.1
Location Offset: Sta. 24+600/1.83m Lt CL
Surface Condition: Asphalt

Elevation (meters)	Depth (meters)	Graphical Log	Lithologic Description	Sample Type	Blow Counts(BC)= Uncorr. Blows/152 mm. Pocket Pen(PP)= T/m²	Recovery (NR=No Recovery)
1880	0		Field engineer measured 0.05m black asphalt; 0.08m brown asphalt			
			Field engineer measured 0.05m base course			
			Clayey SAND (SC): fine grained, non-plastic, reddish yellowish brown, moist, medium dense, weakly cemented Bedding plane (~30°) at 0.30m bgs		BC=2 6 9	381 mm
1879	1		Slight decrease in moisture, bedding plane (~30°) at 1.13m bgs		BC=5 11 11	356 mm
1878	2		**Poorly-Graded SAND with Clay (SP-SC)**: fine grained, light reddish yellowish brown, moist, loose Trace white specks at 2.13m bgs		BC=3 2 5	457 mm
1877	3		Trace subangular, reddish brown, sandstone fragments at 2.74m bgs		BC=3 4 4	457 mm
1876	4					
1875	5					
1874	6					

LABORATORY RESULTS

AASHTO Symbol	Water Content (%)	Dry Unit Wt. (pcf)	Passing #4 (%)	Passing #200 (%)	Liquid Limit	Plasticity Index (NP=NonPlastic)	Additional Tests/ Remarks

The exploration was terminated at approximately 3.2 m. below ground surface. The exploration was backfilled with auger cuttings and asphalt patch on October 20, 2014.

GROUNDWATER LEVEL INFORMATION:
Groundwater was not encountered during drilling or after completion.
GENERAL NOTES:
Coordinates obtained from WHPacific N15 Alignment CAD file; Surface elevation provided by WHPacific.

Allwyn ENVIRONMENTAL

PROJECT NO.:	20151221
DRAWN BY:	PD
CHECKED BY:	MJM
DATE:	12/5/2014
REVISED:	12/17/2014

BORING LOG B-127

BIA N15(2-3)(3-1)(4-1)2&4
GREASEWOOD TO BURNSIDE, ARIZONA

PLATE

B-127

PAGE: 1 of 1

gINT FILE: PROJECTWISE: 20151221_n1520151221.gpj
gINT TEMPLATE: PROJECTWISE: KLF_STANDARD_GINT_LIBRARY_2014.GLB [KLF_BORING/TEST PIT SOIL LOG]

PLOTTED: 07/07/2015 02:03 PM BY: clbeck

BORING LOG B-128

Date Begin - End:	10/20/2014 - 10/20/2014	**Drilling Company:**	Enviro-Drill		
Logged By:	M. Cote	**Drill Crew:**	Ed & Juan		
Hor.-Vert. Datum:	NAD83	**Drilling Equipment:**	CME-75	**Hammer Type - Drop:**	63.5 kg. Auto - 762 mm.
Plunge:	-90 degrees	**Drilling Method:**	Hollow Stem Auger		
Weather:	partly cloudy	**Exploration Diameter:**	184 mm. O.D.		

FIELD EXPLORATION

Northing: 518,855.95 (m)
Easting: 257,454.57 (m)
Ground Surface Elevation (m.): 1,879.9
Location Offset: Sta. 24+800/1.83m Rt CL
Surface Condition: Asphalt

Elevation (meters)	Depth (meters)	Graphical Log	Lithologic Description	Sample Type	Blow Counts(BC)= Uncorr. Blows/152 mm. Pocket Pen(PP)= T/m²	Recovery (NR=No Recovery)
			Field engineer measured 0.10m aphalt			
			Field engineer measured 0.08m base course			
			Silty SAND (SM): fine grained, reddish yellowish brown, moist, loose		BC=3 3 2	432 mm
1879	1				BC=4 3 3	NR
1878	2		Very loose, trace pale olive sandstone fragments at 1.83m bgs		BC=2 1 2	457 mm
1877	3		Fine to medium grained at 2.74m bgs		BC=2 2 2	457 mm
1876	4					
1875	5					
1874	6					

LABORATORY RESULTS

AASHTO Symbol	Water Content (%)	Dry Unit Wt. (pcf)	Passing #4 (%)	Passing #200 (%)	Liquid Limit	Plasticity Index (NP=NonPlastic)	Additional Tests/ Remarks

The exploration was terminated at approximately 3.2 m. below ground surface. The exploration was backfilled with auger cuttings and asphalt patch on October 20, 2014.

GROUNDWATER LEVEL INFORMATION:
Groundwater was not encountered during drilling or after completion.

GENERAL NOTES:
Coordinates obtained from WHPacific N15 Alignment CAD file; Surface elevation provided by WHPacific.

Allwyn ENVIRONMENTAL

PROJECT NO.:	20151221
DRAWN BY:	PD
CHECKED BY:	MJM
DATE:	12/5/2014
REVISED:	12/17/2014

BORING LOG B-128

BIA N15(2-3)(3-1)(4-1)2&4
GREASEWOOD TO BURNSIDE, ARIZONA

PLATE

B-128

PAGE: 1 of 1

gINT FILE: PROJECTWISE: 20151221_n1520151221.gpj
gINT TEMPLATE: PROJECTWISE: KLF_STANDARD_GINT_LIBRARY_2014.GLB [KLF_BORING/TEST PIT SOIL LOG]

PLOTTED: 07/07/2015 02:03 PM BY: clbeck

BORING LOG B-129

Date Begin - End:	10/20/2014 - 10/20/2014	**Drilling Company:**	Enviro-Drill		
Logged By:	M. Cote	**Drill Crew:**	Ed & Juan		
Hor.-Vert. Datum:	NAD83	**Drilling Equipment:**	CME-75	**Hammer Type - Drop:**	63.5 kg. Auto - 762 mm.
Plunge:	-90 degrees	**Drilling Method:**	Hollow Stem Auger		
Weather:	partly cloudy	**Exploration Diameter:**	184 mm. O.D.		

FIELD EXPLORATION

Northing: 519,024.02 (m)
Easting: 257,563.03 (m)
Ground Surface Elevation (m.): 1,876.6
Location Offset: Sta. 25+000/1.83m Lt CL
Surface Condition: Asphalt

Elevation (meters)	Depth (meters)	Graphical Log	Lithologic Description	Sample Type	Blow Counts(BC)= Uncorr. Blows/152 mm. Pocket Pen(PP)= T/m²	Recovery (NR=No Recovery)	AASHTO Symbol	Water Content (%)	Dry Unit Wt. (pcf)	Passing #4 (%)	Passing #200 (%)	Liquid Limit	Plasticity Index (NP=NonPlastic)	Additional Tests/ Remarks
			Field engineer measured 0.08m black asphalt; 0.05m brown asphalt											
			Field engineer measured 0.05m base course											
1876			**Silty SAND (SM)**: fine grained, non-plastic, reddish yellowish brown, dry to moist, loose, trace fine white gravel		BC=3 4 5	406 mm		8.3						
	1		Medium dense, bedding plane (~10°) at 1.22m bgs		BC=3 8 6	406 mm	A-2-4(0)			100	25	NP	NP	
1875														
	2		~0.03m thick of clayey sand mixed into sample at 2.13m bgs		BC=2 2 4	406 mm								
1874														
	3		Very loose at 2.74m bgs		BC=2 2 1	381 mm								
1873														
	4													
1872														
	5													
1871														
	6													

The exploration was terminated at approximately 3.2 m. below ground surface. The exploration was backfilled with auger cuttings and asphalt patch on October 20, 2014.

GROUNDWATER LEVEL INFORMATION:
Groundwater was not encountered during drilling or after completion.

GENERAL NOTES:
Coordinates obtained from WHPacific N15 Alignment CAD file; Surface elevation provided by WHPacific.

Allwyn ENVIRONMENTAL

PROJECT NO.:	20151221
DRAWN BY:	PD
CHECKED BY:	MJM
DATE:	12/5/2014
REVISED:	12/17/2014

BORING LOG B-129

BIA N15(2-3)(3-1)(4-1)2&4
GREASEWOOD TO BURNSIDE, ARIZONA

PLATE

B-129

PAGE: 1 of 1

gINT FILE: PROJECTWISE: 20151221_n1520151221.gpj
gINT TEMPLATE: PROJECTWISE: KLF_STANDARD_GINT_LIBRARY_2014.GLB [KLF_BORING/TEST PIT SOIL LOG]

PLOTTED: 07/07/2015 02:03 PM BY: clbeck

BORING LOG B-130

Date Begin - End:	10/20/2014 - 10/20/2014	**Drilling Company:**	Enviro-Drill		
Logged By:	M. Cote	**Drill Crew:**	Ed & Juan		
Hor.-Vert. Datum:	NAD83	**Drilling Equipment:**	CME-75	**Hammer Type - Drop:**	63.5 kg. Auto - 762 mm.
Plunge:	-90 degrees	**Drilling Method:**	Hollow Stem Auger		
Weather:	partly cloudy	**Exploration Diameter:**	184 mm. O.D.		

FIELD EXPLORATION

Northing: 519,188.31 (m)
Easting: 257,677.14 (m)
Ground Surface Elevation (m.): 1,877.4
Location Offset: Sta. 25+200/1.83m Rt CL
Surface Condition: Asphalt

Elevation (meters)	Depth (meters)	Graphical Log	Lithologic Description	Sample Type	Blow Counts(BC)= Uncorr. Blows/152 mm. Pocket Pen(PP)= T/m²	Recovery (NR=No Recovery)
			Field engineer measured 0.10m asphalt			
			Field engineer measured 0.08m base course			
1877			**Poorly-Graded SAND with Clay (SP-SC)**: fine grained, low plasticity, dark reddish yellowish brown, moist, loose		BC=2 2 2	457 mm
	1		Very loose from 0.91m bgs; distint white line markings at 0.91m bgs		BC=2 1 1	229 mm
1876						
	2		Lighter reddish yellowish brown at 1.83m bgs		BC=1 2 1	457 mm
1875						
	3		Red claystone and pale olive sandstone fragments at 2.74m bgs		BC=2 1 1	432 mm
1874			The exploration was terminated at approximately 3.2 m. below ground surface. The exploration was backfilled with auger cuttings and asphalt patch on October 20, 2014.			
	4					
1873						
	5					
1872						
	6					

LABORATORY RESULTS

AASHTO Symbol	Water Content (%)	Dry Unit Wt. (pcf)	Passing #4 (%)	Passing #200 (%)	Liquid Limit	Plasticity Index (NP=NonPlastic)	Additional Tests/ Remarks

GROUNDWATER LEVEL INFORMATION:
Groundwater was not encountered during drilling or after completion.

GENERAL NOTES:
Coordinates obtained from WHPacific N15 Alignment CAD file; Surface elevation provided by WHPacific.

Allwyn ENVIRONMENTAL

PROJECT NO.:	20151221
DRAWN BY:	PD
CHECKED BY:	MJM
DATE:	12/5/2014
REVISED:	12/17/2014

BORING LOG B-130

BIA N15(2-3)(3-1)(4-1)2&4
GREASEWOOD TO BURNSIDE, ARIZONA

PLATE

B-130

gINT FILE: PROJECTWISE: 20151221_n1520151221.gpj
gINT TEMPLATE: PROJECTWISE: KLF_STANDARD_GINT_LIBRARY_2014.GLB [KLF_BORING/TEST PIT SOIL LOG]

PLOTTED: 07/07/2015 02:03 PM BY: clbeck

BORING LOG B-131

Date Begin - End:	10/20/2014 - 10/20/2014	**Drilling Company:**	Enviro-Drill		
Logged By:	M. Cote	**Drill Crew:**	Ed & Juan		
Hor.-Vert. Datum:	NAD83	**Drilling Equipment:**	CME-75	**Hammer Type - Drop:**	63.5 kg. Auto - 762 mm.
Plunge:	-90 degrees	**Drilling Method:**	Hollow Stem Auger		
Weather:	partly cloudy	**Exploration Diameter:**	184 mm. O.D.		

Northing: 519,356.85 (m)
Easting: 257,784.89 (m)
Ground Surface Elevation (m.): 1,878.4
Location Offset: Sta. 25+400/1.83m Lt CL
Surface Condition: Asphalt

Elevation (meters)	Depth (meters)	Graphical Log	Lithologic Description	Sample Type	Blow Counts(BC)= Uncorr. Blows/152 mm. Pocket Pen(PP)= T/m²	Recovery (NR=No Recovery)	AASHTO Symbol	Water Content (%)	Dry Unit Wt. (pcf)	Passing #4 (%)	Passing #200 (%)	Liquid Limit	Plasticity Index (NP=NonPlastic)	Additional Tests/ Remarks
			Field engineer measured 0.10m asphalt											
			Field engineer measured 0.08m base course											
1878			**Poorly-Graded SAND with Clay (SP-SC)**: fine grained, low plasticity, reddish yellowish brown, moist, medium dense, with patches of coarse to medium grained sand		BC=4 5 7	457 mm								Bulk sample obtained from depth of 0.3 to 1.52m bgs
	1		Loose at 0.91m bgs		BC=4 5 5	457 mm								
1877			**Silty SAND (SM)**: fine grained, non-plastic, reddish yellowish brown, dry to moist, very loose, trace subangular to subrounded, white sandstone fragments											
	2				BC=2 1 2	406 mm								
1876			No sandstone fragments at 2.74m bgs		BC=2 1 2	457 mm								
	3													
1875														
	4													
1874														
	5													
1873														
	6													

The exploration was terminated at approximately 3.2 m. below ground surface. The exploration was backfilled with auger cuttings and asphalt patch on October 20, 2014.

GROUNDWATER LEVEL INFORMATION:
Groundwater was not encountered during drilling or after completion.
GENERAL NOTES:
Coordinates obtained from WHPacific N15 Alignment CAD file; Surface elevation provided by WHPacific.

Allwyn ENVIRONMENTAL

PROJECT NO.:	20151221
DRAWN BY:	PD
CHECKED BY:	MJM
DATE:	12/5/2014
REVISED:	12/17/2014

BORING LOG B-131

BIA N15(2-3)(3-1)(4-1)2&4
GREASEWOOD TO BURNSIDE, ARIZONA

PLATE

B-131

PAGE: 1 of 1

gINT FILE: PROJECTWISE: 20151221_n1520151221.gpj
gINT TEMPLATE: PROJECTWISE: KLF_STANDARD_GINT_LIBRARY_2014.GLB [KLF_BORING/TEST PIT SOIL LOG]

PLOTTED: 07/07/2015 02:03 PM BY: clbeck

BORING LOG B-132

Date Begin - End:	10/20/2014 - 10/20/2014	**Drilling Company:**	Enviro-Drill		
Logged By:	M. Cote	**Drill Crew:**	Ed & Juan		
Hor.-Vert. Datum:	NAD83	**Drilling Equipment:**	CME-75	**Hammer Type - Drop:**	63.5 kg. Auto - 762 mm.
Plunge:	-90 degrees	**Drilling Method:**	Hollow Stem Auger		
Weather:	partly cloudy	**Exploration Diameter:**	184 mm. O.D.		

FIELD EXPLORATION

Northing: 519,521.35 (m)
Easting: 257,898.69 (m)
Ground Surface Elevation (m.): 1,882.3
Location Offset: Sta. 25+600/1.83m Rt CL
Surface Condition: Asphalt

Elevation (meters)	Depth (meters)	Graphical Log	Lithologic Description	Sample Type	Blow Counts(BC)= Uncorr. Blows/152 mm. Pocket Pen(PP)= T/m²	Recovery (NR=No Recovery)
			Field engineer measured 0.10m asphalt			
			Field engineer measured 0.10m base course			
1882			**Silty SAND (SM)**: fine grained, low plasticity, dark reddish yellowish brown, moist, loose, trace silt		BC=3 3 2	457 mm
	1		Dry to moist, very loose from 0.91m bgs		BC=4 2 1	51 mm
1881						
	2		Loose at 1.83m bgs		BC=3 4 2	279 mm
1880						
					BC=1 2 1	457 mm
	3					
1879						
	4					
1878						
	5					
1877						
	6					

LABORATORY RESULTS

AASHTO Symbol	Water Content (%)	Dry Unit Wt. (pcf)	Passing #4 (%)	Passing #200 (%)	Liquid Limit	Plasticity Index (NP=NonPlastic)	Additional Tests/ Remarks

The exploration was terminated at approximately 3.2 m. below ground surface. The exploration was backfilled with auger cuttings and asphalt patch on October 20, 2014.

GROUNDWATER LEVEL INFORMATION:
Groundwater was not encountered during drilling or after completion.

GENERAL NOTES:
Coordinates obtained from WHPacific N15 Alignment CAD file; Surface elevation provided by WHPacific.

Allwyn ENVIRONMENTAL

PROJECT NO.:	20151221
DRAWN BY:	PD
CHECKED BY:	MJM
DATE:	12/5/2014
REVISED:	12/17/2014

BORING LOG B-132

BIA N15(2-3)(3-1)(4-1)2&4
GREASEWOOD TO BURNSIDE, ARIZONA

PLATE

B-132

PAGE: 1 of 1

gINT FILE: PROJECTWISE: 20151221_n1520151221.gpj
gINT TEMPLATE: PROJECTWISE: KLF_STANDARD_GINT_LIBRARY_2014.GLB [KLF_BORING/TEST PIT SOIL LOG]

PLOTTED: 07/07/2015 02:03 PM BY: clbeck

BORING LOG B-133

Date Begin - End:	10/20/2014 - 10/20/2014	**Drilling Company:**	Enviro-Drill		
Logged By:	M. Cote	**Drill Crew:**	Ed & Juan		
Hor.-Vert. Datum:	NAD83	**Drilling Equipment:**	CME-75	**Hammer Type - Drop:**	63.5 kg. Auto - 762 mm.
Plunge:	-90 degrees	**Drilling Method:**	Hollow Stem Auger		
Weather:	partly cloudy	**Exploration Diameter:**	184 mm. O.D.		

FIELD EXPLORATION

Northing: 519,689.66 (m)
Easting: 258,006.78 (m)
Ground Surface Elevation (m.): 1,885.4
Location Offset: Sta. 25+800/1.83m Lt CL
Surface Condition: Asphalt

Elevation (meters)	Depth (meters)	Graphical Log	Lithologic Description	Sample Type	Blow Counts(BC)= Uncorr. Blows/152 mm. Pocket Pen(PP)= T/m²	Recovery (NR=No Recovery)
			Field engineer measured 0.10m asphalt			
			Field engineer measured 0.08m base course			
1885			**Poorly-Graded SAND (SP)**: reddish brown, moist, loose		BC=7 5 6	432 mm
			Poorly-Graded SAND with Clay (SP-SC): fine grained, non-plastic to low plasticity, reddish yellowish brown, moist, medium dense			
	1		Loose, trace fine white line markings at 0.91m bgs		BC=4 3 2	432 mm
1884						
			Silty SAND (SM): fine grained, reddish yellowish brown, moist, very loose		BC=1 1 0	457 mm
	2					
1883						
			Trace subrounded red siltstone and pale olive sandstone fragments at 2.90m bgs		BC=2 1 1	457 mm
	3					
1882						
	4					
1881						
	5					
1880						
	6					

LABORATORY RESULTS

AASHTO Symbol	Water Content (%)	Dry Unit Wt. (pcf)	Passing #4 (%)	Passing #200 (%)	Liquid Limit	Plasticity Index (NP=NonPlastic)	Additional Tests/ Remarks

The exploration was terminated at approximately 3.2 m. below ground surface. The exploration was backfilled with auger cuttings and asphalt patch on October 20, 2014.

GROUNDWATER LEVEL INFORMATION:
Groundwater was not encountered during drilling or after completion.

GENERAL NOTES:
Coordinates obtained from WHPacific N15 Alignment CAD file; Surface elevation provided by WHPacific.

Allwyn ENVIRONMENTAL

PROJECT NO.:	20151221
DRAWN BY:	PD
CHECKED BY:	MJM
DATE:	12/5/2014
REVISED:	12/17/2014

BORING LOG B-133

BIA N15(2-3)(3-1)(4-1)2&4
GREASEWOOD TO BURNSIDE, ARIZONA

PLATE

B-133

gINT FILE: PROJECTWISE: 20151221_n1520151221.gpj
gINT TEMPLATE: PROJECTWISE: KLF_STANDARD_GINT_LIBRARY_2014.GLB [KLF_BORING/TEST PIT SOIL LOG]

Date Begin - End:	10/20/2014 - 10/20/2014	**Drilling Company:**	Enviro-Drill	**BORING LOG B-134**	
Logged By:	M. Cote	**Drill Crew:**	Ed & Juan		
Hor.-Vert. Datum:	NAD83	**Drilling Equipment:**	CME-75	**Hammer Type - Drop:**	63.5 kg. Auto - 762 mm.
Plunge:	-90 degrees	**Drilling Method:**	Hollow Stem Auger		
Weather:	partly cloudy	**Exploration Diameter:**	184 mm. O.D.		

Northing: 519,854.12 (m)
Easting: 258,120.65 (m)
Ground Surface Elevation (m.): 1,885.9
Location Offset: Sta. 26+000/1.83m Rt CL
Surface Condition: Asphalt

Elevation (meters)	Depth (meters)	Graphical Log	Lithologic Description	Sample Type	Blow Counts(BC)= Uncorr. Blows/152 mm. Pocket Pen(PP)= T/m²	Recovery (NR=No Recovery)	AASHTO Symbol	Water Content (%)	Dry Unit Wt. (pcf)	Passing #4 (%)	Passing #200 (%)	Liquid Limit	Plasticity Index (NP=NonPlastic)	Additional Tests/ Remarks
			Field engineer measured 0.13m asphalt											
			Field engineer measured 0.08m base course											
			Silty Clayey SAND (SC-SM): fine grained, low plasticity, reddish yellowish brown, moist, loose, trace fine, subangular to angular gravel Bedding plane (~0°) at 0.70m bgs		BC=3 3 6	457 mm	A-2-4(0)			100	32	23	7	
1885	1		**Poorly-Graded SAND with Clay (SP-SC)**: fine grained, low plasticity, reddish yellowish brown, dry, loose, weakly cemented, trace fine rootlets		BC=3 4 5	381 mm		8.8						
			Poorly-Graded SAND (SP): fine grained, well-rounded, lighter reddish yellowish brown, dry to moist, loose											
1884	2				BC=3 3 3	356 mm								
1883	3				BC=2 3 2	457 mm								
1882	4													
1881	5													
1880	6													

The exploration was terminated at approximately 3.2 m. below ground surface. The exploration was backfilled with auger cuttings and asphalt patch on October 20, 2014.

GROUNDWATER LEVEL INFORMATION:
Groundwater was not encountered during drilling or after completion.
GENERAL NOTES:
Coordinates obtained from WHPacific N15 Alignment CAD file; Surface elevation provided by WHPacific.

Allwyn ENVIRONMENTAL

PROJECT NO.:	20151221
DRAWN BY:	PD
CHECKED BY:	MJM
DATE:	12/5/2014
REVISED:	12/17/2014

BORING LOG B-134

BIA N15(2-3)(3-1)(4-1)2&4
GREASEWOOD TO BURNSIDE, ARIZONA

PLATE
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PAGE: 1 of 1

PLOTTED: 07/07/2015 02:03 PM BY: clbeck
gINT FILE: PROJECTWISE: 20151221_n1520151221.gpj
gINT TEMPLATE: PROJECTWISE: KLF_STANDARD_GINT_LIBRARY_2014.GLB [KLF_BORING/TEST PIT SOIL LOG]

PLOTTED: 07/07/2015 02:03 PM BY: clbeck

BORING LOG B-135

Date Begin - End:	10/20/2014 - 10/20/2014	**Drilling Company:**	Enviro-Drill		
Logged By:	M. Cote	**Drill Crew:**	Ed & Juan		
Hor.-Vert. Datum:	NAD83	**Drilling Equipment:**	CME-75	**Hammer Type - Drop:**	63.5 kg. Auto - 762 mm.
Plunge:	-90 degrees	**Drilling Method:**	Hollow Stem Auger		
Weather:	partly cloudy	**Exploration Diameter:**	184 mm. O.D.		

FIELD EXPLORATION

Northing: 520,022.33 (m)
Easting: 258,228.89 (m)
Ground Surface Elevation (m.): 1,886.8
Location Offset: Sta. 26+200/1.83m Lt CL
Surface Condition: Asphalt

Elevation (meters)	Depth (meters)	Graphical Log	Lithologic Description	Sample Type	Blow Counts(BC)= Uncorr. Blows/152 mm. Pocket Pen(PP)= T/m²	Recovery (NR=No Recovery)
			Field engineer measured 0.10m asphalt			
			Field engineer measured 0.10m base course			
1886	1		**Silty SAND (SM)**: fine grained, low plasticity, reddish yellowish brown, moist, loose		BC=5 5 4	457 mm
					BC=4 2 4	152 mm
1885	2		**Poorly-Graded SAND with Silt (SP-SM)**: moist, very loose, trace subangular to subrounded sandstone fragments		BC=2 1 2	457 mm
1884	3				BC=2 2 1	457 mm
1883	4					
1882	5					
1881	6					

LABORATORY RESULTS

AASHTO Symbol	Water Content (%)	Dry Unit Wt. (pcf)	Passing #4 (%)	Passing #200 (%)	Liquid Limit	Plasticity Index (NP=NonPlastic)	Additional Tests/ Remarks

The exploration was terminated at approximately 3.2 m. below ground surface. The exploration was backfilled with auger cuttings and asphalt patch on October 20, 2014.

GROUNDWATER LEVEL INFORMATION:
Groundwater was not encountered during drilling or after completion.

GENERAL NOTES:
Coordinates obtained from WHPacific N15 Alignment CAD file; Surface elevation provided by WHPacific.

Allwyn ENVIRONMENTAL

PROJECT NO.:	20151221
DRAWN BY:	PD
CHECKED BY:	MJM
DATE:	12/5/2014
REVISED:	12/17/2014

BORING LOG B-135

BIA N15(2-3)(3-1)(4-1)2&4
GREASEWOOD TO BURNSIDE, ARIZONA

PLATE

B-135

gINT FILE: PROJECTWISE: 20151221_n1520151221.gpj
gINT TEMPLATE: PROJECTWISE: KLF_STANDARD_GINT_LIBRARY_2014.GLB [KLF_BORING/TEST PIT SOIL LOG]

PLOTTED: 07/07/2015 02:03 PM BY: clbeck

BORING LOG B-136

Date Begin - End:	10/20/2014 - 10/20/2014	**Drilling Company:**	Enviro-Drill		
Logged By:	M. Cote	**Drill Crew:**	Ed & Juan		
Hor.-Vert. Datum:	NAD83	**Drilling Equipment:**	CME-75	**Hammer Type - Drop:**	63.5 kg. Auto - 762 mm.
Plunge:	-90 degrees	**Drilling Method:**	Hollow Stem Auger		
Weather:	partly cloudy	**Exploration Diameter:**	184 mm. O.D.		

FIELD EXPLORATION

Northing: 520,186.84 (m)
Easting: 258,342.68 (m)
Ground Surface Elevation (m.): 1,887.4
Location Offset: Sta. 26+400/1.83m Rt CL
Surface Condition: Asphalt

Elevation (meters)	Depth (meters)	Graphical Log	Lithologic Description	Sample Type	Blow Counts(BC)= Uncorr. Blows/152 mm. Pocket Pen(PP)= T/m²	Recovery (NR=No Recovery)	AASHTO Symbol	Water Content (%)	Dry Unit Wt. (pcf)	Passing #4 (%)	Passing #200 (%)	Liquid Limit	Plasticity Index (NP=NonPlastic)	Additional Tests/ Remarks
1887	0		Field engineer measured 0.08m black asphalt; 0.08m brown asphalt											
			Field engineer measured 0.05m base course											
			Clayey SAND (SC): fine grained, low plasticity, dark reddish yellowish brown, moist, loose, weakly cemented		BC=3 4 6	457 mm	A-4(2)			96	43	26	10	**R-Value=** 17 Bulk sample obtained from depth of 0.3 to 1.52m bgs
1886	1				BC=7 6 4	457 mm								
1885	2		**Silty SAND (SM)**: fine grained, dark reddish yellowish brown, moist, very loose to loose		BC=1 2 1	406 mm								
	3		Dry to moist, loose, laminated and weakly cemented at 2.74m bgs		BC=2 2 3	457 mm								
1884	4		The exploration was terminated at approximately 3.2 m. below ground surface. The exploration was backfilled with auger cuttings and asphalt patch on October 20, 2014.											
1883	5													
1882	6													

GROUNDWATER LEVEL INFORMATION:
Groundwater was not encountered during drilling or after completion.

GENERAL NOTES:
Coordinates obtained from WHPacific N15 Alignment CAD file; Surface elevation provided by WHPacific.

Allwyn ENVIRONMENTAL

PROJECT NO.:	20151221
DRAWN BY:	PD
CHECKED BY:	MJM
DATE:	12/5/2014
REVISED:	12/17/2014

BORING LOG B-136

BIA N15(2-3)(3-1)(4-1)2&4
GREASEWOOD TO BURNSIDE, ARIZONA

PLATE

B-136

PAGE: 1 of 1

gINT FILE: PROJECTWISE: 20151221_n1520151221.gpj
gINT TEMPLATE: PROJECTWISE: KLF_STANDARD_GINT_LIBRARY_2014.GLB [KLF_BORING/TEST PIT SOIL LOG]

PLOTTED: 07/07/2015 02:03 PM BY: clbeck

BORING LOG B-137

Date Begin - End:	10/20/2014 - 10/20/2014	**Drilling Company:**	Enviro-Drill		
Logged By:	M. Cote	**Drill Crew:**	Ed & Juan		
Hor.-Vert. Datum:	NAD83	**Drilling Equipment:**	CME-75	**Hammer Type - Drop:**	63.5 kg. Auto - 762 mm.
Plunge:	-90 degrees	**Drilling Method:**	Hollow Stem Auger		
Weather:	partly cloudy	**Exploration Diameter:**	184 mm. O.D.		

FIELD EXPLORATION

Northing: 520,355.39 (m)
Easting: 258,450.36 (m)
Ground Surface Elevation (m.): 1,886.0
Location Offset: Sta. 26+600/1.83m Lt CL
Surface Condition: Asphalt

Elevation (meters)	Depth (meters)	Graphical Log	Lithologic Description	Sample Type	Blow Counts(BC)= Uncorr. Blows/152 mm. Pocket Pen(PP)= T/m²	Recovery (NR=No Recovery)
			Field engineer measured 0.08m asphalt			
			Field engineer measured 0.10m base course			
			Poorly-Graded SAND with Gravel (SP): fine to medium grained, rounded, reddish brown, moist, loose		BC=3 3 4	457 mm
			Clayey SAND (SC): fine grained, low plasticity, reddish yellowish brown, moist, loose			
1885	1		Yellowish brown at 0.91m bgs		BC=4 3 2	356 mm
1884	2		**Poorly-Graded SAND with Clay (SP-SC)**: fine grained, rounded, low plasticity, reddish yellowish brown, moist, very loose		BC=2 1 2	330 mm
1883	3		Trace sandstone fragments at 2.74m bgs		BC=1 2 2	
1882	4					
1881	5					
1880	6					

LABORATORY RESULTS

AASHTO Symbol	Water Content (%)	Dry Unit Wt. (pcf)	Passing #4 (%)	Passing #200 (%)	Liquid Limit	Plasticity Index (NP=NonPlastic)	Additional Tests/ Remarks

The exploration was terminated at approximately 3.2 m. below ground surface. The exploration was backfilled with auger cuttings and asphalt patch on October 20, 2014.

GROUNDWATER LEVEL INFORMATION:
Groundwater was not encountered during drilling or after completion.
GENERAL NOTES:
Coordinates obtained from WHPacific N15 Alignment CAD file; Surface elevation provided by WHPacific.

Allwyn ENVIRONMENTAL

PROJECT NO.:	20151221
DRAWN BY:	PD
CHECKED BY:	MJM
DATE:	12/5/2014
REVISED:	12/17/2014

BORING LOG B-137

BIA N15(2-3)(3-1)(4-1)2&4
GREASEWOOD TO BURNSIDE, ARIZONA

PLATE

B-137

gINT FILE: PROJECTWISE: 20151221_n1520151221.gpj
gINT TEMPLATE: PROJECTWISE: KLF_STANDARD_GINT_LIBRARY_2014.GLB [KLF_BORING/TEST PIT SOIL LOG]

PLOTTED: 07/07/2015 02:03 PM BY: clbeck

BORING LOG B-138

Date Begin - End:	10/21/2014 - 10/21/2014	**Drilling Company:**	Enviro-Drill		
Logged By:	M. Cote	**Drill Crew:**	Ed & Juan		
Hor.-Vert. Datum:	NAD83	**Drilling Equipment:**	CME-75	**Hammer Type - Drop:**	63.5 kg. Auto - 762 mm.
Plunge:	-90 degrees	**Drilling Method:**	Hollow Stem Auger		
Weather:	sunny	**Exploration Diameter:**	184 mm. O.D.		

FIELD EXPLORATION

Northing: 520,525.06 (m)
Easting: 258,556.26 (m)
Ground Surface Elevation (m.): 1,884.6
Location Offset: Sta. 26+800/1.83m Rt CL
Surface Condition: Asphalt

Elevation (meters)	Depth (meters)	Graphical Log	Lithologic Description	Sample Type	Blow Counts(BC)= Uncorr. Blows/152 mm. Pocket Pen(PP)= T/m²	Recovery (NR=No Recovery)	AASHTO Symbol	Water Content (%)	Dry Unit Wt. (pcf)	Passing #4 (%)	Passing #200 (%)	Liquid Limit	Plasticity Index (NP=NonPlastic)	Additional Tests/ Remarks
			Field engineer measured 0.10m asphalt											
			Field engineer measured 0.10m base course											
1884			**Sandy Lean CLAY (CL)**: fine grained, low plasticity, reddish yellowish brown, moist, soft		BC=3 2 3	356 mm		12.8						
	1		Increase in sand content at 0.91m bgs		BC=4 4 4	406 mm	A-6(4)			100	53	28	11	
1883														
	2		**Silty SAND (SM)**: fine to medium grained, sub-rounded, non-plastic, reddish yellowish brown, dry to moist, loose		BC=2 3 3	457 mm								
1882														
	3		Dry, fine to medium grained, subrounded to subangular, weakly cemented, trace white spots at 2.74m bgs		BC=2 3 2	432 mm								
1881														
	4													
1880														
	5													
1879														
	6													

The exploration was terminated at approximately 3.2 m. below ground surface. The exploration was backfilled with auger cuttings and asphalt patch on October 21, 2014.

GROUNDWATER LEVEL INFORMATION:
Groundwater was not encountered during drilling or after completion.

GENERAL NOTES:
Coordinates obtained from WHPacific N15 Alignment CAD file; Surface elevation provided by WHPacific.

Allwyn ENVIRONMENTAL

PROJECT NO.:	20151221
DRAWN BY:	PD
CHECKED BY:	MJM
DATE:	12/5/2014
REVISED:	12/17/2014

BORING LOG B-138

BIA N15(2-3)(3-1)(4-1)2&4
GREASEWOOD TO BURNSIDE, ARIZONA

PLATE

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PAGE: 1 of 1

gINT FILE: PROJECTWISE: 20151221_n1520151221.gpj
gINT TEMPLATE: PROJECTWISE: KLF_STANDARD_GINT_LIBRARY_2014.GLB [KLF_BORING/TEST PIT SOIL LOG]

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BORING LOG B-139

Date Begin - End:	10/21/2014 - 10/21/2014	**Drilling Company:**	Enviro-Drill		
Logged By:	M. Cote	**Drill Crew:**	Ed & Juan		
Hor.-Vert. Datum:	NAD83	**Drilling Equipment:**	CME-75	**Hammer Type - Drop:**	63.5 kg. Auto - 762 mm.
Plunge:	-90 degrees	**Drilling Method:**	Hollow Stem Auger		
Weather:	sunny	**Exploration Diameter:**	184 mm. O.D.		

FIELD EXPLORATION

Northing: 520,703.66 (m)
Easting: 258,646.19 (m)
Ground Surface Elevation (m.): 1,885.3
Location Offset: Sta. 27+000/1.83m Lt CL
Surface Condition: Asphalt

Elevation (meters)	Depth (meters)	Graphical Log	Lithologic Description	Sample Type	Blow Counts(BC)= Uncorr. Blows/152 mm. Pocket Pen(PP)= T/m²	Recovery (NR=No Recovery)
			Field engineer measured 0.03m black asphalt; 0.08m brown asphalt			
1885			Field engineer measured 0.08m base course			
			Silty Clayey SAND (SC-SM): fine to coarse grained, non-plastic to low plasticity, reddish yellowish brown, dry to moist, medium dense, weakly cemented, trace fine, pale olive to yellow patches Trace charcoal at 0.46m bgs		BC=7 5 8	457 mm
	1				BC=5 8 10	406 mm
1884			**Silty SAND (SM)**: fine grained, non-plastic, light reddish yellowish brown, dry, loose			
	2				BC=2 2 2	381 mm
1883						
	3		**Clayey SAND (SC)**: fine grained, low plasticity, light reddish yellowish brown to reddish yellowish brown, dry, loose, lenses (up to 1" wide) of poorly-graded sand		BC=3 3 5	356 mm
1882						
	4					
1881						
	5					
1880						
	6					

LABORATORY RESULTS

AASHTO Symbol	Water Content (%)	Dry Unit Wt. (pcf)	Passing #4 (%)	Passing #200 (%)	Liquid Limit	Plasticity Index (NP=NonPlastic)	Additional Tests/ Remarks

The exploration was terminated at approximately 3.2 m. below ground surface. The exploration was backfilled with auger cuttings and asphalt patch on October 21, 2014.

GROUNDWATER LEVEL INFORMATION:
Groundwater was not encountered during drilling or after completion.
GENERAL NOTES:
Coordinates obtained from WHPacific N15 Alignment CAD file; Surface elevation provided by WHPacific.

Allwyn ENVIRONMENTAL

PROJECT NO.:	20151221
DRAWN BY:	PD
CHECKED BY:	MJM
DATE:	12/5/2014
REVISED:	12/17/2014

BORING LOG B-139

BIA N15(2-3)(3-1)(4-1)2&4
GREASEWOOD TO BURNSIDE, ARIZONA

PLATE

B-139

gINT FILE: PROJECTWISE: 20151221_n1520151221.gpj
gINT TEMPLATE: PROJECTWISE: KLF_STANDARD_GINT_LIBRARY_2014.GLB [KLF_BORING/TEST PIT SOIL LOG]

PLOTTED: 07/07/2015 02:03 PM BY: clbeck

BORING LOG B-140

Date Begin - End:	10/21/2014 - 10/21/2014	**Drilling Company:**	Enviro-Drill		
Logged By:	M. Cote	**Drill Crew:**	Ed & Juan		
Hor.-Vert. Datum:	NAD83	**Drilling Equipment:**	CME-75	**Hammer Type - Drop:**	63.5 kg. Auto - 762 mm.
Plunge:	-90 degrees	**Drilling Method:**	Hollow Stem Auger		
Weather:	sunny	**Exploration Diameter:**	184 mm. O.D.		

FIELD EXPLORATION

Northing: 520,883.96 (m)
Easting: 258,732.85 (m)
Ground Surface Elevation (m.): 1,886.9
Location Offset: Sta. 27+200/1.83m Rt CL
Surface Condition: Asphalt

Elevation (meters)	Depth (meters)	Graphical Log	Lithologic Description	Sample Type	Blow Counts(BC)= Uncorr. Blows/152 mm. Pocket Pen(PP)= T/m²	Recovery (NR=No Recovery)
			Field engineer measured 0.10m asphalt			
			Field engineer measured 0.08m base course			
			Poorly-graded SAND (SP): fine to medium grained, subrounded to rounded, reddish brown			
1886			**Clayey SAND (SC)**: fine grained, non-plastic, reddish yellowish brown, moist, medium dense		BC=4 5 6	406 mm
	1				BC=4 5 5	330 mm
1885			Dry, loose, weakly cemented at 1.83m bgs		BC=3 2 3	356 mm
	2					
1884			**Silty SAND (SM)**: fine grained, non-plastic, yellowish brown, moist, loose		BC=2 2 2	457 mm
	3					
1883	4					
1882	5					
1881	6					

LABORATORY RESULTS

AASHTO Symbol	Water Content (%)	Dry Unit Wt. (pcf)	Passing #4 (%)	Passing #200 (%)	Liquid Limit	Plasticity Index (NP=NonPlastic)	Additional Tests/ Remarks

The exploration was terminated at approximately 3.2 m. below ground surface. The exploration was backfilled with auger cuttings and asphalt patch on October 21, 2014.

GROUNDWATER LEVEL INFORMATION:
Groundwater was not encountered during drilling or after completion.

GENERAL NOTES:
Coordinates obtained from WHPacific N15 Alignment CAD file; Surface elevation provided by WHPacific.

Allwyn ENVIRONMENTAL

PROJECT NO.:	20151221
DRAWN BY:	PD
CHECKED BY:	MJM
DATE:	12/5/2014
REVISED:	12/17/2014

BORING LOG B-140

BIA N15(2-3)(3-1)(4-1)2&4
GREASEWOOD TO BURNSIDE, ARIZONA

PLATE

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PAGE: 1 of 1

gINT FILE: PROJECTWISE: 20151221_n1520151221.gpj
gINT TEMPLATE: PROJECTWISE: KLF_STANDARD_GINT_LIBRARY_2014.GLB [KLF_BORING/TEST PIT SOIL LOG]

PLOTTED: 07/07/2015 02:03 PM BY: clbeck

BORING LOG B-141

Date Begin - End:	10/21/2014 - 10/21/2014	**Drilling Company:**	Enviro-Drill		
Logged By:	M. Cote	**Drill Crew:**	Ed & Juan		
Hor.-Vert. Datum:	NAD83	**Drilling Equipment:**	CME-75	**Hammer Type - Drop:**	63.5 kg. Auto - 762 mm.
Plunge:	-90 degrees	**Drilling Method:**	Hollow Stem Auger		
Weather:	sunny	**Exploration Diameter:**	184 mm. O.D.		

FIELD EXPLORATION

Northing: 521,067.78 (m)
Easting: 258,811.72 (m)
Ground Surface Elevation (m.): 1,888.6
Location Offset: Sta. 27+400/1.83m Lt CL
Surface Condition: Asphalt

Elevation (meters)	Depth (meters)	Graphical Log	Lithologic Description	Sample Type	Blow Counts(BC)= Uncorr. Blows/152 mm. Pocket Pen(PP)= T/m²	Recovery (NR=No Recovery)	AASHTO Symbol	Water Content (%)	Dry Unit Wt. (pcf)	Passing #4 (%)	Passing #200 (%)	Liquid Limit	Plasticity Index (NP=NonPlastic)	Additional Tests/ Remarks
			Field engineer measured 0.05m black asphalt; 0.08m brown asphalt											
			Field engineer measured 0.08m base course											
1888			**Clayey SAND (SC)**: fine grained, low plasticity, reddish yellowish brown, moist, medium dense		BC=3 3 8	457 mm								Bulk sample obtained from depth of 0.3 to 1.52m bgs
	1		Loose, trace distinct white lines at 0.91m bgs		BC=3 3 1	330 mm								
1887			**Poorly-graded SAND with Silt (SP-SM)**: fine grained, moist, very loose											
	2				BC=2 1 2	432 mm								
1886														
	3		Loose, lenses of sandy lean clay to clayey sand from 2.74m bgs		BC=2 1 3	330 mm								
1885	4													
1884	5													
1883	6													

The exploration was terminated at approximately 3.2 m. below ground surface. The exploration was backfilled with auger cuttings and asphalt patch on October 21, 2014.

GROUNDWATER LEVEL INFORMATION:
Groundwater was not encountered during drilling or after completion.

GENERAL NOTES:
Coordinates obtained from WHPacific N15 Alignment CAD file; Surface elevation provided by WHPacific.

Allwyn ENVIRONMENTAL

PROJECT NO.:	20151221
DRAWN BY:	PD
CHECKED BY:	MJM
DATE:	12/5/2014
REVISED:	12/17/2014

BORING LOG B-141

BIA N15(2-3)(3-1)(4-1)2&4
GREASEWOOD TO BURNSIDE, ARIZONA

PLATE

B-141

PAGE: 1 of 1

gINT FILE: PROJECTWISE: 20151221_n1520151221.gpj
gINT TEMPLATE: PROJECTWISE: KLF_STANDARD_GINT_LIBRARY_2014.GLB [KLF_BORING/TEST PIT SOIL LOG]

PLOTTED: 07/07/2015 02:03 PM BY: clbeck

BORING LOG B-142

Date Begin - End:	10/21/2014 - 10/21/2014	**Drilling Company:**	Enviro-Drill		
Logged By:	M. Cote	**Drill Crew:**	Ed & Juan		
Hor.-Vert. Datum:	NAD83	**Drilling Equipment:**	CME-75	**Hammer Type - Drop:**	63.5 kg. Auto - 762 mm.
Plunge:	-90 degrees	**Drilling Method:**	Hollow Stem Auger		
Weather:	sunny	**Exploration Diameter:**	184 mm. O.D.		

FIELD EXPLORATION

Northing: 521,248.84 (m)
Easting: 258,896.74 (m)
Ground Surface Elevation (m.): 1,890.0
Location Offset: Sta. 27+600/1.83m Rt CL
Surface Condition: Asphalt

Elevation (meters)	Depth (meters)	Graphical Log	Lithologic Description	Sample Type	Blow Counts(BC)= Uncorr. Blows/152 mm. Pocket Pen(PP)= T/m²	Recovery (NR=No Recovery)	AASHTO Symbol	Water Content (%)	Dry Unit Wt. (pcf)	Passing #4 (%)	Passing #200 (%)	Liquid Limit	Plasticity Index (NP=NonPlastic)	Additional Tests/ Remarks
			Field engineer measured 0.05m black asphalt; 0.05m brown asphalt											
			Field engineer measured 0.05m base course											
			Silty SAND (SM): fine grained, low plasticity, dark reddish yellowish brown to reddish yellowish brown, moist, loose Bedding plane (~15°) at 0.61m bgs		BC=4 4 5	457 mm								
1889	1		Reddish yellowish brown, very loose at 0.91m bgs		BC=2 2 1	432 mm		9.0						
1888	2		Fine to medium grained, subrounded to rounded, trace subrounded to flat, pale olive to light gray sandstone fragments at 1.83m bgs		BC=2 2 2	406 mm	A-2-4(0)			100	35	NP	NP	
1887	3		Very loose, low to medium plasticity at 2.74m bgs		BC=2 2 1	305 mm								
1886	4													
1885	5													
1884	6													

The exploration was terminated at approximately 3.2 m. below ground surface. The exploration was backfilled with auger cuttings and asphalt patch on October 21, 2014.

GROUNDWATER LEVEL INFORMATION:
Groundwater was not encountered during drilling or after completion.

GENERAL NOTES:
Coordinates obtained from WHPacific N15 Alignment CAD file; Surface elevation provided by WHPacific.

Allwyn ENVIRONMENTAL

PROJECT NO.:	20151221
DRAWN BY:	PD
CHECKED BY:	MJM
DATE:	12/5/2014
REVISED:	12/17/2014

BORING LOG B-142

BIA N15(2-3)(3-1)(4-1)2&4
GREASEWOOD TO BURNSIDE, ARIZONA

PLATE

B-142

gINT FILE: PROJECTWISE: 20151221_n1520151221.gpj
gINT TEMPLATE: PROJECTWISE: KLF_STANDARD_GINT_LIBRARY_2014.GLB [KLF_BORING/TEST PIT SOIL LOG]

PLOTTED: 07/07/2015 02:03 PM BY: clbeck

BORING LOG B-143

Date Begin - End:	10/21/2014 - 10/21/2014	**Drilling Company:**	Enviro-Drill		
Logged By:	M. Cote	**Drill Crew:**	Ed & Juan		
Hor.-Vert. Datum:	NAD83	**Drilling Equipment:**	CME-75	**Hammer Type - Drop:**	63.5 kg. Auto - 762 mm.
Plunge:	-90 degrees	**Drilling Method:**	Hollow Stem Auger		
Weather:	sunny	**Exploration Diameter:**	184 mm. O.D.		

FIELD EXPLORATION

Northing: 521,432.67 (m)
Easting: 258,975.6 (m)
Ground Surface Elevation (m.): 1,890.0
Location Offset: Sta. 27+800/1.83m Lt CL
Surface Condition: Asphalt

Elevation (meters)	Depth (meters)	Graphical Log	Lithologic Description	Sample Type	Blow Counts(BC)= Uncorr. Blows/152 mm. Pocket Pen(PP)= T/m²	Recovery (NR=No Recovery)
			Field engineer measured 0.03m black asphalt; 0.05m brown asphalt			
			Field engineer measured 0.08m base course			
			Clayey SAND (SC): fine grained, low plasticity, dark reddish yellowish brown, dry to moist, medium dense Bedding plane (~0°) at 0.52m bgs Bedding plane (~0°) at 0.64m bgs Bedding plane (~0°) at 0.70m bgs		BC=3 6 7	457 mm
1889	1		Loose, trace rootlets, white specks at 0.91m bgs		BC=4 5 4	330 mm
			Silty SAND (SM): fine grained, reddish yellow, dry to moist, very loose, trace pale olive to yellow sandstone fragments			
1888	2				BC=2 1 2	457 mm
			Fine to medium grained at 2.74m bgs		BC=2 1 3	457 mm
1887	3					
1886	4					
1885	5					
1884	6					

LABORATORY RESULTS

AASHTO Symbol	Water Content (%)	Dry Unit Wt. (pcf)	Passing #4 (%)	Passing #200 (%)	Liquid Limit	Plasticity Index (NP=NonPlastic)	Additional Tests/ Remarks

The exploration was terminated at approximately 3.2 m. below ground surface. The exploration was backfilled with auger cuttings and asphalt patch on October 21, 2014.

GROUNDWATER LEVEL INFORMATION:
Groundwater was not encountered during drilling or after completion.
GENERAL NOTES:
Coordinates obtained from WHPacific N15 Alignment CAD file; Surface elevation provided by WHPacific.

Allwyn ENVIRONMENTAL

PROJECT NO.:	20151221
DRAWN BY:	PD
CHECKED BY:	MJM
DATE:	12/5/2014
REVISED:	12/17/2014

BORING LOG B-143

BIA N15(2-3)(3-1)(4-1)2&4
GREASEWOOD TO BURNSIDE, ARIZONA

PLATE

B-143

gINT FILE: PROJECTWISE: 20151221_n1520151221.gpj
gINT TEMPLATE: PROJECTWISE: KLF_STANDARD_GINT_LIBRARY_2014.GLB [KLF_BORING/TEST PIT SOIL LOG]

PLOTTED: 07/07/2015 02:03 PM BY: clbeck

BORING LOG B-144

Date Begin - End:	10/21/2014 - 10/21/2014	**Drilling Company:**	Enviro-Drill		
Logged By:	M. Cote	**Drill Crew:**	Ed & Juan		
Hor.-Vert. Datum:	NAD83	**Drilling Equipment:**	CME-75	**Hammer Type - Drop:**	63.5 kg. Auto - 762 mm.
Plunge:	-90 degrees	**Drilling Method:**	Hollow Stem Auger		
Weather:	sunny	**Exploration Diameter:**	184 mm. O.D.		

FIELD EXPLORATION

Northing: 521,613.78 (m)
Easting: 259,060.51 (m)
Ground Surface Elevation (m.): 1,891.5
Location Offset: Sta. 28+000/1.83m Rt CL
Surface Condition: Asphalt

Elevation (meters)	Depth (meters)	Graphical Log	Lithologic Description	Sample Type	Blow Counts(BC)= Uncorr. Blows/152 mm. Pocket Pen(PP)= T/m²	Recovery (NR=No Recovery)
			Field engineer measured 0.05m black asphalt; 0.08m brown asphalt			
			Field engineer measured 0.08m base course			
1891			**Poorly-graded SAND (SP)**: fine to medium grained, subrounded to rounded, reddish brown		BC=3 5 5	457 mm
	1		**Poorly-graded SAND with Clay (SP-SC)**: fine grained, low plasticity, dark reddish yellowish brown, moist, loose Dry, weakly cemented at 0.91m bgs		BC=4 4 3	356 mm
1890						
	2		**Silty SAND (SM)**: fine grained, reddish yellowish brown, moist, very loose		BC=1 1 1	406 mm
1889						
	3		Loose, rounded, lenses of clayey sand from 2.74m bgs		BC=2 2 1	356 mm
1888	4					
1887	5					
1886	6					

LABORATORY RESULTS

AASHTO Symbol	Water Content (%)	Dry Unit Wt. (pcf)	Passing #4 (%)	Passing #200 (%)	Liquid Limit	Plasticity Index (NP=NonPlastic)	Additional Tests/ Remarks

The exploration was terminated at approximately 3.2 m. below ground surface. The exploration was backfilled with auger cuttings and asphalt patch on October 21, 2014.

GROUNDWATER LEVEL INFORMATION:
Groundwater was not encountered during drilling or after completion.

GENERAL NOTES:
Coordinates obtained from WHPacific N15 Alignment CAD file; Surface elevation provided by WHPacific.

Allwyn ENVIRONMENTAL

PROJECT NO.:	20151221
DRAWN BY:	PD
CHECKED BY:	MJM
DATE:	12/5/2014
REVISED:	12/17/2014

BORING LOG B-144

BIA N15(2-3)(3-1)(4-1)2&4
GREASEWOOD TO BURNSIDE, ARIZONA

PLATE

B-144

PAGE: 1 of 1

gINT FILE: PROJECTWISE: 20151221_n1520151221.gpj
gINT TEMPLATE: PROJECTWISE: KLF_STANDARD_GINT_LIBRARY_2014.GLB [KLF_BORING/TEST PIT SOIL LOG]

PLOTTED: 07/07/2015 02:03 PM BY: clbeck

BORING LOG B-145

Date Begin - End:	10/21/2014 - 10/21/2014	**Drilling Company:**	Enviro-Drill		
Logged By:	M. Cote	**Drill Crew:**	Ed & Juan		
Hor.-Vert. Datum:	NAD83	**Drilling Equipment:**	CME-75	**Hammer Type - Drop:**	63.5 kg. Auto - 762 mm.
Plunge:	-90 degrees	**Drilling Method:**	Hollow Stem Auger		
Weather:	sunny	**Exploration Diameter:**	184 mm. O.D.		

FIELD EXPLORATION

Northing: 521,797.52 (m)
Easting: 259,139.57 (m)
Ground Surface Elevation (m.): 1,893.4
Location Offset: Sta. 28+200/1.83m Lt CL
Surface Condition: Asphalt

Elevation (meters)	Depth (meters)	Graphical Log	Lithologic Description	Sample Type	Blow Counts(BC)= Uncorr. Blows/152 mm. Pocket Pen(PP)= T/m²	Recovery (NR=No Recovery)
			Field engineer measured 0.05m black asphalt; 0.08m brown asphalt			
			Field engineer measured 0.08m base course			
1893			**Clayey SAND (SC)**: fine grained, low plasticity, dark reddish yellowish brown, moist, loose, trace rootlets		BC=2 4 4	356 mm
	1		**Poorly-graded SAND with Clay (SP-SC)**: fine grained, non-plastic to low plasticity, reddish yellowish brown, dry to moist, loose, trace white specks		BC=3 2 2	279 mm
1892			**Clayey SAND (SC)**: non-plastic to low plasticity, reddish yellow, dry to moist, very loose, trace silt			
	2				BC=2 2 1	381 mm
1891						
	3		Loose, decrease in sand content 2.74m bgs		BC=2 2 2	279 mm
1890						
	4					
1889						
	5					
1888						
	6					

LABORATORY RESULTS

AASHTO Symbol	Water Content (%)	Dry Unit Wt. (pcf)	Passing #4 (%)	Passing #200 (%)	Liquid Limit	Plasticity Index (NP=NonPlastic)	Additional Tests/ Remarks

The exploration was terminated at approximately 3.2 m. below ground surface. The exploration was backfilled with auger cuttings and asphalt patch on October 21, 2014.

GROUNDWATER LEVEL INFORMATION:
Groundwater was not encountered during drilling or after completion.

GENERAL NOTES:
Coordinates obtained from WHPacific N15 Alignment CAD file; Surface elevation provided by WHPacific.

Allwyn ENVIRONMENTAL

PROJECT NO.:	20151221
DRAWN BY:	PD
CHECKED BY:	MJM
DATE:	12/5/2014
REVISED:	12/17/2014

BORING LOG B-145

BIA N15(2-3)(3-1)(4-1)2&4
GREASEWOOD TO BURNSIDE, ARIZONA

PLATE

B-145

gINT FILE: PROJECTWISE: 20151221_n1520151221.gpj
gINT TEMPLATE: PROJECTWISE: KLF_STANDARD_GINT_LIBRARY_2014.GLB [KLF_BORING/TEST PIT SOIL LOG]

PLOTTED: 07/07/2015 02:03 PM BY: clbeck

BORING LOG B-146

Date Begin - End:	10/21/2014 - 10/21/2014	**Drilling Company:**	Enviro-Drill		
Logged By:	M. Cote	**Drill Crew:**	Ed & Juan		
Hor.-Vert. Datum:	NAD83	**Drilling Equipment:**	CME-75	**Hammer Type - Drop:**	63.5 kg. Auto - 762 mm.
Plunge:	-90 degrees	**Drilling Method:**	Hollow Stem Auger		
Weather:	sunny	**Exploration Diameter:**	184 mm. O.D.		

FIELD EXPLORATION

Northing: 521,978.72 (m)
Easting: 259,224.27 (m)
Ground Surface Elevation (m.): 1,895.3
Location Offset: Sta. 28+400/1.83m Rt CL
Surface Condition: Asphalt

Elevation (meters)	Depth (meters)	Graphical Log	Lithologic Description	Sample Type	Blow Counts(BC)= Uncorr. Blows/152 mm. Pocket Pen(PP)= T/m²	Recovery (NR=No Recovery)
1895	0		Field engineer measured 0.03m black asphalt; 0.05m brown asphalt			
			Field engineer measured 0.10m base course			
			Poorly-graded SAND (SP): fine to coarse grained, subrounded, reddish brown, moist, loose, trace fine, subrounded gravel		BC=4 4 5 PP=4.2	457 mm
			Sandy Lean CLAY (CL): fine grained, low plasticity, dark reddish yellowish brown, moist, firm			
1894	1		**Clayey SAND (SC)**: fine to coarse grained, rounded, low plasticity, dark reddish yellowish brown, dry to moist, very loose, trace distinct white to pale olive lines of sand		BC=2 2 1	330 mm
1893	2		loose, trace subrounded sandstone fragments below 1.83m bgs		BC=2 2 3	432 mm
1892	3		Fine grained, distinct white lines at 2.74m bgs		BC=2 2 3	356 mm
1891	4					
1890	5					
	6					

LABORATORY RESULTS

AASHTO Symbol	Water Content (%)	Dry Unit Wt. (pcf)	Passing #4 (%)	Passing #200 (%)	Liquid Limit	Plasticity Index (NP=NonPlastic)	Additional Tests/ Remarks
	2.9						Bulk sample obtained from depth of 0.3 to 1.52m bgs

The exploration was terminated at approximately 3.2 m. below ground surface. The exploration was backfilled with auger cuttings and asphalt patch on October 21, 2014.

GROUNDWATER LEVEL INFORMATION:
Groundwater was not encountered during drilling or after completion.

GENERAL NOTES:
Coordinates obtained from WHPacific N15 Alignment CAD file; Surface elevation provided by WHPacific.

Allwyn ENVIRONMENTAL

PROJECT NO.:	20151221
DRAWN BY:	PD
CHECKED BY:	MJM
DATE:	12/5/2014
REVISED:	12/17/2014

BORING LOG B-146

BIA N15(2-3)(3-1)(4-1)2&4
GREASEWOOD TO BURNSIDE, ARIZONA

PLATE

B-146

PAGE: 1 of 1

gINT FILE: PROJECTWISE: 20151221_n1520151221.gpj
gINT TEMPLATE: PROJECTWISE: KLF_STANDARD_GINT_LIBRARY_2014.GLB [KLF_BORING/TEST PIT SOIL LOG]

PLOTTED: 07/07/2015 02:03 PM BY: clbeck

BORING LOG B-147

Date Begin - End:	10/21/2014 - 10/21/2014	**Drilling Company:**	Enviro-Drill		
Logged By:	M. Cote	**Drill Crew:**	Ed & Juan		
Hor.-Vert. Datum:	NAD83	**Drilling Equipment:**	CME-75	**Hammer Type - Drop:**	63.5 kg. Auto - 762 mm.
Plunge:	-90 degrees	**Drilling Method:**	Hollow Stem Auger		
Weather:	sunny	**Exploration Diameter:**	184 mm. O.D.		

FIELD EXPLORATION

Northing: 522,162.73 (m)
Easting: 259,302.72 (m)
Ground Surface Elevation (m.): 1,897.6
Location Offset: Sta. 28+600/1.83m Lt CL
Surface Condition: Asphalt

Elevation (meters)	Depth (meters)	Graphical Log	Lithologic Description	Sample Type	Blow Counts(BC)= Uncorr. Blows/152 mm. Pocket Pen(PP)= T/m²	Recovery (NR=No Recovery)
			Field engineer measured 0.03m black asphalt; 0.08m brown asphalt			
			Field engineer measured 0.08m base course			
1897			**Poorly-graded SAND (SP)**: fine to medium grained, subrounded to rounded, low plasticity, reddish brown, dry to moist, loose		BC=4 5 5	330 mm
	1		**Poorly-graded SAND with Clay (SP-SC)**: fine grained, low plasticity, dark reddish yellowish brown, dry, loose			
			Clayey SAND (SC): fine grained, low plasticity, reddish yellowish brown, dry to moist, loose		BC=4 2 4	203 mm
1896			**Silty CLAY with Sand (CL-ML)**: fine grained, reddish yellow, dry, loose, lenses of fine to coarse sand			
	2				BC=2 3 4	330 mm
			0.03m thick lense of clayey sand at 2.29m bgs			
1895			Dry to moist at 2.74m bgs			
	3				BC=2 3 2	457 mm
1894						
	4					
1893						
	5					
1892						
	6					

LABORATORY RESULTS

AASHTO Symbol	Water Content (%)	Dry Unit Wt. (pcf)	Passing #4 (%)	Passing #200 (%)	Liquid Limit	Plasticity Index (NP=NonPlastic)	Additional Tests/ Remarks

The exploration was terminated at approximately 3.2 m. below ground surface. The exploration was backfilled with auger cuttings and asphalt patch on October 21, 2014.

GROUNDWATER LEVEL INFORMATION:
Groundwater was not encountered during drilling or after completion.
GENERAL NOTES:
Coordinates obtained from WHPacific N15 Alignment CAD file; Surface elevation provided by WHPacific.

Allwyn ENVIRONMENTAL

PROJECT NO.:	20151221
DRAWN BY:	PD
CHECKED BY:	MJM
DATE:	12/5/2014
REVISED:	12/17/2014

BORING LOG B-147

BIA N15(2-3)(3-1)(4-1)2&4
GREASEWOOD TO BURNSIDE, ARIZONA

PLATE

B-147

PAGE: 1 of 1

gINT FILE: PROJECTWISE: 20151221_n1520151221.gpj
gINT TEMPLATE: PROJECTWISE: KLF_STANDARD_GINT_LIBRARY_2014.GLB [KLF_BORING/TEST PIT SOIL LOG]

PLOTTED: 07/07/2015 02:03 PM BY: clbeck

BORING LOG B-148

Date Begin - End:	10/21/2014 - 10/21/2014	**Drilling Company:**	Enviro-Drill		
Logged By:	M. Cote	**Drill Crew:**	Ed & Juan		
Hor.-Vert. Datum:	NAD83	**Drilling Equipment:**	CME-75	**Hammer Type - Drop:**	63.5 kg. Auto - 762 mm.
Plunge:	-90 degrees	**Drilling Method:**	Hollow Stem Auger		
Weather:	sunny	**Exploration Diameter:**	184 mm. O.D.		

FIELD EXPLORATION

Northing: 522,343.72 (m)
Easting: 259,387.91 (m)
Ground Surface Elevation (m.): 1,900.5
Location Offset: Sta. 28+800/1.83m Rt CL
Surface Condition: Asphalt

Elevation (meters)	Depth (meters)	Graphical Log	Lithologic Description	Sample Type	Blow Counts(BC)= Uncorr. Blows/152 mm. Pocket Pen(PP)= T/m²	Recovery (NR=No Recovery)
			Field engineer measured 0.05m black asphalt; 0.05m brown asphalt			
			Field engineer measured 0.08m base course			
1900			**Poorly-graded SAND (SP)**: fine to medium grained, subrounded to rounded, moist, loose, trace subrounded pale olive sandstone fragments		BC=4 5 4	457 mm
	1		**Clayey SAND (SC)**: fine grained, low plasticity, dark reddish yellowish brown, moist, loose Bedding plane (~30°) at 0.61m bgs Decrease in moisture content, decrease in plasticity at 0.91m bgs		BC=5 5 5	457 mm
1899						
	2				BC=2 2 2	330 mm
1898			**Silty CLAY with Sand (CL-ML)**: fine grained, non-plastic, reddish yellowish brown, moist, very loose			
	3				BC=2 2 1	457 mm
1897						
	4					
1896						
	5					
1895						
	6					

LABORATORY RESULTS

AASHTO Symbol	Water Content (%)	Dry Unit Wt. (pcf)	Passing #4 (%)	Passing #200 (%)	Liquid Limit	Plasticity Index (NP=NonPlastic)	Additional Tests/ Remarks

The exploration was terminated at approximately 3.2 m. below ground surface. The exploration was backfilled with auger cuttings and asphalt patch on October 21, 2014.

GROUNDWATER LEVEL INFORMATION:
Groundwater was not encountered during drilling or after completion.
GENERAL NOTES:
Coordinates obtained from WHPacific N15 Alignment CAD file; Surface elevation provided by WHPacific.

Allwyn ENVIRONMENTAL

PROJECT NO.:	20151221
DRAWN BY:	PD
CHECKED BY:	MJM
DATE:	12/5/2014
REVISED:	12/17/2014

BORING LOG B-148

BIA N15(2-3)(3-1)(4-1)2&4
GREASEWOOD TO BURNSIDE, ARIZONA

PLATE

B-148

PAGE: 1 of 1

gINT FILE: PROJECTWISE: 20151221_n1520151221.gpj
gINT TEMPLATE: PROJECTWISE: KLF_STANDARD_GINT_LIBRARY_2014.GLB [KLF_BORING/TEST PIT SOIL LOG]

PLOTTED: 07/07/2015 02:03 PM BY: clbeck

BORING LOG B-149

Date Begin - End:	10/21/2014 - 10/21/2014	**Drilling Company:**	Enviro-Drill		
Logged By:	M. Cote	**Drill Crew:**	Ed & Juan		
Hor.-Vert. Datum:	NAD83	**Drilling Equipment:**	CME-75	**Hammer Type - Drop:**	63.5 kg. Auto - 762 mm.
Plunge:	-90 degrees	**Drilling Method:**	Hollow Stem Auger		
Weather:	sunny	**Exploration Diameter:**	184 mm. O.D.		

FIELD EXPLORATION

Northing: 522,527.58 (m)
Easting: 259,466.69 (m)
Ground Surface Elevation (m.): 1,903.5
Location Offset: Sta. 29+000/1.83m Lt CL
Surface Condition: Asphalt

Elevation (meters)	Depth (meters)	Graphical Log	Lithologic Description	Sample Type	Blow Counts(BC)= Uncorr. Blows/152 mm. Pocket Pen(PP)= T/m²	Recovery (NR=No Recovery)
			Field engineer measured 0.08m asphalt			
			Field engineer measured 0.10m base course			
1903			**Poorly-graded SAND (SP)**: fine to coarse grained, reddish brown, dry, very loose, trace fine gravel		BC=2 1 1	457 mm
			Silty CLAY with Sand (CL-ML): fine grained, non-plastic, reddish yellowish brown, moist, very loose			
	1		Trace fine, subrounded gravel at 0.91m bgs		BC=3 1 0	279 mm
1902						
	2		Dark reddish yellowish brown, loose from 1.83m bgs		BC=3 2 2	76 mm
1901						
	3		**Sandy Lean CLAY (CL)**: fine grained, low to medium plasticity, dark reddish yellowish brown, moist, hard		BC=2 2 4	305 mm
1900	4					
1899	5					
1898	6					

LABORATORY RESULTS

AASHTO Symbol	Water Content (%)	Dry Unit Wt. (pcf)	Passing #4 (%)	Passing #200 (%)	Liquid Limit	Plasticity Index (NP=NonPlastic)	Additional Tests/ Remarks

The exploration was terminated at approximately 3.2 m. below ground surface. The exploration was backfilled with auger cuttings and asphalt patch on October 21, 2014.

GROUNDWATER LEVEL INFORMATION:
Groundwater was not encountered during drilling or after completion.
GENERAL NOTES:
Coordinates obtained from WHPacific N15 Alignment CAD file; Surface elevation provided by WHPacific.

Allwyn ENVIRONMENTAL

PROJECT NO.:	20151221
DRAWN BY:	PD
CHECKED BY:	MJM
DATE:	12/5/2014
REVISED:	12/17/2014

BORING LOG B-149

BIA N15(2-3)(3-1)(4-1)2&4
GREASEWOOD TO BURNSIDE, ARIZONA

PLATE

B-149

PAGE: 1 of 1

gINT FILE: PROJECTWISE: 20151221_n1520151221.gpj
gINT TEMPLATE: PROJECTWISE: KLF_STANDARD_GINT_LIBRARY_2014.GLB [KLF_BORING/TEST PIT SOIL LOG]

PLOTTED: 07/07/2015 02:03 PM BY: clbeck

BORING LOG B-150

Date Begin - End:	10/21/2014 - 10/21/2014	**Drilling Company:**	Enviro-Drill		
Logged By:	M. Cote	**Drill Crew:**	Ed & Juan		
Hor.-Vert. Datum:	NAD83	**Drilling Equipment:**	CME-75	**Hammer Type - Drop:**	63.5 kg. Auto - 762 mm.
Plunge:	-90 degrees	**Drilling Method:**	Hollow Stem Auger		
Weather:	sunny	**Exploration Diameter:**	184 mm. O.D.		

FIELD EXPLORATION

Northing: 522,708.68 (m)
Easting: 259,551.63 (m)
Ground Surface Elevation (m.): 1,905.6
Location Offset: Sta. 29+200/1.83m Rt CL
Surface Condition: Asphalt

Elevation (meters)	Depth (meters)	Graphical Log	Lithologic Description	Sample Type	Blow Counts(BC)= Uncorr. Blows/152 mm. Pocket Pen(PP)= T/m²	Recovery (NR=No Recovery)
			Field engineer measured 0.05m black asphalt; 0.08m brown asphalt			
			Field engineer measured 0.10m base course			
1905			**Poorly-graded SAND (SP)**: fine to medium grained, reddish brown, moist, loose		BC=3 3 3	457 mm
			Silty SAND (SM): fine grained, low plasticity, reddish yellowish brown, moist, loose			
	1		Very loose, trace fine angular gravel at 0.91m bgs		BC=2 1 1	330 mm
1904						
	2		Light reddish yellow, some dark red siltstone fragments at 1.83m bgs		BC=1 2 1	457 mm
1903						
	3				BC=2 2 3	305 mm
1902						
	4					
1901						
	5					
1900						
	6					

LABORATORY RESULTS

AASHTO Symbol	Water Content (%)	Dry Unit Wt. (pcf)	Passing #4 (%)	Passing #200 (%)	Liquid Limit	Plasticity Index (NP=NonPlastic)	Additional Tests/ Remarks

The exploration was terminated at approximately 3.2 m. below ground surface. The exploration was backfilled with auger cuttings and asphalt patch on October 21, 2014.

GROUNDWATER LEVEL INFORMATION:
Groundwater was not encountered during drilling or after completion.

GENERAL NOTES:
Coordinates obtained from WHPacific N15 Alignment CAD file; Surface elevation provided by WHPacific.

Allwyn ENVIRONMENTAL

PROJECT NO.:	20151221
DRAWN BY:	PD
CHECKED BY:	MJM
DATE:	12/5/2014
REVISED:	12/17/2014

BORING LOG B-150

BIA N15(2-3)(3-1)(4-1)2&4
GREASEWOOD TO BURNSIDE, ARIZONA

PLATE

B-150

gINT FILE: PROJECTWISE: 20151221_n1520151221.gpj
gINT TEMPLATE: PROJECTWISE: KLF_STANDARD_GINT_LIBRARY_2014.GLB [KLF_BORING/TEST PIT SOIL LOG]

PLOTTED: 07/07/2015 02:03 PM BY: clbeck

BORING LOG B-151

Date Begin - End:	10/21/2014 - 10/21/2014	**Drilling Company:**	Enviro-Drill		
Logged By:	M. Cote	**Drill Crew:**	Ed & Juan		
Hor.-Vert. Datum:	NAD83	**Drilling Equipment:**	CME-75	**Hammer Type - Drop:**	63.5 kg. Auto - 762 mm.
Plunge:	-90 degrees	**Drilling Method:**	Hollow Stem Auger		
Weather:	sunny	**Exploration Diameter:**	184 mm. O.D.		

FIELD EXPLORATION

Northing: 522,892.43 (m)
Easting: 259,630.66 (m)
Ground Surface Elevation (m.): 1,907.6
Location Offset: Sta. 29+400/1.83m Lt CL
Surface Condition: Asphalt

Elevation (meters)	Depth (meters)	Graphical Log	Lithologic Description	Sample Type	Blow Counts(BC)= Uncorr. Blows/152 mm. Pocket Pen(PP)= T/m²	Recovery (NR=No Recovery)	AASHTO Symbol	Water Content (%)	Dry Unit Wt. (pcf)	Passing #4 (%)	Passing #200 (%)	Liquid Limit	Plasticity Index (NP=NonPlastic)	Additional Tests/ Remarks
			Field engineer measured 0.50m black asphalt; 0.05m brown asphalt											
			Field engineer measured 0.10m base course											
1907			**Clayey SAND (SC)**: fine grained, medium plasticity, dark reddish yellowish brown, dry to moist, medium dense		BC=3 4 5	381 mm	A-6(5)			97	43	34	21	**R-Value=** 17 Bulk sample obtained from depth of 0.3 to 1.52m bgs
	1				BC=2 4 3	25 mm								
1906														
	2		**Silty SAND (SM)**: fine grained, non-plastic to low plasticity, reddish yellowish brown, moist, loose		BC=2 2 2	229 mm								
			Clayey SAND (SC): fine grained, low plasticity, reddish yellowish brown, moist, loose											
1905			**Silty SAND (SM)**: reddish yellowish brown, dry to moist, loose											
	3				BC=2 2 2	457 mm								
1904	4													
1903	5													
1902	6													

The exploration was terminated at approximately 3.2 m. below ground surface. The exploration was backfilled with auger cuttings and asphalt patch on October 21, 2014.

GROUNDWATER LEVEL INFORMATION:
Groundwater was not encountered during drilling or after completion.

GENERAL NOTES:
Coordinates obtained from WHPacific N15 Alignment CAD file; Surface elevation provided by WHPacific.

Allwyn ENVIRONMENTAL

PROJECT NO.:	20151221
DRAWN BY:	PD
CHECKED BY:	MJM
DATE:	12/5/2014
REVISED:	12/17/2014

BORING LOG B-151

BIA N15(2-3)(3-1)(4-1)2&4
GREASEWOOD TO BURNSIDE, ARIZONA

PLATE

B-151

gINT FILE: PROJECTWISE: 20151221_n1520151221.gpj
gINT TEMPLATE: PROJECTWISE: KLF_STANDARD_GINT_LIBRARY_2014.GLB [KLF_BORING/TEST PIT SOIL LOG]

PLOTTED: 07/07/2015 02:03 PM BY: clbeck

BORING LOG B-152

Date Begin - End:	10/21/2014 - 10/21/2014	**Drilling Company:**	Enviro-Drill		
Logged By:	M. Cote	**Drill Crew:**	Ed & Juan		
Hor.-Vert. Datum:	NAD83	**Drilling Equipment:**	CME-75	**Hammer Type - Drop:**	63.5 kg. Auto - 762 mm.
Plunge:	-90 degrees	**Drilling Method:**	Hollow Stem Auger		
Weather:	sunny	**Exploration Diameter:**	184 mm. O.D.		

FIELD EXPLORATION

Northing: 523,073.73 (m)
Easting: 259,715.14 (m)
Ground Surface Elevation (m.): 1,910.7
Location Offset: Sta. 29+600/1.83m Rt CL
Surface Condition: Asphalt

Elevation (meters)	Depth (meters)	Graphical Log	Lithologic Description	Sample Type	Blow Counts(BC)= Uncorr. Blows/152 mm. Pocket Pen(PP)= T/m²	Recovery (NR=No Recovery)
			Field engineer measured 0.03m black asphalt; 0.08m brown asphalt			
			Field engineer measured 0.08m base course			
			Poorly-graded SAND (SP): fine to coarse grained, reddish brown, moist, loose		BC=3 4 6	406 mm
1910			**Silty Clayey SAND (SC-SM)**: fine grained, low plasticity, reddish yellowish brown, dry to moist, loose			
	1				BC=3 3 1	203 mm
			Poorly-graded SAND (SP): fine grained, non-plastic, light reddish yellowish brown, dry to moist, loose			
1909						
	2				BC=1 2 2	457 mm
1908			With flat dark red siltstone fragments at 2.74m bgs			
	3				BC=2 3 2	457 mm
1907						
	4					
1906						
	5					
1905						
	6					

LABORATORY RESULTS

AASHTO Symbol	Water Content (%)	Dry Unit Wt. (pcf)	Passing #4 (%)	Passing #200 (%)	Liquid Limit	Plasticity Index (NP=NonPlastic)	Additional Tests/ Remarks

The exploration was terminated at approximately 3.2 m. below ground surface. The exploration was backfilled with auger cuttings and asphalt patch on October 21, 2014.

GROUNDWATER LEVEL INFORMATION:
Groundwater was not encountered during drilling or after completion.
GENERAL NOTES:
Coordinates obtained from WHPacific N15 Alignment CAD file; Surface elevation provided by WHPacific.

Allwyn ENVIRONMENTAL

PROJECT NO.:	20151221
DRAWN BY:	PD
CHECKED BY:	MJM
DATE:	12/5/2014
REVISED:	12/17/2014

BORING LOG B-152

BIA N15(2-3)(3-1)(4-1)2&4
GREASEWOOD TO BURNSIDE, ARIZONA

PLATE

B-152

gINT FILE: PROJECTWISE: 20151221_n1520151221.gpj
gINT TEMPLATE: PROJECTWISE: KLF_STANDARD_GINT_LIBRARY_2014.GLB [KLF_BORING/TEST PIT SOIL LOG]

PLOTTED: 07/07/2015 02:04 PM BY: clbeck

BORING LOG B-153

Date Begin - End:	10/22/2014 - 10/22/2014	**Drilling Company:**	Enviro-Drill		
Logged By:	M. Cote	**Drill Crew:**	Ed & Juan		
Hor.-Vert. Datum:	NAD83	**Drilling Equipment:**	CME-75	**Hammer Type - Drop:**	63.5 kg. Auto - 762 mm.
Plunge:	-90 degrees	**Drilling Method:**	Hollow Stem Auger		
Weather:	sunny, breezy	**Exploration Diameter:**	184 mm. O.D.		

Northing: 523,257.33 (m)
Easting: 259,794.51 (m)
Ground Surface Elevation (m.): 1,913.8
Location Offset: Sta. 29+800/1.83m Lt CL
Surface Condition: Asphalt

Elevation (meters)	Depth (meters)	Graphical Log	Lithologic Description	Sample Type	Blow Counts(BC)= Uncorr. Blows/152 mm. Pocket Pen(PP)= T/m²	Recovery (NR=No Recovery)	AASHTO Symbol	Water Content (%)	Dry Unit Wt. (pcf)	Passing #4 (%)	Passing #200 (%)	Liquid Limit	Plasticity Index (NP=NonPlastic)	Additional Tests/ Remarks
			Field engineer measured 0.05m black asphalt; 0.05m brown asphalt											
			Field engineer measured 0.08m base course											
1913			**Sandy Lean CLAY (CL)**: fine to medium grained, rounded, low plasticity, dark reddish yellowish brown, dry to moist, hard, trace rootlets		BC=2 4 6	406 mm								
	1		Trace distinct whitle lines, trace charcoal-like black material at 0.91m bgs		BC=3 3 3	203 mm								
1912			**Silty Clayey SAND (SC-SM)**: fine grained, reddish yellow, moist, very loose											
	2				BC=2 1 2	330 mm		7.6						
1911			Dry to moist, loose, weakly cemented at 2.74m bgs		BC=1 2 2	330 mm	A-4(1)				39	24	4	
	3													
1910	4													
1909	5													
1908	6													

The exploration was terminated at approximately 3.2 m. below ground surface. The exploration was backfilled with auger cuttings and asphalt patch on October 22, 2014.

GROUNDWATER LEVEL INFORMATION:
Groundwater was not encountered during drilling or after completion.

GENERAL NOTES:
Coordinates obtained from WHPacific N15 Alignment CAD file; Surface elevation provided by WHPacific.

Allwyn ENVIRONMENTAL

PROJECT NO.:	20151221
DRAWN BY:	PD
CHECKED BY:	MJM
DATE:	12/5/2014
REVISED:	12/17/2014

BORING LOG B-153

BIA N15(2-3)(3-1)(4-1)2&4
GREASEWOOD TO BURNSIDE, ARIZONA

PLATE

B-153

PAGE: 1 of 1

gINT FILE: PROJECTWISE: 20151221_n1520151221.gpj
gINT TEMPLATE: PROJECTWISE: KLF_STANDARD_GINT_LIBRARY_2014.GLB [KLF_BORING/TEST PIT SOIL LOG]

PLOTTED: 07/07/2015 02:04 PM BY: clbeck

BORING LOG B-154

Date Begin - End:	10/22/2014 - 10/22/2014	**Drilling Company:**	Enviro-Drill		
Logged By:	M. Cote	**Drill Crew:**	Ed & Juan		
Hor.-Vert. Datum:	NAD83	**Drilling Equipment:**	CME-75	**Hammer Type - Drop:**	63.5 kg. Auto - 762 mm.
Plunge:	-90 degrees	**Drilling Method:**	Hollow Stem Auger		
Weather:	sunny, breezy	**Exploration Diameter:**	184 mm. O.D.		

FIELD EXPLORATION

Northing: 523,438.63 (m)
Easting: 259,878.99 (m)
Ground Surface Elevation (m.): 1,916.2
Location Offset: Sta. 30+000/1.83m Rt CL
Surface Condition: Asphalt

Elevation (meters)	Depth (meters)	Graphical Log	Lithologic Description	Sample Type	Blow Counts(BC)= Uncorr. Blows/152 mm. Pocket Pen(PP)= T/m²	Recovery (NR=No Recovery)
1916			Field engineer measured 0.05m black asphalt; 0.05m brown asphalt			
			Field engineer measured 0.05m base course			
			Poorly-graded SAND (SP): fine to coarse grained, subrounded to rounded, reddish brown, moist, loose, trace fine, subrounded gravel		BC=4 5 5	457 mm
			Sandy Lean CLAY (CL): fine grained, low plasticity, dark reddish yellowish brown, moist, hard			
	1				BC=3 2 1	330 mm
1915			**Silty Clayey SAND (SC-SM)**: fine grained, light reddish yellowish brown, moist, very loose			
			Dry to moist from 1.83m bgs		BC=2 1 2	381 mm
	2					
1914						
			Lense of 0.10m clayey sand at 2.74m bgs		BC=2 2 1	406 mm
	3					
1913						
	4					
1912						
	5					
1911						
	6					

LABORATORY RESULTS

AASHTO Symbol	Water Content (%)	Dry Unit Wt. (pcf)	Passing #4 (%)	Passing #200 (%)	Liquid Limit	Plasticity Index (NP=NonPlastic)	Additional Tests/ Remarks

The exploration was terminated at approximately 3.2 m. below ground surface. The exploration was backfilled with auger cuttings and asphalt patch on October 22, 2014.

GROUNDWATER LEVEL INFORMATION:
Groundwater was not encountered during drilling or after completion.

GENERAL NOTES:
Coordinates obtained from WHPacific N15 Alignment CAD file; Surface elevation provided by WHPacific.

Allwyn ENVIRONMENTAL

PROJECT NO.:	20151221
DRAWN BY:	PD
CHECKED BY:	MJM
DATE:	12/5/2014
REVISED:	12/17/2014

BORING LOG B-154

BIA N15(2-3)(3-1)(4-1)2&4
GREASEWOOD TO BURNSIDE, ARIZONA

PLATE

B-154

PAGE: 1 of 1

gINT FILE: PROJECTWISE: 20151221_n1520151221.gpj
gINT TEMPLATE: PROJECTWISE: KLF_STANDARD_GINT_LIBRARY_2014.GLB [KLF_BORING/TEST PIT SOIL LOG]

PLOTTED: 07/07/2015 02:04 PM BY: clbeck

BORING LOG B-155

Date Begin - End:	10/22/2014 - 10/22/2014	**Drilling Company:**	Enviro-Drill		
Logged By:	M. Cote	**Drill Crew:**	Ed & Juan		
Hor.-Vert. Datum:	NAD83	**Drilling Equipment:**	CME-75	**Hammer Type - Drop:**	63.5 kg. Auto - 762 mm.
Plunge:	-90 degrees	**Drilling Method:**	Hollow Stem Auger		
Weather:	sunny, breezy	**Exploration Diameter:**	184 mm. O.D.		

FIELD EXPLORATION

Northing: 523,622.34 (m)
Easting: 259,958.11 (m)
Ground Surface Elevation (m.): 1,917.9
Location Offset: Sta. 30+200/1.83m Lt CL
Surface Condition: Asphalt

Elevation (meters)	Depth (meters)	Graphical Log	Lithologic Description	Sample Type	Blow Counts(BC)= Uncorr. Blows/152 mm. Pocket Pen(PP)= T/m²	Recovery (NR=No Recovery)
			Field engineer measured 0.05m black asphalt; 0.05m brown asphalt			
			Field engineer measured 0.10m base course			
			Poorly-graded SAND (SP): fine to coarse grained, reddish brown, moist, loose, trace fine, angular to subrounded gravel		BC=2 4 4	457 mm
1917	1		**Clayey SAND (SC)**: fine grained, low plasticity, dark reddish yellowish brown, moist, loose		BC=5 4 2	NR
			Silty Clayey SAND (SC-SM): fine grained, low plasticity, reddish yellow, dry, very loose			
1916	2		Loose, some silty/clayey strata up to 0.10m thick mixed into sample at 1.83m bgs		BC=1 2 2	406 mm
1915	3		Dry to moist, very loose, some medium, flat, red siltstone fragments at 2.74m bgs		BC=1 1 1	457 mm
1914	4					
1913	5					
1912	6					

LABORATORY RESULTS

AASHTO Symbol	Water Content (%)	Dry Unit Wt. (pcf)	Passing #4 (%)	Passing #200 (%)	Liquid Limit	Plasticity Index (NP=NonPlastic)	Additional Tests/ Remarks

The exploration was terminated at approximately 3.2 m. below ground surface. The exploration was backfilled with auger cuttings and asphalt patch on October 22, 2014.

GROUNDWATER LEVEL INFORMATION:
Groundwater was not encountered during drilling or after completion.
GENERAL NOTES:
Coordinates obtained from WHPacific N15 Alignment CAD file; Surface elevation provided by WHPacific.

Allwyn ENVIRONMENTAL

PROJECT NO.:	20151221
DRAWN BY:	PD
CHECKED BY:	MJM
DATE:	12/5/2014
REVISED:	12/17/2014

BORING LOG B-155

BIA N15(2-3)(3-1)(4-1)2&4
GREASEWOOD TO BURNSIDE, ARIZONA

PLATE

B-155

PAGE: 1 of 1

gINT FILE: PROJECTWISE: 20151221_n1520151221.gpj
gINT TEMPLATE: PROJECTWISE: KLF_STANDARD_GINT_LIBRARY_2014.GLB [KLF_BORING/TEST PIT SOIL LOG]

PLOTTED: 07/07/2015 02:04 PM BY: clbeck

BORING LOG B-156

Date Begin - End:	10/22/2014 - 10/22/2014	**Drilling Company:**	Enviro-Drill		
Logged By:	M. Cote	**Drill Crew:**	Ed & Juan		
Hor.-Vert. Datum:	NAD83	**Drilling Equipment:**	CME-75	**Hammer Type - Drop:**	63.5 kg. Auto - 762 mm.
Plunge:	-90 degrees	**Drilling Method:**	Hollow Stem Auger		
Weather:	sunny, breezy	**Exploration Diameter:**	184 mm. O.D.		

FIELD EXPLORATION

Northing: 523,803.53 (m)
Easting: 260,042.85 (m)
Ground Surface Elevation (m.): 1,920.4
Location Offset: Sta. 30+400/1.83m Rt CL
Surface Condition: Asphalt

Elevation (meters)	Depth (meters)	Graphical Log	Lithologic Description	Sample Type	Blow Counts(BC)= Uncorr. Blows/152 mm. Pocket Pen(PP)= T/m²	Recovery (NR=No Recovery)
			Field engineer measured 0.03m black asphalt; 0.08m brown asphalt			
			Field engineer measured 0.10m base course			
1920			**Poorly-graded SAND (SP)**: fine to coarse grained, subrounded to angular, reddish brown, moist, loose		BC=4 6 4	457 mm
			Clayey SAND (SC): fine grained, low plasticity, reddish yellowish brown, moist, loose, trace white patches of clean sand			
	1		Trace pale olive sandstone fragments, no white patches at 0.91m bgs		BC=4 5 5	381 mm
1919						
			Poorly-graded SAND with Clay (SP-SC): fine grained, low plasticity, light reddish yellowish brown, moist, very loose		BC=1 2 1	381 mm
	2					
1918						
			Lense of clayey sand at 2.74m bgs		BC=1 2 1	406 mm
	3					
1917						
	4					
1916						
	5					
1915						
	6					

LABORATORY RESULTS

AASHTO Symbol	Water Content (%)	Dry Unit Wt. (pcf)	Passing #4 (%)	Passing #200 (%)	Liquid Limit	Plasticity Index (NP=NonPlastic)	Additional Tests/ Remarks
							Bulk sample obtained from depth of 0.3 to 1.52m bgs

The exploration was terminated at approximately 3.2 m. below ground surface. The exploration was backfilled with auger cuttings and asphalt patch on October 22, 2014.

GROUNDWATER LEVEL INFORMATION:
Groundwater was not encountered during drilling or after completion.
GENERAL NOTES:
Coordinates obtained from WHPacific N15 Alignment CAD file; Surface elevation provided by WHPacific.

Allwyn ENVIRONMENTAL

PROJECT NO.:	20151221
DRAWN BY:	PD
CHECKED BY:	MJM
DATE:	12/5/2014
REVISED:	12/17/2014

BORING LOG B-156

BIA N15(2-3)(3-1)(4-1)2&4
GREASEWOOD TO BURNSIDE, ARIZONA

PLATE

B-156

PAGE: 1 of 1

gINT FILE: PROJECTWISE: 20151221_n1520151221.gpj
gINT TEMPLATE: PROJECTWISE: KLF_STANDARD_GINT_LIBRARY_2014.GLB [KLF_BORING/TEST PIT SOIL LOG]

PLOTTED: 07/07/2015 02:04 PM BY: clbeck

BORING LOG B-157

Date Begin - End:	10/22/2014 - 10/22/2014	**Drilling Company:**	Enviro-Drill		
Logged By:	M. Cote	**Drill Crew:**	Ed & Juan		
Hor.-Vert. Datum:	NAD83	**Drilling Equipment:**	CME-75	**Hammer Type - Drop:**	63.5 kg. Auto - 762 mm.
Plunge:	-90 degrees	**Drilling Method:**	Hollow Stem Auger		
Weather:	sunny, breezy	**Exploration Diameter:**	184 mm. O.D.		

FIELD EXPLORATION

Northing: 523,987.34 (m)
Easting: 260,121.74 (m)
Ground Surface Elevation (m.): 1,922.1
Location Offset: Sta. 30+600/1.83m Lt CL
Surface Condition: Asphalt

Elevation (meters)	Depth (meters)	Graphical Log	Lithologic Description	Sample Type	Blow Counts(BC)= Uncorr. Blows/152 mm. Pocket Pen(PP)= T/m²	Recovery (NR=No Recovery)
1922			Field engineer measured 0.05m black asphalt; 0.08m brown asphalt			
			Field engineer measured 0.08m base course			
			Poorly-graded SAND with Clay (SP-SC): fine grained, low plasticity, reddish yellowish brown, moist, dense, trace coarse weak white gravel		BC=16 10 20	406 mm
	1		**Silty SAND (SM)**: fine to medium grained, subrounded to rounded, non-plastic, reddish yellowish brown, moist, loose		BC=5 3 1	330 mm
1921						
			Very loose, light reddish yellowish brown from 1.83m bgs		BC=1 1 1	330 mm
	2					
1920						
			Low plasticity at 2.74m bgs		BC=1 1 1	356 mm
	3					
1919						
	4					
1918						
	5					
1917						
	6					

LABORATORY RESULTS

AASHTO Symbol	Water Content (%)	Dry Unit Wt. (pcf)	Passing #4 (%)	Passing #200 (%)	Liquid Limit	Plasticity Index (NP=NonPlastic)	Additional Tests/ Remarks

The exploration was terminated at approximately 3.2 m. below ground surface. The exploration was backfilled with auger cuttings and asphalt patch on October 22, 2014.

GROUNDWATER LEVEL INFORMATION:
Groundwater was not encountered during drilling or after completion.
GENERAL NOTES:
Coordinates obtained from WHPacific N15 Alignment CAD file; Surface elevation provided by WHPacific.

Allwyn ENVIRONMENTAL

PROJECT NO.:	20151221
DRAWN BY:	PD
CHECKED BY:	MJM
DATE:	12/5/2014
REVISED:	12/17/2014

BORING LOG B-157

BIA N15(2-3)(3-1)(4-1)2&4
GREASEWOOD TO BURNSIDE, ARIZONA

PLATE

B-157

PAGE: 1 of 1

gINT FILE: PROJECTWISE: 20151221_n1520151221.gpj
gINT TEMPLATE: PROJECTWISE: KLF_STANDARD_GINT_LIBRARY_2014.GLB [KLF_BORING/TEST PIT SOIL LOG]

PLOTTED: 07/07/2015 02:04 PM BY: clbeck

BORING LOG B-158

Date Begin - End:	10/22/2014 - 10/22/2014	**Drilling Company:**	Enviro-Drill		
Logged By:	M. Cote	**Drill Crew:**	Ed & Juan		
Hor.-Vert. Datum:	NAD83	**Drilling Equipment:**	CME-75	**Hammer Type - Drop:**	63.5 kg. Auto - 762 mm.
Plunge:	-90 degrees	**Drilling Method:**	Hollow Stem Auger		
Weather:	sunny, breezy	**Exploration Diameter:**	184 mm. O.D.		

FIELD EXPLORATION

Northing: 524,168.58 (m)
Easting: 260,206.36 (m)
Ground Surface Elevation (m.): 1,923.4
Location Offset: Sta. 30+800/1.83m Rt CL
Surface Condition: Asphalt

Elevation (meters)	Depth (meters)	Graphical Log	Lithologic Description	Sample Type	Blow Counts(BC)= Uncorr. Blows/152 mm. Pocket Pen(PP)= T/m²	Recovery (NR=No Recovery)
			Field engineer measured 0.05m black asphalt; 0.08m brown asphalt			
			Field engineer measured 0.08m base course			
1923			**Poorly-graded SAND with Silt (SP-SM)**: fine grained, non-plastic to low plasticity, light reddish yellowish brown, moist, loose		BC=4 5 5	457 mm
	1		**Silty Clayey SAND (SC-SM)**: fine grained, non-plastic, light reddish yellowish brown, moist, very loose		BC=2 1 1	330 mm
1922						
			Lense of coarse, yellow sandstone at 1.83m bgs		BC=1 2 1	406 mm
	2		Lense of clayey sand at 1.98m bgs			
1921						
			Lense of clayey sand at 2.74m bgs		BC=2 1 1	330 mm
	3					
1920						
	4					
1919						
	5					
1918						
	6					

LABORATORY RESULTS

AASHTO Symbol	Water Content (%)	Dry Unit Wt. (pcf)	Passing #4 (%)	Passing #200 (%)	Liquid Limit	Plasticity Index (NP=NonPlastic)	Additional Tests/ Remarks

The exploration was terminated at approximately 3.2 m. below ground surface. The exploration was backfilled with auger cuttings and asphalt patch on October 22, 2014.

GROUNDWATER LEVEL INFORMATION:
Groundwater was not encountered during drilling or after completion.

GENERAL NOTES:
Coordinates obtained from WHPacific N15 Alignment CAD file; Surface elevation provided by WHPacific.

Allwyn ENVIRONMENTAL

PROJECT NO.:	20151221
DRAWN BY:	PD
CHECKED BY:	MJM
DATE:	12/5/2014
REVISED:	12/17/2014

BORING LOG B-158

BIA N15(2-3)(3-1)(4-1)2&4
GREASEWOOD TO BURNSIDE, ARIZONA

PLATE

B-158

gINT FILE: PROJECTWISE: 20151221_n1520151221.gpj
gINT TEMPLATE: PROJECTWISE: KLF_STANDARD_GINT_LIBRARY_2014.GLB [KLF_BORING/TEST PIT SOIL LOG]

PLOTTED: 07/07/2015 02:04 PM BY: clbeck

BORING LOG B-159

Date Begin - End:	10/22/2014 - 10/22/2014	**Drilling Company:**	Enviro-Drill		
Logged By:	M. Cote	**Drill Crew:**	Ed & Juan		
Hor.-Vert. Datum:	NAD83	**Drilling Equipment:**	CME-75	**Hammer Type - Drop:**	63.5 kg. Auto - 762 mm.
Plunge:	-90 degrees	**Drilling Method:**	Hollow Stem Auger		
Weather:	sunny, breezy	**Exploration Diameter:**	184 mm. O.D.		

FIELD EXPLORATION

Northing: 524,352.2 (m)
Easting: 260,285.69 (m)
Ground Surface Elevation (m.): 1,925.6
Location Offset: Sta. 31+000/1.83m Lt CL
Surface Condition: Asphalt

Elevation (meters)	Depth (meters)	Graphical Log	Lithologic Description	Sample Type	Blow Counts(BC)= Uncorr. Blows/152 mm. Pocket Pen(PP)= T/m²	Recovery (NR=No Recovery)
			Field engineer measured 0.05m black asphalt; 0.05m brown asphalt			
			Field engineer measured 0.08m base course			
1925			**Silty SAND (SM)**: fine grained, non-plastic to low plasticity, reddish yellowish brown, moist, loose Bedding plane (~20°) at 0.34m bgs		BC=3 4 2	457 mm
	1		**Poorly-graded SAND with Sand (SP-SM)**: fine grained, non-plastic to low plasticity, light reddish yellowish brown, moist, very loose		BC=2 2 1	254 mm
1924						
	2		Fine to coarse grained, subrounded to rounded flat sandstone fragments at 1.83m bgs		BC=1 1 1	330 mm
1923						
	3				BC=1 1 2	381 mm
1922						
	4					
1921						
	5					
1920						
	6					

LABORATORY RESULTS

AASHTO Symbol	Water Content (%)	Dry Unit Wt. (pcf)	Passing #4 (%)	Passing #200 (%)	Liquid Limit	Plasticity Index (NP=NonPlastic)	Additional Tests/ Remarks

The exploration was terminated at approximately 3.2 m. below ground surface. The exploration was backfilled with auger cuttings and asphalt patch on October 22, 2014.

GROUNDWATER LEVEL INFORMATION:
Groundwater was not encountered during drilling or after completion.
GENERAL NOTES:
Coordinates obtained from WHPacific N15 Alignment CAD file; Surface elevation provided by WHPacific.

Allwyn ENVIRONMENTAL

PROJECT NO.:	20151221
DRAWN BY:	PD
CHECKED BY:	MJM
DATE:	12/5/2014
REVISED:	12/17/2014

BORING LOG B-159

BIA N15(2-3)(3-1)(4-1)2&4
GREASEWOOD TO BURNSIDE, ARIZONA

PLATE

B-159

gINT FILE: PROJECTWISE: 20151221_n1520151221.gpj
gINT TEMPLATE: PROJECTWISE: KLF_STANDARD_GINT_LIBRARY_2014.GLB [KLF_BORING/TEST PIT SOIL LOG]

PLOTTED: 07/07/2015 02:04 PM BY: clbeck

BORING LOG B-160

Date Begin - End:	10/22/2014 - 10/22/2014	**Drilling Company:**	Enviro-Drill		
Logged By:	M. Cote	**Drill Crew:**	Ed & Juan		
Hor.-Vert. Datum:	NAD83	**Drilling Equipment:**	CME-75	**Hammer Type - Drop:**	63.5 kg. Auto - 762 mm.
Plunge:	-90 degrees	**Drilling Method:**	Hollow Stem Auger		
Weather:	sunny, breezy	**Exploration Diameter:**	184 mm. O.D.		

FIELD EXPLORATION

Northing: 524,533.37 (m)
Easting: 260,370.48 (m)
Ground Surface Elevation (m.): 1,926.2
Location Offset: Sta. 31+200/1.83m Rt CL
Surface Condition: Asphalt

Elevation (meters)	Depth (meters)	Graphical Log	Lithologic Description	Sample Type	Blow Counts(BC)= Uncorr. Blows/152 mm. Pocket Pen(PP)= T/m²	Recovery (NR=No Recovery)	AASHTO Symbol	Water Content (%)	Dry Unit Wt. (pcf)	Passing #4 (%)	Passing #200 (%)	Liquid Limit	Plasticity Index (NP=NonPlastic)	Additional Tests/ Remarks
1926	0		Field engineer measured 0.05m black asphalt; 0.05m brown asphalt											
			Field engineer measured 0.08m base course											
			Silty SAND (SM): fine grained, non-plastic, light reddish yellowish brown, moist, medium dense		BC=7 8 6	457 mm		7.2						
1925	1		Loose from 0.91m bgs		BC=4 2 2	229 mm	A-2-4(0)			100	26	NP	NP	
1924	2				BC=2 3 4	NR								
1923	3		Lense of 0.03m clayey sand at 3.05m bgs		BC=1 0 1	457 mm								
1922	4													
1921	5													
	6													

The exploration was terminated at approximately 3.2 m. below ground surface. The exploration was backfilled with auger cuttings and asphalt patch on October 22, 2014.

GROUNDWATER LEVEL INFORMATION:
Groundwater was not encountered during drilling or after completion.

GENERAL NOTES:
Coordinates obtained from WHPacific N15 Alignment CAD file; Surface elevation provided by WHPacific.

Allwyn ENVIRONMENTAL

PROJECT NO.:	20151221
DRAWN BY:	PD
CHECKED BY:	MJM
DATE:	12/5/2014
REVISED:	12/17/2014

BORING LOG B-160

BIA N15(2-3)(3-1)(4-1)2&4
GREASEWOOD TO BURNSIDE, ARIZONA

PLATE

B-160

PAGE: 1 of 1

gINT FILE: PROJECTWISE: 20151221_n1520151221.gpj
gINT TEMPLATE: PROJECTWISE: KLF_STANDARD_GINT_LIBRARY_2014.GLB [KLF_BORING/TEST PIT SOIL LOG]

PLOTTED: 07/07/2015 02:04 PM BY: clbeck

BORING LOG B-161

Date Begin - End:	10/22/2014 - 10/22/2014	**Drilling Company:**	Enviro-Drill		
Logged By:	M. Cote	**Drill Crew:**	Ed & Juan		
Hor.-Vert. Datum:	NAD83	**Drilling Equipment:**	CME-75	**Hammer Type - Drop:**	63.5 kg. Auto - 762 mm.
Plunge:	-90 degrees	**Drilling Method:**	Hollow Stem Auger		
Weather:	sunny, breezy	**Exploration Diameter:**	184 mm. O.D.		

FIELD EXPLORATION

Northing: 524,717.23 (m)
Easting: 260,449.26 (m)
Ground Surface Elevation (m.): 1,927.3
Location Offset: Sta. 31+400/1.83m Lt CL
Surface Condition: Asphalt

Elevation (meters)	Depth (meters)	Graphical Log	Lithologic Description	Sample Type	Blow Counts(BC)= Uncorr. Blows/152 mm. Pocket Pen(PP)= T/m²	Recovery (NR=No Recovery)
1927	0		Field engineer measured 0.08m black asphalt; 0.05m brown asphalt			
			Field engineer measured 0.05m base course			
			Silty SAND (SM): fine grained, reddish yellowish brown, moist, loose Bedding plane (~30°) at 0.46m bgs		BC=6 4 2	457 mm
	1		**Poorly-graded SAND with Silt (SP-SM)**: non-plastic, reddish yellowish brown, dry to moist, loose, distinctive pattern of ~3.2mm wide of dark to light reddish yellowish brown circles		BC=2 2 2	254 mm
1926						
			Some medium, flat, red gravel at 1.83m bgs		BC=1 2 2	279 mm
1925	2					
					BC=2 2 2	330 mm
	3					
1924						
	4					
1923						
	5					
1922						
	6					

LABORATORY RESULTS

AASHTO Symbol	Water Content (%)	Dry Unit Wt. (pcf)	Passing #4 (%)	Passing #200 (%)	Liquid Limit	Plasticity Index (NP=NonPlastic)	Additional Tests/ Remarks
							Bulk sample obtained from depth of 0.3 to 1.52m bgs

The exploration was terminated at approximately 3.2 m. below ground surface. The exploration was backfilled with auger cuttings and asphalt patch on October 22, 2014.

GROUNDWATER LEVEL INFORMATION:
Groundwater was not encountered during drilling or after completion.
GENERAL NOTES:
Coordinates obtained from WHPacific N15 Alignment CAD file; Surface elevation provided by WHPacific.

Allwyn ENVIRONMENTAL

PROJECT NO.:	20151221
DRAWN BY:	PD
CHECKED BY:	MJM
DATE:	12/5/2014
REVISED:	12/17/2014

BORING LOG B-161

BIA N15(2-3)(3-1)(4-1)2&4
GREASEWOOD TO BURNSIDE, ARIZONA

PLATE

B-161

PAGE: 1 of 1

gINT FILE: PROJECTWISE: 20151221_n1520151221.gpj
gINT TEMPLATE: PROJECTWISE: KLF_STANDARD_GINT_LIBRARY_2014.GLB [KLF_BORING/TEST PIT SOIL LOG]

PLOTTED: 07/07/2015 02:04 PM BY: clbeck

BORING LOG B-162

Date Begin - End:	10/22/2014 - 10/22/2014	**Drilling Company:**	Enviro-Drill		
Logged By:	M. Cote	**Drill Crew:**	Ed & Juan		
Hor.-Vert. Datum:	NAD83	**Drilling Equipment:**	CME-75	**Hammer Type - Drop:**	63.5 kg. Auto - 762 mm.
Plunge:	-90 degrees	**Drilling Method:**	Hollow Stem Auger		
Weather:	sunny, breezy	**Exploration Diameter:**	184 mm. O.D.		

FIELD EXPLORATION

Northing: 524,898.47 (m)
Easting: 260,533.88 (m)
Ground Surface Elevation (m.): 1,931.3
Location Offset: Sta. 31+600/1.83m Rt CL
Surface Condition: Asphalt

Elevation (meters)	Depth (meters)	Graphical Log	Lithologic Description	Sample Type	Blow Counts(BC)= Uncorr. Blows/152 mm. Pocket Pen(PP)= T/m²	Recovery (NR=No Recovery)
			Field engineer measured 0.05m black asphalt; 0.05m brown asphalt			
			Field engineer measured 0.08m base course			
1931			**Poorly-graded SAND with Clay (SP-SC)**: fine grained, low plasticity, reddish yellowish brown, moist, loose, trace patches of fine to medium sand		BC=3 3 3	406 mm
	1		Fine to coarse grained at 0.91m bgs		BC=2 1 2	432 mm
1930			Fine to coarse, subrounded to subangular gravel from 1.22 to 1.37m bgs			
	2		**Poorly-graded SAND with Silt (SP-SM)**: fine to coarse grained, non-plastic, moist, very loose		BC=1 2 1	457 mm
1929						
	3		Fine sand at 2.74m bgs		BC=2 2 1	229 mm
1928						
	4					
1927						
	5					
1926						
	6					

LABORATORY RESULTS

AASHTO Symbol	Water Content (%)	Dry Unit Wt. (pcf)	Passing #4 (%)	Passing #200 (%)	Liquid Limit	Plasticity Index (NP=NonPlastic)	Additional Tests/ Remarks

The exploration was terminated at approximately 3.2 m. below ground surface. The exploration was backfilled with auger cuttings and asphalt patch on October 22, 2014.

GROUNDWATER LEVEL INFORMATION:
Groundwater was not encountered during drilling or after completion.

GENERAL NOTES:
Coordinates obtained from WHPacific N15 Alignment CAD file; Surface elevation provided by WHPacific.

Allwyn ENVIRONMENTAL

PROJECT NO.:	20151221
DRAWN BY:	PD
CHECKED BY:	MJM
DATE:	12/5/2014
REVISED:	12/17/2014

BORING LOG B-162

BIA N15(2-3)(3-1)(4-1)2&4
GREASEWOOD TO BURNSIDE, ARIZONA

PLATE

B-162

PAGE: 1 of 1

gINT FILE: PROJECTWISE: 20151221_n1520151221.gpj
gINT TEMPLATE: PROJECTWISE: KLF_STANDARD_GINT_LIBRARY_2014.GLB [KLF_BORING/TEST PIT SOIL LOG]

PLOTTED: 07/07/2015 02:04 PM BY: clbeck

BORING LOG B-163

Date Begin - End:	10/22/2014 - 10/22/2014	**Drilling Company:**	Enviro-Drill		
Logged By:	M. Cote	**Drill Crew:**	Ed & Juan		
Hor.-Vert. Datum:	NAD83	**Drilling Equipment:**	CME-75	**Hammer Type - Drop:**	63.5 kg. Auto - 762 mm.
Plunge:	-90 degrees	**Drilling Method:**	Hollow Stem Auger		
Weather:	sunny, breezy	**Exploration Diameter:**	184 mm. O.D.		

Northing: 525,082.14 (m)
Easting: 260,613.08 (m)
Ground Surface Elevation (m.): 1,934.8
Location Offset: Sta. 31+800/1.83m Lt CL
Surface Condition: Asphalt

Elevation (meters)	Depth (meters)	Graphical Log	Lithologic Description	Sample Type	Blow Counts(BC)= Uncorr. Blows/152 mm. Pocket Pen(PP)= T/m²	Recovery (NR=No Recovery)	AASHTO Symbol	Water Content (%)	Dry Unit Wt. (pcf)	Passing #4 (%)	Passing #200 (%)	Liquid Limit	Plasticity Index (NP=NonPlastic)	Additional Tests/ Remarks
			Field engineer measured 0.05m black asphalt; 0.05m brown asphalt											
			Field engineer measured 0.08m base course											
1934			**Poorly-graded SAND with Silt (SP-SM)**: fine grained, rounded, low plasticity, moist, medium dense, trace fine flat to subrounded gravel Bedding plane (~30°) at 0.55m bgs		BC=4 7 5	406 mm								
	1				BC=4 5 4	432 mm								
1933			Light reddish yellowish brown, dry, very loose from 1.68m bgs											
	2				BC=2 1 1	381 mm								
1932			Loose, trace fine angular gravel, very weakly cemented, slight increase in fines at 2.74m bgs		BC=2 3 2	406 mm								
	3													
1931														
	4													
1930														
	5													
1929														
	6													

The exploration was terminated at approximately 3.2 m. below ground surface. The exploration was backfilled with auger cuttings and asphalt patch on October 22, 2014.

GROUNDWATER LEVEL INFORMATION:
Groundwater was not encountered during drilling or after completion.

GENERAL NOTES:
Coordinates obtained from WHPacific N15 Alignment CAD file; Surface elevation provided by WHPacific.

Allwyn ENVIRONMENTAL

PROJECT NO.:	20151221
DRAWN BY:	PD
CHECKED BY:	MJM
DATE:	12/5/2014
REVISED:	12/17/2014

BORING LOG B-163

BIA N15(2-3)(3-1)(4-1)2&4
GREASEWOOD TO BURNSIDE, ARIZONA

PLATE

B-163

gINT FILE: PROJECTWISE: 20151221_n1520151221.gpj
gINT TEMPLATE: PROJECTWISE: KLF_STANDARD_GINT_LIBRARY_2014.GLB [KLF_BORING/TEST PIT SOIL LOG]

PLOTTED: 07/07/2015 02:04 PM BY: clbeck

BORING LOG B-164

Date Begin - End:	10/22/2014 - 10/22/2014	**Drilling Company:**	Enviro-Drill		
Logged By:	M. Cote	**Drill Crew:**	Ed & Juan		
Hor.-Vert. Datum:	NAD83	**Drilling Equipment:**	CME-75	**Hammer Type - Drop:**	63.5 kg. Auto - 762 mm.
Plunge:	-90 degrees	**Drilling Method:**	Hollow Stem Auger		
Weather:	sunny, breezy	**Exploration Diameter:**	184 mm. O.D.		

FIELD EXPLORATION

Northing: 525,263.33 (m)
Easting: 260,697.81 (m)
Ground Surface Elevation (m.): 1,937.4
Location Offset: Sta. 32+000/1.83m Rt CL
Surface Condition: Asphalt

Elevation (meters)	Depth (meters)	Graphical Log	Lithologic Description	Sample Type	Blow Counts(BC)= Uncorr. Blows/152 mm. Pocket Pen(PP)= T/m²	Recovery (NR=No Recovery)
			Field engineer measured 0.05m black asphlat; 0.08m brown asphalt			
			Field engineer measured 0.08m base course			
1937			**Poorly-graded SAND with Silt (SP-SM)**: fine to medium grained, subrounded to rounded, non-plastic, light reddish yellowish brown, moist, very loose to loose		BC=4 4 2	457 mm
	1		Trace coarse grained sand, fine subangular to subrounded gravel at 0.91m bgs		BC=3 2 1	457 mm
1936						
	2		Dry to moist from 1.83m bgs		BC=1 1 1	406 mm
1935						
	3				BC=2 1 1	406 mm
1934			The exploration was terminated at approximately 3.2 m. below ground surface. The exploration was backfilled with auger cuttings and asphalt patch on October 22, 2014.			
	4					
1933						
	5					
1932						
	6					

LABORATORY RESULTS

AASHTO Symbol	Water Content (%)	Dry Unit Wt. (pcf)	Passing #4 (%)	Passing #200 (%)	Liquid Limit	Plasticity Index (NP=NonPlastic)	Additional Tests/ Remarks

GROUNDWATER LEVEL INFORMATION:
Groundwater was not encountered during drilling or after completion.

GENERAL NOTES:
Coordinates obtained from WHPacific N15 Alignment CAD file; Surface elevation provided by WHPacific.

Allwyn ENVIRONMENTAL

PROJECT NO.:	20151221
DRAWN BY:	PD
CHECKED BY:	MJM
DATE:	12/5/2014
REVISED:	12/17/2014

BORING LOG B-164

BIA N15(2-3)(3-1)(4-1)2&4
GREASEWOOD TO BURNSIDE, ARIZONA

PLATE

B-164

gINT FILE: PROJECTWISE: 20151221_n1520151221.gpj
gINT TEMPLATE: PROJECTWISE: KLF_STANDARD_GINT_LIBRARY_2014.GLB [KLF_BORING/TEST PIT SOIL LOG]

PLOTTED: 07/07/2015 02:04 PM BY: clbeck

BORING LOG B-165

Date Begin - End:	10/22/2014 - 10/22/2014	**Drilling Company:**	Enviro-Drill		
Logged By:	M. Cote	**Drill Crew:**	Ed & Juan		
Hor.-Vert. Datum:	NAD83	**Drilling Equipment:**	CME-75	**Hammer Type - Drop:**	63.5 kg. Auto - 762 mm.
Plunge:	-90 degrees	**Drilling Method:**	Hollow Stem Auger		
Weather:	sunny, breezy	**Exploration Diameter:**	184 mm. O.D.		

FIELD EXPLORATION

Northing: 525,447.12 (m)
Easting: 260,776.77 (m)
Ground Surface Elevation (m.): 1,936.5
Location Offset: Sta. 32+200/1.83m Lt CL
Surface Condition: Asphalt

Elevation (meters)	Depth (meters)	Graphical Log	Lithologic Description	Sample Type	Blow Counts(BC)= Uncorr. Blows/152 mm. Pocket Pen(PP)= T/m²	Recovery (NR=No Recovery)	AASHTO Symbol	Water Content (%)	Dry Unit Wt. (pcf)	Passing #4 (%)	Passing #200 (%)	Liquid Limit	Plasticity Index (NP=NonPlastic)	Additional Tests/ Remarks
			Field engineer measured 0.05m black asphalt; 0.08m brown asphalt											
			Field engineer measured 0.10m base course											
1936			**Poorly-graded SAND with Gravel (SP)**: fine to coarse grained, subrounded to angular, moist, loose		BC=7 8 6	457 mm								
			Poorly-graded SAND with Silt (SP-SM): fine to medium grained, rounded, non-plastic, reddish yellowish brown, moist, medium dense											
	1		Fine grained, dry, loose, weakly cemented, trace thin white lines from 0.91m bgs		BC=4 3 2	178 mm								
1935														
			Light reddish yellowish brown at 1.83m bgs		BC=2 2 2	356 mm		5.6						
1934	2													
					BC=2 2 3	406 mm								
1933	3													
	4													
1932														
	5													
1931														
	6													

The exploration was terminated at approximately 3.2 m. below ground surface. The exploration was backfilled with auger cuttings and asphalt patch on October 22, 2014.

GROUNDWATER LEVEL INFORMATION:
Groundwater was not encountered during drilling or after completion.

GENERAL NOTES:
Coordinates obtained from WHPacific N15 Alignment CAD file; Surface elevation provided by WHPacific.

Allwyn ENVIRONMENTAL

PROJECT NO.:	20151221
DRAWN BY:	PD
CHECKED BY:	MJM
DATE:	12/5/2014
REVISED:	12/17/2014

BORING LOG B-165

BIA N15(2-3)(3-1)(4-1)2&4
GREASEWOOD TO BURNSIDE, ARIZONA

PLATE

B-165

PAGE: 1 of 1

gINT FILE: PROJECTWISE: 20151221_n1520151221.gpj
gINT TEMPLATE: PROJECTWISE: KLF_STANDARD_GINT_LIBRARY_2014.GLB [KLF_BORING/TEST PIT SOIL LOG]

PLOTTED: 07/07/2015 02:04 PM BY: clbeck

BORING LOG B-166

Date Begin - End:	10/22/2014 - 10/22/2014	**Drilling Company:**	Enviro-Drill		
Logged By:	M. Cote	**Drill Crew:**	Ed & Juan		
Hor.-Vert. Datum:	NAD83	**Drilling Equipment:**	CME-75	**Hammer Type - Drop:**	63.5 kg. Auto - 762 mm.
Plunge:	-90 degrees	**Drilling Method:**	Hollow Stem Auger		
Weather:	sunny, breezy	**Exploration Diameter:**	184 mm. O.D.		

FIELD EXPLORATION

Northing: 525,628.37 (m)
Easting: 260,861.36 (m)
Ground Surface Elevation (m.): 1,940.4
Location Offset: Sta. 32+400/1.83m Rt CL
Surface Condition: Asphalt

Elevation (meters)	Depth (meters)	Graphical Log	Lithologic Description	Sample Type	Blow Counts(BC)= Uncorr. Blows/152 mm. Pocket Pen(PP)= T/m²	Recovery (NR=No Recovery)	AASHTO Symbol	Water Content (%)	Dry Unit Wt. (pcf)	Passing #4 (%)	Passing #200 (%)	Liquid Limit	Plasticity Index (NP=NonPlastic)	Additional Tests/ Remarks
1940	0		Field engineer measured 0.05m black asphalt; 0.05m brown asphlat Field engineer measured 0.08m base course											
			Clayey SAND (SC): fine grained, low plasticity, dark reddish yellowish brown, moist, loose		BC=3 1 2	457 mm								Bulk sample obtained from depth of 0.3 to 1.52m bgs
			Poorly-graded SAND with Silt (SP-SM): fine grained, subrounded to rounded, non-plastic, reddish yellowish brown, moist, very loose											
	1				BC=1 2 1	356 mm								
1939														
			Trace distinct while lines at 1.83m bgs		BC=2 1 1	406 mm								
	2													
1938														
					BC=2 1 2	457 mm								
	3													
1937			The exploration was terminated at approximately 3.2 m. below ground surface. The exploration was backfilled with auger cuttings and asphalt patch on October 22, 2014.											
	4													
1936														
	5													
1935														
	6													

GROUNDWATER LEVEL INFORMATION:
Groundwater was not encountered during drilling or after completion.

GENERAL NOTES:
Coordinates obtained from WHPacific N15 Alignment CAD file; Surface elevation provided by WHPacific.

gINT FILE: PROJECTWISE: 20151221_n1520151221.gpj
gINT TEMPLATE: PROJECTWISE: KLF_STANDARD_GINT_LIBRARY_2014.GLB [KLF_BORING/TEST PIT SOIL LOG]

Allwyn ENVIRONMENTAL

PROJECT NO.:	20151221
DRAWN BY:	PD
CHECKED BY:	MJM
DATE:	12/5/2014
REVISED:	12/17/2014

BORING LOG B-166

BIA N15(2-3)(3-1)(4-1)2&4
GREASEWOOD TO BURNSIDE, ARIZONA

PLATE

B-166

PLOTTED: 07/07/2015 02:04 PM BY: clbeck

BORING LOG B-167

Date Begin - End:	10/22/2014 - 10/22/2014	**Drilling Company:**	Enviro-Drill		
Logged By:	M. Cote	**Drill Crew:**	Ed & Juan		
Hor.-Vert. Datum:	NAD83	**Drilling Equipment:**	CME-75	**Hammer Type - Drop:**	63.5 kg. Auto - 762 mm.
Plunge:	-90 degrees	**Drilling Method:**	Hollow Stem Auger		
Weather:	sunny, breezy	**Exploration Diameter:**	184 mm. O.D.		

FIELD EXPLORATION

Northing: 525,812.22 (m)
Easting: 260,940.16 (m)
Ground Surface Elevation (m.): 1,941.4
Location Offset: Sta. 32+600/1.83m Lt CL
Surface Condition: Asphalt

Elevation (meters)	Depth (meters)	Graphical Log	Lithologic Description	Sample Type	Blow Counts(BC)= Uncorr. Blows/152 mm. Pocket Pen(PP)= T/m²	Recovery (NR=No Recovery)
			Field engineer measured 0.05m black asphalt; 0.05m brown asphalt			
			Field engineer measured 0.10m base course			
1941			**Poorly-graded SAND with Gravel (SP)**: fine to coarse grained, subrounded to subangular, reddish brown, moist, loose, fine angular gravel		BC=3 7 5	432 mm
	1		**Poorly-graded SAND with Silt (SP-SM)**: fine to medium grained, non-plastic, reddish yellowish brown, moist, medium dense Very loose from 0.91m bgs		BC=2 2 1	279 mm
1940						
	2				BC=2 1 2	330 mm
1939						
	3				BC=3 3 3	25 mm
1938			The exploration was terminated at approximately 3.2 m. below ground surface. The exploration was backfilled with auger cuttings and asphalt patch on October 22, 2014.			
	4					
1937						
	5					
1936						
	6					

LABORATORY RESULTS

AASHTO Symbol	Water Content (%)	Dry Unit Wt. (pcf)	Passing #4 (%)	Passing #200 (%)	Liquid Limit	Plasticity Index (NP=NonPlastic)	Additional Tests/ Remarks

GROUNDWATER LEVEL INFORMATION:
Groundwater was not encountered during drilling or after completion.

GENERAL NOTES:
Coordinates obtained from WHPacific N15 Alignment CAD file; Surface elevation provided by WHPacific.

Allwyn ENVIRONMENTAL

PROJECT NO.:	20151221
DRAWN BY:	PD
CHECKED BY:	MJM
DATE:	12/5/2014
REVISED:	12/17/2014

BORING LOG B-167

BIA N15(2-3)(3-1)(4-1)2&4
GREASEWOOD TO BURNSIDE, ARIZONA

PLATE

B-167

PAGE: 1 of 1

gINT FILE: PROJECTWISE: 20151221_n1520151221.gpj
gINT TEMPLATE: PROJECTWISE: KLF_STANDARD_GINT_LIBRARY_2014.GLB [KLF_BORING/TEST PIT SOIL LOG]

PLOTTED: 07/07/2015 02:04 PM BY: clbeck

BORING LOG B-168

Date Begin - End:	10/22/2014 - 10/22/2014	**Drilling Company:**	Enviro-Drill		
Logged By:	M. Cote	**Drill Crew:**	Ed & Juan		
Hor.-Vert. Datum:	NAD83	**Drilling Equipment:**	CME-75	**Hammer Type - Drop:**	63.5 kg. Auto - 762 mm.
Plunge:	-90 degrees	**Drilling Method:**	Hollow Stem Auger		
Weather:	sunny, breezy	**Exploration Diameter:**	184 mm. O.D.		

FIELD EXPLORATION

Northing: 525,993.27 (m)
Easting: 261,025.21 (m)
Ground Surface Elevation (m.): 1,941.1
Location Offset: Sta. 32+800/1.83m Rt CL
Surface Condition: Asphalt

Elevation (meters)	Depth (meters)	Graphical Log	Lithologic Description	Sample Type	Blow Counts(BC)= Uncorr. Blows/152 mm. Pocket Pen(PP)= T/m²	Recovery (NR=No Recovery)	AASHTO Symbol	Water Content (%)	Dry Unit Wt. (pcf)	Passing #4 (%)	Passing #200 (%)	Liquid Limit	Plasticity Index (NP=NonPlastic)	Additional Tests/ Remarks
1941	0		Field engineer measured 0.05m black asphalt; 0.03m brown asphalt											
			Field engineer measured 0.08m base course											
			Poorly-graded SAND with Silt (SP-SM): fine to coarse grained, subrounded, reddish brown, moist, loose		BC=4 5 4	457 mm	A-3(0)			97	9.1	NP	NP	
			Clayey SAND (SC): fine grained, low plasticity, reddish yellowish brown, moist, loose											
1940	1				BC=3 2 5	356 mm		8.2						
			Poorly-graded SAND with Silt (SP-SM): fine grained, non-plastic, reddish yellowish brown, dry to moist, very loose											
1939	2				BC=1 2 1	381 mm								
			Fine to medium grained, 0.03m thick lense of yellow subrounded sandstone fragmentsat 2.74m bgs		BC=2 1 1	457 mm								
1938	3													
1937	4													
1936	5													
	6													

The exploration was terminated at approximately 3.2 m. below ground surface. The exploration was backfilled with auger cuttings and asphalt patch on October 22, 2014.

GROUNDWATER LEVEL INFORMATION:
Groundwater was not encountered during drilling or after completion.
GENERAL NOTES:
Coordinates obtained from WHPacific N15 Alignment CAD file; Surface elevation provided by WHPacific.

Allwyn ENVIRONMENTAL

PROJECT NO.:	20151221
DRAWN BY:	PD
CHECKED BY:	MJM
DATE:	12/5/2014
REVISED:	12/17/2014

BORING LOG B-168

BIA N15(2-3)(3-1)(4-1)2&4
GREASEWOOD TO BURNSIDE, ARIZONA

PLATE

B-168

PAGE: 1 of 1

gINT FILE: PROJECTWISE: 20151221_n1520151221.gpj
gINT TEMPLATE: PROJECTWISE: KLF_STANDARD_GINT_LIBRARY_2014.GLB [KLF_BORING/TEST PIT SOIL LOG]

PLOTTED: 07/07/2015 02:04 PM BY: clbeck

BORING LOG B-169

Date Begin - End:	10/23/2014 - 10/23/2014	**Drilling Company:**	Enviro-Drill		
Logged By:	M. Cote	**Drill Crew:**	Ed & Juan		
Hor.-Vert. Datum:	NAD83	**Drilling Equipment:**	CME-75	**Hammer Type - Drop:**	63.5 kg. Auto - 762 mm.
Plunge:	-90 degrees	**Drilling Method:**	Hollow Stem Auger		
Weather:	sunny, breezy	**Exploration Diameter:**	184 mm. O.D.		

FIELD EXPLORATION

Northing: 526,170.54 (m)
Easting: 261,117.42 (m)
Ground Surface Elevation (m.): 1,940.4
Location Offset: Sta. 33+000/1.83m Lt CL
Surface Condition: Asphalt

Elevation (meters)	Depth (meters)	Graphical Log	Lithologic Description	Sample Type	Blow Counts(BC)= Uncorr. Blows/152 mm. Pocket Pen(PP)= T/m²	Recovery (NR=No Recovery)
			Field engineer measured 0.05m black asphalt; 0.08m brown asphalt			
			Field engineer measured 0.10m base course			
1940			**Poorly-graded SAND with Silt (SP-SM)**: fine to coarse grained, reddish brown, moist, loose, trace gravel		BC=2 7 7	457 mm
			Clayey SAND (SC): fine grained, low plasticity, brown, moist, medium dense			
	1		**Poorly-graded SAND with Silt (SP-SM)**: non-plastic to low plasticity, yellowish brown, moist, medium dense, distinct thin white line markings Very loose to loose from 0.91m bgs		BC=2 2 1	356 mm
1939						
	2				BC=3 2 3	NR
1938						
	3		Trace subrounded to rounded sandstone fragments at 2.74m bgs		BC=1 2 1	457 mm
1937						
	4					
1936						
	5					
1935						
	6					

LABORATORY RESULTS

AASHTO Symbol	Water Content (%)	Dry Unit Wt. (pcf)	Passing #4 (%)	Passing #200 (%)	Liquid Limit	Plasticity Index (NP=NonPlastic)	Additional Tests/ Remarks

The exploration was terminated at approximately 3.2 m. below ground surface. The exploration was backfilled with auger cuttings and asphalt patch on October 23, 2014.

GROUNDWATER LEVEL INFORMATION:
Groundwater was not encountered during drilling or after completion.
GENERAL NOTES:
Coordinates obtained from WHPacific N15 Alignment CAD file; Surface elevation provided by WHPacific.

Allwyn ENVIRONMENTAL

PROJECT NO.:	20151221
DRAWN BY:	PD
CHECKED BY:	MJM
DATE:	12/5/2014
REVISED:	12/17/2014

BORING LOG B-169

BIA N15(2-3)(3-1)(4-1)2&4
GREASEWOOD TO BURNSIDE, ARIZONA

PLATE

B-169

PAGE: 1 of 1

gINT FILE: PROJECTWISE: 20151221_n1520151221.gpj
gINT TEMPLATE: PROJECTWISE: KLF_STANDARD_GINT_LIBRARY_2014.GLB [KLF_BORING/TEST PIT SOIL LOG]

PLOTTED: 07/07/2015 02:04 PM BY: clbeck

BORING LOG B-170

Date Begin - End:	10/23/2014 - 10/23/2014	**Drilling Company:**	Enviro-Drill		
Logged By:	M. Cote	**Drill Crew:**	Ed & Juan		
Hor.-Vert. Datum:	NAD83	**Drilling Equipment:**	CME-75	**Hammer Type - Drop:**	63.5 kg. Auto - 762 mm.
Plunge:	-90 degrees	**Drilling Method:**	Hollow Stem Auger		
Weather:	sunny, breezy	**Exploration Diameter:**	184 mm. O.D.		

FIELD EXPLORATION

Northing: 526,325.28 (m)
Easting: 261,243.82 (m)
Ground Surface Elevation (m.): 1,939.8
Location Offset: Sta. 33+200/1.83m Rt CL
Surface Condition: Asphalt

Elevation (meters)	Depth (meters)	Graphical Log	Lithologic Description	Sample Type	Blow Counts(BC)= Uncorr. Blows/152 mm. Pocket Pen(PP)= T/m²	Recovery (NR=No Recovery)	AASHTO Symbol	Water Content (%)	Dry Unit Wt. (pcf)	Passing #4 (%)	Passing #200 (%)	Liquid Limit	Plasticity Index (NP=NonPlastic)	Additional Tests/ Remarks
			Field engineer measured 0.13m asphalt											
			Field engineer measured 0.08m base course											
1939			**Fat CLAY with Sand (CH)**: fine grained sand, medium plasticity, brown, moist, firm		BC=2 3 2	254 mm						65	46	
	1					610 mm								
1938			**Clayey SAND (SC)**: fine grained, low plasticity, reddish yellowish brown, moist											
	2		**Poorly-graded SAND with Silt (SP-SM)**: fine grained, non-plastic to low plasticity, reddish yellowish brown, moist, loose Slightly clayey at 2.29m bgs		BC=2 2 2	457 mm								
1937														
	3				BC=2 2 2	406 mm								
1936	4													
1935	5													
1934	6													

The exploration was terminated at approximately 3.2 m. below ground surface. The exploration was backfilled with auger cuttings and asphalt patch on October 23, 2014.

GROUNDWATER LEVEL INFORMATION:
Groundwater was not encountered during drilling or after completion.
GENERAL NOTES:
Coordinates obtained from WHPacific N15 Alignment CAD file; Surface elevation provided by WHPacific.

Allwyn ENVIRONMENTAL

PROJECT NO.:	20151221
DRAWN BY:	PD
CHECKED BY:	MJM
DATE:	12/5/2014
REVISED:	12/17/2014

BORING LOG B-170

BIA N15(2-3)(3-1)(4-1)2&4
GREASEWOOD TO BURNSIDE, ARIZONA

PLATE

B-170

PAGE: 1 of 1

gINT FILE: PROJECTWISE: 20151221_n1520151221.gpj
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PLOTTED: 07/07/2015 02:04 PM BY: clbeck

BORING LOG B-171

Date Begin - End:	10/23/2014 - 10/23/2014	**Drilling Company:**	Enviro-Drill		
Logged By:	M. Cote	**Drill Crew:**	Ed & Juan		
Hor.-Vert. Datum:	NAD83	**Drilling Equipment:**	CME-75	**Hammer Type - Drop:**	63.5 kg. Auto - 762 mm.
Plunge:	-90 degrees	**Drilling Method:**	Hollow Stem Auger		
Weather:	sunny, breezy	**Exploration Diameter:**	184 mm. O.D.		

FIELD EXPLORATION

Northing: 526,462.77 (m)
Easting: 261,388.85 (m)
Ground Surface Elevation (m.): 1,939.6
Location Offset: Sta. 33+400/1.83m Lt CL
Surface Condition: Asphalt

Elevation (meters)	Depth (meters)	Graphical Log	Lithologic Description	Sample Type	Blow Counts(BC)= Uncorr. Blows/152 mm. Pocket Pen(PP)= T/m²	Recovery (NR=No Recovery)	AASHTO Symbol	Water Content (%)	Dry Unit Wt. (pcf)	Passing #4 (%)	Passing #200 (%)	Liquid Limit	Plasticity Index (NP=NonPlastic)	Additional Tests/ Remarks
			Field engineer measured 0.13m asphalt											
			Field engineer measured 0.10m base course											
1939			**Lean CLAY (CL)**: medium plasticity, brown, moist, firm, trace fine sand		BC=3 2 5	279 mm						44	28	
	1				BC=2 2 3	152 mm								
1938			**Silty SAND (SM)**: fine grained, low plasticity, yellowish brown, moist, loose											
	2				BC=3 3 4	457 mm								
1937			Reddish yellowish brown, dry to moist, very dense, laminated, weakly cemented from 2.74m bgs		BC=24 50/4"	254 mm								
	3													
1936														
	4													
1935														
	5													
1934														
	6													

The exploration was terminated at approximately 3.2 m. below ground surface. The exploration was backfilled with auger cuttings and asphalt patch on October 23, 2014.

GROUNDWATER LEVEL INFORMATION:
Groundwater was not encountered during drilling or after completion.

GENERAL NOTES:
Coordinates obtained from WHPacific N15 Alignment CAD file; Surface elevation provided by WHPacific.

Allwyn ENVIRONMENTAL

PROJECT NO.:	20151221
DRAWN BY:	PD
CHECKED BY:	MJM
DATE:	12/5/2014
REVISED:	12/17/2014

BORING LOG B-171

BIA N15(2-3)(3-1)(4-1)2&4
GREASEWOOD TO BURNSIDE, ARIZONA

PLATE

B-171

gINT FILE: PROJECTWISE: 20151221_n1520151221.gpj
gINT TEMPLATE: PROJECTWISE: KLF_STANDARD_GINT_LIBRARY_2014.GLB [KLF_BORING/TEST PIT SOIL LOG]

PLOTTED: 07/07/2015 02:04 PM BY: clbeck

BORING LOG B-172

Date Begin - End:	10/23/2014 - 10/23/2014	**Drilling Company:**	Enviro-Drill		
Logged By:	M. Cote	**Drill Crew:**	Ed & Juan		
Hor.-Vert. Datum:	NAD83	**Drilling Equipment:**	CME-75	**Hammer Type - Drop:**	63.5 kg. Auto - 762 mm.
Plunge:	-90 degrees	**Drilling Method:**	Hollow Stem Auger		
Weather:	sunny, breezy	**Exploration Diameter:**	184 mm. O.D.		

FIELD EXPLORATION

Northing: 526,591.83 (m)
Easting: 261,541.66 (m)
Ground Surface Elevation (m.): 1,939.9
Location Offset: Sta. 33+600/1.83m Rt CL
Surface Condition: Asphalt

Elevation (meters)	Depth (meters)	Graphical Log	Lithologic Description	Sample Type	Blow Counts(BC)= Uncorr. Blows/152 mm. Pocket Pen(PP)= T/m²	Recovery (NR=No Recovery)
			Field engineer measured 0.13m asphalt			
			Field engineer measured 0.08m base course			
			Poorly-graded SAND with Gravel (SP): fine to coarse grained, subrounded, reddish brown, moist, fine subangular to subrounded gravel		BC=7 4 5	203 mm
1939			**Lean CLAY (CL)**: high plasticity, reddish brown, dry, hard			
	1				BC=2 4 3	279 mm
1938			**Sandy Lean CLAY (CL)**: fine grained sand, trace patches of white sandstone, laminated		BC=4 5 8	102 mm
1937	3				BC=3 6 4	
1936	4					
1935	5					
1934	6					

LABORATORY RESULTS

AASHTO Symbol	Water Content (%)	Dry Unit Wt. (pcf)	Passing #4 (%)	Passing #200 (%)	Liquid Limit	Plasticity Index (NP=NonPlastic)	Additional Tests/ Remarks
					38	24	

The exploration was terminated at approximately 3.2 m. below ground surface. The exploration was backfilled with auger cuttings and asphalt patch on October 23, 2014.

GROUNDWATER LEVEL INFORMATION:
Groundwater was not encountered during drilling or after completion.

GENERAL NOTES:
Coordinates obtained from WHPacific N15 Alignment CAD file; Surface elevation provided by WHPacific.

Allwyn ENVIRONMENTAL

PROJECT NO.:	20151221
DRAWN BY:	PD
CHECKED BY:	MJM
DATE:	12/5/2014
REVISED:	12/17/2014

BORING LOG B-172

BIA N15(2-3)(3-1)(4-1)2&4
GREASEWOOD TO BURNSIDE, ARIZONA

PLATE

B-172

gINT FILE: PROJECTWISE: 20151221_n1520151221.gpj
gINT TEMPLATE: PROJECTWISE: KLF_STANDARD_GINT_LIBRARY_2014.GLB [KLF_BORING/TEST PIT SOIL LOG]

PLOTTED: 07/07/2015 02:04 PM BY: clbeck

BORING LOG B-173

Date Begin - End:	10/23/2014 - 10/23/2014	**Drilling Company:**	Enviro-Drill		
Logged By:	M. Cote	**Drill Crew:**	Ed & Juan		
Hor.-Vert. Datum:	NAD83	**Drilling Equipment:**	CME-75	**Hammer Type - Drop:**	63.5 kg. Auto - 762 mm.
Plunge:	-90 degrees	**Drilling Method:**	Hollow Stem Auger		
Weather:	sunny, breezy	**Exploration Diameter:**	184 mm. O.D.		

FIELD EXPLORATION

Northing: 526,725.54 (m)
Easting: 261,690.43 (m)
Ground Surface Elevation (m.): 1,940.7
Location Offset: Sta. 33+800/1.83m Lt CL
Surface Condition: Asphalt

Elevation (meters)	Depth (meters)	Graphical Log	Lithologic Description	Sample Type	Blow Counts(BC)= Uncorr. Blows/152 mm. Pocket Pen(PP)= T/m²	Recovery (NR=No Recovery)	AASHTO Symbol	Water Content (%)	Dry Unit Wt. (pcf)	Passing #4 (%)	Passing #200 (%)	Liquid Limit	Plasticity Index (NP=NonPlastic)	Additional Tests/ Remarks
			Field engineer measured 0.08m asphalt											
			Field engineer measured 0.13m base course											
			Clayey SAND (SC): fine to coarse grained, subrounded to rounded, reddish brown, moist, loose		BC=3 3 3	381 mm	A-6(3)			94	42	29	17	**R-Value=** 13 Bulk sample obtained from depth of 0.3 to 1.52m bgs
1940			**Silty SAND (SM)**: fine grained, medium plasticity, redddish brown to yellowish brown, moist, loose											
	1		Reddish brown at 0.91m bgs		BC=2 2 1	229 mm								
1939			**Clayey SAND (SC)**: fine grained, low to medium plasticity, reddish brown, moist, loose, weakly cemented, trace angluar fine gravel, laminated											
	2				BC=3 3 3	127 mm								
1938			Sanstone fragments at 2.74m bgs		BC=3 4 3	254 mm								
	3													
1937	4													
1936	5													
1935	6													

LABORATORY RESULTS

The exploration was terminated at approximately 3.2 m. below ground surface. The exploration was backfilled with auger cuttings and asphalt patch on October 23, 2014.

GROUNDWATER LEVEL INFORMATION:
Groundwater was not encountered during drilling or after completion.

GENERAL NOTES:
Coordinates obtained from WHPacific N15 Alignment CAD file; Surface elevation provided by WHPacific.

Allwyn ENVIRONMENTAL

PROJECT NO.:	20151221
DRAWN BY:	PD
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DATE:	12/5/2014
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BORING LOG B-173

BIA N15(2-3)(3-1)(4-1)2&4
GREASEWOOD TO BURNSIDE, ARIZONA

PLATE

B-173

gINT FILE: PROJECTWISE: 20151221_n1520151221.gpj
gINT TEMPLATE: PROJECTWISE: KLF_STANDARD_GINT_LIBRARY_2014.GLB [KLF_BORING/TEST PIT SOIL LOG]

PLOTTED: 07/07/2015 02:04 PM BY: clbeck

BORING LOG B-174

Date Begin - End:	10/23/2014 - 10/23/2014	**Drilling Company:**	Enviro-Drill		
Logged By:	M. Cote	**Drill Crew:**	Ed & Juan		
Hor.-Vert. Datum:	NAD83	**Drilling Equipment:**	CME-75	**Hammer Type - Drop:**	63.5 kg. Auto - 762 mm.
Plunge:	-90 degrees	**Drilling Method:**	Hollow Stem Auger		
Weather:	sunny, breezy	**Exploration Diameter:**	184 mm. O.D.		

FIELD EXPLORATION

Northing: 526,854.27 (m)
Easting: 261,843.53 (m)
Ground Surface Elevation (m.): 1,940.4
Location Offset: Sta. 34+000/1.83m Rt CL
Surface Condition: Asphalt

LABORATORY RESULTS

Elevation (meters)	Depth (meters)	Graphical Log	Lithologic Description	Sample Type	Blow Counts(BC)= Uncorr. Blows/152 mm. Pocket Pen(PP)= T/m²	Recovery (NR=No Recovery)	AASHTO Symbol	Water Content (%)	Dry Unit Wt. (pcf)	Passing #4 (%)	Passing #200 (%)	Liquid Limit	Plasticity Index (NP=NonPlastic)	Additional Tests/ Remarks
1940	0		Field engineer measured 0.10m asphalt											
			Field engineer measured 0.10m base course											
			Silty SAND (SM): fine grained, low plasticity, reddish yellowish brown, moist, loose, trace subangular gravel		BC=7 5 3	279 mm								
	1				BC=3 4 4	356 mm								
1939														
	2				BC=4 5 5	330 mm								
1938														
	3				BC=5 5 6	305 mm								
1937														
	4													
1936														
	5													
1935														
	6													

The exploration was terminated at approximately 3.2 m. below ground surface. The exploration was backfilled with auger cuttings and asphalt patch on October 23, 2014.

GROUNDWATER LEVEL INFORMATION:
Groundwater was not encountered during drilling or after completion.

GENERAL NOTES:
Coordinates obtained from WHPacific N15 Alignment CAD file; Surface elevation provided by WHPacific.

Allwyn ENVIRONMENTAL

PROJECT NO.:	20151221
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DATE:	12/5/2014
REVISED:	12/17/2014

BORING LOG B-174

BIA N15(2-3)(3-1)(4-1)2&4
GREASEWOOD TO BURNSIDE, ARIZONA

PLATE

B-174

PAGE: 1 of 1

gINT FILE: PROJECTWISE: 20151221_n1520151221.gpj
gINT TEMPLATE: PROJECTWISE: KLF_STANDARD_GINT_LIBRARY_2014.GLB [KLF_BORING/TEST PIT SOIL LOG]

APPENDIX C

Laboratory Test Data

Exploration ID	Depth (m.)	Sample Description	Water Content (%)	Dry Unit Wt. (pcf)	Sieve Analysis (%)			Atterberg Limits			Additional Tests
					Passing 3/4"	Passing #4	Passing #200	Liquid Limit	Plastic Limit	Plasticity Index	
B-1	0.15	SILTY SAND (A-2-4)(0)	4.9		100	97	17	NP	NP	NP	**R-Value=** 54
B-1	0.91	POORLY GRADED SAND (A-3)(0)	3.7			100	3.2	NP	NP	NP	
B-2	1.83	POORLY GRADED SAND (A-3)(0)	4.8			100	1.3	NP	NP	NP	
B-3	2.74	POORLY GRADED SAND WITH CLAY (A-2-6)(0)	16.2			100	9.9	32	19	13	
B-4	0.91	POORLY GRADED SAND (A-3)(0)	3.0			100	3.5	NP	NP	NP	
B-5	0.3	POORLY GRADED SAND WITH CLAY (A-2-7)(0)	23.6			99	8.1	71	20	51	
B-6	0.3	SILTY SAND (A-2-4)(0)	4.6			96	31	NP	NP	NP	**R-Value=** 34
B-7	2.74	POORLY GRADED SAND WITH SILT (A-3)(0)	7.0			97	8.1	NP	NP	NP	
B-9	0.3	POORLY GRADED SAND WITH CLAY (A-2-6)(0)	7.3			100	10	28	16	12	
B-11	0.3	POORLY GRADED SAND WITH CLAY (A-2-4)(0)	7.6			100	12	24	16	8	
B-13	1.37	POORLY GRADED SAND WITH SILT (A-3)(0)	4.2			100	6.2	NP	NP	NP	
B-15	1.83	POORLY GRADED SAND (A-3)(0)	3.6			99	4.4	NP	NP	NP	
B-18	0.91	POORLY GRADED SAND (A-3)(0)	12.4			98	2.7	NP	NP	NP	
B-19	0.3	POORLY GRADED SAND (A-3)(0)	9.8			100	5.0	NP	NP	NP	
B-21	0.3	CLAYEY SAND (A-2-6)(1)	10.7		100	89	32	29	15	14	**R-Value=** 25
B-23	0.3	POORLY GRADED SAND WITH CLAY (A-2-6)(0)	10.6			97	9.1	30	14	16	
B-25	1.83	POORLY GRADED SAND WITH CLAY (A-2-7)(0)	14.0			99	7.3	41	16	25	
B-26	0.3	CLAYEY SAND (A-6)(3)	9.0		100	91	38	36	14	22	**R-Value=** 21
B-27	0.91	POORLY GRADED SAND WITH CLAY (A-2-6)(0)	12.0			100	6.5	34	14	20	
B-29	0.3	POORLY GRADED SAND WITH CLAY (A-2-6)(0)	17.4			100	8.0	31	13	18	
B-30	0.3		13.9								
B-30	0.91	CLAYEY SAND (A-2-6)(0)				100	35	25	13	12	
B-31	0.3	CLAYEY SAND (A-6)(3)	10.3		100	90	38	34	15	19	**R-Value=** 16
B-33	0.3	CLAYEY SAND (A-6)(1)				97	36	28	16	12	
B-33	0.91		12.3								
B-36	0.3	CLAYEY SAND (A-2-6)(1)	15.0		100	96	26	31	16	15	**R-Value=** 22
B-41	0.3	SILTY SAND (A-2-4)(0)	5.6		100	91	22	NP	NP	NP	**R-Value=** 41
B-47	0.91		10.3								

Refer to the Geotechnical Evaluation Report or the supplemental plates for the method used for the testing performed above.
NP = NonPlastic

Allwyn ENVIRONMENTAL

PROJECT NO.: 20151221
DRAWN BY: PD
CHECKED BY: MJM
DATE: 12/5/2014
REVISED: 12/17/2014

LABORATORY TEST RESULT SUMMARY

BIA N15(2-3)(3-1)(4-1)2&4
GREASEWOOD TO BURNSIDE, ARIZONA

TABLE
C-1

Exploration ID	Depth (m.)	Sample Description	Water Content (%)	Dry Unit Wt. (pcf)	Sieve Analysis (%)			Atterberg Limits			Additional Tests
					Passing 3/4"	Passing #4	Passing #200	Liquid Limit	Plastic Limit	Plasticity Index	
B-47	1.83	SILTY SAND (A-2-4)(0)				100	18	20	18	2	
B-51	0.3	SILTY SAND (A-2-4)(0)	9.0			95	29	NP	NP	NP	**R-Value=** 21
B-54	1.83		7.8								
B-56	0.3	CLAYEY SAND (A-2-4)(0)			100	91	33	25	15	10	**R-Value=** 27
B-60	1.83		4.8								
B-68	1.83	POORLY GRADED SAND (A-2-4)(0)	9.1		100	96	4.5	23	20	3	
B-69	0.3	CLAYEY SAND (A-2-6)(0)			100	87	26	29	15	14	**R-Value=** 19
B-69	6.1	POORLY GRADED SAND (A-3)(0)	4.7			100	3.2	NP	NP	NP	
B-69	10.06	POORLY GRADED SAND (A-3)(0)	5.8		96	86	3.5	NP	NP	NP	
B-71	0.91	POORLY GRADED SAND WITH SILT (A-3)(0)	10.0			96	6.4	NP	NP	NP	**R-Value=** 68
B-71	5.49	POORLY GRADED SAND (A-3)(0)	6.8		100	91	3.9	NP	NP	NP	
B-72	0.3	SILTY SAND (A-2-4)(0)			100	89	17	NP	NP	NP	
B-74	1.83		19.5								
B-75	2.74							63	25	38	
B-76	0.46	SILTY SAND (A-2-4)(0)				100	18	NP	NP	NP	
B-76	3.66		10.1								
B-81	0.3	CLAYEY SAND (A-2-4)(0)			100	94	26	25	17	8	**R-Value=** 53
B-85	0.3	SILTY SAND (A-2-4)(0)			100	92	20	NP	NP	NP	**R-Value=** 65
B-86	2.74		4.8								
B-90	0.91		11.6								
B-90	2.74	SANDY FAT CLAY (A-7-6)(15)				100	59	67	24	43	
B-91	0.3	CLAYEY SAND (A-2-6)(0)			100	97	30	28	16	12	**R-Value=** 15
B-92	0.3					100	32				
B-92	0.91		10.6								
B-93	1.83	POORLY GRADED SAND WITH SILT (A-2-4)(0)				99	11	NP	NP	NP	
B-93	2.74		3.5								
B-96	0.3	SILTY, CLAYEY SAND (A-2-4)(0)			100	98	26	23	18	5	**R-Value=** 38
B-101	0.3	SILTY, CLAYEY SAND (A-4)(1)				100	40	22	16	6	

Refer to the Geotechnical Evaluation Report or the supplemental plates for the method used for the testing performed above.
NP = NonPlastic

Allwyn ENVIRONMENTAL

PROJECT NO.: 20151221
DRAWN BY: PD
CHECKED BY: MJM
DATE: 12/5/2014
REVISED: 12/17/2014

LABORATORY TEST RESULT SUMMARY

BIA N15(2-3)(3-1)(4-1)2&4
GREASEWOOD TO BURNSIDE, ARIZONA

TABLE
C-2

Exploration ID	Depth (m.)	Sample Description	Water Content (%)	Dry Unit Wt. (pcf)	Sieve Analysis (%)			Atterberg Limits			Additional Tests
					Passing 3/4"	Passing #4	Passing #200	Liquid Limit	Plastic Limit	Plasticity Index	
B-101	0.91		7.7								
B-106	0.3		7.7								
B-106	0.91							NP	NP	NP	
B-111	0.3	CLAYEY SAND (A-2-4)(0)			100	97	34	27	17	10	**R-Value=** 34
B-116	0.3	CLAYEY SAND (A-2-4)(0)			100	98	34	27	17	10	**R-Value=** 16
B-116	1.83		14.7								
B-116	2.74	SILTY, CLAYEY SAND (A-2-4)(0)					21	23	19	4	
B-119	0.91		6.7								
B-119	1.83	SANDY LEAN CLAY (A-6)(7)				100	52	34	14	20	
B-121	0.3	CLAYEY SAND (A-4)(0)			100	97	36	25	16	9	**R-Value=** 25
B-121	1.83		4.8								
B-121	2.74	SILTY SAND (A-4)(0)				100	45	NP	NP	NP	
B-129	0.3		8.3								
B-129	0.91	SILTY SAND (A-2-4)(0)				100	25	NP	NP	NP	
B-134	0.3	SILTY, CLAYEY SAND (A-2-4)(0)				100	32	23	16	7	
B-134	0.91		8.8								
B-136	0.3	CLAYEY SAND (A-4)(2)			100	96	43	26	16	10	**R-Value=** 17
B-138	0.3		12.8								
B-138	0.91	SANDY LEAN CLAY (A-6)(4)				100	53	28	17	11	
B-142	0.91		9.0								
B-142	1.83	SILTY SAND (A-2-4)(0)				100	35	NP	NP	NP	
B-146	0.3		2.9								
B-151	0.3	CLAYEY SAND (A-6)(5)			100	97	43	34	13	21	**R-Value=** 17
B-153	1.83		7.6								
B-153	2.74	SILTY, CLAYEY SAND (A-4)(1)					39	24	20	4	
B-160	0.3		7.2								
B-160	0.91	SILTY SAND (A-2-4)(0)				100	26	NP	NP	NP	
B-165	1.83		5.6								

Refer to the Geotechnical Evaluation Report or the supplemental plates for the method used for the testing performed above.
NP = NonPlastic

Allwyn ENVIRONMENTAL

PROJECT NO.: 20151221
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DATE: 12/5/2014
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LABORATORY TEST RESULT SUMMARY

BIA N15(2-3)(3-1)(4-1)2&4
GREASEWOOD TO BURNSIDE, ARIZONA

TABLE
C-3

Exploration ID	Depth (m.)	Sample Description	Water Content (%)	Dry Unit Wt. (pcf)	Sieve Analysis (%)			Atterberg Limits			Additional Tests
					Passing 3/4"	Passing #4	Passing #200	Liquid Limit	Plastic Limit	Plasticity Index	
B-168	0.3	POORLY GRADED SAND WITH SILT (A-3)(0)				97	9.1	NP	NP	NP	
B-168	0.91		8.2								
B-170	0.3							65	19	46	
B-171	0.3							44	16	28	
B-172	0.3							38	14	24	
B-173	0.3	CLAYEY SAND (A-6)(3)			100	94	42	29	12	17	**R-Value=** 13

Refer to the Geotechnical Evaluation Report or the supplemental plates for the method used for the testing performed above.
NP = NonPlastic

Allwyn ENVIRONMENTAL

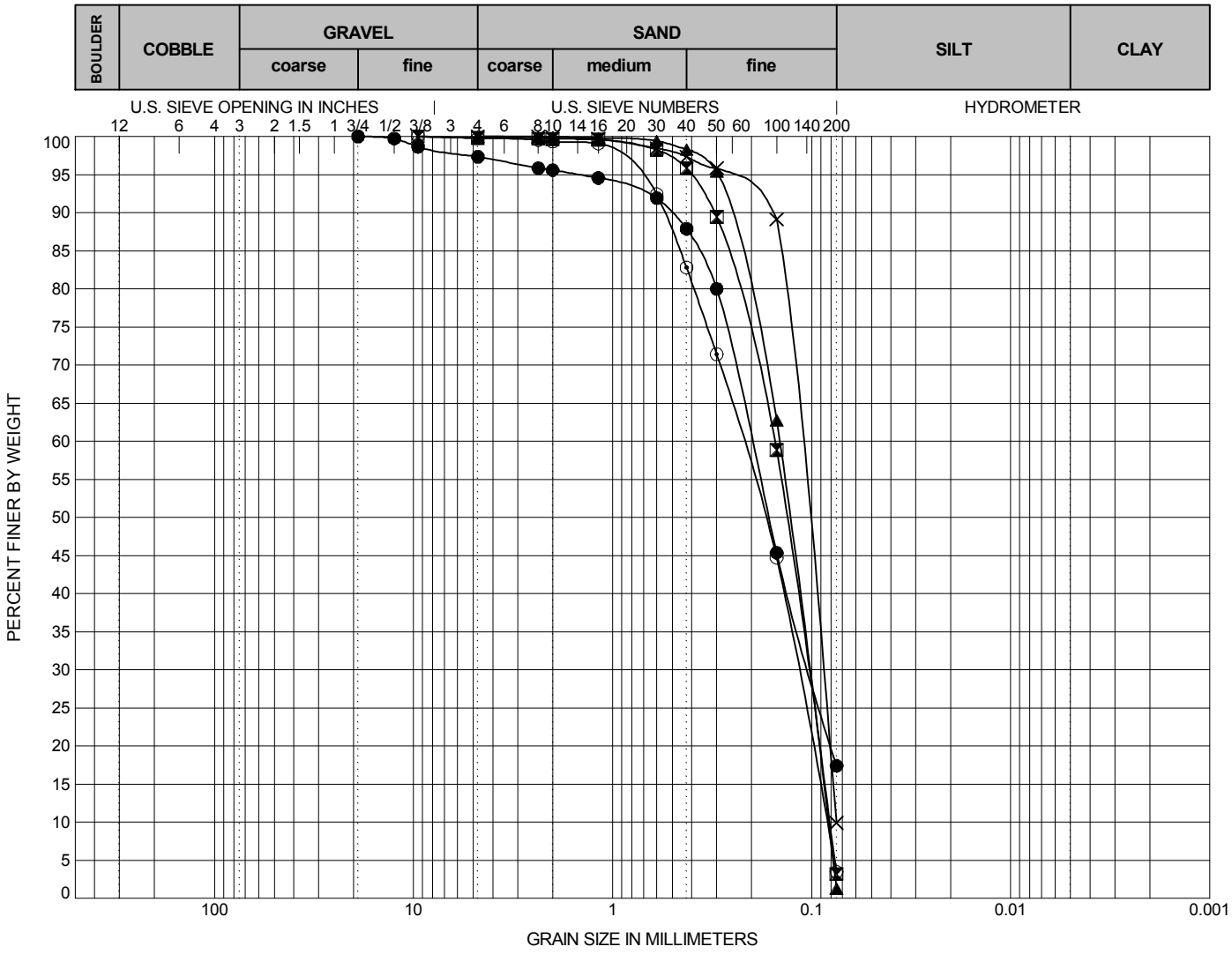
PROJECT NO.: 20151221
DRAWN BY: PD
CHECKED BY: MJM
DATE: 12/5/2014
REVISED: 12/17/2014

LABORATORY TEST RESULT SUMMARY

BIA N15(2-3)(3-1)(4-1)2&4
GREASEWOOD TO BURNSIDE, ARIZONA

TABLE
C-4

PLOTTED: 12/19/2014 01:28 PM BY: mcote



Exploration ID		Depth (m.)	Sample Description	LL	PL	PI
●	B-1	0.15	SILTY SAND (A-2-4)	NP	NP	NP
⊠	B-1	0.91	POORLY GRADED SAND (A-3)	NP	NP	NP
▲	B-2	1.83	POORLY GRADED SAND (A-3)	NP	NP	NP
×	B-3	2.74	POORLY GRADED SAND with CLAY (A-2-6)	32	19	13
⊙	B-4	0.91	POORLY GRADED SAND (A-3)	NP	NP	NP

Exploration ID		Depth (m.)	D_{100}	D_{60}	D_{30}	D_{10}	Cc	Cu	Passing 3/4"	Passing #4	Passing #200	%Silt	%Clay
●	B-1	0.15	19	0.201	0.103	NM	NM	NM	100	97	17	NM	NM
⊠	B-1	0.91	9.5	0.154	0.105	0.082	0.87	1.89		100	3.2	NM	NM
▲	B-2	1.83	4.75	0.145	0.104	0.083	0.89	1.76		100	1.3	NM	NM
×	B-3	2.74	4.75	0.116	0.089	0.075	0.92	1.55		100	9.9	NM	NM
⊙	B-4	0.91	9.5	0.223	0.117	0.084	0.73	2.67		100	3.5	NM	NM

Coefficients of Uniformity - $C_u = D_{60} / D_{10}$
Coefficients of Curvature - $C_C = (D_{30})^2 / D_{60} D_{10}$
D_{60} = Grain diameter at 60% passing
D_{30} = Grain diameter at 30% passing
D_{10} = Grain diameter at 10% passing

Sieve Analysis and Hydrometer Analysis testing performed in general accordance with ASTM D422
NP = Nonplastic
NM = Not Measured

Allwyn ENVIRONMENTAL

PROJECT NO.:	20151221
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DATE:	12/5/2014
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SIEVE ANALYSIS

BIA N15(2-3)(3-1)(4-1)2&4
GREASEWOOD TO BURNSIDE, ARIZONA

PLATE

C-5

gINT FILE: G:\geotech\projects\20151221 - Whp-Bia N152.0 Technical Information\2.4 - Field Activity Records\20151221_n15.gpj
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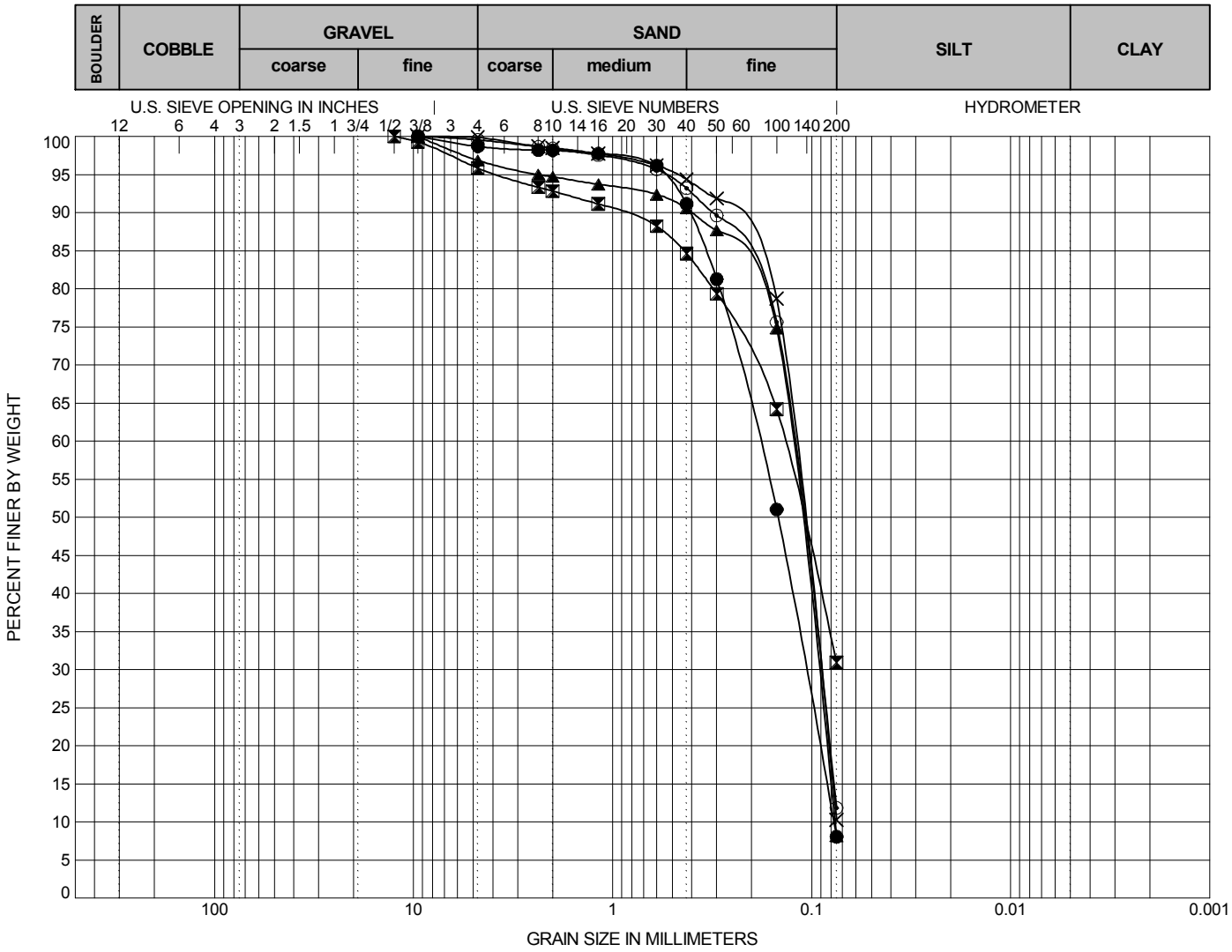

Exploration ID		Depth (m.)	Sample Description	LL	PL	PI
●	B-5	0.3	POORLY GRADED SAND with CLAY (A-2-7)	71	20	51
⊠	B-6	0.3	SILTY SAND (A-2-4)	NP	NP	NP
▲	B-7	2.74	POORLY GRADED SAND with SILT (A-3)	NP	NP	NP
×	B-9	0.3	POORLY GRADED SAND with CLAY (A-2-6)	28	16	12
⊙	B-11	0.3	POORLY GRADED SAND with CLAY (A-2-4)	24	16	8

Exploration ID		Depth (m.)	D_{100}	D_{60}	D_{30}	D_{10}	Cc	Cu	Passing 3/4"	Passing #4	Passing #200	%Silt	%Clay
●	B-5	0.3	9.5	0.184	0.107	0.077	0.80	2.38		99	8.1	NM	NM
⊠	B-6	0.3	12.5	0.137	NM	NM	NM	NM		96	31	NM	NM
▲	B-7	2.74	9.5	0.129	0.094	0.076	0.90	1.68		97	8.1	NM	NM
×	B-9	0.3	9.5	0.124	0.092	NM	0.90	1.66		100	10	NM	NM
⊙	B-11	0.3	9.5	0.127	0.091	NM	0.90	1.72		100	12	NM	NM

Coefficients of Uniformity - $C_u = D_{60} / D_{10}$
Coefficients of Curvature - $C_C = (D_{30})^2 / D_{60} D_{10}$
D_{60} = Grain diameter at 60% passing
D_{30} = Grain diameter at 30% passing
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Allwyn ENVIRONMENTAL

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SIEVE ANALYSIS

BIA N15(2-3)(3-1)(4-1)2&4
GREASEWOOD TO BURNSIDE, ARIZONA

PLATE

C-6

gINT FILE: G:\geotech\projects\20151221 - Whp-Bia N152.0 Technical Information\2.4 - Field Activity Records\20151221_n15.gpj
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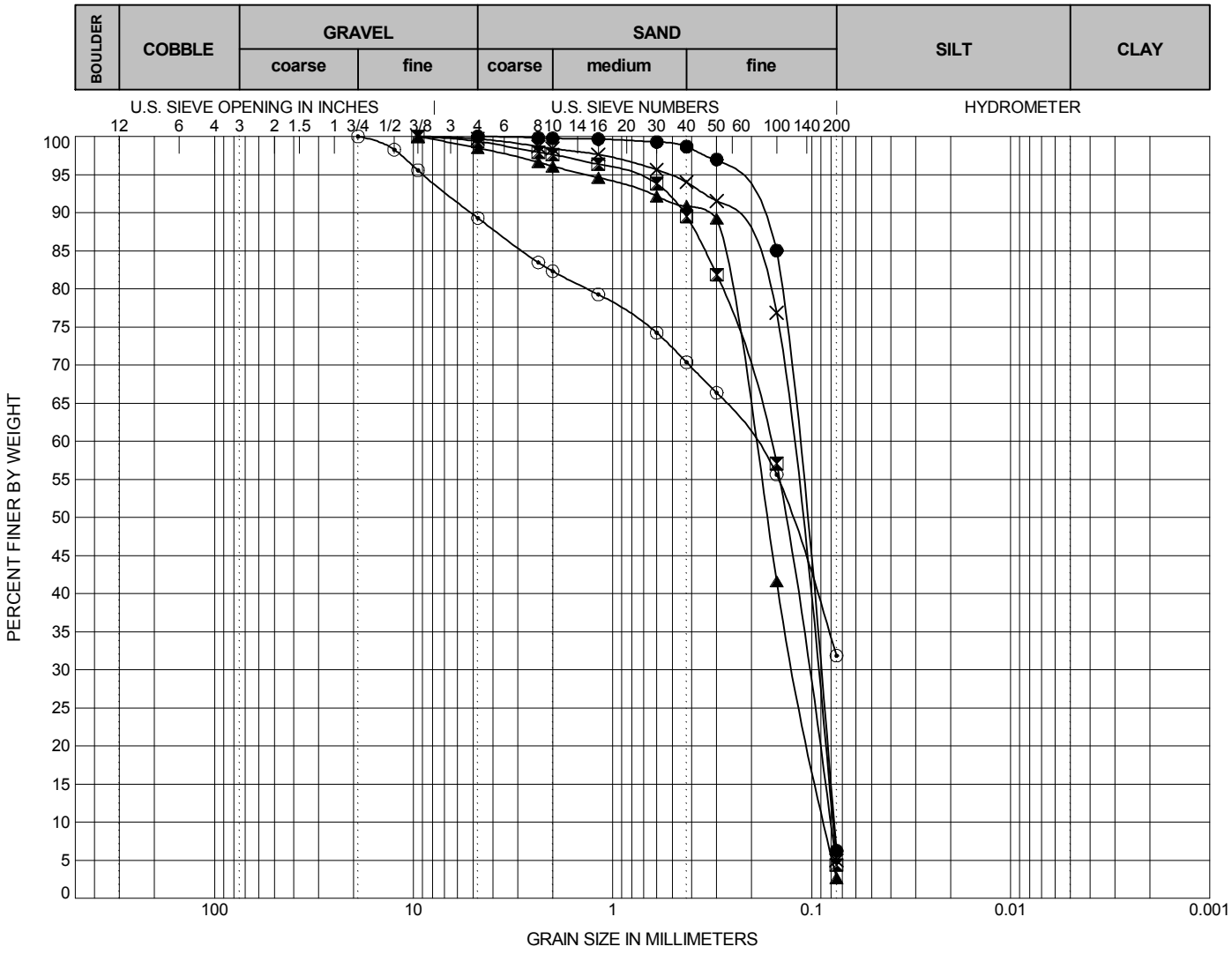

Exploration ID		Depth (m.)	Sample Description	LL	PL	PI
●	B-13	1.37	POORLY GRADED SAND with SILT (A-3)	NP	NP	NP
⊠	B-15	1.83	POORLY GRADED SAND (A-3)	NP	NP	NP
▲	B-18	0.91	POORLY GRADED SAND (A-3)	NP	NP	NP
×	B-19	0.3	POORLY GRADED SAND (A-3)	NP	NP	NP
⊙	B-21	0.3	CLAYEY SAND (A-2-6)	29	15	14

Exploration ID		Depth (m.)	D_{100}	D_{60}	D_{30}	D_{10}	Cc	Cu	Passing 3/4"	Passing #4	Passing #200	%Silt	%Clay
●	B-13	1.37	4.75	0.12	0.092	0.078	0.92	1.55		100	6.2	NM	NM
⊠	B-15	1.83	9.5	0.163	0.105	0.081	0.84	2.01		99	4.4	NM	NM
▲	B-18	0.91	9.5	0.196	0.122	0.085	0.89	2.29		98	2.7	NM	NM
×	B-19	0.3	9.5	0.128	0.095	0.079	0.91	1.62		100	5.0	NM	NM
⊙	B-21	0.3	19	0.199	NM	NM	NM	NM	100	89	32	NM	NM

Coefficients of Uniformity - $C_u = D_{60} / D_{10}$

Coefficients of Curvature - $C_C = (D_{30})^2 / D_{60} D_{10}$

D_{60} = Grain diameter at 60% passing

D_{30} = Grain diameter at 30% passing

D_{10} = Grain diameter at 10% passing

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SIEVE ANALYSIS

BIA N15(2-3)(3-1)(4-1)2&4
GREASEWOOD TO BURNSIDE, ARIZONA

PLATE

C-7

gINT FILE: G:\geotech\projects\20151221 - Whp-Bia N152.0 Technical Information\2.4 - Field Activity Records\20151221_n15.gpj
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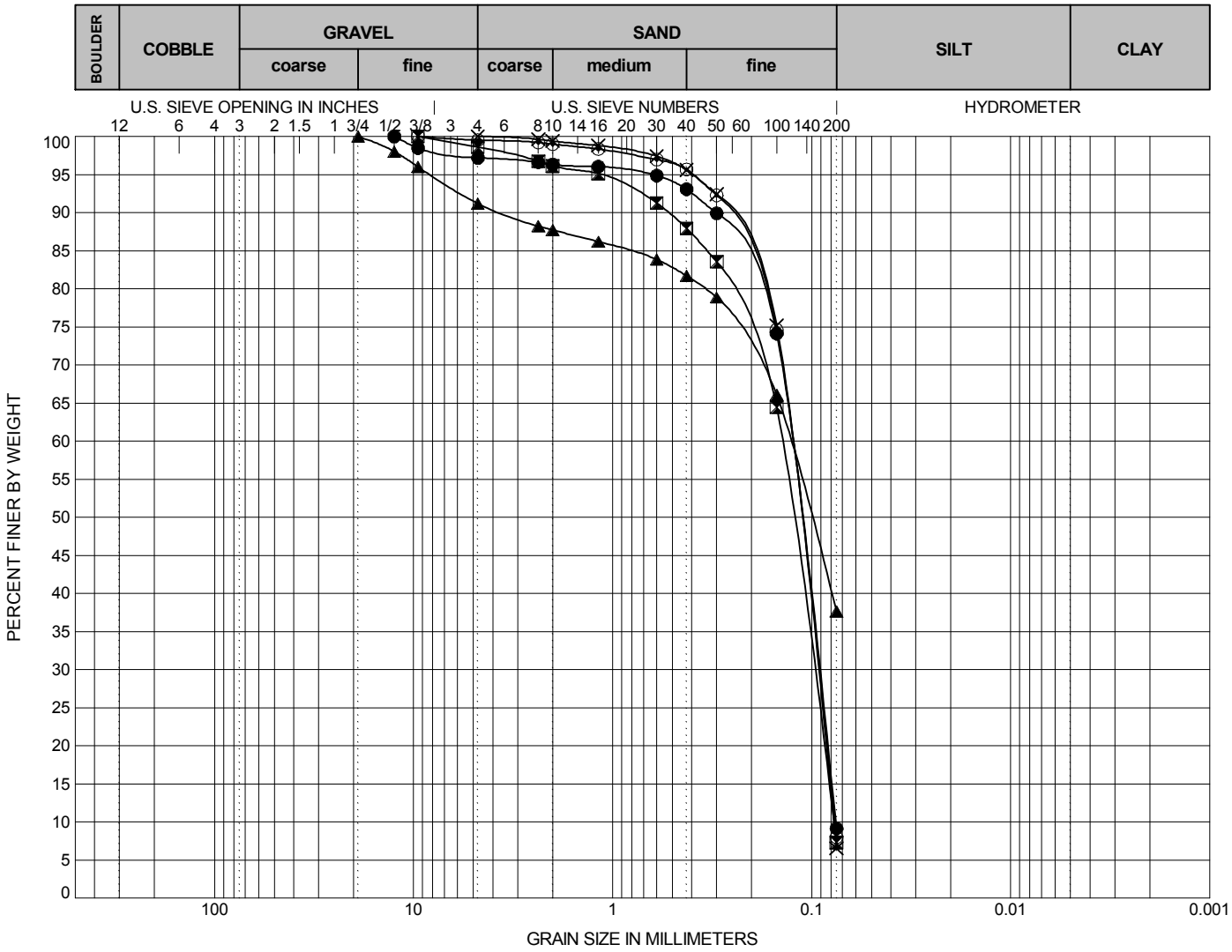

Exploration ID		Depth (m.)	Sample Description	LL	PL	PI
●	B-23	0.3	POORLY GRADED SAND with CLAY (A-2-6)	30	14	16
⊠	B-25	1.83	POORLY GRADED SAND with CLAY (A-2-7)	41	16	25
▲	B-26	0.3	CLAYEY SAND (A-6)	36	14	22
×	B-27	0.91	POORLY GRADED SAND with CLAY (A-2-6)	34	14	20
⊙	B-29	0.3	POORLY GRADED SAND with CLAY (A-2-6)	31	13	18

Exploration ID		Depth (m.)	D_{100}	D_{60}	D_{30}	D_{10}	Cc	Cu	Passing 3/4"	Passing #4	Passing #200	%Silt	%Clay
●	B-23	0.3	12.5	0.129	0.094	0.076	0.90	1.71		97	9.1	NM	NM
⊠	B-25	1.83	9.5	0.142	0.099	0.078	0.89	1.83		99	7.3	NM	NM
▲	B-26	0.3	19	0.129	NM	NM	NM	NM	100	91	38	NM	NM
×	B-27	0.91	4.75	0.129	0.095	0.078	0.90	1.66		100	6.5	NM	NM
⊙	B-29	0.3	9.5	0.129	0.094	0.077	0.90	1.68		100	8.0	NM	NM

Coefficients of Uniformity - $C_u = D_{60} / D_{10}$
Coefficients of Curvature - $C_C = (D_{30})^2 / D_{60} D_{10}$
D_{60} = Grain diameter at 60% passing
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SIEVE ANALYSIS

BIA N15(2-3)(3-1)(4-1)2&4
GREASEWOOD TO BURNSIDE, ARIZONA

PLATE

C-8

gINT FILE: G:\geotech\projects\20151221 - Whp-Bia N152.0 Technical Information\2.4 - Field Activity Records\20151221_n15.gpj
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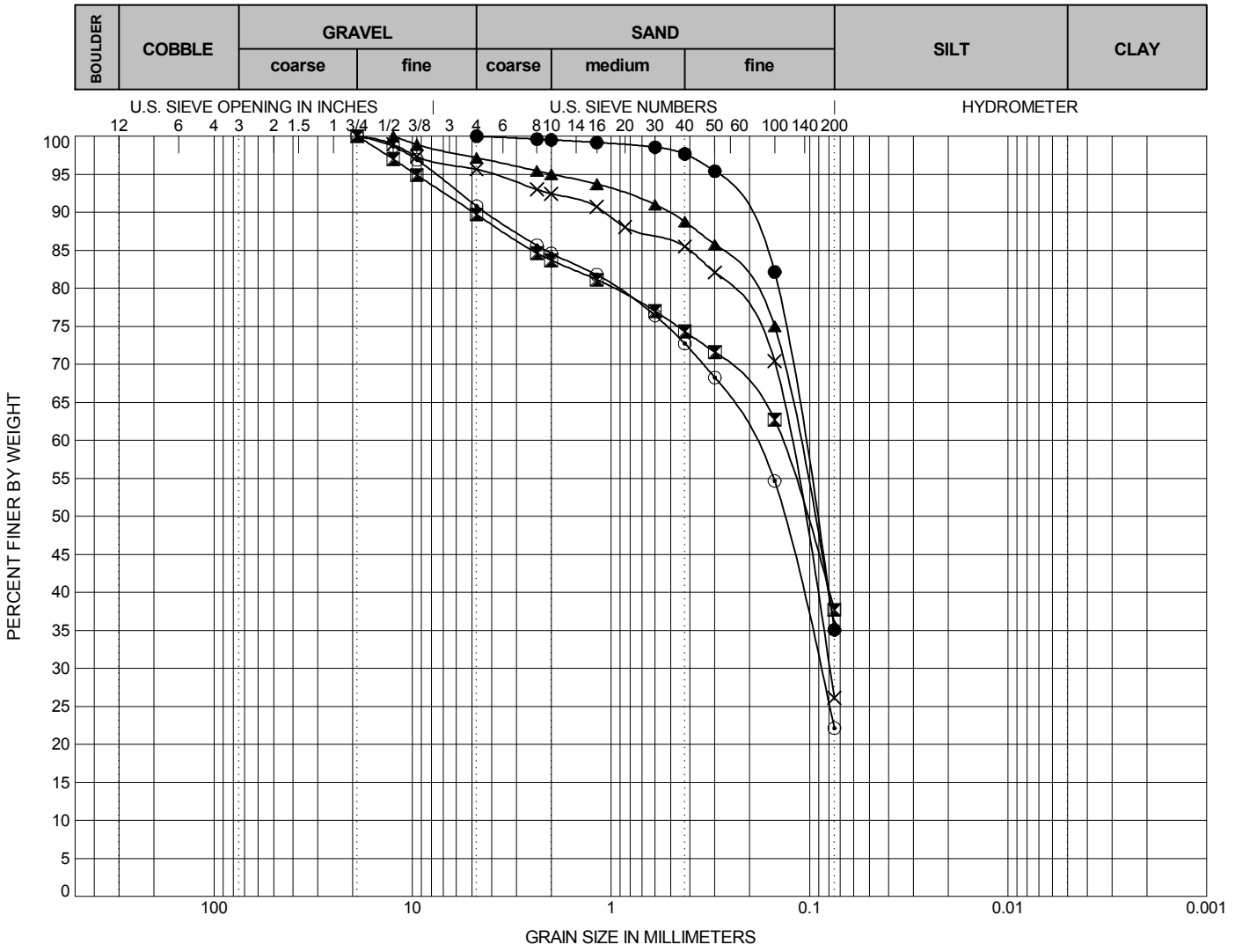

Exploration ID		Depth (m.)	Sample Description	LL	PL	PI
●	B-30	0.91	CLAYEY SAND (A-2-6)	25	13	12
⊠	B-31	0.3	CLAYEY SAND (A-6)	34	15	19
▲	B-33	0.3	CLAYEY SAND (A-6)	28	16	12
×	B-36	0.3	CLAYEY SAND (A-2-6)	31	16	15
⊙	B-41	0.3	SILTY SAND (A-2-4)	NP	NP	NP

Exploration ID		Depth (m.)	D_{100}	D_{60}	D_{30}	D_{10}	Cc	Cu	Passing 3/4"	Passing #4	Passing #200	%Silt	%Clay
●	B-30	0.91	4.75	0.108	NM	NM	NM	NM		100	35	NM	NM
⊠	B-31	0.3	19	0.139	NM	NM	NM	NM	100	90	38	NM	NM
▲	B-33	0.3	12.5	0.115	NM	NM	NM	NM		97	36	NM	NM
×	B-36	0.3	19	0.127	0.08	NM	NM	NM	100	96	26	NM	NM
⊙	B-41	0.3	19	0.197	0.089	NM	NM	NM	100	91	22	NM	NM

Coefficients of Uniformity - $C_u = D_{60} / D_{10}$
Coefficients of Curvature - $C_C = (D_{30})^2 / D_{60} D_{10}$
D_{60} = Grain diameter at 60% passing
D_{30} = Grain diameter at 30% passing
D_{10} = Grain diameter at 10% passing

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SIEVE ANALYSIS

BIA N15(2-3)(3-1)(4-1)2&4
GREASEWOOD TO BURNSIDE, ARIZONA

PLATE

C-9

gINT FILE: G:\geotech\projects\20151221 - Whp-Bia N152.0 Technical Information\2.4 - Field Activity Records\20151221_n15.gpj
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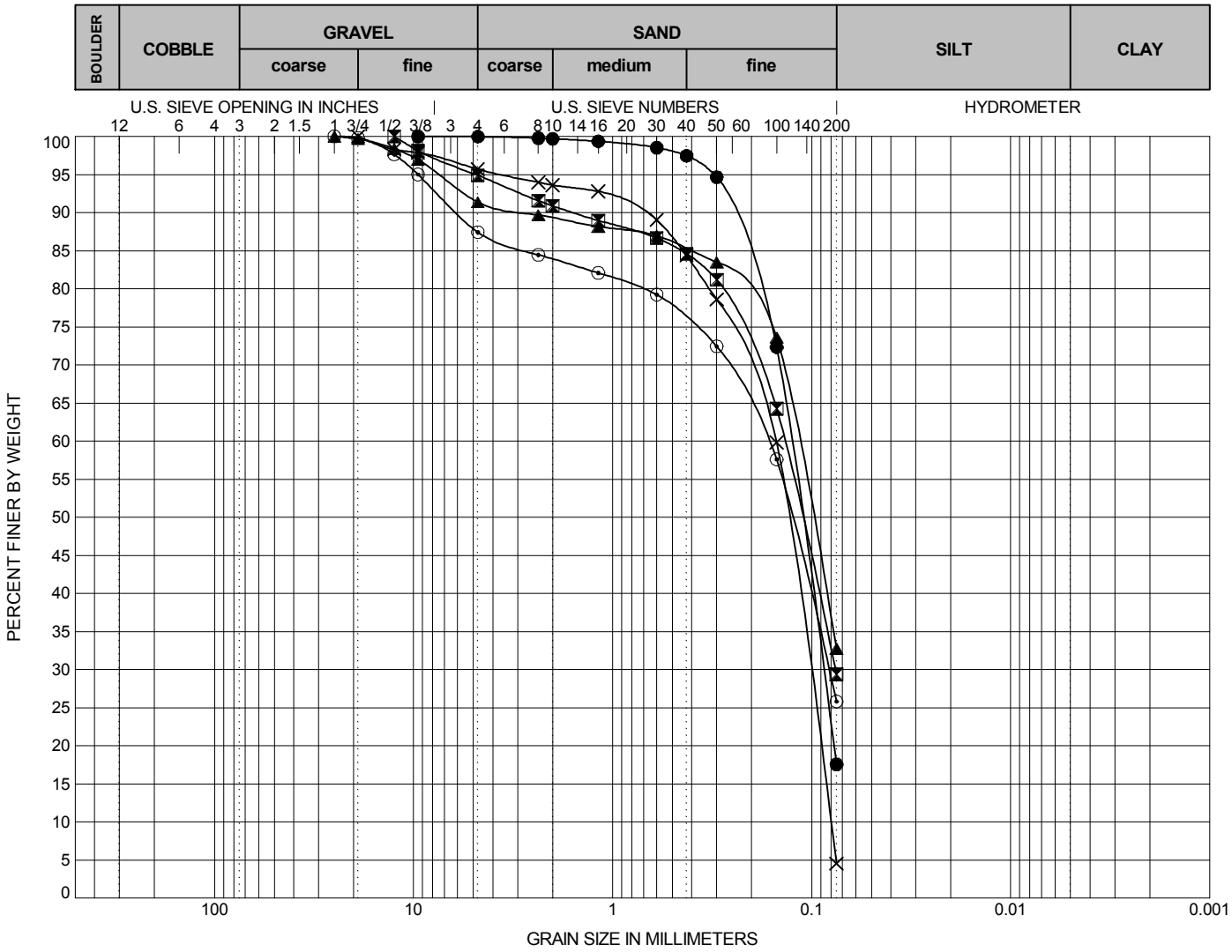

Exploration ID		Depth (m.)	Sample Description	LL	PL	PI
●	B-47	1.83	SILTY SAND (A-2-4)	20	18	2
⊠	B-51	0.3	SILTY SAND (A-2-4)	NP	NP	NP
▲	B-56	0.3	CLAYEY SAND (A-2-4)	25	15	10
×	B-68	1.83	POORLY GRADED SAND (A-2-4)	23	20	3
⊙	B-69	0.3	CLAYEY SAND (A-2-6)	29	15	14

Exploration ID		Depth (m.)	D_{100}	D_{60}	D_{30}	D_{10}	Cc	Cu	Passing 3/4"	Passing #4	Passing #200	%Silt	%Clay
●	B-47	1.83	9.5	0.128	0.088	NM	NM	NM		100	18	NM	NM
⊠	B-51	0.3	12.5	0.138	0.076	NM	NM	NM		95	29	NM	NM
▲	B-56	0.3	25	0.119	NM	NM	NM	NM	100	91	33	NM	NM
×	B-68	1.83	19	0.151	0.103	0.08	0.88	1.88	100	96	4.5	NM	NM
⊙	B-69	0.3	25	0.168	0.082	NM	NM	NM	100	87	26	NM	NM

Coefficients of Uniformity - $C_u = D_{60} / D_{10}$

Coefficients of Curvature - $C_C = (D_{30})^2 / D_{60} D_{10}$

D_{60} = Grain diameter at 60% passing

D_{30} = Grain diameter at 30% passing

D_{10} = Grain diameter at 10% passing

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SIEVE ANALYSIS

BIA N15(2-3)(3-1)(4-1)2&4
GREASEWOOD TO BURNSIDE, ARIZONA

PLATE

C-10

gINT FILE: G:\geotech\projects\20151221 - Whp-Bia N152.0 Technical Information\2.4 - Field Activity Records\20151221_n15.gpj
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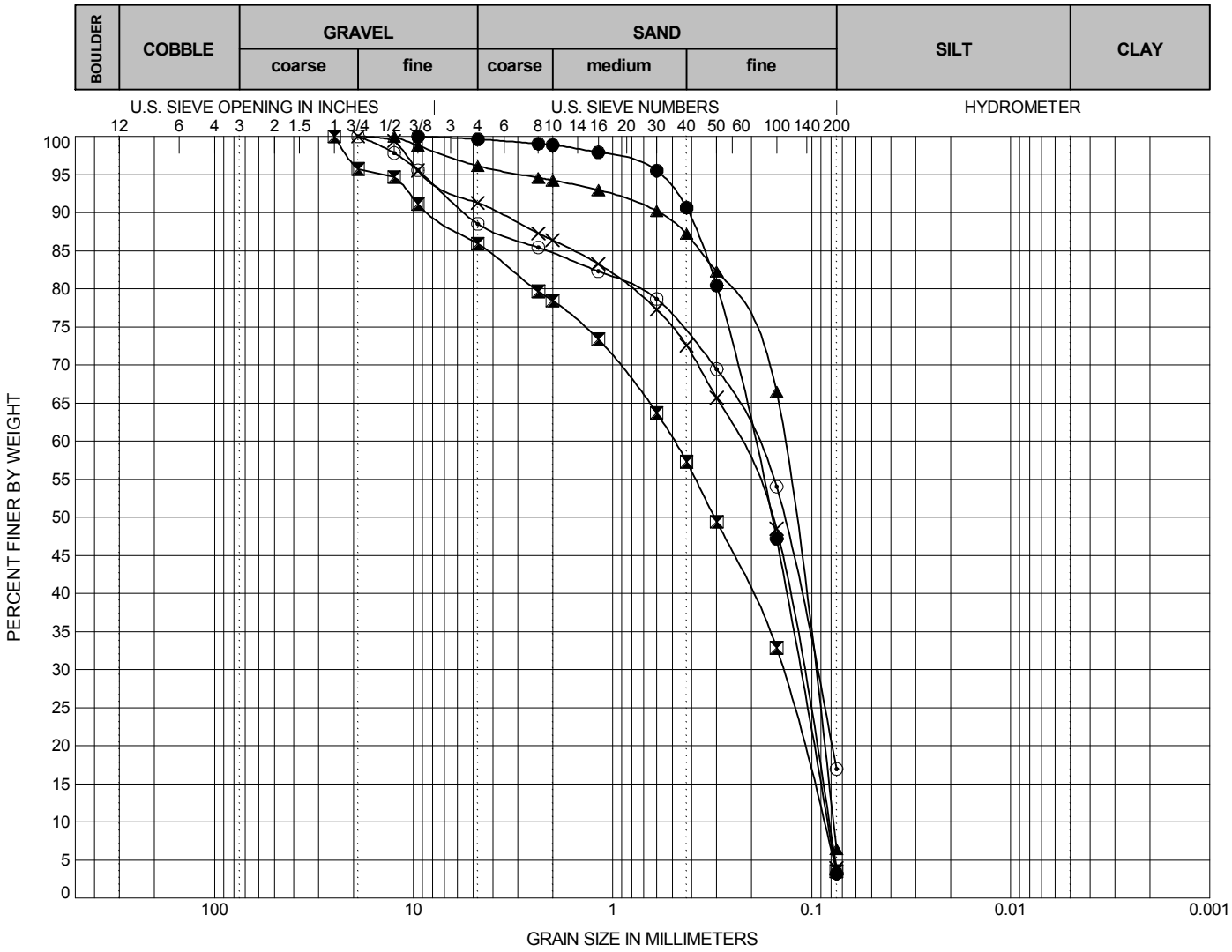

Exploration ID		Depth (m.)	Sample Description	LL	PL	PI
●	B-69	6.1	POORLY GRADED SAND (A-3)	NP	NP	NP
⊠	B-69	10.06	POORLY GRADED SAND (A-3)	NP	NP	NP
▲	B-71	0.91	POORLY GRADED SAND with SILT (A-3)	NP	NP	NP
×	B-71	5.49	POORLY GRADED SAND (A-3)	NP	NP	NP
⊙	B-72	0.3	SILTY SAND (A-2-4)	NP	NP	NP

Exploration ID		Depth (m.)	D_{100}	D_{60}	D_{30}	D_{10}	Cc	Cu	Passing 3/4"	Passing #4	Passing #200	%Silt	%Clay
●	B-69	6.1	9.5	0.196	0.114	0.083	0.80	2.35		100	3.2	NM	NM
⊠	B-69	10.06	25	0.492	0.14	0.087	0.46	5.63	96	86	3.5	NM	NM
▲	B-71	0.91	12.5	0.139	0.098	0.078	0.89	1.78		96	6.4	NM	NM
×	B-71	5.49	19	0.239	0.113	0.082	0.64	2.89	100	91	3.9	NM	NM
⊙	B-72	0.3	19	0.196	0.096	NM	NM	NM	100	89	17	NM	NM

Coefficients of Uniformity - $C_u = D_{60} / D_{10}$
Coefficients of Curvature - $C_C = (D_{30})^2 / D_{60} D_{10}$
D_{60} = Grain diameter at 60% passing
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SIEVE ANALYSIS

BIA N15(2-3)(3-1)(4-1)2&4
GREASEWOOD TO BURNSIDE, ARIZONA

PLATE

C-11

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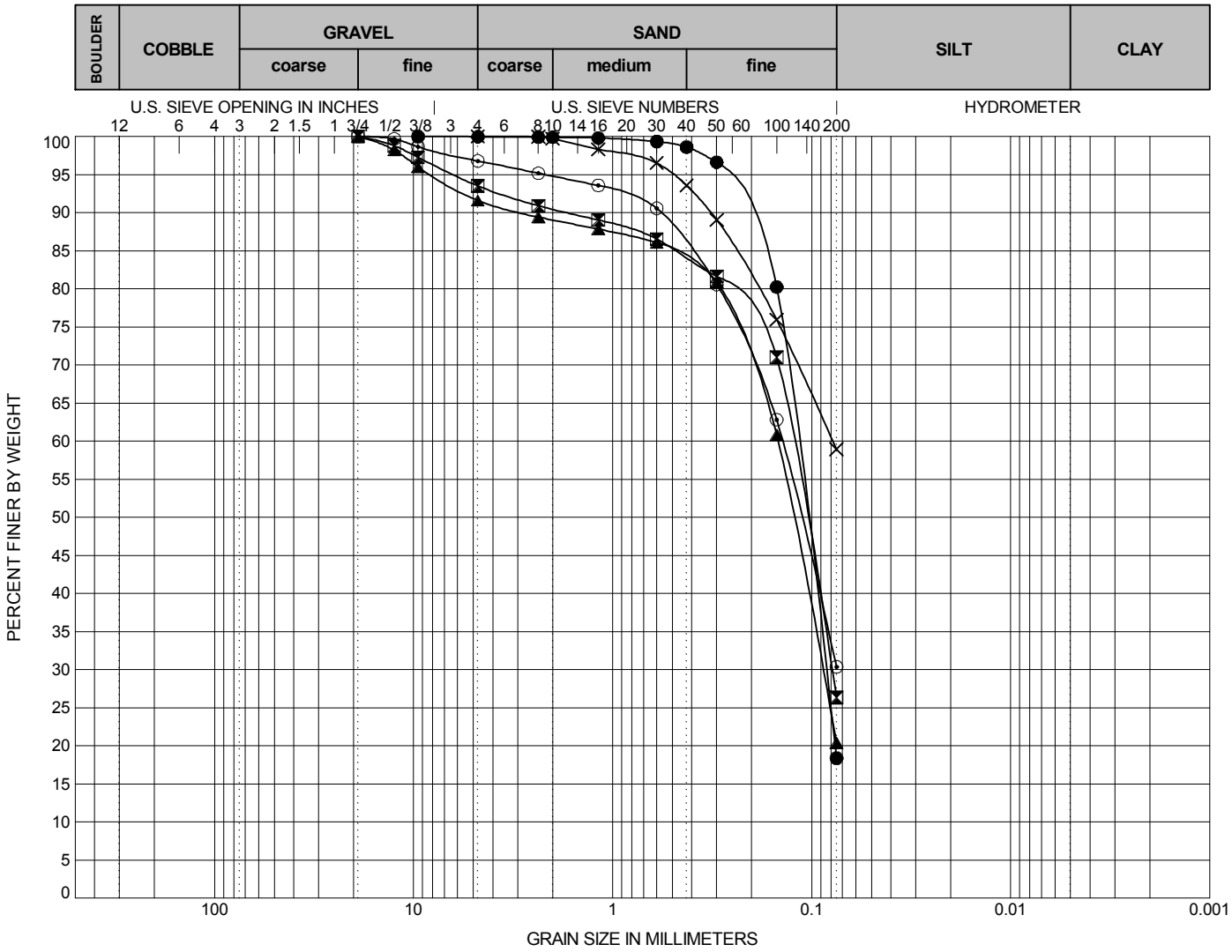

Exploration ID		Depth (m.)	Sample Description	LL	PL	PI
●	B-76	0.46	SILTY SAND (A-2-4)	NP	NP	NP
⊠	B-81	0.3	CLAYEY SAND (A-2-4)	25	17	8
▲	B-85	0.3	SILTY SAND (A-2-4)	NP	NP	NP
×	B-90	2.74	SANDY FAT CLAY (A-7-6)	67	24	43
⊙	B-91	0.3	CLAYEY SAND (A-2-6)	28	16	12

Exploration ID		Depth (m.)	D_{100}	D_{60}	D_{30}	D_{10}	Cc	Cu	Passing 3/4"	Passing #4	Passing #200	%Silt	%Clay
●	B-76	0.46	9.5	0.12	0.085	NM	NM	NM		100	18	NM	NM
⊠	B-81	0.3	19	0.126	0.079	NM	NM	NM	100	94	26	NM	NM
▲	B-85	0.3	19	0.148	0.088	NM	NM	NM	100	92	20	NM	NM
×	B-90	2.74	4.75	0.078	NM	NM	NM	NM		100	59	NM	NM
⊙	B-91	0.3	19	0.141	NM	NM	NM	NM	100	97	30	NM	NM

Coefficients of Uniformity - $C_u = D_{60} / D_{10}$
Coefficients of Curvature - $C_C = (D_{30})^2 / D_{60} D_{10}$
D_{60} = Grain diameter at 60% passing
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SIEVE ANALYSIS

BIA N15(2-3)(3-1)(4-1)2&4
GREASEWOOD TO BURNSIDE, ARIZONA

PLATE

C-12

gINT FILE: G:\geotech\projects\20151221 - Whp-Bia N152.0 Technical Information\2.4 - Field Activity Records\20151221_n15.gpj
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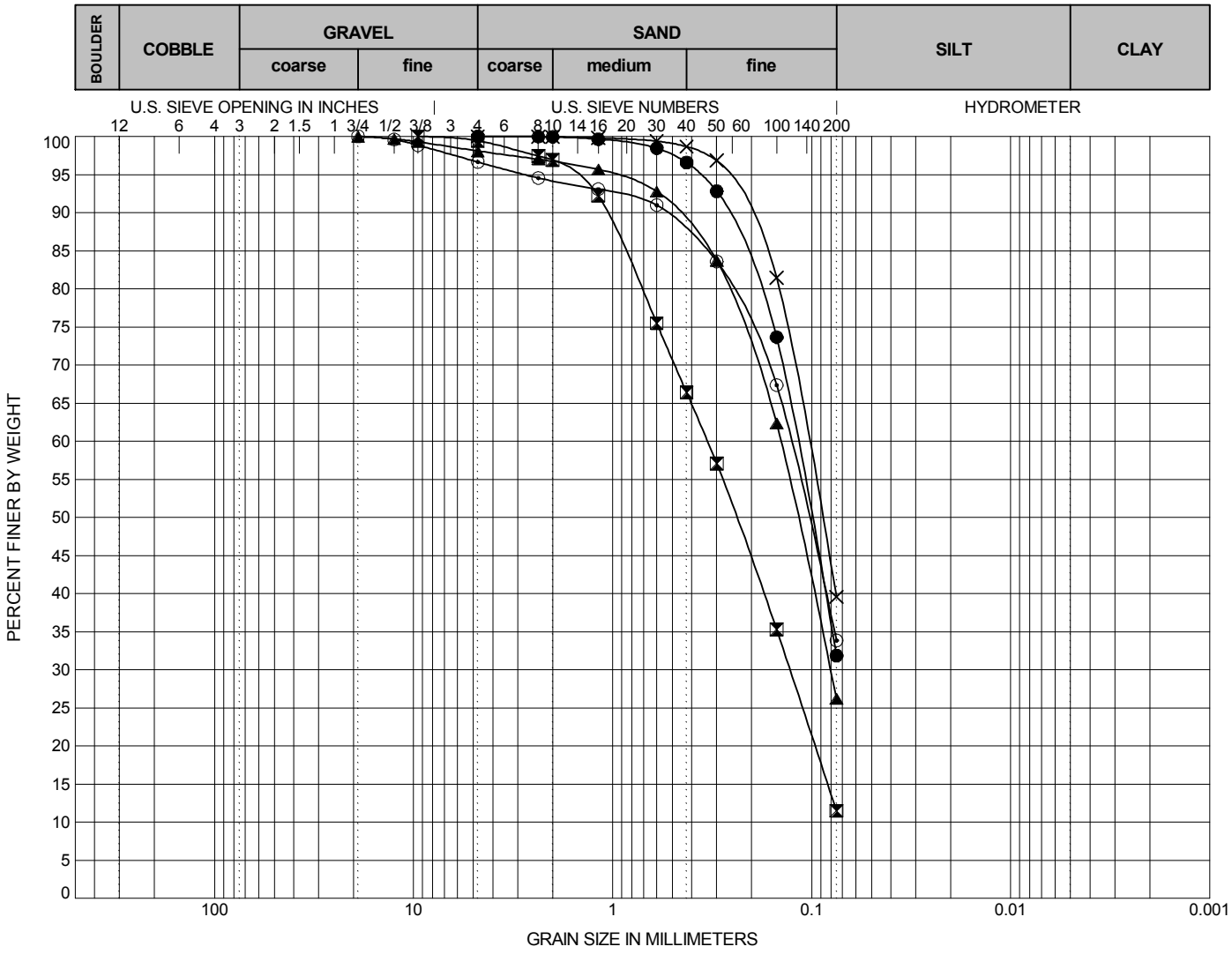

Exploration ID		Depth (m.)	Sample Description	LL	PL	PI
●	B-92	0.3		NM	NM	NM
⊠	B-93	1.83	POORLY GRADED SAND with SILT (A-2-4)	NP	NP	NP
▲	B-96	0.3	SILTY, CLAYEY SAND (A-2-4)	23	18	5
×	B-101	0.3	SILTY, CLAYEY SAND (A-4)	22	16	6
⊙	B-111	0.3	CLAYEY SAND (A-2-4)	27	17	10

Exploration ID		Depth (m.)	D_{100}	D_{60}	D_{30}	D_{10}	Cc	Cu	Passing 3/4"	Passing #4	Passing #200	%Silt	%Clay
●	B-92	0.3	4.75	0.12	NM	NM	NM	NM		100	32	NM	NM
⊠	B-93	1.83	9.5	0.335	0.129	NM	0.69	4.66		99	11	NM	NM
▲	B-96	0.3	19	0.143	0.081	NM	NM	NM	100	98	26	NM	NM
×	B-101	0.3	4.75	0.105	NM	NM	NM	NM		100	40	NM	NM
⊙	B-111	0.3	19	0.129	NM	NM	NM	NM	100	97	34	NM	NM

Coefficients of Uniformity - $C_u = D_{60} / D_{10}$

Coefficients of Curvature - $C_C = (D_{30})^2 / D_{60} D_{10}$

D_{60} = Grain diameter at 60% passing

D_{30} = Grain diameter at 30% passing

D_{10} = Grain diameter at 10% passing

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SIEVE ANALYSIS

BIA N15(2-3)(3-1)(4-1)2&4
GREASEWOOD TO BURNSIDE, ARIZONA

PLATE

C-13

gINT FILE: G:\geotech\projects\20151221 - Whp-Bia N152.0 Technical Information\2.4 - Field Activity Records\20151221_n15.gpj
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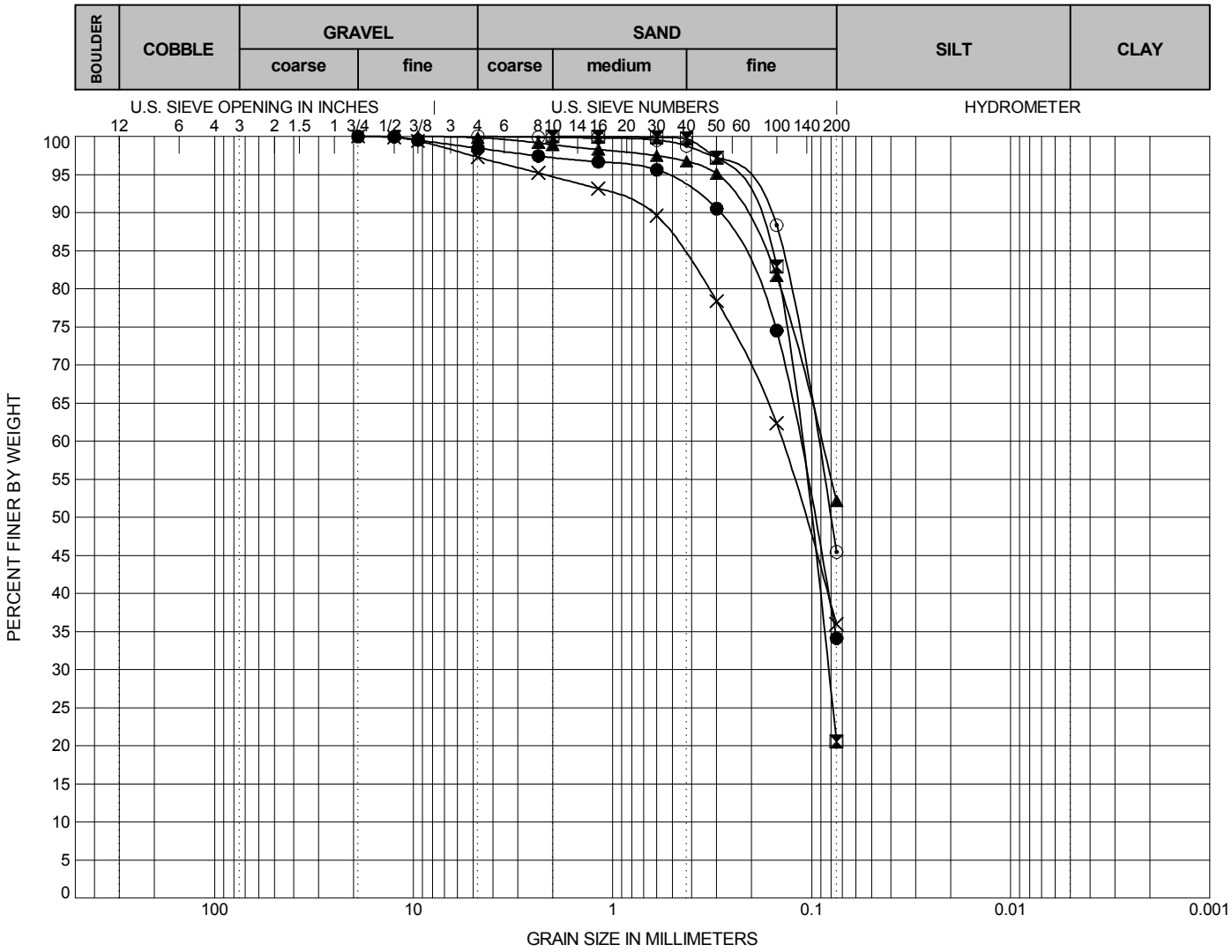

Exploration ID		Depth (m.)	Sample Description	LL	PL	PI
●	B-116	0.3	CLAYEY SAND (A-2-4)	27	17	10
⊠	B-116	2.74	SILTY, CLAYEY SAND (A-2-4)	23	19	4
▲	B-119	1.83	SANDY LEAN CLAY (A-6)	34	14	20
×	B-121	0.3	CLAYEY SAND (A-4)	25	16	9
⊙	B-121	2.74	SILTY SAND (A-4)	NP	NP	NP

Exploration ID		Depth (m.)	D_{100}	D_{60}	D_{30}	D_{10}	Cc	Cu	Passing 3/4"	Passing #4	Passing #200	%Silt	%Clay
●	B-116	0.3	19	0.117	NM	NM	NM	NM	100	98	34	NM	NM
⊠	B-116	2.74	2	0.116	0.083	NM	NM	NM			21	NM	NM
▲	B-119	1.83	9.5	0.09	NM	NM	NM	NM		100	52	NM	NM
×	B-121	0.3	19	0.141	NM	NM	NM	NM	100	97	36	NM	NM
⊙	B-121	2.74	4.75	0.095	NM	NM	NM	NM		100	45	NM	NM

Coefficients of Uniformity - $C_u = D_{60} / D_{10}$
Coefficients of Curvature - $C_C = (D_{30})^2 / D_{60} D_{10}$
D_{60} = Grain diameter at 60% passing
D_{30} = Grain diameter at 30% passing
D_{10} = Grain diameter at 10% passing

Sieve Analysis and Hydrometer Analysis testing performed in general accordance with ASTM D422
NP = Nonplastic
NM = Not Measured

Allwyn ENVIRONMENTAL

PROJECT NO.:	20151221
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CHECKED BY:	MJM
DATE:	12/5/2014
REVISED:	12/17/2014

SIEVE ANALYSIS

BIA N15(2-3)(3-1)(4-1)2&4
GREASEWOOD TO BURNSIDE, ARIZONA

PLATE

C-14

gINT FILE: G:\geotech\projects\20151221 - Whp-Bia N152.0 Technical Information\2.4 - Field Activity Records\20151221_n15.gpj
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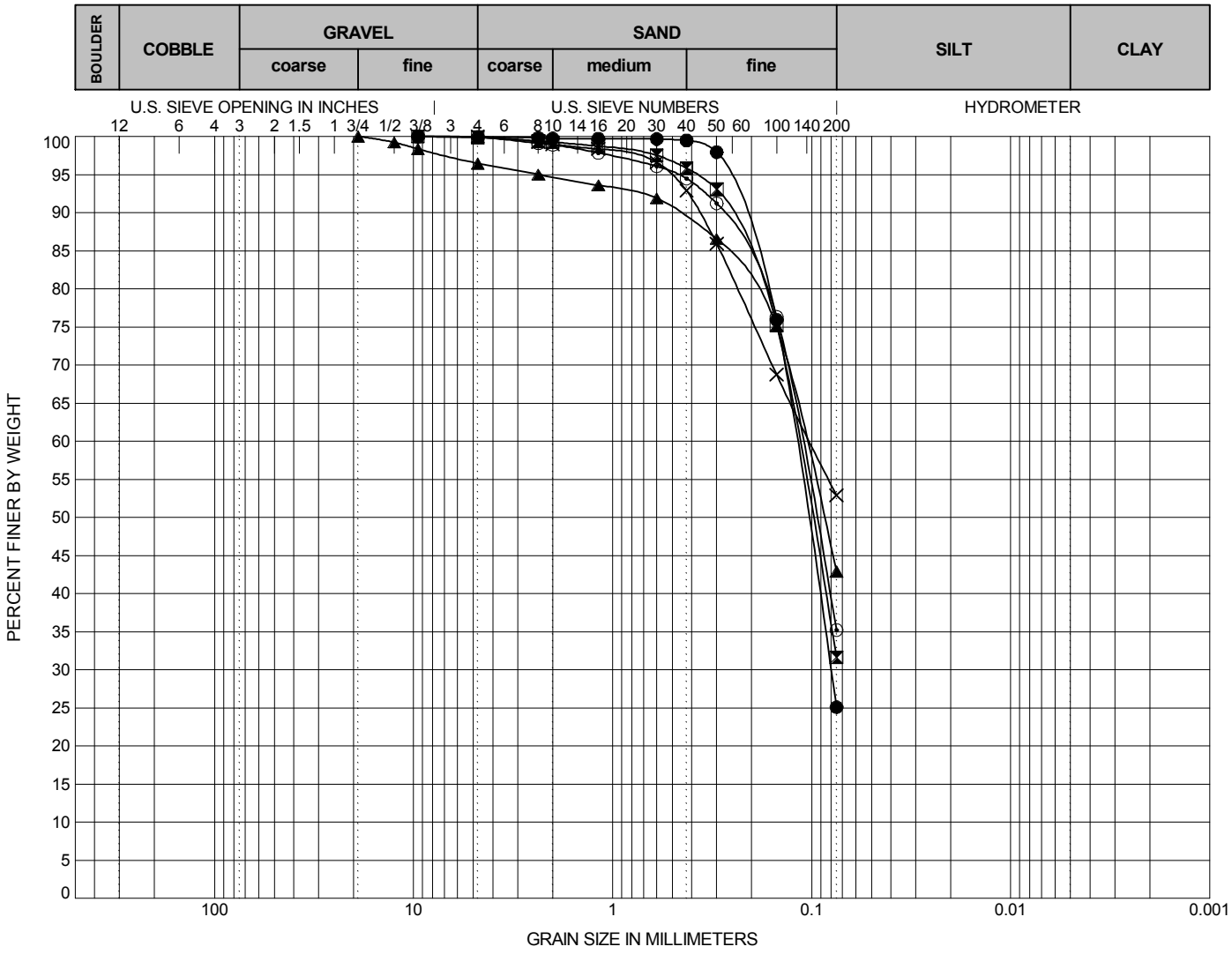

Exploration ID		Depth (m.)	Sample Description	LL	PL	PI
●	B-129	0.91	SILTY SAND (A-2-4)	NP	NP	NP
⊠	B-134	0.3	SILTY, CLAYEY SAND (A-2-4)	23	16	7
▲	B-136	0.3	CLAYEY SAND (A-4)	26	16	10
×	B-138	0.91	SANDY LEAN CLAY (A-6)	28	17	11
⊙	B-142	1.83	SILTY SAND (A-2-4)	NP	NP	NP

Exploration ID		Depth (m.)	D_{100}	D_{60}	D_{30}	D_{10}	Cc	Cu	Passing 3/4"	Passing #4	Passing #200	%Silt	%Clay
●	B-129	0.91	9.5	0.121	0.08	NM	NM	NM		100	25	NM	NM
⊠	B-134	0.3	9.5	0.118	NM	NM	NM	NM		100	32	NM	NM
▲	B-136	0.3	19	0.108	NM	NM	NM	NM	100	96	43	NM	NM
×	B-138	0.91	4.75	0.102	NM	NM	NM	NM		100	53	NM	NM
⊙	B-142	1.83	9.5	0.114	NM	NM	NM	NM		100	35	NM	NM

Coefficients of Uniformity - $C_u = D_{60} / D_{10}$
Coefficients of Curvature - $C_C = (D_{30})^2 / D_{60} D_{10}$
D_{60} = Grain diameter at 60% passing
D_{30} = Grain diameter at 30% passing
D_{10} = Grain diameter at 10% passing

Sieve Analysis and Hydrometer Analysis testing performed in general accordance with ASTM D422
NP = Nonplastic
NM = Not Measured

Allwyn ENVIRONMENTAL

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SIEVE ANALYSIS

BIA N15(2-3)(3-1)(4-1)2&4
GREASEWOOD TO BURNSIDE, ARIZONA

PLATE

C-15

gINT FILE: G:\geotech\projects\20151221 - Whp-Bia N15\2.0 Technical Information\2.4 - Field Activity Records\20151221_n15.gpj
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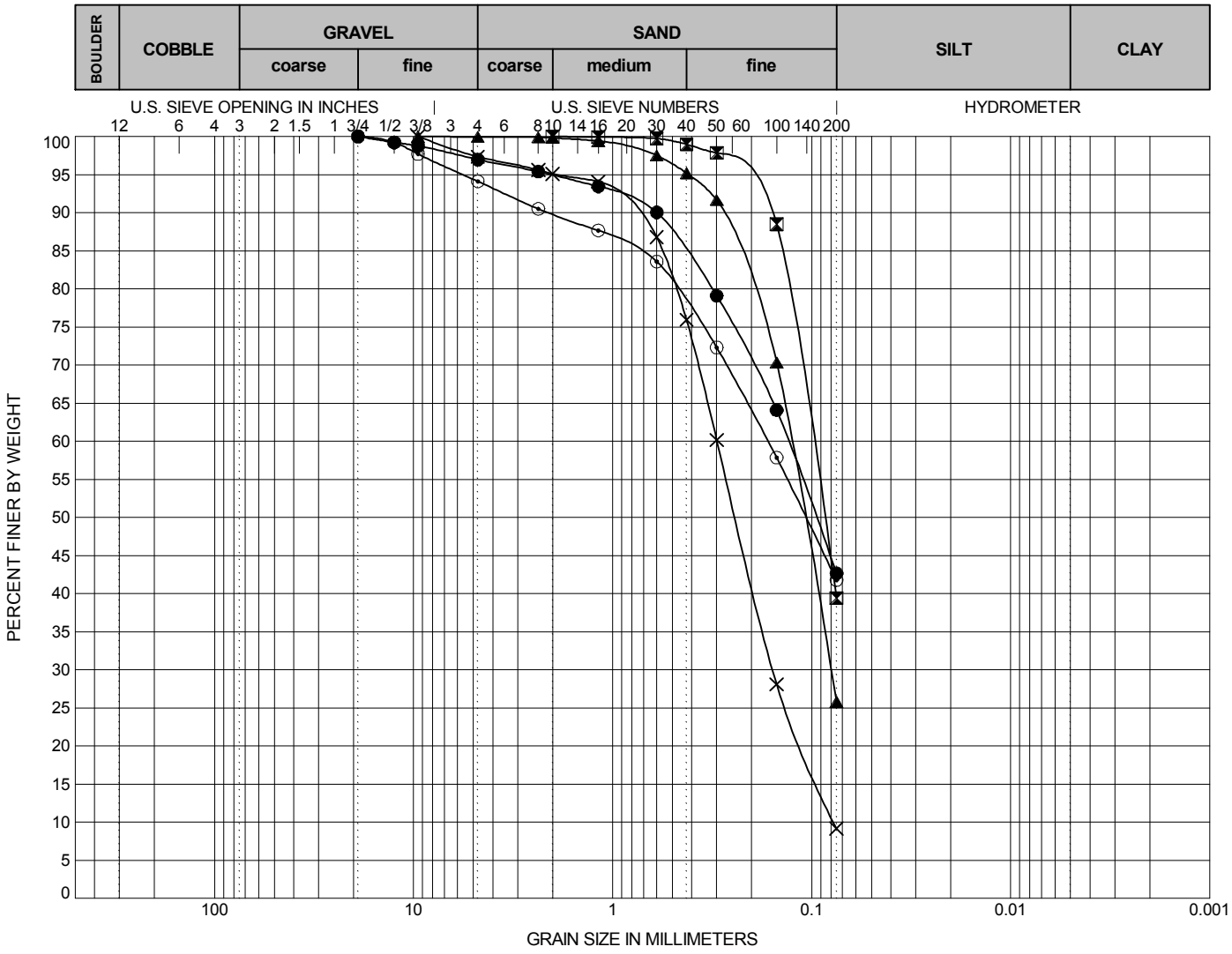

Exploration ID		Depth (m.)	Sample Description	LL	PL	PI
●	B-151	0.3	CLAYEY SAND (A-6)	34	13	21
⊠	B-153	2.74	SILTY, CLAYEY SAND (A-4)	24	20	4
▲	B-160	0.91	SILTY SAND (A-2-4)	NP	NP	NP
×	B-168	0.3	POORLY GRADED SAND with SILT (A-3)	NP	NP	NP
⊙	B-173	0.3	CLAYEY SAND (A-6)	29	12	17

Exploration ID		Depth (m.)	D_{100}	D_{60}	D_{30}	D_{10}	Cc	Cu	Passing 3/4"	Passing #4	Passing #200	%Silt	%Clay
●	B-151	0.3	19	0.131	NM	NM	NM	NM	100	97	43	NM	NM
⊠	B-153	2.74	2	0.1	NM	NM	NM	NM			39	NM	NM
▲	B-160	0.91	9.5	0.128	0.08	NM	NM	NM		100	26	NM	NM
×	B-168	0.3	9.5	0.299	0.156	0.077	1.06	3.86		97	9.1	NM	NM
⊙	B-173	0.3	19	0.166	NM	NM	NM	NM	100	94	42	NM	NM

Coefficients of Uniformity - $C_u = D_{60} / D_{10}$

Coefficients of Curvature - $C_C = (D_{30})^2 / D_{60} D_{10}$

D_{60} = Grain diameter at 60% passing

D_{30} = Grain diameter at 30% passing

D_{10} = Grain diameter at 10% passing

Sieve Analysis and Hydrometer Analysis testing performed in general accordance with ASTM D422

NP = Nonplastic

NM = Not Measured

Allwyn ENVIRONMENTAL

PROJECT NO.:	20151221
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REVISED:	12/17/2014

SIEVE ANALYSIS

BIA N15(2-3)(3-1)(4-1)2&4
GREASEWOOD TO BURNSIDE, ARIZONA

PLATE

C-16

gINT FILE: G:\geotech\projects\20151221 - Whp-Bia N152.0 Technical Information\2.4 - Field Activity Records\20151221_n15.gpj
gINT TEMPLATE: R:KLF_STANDARD_GINT_LIBRARY_2014.GLB [KLF_SIEVE ANALYSIS]

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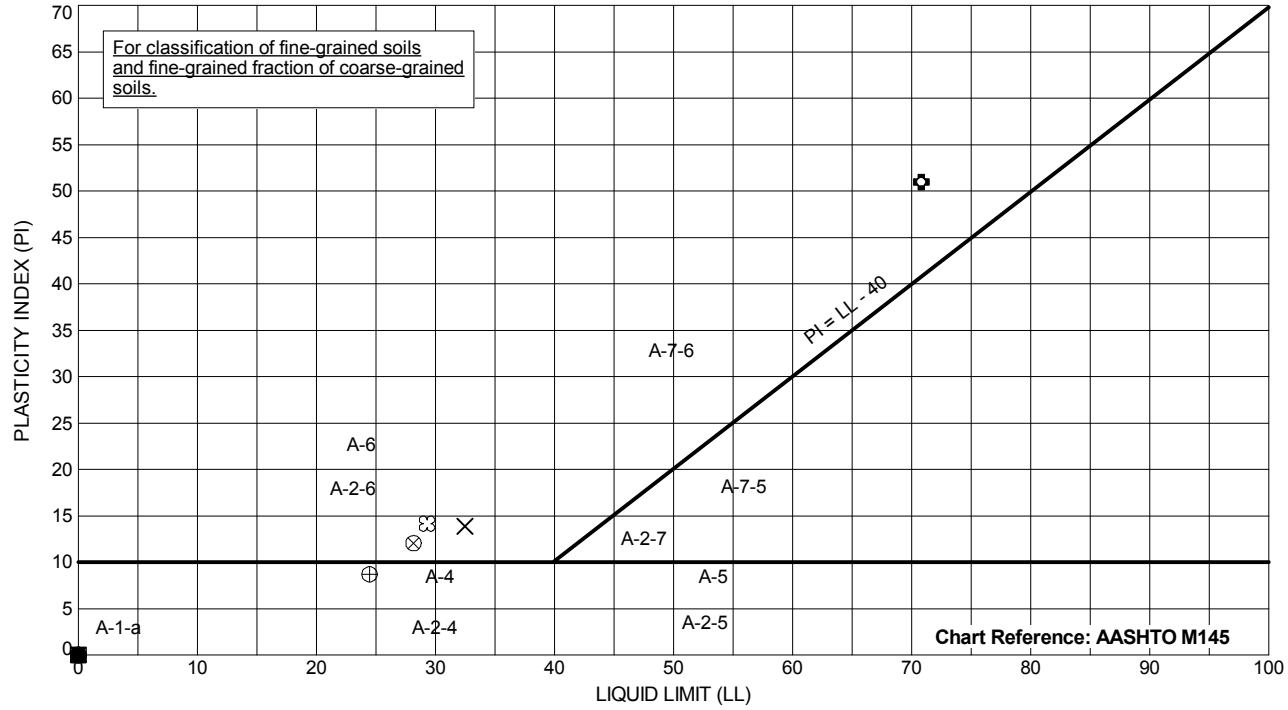

Exploration ID		Depth (m.)	Sample Description	Passing #200	LL	PL	PI
●	B-1	0.15	SILTY SAND (A-2-4)	17	NP	NP	NP
⊠	B-1	0.91	POORLY GRADED SAND (A-3)	3.2	NP	NP	NP
▲	B-2	1.83	POORLY GRADED SAND (A-3)	1.3	NP	NP	NP
×	B-3	2.74	POORLY GRADED SAND with CLAY (A-2-6)	9.9	32	19	13
⊙	B-4	0.91	POORLY GRADED SAND (A-3)	3.5	NP	NP	NP
✿	B-5	0.3	POORLY GRADED SAND with CLAY (A-2-7)	8.1	71	20	51
○	B-6	0.3	SILTY SAND (A-2-4)	31	NP	NP	NP
△	B-7	2.74	POORLY GRADED SAND with SILT (A-3)	8.1	NP	NP	NP
⊗	B-9	0.3	POORLY GRADED SAND with CLAY (A-2-6)	10	28	16	12
⊕	B-11	0.3	POORLY GRADED SAND with CLAY (A-2-4)	12	24	16	8
□	B-13	1.37	POORLY GRADED SAND with SILT (A-3)	6.2	NP	NP	NP
⊛	B-15	1.83	POORLY GRADED SAND (A-3)	4.4	NP	NP	NP
◕	B-18	0.91	POORLY GRADED SAND (A-3)	2.7	NP	NP	NP
☆	B-19	0.3	POORLY GRADED SAND (A-3)	5.0	NP	NP	NP
⊠	B-21	0.3	CLAYEY SAND (A-2-6)	32	29	15	14

Testing perfomed in general accordance with AASHTO M145.
NP = Nonplastic
NM = Not Measured

Allwyn ENVIRONMENTAL

PROJECT NO.:	20151221
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DATE:	12/5/2014
REVISED:	12/17/2014

ATTERBERG LIMITS

BIA N15(2-3)(3-1)(4-1)2&4
GREASEWOOD TO BURNSIDE, ARIZONA

PLATE

C-17

gINT FILE: G:\geotech\projects\20151221 - Whp-Bia N15\2.0 Technical Information\2.4 - Field Activity Records\20151221_n15.gpj
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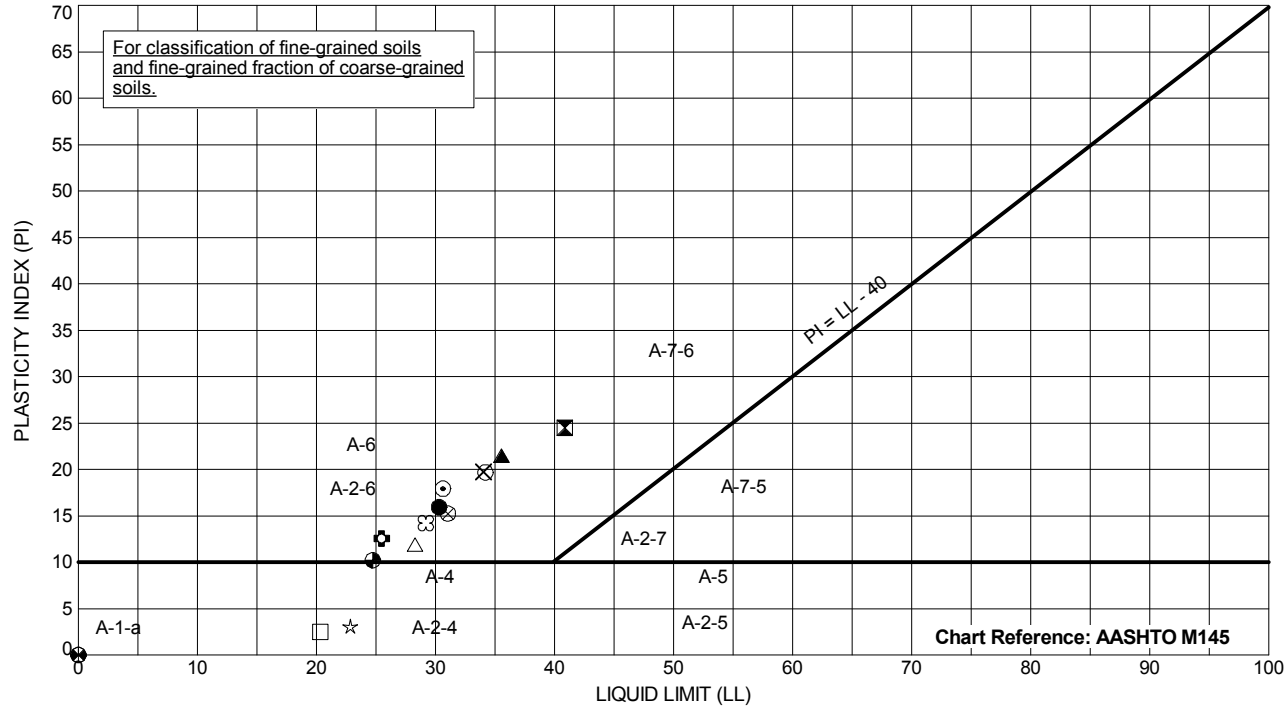

Exploration ID		Depth (m.)	Sample Description	Passing #200	LL	PL	PI
●	B-23	0.3	POORLY GRADED SAND with CLAY (A-2-6)	9.1	30	14	16
⊠	B-25	1.83	POORLY GRADED SAND with CLAY (A-2-7)	7.3	41	16	25
▲	B-26	0.3	CLAYEY SAND (A-6)	38	36	14	22
✕	B-27	0.91	POORLY GRADED SAND with CLAY (A-2-6)	6.5	34	14	20
⊙	B-29	0.3	POORLY GRADED SAND with CLAY (A-2-6)	8.0	31	13	18
✿	B-30	0.91	CLAYEY SAND (A-2-6)	35	25	13	12
○	B-31	0.3	CLAYEY SAND (A-6)	38	34	15	19
△	B-33	0.3	CLAYEY SAND (A-6)	36	28	16	12
⊗	B-36	0.3	CLAYEY SAND (A-2-6)	26	31	16	15
⊕	B-41	0.3	SILTY SAND (A-2-4)	22	NP	NP	NP
□	B-47	1.83	SILTY SAND (A-2-4)	18	20	18	2
⊛	B-51	0.3	SILTY SAND (A-2-4)	29	NP	NP	NP
◕	B-56	0.3	CLAYEY SAND (A-2-4)	33	25	15	10
☆	B-68	1.83	POORLY GRADED SAND (A-2-4)	4.5	23	20	3
⊠	B-69	0.3	CLAYEY SAND (A-2-6)	26	29	15	14

Testing perfomed in general accordance with AASHTO M145.
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Allwyn ENVIRONMENTAL

PROJECT NO.:	20151221
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DATE:	12/5/2014
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ATTERBERG LIMITS

BIA N15(2-3)(3-1)(4-1)2&4
GREASEWOOD TO BURNSIDE, ARIZONA

PLATE

C-18

gINT FILE: G:\geotech\projects\20151221 - Whp-Bia N15\2.0 Technical Information\2.4 - Field Activity Records\20151221_n15.gpj
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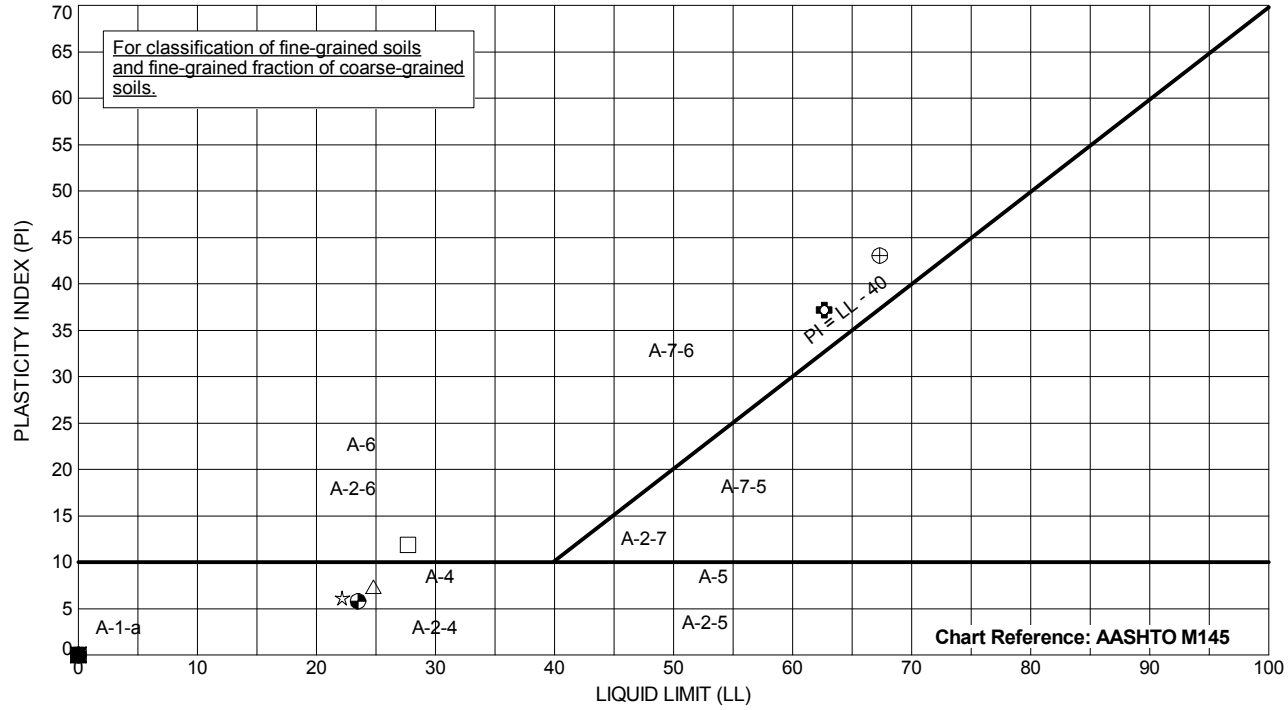

Exploration ID		Depth (m.)	Sample Description	Passing #200	LL	PL	PI
●	B-69	6.1	POORLY GRADED SAND (A-3)	3.2	NP	NP	NP
⊠	B-69	10.06	POORLY GRADED SAND (A-3)	3.5	NP	NP	NP
▲	B-71	0.91	POORLY GRADED SAND with SILT (A-3)	6.4	NP	NP	NP
×	B-71	5.49	POORLY GRADED SAND (A-3)	3.9	NP	NP	NP
⊙	B-72	0.3	SILTY SAND (A-2-4)	17	NP	NP	NP
✿	B-75	2.74		NM	63	25	38
○	B-76	0.46	SILTY SAND (A-2-4)	18	NP	NP	NP
△	B-81	0.3	CLAYEY SAND (A-2-4)	26	25	17	8
⊗	B-85	0.3	SILTY SAND (A-2-4)	20	NP	NP	NP
⊕	B-90	2.74	SANDY FAT CLAY (A-7-6)	59	67	24	43
□	B-91	0.3	CLAYEY SAND (A-2-6)	30	28	16	12
⊛	B-93	1.83	POORLY GRADED SAND with SILT (A-2-4)	11	NP	NP	NP
◕	B-96	0.3	SILTY, CLAYEY SAND (A-2-4)	26	23	18	5
☆	B-101	0.3	SILTY, CLAYEY SAND (A-4)	40	22	16	6
⊠	B-106	0.91		NM	NP	NP	NP

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NM = Not Measured

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ATTERBERG LIMITS

BIA N15(2-3)(3-1)(4-1)2&4
GREASEWOOD TO BURNSIDE, ARIZONA

PLATE

C-19

gINT FILE: G:\geotech\projects\20151221 - Whp-Bia N152.0 Technical Information\2.4 - Field Activity Records\20151221_n15.gpj
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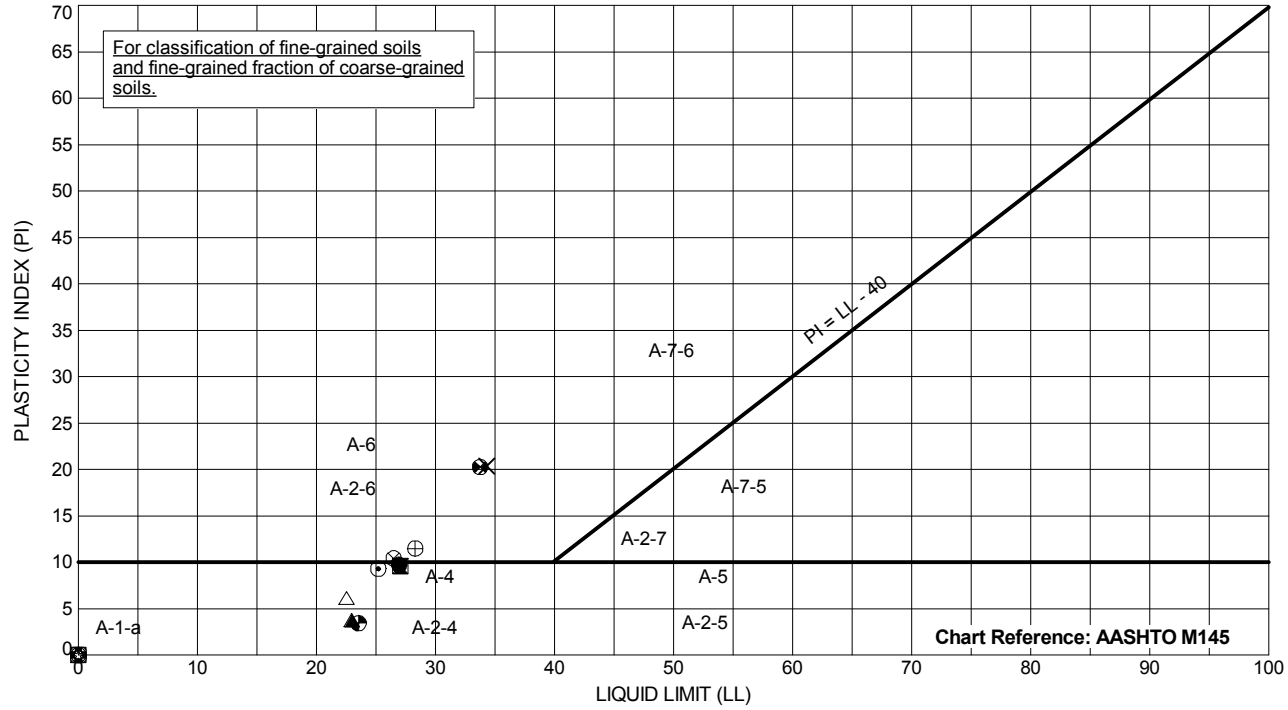

Exploration ID		Depth (m.)	Sample Description	Passing #200	LL	PL	PI
●	B-111	0.3	CLAYEY SAND (A-2-4)	34	27	17	10
⊠	B-116	0.3	CLAYEY SAND (A-2-4)	34	27	17	10
▲	B-116	2.74	SILTY, CLAYEY SAND (A-2-4)	21	23	19	4
×	B-119	1.83	SANDY LEAN CLAY (A-6)	52	34	14	20
⊙	B-121	0.3	CLAYEY SAND (A-4)	36	25	16	9
✿	B-121	2.74	SILTY SAND (A-4)	45	NP	NP	NP
○	B-129	0.91	SILTY SAND (A-2-4)	25	NP	NP	NP
△	B-134	0.3	SILTY, CLAYEY SAND (A-2-4)	32	23	16	7
⊗	B-136	0.3	CLAYEY SAND (A-4)	43	26	16	10
⊕	B-138	0.91	SANDY LEAN CLAY (A-6)	53	28	17	11
□	B-142	1.83	SILTY SAND (A-2-4)	35	NP	NP	NP
⊛	B-151	0.3	CLAYEY SAND (A-6)	43	34	13	21
◕	B-153	2.74	SILTY, CLAYEY SAND (A-4)	39	24	20	4
☆	B-160	0.91	SILTY SAND (A-2-4)	26	NP	NP	NP
⊠	B-168	0.3	POORLY GRADED SAND with SILT (A-3)	9.1	NP	NP	NP

Testing perfomed in general accordance with AASHTO M145.
NP = Nonplastic
NM = Not Measured

Allwyn ENVIRONMENTAL

PROJECT NO.:	20151221
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DATE:	12/5/2014
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ATTERBERG LIMITS

BIA N15(2-3)(3-1)(4-1)2&4
GREASEWOOD TO BURNSIDE, ARIZONA

PLATE

C-20

gINT FILE: G:\geotech\projects\20151221 - Whp-Bia N152.0 Technical Information\2.4 - Field Activity Records\20151221_n15.gpj
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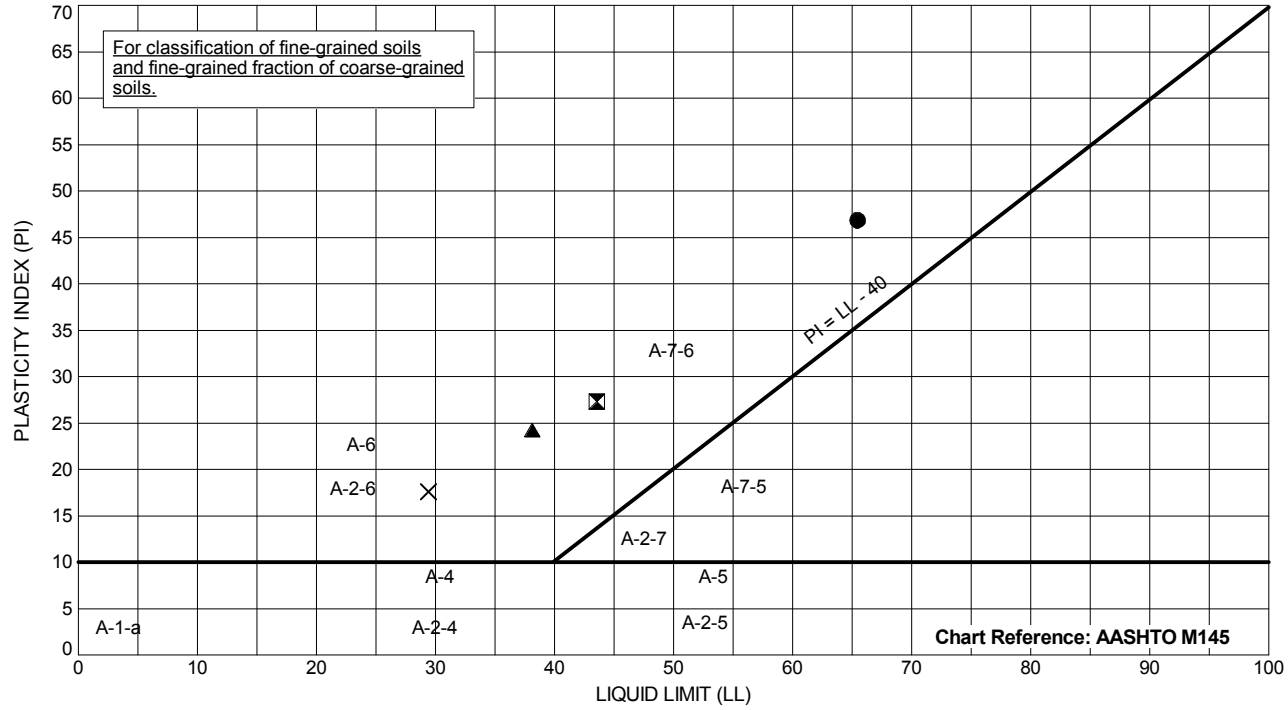

Exploration ID		Depth (m.)	Sample Description	Passing #200	LL	PL	PI
●	B-170	0.3		NM	65	19	46
⊠	B-171	0.3		NM	44	16	28
▲	B-172	0.3		NM	38	14	24
×	B-173	0.3	CLAYEY SAND (A-6)	42	29	12	17

Testing perfomed in general accordance with AASHTO M145.
NP = Nonplastic
NM = Not Measured

Allwyn ENVIRONMENTAL

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DATE:	12/5/2014
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ATTERBERG LIMITS

BIA N15(2-3)(3-1)(4-1)2&4
GREASEWOOD TO BURNSIDE, ARIZONA

PLATE

C-21

gINT FILE: G:\geotech\projects\20151221 - Whp-Bia N15\2.0 Technical Information\2.4 - Field Activity Records\20151221_n15.gpj
gINT TEMPLATE: R:\KLF_STANDARD_GINT_LIBRARY_2014.GLB [KLF_ATTERBERG (AASHTO)]

R-Values
(AASHTO T 190)

31133 A B-1 @ 0-5' Route N15

Mold Label:	6	5	12
Moisture Content:	12.3%	9.5%	10.9%
Weight of Material used,gms:	1127.0	1130.0	1130.0
Water Added,gms:	80.0	50.0	65.0
Height of Specimen: ins	2.55	2.60	2.50
Height of Specimen: mm	64.77	66.04	63.50
Weight of Specimen & mold:	3255	3265.9	3256.2
Weight of Mold,gms:	2116.7	2121.4	2121.7
Specimen Weight,gms:	1138	1144.5	1134.5
Exudation Pressure,lbs:	1755	7550	3855
Exudation Load Psi.:	140	601	307
Expansion Dial Reading:	-0.0009	0.0004	-0.0007
Expanson Pressure	-39	17	-30
Stabilometer Reading @ 1000	37	16	27
Stabilometer Reading @ 2000	73	29	52
Turns of Displacement:	4.20	3.70	4.44
Un-Corrected R-Value:	41	75	54
Correction from Chart:		2	
Corrected R-Value:	41	77	54
R-Value @ 300 psi. Exudation:			53.5
Dry Density PCF.:	120.6	121.9	124.1
Foot Pressure:	350	350	350

Initial Moisture

Pan Number:	MO	
Wet Wt of Sample + Pan:	163.23	129.90
Dry Wt of Sample + Pan:	157.16	123.83
Weight of Water:	6.1	
Weight of Pan:	33.33	
Dry Weight of Sample:	123.8	
Moisture content:	4.9%	

Remarks and observations

Equipment Used

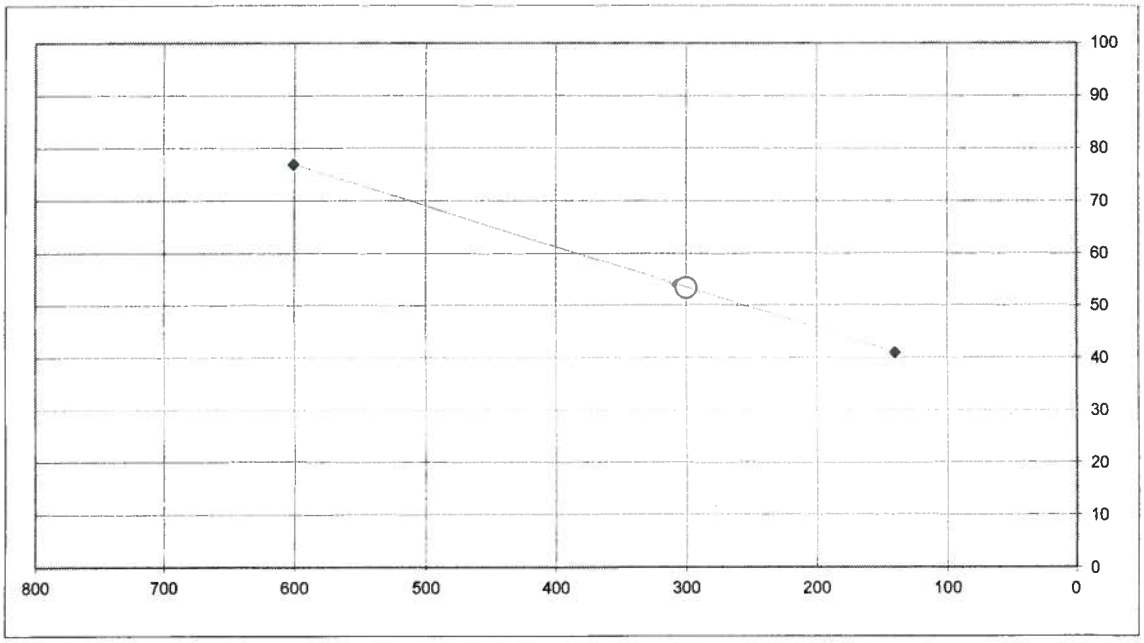
Load cell 719112

Stabilometer 2700814

Kneading Compactor 0091-96

Load Master HM-3000

AASHTO T-190



31133 B B-6 @ 1-5' Route N15

Mold Label:	9	1	4
Moisture Content:	10.9%	12.4%	11.7%
Weight of Material used,gms:	1115.0	1110.0	1110.0
Water Added,gms:	60.0	75.0	68.0
Height of Specimen: ins	2.55	2.55	2.55
Height of Specimen: mm	64.77	64.77	64.77
Weight of Specimen & mold:	3275.9	3262.5	3279.6
Weight of Mold,gms:	2116.3	2116.6	2123.3
Specimen Weight,gms:	1160	1145.9	1156.3
Exudation Pressure,lbs:	5830	3070	3810
Exudation Load Psi.:	464	244	303
Expansion Dial Reading:	0.0001	-0.0005	-0.0001
Expanson Pressure	4	-22	-4
Stabilometer Reading @ 1000	31	48	38
Stabilometer Reading @ 2000	65	112	86
Turns of Displacement:	4.11	3.99	3.98
Un-Corrected R-Value:	47	21	35
Correction from Chart:			
Corrected R-Value:	47	21	35
R-Value @ 300 psi. Exudation:			34.4
Dry Density PCF.:	124.4	121.3	123.1
Foot Pressure:	350	300	350

Initial Moisture

Pan Number:	BB	
Wet Wt of Sample + Pan:	157.06	124.62
Dry Wt of Sample + Pan:	150.85	118.41
Weight of Water:	6.2	
Weight of Pan:	32.44	
Dry Weight of Sample:	118.4	
Moisture content:	5.2%	

Remarks and observations

Equipment Used

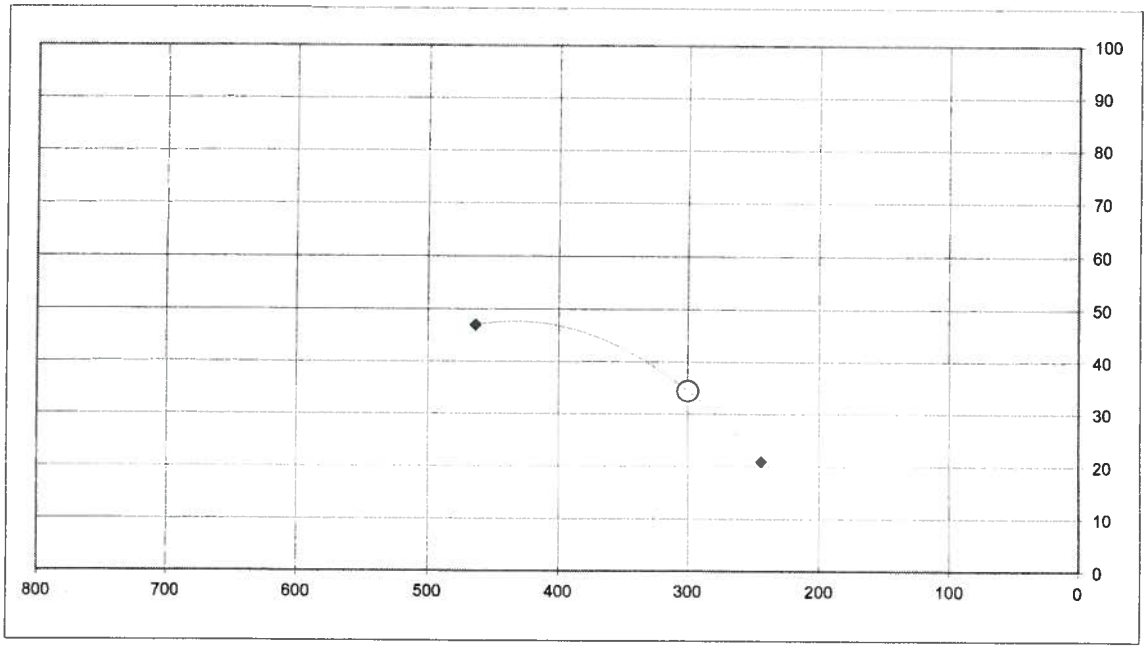
Load cell 719112

Stabilometer 2700814

Kneading Compactor 0091-96

Load Master HM-3000

AASHTO T-190



31133 C B-21 @ 1-5' Route N15

Mold Label:	6	12	5
Moisture Content:	14.2%	12.8%	12.0%
Weight of Material used,gms:	1125.0	1125.0	1125.0
Water Added,gms:	30.0	15.5	8.0
Height of Specimen: ins	2.55	2.50	2.40
Height of Specimen: mm	64.77	63.50	60.96
Weight of Specimen & mold:	3253.7	3247.1	3240.5
Weight of Mold,gms:	2116.7	2121.6	2121.4
Specimen Weight,gms:	1137	1125.5	1119.1
Exudation Pressure,lbs:	1560	3270	7000
Exudation Load Psi.:	124	260	557
Expansion Dial Reading:	-0.0006	0.0005	0.0005
Expanson Pressure	-26	22	22
Stabilometer Reading @ 1000	55	48	40
Stabilometer Reading @ 2000	133	118	107
Turns of Displacement:	3.60	3.06	2.93
Un-Corrected R-Value:	12	23	30
Correction from Chart:			-3
Corrected R-Value:	12	23	27
R-Value @ 300 psi. Exudation:			25.1
Dry Density PCF.:	118.4	121.1	126.3
Foot Pressure:	150	250	300

Initial Moisture

Pan Number:	BB	
Wet Wt of Sample + Pan:	213.34	180.38
Dry Wt of Sample + Pan:	195.10	162.14
Weight of Water:	18.2	
Weight of Pan:	32.96	
Dry Weight of Sample:	162.1	
Moisture content:	11.2%	

Remarks and observations

Equipment Used

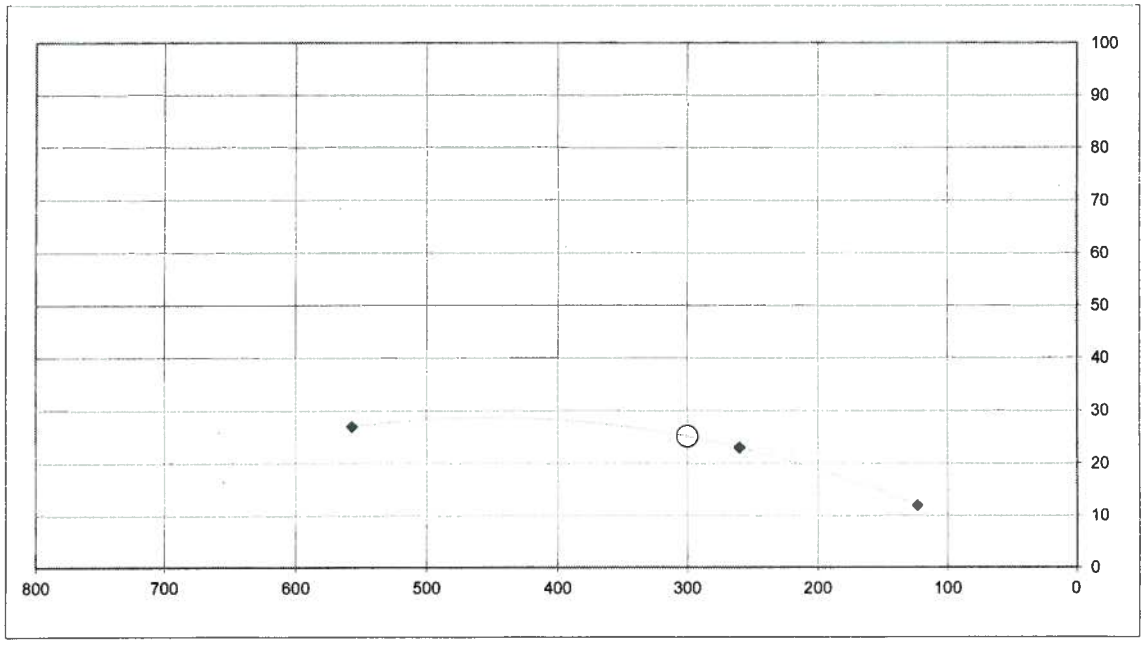
Load cell 719112

Stabilometer 2700814

Kneading Compactor 0091-96

Load Master HM-3000

AASHTO T-190



31133 D B-26 @ 0-5' Route N15

Mold Label:	4	9	1
Moisture Content:	13.7%	14.8%	14.3%
Weight of Material used,gms:	1125.0	1125.0	1125.0
Water Added,gms:	25.0	36.0	30.6
Height of Specimen: ins	2.50	2.60	2.50
Height of Specimen: mm	63.50	66.04	63.50
Weight of Specimen & mold:	3265.3	3270.9	3265.9
Weight of Mold,gms:	2123.3	2116.3	2116.2
Specimen Weight,gms:	1142	1154.6	1149.7
Exudation Pressure,lbs:	6850	2660	3970
Exudation Load Psi.:	545	212	316
Expansion Dial Reading:	0.0005	-0.0003	0.0003
Expanson Pressure	22	-13	11
Stabilometer Reading @ 1000	45	50	47
Stabilometer Reading @ 2000	116	124	120
Turns of Displacement:	3.01	3.28	3.12
Un-Corrected R-Value:	24	18	21
Correction from Chart:		1	
Corrected R-Value:	24	19	21
R-Value @ 300 psi. Exudation:			20.7
Dry Density PCF.:	121.9	117.3	122.0
Foot Pressure:	225	175	250

Initial Moisture

Pan Number:	MO	
Wet Wt of Sample + Pan:	264.86	231.53
Dry Wt of Sample + Pan:	241.46	208.13
Weight of Water:	23.4	
Weight of Pan:	33.33	
Dry Weight of Sample:	208.1	
Moisture content:	11.2%	

Remarks and observations

Equipment Used

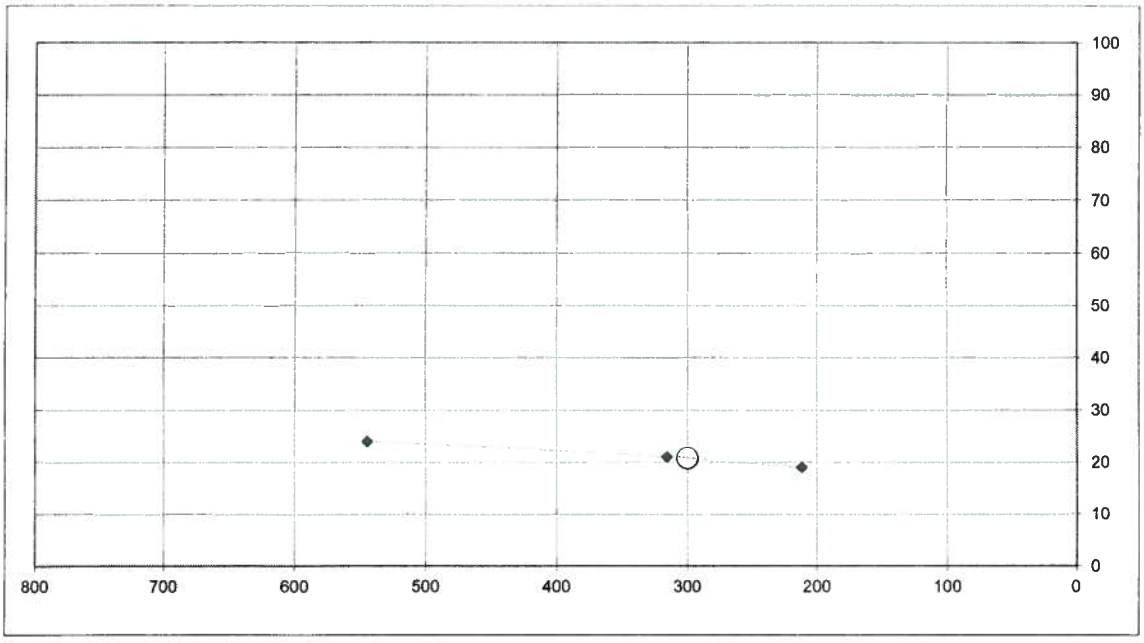
Load cell 719112

Stabilometer 2700814

Kneading Compactor 0091-96

Load Master HM-3000

AASHTO T-190



31133 E B-31 @ 0-5' Route N15

Mold Label:	5	12	6
Moisture Content:	39.9%	40.9%	39.3%
Weight of Material used,gms:	1125.0	1125.0	1125.0
Water Added,gms:	25.0	33.0	20.0
Height of Specimen: ins	2.50	2.55	2.50
Height of Specimen: mm	63.50	64.77	63.50
Weight of Specimen & mold:	3250.2	3266.1	3247.1
Weight of Mold,gms:	2121.4	2121.6	2116.7
Specimen Weight,gms:	1129	1144.5	1130.4
Exudation Pressure,lbs:	3715	1870	5180
Exudation Load Psi.:	296	149	412
Expansion Dial Reading:	-0.0006	-0.0005	0.0005
Expanson Pressure	-26	-22	22
Stabilometer Reading @ 1000	51	60	44
Stabilometer Reading @ 2000	127	138	115
Turns of Displacement:	3.29	3.78	3.35
Un-Corrected R-Value:	16	10	23
Correction from Chart:			
Corrected R-Value:	16	10	23
R-Value @ 300 psi. Exudation:			16.2
Dry Density PCF.:	97.9	96.6	98.5
Foot Pressure:	150	250	300

Initial Moisture

Pan Number:	BB	
Wet Wt of Sample + Pan:	297.32	264.38
Dry Wt of Sample + Pan:	226.08	193.14
Weight of Water:	71.2	
Weight of Pan:	32.94	
Dry Weight of Sample:	193.1	
Moisture content:	36.9%	

Remarks and observations

Equipment Used

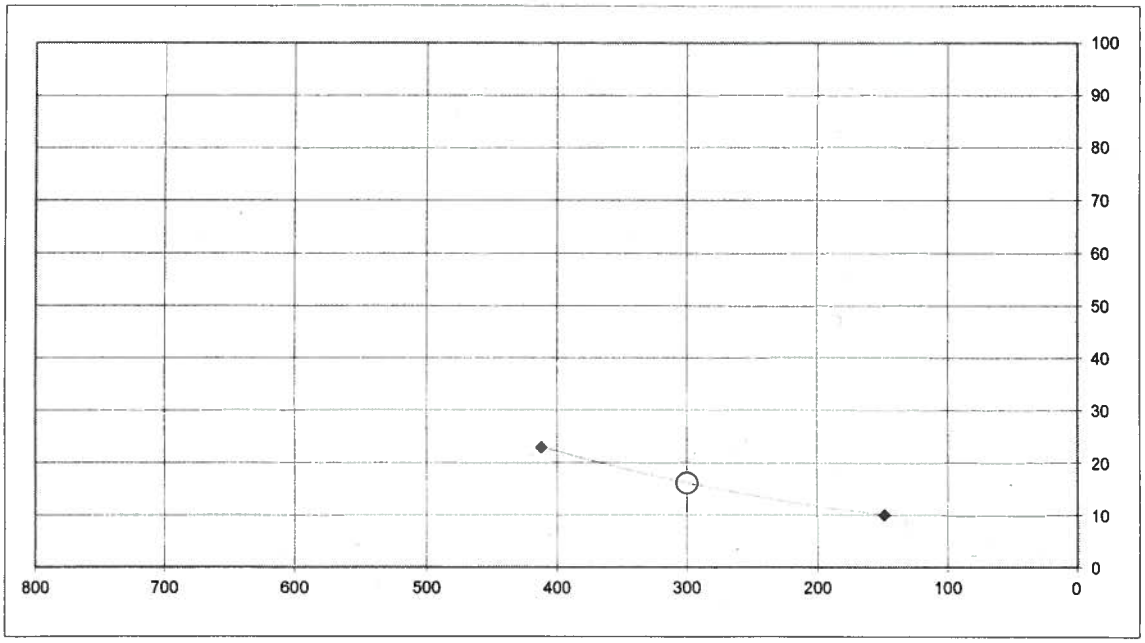
Load cell 719112

Stabilometer 2700814

Kneading Compactor 0091-96

Load Master HM-3000

AASHTO T-190



31133 F B-36 @ 1-5' Route N15

Mold Label:	4	1	9
Moisture Content:	17.4%	16.4%	16.9%
Weight of Material used,gms:	1125.0	1125.0	1125.0
Water Added,gms:	10.0		5.0
Height of Specimen: ins	2.60	2.60	2.60
Height of Specimen: mm	66.04	66.04	66.04
Weight of Specimen & mold:	3237.9	3250.4	3255.7
Weight of Mold,gms:	2123.7	2116.2	2116.3
Specimen Weight,gms:	1114	1134.2	1139.4
Exudation Pressure,lbs:	2200	4350	5390
Exudation Load Psi.:	175	346	429
Expansion Dial Reading:	-0.0005	-0.0003	0.0002
Expanson Pressure	-22	-13	9
Stabilometer Reading @ 1000	55	45	35
Stabilometer Reading @ 2000	130	117	110
Turns of Displacement:	3.46	3.08	3.25
Un-Corrected R-Value:	14	23	26
Correction from Chart:	1	1	1
Corrected R-Value:	15	24	27
R-Value @ 300 psi. Exudation:			22.0
Dry Density PCF.:	110.7	113.7	113.7
Foot Pressure:	175	200	200

Initial Moisture

Pan Number:	MO
Wet Wt of Sample + Pan:	248.48
Dry Wt of Sample + Pan:	218.26
Weight of Water:	30.2
Weight of Pan:	33.43
Dry Weight of Sample:	184.8
Moisture content:	16.4%

215.05

184.83

Remarks and observations

Equipment Used

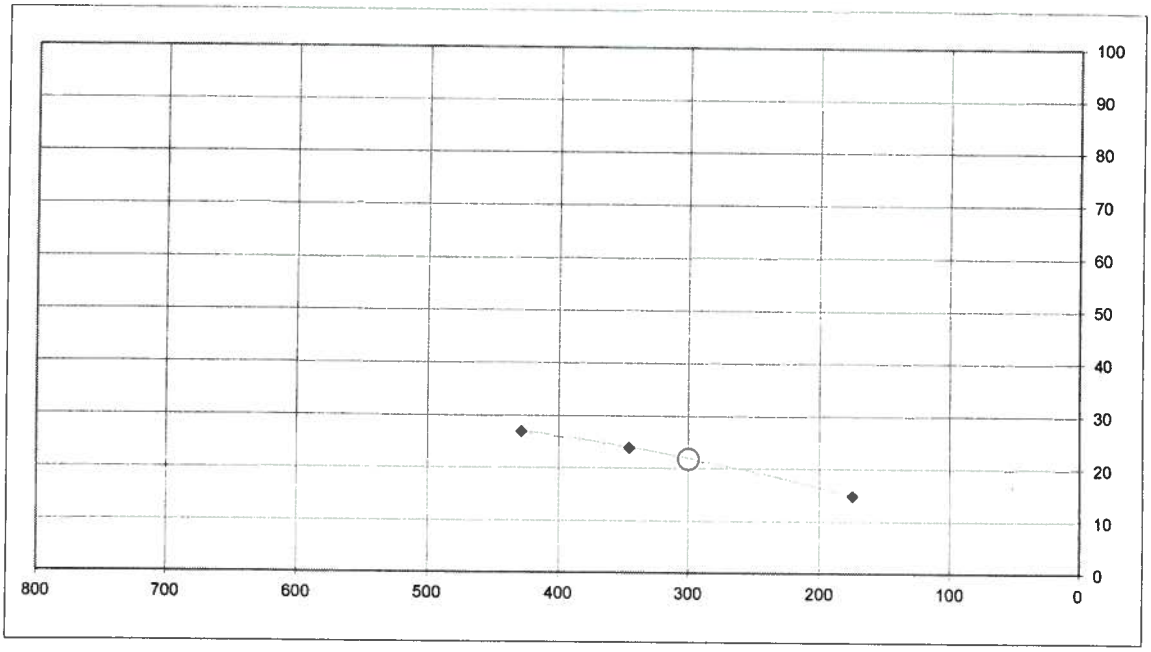
Load cell 719112

Stabilometer 2700814

Kneading Compactor 0091-96

Load Master HM-3000

AASHTO T-190



31133 G B-41 @ 1-5' Route N15

Mold Label:	9	1	5
Moisture Content:	10.4%	12.3%	11.4%
Weight of Material used,gms:	1125.0	1125.0	1125.0
Water Added,gms:	30.0	50.0	41.0
Height of Specimen: ins	2.50	2.55	2.50
Height of Specimen: mm	63.50	64.77	63.50
Weight of Specimen & mold:	3259.3	3284.5	3273.4
Weight of Mold,gms:	2116.3	2116.1	2121.3
Specimen Weight,gms:	1143	1168.4	1152.1
Exudation Pressure,lbs:	8050	2405	3930
Exudation Load Psi.:	641	191	313
Expansion Dial Reading:	-0.0002	-0.0007	-0.0006
Expanson Pressure	-9	-30	-26
Stabilometer Reading @ 1000	18	38	35
Stabilometer Reading @ 2000	36	89	78
Turns of Displacement:	3.56	3.95	3.65
Un-Corrected R-Value:	71	34	42
Correction from Chart:			
Corrected R-Value:	71	34	42
R-Value @ 300 psi. Exudation:			41.1
Dry Density PCF.:	125.6	123.8	125.5
Foot Pressure:	350	300	350

Initial Moisture

Pan Number:	N-11	
Wet Wt of Sample + Pan:	277.60	244.89
Dry Wt of Sample + Pan:	260.53	227.82
Weight of Water:	17.1	
Weight of Pan:	32.71	
Dry Weight of Sample:	227.8	
Moisture content:	7.5%	

Remarks and observations

Equipment Used

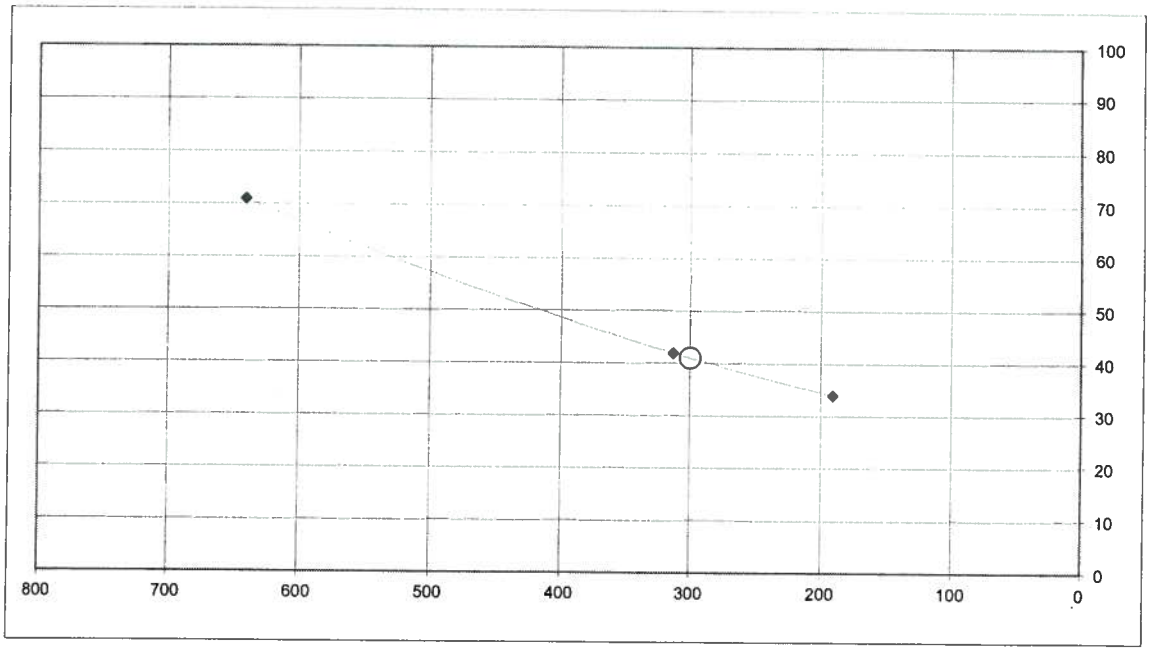
Load cell 719112

Stabilometer 2700814

Kneading Compactor 0091-96

Load Master HM-3000

AASHTO T-190



31133 H B-51 @ 1-5' Route N15

Mold Label:	6	4	12
Moisture Content:	13.3%	12.7%	12.1%
Weight of Material used,gms:	1125.0	1125.0	1125.0
Water Added,gms:	34.0	28.0	22.0
Height of Specimen: ins	2.60	2.55	2.50
Height of Specimen: mm	66.04	64.77	63.50
Weight of Specimen & mold:	3253.9	3270.6	3250.9
Weight of Mold,gms:	2116.7	2123.7	2121.6
Specimen Weight,gms:	1137	1146.9	1129.3
Exudation Pressure,lbs:	2090	3745	5330
Exudation Load Psi.:	166	298	424
Expansion Dial Reading:	-0.0009	-0.0007	-0.0006
Expanson Pressure	-39	-30	-26
Stabilometer Reading @ 1000	57	51	46
Stabilometer Reading @ 2000	132	118	108
Turns of Displacement:	3.83	3.29	3.52
Un-Corrected R-Value:	12	21	25
Correction from Chart:	1		
Corrected R-Value:	13	21	25
R-Value @ 300 psi. Exudation:			21.1
Dry Density PCF.:	117.1	121.0	122.2
Foot Pressure:	150	200	300

Initial Moisture

Pan Number:	MO	
Wet Wt of Sample + Pan:	259.90	226.59
Dry Wt of Sample + Pan:	239.40	206.09
Weight of Water:	20.5	
Weight of Pan:	33.31	
Dry Weight of Sample:	206.1	
Moisture content:	9.9%	

Remarks and observations

Equipment Used

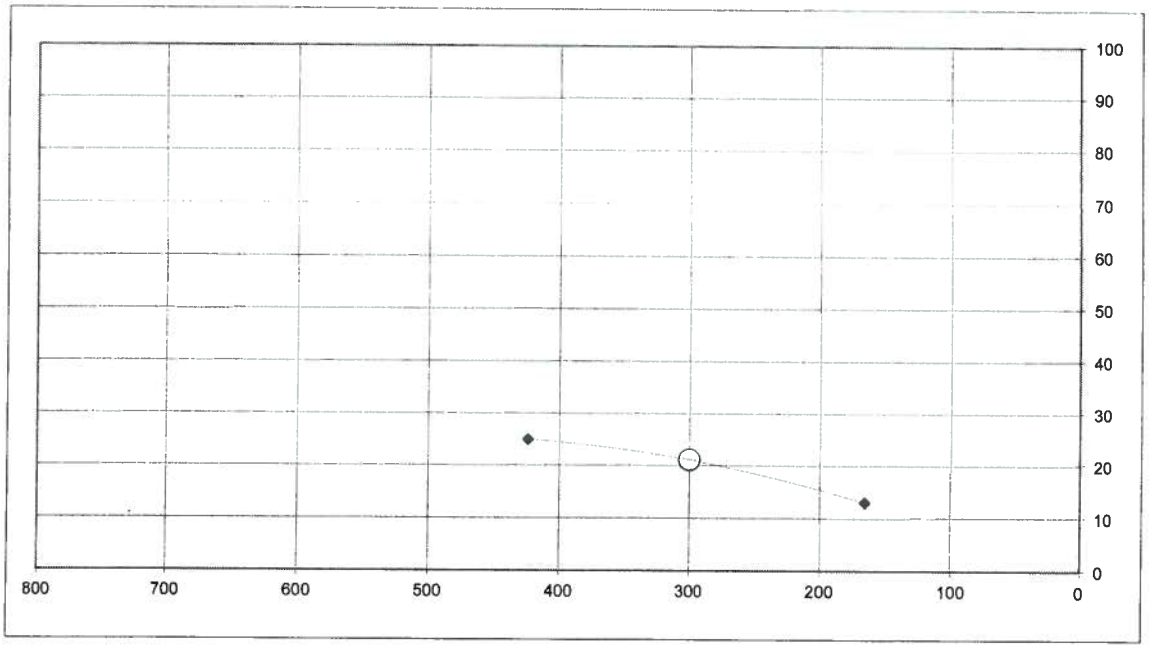
Load cell 719112

Stabilometer 2700814

Kneading Compactor 0091-96

Load Master HM-3000

AASHTO T-190



Job #	20151221	Sample Number	31134 A
Project	Route N15(2-3)(3-1)(4-1)	Sampled By	KD / MM
Client	NR	Date Sampled	10-13 thru 10-17-2014
Phase	03-000L	Date Received	10-23-2014 Vegas Lab
Sample Location	B-56 @ 1-5'	Tested By	WR
Source	Naïve	Reviewed By	
Supplier			

Mold Label:	6	9	4
Moisture Content:	13.3%	11.5%	12.4%
Weight of Material used,gms:	1140.0	1125.0	1126.0
Water Added,gms:	50.0	30.0	39.6
Height of Specimen: ins	2.65	2.50	2.55
Height of Specimen: mm	67.31	63.50	64.77
Weight of Specimen & mold:	3292.4	3252.4	3275.6
Weight of Mold,gms:	2116.7	2116.3	2123.3
Specimen Weight,gms:	1176	1136.1	1152.3
Exudation Pressure,lbs:	3460	8890	4315
Exudation Load Psi.:	275	708	344
Expansion Dial Reading:	-0.00065	-0.00010	-0.00045
Expanson Pressure	-28	-4	-19
Stabilometer Reading @ 1000	46	28	43
Stabilometer Reading @ 2000	107	56	99
Turns of Displacement:	4.00	3.60	3.56
Un-Corrected R-Value:	24	56	30
Correction from Chart:	2		
Corrected R-Value:	26	56	30
R-Value @ 300 psi. Exudation:			27.4
Dry Density PCF.:	118.8	123.6	121.9
Foot Pressure	275	350	350

Initial Moisture	
Pan Number:	BB
Wet Wt of Sample + Pan:	285.57
Dry Wt of Sample + Pan:	265.63
Weight of Water:	19.9
Weight of Pan:	32.91
Dry Weight of Sample:	232.7
Moisture content:	8.6%

Remarks and observations

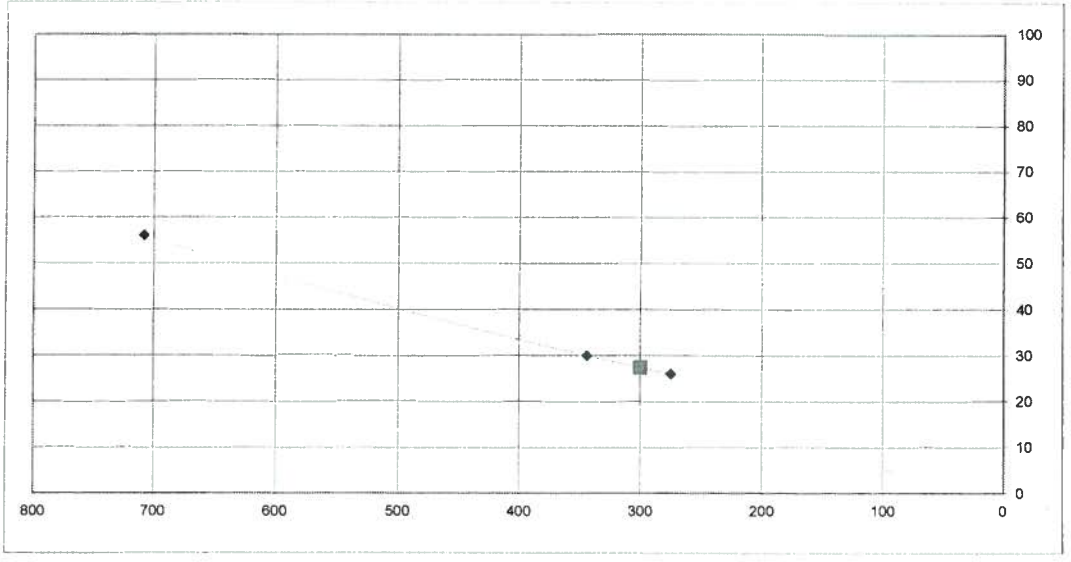
Load cell 719112

Stabilometer 8462

Kneading Compactor 0091-96

Load Master HM-3000

AASHTO T190



Job #	20151221	Sample Number	31134 B
Project	Route N15(2-3)(3-1)(4-1)	Sampled By	KD / MM
Client	NR	Date Sampled	10-13 thru 10-17-2014
Phase	03-000L	Date Received	10-23-2014 Vegas Lab
Sample Location	B-69 @ 1-5'	Tested By	WR
Source	Naïve	Reviewed By	
Supplier			

Mold Label:	1	5	12
Moisture Content:	13.0%	13.4%	12.4%
Weight of Material used,gms:	1125.0	1125.0	1125.0
Water Added,gms:	40.9	45.0	35.0
Height of Specimen: ins	2.50	2.60	2.50
Height of Specimen: mm	63.50	66.04	63.50
Weight of Specimen & mold:	3249.6	3280.7	3274
Weight of Mold,gms:	2116.1	2121.3	2121.6
Specimen Weight,gms:	1134	1159.4	1152.4
Exudation Pressure,lbs:	3890	1910	5110
Exudation Load Psi.:	310	152	407
Expansion Dial Reading:	-0.00040	0.00050	-0.00010
Expanson Pressure	-17	22	-4
Stabilometer Reading @ 1000	52	58	48
Stabilometer Reading @ 2000	121	130	117
Turns of Displacement:	3.39	3.55	3.21
Un-Corrected R-Value:	19	14	22
Correction from Chart:		1	
Corrected R-Value:	19	15	22
R-Value @ 300 psi. Exudation:			18.7
Dry Density PCF.:	121.7	119.3	124.4
Foot Pressure	200	175	300

Initial Moisture

Pan Number:	N-11
Wet Wt of Sample + Pan:	319.98
Dry Wt of Sample + Pan:	296.15
Weight of Water:	23.8
Weight of Pan:	32.73
Dry Weight of Sample:	263.4
Moisture content:	9.0%

Remarks and observations

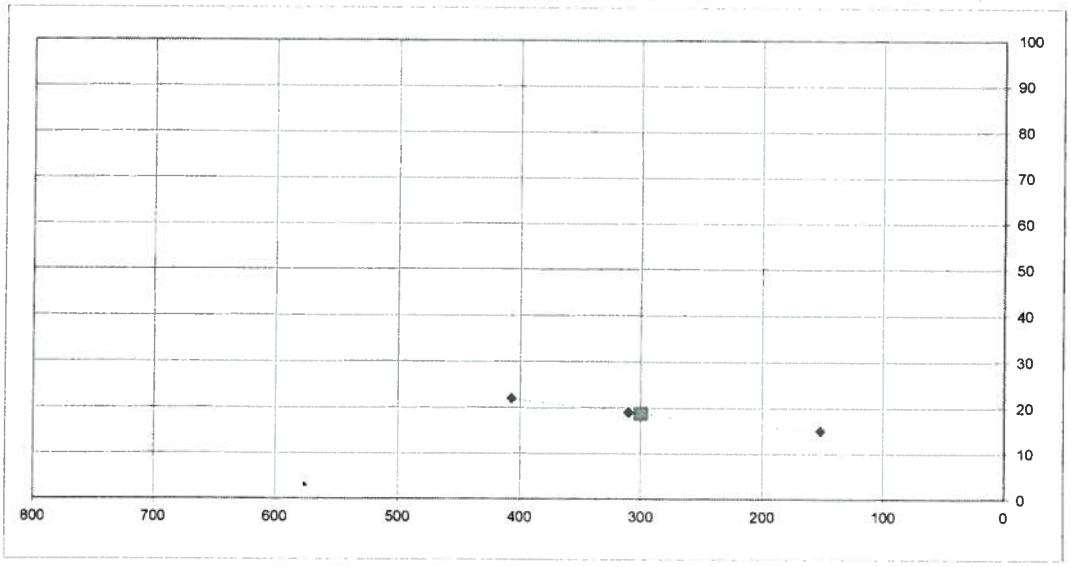
Load cell 719112

Stabilometer 8462

Kneading Compactor 0091-96

Load Master HM-3000

AASHTO T190



Job #	20151221	Sample Number	31134 C
Project	Route N15(2-3)(3-1)(4-1)	Sampled By	KD / MM
Client	NR	Date Sampled	10-13 thru 10-17-2014
Phase	03-000L	Date Received	10-23-2014 Vegas Lab
Sample Location	B-71 @ 1-5'	Tested By	WR
Source	Naïve	Reviewed By	
Supplier			

Mold Label:	9	1	12
Moisture Content:	11.6%	12.3%	11.1%
Weight of Material used,gms:	1125.0	1125.0	1125.0
Water Added,gms:	27.6	35.0	22.5
Height of Specimen: ins	2.55	2.55	2.55
Height of Specimen: mm	64.77	64.77	64.77
Weight of Specimen & mold:	3245.9	3267.2	3261.9
Weight of Mold,gms:	2116.2	2116.1	2121.5
Specimen Weight,gms:	1130	1151.1	1140.4
Exudation Pressure,lbs:	4620	1390	9210
Exudation Load Psi.:	368	111	733
Expansion Dial Reading:	-0.00070	-0.00060	-0.00040
Expanson Pressure	-30	-26	-17
Stabilometer Reading @ 1000	20	25	17
Stabilometer Reading @ 2000	36	45	31
Turns of Displacement:	3.77	4.28	3.76
Un-Corrected R-Value:	70	60	73
Correction from Chart:			
Corrected R-Value:	70	60	73
R-Value @ 300 psi. Exudation:			68.0
Dry Density PCF.:	120.4	121.9	122.1
Foot Pressure	350	350	350

Initial Moisture	
Pan Number:	N-11
Wet Wt of Sample + Pan:	300.85
Dry Wt of Sample + Pan:	278.92
Weight of Water:	21.9
Weight of Pan:	32.77
Dry Weight of Sample:	246.2
Moisture content:	8.9%

Remarks and observations

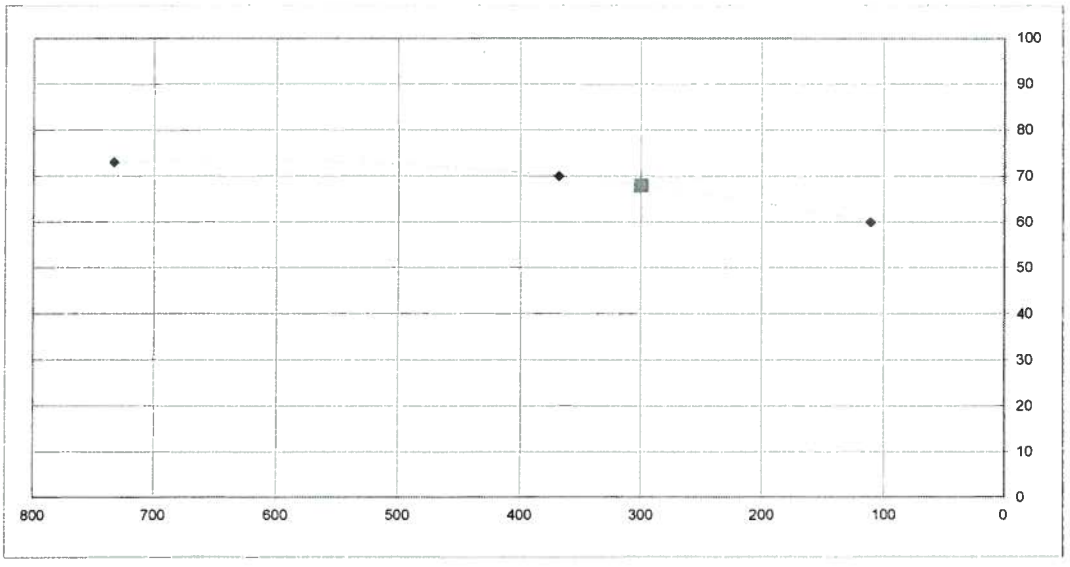
Load cell 719112

Stabilometer 8462

Kneading Compactor 0091-96

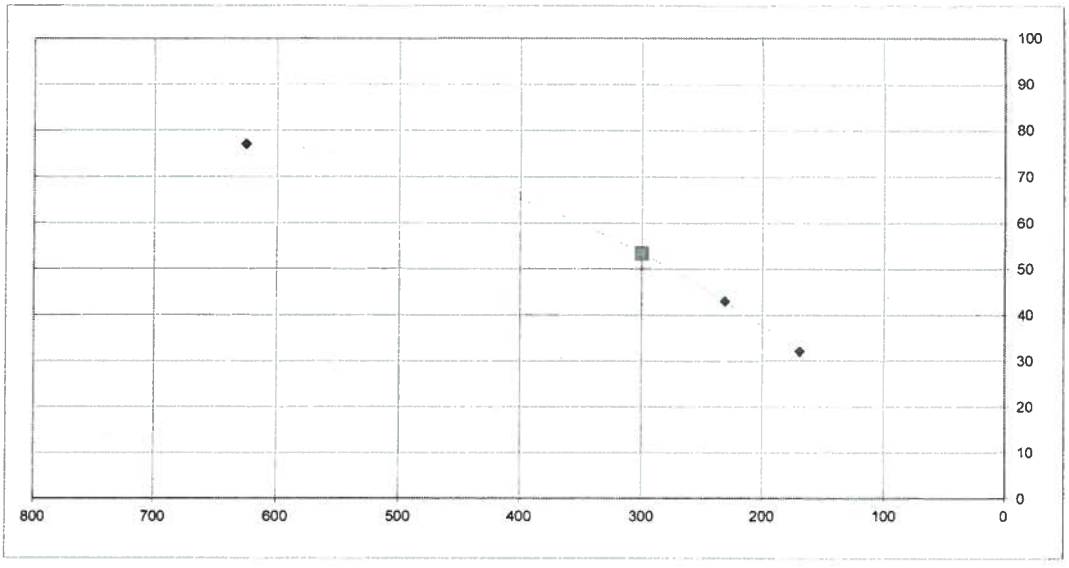
Load Master HM-3000

AASHTO T190



Job #	20151221	Sample Number	31134 D
Project	Route N15(2-3)(3-1)(4-1)	Sampled By	KD / MM
Client	NR	Date Sampled	10-13 thru 10-17-2014
Phase	03-000L	Date Received	10-23-2014 Vegas Lab
Sample Location	B-81 @ 1-5'	Tested By	WR
Source	Naïve	Reviewed By	
Supplier			

Mold Label:	4	6	5	Initial Moisture	
Moisture Content:	12.7%	11.8%	10.6%	Pan Number:	BB
Weight of Material used,gms:	1125.0	1125.0	1125.0	Wet Wt of Sample + Pan:	294.30
Water Added,gms:	40.6	31.6	19.4	Dry Wt of Sample + Pan:	273.28
Height of Specimen: ins	2.60	2.55	2.55	Weight of Water:	21.0
Height of Specimen: mm	66.04	64.77	64.77	Weight of Pan:	32.82
Weight of Specimen & mold:	3273.5	3264.5	3262.5	Dry Weight of Sample:	240.5
Weight of Mold,gms:	2123.3	2116.6	2121.3	Moisture content:	8.7%
Specimen Weight,gms:	1150	1147.9	1141.2	Remarks and observations	
Exudation Pressure,lbs:	2125	2900	7850		
Exudation Load Psi.:	169	231	625		
Expansion Dial Reading:	-0.00050	-0.00040	0.00040	Load cell 719112	
Expanson Pressure	-22	-17	17	Stabilometer 8462	
Stabilometer Reading @ 1000	45	34	16	Kneading Compactor 0091-96	
Stabilometer Reading @ 2000	96	70	29	Load Master HM-3000	
Turns of Displacement:	3.98	4.21	3.40	AASHTO T190	
Un-Corrected R-Value:	30	43	77		
Correction from Chart:	2				
Corrected R-Value:	32	43	77		
R-Value @ 300 psi. Exudation:			53.4		
Dry Density PCF.:	119.1	122.1	122.7		
Foot Pressure	350	350	350		



Job #	20151221	Sample Number	31134 E
Project	Route N15(2-3)(3-1)(4-1)	Sampled By	KD / MM
Client	NR	Date Sampled	10-13 thru 10-17-2014
Phase	03-000L	Date Received	10-23-2014 Vegas Lab
Sample Location	B-85 @ 1-5'	Tested By	WR
Source	Naïve	Reviewed By	
Supplier			

Mold Label:	1	9	4
Moisture Content:	11.3%	10.6%	10.9%
Weight of Material used,gms:	1125.0	1115.0	1116.0
Water Added,gms:	30.8	23.0	26.5
Height of Specimen: ins	2.60	2.50	2.60
Height of Specimen: mm	66.04	63.50	66.04
Weight of Specimen & mold:	3261.2	3210.6	3256.9
Weight of Mold,gms:	2116.1	2116.3	2123.4
Specimen Weight,gms:	1145	1094.3	1133.5
Exudation Pressure,lbs:	2480	9680	6350
Exudation Load Psi.:	197	771	506
Expansion Dial Reading:	-0.00060	-0.00040	-0.00040
Expanson Pressure	-26	-17	-17
Stabilometer Reading @ 1000	24	19	19
Stabilometer Reading @ 2000	45	32	36
Turns of Displacement:	4.47	3.81	4.03
Un-Corrected R-Value:	59	72	68
Correction from Chart:	2		2
Corrected R-Value:	61	72	70
R-Value @ 300 psi. Exudation:			64.8
Dry Density PCF.:	120.0	120.0	119.2
Foot Pressure	350	350	350

Initial Moisture

Pan Number:	BB	
Wet Wt of Sample + Pan:	340.47	307.56
Dry Wt of Sample + Pan:	316.71	283.80
Weight of Water:	23.8	
Weight of Pan:	32.91	
Dry Weight of Sample:	283.8	
Moisture content:	8.4%	

Remarks and observations

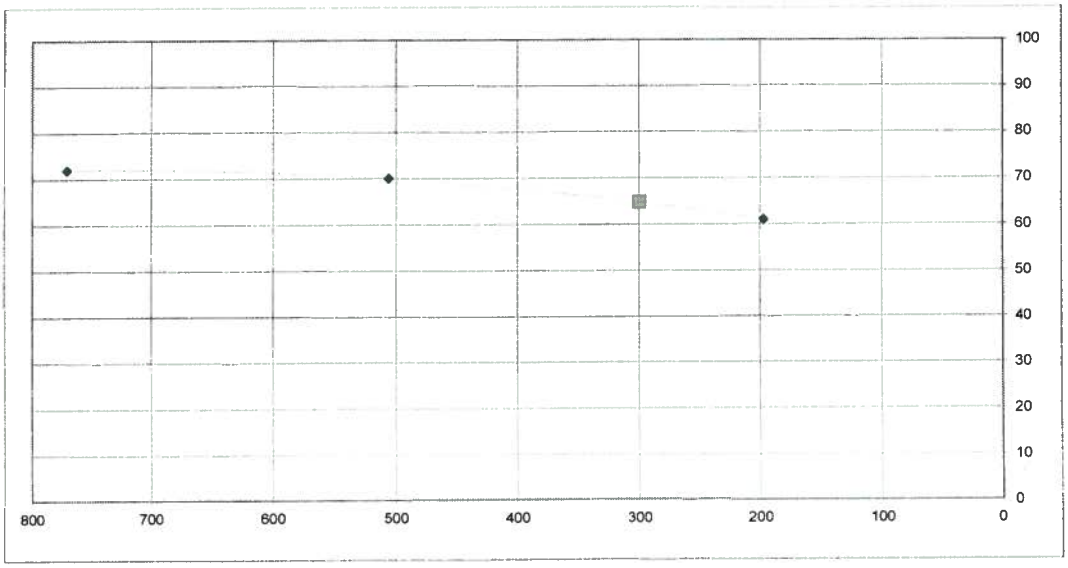
Load cell 719112

Stabilometer 8462

Kneading Compactor 0091-96

Load Master HM-3000

AASHTO T190



Job #	20151221	Sample Number	31134 F
Project	Route N15(2-3)(3-1)(4-1)	Sampled By	KD / MM
Client	NR	Date Sampled	10-13 thru 10-17-2014
Phase	03-000L	Date Received	10-23-2014 Vegas Lab
Sample Location	B-91 @ 1-5'	Tested By	WR
Source	Naïve	Reviewed By	
Supplier			

Mold Label:	5	6	12
Moisture Content:	11.2%	12.3%	11.7%
Weight of Material used,gms:	1125.0	1125.0	1125.0
Water Added,gms:	30.4	41.6	35.0
Height of Specimen: ins	2.50	2.55	2.50
Height of Specimen: mm	63.50	64.77	63.50
Weight of Specimen & mold:	3252.9	3266.9	3261.1
Weight of Mold,gms:	2121.3	2116.6	2121.5
Specimen Weight,gms:	1132	1150.3	1139.6
Exudation Pressure,lbs:	6200	3100	4160
Exudation Load Psi.:	494	247	331
Expansion Dial Reading:	0.00020	-0.00030	0.00040
Expanson Pressure	9	-13	17
Stabilometer Reading @ 1000	49	46	46
Stabilometer Reading @ 2000	115	131	123
Turns of Displacement:	3.53	3.89	3.77
Un-Corrected R-Value:	22	12	17
Correction from Chart:			
Corrected R-Value:	22	12	17
R-Value @ 300 psi. Exudation:			15.3
Dry Density PCF.:	123.5	121.8	123.8
Foot Pressure	350	200	300

Initial Moisture

Pan Number:	N-11		
Wet Wt of Sample + Pan:	325.29	292.52	
Dry Wt of Sample + Pan:	302.82	270.05	
Weight of Water:	22.5		
Weight of Pan:	32.77		
Dry Weight of Sample:	270.1		
Moisture content:	8.3%		

Remarks and observations

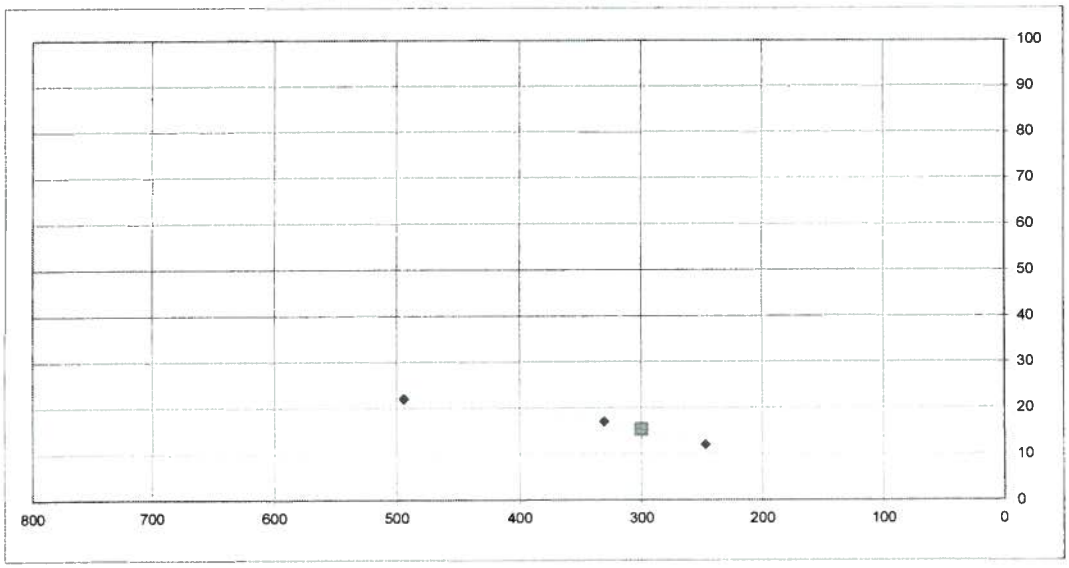
Load cell 719112

Stabilometer 8462

Kneading Compactor 0091-96

Load Master HM-3000

AASHTO T190



Job #	20151221	Sample Number	31134 G
Project	Route N15(2-3)(3-1)(4-1)	Sampled By	KD / MM
Client	NR	Date Sampled	10-13 thru 10-17-2014
Phase	03-000L	Date Received	10-23-2014 Vegas Lab
Sample Location	B-96 @ 1-5'	Tested By	WR
Source	Naïve	Reviewed By	
Supplier			

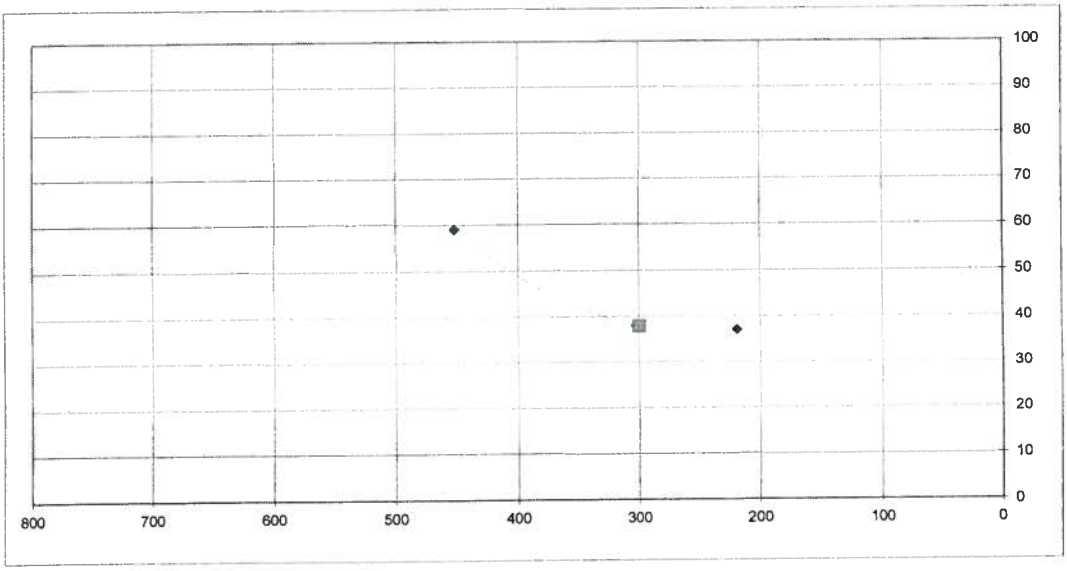
Mold Label:	10	11	2
Moisture Content:	11.5%	10.8%	10.3%
Weight of Material used,gms:	1125.0	1125.0	1125.0
Water Added,gms:	33.4	26.0	21.1
Height of Specimen: ins	2.50	2.50	2.50
Height of Specimen: mm	63.50	63.50	63.50
Weight of Specimen & mold:	3265.9	3244.5	3250.6
Weight of Mold,gms:	2117.9	2098.5	2115.6
Specimen Weight,gms:	1148	1146	1135
Exudation Pressure,lbs:	2750	3800	5680
Exudation Load Psi.:	219	303	452
Expansion Dial Reading:	-0.00035	-0.00030	-0.00040
Expanson Pressure	-15	-13	-17
Stabilometer Reading @ 1000	38	38	25
Stabilometer Reading @ 2000	78	75	47
Turns of Displacement:	4.52	4.54	4.26
Un-Corrected R-Value:	37	38	59
Correction from Chart:			
Corrected R-Value:	37	38	59
R-Value @ 300 psi. Exudation:			37.8
Dry Density PCF.:	124.9	125.5	124.8
Foot Pressure	350	350	350

Initial Moisture

Pan Number:	N-11	
Wet Wt of Sample + Pan:	295.99	263.23
Dry Wt of Sample + Pan:	275.78	243.02
Weight of Water:	20.2	
Weight of Pan:	32.76	
Dry Weight of Sample:	243.0	
Moisture content:	8.3%	

Remarks and observations

Load cell 719112
Stabilometer 8462
Kneading Compactor 0091-96
Load Master HM-3000
AASHTO T190



Job #	20151221	Sample Number	31134 H
Project	Route N15(2-3)(3-1)(4-1)	Sampled By	KD / MM
Client	NR	Date Sampled	10-13 thru 10-17-2014
Phase	03-000L	Date Received	10-23-2014 Vegas Lab
Sample Location	B-111 @ 1-5'	Tested By	WR
Source	Naïve	Reviewed By	
Supplier			

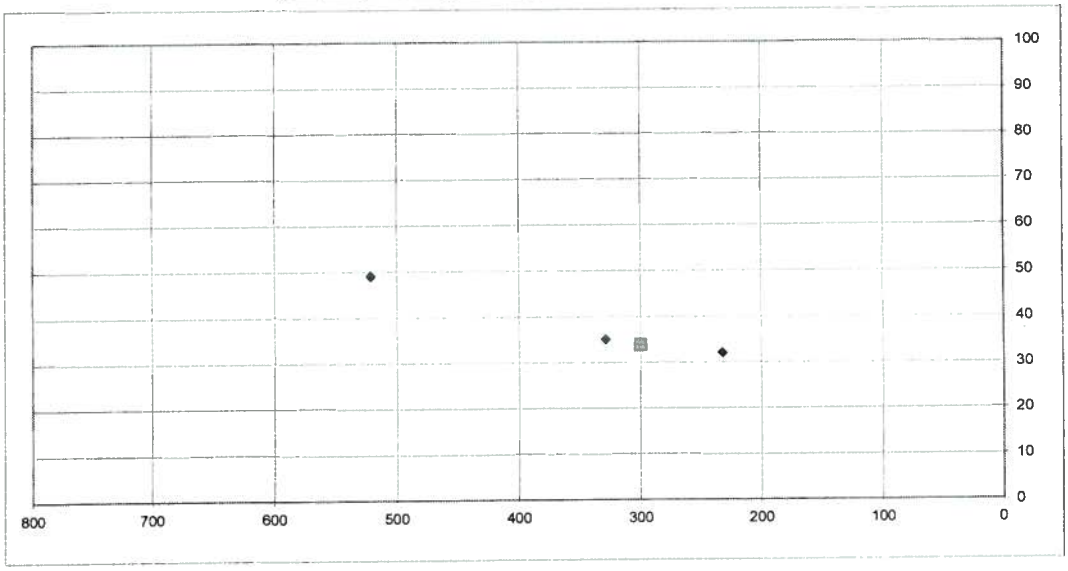
Mold Label:	9	1	4
Moisture Content:	10.5%	11.0%	11.5%
Weight of Material used,gms:	1125.0	1125.0	1125.0
Water Added,gms:	21.4	27.1	32.2
Height of Specimen: ins	2.50	2.50	2.50
Height of Specimen: mm	63.50	63.50	63.50
Weight of Specimen & mold:	3257.7	3251.1	3275.1
Weight of Mold,gms:	2116.2	2116	2123.2
Specimen Weight,gms:	1142	1135.1	1151.9
Exudation Pressure,lbs:	6550	4130	2910
Exudation Load Psi.:	521	329	232
Expansion Dial Reading:	0.00010	0.00040	0.00020
Expanson Pressure	4	17	9
Stabilometer Reading @ 1000	31	39	40
Stabilometer Reading @ 2000	60	81	89
Turns of Displacement:	4.30	4.59	4.17
Un-Corrected R-Value:	49	35	32
Correction from Chart:			
Corrected R-Value:	49	35	32
R-Value @ 300 psi. Exudation:			33.8
Dry Density PCF.:	125.3	124.1	125.3
Foot Pressure	350	350	350

Initial Moisture

Pan Number:	BB	
Wet Wt of Sample + Pan:	303.27	270.33
Dry Wt of Sample + Pan:	282.25	249.31
Weight of Water:	21.0	
Weight of Pan:	32.94	
Dry Weight of Sample:	249.3	
Moisture content:	8.4%	

Remarks and observations

Load cell 719112
Stabilometer 8462
Kneading Compactor 0091-96
Load Master HM-3000
AASHTO T190



Job #	20151221	Sample Number	31134 I
Project	Route N15(2-3)(3-1)(4-1)	Sampled By	KD / MM
Client	NR	Date Sampled	10-13 thru 10-17-2014
Phase	03-000L	Date Received	10-23-2014 Vegas Lab
Sample Location	B-116 @ 1-5'	Tested By	WR
Source	Naïve	Reviewed By	
Supplier			

Mold Label:	5	12	2
Moisture Content:	11.4%	11.9%	12.9%
Weight of Material used,gms:	1125.0	1125.0	1125.0
Water Added,gms:	33.3	38.5	48.7
Height of Specimen: ins	2.55	2.55	2.60
Height of Specimen: mm	64.77	64.77	66.04
Weight of Specimen & mold:	3271.2	3270.4	3263.7
Weight of Mold,gms:	2121.3	2121.5	2115.6
Specimen Weight,gms:	1150	1148.9	1148.1
Exudation Pressure,lbs:	5460	4650	3050
Exudation Load Psi.:	435	370	243
Expansion Dial Reading:	0.00000	-0.00020	-0.00020
Expanson Pressure	0	-9	-9
Stabilometer Reading @ 1000	46	50	55
Stabilometer Reading @ 2000	99	116	124
Turns of Displacement:	4.06	3.86	4.05
Un-Corrected R-Value:	28	20	15
Correction from Chart:			
Corrected R-Value:	28	20	15
R-Value @ 300 psi. Exudation:			15.5
Dry Density PCF.:	122.8	122.1	118.6
Foot Pressure	350	350	300

Initial Moisture

Pan Number:	N-11	
Wet Wt of Sample + Pan:	285.04	252.26
Dry Wt of Sample + Pan:	265.87	233.09
Weight of Water:	19.2	
Weight of Pan:	32.78	
Dry Weight of Sample:	233.1	
Moisture content:	8.2%	

Remarks and observations

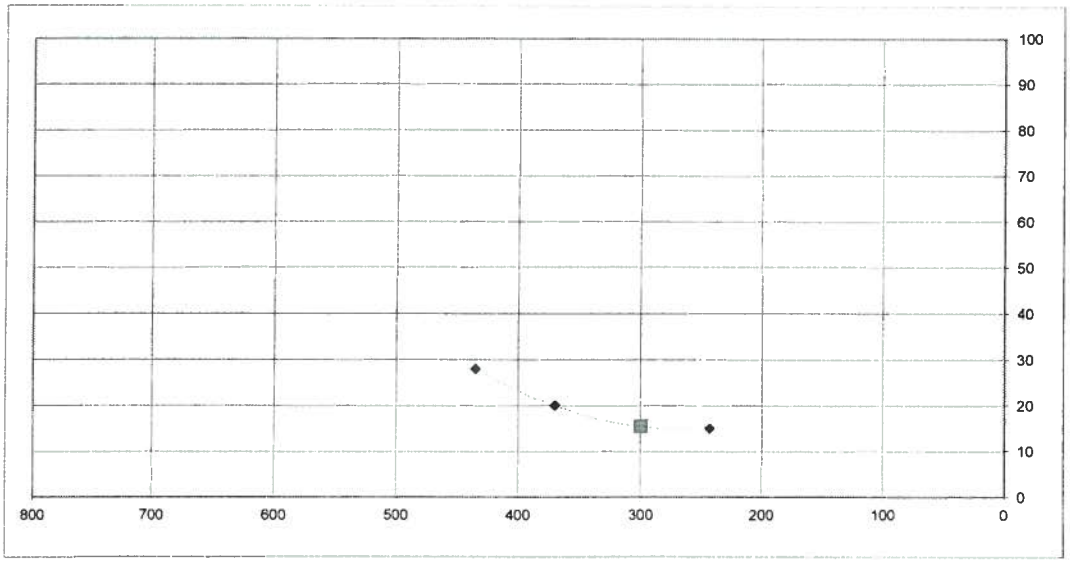
Load cell 719112

Stabilometer 8462

Kneading Compactor 0091-96

Load Master HM-3000

AASHTO T190



Job #	20151221	Sample Number	31134 J
Project	Route N15(2-3)(3-1)(4-1)	Sampled By	KD / MM
Client	NR	Date Sampled	10-13 thru 10-17-2014
Phase	03-000L	Date Received	10-23-2014 Vegas Lab
Sample Location	B-121 @ 1-5'	Tested By	WR
Source	Naïve	Reviewed By	
Supplier			

Mold Label:	10	11	6
Moisture Content:	12.5%	11.9%	11.3%
Weight of Material used,gms:	1125.0	1125.0	1125.0
Water Added,gms:	42.1	35.7	30.0
Height of Specimen: ins	2.60	2.50	2.50
Height of Specimen: mm	66.04	63.50	63.50
Weight of Specimen & mold:	3266.8	3237.1	3263.1
Weight of Mold,gms:	2117.8	2098.5	2116.5
Specimen Weight,gms:	1149	1138.6	1146.6
Exudation Pressure,lbs:	1520	2480	4050
Exudation Load Psi.:	121	197	322
Expansion Dial Reading:	-0.00030	-0.00030	-0.00020
Expanson Pressure	-13	-13	-9
Stabilometer Reading @ 1000	53	44	38
Stabilometer Reading @ 2000	121	111	105
Turns of Displacement:	4.20	4.15	4.01
Un-Corrected R-Value:	16	21	25
Correction from Chart:	1		
Corrected R-Value:	17	21	25
R-Value @ 300 psi. Exudation:			24.5
Dry Density PCF.:	119.1	123.4	125.0
Foot Pressure	250	250	200

Initial Moisture

Pan Number:	BB	
Wet Wt of Sample + Pan:	293.64	260.69
Dry Wt of Sample + Pan:	273.35	240.40
Weight of Water:	20.3	
Weight of Pan:	32.95	
Dry Weight of Sample:	240.4	
Moisture content:	8.4%	

Remarks and observations

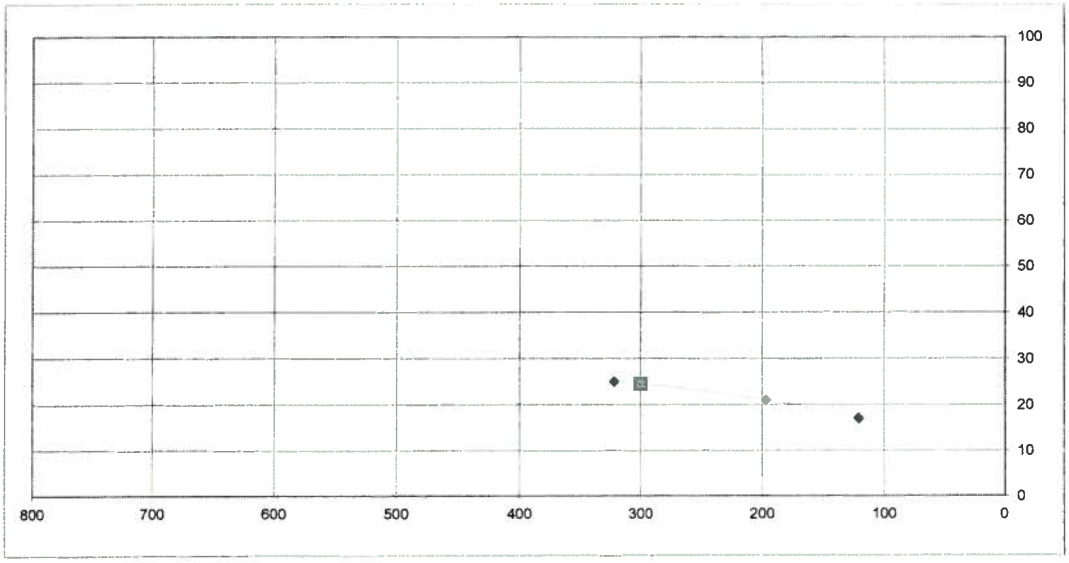
Load cell 719112

Stabilometer 8462

Kneading Compactor 0091-96

Load Master HM-3000

AASHTO T190

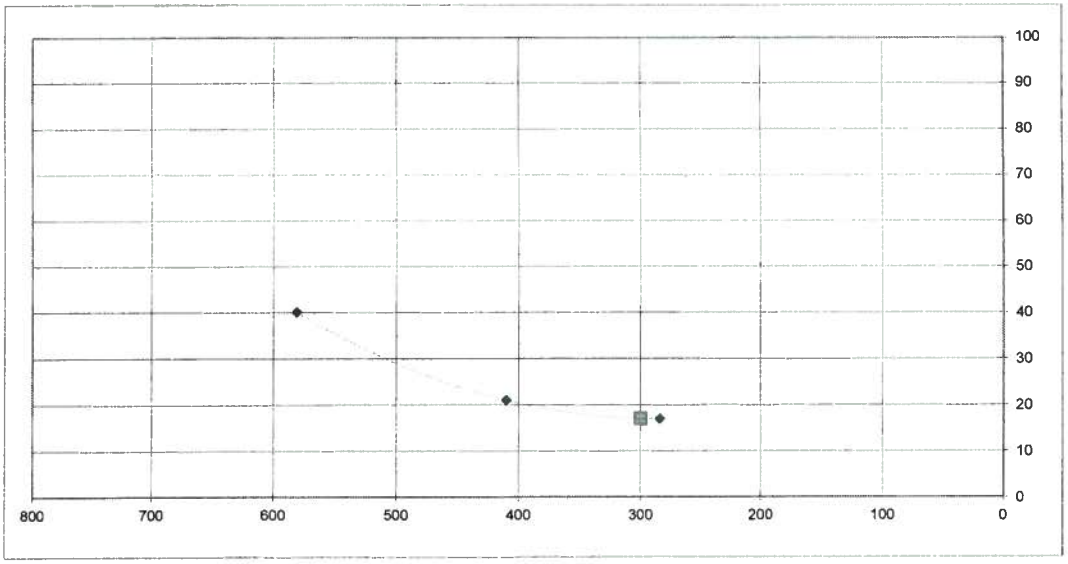


Job #	20151221	Sample Number	31135 A
Project	Route N15(2-3)(3-1)(4-1)	Sampled By	DS / MM
Client	NR	Date Sampled	10-20 thru 10-21-2014
Phase	03-000L	Date Received	
Sample Location	B-136 @ 1-5'	Tested By	WR
Source	Naïve	Reviewed By	
Supplier			

Mold Label:	6	4	9	Initial Moisture	
Moisture Content:	11.4%	11.7%	10.6%	Pan Number:	BB
Weight of Material used,gms:	1125.0	1125.0	1125.0	Wet Wt of Sample + Pan:	301.19
Water Added,gms:	30.9	35.0	23.0	Dry Wt of Sample + Pan:	280.46
Height of Specimen: ins	2.50	2.50	2.50	Weight of Water:	20.7
Height of Specimen: mm	63.50	63.50	63.50	Weight of Pan:	32.99
Weight of Specimen & mold:	3259.9	3264.1	3255.8	Dry Weight of Sample:	247.5
Weight of Mold,gms:	2116.5	2123.3	2116.2	Moisture content:	8.4%
Specimen Weight,gms:	1143	1140.8	1139.6	Remarks and observations	
Exudation Pressure,lbs:	5150	3570	7300		
Exudation Load Psi.:	410	284	581		
Expansion Dial Reading:	-0.00010	-0.00010	-0.00030	Load cell 719112	
Expanson Pressure	-4	-4	-13	Stabilometer 8462	
Stabilometer Reading @ 1000	50	54	37	Kneading Compactor 0091-96	
Stabilometer Reading @ 2000	116	121	80	Load Master HM-3000	
Turns of Displacement:	3.60	3.85	3.80	AASHTO T190	
Un-Corrected R-Value:	21	17	40		
Correction from Chart:					
Corrected R-Value:	21	17	40		
R-Value @ 300 psi. Exudation:			17.0		
Dry Density PCF.:	124.5	123.9	125.0		
Foot Pressure	250	250	200		

268.20

247.47



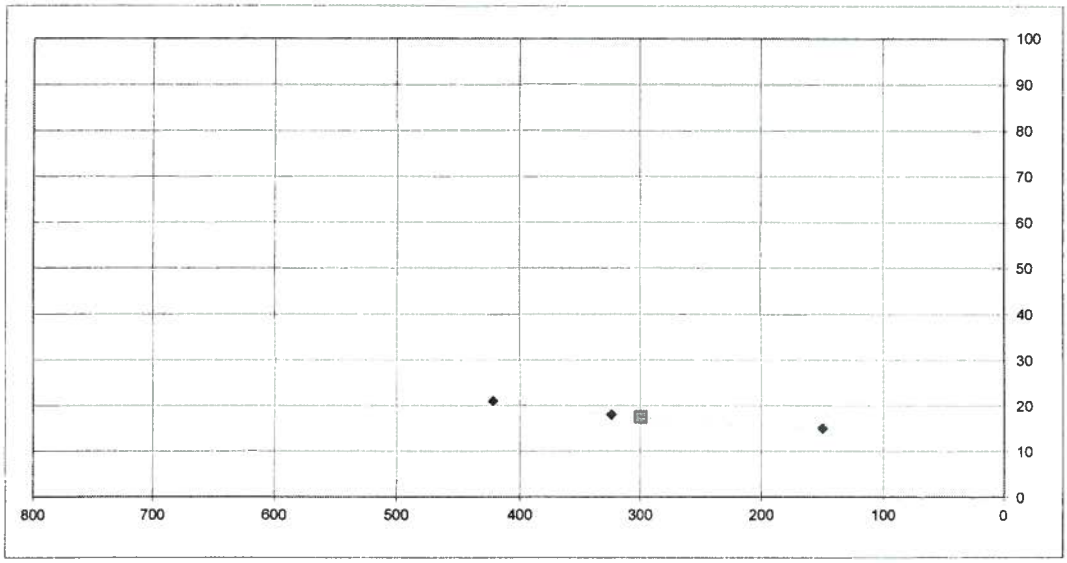
Job #	20151221	Sample Number	31135 B
Project	Route N15(2-3)(3-1)(4-1)	Sampled By	DS / MM
Client	NR	Date Sampled	10-20 thru 10-21-2014
Phase	03-000L	Date Received	
Sample Location	B-151 @ 1-5'	Tested By	WR
Source	Naïve	Reviewed By	
Supplier			

Mold Label:	1	11	5
Moisture Content:	12.8%	11.9%	13.7%
Weight of Material used,gms:	1125.0	1125.0	1125.0
Water Added,gms:	49.0	40.5	58.5
Height of Specimen: ins	2.55	2.60	2.65
Height of Specimen: mm	64.77	66.04	67.31
Weight of Specimen & mold:	3259	3267.4	3294.5
Weight of Mold,gms:	2116	2098.6	2121.3
Specimen Weight,gms:	1143	1168.8	1173.2
Exudation Pressure,lbs:	4070	5300	1890
Exudation Load Psi.:	324	422	150
Expansion Dial Reading:	0.00030	-0.00010	-0.00060
Expanson Pressure	13	-4	-26
Stabilometer Reading @ 1000	50	47	55
Stabilometer Reading @ 2000	124	121	130
Turns of Displacement:	3.29	3.22	3.67
Un-Corrected R-Value:	18	20	14
Correction from Chart:		1	1
Corrected R-Value:	18	21	15
R-Value @ 300 psi. Exudation:			17.4
Dry Density PCF.:	120.5	121.8	118.1
Foot Pressure	200	250	150

Load cell 719112
Stabilometer 8462
Kneading Compactor 0091-96
Load Master HM-3000
AASHTO T190

Initial Moisture		
Pan Number:	N-11	
Wet Wt of Sample + Pan:	325.39	292.63
Dry Wt of Sample + Pan:	303.57	270.81
Weight of Water:	21.8	
Weight of Pan:	32.76	
Dry Weight of Sample:	270.8	
Moisture content:	8.1%	

Remarks and observations



Job #	20151221	Sample Number	31135 C
Project	Route N15(2-3)(3-1)(4-1)	Sampled By	DS / MM
Client	NR	Date Sampled	10-20 thru 10-21-2014
Phase	03-000L	Date Received	
Sample Location	B-173 @ 1-5'	Tested By	WR
Source	Naïve	Reviewed By	
Supplier			

Mold Label:	12	10	2
Moisture Content:	12.9%	11.8%	11.2%
Weight of Material used,gms:	1125.0	1125.0	1125.0
Water Added,gms:	48.4	37.0	31.0
Height of Specimen: ins	2.60	2.60	2.60
Height of Specimen: mm	66.04	66.04	66.04
Weight of Specimen & mold:	3275.9	3273.1	3275
Weight of Mold,gms:	2121.5	2117.8	2121.3
Specimen Weight,gms:	1154	1155.3	1153.7
Exudation Pressure,lbs:	1410	3780	5120
Exudation Load Psi.:	112	301	408
Expansion Dial Reading:	0.00030	-0.00010	-0.00060
Expanson Pressure	13	-4	-26
Stabilometer Reading @ 1000	60	57	53
Stabilometer Reading @ 2000	139	134	128
Turns of Displacement:	3.95	3.56	3.44
Un-Corrected R-Value:	9	12	15
Correction from Chart:	1	1	1
Corrected R-Value:	10	13	16
R-Value @ 300 psi. Exudation:			13.0
Dry Density PCF.:	119.3	120.5	121.0
Foot Pressure	150	175	200

Load cell 719112

Stabilometer 8462

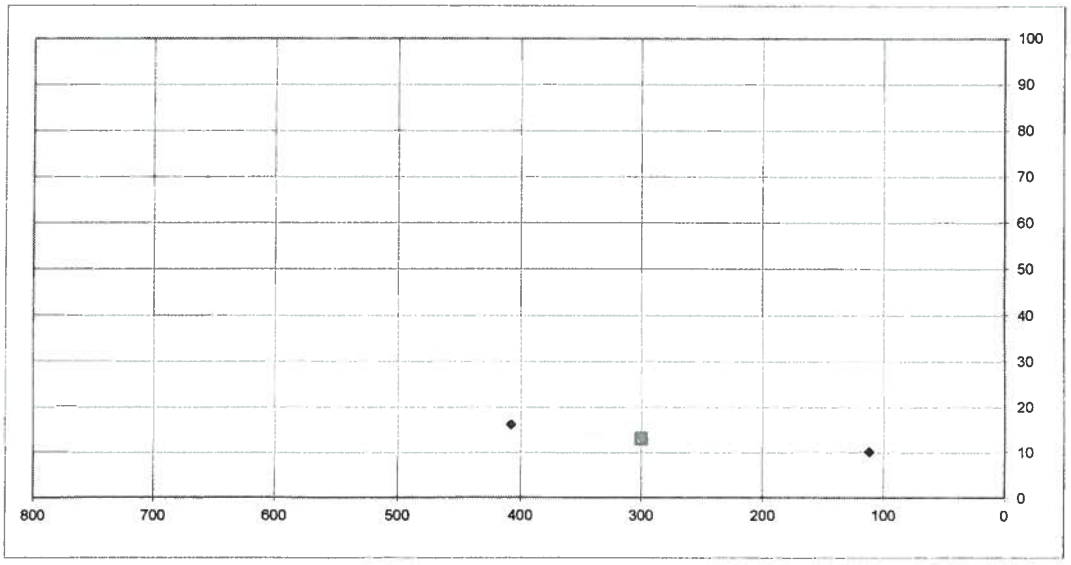
Kneading Compactor 0091-96

Load Master HM-3000

AASHTO T190

Initial Moisture		
Pan Number:	CYB	
Wet Wt of Sample + Pan:	315.85	283.62
Dry Wt of Sample + Pan:	294.31	262.08
Weight of Water:	21.5	
Weight of Pan:	32.23	
Dry Weight of Sample:	262.1	
Moisture content:	8.2%	

Remarks and observations



APPENDIX D

Pueblo Colorado Wash Embankment Slope Stability Analysis Results

Slide Analysis Information

Document Name

File Name: N15 Pueblo Colorado Wash

Project Settings

Project Title: N15 Pueblo Colorado Wash
Failure Direction: Left to Right
Units of Measurement: Imperial Units
Pore Fluid Unit Weight: 62.4 lb/ft3
Groundwater Method: Water Surfaces
Data Output: Standard
Calculate Excess Pore Pressure: Off
Allow Ru with Water Surfaces or Grids: Off
Random Numbers: Pseudo-random Seed
Random Number Seed: 10116
Random Number Generation Method: Park and Miller v.3

Analysis Methods

Analysis Methods used:
Spencer

Number of slices: 25
Tolerance: 0.005
Maximum number of iterations: 50

Surface Options

Surface Type: Circular
Search Method: Grid Search
Radius increment: 10
Composite Surfaces: Disabled
Reverse Curvature: Create Tension Crack
Minimum Elevation: Not Defined
Minimum Depth: Not Defined

Material Properties

Material: Poorly Graded Sand - Loose
Strength Type: Mohr-Coulomb
Unit Weight: 105 lb/ft3
Cohesion: 1 psf
Friction Angle: 30 degrees
Water Surface: None

Material: Cemented Sand - Very Dense
Strength Type: Mohr-Coulomb
Unit Weight: 140 lb/ft3
Cohesion: 2000 psf
Friction Angle: 40 degrees
Water Surface: None

Global Minimums

Method: spencer
FS: 1.200160
Center: 172.138, 210.398
Radius: 173.547
Left Slip Surface Endpoint: 78.854, 64.054
Right Slip Surface Endpoint: 117.945, 45.529
Resisting Moment=714994 lb-ft
Driving Moment=595750 lb-ft
Resisting Horizontal Force=3706.75 lb
Driving Horizontal Force=3088.55 lb

Valid / Invalid Surfaces

Method: spencer
Number of Valid Surfaces: 13699
Number of Invalid Surfaces: 14912
Error Codes:
Error Code -101 reported for 305 surfaces
Error Code -102 reported for 2 surfaces
Error Code -103 reported for 152 surfaces
Error Code -106 reported for 6 surfaces
Error Code -108 reported for 26 surfaces
Error Code -1000 reported for 14421 surfaces

Error Codes

The following errors were encountered during the computation:

-101 = Only one (or zero)
surface / slope intersections.

-102 = Two surface / slope intersections,
but resulting arc is actually outside soil region.

-103 = Two surface / slope intersections,
but one or more surface / nonslope external polygon
intersections lie between them. This usually occurs
when the slip surface extends past the bottom of the
soil region, but may also occur on a benched
slope model with two sets of Slope Limits.

-106 = Average slice width is less than
0.0001 * (maximum horizontal extent of soil region).
This limitation is imposed to avoid numerical errors
which may result from too many slices, or too
small a slip region.

-108 = Total driving moment
or total driving force < 0.1. This is to
limit the calculation of extremely high safety
factors if the driving force is very small
(0.1 is an arbitrary number).

-1000 = No valid slip surfaces are generated
at a grid center. Unable to draw a surface.

List of All Coordinates

Search Grid

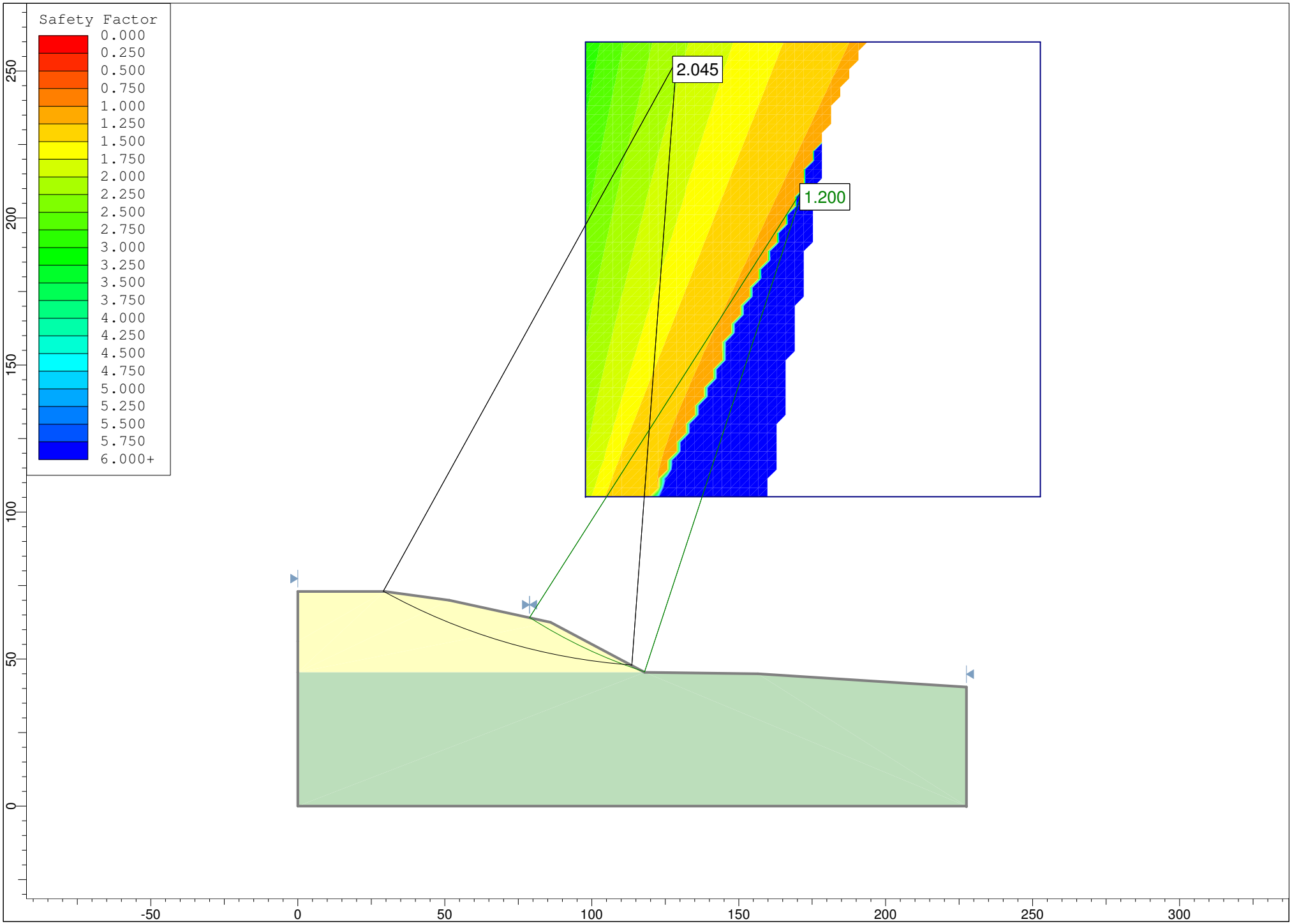
97.868	105.182
252.597	105.182
252.597	259.911
97.868	259.911

Material Boundary

0.000	45.500
118.000	45.500

External Boundary

227.500	0.000
227.500	40.500
156.500	45.000
118.000	45.500
86.000	62.500
51.500	70.000
29.500	73.000
0.000	73.000
0.000	56.000
0.000	45.500
0.000	0.000


Safety Factor
0.000
0.250
0.500
0.750
1.000
1.250
1.500
1.750
2.000
2.250
2.500
2.750
3.000
3.250
3.500
3.750
4.000
4.250
4.500
4.750
5.000
5.250
5.500
5.750
6.000+
2.045
1.200
250
200
150
100
50
0
-50
0
50
100
150
200
250
300

APPENDIX E

Pavement Design Sections

APPENDIX E

Pavement Design Sections

Pavement Section 2-3

PROJECT:	BIA N15(2-3)(3-1)(4-1)2&4	**PROJECT NO:**	20151221	**CLIENT:**	WHPacific Inc.
SUBJECT:	AASHTO Pavement Design Summary	**PREPARED BY:**	Meghan McDonald	**DATE:**	12/9/2014
	Section (2-3), Sta 22+751.75 to 34+017.159	**REVIEWED BY:**	Stacie Steel	**DATE:**	12/12/2014

AASHTO Flexible Pavement Design

Design Parameters:

Standard Normal Deviate	-0.841
Combined Standard Error	0.45
Design Serviceability Loss	2.2
Desired Level of Reliability (percent)	80
Asphalt Concrete Layer Coefficient	0.4
Aggregate Base Layer Coefficient	0.11
Aggregate Base Drainage Coefficient	1.0
Subbase Layer Coefficient	0.08
Subbase Base Drainage Coefficient	0.0

Flexible Pavement Structural Design:

Allowable 18-kip ESAL Repetitions	1,740,000
Resilient Modulus (psi)	12,000
Asphalt Concrete Thickness (inches)	5
Aggregate Base Thickness (inches)	8
Subbase Thickness (inches)	0
Design Structural Number	2.88
Required Structural Number	2.86
Design Life (years)	20

Ashalt Concrete Thickness	**5**	**inches**
Aggregate Base Thickness	**8**	**inches**
Subbase Thickness	**0**	**inches**

PROJECT: BIA N15(2-3)(3-1)(4-1)2&4 PROJECT NO: 20121221
SUBJECT: Section (2-3) Pavement Design PREPARED BY: Meghan McDonald DATE: 12/9/2014
REVIEWED BY: Stacie Steel DATE: 12/12/2014

Equivalent Single Axle Load (ESAL) and Traffic Index (TI) Calculator for Flexible Pavements

This sheet requires input of truck factors. It does not use the truck factors calculated on the Truck Factor Calculation sheet.

Based on the *AASHTO Guide for Design of Pavement Structures 1993* and the *Caltrans Highway Design Manual*

Note: The ESAL calculation is based on the AASHTO Guide. Only the conversion from ESALs to TI comes from Caltrans

Axle Load Equivalency Factors vary depending on structural number (SN) and terminal serviceability.

Analysis Period = 20 years Assumed SN = 5

Terminal Serviceability, p_t: 2

Vehicle Types	Current Traffic	Growth Factors	Design Traffic	ESAL Factor	Design ESAL
		3%			
Passenger Cars	3,740	26.07	35,581,674	0.0008	28,465
Buses	0	26.07	0	0.6806	-
		3%			
Panel and Pickup Trucks	0	26.07	0	0.0122	-
Other 2-Axle / 4-Tire Trucks	0	26.07	0	0.0520	-
2-Axle / 6-Tire Trucks	0	26.07	0	0.1890	-
3 or More Axle Trucks	0	26.07	0	0.1303	-
All Single Unit Trucks [1]	*0*	*26.07*	*0*	*2.4000*	-
		3%			
3 Axle Tractor Semi-Trailers	240	26.07	2,283,316	1.5100	3,447,807
4 Axle Tractor Semi-Trailers	0	26.07	0	0.6560	-
5+ Axle Tractor Semi-Trailers	0	26.07	0	2.3719	-
All Tractor Semi-Trailers [1]	*0*	*26.07*	*0*	*0.0000*	-
		3%			
5-Axle Double Trailers	0	26.07	0	2.3187	-
6+ Axle Double Trailers	0	26.07	0	0.0000	-
All Double Trailer Combos [1]	*0*	*26.07*	*0*	*0.0000*	-
		3%			
3 Axle Truck-Trailers	0	26.07	0	0.0152	-
4 Axle Truck Trailers	0	26.07	0	0.0152	-
5+ Axle Truck Trailers	0	26.07	0	0.5317	-
All Truck-Trailer Combos [1]	*0*	*26.07*	*0*	*0.0000*	-
All Vehicles	3,980		37,864,990	Design ESALs:	3,476,273

1 - either use these summary groups or the more detailed classifications - do not use both

Directional Distribution Factor[1]: 0.5

Lane Distribution Factor: 1

ESALs for Design Lane: 1,738,136

Lane Distribution Factor	
Number of Lanes in Each Direction	% of ESALs in Design Lane
1	100
2	80-100
3	60-80
4	50-75

$$TI = 9.0 \times \left[\frac{(ESAL \times LDF)}{10^6}\right]^{0.119}$$

Where:

TI = Traffic Index

ESAL = Total number of cumulative 18-kip Equivalent Single Axle Loads

LDF = Lane Distribution Factor

The TI is determined to the nearest 0.5

TI for Design Lane: 9.5

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Pavement Optimization Design Analysis

Design Parameters for AASHTO (1993) Equation

Reliability (%)	= 80	Initial Serviceability	= 4.2
Standard Normal Deviate	= -.842	Terminal Serviceability	= 2.0
Standard Deviation	= 0.45	Change in Serviceability	= 2.2

Aggregate fill shall conform to following requirement:

D50 <= 27mm (Base course)

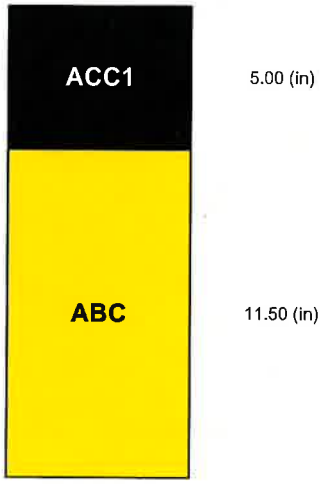
Unstabilized Section Material Properties

Layer	Description	Cost ($/ton)	Layer coefficient	Drainage factor
ACC1	Asphalt Wearing Course	70	0.420	N/A
ABC	Aggregate Base Course	20	0.120	1.0

Stabilized Section Material Properties

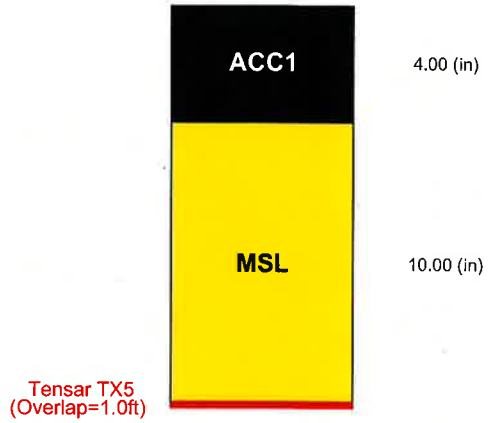
Layer	Description	Cost ($/ton)	Layer coefficient	Drainage factor
ACC1	Asphalt Wearing Course	70	0.420	N/A
MSL	Mechanically Stabilized Base Cour	20	0.197	1.0

Unstabilized Pavement



Subgrade Modulus = 6,000 (psi)
Structural Number = 3.480
Calculated Traffic (ESALs) = 1,284,000

Stabilized Pavement



Subgrade Modulus = 6,000 (psi)
Structural Number = 3.650
Calculated Traffic (ESALs) = 1,775,000

LIMITATIONS OF THE REPORT

The designs, illustrations, information and other content included in this report are necessarily general and conceptual in nature, and do not constitute engineering advice or any design intended for actual construction. Specific design recommendations can be provided as the project develops.

Project Name	BIA N15 Section (2-3)		
Company Name	Tensar		
Designer	S.Davis	Date	10/2/2015

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Standard Asphalt Pavement - TWH Edition - 20150503

Pavement Section 3-1

PROJECT:	BIA N15(2-3)(3-1)(4-1)2&4	**PROJECT NO:**	20151221	**CLIENT:**	WHPacific Inc.
SUBJECT:	AASHTO Pavement Design Summary	**PREPARED BY:**	Meghan McDonald	**DATE:**	12/18/2014
	Section (3-1), Sta 11+300 to 22+751.75	**REVIEWED BY:**	Stacie Steel	**DATE:**	12/18/2014

AASHTO Flexible Pavement Design

Design Parameters:

Standard Normal Deviate	-0.841
Combined Standard Error	0.45
Design Serviceability Loss	2.2
Desired Level of Reliability (percent)	80
Asphalt Concrete Layer Coefficient	0.4
Aggregate Base Layer Coefficient	0.11
Aggregate Base Drainage Coefficient	1.0
Subbase Layer Coefficient	0.08
Subbase Base Drainage Coefficient	0.0

Flexible Pavement Structural Design:

Allowable 18-kip ESAL Repetitions	660,000
Resilient Modulus (psi)	22,600
Asphalt Concrete Thickness (inches)	3
Aggregate Base Thickness (inches)	8
Subbase Thickness (inches)	0
Design Structural Number	2.08
Required Structural Number	1.94
Design Life (years)	20

Ashalt Concrete Thickness	**3**	**inches**
Aggregate Base Thickness	**8**	**inches**
Subbase Thickness	**0**	**inches**

PROJECT: BIA N15(2-3)(3-1)(4-1)2&4
SUBJECT: Section (3-1) Pavement Design

PROJECT NO: 20121221
PREPARED BY: Meghan McDonald
REVIEWED BY: Stacie Steel

DATE: 12/18/2014
DATE: 12/18/2014

Equivalent Single Axle Load (ESAL) and Traffic Index (TI) Calculator for Flexible Pavements

This sheet requires input of truck factors. It does not use the truck factors calculated on the Truck Factor Calculation sheet.

Based on the *AASHTO Guide for Design of Pavement Structures 1993* and the *Caltrans Highway Design Manual*

Note: The ESAL calculation is based on the AASHTO Guide Only the conversion from ESALs to TI comes from Caltrans

Axle Load Equivalency Factors vary depending on structural number (SN) and terminal serviceability

Analysis Period = 20 years

Assumed SN = 5

Terminal Serviceability, p_t: 2

Vehicle Types	Current Traffic	Growth Factors	Design Traffic	ESAL Factor	Design ESAL
		3%			
Passenger Cars	1,791	26.07	17,039,246	0.0008	13,631
Buses	0	26.07	0	0.6806	-
		3%			
Panel and Pickup Trucks	0	26.07	0	0.0122	-
Other 2-Axle / 4-Tire Trucks	0	26.07	0	0.0520	-
2-Axle / 6-Tire Trucks	0	26.07	0	0.1890	-
3 or More Axle Trucks	0	26.07	0	0.1303	-
All Single Unit Trucks [1]	*0*	*26.07*	*0*	*2.4000*	-
		3%			
3 Axle Tractor Semi-Trailers	90	26.07	856,244	1.5100	1,292,928
4 Axle Tractor Semi-Trailers	0	26.07	0	0.6560	-
5+ Axle Tractor Semi-Trailers	0	26.07	0	2.3719	-
All Tractor Semi-Trailers [1]	*0*	*26.07*	*0*	*0.0000*	-
		3%			
5-Axle Double Trailers	0	26.07	0	2.3187	-
6+ Axle Double Trailers	0	26.07	0	0.0000	-
All Double Trailer Combos [1]	*0*	*26.07*	*0*	*0.0000*	-
		3%			
3 Axle Truck-Trailers	0	26.07	0	0.0152	-
4 Axle Truck Trailers	0	26.07	0	0.0152	-
5+ Axle Truck Trailers	0	26.07	0	0.5317	-
All Truck-Trailer Combos [1]	*0*	*26.07*	*0*	*0.0000*	-
All Vehicles	1,881		17,895,489	**Design ESALs:**	1,306,559

1 - either use these summary groups or the more detailed classifications - do not use both

Directional Distribution Factor[1]: 0.5

Lane Distribution Factor: 1

ESALs for Design Lane: 653,280

Lane Distribution Factor

Number of Lanes In Each Direction	% of ESALs In Design Lane
1	100
2	80-100
3	60-80
4	50-75

$$TI = 9.0 \times \left[\frac{(ESAL \times LDF)}{10^6}\right]^{0.119}$$

Where:

TI = Traffic Index

ESAL = Total number of cumulative 18-kip Equivalent Single Axle Loads

LDF = Lane Distribution Factor

The TI is determined to the nearest 0.5

TI for Design Lane: 8.5

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Pavement Optimization Design Analysis

Design Parameters for AASHTO (1993) Equation

Reliability (%)	= 80	Initial Serviceability	= 4.2
Standard Normal Deviate	= -0.842	Terminal Serviceability	= 2.0
Standard Deviation	= 0.45	Change in Serviceability	= 2.2

Aggregate fill shall conform to following requirement:

D50 <= 27mm (Base course)

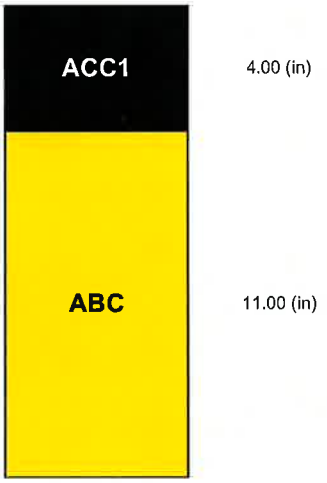
Unstabilized Section Material Properties

Layer	Description	Cost ($/ton)	Layer coefficient	Drainage factor
ACC1	Asphalt Wearing Course	70	0.420	N/A
ABC	Aggregate Base Course	20	0.120	1.0

Stabilized Section Material Properties

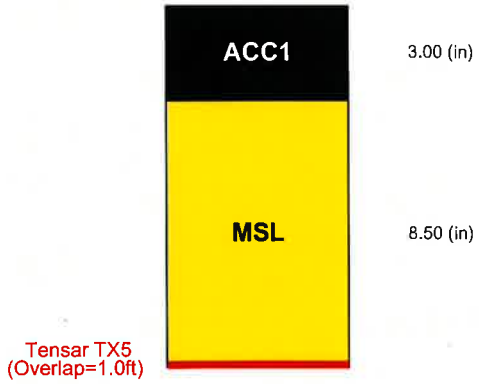
Layer	Description	Cost ($/ton)	Layer coefficient	Drainage factor
ACC1	Asphalt Wearing Course	70	0.420	N/A
MSL	Mechanically Stabilized Base Cour	20	0.206	1.0

Unstabilized Pavement



Subgrade Modulus = 6,000 (psi)
Structural Number = 3.000
Calculated Traffic (ESALs) = 478,000

Stabilized Pavement



Subgrade Modulus = 6,000 (psi)
Structural Number = 3.011
Calculated Traffic (ESALs) = 489,000

LIMITATIONS OF THE REPORT

The designs, illustrations, information and other content included in this report are necessarily general and conceptual in nature, and do not constitute engineering advice or any design intended for actual construction. Specific design recommendations can be provided as the project develops.

Project Name	BIA N15 Section (3-1)		
Company Name	Tensar		
Designer	S. Davis	Date	10/2/2015

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Standard Asphalt Pavement - TWH Edition - 20150503

Pavement Section 4-1

PROJECT:	BIA N15(2-3)(3-1)(4-1)2&4	**PROJECT NO:**	20151221	**CLIENT:**	WHPacific Inc.
SUBJECT:	AASHTO Pavement Design Summary	**PREPARED BY:**	Meghan McDonald	**DATE:**	12/18/2014
	Section (4-1), Sta 0+000 to 11+300	**REVIEWED BY:**	Stacie Steel	**DATE:**	12/18/2014

AASHTO Flexible Pavement Design

Design Parameters:

Standard Normal Deviate	-0.841
Combined Standard Error	0.45
Design Serviceability Loss	2.2
Desired Level of Reliability (percent)	80
Asphalt Concrete Layer Coefficient	0.4
Aggregate Base Layer Coefficient	0.11
Aggregate Base Drainage Coefficient	1.0
Subbase Layer Coefficient	0.08
Subbase Base Drainage Coefficient	0.0

Flexible Pavement Structural Design:

Allowable 18-kip ESAL Repetitions	660,000
Resilient Modulus (psi)	17,650
Asphalt Concrete Thickness (inches)	3.5
Aggregate Base Thickness (inches)	8
Subbase Thickness (inches)	0
Design Structural Number	2.28
Required Structural Number	2.13
Design Life (years)	20

Ashalt Concrete Thickness	**3.5**	**inches**
Aggregate Base Thickness	**8**	**inches**
Subbase Thickness	**0**	**inches**

PROJECT: BIA N15(2-3)(3-1)(4-1)2&4
SUBJECT: Section (4-1) Pavement Design

PROJECT NO: 20121221
PREPARED BY: Meghan McDonald
REVIEWED BY: Stacie Steel

DATE: 12/18/2014
DATE: 12/18/2014

Equivalent Single Axle Load (ESAL) and Traffic Index (TI) Calculator for Flexible Pavements

This sheet requires input of truck factors. It does not use the truck factors calculated on the Truck Factor Calculation sheet.

Based on the *AASHTO Guide for Design of Pavement Structures 1993* and the *Caltrans Highway Design Manual*

Note: The ESAL calculation is based on the AASHTO Guide. Only the conversion from ESALs to TI comes from Caltrans

Axle Load Equivalency Factors vary depending on structural number (SN) and terminal serviceability

Analysis Period = 20 years

Assumed SN = 5

Terminal Serviceability, p_t: 2

Vehicle Types	Current Traffic	Growth Factors	Design Traffic	ESAL Factor	Design ESAL
		3%			
Passenger Cars	1,791	26.07	17,039,246	0.0008	13,631
Buses	0	26.07	0	0.6806	-
		3%			
Panel and Pickup Trucks	0	26.07	0	0.0122	-
Other 2-Axle / 4-Tire Trucks	0	26.07	0	0.0520	-
2-Axle / 6-Tire Trucks	0	26.07	0	0.1890	-
3 or More Axle Trucks	0	26.07	0	0.1303	-
All Single Unit Trucks [1]	*0*	*26.07*	*0*	*2.4000*	-
		3%			
3 Axle Tractor Semi-Trailers	90	26.07	856,244	1.5100	1,292,928
4 Axle Tractor Semi-Trailers	0	26.07	0	0.6560	-
5+ Axle Tractor Semi-Trailers	0	26.07	0	2.3719	-
All Tractor Semi-Trailers [1]	*0*	*26.07*	*0*	*0.0000*	-
		3%			
5-Axle Double Trailers	0	26.07	0	2.3187	-
6+ Axle Double Trailers	0	26.07	0	0.0000	-
All Double Trailer Combos [1]	*0*	*26.07*	*0*	*0.0000*	-
		3%			
3 Axle Truck-Trailers	0	26.07	0	0.0152	-
4 Axle Truck Trailers	0	26.07	0	0.0152	-
5+ Axle Truck Trailers	0	26.07	0	0.5317	-
All Truck-Trailer Combos [1]	*0*	*26.07*	*0*	*0.0000*	-
All Vehicles	1,881		17,895,489	Design ESALs:	1,306,559

1 - either use these summary groups or the more detailed classifications - do not use both

Directional Distribution Factor[1]: 0.5

Lane Distribution Factor: 1

ESALs for Design Lane: 653,280

Lane Distribution Factor

Number of Lanes In Each Direction	% of ESALs in Design Lane
1	100
2	80-100
3	60-80
4	50-75

$$TI = 9.0 \times \left[\frac{(ESAL \times LDF)}{10^6}\right]^{0.119}$$

Where:

TI = Traffic Index

ESAL = Total number of cumulative 18-kip Equivalent Single Axle Loads

LDF = Lane Distribution Factor

The TI is determined to the nearest 0.5

TI for Design Lane: 8.5

SpectraPave4 PRO™
Pavement Optimization Design Analysis

Design Parameters for AASHTO (1993) Equation

Reliability (%)	= 80	Initial Serviceability	= 4.2
Standard Normal Deviate	= -0.842	Terminal Serviceability	= 2.0
Standard Deviation	= 0.45	Change in Serviceability	= 2.2

Aggregate fill shall conform to following requirement:

D50 <= 27mm (Base course)

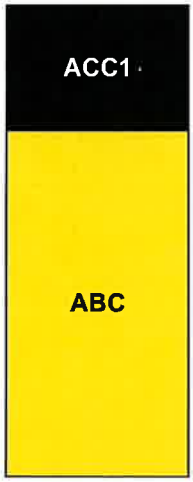
Unstabilized Section Material Properties

Layer	Description	Cost ($/ton)	Layer coefficient	Drainage factor
ACC1	Asphalt Wearing Course	70	0.420	N/A
ABC	Aggregate Base Course	20	0.120	1.0

Stabilized Section Material Properties

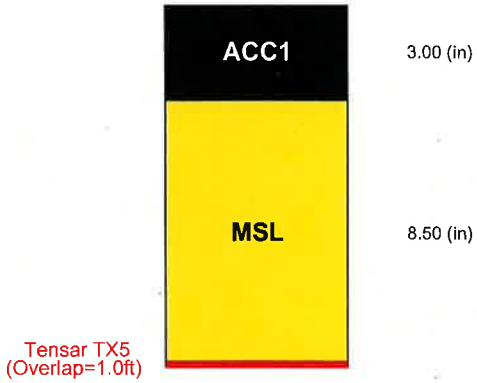
Layer	Description	Cost ($/ton)	Layer coefficient	Drainage factor
ACC1	Asphalt Wearing Course	70	0.420	N/A
MSL	Mechanically Stabilized Base Cour	20	0.206	1.0

Unstabilized Pavement



Subgrade Modulus = 6,000 (psi)
Structural Number = 3.000
Calculated Traffic (ESALs) = 478,000

Stabilized Pavement



Subgrade Modulus = 6,000 (psi)
Structural Number = 3.011
Calculated Traffic (ESALs) = 489,000

LIMITATIONS OF THE REPORT

The designs, illustrations, information and other content included in this report are necessarily general and conceptual in nature, and do not constitute engineering advice or any design intended for actual construction. Specific design recommendations can be provided as the project develops.

Project Name	BIA N15 Section (4-1)		
Company Name	Tensar		
Designer	S. Davis	Date	10/2/2015

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APPENDIX F

GBA Important Information about Your Geotechnical-Engineering Report

Important Information about Your

Geotechnical-Engineering Report

Subsurface problems are a principal cause of construction delays, cost overruns, claims, and disputes.

While you cannot eliminate all such risks, you can manage them. The following information is provided to help.

Geotechnical Services Are Performed for Specific Purposes, Persons, and Projects

Geotechnical engineers structure their services to meet the specific needs of their clients. A geotechnical-engineering study conducted for a civil engineer may not fulfill the needs of a construction contractor or even another civil engineer. Because each geotechnical-engineering study is unique, each geotechnical-engineering report is unique, prepared *solely* for the client. No one except you should rely on your geotechnical engineering report without first conferring with the geotechnical engineer who prepared it. *And no one — not even you —* should apply the report for any purpose or project except the one originally contemplated.

Read the Full Report

Serious problems have occurred because those relying on a geotechnical-engineering report did not read it all. Do not rely on an executive summary. Do not read selected elements only.

A Geotechnical-Engineering Report Is Based on a Unique Set of Project-Specific Factors

Geotechnical engineers consider many unique, project-specific factors when establishing the scope of a study. Typical factors include: the client's goals, objectives, and risk-management preferences; the general nature of the structure involved, its size, and configuration; the location of the structure on the site; and other planned or existing site improvements, such as access roads, parking lots, and underground utilities. Unless the geotechnical engineer who conducted the study specifically indicates otherwise, do not rely on a geotechnical engineering report that was:

- not prepared for you,
- not prepared for your project,
- not prepared for the specific site explored, or
- completed before important project changes were made.

Typical changes that can erode the reliability of an existing geotechnical-engineering report include those that affect:

- the function of the proposed structure, as when it's changed from a parking garage to an office building, or from a light-industrial plant to a refrigerated warehouse,
- elevation, configuration, location, orientation, or weight of the proposed structure,
- composition of the design team, or
- project ownership.

As a general rule, *always* inform your geotechnical engineer of project changes—even minor ones—and request an assessment of their impact. *Geotechnical engineers cannot accept responsibility or liability for problems that occur because their reports do not consider developments of which they were not informed.*

Subsurface Conditions Can Change

A geotechnical-engineering report is based on conditions that existed at the time the study was performed. *Do not rely on a geotechnical-engineering report* whose adequacy may have been affected by: the passage of time; by man-made events, such as construction on or adjacent to the site; or by natural events, such as floods, droughts, earthquakes, or groundwater fluctuations. *Always* contact the geotechnical engineer before applying the report to determine if it is still reliable. A minor amount of additional testing or analysis could prevent major problems.

Most Geotechnical Findings Are Professional Opinions

Site exploration identifies subsurface conditions only at those points where subsurface tests are conducted or samples are taken. Geotechnical engineers review field and laboratory data and then apply their professional judgment to render an opinion about subsurface conditions throughout the site. Actual subsurface conditions may differ—sometimes significantly—from those indicated in your report. Retaining the geotechnical engineer who developed your report to provide construction observation is the most effective method of managing the risks associated with unanticipated conditions.

A Report's Recommendations Are *Not* Final

Do not overrely on the construction recommendations included in your report. *Those recommendations are not final,* because geotechnical engineers develop them principally from judgment and opinion. Geotechnical engineers can finalize their recommendations *only* by observing actual

subsurface conditions revealed during construction. *The geotechnical engineer who developed your report cannot assume responsibility or liability for the report's recommendations if that engineer does not perform construction observation.*

A Geotechnical Engineering Report Is Subject to Misinterpretation

Other design team members' misinterpretation of geotechnical-engineering reports has resulted in costly problems. Lower that risk by having your geotechnical engineer confer with appropriate members of the design team after submitting the report. Also retain your geotechnical engineer to review pertinent elements of the design team's plans and specifications. Contractors can also misinterpret a geotechnical-engineering report. Reduce that risk by having your geotechnical engineer participate in prebid and preconstruction conferences, and by providing construction observation.

Do Not Redraw the Engineer's Logs

Geotechnical engineers prepare final boring and testing logs based upon their interpretation of field logs and laboratory data. To prevent errors or omissions, the logs included in a geotechnical engineering report should *never* be redrawn for inclusion in architectural or other design drawings. Only photographic or electronic reproduction is acceptable, *but recognize that separating logs from the report can elevate risk.*

Give Contractors a Complete Report and Guidance

Some owners and design professionals mistakenly believe they can make contractors liable for unanticipated subsurface conditions by limiting what they provide for bid preparation. To help prevent costly problems, give contractors the complete geotechnical-engineering report, *but* preface it with a clearly written letter of transmittal. In that letter, advise contractors that the report was not prepared for purposes of bid development and that the report's accuracy is limited; encourage them to confer with the geotechnical engineer who prepared the report (a modest fee may be required) and/or to conduct additional study to obtain the specific types of information they need or prefer. A prebid conference can also be valuable. *Be sure contractors have sufficient time* to perform additional study. Only then might you be in a position to give contractors the best information available to you, while requiring them to at least share some of the financial responsibilities stemming from unanticipated conditions.

Read Responsibility Provisions Closely

Some clients, design professionals, and contractors do not recognize that geotechnical engineering is far less exact than other engineering disciplines. This lack of understanding has created unrealistic expectations that have led to disappointments, claims, and disputes. To help reduce the risk of such outcomes, geotechnical engineers commonly include a variety of explanatory provisions in their reports. Sometimes labeled "limitations," many of these provisions indicate where geotechnical engineers' responsibilities begin and end, to help others recognize their own responsibilities and risks. *Read these provisions closely.* Ask questions. Your geotechnical engineer should respond fully and frankly.

Geoenvironmental Concerns Are Not Covered

The equipment, techniques, and personnel used to perform a *geoenvironmental* study differ significantly from those used to perform a *geotechnical* study. For that reason, a geotechnical-engineering report does not usually relate any geoenvironmental findings, conclusions, or recommendations; e.g., about the likelihood of encountering underground storage tanks or regulated contaminants. *Unanticipated environmental problems have led to numerous project failures.* If you have not yet obtained your own geoenvironmental information, ask your geotechnical consultant for risk management guidance. *Do not rely on an environmental report prepared for someone else.*

Obtain Professional Assistance To Deal with Mold

Diverse strategies can be applied during building design, construction, operation, and maintenance to prevent significant amounts of mold from growing on indoor surfaces. To be effective, all such strategies should be devised for the *express purpose* of mold prevention, integrated into a comprehensive plan, and executed with diligent oversight by a professional mold-prevention consultant. Because just a small amount of water or moisture can lead to the development of severe mold infestations, many mold-prevention strategies focus on keeping building surfaces dry. While groundwater, water infiltration, and similar issues may have been addressed as part of the geotechnical-engineering study whose findings are conveyed in this report, the geotechnical engineer in charge of this project is not a mold-prevention consultant; ***none of the services performed in connection with the geotechnical engineer's study were designed or conducted for the purpose of mold prevention. Proper implementation of the recommendations conveyed in this report will not of itself be sufficient to prevent mold from growing in or on the structure involved.***

Rely, on Your GBA-Member Geotechncial Engineer for Additional Assistance

Membership in the GEOPROFESSIONAL BUSINESS ASSOCIATION exposes geotechnical engineers to a wide array of risk confrontaton techniques that can be of genuine benefit for everyone involved with a construction project. Confer with your GBA-member geotechnical engineer for more information.

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