SHANNON & WILSON, INC.
GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS

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July 16, 2014

Mr. C. Terrigal Burn
190 Lucero Way
Portola Valley, CA 94028

RE: GEOTECHNICAL ENGINEERING SERVICES, COUNTY ROAD IMPROVEMENT, WALDRON ISLAND, WASHINGTON

Dear Mr. Burn:

We appreciate the opportunity to prepare this letter report summarizing our observations during a field reconnaissance on April 20, 2014. The purpose of the reconnaissance was to evaluate conditions east and west of the property line for evidence of past construction of a road which was dedicated as San Juan County Road #140 which was to be located on the north end of Waldron Island (see Figure 1). The road was to run along the property line between two properties owned by the Burns Family, and would access Spring Beach (see Figure 2).

Our scope of services was defined in a revised proposal dated March 14, 2014, and included a meeting and a field reconnaissance. During our reconnaissance, we performed a series of shallow hand auger explorations at two sections approximately normal to the property line corridor (see Figure 2).

A survey of the area was performed by San Juan Surveying, LLC of Friday Harbor, Washington. A drawing, dated April 17, 2014, with the information collected during the survey was provided to us. This information was used during our site visit. Elevation and locations of property boundaries, and other site features are based on this survey and staking placed by the surveyor. Elevation references are based on NAVD88 as indicated in the drawing produced by San Juan Surveying.

A Shannon & Wilson, Inc. (Shannon & Wilson) representative traveled to the site on April 20, 2014. Transportation from Friday Harbor to and from Waldron Island was provided by San Juan Surveying.

400 NORTH 34TH STREET, SUITE 100
P.O. BOX 300303
SEATTLE, WASHINGTON 98103-8636
206-632-8020 FAX: 206-695-6777
TDD 1-800-833-6388
www.shannonwilson.com

BACKGROUD AND OBSERVATIONS

The San Juan County Road #140 was to be located at the north end of Waldron Island, and runs north-south through several of the Burn Family properties and ends at Spring Beach. We understand that the island was platted in 1891. At issue is whether the road was improved when the area was platted or has been improved since. The Spring Beach name comes from a spring located approximately 80 feet inland from the ordinary high water mark (OHWM) near the property line (Figure 2).

The site is forested with a moderately thick understory (see Photograph 1). We understand that the forest is second-growth and was logged in the early 1900s. From south to north along the property line, the site slopes gradually downward at an approximate 10 percent grade. At about 100 feet from the OHWM, the slope changes to about 1.5 Horizontal to 1 Vertical (1.5H:1V) or 67 percent grade, starting at elevation 30 feet and going down to elevation 10 feet. The 75-foot-wide area from the toe of the slope to the OHWM is mostly flat (see Photograph 2). The spring is located within a horseshoe-shaped notch into the bank.

As shown in the site plan (Figure 2), an unimproved, two-track road approaches the site from the south. South of the site the road turns to the west (Photograph 3). At the turn in the road, a private footpath leads north paralleling the property line (Photograph 4) for approximately 450 feet. As the path approaches the grade change, it turns to the east slightly and stays above the spring area. The path then splits, and one trail heads east and the other, less traveled, heads northwest down to the spring area and beach. As shown in Figure 2, an old barbed wire fence runs parallel to and approximately 30 feet east of the property line. The fence is in disrepair and covered with vegetation. About 270 feet south of the OHWM on the property line, we observed an area where rocks were piled. The pile is approximately 4 feet wide and consists of approximately 20 large cobble- and boulder-size rocks (Photograph 5).

SUBSURFACE EXPLORATIONS

Using a 3-inch-diameter hand auger, we drilled nine shallow borings along two sections approximately normal to the property line (see Figure 2). Section A-A’ included five borings and is located about 40 feet south of the spring. Section B-B' included four borings and is located 260 feet south of Section A-A'. The depth of the borings ranged from 14 to 27 inches. We visually classified and logged the soil during drilling. Twelve soil samples were collected. The samples were placed in sample jars and transported back to our Seattle offices.

In general, three layers were identified and summarized below:

1. Duff/Litter – Loose, decomposing leaves, sticks, needles, and other tree and plant detritus.
2. Topsoil – Loose, brown, organic soil consisting of mostly homogeneous, decomposed, organic material.
3. Mineral Soil – Medium dense, light brown, silty, gravelly sand.

Thickness of duff and topsoil at each boring are summarized in Figure 3. The thickness of the duff varies from 1 to 5 inches and the depth to the bottom of topsoil varies from 4 to 10 inches.

FINDINGS AND CLOSURE

The purpose of the field reconnaissance and hand-augered boreholes along the property line corridor (San Juan County Road #140) was to evaluate surface soil conditions east and west of property line for evidence of past road construction. Two section locations were selected as shown in Figure 2. Subsurface evidence of past roadway construction would be soil at the surface that does not include an organic component, soil densified by repetitive vehicle passes, or imported granular base materials to support vehicles. Surficial evidence of past roadway construction would be vehicle tracks, deep ruts, or cut and fill areas along slopes.

Results of explorations revealed a consistent topsoil layer ranging in depth from 4 to 10 inches, more typically 8 inches along the sections across the property line. Based on the observed consistent topsoil layer thickness, it is our opinion that it is unlikely a road was constructed along the Burns property line in the past. There is no evidence of densified soils or imported granular base materials.

It is unlikely a road extended to the level of Spring Beach anytime in the past. The current slope (1.5H:1V) at and above the spring is too steep for normal vehicle access roadway. There was no evidence of any cuts and fills along the exposed slopes to indicate road construction to gain beach access.

Another feature that could show evidence of a previous roadway would be observing second growth trees along the corridor. Second growth tree patterns appear to be random along the location of the dedication for San Juan County Road #140.

LIMITATIONS

Our interpretations of the existing conditions discussed in this letter are based on visual observations and limited subsurface explorations. Within the limitations of the scope, schedule, and budget, the analyses and opinions presented in this letter were prepared in accordance with generally accepted professional geological and engineering principles and practices for this type of project at the time this letter report was prepared. We make no other warranty, either express or implied.

Shannon & Wilson did not perform any environmental assessment or evaluation regarding the presence or absence of wetlands or hazardous or toxic materials in the soil, surface water, groundwater, or air, on or below or around the site. Shannon & Wilson can provide these services at your request.

Shannon & Wilson has prepared the enclosed document, "Important Information About Your Geotechnical/Environmental Report," to assist you and others in understanding the use and limitations of this letter report.

We appreciate the opportunity to be of service to you. If you have questions or would like to discuss the opinions contained in this letter please contact me at (206) 695-6724.

Sincerely,

SHANNON & WILSON, INC.

Todd H. LaVielle, P.E.
Senior Engineer

THL:TMG/thl

Enc: Figure 1 – Vicinity Map
Figure 2 – Site and Exploration Plan
Figure 3 – Topsoil and Duff Thickness at Sections A and B
Photographs 1 through 5 (3 pages)
Important Information About Your Geotechnical/Environmental Report

Photograph 1. The site is forested with a moderately thick understory, taken looking north

Photograph 2. Flat area north of the spring

Photograph 3. Unimproved, two-track road approaches the site from the south then turns to the west

Photograph 4. Footpath near Section B-B', orange flagging marks property line

Photograph 5. Pile of rocks

0 2500 5000

Approximate Scale in Feet

NOTE

Map adapted from aerial imagery provided by Google Earth Pro, reproduced by permission granted by Google Earth ™ Mapping Service.

San Juan County Road #140
Waldron Island, Washington

VICINITY MAP

July 2014 21-1-21957-001

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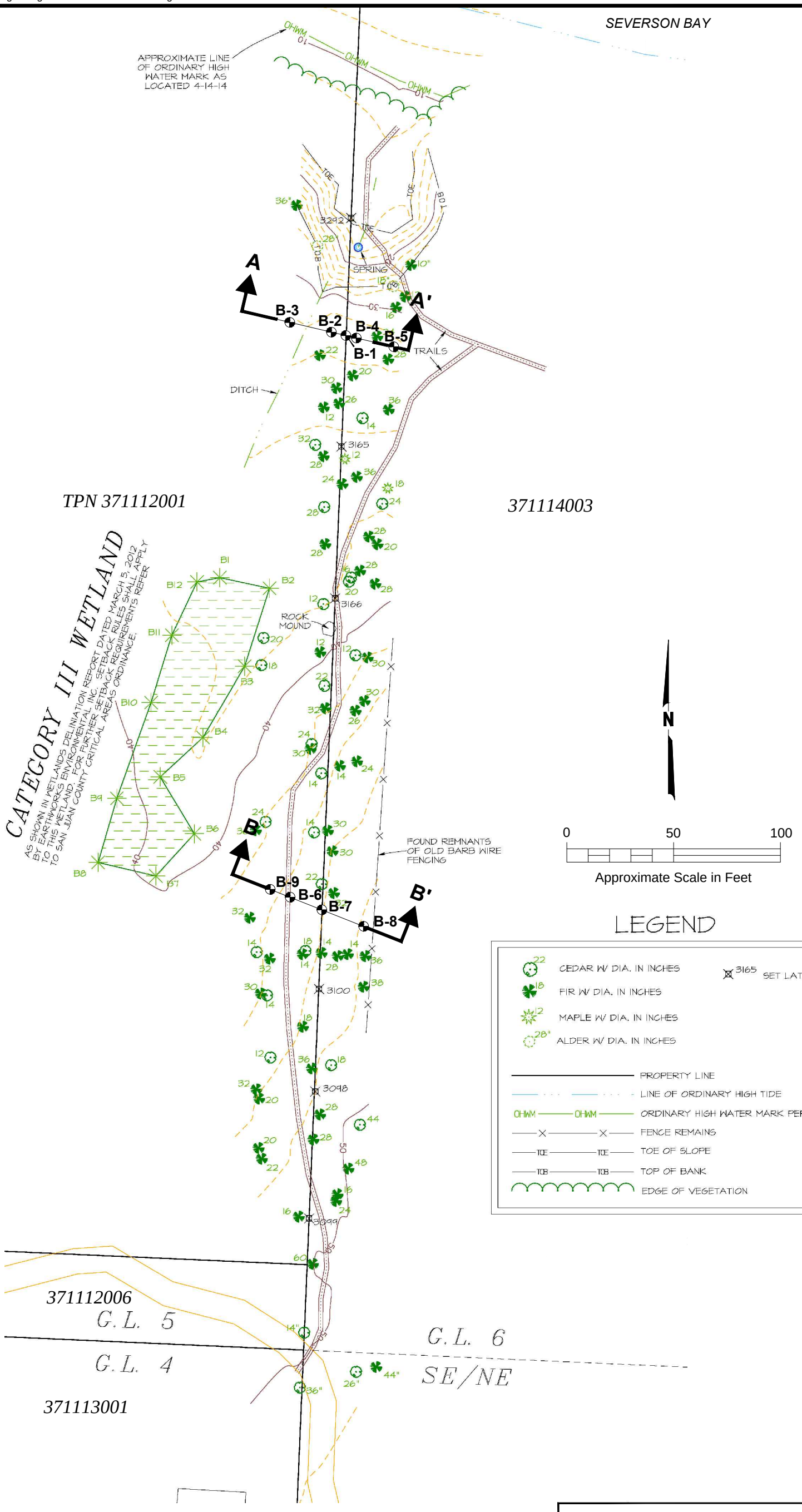
FIG. 1

Filename: J:\211\21957-001\21-1-21957-001 Fig 1.dwg Date: 07-15-2014 Login: sac

Filename: J:\211\21957-001\21-1-21957-001 Fig 2.dwg Date: 07-15-2014 Login: sac



LEGEND

- CEDAR W/ DIA. IN INCHES
- FIR W/ DIA. IN INCHES
- MAPLE W/ DIA. IN INCHES
- ALDER W/ DIA. IN INCHES
- SET LATH
- PROPERTY LINE
- LINE OF ORDINARY HIGH TIDE
- ORDINARY HIGH WATER MARK PER D.O.E.
- FENCE REMAINS
- TOE OF SLOPE
- TOP OF BANK
- EDGE OF VEGETATION

NOTE

This figure is adapted from client file, *4-17-14 EXHIBIT.pdf,* prepared by San Juan Surveying, dated 4-16-14.

LEGEND

B-1 Boring Designation and Approximate Location

A Cross Section Designation and Approximate Location

San Juan County Road #140
Waldron Island, Washington

SITE AND EXPLORATION PLAN

July 2014 21-1-21957-001

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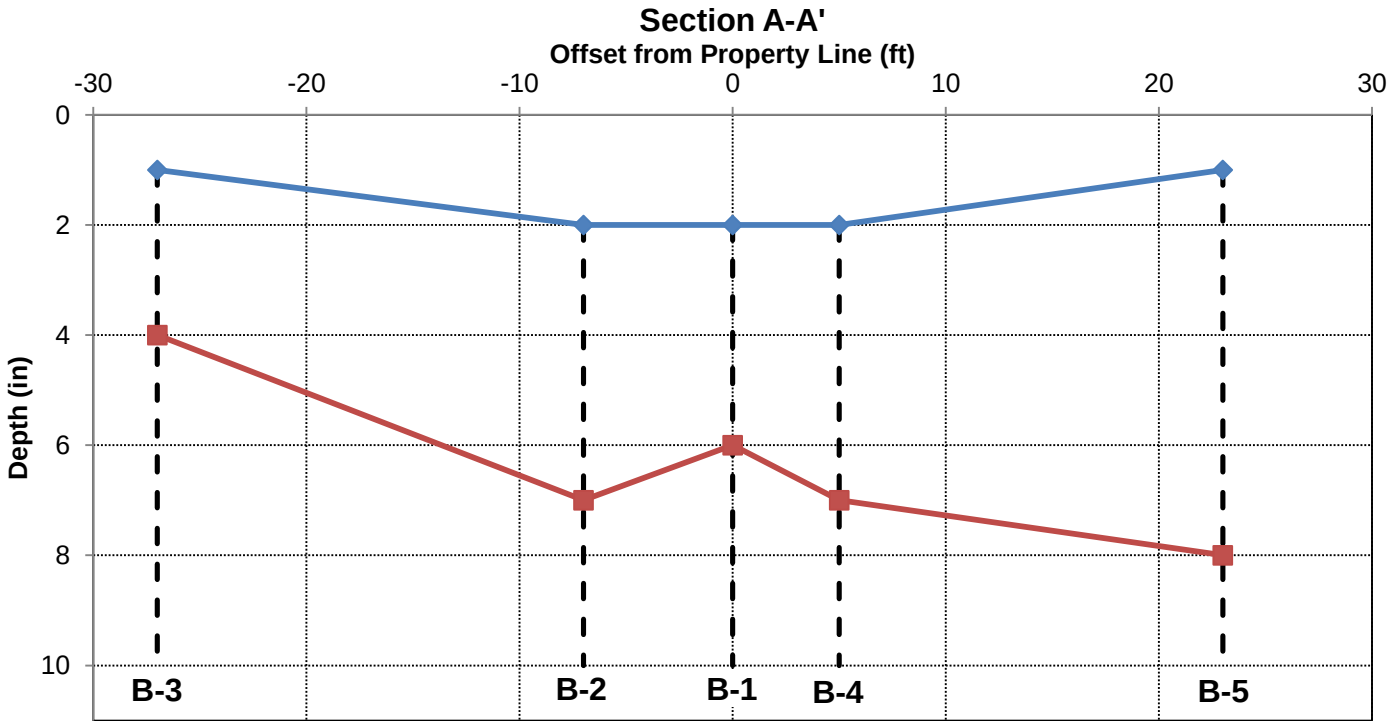
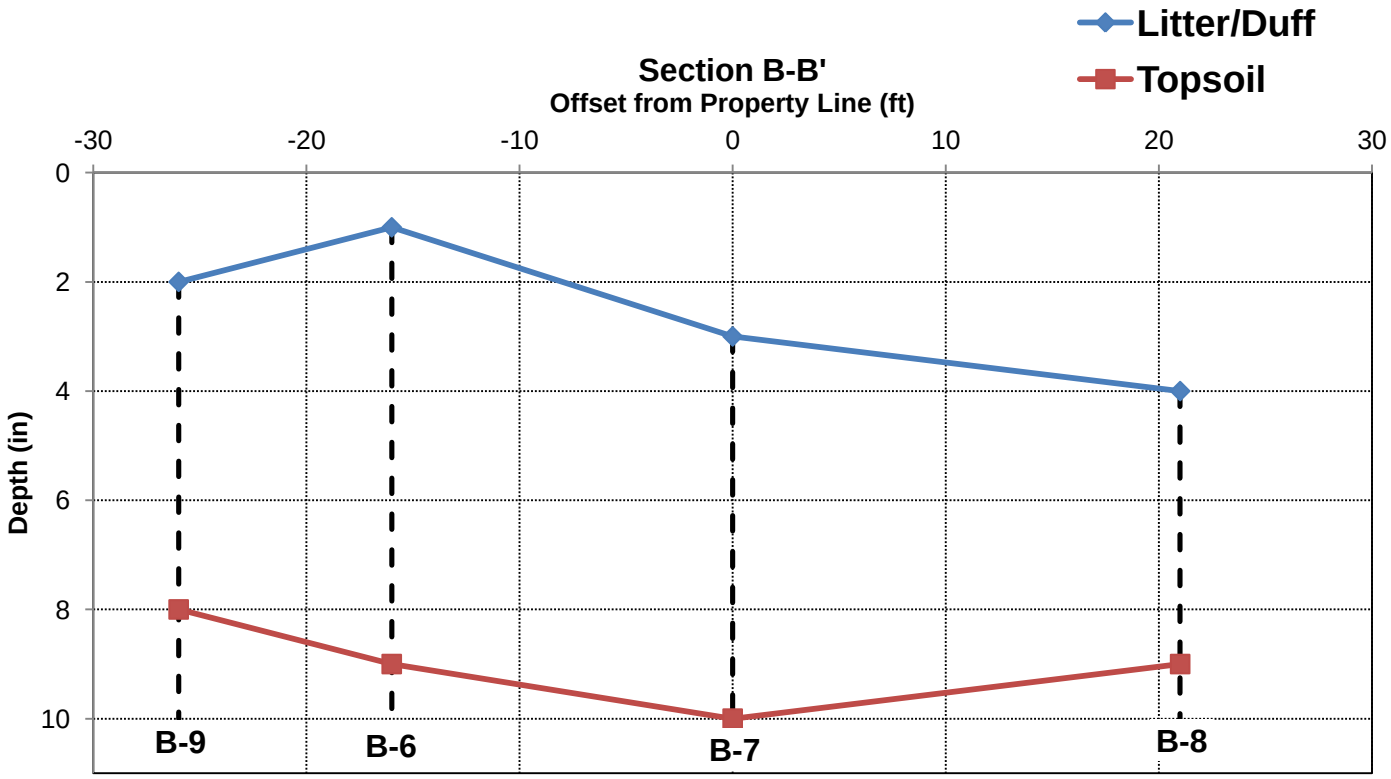
FIG. 2

FIG. 2





NOTES

1. Duff and topsoil thicknesses are are based on subsurface exporations performed with hand boring equipment, on April 20, 2014

San Juan County Road #140
Waldron Island, Washington

TOPSOIL DEPTH

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FIG. 3

SHANNON & WILSON, INC.
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Attachment to and part of Report 21-1-21957-001

Date: July 16, 2014
To: Mr. C. Terrigal Burn

IMPORTANT INFORMATION ABOUT YOUR GEOTECHNICAL/ENVIRONMENTAL REPORT

CONSULTING SERVICES ARE PERFORMED FOR SPECIFIC PURPOSES AND FOR SPECIFIC CLIENTS.

Consultants prepare reports to meet the specific needs of specific individuals. A report prepared for a civil engineer may not be adequate for a construction contractor or even another civil engineer. Unless indicated otherwise, your consultant prepared your report expressly for you and expressly for the purposes you indicated. No one other than you should apply this report for its intended purpose without first conferring with the consultant. No party should apply this report for any purpose other than that originally contemplated without first conferring with the consultant.

THE CONSULTANT'S REPORT IS BASED ON PROJECT-SPECIFIC FACTORS.

A geotechnical/environmental report is based on a subsurface exploration plan designed to consider a unique set of project-specific factors. Depending on the project, these may include: the general nature of the structure and property involved; its size and configuration; its historical use and practice; the location of the structure on the site and its orientation; other improvements such as access roads, parking lots, and underground utilities; and the additional risk created by scope-of-service limitations imposed by the client. To help avoid costly problems, ask the consultant to evaluate how any factors that change subsequent to the date of the report may affect the recommendations. Unless your consultant indicates otherwise, your report should not be used: (1) when the nature of the proposed project is changed (for example, if an office building will be erected instead of a parking garage, or if a refrigerated warehouse will be built instead of an unrefrigerated one, or chemicals are discovered on or near the site); (2) when the size, elevation, or configuration of the proposed project is altered; (3) when the location or orientation of the proposed project is modified; (4) when there is a change of ownership; or (5) for application to an adjacent site. Consultants cannot accept responsibility for problems that may occur if they are not consulted after factors which were considered in the development of the report have changed.

SUBSURFACE CONDITIONS CAN CHANGE.

Subsurface conditions may be affected as a result of natural processes or human activity. Because a geotechnical/environmental report is based on conditions that existed at the time of subsurface exploration, construction decisions should not be based on a report whose adequacy may have been affected by time. Ask the consultant to advise if additional tests are desirable before construction starts; for example, groundwater conditions commonly vary seasonally.

Construction operations at or adjacent to the site and natural events such as floods, earthquakes, or groundwater fluctuations may also affect subsurface conditions and, thus, the continuing adequacy of a geotechnical/environmental report. The consultant should be kept apprised of any such events, and should be consulted to determine if additional tests are necessary.

MOST RECOMMENDATIONS ARE PROFESSIONAL JUDGMENTS.

Site exploration and testing identifies actual surface and subsurface conditions only at those points where samples are taken. The data were extrapolated by your consultant, who then applied judgment to render an opinion about overall subsurface conditions. The actual interface between materials may be far more gradual or abrupt than your report indicates. Actual conditions in areas not sampled may differ from those predicted in your report. While nothing can be done to prevent such situations, you and your consultant can work together to help reduce their impacts. Retaining your consultant to observe subsurface construction operations can be particularly beneficial in this respect.

A REPORT'S CONCLUSIONS ARE PRELIMINARY.

The conclusions contained in your consultant's report are preliminary because they must be based on the assumption that conditions revealed through selective exploratory sampling are indicative of actual conditions throughout a site. Actual subsurface conditions can be discerned only during earthwork; therefore, you should retain your consultant to observe actual conditions and to provide conclusions. Only the consultant who prepared the report is fully familiar with the background information needed to determine whether or not the report's recommendations based on those conclusions are valid and whether or not the contractor is abiding by applicable recommendations. The consultant who developed your report cannot assume responsibility or liability for the adequacy of the report's recommendations if another party is retained to observe construction.

THE CONSULTANT'S REPORT IS SUBJECT TO MISINTERPRETATION.

Costly problems can occur when other design professionals develop their plans based on misinterpretation of a geotechnical/environmental report. To help avoid these problems, the consultant should be retained to work with other project design professionals to explain relevant geotechnical, geological, hydrogeological, and environmental findings, and to review the adequacy of their plans and specifications relative to these issues.

BORING LOGS AND/OR MONITORING WELL DATA SHOULD NOT BE SEPARATED FROM THE REPORT.

Final boring logs developed by the consultant are based upon interpretation of field logs (assembled by site personnel), field test results, and laboratory and/or office evaluation of field samples and data. Only final boring logs and data are customarily included in geotechnical/environmental reports. These final logs should not, under any circumstances, be redrawn for inclusion in architectural or other design drawings, because drafters may commit errors or omissions in the transfer process.

To reduce the likelihood of boring log or monitoring well misinterpretation, contractors should be given ready access to the complete geotechnical engineering/environmental report prepared or authorized for their use. If access is provided only to the report prepared for you, you should advise contractors of the report's limitations, assuming that a contractor was not one of the specific persons for whom the report was prepared, and that developing construction cost estimates was not one of the specific purposes for which it was prepared. While a contractor may gain important knowledge from a report prepared for another party, the contractor should discuss the report with your consultant and perform the additional or alternative work believed necessary to obtain the data specifically appropriate for construction cost estimating purposes. Some clients hold the mistaken impression that simply disclaiming responsibility for the accuracy of subsurface information always insulates them from attendant liability. Providing the best available information to contractors helps prevent costly construction problems and the adversarial attitudes that aggravate them to a disproportionate scale.

READ RESPONSIBILITY CLAUSES CLOSELY.

Because geotechnical/environmental engineering is based extensively on judgment and opinion, it is far less exact than other design disciplines. This situation has resulted in wholly unwarranted claims being lodged against consultants. To help prevent this problem, consultants have developed a number of clauses for use in their contracts, reports and other documents. These responsibility clauses are not exculpatory clauses designed to transfer the consultant's liabilities to other parties; rather, they are definitive clauses that identify where the consultant's responsibilities begin and end. Their use helps all parties involved recognize their individual responsibilities and take appropriate action. Some of these definitive clauses are likely to appear in your report, and you are encouraged to read them closely. Your consultant will be pleased to give full and frank answers to your questions.

The preceding paragraphs are based on information provided by the
ASFE/Association of Engineering Firms Practicing in the Geosciences, Silver Spring, Maryland