The attached document was prepared by Budinger & Associates for Wandermere Estates Homeowners Association. You are being permitted to view a copy of it as a courtesy, for general informational purposes only. No party other than Wandermere Estates Homeowners Association may rely on the document for any purpose.

In particular, homeowners with property in the vicinity of the area described in the document should not rely on the document to evaluate any risk of damage to their property, but should retain the services of their own independent consultants.

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May 20, 2016

Project: S-16050

Attention: Mr. Eric Lundin

PROJECT: N. Wandermere Estates Lane, Spokane, Washington
SUBJECT: Preliminary Spring Evaluation

Mr. Lundin:

Budinger & Associates, Inc. is pleased to present to the Wandermere Home Owners Association (HOA), the results of our preliminary evaluation that explores the geotechnical impact of the spring that has developed along N. Wandermere Estates Lane. We visited the site and discussed the project with you on February 4, 2016. This evaluation was performed in accordance with our proposal of March 8, 2016.

Project
Shallow groundwater has surfaced on the east side of N. Wandermere Estates Lane on the west side of the property located at 13801 N. Copper Canyon Lane. This condition is commonly referred to as a spring. The south end of a concrete modular unit (CMU) retaining wall is located approximately ten feet north of, and down grade from the spring. The spring is also located across the street and approximately 150 feet south of 13803 N. Wandermere Estates Lane.

The spring was observed to well-up within a grassy swale on the east side of the street as well as through the asphalt street pavement and concrete curb and gutter joint. After surfacing, the water flows north, overland across the swale and in the gutter. This surface water flow was observed to disappear to subsurface flow at a point directly across the street from 13811 N. Wandermere Estates Lane, which is located directly to the north of 13803 N. Wandermere Estates Lane.

Some concerns have been expressed by some members of the HOA regarding the conditions described above. These concerns consist of the stability of the CMU wall and the overall stability of the soils across the street from where the surface water flow seeps back into the ground to continue as subsurface flow.

Scope
We have reviewed 23 sets of plans and drawings as well as nine miscellaneous documents associated with the construction of the street and utilities within the street, as well as the design of the two Redi-Rock CMU walls that were located down slope of 13803 and 13811 N. Wandermere Estates Lane. These documents were provided by the HOA. These documents were reviewed to determine possible pathways associated with the subsurface flow of groundwater to the location of the spring and possible remediation. These pathways may include pipe bedding and wall drain systems. Based on our review of the documents, four sets of plans were determined to have some relevance to the remediation of the spring.

Reviewed Information Conclusions and Recommendations
The four sets of plans found to have relevance to this evaluation have the following cover sheet titles:

1. Street Cover Sheet for Wandermere Estates PUD Phase III, Sheets C1.0 to C10.0 and DR1.0 to DR 3.0 (J.R. Bonnett Engineering, 1/2005);
2. Water Cover Sheet for Wandermere Estates PUD Phase III, Sheets W1.0 to W8.0 (J.R. Bonnett Engineering, 2/2005);
3. Sewer Cover Sheet for Wandermere Estates PUD Phase III, Sheets SS1.0 to SS9.0 (J.R. Bonnett Engineering, 2/2005); and,
4. Retaining Walls, Wandermere Estates, Phase III, Sheets S1.0 to S1.6 Bonnett Engineering, 9/2005).

No indication as to the groundwater source of the spring can be determined by the review of the documents previously cited.

Document item 1 shows a Pond D just beyond the slope below Wandermere Estates Lane (below Lots 3 and 4 on Block 2). The drawings show that the pond receives runoff from the south end of N. Alpine Lane. A Google Earth review of the area indicates that the pond may be located between the golf course's 7th-hole fairway and the toe of the slope. The drawings also indicate Ponds A2 and B are located on the east side of N. Wandermere Estates Lane and at the southeast quadrant with the intersection of N. Alpine Lane. The drawings also indicate that N. Wandermere Estates Lane maintains positive drainage from the spring area to Ponds A2 and B. Our review of the area Google Earth image indicates that Ponds A2 and B are in approximately the same location as shown on the drawings.

Items 2 and 3 confirm the conditions in the Item 1 discussion.

Item 4 documents the design of two Redi-Rock CMU walls that were located down slope of 13803 and 13811 N. Wandermere Estates Lane. These walls had failed at some point after construction and only sections at the southern end remain. The drawings indicate that a six-inch rainwater drain line should have been installed on the property line between 13803 and 13811 N. Wandermere Estates Lane. This drain line should have extended beyond the toe of the slope via the drain system for the two retaining walls discussed previously.

No design or construction documents for the CMU wall on the east side of N. Wandermere Estates Lane and just north of the spring were provided for review.

Conclusions and Recommendations
Based on a review of the information discussed previously, it appears that the spring can be contained at the location of upwelling and conveyed via a tight-line pipe to the north along the east edge of N. Wandermere Estates Lane to Ponds A2 and B. Alternatively, the spring flow could be captured and conveyed to the west side of N. Wandermere Estates Lane and convey it to the bottom of the slope via the six-inch drain line cited in the item 4 discussion. If possible, we recommend the first option since no work within the street will be required. Also, it is not known at this time if the drain line installed along the common property line of 13803 and 13811 N. Wandermere Estates Lane is still in place.

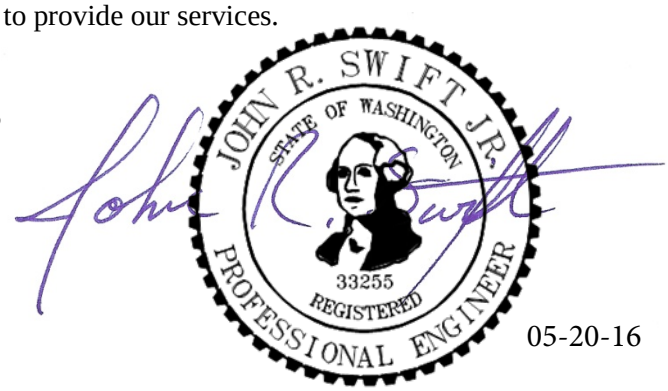
Prior to installing pipe down to Ponds A2 and B, an evaluation of the drain system associated with the CMU wall to the north should be should be performed. The wall drain system should have a point of positive discharge that drains away from the wall. None could be seen at the time of the site visit. The spring may be collected into the wall drain system at the downstream end of the wall if one is in place. It is also possible that the wall drain system is clogged. If this is the case, the clogged drain may also be a source of the spring.

We anticipate that the evaluation of the wall drain system can be performed using a rubber-tired backhoe. The backhoe would excavate a small test pit at the north and south ends of the wall. The excavation should be located to the east side of the street and should not extend into the street. A sewer clean-out device could be run through the system to ensure that it is clear if a drain is found. Due to the location of the test pits next to the street, we recommend that a traffic control plan be implemented during the evaluation.

Limitations

Subsurface characterization, including test pitting, drilling, sampling, testing, and analysis were not performed. The analysis and professional opinions are provided without warranties, express or implied. Thank you for the opportunity to provide our services.

Prepared by:
BUDINGER & ASSOCIATES



John (Hank) Swift, PE, GE
Senior Geotechnical Engineer

05-20-16

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cc: file

JRS/jrs

Important Information About Your
Geotechnical Engineering Report

Subsurface problems are a principal cause of construction delays, cost overruns, claims, and disputes. The following information is provided to help you manage your risks.

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 a number of 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, 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 Options

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 over-rely on the construction recommendations included in your report. *Those recommendations are not final*, because geotechnical engineers develop them principally from the 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, a number of 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 ASFE-Member Geotechncial Engineer for Additional Assistance

Membership in ASFE/The Best People on Earth exposes geotechnical engineers to a wide array of risk management techniques that can be of genuine benefit for everyone involved with a construction project. Confer with your ASFE-member geotechnical engineer for more information.

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