File No. EA2023-103

CITY OF RICHLAND
Determination of Non-Significance

Description of Proposal: Construction of a new 4-story hotel containing 126 rooms and associated site improvements including off-street parking, storm drainage facilities, landscaping and installation of utilities.

Proponent: W77 Acquisitions, LLC
Mr. Aaron Converse
3300 N Triumph Blvd, Suite 100
Lehi, UT 84043

Location of Proposal: The site address is 1289 Tapteal Drive, Richland, Washington (APN No. 130993000001008).

Lead Agency: City of Richland

The lead agency for this proposal has determined that it does not have a probable significant adverse impact on the environment. An environmental impact statement (EIS) is not required under RCW 43.21C.030(2)(c). This decision was made after review of a completed environmental checklist and other information on file with the lead agency. This information is available to the public on request.

( ) There is no comment for the DNS.

(**X**) This DNS is issued under WAC 197-11-340(2); the lead agency will not act on this proposal for fourteen days from the date of issuance.

( ) This DNS is issued after using the optional DNS process in WAC 197-11-355. There is no further comment period on the DNS.

Responsible Official: Mike Stevens
Position/Title: Planning Manager
Address: 625 Swift Blvd., MS #35, Richland, WA 99352
Date: March 7, 2023
Comments Due: March 21, 2023

Signature _____

SEPA ENVIRONMENTAL CHECKLIST

Purpose of checklist:

Governmental agencies use this checklist to help determine whether the environmental impacts of your proposal are significant. This information is also helpful to determine if available avoidance, minimization or compensatory mitigation measures will address the probable significant impacts or if an environmental impact statement will be prepared to further analyze the proposal.

Instructions for applicants:

This environmental checklist asks you to describe some basic information about your proposal. Please answer each question accurately and carefully, to the best of your knowledge. You may need to consult with an agency specialist or private consultant for some questions. You may use "not applicable" or "does not apply" only when you can explain why it does not apply and not when the answer is unknown. You may also attach or incorporate by reference additional studies reports. Complete and accurate answers to these questions often avoid delays with the SEPA process as well as later in the decision-making process.

The checklist questions apply to all parts of your proposal, even if you plan to do them over a period of time or on different parcels of land. Attach any additional information that will help describe your proposal or its environmental effects. The agency to which you submit this checklist may ask you to explain your answers or provide additional information reasonably related to determining if there may be significant adverse impact.

Instructions for Lead Agencies:

Please adjust the format of this template as needed. Additional information may be necessary to evaluate the existing environment, all interrelated aspects of the proposal and an analysis of adverse impacts. The checklist is considered the first but not necessarily the only source of information needed to make an adequate threshold determination. Once a threshold determination is made, the lead agency is responsible for the completeness and accuracy of the checklist and other supporting documents.

Use of checklist for nonproject proposals:

For nonproject proposals (such as ordinances, regulations, plans and programs), complete the applicable parts of sections A and B plus the SUPPLEMENTAL SHEET FOR NONPROJECT ACTIONS (part D). Please completely answer all questions that apply and note that the words "project," "applicant," and "property or site" should be read as "proposal," "proponent," and "affected geographic area," respectively. The lead agency may exclude (for non-projects) questions in Part B - Environmental Elements –that do not contribute meaningfully to the analysis of the proposal.

A. Background [HELP]

1. Name of proposed project, if applicable:

LivAway Suites Richland

2. Name of applicant:

W77 Acquisitions, LLC

3. Address and phone number of applicant and contact person:
Mr. Aaron Converse
3300 N Triumph Blvd, Suite 100
Lehi, UT 84043
(801)448-2079

4. Date checklist prepared:
January 23, 2022

5. Agency requesting checklist:
City of Richland

6. Proposed timing or schedule (including phasing, if applicable):
Following approval of the required short plat and construction permits, construction is expected to begin late Q2 or early Q3 2023.

7. Do you have any plans for future additions, expansion, or further activity related to or connected with this proposal? If yes, explain.
Yes, it is expected that in the future both Lots 2 and 3 created by the short plat will be developed by others.

8. List any environmental information you know about that has been prepared, or will be prepared, directly related to this proposal.

The following report types will be prepared with the current proposal:

- **Storm Drainage Report**
- **Geotechnical Report (provided by GN Northern, Inc., dated January 2023)**
- **Cultural Resource Assessment (provided by GRAM Northwest, LLC, dated January 2023)**

9. Do you know whether applications are pending for governmental approvals of other proposals directly affecting the property covered by your proposal? If yes, explain.
No government approvals or other proposals directly affecting the property are known to be pending.

10. List any government approvals or permits that will be needed for your proposal, if known.
The following approvals/permits will be required under the current proposal:

- **SEPA Determination**
- **Short Plat**
- **Engineering Review/Commercial Construction Permit**
- **General Construction Stormwater Permit**

11. Give brief, complete description of your proposal, including the proposed uses and the size of the project and site. There are several questions later in this checklist that ask you to describe certain aspects of your proposal. You do not need to repeat those answers on this page. (Lead agencies may modify this form to include additional specific information on project description.)
The project first proposes to subdivide an existing parcel totaling approximately 5.54 acres into three parcels located just south of Tapteal Drive in southeast Vancouver,

Washington (a portion of Benton County tax parcel no. 130993000001008, A.F.N. 2022-035223). Lot 1 located at the back of the project site (approx. 2.46 acres) will be developed with a new hotel with associated surface parking and landscape amenities. It is currently zoned C-3, General Business and the proposed hotel is allowed within this zoning in accordance with the City of Richland Municipal Code (RMC). The proposed hotel will be 4 stories and contain 126 hotel rooms. Its program has been designed with in-room kitchenettes, onsite laundry, and exercise facilities. There will be no on-site restaurant proposed with this hotel project. Site improvements to support the new use will include surface parking, storm drainage facilities, landscaping; and water, sanitary sewer, power, and communication utility services. Lots 2 and 3, which will be created by the short plat, will be developed in the future by others.

12. Location of the proposal. Give sufficient information for a person to understand the precise location of your proposed project, including a street address, if any, and section, township, and range, if known. If a proposal would occur over a range of area, provide the range or boundaries of the site(s). Provide a legal description, site plan, vicinity map, and topographic map, if reasonably available. While you should submit any plans required by the agency, you are not required to duplicate maps or detailed plans submitted with any permit applications related to this checklist.
The project site currently comprised of a single parcel that will be subdivided into three separate parcels (Lots 1, 2, and 3) following the short plat process. The project is located south of Tapteal Drive just west of it's intersection with Center Parkway. The address is unassigned on Tapteal Drive, Richland, WA 99352.

B. Environmental Elements [HELP]

1. *Earth* [help]

a. General description of the site:

(circle one): Flat, rolling, **hilly**, steep slopes, mountainous, other _____
The site generally slopes from from higher elevation along the southern boundary northeasterly towards Tapteal Drive. There is approximately 32 feet of topographic relief over the site with hilly terrain.

b. What is the steepest slope on the site (approximate percent slope)?
The maximum slope is located near the middle of the site and is approximately 35%.

c. What general types of soils are found on the site (for example, clay, sand, gravel, peat, muck)? If you know the classification of agricultural soils, specify them and note any agricultural land of long-term commercial significance and whether the proposal results in removing any of these soils.
The NRCS Soils Report classifies onsite soils as Burbank loamy fine sand, gravelly substratum (BIA and BID) and Hezel loamy fine sand (HeD).

d. Are there surface indications or history of unstable soils in the immediate vicinity? If so, describe.
No, there are no indications or history of unstable soils in the immediate vicinity of the site.

e. Describe the purpose, type, total area, and approximate quantities and total affected area of any filling, excavation, and grading proposed. Indicate source of fill.

Preliminary site grading to accommodate the proposed construction on Lot 1 will result in approximately 11,860 CY of cut and 2,500 CY of fill, for a net cut of 9,360 CY. Efforts will be made during final engineering design to minimize material export from the site. Onsite soils will be the source for required fill.

f. Could erosion occur as a result of clearing, construction, or use? If so, generally describe.

Yes, erosion could occur as a result of clearing, graing, and other construction activities during the development on Lot 1. Erosion is unlikely under the developed condition and ongoing use due to the site coverage with impervious surfaces and onsite landscaping.

g. About what percent of the site will be covered with impervious surfaces after project construction (for example, asphalt or buildings)?

Approximately 1.76-acres (72%) of the 2.46-acre Lotl 1 site will be covered by impervious surfaces. Impervious coverage for Lots 2 and 3 will be determined by future proposals.

h. Proposed measures to reduce or control erosion, or other impacts to the earth, if any:

No significant impacts to the earth are expected. A Temporary Erosion Control Plan will be developed and implemented during construction. The plan will include all necessary Best Management Practices (BMPs) example of which include: straw cover, silt fences, sediment traps or tanks, controlled surface grading, a stabilized construction entrance, and various other measures that may be required.

2. Air [help]

a. What types of emissions to the air would result from the proposal during construction, operation, and maintenance when the project is completed? If any, generally describe and give approximate quantities if known.

A short-term increase in emissions and dust will result from the use of construction equipment and transport vehicles at the Lot 1 project site. The anticipated increase will be minor and of short duration. There are no long-term emissions anticipated for the permanent use once construction activities have been completed outside of typical automobile exhaust.

b. Are there any off-site sources of emissions or odor that may affect your proposal? If so, generally describe.

No off-site sources of emisssions are expected to affect this proposal.

c. Proposed measures to reduce or control emissions or other impacts to air, if any:

The Washington Clean Air Act requires the use of all known, available, and reasonable means of controlling air pollution, including dust. It is not anticipated that standard construction methods for this type of development will exceed any applicable state and/or federal air quality standards given the TESC BMP measures to be implemented at the time of construction.

3. Water [help]

a. Surface Water: [help]

1) Is there any surface water body on or in the immediate vicinity of the site (including year-round and seasonal streams, saltwater, lakes, ponds, wetlands)? If yes, describe type and provide names. If appropriate, state what stream or river it flows into.

No, there are no surface water bodies located in the immediate vicinity of the project site.

2) Will the project require any work over, in, or adjacent to (within 200 feet) the described waters? If yes, please describe and attach available plans.

No, there will be no work over, in, or adjacent to surface water bodies.

3) Estimate the amount of fill and dredge material that would be placed in or removed from surface water or wetlands and indicate the area of the site that would be affected. Indicate the source of fill material.

No fill or dredge material will be placed or removed from any surface waters.

4) Will the proposal require surface water withdrawals or diversions? Give general description, purpose, and approximate quantities if known.

No, the project will not require any surface water withdrawls or diversions.

5) Does the proposal lie within a 100-year floodplain? If so, note location on the site plan.

No, the project does not lie within the 100-year floodplain.

6) Does the proposal involve any discharges of waste materials to surface waters? If so, describe the type of waste and anticipated volume of discharge.

No, the project does not involve any discharge of waste materials to surface waters.

b. Ground Water: [help]

1) Will groundwater be withdrawn from a well for drinking water or other purposes? If so, give a general description of the well, proposed uses and approximate quantities withdrawn from the well. Will water be discharged to groundwater? Give general description, purpose, and approximate quantities if known.

Groundwater will not be withdrawn from a well for drinking water or other purposes. Public water mains will be installed to serve the development. Treated stormwater runoff is expected to be discharged to the groundwater by means of on-site infiltration facilities.

2) Describe waste material that will be discharged into the ground from septic tanks or other sources, if any (for example: Domestic sewage; industrial, containing the following chemicals. . . ; agricultural; etc.). Describe the general size of the system, the number of such systems, the number of houses to be served (if applicable), or the number of animals or humans the system(s) are expected to serve.

No waste materials will be discharged to the ground.

c. Water runoff (including stormwater):

1) Describe the source of runoff (including storm water) and method of collection and disposal, if any (include quantities, if known). Where will this water flow? Will this water flow into other waters? If so, describe.

Stormwater runoff will result from the proposed drive aisles, pedestrian facilities, and rooftop areas located on Lot 1. Runoff will be collected with catch basins or roof drains

and conveyed to on-site infiltration facilities. Pretreatment will be provided prior to infiltration as required based on the in-situ soils.

2) Could waste materials enter ground or surface waters? If so, generally describe.
Waste materials are not expected to enter ground or surface water. The proposed stormwater system will be designed to eliminate entry of waste materials or pollutants to ground water and/or surface waters.

3) Does the proposal alter or otherwise affect drainage patterns in the vicinity of the site? If so, describe.
Natural drainage patterns will be maintained. Runoff is expected to be infiltrated into the native soils.

d. Proposed measures to reduce or control surface, ground, and runoff water, and drainage pattern impacts, if any:
A City of Richland approved storm drainage system will be designed and implemented to mitigate any potential adverse impacts from stormwater runoff. Temporary and permanent drainage facilities will be used to control quality and quantity of surface runoff during construction and after development of the hotel located on Lot 1.

4. Plants [help]

a. Check the types of vegetation found on the site:

____deciduous tree: alder, maple, aspen, other
____evergreen tree: fir, cedar, pine, other
__**X**__shrubs
__**X**__grass
__**X**__pasture
____crop or grain
____ Orchards, vineyards or other permanent crops.
____ wet soil plants: cattail, buttercup, bullrush, skunk cabbage, other
____water plants: water lily, eelgrass, milfoil, other

b. What kind and amount of vegetation will be removed or altered?
Shrubs, grass, and pasture currently cover the site. Potions of the site will be cleared and graded for the development of hotel (located on Lot 1) following the subdivision. All clearing will be performed in accordance with current City of Richland development standards.

c. List threatened and endangered species known to be on or near the site.
There are no threatened or endangered species known to be on or in the immediate vicinity of the project.

d. Proposed landscaping, use of native plants, or other measures to preserve or enhance vegetation on the site, if any:
Landscaping will be limited to parking lot islands,bioretention areas (if used), and small open space areas around the perimieter of the proposed hotel building (located on Lot 1). The plantings in these areas will meet the minimum requirements of the City of Richland,

irrigation will be provided where necessary. Species chosen are expected to be native and will enhance the vegetation of the site.

e. List all noxious weeds and invasive species known to be on or near the site.
There are no known noxious weeds or invasive species known to be on or in the immediate vicinity of the site.

5. Animals [help]

a. List any birds and other animals which have been observed on or near the site or are known to be on or near the site.

Examples include:

birds: hawk, heron, eagle, **songbirds**, other:
mammals: deer, bear, elk, beaver, other:
fish: bass, salmon, trout, herring, shellfish, other _____

b. List any threatened and endangered species known to be on or near the site.
There are no known threatened or endangered species on or near the site.

c. Is the site part of a migration route? If so, explain.
Unknown, it may be within the eastern limits of the Pacific Flyway for migratory birds.

d. Proposed measures to preserve or enhance wildlife, if any:
No measures to preserve or enhance wildlife are proposed or expected to be required.

e. List any invasive animal species known to be on or near the site.
No invasive animal species are known to be on or in the immediate vicininty of the site.

6. Energy and Natural Resources [help]

a. What kinds of energy (electric, natural gas, oil, wood stove, solar) will be used to meet the completed project's energy needs? Describe whether it will be used for heating, manufacturing, etc.
The project located on Lot 1 will extend existing electrical power, gas, and communication distribution systems to serve the proposed hotel

b. Would your project affect the potential use of solar energy by adjacent properties? If so, generally describe.
No, the project will not affect the potential use of solar energy for adjacent properties.

c. What kinds of energy conservation features are included in the plans of this proposal? List other proposed measures to reduce or control energy impacts, if any:
The project located on Lot 1 will be constructed to current City of Richland and Washington State Energy Code standards. No additional energy conservation features are known to be proposed, but my be incorporated into the final building design.

7. Environmental Health [help]

a. Are there any environmental health hazards, including exposure to toxic chemicals, risk of fire and explosion, spill, or hazardous waste, that could occur as a result of this proposal? If so, describe.

Local fuel spills are possible from equipment during construction activities for the development of the hotel. No long-term environmental health hazards are known or expected to result from the project.

1) Describe any known or possible contamination at the site from present or past uses.

No known contamination at the site from past or present uses is expected to be encountered.

2) Describe existing hazardous chemicals/conditions that might affect project development and design. This includes underground hazardous liquid and gas transmission pipelines located within the project area and in the vicinity.

There are no known hazardous chemicals/conditions located on, or in the immediate vicinity of the project site.

3) Describe any toxic or hazardous chemicals that might be stored, used, or produced during the project's development or construction, or at any time during the operating life of the project.

Typical commercial cleaning products and paints for regular maintenance of the hotel may be stored on the Lot 1 site.

4) Describe special emergency services that might be required.

No special emergency services are expected to be required.

5) Proposed measures to reduce or control environmental health hazards, if any:

A Storm Water Pollution Prevention and Spill Control Plan (SWPPSCP) will be prepared with the final engineering permit and construction documents for the project located on Lot 1 as required by local and Department of Ecology standards. The SWPPPSCP will include specific measures for addressing construction equipment fuel or other lubricant spills, which will include provisions for maintaining emergency spill control equipment and for preventing or containing such spills.

b. Noise

1) What types of noise exist in the area which may affect your project (for example: traffic, equipment, operation, other)?

The primary source of off-site noise in the area originates from vehicular traffic traveling to and from the commercial shopping areas located along Tapteal Drive along the northern frontage.

2) What types and levels of noise would be created by or associated with the project on a short-term or a long-term basis (for example: traffic, construction, operation, other)? Indicate what hours noise would come from the site.

Typical sounds and sound levels associated with individual passenger cars and occasional heavier trucks for deliveries will occur with the project. Temporary noise level increases will result from equipment during construction activities. Construction activities will be limited to per established City of Richland standards.

3) Proposed measures to reduce or control noise impacts, if any:

Construction activites will be limited to established City of Richland standard work hours to reduce or control equipment emissions and noises.

8. Land and Shoreline Use [help]

a. What is the current use of the site and adjacent properties? Will the proposal affect current land uses on nearby or adjacent properties? If so, describe.

The site is currently undeveloped. The adjacent properties to the east and west are commercial sites and are currently under development. Tapteal Drive runs along the projects northern limits and the Port of Benton Railroad borders the south.

b. Has the project site been used as working farmlands or working forest lands? If so, describe. How much agricultural or forest land of long-term commercial significance will be converted to other uses as a result of the proposal, if any? If resource lands have not been designated, how many acres in farmland or forest land tax status will be converted to nonfarm or nonforest use?

There is no knowledge of the project site being used as working farmland or working forest historically.

1) Will the proposal affect or be affected by surrounding working farm or forest land normal business operations, such as oversize equipment access, the application of pesticides, tilling, and harvesting? If so, how:

The proposal will not affect or be affected by surrounding working farm or forest land.

c. Describe any structures on the site.

No structures currently exist on the project site.

d. Will any structures be demolished? If so, what?

No structures exist or will be demolished on the project site.

e. What is the current zoning classification of the site?

The project site is current zoned General Business (C-3).

f. What is the current comprehensive plan designation of the site?

The current comprehensive plan designation for the site is commercial.

g. If applicable, what is the current shoreline master program designation of the site?

N/A

h. Has any part of the site been classified as a critical area by the city or county? If so, specify.

No portion of the site has been classified as a critical area by either the City of Richland or Benton County.

i. Approximately how many people would reside or work in the completed project?

No permanent residents will reside in the hotel located on Lot 1. The completed hotel will contain 126 rooms. The number of working employees will vary depending on the number of occupied rooms.

j. Approximately how many people would the completed project displace?

None.

k. Proposed measures to avoid or reduce displacement impacts, if any:

None required.

L. Proposed measures to ensure the proposal is compatible with existing and projected land uses and plans, if any:

The project is being developed in accordance with current zoning and development standards for its zoning designation of C3, General Commercial. As such, no additional or site-specific measures are proposed or expected to be necessary to ensure compatibility with existing or proposed land use and plans.

m. Proposed measures to reduce or control impacts to agricultural and forest lands of long-term commercial significance, if any:

The project is not located in the vicinity of any agricultural or forest lands, therefore no measures are proposed.

9. Housing [help]

a. Approximately how many units would be provided, if any? Indicate whether high, middle, or low-income housing.

No permanent residential units would be constructed with this project. The Lot 1 development proposes to provide 126 hotel rooms.

b. Approximately how many units, if any, would be eliminated? Indicate whether high, middle, or low-income housing.

No existing residential units would be eliminated by this project.

c. Proposed measures to reduce or control housing impacts, if any:

No proposed measures to avoid or reduce displacement impacts are proposed or expected to be required.

10. Aesthetics [help]

a. What is the tallest height of any proposed structure(s), not including antennas; what is the principal exterior building material(s) proposed?

The height of the building located on Lot 1 will be 48'-6" at the highest point which will conform to height requirements established by the City of Richland zoning standards for project located within the General Commercial (C3) designation. No extensions are anticipated. The exterior building material will be a combination of thin brick and fiber cement siding.

b. What views in the immediate vicinity would be altered or obstructed?

The subject property is currently a vacant commercial lot. Commercial buildings are being developed on the adjacent parcels and the Port of Benton Railroad runs along the south. No views will be obstructed or altered outside of the intended use for the site, consistent with the adjacent uses.

b. Proposed measures to reduce or control aesthetic impacts, if any:
Landscapiong for Lot 1 is proposed in accordance with City of Richland development standards to reduce or control potential aesthetic impacts of the project.

11. Light and Glare [help]

a. What type of light or glare will the proposal produce? What time of day would it mainly occur?
Typical exterior and interior lighting will be visible from the occupied structures located on Lot 1. The site access and parking lot will also have lighting. The increased lighting would be most visible (i.e., most often occur) from dusk to early morning.

b. Could light or glare from the finished project be a safety hazard or interfere with views?
Light and glare from the Lot 1 project site will not be a safety hazard or interfere with views. Parking lot lighting and exterior wall mounted fixtures will be installed with cut-off shields to direct lighting downward to reduce and control light and glare impacts.

c. What existing off-site sources of light or glare may affect your proposal?
No known existing off-site sources of light or glare will impact the proposed project.

d. Proposed measures to reduce or control light and glare impacts, if any:
Parking lot lighting and exterior wall mounted fixtures will be installed with cut-off shields to direct lighting downward to reduce and control light and glare impacts.

12. Recreation [help]

a. What designated and informal recreational opportunities are in the immediate vicinity?
Columbia Park is located less than half a mile east and Wye Park is located approximately 0.5 miles north of the site.

b. Would the proposed project displace any existing recreational uses? If so, describe.
The project site will not displace any existing recreational uses.

c. Proposed measures to reduce or control impacts on recreation, including recreation opportunities to be provided by the project or applicant, if any:
No measures are proposed or expected to be necessary to reduce or control impacts on recreation.

13. Historic and cultural preservation [help]

a. Are there any buildings, structures, or sites, located on or near the site that are over 45 years old listed in or eligible for listing in national, state, or local preservation registers ? If so, specifically describe.
There are no known structures or sites on or in the vicity of the project site that are listed or proposed for listing on national, state, or local preservation registers.

b. Are there any landmarks, features, or other evidence of Indian or historic use or occupation? This may include human burials or old cemeteries. Are there any material evidence, artifacts, or areas of cultural importance on or near the site? Please list any professional studies conducted at the site to identify such resources.

There are no known landmarks or observied evidence of historic, archaeological, scientific, or cultural importance on or next to the site.

c. Describe the methods used to assess the potential impacts to cultural and historic resources on or near the project site. Examples include consultation with tribes and the department of archeology and historic preservation, archaeological surveys, historic maps, GIS data, etc.

The DAHP Wisaard online research system was used to evaluate potential items/records onsite and on adjacent properties. A Cultural Resources Survey and Testing Report was provided by GRAM Northwest, LLC in January of 2023 which concluded that the project area has a low potential to contain archaeological materials and that cultural resources monitoring is not recommended for this project.

d. Proposed measures to avoid, minimize, or compensate for loss, changes to, and disturbance to resources. Please include plans for the above and any permits that may be required.

No special measures are proposed or expected to be required to reduce impacts to historical or cultural resources.

14. Transportation [help]

a. Identify public streets and highways serving the site or affected geographic area and describe proposed access to the existing street system. Show on site plans, if any.

The project proposes to take access from Tapteal Drive along the northern project frontage. The proposed access for Lot 1 is shown on the plans submitted with this checklist.

b. Is the site or affected geographic area currently served by public transit? If so, generally describe. If not, what is the approximate distance to the nearest transit stop?

No, the site is not currently served by Ben Franklin Transit. The nearest transit stops are approximately 1 mile away from the site for either the Metro Route 1 or Route 110.

c. How many additional parking spaces would the completed project or non-project proposal have? How many would the project or proposal eliminate?

The completed project located on Lot 1 will have at least 126 parking spaces. The project will not eliminate any parking.

d. Will the proposal require any new or improvements to existing roads, streets, pedestrian, bicycle or state transportation facilities, not including driveways? If so, generally describe (indicate whether public or private).

The project will provide improved public sidewalk along the Tapteal Drive frontage.

e. Will the project or proposal use (or occur in the immediate vicinity of) water, rail, or air transportation? If so, generally describe.

The Port of Benton Railroad runs east-west along the southern property boundary.

f. How many vehicular trips per day would be generated by the completed project or proposal? If known, indicate when peak volumes would occur and what percentage of the volume would be trucks (such as commercial and nonpassenger vehicles). What data or transportation models were used to make these estimates?

The proposed hotel development on Lot 1 is estimated to generate 562 vehicular trips (263 entering, 263 exiting). Peak volumes are expected 7-9 AM and 4-6 PM. Less than 3%

trucks are expected. Estimates are based on the *ITE Trip Generation Manual, 10th Edition.* Vehicular trips were generated per Land Use Code (LUC) 311 and a daily trip rate of 4.46.

g. Will the proposal interfere with, affect or be affected by the movement of agricultural and forest products on roads or streets in the area? If so, generally describe.
The proposal is not expected to interfere, affect, or be affected by the movement of agricultural or forest products on roads or streets in the area.

h. Proposed measures to reduce or control transportation impacts, if any:
No additional measures to reduce or control transportation impacts are proposed or expected to be required for the project.

15. Public Services [help]

a. Would the project result in an increased need for public services (for example: fire protection, police protection, public transit, health care, schools, other)? If so, generally describe.
Yes, the project will result in some increase in demand for public services. The proposed commercial use and transient nature of the hotel located on Lot 1 will result in short-term residents that will potentially require police protection, emergency health services, and possibly transit.

b. Proposed measures to reduce or control direct impacts on public services, if any.
The project will pay mitigation fees as required by the current City of Richland municipal code to mitigate potential impacts on public services.

16. Utilities [help]

a. Circle utilities currently available at the site:
electricity, natural gas, water, refuse service, telephone, sanitary sewer, septic system, other _____
Additional An existing 12-inch ductile iron water main runs along the south side of Tapteal Drive adjacent to the project frontage. An 8-inch main will be connected to and extended from the main to serve the Lot 1 project site. An existing 12-inch poly vinyl chorlice (PVC) sewer main runs along the north side of Tapteal Drive. Given the moderate slopes over the site, it is expected that the project will be able to tie into an existing manhole (or main) within the public right-of-way and extend an 8-inch main towards the Lot 1 site to provide sanitary sewer services. Power and communication services are available from existing below-grade distribution lines running along Tapteal Drive.

b. Describe the utilities that are proposed for the project, the utility providing the service, and the general construction activities on the site or in the immediate vicinity which might be needed.
Water, Sewer, and Refuse Service – City of Richland
Natural Gas – Casecade Natural Gas
Electricity – City of Richland, PUD
Telephone – Frontier, Charter

C. Signature [HELP]

The above answers are true and complete to the best of my knowledge. I understand that the lead agency is relying on them to make its decision.

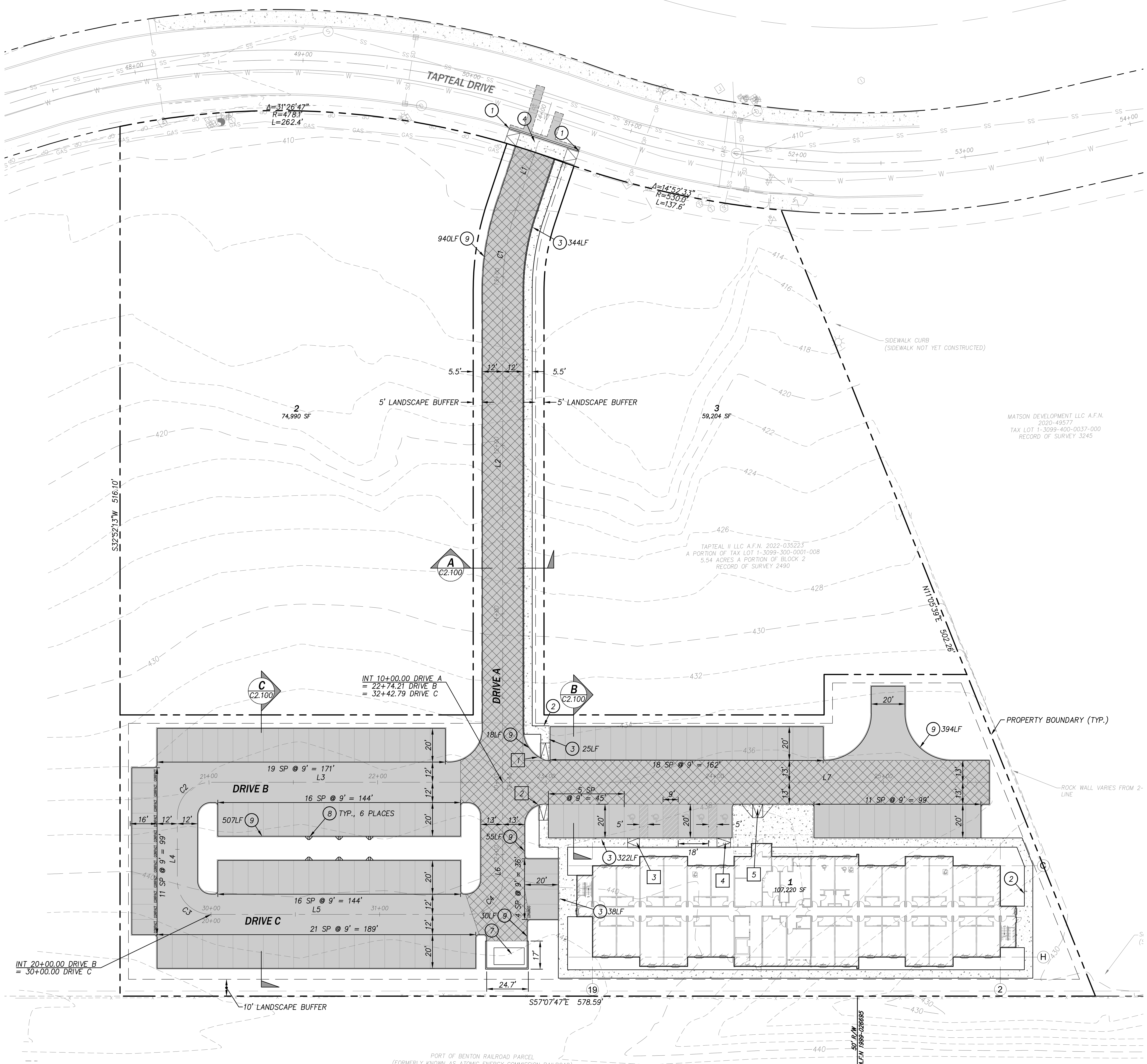
Signature: 

Name of signee Colton Darden, PE

Position and Agency/Organization Project Engineer/CPH Consultants

Date Submitted: 1/23/23

PTN. OF NW 1/4 OF SE 1/4 AND NE 1/4 OF THE SW 1/4 SEC 30, TWP 9 N, R29E W.M.



CONSTRUCTION NOTES

1. CUT EXIST. CURB TO ACCOMMODATE DRIVEWAY INSTALLATION. CONTRACTOR SHALL COORDINATE WITH THE PUBLIC WORKS INSPECTOR REGARDING DRIVEWAY INSTALLATION.
2. SIDEWALK PER COR STD. DWG. ST1 AND ST7
3. CEMENT CONC. SIDEWALK W/ INTEGRAL CURB PER DET. ON SHT. C2.100; APPROX. LENGTH PER PLAN
4. STANDARD DRIVEWAY PER COR STD. DET. ST2
5. STANDARD PARKING STALL PAVEMENT MARKINGS PER DET. ON SHT. C2.100
6. ACCESSIBLE PARKING STALL(S) PER DET. ON SHT. C2.100
7. CONCRETE TRASH/RECYCLING ENCLOSURE, REF. ARCH. PLANS FOR DETAILS; ENCLOSURE SHALL CONFORM TO COR STD. DETAILS SW2A AND SW3
8. CONCRETE SCUPPER PER COR STD. DET. S19 ON SHT. C3.100, SEE NOTE 3
9. CEMENT CONC. TRAFFIC CURB PER WSDOT STD. PLAN F-10.12-04 ON SHT. C2.101, LENGTH PER PLAN
10. SIDEWALK RAMP TYPE 3B PER COR STD. DET. ST6 ON SHT. C2.101
11. SIDEWALK RAMP TYPE 2A PER COR STD. DET. ST5 ON SHT. C2.101
12. REPAIR TAPTEAL DRIVE PER COR STD. DET. U2
13. SIDEWALK RAMP TYPE 1B PER STD. DET. ST4 ON SHT. C2.101

LEGEND

- PROPOSED BUILDING
- SIDEWALK
- SIDEWALK W/ INTEGRAL CURB
- STANDARD AC PAVEMENT (PER DET. ON C2.100)
- HEAVY AC PAVEMENT (PER DET. ON C2.100)

NOTES:

1. CONTRACTOR SHALL BE RESPONSIBLE FOR ANY AND ALL PUBLIC INFRASTRUCTURE CONSTRUCTION DEFICIENCIES FOR A PERIOD OF ONE YEAR FROM THE DATE OF ACCEPTANCE BY THE CITY OF RICHLAND.
2. ANY DAMAGED OR BADLY DETERIORATED CONCRETE CURB, GUTTER, AND SIDEWALK WITHIN THE PUBLIC RIGHT OF WAY SHALL BE REMOVED AND REPLACED, INCLUDING ANY CURB DAMAGED BY CONSTRUCTION EQUIPMENT DURING THE PROJECT.
3. CONCRETE SCUPPERS TO BE LOCATED AT PARKING LOT LOW POINTS AND MAY BE ADDED OR SHIFTED ACCORDINGLY TO FACILITATE RUNOFF.

ALIGNMENT DATA

LINE TABLE

LINE #	LENGTH	DIRECTION
L1	65.86'	N51°23'44"E
L2	292.19'	N32°52'18"E
L3	173.00'	S57°07'47"E
L4	38.38'	N32°52'13"E
L5	153.00'	S57°07'47"E
L6	58.38'	N32°52'18"E
L7	288.63'	S57°07'49"E

CURVE TABLE

CURVE #	Δ	RADIUS	LENGTH
C1	N42°08'01"E	150.00'	48.50'
C2	N77°52'13"E	20.00'	31.42'
C3	N12°07'47"W	20.00'	31.42'
C4	N77°52'13"E	20.00'	31.42'

CURB RAMP SCHEDULE

PLAN REF. NO.	TYPE (CONSTRUCTION NOTE)	WIDTH	STATION, OFFSET
1	10	4.7'	STA 22+95.00, 13.34' LT
2	10	4.5'	STA 22+94.04, 13.06' RT
3	11	5.5'	STA 23+55.34, 35.75' RT
4	11	5.5'	STA 24+01.34, 35.75' RT
5	13	6'	STA 24+25.44, 13.00' RT

BUILDING GRID LOCATION

GRID INT.	NORTH	EAST
C-2	329898.28	1961063.96
C-19	330024.07	1960861.93
H-19	329976.08	1960818.45

RICHLAND SIGNATURE BLOCK

OWNER	APPROVED	DATE
RICHLAND CITY ENGINEER:	________	________

NO.	DATE	REVISION	BY	CK.
1	2/23/23	GRADING AND UTILITY PERMIT SUBMITTAL	MDS	MJH

LIVAWAY SUITES RICHLAND

GRADING, STORM DRAINAGE, AND UTILITY IMPROVEMENTS

SITE LAYOUT

CITY OF RICHLAND

WASHINGTON STATE

CLIENT

WEST 77 ACQUISITIONS, LLC
3300 N TRIUMP BLVD
SUITE 100
LEHI, UT 94043
PHONE: (801) 448-2079

CPH CONSULTANTS
Site Planning • Civil Engineering
Landscape Architecture • Land Use Consulting
11321-B NE 120th Street
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Wenatchee, WA 98801 • (509) 293-7731
www.cphconsultants.com

PROJECT NO. 0128-22-014

DRAWING C2.00

SHEET 6 OF 17

Northern, Inc.
Consulting Engineers Environmental Scientists Geologists
Construction Materials Testing Geophysical Services

GEOTECHNICAL SITE INVESTIGATION REPORT

PROPOSED NEW LIVAWAY SUITES HOTEL
~2.4-ACRE UNDEVELOPED SITE
TAPTEAL DRIVE, RICHLAND, WA

GNN PROJECT NO. 222-16116

JANUARY 2023

Prepared for

W77 ACQUISITIONS, LLC
3300 N. TRIUMPH BLVD, SUITE 100
LEHI, UT 84043

Prepared by

GN NORTHERN, INC.
CONSULTING GEOTECHNICAL ENGINEERS
KENNEWICK, WASHINGTON
(509) 734-9320

Northern, Inc.

At GN Northern our mission is to serve our clients in the most efficient, cost-effective way using the best resources and tools available while maintaining professionalism on every level. Our philosophy is to satisfy our clients through hard work, dedication and extraordinary efforts from all of our valued employees working as an extension of the design and construction team.

January 18, 2023

W77 ACQUISITIONS, LLC
3300 N. Triumph Blvd, Suite 100
Lehi, UT 84043

Attn: Aaron Converse, Development Manager

Subject: **Geotechnical Site Investigation Report**
Proposed New LivAway Suites Hotel
~2.4-Acre Undeveloped Site
Tapteal Drive, Richland, WA

GNN Project No. 222-1616

Dear Mr. Converse,

As requested, GN Northern (GNN) has completed a geotechnical site investigation for the proposed new LivAway Suites Hotel to be constructed on a property located on the south side of Tapteal Drive in Richland, Washington.

Based on the findings of our subsurface study, we conclude that the site is suitable for the proposed construction provided that our geotechnical recommendations presented in this report are followed during the design and construction phases of the project.

This report describes in detail the results of our investigation, summarizes our findings, and presents our recommendations concerning earthwork and the design and construction of foundations for the proposed project. ***It is very important that GNN be retained by W77 ACQUISITIONS, LLC to provide geotechnical engineering consultation during the design phase, and field geotechnical monitoring and compaction testing services during earthwork to ensure proper implementation of the geotechnical recommendations***.

If you have any questions regarding this report, please contact us at 509-734-9320.

Respectfully submitted,

GN Northern, Inc.

Aaron B. Cleveland, GIT
Staff Geologist

Karl A. Harmon, LEG, PE
Senior Geologist/Engineer

TABLE OF CONTENTS

Page No.

APPENDICES

1.0 PURPOSE AND SCOPE OF SERVICES

This report has been prepared for the proposed new LivAway Suites Hotel to be constructed on a property located south of Tapteal Drive in Richland, Washington; site location is shown on the *Vicinity Map* (Figure 1, Appendix I). Our investigation was conducted to collect information regarding subsurface conditions and present recommendations for suitability of the subsurface materials to support the planned site development and allowable bearing capacity for the proposed construction.

GN Northern, Inc. has prepared this report for use by W77 ACQUISITIONS, LLC. and their consultants in the design of the proposed development. Do not use or rely upon this report for other locations or purposes without the written consent of GN Northern, Inc.

Our study was conducted in general accordance with our *Proposal for Geotechnical Services* dated October 27, 2022, along with our understanding of the P*reliminary Site Plan* dated 9/16/2022 prepared by CPH Consultants, LLC; GNN was given *notice-to-proceed* provided in the form of a *Fully Executed Agreement* with W77 ACQUISITIONS, LLC, signed by Mr. Converse, dated December 7, 2022.

Field exploration, consisting of eight (8) exploratory test-pits was completed on January 11, 2023. Test-pit locations are shown on the *Site Exploration Map* (Figure 2, Appendix I). Detailed test-pit logs are presented in Appendix II, and results of our laboratory testing are presented in Appendix III.

This report has been prepared to summarize the data obtained during this study and to present our recommendations based on the proposed construction and the subsurface conditions encountered at the site. Results of the field exploration and laboratory testing were analyzed to develop recommendations for site development, earthwork, foundation bearing capacity and pavements. Design parameters and a discussion of the geotechnical engineering considerations related to construction are included in this report.

2.0 PROPOSED CONSTRUCTION

Based on the information provided, we understand that a new four (4) story hotel is proposed south of Tapteal Drive and generally west of Center Parkway, in Richland, Washington. Site

development will also include 132 new paved parking areas and drive-lanes around the new building, as well as a new paved driveway to connect to proposed hotel to Tapteal Drive.

Structural loading information was not provided at the time of this report. Based on our experience with similar projects, we expect wall loads to be on the order of 4 to 4.5 klf and maximum column loads for the structure to be less than 100 kips. If loading conditions differ from those described herein, GNN should be given an opportunity to perform re-analysis. Settlement tolerances for the structure is assumed to be limited to 1 inch, with differential settlement limited to ½ inch.

3.0 FIELD EXPLORATION

Our field exploration was completed on January 11, 2023, and included eight (8) exploratory test-pits. Test-pits were excavated by Big D's Construction, Inc. using a Link-Belt 160 excavator and a CASE CX210C excavator to depths ranging from approximately 7 to 16 feet below existing ground surface (BGS). Each test-pit was logged by a GNN field geologist. Public utility locate clearance was completed prior to excavation. Upon completion, all excavations were loosely backfilled with excavation spoils. Test-pit locations are shown on the *Site Exploration Map* (Figure 2, Appendix I).

The soils observed during our field exploration were classified according to the Unified Soil Classification System (USCS), utilizing the field classification procedures as outlined in ASTM D2488. A copy of the USCS Classification Chart is included in Appendix II. Photographs of the site and exploration are presented in Appendix IV. Depths referred to in this report are relative to the existing ground surface elevation at the time of our investigation. The surface and subsurface conditions described in this report are as observed at the time of our field investigation.

4.0 LABORATORY TESTING

Representative samples of the exposed soils obtained from the test-pits were selected for testing to determine the index properties of the subsurface soils in general accordance with ASTM procedures. The following laboratory tests were performed:

Table 1: Laboratory Tests Performed

Test	To determine
Particle Size Distribution (ASTM D6913)	Soil classification based on proportion of sand, silt, and clay-sized particles
Natural Moisture Content (ASTM D2216)	Soil moisture content indicative of in-situ condition at the time samples were taken

Results of the laboratory test are included on the test-pit logs and are also presented in graphic form in Appendix III attached to the end of the report.

5.0 SITE CONDITIONS

The site of the new LivAway Suites Hotel project is located south of Tatpeal Drive in Richland, Washington. The site is located within an approximate 2.4-acre portion of a large 25.12-acre parcel identified by the Benton County Assessor as parcel number 130993000001008 located on the southern side of Tapteal Drive in the city of Richland, Benton County, WA. The *Property* is located in the NE ¼ of the SW ¼ and the NW ¼ of the SE ¼ of Section 30, Township 9 North, Range 29 East of the Willamette Meridian.

Surface conditions across the vacant/undeveloped project site are generally hummocky and cover with a moderate growth of native grasses and sage brush. The proposed driveway access from Tapteal Drive to the hotel site has approximately 21 feet of grade change, with elevations ranging from about 427’ to ~406'. The hotel building site and parking area has a grade differential of approximately 16 feet sloping gently toward the northeast, with elevations ranging from about 443’ in the southwest corner to ~427’ in the northeast portion where the driveway begins. The referenced elevations are based on topography from the provided *Preliminary Site Plan* dated 9/16/2022 prepared by CHP Consultants, LLC,

5.1 Regional Geology

The site is located in the Richland area of the Quincy Basin in the central Columbia Plateau. The subsurface stratigraphy of the Richland area is comprised of a thick series of broadly folded, Miocene-age flood basalt lava flows and interbedded sediments (collectively known as the Columbia River Basalt Group [CRBG]) overlain by unconsolidated deposits of late Miocene to recent age. In the Richland area the uppermost layers of the CRBG are fractured bedrock of the

Wanapum Basalt formation. Regionally, the top surface of the Wanapum Basalt is known to slope towards the southwest beneath Richland, although local variations exist in the area.

Much of the basalts in the Richland area are directly overlain by fine-grained deposits of late Miocene to Pliocene-age Ringold Formation. The Ringold sediments are comprised of lacustrine clay, silt, and fine sand. Additional deposits of fine-grained, tuffaceous, eolian sand and silt, basaltic gravel lenses, and inter-layered caliche also are present. Although the Ringold sediments are believed to pinch out northeast of Richland near the Crab Creek drainage area, localized deposits or transported and re-deposited Ringold sediments remain in the area. Overlying the Ringold sediments are a sequence of Pleistocene-age flood deposits, commonly identified as the Missoula Flood Deposits. These deposits consist of massive boulders to granule-sized basaltic gravel, with lesser deposits of sand, silt, and non-basaltic gravel. Caliche fragments and coatings of caliche on gravel surfaces are present in the shallower portions of this sedimentary unit.

The groundwater hydrology of the Columbia Basin is defined by a complex multi-aquifer system comprised of the CRBG formations and overburden deposits. Regional studies of the Columbia Basin generally classify the overburden sediments (Missoula Flood Deposits) and the uppermost flow unit as a single aquifer. However, where present, finer-grained deposits of the Ringold formation act as an aquitard, hydraulically separating groundwater in the flood deposits from groundwater in the uppermost basalt flow.

5.2 Seismic Design Considerations

As per the 2018 International Building Code (IBC), a Site Class ‘D’ may be used for seismic design purposes. Site Class ‘D’ corresponds to ‘stiff soil’. We obtained the seismic parameter from the National Seismic Hazard Maps for Latitude 46.231265°N and Longitude 119.232860°W. Table 2 below presents the recommended seismic design parameters in accordance with ASCE 7-16 for a code-based response spectrum with a return period of 2,475 years.

Table 2: Code Based Seismic Design Parameters

Seismic Design Parameter	Value (unit)	Definition
S_S	0.419 (g)	MCE spectral response acceleration at short periods
S_1	0.16 (g)	MCE spectral response acceleration at 1-second period
F_a	1.465 (unitless)	Site coefficient for short periods
F_v	2.281 (unitless)	Site coefficient for 1-second period
S_{MS}	0.614 (g)	MCE spectral response acceleration at short periods as adjusted for site effects
S_{M1}	0.364 (g)	MCE spectral response acceleration at 1-second period as adjusted for site effects
S_{DS}	0.409 (g)	Design spectral response acceleration at short periods
S_{D1}	0.243 (g)	Design spectral response acceleration at 1-second period
PGA	0.185 (g)	MCE_G peak ground acceleration
F_{PGA}	1.43	Site amplification factor at PGA
PGA_M	0.265 (g)	Site modified peak ground acceleration

6.0 SUBSURFACE CONDITIONS

Based on the findings of our field exploration, native subsurface soils at the site generally consist of Silty Sand (SM) to depth of ~2.5 to 3 feet BGS atop Poorly Graded Gravel with Silt and Sand (GP-GM) with some cobbles and occasional boulders to a maximum depth of ~15 feet BGS. The silty sand layer generally appeared 'medium dense' and had a relative in-situ moisture content of 'dry' to 'damp'. The underlying native gravel with silt and sand unit appeared 'medium dense' to 'dense' and had a relative in-situ moisture content of 'dry' to 'damp'. This gravel unit appeared to be partially cemented to cemented to depths ranging from about 2.5 to ~6.5 feet BGS. Unique to test-pit TP-1 the gravel unit was noted to be approximately 1-foot in thickness and was encountered from approximately 3 to 4 feet BGS. This relatively thin gravel unit was overlying silty sand that extended to the total depth of 7.5 feet. Within test-pit TP-6 a layer of Silty Sand (SM) was encountered at a depth of approx. 8.5 feet and extended to ~14.5 feet BGS and was overlying Poorly Graded Gravel with Silt and Sand (GP-GM). Test-pit logs are included in Appendix II show detailed descriptions and stratification of the soils encountered.

6.1 NRCS Soil Survey

The soil survey map of the site prepared by the Natural Resources Conservation Service (NRCS) identifies native site soils primarily as *Burbank loamy fine sand, gravelly substratum, 0 to 2*

percent slopes, Burbank loamy fine sand, gravelly substratum, 2 to 15 percent slopes and *Hezel loamy fine sand, 2 to 15 percent slopes.* The *Burbank soils* have parent materials described as *mixed alluvium and/or eolian deposits over gravelly and stony alluvium*. The typical soil profiles for these units are described as loamy fine sand atop *loamy sand* atop *very gravelly sand* atop *extremely gravelly sand*. The Hezel unit has parent materials described as eolian sands over silty lacustrine deposits. The typical soil profile for this unit is described as *loamy fine sand* atop *stratified fine sandy loam to silt loam.* According to the NRCS map (Appendix V), these units generally consist of *excessively drained* materials and *somewhat excessively drained* materials, respectively.

6.2 Groundwater

Groundwater was not encountered within the test-pits at time of our exploration to a maximum depth of approximately 16 feet BGS. Based on our review of available groundwater data from the Washington State Department of Ecology well log database, groundwater in the project vicinity is believed to be on the order of 24.5 to 39 feet BGS. Groundwater levels will fluctuate with precipitation, irrigation, drainage, and regional pumping from wells.

7.0 SUMMARY OF FINDINGS & CONCLUSIONS

Conditions imposed by the proposed development have been evaluated on the basis of assumed elevations and engineering characteristics of the subsurface materials encountered in the exploratory test-pits and their anticipated behavior both during and after construction. The following is a summary of our findings, conclusions and professional opinions based on the data obtained from a review of selected technical literature and the site evaluation.

- Based on this geotechnical evaluation and our understanding of the proposed development, from a geotechnical perspective, it is our opinion that the site is suitable for the proposed construction, provided the soil design parameters and site-specific recommendations in this report are followed in the design and construction of this project.

- Final project plans, including a grading and foundation plans, were not provided at the time of this report. GNN shall be provided an opportunity to review final design plans to provide revised recommendations if/as necessary.

- Native site soils generally include an upper layer of fine-grained silty sand overlying relatively clean gravels with silt and sand and some cobbles and occasional boulders.

- Groundwater was not encountered within the test-pits at time of our exploration to a maximum depth of 16 feet BGS and is believed to be on the order of 25 to 40 feet BGS in the project vicinity.

- In our professional opinion, the proposed building may be supported on conventional shallow foundations bearing on a layer of crushed rock placed atop recompacted native gravel subgrade in accordance with the recommendations of this report. All building foundation excavations must extend to the native gravel with silt and sand unit with some cementation.

- Footing excavations should provide allowance for the foundations to bear on a minimum 12-inch-thick layer of compacted imported 1¼" minus crushed rock structural fill overlying the re-compacted or densified native gravel soils and/or imported granular soils placed as structural fill.

- The underlying geologic condition for seismic design is site class 'D'. The *minimum* seismic design should comply with the 2018 International Building Code (IBC) and ASCE 07-16, Minimum Design Loads for Buildings and Other Structures.

- Upon completion, all test-pit excavations were loosely backfilled with excavation spoils. The contractor is responsible to locate the test-pits to re-excavate the loose soils and re-place as compacted engineered fill.

- The onsite sandy and gravelly soils are generally suitable for reuse as engineered fill, provided they are screened and processed to be free of oversize rocks (>4 inches) and any deleterious materials.

- Site grading shall incorporate the requirements of IBC 2018, Appendix J *Grading*.

- The near-surface site soils are susceptible to wind and water erosion when exposed during grading operations. Preventative measures and appropriate BMPs to control runoff and reduce erosion should be incorporated into site grading plans.

8.0 GEOTECHNICAL RECOMMENDATIONS

The following geotechnical recommendations are based on our current understanding of the proposed project as described in Section 2.0 of this report. The report is prepared to comply with the 2018 International Building Code Section 1803, Geotechnical Investigations, and as required by Subsection 1803.2, Investigations Required. Please note that Soil Design Parameters and Recommendations presented in this report are predicated upon appropriate geotechnical monitoring and testing of the site preparation and foundation and building pad construction by a representative of GNN's **Geotechnical-Engineer-of-Record (GER)**. Any deviation and nonconformity from this requirement may invalidate, partially or in whole, the following recommendations. We recommend that we be engaged to review grading and foundation plans in order to provide revised, augmented, and/or additional geotechnical recommendations as required.

Note that the applicability of our recommendations is contingent upon good construction practices. Poor construction techniques may alter conditions from those on which our recommendations are based and, therefore, result in reduced foundation capacity and additional settlement, as appropriate.

8.1 Earthwork and Site Grading

Site grading shall incorporate the requirements of IBC 2018 Appendix J. Do not commence site clearing and grading operations until temporary erosion and sedimentation control measures are in place. We anticipate cutting and filling to achieve the design grades. A representative of the GER should observe site clearing, grading, and the bottoms of excavations before placing fills. Local variations in soil conditions may warrant increasing the depth of over-excavation and recompaction. Do not place backfill or fill soil material on surfaces that are saturated, muddy, frozen, or contain frost, snow, or ice. To prevent potential pumping and unstable ground conditions and improve compaction efforts, we recommend performing site grading during dryer periods avoiding winter and wet weather periods of the year.

Place backfill evenly adjacent to structures, piping, or conduit to required elevations. Wedging action shall be prevented of backfill against structures or displacement of piping or conduits by carrying material uniformly around structure, piping, or conduit to approximately same elevation in each lift.

Soil conditions shall be evaluated by in-place density testing, visual evaluation, probing, and proof-rolling of the imported fill and re-compacted on-site soil as it is prepared to check for compliance with recommendations of this report. A moisture-density curve shall be established in accordance with ASTM D1557 method (Laboratory Compaction Characteristics of Soil Using Modified Effort) for all onsite soils and imported fill materials used as structural fill.

Each test pit was loosely backfilled during our site investigation. During site development, the earthwork contractor is required to re-excavate the test pits and backfill the excavations with suitable fill material and compact as appropriate for the location within the building pad, pavements and hardscape and/or landscape areas.

8.1.1 Clearing and Grubbing

At the start of site grading, existing vegetation, roots, any undocumented fill and/or trash/debris, and any abandoned underground utilities shall be **fully removed** from proposed building, structural and pavement areas. The surface shall be stripped of all topsoil and/or organic growth (vegetation); the topsoil and organic rich soils shall either be stockpiled on-site separately for future use or be removed from the construction area. Depth of stripping can be minimized with real-time onsite observation of sufficient removals. Areas disturbed during clearing shall be properly backfilled and compacted as described below.

As part of the erosion and sediment control plan, the contractor should implement necessary BMP measures and protect the subgrade from exposure to moisture.

8.1.2 Suitability of the Onsite Soils as Engineered Fill

The onsite sandy and gravel soils, free of organics or deleterious materials including trash and debris, is generally suitable for use as engineered structural fill, general fill and utility trench backfill. Engineered fill should be placed in maximum 8-inch-thick loose lifts and each lift compacted to at least 95% of the Modified Proctor maximum dry density, as determined by ASTM D1557 (Laboratory Compaction Characteristics of Soil Using Modified Effort) near optimum moisture content.

8.1.3 Imported Fill Soils

If needed, imported fill material should consist of a clean, non-plastic, free draining sand and gravel mixture, which is free of organic matter, oversized material or other deleterious materials.

Such materials should contain particles no larger than 4 inches in maximum dimension, 70% or more passing the ¾" screen, and less than 7 percent fines (based on the ¾-inch fraction) as described in Section 9-03.14(1) of the WSDOT Standard Specifications (WSDOT, 2018).

8.1.4 Soil Moisture Conditioning

Appropriate moisture conditioning of gravelly fill and native soils will be required to facilitate compaction and to achieve the required degree of compaction. Uniformly moisten subgrade and each subsequent fill or backfill soil layer before compaction to near optimum moisture content, unless indicated otherwise. A laboratory proctor test to determine optimum moisture content is required prior to field compaction testing. Maintain fills soils to near-optimum moisture content at time of compaction. Assume a plus/minus maximum tolerance of approximately 2% to 3% unless compaction efforts prove a wider tolerance from optimum moisture content is acceptable to meet compaction requirements. Remove and replace, or scarify and air dry, otherwise satisfactory soil material that exceeds near-optimum moisture content and is too wet to compact to specified dry density.

8.1.5 Subgrade Inspection and Compaction Verification

A representative of our Geotechnical engineer (soils inspector) shall be onsite during earthwork to inspect and test subgrade and each fill layer. Proceed with subsequent earthmoving only after inspections confirm previously completed work complies with requirements of this report. Inspections and tests include:

1. Determine prior to placement of fill that subgrade has been prepared in compliance with requirements of this Geotechnical Report.
2. Determine that fill material and maximum lift thickness and moisture comply with requirements of this Geotechnical Report.
3. Determine, during placement and compaction, that in-place density of compacted fill complies with requirements of this Geotechnical Report.

When the soils inspector indicates that subgrades, and fills have not achieved subgrade acceptance criteria or degree of compaction specified, scarify, and moisten or aerate, or remove and replace soil materials to depth required; recompact and retest until specified compaction is obtained.

8.2 Temporary Excavations

It shall be the responsibility of the contractor to maintain safe temporary slope configurations since the contractor is at the job site, able to observe the nature and conditions of the slopes, and able to monitor the encountered subsurface conditions. Unsupported vertical cuts deeper than 4 feet are not recommended if worker access is necessary. The cuts shall be adequately sloped, shored, or supported to prevent injury to personnel from caving and sloughing. The contractor and subcontractors shall be aware of, and familiar with, applicable local, state, and federal safety regulations including the current OSHA Excavation and Trench Safety Standards, and OSHA Health and Safety Standards for Excavations, 29 CFR Part 1929, or successor regulations.

It is our opinion that the soil encountered at the site is classified as Type C soils. For excavation planning purposes, we recommend that temporary, unsupported, open cut slopes shall be no steeper than 1.5 feet horizontal to 1.0 feet vertical (1.5H:1V) in Type C soils. No heavy equipment should be allowed near the top of temporary cut slopes unless the cut slopes are adequately braced. Final (permanent) fill slopes should be graded to an angle of 2H:1V or flatter. We recommend that permanent slopes be hydroseeded and/or planted with vegetation after construction. Where unstable soils are encountered, flatter slopes may be required. We recommend protecting slopes with waterproof covering during periods of wet weather to reduce sloughing and erosion.

The native sandy/gravelly soil will be prone to caving and sloughing in open excavations. Excavation stability may be achieved by sloping excavation banks or widening shallow excavations in the anticipation of caving. Deeper excavations may require external support such as shoring or bracing to provide excavation bank stability.

8.3 Utility Excavation, Pipe Bedding and Trench Backfill

To provide appropriate support and bedding for the pipe, we recommend the utilities be founded on suitable bedding material consisting of clean sand and/or sand & gravel mixture. Pipe bedding should provide a firm uniform cradle for support of the pipes. A minimum 4-inch thickness of bedding material beneath the pipe should be provided. Prior to installation of the pipe, the pipe bedding should be shaped to fit the lower part of the pipe exterior with reasonable closeness to provide uniform support along the pipe. Pipe bedding material should be used as pipe zone backfill and placed in layers and tamped around the pipes to obtain complete contact. To protect the pipe, bedding material should extend at least 6 inches above the top of the pipe, however initial lift

thickness could be increased to levels recommended by the manufacturer to protect utilities from damage by compacting equipment.

Placement of bedding material is particularly critical where maintenance of precise grades is essential. Backfill placed within the first 12 inches above utility lines should be compacted to at least 90% of the maximum dry density (ASTM D1557), such that the utility lines are not damaged during backfill placement and compaction. In addition, rock fragments greater than 1 inch in maximum dimension should be excluded from this first lift. The remainder of the utility excavations should be backfilled and compacted to 95% of the maximum dry density as determined by ASTM D1557.

Suitable backfill for the pipe bedding, pipe zone material and trench backfill shall meet the specifications of Section 9-03.12(3) of the Washington State Department of Transportation (WSDOT) 2018 Standard Specifications. Onsite soils may be considered suitable for utility trench backfill provided they are free of significant organic matter and oversize material, and can be adequately compacted. All excavations should be wide enough to allow for compaction around the haunches of pipes. We recommend that utility trenching, installation, and backfilling conform to all applicable federal, state, and local regulations such as OSHA for open excavations.

Compaction of backfill material should be accomplished with soils within ±2% of their optimum moisture content in order to achieve the minimum specified compaction levels recommended in this report. Backfill operations shall be observed and tested to monitor compliance with these recommendations.

8.4 Imported Crushed Rock Structural Fill

Imported structural fill shall consist of well-graded, crushed aggregate material meeting the grading requirements of Washington State Department of Transportation (WSDOT) Standard Specification 9-03.9(3) (1¼ inch minus Base Course Material) presented here:

Table 3: WSDOT Standard Spec. 9-03.9(3)

Sieve Size	Percent Passing (by Weight)
1¼ Inch Square	99 - 100
1 Inch Square	80 - 100
5/8 Inch Square	50 – 80
U.S. No. 4	25 - 45

U.S. No. 40	3 – 18
U.S. No. 200	Less than 7.5

A fifty (50) pound sample of each imported fill material shall be collected by GNN personnel prior to placement to ensure proper gradation and establish a moisture-density relationship (proctor curve).

8.5 Compaction Requirements for Structural/ Engineered Fill

All fill or backfill shall be approved by a representative of our Geotechnical engineer (GER), placed in uniform lifts, and compacted to a minimum 95% of the maximum dry density as determined by ASTM D1557. The compaction effort must be verified in the field using a nuclear density gauge in accordance with ASTM D6938. The thickness of the loose, non-compacted, lift of structural fill shall not exceed 8 inches for heavy-duty compactors or 4 inches for hand operated compactors.

8.6 Compaction Requirements for Oversize/Non-Proctor Testable Soils

If used, native or fill soils consisting of oversize materials (greater than 30% retained on the ¾-inch sieve) shall be proof-rolled using a 30-ton tandem axle loaded dump truck and compacted to a dense and non-yielding surface. Alternatively, a single- or double-drum tandem vibratory roller with a minimum operating weight in the range of 4- to 5-tons can be used for proof-compaction of the native gravels in narrow foundation trenches. A representative of the GER shall be present onsite to confirm proof-compaction of the native subgrade based on the deflection of the compacted subgrade.

In lieu of a drum roller, use a minimum 15,000 lbs excavator and hoe-pack with minimum 5,500 lbs of impulse force at 2,000 cycles per minute, compact each lift by applying steady and uniform pressure until a dense and non-yielding state is achieved. The densification process shall commence immediately after addition of the moisture. Using a ½ inch diameter steel T-probe, a representative of the GER shall probe the compacted fill layer at several locations across the surface of the compacted layer. If the T-probe readily penetrates the placed fill material, it indicates unsatisfactory compaction. The depth of hoe-pack penetration shall be monitored for additional indications of sufficient compaction. In addition, elastic movement in excess of ¾” inch with substantial cracking or substantial lateral movement should also be considered a sign of

unsatisfactory compaction. Adjust the lift thickness and moisture content, as recommended by the GER until the placed fill layer exhibits firm, unyielding conditions. Any areas displaying pumping conditions during proof-compaction shall be over-excavated and recompacted.

8.7 Foundation Bearing Support & Allowable Bearing Capacity

In our opinion, the proposed hotel building structures may be supported on conventional shallow foundations bearing on a layer of imported crushed rock placed atop a recompacted or densified native gravel subgrade or imported granular soils placed as structural fill. All foundation excavations must extend to the native gravel with silt and sand unit with some cementation. The minimum footing depth shall be 24 inches below adjacent exterior finished grades for frost protection and bearing capacity considerations. **Foundations shall not be designed or constructed to straddle a cut-to-fill transition condition**.

To provide a uniform bearing support and minimize the risk of differential settlement, we recommend that all foundations shall bear on a minimum of 12 inches of imported 1¼" minus crushed rock structural fill atop re-compacted or densified native gravel soils. Prior to placing the crushed rock layer, the native gravelly subgrade at the bottom of footing excavations shall be moisture conditioned to near-optimum and proof-compacted to a dense and non-yielding condition. Any soft spots or pumping area(s) observed during proof-compaction shall be over-excavated at least 12 inches and replaced with imported crushed rock structural fill. A representative of our Geotechnical Engineer shall inspect the footing excavation, observe proof-compaction and perform compaction testing during placement of crushed rock structural fill. Foundation subgrade preparation and crushed rock structural fill should extend laterally a minimum distance of two (2) foot beyond the outer edge of all footings. The crushed rock shall be compacted to minimum 95% of the maximum dry density as determined by the ASTM D1557.

Footings constructed in accordance with the above recommendations may be designed for an allowable **3,000 pounds per square foot (psf)** bearing pressure. The allowable bearing pressure may be increased by 1/3 for short-term, transient loading conditions. Provided footing subgrades are prepared in accordance with the recommendations presented in this report, based on theory of elasticity we estimate total foundation settlements will be less than 1-inch, with differential settlement less than half that magnitude.

Lateral forces on foundations from short term wind and seismic loading would be resisted by friction at the base of foundations and passive earth pressure against the buried portions. We recommend an allowable passive earth pressure for compacted onsite fill of **250 psf per foot** of embedment depth at depths greater than 2 feet below adjacent grades. This lateral foundation resistance value includes a factor of safety of 1.5. We recommend a coefficient of friction of **0.45** be used between cast-in-place concrete and imported crushed rock. An appropriate factor of safety should be used to calculate sliding resistance at the base of footings.

8.8 Slab-on-Grade Floors

We recommend placing a minimum 6-inch layer of crushed aggregate fill beneath the slab. The material shall meet *WSDOT Specification* section 9-03.9 (3), "Crushed Surfacing Top Course", with less than 5% passing the No. 200 sieve (fines). Locally available 5/8-inch minus crushed rock material may be substituted as an acceptable alternative, provided the gradation generally meets the above-mentioned specification (WSDOT Spec. 9-03.9(3)) and is approved by the GER. The crushed rock material shall be compacted to at least 95% of the maximum dry density as determined by ASTM D1557 method. Prior to placing the crushed aggregate fill, the subgrade soils shall be scarified and moisture conditions to a minimum depth of 12 inches and then proof-rolled with a minimum 20-ton smooth drum roller to a dense and non-yielding surface and to at least 95% of the maximum dry density as determined by ASTM D1557 method.

We recommend a modulus of subgrade reaction equal to **120 pounds per cubic inch (pci)** based on a value for gravel presented in the Portland Cement Association publication No. EB075.01D. Slab thickness, reinforcement and joint spacing shall be determined by a licensed engineer based on the intended use and loading.

An appropriate vapor retarder (10-mil polyethylene liner) shall be used (ASTM E1745/E1643) beneath areas receiving moisture sensitive resilient flooring/VCT where prevention of moisture migration through slab is essential. The slab designer should refer to ACI 302 and/or ACI 360 for procedures and cautions regarding the use and placement of a vapor retarder. The architect shall determine the need and use of a vapor retarder.

8.9 Lateral Earth Pressure

We recommend the following lateral earth pressures, in terms of equivalent fluid pressure for drained condition, for design of retaining walls or below-grade structures:

At-Rest = 57 psf/ft of embedment
Active = 38 psf/ft of embedment

We assume that the structural wall backfill is adequately drained to avoid saturation and introduction of hydrostatic pressures. For calculation of active pressures, we assume that the wall can deflect in order to develop an active condition. Use at-rest pressures for restrained or braced walls. The horizontal resultant force (pressure x H/2 where H is height of buried wall) should be applied at an H/3 distance from the base of the wall.

If any surface, surcharge loads are closer than one-half of the wall height (horizontal distance) to the edge of the below-grade and/or retaining wall, increase the design wall pressure by $q/2$ over the whole area of the retaining wall. In this expression, q is the surface surcharge load in psf. GNN should review anticipated surcharge loading to confirm that the appropriate design values are considered. The horizontal surcharge resultant force (pressure x H where H is height of buried wall) should be applied at an H/2 distance from the base of the wall.

8.10 Flexible Pavement

Pavement subgrade soils are generally expected to consist of the native silty sand soil. A California Bearing Ratio (CBR) value of 4 has been estimated for the onsite soils for use in the pavement analysis. Using an empirical relationship, this CBR value corresponds to a resilient modulus value of approximately 6,000 psi. Pavement analyses are based on *1993 AASHTO Guide for Design of Pavement Structures*. The table below presents recommended pavement sections for this project:

Table 4: Recommended Asphalt Concrete Paving Sections

Traffic	Asphalt Thickness (inches)	Crushed Aggregate Base Course (inches)	Subgrade
Heavy Duty†	4	10*	upper min. 12 inches scarified, moisture conditioned and re-compacted to at least 95% of the maximum dry density as determined by ASTM D1557
Standard Duty††	2.5	8*	

†Heavy duty applies to pavements section for entrance drives, and trash enclosure drive lanes
††Standard duty applies to general parking areas
*The upper 2" or 3" of crushed rock should be ¾" minus top rock placed over the base course layer

Pavement design recommendations assume proper and positive drainage and construction monitoring and are based on AASHTO Design parameters for a 20-year design period. Asphalt pavements tend to develop thermal and fatigue cracking over time from environmental factors and traffic loads. Asphalt, being a viscoelastic material, weakens from temperature influx. Timely preventative measures for continual flexible maintenance such as crack filling and seal coating at 8-10 year intervals to control the progression of surface cracking and distress to prevent water from infiltrating into the base course and subgrade shall be considered. Performing this intermediate level of maintenance will net at least a 20-year service life/performance life.

Soils containing roots or organic materials shall be completely removed from the proposed paved areas prior to subgrade construction. The upper 12 inches of subgrade soils beneath the pavement section shall be scarified, moisture conditioned and re-compacted to at least 95% of the maximum dry density as determined by ASTM D1557. All fills used to raise low areas must be compacted onsite soils or structural gravel fill and shall be placed under engineering control conditions. The finished surface shall be smooth, uniform and free of localized weak/soft spots. All subgrade deficiency corrections and drainage provisions shall be made prior to placing the aggregate base course. All underground utilities shall be protected prior to grading.

All fills used to raise low areas must be compacted onsite soils or structural fill and shall be placed under engineering control conditions. The finished surface shall be smooth, uniform and free of localized weak/soft spots. All subgrade deficiency corrections and drainage provisions shall be made prior to placing the aggregate base course. All underground utilities shall be protected prior to grading.

Flexible AC should be ½" hot mix asphalt in conformance with the specifications provided in *WSDOT 2018 Standard Specifications* Section 5-04 Hot Mix Asphalt and Section 9-03.8 Aggregates for Hot Mix Asphalt. The asphalt cement binder should be PG 64-22 Performance Grade Asphalt Cement according to *WSDOT 2018 Standard Specifications* 9-02.1(4) Performance Grade Asphalt Binder. The AC should be placed with a minimum lift thickness of 1.5 inches and be compacted to at least 91 percent of the Rice Density of the mix as determined in accordance with ASTM D2041. Aggregate Base material shall comply with Section 9-03.9(3) Crushed

Surfacing of the *WSDOT 2018 Standards Specification*s. Aggregate base or pavement materials should not be placed when the surface is wet.

8.11 Subgrade Protection

The degree to which construction grading problems develop is expected to be dependent, in part, on the time of year that construction proceeds and the precautions which are taken by the contract to protect the subgrade. We recommend that the site shall be graded to prevent water from ponding within construction areas and/or flowing into excavations. Accumulated water must be removed immediately along with any unstable soil. Foundation concrete should be placed, and excavations backfilled as soon as possible to protect the bearing grade.

8.12 Surface Drainage

With respect to surface water drainage, we recommend that the ground surface be sloped to drain away from the structure. Final exterior site grades shall promote free and positive drainage from the building areas. Water shall not be allowed to pond or to collect adjacent to foundations or within the immediate building area. We recommend that a gradient of at least 5% for a minimum distance of 10 feet from the building perimeter be provided, except in paved locations. In paved areas, a minimum gradient of 1% should be provided unless provisions are included for collection/disposal of surface water adjacent to the structure. Catch basins, drainage swales, or other drainage facilities should be aptly located. All surface water such as that coming from roof downspouts and catch basins be collected in tight drain lines and carried to a suitable discharge point, such as a storm drain system. Surface water and downspout water should not discharge into a perforated or slotted subdrain, nor should such water discharge onto the ground surface adjacent to the building. Cleanouts should be provided at convenient locations along all drain lines.

9.0 CONTINUING GEOTECHNICAL SERVICES

GNN recommends that the Client should maintain an adequate program of geotechnical consultation, construction monitoring, and soils testing during the final design and construction phases to monitor compliance with GNN's geotechnical recommendations. ***Maintaining GNN as the geotechnical consultant from beginning to end of the project will provide continuity of services.*** If GN Northern, Inc. is not retained by the owner/developer and/or the contractor to provide the recommended geotechnical inspections/observations and testing services, the geotechnical engineering firm or testing/inspection firm providing tests and observations shall assume the role and responsibilities of Geotechnical Engineer-of-Record.

GNN can provide construction monitoring and testing as additional services. The costs of these services are not included in our present fee arrangement but can be obtained from our office. The recommended construction monitoring and testing includes, but is not necessarily limited to, the following:

- Consultation during the design stages of the project.
- Review of the grading and drainage plans to monitor compliance and proper implementation of the recommendations in GNN's Report.
- Observation and quality control testing during site preparation, grading, and placement of engineered fill as required by the local building ordinances.
- Geotechnical engineering consultation as needed during construction.

Construction observation allows the Geotechnical engineer to observe the actual soil conditions exposed during construction, determine if the proposed design is compatible with the design recommendations, and if the conditions encountered at the site are consistent with those observed during site investigation. Construction observation is conducted to reduce the potential for problems arising during and after construction. However, in all cases, the Contractor is responsible for the quality and completeness of their work and for adhering to the plans, specifications, and recommendations on which their work is based.

10.0 LIMITATIONS OF THE GEOTECHNICAL SITE INVESTIGATION REPORT

This GEOTECHNICAL SITE INVESTIGATION REPORT ("Report") was prepared for the exclusive use of the Client. GN Northern, Inc.'s (GNN) findings, conclusions and recommendations in this Report are based on selected points of field exploration, laboratory testing, and GNN's understanding of the proposed project at the time the Report is prepared. Furthermore, GNN's findings and recommendations are based on the assumption that soil, rock and/or groundwater conditions do not vary significantly from those found at specific exploratory locations. Variations in soil, bedrock and/or groundwater conditions could exist between and beyond the exploration points. The nature and extent of these variations may not become evident until during or after construction. Variations in soil, bedrock and groundwater may require additional studies, consultation, and revisions to GNN's recommendations in the Report.

This Report's findings are valid as of the issued date of this Report. However, changes in conditions of the subject property or adjoining properties can occur due to passage of time, natural processes, or works of man. In addition, applicable building standards/codes may change over time. Accordingly, findings, conclusions, and recommendations of this Report may be invalidated, wholly or partially, by changes outside of GNN's control. Provided that the site conditions are not disturbed or altered after the planned grading is completed, the report will be valid for a period of 3 to 5 years from the issued date of the Report.

In the event that any changes in the nature, design, or location of structures are planned, the findings, conclusions and recommendations contained in this Report shall not be considered valid unless the changes are reviewed by GNN and the findings, conclusions, and recommendations of this Report are modified or verified in writing.

This Report is issued with the understanding that the owner or the owner's representative has the responsibility to bring the findings, conclusions, and recommendations contained herein to the attention of the architect and design professional(s) for the project so that they are incorporated into the plans and construction specifications, and any follow-up addendum for the project. The owner or the owner's representative also has the responsibility to verify that the general contractor and all subcontractors follow such recommendations during construction. It is further understood that the owner or the owner's representative is responsible for submittal of this Report to the

appropriate governing agencies. The foregoing notwithstanding, no party other than the Client shall have any right to rely on this Report and GNN shall have no liability to any third party who claims injury due to reliance upon this Report, which is prepared exclusively for Client's use and reliance.

GNN has provided geotechnical services in accordance with generally accepted geotechnical engineering practices in this locality at this time. GNN expressly disclaims all warranties and guarantees, express or implied.

Client shall provide GNN an opportunity to review the final design and specifications so that earthwork, drainage and foundation recommendations may be properly interpreted and implemented in the design and specifications. If GNN is not accorded the review opportunity, GNN shall have no responsibility for misinterpretation of GNN's recommendations.

Although GNN can provide environmental assessment and investigation services for an additional cost, the current scope of GNN's services does not include an environmental assessment or an investigation for the presence or absence of wetlands, hazardous or toxic materials in the soil, surface water, groundwater, or air on, below, or adjacent to the subject property.

APPENDICES

Appendix I

Vicinity Map (Figure 1)
Site Exploration Map (Figure 2)

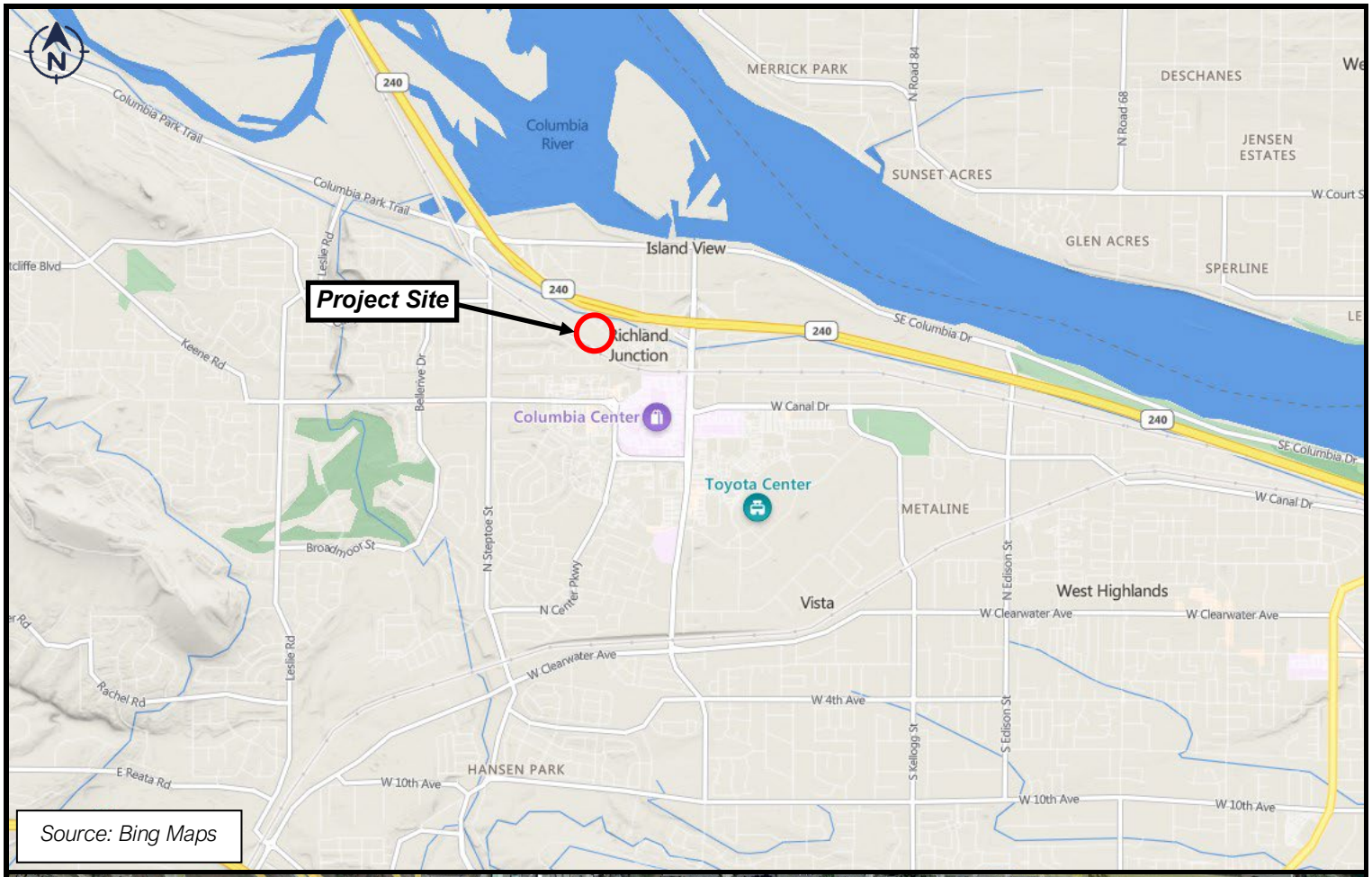

FIGURE 1: VICINITY MAP

PROJECT NO. 222-1616

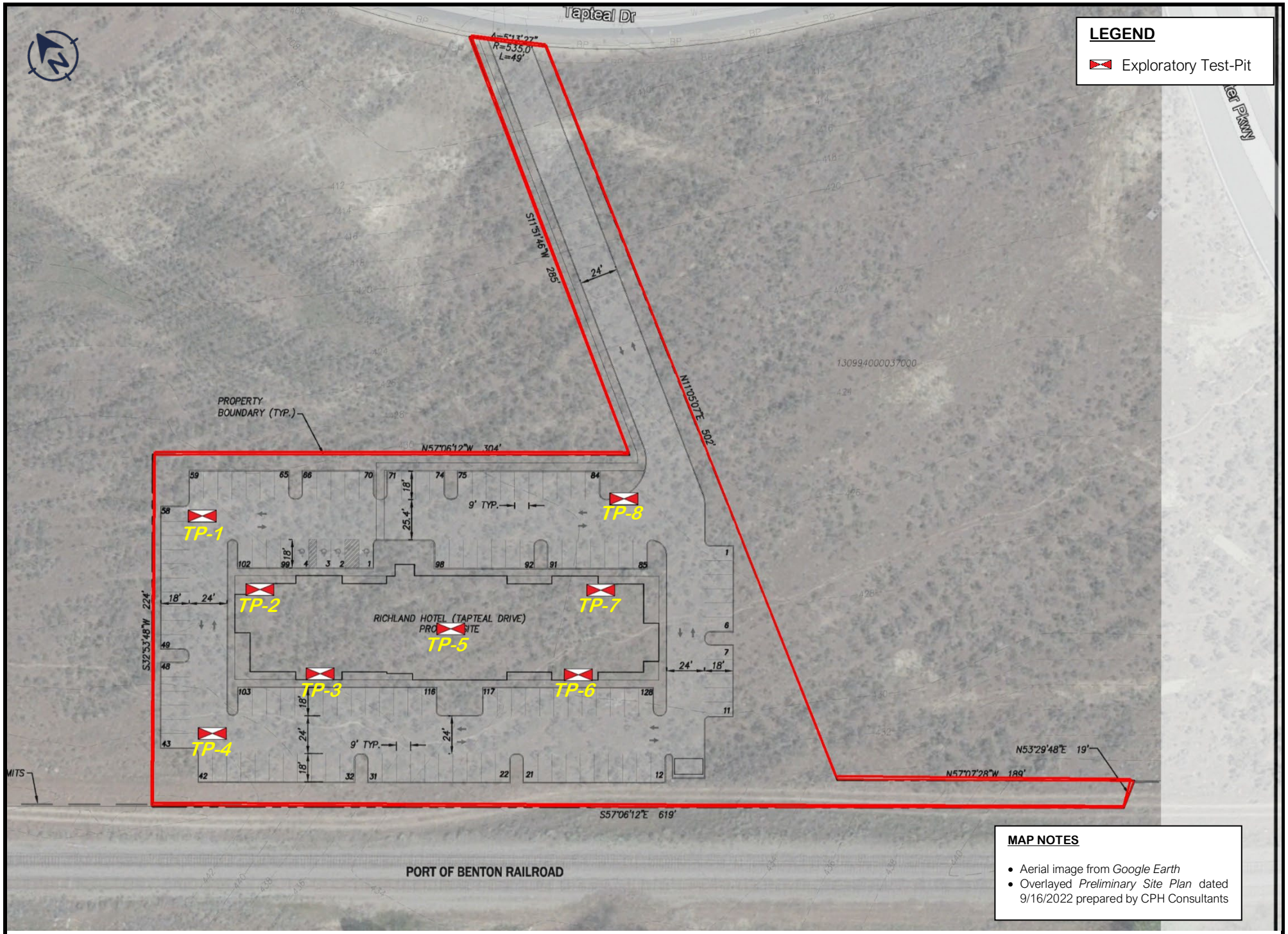

FIGURE 2: SITE EXPLORATION MAP

PROJECT NO. 222-1616

Appendix II

Exploratory Test-Pit Logs
Key Chart (for Soil Classification)

GN Northern, Inc
722 N. 16th Ave Suite 31
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Telephone: (509) 248-9798

TEST PIT NUMBER TP-1

CLIENT West 77 Partners
PROJECT NAME Proposed LivAway Suites Hotel
PROJECT NUMBER 222-1616
PROJECT LOCATION Tapteal Drive, Richland, WA
DATE STARTED 1/11/23 **COMPLETED** 1/11/23
GROUND ELEVATION 433 ft **TEST PIT SIZE** 30 x 72 inches
EXCAVATION CONTRACTOR Big D's Construction
GROUND WATER LEVELS:
EXCAVATION METHOD Link-Belt 160 Excavator
AT TIME OF EXCAVATION ---
LOGGED BY ABC **CHECKED BY** IM
AT END OF EXCAVATION ---
NOTES Approx. GPS Coords.: 46.231645,-119.233777
AFTER EXCAVATION ---

DEPTH (ft)	SAMPLE TYPE NUMBER	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION	
0		SM		SILTY SAND, (SM) light brown, fine grained, damp, appears medium dense	
	GB				
3.0					430.0
		GP-GM		POORLY GRADED GRAVEL WITH SILT AND SAND, (GP-GM) light brown, subrounded, dry, appears medium dense	
4.0					429.0
				SILTY SAND, (SM) light brown, fine grained, dry, appears medium dense	
5		SM			
	GB				
7.5					425.5

- Groundwater not encountered at time of excavation
- Referenced elevations are approximate and based on the topography from the Preliminary Site Plan dated 9/16/2022 prepared by CPH Consultants

Bottom of test pit at 7.5 feet.

GN Northern, Inc
722 N. 16th Ave Suite 31
Yakima, WA 99802
Telephone: (509) 248-9798

TEST PIT NUMBER TP-2

CLIENT West 77 Partners
PROJECT NAME Proposed LivAway Suites Hotel
PROJECT NUMBER 222-1616
PROJECT LOCATION Tapteal Drive, Richland, WA
DATE STARTED 1/11/23 **COMPLETED** 1/11/23
GROUND ELEVATION 434 ft **TEST PIT SIZE** 30 x 72 inches
EXCAVATION CONTRACTOR Big D's Construction
GROUND WATER LEVELS:
EXCAVATION METHOD Link-Belt 160 Excavator
AT TIME OF EXCAVATION ---
LOGGED BY ABC **CHECKED BY** IM
AT END OF EXCAVATION ---
NOTES Approx. GPS Coords.: 46.231482,-119.233757
AFTER EXCAVATION ---

DEPTH (ft)	SAMPLE TYPE NUMBER	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION	
0		SM		SILTY SAND, (SM) brown, fine grained, damp, appears medium dense	
3.0					431.0
		GP-GM		POORLY GRADED GRAVEL WITH SILT AND SAND, (GP-GM) gray brown, subrounded, dry, appears medium dense to dense, some cobbles, partially cemented to ~4' BGS	
5					
10					
10.5					423.5
		SM		SILTY SAND, (SM) light brown, fine grained, dry, appears loose to medium dense	
14.0					420.0

- Groundwater not encountered at time of excavation
- Referenced elevations are approximate and based on the topography from the Preliminary Site Plan dated 9/16/2022 prepared by CPH Consultants

Bottom of test pit at 14.0 feet.

GN Northern, Inc
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Yakima, WA 99802
Telephone: (509) 248-9798

TEST PIT NUMBER TP-3

CLIENT West 77 Partners
PROJECT NAME Proposed LivAway Suites Hotel
PROJECT NUMBER 222-1616
PROJECT LOCATION Tapteal Drive, Richland, WA
DATE STARTED 1/11/23 **COMPLETED** 1/11/23
GROUND ELEVATION 436 ft **TEST PIT SIZE** 30 x 72 inches
EXCAVATION CONTRACTOR Big D's Construction
GROUND WATER LEVELS:
EXCAVATION METHOD Link-Belt 160 Excavator
AT TIME OF EXCAVATION ---
LOGGED BY ABC **CHECKED BY** IM
AT END OF EXCAVATION ---
NOTES Approx. GPS Coords.: 46.231301,-119.233746
AFTER EXCAVATION ---

DEPTH (ft)	SAMPLE TYPE NUMBER	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION
0		SM		SILTY SAND, (SM) brown, fine grained, damp, appears medium dense
3.0				433.0
5	BULK	GP-GM		POORLY GRADED GRAVEL WITH SILT AND SAND, (GP-GM) gray brown, subrounded, dry, appears medium dense to dense, with cobbles, trace boulders, cemented to ~5.5' BGS
10				
14.0				422.0

- Groundwater not encountered at time of excavation
- Referenced elevations are approximate and based on the topography from the Preliminary Site Plan dated 9/16/2022 prepared by CPH Consultants

Bottom of test pit at 14.0 feet.

GN Northern, Inc
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Telephone: (509) 248-9798

TEST PIT NUMBER TP-4

CLIENT West 77 Partners
PROJECT NAME Proposed LivAway Suites Hotel
PROJECT NUMBER 222-1616
PROJECT LOCATION Tapteal Drive, Richland, WA
DATE STARTED 1/11/23 **COMPLETED** 1/11/23
GROUND ELEVATION 442 ft **TEST PIT SIZE** 30 x 72 inches
EXCAVATION CONTRACTOR Big D's Construction
GROUND WATER LEVELS:
EXCAVATION METHOD Link-Belt 160 Excavator
AT TIME OF EXCAVATION ---
LOGGED BY ABC **CHECKED BY** IM
AT END OF EXCAVATION ---
NOTES Approx. GPS Coords.: 46.231317,-119.234057
AFTER EXCAVATION ---

DEPTH (ft)	SAMPLE TYPE NUMBER	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION	
0		SM		SILTY SAND, (SM) brown, fine grained, damp, appears medium dense	
3.0					439.0
5		GP-GM		POORLY GRADED GRAVEL WITH SILT AND SAND, (GP-GM) gray brown, subrounded, dry, appears medium dense to dense, with cobbles, trace boulders, cemented to ~5' BGS	
7.0					435.0

- Groundwater not encountered at time of excavation
- Referenced elevations are approximate and based on the topography from the Preliminary Site Plan dated 9/16/2022 prepared by CPH Consultants

Bottom of test pit at 7.0 feet.

GN Northern, Inc
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Telephone: (509) 248-9798

TEST PIT NUMBER TP-5

CLIENT West 77 Partners
PROJECT NAME Proposed LivAway Suites Hotel
PROJECT NUMBER 222-1616
PROJECT LOCATION Tapteal Drive, Richland, WA
DATE STARTED 1/11/23 **COMPLETED** 1/11/23
GROUND ELEVATION 431 ft **TEST PIT SIZE** 30 x 72 inches
EXCAVATION CONTRACTOR Big D's Construction
GROUND WATER LEVELS:
EXCAVATION METHOD Link-Belt 160 Excavator
AT TIME OF EXCAVATION ---
LOGGED BY ABC **CHECKED BY** IM
AT END OF EXCAVATION ---
NOTES Approx. GPS Coords.: 46.231241,-119.233407
AFTER EXCAVATION ---

DEPTH (ft)	SAMPLE TYPE NUMBER	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION	
0		SM		SILTY SAND, (SM) brown, fine grained, damp, appears medium dense	
2.5					428.5
		GP-GM		POORLY GRADED GRAVEL WITH SILT AND SAND, (GP-GM) gray brown, subrounded, dry, appears dense, with cobbles, trace boulders, partially cemented to cemented to ~6.5' BGS	
5					
10					
14.0					417.0

- Groundwater not encountered at time of excavation
- Referenced elevations are approximate and based on the topography from the Preliminary Site Plan dated 9/16/2022 prepared by CPH Consultants

Bottom of test pit at 14.0 feet.

GN Northern, Inc
722 N. 16th Ave Suite 31
Yakima, WA 99802
Telephone: (509) 248-9798

TEST PIT NUMBER TP-6

CLIENT West 77 Partners
PROJECT NAME Proposed LivAway Suites Hotel
PROJECT NUMBER 222-1616
PROJECT LOCATION Tapteal Drive, Richland, WA
DATE STARTED 1/11/23 **COMPLETED** 1/11/23
GROUND ELEVATION 430 ft **TEST PIT SIZE** 30 x 72 inches
EXCAVATION CONTRACTOR Big D's Construction
GROUND WATER LEVELS:
EXCAVATION METHOD Link-Belt 160 Excavator
AT TIME OF EXCAVATION ---
LOGGED BY ABC **CHECKED BY** IM
AT END OF EXCAVATION ---
NOTES Approx. GPS Coords.: 46.231051,-119.233201
AFTER EXCAVATION ---

DEPTH (ft)	SAMPLE TYPE NUMBER	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION	
0					
	GB	SM		SILTY SAND, (SM) brown, fine grained, damp to moist, appears medium dense	
2.5					427.5
	GB	GP-GM		POORLY GRADED GRAVEL WITH SILT AND SAND, (GP-GM) gray brown, subrounded, dry, appears dense, some cobbles, partially cemented to ~5.5' BGS	
5					
8.5					421.5
		SM		SILTY SAND, (SM) brown, fine grained, damp, appears medium dense	
10	GB				
14.5					415.5
15	GB	GP-GM		POORLY GRADED GRAVEL WITH SILT AND SAND, (GP-GM) gray brown, subrounded, dry, appears medium dense to dense	
16.0					414.0

- Groundwater not encountered at time of excavation
- Referenced elevations are approximate and based on the topography from the Preliminary Site Plan dated 9/16/2022 prepared by CPH Consultants

Bottom of test pit at 16.0 feet.

GN Northern, Inc
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Yakima, WA 99802
Telephone: (509) 248-9798

TEST PIT NUMBER TP-7

CLIENT West 77 Partners
PROJECT NAME Proposed LivAway Suites Hotel
PROJECT NUMBER 222-1616
PROJECT LOCATION Tapteal Drive, Richland, WA
DATE STARTED 1/11/23 **COMPLETED** 1/11/23
GROUND ELEVATION 430 ft **TEST PIT SIZE** 30 x 72 inches
EXCAVATION CONTRACTOR Big D's Construction
GROUND WATER LEVELS:
EXCAVATION METHOD Link-Belt 160 Excavator
AT TIME OF EXCAVATION ---
LOGGED BY ABC **CHECKED BY** IM
AT END OF EXCAVATION ---
NOTES Approx. GPS Coords.: 46.231154,-119.233036
AFTER EXCAVATION ---

DEPTH (ft)	SAMPLE TYPE NUMBER	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION
0		SM		SILTY SAND, (SM) brown, fine grained, damp to moist, appears medium dense
2.5				427.5
		GP-GM		POORLY GRADED GRAVEL WITH SILT AND SAND, (GP-GM) gray brown, subrounded, dry, appears dense, trace cobbles, trace boulders, partially cemented to ~4.5' BGS
5				
10				
15				
15.0				415.0

- Groundwater not encountered at time of excavation
- Referenced elevations are approximate and based on the topography from the Preliminary Site Plan dated 9/16/2022 prepared by CPH Consultants

Bottom of test pit at 15.0 feet.

GN Northern, Inc
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Telephone: (509) 248-9798

TEST PIT NUMBER TP-8

CLIENT West 77 Partners
PROJECT NAME Proposed LivAway Suites Hotel
PROJECT NUMBER 222-1616
PROJECT LOCATION Tapteal Drive, Richland, WA
DATE STARTED 1/11/23 **COMPLETED** 1/11/23
GROUND ELEVATION 429 ft **TEST PIT SIZE** 30 x 72 inches
EXCAVATION CONTRACTOR Big D's Construction
GROUND WATER LEVELS:
EXCAVATION METHOD Link-Belt 160 Excavator
AT TIME OF EXCAVATION ---
LOGGED BY ABC **CHECKED BY** IM
AT END OF EXCAVATION ---
NOTES Approx. GPS Coords.: 46.231265, -119.232860
AFTER EXCAVATION ---

DEPTH (ft)	SAMPLE TYPE NUMBER	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION
0		SM		SILTY SAND, (SM) brown, fine grained, damp to moist, appears medium dense
2.5				426.5
5		GP-GM		POORLY GRADED GRAVEL WITH SILT AND SAND, (GP-GM) gray brown, subrounded, dry, appears medium dense to dense, trace cobbles, partially cemented to ~3.5' BGS
7.5				421.5

- Groundwater not encountered at time of excavation
- Referenced elevations are approximate and based on the topography from the Preliminary Site Plan dated 9/16/2022 prepared by CPH Consultants

Bottom of test pit at 7.5 feet.

Northern, Inc.
Kennewick, Yakima, Spokane, Hermiston (OR)

KEY CHART

RELATIVE DENSITY OR CONSISTENCY VERSUS SPT N-VALUE

COARSE-GRAINED SOILS			FINE-GRAINED SOILS		
DENSITY	N (BLOWS/FT)	FIELD TEST	CONSISTENCY	N (BLOWS/FT)	FIELD TEST
Very Loose	0 – 4	Easily penetrated with ½-inch reinforcing rod pushed by hand	Very Soft	0 – 2	Easily penetrated several inches by thumb
Loose	4 – 10	Difficult to penetrate with ½-inch reinforcing rod pushed by hand	Soft	2 – 4	Easily penetrated one inch by thumb
Medium -Dense	10 – 30	Easily penetrated with ½-inch rod driven with a 5-lb hammer	Medium-Stiff	4 – 8	Penetrated over ½-inch by thumb with moderate effort
Dense	30 – 50	Difficult to penetrate with ½-inch rod driven with a 5-lb hammer	Stiff	8 – 15	Indented about ½-inch by thumb but penetrated with great effort
Very Dense	> 50	penetrated only a few inches with ½-inch rod driven with a 5-lb hammer	Very Stiff	15 – 30	Readily indented by thumb
			Hard	> 30	Indented with difficulty by thumbnail

USCS SOIL CLASSIFICATION

MAJOR DIVISIONS				GROUP DESCRIPTION
Coarse-Grained Soils <50% passes #200 sieve	**Gravel** and **Gravelly Soils** <50% coarse fraction passes #4 sieve	**Gravel** (with little or no fines)	GW	Well-graded **Gravel**
			GP	Poorly Graded **Gravel**
		Gravel (with >12% fines)	GM	Silty **Gravel**
			GC	Clayey **Gravel**
	Sand and **Sandy Soils** >50% coarse fraction passes #4 sieve	**Sand** (with little or no fines)	SW	Well-graded **Sand**
			SP	Poorly graded **Sand**
		Sand (with >12% fines)	SM	Silty **Sand**
			SC	Clayey **Sand**
Fine-Grained Soils >50% passes #200 sieve	**Silt** and **Clay** Liquid Limit < 50		ML	**Silt**
			CL	Lean **Clay**
			OL	Organic **Silt** and C**lay** (low plasticity)
	Silt and **Clay** Liquid Limit > 50		MH	Inorganic **Silt**
			CH	Inorganic **Clay**
			OH	Organic **Clay** and **Silt** (med. to high plasticity)
Highly Organic Soils			PT	**Peat**
				Top Soil

LOG SYMBOLS

	2S	2" OD Split Spoon (SPT)
	3S	3" OD Split Spoon
	NS	Non-Standard Split Spoon
	ST	Shelby Tube
	CR	Core Run
	BG	Bag Sample
	TV	Torvane Reading
	PP	Penetrometer Reading
	NR	No Recovery
	GW	Groundwater Table

MODIFIERS

DESCRIPTION	RANGE
Trace	<5%
Little	5% – 12%
Some	>12%

MOISTURE CONTENT

DESCRIPTION	FIELD OBSERVATION
Dry	Absence of moisture, dusty, dry to the touch
Moist	Damp but not visible water
Wet	Visible free water

SOIL CLASSIFICATION INCLUDES

1. Group Name
2. Group Symbol
3. Color
4. Moisture content
5. Density / consistency
6. Cementation
7. Particle size (if applicable)
8. Odor (if present)
9. Comments

MAJOR DIVISIONS WITH GRAIN SIZE

SIEVE SIZE						
12"	3"	3/4"	4	10	40	200
GRAIN SIZE (INCHES)						
12	3	0.75	0.19	0.079	0.0171	0.0029

Boulders	Cobbles	Gravel		Sand			Silt and Clay
		Coarse	Fine	Coarse	Medium	Fine	

Conditions shown on boring and testpit logs represent our observations at the time and location of the fieldwork, modifications based on lab test, analysis, and geological and engineering judgment. These conditions may not exist at other times and locations, even in close proximity thereof. This information was gathered as part of our investigation, and we are not responsible for any use or interpretation of the information by others.

Appendix III

Laboratory Testing Results

LABORATORY SIEVE ANALYSIS

Northern, Inc.

Project:	LivAway Suites Hotel	**Date Received:**	1/11/23
Client:	West77 Partners	**Job #:**	222-1616
Material:	Native	**W.O. #:**	164101
Source:	TP 3 @ 5.5'	**Lab #:**	171047

Sieve Size	Percent Passing	Specifications Minimum	Specifications Maximum
4"	100%		
3"	90%		
2"	84%		
1 3/4"			
1 1/2"	76%		
1 1/4"			
1"	63%		
3/4"	55%		
5/8"			
1/2"	46%		
3/8"	41%		
1/4"			
#4	32%		
#8			
#10	21%		
#16			
#20	15%		
#30			
#40	13%		
#50			
#60			
#80	10%		
#100	8%		
#200	7%		

Sieve Analysis Data: ASTM D422, D1140

Fineness Modulus:	
% Gravel:	68.4
% Sand:	24.4
% Silt & Clay:	7.2
Moisture Content:	

Soil Classification (USCS): ASTM D 2487

Atterburg Limits: ASTM D 4318

Liquid Limit:	
Plastic Limit:	
Plasticity Index:	

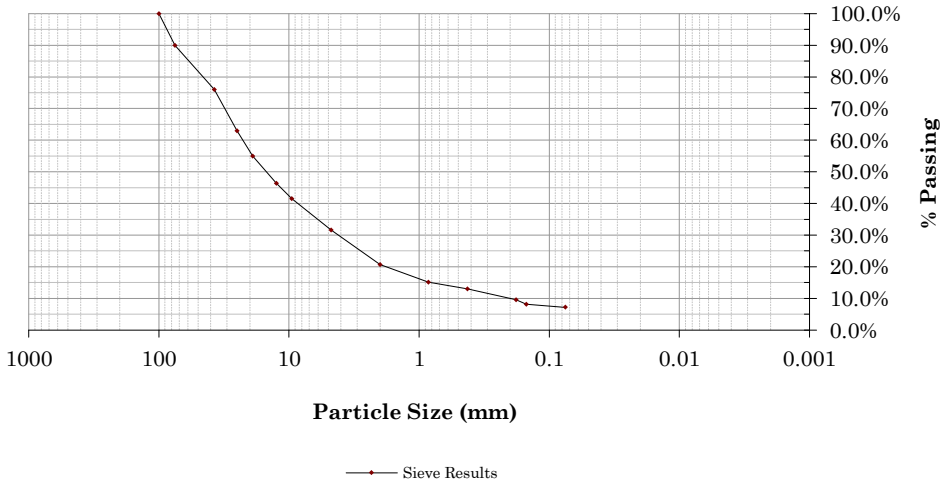
Gradation Coeffecient of Uniformity Cu

	%passing	sieve (mm)
D10 :		0.5
D30 :		2.2
D60 :		5.8

C_u: 11.6

C_c: 1.7

Grain Size Distribution



Reviewed by: _____ **Date:** _____

LABORATORY SIEVE ANALYSIS

Northern, Inc.

Project:	LivAway Suites Hotel	**Date Received:**	1/11/23
Client:	West77 Partners	**Job #:**	222-1616
Material:	Native	**W.O. #:**	164101
Source:	TP 6 @ 10'	**Lab #:**	171048

Sieve Size	Percent Passing	Specifications Minimum	Specifications Maximum
4"			
3"			
2"			
1 3/4"			
1 1/2"			
1 1/4"			
1"			
3/4"			
5/8"			
1/2"			
3/8"			
1/4"			
#4			
#8			
#10	99%		
#16			
#20	98%		
#30			
#40	98%		
#50			
#60			
#80	84%		
#100	76%		
#200	41%		

Sieve Analysis Data: ASTM D422, D1140

Fineness Modulus:
% Gravel:
% Sand: 59.3
% Silt & Clay: 40.7
Moisture Content:

Soil Classification (USCS): ASTM D 2487

Atterburg Limits: ASTM D 4318

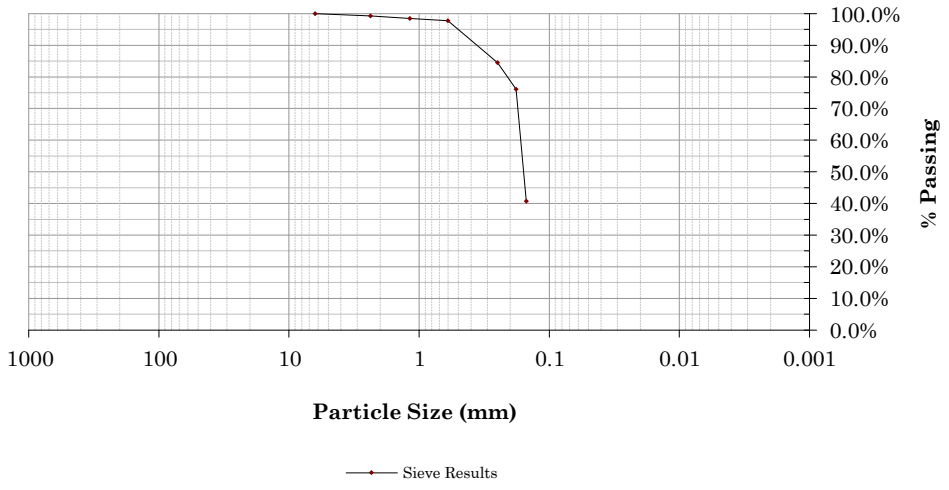
Liquid Limit:
Plastic Limit:
Plasticity Index:

Gradation Coeffecient of Uniformity Cu

	%passing	sieve (mm)
D10 :		0.5
D30 :		2.2
D60 :		5.8

C_u: 11.6
C_c: 1.7

Grain Size Distribution



Reviewed by: _____ **Date:** _____

Appendix IV

Site & Exploration Photographs

Excavation of test-pit TP-1

Subsurface soil profile within test-pit TP-2

View of site conditions looking north from test-pit TP-3

Subsurface soil profile within test-pit TP-3

View of site conditions looking east from test-pit TP-4

Subsurface soil profile within test-pit TP-4

PLATE 1: SITE & EXPLORATION PHOTOGRAPHS **PROJECT NO. 222-1616**

View of site conditions looking north from test-pit TP-5

View of site conditions looking south from test-pit TP-5

Subsurface soil profile within test-pit TP-5

Subsurface soil profile within test-pit TP-6

Subsurface soil profile within test-pit TP-7

Subsurface soil profile within test-pit TP-8

PLATE 2: SITE & EXPLORATION PHOTOGRAPHS **PROJECT NO. 222-1616**

Appendix V

NRCS Soil Survey

United States Department of Agriculture

NRCS

Natural Resources Conservation Service

A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants

Custom Soil Resource Report for Benton County Area, Washington

Proposed LivAway Suites Hotel, Richland, WA

January 16, 2023

Custom Soil Resource Report
Soil Map

Map Scale: 1:1,400 if printed on A portrait (8.5" x 11") sheet.

N

Meters: 0 20 40 80 120

Feet: 0 50 100 200 300

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 11N WGS84

Benton County Area, Washington

BIA—Burbank loamy fine sand, gravelly substratum, 0 to 2 percent slopes

Map Unit Setting

National map unit symbol: 2bbb
Elevation: 300 to 1,300 feet
Mean annual precipitation: 6 to 9 inches
Mean annual air temperature: 50 to 54 degrees F
Frost-free period: 160 to 220 days
Farmland classification: Not prime farmland

Map Unit Composition

Burbank and similar soils: 90 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Burbank

Setting

Landform: Terraces
Parent material: Mixed alluvium and/or eolian deposits over gravelly and stony alluvium

Typical profile

H1 - 0 to 5 inches: loamy fine sand
H2 - 5 to 16 inches: loamy sand
H3 - 16 to 30 inches: very gravelly loamy sand
H4 - 30 to 60 inches: extremely gravelly sand

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Excessively drained
Capacity of the most limiting layer to transmit water (Ksat): High to very high (5.95 to 19.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 15 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: Very low (about 2.9 inches)

Interpretive groups

Land capability classification (irrigated): 4s
Land capability classification (nonirrigated): 6e
Hydrologic Soil Group: A
Ecological site: R007XY140WA - Sands
Hydric soil rating: No

BID—Burbank loamy fine sand, gravelly substratum, 2 to 15 percent slopes

Map Unit Setting

National map unit symbol: 2bbc
Elevation: 300 to 1,300 feet
Mean annual precipitation: 6 to 9 inches
Mean annual air temperature: 50 to 54 degrees F
Frost-free period: 160 to 220 days
Farmland classification: Not prime farmland

Map Unit Composition

Burbank and similar soils: 100 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Burbank

Setting

Landform: Terraces
Parent material: Mixed alluvium and/or eolian deposits over gravelly and stony alluvium

Typical profile

H1 - 0 to 5 inches: loamy fine sand
H2 - 5 to 16 inches: loamy sand
H3 - 16 to 30 inches: very gravelly loamy sand
H4 - 30 to 60 inches: extremely gravelly sand

Properties and qualities

Slope: 2 to 15 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Excessively drained
Capacity of the most limiting layer to transmit water (Ksat): High to very high (5.95 to 19.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 15 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: Very low (about 2.9 inches)

Interpretive groups

Land capability classification (irrigated): 4e
Land capability classification (nonirrigated): 6s
Hydrologic Soil Group: A
Ecological site: R007XY140WA - Sands
Hydric soil rating: No

HeD—Hezel loamy fine sand, 2 to 15 percent slopes

Map Unit Setting

National map unit symbol: 2bch
Elevation: 400 to 2,500 feet
Mean annual precipitation: 6 to 10 inches
Mean annual air temperature: 52 to 54 degrees F
Frost-free period: 150 to 200 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Hezel and similar soils: 100 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Hezel

Setting

Landform: Terraces
Parent material: Eolian sands over silty lacustrine deposits

Typical profile

H1 - 0 to 3 inches: loamy fine sand
H2 - 3 to 16 inches: loamy fine sand
H3 - 16 to 60 inches: stratified fine sandy loam to silt loam

Properties and qualities

Slope: 2 to 15 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Somewhat excessively drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.57 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 20 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: High (about 9.1 inches)

Interpretive groups

Land capability classification (irrigated): 4e
Land capability classification (nonirrigated): 6e
Hydrologic Soil Group: C
Ecological site: R007XY140WA - Sands
Hydric soil rating: No

Appendix VI

Washington Department of Ecology Well Logs

File Original and First Copy with Department of Ecology
Second Copy — Owner s Copy
Third Copy — Driller s Copy

WATER WELL REPORT
STATE OF WASHINGTON

Application No
Permit No

(1) OWNER Name Waren Olsen Address 5622W Yellowstone, Kennewick, Wn.

(2) LOCATION OF WELL County Benton — se ¼ nw ¼ Sec 30 T 9 N R 29E WM

d distance from section or subdivision corner

(3) PROPOSED USE Domestic ☒ Industrial ☐ Municipal ☐
Irrigation ☐ Test Well ☐ Other ☐

(4) TYPE OF WORK Owner s number of well (if more than one)
New well ☒ Method Dug ☐ Bored ☐
Deepened ☐ Cable ☒ Driven ☐
Reconditioned ☐ Rotary ☐ Jetted ☐

(5) DIMENSIONS Diameter of well 6 inches
Drilled 90 ft Depth of completed well 90 ft

(6) CONSTRUCTION DETAILS
Casing installed 6 Diam from 0 ft to 76 ft
Threaded ☐ Diam from ft to ft
Welded ☒ Diam from ft to ft

Perforations Yes ☐ No ☒
Type of perforator used
SIZE of perforations in by in
perforations from ft to ft
perforations from ft to ft
perforations from ft to ft

Screens Yes ☐ No ☒
Manufacturer s Name
Type Model No
Diam Slot size from ft to ft
Diam Slot size from ft to ft

Gravel packed Yes ☒ No ☒ Size of gravel
Gravel placed from ft to ft

Surface seal Yes ☒ No ☐ To what depth? 19 ft
Material used in seal Bentonite
Did any strata contain unusable water? Yes ☐ No ☒
Type of water? Depth of strata
Method of sealing strata off

(7) PUMP Manufacturer s Name X Rod-Jacket
Type sub HP 1

(8) WATER LEVELS Land surface elevation above mean sea level 380 ft
Static level 24½ ft below top of well Date 11/7/75
Artesian pressure lbs per square inch Date
Artesian water is controlled by (Cap valve etc)

(9) WELL TESTS Drawdown is amount water level is lowered below static level
Was a pump test made? Yes ☐ No ☒ If yes by whom?
Yield gal /min with ft drawdown after hrs

Recovery data (time taken as zero when pump turned off) (water level measured from well top to water level)

Time	Water Level	Time	Water Level	Time	Water Level

Bailer test 37 gal /min with 45 ft drawdown after 1 hrs
Artesian flow g p m Date
Temperature of water Was a chemical analysis made? Yes ☐ No ☐

OK TMB

(10) WELL LOG

Formation *Describe by color character size of material and structure and show thickness of aquifers and the kind and nature of the material in each stratum penetrated with at least one entry for each change of formation*

MATERIAL	FROM	TO
Top soil	0	3
Gravel, fine&mea / clay, silt	3	21
Gravel, fine/ cemented	21	31
Brown clay, sandy	31	49
Cla y, grey-blue	49	75
Shale, grey- blue (water)	75	90

Work started Nov. 3 19 75 Completed Nov. 7 1975

WELL DRILLER'S STATEMENT

This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief

NAME D V Wyland Co.
(Person firm or corporation) (Type or print)

Address P O. 6779 Kennewick, Wn.

[Signed] (Well Driller)

License No 0656 Date Nov. 10 1975

(USE ADDITIONAL SHEETS IF NECESSARY)

S F No 7356—OS—(Rev 4 71)
ECY 070 28

3

The Department of Ecology does NOT Warranty the Data and/or the Information on this Well Report.

The Department of Ecology does NOT Warranty the Data and/or the Information on this Well Report.

File Original and First Copy with Department of Ecology
Second Copy — Owner's Copy
Third Copy — Driller's Copy

59752

WATER WELL REPORT

STATE OF WASHINGTON

Start Card No. WD91282

UNIQUE WELL I.D. # _____

Water Right Permit No. _____

OWNER: Name Piotz + Anna Sinyuk Address 1303 Roche Fontaine Ct Richland

(2) LOCATION OF WELL: County Benton SE 1/4 NW 1/4 Sec 30 T. 9 N., R. 29E W.M.

(2a) STREET ADDRESS OF WELL (or nearest address) _____

(3) PROPOSED USE: [X] Domestic [ ] Industrial [ ] Municipal [ ] Irrigation [ ] Test Well [ ] Other [ ] DeWater

(4) TYPE OF WORK: Owner's number of well (If more than one) _____

Abandoned [ ] New well [X] Method: Dug [ ] Bored [ ] Deepened [ ] Cable [ ] Driven [ ] Reconditioned [ ] Rotary [X] Jetted [ ]

(5) DIMENSIONS: Diameter of well 6 inches. Drilled 54½ feet. Depth of completed well 54 ft.

(6) CONSTRUCTION DETAILS:

Casing installed: 6 " Diam. from +1 ft. to 54 ft.
Welded [X] " Diam. from _____ ft. to _____ ft.
Liner installed [ ] " Diam. from _____ ft. to _____ ft.
Threaded [ ]

Perforations: Yes [ ] No [X]
Type of perforator used _____
SIZE of perforations _____ in. by _____ in.
_____ perforations from _____ ft. to _____ ft.
_____ perforations from _____ ft. to _____ ft.
_____ perforations from _____ ft. to _____ ft.

Screens: Yes [ ] No [X]
Manufacturer's Name _____
Type _____ Model No. _____
Diam. ____ Slot size _____ from _____ ft. to _____ ft.
Diam. ____ Slot size _____ from _____ ft. to _____ ft.

Gravel packed: Yes [ ] No [X] Size of gravel _____
Gravel placed from _____ ft. to _____ ft.

Surface seal: Yes [X] No [ ] To what depth? 18 ft.
Material used in seal Bentonite
Did any strata contain unusable water? Yes [ ] No [X]
Type of water? _____ Depth of strata _____
Method of sealing strata off _____

(7) PUMP: Manufacturer's Name _____
Type: _____ H.P. _____

(8) WATER LEVELS: Land-surface elevation above mean sea level _____ ft.
Static level 39 ft. below top of well Date 6-8-98
Artesian pressure _____ lbs. per square inch Date _____
Artesian water is controlled by _____ (Cap, valve, etc.)

(9) WELL TESTS: Drawdown is amount water level is lowered below static level
Was a pump test made? Yes [ ] No [X] If yes, by whom? _____
Yield: _____ gal./min. with _____ ft. drawdown after _____ hrs.
" " " "
" " " "

Recovery data (time taken as zero when pump turned off) (water level measured from well top to water level)

Time	Water Level	Time	Water Level	Time	Water Level

Date of test _____
Bailer test _____ gal./min. with _____ ft. drawdown after _____ hrs.
Airtest 25 gal./min. with stem set at 50 ft. for 2 hrs.
Artesian flow _____ g.p.m. Date _____
Temperature of water _____ Was a chemical analysis made? Yes [ ] No [ ]

(10) WELL LOG or ABANDONMENT PROCEDURE DESCRIPTION

Formation: Describe by color, character, size of material and structure, and show thickness of aquifers and the kind and nature of the material in each stratum penetrated, with at least one entry for each change of information.

MATERIAL	FROM	TO
Sand Tan silty	0	4
Sand Black, gravel	4	11
Sand Black	11	13
Gravel, sand Black water @ 39 feet	13	54½
Sand Tan gravel	54½	

RECEIVED
JUL 31 1998
DEPARTMENT OF ECOLOGY
EASTERN REGIONAL OFFICE

Work Started 6-8 , 19. Completed 6-8 , 1998

WELL CONSTRUCTOR CERTIFICATION:

I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported above are true to my best knowledge and belief.

NAME Nelson Well Drilling Inc (PERSON, FIRM, OR CORPORATION) (TYPE OR PRINT)

Address 8200 W Argent Pasco

(Signed) _____ (WELL DRILLER) License No. 361

Contractor's Registration No. NELSOWD148CQ Date 6-8 , 1998

(USE ADDITIONAL SHEETS IF NECESSARY)

Ecology is an Equal Opportunity and Affirmative Action employer. For special accommodation needs, contact the Water Resources Program at (206) 407-6600. The TDD number is (206) 407-6006.

ECY 050-1-20 (9/93) * * f