

EXHIBIT LIST FOR SUB 2021-001/EA 2021-005
Preliminary Plat of Harvest Ridge

DATED

Planning Commission Memo Exhibit List -October 12, 2021				
PCM 1 Includes:	PCM 1.1	Staff Report	October 1, 2021	
	PCM 1.2	Site Map	June 22, 2021	
	PCM 1.3	Notice of Public Hearing	July 21, 2021	
	PCM 1.4	Staff Memo Continuing the Public Hearing	August 3, 2021	
	PCM 1.5	Staff Memo Continuing the Public Hearing	Sept. 2, 2021	
		APPLICATION SUBMITTAL		
	PCM 1.6	Subdivision Application	February 18, 2021	
	PCM 1.7	Plat Map	February 18, 2021	
	PCM 1.8	Traffic Impact Analysis	May 14, 2021	
	PCM 1.9	Preliminary Stormwater Report	April 27, 2021	
	PCM 1.10	Geo Tech Study	June 14, 2021	
	PCM 1.11	Badger Mountain Irrigation Dist. Service Letter	May 24, 2021	
	PCM 1.12	Summit View Water Works Service Letter	May 21, 2021	
		SEPA INFORMATION		
	PCM 1.13	Environmental Checklist EA 2020-005	February 4, 2021	
	PCM 1.14	Notice of Application	June 22, 2021	
	PCM 1.15	Mitigated Determination of Non Significance	July 20, 2021	
	PCM 1.16	Modified Mitigated Determination of Non Significance	September 3, 2021	
		COMMENTS		
	PCM 1.17	Confederated Tribes of the Umatilla Indian Reservation	August 13, 2021	
	PCM 1.18	City of Richland - Public Works Comments	August 25, 2021	
	PCM 1.19	Benton County Fire Marshal	August 12, 2021	
	PCM 1.20	Cascade Natural Gas	July 26, 2021	
	PCM 1.21	Dept. of Arch. & Historic Preservation	June 30, 2021	
	PCM 1.22	Dept. of Transportation	July 7, 2021	
	PCM 1.23	Dept. of Ecology	July 12, 2021	
	PCM 1.24	Benton Franklin Health District	Aug. 4 & 26, 2021	
	PCM 1.25	Benton County Public Works	August 11, 2021	
	PCM 1.26	Benton County Assessor	June 23, 2021	
	PCM 1.27	Yakama Nation	July 1, 2021	
PCM 1.28	Benton County GIS	Aug. 13, 2021		
PCM 1.29	Dept. of Transportation	August 23, 2021		
PCM 1.30	Badger Mountain Irrigation District	August 13, 2021		
Planning Commission Hearing Exhibit List -October 12, 2021				
	PCH 1.1			
	PCH 1.2			
	PCH 1.3			
Board of County Commissioners Memo Exhibit List - DATE				
BCCM 1 Includes:	BCCM 1.1			
	BCCM 1.2			
	BCCM 1.3			
	BCCM 1.4			

The Exhibit Numbers are found in the Top Right Hand Corner of each document.

- PCM = Planning Commission Memo Exhibits
- PCH = Planning Commission Hearing Exhibits
- BCCM = County Commissioner Memo Exhibits



PCM 1.1

STAFF REPORT TO THE BENTON COUNTY
PLANNING COMMISSION

FILE NO: SUB 2021-001
Preliminary Plat of Harvest Ridge

MEMO DATE: October 1, 2021

HEARING DATE: October 12, 2021

APPLICANT/: Geoff Clark dba Candy Mountain, LLC
OWNER PO Box 1307
Gig Harbor, WA 98335

LOCATION: The site is located east of Interstate 82 and north of Reata Road on approximately the northern half of Lot 1 of the plat of the Ridge at Reata West Phase 1, in Section 5, Township 8 North, Range 28 East, W.M. in Richland, WA on parcel number 1-0588-402-0000-052.

PROPERTY SIZE: Approximately 172.36 acres

AREA TO BE USED: Approximately 43.99 acres

LAND USE: Residential

COMP. PLAN: Rural Transition

ZONING: Rural Lands One Acre District

SUGGESTED STAFF RECOMMENDATION: Positive recommendation subject to seven (7) findings of fact and twenty-two (22) conditions of approval.

APPLICATION DESCRIPTION

The applicant originally submitted a preliminary plat application on February 18, 2021 however the application was placed on hold to give the applicant additional time to submit the necessary supplemental reports which were required. After the initial agency review had been completed, the applicant submitted a revised plat map on August 5, 2021 proposing to subdivide approximately 172.36 acres into 42 residential lots and one 122.30-acre tract. The Planning Division determined on September 3, 2021 that a modified MDNS was necessary to evaluate and change the conditions of approval to mitigate specific adverse environmental impacts. The hearing was then continued from the scheduled hearing date of September 14, 2021 to October 12, 2021.

The preliminary plat is known as Harvest Ridge. The land is zoned Rural Lands One-Acre District. The average lot size in the development is approximately 1.05 acres and the lots are proposed to be served by new public roads, potable water from Badger Mountain Irrigation District, and individual septic systems.

The site is located east of Interstate 82 and north of Reata Road on approximately the northern half of Lot 1 of the plat of the Ridge at Reata West Phase 1, in Section 5, Township 8 North, Range 28 East, W.M. in Richland, WA on parcel number 1-0588-402-0000-052.

PUBLIC NOTICE

1. A Notice of Application was published in the Prosser Record Bulletin on June 30, 2021 (PCM 1.14).
2. Planning Staff mailed out review packets to technical agencies on June 23, 2021.
3. A Notice of Public Hearing was published in the Prosser Record Bulletin on July 28, 2021 (PCM 1.3)
4. Property owners within 300 feet were mailed notice on July 22, 2021.
5. A SEPA Determination of Mitigated Non-Significance (MDNS) (PCM 1.15) was issued on July 20, 2021 and a modified MDNS (PCM 1.16) was issued on September 3, 2021.

APPLICABLE STANDARDS/ORDINANCES

1. Comprehensive Plan: Benton County Comprehensive Plan.
2. SEPA: BCC, Title 6, Chapter 6.35 Environmental Policy.
3. Subdivision Code: BCC, Title 9, Subdivision Regulations.
4. Zoning Code: BCC, Title 11, Zoning Regulations.
5. Critical Area Ord.: BCC, Title 15, Critical Areas- BCC 15.02 - 15.14.
6. RCW 58.17: Plats and Subdivisions.
7. Planning Commission/Open Record Hearing:

Pursuant to BCC 9.05.070, an open record hearing on the proposed subdivision shall be held before the Planning Commission. The Planning Commission shall consider all relevant information, including but not limited to:

- a. The staff report by the Planning Division,
- b. Any written comments or concerns expressed by other reviewing agencies,
- c. Oral and written testimony from persons present at the hearing; and

If the Planning Commission finds that additional information is needed, the Planning Commission may continue the hearing for up to thirty-five (35) days or such longer period as agreed to by the applicant and direct that the additional information be gathered.

AGENCY COMMENTS

1. Benton County Planning Division: See the suggested findings of fact and conditions of approval for the Planning Division’s comments and requirements.
2. Benton County Public Works Department: See comments dated August 11, 2021 (PCM 1.25).
3. City of Richland Public Works Engineering Department: See comments dated August 25, 2021 (PCM 1.18).
4. Washington State Department of Transportation: See comments dated July 7, 2021 (PCM 1.22) and August 23, 2021 (PCM 1.29).

5. Benton County Fire Marshal: See comments dated July 1, 2021 (PCM 1.19).
6. Badger Mountain Irrigation District: See comments dated August 13, 2021 (PCM 1.30).
7. Summit View Water Works: See comments dated May 21, 2021 (PCM 1.12).
8. Benton Franklin Health District: See comments dated August 4 and Aug 26, 2021 (PCM 1.24).
9. Washington State Department of Archeology & Historic Preservation: See comments dated June 30, 2021 (PCM 1.21).
10. Confederated Tribes of the Umatilla: See comments dated August 13, 2021 (PCM 1.17).
11. Yakama Nation: See comments dated July 1, 2021 (PCM 1.27).
12. Washington State Department of Ecology: See comments dated July 12, 2021 (PCM 1.23).
13. Benton County GIS Department- See comments dated August 13, 2021. (PCM 1.28)

CRITERIA FOR FINDINGS OF FACT

1. Pursuant to BCC 9.05.080, Consideration of Preliminary Subdivision, the Benton County Planning Commission, after conducting an open record hearing and considering all information presented, shall forward a recommendation to the Board of County Commissioners regarding whether the preliminary plat be approved, approved with conditions, or denied as proposed. Prior to making any recommendation, the Planning Commission shall make the following written findings:
 - a. That the proposed subdivision conforms to the Benton County Comprehensive Plan, any applicable zoning requirements and other applicable land use controls;
 - b. That the County Engineer, or designee, has provided a written representation that the proposed subdivision provides adequate means of access and conformance with the road and drainage requirements of Benton County;
 - c. That the proposed subdivision meets the requirements of BCC 9.05;
 - d. That the public interest will be served by the proposed division and dedication;
 - e. That appropriate provisions are made for the public health, safety, and general welfare, for open spaces, drainage ways, streets or roads, alleys, other public ways, transit stops, potable water, sanitary wastes, parks and recreation, playgrounds, schools, school grounds, and sidewalks;
 - f. That the Benton-Franklin Health District and Badger Mountain Irrigation District have reviewed the proposed subdivision for compliance with their rules and regulations and has not expressed objection to the proposed subdivision; and
 - g. If any portion of the proposed subdivision is located within an irrigation district, that the applicant has complied with RCW 58.17.310 as it now exists or is hereafter amended.
2. RCW 58.17.110 (1)(2)(3). Approval or disapproval of subdivision - factors to be considered- conditions of approval.

RECOMMENDATION

Benton County Planning staff will assist the Planning Commission with the determination of findings and conditions for the preliminary plat of Harvest Ridge - File Number SUB 2021-001.

The Benton County Planning Division recommends that the Planning Commission forward a recommendation of approval to the Benton County Board of Commissioners for the application SUB 2021-001, with the following suggested findings of fact, conditions of approval, and motion.

SUGGESTED FINDINGS OF FACT:

1. The proposed subdivision (PCM 1.6, application and PCM 1.7, preliminary plat map) conforms to the Benton County Comprehensive Plan, any applicable zoning requirements and other applicable land use controls;
 - a. The proposed use is in conformance with the intent of the Comprehensive Plan based on the following facts:
 - i. The 172.36-acre site is bordered on west by land zoned Rural Lands One Acre District, on the south by land zoned Urban Growth Area Residential, and on the north and east by Richland city limits.
 - ii. The Benton County Comprehensive Plan designates this area as Rural Transition with a 1-acre minimum lot size. The property is zoned Rural Lands One Acre (RL-1). The preliminary plat complies with the minimum lot size and minimum average lot width required for the RL-1 Zoning District;
 - iii. The GMA requires counties to include a rural element in their comprehensive plans to permit appropriate land uses that are compatible with the rural character of such lands and provide for a variety of rural densities. This element has been incorporated as a part of the **land use element of the County's plan**;
 - iv. Rural Transition is designated in areas that are in close proximity to UGAs and have experienced steady growth in the last decade. The intent of the Rural Transition designation is to enable rural residential living in conjunction with providing a transition area between the rural and urban environments, and potentially suitable for future inclusion into UGAs. Maximum allowable density in this land use category is 1 DU/acre;
 - v. The smallest lot size is 1.00 acre and the average lot size for this plat is 1.05 acres;
 - vi. This development is consistent with the required minimum lot size and density standards contained in the Benton County Comprehensive Plan; and
 - vii. The creation of 42 residential lots in the RL-1 Zoning District furthers the implementation of the Benton County Comprehensive Plan.
 - b. The proposed plat is consistent with the applicable zoning requirements of the Benton County Code, Title 11, based on the following facts:
 - i. The property is zoned Rural Lands One Acre (RL-1). The preliminary plat complies with the minimum lot size and minimum average lot width required for the RL-1 Zoning District.
 - c. The proposed subdivision does comply with the requirements of the Benton County Code, Title 9, Subdivision Regulations;
 - i. The proposed subdivision complies with the purpose and preliminary plat requirements included in BCC 9.05 Subdivision - Preliminary Plat.

- d. The proposed subdivision complies with the Benton County Critical Area Ordinance BCC Title 15.
 - i. Upon completion of a review of BCC Title 15 and the Benton County Critical Area Maps, no critical areas were identified on the property.
 - ii. The proposed plat is not located in a special flood hazard area as identified on the Federal Emergency Management Agency Flood Insurance Rate Maps and BCC 3.26.
- e. The requirements of the State Environmental Policy Act have been met based on the following:
 - i. The proposed subdivision has been reviewed under the requirements of BCC Title 6, Chapter 6.35 and the State Environmental Policy Act.
 - ii. An MDNS with mitigation/conditions (PCM 1.15) was issued for the project on July 20, 2021 and a modified MDNS was issued on September 3, 2021 (PCM 1.16) under file number EA 2021-005.
2. The County Engineer has provided a written representation that the proposed subdivision provides adequate means of access and conformance with the road and drainage requirements of Benton County;
 - a. Reference the Benton County Public Works Department comments as it relates to stormwater and drainage easements (PCM 1.25); and
 - b. Reference the Benton County Public Works Department comments as it relates to roads and mitigation requirements (PCM 1.25).
3. The proposed subdivision meets the requirements BCC 9 Subdivision Regulations;
 - a. The proposed subdivision complies with the purpose and preliminary plat requirements included in BCC 9.05 Subdivision- Preliminary Plat;
4. The public interest will be served by the proposed division and dedication;
 - a. The creation of 42 residential lots and one large tract in the RL-1 Zoning District furthers the implementation of the Benton County Comprehensive Plan; and
 - b. Benton County standards are to be complied with, including the construction and dedication of the new public roads.
5. Appropriate provisions are made for the public health, safety, and general welfare, for open spaces, drainage ways, streets or roads, alleys, other public ways, transit stops, potable water, sanitary wastes, parks and recreation, playgrounds, schools, school grounds, and sidewalks;
 - a. Appropriate provisions have been made for the public health and safety based on the following facts:
 - i. The applicant has proposed that the preliminary plat be served by Badger Mountain Irrigation District for potable water, individual septic systems and irrigation water to be provided by Summit View Water Works;
 - ii. The Benton Franklin Health District and Badger Mountain Irrigation District have reviewed the preliminary plat and have no objections provided water is provided by Badger Mountain Irrigation District and sanitary services are provided by individual septic systems; and

- iii. The Benton County Fire Marshal has required fire hydrants to be installed.
- b. Appropriate provisions have been made for open spaces based on the following facts:
 - i. The proposed subdivision does not contain land to be designated for open space.
- c. Appropriate provisions have been made for drainage ways based on the following facts:
 - i. PBS Engineering and Environmental Inc. prepared a preliminary stormwater drainage report for the applicants of Harvest Ridge dated April 27, 2021 (PCM 1.9). The report discusses the provisions made for both offsite and onsite stormwater as it relates to this property and the proposed development;
 - ii. Reference the Benton County and City of Richland Public Works Department comments as it relates to stormwater and drainage easements (PCM 1.25 and 1.18).
- d. Appropriate provisions have been made for streets or roads, alleys, and other public ways based on the following facts:
 - i. The public interest will be served by the proposed division and dedication as the Benton County Public Works Department road standards are to be complied with including the construction and dedication of new public roads; and
 - ii. Reference the Benton County and City of Richland Public Works Department comments as it relates to road and mitigation requirements (PCM 1.18 and PCM 1.25).
- e. Appropriate provisions have been made for transit stops based on the following facts:
 - i. Ben Franklin Transit did not comment on transit service for the proposed development. The proposed plat and surrounding area are not served by public transit.
- f. Adequate provisions have been made for potable water supplies based on the following facts:
 - i. The project is located in the Lower Yakima Watershed, WRIA 37;
 - ii. Potable water is proposed to be served by Badger Mountain Irrigation District. BMID has submitted comments stating that it has sufficient capacity within the water distribution system to provide these services; and
 - iii. The Benton Franklin Health District finds that plat generally meets their requirements for plats utilizing on-site sewage systems with a public water supply.
- g. Adequate provisions have been made for sanitary waste based on the following facts:
 - i. The Benton Franklin Health District has no objections to individual septic systems which are proposed to serve the lots.
- h. Adequate provisions have been made for parks, recreation, and playgrounds based on the following facts:
 - i. The proposed subdivision does not contain land to be designated for parks or recreation. The Benton County Code does not require park dedications; however, the development is located adjacent to the City of Richland and landowners will have access to city parks in the general area.
- i. Appropriate provisions have been made for schools and school grounds and for sidewalks and other planning features that assure safe walking conditions for students who only walk to and from school based on the following facts:

- i. The proposed plat is within the Kennewick School District. The School District did not provide comments on this proposal as to whether there are adequate provisions to assure safe walking conditions for students who walk to and from school or waiting for school buses; however, the developer has provided sidewalk easements throughout the plat.
6. The applicable water/sanitary system agency has reviewed the proposed subdivision for compliance with its rules and regulations and has not expressed objection to the proposed subdivision; and
 - a. Badger Mountain Irrigation has reviewed the application and indicated that it has no objection to the 42 lots connecting to BMID potable water.
7. This plat is not within an irrigation district however, irrigation water is proposed to be served by Summit View Water Works and the applicant has complied with RCW 58.17.310 as it now exists or is hereafter amended.

SUGGESTED CONDITIONS OF APPROVAL:

1. Applicant shall meet and comply with the requirements of the Benton County Public Works Department, including the following:
 - a. The developer shall provide a complete set of engineered construction drawings for review and approval by the County and associated utilities. The drawings shall contain all appropriate information listed on the attached Minimum Plan Requirements. Grading plan will include grading to shape any drainage easements to route and fully contain all runoff based upon the 100-year storm within the easement limits. All plans and associated reports shall be prepared by a Professional Engineer licensed to practice in the State of Washington.
 - b. All construction shall be in accordance with the most current WSDOT Standard Specifications for Road, Bridge and Municipal Construction, applicable Benton County Standard Plans and the requirements of the County Engineer.
 - c. All roads within this plat shall have a paved width of 24 feet with a minimum 2-foot gravel shoulder. Roadways shall be designed for a minimum 25 mile per hour design speed.
 - d. The pavement return radius at all intersections shall be a minimum of 35 feet.
 - e. All stormwater from the roadways shall be contained on the plat and shall utilize surface infiltration (ditches, swales, ponds) for detention. The developer shall have an infiltration test performed at each proposed detention area. Tests shall be done with an infiltrometer using the falling head or constant head method. Other methods of infiltration rate determination shall be approved by the County.
 - f. The developer shall provide a complete stormwater runoff report developed in accordance with the Stormwater Management Manual for Eastern Washington accosting for all impervious and pervious surfaces draining to the roadside ditches. Design storm shall be a Modified SCS Type IA with a 25-year return frequency.
 - g. All signage including but not limited to stop signs, speed limit signs and street name signs shall be installed by the developer in accordance with Benton County Standard Plans.
 - h. All new power, telephone, cable TV and irrigation shall be installed outside of the County right of way in the appropriate easements. Domestic water piping may be installed within the County right of way in accordance with a valid franchise agreement.

- i. Survey monuments, with cases and covers per Benton County Standard R-14B, shall be placed at all road intersections, points of curvature, points of tangency, centers of cul-de-sacs, section corners and quarter corners. All monuments shall be set by a Professional Land Surveyor licensed to practice in the state of Washington.
- j. **The 5' sidewalk** easement shall be paved with HMA.
- k. The sidewalk easement Harvest Ridge Loop shall be continuous (to include future Phasing/subdivision of Tract A).
- l. Provide cross walks for the sidewalk at every road crossing.
- m. Mitigate the pathway/sidewalk crossing over the County ditch.
- n. Approval of final plat is contingent on the construction of the City Road A in the BMS-South Orchard subdivision, and access to E Reata Road.
- o. Provide emergency vehicle turn arounds at the end of each new road.

Add the following notes to the face of the final plat:

- p. Benton County is not responsible for the maintenance or upkeep of any stormwater retention facility or drainage easements. All such maintenance and upkeep are the responsibility of the underlying property owner.
 - q. Road approaches shall not be permitted directly across roadway tee intersections.
 - r. Prior to the construction of any driveway or the issuance of any building permit for any lot within this subdivision the property owner shall obtain a Road Approach Permit from the Benton County Public Works Department and install the required temporary construction access.
 - s. No trees, shrubs, weeds, fencing or other obstructions more than 24 inches in height are permitted within Benton County right of way.
 - t. Property owners that install grass, curbing, rock mulch or other landscaping within the County right of way do so at their own risk. The County will not repair or replace damaged landscaping due to construction or maintenance operations.
 - u. All corner lots shall not have direct access to Harvest Ridge Loop, except lots 1 and 42.
 - v. Property owners with sidewalk abutting their property shall be responsible for the maintenance of said sidewalk.
 - w. All lots within this subdivision are subject to a three thousand five hundred (\$3,500) traffic mitigation fee. Such fee shall be due and payable prior to issuance of any Building Permit or Road Approach Permit.
 - x. For more information, please contact Cristina Woods at 509-786-5611 or Cristina.Woods@co.benton.wa.us.
2. Applicant shall meet and comply with the requirements of the City of Richland, including the following:
- a. Given that the proposed preliminary plat is outside both the Richland city limits and also the Richland UGA, city utilities (domestic water, sanitary sewer) are not available for connection.
 - b. **The "Future Road" adjacent to the eastern boundary of the preliminary plat is within the Richland city limits and does not yet exist. This off-site "Future Road" shall be constructed**

in conformance with either City Standard Detail ST15 (Rural Street) or City Standard Detail ST11 (Major Collector) prior to the final plat for the first phase of this project. At a minimum the project shall construct this street from its intersection with Reata Road to the northern of the two street access points for this project. This construction will require the developer to obtain a City Right of Way Construction Permit pursuant to Richland Municipal Code Chapter 12.08 and to fulfill all of the terms of the permit. This will also require that the developer dedicate the completed street and its right of way to the City prior to the final plat for the first phase of this project.

- c. **The two street intersections for this project onto the "Future Road"** may require street widening and/or striping changes to facilitate the additional turning movements generated by this development. This issue will be resolved during the permitting process for the **"Future Road" construction project**.
 - d. **A "No Access" easement shall be recorded** along the east boundary of this project to enforce the fact that no driveways will be allowed from lots in this plat directly onto the **"Future Road"**. In addition, a note will be shown on the face of the final plat(s) that create any lots that abut the off-site future road that states that the off-site **"Future Road" is classified as a "Major Collector street"**. **Subsequently, no driveways** accessing any of the proposed single family lots will be allowed directly onto it.
 - e. Please contact Pete Rogalsky at the City of Richland for more information at 942-7500 for more information.
3. Applicant shall meet and comply with the requirements of the Washington State Department of Transportation, including the following:
- a. The subject property is adjacent to Interstate 82 (I-82), a full control limited access facility with a posted speed limit of 70 miles per hour. WSDOT has acquired all access rights to the highway from the abutting properties. Direct access to I-82 is prohibited.
 - b. According to the ITE Trip Generation Manual (10th Edition), 42 single-family residential lots may generate up to 396 vehicle trips per weekday with 42 trips occurring during the PM peak hour. WSDOT anticipates the majority of future residents will utilize the I-82/Dallas Road (Exit 104) interchange, and, to a lesser extent, the I-82/Badger Road (Exit 109) interchange. These additional vehicle trips could have a significant impact on the above-mentioned interchanges; therefore, we recommend the county require the proponent to contribute towards the county's planned improvements at Exit 109 and the city of Richland's planned improvements at Exit 104 in proportion to their impacts.
 - c. Please contact Jacob Prilucik at 509-225-0637 for more information.
4. Applicant shall meet and comply with the requirements of the Benton Franklin Health District. The BFHD has reviewed the short plat proposal and finds that it generally meets their requirements for plats utilizing on-site sewage systems with a public water supply.
- a. This recommendation is based on present known site conditions and does not guarantee the granting of an on-site sewage disposal permit. Our approval of any lot within this plat may be contingent upon that lot passing additional soil inspections/percolation tests, and/or other requirements at-a-later date. Should adverse site conditions be revealed at a later date, the Health Department reserves the right to impose restrictions or deny the issuance of any on-site sewage disposal permit. All wells, irrigation lines, canals, and surface waters within 150ft of the plat are shown on the plat map.

- b. Please contact Rebecca Warrington at 509-460-4335 for more information.
5. Applicant shall meet and comply with the requirements of the Benton County Fire Marshal including the following:
- a. Prior to preliminary plat approval, the applicant shall submit to the Benton County Fire Marshal a letter from the water purveyor addressing its willingness and ability to satisfy the requirements of this chapter.
 - b. Prior to final plat approval, the following shall be required:
 - i. Water system plans and specifications which comply with these regulations must be designed and stamped by a registered, professional engineer licensed in the State of Washington. Said plans shall be signed by the purveyor and shall be filed with the Benton County Fire Marshal and the Department of Health.
 - ii. Water system plans shall be approved in writing by the Benton County Fire Marshal.
 - iii. The approved water system shall be installed prior to final plat approval or a statement shall be placed on the plat indicating no building or Manufactured Home/FAS installation permit will be issued until the water system is installed, operating, and approved.
 - iv. Two (2) copies of the "as built" drawings must be filed with the Benton County Fire Marshal.
 - c. When the distribution system is installed, said installation must be under the direction of a registered, professional engineer licensed in the State of Washington who shall certify the construction of the system is in accordance with the approved design.
 - d. Written approval from the Benton County Fire Marshal that the system is operating to specifications shall be submitted.
 - e. Fire hydrants shall meet the standards of Benton County Code 3.18.036.
 - f. Location of hydrants shall be determined by the Benton County Fire Marshal. The location of all water mains, fire hydrants, and valves to be installed shall be properly and accurately marked on identifiable plans or drawings. Two (2) copies of all plans or drawings shall be furnished to the Benton County Fire Marshal.
 - g. Fire hydrant spacing shall meet the standards of Benton County Code 3.18.037.
 - h. Fire hydrants maintenance shall comply with Benton County Code 3.18.038.
 - i. Minimum fire flow requirements shall comply with Benton County Code 3.18.039.
 - j. Purveyor requirements shall comply with Benton County Code 3.18.040.
 - k. Please contact the Benton County Fire Marshal, Clark Posey, at (509) 735-3500 or Clark.Posey@co.benton.wa.us for more information.
6. Applicant shall meet and comply with the requirements of the Department of Archeology and Historic Preservation, including the following:
- a. DAHP's statewide predictive model indicates that there is a moderate probability of encountering cultural resources within the proposed project area. Further, the scale of the proposed ground disturbing actions would destroy any archaeological resources present. Identification during construction is not a recommended detection method because

inadvertent discoveries often result in costly construction delays and damage to the resource. Therefore, we recommend a professional archaeological survey of the project area be conducted and a report be produced prior to ground disturbing activities. This report should **meet DAHP’s Standards for Cultural Resource Reporting**.

- b. We also recommend that any historic buildings or structures (45 years in age or older) located within the project area are evaluated for eligibility for listing in the National Register of Historic Places on Historic Property Inventory (HPI) forms. We highly encourage the SEPA lead agency to ensure that these evaluations are written by a cultural resource professional meeting the SOI Professional Qualification Standards in Architectural History.
 - c. Please note that the recommendations provided in this letter reflect only the opinions of DAHP. Any interested Tribes may have different recommendations. We appreciate receiving any correspondence or comments from Tribes or other parties concerning cultural resource issues that you receive.
 - d. Thank you for the opportunity to comment on this project. Please ensure that the DAHP Project Tracking Number is shared with any hired cultural resource consultants and is attached to any communications or submitted reports. Please also ensure that any reports, site forms, and/or historic property inventory (HPI) forms are uploaded to WISAARD by the consultant(s).
 - e. For more information, please contact Sydney Hanson, Transportation Archaeologist at (360) 586-3082 or Sydney.Hanson@dahp.wa.gov.
7. Applicant shall meet and comply with the requirements of the Confederated Tribes of the Umatilla Indian Reservation, including the following:
- a. The Confederated Tribes of the Umatilla Indian Reservation (CTUIR) Cultural Resources Protection Program (CRPP) has reviewed the materials regarding the Harvest Ridge project. The proposed project area is in close proximity to three historic properties of religious and cultural significance, **Piyuušmaamí uštáy** ('hills of the snakes'), **~usipamá** ('for horses'), and **Wišpúušya** ('Beaver') to the CTUIR. Given that the project area is in close proximity to these traditional use areas and that the project will reach native soils, the likelihood of encountering cultural resources is high. Therefore, we recommend a cultural resource survey with subsurface testing.
 - b. Please contact Ashley Morton at 541-276-3447 for more information.
8. Applicant shall meet and comply with the requirements of the Yakama Nation, including the following:
- a. The project is located within the traditional homelands of the Yakama band, signatory to the Yakama Treaty of 1855. The project is within proximity of Yakama Traditional Cultural Properties and therefore has a heightened potential to encounter archaeological resources. We recommend a cultural resources investigation of the project area. Please have the report sent to our office for review.
 - b. Please contact Corrine Camuso at 509-865-5121, ext. 4776 for more information.
9. Applicant shall meet and comply with the requirements of the Department of Ecology, including the following:
- a. If the project anticipates disturbing ground with the potential for stormwater discharge off-site, the NPDES Construction Stormwater General Permit is recommended. This permit

requires that the SEPA checklist fully disclose anticipated activities including building, road construction and utility placements. Obtaining a permit may take 38-60 days.

The permit requires that a Stormwater Pollution Prevention Plan (Erosion Sediment Control Plan) shall be prepared and implemented for all permitted construction sites. These control measures must be able to prevent soil from being carried into surface water and storm drains by stormwater runoff. Permit coverage and erosion control measures must be in place prior to any clearing, grading, or construction.

In the event that an unpermitted Stormwater discharge does occur off-site, it is a violation of Chapter 90.48 RCW, Water Pollution Control and is subject to enforcement action.

- b. More information on the stormwater program may be found on Ecology's stormwater website at: <http://www.ecy.wa.gov/programs/wq/stormwater/construction/>.
 - c. Please submit an application or contact Lloyd Stevens Jr. at the Dept. of Ecology, 509-574-3991 or email lloyd.stevensjr@ecy.wa.gov, with questions about this permit.
10. Applicant shall meet and comply with the requirements of the Badger Mountain Irrigation District which will be providing potable water to the development.
- a. Badger Mountain Irrigation District will serve the Harvest Ridge Project located on Parcel# 105884020000001. The BMID has sufficient potable water supply to serve the proposed project. BMID currently serves 889 connections and is approved for 1376 connections.
 - b. This parcel was approved as part of the retail service area in our 2010 Water System Plan. BM ID is currently in the process of renewing our WSP and if the project is started before that date construction plans will need to be approved by the state as well as BMID.
 - c. All construction documentation and planning for the domestic water infrastructure will also need to be approved by the Department of Health.
 - d. If you have any questions or need more information, please call BMID at 509-628-0777.
11. Applicant shall meet and comply with the requirements of Summit View Water Works which will be providing irrigation water to the development.
- a. Summit View Water Works, LLC has holds irrigation water right WDOE G4-30505.
 - b. The annual quantity is for 810 acre-feet per year for irrigation of 270 acres from March 1 to October 31 each year.
 - c. The place of use is Section 5, T 8N, R 28E W.M. lying North of Interstate 82.
 - d. The instantaneous quantity shall not exceed 2160 gallons per minute, or 8 gallons per minute per acre.
 - e. The quantities listed above are adequate to provide service for the plat of Harvest Ridge. Please call if you require additional information.
12. Applicant shall meet and comply with the requirements of the Benton County Planning Division, including the following:
- a. The applicant shall meet and comply with the SEPA Determination (EA 2021-005) for this application, including the modified MDNS with mitigation/conditions issued by the Planning Division on September 3, 2021 (PCM 1.16).

- b. The applicant shall meet and comply with the recommended design and project compliance, stormwater system design, proposed erosion control plan and proposed maintenance plan identified in the Preliminary Storm Drainage Report prepared by PBS Engineering and Environmental Inc. dated April 27, 2021 (PCM 1.9).
- c. The existing access easement on Lot 62, recorded under Auditor File Number 2010-019085, shall be vacated prior to approval of the final plat.
- d. Per BCC 9.09.030(p) Development - Estate Fencing; double frontage lots are discouraged. To mitigate for this, an estate type fence or a 3-rail traditional ranch type fence shall be constructed along the following locations prior to final plat approval:
 - i. East parcel line of Lots 1 and 35-42 adjacent to future city of Richland ROW.
 - ii. The fence shall be constructed in compliance with the City of Richland’s road sightline standards for intersections.
- e. Please amend the reference to the adjacent interstate on the plat vicinity maps to read **“I-82.”**
- f. Upon review of the proposed road names, Maize Street will need to be renamed. Please submit three proposed road names for each road section to be reviewed and approved by the County prior to final plat.
- g. Show the location, name, right-of-way widths, and type of surfacing of all streets located within and adjacent to the land to be subdivided on the plat map.
- h. Indicate any areas within the plat having a slope of fifteen (15) percent or greater.
- i. Please ensure there is a subdivision title block located in the bottom right-hand corner of the final plat map.
- j. Please include the following signatures blocks on the final plat:
 - i. Owner/Notary
 - ii. Chairman of the Benton County Board of County Commissioners
 - iii. Chairman of the Benton County Planning Commission
 - iv. Benton County Engineer
 - v. City of Richland Public Works
 - vi. Benton PUD
 - vii. Benton-Franklin Health District
 - viii. Badger Mountain Irrigation District
 - ix. Summit View Water Works
 - x. Benton County Treasurer
 - xi. Benton County Assessor
- k. The following notes shall be placed on the final plat:
 - i. **“During construction on each property, all construction debris shall be maintained on-site and properly disposed of. Dust control measures including an adequate water supply shall be provided”.**

- ii. "Address numbers [noted in brackets] are subject to change until the exact location of access onto the short plat is determined."
 - iii. "The utility easements shown hereon are hereby granted for the use, access and maintenance by the short-platted **property's** current utility provider. Said utility easements are for the use, access and maintenance of electric power, telephone, cable and any other defined utilities to and or through said tract."
 - iv. "Prior to the granting of a building or factory assembled (FAS) permit for each lot by the County, the applicant for a building or FAS permit must provide evidence of potable water from Badger Mountain Irrigation District services."
 - v. "This short plat is not located within an irrigation district; however, irrigation water is provided by Summit View Water Works."
 - vi. "I-82 is an existing facility, and the approval of this subdivision proposes a more noise-sensitive land use. Future residents should be aware this is an area with existing traffic noise. It should also be expected for traffic noise to continue to grow into the future, and, as an essential public facility, I-82 may need to be expanded to accommodate future traffic growth."
13. Preliminary plat approval shall be effective for 5 (five) years from the date of Board of County Commissioner approval. Exceptions shall comply and approved subject to the provisions of BCC 9.05.110 (e) as currently existing or hereafter amended.
 14. Any amendments to an approved preliminary plat must be completed in accordance with BCC 9.05.140 as currently existing or hereafter amended.
 15. Prior to the final plat being reviewed for final approval, the requirements of the Benton County Planning Division, Benton County Fire Marshal, Benton County Engineer, Benton Franklin Health District, and other commenting agencies and conditions shall be met and complied with.
 16. Final Plat applications shall be submitted to the Planning Division. An applicant shall submit a final plat application that follows BCC 9.07 - Final Plat standards and requirements, as currently existing or hereafter amended:
 17. All lots in the final plat shall meet the design standards for final plat approval as specified in Benton County Code 9.09 - Design and Improvements, as currently existing or hereafter amended, and meet all of the zoning requirements as specified in Benton County Code, Title 11 - Zoning, as currently existing or hereafter amended.
 18. The location and size of all irrigation and utility easements necessary for electric power, telephone service, water, sewer and cable TV are to be coordinated with the proper utilities and/or reviewing agencies and shown on the final plat. The developer will need to open the utility trenches, including road crossings, based on individual utility requirements and specifications.
 19. Address numbers shall be coordinated with the Benton County GIS Department and placed on the final plat. Addresses [noted in brackets] are subject to change until the exact location of the dwelling and access onto the plat is determined.
 20. The applicant shall coordinate with the Post Office regarding centralized box unit (CBU) locations for the development, if necessary.
 21. All of the statements that are required to be on the notes of the plat shall be either: 1) recorded as a restrictive covenant on each applicable parcel with the County Auditor, or 2) described in

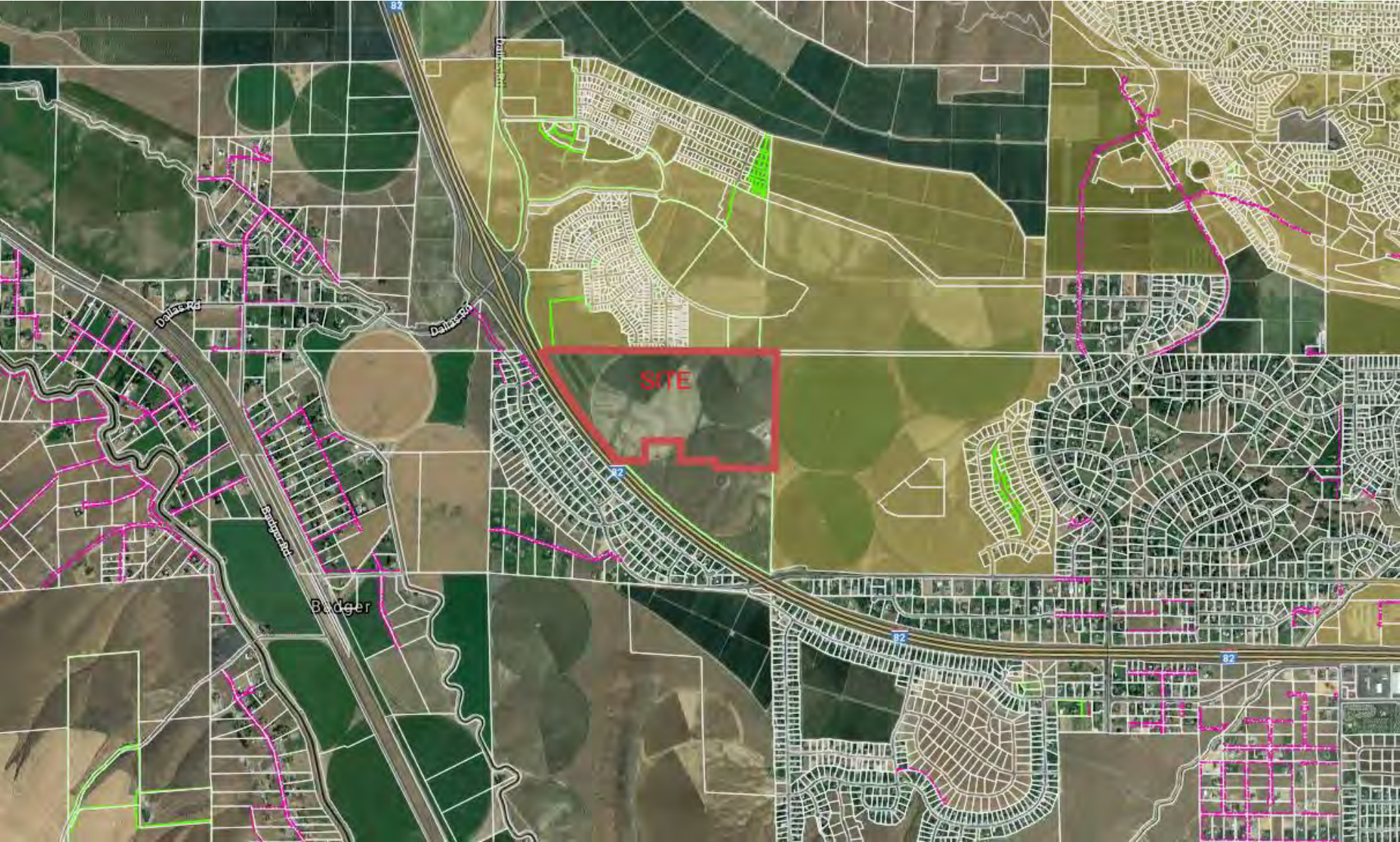
detail in the developer's covenants that are recorded and provided to each lot owner, prospective landowner, and the Planning Division at the time of final plat approval and recording.

22. That the preliminary plat is modified in all necessary respects so that the final plat will reflect the requirements of approval. If the final plat will be in conflict with any of the conditions of approval as adopted by the Planning Commission as a result of the modifications, then the final plat must be reviewed by the Planning Commission at a public meeting for approval prior to sending the final plat to the Board of County Commissioners.

SUGGESTED MOTION:

The Planning Commission forwards a recommendation of approval to the Benton County Board of Commissioners for Application SUB 2021-001/EA 2021-005, subject to the seven (7) findings of fact and twenty-two (22) conditions of approval as stated in the staff memo (PCM 1.1) dated October 1, 2021, which includes the preliminary plat approval for 42 residential lots and one 122.30-acre tract and that the Chairman, in conjunction with the Secretary of the Planning Commission, prepare and adopt written findings and conclusions reflecting the **commission's recommendation** for approval that articulate and are consistent with the findings, conclusions and recommendations made by the Planning Commission tonight.

SUB 2021-001/EA 2021-005 Harvest Village
June 22, 2021



LEGAL DESCRIPTION

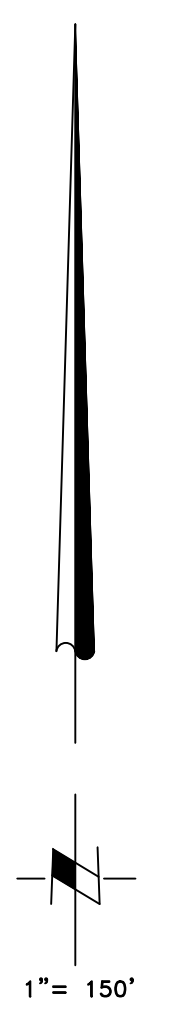
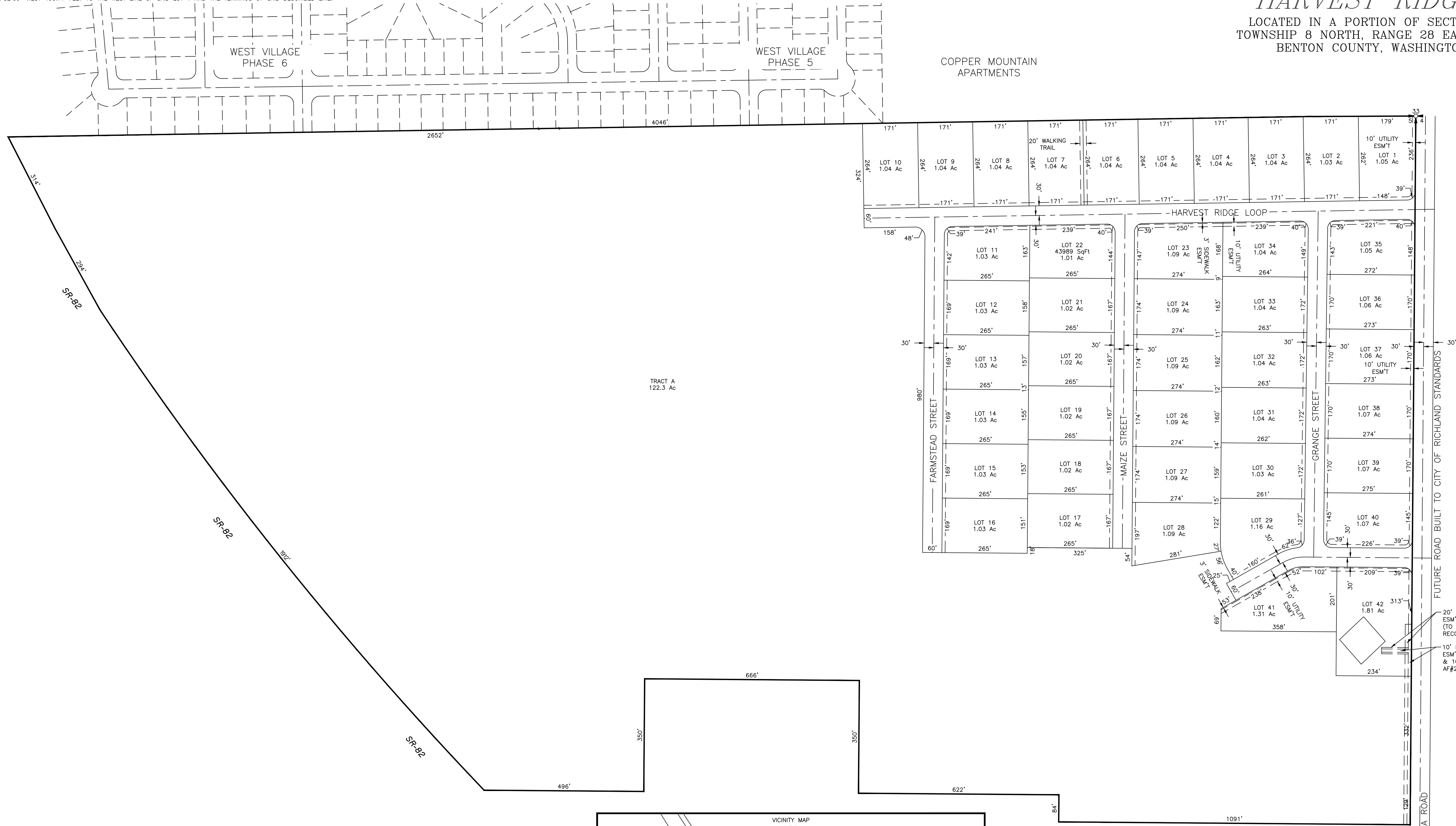
THAT PORTION OF LOT 1, PLAT OF THE RIDGE AT REATA WEST PHASE 1, ACCORDING TO THE SURVEY THEREOF RECORDED UNDER AUDITOR'S FILE NUMBER 2012-034163, RECORDS OF BENTON COUNTY, WASHINGTON, SITUATE IN SECTION 5, TOWNSHIP 8 NORTH, RANGE 28 EAST, WILLAMETTE MERIDIAN, LYING NORTHERLY OF THE FOLLOWING DESCRIBED LINE:

BEGINNING AT THE NORTHEAST CORNER OF SAID LOT 1 (SAID POINT BEING THE NORTHEAST CORNER OF SAID SECTION 5); THENCE SOUTH 00°27'45" WEST 2200.66 FEET ALONG THE EAST LINE OF SAID LOT 1 TO THE TRUE POINT OF BEGINNING; THENCE NORTH 89°32'10" WEST 1090.85 FEET; THENCE NORTH 00°27'46" EAST 84.01 FEET; THENCE NORTH 89°32'09" WEST 622.28 FEET; THENCE NORTH 0°27'46" EAST 350.00 FEET; THENCE NORTH 89°32'09" WEST 666.37 FEET; THENCE SOUTH 00°27'51" WEST 350.00 FEET; THENCE NORTH 89°32'09" WEST 495.77 FEET TO THE WEST LINE OF SAID LOT 1 AND THE TERMINUS OF SAID DESCRIBED LINE.

PCM 1.7

PRELIMINARY PLAT OF HARVEST RIDGE

LOCATED IN A PORTION OF SECTION 5, TOWNSHIP 8 NORTH, RANGE 28 EAST, W.M. BENTON COUNTY, WASHINGTON



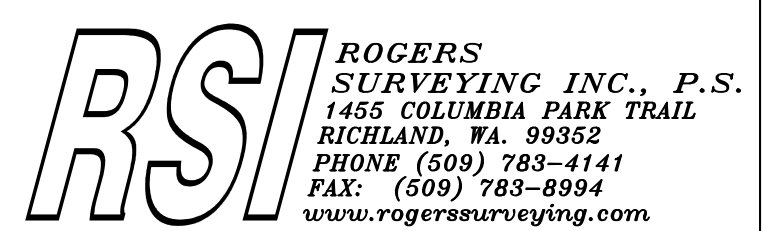
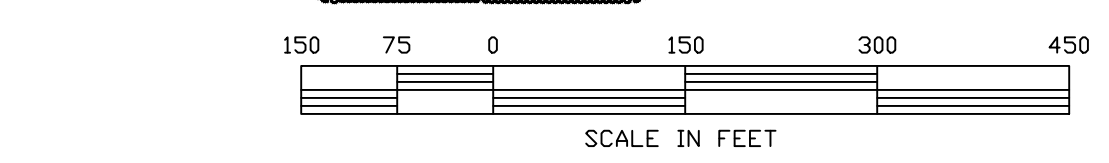
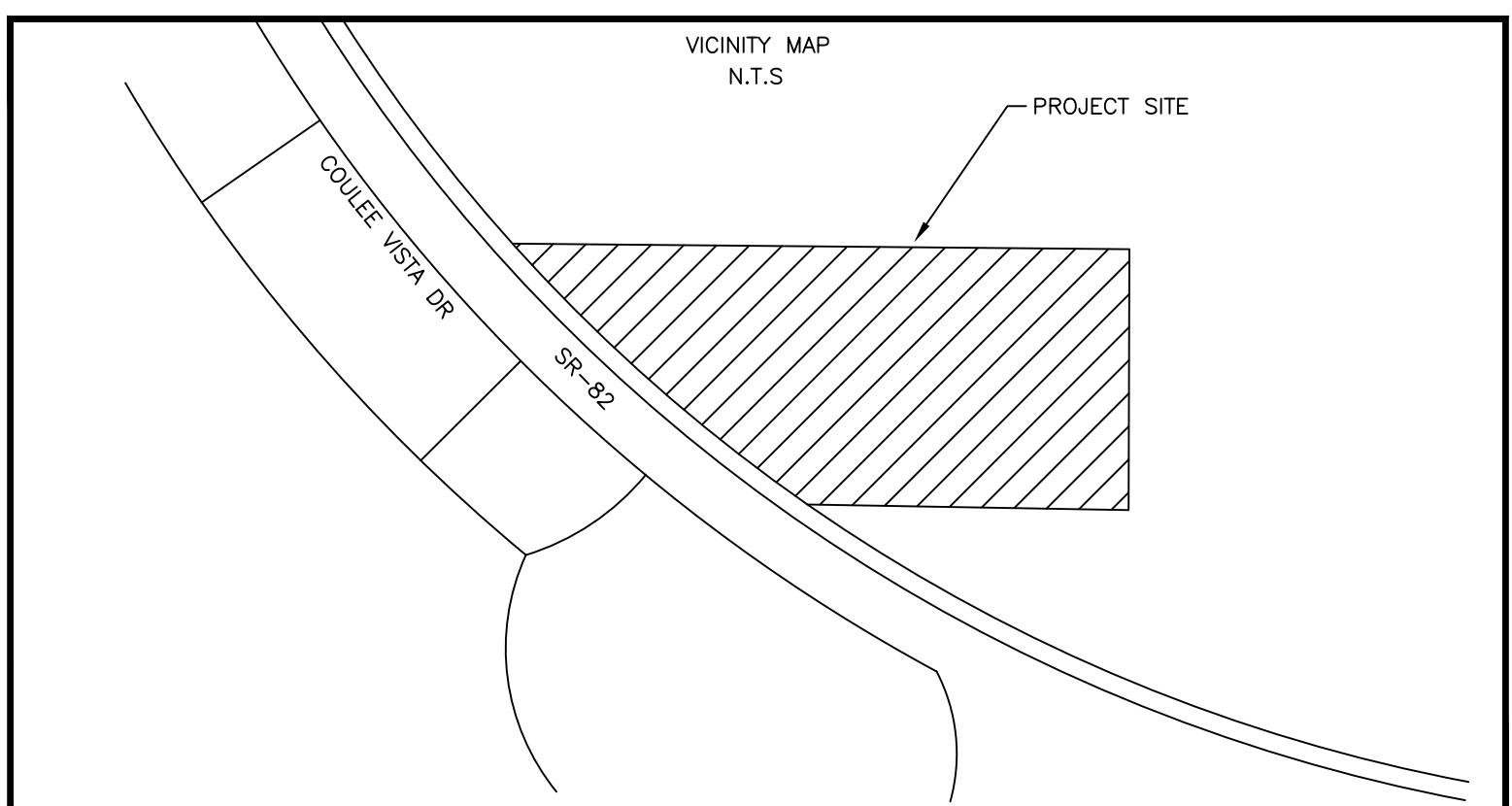
DEVELOPER
 CANDY MOUNTAIN, L.L.C.
 GEOFF CLARK
 P.O. BOX 1307
 GIG HARBOR, WA. 98335
 253-677-3402 (OFFICE)
 253-265-3163 (FAX)

OWNER
 CANDY MOUNTAIN, L.L.C.
 GEOFF CLARK
 P.O. BOX 1307
 GIG HARBOR, WA. 98335
 253-677-3402 (OFFICE)
 253-265-3163 (FAX)

PREPARED BY
 ROGERS SURVEYING INC.
 1455 COLUMBIA PARK TRAIL-STE 201
 RICHLAND, WASHINGTON 99352
 509-783-4141 (OFFICE)
 509-783-2994 (FAX)

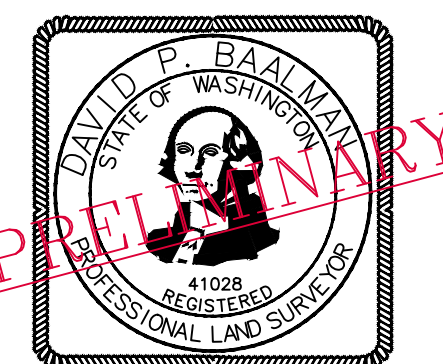
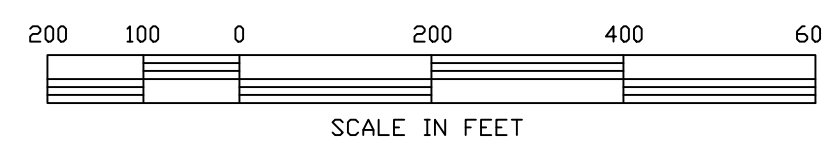
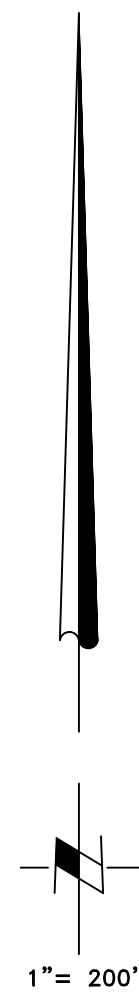
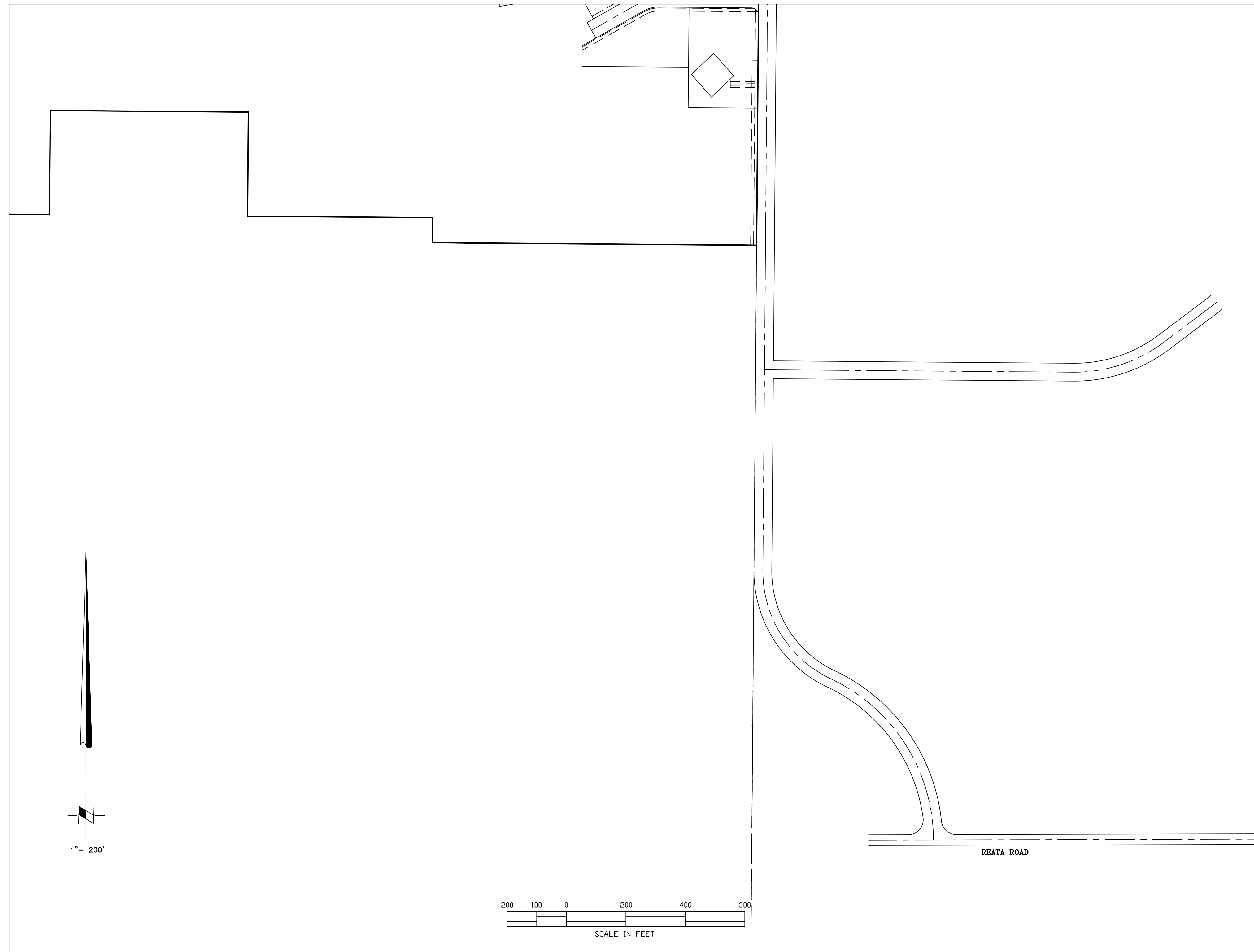
LAND USAGE
 GROSS PLANNING AREA = 172.36 ACRES
 4412 LINEAR FEET PLAT STREETS = 6.07 ACRES
 TRACT A = 122.30 ACRES
 NET PLANNING AREA = 43.99 ACRES
 43.99 ACRES X 43560 SQ. FT. = 45,624 SQ. FT. = 1.05 ACRES
 42 LOTS
 1.81 ACRES LARGEST LOT (42)
 1.00 ACRES SMALLEST LOT (22)

ZONING = RURAL LANDS 1
 WATER SUPPLY = SUMMIT VIEW WATER WORKS
 SEWAGE DISPOSAL = INDIVIDUAL SEPTIC SYSTEMS



*PRELIMINARY PLAT OF
HARVEST RIDGE*
LOCATED IN A PORTION OF SECTION 5,
TOWNSHIP 8 NORTH, RANGE 28 EAST, W.M.
BENTON COUNTY, WASHINGTON

REATA ROAD ACCESS DETAIL



RSI ROGERS
SURVEYING INC., P.S.
1455 COLUMBIA PARK TRAIL
RICHLAND, WA. 99352
PHONE (509) 783-4141
FAX: (509) 783-8994
www.rogerssurveying.com



PCM 1.3

NOTICE OF PUBLIC HEARING

NOTICE IS HEREBY GIVEN that there has been proposed to the Planning Commission of Benton County, Washington, an application (File No. SUB 2021-001/EA 2021-005) by: Candy Mountain LLC for the Preliminary Plat of Harvest Ridge, a subdivision of 172.36 acres into 143 residential lots to be located on the following described property: A portion of Lot 1, Plat of the Ridge At Reata West Phase 1, in Section 5, Township 8 North, Range 28 East, Willamette Meridian, Lying northerly of the following described line: Beginning at the northeast corner of said Lot 1 (said point being the northeast corner of said Section 5); Thence South 00°27'45" West 2200.66 Feet Along The East Line Of Said Lot 1 To The True Point Of Beginning; Thence North 89°32'10" West 1090.85 Feet; Thence North 00°27'46" East 84.01 Feet; Thence North 89°32'09" West 622.28 Feet; Thence North 00°27'46" East 350.00 Feet; Thence North 89°32'09" West 666.37 Feet; Thence South 00°27'51" West 350.00 Feet; Thence North 89°32'09" West 495.77 Feet To The West Line Of Said Lot 1 And The Terminus Of Said Described Line; lying North of I-82 and East of Dallas Road

NOTICE IS FURTHER GIVEN that said application will be considered by the Planning Commission of Benton County, Washington, at a in person and virtual public hearing on August 10, 2021 at the hour of 6:00 p.m. in the Planning Meeting Room, First Floor, Courthouse, Prosser, WA 99350. It is suggested that if you plan on attending the hearing that you call the Benton County Planning Division by 4 p.m. the afternoon of the hearing to confirm that the hearing will be conducted as scheduled.

NOTICE IS FURTHER GIVEN that said proposal has been reviewed under the requirements of the State Environmental Policy Act, as amended, along with the Environmental Checklist and other information. A determination has been made as to the environmental impacts of the proposal and a Determination of Non-Significance has been issued. Accordingly, an Environmental Impact Statement is not required. This determination was made on July 20, 2021. Any comments regarding the determination and the environmental impacts of the proposal can be made at the hearing before the Planning Commission at the time and place indicated above or be made in writing to the Planning Division by 5 p.m. on August 9, 2021.

Any information submitted to Benton County is subject to the public records disclosure law for the State of Washington (RCW Chapter 42.17) and all other applicable law that may require the release of the documents to the public.

At this hearing, the Planning Commission may recommend approval, conditional approval or disapproval of the application to the Benton County Board of Commissioners. All

parties concerned may appear and present any support or objections for the application. Information concerning the application can be obtained at the Benton County Planning Division, P.O. Box 910, 620 Market St, Prosser, Washington 99350 or by calling 736-3086 (Tri-Cities) or 786-5612 (Prosser).

It is Benton County's policy that no qualified individual with a disability shall by reason of such disability be excluded from participation in public meetings. If you wish to use auxiliary aids or require assistance to comment at this public meeting, please contact the ADA Coordinator or the Benton County Planning Division at the above stated phone numbers and/or address no later than 48 hours prior to the date of the meeting. The Request for Reasonable Accommodation form is available online at www.co.benton.wa.us or from the Planning Department.

DATED at Prosser, Washington on this 21st day of July 2021.

Martin Sheeran, Chairman
BENTON COUNTY PLANNING COMMISSION

Michelle Cooke, Assistant Planning Manager
BENTON COUNTY PLANNING DIVISION

PUBLISH: July **28**, 2021



STAFF REPORT TO THE BENTON COUNTY
PLANNING COMMISSION

PCM 1.4

FILE NO: SUB 2021-001
Preliminary Plat of Harvest Ridge

MEMO DATE: September 2, 2021

HEARING DATE: September 14, 2021

APPLICANT/
OWNER: Geoff Clark dba Candy Mountain, LLC
PO Box 1307
Gig Harbor, WA 98335

LOCATION: The site is located east of Interstate 82 and north of Reata Road on approximately the northern half of Lot 1 of the plat of the Ridge at Reata West Phase 1, in Section 5, Township 8 North, Range 28 East, W.M. in Richland, WA on parcel number 1-0588-402-0000-052.

PROPERTY SIZE: Approximately 172.36 acres

AREA TO BE USED: Approximately 43.99 acres

LAND USE: Residential

COMP. PLAN: Rural Transition

ZONING: Rural Lands One Acre District

SUGGESTED STAFF
RECOMMENDATION: Positive recommendation subject to seven (7) findings of fact and twenty-two (22) conditions of approval.

APPLICATION DESCRIPTION

The applicant originally submitted a preliminary plat application on February 18, 2021 however the application was placed on hold to give the applicant additional time to submit the necessary supplemental reports which were required. After the initial agency review had been completed, the applicant submitted a revised plat map on August 5, 2021 proposing to subdivide approximately 172.36 acres into 42 residential lots and one 122.30-acre tract. The preliminary plat is known as Harvest Ridge. The land is zoned Rural Lands One-Acre District.

On July 20, 2021 Benton County issued a Mitigated Determination of Non-Significance (MDNS) for this application. The Community Development Department-Planning Division has determined that a revised Mitigated Determination of Non-Significance is necessary for EA 2021-005 and Preliminary Plat SUB 2021-001. It has been determined that certain conditions

are necessary to mitigate specific adverse environmental impacts and that changes to the Condition of Approvals issued with the MDNS on July 20, 2021 are necessary. With the need to issue a revised MDNS, an associated 14-day comment period is required for the SEPA review process. Due to the required 14-day comment period for the Revised MDNS, there is now a need to continue the public hearing for the preliminary plat of Harvest Ridge. This is necessary due to State Statutes that require that SEPA determinations be made at least 15 days prior to the public hearing.

PLANNING DIVISION RECOMMENDATION

It is the Planning Division’s recommendation that due to the 14-day comment period for the Revised MDNS and the requirement of a Threshold Determination being made 15 days prior to a public hearing on the matter, the public hearing for SUB 2021-001 Harvest Ridge be continued until the October 12, 2021 Planning Commission meeting.

SUGGESTED MOTION:

I move that the Public Hearing for the preliminary plat of Harvest Ridge - SUB 2021-001 be continued until the October 12, 2021 Planning Commission meeting at 6 p.m. in the Planning Meeting Room, 620 Market Street, First Floor, Courthouse, Prosser WA 99350 for the purpose of taking testimony and decision making on this application.



PCM 1.5

Harvest Ridge Preliminary Plat Application SUB 2021-001

DATE: August 3, 2021

TO: Benton County Planning Commission

FROM: Benton County Planning Division

RE: Preliminary Plat Application SUB 2021-001 – Harvest Ridge

LOCATION: The site is located east of Interstate 82 and north of Reata Road on approximately the northern half of Lot 1 of the plat of the Ridge at Reata West Phase 1, in Section 5, Township 8 North, Range 28 East, W.M. in Richland, WA on parcel number 1-0588-402-0000-052.

APPLICANT: Candy Mountain LLC, Geoff Clark

APPLICATION DESCRIPTION:

The applicant has submitted a preliminary plat application and map to subdivide approximately 172.36 acres into 143 residential lots. The preliminary plat is known as Harvest Ridge. The land is zoned Rural Lands One Acre District.

BACKGROUND:

The Benton County Planning Division conducted their review of the preliminary plat application for Harvest Ridge and set a public hearing date of August 10, 2021 with the Planning Commission.

On July 28, 2021, the Planning Division received comments from the Benton Franklin Health District reviewing and approving only Phase 1 of the proposed 3 phase preliminary plat. Planning Staff notified both the applicant and the Health District that review/approval of the entire proposed preliminary plat is required before bringing this application before the Planning Commission at a public hearing. In order to provide the applicant and the Health District additional time to address this issue, the Planning Division is recommending continuing the hearing to the Planning Commission's September 14th meeting.

PLANNING STAFF RECOMMENDATION:

Based on the comments received from the Health District and the need for further review by their office, Planning Staff recommends that the Planning Commission continue the public hearing on the preliminary plat of Harvest Ridge for public testimony and decision making to September 14, 2021 at 6 p.m., Planning Meeting Room, 1st Floor, Courthouse 620 Market Street, Prosser WA.

BENTON COUNTY PRELIMINARY PLAT APPLICATION

File No. SUB 2021-001



Subdivision Name: Harvest Ridge

1. Applicant Name: Geoff Clark
Applicant Address: PO Box 1307 Gig Harbor, WA 98335
Telephone number: Home _____ Work 325-677-3402

2. If you wish to be contacted via email, please list your email address: _____
thefourcs@comcast.net

3. Legal Owners Name: Candy Mountain LLC
Legal Owners Address: _____
Telephone number: Home _____ Work _____

4. Name and address of land surveyor David Baalman, PLS Rogers Surveying Inc

Telephone 509-783-4141

5. Name and address of engineer _____

Telephone _____

6. Parcel number and Legal description of property included in the preliminary plat: _____
1-0588-1402-0000-001
See face of preliminary plat for legal description

7. **Land Use Information:**
a. Total area involved 172.36 AC c. Smallest lot area 1.00 AC
b. Total number of lots 143 d. Average lot area 1.05 AC

Plat Revised to 42 lots (average lots size of 1.05 acre) and 1 tract (122.3 acres) on August 5, 2021.

- e. Acreage in parks 0
- f. Length of public streets 13,175 lf 4412 lf
- g. Total acreage of public streets 22.66 AC 6.07 ac
8. Proposed annexation plans None
9. Plat will be served by:
 Water: Individual Wells _____ City Water _____
 Name of City Provider _____
 Private Water System _____ Name & Address of Private System _____
Summit View Water Works
 Sewer: Septic Tank _____ City Sewer _____ Private System _____
 Power: P.U.D. _____ R.E.A. _____
 Telephone: Frontier Telephone _____ Sprint Telephone _____
 Natural Gas: Yes _____ No _____ Name of Utility _____
 Cable T.V. Yes _____ No _____ Name of Utility Charter
 Irrigation: Yes _____ No _____ Name of Utility Summit View Water Works
 Private Irrigation Lines: Yes _____ No _____
10. School District Kennewick
11. Fire District Benton
12. Any other comments or information that is significant _____

13. Will this plat be finalized in phases? Yes _____ No _____ If so, how many? 3
14. Comprehensive Plan Designation Rural transition
15. Zoning Designation RL-1

IF YOU HAVE ANY ADDITIONAL COMMENTS PLEASE ATTACH THEM ON A SEPARATE SHEET OF PAPER.

I also certify that the information given in this application is true and complete to the best of my knowledge.

Signature Block for individuals only.

_____	_____	_____
Applicant's Signature	Print Name	Date
_____	_____	_____
Signature of Legal Owners	Print Name	Date
_____	_____	_____
Signature of Person with additional ownership interest	Print Name	Date

ALL persons with an ownership interest in the property on which the land use action is proposed must sign the application other than interests exclusively limited to ownership of the parcel's mineral rights.

If the applicant or owner is a corporation/partnership/LLC etc. please use the following signature block. Please copy this page if more than one corporation/partnership/LLC signature is required.

Applicant or legal owner: CANDY MOUNTAIN L.L.C.

By: GEOFFREY CLARK Managing Member
(print name) (Title)

Signature: [Handwritten Signature] Managing Member
(Signature) (Title)

The above signed officer of Candy Mountain LLC (name of entity) warrants and represents that all necessary legal and corporate actions have been duly undertaken to permit GEOFFREY T. CLARK to submit this application and that the above signed officer has been duly authorized and instructed to execute this application.

Any information submitted to the Benton County Planning Department is subject to public records disclosure law for the State of Washington (RCW Chapter 42.17) and all other applicable law that may require the release of the documents to the public.

FEE: \$1,000.00, plus \$50.00 per lot submitted with the application. Checks are to be **made payable to the Benton County Treasurer. THIS FEE IS NON-REFUNDABLE. THE RECORDING FEE IS TO BE PAID AT THE TIME OF RECORDING.**

<p>FOR OFFICIAL USE ONLY:</p> <p>Critical Area Review Completed by _____ on _____.</p> <p>Application approved for processing by _____ on _____</p> <p>Zoning _____ Comp Plan Designation _____</p>
--

Badger Mountain South
Richland, WA

Transportation Impact Analysis

May 14, 2021

Prepared for:

*Nor Am Investment, LLC
4405 71st Avenue Court NW
Gig Harbor, WA 98335*

Prepared by:



Transportation Engineering NorthWest

11400 SE 8th Street, Suite 200
Bellevue, WA 98004
(425) 889-6747

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INTRODUCTION

This transportation impact analysis (TIA) has been prepared for the Badger Mountain South development located on the north side of I-182 and east of Dallas Road in Richland, WA.

Project Description

Badger Mountain South (BMS) is a large mixed-use, multi-phased development on approximately 1,500 acres located in the Badger Mountain Subarea of Richland, WA. The BMS site is located north of I-182 and east of Dallas Road and is generally divided into six neighborhoods (BMS Station, West Village, West Vineyard, East Garden, East Market and South Orchard) as shown in the **Figure 1** vicinity map. As of November 2020, Phase 1 (approximately 700 dwelling units and 22,000 square feet of commercial use) had been constructed. Full project buildout is expected to be complete by 2040 and is anticipated to include a total of approximately 4,600 residential dwelling units (both single family and multifamily) and approximately 1,017,000 square feet of commercial development.

Vehicular access to/from the BMS site is currently provided via Dallas Road only. However, under full buildout of the development in 2040, vehicular access to the BMS site will be provided from Dallas Road, Reata Road, and via the future planned extension of Gage Blvd to/from the east. A preliminary site plan illustrating the anticipated buildout of the BMS site over the next 20 years is shown in **Figure 2**.

History and Purpose

Transportation impacts associated with the development of Badger Mountain South were evaluated in the 2010 Badger Mountain South Final Supplemental EIS (FSEIS). The subsequent Badger Mountain South Subarea Plan and approved Master Agreement (2015) were based on the FSEIS analysis. Exhibit B of the 2015 Master Agreement (conditions of approval) outlines several traffic mitigation measures to be completed with the first 1,000 PM peak hour trips generated by Badger Mountain South (referred to as Phase 1). Exhibit B of the Master Agreement also documents the need for a TIA to be provided to the City for every 500 trips generated after the BMS Phase 1 threshold has been reached in order to identify potential off-site improvements beyond Phase 1 of BMS.

This Traffic Impact Analysis (TIA) was prepared to meet the requirement of the Master Agreement condition of approval for evaluation of traffic impacts beyond the development of BMS Phase 1. The analysis included in this TIA is intended to evaluate traffic impacts of an additional 500 PM peak hour project trips as well as full buildout of the BMS development and to develop a mitigation strategy to address future roadway and intersection deficiencies as a result of buildout of BMS and growth in background traffic to the year 2040.

Project Approach and Study Scope

The detailed scope of work for this TIA was established through correspondence with the City of Richland. A total of 24 off-site study intersections and 12 on-site study intersections were identified for evaluation during both the AM and PM peak hours. Additionally, the City asked for evaluation of four future development years (2025, 2030, 2035 and 2040) in order to assist with identifying the future development phases of BMS for which transportation mitigation will be needed.

The scope of work for this TIA is significantly different and more extensive than the traffic analysis included in FSEIS which analyzed a total of 11 off-site study intersections and 4 on-site study intersections for the PM peak hour only.

To analyze the transportation impacts from buildout of the Badger Mountain South development, the following tasks were undertaken:

- Assessed existing conditions through field reconnaissance and reviewed existing planning documents.
- Described existing roads, pedestrian facilities, and transit facilities in the project vicinity.
- Documented existing (2021) traffic volumes and intersection level of service (LOS) at 22 off-site study intersections during the weekday AM and PM peak hours:
- Documented planned roadway improvements in the project vicinity.
- Developed weekday daily, AM peak hour, and PM peak hour trip generation estimates for four future development years (2025, 2030, 2035, and 2040).
- Summarized traffic modeling information obtained from BFCG to determine the project trip distribution.
- Documented trip distribution and assignment of AM and PM peak hour project trips.
- Documented AM and PM peak hour traffic forecasts and assumptions for year 2040 conditions with full buildout of Badger Mountain South.
- Analyzed weekday AM and PM peak hour LOS for future year 2040 conditions with full project buildout at 24 off-site study intersections.
- Analyzed weekday AM and PM peak hour LOS for future year 2040 full buildout conditions at 12 on-site intersections and identified preliminary traffic control and channelization.
- Documented preliminary roadway functional classifications for internal roadways.
- Evaluated and documented potential mitigation measures at off-site intersections forecast to operate at LOS E or LOS F in 2040.

Primary Data and Information Sources

- Institute of Transportation Engineers (ITE) *Trip Generation Manual*, 10th edition, 2017.
- Peak Hour traffic counts by IDAX, November 2020.
- Peak Hour traffic counts by City of Richland, March 2021.
- *Highway Capacity Manual (HCM)*, 6th Edition, TRB.
- City of Richland *2021-2026 Six Year Transportation Improvement Program (TIP)*.
- City of West Richland *2021-2026 Six Year Transportation Improvement Program (TIP)*.
- Benton Franklin Council of Governments *2021-2024 Transportation Improvement Program (TIP)*
- WSDOT *2021-2024 Statewide Transportation Improvement Program (STIP)*.

- City of Richland *Comprehensive Plan*, 2017.
- Badger Mountain South Sub Area Plan, 2010.
- Badger Mountain South Final Supplemental EIS, 2010.
- Benton Franklin Council of Governments traffic modeling.
- Ben Franklin Transit webpage, www.bft.org, May 2021.

Report Organization

This TIA report is organized to first describe Existing Conditions in the study area of the BMS development, which includes AM and PM peak hour traffic volumes and intersection operations. Then future year conditions are described in year 2040 to reflect full buildout of the BMS development and growth in background traffic. Evaluation of existing and future conditions uses intersection level of service (LOS) to identify locations where future improvements will be necessary to maintain acceptable LOS operations by 2040. Finally, a Mitigation section provides a description of transportation roadway and intersection improvements needed to accommodate buildout of BMS while accounting for growth in background traffic. The mitigation section is intended to provide a list of improvements to be used to monitor and identify road and intersection improvements as buildout of BMS occurs over the next 20 years.

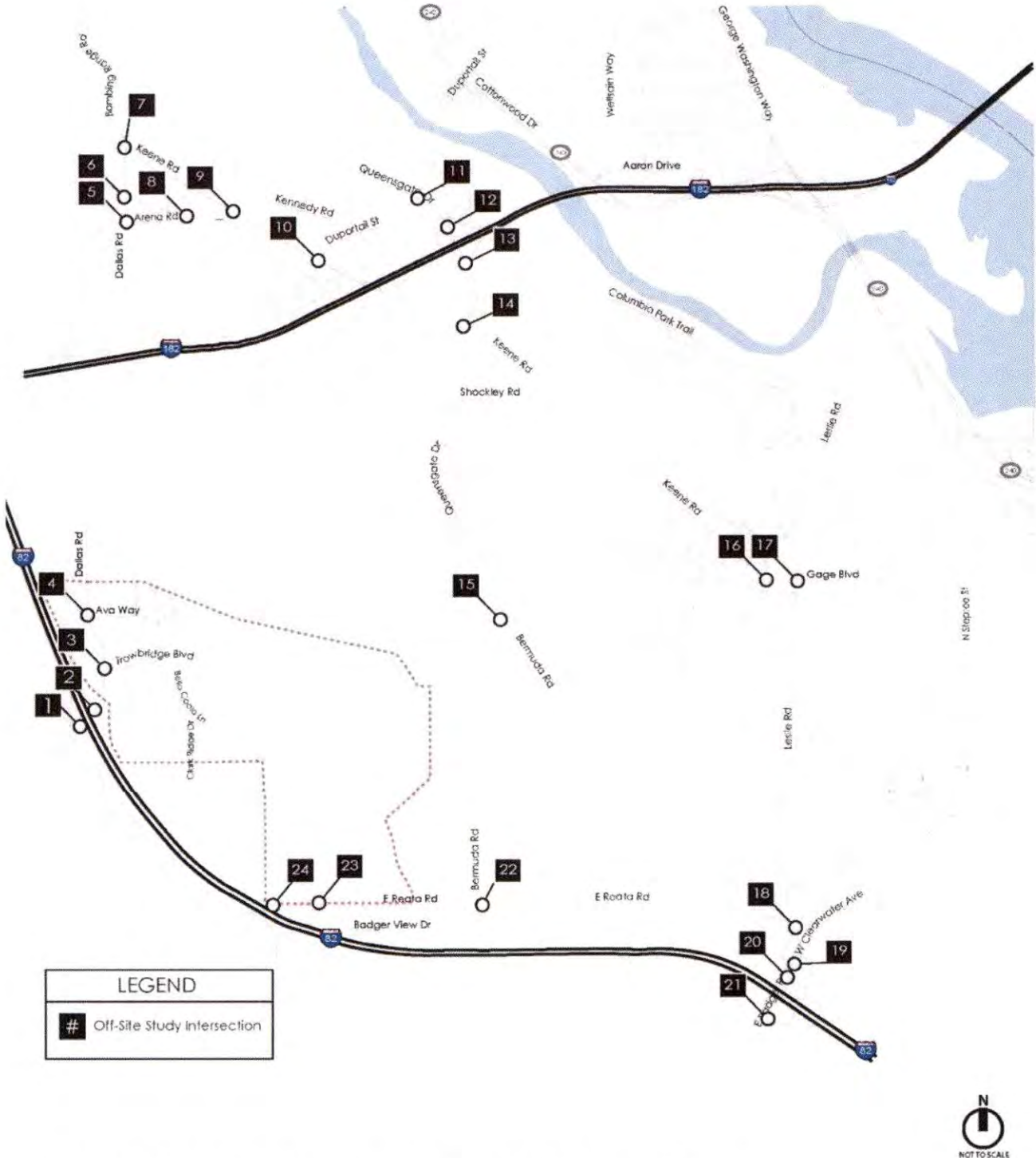


Figure 1: Project Site Vicinity and Off-Site Study Intersections

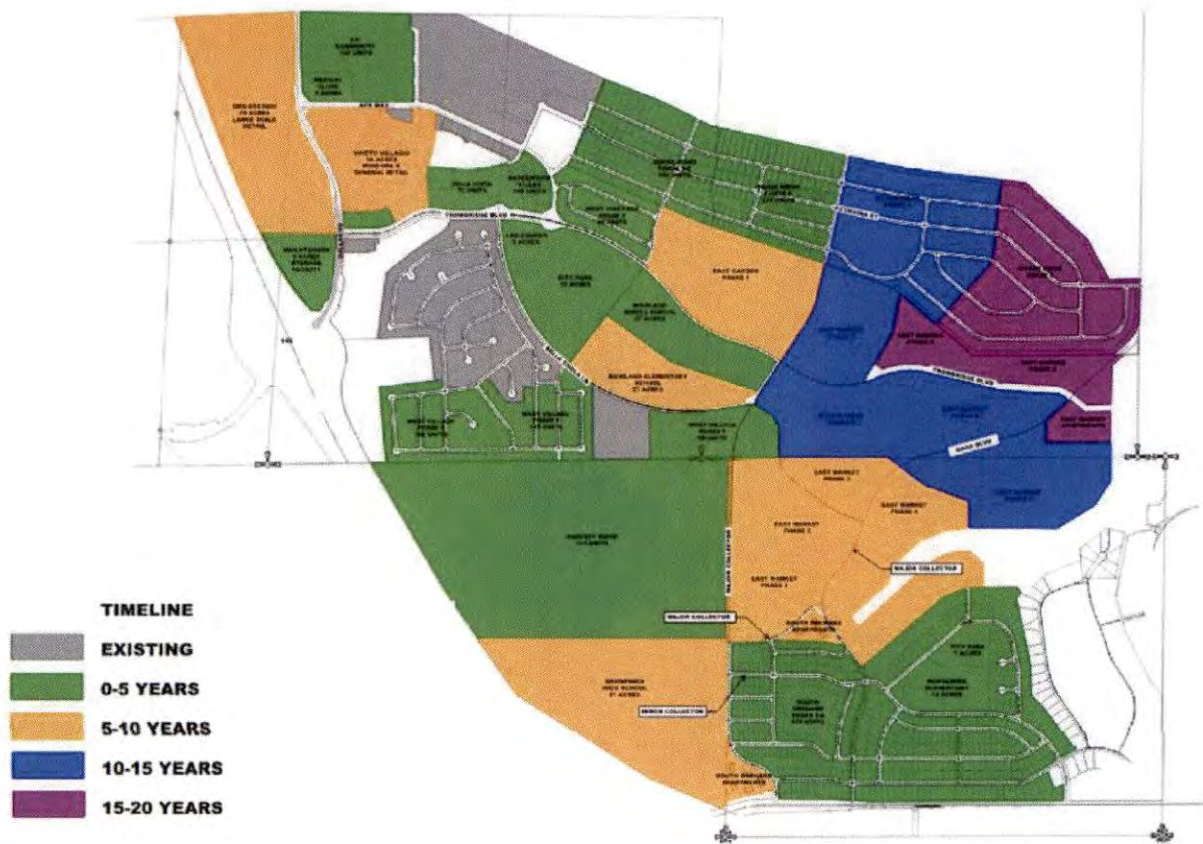


Figure 2: Preliminary Site Plan for Full Buildout of BMS



EXISTING CONDITIONS

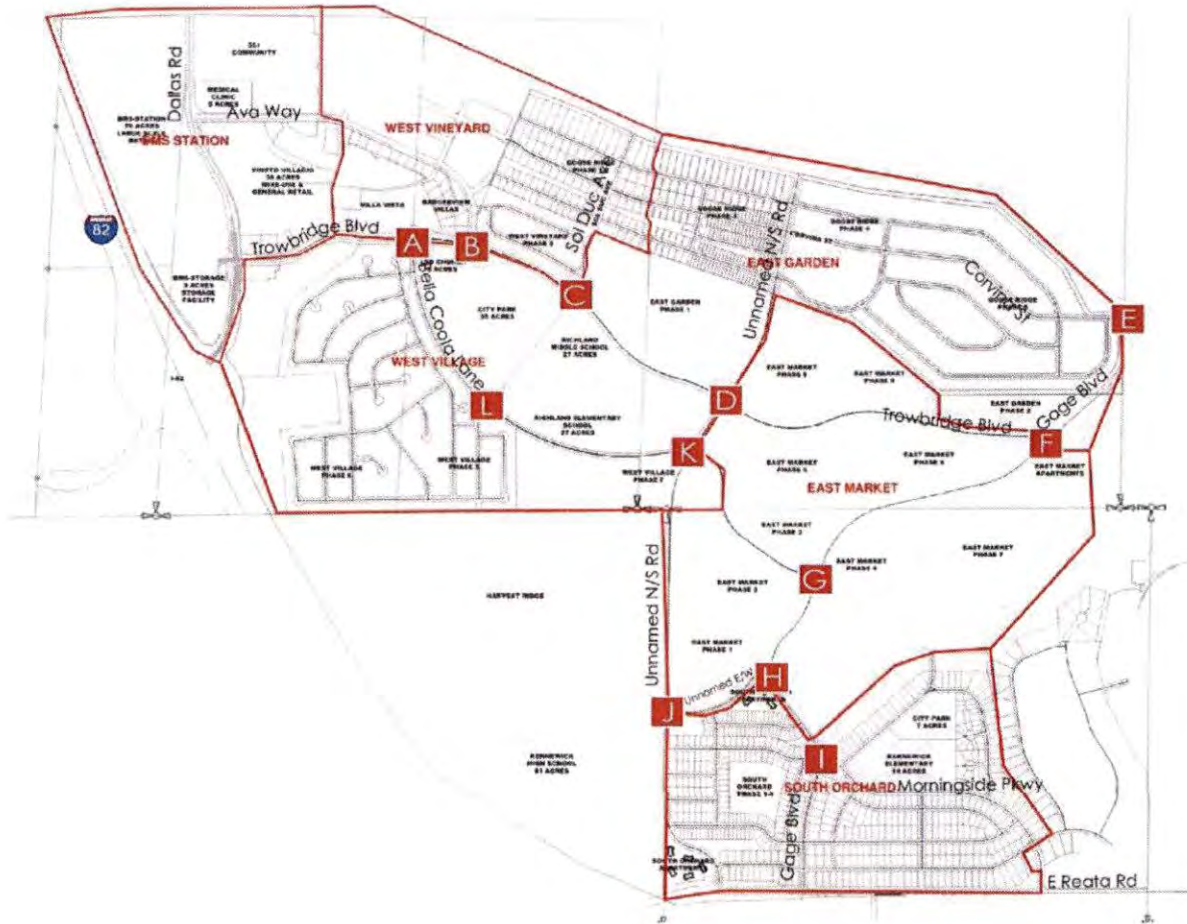
Study Area

The existing transportation study area and roadway network providing access to the Badger Mountain South site is shown on **Figure 1**. The off-site study intersections evaluated in this transportation analysis were identified and agreed upon by the City of Richland. The 24 off-site study intersections and their corresponding jurisdiction are as follows (see also **Figure 1**):

1. Dallas Road / I-82 Eastbound Ramps (WSDOT)
2. Dallas Road / I-82 Westbound Ramps (WSDOT)
3. Dallas Road / Trowbridge Blvd (Richland)
4. Dallas Road / Ava Way (Richland)
5. Dallas Road / Arena Road (West Richland)
6. Bombing Range Road / Kennedy Road (West Richland)
7. Bombing Range Road / Keene Road (West Richland)
8. Arena Road / Kennedy Road (West Richland)
9. Kennedy Road / Keene Road (West Richland)
10. Duportail Street / Keene Road (Richland)
11. Duportail Street / Queensgate Drive (Richland)
12. Queensgate Drive / I-82 Westbound Ramps (WSDOT)
13. Queensgate Drive / I-82 Eastbound Ramps (WSDOT)
14. Queensgate Drive / Keene Road (Richland)
15. Gage Blvd / Queensgate Drive / Bermuda Road (Richland) – *Future Intersection*
16. Keene Road / Gage Blvd (Richland)
17. Leslie Road / Gage Blvd (Richland)
18. Leslie Road / Reata Road (Richland)
19. Leslie Road / Badger Road / Clearwater Avenue (Richland)
20. Badger Road / I-82 Westbound Ramps (WSDOT)
21. Badger Road / I-82 Eastbound Ramps (WSDOT)
22. Bermuda Road / Reata Road (Benton County)
23. Gage Blvd / Reata Road (Benton County) – *Future Intersection*
24. Unnamed Road / Reata Road (Benton County) – *Future Intersection*

In addition to the 24 off-site study intersections, a total of 12 on-site (internal) study intersections were identified by the City of Richland (see **Figure 3**):

- A. Bella Coola Lane / Trowbridge Blvd
- B. Ava Way / Trowbridge Blvd
- C. Sol Duc Ave / Trowbridge Blvd
- D. Unnamed N/S Road / Trowbridge Blvd
- E. Gage Blvd / Trowbridge Blvd
- F. Gage Blvd / Corvina Street
- G. Gage Blvd / Bella Coola Lane
- H. Gage Blvd / Unnamed E/W Road
- I. Gage Blvd / Morningside Parkway
- J. Unnamed N/S Road / Unnamed E/W Road
- K. Unnamed N/S Road / Bella Coola Lane
- L. Clark Ridge Dr / Bella Coola Lane



LEGEND	
	On-Site Study Intersection



Figure 3: On-Site Study Intersections

Roadway Network

Table 1 describes the existing characteristics of the streets used as primary routes to and from the BMS site. Roadway characteristics are described in terms of orientation, arterial classification, number of lanes, posted speed limits, parking, pedestrian facilities, and bicycle facilities. The relationship of these roadways to the project site is shown in Figure 1. An aerial view of the transportation network in the site vicinity is shown on the next page.

Table 1
Existing Study Area Roadway Network

Roadway	Orientation	Existing Functional Classification	# of Travel Lanes	Posted Speed Limit (mph)	Parking	Sidewalks	Bicycle Facilities
Interstate 82 (I-82)	EW	Interstate	4	70	No	No	None
Interstate 182 (I-182)	E/W	Interstate	4	70	No	No	None
Dallas Rd	N/S	Major Collector	2+	35/50	No	No	None
Trowbridge Blvd	E/W	Local Street	2	30	No	Intermittent	None
Ava Way	E/W	Local Street	2	25	No	Intermittent	None
Bombing Range Rd	N/S	Minor Arterial	2+	35	No	Both Sides	None
Kennedy Rd	E/W	Major Collector	2	40	No	Intermittent	None
Keene Rd	NW/SE	Principal Arterial	4+	30/45	No	Intermittent	Bike Path on One Side
Duportail St	N/S	Minor Arterial	4+	30	No	Both Sides	None
Queensgate Dr	N/S	Minor Arterial	4+	35	No	Both Sides	Bike Lanes on Both Sides
Gage Blvd	E/W	Collector Arterial	4+	30	No	Intermittent	None
Leslie Rd	N/S	Minor Arterial	2+	35	No	Intermittent	None
Reata Rd	E/W	Major Collector	2	40	No	No	None

+ includes center two-way left-turn lane (TWLTL)

The following describes the primary roads providing access to the Badger Mountain South area in more detail.

Interstate 82 (I-82) is an east-west limited access freeway that connects I-90 in central Washington to I-84 in Oregon. In the project vicinity, I-82 consists of two travel lanes in each direction with a posted speed limit of 70 mph (60 mph for trucks). Paved shoulders exist on both sides of the highway. In the vicinity of Badger Mountain there is an interchange with I-82 at E Badger Rd (Exit 109), an interchange with I-82 at Dallas Road (Exit 104) and an interchange with I-82 at I-182 (Exit 102). The I-82 interchange at Dallas Rd provides primary access to the project site.

Interstate 182 (I-182) / US 12 is an east-west interstate freeway that connects the Tri Cities area between I-82 and the City of Walla Walla. In the project vicinity, I-182 consists of two travel lanes in each direction with a posted speed limit of 70 mph (60 mph for trucks). Paved shoulders exist on both sides of the highway. In the vicinity of the project site, there is an interchange with I-182 at I-

82 (Exit 102) and an interchange with I-182 at Queensgate Drive (Exit 3). The I-182 interchange at Queensgate Drive provides primary access to West Richland to the northwest and the City of Kennewick to the southeast.

Dallas Road is a north-south major collector consisting of two lanes (one in each direction) and a posted speed limit of 35 to 50 mph. Dallas Road provides access to the BMS project site from its interchange with I-82. Paved shoulders exist on both sides of the roadway.

Gage Blvd is an east-west minor arterial consisting of two lanes in each direction with a center two way left turn lane. Gage Blvd connects the commercial area of Kennewick to residential Richland. The posted speed is 30 mph and sidewalks exist on both sides of the roadway east of Keene Road. A future planned extension will connect Gage Blvd to Reata Road through the BMS site.

Reata Road is an east-west major collector consisting of two lanes in each direction and a posted speed limit of 40 mph. Gravel shoulders exist on both sides of the roadway. Reata Road provides a connection between Dallas Road and Leslie Road along the southern boundary of the BMS site.

Nonmotorized Transportation Facilities

Pedestrian facilities in the immediate project vicinity include intermittent sidewalks on the north side of Ava Way, a paved pedestrian path on the southern side of Ava Way, and a paved pedestrian path on the south side of Trowbridge Blvd. The Badger Mountain Trailhead Park Loop, Canyon Trail, Langdon Trail, Sagebrush Trail and Skyline Trail are located directly north of the project site and are protected trails for pedestrians and bicycles. Other pedestrian facilities include curb ramps and crosswalks at the majority of the study intersections. There are no designated bicycle lanes in the immediate vicinity of the site.

Transit Service

Transit service to and from the project vicinity is provided by Ben Franklin Transit (BFT). There is no existing transit service in the vicinity of the BMS project site.

Existing Traffic Volumes

Year 2021 existing weekday AM and PM peak hour traffic volumes at the existing 22 off-site study intersections were based on counts conducted in November 2020 and March 2021. The AM peak hour represents the highest one-hour time period between 7:00 and 9:00 AM and the PM peak hour represents the highest one-hour time period between 4:00 and 6:00 PM (standard ITE-defined peak period).

To calculate the impact of COVID-19 on existing peak hour traffic volumes collected in November 2020 and March 2021, the peak hour traffic volumes were compared to available historical peak hour traffic volumes provided by the City of Richland, the Benton Franklin Council of Governments, and other traffic studies in the project vicinity with an estimated growth rate of 1.2 percent applied to the historical volumes to estimate existing "normal" conditions. The 1.2 percent annual growth rate was based on a review of historical traffic volumes in the project vicinity.

Based on the results of this volume comparison, to estimate "normal" 2020 existing traffic volumes for non-COVID conditions, the traffic counts collected in November 2020 were increased by 25 percent during the AM peak hour and 15 percent during the PM peak hour. Similarly, traffic counts

collected in March 2021 were increased by 15 percent during the AM peak hour and 5 percent during the PM peak hour to estimate "normal" 2021 existing traffic volumes.

The 2021 "normal" weekday AM and PM peak hour traffic volumes at the 24 off-site study intersections are illustrated in Error! Reference source not found. and Error! Reference source not found., respectively. The traffic count sheets are included in Appendix A.

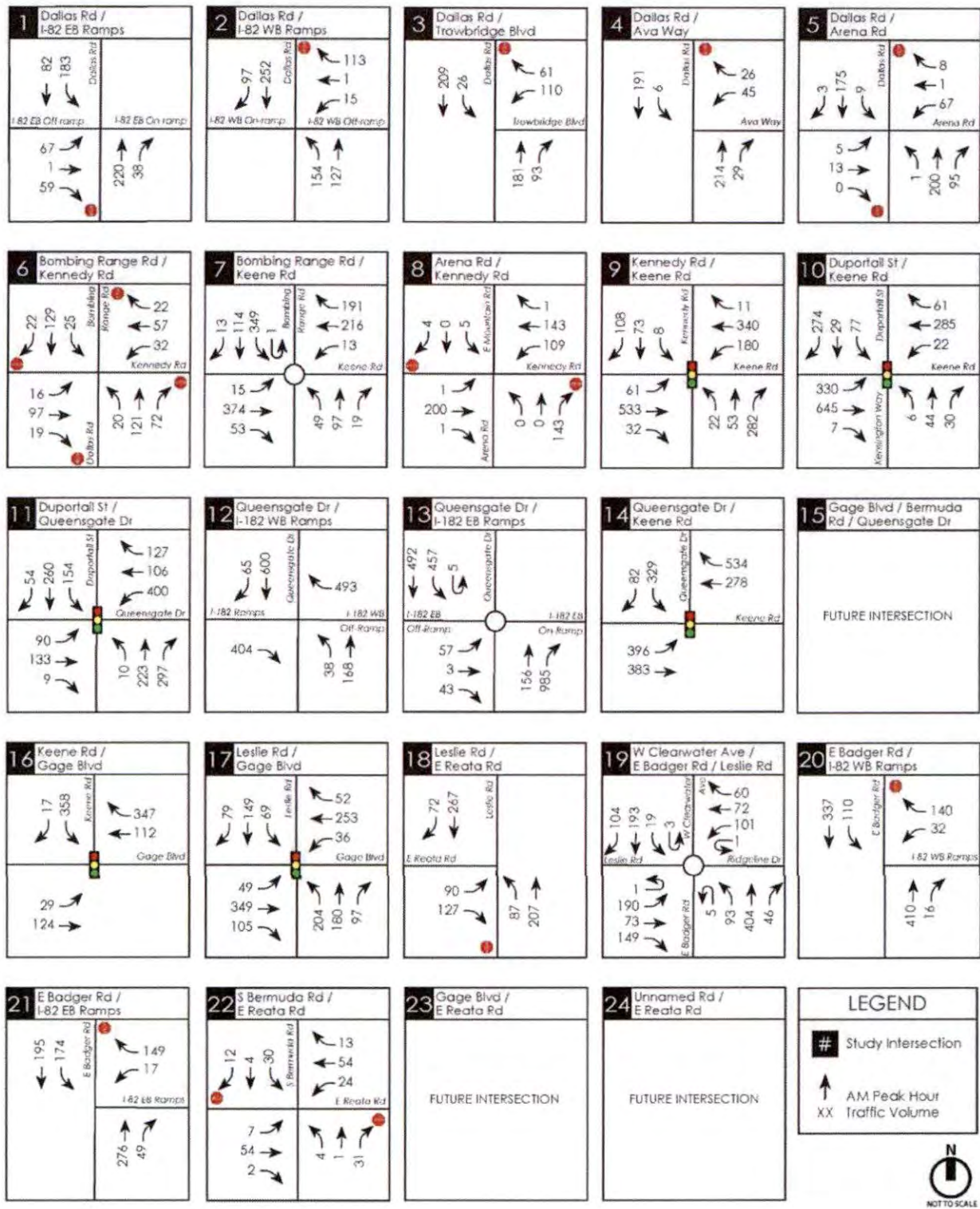


Figure 4: 2021 Existing Weekday AM Peak Hour Traffic Volumes

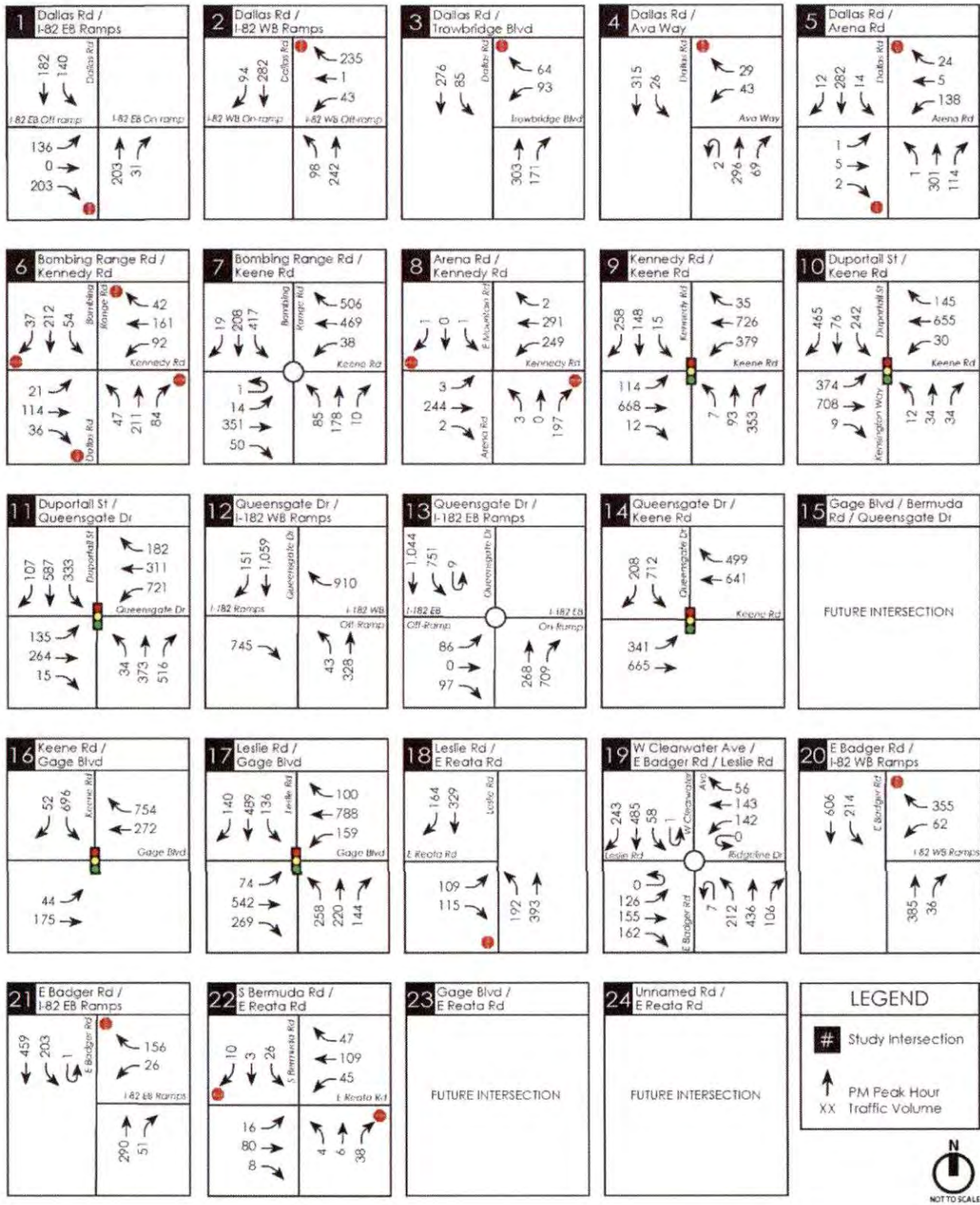


Figure 5: 2021 Existing Weekday PM Peak Hour Traffic Volumes

Existing Level of Service

Based on extensive scoping discussions with the City of Richland, existing weekday AM and PM peak hour level of service (LOS) analyses were conducted at 22 existing off-site study intersections (two of the off-site intersections identified as study intersections are not existing intersections but will be future intersections with the development of BMS).

LOS generally refers to the degree of congestion on a roadway or intersection. It is a measure of vehicle operating speed, travel time, travel delays, and driving comfort. A letter scale from A to F generally describes intersection LOS. At signalized intersections, LOS A represents free-flow conditions (motorists experience little or no delays), and LOS F represents forced-flow conditions where motorists experience an average delay in excess of 80 seconds per vehicle.

The LOS reported for signalized intersections represents the average control delay (sec/veh) and can be reported for the overall intersection, for each approach, and for each lane group (additional v/c ratio criteria apply to lane group LOS only).

The LOS reported at stop-controlled intersections is based on the average control delay and can be reported for each controlled minor approach, controlled minor lane group, and controlled major-street movement (and for the overall intersection at all-way stop controlled intersections. Additional v/c ratio criteria apply to lane group or movement LOS only).

Table 2 outlines the current HCM 6th Edition LOS criteria for signalized and stop-controlled intersections based on these methodologies.

Table 2
LOS Criteria for Signalized and Stop Controlled Intersections

SIGNALIZED INTERSECTIONS			UNSIGNALIZED INTERSECTIONS		
Control Delay (sec/veh)	LOS by Volume-to Capacity (V/C) Ratio ¹		Control Delay (sec/veh)	LOS by Volume-to Capacity (V/C) Ratio ²	
	≤ 1.0	> 1.0		≤ 1.0	> 1.0
≤ 10	A	F	≤ 10	A	F
> 10 to ≤ 20	B	F	> 10 to ≤ 15	B	F
> 20 to ≤ 35	C	F	> 15 to ≤ 25	C	F
> 35 to ≤ 55	D	F	> 25 to ≤ 35	D	F
> 55 to ≤ 80	E	F	> 35 to ≤ 50	E	F
> 80	F	F	> 50	F	F

Source: Highway Capacity Manual, Transportation Research Board, 6th Edition, 2016.

¹ For approach-based and intersection-wide assessments at signals, LOS is defined solely by control delay.

² For two-way stop controlled intersections, the LOS criteria apply to each lane on a given approach and to each approach on the minor street. LOS is not calculated for major-street approaches or for the intersection as a whole at two-way stop controlled intersections. For approach-based and intersection-wide assessments at all-way stop controlled intersections and roundabouts, LOS is solely defined by control delay.

LOS calculations were based on methodology and procedures outlined in the 6th Edition of the *Highway Capacity Manual* using *Synchro 10* and *SIDRA 9* traffic analysis software. Existing signal timing at the signalized study intersections was provided by the City of Richland.

The 2021 existing AM and PM peak hour LOS analysis results at the 22 existing off-site study intersections are summarized in **Table 3** (for signals and roundabouts) and **Table 4** (for stop-controlled). The LOS worksheets are included in **Appendix B**. It should be noted that study intersection # 12 (Queensgate Dr / I-182 WB Ramps) is not included in **Table 3** or **Table 4** because

all movements at the intersection are uncontrolled and thus do not have any vehicular delay associated with them.

Table 3
2021 Existing Peak Hour LOS Summary at Off-Site Study Intersections (signals and roundabouts)

Study Intersection	AM Peak Hour		PM Peak Hour	
	LOS	Delay (sec)	LOS	Delay (sec)
<u>Signalized Intersections</u>				
9. Kennedy Road / Keene Road	C	22.8	C	27.5
10. Duportail Street / Keene Road	C	27.3	C	26.3
11. Duportail Street / Queensgate Drive	C	30.5	C	27.3
14. Queensgate Drive / Keene Road	B	18.8	C	24.4
16. Keene Road / Gage Blvd	B	14.0	B	14.1
17. Leslie Road / Gage Blvd	C	28.4	D	53.4
<u>Roundabout Intersections</u>				
7. Bombing Range Road / Keene Road	A	8.9	C	18.2
13. Queensgate Drive / I-182 EB Ramps	A	5.9	A	6.4
19. Badger Road / Clearwater Ave / Leslie Road	A	8.2	A	9.5

Table 4
2021 Existing Peak Hour LOS Summary at Off-Site Study Intersections (stop-controlled)

Study Intersection / Movement	AM Peak Hour		PM Peak Hour	
	LOS	Delay (sec)	LOS	Delay (sec)
<u>All-Way Stop Controlled Intersection</u>				
6. Bombing Range Road / Kennedy Road	A	9.7	C	15.9
<u>Two-Way Stop Controlled Intersections</u>				
1. Dallas Road / I-82 EB Ramps				
Eastbound Approach	C	21.5	E	41.1
Southbound Left-Turn	A	8.5	A	8.1
2. Dallas Road / I-82 WB Ramps				
Westbound Approach	B	11.2	C	16.9
Northbound Left-Turn	A	8.8	A	8.7
3. Dallas Road / Trowbridge Blvd				
Westbound Approach	B	14.3	C	22.2
Southbound Left-Turn	A	8.1	A	8.8
4. Dallas Road / Ava Way				
Westbound Approach	B	11.7	C	15.8
Southbound Left-Turn	A	8.0	A	8.2
5. Dallas Road / Arena Road				
Eastbound Approach	B	13.7	C	15.7
Westbound Approach	C	15.7	E	41.8
Northbound Left-Turn	A	7.6	A	7.9
Southbound Left-Turn	A	7.9	A	8.3
8. Arena Road / Kennedy Road				
Eastbound Left-Turn	A	7.5	A	7.8
Westbound Left-Turn	A	8.0	A	8.4
Northbound Approach	B	10.7	B	11.7
Southbound Approach	C	15.4	D	25.5
18. Leslie Road / Reata Road				
Eastbound Left-Turn	C	17.5	C	24.7
Eastbound Right-Turn	B	12.1	B	11.3
Northbound Left-Turn	A	8.8	A	9.3
20. Badger Road / I-82 WB Ramps				
Westbound Shared Left-Right	D	27.1	F	58.0
Southbound Left-Turn	A	9.7	A	9.0
21. Badger Road / I-82 EB Ramps				
Westbound Approach	C	16.5	C	15.1
Southbound Left-Turn	A	9.3	A	8.7
22. Bermuda Road / Reata Road				
Eastbound Left-Turn	A	7.5	A	7.6
Westbound Left-Turn	A	7.5	A	7.5
Northbound Approach	A	9.2	A	9.9
Southbound Approach	B	10.7	B	12.0

AM Peak Hour

As shown in Table 3, all signalized and roundabout study intersections are currently operating at LOS C or better during the AM peak hour.

As shown in Table 4, the all-way stop controlled study intersection and all individual lane groups at the stop controlled study intersections are currently operating at LOS D or better during the AM peak hour.

PM Peak Hour

As shown in Table 3, all signalized and roundabout study intersections are currently operating at LOS D or better during the PM peak hour.

As shown in Table 4, the all-way stop controlled study intersection and all individual lane groups at the stop controlled study intersections are currently operating at LOS D or better during the PM peak hour with exception to the following:

- #1 Dallas Road/I-82 EB Ramps – the eastbound approach is currently operating at LOS E
- #5 Dallas Road/Arena Road – the westbound approach is currently operating at LOS E
- #20 Badger Road/I-82 WB Ramps – the westbound approach is currently operating at LOS F

FUTURE YEAR TRAFFIC ANALYSIS

This section provides information related to future planned roadway improvements, weekday AM and PM peak hour traffic volumes, and peak hour LOS at study intersections in year 2040. The 2040 traffic conditions account for buildout of the BMS development and growth in background traffic. Level of service (LOS) evaluation during weekday AM and PM peak hours is used to identify locations where future improvements will be necessary to maintain acceptable LOS operations by 2040. Locations where improvements are needed are then addressed later in the Mitigation Measures section of the report.

Planned Transportation Improvements

This section describes the planned transportation improvements located within the project study area. The following planning documents were reviewed to document planned capacity-related transportation improvements located within the project study area. It should be noted that planned improvements are noted for the next 6-year period; road and intersection improvements beyond 2026 are not clearly identified.

- Benton-Franklin Council of Governments 2021-2024 Transportation Improvement Program (TIP)
- City of Richland 2021-2026 Transportation Improvement Program (TIP)
- City of West Richland 2021-2026 Transportation Improvement Program (TIP)
- WSDOT 2021-2024 Statewide Transportation Improvement Program (STIP)

City of Richland 2021 – 2026 TIP

16. Gage Blvd Improvements. Improvements of Gage Blvd from Penny Royal Ave to Morency Dr. The project involves the addition of curbs, gutter, sidewalks, bike lanes, street lights, and storm drainage. Construction is anticipated to start in 2024.

17. Queensgate Drive Extension Phase I. Extension of Queensgate Dr from Shockley Rd to Keene Rd. The new roadway will have three lanes with curbs, gutter, sidewalks, bike lanes, street lights, and storm drainage. Construction is anticipated to start in 2025.

22. Dallas Road / Trowbridge Blvd Intersection Improvements. Improvements of the Dallas Rd and Trowbridge Blvd intersection. The project involves the reconstruction of the intersection to provide for added capacity. Construction is anticipated to start in 2024.

23. Dallas Road / I-82 WB Ramps Intersection Improvements. Improvements of the Dallas Rd and I-82 WB ramps intersection. The project involves the reconstruction of the ramp and intersection to provide for added capacity. Construction is anticipated to start in 2025.

24. Dallas Road / I-82 EB Ramps Intersection Improvements. Improvements of the Dallas Rd and I-82 EB ramps intersection. The project involves the reconstruction of the ramp and intersection to provide for added capacity. Construction is anticipated to start in 2025.

25. Dallas Road / Ava Way Intersection Improvements. Improvements of the Dallas Rd and Ava Way intersection. The project involves the reconstruction of the intersection to provide for added capacity. Construction is anticipated to start in 2024.

26. **Gage Blvd Extension.** Extension of Gage Blvd from Morency Dr to Queensgate Blvd. The new roadway will have three lanes with curbs, gutter, sidewalks, bike lanes, street lights, and storm drainage. Construction is anticipated to start in 2025.

27. **Dallas Road Widening.** Widening of Dallas Rd from city limits to I-82. The new roadway will have four lanes with curbs, gutter, sidewalks, bike lanes, street lights, and storm drainage. Construction is anticipated to start in 2026.

28. **Shockley Road Extension.** Extension of Shockley Rd from Keene Rd to south of Badger Valley Way. The new roadway will have two lanes with curbs, gutter, sidewalks, bike lanes, street lights, and storm drainage. Construction is anticipated to start in 2026.

29. **Trowbridge Blvd – Ava Way to B-C.** Extension of Trowbridge Blvd from Ava Way to Road B-C. The new roadway will have two lanes with curbs, gutter, sidewalks, bike lanes, street lights, and storm drainage. Construction is anticipated to start in 2025.

30. **Bella Coola Lane – Trowbridge Blvd to Road B-C.** Construction of Bella Coola Ln from Trowbridge Blvd to Road B-C. The new roadway will have two lanes with curbs, gutter, sidewalks, bike lanes, street lights, and storm drainage. Construction is anticipated to start in 2025.

31. **Road B-C / Trowbridge Blvd Intersection Improvements.** Construction of the Road B-C/Trowbridge Blvd intersection. Construction is anticipated to start in 2026.

32. **Road B-C.** Construction of Road B-C from Corvina St to Queensgate Drive. The new roadway would include two lanes with curb, gutter, sidewalk, bike lanes, street lights, and storm drainage. Construction is anticipated to start in 2026.

33. **Queensgate Drive Extension – Phase II.** Construction of the Queensgate Drive Extension from Legacy Lane to the Richland city limits. The new roadway would be a 2-lane collector with curb, gutter, sidewalk, bike lanes, street lights, and storm drainage facilities. Construction is anticipated to start in 2026.

36. **Kingsgate Corridor Improvements.** Construction of Kingsgate Way from Kennedy Road to SR 240. The new 2-lane roadway and bridge over the Yakima River would include curb, gutter, sidewalk, bike lanes, street lights and storm drainage facilities. Construction is anticipated to start in 2026.

City of West Richland TIP

Bombing Range Road / Keene Road Intersection Modifications. This project would signalize the intersection and construct associated lane improvements. Construction is anticipated to occur in 2025.

Bombing Range Road / Kennedy Road Intersection Modifications. This project would construct intersection modifications which may include signalization of the intersection.

WSDOT 2021 – 2024 STIP

Dallas Road Bike Path Project (MP 2.20 to MP 4.22). This project will widen the shoulders of Dallas Road to include bicycle lanes on both sides of the road. Construction is anticipated to start in 2021.

Bombing Range Road / Keene Road Intersection Modifications. This project would signalize the intersection. Construction is anticipated to occur in 2025.

Future Year 2040 Roadway Network

The roadway network assumed in the future year 2040 LOS analysis at the 24 off-site study intersections was based on existing intersection geometry with exception to the following:

- **#1 Dallas Road / I-82 Eastbound Ramps** – this intersection was assumed to include a southbound left-turn lane as identified in the BMS Master Agreement for Phase 1.
- **#2 Dallas Road / I-82 Westbound Ramps** – this intersection was assumed to include a westbound right-turn lane, a northbound left-turn lane, and a southbound right-turn lane as identified in the BMS Master Agreement for Phase 1.
- **#3 Dallas Road / Trowbridge Blvd** – this intersection was assumed to account for Dallas Road being widened to 4 lanes south of Trowbridge Blvd as identified in the BMS Master Agreement for Phase 1 and was assumed to be a 4-leg roundabout.
- **#4 Dallas Road / Ava Way** – this intersection was assumed to include turn lanes on Dallas Road as identified in the BMS Master Agreement for Phase 1 and was assumed to be unsignalized with Dallas Road free flow and Ava Way stop-controlled. A new west leg of the intersection was included at this intersection to account for planned BMS development in the BMS Station neighborhood west of Dallas Road.
- **#7 Bombing Range Road / Keene Road** – this intersection was assumed to be reconstructed from an existing roundabout to a signalized intersection per a City of West Richland TIP project. Channelization improvements include the following: two eastbound through lanes with separate eastbound right and left-turn lanes; two westbound through lanes with separate westbound right and left-turn lanes; a northbound left-turn lane plus a shared through-right-turn lane; and dual southbound left-turn lanes plus a shared through-right-turn lane.
- **#14 Queensgate Drive / Keene Road** – this intersection was assumed to include a new south leg as part of the Queensgate Drive Extension project identified in the City of Richland's 2021-2026 TIP. Channelization improvements include the following: two eastbound through lanes with separate right and left-turn lanes; two westbound through lanes with separate right and left-turn lanes; a northbound left-turn lane plus a shared through-right-turn lane; and dual southbound left-turn lanes with separate through and right-turn lanes.
- **#15 Gage Blvd / Queensgate Drive / Bermuda Road** – this intersection will be a new unsignalized intersection as part of the Queensgate Drive Extension Project identified in the City of Richland's 2021-2026 TIP and was assumed to be all-way stop controlled with the eastbound, southbound, and northbound approaches consisting of a left-turn lane and shared through-right-turn lane. The east leg (westbound approach) of the intersection was assumed to be a single-lane (shared left-through-right).
- **#23 Gage Blvd / Reata Road** – a new unsignalized intersection was assumed at this location with Reata Road a single-lane in each direction and free flow. Gage Boulevard was assumed to include separate southbound right and left-turn lanes and be stop-controlled.
- **#24 Unnamed N/S Road / Reata Road** – a new unsignalized intersection was assumed at this location with Reata Road a single-lane in each direction and free flow.

The Unnamed N/S Road is assumed to include separate southbound right and left-turn lanes and be stop-controlled.

Project Land Use Assumptions by Year

Development of the BMS project will occur in phases over the next 20 years with full buildout anticipated to be achieved by 2040. **Table 5** below summarizes the existing BMS development as of November 2020 (when existing traffic volumes were conducted) and the future land use anticipated to be developed by years 2025, 2030, 2035, and 2040 as provided by the applicant/owner. It should be noted that the future land use assumptions by development year and by BMS neighborhood have been provided by the applicant/owner and are based on the best available information the owner/applicant currently has at this time. However, it should be recognized that the assumptions may be updated or changed as the Badger Mountain South project develops over the next 20 years.

Table 5
Project Land Use Summary by Development Year

Land Use	Total Badger Mountain South Land Use				
	Existing (as of Nov 2020)	Year 2025	Year 2030	Year 2035	Year 2040 (Full Buildout)
<i>Residential</i>					
Single Family	428 DU	1,247 DU	1,617 DU	2,152 DU	2,382 DU
Multifamily	283 DU	808 DU	1,258 DU	1,598 DU	2,058 DU
Senior Adult Housing	=	150 DU	150 DU	150 DU	150 DU
Subtotal Residential	711 DU	2,205 DU	3,025 DU	3,900 DU	4,590 DU
<i>Commercial</i>					
Grocery Store	18,030 sf	18,030 sf	18,030 sf	18,030 sf	18,030 sf
Gas Station w/ Market	3,200 sf	3,200 sf	3,200 sf	3,200 sf	3,200 sf
Fast-Food w/ Drive-Thru	700 sf	700 sf	700 sf	700 sf	700 sf
Shopping Center	--	--	260,000 sf	485,000 sf	500,000 SF
Home Improvement Superstore	--	--	--	130,000 sf	130,000 sf
Sporting Goods Superstore	--	--	--	130,000 sf	130,000 sf
Medical Office	--	40,000 sf	40,000 sf	40,000 sf	40,000 sf
Mini-Warehouse	--	175,000 sf	175,000 sf	175,000 sf	175,000 sf
<i>Other</i>					
Church		20,000 sf	20,000 sf	20,000 sf	20,000 sf

In addition to the BMS land use assumptions summarized in **Table 5** above, there are four schools and a separate single family residential plat anticipated to be constructed within the BMS subarea as follows:

- Elementary School (Kennewick School District) – 650 students (by 2025)
- Middle School (Richland School District) – 800 students (by 2025)
- Elementary School (Richland School District) – 650 students (by 2030)
- High School (Kennewick School District) – 2,000 students (by 2030)
- Harvest Ridge Single Family Residential Plat – 143 dwelling units (by 2025)

Project Trip Generation

Trip generation estimates for development of the BMS site in future years 2025, 2030, 2035 and 2040 (full buildout) were based on methodology documented in the Institute of Transportation Engineers (ITE) *Trip Generation Manual*, 10th Edition (2017). *It should be noted that although trip generation estimates were prepared for four future development years (2025, 2030, 2035, and 2040), the analysis documented in subsequent sections of this TIA focuses on year 2040 conditions with full buildout of the BMS site.*

Reductions to the gross trip generation estimates were made to account for internal and pass-by trips. Internal trips are made by people making multiple stops within a development without generating new trips onto the adjacent street system. The internal trip adjustments for the peak hours were based on methodology established in the ITE *Trip Generation Handbook*, 3rd Edition, 2017 and the internal adjustments for the weekday time period were based on methodology documented in the ITE *Trip Generation Handbook*, 2nd Edition. Pass-by trips are trips that are made by vehicles that are already on the adjacent streets and make intermediate stops at the commercial uses on route to a primary destination (i.e. on the way from work to home). The pass-by trips were based on methodology and studies documented in the ITE *Trip Generation Handbook*, 3rd Edition, 2017.

The resulting net new weekday daily, AM peak hour, and PM peak hour trip generation estimates for full buildout of the BMS site in 2040 are shown in **Table 6**. Detailed trip generation calculations for year 2040 conditions with full buildout are included in **Appendix C**. The detailed peak hour trip generation for future years 2025, 2030, and 2035 are included in **Appendix D**. *It should be noted that the future year 2040 trip generation estimates summarized in **Table 6** and included in **Appendix C** include existing BMS land use that was constructed and occupied as of November 2020.*

Table 6
Project Trip Generation Summary for Project Buildout (Year 2040)

Trip Type	Weekday New Trips Generated								
	Daily			AM Peak Hour			PM Peak Hour		
	In	Out	Total	In	Out	Total	In	Out	Total
Gross Trips	33,041	33,042	66,083	1,266	2,311	3,577	3,359	2,724	6,083
Less Internal Trips	-4,957	-4,957	-9,914	-63	-63	-126	-539	-539	-1,078
Less Pass-by Trips	<u>-5,079</u>	<u>-5,079</u>	<u>-10,158</u>	<u>-215</u>	<u>-163</u>	<u>-378</u>	<u>-431</u>	<u>-452</u>	<u>-883</u>
New Trips	23,005	23,006	46,011	988	2,085	3,073	2,389	1,733	4,122

As shown in **Table 6**, with full buildout in 2040, the BMS site is estimated to generate a total of 46,011 new weekday daily trips, with 3,073 new trips occurring during the weekday AM peak hour (988 entering, 2,085 exiting), and 4,122 new trips occurring during the weekday PM peak hour (2,389 entering, 1,733 exiting).

A summary of the total year 2040 (full buildout) project trip generation by BMS neighborhood is also included in **Table 7** below.

**Table 7
Project Trip Generation Summary for Project Buildout (Year 2040) by BMS Subarea**

BMS Neighborhood	2040 Land Use	Weekday Net New Trips Generated					
		AM Peak Hour			PM Peak Hour		
		In	Out	Total	In	Out	Total
BMS Station	130,000 sf home imp. superstore						
	130,000 sf sporting goods superstore						
	445,000 sf shopping center						
	175,000 sf mini-warehouse	346	208	554	743	683	1,426
	150 DU senior housing						
	18,030 sf grocery store						
	40,000 sf medical office						
West Vineyard	303 single family DU	72	220	292	183	115	298
	220 multifamily DU						
West Village	542 single family DU						
	301 multifamily DU						
	3,200 sf gas station/market	144	386	530	349	221	570
	700 sf fast food with drive thru						
	20,000 sf church						
East Garden	305 single family DU						
	505 multifamily DU	128	394	522	329	209	538
	10,000 sf shopping center						
East Market	850 single family DU						
	320 multifamily DU	209	608	817	555	358	913
	45,000 sf shopping center						
South Orchard	382 single family DU	89	269	358	230	147	377
	252 multifamily DU						
TOTAL		988	2,085	3,073	2,389	1,733	4,122

Project Trip Distribution and Assignment

The distribution of BMS project trips for year 2040 (full buildout) conditions was based on select zone traffic modeling provided by the Benton Franklin Council of Governments (BFCG). The BFCG traffic model distributed BMS project trips through the off-site study intersections based on specific project land use and trip generation assumptions associated with each of the model's TAZ's within the BMS subarea. The project distribution from the traffic model also assumed the roadway improvements outlined above were in place. Although the BFCG traffic model is a PM peak hour based model, it was assumed that the BMS trip distribution for the AM peak hour is consistent with the PM peak hour. The estimated peak hour BMS project trip distribution for year 2040 conditions is illustrated in **Figure 6**.

The specific distribution and assignment of net new peak hour project trips through the BMS off-site access points and internal (on-site) study intersections was based on the general off-site trip distribution from the model (**Figure 6**) and the specific development assumptions and trip generation estimates for each of the six BMS neighborhoods (BMS Station, West Village, West Vineyard, East Garden, East Market and South Orchard as shown in **Figure 3**). The resulting AM and PM peak hour net new project trip assignment at the 24 off-site study intersections is shown in **Figures 7 and 8**, respectively. The resulting AM and PM peak hour net new project trip assignment at the 12 on-site study intersections is shown in **Figures 9 and 10**, respectively.

Internal project trips are typically not assigned as vehicular trips since they are assumed to occur internal to a project site and do not impact the transportation system. However, as a result of the size of the BMS site, it was conservatively assumed that all internal project trips would be vehicular trips. The assignment of peak hour internal vehicular trips through the BMS site was based on the specific origins and destinations of the internal project trips by land use and BMS neighborhood. The resulting AM and PM peak hour internal and pass-by project trip assignment at the 12 on-site study intersections is included in **Appendix E**. The resulting total AM and PM peak hour project trip assignment (net new plus internal plus pass-by trips) at the off-site study intersections is shown in **Figures 11 and 12**. The resulting total AM and PM peak hour project trip assignment (net new plus internal plus pass-by trips) at the on-site study intersections is shown in **Figures 13 and 14**.

Future Year 2040 Traffic Volumes

Future year 2040 AM and PM peak hour traffic volumes with full buildout of BMS were estimated by applying a 1.2 percent annual growth rate to the "normal" existing (year 2021) volumes, adding project traffic associated with full buildout of Badger Mountain South (see **Figures 13 and 14**), and also adding traffic volumes or estimated traffic volume adjustments associated with the following pipeline or roadway improvement projects:

- Harvest Ridge single family residential plat – 143 dwelling units
- Elementary School (Kennewick School District) – 650 students
- Middle School (Richland School District) – 800 students
- Elementary School (Richland School District) – 650 students
- High School (Kennewick School District) – 2,000 students
- Duportail Street bridge improvement
- Queensgate Drive Extension improvement
- Gage Blvd Extension improvement

The 1.2% annual growth rate was calculated based on a comparison of link traffic volumes at the off-site study intersections from the future year 2025 and year 2040 baseline (without BMS project traffic) traffic modeling provided BFCG. Traffic volumes associated with additional pipeline development identified by the City of Richland, including Sienna Hills, Westcliffe, and Red Mountain Center, is assumed to be accounted for in the 1.2% annual background growth rate.

Manual At the time that the existing counts were conducted in November 2020, the Duportail Bridge was still under construction. Therefore, traffic volume adjustments at the study intersections to account for the Duportail Street bridge improvement project were estimated by comparing November 2020 counts to March 2021 counts with the bridge open. Traffic volume adjustments at the study intersections to account for the future Queensgate Drive Extension and Gage Blvd Extension roadway improvement projects were estimated based on the future year 2040 'baseline' traffic modeling (without BMS site traffic) provided by BFCG.

The future 2040 with Full Buildout weekday AM and PM peak hour traffic volumes at the 24 off-site study intersections are shown in **Figure 15 and Figure 16**, respectively. The future 2040 with Full Buildout weekday AM and PM peak hour traffic volumes at the 12 on-site study intersections are shown in **Figure 17 and Figure 18**, respectively.

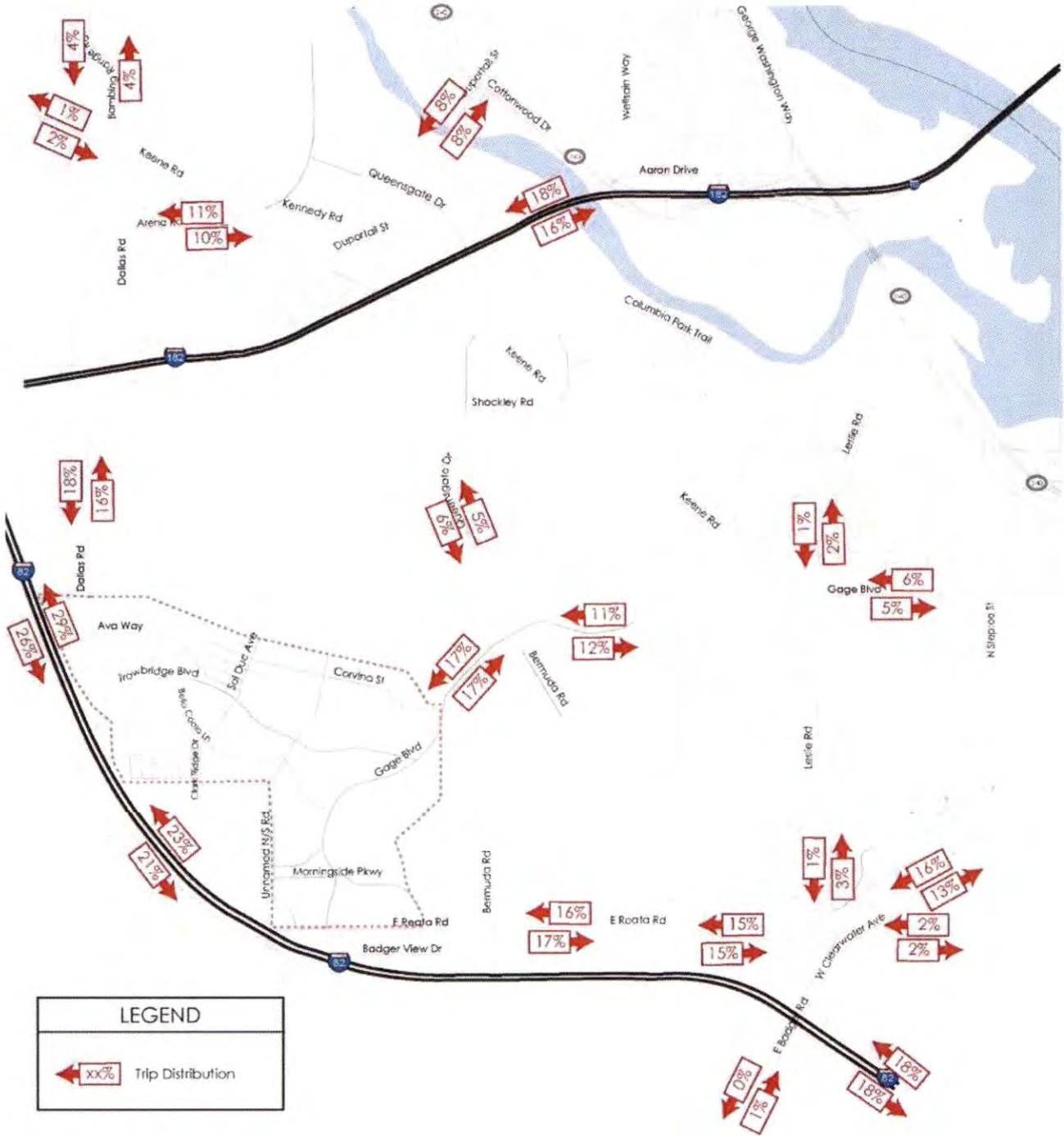


Figure 6: Year 2040 Peak Hour Project Trip Distribution



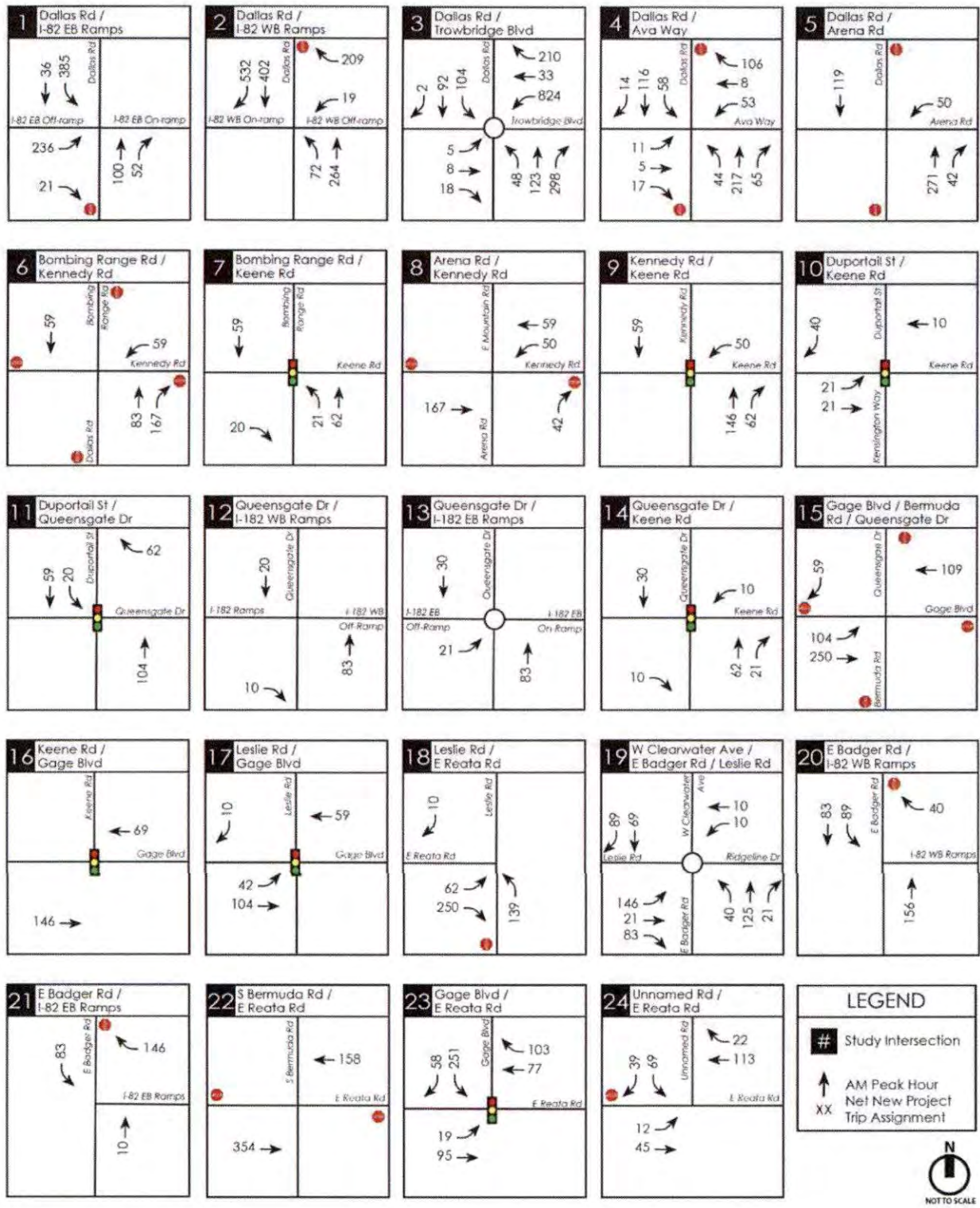


Figure 7: Year 2040 AM Peak Hour Net New Project Trip Assignment (off-site)

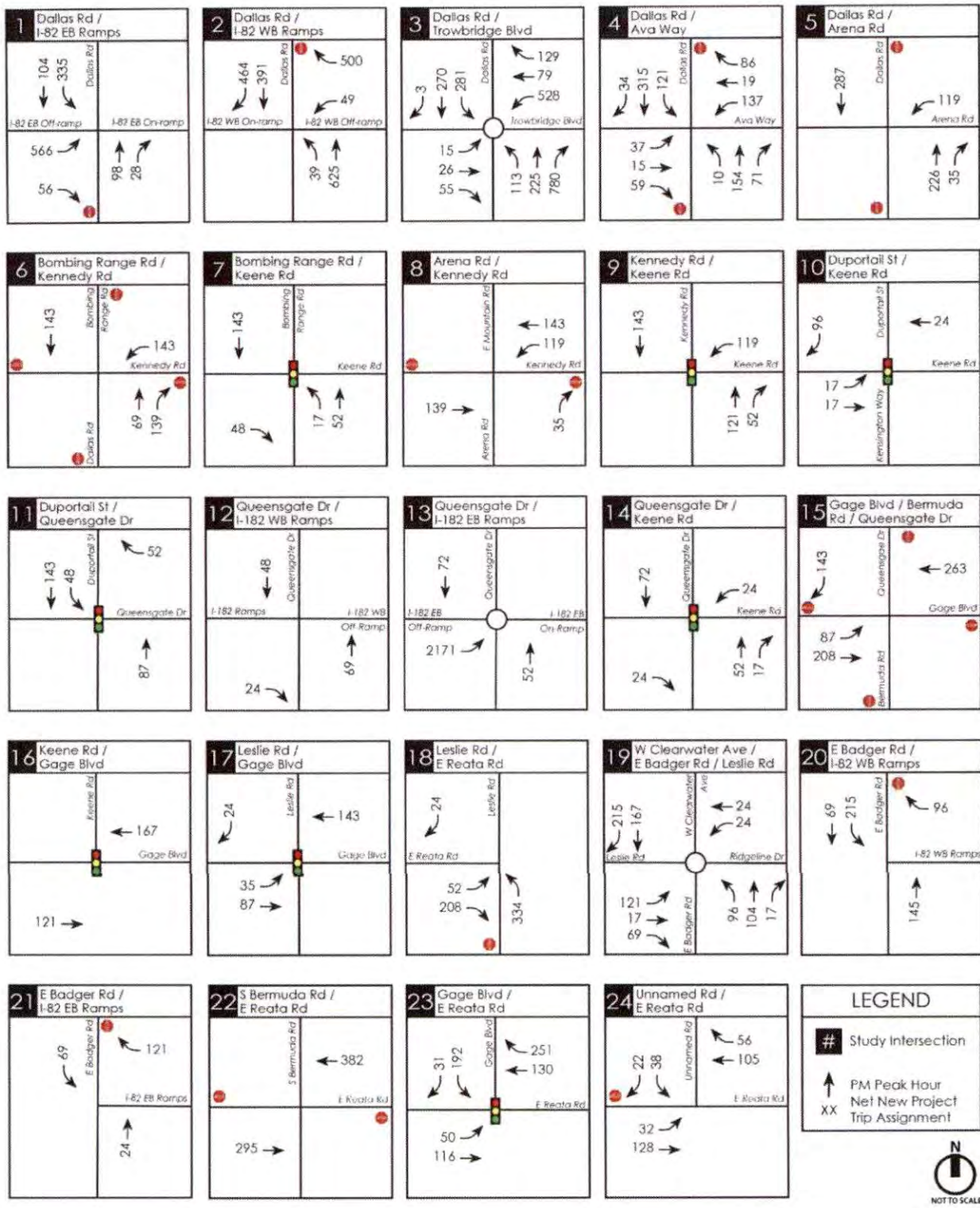


Figure 8: Year 2040 PM Peak Hour Net New Project Trip Assignment (off-site)

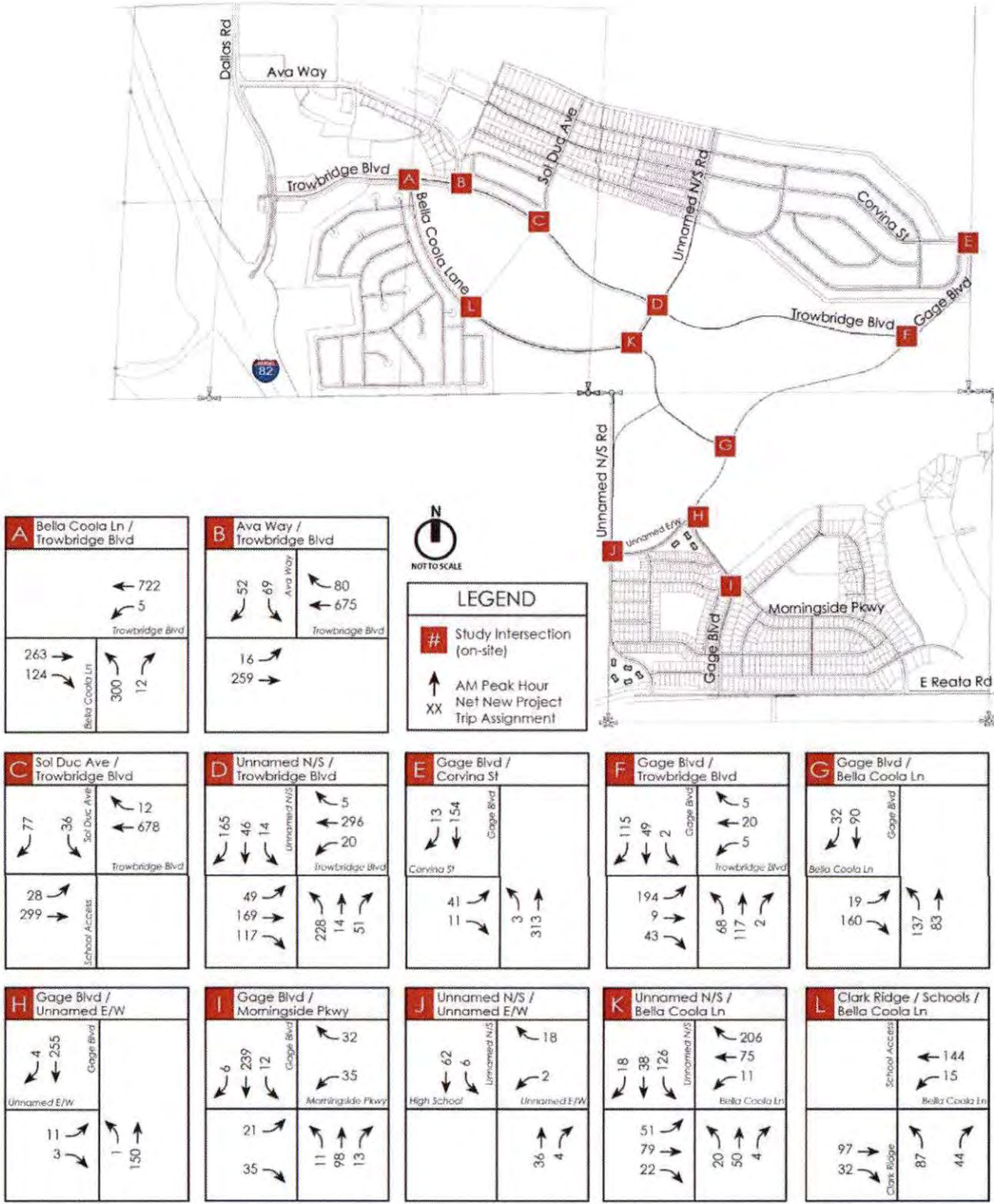


Figure 9: Year 2040 AM Peak Hour Net New Project Trip Assignment (on-site)

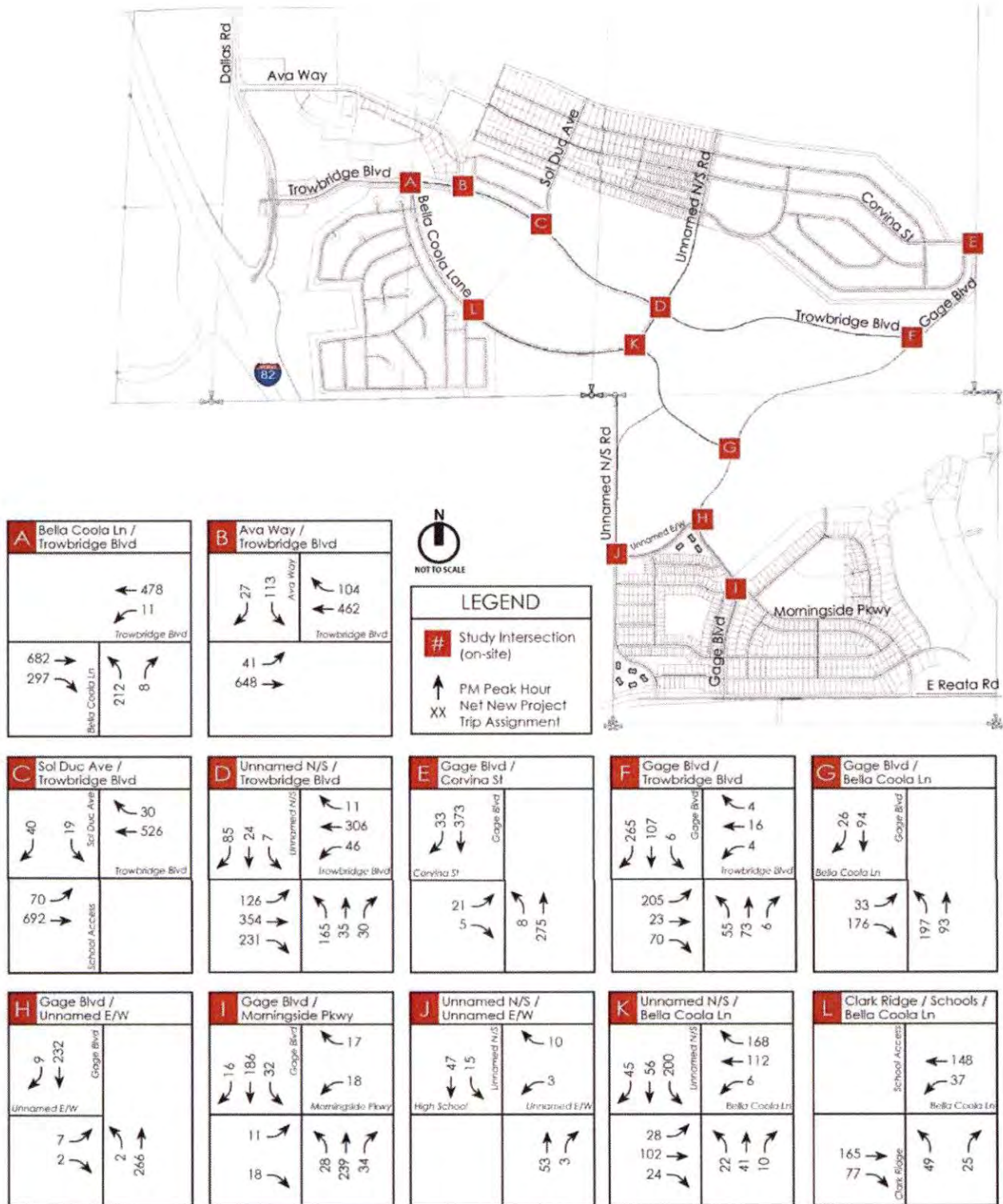


Figure 10: Year 2040 PM Peak Hour Net New Project Trip Assignment (on-site)

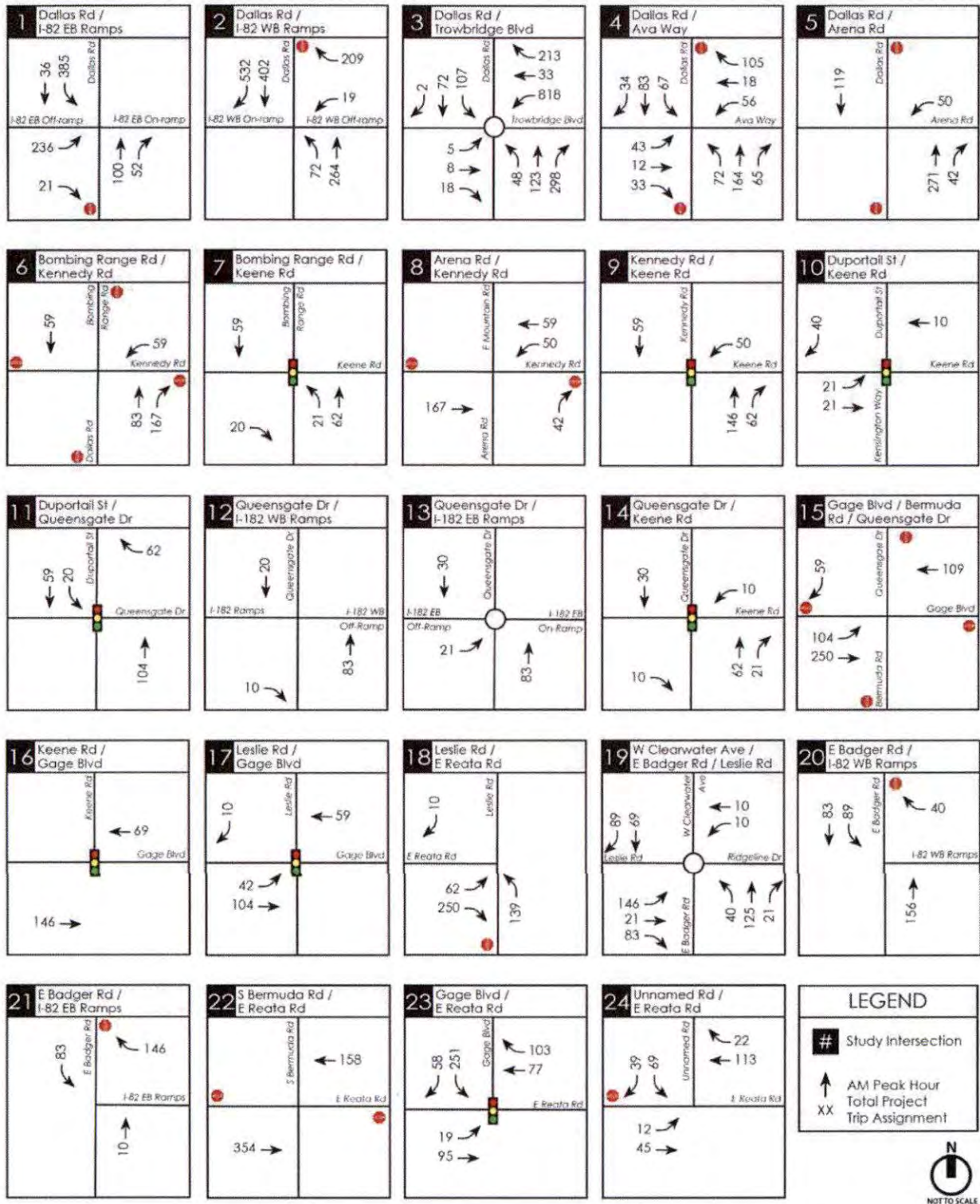


Figure 11: Year 2040 AM Peak Hour Total Project Trip Assignment (off-site)

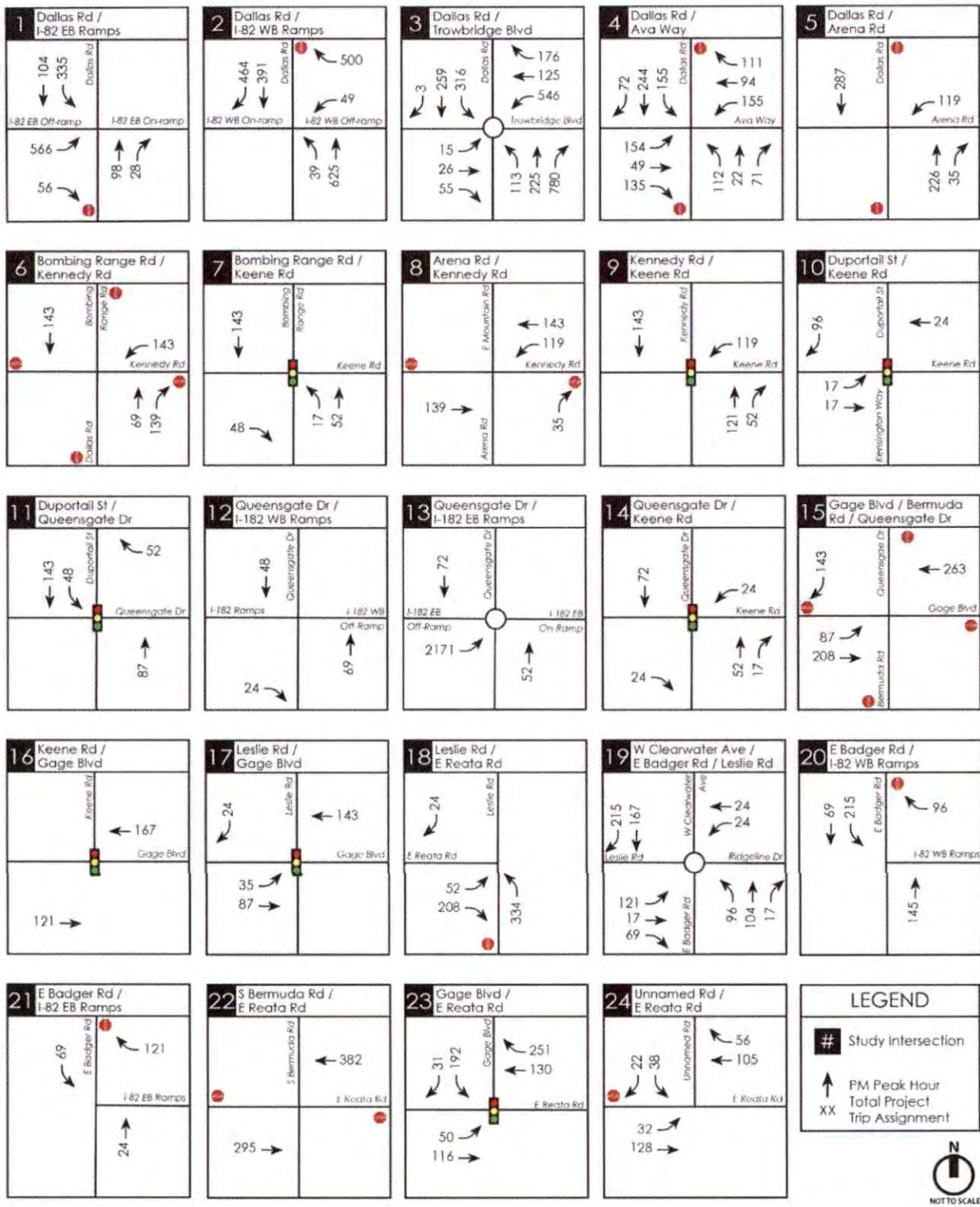


Figure 12: Year 2040 PM Peak Hour Total Project Trip Assignment (off-site)

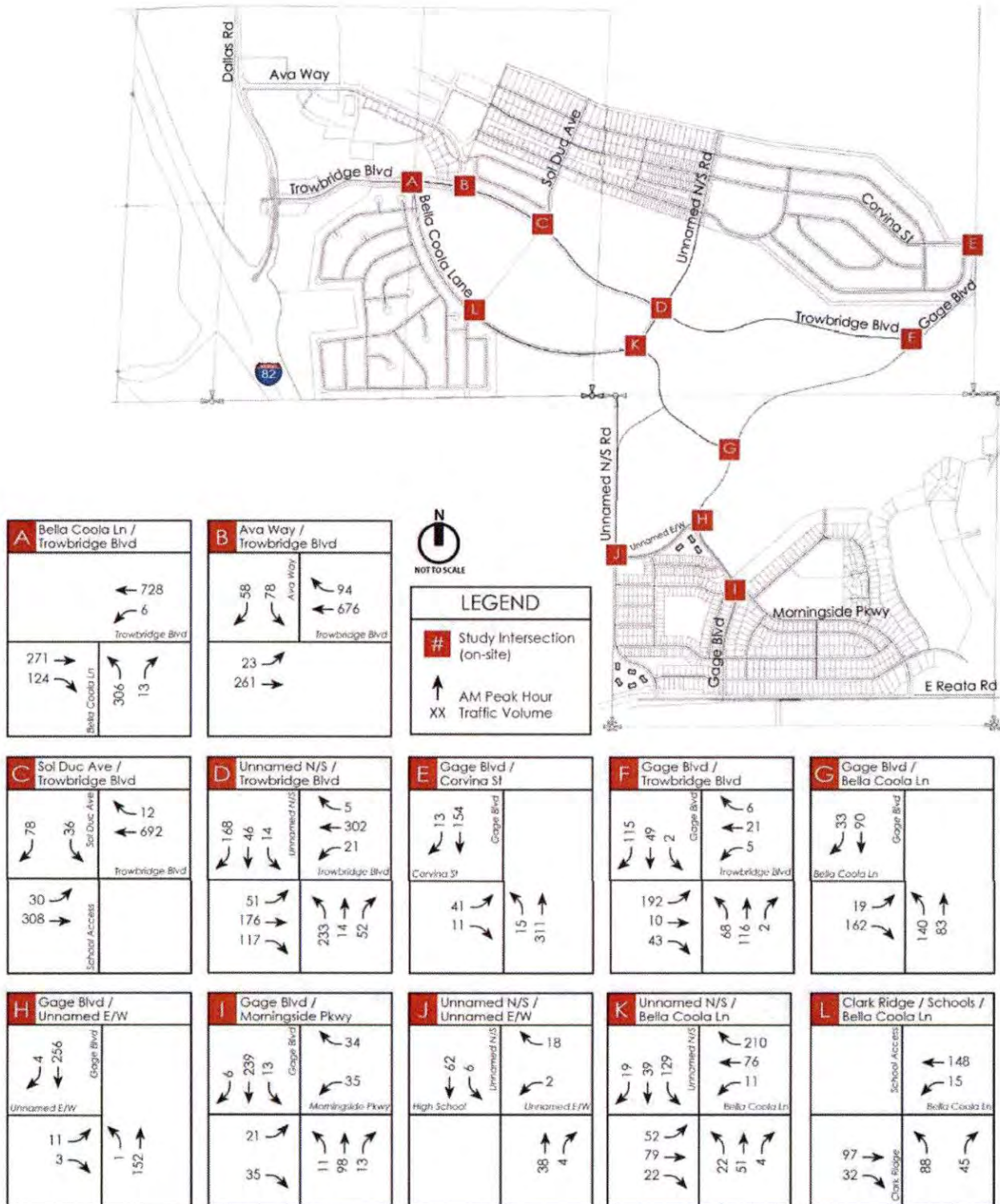


Figure 13: Year 2040 AM Peak Hour Total Project Trip Assignment (on-site)

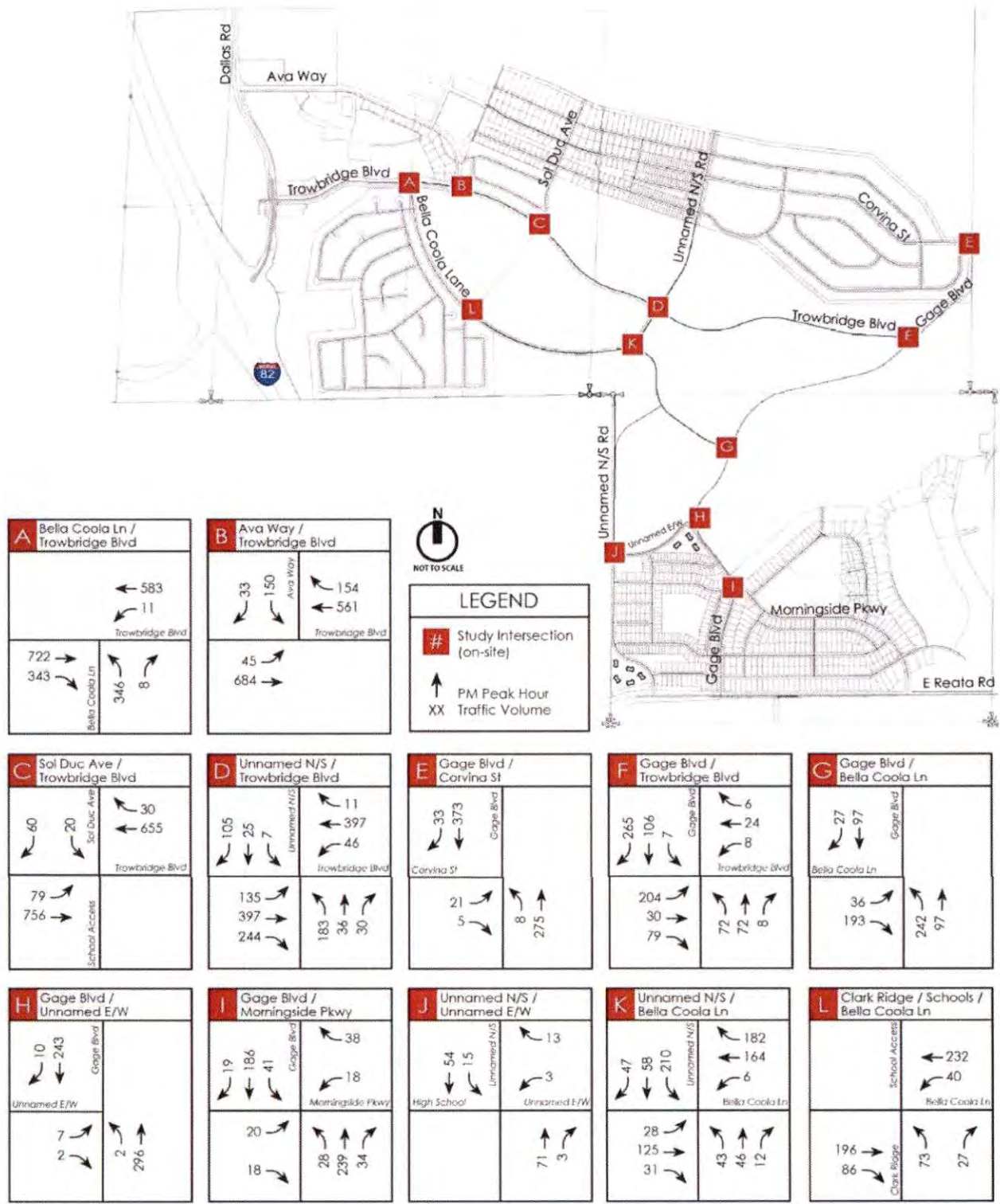


Figure 14: Year 2040 PM Peak Hour Total Project Trip Assignment (on-site)

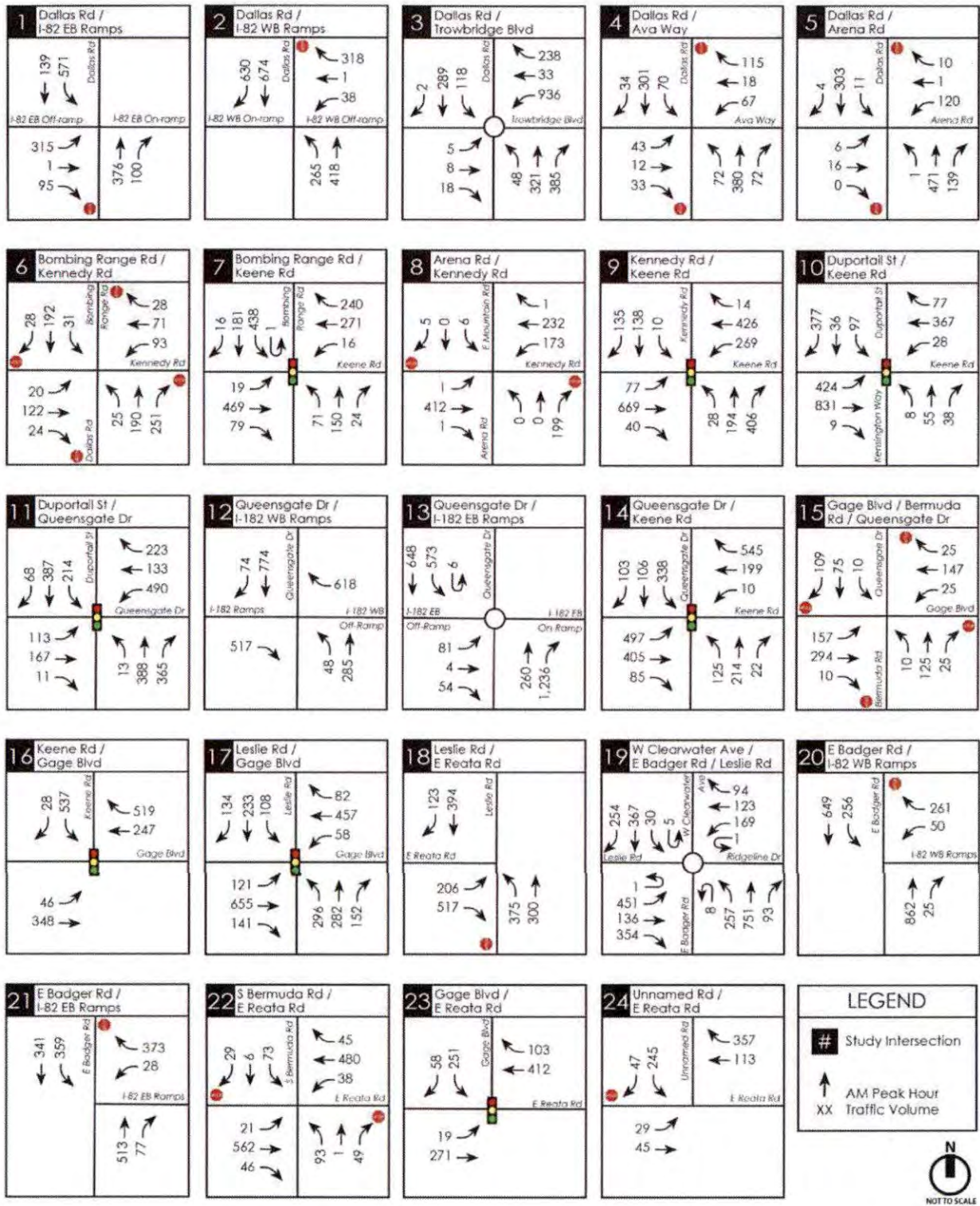


Figure 15: Year 2040 (With Full BMS Buildout) AM Peak Hour Traffic Volumes (off-site)

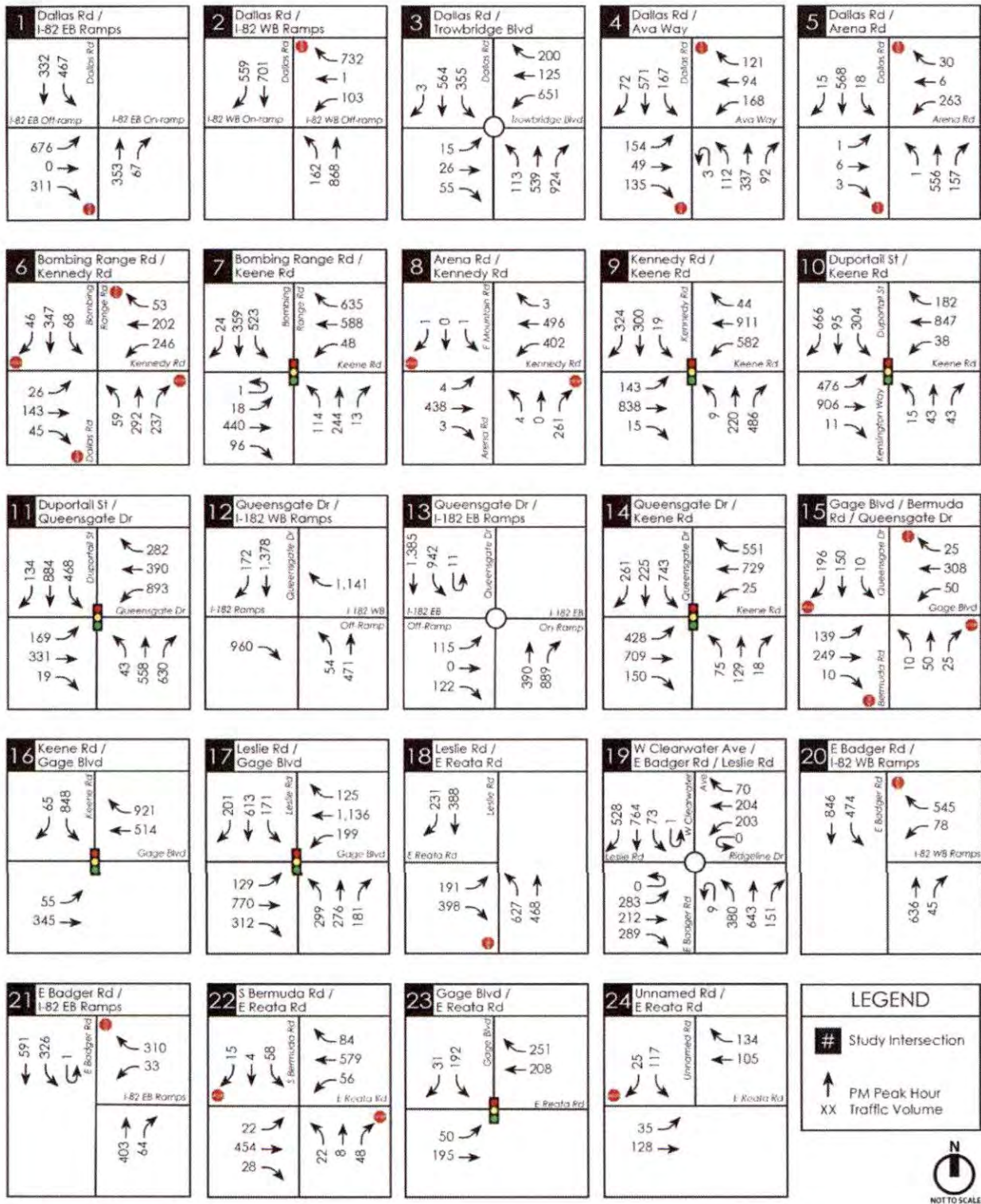


Figure 16: Year 2040 (With Full BMS Buildout) PM Peak Hour Traffic Volumes (off-site)

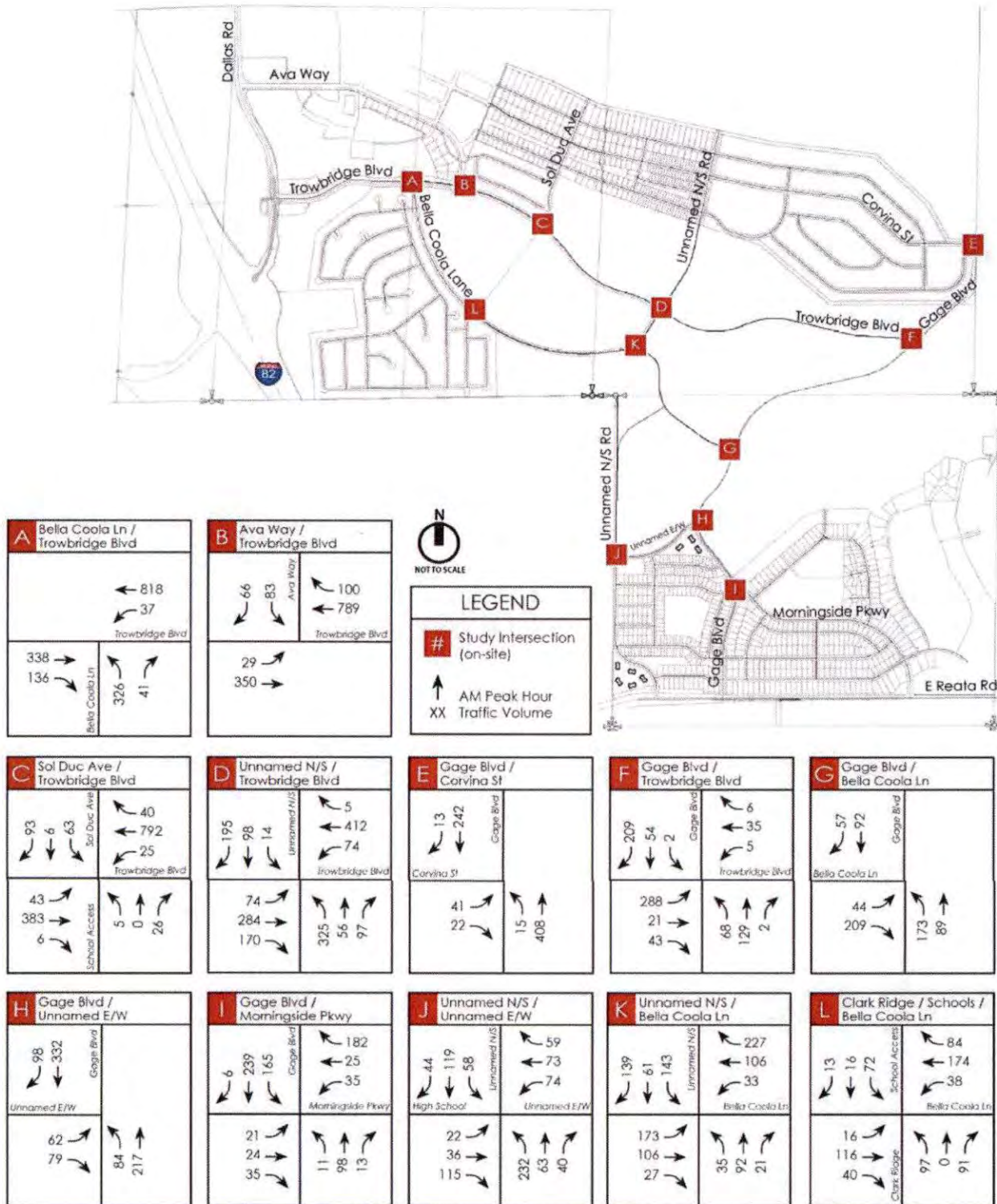


Figure 17: Year 2040 (With Full BMS Buildout) AM Peak Hour Traffic Volumes (on-site)

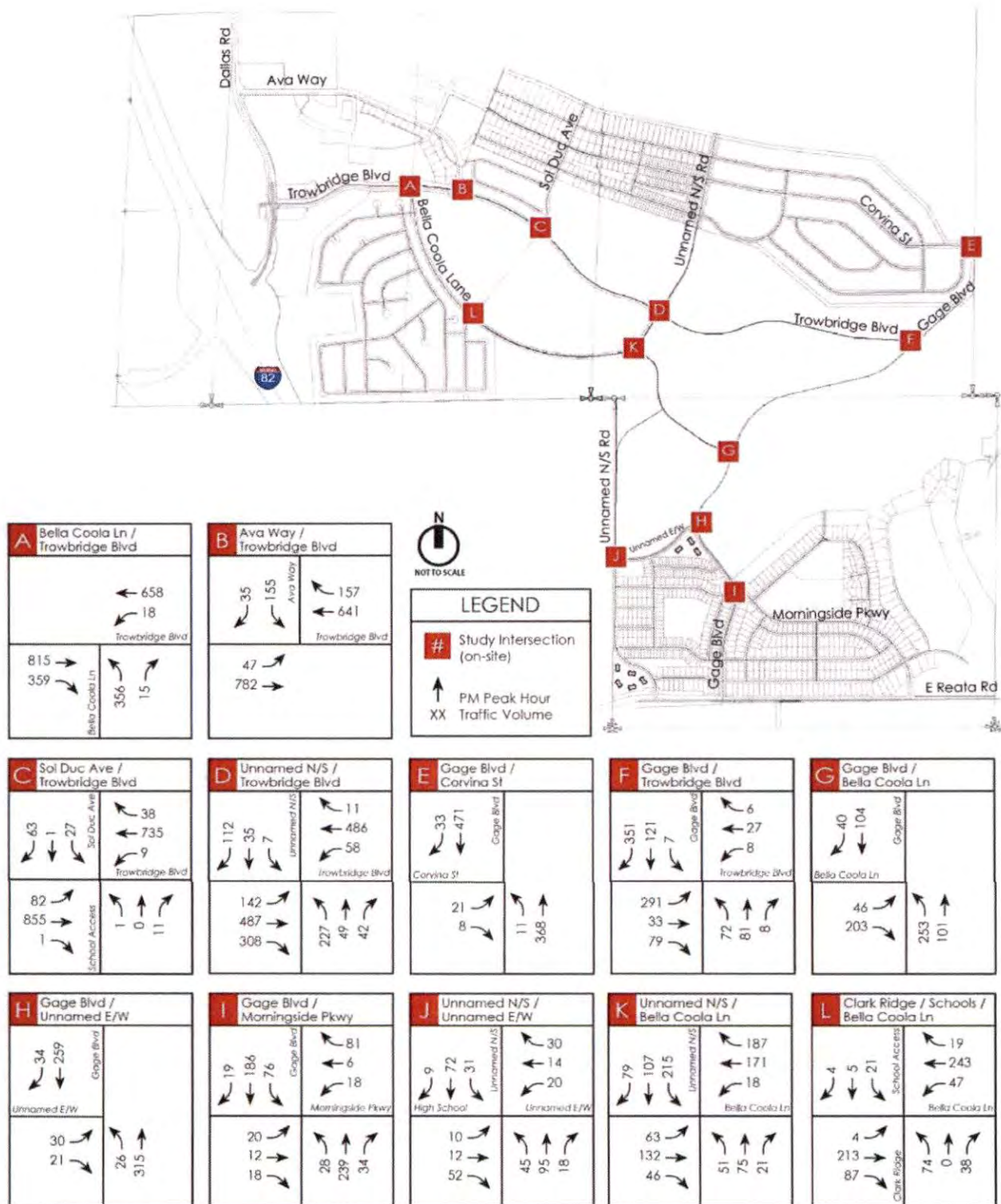


Figure 18: Year 2040 (With Full BMS Buildout) PM Peak Hour Traffic Volumes (on-site)

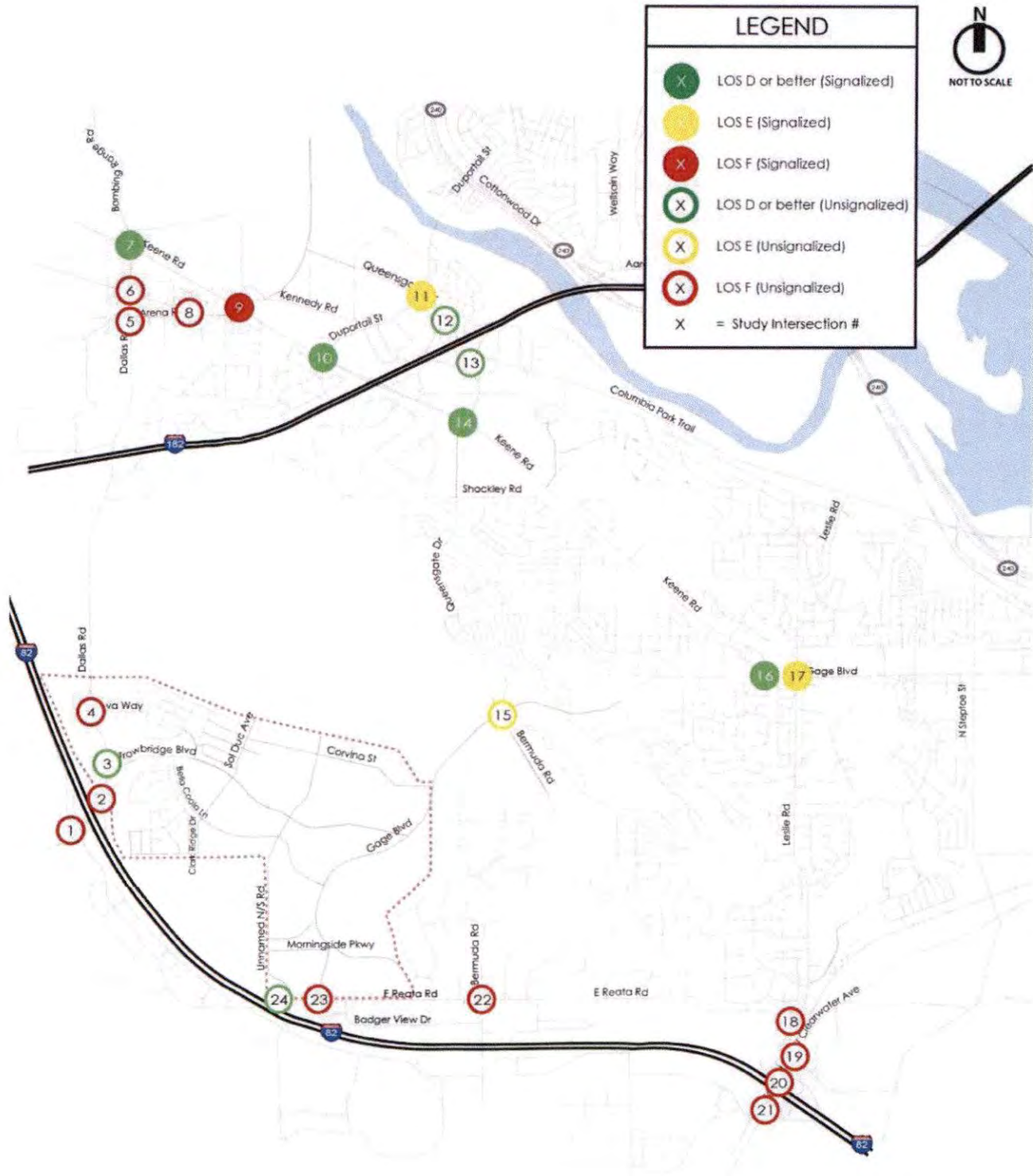


Figure 19: 2040 With Project (Full Build Out) LOS Summary

Future Year 2040 Level of Service at Off-Site Study Intersections

Future year weekday AM and PM peak hour Level of Service (LOS) analyses were conducted at the 24 off-site study intersections for year 2040 with Full Buildout of Badger Mountain South and the 2040 roadway network documented above. The LOS analyses are based on the methodology and procedures outlined in the 6th Edition of the *Highway Capacity Manual* (HCM) using the *Synchro 7.0* and *SIDRA 9* software program. It should be noted that LOS at on-site intersections within the BMS development are described in a later section.

The weekday AM and PM peak hour LOS results at the off-site study intersections for 2040 with Full Buildout conditions are summarized in **Table 8** (for signals and roundabouts) and **Table 9** (for stop-controlled). The year 2040 LOS results at the off-site intersections are also illustrated in **Figure 19**. The detailed LOS worksheets are included in **Appendix B**.

Table 8
2040 With Full Buildout Peak Hour LOS Summary at Off-Site Study Intersections

Study Intersection	2040 With Full Buildout of BMS			
	AM Peak Hour		PM Peak Hour	
	LOS	Delay (sec)	LOS	Delay (sec)
<u>Signalized Intersections</u>				
7. Bombing Range Road / Keene Road	D	41.8	C	34.6
9. Kennedy Road / Keene Road	C	34.2	F	85.0
10. Duportail Street / Keene Road	C	21.5	D	41.7
11. Duportail Street / Queensgate Drive	B	19.8	E	78.9
14. Queensgate Drive / Keene Road	C	29.2	D	35.7
16. Keene Road / Gage Blvd	C	22.4	C	22.7
17. Leslie Road / Gage Blvd	C	28.4	E	77.3
<u>Roundabout Intersections</u>				
3. Dallas Road / Trowbridge Blvd	B	12.7	D	35.0
13. Queensgate Drive / I-182 EB Ramps	A	6.6	A	7.4
19. Badger Road / Clearwater Ave / Leslie Road	D	26.9	F	63.9
<u>All-Way Stop Controlled Intersections</u>				
6. Bombing Range Road / Kennedy Road	C	16.9	F	88.9
15. Gage Blvd / Queensgate Dr / Bermuda Road	B	14.0	C	21.7
<u>Two-Way Stop Controlled Intersections</u>				
1. Dallas Road / I-82 EB Ramps				
Eastbound Approach	F	>100	F	>100
Southbound Left-Turn	B	13.4	B	11.1
2. Dallas Road / I-82 WB Ramps				
Westbound Shared Left-Thru	F	>100	F	>100
Westbound Right-Turn	C	16.9	F	>100
Northbound Left-Turn	C	23.4	C	16.1

Table 8 continued
2040 With Full Buildout Peak Hour LOS Summary at Off-Site Study Intersections

Study Intersection / Movement	2040 With Full Buildout of BMS			
	AM Peak Hour		PM Peak Hour	
	LOS	Delay (sec)	LOS	Delay (sec)
4. Dallas Road / Ava Way				
Eastbound Left-Turn	F	63.4	F	>100
Eastbound Shared Thru-Right	C	16.0	F	>100
Westbound Left-Turn	F	55.0	F	>100
Westbound Shared Thru-Right	C	16.9	F	>100
Northbound Left-Turn	A	8.3	A	9.7
Southbound Left-Turn	A	8.7	A	9.0
5. Dallas Road / Arena Road				
Eastbound Approach	C	22.4	D	29.3
Westbound Approach	F	67.1	F	>100
Northbound Left-Turn	A	8.0	A	8.8
Southbound Left-Turn	A	9.0	A	9.4
8. Arena Road / Kennedy Road				
Eastbound Left-Turn	A	7.8	A	8.5
Westbound Left-Turn	A	8.9	B	10.3
Northbound Approach	B	14.2	C	22.2
Southbound Approach	D	30.9	F	>100
18. Leslie Road / Reata Road				
Eastbound Left-Turn	F	>100	F	>100
Eastbound Right-Turn	E	41.9	C	21.6
Northbound Left-Turn	B	11.0	C	18.9
20. Badger Road / I-82 WB Ramps				
Westbound Shared Left-Right	F	>100	F	>100
Southbound Left-Turn	B	13.4	B	14.7
21. Badger Road / I-82 EB Ramps				
Westbound Approach	F	>100	F	50.2
Southbound Left-Turn	B	11.5	B	10.0
22. Bermuda Road / Reata Road				
Eastbound Left-Turn	A	8.7	A	9.2
Westbound Left-Turn	A	9.1	A	8.7
Northbound Approach	F	>100	D	32.2
Southbound Approach	F	>100	F	>100
23. Gage Blvd / Reata Road				
Eastbound Left-Turn	A	8.7	A	8.6
Southbound Left-Turn	F	56.7	D	25.0
Southbound Right-Turn	B	12.2	B	10.6
24. Unnamed N/S / Reata Road				
Eastbound Left-Turn	A	8.6	A	7.9
Southbound Left-Turn	C	17.4	B	13.0
Southbound Right-Turn	B	10.4	A	9.4

Signalized, Roundabout, and All-Way Stop Controlled Off-Site Study Intersections

As shown in Table 8, many of the signalized, roundabout, and all-way stop controlled study intersections are estimated to operate at LOS D or better during the AM and PM peak hours in 2040 with full buildout of BMS. Five study intersections are anticipated to operate at LOS E or LOS F, and would require improvements to operate at LOS D or better by year 2040; those intersections are described next along with a description of the proportionate share of traffic generated by BMS.

- **#6 Bombing Range Road/Kennedy Road** is anticipated to operate at LOS F during the PM peak hour. BMS is estimated to add 494 PM peak hour trips (28.0% of total entering traffic). Potential mitigation improvements at this intersection include a roundabout or a signal as discussed further in the mitigation section of this report.
- **#9 Kennedy Road / Keene Road** is anticipated to operate at LOS F during the PM peak hour. BMS is estimated to add 435 PM peak hour trips (11.2% of total entering traffic). Potential mitigation of this intersection includes adding northbound and southbound right-turn overlap phases as discussed further in the mitigation section of this report.
- **#11 Dupartail Street / Queensgate Drive** is anticipated to operate at LOS E during the PM peak hour. BMS is estimated to add 330 PM peak hour trips (6.9% of total entering traffic). Recent improvements have been constructed at this intersection which generally render the intersection to be built out. As such, no mitigation is proposed.
- **#17 Leslie Road / Gage Boulevard** is anticipated to operate at LOS E during the PM peak hour. BMS is estimated to add 289 PM peak hour trips (6.6% of total entering traffic). Recent improvements have been constructed at this intersection which generally render the intersection to be built out. As such, no mitigation is proposed.
- **#19 Badger Road / Clearwater Ave / Leslie Road** is anticipated to operate at LOS F during the PM peak hour. BMS is estimated to add 854 PM peak hour trips (22.4% of total entering traffic). Potential mitigation at this intersection includes adding a southbound right-turn slip lane at the roundabout. There is an existing railroad crossing and a pedestrian path located on the northwest corner of this intersection that would be directly impacted by the addition of a southbound right-turn slip lane. Given the potential impacts of this improvement, monitoring and future analysis of this intersection is proposed after BMS project opening to assess traffic volumes and intersection operations based on future conditions to determine if intersection improvements may be necessary to maintain acceptable LOS.

Two-Way Stop Controlled Off-Site Study Intersections

As shown in Table 8, many of individual lane groups at the two-way stop controlled study intersections are estimated to operate at LOS D or better during the AM and PM peak hours in 2040 with full buildout of BMS. Several of the two-way stop controlled study intersections have controlled movements that are anticipated to operate at LOS E or LOS F, and would require improvements to operate at LOS D or better by year 2040; those intersections are described next along with a description of the proportionate share of traffic generated by BMS.

- **#1 Dallas Road/I-82 EB Ramps** – the eastbound approach is anticipated to operate at LOS F during the AM and PM peak hours. BMS is estimated to add 830 AM peak hour trips (52.0% of total entering traffic) and 1,187 PM peak hour trips (53.8% of total

entering traffic). Potential mitigation improvements at this intersection include a roundabout or a signal as discussed further in the mitigation section of this report.

- **#2 Dallas Road/I-82 WB Ramps** – the westbound shared left-thru lane is anticipated to operate at LOS F during the AM and PM peak hours. BMS is estimated to add 1,498 AM peak hour trips (63.9% of total entering traffic) and 2,068 PM peak hour trips (66.2% of total entering traffic). Potential mitigation improvements at this intersection include a roundabout or a signal as discussed further in the mitigation section of this report.
- **#4 Dallas Road/Arena Road** – the eastbound and westbound left-turn lanes are anticipated to operate at LOS F during the AM peak hour and the eastbound and westbound approaches are anticipated to operate at LOS F during the PM peak hour. BMS is estimated to add 752 AM peak hour trips (61.8% of total entering traffic) and 1,374 PM peak hour trips (66.2% of total entering traffic). Potential mitigation improvements at this intersection include a roundabout or a signal as discussed further in the mitigation section of this report.
- **#5 Dallas Road/Arena Road** – the westbound approach is anticipated to operate at LOS F during the AM and PM peak hours. BMS is estimated to add 482 AM peak hour trips (44.5% of total entering traffic) and 667 PM peak hour trips (41.1% of total entering traffic). There is a high volume of traffic traveling from the east on Kennedy Road that utilizes Arena Road as a cut-through to travel southbound on Dallas Road. It is anticipated that the future improvements proposed at the Kennedy Road/Dallas Road intersection (either a future roundabout or a future signal) will reroute a majority of this cut-through traffic to continue westbound on Kennedy Road instead of taking a westbound left-turn onto Arena Road. Shifting westbound traffic away from the Dallas Road/Arena Road intersection will improve side-street traffic operations on Arena Road and therefore, no mitigation improvements are proposed at this intersection.
- **#8 Arena Road / Kennedy Road** – the southbound approach is anticipated to operate at LOS F during the PM peak hour. BMS is estimated to add 436 PM peak hour trips (27.0% of total entering traffic). The anticipated level-of-service failure at this intersection stems from the delay experienced by two southbound trips exiting a residential driveway. Additionally, there is a high volume of traffic traveling from the east on Kennedy Road that utilizes Arena Road as a cut-through to travel southbound on Dallas Road. It is anticipated that the future improvements proposed at the Kennedy Road/Dallas Road intersection (either a future roundabout or a future signal) will reroute a majority of this cut-through traffic to continue westbound on Kennedy Road instead of taking a westbound left-turn onto Arena Road. Shifting westbound left-turn traffic away from the Arena Road/Kennedy Road intersection will improve side-street traffic operations on Arena Road and therefore, no mitigation improvements are proposed at this intersection.
- **#18 Leslie Road/Reata Road** – the eastbound left-turn lane is anticipated to operate at LOS F during the AM and PM peak hours and the eastbound right-turn lane is anticipated to operate at LOS E during the AM peak hour. BMS is estimated to add 461 AM peak hour trips (24.1% of total entering traffic) and 618 PM peak hour trips (26.8% of total entering traffic). Potential mitigation improvements at this intersection include a proposed roundabout or a proposed signal as discussed further in the mitigation section of this report.

- **#20 Badger Road/I-82 WB Ramps** – the westbound approach is anticipated to operate at LOS F during the AM and PM peak hours. BMS is estimated to add 368 AM peak hour trips (17.5% of total entering traffic) and 525 PM peak hour trips (20.0% of total entering traffic). Potential mitigation improvements at this intersection include a proposed roundabout or a proposed signal as discussed further in the mitigation section of this report.
- **#21 Badger Road/I-82 EB Ramps** – the westbound approach is anticipated to operate at LOS F during the AM and PM peak hours. BMS is estimated to add 239 AM peak hour trips (14.1% of total entering traffic) and 214 PM peak hour trips (12.4% of total entering traffic). Potential mitigation improvements at this intersection include a proposed roundabout or a proposed signal as discussed further in the mitigation section of this report.
- **#22 Bermuda Road/Reata Road** – the northbound and southbound approaches are anticipated to operate at LOS F during the AM and PM peak hours. BMS is estimated to add 512 AM peak hour trips (35.5% of total entering traffic) 677 PM peak hour trips (49.1% of total entering traffic). Potential mitigation improvements at this intersection include a roundabout or a signal as discussed further in the mitigation section of this report.
- **#23 Gage Blvd/Reata Road** – the southbound left-turn lane is anticipated to operate at LOS F. BMS is estimated to add 603 AM peak hour trips (54.1% of total entering traffic). Potential mitigation improvements at this intersection include a roundabout or a signal as discussed further in the mitigation section of this report.

At the locations listed above where improvements are necessary to maintain LOS D or better during weekday AM and PM peak hours in 2040, mitigation has been identified. Specific mitigation measures and proportionate share contribution of BMS traffic is discussed in greater detail in the *Mitigation* section of the report.

Future Year 2040 Level of Service at On-Site Study Intersections

Future year weekday AM and PM peak hour LOS analyses were conducted at the 12 on-site study intersections for year 2040 with full buildout of Badger Mountain South and the preliminary internal roadway layout as shown previously in **Figure 2**. It should be noted that LOS at intersections outside of the BMS development (off-site study intersections) were described in the prior section.

The LOS analyses are based on the methodology and procedures outlined in the 6th Edition of the *Highway Capacity Manual* (HCM) using the *Synchro 10* and *SIDRA 9* software program.

Table 9 and Table 10 summarize the weekday AM and PM peak hour LOS results at the 12 on-site study intersections for 2040 with Full Buildout conditions. The detailed LOS worksheets are included in **Appendix F**.

The LOS analyses at intersections within the BMS development include turn lanes, channelization, and intersection control (i.e. stop sign or roundabout) necessary to ensure the on-site intersections would operate at acceptable LOS during the AM and PM peak hours with full buildout in 2040. The majority of the on-site study intersections will operate at LOS D or better with two-way stop control (side streets stop controlled and primary street free flow). However, at intersections A, B, D, and K, more than one option was identified for control of the intersection, and the LOS results for both options are presented in **Table 9 and Table 10**. The specific lane channelization assumptions for both of the proposed control options at intersections A, B, D, and K is included in **Appendix G**.

As shown in **Tables 9 and 10**, all controlled movements at the unsignalized BMS internal (on-site) intersections and all proposed roundabout or signalized intersections are expected to operate at LOS D or better during the AM and PM peak hours with exception to the following:

- **C. Sol Duc Ave/Trowbridge Blvd** – the southbound approach is anticipated to operate at LOS E during the AM peak hour. Given that Sol Duc Ave is a minor side street roadway, no improvements are proposed for this side-street approach.

Table 9
2040 With Full Buildout AM Peak Hour LOS Summary for On-Site Study Intersections

Study Intersection / Movement	Intersection Control Options							
	Roundabout		Signal		Two-Way Stop		All-Way Stop	
	LOS	Delay (sec)	LOS	Delay (sec)	LOS	Delay (sec)	LOS	Delay (sec)
A. Bella Coola Lane / Trowbridge Blvd	A	7.9	B	10.2	-	-	-	-
B. Ava Way / Trowbridge Blvd	B	11.6	B	15.4	-	-	-	-
C. Sol Duc Ave / Trowbridge Blvd								
Eastbound Left-Turn	-	-	-	-	B	10.2	-	-
Westbound Left-Turn	-	-	-	-	A	8.3	-	-
Northbound Approach	-	-	-	-	C	15.6	-	-
Southbound Approach	-	-	-	-	E	42.6	-	-
D. Unnamed N/S / Trowbridge Blvd	B	14.3	D	38.2	-	-	-	-
E. Gage Blvd / Corvina S								
Eastbound Approach	-	-	-	-	B	12.6	-	-
Northbound Left-Turn	-	-	-	-	A	7.9	-	-
F. Gage Blvd / Trowbridge Blvd								
Eastbound Left-Turn	-	-	-	-	C	24.2	-	-
Eastbound Shared Thru-Right	-	-	-	-	B	10.7	-	-
Westbound Approach	-	-	-	-	B	13.2	-	-
Northbound Left-Turn	-	-	-	-	A	8.0	-	-
Southbound Left-Turn	-	-	-	-	A	7.5	-	-
G. Gage Blvd / Bella Coola Lane								
Eastbound Left-Turn	-	-	-	-	B	13.2	-	-
Eastbound Right-Turn	-	-	-	-	B	10.4	-	-
Northbound Left-Turn	-	-	-	-	A	8.0	-	-
H. Gage Blvd/ Unnamed E/W								
Eastbound Approach	-	-	-	-	B	14.9	-	-
Northbound Left-Turn	-	-	-	-	A	8.6	-	-
I. Gage Blvd / Morningside Pkwy								
Eastbound Approach	-	-	-	-	C	16.1	-	-
Westbound Approach	-	-	-	-	C	15.0	-	-
Northbound Left-Turn	-	-	-	-	A	7.8	-	-
Southbound Left-Turn	-	-	-	-	A	7.8	-	-
J. Unnamed N/S / Unnamed E/W								
Eastbound Left-Turn	-	-	-	-	D	27.8	-	-
Eastbound Shared Thru-Right	-	-	-	-	B	13.7	-	-
Westbound Left-Turn	-	-	-	-	D	34.8	-	-
Westbound Shared Thru-Right	-	-	-	-	C	18.9	-	-
Northbound Left-Turn	-	-	-	-	A	8.2	-	-
Southbound Left-Turn	-	-	-	-	A	7.6	-	-
K. Unnamed N/S / Bella Coola Lane	A	7.3	-	-	-	-	C	15.9
L. Clark Ridge Dr / Bella Coola Lane								
Eastbound Left-Turn	-	-	-	-	A	7.9	-	-
Westbound Left-Turn	-	-	-	-	A	7.7	-	-
Northbound Approach	-	-	-	-	C	15.0	-	-
Southbound Approach	-	-	-	-	C	17.0	-	-

Table 10
2040 With Full Buildout PM Peak Hour LOS Summary for On-Site Intersections

Study Intersection / Movement	Intersection Control Options							
	Roundabout		Signal		Two-Way Stop		All-Way Stop	
	LOS	Delay (sec)	LOS	Delay (sec)	LOS	Delay (sec)	LOS	Delay (sec)
A. Bella Coola Lane / Trowbridge Blvd	B	11.3	B	14.0	-	-	-	-
B. Ava Way / Trowbridge Blvd	B	12.6	B	16.7	-	-	-	-
C. Sol Duc Ave / Trowbridge Blvd								
Eastbound Left-Turn	-	-	-	-	B	10.2	-	-
Westbound Left-Turn	-	-	-	-	B	10.0	-	-
Northbound Approach	-	-	-	-	C	19.0	-	-
Southbound Approach	-	-	-	-	D	31.0	-	-
D. Unnamed N/S / Trowbridge Blvd	C	18.7	D	40.8	-	-	-	-
E. Gage Blvd / Corvina S								
Eastbound Approach	-	-	-	-	B	14.0	-	-
Northbound Left-Turn	-	-	-	-	A	8.6	-	-
F. Gage Blvd / Trowbridge Blvd								
Eastbound Left-Turn	-	-	-	-	D	30.9	-	-
Eastbound Shared Thru-Right	-	-	-	-	B	12.4	-	-
Westbound Approach	-	-	-	-	C	15.2	-	-
Northbound Left-Turn	-	-	-	-	A	8.8	-	-
Southbound Left-Turn	-	-	-	-	A	7.4	-	-
G. Gage Blvd / Bella Coola Lane								
Eastbound Left-Turn	-	-	-	-	C	15.6	-	-
Eastbound Right-Turn	-	-	-	-	B	10.3	-	-
Northbound Left-Turn	-	-	-	-	A	8.2	-	-
H. Gage Blvd / Unnamed E/W								
Eastbound Approach	-	-	-	-	B	12.0	-	-
Northbound Left-Turn	-	-	-	-	A	8.0	-	-
I. Gage Blvd / Morningside Pkwy								
Eastbound Approach	-	-	-	-	B	14.1	-	-
Westbound Approach	-	-	-	-	B	12.1	-	-
Northbound Left-Turn	-	-	-	-	A	7.8	-	-
Southbound Left-Turn	-	-	-	-	A	8.1	-	-
J. Unnamed N/S / Unnamed E/W								
Eastbound Left-Turn	-	-	-	-	B	11.6	-	-
Eastbound Shared Thru-Right	-	-	-	-	A	9.7	-	-
Westbound Left-Turn	-	-	-	-	B	11.9	-	-
Westbound Shared Thru-Right	-	-	-	-	B	10.1	-	-
Northbound Left-Turn	-	-	-	-	A	7.5	-	-
Southbound Left-Turn	-	-	-	-	A	7.5	-	-
K. Unnamed N/S / Bella Coola Lane	A	7.4	-	-	-	-	C	17.9
L. Clark Ridge Dr / Bella Coola Lane								
Eastbound Left-Turn	-	-	-	-	A	7.9	-	-
Westbound Left-Turn	-	-	-	-	A	8.1	-	-
Northbound Approach	-	-	-	-	C	17.2	-	-
Southbound Approach	-	-	-	-	C	16.4	-	-

Roadway Functional Classification for BMS Roads

This section uses the future 2040 traffic volumes projections to compare to the City's roadway functional classifications, and recommends roadway classifications for primary roadways within the BMS development. Future 2040 average daily traffic (ADT) for roadways within BMS were estimated based on the weekday AM and PM peak hour volumes multiplied by a k-factor of 9%.

Recommended roadway classifications for the internal roadways serving BMS were evaluated based on the City of Richland's preliminary functional classification recommendations, which are provided in **Appendix H**. Those functional classifications include a range of average daily traffic (ADT) for a range of roadway types, including principal arterial, minor arterial, major collector, and local road.

Table 11 summarizes recommended roadway classifications and number of travel lanes for roadways within and serving BMS. The recommendations are based on review of 2040 ADT and comparison to the City's functional classification recommendations (**Appendix H**). These recommendations are generally consistent with the functional classifications identified by the City for the BMS internal roadways with a few exceptions which are recommended to be re-considered by the City based on the future ADT projections in 2040.

Dallas Road between Trowbridge and I-82 – re-consideration as a Principal Arterial with 4-5 travel lanes.

Trowbridge Blvd between Dallas Road and east of Ava Way to Unnamed N/S Road – re-consideration as a Principal Arterial with 4-5 travel lanes.

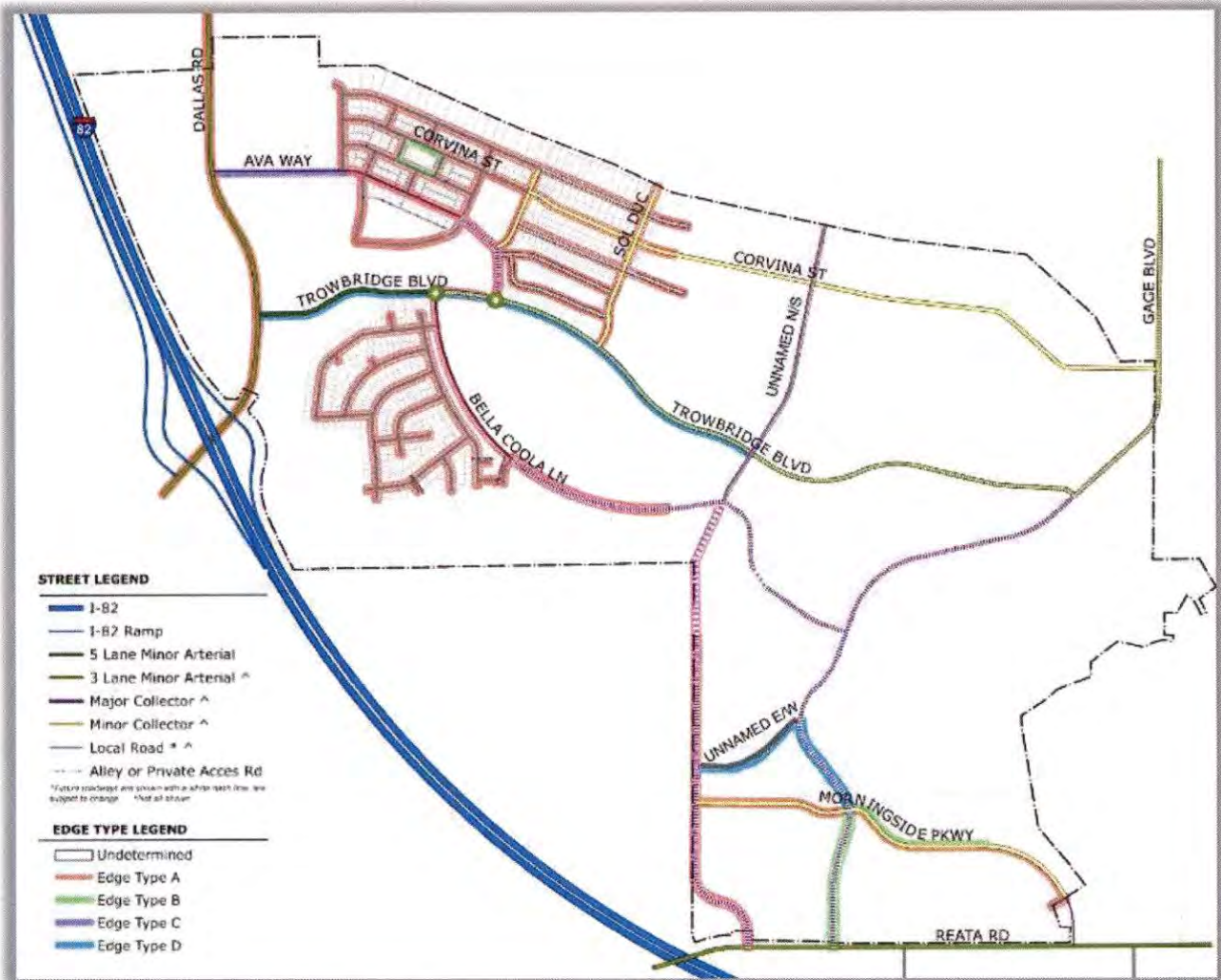
Table 11
Preliminary Functional Classification Recommendations for BMS Internal Roadways

Roadway / location	2040 PM Peak Hour Traffic Volume (total of both directions)	Estimated Average Daily Traffic (ADT) ¹	Preliminary # of Lanes	Preliminary Functional Classification Recommendation
<u>Dallas Road</u>				
north of Ava Way	1,422	15,800	2-3	Minor Arterial
south of Trowbridge Blvd	2,846	31,600	4-5	Principal Arterial ²
<u>Ava Way</u>				
east of Dallas Rd	691	7,700	2-3	Major Collector
north of Trowbridge Blvd	394	4,400	2-3	Major Collector
<u>Trowbridge Blvd</u>				
east of Dallas Rd	2,281	25,300	4-5	Principal Arterial ²
east of Bella Coola Ln	1,506	16,700	5	Principal Arterial ²
east of Ava Way	1,735	19,300	3	Principal Arterial ²
east of Unnamed N/S	1,091	12,100	3	Minor Arterial
west of Gage Blvd	853	9,500	3	Minor Arterial
<u>Bella Coola Ln</u>				
south of Trowbridge Blvd	748	8,300	2-3	Major Collector
west of Unnamed N/S	542	6,000	2-3	Major Collector
east of Unnamed N/S	744	8,300	2-3	Major Collector
west of Gage Blvd	542	6,000	2-3	Major Collector
<u>Unnamed N/S</u>				
South of Trowbridge Blvd	716	8,000	2-3	Major Collector
South of Bella Coola Ln	318	3,500	2-3	Major Collector
North of Unnamed E/W	248	2,700	2-3	Major Collector
South of Unnamed E/W	302	3,400	2-3	Major Collector
<u>Unnamed E/W</u>				
East of Unnamed N/S	125	1,400	2	Local Road
West of Gage Blvd	111	1,200	2	Local Road
<u>Gage Blvd</u>				
Northeast of Corvina St	893	9,900	2-3	Minor Arterial
North of Trowbridge Blvd	857	9,500	2-3	Minor Arterial
South of Trowbridge Blvd	369	4,100	2-3	Major Collector
South of Bella Coola Ln	661	7,300	2-3	Major Collector
South of Unnamed E/W	621	6,900	2-3	Major Collector
North of Reata Rd	524	5,800	2-3	Major Collector

1. ADT volumes were estimated from PM peak hour volumes with an applied K-factor of 9%.
2. Recommended for re-consideration as a Principal Arterial based on ADT projection by 2040.

The number of travel lanes identified in **Table 11** is based on the future ADT by 2040 as well as the anticipated intersection control at the intersections along each roadway segment. Consideration may be given to whether 4 lane roadways should be 5 lanes in order to accommodate left-turns onto future internal roadway connections.

The snip below illustrates a preliminary draft version of the internal roadway network plan for BMS showing primary roadways and alignments within the development area. The preliminary roadway classifications are generally consistent with those identified in Table 11. It is anticipated that this information will be reviewed as part of this traffic analysis, and may be updated based on discussions with City staff in determining the most appropriate roadway classifications for BMS roads.



MITIGATION MEASURES

This section identifies potential improvements necessary to mitigate off-site intersections forecast to operate at LOS E or LOS F in 2040 with full buildout of the BMS development. Although some study intersections may require mitigation to operate at acceptable LOS during one of the earlier development phases (2025, 2030, or 2040), the specific mitigation measures identified in this section are intended to fully mitigate impacts of the full BMS buildout in 2040.

Based on the traffic analysis documented in this TIA for year 2040 future conditions with full buildout of the BMS project, a total of 15 off-site study intersections are forecast to operate at LOS E or F in 2040 with full buildout of BMS. However, it should be noted that 4 of the intersections that are forecast to operate at LOS E or F in 2040 have recently been improved or are anticipated to improve as a result of other planned intersection or roadway improvements in the vicinity. Therefore, potential mitigation measures were identified at 11 off-site study intersections as shown in **Table 12**.

Table 12 also identifies the estimated development phase (and year) in which the mitigation measure is likely to be needed, and provides a preliminary estimated pro-rata share of mitigation for the BMS development based on year 2040 traffic volumes with full buildout of BMS.

Table 12
Summary of Mitigation Measures at Off-Site Study Intersections

Study Intersection	Potential Mitigation Measure ¹	Development Phase (Year) Improvement Needed ²	Estimated BMS Pro-Rata Share ³
1. Dallas Road / I-82 EB Ramps	RAB or signal	2025	52–54%
2. Dallas Road / I-82 WB Ramps	RAB or signal	2025	64–66%
4. Dallas Road / Ava Way	RAB or signal	2025	62–66%
6. Bombing Range Rd / Kennedy Rd	RAB or signal	2030	28%
9. Kennedy Rd / Keene Road	NB+SB RT overlap phases at signal	2030	11%
18. Leslie Road / Reata Road	RAB or signal	2030	24–27%
19. Badger Rd / Clearwater Ave / Leslie Rd	SB right-turn slip lane at RAB	2040	22%
20. Badger Road / I-82 WB Ramps	RAB or signal	2025	18–20%
21. Badger Road / I-82 EB Ramps	RAB or signal	2030	12–14%
22. Bermuda Road / Reata Road	RAB or signal	2030	36–49%
23. Gage Blvd / Reata Road	RAB or signal	2030	54%

1. RAB = roundabout

2. Based on the anticipated year buildout of the development phase (either 2025, 2030, 2035 or 2040).

3. Pro-rata share based on weekday year 2040 AM and PM peak hour traffic volumes.

Although improvements to mitigate future AM and PM peak hour LOS deficiencies at off-site study intersections with full buildout of BMS in 2040 have been preliminarily identified in **Table 12**, the specific mitigation to be constructed, the timing of the mitigation, and the pro-rata share contributions for BMS are anticipated to be refined and confirmed based on input and evaluation from the project Applicant the City of Richland, and other stakeholders (West Richland and Benton County) as necessary. The final mitigation measures, timing of the mitigation, and pro-rata share contribution

percentages are anticipated to be established in a new or updated Master Agreement for the BMS development.

Weekday AM and PM peak hour LOS analyses were conducted for each of the mitigation options at the 11 off-site study intersections for which mitigation measures were identified. The LOS results are summarized in **Tables 13 and 14**, respectively. A summary of the channelization assumptions at each intersection with more than one mitigation option is included **Appendix G**. The detailed LOS reports are included in **Appendix I**.

All identified mitigation measures at the study intersections are expected to result in LOS D or better operations during both the AM and PM peak hours in 2040 with full buildout of the BMS development.

Table 13
2040 Full Buildout and Mitigation - AM Peak Hour Intersection LOS Summary

Study Intersection	Mitigation Measures					
	Roundabout		Signal		Overlap Phasing	
	LOS	Delay (sec)	LOS	Delay (sec)	LOS	Delay (Sec)
1. Dallas Road / I-82 EB Ramps	C	18.0	C	23.6	-	-
2. Dallas Road / I-82 WB Ramps	B	11.4	B	13.6	-	-
4. Dallas Road / Ava Way	A	7.8	B	16.5	-	-
6. Bombing Range Rd / Kennedy Rd	A	6.5	B	12.0	-	-
9. Kennedy Rd / Keene Road	-	-	-	-	D	49.8
18. Leslie Road / Reata Road	C	20.0	B	18.6	-	-
19. Badger Rd / Clearwater Ave / Leslie Rd	D	25.5	-	-	-	-
20. Badger Road / I-82 WB Ramps	C	22.4	B	10.0	-	-
21. Badger Road / I-82 EB Ramps	B	13.4	D	45.5	-	-
22. Bermuda Road / Reata Road	A	9.4	A	7.7	-	-
23. Gage Blvd / Reata Road	A	7.5	A	8.6	-	-

Table 14
2040 Full Buildout and Mitigation - PM Peak Hour Intersection LOS Summary

Study Intersection	Mitigation Options					
	Roundabout		Signal		Overlap Phasing	
	LOS	Delay (sec)	LOS	Delay (sec)	LOS	Delay (Sec)
1. Dallas Road / I-82 EB Ramps	D	34.0	D	51.2	-	-
2. Dallas Road / I-82 WB Ramps	C	22.4	B	11.6	-	-
4. Dallas Road / Ava Way	D	34.0	C	27.5	-	-
6. Bombing Range Rd / Kennedy Rod	B	13.9	B	17.5	-	-
9. Kennedy Rd / Keene Road	-	-	-	-	C	33.9
18. Leslie Road / Reata Road	D	26.0	B	19.1	-	-
19. Badger Rd / Clearwater Ave / Leslie Rd	D	29.3	-	-	-	-
20. Badger Road / I-82 WB Ramps	C	20.5	B	12.0	-	-
21. Badger Road / I-82 EB Ramps	B	12.6	B	16.6	-	-
22. Bermuda Road / Reata Road	A	9.2	A	7.1	-	-
23. Gage Blvd / Reata Road	A	6.1	A	7.9	-	-

Preliminary Storm Drainage Report

Harvest Ridge
Benton County, Washington

Prepared for:
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April 27, 2021
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APPENDICES

Appendix A: HydroCAD Model

- HydroCAD Report
- NRCS Web Soil Survey Data

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Certificate of Engineer

Design for the storm system was done in accordance with the Benton County Storm Codes Design and Construction Standards – General Layout Design Standards Section. Design for the storm systems was also done in compliance with applicable sections of the Stormwater Management Manual for Eastern Washington. The technical information and data contained in this report was prepared under the direction and supervision of the undersigned, whose seal, as a professional engineer licensed to practice as such, is affixed below.

This document was:

Prepared by:

Sonia Barakoti, EIT



Approved by:

Jason Mattox, P.E.

1 INTRODUCTION

1.1 General

Harvest Ridge is a project seeking to develop 143 residential lots in three phases. The site is located in Section 5, Township 8 North, Range 28 East, W.M. in Benton County, Washington. The site backs up against the Interstate 82 Highway to the west and is south of the West Village residential development located in Richland.

1.2 Project Description

This preliminary storm drainage report addresses the stormwater runoff generated by a roadway standard section with a 28-foot asphalt width, 1-foot gravel shoulder, 12-foot wide roadside ditch, and 6-foot pedestrian walkway. Storm runoff generated on-site will be retained on-site through surface and subsurface infiltration in accordance with current Benton County Code and the Stormwater Management Manual for Eastern Washington (SMMEW) (Publication No. 18-10-044, August 2019). This report looks at a preliminary storm design for a typical drainage basin and typical infiltration swale. Future UIC devices may be needed at concentrated roadway low points, and would be designed upon final site design.

2 EXISTING CONDITIONS

2.1 Topography

The site comprises approximately 173.36 acres in a roughly rectangular shape which has been truncated by neighboring parcels. The project site is divided into three phases – Phase 1 (42 lots), phase 2 (54 lots) and phase 3 (47 lots). The property is bounded to the west by I-82 and by an existing residential development to the north. Existing agricultural properties can be found to the east and south. The site is currently under agricultural production. Based on available preliminary topographical data, the site slopes north, north-easterly, and north-westerly toward low-lying areas that continue to slope in those directions. Slopes vary from 1% in the highest elevations to as much as 17% in the low-lying drainage-like areas.

2.2 Land Use

The site is currently used for agriculture. The property to the north is residential development. Property to the south, west and east of the site is agriculture. There is an existing building to the southeast on the site, and it is unknown if it is to remain.

2.3 Drainage Patterns

The majority of the development drains from the south to the north, northeast, and northwest. Currently, all the precipitation that enters the site is presumed to infiltrate into surface soils. There are no existing drainages entering the site. The existing low-lying drainage areas have been cut-off by I-82 from receiving offsite drainage. Development of the area north of the site will prevent drainage from leaving the site in that direction. A small area of the site to the east drains toward a drainage-way that continues north-easterly. This drainage-way could see some runoff from the area south of the site and could potentially have some runoff flow off-site.

There is not a water body located on the site. The proposed project will convey stormwater to the surface and subsurface infiltration systems and no stormwater is anticipated to discharge off site upon final site grading and roadway installation.

2.4 Water Wells, Septic Tanks, etc.

There are no known wells or septic systems on site. Residences to the east and across I-82 appear to have wells and septic systems. The stormwater management plan will follow the guidelines set forth by the Benton-Franklin Health District and the Washington State Department of Ecology, for well head protection.

3 DESIGN AND PROJECT COMPLIANCE

Benton County requires the proposed project to comply with the standards and requirements of the SMMEW. This project is part of a common plan of development and will comply with the eight core elements listed in the SMMEW.

The eight core elements this project and report will address are:

- Preparation of a Stormwater Site Plan
- Construction Stormwater Pollution Prevention
- Source Control of Pollution
- Preservation of Natural Drainage Systems
- Runoff Treatment
- Flow Control
- Operation and Maintenance
- Local Requirements

3.1 Preparation of a Stormwater Site Plan

Design plans will be prepared by a licensed professional engineer and submitted with each phase of the project construction that is permitted for the site.

3.2 Construction Stormwater Pollution Prevention

The intent of this element is to ensure adequate measures are taken to address construction stormwater. The contractor, selected by the owner, will be appointed as the Erosion Control Lead for this project. The owner will be responsible for a construction Stormwater Pollution Prevention Plan (SWPPP) as well as compliance with the NPDES Construction Stormwater General Permit.

The plan is as follows:

- The contractor should see at a minimum to provide the following measures:
- To control erosion during construction, existing catch basin grates should be wrapped in geotextile fabric or have a silt sack placed in the grate prior to construction, existing roadsides ditches shall have straw waddles placed to prevent sediment laden water traveling downstream of the property, and all downstream property boundaries should have silt fencing measures in place to prevent sediment laden runoff from leaving the site.
- To prevent wind-blown erosion, the contractor should use person-operated watering devices. No unattended watering of the site should be allowed.
- The site should have a construction entrance with a rip rap pad present to prevent the tracking of mud onto County streets. Any mud that is tracked onto County streets should be swept up to prevent sediment from entering the County storm facilities. This maintenance should be the responsibility of the contractor during construction.
- All construction storm facilities shall be protected from sediment intrusion until disturbed soils are stabilized. All disturbed soil areas must be stabilized immediately upon completion of construction.

3.3 Source Control of Pollution

The intent of source control BMPs is to prevent pollutants from coming into contact with stormwater. Following construction, projects shall apply all known, available, and reasonable source control BMPs. Source control BMPs shall be selected, designed and maintained according to the SMMEW. Applicable means of source control include but are not limited to preventative maintenance, spill prevention & cleanup, employee training inspections, and good housekeeping.

3.4 Preservation of Natural Drainage Systems

In order to maintain and preserve natural drainage on-site, all stormwater runoff produced will be retained and infiltrated on-site via roadside swales and will be discharged at or below the rate and volume that existed prior to development or infiltrated through underground injection control (UIC) devices. The UIC devices will infiltrate stormwater runoff at the runoff source. The intent of the design is to preserve the existing infiltration volumes to a condition equal to or better than their current conditions.

3.5 Runoff Treatment

The stormwater treatment methodology will seek to provide runoff treatment via surface and sub-surface infiltration methods as defined in the SMMEW.

The roadside swales are expected to retain and infiltrate runoff. At localized roadway low points, swales would have an overflow to a sub-surface UIC infiltration system that will also seek to provide stormwater treatment via infiltration into vadose zone materials. The required design storm for non-linked networks is a Type 1A 24-hour storm with a 25-year storm return period.

3.6 Flow Control

The site will be utilizing a combination of roadside swales and subsurface infiltration UIC's and no off-site discharge to surface water is anticipated to occur. Wherever possible, infiltration methods will be targeted as the primary means of flow control on the site.

3.7 Operation and Maintenance

Upon project completion, all stormwater facilities within the project limits will be owned and maintained by the County and will be subjected to their current operations and maintenance programs compliant with the SMMEW. All proposed improvements are in compliance with Benton County code and are detailed using County standard details and notes identified on the construction plans.

3.8 Local Requirements

Benton County requires that stormwater disposal methodologies be compliant with Benton County Code and the SMMEW.

4 STORMWATER SYSTEM DESIGN

The stormwater runoff from the new impervious surfaces will be directed and infiltrated on-site. The design of the proposed stormwater collection, conveyance, and infiltration facilities will be done with the aid of HydroCAD version 10.10-4b computer software (HydroCAD). HydroCAD utilizes the SCS TR-20 methodology to determine runoff excess for a given amount of rainfall. The stormwater system will be designed in accordance with Benton County standards. The County's rainfall distribution design requirements are a SCS Type 1A, 25-year, 24-hour distribution. The 25-year event was used to analyze the ability of roadside swales to infiltrate runoff and will be used in final design to size any needed sub-surface infiltration UIC's for concentrated low point areas. Rainfall for the 25-year event is 1.7 inches, as on the National Oceanic and Atmospheric Administration (NOAA) map.

The drainage basins analyzed will account for impervious roadway areas and additional impervious areas from individual lots contributing to a modeled roadside swale. Each lot is assumed to contribute 3,125 square feet of impervious driveway surface, 1,000 square feet of impervious roof area, and 50 feet behind the sidewalk for pervious area to stormwater runoff. A sub-catchment is routed to a typical swale that overflows to a

subsurface UIC, both modeled as a “pond” in HydroCAD to properly account for the storage/discharge relationship. Sizing of sub-surface infiltration facilities will be done upon final site layout and design.

The stage/discharge rate for the system is based on the infiltration rate of the soils. The on-site soils are classified as loamy fine sand according to the NRCS Web Soil Survey data referenced for this site (see Appendix A). A geotechnical report prepared for the West Village development north of this site performed infiltration testing that resulted in 2.5 inches per hour. Using that tested rate and applying a safety factor of 2 resulted in a design rate of 1.25 inches per hour for use in the analysis of this preliminary storm design for the infiltration swales. The geotechnical report also stated that static groundwater may be present at depths greater than 30 feet.

The attached HydroCAD spreadsheet summarize the storage volume and dissipation for a sample swale. Those values were used in the HydroCAD model as input for stage storage and stage discharge curves. HydroCAD then determines the peak stage and storage that occurs during the design storm event. The attached “pond summaries” show the peak stage and storage in the swale during a 25-year, 24-hour event (1.7 inches of rainfall). At this time, it is believed the in-situ soils would provide stormwater runoff treatment via infiltration. See Appendix A for HydroCAD model results.

4.1 Evaluation of Compliance

Design for the swale was done in accordance with the SMMEW BMP T5.21 Infiltration Swale and future design of sub-surface infiltration UIC’s shall be in accordance with BMP F6.22: Infiltration Trenches.

4.2 Evaluation of Flood Control Capacity

As mentioned above, no flooding is expected to occur during the 25-year, 24-hour event. Should localized flooding occur due to a storm event happening in excess of one of the required design events or the UIC device fails due to lack of maintenances, the localized low points are located along the north and east property lines. Should flooding continue to increase it would be expected to flow north through the West Village development and to the existing storm pond, and east through agricultural land toward an existing drainage way.

4.3 Evaluation of Water Quality Treatment Compliance

The proposed means of stormwater treatment will be through collection and disposal via means of infiltration through roadside swales and UIC devices.

The existing in-situ soils are believed to provide adequate runoff treatment due to the cation exchange capacity found through the NRCS Web Soil Survey website as well as soil contact time in the vadose zone. For future sub-surface UIC’s, the level of treatment that would be required for a low-pollutant loading site with high vadose treatment capacity would be a two-stage drywell. The on-site soils will be classified per Table 5.2 of SMMEW, and the site will be classified per Table 5 (see Appendix A).

5 PROPOSED EROSION CONTROL PLAN

To control erosion during construction, existing catch basin grates should have a geotextile fabric “witch’s hat” installed prior to construction, existing roadside ditches are to be stabilized with straw wattles and check dams, and all downstream property boundaries should have silt fencing measures in place to prevent sediment laden runoff from leaving the site. To prevent windblown erosion, the contractor should use person-operated watering devices. No unattended watering of the site should be allowed. The site should have a construction entrance with a rip rap pad present to prevent the tracking of mud onto County streets. Any mud that is tracked onto County streets should be swept up to prevent sediment from entering Benton County

storm facilities, which shall be protected from sediment intrusion until disturbed soils are stabilized. All disturbed soil areas must be stabilized immediately upon completion of construction with a hydroseed mulch placed on the disturbed surfaces.

6 PROPOSED MAINTENANCE PLAN

Once the project is completed, all stormwater systems will become the property of the County, and it is assumed that the system will be cleaned and maintained in accordance with the systems maintenance plan. It is recommended that the owner follow the maintenance criteria described under BMP T5.21 for Infiltration Swales or F6.22 for Infiltration Trenches in order to prevent the buildup of materials that could inhibit infiltration.

During construction, the contractor should be responsible for the maintenance of all erosion control measures to include silt fencing, catch basin fabric measures, and the preventative maintenance to keep tracked mud off County streets.

7 CONCLUSION

The preliminary stormwater system design described in this report is expected to adequately provide storage and treatment of stormwater for the given design storm event as required by the County and the SMMEW. No flooding is anticipated to occur during the 25-year, 24-hour design storm event and treatment of stormwater seeks to be provided through the vadose zone with adequate separation between the bottom of the UIC device and the identified groundwater table. All proposed stormwater storage and infiltration measures are found to be in compliance with BMP T5.21 and will seek to be in compliance with BMP F6.22 of the SMMEW for design of future infiltration trenches.

8 REFERENCES

PBS (PBS Engineering and Environmental Inc.). (April 2018). *Geotechnical Engineering Report* (Project No. 66325.000). Prepared for Badger Developer, LLC.

Washington State Department of Ecology. (2019, August). *2019 Stormwater Management Manual for Eastern Washington*. Water Quality Program. Publication Number 18-10-044.

Web Soil Survey. United States Department of Agriculture, Natural Resources Conservation Service, 04 June 2020, websoilsurvey.sc.egov.usda.gov/App/WebSoilSurvey.aspx. Accessed 21 April 2021.

Figures

Figure 1: 25-Year Isopluvial Map

Figure 2: SMMEW Table 4.14

Figure 3. SMMEW Table 5.21

Figure 4. SMMEW Table 5.22

Figure 5. SMMEW Table 5.23

Figure 6. Typical Roadside Ditch Section

Figure 7. Typical Infiltration Facility Detail

Figure 8. Typical Section for Areas with Pedestrian Walkways

Figure 4.10: 25-Year, 24-Hour Isopluvial Map

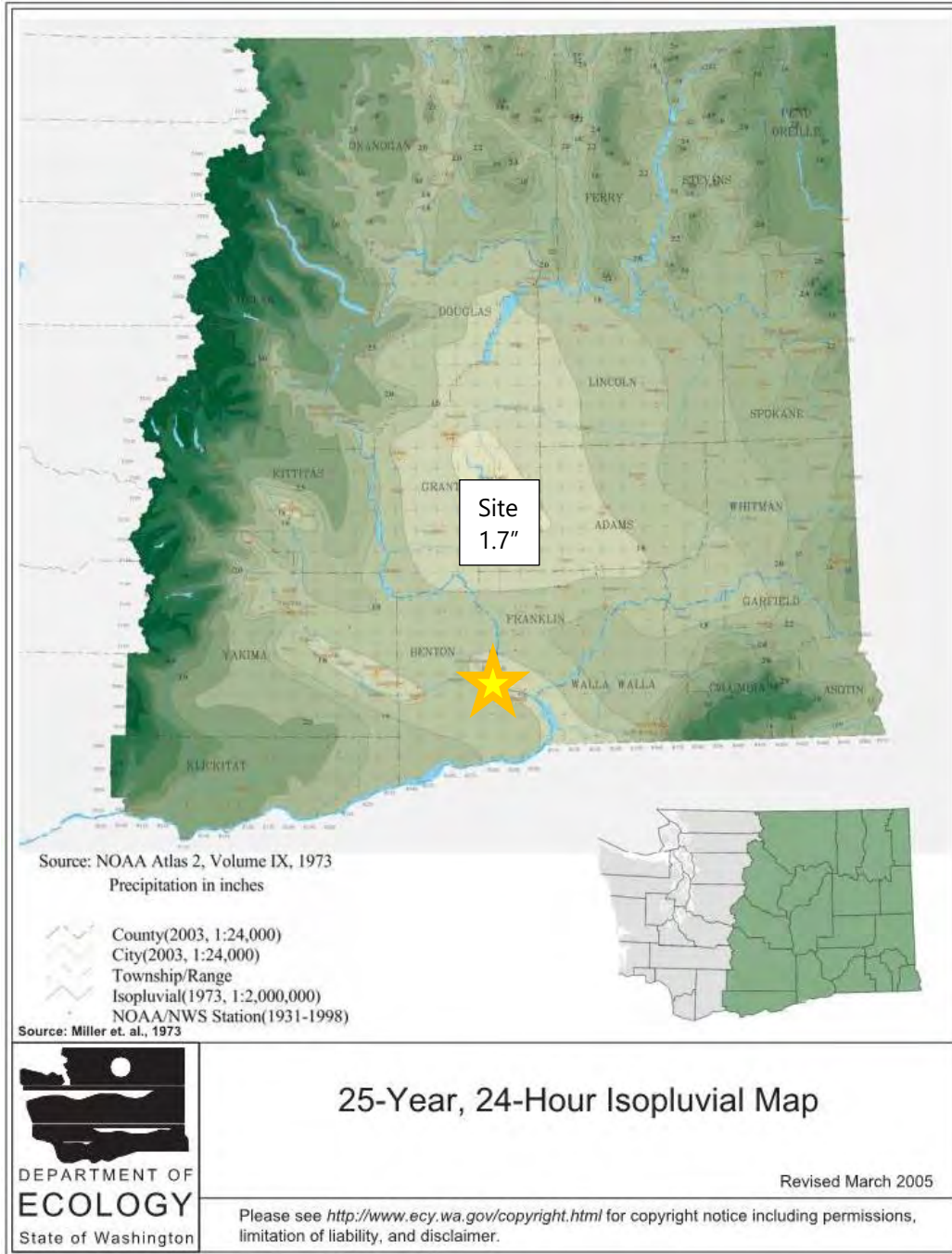


Figure1: 25-Year Isopluvial Map

Table 4.14: Runoff Curve Numbers (CNs) for Selected Agricultural, Suburban, and Urban Areas

Cover type and hydrologic condition	CNs for hydrologic soil group			
	A	B	C	D
Open space (lawns, parks, golf courses, cemeteries, landscaping, etc.)^a				
Poor condition (grass cover <50% of the area)	68	79	86	89
Fair condition (grass cover on 50% to 75% of the area)	49	69	79	84
Good condition (grass cover on >75% of the area)	39	61	74	80
Impervious areas				
Open water bodies: lakes, wetlands, ponds etc.	100	100	100	100
Paved parking lots, roofs, driveways, etc. (excluding right-of-way)	98	98	98	98
Permeable pavers and permeable interlocking concrete (assumed as 85% impervious and 15% lawn)				
Fair lawn condition (weighted average CNs)	95	96	97	97
Gravel (including right-of-way)	76	85	89	91
Dirt (including right-of-way)	72	82	87	89
Pasture, grassland, or range-continuous forage for grazing				
Poor condition (ground cover <50% or heavily grazed with no mulch)	68	79	86	89
Fair condition (ground cover 50% to 75% and not heavily grazed)	49	69	79	84
Good condition (ground cover >75% and lightly or only occasionally grazed)	39	61	74	80
Cultivated agricultural lands				
Row Crops (good) e.g., corn, sugar beets, soy beans	64	75	82	85
Small Grain (good) e.g., wheat, barley, flax	60	72	80	84
Meadow				
Continuous grass, protected from grazing and generally mowed for hay	30	58	71	78
Brush (brush-weed-grass mixture with brush the major element)				

Figure 2: SMMEW Table 4.14

Table 4.14: Runoff Curve Numbers (CNs) for Selected Agricultural, Suburban, and Urban Areas (continued)

Cover type and hydrologic condition	CNs for hydrologic soil group			
	A	B	C	D
Poor (<50% ground cover)	48	67	77	83
Fair (50% to 75% ground cover)	35	56	70	77
Good (>75% ground cover)	30 ^b	48	65	73
Woods-grass combination (orchard or tree farm)^c				
Poor	57	73	82	86
Fair	43	65	76	82
Good	32	58	72	79
Woods				
Poor (Forest litter, small trees, and brush destroyed by heavy grazing or regular burning)	45	66	77	83
Fair (Woods are grazed but not burned, and some forest litter covers the soil)	36	60	73	79
Good (Woods are protected from grazing, and litter and brush adequately cover the soil)	30	55	70	77
Herbaceous (mixture of grass, weeds, and low-growing brush, with brush the minor element)				
Poor (<30% ground cover)	n/a ^d	80	87	93
Fair (30% to 70% ground cover)		71	81	89
Good (>70% ground cover)		62	74	85
Sagebrush with grass understory				
Poor (<30% ground cover)	n/a ^d	67	80	85
Fair (30% to 70% ground cover)		51	63	70
Good (>70% ground cover)		35	47	55
^a Composite CNs may be computed for other combinations of open space cover type. ^b Actual CN is < 30; use CN = 30 for runoff computations. ^c The indicated CNs were computed for areas with 50% woods and 50% grass (pasture) cover. Other combinations of conditions may be computed from the CNs for woods and pasture. ^d CNs have not been developed for hydrologic soil group A.				

Figure 2: SMMEW Table 4.14

Table 5.21: Vadose Zone Treatment Capacity

Treatment Capacity Classification and Required Minimum Thickness	Description of Vadose Zone Layer ^{c,d}
<p style="text-align: center;">HIGH</p> <p style="text-align: center;">A minimum thickness of 5 feet</p>	<p>Meets all of the following characteristics:</p> <ul style="list-style-type: none"> • Materials with median grain size < 0.125 mm • Having a sand to silt/clay ratio of < 1:1 and sand plus gravel < 50% • Field-tested saturated hydraulic conductivity below 2.4 in/hr at the bottom elevation of the proposed BMP • Materials with CEC of ≥ 5 milliequivalents CEC/100 g dry soils, and a minimum of 1% organic content, ≥ 18-inch minimum thickness • Typical geotechnical descriptive words for appropriate soils: <ul style="list-style-type: none"> ▫ Lean, fat, or elastic clay ▫ Sandy or silty clay ▫ Silt ▫ Clayey or sandy silt ▫ Sandy loam or loamy sand ▫ Silt/clay with interbedded sand ▫ Well-compacted, poorly sorted materials <p><i>This category generally includes till, hardpan, caliche, and loess.</i></p>
<p style="text-align: center;">MEDIUM</p> <p style="text-align: center;">A minimum thickness of 10 feet</p>	<p>Meets all of the following characteristics:</p> <ul style="list-style-type: none"> • Materials with average grain size 0.125 to 4 mm • Having a sand to silt/clay ratio from 1:1 and 9:1 and percent sand > percent gravel • Field-tested saturated hydraulic conductivity between 2.4 in/hr and 6 in/hr at the bottom elevation of the proposed BMP • Materials between 2 and 5 milliequivalents CEC/100 g dry soils, and a minimum of 0.5% to 1% organic content, • Typical geotechnical descriptive words for appropriate soils: <ul style="list-style-type: none"> ▫ Fine, medium, or coarse sand

Figure 3: SMMEW Table 5.21

Table 5.21: Vadose Zone Treatment Capacity (continued)

Treatment Capacity Classification and Required Minimum Thickness	Description of Vadose Zone Layer ^{c,d}
	<ul style="list-style-type: none"> ▫ Sand with interbedded clay and/or silt ▫ Poorly compacted, poorly sorted materials <p><i>This category includes some alluvium and outwash deposits.</i></p>
<p style="text-align: center;">LOW</p> <p style="text-align: center;">A minimum thickness of 25 feet</p>	<p>Meets all of the following characteristics:</p> <ul style="list-style-type: none"> • Materials with median grain size > 4 mm to 64 mm • Having a sand to silt/clay ratio > 9:1 and percent sand less than percent gravel • Field-tested saturated hydraulic conductivity between 6 in/hr and 12 in/hr at the bottom elevation of the proposed BMP • Materials with CEC of ≤ 2 milliequivalents CEC/100 g dry soils and a minimum of < 0.5% organic content • Typical geotechnical descriptive words for appropriate soils: <ul style="list-style-type: none"> ▫ Poorly sorted, silty, or muddy gravel ▫ Sandy gravel, gravelly sand, or sand and gravel <p><i>This category includes some alluvium and outwash deposits.</i></p>
<p style="text-align: center;">NONE</p> <p style="text-align: center;">Minimum thickness not applicable</p>	<p>Meets any of the following characteristics:</p> <ul style="list-style-type: none"> • Vadose zone conditions are unknown; or • Vadose zone conditions are known and are characterized in any of the following ways: <ul style="list-style-type: none"> ▫ Sedimentary materials with median grain size > 64 mm ▫ Total fines (sand and mud) < 5% ▫ Field-tested saturated hydraulic conductivity > 12 in/hr at the bottom elevation of the proposed BMP ▫ Materials with no measurable CEC or organic content ▫ Typical geotechnical descriptive words for appropriate soils: <ul style="list-style-type: none"> ■ Well-sorted or clean gravel ■ Boulders and/or cobbles ■ Fractured rock <p><i>This category generally includes vadose zones with conditions that are unknown or vadose zones that are known to be composed of fractured basalt, other fractured bedrock, and cavernous limestone.</i></p>

Figure 3: SMMEW Table 5.21

Table 5.22: Pollutant Loading Classifications for Solids, Metals, and Oil in Stormwater Runoff Directed to UIC Wells

Classification	Areas Contributing Runoff to the UIC Well
Insignificant	<ul style="list-style-type: none"> • Impervious surfaces not subject to motorized vehicle traffic or application of sand or deicing chemicals • Unmaintained open space
Low	<ul style="list-style-type: none"> • Parking areas with < 40 total trip ends per 1,000 square feet (sf) of gross building area and < 100 total trip ends (if you exceed either threshold, move to the Medium Classification) • Other land uses with similar traffic/use characteristics (e.g., most residential parking and employee-only parking areas for small office parks or other commercial buildings) • Inside Urban Growth Management Areas <ul style="list-style-type: none"> ◦ Fully controlled and partially controlled limited access highways with ADT < 15,000 ◦ Other roads with ADT < 7,500 vehicles • Outside Urban Growth Management Areas <ul style="list-style-type: none"> ◦ All roads with ADT < 15,000 vehicles
Medium	<ul style="list-style-type: none"> • Parking areas with between 40 and 100 trip ends per 1,000sf of gross building area and between 100 and 300 total trip ends (if you exceed either threshold, move to the High Classification) • Primary access points for high-density residential apartments • Intersections controlled by traffic signals that do not meet the definition of a high-density intersection (see the Glossary) • Transit center bus stops • Inside Urban Growth Management Areas <ul style="list-style-type: none"> ◦ Fully controlled and partially controlled limited access highways with ADT between 15,000 and 30,000 vehicles ◦ Other roads with ADT between 7,500 and 30,000 vehicles • Outside Urban Growth Management Areas <ul style="list-style-type: none"> ◦ All roads with ADT between 15,000 and 30,000 vehicles
High	<ul style="list-style-type: none"> • High-use sites <ul style="list-style-type: none"> ◦ Includes roads with ADT > 30,000 vehicles • On-street parking areas of municipal streets in commercial and industrial areas
	<ul style="list-style-type: none"> • Highway rest areas • Other land uses with similar traffic/use characteristics (e.g., commercial buildings with a frequent turnover of visitors, such as grocery stores, shopping malls, restaurants, drive-through services, etc.)
<p>Notes:</p> <p>a. This table is applicable to designers intending to use the presumptive approach to identify the necessary level of treatment upstream of a UIC well. Designers for industrial sites with no outdoor processing, storage, or handling of raw or finished products may also use these tables.</p> <p>b. This table is not applicable to stormwater runoff from industrial activities, outdoor processing, storage, or handling of raw or finished products; or areas where stormwater runoff comes into contact with leachate or other prohibited discharges.</p>	

Figure 4: SMMEW Table 5.22

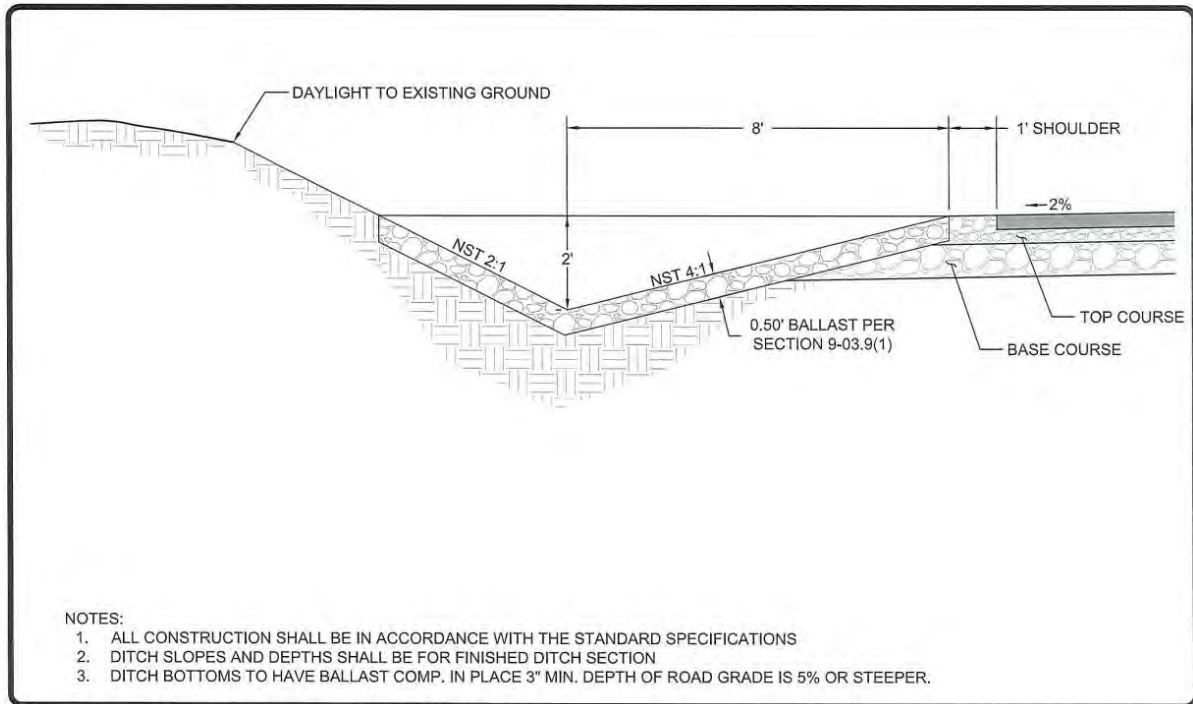
Table 5.23: Treatment Required for Solids, Oil, and Metals

Pollutant Loading	Treatment Capacity			
	High	Medium	Low	None
Insignificant	Two-stage drywell ^a	Two-stage drywell ^a	Two-stage drywell ^a	Two-stage drywell ^a
Low	Two-stage drywell ^a	Pretreatment ^b	Pretreatment ^b	Remove solids ^c
Medium	Pretreatment ^b	Remove solids ^c	Remove solids ^c	Remove solids ^c
High	Remove oil ^d	Remove oil ^d	Remove oil and solids ^{c,d}	Remove oil and solids ^{c,d}

Notes:

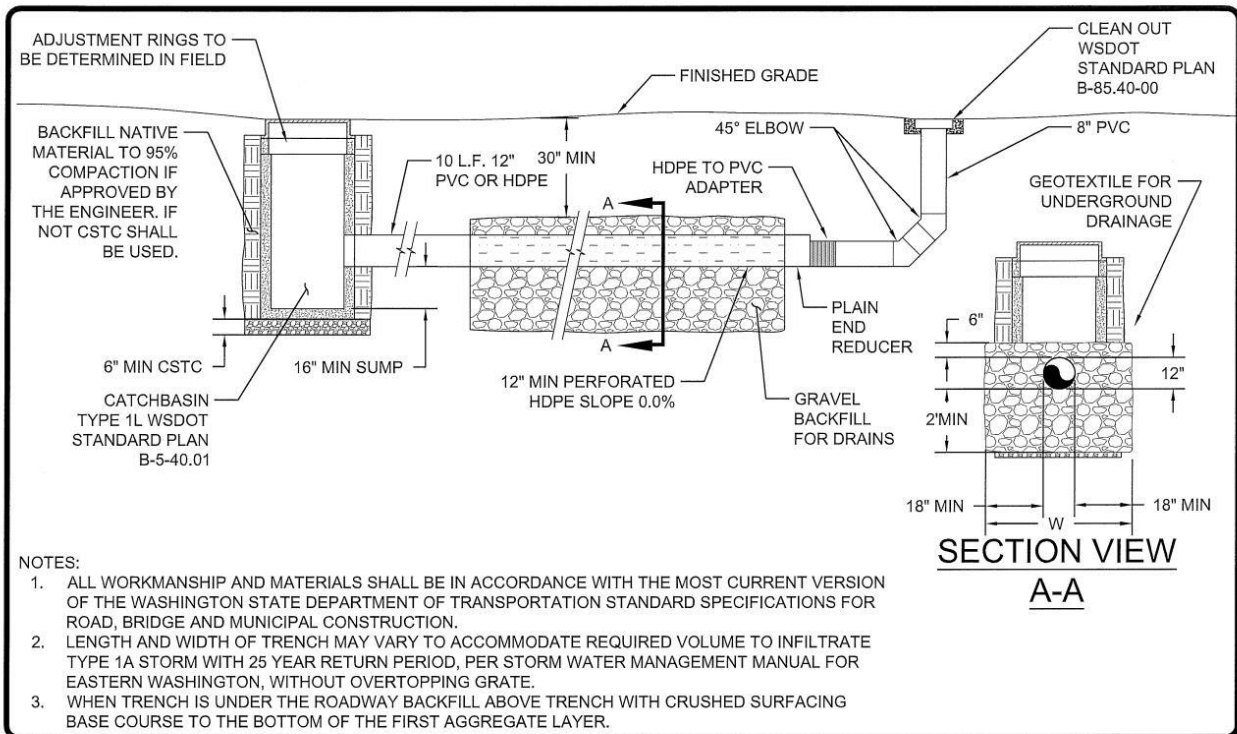
- A two-stage drywell has a catch basin or other presettling device that traps small quantities of oils and solids. Regularly inspect and maintain the catch basin or other presettling device.
- Pretreatment removes solids, but at a level less than basic treatment. Ecology's definition for pretreatment is 50% removal. See the definition for pretreatment in the [Glossary](#).
- Treatment to remove solids means basic treatment. See the definition of basic treatment in the [Glossary](#). Removal of solids removes a large portion of the total metals in most stormwater runoff. Any special treatment requirements in this chapter still apply. Owners may use appropriate source control BMPs for low-pollutant-loading sites, in lieu of structural treatment BMPs.
- Treatment to remove oil is to be accomplished by applying one of the oil control BMPs identified in this manual. See BMP [BMP T5.100: API Separator Bay](#) and [BMP T5.110: Coalescing Plate \(CP\) Separator Bay](#).
 - At high-density intersections and at commercial or industrial sites subject to an expected average daily traffic (ADT) count of 100 vehicles/1,000 sf gross building area, sufficient quantities of oil may be generated to justify operation of a separator BMP.
 - At other high-use sites, project proponents may select a basic treatment BMP that also provides adsorptive capacity, such as a biofiltration or bioinfiltration swale, a filter, or other adsorptive technology, in lieu of a separator BMP. A catch basin with a turned down elbow is not adequate for oil control in this case.
 - For roads in eastern Washington with ADT >30K, basic treatment with sorptive characteristics (i.e., swale or sand filter) is required, and suffices for the oil treatment requirement.
 - The requirement to apply a basic treatment BMP with adsorptive characteristics also applies to commercial parking and to streets with ADT > 7,500.

Figure 5: SMMEW Table 5.23



 <p>BENTON COUNTY ROAD DEPARTMENT</p>	<h2 style="margin: 0;">ROADWAY DITCH - STANDARD</h2> <p>APPROVED BY:  COUNTY ENGINEER</p> <p style="text-align: right;">DATE 4/25/17</p>	<p>STANDARD PLAN</p> <h1 style="margin: 0;">R-6</h1> <p>SHEET 1 OF 1</p>
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Figure 6: Typical Roadside Ditch




 <p>BENTON COUNTY ROAD DEPARTMENT</p>	<h2 style="margin: 0;">EXFILTRATION TRENCH</h2> <p>APPROVED BY:</p> <p style="text-align: center;"><i>David J. Hill</i> COUNTY ENGINEER</p> <p style="text-align: right;">DATE: <u>8-18-2015</u></p>	<p>STANDARD PLAN</p> <h1 style="margin: 0;">R-15</h1> <p>SHEET 1 OF 1</p>
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Figure 7: Typical Infiltration Facility Detail

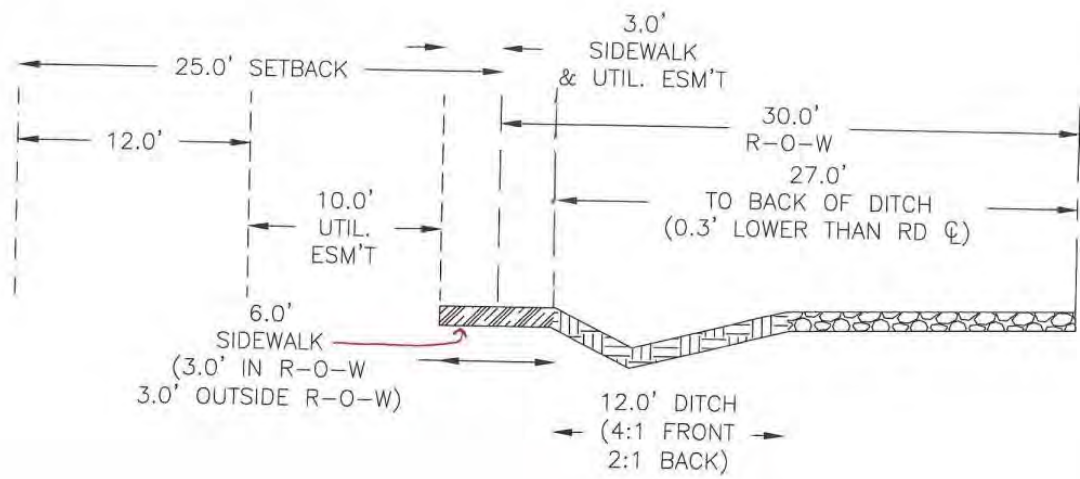
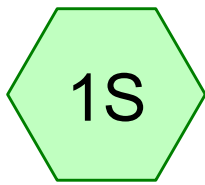


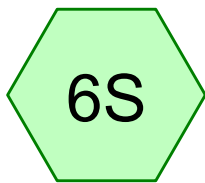
Figure 8: Typical Section for Areas with Pedestrian Walkways

Appendix A

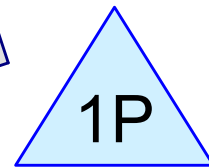
**HydroCAD Report
NRCS Web Soil Survey Data**



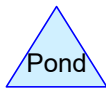
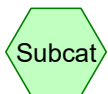
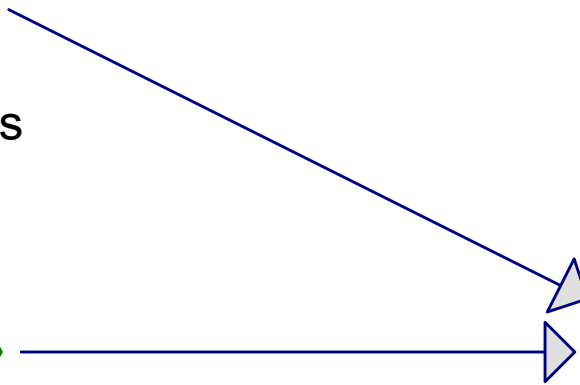
Impervious



Pervious



Swale



66325.000_PrelimModel-3Lots

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Page 2

Rainfall Events Listing (selected events)

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	25-YR 24-HR	Type IA 24-hr		Default	24.00	1	1.70	2

66325.000_PrelimModel-3Lots

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Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
0.577	74	>75% Grass cover, Good, HSG C (6S)
0.215	98	Average Driveways (3 lots @ 3125 SF) (1S)
0.173	98	Half-Road (1S)
0.069	98	Pedestrian Pathway (1S)
0.069	98	Roofs (3 @ 1000 SF) (1S)
1.103	85	TOTAL AREA

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Page 4

Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.000	HSG A	
0.000	HSG B	
0.577	HSG C	6S
0.000	HSG D	
0.526	Other	1S
1.103		TOTAL AREA

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Ground Covers (all nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcat Number
0.000	0.000	0.577	0.000	0.000	0.577	>75% Grass cover, Good	
0.000	0.000	0.000	0.000	0.215	0.215	Average Driveways (3 lots @ 3125 SF)	
0.000	0.000	0.000	0.000	0.173	0.173	Half-Road	
0.000	0.000	0.000	0.000	0.069	0.069	Pedestrian Pathway	
0.000	0.000	0.000	0.000	0.069	0.069	Roofs (3 @ 1000 SF)	
0.000	0.000	0.577	0.000	0.526	1.103	TOTAL AREA	

66325.000_PrelimModel-3Lots

Type IA 24-hr 25-YR 24-HR Rainfall=1.70"

Prepared by PBS Engineering and Environmental Inc.

Printed 4/26/2021

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Page 6

Time span=0.00-72.00 hrs, dt=0.05 hrs, 1441 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment1S: Impervious

Runoff Area=22,926 sf 100.00% Impervious Runoff Depth=1.48"
Tc=5.0 min CN=98 Runoff=0.20 cfs 0.065 af

Subcatchment6S: Pervious

Runoff Area=25,122 sf 0.00% Impervious Runoff Depth=0.22"
Tc=5.0 min CN=74 Runoff=0.01 cfs 0.011 af

Pond 1P: Swale

Peak Elev=9.49' Storage=846 cf Inflow=0.20 cfs 0.075 af
Outflow=0.05 cfs 0.075 af

Total Runoff Area = 1.103 ac Runoff Volume = 0.075 af Average Runoff Depth = 0.82"
52.29% Pervious = 0.577 ac 47.71% Impervious = 0.526 ac

Summary for Subcatchment 1S: Impervious

[49] Hint: $T_c < 2dt$ may require smaller dt

Runoff = 0.20 cfs @ 7.87 hrs, Volume= 0.065 af, Depth= 1.48"

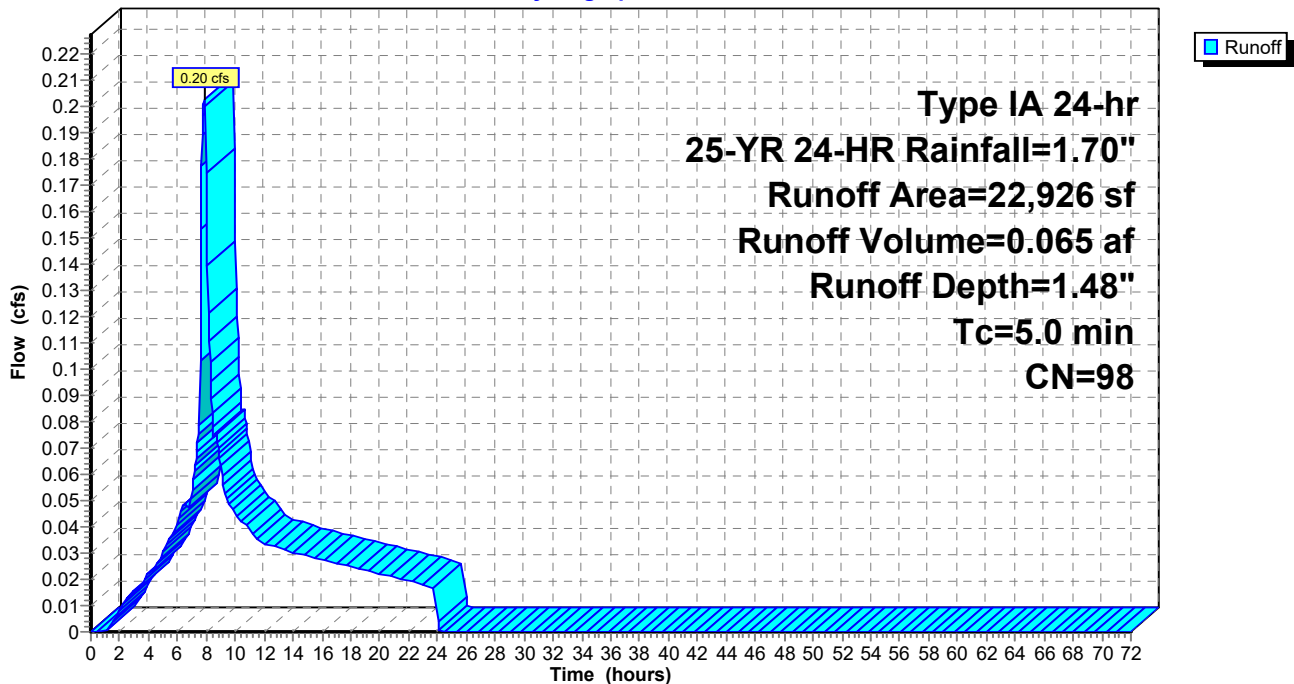
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, $dt= 0.05$ hrs
 Type IA 24-hr 25-YR 24-HR Rainfall=1.70"

	Area (sf)	CN	Description
*	9,375	98	Average Driveways (3 lots @ 3125 SF)
*	3,000	98	Roofs (3 @ 1000 SF)
*	7,536	98	Half-Road
*	3,015	98	Pedestrian Pathway
	22,926	98	Weighted Average
	22,926		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry,

Subcatchment 1S: Impervious

Hydrograph



Summary for Subcatchment 6S: Pervious

[49] Hint: $T_c < 2dt$ may require smaller dt

Runoff = 0.01 cfs @ 17.25 hrs, Volume= 0.011 af, Depth= 0.22"

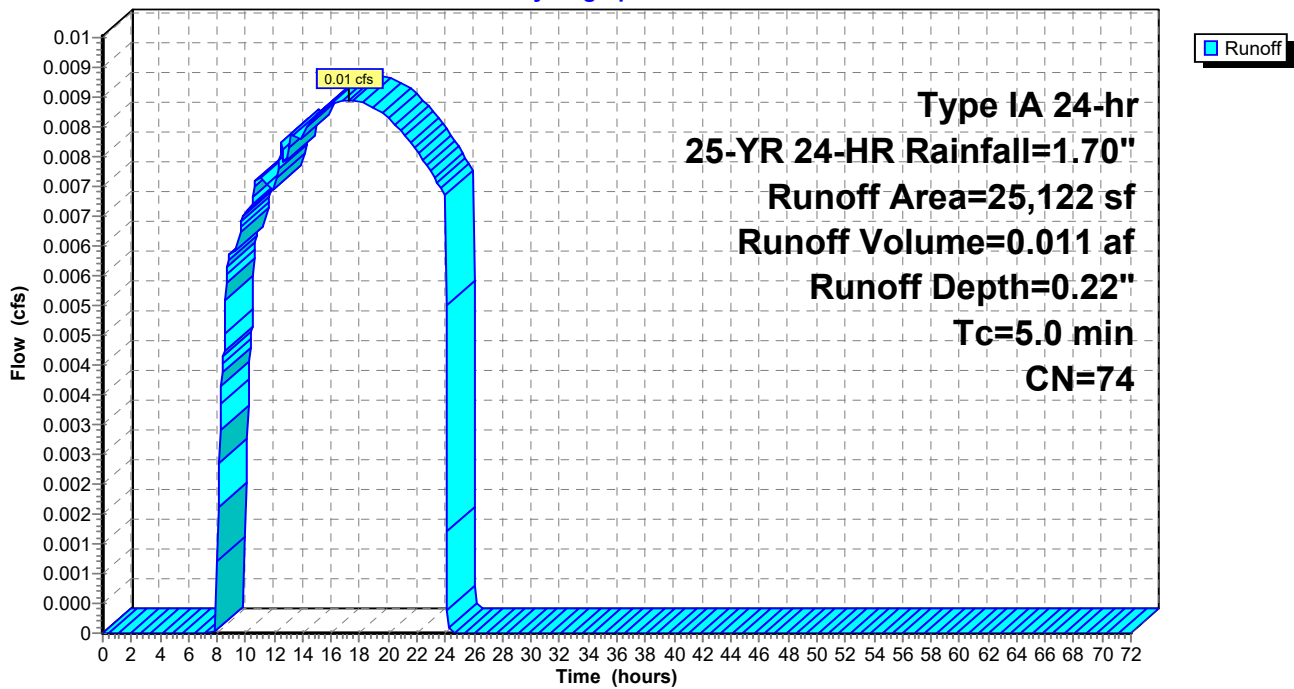
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, $dt= 0.05$ hrs
 Type IA 24-hr 25-YR 24-HR Rainfall=1.70"

Area (sf)	CN	Description
25,122	74	>75% Grass cover, Good, HSG C
25,122		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry,

Subcatchment 6S: Pervious

Hydrograph



Summary for Pond 1P: Swale

Inflow Area = 1.103 ac, 47.71% Impervious, Inflow Depth = 0.82" for 25-YR 24-HR event
 Inflow = 0.20 cfs @ 7.87 hrs, Volume= 0.075 af
 Outflow = 0.05 cfs @ 10.39 hrs, Volume= 0.075 af, Atten= 76%, Lag= 151.1 min
 Discarded = 0.05 cfs @ 10.39 hrs, Volume= 0.075 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
 Peak Elev= 9.49' @ 10.39 hrs Surf.Area= 1,681 sf Storage= 846 cf

Plug-Flow detention time= 251.4 min calculated for 0.075 af (100% of inflow)
 Center-of-Mass det. time= 251.3 min (979.2 - 727.9)

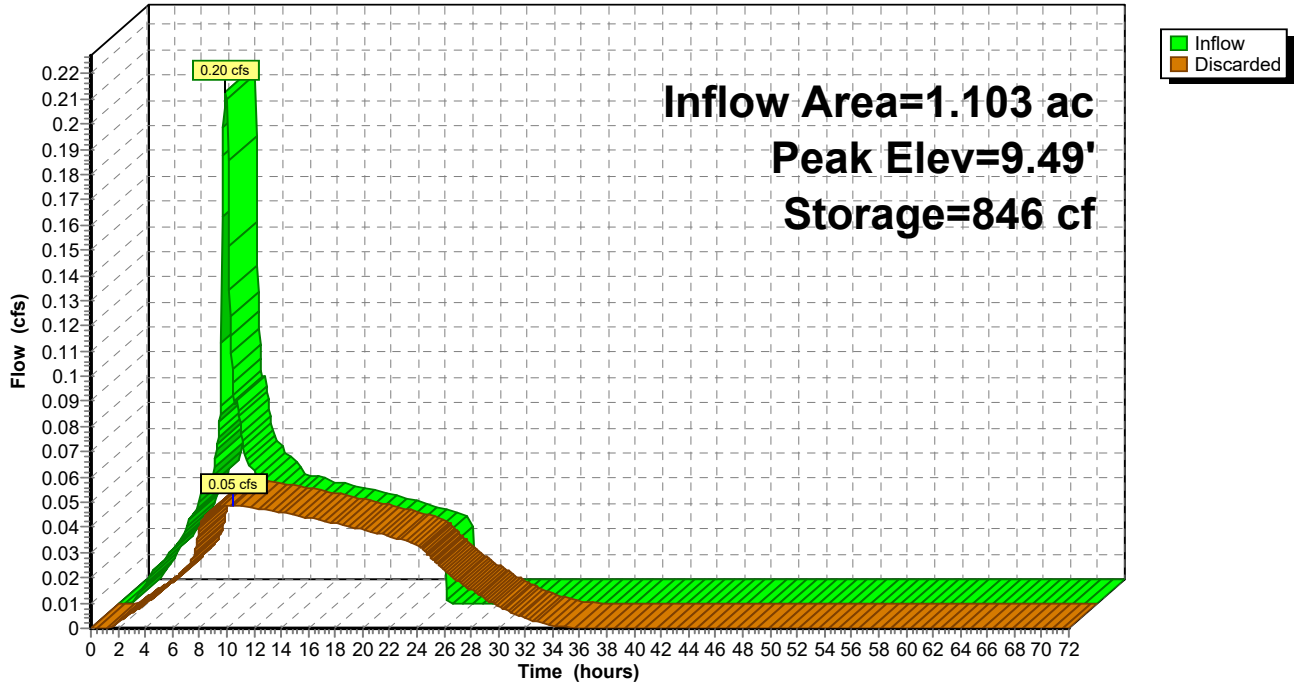
Volume	Invert	Avail.Storage	Storage Description			
#1	8.00'	2,019 cf	Custom Stage Data (Irregular) Listed below (Recalc)			
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)	
8.00	1	16.0	0	0	1	
9.00	753	502.0	260	260	20,036	
10.00	3,015	1,005.0	1,758	2,019	80,362	

Device	Routing	Invert	Outlet Devices
#1	Discarded	8.00'	1.250 in/hr Exfiltration over Surface area

Discarded OutFlow Max=0.05 cfs @ 10.39 hrs HW=9.49' (Free Discharge)
 ↑1=Exfiltration (Exfiltration Controls 0.05 cfs)

Pond 1P: Swale

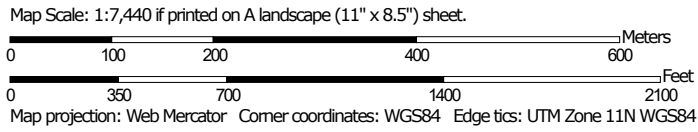
Hydrograph



Hydrologic Soil Group—Benton County Area, Washington
(Hydrologic Soil Group)




Soil Map may not be valid at this scale.



Hydrologic Soil Group—Benton County Area, Washington
(Hydrologic Soil Group)

MAP LEGEND

Area of Interest (AOI)









 Area of Interest (AOI)

Soils

Soil Rating Polygons





-  A
-  A/D
-  B
-  B/D
-  C
-  C/D
-  D
-  Not rated or not available

Soil Rating Lines


-  A
-  A/D
-  B
-  B/D
-  C
-  C/D
-  D
-  Not rated or not available

Soil Rating Points






-  A
-  A/D
-  B
-  B/D

-  C
-  C/D
-  D
-  Not rated or not available

Water Features

 Streams and Canals

Transportation

-  Rails
-  Interstate Highways
-  US Routes
-  Major Roads
-  Local Roads

Background

 Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:20,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Benton County Area, Washington
Survey Area Data: Version 16, Jun 4, 2020

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Jun 4, 2020—Jul 2, 2020

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Hydrologic Soil Group

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
HeE	Hezel loamy fine sand, 0 to 30 percent slopes	C	200.5	91.9%
QuE	Quincy loamy sand, 0 to 30 percent	A	9.8	4.5%
WdAB	Warden silt loam, 0 to 5 percent slopes	B	7.5	3.4%
WdE3	Warden silt loam, 15 to 30 percent slopes, severely eroded	B	0.3	0.2%
Totals for Area of Interest			218.1	100.0%

Description

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The soils in the United States are assigned to four groups (A, B, C, and D) and three dual classes (A/D, B/D, and C/D). The groups are defined as follows:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas. Only the soils that in their natural condition are in group D are assigned to dual classes.

Rating Options

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

Physical Soil Properties

This table shows estimates of some physical characteristics and features that affect soil behavior. These estimates are given for the layers of each soil in the survey area. The estimates are based on field observations and on test data for these and similar soils.

Depth to the upper and lower boundaries of each layer is indicated.

Particle size is the effective diameter of a soil particle as measured by sedimentation, sieving, or micrometric methods. Particle sizes are expressed as classes with specific effective diameter class limits. The broad classes are sand, silt, and clay, ranging from the larger to the smaller.

Sand as a soil separate consists of mineral soil particles that are 0.05 millimeter to 2 millimeters in diameter. In this table, the estimated sand content of each soil layer is given as a percentage, by weight, of the soil material that is less than 2 millimeters in diameter.

Silt as a soil separate consists of mineral soil particles that are 0.002 to 0.05 millimeter in diameter. In this table, the estimated silt content of each soil layer is given as a percentage, by weight, of the soil material that is less than 2 millimeters in diameter.

Clay as a soil separate consists of mineral soil particles that are less than 0.002 millimeter in diameter. In this table, the estimated clay content of each soil layer is given as a percentage, by weight, of the soil material that is less than 2 millimeters in diameter.

The content of sand, silt, and clay affects the physical behavior of a soil. Particle size is important for engineering and agronomic interpretations, for determination of soil hydrologic qualities, and for soil classification.

The amount and kind of clay affect the fertility and physical condition of the soil and the ability of the soil to adsorb cations and to retain moisture. They influence shrink-swell potential, saturated hydraulic conductivity (K_{sat}), plasticity, the ease of soil dispersion, and other soil properties. The amount and kind of clay in a soil also affect tillage and earthmoving operations.

Moist bulk density is the weight of soil (oven-dry) per unit volume. Volume is measured when the soil is at field moisture capacity, that is, the moisture content at 1/3- or 1/10-bar (33kPa or 10kPa) moisture tension. Weight is determined after the soil is dried at 105 degrees C. In the table, the estimated moist bulk density of each soil horizon is expressed in grams per cubic centimeter of soil material that is less than 2 millimeters in diameter. Bulk density data are used to compute linear extensibility, shrink-swell potential, available water capacity, total pore space, and other soil properties. The moist bulk density of a soil indicates the pore space available for water and roots. Depending on soil texture, a bulk density of more than 1.4 can restrict water storage and root penetration. Moist bulk density is influenced by texture, kind of clay, content of organic matter, and soil structure.

Saturated hydraulic conductivity (Ksat) refers to the ease with which pores in a saturated soil transmit water. The estimates in the table are expressed in terms of micrometers per second. They are based on soil characteristics observed in the field, particularly structure, porosity, and texture. Saturated hydraulic conductivity (Ksat) is considered in the design of soil drainage systems and septic tank absorption fields.

Available water capacity refers to the quantity of water that the soil is capable of storing for use by plants. The capacity for water storage is given in inches of water per inch of soil for each soil layer. The capacity varies, depending on soil properties that affect retention of water. The most important properties are the content of organic matter, soil texture, bulk density, and soil structure. Available water capacity is an important factor in the choice of plants or crops to be grown and in the design and management of irrigation systems. Available water capacity is not an estimate of the quantity of water actually available to plants at any given time.

Linear extensibility refers to the change in length of an unconfined clod as moisture content is decreased from a moist to a dry state. It is an expression of the volume change between the water content of the clod at 1/3- or 1/10-bar tension (33kPa or 10kPa tension) and oven dryness. The volume change is reported in the table as percent change for the whole soil. The amount and type of clay minerals in the soil influence volume change.

Linear extensibility is used to determine the shrink-swell potential of soils. The shrink-swell potential is low if the soil has a linear extensibility of less than 3 percent; moderate if 3 to 6 percent; high if 6 to 9 percent; and very high if more than 9 percent. If the linear extensibility is more than 3, shrinking and swelling can cause damage to buildings, roads, and other structures and to plant roots. Special design commonly is needed.

Organic matter is the plant and animal residue in the soil at various stages of decomposition. In this table, the estimated content of organic matter is expressed as a percentage, by weight, of the soil material that is less than 2 millimeters in diameter. The content of organic matter in a soil can be maintained by returning crop residue to the soil.

Organic matter has a positive effect on available water capacity, water infiltration, soil organism activity, and tilth. It is a source of nitrogen and other nutrients for crops and soil organisms.

Erosion factors are shown in the table as the K factor (Kw and Kf) and the T factor. Erosion factor K indicates the susceptibility of a soil to sheet and rill erosion by water. Factor K is one of six factors used in the Universal Soil Loss Equation (USLE) and the Revised Universal Soil Loss Equation (RUSLE) to predict the average annual rate of soil loss by sheet and rill erosion in tons per acre per year. The estimates are based primarily on percentage of silt, sand, and organic matter and on soil structure and Ksat. Values of K range from 0.02 to 0.69. Other factors being equal, the higher the value, the more susceptible the soil is to sheet and rill erosion by water.

Erosion factor Kw indicates the erodibility of the whole soil. The estimates are modified by the presence of rock fragments.

Erosion factor Kf indicates the erodibility of the fine-earth fraction, or the material less than 2 millimeters in size.

Erosion factor T is an estimate of the maximum average annual rate of soil erosion by wind and/or water that can occur without affecting crop productivity over a sustained period. The rate is in tons per acre per year.

Wind erodibility groups are made up of soils that have similar properties affecting their susceptibility to wind erosion in cultivated areas. The soils assigned to group 1 are the most susceptible to wind erosion, and those assigned to group 8 are the least susceptible. The groups are described in the "National Soil Survey Handbook."

Wind erodibility index is a numerical value indicating the susceptibility of soil to wind erosion, or the tons per acre per year that can be expected to be lost to wind erosion. There is a close correlation between wind erosion and the texture of the surface layer, the size and durability of surface clods, rock fragments, organic matter, and a calcareous reaction. Soil moisture and frozen soil layers also influence wind erosion.

Reference:

United States Department of Agriculture, Natural Resources Conservation Service. National soil survey handbook, title 430-VI. (<http://soils.usda.gov>)

Report—Physical Soil Properties

Three values are provided to identify the expected Low (L), Representative Value (R), and High (H).

Physical Soil Properties—Benton County Area, Washington														
Map symbol and soil name	Depth	Sand	Silt	Clay	Moist bulk density	Saturated hydraulic conductivity	Available water capacity	Linear extensibility	Organic matter	Erosion factors			Wind erodibility group	Wind erodibility index
										Kw	Kf	T		
	<i>In</i>	<i>Pct</i>	<i>Pct</i>	<i>Pct</i>	<i>g/cc</i>	<i>micro m/sec</i>	<i>In/In</i>	<i>Pct</i>	<i>Pct</i>					
HeE—Hezel loamy fine sand, 0 to 30 percent slopes														
Hezel	0-3	-80-	-17-	2- 4- 5	1.25-1.35 -1.45	42.00-92.00-14 1.00	0.09-0.11-0. 13	0.0- 1.5- 2.9	0.0- 0.3- 0.5	.32	.32	5	2	134
	3-16	-81-	-17-	0- 3- 5	1.40-1.50 -1.60	42.00-92.00-14 1.00	0.08-0.10-0. 12	0.0- 1.5- 2.9	0.0- 0.3- 0.5	.43	.43			
	16-60	-34-	-59-	5- 7- 8	1.30-1.40 -1.50	1.40-3.00-4.00	0.13-0.17-0. 21	0.0- 1.5- 2.9	0.0- 0.3- 0.5	.64	.64			
QuE—Quincy loamy sand, 0 to 30 percent														
Quincy	0-9	-80-	-16-	1- 4- 6	1.45-1.55 -1.65	42.00-92.00-14 1.00	0.09-0.11-0. 12	0.0- 1.5- 2.9	0.5- 0.8- 1.0	.15	.15	5	2	134
	9-60	-79-	-17-	1- 4- 7	1.50-1.60 -1.70	42.00-92.00-14 1.00	0.08-0.10-0. 12	0.0- 1.5- 2.9	0.0- 0.3- 0.5	.32	.32			

Physical Soil Properties--Benton County Area, Washington														
Map symbol and soil name	Depth	Sand	Silt	Clay	Moist bulk density	Saturated hydraulic conductivity	Available water capacity	Linear extensibility	Organic matter	Erosion factors			Wind erodibility group	Wind erodibility index
										Kw	Kf	T		
	<i>In</i>	<i>Pct</i>	<i>Pct</i>	<i>Pct</i>	<i>g/cc</i>	<i>micro m/sec</i>	<i>In/In</i>	<i>Pct</i>	<i>Pct</i>					
WdAB— Warden silt loam, 0 to 5 percent slopes														
Warden	0-9	-21-	-68-	8-12- 15	1.15-1.23 -1.30	4.00-9.00-14.00	0.19-0.20-0.21	0.0- 1.5- 2.9	1.0- 2.0- 3.0	.43	.43	5	5	56
	9-19	-21-	-68-	8-12- 15	1.30-1.38 -1.45	4.00-9.00-14.00	0.16-0.18-0.20	0.0- 1.5- 2.9	0.0- 0.3- 0.5	.55	.55			
	19-60	-21-	-68-	8-12- 15	1.35-1.43 -1.50	4.00-9.00-14.00	0.19-0.20-0.21	0.0- 1.5- 2.9	0.0- 0.3- 0.5	.55	.55			
WdE3— Warden silt loam, 15 to 30 percent slopes, severely eroded														
Warden	0-2	-21-	-68-	8-12- 15	1.15-1.23 -1.30	4.00-9.00-14.00	0.19-0.20-0.21	0.0- 1.5- 2.9	1.0- 2.0- 3.0	.43	.43	5	5	56
	2-12	-21-	-68-	8-12- 15	1.30-1.38 -1.45	4.00-9.00-14.00	0.16-0.18-0.20	0.0- 1.5- 2.9	0.0- 0.3- 0.5	.55	.55			
	12-60	-21-	-68-	8-12- 15	1.35-1.43 -1.50	4.00-9.00-14.00	0.19-0.20-0.21	0.0- 1.5- 2.9	0.0- 0.3- 0.5	.55	.55			

Data Source Information

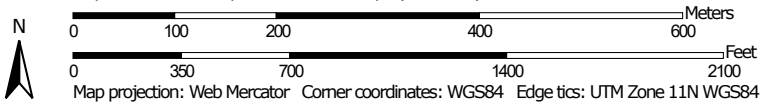
Soil Survey Area: Benton County Area, Washington

Survey Area Data: Version 16, Jun 4, 2020

Saturated Hydraulic Conductivity (Ksat)—Benton County Area, Washington
(Saturated Hydraulic Conductivity (Ksat))



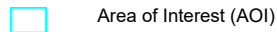
Map Scale: 1:7,440 if printed on A landscape (11" x 8.5") sheet.



Saturated Hydraulic Conductivity (Ksat)—Benton County Area, Washington
(Saturated Hydraulic Conductivity (Ksat))

MAP LEGEND

Area of Interest (AOI)



Area of Interest (AOI)

Background



Aerial Photography

Soils

Soil Rating Polygons



<= 9.0000



> 9.0000 and <= 27.0066



> 27.0066 and <= 92.0000



Not rated or not available

Soil Rating Lines



<= 9.0000



> 9.0000 and <= 27.0066



> 27.0066 and <= 92.0000



Not rated or not available

Soil Rating Points



<= 9.0000



> 9.0000 and <= 27.0066



> 27.0066 and <= 92.0000



Not rated or not available

Water Features



Streams and Canals

Transportation



Rails



Interstate Highways



US Routes



Major Roads



Local Roads

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:20,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service

Web Soil Survey URL:

Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Benton County Area, Washington

Survey Area Data: Version 16, Jun 4, 2020

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Jun 4, 2020—Jul 2, 2020

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Saturated Hydraulic Conductivity (Ksat)

Map unit symbol	Map unit name	Rating (micrometers per second)	Acres in AOI	Percent of AOI
HeE	Hezel loamy fine sand, 0 to 30 percent slopes	27.0066	200.5	91.9%
QuE	Quincy loamy sand, 0 to 30 percent	92.0000	9.8	4.5%
WdAB	Warden silt loam, 0 to 5 percent slopes	9.0000	7.5	3.4%
WdE3	Warden silt loam, 15 to 30 percent slopes, severely eroded	9.0000	0.3	0.2%
Totals for Area of Interest			218.1	100.0%

Description

Saturated hydraulic conductivity (Ksat) refers to the ease with which pores in a saturated soil transmit water. The estimates are expressed in terms of micrometers per second. They are based on soil characteristics observed in the field, particularly structure, porosity, and texture. Saturated hydraulic conductivity is considered in the design of soil drainage systems and septic tank absorption fields.

For each soil layer, this attribute is actually recorded as three separate values in the database. A low value and a high value indicate the range of this attribute for the soil component. A "representative" value indicates the expected value of this attribute for the component. For this soil property, only the representative value is used.

The numeric Ksat values have been grouped according to standard Ksat class limits.

Rating Options

Units of Measure: micrometers per second

Aggregation Method: Dominant Component

Component Percent Cutoff: None Specified

Tie-break Rule: Fastest

Interpret Nulls as Zero: No

Layer Options (Horizon Aggregation Method): All Layers (Weighted Average)

Engineering Properties

This table gives the engineering classifications and the range of engineering properties for the layers of each soil in the survey area.

Hydrologic soil group is a group of soils having similar runoff potential under similar storm and cover conditions. The criteria for determining Hydrologic soil group is found in the National Engineering Handbook, Chapter 7 issued May 2007(<http://directives.sc.egov.usda.gov/OpenNonWebContent.aspx?content=17757.wba>). Listing HSGs by soil map unit component and not by soil series is a new concept for the engineers. Past engineering references contained lists of HSGs by soil series. Soil series are continually being defined and redefined, and the list of soil series names changes so frequently as to make the task of maintaining a single national list virtually impossible. Therefore, the criteria is now used to calculate the HSG using the component soil properties and no such national series lists will be maintained. All such references are obsolete and their use should be discontinued. Soil properties that influence runoff potential are those that influence the minimum rate of infiltration for a bare soil after prolonged wetting and when not frozen. These properties are depth to a seasonal high water table, saturated hydraulic conductivity after prolonged wetting, and depth to a layer with a very slow water transmission rate. Changes in soil properties caused by land management or climate changes also cause the hydrologic soil group to change. The influence of ground cover is treated independently. There are four hydrologic soil groups, A, B, C, and D, and three dual groups, A/D, B/D, and C/D. In the dual groups, the first letter is for drained areas and the second letter is for undrained areas.

The four hydrologic soil groups are described in the following paragraphs:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

Depth to the upper and lower boundaries of each layer is indicated.

Texture is given in the standard terms used by the U.S. Department of Agriculture. These terms are defined according to percentages of sand, silt, and clay in the fraction of the soil that is less than 2 millimeters in diameter. "Loam," for example, is soil that is 7 to 27 percent clay, 28 to 50 percent silt, and less than 52 percent sand. If the content of particles coarser than sand is 15 percent or more, an appropriate modifier is added, for example, "gravelly."

Classification of the soils is determined according to the Unified soil classification system (ASTM, 2005) and the system adopted by the American Association of State Highway and Transportation Officials (AASHTO, 2004).

The Unified system classifies soils according to properties that affect their use as construction material. Soils are classified according to particle-size distribution of the fraction less than 3 inches in diameter and according to plasticity index, liquid limit, and organic matter content. Sandy and gravelly soils are identified as GW, GP, GM, GC, SW, SP, SM, and SC; silty and clayey soils as ML, CL, OL, MH, CH, and OH; and highly organic soils as PT. Soils exhibiting engineering properties of two groups can have a dual classification, for example, CL-ML.

The AASHTO system classifies soils according to those properties that affect roadway construction and maintenance. In this system, the fraction of a mineral soil that is less than 3 inches in diameter is classified in one of seven groups from A-1 through A-7 on the basis of particle-size distribution, liquid limit, and plasticity index. Soils in group A-1 are coarse grained and low in content of fines (silt and clay). At the other extreme, soils in group A-7 are fine grained. Highly organic soils are classified in group A-8 on the basis of visual inspection.

If laboratory data are available, the A-1, A-2, and A-7 groups are further classified as A-1-a, A-1-b, A-2-4, A-2-5, A-2-6, A-2-7, A-7-5, or A-7-6. As an additional refinement, the suitability of a soil as subgrade material can be indicated by a group index number. Group index numbers range from 0 for the best subgrade material to 20 or higher for the poorest.

Percentage of rock fragments larger than 10 inches in diameter and 3 to 10 inches in diameter are indicated as a percentage of the total soil on a dry-weight basis. The percentages are estimates determined mainly by converting volume percentage in the field to weight percentage. Three values are provided to identify the expected Low (L), Representative Value (R), and High (H).

Percentage (of soil particles) passing designated sieves is the percentage of the soil fraction less than 3 inches in diameter based on an oven-dry weight. The sieves, numbers 4, 10, 40, and 200 (USA Standard Series), have openings of 4.76, 2.00, 0.420, and 0.074 millimeters, respectively. Estimates are based on laboratory tests of soils sampled in the survey area and in nearby areas and on estimates made in the field. Three values are provided to identify the expected Low (L), Representative Value (R), and High (H).

Liquid limit and plasticity index (Atterberg limits) indicate the plasticity characteristics of a soil. The estimates are based on test data from the survey area or from nearby areas and on field examination. Three values are provided to identify the expected Low (L), Representative Value (R), and High (H).

References:

American Association of State Highway and Transportation Officials (AASHTO). 2004. Standard specifications for transportation materials and methods of sampling and testing. 24th edition.

American Society for Testing and Materials (ASTM). 2005. Standard classification of soils for engineering purposes. ASTM Standard D2487-00.

Report—Engineering Properties

Absence of an entry indicates that the data were not estimated. The asterisk "*" denotes the representative texture; other possible textures follow the dash. The criteria for determining the hydrologic soil group for individual soil components is found in the National Engineering Handbook, Chapter 7 issued May 2007 (<http://directives.sc.egov.usda.gov/OpenNonWebContent.aspx?content=17757.wba>). Three values are provided to identify the expected Low (L), Representative Value (R), and High (H).

Engineering Properties—Benton County Area, Washington														
Map unit symbol and soil name	Pct. of map unit	Hydrologic group	Depth	USDA texture	Classification		Pct Fragments		Percentage passing sieve number—				Liquid limit	Plasticity index
					Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
			<i>In</i>				<i>L-R-H</i>	<i>L-R-H</i>	<i>L-R-H</i>	<i>L-R-H</i>	<i>L-R-H</i>	<i>L-R-H</i>	<i>L-R-H</i>	<i>L-R-H</i>
HeE—Hezel loamy fine sand, 0 to 30 percent slopes														
Hezel	100	C	0-3	Loamy fine sand	SM	A-2	0- 0- 0	0- 0- 0	100-100-100	100-100-100	50-68-85	15-25-35	0-5 -10	NP
			3-16	Loamy fine sand, loamy sand, fine sand	SM	A-2	0- 0- 0	0- 0- 0	100-100-100	100-100-100	50-63-75	15-25-35	0-5 -10	NP
			16-60	Stratified fine sandy loam to silt loam	ML	A-4	0- 0- 0	0- 0- 0	100-100-100	100-100-100	80-90-100	50-65-80	15-20-25	NP-3 -5
QuE—Quincy loamy sand, 0 to 30 percent														
Quincy	90	A	0-9	Loamy sand	SM	A-2	0- 0- 0	0- 0- 0	100-100-100	100-100-100	65-83-100	15-23-30	0-5 -10	NP
			9-60	Loamy fine sand, fine sand, sand	SM	A-2	0- 0- 0	0- 0- 0	100-100-100	100-100-100	65-73-80	10-20-30	0-5 -10	NP

Engineering Properties--Benton County Area, Washington														
Map unit symbol and soil name	Pct. of map unit	Hydrologic group	Depth	USDA texture	Classification		Pct Fragments		Percentage passing sieve number--				Liquid limit	Plasticity index
					Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
			<i>In</i>				<i>L-R-H</i>	<i>L-R-H</i>	<i>L-R-H</i>	<i>L-R-H</i>	<i>L-R-H</i>	<i>L-R-H</i>	<i>L-R-H</i>	<i>L-R-H</i>
WdAB--Warden silt loam, 0 to 5 percent slopes														
Warden	100	B	0-9	Silt loam	ML	A-4	0- 0- 0	0- 0- 0	95-98-100	95-98-100	85-93-100	70-75-80	25-28-30	NP-3 -5
			9-19	Very fine sandy loam, silt loam	ML	A-4	0- 0- 0	0- 0- 0	95-98-100	95-98-100	95-98-100	75-83-90	25-28-30	NP-3 -5
			19-60	Stratified very fine sandy loam to silt loam	ML	A-4	0- 0- 0	0- 0- 0	95-98-100	95-98-100	95-98-100	75-83-90	25-28-30	NP-3 -5
WdE3--Warden silt loam, 15 to 30 percent slopes, severely eroded														
Warden	100	B	0-2	Silt loam	ML	A-4	0- 0- 0	0- 0- 0	95-98-100	95-98-100	85-93-100	70-75-80	25-28-30	NP-3 -5
			2-12	Very fine sandy loam, silt loam	ML	A-4	0- 0- 0	0- 0- 0	95-98-100	95-98-100	95-98-100	75-83-90	25-28-30	NP-3 -5
			12-60	Stratified very fine sandy loam to silt loam	ML	A-4	0- 0- 0	0- 0- 0	95-98-100	95-98-100	95-98-100	75-83-90	25-28-30	NP-3 -5

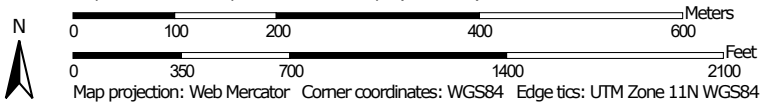
Data Source Information

Soil Survey Area: Benton County Area, Washington
 Survey Area Data: Version 16, Jun 4, 2020

Cation-Exchange Capacity (CEC-7)—Benton County Area, Washington
(Cation-Exchange Capacity)

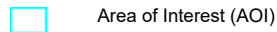


Map Scale: 1:7,440 if printed on A landscape (11" x 8.5") sheet.



MAP LEGEND

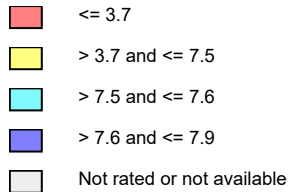
Area of Interest (AOI)



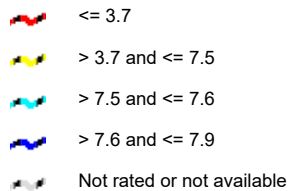
Area of Interest (AOI)

Soils

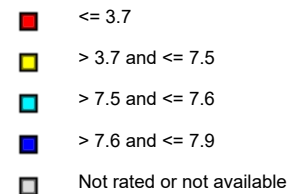
Soil Rating Polygons



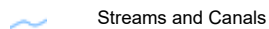
Soil Rating Lines



Soil Rating Points



Water Features



Streams and Canals

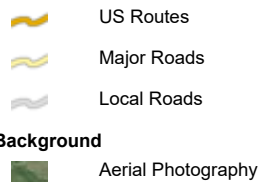
Transportation



Rails



Interstate Highways



Background

Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:20,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Benton County Area, Washington
Survey Area Data: Version 16, Jun 4, 2020

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Jun 4, 2020—Jul 2, 2020

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Cation-Exchange Capacity (CEC-7)

Map unit symbol	Map unit name	Rating (milliequivalents per 100 grams)	Acres in AOI	Percent of AOI
HeE	Hezel loamy fine sand, 0 to 30 percent slopes	7.5	200.5	91.9%
QuE	Quincy loamy sand, 0 to 30 percent	3.7	9.8	4.5%
WdAB	Warden silt loam, 0 to 5 percent slopes	7.9	7.5	3.4%
WdE3	Warden silt loam, 15 to 30 percent slopes, severely eroded	7.6	0.3	0.2%
Totals for Area of Interest			218.1	100.0%

Description

Cation-exchange capacity (CEC-7) is the total amount of extractable cations that can be held by the soil, expressed in terms of milliequivalents per 100 grams of soil at neutrality (pH 7.0) or at some other stated pH value. Soils having a low cation-exchange capacity hold fewer cations and may require more frequent applications of fertilizer than soils having a high cation-exchange capacity. The ability to retain cations reduces the hazard of ground-water pollution.

For each soil layer, this attribute is actually recorded as three separate values in the database. A low value and a high value indicate the range of this attribute for the soil component. A "representative" value indicates the expected value of this attribute for the component. For this soil property, only the representative value is used.

Rating Options

Units of Measure: milliequivalents per 100 grams

Aggregation Method: Dominant Component

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

Interpret Nulls as Zero: No

Layer Options (Horizon Aggregation Method): All Layers (Weighted Average)

**HARVEST RIDGE AND
SOUTH ORCHARD
RESIDENTIAL DEVELOPMENTS
BENTON COUNTY AND RICHLAND,
WASHINGTON**

For:

**MR. KALEB MAPSTEAD, EIT
AHBL, INC.
5804 ROAD 90, SUITE H
PASCO, WASHINGTON 99301**

Provided By:



**1106 Ledwich Ave.
Yakima, WA 98902
509-469-3068
general@baertesting.com**

*June 14, 2021
Project No: 21-135*

June 14, 2021

Mr. Kaleb Mapstead, EIT
AHBL, Inc.
5804 Road 90, Suite H
Pasco, Washington 99301

RE: **GEOTECHNICAL ENGINEERING STUDY; PROPOSED BADGER SOUTH
RESIDENTIAL DEVELOPMENTS, RICHLAND, BENTON COUNTY,
WASHINGTON**

Dear Mr. Mapstead:

At your request, Baer Testing & Engineering, Inc. (BAER) conducted a Geotechnical Engineering study for the Harvest Ridge and South Orchard residential developments in the Badger Mountain South area of Benton County and Richland, Washington. This report presents the results of the field explorations, laboratory testing, and engineering analyses.

This report presents recommendations for site grading, utility construction, and seismic design. Building foundation design recommendations are provided for typical residential structures, as well as construction recommendations for the various project features.

We appreciate the opportunity to be of service. If you have questions or comments, please contact our office.

Sincerely,

BAER TESTING, INC.



Dee J. Burrie, P.E.
Chief Engineer

Enclosures: Geotechnical Engineering Report

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APPENDICIES

- Appendix A – Test Pit Logs
- Appendix B – Laboratory Test Results

1.0 INTRODUCTION

Baer Testing & Engineering, Inc. (BAER) is pleased to present the results of our geotechnical engineering study for the proposed Harvest Ridge and South Orchard developments in Benton County, Washington. This geotechnical engineering study provides subsurface information to support site grading, drainage, utility design and construction, and recommendations for foundation design and construction and paved streets. Our scope of work includes:

- observing 11 test pit excavations and field soil sampling;
- conducting laboratory testing to determine soil properties;
- performing engineering analyses; and
- preparing this report.

This report provides results of our field observations, engineering analysis, and laboratory test results. It also provides recommendations for site grading, drainage, underground utility installation, paved roadways, foundation design and construction, and IBC seismic design criteria.

2.0 PROJECT DESCRIPTION AND PROPOSED DEVELOPMENT

The proposed residential development is located north of Reata Road and east of Interstate-82, in Benton County and the City of Richland, Washington. (**Figure 1 – Site Location Map**). Harvest Ridge approximate mid-site coordinates are 46°12' 30.61"N Latitude; 119°20' 2.13"W Longitude. South Orchard approximate mid-site coordinates are 46°12' 24.60"N Latitude; 119°18' 59.90"W Longitude.

The proposed Harvest Ridge development consists of 143, approximately 1-acre lots. Harvest Ridge is primarily in the N2 of S5, T8N, R28E, WM in Benton County, Washington (**Figure 2A – Harvest Ridge Site Layout**). The South Orchard development is comprised of approximately 195 acres and will include 474 approximately 0.2 acres residential lots. The South Orchard development also includes a park, school areas, and multi-family housing areas (**Figure 2B – South Orchard Site Layout**). The South Orchard development is primarily in the SW4 of S4, T8N, R28E, WM in Richland, Washington, and portions of the N2 and SE4 of Section 4.

The approximately 650-acre site generally consists of rolling hills. The site recently consisted of irrigated agricultural fields/circles. Slopes typically range from nearly level to 10% or less. Isolated slopes in some areas may exceed 15 percent.

The developments will include underground utilities, paved streets, and development-wide stormwater management and disposal. Typical residences will consist of single- or two-story, wood frame structures with concrete slab-on grade or crawl space foundations. Specific foundation design criteria for major structures should be site/lot specific and consider structure size and configuration.

3.0 FIELD EXPLORATIONS

The exploration program consisted of excavating eleven test pits designated TP-1 through TP-11 on the Exploration Plan (**Figure 3 – Exploration Plan**). Double J Excavation (Double J) excavated the test pits on June 2 through 4, 2021 using a CAT 312D excavator equipped with a 30-inch bucket.

Where possible, soil in situ strength was estimated using a dynamic, mini-cone penetrometer (DCP) and our observations of the relative excavation difficulty. The mini cone uses a 15-pound slide

hammer dropped 20 inches to drive a conical tip into the soil. The number of hammer blows required to drive the cone 1¾-inch increments is roughly equivalent to a SPT blow count. The blows per increment provide an indication of the relative soil density. The blow counts are recorded on the logs. The mini-cone penetrometer test method is described in ASTM STP399.

BAER's geologist counted the blows required to drive the rod into the ground for each 1¾-inch increment over a given depth. The recorded blow count data was evaluated using correlation charts to estimate the soil bearing capacity. BAER's geologist observed the test pits; collected representative soil samples, and prepared test pit logs.

The subsurface conditions are known only at the test pit locations on the date explored and should be considered approximate. Actual subsurface conditions may vary between excavation locations. The test pit locations are presented in Figure 2 and the test pit logs are presented in Appendix A. Our geologist classified the soil in the field and transported the soil samples to the laboratory for further examination and testing.

4.0 LABORATORY TESTING

BAER performed the following laboratory tests on selected soil samples from our explorations.

- Moisture Content (American Society for Testing and Materials (ASTM) Designation: D 2216) for material characterization and soil index properties; and
- Particle Distribution (ASTM Designation: D 422 and ASTM Designation: D 1140) for material characterization and soil index properties.

Northwest Agricultural Consultants performed the following laboratory tests on a selected soil sample.

- Organic Matter Content (ASTM Designation: D 2974) for soil index properties; and
- Cation Exchange Capacity (Environmental Protection Agency (EPA) Designation: 9081) for soil properties

Copies of the laboratory test reports are enclosed in Appendix B.

5.0 SUBSURFACE CONDITIONS

The following discussion summarizes the subsurface conditions encountered during the test pit explorations. Please refer to the enclosed test pit logs (Appendix A) for more detailed information regarding subsurface conditions.

5.1 Regional Geologic Setting

The *Geologic Map of Richland 1:100,000 Quadrangle, Washington*; Washington Division of Geology and Earth Resources, Open File Report 94-8 (1994), shows near-surface geology in the site vicinity is mapped as Q_{fs3} – Outburst flood deposits. Q_{fs3} consists of lacustrine silt and fine sand, rhythmically bedded with stringers of coarse sand and gravel and small-scale cross-bedding and discrete layers of volcanic ash. In our opinion, the soils encountered in the test pit excavations are consistent with the mapped geology.

5.2 Soils

The soil profile generally consists of a very stiff to hard *Sandy Silt (ML)* with some dense *Silty Sand (SM)*, which extends to the full excavation depths. Several test pits also encountered a thin (2 inch) ash deposit, at varying depths below the ground surface (bgs).

5.3 Groundwater

Groundwater was not encountered in the test pit explorations. Based on logs from nearby wells, groundwater is approximately 150 to 200 ft feet below the existing surface elevation.

6.0 HAZARDOUS AREA EVALUATION

The City of Richland Geologic Hazards and Critical Areas Map does not identify any areas of the project as within a Steep Slopes area with slopes greater than 15 percent (**Figure 4 - Geologic Hazards and Critical Areas Map**). Hidden thrust faults are located approximately 0.5 and 1.5 miles southwest and northeast of the site, respectively. (**Figure 5 - Geologic Hazards - Faults**). Significant development, including excavating roads and creating building pads, has occurred in the area with little geologic hazard impact.

Although the area is not identified as a critical slope area, we recommend slope preparation and fill placement follow IBC 2018 Appendix J requirements. Constructed fills should be constructed with 2 horizontal:1 vertical (2H:1V) cut and fill slopes. Proposed structures should be located with setbacks as required by IBC 2018. **Figure 6 - IBC Benching Requirements** shows the IBC recommended benching method presented in IBC 2018 Appendix J.

Stormwater and erosion hazards will be managed through on-site collection and retention facilities. Vegetative cover or landscaping will be used to control erosion on individual building sites.

7.0 CONCLUSIONS AND RECOMMENDATIONS

7.1 General

The entire site is used for agriculture and generally consists of rolling hills, with some level sections. The existing vegetation and brush must be removed prior to grading. Moderate to extensive grading is anticipated to accommodate construction across the site.

7.1.1 Test Pit Backfill

Double J used the excavator to backfill each test pit upon completion. The operator compacted the excavated material into the test pits using the excavator bucket. The test pits should be over-excavated and backfilled with compacted structural fill during site grading in accordance with Section “7.2 Earthwork” below.

7.2 Earthwork

Any existing vegetation and deleterious debris should be removed from building and pavement areas. We anticipate approximately 6 inches of topsoil should be removed. However, deeper brush roots will require additional effort. Stripped soil with organic materials may be stockpiled for use in future landscape areas but may not be used as structural fill.

7.2.1 Pre-Wetting Borrow Areas

Soils at the site were typically dry at the time of our explorations. Depending on conditions at the time of construction, the soils may require moisture conditioning, either by adding moisture or drying, prior to being compacted.

Our experience indicates adding moisture to the borrow area prior to excavation is an effective way to moisture condition the material. We recommend adding water by sprinkling the borrow area until the wetted front extends approximately 2 feet below the excavation depth.

7.2.2 Fill Subgrade Preparation

Subgrade areas to receive fill should be moisture conditioned to within 2 percent of optimum in the upper 12 inches and compacted to a minimum 92 percent of the maximum laboratory dry density as determined by the ASTM Designation: D 1557 – *Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort*. We recommend using a heavy, kneading-type compactor (sheepsfoot) in the static mode to compact the fine-grained materials. Vibratory compactors tend to pump moisture to the surface of fine-grained materials resulting in unstable areas. The subgrade should be proof rolled using a loaded water truck or dump truck to identify loose or unstable areas. The geotechnical engineer should observe the subgrade proof-rolling to assist in determining loose soils.

To reduce the potential for slide planes developing between the native soils and the structural fill, we recommend constructing slopes in accordance with IBC 2018 Appendix J. The IBC recommends constructing a keyway at the toe of the proposed fill slope to reduce sliding potential. The horizontal keyway should extend perpendicular to the underlying slope. The keyway should be a minimum 2 feet deep and 10 feet wide. The IBC recommends benches be created at approximately 2-foot intervals to tie fill to the underlying surface. For every 2 feet of fill placed, the native slope should be benched horizontally to accommodate another 2-foot lift, as shown in **Figure 6**.

The finished building pads should be constructed with 2H:1V cut and fill slopes. The fill slopes must extend from the building pad elevation until it intercepts the native slopes. Proposed structures must be located with setbacks as required by IBC 2015.

7.2.3 Material Reuse

The onsite silty sand and sandy silt, free of organics and debris, and with material larger than 3-inch diameter removed, may be used for general and backfill. If imported fill is needed, we recommend a well-graded, 2-inch minus, pit-run sand and gravel with less than 5 percent fines. All fill should be placed in accordance with Section “7.2.4 Fill Placement and Compaction”.

7.2.4 Fill Placement and Compaction

Fill and backfill should be moisture conditioned to within 2 percent of optimum, placed in maximum 8-inch loose lifts, and compacted to a minimum 95 percent of ASTM D 1557. We recommend in-place density tests be performed to verify that the compaction requirements are achieved. Density tests should be performed a minimum of every 2 feet of fill placed during grading.

Compaction efforts on silty material is best accomplished using a heavy, sheepsfoot-type or kneading compactor in static mode. Using vibratory, flat-drum compactors on the silt soils at this site may result in pumping moisture to the surface during compaction.

Building pads created in cut areas should be scarified a minimum of 12 inches, moisture conditioned to within 2 percent of optimum, and compacted to 95 percent of ASTM D 1557.

7.2.5 Slopes

Occupational Safety and Health Administration (OSHA) Type C soil best describes the onsite silty sand with gravel. Type C soils may have maximum temporary construction slopes of 1.5 Horizontal to 1 Vertical (1.5H:1V). Permanent cut or fill slopes should be no steeper than 2H:1V and

must be protected from both wind and water erosion. Erosion protection may consist of vegetative cover or a minimum 3 inches of coarse concrete aggregate conforming to the requirements of WSDOT Specification 9-03.1(4) c, “Concrete Aggregate AASHTO Grading No. 57.”

7.2.6 Utility Trenching

Utility trenching should be accomplished in accordance with American Public Works Association (APWA) Standard Specifications. Based on our explorations, we anticipate excavations may be made using standard excavation equipment. Utility piping should be bedded as recommended in the APWA specifications. Utility trenches should be backfilled using structural fill compacted as specified in section “7.2.3 Fill Placement and Compaction”. Enough backfill should be placed over the utility before compacting with heavy compactors to prevent damage. Onsite sandy silt materials with gravels smaller than 3 inches may be used for utility trench backfill.

7.2.7 Wet Weather Construction

The site soils are typically dry to moist fine sand and silt. The stability of the exposed soils may deteriorate due to change in moisture content. If construction occurs during wet weather, we recommend:

- Fill material consist of clean, granular soil with less than 5 percent fines passing the #200 sieve. Fines should be non-plastic.
- The ground surface in the construction area should be sloped to drain and sealed to reduce water infiltration and to prevent water ponding.
- Work areas and stockpiles should be covered with plastic. Geotextile silt fences, straw bales, straw wattles, and/or other measures should be used as needed to control soil erosion.

7.2.8 Infiltration Rate

We understand stormwater will be managed using infiltration basins. We conducted an infiltration test in Test Pits 1 through 8 at approximately 5 feet bgs. The infiltration tests were conducted in general accordance with the Small PIT method described in the 2019 Washington Department of Ecology Stormwater Management Manual Table 6.3 and Appendix 6.B.

We filled each test pit with approximately 2 feet of water. The water was allowed to saturate the underlying soils for a minimum of 2 hours. The pits were again filled with water and the depth below the reference was measured when filling stopped. We obtained measurements at 15-minute intervals over the following hour. The water surface elevation changes between the 30- and 60-minute readings are used to calculate the infiltration rate. The test results are summarized below:

Table 7.2.8- 1 Infiltration Test Results

Location	TP-1	TP-2	TP-3	TP-4	TP-5	TP-6	TP-7	TP-8
Pre-soak Period (hours)	2	4	2	2	5	2	2	2
Initial Test (inches below reference)	24.5	32.5	30.75	24.25	38.0	33.25	37.0	36.25
15 Minutes (inches below reference)	26.0	35.0	33.5	27.75	41.5	34.5	38.75	39.0
30 Minutes (inches below reference)	27.5	37.0	37.5	30.25	43.75	36.0	39.75	41.25
45 Minutes (inches below reference)	28.5	39.25	39.0	32.5	45.0	38.0	40.75	43.5
60 Minutes (inches below reference)	29.75	41.0	41.0	34.5	46.5	38.5	42.0	45.5
Infiltration Rate (inches/minute)	0.075	0.133	0.117	0.142	0.092	0.083	0.075	0.142
Infiltration Rate (minutes/inch)	13.3	7.5	8.6	7.1	10.9	12	13.3	7.1
Infiltration Rate (inches/hour)	4.5	8	7	8.5	5.5	5	4.5	8.5

Due to the stratified fine to medium sand seams and pockets, and the cementation observed, the indicated rates may be greater or less than those anticipated across the site. Based on the results of the infiltration tests and our experience with silty soils, we recommend using an infiltration rate of 4 inches per hour. This rate does not include safety factors. The system designer should incorporate an appropriate factor of safety against slowing rates over time due to biological and sediment clogging.

8.0 FOUNDATION DESIGN RECOMMENDATIONS

8.1 Footings

Typical residential structures may be supported on conventional spread or continuous footings bearing on the native sandy silt, silty sand, or compacted structural fill. Exterior footings should be embedded a minimum 24 inches below adjacent grades for bearing considerations and frost protection. To avoid differential settlement, it is important all footings bear on similar soils. If footing excavations encounter differing soils at footing depth, or are founded partially on native soils and partially on fill soils, we recommend over-excavating the footings and installing 6 inches of compacted 3/8-inch minus CSTC. The CSTC should be compacted to 95 percent of ASTM D 1557. Prior to placing CSTC or footing concrete, footing subgrade should be moisture conditioned and compacted to 95% of ASTM D 1557.

If ash is encountered in footing excavations, the ash should be removed and replaced with compacted CSTC.

We recommend constructing footings a minimum 2 feet wide for spread footings and minimum 16 inches wide for continuous footing. Footings constructed in accordance with these recommendations can be designed with an allowable bearing pressure of 1,800 pounds per square foot (psf). The

allowable bearing pressure may be increased by one-third for short-term transient loading conditions (i.e., seismic and/or wind loads).

We anticipate settlement will be the limiting factor for foundation design. Foundation settlement estimates are based on the soil profile and soil density encountered at the site. Foundations designed as outlined above should experience less than ½-inch of settlement. We anticipate differential settlement will be less than half of total settlements between adjacent footings or across approximately 20 feet of continuous footings. Settlement should occur rapidly as loads are applied.

Lateral forces may be resisted using a combination of friction and passive earth pressure against the buried portions of the structure. For design, a coefficient of friction of 0.35 may be assumed along the interface between the footing base and the compacted silt. If CSTC is used below the footings, a 0.45 coefficient of friction may be used. Passive earth pressure from the sand backfill may be calculated using an equivalent fluid weight of 250 psf per foot of embedment depth. The recommended coefficient of friction and passive earth pressure values do not include a safety factor.

8.2 Concrete Slabs-on-Grade

The exposed subgrade in areas to receive a concrete slabs-on-grade should be moisture conditioned and compacted to a minimum of 95 percent of the maximum laboratory dry density as determined by ASTM D 1557.

After compacting the subgrade, we recommend placing a minimum 6-inch layer of 5/8-inch CSTC under the concrete slab. The CSTC should be compacted to a firm, non-yielding condition. The geotechnical engineer should observe subgrade preparation prior to gravel placement.

8.3 Retaining Walls

Retaining wall foundations should be designed and constructed in accordance with the footing recommendations. All retaining walls should be designed with a minimum 12-inch-wide drainage zone directly behind the wall. The on-site sandy silt may be used as backfill behind the drainage zone. The drainage zone should be separated from the backfill using a separation geotextile. Backfill should be placed in maximum 8-inch loose lifts and compacted to 95 percent of ASTM D 1557.

If retaining walls are constructed as recommended above, the values in the following table may be used for design.

Table 8.3-1 Retaining Wall Design

Design Parameter	Value, pcf/ft. depth
Active Earth Pressure (unrestrained walls)	35
At-rest Earth Pressure (restrained walls)	55

8.4 Pavement Sections

We anticipate traffic will consist of automobiles and light trucks, with occasional heavier garbage and delivery trucks. Based on the anticipated traffic, we recommend using the following pavement section.

Table 8.4-1 Recommended Pavement Section

Material Layer	Layer Thickness, inches	Compaction Standard
Asphaltic Concrete Pavement (HMACP)	3	91 percent of Maximum Theoretical Specific Gravity (Rice's)
Crushed Stone Top Course (CSTC) WSDOT 5/8-inch minus Top Course	6	95 percent of ASTM D 1557
Compacted Subgrade	12	95 percent of ASTM D 1557

The upper 12 inches of the pavement subgrade should be moisture conditioned and compacted to 95 percent of ASTM D 1557. The geotechnical engineer should observe the subgrade prior to base course placement. Soft or unstable areas should be stabilized or over-excavated and replaced with compacted structural fill prior to paving.

8.5 Seismic Design

Structures should be designed in accordance with the 2018 International Building Code (IBC). The Site Class is based on the average conditions present within 100 feet of the ground surface. The Site Classification is based on shear wave velocity. To establish a higher site class, additional explorations are required, including deep borings and geophysical measurements. Based on the available information, we recommend using the default classification Site Class D (Stiff Soil). Design values determined for the center coordinates of the site using the United States Geological Survey (USGS) *Earthquake Ground Motion Parameters* utility (ATC Hazards by Location Tool – ASCE 7-16) are summarized in Table 8.4-1 below.

Table 8.5-1 Recommended Earthquake Ground Motion Parameters (2018 IBC)

Parameter	Value
Location (Latitude, Longitude), degrees	46.207750; -119.325556
Mapped Spectral Acceleration Values (MCE, Site Class D):	
Short Period, S_s	0.438 g
1.0 Sec. Period, S_1	0.166 g
Soil Factors for Site Class D:	
F_a	1.45 g
F_v	2.268
S_{DS}	0.423 g
S_{D1}	0.251

8.5.1 Liquefaction

Soil liquefaction occurs when saturated soil deposits temporarily lose strength and behave as a liquid in response to earthquake shaking. Liquefaction typically occurs in loose, granular soils located in the upper 50 feet and below the water table. The onsite sandy silt is firm to hard and groundwater is typically encountered 150 to 200 feet below the site surface. In our opinion, the liquefaction potential

at this site is low. Additional explorations and analysis are required to quantify anticipated settlements due to potential liquefaction.

8.5.2 Fault Rupture Potential

Based on our review of available geologic literature, two hidden, northwest - southeast trending hidden thrust faults generally follow the base of the hills (Badger Mountain and Horse Heaven Hills) 1.5 miles northeast, and 0.5 miles southwest of the site, respectively. We are not aware of any demonstrated movement along these faults in the last 10,000 years. We did not observe evidence of surface rupture or recent faulting during our field observation. Therefore, we conclude the fault rupture potential is low at this site.

8.5.3 Slope stability

The natural terrain in the area is generally stabilized dunes with varying minor slopes and elevation changes. Isolated areas may have slopes greater than 15 percent as discussed in Section 6 above. In our opinion, the potential for slope failure impacting the proposed project site is low.

9.0 ADDITIONAL SERVICES

BAER is available to provide further geotechnical consultation during the project design phase. We should review the final design and specifications to verify earthwork and foundation recommendations have been properly interpreted and incorporated into the project design and construction specifications. We are also available to provide geotechnical engineering and special inspection services during construction. Observation during construction provides the geotechnical engineer the opportunity to assist in making engineering decisions if variations in subsurface conditions become apparent. If BAER is not retained to provide construction phase services, we cannot be responsible for soil-related construction errors or omissions.

Construction observation and special inspection services are not part of this geotechnical engineering study scope of work. We will be pleased to provide a separate proposal for the construction phase services, if desired.

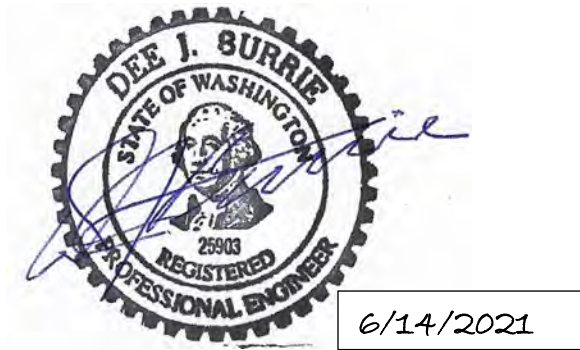
10.0 UNCERTAINTIES AND LIMITATIONS

This report was prepared for use the exclusive use of AHBL, Inc. and their design team for the proposed Harvest Ridge development in Benton County and South Orchard development in Richland, Washington. This report presents the data from observation and field testing and is based on subsurface conditions at the specific locations and depths indicated. No other representation is made. This report should be made available to potential contractors for information on factual data only. Conclusions and interpretations presented in this report should not be construed as a guarantee or warranty of the subsurface conditions. If changes are made to the project components or layout, additional geotechnical data and analyses may be necessary.

Within the limitations of scope, schedule, and budget, BAER attempted to execute these services in accordance with generally accepted professional principles and practices in the field of geotechnical engineering at the time the report was prepared. No warranty, expressed or implied, is made. The scope of our services did not include environmental screening of soil samples retrieved from the explorations completed for this project. Further, we did not complete environmental assessments or evaluations regarding the presence or absence of wetlands or hazardous or toxic materials in the soil, rock, surface water, or air in the project area.

We appreciate the opportunity to be of service. If you have questions or comments, please contact our office.

Sincerely,
BAER TESTING & ENGINEERING, INC.



Dee J. Burrie, P.E.
Chief Engineer



**Approximate
Site Location**

Notes:
Location Map developed using Images
by Google Earth Pro.



Approximate Scale in Miles

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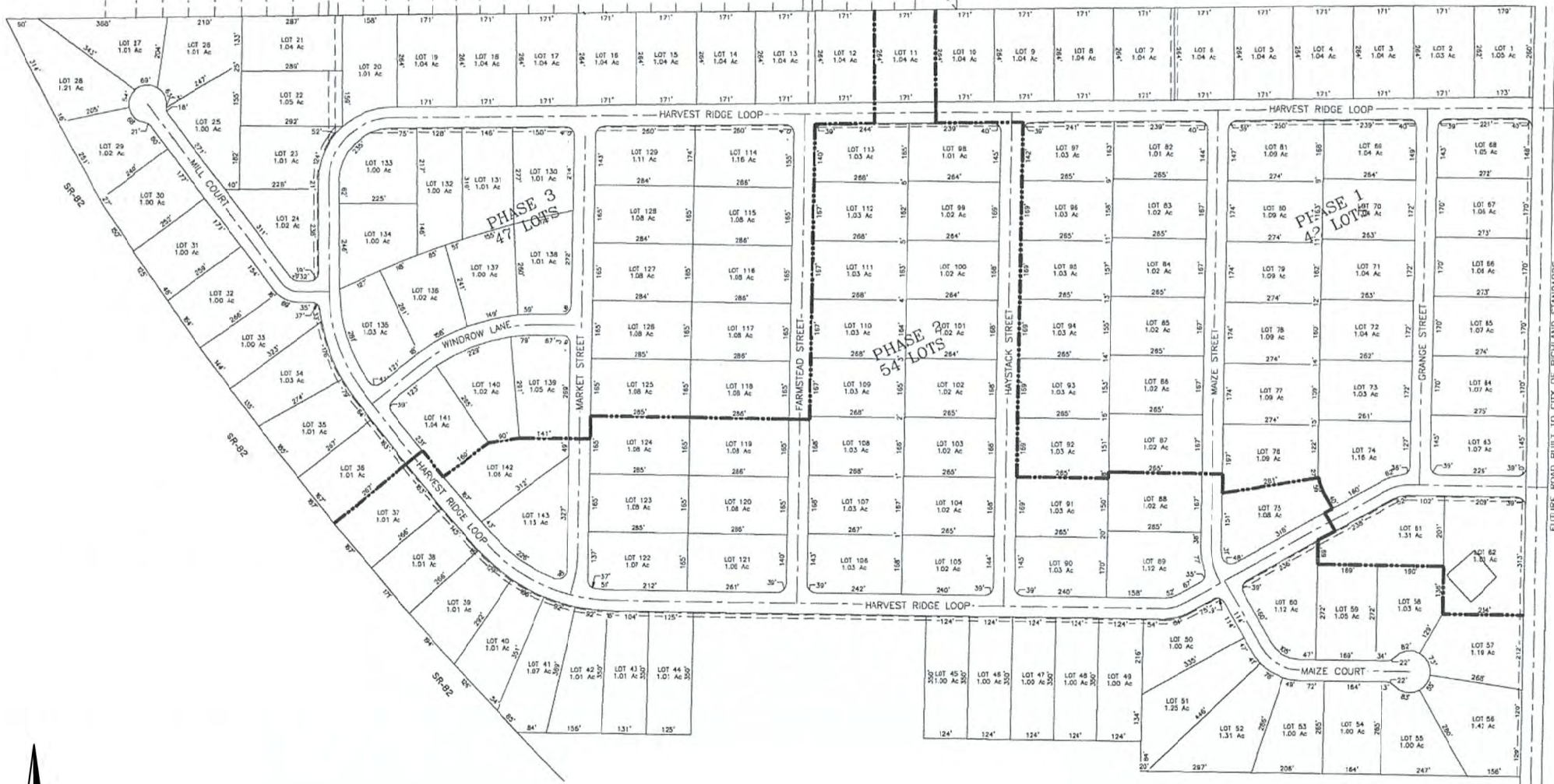
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Site Location Map

21-135

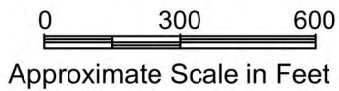
FIG. 1



FUTURE ROAD BUILT TO CITY OF RICHLAND STANDARDS

Notes:

Location Map developed using Images
 Provided by AQTERA Engineering.



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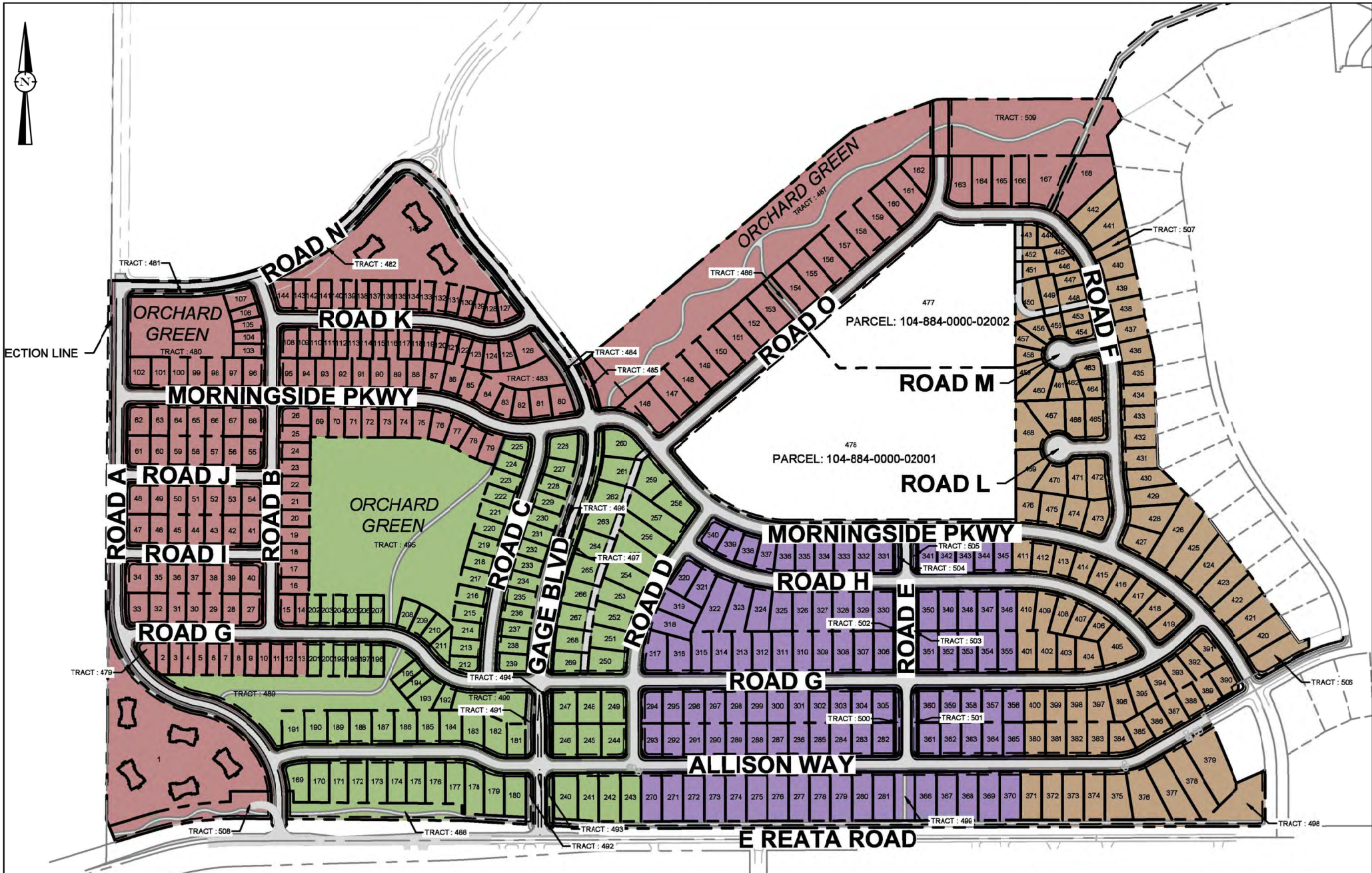
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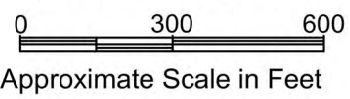
Harvest Ridge Site Layout

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FIG. 2A



Notes:
 Location Map developed using Images
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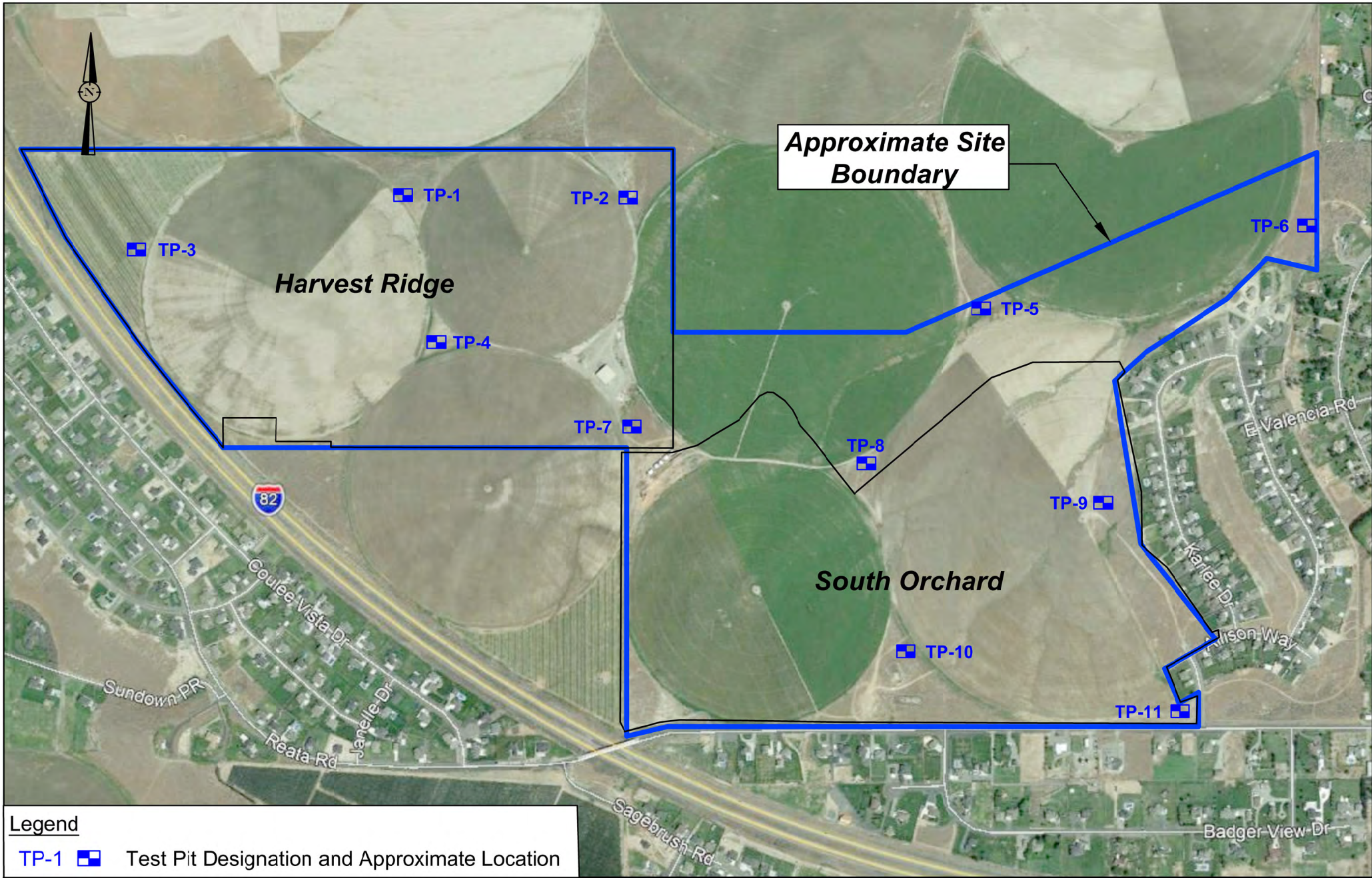
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South Orchard Site Layout


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FIG. 2B



Legend
 TP-1  Test Pit Designation and Approximate Location

Notes:
 Location Map developed using Images Provided by Google Earth Pro.

0 1000 2000

 Approximate Scale in Feet

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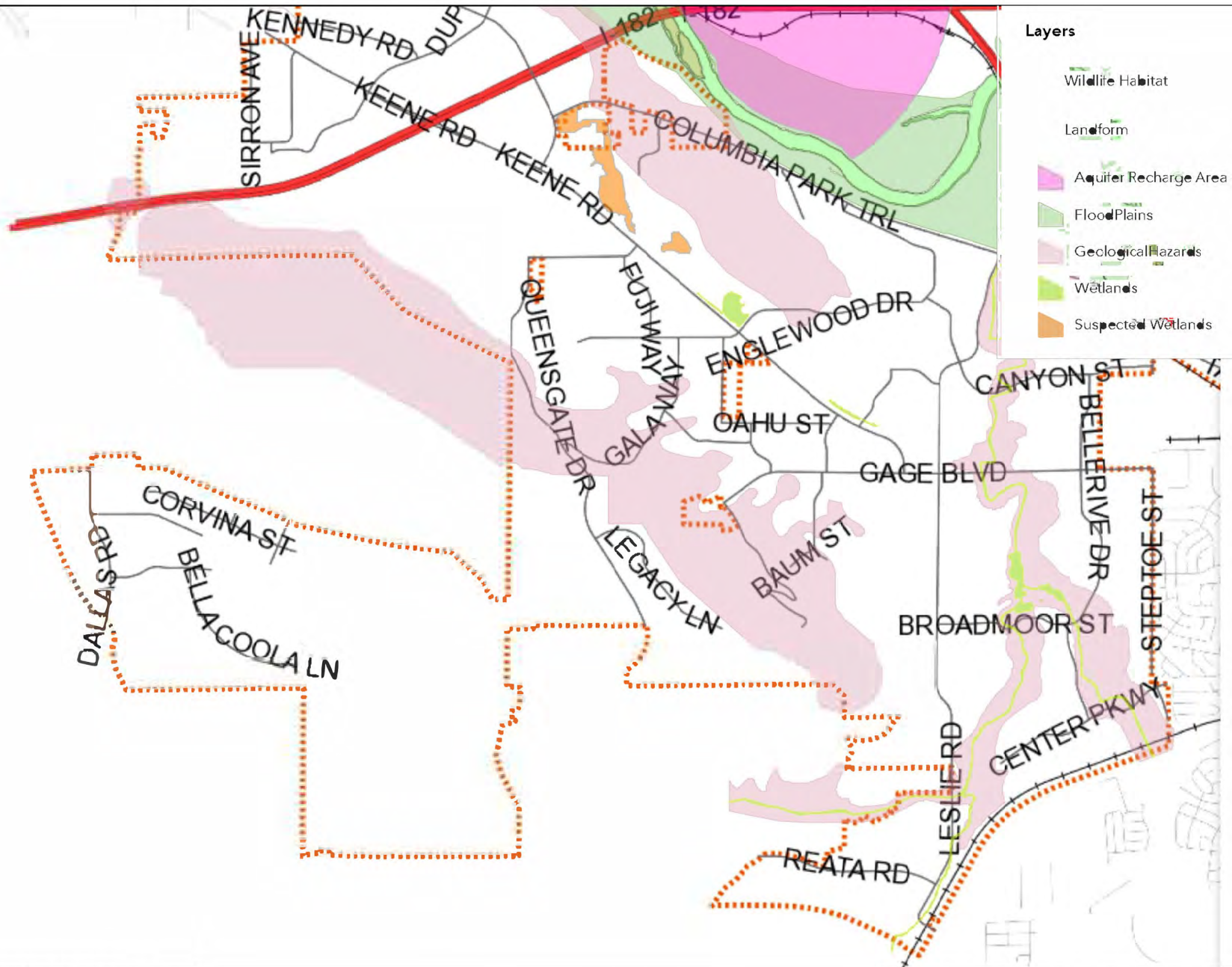


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Exploration Map

21-135	FIG. 3
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- Layers**
- Wildlife Habitat
 - Landform
 - Acquifer Recharge Area
 - Flood Plains
 - Geological Hazards
 - Wetlands
 - Suspected Wetlands



Image created using the City of Richland, WA, Geologic Hazards and Critical Areas map.
<https://richlandwa.maps.arcgis.com/apps/webappviewer/index.html>

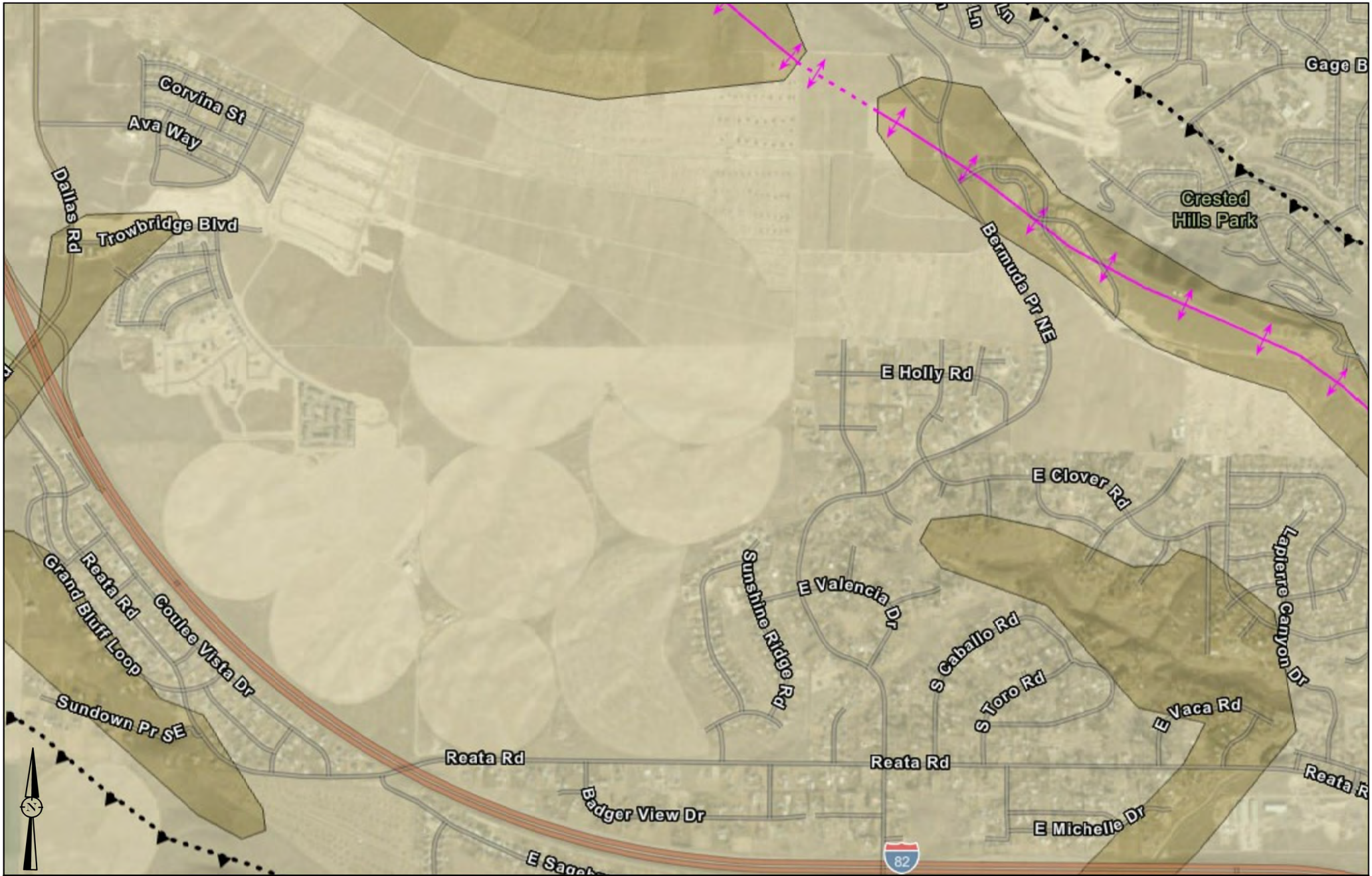
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Geologic Hazards and Critical Areas Map



Notes:

Location Map developed using the Washington State Department of Natural Resources, Natural Hazards. (<https://www.dnr.wa.gov/geologyportal>)

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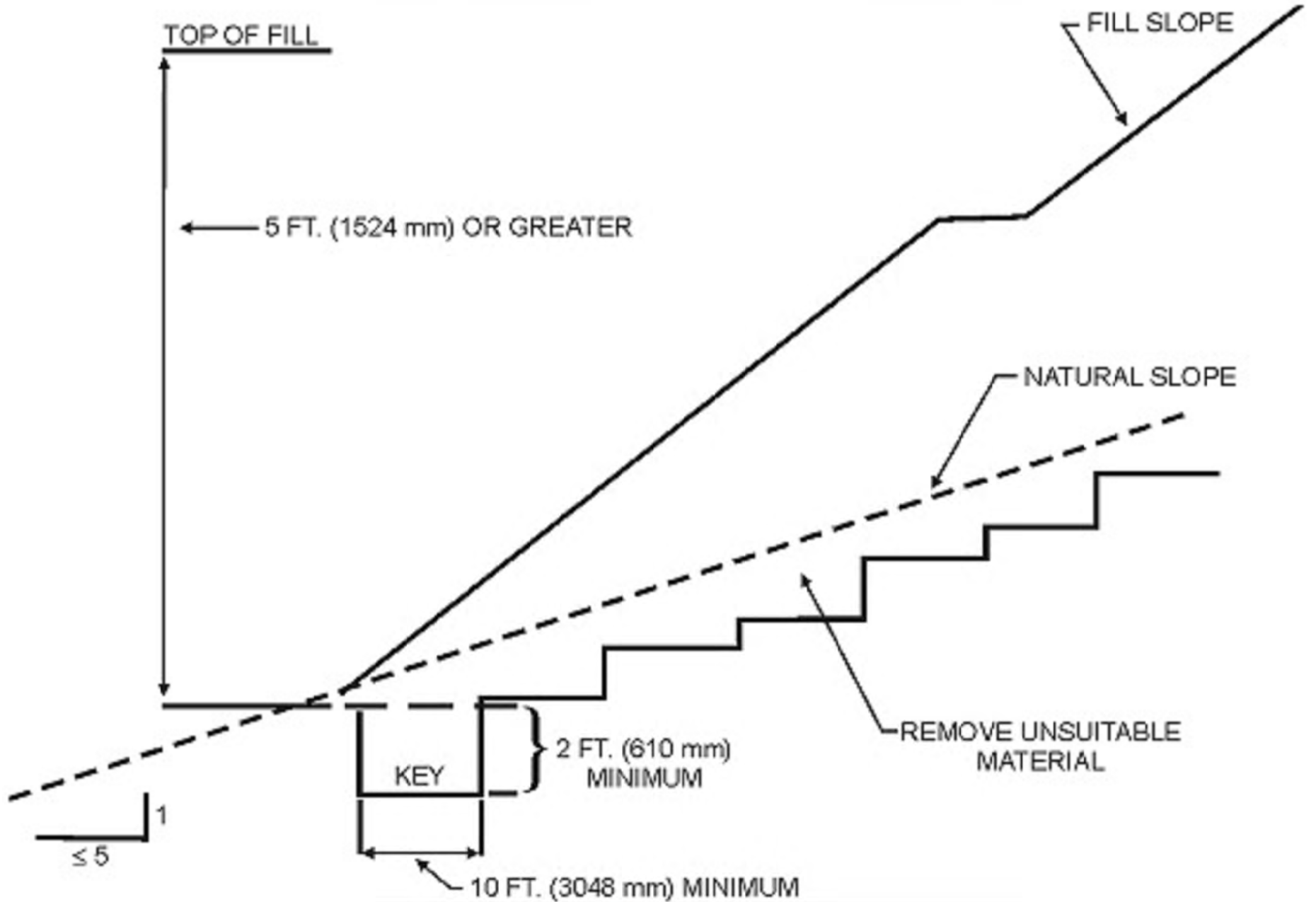
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Geologic Hazards - Faults

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FIG. 5



Notes:
 Image Developed From the 2015
 International Building Code (IBC) Appendix J.

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IBC Benching Requirements

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FIG. 6

APPENDIX A TEST PIT LOGS

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JOB NO: 21-135 EX. DATE: 6/2/2021 LOCATION: NW Corner of North Edge

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LOG OF Test Pit TP-1

Logged By: BH GPS Coordinates: N 46.212763 E -119.341077

SOIL DESCRIPTION	Ground Water	Blow Counts ASTM STP399	Samples	Depth, Ft.	Sketch of <u>West</u> Pit Side Surface Elevation: Horizontal Distance in Feet
Surface Description: Sparse Grass				0	0 2 4 6 8 10 12
① 0-0.5' Light brown Sandy Silt (ML) ; roots throughout. (TOPSOIL)				0	① Sandy Silt (ML); roots; (TOPSOIL) 0.5'
② 0.5-9.5' Very Stiff to hard, light brown, Sandy Silt (ML) ; Dry; fine to medium sand; nonplastic silt; strongly cemented; volcanic ash layer at approximately 1.5 feet.	None Observed	5-50/1½"	S-1	2	Ash Layer ② Sandy Silt (ML)
Test Pit Terminated at ±9.5 feet No Groundwater Encountered				10	Test Pit Terminated at ±9.5 feet No Groundwater Encountered

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JOB NO: 21-135 EX. DATE: 6/3/2021 LOCATION: NW Corner of North Edge

PROJECT: Harvest Ridge and South Orchard Residential Development, Benton County, WA

LOG OF Test Pit TP-2

Logged By: BH GPS Coordinates: N 46.212082 E -119.326898

SOIL DESCRIPTION	Ground Water	Blow Counts ASTM STP399	Samples	Depth, Ft.	Sketch of <u>West</u> Pit Side Surface Elevation: Horizontal Distance in Feet
Surface Description: Sparse Brush				0	0 2 4 6 8 10 12
① 0-1.0' Light brown Sandy Silt (ML) ; roots throughout. (TOPSOIL)	None Observed	12-31-33		0	
② 1.0-8.0' Hard, light brown, Sandy Silt (ML) ; Dry; fine to medium sand; nonplastic silt; strongly cemented.					
Test Pit Terminated at ±8 feet No Groundwater Encountered			S-1 <input checked="" type="checkbox"/>	8 10 12	<p>Test Pit Terminated at ±.8 feet No Groundwater Encountered</p>

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JOB NO: 21-135 EX. DATE: 6/2/2021 LOCATION: NW Corner of West Edge

PROJECT: Harvest Ridge and South Orchard Residential Development, Benton County, WA

LOG OF Test Pit TP-3

Logged By: BH GPS Coordinates: N 46.210642 E -119.341077

SOIL DESCRIPTION	Ground Water	Blow Counts ASTM STP399	Samples	Depth, Ft.	Sketch of <u>West</u> Pit Side Surface Elevation: Horizontal Distance in Feet
Surface Description: Grass				0	0 2 4 6 8 10 12
① 0-1.0' Light brown Sandy Silt (ML) ; roots throughout. (TOPSOIL)				0	
② 1.0-9.0' Very Stiff to hard, light brown, Sandy Silt (ML) ; Dry; trace subrounded and subangular gravel, maximum diam. approximately 2 inches; fine to medium sand; nonplastic silt; strongly cemented. * increased sand with depth.	None Observed	5-50/1"	S-1 ☒	2	
		10-50/1 3/4"	S-2 ☒	4	
Test Pit Terminated at ±9 feet No Groundwater Encountered Infiltration Test Performed				10	Test Pit Terminated at ±.9 feet No Groundwater Encountered
				12	

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JOB NO: 21-135 EX. DATE: 6/2/2021 LOCATION: Middle of NW Corner

PROJECT: Harvest Ridge and South Orchard Residential Development, Benton County, WA

LOG OF Test Pit TP-4

Logged By: BH GPS Coordinates: N 46.209808 E -119.334377

SOIL DESCRIPTION	Ground Water	Blow Counts ASTM STP399	Samples	Depth, Ft.	Sketch of <u>West</u> Pit Side Surface Elevation: Horizontal Distance in Feet
Surface Description: Sand/Silt				0	0 2 4 6 8 10 12
① 0-8.5' Very Stiff to hard, light brown, Sandy Silt (ML) ; Moist; fine to medium sand; nonplastic silt; strongly cemented. *trace gravel near surface, subrounded and subangular, max. diam. 2 inches.	None Observed			0	
② 8.5-9.5' Dense, gray/brown, Poorly Graded Sand with Silt (SP-SM) ; Moist; fine to medium sand; trace nonplastic silt.			S-1 ☒	8	
Test Pit Terminated at ±9.5 feet No Groundwater Encountered				10	
				12	

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JOB NO: 21-135 EX. DATE: 6/3/2021 LOCATION: Middle of NE Corner

PROJECT: Harvest Ridge and South Orchard Residential Development, Benton County, WA

LOG OF Test Pit TP-5

Logged By: BH GPS Coordinates: N 46.211123 E -119.317662

SOIL DESCRIPTION	Ground Water	Blow Counts ASTM STP399	Samples	Depth, Ft.	Sketch of <u>West</u> Pit Side Surface Elevation: Horizontal Distance in Feet
Surface Description: Sparse Brush /Grass				0	0 2 4 6 8 10 12
① 0-0.5' Light brown Sandy Silt (ML) ; roots throughout. (TOPSOIL)				0	① Sandy Silt (ML); roots; (TOPSOIL) 0.5'
② 0.5-9.5' Very Stiff to hard, light brown, Sandy Silt (ML) ; Dry; fine to medium sand; nonplastic silt; strongly cemented.	None Observed	8-30-50/1½"	S-1 ☒	2 4 6 8	② Sandy Silt (ML)
Test Pit Terminated at ±9.5 feet No Groundwater Encountered				10	Test Pit Terminated at ±.9.5 feet No Groundwater Encountered
Infiltration Test Performed				12	

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JOB NO: 21-135 EX. DATE: 6/3/2021 LOCATION: NE Corner

PROJECT: Harvest Ridge and South Orchard Residential Development, Benton County, WA

LOG OF Test Pit TP-6

Logged By: BH GPS Coordinates: N 46.211463 E -119.307760

SOIL DESCRIPTION	Ground Water	Blow Counts ASTM STP399	Samples	Depth, Ft.	Sketch of <u>West</u> Pit Side Surface Elevation: Horizontal Distance in Feet
Surface Description: Light Brush Grass				0	0 2 4 6 8 10 12
① 0-0.5' Light brown Sandy Silt (ML) ; roots throughout. (TOPSOIL)				0	① Sandy Silt (ML); roots; (TOPSOIL) 0.5'
② 0.5-9.5' Very Stiff to hard, light brown, Sandy Silt (ML) ; Dry; fine to medium sand; nonplastic silt; strongly cemented.	None Observed	5-20-25		2 4 6 8 10	② Sandy Silt (ML)
Test Pit Terminated at ±10 feet No Groundwater Encountered Infiltration Test Performed			S-1 ☒	10 12	Test Pit Terminated at ± 10 feet No Groundwater Encountered

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JOB NO: 21-135 EX. DATE: 6/3/2021 LOCATION: Middle of West Edge

PROJECT: Harvest Ridge and South Orchard Residential Development, Benton County, WA

LOG OF Test Pit TP-7

Logged By: BH GPS Coordinates: N 46.207715 E -119.327165

SOIL DESCRIPTION	Ground Water	Blow Counts ASTM STP399	Samples	Depth, Ft.	Sketch of <u>South</u> Pit Side Surface Elevation: Horizontal Distance in Feet
Surface Description: Light Grass				0	0 2 4 6 8 10 12
① 0-0.5' Light brown Sandy Silt (ML) ; roots throughout. (TOPSOIL)				0	① Sandy Silt (ML); roots; (TOPSOIL) 0.5'
② 0.5-9.5' Very Stiff to hard, light brown, Sandy Silt (ML) ; Dry; fine to medium sand; nonplastic silt; strongly cemented.	None Observed			2 4 6 8	② Sandy Silt (ML)
Test Pit Terminated at ±9 feet No Groundwater Encountered				10	Test Pit Terminated at ±.9 feet No Groundwater Encountered
Infiltration Test Performed				12	

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JOB NO: 21-135 EX. DATE: 6/2/2021 LOCATION: Middle of East Side

PROJECT: Harvest Ridge and South Orchard Residential Development, Benton County, WA

LOG OF Test Pit TP-8

Logged By: BH GPS Coordinates: N 46.207022 E -119.320244

SOIL DESCRIPTION	Ground Water	Blow Counts ASTM STP399	Samples	Depth, Ft.	Sketch of <u>West</u> Pit Side Surface Elevation: Horizontal Distance in Feet
Surface Description: Sparse Grass				0	0 2 4 6 8 10 12
① 0-0.5' Light brown Sandy Silt (ML) ; roots throughout. (TOPSOIL)	None Observed	7-26-16		0	① Sandy Silt (ML); roots; (TOPSOIL) 0.5'
② 0.5-6.0' Stiff to Very Stiff, light brown, Sandy Silt (ML) ; Dry; fine to medium sand; nonplastic silt; strongly cemented.			2	② Sandy Silt (ML)	
③ 6.0-9.5' Medium dense, light brown, Silty Sand (SM) ; Dry; fine to medium sand; nonplastic silt; strongly cemented.			6	③ Silty Sand (SM) 6.0'	
Test Pit Terminated at ±9.5 feet No Groundwater Encountered Infiltration Test Performed			S-1 ☒	8	10 Test Pit Terminated at ±9.5 feet No Groundwater Encountered 12

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JOB NO: 21-135 EX. DATE: 6/2/2021 LOCATION: Middle of East Edge

PROJECT: Harvest Ridge and South Orchard Residential Development, Benton County, WA

LOG OF Test Pit TP-9

Logged By: BH GPS Coordinates: N 46.206077 E -119.313290

SOIL DESCRIPTION	Ground Water	Blow Counts ASTM STP399	Samples	Depth, Ft.	Sketch of <u>East</u> Pit Side Surface Elevation: Horizontal Distance in Feet
Surface Description: Grass				0	0 2 4 6 8 10 12
① 0-1.0' Light brown Sandy Silt (ML) ; roots throughout. (TOPSOIL)				0	
② 1.0-9.0' Very Stiff to Stiff, light brown, Sandy Silt (ML) ; Dry; trace subrounded and subangular gravel and cobbles, maximum diam. approximately 9 inches; fine to medium sand; nonplastic silt; strongly to moderately cemented.	None Observed	12-20-24		2	
Test Pit Terminated at ±9 feet No Groundwater Encountered				10	

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JOB NO: 21-135 EX. DATE: 6/2/2021 LOCATION: Middle of South Edge

PROJECT: Harvest Ridge and South Orchard Residential Development, Benton County, WA

LOG OF Test Pit TP-10

Logged By: BH GPS Coordinates: N 46.203165 E -119.319144

SOIL DESCRIPTION	Ground Water	Blow Counts ASTM STP399	Samples	Depth, Ft.	Sketch of <u>South</u> Pit Side Surface Elevation: Horizontal Distance in Feet
Surface Description: Light Brush / Grass				0	0 2 4 6 8 10 12
① 0-1.0' Light brown Sandy Silt (ML) ; roots throughout. (TOPSOIL)				0	
② 1.0-9.0' Very Stiff, light brown, Sandy Silt (ML) ; Dry; trace subrounded and subangular gravel and cobbles, maximum diam. approximately 9 inches; fine to medium sand; nonplastic silt; strongly to moderately cemented.	None Observed	2-16-22		2	
Test Pit Terminated at ±9 feet No Groundwater Encountered				10	
				12	

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JOB NO: 21-135 EX. DATE: 6/3/2021 LOCATION: SE Corner

PROJECT: Harvest Ridge and South Orchard Residential Development, Benton County, WA

LOG OF Test Pit TP-11

Logged By: BH GPS Coordinates: N 46.201942 E -119.311792

SOIL DESCRIPTION	Ground Water	Blow Counts ASTM STP399	Samples	Depth, Ft.	Sketch of <u>East</u> Pit Side Surface Elevation: Horizontal Distance in Feet
Surface Description: Grass				0	0 2 4 6 8 10 12
① 0-0.5' Light brown Sandy Silt (ML) ; roots throughout. (TOPSOIL)	None Observed	8-12-14		0	
② 0.5-9.5' Stiff to very stiff, light brown, Sandy Silt (ML) ; Dry; fine to medium sand; nonplastic silt; strongly cemented.					
* thin volcanic ash layer at approximately 3 feet				4	
* minor sand deposits near 6 feet				6	
*trace cobbles near 7 feet				8	
Test Pit Terminated at ±9 feet No Groundwater Encountered				10	
Infiltration Test Performed				12	

APPENDIX B

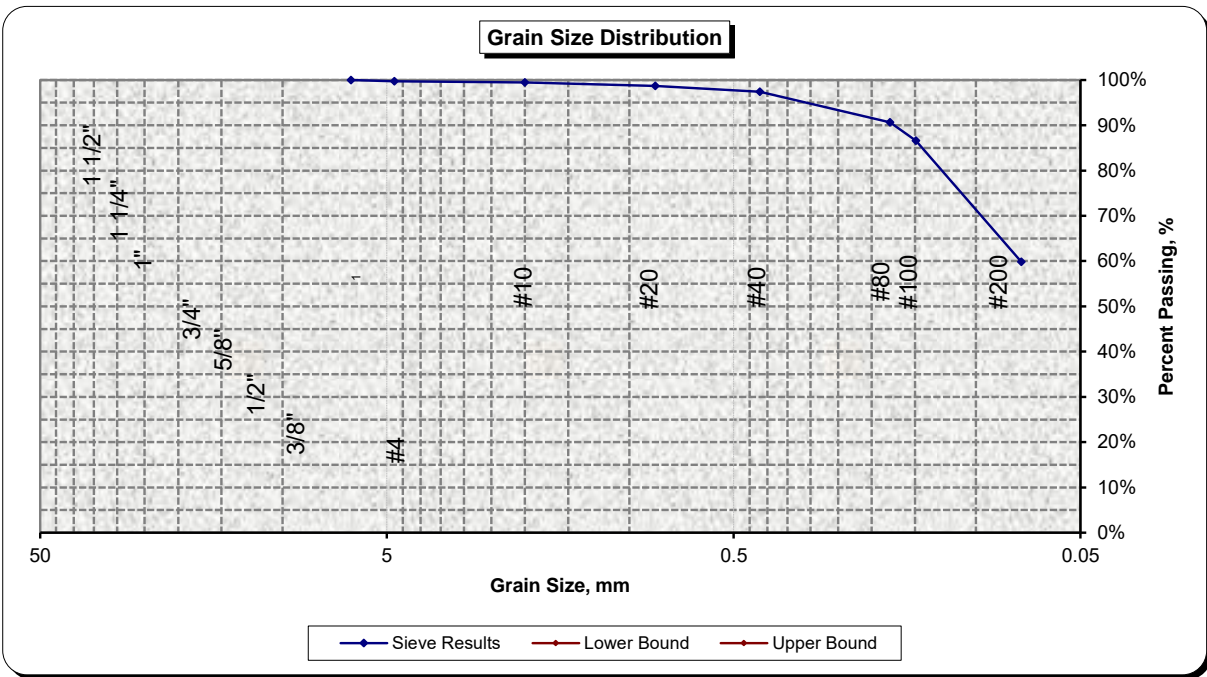
LABORATORY TEST RESULTS

CLIENT: AHBL, Inc.	PROJECT NUMBER: 21-135
PROJECT: Harvest Ridge	WORK ORDER #: 21-1112
SAMPLE SOURCE: TP1 @ 6'	SAMPLE NUMBER: 21-1112-1
DATE SAMPLED: 6/2/2021	DATE TESTED: 6/7/2021
MATERIAL TYPE: Sandy Silt	TESTED BY: AJD

Sampled in Accordance with ASTM D 75 and reduced in accordance with ASTM C 702 or D 421 unless otherwise noted.

SIEVE ANALYSIS OF SOILS ASTM C 136/D 1140			SOIL MOISTURE DETERMINATION ASTM D 2216		
Sieve Size:	Percent Passing:	Specs:	Sieve Size:	Percent Passing:	Specs:
4"	100%		#4	100%	
3"			#8		
2 1/2"			#10	99%	
2"			#16		
1 1/2"			#20	99%	
1 1/4"			#30		
1"			#40	97%	
3/4"			#50		
5/8"			#60		
1/2"			#80	91%	
3/8"			#100	87%	
1/4"	100%		#200	59.8%	

FINENESS MODULUS - ASTM C 136
0.14
HYDROMETER (.02MM) - D 422
FINER THAN #200 - C 117
FRACTURED FACE COUNT ASTM D 5821



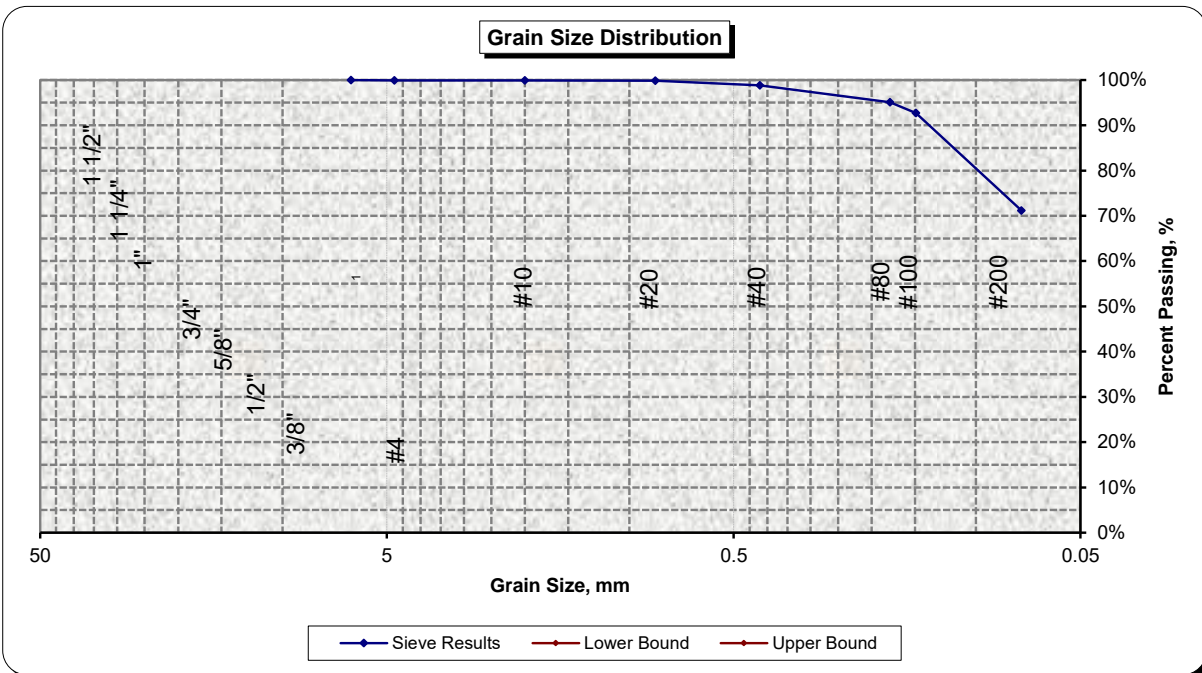
REVIEWED BY:
 Dee Burrie, Technical Director

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CLIENT: AHBL, Inc.	PROJECT NUMBER: 21-135
PROJECT: Harvest Ridge	WORK ORDER #: 21-1112
SAMPLE SOURCE: TP3 @ 9'	SAMPLE NUMBER: 21-1112-2
DATE SAMPLED: 6/2/2021	DATE TESTED: 6/7/2021
MATERIAL TYPE: Sandy Silt	TESTED BY: AJD

Sampled in Accordance with ASTM D 75 and reduced in accordance with ASTM C 702 or D 421 unless otherwise noted.

SIEVE ANALYSIS OF SOILS ASTM C 136/D 1140			SOIL MOISTURE DETERMINATION ASTM D 2216		
Sieve Size:	Percent Passing:	Specs:	Sieve Size:	Percent Passing:	Specs:
4"			#4	100%	FINENESS MODULUS - ASTM C 136
3"			#8		0.07
2 1/2"			#10	100%	HYDROMETER (.02MM) - D 422
2"			#16		
1 1/2"			#20	100%	FINER THAN #200 - C 117
1 1/4"			#30		
1"			#40	99%	
3/4"			#50		
5/8"			#60		
1/2"			#80	95%	FRACTURED FACE COUNT ASTM D 5821
3/8"			#100	93%	
1/4"	100%		#200	71.2%	



REVIEWED BY:
 Dee Burrie, Technical Director

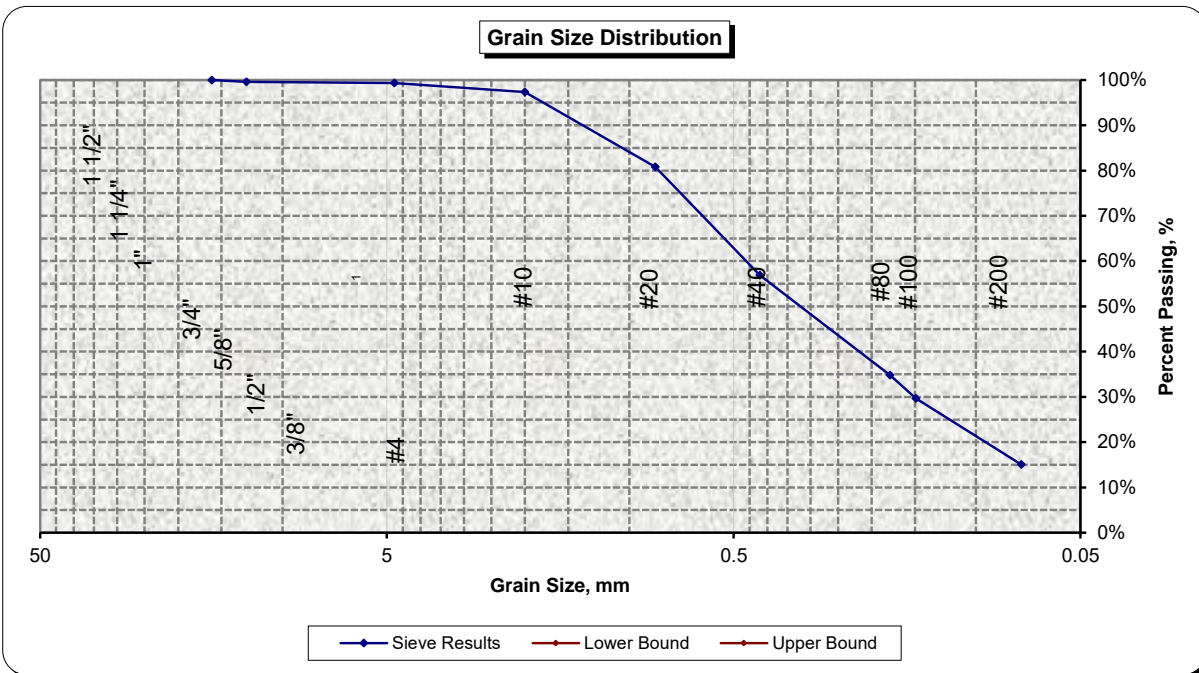
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CLIENT: AHBL, Inc.	PROJECT NUMBER: 21-135
PROJECT: Harvest Ridge	WORK ORDER #: 21-1112
SAMPLE SOURCE: TP4 @ 9'	SAMPLE NUMBER: 21-1112-3
DATE SAMPLED: 6/2/2021	DATE TESTED: 6/7/2021
MATERIAL TYPE: Silty Sand	TESTED BY: AJD

Sampled in Accordance with ASTM D 75 and reduced in accordance with ASTM C 702 or D 421 unless otherwise noted.

SIEVE ANALYSIS OF SOILS ASTM C 136/D 1140			SOIL MOISTURE DETERMINATION ASTM D 2216		
Sieve Size:	Percent Passing:	Specs:	Sieve Size:	Percent Passing:	Specs:
4"			#4	99%	
3"			#8		
2 1/2"			#10	97%	
2"			#16		
1 1/2"			#20	81%	
1 1/4"			#30		
1"			#40	57%	
3/4"			#50		
5/8"	100%		#60		
1/2"	100%		#80	35%	
3/8"			#100	30%	
1/4"			#200	15.0%	

SOIL MOISTURE DETERMINATION ASTM D 2216
4.4%
FINENESS MODULUS - ASTM C 136
0.71
HYDROMETER (.02MM) - D 422
FINER THAN #200 - C 117
FRACTURED FACE COUNT ASTM D 5821



REVIEWED BY:
 Dee Burrie, Technical Director

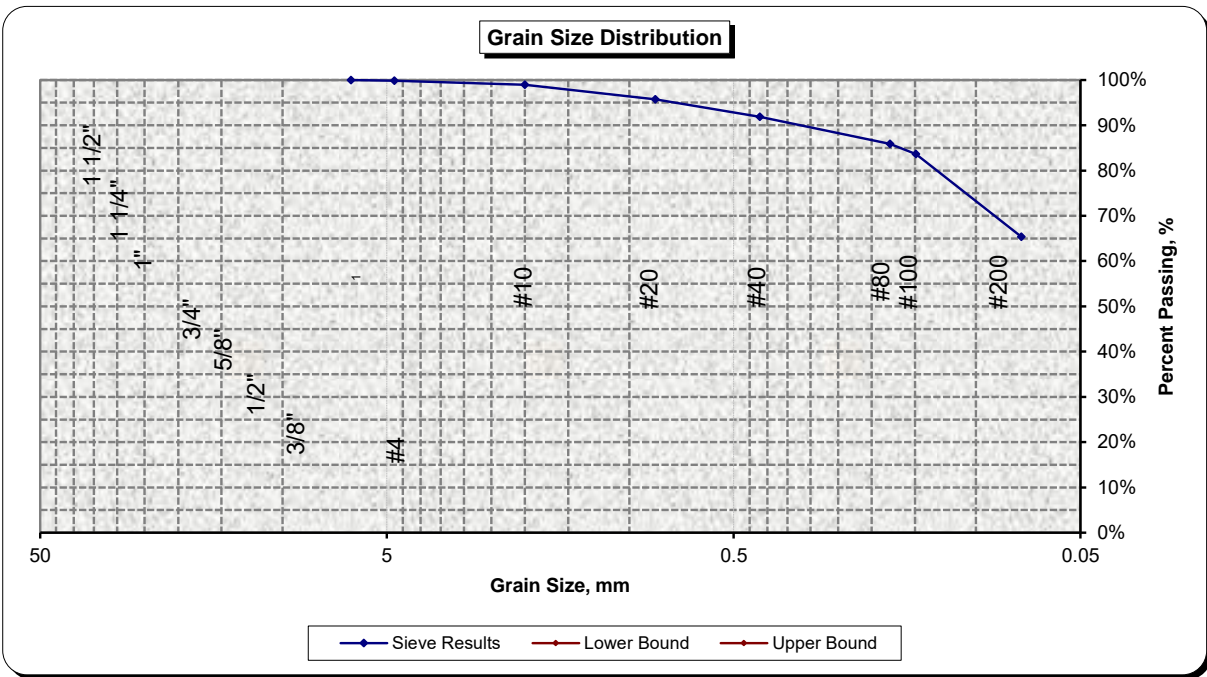
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CLIENT: AHBL, Inc.	PROJECT NUMBER: 21-135
PROJECT: Harvest Ridge	WORK ORDER #: 21-1112
SAMPLE SOURCE: TP11 @ 5'	SAMPLE NUMBER: 21-1112-4
DATE SAMPLED: 6/4/2021	DATE TESTED: 6/7/2021
MATERIAL TYPE: Sandy Silt	TESTED BY: AJD

Sampled in Accordance with ASTM D 75 and reduced in accordance with ASTM C 702 or D 421 unless otherwise noted.

SIEVE ANALYSIS OF SOILS ASTM C 136/D 1140			SOIL MOISTURE DETERMINATION ASTM D 2216		
Sieve Size:	Percent Passing:	Specs:	Sieve Size:	Percent Passing:	Specs:
4"	100%		#4	100%	
3"			#8		
2 1/2"			#10	99%	
2"			#16		
1 1/2"			#20	96%	
1 1/4"			#30		
1"			#40	92%	
3/4"			#50		
5/8"			#60		
1/2"			#80	86%	
3/8"			#100	84%	
1/4"	100%		#200	65.4%	

SOIL MOISTURE DETERMINATION ASTM D 2216
3.5%
FINENESS MODULUS - ASTM C 136
0.16
HYDROMETER (.02MM) - D 422
FINER THAN #200 - C 117
FRACTURED FACE COUNT ASTM D 5821



REVIEWED BY:
 Dee Burrie, Technical Director

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**Northwest Agricultural
Consultants**

2545 W Falls Avenue
Kennewick, WA 99336
509.783.7450
www.nwag.com
lab@nwag.com

PAP-Accredited



BAER Testing Inc.
1106 Ledwich Ave.
Yakima, WA 98902

Report: 55343-1-1
Date: June 5, 2021
Project Name:
Project Number:

Sample ID	Organic Matter	Cation Exchange Capacity
TP-1 @ 5.0'	1.47%	13.1 meq/100g
TP-2 @ 5.0'	1.59%	10.8 meq/100g
TP-3 @ 5.0'	1.41%	12.5 meq/100g
TP-4 @ 5.0'	1.56%	13.3 meq/100g
TP-5 @ 5.0'	1.31%	13.3 meq/100g
TP-6 @ 5.0'	1.67%	14.7 meq/100g
TP-7 @ 5.0'	1.85%	14.1 meq/100g
TP-8 @ 5.0'	1.52%	13.3 meq/100g
Method	ASTM D2974	EPA 9081

Sample ID	Sand	Silt	Clay	Texture Class
TP-1 @ 5.0'	44.0%	52.0%	4.0%	Silt Loam
TP-2 @ 5.0'	50.0%	46.0%	4.0%	Sandy Loam
TP-3 @ 5.0'	48.0%	48.0%	4.0%	Sandy Loam
TP-4 @ 5.0'	52.0%	44.0%	4.0%	Sandy Loam
TP-5 @ 5.0'	62.0%	36.0%	2.0%	Sandy Loam
TP-6 @ 5.0'	58.0%	40.0%	2.0%	Sandy Loam
TP-7 @ 5.0'	42.0%	54.0%	4.0%	Silt Loam
TP-8 @ 5.0'	46.0%	50.0%	4.0%	Silt Loam



87525 East Reata Road
Kennewick, WA 99338

Badger Mountain Irrigation District

(509) 628-0777
Fax (509) 628-0112

5/24/2021

Subject: Harvest Ridge Development Project

To Whom It May Concern,

Badger Mountain Irrigation District will serve the Harvest Ridge Project located on Parcel # 10588402000001. The BMID has sufficient potable water supply to serve the proposed project. BMID currently serves 889 connections and is approved for 1376 connections.

This parcel was approved as part of the retail service area in our 2010 Water System Plan. BMID is currently in the process of renewing our WSP and if the project is started before that date construction plans will need to be approved by the state as well as BMID.

If you have any questions or need more information, please call BMID at 509-628-0777

Sincerely,

Colby Getchell
District Manager

PCM 1.12

To: Michelle Cooke
Assistant Planning Manager Benton County Washington

From: Kirk Rathbun
Summit View Water Works

Re: Harvest Ridge Plat – Phases 1-3

Mrs. Cooke,

Summit View Water Works, LLC has holds irrigation water right WDOE G4-30505.

The annual quantity is for 810 acre-feet per year for irrigation of 270 acres from March 1 to October 31 each year.

The place of use is Section 5, T 8 N, R 28 E.W.M. lying North of Interstate 82.

The instantaneous quantity shall not exceed 2160 gallons per minute, or 8 gallons per minute per acre.

The quantities listed above are adequate to provide service for the plat of Harvest Ridge. Please call if you require additional information.

Summit View Water Works, LLC
Kirk Rathbun
Owner/Manager

A. background

1. Name of proposed project, if applicable: Plat of Harvest Ridge

2. Name and address of applicant: Tri City Development Corporation
PO Box 1307, Gig Harbor, WA 98335

3. Phone number of applicant and contact person: Geoff Clark 253-677-3402

4. Date checklist prepared: 1-25-2021

5. Agency requesting checklist: Benton County Planning Department

6. Proposed timing or schedule (including phasing, if applicable): Construction to begin May 2021

7. Do you have any plans for future additions, expansion, or further activity related to or connected with this proposal? If yes, explain.

No **If there is future development of Tract A, a site specific SEPA document will need to be submitted at the time of development.**

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

None **Preliminary storm water Report, Traffic Study, Geo Tech Study.**

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

10. List any government approvals or permits that will be needed for your proposal, if known.

Preliminary plat, construction plans, final plat, individual home building permits

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.)

A revised plat was received in the Planning Division Office on August 5, 2021. The revised plat was for 42 residential lots and on 3 122.30 acre tract. The average lot size in the development is 1.05 acres.

Subdivide ±172 acre parcel into 143 individual home lots, including associated infrastructure & roads The original plat was for 143 residential lots to be developed in three phases.

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.

Parcel # 1-0588-402-0000-052

Portion of Section 5 T8N R28E WM; Benton County parcel number not yet assigned

B. ENVIRONMENTAL ELEMENTS

1. Earth

a. General description of the site
(circle one): Flat, rolling, hilly, steep slopes, mountainous, other

rolling

b. What is the steepest slope on the site (approximate percent slope)?

10%

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.

Clay, sand, gravel

d. Are there surface indications or history of unstable soils in the immediate vicinity? If so, describe.

No

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.

Grading for roads & building pads on future individual lots. Fill to be acquired onsite through balanced grading plan.

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

Minor wind & rain induced erosion during construction

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

±10%

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

Temporary dust control, temporary silt fences

2. Air

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.

Minor dust during construction

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

No

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

Temporary dust control & silt fences during construction

3. Water

a. Surface Water:

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

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

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.

NA

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

No

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

No

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

b. Ground Water:

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.

No

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.

NA

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.

Storm water, to be contained using ditches & culverts on site

2) Could waste materials enter ground or surface waters? If so, generally describe.

No

3) Does the proposal alter or otherwise affect drainage patterns in the vicinity of the site? If so, describe.

Minimal diversion into ditches & culverts at proposed future roads

d. Proposed measures to reduce or control surface, ground, and runoff water, and drainage pattern impacts, if any:

Ditches and culverts at proposed roads

4. Plants

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

- deciduous tree: alder, maple, aspen, other
- evergreen tree: fir, cedar, pine, other
- shrubs
- grass
- 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?

Grubbing of crops, and mostly non-native grasses & shrubs during site grading & construction

c. List threatened and endangered species known to be on or near the site.

None

d. Proposed landscaping, use of native plants, or other measures to preserve or enhance vegetation on the site, if any:

Future landscaping of individual lots

e. List all noxious weeds and invasive species known to be on or near the site.

Cheat Grass, Russian Thistle

5. Animals

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

Songbirds

b. List any threatened and endangered species known to be on or near the site.

None

c. Is the site part of a migration route? If so, explain.

Not directly, but the entire Columbia Basin is a migration route for waterfowl

d. Proposed measures to preserve or enhance wildlife, if any:

None

e. List any invasive animal species known to be on or near the site.

None

6. Energy and natural resources

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.

Electric for individual homes

b. Would your project affect the potential use of solar energy by adjacent properties? If so, generally describe.

No

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:

Energy efficient house construction

7. Environmental health

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.

No

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

None

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.

None

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.

None

4) Describe special emergency services that might be required.

Normal police, fire & ambulance coverage for residential neighborhood

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

None

b. Noise

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

Traffic noise from SR-82. Agricultural noise from nearby farms & orchards.

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.

Construction noise during normal business hours, during construction phase only

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

Construction during normal business hours only

8. Land and shoreline use

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.

Site is vacant. Adjoining parcels are vacant or single family homes. No affect to nearby parcels

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?

No

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:

No

c. Describe any structures on the site.

Vacant

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

No

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

RL-1

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

Rural Transition

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

NA

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

No

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

±550

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

0

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

NA

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

NA

m. Proposed measures to ensure the proposal is compatible with nearby agricultural and forest lands of long-term commercial significance, if any:

NA

9. Housing

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

143 middle income homes

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

0

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

NA

10. Aesthetics

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

±25' stick built wood homes

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

None

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

NA

11. Light and glare

a. What type of light or glare will the proposal produce? What time of day would it mainly occur?

Lights from individual homes

b. Could light or glare from the finished project be a safety hazard or interfere with views?

No

c. What existing off-site sources of light or glare may affect your proposal?

None

d. Proposed measures to reduce or control light and glare impacts, if any:

NA

12. Recreation

a. What designated and informal recreational opportunities are in the immediate vicinity?

None

b. Would the proposed project displace any existing recreational uses? If so, describe.

No

c. Proposed measures to reduce or control impacts on recreation, including recreation opportunities to be provided by the project or applicant, if any:

NA

13. Historic and cultural preservation

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 located on or near the site? If so, specifically describe.

No

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.

No

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.

None

h. Proposed measures to reduce or control transportation impacts, if any:

None

15. Public services

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.

No

b. Proposed measures to reduce or control direct impacts on public services, if any.

None

16. Utilities

a. Circle utilities currently available at the site:
electricity, natural gas, water, refuse service, telephone, sanitary sewer, septic system,
other: _____

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, electricity, telephone, cable tv, & internet to each proposed house

C. Signature

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: *Tricity Development Corporation*
Geoffrey T. Clark

Name of signee GEOFFREY T. CLARK

Position and Agency/Organization president/coo

Date Submitted: 1-25-2021

h. Proposed measures to reduce or control transportation impacts, if any:

None

15. Public services

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.

No

b. Proposed measures to reduce or control direct impacts on public services, if any.

None

16. Utilities

a. Circle utilities currently available at the site:
electricity, natural gas, water, refuse service, telephone, sanitary sewer, septic system,
other: _____

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, electricity, telephone, cable tv, & internet to each proposed house

C. Signature

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 _____

Position and Agency/Organization _____

Date Submitted: _____

D. supplemental sheet for nonproject actions

(**IT IS NOT NECESSARY** to use this sheet for project actions)

Because these questions are very general, it may be helpful to read them in conjunction with the list of the elements of the environment.

When answering these questions, be aware of the extent the proposal, or the types of activities likely to result from the proposal, would affect the item at a greater intensity or at a faster rate than if the proposal were not implemented. Respond briefly and in general terms.

1. How would the proposal be likely to increase discharge to water; emissions to air; production, storage, or release of toxic or hazardous substances; or production of noise?

Proposed measures to avoid or reduce such increases are:

-
2. How would the proposal be likely to affect plants, animals, fish, or marine life?

Proposed measures to protect or conserve plants, animals, fish, or marine life are:

-
3. How would the proposal be likely to deplete energy or natural resources?

Proposed measures to protect or conserve energy and natural resources are:

-
4. How would the proposal be likely to use or affect environmentally sensitive areas or areas designated (or eligible or under study) for governmental protection; such as parks, wilderness, wild and scenic rivers, threatened or endangered species habitat, historic or cultural sites, wetlands, floodplains, or prime farmlands?

Proposed measures to protect such resources or to avoid or reduce impacts are:

5. How would the proposal be likely to affect land and shoreline use, including whether it would allow or encourage land or shoreline uses incompatible with existing plans?

Proposed measures to avoid or reduce shoreline and land use impacts are:

6. How would the proposal be likely to increase demands on transportation or public services and utilities?

Proposed measures to reduce or respond to such demand(s) are:

7. Identify, if possible, whether the proposal may conflict with local, state, or federal laws or requirements for the protection of the environment.

ESA LISTED SALMONIDS CHECKLIST

The Listed Salmonids Checklist is provided in order that the county may initially identify a project's potential impacts (if any) on salmonids that have been listed as "threatened" or "endangered" under the Federal Endangered Species Act (ESA). A salmonid is any fish species that spends part of its life cycle in the ocean and returns to fresh water. Potential project impacts that may result in a "taking" of listed salmonids must be avoided, or mitigated to insignificant levels. Generally, under ESA, a "taking" is broadly defined as any action that causes the death of, or harm to, the listed species. Such actions include those that affect the environment in ways that interfere with or reduce the level of reproduction of the species.

If ESA listed species are present or ever were present in the watershed where your project will be located, your project has the potential for affecting them, and you need to comply with the ESA. The questions in this section will help determine if the ESA listing will impact your project. The Fish Program Manager at the appropriate Department of Fish and Wildlife (DFW) regional office can provide information for the following two questions. Please contact the Dept. of Fish and Wildlife at 1701 S. 24th, Yakima WA 98902-5720, Phone No. 509-575-2740.

1. Are ESA listed salmonids currently present in the watershed in which your project will be?

YES NO

Please Describe.

2. Has there ever been an ESA listed salmonid stock present in this watershed?

YES NO

Please Describe.

If you answered "yes" to either of the above questions, you should complete the remainder of this checklist.

PROJECT SPECIFIC : The questions in this section are specific to the project and vicinity.

A1. Name of watershed _____

A2. Name of nearest waterbody _____

A3. What is the distance from this project to the nearest body of water?

Often a buffer between the project and a stream can reduce the chance of a negative impact to fish.

A4. What is the current land use between the project and the potentially affected water body (parking lots, farmland, etc.)

A5. Is the project above a:

Natural permanent barrier (waterfall) YES NO

Natural temporary barrier (beaver pond) YES NO

Man-made barrier (culvert, dam) YES NO

Other (explain) _____

A6 If yes, are there any resident salmonid populations above the blockage?
 YES NO Don't Know

A7. area)? What percentage of the project will be impervious surface (including pavement & roof) _____

FISH MIGRATION: The following questions will help determine if this project could interfere with migration of adult and juvenile fish. Both increases and decreases in water flows can affect fish migration.

B1. Does the project require the withdrawal of

a. Surface water? YES NO

Amount _____

Name of surface water body _____

b. Ground water? YES NO

Amount _____

From Where _____

Depth of well _____

B2. Will any water be rerouted? YES NO
If yes, will this require a channel change?

B3. Will there be retention ponds? YES NO
If yes, will this be an infiltration pond or a surface discharge to either a municipal storm water system or a surface water body?

If to a surface water discharge, please give the name of the waterbody.

B4. timing of water reaching a stream and may, thus, impact fish habitat. Will this project require the building of new roads? Increased road mileage may affect the

B5. Are culverts proposed as part of this project? YES NO

B6. Will topography changes affect the duration/direction of runoff flows?

YES NO

If yes describe the changes.

B7. Will the project involve any reduction of the floodway or floodplain by filling or other partial blockage of flows? YES NO

If yes, how will the loss of flood storage be mitigated by your project?

WATER QUALITY: The following questions will help determine if this project could adversely impact water quality. Such impacts can cause problems for listed species. Water quality can be made worse by runoff from impervious surfaces, altering water temperature, discharging contaminants, etc.

C1. Do you know of any problems with water quality in any of the streams within this watershed? YES NO

If yes please describe.

C2. Will your project either reduce or increase shade along or over a waterbody? YES NO

Removal of shading vegetation or the building of structures such as docks or floats often result in a change in shade.

C3. Will the project increase nutrient loading or have the potential to increase nutrient loading or contaminants (fertilizers, other waste discharges, or runoff) to the waterbody?

YES NO

C4. Will turbidity be increased because of construction of the project or during operation of the project? In-water or near water work will often increase turbidity. YES NO

C5. Will your project require long term maintenance, i.e., bridge cleaning, highway salting, chemical sprays for vegetation management, clearing of parking lots? YES NO
Please Describe.

Vegetation: The following questions are designed to determine if the project will affect riparian vegetation, thereby, adversely impacting salmon.

D1. Will the project involve the removal of any vegetation from the stream banks?

YES NO

If yes, please describe the existing conditions and the amount and type of vegetation to be removed.

D2. If any vegetation is removed, do you plan to re-plant? YES NO

If yes, what types of plants will you use?

FOR OFFICIAL USE ONLY:

Critical Area Review Completed by _____ on _____

Application approved for processing by _____ on _____

Zoning and Comp Plan Designation _____

Community Development Department

Prosser Office: 620 Market Street, 1st Floor
Kennewick Office: 102206 East Wiser Parkway
www.co.benton.wa.us



Planning Division

(509) 786-5612
P.O. Box 910, Prosser, WA 99350
planning.department@co.benton.wa.us

PCM 1.14

Notice of Application - Optional DNS Process

Benton County has received a preliminary plat application and environmental checklist for the following project:

Date of permit application: **February 9, 2021**
Date of determination of completeness: **June 22, 2021**
Date of Notice of Application: **June 22, 2021**
Comment due date: **14 days from publication of this notice**
Date of Notice of Application Publication: **June 30, 2021**

Agency Contact: Michelle Cooke, Benton County Assistant Planning Manager
michelle.cooke@co.benton.wa.us (509) 786-5612

Agency File Number(s): SUB 2021-001 and EA 2021-005

Project Description: The preliminary plat of Harvest Ridge for a three phased subdivision of 172.38 acres into 143 lots with an average lot size of 1.05 acres.

Project Location: The site is located east of Interstate 82 and north of Reata Road on approximately the northern half of Lot 1 of the plat of the Ridge at Reata West Phase 1, in Section 5, Township 8 North, Range 28 East, W.M. in Kennewick, WA on parcel number 1-0588-402-0000-001.

Project Applicant: Geoff Clark, PO Box 1307, Gig Harbor, WA 98335

SEPA Environmental Review: The Benton County Planning Division has reviewed the proposed project for probable adverse environmental impacts and expects to issue a Determination of Non-Significance (DNS) or Mitigated Determination of Non-Significance (MDNS). The proposal may include mitigation measures under applicable codes, and the project review process may incorporate or require mitigation measures regardless of whether an EIS is prepared. The optional DNS process in WAC 197-11-355 is being used. This may be your only opportunity to comment on the environmental impacts of the proposed project.

Agencies, tribes, and the public are encouraged to review and comment on the proposed project and its probable environmental impacts. Comments must be submitted 14 days from date of publication to the Benton County Planning Division, P.O. Box 910, Prosser, WA 99350. Any information submitted to Benton County is subject to the public records disclosure law for the State of Washington (RCW Chapter 42.17) and all other applicable law that may require the release of the documents to the public.

Preliminary Development Regulations and Existing Environmental Documents: To evaluate the impacts of the proposed project, the following may be used for mitigation, consistency, and the development of findings and conclusions:

Benton County Code, including BCC Title 15 CAO, BCC Title 6.35 SEPA, Comprehensive Plan, BCC Title 9-Subdivision Regulations, BCC Title 11-Zoning Regulations, Department of Ecology, and the SEPA Environmental Checklist, dated February 9, 2021.

Other required agency evaluations, approvals, permits, and mitigation as necessary.

Required Permits:

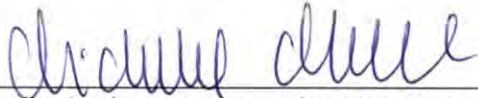
Benton County Building Division Grading Permit and other forms, reports, or approvals as necessary.

Required Studies:

Unknown at this time.

This project does require an open record hearing before the Planning Commission and a closed record hearing before the Board of County Commissioners. A copy of the subsequent threshold determination and any other information concerning this action may be obtained by contacting the Benton County Planning Division at P.O. Box 910, Prosser, WA, or (509) 786-5612.

Dated at Prosser, Washington on this 22nd day of June 2021.



Michelle Cooke, Assistant Planning Manager
Benton County Planning Division



PCM 1.15

MITIGATED DETERMINATION OF NON-SIGNIFICANCE

Proponent:

Geoff Clark dba Candy Mountain LLC

File No. EA 2021-005

Project Description: The applicant is proposing a preliminary plat with 143 residential lots on 172.36 acres with an average lot size of 1.05 acres.

Project Location: The site is located east of Interstate 82 and north of Reata Road on approximately the northern half of Lot 1 of the plat of the Ridge at Reata West Phase 1, in Section 5, Township 8 North, Range 28 East, W.M. in Richland, WA on parcel number 1-0588-402-0000-052.

Jurisdiction: Benton County, Washington.

Lead Agency: Benton County Planning Division.

Threshold Determination: The lead agency for this proposal has determined that it will not have a probable significant adverse impact on the environment. An environmental impact statement (EIS) is not required under RCW 43.21C.030(2)(3), provided that the following measures are taken to mitigate potential adverse impacts. Substantive authority to require mitigation is derived from WAC 197-11-660 and Benton County Code, Chapter 6.35.120. The decision was made after review of a completed environmental checklist, comments received from various agencies and other information on file with the lead agency. This information is available to the public on request.

This MDNS is issued under WAC 197-11-355; no additional comments are being requested.

Conditions/Mitigating Measures: See Attached.

Appeals: You may appeal this determination to the Benton County Planning Division at Post Office Box 910, Prosser, WA 99350, no later than August 3, 2021 by written notice. The fee for a threshold determination appeal is \$700.00. An appeal of the determination must be made in writing to the Benton County Planning Department and a public hearing will be scheduled and the appellant will be notified of the date, time, and place. You should be prepared to make specific factual objections. Contact the Planning Department to read or ask about the procedures for SEPA appeals.

SEPA Responsible Official: Greg Wendt

Position/Title: Director, Community Development Dept.

Address: P.O. Box 910, Prosser WA 99350

Date: **July 20, 2021**


Michelle Cooke, Assistant Planning Manager

DISTRIBUTION:

Benton County Building Division
Department of Natural Resources -Ellensburg
Department of Natural Resources - Olympia
Benton Clean Air Authority
Benton County Engineer
Benton-Franklin Dist. Health Department
Department of Transportation
Washington State Department of Health
Department of Ecology - Olympia
Department of Ecology - Yakima
Benton County Fire Marshal
Dept. of Fish and Wildlife
Bureau of Reclamation
Bureau of Land Management
Fire District # 1
Futurewise
Department of Archaeology/Historic Preservation
Tom Price-Environmental Review Inc.
City of Richland
Yakima Nation
Umatilla Tribes
Badger Mountain Irrigation District
Summit View Water Works

CONDITIONS/MITIGATION MEASURES

File No.: EA 2021-005- Harvest Ridge Subdivision

Applicant:

Geoff Clark dba Candy Mountain LLC
PO Box 1307
Gig Harbor, WA 98335

Documents and Regulations:

The environment threshold determination and conditions are based on an analysis of information contained in the following documents or the applicable regulations and restrictions of various agencies:

1. Benton County, BCC Title 6.35 Environmental Policy (SEPA);
2. Benton County, BCC Title 11, Zoning;
3. Benton County, BCC Title 9, Subdivisions;
4. Benton County Comprehensive Plan;
5. Benton County, BCC Title 15 Critical Area Ordinance;
6. Benton County, BCC Title 3 Building Code, Fire Code, and Road Standards;
7. Regulations of the Benton Clean Air Agency;
8. Regulations of the Washington State Department of Fish and Wildlife, Department of Transportation, Department of Ecology, Department of Natural Resources and Department of Archaeology and Historic Preservation; and
9. Application submittal materials including a Preliminary Storm Drainage Report, dated April 27, 2021, a Transportation Impact Analysis dated May 14, 2021, and SEPA Environmental Checklist dated February 9, 2021.

Findings:

1. Location:
 - a. The site is located east of Interstate 82 and north of Reata Road on approximately the northern half of Lot 1 of the plat of the Ridge at Reata West Phase 1, in Section 5, Township 8 North, Range 28 East, W.M. in Richland, WA on parcel number 1-0588-402-0000-052.
2. Benton County, BCC Title 11, Zoning:
 - a. The zoning designation for the project area is Rural Lands One Acre Zoning

- District (RL-1). This zoning district has a minimum lot size of one acre; and
- b. A single-family home is an allowed use in the RL-1 Zoning District.
3. Benton County, BCC Title 9, Subdivisions:
 - a. Applicant has applied for preliminary plat consideration in accordance with BCC 9.05 Preliminary Plats.
 4. Benton County Comprehensive Plan:
 - a. The property is designated Rural Transition in the Benton County Comprehensive Plan.
 5. Benton County, BCC Title 15, Critical Area Ordinance:
 - a. Upon completion of a review of BCC Title 15 and the Benton County Critical Area Maps, no designated critical areas have been identified on this property. A critical area report is not required for the processing of a preliminary plat at this location.
 - b. Wetlands: None identified.
 - c. Critical Aquifer Recharge Area: None identified.
 - d. Fish and Wildlife Habitat Conservation Area: None identified.
 - e. Frequently Flooded Areas: None identified.
 - f. Geologically Hazardous Areas: None identified.
 6. The applicant is proposing a preliminary plat with 143 residential lots on 172.36 acres with an average lot size of 1.05 acres.
 7. The applicant submitted the following materials for the SEPA review process:
 - a. Preliminary Storm Drainage Report, dated April 27, 2021;
 - b. Transportation Impact Analysis dated May 14, 2021; and
 - c. SEPA Environmental Checklist dated February 9, 2021.
 8. During the SEPA comment period, the State of Washington Department of Archaeology & Historic Preservation (see letter dated June 30, 2021), the Confederated Tribes of the Umatilla Indian Reservation (see letter dated July 7, 2021), and the Yakama Nation (see letter dated July 1, 2021) commented that the project site has the potential to contain archaeological resources. DAHP and the tribes requested the applicant conduct a professional archaeological survey of the project area prior to final plat approval.

Conditions:

The applicant must complete and comply with the following mitigating conditions for this Mitigated Determination of Non-Significance (MDNS).

1. Benton County Planning Division. Meet and comply with BCC Title 9, Subdivisions, including preliminary and final plat requirements, if approved. Contact Benton County Planning Division at 509-786-5612;
2. Benton County Public Works. Meet and comply with the Benton County Public

Works requirements stated in comment letter dated July 18, 2021 including mitigation for stormwater, paving the sidewalk easement and providing crosswalks for the sidewalk easement;

3. City of Richland Public Works. Meet and comply with the City of Richland requirements stated in comment letter dated July 14, 2021 including the dedication of the completed future city street and the payment of traffic impact fees prior to the final plat of each phase. For question, please contact Pete Rogalsky with the City of Richland at 509-942-7558;
4. Benton Clean Air Agency. Prior to any excavations or construction at the site, the applicant shall meet and comply with the permitting requirements and standards of the Benton Clean Air Agency;
5. Washington State Department of Ecology. Meet and comply with Ecology requirements for all activities at the site including obtaining a NPDES Construction Stormwater General Permit as outlined in the comment letter dated July 12, 2021;
6. Benton Franklin Health District. Meet and comply with Health District requirements for all activities at the site;
7. State of Washington Department of Archaeology & Historic Preservation. Meet and comply with DAHP requirements and recommendations stated in the comment letter dated June 30, 2021 prior to ground disturbing activities including a professional archeological survey. A note shall be placed on the subdivision plat specifying DAHP requirements and permitting. If you have questions regarding DAHP permitting, please email DAHP at sydney.hanson@dahp.wa.gov;
8. Yakama Nation and Umatilla Tribes. Meet and comply with the Yakama Nation and Umatilla Tribes recommendation for a professional archeological survey in comments dated July 1, 2021 and July 7, 2021; and
9. State of Washington Department of Transportation. Meet and comply with WSDOT requirements and recommendations stated in the comment letter dated July 7, 2021 including the construction of a six-foot tall fence along the I-82 right-of-way boundary and mitigation of stormwater and surface runoff.

Community Development Department

Prosser Office: 620 Market Street, 1st Floor
Kennewick Office: 102206 East Wiser Parkway
www.co.benton.wa.us



Planning Division

(509) 786-5612
P.O. Box 910, Prosser, WA 99350
planning.department@co.benton.wa.us

MODIFIED

PCM 1.16

MITIGATED DETERMINATION OF NON-SIGNIFICANCE

Proponent:

Geoff Clark dba Candy Mountain LLC

File No. EA 2021-005

Project Description: The applicant is proposing a preliminary plat consisting of 42 residential lots and one 122.30-acre tract. The average lot size in the development is 1.05 acres.

Project Location: The site is located east of Interstate 82 and north of Reata Road on approximately the northern half of Lot 1 of the plat of the Ridge at Reata West Phase 1, in Section 5, Township 8 North, Range 28 East, W.M. in Richland, WA on parcel number 1-0588-402-0000-052.

Jurisdiction: Benton County, Washington.

Lead Agency: Benton County Planning Division.

Threshold Determination: On July 20, 2021, the lead agency for this proposal determined that it will not have a probable significant adverse impact on the environment and issued a Mitigated Determination of Non-Significance based on identified conditions/mitigation measures. Subsequently, comments on the proposal caused the lead agency to reconsider and modify the MDNS terms. The lead agency again determines that an environmental impact statement (EIS) is not required under RCW 43.21C.030(2)(3), provided that the following measures are taken to mitigate potential adverse impacts. Substantive authority to require mitigation is derived from WAC 197-11-660 and Benton County Code, Chapter 6.35.120. The decision was made after review of a completed environmental checklist, comments received from various agencies and other information on file with the lead agency. This information is available to the public on request. This modified MDNS is authorized by WAC 197-11-340 and includes a 14-day comment period.

Conditions/Mitigating Measures: See attached revised conditions. Benton County has received timely comments and determined that such conditions are necessary to mitigate specific adverse impacts.

Appeals: You may appeal this determination to the Benton County Planning Division at Post Office Box 910, Prosser, WA 99350, no later than Friday, September 17, 2021 by written notice. The fee for a threshold determination appeal is \$700.00. An appeal of the determination must be made in writing to the Benton County Planning Department and a public hearing will be scheduled and the appellant will be notified of the date, time, and place. You should be prepared to make specific factual objections. Contact the Planning Department to read or ask about the procedures for SEPA appeals.

SEPA Responsible Official: Greg Wendt

Position/Title: Director, Community Development Dept.

Address: P.O. Box 910, Prosser WA 99350

Date: **September 3, 2021**



Greg Wendt, Director

DISTRIBUTION:

Benton County Building Division
Department of Natural Resources -Ellensburg
Department of Natural Resources - Olympia
Benton Clean Air Authority
Benton County Engineer
Benton-Franklin Dist. Health Department
Department of Transportation
Washington State Department of Health
Department of Ecology - Olympia
Department of Ecology - Yakima
Benton County Fire Marshal
Dept. of Fish and Wildlife
Bureau of Reclamation
Bureau of Land Management
Fire District # 1
Futurewise
Department of Archaeology/Historic Preservation
Tom Price-Environmental Review Inc.
City of Richland
Yakima Nation
Umatilla Tribes
Badger Mountain Irrigation District
Summit View Water Works

**MODIFIED
CONDITIONS/MITIGATION MEASURES**

File No.: EA 2021-005- Harvest Ridge Subdivision

Applicant:

Geoff Clark dba Candy Mountain LLC
PO Box 1307
Gig Harbor, WA 98335

The environment threshold determination and conditions are based on an analysis of information contained in the file and the following documents.

1. Benton County, BCC Title 6.35 Environmental Policy (SEPA);
2. Benton County, BCC Title 11, Zoning;
3. Benton County, BCC Title 9, Subdivisions;
4. Benton County Comprehensive Plan;
5. Benton County, BCC Title 15 Critical Area Ordinance;
6. Benton County, BCC Title 3 Building Code, Fire Code, and Road Standards;
7. Regulations of the Benton Clean Air Agency;
8. Regulations of the Washington State Department of Fish and Wildlife, Department of Transportation, Department of Ecology, Department of Natural Resources and Department of Archaeology and Historic Preservation; and

Findings:

1. Location:
 - a. The site is located east of Interstate 82 and north of Reata Road on approximately the northern half of Lot 1 of the plat of the Ridge at Reata West Phase 1, in Section 5, Township 8 North, Range 28 East, W.M. in Richland, WA on parcel number 1-0588-402-0000-052. The location of the property is in unincorporated Benton County and is not located within the city limits of Richland and/or the Richland Urban Growth Area.
2. Benton County, BCC Title 11, Zoning:
 - a. The zoning designation for the project area is Rural Lands One Acre Zoning

- District (RL-1). This zoning district has a minimum lot size of one acre; and
- b. A single-family home is an allowed use in the RL-1 Zoning District.
3. Benton County, BCC Title 9, Subdivisions:
 - a. Applicant has applied for preliminary plat consideration in accordance with BCC 9.05 Preliminary Plats.
 4. Benton County Comprehensive Plan:
 - a. The property is designated Rural Transition in the Benton County Comprehensive Plan.
 5. Benton County, BCC Title 15, Critical Area Ordinance:
 - a. Upon completion of a review of BCC Title 15 and the Benton County Critical Area Maps, no designated critical areas have been identified on this property. A critical area report is not required for the processing of a preliminary plat at this location.
 - b. Wetlands: None identified.
 - c. Critical Aquifer Recharge Area: None identified.
 - d. Fish and Wildlife Habitat Conservation Area: None identified.
 - e. Frequently Flooded Areas: None identified.
 - f. Geologically Hazardous Areas: None identified.
 6. The applicant is proposing a preliminary plat consisting of 42 residential lots and one 122.30-acre tract. The average lot size in the development is 1.05 acres.
 7. The applicant submitted the following materials for the SEPA review process:
 - a. Preliminary Storm Drainage Report, dated April 27, 2021;
 - b. Draft Transportation Impact Analysis dated May 14, 2021 (Not finalized); and
 - c. SEPA Environmental Checklist dated February 9, 2021.
 8. An MDNS was issued on July 20, 2021. Based on additional comments regarding the proposal, a modified MDNS was issued on September 3, 2021 for this project. Benton County has received timely comments and determined that condition no. 2 should be clarified, and condition no. 3 should be revised as set forth below. The remaining conditions are as reflected in the July 20, 2021 MDNS but are

repeated here for the sake of clarity.

Conditions:

The applicant must complete and comply with the following mitigating conditions for this Mitigated Determination of Non-Significance (MDNS).

1. Meet and comply with BCC Title 9, Subdivisions, including preliminary and final plat requirements, if approved. Contact Benton County Planning Division at 509-786-5612.
2.
 - a. Pay to Benton County a traffic mitigation fee of three thousand five hundred dollars (\$3,500) per lot either prior to final plat approval or add a note to the face of the plat stating that such fee must be paid for a particular prior to the issuance of any building permit fee on such lot within the project.
 - b. Provide pedestrian traffic mitigation in the form of separate five-foot-wide pedestrian pathways as reflected on the proposed plat.
3. No driveways may access any of the lots from the to be built 'Future Road' (the Future Road is adjacent to the eastern boundary of the preliminary plat and is within Richland city limits and does not yet exist).
4. Prior to any excavations or construction at the site, the applicant shall meet and comply with the permitting requirements and standards of the Benton Clean Air Agency.
5. Meet and comply with Washington State Department of Ecology requirements for all activities at the site including obtaining a NPDES Construction Stormwater General Permit as outlined in the comment letter dated July 12, 2021;
6. Meet and comply with the Benton Franklin Health District requirements for all activities at the site.
7. Meet and comply with Washington State Department of Archaeology & Historic Preservation (DAHP) requirements and recommendations stated in the DAHP comment letter dated June 30, 2021, prior to ground disturbing activities including a professional archeological survey. A note shall be placed on the subdivision plat specifying DAHP requirements and permitting. If you have questions regarding DAHP permitting, please email DAHP at sydney.hanson@dahp.wa.gov.
8. Meet and comply with the Yakama Nation and Umatilla Tribes recommendation for a professional archeological survey in comments dated July 1, 2021 and July 7,

2021.

9. Meet and comply with WSDOT requirements and recommendations stated in the comment letter dated July 7, 2021 including the construction of a six-foot tall fence along the I-82 right-of-way boundary and mitigation of stormwater and surface runoff.

Donna Hutchinson

From: Ashley Morton <AshleyMorton@ctuir.org>
Sent: Friday, August 13, 2021 9:11 AM
To: Donna Hutchinson
Cc: Hanson, Sydney (DAHP)
Subject: [EXTERNAL] RE: SUB 2021-001 Agency Re-Review Harvest Ridge Prel. Plat

EXTERNAL EMAIL WARNING!!!: This email originated from outside of Benton County. **DO NOT** click links or open attachments unless you recognize the sender and know the content is safe.

Good morning Donna,
The Confederated Tribes of the Umatilla Indian Reservation (CTUIR) Cultural Resources Protection Program (CRPP) has no additional comments or changes from those initially made for the Harvest Ridge Plat. We still recommend a cultural resources survey.

Thank you.

Sincerely,
Ashley

Ashley M. Morton, M.A., RPA
Archaeologist II
Cultural Resources Protection Program
Confederated Tribes of the Umatilla Indian Reservation
46411 Timine Way, Pendleton, OR 97801
Direct Line/Fax: (541) 429-7214
Main Office: (541) 276-3447
AshleyMorton@ctuir.org



From: Donna Hutchinson [mailto:Donna.Hutchinson@co.benton.wa.us]
Sent: Wednesday, August 11, 2021 2:31 PM
To: Fire District #1-Billie <billie@bentonone.org>; Fire District #1-Staff <staff@bentonone.org>; School District # 17-Ryan Jones <Ryan.Jones@ksd.org>; john.lyle@bentoncleanair.org; Benton Clean Air-Priddy <robin.priddy@bentoncleanair.org>; Benton Clean Air-Rodger <rob.rodger@bentoncleanair.org>; Benton Clean Air-Tyler Thompson <tyler.thompson@bentoncleanair.org>; Benton-Franklin Dist. Health Dept. <rickd@bfhd.wa.gov>; Frontier Telephone <north.central.dbmc.control.desk@ncnetwork.net>; Dept. of Transportation (scplanning@wsdot.wa.gov) <scplanning@wsdot.wa.gov>; Dept. of Transportation- Paul G <Gonsetp@wsdot.wa.gov>; Dept. of Transportation-Jacob Prilucik <PrilucJ@wsdot.wa.gov>; City of Richland-Mike Stevens (mstevens@ci.richland.wa.us) <mstevens@ci.richland.wa.us>; Cascade Natural Gas (Walter.Nelson@cngc.com) <Walter.Nelson@cngc.com>; Cascade Natural Gas (Walter.Nelson@cngc.com) <Walter.Nelson@cngc.com>; Natural Resources Conservation Service <ray.gekosky@wa.usda.gov>; US Postal Service (ina.n.beutler@usps.gov) <ina.n.beutler@usps.gov>; US Postal Service - Address Management System <Tina.C.Fisher@usps.gov>; WA Dept of Health - Kelly Cooper - WA Dept of Health - Kelly Cooper (SEPA.reviewteam@doh.wa.gov) <SEPA.reviewteam@doh.wa.gov>; Cristina Woods

<Cristina.Woods@co.benton.wa.us>; Ben Franklin Transit - Bill Barlow (bbarlow@bft.org) <bbarlow@bft.org>; Ben Franklin Transit K. McMullen <KmcMullen@bft.org>; Ben Franklin Transit - B. Windler <bwindler@bft.org>; Dept. of Ecology - Lori White (lori.white@ecy.wa.gov) <lori.white@ecy.wa.gov>; Southeast Communication Center (k.lettrick@bces.wa.gov) <k.lettrick@bces.wa.gov>; Badger Mountain Irrig. District (bmidmanager@badgermountainirrigation.com) <bmidmanager@badgermountainirrigation.com>; Benton Franklin Health District - JoDee Peyton <Jodeer@bfhd.wa.gov>; Rebecca Warrington <rebeccaw@bfhd.wa.gov>; Segregations <segregations@co.benton.wa.us>; GIS <GIS@co.benton.wa.us>; Mosquito Control (admin@mosquitocontrol.org) <admin@mosquitocontrol.org>; Clark Posey <Clark.Posey@co.benton.wa.us>; Kirk Rathbun <k2rathbun@gmail.com>; WA Dept of Ecology - Gwen Clear <crosepacoordinator@ecy.wa.gov>; Gardipe, Jamie C (DOH) <jamie.gardipe@doh.wa.gov>; progalsky@ci.richland.wa.us; jdeskins@ci.richland.wa.us; Jessica_Lally@Yakama.com; Corrine_Camuso@Yakama.com; Casey_Barney@Yakama.com; Ashley Morton <AshleyMorton@ctuir.org>; Benton PUD- Chad Brooks <Brooksc@bentonpud.org>; Benton PUD-Mike Irving <irvingm@bentonpud.org>; Benton PUD-Shanna Everson <eversons@bentonpud.org>; Benton PUD-tina Glines (glinest@bentonpud.org) <glinest@bentonpud.org>
Subject: RE: SUB 2021-001 Agency Re-Review Harvest Ridge Prel. Plat

EXTERNAL EMAIL: Please use caution when clicking links or opening attachments.

Please see the attached for a **re-review** of the preliminary plat of Harvest Ridge. The applicant has revised his original plat map and is only platting 42 lots and 1 tract at this point in time. Please review the information and send us any comments you may have by August 26, 2021. If you have any questions, please contact our office.



Donna Hutchinson
Office Assistant IV
Community Development Dept.
Planning Division
PO Box 910 Prosser WA 99350
(509) 786-5612

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The opinions expressed by the author are his or her own and are not necessarily those of the Confederated Tribes of the Umatilla Indian Reservation. The information, contents and attachments in this email are Confidential and Private.

Donna Hutchinson

From: Michelle Cooke
Sent: Wednesday, July 7, 2021 1:29 PM
To: Planning Department
Cc: Donna Hutchinson
Subject: FW: [EXTERNAL] FW: SUB 2021-001 Agency Review Harvest Ridge Prel. Plat

FYI



Michelle Cooke • *Assistant Planning Manager*
Benton County Community Development Department - Planning Division
Benton County Courthouse, 620 Market Street, Prosser, WA 99350
Benton County Public Services Office, 102206 E Wisner Parkway, Kennewick, WA 99338
Michelle.Cooke@co.benton.wa.us
(509) 786-5612

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From: Ashley Morton <AshleyMorton@ctuir.org>
Sent: Wednesday, July 7, 2021 1:21 PM
To: Michelle Cooke <Michelle.Cooke@co.benton.wa.us>
Cc: Hanson, Sydney (DAHP) <Sydney.Hanson@dahp.wa.gov>
Subject: [EXTERNAL] FW: SUB 2021-001 Agency Review Harvest Ridge Prel. Plat

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Good afternoon Michelle, The Confederated Tribes of the Umatilla Indian Reservation (CTUIR) Cultural Resources Protection Program (CRPP) has reviewed the materials regarding the Harvest Ridge project. The proposed project area is in close proximity to three historic properties of religious and cultural significance, Piyuušmaamí uštáy ('hills of the snakes'), ʔusipamá ('for horses'), and Wišpúušya ('Beaver') to the CTUIR. Given that the project area is in close proximity to these traditional use areas and that the project will reach native soils, the likelihood of encountering cultural resources is high. Therefore, we recommend a cultural resource survey with subsurface testing.

CTUIR appreciates the opportunity.

Sincerely,
Ashley

Ashley M. Morton, M.A., RPA
Archaeologist II
Cultural Resources Protection Program
Confederated Tribes of the Umatilla Indian Reservation
46411 Timine Way, Pendleton, OR 97801
Direct Line/Fax: (541) 429-7214

Main Office: (541) 276-3447

AshleyMorton@ctuir.org



From: Planning Department [<mailto:Planning.Department@co.benton.wa.us>]

Sent: Wednesday, June 23, 2021 12:01 PM

To: Fire District #1-Billie <billie@bentonone.org>; Fire District #1-Staff <staff@bentonone.org>; School District # 17-Ryan Jones <Ryan.Jones@ksd.org>; john.lyle@bentoncleanair.org; Benton Clean Air-Priddy <robin.priddy@bentoncleanair.org>; Benton Clean Air-Rodger <rob.rodger@bentoncleanair.org>; Benton Clean Air-Tyler Thompson <tyler.thompson@bentoncleanair.org>; Benton-Franklin Dist. Health Dept. <rickd@bfhd.wa.gov>; Frontier Telephone <north.central.dbmc.control.desk@ncnetwork.net>; Dept. of Transportation (scplanning@wsdot.wa.gov) <scplanning@wsdot.wa.gov>; Dept. of Transportation- Paul G <Gonsetp@wsdot.wa.gov>; Dept. of Transportation-Jacob Prilucik <PrilucJ@wsdot.wa.gov>; City of Richland-Mike Stevens (mstevens@ci.richland.wa.us) <mstevens@ci.richland.wa.us>; Cascade Natural Gas (Walter.Nelson@cngc.com) <Walter.Nelson@cngc.com>; Cascade Natural Gas (Walter.Nelson@cngc.com) <Walter.Nelson@cngc.com>; Natural Resources Conservation Service <ray.gekosky@wa.usda.gov>; US Postal Service (ina.n.beutler@usps.gov) <ina.n.beutler@usps.gov>; US Postal Service - Address Management System <Tina.C.Fisher@usps.gov>; WA Dept of Health - Kelly Cooper - WA Dept of Health - Kelly Cooper (SEPA.reviewteam@doh.wa.gov) <SEPA.reviewteam@doh.wa.gov>; Cristina Woods <Cristina.Woods@co.benton.wa.us>; Ben Franklin Transit - Bill Barlow (bbarlow@bft.org) <bbarlow@bft.org>; Ben Franklin Transit K. McMullen <KmcMullen@bft.org>; Ben Franklin Transit - B. Windler <bwindler@bft.org>; Dept. of Ecology - Lori White (lori.white@ecy.wa.gov) <lori.white@ecy.wa.gov>; Southeast Communication Center (k.lettrick@bces.wa.gov) <k.lettrick@bces.wa.gov>; Badger Mountain Irrig. District (bmidmanager@badgermountainirrigation.com) <bmidmanager@badgermountainirrigation.com>; Benton Franklin Health District - JoDee Peyton <Jodeer@bfhd.wa.gov>; Rebecca Warrington <rebeccaw@bfhd.wa.gov>; Segregations <segregations@co.benton.wa.us>; GIS <GIS@co.benton.wa.us>; Mosquito Control (admin@mosquitocontrol.org) <admin@mosquitocontrol.org>; Clark Posey <Clark.Posey@co.benton.wa.us>; Kirk Rathbun <k2rathbun@gmail.com>; WA Dept of Ecology - Gwen Clear <crosepacoordinator@ecy.wa.gov>; Gardipe, Jamie C (DOH) <jamie.gardipe@doh.wa.gov>; progalsky@ci.richland.wa.us; jdeskins@ci.richland.wa.us; Jessica_Lally@Yakama.com; Corrine_Camuso@Yakama.com; Casey_Barney@Yakama.com; Ashley Morton <AshleyMorton@ctuir.org>; Benton PUD- Chad Brooks <Brooksc@bentonpud.org>; Benton PUD-Mike Irving <irvingm@bentonpud.org>; Benton PUD-Shanna Everson <eversons@bentonpud.org>; Benton PUD-tina Glines (glinest@bentonpud.org) <glinest@bentonpud.org>

Subject: SUB 2021-001 Agency Review Harvest Ridge Prel. Plat

EXTERNAL EMAIL: Please use caution when clicking links or opening attachments.

The Planning Division has prepared an Agency Review Packet for the preliminary plat of Harvest Ridge. Please click on the link below to access the packet. If you have any questions please contact our office.

https://benton365-my.sharepoint.com/:b/g/personal/donna_hutchinson_co_benton_wa_us/Eee30IFFwRBLqv4c4afu9xABknmAF8H9fNEOZY5ISVb-Nw?e=AlpKtM



Donna Hutchinson
Office Assistant IV
Community Development Dept.
Planning Division
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MEMORANDUM
Public Works Department

TO: MIKE STEVENS, PLANNING MANAGER

FROM: PETE ROGALSKY, PUBLIC WORKS DIRECTOR

DATE: August 25, 2021

SUBJECT: EA 2021-105 PRELIMINARY PLAT OF "HARVEST RIDGE"

Mike,

The Public Works Engineering Department has reviewed the Notice of Application received in this office on August 11, 2021 for the above referenced property and has the following comments.

1. Given that the proposed preliminary plat is outside both the Richland city limits and also the Richland UGA, city utilities (domestic water, sanitary sewer) are not available for connection.
2. The "Future Road" adjacent to the eastern boundary of the preliminary plat is within the Richland city limits and does not yet exist. This off-site "Future Road" shall be constructed in conformance with either City Standard Detail ST15 (Rural Street) or City Standard Detail ST11 (Major Collector) prior to the final plat for the first phase of this project. At a minimum the project shall construct this street from its intersection with Reata Road to the northern of the two street access points for this project. This construction will require the developer to obtain a City Right of Way Construction Permit pursuant to Richland Municipal Code Chapter 12.08 and to fulfill all of the terms of the permit. This will also require that the developer dedicate the completed street and its right of way to the City prior to the final plat for the first phase of this project.
3. The two street intersections for this project onto the "Future Road" may require street widening and/or striping changes to facilitate the additional turning movements generated by this development. This issue will be resolved during the permitting process for the "Future Road" construction project.
4. The only connection for this development to the regional transportation system is via City of Richland public streets. City of Richland Municipal Code Chapter 12.03 establishes a traffic impact fee to fund the road projects needed to support developments in this area. This proposed development will impose traffic impacts on the City street network at least as great as those assessed in the traffic impact fee program. The developer has recently prepared a draft Traffic Impact Analysis (TIA) Study to update the evaluation of traffic impacts in this area. The Study includes consideration of this proposed project. The City intends to work with the developer to finalize the TIA Study and use it to update the RMC Chapter 12.03 fee program. The traffic impact fee as prescribed in RMC Chapter 12.03 for Zone 3 is presently set at \$2,229.09 for each peak hour trip, which corresponds to a single family home fee. The City requires that the developer of this proposed project resolve this project's traffic impact on the City street system by paying

a lump sum payment prior to the final plat of each phase. This fee will be based on an updated per-lot traffic impact fee for Zone 3 under RMC 12.03, and may include an additional per-lot amount based on project-specific impacts identified in the updated Traffic Impact Analysis Study

5. A "No Access" easement shall be recorded along the east boundary of this project to enforce the fact that no driveways will be allowed from lots in this plat directly onto the "Future Road". In addition a note will be shown on the face of the final plat(s) that create any lots that abut the off-site future road that states that the off-site "Future Road" is classified as a "Major Collector street". Subsequently, no driveways accessing any of the proposed single family lots will be allowed directly onto it.



PCM 1.19

Fire Marshal Review and Comment for the Preliminary Plat of Harvest Ridge SUB 2021-001

The development will include underground utilities, paved streets, and development-wide stormwater management and disposal. Typical residences will consist of single-or two-story, wood frame structures with concrete slab-on grade or crawl space foundations.

The following Benton County Codes shall apply:

3.18.030 PROCEDURE FOR COMPLIANCE. The following shall be required for all subdivisions, short plat subdivisions, Manufactured Home/FAS parks, recreational vehicle parks, and commercial and industrial areas not exempt under the provisions of BCC 3.18.025:

(a) Subdivisions:

(1) Prior to preliminary plat approval, the applicant shall submit to the Benton County Fire Marshal a letter from the water purveyor addressing its willingness and ability to satisfy the requirements of this chapter.

(2) Prior to final plat approval, the following shall be required:

- (i) Water system plans and specifications which comply with these regulations must be designed and stamped by a registered, professional engineer licensed in the State of Washington. Said plans shall be signed by the purveyor and shall be filed with the Benton County Fire Marshal and the Department of Health.
- (ii) Water system plans shall be approved in writing by the Benton County Fire Marshal.
- (iii) The approved water system shall be installed prior to final plat approval or a statement shall be placed on the plat indicating no building or Manufactured Home/FAS installation permit will be issued until the water system is installed, operating, and approved.
- (iv) Two (2) copies of the "as built" drawings must be filed with the Benton County Fire Marshal.

(3) When the distribution system is installed, said installation must be under the direction of a registered, professional engineer licensed in the State of Washington who shall certify the construction of the system is in accordance with the approved design.

(4) Written approval from the Benton County Fire Marshal that the system is operating to specifications shall be submitted.

3.18.036 WATER SYSTEM REQUIREMENTS--FIRE HYDRANTS--GENERAL STANDARDS.
Fire hydrants shall meet the following standards.

(a) Fire hydrants shall conform to current A.W.W.A. Specifications for traffic model fire hydrants, 150 psi working pressure, 300 pounds hydrostatic test, 1 - 5 1/4" main valve opening, 1 - 4 • " NST pumper port that is fitted, when required by the respective Fire District, with a Storz adapter that complies with the Fire District requirements, two (2) - 2 • " NST hose port, and one (1)- • " pentagon operating nut - open left. Compression type opens against pressure main valve and will remain closed should the hydrant be broken off by a traffic accident. Hydrant shoe or inlet may be flanged, AC pipe or mechanical joint. Hydrant to be furnished with two (2) drain ports to insure rapid and complete drainage of hydrant barrel to eliminate all danger to damage by freezing.

(b) There shall be an auxiliary gate valve installed to permit the repair and replacement of the hydrants without disruption of water service. Gate valves shall be in conformance with the latest specifications of A.W.W.A. and be iron body, bronze mounted with two (2) inch square operating nuts that open left. End styles shall be flanged, mechanical joint or ring tight. Valve boxes shall be sliding type with pick type lids.

(c) Hydrants shall stand plumb and be set to the finished grade. The bottom of the lowest outlet of the hydrant shall be no less than twenty-four (24) inches above the grade. There shall be thirty-six (36) inches of clear area about the hydrant for operation of a hydrant wrench on the outlets and on the control valve. The pumper port shall face the street. Where the street cannot be clearly defined or recognized, the port shall face the most likely route of approach and the location of the fire truck while pumping, as determined by the Benton County Fire Marshal.

(d) Hydrants shall not be obstructed by any structure or vegetation, or have the visibility impaired for fifty (50) feet in the direction of vehicular approach to the hydrant.

(e) Hydrants are to be accessible for fire department pumpers.

(f) Fire hydrants subject to vehicle damage (i.e., those located in parking lots) shall be adequately protected.

(g) All hydrants shall be subject to testing and inspection by the Benton County Fire Marshal, subject to reasonable notice and scheduling with the purveyor.

3.18.037 WATER SYSTEM REQUIREMENTS--FIRE HYDRANTS--LOCATION AND SPACING. (a) Location of hydrants shall be determined by the Benton County Fire Marshal. (b) The location of all water mains, fire hydrants, and valves to be installed shall be properly and accurately marked on identifiable plans or drawings. Two (2) copies of all plans or drawings shall be furnished to the Benton County Fire Marshal.

(c) Fire hydrant spacing. The table below specifies the maximum permissible spacing between hydrants:

<u>Type of Development</u>	<u>Hydrant Spacing**</u>
Subdivisions, short plat subdivisions limited to one (1) family dwellings	600 Feet
Multiple family dwellings Eight (8) or less units per acre	600 Feet
Manufactured Home/FAS parks and recreational vehicle parks	600 Feet
Multiple family dwellings –	

Nine (9) or more units per acre,
commercial, industrial, hospitals, schools

300 Feet

**Spacing shall be measured along the pathway which a fire department would have to route a fire hose. This pathway shall be as determined by the Benton County Fire Marshal.

3.18.038 WATER SYSTEM REQUIREMENTS--FIRE HYDRANTS-- MAINTENANCE.

- (a) The Fire Marshal may, after notifying purveyor, test hydrants for flow capability.
- (b) Purveyor will maintain working parts of hydrants above ground, including keeping brush and other physical obstructions from blocking access to, or operation of, hydrants.
- (c) The Fire Marshal may check operation of hydrants and notify purveyor of any malfunction or leaking which will require correction.
- (d) Purveyor will notify the Fire Marshal of any hydrant installation. Said notification will state whether or not they have minimum fire flow.
- (e) Purveyor will respond as expeditiously as possible when notified of a malfunction of a hydrant and will affect repair in a workmanlike manner.

WATER SYSTEM REQUIREMENTS--MINIMUM FIRE FLOW REQUIREMENTS.

- (a) The minimum fire flow requirements for single family residences shall be five hundred (500) gallons per minute for 30 minutes at 20 psi residual pressure at all hydrants.
- (b) The minimum fire flow for duplexes, multiple family residences, commercial, industrial, schools, hospitals, etc. will be determined by the Benton County Fire Marshal or designee. The Fire Marshal or designee may refer to NFPA 1142 Standard on Water Supplies for Suburban and Rural Fire Fighting and other pertinent information in making such determination.

PURVEYOR REQUIREMENTS. All purveyors shall continuously supply water at or above the minimum flow requirements specified herein; provided that the purveyor need not comply with these requirements in the event of vandalism, acts of God, loss of power and temporary shutdown for repairs and/or replacement. The Benton County Fire Marshal shall be notified by the purveyor at least twenty-four (24) hours prior to any shutdown for repairs and/or replacement.

Thank you,

Clark A. Posey

Benton County Fire Marshal

Donna Hutchinson

From: Pineda, Sara <Sara.Pineda@cngc.com>
Sent: Thursday, August 12, 2021 7:52 AM
To: Donna Hutchinson
Subject: [EXTERNAL] RE: SUB 2021-001 Agency Re-Review Harvest Ridge Prel. Plat
Attachments: tie ins.pdf; CNG GIS Map - Harvest Ridge.pdf; GIS Map - Harvest Ridge.pdf

Follow Up Flag: Follow up
Flag Status: Flagged

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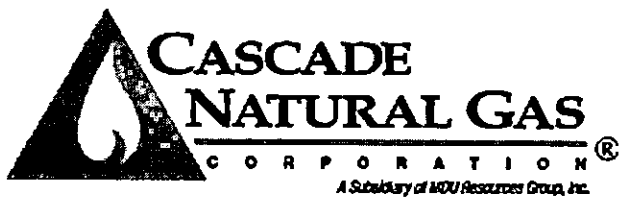
Good morning Donna,

Walter Nelson forwarded this email as I oversee new growth in Richland.

I have attached some screenshots of our tie in points for this project. Working with our engineer group, our plans are to extend a trunk line along new road heading south to Reata. Eventually, in the distant future, we will loop our system with 6" PE on Leslie Road. This will help support growth within Badger Mt. Subarea.

Thank you,
Sara

Sara Pineda - Energy Service Representative
Service Area: Richland, West Richland, & Prosser
Kennewick District Office
200 N. Union St.
Kennewick, WA 99336
Office: 509.734.4515
Cell: 509.551.2536
Email: sara.pineda@cngc.com



In the Community to Serve®

From: Nelson, Walter <Walter.Nelson@cngc.com>
Sent: Thursday, August 12, 2021 6:58 AM
To: Pineda, Sara <Sara.Pineda@cngc.com>
Subject: FW: SUB 2021-001 Agency Re-Review Harvest Ridge Prel. Plat

From: Donna Hutchinson <Donna.Hutchinson@co.benton.wa.us>

Sent: Wednesday, August 11, 2021 2:31 PM

To: Fire District #1-Billie <billie@bentonone.org>; Fire District #1-Staff <staff@bentonone.org>; School District # 17-Ryan Jones <Ryan.Jones@ksd.org>; john.lyle@bentoncleanair.org; Benton Clean Air-Priddy <robin.priddy@bentoncleanair.org>; Benton Clean Air-Rodger <rob.rodger@bentoncleanair.org>; Benton Clean Air-Tyler Thompson <tyler.thompson@bentoncleanair.org>; Benton-Franklin Dist. Health Dept. <rickd@bfhd.wa.gov>; Frontier Telephone <north.central.dbmc.control.desk@ncnetwork.net>; Dept. of Transportation (<scplanning@wsdot.wa.gov>) <scplanning@wsdot.wa.gov>; Dept. of Transportation- Paul G <Gonsetp@wsdot.wa.gov>; Dept. of Transportation-Jacob Prilucik <PrilucJ@wsdot.wa.gov>; City of Richland-Mike Stevens (<mstevens@ci.richland.wa.us>) <mstevens@ci.richland.wa.us>; Nelson, Walter <Walter.Nelson@cngc.com>; Nelson, Walter <Walter.Nelson@cngc.com>; Natural Resources Conservation Service <ray.gekosky@wa.usda.gov>; US Postal Service (<ina.n.beutler@usps.gov>) <ina.n.beutler@usps.gov>; US Postal Service - Address Management System <Tina.C.Fisher@usps.gov>; WA Dept of Health - Kelly Cooper - WA Dept of Health - Kelly Cooper (<SEPA.reviewteam@doh.wa.gov>) <SEPA.reviewteam@doh.wa.gov>; Cristina Woods <Cristina.Woods@co.benton.wa.us>; Ben Franklin Transit - Bill Barlow (<bbarlow@bft.org>) <bbarlow@bft.org>; Ben Franklin Transit K. McMullen <KmcMullen@bft.org>; Ben Franklin Transit - B. Windler <bwindler@bft.org>; Dept. of Ecology - Lori White (<lori.white@ecy.wa.gov>) <lori.white@ecy.wa.gov>; Southeast Communication Center (<k.lettrick@bces.wa.gov>) <k.lettrick@bces.wa.gov>; Badger Mountain Irrig. District (<bmidmanager@badgermountainirrigation.com>) <bmidmanager@badgermountainirrigation.com>; Benton Franklin Health District - JoDee Peyton <Jodeer@bfhd.wa.gov>; Rebecca Warrington <rebeccaw@bfhd.wa.gov>; Segregations <segregations@co.benton.wa.us>; GIS <GIS@co.benton.wa.us>; Mosquito Control (<admin@mosquitocontrol.org>) <admin@mosquitocontrol.org>; Clark Posey <Clark.Posey@co.benton.wa.us>; Kirk Rathbun <k2rathbun@gmail.com>; WA Dept of Ecology - Gwen Clear <crosepacoordinator@ecy.wa.gov>; Gardipe, Jamie C (DOH) <jamie.gardipe@doh.wa.gov>; <progalsky@ci.richland.wa.us>; <jdeskins@ci.richland.wa.us>; <Jessica.Lally@Yakama.com>; <Corrine.Camuso@Yakama.com>; <Casey.Barney@Yakama.com>; Confederated Tribes of the Umatilla Indian Reservation - Ashley M. Morton <AshleyMorton@ctuir.org>; Benton PUD-Chad Brooks <Brooksc@bentonpud.org>; Benton PUD-Mike Irving <irvingm@bentonpud.org>; Benton PUD-Shanna Everson <eversons@bentonpud.org>; Benton PUD-tina Glines (<glinest@bentonpud.org>) <glinest@bentonpud.org>

Subject: RE: SUB 2021-001 Agency Re-Review Harvest Ridge Prel. Plat

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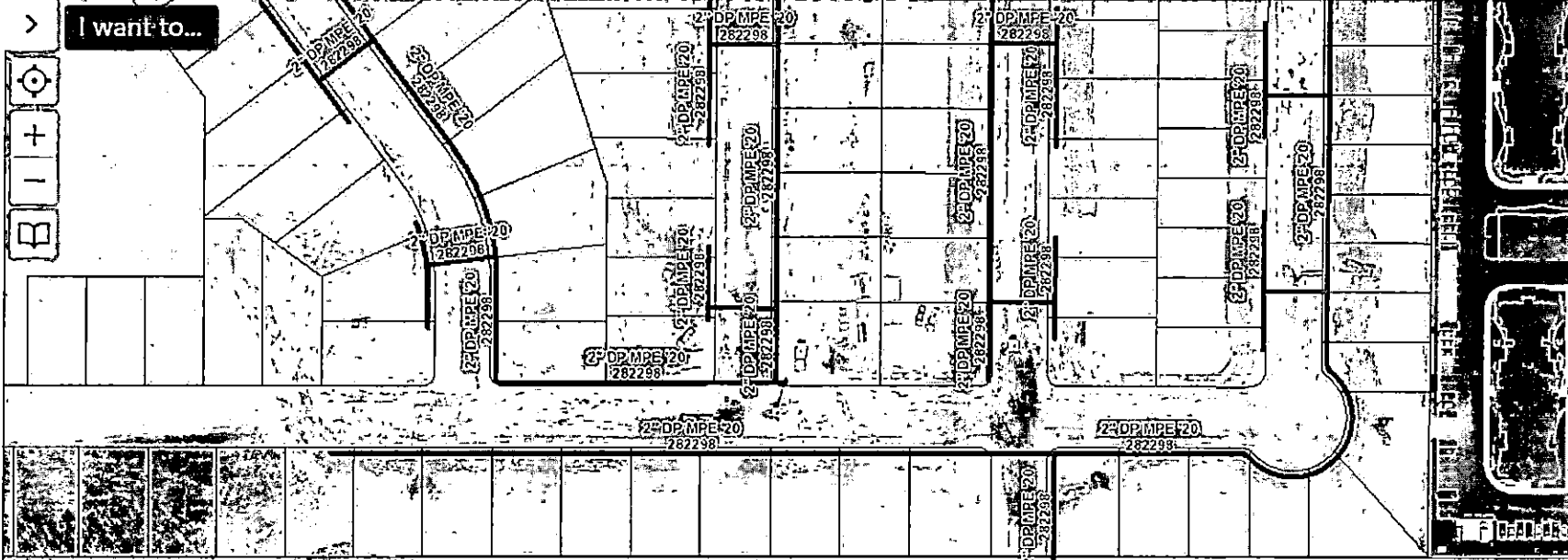
Please see the attached for a **re-review** of the preliminary plat of Harvest Ridge. The applicant has revised his original plat map and is only platting 42 lots and 1 tract at this point in time. Please review the information and send us any comments you may have by August 26, 2021. If you have any questions, please contact our office.



Donna Hutchinson
Office Assistant IV
Community Development Dept.
Planning Division
PO Box 910 Prosser WA 99350
(509) 786-5612

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tie in point



WKID: 4326 Lat/Long ▲

Lat: 46.21247967° N
Lon: 119.32932185° W



Scale 1: 2,257



0 50 100ft



Allyson Brooks Ph.D., Director
State Historic Preservation Officer

June 30, 2021

Michelle Cooke
Assistant Planning Manager
Benton County
620 Market Street
Prosser, WA

In future correspondence please refer to:
Project Tracking Code: 2021-06-04054
Property: Benton County_Harvest Ridge Subdivision (SUB 2021-001)
Re: Survey Requested

Dear Michelle Cooke:

Thank you for contacting the Washington State Historic Preservation Officer (SHPO) and Department of Archaeology and Historic Preservation (DAHP) and providing documentation regarding the above referenced project. These comments are based on the information available at the time of this review and on behalf of the SHPO in conformance Washington State law. Should additional information become available, our assessment may be revised.

Our statewide predictive model indicates that there is a moderate probability of encountering cultural resources within the proposed project area. Further, the scale of the proposed ground disturbing actions would destroy any archaeological resources present. Identification during construction is not a recommended detection method because inadvertent discoveries often result in costly construction delays and damage to the resource. Therefore, we recommend a professional archaeological survey of the project area be conducted and a report be produced prior to ground disturbing activities. This report should meet DAHP's [Standards for Cultural Resource Reporting](#).

We also recommend that any historic buildings or structures (45 years in age or older) located within the project area are evaluated for eligibility for listing in the National Register of Historic Places on Historic Property Inventory (HPI) forms. We highly encourage the SEPA lead agency to ensure that these evaluations are written by a cultural resource professional meeting the [SOI Professional Qualification Standards in Architectural History](#).

Please note that the recommendations provided in this letter reflect only the opinions of DAHP. Any interested Tribes may have different recommendations. We appreciate receiving any correspondence or comments from Tribes or other parties concerning cultural resource issues that you receive.

Thank you for the opportunity to comment on this project. Please ensure that the DAHP Project Tracking Number is shared with any hired cultural resource consultants and is attached to any communications or submitted reports. Please also ensure that any reports, site forms, and/or historic property inventory (HPI) forms are uploaded to WISAARD by the consultant(s).



Should you have any questions, please feel free to contact me.

Sincerely,



Sydney Hanson
Transportation Archaeologist
(360) 280-7563
Sydney.Hanson@dahp.wa.gov





**Washington State
Department of Transportation**

South Central Region
2809 Rudkin Road
Union Gap, WA 98903-1648
509-577-1600 / FAX: 509-577-1603
TTY: 1-800-833-6388
www.wsdot.wa.gov

July 7, 2021

Benton County Planning Division
P.O. Box 910
Prosser, WA 99350

Attn: Michelle Cooke, Assistant Planning Manager

RE: SUB 2021-001 & EA 2021-005 – Harvest Ridge Preliminary Plat
I-82 milepost 105.5 Lt. – Exit 104 vicinity

We have reviewed the proposed subdivision and have the following comments.

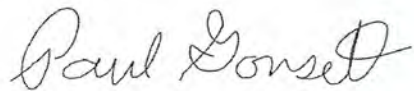
- The subject property is adjacent to Interstate 82 (I-82), a full control limited access facility with a posted speed limit of 70 miles per hour. WSDOT has acquired all access rights to the highway from the abutting properties. Direct access to I-82 is prohibited.
- According to the ITE Trip Generation Manual (10th Edition), 143 single-family residential lots may generate up to 1,350 vehicle trips per weekday with 143 trips occurring during the PM peak hour. WSDOT anticipates the majority of future residents will utilize the I-82/Dallas Road (Exit 104) interchange, and, to a lesser extent, the I-82/Badger Road (Exit 109) interchange. These additional vehicle trips could have a significant impact on the above-mentioned interchanges; therefore, we recommend the county require the proponent to contribute towards the county's planned improvements at Exit 109 and the city of Richland's planned improvements at Exit 104 in proportion to their impacts.
- Residential subdivisions adjacent to the state highway system increase the likelihood of safety concerns with children and pets. Consistent with other residential developments in the area, the proponent is required to construct a six-foot tall fence (or wall) on the subject property and along the I-82 right-of-way boundary. The existing WSDOT right-of-way fence typically lies one foot inside our right-of-way boundary and must not be altered or moved without prior WSDOT approval.
- I-82 is an existing facility, and the proponent is proposing a more noise-sensitive land use. The proponent and future residents should be aware this is an area with existing traffic noise. They should also expect traffic noise to continue to grow into the future, and, as an essential public facility, I-82 may need to be expanded to accommodate future traffic growth. It is the developer's responsibility to dampen or deflect any traffic noise for this development.

Michelle Cooke – Harvest Ridge Preliminary Plat>
July 7, 2021
Page 2

- Stormwater and surface runoff generated by this project must be retained and treated on site. A WSDOT Utility Permit is required for any discharge of water into I-82 right-of-way.
- Any proposed lighting must be directed down towards the site and away from I-82.

Thank you for the opportunity to review and comment on this proposal. If you have any questions regarding this letter, please contact Jacob Prilucik at (509) 225-0637.

Sincerely,

A handwritten signature in cursive script that reads "Paul Gonseth".

Paul Gonseth, P.E.
Region Planning Engineer

PG: jjp

cc: SR 82, File #2021_014
Kara Shute, Area 3 Maintenance Superintendent



STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY

1250 West Alder Street • Union Gap, Washington 98903-0009 • (509) 575-2490

July 12, 2021

Michelle Cooke
Benton County Planning
PO Box 910
Prosser, WA 99350

Re: SEPA 202103367, SUB 2021-001, EA 2021-005

Dear Michelle Cooke:

Thank you for the opportunity to comment during the Optional Determination of Non Significance process for the Harvest Ridge Subdivision submitted by Geoff Clark. We have reviewed the documents and have the following comments.

WATER QUALITY

Project with Potential to Discharge Off-Site

If your project anticipates disturbing ground with the potential for stormwater discharge off-site, the NPDES Construction Stormwater General Permit is recommended. This permit requires that the SEPA checklist fully disclose anticipated activities including building, road construction and utility placements. Obtaining a permit may take 38-60 days.

The permit requires that a Stormwater Pollution Prevention Plan (Erosion Sediment Control Plan) shall be prepared and implemented for all permitted construction sites. These control measures must be able to prevent soil from being carried into surface water and storm drains by stormwater runoff. Permit coverage and erosion control measures must be in place prior to any clearing, grading, or construction.

In the event that an unpermitted Stormwater discharge does occur off-site, it is a violation of Chapter 90.48 RCW, Water Pollution Control and is subject to enforcement action.

More information on the stormwater program may be found on Ecology's stormwater website at: <http://www.ecy.wa.gov/programs/wq/stormwater/construction/>. Please submit an application or contact Lloyd Stevens, Jr. at the Dept. of Ecology, (509) 574-3991 or email lloyd.stevensjr@ecy.wa.gov, with questions about this permit.

Sincerely,

Tricia Sawyer

Tricia Sawyer on behalf of Gwen Clear
Environmental Review Coordinator
Central Regional Office
(509)575-2012 (Gwen)
crosepacoordinator@ecy.wa.gov



August 26, 2021

Donna Hutchinson, Office Assistant
Benton County Planning Department
P.O. Box 910
Prosser, WA 99350

Re: RE-REVIEW OF REVISED PRELIMINARY PLAT HARVEST RIDGE, FILE NO. SUB 2021-001/EA 2021-005

Dear Ms. Hutchinson:

This office has reviewed the above referenced final plat in accordance with our current land development policies and requirements for new subdivisions. Based on an onsite review and supporting file data it appears that the Re-Review of Revised Preliminary Plat of Harvest Ridge generally meets our requirements for plats utilizing on-site sewage systems with a public water supply.

This recommendation is based on present known site conditions and does not guarantee the granting of an on-site sewage disposal permit. Our approval of any lot within this plat may be contingent upon that lot passing additional soil inspections/percolation tests, and/or other requirements at-a-later date. Should adverse site conditions be revealed at a later date, the Health Department reserves the right to impose restrictions or deny the issuance of any on-site sewage disposal permit.

The preceding recommendation shall be valid for a period not to exceed 18 months from this date and will be deemed null and void should this proposal not be developed by that time.

Sincerely,



Rebecca Warrington
Environmental Health Specialist I

CC: Rogers Surveying Inc.

August 4, 2021

Geoff Clark
Candy Mountain LLC
PO Box 1307
Gig Harbor, WA 99335

RE: Revised Preliminary Review of Harvest Ridge Phase 1 Parcel # 1-0588-402-0000-001,
Benton County.

Dear Mr. Clark:

This department completed a preliminary plat review on May 19th, 2021 of the above referenced plat proposal. This department has reviewed the above referenced plat in accordance with our current land development policies and requirements for new subdivisions. Our findings are listed below:

1. This plat is 172.36 acres that will be divided into 42 lots ranging from 1 acre to 1.09 acres with the remaining acreage reserved for future development.
2. All future phases of this plat will require a full review by Benton-Franklin Health District prior to development.
3. The proposed land use is for single family dwellings.
4. Soils encountered throughout the proposed plat area are Type 5 (silt loam).
5. Slopes are variable throughout the plat.
6. Proposed domestic water supply is Summit View Water Works.

Findings indicate the above referenced plat generally meets our requirements for plats utilizing onsite sewage disposal systems and an off-site public water supply, provided:

1. The extension to the Badger Mountain Irrigation District must be developed and approved in accordance with WAC 246-290.
2. All lots shall have a minimum of a ½ acre in size and contain a minimum of 20,000 square feet of usable land area.
3. All wells, irrigation lines, canals, and surface waters within 150ft of the plat are shown on the plat map.

4. Prior to final approval, this office must be given the opportunity to review the final plat for compliance with Benton-Franklin Health Department Rules and Regulations No. 2, and WAC 246-272A, and issue appropriate comments to the Benton County Planning Department.
5. Prior to the issuance of any onsite sewage disposal permits, additional test holes may be required to verify acceptable area for initial and replacement sewage disposal system and design criteria such as trench depth on each lot.
6. It is recommended that some provision be made to facilitate future connection to a municipal sewer utility at such time as said utility becomes available.
7. The following statement is placed on the plat:

“This plat appears to have suitable conditions for the use of on-site sewage disposal systems. However, because of the nature of the testing methods used, we have no way of determining whether each lot can comply with Benton-Franklin Board of Health Rules and Regulation at the time of permit issuance. Further be advised this department’s approval of any lot within this plat for the use of on-site sewage disposal systems may be contingent upon that lot passing additional soil inspections, percolation tests, and/or other requirements at a later date.”

This recommendation is based on present known site conditions and does not guarantee the granting of an on-site sewage disposal permit. Our approval of any lot within this plat may be contingent upon that lot passing additional soil inspections/percolation tests, and/or other requirements at a later date. Should adverse site conditions be revealed at a later date, the Health Department reserves the right to impose restrictions or deny the issuance of any on-site sewage disposal permit.

Your application will be held in an active state until January 28th 2022, at which time the submittal will be deemed null and void should this proposal not be developed by that time.

If you have any questions, please contact me at the Health Department at (509)460-4335.

Sincerely,


Rebecca Warrington
Environmental Health Specialist I

CC: Rogers Surveying Inc.; Benton County Planning Department



TO: PLANNING DEPARTMENT

FROM: CRISTINA WOODS

DATE:8/11/2021

SUBJECT: PRELIMINARY PLAT – SUB 2021-001 HARVEST RIDGE

Please add the following as conditions of final approval for the above reference plat:

1. The developer shall provide a complete set of engineered construction drawings for review and approval by the County and associated utilities. The drawings shall contain all appropriate information listed on the attached Minimum Plan Requirements. Grading plan will include grading to shape any drainage easements to route and fully contain all runoff based upon the 100-year storm within the easement limits. All plans and associated reports shall be prepared by a Professional Engineer licensed to practice in the State of Washington
2. All construction shall be in accordance with the most current WSDOT Standard Specifications for Road, Bridge and Municipal Construction, applicable Benton County Standard Plans and the requirements of the County Engineer
3. All roads within this plat shall have a paved width of 24 feet with a minimum 2-foot gravel shoulder. Roadways shall be designed for a minimum 25 mile per hour design speed
4. The pavement return radius at all intersections shall be a minimum of 35 feet
5. All stormwater from the roadways shall be contained on the plat and shall utilize surface infiltration (ditches, swales, ponds) for detention. The developer shall have an infiltration test performed at each proposed detention area. Tests shall be done with an infiltrometer using the falling head or constant head method. Other methods of infiltration rate determination shall be approved by the County.
6. The developer shall provide a complete stormwater runoff report developed in accordance with the Stormwater Management Manual for Eastern Washington accosting for all impervious and pervious surfaces draining to the roadside ditches. Design storm shall be a Modified SCS Type IA with a 25-year return frequency.
7. All signage including but not limited to stop signs, speed limit signs and street name signs shall be installed by the developer in accordance with Benton County Standard Plans
8. All new power, telephone, cable TV and irrigation shall be installed outside of the County right of way in the appropriate easements. Domestic water piping may be installed within the County right of way in accordance with a valid franchise agreement

Preliminary Plat – Harvest Ridge

July 8, 2021

Page 2

9. Survey monuments, with cases and covers per Benton County Standard R-14B, shall be placed at all road intersections, points of curvature, points of tangency, centers of cul-de-sacs, section corners and quarter corners. All monuments shall be set by a Professional Land Surveyor licensed to practice in the state of Washington
10. The 5' sidewalk easement shall be paved with HMA
11. The sidewalk easement Harvest Ridge Loop shall be continuous (to include future Phase 2 & 3)
12. Provide cross walks for the sidewalk at every road crossing
13. Mitigate the pathway/sidewalk crossing over the County ditch
14. Approval of final plat is contingent on the construction of the City Road A in the BMS-South Orchard subdivision, and access to E Reata Road
15. Provide emergency vehicle turn around at the end of each new road

Add the following notes to the face of the final plat

1. Benton County is not responsible for the maintenance or upkeep of any stormwater retention facility or drainage easements. All such maintenance and upkeep are the responsibility of the underlying property owner.
2. Road approaches shall not be permitted directly across roadway tee intersections
3. Prior to the construction of any driveway or the issuance of any building permit for any lot within this subdivision the property owner shall obtain a Road Approach Permit from the Benton County Public Works Department and install the required temporary construction access
4. No trees, shrubs, weeds, fencing or other obstructions more than 24 inches in height are permitted within Benton County right of way
5. Property owners that install grass, curbing, rock mulch or other landscaping within the County right of way do so at their own risk. The County will not repair or replace damaged landscaping due to construction or maintenance operations
6. All corner lots shall not have direct access to Harvest Ridge Loop, except lots 1 and 42
7. Property owners with sidewalk abutting their property shall be responsible for the maintenance of said sidewalk
8. All lots within this subdivision are subject to a three thousand five hundred (\$3,500) traffic mitigation fee. Such fee shall be due and payable prior to issuance of any Building Permit or Road Approach Permit.

Donna Hutchinson

From: Segregations
Sent: Wednesday, June 23, 2021 12:54 PM
To: Planning Department
Subject: RE: SUB 2021-001 Agency Review Harvest Ridge Prel. Plat

This one looks good. The parent parcel number recently changed due to a boundary line adjustment. The parcel is now 105884020000052.

Sincerely,



Judy H. Woodworth
Office Assistant IV
Benton County Assessor
620 Market St / P.O. Box 902 Prosser WA 99350
(509) 786-2046
judy.woodworth@co.benton.wa.us

From: Planning Department <Planning.Department@co.benton.wa.us>
Sent: Wednesday, June 23, 2021 12:01 PM
To: Fire District #1-Billie <billie@bentonone.org>; Fire District #1-Staff <staff@bentonone.org>; School District # 17-Ryan Jones <Ryan.Jones@ksd.org>; john.lyle@bentoncleanair.org; Benton Clean Air-Priddy <robin.priddy@bentoncleanair.org>; Benton Clean Air-Rodger <rob.rodger@bentoncleanair.org>; Benton Clean Air-Tyler Thompson <tyler.thompson@bentoncleanair.org>; Benton-Franklin Dist. Health Dept. <rickd@bfhd.wa.gov>; Frontier Telephone <north.central.dbmc.control.desk@ncnetwork.net>; Dept. of Transportation (scplanning@wsdot.wa.gov) <scplanning@wsdot.wa.gov>; Dept. of Transportation- Paul G <Gonsetp@wsdot.wa.gov>; Dept. of Transportation-Jacob Prilucik <PrilucJ@wsdot.wa.gov>; City of Richland-Mike Stevens (mstevens@ci.richland.wa.us) <mstevens@ci.richland.wa.us>; Cascade Natural Gas (Walter.Nelson@cngc.com) <Walter.Nelson@cngc.com>; Cascade Natural Gas (Walter.Nelson@cngc.com) <Walter.Nelson@cngc.com>; Natural Resources Conservation Service <ray.gekosky@wa.usda.gov>; US Postal Service (ina.n.beutler@usps.gov) <ina.n.beutler@usps.gov>; US Postal Service - Address Management System <Tina.C.Fisher@usps.gov>; WA Dept of Health - Kelly Cooper - WA Dept of Health - Kelly Cooper (SEPA.reviewteam@doh.wa.gov) <SEPA.reviewteam@doh.wa.gov>; Cristina Woods <Cristina.Woods@co.benton.wa.us>; Ben Franklin Transit - Bill Barlow (bbarlow@bft.org) <bbarlow@bft.org>; Ben Franklin Transit K. McMullen <KmcMullen@bft.org>; Ben Franklin Transit - B. Windler <bwindler@bft.org>; Dept. of Ecology - Lori White (lori.white@ecy.wa.gov) <lori.white@ecy.wa.gov>; Southeast Communication Center (k.lettrick@bces.wa.gov) <k.lettrick@bces.wa.gov>; Badger Mountain Irrig. District (bmidmanager@badgermountainirrigation.com) <bmidmanager@badgermountainirrigation.com>; Benton Franklin Health District - JoDee Peyton <Jodeer@bfhd.wa.gov>; Rebecca Warrington <rebeccaw@bfhd.wa.gov>; Segregations <segregations@co.benton.wa.us>; GIS <GIS@co.benton.wa.us>; Mosquito Control (admin@mosquitocontrol.org) <admin@mosquitocontrol.org>; Clark Posey <Clark.Posey@co.benton.wa.us>; Kirk Rathbun <k2rathbun@gmail.com>; WA Dept of Ecology - Gwen Clear <crosepacoordinator@ecy.wa.gov>; Gardipe, Jamie C (DOH) <jamie.gardipe@doh.wa.gov>; progalsky@ci.richland.wa.us; jdeskins@ci.richland.wa.us; Jessica_Lally@Yakama.com; Corrine_Camuso@Yakama.com; Casey_Barney@Yakama.com; Confederated Tribes of the Umatilla Indian Reservation - Ashley M. Morton <AshleyMorton@ctuir.org>; Benton PUD-Chad Brooks <Brooksc@bentonpud.org>; Benton PUD-Mike Irving <irvingm@bentonpud.org>; Benton PUD-Shanna Everson <eversons@bentonpud.org>; Benton PUD-tina Glines

(glinest@bentonpud.org) <glinest@bentonpud.org>

Subject: SUB 2021-001 Agency Review Harvest Ridge Prel. Plat

The Planning Division has prepared an Agency Review Packet for the preliminary plat of Harvest Ridge. Please click on the link below to access the packet. If you have any questions please contact our office.

https://benton365-my.sharepoint.com/:b:/g/personal/donna_hutchinson_co_benton_wa_us/Eee30IFFwRBLqy4c4afu9xABknmAF8H9fNEOZY5ISVb-Nw?e=AlpKtM



Donna Hutchinson
Office Assistant IV
Community Development Dept.
Planning Division
PO Box 910 Prosser WA 99350
(509) 786-5612

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Prosser: We are now located within the Road Department/Public Works Office on the first floor of the Benton County Courthouse at 620 Market St, Prosser WA 99350. **Kennewick:** The County has opened a new Public Services Office at 102206 E Wiser Parkway, Kennewick, which houses the Planning, Building and Road Departments.

Donna Hutchinson

From: Corrine Camuso <Corrine_Camuso@Yakama.com>
Sent: Thursday, July 1, 2021 2:05 PM
To: Planning Department
Cc: Casey Barney; Jessica Lally
Subject: [EXTERNAL] Re: EA 2021-005-SUB 2021-001 Notice of Application Review

EXTERNAL EMAIL WARNING!!!: This email originated from outside of Benton County. **DO NOT** click links or open attachments unless you recognize the sender and know the content is safe.

Thank you for contacting us regarding this undertaking. The project is located within the traditional homelands of the Yakama band, signatory to the Yakama Treaty of 1855. The project is within proximity of Yakama Traditional Cultural Properties and therefore has a heightened potential to encounter archaeological resources. We recommend a cultural resources investigation of the project area. Please have the report sent to our office for review.

Regards,

Corrine Camuso
 Yakama Nation
 Cultural Resources Program Archaeologist
 Office 509-865-5121 ext. 4776

From: Planning Department <Planning.Department@co.benton.wa.us>
Sent: Tuesday, June 22, 2021 3:18 PM
To: Badger Mountain Irrig. District (bmidmanager@badgermountainirrigation.com); Brad O'Brien; Clark Posey; Michelle Johnson; Rod Worthington; Troy Taylor; Dept. of Natural Resources (sepacenter@dnr.wa.gov); Dept. of Natural Resources; Dept. of Natural Resources-Shafer (ana.shafer@dnr.wa.gov); john.lyle@bentoncleanair.org; Benton Clean Air-Priddy; Benton Clean Air-Rodger ; Cristina Woods; Benton-Franklin Dist. Health Dept.; Dept. of Transportation (scplanning@wsdot.wa.gov); Dept. of Transportation- Paul G; Dept. of Transportation-Jacob Prilucik; WA Dept of Health - Kelly Cooper - WA Dept of Health - Kelly Cooper (SEPA.reviewteam@doh.wa.gov); Dept. of Ecology - Lori White (lori.white@ecy.wa.gov); Dept. of Ecology ; Dept. of Ecology; Dept. of Ecology SEPA Register ; Dept. of Ecology-Former Orchards SEPA (FormerOrchards@ecy.wa.gov); Dept. of Fish and Wildlife-Mark Teske; Dept. of Fish and Wildlife, Eric Bartrand; Dept. of Fish and Wildlife, Michael W. Ritter; Dept. of Fish and Wildlife-SEPA Review (SEPADesk@dfw.wa.gov); Bureau of Land Management - Kevin Devitt District Manager (BLM_OR_SP_Mail@blm.gov); Fire District #1-Billie ; Fire District #1-Staff; Alison@futurewise.org; Futurewise; sydney.hanson@dahp.wa.gov; Dept. of Archaeology and Historic Preservation - SEPA Review (sepa@dahp.wa.gov); Tom Price-Environmental Review Inc. (envreview@gmail.com); City of Richland-Mike Stevens (mstevens@ci.richland.wa.us); Casey Barney; Corrine Camuso; Environmental Review; Jessica Lally; John Marvin; Kirk Rathbun; Badger Mountain Irrig. District (bmidmanager@badgermountainirrigation.com); progalsky@ci.richland.wa.us; jdeskings@ci.richland.wa.us; Gardipe, Jamie C (DOH); Confederated Tribes of the Umatilla Indian Reservation - Ashley M. Morton (AshleyMorton@ctuir.org); Umatilla Indian Nation; Benton Franklin Health District - JoDee Peyton; Rebecca Warrington; Bureau of Reclamation - C. Garner (cgarner@usbr.gov); Bureau of Reclamation - L Hendrix - Bureau of Reclamation (lhendrix@usbr.gov); Bureau of Reclamation -McKinley

(cmckinley@usbr.gov)

Subject: EA 2021-005-SUB 2021-001 Notice of Application Review

The Benton County Planning Department has prepared the attached Notice of Application in accordance with the State Environmental Policy Act regulation. This is being circulated for review by all agencies with jurisdiction. We are circulating it for comments on the environmental impacts of this action. We appreciate your review of the proposal and return of comments no later than July 14, 2021. This proposal will not be acted upon before that time.



Donna Hutchinson
Office Assistant IV
Community Development Dept.
Planning Division
PO Box 910 Prosser WA 99350
(509) 786-5612

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Donna Hutchinson



From: GIS
Sent: Friday, August 13, 2021 7:41 AM
To: Donna Hutchinson; Planning Department
Subject: RE: SUB 2021-001 Agency Re-Review Harvest Ridge Prel. Plat

Good Morning,

No change from the first review by GIS other than to re-note that "MAIZE ST" is closely worded with an already existing "MAZE CT" and can easily be miss read. All temp addresses have been made apart from those whose roads need renaming.

Thank you.

Very Respectfully,
Caleb Kaufmann, GIS Tech II
Benton County Information Technology
Office: 509-786-5485

From: Donna Hutchinson <Donna.Hutchinson@co.benton.wa.us>
Sent: Wednesday, August 11, 2021 2:31 PM
To: Fire District #1-Billie <billie@bentonone.org>; Fire District #1-Staff <staff@bentonone.org>; School District # 17-Ryan Jones <Ryan.Jones@ksd.org>; john.lyle@bentoncleanair.org; Benton Clean Air-Priddy <robin.priddy@bentoncleanair.org>; Benton Clean Air-Rodger <rob.rodger@bentoncleanair.org>; Benton Clean Air-Tyler Thompson <tyler.thompson@bentoncleanair.org>; Benton-Franklin Dist. Health Dept. <ricketd@bfhd.wa.gov>; Frontier Telephone <north.central.dbmc.control.desk@ncnetwork.net>; Dept. of Transportation (scplanning@wsdot.wa.gov) <scplanning@wsdot.wa.gov>; Dept. of Transportation- Paul G <Gonsetp@wsdot.wa.gov>; Dept. of Transportation-Jacob Prilucik <PrilucJ@wsdot.wa.gov>; City of Richland-Mike Stevens (mstevens@ci.richland.wa.us) <mstevens@ci.richland.wa.us>; Cascade Natural Gas (Walter.Nelson@cngc.com) <Walter.Nelson@cngc.com>; Cascade Natural Gas (Walter.Nelson@cngc.com) <Walter.Nelson@cngc.com>; Natural Resources Conservation Service <ray.gekosky@wa.usda.gov>; US Postal Service (ina.n.beutler@usps.gov) <ina.n.beutler@usps.gov>; US Postal Service - Address Management System <Tina.C.Fisher@usps.gov>; WA Dept of Health - Kelly Cooper - WA Dept of Health - Kelly Cooper (SEPA.reviewteam@doh.wa.gov) <SEPA.reviewteam@doh.wa.gov>; Cristina Woods <Cristina.Woods@co.benton.wa.us>; Ben Franklin Transit - Bill Barlow (bbarlow@bft.org) <bbarlow@bft.org>; Ben Franklin Transit K. McMullen <KmcMullen@bft.org>; Ben Franklin Transit - B. Windler <bwindler@bft.org>; Dept. of Ecology - Lori White (lori.white@ecy.wa.gov) <lori.white@ecy.wa.gov>; Southeast Communication Center (k.lettrick@bces.wa.gov) <k.lettrick@bces.wa.gov>; Badger Mountain Irrig. District (bmidmanager@badgermountainirrigation.com) <bmidmanager@badgermountainirrigation.com>; Benton Franklin Health District - JoDee Peyton <Jodeer@bfhd.wa.gov>; Rebecca Warrington <rebeccaw@bfhd.wa.gov>; Segregations <segregations@co.benton.wa.us>; GIS <GIS@co.benton.wa.us>; Mosquito Control (admin@mosquitocontrol.org) <admin@mosquitocontrol.org>; Clark Posey <Clark.Posey@co.benton.wa.us>; Kirk Rathbun <k2rathbun@gmail.com>; WA Dept of Ecology - Gwen Clear <crosepacoordinator@ecy.wa.gov>; Gardipe, Jamie C (DOH) <jamie.gardipe@doh.wa.gov>; progalsky@ci.richland.wa.us; jdeskins@ci.richland.wa.us; Jessica_Lally@Yakama.com; Corrine_Camuso@Yakama.com; Casey_Barney@Yakama.com; Confederated Tribes of the Umatilla Indian Reservation - Ashley M. Morton <AshleyMorton@ctuir.org>; Benton PUD-Chad Brooks <Brooksc@bentonpud.org>; Benton PUD-Mike Irving <irvingm@bentonpud.org>; Benton PUD-Shanna Everson <eversons@bentonpud.org>; Benton PUD-tina Glines (glinest@bentonpud.org) <glinest@bentonpud.org>
Subject: RE: SUB 2021-001 Agency Re-Review Harvest Ridge Prel. Plat

Please see the attached for a **re-review** of the preliminary plat of Harvest Ridge. The applicant has revised his original plat map and is only platting 42 lots and 1 tract at this point in time. Please review the information and send us any comments you may have by August 26, 2021. If you have any questions, please contact our office.



Donna Hutchinson
Office Assistant IV
Community Development Dept.
Planning Division
PO Box 910 Prosser WA 99350
(509) 786-5612

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Donna Hutchinson

From: GIS
Sent: Friday, July 23, 2021 4:31 PM
To: Planning Department; Fire District #1-Billie ; Fire District #1-Staff; School District # 17-Ryan Jones; john.lyle@bentoncleanair.org; Benton Clean Air-Priddy; Benton Clean Air-Rodger ; Benton Clean Air-Tyler Thompson; Benton-Franklin Dist. Health Dept.; Frontier Telephone; Dept. of Transportation (scplanning@wsdot.wa.gov); Dept. of Transportation- Paul G; Dept. of Transportation-Jacob Prilucik; City of Richland-Mike Stevens (mstevens@ci.richland.wa.us); Cascade Natural Gas (Walter.Nelson@cngc.com); Cascade Natural Gas (Walter.Nelson@cngc.com); Natural Resources Conservation Service; US Postal Service (ina.n.beutler@usps.gov); US Postal Service - Address Management System; WA Dept of Health - Kelly Cooper - WA Dept of Health - Kelly Cooper (SEPA.reviewteam@doh.wa.gov); Cristina Woods; Ben Franklin Transit - Bill Barlow (bbarlow@bft.org); Ben Franklin Transit K. McMullen; Ben Franklin Transit - B. Windler; Dept. of Ecology - Lori White (lori.white@ecy.wa.gov); Southeast Communication Center (k.lettrick@bces.wa.gov); Badger Mountain Irrig. District (bmidmanager@badgermountainirrigation.com); Benton Franklin Health District - JoDee Peyton; Rebecca Warrington; Segregations; GIS; Mosquito Control (admin@mosquitocontrol.org); Clark Posey; Kirk Rathbun; WA Dept of Ecology - Gwen Clear; Gardipe, Jamie C (DOH); progalsky@ci.richland.wa.us; jdeskins@ci.richland.wa.us; Jessica_Lally@Yakama.com; Corrine_Camuso@Yakama.com; Casey_Barney@Yakama.com; Confederated Tribes of the Umatilla Indian Reservation - Ashley M. Morton; Benton PUD-Chad Brooks; Benton PUD-Mike Irving; Benton PUD-Shanna Everson; Benton PUD-tina Glines (glinest@bentonpud.org)
Subject: RE: SUB 2021-001 Agency Review Harvest Ridge Prel. Plat

Hello Everyone,

First sorry this took so long, I didn't realize we already had the road names and so was waiting to create the temp addresses.

Road Names

Mill Court = **Is a GO** and there is no records of any road in the county with this name.

Windrow Lane = **Is a GO** and there is no records of any road in the county with this name.

Market Street = Is a NO GO, there is already a street by this name in the county and so it will need a different name.

Farmstead Street = **Is a GO** and there is no records of any road in the county with this name.

Haystack Street = **Is a GO** and there is no records of any road in the county with this name.

Maize Street = Is a NO GO, there is no records of any road in the county with this name but there is a road with the name "Maze Ct" as mentioned below.

Grange Street = **Is a GO** and there is no records of any road in the county with this name.

Maize Court = IS a NO GO, there is a road by the name of "Maze Ct" within the county so this may prove to be an issue with spelling and confusion.

Harvest Ridge Loop = **Is a GO** and there is no records of any road in the county with this name. There is a Harvest Ln but this should not prove to be an issue.

You will need to change the 3 roads highlighted in **RED** above to something else and send the new names to us at the GIS@co.benton.wa.us email and we can re check the new names.

Temp addresses have been assigned however there are 169 so I wont post them on this email and if anyone wishes to see them I can forward them in an excel document. I have also sent this document and an image of all the addresses as seen on a map to Michelle Cooke. As for the addresses that are along the roads that failed the check, I have still given



them a temp address number but have left out the road name that will be filled in at a latter date once one those are determined.

Have a great weekend everyone if you see this before Monday!

Very Respectfully,

Caleb Kaufmann, GIS Tech II

Benton County Information Technology

Office: 509-786-5485

From: Planning Department <Planning.Department@co.benton.wa.us>

Sent: Wednesday, June 23, 2021 12:01 PM

To: Fire District #1-Billie <billie@bentonone.org>; Fire District #1-Staff <staff@bentonone.org>; School District # 17-Ryan Jones <Ryan.Jones@ksd.org>; john.lyle@bentoncleanair.org; Benton Clean Air-Priddy <robin.pridy@bentoncleanair.org>; Benton Clean Air-Rodger <rob.rodger@bentoncleanair.org>; Benton Clean Air-Tyler Thompson <tyler.thompson@bentoncleanair.org>; Benton-Franklin Dist. Health Dept. <rickd@bfhd.wa.gov>; Frontier Telephone <north.central.dbmc.control.desk@ncnetwork.net>; Dept. of Transportation (scplanning@wsdot.wa.gov) <scplanning@wsdot.wa.gov>; Dept. of Transportation- Paul G <Gonsetp@wsdot.wa.gov>; Dept. of Transportation-Jacob Prilucik <Prilucl@wsdot.wa.gov>; City of Richland-Mike Stevens (mstevens@ci.richland.wa.us) <mstevens@ci.richland.wa.us>; Cascade Natural Gas (Walter.Nelson@cngc.com) <Walter.Nelson@cngc.com>; Cascade Natural Gas (Walter.Nelson@cngc.com) <Walter.Nelson@cngc.com>; Natural Resources Conservation Service <ray.gekosky@wa.usda.gov>; US Postal Service (ina.n.beutler@usps.gov) <ina.n.beutler@usps.gov>; US Postal Service - Address Management System <Tina.C.Fisher@usps.gov>; WA Dept of Health - Kelly Cooper - WA Dept of Health - Kelly Cooper (SEPA.reviewteam@doh.wa.gov) <SEPA.reviewteam@doh.wa.gov>; Cristina Woods <Cristina.Woods@co.benton.wa.us>; Ben Franklin Transit - Bill Barlow (bbarlow@bft.org) <bbarlow@bft.org>; Ben Franklin Transit K. McMullen <KmcMullen@bft.org>; Ben Franklin Transit - B. Windler <bwindler@bft.org>; Dept. of Ecology - Lori White (lori.white@ecy.wa.gov) <lori.white@ecy.wa.gov>; Southeast Communication Center (k.lettrick@bces.wa.gov) <k.lettrick@bces.wa.gov>; Badger Mountain Irrig. District (bmidmanager@badgermountainirrigation.com) <bmidmanager@badgermountainirrigation.com>; Benton Franklin Health District - JoDee Peyton <Jodeer@bfhd.wa.gov>; Rebecca Warrington <rebeccaw@bfhd.wa.gov>; Segregations <segregations@co.benton.wa.us>; GIS <GIS@co.benton.wa.us>; Mosquito Control (admin@mosquitocontrol.org) <admin@mosquitocontrol.org>; Clark Posey <Clark.Posey@co.benton.wa.us>; Kirk Rathbun <k2rathbun@gmail.com>; WA Dept of Ecology - Gwen Clear <crosepacoordinator@ecy.wa.gov>; Gardipe, Jamie C (DOH) <jamie.gardipe@doh.wa.gov>; progalsky@ci.richland.wa.us; jdeskins@ci.richland.wa.us; Jessica_Lally@Yakama.com; Corrine_Camuso@Yakama.com; Casey_Barney@Yakama.com; Confederated Tribes of the Umatilla Indian Reservation - Ashley M. Morton <AshleyMorton@ctuir.org>; Benton PUD-Chad Brooks <Brooksc@bentonpud.org>; Benton PUD-Mike Irving <irvingm@bentonpud.org>; Benton PUD-Shanna Everson <eversons@bentonpud.org>; Benton PUD-tina Glines (glinest@bentonpud.org) <glinest@bentonpud.org>

Subject: SUB 2021-001 Agency Review Harvest Ridge Prel. Plat

The Planning Division has prepared an Agency Review Packet for the preliminary plat of Harvest Ridge. Please click on the link below to access the packet. If you have any questions please contact our office.

https://benton365-my.sharepoint.com/:b:/g/personal/donna_hutchinson_co_benton_wa_us/Eee30IFFwRBLgv4c4afu9xABknmAF8H9fNEOZY5ISVb-Nw?e=AlpKtM



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Prosser: We are now located within the Road Department/Public Works Office on the first floor of the Benton County Courthouse at 620 Market St, Prosser WA 99350. **Kennewick:** The County has opened a new Public Services Office at 102206 E Wiser Parkway, Kennewick, which houses the Planning, Building and Road Departments.



August 23, 2021

Benton County Planning Division
P.O. Box 910
Prosser, WA 99350

Attn: Michelle Cooke, Assistant Planning Manager

RE: SUB 2021-001 & EA 2021-005 – Harvest Ridge Re Plat
I-82 milepost 105.5 Lt. – Exit 104 vicinity

We have reviewed the proposed subdivision and have the following comments.

- The subject property is adjacent to Interstate 82 (I-82), a full control limited access facility with a posted speed limit of 70 miles per hour. WSDOT has acquired all access rights to the highway from the abutting properties. Direct access to I-82 is prohibited.
- According to the ITE Trip Generation Manual (10th Edition), 42 single-family residential lots may generate up to 396 vehicle trips per weekday with 42 trips occurring during the PM peak hour. WSDOT anticipates the majority of future residents will utilize the I-82/Dallas Road (Exit 104) interchange, and, to a lesser extent, the I-82/Badger Road (Exit 109) interchange. These additional vehicle trips could have a significant impact on the above-mentioned interchanges; therefore, we recommend the county require the proponent to contribute towards the county's planned improvements at Exit 109 and the city of Richland's planned improvements at Exit 104 in proportion to their impacts.

Thank you for the opportunity to review and comment on this proposal. If you have any questions regarding this letter, please contact Jacob Prilucik at (509) 225-0637.

Sincerely,

Paul Gonseth, P.E.
Region Planning Engineer

PG: jjp

cc: SR 82, File #2021_014
Kara Shute, Area 3 Maintenance Superintendent

RE-REVIEW OF REVISED PLAT OF HARVEST RIDGE

Please check each one that you feel is appropriate for your agency.

If you have any comments or objections - please elaborate under item no. 9.

	Approval	Object
1. Lot size of _____	_____	_____
2. Access (Roads, alleys & other public ways)	_____	_____
3. Water Supply	<u>X</u>	_____
4. Sanitary waste disposal systems	_____	_____
5. Parks and Playgrounds	_____	_____
6. Fire protection facilities	<u>Hydrants X</u>	_____
7. Drainage and storm water easements	_____	_____
8. Utility easements (Phone, water, gas, etc.)	<u>X</u>	_____
9. <u>All construction documentation and planning for the domestic water infrastructure will also need to be approved by Department of Health.</u>		

I certify that the above recommendations are adequate for this agency.

Signature by J. Smith
 Agency Budger Mountain Irrigation
 Date 8/13/2021

Project Name **REVISED PLAT** Harvest Ridge

File No. SUB 2021-001