

Frog Pond Vista

Annexation, Zoning Map Amendment, Tentative Subdivision Plat, Stage I & II Planned Development Review, Site Design Review, Type C Tree Removal Plan, Abbreviated SRIR

Date: Updated January 2022

Submitted to: City of Wilsonville
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Wilsonville, OR 97070

Applicant: Venture Properties, Inc.
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AKS Job Number: 7530



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 City of Wilsonville
Exhibit B1 DB21-0057 et al

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Frog Pond Vista Planned Development

Submitted to:	City of Wilsonville
Applicant:	Venture Properties, LLC 4230 Galewood Street, Suite 100 Lake Oswego, Oregon 97135
Property Owners:	Darrel and Sandi Lauer 6901 SW Frog Pond Lane Wilsonville, OR 97070
Applicant's Consultant:	AKS Engineering & Forestry, LLC 12965 SW Herman Road, Suite 100 Tualatin, OR 97062 Contact(s): Mimi Doukas, AICP, RLA Email: mimid@aks-eng.com Phone: (503) 563-6151
Site Location:	6901 SW Frog Pond Lane
Clackamas County Assessor's Map:	31W12D; Tax Lot 500
Site Size:	±12.8 acres
Land Use Districts:	County Rural Residential Farm Forest 5-Acre (RRFF5)



I. Executive Summary

Venture Properties, LLC (Applicant) is submitting this application to accommodate a single-family residential neighborhood in Frog Pond West master planned community. The project requires the following approvals:

1. Annexation to the City of Wilsonville (City)
2. Zoning Map Amendment
3. Planned Development – Stage I Preliminary Plan
4. Planned Development – Stage II Final Plan
5. Site Design Review of Open Space
6. Tentative Subdivision Plat
7. Type C Tree Plan
8. Abbreviated Sensitive Resource Impact Review

This property is located within the Frog Pond West planning area, which Metro Regional Services (Metro) included in its Urban Growth Boundary (UGB) in 2002 to accommodate projected residential growth. The City of Wilsonville undertook extensive planning of Frog Pond West over several years, ultimately adopting the Frog Pond Area Plan in 2015 and Frog Pond West Master Plan in 2017. Annexation of the project site into the City of Wilsonville is the next step in the progression from the thorough planning process and helps implement the City's vision for this area.

II. Site Description/Setting

Project Location

The site is approximately 12.8 gross acres with frontage on SW Frog Pond Lane. The property is in unincorporated Clackamas County, within the City of Wilsonville Urban Growth Boundary (UGB) and within the Frog Pond West subarea of the city.

Surrounding Land Use

The property abuts the UGB line and undeveloped rural residential land in Clackamas County to the north. Surrounding properties to the east and south will eventually be built out as the Frog Pond master planned community, currently under development or in land use entitlement. The site abuts Boeckman Creek to the west, with an existing Canyon Creek Estates subdivision beyond.

Existing Site Condition

The subject property has Clackamas County zoning designation RRFF5 and has an existing single-family residence, a paved driveway, and several outbuildings. The northwest portion of the site is within City of Wilsonville's Significant Resource Overlay Zone (SROZ) associated with Boeckman Creek.

Proposed Project

The project includes 38 detached single-family lots and six open space tracts. This project annexes the site to the City of Wilsonville and applies the RN zone. Associated site improvements include grading, construction of a local street network and open space tracts to be privately maintained by the homeowners' association (HOA).

This application includes the following components:

- Needed residential housing, in the form of a subdivision for future single-family detached homes

- New interior public streets to City standards with curbs, sidewalks, on-street parking, and street trees
- Approximately ±2.5 acres of open space areas
- Natural resource preservation
- Construction of a section of Boeckman Creek Regional Trail and land dedication to the City
- A complete range of services including public sanitary sewer, public water, stormwater management, and other necessary utilities such as power, telecommunications, gas, etc.

III. **Applicable Review Criteria** **OREGON REVISED STATUTES (ORS)**

2017 ORS 222.111

Authority and Procedure for Annexation

- (1) When a proposal containing the terms of annexation is approved in the manner provided by the charter of the annexing city or by ORS 222.111 (Authority and procedure for annexation) to 222.180 (Effective date of annexation) or 222.840 (Short title) to 222.915 (Application of ORS 222.840 to 222.915), the boundaries of any city may be extended by the annexation of territory that is not within a city and that is contiguous to the city or separated from it only by a public right of way or a stream, bay, lake or other body of water. Such territory may lie either wholly or partially within or without the same county in which the city lies.

Response: The property is within unincorporated Clackamas County and is contiguous to the Wilsonville City Limits.

- (2) A proposal for annexation of territory to a city may be initiated by the legislative body of the city, on its own motion, or by a petition to the legislative body of the city by owners of real property in the territory to be annexed.

Response: The proposal for annexation is initiated by the property owners. The signed petition for annexation to City of Wilsonville is included in Exhibit B.

- (5) The legislative body of the city shall submit, except when not required under ORS 222.120 (Procedure for annexation without election), 222.170 (Annexation by consent before public hearing or order for election) and 222.840 (Short title) to 222.915 (Application of ORS 222.840 to 222.915) to do so, the proposal for annexation to the electors of the territory proposed for annexation and, except when permitted under ORS 222.120 (Procedure for annexation without election) or 222.840 (Short title) to 222.915 (Application of ORS 222.840 to 222.915) to dispense with submitting the proposal for annexation to the electors of the city, the legislative body of the city shall submit such proposal to the electors of the city. The proposal for annexation may be voted upon at a general election or at a special election to be held for that purpose.
- (6) The proposal for annexation may be voted upon by the electors of the city and of the territory simultaneously or at different times not more than 12 months apart.
- (7) Two or more proposals for annexation of territory may be voted upon simultaneously; however, in the city each proposal shall be stated separately

on the ballot and voted on separately, and in the territory proposed for annexation no proposal for annexing other territory shall appear on the ballot.

Response: Pursuant to ORS 222.120(1), the legislative body of the City of Wilsonville is not required to submit a proposal for annexation of territory to the electors of the city for their approval or rejection. The above criteria are not applicable.

2017 ORS 222.120

Procedure for Annexation Without Election

Except when expressly required to do so by the city charter, the legislative body of a city is not required to submit a proposal for annexation of territory to the electors of the city for their approval or rejection.

Response: The City of Wilsonville Charter does not require a vote of the electors of the city for annexation. The property owners of the subject site consent in writing to the annexation and upon submittal of this application a public hearing will be scheduled. The above criterion is met.

2017 ORS 222.170

If the city legislative body has not dispensed with submitting the question to the electors of the city and a majority of the votes cast on the proposition within the city favor annexation, or if the city legislative body has previously dispensed with submitting the question to the electors of the city as provided in ORS 222.120 (Procedure for annexation without election), the legislative body, by resolution or ordinance, shall set the final boundaries of the area to be annexed by a legal description and proclaim the annexation.

Response: The draft legal description and exhibit map for annexation are included within Exhibit K. The criterion above is understood.

- (4) Real property that is publicly owned, is the right of way for a public utility, telecommunications carrier as defined in ORS 133.721 (Definitions for ORS 41.910 and 133.721 to 133.739) or railroad or is exempt from ad valorem taxation shall not be considered when determining the number of owners, the area of land or the assessed valuation required to grant consent to annexation under this section unless the owner of such property files a statement consenting to or opposing annexation with the legislative body of the city on or before a day described in subsection (1) of this section.

Response: The above standard is understood.

OREGON STATEWIDE PLANNING GOALS

The following Oregon Statewide Planning Goals are applicable to this action:

- Goal 1 – Citizen Involvement
- Goal 2 – Land Use Planning
- Goal 6 – Air, Land, and Water Resources Quality
- Goal 8 – Recreational Needs
- Goal 9 – Economic Development
- Goal 10 – Housing
- Goal 11 – Public Facilities and Services

Goal 12 – Transportation

Goal 3 (Agricultural Lands) and Goal 4 (Forest Lands) are not applicable to lands within the UGB and have been omitted for brevity.

Goal 7 (Areas Subject to Natural Hazards) is not applicable because the subject site does not contain mapped areas of steep slopes 25 percent or greater or other known hazard areas.

Goal 13 (Energy Conservation) is not applicable because the amendment does not affect the City or County goals or policies governing energy conservation.

Goal 14 (Urbanization) is not applicable because this application does not involve expansion of the Wilsonville UGB and thus analysis of the transition of rural to urban land uses is not relevant.

Goals 15 (Willamette River Greenway), 16 (Estuarine Resources), 17 (Coastal Shorelands), 18 (Beaches and Dunes), and 19 (Ocean Resources) are not applicable because the subject site does not contain lands described in those goals.

Goal 1: Citizen Involvement

To develop a citizen involvement program that ensures the opportunity for citizens to be involved in all phases of the planning process.

Response: The City of Wilsonville has an established public notice and hearing process for quasi-judicial applications. Once this annexation request is accepted as complete, the City will begin this public notification and citizen involvement process. Therefore, this request is consistent with Goal 1.

Goal 2: Land Use Planning

To establish a land use planning process and policy framework as a basis for all decision and actions related to use of land and to assure an adequate factual base for such decisions and actions.

Response: The Oregon Land Conservation and Development Commission (LCDC) has acknowledged the City of Wilsonville Comprehensive Plan to be in compliance with the Statewide Planning Goals. This narrative demonstrates that the proposed amendment is in compliance with the goals and policies of the City of Wilsonville Comprehensive Plan, as applicable to the proposed annexation.

This application provides an adequate factual basis for the City and County to approve the application because it describes the current and planned future site characteristics and applies the relevant approval criteria to those characteristics. Therefore, following the application process will ensure consistency with Statewide Planning Goal 2.

Goal 5: Natural Resources, Scenic and Historic Areas, and Open Spaces

To protect natural resources and conserve scenic and historic areas and open spaces.

Response: The subject property is within Significant Resource Overlay Zone (SROZ). The project protects natural resources by avoiding disturbance within SROZ boundary and provides ±2.5 acres of open space. Additionally, the applicant has worked closely with the City staff and the adjacent property owner on several iterations of the project layout to achieve the preservation of the existing mature trees along the northeastern perimeter of the

property. The residential lots and public streets were aligned in a way that allows protection of this valuable natural asset. The proposal conforms to this statewide planning goal.

Goal 6: Air, Water and Land Resources Quality

To maintain and improve the quality of the air, water and land resources of the state.

Response: Land located within the Urban Growth Boundary is considered urbanizable and is intended to be developed to meet the needs of the City. The effects of urban development on air, water and land resources are anticipated. Development of the property is subject to tree preservation, stormwater, and wastewater requirements of the City of Wilsonville Development Code which are intended to minimize the impact of development on the state's natural resources. The proposal is consistent with Goal 6.

Goal 8: Recreational Needs

To satisfy the recreational needs of the citizens of the state and visitors and, where appropriate, to provide for the siting of necessary recreational facilities including destination resorts.

Response: Goal 8 is implemented through the City of Wilsonville 2018 Parks and Recreation Comprehensive Master Plan. Together with the Metro Plan, the provisions identify future needs for parks, a natural area, and recreation facilities. The amendments will not negatively affect the City's Comprehensive Plan with respect to Goal 8 and its development regulations governing recreational needs (e.g. open space, park dedication, fee in-lieu-of requirements, etc.). An increase in residential land supply will increase the number of residents and visitors and in turn System Development Charges (SDC) and the demand for recreational facilities will increase. Therefore, this application is consistent with Goal 8.

Goal 9: Economic Development

To provide adequate opportunities throughout the state for a variety of economic activities vital to the health, welfare, and prosperity of Oregon's citizens.

Response: This area has been identified in the City of Wilsonville Comprehensive Plan as appropriate for residential use. The Zone Map Amendment to change the zoning from unincorporated Clackamas County Rural Residential Farm Forest 5-Acre (RRFF-5) to Residential Neighborhood (RN) is consistent with the intent of the Frog Pond West Master Plan. The proposed project will create the needed housing for the City of Wilsonville's workforce, which indirectly promotes economic activities in the region. In addition, a thoughtfully designed community with active-use open space and pedestrian trail system enhances the City's appeal, stimulating its business and industry and contributing to the health and vitality of the overall community. Therefore, this application is consistent with Goal 9.

Goal 10: Housing

To provide for the housing needs of citizens of the state.

Response: The 2014 Wilsonville Residential Land Study, which serves as the City's state-acknowledged Housing Needs Analysis, anticipates that the City will need to accommodate 3,794 new households by 2034. The Frog Pond West master planned community has been planned with a strategy to meet state-required supply for residential

land and housing. Frog Pond Vista project provides homes for 38 families. Therefore, this application is consistent with Goal 10.

Goal 11: Public Facilities and Services

To plan and develop a timely, orderly and efficient arrangement of public facilities and services to serve as a framework for urban and rural development.

Response: The City of Wilsonville Comprehensive Plan and the Frog Pond West Master Plan include implementation measures to ensure site development complies with the City’s Wastewater Collections System Master plan, Stormwater Master Plan, Water System Master Plan, and Transportation System Plan. Therefore, the proposed annexation implements the Comprehensive Plan the Master Plan and is consistent with Goal 11.

Goal 12: Transportation

To provide and encourage a safe, convenient and economic transportation system.

Response: Goal 12 is implemented by the Transportation Planning Rule (TPR), which requires local governments to adopt Transportation System Plans (TSPs) and consider transportation impacts resulting from land use decisions and development. This application includes a Transportation Impacts Study (TIS) prepared by DKS (Exhibit E). It demonstrates that the project will not have a “significant effect” on the surrounding transportation system. Therefore, the application is consistent with Goal 12.

FINDINGS FOR TRANSPORTATION PLANNING RULE COMPLIANCE

Response: The key provision of the TPR related to local land use decisions is Oregon Administrative Rule (OAR) 660-012-0060. OAR 660-012-0060(1) and (2) apply to amendments to acknowledged maps, as is the case with this application.

The TPR requires a two-step analysis. First, under OAR 660-012-0060(1), the Applicant must determine if the application has a “significant affect,” as that term is defined in OAR 660-012-0060(1). The City may rely on transportation improvements found in Transportation System Plans (TSPs), as allowed by OAR 660-012-0060(3)(a), (b), and (c), to show that failing intersections will not be made worse or intersections not now failing will not fail. If there is a “significant affect,” then the Applicant must demonstrate appropriate mitigation under OAR 660-012-0060(2), et seq.

OAR 660-012-0060 Plan and Land Use Regulation Amendments

- (1) If an amendment to a functional plan, an acknowledged comprehensive plan, or a land use regulation (including a zoning map) would significantly affect an existing or planned transportation facility, then the local government must put in place measures as provided in section (2) of this rule, unless the amendment is allowed under section (3), (9) or (10) of this rule. A plan or land use regulation amendment significantly affects a transportation facility if it would:
 - (a) Change the functional classification of an existing or planned transportation facility (exclusive of correction of map errors in an adopted plan);
 - (b) Change standards implementing a functional classification system; or

-
- (c) Result in any of the effects listed in paragraphs (A) through (C) of this subsection based on projected conditions measured at the end of the planning period identified in the adopted TSP. As part of evaluating projected conditions, the amount of traffic projected to be generated within the area of the amendment may be reduced if the amendment includes an enforceable, ongoing requirement that would demonstrably limit traffic generation, including, but not limited to, transportation demand management. This reduction may diminish or completely eliminate the significant effect of the amendment.
 - (A) Types or levels of travel or access that are inconsistent with the functional classification of an existing or planned transportation facility;
 - (B) Degrade the performance of an existing or planned transportation facility such that it would not meet the performance standards identified in the TSP or comprehensive plan; or
 - (C) Degrade the performance of an existing or planned transportation facility that is otherwise projected to not meet the performance standards identified in the TSP or comprehensive plan.

Response: The TIS prepared by DKS contains a detailed discussion of the traffic impacts associated with the proposed project and any potential mitigation for the project as it relates to the Oregon Transportation Planning Rule (TPR) found in OAR 660-012-0060. As described in the study, this project and the associated traffic improvements will comply with OAR 660-012-0060 (1) and (2). Please refer to the TIS (Exhibit E) for further information. The criteria are met.

(...)

- (4) Determinations under sections (1)–(3) of this rule shall be coordinated with affected transportation facility and service providers and other affected local governments.
 - (a) In determining whether an amendment has a significant effect on an existing or planned transportation facility under subsection (1)(c) of this rule, local governments shall rely on existing transportation facilities and services and on the planned transportation facilities, improvements and services set forth in subsections (b) and (c) below.
 - (b) Outside of interstate interchange areas, the following are considered planned facilities, improvements and services:
 - (A) Transportation facilities, improvements or services that are funded for construction or

implementation in the Statewide Transportation Improvement Program or a locally or regionally adopted transportation improvement program or capital improvement plan or program of a transportation service provider.

- (B) Transportation facilities, improvements or services that are authorized in a local transportation system plan and for which a funding plan or mechanism is in place or approved. These include, but are not limited to, transportation facilities, improvements or services for which: transportation systems development charge revenues are being collected; a local improvement district or reimbursement district has been established or will be established prior to development; a development agreement has been adopted; or conditions of approval to fund the improvement have been adopted.
 - (C) Transportation facilities, improvements or services in a metropolitan planning organization (MPO) area that are part of the area's federally-approved, financially constrained regional transportation system plan.
 - (D) Improvements to state highways that are included as planned improvements in a regional or local transportation system plan or comprehensive plan when ODOT provides a written statement that the improvements are reasonably likely to be provided by the end of the planning period.
 - (E) Improvements to regional and local roads, streets or other transportation facilities or services that are included as planned improvements in a regional or local transportation system plan or comprehensive plan when the local government(s) or transportation service provider(s) responsible for the facility, improvement or service provides a written statement that the facility, improvement or service is reasonably likely to be provided by the end of the planning period.
- (c) Within interstate interchange areas, the improvements included in (b)(A)–(C) are considered planned facilities, improvements and services, except where:
- (A) ODOT provides a written statement that the proposed funding and timing of mitigation measures are sufficient to avoid a significant adverse impact on the

Interstate Highway system, then local governments may also rely on the improvements identified in paragraphs (b)(D) and (E) of this section; or

(B) There is an adopted interchange area management plan, then local governments may also rely on the improvements identified in that plan and which are also identified in paragraphs (b)(D) and (E) of this section.

(d) As used in this section and section (3):

(A) Planned interchange means new interchanges and relocation of existing interchanges that are authorized in an adopted transportation system plan or comprehensive plan;

(B) Interstate highway means Interstates 5, 82, 84, 105, 205 and 405; and

(C) Interstate interchange area means:

(i) Property within one-quarter mile of the ramp terminal intersection of an existing or planned interchange on an Interstate Highway; or

(ii) The interchange area as defined in the Interchange Area Management Plan adopted as an amendment to the Oregon Highway Plan.

(e) For purposes of this section, a written statement provided pursuant to paragraphs (b)(D), (b)(E) or (c)(A) provided by ODOT, a local government or transportation facility provider, as appropriate, shall be conclusive in determining whether a transportation facility, improvement or service is a planned transportation facility, improvement or service. In the absence of a written statement, a local government can only rely upon planned transportation facilities, improvements and services identified in paragraphs (b)(A)-(C) to determine whether there is a significant effect that requires application of the remedies in section (2).

Response: This section of the Transportation Planning Rule requires coordination with affected transportations service providers. The City provides the roads that serve the subject

property. Stafford Road is designated as a Minor Arterial and Frog Pond Lane is designated as a Local Road in the City TSP and both streets are under City jurisdiction. The City has a duty to coordinate with transportation facility and service providers and other affected agencies, as applicable. Therefore, the criteria of OAR 660-012-0060 (4) are met.

METRO FUNCTIONAL PLAN COMPLIANCE

Response: Metro Code 3.07.810(c) requires compliance with applicable provisions of the Functional Plan when a City amends its acknowledged comprehensive plan and land use regulations. In this case, the City’s acknowledged Land Use Zoning Map and Land Development Code are consistent with the Functional Plan. This application does not amend the City’s acknowledged Land Use Zoning Map or Land Development Code in a way that is inconsistent with the Functional Plan. Therefore, the City can find that the Functional Plan is satisfied.

Additionally, Metro Code 3.07.810(f) requires that the City give notice to the Metro Chief Operating Officer of the map amendments 35 days before the first Planning Commission hearing. If the City provides such notice, the Land Use Zoning Map Amendment will comply with the Functional Plan upon final approval by the City.

CITY OF WILSONVILLE COMPREHENSIVE PLAN

URBAN GROWTH MANAGEMENT

Urban Growth Boundaries

Goal 2.1 To allow for urban growth while maintaining community livability, consistent with the economics of development, City administration, and the provision of public facilities and services.

Policy 2.2.1 The City of Wilsonville shall support the development of all land within the City, other than designated open space lands, consistent with the land use designations of the Comprehensive Plan.

Implementation Measure 2.2.1.a

Allow annexation when it is consistent with future planned public services and when a need is clearly demonstrated for immediate urban growth.

Response: The proposed project is located within the West Neighborhood of the Frog Pond planning area. The Frog Pond Area Plan was adopted in 2015 and the Frog Pond West Master Plan was adopted in 2017 as a sub-element of the Comprehensive Plan. It provides for single-family residential uses to meet the housing needs of Wilsonville’s growing population. The City’s Housing Needs Analysis validates the need for inclusion of the Frog Pond West subarea to meet state-required supply for residential land. The Frog Pond Area Plan includes a transportation network, parks and open space framework, and infrastructure funding plan to support development within the Frog Pond area and assure adequate public services.

Implementation Measure 2.2.1.e



Changes in the City boundary will require adherence to the annexation procedures prescribed by State law and Metro standards. Amendments to the City limits shall be based on consideration of:

1. **Orderly, economic provision of public facilities and services, i.e., primary urban services are available and adequate to serve additional development or improvements are scheduled through the City's approved Capital Improvements Plan.**

Response: The Frog Pond Area Plan includes implementation measures to ensure the orderly and economic provision of public facilities and services for the Frog Pond Area, including Frog Pond West master planned community. The applicant has submitted concurrent applications for Stage I and Stage II Planned Development Review, Site Design Review, and Tentative Subdivision Plat, which propose the extension of public facilities and services to the Frog Pond Vista neighborhood. These proposed services are generally consistent with the Frog Pond Area Plan, Frog Pond West Master Plan, and the City's Finance Plan and Capital Improvements Plan.

2. **Availability of sufficient land for the various uses to ensure choices in the marketplace for a 3 to 5 year period.**

Response: The proposed project implements the uses envisioned in the adopted Frog Pond West Master Plan, on the land with zoned Residential Neighborhood (RN). The inclusion of the Frog Pond area within the UGB and the adoption of the Frog Pond Area Plan demonstrate the need for residential development in the Frog Pond Area.

3. **Statewide Planning Goals.**

Response: A separate section in this narrative demonstrates compliance with Statewide Planning Goals.

4. **Applicable Metro Plans;**

Response: A separate section in this narrative demonstrates compliance with the applicable provisions of the Metro Urban Growth Management Functional Plan.

5. **Encouragement of development within the City limits before conversion of urbanizable (UGB) areas.**

Response: The subject site was brought into the UGB in 2002 but has not been annexed to the City limits yet. However, the City began the planning process for the development of the Frog Pond Area in 2014. Annexation of the project site is the next stage of the process and will allow the City of Wilsonville to implement the vision of the Frog Pond West Master Plan.

LAND USE AND DEVELOPMENT

Residential Development

GOAL 4.1 To have an attractive, functional, economically vital community with a balance of different types of land uses.

Policy 4.1.4

The City of Wilsonville shall provide opportunities for a wide range of housing types, sizes, and densities at prices and rent levels to accommodate people who are employed in Wilsonville.

Implementation Measure 4.1.4.b

Plan for and permit a variety of housing types consistent with the objectives and policies set forth under this section of the Comprehensive Plan, while maintaining a reasonable balance between the economics of building and the cost of supplying public services. It is the City's desire to provide a variety of housing types needed to meet a wide range of personal preferences and income levels. The City also recognizes the fact that adequate public facilities and services must be available in order to build and maintain a decent, safe, and healthful living environment.

Response: The proposed annexation of the property and zone change to Residential Neighborhood (RN) implement the Comprehensive Plan to provide new single-family homes, consistent with the residential densities and housing types established in the Frog Pond West Master Plan. The proposed project will provide adequate public facilities and services for the new dwellings.

Implementation Measure 4.1.4.d

Encourage the construction and development of diverse housing types, but maintain a general balance according to housing type and geographic distribution, both presently and in the future. Such housing types may include, but shall not be limited to: Apartments, single-family detached, single-family common wall, manufactured homes, mobile homes, modular homes, and condominiums in various structural forms.

Response: The project provides detached single-family housing on lots ranging from approximately 6,000 square feet to 10,000 square feet, as allowed by the R-7 and R-10 zone regulations established in the Frog Pond West Master Plan.

Implementation Measure 4.1.4.e

Targets are to be set in order to meet the City's Goals for housing and assure compliance with State and regional standards.

Response: The Frog Pond Area Plan and Frog Pond West Master Plan establish minimum and maximum residential densities for this area in compliance with State and regional standards. The proposed zone change will allow development of the subject site in conformance with those targets.

Implementation Measure 4.1.4.r

All development, except as indicated in the lowest density districts, will coincide with the provision of adequate streets, water, and sanitary sewerage and storm drainage facilities, as specified in the Public Facilities and Services Section of the Plan. These facilities shall be (a) capable of adequately serving all intervening properties as well as the proposed development and (b) designed to meet City standards.

Response: Frog Pond Vista follows the sequential development pattern of Frog Pond West master planned community and extends the public facilities north from the previously approved Frog Pond Ridge subdivision.

CITY OF WILSONVILLE DEVELOPMENT CODE

CHAPTER 4. ZONING

Section 4.113 STANDARDS APPLYING TO RESIDENTIAL DEVELOPMENTS IN ANY ZONE

(.01) Open Space

Response: The Frog Pond West Master Plan controls open space standards for the area. Please refer to response under Wilsonville Development Code (WDC) Section 4.127(.09).

(.02) Building Setbacks

Response: The Frog Pond West Master Plan controls development standards for the area. The setbacks in the proposed development are consistent with the Frog Pond West Master Plan. Please refer to response under WDC Section 4.127(.08).

(.03) Height Guidelines

Response: This application involves a preliminary subdivision plat, therefore only lot dimensional standards are reviewed with this application. Site development standards (setbacks, height, etc.) are applied at the time of building permit review.

(.05) Off Street Parking: Off-street parking shall be provided as specified in Section 4.155.

Response: Please refer to response under WDC Section 4.155.

(.06) Signs: Signs shall be governed by the provisions of Sections 4.156.01 – 4.156.11.

Response: This project does not include signs.

(.07) Fences:

- A.** The maximum height of a sight-obscuring fence located in the required front yard of a residential development shall not exceed four (4) feet.
- B.** The maximum height of a sight-obscuring fence located in the side yard of a residential lot shall not exceed four (4) feet forward of the building line and shall not exceed six (6) feet in height in the rear yard, except as approved by the Development Review Board. Except, however, that a fence in the side yard of residential corner lot may be up to six (6) feet in height, unless a greater restriction is imposed by the Development Review Board acting on an application. A fence of up to six (6) feet in height may be constructed with no setback along the side, the rear, and in the front yard of a residential lot adjoining the rear of a corner lot as shown in the attached Figure.
- C.** Notwithstanding the provisions of Section 4.122(10)(a) and (b), the Development Review Board may require such fencing as shall be deemed necessary to promote and provide traffic safety, noise mitigation, and nuisance abatement, and the compatibility of different uses permitted on adjacent lots of the same zone and on adjacent lots of different zones.

Response: Fences in residential lots will be reviewed at the time of building permit. This application includes a chain-link fence around the stormwater facility and ornamental metal view

fencing along the rear and side yards facing onto the Boeckman Creek SROZ open space. Please refer to response under WDC Section 4.176 Landscaping, Screening, and Buffering.

(.08) Corner Vision: Vision clearance shall be provided as specified in Section 4.177, or such additional requirements as specified by the City Engineer.

Response: Please refer to response under WDC Section 4.177.

(.09) **Prohibited Uses:**

- A. Uses of structures and land not specifically permitted in the applicable zoning districts.
- B. The use of a trailer, travel trailer or mobile coach as a residence, except as specifically permitted in an approved RV park.
- C. Outdoor advertising displays, advertising signs, or advertising structures except as provided in Sections 4.156.05, 4.156.07, 4.156.09, and 4.156.10.

Response: The project does not include any prohibited uses.

(.10) **Accessory Dwelling Units.**

- A. Accessory Dwelling Units are permitted subject to standards and requirements of this Subsection. [Amended by Ord. #825, 10/15/18]

Response: The project does not include accessory units.

(.11) Reduced Setback Agreements. The following procedure has been created to allow the owners of contiguous residential properties to reduce the building setbacks that would typically be required between those properties, or to allow for neighbors to voluntarily waive the solar access provisions of Section 4.137. Setbacks can be reduced to zero through the procedures outlined in this subsection.

Response: Please refer to response under WDC Section 4.127(.08) RN Zone Lot Development Standards.

Section 4.118 **STANDARDS APPLYING IN ALL PLANNED DEVELOPMENT ZONES**

(.01) **Height Guidelines:** In “S” overlay zones, the solar access provisions of Section 4.137 shall be used to determine maximum building heights. In cases that are subject to review by the Development Review Board, the Board may further regulate heights as follows: [...]

Response: The subject site is not located within the “S” overlay zone.

(.02) **Underground Utilities** shall be governed by Sections 4.300 to 4.320. All utilities above ground shall be located so as to minimize adverse impacts on the site and neighboring properties.

Response: Please refer to response under Sections 4.300 to 4.320 in this narrative.

(.03) Notwithstanding the provisions of Section 4.140 to the contrary, the Development Review Board, in order to implement the purposes and objectives of Section 4.140, and based on findings of fact supported by the record may:

- A. Waive the following typical development standards:
 - 1. minimum lot area;
 - 2. lot width and frontage;
 - 3. height and yard requirements;
 - 4. lot coverage;

-
5. lot depth;
 6. street widths;
 7. sidewalk requirements;
 8. height of buildings other than signs;
 9. parking space configuration and drive aisle design;
 10. minimum number of parking or loading spaces;
 11. shade tree islands in parking lots, provided that alternative shading is provided;
 12. fence height;
 13. architectural design standards;
 14. transit facilities; and
 15. On-site pedestrian access and circulation standards; and
 16. Solar access standards, as provided in section 4.137.

[Amended by Ord. #719, 6/17/13.]

Response: The applicant requests the reduction of minimum lot area for eight lots in Subdistrict 8, pursuant to WDC Section 4.127(.08), which allows lots 80 percent of the minimum size where necessary to reserve natural resources. Please refer to response under WDC Section 4.127(.08).

B. The following shall not be waived by the Board, unless there is substantial evidence in the whole record to support a finding that the intent and purpose of the standards will be met in alternative ways:

1. open space requirements in residential areas, except that the Board may waive or reduce open space requirements in the Residential Neighborhood zone. Waivers in compliance with 4.127 (.08) (B)(2)(d).; [Section 4.118 amended by Ord. 806, 7/17/2017]

Response: Properties within the R-10 and R-7 sub-districts do not have a requirement for common open space. The project provides does provide ±2.5 acres of open space, which includes areas within Boeckman Creek natural resource overlay zone (Tract A) and a grove of mature trees (Tract D).

2. minimum density standards of residential zones. The required minimum density may be reduced by the Board in the Residential Neighborhood zone in compliance with 4.127 (.06) B; [Section 4.118 amended by Ord. 806, 7/17/2017]

Response: The project meets the minimum density standards.

3. minimum landscape, buffering, and screening standards;

Response: The project meets the minimum landscape, buffering, and screening standards.

C. The following shall not be waived by the Board, unless there is substantial evidence in the whole record to support a finding that the intent and purpose of the standards will be met in alternative ways, and the action taken will not violate any applicable federal, state, or regional standards:

1. maximum number of parking spaces;
2. standards for mitigation of trees that are removed;

-
3. standards for mitigation of wetlands that are filled or damaged; and
 4. trails or pathways shown in the Parks and Recreation Master Plan.

Response: The project meets the above standards; no waivers are requested.

(.07) **Density Transfers.** In order to protect significant open space or resource areas, the Development Review Board may authorize the transfer of development densities from one portion of a proposed development to another. Such transfers may go to adjoining properties, provided that those properties are considered to be part of the total development under consideration as a unit.

Response: The applicant is not requesting a density transfer.

(.08) **Wetland Mitigation and other mitigation for lost or damaged resources.** The Development Review Board may, after considering the testimony of experts in the field, allow for the replacement of resource areas with newly created or enhanced resource areas. The Board may specify the ratio of lost to created and/or enhanced areas after making findings based on information in the record. As much as possible, mitigation areas shall replicate the beneficial values of the lost or damaged resource areas.

Response: The project preserves land within SROZ, therefore this waiver is not needed.

(.09) **Habitat-Friendly Development Practices.** To the extent practicable, development and construction activities of any lot shall consider the use of habitat-friendly development practices, which include:

- A. Minimizing grading, removal of native vegetation, disturbance and removal of native soils, and impervious area;
- B. Minimizing adverse hydrological impacts on water resources, such as using the practices described in Part (a) of Table NR-2 in Section 4.139.03, unless their use is prohibited by an applicable and required state or federal permit, such as a permit required under the federal Clean Water Act, 33 U.S.C. §§1251 et seq., or the federal Safe Drinking Water Act, 42 U.S.C. §§300f et seq., and including conditions or plans required by such permit;
- C. Minimizing impacts on wildlife corridors and fish passage, such as by using the practices described in Part (b) of Table NR-2 in Section 4.139.03; and
- D. Using the practices described in Part (c) of Table NR-2 in Section 4.139.03.

Response: This project is designed to minimize impacts to natural habitat through the use of habitat-friendly development practices, including limiting grading to the minimum necessary for installing site improvements and building homes and providing ±2.16 acres of open space. The applicant has designed and will construct water, sewer, and stormwater infrastructure in accordance with the applicable City requirements in order to minimize adverse impacts on the site and to adjacent properties and surrounding resources. The project preserves 34 existing mature onsite trees, including three Oregon White Oaks.

Section 4.124 **STANDARDS APPLYING TO ALL PLANNED DEVELOPMENT RESIDENTIAL ZONES**

(.09) **Block and access standards:**

1. Maximum block perimeter in new land divisions: 1,800 feet.
2. Maximum spacing between streets or private drives for local access: 530 feet, unless waived by the Development Review Board upon finding that barriers such as railroads, freeways, existing buildings, topographic variations, or

designated Significant Resource Overlay Zone areas will prevent street extensions meeting this standard. [Amended by Ord. 682, 9/9/10]

3. Maximum block length without pedestrian and bicycle crossing: 330 feet, unless waived by the Development Review Board upon finding that barriers such as railroads, freeways, existing buildings, topographic variations, or designated Significant Resource Overlay Zone areas will prevent pedestrian and bicycle facility extensions meeting this standard. [Section 4.124(.06) amended by Ordinance No. 538, 2/21/02.]

Response: As shown on the Preliminary Plans (Exhibit A), the project meets block and access standards.

Section 4.127 RESIDENTIAL NEIGHBORHOOD (RN) ZONE.

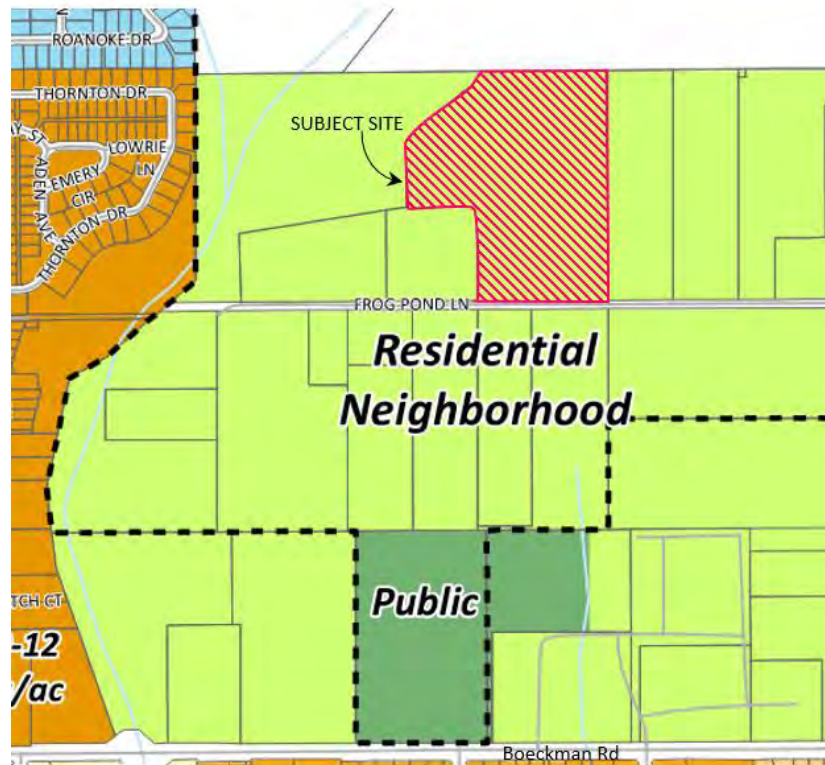
(.01) Purpose.

The Residential Neighborhood (RN) zone applies to lands within Residential Neighborhood Comprehensive Plan Map designation. The RN zone is a Planned Development zone, subject to applicable Planned Development regulations, except as superseded by this section or in legislative master plans. The purposes of the RN Zone are to:

- A. Implement the Residential Neighborhood policies and implementation measures of the Comprehensive Plan.
- B. Implement legislative master plans for areas within the Residential Neighborhood Comprehensive Plan Map designation.
- C. Create attractive and connected neighborhoods in Wilsonville.
- D. Regulate and coordinate development to result in cohesive neighborhoods that include: walkable and active streets; a variety of housing appropriate to each neighborhood; connected paths and open spaces; parks and other non-residential uses that are focal points for the community; and, connections to and integration with the larger Wilsonville community.
- E. Encourage and require quality architectural and community design as defined by the Comprehensive Plan and applicable legislative master plans.
- F. Provide transportation choices, including active transportation options.
- G. Preserve and enhance natural resources so that they are an asset to the neighborhoods, and there is visual and physical access to nature.

Response: Per Figure 5 of the Frog Pond West Master Plan (below), the Frog Pond Vista neighborhood is located within the Residential Neighborhood (RN) Comprehensive Plan Map designation and is subject to these provisions and to applicable Planned Development (PD) regulations.

Frog Pond West Master Plan Figure 5: Comprehensive Plan Designations



- (.02) Permitted uses:
- A. Open Space.
 - B. Single-Family Dwelling Unit.
 - C. Attached Single-Family Dwelling Unit. In the Frog Pond West Neighborhood, a maximum of 2 dwelling units, not including ADU's, may be attached.
 - D. Duplex.
 - E. Multiple-Family Dwelling Units, except when not permitted in a legislative master plan, subject to the density standards of the zone. Multi-family dwelling units are not permitted within the Frog Pond West Master Plan area.
 - F. Cohousing.
 - G. Cluster Housing.
 - H. Public or private parks, playgrounds, recreational and community buildings and grounds, tennis courts, and similar recreational uses, all of a non-commercial nature, provided that any principal building or public swimming pool shall be located not less than forty-five (45) feet from any other lot.
 - I. Manufactured homes.

Response: The project includes 38 single-family lots with associated open space, which are permitted uses in the RN zone.

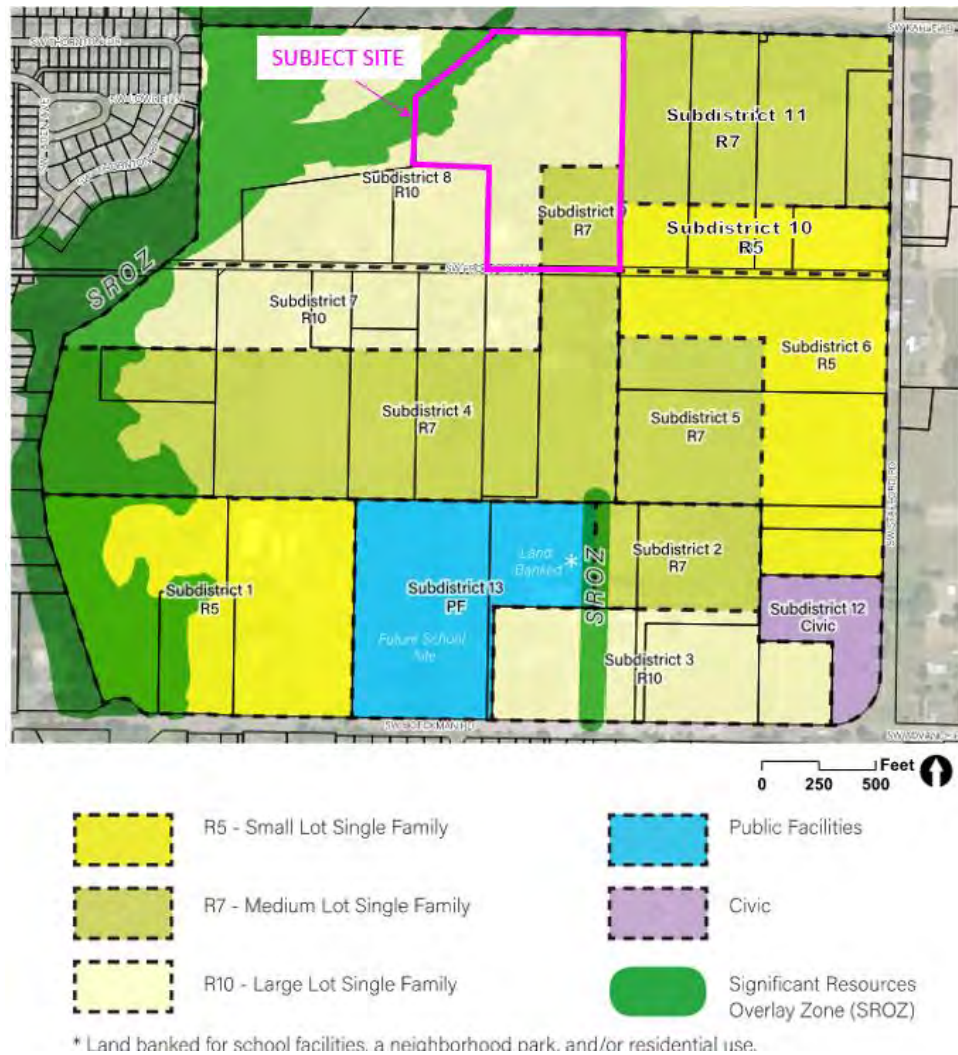
- (.05) Residential Neighborhood Zone Sub-districts:

A. RN Zone sub-districts may be established to provide area-specific regulations that implement legislative master plans.

1. For the Frog Pond West Neighborhood, the sub-districts are listed in Table 1 of this code and mapped on Figure 6 of the Frog Pond West Master Plan. The Frog Pond West Master Plan Sub-District Map serves as the official sub-district map for the Frog Pond West Neighborhood.

Response: As shown on Figure 6 below, ±10.16 acres of the project site are within Subdistrict 8/R10, and ±2.64 acres of the site lie within the Subdistrict 9/R7.

Frog Pond West Master Plan Figure 6: Frog Pond West Land Use and Subdistricts



(.06) **Minimum and Maximum Residential Units:**

A. The minimum and maximum number of residential units approved shall be consistent with this code and applicable provisions of an approved legislative master plan.

1. For the Frog Pond West Neighborhood, Table 1 in this code and Frog Pond West Master Plan Table 1 establish the minimum and maximum number of residential units for the subdistricts.

2. For parcels or areas that are a portion of a sub-district, the minimum and maximum number of residential units are established by determining the proportional gross acreage and applying that proportion to the minimums and maximums listed in Table 1. The maximum density on a parcel may be increased, up to a maximum of 10% of what would otherwise be permitted, based on an adjustment to an SROZ boundary that is consistent with 4.139.06.

Response: The following table summarizes how the proposed residential units in each subdistrict are consistent with the density range allowed by the Frog Pond West Master Plan.

The project area encompasses approximately 47% of Subdistrict 8. The established density range for the entire Subdistrict 8 is 43 to 53 units. Accordingly, the proportional share of units of the project site is 20 to 25 units, which is 47% of the entire subdistrict. The project proposes 25 lots in Subdistrict 8, which is within the permitted range.

The established density range for Subdistrict 9 is 10 to 13 units. The gross project area encompasses the entire Subdistrict 9, therefore 100% of the units allocated to the subdistrict are assigned to the project site. The project proposes 13 lots in Subdistrict 9, consistent with the permitted density.

Table 1. Proposed Residential Units

Subdistrict	Gross Subdistrict Area (acres)	Established Dwelling Unit Range for Subdistrict		Gross Site Area (acres)	Site % of Subdistrict	Proportional Dwelling Unit Range for Site		Proposed Dwelling Units
		Min.	Max.			Min.	Max.	
Subdistrict 8	19.65	43	53	9.19	47%	20	25	25
Subdistrict 9	2.64	10	13	2.64	100%	10	13	13

- B. The City may allow a reduction in the minimum density for a sub-district when it is demonstrated that the reduction is necessary due to topography, protection of trees, wetlands and other natural resources, constraints posed by existing development, infrastructure needs, provision of nonresidential uses and similar physical conditions.

Response: The applicant is not requesting a reduction in minimum density.

(.07) **Development Standards Generally**

- A. Unless otherwise specified by this the regulations in this Residential Development Zone chapter, all development must comply with Section 4.113, Standards Applying to Residential Development in Any Zone.

Response: Compliance with applicable regulations of Section 4.113 is addressed earlier in the narrative. Some regulations of 4.127 supersede the regulations of 4.113.

(.08) **Lot Development Standards:**

- A. Lot development shall be consistent with this code and applicable provisions of an approved legislative master plan.



- B. Lot Standards Generally. For the Frog Pond West Neighborhood, Table 2 establishes the lot development standards unless superseded or supplemented by other provisions of the Development Code.
- C. Lot Standards for Small Lot Sub-districts. The purpose of these standards is to ensure that development in the Small Lot Sub-districts includes varied design that avoids homogenous street frontages, creates active pedestrian street frontages and has open space that is integrated into the development pattern.
- D. Standards. Planned developments in the Small Lot Sub-districts shall include one or more of the following elements on each block:
 1. Alleys.
 2. Residential main entries grouped around a common green or entry courtyard (e.g. cluster housing).
 3. Four or more residential main entries facing a pedestrian connection allowed by an applicable legislative master plan.
 4. Garages recessed at least 4 feet from the front façade or 6 feet from the front of a front porch.

Neighborhood Zone SubDistrict	Min. Lot Size (sq.ft.)	Min. Lot Depth (ft.)	Max. Lot Coverage (%)	Min. Lot Width G, H, J (ft.)	Max. Bldg. Height F (ft.)	Setbacks ^H				
						Front Min. (ft.)	Rear Min. (ft.)	Side Min. (note)	Garage Min Setback from Alley (ft.)	Garage Min Setback from Street ^K (ft.)
R-10 Large Lot Single Family	8,000 ^A	60'	40% ^B	40	35	20 ^C	20	I	18 ^D	20
R-7 Medium Lot Single Family	6,000 ^A	60'	45% ^B	35	35	15 ^C	15	I	18 ^D	20

Notes:

- A May be reduced to 80% of minimum lot size where necessary to preserve natural resources (e.g. trees, wetlands) and/or provide active open space. Cluster housing may be reduced to 80% of minimum lot size. Duplexes in the R-5 Sub-District have a 6,000 SF minimum lot size.*
- B On lots where detached accessory buildings are built, maximum lot coverage may be increased by 10%.*
- C Front porches may extend 5 feet into the front setback.*
- D The garage setback from alley shall be minimum of 18 feet to a garage door facing the alley in order to provide a parking apron. Otherwise, the rear or side setback requirements apply.*
- F Vertical encroachments are allowed up to ten additional feet, for up to 10% of the building footprint; vertical encroachments shall not be habitable space.*
- G May be reduced to 24' when the lot fronts a cul-de-sac. No street frontage is required when the lot fronts on an approved, platted private drive or a public pedestrian access in a cluster housing development.*
- H Front Setback is measured as the offset of the front lot line or a vehicular or pedestrian access easement line. On lots with alleys, Rear Setback shall be measured from the rear lot line abutting the alley.*
- I On lots greater than 10,000 SF with frontage 70 ft. or wider, the minimum combined side yard setbacks shall total 20 ft. with a minimum of 10 ft. On other lots, minimum side setback shall be 5 ft. On a corner lot, minimum side setbacks are 10 feet.*

J For cluster housing with lots arranged on a courtyard, frontage shall be measured at the front door face of the building adjacent to a public right of way or a public pedestrian access easement linking the courtyard with the Public Way.

K Duplexes with front-loaded garages are limited to one shared standard-sized driveway/apron.

Response: WDC Section 4.127, Table 2 (above) establishes the lot development standards for the Frog Pond West neighborhood. These standards supersede the setback standards of 4.113(.03). The table below demonstrates that the proposed project meets the lot dimensional standards, which are applied at the time of subdivision approval.

The Applicant is requesting a reduction in the minimum lot area below the minimum required 8,000 square feet for eight lots within Subdistrict 8 (Lots 20, 22, 24-27, 34-36) to accommodate preservation of a grove of mature trees in the northeastern portion of the site, which includes five Oregon White Oaks, a Ponderosa Pine, and nine Scotch Pines. A reduction up to 80% in lot size is allowed by Code for tree preservation. In order to preserve those mature trees, the Applicant agreed to route the northern section of Willow Creek Drive through their property, to the west of its planned alignment. The re-routing of the street around the tree grove results in the loss of otherwise buildable land. The code allows a reduction of lot area in R-10 zoning district up to up to 6,400 square feet. The project proposes a reduction between 6,547 square feet and 7,787 square feet. As a result, the proposed lots in Subdistrict 8/R-10 will range between ±6,547 and ±17,035 square feet.

Site development standards, including lot coverage, setbacks, and heights, will be reviewed at the time of building permit approval. The applicant has submitted conceptual building floor plans and elevations (Exhibit M) which demonstrate that setback and lot coverage standards can be met.

Table 2. Compliance with Neighborhood Zone Lot Development Standards

Standard (minimum)	R7		R10	
	Required	Proposed	Required	Proposed
Lot Size	6,000 square feet	6,104 square feet	8,000 square feet *6,400 reduction allowed for tree preservation	8,000 square feet *reduced lots are 6,547 - 7,787 square feet to allow tree preservation
Lot Depth	60 feet	101 feet	60 feet	101 feet
Lot Width	35 feet	59 feet	40 feet	50 feet
Front Setback	15 feet	15 feet	20 feet	20 feet
Rear Setback	15 feet	15 feet	20 feet	20 feet
Side Setback – Interior	5 feet	5 feet	5 feet	5 feet
Side Setback – Corner Lot	10 feet	10 feet	10 feet	10 feet
Garage Setback from street	20 feet	20 feet	20 feet	20 feet

D. Lot Standards Specific to the Frog Pond West Neighborhood.

1. Lots adjacent to Boeckman Road and Stafford Road shall meet the following standards:
 - a. Rear or side yards adjacent to Boeckman Road and Stafford Road shall provide a wall and landscaping consistent with the standards in Figure 10 of the Frog Pond West Master Plan.

Response: This property is not adjacent to Stafford Road or Boeckman Road.

2. Lots adjacent to the collector-designated portions of Willow Creek Drive and Frog Pond Lane shall not have driveways accessing lots from these streets, unless no practical alternative exists for access. Lots in Large Lot Sub-districts are exempt from this standard.

Response: The site includes a portion of Collector-designated Willow Creek Drive. No driveways are proposed to access the lots from that street.

(.09) Open Space:

- A. Purpose. The purposes of these standards for the Residential Neighborhood Zone are to:
 1. Provide light, air, open space, and useable recreation facilities to occupants of each residential development.
 2. Retain and incorporate natural resources and trees as part of developments.
 3. Provide access and connections to trails and adjacent open space areas.

For Neighborhood Zones which are subject to adopted legislative master plans, the standards work in combination with, and as a supplement to, the park and open space recommendations of those legislative master plans. These standards supersede the Outdoor Recreational Area requirements in WC Section 4.113 (.01).

Response: The Frog Pond Vista PUD design is consistent with the open space recommendations in the adopted Frog Pond West Master Plan. The project dedicates a section of Boeckman Creek Trail to the City and constructs a connection to the trail through the neighborhood. Per Master Plan Figure 34, Boeckman Creek Trail continues north from the project site, as well as east, following the public sidewalk on Kahle Road, until it connects to the BPA Easement Trail in Frog Pond East. Bearing in mind that Master Plan figures are conceptual, and that specific details are expected to change as the projects are refined during the site design stage, the Vista project provides equivalent connectivity. Due to the required realignment of Kahle Road and Vista Ridge Lane, as further discussed under Section 4.124(.10).B, the eastern trail connection follows a slightly different route than what was envisioned in the Master Plan. As demonstrated in the figure below, the pathway runs east from Boeckman Creek Trail through an open space tract in the western portion of the site, then follows the sidewalk along Trillium Court, where it connects to a landscaped pedestrian crossing (Tract F on the preliminary plans). At that point, the trail aligns with the off-site segment in the Oaks neighborhood to the east, where it meanders through a tree-covered open space area, eventually connecting to Kahle Road sidewalk, as envisioned in Figure 34.

Frog Pond Vista PUD Proposed Boeckman Trail Connections



- B. Within the Frog Pond West Neighborhood, the following standards apply:
1. Properties within the R-10 Large Lot Single Family sub-districts and R-7 Medium Lot Single Family sub-districts are exempt from the requirements of this section. If the Development Review Board finds, based upon substantial evidence in the record, that there is a need for open space, they may waive this exemption and require open space proportional to the need.

Response: The project includes properties within R-10 and R-7 subdistricts, which are exempt from common open space requirement. However, the project preserves open space within SROZ, and provides a total of ±2.5 acres of open space.

- (.10) Block, access and connectivity standards:
- A. Purpose. These standards are intended to regulate and guide development to create: a cohesive and connected pattern of streets, pedestrian connections and bicycle routes; safe, direct and convenient routes to schools and other community destinations; and, neighborhoods that support active transportation and Safe Routes to Schools.
 - B. Blocks, access and connectivity shall comply with adopted legislative master plans.
 1. Within the Frog Pond West Neighborhood, streets shall be consistent with Figure 18, Street Demonstration Plan, in the Frog Pond West Master Plan. The Street Demonstration Plan is intended to be guiding, not binding. Variations from the Street Demonstration Plan may be approved by the Development Review Board, upon finding that one or more of the following justify the variation: barriers such as existing buildings and topography; designated Significant Resource Overlay Zone areas; tree groves, wetlands or other natural resources; existing or planned parks and other active open space that will serve as pedestrian connections for the public; alignment with

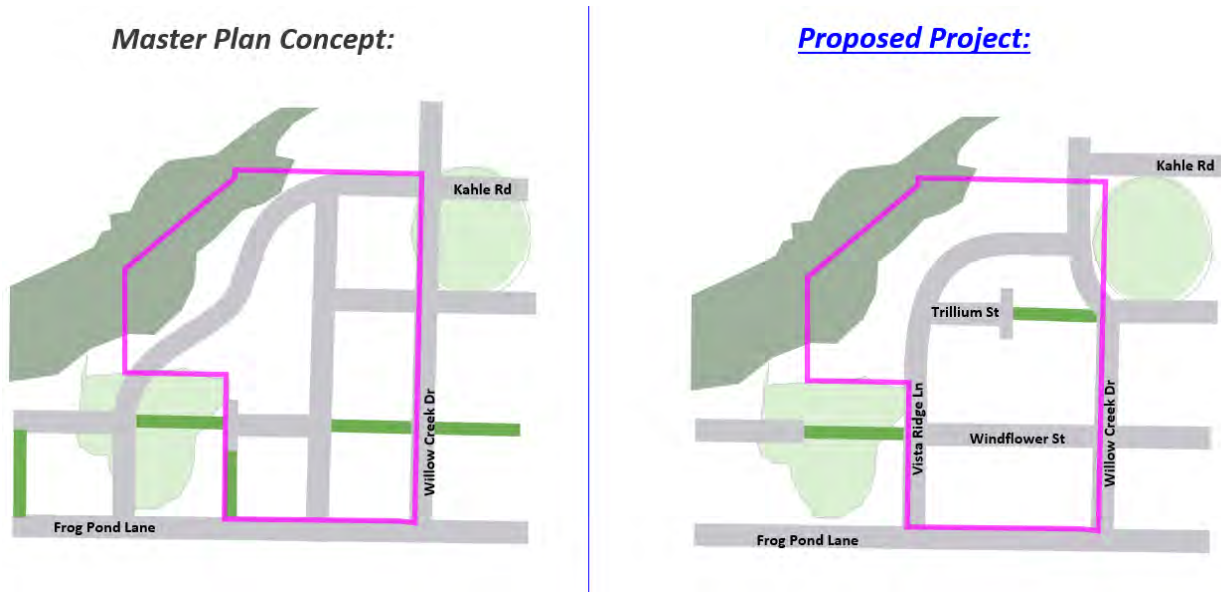
property lines and ownerships that result in efficient use of land while providing substantially equivalent connectivity for the public; and/or site design that provides substantially equivalent connectivity for the public.

Response: The proposed street network is generally consistent with the Frog Pond Master Plan, with some modifications to allow protection of a natural resource areas:

1. Kahle Road alignment was previously shifted north during the design and review of the adjacent projects to the east of Frog Pond Vista. Kahle Road ends at a T-intersection with Willow Creek Drive, which continues north.
2. Vista Ridge Lane provides north-south connectivity along the western portion of the site. This curved street is shifted further to the southeast compared to the alignment in the Master Plan. This street placement avoids anticipated impacts to the natural resources mapped immediately southwest of the project site. Additionally, it allows a more efficient use of land along Boeckman Creek SROZ buffer versus the layout on the Street Demonstration Plan. The proposed alignment provides access to a stormwater facility and residential lots on both sides of the street, rather than only along the eastern side.
3. Willow Creek Drive meanders through the project site to avoid impacts to the off-site natural resources
4. A pedestrian connection is proposed between Trillium Court and Willow Creek Drive in place of a full street connection to maintain the required intersection spacing along an Internal Collector. Due to the curve in the road, visibility would be decreased at this intersection if constructed per Master Plan. Instead, a full street connection is proposed one block to the south.
5. Instead of two pedestrian connections shown on the Street Demonstration Plan at Windflower Street to Willow Creek Drive and Windflower Street to Frog Pond Lane, full street connections are proposed.

The modified grid pattern allows Frog Pond Vista neighborhood to accommodate 38 residential lots allocated to Subdistricts 8 and 9 in the Frog Pond West Master Plan while avoiding impact to Boeckman Creek SROZ and a grove of mature oaks and pines, provides efficient vehicular and pedestrian connections through the project and to the surrounding community. The City can make a finding that the proposed subdivision street plan provides for a substantially equivalent level of pedestrian connectivity. Please refer to the Preliminary Street Plan in Exhibit A, which illustrates the proposed blocks, access, and connectivity for Frog Pond Vista project.

Comparison of Frog Pond Master Plan Figure 18: Street Demonstration Plan & Proposed Connections



(.11) **Signs.** Per the requirements of Sections 4.156.01 through 4.156.11 and applicable provisions from adopted legislative master plans.

Response: Compliance with Sections 4.156.01 through 4.156.11 is addressed further in the narrative.

(.12) **Parking.** Per the requirements of Section 4.155 and applicable provisions from adopted legislative master plans.

Response: Project meets parking code requirements. Compliance with Section 4.155 is addressed further in the narrative.

(.13) **Corner Vision Clearance.** Per the requirements of Section 4.177.

Response: Compliance with Section 4.177 is addressed further in the narrative.

(.14) **Main Entrance Standards**

(.15) **Garage Standards**

(.16) **Residential Design Standards**

Response: The design of individual homes will be reviewed at the time of building permit submittal. The conceptual elevations provided in Exhibit M demonstrate that the standards of subsections 4.127(.14), (.15), and (.16) can be met.

(0.17) **Fences**

A. **Within Frog Pond West, fences shall comply with standards in 4.113 (.08) except as follows:**

1. **Columns for the brick wall along Boeckman Road and Stafford Road shall be placed at lot corners where possible.**
2. **A solid fence taller than 4 feet in height is not permitted within 8 feet of the brick wall along Boeckman Road and Stafford Road, except for fences placed on the side lot line that are perpendicular to the brick wall and end at a column of the brick wall.**

3. Height transitions for fences shall occur at fence posts.

Response: Compliance with Section 4.113 (.08) is addressed earlier in the narrative. Boeckman and Stafford Road frontage standards do not apply to this project.

(0.18) Homes Adjacent to Schools, Parks and Public Open Spaces

- A. Purpose. The purpose of these standards is to ensure that development adjacent to schools and parks is designed to enhance those public spaces with quality design that emphasizes active and safe use by people and is not dominated by driveways, fences, garages, and parking.
- B. Applicability. These standards apply to development that is adjacent to or faces schools and parks. As used here, the term adjacent includes development that is across a street or pedestrian connection from a school or park.
- C. Development must utilize one or more of the following design elements:
 - 1. Alley loaded garage access.
 - 2. On corner lots, placement of the garage and driveway on the side street that does not face the school, park, or public open space.
 - 3. Recess of the garage a minimum of four feet from the front façade of the home. A second story above the garage, with windows, is encouraged for this option.
- D. Development must be oriented so that the fronts or sides of homes face adjacent schools or parks. Rear yards and rear fences may generally not face the schools or parks, unless approved through the waiver process of 4.118 upon a finding that there is no practicable alternative due to the size, shape or other physical constraint of the subject property.

Response: The proposed project is not adjacent to any schools, parks, or public open spaces.

Section 4.139 SIGNIFICANT RESOURCE OVERLAY ZONE (SROZ) ORDINANCE

Section 4.139.04 Uses and Activities Exempt from These Regulations

A request for exemption shall be consistent with the submittal requirements listed under Section 4.139.06(.01)(B – I), as applicable to the exempt use and activity. [Added by Ord. # 674 11/16/09]

[...]

(.08) The construction of new roads, pedestrian or bike paths into the SROZ in order to provide access to the sensitive area or across the sensitive area, provided the location of the crossing is consistent with the intent of the Wilsonville Comprehensive Plan. Roads and paths shall be constructed so as to minimize and repair disturbance to existing vegetation and slope stability.

[...]

(.14) Flood control activities pursuant to the Stormwater Master Plan, save and except those stormwater facilities subject to Class II Administrative Review, as determined by the Planning Director, to ensure such facilities meet applicable standards under federal, state and local laws, rules and regulations.

[...]

(.17) New Single-Family Dwelling. The construction of a new single family dwelling is exempt unless the building encroaches into the Impact Area and/or the SROZ.

[...]

-
- (.22) Any impacts to resource functions from the above excepted activities, such as gravel construction pads, erosion/sediment control materials or damaged vegetation, shall be mitigated using appropriate repair or restoration/enhancement techniques.

Response:

The construction of Boeckman Creek Regional Trail in the SROZ is exempt per (.08) above, as it provides access to and across a sensitive area and the location of the crossing is consistent with the intent of the City of Wilsonville Comprehensive Plan. The proposed minor encroachment into SROZ associated with the stormwater pond is exempt from the regulations of the SROZ Ordinance per (.14) above, which pertains to the flood control activities. The residential lots do not encroach into the Impact Area and/or the SROZ. Impacts will be mitigated per the standards of 4.139.07 and as described in the Abbreviated Significant Resource Impact Report (ASRIR) included as Exhibit F.

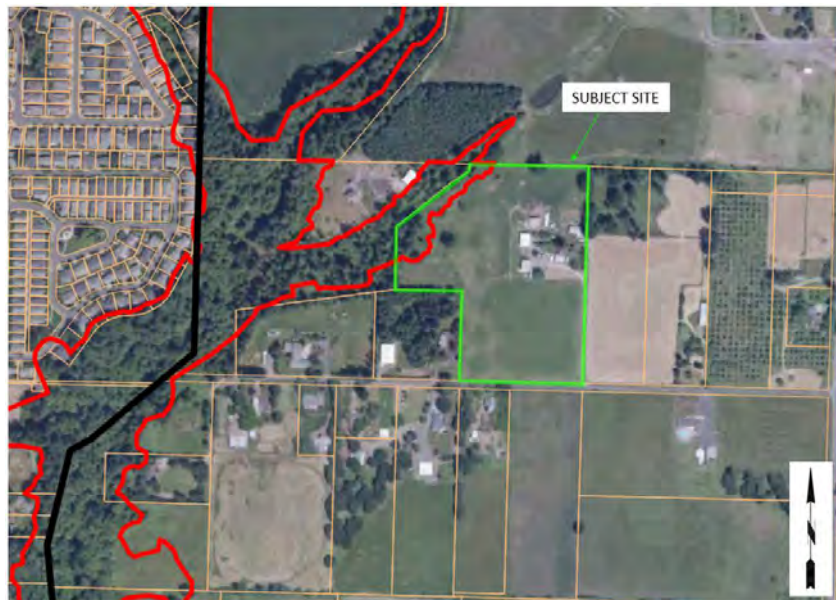
Section 4.139.05 Significant Resource Overlay Zone Map Verification

The map verification requirements described in this Section shall be met at the time an applicant requests a building permit, grading permit, tree removal permit, land division approval, or other land use decision. Map verification shall not be used to dispute whether the mapped Significant Resource Overlay Zone boundary is a significant natural resource. Map refinements are subject to the requirements of Section 4.139.10(.01)(D).

- (.01) In order to confirm the location of the Significant Resource Overlay Zone, map verification shall be required or allowed as follows:
- A. Development that is proposed to be either in the Significant Resource Overlay Zone or less than 100 feet outside of the boundary of the Significant Resource Overlay Zone, as shown on the Significant Resource Overlay Zone Map. B. A lot or parcel that:
1. Either contains the Significant Resource Overlay Zone, or any part of which is less than 100 feet outside the boundary of the Significant Resource Overlay Zone, as shown on the Significant Resource Overlay Zone Map; and
 2. Is the subject of a land use application for a partition, subdivision, or any land use application that the approval of which would authorize new development on the subject lot or parcel.
- (.02) An application for Significant Resource Overlay Zone Map Verification may be submitted even if one is not required pursuant to Section 4.139.05(.01).
- (.03) If a lot or parcel or parcel is subject to Section 4.139.05(.01), an application for Significant Resource Overlay Zone Map Verification shall be filed concurrently with the other land use applications referenced in Section 4.139.05(.01)(B)(2) unless a previously approved Significant Resource Overlay Zone Map Verification for the subject property remains valid.
- (.04) An applicant for Significant Resource Overlay Zone Map Verification shall use one or more of the following methods to verify the Significant Resource Overlay Zone boundary:
- A. The applicant may concur with the accuracy of the Significant Resource Overlay Zone Map of the subject property;
- B. The applicant may demonstrate a mapping error was made in the creation of the Significant Resource Overlay Zone Map;
- C. The applicant may demonstrate that the subject property was developed lawfully prior to June 7, 2001.

Response: The City’s April 29, 2009, Significant Resource Overlay Zone map (City of Wilsonville 2009) identifies a potential SROZ along Boeckman Creek along the western boundary of the project site. AKS wetland professionals visited the site on February 24, 2021 and conducted natural resource delineation in accordance with the procedures outlined in Section 4.139.06 (.02) below. AKS delineation determined on-site SROZ is generally consistent with the City’s 2009 SROZ map, therefore the Applicant concurs with the accuracy of the SROZ Map. Please refer to ASRIR (Exhibit F).

City of Wilsonville Significant Resource Overlay Zone Map



- (.05) The Planning Director shall determine the location of any Significant Resource Overlay Zone on the subject property by considering information submitted by the applicant, information collected during any site visit that may be made to the subject property, information generated by Significant Resource Overlay Zone Map Verification that has occurred on adjacent properties, and any other relevant information that has been provided.
- (.06) For applications filed pursuant to Section 4.139.05(.04)(A) and (C), a Significant Resource Overlay Zone Map Verification shall be consistent with the submittal requirements listed under Section 4.139.06(.01)(B-H).
- (.07) For applications filed pursuant to Section 4.139.05(.04)(B), a Significant Resource Overlay Zone Map Verification shall be consistent with the submittal requirements listed under Section 4.139.06(.02)(D)(1). [Section 4.139.05 added by Ord. # 674 11/16/09]

Response: The application has been filed pursuant to Section 4.139.05(.04)(A) and is subject to the submittal requirements listed under Section 4.139.06(.01)(B-H). The requirements are addressed in the response to that section below.

Section 4.139.06 Significant Resource Impact Report (SRIR) and Review Criteria

-
- (.01) **Abbreviated SRIR Requirements.** It is the intent of this subsection to provide a user-friendly process for the applicant. Only the materials necessary for the application review are required. At the discretion of the Planning Director, an abbreviated SRIR may be submitted for certain small-scale developments such as single family dwellings, additions to single family dwellings, minor additions and accessory structures. The following requirements shall be prepared and submitted as part of the abbreviated SRIR evaluation:
- A. A Site Development Permit Application must be submitted in compliance with the Planning and Land Development Ordinance;
 - B. Outline of any existing features including, but not limited to, structures, decks, areas previously disturbed and existing utility locations*;
 - C. Location of any wetlands or water bodies on the site and the location of the stream centerline and top-of-bank;
 - D. Within the area proposed to be disturbed, the location, size and species of all trees that are more than six (6) inches in diameter at breast height (DBH). Trees outside the area proposed to be disturbed may be individually shown or shown as drip line with an indication of species type or types;
 - E. The location of the SROZ and Impact Area boundaries*;
 - F. A minimum of three slope cross-section measurements transecting the site, equally spaced at no more than 100-foot increments. The measurements should be made perpendicular to the stream*;
 - G. A map that delineates the Metro UGMFP Title 3 Water Quality Resource Area boundary (using Metro Title 3 field observed standards)*;
 - H. Current photos of site conditions shall be provided to supplement the above information*.
 - I. A narrative describing the possible and probable impacts to natural resources and a plan to mitigate for such impacts.

Response: The abbreviated SRIR meeting the requirements above is included as Appendix F and contains the required information.

[...]

- (.03) **SRIR Review Criteria.** In addition to the normal Site Development Permit Application requirements as stated in the Planning and Land Development Ordinance, the following standards shall apply to the issuance of permits requiring an SRIR. The SRIR must demonstrate how these standards are met in a manner that meets the purposes of this Section.

- A. Except as specifically authorized by this code, development shall be permitted only within the Area of Limited Conflicting Use (see definition) found within the SROZ;

Response: As described in the findings in the ASRIR (Exhibit F), the project requires minor encroachment into a portion of the ALCU and the adjacent SR Impact Area setback for exempt activities (pedestrian trail and stormwater pond). No non-exempts activities will occur within SROZ or within the 25-foot-wide SR Impact Area.

- B. Except as specifically authorized by this code, no development is permitted within Metro's Urban Growth Management Functional Plan Title 3 Water Quality Resource Areas boundary;

Response: Development activities are not proposed within Title 3 WQR Areas.

-
- C. No more than five (5) percent of the Area of Limited Conflicting Use (see definition) located on a property may be impacted by a development proposal. On properties that are large enough to include Areas of Limited Conflicting Use on both sides of a waterway, no more than five (5) percent of the Area of Limited Conflicting Use on each side of the riparian corridor may be impacted by a development proposal. This condition is cumulative to any successive development proposals on the subject property such that the total impact on the property shall not exceed five (5) percent;

Response: As stated above, only minor encroachment for exempt activities (pedestrian trail and stormwater pond) are planned to occur within ALCU. Please refer to Figure 7, Natural Resource Site Plan, within the ASRIR (Exhibit F). Therefore, this criterion is not applicable to the Frog Pond Meadows project.

- D. Mitigation of the area to be impacted shall be consistent with Section 4.139.06 of this code and shall occur in accordance with the provisions of this Section;

Response: Mitigation in the form native vegetation within SROZ and the adjacent open space tract is proposed for exempt development activities, as described further in the ASRIR (Exhibit F).

- E. The impact on the Significant Resource is minimized by limiting the degree or magnitude of the action, by using appropriate technology or by taking affirmative steps to avoid, reduce or mitigate impacts;

Response: According to Section 4.19.04(.05), construction and operation of stormwater facilities consistent with the Stormwater Management Plan or City's Comprehensive Plan are exempt from SROZ regulations. There is no practical alternative to the location of the stormwater facility. The design of the facility has been sized to avoid encroachment within the riparian impact area.

- F. The impacts to the Significant Resources will be rectified by restoring, rehabilitating, or creating enhanced resource values within the "replacement area" (see definitions) on the site or, where mitigation is not practical on-site, mitigation may occur in another location approved by the City;

Response: This criteria is not applicable to the proposed exempt encroachments.

- G. Non-structural fill used within the SROZ area shall primarily consist of natural materials similar to the soil types found on the site;

Response: Construction of stormwater facilities consistent are exempt from SROZ regulations, therefore this criterion does not apply. The fill for the stormwater berm within the SROZ area will be structural.

[...]

- J. Appropriate federal and state permits shall be obtained prior to the initiation of any activities regulated by the U.S. Army Corps of Engineers and the Oregon Division of State Lands in any jurisdictional wetlands or water of the United States or State of Oregon, respectively.

Response: As described in the ASRIR (Exhibit F), no wetlands were determined to be present on the project site, therefore the project does not require permits from USACE or DSL.

Section 4.139.07 Mitigation Standards

The following mitigation standards apply to significant wildlife habitat resource areas for encroachments within the Area of Limited Conflicting Uses, and shall be followed by those proposing such encroachments. Wetland mitigation shall be conducted as per permit conditions from the US Army Corps of Engineers and Oregon Division of State Lands. While impacts are generally not allowed in the riparian corridor resource area, permitted impacts shall be mitigated by: using these mitigation standards if the impacts are to wildlife habitat values; and using state and federal processes if the impacts are to wetland resources in the riparian corridor. Mitigation is not required for trees lost to a natural event such as wind or floods.

Response: As stated above, only exempt activities are planned to occur within a minor portion of the onsite SROZ, therefore mitigation requirements do not apply to this project.

Section 4.140 PLANNED DEVELOPMENT REGULATIONS

(.02) Lot Qualification.

- A. Planned Development may be established on lots which are suitable for and of a size to be planned and developed in a manner consistent with the purposes and objectives of Section 4.140.
- B. Any site designated for development in the Comprehensive Plan may be developed as a Planned Development, provided that it is zoned "PD." All sites which are greater than two (2) acres in size, and designated in the Comprehensive Plan for commercial, residential, or industrial use shall be developed as Planned Developments, unless approved for other uses permitted by the Development Code. Smaller sites may also be developed through the City's PD procedures, provided that the location, size, lot configuration, topography, open space and natural vegetation of the site warrant such development.

Response: The subject site is zoned "RN" in the Comprehensive Plan, which is a Planned Development Residential zone, therefore it qualifies for Planned Development.

(.03) Ownership.

- A. The tract or tracts of land included in a proposed Planned Development must be in one (1) ownership or control or the subject of a joint application by the owners of all the property included. The holder of a written option to purchase, with written authorization by the owner to make applications, shall be deemed the owner of such land for the purposes of Section 4.140.
- B. Unless otherwise provided as a condition for approval of a Planned Development permit, the permittee may divide and transfer units or parcels of any development. The transferee shall use and maintain each such unit or parcel in strict conformance with the approval permit and development plan.

Response: The proposed project consists of a single tax lot under one ownership. The land use application has been signed by the property owners.

(.04) Professional Design.

- A. The applicant for all proposed Planned Developments shall certify that the professional services of the appropriate professionals have been utilized in the planning process for development.
- B. Appropriate professionals shall include, but not be limited to the following to provide the elements of the planning process set out in Section 4.139:
 - 1. An architect licensed by the State of Oregon;

2. A landscape architect registered by the State of Oregon;
 3. An urban planner holding full membership in the American Institute of Certified Planners, or a professional planner with prior experience representing clients before the Development Review Board, Planning Commission, or City Council; or
 4. A registered engineer or a land surveyor licensed by the State of Oregon.
- C. One of the professional consultants chosen by the applicant from either 1, 2, or 3, above, shall be designated to be responsible for conferring with the planning staff with respect to the concept and details of the plan.
- D. The selection of the professional coordinator of the design team will not limit the owner or the developer in consulting with the planning staff.

Response: Mimi Doukas, AICP, RLA, of AKS Engineering & Forestry, is the coordinator of a professional design team, which includes a registered civil engineer, a land surveyor, and a landscape architect, all licensed in the State of Oregon.

(.05) **Planned Development Permit Process.**

- A. All parcels of land exceeding two (2) acres in size that are to be used for residential, commercial or industrial development, shall, prior to the issuance of any building permit:
1. Be zoned for planned development;
 2. Obtain a planned development permit; and
 3. Obtain Development Review Board, or, on appeal, City Council approval.

Response: The subject site is ±12.8 acres in size and is proposed for residential development. This application includes annexation of the property to the City of Wilsonville, a Zoning Map Amendment to change Clackamas County Rural Residential Farm Forest 5-Acre (RRFF5) zone to the City of Wilsonville Residential Neighborhood (RN) zone, which is a Planned Development zone, and an application for Planned Development Review.

- B. Zone change and amendment to the zoning map are governed by the applicable provisions of the Zoning Sections, inclusive of Section 4.197.

Response: The requested Zoning Map Amendment is subject to the applicable provisions of the Zoning Sections and 4.197. These provisions are addressed further in the narrative.

- C. Development Review Board approval is governed by Sections 4.400 to 4.450
- D. All planned developments require a planned development permit. The planned development permit review and approval process consists of the following multiple stages, the last two or three of which can be combined at the request of the applicant:
1. Pre-application conference with Planning Department;
 2. Preliminary (Stage I) review by the Development Review Board. When a zone change is necessary, application for such change shall be made simultaneously with an application for preliminary approval to the Board; and
 3. Final (Stage II) review by the Development Review Board
 4. In the case of a zone change and zone boundary amendment, City Council approval is required to authorize a Stage I preliminary plan.

Response: A pre-application conference was held with the Planning Department on December 12, 2019. Concurrent Zoning Map Amendment, and Stage I and Stage II Planned Development permit applications (and a number of additional concurrent applications) have been submitted for review by the Development Review Board.

[...]

(.07) Preliminary Approval (Stage One):

A. Applications for preliminary approval for planned developments shall:

1. Be made by the owner of all affected property or the owner's authorized agent; and
2. Be filed on a form prescribed by the City Planning Department and filed with said Department.
3. Set forth the professional coordinator and professional design team as provided in subsection (.04), above.
4. State whether the development will include mixed land uses, and if so, what uses and in what proportions and locations.

Response: This submittal includes all of the above information.

B. The application shall include conceptual and quantitatively accurate representations of the entire development sufficient to judge the scope, size, and impact of the development on the community; and, in addition to the requirements set forth in Section 4.035, shall be accompanied by the following information:

1. A boundary survey or a certified boundary description by a registered engineer or licensed surveyor.
2. Topographic information as set forth in Section 4.035
3. A tabulation of the land area to be devoted to various uses, and a calculation of the average residential density per net acre.
4. A stage development schedule demonstrating that the developer intends receive Stage II approval within two (2) years of receiving Stage I approval, and to commence construction within two (2) years after the approval of the final development plan, and will proceed diligently to completion; unless a phased development schedule has been approved; in which case adherence to that schedule shall be considered to constitute diligent pursuit of project completion.
5. A commitment by the applicant to provide in the Final Approval (Stage II) a performance bond or other acceptable security for the capital improvements required by the project.
6. If it is proposed that the final development plan will be executed in stages, a schedule thereof shall be provided.
7. Statement of anticipated waivers from any of the applicable site development standards.

Response: A boundary survey including topographic information is provided in the Preliminary Existing Conditions Plan (Exhibit A). A tabulation of land area and residential density is included in Table 1 within this narrative. Stage I and Stage II approvals are being requested concurrently, and a stage development schedule is not proposed.

[...]

(.09) Final Approval (Stage Two):

[Note: Outline Number is incorrect.]

- A. Unless an extension has been granted by the Development Review Board, within two (2) years after the approval or modified approval of a preliminary development plan (Stage I), the applicant shall file with the City Planning Department a final plan for the entire development or when submission in stages has been authorized pursuant to Section 4.035 for the first unit of the development, a public hearing shall be held on each such application as provided in Section 4.013.

Response: A Stage II application has been submitted concurrently with the Stage I application.

- B. After such hearing, the Development Review Board shall determine whether the proposal conforms to the permit criteria set forth in this Code, and shall approve, conditionally approve, or disapprove the application.
- C. The final plan shall conform in all major respects with the approved preliminary development plan, and shall include all information included in the preliminary plan plus the following:
1. The location of water, sewerage and drainage facilities;
 2. Preliminary building and landscaping plans and elevations, sufficient to indicate the general character of the development;
 3. The general type and location of signs;
 4. Topographic information as set forth in Section 4.035;
 5. A map indicating the types and locations of all proposed uses; and
 6. A grading plan.

Response: The required information is included as follows in the Frog Pond Vista PUD Preliminary Plans (Exhibit A):

1. Preliminary Composite Utility Plan
2. Preliminary Landscape Plan
3. Preliminary Grading and Erosion Control Measures

Preliminary building elevations are included as Exhibit M. Sign locations and permits will be provided under a separate application.

- D. The final plan shall be sufficiently detailed to indicate fully the ultimate operation and appearance of the development or phase of development. However, Site Design Review is a separate and more detailed review of proposed design features, subject to the standards of Section 4.400.
- E. Copies of legal documents required by the Development Review Board for dedication or reservation of public facilities, or for the creation of a non-profit homeowner's association, shall also be submitted.

Response: Draft covenants, conditions & restrictions (CC&Rs) are included as Exhibit I.

[...]

- J. A planned development permit may be granted by the Development Review Board only if it is found that the development conforms to all the following criteria, as well as to the Planned Development Regulations in Section 4.140:
1. The location, design, size and uses, both separately and as a whole, are consistent with the Comprehensive Plan, and with any other

applicable plan, development map or Ordinance adopted by the City Council.

Response: The site is located within the Frog Pond West master planned area of the Frog Pond community. The Frog Pond West Master Plan has been incorporated into the Comprehensive Plan and designates the site for single-family residential use. Consistency with the Comprehensive Plan is addressed earlier in the narrative. The RN zone is identified as the implementing zone for the Residential Neighborhood (RN) Comprehensive Plan designation; this zone requires that all development within it be approved as a Planned Development.

2. That the location, design, size and uses are such that traffic generated by the development at the most probable used intersection(s) can be accommodated safely and without congestion in excess of Level of Service D, as defined in the Highway Capacity Manual published by the National Highway Research Board, on existing or immediately planned arterial or collector streets and will, in the case of commercial or industrial developments, avoid traversing local streets. Immediately planned arterial and collector streets are those listed in the City's adopted Capital Improvement Program, for which funding has been approved or committed, and that are scheduled for completion within two years of occupancy of the development or four year if they are an associated crossing, interchange, or approach street improvement to Interstate 5.
 - a. In determining levels of Service D, the City shall hire a traffic engineer at the applicant's expense who shall prepare a written report containing the following minimum information for consideration by the Development Review Board:
 - i. An estimate of the amount of traffic generated by the proposed development, the likely routes of travel of the estimated generated traffic, and the source(s) of information of the estimate of the traffic generated and the likely routes of travel; [Added by Ord. 561, adopted 12/15/03.]
 - ii. What impact the estimate generated traffic will have on existing level of service including traffic generated by (1) the development itself, (2) all existing developments, (3) Stage II developments approved but not yet built, and (4) all developments that have vested traffic generation rights under section 4.140(.10), through the most probable used intersection(s), including state and county intersections, at the time of peak level of traffic. This analysis shall be conducted for each direction of travel if backup from other intersections will interfere with intersection operations. [Amended by Ord 561, adopted 12/15/03.]
 - b. The following are exempt from meeting the Level of Service D criteria standard:
 - i. A planned development or expansion thereof which generates three (3) new p.m. peak hour traffic trips or less;

- ii. A planned development or expansion thereof which provides an essential governmental service.
- c. Traffic generated by development exempted under this subsection on or after Ordinance No. 463 was enacted shall not be counted in determining levels of service for any future applicant. [Added by Ord 561, adopted 12/15/03.]
- d. Exemptions under ‘b’ of this subsection shall not exempt the development or expansion from payment of system development charges or other applicable regulations. [Added by Ord 561, adopted 12/15/03.]
- e. In no case will development be permitted that creates an aggregate level of traffic at LOS “F”. ([Added by Ord 561, adopted 12/15/03.]

Response: DKS and Associates has conducted a Transportation Impact Study (TIS) to evaluate traffic impacts from the proposed development. It addresses the provisions above. Please refer to TIS (Exhibit E) for additional detail demonstrating that the project meets the above criteria.

- 3. That the location, design, size and uses are such that the residents or establishments to be accommodated will be adequately served by existing or immediately planned facilities and services.

Response: The site will be adequately served by public facilities and services, including utilities. The project will construct transportation infrastructure with site development and install sanitary sewer, potable water, stormwater drain, and dry utilities.

- L. Adherence to Approved Plan and Modification Thereof: The applicant shall agree in writing to be bound, for her/himself and her/his successors in interest, by the conditions prescribed for approval of a development. The approved final plan and stage development schedule shall control the issuance of all building permits and shall restrict the nature, location and design of all uses. Minor changes in an approved preliminary or final development plan may be approved by the Director of Planning if such changes are consistent with the purposes and general character of the development plan. All other modifications, including extension or revision of the stage development schedule, shall be processed in the same manner as the original application and shall be subject to the same procedural requirements.

Response: This requirement is acknowledged and understood.

- M. In the event of a failure to comply with the approved plan or any prescribed condition of approval, including failure to comply with the stage development schedule, the Development Review Board may, after notice and hearing, revoke a Planned Development permit. General economic conditions that affect all in a similar manner may be considered as a basis for an extension of a development schedule. The determination of the Board shall become final thirty (30) days after the date of decision unless appealed to the City Council.

Response: This requirement is acknowledged and understood.

(.10) Early Vesting of Traffic Generation. [...]

Response: No early vesting of traffic generation is requested. This standard is not applicable.

CHAPTER 4. GENERAL DEVELOPMENT REGULATIONS

Section 4.154 ON-SITE PEDESTRIAN ACCESS AND CIRCULATION

(.01) On-site Pedestrian Access and Circulation

- A. The purpose of this section is to implement the pedestrian access and connectivity policies of the Transportation System Plan. It is intended to provide for safe, reasonably direct, and convenient pedestrian access and circulation.
- B. Standards. Development shall conform to all of the following standards:
 - 1. Continuous Pathway System. A pedestrian pathway system shall extend throughout the development site and connect to adjacent sidewalks, and to all future phases of the development, as applicable.

Response: The project provides sidewalks along the frontages of all lots establishing a continuous pathway system throughout the community. In addition to the sidewalk system, the project provides a section of Boeckman Creek Regional Trail, which connects to the larger trail network.

- 2. Safe, Direct, and Convenient. Pathways within developments shall provide safe, reasonably direct, and convenient connections between primary building entrances and all adjacent parking areas, recreational areas/playgrounds, and public rights-of-way and crosswalks based on all of the following criteria:
 - a. Pedestrian pathways are designed primarily for pedestrian safety and convenience, meaning they are free from hazards and provide a reasonably smooth and consistent surface.
 - b. The pathway is reasonably direct. A pathway is reasonably direct when it follows a route between destinations that does not involve a significant amount of unnecessary out-of-direction travel.
 - c. The pathway connects to all primary building entrances and is consistent with the Americans with Disabilities Act (ADA) requirements.
 - d. All parking lots larger than three acres in size shall provide an internal bicycle and pedestrian pathway pursuant to Section 4.155(.03)(B.)(3.)(d.).

Response: The on-site pedestrian access and circulation system is generally consistent with Frog Pond West Master Plan Figure 18, Street Demonstration Plan, with minor modifications, as described in the response to WDC Section 4.127(.10) B. It provides safe, direct, and convenient connections both internally and to the surrounding street network.

- 3. Vehicle/Pathway Separation. Except as required for crosswalks, per subsection 4, below, where a pathway abuts a driveway or street it shall be vertically or horizontally separated from the vehicular lane. For example, a pathway may be vertically raised six inches above the abutting travel lane, or horizontally separated by a row of bollards.

Response: The proposed design vertically and/or horizontally separates all sidewalks and pathways from vehicle travel lanes except for private driveways and crosswalks.

- 4. Crosswalks. Where a pathway crosses a parking area or driveway, it shall be clearly marked with contrasting paint or paving materials

(e.g., pavers, light-color concrete inlay between asphalt, or similar contrast).

Response: The proposed pathways do not cross parking areas - this standard is not applicable.

5. Pathway Width and Surface. Primary pathways shall be constructed of concrete, asphalt, brick/masonry pavers, or other durable surface, and not less than five (5) feet wide. Secondary pathways and pedestrian trails may have an alternative surface except as otherwise required by the ADA.

Response: Pathway width and surfaces are planned to meet the requirements of Frog Pond West Master Plan and City of Wilsonville Public Works Standards.

6. All pathways shall be clearly marked with appropriate standard signs.

Response: The pedestrian pathways will be signed as required.

Section 4.155 GENERAL REGULATIONS - PARKING, LOADING AND BICYCLE PARKING

[...]

- G. Table[s] 5 shall be used to determine the minimum and maximum parking standards for various land uses. The minimum number of required parking spaces shown on Tables 5 shall be determined by rounding to the nearest whole parking space. Structured parking and on-street parking are exempted from the parking maximums in Table 5. [Amended by Ordinance No. 538, 2/21/02.]

Response: Table 5 requires that single-family units provide 1 parking space per dwelling unit. There is no maximum number listed. Each lot will accommodate a single-family home with a two-car garage and a driveway. Dimensional standards will be reviewed during building permit submittal.

(.04) Bicycle Parking:

A. Required Bicycle Parking - General Provisions.

1. The required minimum number of bicycle parking spaces for each use category is shown in Table 5, Parking Standards.[...]

Response: Table 5 states that there is no minimum bicycle parking requirement for single-family homes.

Section 4.167 GENERAL REGULATIONS - ACCESS, INGRESS AND EGRESS

- (.01) Each access onto streets or private drives shall be at defined points as approved by the City and shall be consistent with the public's health, safety and general welfare. Such defined points of access shall be approved at the time of issuance of a building permit if not previously determined in the development permit. [Amended by Ord. 682, 9/9/10]

Response: Driveways will be shown on construction drawings and will be approved at the time of building permit issuance.

Section 4.171 GENERAL REGULATIONS - PROTECTION OF NATURAL FEATURES AND OTHER RESOURCES

- (.02) General Terrain Preparation:

-
- A. All developments shall be planned, designed, constructed and maintained with maximum regard to natural terrain features and topography, especially hillside areas, floodplains, and other significant landforms.
 - B. All grading, filling and excavating done in connection with any development shall be in accordance with the Uniform Building Code
 - C. In addition to any permits required under the Uniform Building Code, all developments shall be planned, designed, constructed and maintained so as to:
 - 1. Limit the extent of disturbance of soils and site by grading, excavation and other land alterations.
 - 2. Avoid substantial probabilities of: (1) accelerated erosion; (2) pollution, contamination, or siltation of lakes, rivers, streams and wetlands; (3) damage to vegetation; (4) injury to wildlife and fish habitats.
 - 3. Minimize the removal of trees and other native vegetation that stabilize hillsides, retain moisture, reduce erosion, siltation and nutrient runoff, and preserve the natural scenic character.

Response: Frog Pond Vista was designed to avoid the natural features on the site and preserve SROZ area. As demonstrated in the Preliminary Plans (Exhibit A), grading, filling, and excavating will be conducted in accordance with the Uniform Building code. The site will be protected with erosion control measures. Where removal of trees is necessary for the construction of homes and public streets, replacement trees will be planted per the provisions of this code.

(.03) Hillsides: All developments proposed on slopes greater than 25% shall be limited to the extent that: [...]

Response: The project side does not contain slopes greater than 25%.

(.04) Trees and Wooded Areas.

- A. All developments shall be planned, designed, constructed and maintained so that:
 - 1. Existing vegetation is not disturbed, injured, or removed prior to site development and prior to an approved plan for circulation, parking and structure location.
 - 2. Existing wooded areas, significant clumps/groves of trees and vegetation, and all trees with a diameter at breast height of six inches or greater shall be incorporated into the development plan and protected wherever feasible.
 - 3. Existing trees are preserved within any right-of-way when such trees are suitably located, healthy, and when approved grading allows.
- B. Trees and woodland areas to be retained shall be protected during site preparation and construction according to City Public Works design specifications, by:
 - 1. Avoiding disturbance of the roots by grading and/or compacting activity.
 - 2. Providing for drainage and water and air filtration to the roots of trees which will be covered with impermeable surfaces.

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3. Requiring, if necessary, the advisory expertise of a registered arborist/horticulturist both during and after site preparation.
 4. Requiring, if necessary, a special maintenance, management program to insure survival of specific woodland areas of specimen trees or individual heritage status trees.

Response: Existing vegetation will not be disturbed, injured, or removed prior to land use and permit approvals. Existing trees have been retained wherever possible. As shown on the Preliminary Tree Preservation and Removal Plan (Exhibit A), the project preserves 34 mature on-site trees and two line trees, including three Oregon White Oaks and one Ponderosa Pine. Trees identified to be retained will be protected during site preparation and construction according to the City Public Works design specifications as outlined in the Arborist Report and Conditions of Approval.

(.05) High Voltage Powerline Easements and Rights of Way and Petroleum Pipeline Easements:

- A. Due to the restrictions placed on these lands, no residential structures shall be allowed within high voltage powerline easements and rights of way and petroleum pipeline easements, and any development, particularly residential, adjacent to high voltage powerline easements and rights of way and petroleum pipeline easements shall be carefully reviewed.
- B. Any proposed non-residential development within high voltage powerline easements and rights of way and petroleum pipeline easements shall be coordinated with and approved by the Bonneville Power Administration, Portland General Electric Company or other appropriate utility, depending on the easement or right of way ownership.

Response: The project site does not contain such easements.

(.07) Standards for Earth Movement Hazard Areas:

- A. No development or grading shall be allowed in areas of land movement, slump or earth flow, and mud or debris flow, except under one of the following conditions:
 1. Stabilization of the identified hazardous condition based on established and proven engineering techniques which ensure protection of public and private property. Appropriate conditions of approval may be attached by the City.
 2. An engineering geologic study approved by the City establishing that the site is stable for the proposed use and development. The study shall include the following:
 - a. Index map.
 - b. Project description, to include: location; topography, drainage, vegetation; discussion of previous work; and discussion of field exploration methods.
 - c. Site geology, to include: site geologic map; description of bedrock and superficial materials including artificial fill; location of any faults, folds, etc.; and structural data including bedding, jointing, and shear zones.
 - d. Discussion and analysis of any slope stability problems.
 - e. Discussion of any off-site geologic conditions that may pose a potential hazard to the site or that may be affected by on-site development.

- f. Suitability of site for proposed development from geologic standpoint.
 - g. Specific recommendations for cut slope stability, seepage and drainage control, or other design criteria to mitigate geologic hazards.
 - h. Supportive data, to include: cross sections showing subsurface structure; graphic logs of subsurface explorations; results of laboratory tests; and references.
 - i. Signature and certification number of engineering geologist registered in the State of Oregon.
 - j. Additional information or analyses as necessary to evaluate the site.
- B. Vegetative cover shall be maintained or established for stability and erosion control purposes.
 - C. Diversion of storm water into these areas shall be prohibited.
 - D. The principal source of information for determining earth movement hazards is the State Department of Geology and Mineral Industries (DOGAMI) Bulletin 99 and any subsequent bulletins and accompanying maps. Approved site specific engineering geologic studies shall be used to identify the extent and severity of the hazardous conditions on the site, and to update the earth movement hazards database.

Response: Geotechnical investigation has been completed for the subject property, please refer to the Exhibit H. The report concludes that the proposed project is geotechnically feasible with the recommendations of the report incorporated into the design and construction of the project.

(.08) Standards for Soil Hazard Areas:

- A. Appropriate siting and design safeguards shall insure structural stability and proper drainage of foundation and crawl space areas for development on land with any of the following soil conditions: wet or high water table; high shrink-swell capability; compressible or organic; and shallow depth-to-bedrock.
- B. The principal source of information for determining soil hazards is the State DOGAMI Bulletin 99 and any subsequent bulletins and accompanying maps. Approved site-specific soil studies shall be used to identify the extent and severity of the hazardous conditions on the site, and to update the soil hazards database accordingly.

Response: Geotechnical investigation has been completed by a qualified engineering geologist for the subject property, please refer to the Exhibit H. According to the geotechnical report, the proposed project is geotechnically feasible, provided that the recommendations of the report are incorporated into the design and construction phases of the project.

(.09) Historic Protection: Purpose:

- A. To preserve structures, sites, objects, and areas within the City of Wilsonville having historic, cultural, or archaeological significance.

Response: No historic, cultural, or archaeological items have been identified on the site.

Section 4.175 PUBLIC SAFETY AND CRIME PREVENTION.

- (.01) All developments shall be designed to deter crime and ensure public safety.

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- (.02) Addressing and directional signing shall be designed to assure identification of all buildings and structures by emergency response personnel, as well as the general public.
 - (.03) Areas vulnerable to crime shall be designed to allow surveillance. Parking and loading areas shall be designed for access by police in the course of routine patrol duties.
 - (.04) Exterior lighting shall be designed and oriented to discourage crime.

Response: The Frog Pond Vista community has been designed to deter crime and ensure public safety. Streets and pedestrian connections will be lit for visibility and safety. Homes will be oriented toward these streets to provide “eyes on the street.” All dwellings will be addressed per Building and Fire Department requirements to allow identification for emergency response personnel. No parking and loading areas are proposed. Dwellings will have exterior porch lighting, which will support the streetlights to provide safety and visibility. These standards are met.

Section 4.176 LANDSCAPING, SCREENING, AND BUFFERING

(.02) Landscaping and Screening Standards.

[...]

C. General Landscaping Standard.

1. Intent. The General Landscaping Standard is a landscape treatment for areas that are generally open. It is intended to be applied in situations where distance is used as the principal means of separating uses or developments and landscaping is required to enhance the intervening space. Landscaping may include a mixture of ground cover, evergreen and deciduous shrubs, and coniferous and deciduous trees.
2. Required materials. Shrubs and trees, other than street trees, may be grouped. Ground cover plants must fully cover the remainder of the landscaped area (see Figure 21: General Landscaping). The General Landscaping Standard has two different requirements for trees and shrubs:
 - a. Where the landscaped area is less than 30 feet deep, one tree is required for every 30 linear feet.
 - b. Where the landscaped area is 30 feet deep or greater, one tree is required for every 800 square feet and two high shrubs or three low shrubs are required for every 400 square feet.

[...]

Response: Frog Pond Vista PUD consists of single-family residences generally subject to the General Landscape Standard. The community is surrounded by other residential uses and natural open space and is therefore not required to provide any special screening.

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- (.03) Landscape Area. Not less than fifteen percent (15%) of the total lot area, shall be landscaped with vegetative plant materials. The ten percent (10%) parking area landscaping required by section 4.155.03(B)(1) is included in the fifteen percent (15%) total lot landscaping requirement. Landscaping shall be located in at least three separate and distinct areas of the lot, one of which must be in the contiguous frontage area. Planting areas shall be encouraged adjacent to structures. Landscaping shall be used to define, soften or screen the appearance of buildings and off-street parking areas. Materials to be installed shall achieve a balance between various plant forms, textures, and heights. The installation of native plant materials shall be used whenever practicable. (For recommendations refer to the Native Plant List maintained by the City of Wilsonville). [Amended by Ord. # 674 11/16/09]

Response:

As shown on the Preliminary Landscape Plan (Exhibit A), the project provides attractive landscaping within public rights-of-way and open space tracts. Landscaping on individual private lots will be reviewed at the time of building permit submittal. There are no parking areas.

[...]

(.06) Plant Materials.

A. Shrubs and Ground Cover. All required ground cover plants and shrubs must be of sufficient size and number to meet these standards within three (3) years of planting. Non-horticultural plastic sheeting or other impermeable surface shall not be placed under mulch. Native topsoil shall be preserved and reused to the extent feasible. Surface mulch or bark dust are to be fully raked into soil of appropriate depth, sufficient to control erosion, and are confined to areas around plantings. Areas exhibiting only surface mulch, compost or barkdust are not to be used as substitutes for plant areas. [Amended by Ord. # 674 11/16/09]

1. Shrubs. All shrubs shall be well branched and typical of their type as described in current AAN Standards and shall be equal to or better than 2-gallon containers and 10" to 12" spread.
2. Ground cover. Shall be equal to or better than the following depending on the type of plant materials used: gallon containers spaced at 4 feet on center minimum, 4" pot spaced 2 feet on center minimum, 2-1/4" pots spaced at 18 inch on center minimum. No bare root planting shall be permitted. Ground cover shall be sufficient to cover at least 80% of the bare soil in required landscape areas within three (3) years of planting. Where wildflower seeds are designated for use as a ground cover, the City may require annual re-seeding as necessary.
3. Turf or lawn in non-residential developments. Shall not be used to cover more than ten percent (10%) of the landscaped area, unless specifically approved based on a finding that, due to site conditions and availability of water, a larger percentage of turf or lawn area is appropriate. Use of lawn fertilizer shall be discouraged. Irrigation drainage runoff from lawns shall be retained within lawn areas.
4. Plant materials under trees or large shrubs. Appropriate plant materials shall be installed beneath the canopies of trees and large shrubs to avoid the appearance of bare ground in those locations.
5. Integrate compost-amended topsoil in all areas to be landscaped, including lawns, to help detain runoff, reduce irrigation and fertilizer needs, and create a sustainable, low-maintenance landscape. [Added by Ord. # 674 11/16/09]

Response: As demonstrated on the Preliminary Landscape Plan (Exhibit A), the project complies with the above requirements.

- B. Trees. All trees shall be well-branched and typical of their type as described in current American Association of Nurserymen (AAN) Standards and shall be balled and burlapped. The trees shall be grouped as follows:
1. Primary trees which define, outline or enclose major spaces, such as Oak, Maple, Linden, and Seedless Ash, shall be a minimum of 2" caliper.
 2. Secondary trees which define, outline or enclose interior areas, such as Columnar Red Maple, Flowering Pear, Flame Ash, and Honeylocust, shall be a minimum of 1-3/4" to 2" caliper.
 3. Accent trees which, are used to add color, variation and accent to architectural features, such as Flowering Pear and Kousa Dogwood, shall be 1-3/4" minimum caliper.
 4. Large conifer trees such as Douglas Fir or Deodar Cedar shall be installed at a minimum height of eight (8) feet.
 5. Medium-sized conifers such as Shore Pine, Western Red Cedar or Mountain Hemlock shall be installed at a minimum height of five to six (5 to 6) feet.

Response: The Preliminary Landscape Plan (Exhibit A) addresses these requirements.

- D. Street Trees. In order to provide a diversity of species, the Development Review Board may require a mix of street trees throughout a development. Unless the Board waives the requirement for reasons supported by a finding in the record, different types of street trees shall be required for adjoining blocks in a development.
1. All trees shall be standard base grafted, well branched and typical of their type as described in current AAN Standards and shall be balled and burlapped (b&b). Street trees shall be planted at sizes in accordance with the following standards:
 - a. Arterial streets - 3" minimum caliper
 - b. Collector streets - 2" minimum caliper.
 - c. Local streets or residential private access drives - 1-3/4" minimum caliper. [Amended by Ord. 682, 9/9/10]
 2. The following trees and varieties thereof are considered satisfactory street trees in most circumstances; however, other varieties and species are encouraged and will be considered:
 - a. Trees over 50 feet mature height: Quercus garryana (Native Oregon White Oak), Quercus rubra borealis (Red Oak), Acer Macrophyllum (Native Big Leaf Maple), Acer nigrum (Green Column Black Maple), Fraxinus americanus (White Ash), Fraxinus pennsylvannica 'Marshall' (Marshall Seedless Green Ash), Quercus coccinea (Scarlet Oak), Quercus pulustris (Pin Oak), Tilia americana (American Linden).
 - b. Trees under 50 feet mature height: Acer rubrum (Red Sunset Maple), Cornus nuttallii (Native Pacific Dogwood), Gleditsia triacanthos (Honey Locust), Pyrus calleryana 'Bradford' (Bradford Pear), Tilia cordata (Little Leaf Linden), Fraxinus oxycarpa (Flame Ash).
 - c. Other street tree species. Other species may be specified for use in certain situations. For instance, evergreen species

may be specified where year-round color is desirable and no adverse effect on solar access is anticipated. Water-loving species may be specified in low locations where wet soil conditions are anticipated. [Section 4.176(.06)(D.) amended by Ordinance No. 538, 2/21/02.]

d. Accent or median tree -1-3/4” minimum caliper.

Response: The project provides a mix of five different street tree species, which were selected in conformance with the Frog Pond West Master Plan Figure 43, Street Tree Plan, and Table 2, Street Tree List. Please refer to the Preliminary Landscape Plan (Exhibit A) for details on the proposed street tree species, sizes and locations.

E. Types of Plant Species.

1. Existing landscaping or native vegetation may be used to meet these standards, if protected and maintained during the construction phase of the development and if the plant species do not include any that have been listed by the City as prohibited. The existing native and nonnative vegetation to be incorporated into the landscaping shall be identified.
2. Selection of plant materials. Landscape materials shall be selected and sited to produce hardy and drought-tolerant landscaping. Selection shall be based on soil characteristics, maintenance requirements, exposure to sun and wind, slope and contours of the site, and compatibility with other vegetation that will remain on the site. Suggested species lists for street trees, shrubs and groundcovers shall be provided by the City of Wilsonville.
3. Prohibited plant materials. The City may establish a list of plants that are prohibited in landscaped areas. Plants may be prohibited because they are potentially damaging to sidewalks, roads, underground utilities, drainage improvements, or foundations, or because they are known to be invasive to native vegetation.

[Section 4.176(.06)(E.) amended by Ordinance No. 538, 2/21/02.]

Response: As shown on the Preliminary Landscape Plan (Exhibit A), the proposed landscape materials include a mix of approved trees, shrubs, and groundcovers. No prohibited plant materials are proposed.

F. Tree Credit.

Existing trees that are in good health as certified by an arborist and are not disturbed during construction may count for landscaping tree credit as follows (measured at four and one-half feet above grade and rounded to the nearest inch):

Existing trunk diameter	Number of Tree Credits
18 to 24 inches in diameter	3 tree credits
25 to 31 inches in diameter	4 tree credits
32 inches or greater	5 tree credits

1. It shall be the responsibility of the owner to use reasonable care to maintain preserved trees. Trees preserved under this section may only be removed if an application for removal permit under Section 4.610.10(01)(H) has been approved. Required mitigation for removal shall be replacement with the number of trees credited to the preserved and removed tree.

2. Within five years of occupancy and upon notice from the City, the property owner shall replace any preserved tree that cannot be maintained due to disease or damage, or hazard or nuisance as defined in Chapter 6 of this code. The notice shall be based on complete information provided by an arborist. Replacement with the number of trees credited shall occur within one (1) growing season of notice.

Response: As shown on the Preliminary Tree Preservation and Removal Plan (Exhibit A), 34 trees are planned to be preserved onsite. Out of those 34 trees, 26 trees have existing trunk diameter of 18 inches and greater and can count for 100 replacement tree credits.

Table 3. Tree Credits Calculation.

Tag #	Existing Trunk Diameter	Number of Tree Credits
12262	45"	5
20713	18"	3
20714	25"	4
20715	25"	4
40246	25"	4
40269	21"	3
40300	23"	3
40303	20"	3
40309	26"	4
40334	26"	4
40335	33"	5
40336	33"	5
40337	19"	3
40338	19"	3
40339	31"	4
40340	51"	5
40344	20"	3
40345	39"	5
40346	18"	3
40347	19"	3
40348	33"	5
40349	24"	3
40350	24"	3
40400	57"	5
40419	19"	3
50000	37"	5
Total:		100

(.07) Installation and Maintenance.

- A. **Installation.** Plant materials shall be installed to current industry standards and shall be properly staked to assure survival. Support devices (guy wires, etc.) shall not be allowed to interfere with normal pedestrian or vehicular movement.
- B. **Maintenance.** Maintenance of landscaped areas is the on-going responsibility of the property owner. Any landscaping installed to meet the requirements of this Code, or any condition of approval established by a City decision-making body acting on an application, shall be continuously maintained in a healthy,

vital and acceptable manner. Plants that die are to be replaced in kind, within one growing season, unless appropriate substitute species are approved by the City. Failure to maintain landscaping as required in this Section shall constitute a violation of this Code for which appropriate legal remedies, including the revocation of any applicable land development permits, may result.

- C. Irrigation. The intent of this standard is to assure that plants will survive the critical establishment period when they are most vulnerable due to a lack of watering and also to assure that water is not wasted through unnecessary or inefficient irrigation. Approved irrigation system plans shall specify one of the following:
1. A permanent, built-in, irrigation system with an automatic controller. Either a spray or drip irrigation system, or a combination of the two, may be specified.
 2. A permanent or temporary system designed by a landscape architect licensed to practice in the State of Oregon, sufficient to assure that the plants will become established and drought-tolerant.
 3. Other irrigation system specified by a licensed professional in the field of landscape architecture or irrigation system design.
 4. A temporary permit issued for a period of one year, after which an inspection shall be conducted to assure that the plants have become established. Any plants that have died, or that appear to the Planning Director to not be thriving, shall be appropriately replaced within one growing season. An inspection fee and a maintenance bond or other security sufficient to cover all costs of replacing the plant materials shall be provided, to the satisfaction of the Community Development Director. Additionally, the applicant shall provide the City with a written license or easement to enter the property and cause any failing plant materials to be replaced.
- D. Protection. All required landscape areas, including all trees and shrubs, shall be protected from potential damage by conflicting uses or activities including vehicle parking and the storage of materials.

Response: As detailed in note # 5 on the Preliminary Landscape Plan (Exhibit A), all landscape areas will be watered by a fully automatic underground irrigation system. These standards are met.

(.09) Landscape Plans. Landscape plans shall be submitted showing all existing and proposed landscape areas. Plans must be drawn to scale and show the type, installation size, number and placement of materials. Plans shall include a plant material list. Plants are to be identified by both their scientific and common names. The condition of any existing plants and the proposed method of irrigation are also to be indicated. Landscape plans shall divide all landscape areas into the following categories based on projected water consumption for irrigation:

- A. High water usage areas (+/- two (2) inches per week): small convoluted lawns, lawns under existing trees, annual and perennial flower beds, and temperamental shrubs;
- B. Moderate water usage areas (+/- one (1) inch per week): large lawn areas, average water-using shrubs, and trees;
- C. Low water usage areas (Less than one (1) inch per week, or gallons per hour): seeded fieldgrass, swales, native plantings, drought-tolerant shrubs, and ornamental grasses or drip irrigated areas.

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- D. Interim or unique water usage areas: areas with temporary seeding, aquatic plants, erosion control areas, areas with temporary irrigation systems, and areas with special water-saving features or water harvesting irrigation capabilities. These categories shall be noted in general on the plan and on the plant material list.

Response: A Preliminary Landscape Plan is included in the Frog Pond Vista PUD Preliminary Plans (Exhibit A). Individual lot landscaping will be reviewed at the time of building permit submittal.

- (.10) Completion of Landscaping. The installation of plant materials may be deferred for a period of time specified by the Board or Planning Director acting on an application, in order to avoid hot summer or cold winter periods, or in response to water shortages. In these cases, a temporary permit shall be issued, following the same procedures specified in subsection (.07)(C)(3), above, regarding temporary irrigation systems. No final Certificate of Occupancy shall be granted until an adequate bond or other security is posted for the completion of the landscaping, and the City is given written authorization to enter the property and install the required landscaping, in the event that the required landscaping has not been installed. The form of such written authorization shall be submitted to the City Attorney for review.

Response: No deferral is requested at this time but may be requested in the future subject to the scenarios above. This requirement is acknowledged.

- (.11) Street Trees Not Typically Part of Site Landscaping. Street trees are not subject to the requirements of this Section and are not counted toward the required standards of this Section. Except, however, that the Development Review Board may, by granting a waiver or variance, allow for special landscaping within the right-of-way to compensate for a lack of appropriate on-site locations for landscaping. See subsection (.06), above, regarding street trees.

Response: No waiver or variance for on-site landscaping is requested. This standard is not applicable.

- (.12) Mitigation and Restoration Plantings. A mitigation plan is to be approved by the City's Development Review Board before the destruction, damage, or removal of any existing native plants. Plantings intended to mitigate the loss of native vegetation are subject to the following standards. Where these standards conflict with other requirements of this Code, the standards of this Section shall take precedence. The desired effect of this section is to preserve existing native vegetation.

- A. Plant Sources. Plant materials are to be native and are subject to approval by the City. They are to be non-clonal in origin; seed source is to be as local as possible, and plants must be nursery propagated or taken from a pre-approved transplantation area. All of these requirements are to be addressed in any proposed mitigation plan.
- B. Plant Materials. The mitigation plan shall specify the types and installation sizes of plant materials to be used for restoration. Practices such as the use of pesticides, fungicides, and fertilizers shall not be employed in mitigation areas unless specifically authorized and approved.
- C. Installation. Install native plants in suitable soil conditions. Plant materials are to be supported only when necessary because of extreme winds at the site. Where support is necessary, all stakes, guy wires or other measures are to be removed as soon as the plants can support themselves. Protect from animal and fowl predation and foraging until establishment.
- D. Irrigation. Permanent irrigation systems are generally not appropriate in restoration situations, and manual or temporary watering of new plantings is often necessary. The mitigation plan shall specify the method and frequency

of manual watering, including any that may be necessary after the first growing season.

- E. **Monitoring and Reporting.** Monitoring of native landscape areas is the on-going responsibility of the property owner. Plants that die are to be replaced in kind and quantity within one year. Written proof of the survival of all plants shall be required to be submitted to the City's Planning Department one year after the planting is completed.

[Section 4.176 amended by Ordinance No. 812, 2/22/18]

Response: As shown on the Preliminary Existing Condition Plan (Exhibit A), the site is currently in residential and agricultural use, and site plantings consist primarily of grass and clustered trees primarily around the perimeter of the site. The existing grass and several trees will be removed during construction to accommodate the planned street network and desired lot pattern. Tree removal will be mitigated as detailed in the Preliminary Tree Preservation and Removal Plan and Preliminary Landscape Plan (Exhibit A).

Section 4.177 STREET IMPROVEMENT STANDARDS

- (.01) **Development and related public facility improvements shall comply with the standards in this section, the Wilsonville Public Works Standards, and the Transportation System Plan, in rough proportion to the potential impacts of the development. Such improvements shall be constructed at the time of development or as provided by Section 4.140, except as modified or waived by the City Engineer for reasons of safety or traffic operations.**

Response: The proposed public facility improvements are designed to comply with the standards in this section, the Wilsonville Public Works Standards, and the Transportation System Plan as modified by the Frog Pond Master Plan and as approved by the City Engineer. Final approval will occur with review and issuance of the Public Works construction permit. Please refer to the Preliminary Street Plan (Exhibit A) for the proposed street improvements. The project will provide payment of the required in-lieu fees for transportation impacts on specified off-site transportation improvements.

- (.02) **Street Design Standards.**

- A. **All street improvements and intersections shall provide for the continuation of streets through specific developments to adjoining properties or subdivisions.**

- 1. **Development shall be required to provide existing or future connections to adjacent sites through the use of access easements where applicable. Such easements shall be required in addition to required public street dedications as required in Section 4.236(.04).**

Response: As shown on the Preliminary Street Plan (Exhibit A), the project provides for the continuation of street to the adjoining properties.

- B. **The City Engineer shall make the final determination regarding right-of-way and street element widths using the ranges provided in Chapter 3 of the Transportation System Plan and the additional street design standards in the Public Works Standards.**

Response: The proposed streets are designed to the standards of Frog Pond West Master Plan and meet the requirements of the TSP and Public Works Standards.

- C. **Rights-of-way.**

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1. Prior to issuance of a Certificate of Occupancy Building permits or as a part of the recordation of a final plat, the City shall require dedication of rights-of-way in accordance with the Transportation System Plan. All dedications shall be recorded with the County Assessor's Office.
 2. The City shall also require a waiver of remonstrance against formation of a local improvement district, and all non-remonstrances shall be recorded in the County Recorder's Office as well as the City's Lien Docket, prior to issuance of a Certificate of Occupancy Building Permit or as a part of the recordation of a final plat.
 3. In order to allow for potential future widening, a special setback requirement shall be maintained adjacent to all arterial streets. The minimum setback shall be 55 feet from the centerline or 25 feet from the right-of-way designated on the Master Plan, whichever is greater.

Response: Required public right-of-way will be dedicated to the City on the final plat. Please refer to the Preliminary Dimensioned PUD Plan (Exhibit A) for proposed street dedications.

- D. **Dead-end Streets.** New dead-end streets or cul-de-sacs shall not exceed 200 feet in length, unless the adjoining land contains barriers such as existing buildings, railroads or freeways, or environmental constraints such as steep slopes, or major streams or rivers, that prevent future street extension and connection. A central landscaped island with rainwater management and infiltration are encouraged in cul-de-sac design. No more than 25 dwelling units shall take access to a new dead-end or cul-de-sac street unless it is determined that the traffic impacts on adjacent streets will not exceed those from a development of 25 or fewer units. All other dimensional standards of dead-end streets shall be governed by the Public Works Standards. Notification that the street is planned for future extension shall be posted on the dead-end street. [Amended by Ord. # 674 11/16/09]

Response: SW Trillium Court is the only dead-end street proposed within the project. It provides access to four lots. A 120-foot hammerhead turn-around meeting the standards of TVF&R and Figure 28 of Frog Pond West Master Plan ("Hammerhead" diagram) is provided. Trillium Court is approximately 300 feet in length due to a number of physical site constraints that prevent a full street connection; therefore, the Applicant is requesting an exception to the maximum 200-foot length standard. As discussed earlier in the narrative in the findings to Block, Access, and Connectivity standards in Section 4.127(.10)B, a full street connection on Trillium Court is not feasible due to the intersection spacing requirements on Willow Creek, which is a Collector classified roadway; therefore, Trillium Court must end in a dead-end. Additionally, there is a curve on Willow Creek just north of Trillium, which would pose visibility issues if this were a four-way intersection. The Applicant has worked closely with City Engineering and Planning staff, and the proposed Trillium Court configuration was agreed to be the safest and environmentally superior design. Therefore, staff can make a finding that the land barriers and environmental constraints (in the form of a mature oak tree grove that is being preserved by the curve in Willow Creek Drive through the Applicant's property) are consistent with the Code provisions for an exception to this standard.

- E. **Corner or clear vision area.**

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1. A clear vision area which meets the Public Works Standards shall be maintained on each corner of property at the intersection of any two streets, a street and a railroad or a street and a driveway. However, the following items shall be exempt from meeting this requirement:
 - a. Light and utility poles with a diameter less than 12 inches.
 - b. Trees less than 6" d.b.h., approved as a part of the Stage II Site Design, or administrative review.
 - c. Except as allowed by b., above, an existing tree, trimmed to the trunk, 10 feet above the curb.
 - d. Official warning or street sign.
 - e. Natural contours where the natural elevations are such that there can be no cross visibility at the intersection and necessary excavation would result in an unreasonable hardship on the property owner or deteriorate the quality of the site.

Response: Clear vision areas will be maintained at the intersections, as required above.

- F. Vertical clearance - a minimum clearance of 12 feet above the pavement surface shall be maintained over all streets and access drives.

Response: Vertical clearances will be maintained at all streets and access drives, as required – please refer to Landscape Note # 5 on the Preliminary Landscape Plan (Exhibit A).

- G. Interim improvement standard. It is anticipated that all existing streets, except those in new subdivisions, will require complete reconstruction to support urban level traffic volumes. However, in most cases, existing and short-term projected traffic volumes do not warrant improvements to full Master Plan standards. Therefore, unless otherwise specified by the Development Review Board, the following interim standards shall apply.

[...]

Response: This project is a new subdivision. The Interim Improvement standards do not apply.

(.03) Sidewalks. Sidewalks shall be provided on the public street frontage of all development. Sidewalks shall generally be constructed within the dedicated public right-of-way, but may be located outside of the right-of-way within a public easement with the approval of the City Engineer.

- A. Sidewalk widths shall include a minimum through zone of at least five feet. The through zone may be reduced pursuant to variance procedures in Section 4.196, a waiver pursuant to Section 4.118, or by authority of the City Engineer for reasons of traffic operations, efficiency, or safety.
- B. Within a Planned Development, the Development Review Board may approve a sidewalk on only one side. If the sidewalk is permitted on just one side of the street, the owners will be required to sign an agreement to an assessment in the future to construct the other sidewalk if the City Council decides it is necessary.

Response: As shown on the Preliminary Street Plan (Exhibit A), all sidewalks within Frog Pond Vista are at least 5 feet wide. No adjustments are requested. Sidewalks are proposed within the dedicated public right-of-way. In those instances where they are located outside of the right-of-way in order to accommodate stormwater swales, a public sidewalk easement is proposed, as shown on the Preliminary Dimensioned PUD Plan (Exhibit A). Sidewalks are proposed on both sides of all streets.

(.04) **Bicycle Facilities.** Bicycle facilities shall be provided to implement the Transportation System Plan, and may include on-street and off-street bike lanes, shared lanes, bike boulevards, and cycle tracks. The design of on-street bicycle facilities will vary according to the functional classification and the average daily traffic of the facility.

Response: The proposed street cross-sections shown on the Preliminary Street Cross Sections Plan comply with the street classifications and cross-sections identified in the Frog Pond West Master Plan. These standards are met.

(.05) **Multiuse Pathways.** Pathways may be in addition to, or in lieu of, a public street. Paths that are in addition to a public street shall generally run parallel to that street, and shall be designed in accordance with the Public Works Standards or as specified by the City Engineer. Paths that are in lieu of a public street shall be considered in areas only where no other public street connection options are feasible and are subject to the following standards.

- A. Paths shall be located to provide a reasonably direct connection between likely pedestrian and bicyclist destinations. Additional standards relating to entry points, maximum length, visibility, and path lighting are provided in the Public Works Standards.
- B. To ensure ongoing access to and maintenance of pedestrian/bicycle paths, the City Engineer will require dedication of the path to the public and acceptance of the path by the City as public right-of-way; or creation of a public access easement over the path.

Response: The project will construct a pedestrian connection in Tract C, a section of Boeckman Creek Regional Trail through the onsite natural area on the western edge of the site, and a trailhead connection to Boeckman Creek Trail. The trail is designed in accordance with the regional trail standards outlined in Frog Pond West Master Plan Figure 32. As shown on the Preliminary Subdivision Plat, a public access easement is provided over the trail.

(.06) **Transit Improvements**

Development on sites that are adjacent to or incorporate major transit streets shall provide improvements as described in this section to any bus stop located along the site's frontage, unless waived by the City Engineer for reasons of safety or traffic operations. Transit facilities include bus stops, shelters, and related facilities. Required transit facility improvements may include the dedication of land or the provision of a public easement.[...]

Response: The site is not adjacent to any transit routes. These standards are not applicable.

(.07) **Residential Private Access Drives.** Residential Private Access Drives shall meet the following standards:

- A. Residential Private Access Drives shall provide primary vehicular access to no more than four (4) dwelling units, excluding accessory dwelling units.

Response: No private access drives are proposed.

(.08) **Access Drive and Driveway Approach Development Standards.**

- A. An access drive to any proposed development shall be designed to provide a clear travel lane free from any obstructions.
- B. Access drive travel lanes shall be constructed with a hard surface capable of carrying a 23-ton load.
- C. Where emergency vehicle access is required, approaches and driveways shall be designed and constructed to accommodate emergency vehicle apparatus

and shall conform to applicable fire protection requirements. The City may restrict parking, require signage, or require other public safety improvements pursuant to the recommendations of an emergency service provider.

- D. Secondary or emergency access lanes may be improved to a minimum 12 feet with an all-weather surface as approved by the Fire District. All fire lanes shall be dedicated easements.
- E. Minimum access requirements shall be adjusted commensurate with the intended function of the site based on vehicle types and traffic generation.
- F. The number of approaches on higher classification streets (e.g., collector and arterial streets) shall be minimized; where practicable, access shall be taken first from a lower classification street.
- G. The City may limit the number or location of connections to a street, or impose access restrictions where the roadway authority requires mitigation to alleviate safety or traffic operations concerns.
- H. The City may require a driveway to extend to one or more edges of a parcel and be designed to allow for future extension and inter-parcel circulation as adjacent properties develop. The City may also require the owner(s) of the subject site to record an access easement for future joint use of the approach and driveway as the adjacent property(ies) develop(s).
- I. Driveways shall accommodate all projected vehicular traffic on-site without vehicles stacking or backing up onto a street.
- J. Driveways shall be designed so that vehicle areas, including but not limited to drive-up and drive-through facilities and vehicle storage and service areas, do not obstruct any public right-of-way.
- K. Approaches and driveways shall not be wider than necessary to safely accommodate projected peak hour trips and turning movements, and shall be designed to minimize crossing distances for pedestrians.
- L. As it deems necessary for pedestrian safety, the City, in consultation with the roadway authority, may require traffic-calming features, such as speed tables, textured driveway surfaces, curb extensions, signage or traffic control devices, or other features, be installed on or in the vicinity of a site.
- M. Approaches and driveways shall be located and designed to allow for safe maneuvering in and around loading areas, while avoiding conflicts with pedestrians, parking, landscaping, and buildings.
- N. Where a proposed driveway crosses a culvert or drainage ditch, the City may require the developer to install a culvert extending under and beyond the edges of the driveway on both sides of it, pursuant applicable Public Works standards.
- O. Except as otherwise required by the applicable roadway authority or waived by the City Engineer, temporary driveways providing access to a construction site or staging area shall be paved or graveled to prevent tracking of mud onto adjacent paved streets.

Response: As shown on the Preliminary Street Plan (Exhibit A), the project meets the above code requirements, as applicable.

- P. Unless constrained by topography, natural resources, rail lines, freeways, existing or planned or approved development, or easements or covenants, driveways proposed as part of a residential or mixed-use development shall meet local street spacing standards and shall be constructed to align with existing or planned streets, if the driveway

1. Intersects with a public street that is controlled, or is to be controlled in the planning period, by a traffic signal;
2. Intersects with an existing or planned arterial or collector street; or
3. Would be an extension of an existing or planned local street, or of another major driveway.

Response: None of the conditions outlined above are present in the project. All driveways take access from Local streets.

(.09) Minimum street intersection spacing standards.

- A. New streets shall intersect at existing street intersections so that centerlines are not offset. Where existing streets adjacent to a proposed development do not align properly, conditions shall be imposed on the development to provide for proper alignment.
- B. Minimum intersection spacing standards are provided in Transportation System Plan Table 3-2.

Response: Willow Creek Drive is an Internal Collector. Per Table 3-2 of the Transportation System Plan, the City's desired access spacing for a Collector is 300 feet, which may be reduced to 100 feet with the City Engineer's approval, if necessary to align with existing driveways, property limitations, or other safety related issues. Due to safety issues associated with a curve in Willow Creek Drive north of Trillium Court, a full street connection is required at Willow Creek and Windflower Street, as described in more detail in response to Code Section 4.127(.10)B. The proposed access spacing is ±200 feet between Frog Pond Lane and Windflower Street on Willow Creek Drive, which exceeds the minimum standard. The Applicant coordinated with City staff when designing this street alignment prior to project submittal and the proposed access spacing was acceptable to staff. No individual lot accesses are proposed on Willow Creek Drive.

All the other streets within the project are Local Streets, which do not have minimum access spacing standards; access is permitted to each lot.

(.10) Exceptions and Adjustments. The City may approve adjustments to the spacing standards of subsections (.08) and (.09) above through a Class II process, or as a waiver per Section 4.118(.03)(A.), where an existing connection to a City street does not meet the standards of the roadway authority, the proposed development moves in the direction of code compliance, and mitigation measures alleviate all traffic operations and safety concerns. Mitigation measures may include consolidated access (removal of one access), joint use driveways (more than one property uses same access), directional limitations (e.g., one-way), turning restrictions (e.g., right in/out only), or other mitigation. [Section 4.177 amended by Ord. 719, 6/17/13]

Response: No exceptions or adjustments are requested.

Section 4.180 EXCEPTIONS AND MODIFICATIONS - PROJECTIONS INTO REQUIRED YARDS

(.01) Certain non-structural architectural features are permitted to project into required yards or courts, without requiring the approval of a Variance or Reduced Setback Agreement, as follows:

- A. Into any required yard:
 1. Architectural features may project into the required yard not more than two (2) inches for each foot of required setback.

2. Architectural features on buildings within the Coffee Creek Industrial Design Overlay District shall be subject to the applicable requirements in Section 4.134. : [Added by Ord. 682, 9/9/10]
 3. Open, unenclosed fire escapes may project a distance not exceeding forty-eight (48) inches.
- B. Into any required yard, adjoining a street or tract with a private drive: [Amended by Ord. 682, 9/9/10]
1. Architectural features may project a distance not exceeding forty (40) inches.
 2. An uncovered porch, terrace, or patio extending no more than two and one-half (2 1/2) feet above the finished elevation may extend within three (3) feet of an interior side lot line, or within ten (10) feet of a front lot line or of an exterior side lot line.

Response: The scope of this application does not include any buildings. Compliance with this section will be reviewed during a subsequent permit submittal.

Section 4.181 EXCEPTIONS & MODIFICATIONS - HEIGHT LIMITS.

Except as stipulated in Sections 4.800 through 4.804, height limitations specified elsewhere in this Code shall not apply to barns, silos or other farm buildings or structures on farms; to church spires; belfries; cupolas; and domes; monuments; water towers; windmills; chimneys; smokestacks; fire and hose towers; flag poles; above-ground electric transmission, distribution, communication and signal lines, towers and poles; and properly screened mechanical and elevator structures.

Response: No listed structures are proposed at this time. Compliance with this section will be reviewed during a subsequent permit submittal.

Section 4.182 EXCEPTIONS AND MODIFICATIONS - SETBACK MODIFICATIONS

In any residential zone where the average depth of at least two (2) existing front yards on adjoining lots or within one hundred fifty (150) feet of the lot in question and within the same block front is less or greater than the minimum or maximum front yard depth prescribed elsewhere in this Code, the required depth of the front yard on such lot shall be modified. In such case, the front yard depth shall not be less than the average depth, nor more than the greater depth, of existing front yards on at least two (2) adjoining lots within one hundred and fifty (150) feet. In the case of a corner lot, the depth of the front yard may be reduced to that of the lot immediately adjoining, provided, however, that the depth of a front yard on any corner lot shall be at least ten (10) feet.

Response: No setback modifications are requested. Compliance with this section will be reviewed during a subsequent building permit submittal.

[...]

Section 4.197 ZONE CHANGES AND AMENDMENTS TO THIS CODE – PROCEDURES

(.01) The following procedure shall be followed in applying for an amendment to the text of this Chapter: [...]

Response: No zoning text amendments are proposed. This procedure is not applicable.

- B. All other quasi-judicial zone map amendments shall be reviewed by the Development Review Board to make a recommendation to City Council and all legislative zone map amendments shall be reviewed by the Planning Commission to make a recommendation to City Council.

C. In recommending approval or denial of a proposed zone map amendment, the Planning Commission or Development Review Board shall at a minimum, adopt findings addressing the following criteria:

1. That the application before the Commission or Board was submitted in accordance with the procedures set forth in Section 4.008, Section 4.125 (.18)(B)(2) or, in the case of a Planned Development, Section 4.140; and [Amended by Ord 557, adopted 9/5/03]

Response: The Zone Map Amendment is being requested concurrent with Planned Development. The application has been submitted in accordance with the procedures set forth in Section 4.140. This criterion is met.

2. That the proposed amendment is consistent with the Comprehensive Plan map designation and substantially complies with the applicable goals, policies and objectives, set forth in the Comprehensive Plan text; and

Response: Concurrently with the adoption of the Frog Pond West Master Plan, the City added a new zoning district, Residential Neighborhood (RN), intended for application to the Master Plan area. The applicant is requesting ±12.8 acres of unincorporated land be annexed to the City of Wilsonville and have the RN zone applied. The applicable goals, policies, and objectives of the Comprehensive Plan text are addressed earlier in the narrative.

3. In the event that the subject property, or any portion thereof, is designated as "Residential" on the City's Comprehensive Plan Map; specific findings shall be made addressing substantial compliance with Implementation Measures 4.1.4.b, d, e, q, and x of Wilsonville's Comprehensive Plan text; and [Amended by Ordinance No. 538, 2/21/02.]

Response: Compliance with Implementation Measures 4.1.4.b, d, e, q, and x is addressed earlier in the narrative.

4. That the existing primary public facilities, i.e., roads and sidewalks, water, sewer and storm sewer are available and are of adequate size to serve the proposed development; or, that adequate facilities can be provided in conjunction with project development. The Planning Commission and Development Review Board shall utilize any and all means to ensure that all primary facilities are available and are adequately sized; and

Response: As addressed elsewhere in this narrative, Frog Pond Vista will extend roads and sidewalks, water, sewer, and storm drain to serve the proposed residential neighborhood. This criterion is met.

5. That the proposed development does not have a significant adverse effect upon Significant Resource Overlay Zone areas, an identified natural hazard, or an identified geologic hazard. When Significant Resource Overlay Zone areas or natural hazard, and/or geologic hazard are located on or abut the proposed development, the Planning Commission or Development Review Board shall use appropriate measures to mitigate and significantly reduce conflicts between the development and identified hazard or Significant Resource Overlay Zone and

Response: The application includes an abbreviated SRIR. As demonstrated in the responses to the Natural Resources Code Section above and in the Natural Resource Assessment (Exhibit F), the project does not propose impacts to SROZ aside from the exempt activities (a pedestrian trails and a stormwater pond). The project design incorporates the recommendations of the geotechnical report (Exhibit H) which ensure geological feasibility of the project.

6. That the applicant is committed to a development schedule demonstrating that development of the property is reasonably expected to commence within two (2) years of the initial approval of the zone change; and

Response: The zone change request is being submitted concurrently with a PUD, a subdivision, and a site plan review application. The applicant expects to develop the property as soon as these applications and related site development permits are approved.

7. That the proposed development and use(s) can be developed in compliance with the applicable development standards or appropriate conditions are attached that ensure that the project development substantially conforms to the applicable development standards.

Response: The proposed project is a single-family residential community, in accordance with the Frog Pond West Master Plan. Compliance with the applicable development standards of the RN zone is addressed earlier in the narrative.

8. Adequate public facilities, services, and transportation networks are in place, or are planned to be provided concurrently with the development of the property. The applicant shall demonstrate compliance with the Transportation Planning Rule, specifically by addressing whether the proposed amendment has a significant effect on the transportation system pursuant to OAR 660012-0060. A Traffic Impact Analysis (TIA) shall be prepared pursuant to the requirements in Section 4.133.05.(01).

Response: Adequate public facilities, services, and transportation networks are in place, or are planned to be provided concurrently with the proposed development. The applicant will extend sewer and water infrastructure and will provide storm drainage facilities to serve the project.

The project design incorporates the recommendations of the TIS prepared by DKS Engineering at the direction of the City of Wilsonville (Exhibit E).

Compliance with the Transportation Planning Rule (TPR) is included in the Frog Pond Area Plan and assumes full development of the Frog Pond area. The Frog Pond Area Plan determined that the anticipated development within Frog Pond would comply with the TPR with the appropriate intersection control at Stafford Road and Frog Pond Lane. This criterion is met.

- (.05) In cases where a property owner or other applicant has requested a change in zoning and the City Council has approved the change subject to conditions, the owner or applicant shall sign a statement accepting, and agreeing to complete the conditions of approval before the zoning shall be changed.

Response: This project meets the applicable criteria as described above. The applicant will sign the statement accepting and agreeing to complete the conditions of approval, as required by this section.

CHAPTER 4. LAND DIVISIONS

Section 4.210 APPLICATION PROCEDURE

(.01) Pre-application conference. Prior to submission of a tentative condominium, partition, or subdivision plat, a person proposing to divide land in the City shall contact the Planning Department to arrange a pre-application conference as set forth in Section 4.010.

Response: The applicant held a preapplication conference with City staff on December 12, 2019.

B. Tentative Plat Submission. The purpose of the Tentative Plat is to present a study of the proposed subdivision to the Planning Department and Development Review Board and to receive approval or recommendations for revisions before preparation of a final Plat. The design and layout of this plan plat shall meet the guidelines and requirements set forth in this Code. The Tentative Plat shall be submitted to the Planning Department with the following information:

1. Site development application form completed and signed by the owner of the land or a letter of authorization signed by the owner. A preliminary title report or other proof of ownership is to be included with the application form.
2. Application fees as established by resolution of the City Council.
3. Ten (10) copies and one (1) sepia or suitable reproducible tracing of the Tentative Plat shall be submitted with the application. Paper size shall be eighteen inch (18") by twenty-four inch (24"), or such other size as may be specified by the City Engineer.
4. Name of the subdivision. No subdivision name shall duplicate or resemble the name of any other subdivision in Clackamas or Washington County. Names may be checked through the county offices.
5. Names, addresses, and telephone numbers of the owners and applicants, and engineer or surveyor.
6. Date, north point and scale of drawing.
7. Location of the subject property by Section, Township, and Range.
8. Legal road access to subject property shall be indicated as City, County, or other public roads.
9. Vicinity map showing the relationship to the nearest major highway or street.
10. Lots: Dimensions of all lots, minimum lot size, average lot size, and proposed lot and block numbers.
11. Gross acreage in proposed plat.
12. Proposed uses of the property, including sites, if any, for multi-family dwellings, shopping centers, churches, industries, parks, and playgrounds or other public or semi-public uses.
13. Improvements: Statement of the improvements to be made or installed including streets, private drives, sidewalks, lighting, tree

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- planting, and times such improvements are to be made or completed.
[Amended by Ord. 682, 9/9/10]
14. Trees. Locations, types, sizes, and general conditions of all existing trees, as required in Section 4.600.
 15. Utilities such as electrical, gas, telephone, on and abutting the tract.
 16. Easements: Approximate width, location, and purpose of all existing and proposed easements on, and known easements abutting the tract.
 17. Deed Restrictions: Outline of proposed deed restrictions, if any.
 18. Written Statement: Information which is not practical to be shown on the maps may be shown in separate statements accompanying the Tentative Plat.
 19. If the subdivision is to be a "Planned Development," a copy of the proposed Home Owners Association By-Laws must be submitted at the time of submission of the application. The Tentative Plat shall be considered as the Stage I Preliminary Plan. The proposed By-Laws must address the maintenance of any parks, common areas, or facilities.
 20. Any plat bordering a stream or river shall indicate areas subject to flooding and shall comply with the provisions of Section 4.172.
 21. Proposed use or treatment of any property designated as open space by the City of Wilsonville.
 22. A list of the names and addresses of the owners of all properties within 250 feet of the subject property, printed on self-adhesive mailing labels. The list shall be taken from the latest available property ownership records of the Assessor's office of the affected county.
 23. A completed "liens and assessments" form, provided by the City Finance Department.
 24. Locations of all areas designated as a Significant Resource Overlay Zone by the City, as well as any wetlands shall be shown on the tentative plat.
 25. Locations of all existing and proposed utilities, including but not limited to domestic water, sanitary sewer, storm drainage, and any private utilities crossing or intended to serve the site. Any plans to phase the construction or use of utilities shall be indicated.
[Amended by Ord. 682, 9/9/10]
 26. A traffic study, prepared under contract with the City, shall be submitted as part of the tentative plat application process, unless specifically waived by the Community Development Director.

Response: The application materials include the information required in subsection Section 4.210(.01)B.

- D. Land division phases to be shown. Where the applicant intends to develop the land in phases, the schedule of such phasing shall be presented for review at the time of the tentative plat. In acting on an application for tentative plat approval, the Planning Director or Development Review Board may set time limits for the completion of the phasing schedule which, if not met, shall result in an expiration of the tentative plat approval.

Response: This project is not planned to be phased.

- E. Remainder tracts to be shown as lots or parcels. Tentative plats shall clearly show all affected property as part of the application for land division. All remainder tracts, regardless of size, shall be shown and counted among the parcels or lots of the division.

Response: The proposed subdivision does not create remainder tracts. The tentative plat accounts for all land within the plat area as lots, tracts, or right-of-way.

Section 4.236 GENERAL REQUIREMENTS - STREETS

- (.01) Conformity to the Transportation System Plan. Land divisions shall conform to and be in harmony with the Transportation Systems Plan, the Bicycle and Pedestrian Master Plan, and the Parks and Recreation Master Plan. [Amended by Ord. #719, 6/17/13]

Response: As confirmed by the TIS (Exhibit E), the proposed street layout conforms to the Transportation System Plan and the Frog Pond West Master Plan. The 2006 City of Wilsonville Bicycle and Pedestrian Master Plan identifies Community Walkway/Bikeway C10 generally within Frog Pond West area. The 2017 Frog Pond West Master Plan incorporates a Bicycle and Pedestrian Framework (Figure 17), which identifies proposed bicycle lanes on Willow Creek Drive. Per Willow Creek Drive cross-section on Figure 24 of Frog Pond West Master Plan, bike sharrows will provided – please refer to the Preliminary Street Plan (Exhibit A).

- (.02) Relation to Adjoining Street System.

- A. A land division shall provide for the continuation of the principal streets existing in the adjoining area, or of their proper projection when adjoining property is not developed, and shall be of a width not less than the minimum requirements for streets set forth in these regulations. Where, in the opinion of the Planning Director or Development Review Board, topographic conditions make such continuation or conformity impractical, an exception may be made. In cases where the Board or Planning Commission has adopted a plan or plat of a neighborhood or area of which the proposed land division is a part, the subdivision shall conform to such adopted neighborhood or area plan.

Response: As shown on the Preliminary Street Plan (Exhibit A), the proposed street network is designed for future continuation, per the Frog Pond West Master Plan. These standards are met.

- B. Where the plat submitted covers only a part of the applicant's tract, a sketch of the prospective future street system of the unsubmitted part shall be furnished and the street system of the part submitted shall be considered in the light of adjustments and connections with the street system of the part not submitted.

Response: The submitted tentative plat covers the entirety of the Applicant's tract.

- C. At any time when an applicant proposes a land division and the Comprehensive Plan would allow for the proposed lots to be further divided, the city may require an arrangement of lots and streets such as to permit a later resubdivision in conformity to the street plans and other requirements specified in these regulations.

Response: The proposed lots follow the minimum lot size standards for R7 and R10 subdistricts and will not be further subdivided.

(.03) All streets shall conform to the standards set forth in Section 4.177 and the block size requirements of the zone.

Response: Compliance with the standards of Section 4.177 is addressed earlier in the narrative.

(.04) **Creation of Easements:** The Planning Director or Development Review Board may approve an easement to be established without full compliance with these regulations, provided such an easement is the only reasonable method by which a portion of a lot large enough to allow partitioning into two (2) parcels may be provided with vehicular access and adequate utilities. If the proposed lot is large enough to divide into more than two (2) parcels, a street dedication may be required. [Amended by Ord. 682, 9/9/10]

Response: This project does not create street easements.

(.05) **Topography:** The layout of streets shall give suitable recognition to surrounding topographical conditions in accordance with the purpose of these regulations.

Response: The street layout recognizes topographical conditions.

(.06) **Reserve Strips:** The Planning Director or Development Review Board may require the applicant to create a reserve strip controlling the access to a street. Said strip is to be placed under the jurisdiction of the City Council, when the Director or Board determine that a strip is necessary:

- A. To prevent access to abutting land at the end of a street in order to assure the proper extension of the street pattern and the orderly development of land lying beyond the street; or
- B. To prevent access to the side of a street on the side where additional width is required to meet the right-of-way standards established by the City; or
- C. To prevent access to land abutting a street of the land division but not within the tract or parcel of land being divided; or
- D. To prevent access to land unsuitable for building development.

Response: The project does not include reserve strips.

(.07) **Future Expansion of Street:** When necessary to give access to, or permit a satisfactory future division of, adjoining land, streets shall be extended to the boundary of the land division and the resulting dead-end street may be approved without a turn-around. Reserve strips and street plugs shall be required to preserve the objective of street extension. Notification that the street is planned for future extension shall be posted on the stub street. [Amended by Ord. #719, 6/17/13]

Response: Local streets extend to the boundaries of the site and are intended for future extension to the abutting properties. For that reason, no turnarounds are proposed for these streets. The Applicant will comply with any signage requirements related to street extension objectives. This standard is met.

(.08) **Existing Streets:** Whenever existing streets adjacent to or within a tract are of inadequate width, additional right-of-way shall conform to the designated width in this Code or in the Transportation Systems Plan.

Response: As demonstrated on the Preliminary Dimensioned PUD Plan (Exhibit A), the project dedicates ±9.5 feet of right-of-way along Frog Pond Lane to allow construction of a 52-foot width at full buildout.

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- (.09) Street Names: No street names will be used which will duplicate or be confused with the names of existing streets, except for extensions of existing streets. Street names and numbers shall conform to the established name system in the City, and shall be subject to the approval of the City Engineer.

Response: The new streets will conform to the City's established name system and will be subject to approval by the City Engineer. This standard is met.

Section 4.237 GENERAL REQUIREMENTS – OTHER.

- (.01) Blocks:
- A. The length, width, and shape of blocks shall be designed with due regard to providing adequate building sites for the use contemplated, consideration of needs for convenient access, circulation, control, and safety of pedestrian, bicycle, and motor vehicle traffic, and recognition of limitations and opportunities of topography.
 - B. Sizes: Blocks shall not exceed the sizes and lengths specified for the zone in which they are located unless topographical conditions or other physical constraints necessitate larger blocks. Larger blocks shall only be approved where specific findings are made justifying the size, shape, and configuration.

Response: The length, width, and shape of blocks have been designed to accommodate the single-family residential neighborhood established by the Frog Pond West Master Plan and to comply with the standards of Section 4.177. These standards are addressed above. The site is located within the RN zone and is also subject to the block, access, and connectivity standards of Section 4.127(.10). Those standards are addressed above.

- (.02) Easements:
- A. Utility lines. Easements for sanitary or storm sewers, drainage, water mains, electrical lines or other public utilities shall be dedicated wherever necessary. Easements shall be provided consistent with the City's Public Works Standards, as specified by the City Engineer or Planning Director. All of the public utility lines within and adjacent to the site shall be installed within the public right-of-way or easement; with underground services extending to the private parcel constructed in conformance to the City's Public Works Standards. All franchise utilities shall be installed within a public utility easement. All utilities shall have appropriate easements for construction and maintenance purposes. [Amended by Ord. 682, 9/9/10]
 - B. Water courses. Where a land division is traversed by a water course, drainage way, channel or stream, there shall be provided a storm water easement or drainage right-of-way conforming substantially with the lines of the water course, and such further width as will be adequate for the purposes of conveying storm water and allowing for maintenance of the facility or channel. Streets or parkways parallel to water courses may be required.

Response: As shown on the Preliminary Composite Utility Plan, public utilities are placed within public rights-of-way or within public utility easements (PUE) adjacent to the public streets.

- (.03) Pedestrian and bicycle pathways. An improved public pathway shall be required to transverse the block near its middle if that block exceeds the length standards of the zone in which it is located.
- A. Pathways shall be required to connect to cul-de-sacs or to pass through unusually shaped blocks.

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- B. Pathways required by this subsection shall have a minimum width of ten (10) feet unless they are found to be unnecessary for bicycle traffic, in which case they are to have a minimum width of six (6) feet.

Response: These standards do not apply as the proposed blocks do not exceed maximum length.

- (.04) Tree planting. Tree planting plans for a land division must be submitted to the Planning Director and receive the approval of the Director or Development Review Board before the planting is begun. Easements or other documents shall be provided, guaranteeing the City the right to enter the site and plant, remove, or maintain approved street trees that are located on private property.

Response: As shown on the Preliminary Landscape Plan (Exhibit A), street trees are located within the planter strips in public rights-of-way and within the public easement in Tract C.

- (.05) Lot Size and shape. The lot size, width, shape and orientation shall be appropriate for the location of the land division and for the type of development and use contemplated. Lots shall meet the requirements of the zone where they are located.
 - A. In areas that are not served by public sewer, an on-site sewage disposal permit is required from the City. If the soil structure is adverse to on-site sewage disposal, no development shall be permitted until sewer service can be provided.
 - B. Where property is zoned or deeded for business or industrial use, other lot widths and areas may be permitted at the discretion of the Development Review Board. Depth and width of properties reserved or laid out for commercial and industrial purposes shall be adequate to provide for the off-street service and parking facilities required by the type of use and development contemplated.
 - C. In approving an application for a Planned Development, the Development Review Board may waive the requirements of this section and lot size, shape, and density shall conform to the Planned Development conditions of approval.

Response: The proposed lots meet the dimensional standards of the RN zone and the R7 and R10 subdistricts. Please refer to response under WDC Section 4.127(.08). The site is served by public sewer and no on-site sewage disposal is proposed. These standards are met.

- (.06) Access. The division of land shall be such that each lot shall have a minimum frontage on a street or private drive, as specified in the standards of the relative zoning districts. This minimum frontage requirement shall apply with the following exceptions:
 - A. A lot on the outer radius of a curved street or tract with a private drive, or facing the circular end of a cul-de-sac shall have frontage of not less than twenty-five (25) feet upon a street or tract with a private drive, measured on the arc.
 - B. The Development Review Board may waive lot frontage requirements where in its judgment the waiver of frontage requirements will not have the effect of nullifying the intent and purpose of this regulation or if the Board determines that another standard is appropriate because of the characteristics of the overall development.

[Section 4.237(.06) amended by Ord. 682, 9/9/10]

Response: As detailed in the response to Section 4.127(.08)D and shown on the Preliminary Dimensioned PUD Plan (Exhibit A), each lot has frontage on a public street and meets its minimum frontage dimensional standard.

(.07) **Through lots.** Through lots shall be avoided except where essential to provide separation of residential development from major traffic arteries or adjacent non-residential activity or to overcome specific disadvantages of topography and orientation. A planting screen easement of at least ten (10) feet, across which there shall be no access, may be required along the line of lots abutting such a traffic artery or other disadvantageous use. Through lots with planting screens shall have a minimum average depth of one hundred (100) feet. The Development Review Board may require assurance that such screened areas be maintained as specified in Section 4.176.

Response: Initially, no through lots were contemplated for Frog Pond Vista subdivision. However, the Frog Pond West Master Plan conceptual design shows a Collector road crossing a grove of mature Oaks and Ponderosa Pines. If built in line with the Master Plan Street Demonstration Plan, those trees would be removed. After collaborating with the adjacent property owner and City staff on alternative site layouts aimed at preserving the trees, Willow Creek Drive was re-aligned to curve west through the Applicant's property, which caused Trillium Court to end in a dead-end to limit driveway access to a higher classification roadway. Due to this change, two through lots are necessary. Lots 24 and 25 located at the terminus of Trillium Court have frontage on Willow Creek Drive, an Internal Collector, and Trillium Court. Access to those lots will be provided from Trillium Court. The through lots meet the minimum required depth of 100 feet. Please refer to the Preliminary Dimensioned PUD Plan (Exhibit A).

(.08) **Lot side lines.** The side lines of lots, as far as practicable for the purpose of the proposed development, shall run at right angles to the street or tract with a private drive upon which the lots face. [Amended by Ord. 682, 9/9/10]

Response: As demonstrated on the Preliminary Subdivision Plan, all side lot lines run at right angles to the street or the tract upon which they face. This standard is met.

(.09) **Large lot land divisions.** In dividing tracts which at some future time are likely to be re-divided, the location of lot lines and other details of the layout shall be such that re-division may readily take place without violating the requirements of these regulations and without interfering with the orderly development of streets. Restriction of buildings within future street locations shall be made a matter of record if the Development Review Board considers it necessary.

Response: The lot sizes are within the required ranges of Frog Pond West Subdistricts 8 and 9. This project does not create large lots that could be further subdivided, therefore these requirements are not applicable.

(.10) **Building line.** The Planning Director or Development Review Board may establish special building setbacks to allow for the future redivision or other development of the property or for other reasons specified in the findings supporting the decision. If special building setback lines are established for the land division, they shall be shown on the final plat.

Response: As stated above, future revision of the property is not anticipated due to minimum lot sizes meeting the requirements of the RN zone.

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- (.11) **Build-to line.** The Planning Director or Development Review Board may establish special build-to lines for the development, as specified in the findings and conditions of approval for the decision. If special build-to lines are established for the land division, they shall be shown on the final plat.

Response: There is no maximum setback in the RN zone and no build-to lines are proposed.

- (.12) **Land for public purposes.** The Planning Director or Development Review Board may require property to be reserved for public acquisition, or irrevocably offered for dedication, for a specified period of time.

Response: The City has not identified any requirements for the subject property to be reserved for public acquisition.

- (.13) **Corner lots.** Lots on street intersections shall have a corner radius of not less than ten (10) feet.

Response: As shown on the Preliminary Subdivision Plan, lots on street intersections have corner radii of at least 10 feet. This standard is met.

Section 4.250 **LOTS OF RECORD**

All lots of record that have been legally created prior to the adoption of this ordinance shall be considered to be legal lots. Tax lots created by the County Assessor are not necessarily legal lots of record.

Response: The application contains documents confirming that the property is a legal lot of record.

Section 4.262 **IMPROVEMENTS - REQUIREMENTS**

- (.01) **Streets.** Streets within or partially within the development shall be graded for the entire right-of-way width, constructed and surfaced in accordance with the Transportation Systems Plan and City Public Works Standards. Existing streets which about the development shall be graded, constructed, reconstructed, surfaced or repaired as determined by the City Engineer.

- (.02) **Curbs.** Curbs shall be constructed in accordance with standards adopted by the City.

- (.03) **Sidewalks.** Sidewalks shall be constructed in accordance with standards adopted by the City.

Response: As shown on the Preliminary Street Plan (Exhibit A), streets, curbs and sidewalks will be constructed according to the TSP, the cross-sections incorporated into the Frog Pond West Master Plan, and the City's Public Works Standards as modified by the City Engineer. These standards are met.

- (.04) **Sanitary sewers.** When the development is within two hundred (200) feet of an existing public sewer main, sanitary sewers shall be installed to serve each lot or parcel in accordance with standards adopted by the City. When the development is more than two hundred (200) feet from an existing public sewer main, the City Engineer may approve an alternate sewage disposal system.

Response: As shown on the Preliminary Composite Utility Plan (Exhibit A), the project connects to existing public sanitary sewer main on SW Frog Pond Lane and serves each lot in accordance with standards adopted by the City.

- (.05) **Drainage.** Storm drainage, including detention or retention systems, shall be provided as determined by the City Engineer.

Response: Storm drainage systems are being provided as outlined in the City's Public Works Standards. Please refer to the Preliminary Composite Utility Plan (Exhibit A).

(.06) **Underground utility and service facilities.** All new utilities shall be subject to the standards of Section 4.300 (Underground Utilities). The developer shall make all necessary arrangements with the serving utility to provide the underground services in conformance with the City's Public Works Standards.

Response: The standards of Section 4.300 are addressed earlier in the narrative. These standards are met.

(.07) **Streetlight standards.** Streetlight standards shall be installed in accordance with regulations adopted by the City.

Response: Streetlights will be installed per the Frog Pond West Master Plan and regulations adopted by the City.

(.08) **Street signs.** Street name signs shall be installed at all street intersections and dead-end signs at the entrance to all dead-end streets and cul-de-sacs in accordance with standards adopted by the City. Other signs may be required by the City Engineer.

Response: Street signs will be installed per City standards.

(.09) **Monuments.** Monuments shall be placed at all lot and block corners, angle points, points of curves in streets, at intermediate points and shall be of such material, size and length as required by State Law. Any monuments that are disturbed before all improvements are completed by the developer and accepted by the City shall be replaced to conform to the requirements of State Law.

Response: Monuments will be placed per State, Clackamas County, and City requirements.

(.10) **Water.** Water mains and fire hydrants shall be installed to serve each lot in accordance with City standards.

Response: Water mains and fire hydrants are proposed to serve each lot in accordance with City and Fire Department standards. Please refer to the Preliminary Composite Utility Plan (Exhibit A) for the proposed locations of water mains and fire hydrants.

CHAPTER 4. UNDERGROUND UTILITIES.

Section 4.300 GENERAL

(.02) After the effective date of this Code, the approval of any development of land within the City will be upon the express condition that all new utility lines, including but not limited to those required for power, communication, street lighting, gas, cable television services and related facilities, shall be placed underground.

(.03) The construction of underground utilities shall be subject to the City's Public Works Standards and shall meet applicable requirements for erosion control and other environmental protection.

Response: The project is subject to the requirements of this section.

Section 4.320 REQUIREMENTS

(.01) The developer or subdivider shall be responsible for and make all necessary arrangements with the serving utility to provide the underground services (including cost of rearranging any existing overhead facilities). All such underground facilities as described shall be constructed in compliance with the rules and regulations of the Public Utility Commission of the State of Oregon relating to the installation and safety of underground lines, plant, system, equipment and apparatus.

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- (.02) The location of the buried facilities shall conform to standards supplied to the subdivider by the City. The City also reserves the right to approve location of all surface-mounted transformers.
 - (.03) Interior easements (back lot lines) will only be used for storm or sanitary sewers, and front easements will be used for other utilities unless different locations are approved by the City Engineer. Easements satisfactory to the serving utilities shall be provided by the developer and shall be set forth on the plat.

Response: New utilities will be installed underground in accordance with City and other agency requirements. Please refer to the Preliminary Composite Utility Plan (Exhibit A) for proposed location of utility lines and public utility easements.

CHAPTER 4. SITE DESIGN REVIEW

Section 4.421 CRITERIA AND APPLICATION OF DESIGN STANDARDS

- (.01) The following standards shall be utilized by the Board in reviewing the plans, drawings, sketches and other documents required for Site Design Review. These standards are intended to provide a frame of reference for the applicant in the development of site and building plans as well as a method of review for the Board. These standards shall not be regarded as inflexible requirements. They are not intended to discourage creativity, invention and innovation. The specifications of one or more particular architectural styles is not included in these standards. (Even in the Boones Ferry Overlay Zone, a range of architectural styles will be encouraged.)
 - A. Preservation of Landscape. The landscape shall be preserved in its natural state, insofar as practicable, by minimizing tree and soils removal, and any grade changes shall be in keeping with the general appearance of neighboring developed areas.

Response: The project site includes SROZ associated with Boeckman Creek along the northwestern boundary of the site, which is planned to be preserved in its natural state. Tract D is an Open Space tract in the northeastern corner of the property where a grove of mature Oregon White Oaks and Pondera Pines is being preserved. Site design incorporates preservation of natural landforms to the greatest degree practicable.

- B. Relation of Proposed Buildings to Environment. Proposed structures shall be located and designed to assure harmony with the natural environment, including protection of steep slopes, vegetation and other naturally sensitive areas for wildlife habitat and shall provide proper buffering from less intensive uses in accordance with Sections 4.171 and 4.139 and 4.139.5. The achievement of such relationship may include the enclosure of space in conjunction with other existing buildings or other proposed buildings and the creation of focal points with respect to avenues of approach, street access or relationships to natural features such as vegetation or topography.

Response: This application for a PUD does not include buildings or structures. Building design will be reviewed during building permit review.

- C. Drives, Parking and Circulation. With respect to vehicular and pedestrian circulation, including walkways, interior drives and parking, special attention shall be given to location and number of access points, general interior circulation, separation of pedestrian and vehicular traffic, and arrangement of parking areas that are safe and convenient and, insofar as practicable, do not detract from the design of proposed buildings and structures and the neighboring properties.

Response: The drives, parking, and circulation within Frog Pond Vista are subject to the requirements of the RN Zone, the Planned Development overlay, and Land Division requirements and are not subject to Site Design Review. This standard is not applicable.

D. **Surface Water Drainage.** Special attention shall be given to proper site surface drainage so that removal of surface waters will not adversely affect neighboring properties of the public storm drainage system.

Response: Please refer to Appendix G for the Preliminary Stormwater Report. The Preliminary Street Plan (Exhibit A) shows the location of Low Impact Development Approaches (LIDA) facilities within the planter strips of the public streets and the stormwater facility within the Tract B.

E. **Utility Service.** Any utility installations above ground shall be located so as to have a harmonious relation to neighboring properties and site. The proposed method of sanitary and storm sewage disposal from all buildings shall be indicated.

Response: As shown on the Preliminary Composite Utility Plan (Exhibit A), each lot will be served by an underground sanitary sewer line connected to City sewer. Stormwater disposal is provided by an underground storm drain system. Above-ground utilities, such as fire hydrants, electric transformer boxes, irrigation meters, and the like, will be placed in the most efficient locations possible with consideration given to the neighboring properties.

(.02) The standards of review outlined in Sections (a) through (g) above shall also apply to all accessory buildings, structures, exterior signs and other site features, however related to the major buildings or structures.

Response: This application does not include accessory buildings or exterior signs.

(.04) **Conditional application.** The Planning Director, Planning Commission, Development Review Board or City Council may, as a Condition of Approval for a zone change, subdivision, land partition, variance, conditional use, or other land use action, require conformance to the site development standards set forth in this Section.

Response: This applicant understands that conformance to the side development standards is required. This narrative demonstrates compliance with all applicable code requirements.

(.05) The Board may attach certain development or use conditions in granting an approval that are determined necessary to insure the proper and efficient functioning of the development, consistent with the intent of the Comprehensive Plan, allowed densities and the requirements of this Code. In making this determination of compliance and attaching conditions, the Board shall, however, consider the effects of this action on the availability and cost of needed housing. The provisions of this section shall not be used in such a manner that additional conditions either singularly or accumulatively have the effect of unnecessarily increasing the cost of housing or effectively excluding a needed housing type.

Response: The project has been designed in accordance with the Frog Pond West Master Plan, which is part of, and consistent with, the Comprehensive Plan. The proposed site plan is consistent with the community design objectives, circulation pattern, land use, lot dimensional standards, open space, and other requirements established by the Frog Pond West Master Plan and the implementing RN zone. No additional conditions are needed to ensure that the development remains consistent with the City's adopted policies.

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- (.06) The Board or Planning Director may require that certain paints or colors of materials be used in approving applications. Such requirements shall only be applied when site development or other land use applications are being reviewed by the City.
- A. Where the conditions of approval for a development permit specify that certain paints or colors of materials be used, the use of those paints or colors shall be binding upon the applicant. No Certificate of Occupancy shall be granted until compliance with such conditions has been verified.
 - B. Subsequent changes to the color of a structure shall not be subject to City review unless the conditions of approval under which the original colors were set included a condition requiring a subsequent review before the colors could be changed.

Response: This project is a single-family residential community. No paints or colors of materials are identified in the design standards of the Frog Pond West Master Plan. It is anticipated that building elevations, including paint and material colors, will be evaluated at the time of building permit review.

Section 4.440 PROCEDURE

- (.01) Submission of Documents. A prospective applicant for a building or other permit who is subject to site design review shall submit to the Planning Department, in addition to the requirements of Section 4.035, the following:
- A. A site plan, drawn to scale, showing the proposed layout of all structures and other improvements including, where appropriate, driveways, pedestrian walks, landscaped areas, fences, walls, offstreet parking and loading areas, and railroad tracks. The site plan shall indicate the location of entrances and exits and direction of traffic flow into and out of off-street parking and loading areas, the location of each parking space and each loading berth and areas of turning and maneuvering vehicles. The site plan shall indicate how utility service and drainage are to be provided.

Response: The Preliminary Plans (Exhibit A) provide the information listed above, as applicable.

- B. A Landscape Plan, drawn to scale, showing the location and design of landscaped areas, the variety and sizes of trees and plant materials to be planted on the site, the location and design of landscaped areas, the varieties, by scientific and common name, and sizes of trees and plant materials to be retained or planted on the site, other pertinent landscape features, and irrigation systems required to maintain trees and plant materials. An inventory, drawn at the same scale as the Site Plan, of existing trees of 4" caliper or more is required. However, when large areas of trees are proposed to be retained undisturbed, only a survey identifying the location and size of all perimeter trees in the mass is necessary.

Response: The Preliminary Landscape Plan and Preliminary Tree Preservation and Removal Plan (Exhibit A) are included with this application. The plans provide the information required in the above subsection.

- C. Architectural drawings or sketches, drawn to scale, including floor plans, in sufficient detail to permit computation of yard requirements and showing all elevations of the proposed structures and other improvements as they will appear on completion of construction. Floor plans shall also be provided in sufficient detail to permit computation of yard requirements based on the relationship of indoor versus outdoor living area, and to evaluate the floor plan's effect on the exterior design of the building through the placement and configuration of windows and doors.

Response: Conceptual typical building elevations and floor plans are included as Exhibit M.

- D. A Color Board displaying specifications as to type, color, and texture of exterior surfaces of proposed structures. Also, a phased development schedule if the development is constructed in stages.
- E. A sign Plan, drawn to scale, showing the location, size, design, material, color and methods of illumination of all exterior signs.
- F. The required application fee.

Response: A color board is not included, as exterior dwelling design will be evaluated at the time of building permit review. No signs are proposed at this time. The required application fee has been submitted with this application.

CHAPTER 4. TREE PRESERVATION AND PROTECTION

Section 4.600.30 TREE REMOVAL PERMIT REQUIRED

- (.01) Requirement Established. No person shall remove any tree without first obtaining a Tree Removal Permit (TRP) as required by this subchapter.
- (.02) Tree Removal Permits will be reviewed according to the standards provided for in this subchapter, in addition to all other applicable requirements of Chapter 4.
- (.03) Although tree activities in the Willamette River Greenway are governed by WC 4.500 - 4.514, the application materials required to apply for a conditional use shall be the same as those required for a Type B or C permit under this subchapter, along with any additional materials that may be required by the Planning Department. An application for a Tree Removal Permit under this section shall be reviewed by the Development Review Board.

Response: As shown on the Preliminary Tree Preservation and Removal Plan in Exhibit A, the construction of public streets and homes necessitates removal of 14 trees, therefore this application includes a Type C Tree Removal Plan.

Section 4.600.50 APPLICATION FOR TREE REMOVAL PERMIT

- (.01) Application for Permit. A person seeking to remove one or more trees shall apply to the Director for a Tree Removal Permit for a Type A, B, C, or D permit, depending on the applicable standards as provided in this subchapter.
 - A. An application for a tree removal permit that does not meet the requirements of Type A may be submitted as a Type B application.
- (.02) Time of Application. Application for a Tree Removal Permit shall be made before removing or transplanting trees, except in emergency situations as provided in WC 4.600.40 (1)(B) above. Where the site is proposed for development necessitating site plan or plat review, application for a Tree Removal Permit shall be made as part of the site development application as specified in this subchapter.
- (.03) Fees. A person applying for a Tree Removal Permit shall pay a non-refundable application fee; as established by resolution of the City Council.
 - A. By submission of an application, the applicant shall be deemed to have authorized City representatives to have access to applicant's property as may be needed to verify the information provided, to observe site conditions, and if a permit is granted, to verify that terms and conditions of the permit are followed.

Response: The project application includes a Type C Removal Plan subject to the Design Review Board review and approval. A Type C Tree Removal Permit will be obtained prior to commencement of construction.

Section 4.610.00 APPLICATION REVIEW PROCEDURE

- (.01) The permit applicant shall provide complete information as required by this subchapter in order for the City to review the application.
- (.02) Departmental Review. All applications for Tree Removal Permits must be deemed complete by the City Planning Department before being accepted for review. When all required information has been supplied, the Planning Department will verify whether the application is complete. Upon request of either the applicant or the City, the City may conduct a field inspection or review meeting. City departments involved in the review shall submit their report and recommendations to the Planning Director who shall forward them to the appropriate reviewing authority.
- (.03) Reviewing Authority.
 - A. Type A or B. Where site plan review or plat approval by the Development Review Board is not required by City ordinance, the grant or denial of the Tree Removal Permit application shall be the responsibility of the Planning Director. The Planning Director has the authority to refer a Type B permit application to the DRB under the Class II administrative review procedures of this Chapter. The decision to grant or deny a permit shall be governed by the applicable review standards enumerated in WC 4.610.10
 - B. Type C. Where the site is proposed for development necessitating site plan review or plat approval by the Development Review Board, the Development Review Board shall be responsible for granting or denying the application for a Tree Removal Permit, and that decision may be subject to affirmance, reversal or modification by the City Council, if subsequently reviewed by the Council.
 - C. Type D. Type D permit applications shall be subject to the standards and procedures of Class I administrative review and shall be reviewed for compliance with the Oregon Forest Practice Rules and Statutes. The Planning Director shall make the decision to grant or deny an application for a Type D permit.
 - D. Review period for complete applications. Type A permit applications shall be reviewed within 10 (ten) working days. Type B permit applications shall be reviewed by the Planning Director within thirty (30) calendar days, except that the DRB shall review any referred application within sixty (60) calendar days. Type C permit applications shall be reviewed within the time frame established by this Chapter. Type D permit applications shall be reviewed within 15 calendar days.

Response: The application is for a Type C Tree Removal Plan and is subject to review and approval by the DRB.

Section 4.610.10 STANDARDS FOR TREE REMOVAL, RELOCATION OR REPLACEMENT

- (.01) Except where an application is exempt, or where otherwise noted, the following standards shall govern the review of an application for a Type A, B, C or D Tree Removal Permit:
 - A. Standard for the Significant Resource Overlay Zone. The standard for tree removal in the Significant Resource Overlay Zone shall be that removal or transplanting of any tree is not inconsistent with the purposes of this Chapter.

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- B. **Preservation and Conservation.** No development application shall be denied solely because trees grow on the site. Nevertheless, tree preservation and conservation as a design principle shall be equal in concern and importance to other design principles.

Response: As shown on the Preliminary Tree Preservation and Removal Plan (Exhibit A), all existing trees within Boeckman Creek SROZ will be preserved. Thirty-four (34) existing mature trees are planned to be preserved on-site. Fourteen (14) trees have to be removed to accommodate a stormwater facility, public streets, and building footprints of the individual lots, as determined by minimum setbacks and driveway depth requirements. Willow Creek Drive was re-aligned through the Applicant's property from the route originally contemplated in the Master Plan so as to avoid the removal of an existing mature tree grove.

- C. **Developmental Alternatives.** Preservation and conservation of wooded areas and trees shall be given careful consideration when there are feasible and reasonable location alternatives and design options on-site for proposed buildings, structures or other site improvements.

Response: The Frog Pond West Master Plan provides clear direction for street connections, residential densities, and preservation of the SROZ. The existing trees were preserved to the greatest extent practicable. Preservation of 100 percent of the existing trees onsite is not feasible, while addressing the requirements of the Frog Pond West Master Plan. This standard is met.

- D. **Land Clearing.** Where the proposed activity requires land clearing, the clearing shall be limited to designated street rights-of-way and areas necessary for the construction of buildings, structures or other site improvements.

Response: The proposed land clearing is limited to designated street rights-of-way and areas necessary for the construction of single-family homes and storm management facilities. This standard is met.

- E. **Residential Development.** Where the proposed activity involves residential development, residential units shall, to the extent reasonably feasible, be designed and constructed to blend into the natural setting of the landscape.

Response: The residential lots were laid out within the project to blend into the natural areas on the site to the greatest degree practicable. In conformance with the intent of Frog Pond West Master Plan, unobstructed visual and physical access is provided to Boeckman Creek natural area within the site. Trillium Court terminates at the future location of Boeckman Creek trailhead, providing a visual corridor from the interior of the neighborhood to the open space. This standard is met.

- F. **Compliance with Statutes and Ordinances.** The proposed activity shall comply with all applicable statutes and ordinances.

Response: Applicable statutes and ordinances include the City's Development Code. The proposed activity will comply with this code and any other applicable statutes and ordinances. This standard is met.

- G. **Relocation or Replacement.** The proposed activity shall include necessary provisions for tree relocation or replacement, in accordance with WC 4.620.00,

and the protection of those trees that are not to be removed, in accordance with WC 4.620.10.

Response: As shown on the Preliminary Tree Preservation and Removal Plan (Exhibit A), trees to be retained will be protected per the provisions of 4.620.10 and trees will be replaced in accordance with 4.620.00. This standard is met.

H. **Limitation.** Tree removal or transplanting shall be limited to instances where the applicant has provided completed information as required by this Chapter and the reviewing authority determines that removal or transplanting is necessary based on the criteria of this subsection.

1. **Necessary For Construction.** Where the applicant has shown to the satisfaction of the reviewing authority that removal or transplanting is necessary for the construction of a building, structure or other site improvement, and that there is no feasible and reasonable location alternative or design option on-site for a proposed building, structure or other site improvement; or a tree is located too close to existing or proposed buildings or structures, or creates unsafe vision clearance.

Response: As shown on the Preliminary Tree Preservation and Removal Plan and the associated Table included in the Preliminary Plans (Exhibit A), there are 48 existing trees on site. Removal of 14 trees on site is necessary for construction of site improvements, including utilities, stormwater pond, public streets, and detached residential dwellings. The location of public streets and connections, as well as minimum and maximum residential density and dimensional standards of residential lots are determined by the requirements of the Frog Pond West Master Plan. Therefore, removal of 14 trees is necessary for construction. The proposed development is anticipated by the Frog Pond West Master Plan. New street trees appropriate for the size and location of the planter strips within the public right-of-way will be planted. These trees will serve to soften the urban environment, contribute to stormwater management, and provide shade and protection for pedestrians.

2. **Disease, Damage, or Nuisance, or Hazard.** Where the tree is diseased, damaged, or in danger of falling, or presents a hazard as defined in WC 6.208, or is a nuisance as defined in WC 6.200 et seq., or creates unsafe vision clearance as defined in this Code.

(a) As a condition of approval of Stage II development, filbert trees must be removed if they are no longer commercially grown or maintained.

3. **Interference.** Where the tree interferes with the healthy growth of other trees, existing utility service or drainage, or utility work in a previously dedicated right-of-way, and it is not feasible to preserve the tree on site.

4. **Other.** Where the applicant shows that tree removal or transplanting is reasonable under the circumstances.

I. **Additional Standards for Type C Permits.**

1. **Tree survey.** For all site development applications reviewed under the provisions of Chapter 4 Planning and Zoning, the developer shall provide a Tree Survey before site development as required by WC 4.610.40, and provide a Tree Maintenance and Protection plan, unless

specifically exempted by the Planning Director or DRB, prior to initiating site development.

Response: A tree survey has been completed and incorporated into the Tree Removal and Protection Plan (Exhibit A). This standard is met.

2. **Platted Subdivisions.** The recording of a final subdivision plat whose preliminary plat has been reviewed and approved after the effective date of Ordinance 464 by the City and that conforms with this subchapter shall include a Tree Survey and Maintenance and Protection Plan, as required by this subchapter, along with all other conditions of approval.

Response: This application includes a preliminary subdivision plat. Following the approval of this application, the applicant will submit a final subdivision plat, which will include a Tree Survey and Maintenance Protection Plan, pursuant to the Code requirements. This standard is met.

3. **Utilities.** The City Engineer shall cause utilities to be located and placed wherever reasonably possible to avoid adverse environmental consequences given the circumstances of existing locations, costs of placement and extensions, the public welfare, terrain, and preservation of natural resources. Mitigation and/or replacement of any removed trees shall be in accordance with the standards of this subchapter.

Response: The utilities will be located and placed within rights-of-way or adjacent PUEs whenever possible. Trees removed from the site will be replaced per the provisions of 4.620.00. This standard is met.

[...]

Section 4.610.40 TYPE C PERMIT

- (.01) Approval to remove any trees on property as part of a site development application may be granted in a Type C permit. A Type C permit application shall be reviewed by the standards of this subchapter and all applicable review criteria of Chapter 4. Application of the standards of this section shall not result in a reduction of square footage or loss of density, but may require an applicant to modify plans to allow for buildings of greater height. If an applicant proposes to remove trees and submits a landscaping plan as part of a site development application, an application for a Tree Removal Permit shall be included. The Tree Removal Permit application will be reviewed in the Stage II development review process, and any plan changes made that affect trees after Stage II review of a development application shall be subject to review by DRB. Where mitigation is required for tree removal, such mitigation may be considered as part of the landscaping requirements as set forth in this Chapter. Tree removal shall not commence until approval of the required Stage II application and the expiration of the appeal period following that decision. If a decision approving a Type C permit is appealed, no trees shall be removed until the appeal has been settled.

Response: As described above, removal of 14 trees is necessary for construction associated with this site development application, which requires 14 trees to be replaced. Please refer to the calculations and discussion provided in response to Code Section 4.176(.06)F above. The project earns a credit for 100 replacement trees through preservation of existing mature trees onsite, therefore additional mitigation is not required. However, as shown on the Preliminary Landscape Plan (Exhibit A), Frog Pond Vista neighborhood will provide 83 new

street trees, which were selected from the list of approved species in the Frog Pond Master Plan and are tied to the street typology for Frog Pond West (Primary and Neighborhood streets).

(.02) The applicant must provide ten copies of a Tree Maintenance and Protection Plan completed by an arborist that contains the following information:

A. A plan, including a topographical survey bearing the stamp and signature of a qualified, registered professional containing all the following information:

1. **Property Dimensions.** The shape and dimensions of the property, and the location of any existing and proposed structure or improvement.
2. **Tree survey.** The survey must include:
 - a. An accurate drawing of the site based on accurate survey techniques at a minimum scale of one inch (1") equals one hundred feet (100') and which provides a) the location of all trees having six inches (6") or greater d.b.h. likely to be impacted, b) the spread of canopy of those trees, (c) the common and botanical name of those trees, and d) the approximate location and name of any other trees on the property.
 - b. A description of the health and condition of all trees likely to be impacted on the site property. In addition, for trees in a present or proposed public street or road right-of-way that are described as unhealthy, the description shall include recommended actions to restore such trees to full health. Trees proposed to remain, to be transplanted or to be removed shall be so designated. All trees to remain on the site are to be designated with metal tags that are to remain in place throughout the development. Those tags shall be numbered, with the numbers keyed to the tree survey map that is provided with the application.
 - c. Where a stand of twenty (20) or more contiguous trees exist on a site and the applicant does not propose to remove any of those trees, the required tree survey may be simplified to accurately show only the perimeter area of that stand of trees, including its drip line. Only those trees on the perimeter of the stand shall be tagged, as provided in "b," above.
 - d. All Oregon white oaks, native yews, and any species listed by either the state or federal government as rare or endangered shall be shown in the tree survey.
3. **Tree Protection.** A statement describing how trees intended to remain will be protected during development, and where protective barriers are necessary, that they will be erected before work starts. Barriers shall be sufficiently substantial to withstand nearby construction activities. Plastic tape or similar forms of markers do not constitute "barriers."
4. **Easements and Setbacks.** Location and dimension of existing and proposed easements, as well as all setbacks required by existing zoning requirements.

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5. **Grade Changes.** Designation of grade changes proposed for the property that may impact trees.
 6. **Cost of Replacement.** A cost estimate for the proposed tree replacement program with a detailed explanation including the number, size and species.
 7. **Tree Identification.** A statement that all trees being retained will be identified by numbered metal tags, as specified in subsection "A," above in addition to clear identification on construction documents.

Response: A Preliminary Tree Preservation and Removal Plan is included in the preliminary plans (Exhibit A). It includes a tree survey indicating the location of trees greater than 6-inch diameter at breast height (DBH), information about the condition of the trees, crown diameter, and proposed action for each tree. The plan also includes a statement identifying the purpose of the tree tags. Please refer to the Preliminary Existing Conditions Plan (Exhibit A) prepared by a professional surveyor for the location of existing structures and improvements. Please refer to the Preliminary Dimensioned Subdivision Plan (Exhibit A) for the location of proposed improvements and setbacks. Since tree replacement requirement is fully satisfied onsite, payment into the tree replacement fund is not proposed, therefore the cost estimate requirement is not applicable.

Section 4.620.00 TREE RELOCATION, MITIGATION, OR REPLACEMENT

- (.01) **Requirement Established.** A Type B or C Tree Removal Permit grantee shall replace or relocate each removed tree having six (6) inches or greater d.b.h. within one year of removal.

Response: Pursuant to Section 4.176 (.06).F, the project earns credit for 100 replacement trees through the preservation of onsite mature trees, which exceeds the requirement for 14 replacement trees. These criteria do not apply.

[...]

Section 4.620.10 TREE PROTECTION DURING CONSTRUCTION

- (.01) Where tree protection is required by a condition of development under Chapter 4 or by a Tree Maintenance and Protection Plan approved under this subchapter, the following standards apply:
- A. All trees required to be protected must be clearly labeled as such.
 - B. **Placing Construction Materials Near Tree.** No person may conduct any construction activity likely to be injurious to a tree designated to remain, including, but not limited to, placing solvents, building material, construction equipment, or depositing soil, or placing irrigated landscaping, within the drip line, unless a plan for such construction activity has been approved by the Planning Director or Development Review Board based upon the recommendations of an arborist.
 - C. **Attachments to Trees During Construction.** Notwithstanding the requirement of WC 4.620.10(1)(A), no person shall attach any device or wire to any protected tree unless needed for tree protection.
 - D. **Protective Barrier.** Before development, land clearing, filling or any land alteration for which a Tree Removal Permit is required, the developer shall erect and maintain suitable barriers as identified by an arborist to protect remaining trees. Protective barriers shall remain in place until the City authorizes their removal or issues a final certificate of occupancy, whichever

occurs first. Barriers shall be sufficiently substantial to withstand nearby construction activities. Plastic tape or similar forms of markers do not constitute "barriers." The most appropriate and protective barrier shall be utilized. Barriers are required for all trees designated to remain, except in the following cases:

1. Right-of-Ways and Easements. Street right-of-way and utility easements may be cordoned by placing stakes a minimum of fifty (50) feet apart and tying ribbon, plastic tape, rope, etc., from stake to stake along the outside perimeters of areas to be cleared.
2. Any property area separate from the construction or land clearing area onto which no equipment will venture may also be cordoned off as described in paragraph (D) of this subsection, or by other reasonable means as approved by the reviewing authority.

Response: The Preliminary Tree Preservation and Removal Plan (Exhibit A) provides direction regarding the protection of trees on the site. The applicable standards will be included on the construction documents as well.

CHAPTER 4. ANNEXATIONS AND URBAN GROWTH BOUNDARY AMENDMENTS

Section 4.700 PROCEDURES RELATING TO THE PROCESSING OF REQUESTS FOR ANNEXATION AND URBAN GROWTH BOUNDARY AMENDMENTS.

(.01) The City of Wilsonville is located within the Portland Metropolitan Area, and is therefore subject to regional government requirements affecting changes to the city limits and changes to the Urban Growth Boundary (UGB) around Wilsonville. The City has the authority to annex properties as prescribed in State law, but the City's role in determining the UGB is primarily advisory to Metro, as provided in Oregon Revised Statutes. The following procedures will be used to aid the City Council in formulating recommendations to those regional entities. [Amended by Ordinance No. 538, 2/21/02.]

A. Proponents of such changes shall provide the Planning Director with all necessary maps and written information to allow for review by city decision-makers. The Planning Director, after consultation with the City Attorney, will determine whether each given request is quasi-judicial or legislative in nature and will make the necessary arrangements for review based upon that determination.

Response: The Applicant has provided the required information. The Planning Director has determined that the annexation request is subject to quasi-judicial review.

B. Written information submitted with each request shall include an analysis of the relationship between the proposal and the City's Comprehensive Plan, applicable statutes, as well as the Statewide Planning Goals and any officially adopted regional plan that may be applicable.

Response: Please refer to the responses addressing compliance with the relevant Comprehensive Plan goals.

IV. Conclusion

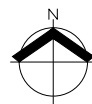
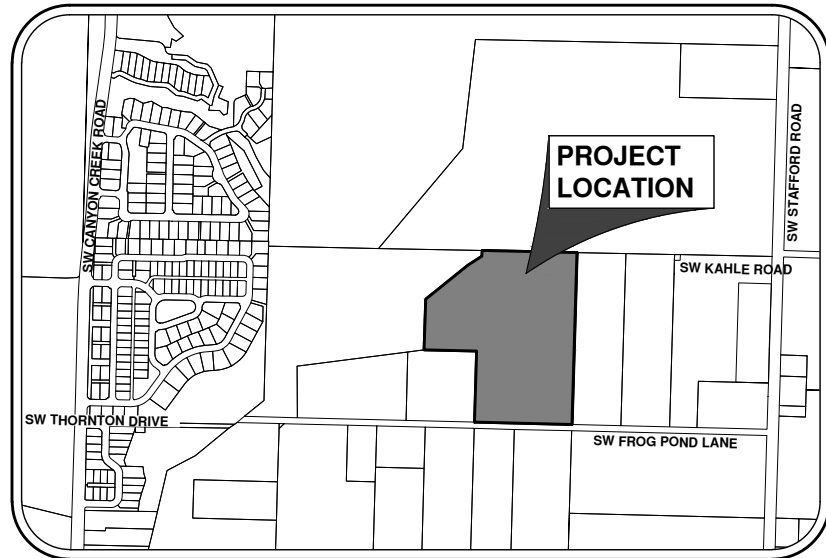
The required findings have been made and this written narrative and accompanying documentation demonstrate that the application is consistent with the applicable standards of the City of Wilsonville. The evidence in the record is substantial and supports approval of the application. Therefore, the Applicant respectfully requests that the City approve this Combined Application.

Exhibit A: Preliminary Plans

FROG POND VISTA

PLANNED UNIT DEVELOPMENT

PRELIMINARY PLANS



VICINITY MAP
1" = 500'

APPLICANT:

VENTURE PROPERTIES, INC.
4230 GALEWOOD STREET #100
LAKE OSWEGO, OR 97035

PLANNING / ENGINEERING / SURVEYING TEAM:

AKS ENGINEERING & FORESTRY, LLC
CONTACT: CODY STREET / MIMI DOUKAS
12965 SW HERMAN RD, SUITE 100
TUALATIN, OR 97062
PH: 503-563-6151

PROJECT LOCATION:

NORTHWEST OF THE INTERSECTION OF SW WILLOW CREEK DRIVE AND SW FROG POND LANE - WILSONVILLE, OR

PROPERTY DESCRIPTION:

TAX LOT 500, CLACKAMAS COUNTY ASSESSOR'S MAP 3S 1W 12. LOCATED IN TOWNSHIP 3 SOUTH, RANGE 1 WEST, SECTION 12, WILLAMETTE MERIDIAN, CITY OF WILSONVILLE, CLACKAMAS COUNTY, OREGON.

EXISTING LAND USE:

EXISTING HOUSE WITH ACCESSORY STRUCTURES

PROJECT PURPOSE:

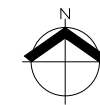
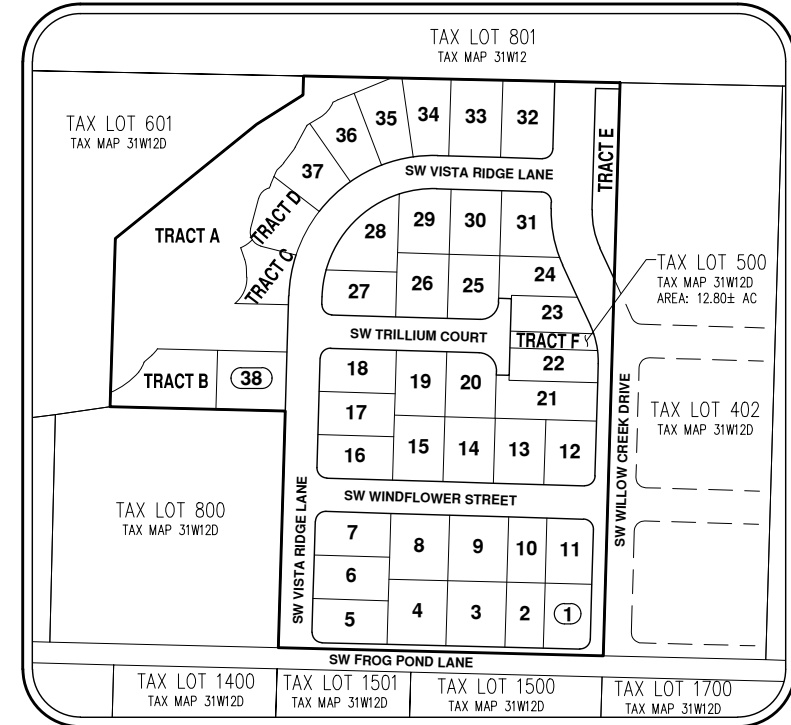
PLANNED UNIT DEVELOPMENT FOR FUTURE SINGLE-FAMILY HOMES

VERTICAL DATUM:

VERTICAL DATUM: DERIVED FROM GPS OBSERVATIONS USING THE TRIMBLE VRS NOW NETWORK (NAVD 88)

HORIZONTAL DATUM:

HORIZONTAL DATUM: A LOCAL DATUM PLANE SCALED FROM OREGON STATE PLANE NORTH 3601 NAD83(2011) EPOCH 2010.0000 BY HOLDING A PROJECT MEAN GROUND COMBINED SCALE FACTOR OF 1.0001095227 AT A CALCULATED CENTRAL PROJECT POINT WITH GRID VALUES OF (NORTH: 611619.612 EAST: 7624210.554). THE MERIDIAN CONVERGENCE ANGLE AT THE CALCULATED CENTRAL POINT IS -1'35"37". THE STATE PLANE COORDINATES WERE DERIVED FROM THE TRIMBLE VRS NETWORK.



SITE MAP
1" = 150'

SITE INFORMATION:

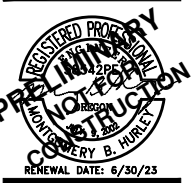
GROSS AREA: 12.8 ACRES
6901 SW FROG POND LANE

SHEET INDEX

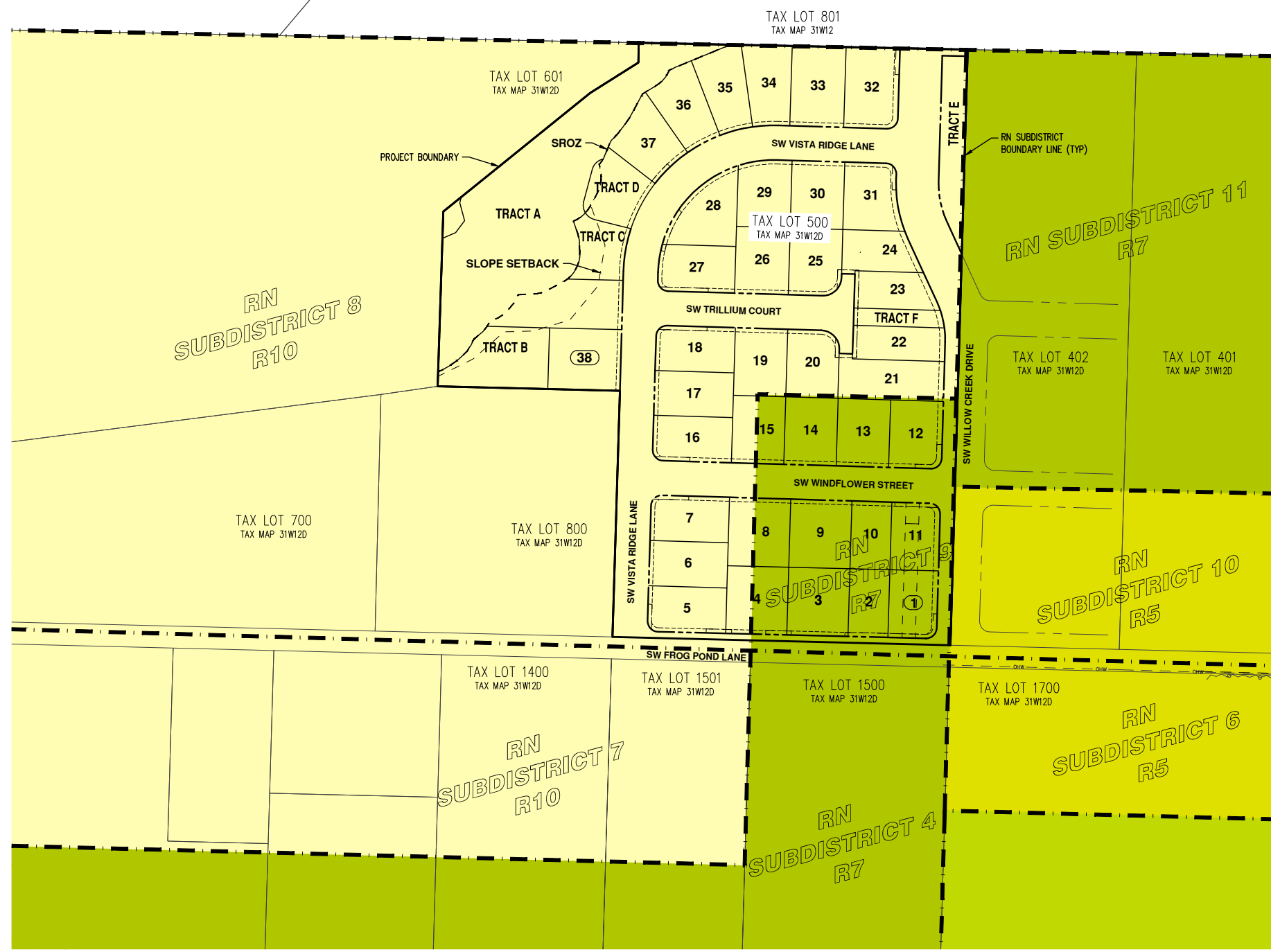
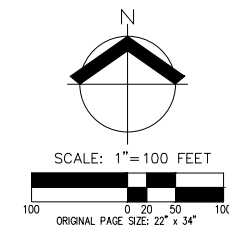
- P-01 COVER SHEET WITH LEGEND, VICINITY, AND SITE MAPS
- P-02 ZONING MAP
- P-03 ANNEXATION MAP
- P-04 PRELIMINARY EXISTING CONDITIONS PLAN
- P-05 PRELIMINARY AERIAL PHOTOGRAPH PLAN
- P-06 PRELIMINARY DIMENSIONED P.U.D. PLAN
- P-07 PRELIMINARY GRADING AND EROSION CONTROL MEASURES
- P-08 PRELIMINARY COMPOSITE UTILITY PLAN
- P-09 PRELIMINARY STREET PLAN
- P-10 PRELIMINARY STREET CROSS SECTIONS
- P-11 PRELIMINARY STREET PROFILES
- P-12 PRELIMINARY STREET PROFILES
- P-13 PRELIMINARY TREE PRESERVATION AND REMOVAL PLAN
- P-14 PRELIMINARY TREE PRESERVATION AND REMOVAL TABLE
- P-15 PRELIMINARY DEMOLITION PLAN
- P-16 PRELIMINARY LANDSCAPE PLAN
- P-17 PRELIMINARY TRACT C OPEN SPACE PLAN
- P-18 PRELIMINARY LANDSCAPE DETAILS

LEGEND			
	EXISTING	PROPOSED	
DECIDUOUS TREE			STORM DRAIN CLEAN OUT
CONIFEROUS TREE			STORM DRAIN CATCH BASIN
FIRE HYDRANT			STORM DRAIN AREA DRAIN
WATER BLOWOFF			STORM DRAIN MANHOLE
WATER METER			GAS METER
WATER VALVE			GAS VALVE
DOUBLE CHECK VALVE			GUY WIRE ANCHOR
AIR RELEASE VALVE			UTILITY POLE
SANITARY SEWER CLEAN OUT			POWER VAULT
SANITARY SEWER MANHOLE			POWER JUNCTION BOX
SIGN			POWER PEDESTAL
STREET LIGHT			COMMUNICATIONS VAULT
MAILBOX			COMMUNICATIONS JUNCTION BOX
			COMMUNICATIONS RISER

	EXISTING	PROPOSED
RIGHT-OF-WAY LINE		
BOUNDARY LINE		
PROPERTY LINE		
CENTERLINE		
DITCH		
CURB		
EDGE OF PAVEMENT		
EASEMENT		
FENCE LINE		
GRAVEL EDGE		
POWER LINE		
OVERHEAD WIRE		
COMMUNICATIONS LINE		
FIBER OPTIC LINE		
GAS LINE		
STORM DRAIN LINE		
SANITARY SEWER LINE		
WATER LINE		



RENEWAL DATE:	6/30/23
JOB NUMBER:	7530
DATE:	01/14/2022
DESIGNED BY:	NLB
DRAWN BY:	JJA
CHECKED BY:	MBH



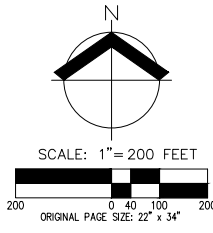
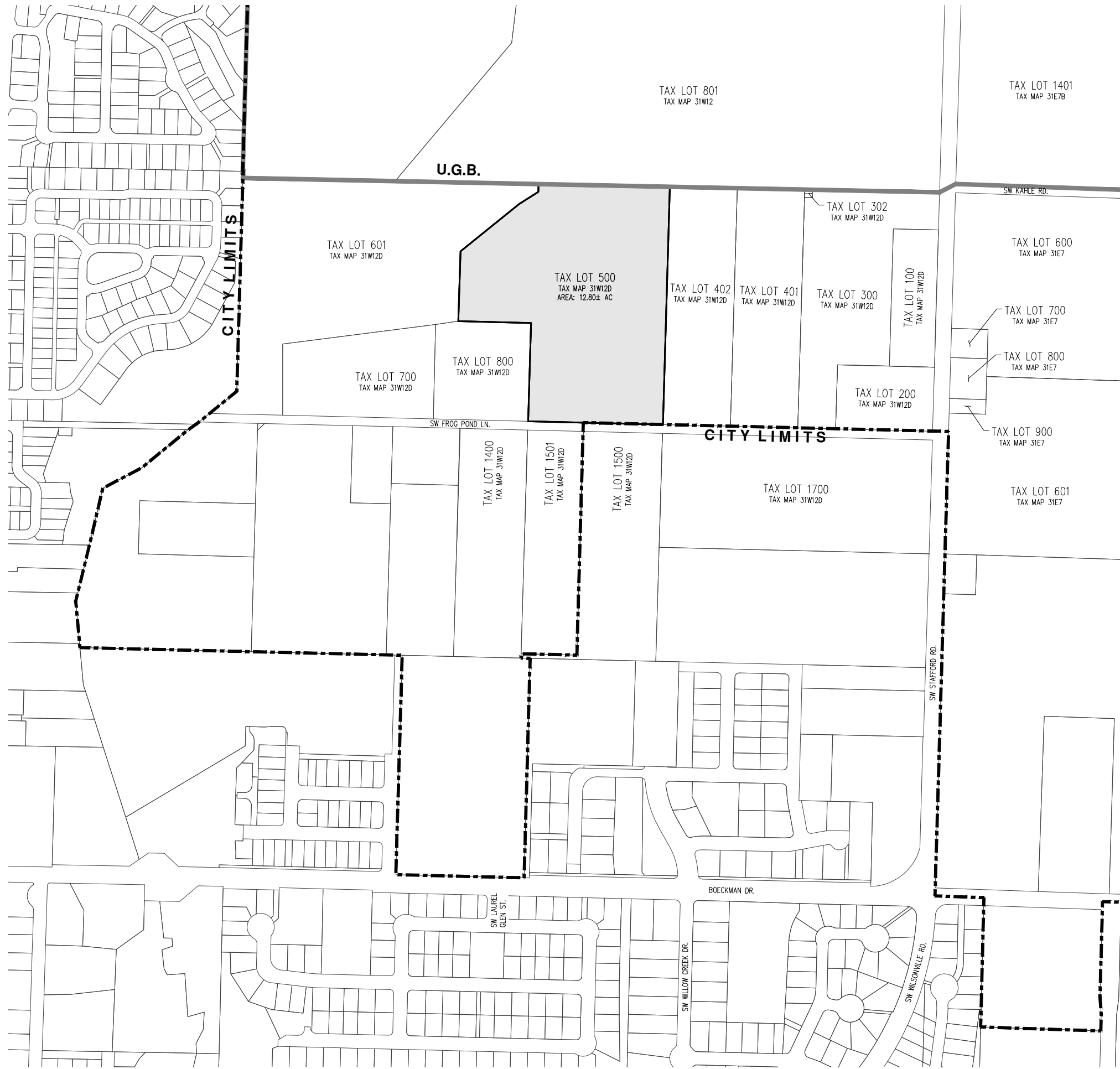
LEGEND

- R5 ZONE
- R7 ZONE
- R10 ZONE


**ZONING MAP
 FROG POND VISTA
 VENTURE PROPERTIES, INC.
 WILSONVILLE, OREGON**


PRELIMINARY
 REGISTERED PROFESSIONAL ENGINEER
 CONSTRUCTION
 BRYAN B. HURVEY
 RENEWAL DATE: 6/30/23


JOB NUMBER: 7530
 DATE: 01/14/2022
 DESIGNED BY: NLB
 DRAWN BY: JJA
 CHECKED BY: MBH



LEGEND

AREA TO BE ANNEXED 

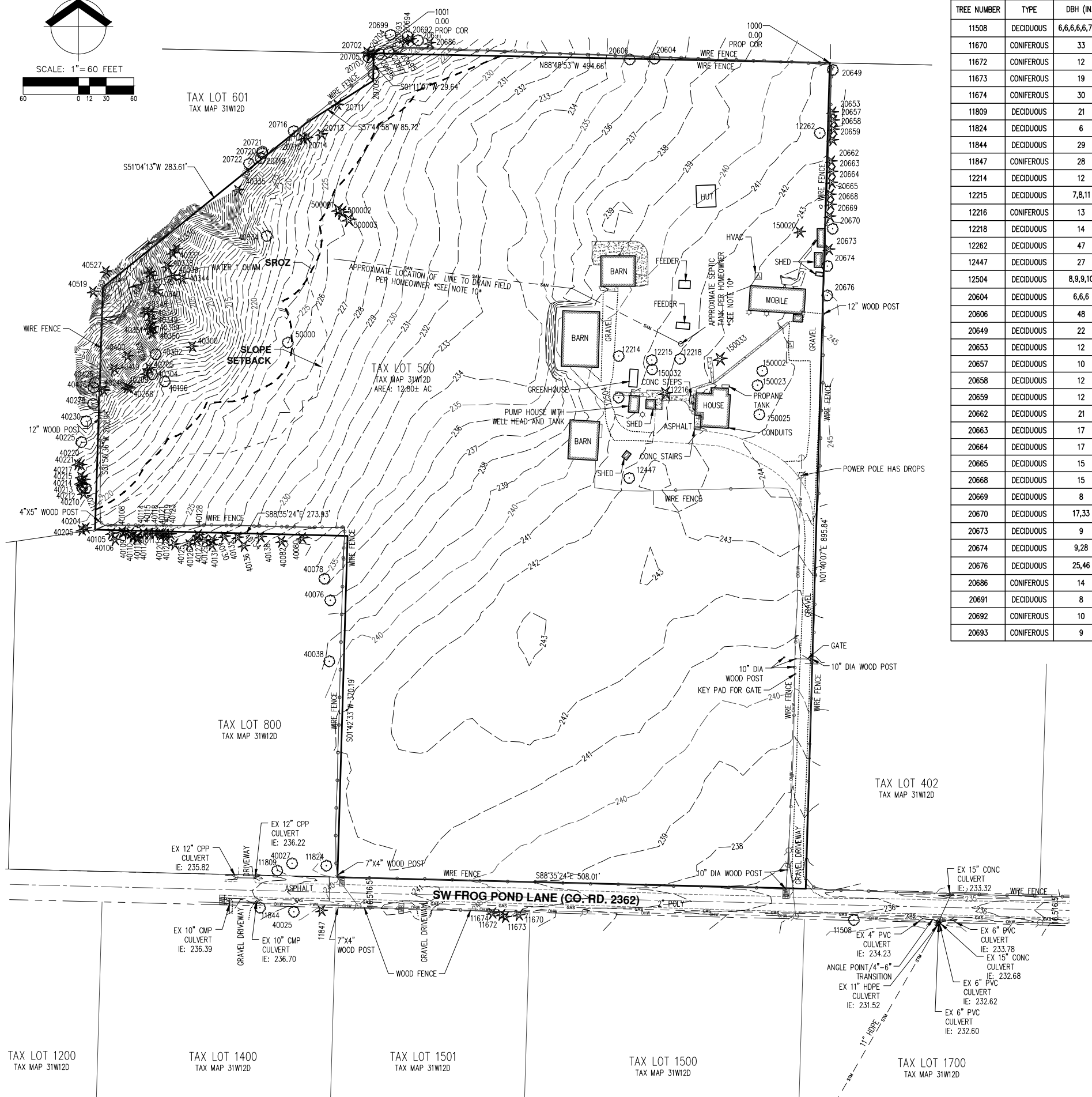
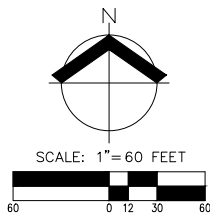
URBAN GROWTH BOUNDARY 

CITY LIMITS 

AKS
 AKS ENGINEERING & FORESTRY, LLC
 12965 SW HERMAN RD., STE. 100
 TUALUMIN, OR 97062
 503.563.6151
 WWW.AKS-ENG.COM
 ENGINEERING • SURVEYING • NATURAL RESOURCES
 FORESTRY • PLANNING • LANDSCAPE ARCHITECTURE

**ANNEXATION MAP
 FROG POND VISTA
 VENTURE PROPERTIES, INC.
 WILSONVILLE, OREGON**

PROFESSIONAL SEAL
 REGISTERED PROFESSIONAL SURVEYOR
 WILSONVILLE, OREGON
 CONSTRUCTION
 RENEWAL DATE: 6/30/23
 JOB NUMBER: 7530
 DATE: 01/14/2022
 DESIGNED BY: NLB
 DRAWN BY: JJA
 CHECKED BY: MBH



TREE NUMBER	TYPE	DBH (IN.)
11508	DECIDUOUS	6,6,6,6,6,7,8,8
11670	CONIFEROUS	33
11672	CONIFEROUS	12
11673	CONIFEROUS	19
11674	CONIFEROUS	30
11809	DECIDUOUS	21
11824	DECIDUOUS	6
11844	DECIDUOUS	29
11847	CONIFEROUS	28
12214	DECIDUOUS	12
12215	DECIDUOUS	7,8,11
12216	CONIFEROUS	13
12218	DECIDUOUS	14
12262	DECIDUOUS	47
12447	DECIDUOUS	27
12504	DECIDUOUS	8,9,9,10
20604	DECIDUOUS	6,6,6
20606	DECIDUOUS	48
20649	DECIDUOUS	22
20653	DECIDUOUS	12
20657	DECIDUOUS	10
20658	DECIDUOUS	12
20659	DECIDUOUS	12
20662	DECIDUOUS	21
20663	DECIDUOUS	17
20664	DECIDUOUS	17
20665	DECIDUOUS	15
20668	DECIDUOUS	15
20669	DECIDUOUS	8
20670	DECIDUOUS	17,33
20673	DECIDUOUS	9
20674	DECIDUOUS	9,28
20676	DECIDUOUS	25,46
20686	CONIFEROUS	14
20691	DECIDUOUS	8
20692	CONIFEROUS	10
20693	CONIFEROUS	9

TREE NUMBER	TYPE	DBH (IN.)
20694	DECIDUOUS	13
20695	DECIDUOUS	14
20697	DECIDUOUS	8
20698	DECIDUOUS	6
20699	DECIDUOUS	8
20702	CONIFEROUS	23
20703	CONIFEROUS	6
20704	CONIFEROUS	6
20705	DECIDUOUS	13
20709	DECIDUOUS	26
20711	CONIFEROUS	17
20713	CONIFEROUS	18
20714	CONIFEROUS	25
20715	CONIFEROUS	25
20716	DECIDUOUS	7
20719	DECIDUOUS	13
20720	DECIDUOUS	17
20721	DECIDUOUS	9
20722	DECIDUOUS	26
40025	DECIDUOUS	34
40027	DECIDUOUS	8
40038	DECIDUOUS	20
40076	DECIDUOUS	10
40078	DECIDUOUS	9
40079	DECIDUOUS	9
40080	CONIFEROUS	29
40082	CONIFEROUS	9
40105	CONIFEROUS	7
40106	CONIFEROUS	7
40108	CONIFEROUS	18
40109	CONIFEROUS	7
40110	CONIFEROUS	8
40111	CONIFEROUS	7
40112	CONIFEROUS	9
40113	CONIFEROUS	6
40114	CONIFEROUS	12
40115	CONIFEROUS	13

TREE NUMBER	TYPE	DBH (IN.)
40118	CONIFEROUS	12
40119	CONIFEROUS	8
40120	CONIFEROUS	10
40121	CONIFEROUS	8
40122	CONIFEROUS	10
40123	CONIFEROUS	17
40125	CONIFEROUS	15
40126	CONIFEROUS	14
40127	CONIFEROUS	12
40128	CONIFEROUS	16
40129	CONIFEROUS	12
40130	CONIFEROUS	16
40131	CONIFEROUS	10
40132	CONIFEROUS	17
40134	CONIFEROUS	18
40136	CONIFEROUS	16
40138	CONIFEROUS	22
40196	DECIDUOUS	7
40204	CONIFEROUS	22,29
40205	CONIFEROUS	21,28
40210	CONIFEROUS	23
40211	DECIDUOUS	6
40212	DECIDUOUS	7
40213	CONIFEROUS	15
40214	CONIFEROUS	16
40215	CONIFEROUS	32
40217	CONIFEROUS	9
40220	CONIFEROUS	14
40221	CONIFEROUS	13
40225	DECIDUOUS	7
40230	DECIDUOUS	15
40246	CONIFEROUS	25
40268	CONIFEROUS	9
40269	CONIFEROUS	21
40278	DECIDUOUS	25
40300	CONIFEROUS	23
40302	DECIDUOUS	9

TREE NUMBER	TYPE	DBH (IN.)
40303	CONIFEROUS	20
40304	DECIDUOUS	7
40305	CONIFEROUS	14
40309	CONIFEROUS	26
40334	DECIDUOUS	8,26
40335	CONIFEROUS	33
40336	CONIFEROUS	33
40337	CONIFEROUS	19
40338	CONIFEROUS	19
40339	CONIFEROUS	31
40340	CONIFEROUS	51
40344	CONIFEROUS	20
40345	CONIFEROUS	39
40346	CONIFEROUS	18
40347	CONIFEROUS	19
40348	CONIFEROUS	33
40349	CONIFEROUS	24
40350	CONIFEROUS	24
40351	CONIFEROUS	14
40400	CONIFEROUS	57
40419	CONIFEROUS	19
40425	DECIDUOUS	14
40426	DECIDUOUS	15
40519	CONIFEROUS	32
40527	CONIFEROUS	44
50000	DECIDUOUS	38
150002	DECIDUOUS	6,6,6,6
150020	CONIFEROUS	14
150023	DECIDUOUS	11
150025	DECIDUOUS	7
150032	DECIDUOUS	7,8
150033	CONIFEROUS	57
500001	CONIFEROUS	10
500002	CONIFEROUS	18
500003	CONIFEROUS	24

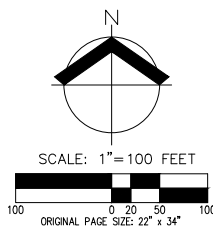
NOTES:

- UTILITIES SHOWN ARE BASED ON UNDERGROUND UTILITY LOCATE MARKINGS AS PROVIDED BY OTHERS, PROVIDED PER UTILITY LOCATE TICKET NUMBERS 21084826, 21084836, 21084839. THE SURVEYOR MAKES NO GUARANTEE THAT THE UNDERGROUND LOCATES REPRESENT THE ONLY UTILITIES IN THE AREA. CONTRACTORS ARE RESPONSIBLE FOR VERIFYING ALL EXISTING CONDITIONS PRIOR TO BEGINNING CONSTRUCTION.
- FIELD WORK WAS CONDUCTED FEBRUARY 17-25, 2021.
- VERTICAL DATUM: DERIVED FROM GPS OBSERVATIONS USING THE TRIMBLE VRS NOW NETWORK (NAVD 88).
- HORIZONTAL DATUM: A LOCAL DATUM PLANE SCALED FROM OREGON STATE PLANE NORTH 3601 NAD83(2011) EPOCH 2010.0000 BY HOLDING A PROJECT MEAN GROUND COMBINED SCALE FACTOR OF 1.0001095227 AT A CALCULATED CENTRAL PROJECT POINT WITH GRID VALUES OF (NORTH:611619.612 EAST:7624210.554). THE MERIDIAN CONVERGENCE ANGLE AT THE CALCULATED CENTRAL POINT IS -1'35"37". THE STATE PLANE COORDINATES WERE DERIVED FROM THE TRIMBLE VRS NETWORK.
- THIS IS NOT A PROPERTY BOUNDARY SURVEY TO BE RECORDED WITH THE COUNTY SURVEYOR. BOUNDARIES MAY BE PRELIMINARY AND SHOULD BE CONFIRMED WITH THE STAMPING SURVEYOR PRIOR TO USE FOR DETAILED DESIGN OR CONSTRUCTION.
- BUILDING FOOTPRINTS ARE MEASURED TO SIDING UNLESS NOTED OTHERWISE. CONTACT SURVEYOR WITH QUESTIONS REGARDING BUILDING TIES.
- CONTOUR INTERVAL IS 1 FOOT.
- TREES WITH DIAMETER OF 6" AND GREATER ARE SHOWN. TREE DIAMETERS WERE MEASURED UTILIZING A DIAMETER TAPE AT BREAST HEIGHT. TREE INFORMATION IS SUBJECT TO CHANGE UPON ARBORIST INSPECTION.
- WETLAND & WATER BOUNDARIES SHOWN WERE DELINEATED BY AKS ENGINEERING & FORESTRY, LLC. ON FEBRUARY 24, 2021 AND WERE PROFESSIONALLY SURVEYED BY AKS ON 02-25-2021.
- THE SEPTIC DRAIN FIELD SYSTEM IS BASED ON THE HOMEOWNER'S DESCRIPTION OF THE APPROXIMATE LOCATIONS OF THE TANK AND DRAIN LINES.

PRELIMINARY EXISTING CONDITIONS PLAN
FROG POND VISTA
VENTURE PROPERTIES, INC.
WILSONVILLE, OREGON

AKS
 AKS ENGINEERING & FORESTRY, LLC
 12965 SW HERMAN RD., STE. 100
 TUALATIN, OR 97062
 503.563.6151
 WWW.AKS-ENG.COM
 ENGINEERING • SURVEYING • NATURAL RESOURCES
 FORESTRY • PLANNING • LANDSCAPE ARCHITECTURE

REGISTERED PROFESSIONAL LAND SURVEYOR
 PRELIMINARY FOR CONSTRUCTION
 JANUARY 20, 2025
 ROBERT D. RETTIG
 80124LS
 RENEWS: 12/31/22
 JOB NUMBER: 7530
 DATE: 01/14/2022
 DESIGNED BY:
 DRAWN BY: RDR
 CHECKED BY: RDR

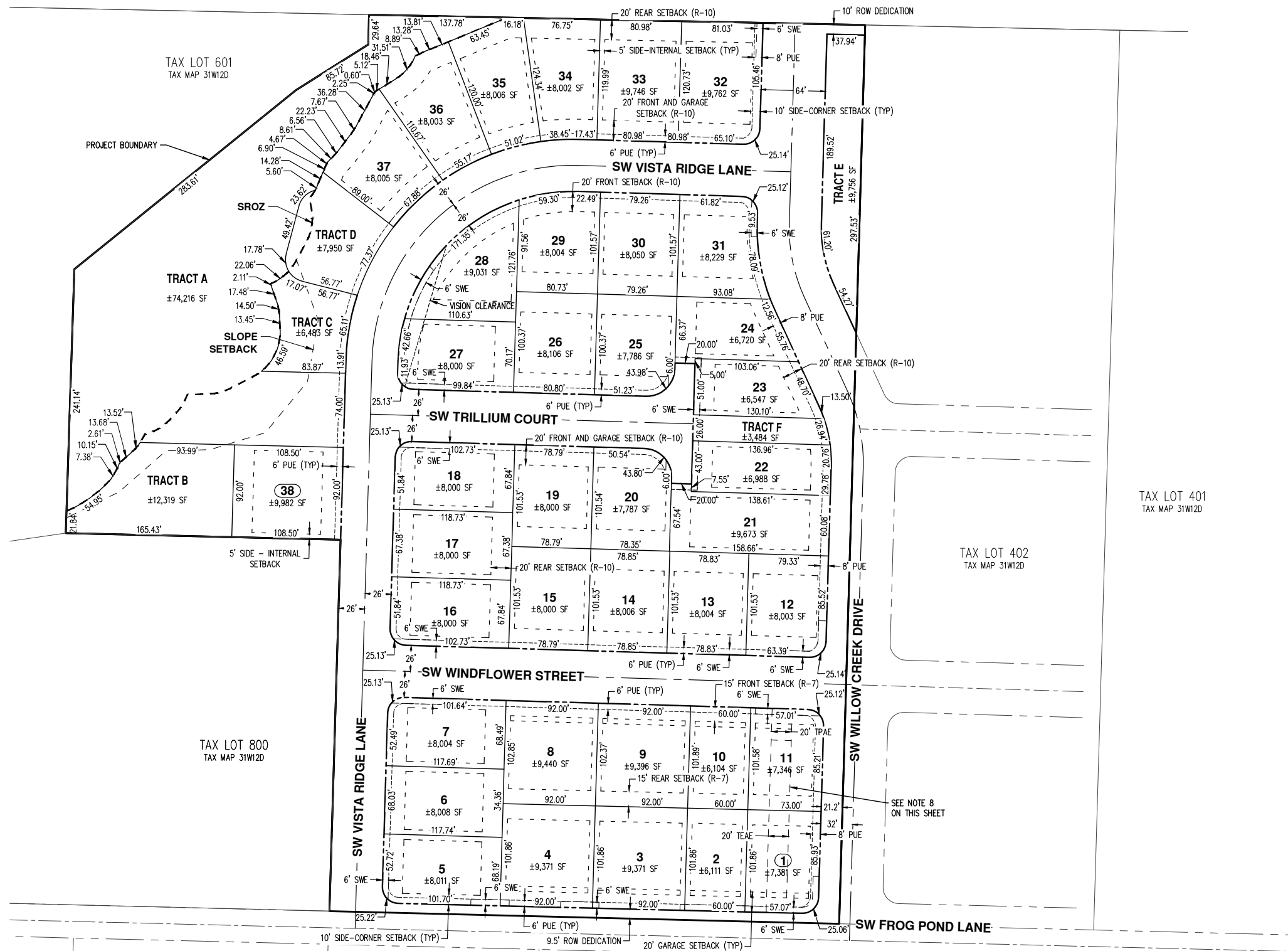


PRELIMINARY AERIAL PHOTOGRAPH PLAN
FROG POND VISTA
VENTURE PROPERTIES, INC.
WILSONVILLE, OREGON

REGISTERED PROFESSIONAL LAND SURVEYOR
WALTER B. WORTZ
 CONSTRUCTION
 WALTER B. WORTZ
 RENEWAL DATE: 6/30/23
 JOB NUMBER: 7530
 DATE: 01/14/2022
 DESIGNED BY: NLB
 DRAWN BY: JJA
 CHECKED BY: MBH

AKS
 AKS ENGINEERING & FORESTRY, LLC
 12965 SW HERMAN RD., STE 100
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TAX LOT 801
 TAX MAP 31W12



NOTES:

1. THE PURPOSE OF THIS PRELIMINARY DIMENSIONED PLAN IS TO SHOW LOT DIMENSIONS AND AREAS FOR PLANNING PURPOSES. THIS IS NOT AN OFFICIAL RECORDED FINAL PLAT AND IS NOT TO BE USED FOR SURVEY PURPOSES. ALL DIMENSIONS ARE SUBJECT TO CHANGE.
2. TRACT A SHALL BE DEDICATED TO THE CITY OF WILSONVILLE.
3. TRACT B AND C ARE FOR OPEN SPACE AND ARE SUBJECT TO PUBLIC AND PEDESTRIAN ACCESS EASEMENT OVER ITS ENTIRETY.
4. TRACT D IS FOR STORMWATER TREATMENT, PEDESTRIAN ACCESS, AND LANDSCAPE PURPOSES. IT IS SUBJECT TO STORM DRAINAGE TO BENEFIT THE CITY OF WILSONVILLE OVER ITS ENTIRETY.
5. TRACT E IS FOR OPEN SPACE IS SUBJECT TO A PUBLIC ACCESS EASEMENT AND PEDESTRIAN ACCESS EASEMENT OVER ITS ENTIRETY.
6. TRACT F IS FOR PEDESTRIAN PURPOSES AND IS SUBJECT TO A PUBLIC ACCESS EASEMENT, PEDESTRIAN ACCESS EASEMENT, AND WATERLINE EASEMENT OVER ITS ENTIRETY.
7. HOMES SHALL NOT BE CONSTRUCTED ON LOTS 1 AND 13 UNTIL SUCH TIME AS THE FULL SW WILLOW CREEK DRIVE RIGHT-OF-WAY IMPROVEMENTS HAVE BEEN COMPLETED BETWEEN SW WILLOW CREEK DRIVE'S INTERSECTION WITH SW FROG POND LANE AND SW WINDFLOWER STREET. AT THAT TIME, THE TEMPORARY ACCESS EASEMENTS ACROSS LOTS 1 AND 13 CAN BE EXTINGUISHED AND HOMES CAN BE BUILT ON THOSE LOTS.

LOT SIZE SUMMARY

	SUBDISTRICT 9 R-7	SUBDISTRICT 8 R-10
MIN. LOT SIZE	6,000 SF	8,000 SF
MIN. REDUCED LOT SIZE*	-	6,400 SF

*MINIMUM REDUCED LOT AREA FOR TREE PRESERVATION

SUMMARY OF LAND USES

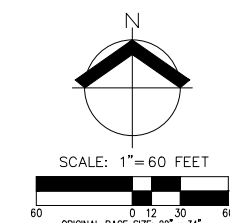
LAND USE	SF	PERCENTAGE OF PROPERTY
1. GROSS AREA IN PLAT	557,374	-
2. LANDSCAPE COVERAGE AREA/OPEN SPACE	106,258	19%
3. ROW	134,273	24%
4. LOT AREA	308,894	56%
5. STORMWATER TREATMENT FACILITY	7,950	1%

SETBACKS

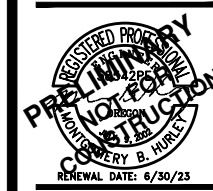
	R-7	R-10
FRONT	15 FT	20 FT
REAR	15 FT	20 FT
SIDE - INTERNAL	5 FT	5 FT
SIDE - CORNER	10 FT	10 FT
GARAGE - FROM STREET	20 FT	20 FT

EASEMENT LEGEND

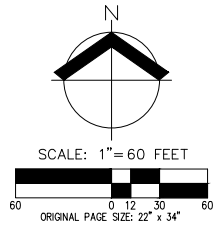
- PUE PUBLIC UTILITY EASEMENT
- SWE SIDEWALK EASEMENT
- PAUE PUBLIC ACCESS AND UTILITY EASEMENT
- TEAE TEMPORARY EMERGENCY ACCESS EASEMENT
- TPAE TEMPORARY PUBLIC ACCESS EASEMENT



PRELIMINARY DIMENSIONED P.U.D. PLAN
FROG POND VISTA
VENTURE PROPERTIES, INC.
WILSONVILLE, OREGON



RENEWAL DATE: 6/30/23
 JOB NUMBER: 7530
 DATE: 01/14/2022
 DESIGNED BY: NLB
 DRAWN BY: JJA
 CHECKED BY: MBH



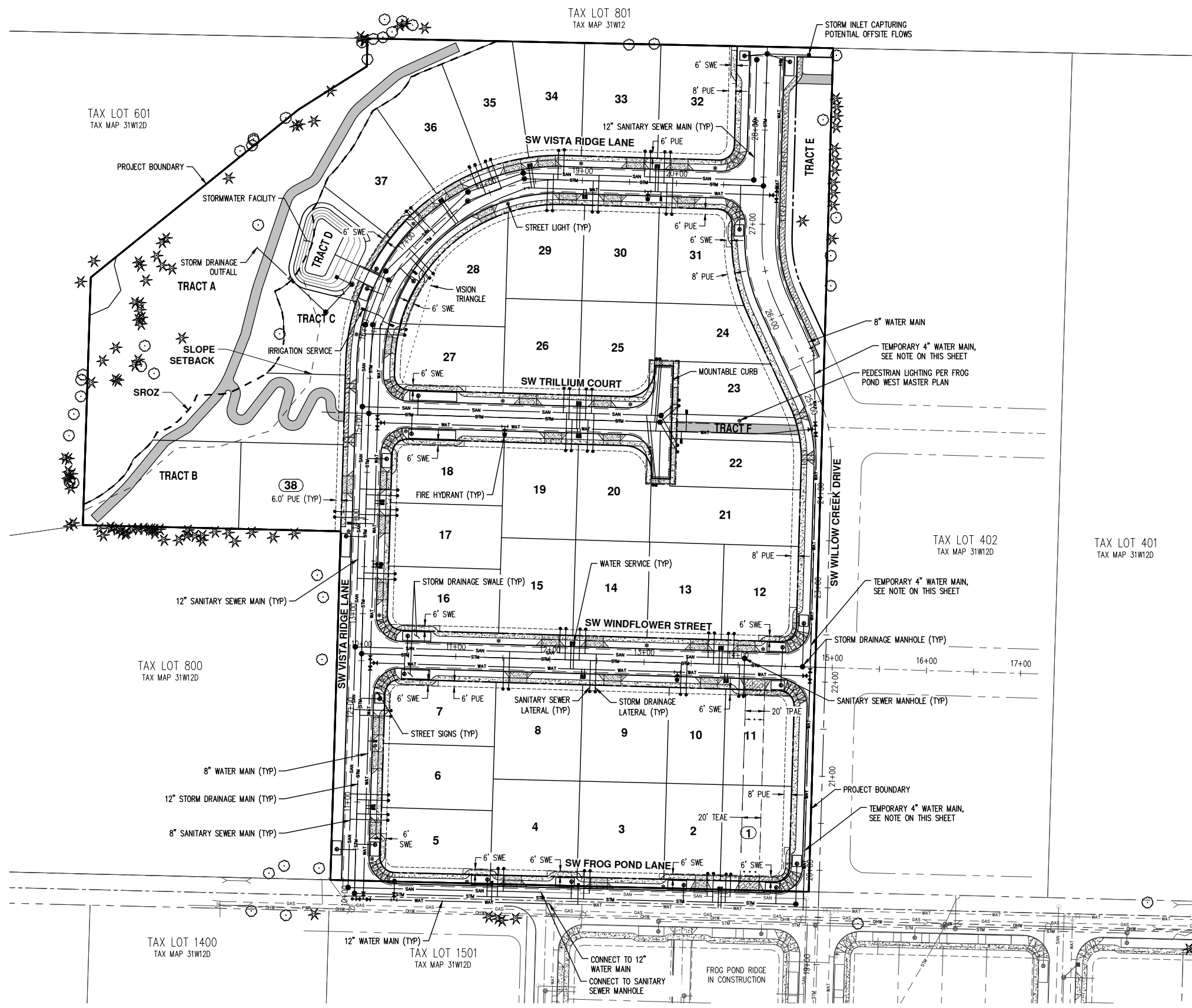
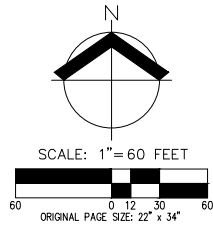
LEGEND	
EXISTING GROUND CONTOUR (1 FT)	
EXISTING GROUND CONTOUR (5 FT)	
FINISHED GRADE CONTOUR (1 FT)	
FINISHED GRADE CONTOUR (5 FT)	
SEDIMENT FENCE (TO BE INSTALLED PRIOR TO GRADING)	
SEDIMENT FENCE (TO BE INSTALLED AFTER GRADING)	
AREA DRAIN PROTECTION (TYP) PER CATCH BASIN INSERT BAG DETAIL	
CHECK DAM BIOFILTER BAG	
CONCRETE WASHOUT AREA	
DRAINAGE FLOW DIRECTION	
GRAVEL CONSTRUCTION ENTRANCE	
SLOPE MATTING	
GRADING LIMITS	
TREE PROTECTION/CONSTRUCTION FENCE	

EASEMENT LEGEND	
PUE	PUBLIC UTILITY EASEMENT
SWE	SIDEWALK EASEMENT
PAUE	PUBLIC ACCESS AND UTILITY EASEMENT
TEAE	TEMPORARY EMERGENCY ACCESS EASEMENT
TPAE	TEMPORARY PUBLIC ACCESS EASEMENT

AKS
 AKS ENGINEERING & FORESTRY, LLC
 12965 SW HERMAN RD., STE. 100
 TUALATIN, OR 97062
 503.563.6151
 WWW.AKS-ENG.COM
 ENGINEERING • SURVEYING • NATURAL RESOURCES
 FORESTRY • PLANNING • LANDSCAPE ARCHITECTURE

PRELIMINARY GRADING AND EROSION CONTROL MEASURES
FROG POND VISTA
VENTURE PROPERTIES, INC.
WILSONVILLE, OREGON

REGISTERED PROFESSIONAL ENGINEER
CONSTRUCTION
 RENEWAL DATE: 6/30/23
 JOB NUMBER: 7530
 DATE: 01/14/2022
 DESIGNED BY: NLB
 DRAWN BY: JJA
 CHECKED BY: MBH



NOTE:
 TEMPORARY 4" WATER LINES ARE PLANNED TO BE INSTALLED UNTIL SUCH TIME THE DEVELOPMENT TO THE EAST COMPLETES THE WATERLINE IN SW WILLOW CREEK DRIVE. IF THE WATERLINE IN SW WILLOW CREEK DRIVE IS COMPLETED PRIOR TO DEVELOPMENT, THE TEMPORARY 4" WATER LINES WILL NOT BE CONSTRUCTED AND CONNECTION TO THE WATERLINE IN SW WILLOW CREEK DRIVE WILL BE MADE.

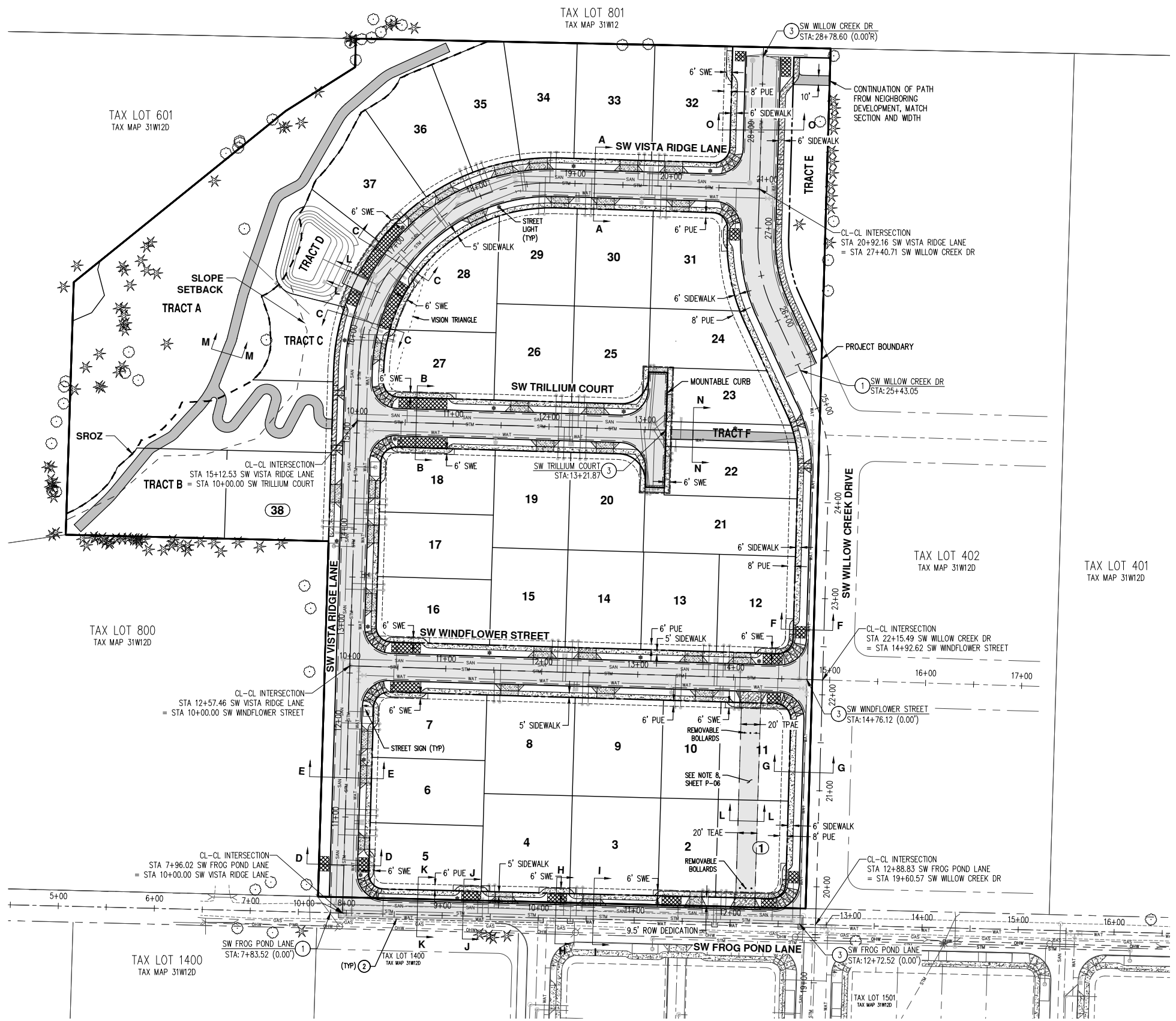
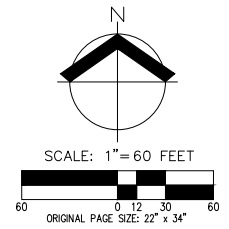
EASEMENT LEGEND	
PUE	PUBLIC UTILITY EASEMENT
SWE	SIDEWALK EASEMENT
PAUE	PUBLIC ACCESS AND UTILITY EASEMENT
TEAE	TEMPORARY EMERGENCY ACCESS EASEMENT
TPAE	TEMPORARY PUBLIC ACCESS EASEMENT

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**PRELIMINARY COMPOSITE UTILITY PLAN
 FROG POND VISTA
 VENTURE PROPERTIES, INC.
 WILSONVILLE, OREGON**



RENEWAL DATE: 6/30/23
 JOB NUMBER: 7530
 DATE: 01/14/2022
 DESIGNED BY: NLB
 DRAWN BY: JJA
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KEYED NOTES

1. BEGIN STREET IMPROVEMENTS.
2. SAWCUT EXISTING ASPHALT ROAD.
3. END STREET IMPROVEMENTS.

LEGEND

- SIDEWALK TO BE INSTALLED BY HOMEOWNER.
- DRIVEWAY APPROACHES TO BE INSTALLED BY HOMEOWNER.
- SIDEWALK AND DRIVEWAY APPROACHES TO BE INSTALLED BY CONTRACTOR.
- STORMWATER SWALE TO BE CONSTRUCTED BY CONTRACTOR.
- TRAIL MEETING APPLICABLE ADAAG AND PROWAG STANDARDS TO BE CONSTRUCTED BY CONTRACTOR.
- ASPHALT CONCRETE PAVEMENT.

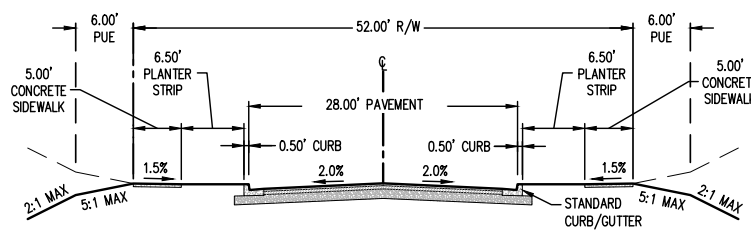
EASEMENT LEGEND

- PUE PUBLIC UTILITY EASEMENT
- SWE SIDEWALK EASEMENT
- PAUE PUBLIC ACCESS AND UTILITY EASEMENT
- TEAE TEMPORARY EMERGENCY ACCESS EASEMENT
- TPAE TEMPORARY PUBLIC ACCESS EASEMENT

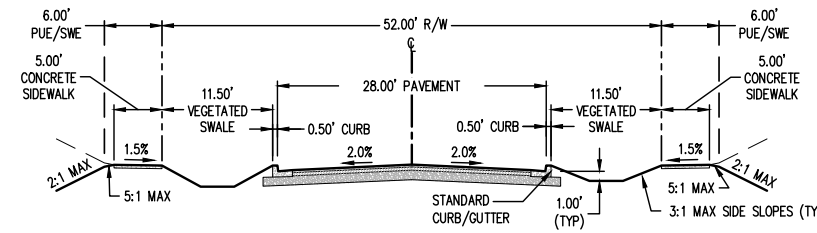
PRELIMINARY STREET PLAN
FROG POND VISTA
VENTURE PROPERTIES, INC.
WILSONVILLE, OREGON



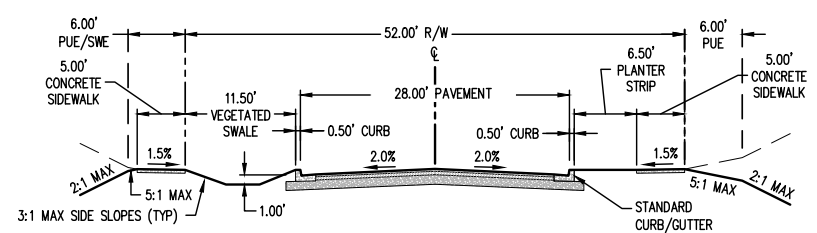
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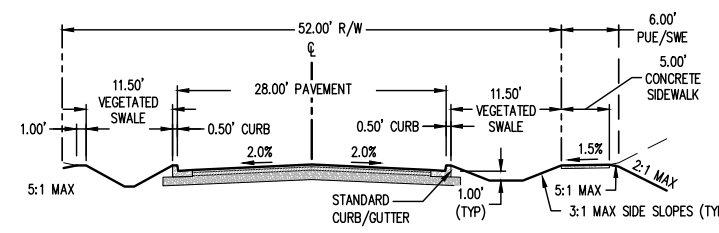
A TYPICAL LOCAL STREET CROSS SECTION
 SCALE: 1" = 10'
 CROSS SECTION A SHALL BE USED IN THE FOLLOWING LOCATIONS:
 SW VISTA RIDGE LANE: STA 13+91.58 TO 14+51.68
 STA 15+51.72 TO 16+14+71
 STA 17+13+83 TO 20+46.13
 SW TRILLIUM COURT: STA 10+93.00 TO 12+74.37
 SW WINDFLOWER STREET: STA 10+73.00 TO 13+31.99
 STA 13+56.99 TO 14+46.65



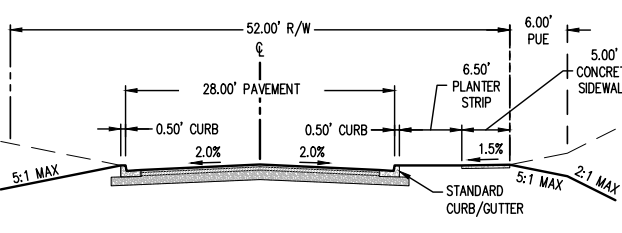
B TYPICAL LOCAL STREET CROSS SECTION WITH VEGETATED SWALE
 SCALE: 1" = 10'
 CROSS SECTION B SHALL BE USED IN THE FOLLOWING LOCATIONS:
 SW VISTA RIDGE LANE: STA 16+27.90 TO 16+72.12
 SW TRILLIUM COURT: STA 10+43.00 TO 10+93.00
 SW WINDFLOWER STREET: STA 10+43.00 TO 10+73.00
 STA 13+31.99 TO 13+56.99



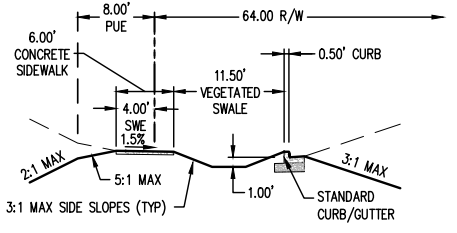
C MODIFIED LOCAL STREET CROSS SECTION WITH VEGETATED SWALE
 SCALE: 1" = 10'
 CROSS SECTION C SHALL BE USED IN THE FOLLOWING LOCATIONS:
 SW VISTA RIDGE LANE: STA 14+51.68 TO 14+76.68
 STA 16+15.05 TO 16+27.90
 STA 16+72.12 TO 17+13.83



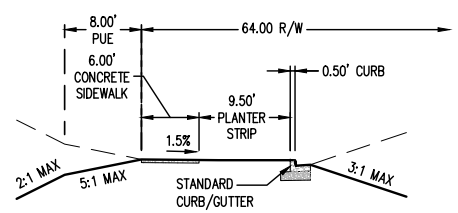
D MODIFIED LOCAL STREET CROSS SECTION WITH VEGETATED SWALE
 SCALE: 1" = 10'
 CROSS SECTION D SHALL BE USED IN THE FOLLOWING LOCATIONS:
 SW VISTA RIDGE LANE: STA 10+43.73 TO 10+67.29



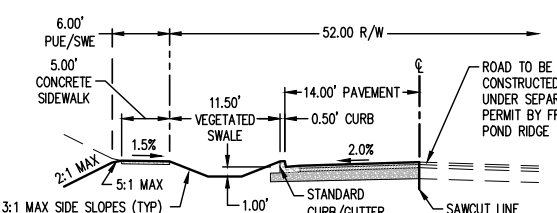
E MODIFIED LOCAL STREET CROSS SECTION
 SCALE: 1" = 10'
 CROSS SECTION E SHALL BE USED IN THE FOLLOWING LOCATIONS:
 SW VISTA RIDGE LANE: STA 10+67.29 TO 12+15.46
 STA 12+99.46 TO 13+91.58



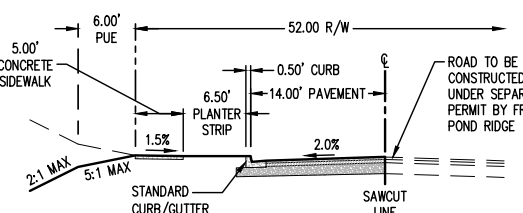
F COLLECTOR PARTIAL STREET CROSS SECTION
 SCALE: 1" = 10'
 CROSS SECTION F SHALL BE USED IN THE FOLLOWING LOCATIONS:
 SW WILLOW CREEK DRIVE: STA 20+03.30 TO 20+15.45
 STA 22+58.37 TO 22+70.52



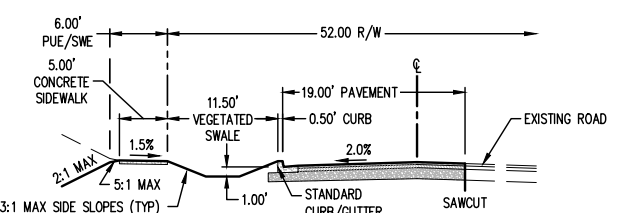
G COLLECTOR PARTIAL STREET CROSS SECTION
 SCALE: 1" = 10'
 CROSS SECTION G SHALL BE USED IN THE FOLLOWING LOCATIONS:
 SW WILLOW CREEK DRIVE: STA 20+15.45 TO 21+73.52
 STA 22+70.52 TO 25+43.05



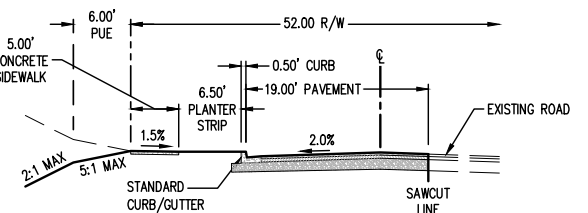
H LOCAL HALF STREET CROSS SECTION
 SCALE: 1" = 10'
 CROSS SECTION H SHALL BE USED IN THE FOLLOWING LOCATIONS:
 SW FROG POND LANE: STA 10+09.20 TO 10+29.20
 STA 11+28.17 TO 11+48.36
 STA 12+32.00 TO 12+46.00



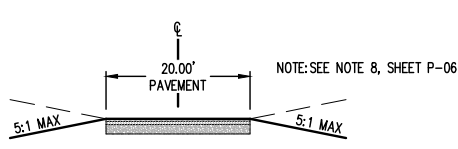
I LOCAL HALF STREET CROSS SECTION
 SCALE: 1" = 10'
 CROSS SECTION I SHALL BE USED IN THE FOLLOWING LOCATIONS:
 SW FROG POND LANE: STA 10+29.20 TO 11+28.17
 STA 11+48.36 TO 12+32.00



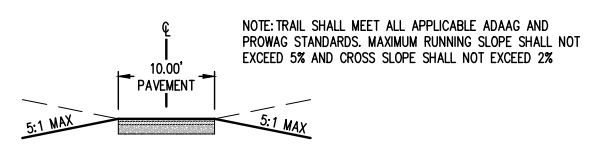
J LOCAL 3/4 STREET CROSS SECTION
 SCALE: 1" = 10'
 CROSS SECTION J SHALL BE USED IN THE FOLLOWING LOCATIONS:
 SW FROG POND LANE: STA 9+19.57 TO 9+39.76



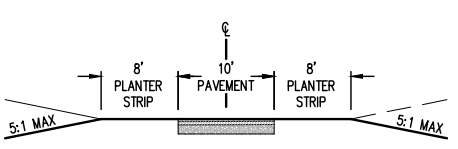
K LOCAL 3/4 STREET CROSS SECTION
 SCALE: 1" = 10'
 CROSS SECTION K SHALL BE USED IN THE FOLLOWING LOCATIONS:
 SW FROG POND LANE: STA 8+38.24 TO 9+19.57
 STA 9+39.76 TO 10+09.20



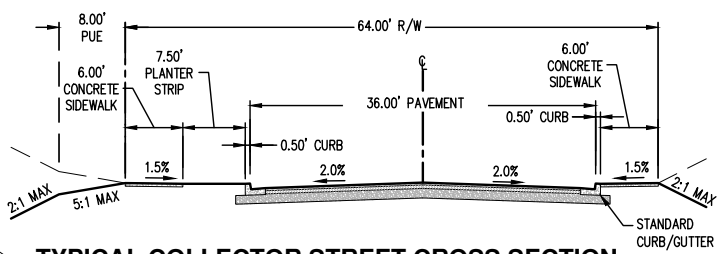
L TEMPORARY ACCESS
 SCALE: 1" = 10'



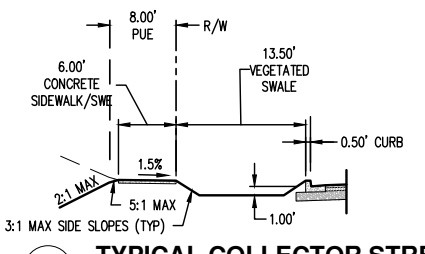
M TYPICAL BOECKMAN CREEK REGIONAL TRAIL
 SCALE: 1" = 10'



N TYPICAL PEDESTRIAN CONNECTION
 SCALE: 1" = 10'

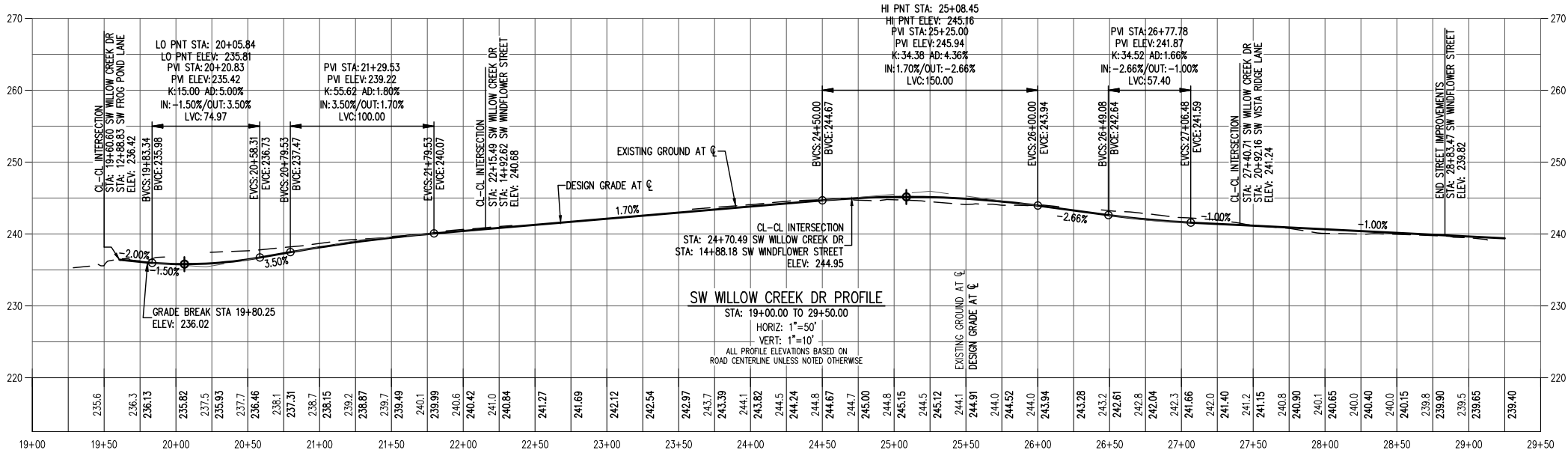
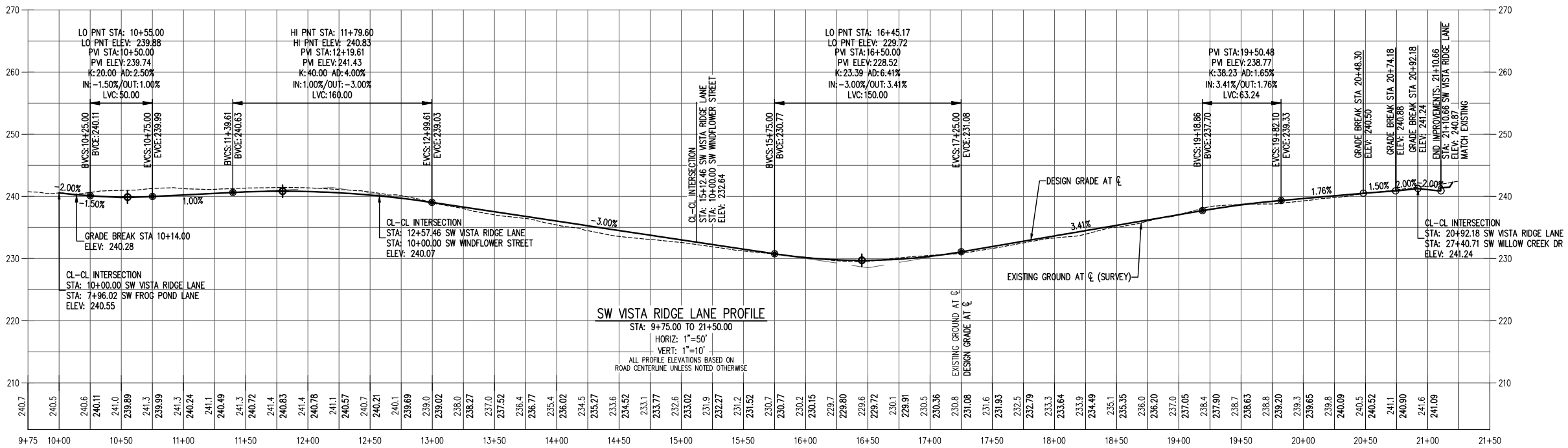


O TYPICAL COLLECTOR STREET CROSS SECTION
 SCALE: 1" = 10'
 CROSS SECTION O SHALL BE USED IN THE FOLLOWING LOCATIONS:
 SW WILLOW CREEK DR: STA 25+43.05 TO 28+78.60
 *REFER TO SECTION 1 FOR VEGETATED SWALE LOCATIONS WITHIN PLANTER STRIP.

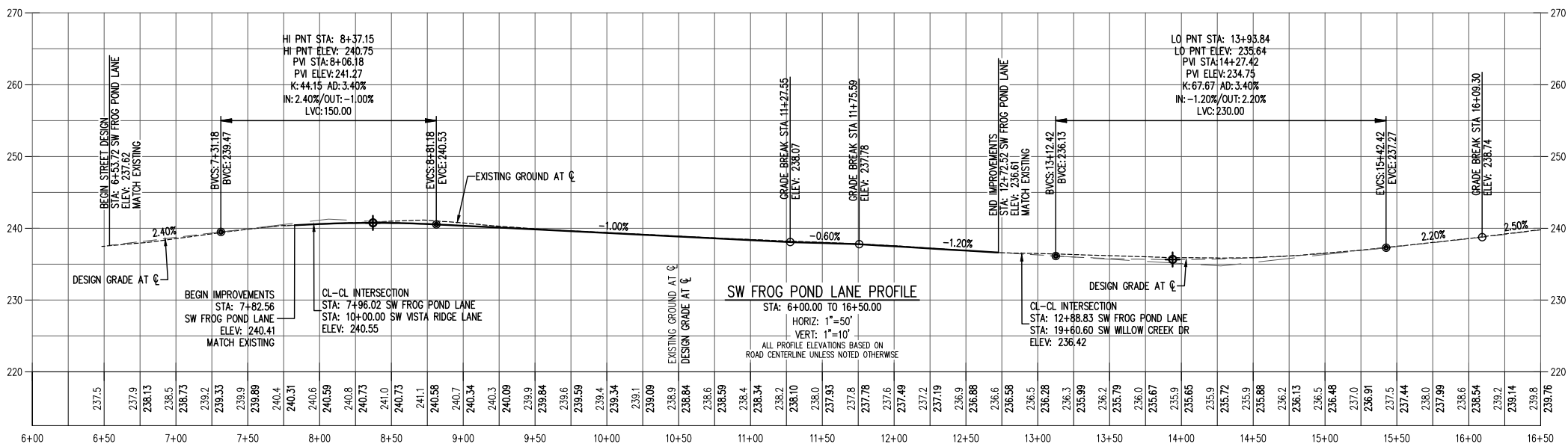


1 TYPICAL COLLECTOR STREET CROSS SECTION
 SCALE: 1" = 10'
 CROSS SECTION 1 SHALL BE USED IN THE PLANTER STRIP AT THE FOLLOWING LOCATIONS:
 SW WILLOW CREEK DR: STA 28+73.32 TO 28+83.32 (WEST)
 STA 28+63.63 TO 28+83.32 (EAST)
 STA 26+87.08 TO 26+98.77 (WEST)

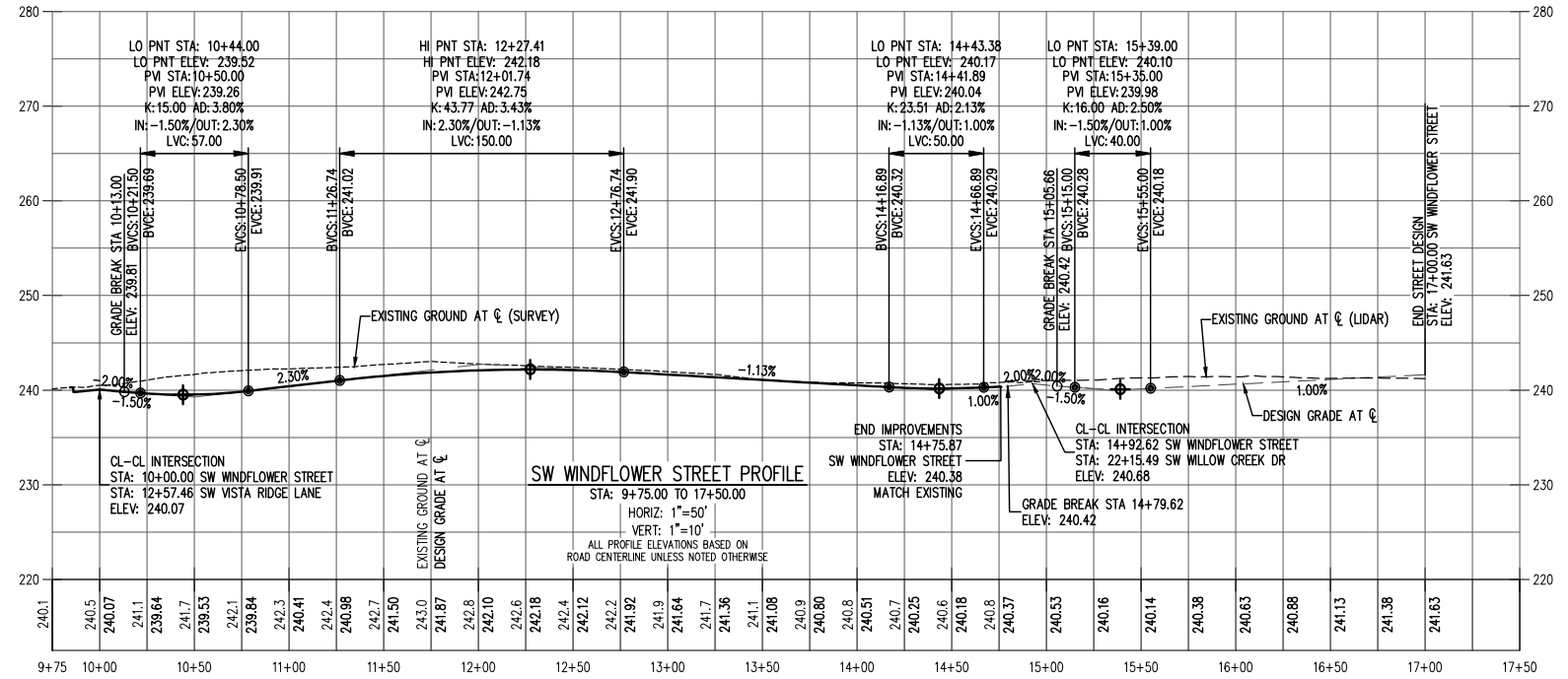
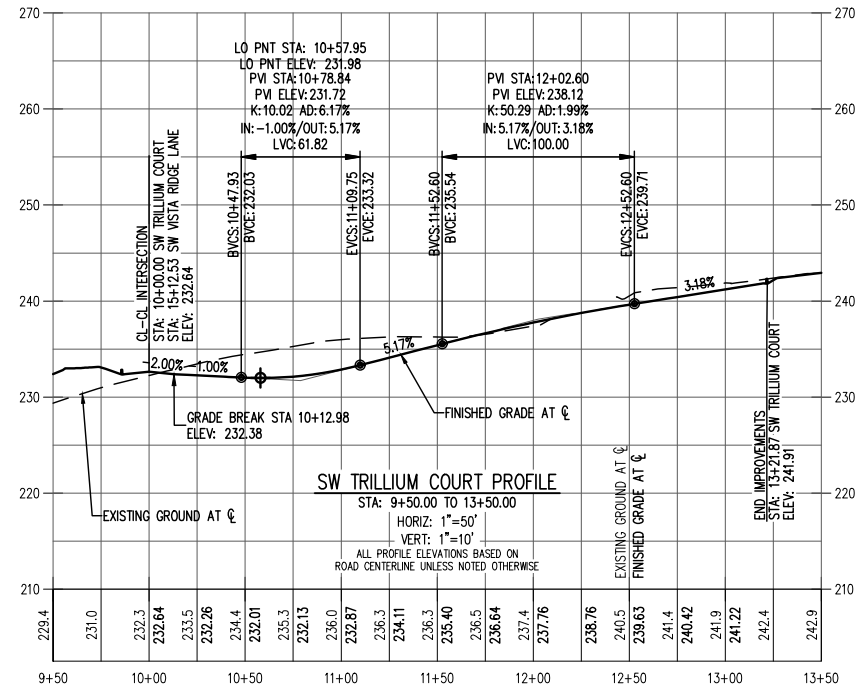
REGISTERED PROFESSIONAL
LANDSCAPE ARCHITECT
 WILSONVILLE, OREGON
 CONSTRUCTION
 RENEWAL DATE: 6/30/23
 JOB NUMBER: 7530
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NOTE:
 ALL PROFILE ELEVATIONS BASED ON CENTERLINE UNLESS NOTED OTHERWISE.

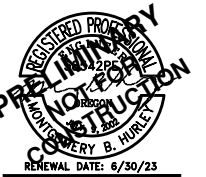


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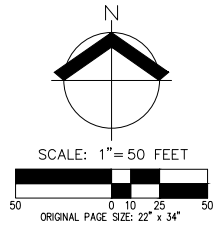
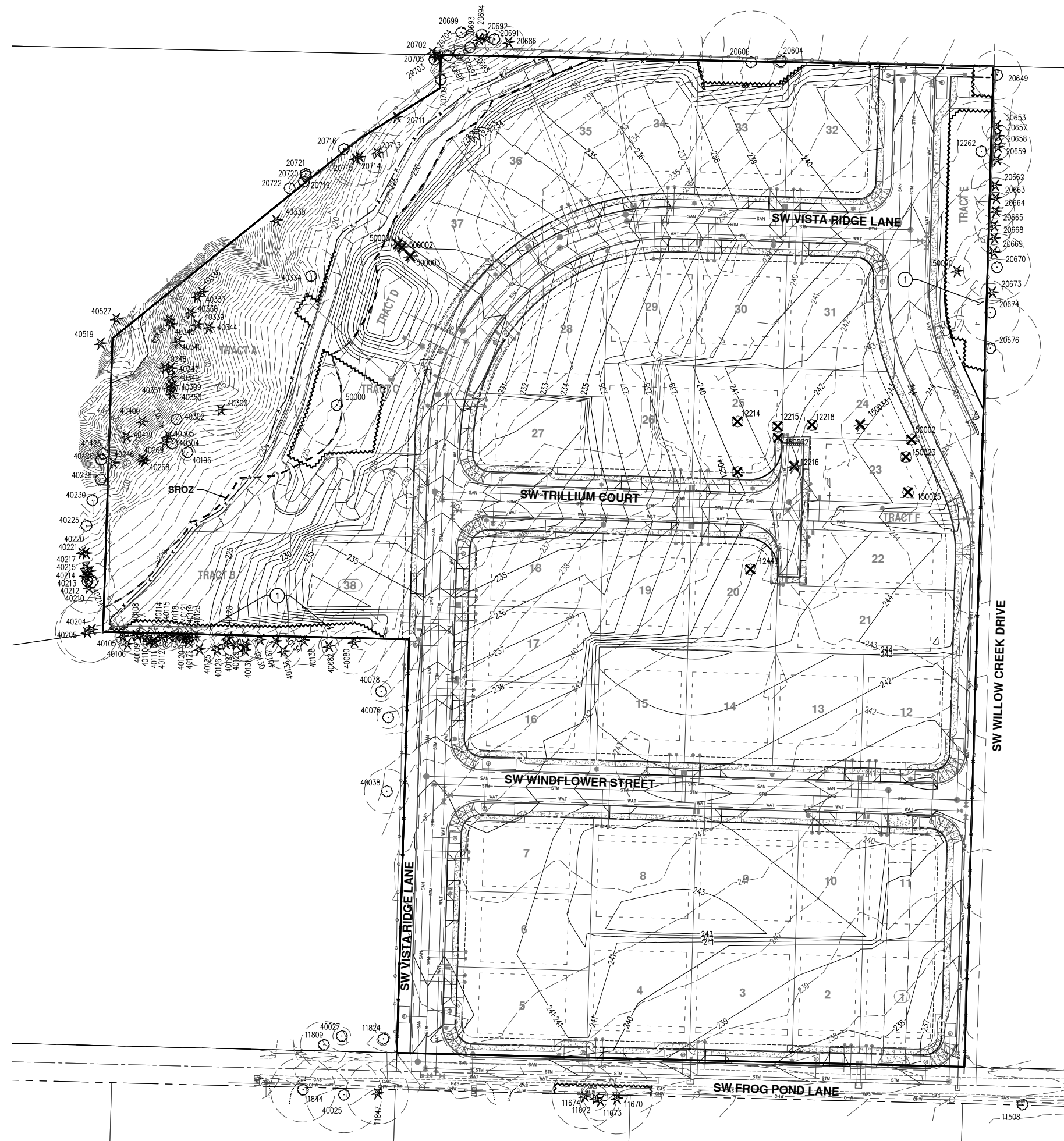


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PRELIMINARY STREET PROFILES
FROG POND VISTA
VENTURE PROPERTIES, INC.
WILSONVILLE, OREGON



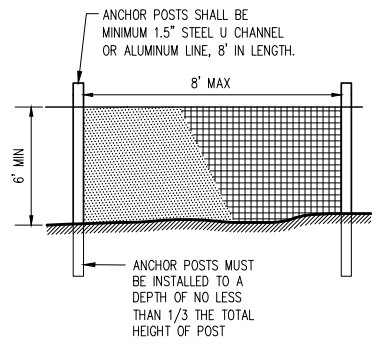
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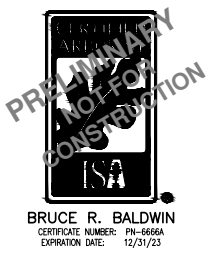
LEGEND	
EXISTING GROUND CONTOUR (1 FT)	--- 149 ---
EXISTING GROUND CONTOUR (5 FT)	--- 150 ---
FINISHED GRADE CONTOUR (1 FT)	--- 149 ---
FINISHED GRADE CONTOUR (5 FT)	--- 150 ---
EXISTING CONIFEROUS TREE	★
EXISTING DECIDUOUS TREE	⊙
TREE REMOVAL	✕
TREE PROTECTION FENCE (TREE PROTECTION AREA)	⌘
SEDIMENT FENCE (ALSO SERVES AS TREE PROTECTION WHERE SHOWN)	— x — x —
STRAW WATTLE	— x x x —
ASSUMED TREE ROOT ZONE (1-FT RADIUS PER 1-IN OF DBH)	⊙

SPECIAL TREE KEY NOTES:

① DEMOLITION SHALL BE PERFORMED USING HAND TOOLS AND METHODS OR BY EQUIPMENT STAGED OUTSIDE OF THE TREE PROTECTION AREA. EQUIPMENT TRACK WALKING SHALL BE AVOIDED WITHIN THE TREE PROTECTION AREA. IF EQUIPMENT ACCESS IS DESIRED, THEN STEEL PLATES, MULCH, OR OTHER MATERIAL AS APPROVED BY THE PROJECT ARBORIST SHOULD BE PLACED SO AS NOT TO CAUSE EXCESSIVE SOIL COMPACTION. A CERTIFIED ARBORIST SHOULD BE ONSITE DURING DEMOLITION IN THIS AREA.



- NOTES:
- 2" MESH CHAIN LINK FENCE FOR TREE PROTECTION DEVICE OR APPROVED EQUAL.
 - AVOID DAMAGE TO CRITICAL ROOT ZONE. DO NOT DAMAGE OR SEVER LARGE ROOTS WHEN INSTALLING POSTS.
 - FENCE SHALL BE MAINTAINED THROUGHOUT CONSTRUCTION.
- TREE PROTECTION FENCE**



PRELIMINARY TREE PRESERVATION AND REMOVAL PLAN
FROG POND VISTA
VENTURE PROPERTIES, INC.
WILSONVILLE, OREGON

RENEWAL DATE:	6/30/23
JOB NUMBER:	7530
DATE:	01/14/2022
DESIGNED BY:	NLB
DRAWN BY:	JJA
CHECKED BY:	MBH

Detailed Tree Inventory for Frog Pond Vista

AKS Job No. 7530 - Evaluation Date: 8/7/2020 & 6/11/2021 - Evaluated by: BRK

Tree #	DBH (in.)	Avg. Crown Radius (ft)	Tree Species (Common Name Scientific Name)	Comments	Health Rating*	Structure Rating**	Remove/Preserve
116/0	32	18	Ponderosa Pine [Pinus ponderosa]	OFFSITE; Evaluated from the property line; North side pruned for overhead wires; 1 sided canopy [S]; Many broken limbs	2	2	Preserve
116/2	11	12	Ponderosa Pine [Pinus ponderosa]	OFFSITE; Evaluated from the property line; topped for overhead wires; many codominant stems	2	2	Preserve
116/3	18	10	Scotch Pine [Pinus sylvatica]	OFFSITE; Evaluated from the property line; North side pruned for overhead wires; 1 sided canopy [S]; Codominant top	1	2	Preserve
116/4	29	28	Ponderosa Pine [Pinus ponderosa]	OFFSITE; Evaluated from the property line; North side pruned for overhead wires; 1 sided canopy [S]; Crooked bole	1	2	Preserve
11609	21	21	European White Birch [Betula pendula]	OFFSITE; Evaluated from property line; Dead branches; Broken limbs	2	2	Preserve
118/4	6	33	Cherry [Prunus sp.]	OFFSITE; Evaluated from property line	1	1	Preserve
11844	29	35	Dragon White Oak [Quercus garryana]	OFFSITE; Evaluated from property line; North side pruned for overhead wires; 1 sided canopy [S]	1	2	Preserve
11847	28	10	Western Red cedar [Thuja plicata]	OFFSITE; Evaluated from property line; topped for overhead wires	2	2	Preserve
12214	10	13	Magnolia [Magnolia sp.]	OFFSITE; Evaluated from property line	1	1	Remove
12215	12	14	Apple [Malus domestica]	Cavity with decay	2	1	Remove
12216	11	6	Palm [Areca palm sp.]	OFFSITE; Evaluated from property line	1	1	Remove
12218	8,8,8,8,9	35	Apple [Malus domestica]	OFFSITE; Evaluated from property line	1	1	Remove
12262	45	28	Dragon White Oak [Quercus garryana]	OFFSITE; Evaluated from property line; Codominant top	1	1	Preserve
12447	28	18	Norway Maple [Acer platanoides]	OFFSITE; Evaluated from property line	1	1	Remove
12504	8,8,8,8,8	12	Apple [Malus domestica]	Bore holes; Cavities with decay; Epicormic sprouts	2	2	Remove
20604	6,6,6	6	Holly [Ilex sp.]	OFFSITE; Large cavities with significant decay; Dead branch	2	2	Preserve
20606	40	25	Dragon White Oak [Quercus garryana]	LINE TREE	1	1	Preserve
20649	22	23	Dragon White Oak [Quercus garryana]	OFFSITE; Evaluated from Property Line; 1 sided canopy [W]	1	2	Preserve
20651	11	15	Scotch Pine [Pinus sylvatica]	OFFSITE; Evaluated from Property Line	1	1	Preserve
20657	10	25	Scotch Pine [Pinus sylvatica]	OFFSITE; Evaluated from Property Line	1	1	Preserve
20658	11	25	Scotch Pine [Pinus sylvatica]	OFFSITE; Evaluated from Property Line	1	1	Preserve
20659	12	15	Scotch Pine [Pinus sylvatica]	OFFSITE; Evaluated from Property Line	1	1	Preserve
20662	21	17	Scotch Pine [Pinus sylvatica]	OFFSITE; Evaluated from Property Line; Codominant with included bark	1	2	Preserve
20663	18	17	Scotch Pine [Pinus sylvatica]	OFFSITE; Evaluated from Property Line	1	1	Preserve
20664	17	17	Scotch Pine [Pinus sylvatica]	OFFSITE; Evaluated behind fence; Codominant with included bark	1	2	Preserve
20665	17	15	Scotch Pine [Pinus sylvatica]	OFFSITE; Evaluated from Property Line; Crooked bole; 1 sided canopy [S]	1	2	Preserve
20668	14	15	Scotch Pine [Pinus sylvatica]	OFFSITE; Evaluated from Property Line	1	1	Preserve
20669	6	8	Scotch Pine [Pinus sylvatica]	OFFSITE; Evaluated from Property Line	1	1	Preserve
20670	12,10	25	Dragon White Oak [Quercus garryana]	OFFSITE; Evaluated from Property Line; Codominant base; Insulation between bolts	1	2	Preserve
20671	10	9	Scotch Pine [Pinus sylvatica]	OFFSITE; Evaluated from Property Line	1	1	Preserve
20674	26	25	Dragon White Oak [Quercus garryana]	OFFSITE; Evaluated from Property Line; 1 sided canopy [N]	1	2	Preserve
20676	22,24	40	Dragon White Oak [Quercus garryana]	OFFSITE; Evaluated from Property Line; Codominant base	1	2	Preserve
20686	14		Coniferous	OFFSITE; Not evaluated by an arborist			Preserve
20691	8		Deciduous	OFFSITE; Not evaluated by an arborist			Preserve
20692	10		Coniferous	OFFSITE; Not evaluated by an arborist			Preserve
20693	9		Coniferous	OFFSITE; Not evaluated by an arborist			Preserve
20694	13		Deciduous	OFFSITE; Not evaluated by an arborist			Preserve
20695	14		Deciduous	OFFSITE; Not evaluated by an arborist			Preserve
20697	8		Deciduous	OFFSITE; Not evaluated by an arborist			Preserve
20698	6		Deciduous	Not evaluated by an arborist			Preserve
20699	8		Deciduous	OFFSITE; Not evaluated by an arborist			Preserve
20702	23		Coniferous	OFFSITE; Not evaluated by an arborist			Preserve
20703	6		Coniferous	OFFSITE; Not evaluated by an arborist			Preserve
20704	6		Coniferous	OFFSITE; Not evaluated by an arborist			Preserve
20705	13		Deciduous	OFFSITE; Not evaluated by an arborist			Preserve
20709	26		Deciduous	LINE TREE; Not evaluated by an arborist			Preserve
20711	17		Coniferous	OFFSITE; Not evaluated by an arborist			Preserve
20713	18		Coniferous	Not evaluated by an arborist			Preserve
20714	25		Coniferous	Not evaluated by an arborist			Preserve
20715	25		Coniferous	Not evaluated by an arborist			Preserve
20716	7		Deciduous	OFFSITE; Not evaluated by an arborist			Preserve
20719	11		Deciduous	OFFSITE; Not evaluated by an arborist			Preserve
20720	17		Deciduous	OFFSITE; Not evaluated by an arborist			Preserve
20721	9		Deciduous	OFFSITE; Not evaluated by an arborist			Preserve
20722	26		Deciduous	OFFSITE; Not evaluated by an arborist			Preserve
40075	14	15	Bighorn Maple [Acer macrophyllum]	OFFSITE; Evaluated from property line; topped for overhead wires; large cavity with decay	2	2	Preserve
40077	8	10	Black locust [Robinia pseudoacacia]	OFFSITE; Evaluated behind fence; Dead branches; Epicormic sprouts	2	1	Preserve
40078	20	10	Norway Maple [Acer platanoides]	OFFSITE; Evaluated behind fence; Large broken limbs; 1 sided canopy [N]	1	2	Preserve
40076	10	12	Apple [Malus domestica]	OFFSITE; Evaluated behind fence	1	1	Preserve
40078	9	12	Apple [Malus domestica]	OFFSITE; Evaluated behind fence	1	1	Preserve
40080	29	22	Douglas fir [Pseudotsuga menziesii]	OFFSITE; Evaluated behind fence; Codominant with included bark	1	2	Preserve
40082	9	9	Douglas fir [Pseudotsuga menziesii]	OFFSITE; Evaluated behind fence	1	1	Preserve
40105	7	7	Douglas fir [Pseudotsuga menziesii]	OFFSITE; Evaluated behind fence; High canopy	1	2	Preserve
40106	7	10	Douglas fir [Pseudotsuga menziesii]	OFFSITE; Evaluated behind fence; lean [N]; Sweep; High canopy	1	2	Preserve
40108	18	20	Douglas fir [Pseudotsuga menziesii]	OFFSITE; Evaluated behind fence; 1 sided canopy [N]	1	2	Preserve
40109	7	6	Douglas fir [Pseudotsuga menziesii]	OFFSITE; Evaluated behind fence; High canopy	1	2	Preserve
40110	8	14	Douglas fir [Pseudotsuga menziesii]	OFFSITE; Evaluated behind fence	1	1	Preserve
40111	7	11	Douglas fir [Pseudotsuga menziesii]	OFFSITE; Evaluated behind fence	1	1	Preserve
40112	9	0	Douglas fir [Pseudotsuga menziesii]	OFFSITE; Evaluated behind fence; Dead [60']	3	3	Preserve
40113	6	0	Douglas fir [Pseudotsuga menziesii]	OFFSITE; Evaluated behind fence; Dead [40']	3	3	Preserve
40114	12	15	Douglas fir [Pseudotsuga menziesii]	OFFSITE; Evaluated behind fence	1	1	Preserve
40115	13	26	Douglas fir [Pseudotsuga menziesii]	OFFSITE; Evaluated behind fence	1	1	Preserve
40118	12	17	Douglas fir [Pseudotsuga menziesii]	OFFSITE; Evaluated behind fence	1	1	Preserve
40119	8	0	Douglas fir [Pseudotsuga menziesii]	OFFSITE; Evaluated behind fence; Dead [50']	3	3	Preserve
40120	10	17	Douglas fir [Pseudotsuga menziesii]	OFFSITE; Evaluated behind fence; 1 sided canopy [N]	1	2	Preserve
40121	8	18	Douglas fir [Pseudotsuga menziesii]	OFFSITE; Evaluated behind fence; 1 sided canopy [N]	1	2	Preserve
40122	10	0	Douglas fir [Pseudotsuga menziesii]	OFFSITE; Evaluated behind fence; Dead [50']	3	3	Preserve
40123	17	26	Douglas fir [Pseudotsuga menziesii]	OFFSITE; Evaluated behind fence	1	1	Preserve
40125	15	15	Douglas fir [Pseudotsuga menziesii]	OFFSITE; Evaluated behind fence	1	1	Preserve
40126	14	24	Douglas fir [Pseudotsuga menziesii]	OFFSITE; Evaluated behind fence	1	1	Preserve
40127	12	12	Douglas fir [Pseudotsuga menziesii]	OFFSITE; Evaluated behind fence; High canopy	1	2	Preserve
40128	16	20	Douglas fir [Pseudotsuga menziesii]	OFFSITE; Evaluated behind fence; 1 sided canopy [N]	1	2	Preserve
40129	12	14	Douglas fir [Pseudotsuga menziesii]	OFFSITE; Evaluated behind fence	1	1	Preserve
40130	16	16	Douglas fir [Pseudotsuga menziesii]	OFFSITE; Evaluated behind fence; 1 sided canopy [N]	1	2	Preserve
40131	10	8	Douglas fir [Pseudotsuga menziesii]	OFFSITE; Evaluated behind fence; High canopy	1	2	Preserve
40132	17	21	Douglas fir [Pseudotsuga menziesii]	OFFSITE; Evaluated behind fence; 1 sided canopy [N]	1	2	Preserve
40134	18	18	Douglas fir [Pseudotsuga menziesii]	OFFSITE; Evaluated behind fence; Codominant top; Codominant stem	1	2	Preserve
40136	16	13	Douglas fir [Pseudotsuga menziesii]	OFFSITE; Evaluated behind fence	1	1	Preserve
40138	22	21	Douglas fir [Pseudotsuga menziesii]	OFFSITE; Evaluated behind fence; Codominant with included bark; Dead foliage; Broken branches	2	2	Preserve
40196	7		Deciduous	Not evaluated by an arborist			Preserve

Detailed Tree Inventory for Frog Pond Vista

AKS Job No. 7530 - Evaluation Date: 8/7/2020 & 6/11/2021 - Evaluated by: BRK

Tree #	DBH (in.)	Avg. Crown Radius (ft)	Tree Species (Common Name Scientific Name)	Comments	Health Rating*	Structure Rating**	Remove/Preserve
40204	22,29		Coniferous	OFFSITE; Not evaluated by an arborist			Preserve
40205	21,28		Coniferous	OFFSITE; Not evaluated by an arborist			Preserve
40210	23		Coniferous	OFFSITE; Not evaluated by an arborist			Preserve
40211	6		Deciduous	OFFSITE; Not evaluated by an arborist			Preserve
40212	7		Deciduous	OFFSITE; Not evaluated by an arborist			Preserve
40215	15		Coniferous	OFFSITE; Not evaluated by an arborist			Preserve
40214	10		Coniferous	OFFSITE; Not evaluated by an arborist			Preserve
40215	32		Coniferous	OFFSITE; Not evaluated by an arborist			Preserve
40217	9		Coniferous	OFFSITE; Not evaluated by an arborist			Preserve
40220	14		Coniferous	OFFSITE; Not evaluated by an arborist			Preserve
40221	13		Coniferous	OFFSITE; Not evaluated by an arborist			Preserve
40225	7		Deciduous	OFFSITE; Not evaluated by an arborist			Preserve
40230	15		Deciduous	OFFSITE; Not evaluated by an arborist			Preserve
40236	25		Coniferous	Not evaluated by an arborist			Preserve
40268	9		Coniferous	Not evaluated by an arborist			Preserve
40269	21		Coniferous	Not evaluated by an arborist			Preserve
40278	25		Deciduous	OFFSITE; Not evaluated by an arborist			Preserve
40300	23		Coniferous	Not evaluated by an arborist			Preserve
40302	9		Deciduous	Not evaluated by an arborist			Preserve
40303	20		Coniferous	Not evaluated by an arborist			Preserve
40304	7		Deciduous	Not evaluated by an arborist			Preserve
40305	14		Coniferous	Not evaluated by an arborist			Preserve
40309	26		Coniferous	Not evaluated by an arborist			Preserve
40334	26,8		Deciduous	Not evaluated by an arborist			Preserve
40335	33		Coniferous	Not evaluated by an arborist			Preserve
40336	11		Coniferous	Not evaluated by an arborist			Preserve
40337	19		Coniferous	Not evaluated by an arborist			Preserve
40338	19		Coniferous	Not evaluated by an arborist			Preserve
40339	11		Coniferous	Not evaluated by an arborist			Preserve
40340	51		Coniferous	Not evaluated by an arborist			Preserve
40344	20		Coniferous	Not evaluated by an arborist			Preserve
40345	39		Coniferous	Not evaluated by an arborist			Preserve
40346	18		Coniferous	Not evaluated by an arborist			Preserve
40347	19		Coniferous	Not evaluated by an arborist			Preserve
40348	33		Coniferous	Not evaluated by an arborist			Preserve
40349	24		Coniferous	Not evaluated by an arborist			Preserve
40350	24		Coniferous	Not evaluated by an arborist			Preserve
40351	14		Coniferous	Not evaluated by an arborist			Preserve
40400	57		Coniferous	Not evaluated by an arborist			Preserve
40419	19		Coniferous	Not evaluated by an arborist			Preserve
40425	14		Deciduous	OFFSITE; Not evaluated by an arborist			Preserve
40426	15		Deciduous	OFFSITE; Not evaluated by an arborist			Preserve
40519	32		Coniferous	OFFSITE; Not evaluated by an arborist			Preserve
40527	44		Coniferous	OFFSITE; Not evaluated by an arborist			Preserve
50000	37	28	Dragon White Oak [Quercus garryana]		1	1	Preserve
150002	6,6,6,6	7	Holly [Ilex sp.]	Large cavities, up holes, with decay	2	2	Remove
150070	13	10	Ponderosa Pine [Pinus ponderosa]	Codominant top with included bark	1	2	Preserve
150071	6,7	6	Holly [Ilex sp.]	Large cavities, up holes, with decay	2	2	Remove
150075	8	6	Cherry [Prunus sp.]		1	1	Remove
150052	6,7	10	Camellia [Camellia sp.]		1	1	Remove
150033	5,8	24	Western Red cedar [Thuja plicata]	Many leaders; Codominant top	1	2	Remove
500001	9	11	Douglas fir [Pseudotsuga menziesii]	1 sided canopy [W]; High canopy	1	2	Remove
500002	17	11	Douglas fir [Pseudotsuga menziesii]	Exposed buttress roots with damage [S]	1	2	Remove
500003	21	13	Douglas fir [Pseudotsuga menziesii]	lean [N]; 1 sided canopy [S]; Abnormal dead branch in canopy; Exposed buttress roots all around	2	2	Remove

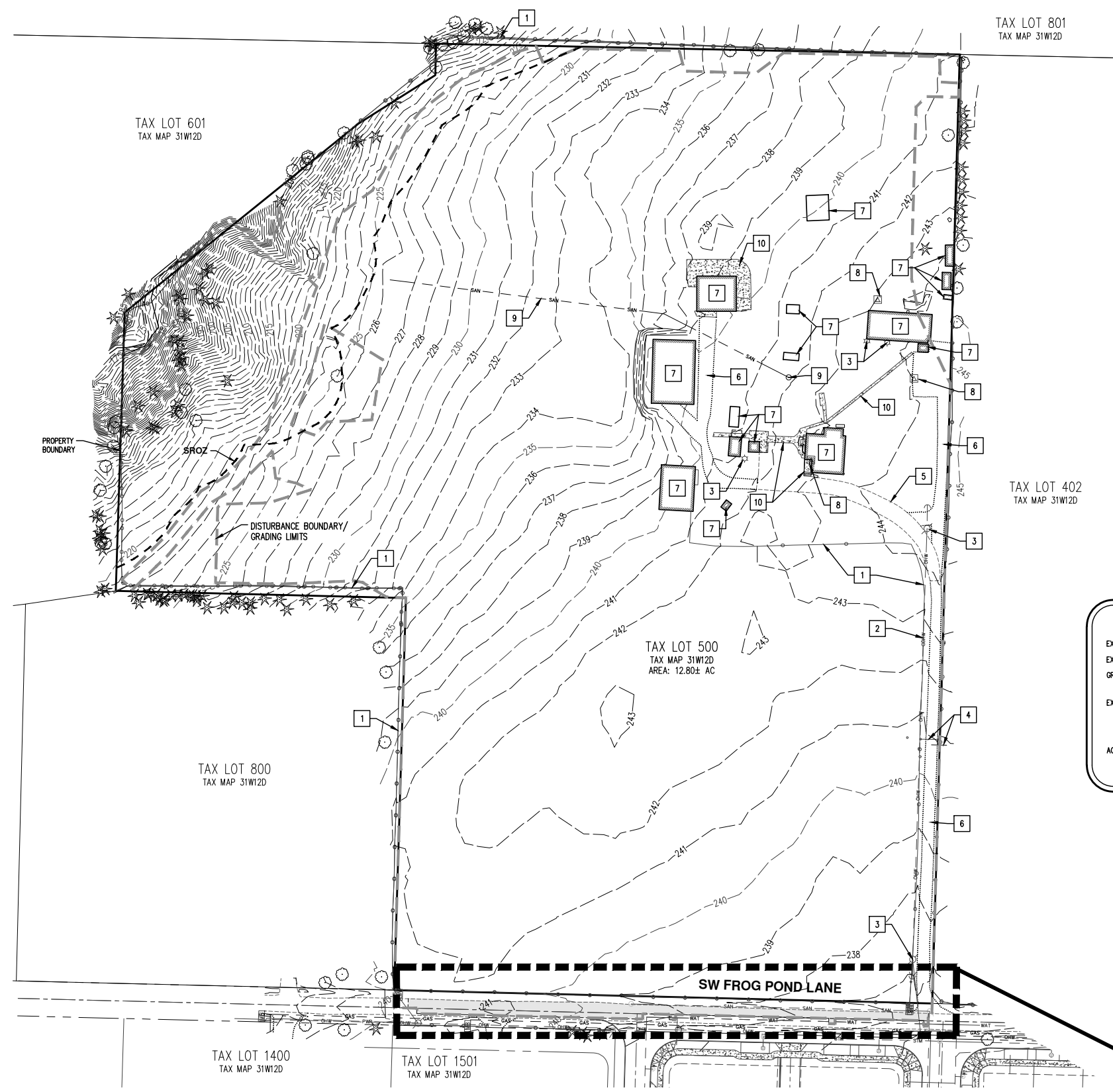
Total # of Existing Trees inventoried = 144

Total # of Existing Onsite Trees = 48
 Total # of Existing Onsite Trees to be Preserved = 34
 Total # of Existing Onsite Trees to be Removed = 14

Total # of Existing Line Trees = 2
 Total # of Existing Line Trees to be Preserved = 2
 Total #

PRELIMINARY DEMOLITION PLAN
FROG POND VISTA
VENTURE PROPERTIES, INC.
WILSONVILLE, OREGON

REGISTERED PROFESSIONAL
WALTER B. HURLEY
 ENGINEER
 No. 12345
 OREGON
 RENEWAL DATE: 6/30/23
 JOB NUMBER: 7530
 DATE: 01/14/2022
 DESIGNED BY: NLB
 DRAWN BY: JJA
 CHECKED BY: MBH



TAX LOT 801
TAX MAP 31W12D

TAX LOT 601
TAX MAP 31W12D

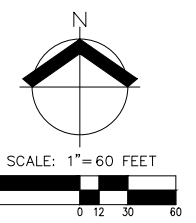
TAX LOT 402
TAX MAP 31W12D

TAX LOT 500
TAX MAP 31W12D
AREA: 12.80± AC

TAX LOT 800
TAX MAP 31W12D

TAX LOT 1400
TAX MAP 31W12D

TAX LOT 1501
TAX MAP 31W12D



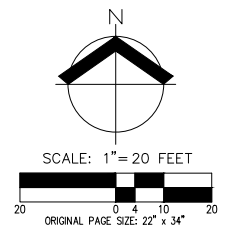
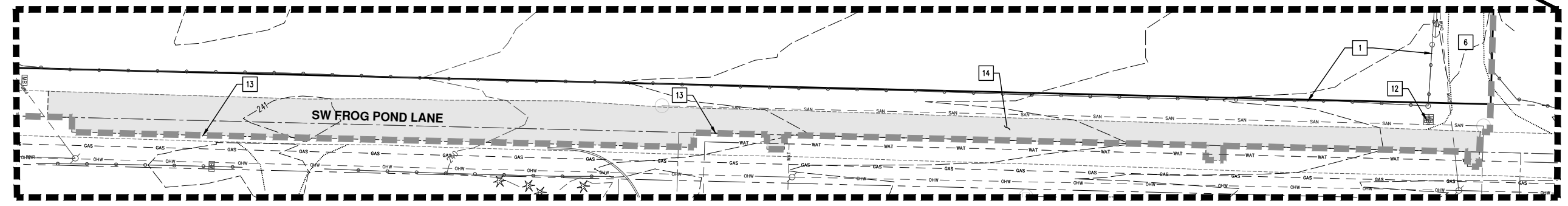
DEMOLITION KEYED NOTES

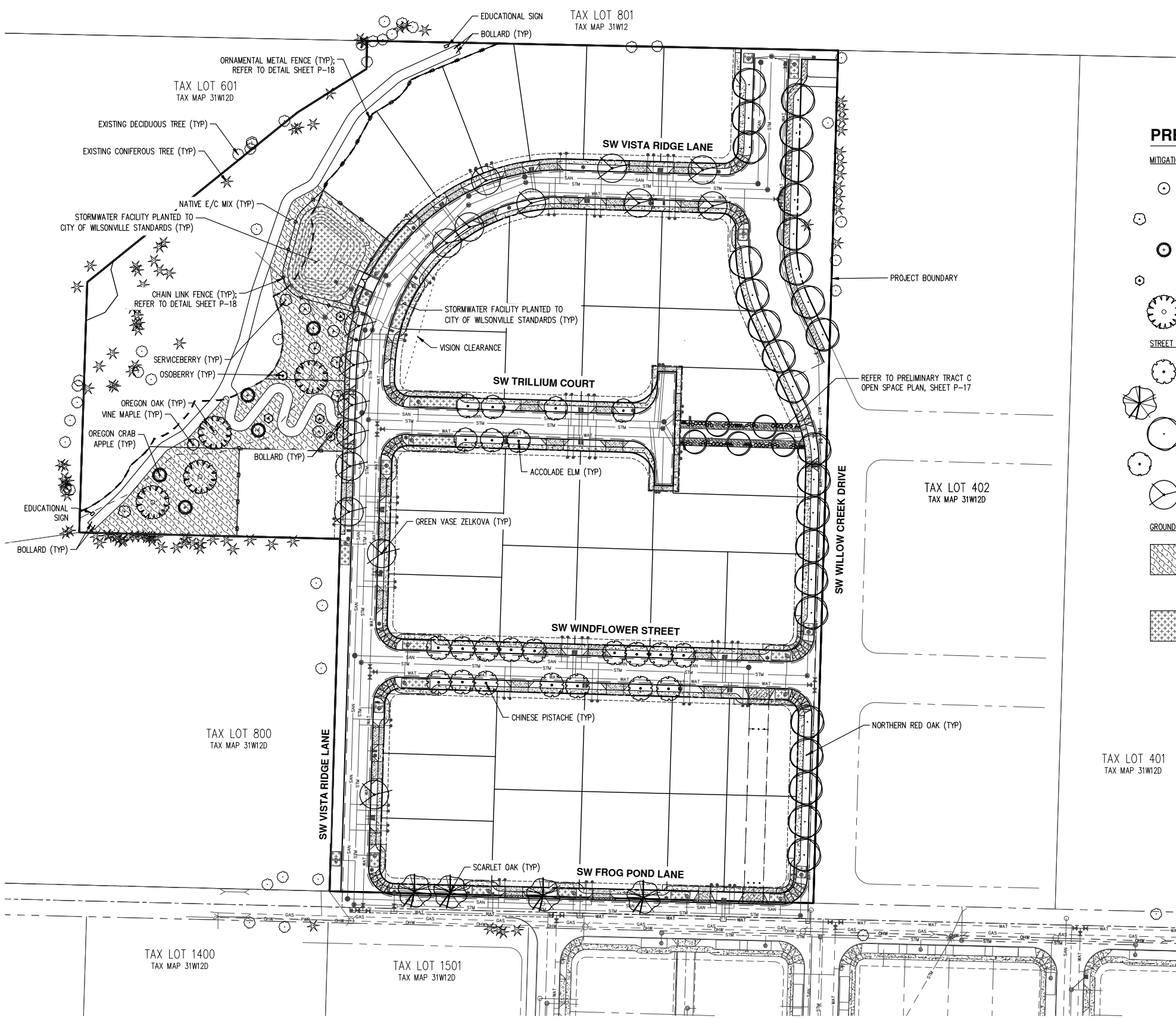
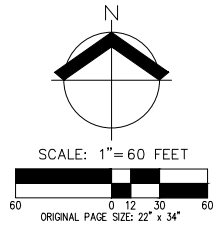
1. REMOVE OR RELOCATE EXISTING FENCE.
2. REMOVE EXISTING OVERHEAD WIRE.
3. REMOVE EXISTING UTILITY POLE.
4. REMOVE EXISTING GATE AND SIGN.
5. REMOVE/ABANDON EXISTING ASPHALT DRIVE.
6. REMOVE/ABANDON EXISTING GRAVEL DRIVE.
7. REMOVE EXISTING BUILDING.
8. REMOVE/ABANDON EXISTING POWER AND ASSOCIATED WIRING.
9. REMOVE/ABANDON EXISTING PIPE, SEPTIC TANK, DRAINFIELD AND LEECH LINE.
10. REMOVE CONCRETE SLAB, PATHWAY AND STEPS.
11. NOT USED.
12. REMOVE MAILBOX.
13. SAW-CUT LINE.
14. REMOVE ASPHALT PAVEMENT TO SAW-CUT LINE.

NOTE:
DECOMMISSION ALL SEPTIC DRAINFIELDS AND WELLS FOUND ON SITE.

LEGEND

EXISTING GROUND CONTOUR (1 FT)	— 341 —
EXISTING GROUND CONTOUR (5 FT)	— 335 —
GRADING LIMITS	- - - - -
EXISTING TREE TO REMAIN	★ ○
AC CONCRETE TO BE REMOVED	□





PRELIMINARY PLANT SCHEDULE

MITIGATION TREES	QTY	BOTANICAL NAME	COMMON NAME	SIZE/CONTAINER	SPACING
	5	ACER CIRCINATUM (NATIVE/LOW WATER USAGE)	VINE MAPLE	2" CAL. B&B (MULTI-STEM, CUMULATIVE TRUNKS)	AS SHOWN
	4	AMELANCHIER ALNIFOLIA (NATIVE/LOW WATER USAGE)	SERVICEBERRY	2" CAL. B&B (MULTI-STEM, CUMULATIVE TRUNKS)	AS SHOWN
	4	MALUS FUSCA (NATIVE/LOW WATER USAGE)	OREGON CRAB APPLE	2" CAL. B&B	AS SHOWN
	5	OEMLERIA CERASIFORMIS (NATIVE/LOW WATER USAGE)	OSOBERRY	2" CAL. B&B (MULTI-STEM, CUMULATIVE TRUNKS)	AS SHOWN
	3	QUERCUS GARRYANA (NATIVE/LOW WATER USAGE)	OREGON OAK	2" CAL. B&B	AS SHOWN

STREET TREES	QTY	BOTANICAL NAME	COMMON NAME	SIZE/CONTAINER	SPACING
	17	PISTACIA CHINENSIS (LOW WATER USAGE)	CHINESE PISTACHE	2" CAL. B&B	AS SHOWN
	5	QUERCUS COCCINEA (LOW WATER USAGE)	SCARLET OAK	3" CAL. B&B	AS SHOWN
	27	QUERCUS RUBRA BOREALIS (LOW WATER USAGE)	NORTHERN RED OAK	2" CAL. B&B	AS SHOWN
	8	ULMUS X 'MORTON' TM (MODERATE WATER USAGE)	ACCOLADE ELM	2" CAL. B&B	AS SHOWN
	16	ZELKOVA SERRATA 'GREEN VASE' (MODERATE WATER USAGE)	GREEN VASE ZELKOVA	2" CAL. B&B	AS SHOWN

GROUND COVERS	QTY	DESCRIPTION
	± 26,226 SF	NATIVE E/C MIX (NATIVE/INTERIM WATER USAGE - PERMANENT IRRIGATION NOT PROPOSED)
		MEADOW BARLEY (HORDEUM BRACHYANTHERUM) 40%; CALIFORNIA BROME (BROMUS CARINATUS) 35%; NATIVE RED FESCUE (FESTUCA RUBRA RUBRA) 20%; TUFTED HAIRGRASS (DESCHAMPSIA CAESPITOSA) 3%; SPIKE BENTGRASS (AGROSTIS EXERATA) 2%
		STORMWATER FACILITY PLANTED TO CITY OF WILSONVILLE STANDARDS (INTERIM WATER USAGE - PERMANENT IRRIGATION NOT PROPOSED)

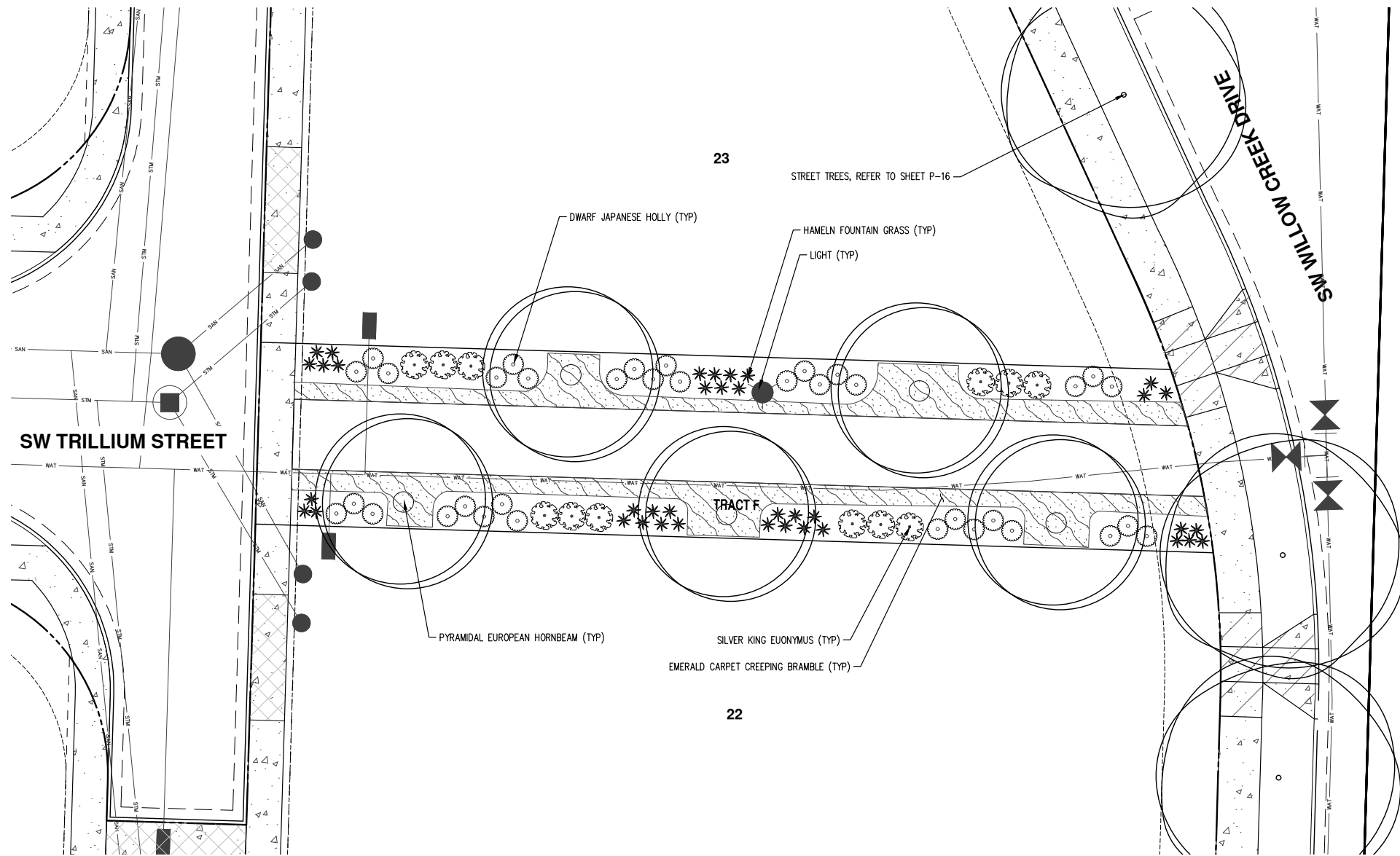
PRELIMINARY LANDSCAPE NOTES

- PLANTS AND PLANTINGS ARE PRELIMINARY AND SHOWN TO PORTRAY THE CHARACTER OF THE SITE. PLAN REVISIONS INCLUDING CHANGES TO PLANT SPECIES, SIZES, SPACING, QUANTITIES, ETC., DUE TO PLANT AVAILABILITY, FINAL FIELD LOCATIONS OF DRIVEWAYS, UTILITIES, ETC., OR UNFORESEEN SITE CONDITIONS, MAY BE MADE PRIOR TO INSTALLATION WHERE ALLOWED BY THE CITY OF WILSONVILLE DESIGN STANDARDS.
- ALL PLANTS AND INSTALLATION SHALL CONFORM TO THE CITY OF WILSONVILLE LANDSCAPE DESIGN STANDARDS AND TO THE AMERICAN STANDARD FOR NURSERY STOCK, ANSI Z60.1, CURRENT EDITION, IN ALL WAYS. TREES AND OTHER LANDSCAPING PLANT MATERIAL SHALL BE WELL-BRANCHED AND TYPICAL FOR THE SPECIES, BEING FREE OF DAMAGE, DISEASE, OR PESTS.
- PLANT MATERIALS SHALL BE INSTALLED TO CURRENT INDUSTRY STANDARDS, SUCH AS THE BEST PRACTICE STANDARDS ADOPTED BY THE OREGON LANDSCAPE CONTRACTORS BOARD (OLCB).
- ALL TREES SHALL BE PROPERLY DOUBLE STAKED TO ASSURE SURVIVAL. SUPPORT DEVICES (GUY WIRES, ETC.) SHALL NOT BE ALLOWED TO INTERFERE WITH NORMAL PEDESTRIAN OR VEHICULAR MOVEMENT OR PLACED IN SUCH A WAY TO DAMAGE TREE BARK. CENTER TREE IN PLANTING STRIP BETWEEN CURB AND SIDEWALK WHERE APPLICABLE.
- LANDSCAPING WITHIN VISION CLEARANCE AREAS SHALL BE MAINTAINED TO THE STANDARDS OF SECTION 4.177. OF THE CITY'S DEVELOPMENT CODE.
- WATERING WILL BE PROVIDED FOR NEW PLANT ESTABLISHMENT AND LONG TERM PLANT HEALTH, THROUGH A PERMANENT, UNDERGROUND IRRIGATION SYSTEM (WATER EFFICIENT DRIP IRRIGATION AND/OR SPRAY IRRIGATION) WITH AN AUTOMATIC CONTROLLER, OR BY OTHER APPROVED METHODS. TEMPORARY IRRIGATION IN NATURAL AREAS, STORMWATER FACILITIES, ETC. MAY BE USED FOR INITIAL ESTABLISHMENT. THE IRRIGATION SYSTEM SHALL BE 'DESIGN-BUILD' BY THE LANDSCAPE CONTRACTOR, USING CURRENT WATER SAVING TECHNOLOGY, AND INCLUDE ALL MATERIALS, COMPONENTS, CITY APPROVED BACKFLOW OR ANTI-SIPHON DEVICES, VALVES, ETC. NECESSARY FOR THE COMPLETE AND EFFICIENT COVERAGE OF LANDSCAPE AREAS SHOWN. IRRIGATION AREAS SHALL BE APPROPRIATELY ZONED BASED ON WATER NEEDS (HIGH WATER USAGE, MODERATE WATER USAGE, LOW WATER USAGE, AND INTERIM (TEMPORARY) IRRIGATION).
- MULCH: APPLY 3" DEEP WELL-AGED DARK HEMLOCK, OR FIR, MEDIUM GRIND, UNDER AND AROUND ALL PLANTS IN PLANTING BEDS. WHERE TREES OR OTHER WOODY PLANT MATERIAL ARE PLANTED IN SEEDING AREAS, A MINIMUM 3" DIAMETER BARK MULCH SHALL BE USED AND CENTERED ON THE PLANT TRUNK FOR EASE OF MAINTENANCE AND SOIL MOISTURE RETENTION.
- EDUCATIONAL SIGN: DETAILS AND SIZE OF THE EDUCATIONAL SIGNS WILL BE COORDINATED AND DEVELOPED WITH INPUT AND REVIEW BY THE CITY. THE SIGNS ARE TO BE CONSISTENT AND IN COMPLIANCE WITH THE DETAILS FOR THIS REGIONAL TRAIL SYSTEM.

PRELIMINARY LANDSCAPE PLAN
FROG POND VISTA
VENTURE PROPERTIES, INC.
WILSONVILLE, OREGON

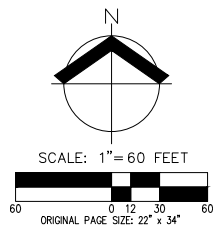


JOB NUMBER:	7530
DATE:	01/14/2022
DESIGNED BY:	NKP
DRAWN BY:	NKP
CHECKED BY:	KAH



PRELIMINARY TRACT C PLANT SCHEDULE

TREES	QTY	BOTANICAL NAME	COMMON NAME	SIZE/CONTAINER	SPACING
	5	CARPINUS BETULUS 'FASTIGIATA' (MODERATE WATER USAGE)	PYRAMIDAL EUROPEAN HORNBEAN	2" CAL. B&B	AS SHOWN
SHRUBS	QTY	BOTANICAL NAME	COMMON NAME	SIZE/CONTAINER	SPACING
	12	EUONYMUS JAPONICUS 'SILVER KING' (MODERATE WATER USAGE)	SILVER KING EUONYMUS	2 GAL. CONT.	48" o.c.
	35	ILEX CRENATA 'COMPACTA' (MODERATE WATER USAGE)	DWARF JAPANESE HOLLY	2 GAL. CONT.	36" o.c.
	37	PENNISETUM ALOPECUROIDES 'HAMELN' (MODERATE WATER USAGE)	HAMELN FOUNTAIN GRASS	1 GAL. CONT.	24" o.c.
GROUND COVERS	QTY	BOTANICAL NAME	COMMON NAME	SIZE/CONTAINER	SPACING
	234	RUBUS CALYCNOIDES 'EMERALD CARPET' (MODERATE WATER USAGE)	EMERALD CARPET CREEPING BRAMBLE	4" POTS	24" o.c.



EASEMENT LEGEND

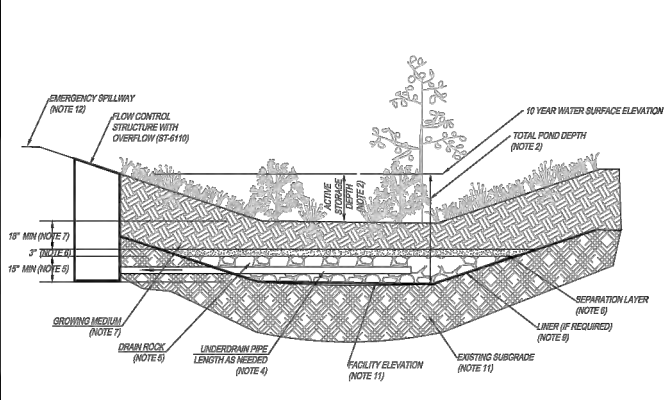
PUE	PUBLIC UTILITY EASEMENT
SWE	SIDEWALK EASEMENT
PAUE	PUBLIC ACCESS AND UTILITY EASEMENT
TPAE	TEMPORARY PUBLIC ACCESS EASEMENT

PRELIMINARY TRACT C OPEN SPACE PLAN
FROG POND VISTA
VENTURE PROPERTIES, INC.
WILSONVILLE, OREGON



JOB NUMBER:	7530
DATE:	01/14/2022
DESIGNED BY:	NKP
DRAWN BY:	NKP
CHECKED BY:	KAH

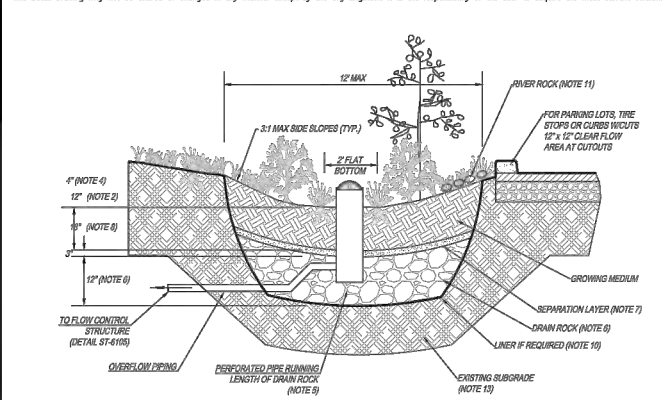
This Detail Drawing may not be altered or changed in any manner except by the City Engineer. It is the responsibility of the user to acquire the most current version.



- GENERAL NOTES:**
- PROVIDE PROTECTION** FROM ALL VEHICLE TRAFFIC, EQUIPMENT STAGING, AND FOOT TRAFFIC IN PROPOSED INFILTRATION AREAS PRIOR TO, DURING AND AFTER CONSTRUCTION. UNLESS REQUIRED BY SITE CONDITIONS, UNLINED PONDS ARE PREFERRED TO ALLOW MAXIMUM INFILTRATION.
 - DIMENSIONS:**
 - ACTIVE STORAGE DEPTH: (FROM TOP OF GROWING MEDIUM TO OVERFLOW ELEVATION); PER FACILITY SIZING MODEL.
 - TOTAL POND DEPTH: 4' MINIMUM, PER FACILITY SIZING MODEL.
 - BOTTOM SLOPE: 2.0% OR LESS.
 - SIDE SLOPES OF DETENTION POND: 3:1 MAXIMUM.
 - LOCATION/SETBACKS:**
 - DETENTION POND SHALL BE 10' FROM FOUNDATIONS AND 5' FROM PROPERTY LINES UNLESS APPROVED BY BUILDING OFFICIAL.
 - PIPING:**
 - PERFORATED UNDER-DRAIN PIPING: SHALL BE ABS SCH. 40, CAST IRON OR PVC SCH. 40, 6" MINIMUM DIAMETER. PIPING SHALL HAVE 1% GRADE AND FOLLOW THE UNIFORM PLUMBING CODE. PVC NOT ALLOWED ABOVE GROUND. WRAP UNDER-DRAIN PIPE IN FILTER FABRIC TO REDUCE TRANSPORT OF FINES.
 - OVERFLOW PIPING: SHALL BE ABS SCH. 40, CAST IRON OR PVC SCH. 40 AND SHALL NOT BE PERFORATED. MINIMUM DIAMETER IS 6". PIPING SHALL HAVE 1% GRADE AND FOLLOW THE UNIFORM PLUMBING CODE. PVC NOT ALLOWED ABOVE GROUND.
 - DRAIN ROCK:**
 - SIZE: 1 1/2" - 3/4" WASHED
 - DEPTH: 15" MINIMUM
 - SEPARATION BETWEEN DRAIN ROCK AND GROWING MEDIUM: SHALL BE A 3" LAYER OF 3/4" - 1/4" OPEN GRADED AGGREGATE.
 - GROWING MEDIUM:**
 - 3" MINIMUM
 - SEE APPENDIX C FOR SPECIFICATION OR USE SAND/LOAM/COMPOST 3-WAY MIX.
 - VEGETATION:** FOLLOW LANDSCAPE PLANS OR REFER TO PLANTING REQUIREMENTS IN APPENDIX A.
 - WATERPROOF LINER (IF REQUIRED):** SHALL BE 30 MIL PVC OR EQUIVALENT FOR DETENTION POND.
 - INSTALL RIVER ROCK SPLASH PAD** OVER A NON WOVEN GEO TEXTILE FABRIC TO TRANSITION FROM INLETS TO GROWING MEDIUM. SIZE OF ROCK SHALL BE 1" TO 3" SQUARE FEET 6" DEEP.
 - SEASONAL HIGH GROUNDWATER SEPARATION:** -SEPARATION DISTANCE AS REQUIRED BY CITY.
 - EMERGENCY SPILLWAY** SIZED TO CONVEY THE 100 YEAR DESIGN STORM (S-2275). SEE PUBLIC WORKS STANDARDS 301.4.09.

Detention Pond		CITY OF WILSONVILLE	
DRAWING NUMBER: ST-6060	DRAWN BY: SR	SCALE: N.T.S.	PUBLIC WORKS STANDARDS
FILE NAME: ST-6060.DWG	APPROVED BY: NK	DATE: 6/3/16	

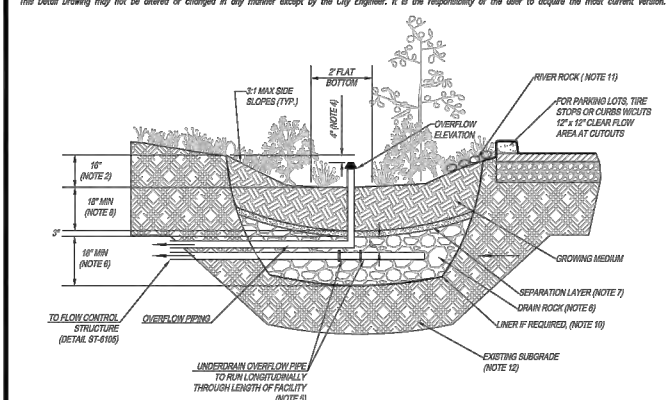
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- GENERAL NOTES:**
- PROVIDE PROTECTION** FROM ALL VEHICLE TRAFFIC, EQUIPMENT STAGING, AND FOOT TRAFFIC IN PROPOSED INFILTRATION AREAS PRIOR TO, DURING AND AFTER CONSTRUCTION. UNLESS REQUIRED BY SITE CONDITIONS, UNLINED SWALES ARE PREFERRED TO ALLOW MAXIMUM INFILTRATION.
 - DIMENSIONS:**
 - DEPTH OF SWALE (FROM TOP OF GROWING MEDIUM TO OVERFLOW ELEVATION): 12"
 - LONGITUDINAL SLOPE OF SWALES: 0.5% OR LESS
 - FLAT BOTTOM WIDTH: 2' MINIMUM
 - SIDE SLOPES OF SWALE: 3:1 MAXIMUM
 - LOCATION/SETBACKS:**
 - FILTRATION SWALES SHALL BE 10' FROM FOUNDATIONS AND 5' FROM PROPERTY LINES UNLESS APPROVED BY BUILDING OFFICIAL.
 - OVERFLOW:**
 - INLET ELEVATION SHALL ALLOW FOR 4" OF FREEBOARD, MINIMUM.
 - PROTECT FROM DEBRIS AND SEDIMENT WITH STRAINER OR GRATE.
 - PIPING:**
 - PERFORATED UNDER-DRAIN PIPING: SHALL BE ABS SCH. 40, CAST IRON, OR PVC SCH. 40. MINIMUM DIAMETER IS 6". PIPING SHALL HAVE 1% GRADE AND FOLLOW THE UNIFORM PLUMBING CODE. PVC NOT ALLOWED ABOVE GROUND. WRAP UNDER-DRAIN IN FILTER FABRIC TO REDUCE TRANSPORT OF FINES.
 - OVERFLOW PIPING: SHALL BE ABS SCH. 40, CAST IRON, OR PVC SCH. 40 AND SHALL NOT BE PERFORATED. MINIMUM DIAMETER IS 6". PIPING SHALL HAVE 1% GRADE AND FOLLOW THE UNIFORM PLUMBING CODE. PVC NOT ALLOWED ABOVE GROUND.
 - DRAIN ROCK:**
 - SIZE: 1 1/2" - 3/4" WASHED
 - DEPTH: 12"
 - SEPARATION BETWEEN DRAIN ROCK AND GROWING MEDIUM:** SHALL BE A 3" LAYER OF 3/4" - 1/4" OPEN GRADED AGGREGATE.
 - GROWING MEDIUM:**
 - 3" MINIMUM
 - SEE APPENDIX C FOR SPECIFICATION OR USE SAND/LOAM/COMPOST 3-WAY MIX.
 - VEGETATION:** FOLLOW LANDSCAPE PLANS OR REFER TO PLANTING REQUIREMENTS IN APPENDIX A.
 - INSTALL RIVER ROCK SPLASH PAD** OVER A NON WOVEN GEO TEXTILE FABRIC TO TRANSITION FROM INLETS TO GROWING MEDIUM. SIZE OF ROCK SHALL BE 1" TO 3" SQUARE FEET, 6" DEEP.
 - CHECK DAMS:** SHALL BE PLACED ACCORDING TO FACILITY DESIGN. REFER TO DETAIL ST-6100 FOR PROFILE AND SPACING.
 - SEASONAL HIGH GROUNDWATER SEPARATION:** -SEPARATION DISTANCE AS REQUIRED BY CITY.

Vegetated Swale - Filtration		CITY OF WILSONVILLE	
DRAWING NUMBER: ST-6045	DRAWN BY: SR	SCALE: N.T.S.	PUBLIC WORKS STANDARDS
FILE NAME: ST-6045.DWG	APPROVED BY: NK	DATE: 4/16/18	

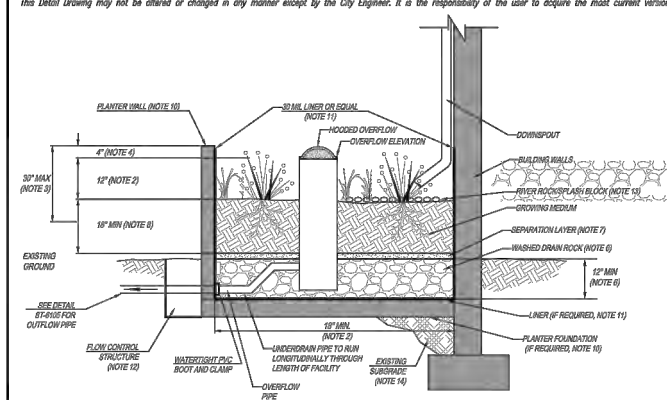
This Detail Drawing may not be altered or changed in any manner except by the City Engineer. It is the responsibility of the user to acquire the most current version.



- GENERAL NOTES:**
- PROVIDE PROTECTION** FROM ALL VEHICLE TRAFFIC, EQUIPMENT STAGING, AND FOOT TRAFFIC IN PROPOSED INFILTRATION AREAS PRIOR TO, DURING AND AFTER CONSTRUCTION. UNLESS REQUIRED BY SITE CONDITIONS, UNLINED RAIN GARDENS ARE PREFERRED TO MAXIMIZE ONSITE INFILTRATION.
 - DIMENSIONS:**
 - DEPTH OF BASIN (FROM TOP OF GROWING MEDIUM TO OVERFLOW ELEVATION): 12"
 - FLAT BOTTOM WIDTH: 2' MINIMUM
 - SIDE SLOPES OF RAIN GARDEN: 3:1 MAXIMUM
 - CENTERLINE SLOPE OF RAIN GARDEN: 0.5% OR LESS
 - SETBACKS:**
 - FILTRATION RAIN GARDEN SHALL BE 10' FROM FOUNDATIONS AND 5' FROM PROPERTY LINES UNLESS APPROVED BY BUILDING OFFICIAL.
 - OVERFLOW:**
 - OVERFLOW REQUIRED. INLET ELEVATION SHALL ALLOW FOR 4" OF FREEBOARD, MINIMUM.
 - PROTECT FROM DEBRIS AND SEDIMENT WITH STRAINER OR GRATE.
 - PIPING:**
 - PERFORATED UNDER-DRAIN PIPING: SHALL RUN LONGITUDINALLY THROUGH LENGTH OF FACILITY. SHALL BE ABS SCH. 40, CAST IRON, OR PVC SCH. 40. MINIMUM DIAMETER IS 6". PIPING SHALL HAVE 1% GRADE AND FOLLOW THE UNIFORM PLUMBING CODE. PVC NOT ALLOWED ABOVE GROUND. WRAP UNDER-DRAIN IN FILTER FABRIC TO REDUCE TRANSPORT OF FINES.
 - OVERFLOW PIPING: SHALL BE ABS SCH. 40, CAST IRON, OR PVC SCH. 40 AND SHALL NOT BE PERFORATED. MINIMUM DIAMETER IS 6". PIPING SHALL HAVE 1% GRADE AND FOLLOW THE UNIFORM PLUMBING CODE. PVC NOT ALLOWED ABOVE GROUND.
 - DRAIN ROCK:**
 - SIZE: 1 1/2" - 3/4" WASHED
 - DEPTH: 12" MINIMUM
 - SEPARATION BETWEEN DRAIN ROCK AND GROWING MEDIUM:** SHALL BE A 3" LAYER OF 3/4" - 1/4" OPEN GRADED AGGREGATE.
 - GROWING MEDIUM:**
 - 3" MINIMUM
 - SEE APPENDIX C FOR SPECIFICATION OR USE SAND/LOAM/COMPOST 3-WAY MIX.
 - VEGETATION:** FOLLOW LANDSCAPE PLANS OR REFER TO PLANTING REQUIREMENTS IN APPENDIX A.
 - INSTALL RIVER ROCK SPLASH PAD** OVER A NON WOVEN GEO TEXTILE FABRIC TO TRANSITION FROM INLETS TO GROWING MEDIUM. SIZE OF ROCK SHALL BE 1" TO 3" SQUARE FEET, 6" DEEP.
 - SEASONAL HIGH GROUNDWATER SEPARATION:** -SEPARATION DISTANCE AS REQUIRED BY CITY.

Rain Garden - Filtration		CITY OF WILSONVILLE	
DRAWING NUMBER: ST-6020	DRAWN BY: SR	SCALE: N.T.S.	PUBLIC WORKS STANDARDS
FILE NAME: ST-6020.DWG	APPROVED BY: NK	DATE: 6/3/16	

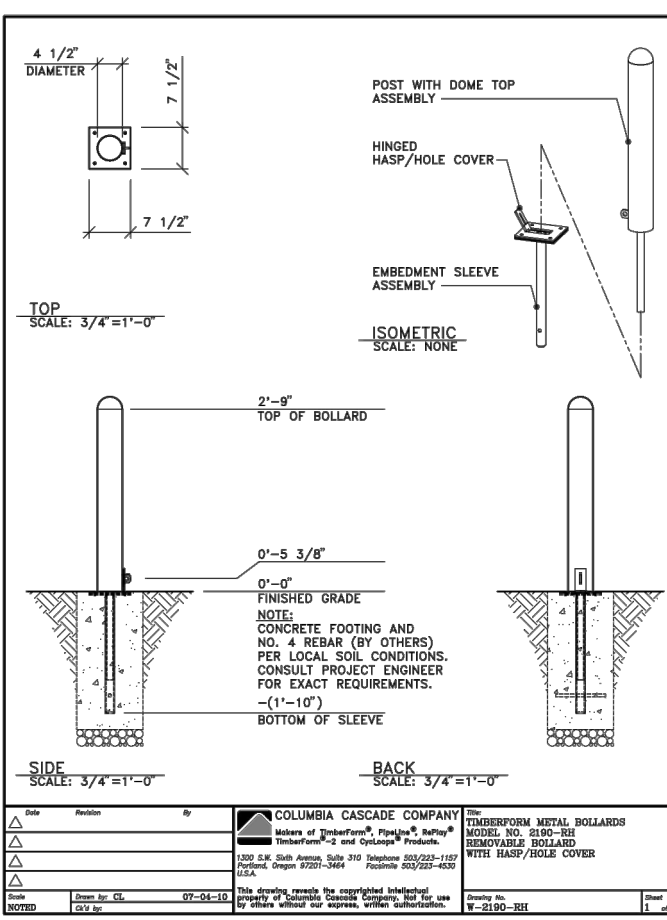
This Detail Drawing may not be altered or changed in any manner except by the City Engineer. It is the responsibility of the user to acquire the most current version.



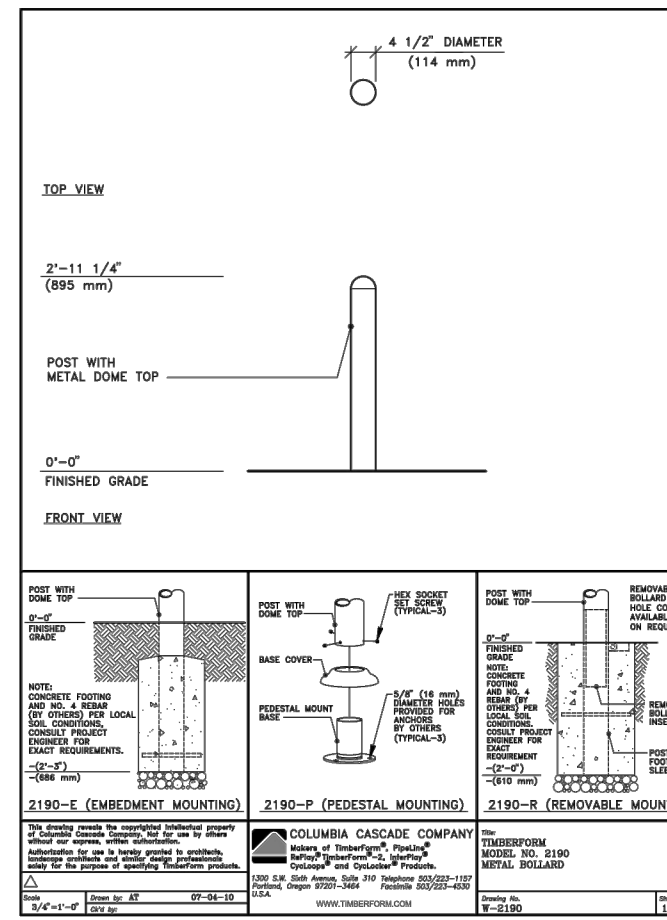
- GENERAL NOTES:**
- PROVIDE PROTECTION** FROM ALL VEHICLE TRAFFIC, EQUIPMENT STAGING, AND FOOT TRAFFIC IN PROPOSED INFILTRATION AREAS PRIOR TO, DURING AND AFTER CONSTRUCTION. UNLESS REQUIRED BY SITE CONDITIONS, UNLINED UNDER-DRAIN IN FILTER FABRIC TO REDUCE TRANSPORT OF FINES.
 - DIMENSIONS:**
 - DEPTH OF PLANTER (FROM TOP OF GROWING MEDIUM TO OVERFLOW ELEVATION): 12"
 - SLOPE OF PLANTER: 0.5% OR LESS
 - SEPARATION:**
 - PLANTER SHALL BE LESS THAN 50" IN HEIGHT ABOVE SURROUNDING AREA
 - PLANTERS SHALL BE MINIMUM OF 3 FEET FROM PROPERTY LINE
 - OVERFLOW:**
 - INLET ELEVATION SHALL ALLOW FOR 4" OF FREEBOARD, MINIMUM.
 - PROTECT FROM DEBRIS AND SEDIMENT WITH STRAINER OR GRATE.
 - PIPING:**
 - PERFORATED UNDER-DRAIN PIPING: SHALL RUN LONGITUDINALLY THROUGH LENGTH OF FACILITY. SHALL BE ABS SCH. 40, CAST IRON, OR PVC SCH. 40. MINIMUM DIAMETER IS 6". PIPING SHALL HAVE 1% GRADE AND FOLLOW THE UNIFORM PLUMBING CODE. PVC NOT ALLOWED ABOVE GROUND. WRAP UNDER-DRAIN IN FILTER FABRIC TO REDUCE TRANSPORT OF FINES.
 - OVERFLOW PIPING: SHALL BE ABS SCH. 40, CAST IRON, OR PVC SCH. 40 AND SHALL NOT BE PERFORATED. MINIMUM DIAMETER IS 6". PIPING SHALL HAVE 1% GRADE AND FOLLOW THE UNIFORM PLUMBING CODE. PVC NOT ALLOWED ABOVE GROUND.
 - DRAIN ROCK:**
 - SIZE FOR FLOW-THROUGH PLANTER: 1 1/2" - 3/4" WASHED
 - DEPTH: 12" MINIMUM
 - SEPARATION BETWEEN DRAIN ROCK AND GROWING MEDIUM: SHALL BE A 3" LAYER OF 3/4" - 1/4" OPEN GRADED AGGREGATE.
 - GROWING MEDIUM:**
 - 3" MINIMUM
 - SEE APPENDIX C FOR SPECIFICATION OR USE SAND/LOAM/COMPOST 3-WAY MIX.
 - VEGETATION:** FOLLOW LANDSCAPE PLANS OR REFER TO PLANTING REQUIREMENTS IN APPENDIX A.
 - PLANTER POSITIONING AND WALLS:**
 - CONCRETE SHALL BE 2" REINFORCED CONCRETE, STONE, BRICK, OR OTHER DURABLE MATERIAL
 - CONCRETE, BRICK, OR STONE WALLS SHALL BE INCLUDED ON FOUNDATION PLANS.
 - INSTALL INVERTED CURB AS NEEDED BETWEEN PLANTER AND ROAD SURFACING.
 - SUBMIT RETAINING WALL DESIGN IN ACCORDANCE WITH APPLICABLE STRUCTURAL CODES FOR REVIEW AND APPROVAL.
 - WATERPROOF LINER (IF REQUIRED):**
 - LINER SHALL BE 30 MIL PVC OR EQUIVALENT. FOR FLOW THROUGH FACILITIES.
 - A WATERPROOF LINER IS NOT REQUIRED IF THE FOUNDATION OR WALL MATERIAL IS WATERPROOF REINFORCED CONCRETE OR APPROVED EQUAL.
 - FLOW CONTROL STRUCTURE:** SEE DETAIL ST-6005.
 - INSTALL RIVER ROCK SPLASH PAD** OVER A NON WOVEN GEO TEXTILE FABRIC TO TRANSITION FROM INLETS TO GROWING MEDIUM. SIZE OF ROCK SHALL BE 1" - 3" SQUARE FEET, 6" DEEP.
 - SEASONAL HIGH GROUNDWATER SEPARATION:** -SEPARATION DISTANCE AS REQUIRED BY THE CITY.

Stormwater Planter - Filtration		CITY OF WILSONVILLE	
DRAWING NUMBER: ST-6005	DRAWN BY: SR	SCALE: N.T.S.	PUBLIC WORKS STANDARDS
FILE NAME: ST-6005.DWG	APPROVED BY: NK	DATE: 4/16/18	

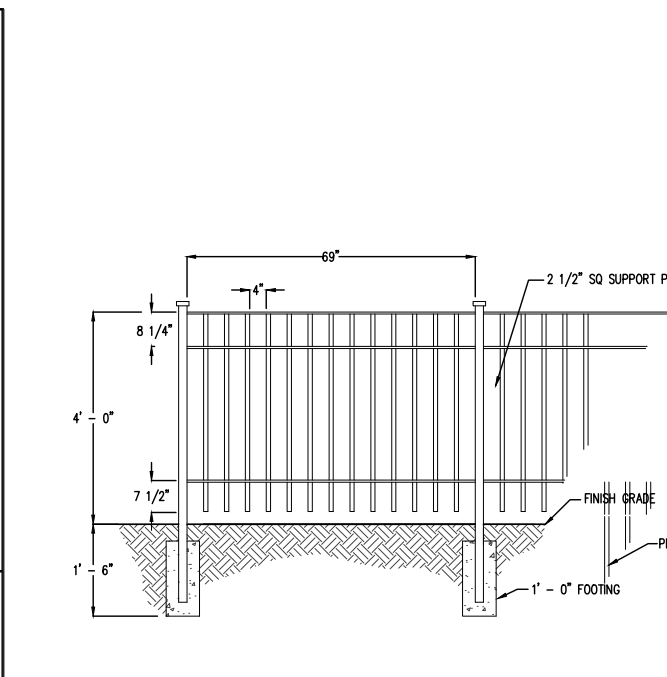
1 STORMWATER FACILITY DETAILS
P-18



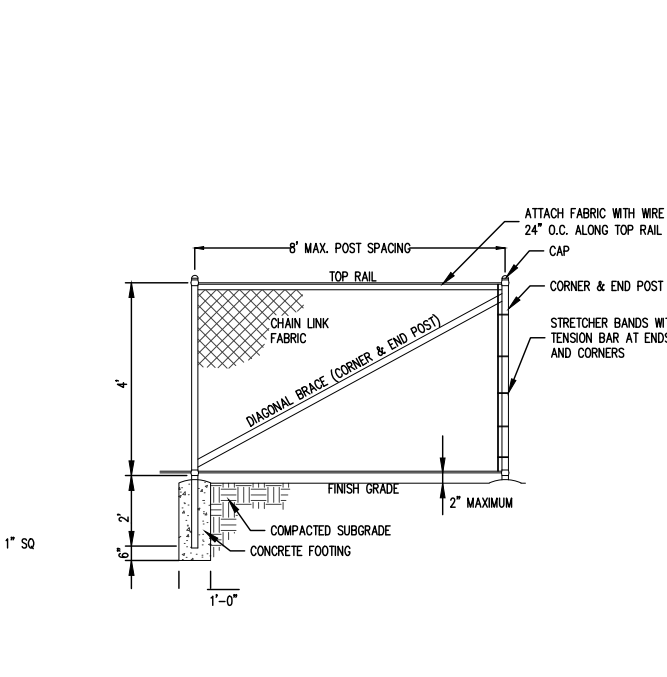
COLUMBIA CASCADE COMPANY		TIMBERFORM METAL BOLLARDS	
Model No. 2190-BH	REMOVABLE BOLLARD WITH HASP/HOLE COVER	Model No. 2190-RH	REMOVABLE BOLLARD WITH HASP/HOLE COVER
1300 S.W. Sixth Avenue, Suite 310 Portland, Oregon 97201-3464	Telephone 503/223-1187 Facsimile 503/223-4530	1300 S.W. Sixth Avenue, Suite 310 Portland, Oregon 97201-3464	Telephone 503/223-1187 Facsimile 503/223-4530



COLUMBIA CASCADE COMPANY		TIMBERFORM METAL BOLLARDS	
Model No. 2190-E	EMBEDMENT MOUNTING	Model No. 2190-P	PEDESTAL MOUNTING
1300 S.W. Sixth Avenue, Suite 310 Portland, Oregon 97201-3464	Telephone 503/223-1187 Facsimile 503/223-4530	1300 S.W. Sixth Avenue, Suite 310 Portland, Oregon 97201-3464	Telephone 503/223-1187 Facsimile 503/223-4530



- 3 TYPICAL ORNAMENTAL METAL FENCE DETAIL**
P-18
- NTS
- NOTES:
- FENCE TO HAVE BLACK POWDER-COATED FINISH.
 - FENCE TO APPEAR AS SHOWN OR APPROVED EQUAL.



- 4 CHAIN LINK FENCE**
P-18
- NTS
- NOTE:
- FENCE MATERIAL SHALL BE NO. 11 GAUGE GALVANIZED STEEL FABRIC WITH BONDED VINYL COATING (BLACK).
 - FENCE POSTS SHALL BE GALVANIZED STEEL, WITH TOP CAPS, AND SET 2 FEET DEEP IN CONCRETE.
 - CROSS BARS SHALL CONNECT ADJACENT FENCE POSTS WITH DIAGONAL BRACES AT CORNERS AND ENDS.
 - SEE PLAN FOR LOCATION OF FENCE.
 - ALL FENCING MATERIALS (INCLUDING CHAIN LINK FABRIC, POSTS, RAILS, ETC.) SHALL BE COVERED WITH BLACK-COLORED VINYL COATING. THE COLOR SHOULD BE THE SAME FOR ALL FENCING MATERIALS.
 - 4' HIGH FENCE: CONCRETE POST BASE SHALL BE 12" MINIMUM DIAMETER X 24" DEEP, 3,000 PSI CONCRETE.
 - 5' HIGH FENCE: CONCRETE POST BASE SHALL BE 12" MINIMUM DIAMETER X 30" DEEP, 3,000 PSI CONCRETE.
 - 6' HIGH FENCE: CONCRETE POST BASE SHALL BE 12" MINIMUM DIAMETER X 36" DEEP, 3,000 PSI CONCRETE.

Exhibit B: Land Use Application Forms



29799 SW Town Center Loop E, Wilsonville, OR 97070
 Phone: 503.682.4960 Fax: 503.682.7025
 Web: www.ci.wilsonville.or.us

Planning Division Development Permit Application

Final action on development application or zone change is required within 120 days in accordance with provisions of ORS 227.175

A pre application conference is normally required prior to submittal of an application. Please visit the City's website for submittal requirements

Pre-Application Meeting Date: 12/12/2019

Incomplete applications will not be scheduled for public hearing until all of the required materials are submitted.

Applicant:

Name: Venture Properties, Inc.
 Company: _____
 Mailing Address: 4230 Galewood St #100
 City, State, Zip: Lake Oswego, OR 97035
 Phone: please contact the Applicant's consultant
 E-mail: please contact the Applicant's consultant

Authorized Representative:

Name: Consultant: Mimi Doukas, AICP, RLA
 Company: AKS Engineering & Forestry, LLC
 Mailing Address: 12965 SW Herman Rd., Suite 100
 City, State, Zip: Tualatin, OR 97062
 Phone: 503-563-6151 Fax: 503-563-6152
 E-mail: mimid@aks-eng.com

Property Owner:

Name: Darrel R and Sandi L Lauer
 Company: _____
 Mailing Address: 6901 SW Frog Pond Lane
 City, State, Zip: Wilsonville, OR 97070
 Phone: please contact the Applicant's consultant
 E-mail: please contact the Applicant's consultant

Property Owner's Signature:

 AuthentiSign Sandi L. Lauer <small>4/29/2021 12:00:36 PM PDT</small>	 AuthentiSign Darrell R. Lauer <small>4/29/2021 12:03:47 PM PDT</small>
Date: <u>04/29/2021</u>	

Applicant's Signature: (if different from Property Owner)

DocuSigned by:

DE4436EEBFA54A4
 Printed Name: Kelly Ritz Date: 4/28/2021

Site Location and Description:

Project Address if Available: 6901 SW Frog Pond Lane Suite/Unit _____
 Project Location: 0.25 miles northwest of SW Stafford Rd. and SW Frog Pond Ln. intersection
 Tax Map #(s): 3 1 W 12D Tax Lot #(s): 100, 300, 302 County: Washington Clackamas

Request:

Annexation, Zoning Map Amendment, Planned Development (Stage I Master Plan, Stage II Final Plan), Site Design Review of Open Space, Tentative Subdivision Plat, Type C Tree Removal Plan, SROZ Review

Project Type: Class I Class II Class III

Residential Commercial Industrial Other: _____

Application Type(s):

- | | | | |
|--|---|---|---|
| <input checked="" type="checkbox"/> Annexation | <input type="checkbox"/> Appeal | <input type="checkbox"/> Comp Plan Map Amend | <input type="checkbox"/> Parks Plan Review |
| <input type="checkbox"/> Final Plat | <input type="checkbox"/> Major Partition | <input type="checkbox"/> Minor Partition | <input type="checkbox"/> Request to Modify Conditions |
| <input type="checkbox"/> Plan Amendment | <input checked="" type="checkbox"/> Planned Development | <input checked="" type="checkbox"/> Preliminary Plat | <input checked="" type="checkbox"/> Site Design Review |
| <input type="checkbox"/> Request for Special Meeting | <input type="checkbox"/> Request for Time Extension | <input type="checkbox"/> Signs | <input checked="" type="checkbox"/> Stage II Final Plan |
| <input checked="" type="checkbox"/> SROZ/SRIR Review | <input type="checkbox"/> Staff Interpretation | <input checked="" type="checkbox"/> Stage I Master Plan | <input type="checkbox"/> Variance |
| <input checked="" type="checkbox"/> Type C Tree Removal Plan | <input type="checkbox"/> Tree Permit (B or C) | <input type="checkbox"/> Temporary Use | <input type="checkbox"/> Other (describe) |
| <input type="checkbox"/> Villebois SAP | <input type="checkbox"/> Villebois PDP | <input type="checkbox"/> Villebois FDP | |
| <input checked="" type="checkbox"/> Zone Map Amendment | <input type="checkbox"/> Waiver(s) | <input type="checkbox"/> Conditional Use | |

Business Registry Business Name Search

[New Search](#)

Business Entity Data

04-29-2021

13:06

Registry Nbr	Entity Type	Entity Status	Jurisdiction	Registry Date	Next Renewal Date	Renewal Due?
230690-81	DBC	ACT	OREGON	01-07-1991	01-07-2022	
Entity Name	VENTURE PROPERTIES, INC.					
Foreign Name						

[New Search](#)

Associated Names

Type	PRINCIPAL PLACE OF BUSINESS					
Addr 1	4230 GALEWOOD ST #100					
Addr 2						
CSZ	LAKE OSWEGO	OR	97035		Country	UNITED STATES OF AMERICA

Please click [here](#) for general information about registered agents and service of process.

Type	AGT REGISTERED AGENT			Start Date	01-07-1991	Resign Date
Name	DON MORISSETTE					
Addr 1	4230 GALEWOOD ST #100					
Addr 2						
CSZ	LAKE OSWEGO	OR	97035		Country	UNITED STATES OF AMERICA

Type	MAL MAILING ADDRESS					
Addr 1	4230 GALEWOOD ST STE 100					
Addr 2						
CSZ	LAKE OSWEGO	OR	97035		Country	UNITED STATES OF AMERICA

Type	PRE PRESIDENT				Resign Date	
Name	KELLY RITZ					
Addr 1	4230 GALEWOOD ST STE 100					
Addr 2						
CSZ	LAKE OSWEGO	OR	97035		Country	UNITED STATES OF AMERICA

Type	SEC SECRETARY				Resign Date	
Name	KELLY RITZ					
Addr 1	4230 GALEWOOD ST STE 100					
Addr 2						
CSZ	LAKE OSWEGO	OR	97035		Country	UNITED STATES OF AMERICA








[New Search](#)

Name History

Business Entity Name	Name Type	Name Status	Start Date	End Date
VENTURE PROPERTIES, INC.	EN	CUR	01-07-1991	

Please [read](#) before ordering [Copies](#).[New Search](#)

Summary History

Image Available	Action	Transaction Date	Effective Date	Status	Name/Agent Change	Dissolved By
	AMENDED ANNUAL REPORT	12-28-2020		FI		
	ANNUAL REPORT	12-13-2019		FI		
	AMENDED ANNUAL REPORT	01-21-2019		FI		
	AMENDED ANNUAL REPORT	01-24-2018		FI		
	AMENDED ANNUAL REPORT	12-28-2016		FI		
	AMENDED ANNUAL REPORT	12-30-2015		FI		
	AMENDED ANNUAL REPORT	01-07-2015		FI		
	AMENDED ANNUAL REPORT	12-26-2013		FI		
	ANNUAL REPORT PAYMENT	12-12-2012		SYS		
	ANNUAL REPORT PAYMENT	12-15-2011		SYS		
	ANNUAL REPORT PAYMENT	12-21-2010		SYS		
	ANNUAL REPORT PAYMENT	12-15-2009		SYS		
	ANNUAL REPORT PAYMENT	12-12-2008		SYS		
	ANNUAL REPORT PAYMENT	12-12-2007		SYS		
	ANNUAL REPORT PAYMENT	12-13-2006		SYS		
	ANNUAL REPORT PAYMENT	12-16-2005		SYS		
	ANNUAL REPORT PAYMENT	12-15-2004		SYS		
	ANNUAL REPORT PAYMENT	12-15-2003		SYS		
	ANNUAL REPORT PAYMENT	12-12-2002		SYS		

	AMNDMT TO ANNUAL RPT/INFO STATEMENT	11-15-2002		FI		
	ANNUAL REPORT PAYMENT	12-13-2001		SYS		
	RESTATED ARTICLES	03-01-2001		FI		
	AMENDED RENEWAL	12-15-2000		FI		
	AGENT/AUTH REP CHNG	12-15-2000		FI		
	CHANGED RENEWAL	01-13-2000		FI		
	STRAIGHT RENEWAL	12-17-1999		FI		
	STRAIGHT RENEWAL	12-14-1998		FI		
	STRAIGHT RENEWAL	12-17-1997		FI		
	STRAIGHT RENEWAL	11-25-1996		FI		
	STRAIGHT RENEWAL	12-21-1995		FI		
	AMENDED RENEWAL	12-14-1994		FI		
	AMENDED RENEWAL	02-07-1994		FI		
	STRAIGHT RENEWAL	12-17-1992		FI		
	AMENDED RENEWAL	02-04-1992		FI		
	NEW FILING	01-07-1991		FI		

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Exhibit C: Title Report

AFTER RECORDING RETURN TO:



\$98.00

06/13/2018 11:21:34 AM

Kevin F. Kerstiens
Schwabe, Williamson & Wyatt
1211 SW Fifth Avenue, Suite 1700
Portland, Oregon 97204-3795

D-D Cnt=1 Stn=9 COUNTER1
\$10.00 \$16.00 \$62.00 \$10.00

Sandi L. Lauer
UNTIL A CHANGE IS REQUESTED, ALL TAX
STATEMENTS SHALL BE SENT TO:

No change

STATUTORY WARRANTY DEED

Tapfer Family LLC, an Oregon limited liability company, Grantor, conveys and warrants to Darrell R. Lauer and Sandi L. Lauer, husband and wife, Grantee, the following described real property:

Beginning at a point on the north line of the southeast quarter of Section 12, T. 3 S., R. 1 W., of the W.M., said point being 1045.4 feet west of the northeast corner of said southeast quarter of Section 12; thence tracing said north line of the southeast quarter of Section 12 west a distance of 492.4 feet; thence south at right angles 29.70 feet; thence south 56° west 1.30 chains; thence south 49° 30' west 4.30 chains; thence south 4 chains; thence east 275 feet; thence south 372 feet to the southeast corner of that certain tract described in deed from W.E. Hauser to William Tetz, by deed recorded in Book 124, page 518, deed records; thence east 507.7 feet; thence north 887.7 feet to the place of beginning.

This conveyance is made by Grantor and accepted by Grantee subject to the exceptions of record in Clackamas County, Oregon, to the extent valid and subsisting and affecting the property conveyed.

The true consideration for this conveyance consists of or includes other property or other value given or promised.

BEFORE SIGNING OR ACCEPTING THIS INSTRUMENT, THE PERSON TRANSFERRING FEE TITLE SHOULD INQUIRE ABOUT THE PERSON'S RIGHTS, IF ANY, UNDER ORS 195.300, 195.301 AND 195.305 TO 195.336 AND SECTIONS 5 TO 11, CHAPTER 424, OREGON LAWS 2007, SECTIONS 2 TO 9 AND 17, CHAPTER 855, OREGON LAWS 2009, AND SECTIONS 2 TO 7, CHAPTER 8, OREGON LAWS 2010. THIS INSTRUMENT DOES NOT ALLOW USE OF THE PROPERTY DESCRIBED IN THIS INSTRUMENT IN VIOLATION OF APPLICABLE LAND USE LAWS AND REGULATIONS. BEFORE SIGNING OR ACCEPTING THIS INSTRUMENT, THE PERSON ACQUIRING FEE TITLE TO THE PROPERTY SHOULD CHECK WITH THE APPROPRIATE CITY OR COUNTY PLANNING DEPARTMENT TO VERIFY THAT THE UNIT OF LAND BEING TRANSFERRED IS A LAWFULLY ESTABLISHED LOT OR PARCEL, AS DEFINED IN ORS 92.010 OR 215.010, TO VERIFY THE APPROVED USES OF THE LOT OR PARCEL, TO DETERMINE ANY LIMITS ON LAWSUITS AGAINST FARMING OR FOREST PRACTICES, AS DEFINED IN ORS 30.930, AND TO INQUIRE ABOUT THE RIGHTS OF NEIGHBORING PROPERTY OWNERS, IF ANY, UNDER ORS 195.300, 195.301 AND 195.305 TO 195.336 AND SECTIONS 5 TO 11, CHAPTER 424, OREGON LAWS 2007, SECTIONS 2 TO 9 AND 17, CHAPTER 855, OREGON LAWS 2009, AND SECTIONS 2 TO 7, CHAPTER 8, OREGON LAWS 2010.

Executed this 7th day of June, 2018.

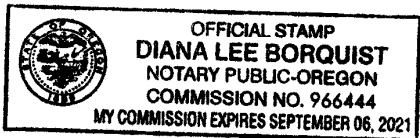
GRANTOR:

TAPPER FAMILY LLC

Sandi L. Lauer
By: Sandi L. Lauer, Manager

STATE OF OREGON)
) ss.
County of Clackamas)

This instrument was acknowledged before me this 7th day of June, 2018,
by Sandi L. Lauer, Manager of Tapfer Family LLC, an Oregon limited liability company, on behalf of the
company.



Diana Lee Borquist
NOTARY PUBLIC FOR OREGON
My Commission Expires: Sept 06 2021

Exhibit D: Clackamas County Assessor's Map

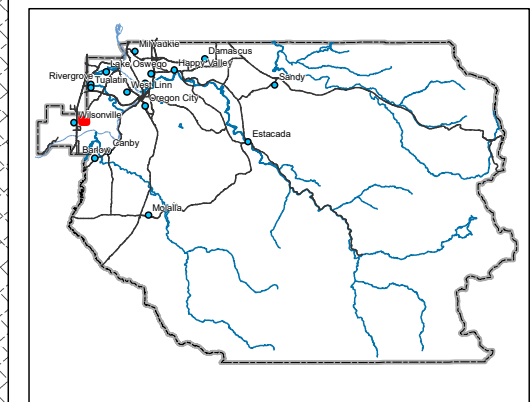
3 1 W 12D
WILSONVILLE

S.E. 1/4 SEC. 12 T. 3S. R. 1W. W. M.
CLACKAMAS COUNTY
1" = 200'

Cancelled Taxlots

- 201
- 301
- 400
- 600
- 602
- 603
- 604
- 605
- 900
- 1000
- 1600
- 1900
- 1901
- 2000E1
- 2500
- 2900S1
- 2900
- 2902
- 3100
- 3200E1
- 3201
- 3300E1
- 3400
- 3200E3

- Parcel Boundary
- Private Road ROW
- Historical Boundary
- Railroad Centerline
- TaxCodeLines
- Map Index
- WaterLines
- Land Use Zoning
- Plats
- Water
- Corner
- Section Corner
- 1/16th Line
- Govt Lot Line
- DLC Line
- Meander Line
- PLSS Section Line
- Historic Corridor 40'
- Historic Corridor 20'



THIS MAP IS FOR ASSESSMENT
PURPOSES ONLY

12/12/2018

3 1 W 12D
WILSONVILLE

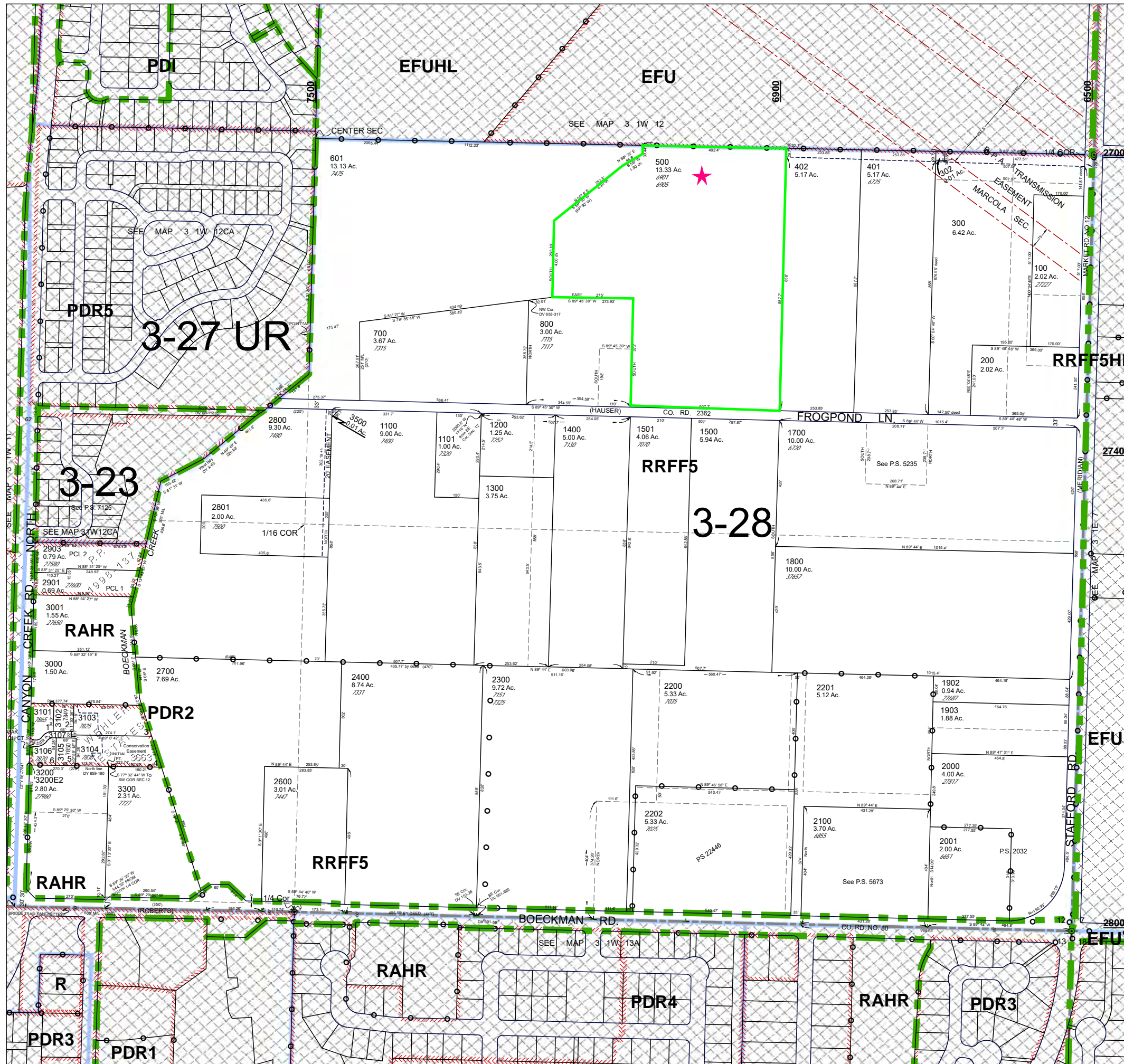


Exhibit E: Traffic Impact Study



**WILSONVILLE FROG POND WEST
VISTA SUBDIVISION**
TRANSPORTATION IMPACT ANALYSIS

AUGUST 2021

PREPARED FOR:



117 COMMERCIAL STREET NE, SUITE 310, SALEM, OR 97301 • 503.391.8773 • DKSASSOCIATES.COM

SHAPING A SMARTER TRANSPORTATION EXPERIENCE™

AN EMPLOYEE-OWNED COMPANY

PREPARED FOR CITY OF WILSONVILLE



PREPARED BY DKS ASSOCIATES

Scott Mansur, P.E., PTOE

Jenna Bogert, P.E.

Travis Larson, E.I.



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INTRODUCTION

This study evaluates the transportation impacts associated with the proposed Frog Pond West Vista Subdivision development to be located on Frog Pond Lane in Wilsonville, Oregon. The owner desires to construct 43 single-family homes as part of the Frog Pond West Master Plan.¹

The purpose of this transportation impact analysis is to identify potential mitigation measures needed to offset transportation impacts that the proposed development may have on the nearby transportation network. The impact analysis is focused on the study intersections, which were selected for evaluation in coordination with City staff. The intersections are listed below and shown on Figure 1.

- Boeckman Road/ Parkway Avenue
- Boeckman Road/ Canyon Creek Road
- Boeckman Road/ Stafford Road/ Advance Road/ Wilsonville Road
- Stafford Road/ Frog Pond Lane
- Stafford Road/ 65th Avenue

Table 1 lists important characteristics of the study area and proposed project.

TABLE 1: STUDY AREA AND PROPOSED PROJECT CHARACTERISTICS

STUDY AREA	
NUMBER OF STUDY INTERSECTIONS	Five
ANALYSIS PERIODS	Weekday PM peak hour (highest hour between 4pm – 6pm)
PROPOSED DEVELOPMENT	
SIZE AND LAND USE	13.3-acre plot with 43 residential house lots
NET PROJECT TRIPS	44 total PM peak hour trips (27 in, 17 out)
VEHICLE ACCESS POINTS	Access to the site will be provided via Frog Pond Lane, with an alternate access via Willow Creek Drive.

¹ Frog Pond West Master Plan, City of Wilsonville, July 17, 2017.



FIGURE 1: STUDY AREA

EXISTING CONDITIONS

This chapter provides documentation of existing study area conditions, including the study area roadway network, pedestrian and bicycle facilities, and existing traffic volumes and operations.

STUDY AREA ROADWAY NETWORK

Key roadways and their existing characteristics in the study area are summarized in Table 2. The functional classifications for the streets are provided in the City of Wilsonville Transportation System Plan (TSP).²

TABLE 2: STUDY AREA ROADWAY CHARACTERISTICS

ROADWAY	FUNCTIONAL CLASSIFICATION	ROADWAY OWNERSHIP	POSTED SPEED	SIDEWALKS	BIKE FACILITIES	ON-STREET PARKING
FROG POND LANE	Collector	City of Wilsonville	N/A	No	No	No
STAFFORD ROAD	Major Arterial	Clackamas County	45 mph	No	No	No
BOECKMAN ROAD	Minor Arterial	City of Wilsonville	35 mph	Partial ^a	Partial ^a	No
WILSONVILLE ROAD	Minor Arterial	City of Wilsonville	35 mph	Yes	Yes	No
ADVANCE ROAD	Collector	City of Wilsonville ^b	35 mph ^c	Partial ^d	Partial ^d	No
CANYON CREEK ROAD	Minor Arterial	City of Wilsonville	35 mph	Yes	Yes	No
PARKWAY AVENUE	Minor Arterial	City of Wilsonville	40 mph	Yes	Partial ^e	No
65 TH AVENUE	Minor Arterial	Clackamas County and Washington County ^f	45 mph	No	No	No

^a Sidewalk primarily exists on south side of street. Bicycle lanes are intermittent.

^b City jurisdiction west of 60th Avenue. County jurisdiction east of 60th Avenue.

^c Speed limit increases to 45 mph outside of the City.

^d Sidewalk and bike lane present on the south side between Stafford Road and 63rd Avenue.

^e Intermittent bike lanes.

^f West half is Washington County; east half is Clackamas County.

² Wilsonville Transportation System Plan, Amended November 16, 2020.

NEARBY BICYCLE AND PEDESTRIAN FACILITIES

There are currently no bicycle lanes or sidewalks along Frog Pond Lane or Stafford Road to connect the new development with the City pedestrian and bicycle system. Willow Creek Drive, a collector road currently in construction within the Frog Pond West area, will have sidewalks and bicycle lanes on both sides of the street. Along Boeckman Road and Advance Road, sidewalks exist on the south side and there are intermittent bicycle lanes. Wilsonville Road has bicycle lanes and sidewalks on both sides of the street.

NEARBY PUBLIC TRANSIT SERVICE

South Metro Area Regional Transit (SMART) provides public transportation services within Wilsonville and the outlying areas. There are no bus stops currently adjacent to Frog Pond Lane, but Route 4 covers Advance Road and Wilsonville Road with the closest stop to the project site approximately 0.5 mile south at Landover Road on Wilsonville Road.

PLANNED PROJECTS

The City of Wilsonville Transportation System Plan (TSP) has a list of Higher Priority projects which includes the recommended projects reasonably expected to be funded through 2035. These are the highest priority solutions to meet the City's most important needs. The list includes the following projects that impact the key roadways near the proposed project site.³

- RE-12A - Frog Pond West Neighborhood Collector Roads: Construction of collector roadways within the Frog Pond West neighborhood per the Master Plan.
- RW-01 - Boeckman Road Bridge and Corridor Improvements: Improvements along Boeckman Road near I-5 as well as improvement of the Parkway Avenue intersection.
- UU-01 - Boeckman Road Dip Improvements: Installation of bridge along Boeckman Road at the vertical curve and a new traffic signal at the Boeckman Road/ Canyon Creek Road intersection.
- UU-06 - Stafford Road Urban Upgrade: Upgrade of Stafford Road from Kahle Road to Boeckman Road to applicable roadway cross-section standards.
- SI-03 - Stafford Road/65th Avenue Intersection Improvements: New signal or roundabout in conjunction with 65th/Elligsen intersection to facilitate improved safety and operations.
- BW-04 - Boeckman Road Bike Lanes and Sidewalk Infill: Improvements to pedestrian and bicycle facilities between Parkway Avenue and Canyon Creek Road.

EXISTING TRAFFIC VOLUMES

Historic turning movement count data was utilized for this traffic impact analysis that were previously collected prior to the Covid19 pandemic. The historic data was collected during weekday pm peak periods (4:00-6:00 pm). The intersections were collected on the below dates.

- Boeckman Road/ Parkway Avenue: May 22, 2019

³ Table 5-3/Figure 5-4, Wilsonville Transportation System Plan, Amended November 16, 2020.

- Boeckman Road/ Canyon Creek Road: May 22, 2019
- Boeckman Road/ Stafford Road/ Advance Road/ Wilsonville Road: May 22, 2019
- Stafford Road/ 65th Avenue: May 9, 2019

These historical counts were factored up to 2021 conditions by assuming a conservative yearly growth rate of 2%. This yearly growth rate is a typical growth rate used in Wilsonville traffic impact analyses and has been calculated using the Wilsonville Travel Demand model in previous studies.

Existing turning movements at the Frog Pond Lane/Stafford Road intersection were estimated using link volumes between the Boeckman Road/Stafford Road/Advance Road/Wilsonville Road and Stafford Road/ 65th Avenue intersections as well as Institute of Transportation Engineers (ITE) trip generation rates for Single-Family Detached Housing (210) for the existing houses along Frog Pond Lane.⁴

Figure 2 shows the 2021 Existing PM peak hour traffic volumes for the study intersections, along with the lane configurations and traffic control.

INTERSECTION PERFORMANCE MEASURES

Agency mobility standards often require intersections to meet level of service (LOS) or volume-to-capacity (v/c) intersection operation thresholds. Additional details about LOS and delay are provided in Appendix B.

- The intersection LOS is similar to a “report card” rating based upon average vehicle delay. Level of service A, B, and C indicate conditions where traffic moves without significant delays over periods of peak hour travel demand. Level of service D and E are progressively worse operating conditions. Level of service F represents conditions where average vehicle delay has become excessive and demand has exceeded capacity. This condition is typically evident in long queues and delays.
- The volume-to-capacity (v/c) ratio represents the level of saturation of the intersection or individual movement. It is determined by dividing the peak hour traffic volume by the maximum hourly capacity of an intersection or turn movement. When the V/C ratio approaches 0.95, operations become unstable and small disruptions can cause the traffic flow to break down, resulting in the formation of excessive queues.

The City of Wilsonville requires study intersections on public streets to meet its minimum acceptable level of service (LOS) standard of LOS D for the overall intersection for the PM peak period.⁵ For intersections under Clackamas County jurisdiction in the PM peak period in rural areas, signalized intersections must meet the volume-to-capacity ratio of 0.90 or less and unsignalized intersections must meet the minimum LOS standard of LOS E.⁶

⁴ Trip Generation Manual, 10th Edition, Institute of Transportation Engineers, 2017.

⁵ Policy 5, Wilsonville Transportation System Plan 2013, Amended November 16, 2020.

⁶ System Performance Policies, Chapter 5: Transportation System Plan, Clackamas County Comprehensive Plan, Amended January 18, 2017.

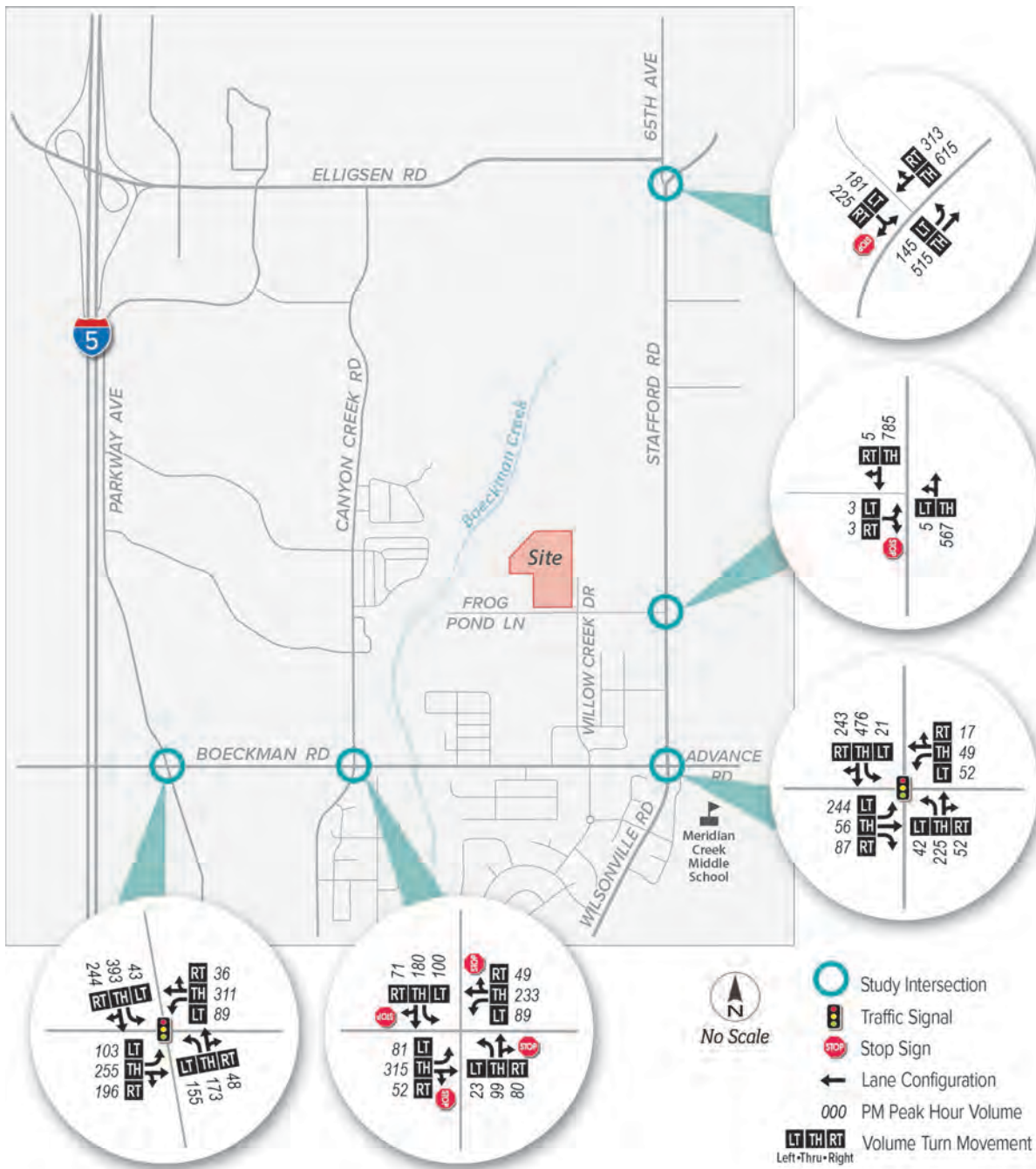


FIGURE 2: 2021 EXISTING PM TRAFFIC VOLUMES, LANE GEOMETRIES, AND TRAFFIC CONTROL

EXISTING INTERSECTION OPERATIONS

An analysis of the 2021 existing intersection operations was performed at the study intersections to determine the current operating conditions of the study area. Intersection operations were analyzed for the PM peak hour using Highway Capacity Manual (HCM) 6th Edition methodology.⁷ The volume to capacity (v/c) ratio, delay, and level of service (LOS) of each study intersection are listed in Table 3.

The Stafford Road/ 65th Avenue intersection is under Clackamas County jurisdiction, while all other intersections are under City of Wilsonville jurisdictions. While Frog Pond Lane is currently a Clackamas County road, the Frog Pond Lane/ Stafford Road intersection is within the City's Urban Growth Boundary (UGB) and will be incorporated into City limits once the development is constructed.

TABLE 3: EXISTING PM INTERSECTION OPERATIONS

INTERSECTION	OPERATING STANDARD	PM PEAK HOUR		
		V/C	DELAY	LOS
SIGNALIZED CONTROL				
BOECKMAN RD/ STAFFORD RD/ WILSONVILLE RD/ ADVANCE RD	LOS D	0.76	20.4	C
BOECKMAN RD/ PARKWAY AVENUE	LOS D	0.95	37.8	D
ALL-WAY STOP CONTROLLED				
BOECKMAN RD/ CANYON CREEK RD	LOS D	0.83	24.1	C
TWO-WAY STOP CONTROLLED				
STAFFORD RD/ 65 TH AVENUE	LOS E	>1.00	>120.0	B/F
STAFFORD RD/ FROG POND LANE	LOS D	0.03	22.5	A/C
SIGNALIZED INTERSECTION: Delay = Average Intersection Delay (secs) v/c = Total Volume-to-Capacity Ratio LOS = Total Level of Service	ALL-WAY STOP CONTROLLED INTERSECTION: Delay = Average Intersection Delay (secs) v/c = Critical Movement Volume-to-Capacity Ratio LOS = Total Level of Service	TWO-WAY STOP CONTROLLED INTERSECTION: Delay = Critical Movement Delay (secs) v/c = Critical Movement Volume-to-Capacity Ratio LOS = Critical Levels of Service (Major/Minor Road)		

Bold/Highlighted = Does not meet the operating standard/mobility target

As shown, the Stafford Rd/ 65th Avenue intersection fails to meet Clackamas County standards under existing conditions. All other intersections meet the City of Wilsonville's operating standards for the existing conditions.

⁷ Highway Capacity Manual, 6th Edition, Transportation Research Board, 2017.

PROJECT IMPACTS

This chapter reviews the impacts that the proposed development may have on the study area transportation system. This analysis includes site plan evaluation, trip generation, trip distribution, and future year traffic volumes and operating conditions for the five study intersections.

PROPOSED DEVELOPMENT

The proposed development includes 43 single-family home lots. The location of the proposed development is shown on all analysis figures and is part of the Frog Pond West Master Plan.⁸ The parcel is currently used primarily for agricultural purposes with one single-family home on it.

FUTURE ANALYSIS SCENARIOS

Operating conditions were analyzed at the study intersections for the following traffic scenarios. The comparison of the following scenarios enables the assessment of project impacts:

- Existing + Project
- Existing + Stage II
- Existing + Project + Stage II

All future analysis scenarios assume the same traffic control as existing conditions. Stage II represents traffic from other developments that have Stage II approval or are under construction in Wilsonville. For this analysis, it was assumed that the Frog Pond Crossing development (located at 27227 SW Stafford Road) was included on the Stage II list.

TRIP GENERATION

Trip generation is the method used to estimate the number of vehicles added to site driveways and the adjacent roadway network by a development during a specified period (i.e., such as the PM peak hour). For this study, the Institute of Transportation Engineers (ITE) trip generation rates for Single-Family Detached Housing (210) were used to estimate the site's trip generation, which is based on the number of housing lots in the development.⁹ As one home will be removed from the site during construction, the trips from that home have been subtracted from the total trips.

The trip generation for the proposed development is shown in Table 4. As shown, the proposed development is expected to generate a net total 44 PM peak hour trips (27 in, 17 out). The project trips at the study intersections are shown on Figure 3.

⁸ Frog Pond West Master Plan, City of Wilsonville, July 17, 2017.

⁹ Trip Generation Manual, 10th Edition, Institute of Transportation Engineers, 2017.

TABLE 4: VEHICLE TRIP GENERATION

LAND USE	ITE DESCRIPTION (CODE)	UNITS	PM PEAK TRIP RATE	PM PEAK TRIPS			WEEKDAY
				IN	OUT	TOTAL	
NEW HOMES	SINGLE-FAMILY DETACHED HOUSING (210)	43 Lots	1.05 trips per lot	28	17	45	478
EXISTING HOMES REMOVED	SINGLE-FAMILY DETACHED HOUSING (210)	1 Lot	1.00 trips per lot	1	0	1	15
Total Net New Trips				27	17	44	463

VEHICLE TRIP DISTRIBUTION

Vehicle trip distribution provides an estimation of where vehicles would be coming from and going to. It is given as a percentage at key gateways to the study area and is used to route project trips through the study intersections. Figure 3 shows the trip distribution for the proposed site. The trip distribution was based on the Wilsonville Travel Demand Model.

PROJECT TRIPS THROUGH CITY OF WILSONVILLE INTERCHANGE AREAS

The project trips through the two City of Wilsonville I-5 interchange areas were estimated based on the trip generation and distribution assumptions. Approximately 5% of the project trips are expected to travel through the I-5/Wilsonville Road interchange area and 5% are expected to travel through the I-5/Elligsen Road interchange area; that is, the proposed development is expected to generate 1 net new PM peak hour trips through the I-5/Wilsonville Road interchange area and 1 net new PM peak hour trips through the I-5/Elligsen Road interchange area.

FUTURE TRAFFIC VOLUMES

Traffic volumes were estimated at the study intersections for the three future analysis scenarios. The future scenarios include various combinations of three types of traffic: Existing, Project, and Stage II. Stage II development trips are estimated based on the list of currently approved Stage II developments provided by City staff.¹⁰ Figure 4, Figure 5, and Figure 6 show the PM peak hour traffic volumes for the following scenarios: Existing + Project, Existing + Stage II, Existing + Project + Stage II.

¹⁰ Email from Daniel Pauly, City of Wilsonville, July 8, 2021.

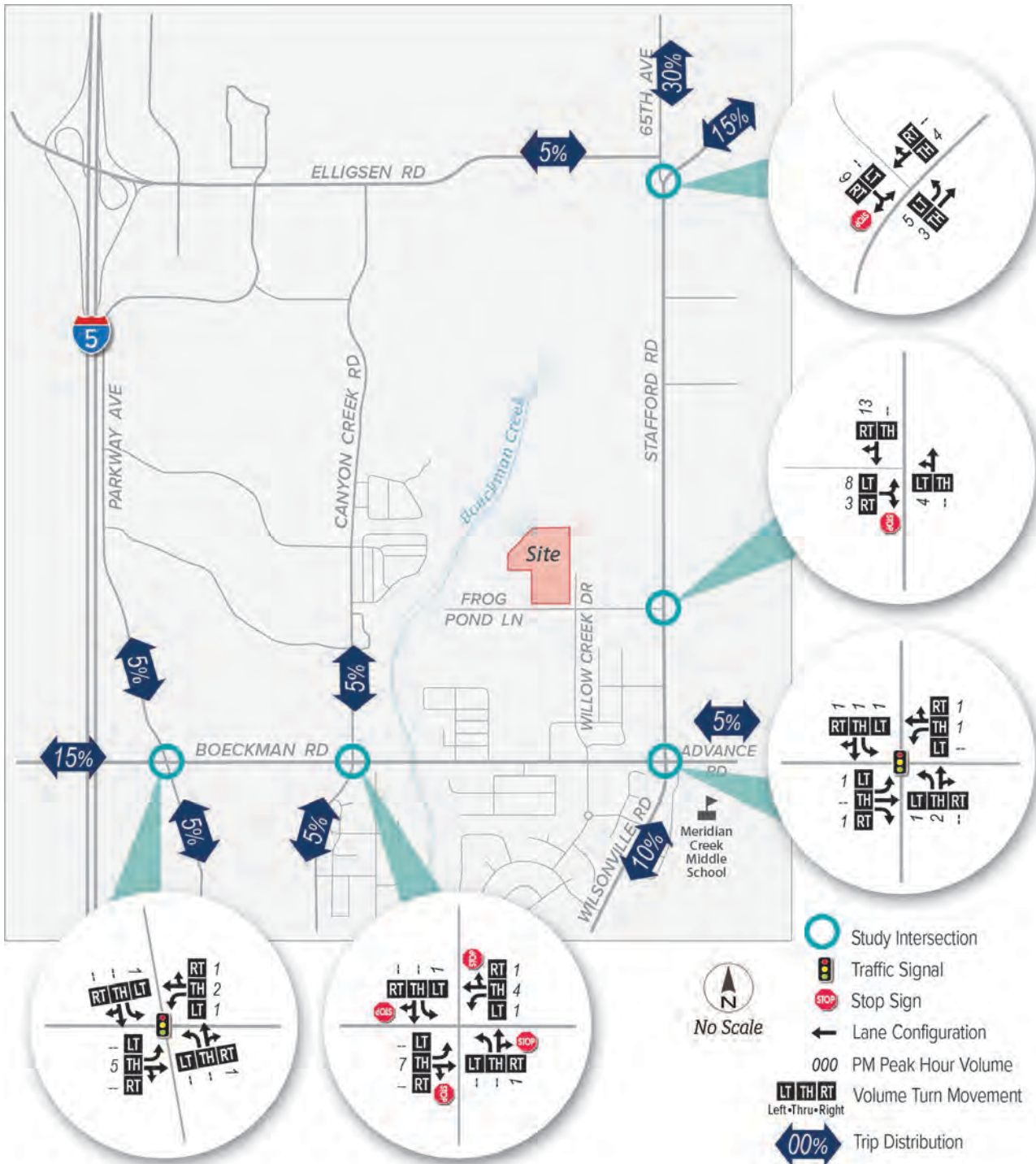


FIGURE 3: TRIP DISTRIBUTION AND PROJECT TRIPS

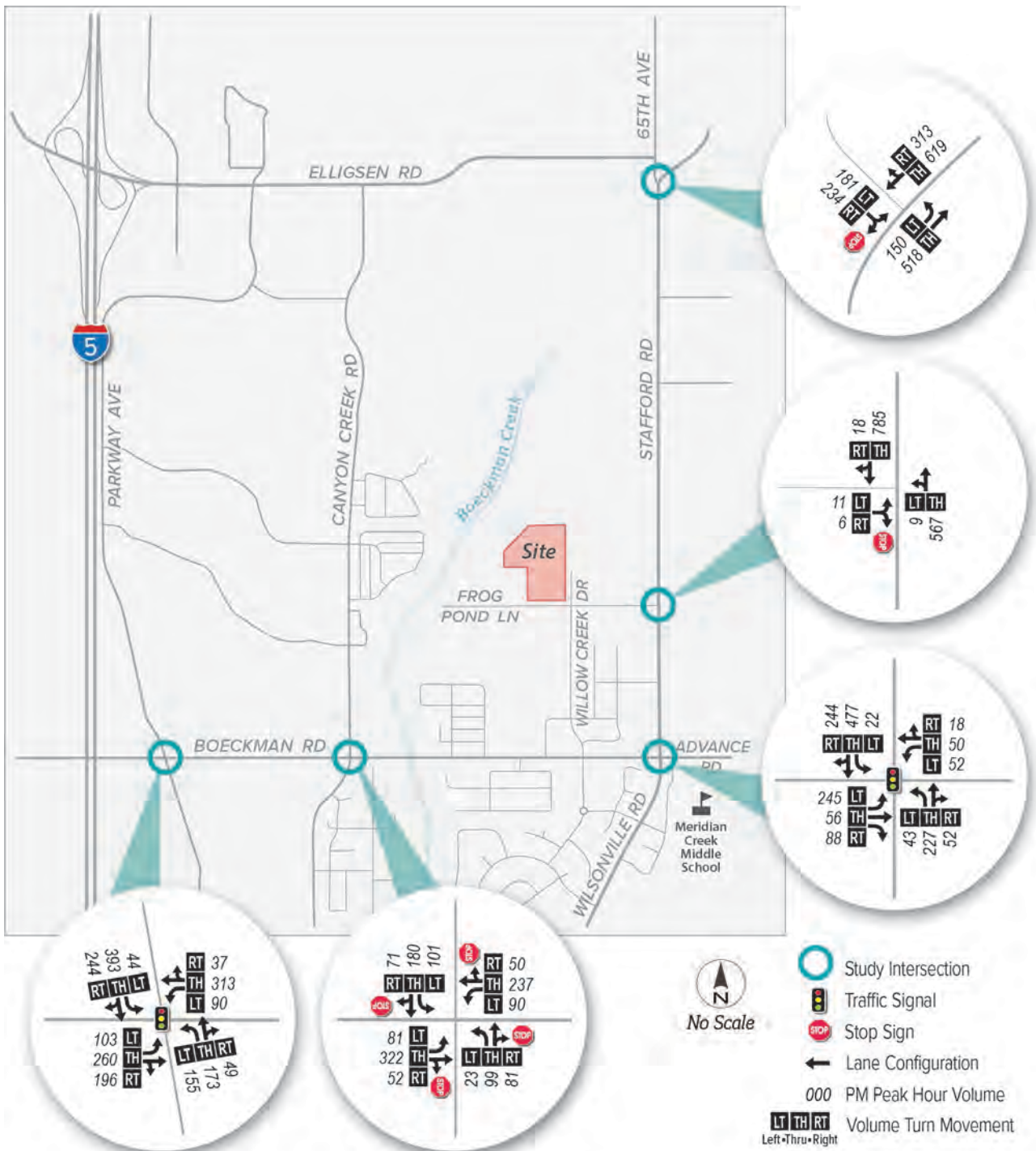


FIGURE 4: EXISTING PM + PROJECT PEAK HOUR TRAFFIC VOLUMES

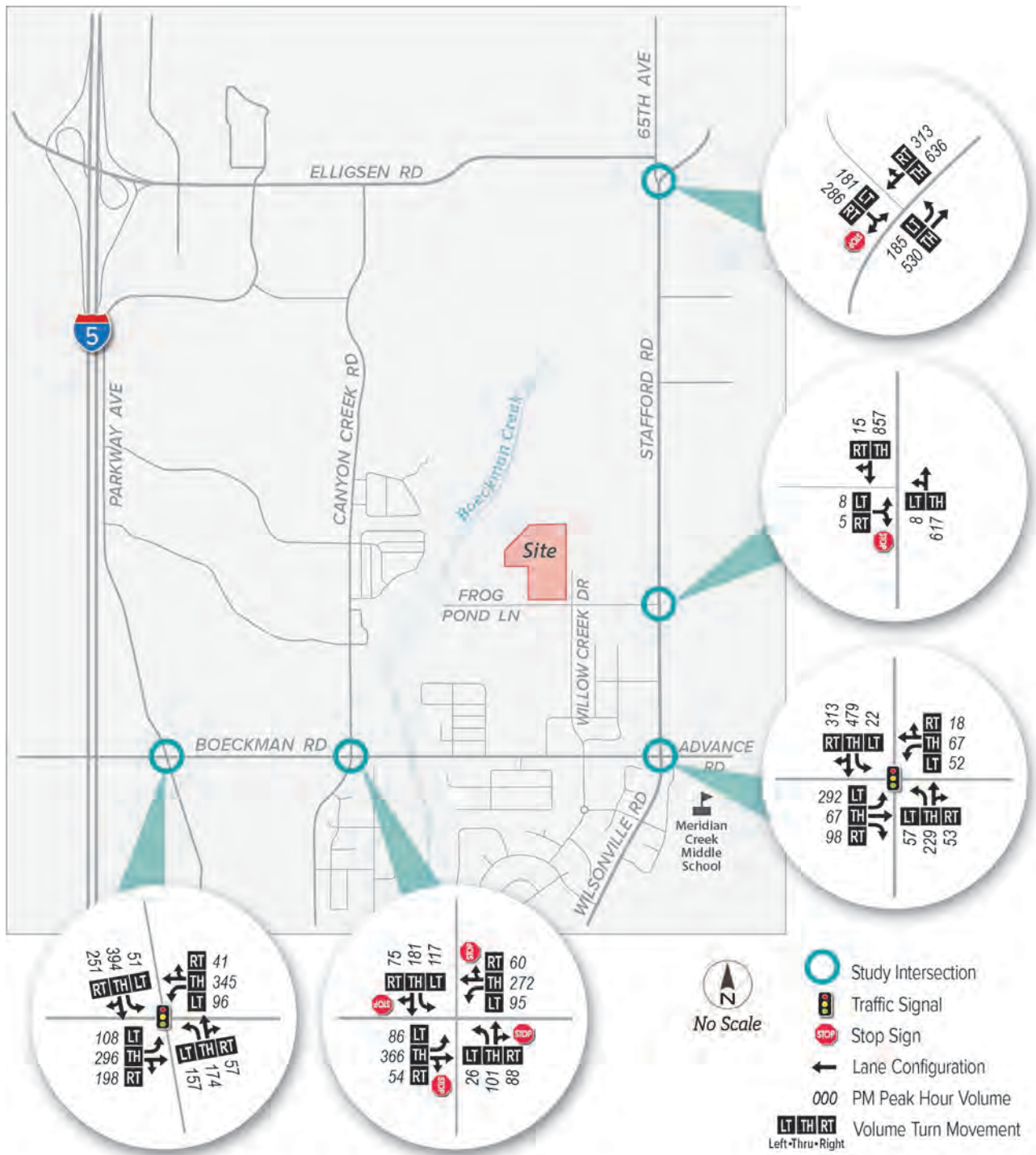


FIGURE 5: EXISTING PM + STAGE II PEAK HOUR TRAFFIC VOLUMES

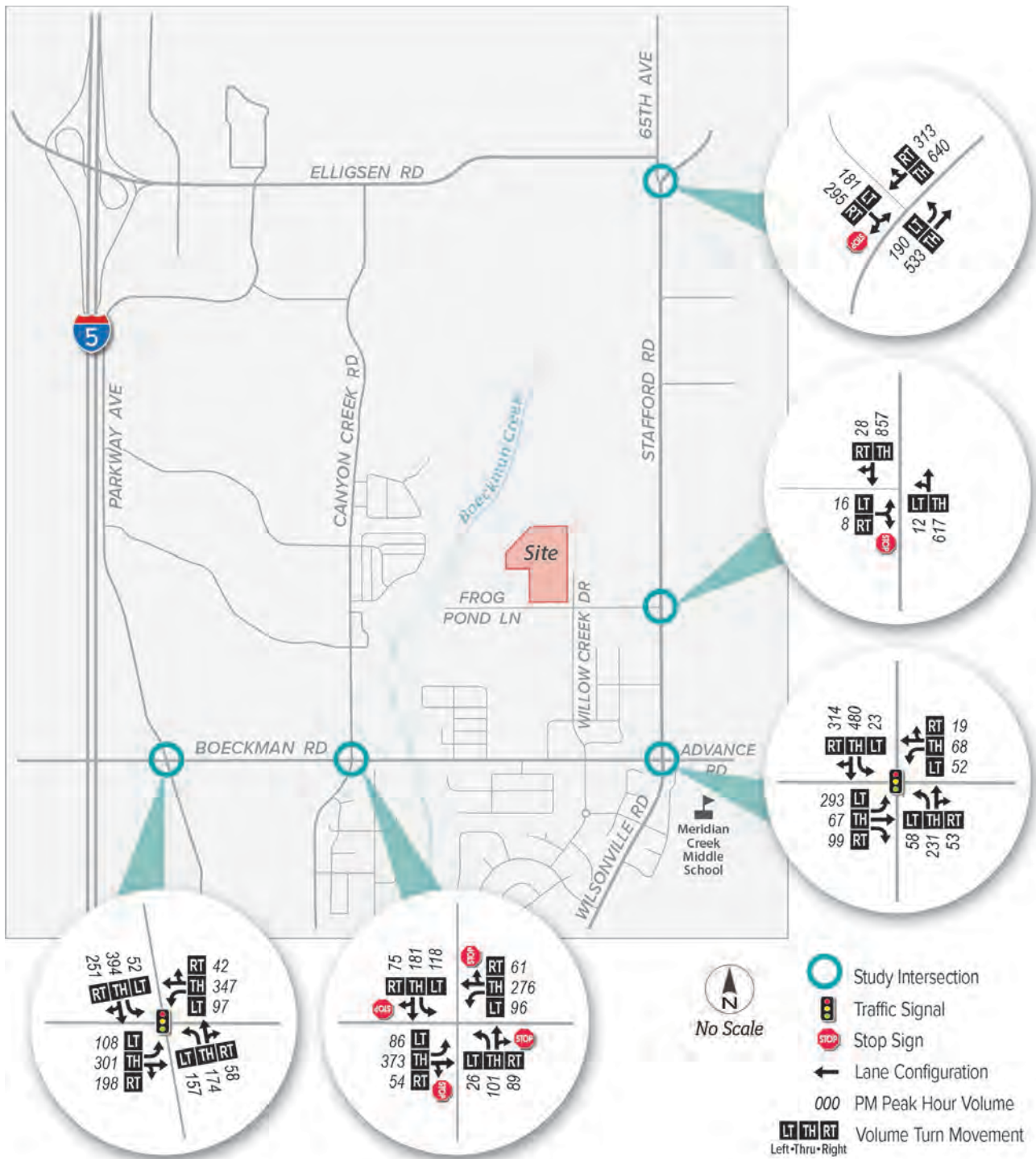


FIGURE 6: EXISTING PM + PROJECT + STAGE II PEAK HOUR TRAFFIC VOLUMES

FUTURE INTERSECTION OPERATIONS

Intersection operations were analyzed for the PM peak hour at all study intersections for the three future scenarios using Highway Capacity Manual (HCM) 6th Edition methodology.¹¹ The volume to capacity (v/c) ratio, delay, and level of service (LOS) of each study intersection are listed in Table 5.

TABLE 5: EXISTING PM, PROJECT, AND STAGE II INTERSECTION OPERATIONS

INTERSECTION	OPERATING STANDARD	EXISTING PM + PROJECT			EXISTING PM + STAGE II			EXISTING PM + PROJECT + STAGE II		
		V/C	DELAY	LOS	V/C	DELAY	LOS	V/C	DELAY	LOS
SIGNALIZED CONTROL										
BOECKMAN RD/ STAFFORD RD/ WILSONVILLE RD/ ADVANCE RD	LOS D	0.76	20.6	C	0.88	22.5	C	0.88	29.9	C
BOECKMAN RD/ PARKWAY AVE	LOS D	0.96	38.5	D	0.98	43.0	D	0.99	43.6	D
ALL-WAY STOP CONTROLLED										
BOECKMAN RD/ CANYON CREEK RD	LOS D	0.85	25.7	D	1.00	39.5	E	1.02	42.0	E
TWO-WAY STOP CONTROLLED										
STAFFORD RD/ 65TH AVE	LOS E	>1.20	>120.0	B/F	>1.20	>120.0	B/F	>1.20	>120.0	B/F
STAFFORD RD/ FROG POND LN	LOS D	0.10	26.8	A/D	0.09	29.8	A/D	0.17	34.3	A/D

SIGNALIZED INTERSECTION:

Delay = Average Intersection Delay (secs)
v/c = Total Volume-to-Capacity Ratio
LOS = Total Level of Service

ALL-WAY STOP CONTROLLED INTERSECTION:

Delay = Average Intersection Delay (secs)
v/c = Critical Movement Volume-to-Capacity Ratio
LOS = Total Level of Service

TWO-WAY STOP CONTROLLED INTERSECTION:

Delay = Critical Movement Delay (secs)
v/c = Critical Movement Volume-to-Capacity Ratio
LOS = Critical Levels of Service (Major/Minor Road)

Bold/Highlighted = Does not meet the operating standard/mobility target

¹¹ Highway Capacity Manual, 6th Edition, Transportation Research Board, 2017.

As shown, two of the five study intersections will fail to meet either County or City operating standards. Stafford Road/ 65th study intersection is expected to fail to meet Clackamas County standards under all future conditions. The Boeckman Road/ Canyon Creek Road intersection is expected to fail to meet City of Wilsonville standards under Existing PM + Stage II and Existing PM + Project + Stage II conditions, but not Existing PM + Project conditions. The recommended mitigation projects are discussed in the following section.

MITIGATION & FUNDING

The following sections contain the recommended mitigations for the two study intersections that were identified in the previous section to fail to meet jurisdictional operating standards.

Stafford Road/65th Avenue

The Stafford Road/ 65th Avenue intersection is under Clackamas County jurisdiction and currently fails to meet County operating standards under existing 2021 conditions.

In the Clackamas County 20-Year Capital Project List¹², a proposed future roundabout at the Stafford Road/65th Avenue/Elligsen Road intersection (Project ID 1079) is the recommended improvement. In the City of Wilsonville Transportation System Plan¹³, a traffic signal or roundabout has been identified as a High Priority Project (SI-03) at the same intersection. The City of Wilsonville's share cost of the project is 25% of the total project cost with the County funding the remaining portion. The developer's Transportation System Development Charge (SDC) will contribute to the City's share cost for the proposed intersection improvement.

Boeckman Road/ Canyon Creek Road

The Boeckman Road/ Canyon Creek Road operates at an overall LOS E in the following scenarios: *Existing + Stage II* and *Existing + Stage II + Project*. Therefore, mitigation measures must be explored to bring the operations back up to LOS D or better, in order to meet the City of Wilsonville standards.

The Wilsonville Transportation System Plan shows a traffic signal as a high priority project at the intersection of Boeckman Road/Canyon Creek Road as part of project UU-01.¹⁴ The developer's Transportation System Development Charge (SDC) will contribute to the City's fund to implement the traffic signal.

The construction of a new traffic signal at Boeckman Road/Canyon Creek Road will be coordinated with the other tasks in the project UU-01 Boeckman Road Dip Improvements, with construction estimated to begin in 2023.

¹² Clackamas County Comprehensive Plan, Table 5-3a, Amended January 18, 2017.

¹³ Wilsonville Transportation System Plan, Table 5-3, Amended November 16, 2020.

¹⁴ Wilsonville Transportation System Plan, Table 5-3, Amended November 16, 2020.

TABLE 6: INTERSECTION OPERATIONS – WITH MITIGATION

INTERSECTION	OPERATING STANDARD	EXISTING PM + PROJECT + STAGE II + MITIGATION		
		V/C	DELAY	LOS
SIGNALIZED CONTROL				
BOECKMAN RD/ CANYON CREEK RD	LOS D	0.64	17.9	B
ROUNDBABOUT				
STAFFORD RD/ 65 TH AVE / ELLIGSEN RD	LOS E	0.93	20.1	C
SIGNALIZED INTERSECTION: Delay = Average Intersection Delay (secs) v/c = Total Volume-to-Capacity Ratio LOS = Total Level of Service		ROUNDBABOUT: Delay = Average Intersection Delay (secs) v/c = Highest Approach Volume-to-Capacity Ratio LOS = Total Level of Service		

SITE REVIEW

This chapter reviews the provided site plan to determine consistency with the Frog Pond West Master Plan, including street configuration and zoning, and alignment with the Wilsonville Development Code or Construction Standards, including vehicular access, parking, circulation, and pedestrian and bicycle facilities.

FROG PONG WEST MASTER PLAN CONSISTENCY

The proposed street layout matches the framework plan as laid out in the Frog Pond West Master Plan.¹⁵ The residential zoning and land use in the site plan also appear to be consistent with the Master Plan. Thirteen lots are zoned R7 (Medium Lot Single Family) and the other 30 lots are zoned R10 (Large Lot Single Family).

ACCESS SPACING

The proposed project is required to comply with access spacing requirements as laid out in the City Transportation System Plan.¹⁶ The two access points for the new development on Frog Pond Lane will be spaced approximately 500 ft apart, satisfying the City’s 300 ft desired spacing requirement for Collectors. There are no spacing requirements for local streets.

PARKING

The proposed project is required to comply with the City Development Code for the number of vehicular parking spots and bicycle parking spaces that are provided on site.¹⁷ For residential developments, one parking spot per dwelling unit is required. There is no minimum for bicycle

¹⁵ Figure 16, Frog Pond West Master Plan, City of Wilsonville, July 17, 2017.

¹⁶ Table 3-2, Wilsonville Transportation System Plan, Amended November 2020.

¹⁷ Table 5, Section 4.155, Wilsonville Development Code, updated June 2020.

parking. It is assumed that all home lots will have driveways that satisfy this vehicular parking requirement.

SITE CIRCULATION

The proposed project provides adequate site circulation when considering the entirety of the Frog Pond West Master Plan. The proposed site will have access to Stafford Road via Frog Pond Lane.

STREETS

The Frog Pond West Master Plan provides the street type plan and required cross sections for all streets in the Frog Pond West development.¹⁸ Fronting the proposed project site along the east edge, Willow Creek Drive is shown to be an Internal Collector, which has two travel lanes (with bike sharrows), on street parking, planter strips, and sidewalks.¹⁹ Fronting the proposed project site along the south edge, Frog Pond Lane will be a Local Street with sidewalks on both sides, planter strips, two travel lanes with parking on both sides. The developer will be responsible for building these frontage improvements along the subject property frontage.

SUMMARY OF PROJECT IMPACTS

The key findings of the transportation impact study for the Frog Pond West Vista development are discussed below.

- The project will consist of 43 single-family home lots as part of the Frog Pond West Master Plan. The parcel is currently used for agricultural purposes with one single-family home on it.
- The proposed development is expected to generate a net total of 44 PM peak hour trips (27 in, 17 out).
- Of the net project trips, approximately one (5%) trip is expected to travel through the I-5/Wilsonville Road interchange area and one (5%) trip is expected to travel through the I-5/Elligsen Road interchange area.
- Two study intersections are anticipated to fail to meet jurisdictional operating standards:
 - The Stafford Road/ 65th Avenue study intersection is expected to fail to meet Clackamas County standards (LOS E) under all future conditions.
 - The Boeckman Road/ Canyon Creek Road intersection is expected to fail to meet City of Wilsonville standards (LOS D) under Existing PM + Stage II and Existing PM + Project + Stage II conditions.

¹⁸ Figure 19, Frog Pond West Master Plan, City of Wilsonville, July 17, 2017.

¹⁹ Figure 24, Frog Pond West Master Plan, City of Wilsonville, July 17, 2017.

- The proposed mitigations at the study intersections are as follows. The developer's share cost of these improvements are covered by the Transportation SDC cost.
 - Stafford Road/ 65th Avenue: Install a roundabout or traffic signal (Clackamas County project).
 - Boeckman Road/ Canyon Creek Road: Install a traffic signal (City of Wilsonville project UU-01).
- Frontage improvements on Willow Creek Drive and Frog Pond Lane will need to be consistent with the roadway types as identified in the Frog Pond West Master Plan.
- Based on the provided site plan, it appears that the site will be consistent with the Frog Pond West Master Plan and meets applicable Wilsonville Development Codes and Construction Standards pertaining to vehicular access, parking, circulation, and pedestrian and bicycle facilities.

APPENDIX

CONTENTS

A. TRAFFIC COUNT DATA

B. HCM REPORTS – EXISTING

C. STAGE II LIST

D. HCM REPORTS – EXISTING + PROJECT

E. HCM REPORTS – EXISTING + STAGE II

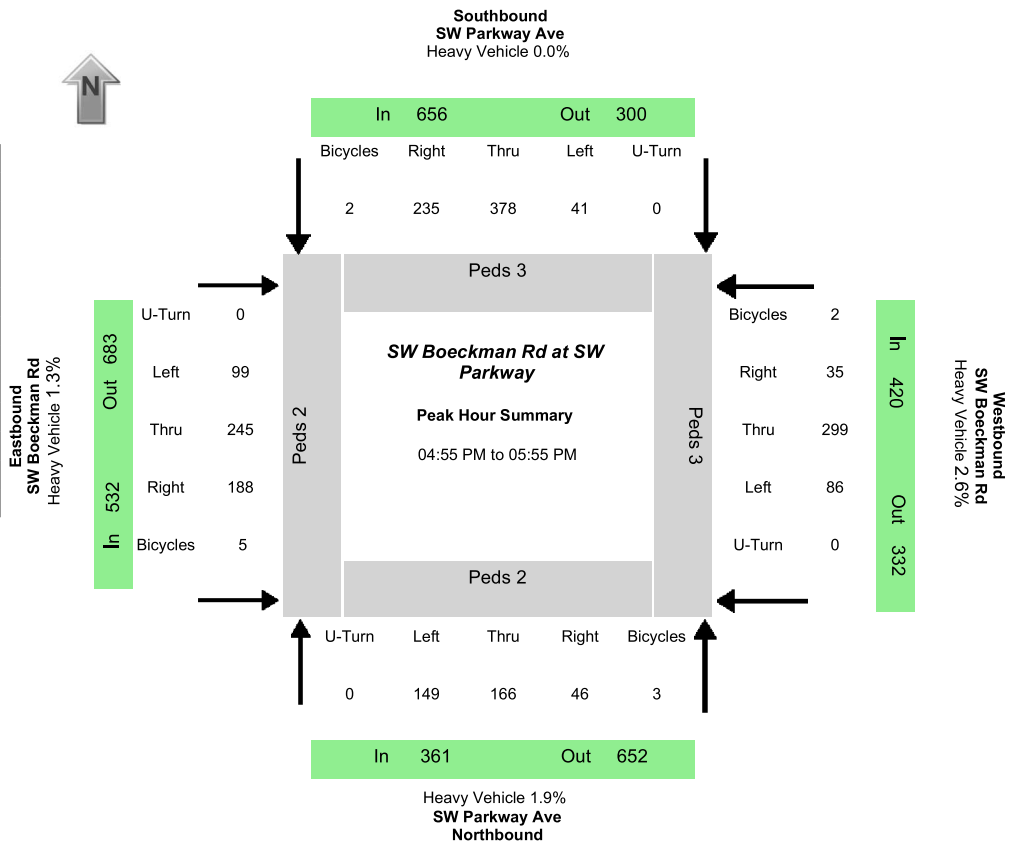
F. HCM REPORTS – EXISTING + STAGE II + PROJECT

**G. HCM REPORTS – EXISTING + STAGE II + PROJECT
+ MITIGATION**

H. SITE PLAN

A. TRAFFIC COUNT DATA

Data Provided by K-D-N.com 503-594-4224	
N/S street	SW Parkway Ave
E/W street	SW Boeckman Rd
City, State	Wilsonville OR
Site Notes	
Location	45.317437 - -122.765886
Start Date	Wednesday, May 22, 2019
Start Time	04:00:00 PM
Weather	
Study ID #	
Peak Hour Start	04:55:00 PM
Peak 15 Min Start	05:05:00 PM
PHF (15-Min Int)	0.92



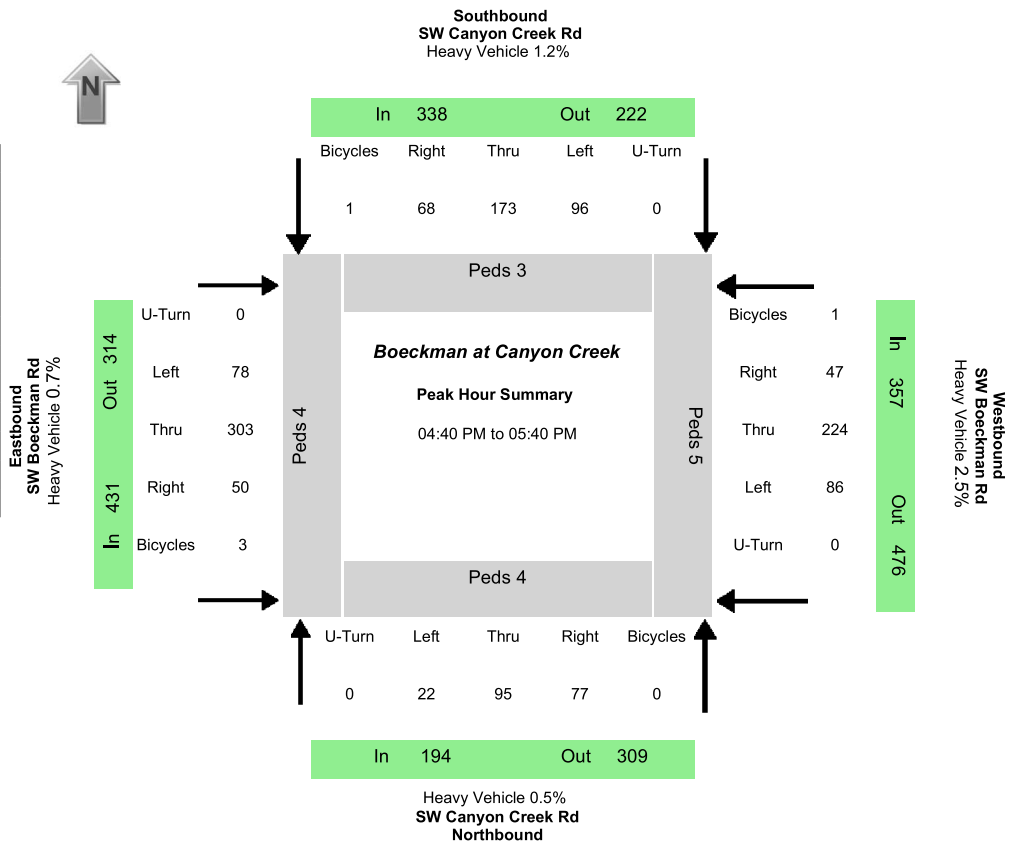
Peak-Hour Volumes (PHV)																							
Northbound				Southbound				Eastbound				Westbound				Entering				Leaving			
Left	Thru	Right	Uturn	Left	Thru	Right	Uturn	Left	Thru	Right	Uturn	Left	Thru	Right	Uturn	NB	SB	EB	WB	NB	SB	EB	WB
149	166	46	0	41	378	235	0	99	245	188	0	86	299	35	0	361	654	532	420	652	300	683	332
Percent Heavy Vehicles																							
0.7%	3.0%	2.2%	0.0%	0.0%	0.0%	0.0%	0.0%	3.0%	0.8%	1.1%	0.0%	2.3%	3.0%	0.0%	0.0%	1.9%	0.0%	1.3%	2.6%	0.6%	2.7%	1.5%	0.9%

PHV - Bicycles												PHV - Pedestrians									
Northbound				Southbound				Eastbound				Westbound				in Crosswalk					
Left	Thru	Right	Uturn	Left	Thru	Right	Uturn	Left	Thru	Right	Uturn	Left	Thru	Right	Uturn	Sum	NB	SB	EB	WB	Sum
0	0	3	0	0	0	2	0	0	4	1	0	0	2	0	0	12	2	3	2	3	10

Time	Northbound SW Parkway Ave				Southbound SW Parkway Ave				Eastbound SW Boeckman Rd				Westbound SW Boeckman Rd				15 Min Sum	1 HR Sum
	Left	Thru	Right	Uturn	Left	Thru	Right	Uturn	Left	Thru	Right	Uturn	Left	Thru	Right	Uturn		
04:00:00 PM	13	12	5	0	2	25	20	0	6	22	11	0	6	26	4	0		
04:05:00 PM	11	7	6	0	5	27	24	0	14	28	17	0	7	26	2	0		
04:10:00 PM	7	12	9	0	10	32	14	0	5	21	12	0	3	16	2	0	469	
04:15:00 PM	7	13	4	0	4	25	3	0	9	24	14	0	8	22	1	0	451	
04:20:00 PM	16	15	3	0	1	24	13	0	4	31	17	0	7	18	4	0	430	
04:25:00 PM	8	11	6	0	2	36	24	0	6	15	15	0	3	24	3	0	440	
04:30:00 PM	3	13	3	0	2	31	19	0	8	19	14	0	12	25	3	0	458	
04:35:00 PM	7	18	4	0	6	27	11	0	8	18	21	0	7	13	4	0	449	
04:40:00 PM	10	10	3	0	2	27	17	0	10	22	15	0	11	27	5	0	455	
04:45:00 PM	12	13	7	0	6	25	23	0	3	12	11	0	9	32	3	0	459	
04:50:00 PM	12	18	3	0	2	17	15	0	6	16	26	0	7	20	0	0	457	
04:55:00 PM	10	9	4	0	2	30	30	0	8	20	11	0	7	18	3	0	450	1814
05:00:00 PM	12	12	3	0	3	22	16	0	7	23	27	0	1	23	4	0	447	1815
05:05:00 PM	9	19	4	0	3	41	25	0	4	20	16	0	7	43	4	0	500	1836
05:10:00 PM	18	10	8	0	2	36	21	0	9	17	20	0	9	24	2	0	524	1869
05:15:00 PM	14	21	2	0	9	39	21	0	12	15	11	0	4	16	1	0	536	1900
05:20:00 PM	10	17	2	0	1	36	14	0	8	27	11	0	9	29	3	0	508	1914
05:25:00 PM	12	11	5	0	3	26	19	0	11	26	16	0	10	24	1	0	496	1925
05:30:00 PM	14	17	7	0	4	25	18	0	9	20	12	0	9	29	2	0	497	1939
05:35:00 PM	16	10	3	0	2	39	15	0	9	23	9	0	8	28	2	0	494	1959
05:40:00 PM	15	12	2	0	5	31	17	0	7	18	17	0	8	27	6	0	495	1965
05:45:00 PM	9	13	5	0	2	32	18	0	5	16	22	0	7	17	5	0	480	1960
05:50:00 PM	10	15	1	0	5	21	21	0	10	20	16	0	7	21	2	0	465	1967
05:55:00 PM	8	14	5	0	3	33	14	0	6	18	17	0	8	21	2	0	449	1964

Data Provided by K-D-N.com 503-594-4224

N/S street	SW Canyon Creek Rd
E/W street	SW Boeckman Rd
City, State	Wilsonville OR
Site Notes	
Location	45.317469 - -122.757745
Start Date	Wednesday, May 22, 2019
Start Time	04:00:00 PM
Weather	
Study ID #	
Peak Hour Start	04:40:00 PM
Peak 15 Min Start	04:55:00 PM
PHF (15-Min Int)	0.93



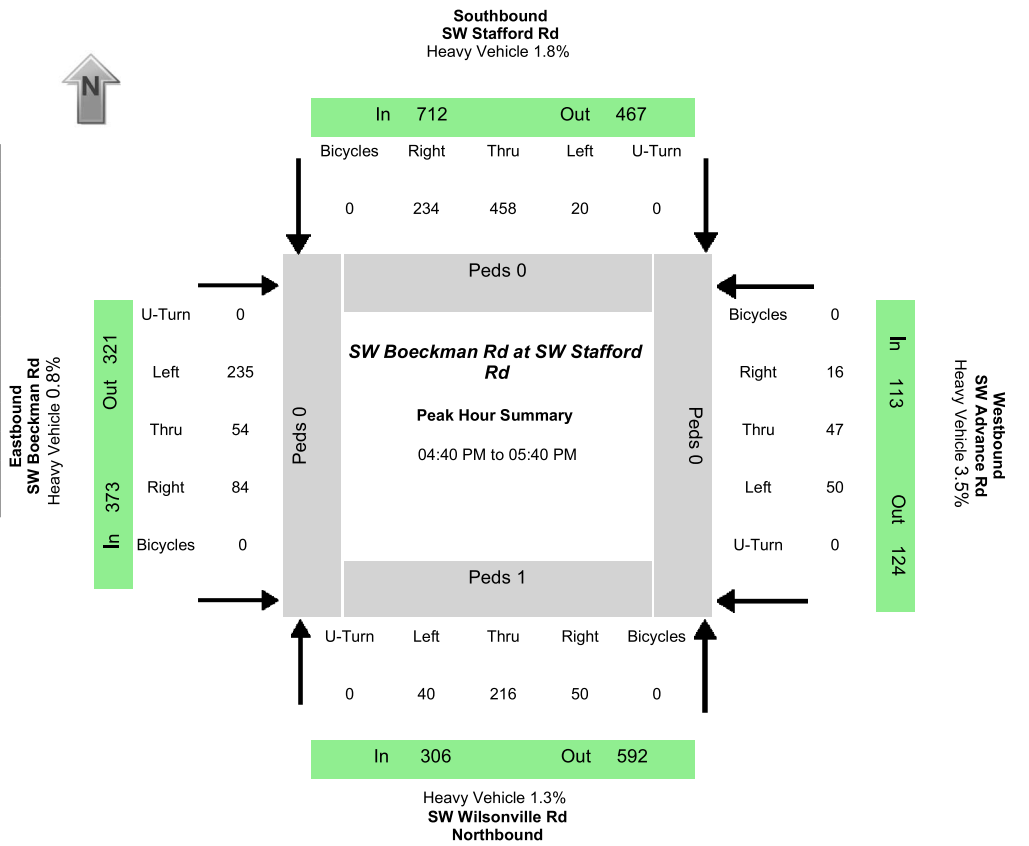
Peak-Hour Volumes (PHV)																							
Northbound				Southbound				Eastbound				Westbound				Entering				Leaving			
Left	Thru	Right	Uturn	Left	Thru	Right	Uturn	Left	Thru	Right	Uturn	Left	Thru	Right	Uturn	NB	SB	EB	WB	NB	SB	EB	WB
22	95	77	0	96	173	68	0	78	303	50	0	86	224	47	0	194	337	431	357	309	220	314	476
Percent Heavy Vehicles																							
0.0%	1.1%	0.0%	0.0%	1.0%	1.2%	1.5%	0.0%	1.3%	0.7%	0.0%	0.0%	2.3%	2.2%	4.3%	0.0%	0.5%	1.2%	0.7%	2.5%	1.3%	1.8%	1.9%	0.6%

PHV - Bicycles												PHV - Pedestrians									
Northbound				Southbound				Eastbound				Westbound				in Crosswalk					
Left	Thru	Right	Uturn	Left	Thru	Right	Uturn	Left	Thru	Right	Uturn	Left	Thru	Right	Uturn	Sum	NB	SB	EB	WB	Sum
0	0	0	0	0	1	0	0	1	2	0	0	0	0	1	0	5	4	3	4	5	16

Time	Northbound SW Canyon Creek Rd				Southbound SW Canyon Creek Rd				Eastbound SW Boeckman Rd				Westbound SW Boeckman Rd				15 Min Sum	1 HR Sum
	Left	Thru	Right	Uturn	Left	Thru	Right	Uturn	Left	Thru	Right	Uturn	Left	Thru	Right	Uturn		
04:00:00 PM	2	8	5	0	8	10	2	0	3	17	1	0	8	17	7	0		
04:05:00 PM	5	4	7	0	8	10	1	0	5	38	6	0	3	19	4	0		
04:10:00 PM	1	10	7	0	10	13	4	0	9	33	4	0	6	13	6	0	314	
04:15:00 PM	0	10	4	0	13	13	8	0	3	21	7	0	8	17	7	0	337	
04:20:00 PM	2	5	3	0	5	10	11	0	5	27	6	0	3	14	4	0	322	
04:25:00 PM	2	9	4	0	5	15	3	0	6	31	3	0	4	17	3	0	308	
04:30:00 PM	1	9	10	0	4	14	4	0	6	19	2	0	5	20	2	0	293	
04:35:00 PM	1	6	10	0	10	9	3	0	10	28	2	0	6	15	2	0	300	
04:40:00 PM	3	15	5	0	10	7	3	0	7	24	4	0	10	20	1	0	307	
04:45:00 PM	3	8	2	0	5	7	7	0	5	23	3	0	5	22	5	0	306	
04:50:00 PM	2	5	10	0	5	17	3	0	8	21	2	0	11	16	3	0	307	
04:55:00 PM	2	6	7	0	17	20	7	0	9	23	3	0	6	16	7	0	321	1250
05:00:00 PM	3	13	5	0	8	16	6	0	5	26	4	0	8	22	3	0	345	1281
05:05:00 PM	3	7	5	0	5	18	8	0	12	21	6	0	3	18	5	0	353	1282
05:10:00 PM	1	6	10	0	8	17	5	0	6	25	2	0	5	16	4	0	335	1271
05:15:00 PM	3	6	8	0	12	14	6	0	4	31	7	0	7	13	4	0	331	1275
05:20:00 PM	1	7	6	0	3	18	8	0	5	23	7	0	9	22	2	0	331	1291
05:25:00 PM	1	8	4	0	6	13	5	0	6	32	3	0	9	20	6	0	339	1302
05:30:00 PM	0	8	7	0	7	13	5	0	5	29	5	0	6	17	3	0	329	1311
05:35:00 PM	0	6	8	0	10	13	5	0	6	25	4	0	7	22	4	0	328	1319
05:40:00 PM	1	7	4	0	12	7	5	0	8	23	2	0	7	16	1	0	308	1303
05:45:00 PM	1	8	3	0	8	17	5	0	5	23	5	0	9	16	3	0	306	1311
05:50:00 PM	0	10	7	0	19	9	5	0	2	25	4	0	7	19	2	0	305	1317
05:55:00 PM	4	7	3	0	5	15	4	0	6	20	6	0	16	22	3	0	323	1305

Data Provided by K-D-N.com 503-594-4224

N/S street	SW Wilsonville Rd
E/W street	SW Boeckman Rd
City, State	Wilsonville OR
Site Notes	
Location	45.317521 - -122.743751
Start Date	Wednesday, May 22, 2019
Start Time	04:00:00 PM
Weather	
Study ID #	
Peak Hour Start	04:40:00 PM
Peak 15 Min Start	05:25:00 PM
PHF (15-Min Int)	0.95



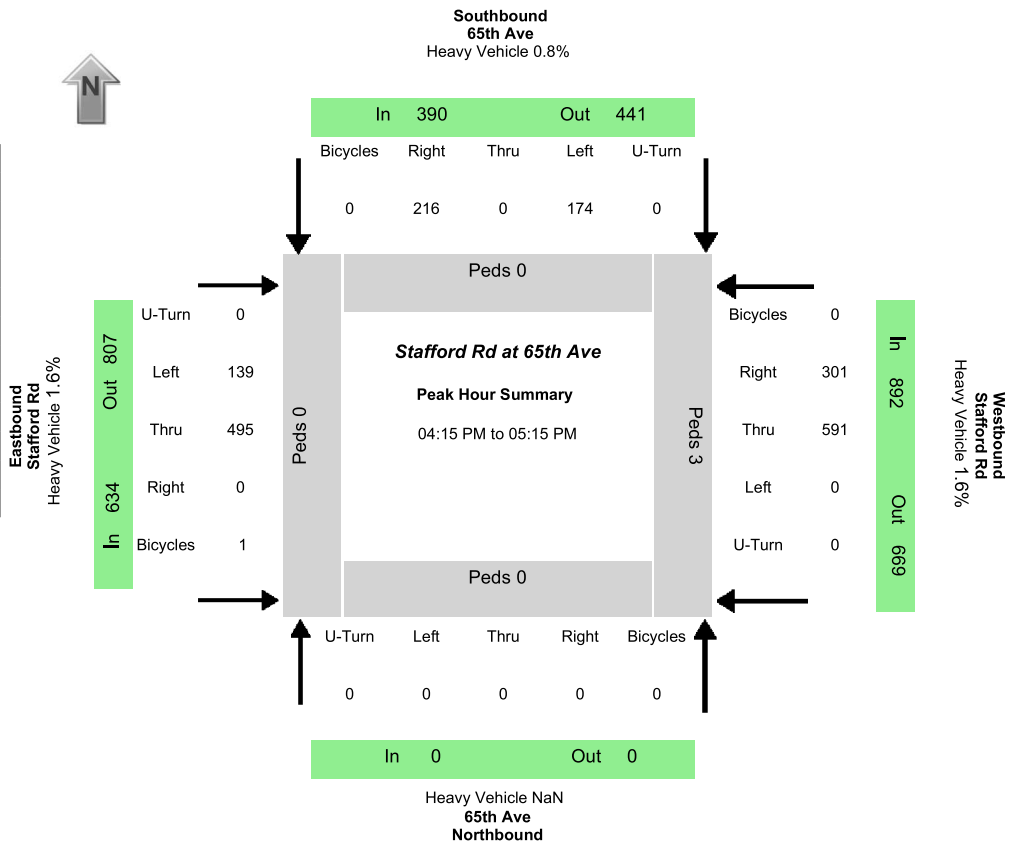
Peak-Hour Volumes (PHV)																							
Northbound				Southbound				Eastbound				Westbound				Entering				Leaving			
Left	Thru	Right	Uturn	Left	Thru	Right	Uturn	Left	Thru	Right	Uturn	Left	Thru	Right	Uturn	NB	SB	EB	WB	NB	SB	EB	WB
40	216	50	0	20	458	234	0	235	54	84	0	50	47	16	0	306	712	373	113	592	467	321	124
Percent Heavy Vehicles																							
2.5%	0.5%	4.0%	0.0%	10.0%	0.4%	3.8%	0.0%	0.9%	1.9%	0.0%	0.0%	6.0%	2.1%	0.0%	0.0%	1.3%	1.8%	0.8%	3.5%	0.8%	0.6%	3.4%	4.0%

PHV - Bicycles														PHV - Pedestrians							
Northbound				Southbound				Eastbound				Westbound				in Crosswalk					
Left	Thru	Right	Uturn	Left	Thru	Right	Uturn	Left	Thru	Right	Uturn	Left	Thru	Right	Uturn	Sum	NB	SB	EB	WB	Sum
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1

Time	Northbound SW Wilsonville Rd				Southbound SW Stafford Rd				Eastbound SW Boeckman Rd				Westbound SW Advance Rd				15 Min Sum	1 HR Sum
	Left	Thru	Right	Uturn	Left	Thru	Right	Uturn	Left	Thru	Right	Uturn	Left	Thru	Right	Uturn		
04:00:00 PM	6	14	7	0	3	23	22	0	16	4	2	0	2	2	2	0		
04:05:00 PM	3	12	3	0	0	22	11	0	34	5	9	0	6	7	6	0		
04:10:00 PM	3	15	5	0	2	27	13	0	32	5	9	0	4	6	4	0	346	
04:15:00 PM	8	15	3	0	2	30	15	0	23	6	5	0	8	3	0	0	361	
04:20:00 PM	6	18	5	0	2	23	8	0	17	5	6	0	3	3	4	0	343	
04:25:00 PM	4	13	3	0	0	39	12	0	25	9	8	0	5	1	0	0	337	
04:30:00 PM	7	27	1	0	0	31	13	0	14	5	3	0	3	5	2	0	330	
04:35:00 PM	6	14	2	0	1	35	18	0	32	5	8	0	5	4	2	0	362	
04:40:00 PM	2	25	4	0	5	46	18	0	21	4	12	0	3	3	0	0	386	
04:45:00 PM	3	21	5	0	0	27	17	0	17	2	6	0	8	9	3	0	393	
04:50:00 PM	1	15	1	0	1	45	13	0	15	6	4	0	7	9	0	0	378	
04:55:00 PM	2	20	6	0	3	41	17	0	13	2	9	0	3	2	2	0	355	1424
05:00:00 PM	8	17	1	0	2	40	25	0	26	7	9	0	4	1	1	0	378	1462
05:05:00 PM	4	26	2	0	2	31	16	0	15	5	3	0	6	3	0	0	374	1457
05:10:00 PM	3	12	7	0	1	30	12	0	29	8	3	0	3	3	2	0	367	1445
05:15:00 PM	2	17	3	0	2	38	15	0	26	0	9	0	4	3	3	0	348	1449
05:20:00 PM	5	10	6	0	1	34	30	0	17	4	6	0	2	3	3	0	356	1470
05:25:00 PM	4	15	8	0	1	36	21	0	24	6	9	0	1	4	0	0	372	1480
05:30:00 PM	5	18	4	0	2	45	16	0	16	8	8	0	4	6	0	0	382	1501
05:35:00 PM	1	20	3	0	0	45	34	0	16	2	6	0	5	1	2	0	396	1504
05:40:00 PM	1	14	2	0	0	35	12	0	18	6	9	0	3	1	0	0	368	1462
05:45:00 PM	5	18	2	0	4	40	25	0	21	3	6	0	7	1	1	0	369	1477
05:50:00 PM	4	10	2	0	0	18	14	0	15	7	9	0	2	1	0	0	316	1442
05:55:00 PM	7	12	2	0	1	28	21	0	13	4	7	0	1	2	1	0	314	1421

Data Provided by K-D-N.com 503-594-4224

N/S street	65th Ave
E/W street	Stafford Rd
City, State	Wilsonville OR
Site Notes	
Location	45.335919 - -122.74347
Start Date	Thursday, May 09, 2019
Start Time	04:00:00 PM
Weather	
Study ID #	
Peak Hour Start	04:15:00 PM
Peak 15 Min Start	05:00:00 PM
PHF (15-Min Int)	0.84



Peak-Hour Volumes (PHV)																							
Northbound				Southbound				Eastbound				Westbound				Entering				Leaving			
Left	Thru	Right	Uturn	Left	Thru	Right	Uturn	Left	Thru	Right	Uturn	Left	Thru	Right	Uturn	NB	SB	EB	WB	NB	SB	EB	WB
0	0	0	0	174	0	216	0	139	495	0	0	0	591	301	0	0	390	634	892	0	440	807	669
Percent Heavy Vehicles																							
0.0%	0.0%	0.0%	0.0%	1.1%	0.0%	0.5%	0.0%	4.3%	0.8%	0.0%	0.0%	0.0%	1.0%	2.7%	0.0%	NaN	0.8%	1.6%	1.6%	NaN	3.2%	0.9%	0.9%

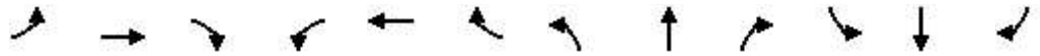
PHV - Bicycles														PHV - Pedestrians							
Northbound				Southbound				Eastbound				Westbound				in Crosswalk					
Left	Thru	Right	Uturn	Left	Thru	Right	Uturn	Left	Thru	Right	Uturn	Left	Thru	Right	Uturn	Sum	NB	SB	EB	WB	Sum
0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	0	0	0	3	3

Time	Northbound 65th Ave				Southbound 65th Ave				Eastbound Stafford Rd				Westbound Stafford Rd				15 Min Sum	1 HR Sum
	Left	Thru	Right	Uturn	Left	Thru	Right	Uturn	Left	Thru	Right	Uturn	Left	Thru	Right	Uturn		
04:00:00 PM	0	0	0	0	24	0	23	0	5	29	0	0	0	25	20	0		
04:05:00 PM	0	0	0	0	12	0	16	0	10	33	0	0	0	49	19	0		
04:10:00 PM	0	0	0	0	14	0	15	0	11	28	0	0	0	34	21	0	388	
04:15:00 PM	0	0	0	0	19	0	23	0	8	40	0	0	0	35	20	0	407	
04:20:00 PM	0	0	0	0	8	0	10	0	14	32	0	0	0	43	14	0	389	
04:25:00 PM	0	0	0	0	15	0	19	0	12	41	0	0	0	49	22	0	424	
04:30:00 PM	0	0	0	0	19	0	19	0	6	46	0	0	0	50	24	0	443	
04:35:00 PM	0	0	0	0	9	0	12	0	9	36	0	0	0	39	27	0	454	
04:40:00 PM	0	0	0	0	14	0	19	0	10	31	0	0	0	35	27	0	432	
04:45:00 PM	0	0	0	0	10	0	15	0	11	33	0	0	0	54	25	0	416	
04:50:00 PM	0	0	0	0	13	0	19	0	10	33	0	0	0	50	31	0	440	
04:55:00 PM	0	0	0	0	9	0	14	0	16	53	0	0	0	63	31	0	490	1734
05:00:00 PM	0	0	0	0	14	0	20	0	12	32	0	0	0	34	23	0	477	1743
05:05:00 PM	0	0	0	0	15	0	15	0	10	37	0	0	0	42	20	0	460	1743
05:10:00 PM	0	0	0	0	29	0	31	0	21	81	0	0	0	97	37	0	570	1916
05:15:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	435	1771
05:20:00 PM	0	0	0	0	9	0	11	0	12	38	0	0	0	60	20	0	446	1800
05:25:00 PM	0	0	0	0	11	0	21	0	8	35	0	0	0	56	21	0	302	1794
05:30:00 PM	0	0	0	0	14	0	23	0	11	30	0	0	0	32	20	0	432	1760
05:35:00 PM	0	0	0	0	17	0	17	0	6	37	0	0	0	46	15	0	420	1766
05:40:00 PM	0	0	0	0	11	0	29	0	17	34	0	0	0	38	24	0	421	1783
05:45:00 PM	0	0	0	0	16	0	10	0	11	33	0	0	0	36	19	0	416	1760
05:50:00 PM	0	0	0	0	11	0	21	0	8	28	0	0	0	29	12	0	387	1713
05:55:00 PM	0	0	0	0	14	0	25	0	9	27	0	0	0	21	18	0	348	1641

B. HCM REPORTS – EXISTING

HCM 6th Signalized Intersection Summary
 1: Parkway Ave & Boeckman Rd

Frog Pond Vista
 Existing PM



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	103	255	196	89	311	36	155	173	48	43	393	244
Future Volume (veh/h)	103	255	196	89	311	36	155	173	48	43	393	244
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.97	1.00		0.97	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1930	1885	1885	1870	1856	1900	1885	1856	1870	1976	1976	1900
Adj Flow Rate, veh/h	112	277	179	97	338	35	168	188	41	47	427	239
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	3	1	1	2	3	0	1	3	2	0	0	0
Cap, veh/h	290	295	191	208	451	47	250	631	138	565	454	254
Arrive On Green	0.06	0.28	0.28	0.06	0.27	0.27	0.08	0.43	0.43	0.03	0.39	0.39
Sat Flow, veh/h	1838	1055	681	1781	1648	171	1795	1468	320	1882	1178	659
Grp Volume(v), veh/h	112	0	456	97	0	373	168	0	229	47	0	666
Grp Sat Flow(s),veh/h/ln	1838	0	1736	1781	0	1819	1795	0	1788	1882	0	1837
Q Serve(g_s), s	3.6	0.0	21.6	3.2	0.0	15.7	4.5	0.0	7.0	1.3	0.0	29.4
Cycle Q Clear(g_c), s	3.6	0.0	21.6	3.2	0.0	15.7	4.5	0.0	7.0	1.3	0.0	29.4
Prop In Lane	1.00		0.39	1.00		0.09	1.00		0.18	1.00		0.36
Lane Grp Cap(c), veh/h	290	0	486	208	0	498	250	0	769	565	0	707
V/C Ratio(X)	0.39	0.00	0.94	0.47	0.00	0.75	0.67	0.00	0.30	0.08	0.00	0.94
Avail Cap(c_a), veh/h	350	0	486	277	0	509	284	0	769	685	0	732
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	21.4	0.0	29.6	22.9	0.0	27.9	19.1	0.0	15.7	14.7	0.0	24.9
Incr Delay (d2), s/veh	0.8	0.0	26.4	1.6	0.0	6.0	5.1	0.0	0.2	0.1	0.0	20.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.6	0.0	12.2	1.4	0.0	7.4	2.0	0.0	2.8	0.5	0.0	15.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	22.2	0.0	55.9	24.5	0.0	33.9	24.2	0.0	15.9	14.8	0.0	44.9
LnGrp LOS	C	A	E	C	A	C	C	A	B	B	A	D
Approach Vol, veh/h		568			470			397			713	
Approach Delay, s/veh		49.3			31.9			19.4			42.9	
Approach LOS		D			C			B			D	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	10.4	36.9	8.7	28.0	6.7	40.6	9.3	27.5				
Change Period (Y+Rc), s	4.0	4.5	4.0	4.5	4.0	4.5	4.0	4.5				
Max Green Setting (Gmax), s	8.0	33.5	8.0	23.5	8.0	33.5	8.0	23.5				
Max Q Clear Time (g_c+I1), s	6.5	31.4	5.2	23.6	3.3	9.0	5.6	17.7				
Green Ext Time (p_c), s	0.1	1.0	0.0	0.0	0.0	1.3	0.1	1.1				
Intersection Summary												
HCM 6th Ctrl Delay			37.8									
HCM 6th LOS			D									

Intersection												
Intersection Delay, s/veh	24.1											
Intersection LOS	C											

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	81	315	52	89	233	49	23	99	80	100	180	71
Future Vol, veh/h	81	315	52	89	233	49	23	99	80	100	180	71
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles, %	1	1	0	2	2	4	0	1	0	1	1	1
Mvmt Flow	87	339	56	96	251	53	25	106	86	108	194	76
Number of Lanes	1	1	0	1	1	0	1	1	0	1	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	2	2	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	2	2	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	2	2	2
HCM Control Delay	32.9	21.8	16.7	19.6
HCM LOS	D	C	C	C

Lane	NBLn1	NBLn2	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1	SBLn2
Vol Left, %	100%	0%	100%	0%	100%	0%	100%	0%
Vol Thru, %	0%	55%	0%	86%	0%	83%	0%	72%
Vol Right, %	0%	45%	0%	14%	0%	17%	0%	28%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	23	179	81	367	89	282	100	251
LT Vol	23	0	81	0	89	0	100	0
Through Vol	0	99	0	315	0	233	0	180
RT Vol	0	80	0	52	0	49	0	71
Lane Flow Rate	25	192	87	395	96	303	108	270
Geometry Grp	7	7	7	7	7	7	7	7
Degree of Util (X)	0.062	0.44	0.199	0.825	0.225	0.658	0.259	0.595
Departure Headway (Hd)	9.051	8.225	8.245	7.658	8.457	7.815	8.655	7.933
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	397	439	436	477	426	464	417	456
Service Time	6.784	5.957	5.975	5.358	6.176	5.534	6.371	5.649
HCM Lane V/C Ratio	0.063	0.437	0.2	0.828	0.225	0.653	0.259	0.592
HCM Control Delay	12.4	17.3	13	37.3	13.6	24.4	14.4	21.7
HCM Lane LOS	B	C	B	E	B	C	B	C
HCM 95th-tile Q	0.2	2.2	0.7	8	0.9	4.7	1	3.8

HCM 6th Signalized Intersection Summary
 3: Wilsonville Rd/Stafford Rd & Boeckman Rd/Advance Rd

Frog Pond Vista
 Existing PM



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	244	56	87	52	49	17	42	225	52	21	476	243
Future Volume (veh/h)	244	56	87	52	49	17	42	225	52	21	476	243
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	0.99		0.99	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1885	1870	1900	1811	1870	1900	1870	1900	1841	1752	1900	1841
Adj Flow Rate, veh/h	257	59	17	55	52	2	44	237	47	22	501	237
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	1	2	0	6	2	0	2	0	4	10	0	4
Cap, veh/h	440	336	289	255	107	4	242	742	147	543	571	270
Arrive On Green	0.16	0.18	0.18	0.04	0.06	0.06	0.03	0.48	0.48	0.02	0.47	0.47
Sat Flow, veh/h	1795	1870	1606	1725	1789	69	1781	1540	305	1668	1219	577
Grp Volume(v), veh/h	257	59	17	55	0	54	44	0	284	22	0	738
Grp Sat Flow(s),veh/h/ln	1795	1870	1606	1725	0	1857	1781	0	1845	1668	0	1796
Q Serve(g_s), s	8.1	1.7	0.6	1.9	0.0	1.8	0.8	0.0	6.1	0.4	0.0	23.9
Cycle Q Clear(g_c), s	8.1	1.7	0.6	1.9	0.0	1.8	0.8	0.0	6.1	0.4	0.0	23.9
Prop In Lane	1.00		1.00	1.00		0.04	1.00		0.17	1.00		0.32
Lane Grp Cap(c), veh/h	440	336	289	255	0	111	242	0	889	543	0	841
V/C Ratio(X)	0.58	0.18	0.06	0.22	0.00	0.49	0.18	0.00	0.32	0.04	0.00	0.88
Avail Cap(c_a), veh/h	537	755	648	298	0	473	295	0	1083	615	0	1054
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	21.3	22.4	21.9	27.0	0.0	29.3	12.9	0.0	10.2	8.8	0.0	15.5
Incr Delay (d2), s/veh	1.2	0.2	0.1	0.4	0.0	3.3	0.4	0.0	0.2	0.0	0.0	7.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	8.3	0.7	0.2	0.8	0.0	0.9	0.3	0.0	2.2	0.1	0.0	10.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	22.5	22.6	22.0	27.4	0.0	32.6	13.3	0.0	10.4	8.8	0.0	22.7
LnGrp LOS	C	C	C	C	A	C	B	A	B	A	A	C
Approach Vol, veh/h		333			109			328			760	
Approach Delay, s/veh		22.5			30.0			10.8			22.3	
Approach LOS		C			C			B			C	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	6.7	34.6	14.7	8.4	5.8	35.5	7.0	16.1				
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5				
Max Green Setting (Gmax), s	4.1	37.8	13.7	16.4	4.1	37.8	4.1	26.0				
Max Q Clear Time (g_c+1/2g), s	12.8	25.9	10.1	3.8	2.4	8.1	3.9	3.7				
Green Ext Time (p_c), s	0.0	4.3	0.3	0.1	0.0	1.8	0.0	0.3				
Intersection Summary												
HCM 6th Ctrl Delay				20.4								
HCM 6th LOS				C								

Intersection

Int Delay, s/veh 347.8

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	145	515	615	313	181	225
Future Vol, veh/h	145	515	615	313	181	225
Conflicting Peds, #/hr	0	0	0	0	3	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	175	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	84	84	84	84	84	84
Heavy Vehicles, %	4	1	1	3	1	0
Mvmt Flow	173	613	732	373	215	268

Major/Minor

	Major1	Major2	Minor2		
Conflicting Flow All	1105	0	0	1881	919
Stage 1	-	-	-	919	-
Stage 2	-	-	-	962	-
Critical Hdwy	4.14	-	-	6.41	6.2
Critical Hdwy Stg 1	-	-	-	5.41	-
Critical Hdwy Stg 2	-	-	-	5.41	-
Follow-up Hdwy	2.236	-	-	3.509	3.3
Pot Cap-1 Maneuver	624	-	-	~ 79	332
Stage 1	-	-	-	390	-
Stage 2	-	-	-	372	-
Platoon blocked, %		-	-		
Mov Cap-1 Maneuver	624	-	-	~ 57	332
Mov Cap-2 Maneuver	-	-	-	~ 57	-
Stage 1	-	-	-	282	-
Stage 2	-	-	-	372	-

Approach

	EB	WB	SB
HCM Control Delay, s	2.8	0	\$ 1703.4
HCM LOS			F

Minor Lane/Major Mvmt

	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	624	-	-	-	105
HCM Lane V/C Ratio	0.277	-	-	-	4.603
HCM Control Delay (s)	13	-	-	-	\$ 1703.4
HCM Lane LOS	B	-	-	-	F
HCM 95th %tile Q(veh)	1.1	-	-	-	50.9

Notes

~: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Intersection						
Int Delay, s/veh	0.1					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	3	3	5	567	785	5
Future Vol, veh/h	3	3	5	567	785	5
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	0	0	0	1	2	0
Mvmt Flow	3	3	5	597	826	5

Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	1436	829	831	0	-	0
Stage 1	829	-	-	-	-	-
Stage 2	607	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	149	374	810	-	-	-
Stage 1	432	-	-	-	-	-
Stage 2	548	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	148	374	810	-	-	-
Mov Cap-2 Maneuver	148	-	-	-	-	-
Stage 1	428	-	-	-	-	-
Stage 2	548	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	22.5	0.1	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	810	-	212	-	-
HCM Lane V/C Ratio	0.006	-	0.03	-	-
HCM Control Delay (s)	9.5	0	22.5	-	-
HCM Lane LOS	A	A	C	-	-
HCM 95th %tile Q(veh)	0	-	0.1	-	-

Synchro ID	Control Type	Intersection	Control Type	LOS	Delay	V/C Ratio
	1 Signal	Parkway Ave & Boeckman Rd	Signal	D	37.8	0.95
	3 Signal	Wilsonville Rd/Stafford Rd & Boeckman R	Signal	C	20.4	0.76

C. STAGE II LIST

Stage II Approved_Vista Subdivision

Updated by D. Pauly 07.08.2021

Stage II Approved									
Project	Land Use	Status	Size	Total PM Peak Trips	Trip Allocation		Net New (Primary + Diverted) PM Peak		
					Internal	Pass-By	In	Out	Total
Hydro-Temp: Recent agreement with the City, the project is vested and so are the traffic trips	Office/Flex-Space	Not built	60.8 KSF				44	46	90
Mercedes Benz (Phase 2)	Auto Dealership	Not built					20	26	46
Shredding Systems (SQFT does not including paint canopy and another canopy)	Industrial/Commercial	Under construction	66.8 KSF				20	46	66
Town Center Ph III and trip dedication to Miller Point store <i>Uses marked with "*" have not been built and PM peak hr trip sum exceeds remaining vested trip level by 2 trips. It has yet to be determined</i>	*High Turnover Restaurant (Pad 1)	Not built	7.5 KSF				24	17	47*
	Remaining Approved Total								47
Wilsonville Road Business Park Phase II	Phase 2 - office (2-story building on west parcel)	Partially Built	21.7 KSF				15	71	86
Universal Health Services	Mental Health Facility	Land Use Expired, Trip available for other uses	62K						107
Frog Pond-Stafford Meadows (Phase 2 and 3a of 10/18 study)	Residential	Partially Built, 20 homes built and occupied	46 units				16	12	26
Frog Pond-Frog Pond Meadows (Phase 3B, 4A, 4B of 10/18 Study)	Residential	Under construction	74 units				45	29	74
Frog Pond Ridge	Residential	Under construction, no homes built	71 units				43	28	71
Frog Pond-Morgan Farm	Residential	Partially Built, 33 homes built and occupied	80 units				30	17	47
Fir Avenue Commons	Residential	Built, not yet occupied	10 units				7	3	10
Magnolia Townhomes	Residential	Approved	6 units				3	2	5
Aspen Meadows II	Residential	Under construction, no homes sold and occupied	5 units				2	3	5
Canyon Creek III	Residential	Approved	5 units (traffic study was for 11)				2	3	5
Coffee Creek Logistics	Industrial/Commercial	Under construction	115K				16	41	57

Stage II Approved – Villebois													
Project	Phase	Status	Land Use					Total PM Peak Trips	Location Percentage		Net New (Primary + Diverted)		
			SF	Town.	Apt.	Retail	School		Internal	Pass-By	In	Out	Total
North (Entirety)	Residential	Partially built, 364 homes sold and occupied	466								65	37	102

Stage II Approved_Vista Subdivision






















Central	Residential	Partially Built, 734 homes (102 single family, 318 condo/row homes, 365 apartments) occupied	102	391	365	8.5 KSF					30	14	44
FOR REFERENCE SAP EAST			537	42									
FOR REFERENCE SAP SOUTH (Includes PDP 7 Grande Pointe)			560										

Pending Projects for Which Traffic Analysis has been completed (except Villebois)										
Project	Land Use	Status	Size	Total PM Peak Trips	Trip Allocation Percentage			Net New (Primary) PM Peak Hour Trips		
					Internal	Pass-By	Diverted	In	Out	Total
PW Complex on Boberg	Public	under review	15,800 office, 17,900 warehouse					11	39	50
DAS North Valley Complex	Public/Industrial	under review	174,700 sf					5	15	20
Frog Pond West Crossing Subdivision	Residential	under review	29 lots					19	11	30

D. HCM REPORTS – EXISTING + PROJECT

HCM 6th Signalized Intersection Summary
 1: Parkway Ave & Boeckman Rd

Frog Pond Vista
 Existing PM + Project

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	103	260	196	90	313	37	155	173	49	44	393	244
Future Volume (veh/h)	103	260	196	90	313	37	155	173	49	44	393	244
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.97	1.00		0.97	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1930	1885	1885	1870	1856	1900	1885	1856	1870	1976	1976	1900
Adj Flow Rate, veh/h	112	283	180	98	340	36	168	188	42	48	427	239
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	3	1	1	2	3	0	1	3	2	0	0	0
Cap, veh/h	292	300	191	207	456	48	247	624	139	561	451	252
Arrive On Green	0.06	0.28	0.28	0.06	0.28	0.28	0.08	0.43	0.43	0.03	0.38	0.38
Sat Flow, veh/h	1838	1062	675	1781	1644	174	1795	1460	326	1882	1178	659
Grp Volume(v), veh/h	112	0	463	98	0	376	168	0	230	48	0	666
Grp Sat Flow(s),veh/h/ln	1838	0	1737	1781	0	1818	1795	0	1787	1882	0	1837
Q Serve(g_s), s	3.6	0.0	22.0	3.3	0.0	15.9	4.5	0.0	7.2	1.3	0.0	29.7
Cycle Q Clear(g_c), s	3.6	0.0	22.0	3.3	0.0	15.9	4.5	0.0	7.2	1.3	0.0	29.7
Prop In Lane	1.00		0.39	1.00		0.10	1.00		0.18	1.00		0.36
Lane Grp Cap(c), veh/h	292	0	491	207	0	504	247	0	763	561	0	703
V/C Ratio(X)	0.38	0.00	0.94	0.47	0.00	0.75	0.68	0.00	0.30	0.09	0.00	0.95
Avail Cap(c_a), veh/h	351	0	491	275	0	514	280	0	763	679	0	719
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	21.3	0.0	29.6	22.9	0.0	27.8	19.3	0.0	15.9	14.9	0.0	25.3
Incr Delay (d2), s/veh	0.8	0.0	26.8	1.7	0.0	5.8	5.6	0.0	0.2	0.1	0.0	21.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.6	0.0	12.5	1.4	0.0	7.5	2.1	0.0	2.8	0.5	0.0	16.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	22.1	0.0	56.4	24.6	0.0	33.6	24.8	0.0	16.1	15.0	0.0	46.6
LnGrp LOS	C	A	E	C	A	C	C	A	B	B	A	D
Approach Vol, veh/h		575			474			398			714	
Approach Delay, s/veh		49.7			31.7			19.8			44.5	
Approach LOS		D			C			B			D	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	10.5	36.8	8.8	28.4	6.7	40.6	9.3	27.9				
Change Period (Y+Rc), s	4.0	4.5	4.0	4.5	4.0	4.5	4.0	4.5				
Max Green Setting (Gmax), s	8.0	33.1	8.0	23.9	8.0	33.1	8.0	23.9				
Max Q Clear Time (g_c+I1), s	6.5	31.7	5.3	24.0	3.3	9.2	5.6	17.9				
Green Ext Time (p_c), s	0.1	0.7	0.0	0.0	0.0	1.3	0.1	1.1				
Intersection Summary												
HCM 6th Ctrl Delay			38.5									
HCM 6th LOS			D									

Intersection												
Intersection Delay, s/veh	25.7											
Intersection LOS	D											

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	81	322	52	90	237	50	23	99	81	101	180	71
Future Vol, veh/h	81	322	52	90	237	50	23	99	81	101	180	71
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles, %	1	1	0	2	2	4	0	1	0	1	1	1
Mvmt Flow	87	346	56	97	255	54	25	106	87	109	194	76
Number of Lanes	1	1	0	1	1	0	1	1	0	1	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	2	2	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	2	2	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	2	2	2
HCM Control Delay	36.7	22.6	17	19.9
HCM LOS	E	C	C	C

Lane	NBLn1	NBLn2	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1	SBLn2
Vol Left, %	100%	0%	100%	0%	100%	0%	100%	0%
Vol Thru, %	0%	55%	0%	86%	0%	83%	0%	72%
Vol Right, %	0%	45%	0%	14%	0%	17%	0%	28%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	23	180	81	374	90	287	101	251
LT Vol	23	0	81	0	90	0	101	0
Through Vol	0	99	0	322	0	237	0	180
RT Vol	0	81	0	52	0	50	0	71
Lane Flow Rate	25	194	87	402	97	309	109	270
Geometry Grp	7	7	7	7	7	7	7	7
Degree of Util (X)	0.063	0.446	0.201	0.859	0.228	0.673	0.263	0.601
Departure Headway (Hd)	9.124	8.294	8.307	7.692	8.496	7.853	8.712	8.013
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	393	434	434	475	423	460	413	451
Service Time	6.878	6.047	6.023	5.407	6.247	5.604	6.459	5.736
HCM Lane V/C Ratio	0.064	0.447	0.2	0.846	0.229	0.672	0.264	0.599
HCM Control Delay	12.5	17.6	13.1	41.8	13.8	25.4	14.6	22.1
HCM Lane LOS	B	C	B	E	B	D	B	C
HCM 95th-tile Q	0.2	2.2	0.7	8.8	0.9	4.9	1	3.9

HCM 6th Signalized Intersection Summary
 3: Wilsonville Rd/Stafford Rd & Boeckman Rd/Advance Rd

Frog Pond Vista
 Existing PM + Project



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	245	56	88	52	50	18	43	227	52	22	477	244
Future Volume (veh/h)	245	56	88	52	50	18	43	227	52	22	477	244
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	0.99		0.99	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1885	1870	1900	1811	1870	1900	1870	1900	1841	1752	1900	1841
Adj Flow Rate, veh/h	258	59	18	55	53	2	45	239	47	23	502	238
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	1	2	0	6	2	0	2	0	4	10	0	4
Cap, veh/h	439	337	289	254	107	4	241	743	146	542	571	271
Arrive On Green	0.16	0.18	0.18	0.04	0.06	0.06	0.03	0.48	0.48	0.02	0.47	0.47
Sat Flow, veh/h	1795	1870	1606	1725	1790	68	1781	1542	303	1668	1218	578
Grp Volume(v), veh/h	258	59	18	55	0	55	45	0	286	23	0	740
Grp Sat Flow(s),veh/h/ln	1795	1870	1606	1725	0	1858	1781	0	1845	1668	0	1796
Q Serve(g_s), s	8.1	1.7	0.6	1.9	0.0	1.9	0.8	0.0	6.1	0.5	0.0	24.1
Cycle Q Clear(g_c), s	8.1	1.7	0.6	1.9	0.0	1.9	0.8	0.0	6.1	0.5	0.0	24.1
Prop In Lane	1.00		1.00	1.00		0.04	1.00		0.16	1.00		0.32
Lane Grp Cap(c), veh/h	439	337	289	254	0	111	241	0	889	542	0	842
V/C Ratio(X)	0.59	0.18	0.06	0.22	0.00	0.50	0.19	0.00	0.32	0.04	0.00	0.88
Avail Cap(c_a), veh/h	536	751	645	296	0	468	293	0	1078	613	0	1049
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	21.4	22.5	22.0	27.2	0.0	29.5	13.0	0.0	10.3	8.8	0.0	15.5
Incr Delay (d2), s/veh	1.3	0.2	0.1	0.4	0.0	3.4	0.4	0.0	0.2	0.0	0.0	7.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	8.3	0.7	0.2	0.8	0.0	0.9	0.3	0.0	2.2	0.2	0.0	10.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	22.7	22.7	22.1	27.6	0.0	32.9	13.4	0.0	10.5	8.8	0.0	22.9
LnGrp LOS	C	C	C	C	A	C	B	A	B	A	A	C
Approach Vol, veh/h		335			110			331			763	
Approach Delay, s/veh		22.6			30.2			10.9			22.5	
Approach LOS		C			C			B			C	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	6.7	34.8	14.8	8.4	5.9	35.7	7.0	16.2				
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5				
Max Green Setting (Gmax), s	4.1	37.8	13.8	16.3	4.1	37.8	4.1	26.0				
Max Q Clear Time (g_c+1), s	12.8	26.1	10.1	3.9	2.5	8.1	3.9	3.7				
Green Ext Time (p_c), s	0.0	4.2	0.3	0.1	0.0	1.8	0.0	0.3				
Intersection Summary												
HCM 6th Ctrl Delay												20.6
HCM 6th LOS												C

Intersection

Int Delay, s/veh 374.4

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	150	518	619	313	181	234
Future Vol, veh/h	150	518	619	313	181	234
Conflicting Peds, #/hr	0	0	0	0	3	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	175	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	84	84	84	84	84	84
Heavy Vehicles, %	4	1	1	3	1	0
Mvmt Flow	179	617	737	373	215	279

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	1110	0	0 1902 924
Stage 1	-	-	- - 924 -
Stage 2	-	-	- - 978 -
Critical Hdwy	4.14	-	- - 6.41 6.2
Critical Hdwy Stg 1	-	-	- - 5.41 -
Critical Hdwy Stg 2	-	-	- - 5.41 -
Follow-up Hdwy	2.236	-	- - 3.509 3.3
Pot Cap-1 Maneuver	622	-	- - ~ 76 329
Stage 1	-	-	- - 388 -
Stage 2	-	-	- - 366 -
Platoon blocked, %		-	- -
Mov Cap-1 Maneuver	622	-	- - ~ 54 329
Mov Cap-2 Maneuver	-	-	- - ~ 54 -
Stage 1	-	-	- - 276 -
Stage 2	-	-	- - 366 -

Approach	EB	WB	SB
HCM Control Delay, s	2.9	0	\$ 1813.3
HCM LOS			F

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	622	-	-	-	102
HCM Lane V/C Ratio	0.287	-	-	-	4.844
HCM Control Delay (s)	13.1	-	-	-	\$ 1813.3
HCM Lane LOS	B	-	-	-	F
HCM 95th %tile Q(veh)	1.2	-	-	-	52.5

Notes

~: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Intersection						
Int Delay, s/veh	0.4					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	Y			4	4	
Traffic Vol, veh/h	11	6	9	567	785	18
Future Vol, veh/h	11	6	9	567	785	18
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	0	0	0	1	2	0
Mvmt Flow	12	6	9	597	826	19

Major/Minor	Minor2	Major1		Major2	
Conflicting Flow All	1451	836	845	0	0
Stage 1	836	-	-	-	-
Stage 2	615	-	-	-	-
Critical Hdwy	6.4	6.2	4.1	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-
Pot Cap-1 Maneuver	145	370	800	-	-
Stage 1	429	-	-	-	-
Stage 2	543	-	-	-	-
Platoon blocked, %				-	-
Mov Cap-1 Maneuver	143	370	800	-	-
Mov Cap-2 Maneuver	143	-	-	-	-
Stage 1	422	-	-	-	-
Stage 2	543	-	-	-	-

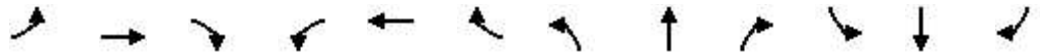
Approach	EB	NB	SB
HCM Control Delay, s	26.8	0.1	0
HCM LOS	D		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	800	-	183	-	-
HCM Lane V/C Ratio	0.012	-	0.098	-	-
HCM Control Delay (s)	9.6	0	26.8	-	-
HCM Lane LOS	A	A	D	-	-
HCM 95th %tile Q(veh)	0	-	0.3	-	-

E. HCM REPORTS – EXISTING + STAGE II

HCM 6th Signalized Intersection Summary
 1: Parkway Ave & Boeckman Rd

Frog Pond Vista
 Existing PM + Stage II



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	108	296	198	96	345	41	157	174	57	51	394	251
Future Volume (veh/h)	108	296	198	96	345	41	157	174	57	51	394	251
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.97	1.00		0.97	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1930	1885	1885	1870	1856	1900	1885	1856	1870	1976	1976	1900
Adj Flow Rate, veh/h	117	322	189	104	375	41	171	189	50	55	428	248
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	3	1	1	2	3	0	1	3	2	0	0	0
Cap, veh/h	283	337	198	194	495	54	229	601	159	543	447	259
Arrive On Green	0.06	0.31	0.31	0.06	0.30	0.30	0.08	0.43	0.43	0.03	0.38	0.38
Sat Flow, veh/h	1838	1099	645	1781	1638	179	1795	1405	372	1882	1161	673
Grp Volume(v), veh/h	117	0	511	104	0	416	171	0	239	55	0	676
Grp Sat Flow(s),veh/h/ln	1838	0	1745	1781	0	1817	1795	0	1777	1882	0	1834
Q Serve(g_s), s	4.2	0.0	27.6	3.8	0.0	19.9	5.3	0.0	8.6	1.7	0.0	34.6
Cycle Q Clear(g_c), s	4.2	0.0	27.6	3.8	0.0	19.9	5.3	0.0	8.6	1.7	0.0	34.6
Prop In Lane	1.00		0.37	1.00		0.10	1.00		0.21	1.00		0.37
Lane Grp Cap(c), veh/h	283	0	535	194	0	549	229	0	760	543	0	706
V/C Ratio(X)	0.41	0.00	0.96	0.54	0.00	0.76	0.75	0.00	0.31	0.10	0.00	0.96
Avail Cap(c_a), veh/h	322	0	535	240	0	557	244	0	760	639	0	714
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	23.2	0.0	32.7	25.2	0.0	30.4	22.1	0.0	18.2	17.0	0.0	28.9
Incr Delay (d2), s/veh	1.0	0.0	28.0	2.3	0.0	5.9	11.2	0.0	0.2	0.1	0.0	23.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.8	0.0	15.5	1.7	0.0	9.4	2.8	0.0	3.5	0.7	0.0	19.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	24.1	0.0	60.8	27.5	0.0	36.3	33.3	0.0	18.4	17.1	0.0	52.5
LnGrp LOS	C	A	E	C	A	D	C	A	B	B	A	D
Approach Vol, veh/h		628			520			410				731
Approach Delay, s/veh		53.9			34.5			24.7				49.9
Approach LOS		D			C			C				D
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	11.2	41.5	9.5	34.0	7.1	45.7	9.9	33.6				
Change Period (Y+Rc), s	4.0	4.5	4.0	4.5	4.0	4.5	4.0	4.5				
Max Green Setting (Gmax), s	8.0	37.5	8.0	29.5	8.0	37.5	8.0	29.5				
Max Q Clear Time (g_c+I1), s	7.3	36.6	5.8	29.6	3.7	10.6	6.2	21.9				
Green Ext Time (p_c), s	0.0	0.5	0.0	0.0	0.0	1.4	0.0	1.5				
Intersection Summary												
HCM 6th Ctrl Delay			43.0									
HCM 6th LOS			D									

Intersection

Intersection Delay, s/veh	39.5
Intersection LOS	E

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	86	366	54	95	272	60	26	101	88	117	181	75
Future Vol, veh/h	86	366	54	95	272	60	26	101	88	117	181	75
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles, %	1	1	0	2	2	4	0	1	0	1	1	1
Mvmt Flow	92	394	58	102	292	65	28	109	95	126	195	81
Number of Lanes	1	1	0	1	1	0	1	1	0	1	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	2	2	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	2	2	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	2	2	2
HCM Control Delay	66	33.1	19.2	22.6
HCM LOS	F	D	C	C

Lane	NBLn1	NBLn2	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1	SBLn2
Vol Left, %	100%	0%	100%	0%	100%	0%	100%	0%
Vol Thru, %	0%	53%	0%	87%	0%	82%	0%	71%
Vol Right, %	0%	47%	0%	13%	0%	18%	0%	29%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	26	189	86	420	95	332	117	256
LT Vol	26	0	86	0	95	0	117	0
Through Vol	0	101	0	366	0	272	0	181
RT Vol	0	88	0	54	0	60	0	75
Lane Flow Rate	28	203	92	452	102	357	126	275
Geometry Grp	7	7	7	7	7	7	7	7
Degree of Util (X)	0.074	0.494	0.225	1.02	0.251	0.813	0.32	0.644
Departure Headway (Hd)	9.778	8.931	8.742	8.131	9.001	8.35	9.31	8.575
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	368	406	413	452	401	436	389	424
Service Time	7.478	6.631	6.441	5.83	6.701	6.05	7.01	6.275
HCM Lane V/C Ratio	0.076	0.5	0.223	1	0.254	0.819	0.324	0.649
HCM Control Delay	13.3	20	14	76.6	14.7	38.4	16.3	25.5
HCM Lane LOS	B	C	B	F	B	E	C	D
HCM 95th-tile Q	0.2	2.7	0.9	13.6	1	7.5	1.4	4.4

HCM 6th Signalized Intersection Summary
 3: Wilsonville Rd/Stafford Rd & Boeckman Rd/Advance Rd

Frog Pond Vista
 Existing PM + Stage II



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	292	67	98	52	67	18	57	229	53	22	479	313
Future Volume (veh/h)	292	67	98	52	67	18	57	229	53	22	479	313
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	0.99		0.99	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1885	1870	1900	1811	1870	1900	1870	1900	1841	1752	1900	1841
Adj Flow Rate, veh/h	307	71	20	55	71	6	60	241	48	23	504	305
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	1	2	0	6	2	0	2	0	4	10	0	4
Cap, veh/h	449	387	332	247	117	10	194	767	153	542	533	322
Arrive On Green	0.18	0.21	0.21	0.04	0.07	0.07	0.04	0.50	0.50	0.02	0.48	0.48
Sat Flow, veh/h	1795	1870	1606	1725	1700	144	1781	1538	306	1668	1108	671
Grp Volume(v), veh/h	307	71	20	55	0	77	60	0	289	23	0	809
Grp Sat Flow(s),veh/h/ln	1795	1870	1606	1725	0	1843	1781	0	1845	1668	0	1779
Q Serve(g_s), s	11.4	2.4	0.8	2.2	0.0	3.1	1.3	0.0	7.1	0.5	0.0	33.0
Cycle Q Clear(g_c), s	11.4	2.4	0.8	2.2	0.0	3.1	1.3	0.0	7.1	0.5	0.0	33.0
Prop In Lane	1.00		1.00	1.00		0.08	1.00		0.17	1.00		0.38
Lane Grp Cap(c), veh/h	449	387	332	247	0	127	194	0	919	542	0	855
V/C Ratio(X)	0.68	0.18	0.06	0.22	0.00	0.61	0.31	0.00	0.31	0.04	0.00	0.95
Avail Cap(c_a), veh/h	450	638	548	272	0	399	220	0	920	596	0	887
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	24.6	24.9	24.3	31.4	0.0	34.5	17.0	0.0	11.4	9.8	0.0	18.8
Incr Delay (d2), s/veh	4.2	0.2	0.1	0.4	0.0	4.6	0.9	0.0	0.2	0.0	0.0	18.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.1	1.0	0.3	0.9	0.0	1.5	0.5	0.0	2.7	0.2	0.0	16.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	28.8	25.1	24.3	31.8	0.0	39.1	17.9	0.0	11.6	9.9	0.0	37.0
LnGrp LOS	C	C	C	C	A	D	B	A	B	A	A	D
Approach Vol, veh/h		398			132			349			832	
Approach Delay, s/veh		27.9			36.0			12.7			36.2	
Approach LOS		C			D			B			D	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	7.4	41.1	17.9	9.8	6.0	42.5	7.4	20.3				
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5				
Max Green Setting (Gmax), s	4.0	38.0	13.5	16.5	4.0	38.0	4.0	26.0				
Max Q Clear Time (g_c+1/3), s	13.3	35.0	13.4	5.1	2.5	9.1	4.2	4.4				
Green Ext Time (p_c), s	0.0	1.6	0.0	0.2	0.0	1.8	0.0	0.3				

Intersection Summary												
HCM 6th Ctrl Delay											29.5	
HCM 6th LOS											C	

Intersection

Int Delay, s/veh 531.9

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	185	530	636	313	181	286
Future Vol, veh/h	185	530	636	313	181	286
Conflicting Peds, #/hr	0	0	0	0	3	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	175	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	84	84	84	84	84	84
Heavy Vehicles, %	4	1	1	3	1	0
Mvmt Flow	220	631	757	373	215	340

Major/Minor

	Major1	Major2	Minor2
Conflicting Flow All	1130	0	0 2018 944
Stage 1	-	-	- 944 -
Stage 2	-	-	- 1074 -
Critical Hdwy	4.14	-	- 6.41 6.2
Critical Hdwy Stg 1	-	-	- 5.41 -
Critical Hdwy Stg 2	-	-	- 5.41 -
Follow-up Hdwy	2.236	-	- 3.509 3.3
Pot Cap-1 Maneuver	611	-	- ~ 65 ~ 321
Stage 1	-	-	- 380 -
Stage 2	-	-	- 329 -
Platoon blocked, %		-	-
Mov Cap-1 Maneuver	611	-	- ~ 42 ~ 321
Mov Cap-2 Maneuver	-	-	- ~ 42 -
Stage 1	-	-	- 243 -
Stage 2	-	-	- 329 -

Approach

	EB	WB	SB
HCM Control Delay, s	3.7	0	\$ 2421.5
HCM LOS			F

Minor Lane/Major Mvmt

	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	611	-	-	-	90
HCM Lane V/C Ratio	0.36	-	-	-	6.177
HCM Control Delay (s)	14.2	-	-	-	\$ 2421.5
HCM Lane LOS	B	-	-	-	F
HCM 95th %tile Q(veh)	1.6	-	-	-	61.6

Notes

~: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Intersection						
Int Delay, s/veh	0.3					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	8	5	8	617	857	15
Future Vol, veh/h	8	5	8	617	857	15
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	0	0	0	1	2	0
Mvmt Flow	8	5	8	649	902	16

Major/Minor	Minor2	Major1		Major2	
Conflicting Flow All	1575	910	918	0	0
Stage 1	910	-	-	-	-
Stage 2	665	-	-	-	-
Critical Hdwy	6.4	6.2	4.1	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-
Pot Cap-1 Maneuver	122	336	752	-	-
Stage 1	396	-	-	-	-
Stage 2	515	-	-	-	-
Platoon blocked, %				-	-
Mov Cap-1 Maneuver	120	336	752	-	-
Mov Cap-2 Maneuver	120	-	-	-	-
Stage 1	389	-	-	-	-
Stage 2	515	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	29.8	0.1	0
HCM LOS	D		

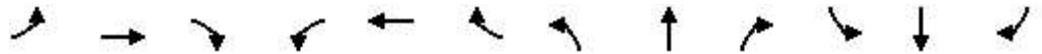
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	752	-	159	-	-
HCM Lane V/C Ratio	0.011	-	0.086	-	-
HCM Control Delay (s)	9.8	0	29.8	-	-
HCM Lane LOS	A	A	D	-	-
HCM 95th %tile Q(veh)	0	-	0.3	-	-

Synchro ID	Control Type	Intersection	Control Type	LOS	Delay	V/C Ratio
	1 Signal	Parkway Ave & Boeckman Rd	Signal	D	43.0	0.98
	3 Signal	Wilsonville Rd/Stafford Rd & Boeckman R	Signal	C	29.5	0.88

F. HCM REPORTS – EXISTING + PROJECT + STAGE II

HCM 6th Signalized Intersection Summary
 1: Parkway Ave & Boeckman Rd

Frog Pond Vista
 Existing PM + Project + Stage II



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	108	301	198	97	347	42	157	174	58	52	394	251
Future Volume (veh/h)	108	301	198	97	347	42	157	174	58	52	394	251
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.97	1.00		0.97	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1930	1885	1885	1870	1856	1900	1885	1856	1870	1976	1976	1900
Adj Flow Rate, veh/h	117	327	189	105	377	42	171	189	51	57	428	248
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	3	1	1	2	3	0	1	3	2	0	0	0
Cap, veh/h	281	339	196	191	494	55	229	597	161	542	447	259
Arrive On Green	0.06	0.31	0.31	0.06	0.30	0.30	0.08	0.43	0.43	0.03	0.38	0.38
Sat Flow, veh/h	1838	1107	640	1781	1635	182	1795	1398	377	1882	1161	673
Grp Volume(v), veh/h	117	0	516	105	0	419	171	0	240	57	0	676
Grp Sat Flow(s),veh/h/ln	1838	0	1746	1781	0	1817	1795	0	1776	1882	0	1834
Q Serve(g_s), s	4.2	0.0	28.0	3.9	0.0	20.1	5.3	0.0	8.6	1.8	0.0	34.6
Cycle Q Clear(g_c), s	4.2	0.0	28.0	3.9	0.0	20.1	5.3	0.0	8.6	1.8	0.0	34.6
Prop In Lane	1.00		0.37	1.00		0.10	1.00		0.21	1.00		0.37
Lane Grp Cap(c), veh/h	281	0	535	191	0	549	229	0	758	542	0	705
V/C Ratio(X)	0.42	0.00	0.96	0.55	0.00	0.76	0.75	0.00	0.32	0.11	0.00	0.96
Avail Cap(c_a), veh/h	320	0	535	236	0	556	243	0	758	637	0	714
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	23.2	0.0	32.9	25.3	0.0	30.5	22.1	0.0	18.3	17.0	0.0	28.9
Incr Delay (d2), s/veh	1.0	0.0	30.1	2.5	0.0	6.1	11.3	0.0	0.2	0.1	0.0	23.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.8	0.0	16.0	1.7	0.0	9.5	2.8	0.0	3.5	0.8	0.0	19.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	24.2	0.0	63.0	27.7	0.0	36.6	33.4	0.0	18.5	17.1	0.0	52.6
LnGrp LOS	C	A	E	C	A	D	C	A	B	B	A	D
Approach Vol, veh/h		633			524			411				733
Approach Delay, s/veh		55.8			34.8			24.7				49.9
Approach LOS		E			C			C				D
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	11.2	41.5	9.5	34.0	7.1	45.6	9.9	33.6				
Change Period (Y+Rc), s	4.0	4.5	4.0	4.5	4.0	4.5	4.0	4.5				
Max Green Setting (Gmax), s	8.0	37.5	8.0	29.5	8.0	37.5	8.0	29.5				
Max Q Clear Time (g_c+I1), s	7.3	36.6	5.9	30.0	3.8	10.6	6.2	22.1				
Green Ext Time (p_c), s	0.0	0.4	0.0	0.0	0.0	1.5	0.0	1.5				
Intersection Summary												
HCM 6th Ctrl Delay			43.6									
HCM 6th LOS			D									

Intersection	
Intersection Delay, s/veh	42
Intersection LOS	E

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	86	373	54	96	276	61	26	101	89	118	181	75
Future Vol, veh/h	86	373	54	96	276	61	26	101	89	118	181	75
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles, %	1	1	0	2	2	4	0	1	0	1	1	1
Mvmt Flow	92	401	58	103	297	66	28	109	96	127	195	81
Number of Lanes	1	1	0	1	1	0	1	1	0	1	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	2	2	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	2	2	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	2	2	2
HCM Control Delay	71.8	34.9	19.4	22.6
HCM LOS	F	D	C	C

Lane	NBLn1	NBLn2	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1	SBLn2
Vol Left, %	100%	0%	100%	0%	100%	0%	100%	0%
Vol Thru, %	0%	53%	0%	87%	0%	82%	0%	71%
Vol Right, %	0%	47%	0%	13%	0%	18%	0%	29%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	26	190	86	427	96	337	118	256
LT Vol	26	0	86	0	96	0	118	0
Through Vol	0	101	0	373	0	276	0	181
RT Vol	0	89	0	54	0	61	0	75
Lane Flow Rate	28	204	92	459	103	362	127	275
Geometry Grp	7	7	7	7	7	7	7	7
Degree of Util (X)	0.074	0.495	0.226	1.044	0.255	0.83	0.321	0.641
Departure Headway (Hd)	9.839	8.99	8.791	8.182	9.029	8.378	9.371	8.636
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	366	405	412	450	401	435	386	421
Service Time	7.539	6.69	6.462	5.852	6.729	6.078	7.071	6.336
HCM Lane V/C Ratio	0.077	0.504	0.223	1.02	0.257	0.832	0.329	0.653
HCM Control Delay	13.3	20.2	14	83.4	14.8	40.6	16.4	25.5
HCM Lane LOS	B	C	B	F	B	E	C	D
HCM 95th-tile Q	0.2	2.7	0.9	14.4	1	7.9	1.4	4.3

HCM 6th Signalized Intersection Summary
 3: Wilsonville Rd/Stafford Rd & Boeckman Rd/Advance Rd

Frog Pond Vista
 Existing PM + Project + Stage II



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	293	67	99	52	68	19	58	231	53	23	480	314
Future Volume (veh/h)	293	67	99	52	68	19	58	231	53	23	480	314
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	0.99		0.99	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1885	1870	1900	1811	1870	1900	1870	1900	1841	1752	1900	1841
Adj Flow Rate, veh/h	308	71	20	55	72	6	61	243	48	24	505	307
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	1	2	0	6	2	0	2	0	4	10	0	4
Cap, veh/h	448	388	333	247	118	10	192	768	152	541	532	324
Arrive On Green	0.18	0.21	0.21	0.04	0.07	0.07	0.04	0.50	0.50	0.02	0.48	0.48
Sat Flow, veh/h	1795	1870	1606	1725	1702	142	1781	1541	304	1668	1106	673
Grp Volume(v), veh/h	308	71	20	55	0	78	61	0	291	24	0	812
Grp Sat Flow(s),veh/h/ln	1795	1870	1606	1725	0	1844	1781	0	1845	1668	0	1779
Q Serve(g_s), s	11.5	2.4	0.8	2.2	0.0	3.1	1.3	0.0	7.2	0.6	0.0	33.4
Cycle Q Clear(g_c), s	11.5	2.4	0.8	2.2	0.0	3.1	1.3	0.0	7.2	0.6	0.0	33.4
Prop In Lane	1.00		1.00	1.00		0.08	1.00		0.16	1.00		0.38
Lane Grp Cap(c), veh/h	448	388	333	247	0	128	192	0	919	541	0	856
V/C Ratio(X)	0.69	0.18	0.06	0.22	0.00	0.61	0.32	0.00	0.32	0.04	0.00	0.95
Avail Cap(c_a), veh/h	448	635	546	271	0	397	218	0	919	593	0	883
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	24.7	25.0	24.3	31.5	0.0	34.6	17.2	0.0	11.4	9.9	0.0	19.0
Incr Delay (d2), s/veh	4.4	0.2	0.1	0.4	0.0	4.6	0.9	0.0	0.2	0.0	0.0	18.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.2	1.1	0.3	0.9	0.0	1.5	0.5	0.0	2.7	0.2	0.0	16.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	29.1	25.2	24.4	31.9	0.0	39.2	18.1	0.0	11.6	9.9	0.0	37.7
LnGrp LOS	C	C	C	C	A	D	B	A	B	A	A	D
Approach Vol, veh/h		399			133			352			836	
Approach Delay, s/veh		28.1			36.2			12.8			36.9	
Approach LOS		C			D			B			D	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	7.4	41.3	18.0	9.8	6.1	42.6	7.4	20.4				
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5				
Max Green Setting (Gmax), s	4.0	38.0	13.5	16.5	4.0	38.0	4.0	26.0				
Max Q Clear Time (g_c+1/3), s	13.3	35.4	13.5	5.1	2.6	9.2	4.2	4.4				
Green Ext Time (p_c), s	0.0	1.5	0.0	0.2	0.0	1.8	0.0	0.3				
Intersection Summary												
HCM 6th Ctrl Delay											29.9	
HCM 6th LOS											C	

Intersection

Int Delay, s/veh 570.9

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	190	533	640	313	181	295
Future Vol, veh/h	190	533	640	313	181	295
Conflicting Peds, #/hr	0	0	0	0	3	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	175	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	84	84	84	84	84	84
Heavy Vehicles, %	4	1	1	3	1	0
Mvmt Flow	226	635	762	373	215	351

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	1135	0	0 2039 949
Stage 1	-	-	- 949 -
Stage 2	-	-	- 1090 -
Critical Hdwy	4.14	-	- 6.41 6.2
Critical Hdwy Stg 1	-	-	- 5.41 -
Critical Hdwy Stg 2	-	-	- 5.41 -
Follow-up Hdwy	2.236	-	- 3.509 3.3
Pot Cap-1 Maneuver	608	-	- ~ 63 ~ 319
Stage 1	-	-	- 378 -
Stage 2	-	-	- 324 -
Platoon blocked, %		-	-
Mov Cap-1 Maneuver	608	-	- ~ 40 ~ 319
Mov Cap-2 Maneuver	-	-	- ~ 40 -
Stage 1	-	-	- 237 -
Stage 2	-	-	- 324 -

Approach	EB	WB	SB
HCM Control Delay, s	3.8	0	\$ 2575.4
HCM LOS			F

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	608	-	-	-	87
HCM Lane V/C Ratio	0.372	-	-	-	6.513
HCM Control Delay (s)	14.4	-	-	-	\$ 2575.4
HCM Lane LOS	B	-	-	-	F
HCM 95th %tile Q(veh)	1.7	-	-	-	63.3

Notes

~: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Intersection						
Int Delay, s/veh	0.6					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	T		T		T	
Traffic Vol, veh/h	16	8	12	617	857	28
Future Vol, veh/h	16	8	12	617	857	28
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	0	0	0	1	2	0
Mvmt Flow	17	8	13	649	902	29

Major/Minor	Minor2	Major1		Major2	
Conflicting Flow All	1592	917	931	0	0
Stage 1	917	-	-	-	-
Stage 2	675	-	-	-	-
Critical Hdwy	6.4	6.2	4.1	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-
Pot Cap-1 Maneuver	119	332	743	-	-
Stage 1	393	-	-	-	-
Stage 2	510	-	-	-	-
Platoon blocked, %				-	-
Mov Cap-1 Maneuver	116	332	743	-	-
Mov Cap-2 Maneuver	116	-	-	-	-
Stage 1	382	-	-	-	-
Stage 2	510	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	34.3	0.2	0
HCM LOS	D		

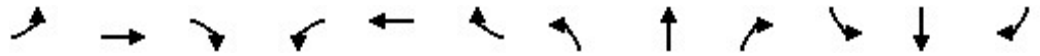
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	743	-	148	-	-
HCM Lane V/C Ratio	0.017	-	0.171	-	-
HCM Control Delay (s)	9.9	0	34.3	-	-
HCM Lane LOS	A	A	D	-	-
HCM 95th %tile Q(veh)	0.1	-	0.6	-	-

Synchro ID	Control Type	Intersection	Control Type	LOS	Delay	V/C Ratio
	1 Signal	Parkway Ave & Boeckman Rd	Signal	D	43.6	0.99
	3 Signal	Wilsonville Rd/Stafford Rd & Boeckman R	Signal	C	29.9	0.88

G. HCM REPORTS – EXISTING + PROJECT + STAGE II

HCM 6th Signalized Intersection Summary
 2: Canyon Creek Rd & Boeckman Rd

Frog Pond Vista
 Existing PM + Project + Stage II + Mitigation



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	86	373	54	96	276	61	26	101	89	118	181	75
Future Volume (veh/h)	86	373	54	96	276	61	26	101	89	118	181	75
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.97	0.99		0.98	0.99		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1885	1885	1900	1870	1870	1841	1976	1885	1900	1885	1885	1885
Adj Flow Rate, veh/h	92	401	50	103	297	55	28	109	41	127	195	56
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	1	1	0	2	2	4	0	1	0	1	1	1
Cap, veh/h	451	653	81	381	613	114	212	198	75	306	277	80
Arrive On Green	0.04	0.40	0.41	0.04	0.40	0.41	0.01	0.15	0.16	0.05	0.20	0.21
Sat Flow, veh/h	1795	1637	204	1781	1528	283	1882	1299	489	1795	1396	401
Grp Volume(v), veh/h	92	0	451	103	0	352	28	0	150	127	0	251
Grp Sat Flow(s),veh/h/ln	1795	0	1842	1781	0	1811	1882	0	1788	1795	0	1797
Q Serve(g_s), s	1.7	0.0	10.9	2.0	0.0	8.1	0.4	0.0	4.4	3.0	0.0	7.3
Cycle Q Clear(g_c), s	1.7	0.0	10.9	2.0	0.0	8.1	0.4	0.0	4.4	3.0	0.0	7.3
Prop In Lane	1.00		0.11	1.00		0.16	1.00		0.27	1.00		0.22
Lane Grp Cap(c), veh/h	451	0	735	381	0	727	212	0	273	306	0	357
V/C Ratio(X)	0.20	0.00	0.61	0.27	0.00	0.48	0.13	0.00	0.55	0.42	0.00	0.70
Avail Cap(c_a), veh/h	481	0	735	406	0	727	299	0	688	306	0	691
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	10.4	0.0	13.4	10.9	0.0	12.5	22.5	0.0	22.0	20.2	0.0	20.9
Incr Delay (d2), s/veh	0.2	0.0	3.8	0.4	0.0	2.3	0.3	0.0	1.7	0.9	0.0	2.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	0.0	4.6	0.7	0.0	3.3	0.3	0.0	1.8	1.4	0.0	3.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	10.6	0.0	17.2	11.3	0.0	14.8	22.8	0.0	23.7	21.1	0.0	23.5
LnGrp LOS	B	A	B	B	A	B	C	A	C	C	A	C
Approach Vol, veh/h		543			455			178				378
Approach Delay, s/veh		16.1			14.0			23.5				22.7
Approach LOS		B			B			C				C
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	8.0	13.6	7.2	27.4	5.4	16.1	7.0	27.6				
Change Period (Y+Rc), s	4.0	4.5	4.0	4.5	4.0	4.5	4.0	4.5				
Max Green Setting (Gmax), s	4.0	22.1	4.0	22.9	4.0	22.1	4.0	22.9				
Max Q Clear Time (g_c+I1), s	5.0	6.4	4.0	12.9	2.4	9.3	3.7	10.1				
Green Ext Time (p_c), s	0.0	0.7	0.0	2.0	0.0	1.1	0.0	1.7				

Intersection Summary

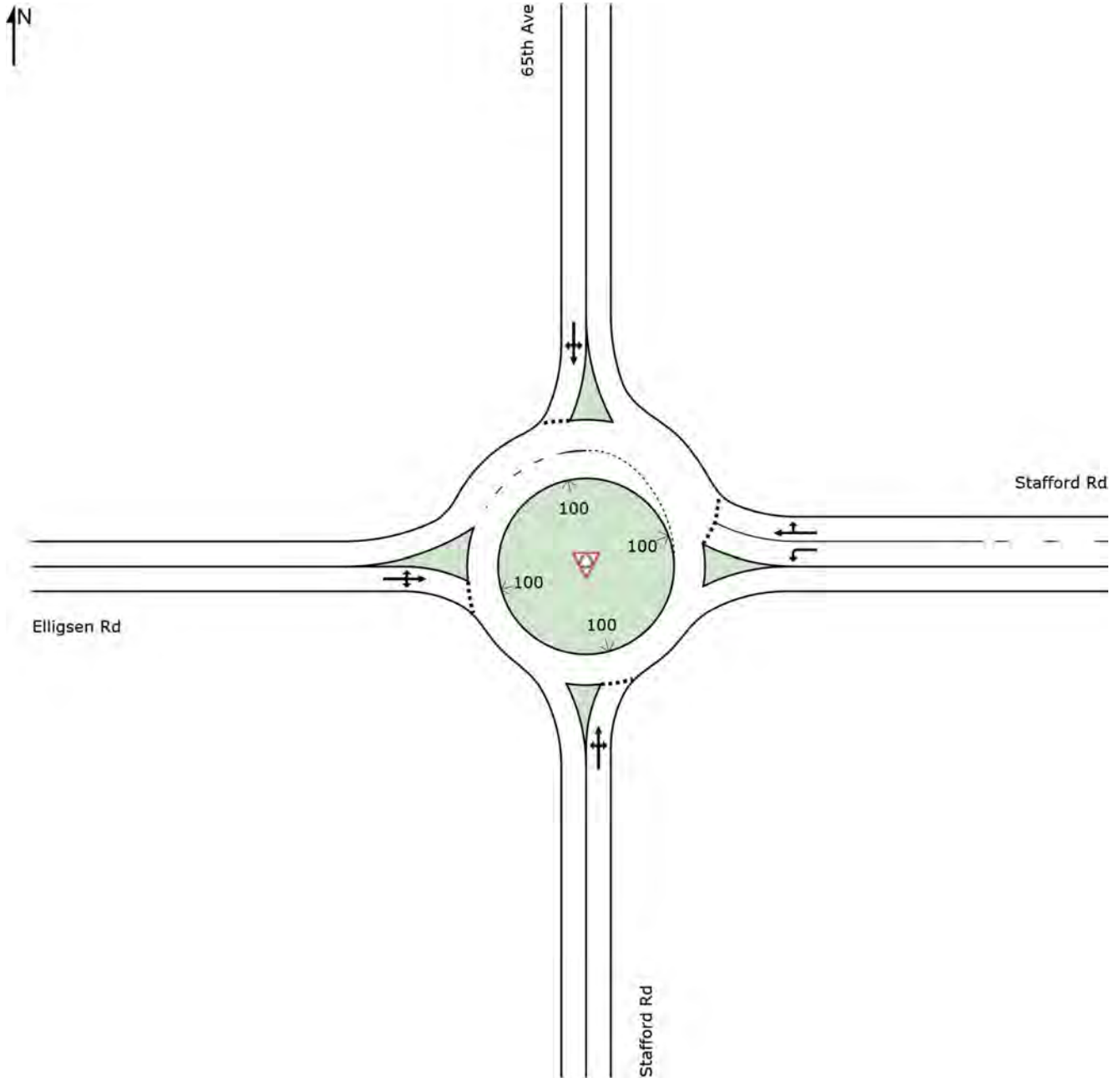
HCM 6th Ctrl Delay	17.9
HCM 6th LOS	B

Synchro ID	Control Type	Intersection	Control Type	LOS	Delay	V/C Ratio
2	Signal	Canyon Creek Rd & Boeckman Rd	Signal	B	17.9	0.64

SITE LAYOUT

 Site: [Wilsonville Frog Pond Vista]

Site Category: -
Roundabout



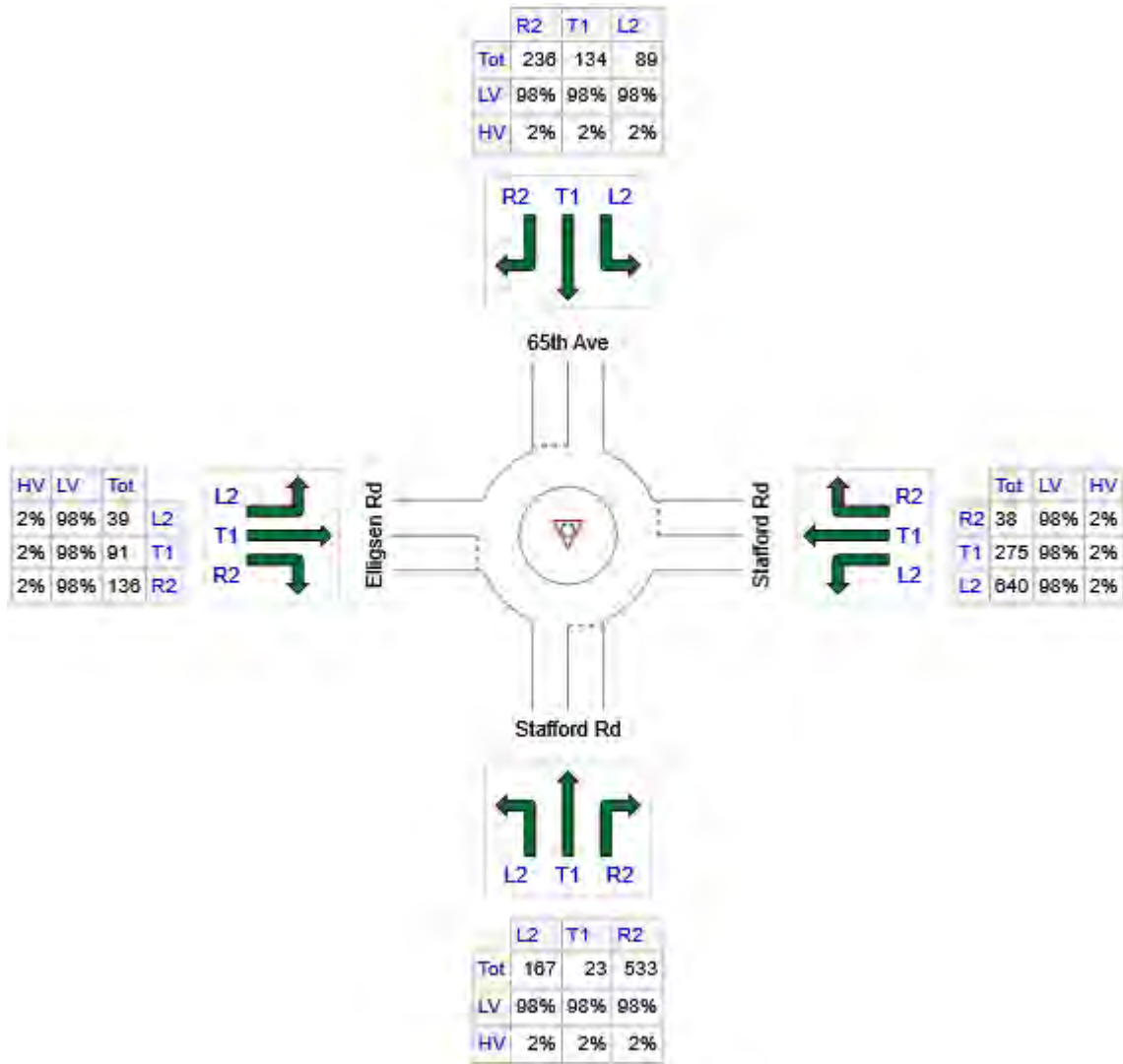
INPUT VOLUMES

Vehicles and pedestrians per 60 minutes

Site: [Wilsonville Frog Pond Vista]

Site Category: -
Roundabout

Volume Display Method: Total and %



	All MCs	Light Vehicles (LV)	Heavy Vehicles (HV)
S: Stafford Rd	723	709	14
E: Stafford Rd	953	934	19
N: 65th Ave	459	450	9
W: Elligsen Rd	266	261	5
Total	2401	2353	48

MOVEMENT SUMMARY

 Site: [Wilsonville Frog Pond Vista]

Site Category: -
Roundabout

Movement Performance - Vehicles												
Mov ID	Turn	Demand Total veh/h	Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance ft	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed mph
South: Stafford Rd												
3	L2	176	2.0	0.715	14.9	LOS B	12.2	308.7	0.78	0.83	1.20	30.0
8	T1	24	2.0	0.715	14.9	LOS B	12.2	308.7	0.78	0.83	1.20	29.9
18	R2	561	2.0	0.715	14.9	LOS B	12.2	308.7	0.78	0.83	1.20	29.2
Approach		761	2.0	0.715	14.9	LOS B	12.2	308.7	0.78	0.83	1.20	29.4
East: Stafford Rd												
1	L2	674	2.0	0.605	11.1	LOS B	5.8	146.6	0.62	0.55	0.76	30.0
6	T1	289	2.0	0.296	6.1	LOS A	1.4	36.0	0.42	0.31	0.42	34.7
16	R2	40	2.0	0.296	6.1	LOS A	1.4	36.0	0.42	0.31	0.42	33.6
Approach		1003	2.0	0.605	9.4	LOS A	5.8	146.6	0.56	0.47	0.65	31.3
North: 65th Ave												
7	L2	94	2.0	0.932	52.3	LOS F	12.5	316.4	0.95	1.67	3.46	20.1
4	T1	141	2.0	0.932	52.3	LOS F	12.5	316.4	0.95	1.67	3.46	20.1
14	R2	248	2.0	0.932	52.3	LOS F	12.5	316.4	0.95	1.67	3.46	19.7
Approach		483	2.0	0.932	52.3	LOS F	12.5	316.4	0.95	1.67	3.46	19.9
West: Elligsen Rd												
5	L2	41	2.0	0.533	17.0	LOS C	3.1	79.6	0.79	0.93	1.25	29.4
2	T1	96	2.0	0.533	17.0	LOS C	3.1	79.6	0.79	0.93	1.25	29.3
12	R2	143	2.0	0.533	17.0	LOS C	3.1	79.6	0.79	0.93	1.25	28.6
Approach		280	2.0	0.533	17.0	LOS C	3.1	79.6	0.79	0.93	1.25	28.9
All Vehicles		2527	2.0	0.932	20.1	LOS C	12.5	316.4	0.72	0.86	1.42	27.5

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Roundabout LOS Method: Same as Sign Control.

Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.

LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).

Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).

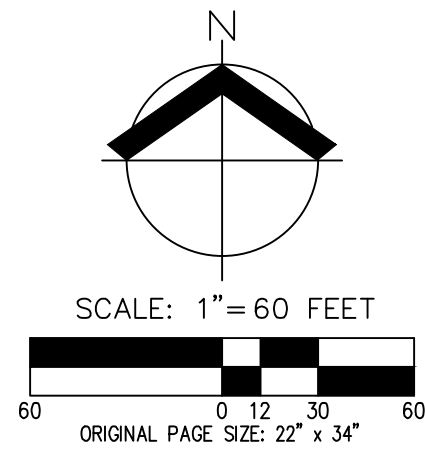
Roundabout Capacity Model: US HCM 6.

HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.

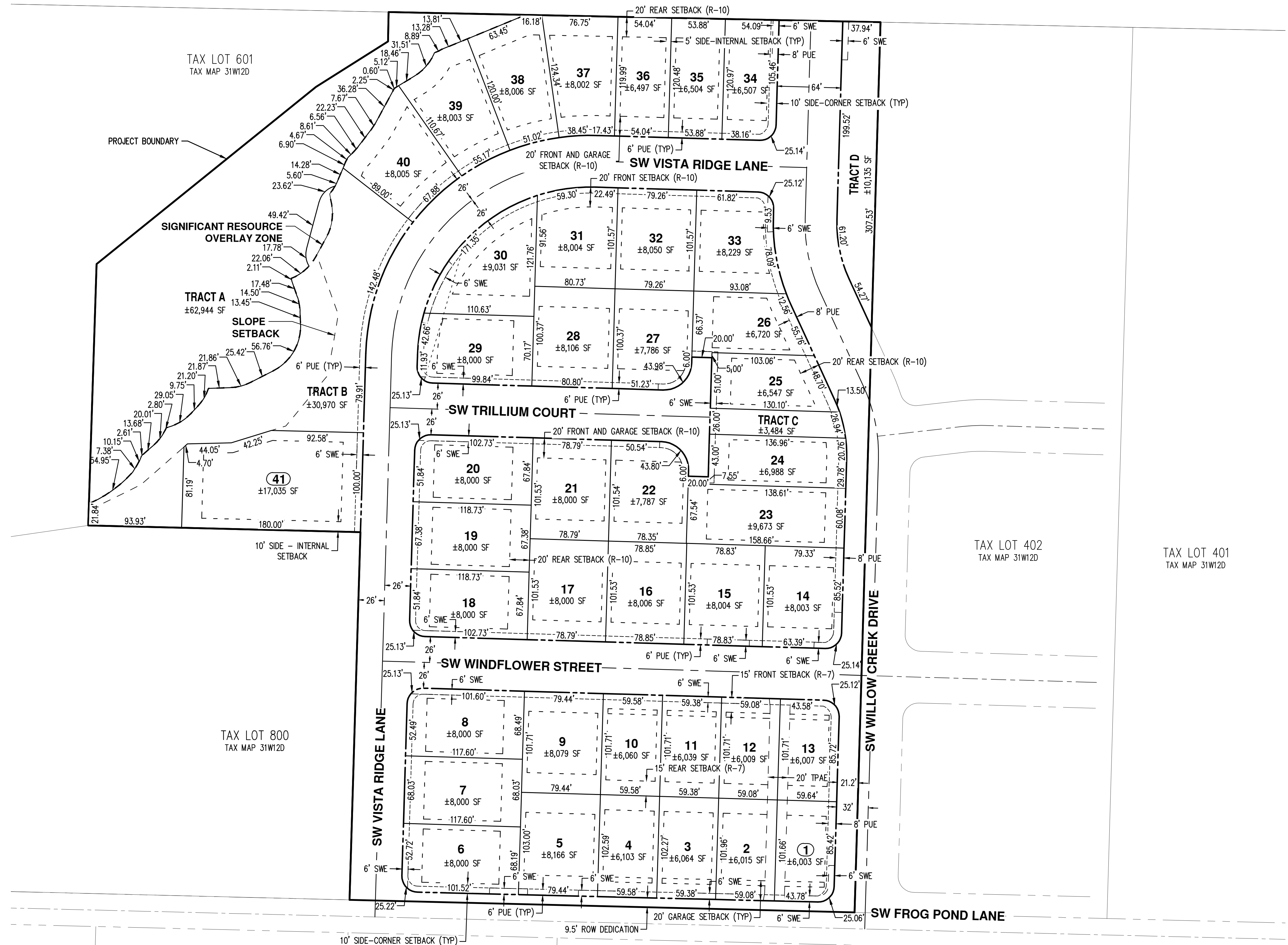
Gap-Acceptance Capacity: Traditional M1.

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

H. SITE PLAN



TAX LOT 801
 TAX MAP 31W12



- NOTES:**
- TRACT A IS FOR OPEN SPACE AND IS SUBJECT TO A PUBLIC ACCESS EASEMENT AND PEDESTRIAN ACCESS EASEMENT OVER ITS ENTIRETY.
 - TRACT B IS FOR STORMWATER TREATMENT, PEDESTRIAN ACCESS, AND LANDSCAPE PURPOSES. IT IS SUBJECT TO STORM DRAINAGE TO BENEFIT THE CITY OF WILSONVILLE OVER ITS ENTIRETY.
 - TRACT C IS FOR PEDESTRIAN PURPOSES AND IS SUBJECT TO A PUBLIC ACCESS EASEMENT, PEDESTRIAN ACCESS EASEMENT, AND WATERLINE EASEMENT OVER ITS ENTIRETY.
 - TRACT D IS FOR OPEN SPACE IS SUBJECT TO A PUBLIC ACCESS EASEMENT AND PEDESTRIAN ACCESS EASEMENT OVER ITS ENTIRETY.

LOT SIZE SUMMARY

	SUBDISTRICT 9 R-7	SUBDISTRICT 8 R-10
MIN. LOT SIZE	6,000 SF	8,000 SF
MIN. REDUCED LOT SIZE*	-	6,400 SF
AVG. LOT SIZE	6,037 SF	8,113 SF

*MINIMUM REDUCED LOT AREA FOR TREE PRESERVATION

SUMMARY OF LAND USES

LAND USE	SF	PERCENTAGE OF PROPERTY
1. GROSS AREA IN PLAT	557,374	-
2. LANDSCAPE COVERAGE AREA/OPEN SPACE	101,659	18%
3. ROW	133,804	24%
4. LOT AREA	316,037	57%
5. STORMWATER TREATMENT FACILITY	5,874	1%

SETBACKS

	R-7	R-10	LOT 41
FRONT	15 FT	20 FT	20 FT
REAR	15 FT	20 FT	20 FT
SIDE - INTERNAL	5 FT	5 FT	10 FT
SIDE - CORNER	10 FT	10 FT	10 FT
GARAGE - FROM ALLEY	18 FT	18 FT	18 FT
GARAGE - FROM STREET	20 FT	20 FT	20 FT

EASEMENT LEGEND

- PUE PUBLIC UTILITY EASEMENT
- SWE SIDEWALK EASEMENT
- PAUE PUBLIC ACCESS AND UTILITY EASEMENT
- TPAE TEMPORARY PUBLIC ACCESS EASEMENT

PRELIMINARY DIMENSIONED P.U.D. PLAN
FROG POND VISTA
VENTURE PROPERTIES, INC.
WILSONVILLE, OREGON



REVISIONS: DECEMBER 31, 2021
 JOB NUMBER: 7530
 DATE: 10/13/2021
 DESIGNED BY: NLB
 DRAWN BY: JJA
 CHECKED BY: AJD

Exhibit F: Abbreviated Significant Resource Impact Report

Frog Pond Vista Abbreviated Significant Resource Impact Report (SRIR)

Date: December 2021

Prepared for: Venture Properties, Inc.
4230 SW Galewood Street, Suite 100
Lake Oswego, OR

Prepared by: AKS Engineering & Forestry, LLC
Sonya Templeton, Natural Resource Specialist
Stacey Reed, PWS, Senior Wetland Scientist
503-563-6151 | stacey@aks-eng.com

Site Information: 6901 SW Frog Pond Lane
Wilsonville, Clackamas County, Oregon
Clackamas County Assessor's Map 3 1 W 12D
Tax Lot 500

AKS Job Number: 7530



12965 SW Herman Road, Suite 100
Tualatin, OR 97062
(503) 563-6151

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- Figure 1A:** USGS Vicinity Map
- Figure 1B:** USGS Vicinity Map
- Figure 2:** Tax Lot Map
- Figure 3:** NRCS Soils Map
- Figure 4:** National Wetlands Inventory (NWI) Map
- Figure 5:** Wilsonville 2009 SROZ Map
- Figure 6:** Natural Resource Existing Conditions Map
- Figure 7:** Natural Resource Site Plan

Appendices

- Appendix A:** Representative Site Photographs
 - Appendix B:** Planting Specifications Table
-

Introduction

AKS Engineering & Forestry, LLC (AKS) was contracted by Venture Properties, Inc. to prepare an Abbreviated Significant Resource Impact Report (SRIR) for the Frog Pond Vista residential development project located at 6901 SW Frog Pond Lane in Wilsonville, Clackamas County, Oregon. The project site consists of Tax Lot 500 of Clackamas County Assessor's Map 3 1 W 12D (Figures 1 and 2). The project site is located within the Frog Pond West Neighborhood of the Frog Pond Urban Growth Boundary (UGB), added to the City of Wilsonville in 2002. The Frog Pond Vista residential project consists of a 40-lot, single-family residential community located north and west from the Frog Pond Meadows residential development project (approved under City File DB 18-0060).

A portion of an unnamed tributary to Boeckman Creek (Primary Protected Water Feature) was delineated on the project site. The tributary and adjacent riparian area within the project site is mapped as Significant Natural Resource Overlay Zone (SROZ) on the City's 2009 SROZ map. No wetlands were determined to be present on-site above the ordinary high water mark (OHWM) of the tributary. Slopes adjacent to the tributary are greater than 25 percent for less than 150 feet, requiring the Area of Limited Conflicting Use (ALCU) to extend 50 feet past the break in slope to less than 25 percent. The City requires a 25-foot-wide Significant Resource (SR) Impact Area setback to extend from the edge of the SROZ boundary. Our delineation of SROZ on the site is generally consistent with the City's 2009 SROZ map; therefore, the applicant is not requesting a map amendment.

No impacts will occur within the tributary to Boeckman Creek or within the Riparian Impact Area. Permanent impacts are necessary within portions of the outer edges of the ALCU and the 25-foot-wide SR Impact Area setback for a stormwater facility and 10-foot-wide paved pedestrian path. According to Sections 4.1.39.04.05 and 0.8 of the City's SROZ Ordinance, both development activities within SROZ are considered allowed uses under the City's SROZ exemption code. Impacts within the ACLU will be mitigated for through enhancement plantings on-site. A mitigation plan has been prepared with this report in accordance with the mitigation standards under Section 4.139.07 of the City's SROZ Ordinance.

This report has been prepared to meet Section 4.139.06 of the City of Wilsonville's Significant Resource Overlay Zone (SROZ) Ordinance and describes the requirements listed under Section 4.139.06.01 A-I of Wilsonville's SROZ Ordinance.

Background Information

The site is located within the City of Wilsonville Frog Pond West Neighborhood Planning area. The project site is ±12.80 acres in size and is in the Foothills of the Willamette Valley ecoregion. Topography on the site has a gentle (less than 5 percent overall) slope westerly toward the tributary to Boeckman Creek where slopes adjacent to the creek are steep (greater than 40 percent overall).

The following non-hydric soil units are mapped within the project area, according to the Natural Resources Conservation Service (NRCS) Clackamas County Area Soil Survey Map and Clackamas County Hydric Soils List (Figure 3):

- (Unit 1A) Aloha silt loam, 0 to 3 percent slopes; Non-hydric
- (Unit 91B) Woodburn silt loam, 3 to 8 percent slopes; Non-hydric
- (Unit 91C) Woodburn silt loam, 8 to 15 percent slopes; Non-hydric

-
- (Unit 92F) Xerochrepts and Haploxerolls, very steep slopes; Non-hydric

The project site is located within the Coffee Lake Creek-Willamette River watershed (HUC 1709000070402). Upland runoff on the site drains northwesterly to a tributary fork of Boeckman Creek, located in the northwestern portion of the site. The tributary to Boeckman Creek continues off site to the northeast and southwest and has a direct surface water connection to the Willamette River, located over 2 miles south of the project site.

One single-family residences and detached barns and outbuildings are present in the northeastern portion of the site. The remainder of the site is undeveloped consisting of an open pasture dominated by upland non-native grasses and forbs. A sanitary septic line extends from the existing structures towards the tributary to Boeckman Creek.

Wetlands and Waters Mapping

Wilsonville Local Wetland and Riparian Inventory Maps: The project site is not within the City of Wilsonville's 1998 Local Wetland Inventory (LWI) or Riparian Corridor Inventory map boundaries.

National Wetland Inventory Map: According to the US Fish and Wildlife Service (USFWS) National Wetland Inventory (NWI) map, a linear freshwater forested/shrub wetland is mapped along the northwestern site boundary (Figure 4). Our study determined a tributary to Boeckman Creek to be present in the vicinity of the NWI-mapped feature; however, no wetland conditions were determined to be present above the OHWM of the creek.

City of Wilsonville Significant Resource Overlay Zone (SROZ) Map: According to the City's 2009 SROZ map, SROZ extends into the northwestern portion of the site (Figure 5). Our delineation determined on-site SROZ is generally consistent with the City's 2009 SROZ map.

SROZ Delineation Methodology

AKS Senior Wetland Scientist Stacey Reed, PWS and Natural Resource Specialist Sonya Templeton conducted a site visit on February 24, 2021 to determine if wetlands were present and delineate the on-site portions of any non-wetland waters. The methodology used to determine the presence of wetlands followed the *Corps of Engineers Wetlands Delineation Manual* (Environmental Laboratory, 1987) and the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys, and Coast Region (Version 2.0)* (Wakeley et al., 2010). The *National Wetland Plant List 2018* (USACE, 2018) was used to assign wetland indicator status for the appropriate region.

AKS delineated the on-site portion of the left (south) bank associated with the tributary to Boeckman Creek on the project site. The right (north) bank was located off-site. The on-site OHWM/top of stream bank was flagged in the field and professionally land surveyed by AKS and is included as Figure 6, Natural Resource Existing Conditions Map.

The OHWM was delineated according to Oregon Administrative Rule (OAR) 141-085-0515-(3) based on physical indicators observed in the field including scour, sediment deposits, wrack, and change in vegetation community. On-site portions were generally flagged along the stream top of bank. Off-site portions were hand mapped based on off-site Lidar contours and aerial imagery on the change in vegetation community that coincided with the topographic Lidar change.

Representative site photographs are included in Appendix A. A list of references is included at the end of the report.

Significant Waters

The tributary to Boeckman Creek flows southwesterly immediately off-site to the north, meandering into the northwest corner of the project site. Within the project site, the creek averages ± 4 -foot-wide channel bed with up to 1-foot-tall banks. The channel bed is unvegetated and dominated by a silt loam substrate lacking gravels and cobbles. Within (and immediately adjacent to) the project site, the channel lacks in-stream habitat (large woody debris) and pool and riffle complexes. The channel contained an average of approximately 6-inch-deep continuous flow during our February 24, 2021 site visit. The on-site riparian community is described in the Significant Riparian Corridor section below. The tributary and riparian corridor were determined to be locally significant, as mapped on the City's 2009 SROZ map.

The site was dominated by non-hydrophytic vegetation. There are no NRCS hydric soils mapped on the site. There was no evidence of surface ponding or saturation above the OHWM of the creek during our February 2021 site visit.

Significant Riparian Corridor

The riparian corridor boundary was established per Section 4.139.00, as defined in Figure NR-1: Riparian Corridor Type NR-1 (stream-riparian ecosystem). The slopes adjacent to the tributary exceed 25 percent for less than 150 feet, requiring the ALCU to extend 50 feet past the break in slope to less than 25 percent. Slope measurements and the extent of SROZ are shown on attached Figure 6.

The riparian corridor was dominated Douglas fir (*Pseudotsuga menziesii*; FACU) trees with scattered bigleaf maple (*Acer macrophyllum*; FACU) and Western red cedar (*Thuja plicata*; FAC) trees and saplings. Invasive Himalayan blackberry (*Rubus armeniacus*, FAC) was mainly dominant in the understory with some beaked hazelnut (*Corylus cornuta*; FACU). Stumps were present in the outer edges of the riparian corridor, indicating the site had been historically logged.

The ALCU was dominated by non-native grasses generally lacking tree canopy and woody vegetation. One Oregon white oak tree is present in the outer edges of the ALCU. The ALCU can be considered to provide "degraded" functional support to the tributary to Boeckman Creek.

Project

The project consists of single-family residential development consistent with the City's Frog Pond West Master Plan. The project requires permanent encroachment into the portion of the ALCU and the adjacent SR Impact Area setback for exempt development activities (pedestrian trail and stormwater facility). No non-exempt development activities will occur with SROZ or within the 25-foot-wide SR Impact Area, as shown on the Natural Resource Site Plan (Figure 7).

According to Section 4.139.04(8) of the City's SROZ ordinance, construction of new pedestrian paths to cross or provide access to the SROZ are exempt if they are consistent with the Wilsonville Comprehensive Plan and conform to the submittal requirements listed under Section 4.139.06(.01)B-I for an Abbreviated SRIR. The alignment of the pedestrian path is consistent with the City's 2017 Frog Pond West Master Plan. This path will provide access and connectivity among neighborhoods and recreational and education opportunity within the riparian habitat.

According to Section 4.19.04(5), construction and operation of stormwater facilities consistent with the Stormwater Management Plan or City's Comprehensive Plan are exempt from SROZ regulations. There is no practical alternative to the location of the stormwater facility. The design of the facility has been sized to avoid encroachment within the riparian impact area. Due to the degraded condition of the ALCU, the placement and operation of the stormwater facility within SROZ will provide a water quality and habitat benefit through planting the facility with native woody vegetation.

SROZ Impacts

The existing condition of the upland ALCU (outer edge of SROZ) can be described as "degraded" condition (lacking native woody vegetation and tree canopy). The SR Impact Area setback is also dominated by non-native grasses and forbs, lacking tree canopy. Therefore, permanent encroachments into SROZ for the pedestrian trail and stormwater facility are not expected to create a significant functional loss of resources within the City's local watershed. Erosion and sediment control fencing will be set in place prior to site grading to minimize the potential for sedimentation entering the SROZ and tributary.

SROZ Buffer Enhancement Mitigation Plan

On-site enhancement mitigation within the existing ALCU buffer is proposed at a 1:1 ratio to ensure that there are no net loss of riparian and habitat functions and values on-site. The location of the proposed on-site enhancement area is shown on the Natural Resource Site Plan (Figure 7). The enhancement area lacks a tree canopy and woody understory and was dominated by common, non-native grasses and weeds. The removal of invasive and non-native vegetation and the planting of native woody vegetation will provide functions and values that are significantly greater than the degraded habitat that is being affected.

The enhancement planting specification plan included in Appendix B provides a list of recommended native species and quantities in accordance with Section 4.139.07(.02)(E)(1)(b). Throughout all the SROZ buffer enhancement area, native trees will be planted at a rate of five trees per 500 square feet of impact and native woody shrubs will be planted at a rate of 25 shrubs per 500 square feet of impact. The mitigation enhancement will consist of the removal of invasive non-native or noxious species prior to enhancement planting.

Prior to construction, the location of the outer extent of the SROZ buffer to be left undisturbed will be staked and fenced with silt fencing, which will be maintained throughout the duration of construction.

Enhancement Mitigation Monitoring & Maintenance Plan

To meet the City of Wilsonville's mitigation requirements listed under Section 4.139.07, woody enhancement plantings will be monitored and maintained for a minimum of five full growing seasons beginning after installation of plantings. Monitoring will consist of establishing an appropriate number of monitoring plot locations across the mitigation area to be assessed in Years 1, 2, 3, 4 and 5. At each plot, the survivorship of planted shrubs and trees; cover of planted or naturally recruited native shrubs and trees; cover of invasive and nonnative species; and general site observations will be recorded. Representative site photographs will be taken from established photo points across the mitigation area. Vegetation monitoring plot and photo point locations will be determined during the first monitoring year.

Monitoring reports will be submitted to the City by November 1, following the growing seasons of Years 1, 2, 3, 4, and 5. The first-year monitoring report will confirm whether the impacted areas were seeded and planted appropriately to restore buffer functions. The monitoring report will consist of photographs and a discussion of performance standards, maintenance activities, problems and successes, and any

maintenance needs or contingency actions necessary to ensure success of the mitigation project. Success will be achieved when monitoring results indicate that performance standards are being met at the end of the five-year monitoring period, or thereafter as necessary.

Performance Standards

1. Within the buffer enhancement mitigation area, native tree and shrub plantings shall maintain 80 percent survival in years one through five.
2. Within the buffer enhancement mitigation area, there will be at least 20 percent aerial cover for all native trees and shrubs after five growing seasons.
3. Invasive and noxious weeds, including Himalayan blackberry, will not exceed 10 percent aerial cover in the buffer enhancement mitigation area during all monitoring years.
4. Enhancement mitigation area will provide diverse habitat structure supporting a diversity of wildlife.

Per Section 4.139.07(.02)(E)(7), trees and shrubs that die shall be replaced in kind to the extent necessary to ensure that a minimum of 80 percent of the trees and shrubs initially planted shall remain alive on year five of the date the enhancement plantings were completed.

Report Preparer and Qualifications

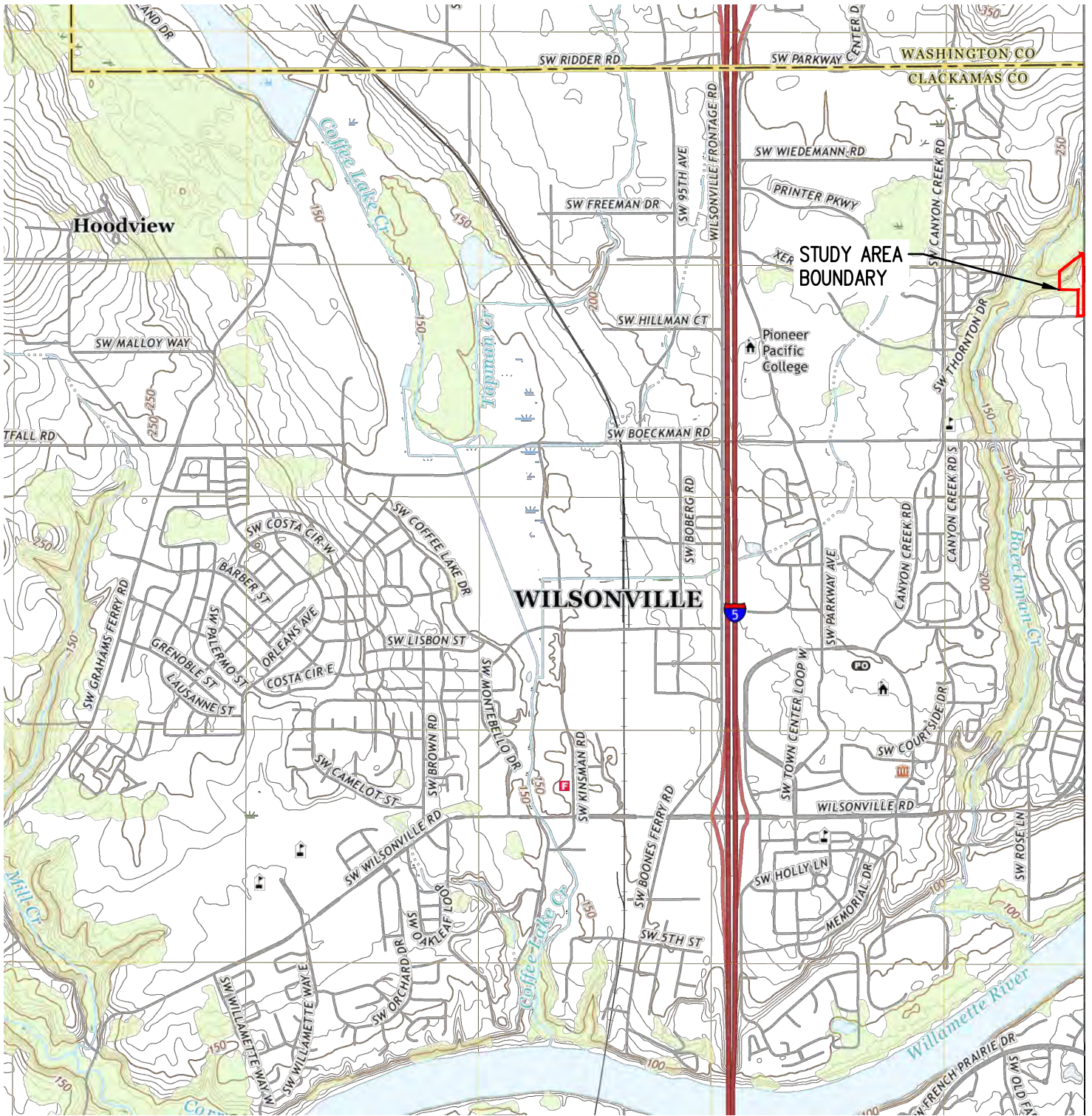


Stacey Reed, PWS
Senior Wetland Scientist
Fieldwork and Report Preparation

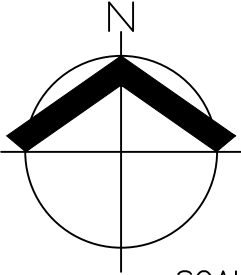
Stacey Reed is a certified Professional Wetland Scientist (PWS) with more than 20 years of experience delineating wetlands and waters, conducting wetland and stream function and value assessments, and prepare natural resource assessments throughout Oregon.

Literature Cited and Referenced

- Natural Resources Conservation Service (NRCS). 2006. *Hydric Soils List: Clackamas County, Oregon*. Washington (DC): US Department of Agriculture.
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USGS 7.5' TOPOGRAPHIC SERIES
 QUADRANGLE: SHERWOOD, OR (2020)



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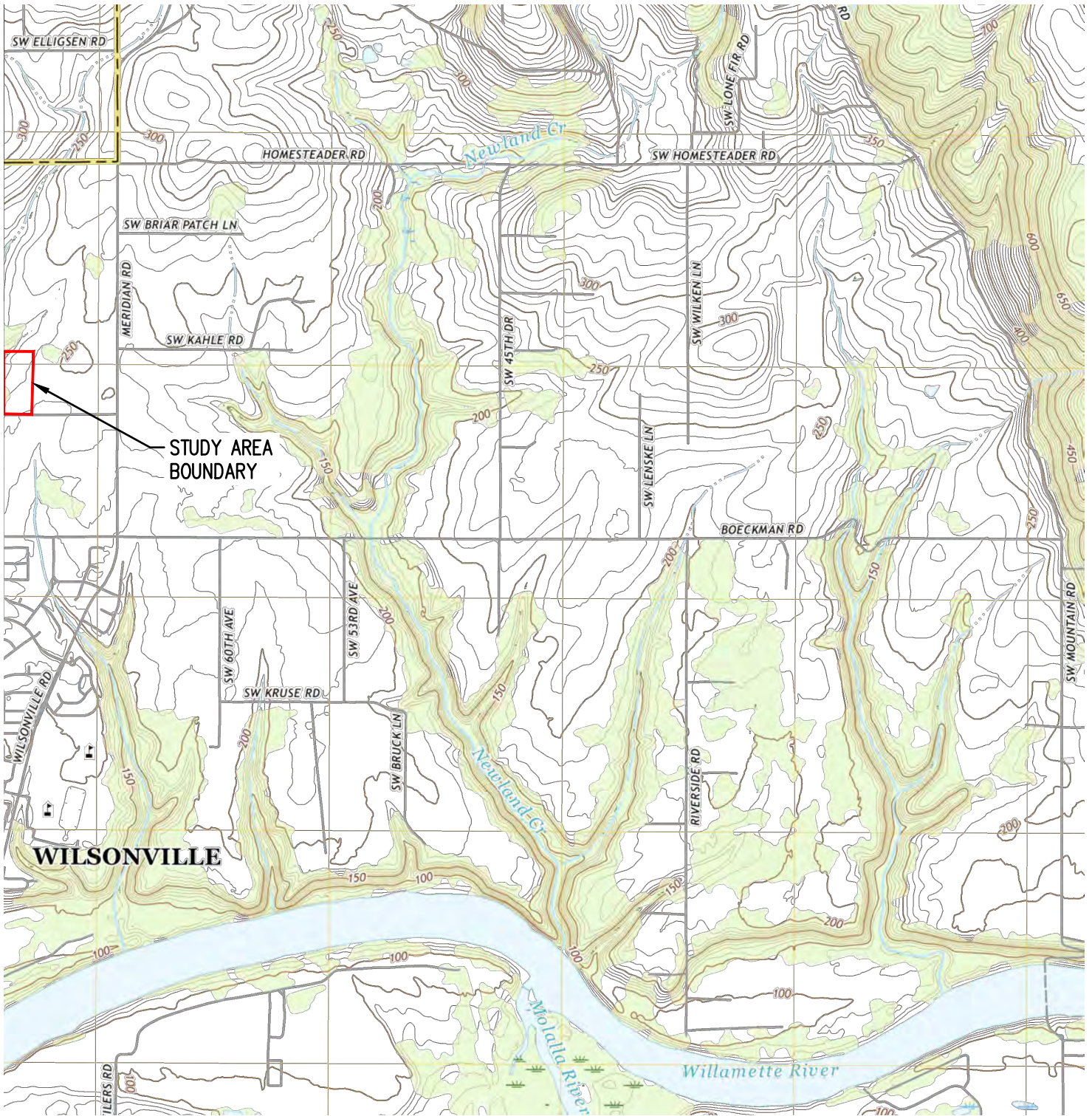


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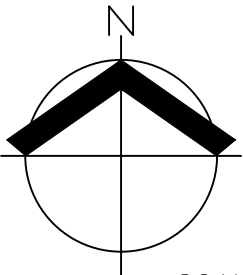
DATE: 07/15/2021

USGS VICINITY MAP FROG POND VISTA RESIDENTIAL DEVELOPMENT ABBREVIATED SRIR		FIGURE 1A
AKS ENGINEERING & FORESTRY, LLC 12965 SW HERMAN RD, STE 100 TUALATIN, OR 97062 503.563.6151 WWW.AKS-ENG.COM		DRWN: SKT CHKD: SAR AKS JOB: 7530





USGS 7.5' TOPOGRAPHIC SERIES
 QUADRANGLE: CANBY, OR (2020)



SCALE: 1" = 2000 FEET



DATE: 07/15/2021

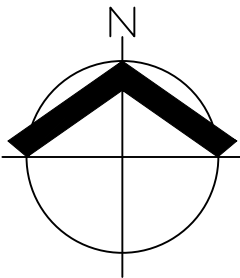
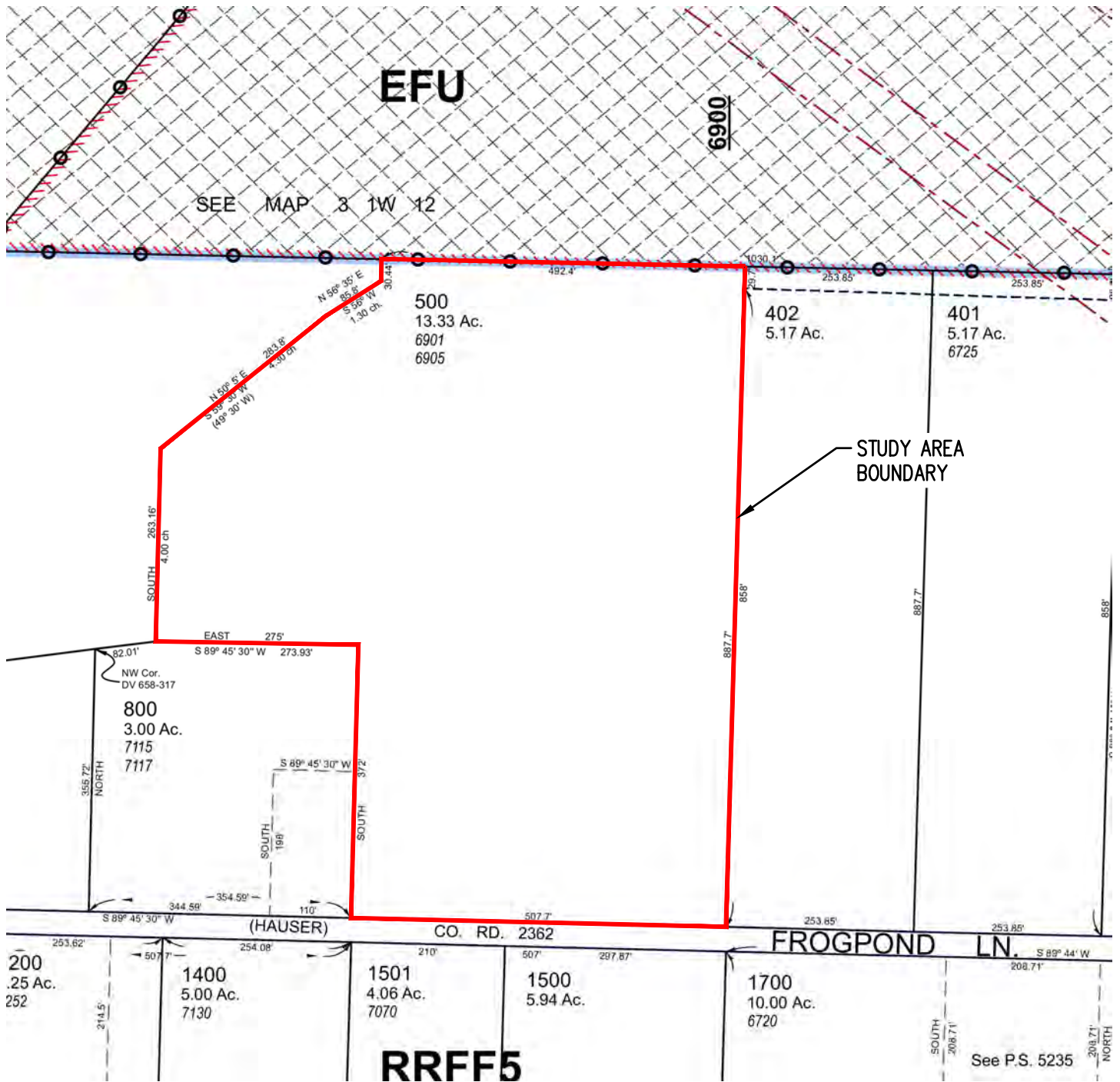
USGS VICINITY MAP
 FROG POND VISTA RESIDENTIAL DEVELOPMENT ABBREVIATED SRIR

FIGURE
1B

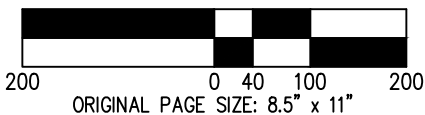
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DRWN: SKT
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SCALE: 1" = 200 FEET



DATE: 07/15/2021

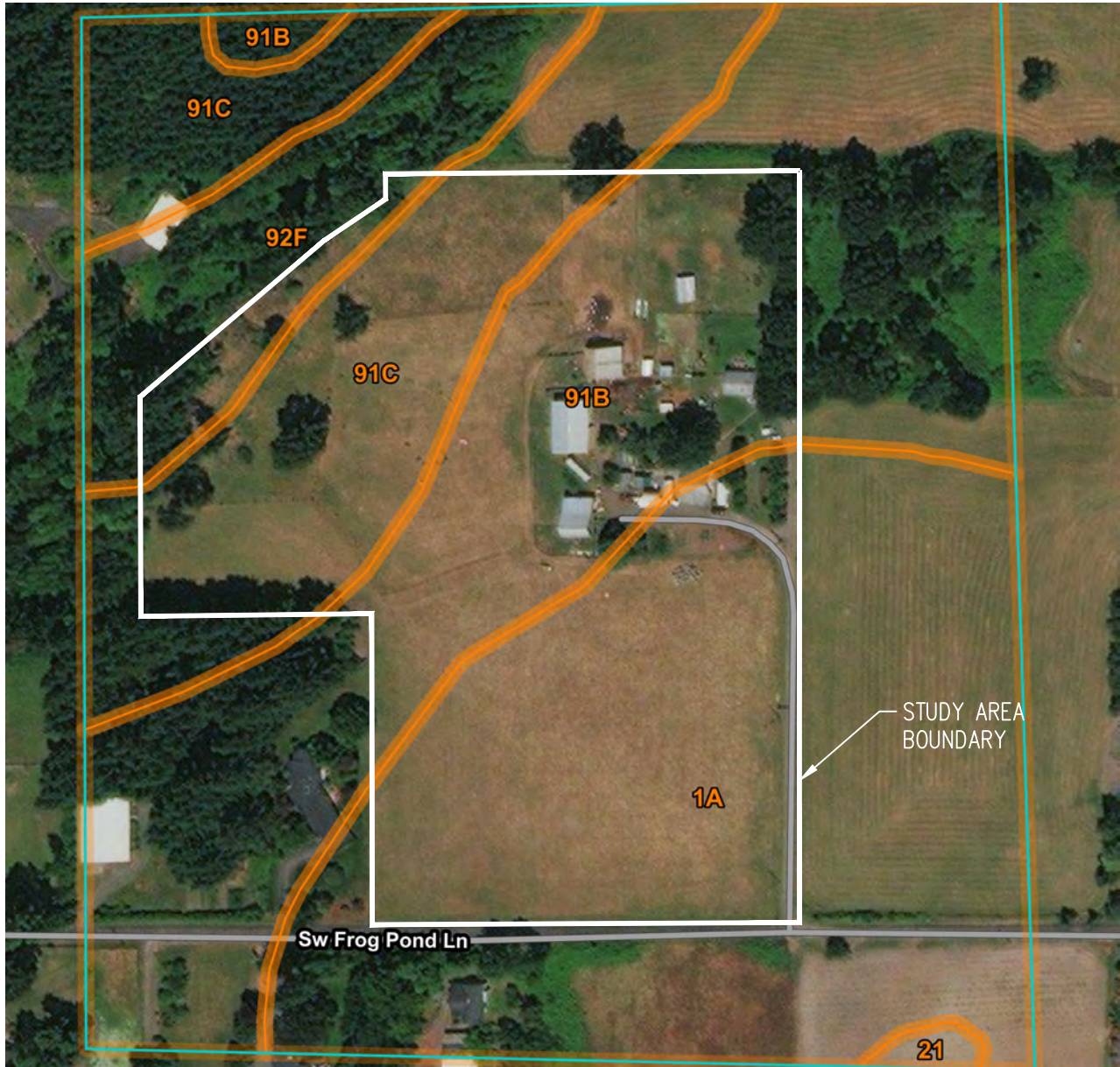
TAX MAP (MAP 3 1 W 12D)
FROG POND VISTA RESIDENTIAL DEVELOPMENT ABBREVIATED SRIR

FIGURE
2

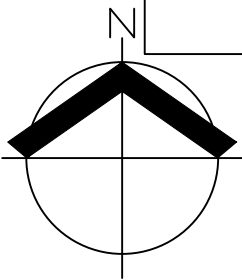
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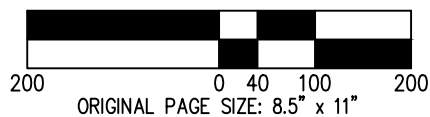


MAP UNIT SYMBOL	MAP UNIT NAME
1A	ALOHA SILT LOAM, 0% TO 3% SLOPES; NON-HYDRIC
91B	WOODBURN SILT LOAM, 3% TO 8% SLOPES; NON-HYDRIC
91C	WOODBURN SILT LOAM, 8% TO 15% SLOPES; NON-HYDRIC
92F	XEROCHREPTS AND HAPLOXEROLLS, VERY STEEP SLOPES; NON-HYDRIC



NRCS WEB SOIL SURVEY FOR
CLACKAMAS COUNTY

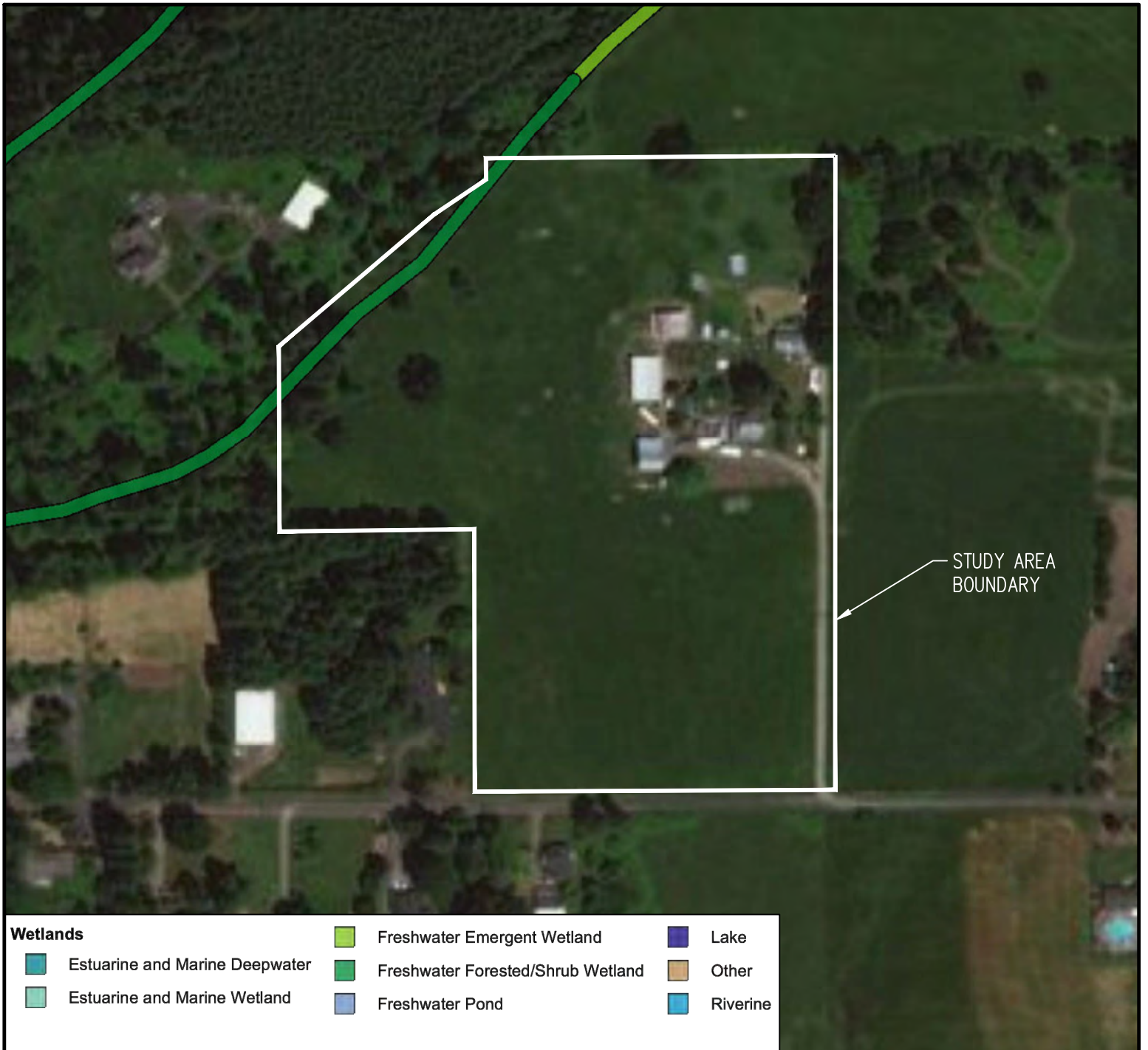
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DATE: 07/15/2021

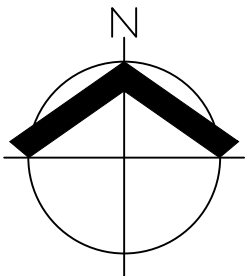
NRCS SOIL SURVEY MAP FROG POND VISTA RESIDENTIAL DEVELOPMENT ABBREVIATED SRIR		FIGURE 3
AKS ENGINEERING & FORESTRY, LLC 12965 SW HERMAN RD, STE 100 TUALATIN, OR 97062 503.563.6151 WWW.AKS-ENG.COM		DRWN: SKT CHKD: SAR AKS JOB: 7530



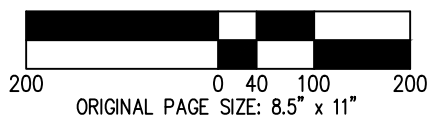


Wetlands					
	Estuarine and Marine Deepwater		Freshwater Emergent Wetland		Lake
	Estuarine and Marine Wetland		Freshwater Forested/Shrub Wetland		Other
			Freshwater Pond		Riverine

US FISH & WILDLIFE SERVICE
NATIONAL WETLANDS INVENTORY



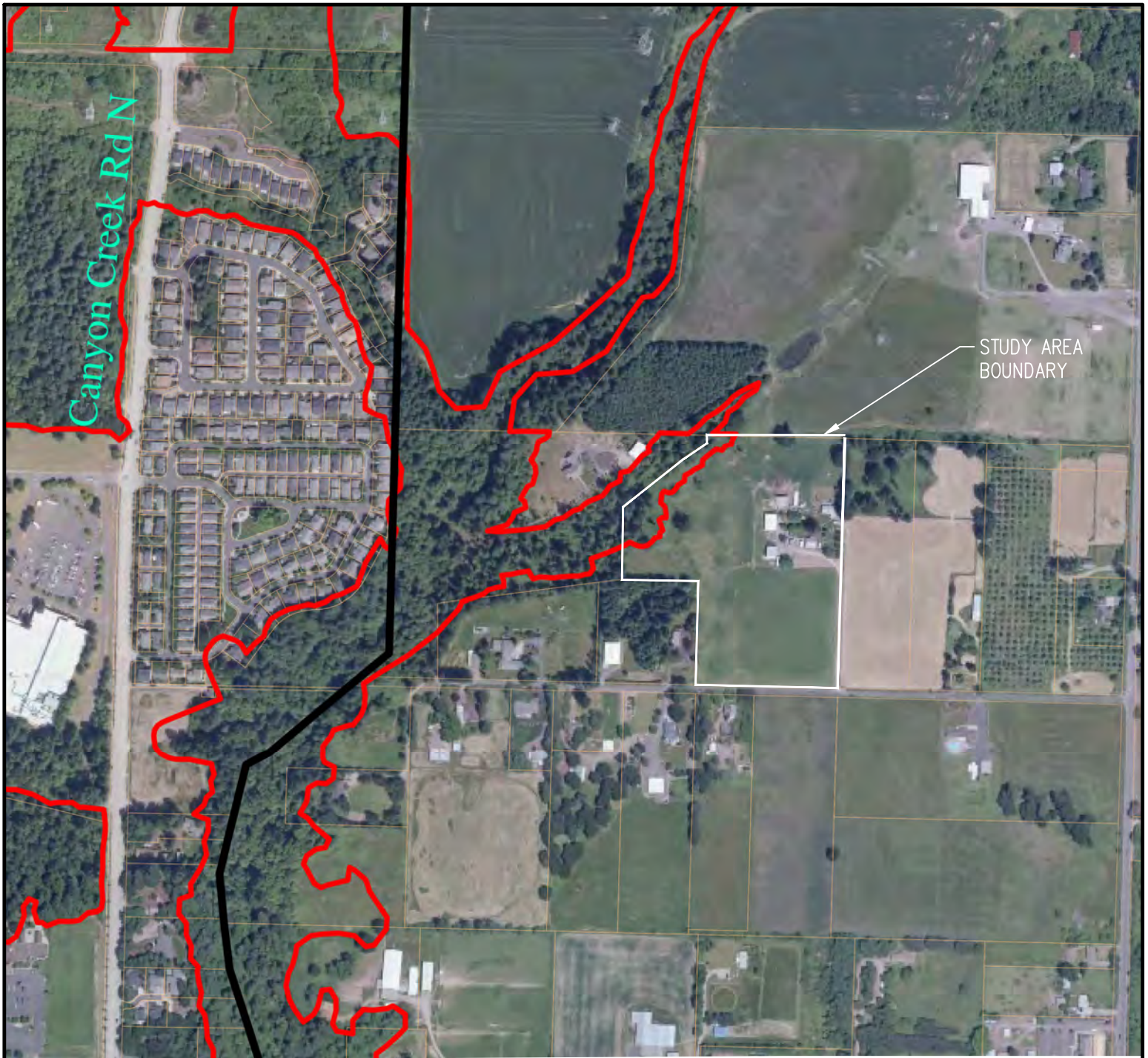
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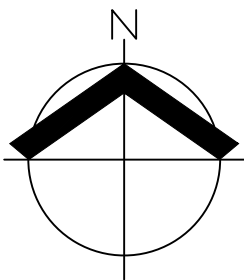
DATE: 07/15/2021

NATIONAL WETLANDS INVENTORY MAP FROG POND VISTA RESIDENTIAL DEVELOPMENT ABBREVIATED SRIR		FIGURE 4
AKS ENGINEERING & FORESTRY, LLC 12965 SW HERMAN RD, STE 100 TUALATIN, OR 97062 503.563.6151 WWW.AKS-ENG.COM		DRWN: SKT CHKD: SAR AKS JOB: 7530

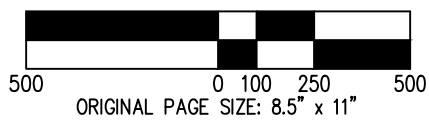




CITY OF WILSONVILLE
SIGNIFICANT RESOURCE OVERLAY ZONE



SCALE: 1" = 500 FEET



DATE: 07/15/2021

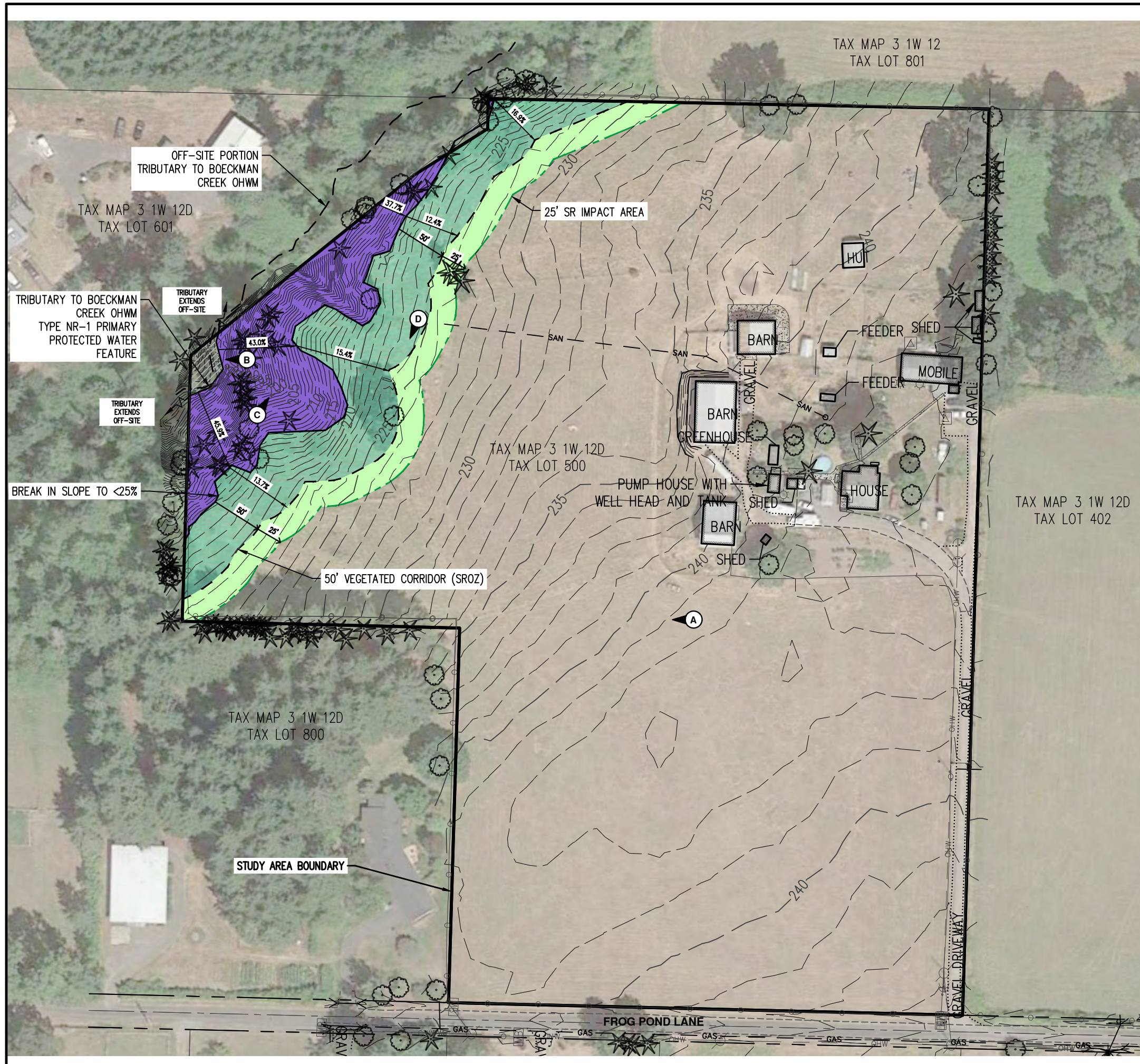
SROZ MAP
FROG POND VISTA RESIDENTIAL DEVELOPMENT ABBREVIATED SRIR

FIGURE
5

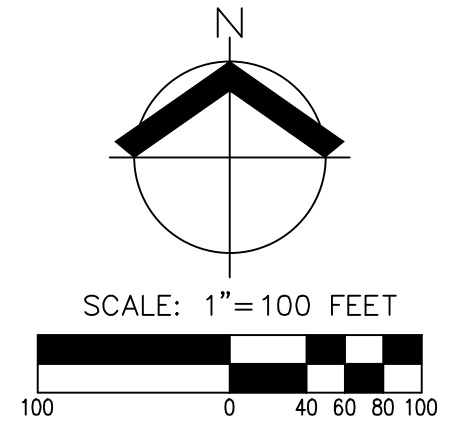
AKS ENGINEERING & FORESTRY, LLC
12965 SW HERMAN RD, STE 100
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503.563.6151 WWW.AKS-ENG.COM



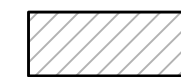

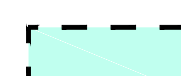
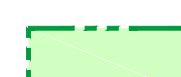

DRWN: SKT
CHKD: SAR
AKS JOB:
7530



HIGH RESOLUTION ORTHO
IMAGERY JULY 2019



LEGEND (COLOR COPY):

-  ON-SITE PORTION OF TRIBUTARY TO BOECKMAN CREEK: 1,250 SF± / 81 LF± (0.03 ACRES±)
-  RIPARIAN IMPACT AREA: 26,466 SF± (0.61 ACRES±)
-  AREA OF LIMITED CONFLICTING USE: 36,204 SF± (0.83 ACRES±)
-  25' SIGNIFICANT RESOURCE (SR) IMPACT AREA: 18,697 SF± (0.43 ACRES±)
-  PHOTO LOCATION & ORIENTATION

ON-SITE WATER BOUNDARY SHOWN WAS DELINEATED BY AKS ENGINEERING & FORESTRY, LLC (AKS) ON FEBRUARY 24, 2021 AND WAS PROFESSIONALLY LAND SURVEYED BY AKS ON FEBRUARY 25, 2021 .

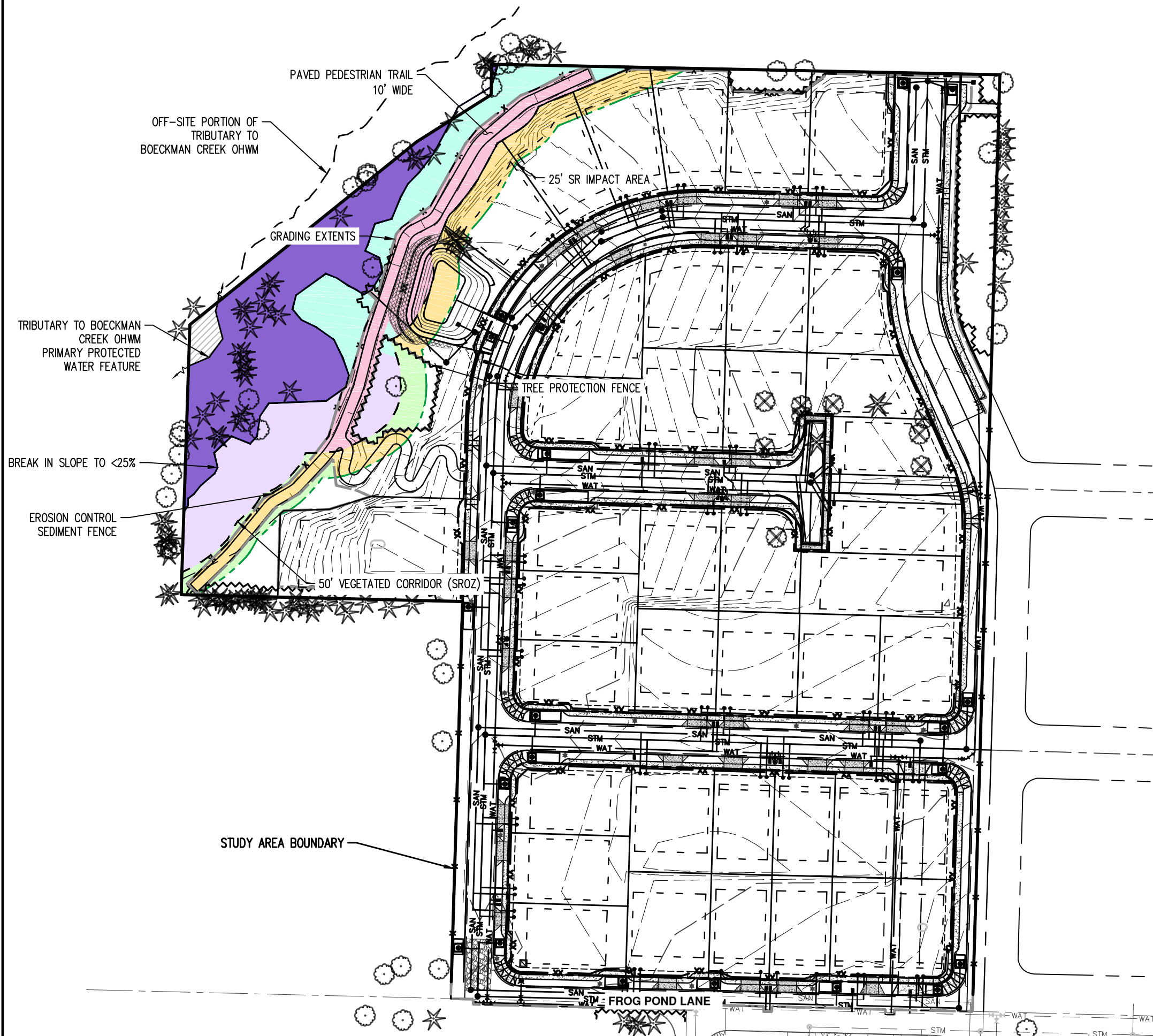
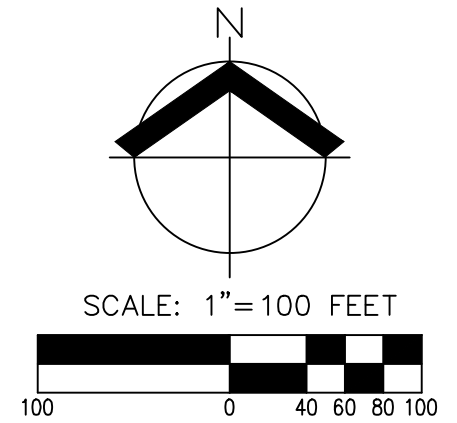
1-FOOT INTERVAL GROUND CONTOURS, EXISTING CONDITIONS, TREES >6" DBH, AND STUDY AREA BOUNDARY DERIVED FROM AKS PROFESSIONAL LAND SURVEY.

DATE: 07/15/2021

NATURAL RESOURCE EXISTING CONDITIONS	FIGURE
FROG POND VISTA RESIDENTIAL DEVELOPMENT ABBREVIATED SRIR	6
AKS ENGINEERING & FORESTRY, LLC 12965 SW HERMAN RD, STE 100 TUALATIN, OR 97062 503.563.6151 WWW.AKS-ENG.COM	DRWN: SKT CHKD: SAR AKS JOB: 7530



HIGH RESOLUTION ORTHO
IMAGERY JULY 2019



LEGEND (COLOR COPY):

- ON-SITE PORTION OF TRIBUTARY TO BOECKMAN CREEK: 1,250 SF± / 81 LF± (0.03 ACRES±)
- AREA OF LIMITED CONFLICTING USE EXEMPT IMPACTS: 12,658 SF± (0.29 ACRES±)
- SIGNIFICANT RESOURCE (SR) IMPACT AREA EXEMPT IMPACTS: 14,220 SF± (0.33 ACRES±)
- RIPARIAN IMPACT AREA TO REMAIN: 26,466 SF± (0.61 ACRES±)
- AREA OF LIMITED CONFLICTING USE TO REMAIN: 10,888 SF± (0.25 ACRES±)
- SR IMPACT AREA TO REMAIN: 4,477 SF± (0.10 ACRES±)
- ENHANCEMENT AREA (1:1 RATIO): 12,658 SF± (0.29 ACRES±)
- REMOVAL OF TREES GREATER THAN 6" DBH

ON-SITE WATER BOUNDARY SHOWN WAS DELINEATED BY AKS ENGINEERING & FORESTRY, LLC (AKS) ON FEBRUARY 24, 2021 AND WAS PROFESSIONALLY LAND SURVEYED BY AKS ON FEBRUARY 25, 2021.

DATE: 12/06/2021

NATURAL RESOURCE SITE PLAN	FIGURE
FROG POND VISTA RESIDENTIAL DEVELOPMENT ABBREVIATED SRIR	7
AKS ENGINEERING & FORESTRY, LLC 12965 SW HERMAN RD, STE 100 TUALATIN, OR 97062 503.563.6151 WWW.AKS-ENG.COM	DRWN: SKT CHKD: SAR AKS JOB: 7530



Appendix A: **Representative Site Photographs**



Photo A. View west of upland field dominated by pasture grasses and common, non-native, upland forbs.



Photo B. View west of Tributary to Boeckman Creek dominated by Himalayan blackberry on the adjacent banks.



Photo C. View north of the steep riparian corridor.



Photo D. View south of the Area of Limited Conflicting Use with the riparian corridor to the west.

Appendix B:
Planting Specifications Table

Frog Pond Vista –Enhancement Planting Specifications

Planting specifications for ±12,658 square feet of enhancement within the ACLU buffer.

Scientific Name	Common Name	Size*	Spacing/Seeding Rate	Quantity
Trees (total 127)**				
<i>Acer macrophyllum</i>	bigleaf maple	2 gallon	10 feet on center	30
<i>Quercus garryana</i>	Oregon white oak	2 gallon	10 feet on center	30
<i>Pseudotsuga menziesii</i>	Douglas-fir	2 gallon	10 feet on center	30
<i>Rhamnus Purshina</i>	cascara	2 gallon	10 feet on center	20
<i>Cornus nuttalli</i>	Pacific dogwood	2 gallon	10 feet on center	17
Shrubs (total 633)**				
<i>Symphoricarpus albus</i>	snowberry	1 gallon	4-5 feet on center	120
<i>Mahonia aquifolium</i>	tall Oregon grape	1 gallon	4-5 feet on center	120
<i>Corylus cornuta</i>	beaked hazelnut	1 gallon	4-5 feet on center	99
<i>Polystichum munitum</i>	pineland sword fern	1 gallon	4-5 feet on center	98
<i>Rosa gymnocarpa</i>	baldhip rose	1 gallon	4-5 feet on center	98
<i>Ribes sanguineum</i>	red flowering currant	1 gallon	4-5 feet on center	98
Seed Mix/Plug				
<i>Sunmark Seeds *** (Native E/C Mix)</i>	meadow barley California brome blue wildrye tufted hairgrass spike bentgrass	seed	2 LB/1,000 SF OR 88 LB/AC	As needed for bare soil areas >25 square feet
<i>Sunmark Seeds*** (Ecobiotics Plus Organic Amendment)</i>	N/A	Blend directly with Native E/C Mix	200 LB/AC	As needed for bare soil areas >25 square feet

*Bare root plants may be substituted for container plants based on availability. If bare root plants are used, they must be planted during the late winter/early spring dormancy period.

** Minimum plant quantities ordered.

*** Native E/C Mix and Ecobiotics Plus can be obtained from Sunmark Seeds International or other similar seed supplier.

Planting Notes (Per Section 4.139.06(.02)(E) of the City of Wilsonville’s SROZ Ordinance):

- 1) Container stock shall be installed only from February 1 through May 1 and October 1 through November 15. Bare root stock shall be installed only from December 15 through April 15. Plantings outside these times may require additional measures to ensure survival which shall be specified on the plans.
- 2) All non-native invasive or noxious vegetation shall be removed from planting areas prior to installing native enhancement plantings and shall be removed or controlled for 5 years following the date the enhancement plantings are completed. Invasive species control shall be consistent with The City of Wilsonville 2018 *Integrated Pest Management (IPM) Plan*.
- 3) Appropriate plant selection, along with adequate site preparation and maintenance, reduces the need for irrigation. However, unless site hydrology is currently adequate, a City approved

irrigation system or equivalent (i.e., polymer, plus watering) shall be used during the two-year plant establishment period. Watering shall be at a minimum rate of at least one inch per week from June 15 through October 15.

- 4) Trees, shrubs, and groundcovers planted shall be mulched at a minimum of three inches in depth and 18 inches in diameter, to retain moisture and discourage weed growth around newly installed plant material. Appropriate mulches are made from composted bark or leaves that have not been chemically treated. Browse protection shall be installed on trees and shrubs. Mulching and browse protection shall be maintained during the two-year plant establishment period.
- 5) Trees and shrubs that die shall be replaced in kind to the extent necessary to ensure that a minimum of 80 percent of the trees and shrubs initially planted shall remain alive on year 5 of the date the enhancement plantings were completed.

Exhibit G: Preliminary Stormwater Report

Frog Pond Vista Wilsonville, Oregon Preliminary Stormwater Report

Date: Updated January 2022

Client: Venture Properties, Inc.

Engineering Contact: Monty Hurley, PE
(503) 563-6151 | Monty@aks-eng.com

Prepared By: Vu Nguyen, PE

Engineering Firm: AKS Engineering & Forestry, LLC
12965 SW Herman Road Suite 100
Tualatin, OR 97062

AKS Job Number: 7530



Renewal Date: 6/30/23



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Appendices

Appendix A: Vicinity Map

Appendix B: Pre-developed Catchment Map and Detail

Appendix C: Post-developed Catchment Map and Detail

Appendix D: BMP Sizing Tool Report

Appendix E: Stormwater Facilities Location Map

Appendix F: Emergency Overflow Calculations

Appendix G: Downstream Analysis

Appendix H: Information from the NRCS Soil Survey of Clackamas County, Oregon

Appendix I: Relevant Information

Preliminary Stormwater Report

FROG POND VISTA, CITY OF WILSONVILLE, OREGON

1.0 Purpose of Report

The purpose of this report is to analyze the effect development of Frog Pond Vista will have on the downstream stormwater conveyance system, document the criteria the proposed stormwater system was designed to meet, identify the sources of information on which the analysis was based, detail the design methodology, and document the results of the analysis.

2.0 Project Description

The development is located on Tax Lot 500 of Clackamas County Assessor's Map 3 1W 12D. The subject site is located on the north side of SW Frog Pond Lane in Wilsonville, Oregon. The site area is ±12.80 acres. The site area generally slopes toward the northwest and southeast corner of the site. Stormwater runoff from this development will be collected and routed to new low impact development (LID) stormwater facilities throughout the site to meet City standards for water quality and flow control. Stormwater runoff will discharge to the existing drainage channel on the northwest corner of the site.

3.0 Regulatory Design Criteria

3.1. Water Quality Requirement

Per City of Wilsonville 2015 Stormwater & Surface Water Design & Construction Standards, water quality facilities shall be designed to capture and treat 80 percent of the average annual runoff volume to the maximum extent practicable (MEP) with the goal of removing 70 percent of total suspended solids (TSS). The BMP Sizing Tool addresses these water quality requirements to size stormwater management facilities meeting best management practices (BMPs).

3.2. Flow Control Requirement

Per the 2015 City of Wilsonville *Stormwater & Surface Water Design & Construction Standards*, the duration of peak flow rates from post-development conditions shall be less than or equal to the duration of peak flow rates from pre-developed conditions for all peak flows between 42 percent of the 2-year design storm peak flow rate and the 10-year design storm peak flow rate. The BMP Sizing Tool incorporates these flow control requirements to size stormwater management facilities.

4.0 Design Methodology

The BMP Sizing Tool was used to design and size LID stormwater facilities to meet City standards. The Santa Barbara Urban Hydrograph (SBUH) method will be used to design the stormwater conveyance system. The SBUH method uses the Soil Conservation Service (SCS) Type 1A 24-hour storm. HydroCAD computer software aided in the analysis.

5.0 Design Parameters

5.1. Design Storm

5.1.1. On-Site Inlet and Conduit Sizing

Stormwater inlets for the site will be placed at locations that will adequately capture stormwater runoff from the roadways. The on-site stormwater conduit pipes will be sized with Manning's equation, based on peak flows for the 25-year, 3.9-inch storm event.

5.1.2. Upstream and Off-site Basin

Existing stormwater runoff from a small upstream area (undeveloped condition) near the northeast corner of the site will drain onsite. A stormwater inlet (will be installed at the northwest corner of the site with this development) will adequately capture the offsite stormwater runoff and route it to this developments LID stormwater facility (detention pond).

The stormwater conveyance pipes will be adequately sized (utilize Manning's equation, based on peak flows for the 25-year, with a 3.9-inch storm event) to accommodate the existing stormwater flows generated from this offsite area. The LID stormwater facility was sized with the BMP Sizing Tool to accommodate the offsite area.

5.2. Pre-developed Site Topography and Land Use

5.2.1. Site Topography

The site area is convex, generally sloping toward the northwest and southeast corners of the site. Vegetative cover on the site consists of trees and grass.

5.2.2. Land Use

Currently, there is an existing single-family house and outbuildings on site. All existing structures will be removed for the development.

5.3. Soil Type

The soils on site are classified as Aloha silt loam (hydrologic soil group C/D), Woodburn silt loam (hydrologic soil group C), and Xerochrepts and Haploxerolls (hydrologic soil group B) by the Natural Resources Conservation Service (NRCS) Soil Survey for Clackamas County. Information on this soil type is provided in Appendix H.

5.4. Post-developed Site Topography and Land Use

5.4.1. Site Topography

The post-developed site topography will be altered from the pre-developed site topography to allow the construction of public streets, single-family homes, and other associated infrastructure and features.

5.4.2. Land Use

The post-developed land use will consist of 40 lots for single-family homes, public streets, and stormwater facilities.

5.4.3. Post-Developed Input Parameters

Per City of Wilsonville 2015 Stormwater & Surface Water Design & Construction Standards, each of the detached single-family dwelling lots was assessed with 2,750 square feet of impervious area.

5.5. Infiltration Rate

Per the infiltration test result prepared by GeoPacific Engineering, Inc. dated May 4, 2021, falling-head infiltration testing conducted on the project site demonstrated a measured infiltration rate of 0.0 inches per hour.

6.0 Calculation Methodology

6.1. Proposed Stormwater Conduit Sizing and Inlet Spacing

The on-site stormwater conduit pipes will be sized using Manning's equation for the 25-year, 3.9-inch storm event. Stormwater inlets will be placed at locations to adequately capture stormwater runoff from the streets.

6.2. Proposed Stormwater Quality Facility Design

The new vegetated swales and detention pond will provide water quality management for stormwater runoff from impervious areas within the new street right-of-way and roof areas.

These LID stormwater facilities were sized with the BMP Sizing Tool to accommodate flows generated by developed areas of the subject property in compliance with City water quality requirements (described in Section 3.1)

6.3. Proposed Stormwater Flow Control Facility Design

The new detention pond will provide flow control management for stormwater runoff from impervious areas within the new street right-of-way and roof areas.

The LID stormwater facility was sized with the BMP Sizing Tool to accommodate flows generated by developed areas of the subject property in compliance with City flow control requirements (described in Section 3.2).

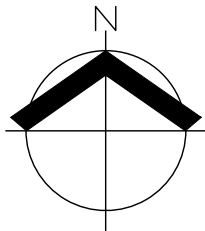
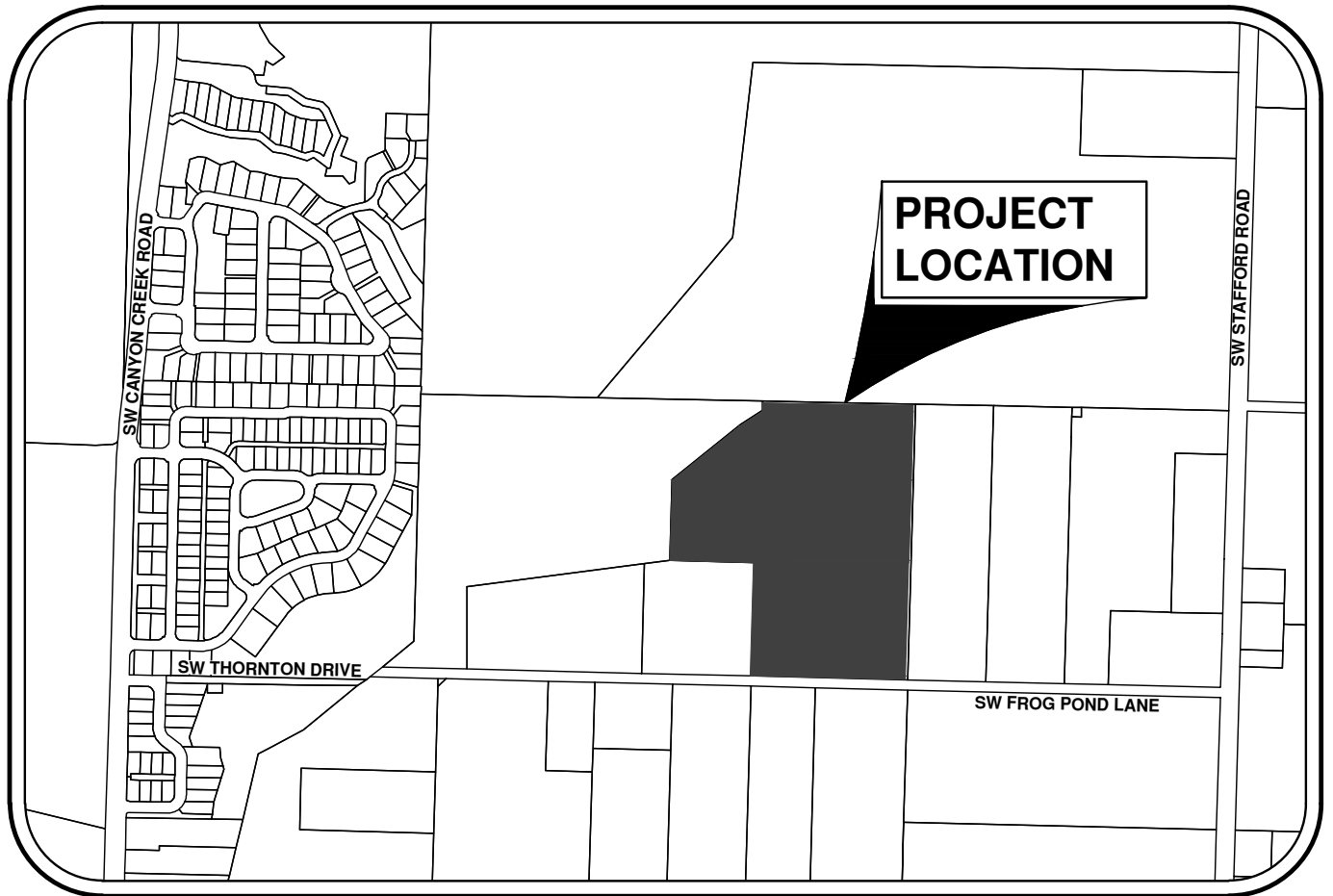
6.4. Emergency Overflow Calculations

The emergency overflow weir of the detention pond was sized to convey the 100-year storm event. Calculations are included in Appendix F. If the stormwater facility's outlet structures become plugged and cannot convey runoff from the site, the overflow stormwater from the stormwater facility will sheet flow across the overflow riprap pad and down to the existing wetland area.

6.5. Downstream Analysis

Peak flow discharges from the stormwater facilities will be detained and metered out at or below the pre-development runoff condition. Therefore, this project will not negatively impact downstream capacity. Per the downstream analysis that is included in Appendix G, downstream drainage channel and creek has the capacity to convey the 25-year storm.

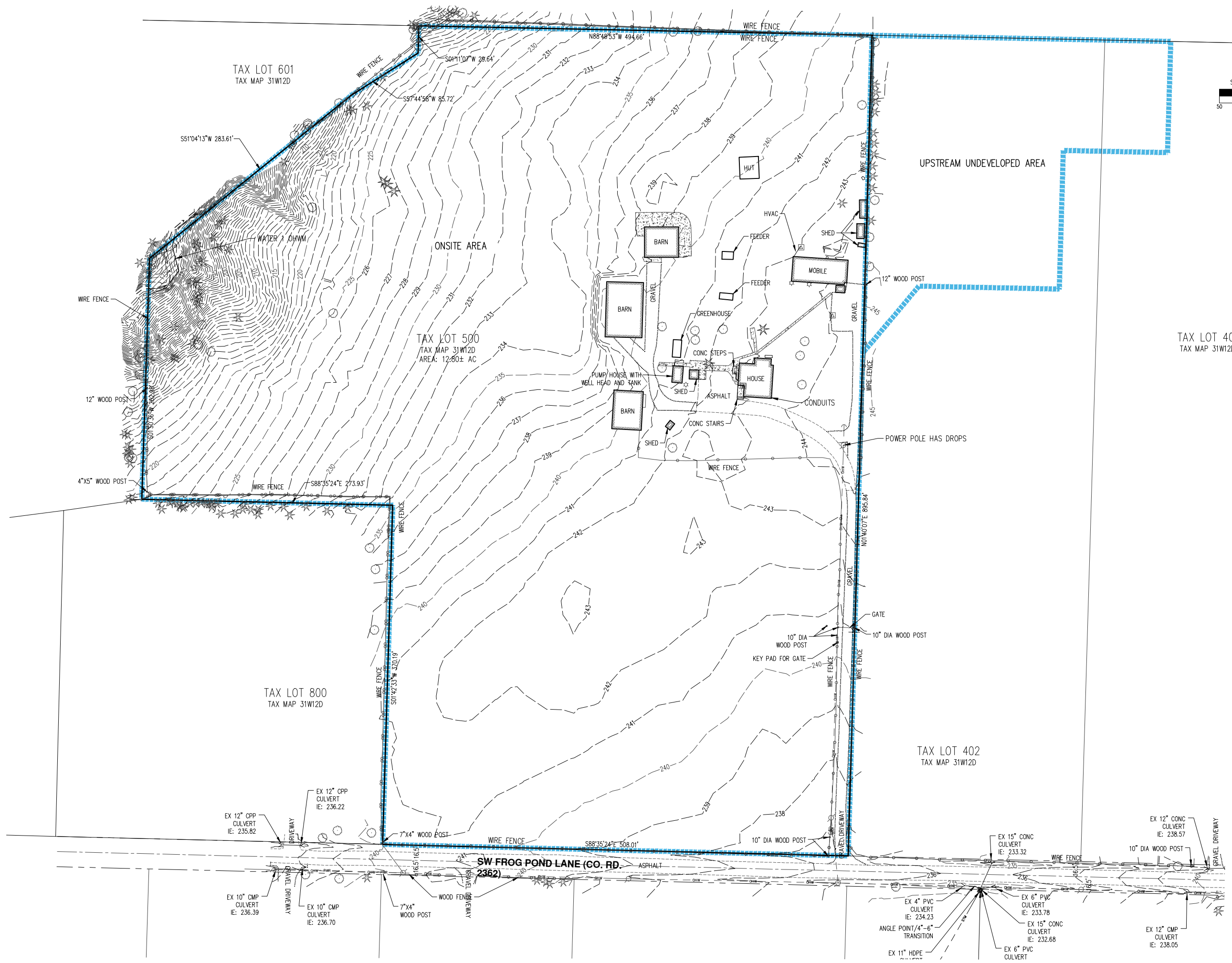
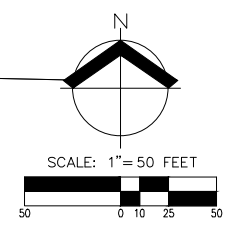
Appendix A: Vicinity Map



VICINITY MAP

N.T.S.

Appendix B: Pre-developed Catchment Map and Detail

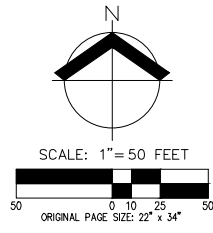


**PRE-DEVELOPED MAP
 FROG POND VISTA
 VENTURE PROPERTIES, INC.
 WILSONVILLE, OREGON**

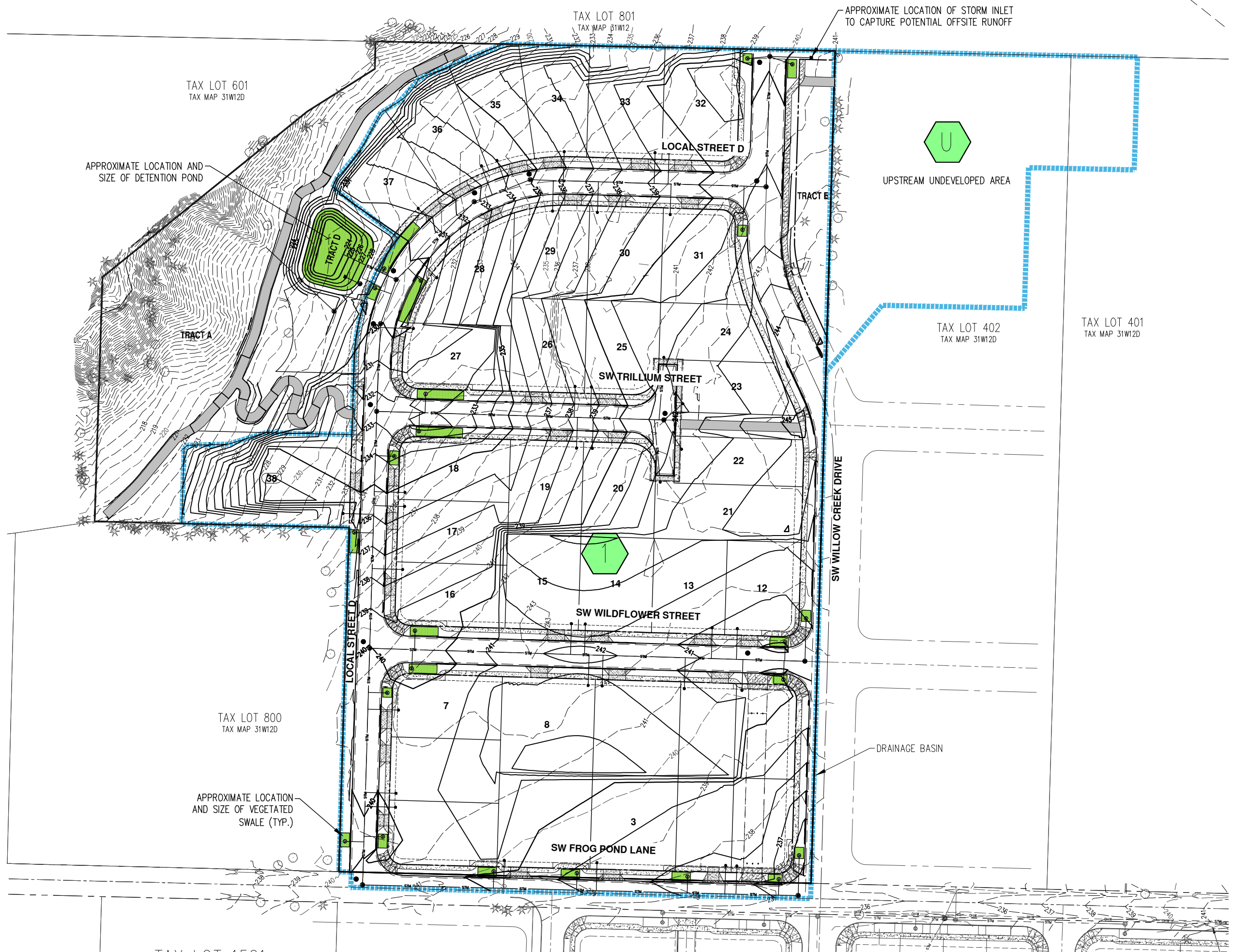
**PRELIMINARY
 NOT FOR
 CONSTRUCTION**

JOB NUMBER:	7530
DATE:	01/14/2022
DESIGNED BY:	NLB
DRAWN BY:	JJA
CHECKED BY:	MBH

Appendix C: Post-developed Catchment Map and Detail



AKS
 AKS ENGINEERING & FORESTRY, LLC
 12045 SW HERMAN RD., STE 100
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 503.563.6151
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AKS DRAWING FILE: 7530-POST-MAP.DWG | LAYOUT: 1

POST-DEVELOPED MAP
FROG POND VISTA
VENTURE PROPERTIES, INC.
WILSONVILLE, OREGON

PRELIMINARY
NOT FOR
CONSTRUCTION

JOB NUMBER:	7530
DATE:	01/14/2022
DESIGNED BY:	NLB
DRAWN BY:	JJA
CHECKED BY:	MBH

Appendix D: BMP Sizing Tool Report

WES BMP Sizing Report

Project Information

Project Name	7530
Project Type	Subdivision
Location	
Stormwater Management Area	6000
Project Applicant	AKS
Jurisdiction	OutofDistrict

Drainage Management Area

Name	Area (sq-ft)	Pre-Project Cover	Post-Project Cover	DMA Soil Type	BMP
1-Roofs (C)	63,250	Grass	Roofs	C	Detention Pond
1-Roofs (D)	52,250	Grass	Roofs	D	Detention Pond
1-Impervious (C)	59,300	Grass	ConventionalConcrete	C	Vegetated Swale
1-Impervious (D)	49,100	Grass	ConventionalConcrete	D	Vegetated Swale
1-Pervious (C)	151,200	Grass	LandscapeCsoil	C	Vegetated Swale
1-Pervious (D)	90,650	Grass	LandscapeDsoil	D	Vegetated Swale
Upstream Undeveloped	74,563	Grass	Grass	C	Detention Pond

LID Facility Sizing Details

LID ID	Design Criteria	BMP Type	Facility Soil Type	Minimum Area (sq-ft)	Planned Areas (sq-ft)	Orifice Diameter (in)
Vegetated Swale	WaterQuality	Vegetated Swale - Filtration	Lined	3,711.8	3,720.0	2.8

Pond Sizing Details

Pond ID	Design Criteria(1)	Facility Soil Type	Max Depth (ft)(2)	Top Area (sq-ft)	Side Slope (1:H)	Facility Vol. (cu-ft)(3)	Water Storage Vol. (cu-ft)(4)	Adequate Size?
Detention	FCWQT	Lined	5.00	1,869.0	3	4,359.8	3,421.7	Yes

Pond								
------	--	--	--	--	--	--	--	--

1. FCWQT = Flow control and water quality treatment, WQT = Water quality treatment only
2. Depth is measured from the bottom of the facility and includes the three feet of media (drain rock, separation layer and growing media).
3. Maximum volume of the facility. Includes the volume occupied by the media at the bottom of the facility.
4. Maximum water storage volume of the facility. Includes water storage in the three feet of soil media assuming a 40 percent porosity.

Simple Pond Geometry Configuration

Pond ID: Detention Pond

Design: FlowControlAndTreatment

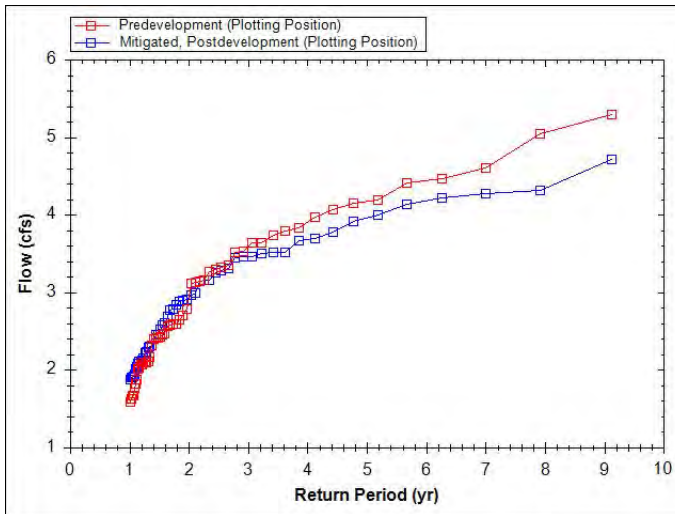
Shape Curve

Depth (ft)	Area (sq ft)
5.0	1,869.0

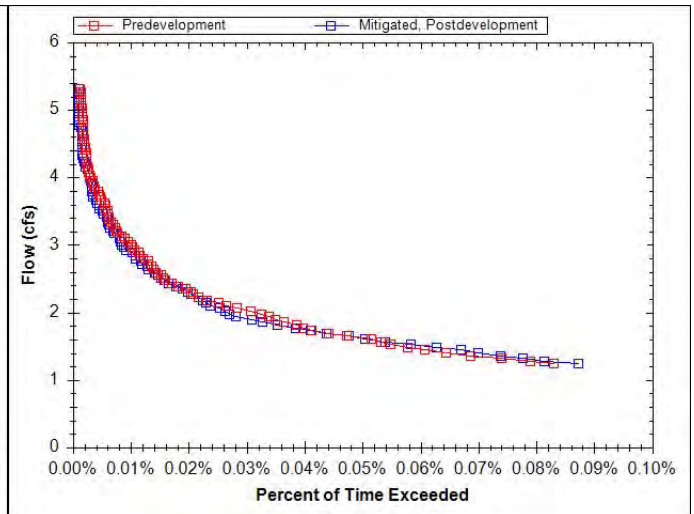
Outlet Structure Details

Lower Orifice Invert (ft)	0.0
Lower Orifice Dia (in)	4.6
Upper Orifice Invert(ft)	3.4
Upper Orifice Dia (in)	11.1
Overflow Weir Invert(ft)	4.0
Overflow Weir Length (ft)	6.3

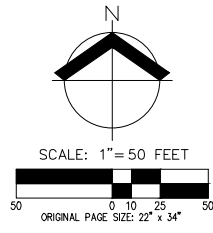
Flow Frequency Chart



Flow Duration Chart



Appendix E: Stormwater Facilities Location Map



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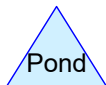
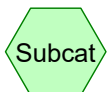
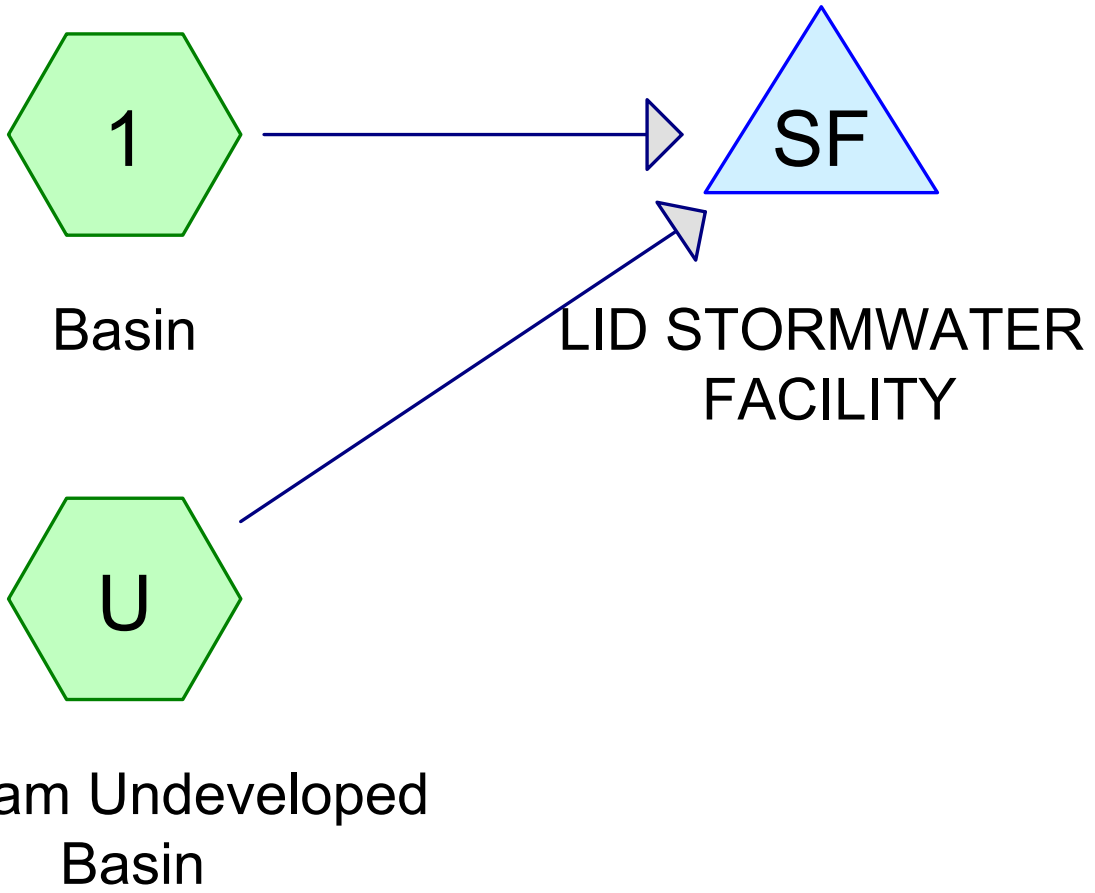


STORMWATER FACILITIES LOCATION MAP
FROG POND VISTA
VENTURE PROPERTIES, INC.
WILSONVILLE, OREGON

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JOB NUMBER:	7530
DATE:	01/14/2022
DESIGNED BY:	NLB
DRAWN BY:	JJA
CHECKED BY:	MBH

Appendix F: Emergency Overflow Calculations



7530 HydroCAD Overflow

Prepared by AKS Engineering & Forestry, LLC
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Printed 1/13/2022

Area Listing (all nodes)

Area (sq-ft)	CN	Description (subcatchment-numbers)
102,900	98	Impervious (1)
151,200	86	Pervious (1)
90,650	90	Pervious (1)
118,250	98	Roofs (1)
74,563	74	Upstream Undeveloped - Grass Cover > 75% (U)

7530 HydroCAD Overflow

Prepared by AKS Engineering & Forestry, LLC

HydroCAD® 10.00-22 s/n 01338 © 2018 HydroCAD Software Solutions LLC

Type IA 24-hr 100-YR Rainfall=4.50"

Printed 1/13/2022

Time span=0.00-24.00 hrs, dt=0.10 hrs, 241 points

Runoff by SBUH method, Split Pervious/Imperv.

Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1: Basin

Runoff Area=463,000 sf 47.76% Impervious Runoff Depth>3.65"
Tc=5.0 min CN=87/98 Runoff=9.76 cfs 140,775 cf

Subcatchment U: Upstream Undeveloped Basin

Runoff Area=74,563 sf 0.00% Impervious Runoff Depth>1.95"
Tc=20.0 min CN=74/0 Runoff=0.58 cfs 12,117 cf

Pond SF: LID STORMWATER FACILITY

Peak Elev=227.41' Storage=11,345 cf Inflow=10.40 cfs 152,893 cf
Outflow=10.29 cfs 142,893 cf

7530 HydroCAD Overflow

Prepared by AKS Engineering & Forestry, LLC
 HydroCAD® 10.00-22 s/n 01338 © 2018 HydroCAD Software Solutions LLC

Type IA 24-hr 100-YR Rainfall=4.50"

Printed 1/13/2022

Summary for Subcatchment 1: Basin

Runoff = 9.76 cfs @ 7.94 hrs, Volume= 140,775 cf, Depth> 3.65"

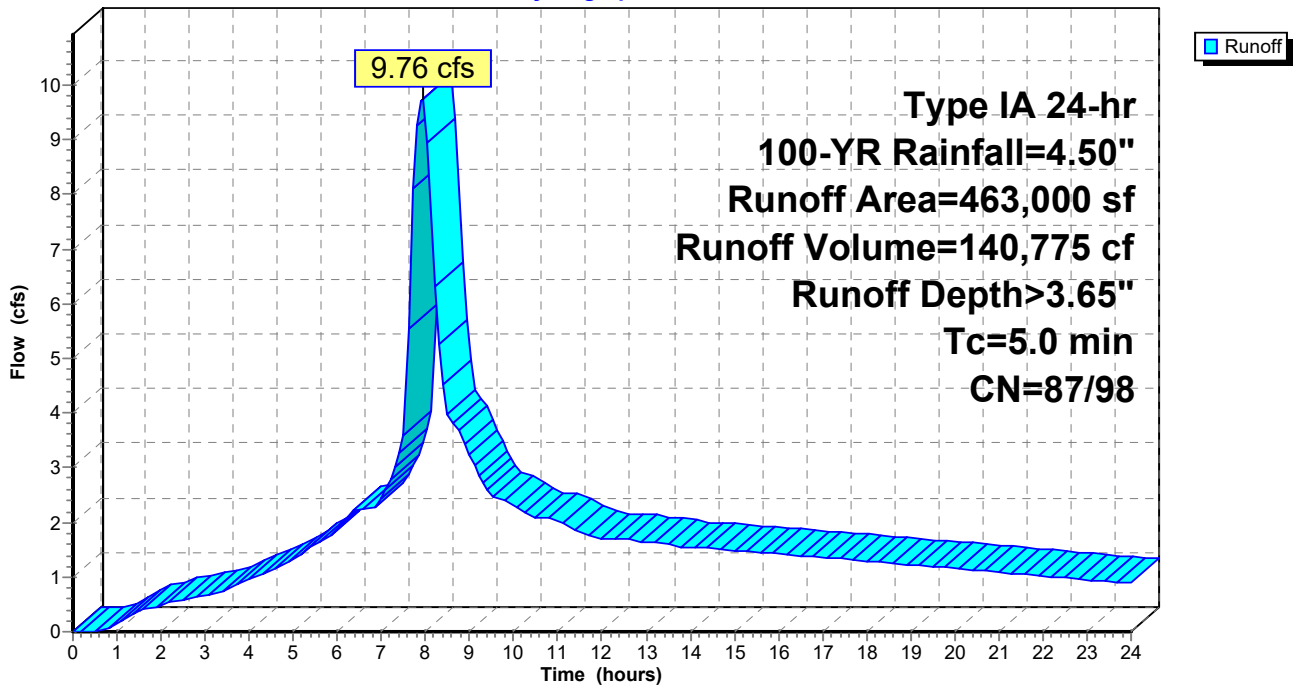
Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-24.00 hrs, dt= 0.10 hrs
 Type IA 24-hr 100-YR Rainfall=4.50"

Area (sf)	CN	Description
* 102,900	98	Impervious
* 118,250	98	Roofs
* 151,200	86	Pervious
* 90,650	90	Pervious
463,000	93	Weighted Average
241,850		52.24% Pervious Area
221,150		47.76% Impervious Area

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

Subcatchment 1: Basin

Hydrograph



7530 HydroCAD Overflow

Prepared by AKS Engineering & Forestry, LLC
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Type IA 24-hr 100-YR Rainfall=4.50"

Printed 1/13/2022

Summary for Subcatchment U: Upstream Undeveloped Basin

Runoff = 0.58 cfs @ 8.09 hrs, Volume= 12,117 cf, Depth> 1.95"

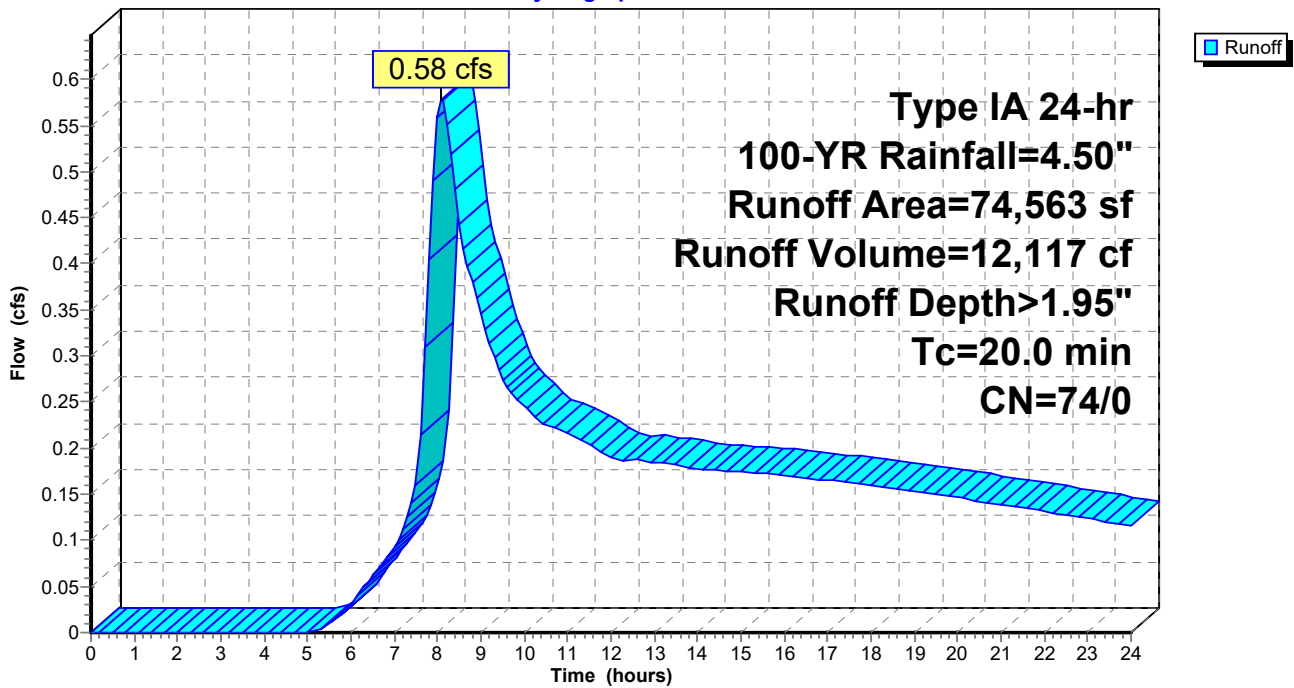
Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-24.00 hrs, dt= 0.10 hrs
Type IA 24-hr 100-YR Rainfall=4.50"

Area (sf)	CN	Description
* 74,563	74	Upstream Undeveloped - Grass Cover > 75%
74,563		100.00% Pervious Area

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

Subcatchment U: Upstream Undeveloped Basin

Hydrograph



7530 HydroCAD Overflow

Prepared by AKS Engineering & Forestry, LLC
 HydroCAD® 10.00-22 s/n 01338 © 2018 HydroCAD Software Solutions LLC

Type IA 24-hr 100-YR Rainfall=4.50"

Printed 1/13/2022

Summary for Pond SF: LID STORMWATER FACILITY

Inflow Area = 537,563 sf, 41.14% Impervious, Inflow Depth > 3.41" for 100-YR event
 Inflow = 10.40 cfs @ 7.95 hrs, Volume= 152,893 cf
 Outflow = 10.29 cfs @ 7.97 hrs, Volume= 142,893 cf, Atten= 1%, Lag= 0.8 min
 Primary = 10.29 cfs @ 7.97 hrs, Volume= 142,893 cf

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.10 hrs / 2
 Peak Elev= 227.41' @ 7.97 hrs Surf.Area= 4,231 sf Storage= 11,345 cf

Plug-Flow detention time= 82.3 min calculated for 142,893 cf (93% of inflow)
 Center-of-Mass det. time= 36.8 min (744.2 - 707.4)

Volume	Invert	Avail.Storage	Storage Description
#1	221.00'	14,008 cf	Custom Stage Data (Pyramidal) Listed below (Recalc)

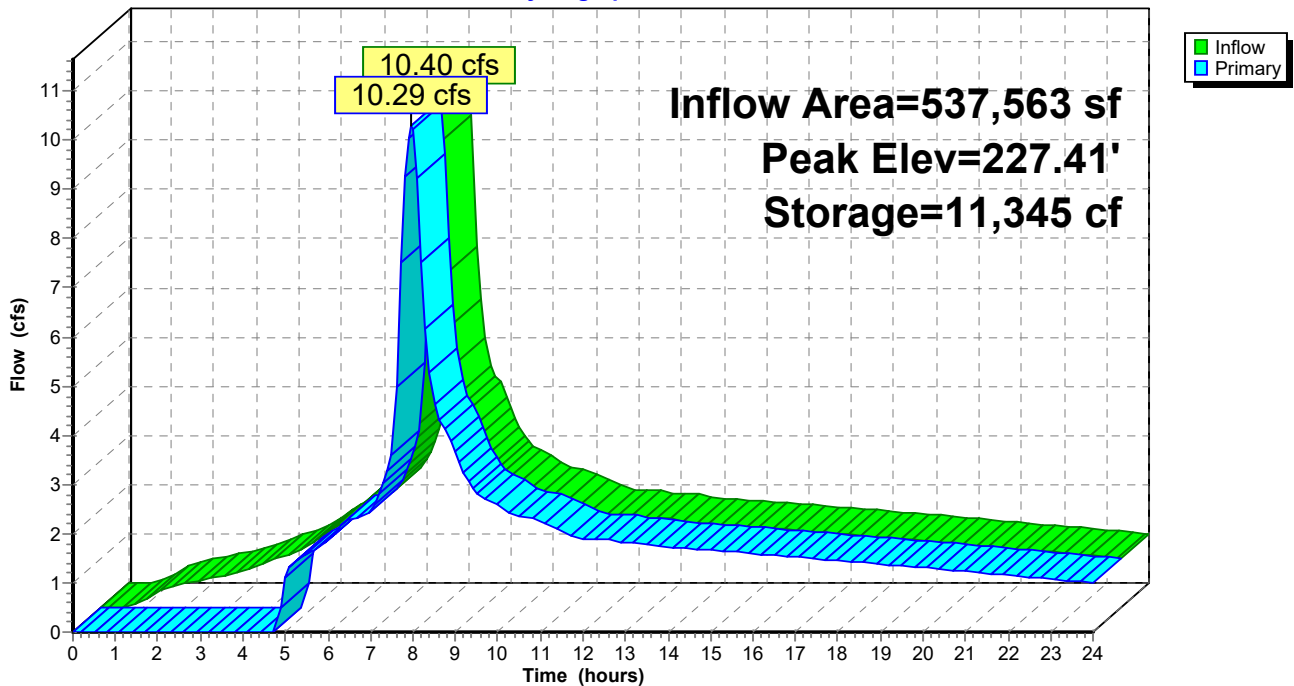
Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
221.00	1,490	0.0	0	0	1,490
223.90	1,490	40.0	1,728	1,728	1,938
224.00	1,490	100.0	149	1,877	1,953
225.00	2,190	100.0	1,829	3,706	2,674
226.00	2,980	100.0	2,575	6,281	3,489
227.00	3,850	100.0	3,406	9,687	4,390
228.00	4,810	100.0	4,321	14,008	5,385

Device	Routing	Invert	Outlet Devices
#1	Primary	227.00'	15.0' long x 11.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.53 2.59 2.70 2.68 2.67 2.68 2.66 2.64

Primary OutFlow Max=10.11 cfs @ 7.97 hrs HW=227.41' (Free Discharge)
 ↳ **Broad-Crested Rectangular Weir**(Weir Controls 10.11 cfs @ 1.66 fps)

Pond SF: LID STORMWATER FACILITY

Hydrograph



Appendix G: Downstream Analysis

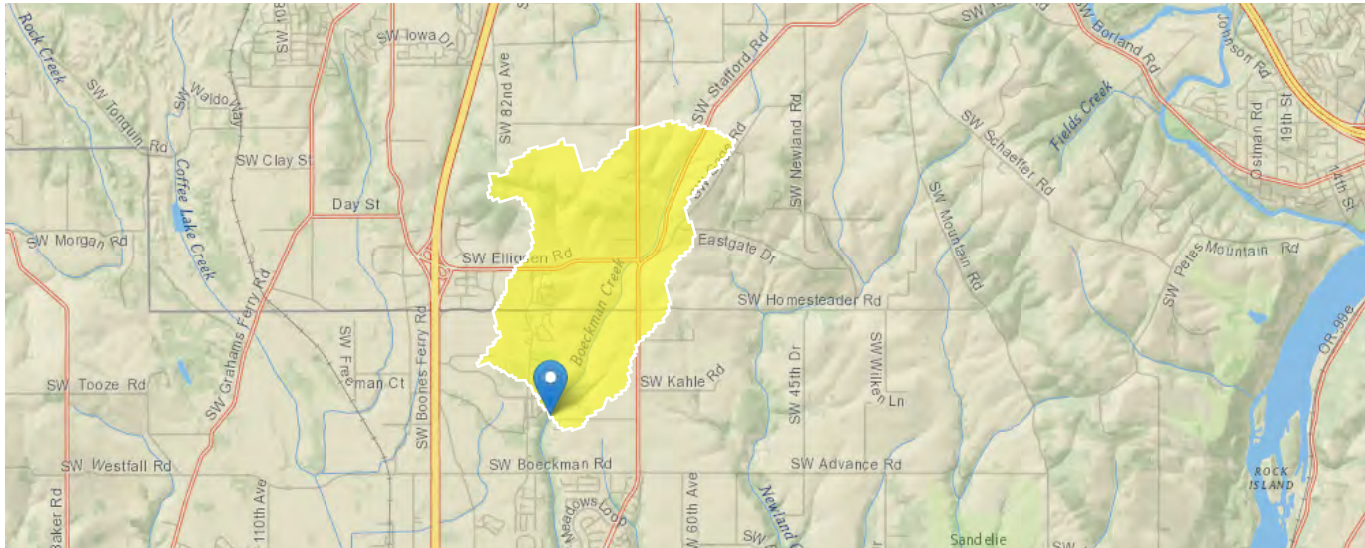
Frog Pond Vista - Stormwater Analysis

Region ID: OR

Workspace ID: OR20211012170913841000

Clicked Point (Latitude, Longitude): 45.32257, -122.75473

Time: 2021-10-12 10:09:36 -0700



Basin Characteristics

Parameter Code	Parameter Description	Value	Unit
DRNAREA	Area that drains to a point on a stream	1.65	square miles
I24H2Y	Maximum 24-hour precipitation that occurs on average once in 2 years - Equivalent to precipitation intensity index	1.81	inches
SOILPERM	Average Soil Permeability	0.71	inches per hour
JANMAXT2K	Mean Maximum January Temperature from 2K resolution PRISM 1961-1990 data	46.2	degrees F
WATCAPORC	Available water capacity from STATSGO data using methods from SIR 2005-5116	0.14	inches
ORREG2	Oregon Region Number	10001	dimensionless
BSLOPD	Mean basin slope measured in degrees	4.4	degrees
JANMINT2K	Mean Minimum January Temperature from 2K resolution PRISM PRISM 1961-1990 data	33.2	degrees F
ELEV	Mean Basin Elevation	333	feet

Peak-Flow Statistics Parameters [Reg 2B Western Interior LT 3000 ft Cooper]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	1.65	square miles	0.37	7270
BSLOPD	Mean Basin Slope degrees	4.4	degrees	5.62	28.3
I24H2Y	24 Hour 2 Year Precipitation	1.81	inches	1.53	4.48
ELEV	Mean Basin Elevation	333	feet		
ORREG2	Oregon Region Number	10001	dimensionless		

Peak-Flow Statistics Disclaimers [Reg 2B Western Interior LT 3000 ft Cooper]

One or more of the parameters is outside the suggested range. Estimates were extrapolated with unknown errors

Peak-Flow Statistics Flow Report [Reg 2B Western Interior LT 3000 ft Cooper]

Statistic	Value	Unit
50-percent AEP flood	47.6	ft ³ /s
20-percent AEP flood	71.4	ft ³ /s

Statistic	Value	Unit
10-percent AEP flood	88	ft ³ /s
4-percent AEP flood	109	ft ³ /s
2-percent AEP flood	126	ft ³ /s
1-percent AEP flood	142	ft ³ /s
0.2-percent AEP flood	180	ft ³ /s

Peak-Flow Statistics Citations

Cooper, R.M., 2005, Estimation of Peak Discharges for Rural, Unregulated Streams in Western Oregon: U.S. Geological Survey Scientific Investigations Report 2005-5116, 76 p. (<http://pubs.usgs.gov/sir/2005/5116/pdf/sir2005-5116.pdf>)

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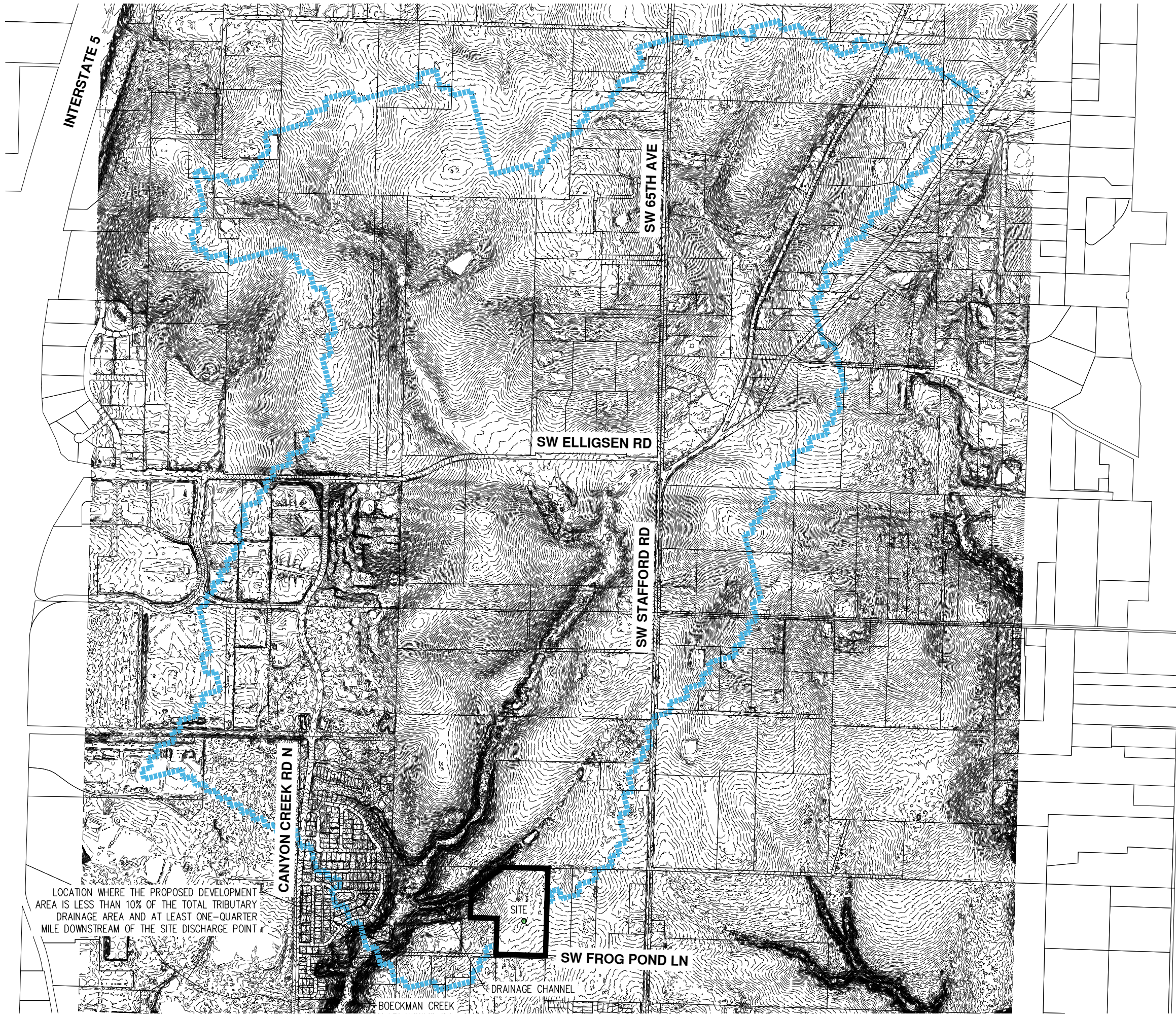
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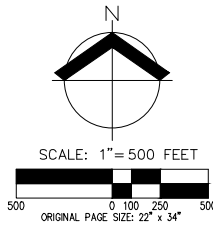
Application Version: 4.6.2

StreamStats Services Version: 1.2.22

NSS Services Version: 2.1.2



LOCATION WHERE THE PROPOSED DEVELOPMENT AREA IS LESS THAN 10% OF THE TOTAL TRIBUTARY DRAINAGE AREA AND AT LEAST ONE-QUARTER MILE DOWNSTREAM OF THE SITE DISCHARGE POINT



**DOWNSTREAM BASIN MAP
FROG POND VISTA
VENTURE PROPERTIES, INC.
WILSONVILLE, OREGON**

**PRELIMINARY
NOT FOR
CONSTRUCTION**

JOB NUMBER:	7530
DATE:	10/8/2021
DESIGNED BY:	NLB
DRAWN BY:	JJA
CHECKED BY:	AJD

Channel Report

Drainage Channel Analysis

Trapezoidal

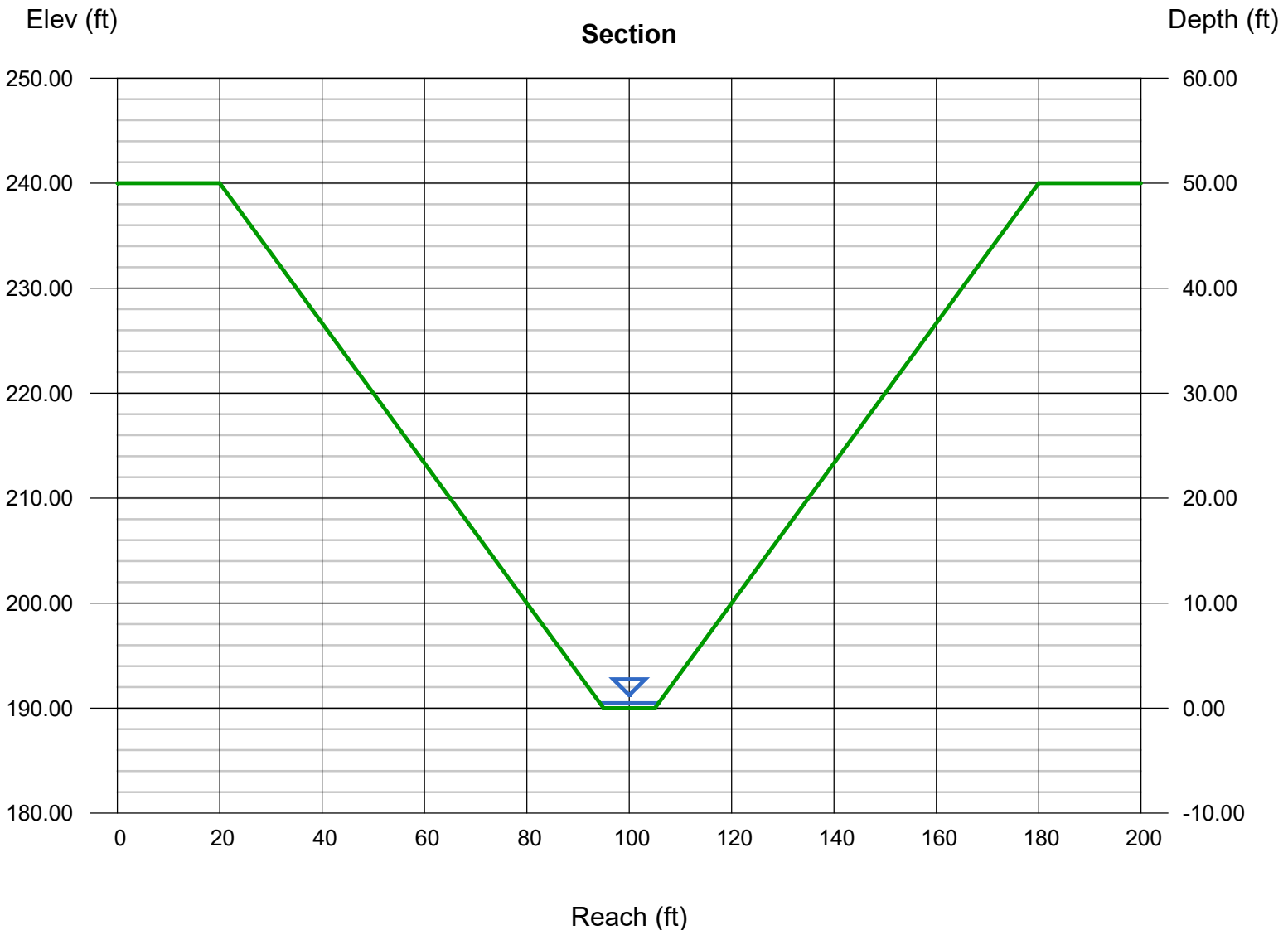
Bottom Width (ft) = 10.00
Side Slopes (z:1) = 1.50, 1.50
Total Depth (ft) = 50.00
Invert Elev (ft) = 190.00
Slope (%) = 3.50
N-Value = 0.040

Highlighted

Depth (ft) = 0.48
Q (cfs) = 20.00
Area (sqft) = 5.15
Velocity (ft/s) = 3.89
Wetted Perim (ft) = 11.73
Crit Depth, Y_c (ft) = 0.49
Top Width (ft) = 11.44
EGL (ft) = 0.71

Calculations

Compute by: Known Q
Known Q (cfs) = 20.00



Channel Report

Creek Analysis

Trapezoidal

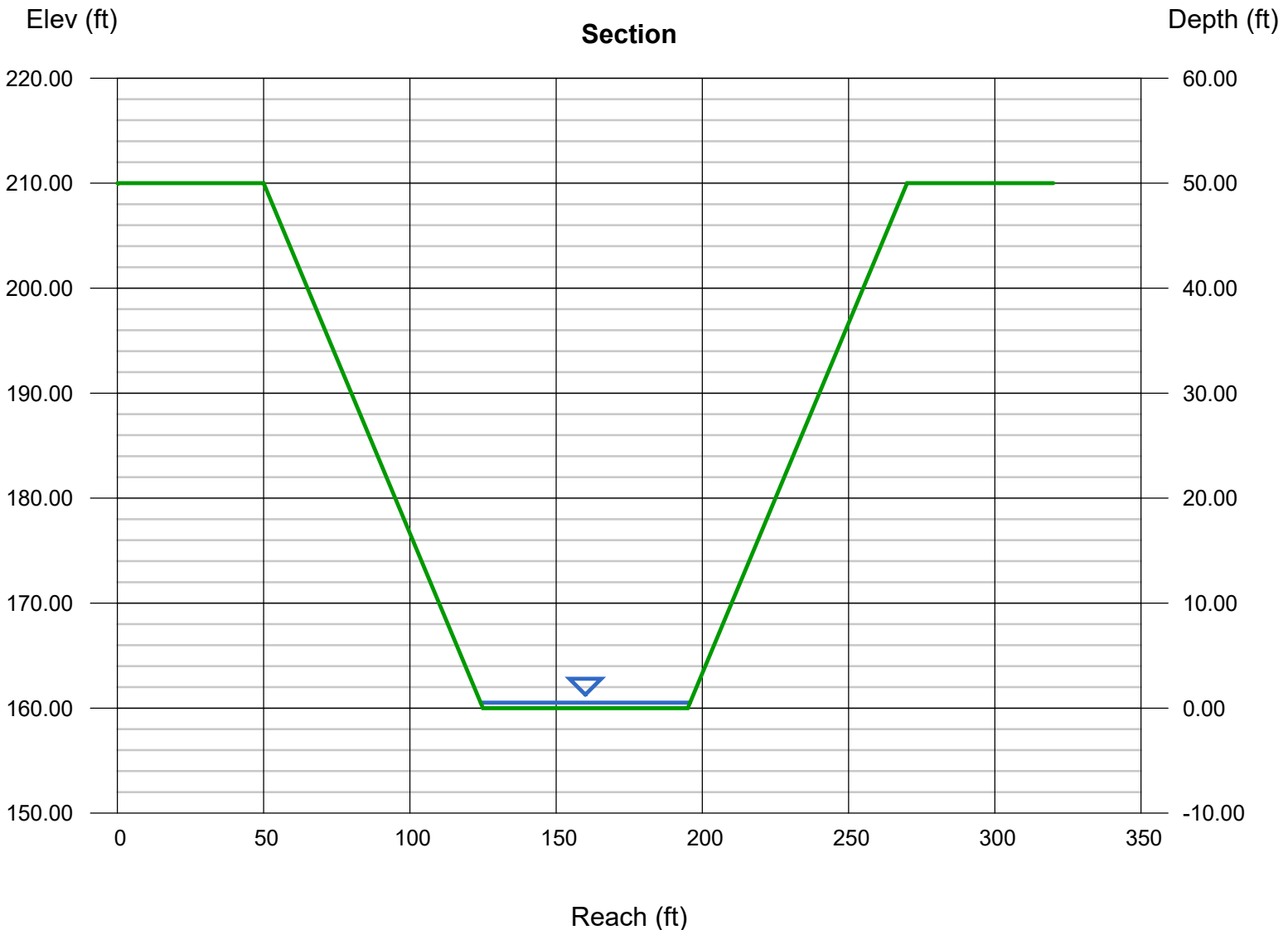
Bottom Width (ft) = 70.00
Side Slopes (z:1) = 1.50, 1.50
Total Depth (ft) = 50.00
Invert Elev (ft) = 160.00
Slope (%) = 1.50
N-Value = 0.040

Highlighted

Depth (ft) = 0.53
Q (cfs) = 109.00
Area (sqft) = 37.52
Velocity (ft/s) = 2.91
Wetted Perim (ft) = 71.91
Crit Depth, Yc (ft) = 0.43
Top Width (ft) = 71.59
EGL (ft) = 0.66

Calculations

Compute by: Known Q
Known Q (cfs) = 109.00



Appendix H: Information from the NRCS Soil Survey of Clackamas County, Oregon



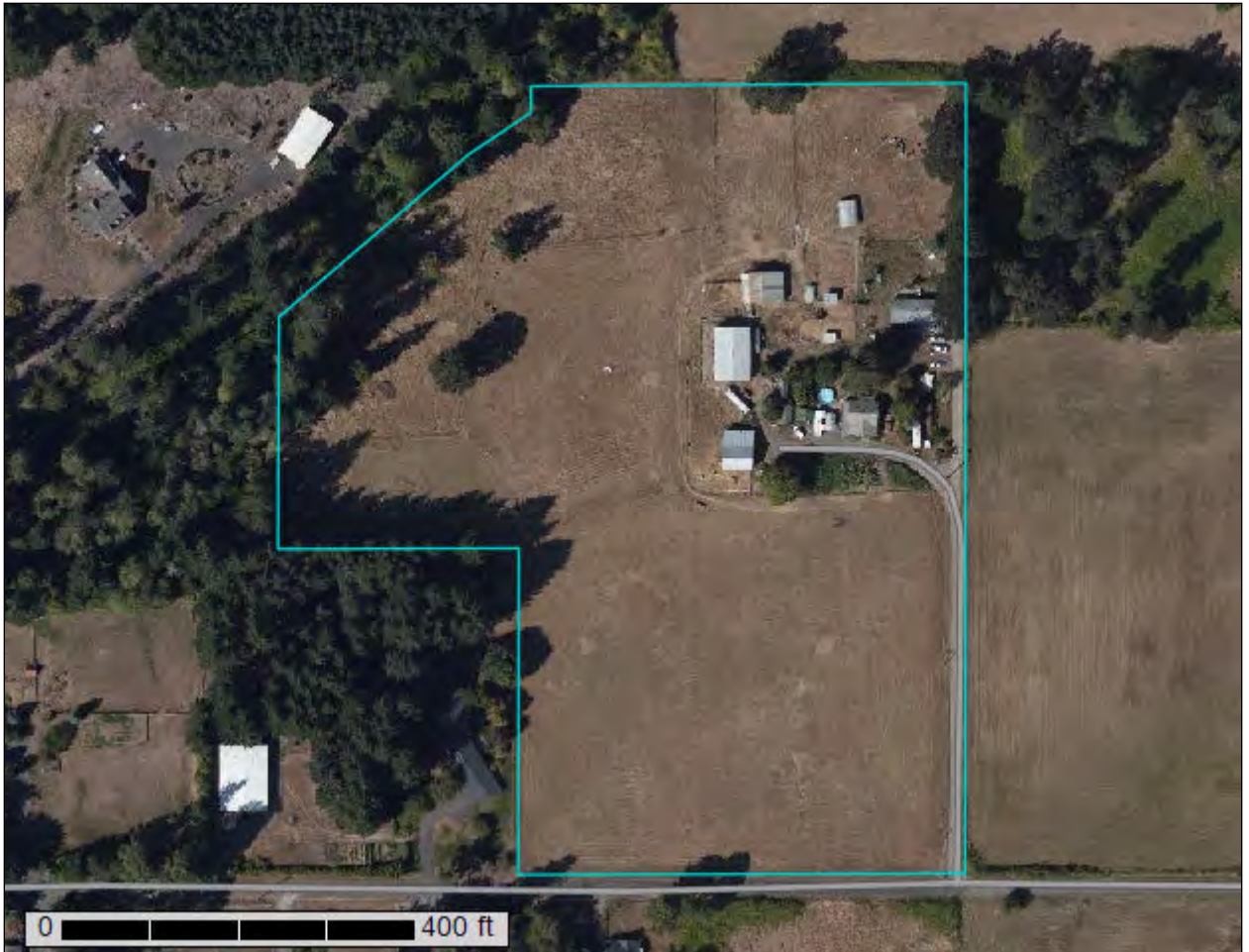
United States
Department of
Agriculture

NRCS

Natural
Resources
Conservation
Service

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

Custom Soil Resource Report for **Clackamas County Area, Oregon**



Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (<http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/>) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (<https://offices.sc.egov.usda.gov/locator/app?agency=nrcs>) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

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How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil

Custom Soil Resource Report

scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and

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identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

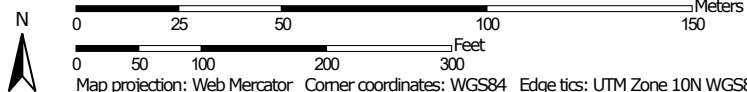
Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

Custom Soil Resource Report Soil Map



Map Scale: 1:1,840 if printed on A portrait (8.5" x 11") sheet.



Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 10N WGS84

MAP LEGEND

Area of Interest (AOI)

 Area of Interest (AOI)




















Soils

 Soil Map Unit Polygons

 Soil Map Unit Lines


 Soil Map Unit Points

Special Point Features






-  Blowout
-  Borrow Pit
-  Clay Spot
-  Closed Depression
-  Gravel Pit
-  Gravelly Spot
-  Landfill
-  Lava Flow
-  Marsh or swamp
-  Mine or Quarry
-  Miscellaneous Water
-  Perennial Water
-  Rock Outcrop
-  Saline Spot
-  Sandy Spot
-  Severely Eroded Spot
-  Sinkhole
-  Slide or Slip
-  Sodic Spot

-  Spoil Area
-  Stony Spot
-  Very Stony Spot
-  Wet Spot
-  Other
-  Special Line Features


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: Clackamas County Area, Oregon
 Survey Area Data: Version 16, Jun 11, 2020

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

Date(s) aerial images were photographed: Aug 1, 2019—Sep 12, 2019

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.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
1A	Aloha silt loam, 0 to 3 percent slopes	4.8	37.4%
91B	Woodburn silt loam, 3 to 8 percent slopes	4.3	33.4%
91C	Woodburn silt loam, 8 to 15 percent slopes	3.1	24.5%
92F	Xerochrepts and Haploxerolls, very steep	0.6	4.7%
Totals for Area of Interest		12.8	100.0%

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

Custom Soil Resource Report

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Clackamas County Area, Oregon

1A—Aloha silt loam, 0 to 3 percent slopes

Map Unit Setting

National map unit symbol: 2231
Elevation: 150 to 400 feet
Mean annual precipitation: 40 to 60 inches
Mean annual air temperature: 52 to 54 degrees F
Frost-free period: 165 to 210 days
Farmland classification: Prime farmland if drained

Map Unit Composition

Aloha and similar soils: 85 percent
Minor components: 5 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Aloha

Setting

Landform: Terraces
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Stratified glaciolacustrine deposits

Typical profile

H1 - 0 to 8 inches: silt loam
H2 - 8 to 51 inches: silt loam
H3 - 51 to 80 inches: silt loam

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Somewhat poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.57 in/hr)
Depth to water table: About 18 to 24 inches
Frequency of flooding: None
Frequency of ponding: None
Available water capacity: High (about 11.9 inches)

Interpretive groups

Land capability classification (irrigated): 2w
Land capability classification (nonirrigated): 2w
Hydrologic Soil Group: C/D
Forage suitability group: Somewhat Poorly Drained (G002XY005OR)
Other vegetative classification: Somewhat Poorly Drained (G002XY005OR)
Hydric soil rating: No

Minor Components

Huberly

Percent of map unit: 3 percent
Landform: Swales on terraces
Landform position (three-dimensional): Tread

Custom Soil Resource Report

Down-slope shape: Linear
Across-slope shape: Linear
Other vegetative classification: Poorly Drained (G002XY006OR)
Hydric soil rating: Yes

Dayton

Percent of map unit: 2 percent
Landform: Terraces
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Other vegetative classification: Poorly Drained (G002XY006OR)
Hydric soil rating: Yes

91B—Woodburn silt loam, 3 to 8 percent slopes

Map Unit Setting

National map unit symbol: 227z
Elevation: 150 to 400 feet
Mean annual precipitation: 40 to 50 inches
Mean annual air temperature: 52 to 54 degrees F
Frost-free period: 165 to 210 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Woodburn and similar soils: 90 percent
Minor components: 4 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Woodburn

Setting

Landform: Terraces
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Stratified glaciolacustrine deposits

Typical profile

H1 - 0 to 16 inches: silt loam
H2 - 16 to 38 inches: silty clay loam
H3 - 38 to 60 inches: silt loam

Properties and qualities

Slope: 3 to 8 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Moderately well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: About 25 to 32 inches
Frequency of flooding: None

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Frequency of ponding: None
Available water capacity: High (about 12.0 inches)

Interpretive groups

Land capability classification (irrigated): 2e
Land capability classification (nonirrigated): 2e
Hydrologic Soil Group: C
Forage suitability group: Moderately Well Drained < 15% Slopes (G002XY004OR)
Other vegetative classification: Moderately Well Drained < 15% Slopes (G002XY004OR)
Hydric soil rating: No

Minor Components

Huberly

Percent of map unit: 2 percent
Landform: Swales on terraces
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Other vegetative classification: Poorly Drained (G002XY006OR)
Hydric soil rating: Yes

Dayton

Percent of map unit: 1 percent
Landform: Terraces
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Other vegetative classification: Poorly Drained (G002XY006OR)
Hydric soil rating: Yes

Aquolls

Percent of map unit: 1 percent
Landform: Flood plains
Hydric soil rating: Yes

91C—Woodburn silt loam, 8 to 15 percent slopes

Map Unit Setting

National map unit symbol: 2280
Elevation: 150 to 400 feet
Mean annual precipitation: 40 to 50 inches
Mean annual air temperature: 52 to 54 degrees F
Frost-free period: 165 to 210 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Woodburn and similar soils: 90 percent
Minor components: 3 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Woodburn

Setting

Landform: Terraces
Landform position (three-dimensional): Riser
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Stratified glaciolacustrine deposits

Typical profile

H1 - 0 to 16 inches: silt loam
H2 - 16 to 38 inches: silty clay loam
H3 - 38 to 60 inches: silt loam

Properties and qualities

Slope: 8 to 15 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Moderately well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: About 25 to 32 inches
Frequency of flooding: None
Frequency of ponding: None
Available water capacity: High (about 12.0 inches)

Interpretive groups

Land capability classification (irrigated): 2e
Land capability classification (nonirrigated): 2e
Hydrologic Soil Group: C
Forage suitability group: Moderately Well Drained < 15% Slopes (G002XY004OR)
Other vegetative classification: Moderately Well Drained < 15% Slopes (G002XY004OR)
Hydric soil rating: No

Minor Components

Dayton

Percent of map unit: 2 percent
Landform: Terraces
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Other vegetative classification: Poorly Drained (G002XY006OR)
Hydric soil rating: Yes

Aquolls

Percent of map unit: 1 percent
Landform: Flood plains
Hydric soil rating: Yes

92F—Xerochrepts and Haploxerolls, very steep

Map Unit Setting

National map unit symbol: 2281
Elevation: 50 to 1,000 feet
Mean annual precipitation: 40 to 60 inches
Mean annual air temperature: 50 to 54 degrees F
Frost-free period: 165 to 210 days
Farmland classification: Not prime farmland

Map Unit Composition

Xerochrepts and similar soils: 50 percent
Haploxerolls and similar soils: 35 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Xerochrepts

Setting

Landform: Terraces
Landform position (three-dimensional): Riser
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Colluvium derived from igneous rock

Typical profile

H1 - 0 to 8 inches: silt loam
H2 - 8 to 48 inches: gravelly clay loam
H3 - 48 to 60 inches: very cobbly clay loam

Properties and qualities

Slope: 20 to 60 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.57 in/hr)
Depth to water table: About 36 to 72 inches
Frequency of flooding: None
Frequency of ponding: None
Available water capacity: Moderate (about 8.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6e
Hydrologic Soil Group: B
Hydric soil rating: No

Description of Haploxerolls

Setting

Landform: Terraces

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Landform position (three-dimensional): Riser
Down-slope shape: Concave
Across-slope shape: Linear
Parent material: Colluvium derived from igneous rock

Typical profile

H1 - 0 to 12 inches: silt loam
H2 - 12 to 60 inches: very gravelly loam

Properties and qualities

Slope: 20 to 60 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high
(0.20 to 1.98 in/hr)
Depth to water table: About 36 to 48 inches
Frequency of flooding: None
Frequency of ponding: None
Available water capacity: High (about 12.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6e
Hydrologic Soil Group: B
Hydric soil rating: No

Soil Information for All Uses

Soil Properties and Qualities

The Soil Properties and Qualities section includes various soil properties and qualities displayed as thematic maps with a summary table for the soil map units in the selected area of interest. A single value or rating for each map unit is generated by aggregating the interpretive ratings of individual map unit components. This aggregation process is defined for each property or quality.

Soil Qualities and Features

Soil qualities are behavior and performance attributes that are not directly measured, but are inferred from observations of dynamic conditions and from soil properties. Example soil qualities include natural drainage, and frost action. Soil features are attributes that are not directly part of the soil. Example soil features include slope and depth to restrictive layer. These features can greatly impact the use and management of the soil.

Hydrologic Soil Group

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.

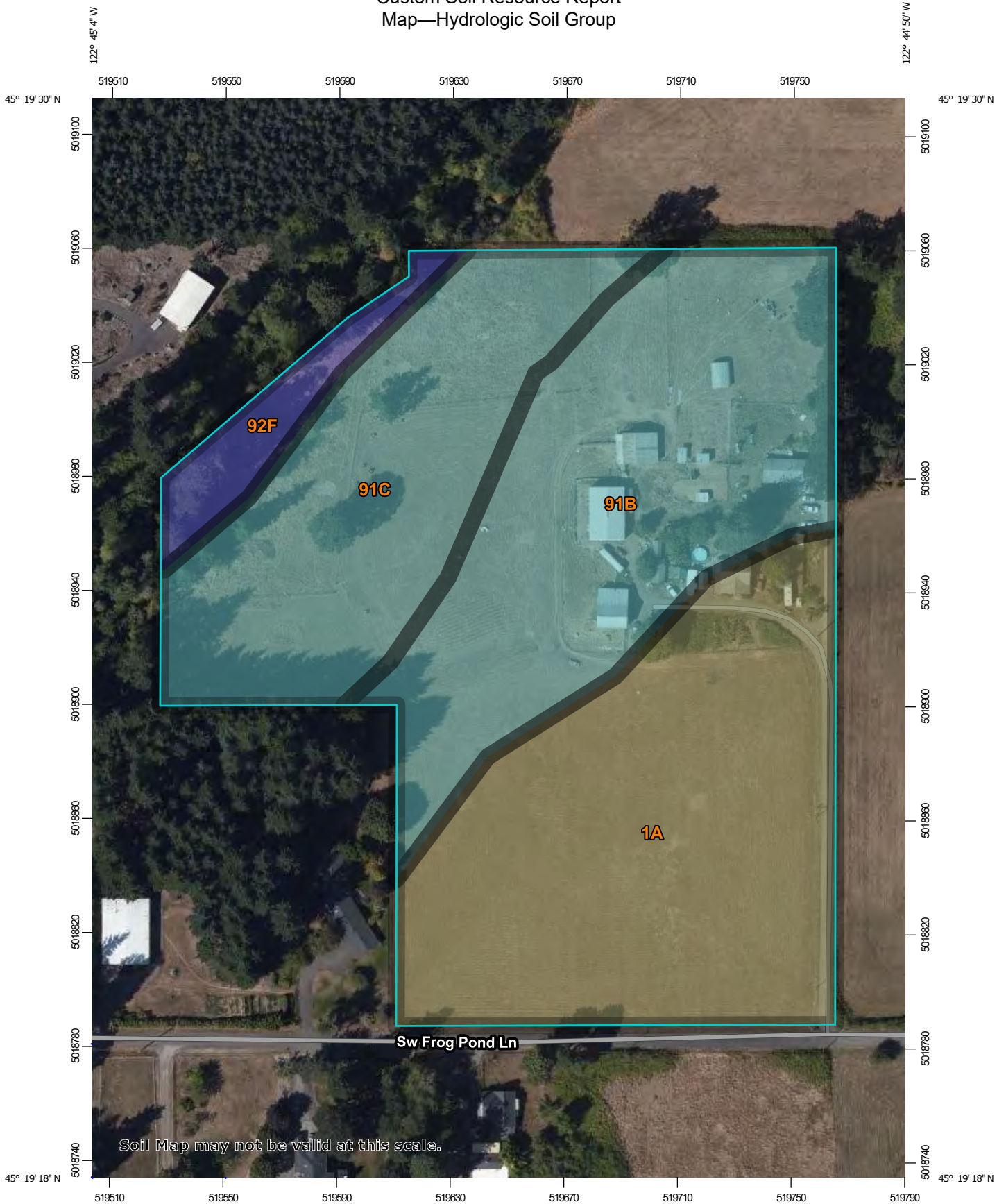
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Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water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

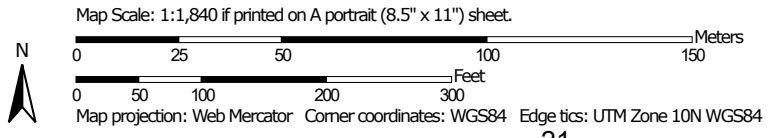
Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over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

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Map—Hydrologic Soil Group




Soil Map may not be valid at this scale.



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: Clackamas County Area, Oregon
 Survey Area Data: Version 16, Jun 11, 2020

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

Date(s) aerial images were photographed: Aug 1, 2019—Sep 12, 2019

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.

Table—Hydrologic Soil Group

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
1A	Aloha silt loam, 0 to 3 percent slopes	C/D	4.8	37.4%
91B	Woodburn silt loam, 3 to 8 percent slopes	C	4.3	33.4%
91C	Woodburn silt loam, 8 to 15 percent slopes	C	3.1	24.5%
92F	Xerochrepts and Haploxerolls, very steep	B	0.6	4.7%
Totals for Area of Interest			12.8	100.0%

Rating Options—Hydrologic Soil Group

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

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Appendix I: Relevant Information



2015

**STORMWATER & SURFACE WATER
DESIGN & CONSTRUCTION STANDARDS**

SECTION 3 - PUBLIC WORKS STANDARDS



**Community Development Department
29799 SW Town Center Loop E
Wilsonville, OR 97070**

Revised December 2015

allowable maximum density to use in the upstream basin analysis for ultimate development potential and conveyance system sizing.

301.1.12 Extension of Public Storm Sewer Systems

- a. The extension or upsizing of the public stormwater systems in excess of 12 inches in diameter (or equivalent flows) or as shown in the Wilsonville Stormwater Master Plan to serve the ultimate development density of the contributing area shall be done by the property owner or permit applicant and may be subject to applicable System Development Charge (SDC) credits.
- b. The City reserves the right to perform the work or cause it to be performed and bill the owner for the cost of the work or to pursue special assessment proceedings.
- c. The public storm sewer system shall extend to the most distant parcel boundary and be designed at a size and grade to facilitate future extension to serve development of the entire contributing area.
- d. Where public infrastructure improvements paid for by the property owner or permit applicant directly benefit adjacent properties, the property owner or permit applicant may pursue establishment of a reimbursement district per Section 3.116 of the City Code.
- e. The City's authorized representative may require a storm pipeline that serves or may serve more than one property to be a public system.

301.1.13 Conveyance System Hydraulic Standards

- a. The conveyance system shall be designed to convey and contain at least the peak runoff for the 25-year design storm.
- b. Structures for proposed pipe systems must be demonstrated to provide a minimum of 1 foot of freeboard between the hydraulic grade line and the top of the structure or finish grade above pipe for the 25-year post-development peak rate of runoff.
- c. Design surcharge in new pipe systems shall not be allowed if it will cause flooding in a habitable structure, including below-floor crawl spaces.
- d. The 25-year design shall be supplemented with an overland conveyance component demonstrating how a 100-year event will be accommodated. The overland component shall not be allowed to flow through or inundate an existing building.
- e. Flows in streets during the 25-year event shall not run deeper than 4 inches against the curb or extend more than 2 feet into the travel lane.
- f. Open channel systems shall be designed for minimum 1-foot freeboard from bank full, provided that no structures are impacted by the design water surface elevation.

301.1.14 Storm Systems and Fish Passage

For pipe systems that convey flows from a stream or through sensitive areas, a local representative of ODFW or other applicable state or federal agency shall be contacted to

Protecting undisturbed, uncompacted areas from construction activities provides more rainfall interception, evapo-transpiration and runoff rate attenuation than clearing and replanting, even with soil amendments. On the Preliminary Site Plan, identify areas that will not be cleared during construction.

(c) Minimize Soil Compaction

Avoid any construction activity that could cause soil compaction in areas designated for stormwater management facilities to preserve filtration and infiltration characteristics of the soil. Also avoid soil compaction in natural resource areas, and mitigation and/or re-vegetation areas. Delineate these areas on the Preliminary Site Plan and protect them during construction with orange construction fencing.

(d) Minimize Imperviousness

Complete and attach the Impervious Area Threshold Determination Form. The form allows for impervious area reduction credits for use of porous pavement, green roofs, tree preservation and tree planting (tree credits apply to non-single family developments only). Identify proposed impervious area reduction methods, and show them on the Preliminary Site Plan.

4. Proposed Stormwater Management Strategy

Given suitable site and soil conditions, the City requires that development shall incorporate LID facilities to infiltrate stormwater runoff to the Maximum Extent Practicable (MEP) to recharge groundwater and mimic pre-development hydrologic conditions. LID facilities will be designed and sized according to the soil classification and/or infiltration testing rate. Onsite soil characteristics may require a geotechnical report to address soil conditions, infiltration rates and groundwater to incorporate an infiltration strategy into the stormwater management plan to the MEP.

For the *Site Assessment and Planning Checklist*, the applicant must identify and select a proposed stormwater management strategy from the choices below.

- (a) LID facilities to the MEP – Check this option if LID facilities will be utilized to the MEP to address the water quality and flow control requirements of the site. LID facilities must be sized according to the design requirements in [Section 301.4.00](#), “Stormwater Management Facility Selection and Design” utilizing either the BMP Sizing Tool or the Engineered Method. MEP is defined as installing LID facilities with a surface area of at least 10% of the total new or redeveloped impervious area. Approved stormwater management facilities that qualify as LID facilities are defined in [Section 301.4.00](#).
- (b) Onsite retention of the 10-year design storm – Where possible, retain and infiltrate all stormwater runoff up to and including the 10-year storm onsite using LID facilities. Infiltration of the full 10-year design storm is assumed to satisfy both water quality and flow control requirements of [Section 301.4.00](#), “Stormwater Management Facility Selection and Design”.

- (c) Limiting conditions for LID facilities - The following limiting conditions restrict the practicality of using onsite infiltration and may require the use of lined, non-infiltrating stormwater management facilities or underground facilities to meet stormwater management requirements. When sites have limiting conditions, a report is required to document one of the following:
- (1) Stormwater management facilities will be located on fill.
 - (2) Site areas with steep slopes ($\geq 20\%$) and/or slope stability concerns (geotechnical engineering or geologist report and City approval required for infiltration facilities on moderate slopes of 10-20%).
 - (3) Sites in areas of seasonal high groundwater table (for site planning submittal, sites with jurisdictional wetlands or FEMA floodplains may be required to perform a seasonal high groundwater table assessment and determine that the seasonal groundwater table is below the proposed bottom elevation of stormwater infiltration facilities).
 - (4) Sites with contaminated soils (sites that have contaminated soils conditions must be evaluated by the Oregon Department of Environmental Quality (ODEQ) and/or the Environmental Protection Agency to determine if areas on the property are suitable for infiltration without the risk of mobilizing contaminants in the soil or groundwater. Documentation showing contamination assessment and determination must be submitted to the City at the time of application).
 - (5) There is a conflict with required source controls for high-risk sites (a geotechnical report is not required to document this limiting condition, but approval from the City is required to install lined and/or underground facilities in place of LID facilities).

5. Facility Selection/Sizing

After selecting a stormwater management strategy, applicants shall indicate which stormwater management facilities are proposed for the site based on the results of the site assessment and planning process. The BMP Sizing Tool shall be used to calculate the size of the facilities and the BMP Sizing Tool report shall be included as part of the application. All proposed impervious area reduction methods and proposed stormwater management facilities shall be shown on the Preliminary Site Plan.

301.3.00 SUBMITTAL REQUIREMENTS

The Developer's engineer shall submit sufficient supporting information as outlined below to justify the proposed stormwater management design meets all the provisions within these standards and the land use conditions of approval. It is the design engineer's responsibility to ensure that engineering plans are sufficiently clear and concise to construct the project in proper sequence, using specified methods and materials, with sufficient dimensions to fulfill the intent of these design standards. A Storm Drainage Report as outlined in [Section 301.3.02](#), "Storm Drainage Report", is required to be prepared and submitted with the design plans.

301.4.01 Impervious Area Used in Design

- a. Stormwater management facilities are required when proposed development establishes or increases the impervious surface area by more than 5,000 square feet. Development includes new development, redevelopment, and/or partial redevelopment.
- b. For single-family and duplex residential subdivisions, stormwater management facilities shall be sized for all impervious areas created by the subdivision, including all residences on individual lots at the current rate of 2,750 square feet of impervious surface area per dwelling unit.
- c. For all developments other than single-family and duplex dwellings, including row houses and condominiums, the sizing of stormwater management facilities shall be based on the impervious area to be created by the development, including structures and all roads and impervious areas. Impervious surfaces shall be based on building permits, construction plans, or other appropriate methods of measurement deemed reliable by the City's authorized representative.
- d. The City encourages design initiatives that reduce the effective impervious area. For developments other than single-family and duplex dwellings, a smaller stormwater management facility may be possible.

301.4.02 Criteria for Requiring a Stormwater Management Facility

A stormwater management facility shall be constructed on site unless, in the judgment of the City's authorized representative, any of the following conditions exist:

- a. The site location, size, gradient, topography, soils, or presence of an SROZ make it impractical or ineffective to construct an on-site facility.
- b. The subbasin has a more effective, existing regional site designed to incorporate the development or which has the capacity to treat the site stormwater.
- c. The development is for construction of one- or two-family (duplex) dwellings on existing lots of record which will establish or create less than 5,000 square feet of impervious surface.

301.4.03 Facility Selection

LID facilities such as planters, swales, rain gardens, ponds, and other vegetated facilities are the preferred strategy to meet the stormwater management requirements for water quality treatment and flow control. Impervious area reduction techniques, such as preservation of existing trees, retaining vegetation and open space, clustering buildings, disconnecting residential downspouts, and constructing pervious pavement and green roofs, may be used as techniques to help mitigate stormwater runoff and reduce the size of the required stormwater management facilities.

- a. The following types of stormwater management facilities can be used to meet these standards:
 1. Impervious Area Reduction Methods:

- c. **Alternate Facilities** - Applicants may propose stormwater management facilities that are not listed in **Table 3.10**. Such a proposal will require the applicant to submit a request for a modification to these standards. Alternate facilities must be sized using the Engineered Method as described in this section. An example of an alternate facility would be for the use of a drywell, infiltration trench, or other underground injection control (UIC) facility on private property. To propose a UIC on private property, the applicant would need to prepare appropriate registration information to ODEQ and submit a modification request to the City.

301.4.04 Design Criteria

Stormwater management facility design is based on meeting the City's design criteria to address LID requirements, water quality treatment standards, and flow control requirements.

- a. **LID to the MEP:** The goal is to prioritize the use of LID facilities to the MEP to mimic the natural stormwater runoff conditions of the pre-developed site and recharge the groundwater. The City's strategy to meet this goal is to incorporate LID principles in site planning and facility design.

Either one of the following two options may be used to meet the LID requirement:

1. **LID facilities to the MEP** – Utilize LID facilities to the MEP to address the water quality and flow control requirements of the site. LID facilities shall be sized according to the design requirements of this section, utilizing either the BMP Sizing Tool or the Engineered Method. When site constraints limit the surface area available for stormwater management facilities, MEP is defined as installing LID facilities with a surface area of at least 10% of the total new plus replaced impervious area.
 2. **Onsite Retention** – Retain and fully infiltrate the 10-year design storm on site using LID facilities. This is equivalent to retaining and infiltrating runoff from new impervious surface for the 3.4-inch storm over 24 hours. The facility shall fully infiltrate within 72 hours following the beginning of the storm event. Infiltration of the full 10-year design storm is assumed to satisfy both water quality and flow control requirements.
- b. **Limited Infiltration:** For sites with conditions that limit the use of infiltration (fill, steep slopes, high groundwater table, well-head protection areas, and/or contaminated soils), utilizing LID facilities may not be practicable and the applicant may use lined, non-infiltrating or underground stormwater management facilities. In such cases, the applicant shall submit documentation of limiting conditions from a geotechnical engineer or engineering geologist registered in the State of Oregon, or documentation from ODEQ.
 - c. **Water Quality Requirement:** Water quality facilities shall be designed to capture and treat 80% of the average annual runoff volume to the MEP with the goal of 70% total suspended solids (TSS) removal. In this context, MEP means less effective treatment may not be substituted when it is practicable to provide more effective treatment. The treatment volume equates to a design storm of 1.0 inch over 24 hours.

The BMP Sizing Tool addresses these water quality requirements to size stormwater management facilities.

Hydrodynamic separators, when used as a sole method of stormwater treatment, do not meet the MEP requirement for stormwater treatment effectiveness with regard to these stormwater standards.

- d. **Flow Control Requirement:** The duration of peak flow rates from post-development conditions shall be less than or equal to the duration of peak flow rates from pre-development conditions for all peak flows between 42% of the 2-year storm peak flow rate¹ up to the 10-year peak flow rate. A hydrologic/hydraulic analytical model capable of performing a continuous simulation of flows from local long-term rainfall data shall be used to determine the peak flow rates, recurrence intervals and durations. The BMP Sizing Tool incorporates these flow control requirements to size stormwater management facilities.

301.4.05 Design Methods

This section explains the two methods accepted by the City for designing stormwater management facilities: the BMP Sizing Tool Method and the Engineered Method. To use a different method for sizing a treatment facility type not covered in these standards, applicants shall obtain approval from the City's authorized representative prior to submitting permit applications for review.

a. BMP Sizing Tool Method:

1. A BMP Sizing Tool application is available from the City to assist with the sizing of stormwater management facilities that meet the requirements of these standards. The following facilities can be sized using the tool:
 - (a) Rain Garden – Infiltration and Filtration
 - (b) Stormwater Planter – Infiltration and Filtration
 - (c) Vegetated Swale - Infiltration and Filtration
 - (d) Infiltrator
 - (e) Detention Pond
2. The detention pond option will allow credit for the utilization of upstream LID facilities.
3. The report generated by the BMP Sizing Tool shall be included with permit application submittals. The BMP Sizing Tool can be used during the initial site

¹ The lower threshold of 42% of the 2-year peak flow rate for flow-duration matching is based on a 2008 study by the Oregon Department of Transportation (ODOT) titled, "Water Quantity (Flow Control) Design Storm Performance Standard." ODOT's study found that bed movement in sand-bedded streams occurs at approximately two-thirds of the bank full flow, which is assumed to be roughly equivalent to the 1.2 year discharge. ODOT's flow frequency analysis established that two thirds of the 1.2-year discharge is approximately equivalent to 42 percent of the 2-year discharge.

Exhibit H: Geotechnical Report



Real-World Geotechnical Solutions
Investigation • Design • Construction Support

May 4, 2021
Project No. 19-5263

Scott Newcombe
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Lake Oswego, Oregon 97035
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SUBJECT: GEOTECHNICAL ENGINEERING REPORT
LAUER FROG POND PROPERTY
6901 SW FROG POND LANE
WILSONVILLE, OREGON

This report presents the results of a geotechnical engineering study conducted by GeoPacific Engineering, Inc. (GeoPacific) for the above-referenced project. The purpose of our investigation was to evaluate subsurface conditions at the site and to provide geotechnical recommendations for site development. This geotechnical study was performed in general accordance with GeoPacific Proposals No. P-7015 dated June 13, 2019 and No. P-7643 dated February 15, 2021 and your subsequent authorization of our proposals and *General Conditions for Geotechnical Services*.

SITE DESCRIPTION AND PROPOSED DEVELOPMENT

The subject site is located on the north side of SW Frog Pond Lane in the City of Wilsonville, Clackamas County, Oregon (Figure 1). The property is approximately 12.8 acres in size. Topography is generally gently sloping to the northwest with grades of 10 percent or less (Figures 2 & 3). Steeper slopes up to 45 feet in height and exceeding 35 percent grade are present in the northwestern portion of the site where Boeckman Creek is located. The site is currently occupied by two homes and several barns. Vegetation consists primarily of short grasses and sparse trees.

It is our understanding that the proposed development will consist of a 43 lot subdivision for single family homes, new streets, stormwater facilities, open space, and associated underground utilities. A grading plan has not been provided for our review; however, we anticipate maximum cuts and fills will be on the order of about 10 feet.

REGIONAL AND LOCAL GEOLOGIC SETTING

Regionally, the subject site lies within the Willamette Valley/Puget Sound lowland, a broad structural depression situated between the Coast Range on the west and the Cascade Range on the east. A series of discontinuous faults subdivide the Willamette Valley into a mosaic of fault-bounded, structural blocks (Yeats et al., 1996). Uplifted structural blocks form bedrock highlands, while down-warped structural blocks form sedimentary basins.

The site is underlain by the Quaternary age (last 1.6 million years) Willamette Formation, a catastrophic flood deposit associated with repeated glacial outburst flooding of the Willamette Valley (Gannett and Caldwell, 1998). The last of these outburst floods occurred about 10,000 years ago. These deposits typically consist of fluvial and lacustrine horizontally layered, micaceous, silt to coarse sand forming poorly-defined to distinct beds less than 3 feet thick.

The Willamette Formation is underlain by the Miocene age (about 14.5 to 16.5 million years ago) Columbia River Basalt Formation, a thick sequence of lava flows that form the crystalline bedrock of Tualatin Valley (Yeats et al., 1996; Gannett and Caldwell, 1998). These basalts are dense, finely crystalline rock that is commonly fractured along blocky and columnar vertical joints. Individual basalt flow units typically range from 25 to 125 feet thick and interflow zones are typically vesicular, scoriaceous, and brecciated, and sometimes include sedimentary rocks. Typically, the upper portion of the basalt is deeply weathered and decomposed to a residual soil consisting of red-brown, clayey silt.

REGIONAL SEISMIC SETTING

At least three potential source zones capable of generating damaging earthquakes are thought to exist in the region. These include the Portland Hills Fault Zone, the Gales Creek-Newberg-Mt. Angel Structural Zone, and the Cascadia Subduction Zone, as discussed below.

Portland Hills Fault Zone

The Portland Hills Fault Zone is a series of NW-trending faults that include the central Portland Hills Fault, the western Oatfield Fault, and the eastern East Bank Fault. These faults occur in a northwest-trending zone that varies in width between 3.5 and 5.0 miles. The combined three faults vertically displace the Columbia River Basalt by 1,130 feet and appear to control thickness changes in late Pleistocene (approx. 780,000 years) sediment (Madin, 1990). The Portland Hills Fault occurs along the Willamette River at the base of the Portland Hills and is approximately 9.6 miles northeast of the site. The East Bank Fault occurs along the eastern margin of the Willamette River and is located approximately 14.3 miles northeast of the site. The Oatfield Fault occurs along the western side of the Portland Hills and is approximately 8.5 miles northeast of the site. The accuracy of the fault mapping is stated to be within 500 meters (Wong, et al., 2000). No historical seismicity is correlated with the mapped portion of the Portland Hills Fault Zone, but in 1991 a M3.5 earthquake occurred on a NW-trending shear plane located 1.3 miles east of the fault (Yelin, 1992). Although there is no definitive evidence of recent activity, the Portland Hills Fault Zone is assumed to be potentially active (Geomatrix Consultants, 1995).

Gales Creek-Newberg-Mt. Angel Structural Zone

The Gales Creek-Newberg-Mt. Angel Structural Zone is a 50-mile-long zone of discontinuous, NW-trending faults that lies approximately 10.4 miles southwest of the subject site. These faults are recognized in the subsurface by vertical separation of the Columbia River Basalt and offset seismic

reflectors in the overlying basin sediment (Yeats et al., 1996; Werner et al., 1992). A geologic reconnaissance and photogeologic analysis study conducted for the Scoggins Dam site in the Tualatin Basin revealed no evidence of deformed geomorphic surfaces along the structural zone (Unruh et al., 1994). No seismicity has been recorded on the Gales Creek Fault or Newberg Fault; however, these faults are considered to be potentially active because they may connect with the seismically active Mount Angel Fault and the rupture plane of the 1993 M5.6 Scotts Mills earthquake (Werner et al. 1992; Geomatrix Consultants, 1995).

Cascadia Subduction Zone

The Cascadia Subduction Zone is a 680-mile-long zone of active tectonic convergence where oceanic crust of the Juan de Fuca Plate is subducting beneath the North American continent at a rate of 4 cm per year (Goldfinger et al., 1996). A growing body of geologic evidence suggests that prehistoric subduction zone earthquakes have occurred (Atwater, 1992; Carver, 1992; Peterson et al., 1993; Geomatrix Consultants, 1995). This evidence includes: (1) buried tidal marshes recording episodic, sudden subsidence along the coast of northern California, Oregon, and Washington, (2) burial of subsided tidal marshes by tsunami wave deposits, (3) paleoliquefaction features, and (4) geodetic uplift patterns on the Oregon coast. Radiocarbon dates on buried tidal marshes indicate a recurrence interval for major subduction zone earthquakes of 250 to 650 years with the last event occurring 300 years ago (Atwater, 1992; Carver, 1992; Peterson et al., 1993; Geomatrix Consultants, 1995). The inferred seismogenic portion of the plate interface lies approximately 50 miles west of the Portland Basin at depths of between 20 and 40 kilometers below the surface.

FIELD EXPLORATION

The site-specific exploration for this study was conducted on July 2, 2019, and March 15 & 16, 2021. Fourteen exploratory test pits (designated TP-1 through TP-14) and two exploratory borings (designated B-1 and B-2) were performed at the approximate locations presented on Figure 3. The test pits were excavated to depths of 8.5 to 21 feet with a medium sized backhoe subcontracted by GeoPacific.

The boreholes were drilled using a trailer-mounted drill rig and solid stem auger methods. At each boring location, SPT (Standard Penetration Test) sampling was performed in general accordance with ASTM D1586 using a 2-inch outside diameter split-spoon sampler and a 140-pound hammer equipped with a rope and cathead mechanism. During the test, a sample is obtained by driving the sampler 18 inches into the soil with the hammer free-falling 30 inches. The number of blows for each 6 inches of penetration is recorded. The Standard Penetration Resistance ("N-value") of the soil is calculated as the number of blows required for the final 12 inches of penetration. If 50 or more blows are recorded within a single 6-inch interval, the test is terminated, and the blow count is recorded as 50 blows for the number of inches driven. This resistance, or N-value, provides a measure of the relative density of granular soils and the relative consistency of cohesive soils. At the completion of the borings, the holes were backfilled with bentonite.

It should be noted that exploration locations were determined in the field by pacing or taping distances from apparent property corners and other site features shown on the plans provided. As such, the locations of the explorations should be considered approximate. Explorations were conducted under the full-time observation of a GeoPacific Engineering Geologist. Soil samples obtained from the boring were classified in the field and representative portions were placed in relatively air-tight plastic bags. These soil samples were then returned to the laboratory for further examination and laboratory testing. Pertinent information including soil sample depths, stratigraphy, soil engineering characteristics, and groundwater occurrence was recorded. Rock

hardness was classified in accordance with Table 1, modified from the ODOT Rock Hardness Classification Chart. Soils were classified in general accordance with the Unified Soil Classification System (USCS).

Table 1. Rock Hardness Classification Chart

ODOT Rock Hardness Rating	Field Criteria	Unconfined Compressive Strength	Typical Equipment Needed For Excavation
Extremely Soft (R0)	Indented by thumbnail	<100 psi	Small excavator
Very Soft (R1)	Scratched by thumbnail, crumbled by rock hammer	100-1,000 psi	Small excavator
Soft (R2)	Not scratched by thumbnail, indented by rock hammer	1,000-4,000 psi	Medium excavator (slow digging with small excavator)
Medium Hard (R3)	Scratched or fractured by rock hammer	4,000-8,000 psi	Medium to large excavator (slow to very slow digging), typically requires chipping with hydraulic hammer or mass excavation)
Hard (R4)	Scratched or fractured w/ difficulty	8,000-16,000 psi	Slow chipping with hydraulic hammer and/or blasting
Very Hard (R5)	Not scratched or fractured after many blows, hammer rebounds	>16,000 psi	Blasting

Summary test pit and boring logs are attached. The stratigraphic contacts shown on the individual borehole logs represent the approximate boundaries between soil types. The actual transitions may be more gradual. The soil and groundwater conditions depicted are only for the specific dates and locations reported, and therefore, are not necessarily representative of other locations and times.

Undocumented Fill: Up to 2 feet of undocumented fill was encountered in test pits TP-6 and TP-14. The fill encountered in test pit TP-6 generally consisted of stiff to very stiff silt (ML) with roots and black staining. Trace gravel fill was encountered within the topsoil horizon in test pit TP-14. It is likely that other or thicker areas of undocumented fill may exist in the vicinity of the existing structures, driveway, and road rights-of-way. Topography indicates up to 5 feet of fill may be present on the west side of the barn.

Topsoil Horizon: The ground surface in test pits TP-1 through TP-14 and borings B-1 and B-2 was directly underlain by a moderately organic topsoil horizon. The brown topsoil horizon consisted of silt (OL-ML), was soft, and contained fine roots. The topsoil horizon typically extended to a depth of 6 to 9 inches in explorations. A thin topsoil horizon had developed on the fill in test pit TP-6.

Willamette Formation: Underlying the topsoil horizon in test pits TP-1 through TP-5, and TP-7 through TP-14 and borings B-1 through B-2 and the fill in test pit TP-6 were catastrophic flood

deposits belonging to the Willamette Formation. These soils generally consisted of medium stiff to very stiff, micaceous, light brown clayey silt (ML), silt, and sandy silt that exhibited subtle to strong orange and gray mottling. N-values of samples from borings B-1 and B-2 were on the order of N=4 to N=21. Soils belonging to the Willamette Formation extended to depth of 10 to 20 feet in test pits TP-10, TP-11, and borings B-1 and B-2 and beyond the maximum depth of exploration in test pits TP-1 through TP-9 and TP-12 through TP-14 (8.5 to 16 feet).

Residual Soil: The Willamette Formation soils were underlain by residual resulting from in-place weathering of the underlying Columbia River Basalt Formation in test pits TP-10 and TP-11 and borings B-1 and B-2. The residual soil generally consisted of reddish brown silty CLAY (CL) that had a medium stiff to very stiff consistency with N-values ranging from N=5 to N=27. The residual soil extended to a depth of 40 feet in boring B-2 and beyond the maximum depth of exploration in test pits TP-10 and TP-11 and boring B-1 (20 to 41.5 feet).

Columbia River Basalt Formation: Weathered basalt belonging to the Columbia River Basalt Formation was encountered beneath the residual soil in boring B-2. The gray basalt was weathered to very soft (R1) according to the ODOT Rock Hardness Classification Chart (Table 1) and had an N-value of N=50 for 2 inches. The Columbia River Basalt Formation extended beyond the maximum depth of exploration in boring B-2 (41.5 feet).

Soil Moisture and Groundwater

Soils encountered in explorations were damp to wet. Perched groundwater seepage was encountered at depths of 4 to 20 feet in test pits TP-10 through TP-14 and boring B-1. Discharge was visually estimated at ¼ to 2 gallons per minute. According to our review of nearby Water Well logs, static groundwater is present at depths of approximately 75 to 90 feet below the ground surface (Oregon Water Resources Department, 2021). Experience has shown that temporary perched storm-related groundwater conditions often occur within the surface soils over fine-grained native deposits such as those beneath the site, particularly during the wet season. It is anticipated that groundwater conditions will vary depending on the season, local subsurface conditions, changes in site utilization, and other factors.

INFILTRATION TESTING

Soil infiltration testing was performed using the pushed pipe infiltration method in test pits TP-10 through TP-14. Soil in the test pits was pre-saturated for a period of over 1 hour. The water level was measured to the nearest tenth of an inch every fifteen minutes to half hour with reference to the ground surface. Table 2 presents the results of our falling head infiltration tests.

Table 2. Summary of Infiltration Test Results

Test Pit	Depth (feet)	Soil Type	Infiltration Rate (in/hr)	Hydraulic Head Range (inches)
TP-10	6	Clayey Silt (ML)	0	34-35
TP-11	6	Clayey Silt (ML)	0	41-42
TP-12	7	Clayey Silt (ML)	0	37-38
TP-13	6	Clayey Silt (ML)	0	29-30
TP-14	6	Clayey Silt (ML)	0	30-31

Due to the presence of fine grained soil conditions, it is our opinion that the site is not suitable for infiltration.

Slope Stability

A reconnaissance of the site was performed on March 15, 2021. The majority of the subject site is characterized by gently sloping topography that incline to the northwest with grades of approximately 10 percent or less. The northwestern portion of the site is moderately to steeply sloping towards Boeckman Creek, which is located near the northwestern property line. A slope up to 45 feet and height with grades of 30 to 80 percent is present immediately adjacent to the creek. No natural springs or seeps were observed; however, a drain line daylights near the top of the drainage and wet, soft soil conditions were observed in its vicinity.

Regional landslide hazard mapping does not identify any mapped landslides on the subject site (Burns, 2009; Burns, et al., 2012; DOGAMI, 2021); however, geomorphology consistent with prior slope instability was observed along the Boeckman Creek drainage (Figures 2 & 3). Observed geomorphology included an arcuate shaped headscarp, a moderately steep slope interrupted by relatively flat benches, and hummocky topography. The landslide is estimated to be approximately 10 feet thick and likely extends off site to the west.

Natural slopes on site away from the Boeckman Creek drainage are generally 5 to 10 percent. These slopes are generally smooth and uniform, which is consistent with stable slope conditions. No other scarps or topographic benches were observed. Explorations indicate the site is underlain by medium stiff to very stiff silt belonging to the Willamette Formation underlain by medium stiff to very stiff residual soil underlain by basalt bedrock. The Willamette Formation and residual soil have a moderate to high resistance to slope instability on gently sloping terrain.

CONCLUSIONS AND RECOMMENDATIONS

Our investigation indicates that the proposed development is geotechnically feasible, provided that the recommendations of this report are incorporated into the design and construction phases of the project. The primary geotechnical constraints to development include:

1. prior slope instability along the Boeckman Creek drainage in the northwestern portion of the site (Figure 3). Quantitative slope stability analysis indicates adequate factors of safety can be maintained under static and pseudostatic conditions by maintaining a 50 to 75 foot slope

setback for lots adjacent to the Boeckman Creek drainage in the northwestern portion of the site. The slope setback is presented on Figure 3. Additional analysis may be necessary if engineered fill or cuts are planned adjacent to the Boeckman Creek drainage.

2. low permeability soils and the presence of shallow, perched groundwater conditions that could make utility trenching difficult, especially in the winter months.

Slope Stability

A reconnaissance of the site was performed on March 15, 2021. Much of the subject site is characterized by gently sloping topography with grades of less than 10 percent. An approximately 45 foot high, northwest facing slope is located adjacent to the Boeckman Creek drainage, which is located along the northwestern property line. No natural springs or seeps were observed.

Regional hazard mapping does not identify any mapped landslides on the site (Burns, 2009; Burns et al., 2012; DOGAMI, 2021); however geomorphic evidence of prior slope instability was observed during our reconnaissance. The landslide is located along the northwestern-facing slope adjacent to Boeckman Creek in the northwestern portion of the site and may extend off site to the west (Figures 2 & 3). Elsewhere, our visual reconnaissance and review of Lidar based high resolution digital elevation maps (Figure 2) indicate slopes are generally smooth and uniform consistent with stable slope conditions (DOGAMI, 2021).

Natural slopes in the vicinity to be developed are generally 10 percent or less. No other scarps or topographic benches were observed. Explorations indicate the site is underlain by medium stiff to very stiff, Willamette Formation soils underlain by stiff to very stiff residual soil underlain by basalt bedrock that have a moderate resistance to slope instability on gently to moderately sloping terrain.

Quantitative Slope Stability Modeling

Quantitative slope stability modeling and analyses were performed to evaluate slope stability on slopes adjacent to the Boeckman Creek drainage (Sections A-A' and B-B') under existing conditions using the SLOPE/W computer program developed by Geo-Slope International of Calgary, Canada. This numerical analysis program utilizes a two-dimensional limiting equilibrium method to calculate the factor of safety of a potential slip surface and incorporates search routines to identify the most critical potential failure surfaces for the cases analyzed. Factors of safety were calculated using the Spencer method of analysis.

The slope was modeled as a three or four layer system: landslide debris (Section A-A' only), silt belonging to the Willamette Formation, clayey silt residual soil, and weather basalt belonging to the Columbia River Basalt Formation. Slope topography, subsurface geometry, and other conditions modeled in the analyses are based on geologic cross sections A-A' and B-B' - the locations of which are presented on Figure 3. The analyses were performed using subsurface geologic and groundwater data collected in borings B-1 and B-2.

For stability calculations, the potential failure mode was considered primarily as a defined circular surface. Shear strength parameters used in the models were selected based on SPT N-value correlations obtained from explorations and our local experience with similar soil and geologic conditions. The parameters assumed in the stability calculations are summarized in Table 3. The results of our slope stability analyses are summarized in Table 4.

Table 3. Summary of Estimated Soil Strength Parameters

Geologic Unit	Unit Weight (pcf)	Friction Angle	Cohesion (psf)
Willamette Formation - Silt	120	25°	150
Landslide Debris	125	10°	150
Residual Soil of Columbia River Basalt Formation	125	26°	200
Columbia River Basalt Formation	125	36°	500

* Anisotropic conditions, weaker direction subhorizontal to geologic contacts

Table 4. Summary of Slope Stability Analyses

Section Analyzed	Recommended Slope Setback	Factor of Safety	
		Static	Pseudostatic
Section A-A' (Existing Slide Area)	75 Feet	1.9	1.1
Section B-B'	50 Feet	1.7	1.1

The results of our quantitative slope stability analysis indicate factors of safety for the existing conditions with the recommended slope setback at the site exceed 1.7 under static conditions and factors of safety exceed 1.1 under pseudostatic conditions, which are adequate. Our analysis of cross sections A-A' and B-B' and the soil conditions encountered in our explorations indicate that existing slopes will remain grossly stable. Additional analysis may be necessary to evaluate factors of safety and revise slope setback distances if engineered fill is planned or cuts are planned adjacent to the Boeckman Creek drainage.

Site Preparation

Areas of proposed buildings, streets, and areas to receive fill should be cleared of vegetation and any organic and inorganic debris. Existing drain tiles and buried structures such as septic tanks, should be demolished and any cavities structurally backfilled. Areas of undocumented fill should be completely removed to native soils. Up to 2 feet of undocumented fill was encountered in test pits TP-6 and TP-14. Other areas of fill may be present in the vicinity of the existing structures and driveways. Topography indicates fill up to 5 feet in height may be present on the west side of one of the barn structures. Inorganic debris should be removed from the site.

Organic-rich topsoil should then be stripped from native soil areas of the site. The estimated depth range necessary for removal of topsoil in cut and fill areas is approximately 6 to 9 inches, respectively. The final depth of soil removal will be determined on the basis of a site inspection after the stripping/excavation has been performed. Stripped topsoil should preferably be removed from the site due to the high density of the proposed development. Any remaining topsoil should be stockpiled only in designated areas and stripping operations should be observed and documented by the geotechnical engineer or his representative.

Once topsoil stripping and removal of organic and inorganic debris are approved in a particular area, the area must be ripped or tilled to a depth of 12 inches, moisture conditioned, root-picked, and compacted in-place prior to the placement of engineered fill or crushed aggregate base for

pavement. Exposed subgrade soils should be evaluated by the geotechnical engineer. For large areas, this evaluation is normally performed by proof-rolling the exposed subgrade with a fully loaded scraper or dump truck. For smaller areas where access is restricted, the subgrade should be evaluated by probing the soil with a steel probe. Soft/loose soils identified during subgrade preparation should be compacted to a firm and unyielding condition, over-excavated and replaced with engineered fill (as described below) or stabilized with rock prior to placement of engineered fill. The depth of overexcavation, if required, should be evaluated by the geotechnical engineer at the time of construction.

Engineered Fill

In general, we anticipate that soils from planned cuts and utility trench excavations will be suitable for use as engineered fill provided they are adequately moisture conditioned prior to compacting. All grading for the proposed construction should be performed as engineered grading in accordance with the applicable building code at time of construction with the exceptions and additions noted herein. Proper test frequency and earthwork documentation usually requires daily observation and testing during stripping, rough grading, and placement of engineered fill. Imported fill material must be approved by the geotechnical engineer prior to being imported to the site. Oversize material greater than 6 inches in size should not be used within 3 feet of foundation footings, and material greater than 12 inches in diameter should not be used in engineered fill.

Engineered fill should be compacted in horizontal lifts not exceeding 8 inches using standard compaction equipment. We recommend that engineered fill be compacted to at least 90% of the maximum dry density determined by ASTM D1557 (Modified Proctor) or equivalent. Field density testing should conform to ASTM D2922 and D3017, or D1556. All engineered fill should be observed and tested by the project geotechnical engineer or his representative. Typically, one density test is performed for at least every 2 vertical feet of fill placed or every 500 yd³, whichever requires more testing. Because testing is performed on an on-call basis, we recommend that the earthwork contractor be held contractually responsible for test scheduling and frequency.

Site earthwork will be impacted by soil moisture and shallow groundwater conditions. Earthwork in wet weather would likely require extensive use of cement or lime treatment, or other special measures, at considerable additional cost compared to earthwork performed under dry-weather conditions.

Excavating Conditions and Utility Trenches

Subsurface exploration indicates that, in general, utility trenches can be excavated using conventional heavy equipment such as dozers and trackhoes. Shallow, perched groundwater conditions could cause sidewall caving in excavations. Minor sidewall caving was observed in test pit TP-14. These shallow, perched groundwater conditions could make utility trenching difficult, especially in the winter months, and adequate shoring should be maintained.

All temporary cuts in excess of 4 feet in height should be sloped in accordance with U.S. Occupational Safety and Health Administration (OSHA) regulations (29 CFR Part 1926) or be shored. The existing, near surface, native soils classify as Type B Soil and shallow, temporary excavation side slope inclinations as steep as 1H:1V may be assumed for planning purposes. This cut slope inclination is applicable to excavations above the water table only. Maintenance of safe working conditions, including temporary excavation stability, is the responsibility of the contractor. Actual slope inclinations at the time of construction should be determined based on safety requirements and actual soil and groundwater conditions.

Saturated soils and groundwater may be encountered in utility trenches, particularly during the wet season. We anticipate that dewatering systems consisting of ditches, sumps and pumps would be adequate for control of perched groundwater. Regardless of the dewatering system used, it should be installed and operated such that in-place soils are prevented from being removed along with the groundwater.

Vibrations created by traffic and construction equipment may cause some caving and raveling of excavation walls. In such an event, lateral support for the excavation walls should be provided by the contractor to prevent loss of ground support and possible distress to existing or previously constructed structural improvements.

PVC pipe should be installed in accordance with the procedures specified in ASTM D2321. We recommend that the upper 4 feet of trench backfill be compacted to at least 95% of the maximum dry density obtained by Modified Proctor ASTM D1557 or equivalent. Trench backfill below 4 feet should be compacted to at least 90% of the maximum dry density obtained by Modified Proctor ASTM D1557 or equivalent. Initial backfill lift thickness for a ¾"-0 crushed aggregate base may need to be as great as 4 feet to reduce the risk of flattening underlying flexible pipe. Subsequent lift thickness should not exceed 1 foot. If imported granular fill material is used, then the lifts for large vibrating plate-compaction equipment (e.g. hoe compactor attachments) may be up to 2 feet, provided that proper compaction is being achieved and each lift is tested. Use of large vibrating compaction equipment should be carefully monitored near existing structures and improvements due to the potential for vibration-induced damage.

Adequate density testing should be performed during construction to verify that the recommended relative compaction is achieved. Typically, one density test is taken for every 4 vertical feet of backfill on each 200-lineal-foot section of trench.

Erosion Control Considerations

During our field exploration program, we did not observe soil types that would be considered highly susceptible to erosion except in areas of moderately to steeply sloping topography. In our opinion, the primary concern regarding erosion potential will occur during construction, in areas that have been stripped of vegetation. Erosion at the site during construction can be minimized by implementing the project erosion control plan, which should include judicious use of straw wattles and silt fences. If used, these erosion control devices should be in place and remain in place throughout site preparation and construction.

Erosion and sedimentation of exposed soils can also be minimized by quickly re-vegetating exposed areas of soil, and by staging construction such that large areas of the project site are not denuded and exposed at the same time. Areas of exposed soil requiring immediate and/or temporary protection against exposure should be covered with either mulch or erosion control netting/blankets. Areas of exposed soil requiring permanent stabilization should be seeded with an approved grass seed mixture, or hydroseeded with an approved seed-mulch-fertilizer mixture.

Wet Weather Earthwork

Soils underlying the site are likely to be moisture sensitive and may be difficult to handle or traverse with construction equipment during periods of wet weather. Earthwork is typically most economical when performed under dry weather conditions. Earthwork performed during the wet-weather season will probably require expensive measures such as cement treatment or imported granular material to compact fill to the recommended engineering specifications. If earthwork is to be performed or fill is to be placed in wet weather or under wet conditions when soil moisture

content is difficult to control, the following recommendations should be incorporated into the contract specifications.

- Earthwork should be performed in small areas to minimize exposure to wet weather. Excavation or the removal of unsuitable soils should be followed promptly by the placement and compaction of clean engineered fill. The size and type of construction equipment used may have to be limited to prevent soil disturbance. Under some circumstances, it may be necessary to excavate soils with a backhoe to minimize subgrade disturbance caused by equipment traffic;
- The ground surface within the construction area should be graded to promote run-off of surface water and to prevent the ponding of water;
- Material used as engineered fill should consist of clean, granular soil containing less than 5 percent fines. The fines should be non-plastic. Alternatively, cement treatment of on-site soils may be performed to facilitate wet weather placement;
- The ground surface within the construction area should be sealed by a smooth drum vibratory roller, or equivalent, and under no circumstances should be left uncompacted and exposed to moisture. Soils which become too wet for compaction should be removed and replaced with clean granular materials;
- Excavation and placement of fill should be observed by the geotechnical engineer to verify that all unsuitable materials are removed and suitable compaction and site drainage is achieved; and
- Straw wattles and/or geotextile silt fences should be strategically located to control erosion.

If cement or lime treatment is used to facilitate wet weather construction, GeoPacific should be contacted to provide additional recommendations and field monitoring.

Spread Foundations

The proposed residential structures may likely be supported on shallow foundations bearing on competent undisturbed, native low expansivity soils and/or engineered fill, appropriately designed and constructed as recommended in this report. A 50 to 75 foot slope setback is recommended for lots adjacent to the Boeckman Creek drainage in the northwestern portion of the site, as presented on Figure 3.

Foundation design, construction, and setback requirements should conform to the applicable building code at the time of construction. For maximization of bearing strength and protection against frost heave, spread footings should be embedded at a minimum depth of 12 inches below exterior grade. The recommended minimum widths for continuous footings supporting wood-framed walls without masonry are 12 inches for single-story, 15 inches for two-story, and 18 inches for three-story structures. Minimum foundation reinforcement should consist of a No. 4 bar at the top of the stem walls, and a No. 4 bar at the bottom of the footings. Concrete slab-on-grade reinforcement should consist of No. 4 bars placed on 24-inch centers in a grid pattern.

The anticipated allowable soil bearing pressure is 1,500 lbs/ft² for footings bearing on competent, native soil and/or engineered fill. A maximum chimney and column load of 40 kips is recommended for the site. The recommended maximum allowable bearing pressure may be increased by 1/3 for short-term transient conditions such as wind and seismic loading. For heavier loads, the geotechnical engineer should be consulted. The coefficient of friction between on-site soil and poured-in-place concrete may be taken as 0.42, which includes no factor of safety. The

maximum anticipated total and differential footing movements (generally from soil expansion and/or settlement) are 1 inch and $\frac{3}{4}$ inch over a span of 20 feet, respectively. We anticipate that the majority of the estimated settlement will occur during construction, as loads are applied. Excavations near structural footings should not extend within a 1H:1V plane projected downward from the bottom edge of footings.

Footing excavations should penetrate through topsoil and any loose soil to competent subgrade that is suitable for bearing support. All footing excavations should be trimmed neat, and all loose or softened soil should be removed from the excavation bottom prior to placing reinforcing steel bars. Due to the moisture sensitivity of on-site native soils, foundations constructed during the wet weather season may require overexcavation of footings and backfill with compacted, crushed aggregate.

Our recommendations are for house construction incorporating raised wood floors and conventional spread footing foundations. If living space of the structures will incorporate basements, a geotechnical engineer should be consulted to make additional recommendations for retaining walls, water-proofing, underslab drainage and wall subdrains. After site development, a Final Soil Engineer's Report should either confirm or modify the above recommendations.

Concrete Slabs-on-Grade

Preparation of areas beneath concrete slab-on-grade floors should be performed as recommended in the *Site Preparation and Undocumented Fill Removal* section. Care should be taken during excavation for foundations and floor slabs, to avoid disturbing subgrade soils. If subgrade soils have been adversely impacted by wet weather or otherwise disturbed, the surficial soils should be scarified to a minimum depth of 8 inches, moisture conditioned to within about 3 percent of optimum moisture content, and compacted to engineered fill specifications. Alternatively, disturbed soils may be removed and the removal zone backfilled with additional crushed rock.

For evaluation of the concrete slab-on-grade floors using the beam on elastic foundation method, a modulus of subgrade reaction of 150 kcf (87 pci) should be assumed for the medium stiff native silt soils anticipated at subgrade depth. This value assumes the concrete slab system is designed and constructed as recommended herein, with a minimum thickness of crushed rock of 8 inches beneath the slab.

Interior slab-on-grade floors should be provided with an adequate moisture break. The capillary break material should consist of ODOT open graded aggregate per ODOT Standard Specifications 02630-2. The minimum recommended thickness of capillary break materials on re-compacted soil subgrade is 8 inches. The total thickness of crushed aggregate will be dependent on the subgrade conditions at the time of construction, and should be verified visually by proof-rolling. Under-slab aggregate should be compacted to at least 90% of its maximum dry density as determined by ASTM D1557 or equivalent.

In areas where moisture will be detrimental to floor coverings or equipment inside the proposed structure, appropriate vapor barrier and damp-proofing measures should be implemented. A commonly applied vapor barrier system consists of a 10-mil polyethylene vapor barrier placed directly over the capillary break material. Other damp/vapor barrier systems may also be feasible. Appropriate design professionals should be consulted regarding vapor barrier and damp proofing systems, ventilation, building material selection and mold prevention issues, which are outside GeoPacific's area of expertise.

Permanent Below-Grade Walls

Lateral earth pressures against below-grade retaining walls will depend upon the inclination of any adjacent slopes, type of backfill, degree of wall restraint, method of backfill placement, degree of backfill compaction, drainage provisions, and magnitude and location of any adjacent surcharge loads. At-rest soil pressure is exerted on a retaining wall when it is restrained against rotation. In contrast, active soil pressure will be exerted on a wall if its top is allowed to rotate or yield a distance of roughly 0.001 times its height or greater.

If the subject retaining walls will be free to rotate at the top, they should be designed for an active earth pressure equivalent to that generated by a fluid weighing 35 pcf for level backfill against the wall. For restrained wall, an at-rest equivalent fluid pressure of 55 pcf should be used in design, again assuming level backfill against the wall. These values assume that drainage provisions are incorporated, free draining gravel backfill is used, and hydrostatic pressures are not allowed to develop against the wall.

During a seismic event, lateral earth pressures acting on below-grade structural walls will increase by an incremental amount that corresponds to the earthquake loading. Based on the Mononobe-Okabe equation and peak horizontal accelerations appropriate for the site location, seismic loading should be modeled using the active or at-rest earth pressures recommended above, plus an incremental rectangular-shaped seismic load of magnitude $6.5H$, where H is the total height of the wall.

We assume relatively level ground surface below the base of the walls. As such, we recommend passive earth pressure of 320 pcf for use in design, assuming wall footings are cast against competent native soils or engineered fill. If the ground surface slopes down and away from the base of any of the walls, a lower passive earth pressure should be used and GeoPacific should be contacted for additional recommendations.

A coefficient of friction of 0.42 may be assumed along the interface between the base of the wall footing and subgrade soils. The recommended coefficient of friction and passive earth pressure values do not include a safety factor, and an appropriate safety factor should be included in design. The upper 12 inches of soil should be neglected in passive pressure computations unless it is protected by pavement or slabs on grade.

The above recommendations for lateral earth pressures assume that the backfill behind the subsurface walls will consist of properly compacted structural fill, and no adjacent surcharge loading. If the walls will be subjected to the influence of surcharge loading within a horizontal distance equal to or less than the height of the wall, the walls should be designed for the additional horizontal pressure. For uniform surcharge pressures, a uniformly distributed lateral pressure of 0.3 times the surcharge pressure should be added. Traffic surcharges may be estimated using an additional vertical load of 250 psf (2 feet of additional fill), in accordance with local practice.

The recommended equivalent fluid densities assume a free-draining condition behind the walls so that hydrostatic pressures do not build-up. This can be accomplished by placing a 12 to 18-inch wide zone of sand and gravel containing less than 5 percent passing the No. 200 sieve against the walls. A 3-inch minimum diameter perforated, plastic drain pipe should be installed at the base of the walls and connected to a suitable discharge point to remove water in this zone of sand and gravel. The drain pipe should be wrapped in filter fabric (Mirafi 140N or other as approved by the geotechnical engineer) to minimize clogging.

Wall drains are recommended to prevent detrimental effects of surface water runoff on foundations – not to dewater groundwater. Drains should not be expected to eliminate all potential sources of water entering a basement or beneath a slab-on-grade. An adequate grade to a low point outlet drain in the crawlspace is required by code. Underslab drains are sometimes added beneath the slab when placed over soils of low permeability and shallow, perched groundwater.

Water collected from the wall drains should be directed into the local storm drain system or other suitable outlet. A minimum 0.5 percent fall should be maintained throughout the drain and non-perforated pipe outlet. Down spouts and roof drains should not be connected to the wall drains in order to reduce the potential for clogging. The drains should include clean-outs to allow periodic maintenance and inspection. Grades around the proposed structure should be sloped such that surface water drains away from the building.

GeoPacific should be contacted during construction to verify subgrade strength in wall keyway excavations, to verify that backslope soils are in accordance with our assumptions, and to take density tests on the wall backfill materials.

Structures should be located a horizontal distance of at least 1.5H away from the back of the retaining wall, where H is the total height of the wall. GeoPacific should be contacted for additional foundation recommendations where structures are located closer than 1.5H to the top of any wall.

Pavement Design

For design purposes, we used an estimated resilient modulus of 9,000 for compacted native soil. Table 5 presents our recommended minimum pavement section for dry weather construction.

Table 5. Recommended Minimum Dry-Weather Pavement Section

Material Layer	Light-duty Public Streets	Compaction Standard
Asphaltic Concrete (AC)	3 in.	92% of Rice Density AASHTO T-209
Crushed Aggregate Base ¾"-0 (leveling course)	2 in.	95% of Modified Proctor AASHTO T-180
Crushed Aggregate Base 1½"-0	8 in.	95% of Modified Proctor AASHTO T-180
Subgrade	12 in.	95% of Standard Proctor AASHTO T-99 or equivalent

Any pockets of organic debris or loose fill encountered during ripping or tilling should be removed and replaced with engineered fill (see *Site Preparation* Section). In order to verify subgrade strength, we recommend proof-rolling directly on subgrade with a loaded dump truck during dry weather and on top of base course in wet weather. Soft areas that pump, rut, or weave should be stabilized prior to paving. If pavement areas are to be constructed during wet weather, the subgrade and construction plan should be reviewed by the project geotechnical engineer at the time of construction so that condition specific recommendations can be provided. The moisture sensitive subgrade soils make the site a difficult wet weather construction project.

During placement of pavement section materials, density testing should be performed to verify compliance with project specifications. Generally, one subgrade, one base course, and one asphalt compaction test is performed for every 100 to 200 linear feet of paving.

Seismic Design

The Oregon Department of Geology and Mineral Industries (DOGAMI), Oregon HazVu: 2021 Statewide GeoHazards Viewer indicates that the site is in an area where severe ground shaking is anticipated during an earthquake (DOGAMI HazVu, 2021). Structures should be designed to resist earthquake loading in accordance with the methodology described in the 2018 International Building Code (IBC) with applicable Oregon Structural Specialty Code (OSSC) revisions (current 2019). We recommend Site Class D be used for design as defined in ASCE 7, Chapter 20, Table 20.3-1. Design values determined for the site using the ATC (Applied Technology Council) *ASCE7-16 Hazards by Location online Tool* website are summarized in Table 6.

Table 6. Recommended Earthquake Ground Motion Parameters (ATC 2021)

Parameter	Value
Location (Lat, Long), degrees	45.324, -122.749
Mapped Spectral Acceleration Values (MCE):	
Peak Ground Acceleration PGA_M	0.458 g
Short Period, S_s	0.821 g
1.0 Sec Period, S_1	0.381 g
Soil Factors for Site Class D:	
F_a	1.172
F_v	*1.919
$SD_s = 2/3 \times F_a \times S_s$	0.641 g
$SD_1 = 2/3 \times F_v \times S_1$	*0.487 g
Seismic Design Category	D

* The F_v value reported in the above table is a straight-line interpolation of mapped spectral response acceleration at 1-second period, S_1 per Table 1613.2.3(2) of OSSC 2019 with the assumption that Exception 2 of ASCE 7-16 Chapter 11.4.8 is met. SD_1 is based on the F_v value. The structural engineer should evaluate exception 2 and determine whether or not the exception is met. If Exception 2 is not met, and the long-period site coefficient (F_v) is required for design, GeoPacific Engineering can be consulted to provide a site-specific procedure as per ASCE 7-16, Chapter 21.

Soil Liquefaction

Soil liquefaction is a phenomenon wherein saturated soil deposits temporarily lose strength and behave as a liquid in response to earthquake shaking. Soil liquefaction is generally limited to loose, granular soils located below the water table. The Oregon Department of Geology and Mineral Industries (DOGAMI), Oregon HazVu: 2021 Statewide GeoHazards Viewer indicates that the majority of the site is considered to have a low risk for soil liquefaction with the southern portion considered to have a moderate liquefaction risk. Two small zones identified as having a high risk of soil liquefaction are identified in the northwestern and southeastern portions of the site. Our explorations indicate that the near surface soils underlying the site are not prone to liquefaction.

Other Potential Seismic Impacts

Other potential seismic impacts include fault rupture potential. However, based on our review of available geologic literature, we are not aware of any mapped active (demonstrating movement in the last 10,000 years) faults on the site. During our field investigation, we did not observe any evidence of surface rupture or recent faulting. Therefore, we conclude that the potential for fault rupture on site is very low.

Footing and Roof Drains

Construction should include typical measures for controlling subsurface water beneath the homes, including positive crawlspace drainage to an adequate low-point drain exiting the foundation, visqueen covering the expose ground in the crawlspace, and crawlspace ventilation (foundation vents). The homebuyers should be informed and educated that some slow flowing water in the crawlspaces is considered normal and not necessarily detrimental to the home given these other design elements incorporated into its construction. Appropriate design professionals should be consulting regarding crawlspace ventilation, building material selection and mold prevention issues, which are outside GeoPacific's area of expertise.

Down spouts and roof drains should collect roof water in a system separate from the footing drains to reduce the potential for clogging. Roof drain water should be directed to an appropriate discharge point and storm system well away from structural foundations. Grades should be sloped downward and away from buildings to reduce the potential for ponded water near structures.

If the proposed structures will have a raised floor, and no concrete slab-on-grade floors in living spaces are used, perimeter footing drains would not be required based on soil conditions encountered at the site and experience with standard local construction practices. Where it is desired to reduce the potential for moist crawl spaces, footing drains may be installed. If concrete slab-on-grade floors are used, perimeter footing drains should be installed as recommended below.

Where necessary, perimeter footing drains should consist of 3 or 4-inch diameter, perforated plastic pipe embedded in a minimum of 1 ft³ per lineal foot of clean, free-draining drain rock. The drain pipe and surrounding drain rock should be wrapped in non-woven geotextile (Mirafi 140N, or approved equivalent) to minimize the potential for clogging and/or ground loss due to piping. A minimum 0.5 percent fall should be maintained throughout the drain and non-perforated pipe outlet. In our opinion, footing drains may outlet at the curb, or on the back sides of lots where sufficient fall is not available to allow drainage to meet the street.

UNCERTAINTIES AND LIMITATIONS

We have prepared this report for the owner and their consultants for use in design of this project only. This report should be provided in its entirety to prospective contractors for bidding and estimating purposes; however, the conclusions and interpretations presented in this report should not be construed as a warranty of the subsurface conditions. Experience has shown that soil and groundwater conditions can vary significantly over small distances. Inconsistent conditions can occur between explorations that may not be detected by a geotechnical study. If, during future site operations, subsurface conditions are encountered which vary appreciably from those described herein, GeoPacifc should be notified for review of the recommendations of this report, and revision of such if necessary.

Sufficient geotechnical monitoring, testing and consultation should be provided during construction to confirm that the conditions encountered are consistent with those indicated by explorations. The checklist attached to this report outlines recommended geotechnical observations and testing for the project. Recommendations for design changes will be provided should conditions revealed during construction differ from those anticipated, and to verify that the geotechnical aspects of construction comply with the contract plans and specifications.

Within the limitations of scope, schedule and budget, GeoPacifc attempted to execute these services in accordance with generally accepted professional principles and practices in the fields of geotechnical engineering and engineering geology at the time the report was prepared. No warranty, expressed or implied, is made. The scope of our work did not include environmental assessments or evaluations regarding the presence or absence of wetlands or hazardous or toxic substances in the soil, surface water, or groundwater at this site.

We appreciate this opportunity to be of service.

Sincerely,

GEO PACIFIC ENGINEERING, INC.



Beth K. Rapp, C.E.G.
Senior Engineering Geologist



EXPIRES: 06/30/20 23

Reviewed by: James D. Imbrie, G.E., C.E.G.
Principal Geotechnical Engineer

Attachments: References
Figure 1 – Vicinity Map
Figure 2 – Lidar Based Vicinity Map – With Mapped Landslides
Figure 3 – Site Plan and Exploration Locations
Test Pit Logs (TP-1 through TP-14)
Boring Logs (B-1 & B-2)
Results of Slope Stability Analysis (8 Pages)

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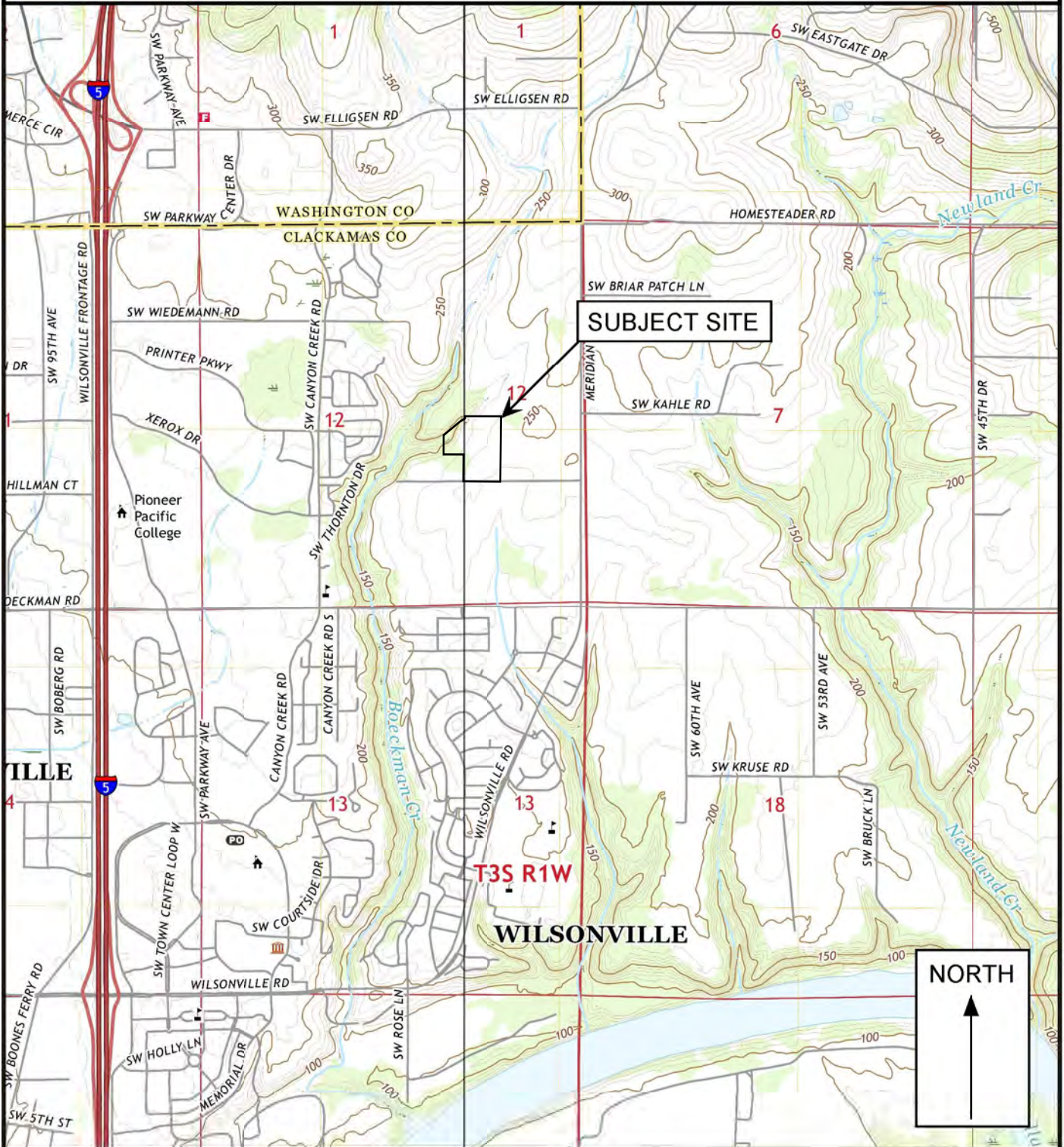
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VICINITY MAP



Legend

Approximate Scale 1 in = 2,000 feet

Date: 5/4/2021
 Drawn by: EKR

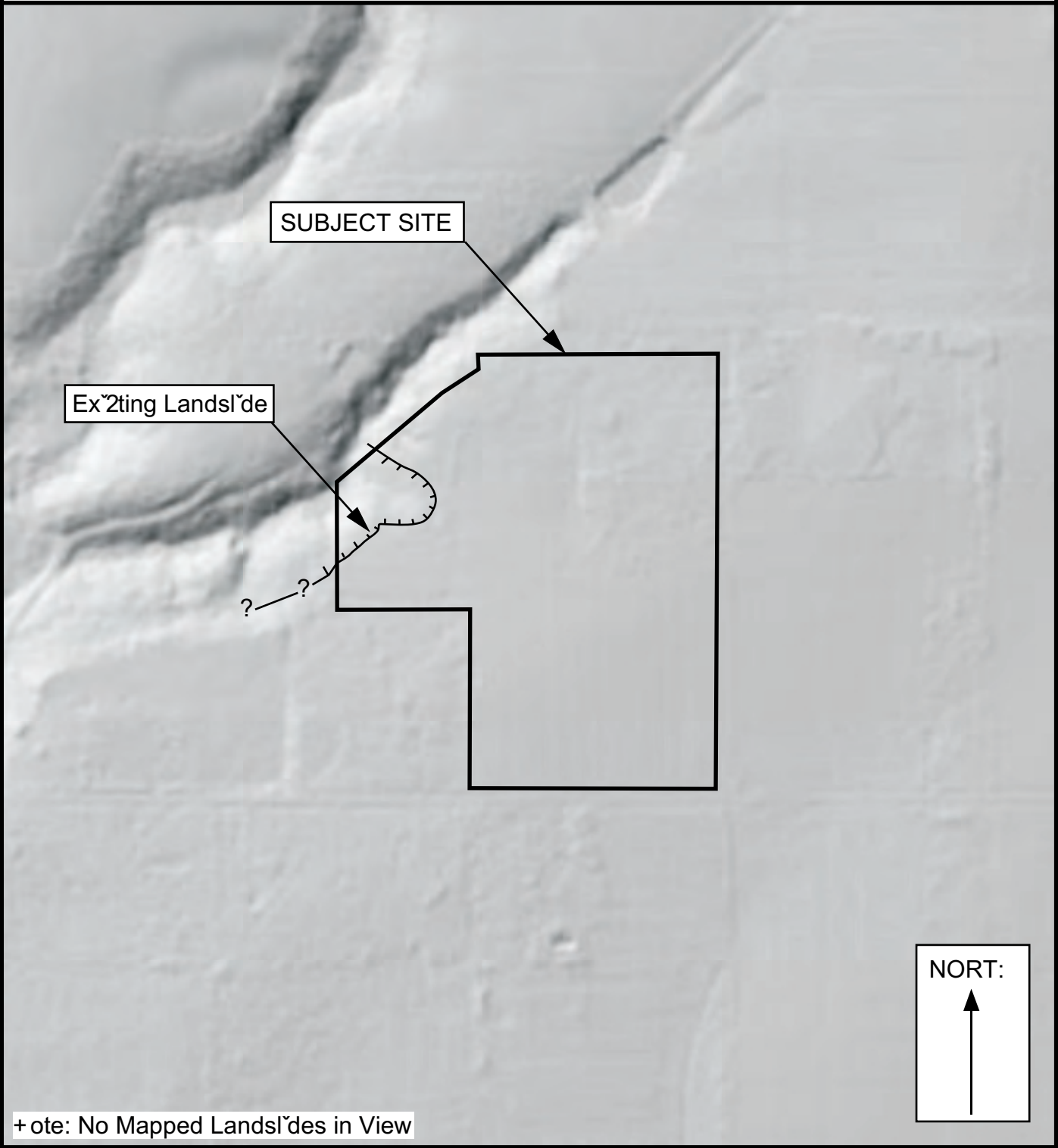
Base map: U.S. Geological Survey 7.5 minute Topographic Map Series, Canby, Oregon Quadrangle, and Sherwood, Oregon Quadrangle, 2020.

Project: Lauer Frog Pond Wilsonville, Oregon	Project No. 20-5263	FIGURE 1
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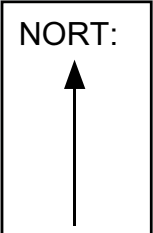
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LIDAR BASED VICINITY MAP - WITH MAPPED LANDSLIDES



Existing Landslide

SUBJECT SITE



+ Note: No Mapped Landslides in View

Legend Approximate Scale 1 in = 300 ft # Date: 5/4/2021
Prepared by: EKR

Base map: Oregon Department of Geology and Mineral Industries, 2021, Statewide Landslide Information Database for Oregon ("LID5":
<https://gis.dogmatic.com/oregon.go3/maps/slido/>)

Project: Lauer Frog Pond
 1 Wilsonville, Oregon

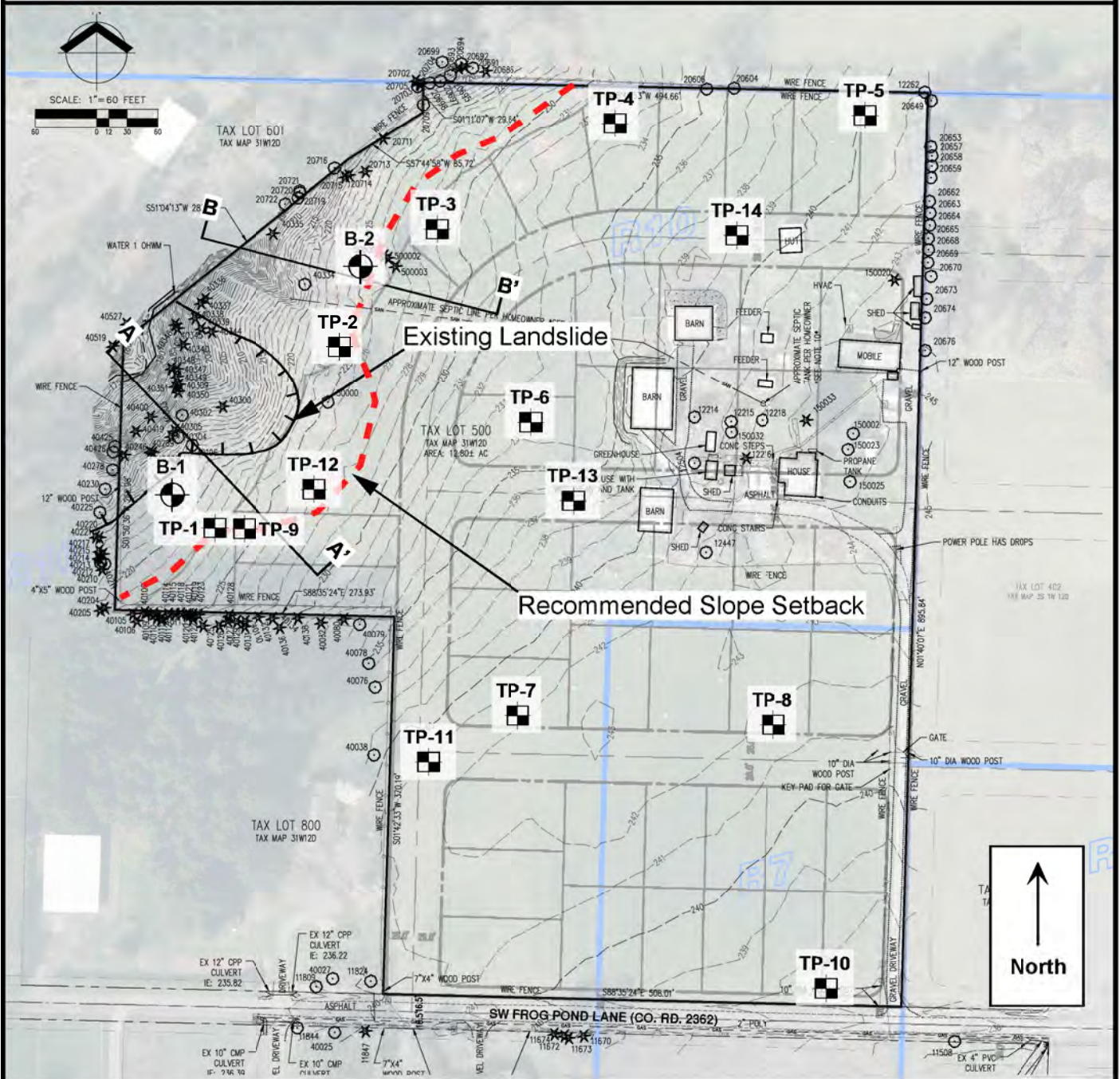
Project No. 19-5263

FIGURE 2



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SITE PLAN AND EXPLORATION LOCATIONS



Legend

Date: 5/4/2021
 Drawn by: EKR

TP-1 Test Pit Designation and Approximate Location

Recommended Slope Setback

B-1 Boring Designation and Approximate Location

A A' Section Designation and Approximate Location

0 150'
 APPROXIMATE SCALE 1"=150'

Project: Lauer Frog Pond
 Wilsonville, Oregon

Project No. 19-5263

FIGURE 2



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TEST PIT LOG

Project: Lauer Fr! Pond
 Wilsonville, Oregon

Project No. 19-10-1

Test Pit No. **TP-1**

Depth (ft)	Pocket Penetrator meter (tons/ft²)	Sample Type	In-Situ Dry Density (lb/ft³)	Moisture Content (%)	Water Content (%)	Material Description
0 - 0.5	10					4-6 inches, soft to medium stiff, moderately organic SILT (OL: 10, dark brown, fine roots throughout, dry (Topsoil Horizon)
0.5 - 1.5	15					Stiff to very stiff, SILT (OL: 15, light brown, subtle orange and gray mottling, some black staining, micaceous, dry to damp, fine roots to approximately 1.5 feet (Willaette Formation)
1.5 - 2.5	20					Grades to stiff with trace clay
2.5 - 3.5	25					Grades to with trace sand
3.5 - 8.5	30					Test pit terminated at 8.5 feet bgs. (no groundwater seepage observed)

1454(D



100 to 1,000 g



5 Gal. bucket



Shelby Tube Sample



Seepage



Water Content Zone



Water Level at Abandonment

Date Excavated: 7/2/2019

Designed By: S. Morris

Surface Elevation:



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TEST PIT LOG

Project: Lauer Farm Pond
 Wilsonville, Oregon

Project No. 19-100

Test Pit No. **TP-2**

Depth (ft)	Pocket Penetrometer (tons/ft²)	Sample Type	In-Situ Dry Density (lb/ft³)	Moisture Content (%)	Water Content (%)	Material Description
0						4-6 inches, soft to medium stiff, moderately organic SILT (OL-1), dark brown, fine roots throughout, dry (Topsoil Horizon)
1						Stiff to very stiff, SILT (CL-1), light brown, subtle orange and gray mottling, some black staining, micaceous, dry to damp, fine and woody roots to approximately 2 feet (Willamette Formation)
2						
3						Grades to stiff = with trace clay
4						Medium stiff to stiff, sandy SILT (CL-1), light brown, some black staining, micaceous, damp (Willamette Formation)
5						
6						Test pit terminated at 12 feet bgs. (no groundwater seepage observed)
7						
8						
9						
10						
11						
12						
13						
14						
15						

1454(D)

100 to 1,000 g
bag Sample

5 Gal. bucket
bucket Sample

Shelby Tube Sample

Seepage

Water Content Zone

Water Level at Abandonment

Date Excavated: 7/2/2019
 Fielded By: S. Morris
 Surface Elevation:



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TEST PIT LOG

Project: Lauer Fr! Pond
 Wilsonville, Oregon

Project No. 19-10-1

Test Pit No. **TP-3**

Depth (ft)	Pocket Penetrometer (tons/ft²)	Sample Type	In-Situ Dry Density (lb/ft³)	Moisture Content (%)	Water Content (%)	Material Description
0						4-6 inches, soft to medium stiff, moderately organic SILT (OL-1, dark brown, fine roots throughout, dry) (Topsoil Horizon)
1						Stiff to very stiff, SILT (1-2, light brown, subtle to strong orange and gray mottling, some black staining, micaceous, dry to damp, fine and woody roots to approximately 3 feet (Willamette Formation))
2						
3						Grades to stiff with trace sand, damp to moist
4						
5						Medium stiff to stiff, sandy SILT (1-2, brown, some black staining, micaceous, damp to moist) (Willamette Formation)
6						
7						Test pit terminated at 13 feet bgs. (No groundwater seepage observed)
8						
9						
10						
11						
12						
13						

1454 (D)

100 to 1,000 g
bag Sample

5 Gal. bucket
bucket Sample

Shelby Tube Sample

Seepage

Water Content Zone

Water Level at Abandonment

Date Excavated: 7/2/2019
 Fielded By: S. Morris
 Surface Elevation:



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TEST PIT LOG

Project: Lauer Fr! Pond
 Wilsonville, Oregon

Project No. 19-,&-^

Test Pit No. **TP-4**

Depth (ft)	Pocket Penetr meter (tons/ft²)	Sample Type	In-Situ Dry Density (lb/ft³)	Moisture Content (%)	Water bearing zone	Material Description
0						Approximately 8 inches, soft to medium stiff, moderately organic SILT (OL-1), dark brown, fine roots throughout, dry (Topsoil Horizon)
1						Stiff to very stiff, SILT (1-2), light brown, subtle orange and gray mottling, some black staining, micaceous, dry to damp, fine and woody roots to approximately 1 foot (Willamette Formation)
2						Grades to stiff micaceous mottles
3						Medium stiff to stiff, sandy SILT (1-2), light brown, micaceous, damp to moist (Willamette Formation)
4						Test pit terminated at 12 feet bgs. (No groundwater seepage observed)

454(D



bag Sample



bucket Sample



Shelby Tube Sample



Seepage



Water bearing Zone



Water Level at Abandonment

Date Excavated: 7/2/2019

Designed By: S. Morris

Surface Elevation:



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TEST PIT LOG

Project: Lauer Farm Pond
 Wilsonville, Oregon

Project No. 19-10-1

Test Pit No. **TP-5**

Depth (ft)	Pocket Penetrometer (tons/ft²)	Sample Type	In-Situ Dry Density (lb/ft³)	Moisture Content (%)	Water Content (%)	Material Description
0						4-6 inches, soft to medium stiff, moderately organic SILT (OL), dark brown, fine roots throughout. dry (Topsoil Horizon)
1						Stiff to very stiff, SILT (CL), light brown, subtle to strong orange and gray mottling, some black staining, micaceous, dry to damp, fine and woody roots to approximately 2 feet (Willamette Formation)
2						
3						Grades to stiff = with trace sand
4						Medium stiff to stiff, sandy SILT (CL), light brown, micaceous, moist (Willamette Formation)
5						
6						Test pit terminated at 12.5 feet bgs. (no groundwater seepage observed)
7						
8						
9						
10						
11						
12						
13						
14						
15						
16						
17						

1454 (D)

100 to 1,000 g
bag Sample

5 Gal. bucket
bucket Sample

Shelby Tube Sample

Seepage

Water Bearing Zone

Water Level at Abandonment

Date Excavated: 7/2/2019
 Fielded By: S. Morris
 Surface Elevation:



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TEST PIT LOG

Project: Lauer Fr ! Pond
 Wilsonville, Oregon

Project No. 19-,&-^

Test Pit No. **TP-6**

Depth (ft)	Pocket Penetr meter (tons/ft²)	Sample Type	In-Situ Dry Density (lb/ft³)	Moisture Content (%)	Water Content (%)	Material Description
0						4-6 inches, soft to medium stiff, moderately organic SILT (OL- . . , dark br" = n, fine roots throughout, dry (Topsoil Horizon)
1						Stiff to very stiff, SILT (. . , light br" = n, large black stains, dry to damp, fine roots to approximately 2 feet (Undocumented Fill)
2						Stiff to very stiff, SILT (. . , light br" = n, subtle to strong orange and gray mottling, micaceous, dry to damp (Willamette Formation)
3						
4						
5						
6						
7						
8						
9						
10						Grades to stiff = ith trace sand
11						
12						Medium stiff to stiff, sandy SILT (. . , light br" = n, micaceous, damp (Willamette Formation)
13						
14						
15						
16						
17						
18						
19						
20						
21						
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100						

454(D

ag Sample ucket Sample Shelby Tube Sample Seepage ater Content Zone ater Level at Abandonment

Date Excavated: 7/2/2019
 Fielded By: S. Morris
 Surface Elevation:



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TEST PIT LOG

Project: Lauer Farm Pond
 Wilsonville, Oregon

Project No. 19-10-1

Test Pit No. **TP-7**

Depth (ft)	Pocket Penetrometer (tons/ft²)	Sample Type	In-Situ Dry Density (lb/ft³)	Moisture Content (%)	Water Content (%)	Material Description
0	10					4-6 inches, soft to medium stiff, moderately organic SILT (OL-1, dark brown, fine roots throughout, dry (Topsoil Horizon)
1	15					Stiff to very stiff, SILT (1-2, light brown, subtle orange and gray mottling, some black staining, micaceous, dry to damp, fine roots to approximately 3 feet (Willamette Formation)
2	20				Grades to stiff = with trace sand	
3	25					Medium stiff to stiff, sandy SILT (1-3, light brown, micaceous, damp to moist (Willamette Formation)
4	30					Test pit terminated at 12 feet bgs. (No groundwater seepage observed)
5	35					
6	40					
7	45					
8	50					
9	55					
10	60					
11	65					
12	70					
13	75					

1454 (D)

100 to 1,000 g
bag Sample

5 Gal. bucket
ucket Sample

Shelby Tube Sample

Seepage

Water Content Zone

Water Level at Abandonment

Date Excavated: 7/2/2019
 Fielded By: S. Morris
 Surface Elevation:



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TEST PIT LOG

Project: Lauer Fr! Pond
 Wilsonville, Oregon

Project No. 19-10-1

Test Pit No. **TP-8**

Depth (ft)	Pocket Penetr meter (tons/ft²)	Sample Type	In-Situ Dry Density (lb/ft³)	Moisture Content (%)	Water Content (%)	Material Description
0	0					Approximately 7 inches, soft to medium stiff, moderately organic SILT (OL-1), dark brown, fine roots throughout, dry (Topsoil Horizon)
1	1					Stiff to very stiff, SILT (OL-2), light brown, subtle to moderate orange and gray mottling, some black staining, micaceous, dry to damp, fine roots to approximately 2 feet (Willamette Formation)
2	2					Grades to stiff, reddish brown SILT with trace sand
3	3					Medium stiff to stiff, sandy SILT (OL-3), light brown, micaceous, damp to moist (Willamette Formation)
4	4					
5	5					
6	6					
7	7					
8	8					
9	9					
10	10					
11	11					
12	12					Test pit terminated at 12 feet bgs. (No groundwater seepage observed)

1454(D

ag Sample ucket Sample Shelby Tube Sample Seepage ater Content Zone ater Level at Abandonment

Date Excavated: 7/2/2019
 Prepared By: S. Morris
 Surface Elevation:



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TEST PIT LOG

Project: Lauer Frail Pond
 Wilsonville, Oregon

Project No. 19-10-1

Test Pit No. **TP-9**

Depth (ft)	Pocket Penetrator meter (tons/ft²)	Sample Type	In-Situ Dry Density (lb/ft³)	Moisture Content (%)	Water Content (%)	Material Description
0						4-6 inches, soft to medium stiff, moderately organic SILT (OL-1, dark brown, fine roots throughout, dry (Topsoil Horizon)
1						Stiff to very stiff, SILT (1-2, light brown, subtle orange and gray mottling, some black staining, micaceous, dry to damp, fine roots to approximately 1.5 feet (Willaette Formation)
2						Grades to stiff with trace clay
3						Grades to with trace sand
4						Medium stiff to stiff, sandy SILT (1-2, light brown, micaceous, damp to moist (Willaette Formation)
5						Test pit terminated at 10 feet bgs. (no groundwater seepage observed)
6						
7						
8						
9						
10						
11						
12						
13						
14						

1454 (D)

100 to 1,000 g
bag Sample

5 Gal. bucket
bucket Sample

Shelby Tube Sample

Seepage

Water Content Zone

Water Level at Abandonment

Date Excavated: 7/2/2019
 Fielded By: S. Morris
 Surface Elevation:



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TEST PIT LOG

Project: Lauer Fr! Pond
 Wilsonville, Oregon

Project No. 19-10

Test Pit No. **TP-10**

Depth (ft)	Pocket Penetrometer (tons/ft²)	Sample Type	In-Situ Dry Density (lb/ft³)	Moisture Content (%)	Water Bearing Zone	Material Description
0						moderately organic, SILT (3 L- , br = n, trace roots throughout, loose, damp (Topsoil > ?ri?on)
1						
2						Stiff to very stiff, clayey SILT (. , li! ht br = n, micaceous, strong orange and gray mottling, trace black staining, moist (Willamette Formation)
3						
4						
5						
6						
7						
8						
8.5						Grades to SILT (. , moist to very moist
9						
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						
21						Stiff, clayey SILT (. , blue gray, micaceous, strong orange and gray mottling! 2 lery moist (Willamette Formation
22						
23						
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Test Pit Terminated at 21 Feet.
 Note: Groundwater seepage encountered at 8.5 to 12 feet.
 Discharge visually estimated at 1 gallon per minute.

.454(D

bag Sample bucket Sample Shelby Tube Sample Seepage Water bearing Zone Water Level at Abandonment

Date Excavated: 3/15/2021
 Fielded By: B. Rapp
 Surface Elevation:



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TEST PIT LOG

Project: Lauer Farm Pond
 Wilsonville, Oregon

Project No. 19-10-1

Test Pit No. **TP-11**

Depth (ft)	Pocket Penetrometer (tons/ft²)	Sample Type	In-Situ Dry Density (lb/ft³)	Moisture Content (%)	Water Bearing Zone	Material Description
0	10					moderately organic, SILT (3 L-10, brown, trace roots throughout, loose, moist (Topsoil > 2 ft))
1	15					Stiff to very stiff, clayey SILT (10-15, light brown, micaceous, strong orange and gray mottling, trace black staining, moist (Willamette Formation))
2	20					
3	25					
4	30					
5	35					
6	40					
7	45					
8	50					
9	55					
10	60					
11	65					
12	70					
13	75					
14	80					
15	85					
16	90					
17	95					
18	100					
19	105					Very stiff, silty CL (10-15, light reddish brown, trace black staining, moist (Residual Soil))
20	110					Test Pit Terminated at 20 Feet. Note: Groundwater seepage encountered at 14 to 15 feet. Discharge visually estimated at 1/2 gallon per minute.

454(D

100 to 1,000 g Sample

5 Gal. bucket Sample

Shelby Tube Sample

Seepage

Water Bearing Zone

Water Level at Abandonment

Date Excavated: 3/15/2021
 Fielded By: B. Rapp
 Surface Elevation:



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TEST PIT LOG

Project: Lauer Frail Pond
 Wilsonville, Oregon

Project No. 19-12

Test Pit No. **TP-12**

Depth (ft)	Pocket Penetrimeter (tons/ft²)	Sample Type	In-Situ Dry Density (lb/ft³)	Moisture Content (%)	Water Content (%)	Material Description
0	0					Slightly organic, SILT (3 L, dark brown, trace roots throughout, loose, damp (Topsoil > 2 ft))
1	1					Stiff to very stiff, clayey SILT (3 L, light brown, micaceous, strong orange and gray mottling, trace black staining, moist (Willamette Formation))
2	2					
3	3					
4	4					
5	5					
6	6					
7	7					
8	8					
9	9					
10	10					
11	11					
12	12					<p>Test Pit Terminated at 12 Feet.</p> <p>Note: Groundwater seepage encountered at 11.5 feet. Discharge visually estimated at 1/4 gallon per minute.</p>

1454(D

100 to 1,000 g
bag Sample

5 Gal. bucket
bucket Sample

Shelby Tube Sample

Seepage

Water Content Zone

Water Level at Abandonment

Date Excavated: 3/15/2021

Fielded By: B. Rapp

Surface Elevation:



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TEST PIT LOG

Project: Lauer Fracture Pond
 Wilsonville, Oregon

Project No. 19-10-1

Test Pit No. **TP-13**

Depth (ft)	Pocket Penetrometer (tons/ft²)	Sample Type	In-Situ Dry Density (lb/ft³)	Moisture Content (%)	Water Content (%)	Material Description
0	0					Moderately organic, SILT (3 L-10, dark brown, trace roots throughout, loose, damp (Topsoil > 10 ft))
1	0					Stiff to very stiff, clayey SILT (3 L-10, light brown, micaceous, strong orange and gray mottling, trace black staining, moist (Willamette Formation))
2	0					
3	0					
4	0					
5	0					
6	0					
7	0					
8	0					
9	0					
10	0					
11	0					
12	0					
13	0					
14	0					
15	0					
16	0					Test Pit Terminated at 16 Feet. Note: Groundwater seepage encountered at 10.5 feet. Discharge visually estimated at 1/2 gallon per minute.

1454 (D)

100 to 1,000 g Sample

5 Gal. Bucket Sample

Shelby Tube Sample

Seepage

Water Content Zone

Water Level at Abandonment

Date Excavated: 3/15/2021
 Fielded By: B. Rapp
 Surface Elevation:



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TEST PIT LOG

Project: Lauer Fr! Pond
 Wilsonville, Oregon

Project No. 19-14

Test Pit No. **TP-14**

Depth (ft)	Pocket Penetr meter (tons/ft²)	Sample Type	In-Situ Dry Density (lb/ft³)	Moisture Content (%)	Water Content (%)	Material Description
0	0					Moderately organic, SILT (OL-ML), with trace gravel fill, dark brown, trace roots throughout, loose, moist (Topsoil Horizon)
1	1					Stiff to very stiff, clayey SILT (CL), light brown, micaceous, strong orange and gray mottling, trace black staining, moist (Willamette Formation)
2	2					
3	3					Grades to SILT (CL), moist to very moist
4	4					
5	5					Minor sidewall caving below 12 feet
6	6					
7	7					Test Pit Terminated at 16 Feet. Note: Groundwater seepage encountered at 4 and 5.5 feet. Discharge visually estimated at 1 to 2 gallons per minute.
8	8					
9	9					
10	10					
11	11					
12	12					
13	13					
14	14					
15	15					
16	16					

1454(D

bag Sample bucket Sample Shelby Tube Sample Seepage Water Content Zone Water Level at Abandonment

Date Excavated: 3/15/2021
 Fielded By: B. Rapp
 Surface Elevation:



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BORING LOG

Project: Lauer Pond Willamette, Oregon	Project No. 219-(%)*	Boring No. B-1
---	----------------------	-----------------------

Depth (ft)	Sample Type	N-Value	Well Construction	Moisture Content (%)	Water Bore	Material Description
0						Moderately organic, SILT (M+, bro; , trace roots, moist (Topsoil Horizon)
9		9				Medium stiff to stiff, SILT (M+, light bro; , micaceous, subtle to strong orange and gray mottling, trace black staining, sand is fine grained, moist to very moist (Willamette Formation)
9.6		8.6				
9.9		9				
9.6		(
9.8		8				
9.8		8				
9.6		(
9.6		8.6				
9.6		(
9.6		8.6				
20		8.6				Medium stiff to stiff, silty claystone, with highly weathered basalt fragments below 25 feet, light reddish bro; to gray, trace black staining, moist (Residual Soil)
20.6		(
20.6		8.6				
20.6		8.6				Boring Terminated at 41.5 feet. Perched Groundwater Seepage Encountered at 20 Feet.
41.5		8.6				

LEGEND Bag Sample Split-Spoon Shelby Tube Sample Stat# Water Table at Drill Stat# Water Table Water Bore						Date Drilled: 3/16/2021 Logged By: B. Rapp Surface Elevation:
---	--	--	--	--	--	---



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BORING LOG

Project: Lauer Pond Willamette, Oregon	Project No. 219-(%)*	Boring No. B-2
---	----------------------	-----------------------

Depth (ft)	Sample Type	N-Value	Well Construction	Moisture Content (%)	Water Bearing	Material Description
0						Moderately organic, SILT (M+, bro; , trace roots, moist (Topsoil Horizon)
0.5		&(<p>Medium stiff to very stiff, SILT (M+, light bro; to gray, micaceous, subtle to strong orange and gray mottling, trace black staining, moist to very moist (Willamette Formation)</p>
1		%&				
1.5		&(
2		&6				
2.5)				
3		&6				
3.5		&)				
4		A				
4.5		&(
5		%6				
6		%8				<p>Stiff to very stiff, silty clay, with highly weathered basalt fragments below 30 feet, light reddish bro; to gray, trace black staining, moist to very moist (Residual Soil)</p>
7		%9				
8		50 foot %B				
41.5						Very stiff, very soft (7 & BASALT, with light reddish bro; silty clay matrix, gray/trace black staining, moist (Columbia River Basalt Formation)
Boring Terminated at 41.5 feet.						
No Groundwater or Seepage Encountered.						

LEGEND

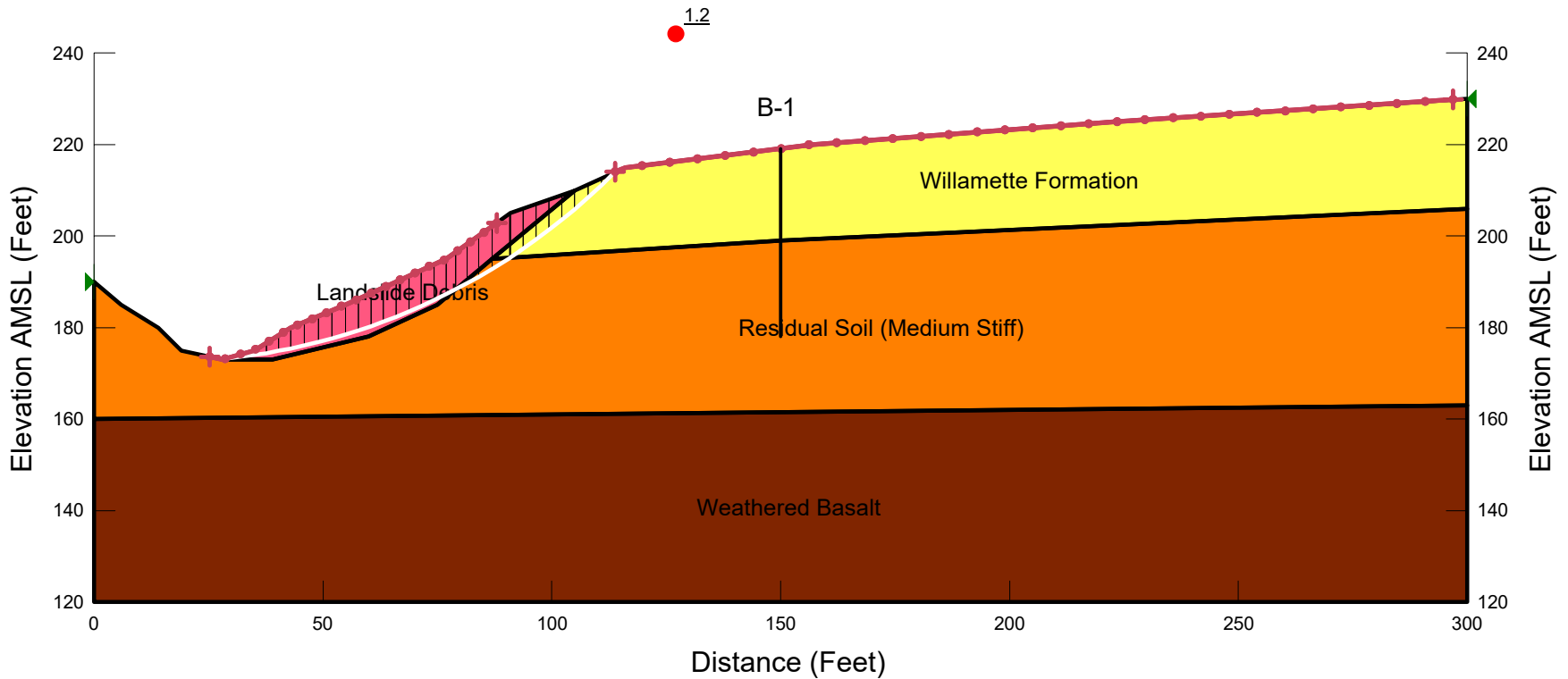
Bag Sample	Split-Spoon	Shelby Tube Sample	Stat# Water Table at Drill	Stat# Water Table	Water Bearing
------------	-------------	--------------------	----------------------------	-------------------	---------------

Date Drilled: 3/16/2021
 Logged By: B. Rapp
 Surface Elevation:

19-5263, A-A' Existing, No Setback (Static)

Color	Name	Model	Unit Weight (pcf)	Cohesion' (psf)	Phi' (°)
Light Pink	Landslide Debris	Mohr-Coulomb	125	150	10
Orange	Residual Soil (Medium Stiff)	Mohr-Coulomb	125	200	26
Brown	Weathered Basalt	Mohr-Coulomb	125	500	36
Yellow	Willamette Formation	Mohr-Coulomb	120	150	25

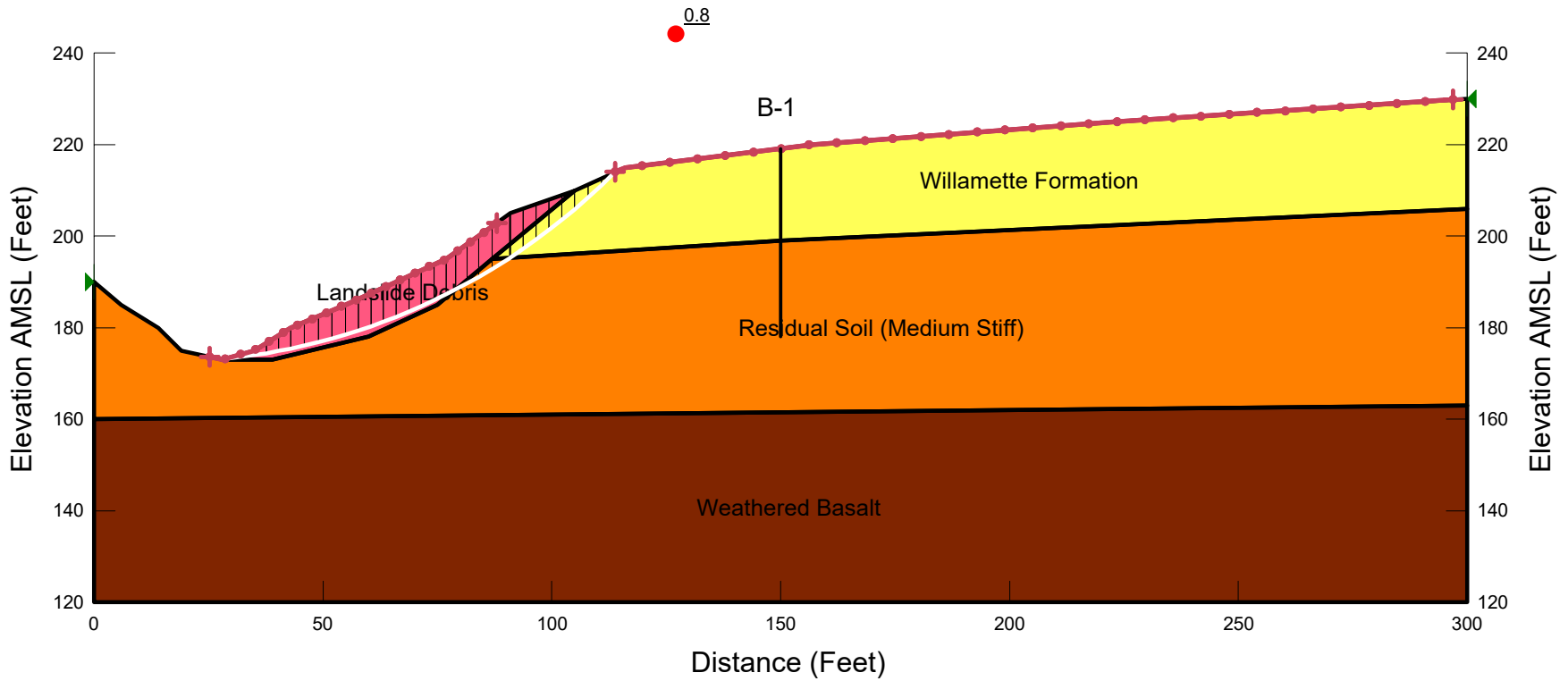
Horz Seismic Coef.: 0
Factor of Safety: 1.2



19-5263, A-A' Existing, No Setback (Pseudostatic)

Color	Name	Model	Unit Weight (pcf)	Cohesion' (psf)	Phi' (°)
Light Pink	Landslide Debris	Mohr-Coulomb	125	150	10
Orange	Residual Soil (Medium Stiff)	Mohr-Coulomb	125	200	26
Brown	Weathered Basalt	Mohr-Coulomb	125	500	36
Yellow	Willamette Formation	Mohr-Coulomb	120	150	25

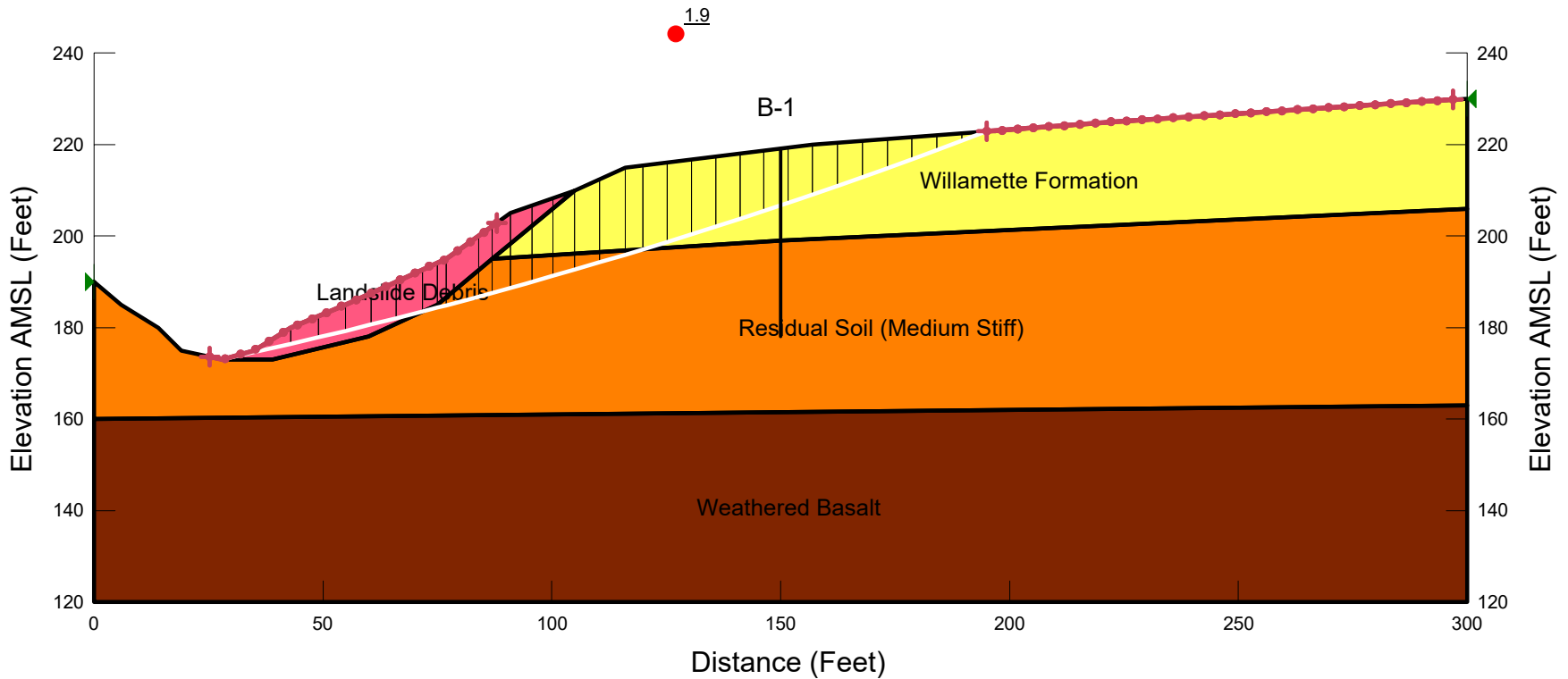
Horz Seismic Coef.: 0.225
 Factor of Safety: 0.8



19-5263, A-A' Existing, 75-Foot Setback (Static)

Color	Name	Model	Unit Weight (pcf)	Cohesion' (psf)	Phi' (°)
Light Pink	Landslide Debris	Mohr-Coulomb	125	150	10
Orange	Residual Soil (Medium Stiff)	Mohr-Coulomb	125	200	26
Brown	Weathered Basalt	Mohr-Coulomb	125	500	36
Yellow	Willamette Formation	Mohr-Coulomb	120	150	25

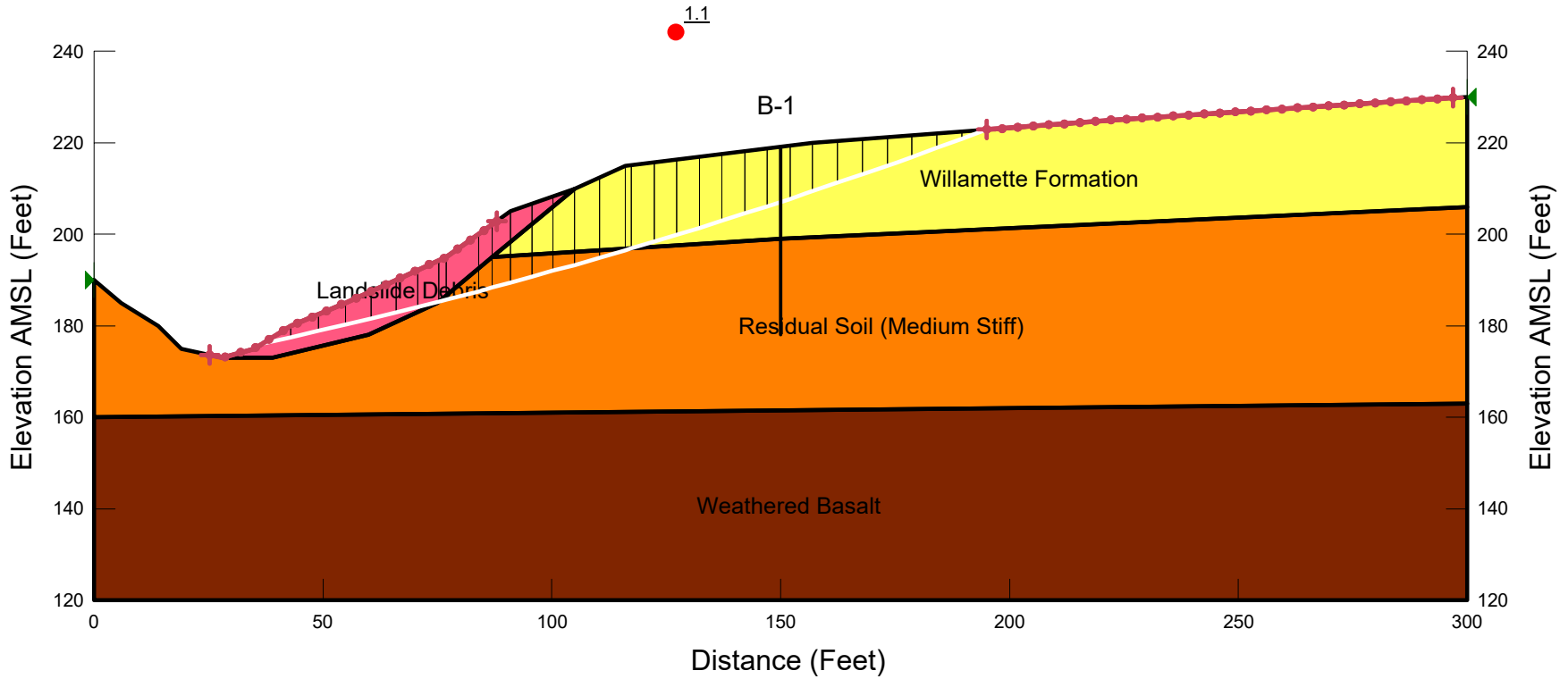
Horz Seismic Coef.: 0
 Factor of Safety: 1.9






19-5263, A-A' Existing, 75-Foot Setback (Pseudostatic)

Color	Name	Model	Unit Weight (pcf)	Cohesion' (psf)	Phi' (°)
Light Pink	Landslide Debris	Mohr-Coulomb	125	150	10
Orange	Residual Soil (Medium Stiff)	Mohr-Coulomb	125	200	26
Brown	Weathered Basalt	Mohr-Coulomb	125	500	36
Yellow	Willamette Formation	Mohr-Coulomb	120	150	25

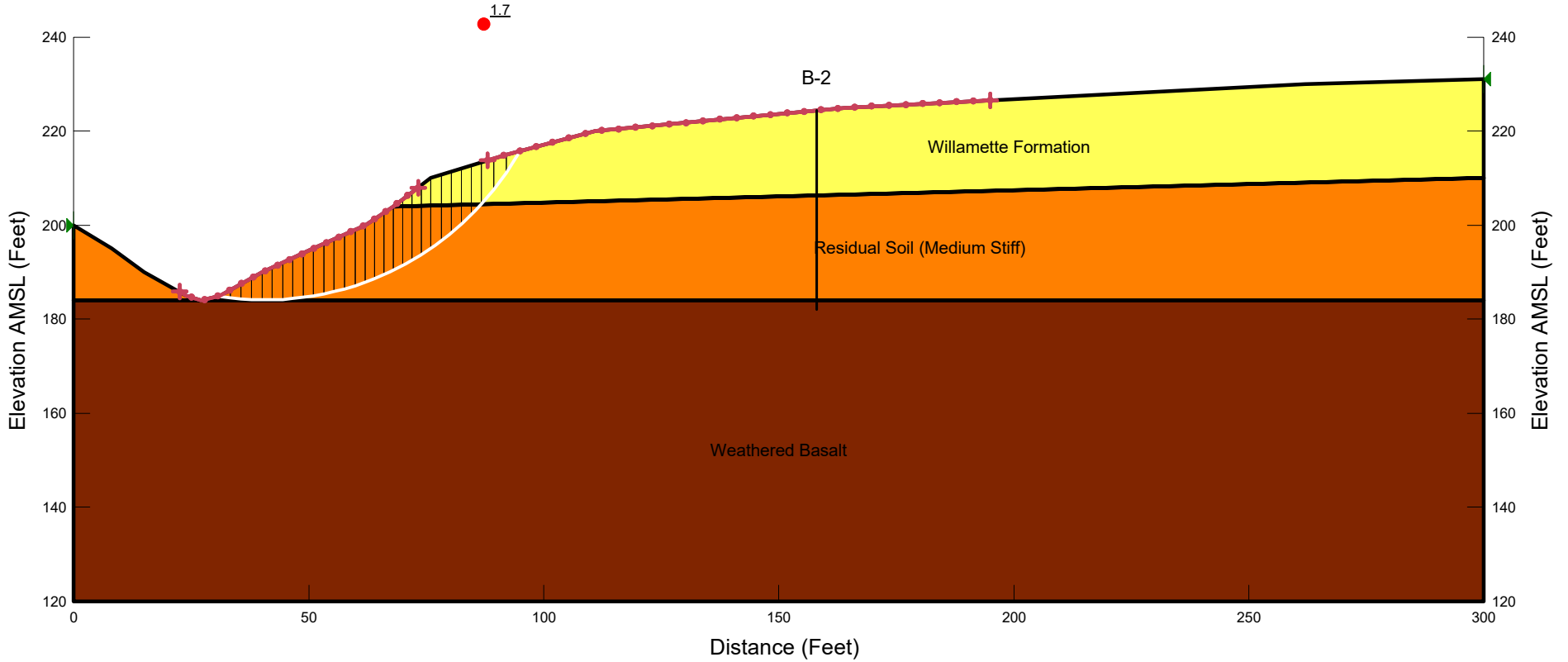
Horz Seismic Coef.: 0.225
Factor of Safety: 1.1



19-5263, B-B' Existing Condition, No Setback (Static)

Color	Name	Model	Unit Weight (pcf)	Cohesion' (psf)	Phi' (°)
	Residual Soil (Medium Stiff)	Mohr-Coulomb	125	200	26
	Weathered Basalt	Mohr-Coulomb	125	500	36
	Willamette Formation	Mohr-Coulomb	120	150	25

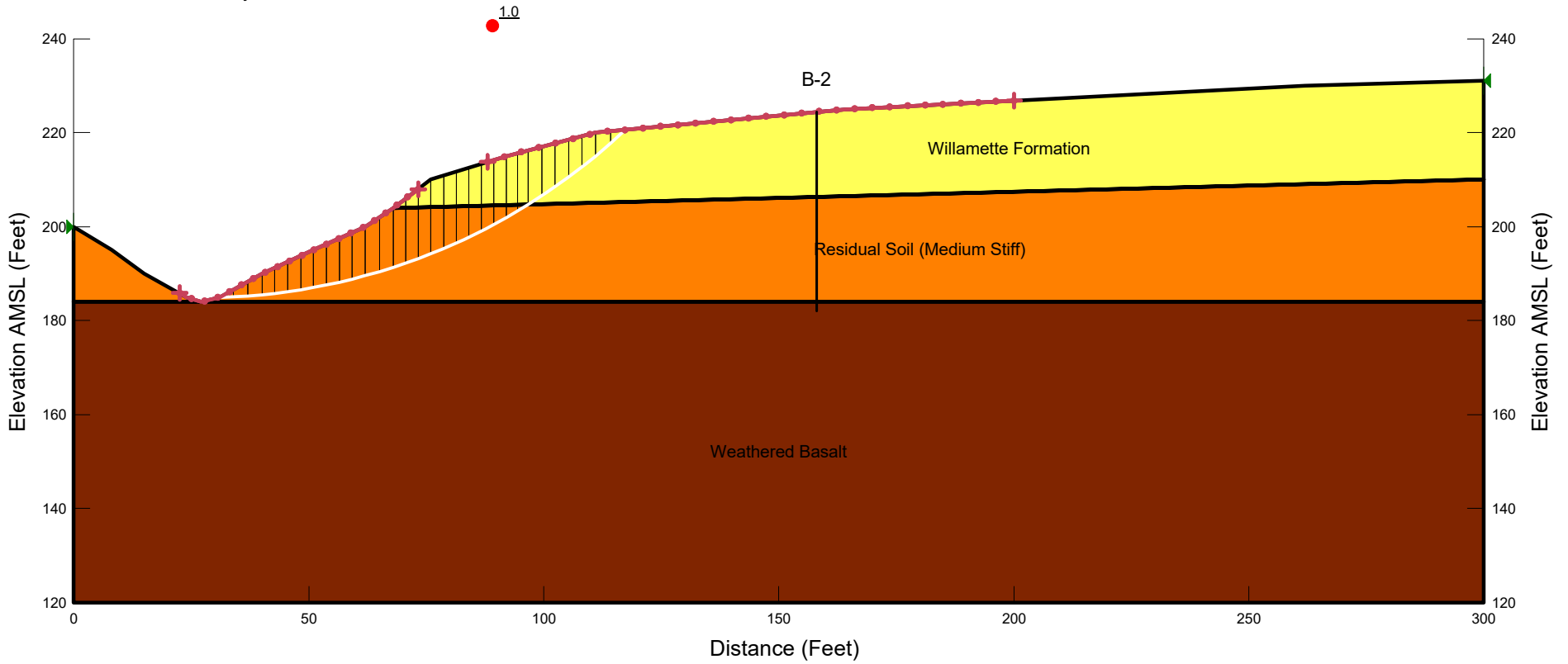
Horz Seismic Coef.: 0
Factor of Safety: 1.7



19-5263, B-B' Existing Condition, No Setback (Pseudostatic)

Color	Name	Model	Unit Weight (pcf)	Cohesion' (psf)	Phi' (°)
	Residual Soil (Medium Stiff)	Mohr-Coulomb	125	200	26
	Weathered Basalt	Mohr-Coulomb	125	500	36
	Willamette Formation	Mohr-Coulomb	120	150	25

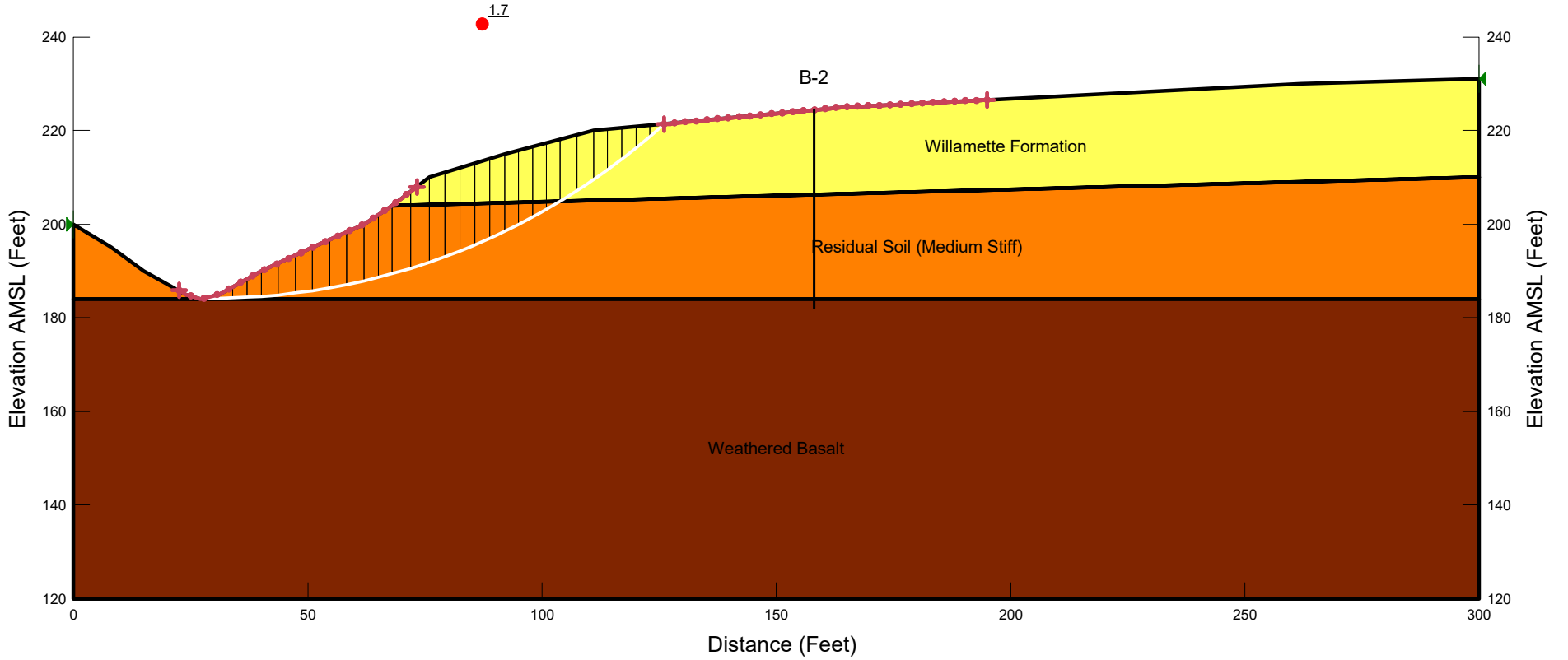
Horz Seismic Coef.: 0.225
Factor of Safety: 1.1



19-5263, B-B' Existing Condition, 50-Foot Setback (Static)

Color	Name	Model	Unit Weight (pcf)	Cohesion' (psf)	Phi' (°)
	Residual Soil (Medium Stiff)	Mohr-Coulomb	125	200	26
	Weathered Basalt	Mohr-Coulomb	125	500	36
	Willamette Formation	Mohr-Coulomb	120	150	25

Horz Seismic Coef.: 0
Factor of Safety: 1.7



19-5263, B-B' Existing Condition, 50-Foot Setback (Pseudostatic)

Color	Name	Model	Unit Weight (pcf)	Cohesion' (psf)	Phi' (°)
	Residual Soil (Medium Stiff)	Mohr-Coulomb	125	200	26
	Weathered Basalt	Mohr-Coulomb	125	500	36
	Willamette Formation	Mohr-Coulomb	120	150	25

Horz Seismic Coef.: 0.225
Factor of Safety: 1.1

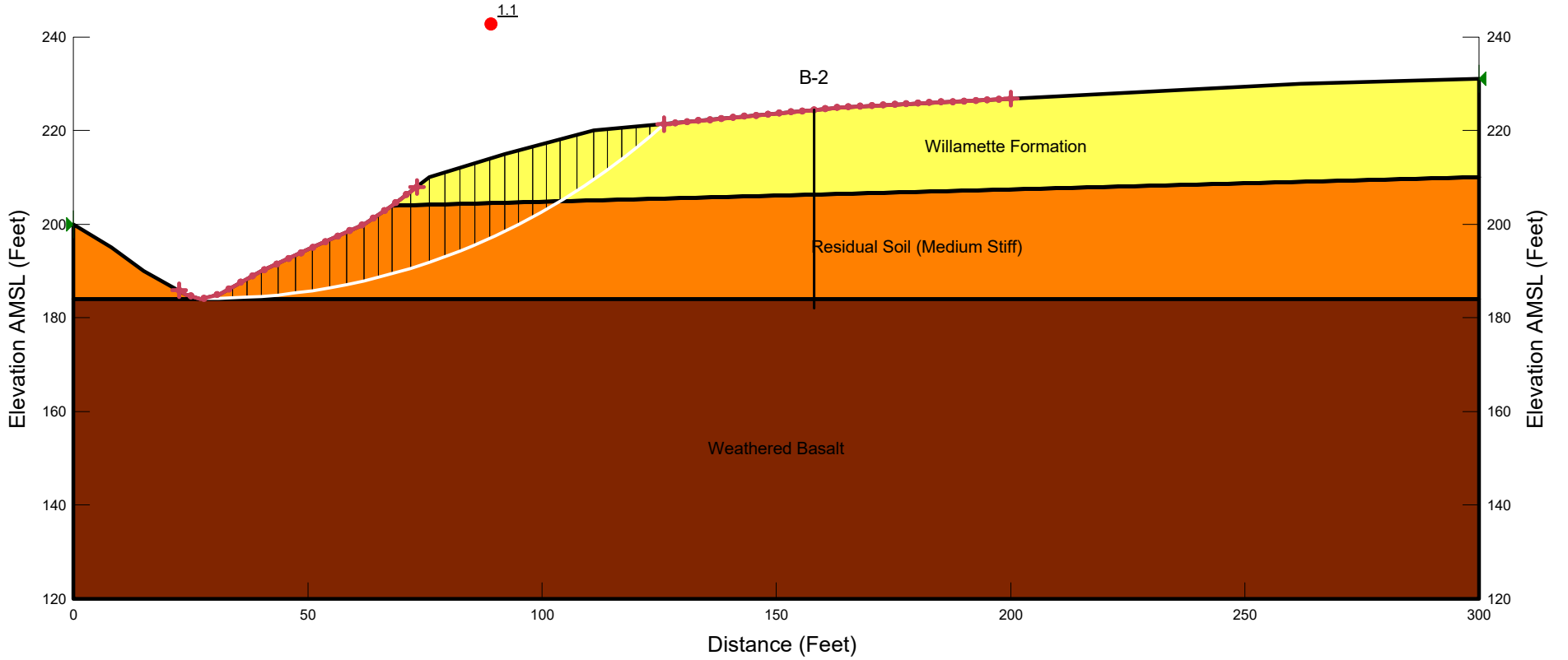


Exhibit I: CC&Rs

AFTER RECORDING RETURN TO:
Venture Properties, Inc.
4230 Galewood Street, Suite 100
Lake Oswego, OR 97035

**DECLARATION OF
COVENANTS, CONDITIONS AND RESTRICTIONS
FOR FROG POND VISTA**

THIS DECLARATION OF COVENANTS, CONDITIONS AND RESTRICTIONS FOR FROG POND VISTA ("Declaration") is made by Venture Properties, Inc., an Oregon corporation ("Declarant").

RECITALS

Declarant is the owner of all the real property and improvements thereon located in the City of Wilsonville, County of Clackamas, State of Oregon, described as follows:

All Lots and Tracts as shown on the plat map of Frog Pond Vista filed for record in the plat records of the County of Clackamas, State of Oregon and known collectively herein as "Frog Pond Vista" (the "Property").

Declarant intends to develop Frog Pond Vista as a Class I planned community within the meaning of the Oregon Planned Community Act. To establish Frog Pond Vista as a planned community, Declarant desires to impose these mutually beneficial covenants, conditions, restrictions, easements, assessments and liens on the Property, under a comprehensive general plan of improvement and development for the benefit of all Lots and Common Area in Frog Pond Vista.

Declarant has deemed it desirable for the efficient preservation of the values and amenities in Frog Pond Vista to create a nonprofit corporation, to which will be delegated and assigned the powers and authority to own, maintain and administer the Common Area and facilities, maintain, repair and replace certain portions of the Property, to administer and enforce the covenants, conditions, and restrictions of this Declaration, and to collect and disburse the assessments and charges hereinafter created.

Declarant reserves the right to annex additional property ("Additional Property") in the future. Declarant may but shall have no obligation to annex all or any portion of the Additional Property to Frog Pond Vista. After annexation, the Additional Property annexed shall constitute a part of Frog Pond Vista and shall be subject to this Declaration. There is no limitation on the number of Lots and Tracts which may be annexed to Frog Pond Vista.

NOW THEREFORE, Declarant declares that the Property shall be held, transferred, sold, conveyed and occupied subject to the Oregon Planned Community Act as may be amended from time to time (ORS 94.550 to 94.783) and subject to the following covenants, conditions, restrictions, easements, charges and liens, which shall run with the land, which shall be binding upon all parties having or acquiring any right, title or interest in the Property or any part thereof, and which shall inure to the benefit of the Association and of each Owner.

ARTICLE 1 **DEFINITIONS**

1.1 "**Architectural Review Committee**" or "ARC" shall refer to that committee constituted and acting pursuant to Article 6 of this Declaration.

1.2 "**Articles**" shall mean the Articles of Incorporation for the nonprofit corporation, Frog Pond Vista Home Owners Association, as filed with the Oregon Secretary of State.

1.3 "**Association**" shall mean and refer to Frog Pond Vista Home Owners Association, its successors and assigns.

1.4 "**Board**" shall mean the Board of Directors of the Association.

1.5 "**Bylaws**" shall mean and refer to the Bylaws of the Association which shall be recorded in Clackamas County, Oregon, deed records.

1.6 "**Common Area**" shall mean and refer to Tracts A, B, C and D as shown on the recorded Plat of the Property, including any improvements located thereon, which areas and improvements are intended to be devoted to the common use and enjoyment of the members' subject to the restrictions provided herein and which land shall be conveyed to the Association.

1.7 "**Commonly Maintained Property**" shall mean any property not owned by the Association, but for which the Association has maintenance responsibility, including but not limited to mailboxes.

1.8 "**Declaration**" shall mean the covenants, conditions, restrictions, and all other provisions set forth in this Declaration.

1.9 "**Declarant**" shall mean and refer to Venture Properties, Inc., an Oregon limited liability company, and its successors or assigns, or any successor or assign to all or the remainder of its interest in the Property. Without limiting the generality of the foregoing, Declarant shall have the right to assign some or all of its Declarant rights hereunder to a purchaser of Lots, and such assignees shall be successor Declarants to the extent of such assignment(s).

1.10 "**General Plan of Development**" shall mean Declarant's general plan of development of the Property, as approved by appropriate governmental agencies, as may be amended from time to time.

1.11 "**Frog Pond Vista**" shall mean Lots 1-41 of the Property and Tracts A, B, C and D as designated on the plat of Frog Pond Vista and may include an undetermined number of additional lots that may be annexed in the future.

1.12 "**Home**" shall mean and refer to any portion of a structure situated on a Lot and designed and intended for use and occupancy as a residence.

1.13 "**Lot**" shall mean and refer to each and any of the Lots on the plat of Frog Pond Vista. "Lot" shall not include any of the Tracts.

1.14 "**Members**" shall mean and refer to the Owners of Lots in Frog Pond Vista.

1.15 "**Occupant**" shall mean and refer to the occupant of a Home, whether such person is an Owner, a lessee or any other person authorized by the Owner to occupy the Home.

1.16 "**Owner**" shall mean and refer to the record owner, whether one or more persons or entities, of the fee simple title to any Lot or a purchaser in possession of a Lot under a land sale contract. The foregoing does not include persons or entities that hold an interest in any Lot merely as security for the performance of an obligation.

1.17 "**Plat**" shall mean and refer to the Plat of Frog Pond Vista recorded in the Plat Records of Clackamas County, Oregon, and any subsequent plats for future phases of Frog Pond Vista annexed into this Declaration, together with any amendments to any of the foregoing.

1.18 "**Property**" shall have the meaning attributed to such term in the Recitals of this Declaration.

1.19 "**Reserve Account(s)**" shall mean and refer to an account set up by the Board to hold funds for construction, improvements or maintenance of the Common Area and the Commonly Maintained Property.

1.20 "**Rules and Regulations**" shall mean and refer to the documents containing rules and regulations and policies adopted by the Board or the Architectural Review Committee, as may be from time to time amended.

1.21 "**Tract(s)**" shall mean and refer to Tracts A, B, C and D as shown on the Plat.

ARTICLE 2

PROPERTY SUBJECT TO THIS DECLARATION

2.1 **Development.** The development of Frog Pond Vista shall consist of the Property, which shall be held, transferred, sold, conveyed, and occupied subject to this Declaration. Declarant does not intend to build any Common Area improvements in Frog Pond Vista, except as provided herein.

2.2 **Right to Annex Additional Property or to Withdraw Property.** The Declarant reserves the right to annex additional property to or to withdraw property from Frog Pond Vista.

ARTICLE 3

OWNERSHIP AND EASEMENTS

3.1 **Non-Severability.** The interest of each Owner in the use and benefit of the Common Area shall be appurtenant to the Lot owned by the Owner. No Lot shall be conveyed by the Owner separately from the interest in the Common Area. Any conveyance of any Lot shall automatically transfer the right to use the Common Area without the necessity of express reference in the instrument of conveyance. There shall be no judicial partition of the Common Area. Each Owner, whether by deed, gift, devise or operation of law, for such Owner's benefit and for the benefit of all other Owners, specifically waives and abandons all rights, interests and causes of action for judicial partition of any interest in the Common Area and agrees that no action for judicial partition shall be instituted, prosecuted or reduced to judgment. Ownership interests in the Common Area and Lots are subject to the easements granted and reserved in this Declaration.

Each of the easements granted or reserved herein shall be deemed to be established upon the recordation of this Declaration and shall thenceforth be deemed to be covenants running with the land for the use and benefit of the Owners and their Lots and shall be superior to all other encumbrances applied against or in favor of any portion of Frog Pond Vista.

32 Ownership of Lots. Title to each Lot in Frog Pond Vista shall be conveyed in fee to an Owner. If more than one person and/or entity owns an undivided interest in the same Lot, such persons and/or entities shall constitute one Owner.

33 Ownership of Common Area. Subject to subsection 3.5, title to any Common Area shall be conveyed to the Association not later than the date of the Turnover Meeting.

34 Easements. Individual deeds to Lots may, but shall not be required to, set forth the easements specified in this Article.

34.1 Easements on Plat. The Common Area and Lots are subject to the easements and rights-of-way shown on the Plat, including, without limitation, Public Utility Easements, storm sewer, surface water, drainage, detention, sidewalk and public access easements.

34.2 Easements for Common Area. Subject to the restrictions contained herein, every Owner shall have a non-exclusive right and easement of use and enjoyment in and to the Common Area, which shall be appurtenant to and shall pass with the title to every Lot. Such easement is subject to ORS 94.665, as may be amended from time to time.

34.3 Easements Reserved by Declarant. So long as Declarant owns any Lot, Declarant reserves an easement over, under and across the Common Area in order to carry out sales activities necessary or convenient for the sale of Lots. Declarant, for itself and its successors and assigns, hereby retains a right and easement of ingress and egress to, from, over, in, upon, under and across the Common Area and the right to store materials thereon and to make such other use thereof as may be reasonably necessary or incident to the construction of the improvements on the Property in such a way as not to interfere unreasonably with the occupancy, use, enjoyment or access to an Owner's Lot by such Owner or such Owner's family, tenants, employees, guests or invitees.

34.4 Additional Utility and Drainage Easements. Notwithstanding anything expressed or implied to the contrary, this Declaration shall be subject to all easements granted or acquired by Declarant for the installation and maintenance of utilities and drainage facilities necessary for the development of Frog Pond Vista. No structure, planting or other material that may damage or interfere with the installation or maintenance of utilities, that may change the direction of flow of drainage channels in the easements, or that may obstruct or retard the flow of water through drainage channels in the easement areas shall be placed or permitted to remain within any easement area.

34.5 Association's Right of Entry. Declarant grants to the Association and its duly authorized agents and representatives such right of entry over the Lots and Common Area as are necessary to perform the duties and obligations of the Association, as set forth in this Declaration, the Bylaws, and the Articles, as the same may be amended.

3.4.6 **Easement to Governmental Entities.** Declarant grants a non-exclusive easement over the Common Area to all governmental and quasi-government entities, agencies, utilities, and their agents for the purposes of performing their duties as utility providers.

3.4.7 **Perimeter Right of Entry Benefiting Association.** Declarant grants to the Association and its duly authorized agents and representatives a right of entry over that perimeter portion of each Lot that is included within the building setbacks set by applicable ordinances for the purposes of installation, maintenance, repair, and replacement of private streets, Common Area, Commonly Maintained Property, utilities, communication lines, and drainage. The Board may grant or convey the easements reserved herein to any governmental body or agency and/or any public or private utility company or provider, upon a two-thirds (2/3) vote of the Board members at a duly called and held Board meeting.

3.5 **Declarant's Right to Dedicate Common Area and Grant Easements; Board's Authority After Title Transferred to Association.** Declarant reserves the right and power to dedicate and/or convey any portion or all of the Tracts to any governmental body or agency without the approval of any other Owner or the Association. Declarant further reserves the right and power to grant an easement over the Tracts to any governmental body or agency or any public or private utility company or provider without the approval of any other Owner or the Association. Declarant's rights and power under this Section 3.5 shall expire when the Tracts are conveyed to the Association. Thereafter, the Board shall have the same powers reserved to Declarant and may exercise such power upon a two-thirds (2/3) or greater vote of the Board members at any duly called and held Board meeting. The provisions of this Section 3.5 shall control over any provisions to the contrary contained in any other Section of the Declaration.

ARTICLE 4 **LOTS AND HOMES**

4.1 **Residential Use.** Lots shall only be used for residential purposes. Except with the Board's consent no trade, craft, business, profession, commercial or similar activity of any kind shall be conducted on any Lot or in any Home, and no goods, equipment, vehicles, materials or supplies used in connection with any trade, service or business shall be kept or stored on any Lot or in any Home. Nothing in this Section 4.1 shall be deemed to prohibit (a) activities relating to the sale of residences, (b) the right of Declarant or any contractor or homebuilder to construct residences on any Lot, to store construction materials and equipment on such Lots in the normal course of construction, and to use any residence as a sales office or model home for purposes of sales in Frog Pond Vista, and (c) the right of the Owner of a Lot to maintain such Owner's personal business or professional library, keep such Owner's personal business or professional records or accounts, handle such Owner's personal business or professional telephone calls or confer with a reasonable number of business or professional associates, clients or customers in such Owner's residence. The Board shall not approve commercial activities otherwise prohibited by this Section 4.1 unless the Board determines that only normal residential activities would be observable outside of the residence and that the activities would not be in violation of applicable local government ordinances.

4.2 **Construction of Homes.** Except as provided in Section 6.15, no construction of a Home or any other structure shall occur on a Lot unless the approval of the ARC is first obtained

as provided in Article 6. Considerations such as siting, shape, size, color, design, height, solar access, or material may be considered by the ARC in determining whether or not to consent to any proposed work. The following restrictions are required for all Lots:

4.2.1 Lot Coverage. The total square footage of a Lot that may be covered by any type of structure may not be any more than permitted by applicable zoning ordinances and the variances allowed by the land use approval for the Property.

4.2.2 Setbacks. All Homes within Frog Pond Vista shall comply with City of Wilsonville setback requirements and such other setbacks as established or permitted by Clackamas County and all other governing authorities, the Architectural Standards and by the ARC after a review of all relevant data.

43 Completion of Construction. The construction and landscaping of any building on any Lot, including painting and all exterior finish and landscaping, shall be completed within twelve (12) months from the beginning of the construction so as to present a finished appearance when viewed from any angle. In the event of undue hardship due to weather conditions or other factors, this provision may be extended for a reasonable length of time upon written approval from the ARC. If construction has not commenced within twelve (12) months after the construction documents have been approved by the ARC, the approval shall be deemed revoked unless the Owner has applied for and received an extension of time in writing from the ARC.

44 Landscaping. Landscaping for front yard portions of the Lot shall be completed within three (3) months after occupancy of the Home. The Declarant or other Owner of any Lot with finished Homes being held for sale shall complete front yard landscaping on such Lot within three (3) months after substantial completion of such Home. Owners shall irrigate their entire yard to keep lawns green and other landscaping fresh. Street trees in front of an Owner's Home shall be irrigated and maintained by such Owner as required by the City of Wilsonville or any other governing jurisdiction. Owners shall not remove or move street trees.

45 Maintenance of Lots and Homes. Each Owner shall maintain such Owner's Lot and all improvements thereon in a clean and attractive condition, in good repair and in such fashion as not to create a fire hazard. Such maintenance shall include, without limitation, maintenance of roofs, siding, windows, doors, garage doors, walks, patios, chimneys, landscaping, street trees (if not maintained by the Association or a sub-association), and other exterior improvements and glass surfaces, including, without limitation, any sidewalk abutting such Owner's Lot, as required by City of Wilsonville ordinances. All repainting or re-staining and exterior remodeling shall be subject to prior review and approval by the ARC. Each Owner shall repair damage caused to such Owner's Lot or improvements located thereon by fire, flood, storm, earthquake, riot, vandalism, or other causes within a reasonable period.

46 Rental of Homes. An Owner may rent or lease such Owner's Home or a portion thereof, provided that the following conditions are met:

4.6.1 Written Rental Agreements Required. The Owner and the tenant shall enter into a written rental or lease agreement specifying that (i) the tenant shall be subject to all provisions of the Declaration, Bylaws and Rules and Regulations, and (ii) a failure to comply with

any provision of the Declaration, Bylaws and Rules and Regulations shall constitute a default under the rental or lease agreement.

4.6.2 Minimum Rental Period. The period of the rental or lease is not less than thirty (30) days.

4.8.3 Tenant Must be Given Documents. The Owner gives each tenant a copy of the Declaration, Bylaws and Rules and Regulations.

47 Animals. No animals, livestock or poultry of any kind, other than a reasonable number of dogs and cats that are not kept, bred or raised for commercial purposes and that are reasonably controlled so as not to be a nuisance, shall be raised, bred, kept or permitted within any Lot. Excluded from the foregoing restriction shall be birds, fish, small reptiles, and small animals which are kept in cages or tanks which are permanently kept within the interior of a Home. Owners whose pets cause any inconvenience or unpleasantness to other Owners shall take all steps reasonably necessary to prevent recurrence thereof and Owners whose pets damage other Owners' Lots or personal property shall reimburse such other Owners for reasonable costs actually incurred by such other Owners in repairing such damage. An Owner shall ensure that such Owner's dog is leashed when on the Property and outside of such Owner's Lot. An Owner may be required to remove a pet upon the receipt of the third notice in writing from the Board of a violation of any rule, regulation, or restriction governing pets within the Property.

48 Nuisance. No noxious, harmful, or offensive activities shall be carried on upon any Lot or Common Area. Nor shall anything be done or placed on any Lot or Common Area that interferes with or jeopardizes the enjoyment of, or that is a source of annoyance to, the Owner or other Occupants. No outside burning of leaves, debris, trash, garbage, or household refuse shall be permitted.

49 Parking. Boats, trailers, commercial vehicles, mobile homes, campers, and other recreational vehicles or equipment, regardless of weight, shall not be parked on any part of the Common Area, or on any streets on or adjacent to the Property at any time or for any reason, including loading or unloading, and may not be parked on any Lot, including the driveway, for more than three (3) days unless they are fully enclosed in the garage or parked alongside the Home and fully obscured from view behind a fully enclosed fence which may not extend beyond the front of the Home or garage. Owners must obtain prior approval to install such screening fence from the ARC.

410 Vehicles in Disrepair. No Owner shall permit any vehicle that is in a state of disrepair (e.g. including, but not limited to, fails to run, cannot be moved under its own power in current condition, flat tires, unpainted or body parts missing) or that is not currently licensed to be abandoned or to remain parked upon the Common Area or on any street on or adjacent to the Property at any time and may not permit them on a Lot for a period in excess of three (3) days. A vehicle shall be deemed in a "state of disrepair" when the Board reasonably determines that its presence offends the occupants of the neighborhood. If an Owner fails to remove such vehicle within forty-eight (48) hours following the date on which the Association mails or delivers to such Owner a notice directing such removal, the Association may have the vehicle removed from the Property and charge the expense of such removal to the Owner as an Assessment, which may be collected and enforced as any other assessments imposed pursuant to the Declaration and Bylaws.

411 Signs. No signs shall be erected or maintained on any Lot except that not more than one (1) "For Sale" or "For Rent" sign placed by the Owner or by a licensed real estate agent, not exceeding twenty-four (24) inches high and thirty-six (36) inches long, may be temporarily displayed on any Lot. The restrictions contained in this Section 4.14 shall not prohibit the temporary placement of "political" signs on any Lot by the Owner or Occupant. Provided, however, political signs shall be removed within three (3) days after the election day pertaining to the subject of the sign. Real estate signs shall be removed within three (3) days after the sale closing date.

412 Rubbish and Trash. No Lot or part of the Common Area shall be used as a dumping ground for trash or rubbish of any kind. All garbage and other waste shall be kept in appropriate containers for proper disposal, which shall be screened or otherwise kept out of public view. Yard rakings, dirt and other material resulting from landscaping work shall not be dumped onto streets, the Common Area, or any other Lots. If an Owner fails to remove any trash, rubbish, garbage, yard rakings or any similar materials from any Lot, any streets or the Common Area where deposited by such Owner or the Occupants of such Owner's Lot after notice has been given by the Board to the Owner, the Association may have such materials removed and charge the expense of such removal to the Owner. Such charge shall constitute an Assessment, which may be collected and enforced as any other assessments imposed pursuant to the Declaration and Bylaws.

413 Fences and Hedges. Except for construction performed by or contracted for by Declarant, no fences or boundary hedges shall be installed or replaced without prior written approval of the ARC. Rear yard fences shall be six (6) feet tall or less and no fence will extend beyond the front elevation of the home. All fencing on corner lots shall comply with any applicable City of Wilsonville vision clearance requirements, which may limit fence heights and may regulate fence locations.

All fences, excluding fencing installed during the development of Frog Pond Vista, will conform to the style outlined in Exhibit "A" of this document and must be stained Sherwin Williams SW 3524 "Chestnut" unless otherwise approved by the ARC Committee.

414 Service Facilities. Service facilities (garbage containers, fuel tanks, clotheslines, etc.) shall be screened such that such facilities are not visible at any time from the street except the night before and during garbage pickup days. All telephone, electrical, cable television and other utility installations shall be placed underground in conformance with applicable law and subject to approval by the ARC.

415 Antennas and Satellite Dishes. Except as otherwise provided by law or this Section, no exterior antennas, satellite dishes, microwave, aerial, tower or other devices for the transmission or reception of television, radio or other forms of sound or electromagnetic radiation shall be erected, constructed or placed on any Common Area or Lot. Without prior written consent from the ARC, exterior satellite dishes or antennas with a surface diameter of one (1) meter or less and antennas designed to receive television broadcast signals or multi-channel multi-point distribution (wireless cable) only may be placed on any Lot if they are not visible from the street and are screened from neighboring Lots to the extent possible. The Board or ARC may adopt reasonable rules and regulations governing the installation, safety, placement and screening of such antennas, satellite dishes and other transmission devices. Such rules shall not unreasonably

delay or increase the cost of installation, maintenance or use or preclude reception of a signal of acceptable quality.

4.16 Exterior Lighting or Noise-Making Devices. Except with the consent of the ARC, no exterior lighting or noise-making devices, other than security and fire alarms, shall be installed or maintained on any Lot.

4.17 Basketball Hoops. No Owner may install a permanent basketball hoop on any Lot without the ARC's prior approval. The ARC may, in its discretion, prohibit such basketball hoops. Basketball hoops shall be prohibited in the Common Area and on any Lot if the area of play is intended to be the street or any Common Area. When not in use, temporary or portable basketball hoops must be stored or screened from view.

4.18 Grades, Slopes and Drainage. There shall be no interference with the established drainage patterns or systems over or through any Lot within Frog Pond Vista so as to affect any other Lot or Common Area or any real property outside Frog Pond Vista unless adequate alternative provision is made for proper drainage and is approved by the ARC. The term "established drainage" shall mean the drainage swales, conduits, inlets, and outlets designed and constructed for Frog Pond Vista.

4.19 Damage or Destruction to Home and/or Lot. If all or any portion of a Lot or Home is damaged by fire or other casualty, the Owner shall either (i) restore the damaged improvements or (ii) remove all damaged improvements, including foundations, and leave the Lot in a clean and safe condition. Any restoration proceeding under (i) above must be performed so that the improvements are in substantially the same condition in which they existed prior to the damage, unless the provisions of Article 6 are complied with by the Owner. The Owner must commence such work within sixty (60) days after the damage occurs and must complete the work within six (6) months thereafter.

4.20 Right of Maintenance and Entry by Association. If an Owner fails to perform maintenance and/or repair that such Owner is obligated to perform pursuant to this Declaration, and if the Board determines, after notice, that such maintenance and/or repair is necessary to preserve the attractiveness, quality, nature and/or value of Frog Pond Vista, the Board may cause such maintenance and/or repair to be performed and may enter any such Lot whenever entry is necessary in connection with the performance thereof. An Owner may request, and the Board shall conduct, a hearing on the matter. The Owner's request shall be in writing delivered within five (5) days after receipt of the notice, and the hearing shall be conducted within not less than five (5) days nor more than twenty (20) days after the request for a hearing is received. Entry shall be made with as little inconvenience to an Owner as practicable and only after advance written notice of not less than forty-eight (48) hours, except in emergency situations. The costs of such maintenance and/or repair shall be chargeable to the Owner of the Lot as an Assessment, which may be collected and enforced as any other assessments authorized hereunder.

4.21 Association Rules and Regulations. The Board from time to time may adopt, modify or revoke such Rules and Regulations governing the conduct of persons and the operation and use of Lots and the Common Area as it may deem necessary or appropriate to assure the peaceful and orderly use and enjoyment of the Property and the administration and operation of the Association. A copy of the Rules and Regulations, upon adoption, and a copy of each

amendment, modification or revocation thereof, shall be delivered by the Board promptly to each Owner and shall be binding upon all Owners and occupants of all Lots upon the date of delivery or actual notice thereof. The method of adoption of such Rules and Regulations shall be provided in the Bylaws of the Association. Subject to approval or consent by the Board, the ARC may adopt rules and regulations pertinent to its functions.

422 Ordinances and Regulations. The standards and restrictions set forth in this Article 4 shall be the minimum required. To the extent that local governmental ordinances and regulations are more restrictive or provide for a higher or different standard, such local governmental ordinances and regulations shall prevail.

423 Temporary Structures. No structure of a temporary character or any trailer, basement, tent, shack, garage, barn, or other outbuilding shall be used on any Lot as a residence, either temporarily or permanently.

424 Declarant Exemptions. Any home builder building a home for sale to a third party and the Declarant shall be exempt from the application of Section 4.14.

ARTICLE 5

COMMON AREA AND COMMONLY MAINTAINED PROPERTY

5.1 Common Area Tracts. Tract A is for natural resources and open space. Tract B is for private alley access serving lots 17-24. Tract C is for pedestrian and bicycle access. Tract D is for landscaping and open space.

5.2 Easements. Lots are subject to 6-foot public utility easements along their front-lot and side-lot frontages.

5.3 Use of Common Areas. Use of the Common Area is subject to the provisions of the Declaration, Bylaws, Articles and the Rules and Regulations adopted by the Board. There shall be no obstruction of any part of the Common Area. Nothing shall be stored or kept in the Common Area without the prior written consent of the Board. No alterations or additions to the Common Area shall be permitted without the prior written consent of the Board. The Common Area owned by the Association consists solely of the Tracts.

5.4 Maintenance of Common Area and Commonly Maintained Property. Except as otherwise specifically provided in this Declaration, the Association shall be responsible for maintenance, repair, replacement, and upkeep of the Common Area and Commonly Maintained Property. The Association shall keep the Common Area in good condition and repair, provide for all necessary services, and cause all acts to be done which may be necessary or proper to assure the maintenance of the Common Area.

5.5 Alterations to Common Area. Except as otherwise specifically provided in this Declaration, only the Association shall construct, reconstruct, or alter any improvement located on

the Common Area. A proposal for any construction of or alteration, maintenance, or repair to any such improvement may be made at any Board meeting. A proposal may be adopted by the Board, subject to the limitations contained in the Bylaws, this Declaration.

5.6 Funding. Expenditures for alterations, maintenance, or repairs to an existing improvement for which a reserve has been collected shall be made from the Reserve Account. As provided in Section 10.4, the Board may levy a special assessment to fund any construction, alteration, repair or maintenance of an improvement (or any other portions of the Common Area and Commonly Maintained Property) for which no reserve has been collected or for which the Reserve Account is insufficient to cover the cost of the proposed improvement.

5.7 Landscaping. All landscaping on any Lot, the Common Area or Commonly Maintained Property shall be maintained and cared for in a manner that is consistent with Declarant's or the ARC's original approval of such landscaping. Weeds and diseased or dead lawn, tree, ground cover or shrubs shall be removed and replaced. Lawns shall be neatly mowed, and trees and shrubs shall be neatly trimmed. All landscaping shall be irrigated in a horticulturally proper manner, subject to water use restrictions or moratoria by government bodies or agencies.

5.8 Condemnation of Common Area. If all or any portion of the Common Area is taken for any public or quasi-public use under any statute, by right of eminent domain or by purchase in lieu of eminent domain, the entire award shall be received by and expended by the Board in a manner that, in the Board's discretion, is in the best interest of the Association and the Owners. The Association shall represent the interest of all Owners in any negotiations, suit, action, or settlement in connection with such matters.

5.9 Damage or Destruction of Common Area. If all or any portion of the Common Area or Commonly Maintained Property is damaged or destroyed by an Owner or any of Owner's guests, Occupants, tenants, licensees, agents or members of Owner's family in a manner that would subject such Owner to liability for such damage under Oregon law, such Owner hereby authorizes the Association to repair such damage. The Association shall repair the damage and restore the area in workmanlike manner as originally constituted or as may be modified or altered subsequently by the Association in the discretion of the Board. Reasonable costs incurred in connection with affecting such repairs shall become a special assessment upon the Lot and against the Owner who caused or is responsible for such damage.

5.10 Power of Association to Sell, Convey or Grant Security Interest in Common Area. The Association may sell, convey, or subject to a security interest any portion of the Common Area pursuant to the processes and limitations set forth in ORS 94.665.

5.11 Public Use of Lands. ORS 105.672 through 105.700 exculpate owners of lands who allow the general public upon their lands for purposes of recreation, and the liability of the Declarant and the Association and its members shall be limited as provided thereby.

ARTICLE 6 **ARCHITECTURAL REVIEW COMMITTEE**

61 Architectural Review. Except as provided in Section 6.15, no improvement shall be commenced, erected, placed or altered on any Lot until the construction plans and specifications showing the nature, shape, heights, materials, colors, and proposed location of the improvement have been submitted to and approved in writing by the ARC. This Article's purpose is to ensure quality of workmanship and materials and harmony between exterior design and the existing improvements and landscaping and as to location with respect to topography and finished grade elevations. The ARC shall not be responsible for determining compliance with structural and building codes, solar ordinances, zoning codes or other governmental regulations, all of which are the applicant's responsibility. The procedure and specific requirements for review and approval of construction shall be set forth in design guidelines and standards adopted from time to time by the ARC. The provisions of this Article shall apply in all instances in which this Declaration requires the ARC's consent.

62 Architectural Review Committee, Appointment and Removal. Declarant reserves the right to appoint all members of the ARC and all replacements thereto until Frog Pond Vista is one hundred percent (100%) built out. Each ARC member shall serve for one (1) year. After build-out, the Board shall have the right to appoint and remove members of the ARC. After the right to appoint the members of the ARC transfers to the Board, the ARC shall consist of three (3) members. The Board may appoint itself as the ARC or any of its members to the ARC. If an ARC has not been appointed, the Board shall serve as the ARC.

63 Majority Action. Except as otherwise provided in this Declaration, a majority of the members of the ARC shall have the power to act on behalf of the ARC, without the necessity of a meeting and without the necessity of consulting the remaining member or members of the ARC. The ARC may render its decision only by written instrument setting forth the action taken by the members consenting thereto.

64 Duties. The ARC shall consider and act upon the proposals and/or plans submitted pursuant to this Article. The ARC, from time to time and at its sole discretion, may adopt architectural rules, regulations, and guidelines ("Architectural Standards").

65 ARC Decision. The ARC shall render its written decision approving or denying each application submitted to it within thirty (30) working days after its receipt of all materials required with respect to such application. If appeals are permitted pursuant to Section 6.8, a decision will not be final until the 10-day appeal period has expired, or, if an appeal is timely filed, when the Board issues a decision on the appeal. If the ARC fails to render such written decision within thirty (30) days of its receipt of all required materials or request an extension, the application shall be deemed approved. The ARC shall be entitled to request one or more extensions of time, not to exceed thirty (30) days. In the event of such extension requests, if the ARC does not render a written decision within the extension period, the application shall be deemed approved. Provided, however, the applicant may agree to further extensions to allow the applicant to complete or supplement the application.

66 ARC Discretion. The ARC, at its sole discretion, may withhold consent to any proposed work if the ARC finds the proposed work would be inappropriate for the particular lot or incompatible with the design standards that the ARC intends for Frog Pond Vista. The ARC may consider siting, shape, size, color, design, height, solar access or other effect on the enjoyment

of other Lots or the Common Area, and any other factors that it reasonably believes to be relevant in determining whether or not to consent to any proposed work.

67 Nonwaiver. Consent by the ARC to any matter proposed to it or within its jurisdiction shall not be deemed to constitute precedent or waiver impairing its right to withhold approval as to any similar matter thereafter proposed or submitted to it for consent.

68 Appeal. After the right to appoint ARC members transfers to the Board, pursuant to Section 6.2, any Owner adversely impacted by action of the ARC may appeal such action to the Board. Such appealing Owner shall submit to the Board a written notice of appeal, setting forth specific objections or mitigating circumstances justifying the appeal, to the Board within ten (10) days after the ARC's action. The Board shall issue a final, conclusive decision within forty-five (45) days after receipt of such notice, and such decision shall be final and binding upon the appealing Owner, the Owner of the affected Lot, and the ARC. Provided, however, the Board shall make reasonable efforts to reach a decision within twenty (20) days. If the Board is serving as the ARC, then such appeal shall be deemed a request for reconsideration.

69 Effective Period of Consent. Except as provided in Section 4.3, the ARC's consent to any proposed work shall automatically expire six (6) months after issuance unless construction of the project has been commenced or the Owner has applied for and received an extension of time from the ARC.

610 Determination of Compliance. The ARC may inspect, from time to time, all work performed and determine whether it is in substantial compliance with the approval granted. If the ARC finds that the work was not performed in substantial conformance with the approval granted, or if the ARC finds that the approval required was not obtained, the ARC shall notify the Owner in writing of the noncompliance. The notice shall specify the particulars of noncompliance and shall require the Owner to remedy the noncompliance.

611 Noncompliance. If the ARC determines that an Owner has not constructed an improvement consistent with the specifications of an ARC approval or has constructed an improvement without obtaining ARC approval, sends a notice of noncompliance to such Owner, and such Owner fails to commence diligently remedying such noncompliance in accordance with such notice, then, effective at 5 p.m. on the third (3rd) day after issuance of such notice, the ARC shall provide notice of a hearing to consider the Owner's continuing noncompliance. The hearing shall be set not more than thirty (30) days from the date on which the notice of noncompliance was issued. At the hearing, if the ARC finds that there is no valid reason for the continuing noncompliance, the ARC shall determine the estimated costs of achieving compliance and may issue a fine against the noncomplying Owner for such amount. The ARC also shall require the Owner to remedy such noncompliance within ten (10) days after the date of the ARC's determination. If the Owner does not comply with the ARC's ruling within such period or any extension thereof granted by the ARC, at its sole discretion, the ARC may remove the noncomplying improvement, remedy the noncompliance, and/or record a notice of noncompliance in the county deed records. The costs of any such action shall be assessed against the Owner as a Reimbursement Assessment either before or after any remedial action is taken.

612 Liability. Neither the ARC nor any member thereof shall be liable to any Owner, Occupant, for any damage, loss or prejudice suffered or claimed on account of any action or failure

to act of the ARC or a member thereof, provided only that the ARC or the member has, in accordance with its or his actual knowledge, acted in good faith.

613 Estoppel Certificate. Within fifteen (15) working days after the ARC's receipt of a written request from an Owner and the ARC's receipt of payment of a reasonable fee fixed by the ARC to cover costs, the ARC shall provide such Owner with a certificate executed by the Chairperson or other authorized member of the ARC certifying with respect to any Lot owned by the Owner, that, as of the date thereof either (a) all improvements made or done upon such Lot comply with this Declaration, or (b) such improvements do not so comply, in which event, the certificate shall also identify the noncomplying improvements and set forth with particularity the nature of such noncompliance. The Owner and such Owner's heirs, devisees, successors, and assigns shall be entitled to rely on the certificate with respect to the matters set forth therein. The certificate shall be conclusive as among Declarant, the ARC, the Association, all Owners, and all persons deriving any interest through any of them.

614 Fees. The ARC may charge applicants a reasonable application fee and additional costs incurred or expected to be incurred by the ARC to retain architects, attorneys, engineers and other consultants to advise the ARC concerning any aspect of the applications and/or compliance with any appropriate architectural criteria or standards. Such fees shall be collectible as assessments pursuant to Article 10.

615 Declarant and Successor Exempt From ARC. The Declarant or a successor shall be exempt from the requirement to submit and have plans approved by the ARC.

ARTICLE 7

MEMBERSHIP IN THE ASSOCIATION

7.1 Members. Each Owner shall be a member of the Association. Membership in the Association shall be appurtenant to, and may not be separated from, ownership of any Lot. Transfer of ownership of a Lot shall automatically transfer membership in the Association. Without any other act or acknowledgment, Occupants and Owners shall be governed and controlled by this Declaration, the Articles, Bylaws, and the Rules and Regulations of the Association and any amendments thereof.

7.2 Proxy. Each Owner may cast such Owner's vote in person, by written ballot or pursuant to a proxy executed by such Owner. An Owner may not revoke a proxy given pursuant to this Section 7.2 except by actual notice of revocation to the person presiding over a meeting of the Association. A proxy shall not be valid if it is undated or purports to be revocable without notice. A proxy shall terminate one (1) year after its date unless the proxy specifies a shorter term.

7.3 Voting Rights. The Association shall have two (2) classes of voting members:

7.3.1 Class A. Class A members shall be all Owners of Lots other than Declarant, and each Class A member shall be entitled to one (1) vote for each Lot owned with respect to all matters upon which Owners are entitled to vote.

7.3.2 Class B. The Class B member shall be Declarant, its successors, and assigns. The Class B member shall have three (3) votes for each Lot owned. The Class B

membership shall cease and be converted to Class A membership upon the earlier of the following dates (the "Termination Date"):

(a) When all Lots are sold from the Declarant to a party other than a successor Declarant; or

(b) At such earlier time as Declarant elects in writing to terminate Class B membership.

After the Termination Date, each Owner, including Declarant, shall be entitled to one (1) vote for each Lot owned with respect to all matters upon which Owners are entitled to vote, and the total number of votes shall be equal to the total number of Lots subject to this Declaration.

When more than one (1) person or entity owns a Lot, the vote for such Lot may be cast as they shall determine, but in no event shall fractional voting be allowed. Fractional or split votes shall be disregarded, except for purposes of determining a quorum.

7.4 Procedure. All meetings of the Association, the Board, the ARC, and Association committees shall be conducted with such rules of order as may from time to time be adopted by the Board. Notwithstanding which rule of order is adopted, the President shall be entitled to vote on all matters, not merely to break a tie vote. A tie vote does not constitute a majority or approval of any motion or resolution.

ARTICLE 8 DECLARANT CONTROL

81 Interim Board and Officers. Declarant hereby reserves administrative control of the Association. Declarant, in its sole discretion, shall have the right to appoint and remove members of an interim board (the "Interim Board"), which shall manage the affairs of the Association and be invested with all powers and rights of the Board until the Turnover Meeting (as hereinafter defined). The Interim Board shall consist of from one (1) to three (3) members. Notwithstanding the provision of this Section 8.1, at the Turnover Meeting, at least one (1) Director shall be elected by Owners other than Declarant, even if Declarant otherwise has voting power to elect all three (3) Directors.

82 Turnover Meeting. Declarant shall call a meeting for the purpose of turning over administrative control of the Association from Declarant to the Class A members within sixty (60) days of the earlier of the following dates:

82.1 Latest Date. When all Lots are sold from Declarant to someone other than a successor Declarant; or

82.2 Optional Turnover. At such time as Declarant has elected in writing to terminate Class B membership.

Declarant shall give notice of the Turnover Meeting to each Owner as provided in the Bylaws. If Declarant does not call the Turnover Meeting required under this Section, the transitional advisory committee or any Owner may do so.

83 Transitional Advisory Committee. Not later than the sixtieth (60th) day after the date the Declarant conveys at least fifty percent (50%) of the Lots in the Project, the Declarant shall call a meeting of Owners for the purpose of electing a Transitional Advisory Committee. The Transitional Advisory Committee shall consist of three (3) members, two of whom shall be selected by Owners other than the Declarant, and one of whom shall be appointed by the Declarant. The Committee shall have reasonable access to the same information and documents that the Declarant is required to deliver to the Association at the Turnover Meeting. An Owner may call the meeting provided for in this Section 8.3 if the Declarant fails to do so.

ARTICLE 9

DECLARANT'S SPECIAL RIGHTS

91 General. Declarant is undertaking the work of developing Lots and other improvements within Frog Pond Vista. The completion of the development work and the marketing and sale of the Lots is essential to the establishment and welfare of the Property as a residential community. Until the Homes on all Lots on the Property have been constructed, fully completed and sold, with respect to the Common Area and each Lot on the Property, Declarant shall have the special rights set forth in this Article 9.

92 Marketing Rights. Declarant shall have the right to maintain a sales office and model on one or more of the Lots which Declarant owns. Declarant and prospective purchasers and their agents shall have the right to use and occupy the sales office and models during reasonable hours any day of the week. Declarant may maintain a "For Sale" and community marketing signs at reasonable locations on the Property, including, without limitation, on the Common Area.

93 Declarant Easements. Declarant reserves easements over the Property as more fully described in Sections 3.4 and 3.5 hereof.

94 Additional Improvements. Declarant has not committed to build any improvements not described in this Declaration.

95 Control of the ARC. Declarant shall have the right, but not the obligation, to control all aspects of the ARC, including the appointment of all ARC members and the approval, modification or adoption of the Architectural Standards as described in Article 6 herein.

ARTICLE 10

FUNDS AND ASSESSMENTS

10.1 Purpose of Assessments; Expenses. The assessments levied by the Association shall be used exclusively to promote the recreation, health, safety, aesthetics and welfare of the Owners and Occupants of Frog Pond Vista, for the improvement, operation and maintenance of the Common Area and the Commonly Maintained Property, for the payment of obligations of the Association, for the administration and operation of the Association and for property and liability insurance.

10.2 Covenants to Pay. Each Owner covenants and agrees to pay the Association the assessments and any additional charges levied pursuant to this Declaration or the Bylaws. All

assessments for operating expenses, repairs and replacement and reserves shall be allocated among the Lots and their Owners as set forth in Section 10.4.2.

1021 Funds Held in Trust. The assessments collected by the Association shall be held by the Association for and on behalf of each Owner and shall be used solely as set forth in Section 10.1. The assessments are the property of the Association and are not refundable to Owners or Lots. Upon the sale or transfer of any Lot, the Owner's interest in such funds shall be deemed automatically transferred to the successor in interest to such Owner.

1022 Offsets. No offsets against any assessment shall be permitted for any reason, including, without limitation, any claim that the Association is not properly discharging its duties.

1023 Right to Profits. Association profits, if any, shall be the property of the Association and shall be contributed to the Current Operating Account.

103 Basis of Assessment; Commencement of Assessments. Assessments for reserves shall commence for a Lot when a Lot is sold from the Declarant to a party other than a successor Declarant but can be accrued if the Lot is sold to a homebuilder for building a Home. The accrued reserves must then be paid when the homebuilder sells the completed Home to a third party. Provided, however, the reserves cannot be accrued beyond the date of the Turnover Meeting. If the Lot is not being sold to a homebuilder, then the reserves may not be accrued and must be paid when billed. Assessments for operating shall commence ninety (90) days following the date a building permit is issued for the Lot. Operation assessments may not be accrued. The amount of the annual assessment to Owners other than the Declarant shall be determined by the Declarant. The Declarant shall be exempt from paying all assessments on all Lots owned by it.

104 Annual Assessments. Annual assessments for each fiscal year shall be established when the Board approves the budget for that fiscal year. The initial assessment and the implementation thereof shall be determined by the Declarant and shall be prorated on a monthly basis. For prospective purposes, any portion of a month shall count as a full month. Annual assessments shall be levied on a fiscal year basis. The fiscal year shall be the calendar year unless another year is adopted by vote of the Association members. Unless otherwise specified by the Board, annual assessments shall be due and payable on the first day of each calendar year during the term of this Declaration.

104.1 Budgeting. Each year the Board shall prepare, approve and make available to each member a pro forma operating statement (budget) containing: (i) estimated revenue and expenses on an accrual basis; (ii) the amount of the total cash reserves of the Association currently available for replacement or major repair of the Common Area and Commonly Maintained Property and for contingencies; (iii) an itemized estimate for the remaining life of, and the methods of funding to defray repair, replacement or additions to major components of such improvements as provided in Section 10.7.2; and (iv) a general statement setting forth the procedures used by the Board in the calculation and establishment of reserves to defray the costs of repair, replacement or additions to major components of the Common Area and the Commonly Maintained Property. Notwithstanding that budgeting shall be done on an accrual basis, the Association's books shall be kept on a cash basis and the Association shall be a cash basis taxpayer, unless applicable governmental regulations require otherwise. For the first fiscal year, the budget

shall be approved by the Board no later than the date on which annual assessments are scheduled to commence. Thereafter, the Board shall annually prepare and approve the budget and distribute a copy or summary thereof to each member, together with written notice of the amount of the annual assessments to be levied against the Owner's Lot, within thirty (30) days after adoption of such budget.

1042 Allocation of Assessments. The total amount in the budget shall be charged equally against all Lots, which are subject to assessment as provided in Section 10.3. Declarant shall be exempt from paying the operation portion of the assessment.

1043 Nonwaiver of Assessments. If before the expiration of any fiscal year the Association fails to fix annual assessments for the next fiscal year, the annual assessments established for the preceding year shall continue until a new annual assessment is fixed.

1044 Special Assessments. The Board and/or the Owners shall have the power to levy special assessments against an Owner or all Owners in the following manner for the following purposes:

10.4.4.1 Correct Deficit. To correct a deficit in the operating budget, by vote of a majority of the Board.

10.4.4.2 Special Obligations of an Owner. To collect amounts due to the Association from an Owner for breach of the Owner's obligations under this Declaration, the Bylaws, or the Rules and Regulations, by vote of a majority of the Board.

10.4.4.3 Repairs. To collect additional amounts necessary to make repairs or renovations to the Common Area or Commonly Maintained Property if sufficient funds are not available from the operating budget or replacement reserve accounts, by vote of a majority of the Board; or

10.4.4.4 Capital Improvements. To make capital acquisitions, additions, or improvements, by vote of at least eighty percent (80%) of all votes allocated to the Lots.

1045 Working Capital. Upon the first sale of a Lot to a purchaser other than a successor Declarant, the purchaser will pay to the Association a working fund assessment equal to 1/6th of the annual assessment then applicable to the Lot. The Board of Directors may deposit these funds either in the Current Operating Account or the Reserve Account, at the discretion of the Board.

105 Accounts.

1051 Types of Accounts. Assessments collected by the Association shall be deposited into at least two (2) separate accounts with a bank, which accounts shall be clearly designated as (i) the Current Operating Account and (ii) the Reserve Account. The Board shall deposit those portions of the assessments collected for current maintenance and operation into the Current Operating Account and shall deposit those portions of the assessments collected as

reserves for replacement and deferred maintenance of capital improvements into the Reserve Account. Withdrawal of funds for the Association's Reserve Account shall require the signatures of either two (2) Directors or one (1) Director and an officer of the Association who is not a Director. In its books and records, the Association shall account separately for operating expenses relating to the Common Area/Commonly Maintained Property and operating expenses relating to all other matters, as well as for necessary reserves relating to the Common Area/Commonly Maintained Property and necessary reserves relating to all other matters.

1052 Reserve Account. Declarant shall establish a Reserve Account, in the name of the Association, which shall be kept separate from all other funds held by the Association. The Association shall pay out of the Reserve Account only those costs that are attributable to the maintenance, repair or replacement of Common Area property and Commonly Maintained Property that normally requires replacement, in whole or in part, within one (1) to thirty (30) years and not for regular or periodic maintenance and expenses. No funds collected for the Reserve Account may be used for ordinary current maintenance and operation purposes.

10.5.2.1 Calculation of Reserve Assessment; Reserve Study. The Board of Directors of the Association annually shall conduct a reserve study, or review and update an existing study, of the Common Area and Commonly Maintained Property to determine the reserve account requirements. A reserve account shall be established for those items of the Common Area and Commonly Maintained Property all or part of which will normally require replacement in more than three and less than 30 years, and for the maintenance, repair or replacement of other items as may be required under the Declaration or Bylaws or that the Board of Directors, in its discretion, may deem appropriate. The reserve account need not include items that could reasonably be funded from operating assessments. The reserve study shall include:

- (a) Identification of all items for which reserves are required to be established.
- (b) The estimated remaining useful life of each item as of the date of the reserve study.
- (c) The estimated cost of maintenance, repair, or replacement of each item at the end of its useful life; and
- (d) A 30-year plan with regular and adequate contributions, adjusted by estimated inflation and interest earned on reserves, to meet the maintenance, repair, and replacement schedule.

The reserve account assessment shall be allocated pursuant to Section 10.4.2.

10.5.2.2 Loan from Reserve Account. After the Turnover Meeting described in Section 8.2, the Board may borrow funds from the Reserve Account to meet high seasonal demands on the Association's regular operating fund or to meet unexpected increases in expenses. Funds borrowed must be repaid later from assessments if the Board has adopted a resolution, which may be an annual continuing resolution, authorizing the borrowing of funds. Not later than the adoption of the budget for the following year, the Board shall adopt by resolution a written payment plan providing for repayment within a reasonable period.

10.5.2.3 Investment of Reserve Account. Nothing in this Section 10.5.2 prohibits the prudent investment of Reserve Account funds, subject to any constraints imposed by the Planned Community Act, the Board, the Bylaws or the Rules and Regulations.

10.5.2.4 Refunds of Assessments. Assessments paid into the Reserve Account are the property of the Association and are not refundable to sellers or Owners of Lots. Sellers or Owners of Lots may treat their outstanding share of the Reserve Account's balance as a separate item in the sales contract providing for the conveyance of their Lot.

1053 Current Operating Account. All costs other than those to be paid from the Reserve Account pursuant to Section 10.5.2 may be paid from the Current Operating Account.

106 Default in Payment of Assessments; Enforcement of Liens.

1061 Personal Obligation. All assessments properly imposed under this Declaration or the Bylaws shall be the joint and several personal obligations of all Owners of the Lot to which such assessment pertains. In a voluntary conveyance (that is, one other than through foreclosure or a deed in lieu of foreclosure), the grantees shall be jointly and severally liable with the grantors for all Association assessments imposed through the recording date of the instrument effecting the conveyance. A suit for a money judgment may be initiated by the Association to recover such assessments without either waiving or foreclosing the Association's lien.

1062 Association Lien. The Association shall have a lien against each Lot for any assessment (of any type provided for by this Declaration or the Bylaws) or installment thereof that is delinquent. The Association's lien shall accumulate all future assessments or installments, reimbursement assessments, interest, late fees, penalties, fines, attorneys' fees (whether or not suit or action is instituted), actual administrative costs, and other appropriate costs properly chargeable to an Owner by the Association, until such amounts are fully paid. Recording of the Declaration constitutes record notice and perfection of the lien. Said lien may be foreclosed at any time pursuant to the Planned Community Act. The Association shall record a notice of a claim for assessments and other charges in the deed records of Clackamas County, Oregon, before any suit to foreclose may be filed. The lien of the Association shall be superior to all other liens and encumbrances except property taxes and assessments, any first mortgage, deed of trust or land sale contract recorded before the Association's notice of lien.

1063 Interest; Fines; Late Fees; Penalties. The Board, in its reasonable discretion, may from time to time adopt resolutions to set the rate of interest and to impose late fees, fines and penalties on delinquent assessments or for violations of the provisions of this Declaration, the Bylaws, Architectural Standards and the Rules and Regulations adopted by the Board or the ARC. The adoption of such impositions shall be communicated to all Owners in writing not less than thirty (30) days before the effective date by a notice mailed to the assessment billing address of such Owners. Such impositions shall be considered assessments that are lienable and collectible in the same manner as any other assessments; provided, however, that fines or penalties for violation of this Declaration, the Bylaws or any rule and regulation, other than late fees, fines or interest arising from an Owner's failure to pay regular, or special Assessments may not be imposed against an Owner or such Owner's Lot until such Owner is given an opportunity for a hearing as elsewhere provided herein.

10.64 Association's Right to Rents; Receiver. In any foreclosure suit by the Association with respect to such lien, the Association shall be entitled to collect reasonable rent from the defaulting Owner for the use of such Owner's Lot or shall be entitled to the appointment of a receiver.

ARTICLE 11 **GENERAL PROVISIONS**

11.1 Records. The Board shall preserve and maintain minutes of the meetings of the Association, the Board, and any committees. The Board also shall keep detailed and accurate financial records, including individual assessment accounts of Owners, the balance sheet, and income and expense statements. Individual assessment accounts shall designate the name and address of the Owner or Owners of the Lot, the amount of each assessment as it becomes due, the amounts paid upon the account, and the balance due on the assessments. The minutes of the Association, the Board and Board committees, and the Association's financial records shall be maintained in the state of Oregon and reasonably available for review and copying by the Owners. A reasonable charge may be imposed by the Association for providing copies.

11.2 Enforcement; Attorneys' Fees. The Association and the Owners and any mortgagee holding an interest on a Lot shall have the right but not the obligation to enforce all of the covenants, conditions, restrictions, reservations, easements, liens and charges now or hereinafter imposed by any of the provisions of this Declaration as may appertain specifically to such parties or Owners by any proceeding at law or in equity. Failure by either the Association or by any Owner or mortgagee to enforce any covenant, condition or restriction herein contained shall in no event be deemed a waiver of their right to do so thereafter. In the event suit or action is commenced to enforce the terms and provisions of this Declaration (including without limitations, for the collection of assessments), the prevailing party shall be entitled to its actual administrative costs incurred because of a matter or event which is the subject of the suit or action, attorneys' fees and costs in such suit or action to be fixed by the trial court, and in the event of an appeal, the cost of the appeal, together with reasonable attorneys' fees, to be set by the appellate court. In addition, thereto, the Association shall be entitled to its reasonable attorneys' fees and costs incurred in any enforcement activity or to collect delinquent assessments, together with the Association's actual administrative costs, whether or not suit or action is filed.

11.3 Construction Defect Claim Procedure. No litigation shall be commenced against the Declarant (including any successor Declarant), contractor or builder of the Home or any Owner of a Lot in respect to any alleged defect in a Home or on any Common Area except in compliance with the process set forth in ORS 701.560-701.595 and ORS 701.605.

11.4 Severability. Invalidation of any one of these covenants, conditions or restrictions by judgment or court order shall not affect the other provisions hereof and the same shall remain in full force and effect.

11.5 Duration. The covenants, conditions and restrictions of this Declaration shall run with and bind the land for a term of thirty-five (35) years from the date of this Declaration being recorded, after which time they shall be automatically extended for successive periods of ten (10) years, unless rescinded by a vote of at least ninety percent (90%) of the Owners and ninety percent

(90%) of the first mortgagees; provided, however, that amendments that do not constitute rescission of the planned community may be adopted as provided in Section 11.6

116 Amendment. Except as otherwise provided in Section 11.5 or ORS 94.590, and the restrictions set forth elsewhere herein, this Declaration may be amended at any time by an instrument approved by not less than seventy-five percent (75%) of the total votes of each class of members that are eligible to vote. Any amendment must be executed, recorded and certified as provided by law; provided, however, that no amendment of this Declaration shall effect an amendment of the Bylaws or Articles without compliance with the provisions of such documents, and the Oregon Nonprofit Corporation Act and that no amendment affecting the general plan of development or any other right of Declarant herein contained may be effected without the express written consent of Declarant or its successors and assigns, including, without limitation, amendment of this Section 11.6.

117 Release of Right of Control. Declarant may give up its right of control in writing at any time by notice to the Association.

118 Unilateral Amendment by Declarant. In addition to all other special rights of Declarant provided in this Declaration, Declarant may amend this Declaration in order to comply with the requirements of the Federal Housing Administration of the United States, the Federal National Mortgage Association, the Government National Mortgage Association, the Federal Home Mortgage Loan Corporation, any department, bureau, board, commission or agency of the United States or the State of Oregon, or any other state in which the Lots are marketed and sold, or any corporation wholly owned, directly or indirectly, by the United States or the State of Oregon, or such other state, the approval of which entity is required in order for it to insure, guarantee or provide financing in connection with development of the Property and sale of Lots. Prior to the Turnover Meeting, no such amendment shall require notice to or approval by any Class A member.

119 Resolution of Document Conflicts. In the event of a conflict among any of the provisions in the documents governing Frog Pond Vista, such conflict shall be resolved by looking to the following documents in the order shown below:

- (a) Declaration;
- (b) Articles;
- (c) Bylaws; and
- (d) Rules and Regulations.

IN WITNESS WHEREOF, Declarant has executed this instrument this _____ day of _____, 20____.

VENTURE PROPERTIES, INC.,
an Oregon corporation

By: _____

Its: _____

STATE OF OREGON)
) ss. _____, 20 ____
County of _____)

Personally appeared before me the above-named _____, who, being duly sworn, did say that she is the _____ of VENTURE PROPERTIES, INC., and that said instrument was signed on behalf of said company by authority of its members; and he acknowledged said instrument to be its voluntary act and deed.

Notary Public for Oregon

AFTER RECORDING RETURN TO:

Venture Properties, Inc.
4230 Galewood Street, Suite 100
Lake Oswego, OR 97035

**BYLAWS OF
FROG POND VISTA HOME OWNERS ASSOCIATION**

DRAFT

ARTICLE 1

PLAN OF LOT OWNERSHIP; DEFINITIONS

1.1 **Bylaws Applicability.** These Bylaws apply to the Lots and the Common Area in Frog Pond Vista, a planned community in the City of Wilsonville, Clackamas County, Oregon, that have been subjected to the Declaration of Covenants, Conditions and Restrictions for Frog Pond Vista (the "Declaration"), as well as to the Frog Pond Vista Home Owners Association (the "Association") and the entire management structure thereof.

1.2 **Lots; Property.** The Lots and the Common Area may be collectively referred to in these Bylaws as the "Property" or "Project" and the Lots individually as a "Lot" or collectively as the "Lots."

1.3 **Personal Application.** All present or future Owners, tenants, Occupants, and their employees, and any other person that might occupy any portion of the Property in any manner, shall be subject to the provisions set forth in these Bylaws. The acquisition, rental, or occupancy of any of the Lots shall constitute acceptance and ratification of these Bylaws and agreement to comply with all the provisions hereof.

1.4 **Definitions.** Capitalized terms used but not defined herein shall have meanings attributed to them in Article 1 of the Declaration.

1.5 **Oregon Planned Community Act.** The Property, all Lots and Owners thereof, the Association and all Members thereof, shall be subject to the Oregon Planned Community Act, ORS 94.550 et seq. (the "PCA").

ARTICLE 2

ASSOCIATION MEMBERSHIP, VOTING, MAJORITY OF OWNERS, QUORUM, PROXIES

2.1 **Membership in the Association.** Upon recordation of a conveyance or contract to convey a Lot, the grantee or purchaser named in such conveyance or contract shall automatically be and shall remain a Member of the Association until such time as such person's ownership ceases for any reason. For all purposes of the Declaration and the administration of the Property, Lot ownership shall be determined from the records maintained by the Association. The record shall be established by the Owner filing with the Association a copy of the deed to or land sale contract for such Owner's Lot, to which shall be affixed the certificate of the recording officer of the County of Clackamas, Oregon, showing the date and place of recording of such deed or contract. No person shall be recognized as an Owner unless a copy of the deed or contract has been filed with the Association as provided above showing such Owner to be the current Owner or contract purchaser of a Lot. Notwithstanding the foregoing, Declarant shall be the Owner of all previously unsold Lots, although no deed or land sale contract, with respect to such Lots, has been filed with the Association.

2.2 **Voting Rights.** The Association shall have two (2) classes of voting Members:

2.2.1 **Class A.** Class A Members shall be all Owners of Lots other than Declarant, and each Class A Member shall be entitled to one (1) vote for each Lot owned with respect to all matters upon which Owners are entitled to vote.

2.2.2 **Class B.** The Class B Member shall be Declarant, its successors and assigns. The Class B Member shall have three (3) votes for each Lot owned; provided, however, that Class B membership shall cease on the Termination Date, as defined in Section 3.3. After termination of Class B membership, each Owner (including Declarant) shall be entitled to one (1) vote for each Lot owned with respect to all matters upon which Owners are entitled to vote, and the total number of votes shall equal the total number of Lots subjected to these Bylaws.

When more than one (1) person or entity owns a Lot, the vote for such Lot may be cast as they shall determine, but in no event shall fractional voting be allowed. Fractionalized or split votes shall be disregarded, except for purposes of determining a quorum.

2.3 **Majority of Owners.** As used in these Bylaws, the term "majority" shall mean those Owners holding over fifty percent (50%) of the voting rights allocated to the Owners in accordance with the Declaration and Section 2.2 above. "Majority of Owners present" shall mean Owners holding over fifty percent (50%) of the votes present at any legal meeting.

2.4 **Quorum.** Except as otherwise provided in these Bylaws, the presence in person or by proxy of Owners holding twenty percent (20%) or more of the outstanding votes in the Association, as defined in Section 2.2 of this Article, shall constitute a quorum. There is no quorum requirement for a statutory turnover meeting from the Declarant to Owners.

2.5 **Voting; Proxies.** Owners may cast votes in person, by written ballot, or by proxy. Proxies must be filed with the Secretary of the Association ("Secretary") before or during the appointed meeting. A proxy shall expire one (1) year after the date it was signed unless a shorter period is specified in the proxy. The proxies may require the holder to cast a vote for or against any special proposal set out in the notice calling the meeting. Unless withdrawn, a proxy given to another person to vote at a specific meeting shall also be valid at an adjourned meeting called under the provisions of Section 3.8. Proxies and ballots must be retained by the Association for one (1) year from the date of the determination of the vote, except that proxies and ballots relating to an amendment must be retained by the Association for one (1) year from the date the amendment is effective.

2.6 **Authority to Vote.** All Owners, including those who have leased their Lot to a third party, shall be entitled to vote. An Owner's right to vote may not be revoked. A purchaser under a land sale contract entitled to immediate possession of the Lot shall be deemed the Owner thereof, unless otherwise provided in such contact.

2.7 **Fiduciaries and Joint Owners.** An attorney-in-fact, executor, administrator, guardian, conservator or trustee may vote, in person or by proxy, at any meeting of the Association with respect to any Lot owned or held by such person in such capacity, whether or not the same shall have been transferred to such person's name, provided that such person has satisfied the Secretary that such person is the attorney-in-fact, executor, administrator, guardian, conservator

or trustee holding such Lot in such capacity. Whenever any Lot is owned by two (2) or more persons jointly according to the records of the Association, the vote of such Lot may be exercised by any one of the Owners then present, in the absence of protest by a co-owner. In the event of such protest, no one co-owner shall be entitled to vote without the approval of all co-owners. In the event of disagreement among the co-owners, the vote of such Lot shall be disregarded for all purposes, except for determining whether a quorum is present.

ARTICLE 3 **ADMINISTRATION**

31 Association Responsibilities. The Owners shall constitute the Members of the Association. Except as otherwise provided in the Declaration or these Bylaws, decisions and resolutions of the Association shall require approval by a majority of the Owners present at any legal meeting. A legal meeting is one duly called pursuant to these Bylaws at which a quorum is present, in person or by proxy at a formal gathering or, if a vote is taken by written ballots, when ballots are returned representing more than twenty percent (20%) of the vote, unless a larger vote is required to approve a ballot item, in which case the quorum requirements shall be the number of votes required to approve the proposal.

32 Place of Meetings. Formal meetings of the Association shall be held at suitable places convenient to the Owners as may be designated by the Board of Directors of the Association (the "Board").

33 Turnover Meeting. Declarant shall call a meeting for the purpose of turning over administrative control of the Association from Declarant to the Class A members within sixty (60) days after of the earlier of the following dates:

3.3.1 Latest Date. When one hundred percent (100%) of the lots within the Association are sold to a party other than a successor Declarant; or

3.3.2 Optional Turnover. At such time as Declarant has elected in writing to terminate Class B membership.

Declarant shall give notice of the Turnover Meeting to each Owner as provided in these Bylaws. If Declarant does not call the Turnover Meeting within sixty (60) days as required under this Section, the transitional advisory committee or any Owner may do so.

At the Turnover Meeting, Declarant shall relinquish control of the administration of the Association and the Owners shall assume such control and shall elect the Board in accordance with the provisions of Article 4 of these Bylaws and change the registered agent of the Association with the Oregon Secretary of State. Additionally, Declarant shall deliver to the Association all business and financial records, together with all Association bank accounts, funds and other assets as required by ORS 94.616. The turnover meeting may not be conducted by written ballot.

34 Transitional Advisory Committee. Declarant shall form a transitional advisory committee (the "Committee") to provide for the transition of administrative control of the Association from Declarant to the Class A Members. Within sixty (60) days after Declarant has conveyed fifty percent (50%) or more of Lots in the Project to Owners other than a successor

declarant, Declarant shall call a meeting of Owners for the purpose of selecting the Committee, which shall consist of three (3) Members. The Class A Members shall, by majority vote, elect two (2) Members, and Declarant shall elect one (1) Member.

The Committee's function shall be facilitating the transfer of control of the administration of the Association from Declarant to the Owners. The Committee shall have access to the information, documents and records that Declarant must turn over to the Owners under the PCA and this Article 3.

Declarant shall give notice of the meeting required under this Section 3.4 to each Owner at least seven (7), but not more than fifty (50), days prior to the meeting. The notice shall state the purpose of the meeting and the time and place where it is to be held. If Declarant does not call such meeting within the time specified, an Owner may call such meeting. If the Owners, other than Declarant, do not select Members for the Committee under this Section 3.4, Declarant shall have no further responsibility to form the Committee.

35 Annual Meetings. The Board, by a Board action, shall cause the first annual meeting of the Association to be held during the calendar year following the calendar year in which the Turnover Meeting is held. The Board, at its discretion, from time to time, may change the meeting date, provided that the meeting is held annually. At such meetings, the Owners shall elect new members of the Board in accordance with the requirements of Section 4.7 of these Bylaws to replace those Directors whose terms have expired. The Owners also may transact such other business of the Association as may properly come before them. Annual meetings of the Association may not be conducted by written ballot.

36 Special Meetings. The President shall call a special meeting of the Owners if so directed by a resolution of the Board or a petition, presented to the Secretary and signed by twenty percent (20%) or more of the Owners. All meetings called because of petition of Owners shall be held at a formal gathering, and not by written ballot, notice of which shall be sent within thirty (30) days after the Secretary's receipt of the petition. The notice of any special meeting shall state the time and place of such meeting and the purpose thereof. No business other than that stated in such notice shall be transacted at a special meeting unless by consent of all the Owners of the Lots or as otherwise set out in these Bylaws.

37 Notice of Meetings. The Secretary shall mail by first class mail, hand deliver, or deliver via electronic communication, a notice of each annual and special meeting, stating the purpose thereof and the time and place where such meeting is to be held, to each Owner of record at least ten (10) but not more than fifty (50) days before such meeting or the date on which ballots for a ballot meeting are required to be returned. The Board of Directors may propose that the Owners take an action by written ballot without a meeting, pursuant to the provisions of the PCA and the Oregon Nonprofit Corporation Act. Such notices shall be mailed to the Owner's mailing or email address last given to the Secretary in writing by the Owner or such Owner's vendee. If Lot ownership is split or the Lot has been sold on a contract, notice shall be sent to a single address, of which the Secretary has been notified in writing by such parties. If no address has been given to the Secretary in writing, then mailing to the Lot shall be sufficient. The mailing or emailing of a notice in the manner provided in this Section shall be considered notice served. Provided

however, an owner may decline to receive notices or ballots via electronic communication by written notice to the Secretary.

38 Adjourned Meetings. If any gathering of Owners is not a legal meeting because a quorum has not attended, the Owners who are present, either in person or by proxy, may adjourn the meeting to a time not less than forty-eight (48) hours or more than twenty (20) days from the time of the original meeting. The adjournment provisions of this Section do not apply to actions proposed to be taken by written ballot.

39 Ballot Meetings. Unless prohibited or limited by the Articles of Incorporation of the Association, any action that may be taken at any annual or special meeting of the Owners may be taken without a meeting if the Association delivers a written ballot to every Owner entitled to vote on the matter as provided in ORS 94.647. Provided, however, action by written ballot may not substitute for the turnover meeting, annual meeting, meeting to remove a director or special meeting called at the request of the Owners. Such ballot shall set forth each proposed action and provide an opportunity to vote for or against each proposed action. A proposed action shall be deemed to be approved by written ballot when the number of votes cast by ballot equals or exceeds any quorum required to be present at a meeting authorizing the action, and the number of approvals equals or exceeds the number of votes that would be required to approve the matter at a meeting at which the total number of votes cast was the same as the number of votes cast by ballot. The Board must provide Owners with at least ten (10) days' notice as required by ORS 94.647 before written ballots are mailed or otherwise delivered. If, at least three (3) days before written ballots are scheduled to be mailed or otherwise distributed, at least ten percent (10%) of the Owners petition the Board requesting secrecy procedures, a written ballot must be accompanied by a secrecy envelope, a return identification envelope to be signed by the Owner and instructions for making and returning the ballot. The Board of Directors may extend the date for counting the ballots of a ballot meeting, in one or more extensions, for up to ninety (90) days after the originally scheduled ballot return date if a quorum of ballots has not been returned and/or for matters on which a certain percentage approval is required and that vote has not been received nor have sufficient votes in opposition been received to negate such approval. Provided, however, if a secret ballot is required, secrecy ballots may not be examined or counted prior to the date certain specified in the notice or any extension thereof.

310 Order of Business. The order of business at all annual meetings shall be as follows:

- Roll call;
- Proof of notice of meeting or waiver of notice;
- Reading of minutes of the preceding meeting;
- Reports of officers;
- Reports of committees;
- Election of inspectors of election;
- Election of Directors;
- Unfinished business;
- New business; and
- Adjournment.

ARTICLE 4
BOARD OF DIRECTORS

41 Number and Qualification. The Board shall be composed of three (3) persons, all of whom must be an Owner or a co-owner of a Lot; provided, however, that if a Lot is owned by more than one (1) Owner, only one (1) co-owner of that Lot may serve on the Board of Directors at any one time. An officer or employee of a corporation, the trustee of a trust, the personal representative of an estate, or an employee of a trust or estate may serve on the Board if the corporation, trust or estate owns a Lot.

42 Powers and Duties. The Board shall have the powers and duties necessary for the administration of the affairs of the Association and may do all such acts and things as are not by law or by these Bylaws directed to be done by the Owners.

43 Other Duties. In addition to duties imposed by these Bylaws or by resolutions of the Association, the Board shall have authority to carry out and be responsible for the following matters:

4.3.1 Upkeep of Common Area and Commonly Maintained Property. Care, upkeep and supervision of the Common Area and the Commonly Maintained Property.

4.3.2 Reserves. Establishment and maintenance of replacement Reserve Accounts which the Board deems prudent for replacement of Common Area improvements or facilities and the Commonly Maintained Property.

4.3.3 Assessment Collection. Designation and collection of assessments from the Owners, in accordance with these Bylaws and the Declaration.

4.3.4 Budget; Voucher System. Establishment of a budget and payment of all common expenses of the Association and institution and maintenance of a voucher system for such payment, which shall require a sufficient number of signatories thereon as may be reasonably necessary to prevent any misuse of Association funds, in accordance with these Bylaws and the Declaration.

4.3.5 Insurance. Procurement and maintenance of insurance policies and payment of premiums therefor out of the common expense funds, as more specifically provided in Article 8 of these Bylaws.

4.3.6 Personnel. Designation and dismissal of the personnel necessary for the maintenance and operation of the Project.

4.3.7 Financial Statements. Causing the preparation and distribution of annual financial statements of the Association to each of the Owners, as more specifically provided in the Declaration.

4.3.8 Rules. Adoption and amendment of administrative Rules and Regulations governing the details of operation and use of the Common Area and administration of the Association, including a fine schedule for violations of these Bylaws, the Declaration or any rules

or regulations promulgated thereunder. Provided, however, that any such Rules and Regulations shall always be subject to rescission or amendment by the Association upon a majority vote of Owners present at any properly called meeting.

4.3.9 Copies of Documents: Bank Accounts. Causing the Association to comply with ORS 94.670 relating to maintenance within the State of Oregon of documents delivered to the Association by the Declarant, depositing all assessments in a separate federally insured account in the name of the Association, payment of all expenses of the Association from the Association's bank account, and maintenance and distribution of financial statements and to maintain copies suitable for duplication of the following: the Declaration, the Articles of Incorporation, the Bylaws, the Association rules and regulations and any amendments thereto, the most recent annual financial statement, and the current operating budget of the Association. Further, the Board of Directors shall cause to be maintained and kept current the information required to enable the Association to comply with ORS 94.670.

4.3.10 Tax Returns. Causing the Association to file the necessary tax returns of the Association.

4.3.11 Mailing Address. Establishing and maintaining a current mailing address for the Association.

4.3.12 Professional Services. Employment of legal, accounting, and other personnel or consultants for reasonable compensation to perform such services as may be required for the proper administration of the Association and preparing and filing the required income tax returns or forms.

44 Limited Authority. The Board shall not take any of the following actions, except with the vote or written assent of a majority of the voting power of the Owners other than Declarant:

4.4.1 Third Party Contracts. Enter into a contract with a third party wherein the third person will furnish goods or services for the Common Area, the Commonly Maintained Property, or the Association for a term longer than one (1) year with the following exceptions:

(a) Management contract, the provisions of which have been approved by the Federal Housing Administration, U.S. Housing and Urban Development or Veterans Administration.

(b) A contract with a public utility company in the City of Wilsonville or Clackamas County, or a service contract if the rates charged for the materials or services are regulated by the Oregon Public Utilities Commission; provided, however, that the term of the contract shall not exceed the shortest term for which the supplier will contract at the regulated rate.

(c) A prepaid casualty and/or liability insurance policy the term of which does not exceed three (3) years, provided that the policy permits short-rate cancellation by the insured.

4.4.2 Capital Expenditures. Incur aggregate expenditures for capital improvements (as opposed to maintenance, repair and replacement costs) to the Common Area, the Commonly Maintained Property, during any fiscal year in excess of five percent (5%) of the budgeted gross expenses of the Association for that fiscal year.

4.4.3 Compensating Board Members. Pay compensation to members of the Board or officers of the Association for services performed in the conduct of the Association's business; provided, however, that the Board may cause a member or officer to be reimbursed for expenses incurred in carrying on the business of the Association.

45 Management Agent. The Board may employ a management agent, to be compensated in an amount established by the Board, to perform such duties and services as the Board shall authorize, including, but not limited to, the duties listed in Section 4.3 of these Bylaws. Any such management contract must be cancelable without penalty upon thirty (30) days' written notice. Any management contract entered into by the Declarant before the Turnover Meeting may be canceled by the Board of Directors elected at the Turnover Meeting upon thirty (30) days' written notice given not later than sixty (60) days after the turnover meeting.

46 Interim Board and Officers. Declarant hereby reserves administrative control of the Association until the Turnover Meeting. Declarant, in its sole discretion, may appoint and remove members of the Board and officers of the Association whose terms of service shall end on or before the date of the Turnover Meeting. However, at the Turnover Meeting, at least one (1) Director shall be elected by Owners other than Declarant, even if Declarant otherwise has voting power to elect all three (3) Directors.

47 Election and Term of Office. At the Turnover Meeting of the Association, the term of office of two (2) Directors shall be fixed for two (2) years. The term of office of one (1) Directors shall be fixed at one (1) year. Should the number of Directors serving on the Board be increased, the same sequential election terms shall apply as nearly as is practicable. Upon expiration of the initial term of office of each respective Director, such Director's successor shall be elected to serve a term of two (2) years. The Directors shall hold office until their successors have been elected and hold their first meeting. At the Turnover Meeting, upon agreement by vote of the Owners, the Owners may elect Directors by using a ballot that permits each Owner to vote for three (3) nominees. In such event, the two (2) nominees receiving the highest number of votes shall be the two (2) year Directors and the nominee receiving the next highest number of votes shall be the one (1) year Director.

48 Vacancies. Vacancies on the Board caused by any reason other than the removal of a Director by a vote of the Association shall be filled for the balance of the term of each directorship by vote of a majority of the remaining Directors, even though they may constitute less than a quorum. Each person so elected shall be a Director until a successor is elected upon expiration of the term for which such person was elected by the other Directors to serve.

49 Removal of Directors. At any legal annual or special meeting at which removal of a Director is on the agenda (not including actions proposed to be taken by written ballot without a meeting), any one (1) or more of the Directors may be removed with or without cause, by a majority vote of the total voting power of the Owners and a successor may be then and there elected

to fill the vacancy thus created; provided, however, that the notice of meeting shall specifically indicate that the removal of one (1) or more named Directors is an agenda item for such meeting. The owners must vote on removal of each Director whose removal is proposed as a separate question. Any Director whose removal has been proposed by the Owners shall be given an opportunity to be heard at such meeting.

410 Organizational Meeting. The first meeting of a newly elected Board shall be held within ten (10) days of election at such place as shall be fixed by the Directors at the Association meeting at which such Directors were elected, and no notice shall be necessary to the newly elected Directors in order to hold such meeting legally, providing a majority of the newly elected Directors are present.

411 Regular Meetings. Regular meetings of the Board may be held at such time and place as shall be determined, from time to time, by a majority of the Directors. Notice of regular meetings of the Board may be called by the President on at least three (3) days' notice to each Director, given personally or by mail, telephone, e-mail or facsimile, which notice shall state the time, place (as hereinabove provided) and purpose of the meeting.

412 Special Meetings. Special meetings of the Board may be called by the President or Secretary or on the written request of at least two (2) Directors. Special meetings of the Board may be called on at least three (3) days' notice to each Director, given personally or by mail, telephone, e-mail or facsimile, which notice shall state the time, place (as hereinabove provided) and purpose of the meeting.

413 Waiver of Notice to Directors. Before, at or after any meeting of the Board, any Director may, in writing, waive notice of such meeting and such waiver shall be deemed equivalent to the giving of such notice. Attendance by a Director at any meeting of the Board shall be a waiver of notice by such Director of the time and place thereof. If all the Directors are present at any meeting of the Board, no notice to Directors shall be required and any business may be transacted at such meeting.

414 Board of Directors' Quorum. At all meetings of the Board, a majority of the existing Directors shall constitute a quorum for the transaction of business, and the acts of the majority of the Directors shall be the acts of the Board. If quorum requirements are not met at any meeting of the Board, the majority of those present may adjourn the meeting from time to time. At any such adjourned meeting, any business that might have been transacted at the meeting as originally called may be transacted without further notice.

415 Board Meetings Open to All Association Members. Except for executive sessions, all meetings of the Board shall be open to any and all Members of the Association; provided, however, that no Association Member shall have a right to participate in the Board's meetings unless such Member is also a member of the Board. The President shall have authority to exclude any Association Member who disrupts the proceedings at a meeting of the Board. At the discretion of the Board, the following matters may be done in executive sessions:

4.15.1 Consultation with legal counsel;

4.15.2 Consideration of personnel matters, including salary negotiations and employee discipline;

4.15.3 Negotiations of contracts with third parties;

4.15.4 Collection of assessments; and

4.15.5 Consideration of any other matter permitted by the PCA to be discussed in executive session.

Except in the case of an emergency, the Board shall vote in an open meeting whether to meet in executive session. If the Board votes to meet in executive session, the presiding officer of the Board shall state the general nature of the action to be considered, as precisely as possible, when and under what circumstances the deliberations can be disclosed to Owners. The statement, motion or decision to meet in executive session must be included in the minutes of the meeting. A contract or an action considered in executive session does not become effective unless the Board, following the executive session, reconvenes in open meeting and votes on the contract or action, which must be reasonably identified in the open meeting and included in the minutes.

416 **Notice to Association Members of Board Meetings.** For other than emergency meetings, notice of special Board meetings shall be mailed or delivered via electronic communication to each Owner at least seven (7) days before the meeting or at least three (3) days' notice by hand delivery to each Lot Owner's address or by facsimile transmission. The Board shall give Owners notice of regular Board meetings at the beginning of each year by first class mail or other reasonable means setting out the time and place of the regular meetings. For any changed time or place, the notice requirements for special meetings shall apply.

417 **Emergency Meetings.** In the event of an emergency, Board of Directors meetings may be conducted by telephonic communication or by the use of a means of communication that allows all Board members participating to hear each other simultaneously or otherwise to be able to communicate during the meeting. No notice to either Directors or Association members shall be required for such meetings of the Board of Directors to be held for any emergency action. Provided, however, that no such meeting shall occur unless at least two-thirds (2/3rds) of the Board of Directors participate in the same and after an attempt has been made to reach each Director.

418 **Compensation of Directors.** No Director shall be compensated in any manner, except for out-of-pocket expenses, unless such compensation is approved by vote of the Owners.

ARTICLE 5 **OFFICERS**

51 **Designation.** The principal officers of the Association shall be a President, a Secretary and a Treasurer, all of whom shall be elected by the Directors. The Directors may appoint an assistant treasurer and an assistant secretary, and any such other officers as in their judgment may be necessary.

52 **Election of Officers.** The officers of the Association may be elected by the Board at the organizational meeting of each new Board or any Board meeting thereafter and shall hold office at the pleasure of the Board.

53 **Removal of Officers.** Upon an affirmative vote of a majority of the Board, any officer may be removed, either with or without cause, and such officer's successor may be elected at any regular or special meeting of the Board.

54 **President.** The President shall be the chief executive officer of the Association and shall preside at all meetings of the Association and of the Board. The President shall have all of the general powers and duties which are usually vested in the office of president of an association, including, but not limited to, the power to appoint committees from among the Owners from time to time as the President may, in the President's discretion, decide is appropriate to assist in the conduct of the affairs of the Association.

55 **Secretary.** The Secretary shall keep the minutes of all meetings of the Board and the minutes of all meetings of the Association and shall have charge of such books and papers as the Board may direct; and shall, in general, perform all the duties incident of the office of secretary.

56 **Treasurer.** The Treasurer shall have responsibility for Association funds and securities and shall be responsible for keeping full and accurate accounts of all receipts and disbursements in books belonging to the Association. The Treasurer shall be responsible for the deposit of all monies and other valuable effects in the name, and to the credit, of the Association in such depositories as may from time to time be designated by the Board.

57 **Directors as Officers.** Any Director may be an officer of the Association.

ARTICLE 6

OBLIGATIONS OF THE OWNERS

6.1 **Assessments.** All Owners are obligated to pay assessments imposed by the Association to meet all the Association's general common expenses, as more particularly set forth in the Declaration. Assessments shall be payable on a periodic basis, not more frequently than monthly, as determined by the Board. Declarant (before turnover) and the Board (after turnover) may, but shall not be required to, impose interest or a service charge for late installment payments or allow a discount for payment of the annual assessment or any installment in advance.

6.2 **Investment of Reserve Account Funds.** Assessments paid into Reserve Accounts shall be kept with a safe and responsible depository, shall be accounted for separately and, if invested, the obligation or security shall be fully guaranteed as to principal by the United States of America or one of its agencies. Assessments paid into the Reserve Accounts are the property of the Association and are not refundable to sellers of Lots. However, nothing contained herein shall prevent sellers of Lots from treating their outstanding allocable share of Reserve Accounts as a separate or reimbursable item in a sales agreement. No Owner shall have any individual rights in any of these reserves, although it is understood that the value of an Owner's Lot may increase in proportion to such Lot's right to receive repair, maintenance and replacement therefrom.

63 **Initial Assessment.** The amount of the initial assessment due from Lot Owners other than the Declarant shall be determined by the Declarant.

64 **Income Tax Returns; Determination of Fiscal Year.**

6.4.1 **Fiscal Year.** The fiscal year of the Association shall be the calendar year unless otherwise determined by the Board.

6.4.2 **Tax Returns.** The Board, in its sole discretion, shall determine the manner in which all necessary income tax returns are filed and of selecting any and all persons to prepare such tax returns.

65 **Statement of Assessments.**

6.5.1 The Association shall provide, within ten (10) business days of receipt of a written request from an Owner, a written statement that provides:

(a) The amount of assessments due from the Owner and unpaid at the time the request was received, including:

Regular and special assessments;
Fines and other charges;
Accrued interest; and
Late payment charges.

(b) The percentage rate at which interest accrues on assessments that are not paid when due.

(c) The percentage rate used to calculate the charges for late payment or the amount of a fixed charge for late payment.

6.5.2 The Association is not required to comply with Section 6.5.1 if the Association has commenced litigation by filing a complaint against the Owner and the litigation is pending when the statement would otherwise be due.

66 **Default.** Failure by an Owner to pay any assessment of the Association shall be a default by such Owner of such Owner's obligations pursuant to these Bylaws and the Declaration. The Association shall be entitled to the remedies set forth in the Declaration.

67 **Maintenance and Repair.**

6.7.1 **Lots.** Except as otherwise specifically provided in the Declaration and these Bylaws, every Owner must perform promptly all maintenance and repair work to such Owner's Lot and the exterior of the improvements thereon (which do not constitute Commonly Maintained Property) and keep the same in good repair and sanitary and neat condition.

6.7.2 Common Area and Commonly Maintained Property. The Association shall repair and maintain the Common Area and the Commonly Maintained Property, subject to the provisions of subsection 6.7.3.

6.7.3 Reimbursement of Association. An Owner shall reimburse the Association for any expenditures incurred in repairing or replacing any portion of the Common Area or of any Commonly Maintained Property that was damaged through such Owner's fault and that is not otherwise covered by insurance policies carried by the Owner or the Association for the Owner's and the Association's benefit. In such circumstances, the insurance obtained by the Owner shall be deemed to be the primary coverage. The Board of Directors shall have the unfettered discretion to refuse to make a claim on the Association's policy even though coverage may pertain. Such discretion is for the purpose of maintaining the Association's insurability and controlling the amount of the premiums for the Association's insurance. Such charge shall be collectible as a reimbursement assessment as provided in the Declaration.

6.8 Right of Entry; Easements for Maintenance.

6.8.1 Emergencies. Present and future Owners, tenants, Occupants, and any other persons that occupy any portion of the Property, by virtue of acquisition, rental, or occupancy of any of the Lots, grant to the management agent or to any other person authorized by the Board or the Association the right to enter upon such Lot in the event of an emergency originating in or threatening any Owner's Lot.

6.8.2 Maintenance Easements. Declarant grants an easement to the Association in and through any Lot and the Common Area providing access at reasonable times and with reasonable notice for purposes of maintenance, repair and replacement of the Common Area and Commonly Maintained Property. If, in performing such repair and maintenance, the Association needs to alter or damage any Lot, Commonly Maintained Property or Common Area, it may do so without providing compensation, provided that it promptly restores the Lot and/or Common Area to substantially its prior condition.

ARTICLE 7

USE AND OCCUPANCY RESTRICTIONS: RULES OF CONDUCT

In addition to the restrictions and rules of conduct set forth in the Declaration, the following shall apply:

7.1 Use of the Common Area. No Owner shall place or cause to be placed on any portion of the Common Area any trash, structure, equipment, improvement, furniture, package or object of any kind. Common Areas shall be used for no purpose other than what is customary for such areas.

7.2 Appearance of Lots. Owners shall keep their Lots and the improvements thereon in good repair, clean, and with painted, stained or other finished exteriors compatible with the Architectural Standards, the Declaration and Rules and Regulations. Provided, however, the Association shall have such obligations with respect to the Commonly Maintained Property.

73 **Nuisances.** No Owner or Occupant shall cause or permit such Owner's representatives, agents, employees, or family members to cause any nuisance or to make any use or engage in any practice on the Property that is a source of annoyance to other Owners and Occupants or that interferes with other Owners' and Occupants' peaceful possession and proper use of the Property. Owners and Occupants shall exercise extreme care about creating disturbances, making noises or using musical instruments, radios, televisions and amplifiers that may disturb other Owners and Occupants. Owners and Occupants shall keep all parts of their respective Lots in a clean and sanitary condition, free of any accumulation of rubbish, refuse or garbage and free of any fire hazard and shall not cause any accumulation of rubbish, refuse or garbage or any fire hazard on any other part of the Property. Owners and Occupants shall place all of their rubbish, refuse and garbage inside disposal containers. No Owner shall make or permit any use of such Owner's Lot or of the Common Area that will increase the cost of insurance upon the Common Area.

74 **Improper, Offensive or Unlawful Use.** No Owner or Occupant shall make any improper, offensive or unlawful use of any part of the Property. Owners and Occupants shall observe all valid laws, zoning ordinances and regulations of governmental bodies having jurisdiction over the Property. The responsibility for meeting the requirements of governmental bodies for maintenance, modification or repair of the Property shall be carried out and paid for in the same manner as the responsibility for the maintenance and repair of the Property concerned.

75 **Additional Rules.** In addition to the rules set forth in this Article 7, the Board may promulgate and amend, from time to time, Rules and Regulations concerning other use of the Property and shall furnish copies of such Rules and Regulations to any Owner or Occupant requesting such copies.

7.6 **Enforcement.** The Association, through its Board of Directors, shall have the power to enforce the covenants and restrictions in these Bylaws and in the Declaration. Owners shall also have the right to bring actions or suits regarding covenants and restrictions but shall have no right or power to require the Association or Board of Directors to take any enforcement action.

7.7 **Fines.** The Board of Directors may, after giving written notice and an opportunity to be heard, levy reasonable fines for violations of the Declaration, Bylaws and rules and regulations of the Association, provided that fines levied are based on a schedule previously adopted by Board resolution that is mailed to the mailing address of each Lot or mailed to the mailing address designated in writing by the Owner(s).

ARTICLE 8 **INSURANCE**

81 **General.** The Board shall obtain and maintain at all times insurance of the type and kind and in the amounts hereinafter provided and additional insurance for such other risks of a similar or dissimilar nature as are now or as shall be hereafter customarily covered by insurance obtained by other planned communities similar in construction and design. Such additional insurance shall be governed by this Article 8.

82 **Types of Insurance Policies Maintained By the Association.** For the benefit of the Association and the Owners, the Board shall obtain and maintain at all times, and shall pay for out of the common expense funds, the following insurance to the extent that it is available at reasonable cost:

8.2.1 **Property Insurance.** A policy or policies of property insurance, including, but not limited to, fire, extended coverage, vandalism and malicious mischief, for the full insurable replacement value of the Common Area to the extent such insurance is available and, if available at a reasonable cost, shall obtain building code and actual replacement cost endorsements and earthquake insurance.

8.2.2 **Liability.** A policy or policies insuring the Association, its Board, the Owners individually, and the manager against any liability to the public or the Owners and their invitees or tenants, incident to the ownership, supervision, control or use of the Property. Limits of liability under such insurance shall be not less than one million dollars (\$1,000,000) per occurrence for bodily injuries and property damage liability. Such limit and coverage shall be reviewed at least annually by the Board, which may increase the limit of and/or coverage, in its discretion. Said policy or policies shall be issued on a commercial General Liability form and shall provide cross liability endorsements wherein the rights of the named insured under the policy or policies shall not be prejudiced as respects his, her or their action against another named insured.

8.2.3 **Workers Compensation.** Workers Compensation Insurance to the extent that it is necessary to comply with any applicable laws.

8.2.4 **Crime; Employee Dishonesty Insurance.** The Board must obtain a fidelity, employee dishonesty and crime insurance policy(ies) which insures the Association against theft or embezzlement of Association funds.

8.2.5 **Directors' and Officers' Insurance.** Directors' and officers' insurance insuring the directors and officers.

83 **Insurance Companies Authorized.** All policies obtained under this Article 8 shall be written by a company licensed to do business in Oregon and holding a "Commissioner's Rating" of "B+" and a size rating of "IX," or better, by Best's Insurance Reports, or as may be otherwise acceptable to all mortgagees and Directors.

84 **Provisions in Insurance Policies.** The Board shall make every reasonable effort to secure insurance policies that will provide for the following:

8.4.1 **Waiver of Subrogation.** A waiver of subrogation by the insurer as to any claims against the Board, the officers, the manager, the Owners and their respective servants, agents, guests and tenants.

8.4.2 **Noncancellation for Owner Conduct.** A provision that the master policy on the Property cannot be canceled, invalidated or suspended on account of the conduct of any one or more individual Owners.

8.4.3 Noncancellation Without Opportunity to Cure. A provision that the master policy on the Property cannot be canceled, invalidated or suspended on account of the conduct of any officer, Board member or employee of the Board or the manager without prior demand in writing that the Board or manager cure the defect.

8.4.4 No Other Insurance Clauses. A provision that any "no other insurance" clause in the master policy exclude individual Owners' policies and not otherwise prevent such individual policies from providing coverage for damage to Homes, Lots or Common Area.

85 Home and Lot Insurance Maintained By Each Owner. The Association shall have no responsibility to procure or to assist Owners or Occupants in procuring property loss insurance or liability insurance other than as expressly stated in this Article 8. Owners and Occupants shall procure all other insurance coverage that they deem necessary or prudent for their protection and shall be obligated to carry property insurance with extended coverage endorsements in the amount of the replacement value of such Owners' Homes and liability insurance with minimum combined limits of \$100,000 per occurrence. Such obligation may be discharged with respect to the Attached Home Lot improvements by a sub-association created pursuant to an Additional Declaration. Insurance coverage obtained and maintained by the Board of Directors may be brought into contribution with that obtained and maintained by Owners or mortgagees only in the Board of Directors' sole and unfettered discretion.

86 Review of Insurance Policies. At least annually, the Board shall review all insurance carried by the Association, which review shall include a consultation with a representative of the insurance carrier writing the master policy.

87 Deductible Provisions. The Board of Directors may negotiate the amount of the deductible in all Association insurance policies at such limits as are reasonable and customary under the circumstances and the deductible amount may be set at different levels for different insured risks. The Board shall adopt a resolution providing the responsibility for payment of the deductible. If no such resolution has been adopted, the Association shall be responsible for the deductible.

ARTICLE 9 **AMENDMENT**

Except as otherwise provided in this Article, and the restrictions set forth elsewhere herein, these Bylaws may be amended at any time by an instrument approved by at least a majority of the total votes of each class of Members that are eligible to vote. Any amendment must be executed, recorded and certified as provided by law. Provided, however, no amendment of these Bylaws may effect an amendment of the Declaration or the Articles without compliance with the provisions of such documents and the Oregon Nonprofit Corporation Act, and no amendment deleting or affecting any right of Declarant or its successor or assignee, including, without limitation, an amendment to this Article 9, may be adopted without the prior written consent of Declarant or its successor or assignee.

ARTICLE 10
RECORDS AND AUDITS

10.1 General Records. The Board and the managing agent or manager, if any, shall preserve and maintain minutes of the meetings of the Association, the Board and any Board committees as required by ORS 94.670. The Board shall maintain a list of Owners entitled to vote at meetings of the Association. The minutes of the Association, the Board and Board committees, and the Association's financial records shall be reasonably available for review and copying by the Owners. A reasonable charge may be imposed by the Association for providing copies.

10.2 Assessment Roll. The Board and the managing agent or manager, if any, shall maintain the assessment roll in a set of accounting books in which there shall be an account for each Lot. Such account shall designate the name and address of the Owner or Owners, the amount of each assessment against the Owner, the dates on which and the amounts in which the assessment comes due, the amounts paid upon the account and the balance due on the assessments.

10.3 Payment of Vouchers. The Treasurer or management agent shall pay all expenses authorized by the Board. The Treasurer or management agent shall maintain and follow reasonable procedures to assure the accounts and proper records, and to assure that all expenditures are proper. Except in cases where an emergency exists (for example, a repair must be made immediately to prevent further damage), any voucher for non-budgeted items shall require the signature of the President; provided, however, that any withdrawal from Reserve Accounts shall require the signature of two Board members or one Board member and an officer of the Association who is not a Board member.

ARTICLE 11
COMPLIANCE WITH THE PLANNED COMMUNITY ACT; CONFLICTS

These Bylaws are intended to comply with the provisions of the PCA, the provisions of which apply to Frog Pond Vista. In case of any conflict among the provisions of the PCA, the Articles, the Declaration, or these Bylaws, the provisions of the PCA shall control over those of the Articles and Declaration, and the provisions of the Declaration shall be control over those of the Articles and these Bylaws.

ARTICLE 12
INDEMNIFICATION OF DIRECTORS, OFFICERS, EMPLOYEES AND AGENTS

The Association shall indemnify any Director, officer, employee or agent who was or is a party or is threatened to be made a party to any threatened, pending or completed action, suit or proceeding, whether civil, criminal, administrative or investigative (other than an action by the Association) by reason of the fact that such person is or was a Director, officer, employee or agent of the Association or is or was serving at the request of the Association as a Director, officer, employee or agent of another corporation, partnership, joint venture, trust or other enterprise, against expenses (including attorneys' fees), judgments, fines and amounts paid in settlement actually and reasonably incurred by said person in connection with such suit, action or proceeding if such person acted in good faith and in a manner that such person reasonably believed to be in, or not opposed to, the best interest of the Association, and, with respect to any criminal action or

proceedings, had no reasonable cause to believe that such person's conduct was unlawful. The termination of any action, suit or proceeding by judgment, order, settlement, conviction, or with a plea of nolo contendere or its equivalent, shall not of itself create a presumption that a person did not act in good faith and in a manner that such person reasonably believed to be in, or not opposed to, the best interest of the Association, and, with respect to any criminal action or proceedings, had reasonable cause to believe that such person's conduct was unlawful. Payment under this clause may be made during the pendency of such claim, action, suit or proceeding as and when incurred, subject only to the right of the Association to reimbursement of such payment from such person, should it be proven at a later time that such person had no right to such payments. All persons who are ultimately held liable for their actions on behalf of the Association as a Director, officer, employee or agent shall have a right of contribution over and against all other Directors, officers, employees or agents and Members of the Association who participated with or benefited from the acts that created said liability.

ARTICLE 13 **ASSESSMENT COLLECTION COSTS; SUITS AND ACTIONS**

An Owner shall be obliged to pay reasonable fees and costs (including, but not limited to, attorneys' fees) and actual administrative costs incurred in connection with efforts to collect any delinquent unpaid assessments from such Owner, whether or not suit or action is filed. Assessments against Owners may include fees, late charges, fines and interest imposed by the Board, in addition to amounts owed toward operating expenses and the funding of reserves. If the Association brings against any Owner or Owners a suit or action for the collection of any amounts due pursuant to or for the enforcement of any provisions of the Declaration, the Articles or these Bylaws, such Owner or Owners, jointly and severally, shall pay, in addition to all other obligations, the costs of such suit or action, including actual administrative expenses incurred by the Association because of the matter or act which is the subject of the suit, reasonable attorneys' fees to be fixed by the trial court and, in the event of an appeal, the cost of the appeal, together with reasonable attorneys' fees in the appellate court to be fixed by such court.

ARTICLE 14 **MISCELLANEOUS**

14.1 Notices. All notices to the Association or to the Board shall be sent care of the managing agent or, if there is no managing agent, to the principal office of the Association or to such other address as the Board hereafter may designate from time to time. All notices to any Owner shall be sent to such address as may have been designated by such Owner from time to time, in writing, to the Board, or if no address has been designated, then to such Owner's Lot.

14.2 Waiver. No restriction, condition, obligation or provision contained in these Bylaws shall be deemed to have been abrogated or waived by reason of any failure to enforce the same, irrespective of the number of violations or breaches thereof that may have occurred and the number of times that the pertinent restriction, condition, obligation or provision was not enforced.

14.3 Invalidity; Number; Captions. The invalidity of any part of these Bylaws shall not impair or affect in any manner the validity, enforceability or effect of the balance of these Bylaws. As used herein, the singular shall include the plural, and the plural the singular. The

masculine and neuter shall each include the masculine, feminine and neuter, as the context requires. All captions used herein are intended solely for convenience of reference and shall in no way limit any of the provisions of these Bylaws.

ARTICLE 15
ADOPTION

It is hereby certified that these Bylaws have been adopted by Venture Properties, Inc., an Oregon corporation, Declarant of Frog Pond Vista, and shall be recorded in the Deed Records of Clackamas County, together with the Declaration for said planned community.

DATED this _____ day of _____, 20__

VENTURE PROPERTIES, INC.
an Oregon corporation,

By: _____
Its: _____

STATE OF OREGON)
) ss. _____, 20__
County of _____)

Personally, appeared before me the above-named _____, who, being duly sworn, did say that she is the _____ of Venture Properties, Inc. and that said instrument was signed on behalf of said company by authority of its members; and he acknowledged said instrument to be its voluntary act and deed.



Notary Public for Oregon

Exhibit J: Annexation Petition and Certification

PETITION FOR ANNEXATION

We, the undersigned owner(s) of the property described in **Exhibit A** and/or elector(s) residing at the referenced location(s), hereby petition for, and give consent to, Annexation of said property to the City of Wilsonville:

NOTE: This petition may be signed by any qualified persons even though they may not know their property description or precinct number.

SIGNATURE	PRINTED NAME	I AM A: *			PROPERTY ADDRESS	PROPERTY DESCRIPTION				PRECINCT #	DATE
		PO	RV	OV		LOT #	¼ SEC	T	R		
 <i>Darrell R. Lauer</i> <small>4/20/2021 2:15:05 PM PDT</small>	Darrell R. Lauer			X	6901 SW Frog Pond Ln, Wilsonville, OR 97070	500	12	3S	1W	323	04/20/2021
 <i>Sandi L. Lauer</i> <small>4/20/2021 1:54:58 PM PDT</small>	Sandi L. Lauer			X	6901 SW Frog Pond Ln, Wilsonville, OR 97070	500	12	3S	1W	323	04/20/2021

- * PO - Property Owner
- RV - Registered Voter
- OV - Property Owner & Registered Voter

CERTIFICATION OF PROPERTY OWNERSHIP

I hereby certify that the attached petition for annexation contains the names of the owners¹ (as shown on the last available complete assessment roll) of 100% of the land area of the territory proposed for annexation as described in the attached petition.

NAME: C. W. S.
TITLE: Cartographer
DEPARTMENT: Tax Assessor
COUNTY OF: Clackamas
DATE: 5/10/21



¹ "Owner" means the legal owner of record or, where there is a recorded a land contract which is in force, the purchaser thereunder. If there is a multiple ownership in a parcel of land each consenting owner shall be counted as a fraction to the same extent as the interest of the owner in the land bears in relation to the interest of the other owners and the same fraction shall be applied to the parcel's land mass and assessed value for purposes the consent petition. If a corporation owns land in territory proposed to be annexed, the corporation shall be considered the individual owner of that land.



EXHIBIT A

City Annexation Description

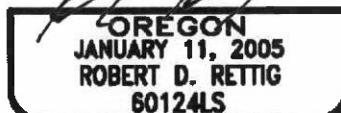
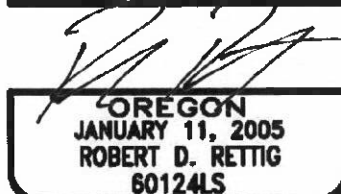
A tract of land located in the Southeast One-Quarter of Section 12, Township 3 South, Range 1 West, Willamette Meridian, Clackamas County, Oregon, and being more particularly described as follows:

Commencing at the southeast corner of Parcel II of Partition Plat 1991-043, Clackamas County Plat Records, also being on the west right-of-way line of Stafford Road (30.00 feet from centerline); thence along the south line of said Parcel II, North 88°48'53" West 1015.40 feet to the northwest corner of Document Number 2018-044491, Clackamas County Deed Records, and the Point of Beginning; thence along the west line of said deed, South 01°40'07" West 895.84 feet to the north right-of-way line of Frogpond Lane (16.50 feet from centerline) and the City of Wilsonville city limits line; thence along said north right-of-way line and said city limits line, North 88°35'24" West 298.01 feet to the northerly extension of the east line of Document Number 99-022102, Clackamas County Deed Records; thence along said northerly extension and said city limits line, South 01°42'33" West 33.00 feet to the south right-of-way line of Frogpond Lane (16.50 feet from centerline); thence leaving said city limits line along said south right-of-way line, North 88°35'24" West 210.00 feet to the southerly extension of the east line of Document Number 2001-040160, Clackamas County Deed Records; thence along said southerly extension and the east line of said deed, North 01°42'33" East 403.19 feet to the northeast corner thereof; thence along the north line of said deed, North 88°35'24" West 273.93 feet to the easterly line of Document Number 2020-036921, Clackamas County Deed Records; thence along said easterly line the following four (4) courses: North 01°50'36" East 262.98 feet; North 51°04'13" East 283.61 feet; North 57°44'58" East 85.72 feet; North 01°11'07" East 29.64 feet to the south line of said Parcel II; thence along said south line, South 88°48'53" East 494.66 feet to the Point of Beginning.

The above described tract of land contains 12.95 acres, more or less.

Bearings for this description are based on State Plane Grid bearing, Oregon State Plane, North Zone 3601, NAD83(2011) Epoch: 2010.0000. Distances shown are International Foot ground values.

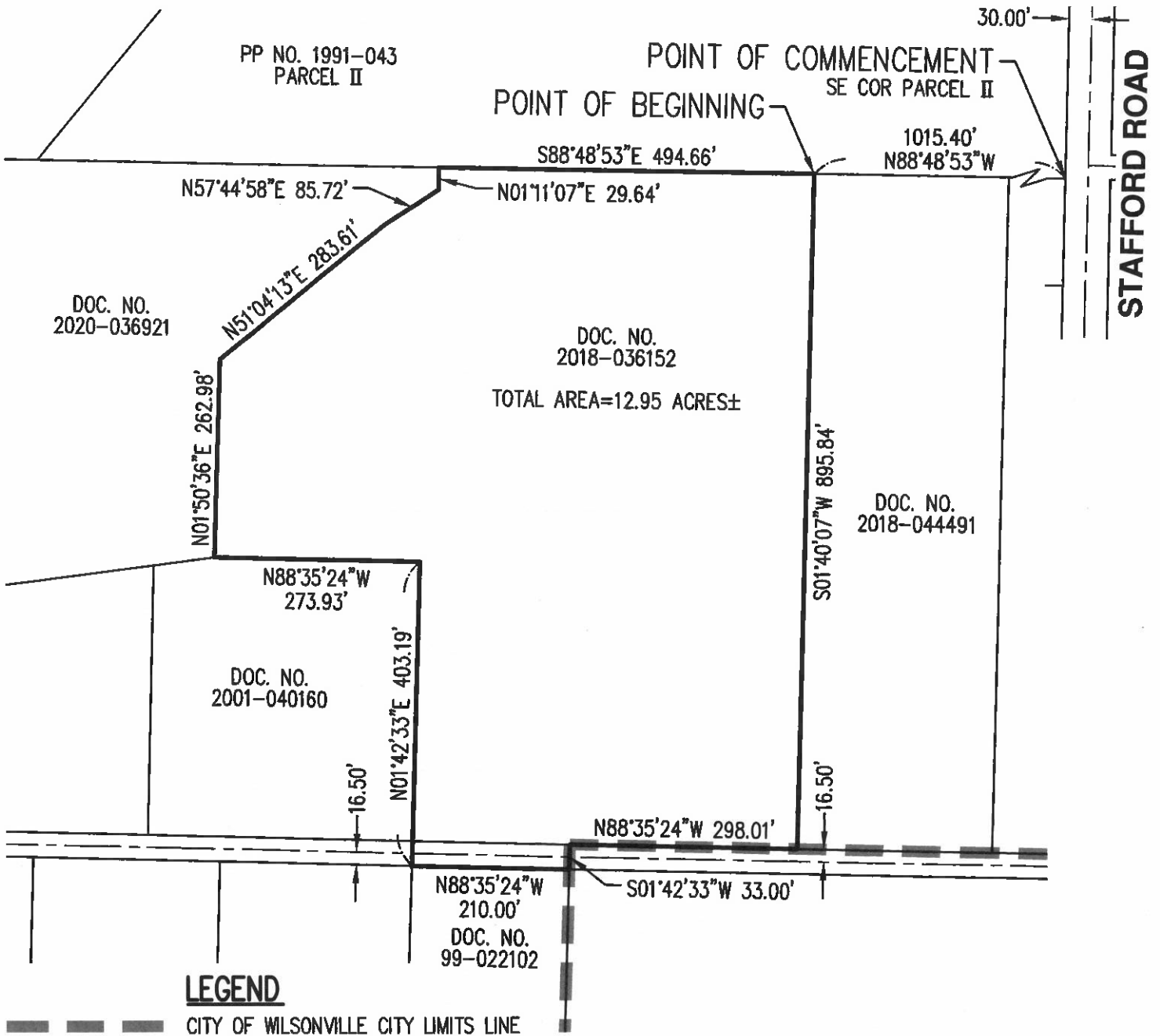
4/23/2021



RENEWS: 12/31/22

EXHIBIT B

A TRACT OF LAND LOCATED IN THE SOUTHEAST 1/4 OF SECTION 12,
TOWNSHIP 3 SOUTH, RANGE 1 WEST, WILLAMETTE MERIDIAN,
CLACKAMAS COUNTY, OREGON



4/23/2021

REGISTERED
PROFESSIONAL
LAND SURVEYOR

[Signature]

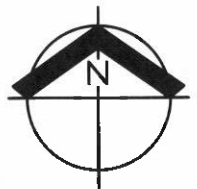
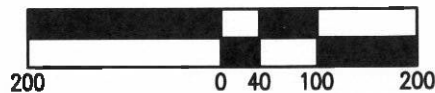
OREGON
JANUARY 11, 2005
ROBERT D. RETTIG
60124LS

RENEWS: 12/31/22

PREPARED FOR

VENTURE PROPERTIES, INC.
4230 SW GALEWOOD STREET, SUITE 100
LAKE OSWEGO, OR 97035

SCALE: 1" = 200 FEET



CITY ANNEXATION MAP

AKS ENGINEERING & FORESTRY, LLC
12965 SW HERMAN RD, STE 100
TUALATIN, OR 97062
503.563.6151 WWW.AKS-ENG.COM



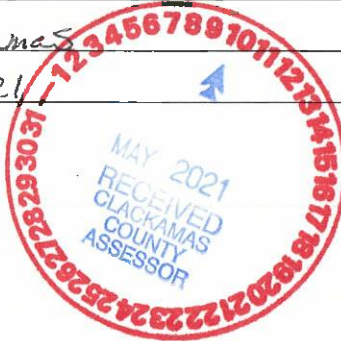
EXHIBIT
B

DRWN: WCB
CHKD: RDR
AKS JOB:
7350

CERTIFICATION OF LEGAL DESCRIPTION AND MAP

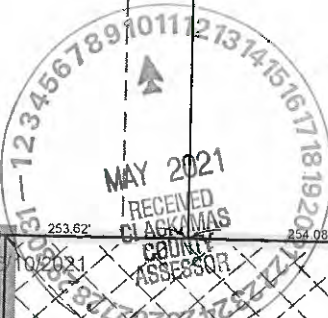
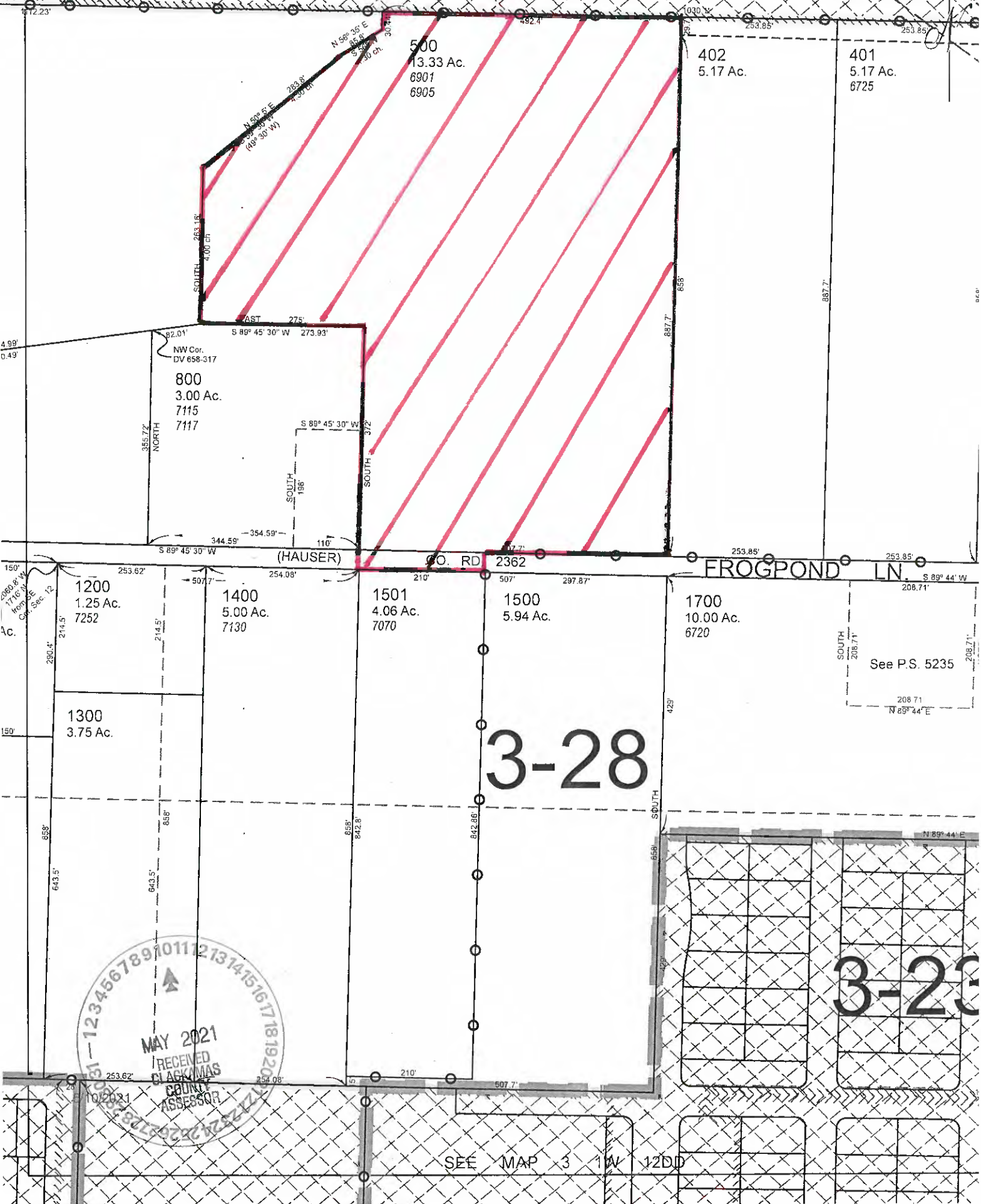
I hereby certify that the description of the property included within the attached petition (located on Assessor's Map _____) has been checked by me and it is a true and exact description of the property under consideration, and the description corresponds to the attached map indicating the property under consideration.

NAME: _____
TITLE: _____
DEPARTMENT: _____
COUNTY OF: _____
DATE: _____



31612D

SEE MAP 3 1W 12



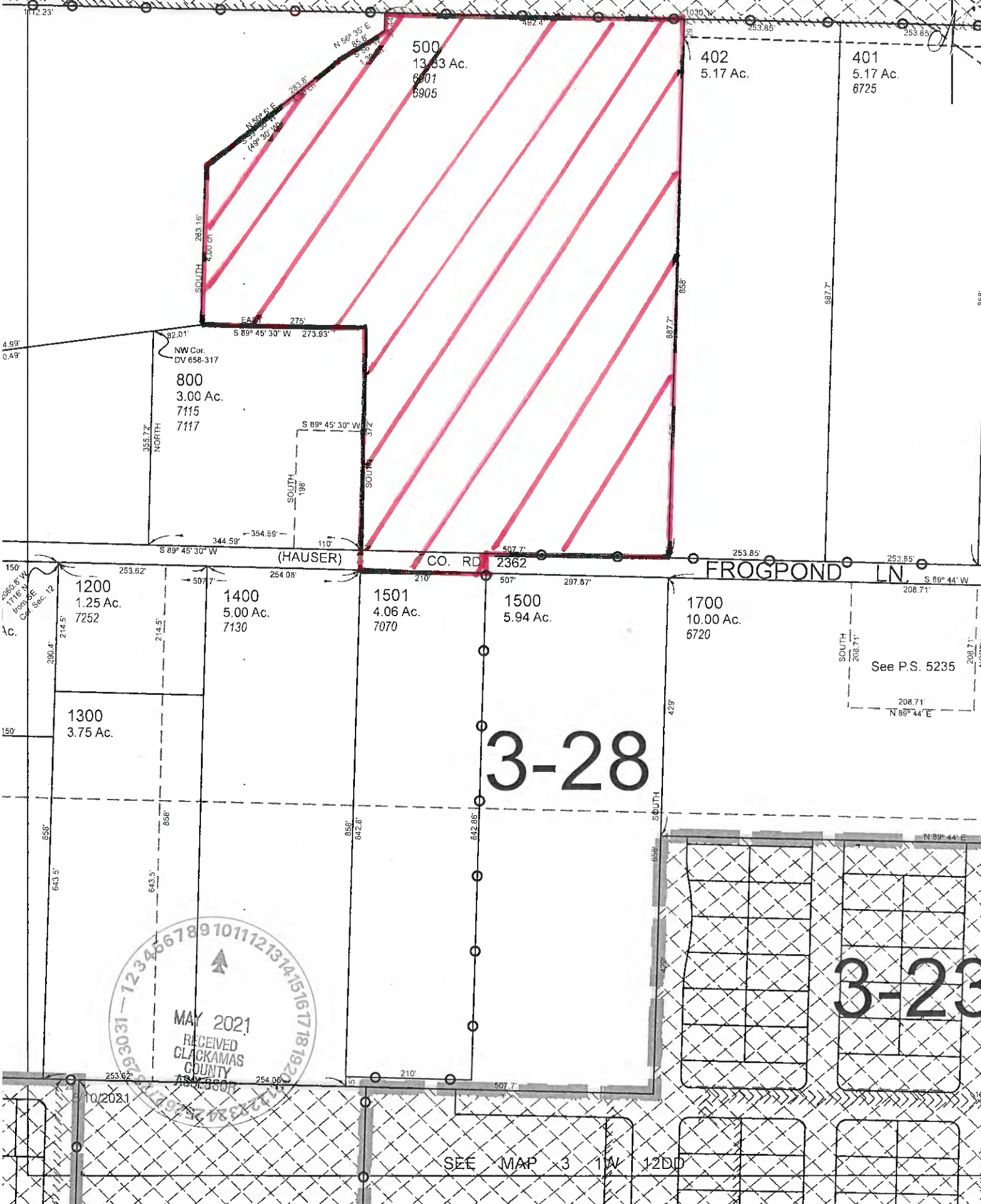
3-28

3-23

SEE MAP 3 1W 12DD

31W12D

SEE MAP 3 1W 12



500
13.83 Ac.
6901
6905

800
3.00 Ac.
7115
7117

402
5.17 Ac.

401
5.17 Ac.
6725

1200
1.25 Ac.
7252

1400
5.00 Ac.
7130

1501
4.06 Ac.
7070

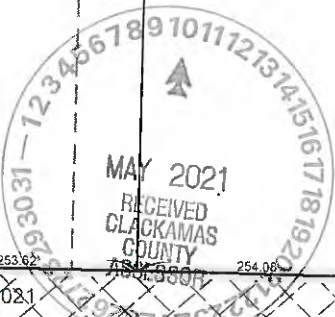
1500
5.94 Ac.

1700
10.00 Ac.
6720

1300
3.75 Ac.

3-28

3-23



SEE MAP 3 1W 12DD

Exhibit K: Annexation Legal Description, Exhibit, and Certification



EXHIBIT A

City Annexation Description

A tract of land located in the Southeast One-Quarter of Section 12, Township 3 South, Range 1 West, Willamette Meridian, Clackamas County, Oregon, and being more particularly described as follows:

Commencing at the southeast corner of Parcel II of Partition Plat 1991-043, Clackamas County Plat Records, also being on the west right-of-way line of Stafford Road (30.00 feet from centerline); thence along the south line of said Parcel II, North 88°48'53" West 1015.40 feet to the northwest corner of Document Number 2018-044491, Clackamas County Deed Records, and the Point of Beginning; thence along the west line of said deed, South 01°40'07" West 895.84 feet to the north right-of-way line of Frogpond Lane (16.50 feet from centerline) and the City of Wilsonville city limits line; thence along said north right-of-way line and said city limits line, North 88°35'24" West 298.01 feet to the northerly extension of the east line of Document Number 99-022102, Clackamas County Deed Records; thence along said northerly extension and said city limits line, South 01°42'33" West 33.00 feet to the south right-of-way line of Frogpond Lane (16.50 feet from centerline); thence leaving said city limits line along said south right-of-way line, North 88°35'24" West 210.00 feet to the southerly extension of the east line of Document Number 2001-040160, Clackamas County Deed Records; thence along said southerly extension and the east line of said deed, North 01°42'33" East 403.19 feet to the northeast corner thereof; thence along the north line of said deed, North 88°35'24" West 273.93 feet to the easterly line of Document Number 2020-036921, Clackamas County Deed Records; thence along said easterly line the following four (4) courses: North 01°50'36" East 262.98 feet; North 51°04'13" East 283.61 feet; North 57°44'58" East 85.72 feet; North 01°11'07" East 29.64 feet to the south line of said Parcel II; thence along said south line, South 88°48'53" East 494.66 feet to the Point of Beginning.

The above described tract of land contains 12.95 acres, more or less.

Bearings for this description are based on State Plane Grid bearing, Oregon State Plane, North Zone 3601, NAD83(2011) Epoch: 2010.0000. Distances shown are International Foot ground values.

5/24/2021

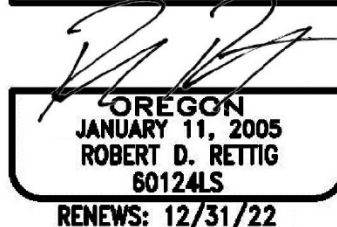
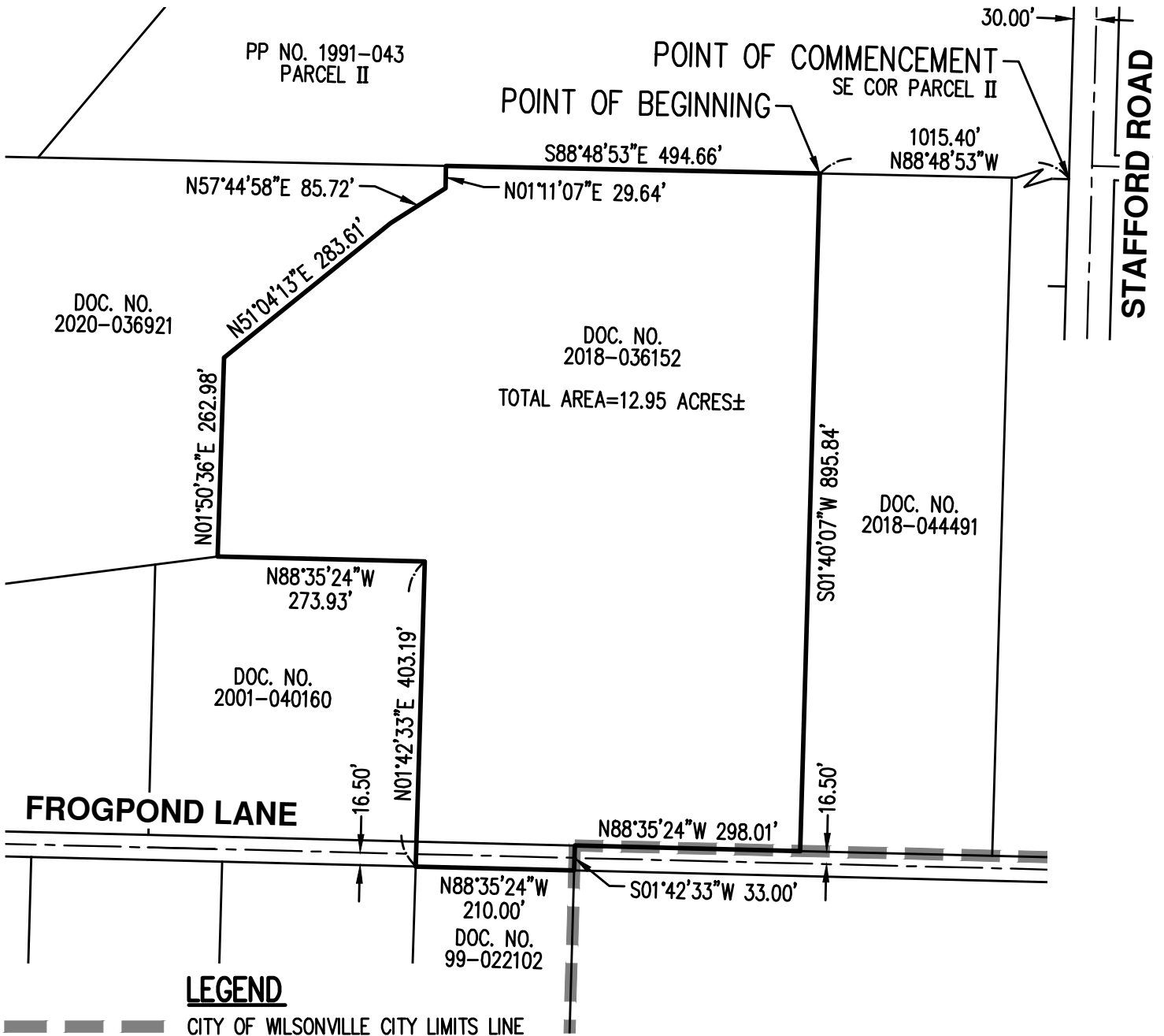


EXHIBIT B

A TRACT OF LAND LOCATED IN THE SOUTHEAST 1/4 OF SECTION 12,
TOWNSHIP 3 SOUTH, RANGE 1 WEST, WILLAMETTE MERIDIAN,
CLACKAMAS COUNTY, OREGON



LEGEND

--- CITY OF WILSONVILLE CITY LIMITS LINE

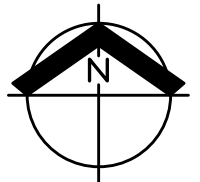
5/24/2021

REGISTERED
PROFESSIONAL
LAND SURVEYOR

PREPARED FOR

VENTURE PROPERTIES, INC.
4230 SW GALEWOOD STREET, SUITE 100
LAKE OSWEGO, OR 97035

SCALE: 1" = 200 FEET



OREGON
JANUARY 11, 2005
ROBERT D. RETTIG
60124LS

RENEWS: 12/31/22

CITY ANNEXATION MAP

AKS ENGINEERING & FORESTRY, LLC
12965 SW HERMAN RD, STE 100
TUALATIN, OR 97062
503.563.6151 WWW.AKS-ENG.COM

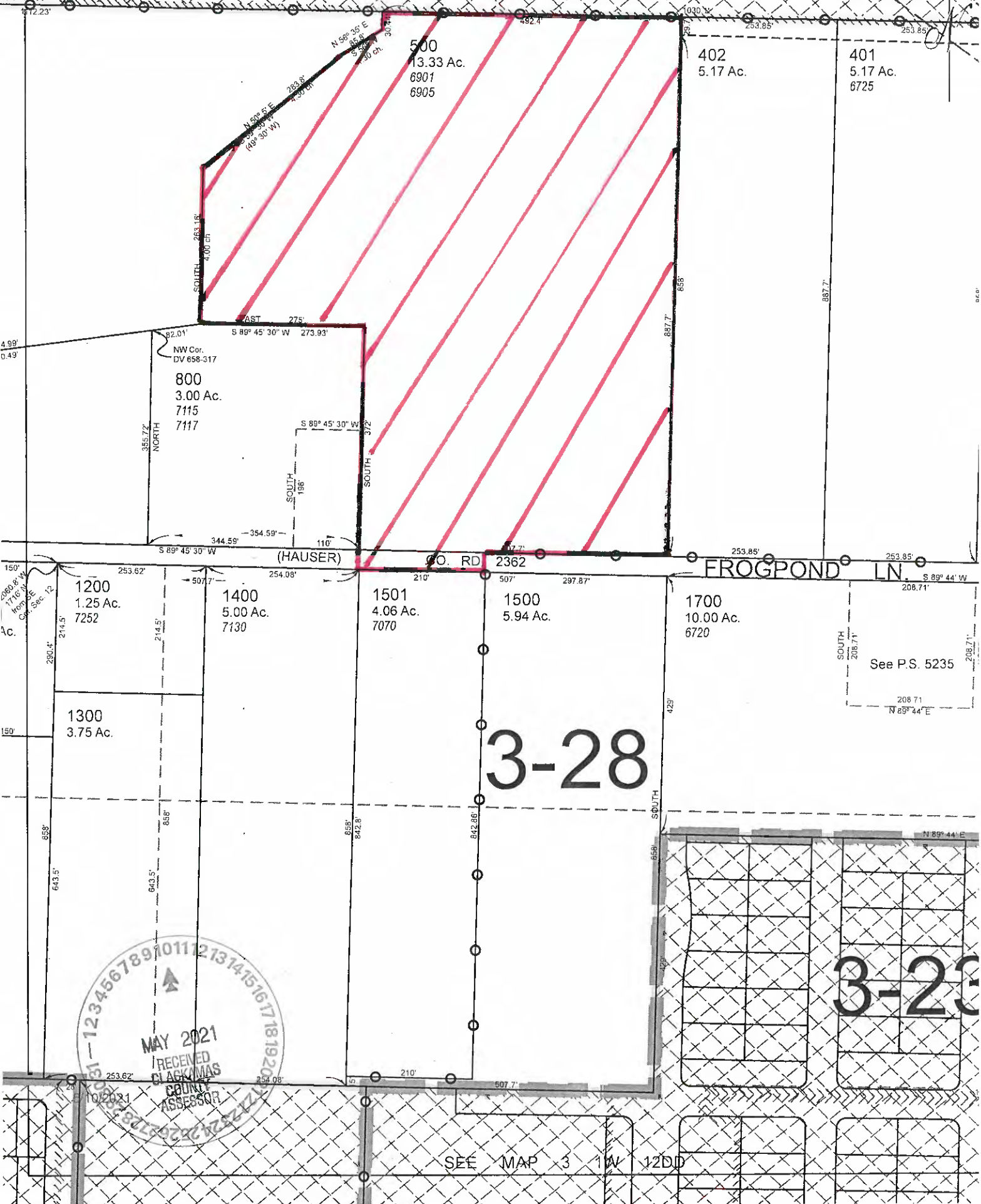


EXHIBIT
B

DRWN: WCB
CHKD: RDR
AKS JOB:
7350

31612D

SEE MAP 3 1W 12



3-28

3-23

SEE MAP 3 1W 12DD

Exhibit L:
Zoning Change Legal Description and Exhibit



EXHIBIT A

Zone Change Description

A tract of land located in the Southeast One-Quarter of Section 12, Township 3 South, Range 1 West, Willamette Meridian, Clackamas County, Oregon, and being more particularly described as follows:

Commencing at the southeast corner of Parcel II of Partition Plat 1991-043, Clackamas County Plat Records, also being on the west right-of-way line of Stafford Road (30.00 feet from centerline); thence along the south line of said Parcel II, North 88°48'53" West 1015.40 feet to the northwest corner of Document Number 2018-044491, Clackamas County Deed Records, and the Point of Beginning; thence along the west line of said deed, South 01°40'07" West 895.84 feet to the north right-of-way line of Frogpond Lane (16.50 feet from centerline) and the City of Wilsonville city limits line; thence along said north right-of-way line and said city limits line, North 88°35'24" West 298.01 feet to the northerly extension of the east line of Document Number 99-022102, Clackamas County Deed Records; thence leaving said city limits line along said north right-of-way line, North 88°35'24" West 210.00 feet to the southeast corner of Document Number 2001-040160, Clackamas County Deed Records; thence along the east line of said deed, North 01°42'33" East 370.06 feet to the northeast corner thereof; thence along the north line of said deed, North 88°35'24" West 273.93 feet to the easterly line of Document Number 2020-036921, Clackamas County Deed Records; thence along said easterly line the following four (4) courses: North 01°50'36" East 262.98 feet; North 51°04'13" East 283.61 feet; North 57°44'58" East 85.72 feet; North 01°11'07" East 29.64 feet to the south line of said Parcel II; thence along said south line, South 88°48'53" East 494.66 feet to the Point of Beginning.

The above described tract of land contains 12.80 acres, more or less.

Bearings for this description are based on State Plane Grid bearing, Oregon State Plane, North Zone 3601, NAD83(2011) Epoch: 2010.0000. Distances shown are International Foot ground values.

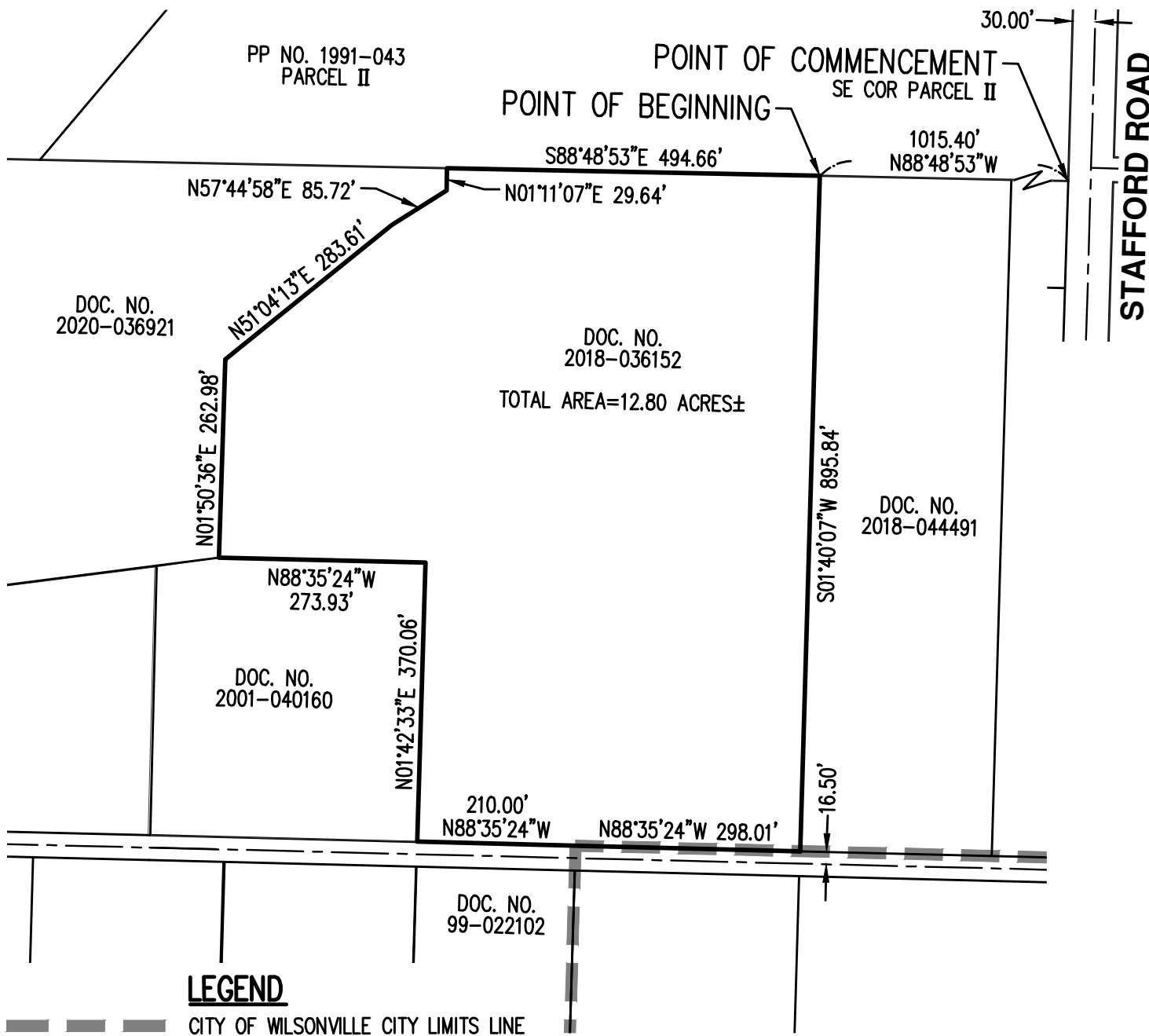
12/8/2021



RENEWS: 12/31/22

EXHIBIT B

A TRACT OF LAND LOCATED IN THE SOUTHEAST 1/4 OF SECTION 12,
TOWNSHIP 3 SOUTH, RANGE 1 WEST, WILLAMETTE MERIDIAN,
CLACKAMAS COUNTY, OREGON

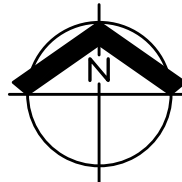


12/8/2021

PREPARED FOR

VENTURE PROPERTIES, INC.
4230 SW GALEWOOD STREET, SUITE 100
LAKE OSWEGO, OR 97035

SCALE: 1" = 200 FEET



REGISTERED
PROFESSIONAL
LAND SURVEYOR

OREGON
JANUARY 11, 2005
ROBERT D. RETTIG
60124LS

RENEWS: 12/31/22

ZONE CHANGE MAP

AKS ENGINEERING & FORESTRY, LLC
12965 SW HERMAN RD, STE 100
TUALATIN, OR 97062
503.563.6151 WWW.AKS-ENG.COM



EXHIBIT
B

DRWN: WCB
CHKD: RDR
AKS JOB:
7530

Exhibit M: Preliminary Elevations

*SQUARE FOOTAGE IS AN ESTIMATED FIGURE, IT MAY VARY.
 *ALL DIMENSIONS ARE ESTIMATES, SOME MAY VARY.
 *PLANS ARE DESIGNED FOR FLAT LOTS. IF MASONRY IS INCLUDED IN PLAN, THERE IS AN ADDITIONAL CHARGE IF HOME SITE IS NOT FLAT.
 *ARCHITECTURAL DRAWINGS ARE ESTIMATES OF HOW HOME WILL LOOK.

GLAZING REQUIREMENTS

ELEVATION TWO-STORY	TOTAL WALL AREA	MIN. AREA REQUIRED	ACTUAL AREA ON ELEVATION
FRONT-TOTAL	684 sq.ft.	15% = 103 sq.ft.	24.1% = 169 sq.ft.

ARTICULATION:
 2 MIN. ON FRONT

1. VARYING ROOFLINE
2. OFFSET

RESIDENTIAL DESIGN MENU:
 5 MIN. ON FRONT

1. DECORATIVE DIAGONAL BRACING AT PORCH COLUMNS
8. DECORATIVE MOLDING ABOVE WINDOWS AND DOORS
12. WINDOW IN FRONT DOOR
13. WINDOW GRIDS ON ALL FACADE WINDOWS
14. GARAGE WITH WINDOWS AND DECORATIVE TRIM

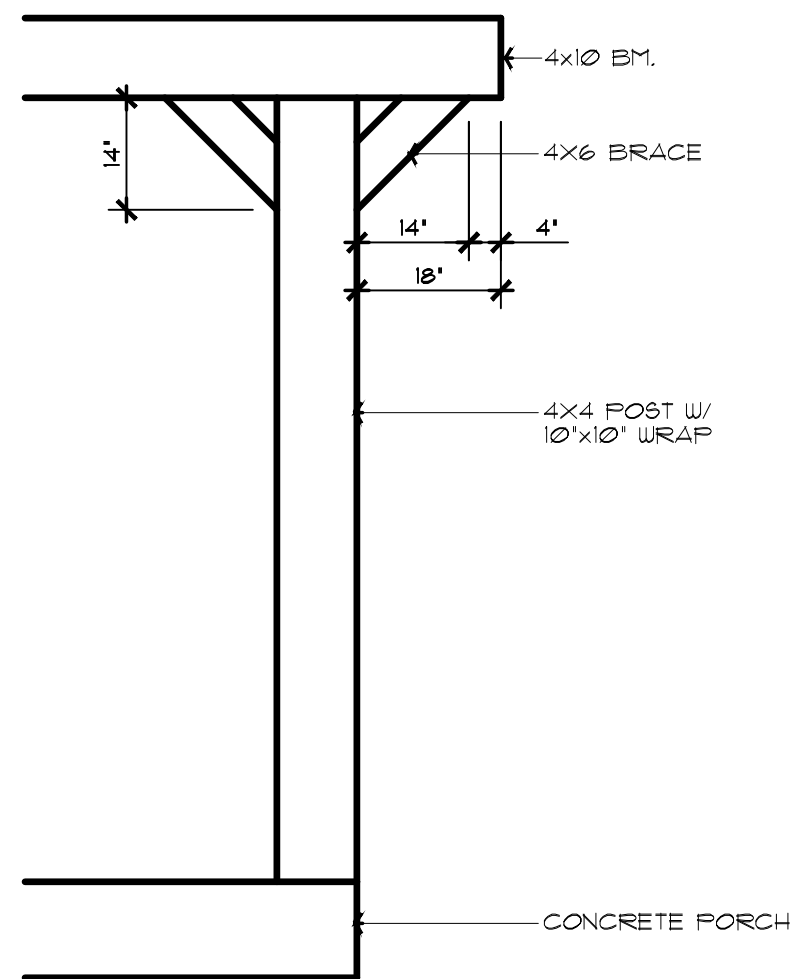
RIDGELINE
 29'-9 1/8" AFF

TOP PLATE HEIGHT
 18'-1 1/8"

SECOND FLR HEIGHT
 10'-1 1/8"

TOP PLATE
 9'-0"

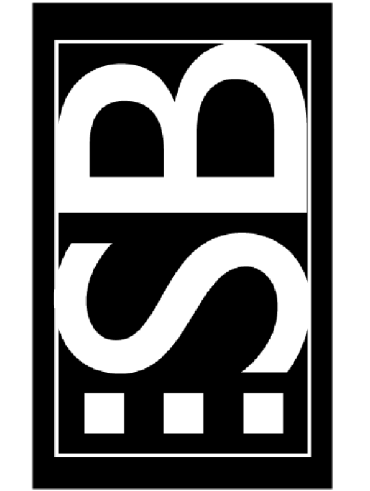
FINISHED FLR HEIGHT
 0'-0"



COLUMN DETAIL
 1/2" = 1'-0"



STONE BRIDGE
 HOMES NW



PLAN No. RX308-FH
 DRAWN BY: GF
 DATE: 6/24/21
 SCALE: 1/4" = 1'-0"
 FILE: RX308MOD-FH-1

DRAWINGS:
 EXTERIOR ELEVATION

CONTEMP.
 FARMHOUSE

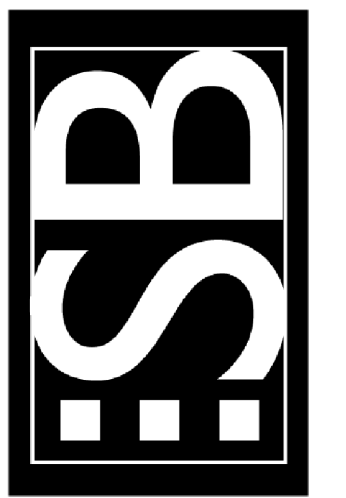
SHEET No.
 1
 RX308mod
 FARMHOUSE
 2,907 SQ.FT.



REAR ELEVATION-INTERIOR

1/4"=1'-0"

STONE BRIDGE
HOMES NW



PLAN No.	RX308-FH
DRAWN BY:	GF
DATE:	6/24/21
SCALE:	1/4"=1'-0"
FILE:	RX308MOD-FH-2A

DRAWINGS:

**EXTERIOR
ELEVATION**

**CONTEMP.
FARMHOUSE**

SHEET No.

2A

**RX308mod
FARMHOUSE
2,907 SQ.FT.**

TOP PLATE HEIGHT
10'-1 1/2"

SECOND FLR. HEIGHT
10'-1 1/2"

TOP PLATE
9'-0"

FINISHED FLR. HEIGHT
0'-0"



SIDE A ELEVATION-INTERIOR

1/4"=1'-0"

TOP PLATE HEIGHT
10'-1 1/2"

SECOND FLR. HEIGHT
10'-1 1/2"

TOP PLATE
9'-0"

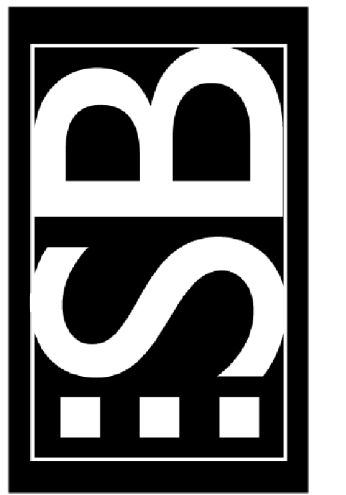
FINISHED FLR. HEIGHT
0'-0"



SIDE B ELEVATION-INTERIOR

1/4"=1'-0"

STONE BRIDGE
HOMES NW



PLAN No.	RX308-FH
DRAWN BY:	GF
DATE:	6/24/21
SCALE:	1/4"=1'-0"
FILE:	RX308MOD-FH-2B

DRAWINGS:

EXTERIOR
ELEVATION

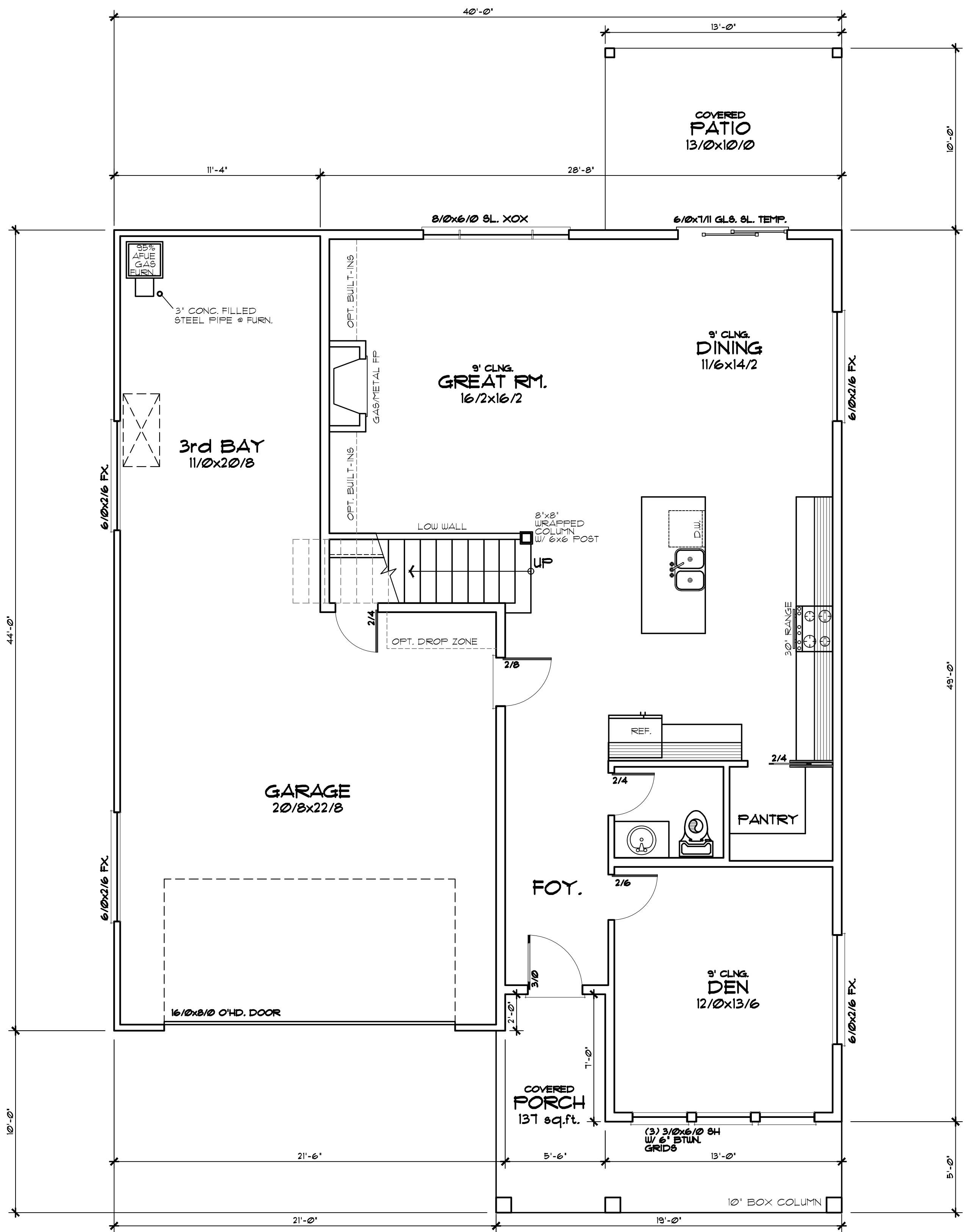
CONTEMP.
FARMHOUSE

SHEET No.

2B

RX308mod
FARMHOUSE
2,907 SQ.FT.

*SQUARE FOOTAGE IS AN ESTIMATED FIGURE, IT MAY VARY.
 *ALL DIMENSIONS ARE ESTIMATES, SOME MAY VARY.
 *PLANS ARE DESIGNED FOR FLAT LOTS. IF MASONRY IS INCLUDED IN PLAN, THERE IS AN ADDITIONAL CHARGE IF HOME SITE IS NOT FLAT.
 *ARCHITECTURAL DRAWINGS ARE ESTIMATES OF HOW HOME WILL LOOK.



MAIN FLOOR PLAN
 1/4" = 1'-0"
 1,092 SQ. FT.
 GARAGE: 722 SQ. FT.

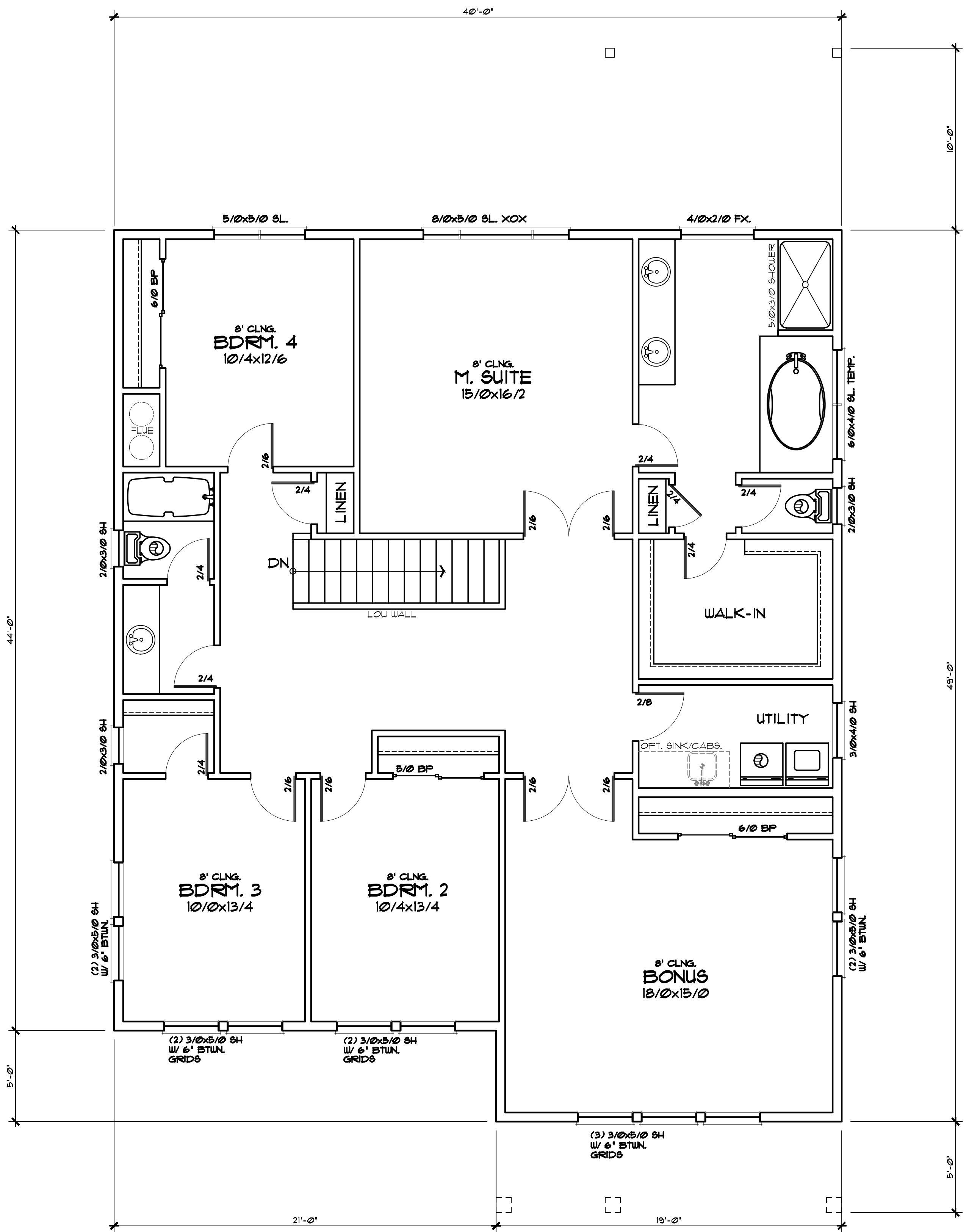
STONE BRIDGE
ESB
HOMES NW

PLAN No.	RX308-FH
DRAWN BY:	GF
DATE:	6/24/21
SCALE:	1/4" = 1'-0"
FILE:	RX308MOD-FH-3

DRAWINGS:
MAIN FLOOR PLAN
CONTEMP. FARMHOUSE

SHEET No.
3
RX308mod FARMHOUSE
2,907 SQ.FT.

*SQUARE FOOTAGE IS AN ESTIMATED FIGURE, IT MAY VARY.
 *ALL DIMENSIONS ARE ESTIMATES, SOME MAY VARY.
 *PLANS ARE DESIGNED FOR FLAT LOTS. IF MASONRY IS INCLUDED IN PLAN, THERE IS AN ADDITIONAL CHARGE IF HOME SITE IS NOT FLAT.
 *ARCHITECTURAL DRAWINGS ARE ESTIMATES OF HOW HOME WILL LOOK.



UPPER FLOOR PLAN
 1/4" = 1'-0"
 1,815 SQ. FT.

STONE BRIDGE HOMES NW

PLAN No.	RX308-FH
DRAWN BY:	GF
DATE:	6/24/21
SCALE:	1/4" = 1'-0"
FILE:	RX308MOD-FH-4

DRAWINGS:
UPPER FLOOR PLAN
CONTEMP. FARMHOUSE

SHEET No.
4
RX308mod FARMHOUSE
2,907 SQ. FT.

Exhibit N: TVF&R Service Provider Letter

**FIRE CODE / LAND USE / BUILDING REVIEW
APPLICATION**



North Operating Center
11945 SW 70th Avenue
Tigard, OR 97223
Phone: 503-649-8577

South Operating Center
8445 SW Elligsen Rd
Wilsonville, OR 97070
Phone: 503-649-8577

REV 6-30-20

Project Information

Applicant Name: Venture Properties, LLC
Address: 4230 Galewood Street, Suite 100
Phone: 503-563-6151
Email: mariam@aks-eng.com
Site Address: 6901 SW Frog Pond Lane
City: Wilsonville
Map & Tax Lot #: 31W12D, Tax Lot 500
Business Name: Frog Pond Vista Subdivision
Land Use/Building Jurisdiction: City of Wilsonville
Land Use/ Building Permit # TBD

Choose from: Beaverton, Tigard, Newberg, Tualatin, North Plains, West Linn, **Wilsonville**, Sherwood, Rivergrove, Durham, King City, Washington County, Clackamas County, Multnomah County, Yamhill County

Project Description

41-lot single-family detached residential subdivision on a ±12.8-acre site

Permit/Review Type (check one):

- Land Use / Building Review - Service Provider Permit
- Emergency Radio Responder Coverage Install/Test
- LPG Tank (Greater than 2,000 gallons)
- Flammable or Combustible Liquid Tank Installation (Greater than 1,000 gallons)
 - * Exception: Underground Storage Tanks (UST) are deferred to DEQ for regulation.
- Explosives Blasting (Blasting plan is required)
- Exterior Toxic, Pyrophoric or Corrosive Gas Installation (in excess of 810 cu.ft.)
- Tents or Temporary Membrane Structures (in excess of 10,000 square feet)
- Temporary Haunted House or similar
- OLCC Cannabis Extraction License Review
- Ceremonial Fire or Bonfire (For gathering, ceremony or other assembly)

For Fire Marshal's Office Use Only

TVFR Permit # 2021-0109
Permit Type: SPP-COW
Submittal Date: 10-11-2021
Assigned To: DFM Ann
Due Date: NA
Fees Due: Ø
Fees Paid: Ø

Approval/Inspection Conditions
(For Fire Marshal's Office Use Only)

This section is for application approval only

[Signature] 10/13/21
Fire Marshal or Designee Date

Conditions:

See Attached Conditions: Yes No

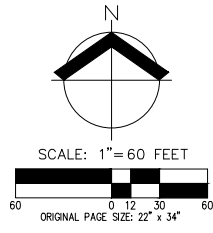
Site Inspection Required: Yes No

This section used when site inspection is required

Inspection Comments:

NA

Final TVFR Approval Signature & Emp ID Date



APPROVED PLANS
 APPROVAL OF PLANS IS NOT AN APPROVAL
 OF OMISSIONS OR OVERSIGHTS

Thomas J. Gale
 Deputy Fire Marshal II
 TVF&R Permit # 2021-0109

EASEMENT LEGEND	
PUE	PUBLIC UTILITY EASEMENT
SWE	SIDEWALK EASEMENT
PAUE	PUBLIC ACCESS AND UTILITY EASEMENT
TPAE	TEMPORARY PUBLIC ACCESS EASEMENT

AKS
 AKS ENGINEERING & FORESTRY, LLC
 12965 SW HERMAN RD., STE. 100
 TUALATIN, OR 97062
 503.563.6151
 WWW.AKS-ENG.COM
 ENGINEERING • SURVEYING • NATURAL RESOURCES
 FORESTRY • PLANNING • LANDSCAPE ARCHITECTURE

PRELIMINARY COMPOSITE UTILITY PLAN
FROG POND VISTA
VENTURE PROPERTIES, INC.
WILSONVILLE, OREGON



JOB NUMBER:	7530
DATE:	10/8/2021
DESIGNED BY:	NLB
DRAWN BY:	JJA
CHECKED BY:	AJD

FS-1

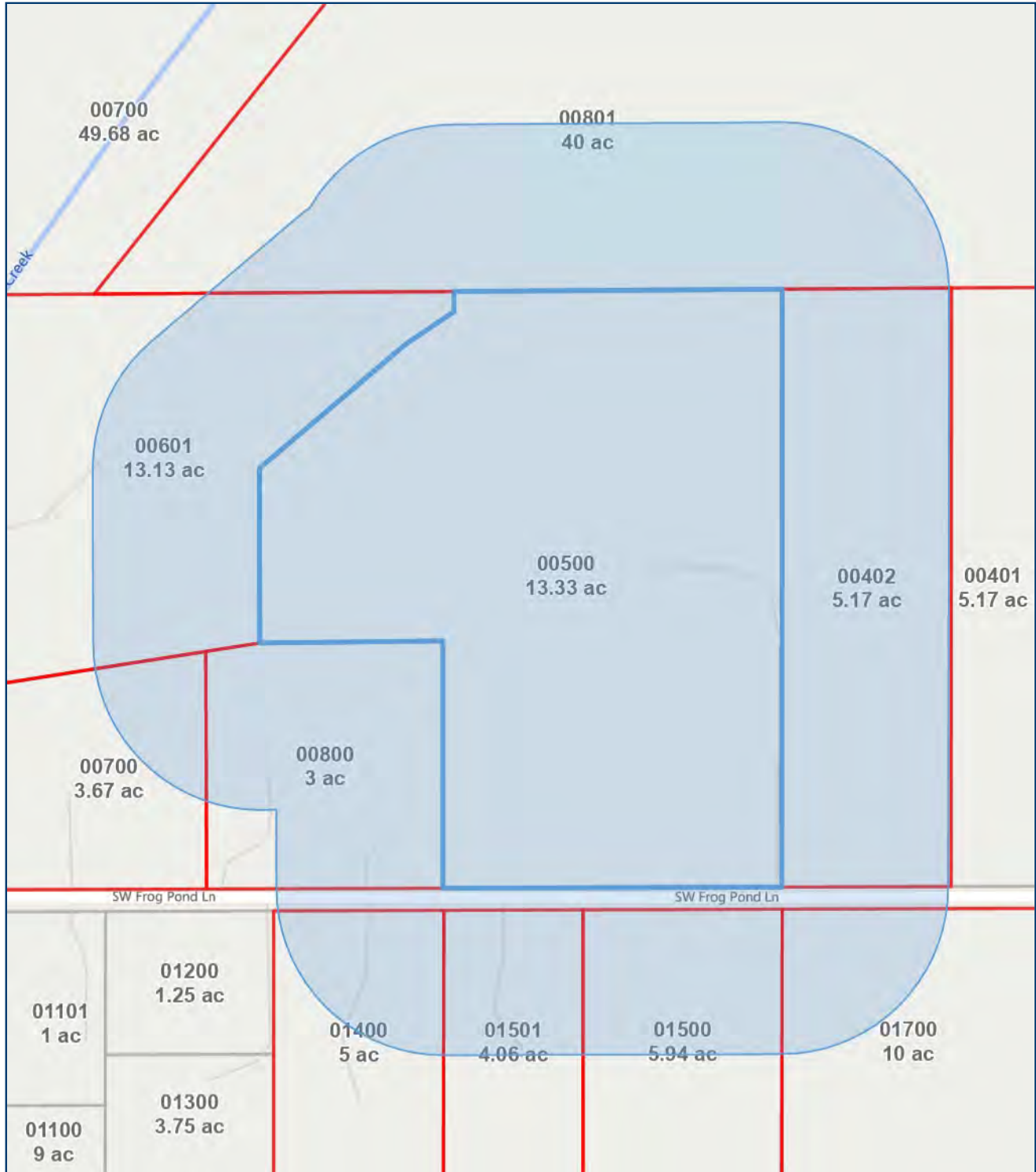
Exhibit O: 250' Radius Mailing Labels



250 ft Buffer

6901 SW Frog Pond Ln, Wilsonville, OR 97070

Report Generated: 7/6/2021



The present data and maps are intended for informational purposes only. Some information has been procured from third-party sources and has not been independently verified. Individual parts are owned by their respective copyright owners and not by First American. First American Title Company makes no express or implied warranty respecting the information presented and assumes no responsibility for errors or omissions.

31W12D 00800
Andy Finkbeiner & Tamara Pittman
7115 SW Frog Pond Ln
Wilsonville, OR 97070

31W12 00801
Grill David Glenn & Grill Kellie Poulsen
26801 SW Stafford Rd
Wilsonville, OR 97070

31W12D 00500
Darrell & Sandi Lauer
5901 SW Frog Pond Ln
Wilsonville, OR 97070

31W12D 00402
Sheri Miller & Jamison Mehus
6725 SW Frog Pond Ln
Wilsonville, OR 97070

31W12D 01700
Venture Properties Inc
4230 Galewood St STE 100
Lake Oswego, OR 97035

31W12D 00601
Derek & Amber Osterholme
7475 SW Frog Pond Ln
Wilsonville, OR 97070

31W12D 00700
Daniel & Debra Ross
7315 SW Frog Pond Ln
Wilsonville, OR 97070

31W12D 01501
Amy Thurmond
1411 S Radcliffe Rd
Portland, OR 97219

31W12D 01500
West Hills Land Development Llc
3330 NW Yeon Ave STE 200
Portland, OR 97210

31W12D 01400
Paul & Susan Woebkenberg
7130 SW Frog Pond Ln
Wilsonville, OR 97070

Exhibit P: Republic Services Service Provider Letter



December 7, 2021

Maria Miller
AKS Engineering & Forestry, LLC

Re: Frog Pond Vista
Wilsonville, OR 97070

Dear Maria,

Thank you, for sending us the preliminary site plans for this proposed development in Wilsonville OR.

My Company: Republic Services of Clackamas and Washington Counties has the franchise agreement to service this area with the City of Wilsonville. We will provide complete residential waste removal and recycling services as needed on a weekly basis for this location

The hammerhead turn-around at the end of SW Trillium Ct. with a width of 20'Ft. and posted No Parking at the center and each end, will provide adequate turn-around space for our collection vehicles.

The temporary access road between SW Windflower St. and SW Frog Pond Ln. with a width of 20' Ft. and No Parking signs posted on either side of SW Windflower St. and SW Frog Pond Ln. where they intersect with the temporary access road, will allow adequate room for our collection trucks to navigate this proposed project.

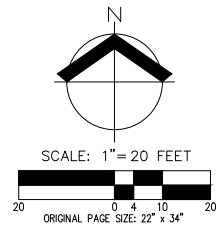
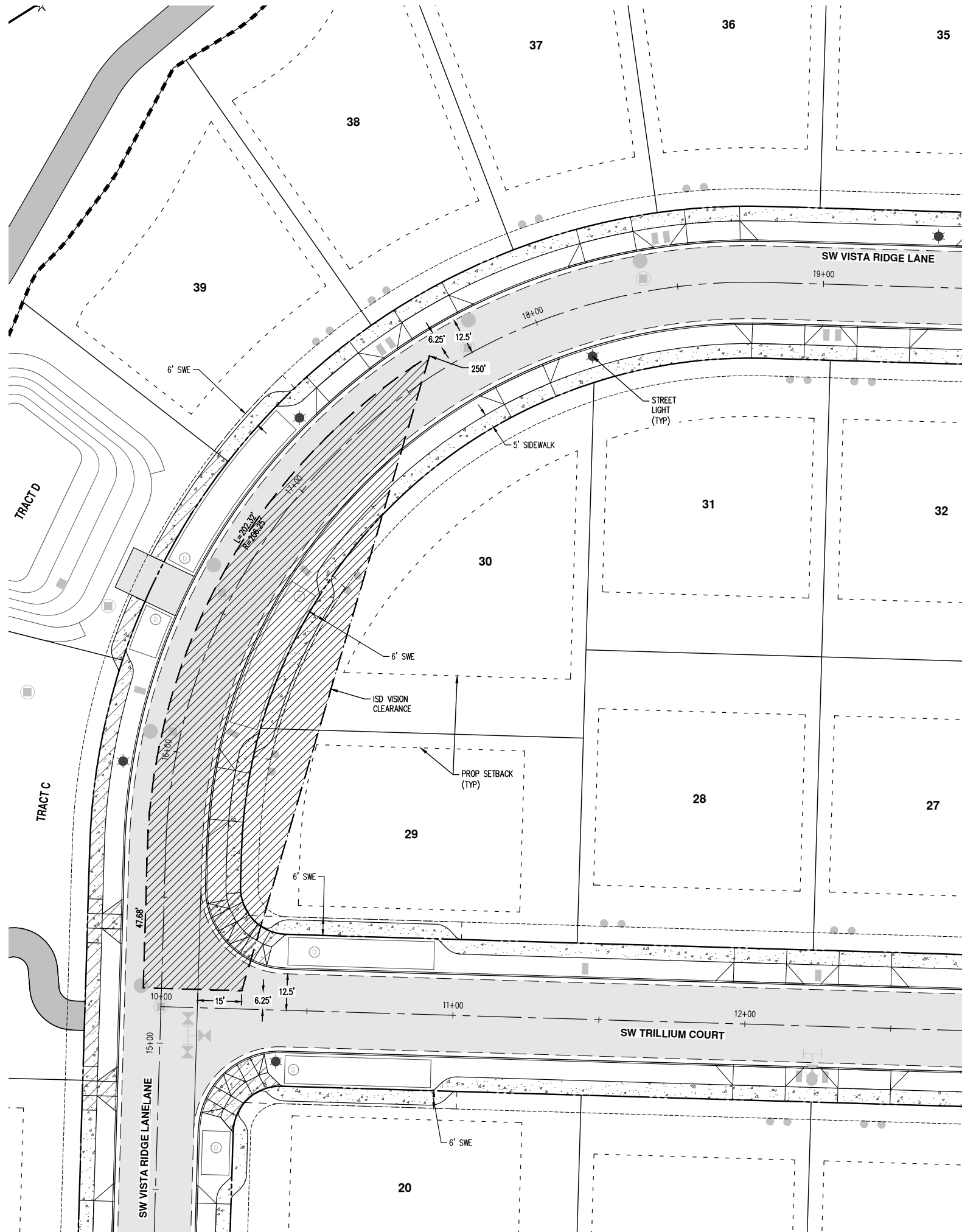
Thanks Maria, for your help and concerns for our services prior to this project being developed.

Sincerely,

A handwritten signature in blue ink, appearing to read "Kelly Herrod", with a long horizontal flourish extending to the left.

Kelly Herrod
Operations Supervisor
Republic Services Inc.

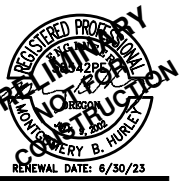
Exhibit Q: Lots 29 and 30 Sight Distance Exhibit



SETBACKS			
	R-7	R-10	LOT 41
FRONT	15 FT	20 FT	20 FT
REAR	15 FT	20 FT	20 FT
SIDE - INTERNAL	5 FT	5 FT	10 FT
SIDE - CORNER	10 FT	10 FT	10 FT
GARAGE - FROM STREET	20 FT	20 FT	20 FT

EASEMENT LEGEND	
PUE	PUBLIC UTILITY EASEMENT
SWE	SIDEWALK EASEMENT
PAUE	PUBLIC ACCESS AND UTILITY EASEMENT
TEAE	TEMPORARY EMERGENCY ACCESS EASEMENT
TPAE	TEMPORARY PUBLIC ACCESS EASEMENT

INTERSECTION SIGHT DISTANCE - 25 MPH
FROG POND VISTA
VENTURE PROPERTIES, INC.
WILSONVILLE, OREGON



RENEWAL DATE: 6/30/23
 JOB NUMBER: 7530
 DATE: 12/09/2021
 DESIGNED BY: NLB
 DRAWN BY: JJA
 CHECKED BY: MBH