

Updated 3/11/2019 all previous version of this form are obsolete



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 per ORS 227.175 or as otherwise required by state or federal law for specific application types.

A pre application conference may be required.

The City will not accept applications for wireless communication facilities or similar facilities without a completed copy of a Wireless Facility Review Worksheet.

The City will not schedule incomplete applications for public hearing or send administrative public notice until all of the required materials are submitted.

Applicant:

Name: _____
 Company: West Hills Development, LLC
 Mailing Address: 3330 NW Yeon Avenue, Suite 200
 City, State, Zip: Portland, OR 97210
 Phone: Please contact Applicant's Consultant _____ Fax: Please contact Applicant's Consultant _____
 E-mail: Please contact Applicant's Consultant _____

Authorized Representative:

Name: Applicant's Consultant: Glen Southerland, AICP
 Company: AKS Engineering & Forestry, LLC
 Mailing Address: 12965 SW Herman Road, Suite 100
 City, State, Zip: Tualatin, OR 97062
 Phone: (503) 563-6151 Fax: (503) 563-6152
 E-mail: SoutherlandG@aks-eng.com

Property Owner:

Name: _____
 Company: O'Hogan Living Trust
 Mailing Address: 7400 SW Frog Pond Lane
 City, State, Zip: Wilsonville, OR 97070
 Phone: Please contact Applicant's Consultant _____ Fax: Please contact Applicant's Consultant _____
 E-mail: Please contact Applicant's Consultant _____

Property Owner's Signature:

Maurse O'Hogan
 Printed Name: Maurse O'Hogan Date: 6/10/24

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

DocuSigned by:

 Printed Name: Wally Remmers Date: 5/31/2024

Site Location and Description:

Project Address if Available: 7400 SW Frog Pond Lane Suite/Unit _____
 Project Location: South of SW Frog Pond Lane, east of Boeckman Creek
 Tax Map #(s): 3S 1W 12D Tax Lot #(s): 1100 County: Washington Clackamas

Request:

Annexation, Zone Map Amendment, Planned Development (Stage I Master Plan, Stage II Final Plan), Tentative Subdivision Plat, and Middle Housing Land Division

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 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 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 checked="" type="checkbox"/> Waiver(s) | <input type="checkbox"/> Conditional Use | |



Ridgecrest

Consolidated Land Use Applications

Date: June 2024
Updated August 2024

Submitted to: City of Wilsonville
29799 SW Town Center Loop East
Wilsonville, OR 97070

Applicant: West Hills Land Development, LLC
3330 NW Yeon Avenue, Suite 200
Portland, OR 97210

AKS Job Number: 10411



12965 SW Herman Road, Suite 100
Tualatin, OR 97062
(503) 563-6151

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Ridgecrest

Consolidated Land Use Applications

Submitted to:	City of Wilsonville 29799 SW Town Center Loop E Wilsonville, OR 97070
Applicant:	West Hills Land Development, LLC 3330 NW Yeon Avenue, Suite 200 Portland, OR 97210
Property Owner:	O'Hogan Living Trust 7400 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): Glen Southerland, AICP Email: SoutherlandG@aks-eng.com Phone: (503) 563-6151
Site Location:	7400 SW Frog Pond Lane North of SW Brisband Street and south of SW Frog Pond Lane, Wilsonville, OR
Clackamas County Assessor's Map:	3 1W 12D; Tax Lot 1100
Site Size:	±9.0 acres
Land Use Districts:	Clackamas County Rural Residential Farm Forest 5-Acre (RRFF5) (Current) Residential Neighborhood (RN) (Upon Annexation)



I. Executive Summary

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

1. Annexation to the City of Wilsonville
2. Annexation to Metro
3. Zoning Map Amendment
4. Planned Development – Stage I Preliminary Plan
5. Planned Development – Stage II Final Plan
6. Site Design Review of Open Space
7. Tentative Subdivision Plat/Tentative Middle Housing Land Division
8. Planned Development Waiver
9. Type C Tree Plan

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 (City) 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* (Master Plan) in 2017. Annexation of the project site into the City of Wilsonville is the next step in the progression of the thorough planning process and helps implement the City's vision for this area.

Proposed Project

This project proposes 54 single-family homes, open space tracts with landscaping, a pedestrian trail, and stormwater facilities. Associated site improvements include grading, construction of a local street network, and open space tracts to be privately maintained by a homeowners' association (HOA). The project dedicates 9.5 feet of right-of-way width for the expansion of SW Frog Pond Lane and 15 feet of right-of-way width for the planned future expansion of SW Brisband Street.

This project proposes to annex the site to the City of Wilsonville and apply the designated RN zoning district. Per Figure 6 of the *Frog Pond West Master Plan*, the northern ± 2.53 gross acres of the site are within Frog Pond West Subdistrict 7, which is designated R-10 (Large Lots; 8,000-square-foot lots) and is planned for eight lots. Approximately 6.46 gross acres on the southern side of the site are within Subdistrict 4, which is designated R-7 (Medium Size Lots; 6,000- to 8,000-square-foot lots) and is planned for 20 lots. The project is planned to provide 28 parent lots, 24 child lots, for a total of 54 dwelling units.

As part of the PD process, several adjustments to the development standards are requested. To accommodate middle housing, adjustments are required to the maximum lot size and maximum lot coverage standards. To address two constraints at the edge of the project, two setback adjustments are requested. Middle housing was not approved in Wilsonville until 2022 and not considered as part of the *Frog Pond West Master Plan* or throughout the planning process for the Frog Pond Area. Middle housing requirements provide a unique opportunity and challenge in providing housing to meet the housing needs established within the City of Wilsonville's Housing Needs Analysis, the 2014 *Wilsonville Residential Land Study*. The established lot coverage and setback requirements of both the R-7 and R-10 Subdistricts hamper the construction of desirable homes that would help alleviate the region's recognized housing shortage.

As such, the project requires adjustments to maximum *lot coverage* requirements, both to permit middle housing units to be constructed that will compare to the more reasonable home size of the R-5 Subdistrict, which provides similar lot size standards ($\pm 4,000$ square feet) to the resulting middle housing lots ($\pm 3,531$ to $\pm 5,560$ square feet in size). The Middle Housing Land Division code also restricts the maximum *lot size* of parent lots, which are required to be equal to 60 percent or less of the minimum lot size of the zone. This application includes an adjustment to exceed the maximum lot size but limited rear setbacks to retain the same maximum building footprint intended by the code.

In addition, as previously mentioned, the approved and established layouts of previous Frog Pond West projects have constricted some areas of the site, requiring other adjustments to make homes feasible on the Ridgecrest site. For example, Lot 1 features a much shallower lot depth on the lot's north end to complete a fire turnaround as well as a regional trail, having the effect of making the lot unbuildable to all but the smallest homes. An adjustment is requested to relieve this issue, allowing a home to be built with a smaller front setback, therefore allowing the home to shift towards the street and away from planned street improvements at the front of the property and grade differences to the rear of the property.

Similarly, Lot 19 requires a setback waiver to accommodate the location of the SW Woodbury Loop corner radius and eyebrow. Because the right-of-way configuration in this location must be altered to allow two-way traffic and utilities to pass adjacent to neighboring Tax Lot 1101, a setback waiver is requested. These setback waivers are the minimum necessary and will not create buildings or situations that are out of scale with, disproportionate to, or detrimental to the surrounding homes. A waiver is also requested to allow up to two driveways per lot where middle housing is planned. The applicable code for the site does not permit greater than one driveway per parent lot, regardless of the number of units. With the planned home configuration (two-unit detached clusters), combined driveways are not desired nor practical. Because alleys and alternative access are not available or planned for these lots, one additional driveway per parent lot is requested.

This application involves the development of land for housing. Oregon Revised Statutes (ORS) 197.307(4) states that a local government may apply only clear and objective standards, conditions, and procedures regulating the provision of housing, and that such standards, conditions, and procedures cannot have the effect, either in themselves or cumulatively, of discouraging housing through unreasonable cost or delay. This application involves a "limited land use decision," as that term is defined in ORS 197.015 (12), as it involves a tentative subdivision plan for property within an urban growth boundary.

Oregon Courts and the Land Use Board of Appeals (LUBA) have generally held that an approval standard is not clear and objective if it imposes on an applicant "subjective, value-laden analyses that are designed to balance or mitigate impacts of the development" (Rogue Valley Association of Realtors v. City of Ashland, 35 OR LUBA 139, 158 [1998] *aff'd*, 158 OR App 1 [1999]). ORS 197.831 places the burden on local governments to demonstrate that the standards and conditions placed on housing applications can be imposed only in a clear and objective manner. While this application addresses all standards and conditions, the Applicant reserves the right to object to the enforcement of standards or conditions that are not clear and objective and does not waive its right to assert that the housing statutes apply to this application. Exceptions in ORS 197.307(4)(a) and 197.307(5) do not apply to this application; ORS 197.307(7)(a) is controlled by ORS 197.307(4).

ORS 197.195(1) describes how certain standards can be applied as part of a limited land use application. The applicable land use regulations for this application are found in the City of Wilsonville Development Code (WDC). Pursuant to ORS 197.195(1) comprehensive plan provisions (as well as goals, policies, etc. from within the adopted elements of the comprehensive plan) may not be used as a basis for a decision or an appeal of a decision unless they are specifically incorporated into the land use regulations. While this application may respond to comprehensive plan and/or related documents, such a response does not imply or concede that said provisions are applicable approval criteria. Similarly, the Applicant does not waive its right to object to the attempted implementation of these provisions unless they are specifically listed in the applicable land use regulations, as is required by ORS 197.195(1).

Pursuant to ORS 197.522, if this application is found to be inconsistent with the applicable land use regulations, the Applicant may offer an amendment or propose conditions of approval to make the application consistent with applicable regulations. In fact, the local government is obligated to consider and impose any conditions of approval proposed by the Applicant if such conditions would allow the local government to approve an application that would not otherwise meet applicable approval criteria.

II. Site Description/Setting

Project Location

The site is ±9.0 gross acres with frontage on SW Frog Pond Lane and SW Brisband Street. The property is in unincorporated Clackamas County (County), within the City of Wilsonville UGB and within the Frog Pond West planning area of the City. The properties are within the Frog Pond West Subdistrict 4, to be zoned R-7 (Medium Lot Single Family), and Subdistrict 7, to be zoned R-10 (Large Lot Single Family).

Surrounding Land Use

The subject site is within the UGB and abuts the existing city limits to the north, south, east, and west. Surrounding properties are in the process of developing or will eventually be developed as the Frog Pond master planned community. The adjacent undeveloped properties to the east and west are within the same Frog Pond West Subdistricts 4 and 7 as the project site and will share its R-7 and R-10 zoning designations. These properties will also be annexed to the City and rezoned from Clackamas County Rural Residential Farm Forest 5-Acre (RRFF5) to Residential Neighborhood (RN) with R-7 and R-10 *Frog Pond Area Plan* designations. Properties across SW Frog Pond Lane opposite the project site are part of Subdistrict 8 with a zoning designation of R-10.

Existing Site Condition

The site consists of Tax Lot 1100 of Clackamas County Assessor's Map 3 1W 12D and has Clackamas County zoning designation RRFF5. Tax Lot 1100 has an existing single-family rural residence, an unpaved driveway, barn, and other accessory structures. The majority of the property is undeveloped, but has been previously cleared, farmed, and planted with nursery stock trees and shrubs.

Transportation & Circulation

The subdivision accesses SW Frog Pond Lane to the north and SW Brisband Street to the south, both classified as framework streets. New local streets include extensions of SW Alder Street, SW Woodbury Loop, and SW Painter Drive through the proposed subdivision. Pedestrian connections to the Cottage Park Place subdivision are planned through Tract G.

III. Applicable Review Criteria

OREGON REVISED STATUTES

GENERAL PROVISIONS

ORS 222.111 Authority and procedure for annexation; specifying tax rate in annexed territory.

- (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 to 222.180 or 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 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 of the land proposed for annexation and has been signed by all property owners and electors residing on the property. 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.

ORS 222.120 Procedure for annexation without election; hearing; ordinance subject to referendum.

-
- (1) 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 and electors of the subject site consent in writing to the annexation, and upon submittal of this application a public hearing will be scheduled. The annexation will follow the process defined within the WDC. The above criterion is met.

ORS 222.125 Annexation by consent of all owners of land and majority of electors; proclamation of annexation.

The legislative body of a city need not call or hold an election in the city or in any contiguous territory proposed to be annexed or hold the hearing otherwise required under ORS 222.120 when all of the owners of land in that territory and not less than 50 percent of the electors, if any, residing in the territory consent in writing to the annexation of the land in the territory and file a statement of their consent with the legislative body. Upon receiving written consent to annexation by owners and electors under this section, the legislative body of the city, by resolution or ordinance, may set the final boundaries of the area to be annexed by a legal description and proclaim the annexation.

Note: 222.125 was added to and made a part of ORS chapter 222 by legislative action but was not added to any smaller series therein. See Preface to Oregon Revised Statutes for further explanation.

Response: The property owners and electors residing within the area proposed for annexation have provided their consent in writing. The City does not require a vote of the electors of the City to approve an annexation and instead will follow a public hearing process as defined within the WDC. This criterion is met.

ORS 222.170 Annexation by consent before public hearing or order for election; proclamation of annexation.

- (1) The legislative body of the city need not call or hold an election in any contiguous territory proposed to be annexed if more than half of the owners of land in the territory, who also own more than half of the land in the contiguous territory and of real property therein representing more than half of the assessed value of all real property in the contiguous territory consent in writing to the annexation of their land in the territory and file a statement of their consent with the legislative body on or before the day:
 - (a) The public hearing is held under ORS 222.120 (Procedure for annexation without election), if the city legislative body dispenses with submitting the question to the electors of the city; or
 - (b) The city legislative body orders the annexation election in the city under ORS 222.111 (Authority and procedure for annexation), if the city legislative body submits the question to the electors of the city.

Response: The draft legal description and exhibit map for annexation are included within Exhibit J. 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 5 – Natural Resources, Scenic and Historic Areas, and Open Spaces

Goal 6 – Air, Water, and Land 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* (October 2018; updated June 2020) 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 not designated as an open space or scenic area, and there are no protected natural resources or historic areas present on the site. 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 UGB 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 WDC, 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 proposed project 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. A Zone Map Amendment to change the zoning from unincorporated RRFF5 to 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. The project provides 28 residential parent lots for 54 medium- and small-lot single-family homes. 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 (Ordinance No. 530, adopted April 1994), *Stormwater Master Plan* (March 2012), *Water System Master Plan* (September 2012), and *Transportation System Plan* (June 2013). Therefore, the proposed annexation implements the Comprehensive Plan and master plans 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 Impact Study (TIS) prepared by DKS Associates (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.

OREGON ADMINISTRATIVE RULE (TRANSPORTATION PLANNING RULE)

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 effect," as that term is defined in OAR 660-012-0060(1). The City may rely on transportation improvements found in 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 effect," 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 was prepared by the City's traffic engineer, DKS Associates, and 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 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). Compliance with the TPR is included within the *Frog Pond Area Plan*, which assumed full development of the Frog Pond area. Please refer to the TIS (Exhibit E), when available, for further information.

These 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 TPR requires coordination with affected transportation service providers. The City provides the roads that serve the subject property. The adjacent section of SW 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 URBAN GROWTH MANAGEMENT FUNCTIONAL PLAN

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.

Chapter 3.09 – Local Government Boundary Changes

3.09.040 Requirements for Petitions

- A. A petition for a boundary change must contain the following information:
1. The jurisdiction of the reviewing entity to act on the petition;
 2. A map and a legal description of the affected territory in the form prescribed by the reviewing entity;
 3. For minor boundary changes, the names and mailing addresses of all persons owning property and all electors within the affected territory as shown in the records of the tax assessor and county clerk; and
 4. For boundary changes under ORS 198.855(3), 198.857, 222.125 or 222.170, statements of consent to the annexation signed by the requisite number of owners or electors.

B. A city, county and Metro may charge a fee to recover its reasonable costs to carry out its duties and responsibilities under this chapter.

Response: The City is the reviewing entity that will act on this petition. Necessary application forms and exhibits, as well as associated review fees, have been submitted with this application. A map and legal description of the affected territory are included in Exhibit J. The names and mailing addresses of persons owning property in the affected territory, per County Tax Assessor and County Clerk records, are included in Exhibit C. Finally, a statement of consent from the requisite owners and electors is included in Exhibit B. Therefore, the criteria are met.

3.09.045 Expedited Decisions

[...]

D. To approve a boundary change through an expedited process, the city shall:

1. Find that the change is consistent with expressly applicable provisions in:

[...]

Response: The applicable provisions have been addressed within this written narrative. The proposed annexation is consistent with the *City of Wilsonville Comprehensive Plan, Frog Pond West Master Plan*, and other applicable plans and agreements. These criteria are met.

2. Consider whether the boundary change would:

a. Promote the timely, orderly and economic provision of public facilities and services;

b. Affect the quality and quantity of urban services; and

c. Eliminate or avoid unnecessary duplication of facilities or services.

Response: The annexation of this property is part of the orderly and timely development of the Frog Pond West master planned area, adding necessary housing and infrastructure to this planned area of urban development. The utility and service capacity and availability necessary to serve this new area of the City have been determined to be sufficient per the applicable City master plans. These criteria are met.

E. A city may not annex territory that lies outside the UGB, except it may annex a lot or parcel that lies partially within and partially outside the UGB.

Response: The territory proposed for annexation is wholly within the UGB and eligible for annexation. This criterion is met.

3.09.050 Hearing and Decision Requirements [...] Other Than Expedited Decisions

A. The following requirements for hearings on petitions operate in addition to requirements for boundary changes in ORS Chapters 198, 221 and 222 and the reviewing entity's charter, ordinances or resolutions.

Response: This narrative and accompanying exhibits respond to applicable State and local requirements pertaining to boundary changes. Additionally, Metro Code Section 3.09 and WDC implement the applicable annexation provisions from ORS Chapters 198, 221, and 222. This narrative demonstrates that applicable boundary change requirements have been satisfied. The criterion is met.

B. Not later than 15 days prior to the date set for a hearing the reviewing entity shall make available to the public a report that addresses the criteria identified in subsection (D) and includes the following information:

1. The extent to which urban services are available to serve the affected territory, including any extra territorial extensions of service;

Response: Urban services are or will be made available to serve the affected territory to a level consistent with City and Clean Water Services (CWS) standards.

2. Whether the proposed boundary change will result in the withdrawal of the affected territory from the legal boundary of any necessary party; and

Response: Metro Code Section 3.09.020 defines the following terms: “affected territory” means a territory described in a petition; “necessary party” means any county, city, or district whose jurisdictional boundary or adopted urban service area includes any part of the affected territory, or who provides any urban service to any portion of the affected territory, including Metro, or any other unit of local government, as defined in ORS 190.003, that is a party to any agreement for provision of an urban service to the affected territory. The annexation will add ±9.0 acres of land to the City of Wilsonville for the provision of urban services but will not withdraw the affected territory from the legal boundary of any party. The legal description of the area is included in Exhibit J.

3. The proposed effective date of the boundary change.

Response: The Applicant anticipates approval of the Annexation application by roughly October 2024.

C. The person or entity proposing the boundary change has the burden to demonstrate that the proposed boundary change meets the applicable criteria.

Response: This application includes responses demonstrating compliance to applicable boundary change criteria.

D. To approve a boundary change, the reviewing entity shall apply the criteria and consider the factors set forth in subsections (D) and (E) of section 3.09.045.

Response: Responses to Metro Code Sections 3.09.045 (D) and (E) are included above.

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 2.1.1 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 2.1.1.b

Allow urbanization to occur to provide adequate housing to accommodate workers who are employed within the City.

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 City’s 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 ensure adequate public services.

Policy 2.2.1. The City of Wilsonville shall plan for the eventual urbanization of land within the local planning area, beginning with land within the Urban Growth Boundary.

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 annexation is located within an area planned for future public services. Surrounding properties have been approved for residential development and annexation of this property is a logical progression of development of Frog Pond West. The project is consistent with this policy.

Implementation Measure 2.1.1.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 of Open Space, and Tentative Subdivision Plat, which propose the extension of public facilities and services to the Ridgecrest 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. Applicable State and Metro regulations have been evaluated within this narrative.

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 RN zoning designation. 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 applicable 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.

6. Consistency with legislative Master Plans and other applicable provisions of the Comprehensive Plan and Development Code.

Response: The subject site was brought into the UGB in 2002 but has not yet been annexed to the City limits. 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 RN implement goals of 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.c

Establish residential areas that are safe, convenient, healthful, and attractive places to live while encouraging variety through the use of planned developments and clusters and legislative Master Plans.

Response: The proposed Planned Development is consistent with the legislatively adopted *Frog Pond West Master Plan*. The project proposes development within the RN zoning district and is consistent with the WDC standards to ensure a residential area that is safe, convenient, healthful, and attractive.

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 homes on lots ranging from ±3,531 square feet to ±12,233 square feet, as allowed by the R-7 and R-10 district 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: Ridgecrest follows the sequential development pattern of the Frog Pond West master planned community and extends public facilities from previously approved subdivisions surrounding the project.

Residential Neighborhood Development

Policy 4.1.7.a New neighborhoods in residential urban growth expansion areas may be designated “Residential Neighborhood” on the Comprehensive Plan Map.

Implementation Measure 4.1.7.a

Area Plans (also called Concept Plans) shall be prepared to guide the overall framework of land use, multi-modal transportation, natural resources, parks and open space, public facilities, and infrastructure funding. Master Plans shall direct more detailed planning. The City may at its discretion combine Area Planning and Master Planning.

[...]

Implementation Measure 4.1.7.c

The “Residential Neighborhood” Zone District shall be applied in all areas that carry the Residential Neighborhood Plan map designation, unless otherwise directed by an area plan or master plan.

Response: The project site has been designated “Residential Neighborhood” on the City’s Comprehensive Plan Map and is part of the Frog Pond West Master Plan area. The subject area has been proposed to receive the planned designation RN as required for the area. The proposed development is consistent with the purpose of the RN designation and the *Frog Pond West Master Plan*.

CITY OF WILSONVILLE DEVELOPMENT CODE

CHAPTER 4. PLANNING AND LAND DEVELOPMENT

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. The project involves land within the R-7 and R-10 subdistrict zoning designations, which do not require open space. The proposed development contains open space tracts for the primary purpose of providing stormwater facilities. Tract G provides pedestrian connection to adjacent pedestrian pathways. Please refer to the response under 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 project are consistent with the *Frog Pond West Master Plan*, with the exception of Lots 1 and 19, discussed within this written narrative. Please refer to the 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 the response under WDC Section 4.155.

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

Response: Signs are not included as part of this application. These standards do not apply at this time.

(.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.
- D. Fences in residential zones shall not include barbed wire, razor wire, electrically charged wire, or be constructed of sheathing material such as plywood or flakeboard.

Response: Fences in residential lots will be reviewed at the time of building permit. This application includes fences around the stormwater facilities. Please refer to responses to WDC Section 4.176 Landscaping, Screening, and Buffering elsewhere within this written narrative.

(.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 responses 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 prohibited uses.

(.10) *Accessory Dwelling Units:*

- A. Accessory Dwelling Units are permitted subject to standards and requirements of this Subsection.

[...]

Response: This application does not include accessory units. These standards are not applicable.

(.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 voluntary 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 the response under WDC Section 4.127(.08). Reduced setbacks have not been requested in the method allowed by this subsection. These standards do not apply.

(.12) *Bed and Breakfasts:*

Response: Bed and breakfasts have not been proposed as part of this application. These standards do not apply.

(.13) The Planning Director and Development Review Board shall, in making their determination of compliance in attaching conditions, 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 cumulatively, have the effect of unnecessarily increasing the cost of housing or effectively excluding a needed housing type. However, consideration of these factors shall not prevent the Board or Planning Director from imposing conditions of approval necessary to meet the minimum requirements of the Comprehensive Plan and Code.

Response: This standard is understood.

(.14) Design Standards for Detached Single-family and Middle Housing.

A. The standards in this subsection apply in all zones, except as indicated in 1.—2. below:

1. The Façade Variety standards in Subsection C.1. do not apply in the Village Zone or Residential Neighborhood Zones, as these zones have their own variety standards, except that the standards do apply within middle housing development with multiple detached units on a single lot which the standards of these zones do not address;
2. The entry orientation and window standards for triplexes, quadplexes, and townhouses in Subsections D.1-2. and E. 2-3. do not apply in the Village Zone or Residential Neighborhood Zone as these zones have their own related standards applicable to all single-family and middle housing.

[...]

Response: The project is located within the RN zoning district; therefore, the listed standards do not apply. The applicable standards of Section 4.127 are addressed later within this written narrative or will be addressed with future applications for each home.

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 responses 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.
 17. Open space in the Residential Neighborhood zone; and
 18. Lot orientation.

Response: As part of the Planned Development application, there are several waivers required for the project that may be granted as part of the required process.

Lot coverage requirements. Residential lots located within the RN zoning district R-10 zoning designation (Lots 1-3, 24-28) and R-7 zoning designation (Lots 8-9, 11-15, and 21) areas are limited to 40 and 45 percent maximum lot coverage, respectively. This application is requesting a 20% increase in the lot coverage standard.

Middle housing was not an approved use within the City until 2022 and was not considered during the creation of the 2017 *Frog Pond Master Plan*. Because of this timeline of events, lot development standards for the R-10 zoning designation were created with detached single-family dwellings in mind. The State of Oregon implemented middle housing regulations in 2021 that allowed the creation of multiple dwelling units on a traditional single-family lot.

The middle housing land division process allows two (or more) primary structures to be created on a single parent lot, reducing land costs as a part of home cost and encouraging the construction of more housing. Unfortunately, the lot coverage requirements do not appear to have been updated to accommodate this increase in allowable residential

dwellings. Increases to the maximum lot coverage requirements are allowed only for “accessory structures” with no regard provided for the possibility of additional dwellings. The result is a smaller “child lot” with a dwelling that must also be undersized in order to support the required maximum lot coverage. Since vehicle parking is required for each single-family home and that basic fact is unlikely to change in the foreseeable future, meeting the lot coverage standards eliminates area on each lot that could otherwise be used for living space. An increase in the allowed percentage of lot coverage will allow these homes to provide the same parking, living areas, and amenities as traditional homes.

The RN zoning district R-10 designation requires two middle housing dwelling units to be located on a minimum 8,000-square-foot lot, which equates to 1 dwelling unit per 4,000 square feet. Allowing up to 48 percent lot coverage for lots within the R-10 subdistrict (Lots 1-3, and 24-28) will permit the construction of homes that are typically provided within residential lots of this size. This is less than the lot coverage allowed in the R-5 zone for similarly sized lots.

The RN zoning district R-7 designation proposes two middle housing dwelling units on lots typically 7,000 square feet in area, which equates to 1 dwelling unit per 3,500 square feet. Accordingly, an increased maximum lot coverage of up to 54 percent lot coverage will permit the construction of homes typically seen on similarly zoned and sized lots. Lots 8, 9, 11-15, and 21 require a 20% lot coverage increase to accommodate middle housing on these parent lots.

Middle Housing Maximum Lot Size. Several parent lots located within the R-7 subdistrict (Lots 4-8 and 16-23) are restricted by Section 4.232(.03)F.2, requiring that each lot within the subdivision planned for middle housing be, on average, equal to 60 percent or less of the minimum lot size of the zone. The parent lots proposed are greater than 120 percent of the subdistrict minimum lot size, and thus, require a waiver. These lots, shown on sheet P-06 of the Preliminary Plans (Exhibit A), are increased in size because of the necessary placement of streets throughout the development. The rear setbacks have been increased in order to maintain the same building envelope as lots that comply with the maximum lot size. The maximum lot size waiver would allow these homes to retain outdoor yard space typical of single-family homes and similar to nearby homes, while also attaining the purpose of middle housing through the provision of a smaller building. Lot coverage waivers have not been proposed for lots that require the maximum lot size waiver.

Lot 1 and 19 Front Setback Requirements. Due to the placement of the existing SW Frog Pond Lane “knuckle” right-of-way and the location of the trail at the rear of Lot 1, the northern end of the lot is constrained and a front setback waiver is requested. Lot 1 is located within the R-10 Subdistrict and requires a 20-foot front setback (shown below). A reduced setback of 10 feet would allow the home constructed on this lot to retain a similar size and function as other homes in the area. The reduced setback would also permit the home to retain a typical rear yard instead of necessitating a shift of the home to the rear of the lot, especially important because of the proximity of the planned regional pathway

and retaining wall along the property line. This lot is also constrained at the rear by a regional trail for Frog Pond Overlook and Frog Pond Terrace.

Retaining the standard setbacks in the district will require either a very shallow custom home, increasing home costs for a buyer, or the elimination of a dwelling unit. While the home would have a narrower front setback, as shown by the figures below, the home would remain generally even with the adjacent home due to the proximity of the SW Frog Pond Lane eyebrow curve.

Lot 19 experiences similar constraints to Lot 1. In order to accommodate right-of-way width to provide two-way traffic and looped utilities through the SW Woodbury Loop right-of-way adjacent to Tax Lot 1101, the front setback of Lot 19 must be adjusted. The change will permit the northern home on middle housing Lot 36 to remain similarly sized, scaled, and positioned in relation to the home on Lot 37. The front setback on Lot 37 would be forced to follow the curve of the SW Woodbury Loop right-of-way without the waiver. This would, in turn, force the home on this lot to be pulled back from the street, narrowing the home needlessly and creating a difficult home to build and live in. The garage location and setback will be unaffected by the proposed waiver and is still planned to be located further south of the problematic northwest lot corner.



Figure 1 Lot 1 without waiver

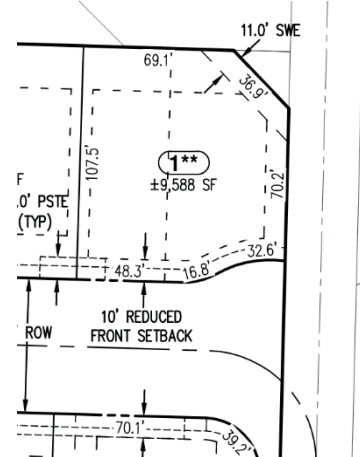


Figure 2 Lot 1 with waiver

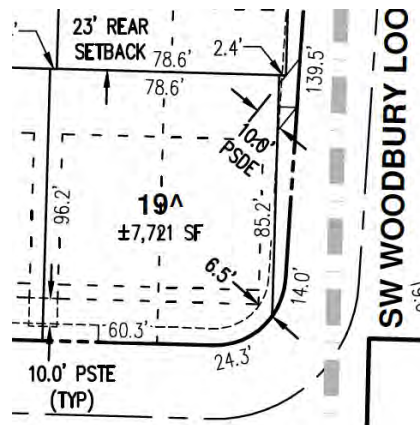


Figure 3 Lot 19 with waiver

Driveway Requirements. Per Section 4.127, Table 2, Footnote O, “[a]ll lots with front-loaded garages are limited to one shared standard-sized driveway/apron per street regardless of the number of units on the lot.” The surrounding streets and subdivisions do not provide for a project layout that provides the ability to accommodate alley access, which would eliminate the need for two street-facing driveways. As mentioned previously, Frog Pond West did not consider that middle housing would be permissible or desired and generally envisioned only traditional single-family homes providing a single driveway per lot. Where two driveways would not be needed for single-family homes in most situations, two middle housing units would reasonably need to provide their own garages and driveways.

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 [Section] 4.127(.08)(B)(2)(d);

Response: Per Section 4.127(.09)B.1, properties within the R-10 and R-7 subdistrict zoning designations are exempt from the requirements of the RN Open Space standards.

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 [Section] 4.127(.06) B; and

Response: The project meets the minimum density standards, and no waiver of density standards is requested.

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 for these listed items.

[...]

(.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 requesting a density transfer of two parent lots from the portion of the site designated as Subdistrict 4 to the portion designated as part of Subdistrict 7. Layout of the Ridgecrest project considered the need to accommodate public roadways, trails, open spaces, and adjacent residential project layouts. Because the surrounding properties, apart from Tax Lot 1101 to the northeast, have received preliminary approval or have started construction, the layout of the street network and other facilities have been pre-determined. The Ridgecrest project must accommodate the locations of these street and pedestrian connections. The number of residential lots provided is appropriate for the designated zoning and lot areas and dimensions planned. Transfer of density equal to two parent residential lots from Subdistrict 4 to Subdistrict 7 will allow the project to retain the required number of residential units and provide the desired street layout within the project area consistent with the lot size of developments to the north and west.

(.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: As there are no wetlands on-site, no mitigation areas are required or proposed.

(.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 ±58,765 square feet of stormwater facilities, open space, and landscape coverage area. Water, sewer, and stormwater infrastructure was designed and will be installed in accordance with the applicable City requirements to minimize adverse impacts on the site and to adjacent properties and surrounding resources.

In accordance with the intent of the *Frog Pond West Master Plan*, the layout of residential lots, streets, and open space tracts was designed to accommodate previously planned and platted adjacent streets and subdivisions, creating a framework that Ridgecrest must fit into. Those subdivisions have shifted infrastructure to better preserve trees and wetlands, necessitating a layout for Ridgecrest that differs slightly from that envisioned with the *Frog Pond West Master Plan*. These criteria are met.

Section 4.124 Standards applying to all planned development residential zones.

(.01) *Permitted Uses:*

- A. Open Space.
 - B. Single-Family Dwelling Units.
 - C. Duplexes, triplexes, quadplexes, townhouses.
- [...]

Response: Each of the uses proposed within Ridgecrest is permitted.

[...]

(.09) Block and access standards:

- 1. Maximum block perimeter in new land divisions: 1,800 feet.

Response: As shown on the Preliminary Plans (Exhibit A), the project meets maximum block perimeter standards. This criterion is met.

- 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.

Response: The spacing between the proposed streets meets this standard.

- 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.

Response: Blocks that exceed 530 feet in length provide pedestrian and bicycle crossings within the planned open space tracts, meeting this criterion.

Section 4.127 Residential neighborhood (RN) zone.

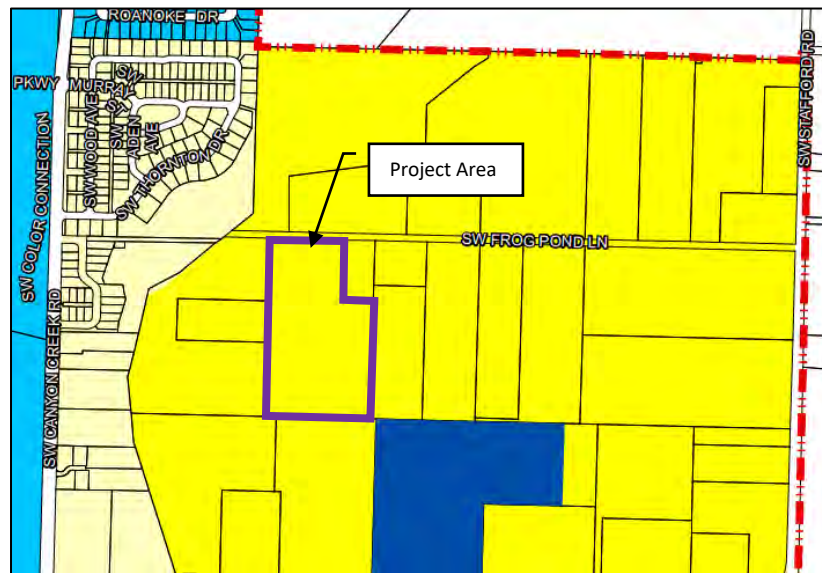
(.01) *Purpose.* The Residential Neighborhood (RN) zone applies to lands within Residential Neighborhood Comprehensive Plan Map designation. The RN zone is a Planned Development zone, subject to applicable Planned Development regulations, except as superseded by this section or in legislative master 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.
- H. Create housing opportunities for a variety of households, including housing types that implement the Wilsonville Equitable Housing Strategic Plan and housing affordability provisions of legislative master plans.

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

Frog Pond West Master Plan Figure 5 excerpt: Comprehensive Plan Designations



(.02) *Permitted uses:*

- A. Open Space.
- B. Single-Family Dwelling Unit.

-
- C. Townhouses. During initial development in the Frog Pond West Neighborhood, a maximum of two townhouses may be attached, except on corners, a maximum of three townhouses may be attached.
 - D. Duplex.
 - E. Triplex and quadplex. During initial development in the Frog Pond West Neighborhood, triplexes are permitted only on corner lots and quadplexes are not permitted.
 - F. Cluster housing. During initial development in the Frog Pond West Neighborhood, only two-unit cluster housing is permitted except on corner lots where three-unit cluster housing is permitted.
 - G. 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.
 - H. Cohousing.
 - I. Cluster Housing (Frog Pond West Master Plan).
 - J. 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 45 feet from any other lot.
 - K. Manufactured homes.

Response: The project includes 28 parent lots, 26 child lots, and open space, which are permitted uses in the RN zoning district.

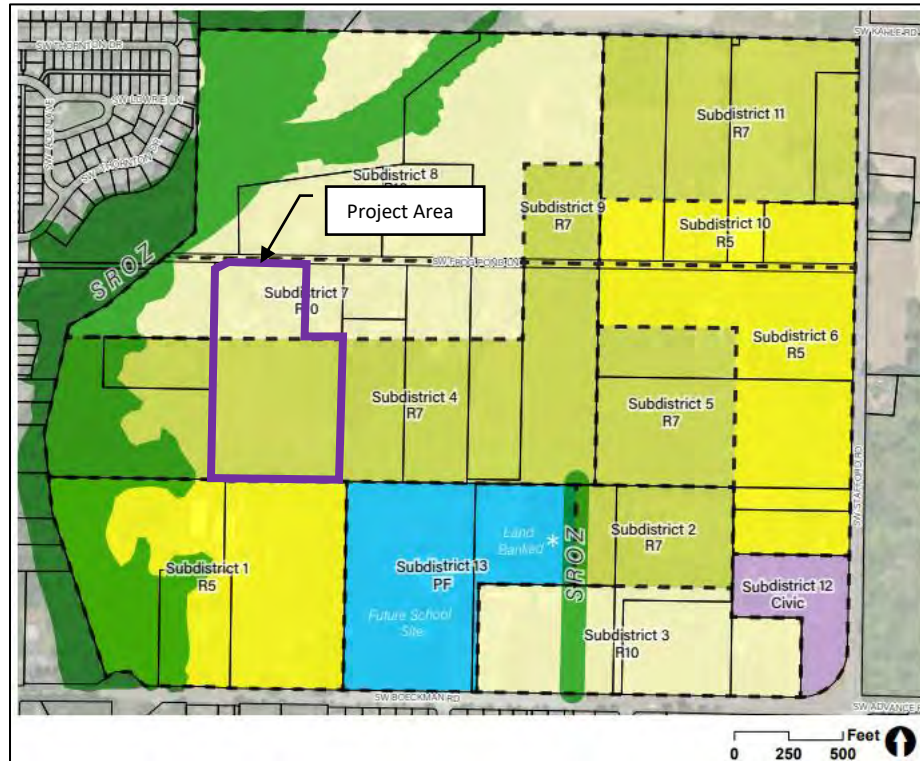
[...]

(.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: Approximately 2.5 acres of the project site are within Subdistrict 7, which is designated R-10, and ±6.5 acres of the site lie within Subdistrict 4, which is designated R-7.

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



	R5 - Small Lot Single Family		Public Facilities
	R7 - Medium Lot Single Family		Civic
	R10 - Large Lot Single Family		Significant Resources Overlay Zone (SROZ)

* Land banked for school facilities, a neighborhood park, and/or residential use.

(.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 initial development of 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 lots for the sub-districts.
 - 2. For areas that are a portion of a sub-district, the minimum and maximum number of residential lots are established by determining the proportional gross acreage and applying that proportion to the minimums and maximums listed in Table 1. The maximum density of the area may be increased, up to a maximum of ten percent of what would otherwise be permitted, based on an adjustment to an SROZ boundary that is consistent with 4.139.06.

Response: The project area encompasses ±9.0 gross acres of the Frog Pond West Master Plan area. Approximately 2.5 acres are within Subdistrict 7, with the remainder, ±6.5 acres within

neighboring Subdistrict 4. The following table summarizes how the proposed residential units in each subdistrict are consistent with the density range envisioned by the *Frog Pond West Master Plan*. Middle Housing units are not included within the density range calculations for the Frog Pond West area; therefore, calculations have been based on the number of parent lots rather than dwelling units.

Table 1. Proposed Residential Units

Subdistrict	Zoning Designation	Gross Subdistrict Area (acres)	Site % of Gross Subdistrict	Established Dwelling Unit Range for Subdistrict		Proportional Lot Range for Site		Maximum Lot Range with Density Transfer	Proposed Parent Lots
				Min	Max	Min	Max		
Subdistrict 4	R-7 (Medium Lot)	30.1	22%	86	107	19	24	22	20
Subdistrict 7	R-10 (Large Lot)	11.7	40%	24	30	5	6	8	8

- B. The City may allow a reduction in the minimum density for a subdistrict 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.

Table 1. Minimum and Maximum Residential Lots by Sub-District in the Frog Pond West Neighborhood			
Area Plan Designation	Frog Pond West Sub-district	Minimum Lots in Sub-district ^{a, b}	Maximum Lots in Sub-district ^{a, b}
R-10 Large Lot	7	24	30
R-7 Medium Lot	4	86	107

- a. Each lot must contain at least one dwelling unit but may contain additional units consistent with the allowance for ADUs and middle housing.
 b. For townhouses, the combined lots of the townhouse project shall be considered a single lot for the purposes of the minimum and maximum of this table. In no case shall the density of a townhouse project exceed 25 dwelling units per net acre.
 c. These metrics apply to infill housing within the Community of Hope Church property, should they choose to develop housing on the site. Housing in the Civic sub-district is subject to the R-7 Medium Lot Single Family regulations.

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 this written narrative. Some regulations of Section 4.127 supersede those of Section 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.
- [...]

Response: The project is not within a Small Lot Subdistrict. The applicable lot standards are outlined below.

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

Notes:

- A. Minimum lot size may be reduced to 80% of minimum lot size for any of the following three reasons: (1) where necessary to preserve natural resources (e.g. trees, wetlands) and/or provide active open space, (2) lots designated for cluster housing (Frog Pond West Master Plan), (3) to increase the number of lots up to the maximum number allowed so long as for each lot reduced in size a lot meeting the minimum lot size is designated for development of a duplex or triplex.
- B. For townhouses the minimum lot size in all sub-districts is 1,500 square feet.
- C. In R-5 and R-7 sub-districts the minimum lot size for quadplexes and cottage clusters is 7,000 square feet.
- D. In R-5 sub-districts the minimum lot size for triplexes is 5,000 square feet.
- E. On lots where detached accessory buildings are built, maximum lot coverage may be increased by 10%. Cottage clusters are exempt from maximum lot coverage standards.
- F. Front porches may extend 5 feet into the front setback.
- G. 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 shall be between 3 and 5 feet.
- H. Vertical encroachments are allowed up to ten additional feet, for up to 10% of the building footprint; vertical encroachments shall not be habitable space.
- I. For townhouses in all sub-districts minimum lot width is 20 feet.
- J. 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 (Frog Pond West Master Plan) development.
- K. 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.
- L. For cottage clusters all setbacks otherwise greater than 10 feet for other housing types is reduced to 10 feet
- M. 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.
- N. For cluster housing (Frog Pond West Master Plan) 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.
- O. All lots with front-loaded garages are limited to one shared standard-sized driveway/apron per street regardless of the number of units on the lot.
- P. The garage shall be setback a minimum of 18 feet from any sidewalk easements that parallels the street.

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). Unless superseded by waivers applied as part of the Planned Development process, Table 2 below demonstrates the general development standards applied at the time of subdivision approval.

Table 2. Parent Lot Compliance with Neighborhood Zone Lot Development Standards

Standard	R-7 Designation		R-10 Designation	
	Required	Proposed (parent lots)	Required	Proposed (parent lots)
Min. Lot Size (sq. ft.)	6,000 square feet	6,000 square feet	8,000 square feet	8,000 square feet
Min. Lot Depth (ft.)	60 feet	60 feet	60 feet	60 feet
Min. Lot Width (ft.)	35 feet	35 feet	40 feet	40 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
Side Setback – Lots Greater Than 10,000 SF	20 feet min. combined 10 feet minimum	20 feet min. combined 10 feet minimum	20 feet min. combined 10 feet minimum	20 feet min. combined 10 feet minimum
Garage Setback from Street	20 feet	20 feet	20 feet	20 feet

Notes:
 O. All lots with front-loaded garages are limited to one shared standard-sized driveway/apron per street regardless of the number of units on the lot.

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

[...]

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 SW Frog Pond Lane with two lots gaining access from that street. The lots are located within a Large Lot Subdistrict; therefore, this standard does not apply to the project.

(.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 Open Space requirements in WC Section 4.113(.01).

B. *Within the Frog Pond West Neighborhood, the following standards apply:*

1. Properties within the R-10 Large Lot sub-districts and R-7 Medium Lot 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 proposed project includes properties within the R-7 designation and the R-10 designation, which are exempt from the Open Space requirements. These criteria do not apply to the project.

(.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.
2. If a legislative master plan does not provide sufficient guidance for a specific development or situation, the Development Review Board shall use the block and access standards in Section 4.124(.06) as the applicable standards.

Response: The proposed streets are generally consistent with the *Frog Pond West Master Plan*. As shown on Figure 18, the Street Demonstration Plan in the *Frog Pond West Master Plan* envisions a grid street plan and the opportunity for pedestrian connections within the project site. This plan is merely a “guideline” pursuant to WDC Section 4.127(.10)(A). The proposed street network generally follows the pattern intended by the Master Plan with some minor modifications. Streets within the project have been realigned to allow for connections to the adjacent planned street network.

Please refer to the Preliminary Street Plan in Exhibit A, which illustrates the proposed blocks, access, and connectivity for Ridgecrest project. The modified grid pattern maintains the planned pedestrian connectivity through the area, provides the same number of tiers of residential lots, and preserves trees within designated open spaces.

The City can make a finding that the proposed subdivision street plan provides for a substantially equivalent level of pedestrian connectivity. Further, the proposed street layout does not require out-of-direction pedestrian travel and does not result in greater distances for pedestrian access to the proposed subdivision from SW Brisband Street than would otherwise be the case if the Street Demonstration Plan were adhered to.

(.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 WDC 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 content contained within application will not prevent the standards of subsections 4.127(.14), (.15), and (.16) from being met.

(.17) *Fences:*

A. Within Frog Pond West, fences shall comply with standards in 4.113 (.07) 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 four feet in height is not permitted within eight 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: The project site is not adjacent to Boeckman or Stafford Roads. Fences will be reviewed for compliance with code requirements as part of building permit review for individual homes. This standard does not apply at this time.

(.18) Residential Structures 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 residential structures 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 site is not located adjacent to schools or parks; therefore, these standards do not apply.

Section 4.139 Significant resource overlay zone (SROZ) ordinance.

Response: The proposed project is not within a Significant Resource Overlay Zone (SROZ). No wetlands were identified or documented on the site. An artificial pond was delineated within the northern portion of the site. The pond is less than 1 acre in size and was created within an area of upland soils and is likely to be determined non-jurisdictional and not regulated by the state's removal-fill law.

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" or specifically defined as a PD zone by this Code. All sites which are greater than two 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 ±9.0 acres and is suitable for Planned Development. The project accommodates 28 residential parent lots (54 total lots with Middle Housing Land Division) and provides an efficient circulation system. The application requests to rezone the property to RN from its current Clackamas County zoning. Pursuant to the *Frog Pond West Master Plan*, development in the RN zoning district follows the same Planned Development procedure as Planned Development (PD) zoning districts.

(.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 one lot under one ownership. The land use application has been signed by the property owners. These criteria are met.

(.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: The Applicant has selected a professional design team, AKS Engineering & Forestry, LLC, which includes registered civil engineers, certified planners, registered land surveyors, and licensed landscape architects. Each member of the professional design team has been certified or licensed by their corresponding professional board or agency. Glen Southerland, AICP, is the point of contact for planning staff with respect to the concept and details of the plan. These criteria are met.

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

- A. All parcels of land exceeding two 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 ±9.0 acres in size and is proposed for residential development. This application includes a Zoning Map Amendment to apply RN zoning to the site, Planned Development Stage I application, and Planned Development Stage II application. These criteria are met.

- 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. This criterion is met.

- 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 or the Planning Director for properties within the Coffee Creek Industrial Design Overlay District. When a zone change is necessary, application for such change shall be made simultaneously with an application for preliminary approval; and
 3. Final (Stage II) review by the Development Review Board or the Planning Director for properties within the Coffee Creek Industrial Design Overlay District.
 4. In the case of a zone change and zone boundary amendment, City Council approval is required to authorize a Stage I preliminary plan except for properties within the Coffee Creek Industrial Design Overlay District, which may receive separate zone map amendment approvals.

Response: A pre-application conference was held with the Planning Department on April 4, 2024. Concurrent Zoning Map Amendment and Planned Development Stage I and Stage II permit applications (and other additional concurrent applications) have been submitted for review by the Development Review Board. These criteria are met.

[...]

(.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. Developments within the RN zone shall show how the proposed number of units complies with the applicable maximum and minimum provisions of the RN zone.
 4. A stage development schedule demonstrating that the developer intends receive Stage II approval within two years of receiving Stage I approval, and to commence construction within two 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 written narrative. Stage I and Stage II approvals are being requested concurrently, and a staged development schedule is not proposed at this time.

[...]

(.09) *Final Approval (Stage Two):*

- A. Unless an extension has been granted by the Development Review Board or Planning Director, as applicable, within two 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. As provided in Section 4.134, an application for a Stage II approval within the Coffee Creek Industrial Design Overlay District may be considered by the Planning Director without a public hearing as a Class II Administrative Review as provided in Section 4.035(.03).

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

- B. The Development Review Board or Planning Director, as applicable, 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 Ridgecrest Preliminary Plans (Exhibit A):

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

Preliminary conceptual building elevations will be reviewed at a future date. Sign locations are not included as part of this 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.

Response: A concurrent Site Design Review of Open Space application has been submitted. Section 4.400 Site Design Review criteria are addressed in the narrative.

- E. Copies of legal documents required by the Development Review Board or Planning Director, as applicable, 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 or Planning Director, as applicable, 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 zoning district is identified as the implementing zone for the 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;

- 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.
- b. The following are exempt from meeting the Level of Service D criteria standard:
 - i. A planned development or expansion thereof which generates three 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.
- d. Exemptions under 'b' of this subsection shall not exempt the development or expansion from payment of system development charges or other applicable regulations.
- e. In no case will development be permitted that creates an aggregate level of traffic at LOS "F".

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

- 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 will dedicate 9.5 feet of public right-of-way width to SW Frog Pond Lane for the future widening and improvement. Therefore, this criterion is met.

(.10) Adherence to Approved Plans, Modification.

-
- A. 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.
- B. 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 30 days after the date of decision unless appealed to the City Council.
- C. Approved plans and non-conforming status with updated zoning and development standards.
1. Approved plans are the basis of legal conforming status of development except where one of the following occurs, at which point, the approved planned development becomes legally non-conforming:
 - a. the zoning of land within the plan area has been changed since adoption of the plan; or
 - b. the zoning standards for the zone under which it was approved have been substantially modified (50 percent or more of the regulatory standards have been modified as determined by the Planning Director); or
 - c. the City Council declared all planned developments in a certain zone or zones to be legal non-conforming as part of an ordinance to update or replace zoning standards; or
 - d. the City Council declared, by a stand-alone ordinance, planned developments in a certain zone not complying with current standards to be legal non-conforming. The City Council may, in an ordinance establishing non-conforming status of a planned development, declare the entire planned development to be non-conforming or declare certain standards established in the planned development to be non-conforming (i.e., lot coverage, setbacks, stormwater standards).
 2. If one of the conditions of subsection 1. is met, development that is consistent with the approved plan, but not complying with current zoning standards, shall be considered legal non-conforming and subject to the standards of Sections 4.189 thru 4.192.

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3. In no case shall a planned development approved within the previous 24 months, or under a time-extension under WC Section 4.023, be considered non-conforming; but automatically will become non-conforming after 24-months, and the end of any extensions, if it otherwise would qualify as legally non-conforming or is so declared pursuant to this subsection.
- D. The following are exempt from established residential density requirements beyond one unit per lot.
 1. Accessory Dwelling Units.
 2. Duplexes.
 3. Triplexes.
 4. Quadplexes.
 5. Cluster housing.
 - E. For new townhouses in existing residential planned developments in residential zones, the allowed density shall be the lesser of: (1) Four times the maximum net density for the lot(s) or parcel(s) established in the approved plan, or (2) 25 units per acre.
 - F. Notwithstanding Subsection C. above, single-family residential development built consistent with an approved master plan in the Planned Development Commercial or Planned Development Industrial zones prior to November 18, 2021 shall continue to be legal conforming uses. However, all lots within these master plans that allow for detached single-family must also allow all middle housing types with density exemptions and allowances consistent with D. and E. above. In addition, any lot coverage maximums established in the master plans less than those listed in Table 2 of Subsection 4.124(.07) are superseded by lot coverage standards in that table.

Response: These standards are understood.

- (.11) *Early Vesting of Traffic Generation.* Applicants with Stage I or Master Plan approvals occurring after June 2, 2003 may apply to vest the right to use available transportation capacity at the intersections of Wilsonville Road with Boone's Ferry Road and with Town Center Loop West, and/or the I-5 interchange. Vesting for properties with such approvals shall occur upon execution of a vesting agreement satisfactory to the City, which agreement shall include a proposed development schedule or phasing plan and either provide for the payment of any and all Supplemental Street SDCs or provide other means of financing public improvements. Vesting for properties pending such approvals shall occur upon such agreement and the date the approvals are final.

The number of trips vested is subject to modification based upon updated traffic analysis associated with subsequent development approvals for the property. A reduction in vested trips shall attend repayment of vesting fees by the City. An increase in available vested trips shall occur upon payment of necessary vesting fees.

Vesting shall remain valid and run with the property, unless an approval that is necessary for vesting to occur is terminated or a vesting agreement is terminated. If the vested right to use certain trips is lost or terminated, as determined by the Community Development Director with the concurrence

of City Council, such trips shall be made available to other development upon City repayment, without interest, of associated vesting fees.

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

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 design proposes sidewalks along the frontages of all lots providing a continuous pathway system throughout the community. In addition to the sidewalks, a pedestrian pathway is proposed within Tract G providing convenient connections to adjacent local transportation networks. These pathways and sidewalks provide easy connections to adjacent development, planned schools, planned parks and other local streets. These criteria are met.

- 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*. 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: Proposed pathways do not cross a parking area or driveway. 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 feet wide. Secondary pathways and pedestrian trails may have an alternative surface except as otherwise required by the ADA.

Response: As shown on the Preliminary Street Plan (Exhibit A), the pedestrian pathways are planned to be paved and are each 5 feet wide. This criterion is met.

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

[...]

(.02) *General Provisions:*

[...]

(.03) *Minimum and Maximum Off-Street Parking Requirements:*

[...]

- G. Tables 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. For example, a use containing 500 square feet, in an area where the standard is one space for each 400 square feet of floor area, is required to provide one off-street parking space. If the same use contained more than 600 square feet, a second parking space would be required. Structured parking and on-street parking are exempted from the parking maximums in Table 5.

[...]

(.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.

[...]

Table 5: Parking Standards			
USE	PARKING MINIMUMS	PARKING MAXIMUMS	BICYCLE MINIMUMS
a. Residential			
1. Single-family dwelling units, middle housing, as well as multiple-family dwelling units of nine or fewer units	1 per dwelling unit. ^{1,2} 2 spaces are encouraged for dwelling units over 1000 square feet ³	No Limit	Multiple-family dwelling units Min. of 2

NOTES:

- ¹ No additional off-street parking is required for a triplex or quadplex created through the addition to, or conversion of, an existing single-family detached dwelling.
- ² Garages (except for parking structures in the Town Center) do not count towards minimum parking unless all the requirements of Subsection 4.155 (.02) Q. are met.
- ³ No permit for single-family dwelling units, middle housing, or multiple-family dwelling units of nine or fewer units shall be denied based on only providing one parking space per unit.

Response: Table 5 requires that single-family units provide one 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.

Table 5 states that there is no minimum bicycle parking requirement for single-family homes. These criteria are met.

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.

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 [...] 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: The site has been planned and designed to avoid the natural features on the site such as the trees contained within Tracts A and B. As demonstrated within 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 the WDC. These criteria are met.

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

Response: The project site does not contain development proposed on slopes greater than 25 percent. These standards do not apply.

(.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.
 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: Trees will need to be removed to provide area for construction of rights-of-way and homes. Existing tree groves on adjacent properties have been identified for protection and incorporated into the Preliminary Tree Preservation and Removal Plan (Exhibit A). The trees proposed for removal are generally non-native species grown as nursery stock and for landscaping. Additional information is available within the Arborist Memo (Exhibit O).

[...]

(.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, and no earth movement hazards have been identified. See Exhibit H for the Geotechnical Report. These standards do not apply to this application.

(.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: A geotechnical investigation has been completed for the subject property, and no soil hazard areas have been identified. See Exhibit H for the Geotechnical Report. These criteria are met.

(.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.
- (.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 Ridgecrest 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 or open spaces to provide visibility that will deter crime. 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 public streetlights to provide safety and visibility. These criteria 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: This project consists of a single-family residential neighborhood subject to the General Landscaping Standard. Landscaping meeting these standards will be provided at the time of building permit submittal; these criteria will be met at such time.

D. *Low Screen Landscaping Standard.*

[...]

2. *Required materials.* The Low Screen Landscaping Standard requires sufficient low shrubs to form a continuous screen three (3) feet high and 95% opaque, year-round. In addition, one tree is required for every 30 linear feet of landscaped area, or as otherwise required to provide a tree canopy over the landscaped area. Ground cover plants must fully cover the remainder of the landscaped area. A three (3) foot high masonry wall or a berm may be substituted for the shrubs, but the trees and ground cover plants are still required. When applied along street lot lines, the screen or wall is to

be placed along the interior side of the landscaped area. (See Figure 22: Low Screen Landscaping).

[...]

Response: The proposed residential development is adjacent to other planned residential developments. Screening is not required, nor has it been proposed.

(.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).

Response: Landscaping on individual private lots will be reviewed at the time of building permit submittal. The Preliminary Landscape Plan included in Exhibit A illustrates the location and type of landscaping within public rights-of-way and open space tracts. This criterion is met.

[...]

(.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.

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.

Response: The Preliminary Landscape Plan (Exhibit A) demonstrates compliance with these requirements. These criteria are met.

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, as applicable. These criteria are met.

[...]

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

[...]

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- b. Collector streets - 2" minimum caliper.

- c. Local streets or residential private access drives - 1-3/4" minimum caliper.
- d. Accent or median tree -1-3/4" minimum caliper.

Response: The project has frontage on SW Frog Pond Lane, which is classified as a Local street west of Willow Creek Drive. SW Brisband Street and other streets planned as part of the project will be designated as Local streets. As shown on the Preliminary Landscape Plan (Exhibit A), the project complies with the above street tree requirements. These criteria are met.

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.

Response: Street trees have been selected in accordance with Figure 43, Street Tree Plan, and Table 2, Street Tree List of the *Frog Pond West Master Plan*. These criteria are met.

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.

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

(.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 6 of the Preliminary Landscape Plan (Exhibit A), all landscape areas will be watered by a fully automatic underground irrigation system. These criteria 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.
- 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 within the Ridgecrest Preliminary Plans (Exhibit A). Individual lot landscaping will be proposed at the time of building permit submittal. These criteria are met.

(.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 understood.

(.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.

Response: The site is currently in residential and agricultural use, and site plantings consist primarily of grass and clustered trees. The existing grass and some of the trees will be removed for site development, specifically to accommodate the planned street network and desired lot pattern. Tree removal will be mitigated as detailed in the response to Section 4.610.40. These criteria are met.

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 TSP as modified by the *Frog Pond West Master Plan* and as approved by the City Engineer. Final approval will occur with review and issuance of the Public Works construction permit.

The development will construct the remaining width of SW Frog Pond Lane and the associated bicycle/pedestrian facilities. Local streets within the project will be constructed as part of the public improvements of the project and will meet the City's public improvement standards. Please refer to the Preliminary Street Plan (Exhibit A) for the proposed street improvements. This criterion is met.

(.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: The street network has been designed in substantial compliance with the Frog Pond West Street Demonstration Plan. Future connections to adjacent sites are anticipated to the east and south. This criterion is met.

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 the *Frog Pond West Master Plan* and meet the requirements of the TSP and Public Works Standards. This criterion is met.

C. *Rights-of-way.*

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: The site abuts SW Frog Pond Lane, a Local street, to the north. The project will dedicate 9.5 feet of right-of-way to the southern edge of SW Frog Pond Lane right-of-way, which will increase the right-of-way to 42.5 feet and 52 feet with development and dedication of the south side of SW Frog Pond Lane. The tentative subdivision plat shows right-of-way dedication.

A waiver of remonstrance will be issued prior to the recordation of a final plat. The project is not adjacent to arterial streets; therefore, a special setback requirement is not required.

These criteria are met.

- 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.

Response: The street network has been designed per the *Frog Pond West Master Plan* Street Demonstration Plan. Permanent dead-end streets have not been proposed by the Applicant; therefore, this standard does not apply.

- E. *Corner or clear vision area.*
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 corner of each property. These criteria are met.

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- 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. This criterion is met.

- 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.
 1. Arterials - 24 foot paved, with standard sub-base. Asphalt overlays are generally considered unacceptable, but may be considered as an interim improvement based on the recommendations of the City Engineer, regarding adequate structural quality to support an overlay.
 2. Half-streets are generally considered unacceptable. However, where the Development Review Board finds it essential to allow for reasonable development, a half-street may be approved. Whenever a half-street improvement is approved, it shall conform to the requirements in the Public Works Standards:
 3. When considered appropriate in conjunction with other anticipated or scheduled street improvements, the City Engineer may approve street improvements with a single asphalt lift. However, adequate provision must be made for interim storm drainage, pavement transitions at seams and the scheduling of the second lift through the Capital Improvements Plan.

Response: This project is a new subdivision. Project streets are planned to be improved to the required width, including existing partial streets such as SW Brisband Street and SW Frog Pond Lane. SW Woodbury Loop is planned to construct three-quarter-street improvements adjacent to Tax Lot 1101 to allow for future development and connections from the neighboring property. The applicable criteria are met.

- (.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 the proposed development are at least 5 feet wide. Sidewalks are proposed on both sides of all streets where development has been planned and off-site along SW Sherman Drive. No adjustments are requested; therefore, these criteria are met.

(.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: As shown on the Preliminary Street Plan (Exhibit A), the proposed street cross sections comply with the street classifications and cross sections identified in the *Frog Pond West Master Plan*. The SW Frog Pond Lane cross section includes buffered bike lanes; bikes will share the vehicular lane with vehicles on local streets. Therefore, these criteria 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: Please see responses to WDC Section 4.127(.10), above, for more details.

(.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 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: Private access drives providing primary vehicular access to more than four dwelling units are not proposed. Each dwelling unit will gain street access via public streets. This standard does not apply.

(.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: As shown on the Preliminary Street Plan (Exhibit A), project streets are designed to meet local spacing standards. These criteria are met.

(.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: All streets within the proposed project are Local streets. Centerlines are not planned to be offset and are properly aligned.

Per Table 3-2 of the TSP, there are no minimum access spacing standards along Local streets. Access is permitted and proposed to each individual lot fronting a Local street. These criteria are met.

- (.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.

Response: No exceptions or adjustments are requested. This standard does not apply.

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. :
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:

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: No buildings are proposed with this application. Compliance with this section will be reviewed during a subsequent permit submittal; therefore, these standards are not applicable at this time.

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. Architectural features will be determined as part of future submittals; therefore, compliance with this section will be reviewed during a subsequent permit submittal. At this time, this standard does not apply.

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: Two front yard setback modifications are required for Ridgecrest. The modifications are proposed as part of a waiver associated with the Planned Development. The setbacks

follow the front setback pattern along the block as required by this section. This standard does not apply.

[...]

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.

A. The Planning Commission shall conduct a public hearing on the proposed amendment at its earliest practicable meeting after it is proposed and shall, within 40 days after concluding the hearing, provide a report and recommendation to the City Council regarding the proposed amendment. The findings and recommendations of the Commission shall be adopted by resolution and shall be signed by the Chair of the Commission.

B. In recommending approval of a proposed text amendment, the Planning Commission shall, at a minimum, adopt findings relative to the following:

1. That the application was submitted in compliance with the procedures set forth in Section 4.008; and
2. The amendment substantially complies with all applicable goals, policies and objectives set forth in the Comprehensive Plan; and
3. The amendment does not materially conflict with, nor endanger, other provisions of the text of the Code; and
4. If applicable, the amendment is in compliance with Statewide Land Use Planning Goals and related administrative rules; and
5. If applicable, the amendment is necessary to ensure that the City's Land Use and Development Ordinance complies with mandated requirements of State or Federal laws and/or statutes.

(.02) The following procedures shall be followed for zone map amendments.

[...]

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

Response: A Zone Map Amendment is being requested concurrent with a 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: Concurrent with the adoption of the *Frog Pond West Master Plan*, the City added a new zoning district, RN, intended for application to the Master Plan area. The Applicant is requesting ±9.0 acres of unincorporated land be annexed to the City of Wilsonville and the RN zoning district applied to that territory. The applicable goals, policies, and objectives of the Comprehensive Plan text are addressed earlier in the narrative. This criterion is met.

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

Response: Compliance with the applicable implementation measures is addressed earlier within this written narrative. This criterion is met.

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 written narrative, the project will extend roads and sidewalks, water, sewer, and storm drain to serve residents of the project. 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 subject site does not contain SROZ areas, identified natural hazards, or identified geologic hazards. This standard does not apply.

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 Planned Development, Subdivision, and Site Plan Review application. The Applicant plans to develop the property in a timely manner, within two years of the initial approval of the zone change, as feasible. Therefore, this criterion is met.

-
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: This project is a single-family neighborhood, in accordance with the *Frog Pond West Master Plan*. Compliance with the applicable development standards of the RN zoning district is addressed earlier narrative. This criterion is met.

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 construction of the project. The Applicant will extend sewer and water infrastructure and will provide storm drainage facilities to serve the project.

A TIS was prepared by DKS Associates at the direction of the City of Wilsonville (included as Exhibit E). Compliance with the 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. 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.

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 pre-application conference with City staff on April 4, 2024. This criterion is met.

[...]

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- 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 planting, and times such improvements are to be made or completed.
 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.

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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 all of the information required in subsection 4.210(.01)B. These criteria are met.

[...]

- 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: The proposed land division phases are shown on the submitted Preliminary Dimensioned Subdivision Plan (Exhibit A). This criterion is met.

- 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. This standard does not apply.

Section 4.232 Expedited land divisions and middle housing land divisions.

- (.01) Applicants for subdivisions or land partitions may request that their applications be processed as expedited land divisions, pursuant to ORS 197. In order to be processed as an expedited land division, each such request must be filed in writing at the time that the application is filed.
- (.02) Additional to the relevant standards and criteria applying to partitions and subdivisions, applications for expedited land divisions shall only be approved where the subject property is in a residential zone and the application includes no requests for waivers or variances from the standards applying to land divisions in the zone.

Response: These standards related to expedited land divisions are understood but are not applicable due to the need for other concurrent land use decisions.

- (.03) An applicant for a land division may process the land division as a Middle Housing land division if all the following are met:
 - A. The proposed land division is occupied by Middle Housing or an Accessory Dwelling Unit and the associated primary dwelling;

Response: Each Middle Housing Land Division involves a parent lot divided into two child lots. This criterion is met.

- B. Separate utilities are provided for each dwelling unit within the land division;

Response: The Ridgecrest project envisions 28 parent lots and 24 child lots single-family residences for a total of 54 detached dwelling units. Each dwelling unit and lot will be provided with separate utilities per the Preliminary Composite Utility Plans contained within Exhibit A. This criterion is met.

- C. Easements are provided for each dwelling unit for:
 1. Locating, accessing, replacing and servicing all utilities;
 2. Pedestrian access from each dwelling unit to a street or private drive;
 3. Any common areas or shared building elements;
 4. Any dedicated driveways or parking; and
 5. Any dedicated common area.

Response: Each dwelling unit and lot has been planned with any necessary easements to provide for the listed residential functions. These criteria are met.

-
- D. Evidence demonstrates how buildings or structures on a resulting middle housing land division unit will comply with applicable building codes provisions relating to new property lines and, notwithstanding the creation of new middle housing land division units, how structures or buildings located on the newly created middle housing land division units will comply with the Oregon residential specialty code.

Response: The proposed project will comply with the applicable building code provisions related to new dwelling units and property lines. This criterion is met.

- E. Notes are added to the final plat indicating the following:
1. Further division of the resulting middle housing land division units is prohibited;
 2. The approval of the middle housing land division is pursuant to ORS 92.010 to 92.192, as applicable.

Response: The final plat will contain language indicating that further division of the Middle Housing units is prohibited and that the Middle Housing Land Division complies with the applicable provisions of ORS 92.010 to 92.192. Therefore, these criteria are met.

- F. The Middle Housing Land Division is not used to create separate units of land for a two, three, or four-Unit Cluster Housing development on either of the following:

Response: Middle Housing Land Divisions are planned involving two-unit Cluster Housing units as part of this application. Section 4.001 provides two definitions for Cluster Housing, one of which specifically applies within Frog Pond West. The proposed units meet the definition of Cluster Housing as “detached dwelling units on a single lot meeting one of the sub-definitions A.-D. below. A type of middle housing.” This unit type is further defined as “B. Two-Unit Cluster Housing: Cluster housing containing two units where neither unit is an Accessory Dwelling Unit.” The planned homes will be arranged in clusters of two detached units on a single parent lot and are utilizing a Middle Housing Land Division to create two child lots, one for each home.

For clarification, the Cluster Housing units are not proposed per the Frog Pond West Master Plan definition below:

“A type of detached dwelling unit development arranged in groups, each unit on its own lot, with a courtyard(s) containing shared green space and a public access sidewalk easement. Cluster Housing, as used in the Frog Pond West Master Plan, is not considered a type of middle housing.”

As such, these standards apply.

1. On land otherwise divisible through a partition or subdivision to create lots for detached single-family homes; or

Response: The proposed parent lots are not further divisible by a partition or subdivision as they are not larger than double the minimum lot size. Therefore, any partition or subdivision would not create a lot larger than the minimum lot size for the zoning district. This situation is not present and the Middle Housing Land Division process is permitted.

-
2. On lots in subdivisions or partitions recorded in the prior 24 month period unless the average size of the resulting land division units, determined by adding the areas of land division units and dividing by the number of land division units, is 60 percent or less of the minimum lot size in the zone.

Response: The subdivision is occurring alongside the Middle Housing Land Division process. A Planned Development waiver has been requested to permit select parent lots (Lots 4-8 and 16-23) to allow middle housing child lots which are greater than 60 percent of the minimum lot size. However, lots that are planned to provide middle housing units will provide larger rear yard setbacks that will ensure that the homes fit the originally permitted smaller building envelope, as originally intended by the middle housing code because of the required location of streets and adjacent approved subdivision layouts, lots that meet these maximum lot size requirements are not feasible.

(.04) Provisions of Middle Housing Land Divisions:

1. A Middle Housing Land Division creates separate units of land for each dwelling unit in a Middle Housing development that could otherwise be built on the lot without a land division or to create a separate unit of land for an Accessory Dwelling Unit.

Response: The proposed Middle Housing Land Division creates separate units of land for each dwelling unit. In this case, a two-unit cluster home on a legal parent lot is divided into two separate dwelling units on two separate units of land. This criterion is met.

2. Following a Middle Housing Land Division, the units of land resulting from a Middle Housing Land Division shall collectively be considered a single lot, along with the parent lot, for all but platting and property transfer purposes under City code and state rules and statutes, including, but not limited to, the following purposes:

- A. Lot standards such as size, setback, lot coverage, and lot width and depth;

Response: With the proposed adjustments, each proposed parent lot will meet the applicable standards established for the Ridgecrest subdivision, as explained within the written narrative responses related to Section 4.127. This criterion is met.

- B. Definition of unit types (e.g., a two-Unit Cluster Housing development where each unit is on its own land division unit through a Middle Housing Land Division would still be considered two-Unit Cluster Housing rather than single-family units; a duplex would still be considered a duplex rather than townhouses);

Response: The proposed two-unit clusters will still be considered two-unit clusters following Middle Housing Land Division. This criterion is met.

- C. Allowance of number of Middle Housing units and Accessory Dwelling Units;

Response: The proposed number of dwelling units is acceptable by the standards of the WDC and *Frog Pond West Master Plan*. This criterion is met.

-
- D. Compliance with Middle Housing rules and statutes in ORS 197 and OAR 660-046.

Response: The proposed Middle Housing Land Divisions comply with the applicable rules and statutes of ORS 197 and OAR 660-046. This criterion is met.

- 3. Middle Housing Land Division Units, the units of land resulting from a Middle Housing Division, shall:
 - A. Have exactly one dwelling unit (except for tracts for common space), and
 - B. Not be further divisible.

Response: Following the proposed Middle Housing Land Divisions, each child lot will contain exactly one dwelling unit and will be noted as ineligible for further division on the final plat. These criteria are met.

(.05) Procedures and Requirements for Expedited Land Divisions and Middle Housing Land Divisions.

- A. Expedited Land Divisions and Middle Housing Land Divisions for new middle housing, shall be subject to the same procedures and requirements as conventional land divisions, with the following exceptions:
 - 1. The Planning Director shall have the authority to approve, conditionally approve, or deny tentative plat applications through the Administrative Review procedures of Section 4.035. The Director shall not refer an application for an expedited land division to the Development Review Board for hearing and the Board shall not have the authority to call up the decision of the Director for review.
 - 2. The Director shall render a decision on an expedited land division within 30 days of a complete filing, unless a time extension has been requested by the applicant.
 - 3. Appeals of the decisions of the Director on expedited land divisions shall be heard by a referee who has been retained by the City for the purpose of considering such appeals. Decisions of the referee shall be final and the City Council shall not have the authority to call up such decisions for review.
 - 4. The referee shall render a decision on an expedited land division or middle housing land division appeal within 63 days of a complete filing, unless a time extension has been requested by the applicant.
- B. Middle Housing Land Division occupied by existing middle housing or an Accessory Dwelling Unit and the associated primary dwelling shall be subject to the same procedures and requirements as partitions.
- C. For either process described in A. and B., an applicant may submit multiple tentative middle housing land divisions within the same recorded subdivision or partition plat as a single application.
- D. Notwithstanding Subsections A. and B. above, an applicant may elect to have one or more tentative middle housing land divisions reviewed concurrently with the tentative plat of a subdivision subject

to review by the Development Review Board. Such tentative middle housing land divisions shall be shown on separate sheet(s) than the tentative subdivision plat and be clearly identified as being created from one or more lots created by the subdivision.

Response: These standards are understood. The proposed Middle Housing Land Divisions meet the applicable requirements and are submitted concurrently with the subdivision tentative plat. Middle Housing Land Divisions are shown on the Preliminary Middle Housing Land Division Plat of the Preliminary Plans (Exhibit A), separate of the tentative subdivision plat. These criteria, as applicable, are met.

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.

Response: As confirmed by the TIS, the proposed street plan conforms to the TSP and the *Frog Pond West Master Plan*. Per Figure 17 of the *Frog Pond West Master Plan*, the site is bound to the north and south by framework streets (SW Frog Pond Lane and SW Brisband Street). The plans comply with the applicable master plans for the area.

(.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 and is generally consistent with the *Frog Pond West Master Plan*. Therefore, this criterion is 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 tracts. This standard does not apply.

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 R-7 and R-10 designations. Conformity with street plans and other requirements is addressed within this written narrative. This criterion is met.

(.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. This criterion is met.

(.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.

Response: The Applicant is not requesting street easements; therefore, this standard does not apply.

(.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. This criterion is met.

(.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. If required, reserve strips will be provided in order to prevent access to adjacent lands. At this time, this standard does not apply to the application.

(.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.

Response: Future expansion of streets is dependent on the development of adjacent properties. SW Alder Street and SW Woodbury Loop are designed to connect to a planned street network. A portion of SW Woodbury Loop will be completed as part of future

development. The Applicant will comply with any requirements related to signage 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: The project will dedicate 9.5 feet of right-of-way to SW Frog Pond Lane as well as 15 feet for the expansion of SW Brisband Street. The resulting streets are of adequate width and are anticipated to meet City standards. This criterion is met.

(.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: Streets adjacent to the project area have established street names that are continued as part of these proposed streets. This criterion 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 development established by the *Frog Pond West Master Plan*, accommodate natural resources designated for preservation on adjacent sites, and to comply with the standards of Section 4.177. These standards are addressed above. The site is located within the RN zoning district and is also subject to the block, access, and connectivity standards of Section 4.127(.10). Those standards are addressed above. The placement of streets within the Ridgcrest development and the blocks formed allow for the creation of lots, which meet the standards of the pertinent subdistricts. These criteria are met.

(.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.

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- 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: Public utilities are placed within public rights-of-way or within public utility easements (PUE) adjacent to the public streets. The tentative plat shows a public access and utility easement (PAUE) over the private alleys and tracts. Public and private utilities are expected to be constructed within public rights-of-way or within the provided utility easements. Qualifying existing overhead utilities are planned to be installed underground as feasible. Water courses are not located on the subject properties. Therefore, the applicable criteria are met.

- (.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.
 - 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: Due to existing tree groves slated for preservation on the Frog Pond Cottage Park Place site and the layout of Frog Pond Estates, currently undergoing development, the street layout originally envisioned (Figure 13 of the *Frog Pond West Master Plan*) must be slightly modified. The layout change is compatible with the right-of-way network created by previously approved subdivisions.

- (.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: Proposed tree planting is shown on the Preliminary Landscape Plan (Exhibit A). Proposed street trees are located within public right-of-way planter strips and additional easements are not required.

- (.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 site is served by public sewer, and no on-site sewage disposal is proposed. The property is zoned for residential use and is subject to an application for a Planned Development. The site is designated RN and is subject to the standards of that zone upon annexation. The proposed lots meet the dimensional standards of the RN zone and the R-7 and R-10 designations as well as the general expectations of the *Frog Pond West Master Plan*. Please refer to response under WDC Section 4.127(.08). These criteria 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.

Response: The minimum lot width in the RN zoning district, R-7 designation is 35 feet. Within the R-10 designation, the minimum lot width is 40 feet. As shown on the Preliminary Dimensioned Subdivision Plan (Exhibit A), the parent lots meet the dimensional standards. Please refer to the response to Section 4.127, addressing the standards of the RN zoning district, previously discussed within the narrative.

These criteria are met.

(.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: No through lots are proposed. This standard is not applicable.

(.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.

Response: Planned side lot lines run at right angles to the street or the tract upon which they face. This criterion 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: No future development tracts are proposed in this application; therefore, this standard does not apply.

(.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: No special building setbacks are proposed; therefore, this standard does not apply.

(.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 are no maximum setbacks or build-to lines required or proposed; therefore, this standard does not apply.

(.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 property to be reserved for public acquisition. The development will dedicate right-of-way for the public street network. This criterion is met.

(.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 Street Plan (Exhibit A), lots on street intersections are planned to have corner radius of at least 10 feet. This criterion 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. This criterion is met.

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 abut 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 will be graded, constructed, and surfaced 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 criteria 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 an existing public sanitary sewer main adjacent to the site at the intersection of SW Brisband Street and SW Painter Drive. The proposed sanitary sewer serves each lot and each future middle housing lot in accordance with standards adopted by the City; therefore, this criterion is met.

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

Response: Per the Preliminary Stormwater Report (Exhibit G) and as demonstrated within the Preliminary Plans (Exhibit A), storm drainage systems are being provided as outlined in the City's Public Works Standards. This criterion is met.

- (.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 in the narrative. This criterion is met.

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

Response: Proposed streetlight locations are shown on the Preliminary Composite Utility Plan within the Preliminary Plans (Exhibit A). Streetlights will be installed per the *Frog Pond West Master Plan* and regulations adopted by the City. This criterion will be met during construction.

- (.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. This criterion will be met upon sign installation.

- (.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. This criterion will be met.

(.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 more information. This criterion will be met upon the installation of water mains and fire hydrants.

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.

(.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: As demonstrated within the Preliminary Plans (Exhibit A), new utilities will be installed underground in accordance with City and other agency requirements. New interior utility easements are not proposed. These criteria are met.

SITE DESIGN REVIEW

Section 4.421 Criteria and application of design standards

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- (.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: As the site was previously developed as a rural residence and farmed for personal use for many years; little, if any, of the site exists in a natural state. Tree and soil removal is minimized to the degree practicable; however, the trees to be removed are by and large not examples of particularly significant natural specimens. Additionally, some trees on the site have been damaged by adjacent development and/or have been infested by invasive insect species and must be removed. The proposed layout of the subdivision accommodates the general grading and appearance of the site with consideration to neighboring developed areas. Please see the Arborist Memo in Exhibit O for further information. This criterion is met.

- 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: Natural features, vegetation, habitat, or steep slopes are not located on the project site. Where needed, tree protection fencing has been planned in order to protect significant tree groves on adjacent properties; however, there are no such resources located on the project site. Additional information is available within the Arborist Memo (Exhibit O) and the Wetland Delineation Report (Exhibit F). This requirement is met.

- 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 the development are subject to the requirements of the RN zoning district, 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 Exhibit 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, on-lot facilities, and the stormwater facilities within Tracts B, D, E, and I. This criterion is met.

- 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 a sanitary sewer line. Stormwater management is provided by a storm drain system connecting to each on-site stormwater facility. This criterion is met.

- (.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. This standard does not apply.

[..]

- (.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 application includes a Zone Change and Planned Development, among other applications, and includes responses to the site development standards of those sections. Per City staff, the project elements subject to Site Design Review and the standards of this chapter are tracts and their landscaping as well as landscaping within the public right-of-way. Conformance with the applicable standards is shown; therefore, this criterion is met.

- (.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: This single-family community has been designed in accordance with the *Frog Pond West Master Plan*, which is part of and consistent with the Comprehensive Plan. The site plan

is consistent with allowable number of homes and other requirements established by the *Frog Pond West Master Plan* and the implementing RN zoning district. No additional conditions are needed to ensure that the project remains consistent with the City's adopted policies. This criterion is met.

- (.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 an attached single-family community. Colors and materials have not been 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. As applicable, these criteria are met.

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. This criterion is met.

- 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 in 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; therefore, this criterion is met.

- 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: Example building elevations and floor plans are anticipated to be provided. This criterion is met.

- 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. These criteria are met.

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 included in Exhibit A, the development will remove trees and a Tree Removal Permit is required.

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.

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- (.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 Tree Removal Plan for Design Review Board review and approval. The necessary Tree Removal Permit application forms, information, and fees have been submitted for review. These criteria are met.

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: It is understood that the application is for a Type C Tree Removal Plan and is subject to review and approval by the Design Review Board.

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:

[...]

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.

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: Tree removal in conjunction with site layout is based on and limited by factors such as allowable residential densities, lot dimensional standards, and circulation network established in the *Frog Pond West Master Plan* and past subdivision approvals. Removed trees are planned for mitigation at a 1:1 ratio and will be replaced as street trees and within open space areas, not counting landscape trees within residential lots. Therefore, these criteria are 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. This criterion 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: This project is a single-family residential neighborhood. The homes will be designed and constructed, as much as possible, to blend into the natural areas on the site. This criterion 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 WDC. The proposed activity will comply with this Code and any other applicable statutes and ordinances. This criterion 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, 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. Those provisions are addressed in the responses to WDC Section 4.620 later in this narrative. Therefore, this criterion 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 (Exhibit A) and the associated Preliminary Tree Preservation and Removal Table included in the Preliminary Plans (Exhibit A), there are 210 existing trees on-site, 11 line trees, and 43 off-site trees. The on-site trees and seven line trees must be removed to accommodate the construction of necessary site improvements, including utilities, stormwater pond, public streets, and single-family homes. 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* and past approvals for adjacent lands. The construction of this project is anticipated by the *Frog Pond West Master Plan*. The trees will be replaced on-site with a variety of native trees that will be planted in the open space tracts. Additionally, street trees in the right-of-way planter strips will serve to soften the urban environment, contribute to stormwater management, and provide shade and protection for pedestrians. These planting locations are demonstrated within the Preliminary Landscape Plan (Exhibit A). These criteria are met.

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.

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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 Preservation and Removal Plan (Exhibit A). For further information, please refer to the Arborist Memo attached as Exhibit O. Therefore, this criterion 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 plat (Exhibit A). 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 criterion 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. Existing overhead utilities will be installed underground as necessary and feasible to meet City requirements. Trees removed from the site will be mitigated and/or replaced per the provisions of 4.620.00. This criterion 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 onsite trees is necessary for construction associated with this site development application. A Preliminary Landscape Plan and an application for a Tree Removal Permit are included in this application. The Preliminary Landscape Plan (Exhibit A) indicates mitigation trees will be planted in the open space tracts, in addition to street trees in the public rights-of-way. These criteria are met.

(.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.
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 and Preliminary Middle Housing Land Division Plat (Exhibit A) for the location of proposed improvements and setbacks. Since tree replacement requirement is proposed to be fully satisfied on-site, payment into the tree replacement fund is not proposed; therefore, the cost estimate requirement is not applicable. Should tree replacement on-site prove infeasible, a cost estimate will be provided for payment into the tree replacement fund. The other listed applicable criteria are met.

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.
- (.02) *Basis for Determining Replacement.* The permit grantee shall replace removed trees on a basis of one (1) tree replanted for each tree removed. All replacement trees must measure two inches (2") or more in diameter. Alternatively, the Planning Director or Development Review Board may require the permit grantee to replace removed trees on a per caliper inch basis, based on a finding that the large size of the trees being removed justifies an increase in the replacement trees required. Except, however, that the Planning Director or Development Review Board may allow the use of replacement Oregon white oaks and other uniquely valuable trees with a smaller diameter.

Response: The Preliminary Landscape Plan (Exhibit A) includes replacement trees at a 1:1 ratio. Project construction requires removal of 217 trees. Replacement trees proposed to be planted in the planned open space tracts, in addition to street trees. All replacement trees are planned to measure a minimum of 2 inches in diameter. This criterion is met.

- (.03) *Replacement Tree Requirements.* A mitigation or replacement tree plan shall be reviewed by the City prior to planting and according to the standards of this subsection.
 - A. Replacement trees shall have shade potential or other characteristics comparable to the removed trees, shall be appropriately chosen for the site from an approved tree species list supplied by the City, and shall be state Department of Agriculture Nursery Grade No. 1 or better.
 - B. Replacement trees must be staked, fertilized and mulched, and shall be guaranteed by the permit grantee or the grantee’s successors-in-interest for two (2) years after the planting date.
 - C. A “guaranteed” tree that dies or becomes diseased during that time shall be replaced.
 - D. Diversity of tree species shall be encouraged where trees will be replaced, and diversity of species shall also be maintained where essential to preserving a wooded area or habitat.

Response: The replacement trees have been selected by a professional landscape architect to meet the above requirements. Mitigation trees have been chosen from the approved tree list to provide comparable shade potential and other characteristics where the trees will be planted. These criteria are met.

- (.04) All trees to be planted shall consist of nursery stock that meets requirements of the American Association of Nurserymen (AAN) American Standards for Nursery Stock (ANSI Z60.1) for top grade.
- (.05) *Replacement Tree Location.*
 - A. *City Review Required.* The City shall review tree relocation or replacement plans in order to provide optimum enhancement, preservation and protection of wooded areas. To the extent feasible and desirable, trees shall be relocated or replaced on-site and within the same general area as trees removed.
 - B. *Relocation or Replacement Off-Site.* When it is not feasible or desirable to relocate or replace trees on-site, relocation or replacement may be made at another location approved by the City.

Response: Replacement tree locations are shown on the Preliminary Landscape Plan (Exhibit A). Therefore, these criteria are met.

- (.06) *City Tree Fund.* Where it is not feasible to relocate or replace trees on site or at another approved location in the City, the Tree Removal Permit grantee shall pay into the City Tree Fund, which fund is hereby created, an amount of money approximately the value as defined by this subchapter, of the replacement trees that would otherwise be required by this subchapter. The City shall use the City Tree Fund for the purpose of producing, maintaining and preserving wooded areas and heritage trees, and for planting trees within the City.

-
- A. The City Tree Fund shall be used to offer trees at low cost on a first-come, first-serve basis to any Type A Permit grantee who requests a tree and registers with the City Tree Fund.
 - B. In addition, and as funds allow, the City Tree Fund shall provide educational materials to assist with tree planting, mitigation, and relocation.

Response: The Applicant intends to replace the trees on-site, where feasible. Where trees cannot be replaced on-site or at an approved off-site location, a contribution to the City Tree Fund will be provided.

- (.07) *Exception.* Tree replacement may not be required for applicants in circumstances where the Director determines that there is good cause to not so require. Good cause shall be based on a consideration of preservation of natural resources, including preservation of mature trees and diversity of ages of trees. Other criteria shall include consideration of terrain, difficulty of replacement and impact on adjacent property.

Response: The Applicant is not requesting an exception to the tree replacement requirement. As such, this standard does not apply to the application.

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:

[...]

- 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) and Arborist Memo (Exhibit O) provides direction regarding the protection of trees on the site. The applicable standards will be included on the construction documents as well. These criteria are met.

ANNEXATIONS AND URBAN GROWTH BOUNDARY AMENDMENTS

Section 4.700 Procedures [...] for annexation [...]

(.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.

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. This criterion is met.

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 Statewide Planning Goals, City of Wilsonville Comprehensive Plan goals, *Frog Pond West Master Plan*, and applicable sections of the WDC. This criterion is met.

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 Consolidated Land Use Application.

Exhibit C: Title Report

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201



OREGON TITLE
Insurance Company

OREGON TITLE INS. CO. 961479C

After Recording, Return to:
Mr. & Mrs. O'Hogan
7400 S.W. Frog Pond Lane
Wilsonville, OR 97070

Until a change is requested, tax statements
shall be sent to the following address:
No change with this document

STATUTORY BARGAIN AND SALE DEED
(Individual)

(Above Space Reserved for Recorder's Use)

Mary Ellen Dierks and Ernest F. Hawks

conveys to
Patrick James O'Hogan and Sharon Lee O'Hogan, husband and wife

the following described real property in the State of Oregon and County of Clackamas

(Continued)

THIS DEED IS GIVEN IN FULFILLMENT OF THAT CERTAIN CONTRACT DATED May 29, 1971 AND
RECORDED June 2, 1971 AS RECORDER'S FEE # 71-12117.

Tax Account Number(s): 805819

The true consideration for this conveyance is \$34,000.00

THIS INSTRUMENT WILL NOT ALLOW USE OF THE PROPERTY DESCRIBED IN THIS INSTRUMENT IN VIOLA-
TION OF APPLICABLE LAND USE LAWS AND REGULATIONS. BEFORE SIGNING OR ACCEPTING THIS INSTRU-
MENT, THE PERSON ACQUIRING FEE TITLE TO THE PROPERTY SHOULD CHECK WITH THE APPROPRIATE CITY
OR COUNTY PLANNING DEPARTMENT TO VERIFY APPROVED USES AND TO DETERMINE ANY LIMITS ON LAW-
SUITS AGAINST FARMING OR FOREST PRACTICES AS DEFINED IN ORS 30.930.

DATED this 21st day of July, 1999.

Mary Ellen Dierks
Mary Ellen Dierks

Ernest F. Hawks
Ernest F. Hawks

99-082995

STATE OF California, COUNTY OF Santa Clara) ss.
The foregoing instrument was acknowledged before me this 21 day of July, 1999, by Mary
Ellen Dierks and Ernest F. Hawks.

Chetna J. Patel
Notary Public for California
My Commission Expires: Oct 30 2000



Order No.: 961479c

(Continued)

That portion of the West half of the Southeast quarter of Section 12, Township 3 South, Range 1 West of the Willamette Meridian, in the County of Clackamas and State of Oregon, described as follows:

Beginning at a point 858.00 feet North and 2569.00 feet West of the Southeast corner of Section 12; thence North parallel with the Willamette Meridian, 858.00 feet; thence East parallel with the South line of said Section 12, a distance of 507.70 feet; thence South parallel with the Willamette Meridian, 858.00 feet; thence West to the place of beginning.

EXCEPT a small triangular tract in the Northwest corner conveyed to John M. Brown, by Deed, recorded January 25, 1928, in Book 191, at Page 426, Deed Records aforesaid, described as follows:

A tract of land in Section 12, Township 3 South, Range 1 West of the Willamette Meridian, in the County of Clackamas and State of Oregon, more fully described as follows, to-wit:

Beginning at a point on the West boundary of the land of the grantors herein, and of record in Book 165, Page 508, of the Deed Records of said county, that bears 26 feet South of the Northwest corner of said land, running thence North 26 feet tracing the said West boundary to the Northwest corner of said land; thence East 26 feet tracing the North boundary of said land to a point; thence South 45° West, 36.7 feet to the place of beginning.

EXCEPT THEREFROM that portion deeded to Patrick J. O'Hogan and Sharon L. O'Hogan, by Deed, recorded April 14, 1972, as Recorder's Fee No. 72-10142, described as follows:

A tract in the West half of the Southeast quarter of Section 12, Township 3 South, Range 1 West of the Willamette Meridian, in the County of Clackamas and State of Oregon, described as follows:

Beginning at a point 858 feet North and 2569 feet West of the Southeast corner of said section; thence North parallel with the Willamette Meridian, 832 feet to the South corner of the triangular tract conveyed to John M. Brown, by Deed, recorded in Book 191, at Page 426; thence North 45° East, 36.7 feet to the East corner of said Brown Tract; thence East parallel with the South line of said Section 12, a distance of 331.70 feet to a point 150 feet West of the Northeast corner of the tract described in Contract to Patrick J. O'Hogan, recorded under Fee No. 71-12117 and being the true point of beginning hereof; thence South parallel with the Willamette Meridian 290.4 feet; thence East parallel with the South line of said Section 12, for a distance of 150 feet to the East line of said O'Hogan Tract; thence North parallel with the Willamette Meridian, 290.4 feet to the Northeast corner of said O'Hogan Tract; thence West parallel with the South line of said Section 12, a distance of 150 feet to the true point of beginning.



ACKNOWLEDGMENT

State of California
County of Santa Barbara } ss.
on July 29, 1999 before me, Michelle A. Lawrence (here Insert name)
Notary Public, personally appeared Ernest F. Hawks

personally known to me (or proved to me on the basis of satisfactory evidence) to be the person(s) whose name(s) is/are subscribed to the within instrument and acknowledged to me all that he/she/they executed the same in his/her/their authorized capacity(ies), and that by his/her/their signature(s) on the instrument the person(s), or the entity upon behalf of which the person(s) acted, executed the instrument.

WITNESS my hand and official seal.



Signature Michelle A. Lawrence

(affix seal)

ATTENTION NOTARY: Although the information requested below is OPTIONAL, it could prevent fraudulent attachment of this certificate to another document.

THIS CERTIFICATE MUST BE ATTACHED TO THE DOCUMENT DESCRIBED AT RIGHT:

Title or Type of Document _____
Number of Pages _____ Date of Document _____
Signer(s) Other Than Named Above _____

CLT
Lawyers Title Company
Subsidiary of
Lawyers Title Insurance Corporation

OFFICES IN:

LOS ANGELES COUNTY 800 E. Colorado Blvd. Pasadena, CA 91101 (818) 304-2700	ORANGE COUNTY 18551 Von Karman Ave. Ste. 100/200 Irvine, CA 92612 (714) 223-5575	INLAND EMPIRE 1845 Business Center Dr Suite 200 San Bernardino CA 92408 (800) 676-2582	SAN DIEGO COUNTY 4542 Ruffner St. San Diego, CA 92111 (619) 278-4171	SANTA BARBARA COUNTY 200 E. Carrizo St. Santa Barbara, CA 93101 (805) 965-7091	VENTURA COUNTY 751 Daly Dr., Suite 100, Camarillo, CA 93010 (818) 889-6631 (805) 484-2701
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STATE OF OREGON 99-082995
CLACKAMAS COUNTY
Received and placed in the public
records of Clackamas County
RECEIPT# AND FEE: 88823 \$45.00
DATE AND TIME: 08/20/99 03:01 PM
JOHN KAUFFMAN, COUNTY CLERK

OREGON TITLE INS. CO. 9014790

RETURN TO
PACIFIC NORTHWEST FEDERAL CREDIT
UNION
12106 NORTHEAST MARX STREET
PORTLAND, OREGON 97220

Loan No. 4179390

[Space Above This Line For Recording Data]

DEED OF TRUST

THIS DEED OF TRUST ("Security Instrument") is made on AUGUST 13, 1999
The grantor is PATRICK O'HOGAN AND SHARON O'HOGAN, HUSBAND AND WIFE

OREGON TITLE INSURANCE COMPANY ("Borrower"). The trustee is
PACIFIC NORTHWEST FEDERAL CREDIT UNION, AN OREGON CREDIT UNION ("Trustee"). The beneficiary is
which is organized and existing under the laws of OREGON and whose address is
12106 NORTHEAST MARX STREET, PORTLAND, OREGON 97220

ONE HUNDRED TEN THOUSAND AND 00/100***** ("Lender"). Borrower owes Lender the principal sum of
Dollars (U.S. \$ 110,000.00). This debt is evidenced by Borrower's note dated
the same date as this Security Instrument ("Note"), which provides for monthly payments, with the full debt, if not paid
earlier, due and payable on SEPTEMBER 1, 2029. This Security Instrument secures
to Lender: (a) the repayment of the debt evidenced by the Note, with interest, and all renewals, extensions and
modifications of the Note; (b) the payment of all other sums, with interest, advanced under paragraph 7 to protect the
security of this Security Instrument; and (c) the performance of Borrower's covenants and agreements under this
Security Instrument and the Note. For this purpose, Borrower irrevocably grants and conveys to Trustee, in trust, with
power of sale, the following described property located in CLACKAMAS County, Oregon:
LEGAL DESCRIPTION ATTACHED HERETO AND MADE A PART HEREOF AS EXHIBIT
"A"

A.P.N. : 00805819

which has the address of 7400 SW FROG POND LANE, WILSONVILLE [Street] [City]
Oregon 97070 ("Property Address"); [Zip Code]

89-082996

ORI.DOT



EXHIBIT "A"
Legal Description

That portion of the West half of the Southeast quarter of Section 12, Township 3 South, Range 1 West of the Willamette Meridian, in the County of Clackamas and State of Oregon, described as follows:

Beginning at a point 858.00 feet North and 2569.00 feet West of the Southeast corner of Section 12; thence North parallel with the Willamette Meridian, 858.00 feet; thence East parallel with the South line of said Section 12, a distance of 507.70 feet; thence South parallel with the Willamette Meridian, 858.00 feet; thence West to the place of beginning.

EXCEPT a small triangular tract in the Northwest corner conveyed to John M. Brown, by Deed, recorded January 25, 1928, in Book 191, at Page 426, Deed Records aforesaid, described as follows:

A tract of land in Section 12, Township 3 South, Range 1 West of the Willamette Meridian, in the County of Clackamas and State of Oregon, more fully described as follows, to-wit:

Beginning at a point on the West boundary of the land of the grantors herein, and of record in Book 165, Page 508, of the Deed Records of said county, that bears 26 feet South of the Northwest corner of said land, running thence North 26 feet tracing the said West boundary to the Northwest corner of said land; thence East 26 feet tracing the North boundary of said land to a point; thence South 45° West, 36.7 feet to the place of beginning.

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TOGETHER WITH all the improvements now or hereafter erected on the property, and all easements, appurtenances, and fixtures now or hereafter a part of the property. All replacements and additions shall also be covered by this Security Instrument. All of the foregoing is referred to in this Security Instrument as the "Property."

BORROWER COVENANTS that Borrower is lawfully seized of the estate hereby conveyed and has the right to grant and convey the Property and that the Property is unencumbered, except for encumbrances of record. Borrower warrants and will defend generally the title to the Property against all claims and demands, subject to any encumbrances of record.

THIS SECURITY INSTRUMENT combines uniform covenants for national use and non-uniform covenants with limited variations by jurisdiction to constitute a uniform security instrument covering real property.

UNIFORM COVENANTS. Borrower and Lender covenant and agree as follows:

1. **Payment of Principal and Interest; Prepayment and Late Charges.** Borrower shall promptly pay when due the principal of and interest on the debt evidenced by the Note and any prepayment and late charges due under the Note.

2. **Funds for Taxes and Insurance.** Subject to applicable law or to a written waiver by Lender, Borrower shall pay to Lender on the day monthly payments are due under the Note, until the Note is paid in full, a sum ("Funds") for: (a) yearly taxes and assessments which may attain priority over this Security Instrument as a lien on the Property; (b) yearly leasehold payments or ground rents on the Property, if any; (c) yearly hazard or property insurance premiums; (d) yearly flood insurance premiums, if any; (e) yearly mortgage insurance premiums, if any; and (f) any sums payable by Borrower to Lender, in accordance with the provisions of paragraph 8, in lieu of the payment of mortgage insurance premiums. These items are called "Escrow Items." Lender may, at any time, collect and hold Funds in an amount not to exceed the maximum amount a lender for a federally related mortgage loan may require for Borrower's escrow account under the federal Real Estate Settlement Procedures Act of 1974 as amended from time to time, 12 U.S.C. § 2601 et seq. ("RESPA"), unless another law that applies to the Funds sets a lesser amount. If so, Lender may, at any time, collect and hold Funds in an amount not to exceed the lesser amount. Lender may estimate the amount of Funds due on the basis of current data and reasonable estimates of expenditures of future Escrow Items or otherwise in accordance with applicable law.

The Funds shall be held in an institution whose deposits are insured by a federal agency, instrumentality, or entity (including Lender, if Lender is such an institution) or in any Federal Home Loan Bank. Lender shall apply the Funds to pay the Escrow Items. Lender may not charge Borrower for holding and applying the Funds, annually analyzing the escrow account, or verifying the Escrow Items, unless Lender pays Borrower interest on the Funds and applicable law permits Lender to make such a charge. However, Lender may require Borrower to pay a one-time charge for an independent real estate tax reporting service used by Lender in connection with this loan, unless applicable law provides otherwise. Unless an agreement is made or applicable law requires interest to be paid, Lender shall not be required to pay Borrower any interest or earnings on the Funds. Borrower and Lender may agree in writing, however, that interest shall be paid on the Funds. Lender shall give to Borrower, without charge, an annual accounting of the Funds, showing credits and debits to the Funds and the purpose for which each debit to the Funds was made. The Funds are pledged as additional security for all sums secured by this Security Instrument.

If the Funds held by Lender exceed the amounts permitted to be held by applicable law, Lender shall account to Borrower for the excess Funds in accordance with the requirements of applicable law. If the amount of the Funds held by Lender at any time is not sufficient to pay the Escrow Items when due, Lender may so notify Borrower in writing, and, in such case Borrower shall pay to Lender the amount necessary to make up the deficiency. Borrower shall make up the deficiency in no more than twelve monthly payments, at Lender's sole discretion.

Upon payment in full of all sums secured by this Security Instrument, Lender shall promptly refund to Borrower any Funds held by Lender. If, under paragraph 21, Lender shall acquire or sell the Property, Lender, prior to the acquisition or sale of the Property, shall apply any Funds held by Lender at the time of acquisition or sale as a credit against the sums secured by this Security Instrument.

3. **Application of Payments.** Unless applicable law provides otherwise, all payments received by Lender under paragraphs 1 and 2 shall be applied: first, to any prepayment charges due under the Note; second, to amounts payable under paragraph 2; third, to interest due; fourth, to principal due; and last, to any late charges due under the Note.

4. **Charges; Liens.** Borrower shall pay all taxes, assessments, charges, fines and impositions attributable to the Property which may attain priority over this Security Instrument, and leasehold payments or ground rents, if any. Borrower shall pay these obligations in the manner provided in paragraph 2, or if not paid in that manner, Borrower shall pay them on time directly to the person owed payment. Borrower shall promptly furnish to Lender all notices of amounts to be paid under this paragraph. If Borrower makes these payments directly, Borrower shall promptly furnish to Lender receipts evidencing the payments.

Borrower shall promptly discharge any lien which has priority over this Security Instrument unless Borrower: (a) agrees in writing to the payment of the obligation secured by the lien in a manner acceptable to Lender; (b) contests in good faith the lien by, or defends against enforcement of the lien in, legal proceedings which in the Lender's opinion operate to prevent the enforcement of the lien; or (c) secures from the holder of the lien an agreement satisfactory to Lender subordinating the lien to this Security Instrument. If Lender determines that any part of the Property is subject to a lien which may attain priority over this Security Instrument, Lender may give Borrower a notice identifying the lien. Borrower shall satisfy the lien or take one or more of the actions set forth above within 10 days of the giving of notice.

5. **Hazard or Property Insurance.** Borrower shall keep the improvements now existing or hereafter erected on the Property insured against loss by fire, hazards included within the term "extended coverage" and any other hazards, including floods or flooding, for which Lender requires insurance. This insurance shall be maintained in the amounts and for the periods that Lender requires. The insurance carrier providing the insurance shall be chosen by Borrower subject to Lender's approval which shall not be unreasonably withheld. If Borrower fails to maintain coverage described above, Lender may, at Lender's option, obtain coverage to protect Lender's rights in the Property in accordance with paragraph 7. All insurance policies and renewals shall be acceptable to Lender and shall include a standard mortgage clause. Lender shall have the right to hold the policies and renewals. If Lender requires, Borrower shall promptly give to Lender all receipts of paid premiums and renewal notices. In the event of loss, Borrower shall give prompt notice to the insurance carrier and Lender. Lender may make proof of loss if not made promptly by Borrower.

Unless Lender and Borrower otherwise agree in writing, insurance proceeds shall be applied to restoration or repair of the Property damaged, if the restoration or repair is economically feasible and Lender's security is not lessened. If the restoration or repair is not economically feasible or Lender's security would be lessened, the insurance proceeds shall be applied to the sums secured by this Security Instrument, whether or not then due, with any excess paid to Borrower. If Borrower abandons the Property, or does not answer within 30 days a notice from Lender that the insurance carrier has offered to settle a claim, then Lender may collect the insurance proceeds. Lender may use the proceeds to repair or restore the Property or to pay sums secured by this Security Instrument, whether or not then due. The 30-day period will begin when the notice is given.

Unless Lender and Borrower otherwise agree in writing, any application of proceeds to principal shall not extend or postpone the due date of the monthly payments referred to in paragraphs 1 and 2 or change the amount of the payments. If under paragraph 21 the Property is acquired by Lender, Borrower's right to any insurance policies and proceeds resulting from damage to the Property prior to the acquisition shall pass to Lender to the extent of the sums secured by this Security Instrument immediately prior to the acquisition.

6. **Occupancy, Preservation, Maintenance and Protection of the Property; Borrower's Loan Application; Leaseholds.** Borrower shall occupy, establish, and use the Property as Borrower's principal residence within sixty days after the execution of this Security Instrument and shall continue to occupy the Property as Borrower's principal residence for at least one year after the date of occupancy, unless Lender otherwise agrees in writing, which consent shall not be unreasonably withheld, or unless extenuating circumstances exist which are beyond Borrower's control. Borrower shall not destroy, damage or impair the Property, allow the Property to deteriorate, or commit waste on the Property. Borrower shall be in default if any forfeiture action or proceeding, whether civil or criminal, is begun that in Lender's good faith judgment could result in forfeiture of the Property or otherwise materially impair the lien created by this Security Instrument or Lender's security interest. Borrower may cure such a default and reinstate, as provided in paragraph 18, by causing the action or proceeding to be dismissed with a ruling that, in Lender's good faith determination, precludes forfeiture of the Borrower's interest in the Property or other material impairment of the lien created by this Security Instrument or Lender's security interest. Borrower shall also be in default if Borrower, during the loan application process, gave materially false or inaccurate information or statements to Lender (or failed to provide Lender with any material information) in connection with the loan evidenced by the Note, including, but not limited to, representations concerning Borrower's occupancy of the Property as a principal residence. If this Security Instrument is on a leasehold, Borrower shall comply with all the provisions of the lease. If Borrower acquires fee title to the Property, the leasehold and the fee title shall not merge unless Lender agrees to the merger in writing.

7. **Protection of Lender's Rights in the Property.** If Borrower fails to perform the covenants and agreements contained in this Security Instrument, or there is a legal proceeding that may significantly affect Lender's rights in the Property (such as a proceeding in bankruptcy, probate, for condemnation or forfeiture or to enforce laws or regulations), then Lender may do and pay for whatever is necessary to protect the value of the Property and Lender's

rights in the Property. Lender's actions may include paying any sums secured by a lien which has priority over this Security Instrument, appearing in court, paying reasonable attorneys' fees and entering on the Property to make repairs. Although Lender may take action under this paragraph 7, Lender does not have to do so.

Any amounts disbursed by Lender under this paragraph 7 shall become additional debt of Borrower secured by this Security Instrument. Unless Borrower and Lender agree to other terms of payment, these amounts shall bear interest from the date of disbursement at the Note rate and shall be payable, with interest, upon notice from Lender to Borrower requesting payment.

8. Mortgage Insurance. If Lender required mortgage insurance as a condition of making the loan secured by this Security Instrument, Borrower shall pay the premiums required to maintain the mortgage insurance in effect. If, for any reason, the mortgage insurance coverage required by Lender lapses or ceases to be in effect, Borrower shall pay the premiums required to obtain coverage substantially equivalent to the mortgage insurance previously in effect, at a cost substantially equivalent to the cost to Borrower of the mortgage insurance previously in effect, from an alternate mortgage insurer approved by Lender. If substantially equivalent mortgage insurance coverage is not available, Borrower shall pay to Lender each month a sum equal to one-twelfth of the yearly mortgage insurance premium being paid by Borrower when the insurance coverage lapsed or ceased to be in effect. Lender will accept, use and retain these payments as a loss reserve in lieu of mortgage insurance. Loss reserve payments may no longer be required, at the option of Lender, if mortgage insurance coverage (in the amount and for the period that Lender requires) provided by an insurer approved by Lender again becomes available and is obtained. Borrower shall pay the premiums required to maintain mortgage insurance in effect, or to provide a loss reserve, until the requirement for mortgage insurance ends in accordance with any written agreement between Borrower and Lender or applicable law.

9. Inspection. Lender or its agent may make reasonable entries upon and inspections of the Property. Lender shall give Borrower notice at the time of or prior to an inspection specifying reasonable cause for the inspection.

10. Condemnation. The proceeds of any award or claim for damages, direct or consequential, in connection with any condemnation or other taking of any part of the Property, or for conveyance in lieu of condemnation, are hereby assigned and shall be paid to Lender.

In the event of a total taking of the Property, the proceeds shall be applied to the sums secured by this Security Instrument, whether or not then due, with any excess paid to Borrower. In the event of a partial taking of the Property in which the fair market value of the Property immediately before the taking is equal to or greater than the amount of the sums secured by this Security Instrument immediately before the taking, unless Borrower and Lender otherwise agree in writing, the sums secured by this Security Instrument shall be reduced by the amount of the proceeds multiplied by the following fraction: (a) the total amount of the sums secured immediately before the taking, divided by (b) the fair market value of the Property immediately before the taking. Any balance shall be paid to Borrower. In the event of a partial taking of the Property in which the fair market value of the Property immediately before the taking is less than the amount of the sums secured immediately before the taking, unless Borrower and Lender otherwise agree in writing or unless applicable law otherwise provides, the proceeds shall be applied to the sums secured by this Security Instrument whether or not the sums are then due.

If the Property is abandoned by Borrower, or if, after notice by Lender to Borrower that the condemnor offers to make an award to settle a claim for damages, Borrower fails to respond to Lender within 30 days after the date the notice is given, Lender is authorized to collect and apply the proceeds, at its option, either to restoration or repair of the Property or to the sums secured by this Security Instrument, whether or not then due.

Unless Lender and Borrower otherwise agree in writing, any application of proceeds to principal shall not extend or postpone the due date of the monthly payments referred to in paragraphs 1 and 2 or change the amount of such payments.

11. Borrower Not Released; Forbearance By Lender Not a Waiver. Extension of the time for payment or modification of amortization of the sums secured by this Security Instrument granted by Lender to any successor in interest of Borrower shall not operate to release the liability of the original Borrower or Borrower's successors in interest. Lender shall not be required to commence proceedings against any successor in interest or refuse to extend time for payment or otherwise modify amortization of the sums secured by this Security Instrument by reason of any demand made by the original Borrower or Borrower's successors in interest. Any forbearance by Lender in exercising any right or remedy shall not be a waiver of or preclude the exercise of any right or remedy.

12. Successors and Assigns Bound; Joint and Several Liability; Co-signers. The covenants and agreements of this Security Instrument shall bind and benefit the successors and assigns of Lender and Borrower, subject to the provisions of paragraph 17. Borrower's covenants and agreements shall be joint and several. Any Borrower who co-signs this Security Instrument but does not execute the Note: (a) is co-signing this Security Instrument only to mortgage, grant

and convey that Borrower's interest in the Property under the terms of this Security Instrument; (b) is not personally obligated to pay the sums secured by this Security Instrument; and (c) agrees that Lender and any other Borrower may agree to extend, modify, forbear or make any accommodations with regard to the terms of this Security Instrument or the Note without that Borrower's consent.

13. **Loan Charges.** If the loan secured by this Security Instrument is subject to a law which sets maximum loan charges, and that law is finally interpreted so that the interest or other loan charges collected or to be collected in connection with the loan exceed the permitted limits, then: (a) any such loan charge shall be reduced by the amount necessary to reduce the charge to the permitted limit; and (b) any sums already collected from Borrower which exceeded permitted limits will be refunded to Borrower. Lender may choose to make this refund by reducing the principal owed under the Note or by making a direct payment to Borrower. If a refund reduces principal, the reduction will be treated as a partial prepayment without any prepayment charge under the Note.

14. **Notices.** Any notice to Borrower provided for in this Security Instrument shall be given by delivering it or by mailing it by first class mail unless applicable law requires use of another method. The notice shall be directed to the Property Address or any other address Borrower designates by notice to Lender. Any notice to Lender shall be given by first class mail to Lender's address stated herein or any other address Lender designates by notice to Borrower. Any notice provided for in this Security Instrument shall be deemed to have been given to Borrower or Lender when given as provided in this paragraph.

15. **Governing Law; Severability.** This Security Instrument shall be governed by federal law and the law of the jurisdiction in which the Property is located. In the event that any provision or clause of this Security Instrument or the Note conflicts with applicable law, such conflict shall not affect other provisions of this Security Instrument or the Note which can be given effect without the conflicting provision. To this end the provisions of this Security Instrument and the Note are declared to be severable.

16. **Borrower's Copy.** Borrower shall be given one conformed copy of the Note and of this Security Instrument.

17. **Transfer of the Property or a Beneficial Interest in Borrower.** If all or any part of the Property or any interest in it is sold or transferred (or if a beneficial interest in Borrower is sold or transferred and Borrower is not a natural person) without Lender's prior written consent, Lender may, at its option, require immediate payment in full of all sums secured by this Security Instrument. However, this option shall not be exercised by Lender if exercise is prohibited by federal law as of the date of this Security Instrument.

If Lender exercises this option, Lender shall give Borrower notice of acceleration. The notice shall provide a period of not less than 30 days from the date the notice is delivered or mailed within which Borrower must pay all sums secured by this Security Instrument. If Borrower fails to pay these sums prior to the expiration of this period, Lender may invoke any remedies permitted by this Security Instrument without further notice or demand on Borrower.

18. **Borrower's Right to Reinstatement.** If Borrower meets certain conditions, Borrower shall have the right to have enforcement of this Security Instrument discontinued at any time prior to the earlier of: (a) 5 days (or such other period as applicable law may specify for reinstatement) before sale of the Property pursuant to any power of sale contained in this Security Instrument; or (b) entry of a judgment enforcing this Security Instrument. Those conditions are that Borrower: (a) pays Lender all sums which then would be due under this Security Instrument and the Note as if no acceleration had occurred; (b) cures any default of any other covenants or agreements; (c) pays all expenses incurred in enforcing this Security Instrument, including, but not limited to, reasonable attorneys' fees; and (d) takes such action as Lender may reasonably require to assure that the lien of this Security Instrument, Lender's rights in the Property and Borrower's obligation to pay the sums secured by this Security Instrument shall continue unchanged. Upon reinstatement by Borrower, this Security Instrument and the obligations secured hereby shall remain fully effective as if no acceleration had occurred. However, this right to reinstate shall not apply in the case of acceleration under paragraph 17.

19. **Sale of Note; Change of Loan Servicer.** The Note or a partial interest in the Note (together with this Security Instrument) may be sold one or more times without prior notice to Borrower. A sale may result in a change in the entity (known as the "Loan Servicer") that collects monthly payments due under the Note and this Security Instrument. There also may be one or more changes of the Loan Servicer unrelated to a sale of the Note. If there is a change of the Loan Servicer, Borrower will be given written notice of the change in accordance with paragraph 14 above and applicable law. The notice will state the name and address of the new Loan Servicer and the address to which payments should be made. The notice will also contain any other information required by applicable law.

20. **Hazardous Substances.** Borrower shall not cause or permit the presence, use, disposal, storage, or release of any Hazardous Substances on or in the Property. Borrower shall not do, nor allow anyone else to do, anything affecting the Property that is in violation of any Environmental Law. The preceding two sentences shall not apply to



the presence, use, or storage on the Property of small quantities of Hazardous Substances that are generally recognized to be appropriate to normal residential uses and to maintenance of the Property.

Borrower shall promptly give Lender written notice of any investigation, claim, demand, lawsuit or other action by any governmental or regulatory agency or private party involving the Property and any Hazardous Substance or Environmental Law of which Borrower has actual knowledge. If Borrower learns, or is notified by any governmental or regulatory authority, that any removal or other remediation of any Hazardous Substance affecting the Property is necessary, Borrower shall promptly take all necessary remedial actions in accordance with Environmental Law.

As used in this paragraph 20, "Hazardous Substances" are those substances defined as toxic or hazardous substances by Environmental Law and the following substances: gasoline, kerosene, other flammable or toxic petroleum products, toxic pesticides and herbicides, volatile solvents, materials containing asbestos or formaldehyde, and radioactive materials. As used in this paragraph 20, "Environmental Law" means federal laws and laws of the jurisdiction where the Property is located that relate to health, safety or environmental protection.

NON-UNIFORM COVENANTS. Borrower and Lender further covenant and agree as follows:

21. Acceleration; Remedies. Lender shall give notice to Borrower prior to acceleration following Borrower's breach of any covenant or agreement in this Security Instrument (but not prior to acceleration under paragraph 17 unless applicable law provides otherwise). The notice shall specify: (a) the default; (b) the action required to cure the default; (c) a date, not less than 30 days from the date the notice is given to Borrower, by which the default must be cured; and (d) that failure to cure the default on or before the date specified in the notice may result in acceleration of the sums secured by this Security Instrument and sale of the Property. The notice shall further inform Borrower of the right to reinstate after acceleration and the right to bring a court action to assert the non-existence of a default or any other defense of Borrower to acceleration and sale. If the default is not cured on or before the date specified in the notice, Lender at its option may require immediate payment in full of all sums secured by this Security Instrument without further demand and may invoke the power of sale and any other remedies permitted by applicable law. Lender shall be entitled to collect all expenses incurred in pursuing the remedies provided in this paragraph 21, including, but not limited to, reasonable attorneys' fees and costs of title evidence.

If Lender invokes the power of sale, Lender shall execute or cause Trustee to execute a written notice of the occurrence of an event of default and of Lender's election to cause the Property to be sold and shall cause such notice to be recorded in each county in which any part of the Property is located. Lender or Trustee shall give notice of sale in the manner prescribed by applicable law to Borrower and to other persons prescribed by applicable law. After the time required by applicable law, Trustee, without demand on Borrower, shall sell the Property at public auction to the highest bidder at the time and place and under the terms designated in the notice of sale in one or more parcels and in any order Trustee determines. Trustee may postpone sale of all or any parcel of the Property by public announcement at the time and place of any previously scheduled sale. Lender or its designee may purchase the Property at any sale.

Trustee shall deliver to the purchaser Trustee's deed conveying the Property without any covenant or warranty, expressed or implied. The recitals in the Trustee's deed shall be prima facie evidence of the truth of the statements made therein. Trustee shall apply the proceeds of the sale in the following order: (a) to all expenses of the sale, including, but not limited to, reasonable Trustee's and attorneys' fees; (b) to all sums secured by this Security Instrument; and (c) any excess to the person or persons legally entitled to it.

22. Reconveyance. Upon payment of all sums secured by this Security Instrument, Lender shall request Trustee to reconvey the Property and shall surrender this Security Instrument and all notes evidencing debt secured by this Security Instrument to Trustee. Trustee shall reconvey the Property without warranty to the person or persons legally entitled to it. Lender may charge such person or persons a fee for reconveying the Property, if the fee is paid to a third party Trustee for services rendered and charging of the fee is permitted under applicable law. Such person or persons shall pay any recordation costs.

23. Substitute Trustee. Lender may from time to time remove Trustee and appoint a successor trustee to any Trustee appointed hereunder. Without conveyance of the Property, the successor trustee shall succeed to all the title, power and duties conferred upon Trustee herein and by applicable law.

24. Attorneys' Fees. As used in this Security Instrument and in the Note, "attorneys' fees" shall include any attorneys' fees awarded by an appellate court.

25. Riders to this Security Instrument. If one or more riders are executed by Borrower and recorded together with this Security Instrument, the covenants and agreements of each such rider shall be incorporated into and shall amend and supplement the covenants and agreements of this Security Instrument as if the rider(s) were a part of this Security Instrument.



BY SIGNING BELOW, Borrower accepts and agrees to the terms and covenants contained in pages 1 through 8 of this Security Instrument and in any rider(s) executed by Borrower and recorded with it.

Patrick O'Hogan (Seal)
PATRICK O'HOGAN -Borrower

Sharon O'Hogan (Seal)
SHARON O'HOGAN -Borrower

____ (Seal)
____ -Borrower

____ (Seal)
____ -Borrower

____ (Seal)
____ -Borrower

____ (Seal)
____ -Borrower

Witness: Carneal for Oregon Title Witness: Carneal for Oregon Title

STATE OF OREGON,

~~CLACKAMAS~~ Multnomah County ss:

This instrument was acknowledged before me on August 16, 1999
by

Patrick O'Hogan and Sharon O'Hogan

(Official Seal)



Leslie Carneal
Notary Public for Oregon

My Commission expires:

REQUEST FOR RECONVEYANCE

TO TRUSTEE:

The undersigned is the holder of the note or notes secured by this Deed of Trust. Said note or notes, together with all other indebtedness secured by the Deed of Trust, have been paid in full. You are hereby directed to cancel said note or notes and this Deed of Trust, which are delivered hereby, and to reconvey, without warranty, all the estate now held by you under this Deed of Trust to the person or persons legally entitled thereto.

Date: _____

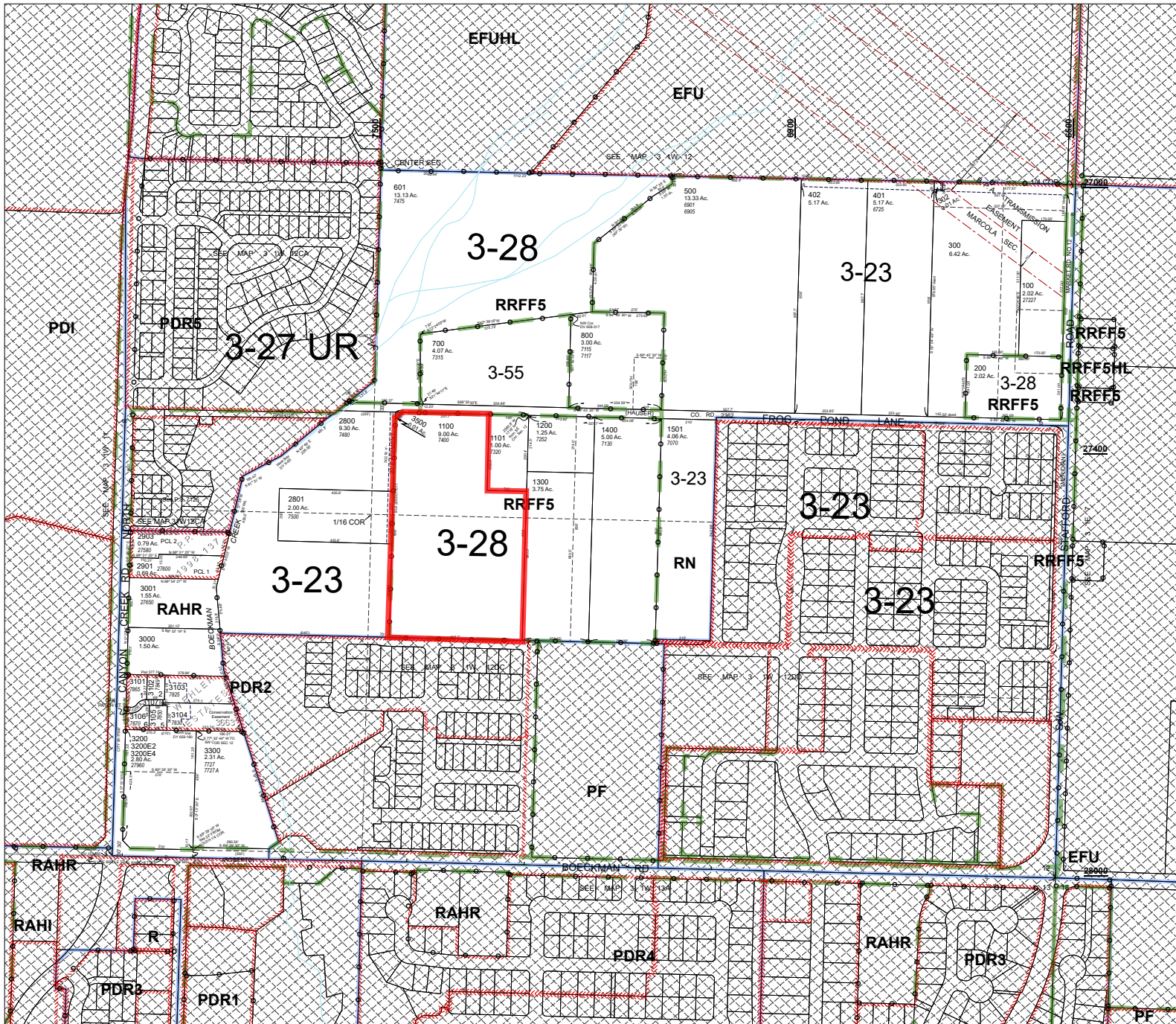
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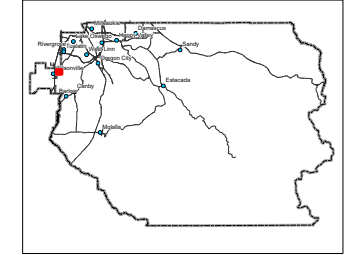
STATE OF OREGON 99-082996
CLACKAMAS COUNTY
Received and placed in the public
records of Clackamas County
RECEIPT# AND FEE: 88823 \$85.00
DATE AND TIME: 08/20/99 03:01 PM
JOHN KAUFFMAN, COUNTY CLERK

Exhibit D: Clackamas County Assessor's Map



Cancelled	Cancelled
900	2902
3201	604
1901	2900
1600	3200E3
400	1902
1900	1903
3400	2000
605	2001
602	2100
603	2201
2900S1	2202
2000E1	2200
3100	2300
1000	2400
600	2600
2500	2700
3300E1	2300
3200E1	1800
201	1700
301	1500

- Parcel Boundary
- Private Road ROW
- Historical Boundary
- Railroad Centerline
- Tax Code Lines
- Map Index
- Water Lines
- 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

Exhibit E: Traffic Impact Study

FROG POND

**WILSONVILLE FROG POND WEST
RIDGECREST SUBDIVISION
TRAFFIC IMPACT STUDY**

AUGUST 2024

PREPARED FOR:

CITY OF WILSONVILLE



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

PREPARED FOR CITY OF WILSONVILLE



Amy Pepper, PE

PREPARED BY DKS ASSOCIATES



Jenna Bogert, PE

Travis Larson, PE



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INTRODUCTION

This study evaluates the transportation impacts associated with the proposed Frog Pond West Ridgecrest Subdivision development to be located within the Frog Pond West area in Wilsonville, Oregon. The development includes 54 single-family homes (detached)¹, which are consistent with the Frog Pond West Master Plan. The purpose of this traffic impact study 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. Table 1 lists important characteristics of the study area and proposed project.

- (1) Frog Pond Lane/Stafford Road, (2) Brisband Street/Stafford, (3) Sherman Drive/Boeckman Road

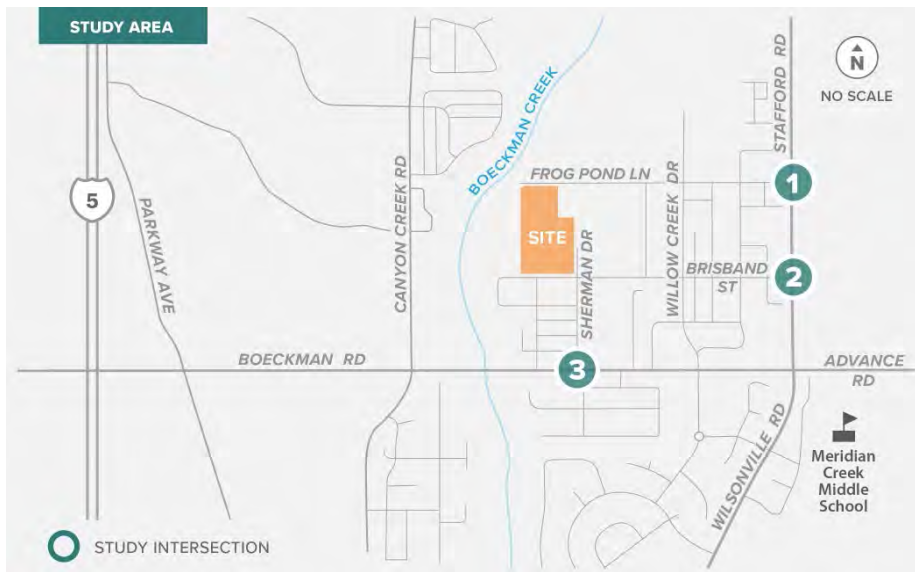


FIGURE 1: STUDY AREA

TABLE 1: STUDY AREA & PROJECT CHARACTERISTICS

STUDY AREA	
NUMBER OF STUDY INTERSECTIONS	Three
ANALYSIS PERIODS	Weekday PM peak hour (highest hour between 4pm – 6pm)
PROPOSED DEVELOPMENT	
SIZE AND LAND USE	9.02-acre plot w/ 54 residential lots (Tax Lot: 31W12D 01100)
NET PROJECT TRIPS	55 total PM peak hour trips (34 in, 21 out)
VEHICLE ACCESS POINTS	Access via Frog Pond Lane, Brisband Street, and Sherman Drive.

¹ While the site plan shows the potential for attached single-family units, for the purposes of transportation analysis and per the direction of the applicant, single-family detached housing was analyzed.

EXISTING CONDITIONS

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

STUDY AREA STREET NETWORK

Key streets 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 and the Frog Pond West Master Plan.³

In addition to all the ongoing residential development occurring within the Frog Pond West neighborhood area, Boeckman Road is currently undergoing reconstruction (Spring 2024 – Summer 2025) between Canyon Creek Road and Stafford Road-Wilsonville Road for construction of the [Boeckman Road “dip” bridge](#) and is closed to all traffic west of Sherman Drive. The below existing street characteristics reflect the characteristics before the reconstruction work began.

TABLE 2: STUDY AREA STREET CHARACTERISTICS

STREET	FUNCTIONAL CLASSIFICATION	JURISDICTION	POSTED SPEED	PEDESTRIAN FACILITIES	BIKE FACILITIES	ON-STREET PARKING
FROG POND LANE	Collector/Local ^a	City/County ^b	N/A	Partial ^c	Partial ^c	Partial ^c
BRISBAND STREET	Local	City	N/A	Partial ^d	No	Partial ^d
SHERMAN DRIVE	Local	City	N/A	Partial ^e	No	Partial ^e
STAFFORD ROAD	Major Arterial	City/County ^f	45 mph	No	No	No
BOECKMAN ROAD	Minor Arterial	City	35 mph	Partial ^g	Partial ^g	No

^a Frog Pond Lane is a Collector east of Willow Creek Drive and a Local west of Willow Creek Drive.

^b Jurisdiction changes on Frog Pond Lane depending on where development has occurred.

^c Improved street facilities (sidewalk, bicycle lanes, and on-street parking) exist intermittently where redevelopment has occurred along Frog Pond Lane.

^d Sidewalk and on-street parking exist on both sides of Brisband Street east of Willow Creek Drive.

^e Sidewalk and on-street parking currently exist on the west side of Sherman Drive.

^f Stafford Road is City jurisdiction south of Frog Pond Lane and County jurisdiction north of Frog Pond Lane.

^g Sidewalk primarily exists on the south side of Boeckman Road. Bicycle lanes are intermittent along both the north and south sides of the street.

² Functional Classification, Chapter 3: The Standards, Wilsonville Transportation System Plan 2013, Amended May 2023.

³ Street Types and Cross Sections, Transportation Section, Frog Pond West Master Plan, Adopted July 2017.

BICYCLE AND PEDESTRIAN FACILITIES

The Frog Pond West neighborhood is continually developing and constructing new pedestrian and bicycle infrastructure. Sidewalks with planter strip buffers will exist along both sides of every street, and dedicated bicycle lanes will exist along the Collector portions of Willow Creek Drive and Frog Pond Lane. Along Boeckman Road and Advance Road, sidewalks exist on the south side and there are intermittent bicycle lanes on both sides of the streets. Stafford Road has no bicycle or pedestrian facilities. Wilsonville Road has bicycle lanes and sidewalks on both sides of the street.

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 the Frog Pond West neighborhood, but Route 4 covers Advance Road and Wilsonville Road with the closest stop to the project site approximately 0.15 mile south of the Wilsonville Road/Advance Road intersection at Landover Road. After the completion of the Boeckman Dip Improvement project (UU-01), transit service is expected to be expanded to the Frog Pond West area.

PLANNED PROJECTS

The Wilsonville 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 streets near the proposed project site.

- RE-12A - Frog Pond West Neighborhood Collector Roads: Construction of collector streets within the Frog Pond West neighborhood per the Master Plan.
- RE-17 - Frog Pond Brisband Main Street Extension: Construction of Brisband Street, east of Stafford Road, that is built per the Frog Pond main street classification.
- 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-02 - Boeckman Road Urban Upgrade: Improvement of Boeckman Road to urban cross-section standards.
- UU-06 - Stafford Road Urban Upgrade: Upgrade of Stafford Road from Kahle Road to Boeckman Road to applicable street cross-section standards.
- SI-13 - Stafford Road/Brisband Street Roundabout: Installation of a roundabout at the Stafford Road/Brisband Street intersection.
- BW-23 - Stafford Road Enhance Crossing: Installation of an RRFB across Stafford Road at Frog Pond Lane, including a median refuge island.

EXISTING TRAFFIC VOLUMES

In January 2024, construction of the Boeckman Road “dip” bridge project began and Boeckman Road was closed between Sherman Drive and Canyon Creek Road to through traffic. Currently, all through traffic is being detoured via Stafford Road or Canyon Creek Road to Elligsen Road. Because of altered traffic patterns on Stafford Road, Boeckman Road, and into/out of Frog Pond West, no new traffic counts were collected for this analysis and previous traffic volume estimates from recent Frog Pond area studies were used instead. Below is a summary of how the traffic volumes for this analysis were developed.

PM peak period (4:00-6:00 pm) turning movement count data from September 30th, 2021 was utilized as the basis for two of the study intersections. Historical counts were not available for the intersection of Sherman Drive and Boeckman Road, so the volumes were estimated based on three sources: volumes balancing between nearby intersection traffic counts, number of occupied homes in the neighborhood off of Sherman Drive, and data from the Frog Pond Primary School TIA.⁴ The intersection counts were then factored up to 2024 conditions by applying an average yearly linear growth rate of 2.0%. This yearly growth rate is a typical growth rate used in Wilsonville traffic analyses and has previously been calculated using the Wilsonville Travel Demand model.

Figure 2 shows the 2024 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.

- 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

⁴ Wilsonville Frog Pond Primary School, Transportation Impact Analysis, DKS Associates, October 2022.

⁵ Policies and Implementation Measures, Chapter 2: The Vision, Wilsonville Transportation System Plan 2013, Amended May 2023.



← LANE CONFIGURATION

MOTOR VEHICLE PEAK HOUR TRAFFIC VOLUMES

LT TH RT LEFT • THRU • RIGHT VOLUME TURN MOVEMENT

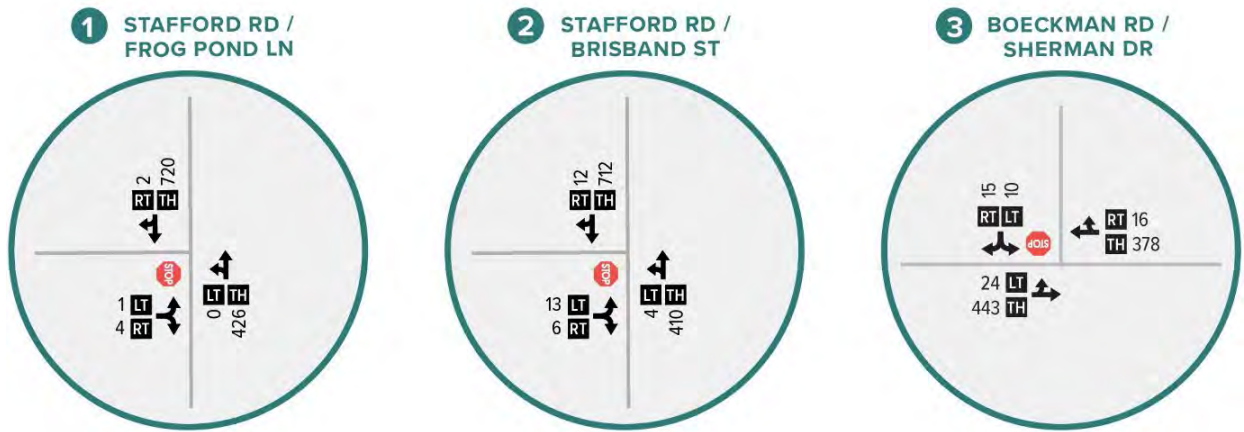


FIGURE 2: PM VOLUMES – EXISTING 2024

EXISTING INTERSECTION OPERATIONS

An analysis of the 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) 7th Edition methodology.⁶ The volume to capacity (v/c) ratio, delay, and level of service (LOS) of each study intersection are listed in Table 3.

As shown, all study intersections meet the City of Wilsonville’s operating standards for the existing conditions.

TABLE 3: EXISTING (PM) INTERSECTION OPERATIONS

INTERSECTION	OPERATING STANDARD	EXISTING PM PEAK HOUR		
		V/C	DELAY	LOS
TWO-WAY STOP-CONTROL				
FROG POND LN/STAFFORD RD	LOS D	0.02	16.2	A/C
BRISBAND ST/STAFFORD RD	LOS D	0.09	22.1	A/C
SHERMAND DR/BOECKMAN RD	LOS D	0.07	14.3	A/B

TWO-WAY STOP-CONTROL:

Delay = Critical Lane Delay (secs)

v/c = Critical Lane Volume-to-Capacity Ratio

LOS = Critical Levels of Service (Major/Minor Street)

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

⁶ Highway Capacity Manual, 7th Edition, Transportation Research Board, 2022.

PROJECT IMPACTS

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

PROPOSED DEVELOPMENT

The proposed development includes 54 single-family home lots (detached), which will be within the Frog Pond West Master Plan area. 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:

- *PM: Existing + Project*
- *PM: Existing + Stage II*
- *PM: 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 all previously developed transportation studies within the Frog West area were included in the Stage II list, even if not yet approved.

TRIP GENERATION

Trip generation is the method used to estimate the number of vehicles added to site driveways and the adjacent street network by a development during a specified period (e.g., 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 lots in the development. 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 55 PM peak hour trips (34 in, 21 out) and 557 Weekday trips. The average trip rate per lot is 1.04 trips in the PM peak hour and 10.59 daily weekday trips.

TABLE 4: TRIP GENERATION

LAND USE	ITE DESCRIPTION (CODE)	UNITS	PM PEAK TRIPS			WEEKDAY TRIPS
			IN	OUT	TOTAL	
NEW HOMES	SINGLE-FAMILY DETACHED HOUSING (210)	54 Lots	35	21	56	572
HOMES REMOVED	SINGLE-FAMILY DETACHED HOUSING (210)	1 Lot	1	0	1	15
Total Net New Trips:			34	21	55	557

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 and previous Frog Pond traffic analyses.

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 10% of the project trips (6 trips) are expected to travel through the I-5/Wilsonville Road interchange area and 10% (6 trips) are expected to travel 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, which include various combinations of three types of traffic as described previously. Figure 4 shows the PM peak hour traffic volumes for those scenarios: *Existing + Project*, *Existing + Stage II*, and *Existing + Project + Stage II*.

For this analysis, it was assumed that all traffic generated by developments within the Frog West area were included in the Stage II list, even if the land use applications were still in-process and not yet approved.

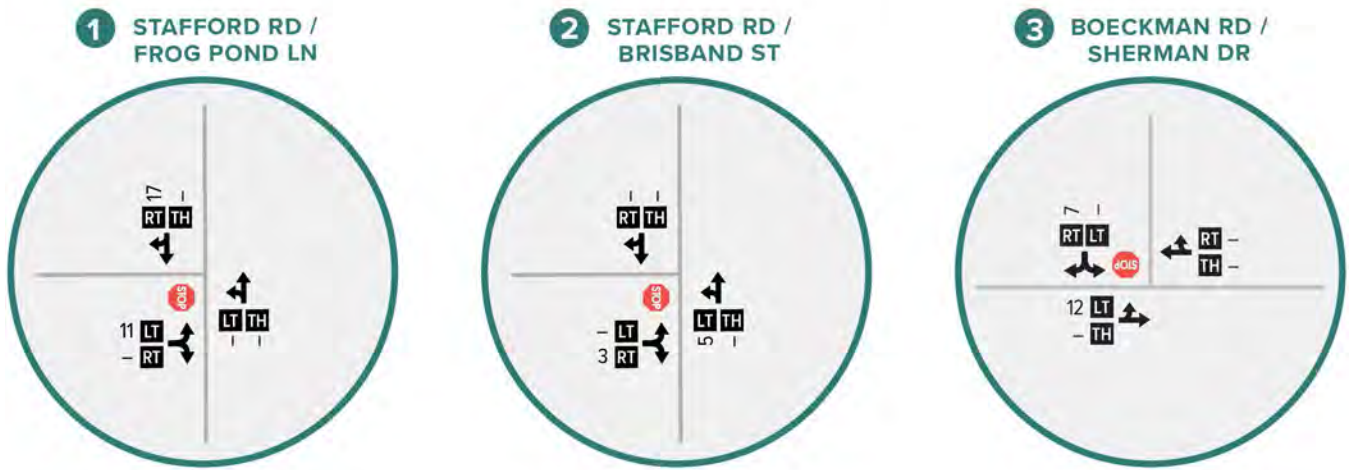
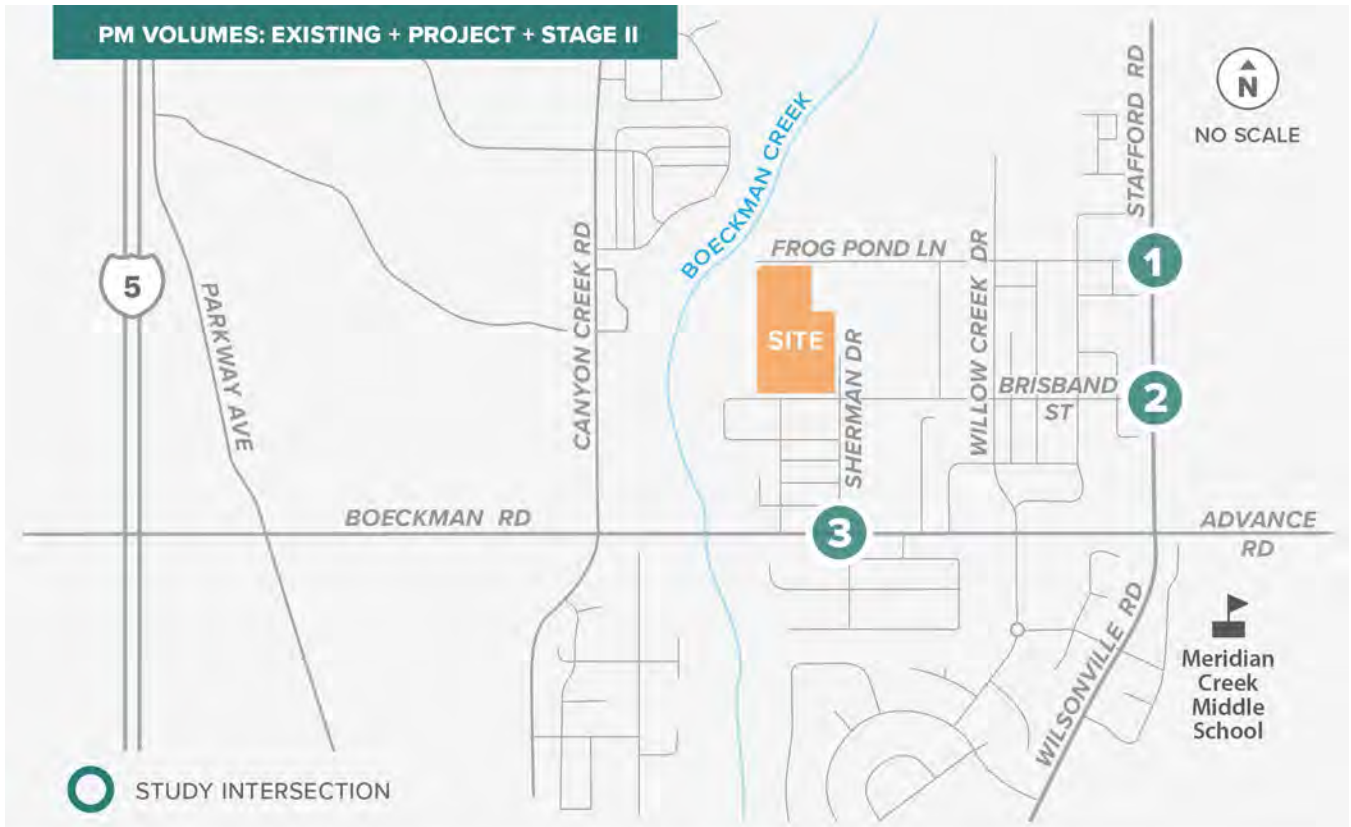


FIGURE 3: PROJECT TRIPS & DISTRIBUTION



← LANE CONFIGURATION
EXISTING + PROJECT

LT TH RT LEFT • THRU • RIGHT VOLUME TURN MOVEMENT
(##) EXISTING + STAGE II

EXISTING + PROJECT + STAGE II



FIGURE 4: PM VOLUMES - FUTURE

FUTURE INTERSECTION OPERATIONS

Intersection operations were analyzed for the PM peak hour at all study intersections for the three future condition scenarios using Highway Capacity Manual (HCM) 7th Edition methodology.⁷ The volume to capacity (v/c) ratio, delay, and level of service (LOS) of each study intersection are listed in Table 5.

TABLE 5: FUTURE (PM) INTERSECTION OPERATIONS

INTERSECTION	OPERATING STANDARD	EXISTING + PROJECT			EXISTING + STAGE II			EXISTING + PROJECT + STAGE II		
		V/C	DELAY	LOS	V/C	DELAY	LOS	V/C	DELAY	LOS
TWO-WAY STOP-CONTROL										
FROG POND LN/ STAFFORD RD	LOS D	0.08	23.0	A/C	0.34	37.1	A/E	0.43	42.4	A/E
BRISBAND ST/ STAFFORD RD	LOS D	0.10	21.6	A/C	0.19	27.9	B/D	0.20	27.8	B/D
SHERMAND DR/ BOECKMAN RD	LOS D	0.08	14.0	A/B	0.25	20.1	A/C	0.27	20.5	A/C

TWO-WAY STOP-CONTROL:

Delay = Critical Lane Delay (secs)

v/c = Critical Lane Volume-to-Capacity Ratio

LOS = Critical Levels of Service (Major/Minor Street)

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

OPERATION RESULTS DISCUSSION

As shown, the Stafford Road/Frog Pond Lane study intersection is expected to fail to meet the City of Wilsonville’s LOS D operating standard under the *Existing + Stage II* traffic conditions (without the proposed project). With over 1,200 vehicles on Stafford Road during the PM peak hour, there are few opportunities for vehicles turning out of Frog Pond Lane to make a left turn or right turn, resulting in high delays for those vehicles. Additionally, as the local street network is built out, some of the existing vehicle patterns within Frog Pond West may shift from other streets to Frog Pond Lane if it is a shorter route, creating even higher demand and delays at Frog Pond Lane/Stafford Road. This deficiency was previously identified and had been documented in previous Frog Pond traffic studies, indicating that this intersection would fail as the Frog Pond West neighborhood developed.

The Frog Pond East & South Master Plan, which was approved by City Council in December 2022, identified traffic control mitigations at Stafford Road/Frog Pond Lane intersection, which included restricting left-turns out of Frog Pond Lane. Long-term, this improvement will shift traffic patterns in the neighborhood off Frog Pond Lane, due to the turn restrictions, onto nearby streets like

⁷ Highway Capacity Manual, 7th Edition, Transportation Research Board, 2022.

Brisband Street. The Master Plan then identified a single-lane roundabout at Stafford Road/Brisband Street to increase capacity and safety at the intersection.

If the turn restrictions were to be implemented at Stafford Road/Frog Pond Lane, all of the left-turns out of Frog Pond Lane onto Stafford Road would be forced to go down to Brisband Street and make a left turn there. This would cause Brisband Street to greatly exceed LOS D (excessively high delays) on the Brisband Street approach because it would more than double the left turn volumes there. The planned single-lane roundabout at Brisband Street would need to also be implemented simultaneously with the turn restrictions at Frog Pond Lane in order to provide safe and efficient traffic movements out of the Frog Pond West neighborhood to Stafford Road.

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 TSP, Development Code, and Construction Standards, including vehicular access, on-site circulation, and street standards. The site plan is included in the appendix.

FROG POND WEST MASTER PLAN CONSISTENCY

The proposed street layout generally matches the framework plan as laid out in the Frog Pond West Master Plan,⁸ and the layout connects adequately with adjacent residential developments already approved by the City of Wilsonville. Overall, the residential zoning and land use in the site plan also appear to be consistent with the Master Plan.⁹

A north-south pedestrian-only connection was originally shown in the Frog Pond West Master Plan extending from Brisband Street north to Frog Pond Lane through the center of this development.¹⁰ However, this particular route is now shown as a full street connection on the proposed site plan. Because the pedestrian-only connection has been replaced with a full street connection, pedestrian facilities will still be provided and there are no concerns with this minor deviation from the Frog Pond West Master Plan. The property to the east (previously referred to as Matteoni property) had originally shown a half-street improvement where the Ridgecrest property and Matteoni properties meet. However, the Ridgecrest property site plan shows open space tracts along that other half of the Matteoni proposed half-street. This half-street on Matteoni should be converted to open space between the two properties with pedestrian and bicycle connections so as to continue to meet the intent of the Frog Pond West Master Plan street framework.

⁸ Figures 16-19, Transportation Section, Frog Pond West Master Plan, Adopted July 2017.

⁹ Figures 4 & 6, Land Use Section, Frog Pond West Master Plan, Adopted July 2017.

¹⁰ Figures 18-19, Transportation Section, Frog Pond West Master Plan, Adopted July 2017.

ACCESS SPACING

The proposed development is required to comply with access spacing requirements as laid out in the City Transportation System Plan.¹¹ As all proposed streets are Local streets, no standards are prescribed, and access is permitted for every lot. The access points for the new development are also consistent with the Frog Pond Master Plan.

SITE CIRCULATION

The proposed development 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 both Frog Pond Lane and Brisband Street, and access to Boeckman Road via Sherman Drive (and alternatively via Willow Creek Drive).

STREETS

The Frog Pond West Master Plan provides the street type plan and required cross sections for all streets in the Frog Pond West area.¹² The developer will be responsible for building the local streets including a sidewalk, planter strip, and a shared space for vehicles, bicycles, and on-street parking. No dedicated bicycle facilities are required. Additionally, the Frog Pond Area Plan identifies desired urban improvements to Stafford Road and Boeckman Road. A combination of the Transportation System Development Charge and the Frog Pond Infrastructure Fee will be collected from the developer on cost per lot basis by the City to help fund the cost of those urban improvements, which will be built by the City.

A temporary street improvement on the northeast corner of Woodbury Loop is proposed due to part of the proposed street corner being outside of this development. The temporary street improvement will be a paved portion of a 90-degree street corner radius to allow full movement through the corner. As the property to the northeast develops, it is assumed that the street corner will be built by the future developer to appropriate street standards. The temporary improvement should allow for safe movement of bicycles and pedestrians.

SIGHT DISTANCE

Adequate sight distance should be provided at the proposed internal streets. Objects (e.g., fences, walls, or vegetation) located near the intersections may inhibit sight distance for drivers attempting to turn out of a minor street onto the major street. Prior to occupancy, sight distance at any proposed access point will need to be verified, documented, and stamped by a registered professional Civil or Traffic Engineer licensed in the State of Oregon to assure that buildings, signs, or landscaping does not restrict sight distance.

¹¹ Table 3-2, Chapter 3: The Standards, Wilsonville Transportation System Plan 2013, Amended May 2023.

¹² Figures 20-28, Transportation Section, Frog Pond West Master Plan, Adopted July 2017.

SUMMARY OF PROJECT IMPACTS

Key findings of the traffic impact study for the Frog Pond West Ridgecrest development are discussed below.

- The development will consist of 54 detached single-family homes consistent with 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 55 PM peak hour trips (34 in, 21 out).
- Of the net project trips, approximately 6 trips (10% of total) are expected to travel through the I-5/Wilsonville Road interchange area and 6 trips (10% of total) are expected to travel through the I-5/Elligsen Road interchange area.
- Due to road closures for the Boeckman Road “dip” bridge project, no new traffic counts were collected for this analysis and previous traffic volume estimates from recent Frog Pond area studies were used.
- As shown, the Stafford Road/Frog Pond Lane study intersection is expected to fail to meet the City of Wilsonville’s LOS D operating standard. However, the long-term solution for the intersection is to restrict the minor street left turns out of Frog Pond Lane. This improvement, along with many others, are identified in the Frog Pond East & South Master Plan. If these improvements are included on the Capital Improvement Projects (CIP) list with funding approved or commended and scheduled for completion within two years of occupancy of the development, no additional mitigation is recommended.
- The developer will be responsible for building the local streets both within and fronting the property. Care should be taken to ensure safe and complete vehicle, pedestrian, and bicycle movements through the Woodbury Loop northeast corner when constructing the temporary improvements.

APPENDIX



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APPENDIX C: HCM REPORTS

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APPENDIX A: TRAFFIC COUNT DATA



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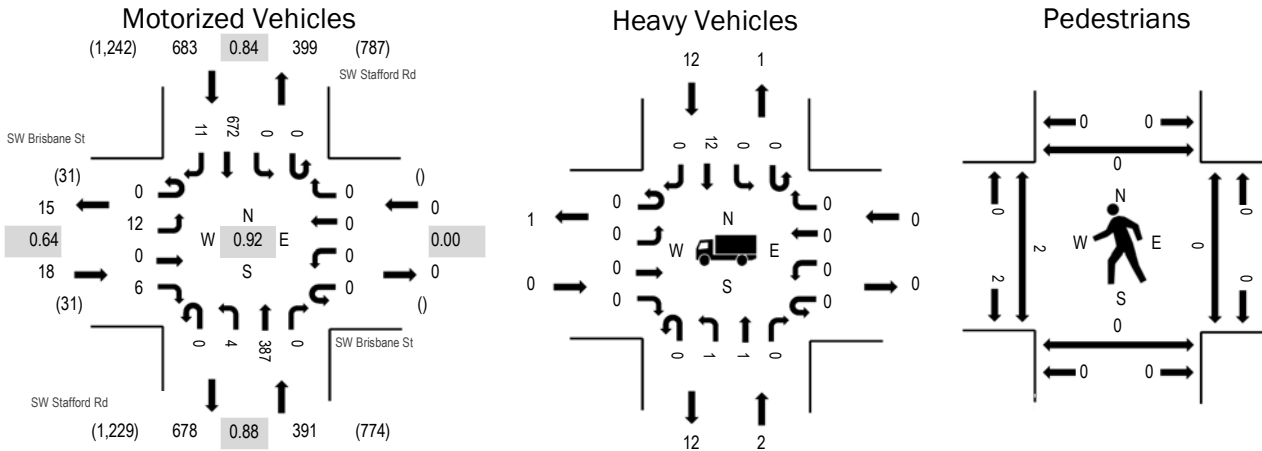
Location: 5 SW Stafford Rd & SW Brisbane St PM

Date: Thursday, September 30, 2021

Peak Hour: 04:45 PM - 05:45 PM

Peak 15-Minutes: 05:20 PM - 05:35 PM

Peak Hour



Note: Total study counts contained in parentheses.

	HV%	PHF
EB	0.0%	0.64
WB	0.0%	0.00
NB	0.5%	0.88
SB	1.8%	0.84
All	1.3%	0.92

Traffic Counts - Motorized Vehicles

Interval Start Time	SW Brisbane St Eastbound				SW Brisbane St Westbound				SW Stafford Rd Northbound				SW Stafford Rd Southbound				Total	Rolling Hour
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right		
4:00 PM	0	0	0	0	0	0	0	0	0	0	37	0	0	0	49	0	86	986
4:05 PM	0	1	0	0	0	0	0	0	0	0	41	0	0	0	33	0	75	981
4:10 PM	0	1	0	0	0	0	0	0	0	1	34	0	0	0	46	0	82	992
4:15 PM	0	0	0	1	0	0	0	0	0	0	30	0	0	0	42	0	73	998
4:20 PM	0	2	0	0	0	0	0	0	0	0	38	0	0	0	48	2	90	1,010
4:25 PM	0	1	0	0	0	0	0	0	0	0	35	0	0	0	44	0	80	1,017
4:30 PM	0	1	0	2	0	0	0	0	0	1	21	0	0	0	48	2	75	1,042
4:35 PM	0	1	0	1	0	0	0	0	0	0	34	0	0	0	44	0	80	1,062
4:40 PM	0	1	0	0	0	0	0	0	0	1	29	0	0	0	43	3	77	1,068
4:45 PM	0	0	0	1	0	0	0	0	0	0	30	0	0	0	60	0	91	1,092
4:50 PM	0	1	0	0	0	0	0	0	0	0	33	0	0	0	55	0	89	1,089
4:55 PM	0	1	0	1	0	0	0	0	0	0	31	0	0	0	53	2	88	1,077
5:00 PM	0	2	0	0	0	0	0	0	0	0	35	0	0	0	41	3	81	1,061
5:05 PM	0	3	0	1	0	0	0	0	0	0	34	0	0	0	48	0	86	
5:10 PM	0	1	0	2	0	0	0	0	0	0	43	0	0	0	42	0	88	
5:15 PM	0	0	0	0	0	0	0	0	0	0	28	0	0	0	55	2	85	
5:20 PM	0	1	0	0	0	0	0	0	0	0	27	0	0	0	66	3	97	
5:25 PM	0	0	0	1	0	0	0	0	0	1	29	0	0	0	74	0	105	
5:30 PM	0	0	0	0	0	0	0	0	0	2	32	0	0	0	61	0	95	
5:35 PM	0	0	0	0	0	0	0	0	0	0	32	0	0	0	54	0	86	
5:40 PM	0	3	0	0	0	0	0	0	0	1	33	0	0	0	63	1	101	
5:45 PM	0	0	0	0	0	0	0	0	0	0	35	0	0	0	52	1	88	
5:50 PM	0	1	0	0	0	0	0	0	0	0	23	0	0	0	51	2	77	
5:55 PM	0	0	0	0	0	0	0	0	0	1	22	0	0	0	47	2	72	
Count Total	0	21	0	10	0	0	0	0	0	8	766	0	0	0	1,219	23	2,047	
Peak Hour	0	12	0	6	0	0	0	0	0	4	387	0	0	0	672	11	1,092	

Traffic Counts - Heavy Vehicles, Bicycles on Road, and Pedestrians/Bicycles on Crosswalk

Interval Start Time	Heavy Vehicles					Interval Start Time	Bicycles on Roadway					Interval Start Time	Pedestrians/Bicycles on Crosswalk				
	EB	NB	WB	SB	Total		EB	NB	WB	SB	Total		EB	NB	WB	SB	Total
4:00 PM	0	2	0	1	3	4:00 PM	0	0	0	0	0	4:00 PM	0	0	0	0	0
4:05 PM	0	0	0	0	0	4:05 PM	0	0	0	0	0	4:05 PM	0	0	0	0	0
4:10 PM	0	2	0	1	3	4:10 PM	0	0	0	0	0	4:10 PM	0	0	0	0	0
4:15 PM	0	2	0	0	2	4:15 PM	0	0	0	0	0	4:15 PM	0	0	0	0	0
4:20 PM	0	2	0	1	3	4:20 PM	0	0	0	0	0	4:20 PM	0	0	0	0	0
4:25 PM	0	0	0	2	2	4:25 PM	0	0	0	0	0	4:25 PM	0	0	0	0	0
4:30 PM	0	0	0	2	2	4:30 PM	0	0	0	0	0	4:30 PM	0	0	0	0	0
4:35 PM	0	0	0	0	0	4:35 PM	0	0	0	0	0	4:35 PM	0	0	0	0	0
4:40 PM	0	0	0	1	1	4:40 PM	0	0	0	0	0	4:40 PM	0	0	0	0	0
4:45 PM	0	0	0	1	1	4:45 PM	0	0	0	0	0	4:45 PM	0	0	0	0	0
4:50 PM	0	0	0	1	1	4:50 PM	0	0	0	0	0	4:50 PM	0	0	0	0	0
4:55 PM	0	0	0	1	1	4:55 PM	0	0	0	0	0	4:55 PM	0	0	0	0	0
5:00 PM	0	0	0	0	0	5:00 PM	0	0	0	0	0	5:00 PM	0	0	0	0	0
5:05 PM	0	0	0	1	1	5:05 PM	0	0	0	0	0	5:05 PM	0	0	0	0	0
5:10 PM	0	1	0	2	3	5:10 PM	0	0	0	0	0	5:10 PM	0	0	0	0	0
5:15 PM	0	0	0	1	1	5:15 PM	0	0	0	0	0	5:15 PM	0	0	0	0	0
5:20 PM	0	0	0	1	1	5:20 PM	0	0	0	0	0	5:20 PM	0	0	0	0	0
5:25 PM	0	0	0	0	0	5:25 PM	0	0	0	0	0	5:25 PM	0	0	0	0	0
5:30 PM	0	1	0	2	3	5:30 PM	0	0	0	0	0	5:30 PM	0	0	0	0	0
5:35 PM	0	0	0	1	1	5:35 PM	0	0	0	0	0	5:35 PM	0	0	0	0	0
5:40 PM	0	0	0	1	1	5:40 PM	0	0	0	0	0	5:40 PM	2	0	0	0	2
5:45 PM	0	0	0	0	0	5:45 PM	0	0	0	0	0	5:45 PM	2	0	0	0	2
5:50 PM	0	0	0	0	0	5:50 PM	0	0	0	0	0	5:50 PM	0	0	0	0	0
5:55 PM	0	0	0	0	0	5:55 PM	0	0	0	0	0	5:55 PM	0	0	0	0	0
Count Total	0	10	0	20	30	Count Total	0	0	0	0	0	Count Total	4	0	0	0	4
Peak Hour	0	2	0	12	14	Peak Hour	0	0	0	0	0	Peak Hour	2	0	0	0	2



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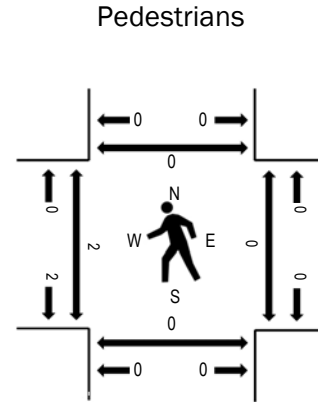
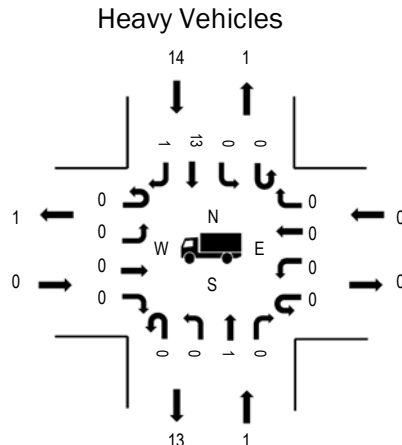
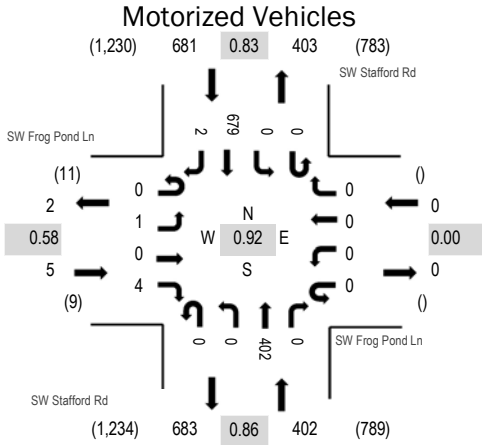
Location: 6 SW Stafford Rd & SW Frog Pond Ln PM

Date: Thursday, September 30, 2021

Peak Hour: 04:45 PM - 05:45 PM

Peak 15-Minutes: 05:20 PM - 05:35 PM

Peak Hour



Note: Total study counts contained in parentheses.

	HV%	PHF
EB	0.0%	0.58
WB	0.0%	0.00
NB	0.2%	0.86
SB	2.1%	0.83
All	1.4%	0.92

Traffic Counts - Motorized Vehicles

Interval Start Time	SW Frog Pond Ln Eastbound				SW Frog Pond Ln Westbound				SW Stafford Rd Northbound				SW Stafford Rd Southbound				Total	Rolling Hour
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right		
4:00 PM	0	0	0	1	0	0	0	0	0	1	38	0	0	0	47	0	87	971
4:05 PM	0	0	0	0	0	0	0	0	0	0	39	0	0	0	31	0	70	965
4:10 PM	0	0	0	0	0	0	0	0	0	1	33	0	0	0	48	0	82	983
4:15 PM	0	0	0	0	0	0	0	0	0	1	28	0	0	0	41	0	70	988
4:20 PM	0	0	0	0	0	0	0	0	0	1	39	0	0	0	52	0	92	1,004
4:25 PM	0	0	0	1	0	0	0	0	0	0	36	0	0	0	43	0	80	1,011
4:30 PM	0	0	0	1	0	0	0	0	0	2	19	0	0	0	44	1	67	1,036
4:35 PM	0	0	0	0	0	0	0	0	0	0	36	0	0	0	47	1	84	1,060
4:40 PM	0	0	0	0	0	0	0	0	0	0	33	0	0	0	44	0	77	1,064
4:45 PM	0	0	0	0	0	0	0	0	0	0	29	0	0	0	59	0	88	1,088
4:50 PM	0	0	0	2	0	0	0	0	0	0	34	0	0	0	57	0	93	1,084
4:55 PM	0	0	0	1	0	0	0	0	0	0	31	0	0	0	49	0	81	1,066
5:00 PM	0	0	0	0	0	0	0	0	0	0	38	0	0	0	43	0	81	1,057
5:05 PM	0	0	0	1	0	0	0	0	0	0	36	0	0	0	50	1	88	
5:10 PM	0	0	0	0	0	0	0	0	0	0	46	0	0	0	41	0	87	
5:15 PM	0	0	0	0	0	0	0	0	0	0	32	0	0	0	53	1	86	
5:20 PM	0	1	0	0	0	0	0	0	0	0	28	0	0	0	70	0	99	
5:25 PM	0	0	0	0	0	0	0	0	0	0	29	0	0	0	76	0	105	
5:30 PM	0	0	0	0	0	0	0	0	0	0	31	0	0	0	60	0	91	
5:35 PM	0	0	0	0	0	0	0	0	0	0	32	0	0	0	56	0	88	
5:40 PM	0	0	0	0	0	0	0	0	0	0	36	0	0	0	65	0	101	
5:45 PM	0	0	0	0	0	0	0	0	0	1	33	0	0	0	50	0	84	
5:50 PM	0	0	0	1	0	0	0	0	0	0	24	0	0	0	50	0	75	
5:55 PM	0	0	0	0	0	0	0	0	0	0	22	0	0	0	50	0	72	
Count Total	0	1	0	8	0	0	0	0	0	7	782	0	0	0	1,226	4	2,028	
Peak Hour	0	1	0	4	0	0	0	0	0	0	402	0	0	0	679	2	1,088	

Traffic Counts - Heavy Vehicles, Bicycles on Road, and Pedestrians/Bicycles on Crosswalk

Interval Start Time	Heavy Vehicles					Interval Start Time	Bicycles on Roadway					Interval Start Time	Pedestrians/Bicycles on Crosswalk				
	EB	NB	WB	SB	Total		EB	NB	WB	SB	Total		EB	NB	WB	SB	Total
4:00 PM	0	2	0	1	3	4:00 PM	0	0	0	0	0	4:00 PM	0	0	0	0	0
4:05 PM	0	0	0	1	1	4:05 PM	0	0	0	0	0	4:05 PM	0	0	0	0	0
4:10 PM	0	2	0	1	3	4:10 PM	0	0	0	0	0	4:10 PM	0	0	0	0	0
4:15 PM	0	2	0	1	3	4:15 PM	0	0	0	0	0	4:15 PM	0	0	0	0	0
4:20 PM	0	2	0	2	4	4:20 PM	0	0	0	0	0	4:20 PM	0	0	0	0	0
4:25 PM	1	0	0	0	1	4:25 PM	0	0	0	0	0	4:25 PM	0	0	0	0	0
4:30 PM	1	0	0	1	2	4:30 PM	0	0	0	0	0	4:30 PM	0	0	0	0	0
4:35 PM	0	0	0	0	0	4:35 PM	0	0	0	0	0	4:35 PM	0	0	0	0	0
4:40 PM	0	0	0	1	1	4:40 PM	0	0	0	0	0	4:40 PM	0	0	0	0	0
4:45 PM	0	0	0	2	2	4:45 PM	0	0	0	0	0	4:45 PM	0	0	0	0	0
4:50 PM	0	0	0	1	1	4:50 PM	0	0	0	0	0	4:50 PM	0	0	0	0	0
4:55 PM	0	0	0	1	1	4:55 PM	0	0	0	0	0	4:55 PM	0	0	0	0	0
5:00 PM	0	0	0	0	0	5:00 PM	0	0	0	0	0	5:00 PM	0	0	0	0	0
5:05 PM	0	0	0	2	2	5:05 PM	0	0	0	0	0	5:05 PM	0	0	0	0	0
5:10 PM	0	1	0	2	3	5:10 PM	0	0	0	0	0	5:10 PM	0	0	0	0	0
5:15 PM	0	0	0	1	1	5:15 PM	0	0	0	0	0	5:15 PM	0	0	0	0	0
5:20 PM	0	0	0	1	1	5:20 PM	0	0	0	0	0	5:20 PM	0	0	0	0	0
5:25 PM	0	0	0	0	0	5:25 PM	0	0	0	0	0	5:25 PM	0	0	0	0	0
5:30 PM	0	0	0	2	2	5:30 PM	0	0	0	0	0	5:30 PM	0	0	0	0	0
5:35 PM	0	0	0	1	1	5:35 PM	0	0	0	0	0	5:35 PM	0	0	0	0	0
5:40 PM	0	0	0	1	1	5:40 PM	0	0	0	0	0	5:40 PM	2	0	0	0	2
5:45 PM	0	0	0	0	0	5:45 PM	0	0	0	0	0	5:45 PM	2	0	0	0	2
5:50 PM	0	0	0	0	0	5:50 PM	0	0	0	0	0	5:50 PM	0	0	0	0	0
5:55 PM	0	0	0	0	0	5:55 PM	0	0	0	0	0	5:55 PM	0	0	0	0	0
Count Total	2	9	0	22	33	Count Total	0	0	0	0	0	Count Total	4	0	0	0	4
Peak Hour	0	1	0	14	15	Peak Hour	0	0	0	0	0	Peak Hour	2	0	0	0	2

APPENDIX B: STAGE II LIST

Updated by D. Pauly 05.31.24

Stage II Approved									
Project	Land Use	Status	Size	Total PM Peak Trips	Trip Allocation Percentage		Net New (Primary + Diverted) PM Peak Hour Trips not yet active		
					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
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 how to allocate trips between remaining buildings.</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
Frog Pond Ridge	Residential	48 homes built and occupied	71 units				14	9	23
Frog Pond Crossing	Residential	Under construction, no homes occupied	29 units				19	9	28
Frog Pond Estates	Residential	Under construction, no homes occupied	17 units				11	7	18
Frog Pond Oaks	Residential	Under construction, no homes occupied	41 units				27	14	41
Frog Pond Vista	Residential	Under construction, no homes occupied	38 units				27	17	44
Frog Pond Overlook	Residential	Under construction, no homes occupied	12 Units				8	5	13
Frog Pond Terrace	Residential	Under construction, no homes occupied	19 Units				12	8	20
Canyon Creek III	Residential	Under Construction	5 units (traffic study was for 11)				2	3	5
Frog Pond Primary School	Public	Under Construction	550 students	88			39	48	87
Delta Logistics	Industrial	Under Construction	56,100 sf warehouse	33			9	24	33
Building W5 Boeckman and Kinsman	Industrial	Approved	80,000 sf manufacturing	54			17	37	54
Precision Countertops	Industrial	Under Construction	65800 square feet	43			13	30	43
Town Center Mixed Use	Mixed Use Residential/Commercial	Approved	114 units, 4,000 square feet retail	55			31	24	55
Frog Pond Cottage Park Place	Residential	Approved	34 attached units	16			13	9	22
Frog Pond Petras	Residential	Approved	22 attached units	9			5	4	9
28395 SW Boberg Road Warehouse Expansion	Industrial	Approved	9,540 sf warehouse	22			6	16	22
Parkway Woods Expansion	Industrial	Approved	80,000 sf manufac	52			19	43	62
CIS Oregon	Office	Approved	15,750 sf office	36			6	30	36

Stage II Approved – Villebois

Project	Phase	Status	Land Use					Total PM Peak Trips	Trip Allocation Percentage		Net New (Primary + Diverted) PM Peak Hour Trips not yet active		
			SF	Town.	Apt.	Retail	School		Internal	Pass-By	In	Out	Total
North (Entirety)	Residential	Partially built, 383 homes sold and occupied	451								15	10	25
Central	Residential	Partially Built, 991 homes (102 single family, 319 condo/row homes, 365 apartments) occupied	102	391	510						60	30	90
FOR REFERENCE SAP EAST			537	42									

IR REFERENCE SAP SOUTH (Includes PDP 7 Grande Pointe)

560

Pending Projects for Which Traffic Analysis has been completed

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	
Wilsonville Lamborghini	Retail/Service	Pending	37,500 sf	89					36	53	89

APPENDIX C: HCM REPORTS

Intersection						
Int Delay, s/veh	0.1					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	T			T		T
Traffic Vol, veh/h	1	4	0	426	720	2
Future Vol, veh/h	1	4	0	426	720	2
Conflicting Peds, #/hr	0	0	2	0	0	2
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	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	0	2	50
Mvmt Flow	1	4	0	463	783	2

Major/Minor	Minor2	Major1		Major2	
Conflicting Flow All	1249	786	787	0	0
Stage 1	786	-	-	-	-
Stage 2	463	-	-	-	-
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	193	396	841	-	-
Stage 1	453	-	-	-	-
Stage 2	638	-	-	-	-
Platoon blocked, %				-	-
Mov Cap-1 Maneuver	192	395	840	-	-
Mov Cap-2 Maneuver	192	-	-	-	-
Stage 1	452	-	-	-	-
Stage 2	637	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s/v16.23		0	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	840	-	326	-	-
HCM Lane V/C Ratio	-	-	0.017	-	-
HCM Control Delay (s/veh)	0	-	16.2	-	-
HCM Lane LOS	A	-	C	-	-
HCM 95th %tile Q(veh)	0	-	0.1	-	-

Intersection						
Int Delay, s/veh	0.4					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	T			T		T
Traffic Vol, veh/h	13	6	4	410	712	12
Future Vol, veh/h	13	6	4	410	712	12
Conflicting Peds, #/hr	0	0	2	0	0	2
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	92	92	92	92	92	92
Heavy Vehicles, %	0	0	25	0	2	0
Mvmt Flow	14	7	4	446	774	13

Major/Minor	Minor2	Major1		Major2	
Conflicting Flow All	1237	782	789	0	0
Stage 1	782	-	-	-	-
Stage 2	454	-	-	-	-
Critical Hdwy	6.4	6.2	4.35	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.425	-	-
Pot Cap-1 Maneuver	196	397	738	-	-
Stage 1	454	-	-	-	-
Stage 2	644	-	-	-	-
Platoon blocked, %				-	-
Mov Cap-1 Maneuver	194	396	736	-	-
Mov Cap-2 Maneuver	194	-	-	-	-
Stage 1	450	-	-	-	-
Stage 2	642	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s/v22.09		0.1	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	17	-	231	-	-
HCM Lane V/C Ratio	0.006	-	0.089	-	-
HCM Control Delay (s/veh)	9.9	0	22.1	-	-
HCM Lane LOS	A	A	C	-	-
HCM 95th %tile Q(veh)	0	-	0.3	-	-

Intersection						
Int Delay, s/veh	0.6					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↕		↕	
Traffic Vol, veh/h	24	443	378	16	10	15
Future Vol, veh/h	24	443	378	16	10	15
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	27	492	420	18	11	17

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	438	0	-	0	974 429
Stage 1	-	-	-	-	429 -
Stage 2	-	-	-	-	546 -
Critical Hdwy	4.1	-	-	-	6.4 6.2
Critical Hdwy Stg 1	-	-	-	-	5.4 -
Critical Hdwy Stg 2	-	-	-	-	5.4 -
Follow-up Hdwy	2.2	-	-	-	3.5 3.3
Pot Cap-1 Maneuver	1133	-	-	-	282 630
Stage 1	-	-	-	-	661 -
Stage 2	-	-	-	-	585 -
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	1133	-	-	-	272 630
Mov Cap-2 Maneuver	-	-	-	-	272 -
Stage 1	-	-	-	-	640 -
Stage 2	-	-	-	-	585 -

Approach	EB	WB	SB
HCM Control Delay, s/v	0.42	0	14.34
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	93	-	-	-	413
HCM Lane V/C Ratio	0.024	-	-	-	0.067
HCM Control Delay (s/veh)	8.3	0	-	-	14.3
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0.1	-	-	-	0.2

Intersection						
Int Delay, s/veh	0.3					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	T			T		T
Traffic Vol, veh/h	12	4	0	426	720	19
Future Vol, veh/h	12	4	0	426	720	19
Conflicting Peds, #/hr	0	0	2	0	0	2
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	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	0	2	50
Mvmt Flow	13	4	0	463	783	21

Major/Minor	Minor2	Major1		Major2	
Conflicting Flow All	1258	795	805	0	0
Stage 1	795	-	-	-	-
Stage 2	463	-	-	-	-
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	190	391	828	-	-
Stage 1	448	-	-	-	-
Stage 2	638	-	-	-	-
Platoon blocked, %				-	-
Mov Cap-1 Maneuver	190	390	827	-	-
Mov Cap-2 Maneuver	190	-	-	-	-
Stage 1	447	-	-	-	-
Stage 2	637	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s/v22.97		0	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	827	-	218	-	-
HCM Lane V/C Ratio	-	-	0.08	-	-
HCM Control Delay (s/veh)	0	-	23	-	-
HCM Lane LOS	A	-	C	-	-
HCM 95th %tile Q(veh)	0	-	0.3	-	-

Intersection						
Int Delay, s/veh	0.5					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	13	9	9	410	712	12
Future Vol, veh/h	13	9	9	410	712	12
Conflicting Peds, #/hr	0	0	2	0	0	2
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	92	92	92	92	92	92
Heavy Vehicles, %	0	0	25	0	2	0
Mvmt Flow	14	10	10	446	774	13

Major/Minor	Minor2	Major1		Major2	
Conflicting Flow All	1248	782	789	0	0
Stage 1	782	-	-	-	-
Stage 2	465	-	-	-	-
Critical Hdwy	6.4	6.2	4.35	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.425	-	-
Pot Cap-1 Maneuver	193	397	738	-	-
Stage 1	454	-	-	-	-
Stage 2	636	-	-	-	-
Platoon blocked, %				-	-
Mov Cap-1 Maneuver	189	396	736	-	-
Mov Cap-2 Maneuver	189	-	-	-	-
Stage 1	445	-	-	-	-
Stage 2	635	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s/v	21.61	0.21	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	39	-	241	-	-
HCM Lane V/C Ratio	0.013	-	0.099	-	-
HCM Control Delay (s/veh)	10	0	21.6	-	-
HCM Lane LOS	A	A	C	-	-
HCM 95th %tile Q(veh)	0	-	0.3	-	-

Intersection						
Int Delay, s/veh	0.8					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↕		↕	
Traffic Vol, veh/h	36	443	378	16	10	22
Future Vol, veh/h	36	443	378	16	10	22
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	40	492	420	18	11	24

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	438	0	-	0	1001 429
Stage 1	-	-	-	-	429 -
Stage 2	-	-	-	-	572 -
Critical Hdwy	4.1	-	-	-	6.4 6.2
Critical Hdwy Stg 1	-	-	-	-	5.4 -
Critical Hdwy Stg 2	-	-	-	-	5.4 -
Follow-up Hdwy	2.2	-	-	-	3.5 3.3
Pot Cap-1 Maneuver	1133	-	-	-	271 630
Stage 1	-	-	-	-	661 -
Stage 2	-	-	-	-	568 -
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	1133	-	-	-	258 630
Mov Cap-2 Maneuver	-	-	-	-	258 -
Stage 1	-	-	-	-	629 -
Stage 2	-	-	-	-	568 -

Approach	EB	WB	SB
HCM Control Delay, s/v	0.62	0	14.02
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	135	-	-	-	435
HCM Lane V/C Ratio	0.035	-	-	-	0.082
HCM Control Delay (s/veh)	8.3	0	-	-	14
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0.1	-	-	-	0.3

Intersection						
Int Delay, s/veh	1.5					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	T			T		T
Traffic Vol, veh/h	45	8	11	467	755	70
Future Vol, veh/h	45	8	11	467	755	70
Conflicting Peds, #/hr	0	0	2	0	0	2
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	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	0	2	50
Mvmt Flow	49	9	12	508	821	76

Major/Minor	Minor2	Major1		Major2	
Conflicting Flow All	1392	861	899	0	0
Stage 1	861	-	-	-	-
Stage 2	532	-	-	-	-
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	158	358	764	-	-
Stage 1	417	-	-	-	-
Stage 2	593	-	-	-	-
Platoon blocked, %				-	-
Mov Cap-1 Maneuver	154	358	763	-	-
Mov Cap-2 Maneuver	154	-	-	-	-
Stage 1	408	-	-	-	-
Stage 2	592	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s/v	37.1	0.23	0
HCM LOS	E		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	41	-	168	-	-
HCM Lane V/C Ratio	0.016	-	0.342	-	-
HCM Control Delay (s/veh)	9.8	0	37.1	-	-
HCM Lane LOS	A	A	E	-	-
HCM 95th %tile Q(veh)	0	-	1.4	-	-

Intersection						
Int Delay, s/veh	0.8					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	Y			4	4	
Traffic Vol, veh/h	27	6	4	448	739	24
Future Vol, veh/h	27	6	4	448	739	24
Conflicting Peds, #/hr	0	0	2	0	0	2
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	92	92	92	92	92	92
Heavy Vehicles, %	0	0	25	0	2	0
Mvmt Flow	29	7	4	487	803	26

Major/Minor	Minor2	Major1		Major2	
Conflicting Flow All	1314	818	831	0	0
Stage 1	818	-	-	-	-
Stage 2	496	-	-	-	-
Critical Hdwy	6.4	6.2	4.35	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.425	-	-
Pot Cap-1 Maneuver	176	379	710	-	-
Stage 1	437	-	-	-	-
Stage 2	616	-	-	-	-
Platoon blocked, %				-	-
Mov Cap-1 Maneuver	174	378	709	-	-
Mov Cap-2 Maneuver	174	-	-	-	-
Stage 1	433	-	-	-	-
Stage 2	615	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s/v	27.86	0.09	0
HCM LOS	D		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	16	-	193	-	-
HCM Lane V/C Ratio	0.006	-	0.186	-	-
HCM Control Delay (s/veh)	10.1	0	27.9	-	-
HCM Lane LOS	B	A	D	-	-
HCM 95th %tile Q(veh)	0	-	0.7	-	-

Intersection						
Int Delay, s/veh	1.7					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↕		↕	
Traffic Vol, veh/h	56	500	414	37	31	39
Future Vol, veh/h	56	500	414	37	31	39
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	62	556	460	41	34	43

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	501	0	-	0	1161 481
Stage 1	-	-	-	-	481 -
Stage 2	-	-	-	-	680 -
Critical Hdwy	4.1	-	-	-	6.4 6.2
Critical Hdwy Stg 1	-	-	-	-	5.4 -
Critical Hdwy Stg 2	-	-	-	-	5.4 -
Follow-up Hdwy	2.2	-	-	-	3.5 3.3
Pot Cap-1 Maneuver	1074	-	-	-	218 590
Stage 1	-	-	-	-	626 -
Stage 2	-	-	-	-	507 -
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	1074	-	-	-	200 590
Mov Cap-2 Maneuver	-	-	-	-	200 -
Stage 1	-	-	-	-	574 -
Stage 2	-	-	-	-	507 -

Approach	EB	WB	SB
HCM Control Delay, s/v	0.86	0	20.06
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	181	-	-	-	316
HCM Lane V/C Ratio	0.058	-	-	-	0.246
HCM Control Delay (s/veh)	8.6	0	-	-	20.1
HCM Lane LOS	A	A	-	-	C
HCM 95th %tile Q(veh)	0.2	-	-	-	0.9

Intersection						
Int Delay, s/veh	2					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	56	8	11	467	755	87
Future Vol, veh/h	56	8	11	467	755	87
Conflicting Peds, #/hr	0	0	2	0	0	2
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	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	0	2	50
Mvmt Flow	61	9	12	508	821	95

Major/Minor	Minor2	Major1		Major2	
Conflicting Flow All	1401	870	917	0	0
Stage 1	870	-	-	-	-
Stage 2	532	-	-	-	-
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	156	354	752	-	-
Stage 1	413	-	-	-	-
Stage 2	593	-	-	-	-
Platoon blocked, %				-	-
Mov Cap-1 Maneuver	152	353	751	-	-
Mov Cap-2 Maneuver	152	-	-	-	-
Stage 1	403	-	-	-	-
Stage 2	592	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s/v	42.39	0.23	0
HCM LOS	E		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	41	-	164	-	-
HCM Lane V/C Ratio	0.016	-	0.425	-	-
HCM Control Delay (s/veh)	9.9	0	42.4	-	-
HCM Lane LOS	A	A	E	-	-
HCM 95th %tile Q(veh)	0	-	1.9	-	-

Intersection						
Int Delay, s/veh	0.9					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	Y			Y	Y	
Traffic Vol, veh/h	27	9	9	448	739	24
Future Vol, veh/h	27	9	9	448	739	24
Conflicting Peds, #/hr	0	0	2	0	0	2
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	92	92	92	92	92	92
Heavy Vehicles, %	0	0	25	0	2	0
Mvmt Flow	29	10	10	487	803	26

Major/Minor	Minor2	Major1		Major2	
Conflicting Flow All	1325	818	831	0	0
Stage 1	818	-	-	-	-
Stage 2	507	-	-	-	-
Critical Hdwy	6.4	6.2	4.35	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.425	-	-
Pot Cap-1 Maneuver	174	379	710	-	-
Stage 1	437	-	-	-	-
Stage 2	609	-	-	-	-
Platoon blocked, %				-	-
Mov Cap-1 Maneuver	170	378	709	-	-
Mov Cap-2 Maneuver	170	-	-	-	-
Stage 1	428	-	-	-	-
Stage 2	608	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s/v27.78		0.2	0
HCM LOS	D		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	35	-	197	-	-
HCM Lane V/C Ratio	0.014	-	0.199	-	-
HCM Control Delay (s/veh)	10.2	0	27.8	-	-
HCM Lane LOS	B	A	D	-	-
HCM 95th %tile Q(veh)	0	-	0.7	-	-

Intersection						
Int Delay, s/veh	2					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↕		↕	
Traffic Vol, veh/h	68	500	414	37	31	46
Future Vol, veh/h	68	500	414	37	31	46
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	76	556	460	41	34	51

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	501	0	-	0	1187 481
Stage 1	-	-	-	-	481 -
Stage 2	-	-	-	-	707 -
Critical Hdwy	4.1	-	-	-	6.4 6.2
Critical Hdwy Stg 1	-	-	-	-	5.4 -
Critical Hdwy Stg 2	-	-	-	-	5.4 -
Follow-up Hdwy	2.2	-	-	-	3.5 3.3
Pot Cap-1 Maneuver	1074	-	-	-	210 590
Stage 1	-	-	-	-	626 -
Stage 2	-	-	-	-	493 -
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	1074	-	-	-	189 590
Mov Cap-2 Maneuver	-	-	-	-	189 -
Stage 1	-	-	-	-	562 -
Stage 2	-	-	-	-	493 -

Approach	EB	WB	SB
HCM Control Delay, s/v	1.03	0	20.45
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	215	-	-	-	318
HCM Lane V/C Ratio	0.07	-	-	-	0.269
HCM Control Delay (s/veh)	8.6	0	-	-	20.5
HCM Lane LOS	A	A	-	-	C
HCM 95th %tile Q(veh)	0.2	-	-	-	1.1

APPENDIX D: SITE PLAN

**PRELIMINARY MIDDLE HOUSING LAND DIVISION PLAT
 RIDGECREST
 WEST HILLS LAND DEVELOPMENT, LLC
 WILSONVILLE, OREGON**

PRELIMINARY
 REGISTERED PROPERTY
 No Part
 to be
 Constructed
 WILSONVILLE, OREGON
 COUNCILMEMBER B. HURLEY
 RENEWAL DATE: 6/30/25
 JOB NUMBER: 10411
 DATE: 06/20/2024
 DESIGNED BY: LTP
 DRAWN BY: AC
 CHECKED BY: MBH
P-08

**SUBDISTRICT 7 RESIDENTIAL
 NEIGHBORHOOD (RN) (R-10 LARGE
 LOT) DEVELOPMENT STANDARDS:**

- LOT DIMENSIONS**
- MIN. SINGLE FAMILY LOT SIZE - 8,000 SF
 - MIN. LOT DEPTH - 60'
 - MIN. LOT WIDTH - 40'
- MIN. SETBACKS:**
- FRONT - 20' - FRONT PORCH MAY EXTEND 5' INTO SETBACK
 - REAR - 20'
 - GARAGE - 20'
 - SIDE - ON LOTS GREATER THAN 10,000 SF WITH FRONTAGE 70' OR WIDER, MIN. COMBINED SIDE YARD SETBACKS TOTAL 20' WITH MIN. OF 10'. ON OTHER LOTS, MIN. SIDE SETBACK IS 5'. ON CORNER LOTS, MIN. IS 10'.
- LOT COVERAGE**
- MAX. LOT COVERAGE BY BUILDINGS: 40%
 - MIN. DENSITY - 5
 - MAX DENSITY - 6

**SUBDISTRICT 4 RESIDENTIAL
 NEIGHBORHOOD (RN) (R-7 MEDIUM
 LOT) DEVELOPMENT STANDARDS:**

- LOT DIMENSIONS**
- MIN. SINGLE FAMILY LOT SIZE - 6,000 SF
 - MIN. LOT DEPTH - 60'
 - MIN. LOT WIDTH - 35'
- MIN. SETBACKS:**
- FRONT - 15' - FRONT PORCH MAY EXTEND 5' INTO SETBACK
 - REAR - 15'
 - GARAGE - 20'
 - SIDE - ON LOTS GREATER THAN 10,000 SF WITH FRONTAGE 70' OR WIDER, MIN. COMBINED SIDE YARD SETBACKS TOTAL 20' WITH MIN. OF 10'. ON OTHER LOTS, MIN. SIDE SETBACK IS 5'. ON CORNER LOTS, MIN. IS 10'.
- LOT COVERAGE**
- MAX. LOT COVERAGE BY BUILDINGS: 45%
 - MIN. DENSITY - 19
 - MAX DENSITY - 24

NOTES:

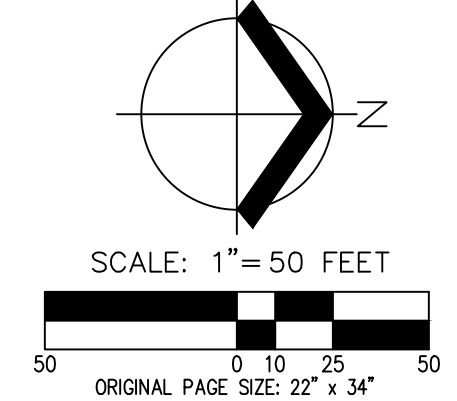
1. TRACTS E, G, H, AND I ARE TO BE OWNED AND MAINTAINED BY THE HOMEOWNERS ASSOCIATION AS OPEN SPACE AND ARE SUBJECT TO A PUBLIC ACCESS EASEMENT OVER THEIR ENTIRETY.
2. TRACTS A, C, F, AND J ARE TO BE OWNED AND MAINTAINED BY THE HOMEOWNERS ASSOCIATION AS OPEN SPACE.
3. TRACTS B AND D ARE FOR STORMWATER TREATMENT AND LANDSCAPE PURPOSES. THEY ARE SUBJECT TO A STORM DRAINAGE EASEMENT OVER THEIR ENTIRETY TO BENEFIT THE CITY OF WILSONVILLE.
4. THESE PLANS ASSUME THE NEARBY FROG POND OVERLOOK, FROG POND TERRACE, AND FROG POND COTTAGE PARK PLACE SUBDIVISIONS WILL BE CONSTRUCTED PRIOR TO OR CONCURRENT WITH THIS DEVELOPMENT.

* APPLICATION INCLUDES A 20% LOT COVERAGE ADJUSTMENT TO R-7 DEVELOPMENT STANDARDS

** APPLICATION INCLUDES A 20% LOT COVERAGE ADJUSTMENT TO R-10 DEVELOPMENT STANDARDS

* APPLICATION INCLUDES A MAXIMUM LOT SIZE ADJUSTMENT TO R-7 DEVELOPMENT STANDARDS. SETBACKS HAVE BEEN MODIFIED TO ENSURE NO INCREASE IN BUILDING ENVELOPE

DISCLAIMER:
 THE PURPOSE OF THIS PRELIMINARY MIDDLE HOUSING LAND DIVISION PLAT 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.



EASEMENT LEGEND	
PUE	PUBLIC UTILITY EASEMENT
PSDE	PRIVATE STORM DRAINAGE EASEMENT
SWE	SIDEWALK EASEMENT
PSTE	PUBLIC STREET TREE EASEMENT

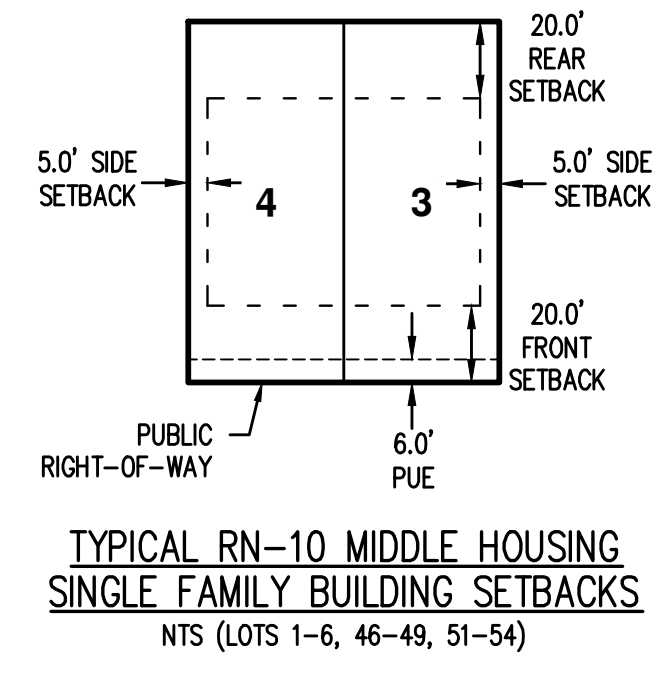
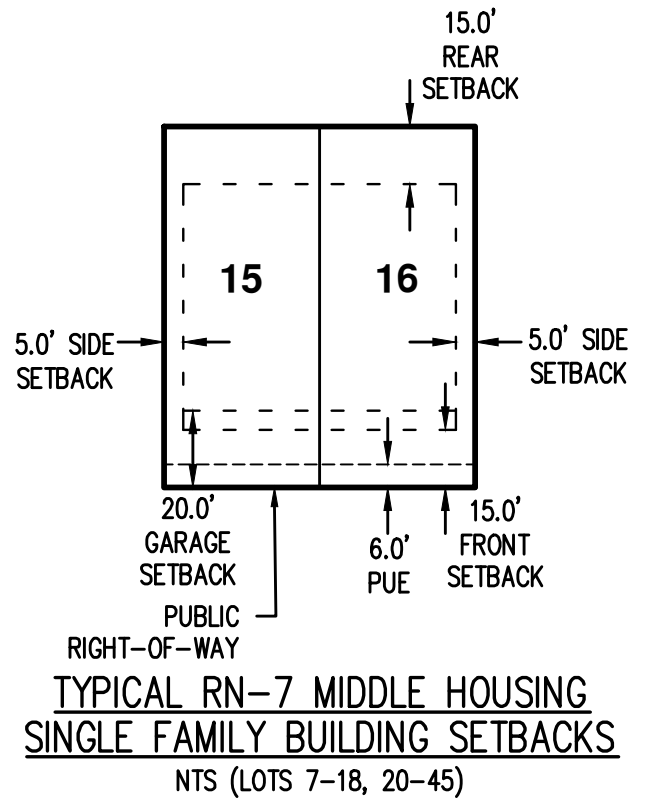
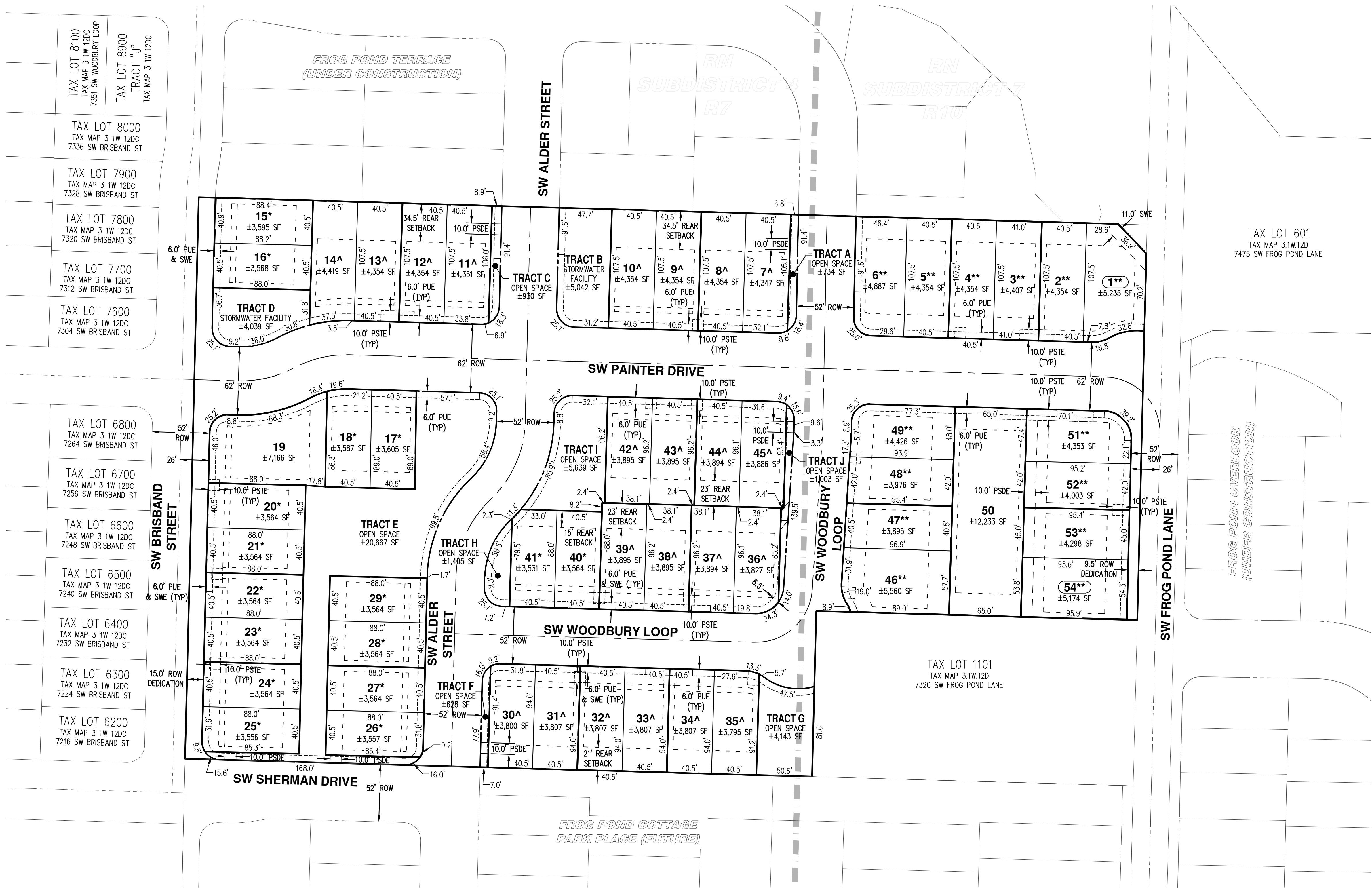


Exhibit F: Wetland Delineation Report

7400 SW Frog Pond Lane Wilsonville, Clackamas County, Oregon Wetland Determination Report

Date: May 2024

Prepared for: West Hills Land Development, LLC
330 NW Yeon Ave
Portland, OR 97210

Prepared by: AKS Engineering & Forestry, LLC
Margret Harburg, Natural Resource Specialist
Stacey Reed, Senior Wetland Scientist, PWS

Study Area: Clackamas County Assessor's Map 3 1W 12D;
Tax Lot 1100
Wilsonville, Oregon

AKS Job Number: 10411



AKS
ENGINEERING & FORESTRY
12965 SW Herman Road, Suite 100
Tualatin, OR 97062
(503) 563-6151

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C. Precipitation Data and Analysis	1
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Appendices

Appendix A: Maps

Figure 1: USGS Vicinity Map

Figure 2: Clackamas County Assessor’s Map (3 1W 12D)

Figure 3: NRCS Soil Survey Map

Figure 4: Statewide Wetlands Inventory (SWI) Map

Figure 5: Recent Aerial Image

Figure 6: Wetland Determination Map

Appendix B: Wetland Determination Data Forms

Appendix C: Representative Site Photographs

Appendix D: Literature Cited and Referenced

Introduction

This report was prepared by AKS Engineering & Forestry, LLC (AKS) in accordance with Oregon Administrative Rules (OAR) 141-090-0030 and 141-090-0035 and describes the results of a wetland determination conducted on Tax Lot 1100 Clackamas County Assessor's Map 3 1W 12D, which is located at 7400 SW Frog Pond Lane in Wilsonville, Oregon (Figures 1 and 2 in Appendix A). The study area for the wetland determination is ±9 acres and is shown in Figures 1 through 6 in Appendix A.

AKS conducted a site visit on April 22, 2024, to delineate any potential wetlands and waters on-site. The boundaries of one small artificial pond were mapped under this study. No wetlands or naturally occurring non-wetland waters were determined to be present within the study area limits.

A. Landscape Setting and Land Use

The study area contains one house and several associated outbuildings, gravel pad, and driveways within the northern portion of the study area. The remainder of the study area is undeveloped. The central portion contained row crops and fruit trees and the southern portion contains varied ornamental trees, Douglas-fir (*Pseudotsuga menziesii*; FACU), and ponderosa pine (*Pinus ponderosa*; FACU). The lawn areas are dominant in non-native grasses including orchard grass (*Dactylis glomerata*; FACU), perennial rye grass (*Lolium perenne*; FAC), bentgrass species (*Agrostis spp.*; assumed FAC), and tall false rye grass (*Schedonorus arundinaceus*; FAC). The surrounding land use is residential. The topography is generally flat throughout the study area.

The following soil units are mapped within the study area, according to the Natural Resources Conservation Service (NRCS) Clackamas County Area Soil Survey Map (Figure 3 in Appendix A):

- Aloha silt loam (Unit 1B), 3 to 6 percent slopes; Non-hydric
- Woodburn silt loam (Unit 91B), 3 to 8 percent slopes; Non-hydric
- Woodburn silt loam (Unit 91C), 8 to 15 percent slopes; Non-hydric

B. Site Alterations

Historic aerial imagery dating from 1994 to 2024 were reviewed to determine if any site alterations may have affected the presence, location, or geographic boundaries of any potential wetlands within the study area. No apparent alterations have occurred that may have affected the lack of wetland conditions on the site. The artificial pond delineated under this study first appears on the 2002 aerial. It appears to have been constructed as an aesthetic feature and is fed by roof runoff.

C. Precipitation Data and Analysis

Observed precipitation data were obtained from the Portland KGW-TV weather station via the National Oceanic and Atmospheric Administration (NOAA) Applied Climate Information System (ACIS). The closest Climate Analysis for Wetlands Tables (WETS) station to the project study area is the Portland KGW-TV station. According to the Portland KGW-TV station, the April 22, 2024, site visit was conducted within the growing season, as evidenced by bud burst and leaf emergence during our site visit.

According to the Portland KGW-TV station, no amount of rainfall was received the day of the April 22, 2024, site visit and 0.11 inches of rainfall were received within the two weeks prior. Observed water year

to date (starting October 1, 2021) was 39.96 inches, which was approximately 109 percent of normal (3.40 inches above normal). Table 1 shows antecedent rainfall according to the WETS Portland KGW-TV station for the three months prior to the April 22, 2024, site visit. According to the WETS data, monthly observed precipitation was within the drier than normal range in the three months preceding the site visit. The drier than normal precipitation conditions did not affect the results of our wetland determination. Raw data is available upon request.

Table 1: Precipitation Data Prior to the April 22, 2024, Site Visit

Prior Months	Observed Precipitation (Inches)	Average WETS Precipitation (Inches)	30% Chance Will Have		Condition Dry, Wet, Normal	Condition Value (1=dry, 2=normal, 3=wet)	Month Weight	Multiply Previous Two Columns
			Less Than	More Than				
April 1-21	0.57	3.63	2.69	4.22	Dry	1	3	3
March	4.08	4.83	3.66	5.67	Normal	2	2	4
February	5.41	4.74	2.95	5.72	Normal	2	1	2
							Sum	9
								Drier
Rainfall of prior period was: drier than normal (sum is 6-9), normal (sum is 10-14), wetter than normal (sum is 15-18)								

D. Site-Specific Methods

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* (Environmental Laboratory 2010). The *National Wetland Plant List* (USACE 2022) was used to assign wetland indicator status for the appropriate region.

The methodology used to delineate the ordinary high water (OHW) for the artificial pond included field indicators in accordance with OAR 141-085-0515(3). Fieldwork was conducted on April 22, 2024, by AKS Natural Resource Specialist Margret Harburg and Senior Wetland Scientist Stacey Reed, PWS. Soils, vegetation, and indicators of hydrology were recorded at 3 sample plot locations on standardized wetland determination data forms (Appendix B) to document site conditions.

E. Description of All Wetlands and Other Non-Wetland Waters

One small artificial pond was identified within the study area and is discussed in further detail below. Representative ground-level site photographs are included in Appendix C.

Water

Artificial Pond

A small, isolated pond was excavated entirely from within upland is present in the northern portion of the study area adjacent to a barn (Photo F, Appendix C). Plot 2 was recorded on the edge of the artificial pond. The artificial pond is approximately 2.5-feet deep, 7-feet long and 4-feet wide. OHW indicators included break in slope. The pond edges were dominant in non-native grasses including orchard grass (FACU), perennial rye grass (FAC) and bentgrass species (assumed FAC) above the OHW and sparsely vegetated below OHW. The bottom of the pond had a silt loam substrate and less than 1-inch of standing

water during the April 22, 2024 site visit. The pond receives roof runoff from the nearby barn and does not appear to be supported by groundwater.

Upland

Plot 1 was recorded within an area of low topography within the southeast corner of the study area (Photo E, Appendix C). The plot was dominant in large sweet vernal grass (*Anthoxanthum odoratum*; FACU) with some bare ground and lesser amounts of bentgrass species (assumed FAC), tall false rye grass (FAC), and corkscrew willow (*Salix matsudana*; NOL assumed UPL). The plot lacked hydric soil indicators and indicators of wetland hydrology; therefore, was determined to be upland.

Plot 3 was recorded within the vicinity of signatures observed in historic aerial images (Photo G, Appendix C). The plot was dominant in bentgrass species (assumed FAC), tall false rye grass (FAC), and perennial rye grass (FAC). The plot lacked a concave landform, hydric soil indicators, and wetland hydrology indicators; therefore, it was determined to be upland.

F. Deviation from SWI

The study area is located just outside of the state approved Local Wetland Inventory (LWI) study area for the City of Wilsonville. According to the Statewide Wetland Inventory (SWI), there are no mapped riverine or wetland features within the study area (Figure 4, Appendix A). AKS delineated one small artificial pond in the study area that is not mapped by the SWI. AKS agrees with the lack of wetlands mapped on the SWI within the study area.

G. Mapping Method

The artificial pond boundary and plots shown were delineated by AKS on April 22, 2024 and mapped with submeter accuracy using a Trimble R-10 GPS receiver and TSC3 data collector. The wetland determination map is included as Figure 6 in Appendix A.

H. Summary of Results and Conclusions

No wetlands were documented within the study area. One artificial pond was delineated within the northern portion of the study area. The artificially created pond is less than one acre in size and was created entirely from within NRCS mapped upland soils; therefore, is likely to be determined non-jurisdictional per OAR 141-085-0515(6) and not regulated under the state's removal-fill law.

I. Required Disclaimer

This report documents the investigation, BPJ, and conclusions of the investigators. It is correct and complete to the best of our knowledge. It should be considered a Preliminary Jurisdictional Determination of wetlands and other waters and used at your own risk, unless it has been reviewed and approved in writing by the Oregon Department of State Lands in accordance with Oregon Administrative Rules (OAR) 141-090-0005 through 141-090-0055.

J. List of Preparers

Margret Harburg



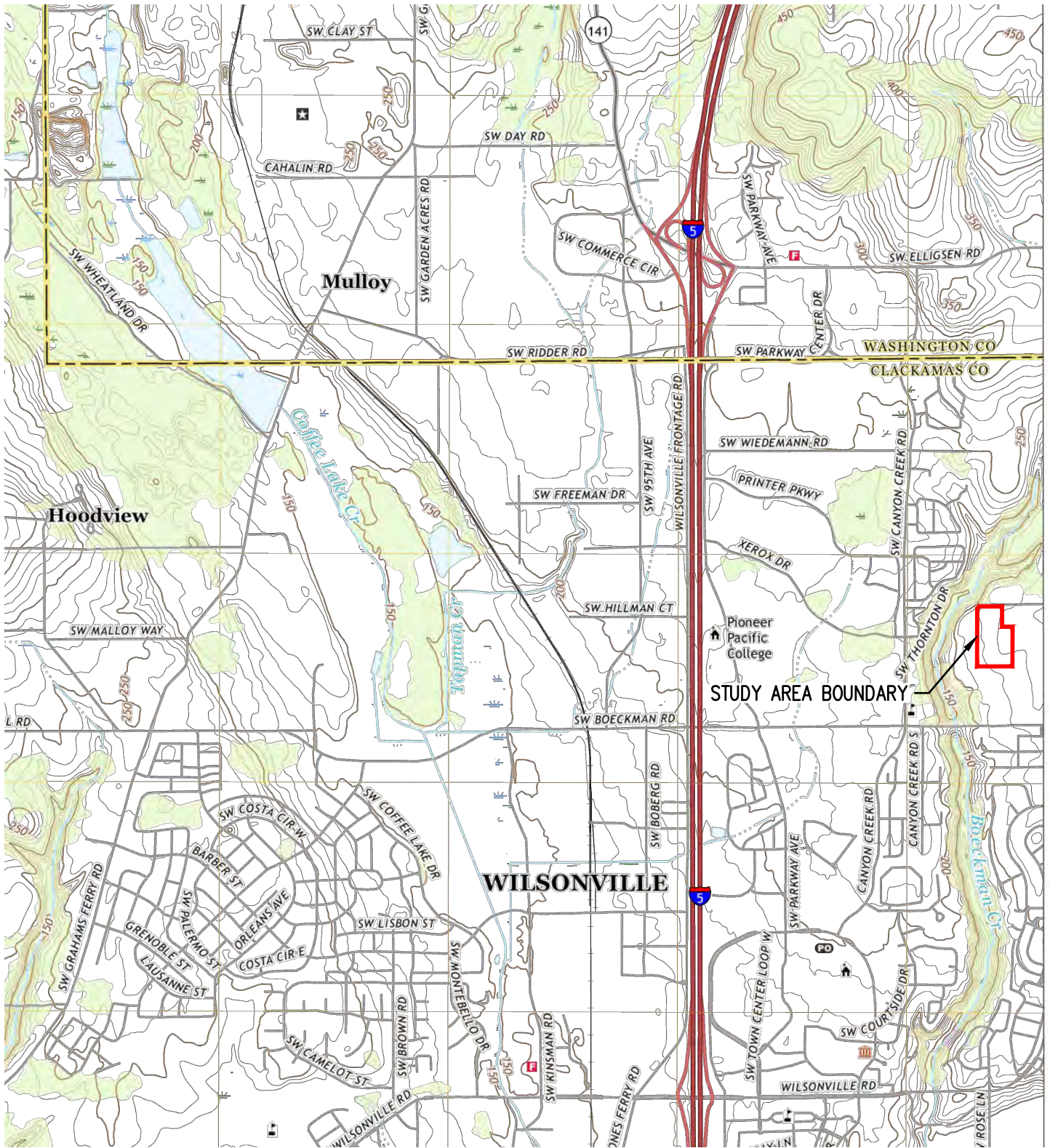
Natural Resource Specialist
Fieldwork and Report Preparation

Stacey Reed, PWS

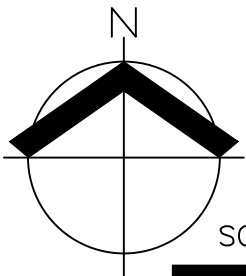


Senior Wetland Scientist
Fieldwork and Report QA/QC

Appendix A: Maps



USGS 7.5' TOPOGRAPHIC SERIES
 QUADRANGLE: SHERWOOD, OR (2020)

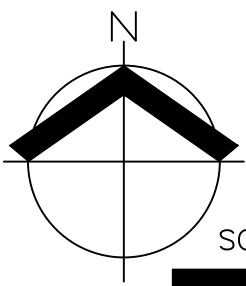
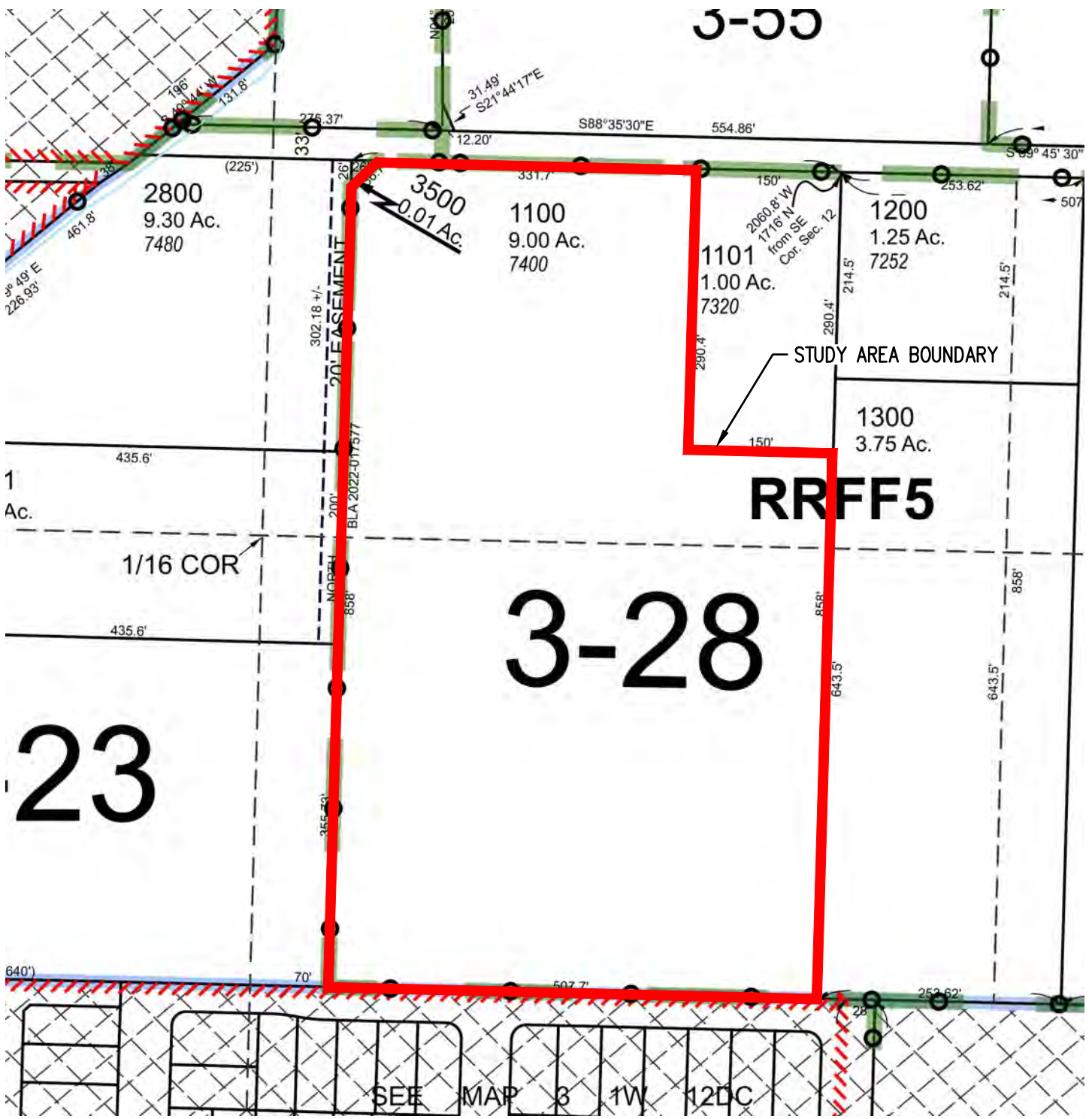


SCALE: 1" = 2000 FEET

2000 0 400 1000 2000
 ORIGINAL PAGE SIZE: 8.5" x 11"

DATE: 05/23/2024

USGS VICINITY MAP 7400 SW FROG POND LANE WETLAND DETERMINATION REPORT		FIGURE 1
AKS ENGINEERING & FORESTRY, LLC 12965 SW HERMAN RD, STE 100 TUALATIN, OR 97062 503.563.6151 WWW.AKS-ENG.COM		DRWN: GPM CHKD: SAR AKS JOB: 10441
		



SCALE: 1" = 150 FEET

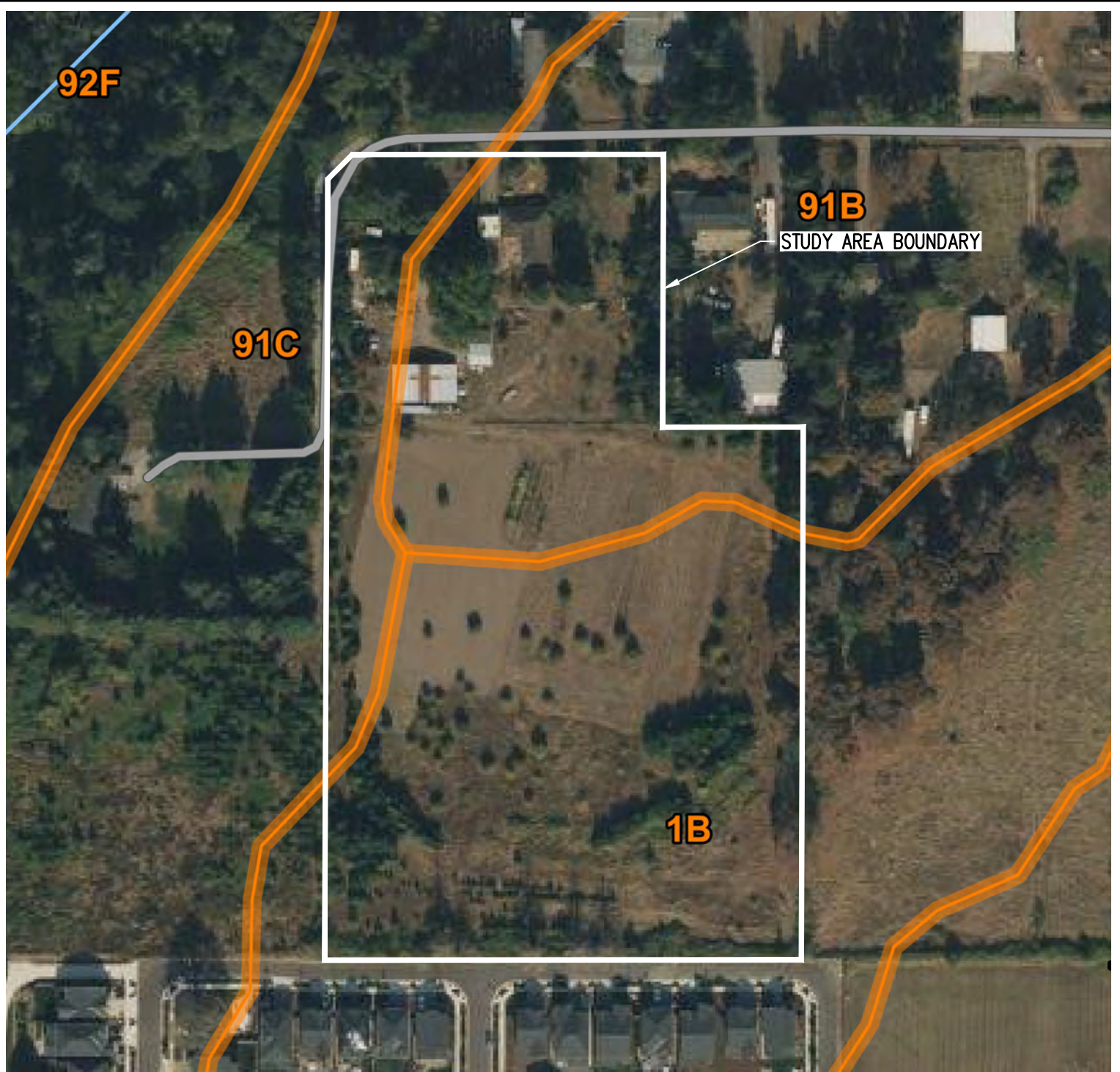


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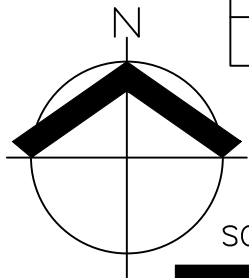
DATE: 05/23/2024

TAX MAP (MAP 3 1W 12D) 7400 SW FROG POND LANE WETLAND DETERMINATION REPORT		FIGURE 2
AKS ENGINEERING & FORESTRY, LLC 12965 SW HERMAN RD, STE 100 TUALATIN, OR 97062 503.563.6151 WWW.AKS-ENG.COM		DRWN: GPM CHKD: SAR AKS JOB: 10411

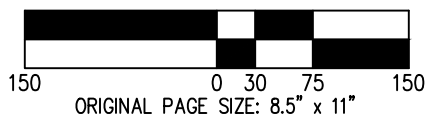




MAP UNIT SYMBOL	MAP UNIT NAME
1B	ALOHA SILT LOAM, 3% TO 6% SLOPES; NON-HYDRIC
91B	WOODBURN SILT LOAM, 3% TO 8% SLOPES; NON-HYDRIC
91C	WOODBURN SILT LOAM, 8% TO 15% SLOPES; NON-HYDRIC



SCALE: 1" = 150 FEET



NRCS WEB SOIL SURVEY FOR
CLACKAMAS COUNTY

DATE: 05/23/2024

NRCS SOIL SURVEY MAP 7400 SW FROG POND LANE WETLAND DETERMINATION REPORT		FIGURE 3
AKS ENGINEERING & FORESTRY, LLC 12965 SW HERMAN RD, STE 100 TUALATIN, OR 97062 503.563.6151 WWW.AKS-ENG.COM		DRWN: GPM CHKD: SAR AKS JOB: 10411

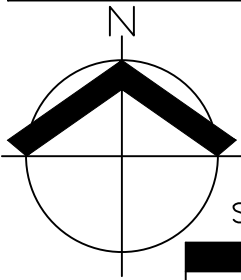




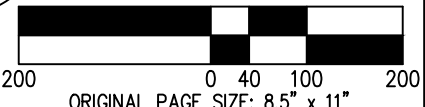
Wetlands

-  Estuarine and Marine Deepwater
-  Estuarine and Marine Wetland
-  Freshwater Emergent Wetland
-  Freshwater Forested/Shrub Wetland
-  Freshwater Pond
-  Lake
-  Riverine

OREGON DEPARTMENT OF STATE LANDS (DSL)
STATEWIDE WETLANDS INVENTORY (2024)



SCALE: 1" = 200 FEET



ORIGINAL PAGE SIZE: 8.5" x 11"

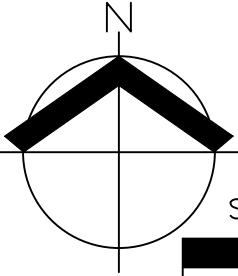
DATE: 05/23/2024

STATEWIDE WETLANDS INVENTORY MAP 7400 SW FROG POND LANE WETLAND DETERMINATION REPORT		FIGURE 4
AKS ENGINEERING & FORESTRY, LLC 12965 SW HERMAN RD, STE 100 TUALATIN, OR 97062 503.563.6151 WWW.AKS-ENG.COM		DRWN: GPM CHKD: SAR AKS JOB: 10411

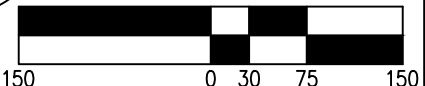




AERIAL DERIVED FROM OREGONMETRO.GOV (2021)



SCALE: 1" = 150 FEET



ORIGINAL PAGE SIZE: 8.5" x 11"

DATE: 05/23/2023

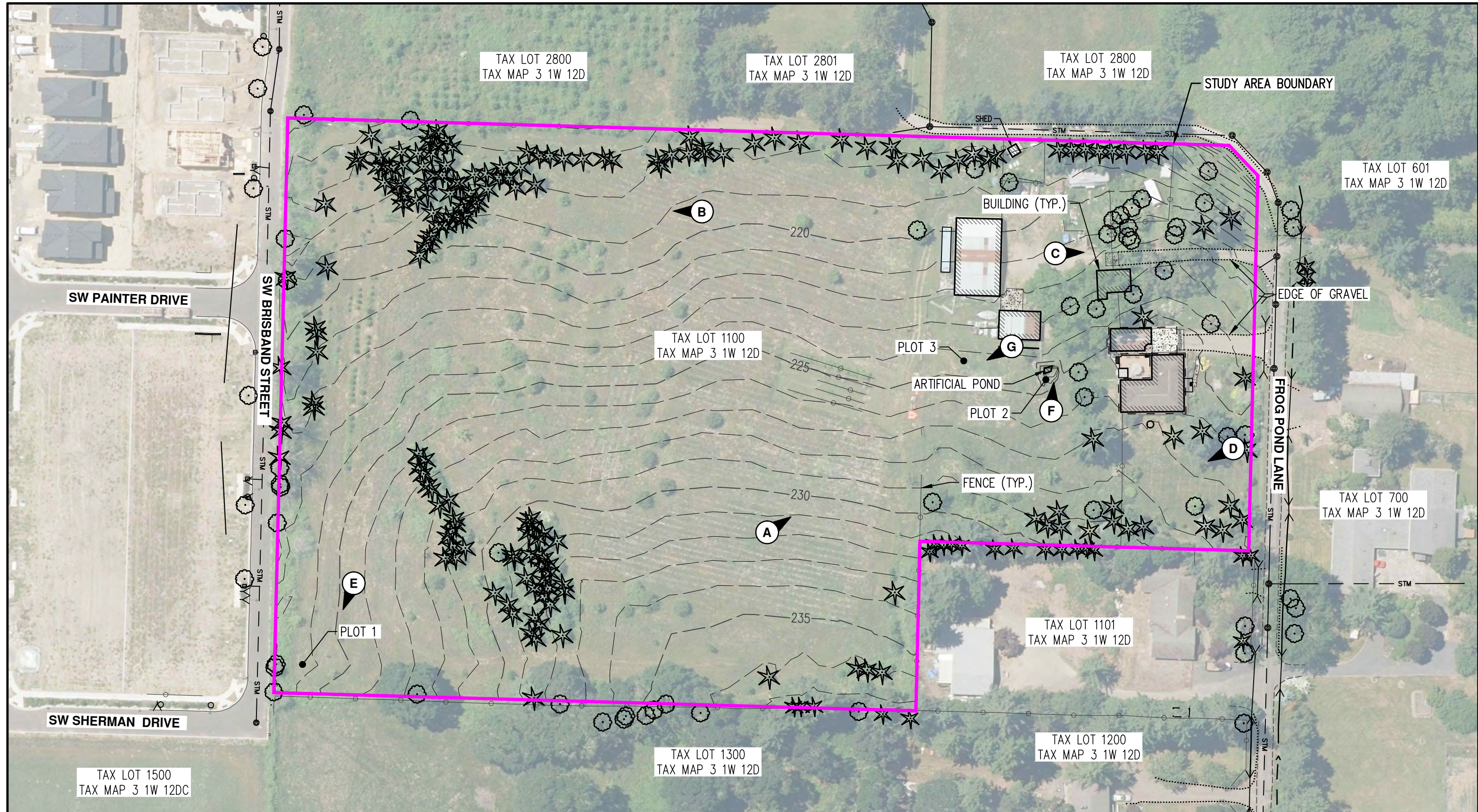
RECENT AERIAL IMAGE
7400 SW FROG POND LANE WETLAND DETERMINATION REPORT

AKS ENGINEERING & FORESTRY, LLC
 12965 SW HERMAN RD, STE 100
 TUALATIN, OR 97062
 503.563.6151 WWW.AKS-ENG.COM



FIGURE
5

DRWN: GPM
 CHKD: SAR
 AKS JOB:
 10411



LEGEND (COLOR COPY):

 TOTAL ON-SITE ARTIFICIAL POND AREA: 29 SF±

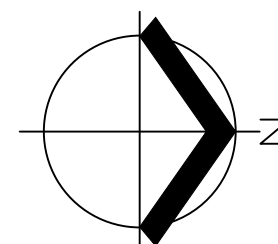
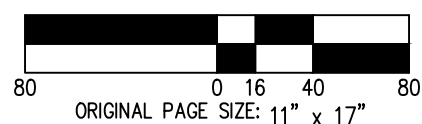
 PHOTO POINT LOCATION AND ORIENTATION

PLOTS SHOWN WERE MAPPED BY AKS ENGINEERING & FORESTRY, LLC (AKS) ON APRIL 22, 2024, AND WERE RECORDED WITH SUB-METER ACCURACY USING A TRIMBLE R10 GPS RECEIVER AND TSC3 DATA COLLECTOR.

PROPERTY BOUNDARIES, STUDY AREA BOUNDARY, EXISTING CONDITIONS, 1-FOOT INTERVAL CONTOURS, AND TREE SURVEY OF TREES >6"DBH DERIVED FROM AKS PROFESSIONAL LAND SURVEY BETWEEN APRIL 8, TO 18, 2024.

AERIAL DERIVED FROM OREGONMETRO.GOV (2021).

SCALE: 1" = 80 FEET



DATE: 05/23/2024

WETLAND DETERMINATION MAP

7400 SW FROG POND LANE WETLAND DETERMINATION REPORT

AKS ENGINEERING & FORESTRY, LLC
 12965 SW HERMAN RD, STE 100
 TUALATIN, OR 97062
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FIGURE

6

DRWN: GPM
 CHKD: SAR
 AKS JOB:
 10411

Appendix B: Wetland Determination Data Forms

Appendix C: Representative Site Photographs



Photo A. View of storage buildings, fruit trees and row crops within the central portion of the study area.



Photo B. View of trees and field dominant in non-native grasses facing the southern portion of the study area.



Photo C. View of some of the storage buildings associated with the home facing the northwestern corner of the study area.



Photo D. View of the lawn within the northeastern corner of the study area.



Photo E. View of Plot 1 facing the southeast corner of the study area.



Photo F. View of the artificial pond and Plot 2 within the northern portion of the study area.



Photo G. View of Plot 3 and the general vicinity of inundation signatures observed on historic aerial imagery.

Appendix D: Literature Cited and Referenced

Literature Cited and Referenced

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-

Exhibit G: Preliminary Stormwater Report

Ridgecrest Wilsonville, Oregon

Preliminary Stormwater Report

Date: June 2024

Client: West Hills Land Development, LLC
3330 NW Yeon Avenue, Suite 200
Portland, OR 97210

Engineering Contact: Lawrence Pankey, PE
(503) 563-6151

Prepared By: Lawrence Pankey, PE

Engineering Firm: AKS Engineering & Forestry, LLC
12965 SW Herman Road, Suite 100
Tualatin, OR 97062

AKS Job Number: 10411



RENEWS: DECEMBER 31, 2024



www.aks-eng.com

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Appendix H: Information from NRCS Soil Survey of Clackamas County, Oregon

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Appendix J: Additional Downstream Analysis Reference Documents

Preliminary Stormwater Report

RIDGECREST

WILSONVILLE, OREGON

1.0 Purpose of Report

The purpose of this report is to analyze the effect development of 7400 Frog Pond Lane 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 Location/Description

The development is located on Tax Lot 1100 of Clackamas County Assessor's Map 3 1W 12D. The project site is located to the north of the intersection of SW Brisband Street and SW Painter Drive in Wilsonville, Oregon. The site area is ±9 acres. The site area generally slopes to the west toward the Frog Pond Terrace project currently under construction with a portion of the site sloping toward SW Brisband Street to the south. Stormwater runoff from this development will be collected and routed to new low impact development (LID) stormwater facilities throughout the site to meet City of Wilsonville (City) standards for water quality and flow control. Stormwater runoff from the site will be routed through a series of downstream public stormwater drainage conveyance pipes and eventually discharge into Boeckman Creek.

3.0 Regulatory Design Criteria

3.1. Water Quality Requirements

Per the City of Wilsonville's 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 Clackamas County BMP Sizing Tool addresses these water quality requirements to size stormwater management facilities meeting best management practices (BMPs).

3.2. Flow Control Requirements

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 and size the public stormwater conveyance system. The SBUH method uses the Soil Conservation Service (SCS) Type 1A 24-hour storm. HydroCAD computer software will aid in the analysis.

5.0 Design Parameters

5.1. Design Storms

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 Basin

The upstream basin consists of the Frog Pond Cottage Park Place project, which is anticipated to develop prior to this project. It is assumed that stormwater runoff generated from the upstream basin is to be managed on-site by the public storm drainage system to be installed with that project.

5.2. Pre-Developed Site Topography and Land Use

5.2.1. Site Topography

The existing stormwater runoff drains to the northwest and southwest corners of the site. The vegetative cover of the site consists of grass, trees, and brush.

5.2.2. Land Use

Tax Lot 1100 currently has a single-family home and several outbuildings on-site. All existing structures will be removed as a part of this development.

5.3. Soil Type

The soils present on the site are classified as Aloha silt loam (hydrologic soil group C/D), and Woodburn silt loam (hydrologic soil group C) by the Natural Resources Conservation Service (NRCS) Soil Survey for Clackamas County. Information on these soil types 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 for the construction of public streets, detached single-family homes, stormwater facilities, and other associated infrastructure.

Due to topographic constraints, the westernmost portion of pavement widening improvements, totaling ±1,650 square feet of impervious area in SW Brisband Street in Basin 1.3, cannot be captured and treated by an on-site LID. Runoff generated by this portion of street improvements will be captured by a new catch basin and routed to the existing public storm system in SW Brisband Street.

5.4.2. Land Use

The post-developed land use will consist of 54 detached single-family homes, public streets, open space, and stormwater facilities.

5.4.3. Post-Developed Input Parameters

The City of Wilsonville 2015 *Stormwater & Surface Water Design & Construction Standards* assesses each dwelling with 2,750 square feet of impervious area. This area is not practical for the smaller lot sizes in this development; therefore, the assumed impervious area for each lot is based on an assumed roof area, which is based on the allowable lot coverage per the underlying zoning.

For middle-housing lots in the Medium Lot Single Family (R-7) zoning district, the average lot area is $\pm 3,830$ square feet, and the allowable lot coverage is 45 percent. Therefore, an assumed average roof area of 1,700 square feet was utilized for lots in the R-7 zoning district.

For middle-housing lots in the Large Lot Single Family (R-10) zoning district, the average lot area is $\pm 4,520$ square feet, and the allowable lot coverage is 40 percent. Therefore, an assumed average roof area of 1,800 square feet was utilized for lots zoned R-10.

An additional 360 square feet was included for an assumed 20-foot-wide by 18-foot-long driveway per lot. The resultant total impervious areas for each lot type are: 2,060 square feet for middle-housing lots zoned R-7 and 2,160 square feet for middle-housing lots zoned R-10.

There are two larger lots that are not intended for subsequent middle housing division. For those lots, the City of Wilsonville standard dwelling area of 2,750 square feet was utilized.

5.5. Infiltration Rate

Per the infiltration testing and report prepared by GeoPacific Engineering, Inc. dated May 23, 2024, falling-head infiltration testing on the project site demonstrated an infiltration rate between 0 and 0.3 inches per hour. The site is not suitable for infiltration.

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 public streets.

6.2. Proposed Stormwater Quality Control Facility Design

The new vegetated swales and stormwater facilities will provide water quality management for stormwater runoff from impervious areas within the new street right-of-way, driveways, and roof areas. All LID stormwater facilities were sized utilizing 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 Quantity Facility Design

The new vegetated swales, planters, and stormwater facilities will provide flow control management for stormwater runoff from impervious areas within the new street rights-of-way and roof areas. All LID stormwater facilities were sized utilizing 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. Facility Sizing Adjustments

Per Section 301.4.05.a.5 of the 2015 City of Wilsonville *Stormwater & Surface Water Design & Construction Standards*, alternate facility specifications may be used to adjust the size of the stormwater management facility as calculated by the BMP Sizing Tool. Table 3.11 specifies that an increase in growing media depth by 12 inches or more permits the reduction of the calculated surface area by up to 25 percent. This adjustment will be applied to Swales 1.1, 4, 29, 30, 38, 40, and 41.

6.5. Emergency Overflow Calculations

The emergency overflow weirs were 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 in Tract D will back up out of the catch basin along SW Brisband Street and flow down SW Brisband Street towards Boeckman Creek. If this catch basin becomes plugged, overflow will sheet flow out of the pond and across the overflow riprap pad and the curb ramp at the corner of SW Brisband Street and SW Sherman Drive, and down SW Brisband Street towards Boeckman Creek.

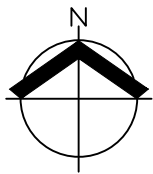
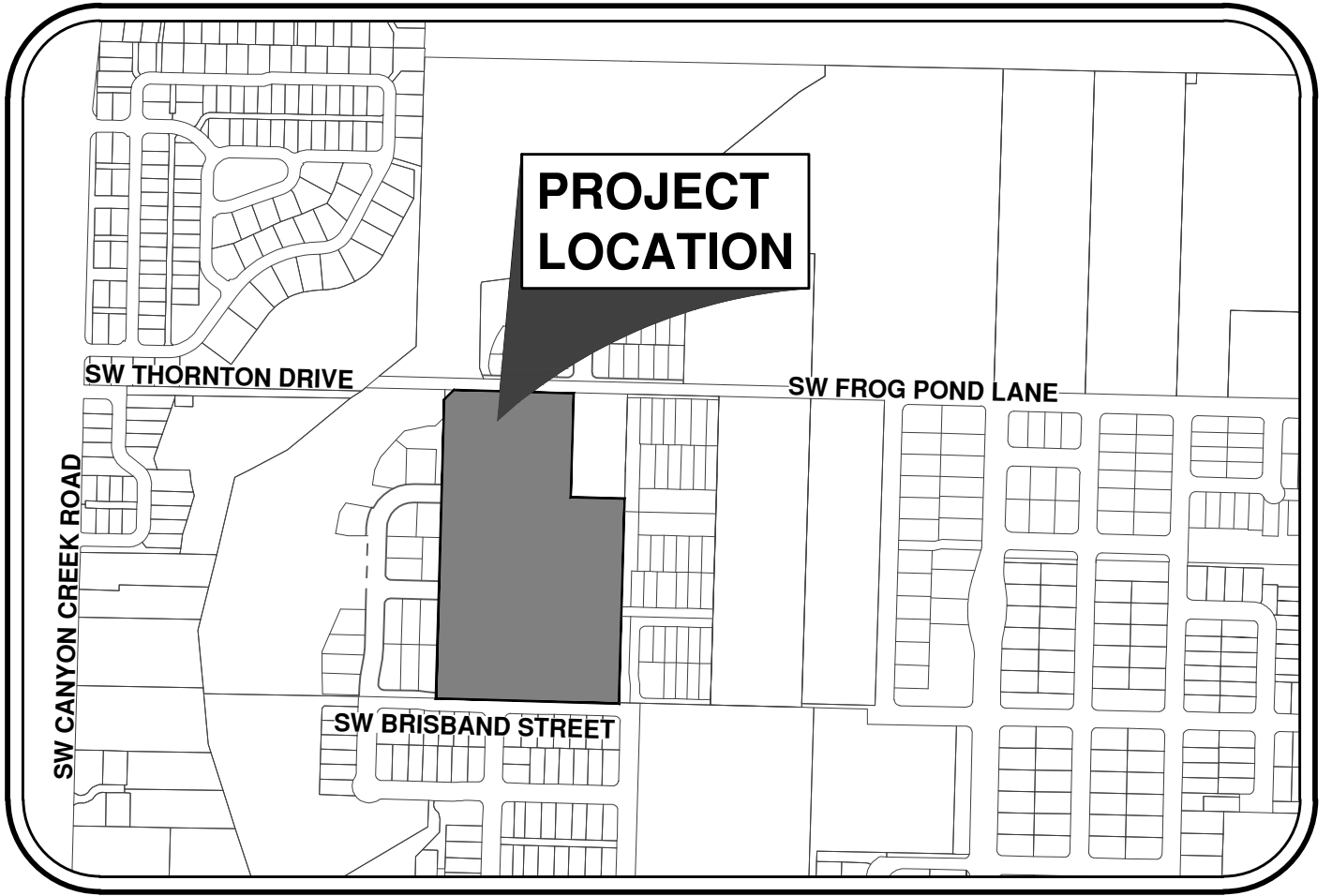
For the stormwater facility in Tract B, if the outlet structure becomes plugged and cannot convey runoff from the site, the overflow stormwater will sheet flow out of the pond across the overflow riprap pad and into SW Alder Street. From there, it will flow down SW Alder Street toward Boeckman Creek.

6.6. Downstream Analysis

Runoff from the southern basin will be conveyed to the existing public storm drainage system in SW Brisband Street constructed with Morgan Farm Phase 2. Stormwater discharged from the site at this location continues through Morgan Farm Phase 2 and discharges into Boeckman Creek. Per the Morgan Farm Phase 2 downstream analysis included in Appendix G, the existing system within Morgan Farm Phase 2 has capacity to convey upstream runoff from the post-developed 25-year storm event, which includes the south basin of this site. Based on the analysis of the downstream system, the large swale along the western boundary of Morgan Farm Phase 2 is expected to experience a surcharge depth of ± 6 inches of depth contained within the bottom of the swale.

Runoff from the remainder of the site will be conveyed to the public storm drainage system being installed with the adjacent Frog Pond Overlook project to the north and Frog Pond Terrace project to the west. An analysis of the capacity of this downstream system is included in Appendix G.

Appendix A: Vicinity Map



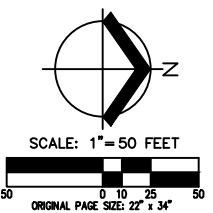
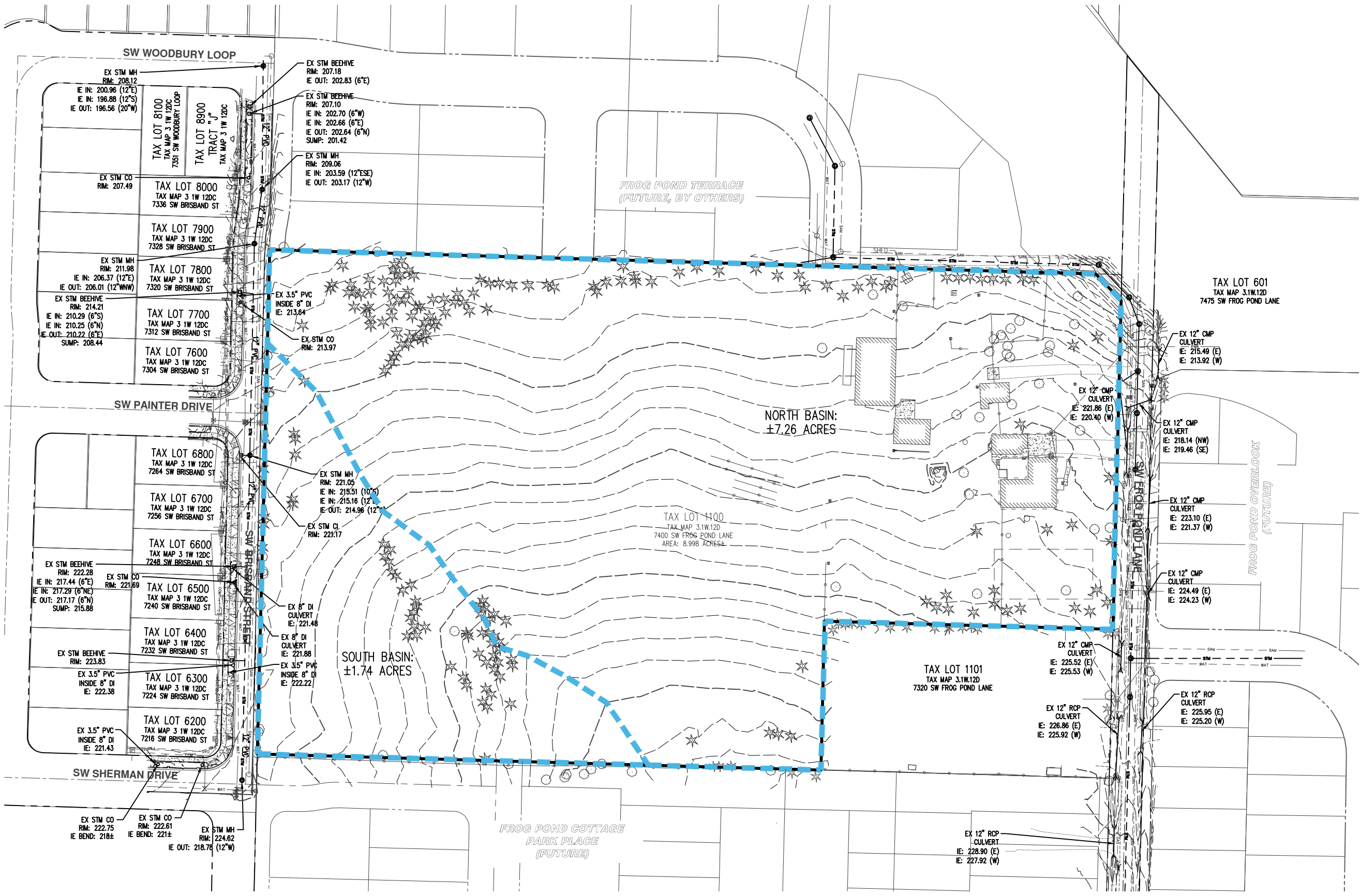
VICINITY MAP
NOT TO SCALE

Appendix B: Pre-Developed Basin Map

PRE-DEVELOPED BASIN MAP
RIDGECREST
WEST HILLS LAND DEVELOPMENT, LLC
WILSONVILLE, OREGON

PRELIMINARY
NOT FOR
CONSTRUCTION

JOB NUMBER:	10411
DATE:	08/19/2024
DESIGNED BY:	LTP
DRAWN BY:	AC
CHECKED BY:	MBH



Appendix C: Post-Developed Basin Map



TAX LOT 8100 TAX MAP 3 1W 12DC 7351 SW WOODBURY LOOP
TAX LOT 8000 TAX MAP 3 1W 12DC 7336 SW BRISBAND ST
TAX LOT 7900 TAX MAP 3 1W 12DC 7328 SW BRISBAND ST
TAX LOT 7800 TAX MAP 3 1W 12DC 7320 SW BRISBAND ST
TAX LOT 7700 TAX MAP 3 1W 12DC 7312 SW BRISBAND ST
TAX LOT 7600 TAX MAP 3 1W 12DC 7304 SW BRISBAND ST

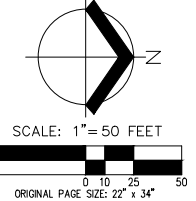
TAX LOT 6800 TAX MAP 3 1W 12DC 7264 SW BRISBAND ST
TAX LOT 6700 TAX MAP 3 1W 12DC 7256 SW BRISBAND ST
TAX LOT 6600 TAX MAP 3 1W 12DC 7248 SW BRISBAND ST
TAX LOT 6500 TAX MAP 3 1W 12DC 7240 SW BRISBAND ST
TAX LOT 6400 TAX MAP 3 1W 12DC 7232 SW BRISBAND ST
TAX LOT 6300 TAX MAP 3 1W 12DC 7224 SW BRISBAND ST
TAX LOT 6200 TAX MAP 3 1W 12DC 7216 SW BRISBAND ST

TAX LOT 601
TAX MAP 3.1W.12D
7475 SW FROG POND LANE

POST-DEVELOPED BASIN MAP
RIDGECREST
WEST HILLS LAND DEVELOPMENT, LLC
WILSONVILLE, OREGON

PRELIMINARY
NOT FOR
CONSTRUCTION

JOB NUMBER:	10411
DATE:	06/19/2024
DESIGNED BY:	LTP
DRAWN BY:	AC
CHECKED BY:	MBH



Appendix D: BMP Sizing Tool Report

WES BMP Sizing Report

Project Information

Project Name	10411 SW FROG POND LANE
Project Type	SingleFamily
Location	7400 SW Frog Pond Lane
Stormwater Management Area	10740
Project Applicant	
Jurisdiction	OutofDistrict

Drainage Management Area

Name	Area (sq-ft)	Pre-Project Cover	Post-Project Cover	DMA Soil Type	BMP
BASIN 1.2 IMPERVIOUS	3,150	Grass	ConventionalConcrete	D	TRACT D POND
BASIN 1.1 ROOF	3,400	Grass	Roofs	D	SWALE 1.1
BASIN 2 IMPERVIOUS	3,502	Grass	ConventionalConcrete	D	TRACT D POND
BASIN 22 IMPERVIOUS	2,432	Grass	ConventionalConcrete	D	SWALE 22
BASIN 21 IMPERVIOUS	2,422	Grass	ConventionalConcrete	D	TRACT B POND
BASIN 7 ROOF	1,700	Grass	Roofs	D	SWALE 7
BASIN 21 ROOF	5,100	Grass	ConventionalConcrete	D	TRACT B POND
BASIN 5 ROOF	2,750	Grass	Roofs	D	SWALE 5
BASIN 20 IMPERVIOUS	3,172	Grass	ConventionalConcrete	D	SWALE 20
BASIN 12 ROOF	5,100	Grass	Roofs	D	TRACT B POND
BASIN 11 ROOF	3,400	Grass	Roofs	D	TRACT B POND
BASIN 19 ROOF	1,700	Grass	Roofs	D	SWALE 19
BASIN 18 ROOF	1,700	Grass	Roofs	D	SWALE 18
BASIN 15 IMPERVIOUS	7,392	Grass	ConventionalConcrete	D	SWALE 15

BASIN 8 IMPERVIOUS	2,102	Grass	ConventionalConcrete	D	TRACT B POND
BASIN 3 IMPERVIOUS	2,442	Grass	ConventionalConcrete	D	SWALE 3
BASIN 14 ROOF	1,700	Grass	Roofs	D	SWALE 14
BASIN 5 IMPERVIOUS	815	Grass	ConventionalConcrete	D	SWALE 5
BASIN 6 ROOF	8,500	Grass	Roofs	D	TRACT D POND
BASIN 7 IMPERVIOUS	1,640	Grass	ConventionalConcrete	D	SWALE 7
BASIN 4 IMPERVIOUS	3,827	Grass	ConventionalConcrete	D	SWALE 4
BASIN 9 IMPERVIOUS	3,432	Grass	ConventionalConcrete	D	SWALE 9
BASIN 10 IMPERVIOUS	4,572	Grass	ConventionalConcrete	D	SWALE 10
BASIN 12 ROOF	5,100	Grass	Roofs	D	TRACT B POND
BASIN 13 IMPERVIOUS	4,852	Grass	ConventionalConcrete	D	SWALE 13
BASIN 14 IMPERVIOUS	2,830	Grass	ConventionalConcrete	D	SWALE 14
BASIN 16 IMPERVIOUS	3,600	Grass	ConventionalConcrete	D	SWALE 16
BASIN 19 IMPERVIOUS	2,850	Grass	ConventionalConcrete	D	SWALE 19
BASIN 17 IMPERVIOUS	6,370	Grass	ConventionalConcrete	D	SWALE 17
BASIN 18 IMPERVIOUS	1,280	Grass	ConventionalConcrete	D	SWALE 18
BASIN 13 ROOF	1,700	Grass	Roofs	D	SWALE 13
BASIN 20 ROOF	1,700	Grass	Roofs	D	SWALE 20
BASIN 23 IMPERVIOUS	2,362	Grass	ConventionalConcrete	D	SWALE 23
BASIN 8 ROOF	5,100	Grass	Roofs	D	TRACT B POND
BASIN 24 ROOF	3,400	Grass	Roofs	D	TRACT B POND
BASIN 24 IMPERVIOUS	3,402	Grass	ConventionalConcrete	D	TRACT B POND
BASIN 25 ROOF	3,400	Grass	Roofs	D	TRACT B POND

BASIN 26 IMPERVIOUS	2,787	Grass	ConventionalConcrete	D	SWALE 26
BASIN 27 IMPERVIOUS	3,050	Grass	ConventionalConcrete	D	SWALE 27
BASIN 28 ROOF	3,400	Grass	Roofs	D	TRACT B POND
BASIN 29 ROOF	3,400	Grass	Roofs	D	SWALE 29
BASIN 29 IMPERVIOUS	1,116	Grass	ConventionalConcrete	D	SWALE 29
BASIN 30 IMPERVIOUS	1,436	Grass	ConventionalConcrete	D	SWALE 30
BASIN 30 ROOF	3,400	Grass	Roofs	D	SWALE 30
BASIN 31 IMPERVIOUS	2,860	Grass	ConventionalConcrete	C	SWALE 31
BASIN 31 ROOF	1,700	Grass	Roofs	C	SWALE 31
BASIN 32 IMPERVIOUS	6,080	Grass	ConventionalConcrete	C	SWALE 32
BASIN 32 ROOF	3,400	Grass	Roofs	C	SWALE 32
BASIN 33 ROOF	1,800	Grass	Roofs	C	SWALE 33
BASIN 33 IMPERVIOUS	3,210	Grass	ConventionalConcrete	C	SWALE 33
BASIN 34 IMPERVIOUS	2,030	Grass	ConventionalConcrete	C	TRACT B POND
BASIN 35 IMPERVIOUS	2,015	Grass	ConventionalConcrete	C	SWALE 35
BASIN 35 ROOF	1,800	Grass	Roofs	C	SWALE 35
BASIN 36 IMPERVIOUS	11,730	Grass	ConventionalConcrete	C	TRACT B POND
BASIN 36 ROOF	12,600	Grass	Roofs	C	TRACT B POND
BASIN 37 ROOF	9,000	Grass	Roofs	C	TRACT B POND
BASIN 38 IMPERVIOUS	2,455	Grass	ConventionalConcrete	C	SWALE 38
BASIN 39 ROOF	9,950	Grass	Roofs	C	SWALE 39
BASIN 39 IMPERVIOUS	5,011	Grass	ConventionalConcrete	C	SWALE 39
BASIN 40 IMPERVIOUS	2,212	Grass	ConventionalConcrete	C	SWALE 40

BASIN 41 IMPERVIOUS	3,002	Grass	Conventional Concrete	C	SWALE 41
BASIN 1.3 IMPERVIOUS	1,650	Grass	Conventional Concrete	D	NA

LID Facility Sizing Details

LID ID	Design Criteria	BMP Type	Facility Soil Type	Minimum Area (sq-ft)	Planned Areas (sq-ft)	Orifice Diameter (in)
SWALE 22	Flow Control and Treatment	Vegetated Swale - Filtration	Lined	97.3	100.0	0.6
SWALE 23	Flow Control and Treatment	Vegetated Swale - Filtration	Lined	94.5	96.0	0.5
SWALE 7	Flow Control and Treatment	Vegetated Swale - Filtration	Lined	133.6	140.0	0.6
SWALE 3	Flow Control and Treatment	Vegetated Swale - Filtration	Lined	97.7	100.0	0.6
SWALE 4 *	Flow Control and Treatment	Vegetated Swale - Filtration	Lined	153.1	118.0	0.7
SWALE 5	Flow Control and Treatment	Vegetated Swale - Filtration	Lined	142.6	145.0	0.7
SWALE 20	Flow Control and Treatment	Vegetated Swale - Filtration	Lined	194.9	197.0	0.8
SWALE 9	Flow Control and Treatment	Vegetated Swale - Filtration	Lined	137.3	140.0	0.7
SWALE 10	Flow Control and Treatment	Vegetated Swale - Filtration	Lined	182.9	185.0	0.8
SWALE 19	Flow Control and Treatment	Vegetated Swale - Filtration	Lined	182.0	184.0	0.8
SWALE 18	Flow Control and Treatment	Vegetated Swale - Filtration	Lined	119.2	120.0	0.6
SWALE 13	Flow Control and Treatment	Vegetated Swale - Filtration	Lined	262.1	264.0	0.9
SWALE 14	Flow Control and Treatment	Vegetated Swale - Filtration	Lined	181.2	184.0	0.8

*A Reduction by 25% of calculated surface area permitted with an increase of growing media depth by 12 inches or more. See Section 6.4 for additional information

SWALE 15	FlowControlAndTreatment	Vegetated Swale - Filtration	Lined	295.7	297.0	1.0
SWALE 16	FlowControlAndTreatment	Vegetated Swale - Filtration	Lined	144.0	144.0	0.7
SWALE 17	FlowControlAndTreatment	Vegetated Swale - Filtration	Lined	254.8	275.0	0.9
SWALE 26	FlowControlAndTreatment	Vegetated Swale - Filtration	Lined	111.5	114.0	0.6
SWALE 27	FlowControlAndTreatment	Vegetated Swale - Filtration	Lined	122.0	124.0	0.6
SWALE 29*	FlowControlAndTreatment	Vegetated Swale - Filtration	Lined	180.6	136.0	0.8
SWALE 30*	FlowControlAndTreatment	Vegetated Swale - Filtration	Lined	193.4	146.0	0.8
SWALE 31	FlowControlAndTreatment	Vegetated Swale - Filtration	Lined	319.2	320.0	0.6
SWALE 32	FlowControlAndTreatment	Vegetated Swale - Filtration	Lined	663.6	670.0	0.9
SWALE 1.1*	FlowControlAndTreatment	Vegetated Swale - Filtration	Lined	136.0	102.0	0.7
SWALE 33	FlowControlAndTreatment	Vegetated Swale - Filtration	Lined	350.7	352.0	0.7
SWALE 35	FlowControlAndTreatment	Vegetated Swale - Filtration	Lined	267.1	306.0	0.6
SWALE 38*	FlowControlAndTreatment	Vegetated Swale - Filtration	Lined	171.9	132.0	0.5
SWALE 39	FlowControlAndTreatment	Vegetated Swale - Filtration	Lined	1,047.3	1,074.0	1.2
SWALE 40*	FlowControlAndTreatment	Vegetated Swale - Filtration	Lined	154.8	128.0	0.4
SWALE 41*	FlowControlAndTreatment	Vegetated Swale - Filtration	Lined	210.1	161.0	0.5

*A Reduction by 25% of calculated surface area permitted with an increase of growing media depth by 12 inches or more. See Section 6.4 for additional information

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?
TRACT D POND	FCWQT	Lined	5.00	900.0	3	1,500.0	1,305.6	Yes
TRACT B POND	FCWQT	Lined	6.00	2,283.0	3	5,970.7	5,144.3	Yes

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: TRACT D POND

Design: FlowControlAndTreatment

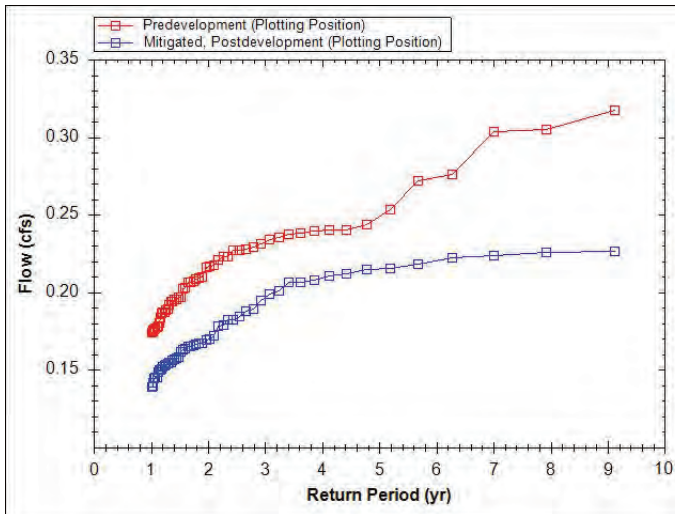
Shape Curve

Depth (ft)	Area (sq ft)
5.0	900.0

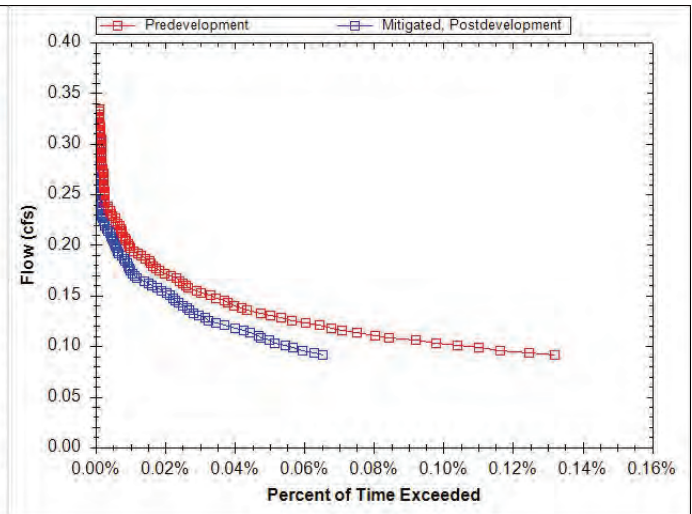
Outlet Structure Details

Lower Orifice Invert (ft)	0.0
Lower Orifice Dia (in)	1.2
Upper Orifice Invert(ft)	3.4
Upper Orifice Dia (in)	2.7
Overflow Weir Invert(ft)	4.0
Overflow Weir Length (ft)	6.3

Flow Frequency Chart



Flow Duration Chart



Simple Pond Geometry Configuration

Pond ID: TRACT B POND

Design: FlowControlAndTreatment

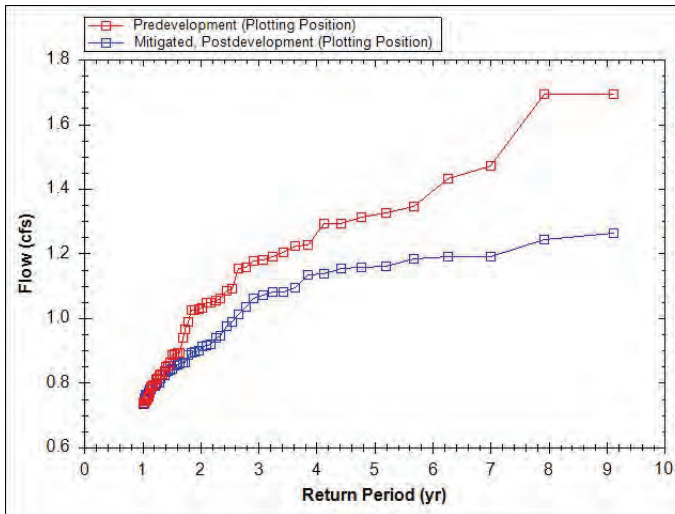
Shape Curve

Depth (ft)	Area (sq ft)
6.0	2,283.0

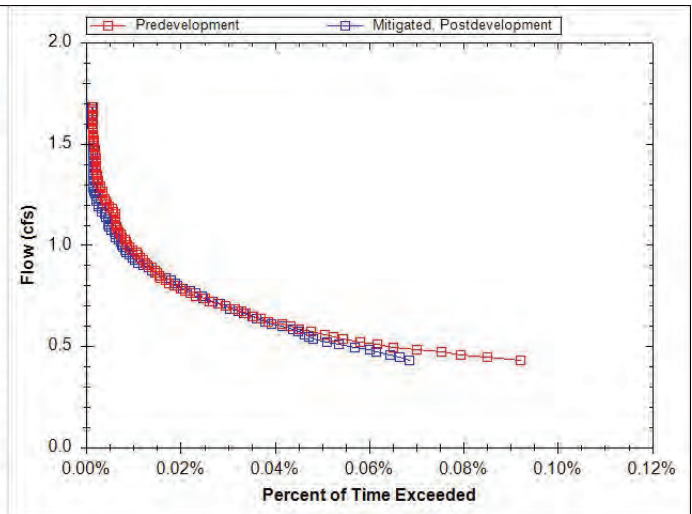
Outlet Structure Details

Lower Orifice Invert (ft)	0.0
Lower Orifice Dia (in)	2.6
Upper Orifice Invert(ft)	4.0
Upper Orifice Dia (in)	5.8
Overflow Weir Invert(ft)	5.0
Overflow Weir Length (ft)	6.3

Flow Frequency Chart



Flow Duration Chart



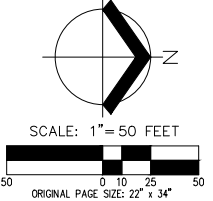
Appendix E: Stormwater Facilities Location Map



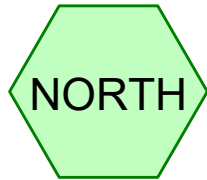
STORMWATER FACILITIES LOCATION MAP
RIDGECREST
WEST HILLS LAND DEVELOPMENT, LLC
WILSONVILLE, OREGON

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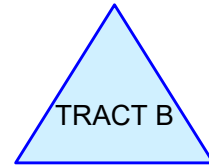
JOB NUMBER:	10411
DATE:	06/19/2024
DESIGNED BY:	LTP
DRAWN BY:	AC
CHECKED BY:	MBH



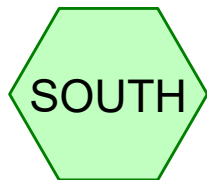
Appendix F: Emergency Overflow Calculations



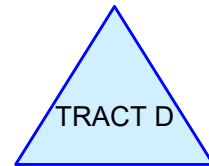
Basins To Pond



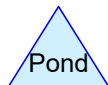
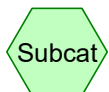
LID STORMWATER FACILITY



Basins To Pond



LID STORMWATER FACILITY



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Area Listing (all nodes)

Area (sq-ft)	CN	Description (subcatchment-numbers)
118,041	98	Impervious (NORTH, SOUTH)
100,800	98	Roofs (NORTH, SOUTH)
218,841	98	TOTAL AREA

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Type IA 24-hr 100-YR Rainfall=4.50"

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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

SubcatchmentNORTH: Basins To Pond Runoff Area=174,505 sf 100.00% Impervious Runoff Depth>4.25"
Tc=10.0 min CN=0/98 Runoff=4.03 cfs 61,801 cf

SubcatchmentSOUTH: Basins To Pond Runoff Area=44,336 sf 100.00% Impervious Runoff Depth>4.25"
Tc=10.0 min CN=0/98 Runoff=1.02 cfs 15,701 cf

Pond TRACTB: LID STORMWATER Peak Elev=217.71' Storage=8,083 cf Inflow=4.03 cfs 61,801 cf
Outflow=3.99 cfs 54,256 cf

Pond TRACTD: LID STORMWATER Peak Elev=217.62' Storage=3,240 cf Inflow=1.02 cfs 15,701 cf
Outflow=1.01 cfs 12,615 cf

Total Runoff Area = 218,841 sf Runoff Volume = 77,502 cf Average Runoff Depth = 4.25"
0.00% Pervious = 0 sf 100.00% Impervious = 218,841 sf

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Type IA 24-hr 100-YR Rainfall=4.50"

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Summary for Subcatchment NORTH: Basins To Pond

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

Runoff = 4.03 cfs @ 7.98 hrs, Volume= 61,801 cf, Depth> 4.25"

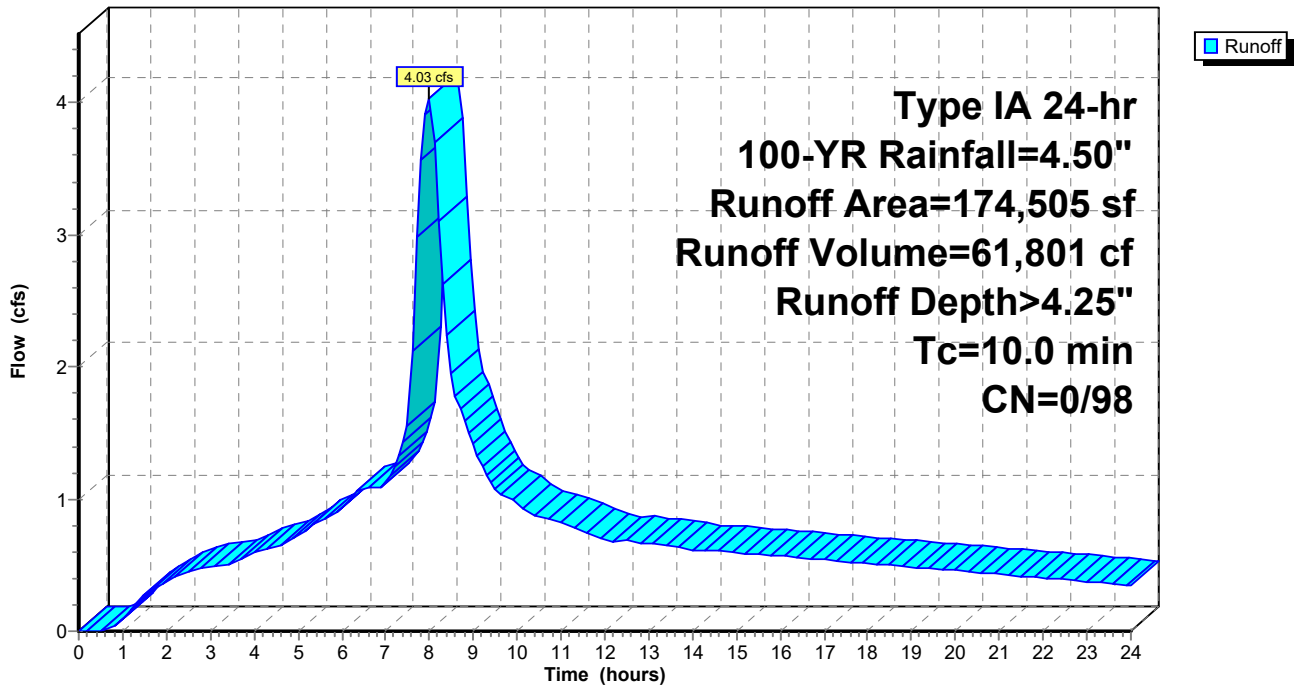
Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-24.00 hrs, dt= 0.10 hrs
Type IA 24-hr 100-YR Rainfall=4.50"

	Area (sf)	CN	Description
*	93,455	98	Impervious
*	81,050	98	Roofs
	174,505	98	Weighted Average
	174,505		100.00% Impervious Area

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

Subcatchment NORTH: Basins To Pond

Hydrograph



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Type IA 24-hr 100-YR Rainfall=4.50"

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Summary for Subcatchment SOUTH: Basins To Pond

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

Runoff = 1.02 cfs @ 7.98 hrs, Volume= 15,701 cf, Depth> 4.25"

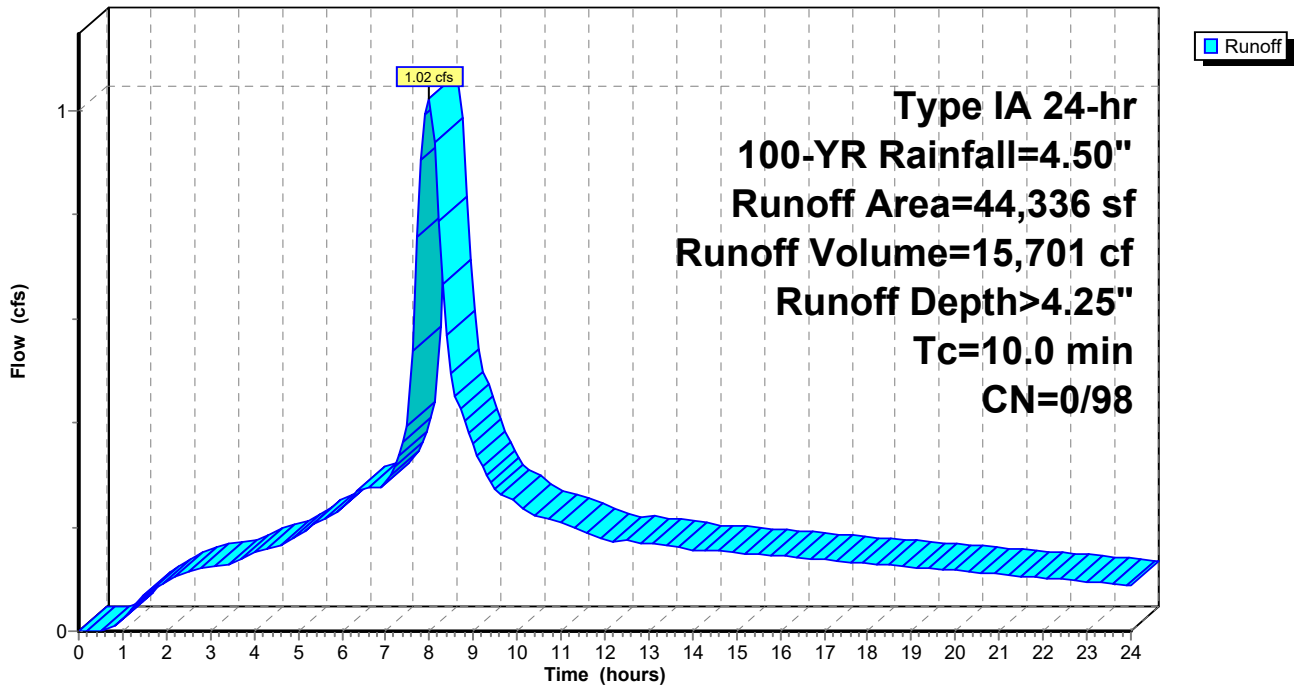
Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-24.00 hrs, dt= 0.10 hrs
Type IA 24-hr 100-YR Rainfall=4.50"

	Area (sf)	CN	Description
*	24,586	98	Impervious
*	19,750	98	Roofs
	44,336	98	Weighted Average
	44,336		100.00% Impervious Area

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

Subcatchment SOUTH: Basins To Pond

Hydrograph



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Type IA 24-hr 100-YR Rainfall=4.50"

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Summary for Pond TRACT B: LID STORMWATER FACILITY

Inflow Area = 174,505 sf, 100.00% Impervious, Inflow Depth > 4.25" for 100-YR event
 Inflow = 4.03 cfs @ 7.98 hrs, Volume= 61,801 cf
 Outflow = 3.99 cfs @ 8.00 hrs, Volume= 54,256 cf, Atten= 1%, Lag= 1.3 min
 Primary = 3.99 cfs @ 8.00 hrs, Volume= 54,256 cf

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.10 hrs / 2
 Peak Elev= 217.71' @ 8.00 hrs Surf.Area= 3,129 sf Storage= 8,083 cf

Plug-Flow detention time= 149.7 min calculated for 54,030 cf (87% of inflow)
 Center-of-Mass det. time= 64.5 min (726.4 - 662.0)

Volume	Invert	Avail.Storage	Storage Description			
#1	210.50'	9,024 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)	
210.50	580	0.0	0	0	580	
213.45	580	40.0	684	684	864	
213.50	580	100.0	29	713	869	
215.00	1,350	100.0	1,407	2,121	1,660	
216.50	2,290	100.0	2,699	4,820	2,634	
217.00	2,620	100.0	1,227	6,047	2,979	
218.00	3,350	100.0	2,978	9,024	3,740	

Device	Routing	Invert	Outlet Devices												
#1	Primary	217.50'	17.0' long x 8.0' breadth Broad-Crested Rectangular Weir												
			Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00												
			2.50 3.00 3.50 4.00 4.50 5.00 5.50												
			Coef. (English) 2.43 2.54 2.70 2.69 2.68 2.68 2.66 2.64 2.64												
			2.64 2.65 2.65 2.66 2.66 2.68 2.70 2.74												

Primary OutFlow Max=3.96 cfs @ 8.00 hrs HW=217.71' (Free Discharge)
 ↑1=**Broad-Crested Rectangular Weir** (Weir Controls 3.96 cfs @ 1.11 fps)

10411 HydroCAD Overflow

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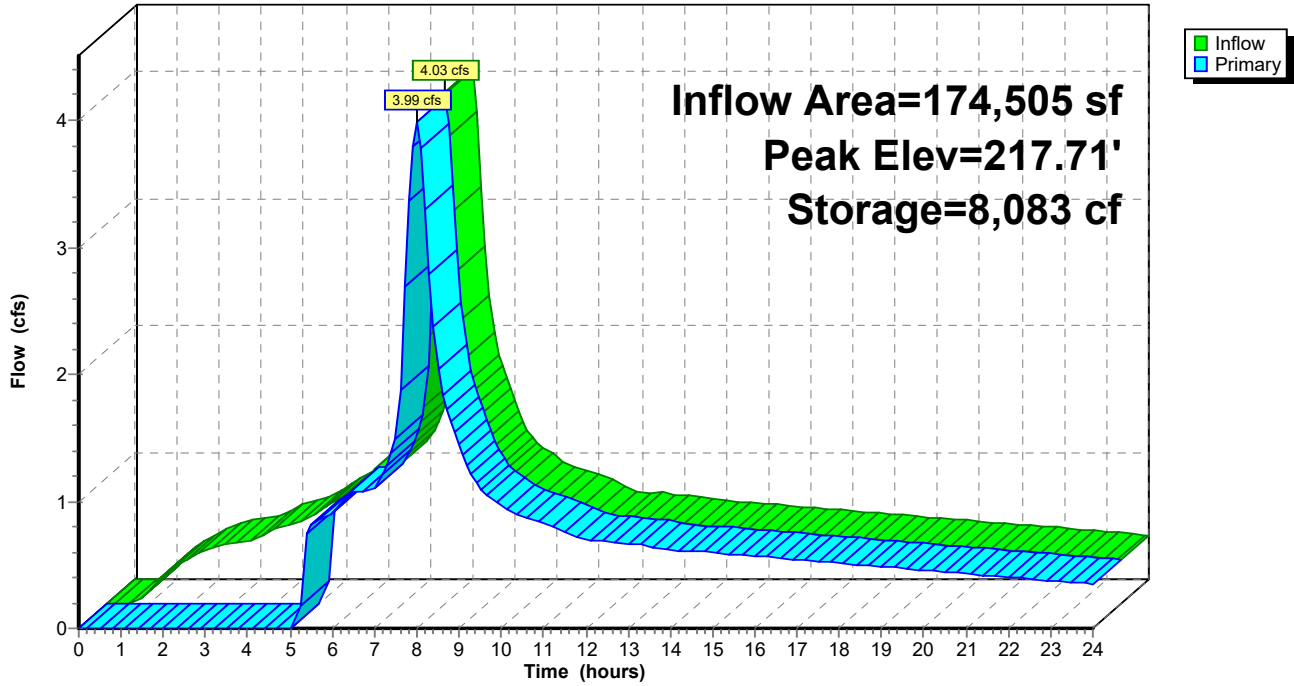
Type IA 24-hr 100-YR Rainfall=4.50"

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Pond TRACT B: LID STORMWATER FACILITY

Hydrograph



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Type IA 24-hr 100-YR Rainfall=4.50"

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Summary for Pond TRACT D: LID STORMWATER FACILITY

Inflow Area = 44,336 sf, 100.00% Impervious, Inflow Depth > 4.25" for 100-YR event
 Inflow = 1.02 cfs @ 7.98 hrs, Volume= 15,701 cf
 Outflow = 1.01 cfs @ 8.00 hrs, Volume= 12,615 cf, Atten= 1%, Lag= 1.5 min
 Primary = 1.01 cfs @ 8.00 hrs, Volume= 12,615 cf

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.10 hrs / 2
 Peak Elev= 217.62' @ 8.00 hrs Surf.Area= 1,503 sf Storage= 3,240 cf

Plug-Flow detention time= 229.2 min calculated for 12,615 cf (80% of inflow)
 Center-of-Mass det. time= 98.2 min (760.1 - 662.0)

Volume	Invert	Avail.Storage	Storage Description			
#1	211.00'	3,852 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)	
211.00	318	0.0	0	0	318	
213.95	318	40.0	375	375	528	
214.00	318	100.0	16	391	532	
215.00	418	100.0	367	758	658	
216.50	1,065	100.0	1,075	1,833	1,324	
217.00	1,214	100.0	569	2,402	1,488	
218.00	1,698	100.0	1,449	3,852	1,995	

Device	Routing	Invert	Outlet Devices												
#1	Primary	217.50'	10.0' long x 8.0' breadth Broad-Crested Rectangular Weir												
			Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00												
			2.50 3.00 3.50 4.00 4.50 5.00 5.50												
			Coef. (English) 2.43 2.54 2.70 2.69 2.68 2.68 2.66 2.64 2.64												
			2.64 2.65 2.65 2.66 2.66 2.68 2.70 2.74												

Primary OutFlow Max=0.98 cfs @ 8.00 hrs HW=217.62' (Free Discharge)
 ↑1=**Broad-Crested Rectangular Weir** (Weir Controls 0.98 cfs @ 0.83 fps)

10411 HydroCAD Overflow

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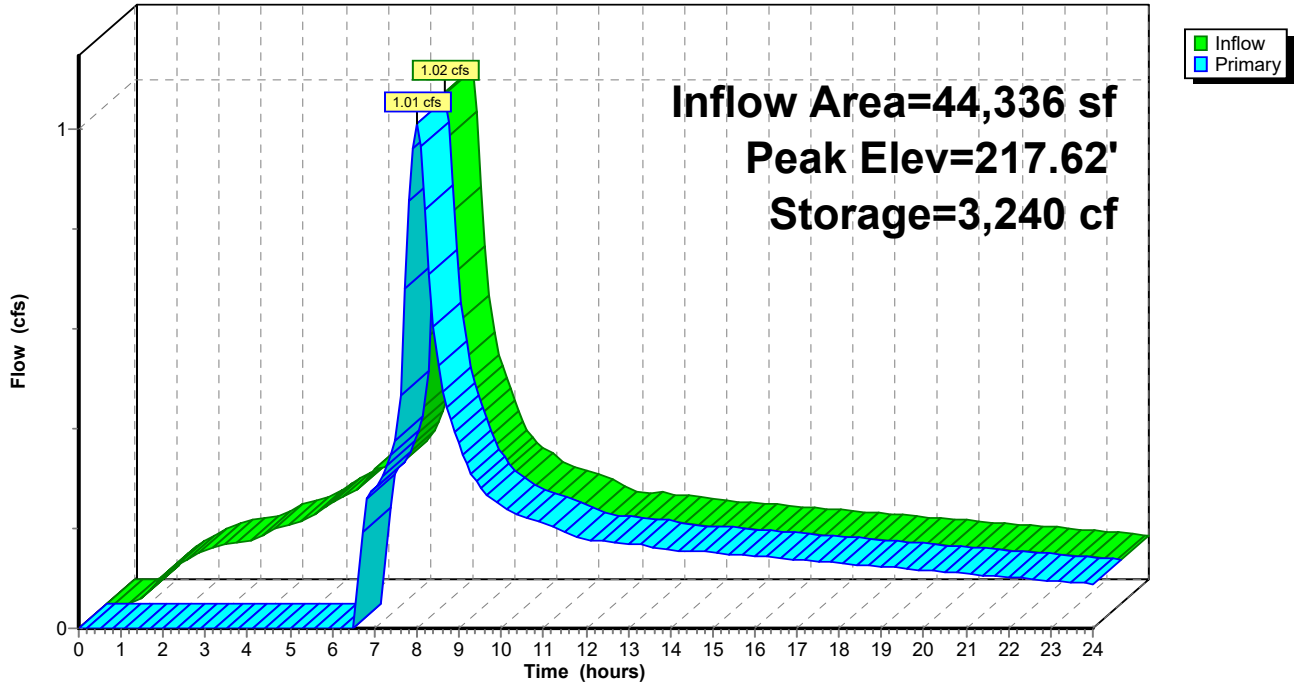
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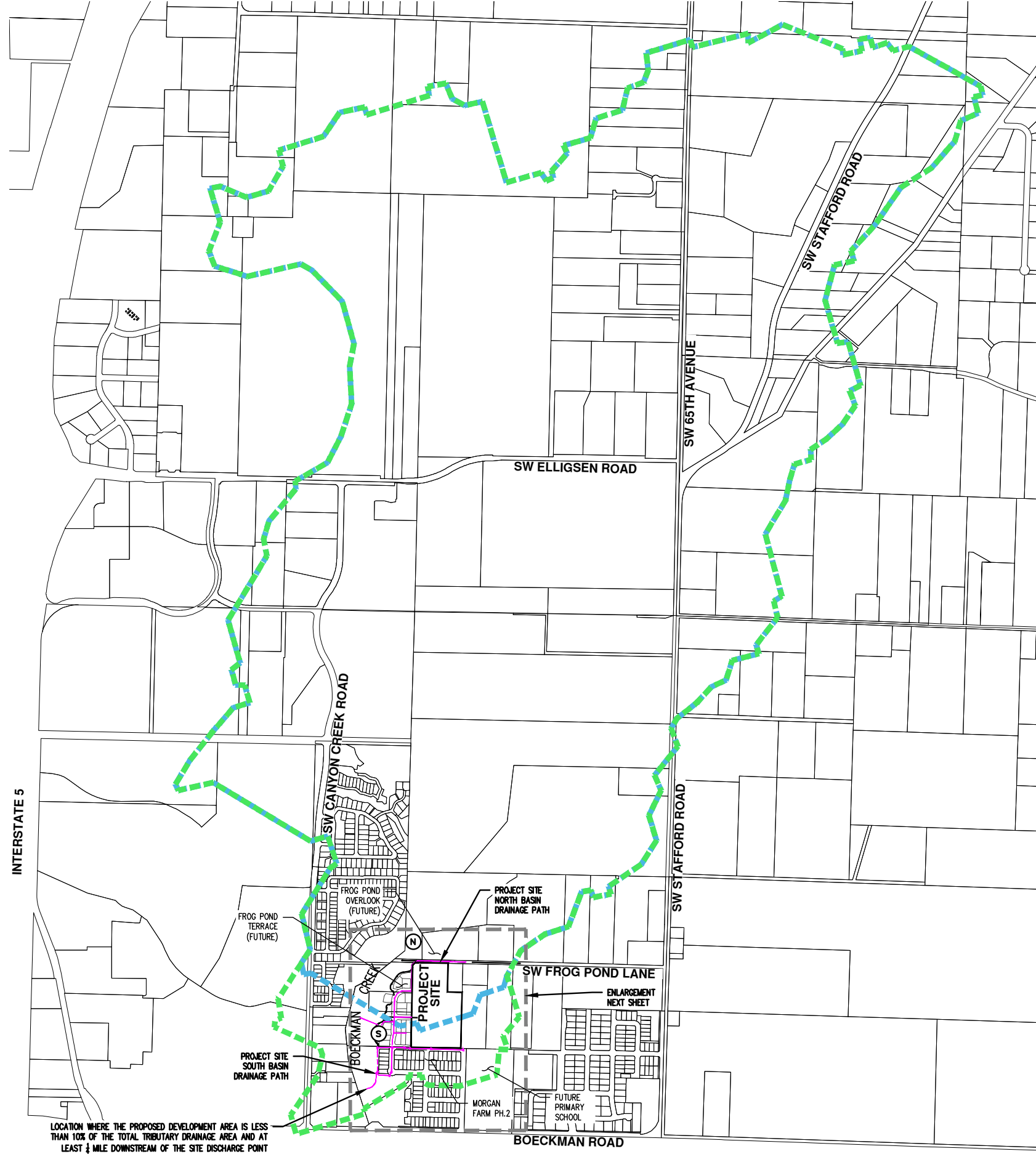
Page 9

Pond TRACT D: LID STORMWATER FACILITY

Hydrograph



Appendix G: Downstream Analysis



LOCATION WHERE THE PROPOSED DEVELOPMENT AREA IS LESS THAN 10% OF THE TOTAL TRIBUTARY DRAINAGE AREA AND AT LEAST 1/4 MILE DOWNSTREAM OF THE SITE DISCHARGE POINT

BASIN LEGEND

NORTH

SOUTH

N

SCALE: 1" = 600 FEET

ORIGINAL PAGE SIZE: 22" X 34"

DOWNSTREAM BASIN MAP
RIDGECREST
WEST HILLS LAND DEVELOPMENT, LLC
WILSONVILLE, OREGON

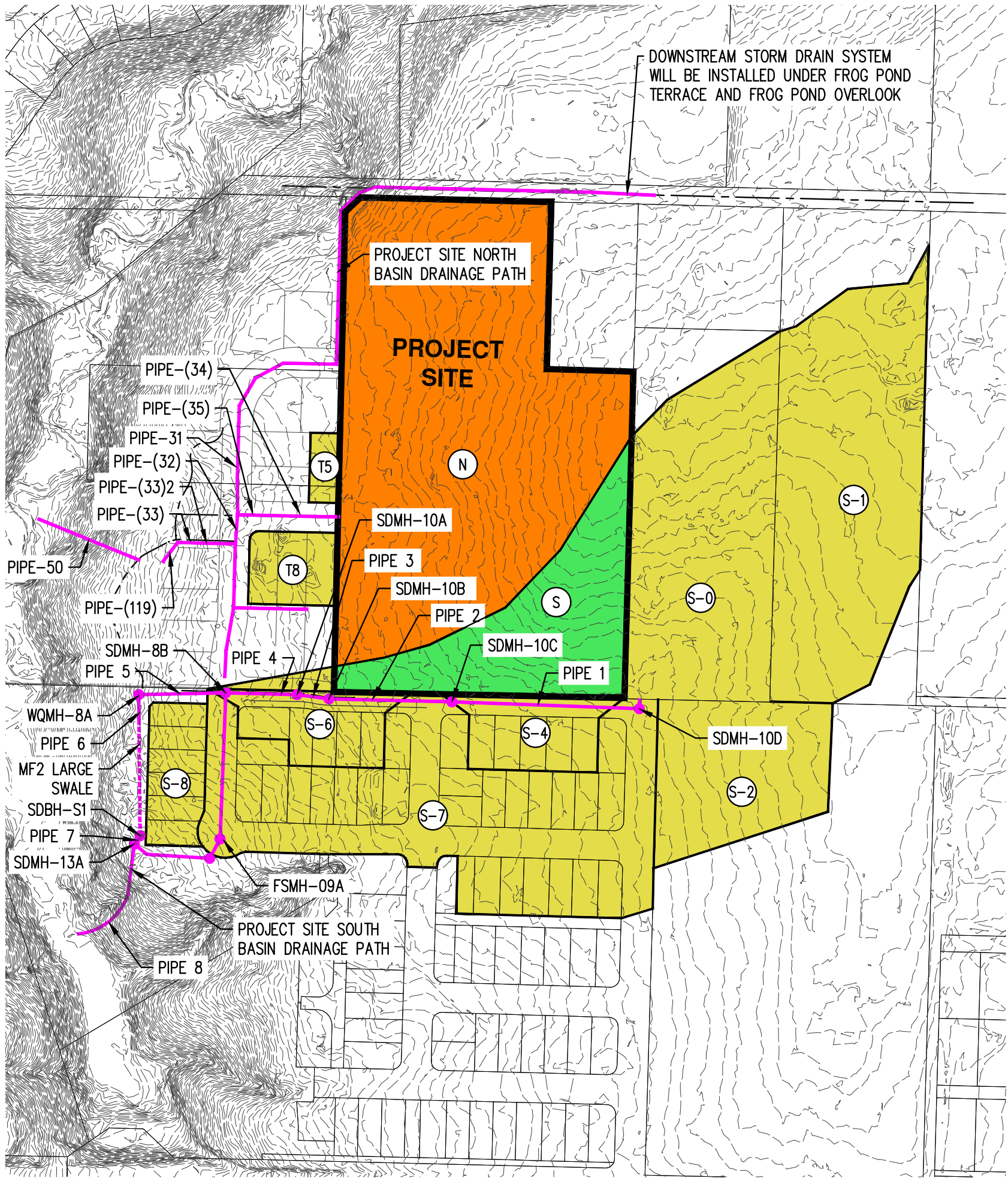
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DOWNSTREAM BASIN MAP ENLARGEMENT
RIDGECREST
WEST HILLS LAND DEVELOPMENT, LLC
WILSONVILLE, OREGON

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DATE:	06/19/2024
DESIGNED BY:	LTP
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CHECKED BY:	MBH



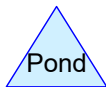
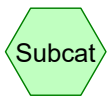
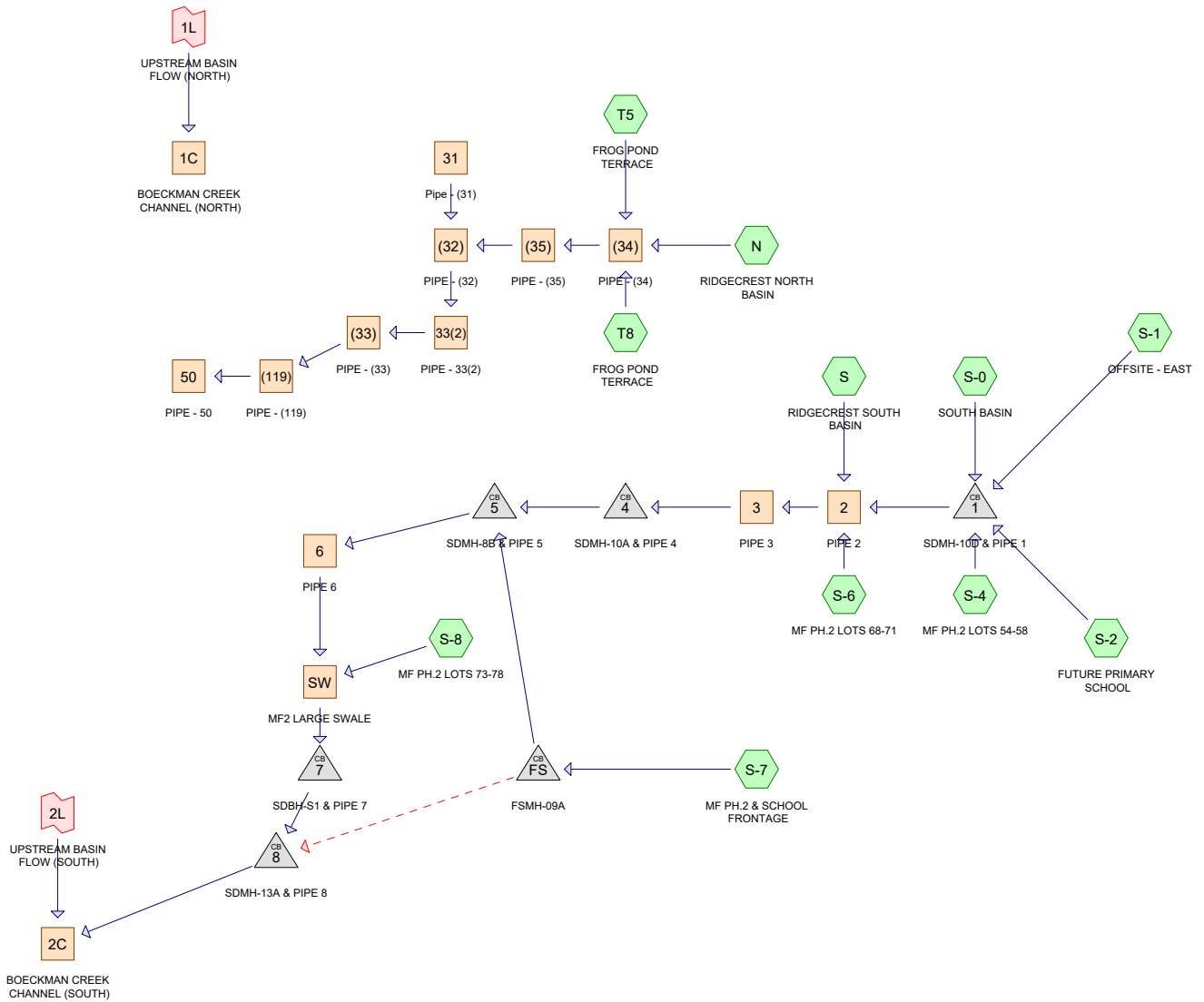
BASIN LEGEND

- N NORTH - ONSITE
- S SOUTH - ONSITE
- S-# OFFSITE

N

SCALE: 1" = 100 FEET

ORIGINAL PAGE SIZE: 22" x 34"



Routing Diagram for 10411 Prelim Downstream
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10411 Prelim Downstream

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Area Listing (all nodes)

Area (sq-ft)	CN	Description (subcatchment-numbers)
14,018	79	50-75% Grass cover, Fair, HSG C (T5, T8)
64,362	74	>75% Grass cover, Good, HSG C (S-6, S-7, S-8)
68,555	80	>75% Grass cover, Good, HSG D (S-0, S-2, S-4)
43,027	98	BASIN 5-11 IMPERVIOUS (S-0)
33,880	98	BASIN 5-11 ROOFS (S-0)
102,950	98	IMPERVIOUS (S-2, S-4, S-6, S-7)
129,041	98	Impervious (N, S, T5, T8)
167,500	80	Pasture/grassland/range, Good, HSG D (S-1)
115,509	98	ROOFS (S-4, S-6, S-7, S-8)
19,750	98	Roof (S)
81,050	98	Roofs, HSG D (N)
32,918	79	Woods/grass comb., Good, HSG D (S-0)
872,560	90	TOTAL AREA

10411 Prelim Downstream

Type IA 24-hr 25-YR Rainfall=3.90"

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Time span=0.00-24.00 hrs, dt=0.01 hrs, 2401 points

Runoff by SBUH method, Split Pervious/Imperv.

Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment N: RIDGECREST NORTH Runoff Area=174,505 sf 100.00% Impervious Runoff Depth>3.66"
Tc=5.0 min CN=0/98 Runoff=3.67 cfs 53,213 cf

Subcatchment S: RIDGECREST SOUTH Runoff Area=44,336 sf 100.00% Impervious Runoff Depth>3.66"
Tc=5.0 min CN=0/98 Runoff=0.93 cfs 13,520 cf

Subcatchment S-0: SOUTH BASIN Runoff Area=142,170 sf 54.10% Impervious Runoff Depth>2.84"
Tc=5.0 min CN=79/98 Runoff=2.26 cfs 33,664 cf

Subcatchment S-1: OFFSITE - EAST Runoff Area=167,500 sf 0.00% Impervious Runoff Depth>1.90"
Flow Length=815' Tc=55.1 min CN=80/0 Runoff=0.92 cfs 26,526 cf

Subcatchment S-2: FUTURE PRIMARY Runoff Area=39,074 sf 26.53% Impervious Runoff Depth>2.41"
Tc=5.0 min CN=80/98 Runoff=0.52 cfs 7,837 cf

Subcatchment S-4: MF PH.2 LOTS 54-58 Runoff Area=30,788 sf 75.63% Impervious Runoff Depth>3.24"
Tc=5.0 min CN=80/98 Runoff=0.57 cfs 8,322 cf

Subcatchment S-6: MF PH.2 LOTS 68-71 Runoff Area=30,682 sf 76.24% Impervious Runoff Depth>3.15"
Tc=5.0 min CN=74/98 Runoff=0.54 cfs 8,056 cf

Subcatchment S-7: MF PH.2 & SCHOOL Runoff Area=194,137 sf 74.64% Impervious Runoff Depth>3.12"
Tc=5.0 min CN=74/98 Runoff=3.39 cfs 50,418 cf

Subcatchment S-8: MF PH.2 LOTS 73-78 Runoff Area=24,350 sf 67.80% Impervious Runoff Depth>2.97"
Tc=5.0 min CN=74/98 Runoff=0.40 cfs 6,027 cf

Subcatchment T5: FROG POND TERRACE Runoff Area=6,063 sf 45.36% Impervious Runoff Depth>2.69"
Tc=5.0 min CN=79/98 Runoff=0.09 cfs 1,357 cf

Subcatchment T8: FROG POND TERRACE Runoff Area=18,955 sf 43.52% Impervious Runoff Depth>2.65"
Tc=5.0 min CN=79/98 Runoff=0.28 cfs 4,191 cf

Reach (119): PIPE - (119) Avg. Flow Depth=1.07' Max Vel=12.32 fps Inflow=21.04 cfs 1,527,063 cf
24.0" Round Pipe n=0.013 L=44.0' S=0.0277 ' Capacity=37.67 cfs Outflow=21.04 cfs 1,526,936 cf

Reach (32): PIPE - (32) Avg. Flow Depth=0.69' Max Vel=19.37 fps Inflow=18.52 cfs 1,309,704 cf
24.0" Round Pipe n=0.013 L=50.8' S=0.1037 ' Capacity=72.86 cfs Outflow=18.52 cfs 1,309,624 cf

Reach (33): PIPE - (33) Avg. Flow Depth=1.20' Max Vel=10.68 fps Inflow=21.04 cfs 1,527,231 cf
24.0" Round Pipe n=0.013 L=50.2' S=0.0191 ' Capacity=31.28 cfs Outflow=21.04 cfs 1,527,063 cf

Reach (34): PIPE - (34) Avg. Flow Depth=0.56' Max Vel=8.89 fps Inflow=4.04 cfs 58,760 cf
12.0" Round Pipe n=0.013 L=126.1' S=0.0350 ' Capacity=6.66 cfs Outflow=4.04 cfs 58,746 cf

Reach (35): PIPE - (35) Avg. Flow Depth=0.58' Max Vel=9.08 fps Inflow=4.31 cfs 82,084 cf
12.0" Round Pipe n=0.013 L=39.4' S=0.0355 ' Capacity=6.72 cfs Outflow=4.31 cfs 82,072 cf

10411 Prelim Downstream

Type IA 24-hr 25-YR Rainfall=3.90"

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Reach 1C: BOECKMAN CREEK Avg. Flow Depth=0.64' Max Vel=2.46 fps Inflow=111.00 cfs 9,594,396 cf
n=0.040 L=541.0' S=0.0080 '/ Capacity=40,939.08 cfs Outflow=111.00 cfs 9,543,576 cf

Reach 2: PIPE 2 Avg. Flow Depth=0.66' Max Vel=10.11 fps Inflow=5.61 cfs 97,923 cf
12.0" Round Pipe n=0.013 L=213.8' S=0.0406 '/ Capacity=7.18 cfs Outflow=5.60 cfs 97,882 cf

Reach 2C: BOECKMAN CREEK Avg. Flow Depth=0.69' Max Vel=2.59 fps Inflow=126.36 cfs 10,267,140 cf
n=0.040 L=541.0' S=0.0080 '/ Capacity=40,939.08 cfs Outflow=126.33 cfs 10,215,073 cf

Reach 3: PIPE 3 Avg. Flow Depth=0.63' Max Vel=10.69 fps Inflow=5.60 cfs 97,882 cf
12.0" Round Pipe n=0.013 L=55.9' S=0.0467 '/ Capacity=7.70 cfs Outflow=5.60 cfs 97,872 cf

Reach 6: PIPE 6 Avg. Flow Depth=0.58' Max Vel=15.08 fps Inflow=8.38 cfs 125,183 cf
15.0" Round Pipe n=0.013 L=28.7' S=0.0878 '/ Capacity=19.14 cfs Outflow=8.38 cfs 125,179 cf

Reach 31: Pipe - (31) Avg. Flow Depth=1.28' Max Vel=7.87 fps Inflow=14.21 cfs 1,228,256 cf
24.0" Round Pipe n=0.013 L=100.0' S=0.0100 '/ Capacity=22.62 cfs Outflow=14.63 cfs 1,227,633 cf

Reach 33(2): PIPE - 33(2) Avg. Flow Depth=1.21' Max Vel=10.57 fps Inflow=20.94 cfs 1,518,799 cf
24.0" Round Pipe n=0.013 L=50.4' S=0.0187 '/ Capacity=30.89 cfs Outflow=20.94 cfs 1,518,587 cf

Reach 50: PIPE - 50 Avg. Flow Depth=1.00' Max Vel=25.68 fps Inflow=21.04 cfs 1,526,936 cf
12.0" Round Pipe n=0.013 L=201.1' S=0.2465 '/ Capacity=17.69 cfs Outflow=19.07 cfs 1,524,068 cf

Reach SW: MF2 LARGE SWALE Avg. Flow Depth=0.72' Max Vel=2.94 fps Inflow=8.78 cfs 131,205 cf
n=0.030 L=217.0' S=0.0100 '/ Capacity=54.57 cfs Outflow=8.77 cfs 131,021 cf

Pond 1: SDMH-10D & PIPE 1 Peak Elev=221.40' Inflow=4.15 cfs 76,348 cf
12.0" Round Culvert n=0.013 L=327.4' S=0.0110 '/ Outflow=4.15 cfs 76,348 cf

Pond 4: SDMH-10A & PIPE 4 Peak Elev=206.21' Inflow=5.60 cfs 97,872 cf
12.0" Round Culvert n=0.013 L=124.2' S=0.0197 '/ Outflow=5.60 cfs 97,872 cf

Pond 5: SDMH-8B & PIPE 5 Peak Elev=199.67' Inflow=8.38 cfs 125,183 cf
15.0" Round Culvert n=0.013 L=140.3' S=0.0123 '/ Outflow=8.38 cfs 125,183 cf

Pond 7: SDBH-S1 & PIPE 7 Peak Elev=194.36' Inflow=8.77 cfs 131,021 cf
12.0" Round Culvert n=0.013 L=17.6' S=0.0335 '/ Outflow=8.77 cfs 131,021 cf

Pond 8: SDMH-13A & PIPE 8 Peak Elev=194.32' Inflow=9.36 cfs 154,128 cf
12.0" Round Culvert n=0.013 L=50.0' S=0.0340 '/ Outflow=9.36 cfs 154,128 cf

Pond FS: FSMH-09A Peak Elev=201.14' Inflow=3.39 cfs 50,418 cf
Primary=2.79 cfs 27,311 cf Secondary=0.61 cfs 23,107 cf Outflow=3.39 cfs 50,418 cf

Link 1L: UPSTREAM BASIN FLOW (NORTH) Manual Hydrograph Inflow=111.00 cfs 9,594,396 cf
Primary=111.00 cfs 9,594,396 cf

Link 2L: UPSTREAM BASIN FLOW (SOUTH) Manual Hydrograph Inflow=117.00 cfs 10,113,012 cf
Primary=117.00 cfs 10,113,012 cf

Total Runoff Area = 872,560 sf Runoff Volume = 213,128 cf Average Runoff Depth = 2.93"
39.81% Pervious = 347,353 sf 60.19% Impervious = 525,207 sf

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Type IA 24-hr 25-YR Rainfall=3.90"

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Summary for Subcatchment N: RIDGECREST NORTH BASIN

Runoff = 3.67 cfs @ 7.88 hrs, Volume= 53,213 cf, Depth> 3.66"

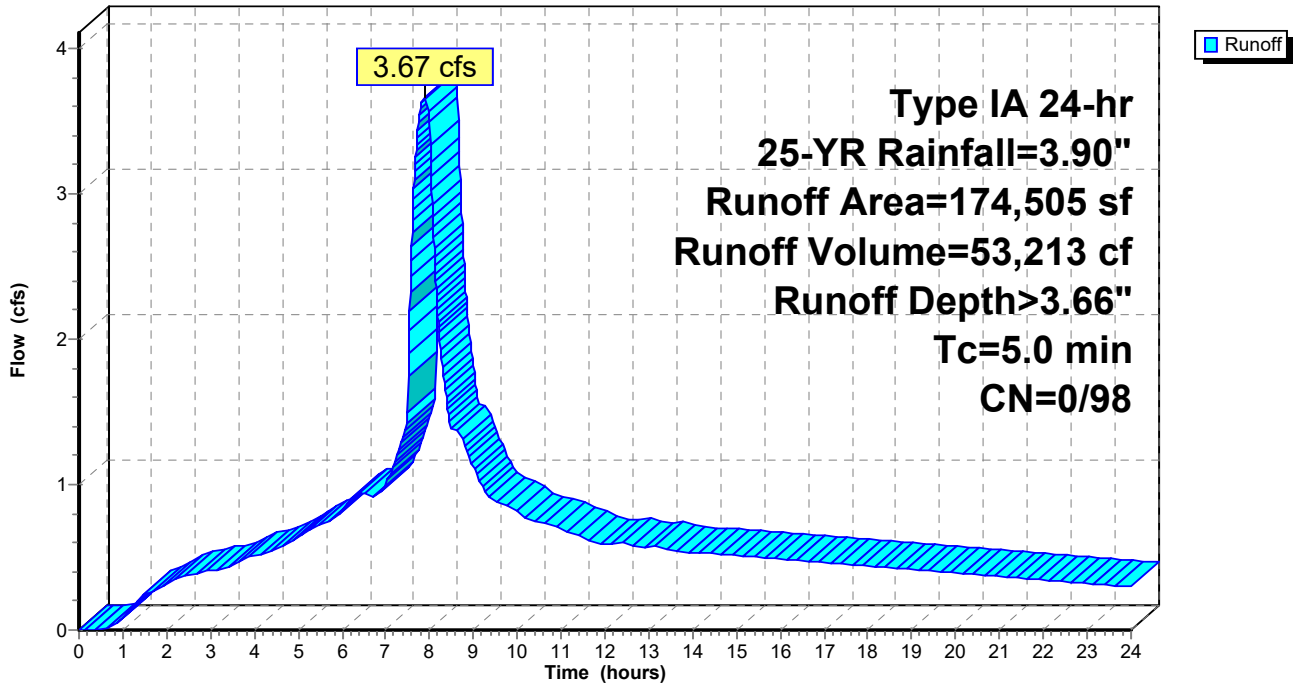
Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type IA 24-hr 25-YR Rainfall=3.90"

Area (sf)	CN	Description
* 93,455	98	Impervious
81,050	98	Roofs, HSG D
174,505	98	Weighted Average
174,505		100.00% Impervious Area

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

Subcatchment N: RIDGECREST NORTH BASIN

Hydrograph



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Summary for Subcatchment S: RIDGECREST SOUTH BASIN

Runoff = 0.93 cfs @ 7.88 hrs, Volume= 13,520 cf, Depth> 3.66"

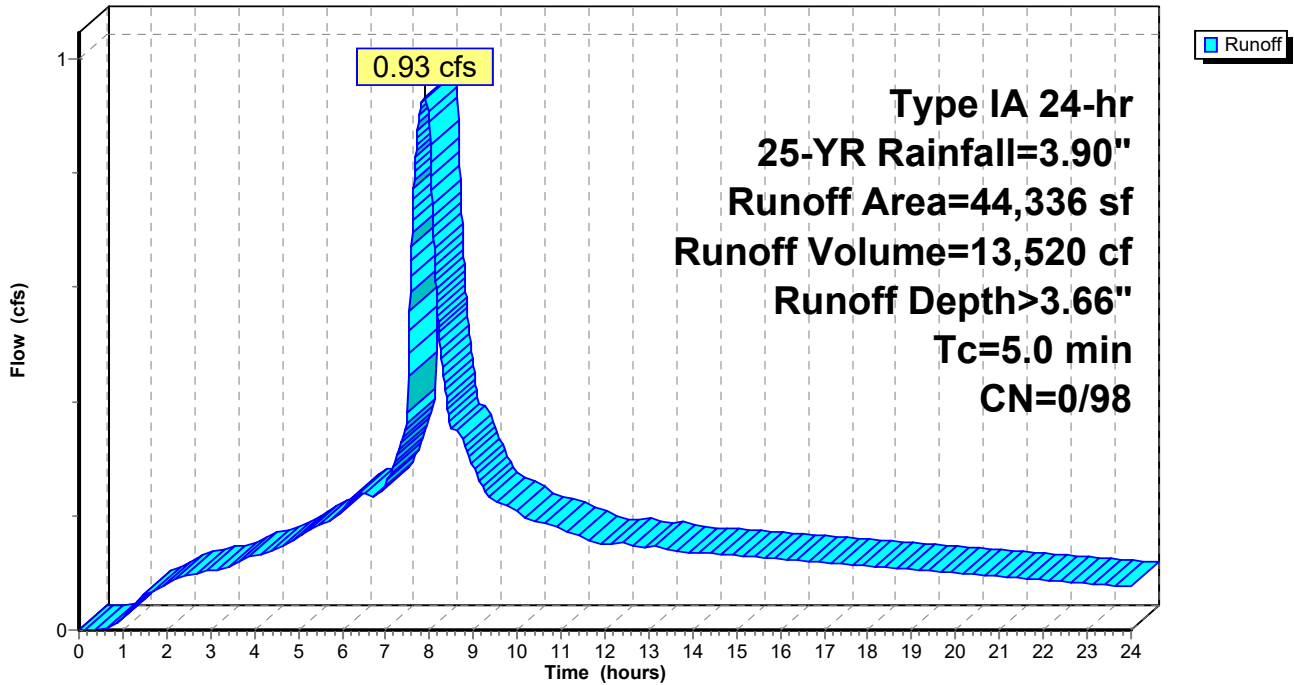
Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type IA 24-hr 25-YR Rainfall=3.90"

	Area (sf)	CN	Description
*	24,586	98	Impervious
*	19,750	98	Roof
	44,336	98	Weighted Average
	44,336		100.00% Impervious Area

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

Subcatchment S: RIDGECREST SOUTH BASIN

Hydrograph



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Type IA 24-hr 25-YR Rainfall=3.90"

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Summary for Subcatchment S-0: SOUTH BASIN

Runoff = 2.26 cfs @ 7.91 hrs, Volume= 33,664 cf, Depth> 2.84"

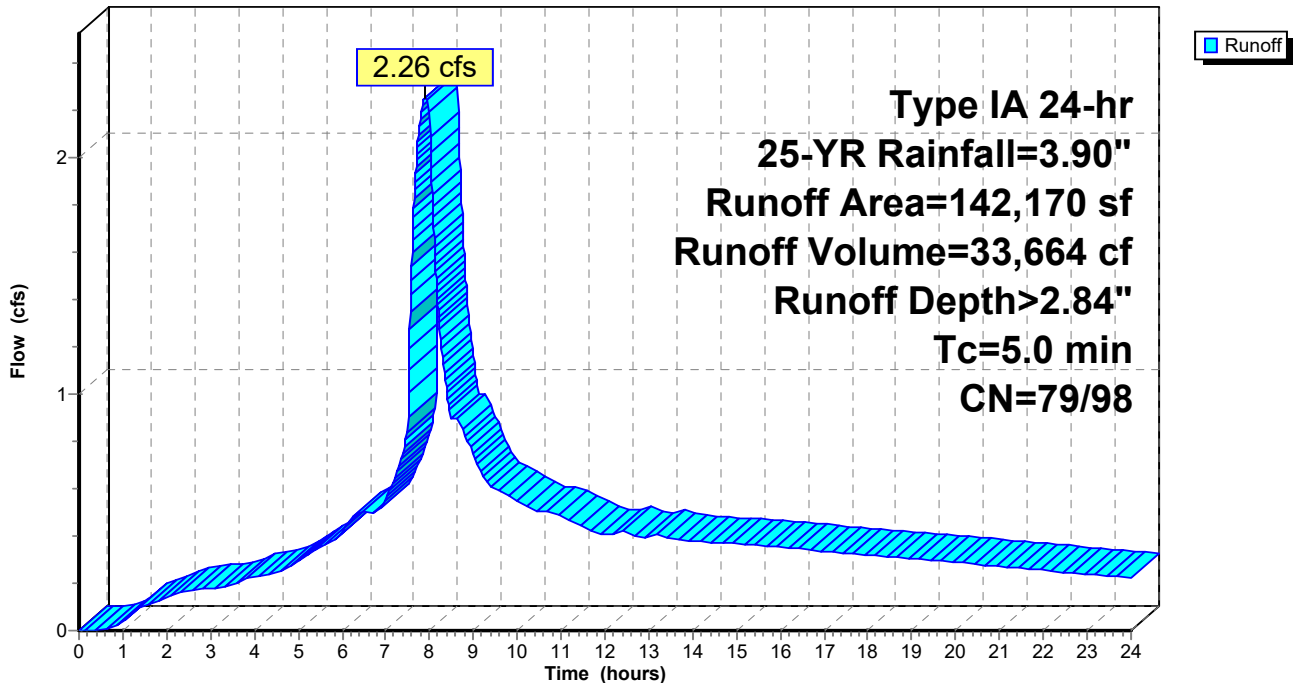
Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type IA 24-hr 25-YR Rainfall=3.90"

Area (sf)	CN	Description
32,345	80	>75% Grass cover, Good, HSG D
* 43,027	98	BASIN 5-11 IMPERVIOUS
* 33,880	98	BASIN 5-11 ROOFS
32,918	79	Woods/grass comb., Good, HSG D
142,170	90	Weighted Average
65,263		45.90% Pervious Area
76,907		54.10% Impervious Area

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

Subcatchment S-0: SOUTH BASIN

Hydrograph



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Type IA 24-hr 25-YR Rainfall=3.90"

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Summary for Subcatchment S-1: OFFSITE - EAST

Runoff = 0.92 cfs @ 8.24 hrs, Volume= 26,526 cf, Depth> 1.90"

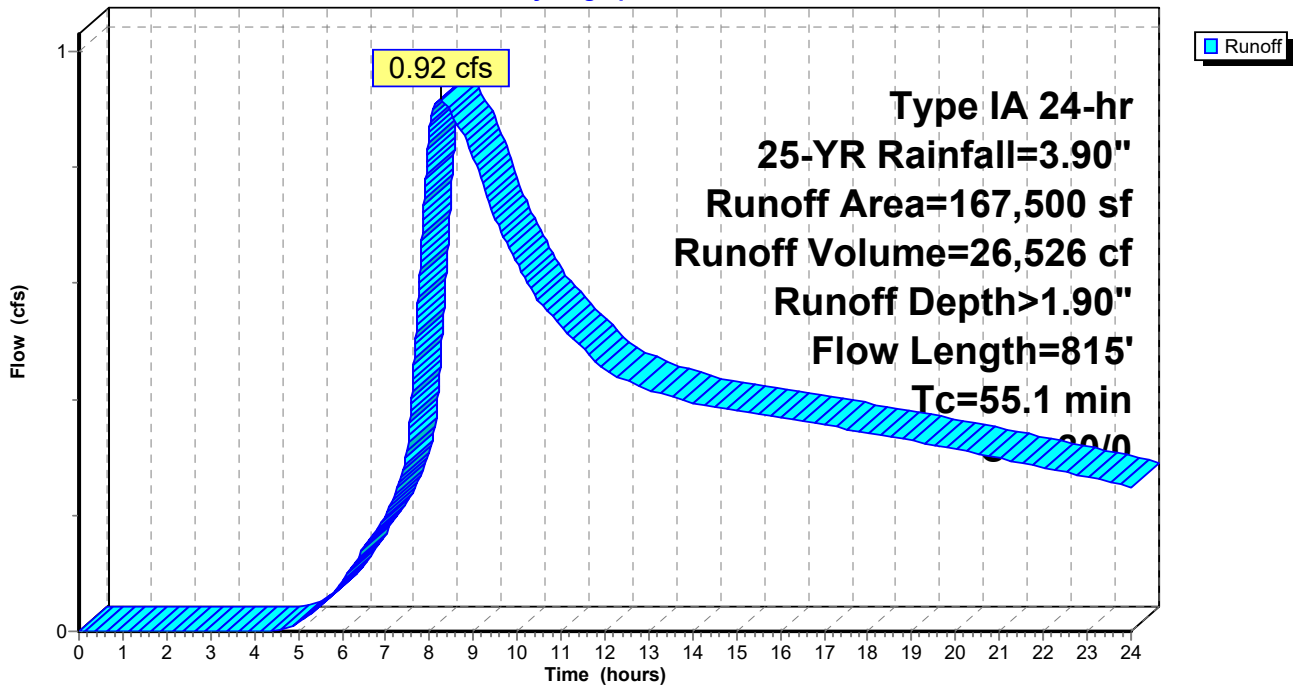
Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type IA 24-hr 25-YR Rainfall=3.90"

Area (sf)	CN	Description
167,500	80	Pasture/grassland/range, Good, HSG D
167,500		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
42.8	300	0.0150	0.12		Sheet Flow, Grass: Dense n= 0.240 P2= 2.60"
12.3	515	0.0100	0.70		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
55.1	815	Total			

Subcatchment S-1: OFFSITE - EAST

Hydrograph



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Type IA 24-hr 25-YR Rainfall=3.90"

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Summary for Subcatchment S-2: FUTURE PRIMARY SCHOOL

Runoff = 0.52 cfs @ 7.93 hrs, Volume= 7,837 cf, Depth> 2.41"

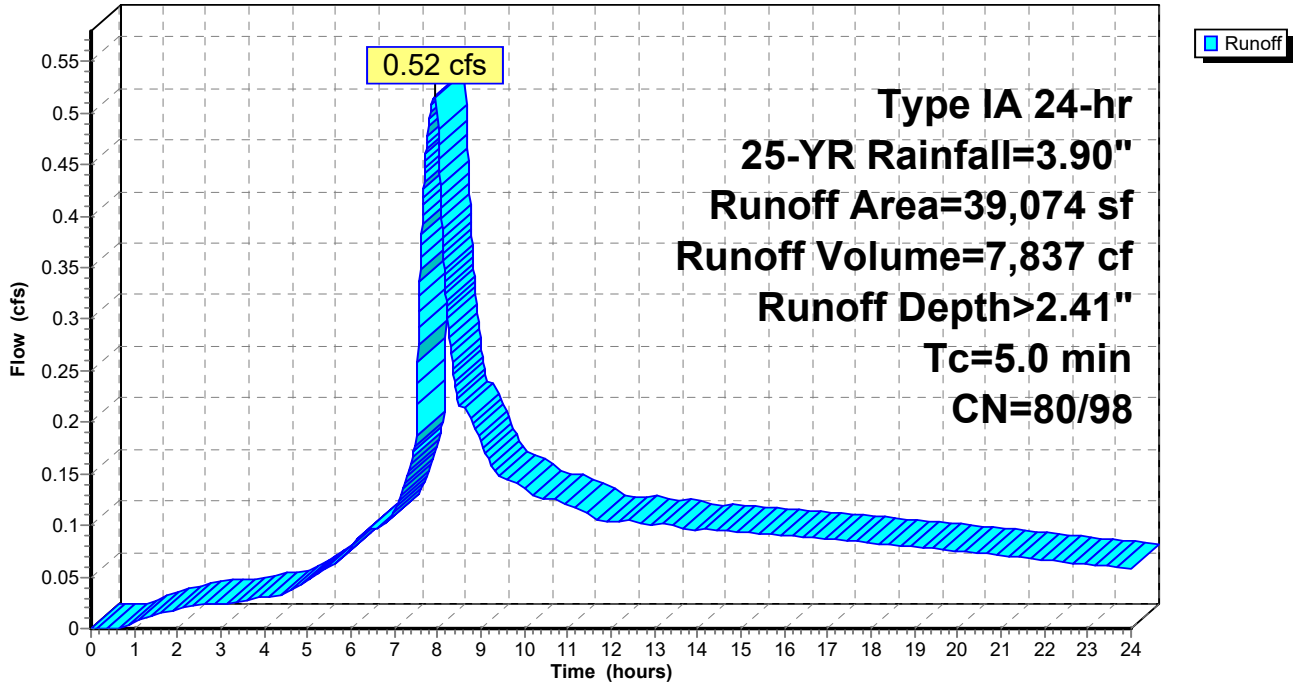
Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type IA 24-hr 25-YR Rainfall=3.90"

	Area (sf)	CN	Description
*	10,368	98	IMPERVIOUS
	28,706	80	>75% Grass cover, Good, HSG D
	39,074	85	Weighted Average
	28,706		73.47% Pervious Area
	10,368		26.53% Impervious Area

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

Subcatchment S-2: FUTURE PRIMARY SCHOOL

Hydrograph



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Summary for Subcatchment S-4: MF PH.2 LOTS 54-58

Runoff = 0.57 cfs @ 7.89 hrs, Volume= 8,322 cf, Depth> 3.24"

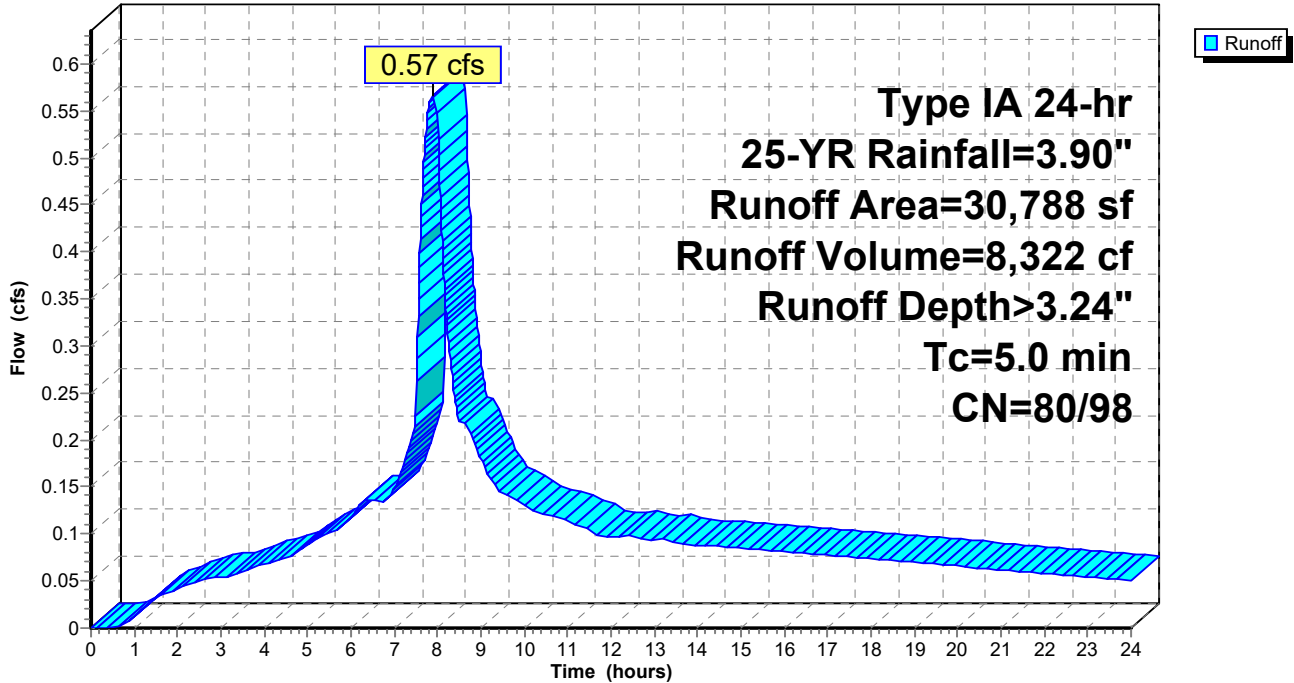
Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type IA 24-hr 25-YR Rainfall=3.90"

	Area (sf)	CN	Description
*	9,534	98	IMPERVIOUS
	7,504	80	>75% Grass cover, Good, HSG D
*	13,750	98	ROOFS
	30,788	94	Weighted Average
	7,504		24.37% Pervious Area
	23,284		75.63% Impervious Area

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

Subcatchment S-4: MF PH.2 LOTS 54-58

Hydrograph



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Type IA 24-hr 25-YR Rainfall=3.90"

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Summary for Subcatchment S-6: MF PH.2 LOTS 68-71

Runoff = 0.54 cfs @ 7.89 hrs, Volume= 8,056 cf, Depth> 3.15"

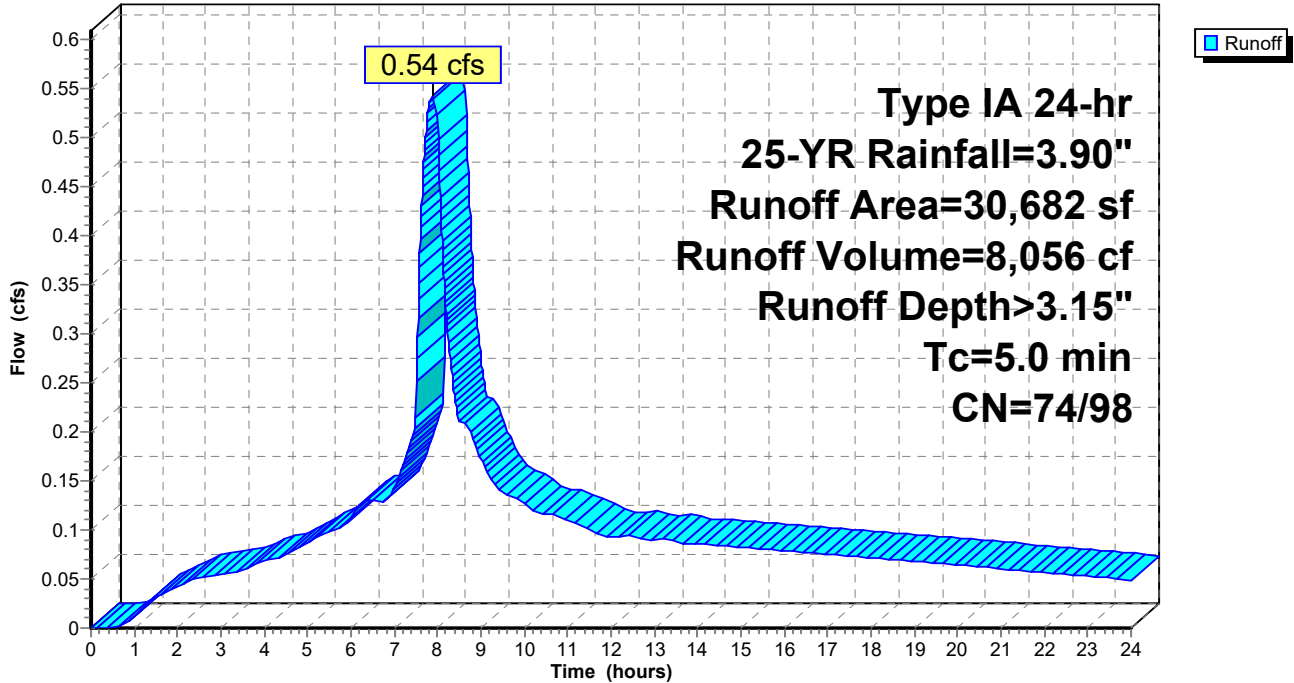
Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type IA 24-hr 25-YR Rainfall=3.90"

Area (sf)	CN	Description
7,289	74	>75% Grass cover, Good, HSG C
* 13,750	98	ROOFS
* 9,643	98	IMPERVIOUS
30,682	92	Weighted Average
7,289		23.76% Pervious Area
23,393		76.24% Impervious Area

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

Subcatchment S-6: MF PH.2 LOTS 68-71

Hydrograph



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Type IA 24-hr 25-YR Rainfall=3.90"

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Summary for Subcatchment S-7: MF PH.2 & SCHOOL FRONTAGE

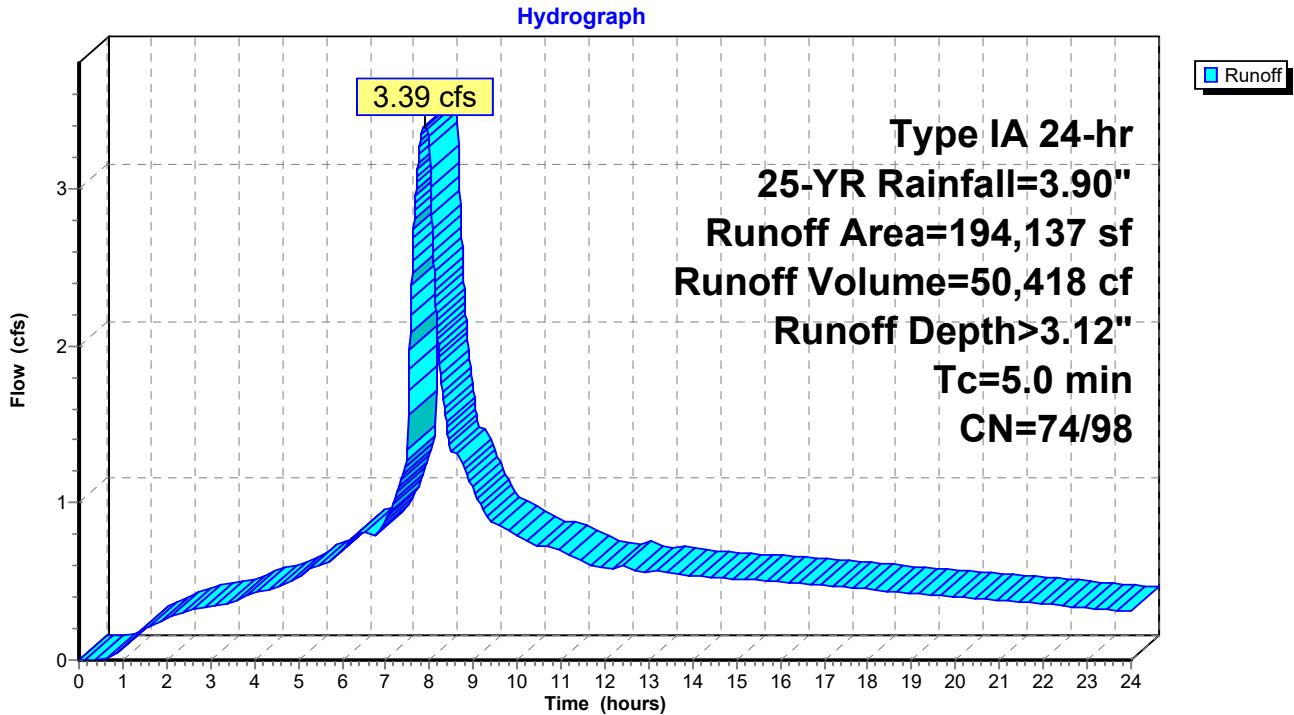
Runoff = 3.39 cfs @ 7.89 hrs, Volume= 50,418 cf, Depth> 3.12"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type IA 24-hr 25-YR Rainfall=3.90"

	Area (sf)	CN	Description
*	73,405	98	IMPERVIOUS
	49,232	74	>75% Grass cover, Good, HSG C
*	71,500	98	ROOFS
	194,137	92	Weighted Average
	49,232		25.36% Pervious Area
	144,905		74.64% Impervious Area

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

Subcatchment S-7: MF PH.2 & SCHOOL FRONTAGE



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Type IA 24-hr 25-YR Rainfall=3.90"

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Summary for Subcatchment S-8: MF PH.2 LOTS 73-78

Runoff = 0.40 cfs @ 7.90 hrs, Volume= 6,027 cf, Depth> 2.97"

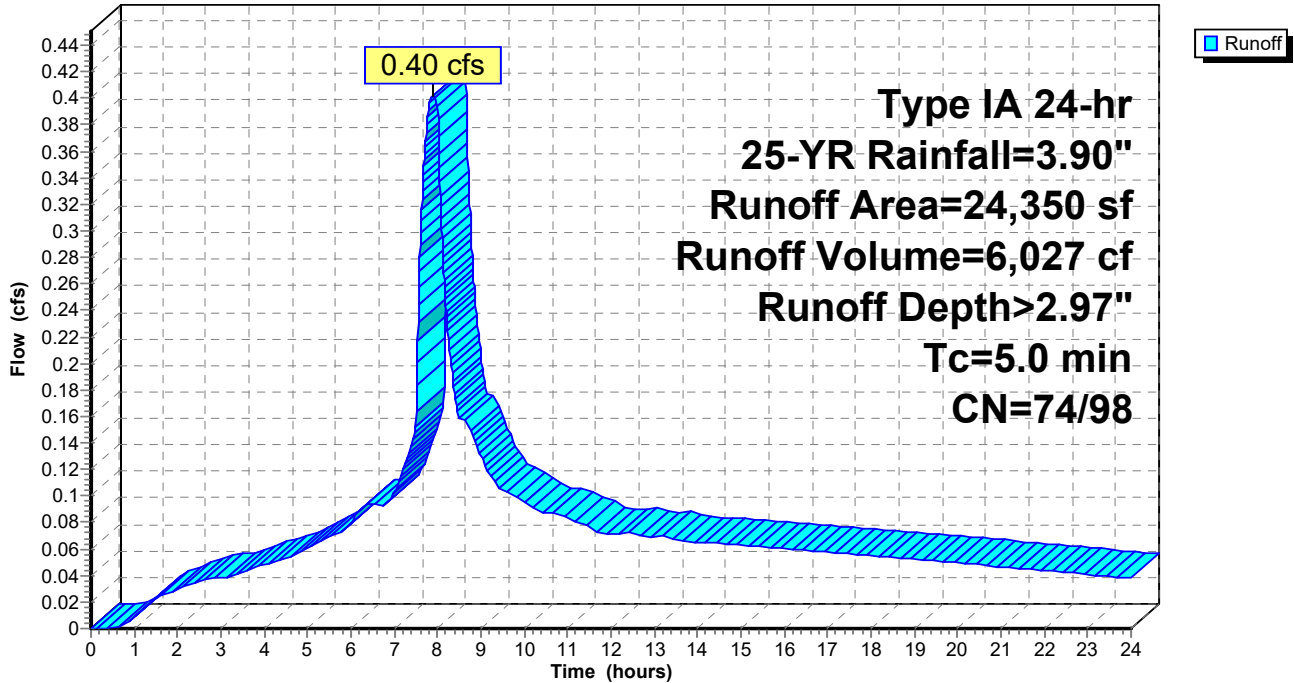
Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type IA 24-hr 25-YR Rainfall=3.90"

Area (sf)	CN	Description
7,841	74	>75% Grass cover, Good, HSG C
* 16,509	98	ROOFS
24,350	90	Weighted Average
7,841		32.20% Pervious Area
16,509		67.80% Impervious Area

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

Subcatchment S-8: MF PH.2 LOTS 73-78

Hydrograph



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Type IA 24-hr 25-YR Rainfall=3.90"

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Summary for Subcatchment T5: FROG POND TERRACE

Runoff = 0.09 cfs @ 7.92 hrs, Volume= 1,357 cf, Depth> 2.69"

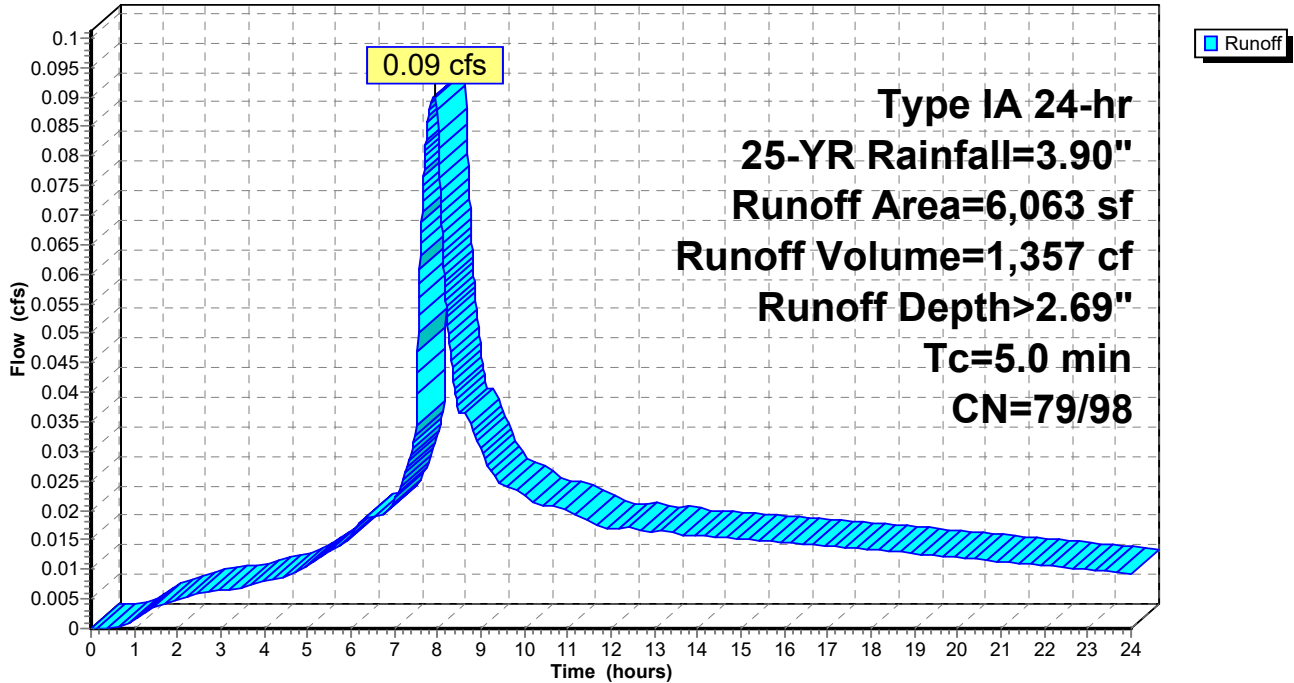
Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type IA 24-hr 25-YR Rainfall=3.90"

	Area (sf)	CN	Description
*	2,750	98	Impervious
	3,313	79	50-75% Grass cover, Fair, HSG C
	6,063	88	Weighted Average
	3,313		54.64% Pervious Area
	2,750		45.36% Impervious Area

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

Subcatchment T5: FROG POND TERRACE

Hydrograph



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Type IA 24-hr 25-YR Rainfall=3.90"

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Summary for Subcatchment T8: FROG POND TERRACE

Runoff = 0.28 cfs @ 7.92 hrs, Volume= 4,191 cf, Depth> 2.65"

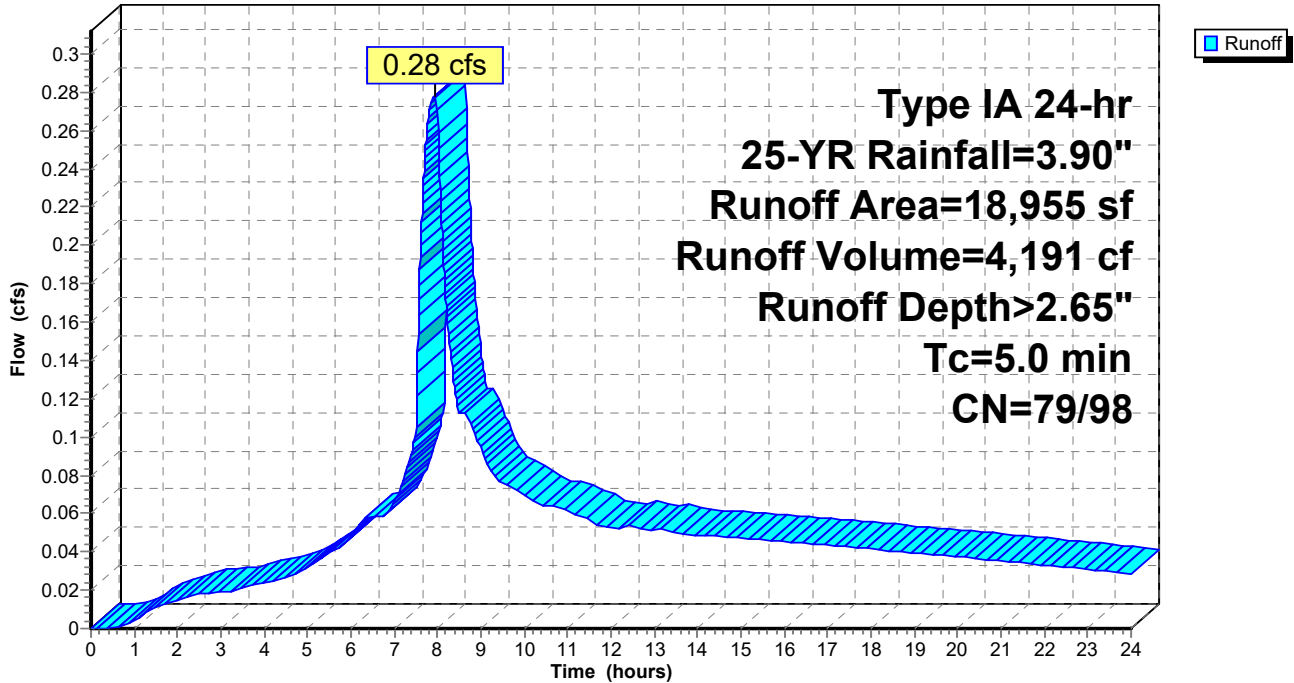
Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type IA 24-hr 25-YR Rainfall=3.90"

	Area (sf)	CN	Description
*	8,250	98	Impervious
	10,705	79	50-75% Grass cover, Fair, HSG C
	18,955	87	Weighted Average
	10,705		56.48% Pervious Area
	8,250		43.52% Impervious Area

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

Subcatchment T8: FROG POND TERRACE

Hydrograph



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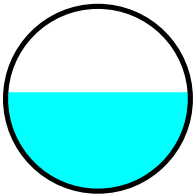
Summary for Reach (119): PIPE - (119)

Inflow Area = 199,523 sf, 92.97% Impervious, Inflow Depth > 91.84" for 25-YR event
Inflow = 21.04 cfs @ 7.90 hrs, Volume= 1,527,063 cf
Outflow = 21.04 cfs @ 7.90 hrs, Volume= 1,526,936 cf, Atten= 0%, Lag= 0.1 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Max. Velocity= 12.32 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 11.80 fps, Avg. Travel Time= 0.1 min

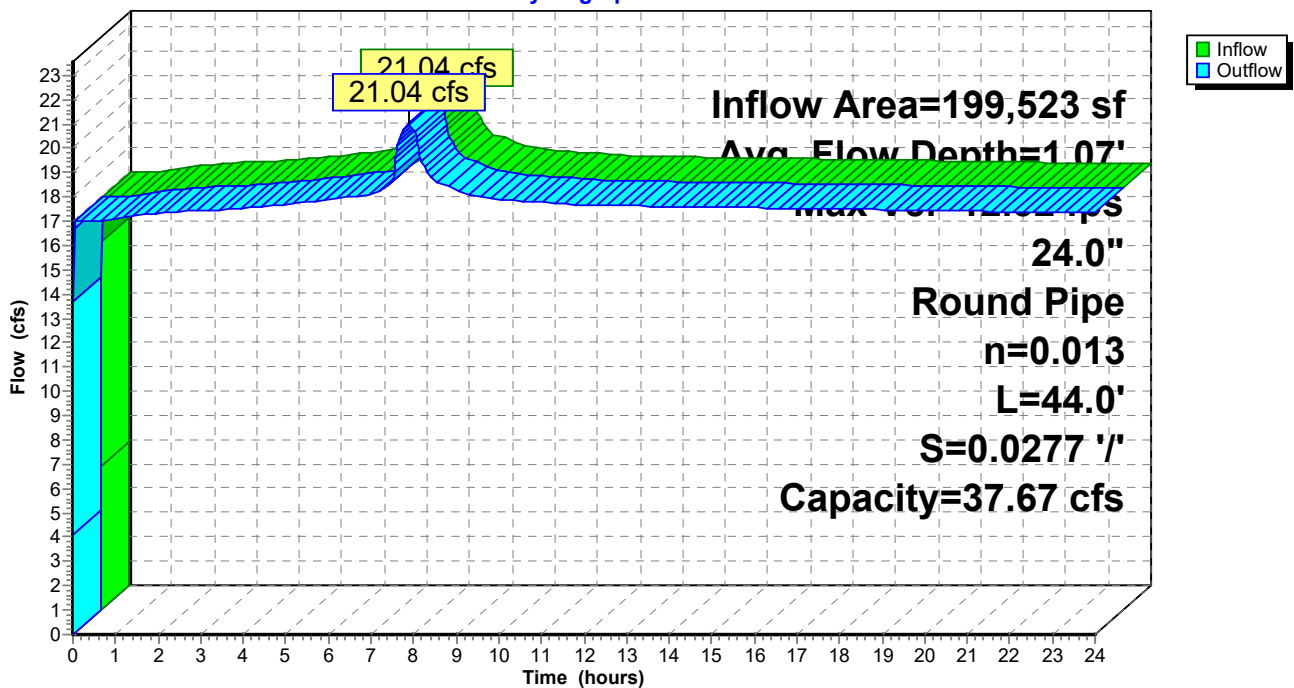
Peak Storage= 75 cf @ 7.90 hrs
Average Depth at Peak Storage= 1.07'
Bank-Full Depth= 2.00' Flow Area= 3.1 sf, Capacity= 37.67 cfs

24.0" Round Pipe
n= 0.013 PVC, smooth interior
Length= 44.0' Slope= 0.0277 '/'
Inlet Invert= 195.22', Outlet Invert= 194.00'



Reach (119): PIPE - (119)

Hydrograph



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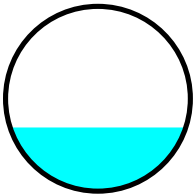
Summary for Reach (32): PIPE - (32)

Inflow Area = 199,523 sf, 92.97% Impervious, Inflow Depth > 78.77" for 25-YR event
Inflow = 18.52 cfs @ 7.89 hrs, Volume= 1,309,704 cf
Outflow = 18.52 cfs @ 7.89 hrs, Volume= 1,309,624 cf, Atten= 0%, Lag= 0.1 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Max. Velocity= 19.37 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 18.31 fps, Avg. Travel Time= 0.0 min

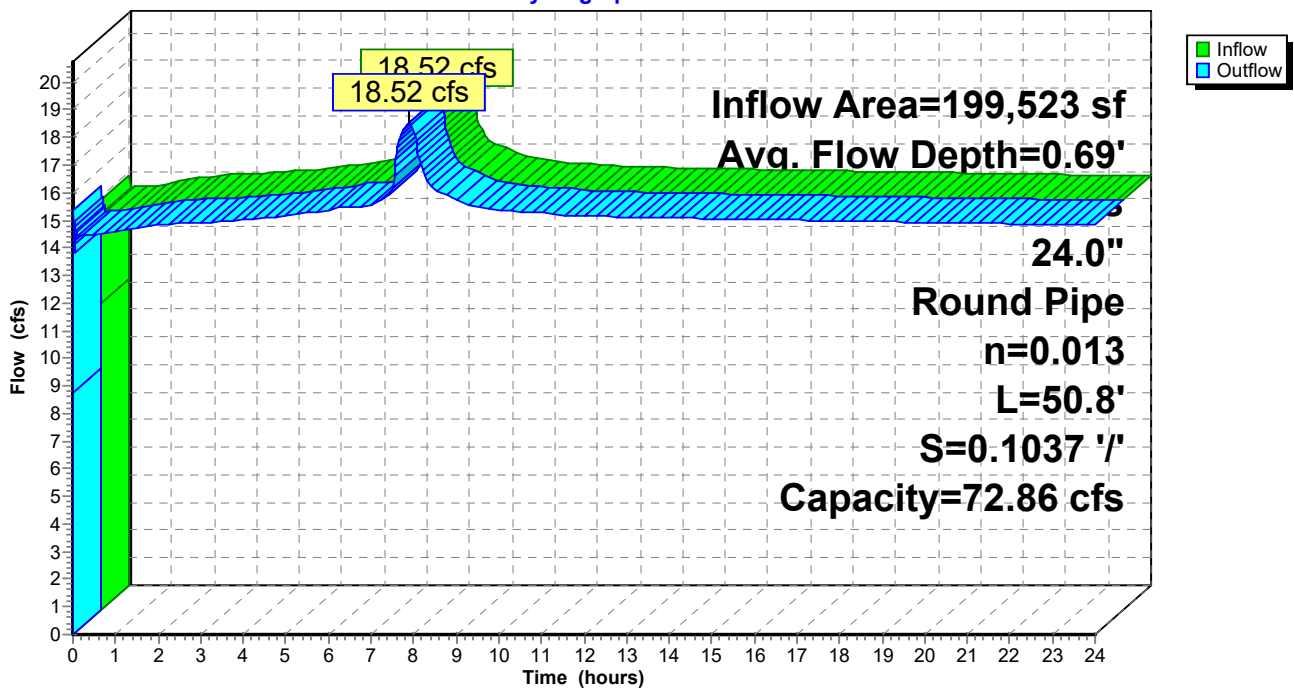
Peak Storage= 49 cf @ 7.89 hrs
Average Depth at Peak Storage= 0.69'
Bank-Full Depth= 2.00' Flow Area= 3.1 sf, Capacity= 72.86 cfs

24.0" Round Pipe
n= 0.013 PVC, smooth interior
Length= 50.8' Slope= 0.1037 '/'
Inlet Invert= 202.26', Outlet Invert= 196.99'



Reach (32): PIPE - (32)

Hydrograph



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Type IA 24-hr 25-YR Rainfall=3.90"

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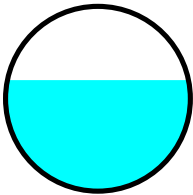
Summary for Reach (33): PIPE - (33)

Inflow Area = 199,523 sf, 92.97% Impervious, Inflow Depth > 91.85" for 25-YR event
Inflow = 21.04 cfs @ 7.89 hrs, Volume= 1,527,231 cf, Incl. 0.10 cfs Base Flow
Outflow = 21.04 cfs @ 7.90 hrs, Volume= 1,527,063 cf, Atten= 0%, Lag= 0.1 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Max. Velocity= 10.68 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 10.26 fps, Avg. Travel Time= 0.1 min

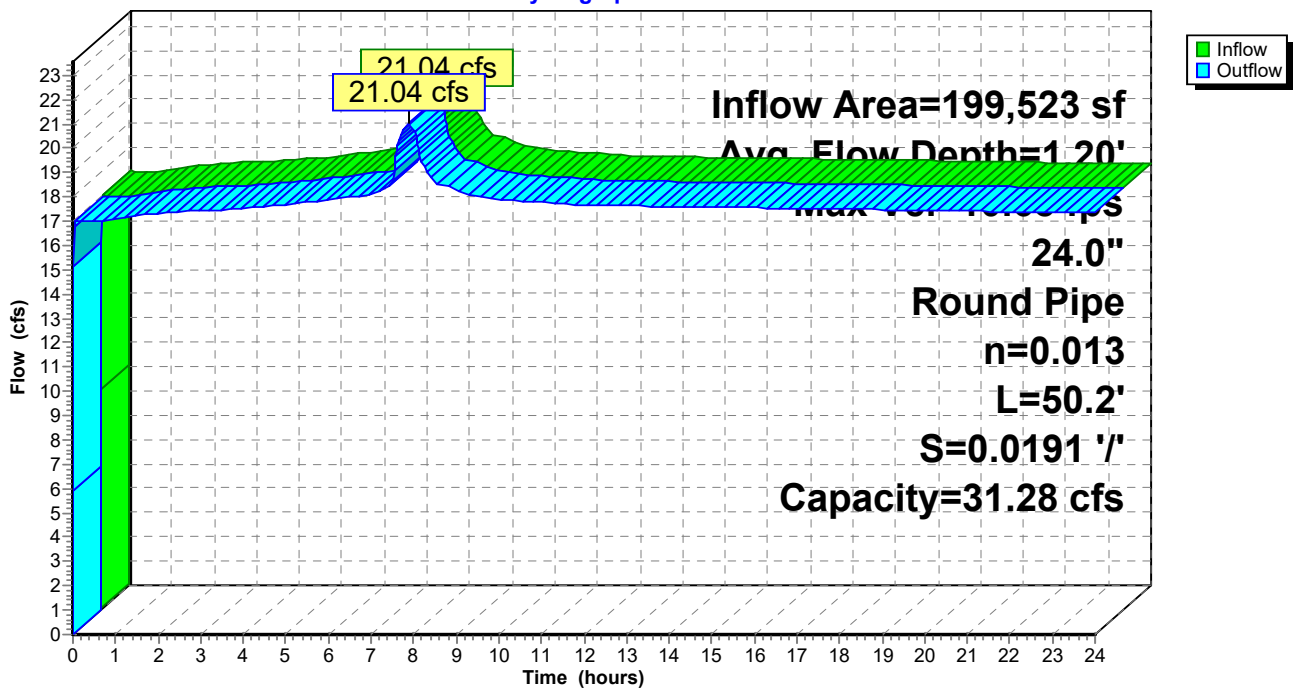
Peak Storage= 99 cf @ 7.89 hrs
Average Depth at Peak Storage= 1.20'
Bank-Full Depth= 2.00' Flow Area= 3.1 sf, Capacity= 31.28 cfs

24.0" Round Pipe
n= 0.013 PVC, smooth interior
Length= 50.2' Slope= 0.0191 '/
Inlet Invert= 195.62', Outlet Invert= 194.66'



Reach (33): PIPE - (33)

Hydrograph



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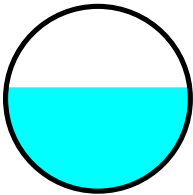
Summary for Reach (34): PIPE - (34)

Inflow Area = 199,523 sf, 92.97% Impervious, Inflow Depth > 3.53" for 25-YR event
 Inflow = 4.04 cfs @ 7.88 hrs, Volume= 58,760 cf
 Outflow = 4.04 cfs @ 7.89 hrs, Volume= 58,746 cf, Atten= 0%, Lag= 0.4 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
 Max. Velocity= 8.89 fps, Min. Travel Time= 0.2 min
 Avg. Velocity= 5.25 fps, Avg. Travel Time= 0.4 min

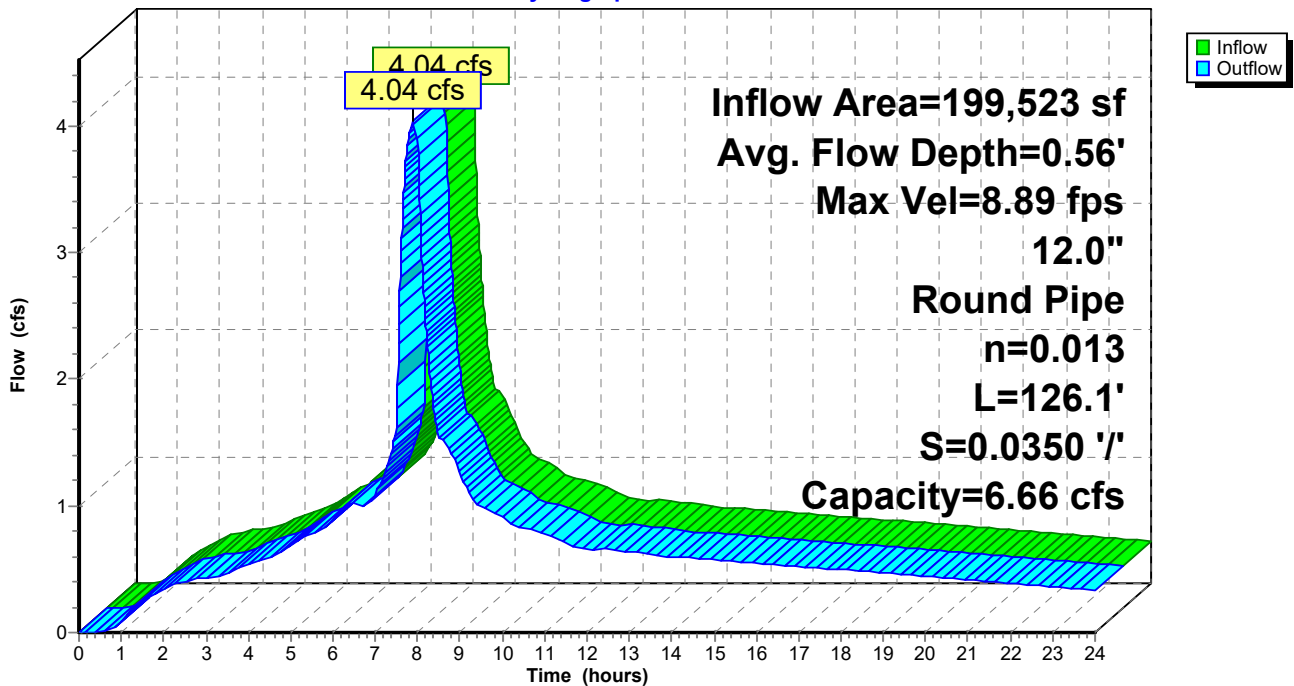
Peak Storage= 57 cf @ 7.88 hrs
 Average Depth at Peak Storage= 0.56'
 Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 6.66 cfs

12.0" Round Pipe
 n= 0.013 PVC, smooth interior
 Length= 126.1' Slope= 0.0350 '/'
 Inlet Invert= 208.47', Outlet Invert= 204.06'



Reach (34): PIPE - (34)

Hydrograph



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Type IA 24-hr 25-YR Rainfall=3.90"

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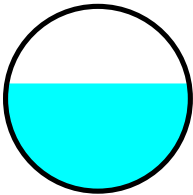
Summary for Reach (35): PIPE - (35)

Inflow Area = 199,523 sf, 92.97% Impervious, Inflow Depth > 4.94" for 25-YR event
Inflow = 4.31 cfs @ 7.89 hrs, Volume= 82,084 cf, Incl. 0.27 cfs Base Flow
Outflow = 4.31 cfs @ 7.89 hrs, Volume= 82,072 cf, Atten= 0%, Lag= 0.1 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Max. Velocity= 9.08 fps, Min. Travel Time= 0.1 min
Avg. Velocity= 5.90 fps, Avg. Travel Time= 0.1 min

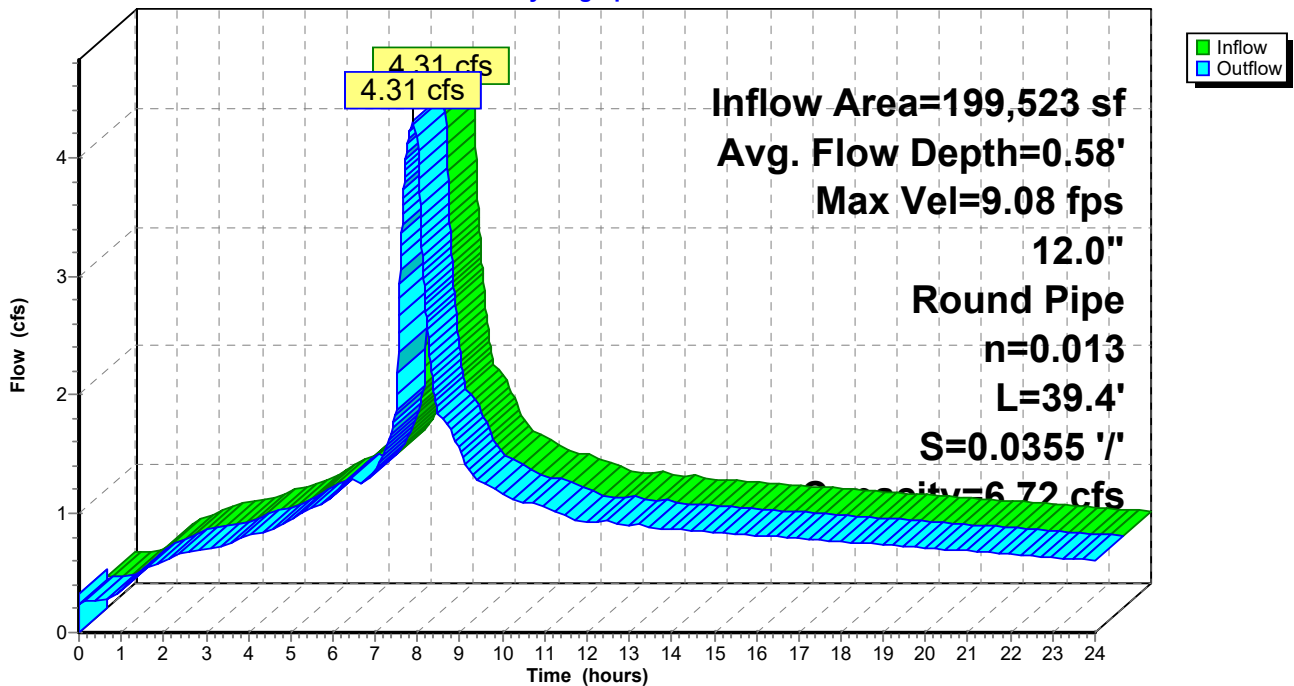
Peak Storage= 19 cf @ 7.89 hrs
Average Depth at Peak Storage= 0.58'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 6.72 cfs

12.0" Round Pipe
n= 0.013 PVC, smooth interior
Length= 39.4' Slope= 0.0355 '/
Inlet Invert= 203.86', Outlet Invert= 202.46'



Reach (35): PIPE - (35)

Hydrograph



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Summary for Reach 1C: BOECKMAN CREEK CHANNEL (NORTH)

Inflow = 111.00 cfs @ 0.00 hrs, Volume= 9,594,396 cf
Outflow = 111.00 cfs @ 1.34 hrs, Volume= 9,543,576 cf, Atten= 0%, Lag= 80.4 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Max. Velocity= 2.46 fps, Min. Travel Time= 3.7 min
Avg. Velocity = 2.46 fps, Avg. Travel Time= 3.7 min

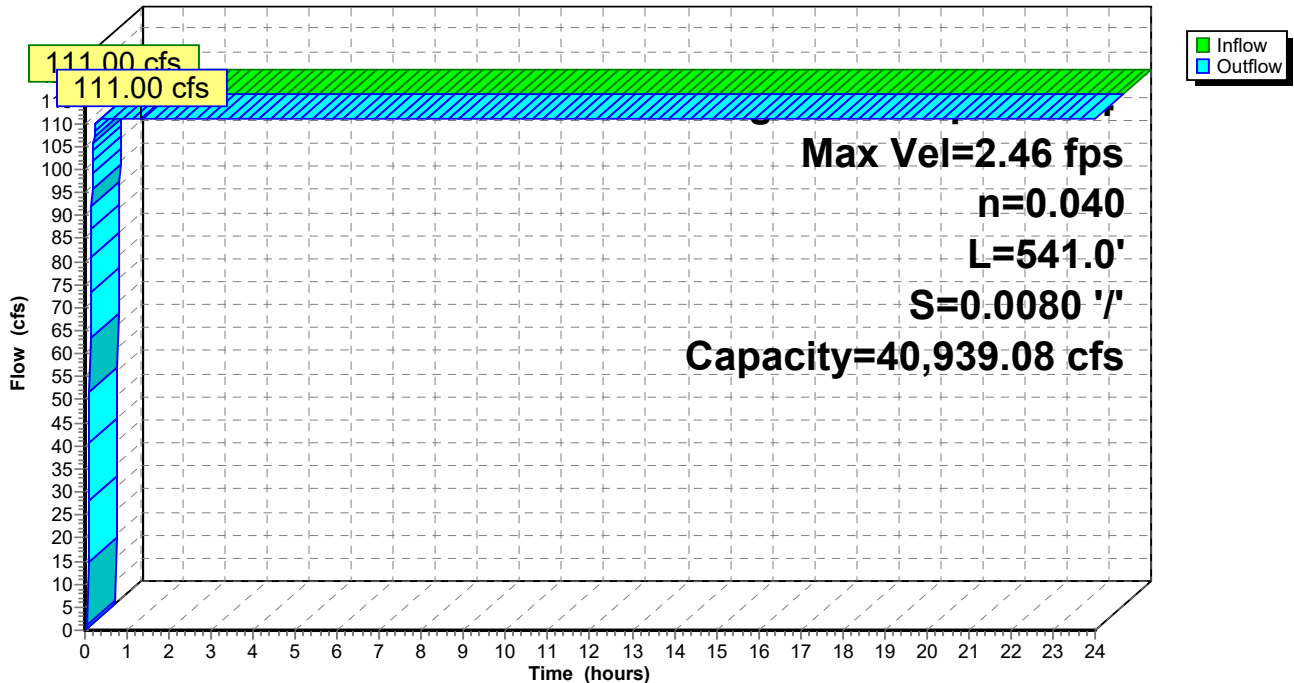
Peak Storage= 24,411 cf @ 1.27 hrs
Average Depth at Peak Storage= 0.64'
Bank-Full Depth= 20.00' Flow Area= 2,140.0 sf, Capacity= 40,939.08 cfs

69.00' x 20.00' deep channel, n= 0.040 Mountain streams
Side Slope Z-value= 1.7 2.1 '/' Top Width= 145.00'
Length= 541.0' Slope= 0.0080 '/'
Inlet Invert= 138.50', Outlet Invert= 134.17'



Reach 1C: BOECKMAN CREEK CHANNEL (NORTH)

Hydrograph



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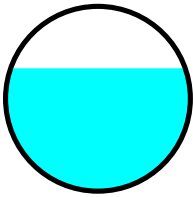
Summary for Reach 2: PIPE 2

Inflow Area = 454,550 sf, 39.22% Impervious, Inflow Depth > 2.59" for 25-YR event
Inflow = 5.61 cfs @ 7.94 hrs, Volume= 97,923 cf
Outflow = 5.60 cfs @ 7.96 hrs, Volume= 97,882 cf, Atten= 0%, Lag= 0.6 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Max. Velocity= 10.11 fps, Min. Travel Time= 0.4 min
Avg. Velocity = 6.40 fps, Avg. Travel Time= 0.6 min

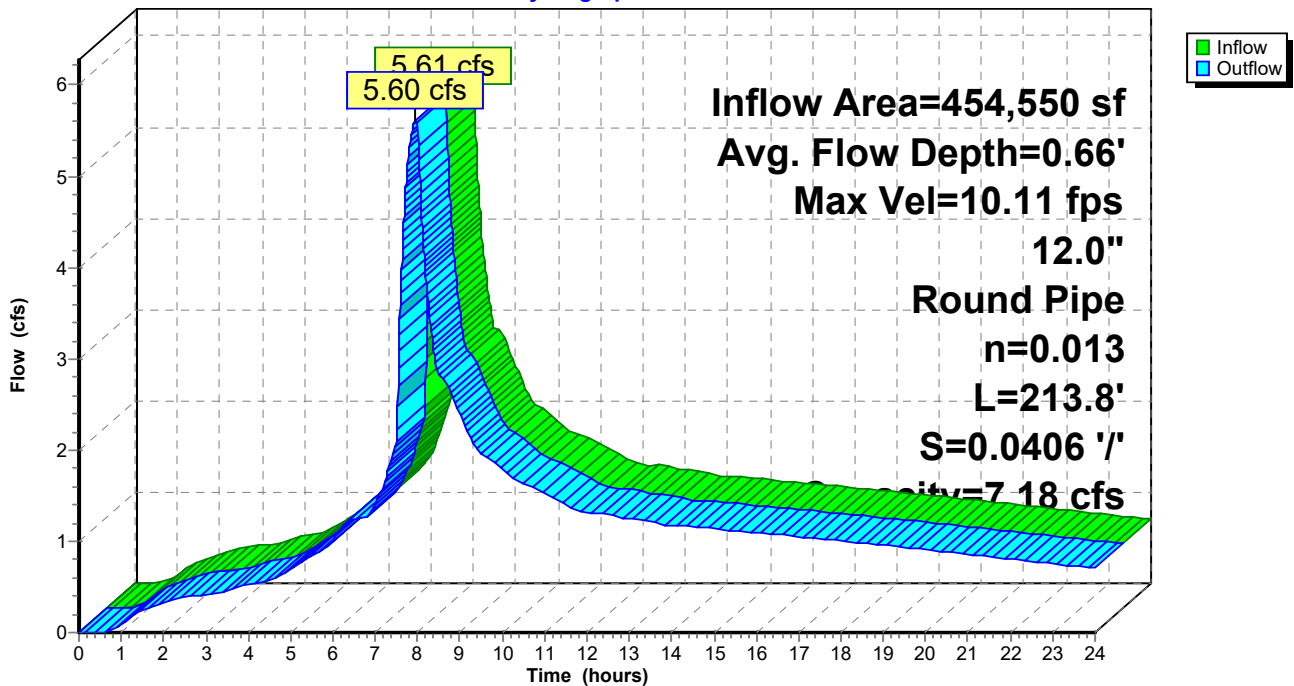
Peak Storage= 119 cf @ 7.95 hrs
Average Depth at Peak Storage= 0.66'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 7.18 cfs

12.0" Round Pipe
n= 0.013 PVC, smooth interior
Length= 213.8' Slope= 0.0406 '/'
Inlet Invert= 215.09', Outlet Invert= 206.41'



Reach 2: PIPE 2

Hydrograph



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Summary for Reach 2C: BOECKMAN CREEK CHANNEL (SOUTH)

Inflow Area = 673,037 sf, 50.47% Impervious, Inflow Depth >183.06" for 25-YR event
 Inflow = 126.36 cfs @ 7.96 hrs, Volume= 10,267,140 cf
 Outflow = 126.33 cfs @ 8.06 hrs, Volume= 10,215,073 cf, Atten= 0%, Lag= 5.6 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
 Max. Velocity= 2.59 fps, Min. Travel Time= 3.5 min
 Avg. Velocity = 2.53 fps, Avg. Travel Time= 3.6 min

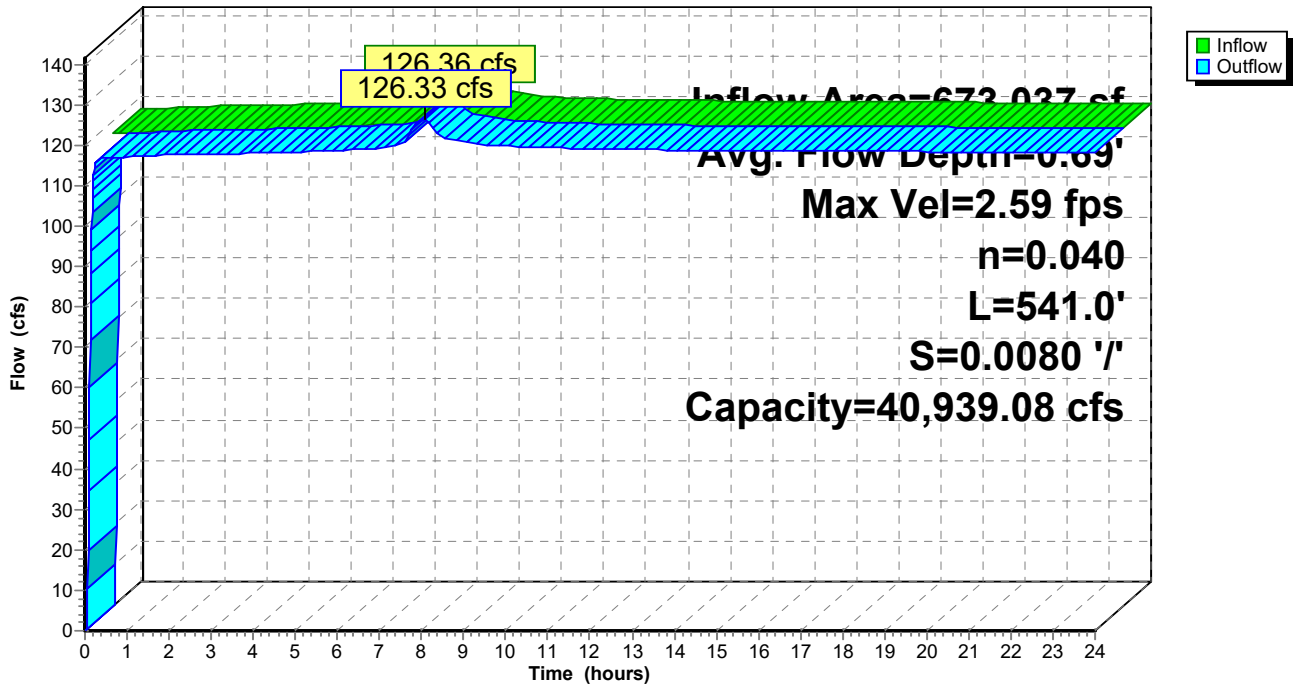
Peak Storage= 26,374 cf @ 8.00 hrs
 Average Depth at Peak Storage= 0.69'
 Bank-Full Depth= 20.00' Flow Area= 2,140.0 sf, Capacity= 40,939.08 cfs

69.00' x 20.00' deep channel, n= 0.040 Mountain streams
 Side Slope Z-value= 1.7 2.1 '/' Top Width= 145.00'
 Length= 541.0' Slope= 0.0080 '/'
 Inlet Invert= 138.50', Outlet Invert= 134.17'



Reach 2C: BOECKMAN CREEK CHANNEL (SOUTH)

Hydrograph



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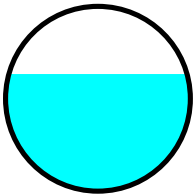
Summary for Reach 3: PIPE 3

Inflow Area = 454,550 sf, 39.22% Impervious, Inflow Depth > 2.58" for 25-YR event
Inflow = 5.60 cfs @ 7.96 hrs, Volume= 97,882 cf
Outflow = 5.60 cfs @ 7.96 hrs, Volume= 97,872 cf, Atten= 0%, Lag= 0.2 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Max. Velocity= 10.69 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 6.74 fps, Avg. Travel Time= 0.1 min

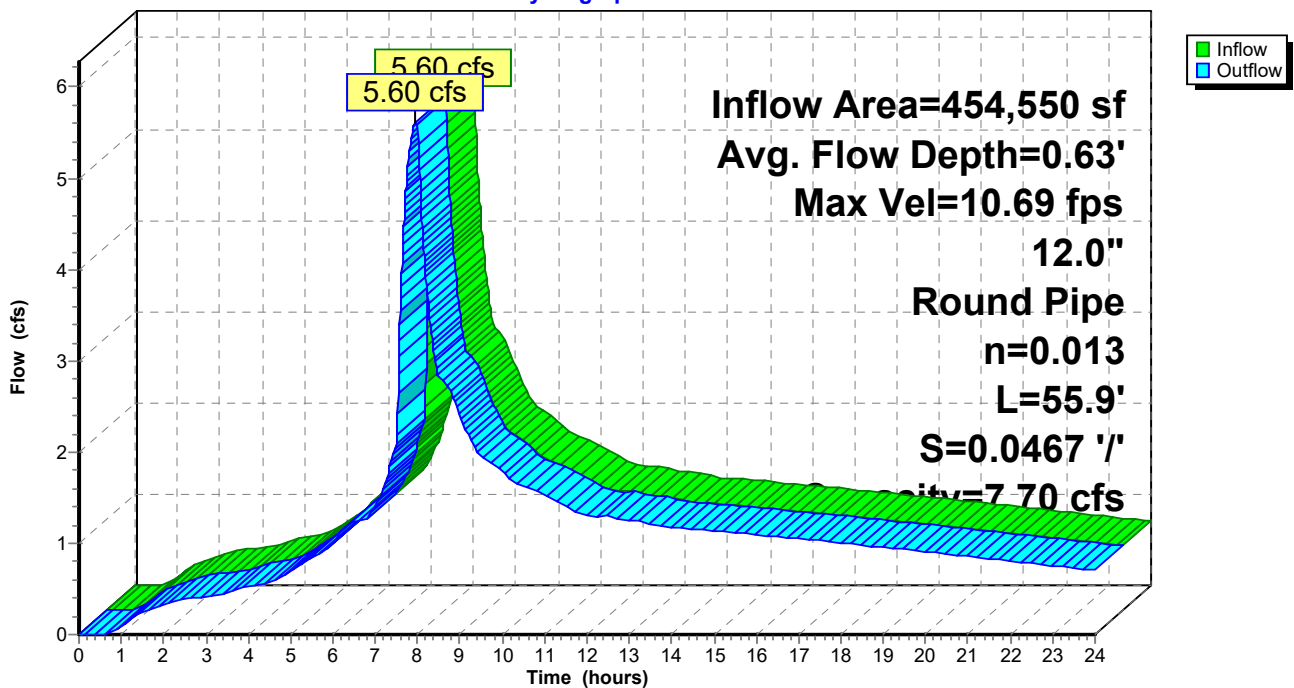
Peak Storage= 29 cf @ 7.96 hrs
Average Depth at Peak Storage= 0.63'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 7.70 cfs

12.0" Round Pipe
n= 0.013 PVC, smooth interior
Length= 55.9' Slope= 0.0467 '/'
Inlet Invert= 206.20', Outlet Invert= 203.59'



Reach 3: PIPE 3

Hydrograph



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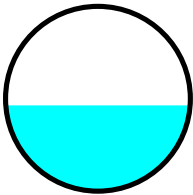
Summary for Reach 6: PIPE 6

Inflow Area = 648,687 sf, 49.82% Impervious, Inflow Depth > 2.32" for 25-YR event
Inflow = 8.38 cfs @ 7.94 hrs, Volume= 125,183 cf
Outflow = 8.38 cfs @ 7.94 hrs, Volume= 125,179 cf, Atten= 0%, Lag= 0.1 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Max. Velocity= 15.08 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 8.78 fps, Avg. Travel Time= 0.1 min

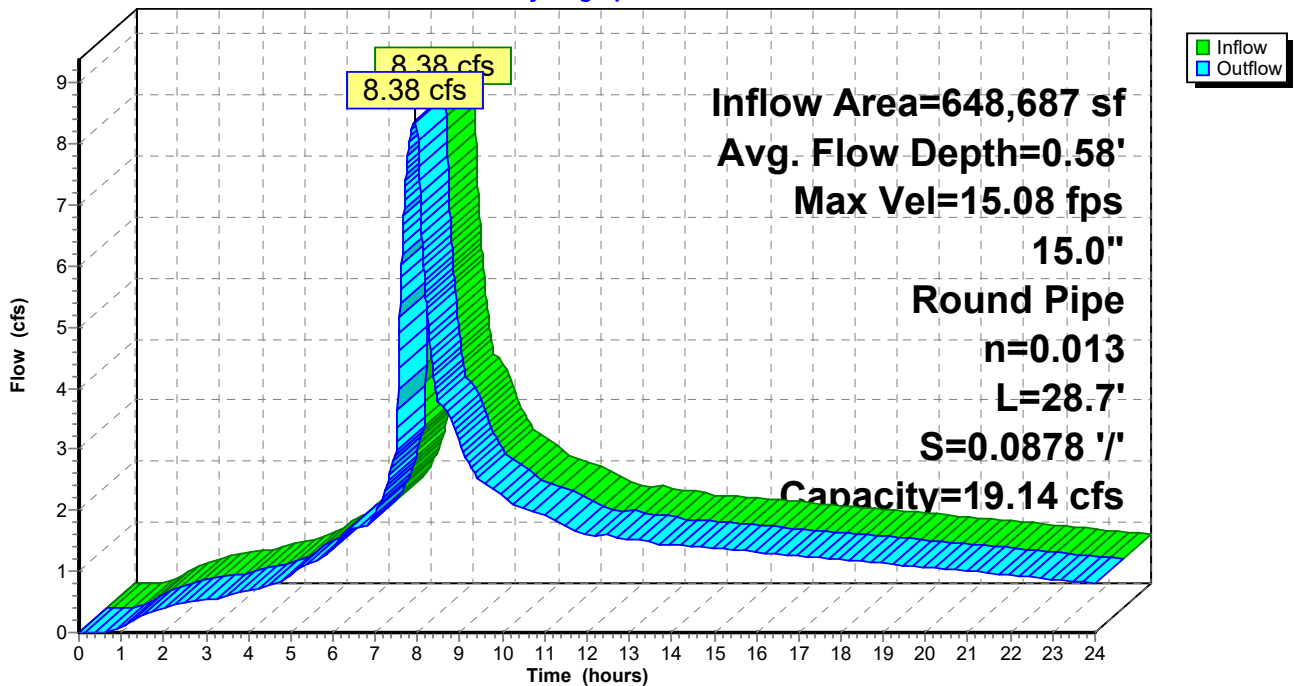
Peak Storage= 16 cf @ 7.94 hrs
Average Depth at Peak Storage= 0.58'
Bank-Full Depth= 1.25' Flow Area= 1.2 sf, Capacity= 19.14 cfs

15.0" Round Pipe
n= 0.013
Length= 28.7' Slope= 0.0878 '/'
Inlet Invert= 194.42', Outlet Invert= 191.90'



Reach 6: PIPE 6

Hydrograph



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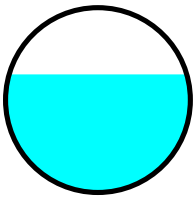
Summary for Reach 31: Pipe - (31)

Inflow = 14.21 cfs @ 0.00 hrs, Volume= 1,228,256 cf, Incl. 14.21 cfs Base Flow
Outflow = 14.63 cfs @ 0.02 hrs, Volume= 1,227,633 cf, Atten= 0%, Lag= 1.2 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Max. Velocity= 7.87 fps, Min. Travel Time= 0.2 min
Avg. Velocity = 7.61 fps, Avg. Travel Time= 0.2 min

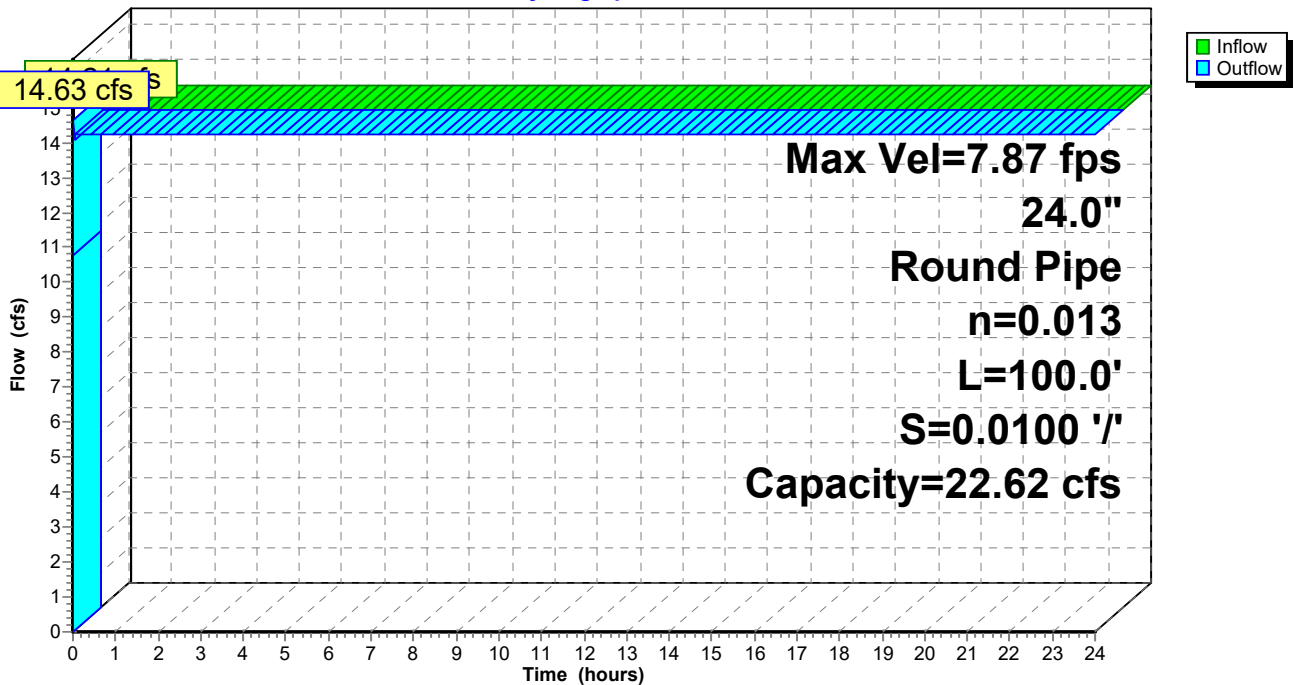
Peak Storage= 212 cf @ 0.01 hrs
Average Depth at Peak Storage= 1.28'
Bank-Full Depth= 2.00' Flow Area= 3.1 sf, Capacity= 22.62 cfs

24.0" Round Pipe
n= 0.013
Length= 100.0' Slope= 0.0100 '/'
Inlet Invert= 1.00', Outlet Invert= 0.00'



Reach 31: Pipe - (31)

Hydrograph



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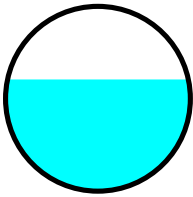
Summary for Reach 33(2): PIPE - 33(2)

Inflow Area = 199,523 sf, 92.97% Impervious, Inflow Depth > 91.35" for 25-YR event
 Inflow = 20.94 cfs @ 7.89 hrs, Volume= 1,518,799 cf, Incl. 2.42 cfs Base Flow
 Outflow = 20.94 cfs @ 7.89 hrs, Volume= 1,518,587 cf, Atten= 0%, Lag= 0.1 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
 Max. Velocity= 10.57 fps, Min. Travel Time= 0.1 min
 Avg. Velocity = 10.15 fps, Avg. Travel Time= 0.1 min

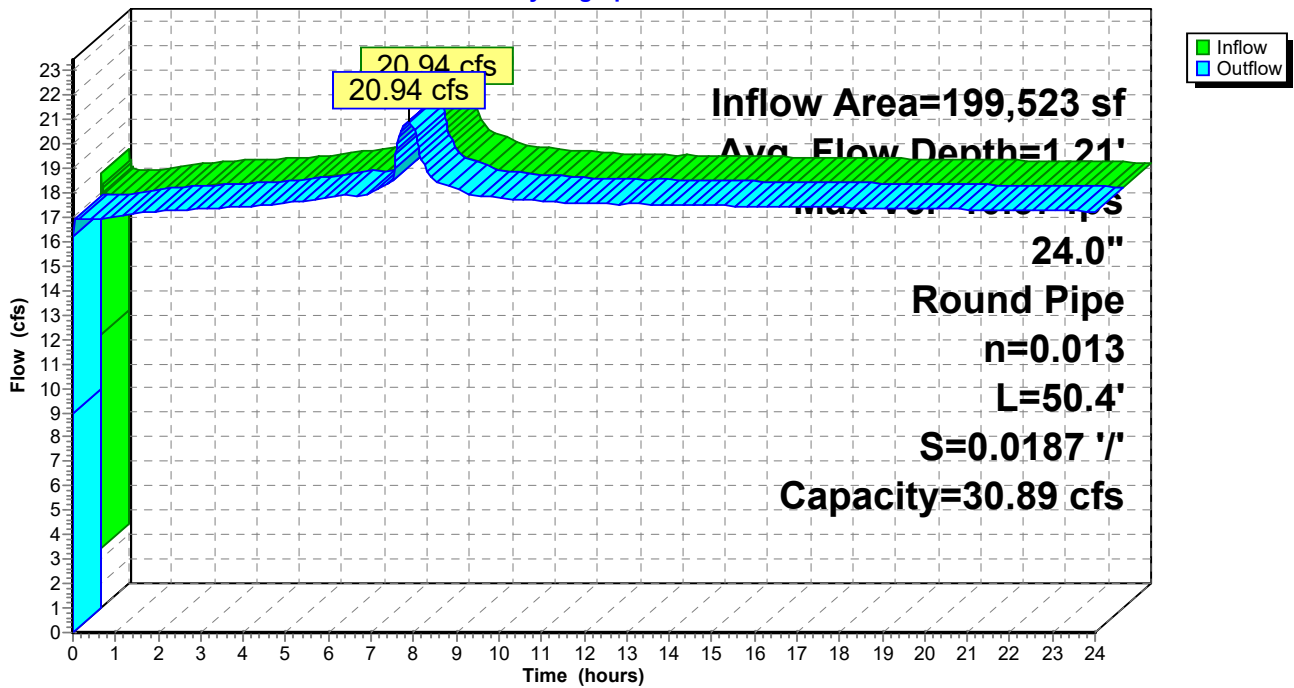
Peak Storage= 100 cf @ 7.89 hrs
 Average Depth at Peak Storage= 1.21'
 Bank-Full Depth= 2.00' Flow Area= 3.1 sf, Capacity= 30.89 cfs

24.0" Round Pipe
 n= 0.013 PVC, smooth interior
 Length= 50.4' Slope= 0.0187 '/
 Inlet Invert= 196.76', Outlet Invert= 195.82'



Reach 33(2): PIPE - 33(2)

Hydrograph



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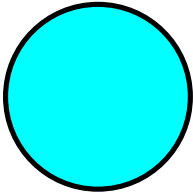
Summary for Reach 50: PIPE - 50

Inflow Area = 199,523 sf, 92.97% Impervious, Inflow Depth > 91.84" for 25-YR event
Inflow = 21.04 cfs @ 7.90 hrs, Volume= 1,526,936 cf
Outflow = 19.07 cfs @ 7.55 hrs, Volume= 1,524,068 cf, Atten= 9%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Max. Velocity= 25.68 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 23.51 fps, Avg. Travel Time= 0.1 min

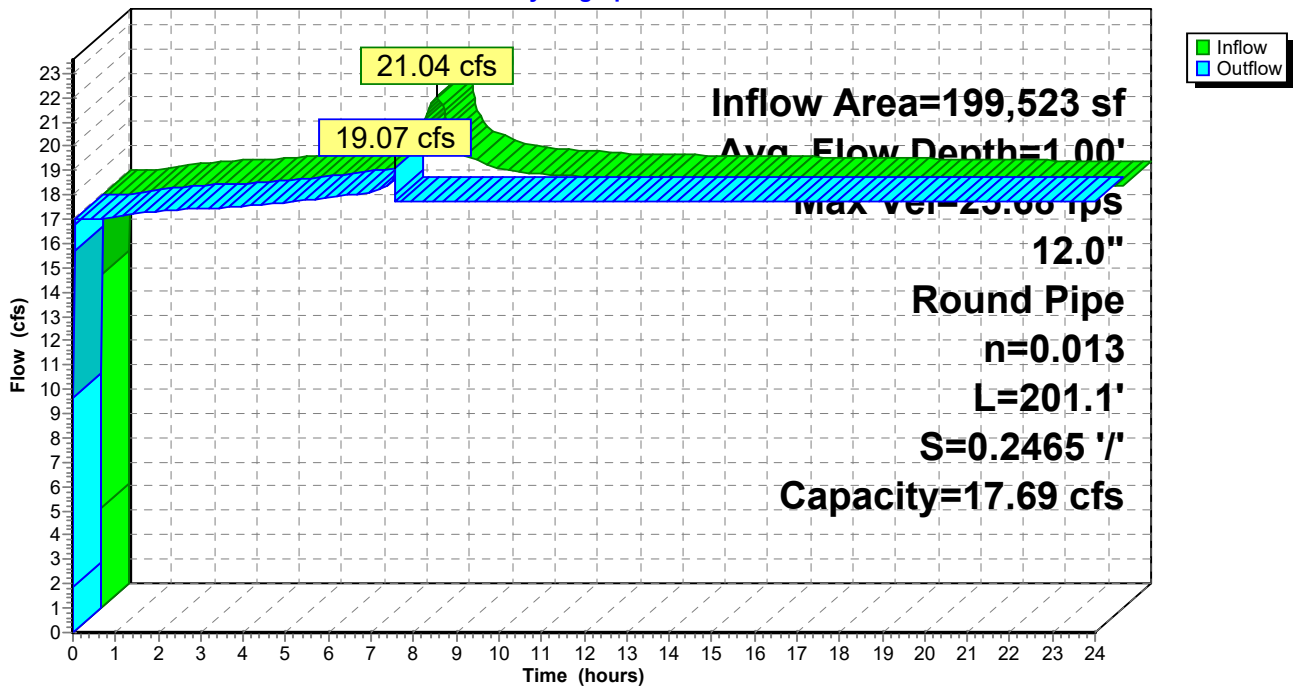
Peak Storage= 158 cf @ 7.56 hrs
Average Depth at Peak Storage= 1.00'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 17.69 cfs

12.0" Round Pipe
n= 0.013 PVC, smooth interior
Length= 201.1' Slope= 0.2465 '/'
Inlet Invert= 190.97', Outlet Invert= 141.39'



Reach 50: PIPE - 50

Hydrograph



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Summary for Reach SW: MF2 LARGE SWALE

Inflow Area = 673,037 sf, 50.47% Impervious, Inflow Depth > 2.34" for 25-YR event
 Inflow = 8.78 cfs @ 7.94 hrs, Volume= 131,205 cf
 Outflow = 8.77 cfs @ 7.97 hrs, Volume= 131,021 cf, Atten= 0%, Lag= 2.1 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
 Max. Velocity= 2.94 fps, Min. Travel Time= 1.2 min
 Avg. Velocity = 1.71 fps, Avg. Travel Time= 2.1 min

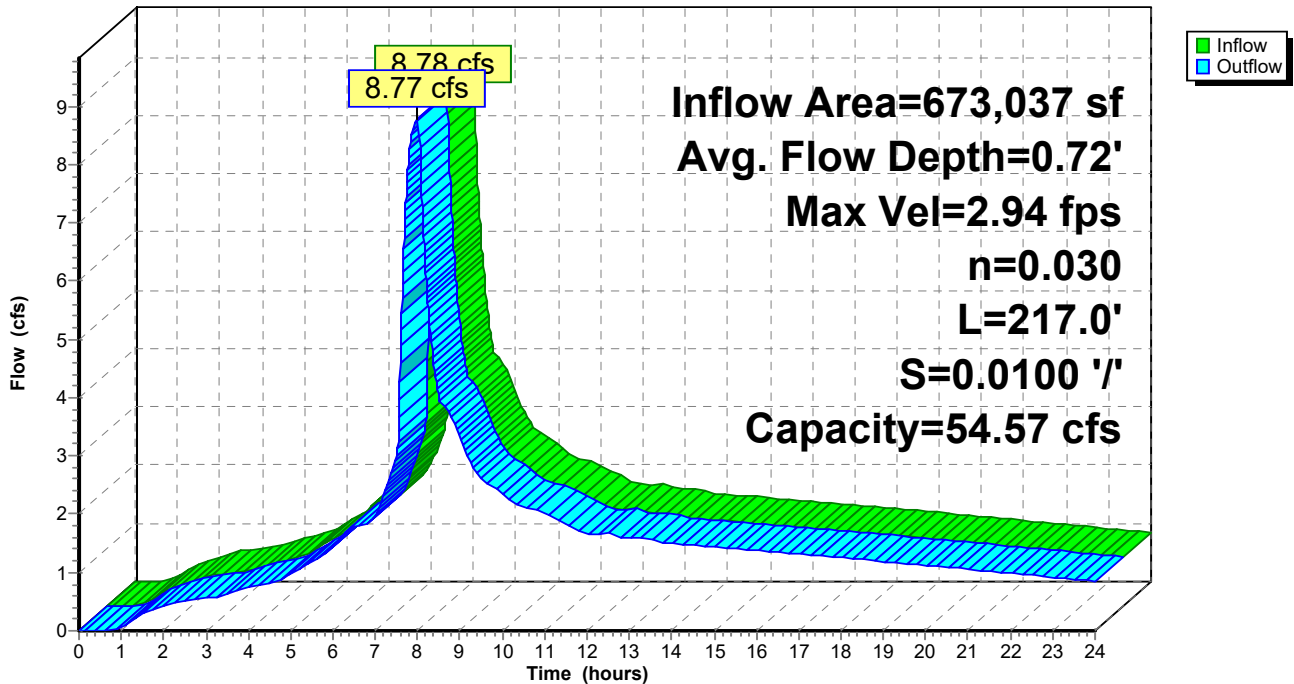
Peak Storage= 648 cf @ 7.95 hrs
 Average Depth at Peak Storage= 0.72'
 Bank-Full Depth= 1.66' Flow Area= 11.6 sf, Capacity= 54.57 cfs

2.00' x 1.66' deep channel, n= 0.030 Earth, grassed & winding
 Side Slope Z-value= 3.0 '/' Top Width= 11.96'
 Length= 217.0' Slope= 0.0100 '/'
 Inlet Invert= 190.65', Outlet Invert= 188.48'



Reach SW: MF2 LARGE SWALE

Hydrograph



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Summary for Pond 1: SDMH-10D & PIPE 1

Inflow Area = 379,532 sf, 29.13% Impervious, Inflow Depth > 2.41" for 25-YR event
 Inflow = 4.15 cfs @ 7.97 hrs, Volume= 76,348 cf
 Outflow = 4.15 cfs @ 7.97 hrs, Volume= 76,348 cf, Atten= 0%, Lag= 0.0 min
 Primary = 4.15 cfs @ 7.97 hrs, Volume= 76,348 cf

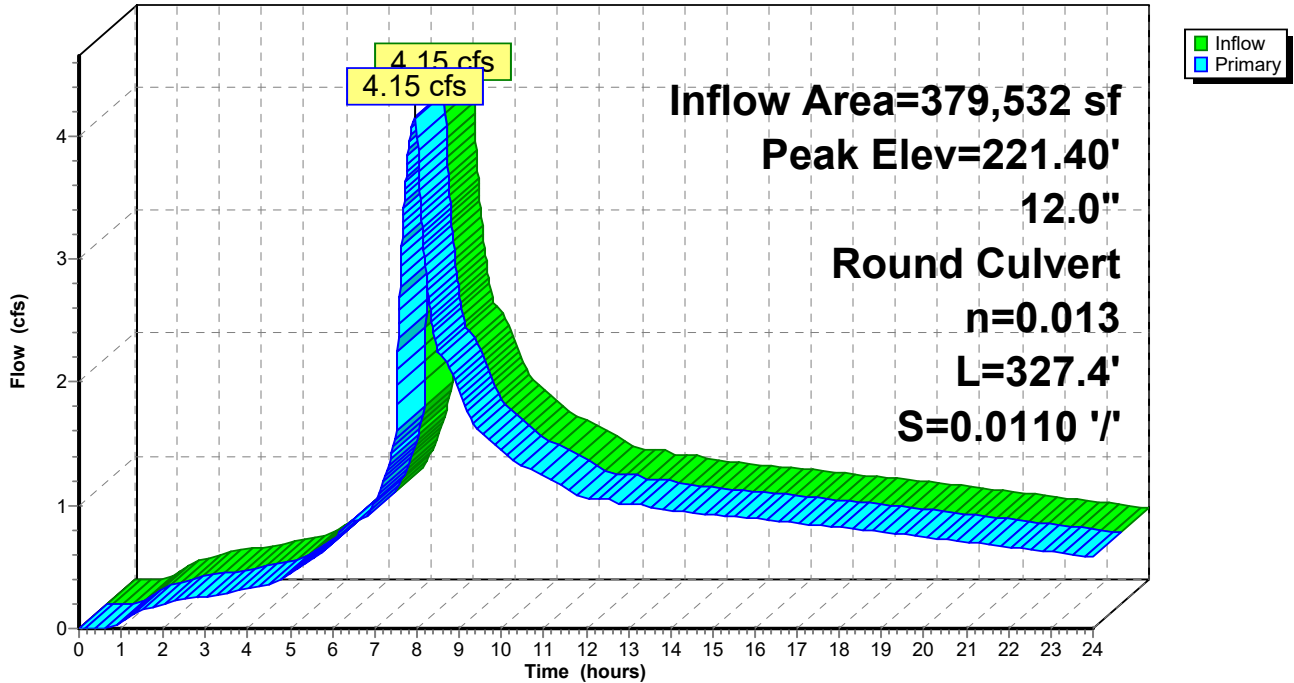
Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
 Peak Elev= 221.40' @ 7.97 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	218.89'	12.0" Round Culvert L= 327.4' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 218.89' / 215.29' S= 0.0110 1/1' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf

Primary OutFlow Max=4.15 cfs @ 7.97 hrs HW=221.39' (Free Discharge)
 ←1=Culvert (Barrel Controls 4.15 cfs @ 5.28 fps)

Pond 1: SDMH-10D & PIPE 1

Hydrograph



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Summary for Pond 4: SDMH-10A & PIPE 4

Inflow Area = 454,550 sf, 39.22% Impervious, Inflow Depth > 2.58" for 25-YR event
 Inflow = 5.60 cfs @ 7.96 hrs, Volume= 97,872 cf
 Outflow = 5.60 cfs @ 7.96 hrs, Volume= 97,872 cf, Atten= 0%, Lag= 0.0 min
 Primary = 5.60 cfs @ 7.96 hrs, Volume= 97,872 cf

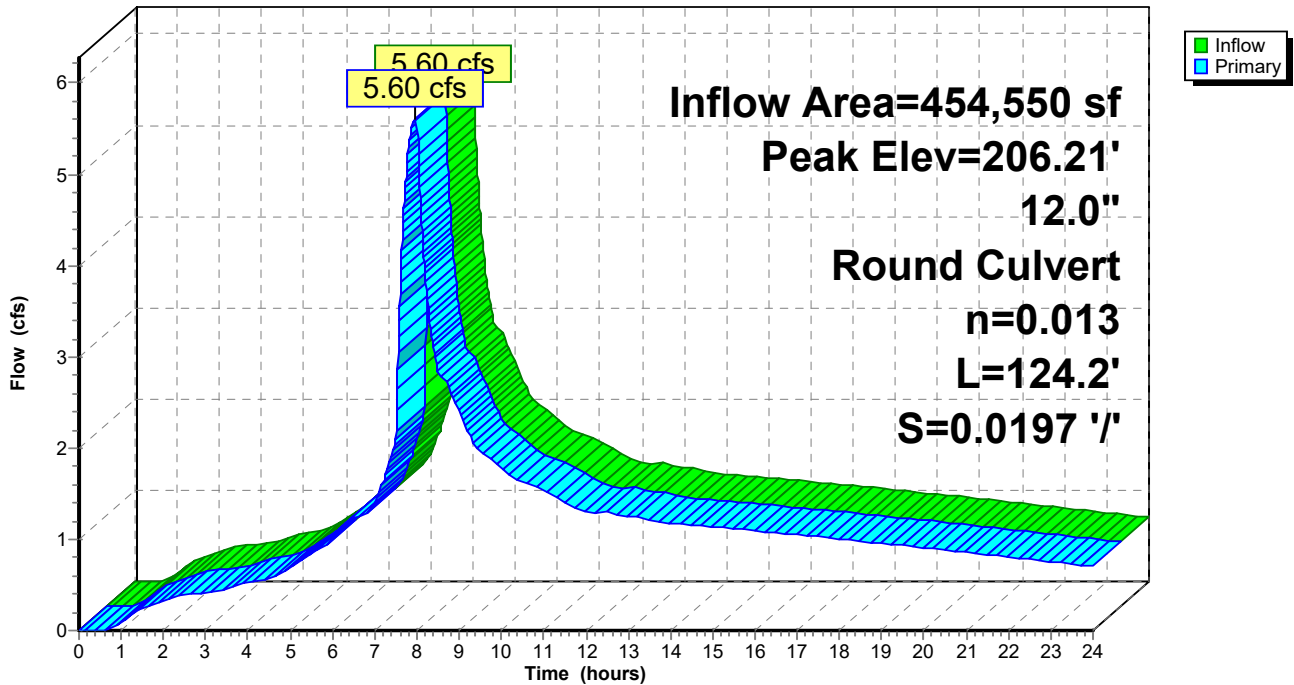
Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
 Peak Elev= 206.21' @ 7.96 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	203.39'	12.0" Round Culvert L= 124.2' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 203.39' / 200.94' S= 0.0197 '/ Cc= 0.900 n= 0.013, Flow Area= 0.79 sf

Primary OutFlow Max=5.60 cfs @ 7.96 hrs HW=206.21' (Free Discharge)
 ←1=Culvert (Barrel Controls 5.60 cfs @ 7.14 fps)

Pond 4: SDMH-10A & PIPE 4

Hydrograph



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Summary for Pond 5: SDMH-8B & PIPE 5

Inflow Area = 648,687 sf, 49.82% Impervious, Inflow Depth > 2.32" for 25-YR event
 Inflow = 8.38 cfs @ 7.94 hrs, Volume= 125,183 cf
 Outflow = 8.38 cfs @ 7.94 hrs, Volume= 125,183 cf, Atten= 0%, Lag= 0.0 min
 Primary = 8.38 cfs @ 7.94 hrs, Volume= 125,183 cf

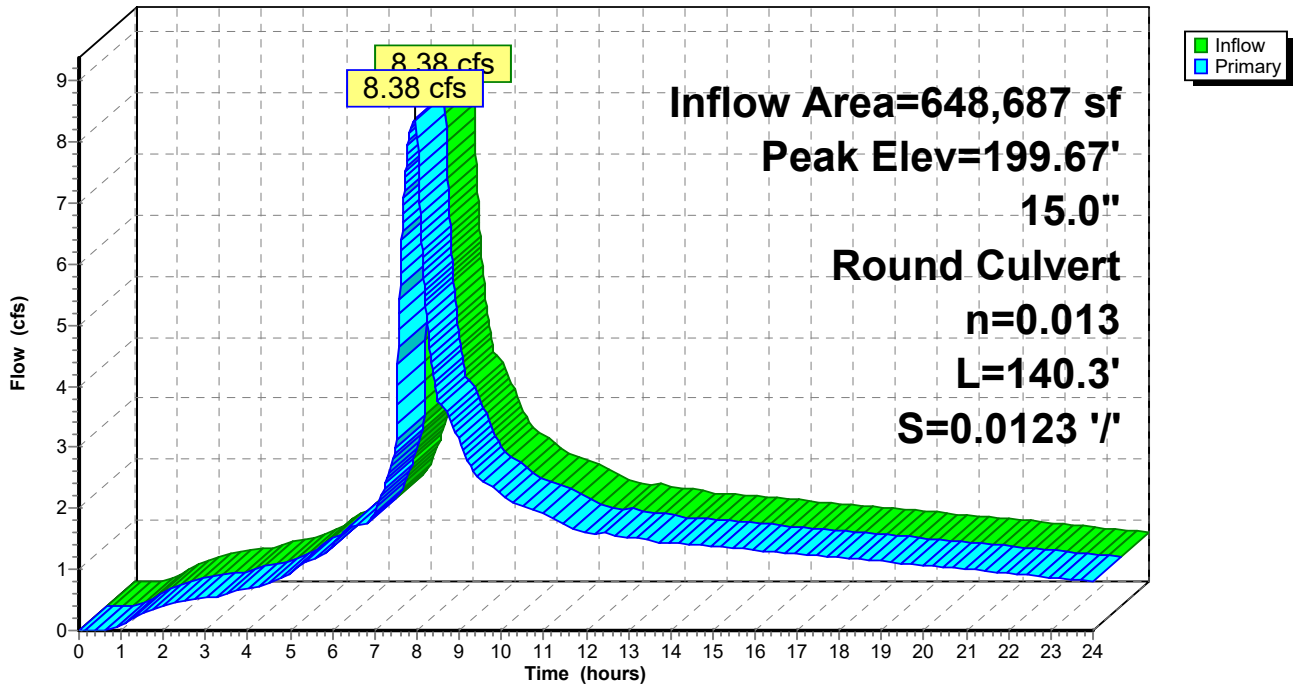
Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
 Peak Elev= 199.67' @ 7.94 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	196.70'	15.0" Round Culvert L= 140.3' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 196.70' / 194.97' S= 0.0123 '/ Cc= 0.900 n= 0.013, Flow Area= 1.23 sf

Primary OutFlow Max=8.37 cfs @ 7.94 hrs HW=199.67' (Free Discharge)
 ←1=Culvert (Barrel Controls 8.37 cfs @ 6.82 fps)

Pond 5: SDMH-8B & PIPE 5

Hydrograph



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Summary for Pond 7: SDBH-S1 & PIPE 7

Inflow Area = 673,037 sf, 50.47% Impervious, Inflow Depth > 2.34" for 25-YR event
 Inflow = 8.77 cfs @ 7.97 hrs, Volume= 131,021 cf
 Outflow = 8.77 cfs @ 7.97 hrs, Volume= 131,021 cf, Atten= 0%, Lag= 0.0 min
 Primary = 8.77 cfs @ 7.97 hrs, Volume= 131,021 cf

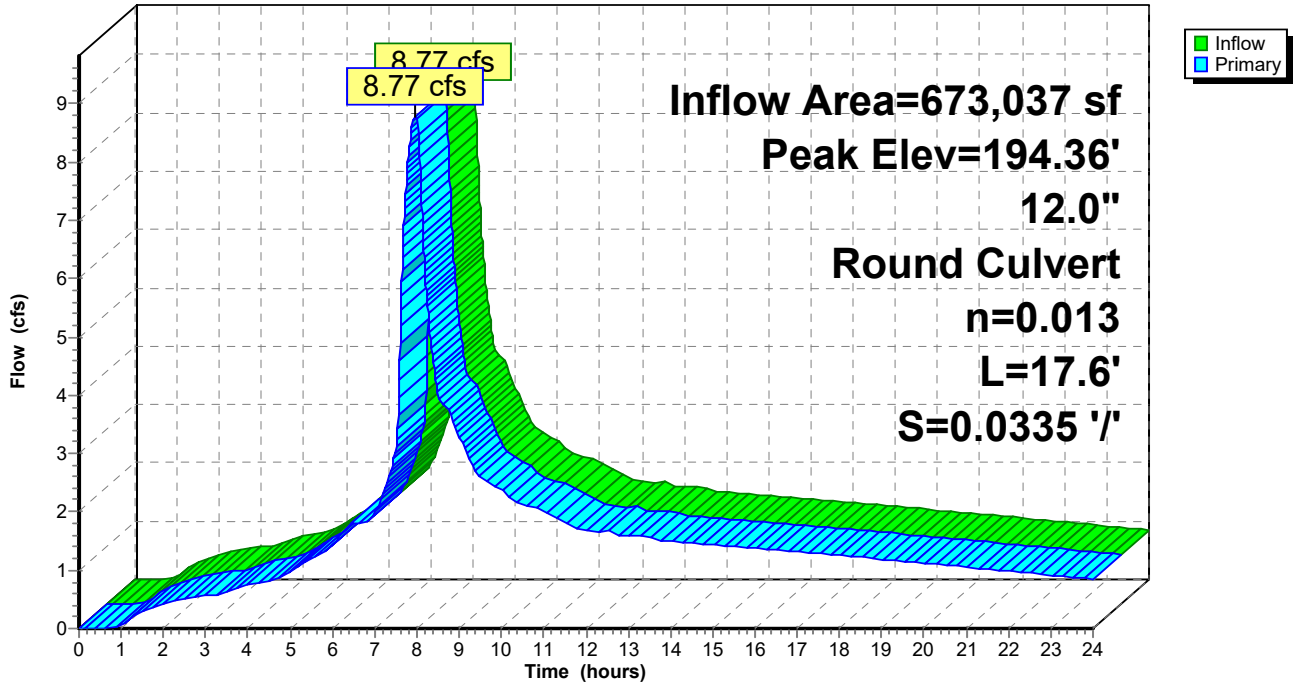
Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
 Peak Elev= 194.36' @ 7.97 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	188.48'	12.0" Round Culvert L= 17.6' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 188.48' / 187.89' S= 0.0335 1/ S= 0.0335 1/ Cc= 0.900 n= 0.013, Flow Area= 0.79 sf

Primary OutFlow Max=8.77 cfs @ 7.97 hrs HW=194.36' (Free Discharge)
 ←1=Culvert (Inlet Controls 8.77 cfs @ 11.17 fps)

Pond 7: SDBH-S1 & PIPE 7

Hydrograph



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Summary for Pond 8: SDMH-13A & PIPE 8

Inflow Area = 673,037 sf, 50.47% Impervious, Inflow Depth > 2.75" for 25-YR event
 Inflow = 9.36 cfs @ 7.96 hrs, Volume= 154,128 cf
 Outflow = 9.36 cfs @ 7.96 hrs, Volume= 154,128 cf, Atten= 0%, Lag= 0.0 min
 Primary = 9.36 cfs @ 7.96 hrs, Volume= 154,128 cf

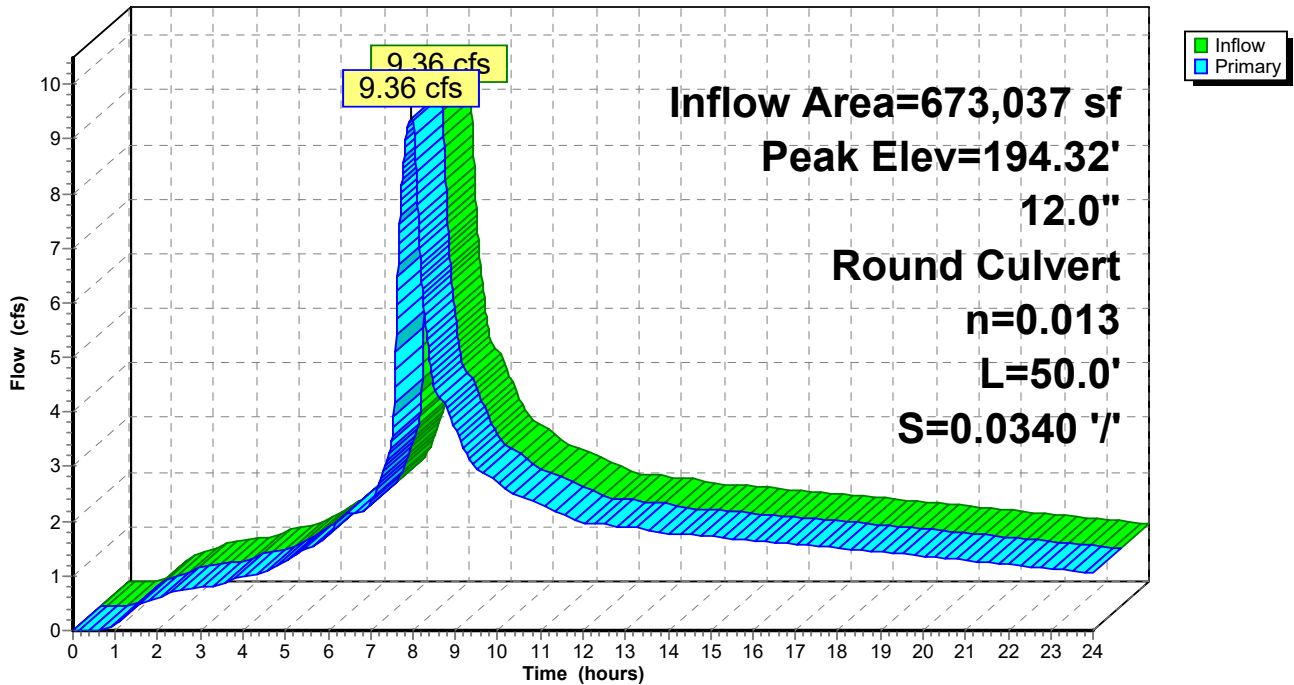
Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
 Peak Elev= 194.32' @ 7.96 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	187.69'	12.0" Round Culvert L= 50.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 187.69' / 185.99' S= 0.0340 '/ Cc= 0.900 n= 0.013, Flow Area= 0.79 sf

Primary OutFlow Max=9.36 cfs @ 7.96 hrs HW=194.32' (Free Discharge)
 ←1=Culvert (Inlet Controls 9.36 cfs @ 11.92 fps)

Pond 8: SDMH-13A & PIPE 8

Hydrograph



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Summary for Pond FS: FSMH-09A

Inflow Area = 194,137 sf, 74.64% Impervious, Inflow Depth > 3.12" for 25-YR event
 Inflow = 3.39 cfs @ 7.89 hrs, Volume= 50,418 cf
 Outflow = 3.39 cfs @ 7.89 hrs, Volume= 50,418 cf, Atten= 0%, Lag= 0.0 min
 Primary = 2.79 cfs @ 7.89 hrs, Volume= 27,311 cf
 Secondary = 0.61 cfs @ 7.89 hrs, Volume= 23,107 cf

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
 Peak Elev= 201.14' @ 7.89 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	200.29'	15.0" Round Culvert L= 250.2' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 200.29' / 196.90' S= 0.0135 '/' Cc= 0.900 n= 0.013, Flow Area= 1.23 sf
#2	Secondary	200.12'	12.0" Round Culvert L= 47.2' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 200.12' / 199.85' S= 0.0057 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf
#3	Device 2	200.12'	4.9" Vert. Orifice/Grate C= 0.600
#4	Device 2	201.12'	4.0' long Sharp-Crested Rectangular Weir 2 End Contraction(s)

Primary OutFlow Max=2.79 cfs @ 7.89 hrs HW=201.14' (Free Discharge)
 ↳ **1=Culvert** (Inlet Controls 2.79 cfs @ 3.14 fps)

Secondary OutFlow Max=0.61 cfs @ 7.89 hrs HW=201.14' (Free Discharge)
 ↳ **2=Culvert** (Passes 0.61 cfs of 2.30 cfs potential flow)
 ↳ **3=Orifice/Grate** (Orifice Controls 0.57 cfs @ 4.35 fps)
 ↳ **4=Sharp-Crested Rectangular Weir** (Weir Controls 0.04 cfs @ 0.46 fps)

10411 Prelim Downstream

Prepared by AKS Engineering & Forestry, LLC

HydroCAD® 10.00-22 s/n 01338 © 2018 HydroCAD Software Solutions LLC

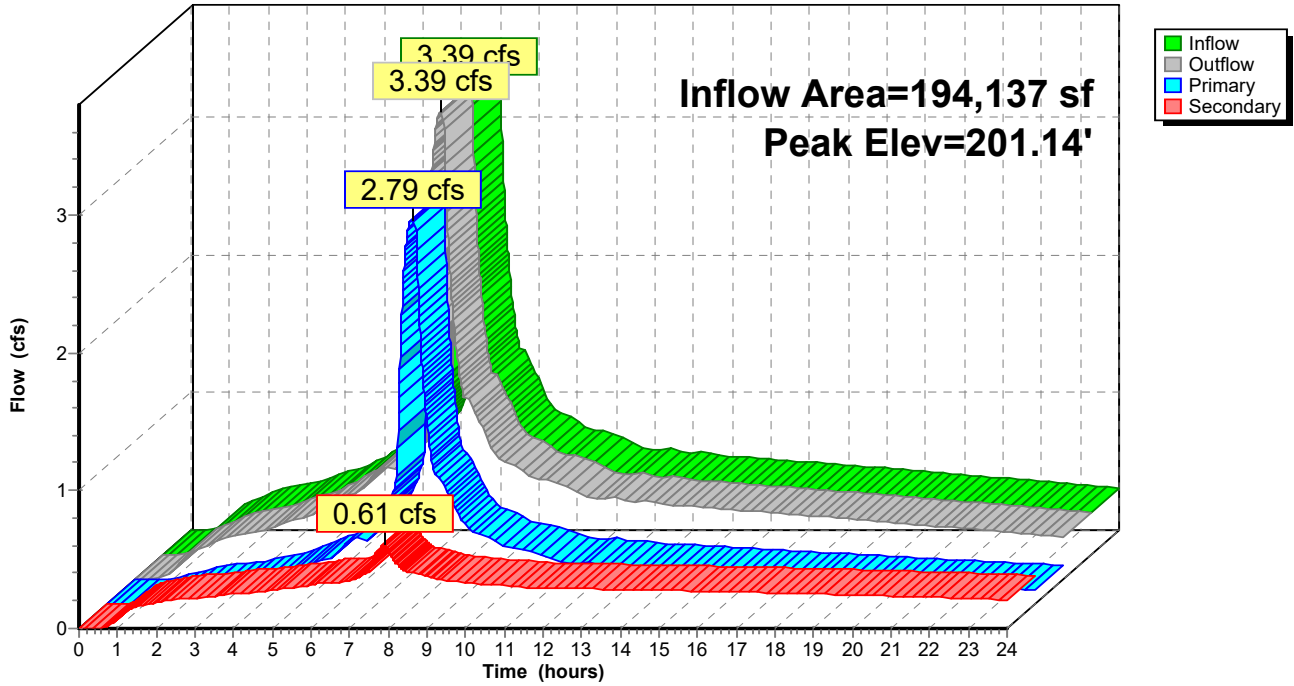
Type IA 24-hr 25-YR Rainfall=3.90"

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Pond FS: FSMH-09A

Hydrograph



10411 Prelim Downstream

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Type IA 24-hr 25-YR Rainfall=3.90"

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Summary for Link 1L: UPSTREAM BASIN FLOW (NORTH)

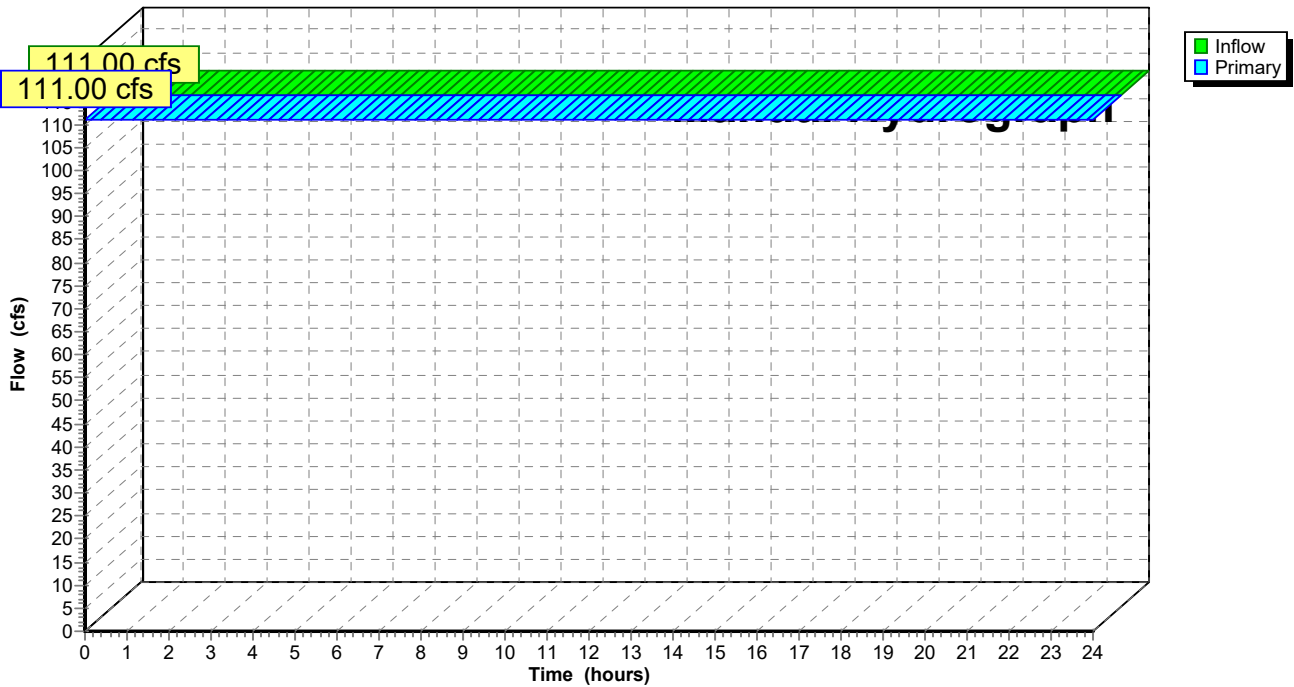
Inflow = 111.00 cfs @ 0.00 hrs, Volume= 9,594,396 cf
Primary = 111.00 cfs @ 0.00 hrs, Volume= 9,594,396 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Constant Inflow= 111.00 cfs

Link 1L: UPSTREAM BASIN FLOW (NORTH)

Hydrograph



10411 Prelim Downstream

Prepared by AKS Engineering & Forestry, LLC

HydroCAD® 10.00-22 s/n 01338 © 2018 HydroCAD Software Solutions LLC

Type IA 24-hr 25-YR Rainfall=3.90"

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Summary for Link 2L: UPSTREAM BASIN FLOW (SOUTH)

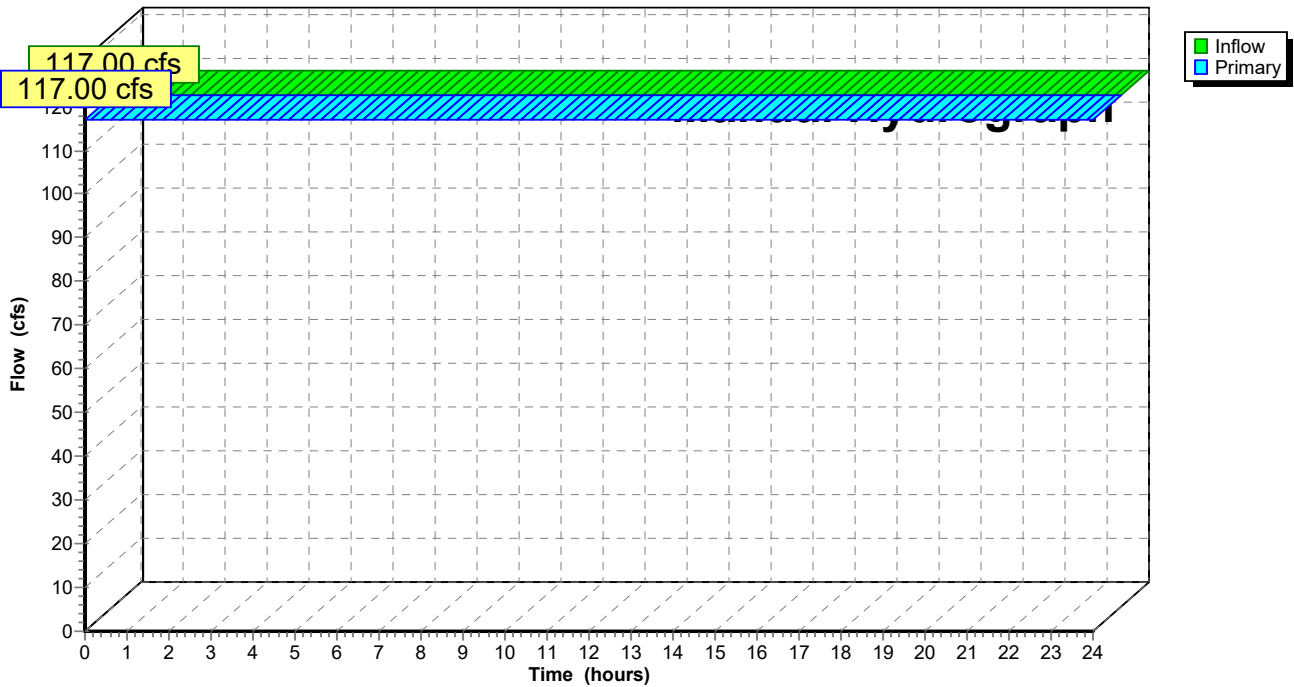
Inflow = 117.00 cfs @ 0.00 hrs, Volume= 10,113,012 cf
Primary = 117.00 cfs @ 0.00 hrs, Volume= 10,113,012 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Constant Inflow= 117.00 cfs

Link 2L: UPSTREAM BASIN FLOW (SOUTH)

Hydrograph



Appendix H: Information from NRCS Soil Survey of
Clackamas County, Oregon

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

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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: 1:1,530 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 20, Sep 7, 2023

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

Date(s) aerial images were photographed: Sep 26, 2022—Oct 11, 2022

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
1B	Aloha silt loam, 3 to 6 percent slopes	5.0	55.1%
91B	Woodburn silt loam, 3 to 8 percent slopes	3.1	34.6%
91C	Woodburn silt loam, 8 to 15 percent slopes	0.9	10.3%
Totals for Area of Interest		9.0	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.

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

Custom Soil Resource Report

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

1B—Aloha silt loam, 3 to 6 percent slopes

Map Unit Setting

National map unit symbol: 223m
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: 3 to 6 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 supply, 0 to 60 inches: High (about 11.9 inches)

Interpretive groups

Land capability classification (irrigated): 2w
Land capability classification (nonirrigated): 2w
Hydrologic Soil Group: C/D
Ecological site: R002XC007OR - Valley Swale Group
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

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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: 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

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Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: High (about 12.0 inches)

Interpretive groups

Land capability classification (irrigated): 2e
Land capability classification (nonirrigated): 2e
Hydrologic Soil Group: C
Ecological site: R002XC008OR - Valley Terrace Group
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

Aquolls

Percent of map unit: 1 percent
Landform: Flood plains
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

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

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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 supply, 0 to 60 inches: High (about 12.0 inches)

Interpretive groups

Land capability classification (irrigated): 2e

Land capability classification (nonirrigated): 2e

Hydrologic Soil Group: C

Ecological site: R002XC008OR - Valley Terrace Group

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

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**Appendix I: Relevant Information from City of
Wilsonville Stormwater & Surface Water Design &
Construction Standards**



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.

Table 2-2a Runoff curve numbers for urban areas ^{1/}

Cover description	Average percent impervious area ^{2/}	Curve numbers for hydrologic soil group			
		A	B	C	D
Fully developed urban areas (vegetation established)					
Open space (lawns, parks, golf courses, cemeteries, etc.) ^{3/} :					
Poor condition (grass cover < 50%)		68	79	86	89
Fair condition (grass cover 50% to 75%)		49	69	79	84
Good condition (grass cover > 75%)		39	61	74	80
Impervious areas:					
Paved parking lots, roofs, driveways, etc. (excluding right-of-way)		98	98	98	98
Streets and roads:					
Paved; curbs and storm sewers (excluding right-of-way)		98	98	98	98
Paved; open ditches (including right-of-way)		83	89	92	93
Gravel (including right-of-way)		76	85	89	91
Dirt (including right-of-way)		72	82	87	89
Western desert urban areas:					
Natural desert landscaping (pervious areas only) ^{4/}		63	77	85	88
Artificial desert landscaping (impervious weed barrier, desert shrub with 1- to 2-inch sand or gravel mulch and basin borders)		96	96	96	96
Urban districts:					
Commercial and business	85	89	92	94	95
Industrial	72	81	88	91	93
Residential districts by average lot size:					
1/8 acre or less (town houses)	65	77	85	90	92
1/4 acre	38	61	75	83	87
1/3 acre	30	57	72	81	86
1/2 acre	25	54	70	80	85
1 acre	20	51	68	79	84
2 acres	12	46	65	77	82

Developing urban areas

Newly graded areas
(pervious areas only, no vegetation) ^{5/}

	77	86	91	94
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Idle lands (CN's are determined using cover types
similar to those in table 2-2c).

¹ Average runoff condition, and $I_a = 0.2S$.

² The average percent impervious area shown was used to develop the composite CN's. Other assumptions are as follows: impervious areas are directly connected to the drainage system, impervious areas have a CN of 98, and pervious areas are considered equivalent to open space in good hydrologic condition. CN's for other combinations of conditions may be computed using figure 2-3 or 2-4.

³ CN's shown are equivalent to those of pasture. Composite CN's may be computed for other combinations of open space cover type.

⁴ Composite CN's for natural desert landscaping should be computed using figures 2-3 or 2-4 based on the impervious area percentage (CN = 98) and the pervious area CN. The pervious area CN's are assumed equivalent to desert shrub in poor hydrologic condition.

⁵ Composite CN's to use for the design of temporary measures during grading and construction should be computed using figure 2-3 or 2-4 based on the degree of development (impervious area percentage) and the CN's for the newly graded pervious areas.

Table 2-2b Runoff curve numbers for cultivated agricultural lands ^{1/}

Cover description			Curve numbers for hydrologic soil group			
Cover type	Treatment ^{2/}	Hydrologic condition ^{3/}	A	B	C	D
Fallow	Bare soil	—	77	86	91	94
	Crop residue cover (CR)	Poor	76	85	90	93
		Good	74	83	88	90
Row crops	Straight row (SR)	Poor	72	81	88	91
		Good	67	78	85	89
	SR + CR	Poor	71	80	87	90
		Good	64	75	82	85
	Contoured (C)	Poor	70	79	84	88
		Good	65	75	82	86
	C + CR	Poor	69	78	83	87
		Good	64	74	81	85
	Contoured & terraced (C&T)	Poor	66	74	80	82
		Good	62	71	78	81
C&T+ CR	Poor	65	73	79	81	
	Good	61	70	77	80	
Small grain	SR	Poor	65	76	84	88
		Good	63	75	83	87
	SR + CR	Poor	64	75	83	86
		Good	60	72	80	84
	C	Poor	63	74	82	85
		Good	61	73	81	84
	C + CR	Poor	62	73	81	84
		Good	60	72	80	83
	C&T	Poor	61	72	79	82
		Good	59	70	78	81
C&T+ CR	Poor	60	71	78	81	
	Good	58	69	77	80	
Close-seeded or broadcast legumes or rotation meadow	SR	Poor	66	77	85	89
		Good	58	72	81	85
	C	Poor	64	75	83	85
		Good	55	69	78	83
	C&T	Poor	63	73	80	83
		Good	51	67	76	80

¹ Average runoff condition, and $I_a=0.2S$

² Crop residue cover applies only if residue is on at least 5% of the surface throughout the year.

³ Hydraulic condition is based on combination factors that affect infiltration and runoff, including (a) density and canopy of vegetative areas, (b) amount of year-round cover, (c) amount of grass or close-seeded legumes, (d) percent of residue cover on the land surface (good $\geq 20\%$), and (e) degree of surface roughness.

Poor: Factors impair infiltration and tend to increase runoff.

Good: Factors encourage average and better than average infiltration and tend to decrease runoff.

Table 2-2c Runoff curve numbers for other agricultural lands ^{1/}

Cover description	Hydrologic condition	Curve numbers for hydrologic soil group			
		A	B	C	D
Pasture, grassland, or range—continuous forage for grazing. ^{2/}	Poor	68	79	86	89
	Fair	49	69	79	84
	Good	39	61	74	80
Meadow—continuous grass, protected from grazing and generally mowed for hay.	—	30	58	71	78
Brush—brush-weed-grass mixture with brush the major element. ^{3/}	Poor	48	67	77	83
	Fair	35	56	70	77
	Good	30 ^{4/}	48	65	73
Woods—grass combination (orchard or tree farm). ^{5/}	Poor	57	73	82	86
	Fair	43	65	76	82
	Good	32	58	72	79
Woods. ^{6/}	Poor	45	66	77	83
	Fair	36	60	73	79
	Good	30 ^{4/}	55	70	77
Farmsteads—buildings, lanes, driveways, and surrounding lots.	—	59	74	82	86

¹ Average runoff condition, and $I_a = 0.2S$.

² **Poor:** <50% ground cover or heavily grazed with no mulch.

Fair: 50 to 75% ground cover and not heavily grazed.

Good: > 75% ground cover and lightly or only occasionally grazed.

³ **Poor:** <50% ground cover.

Fair: 50 to 75% ground cover.

Good: >75% ground cover.

⁴ Actual curve number is less than 30; use CN = 30 for runoff computations.

⁵ CN's shown were computed for areas with 50% woods and 50% grass (pasture) cover. Other combinations of conditions may be computed from the CN's for woods and pasture.

⁶ **Poor:** Forest litter, small trees, and brush are destroyed by heavy grazing or regular burning.

Fair: Woods are grazed but not burned, and some forest litter covers the soil.

Good: Woods are protected from grazing, and litter and brush adequately cover the soil.

Table 2-2d Runoff curve numbers for arid and semiarid rangelands ^{1/}

Cover description		Curve numbers for hydrologic soil group			
Cover type	Hydrologic condition ^{2/}	A ^{3/}	B	C	D
Herbaceous—mixture of grass, weeds, and low-growing brush, with brush the minor element.	Poor		80	87	93
	Fair		71	81	89
	Good		62	74	85
Oak-aspen—mountain brush mixture of oak brush, aspen, mountain mahogany, bitter brush, maple, and other brush.	Poor		66	74	79
	Fair		48	57	63
	Good		30	41	48
Pinyon-juniper—pinyon, juniper, or both; grass understory.	Poor		75	85	89
	Fair		58	73	80
	Good		41	61	71
Sagebrush with grass understory.	Poor		67	80	85
	Fair		51	63	70
	Good		35	47	55
Desert shrub—major plants include saltbush, greasewood, creosotebush, blackbrush, bursage, palo verde, mesquite, and cactus.	Poor	63	77	85	88
	Fair	55	72	81	86
	Good	49	68	79	84

¹ Average runoff condition, and I_a , = 0.2S. For range in humid regions, use table 2-2c.

² Poor: <30% ground cover (litter, grass, and brush overstory).

Fair: 30 to 70% ground cover.

Good: > 70% ground cover.

³ Curve numbers for group A have been developed only for desert shrub.

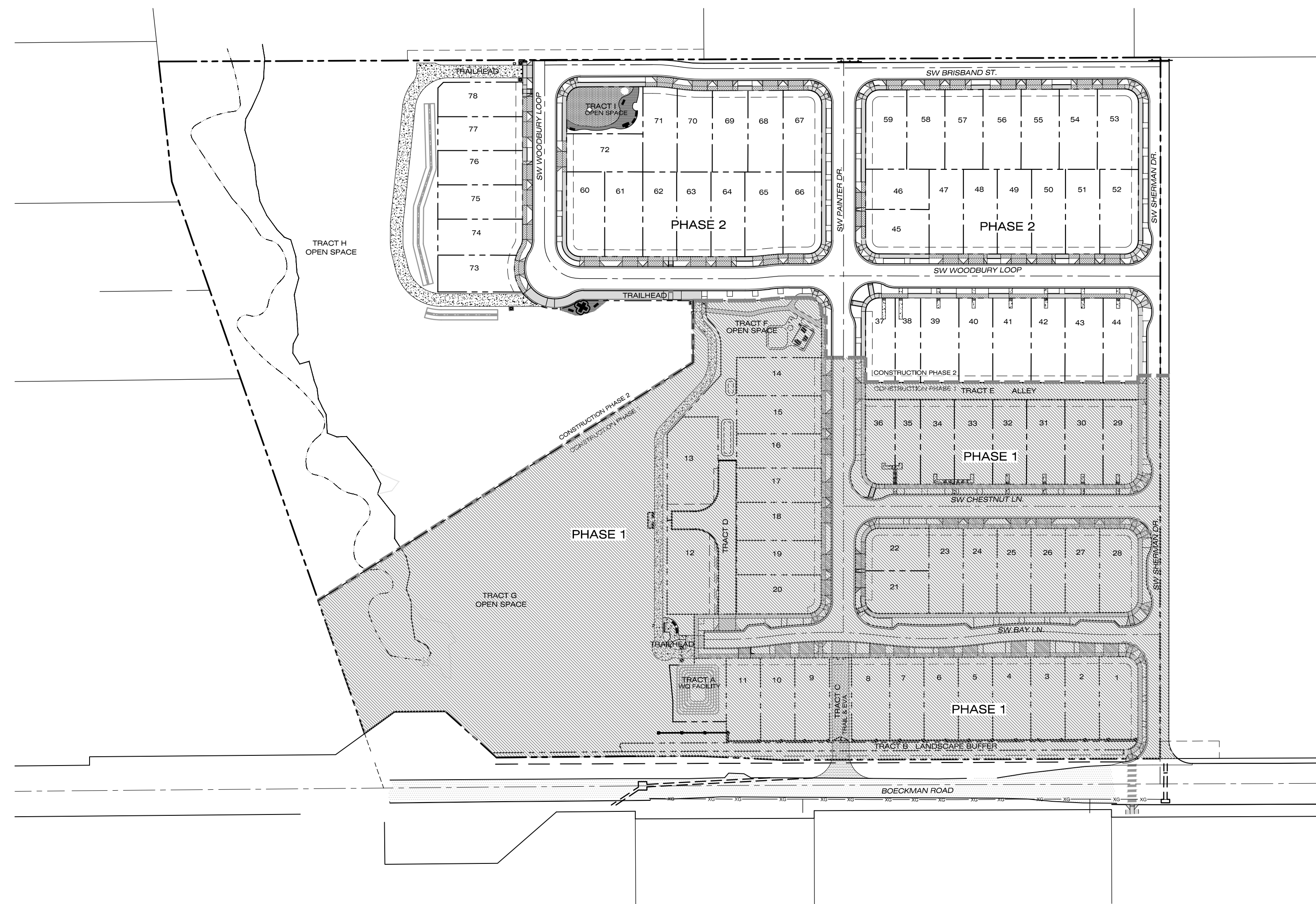
Appendix J: Additional Downstream Analysis Reference Documents

MORGAN FARM (PHASE 2)

PHASE 2 OF A PLANNED DEVELOPMENT FOR A 78-LOT SUBDIVISION - LOTS 37-78
TAX LOTS 2400, 2600 & 2700, TAX MAP T3S, R1W, SEC. 12D



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C0.2	PRELIMINARY PLAT
EXISTING CONDITIONS	
C1.0	EXISTING CONDITIONS AND DEMOLITION PLAN
C1.1	EXISTING TREE TABLE
C1.2	TREE REMOVAL PLAN
C1.3	TREE PROTECTION SPECIFICATIONS
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SITE	
C3.0	COMPOSITE UTILITY PLAN
C3.1	OVERALL STREET PLAN
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C6.0	SSLN-A & SSLN-G PLAN AND PROFILE
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C9.2	CONSTRUCTION DETAILS - SANITARY & STORM SYSTEMS
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C9.4	CONSTRUCTION DETAILS - SANITARY & STORM SYSTEMS
C9.5	CONSTRUCTION DETAILS - STORMWATER LID
C9.6	CONSTRUCTION DETAILS - WATER
C9.7	CONSTRUCTION DETAILS - WATER & RETAINING WALLS
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LIGHTING PLANS	
E0.1-E2.0	LIGHTING DESIGN PLANS
1200-C EROSION AND SEDIMENT CONTROL PLANS	
P1-P6	NPDES PERMIT SET

COVER SHEET	
Designed by	TCC
Drawn by	TCC
Reviewed by	BEF
Project No.	321-002
Horiz. Scale	N/A
Vert. Scale	N/A
Date	12/2018
Date	12/2018
Date	12/2018
REF.	

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VERTICAL DATUM

CITY OF WILSONVILLE CONTROL SURVEY PS25218
STATION #5806 - A 3 1/4" BRASS DISC IN MONUMENT BOX -
THE SECTION CORNER COMMON TO SECTIONS 11, 12, 13 &
14, T3S R1E, IN THE CENTER OF BOECKMAN RD, EAST OF
BOONES FERRY RD.

ELEVATION = 213.19'
DATUM: NAVD 88, US FEET

SITE INFORMATION

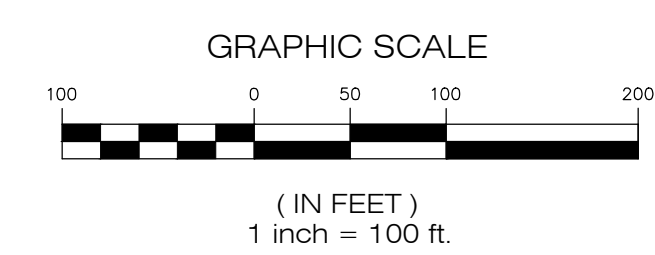
SITE ADDRESS: 7331 & 7447 SW BOECKMAN RD.
1/4 SECTION MAP: T3S R1W SEC 12D
TAX LOTS: 2400, 2600 & 2700
SITE SIZE: 20.13 ACRES

LOCATES (48 HOURS NOTICE REQUIRED)

ONE CALL SYSTEM 1-800-332-2344
(GENERAL TELEPHONE, NORTHWEST
NATURAL GAS, PORTLAND GENERAL
ELECTRIC)

REPAIR EMERGENCIES

NORTHWEST NATURAL GAS - 800-882-3377
QWEST - 503-242-6064
PORTLAND GENERAL ELECTRIC - 503-464-7777
COMCAST - 888-824-8264
CITY OF WILSONVILLE - 866-252-3614
VERIZON - 503-526-2220



THIS DESIGN COMPLIES WITH ORS 92.044 (7) IN THAT NO UTILITY INFRASTRUCTURE IS DESIGNED TO BE WITHIN ONE (1) FOOT OF A SURVEY MONUMENT LOCATION SHOWN ON A SUBDIVISION OR PARTITION PLAT. NO DESIGN EXCEPTIONS NOR FINAL FIELD LOCATION CHANGES SHALL BE PERMITTED IF THAT CHANGE WOULD CAUSE ANY UTILITY INFRASTRUCTURE TO BE PLACED WITHIN THE PROHIBITED AREA.

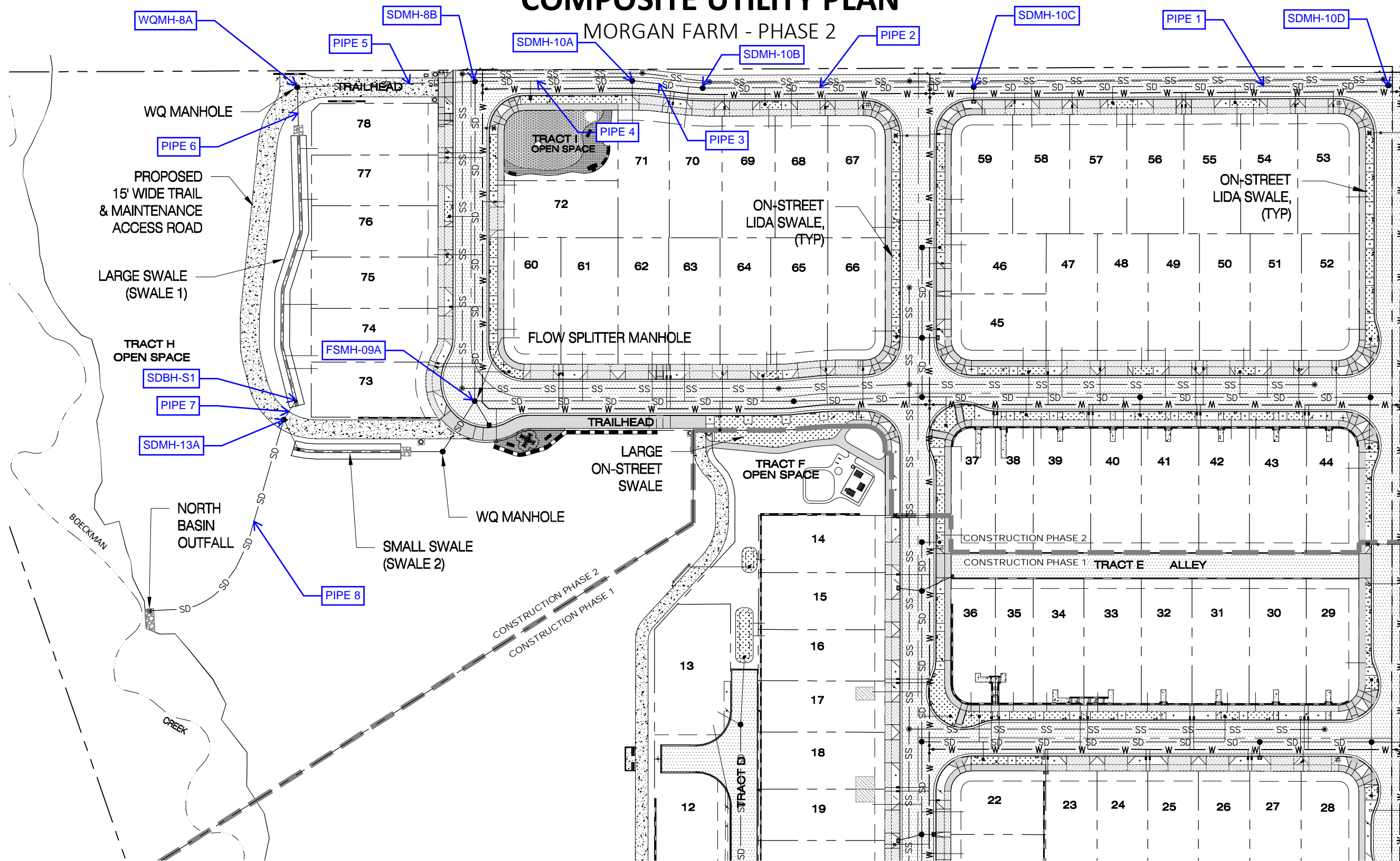
RECORD DRAWINGS
DATE: 12/18/2018 THESE RECORD DRAWINGS HAVE BEEN PREPARED BASED ON FIELD OBSERVATION AND SURVEYED INFORMATION.

Project: MORGAN FARM PH.2
No.: 321-002
Type: AS-BUILTS
Sheet: **C0.0**

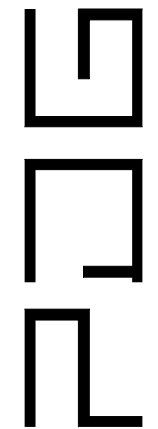
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COMPOSITE UTILITY PLAN

MORGAN FARM - PHASE 2



9020 SW WASHINGTON SQUARE RD.
SUITE 170
PORTLAND, OREGON 97223
p 503.843.8286
f 844.715.4743
www.p-d-grp.com

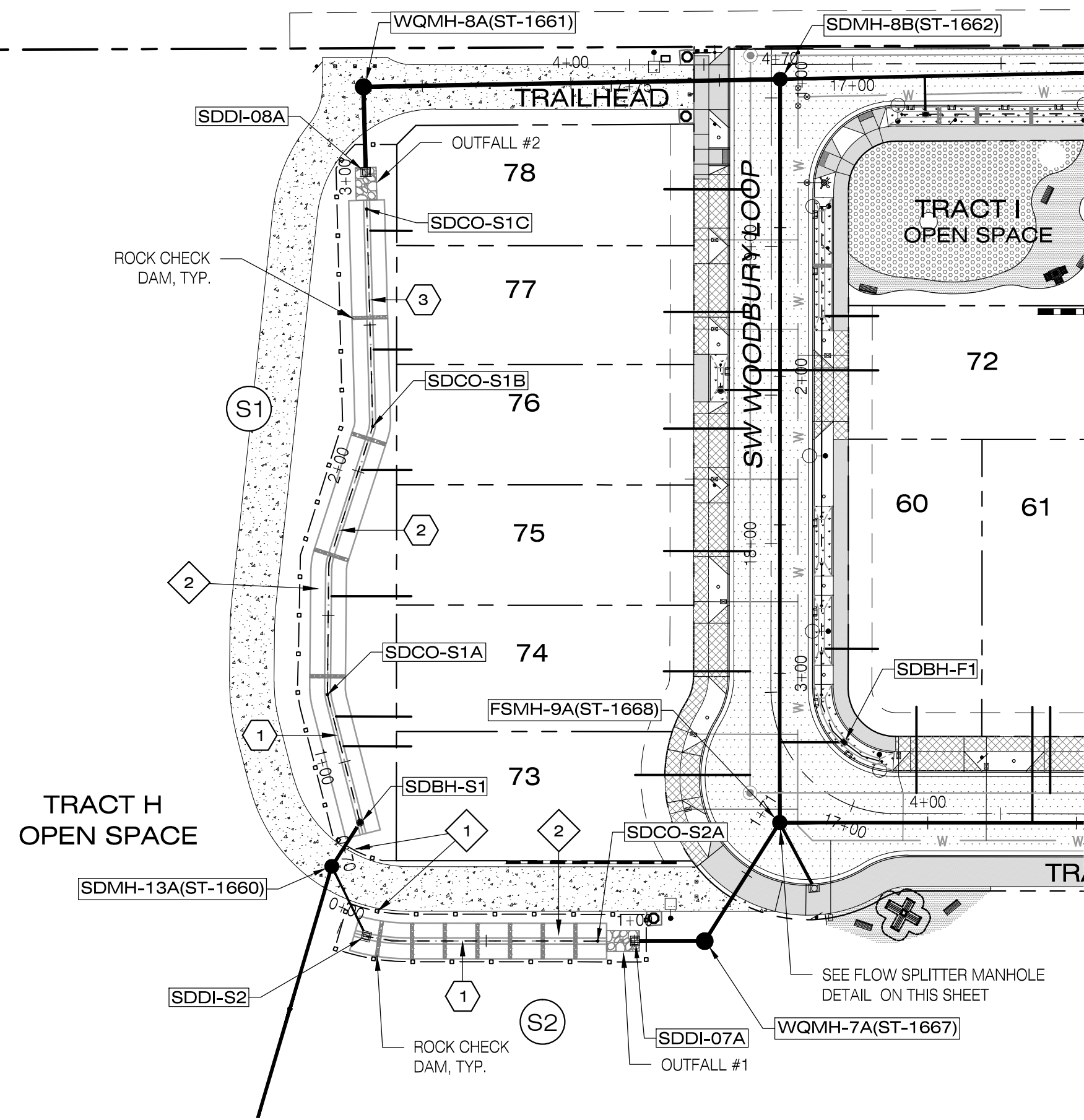


PIONEER DESIGN GROUP, INC.

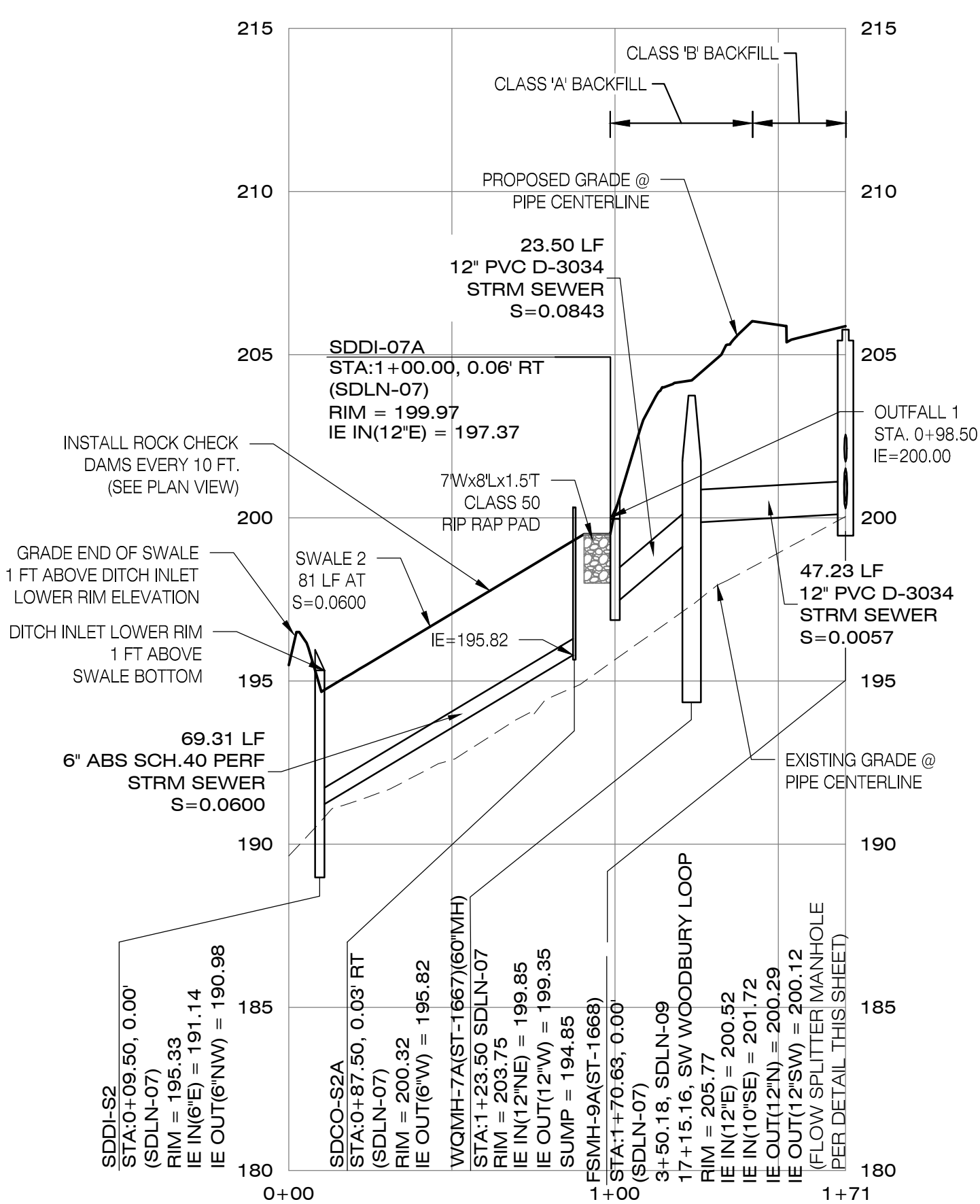
Designed by	TCC	Date
		01/18
Drawn by	TCC	Date
		01/18
Reviewed by	BEF	Date
		01/18
Project No.	321-002	REF.
Horiz. Scale:	1"=80'	
Vert. Scale:		

Project
MORGAN FARMS
No.
321-002
Type
ENGINEERING
Sheet

B:\Land Projects\2004\338-001\dwg\engineering\Phase 2\3381_C4-7\WQPF.dwg 12/18/2019 12:48:20 PM



SDLN-07 / SDLN-08 / SWALES 1 & 2 - PLAN
SCALE: 1"=40' (H)

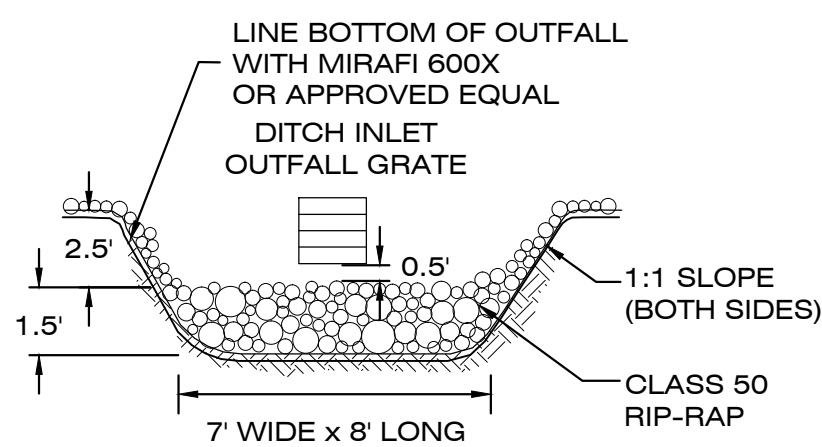


SDLN-07 / SWALE 2 - PROFILE
SCALE: 1"=40' (H), 1"=4' (V)

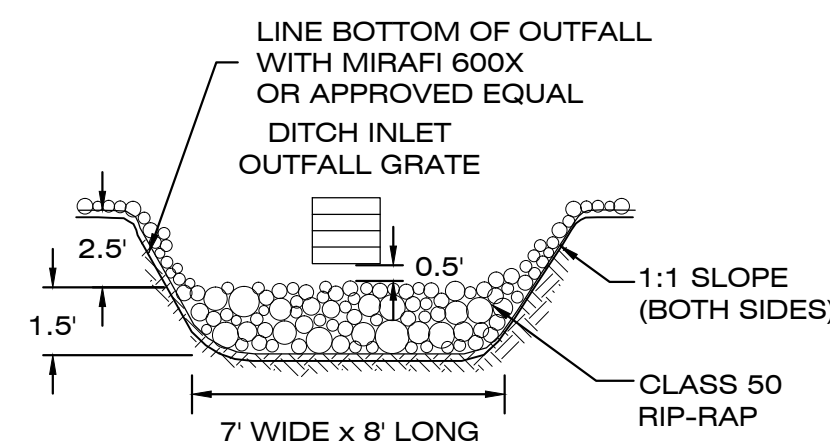
BEEHIVE INLET STRUCTURE DATA							
TAG	TYPE	STATION	RIM ELEV	IE IN	IE OUT	SLOPE	PIPE
SDBH-S1	Beehive Inlet	0+78.89 0.00' RT SDLN-08	193.85	189.35	188.48	0.0337	17.50 LF 12" PVC D-3034
SDDI-S2	Ditch Inlet	0+09.50 0.00' RT SDLN-07	195.33	191.14	190.98	0.1091	26.21 LF 6" PVC D-3034

VEGETATED SWALE 1	
SWALE SIZE (SF)	2604 SF
①	44.5 LF - 6" ABS SCH.40 PERF PIPE
②	92.6 LF - 6" ABS SCH.40 PERF PIPE
③	73.1 LF - 6" ABS SCH.40 PERF PIPE

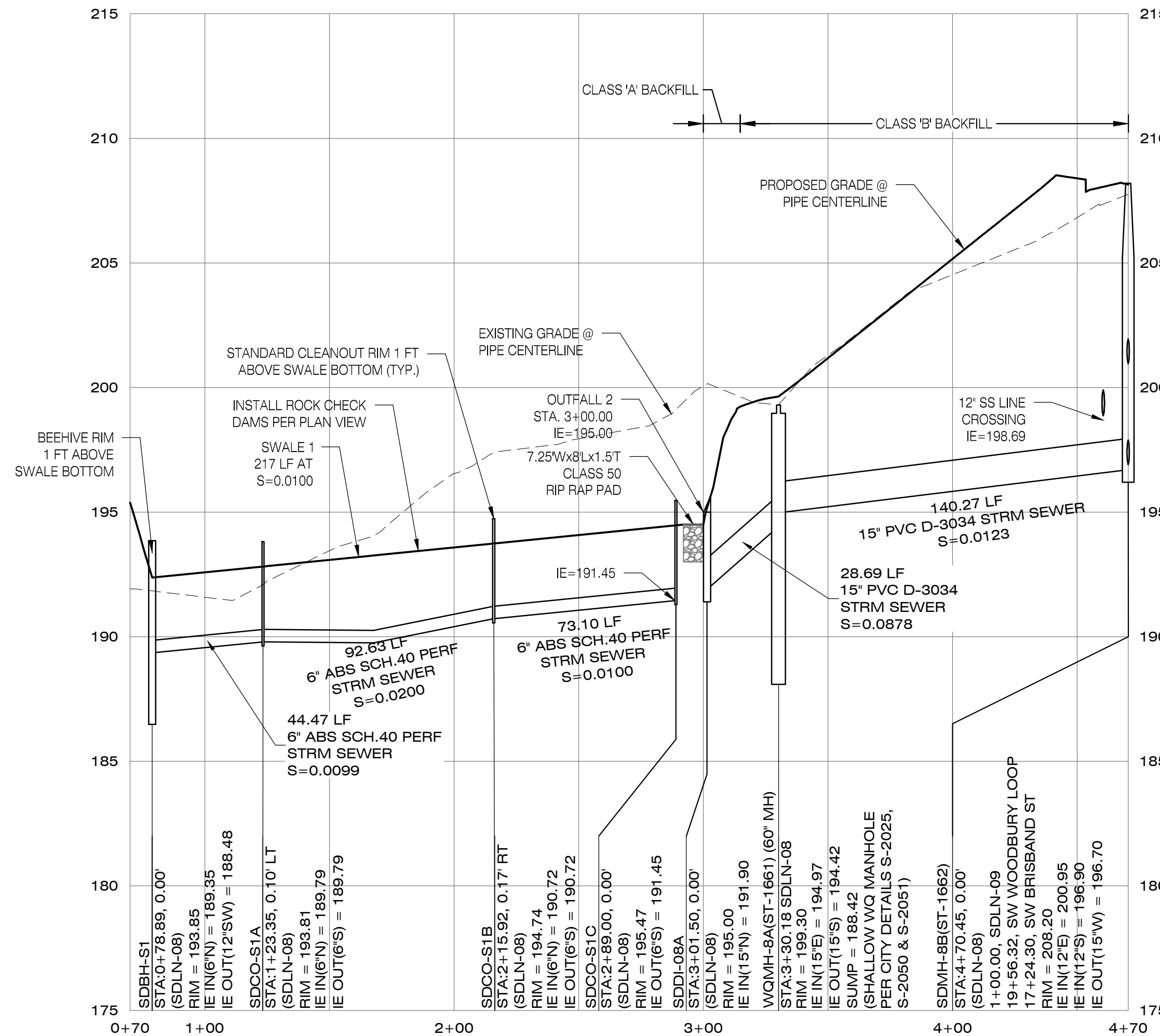
VEGETATED SWALE 2	
SWALE SIZE (SF)	1020 SF
①	78.0 LF - 6" ABS SCH.40 PERF PIPE



OUTFALL #1 PROTECTION
N.T.S.



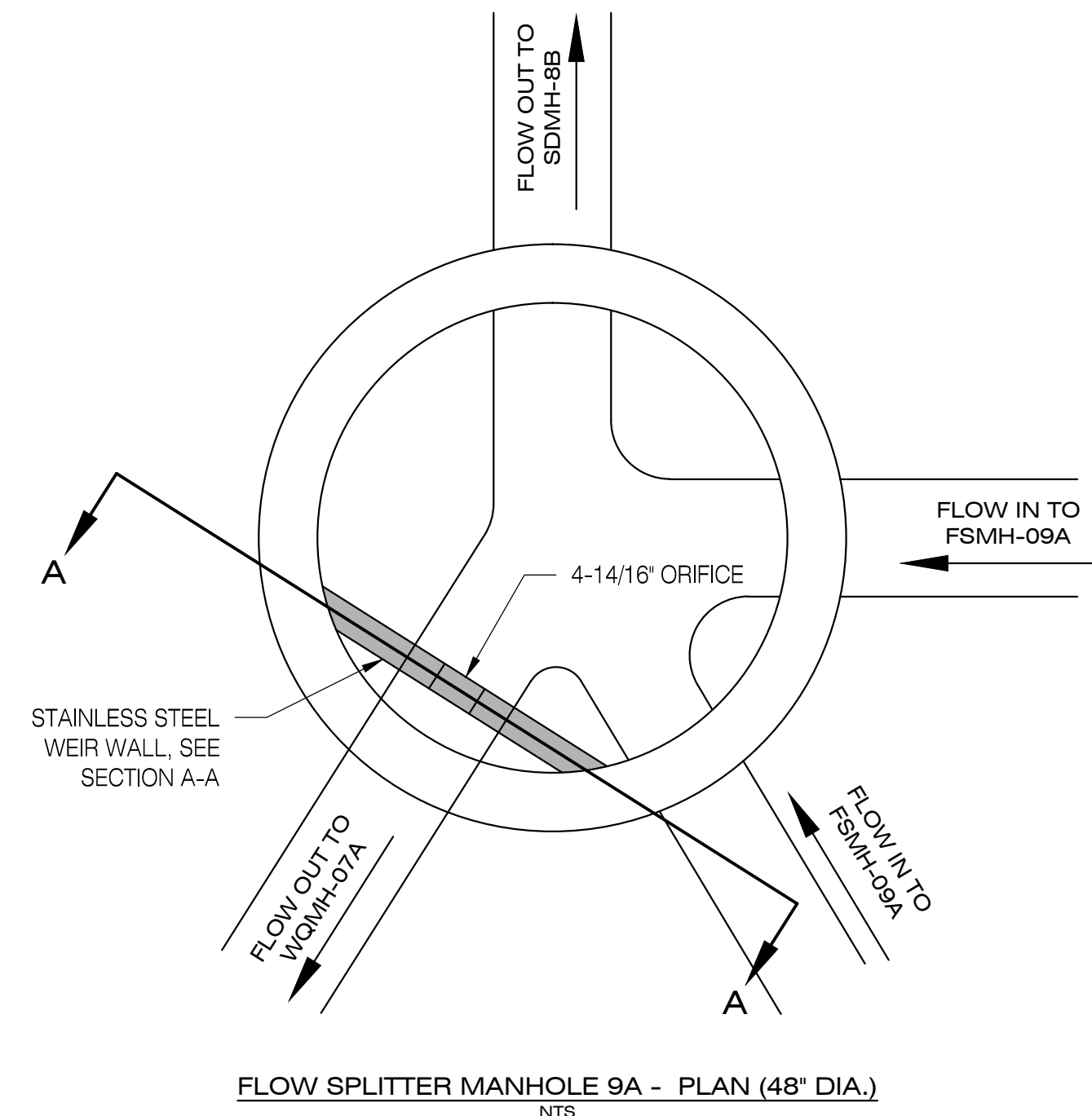
OUTFALL #2 PROTECTION
N.T.S.



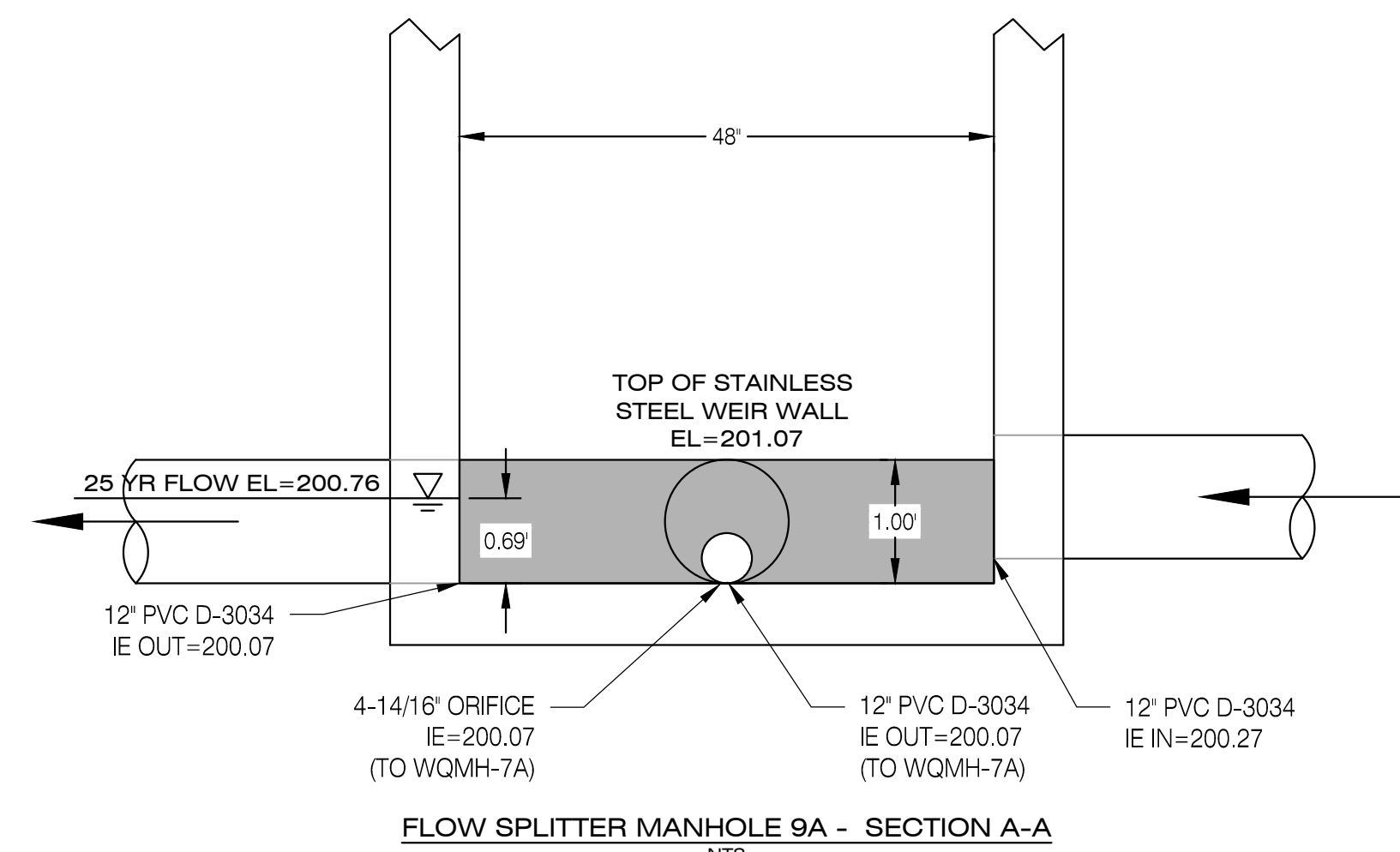
SDLN-08 / SWALE 1 - PROFILE
SCALE: 1"=40' (H), 1"=4' (V)

CONSTRUCTION NOTES

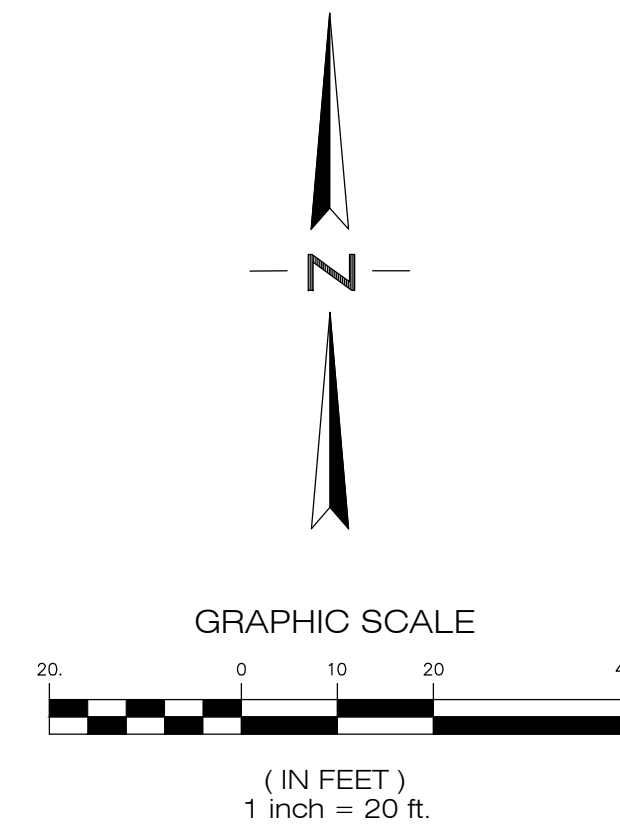
- ① INSTALL 4' HIGH ORNAMENTAL FENCE WITH 12' WIDE ACCESS GATE. SEE LANDSCAPE PLANS FOR FENCING DETAILS.
- ② VEGETATED SWALES TO BE COMPLETELY LINED WITH 30 MIL PLASTIC LINER OR APPROVED EQUAL PER CITY DETAIL ST-6045.



FLOW SPLITTER MANHOLE 9A - PLAN (48" DIA.)
NTS



FLOW SPLITTER MANHOLE 9A - SECTION A-A
NTS

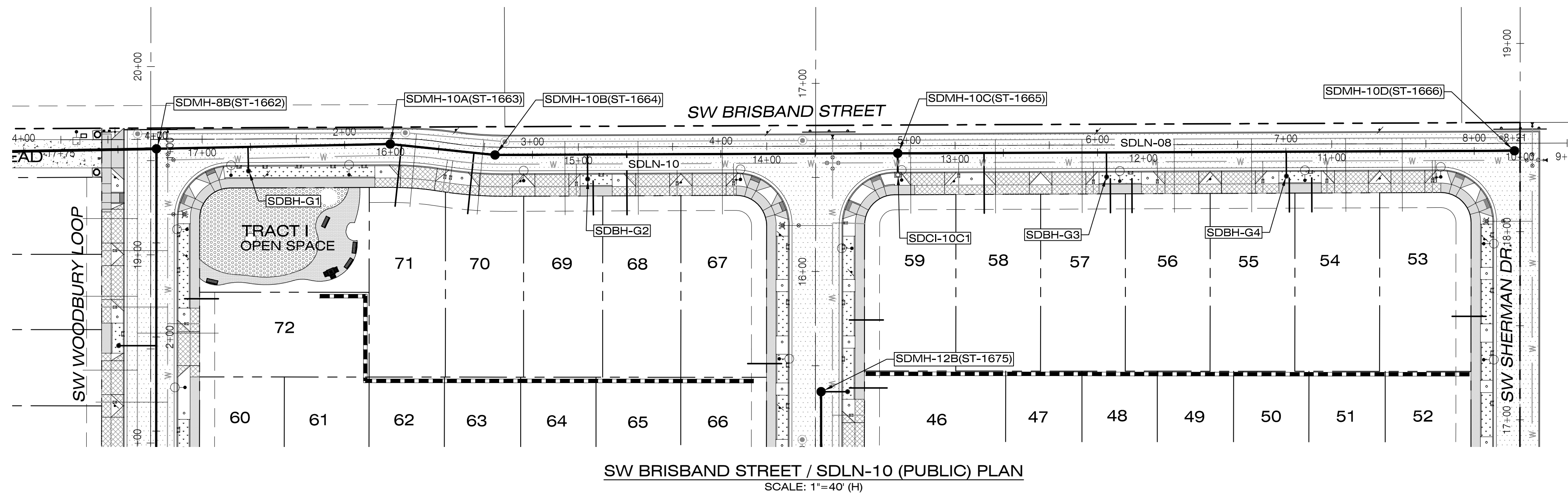


Designed by	Date	TCC
	12/2018	
Drawn by	Date	TCC
	12/2018	
Reviewed by	Date	BEF
	12/2018	
Project No.	Scale	REF.
321-002	N/A	
Horiz. Scale	Vert. Scale	
N/A	N/A	

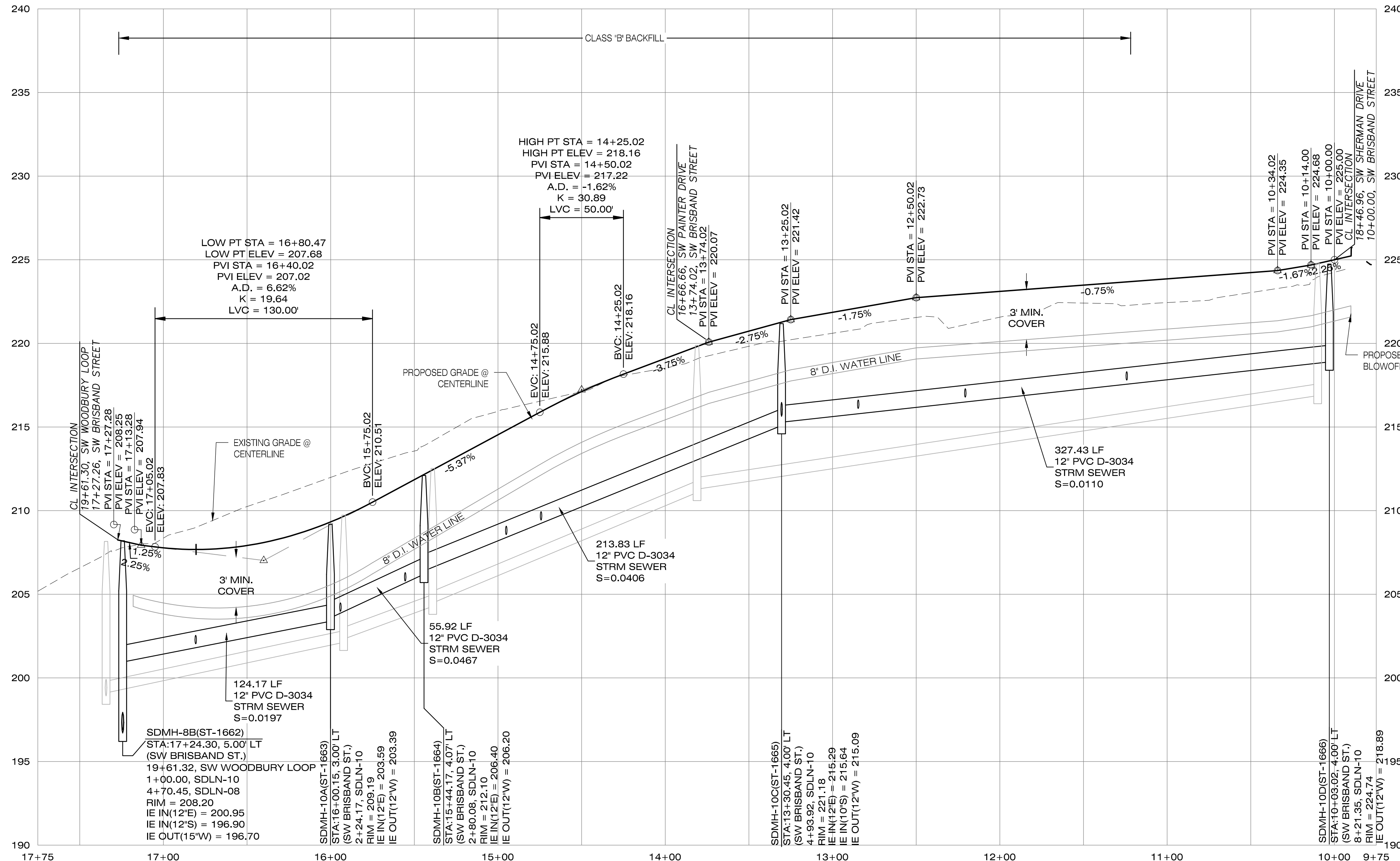
RECORD DRAWINGS
DATE: 12/18/2018 THESE RECORD DRAWINGS HAVE BEEN PREPARED BASED ON FIELD OBSERVATION AND SURVEYED INFORMATION.

Project: MORGAN FARM PH.2
No.: 321-002
Type: AS-BUILTS
Sheet:

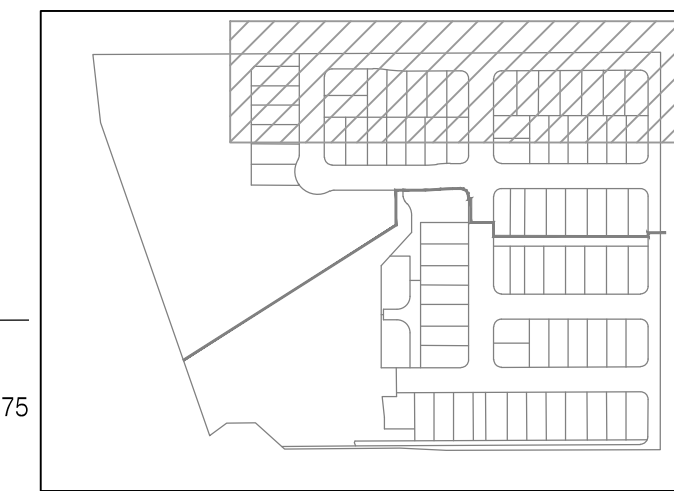
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SW BRISBAND STREET / SDLN-10 (PUBLIC) PLAN
SCALE: 1"=40' (H)



SW BRISBAND STREET / SDLN-10 (PUBLIC) PROFILE
SCALE: 1"=40' (H), 1"=4' (V)



KEY MAP
NTS

LEGEND

- PROPOSED SIDEWALK WITH FACILITY PERMIT
- PROPOSED SIDEWALK (BY HOMEBUILDER)
- PROPOSED CONCRETE CURB AND GUTTER
- PROPOSED STORM LINE & MANHOLE
- PROPOSED SANITARY LINE & MANHOLE
- PROPOSED WATERLINE & VALVE
- PROPOSED PAVEMENT

STORM LATERAL DATA							
LOT NO.	D.S. M.H.	DIST. FROM D.S. M.H.	LENGTH	INV. EL. @ MAINLINE	INV. EL. @ PLUG	SLOPE	DEPTH @ PLUG
1) 54	LIDA	--	18.0'	222.37	222.55	0.0100	0.9'
1) 55	LIDA	--	18.0'	222.50	222.68	0.0100	0.9'
1) 56	LIDA	--	18.0'	221.94	222.12	0.0100	0.9'
1) 57	LIDA	--	18.0'	221.57	221.75	0.0100	0.9'
58	10C	45.80'	32.0'	216.04	217.43	0.0434	5.0'
68	10B	69.94'	32.0'	209.49	211.36	0.0584	5.0'
1) 69	LIDA	--	18.0'	213.75	213.93	0.0100	1.0'
70	10A	44.71'	32.5'	205.93	207.08	0.0354	5.0'
71	10A	6.00'	32.6'	204.12	205.07	0.0292	5.0'

1) STORM LATERAL TO BE 6" DUCTILE IRON PIPE.

PUBLIC CATCH BASIN DATA							
TAG	TYPE	STATION	TC ELEV	IE IN	IE OUT	SLOPE	PIPE
SDCI-10C1	CG-30	13+30.47 14.00' LT BRISBAND	221.30	--	216.40	0.0668	11.38 LF 10" PVC C900

BEEHIVE LATERAL DATA						
BEEHIVE NO.	D.S. M.H.	DIST. FROM D.S. M.H.	LENGTH	INV. EL. @ MAINLINE	INV. EL. @ BEEHIVE	SLOPE
G1	8B	43.63'	12.8'	202.06	202.23	0.0133
G2	10B	49.13'	13.0'	208.64	210.38	0.1338
G3	10C	109.80'	13.0'	216.75	217.35	0.0462
G4	10C	206.30'	13.0'	217.80	218.42	0.0474

CONSTRUCTION NOTES

ALL 6" STORM LATERALS THAT OUTFALL INTO STREET SIDE SWALES WILL BE DUCTILE IRON PIPE INSTALLED UNDER THE SIDEWALK AT S=0.0100 TO MAXIMIZE COVER AT THE END OF THE PIPE. SEE STORM LATERAL TO SWALE DETAIL ON SHEET C4.2.

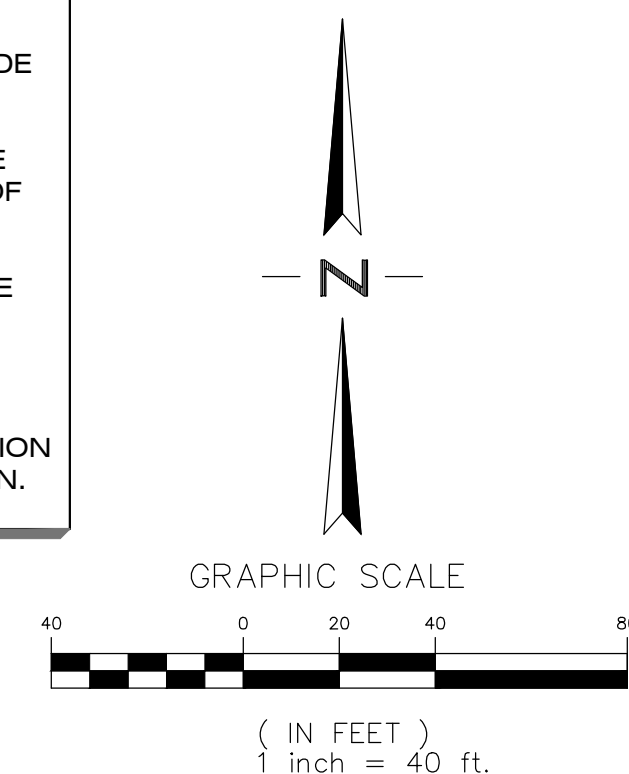
STORM SEWER NOTES

UNLESS OTHERWISE NOTED, ALL LATERALS ARE TO BE 6" PVC (ASTM D3034) WITH A MINIMUM SLOPE OF 0.0100. LATERAL CONNECTIONS TO MAIN SEWER LINE TO BE MADE WITH MANUFACTURED TEES.

ALL 2" x 4" STORM SERVICE CONNECTION MARKERS TO BE COLOR CODED WHITE. CONTRACTOR TO NOTE LENGTH OF BOARD USED ON EACH MARKER.

BACKFILL NOTE: PIPES UNDER PAVED SURFACES REQUIRE GRANULAR BACKFILL. FOR PIPES OUTSIDE PAVEMENT, NATIVE BACKFILL IS PERMITTED, UNLESS OTHERWISE NOTED.

THE CONTRACTOR SHALL FIELD VERIFY THE SIZE, LOCATION & DEPTH OF EXISTING UTILITIES PRIOR TO CONSTRUCTION.

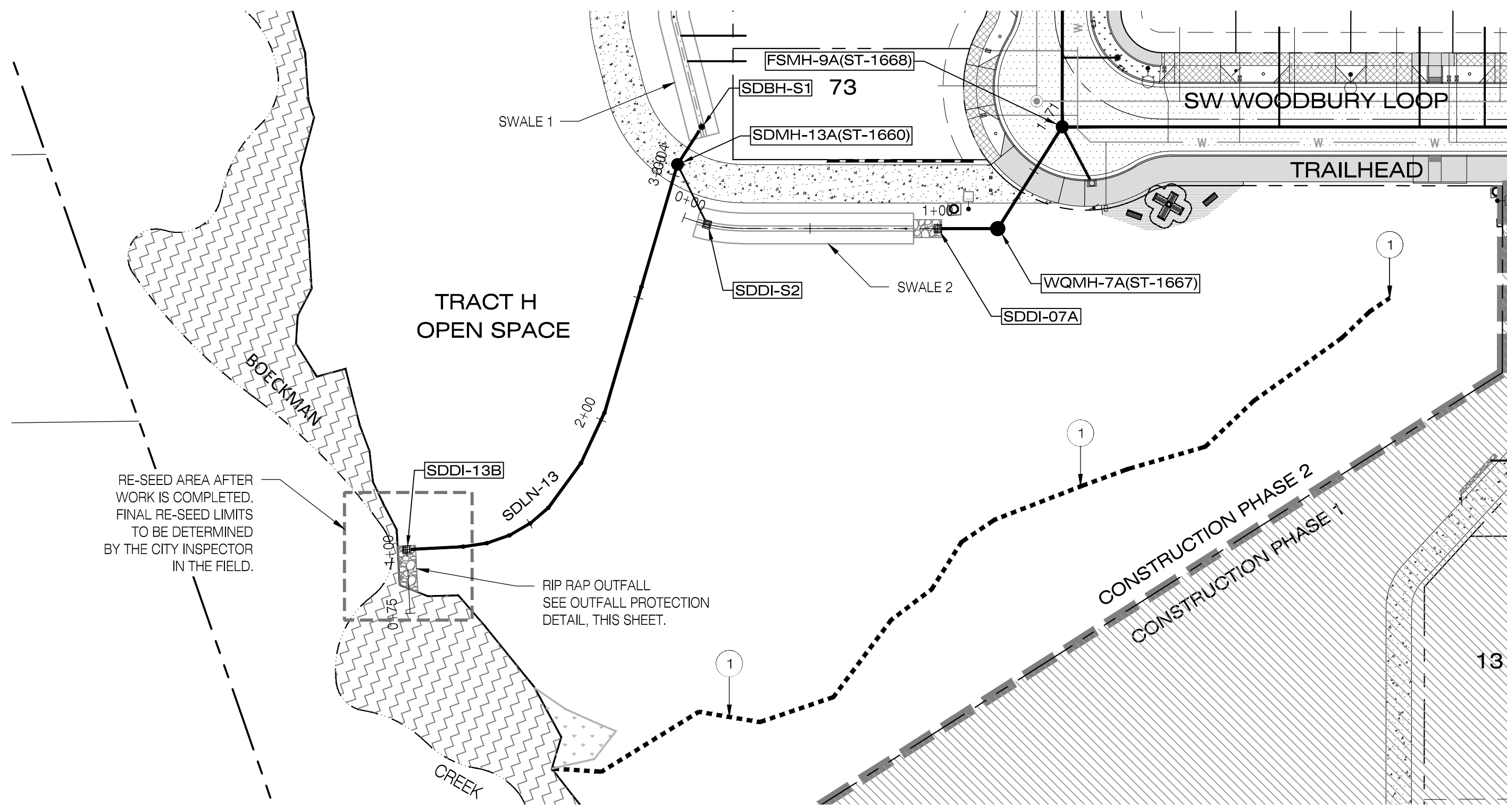


WILSONVILLE APP. NO. DB18-0018 - DB18-0021

Designed by	TCC	Date	12/2018
Drawn by <td>TCC <td>Date <td>12/2018</td> </td></td>	TCC <td>Date <td>12/2018</td> </td>	Date <td>12/2018</td>	12/2018
Reviewed by <td>BEF <td>Date <td>12/2018</td> </td></td>	BEF <td>Date <td>12/2018</td> </td>	Date <td>12/2018</td>	12/2018
Project No.	321-002 <td>REF.</td> <td></td>	REF.	
Horiz. Scale:	1" = 40'		
Vert. Scale:	1" = 4'		

RECORD DRAWINGS
DATE: 12/18/2018 THESE RECORD DRAWINGS HAVE BEEN PREPARED BASED ON FIELD OBSERVATION AND SURVEYED INFORMATION.

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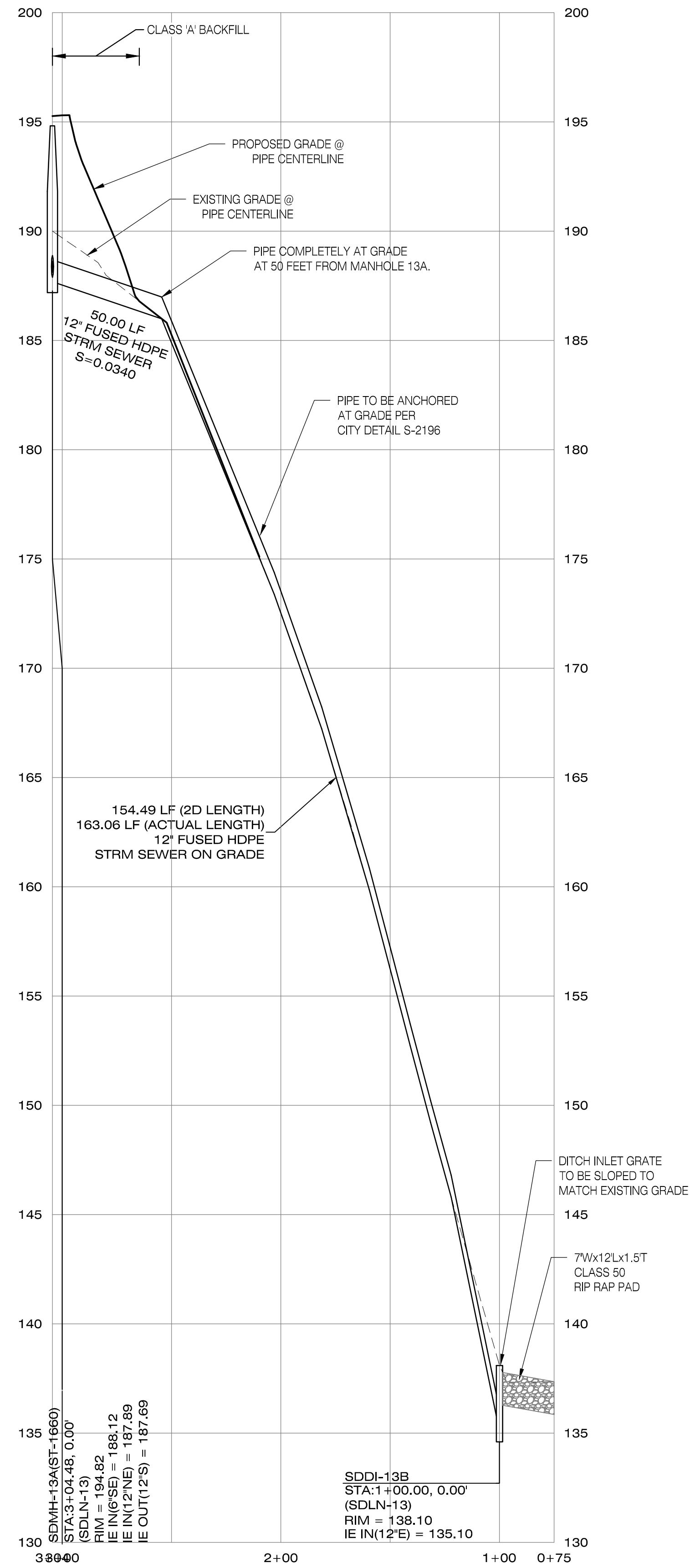


SDLN-13 (PUBLIC) PLAN
SCALE: 1"=40' (H)

CONSTRUCTION NOTES

- 1 STREAM STABILIZATION USING BEAVER DAM ANALOGS TO BE COMPLETED ALONG THE EXISTING DRAINAGEWAY. REFER TO APPROVED REPORT AND DESIGN PLANS FROM WOLFE WATER RESOURCES INC. DATED JULY 2018. THIS WORK WILL BE COMPLETED BY OTHERS AND IS NOTED FOR REFERENCE ONLY.

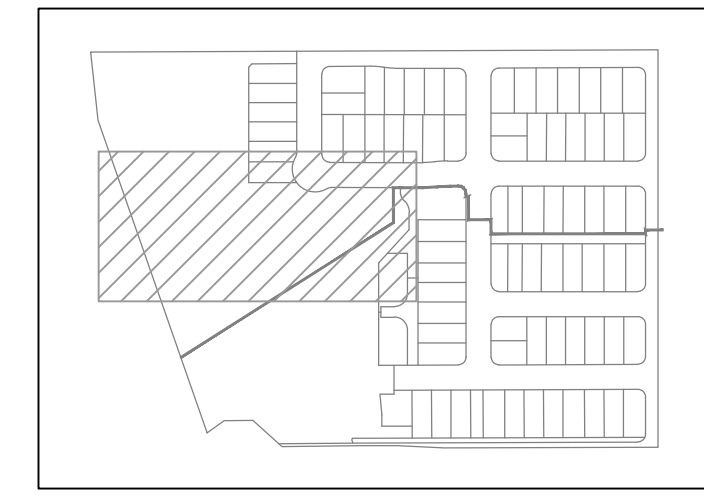
CONTRACTOR TO VERIFY FINAL LOCATION OF FUSED HDPE PIPE IN THE FIELD PRIOR TO INSTALLATION. SHOULD THE LOCATION OF PIPE NEED TO CHANGE, CONTACT THE ENGINEER IMMEDIATELY .



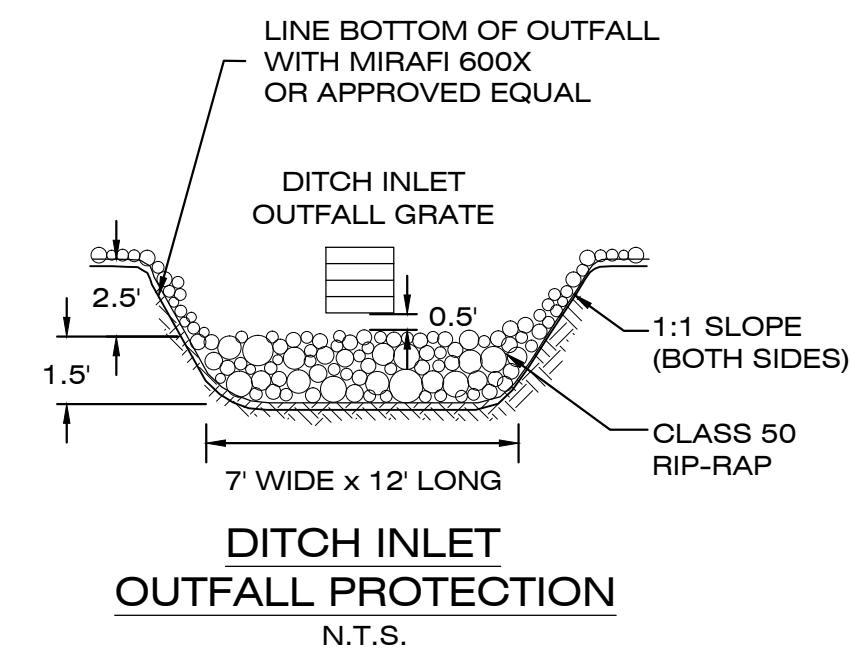
SDLN-13 (PUBLIC) PROFILE
SCALE: 1"=40' (H), 1"=4' (V)

LEGEND

- PROPOSED SIDEWALK WITH FACILITY PERMIT
- PROPOSED SIDEWALK (BY HOMEBUILDER)
- PROPOSED CONCRETE CURB AND GUTTER
- PROPOSED STORM LINE & MANHOLE
- PROPOSED SANITARY LINE & MANHOLE
- PROPOSED WATERLINE & VALVE
- PROPOSED PAVEMENT



KEY MAP
NTS



DITCH INLET
OUTFALL PROTECTION
N.T.S.

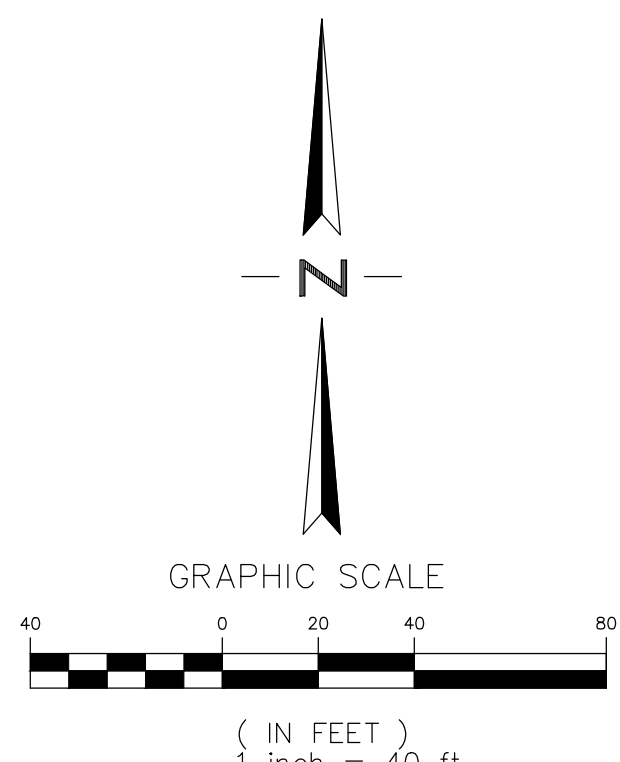
STORM SEWER NOTES

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ALL 2"x 4" STORM SERVICE CONNECTION MARKERS TO BE COLOR CODED WHITE. CONTRACTOR TO NOTE LENGTH OF BOARD USED ON EACH MARKER.

BACKFILL NOTE: PIPES UNDER PAVED SURFACES REQUIRE GRANULAR BACKFILL. FOR PIPES OUTSIDE PAVEMENT, NATIVE BACKFILL IS PERMITTED, UNLESS OTHERWISE NOTED.

THE CONTRACTOR SHALL FIELD VERIFY THE SIZE, LOCATION & DEPTH OF EXISTING UTILITIES PRIOR TO CONSTRUCTION.



Designed by	Date	Reviewed by	Date	Project No.	Horiz. Scale	Vert. Scale
TCC	12/2018	BEF	12/2018	321-002	1" = 40'	1" = 4'

RECORD DRAWINGS
DATE: 12/18/2018 THESE RECORD DRAWINGS HAVE BEEN PREPARED BASED ON FIELD OBSERVATION AND SURVEYED INFORMATION.



CIVIL LAND USE PLANNING SURVEY

P 503.643.8286 F 844.715.4743 www.pd-grp.com
9020 SW Washington Square Rd Suite 170
Portland, Oregon 97223

Final Storm Drainage Report

Morgan Farm – Phase 2

City of Wilsonville, Oregon



Date: January 16, 2019

Prepared By: T.C. Campbell, P.E.

Reviewed By: Brent E. Fitch, P.E.

PDG Job No. 321-002

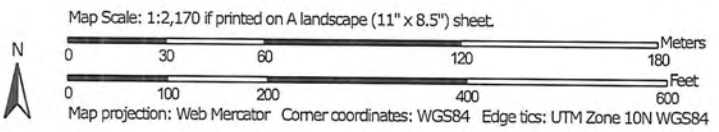
Applicant: Pahlisch Homes, Inc.
15333 SW Sequoia Pkwy.
Suite 190
Portland, OR 97224
(503) 317-6500

Engineer: Pioneer Design Group, Inc.
9020 SW Washington Sq. Dr.
Suite 170
Portland, OR 97223
(503) 643-8286

Hydrologic Soil Group—Clackamas County Area, Oregon



Soil Map may not be valid at this scale.



Hydrologic Soil Group

Hydrologic Soil Group— Summary by Map Unit — Clackamas County Area, Oregon (OR610)				
Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
1A	Aloha silt loam, 0 to 3 percent slopes	C/D	0.7	5.4%
1B	Aloha silt loam, 3 to 6 percent slopes	C/D	10.4	74.2%
91C	Woodburn silt loam, 8 to 15 percent slopes	C	2.7	19.0%
92F	Xerochrepts and Haploxerolls, very steep	B	0.2	1.4%
Totals for Area of Interest			13.9	100.0%

RUNOFF CURVE NUMBERS (TR55)

Table 2-2a: Runoff curve numbers for urban areas ¹

Cover description		CN for hydrologic soil group			
Cover type and hydrologic condition	Average percent impervious area ²	A	B	C	D
<i>Fully developed urban areas (vegetation established)</i>					
Open space (lawns, parks, golf courses, cemeteries, etc.) ³ :					
Poor condition (grass cover <50%)	68		79	86	89
Fair condition (grass cover 50% to 75%)	49		69	79	84
Good condition (grass cover >75%)	39		61	74	80
POST					
Impervious areas:					
Paved parking lots, roofs, driveways, etc. (excluding right-of-way)	98		98	98	98
PRE/POST					
Streets and roads:					
Paved; curbs and storm sewers (excluding right-of-way)	98	98	98	98	
Paved; open ditches (including right-of-way)	83	89	92	93	
Gravel (including right-of-way)	76	85	89	91	
Dirt (including right-of-way)	72	82	87	89	
Western desert urban areas:					
Natural desert landscaping (pervious areas only) ⁴	63	77	85	88	
Artificial desert landscaping (impervious weed barrier, desert shrub with 1- to 2-inch sand or gravel mulch and basin borders)	96	96	96	96	
Urban districts:					
Commercial and business	85	89	92	94	95
Industrial	72	81	88	91	93
Residential districts by average lot size:					
1/8 acre or less (town houses)	65	77	85	90	92
1/4 acre	38	61	75	83	87
1/3 acre	30	57	72	81	86
1/2 acre	25	54	70	80	85
1 acre	20	51	68	79	84
2 acres	12	46	65	77	82
<i>Developing urban areas</i>					
Newly graded areas (pervious areas only, no vegetation) ⁵	77	86	91	94	
Idle lands (CNs are determined using cover types similar to those in table 2-2c)					

1: Average runoff condition, and $I_a = 0.2S$.

2: The average percent impervious area shown was used to develop the composite CN's. Other assumptions are as follows: impervious areas are directly connected to the drainage system, impervious areas have a CN of 98, and pervious areas are considered equivalent to open space in good hydrologic condition. CN's for other combinations of conditions may be computed using figure 2-3 or 2-4.

3: CN's shown are equivalent to those of pasture. Composite CN's may be computed for other combinations of open space cover type.

4: Composite CN's for natural desert landscaping should be computed using figures 2-3 or 2-4 based on the impervious area percentage (CN = 98) and the pervious area CN. The pervious area CN's are assumed equivalent to desert shrub in poor hydrologic condition.

5: Composite CN's to use for the design of temporary measures during grading and construction should be computed using figure 2-3 or 2-4 based on the degree of development (impervious area percentage) and the CN's for the newly graded pervious areas.

3J CONSULTING

CIVIL ENGINEERING | WATER RESOURCES | COMMUNITY PLANNING

PRELIMINARY DRAINAGE REPORT

NEW WILSONVILLE PRIMARY SCHOOL
7151 BOECKMAN ROAD
WILSONVILLE, OREGON

Planning DB No. TBD

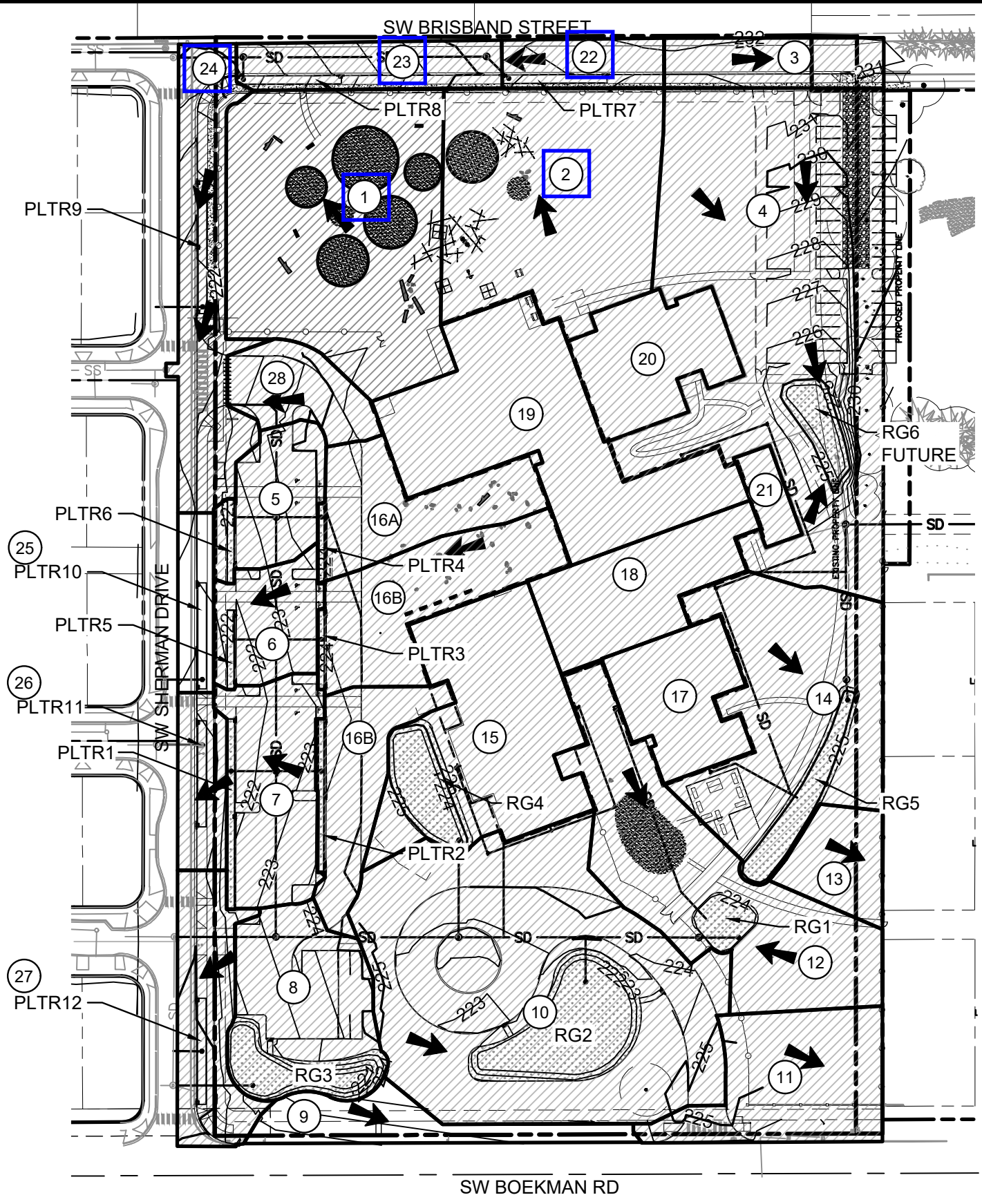
November 2, 2022

Applicant:








West Linn-Wilsonville School District
22210 SW Stafford Road
Tualatin, Oregon 97062
503-673-7000



Prepared By:
3J Consulting, Inc.
9600 SW Nimbus Avenue, Suite 100
Beaverton, Oregon 97008
Project No: 21680
Kathleen Freeman, PE
Water Resources Project Manager



LEGEND

-  PROPERTY LINE
-  EXTG. RIGHT OF WAY
-  STORM STRUCTURES
-  MAJOR DESIGN CONTOUR
-  MINOR DESIGN CONTOUR
-  DRAINAGE BASIN
-  DIRECTION OF FLOW

EAST / WEST BASIN TOTALS


EAST	155,885 SF - 3.59 ACRES
WEST	277,571 SF - 6.37 ACRES

NOTE:
SEE PROPOSED DRAINAGE BASIN TABLE
TABLE ABOVE DOES NOT INCLUDE 7,921 SF OF REPAVING
ON SHERMAN DRIVE FOR HALF STREET IMPROVEMENTS

NEW WILSONVILLE PRIMARY SCHOOL
WEST LINN / WILSONVILLE SCHOOL DISTRICT

PROPOSED DRAINAGE BASIN PLAN

3J CONSULTING
CIVIL ENGINEERING . WATER RESOURCES . COMMUNITY PLANNING

N
W  E SCALE: 1" = 100'
S 0 100 200 FT NOV 2022

Included in downstream analysis per drainage flow arrows on basin map

DRAINAGE BASIN TABLE

#	IMP AREA (SF)	PERV AREA (SF)	¹ DIRECTION OF DRAINAGE	FACILITY ID	MIN LID SIZE (FT)	ORIFICE SIZE (IN)
1	0	33,544	MF PH1	OFFSITE	N/A	N/A
2	0	27,467	MF PH2	OFFSITE	N/A	N/A
3	5,855	374	EAST	OFFSITE	N/A	N/A
4	11,720	40,771	SM CULVERT	RG6 FUTURE	1,986	2.51
5	5,493	1,856	MF PH1	PLTR6	204	0.96
6	5,323	1,592	MF PH1	PLTR5	194	0.93
7	9,428	2,447	MF PH1	PLTR1	334	1.22
8	8,338	5,983	MF PH1	RG3	501	1.21
9	0	6,876	MF PH1	OFFSITE	N/A	N/A
10	17,937	31,413	MF PH1	RG2	1597	2.24
11	759	12,609	EAST	OFFSITE	N/A	N/A
12	3,464	20,578	MF PH1	RG1	576	1.45
13	0	5,222	EAST	OFFSITE	N/A	N/A
14	22,325	1,745	SM CULVERT	RG5	2746	2.66
15	16,032	6,105	MF PH1	RG4	812	1.50
16A	2,675	7,393	MF PH1	PLTR4	236	1.12
16B	2,749	9,853	MF PH1	PLTR3	290	1.26
16C	7,205	1,755	MF PH1	PLTR2	253	1.06
17	8,633	0	SM CULVERT	RG5	SEE BASIN 14	
18	10,815	0	SM CULVERT	RG5	SEE BASIN 14	
19	23,645	0	SM CULVERT	RG5	SEE BASIN 14	
20	9,398	0	SM CULVERT	RG6 FUTURE	SEE BASIN 4	
21	2,014	0	SM CULVERT	RG5	SEE BASIN 14	
22	4,016	489	MF PH2	PLTR7	131	0.75
23	6,352	750	MF PH2	PLTR8	206	0.94
24	9,127	5,375	MF PH1	PLTR9	289	1.18
25	2,639	1,015	MF PH1	PLTR10	64	0.55
26	2,685	2,119	MF PH1	PLTR11	89	0.67
27	5,017	4,384	MF PH1	PLTR12	176	0.95
28	3,795	2,192	MF PH1	NOT TREATED	N/A	N/A
TOTAL	207,469	233,907				

Included with MF PH2 for downstream analysis per pipe routing diagram

¹MF PH1 = MORGAN FARM SUBDIVISION PHASE 1
 MF PH2 = MORGAN FARM SUBDIVISION PHASE 2
 SM CULVERT = STAFFORD MEADOWS CULVERT
 BASINS 24-27 INCLUDE HALF STREET IMPROVEMENTS TO SHERMAN

Table 2-2a Runoff curve numbers for urban areas ^{1/}

Cover description	Average percent impervious area ^{2/}	Curve numbers for hydrologic soil group			
		A	B	C	D
<i>Fully developed urban areas (vegetation established)</i>					
Open space (lawns, parks, golf courses, cemeteries, etc.) ^{3/} :					
Poor condition (grass cover < 50%)		68	79	86	89
Fair condition (grass cover 50% to 75%)		49	69	79	84
Good condition (grass cover > 75%)		39	61	74	80
Impervious areas:					
Paved parking lots, roofs, driveways, etc. (excluding right-of-way)		98	98	98	98
Streets and roads:					
Paved; curbs and storm sewers (excluding right-of-way)		98	98	98	98
Paved; open ditches (including right-of-way)		83	89	92	93
Gravel (including right-of-way)		76	85	89	91
Dirt (including right-of-way)		72	82	87	89
Western desert urban areas:					
Natural desert landscaping (pervious areas only) ^{4/}		63	77	85	88
Artificial desert landscaping (impervious weed barrier, desert shrub with 1- to 2-inch sand or gravel mulch and basin borders)		96	96	96	96
Urban districts:					
Commercial and business	85	89	92	94	95
Industrial	72	81	88	91	93
Residential districts by average lot size:					
1/8 acre or less (town houses)	65	77	85	90	92
1/4 acre	38	61	75	83	87
1/3 acre	30	57	72	81	86
1/2 acre	25	54	70	80	85
1 acre	20	51	68	79	84
2 acres	12	46	65	77	82
<i>Developing urban areas</i>					
Newly graded areas					
(pervious areas only, no vegetation) ^{5/}		77	86	91	94
Idle lands (CN's are determined using cover types similar to those in table 2-2c).					

¹ Average runoff condition, and $I_a = 0.2S$.² The average percent impervious area shown was used to develop the composite CN's. Other assumptions are as follows: impervious areas are directly connected to the drainage system, impervious areas have a CN of 98, and pervious areas are considered equivalent to open space in good hydrologic condition. CN's for other combinations of conditions may be computed using figure 2-3 or 2-4.³ CN's shown are equivalent to those of pasture. Composite CN's may be computed for other combinations of open space cover type.⁴ Composite CN's for natural desert landscaping should be computed using figures 2-3 or 2-4 based on the impervious area percentage (CN = 98) and the pervious area CN. The pervious area CN's are assumed equivalent to desert shrub in poor hydrologic condition.⁵ Composite CN's to use for the design of temporary measures during grading and construction should be computed using figure 2-3 or 2-4 based on the degree of development (impervious area percentage) and the CN's for the newly graded pervious areas.



Frog Pond Terrace, Frog Pond Overlook
Storm Drainage Report
Final Design

Submitted to:

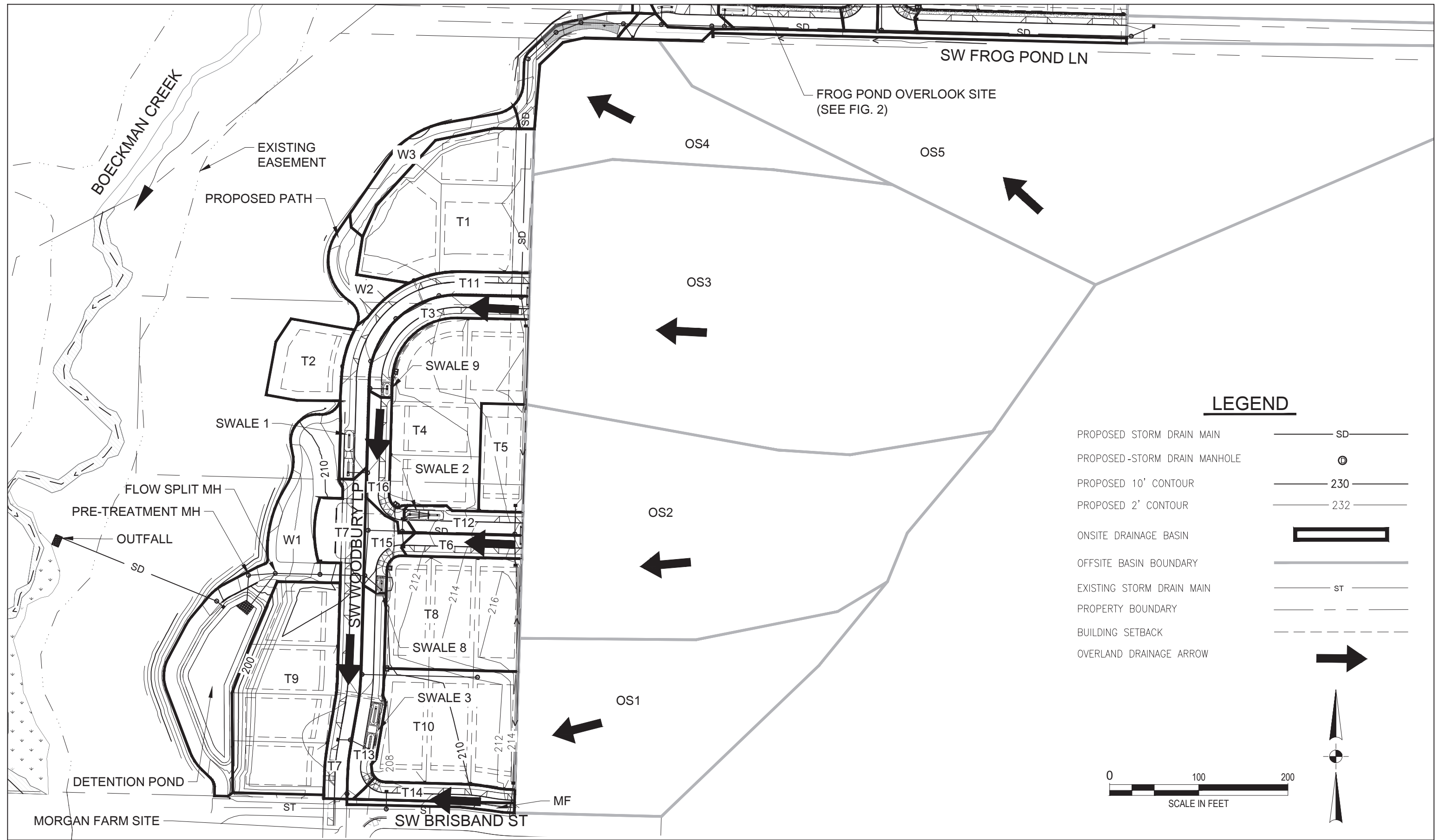
City of Wilsonville
29799 SW Town Center Loop E.
Wilsonville, OR 97070

May 12, 2023

Prepared by:

Otak, Inc.
808 SW Third Avenue, Suite 800
Portland, OR 97204

Project No. 20015



FROG POND TERRACE | FINAL DESIGN | PROPOSED CONDITIONS

FIG 3 | MAY 2023 | PROJECT NUMBER: 20015



Appendix C

DownStream Analysis





Memorandum

To: Keith Buisman, PE
From: Roger Tiffany, EI and Rose Horton, PE
Copies: File
Date: May 17, 2022
Subject: Downstream Impact Analysis of Boeckman Creek
Project No.: 20015

Introduction

Otak has conducted a downstream impact analysis on the downstream storm conveyance system for the proposed Frog Pond Terrace and Frog Pond Overlook developments, per City of Wilsonville 2015 standards. These proposed developments are located adjacent to Frog Pond Lane and east of Boeckman Creek, as shown on Figure 1.



Figure 1 Vicinity Map

The development will meet the City of Wilsonville Public Work Standards Section 301.4.04 which requires flow control from post-development conditions for peak flow rates generated by between 42% of the 2-year storm up to the 10-year storm.

To meet the requirements of City of Wilsonville Public Work Standards Section 301.5.01, a downstream analysis shall include:

- verifying that the downstream system has the capacity to convey the 25-year design storm.
- extending the analysis downstream to a point in the drainage system where the proposed development site contributes 10% or less of the total tributary drainage flow or for one-quarter mile downstream of the approved point of discharge.

Per email communications with Kerry Rappold on March 3, 2022, the downstream analysis should extend down to the flow control structure directly upstream of SW Boeckman Road.

Existing Conveyance System

The existing conveyance system used in this analysis is shown on Figure 2 (attached), which also includes the drainage basin delineation, time of concentration (T_c) flow paths, and runoff node locations represented in the hydraulic model. Cross sections of the open channel system were obtained from LiDAR and field observation. The proposed Frog Pond Terrace and Frog Pond Overlook developments will discharge runoff into the existing Boeckman Creek channel approximately 1,330 feet upstream of the existing flow control structure.

The stretch of channel downstream of the project site was visited on March 16, 2022. The purpose of the field visit was to observe and document existing channel conditions, outfalls, and contributing waterways. Visual documentation of the drainage system along the channel is included in the Photo Log in Appendix A.

Conveyance Hydrology

Peak runoff rates from the drainage basins delineated in Figure 2 during proposed conditions were calculated using XPSWMM V2021. The Santa Barbara Urban Hydrograph (SBUH) method was used to apply the conveyance design event (25-year recurrence interval, 24-hour duration, NRCS Type 1A rainfall distribution), per Section 301.5.01. Time of Concentration values were calculated for delineated drainage basin using TR-55 equations. Time of Concentration (T_c) flow paths are shown in Figure 2 and corresponding calculations for each drainage basin are included in Appendix B. A time of concentration of five minutes, the minimum allowable, was applied to steep and developed basins for a conservative estimate.

The study area is primarily comprised of Aloha silt loam categorized in the hydrologic soil groups (HSG) Type D and Woodburn silt loam categorized as HSG Type C. HSG D soils generally exhibit very slow infiltration rates when thoroughly wet. The steep area of the channel is Xerochrepts and Haploxerolls which is categorized as HSG Type B with moderate infiltration. A Curve Number (CN) of 98 was used for all impervious areas. The pervious areas were open space with good grass cover, thus a CN of 74 (HSG Type C) was used as applicable.

The basins downstream of the proposed project site are developed residential areas. Impervious percentages were estimated based on existing impervious surfaces captured in 2022 aerial imagery.

The upstream flow in Boeckman Creek was obtained from StreamStats (see Appendix B). It is not recommended to mix hydrologic methods and this data should not be used for design. In this case, the StreamStats data was used provide a rough order of magnitude flowrate for the large upstream basin in comparison with the flowrates generated from the proposed development. Table 1 summarizes the 25-year peak flowrates in Boeckman Creek for proposed project conditions calculated in XP-SWMM. The stationing represents the distance upstream from the existing Boeckman Road flow control structure. The existing flow control structure at the end of the analysis is 1,331 feet downstream from the project's proposed discharge location.

Table 1 Peak 25-Year Flowrates

Node	Station	Total Contributing Basin Area (ac)	Flow Rate (cfs)
Drainage Node 4	16+95	910	116.62
Drainage Node 3	13+31	978	158.38
Drainage Node 2	5+78	992	160.6
Drainage Node 1	2+00	1,025	173.6

Downstream Conveyance Modeling Analysis

The stormwater conveyance network was analyzed in XP-SWMM. The conveyance system was modeled to determine whether the existing downstream system has sufficient capacity to support the Frog Pond Overlook and Frog Pond Terrace developments runoff undetained during the 25-year, 24-hour storm event. The inverts are from as-builts of the flow control structure and LiDAR data. Manning's n values of 0.035 or 0.04 were applied to the channel of Boeckman Creek depending on the amount of wood located in the channel along the reach. A Manning's n value of 0.1 was applied to the overbanks. A minimum of one-foot of freeboard between the hydraulic grade line (HGL) and the top of bank was confirmed. The model does not include the effect of the existing flow control structure on the system. Appendix C includes output information from the XP-SWMM model, summarizing the channel network characteristics and results of the hydraulic routing during the design storm.

Conclusions

The downstream stormwater conveyance system was analyzed to confirm conveyance capacity for the proposed development to Boeckman Road. The system consists entirely of open channel upstream of the existing flow control structure at Boeckman Road. A site visit along the downstream reach provided a qualitative assessment of the storm conveyance system and found no evidence of capacity restrictions under existing conditions. The channel was modeled using XP-SWMM software and shows adequate capacity for the proposed flows and the existing flow control structure creates ponding in the downstream reach.

References

Wilsonville, 2015. *City of Wilsonville Public Works Standards. Section 3, Stormwater & Surface Water Design and Construction Standards*, City of Wilsonville, Revised December 2015.

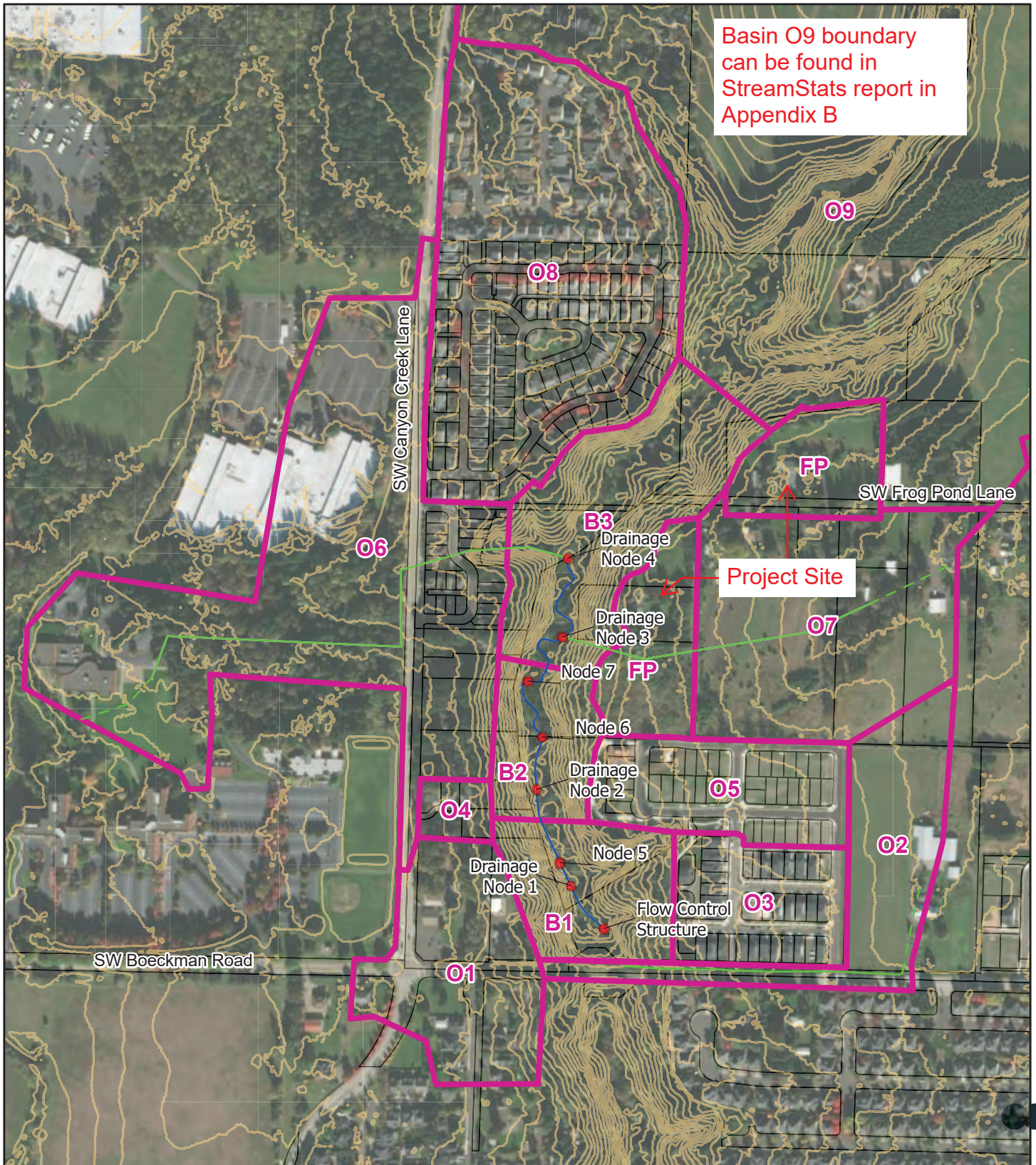
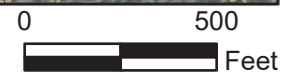


FIGURE 2
DOWNSTREAM ANALYSIS
BOECKMAN CREEK
WILSONVILLE, OREGON

Legend

- Nodes
- Stream Centerline (Analysis Extent)
- Drainage Basins
- Contours (5 ft)
- Time of Concentration Path
- Shallow Concentrated Flow
- - - Sheet Flow



Data Sources:
 Date: 4/18/2022
 Disclaimer: This data is not to survey accuracy and is meant for planning purposes only.
 L:\Project\2000\2015\CADD\GIS\MXDs\2015-DSA Analysis\2015-DSA Analysis.aprx

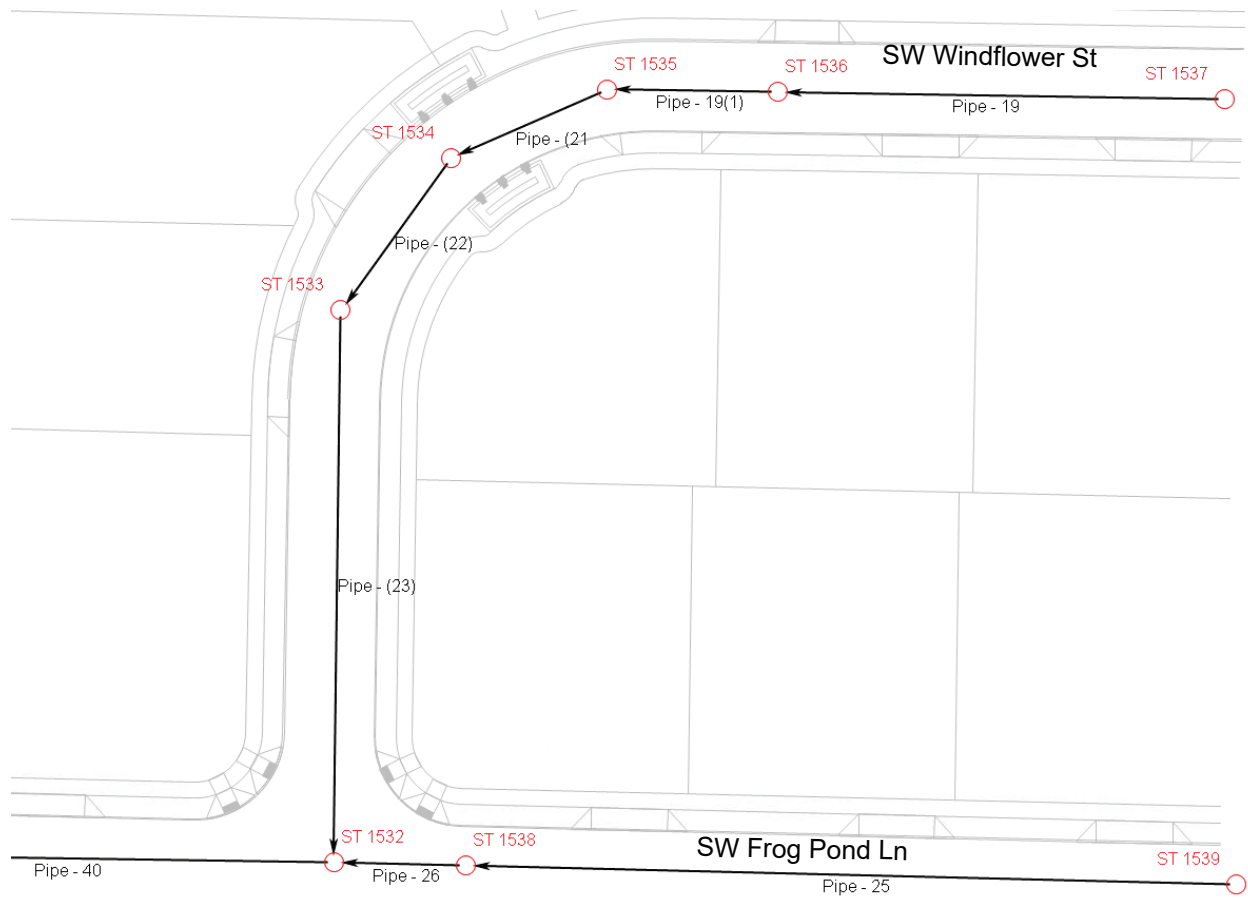
Appendix E

Pipe Conveyance



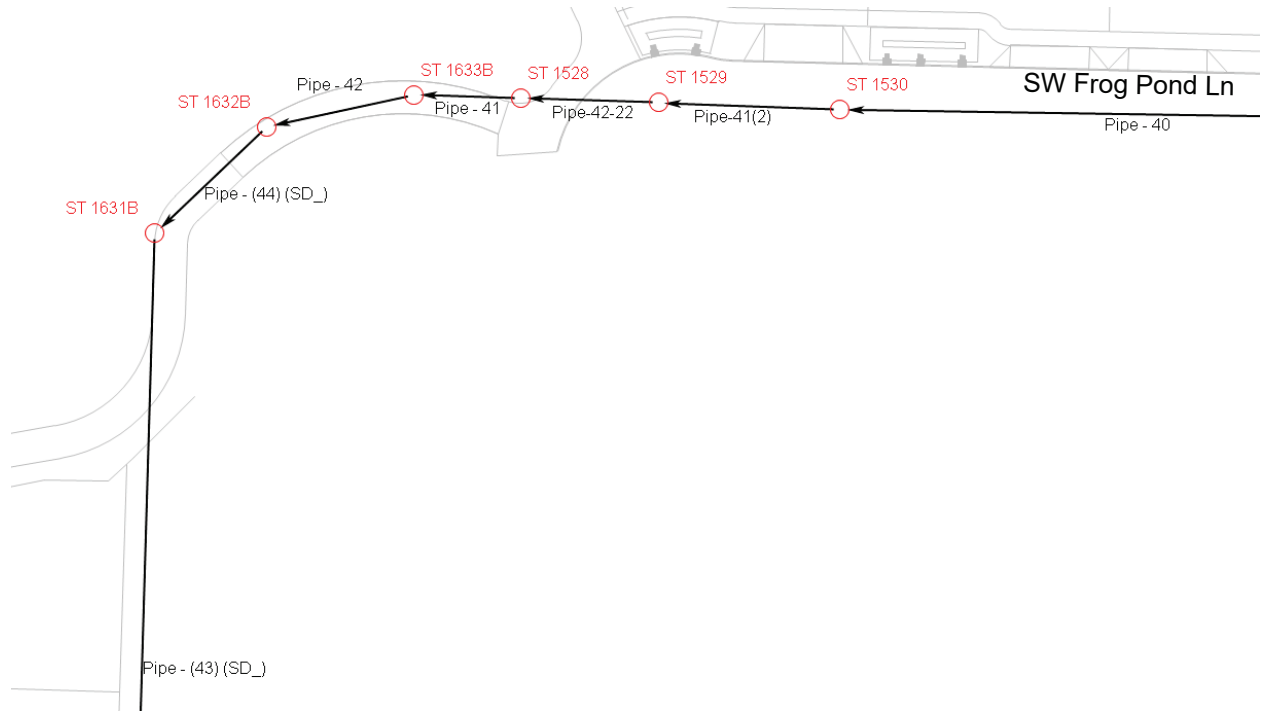
XP-SWMM Layout

Frog Pond Estates/Frog Pond Overlook



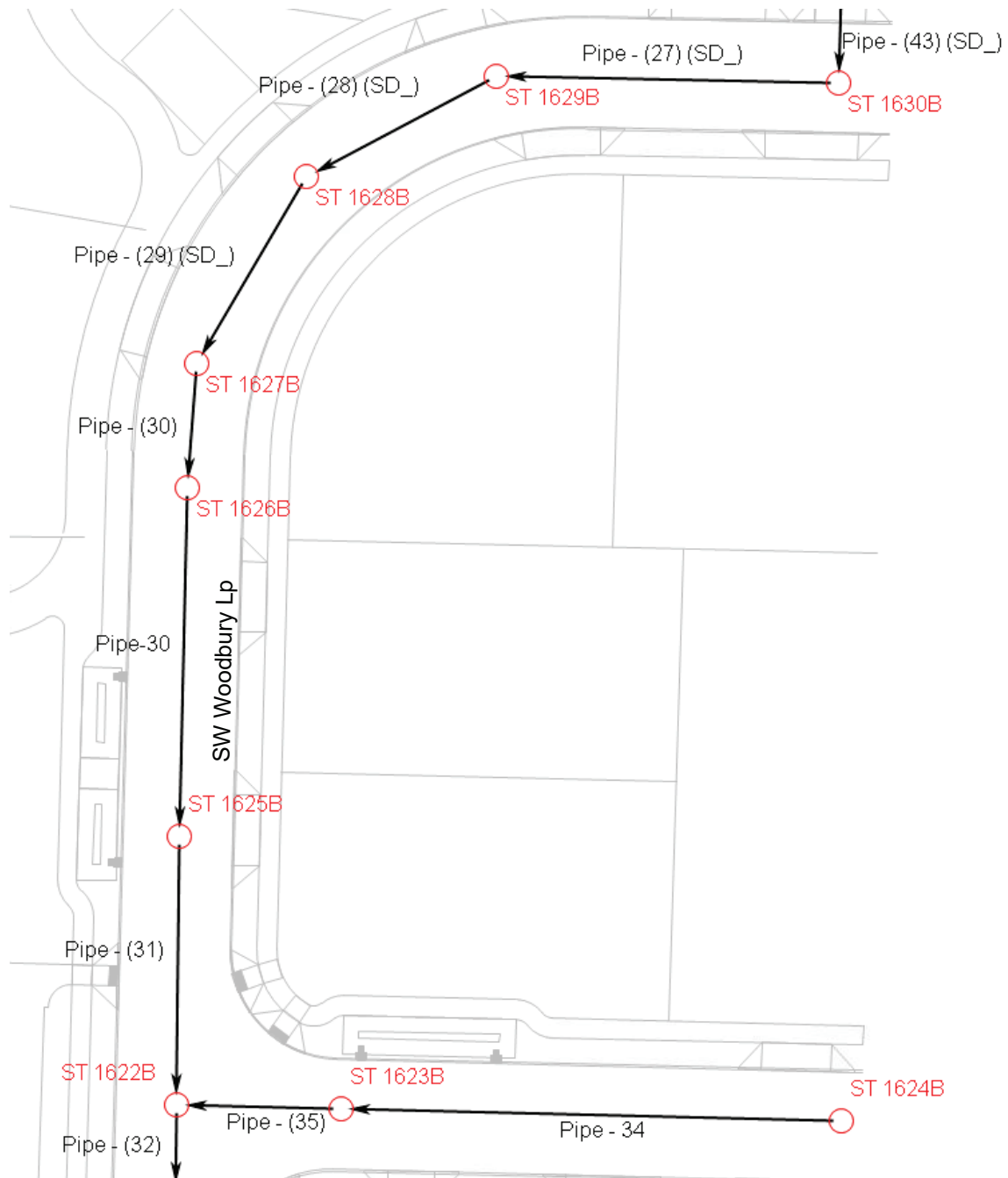
XP-SWMM Layout

Frog Pond Estates/Frog Pond Overlook



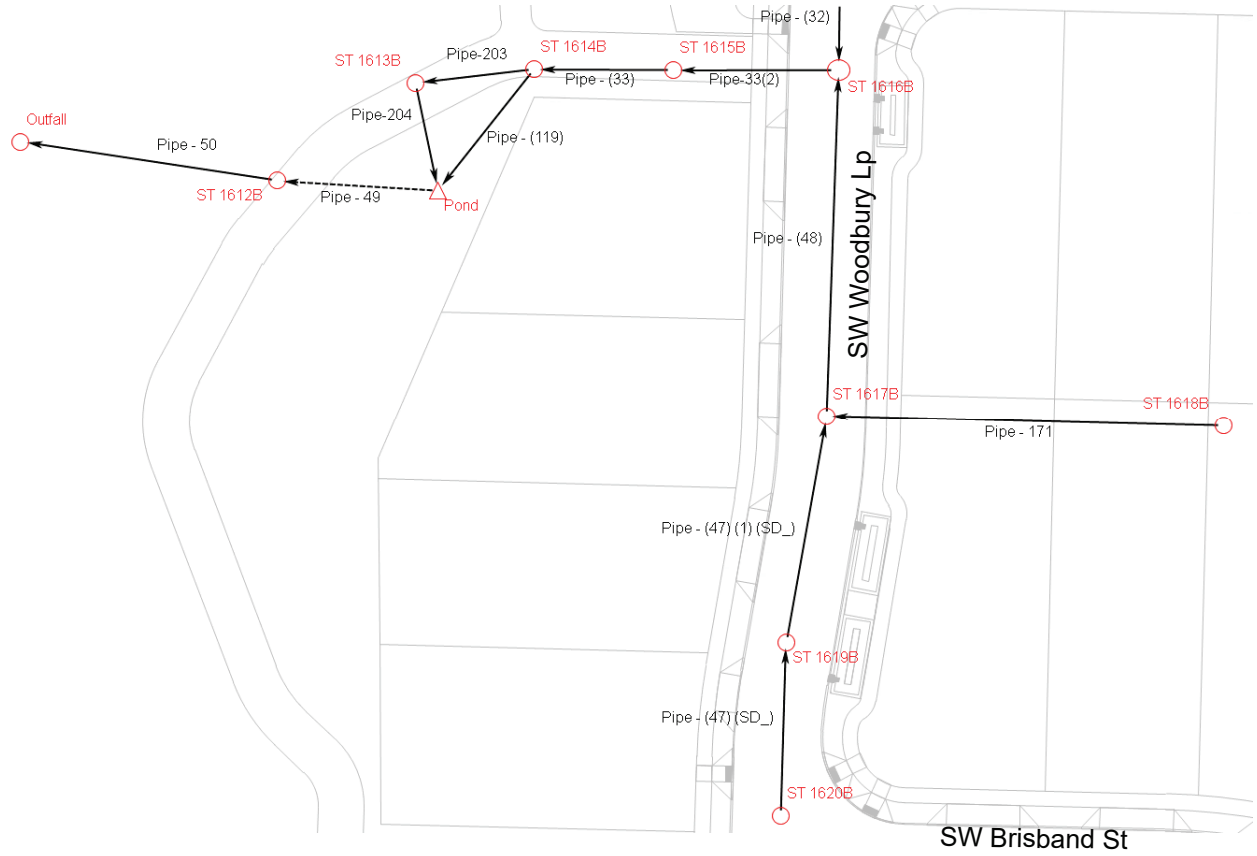
XP-SWMM Layout

Frog Pond Estates/Frog Pond Overlook



XP-SWMM Layout

Frog Pond Estates/Frog Pond Overlook



XP-SWMM RUNOFF DATA
Frog Pond Terrace/Frog Pond Overlook
Proposed Conditions

SCS Type IA 25-Year Storm Event							
XP-SWMM Input Data					XP-SWMM Output Data		
Node Name	Total Area (ac)	Impervious %	Pervious Curve Number	Tc (min)	Rainfall Depth (in)	Unit Hydrograph Method	Surface Runoff Flow (cfs)
ST 1539	3.61	55	79	5	4	Santa Barbara	3.29
ST 1538	0.70	68	79	5	4	Santa Barbara	0.70
ST 1537	2.94	55	79	5	4	Santa Barbara	2.68
ST 1536	0.79	53	79	5	4	Santa Barbara	0.71
ST 1533	0.97	47	79	5	4	Santa Barbara	0.83
ST 1528	0.79	57	79	5	4	Santa Barbara	0.73
ST 1534	0.61	86	79	5	4	Santa Barbara	0.68
ST 1630B	3.75	55	79	5	4	Santa Barbara	3.41
ST 1624B	4.06	53	79	5	4	Santa Barbara	3.64
ST 1629B	1.18	42	79	5	4	Santa Barbara	0.97
ST 1625B	0.24	95	79	5	4	Santa Barbara	0.28
ST 1618B	0.45	42	79	5	4	Santa Barbara	0.37
ST 1623B	0.25	85	79	5	4	Santa Barbara	0.28
ST 1619B	0.96	64	79	5	4	Santa Barbara	0.93
ST 1616B	0.07	95	79	5	4	Santa Barbara	0.08
ST 1626B	0.29	61	79	5	4	Santa Barbara	0.28
ST 1530	0.26	37	79	5	4	Santa Barbara	0.20
ST 1529	0.14	97	79	5	4	Santa Barbara	0.16

XP-SWMM HYDRAULICS DATA

Frog Pond Terrace/Overlook

Proposed Conditions

SCS Type IA 25-Year Storm Event

SCS Type IA 25-Year Storm Event																					
Location			Conduit Properties					Conduit Profile								Conduit Results					
Link Name	Node Limits		Diameter		Length	Slope	Conduit Type	Ground Elevation (ft)		Invert Elevation (ft)		Max. Water Elevation (ft)		Freeboard (ft)		Design Flow	Max. Flow	Max. Velocity	Design Velocity	Max. Depth	y/d0
	From	To	in	ft	ft	%		US	DS	US	DS	US	DS	US	DS	(cfs)	(cfs)	(ft/s)	(ft/s)	(ft)	
Pipe - 25	ST 1539	ST 1538	12	1.00	241.27	2.9	Pipe	233.14	226.91	225.92	218.90	226.44	219.08	6.70	7.84	6.08	3.27	7.87	7.74	0.52	0.52
Pipe - 26	ST 1538	ST 1532	12	1.00	38.92	13.8	Pipe	226.91	226.71	218.70	213.32	219.08	214.08	7.84	12.63	13.25	3.96	14.03	16.87	0.76	0.76
Pipe - 40	ST 1532	ST 1530	18	1.50	190.43	1.2	Pipe	226.71	223.33	213.12	210.77	214.08	211.53	12.63	11.80	11.67	8.62	7.22	6.60	0.96	0.64
Pipe - 19	ST 1537	ST 1536	12	1.00	140.03	0.4	Pipe	226.00	221.35	216.24	215.62	217.35	216.65	8.65	4.70	2.37	2.61	3.53	3.02	1.11	1.11
Pipe - 19(1)	ST 1536	ST 1535	12	1.00	53.43	0.4	Pipe	221.35	220.27	215.42	215.18	216.65	216.23	4.70	4.04	2.39	3.27	4.08	3.04	1.23	1.23
Pipe - (23)	ST 1533	ST 1532	18	1.50	172.88	0.4	Pipe	220.65	226.71	214.08	213.32	214.99	214.08	5.66	12.63	6.96	4.71	4.24	3.94	0.91	0.61
Pipe - 41	ST 1528	ST 1633B	18	1.50	47.56	0.6	Pipe	218.75	215.70	208.88	208.58	210.18	209.59	8.57	6.11	8.34	9.69	6.00	4.72	1.30	0.87
Pipe - (21)	ST 1535	ST 1534	12	1.00	52.60	0.5	Pipe	220.27	219.47	214.98	214.74	216.23	215.82	4.04	3.65	2.41	3.28	4.15	3.06	1.25	1.25
Pipe - (22)	ST 1534	ST 1533	12	1.00	58.64	0.4	Pipe	219.47	220.65	214.54	214.28	215.82	214.99	3.65	5.66	2.37	3.92	5.04	3.02	1.28	1.28
Pipe - 42	ST 1633B	ST 1632B	18	1.50	30.00	3.3	Pipe	215.70	213.29	208.38	207.38	209.59	209.36	6.11	3.93	19.18	9.69	9.09	10.85	1.98	1.32
Pipe - (27) (SD_)	ST 1630B	ST 1629B	24	2.00	92.19	0.7	Pipe	217.25	215.77	205.40	204.78	206.62	205.99	10.63	9.78	18.55	12.76	6.36	5.91	1.22	0.61
Pipe - 34	ST 1624B	ST 1623B	12	1.00	126.06	3.5	Pipe	216.05	210.80	208.47	204.06	209.00	204.41	7.05	6.39	6.66	3.63	8.66	8.49	0.53	0.53
Pipe - (28) (SD_)	ST 1629B	ST 1628B	24	2.00	54.77	0.4	Pipe	215.77	214.90	204.58	204.34	205.99	205.55	9.78	9.35	14.98	13.68	5.83	4.77	1.41	0.70
Pipe - (29) (SD_)	ST 1628B	ST 1627B	24	2.00	55.45	0.4	Pipe	214.90	214.00	204.14	203.90	205.55	205.08	9.35	8.92	14.88	13.68	5.81	4.74	1.41	0.71
Pipe - (30)	ST 1627B	ST 1626B	24	2.00	30.49	0.4	Pipe	214.00	213.51	203.68	203.56	205.08	204.82	8.92	8.70	14.19	13.69	5.88	4.52	1.40	0.70
Pipe - (31)	ST 1625B	ST 1622B	24	2.00	64.51	0.4	Pipe	211.99	210.92	202.74	202.46	204.19	202.94	7.80	7.99	14.90	14.21	5.86	4.74	1.45	0.73
Pipe - 171	ST 1618B	ST 1617B	12	1.00	129.54	4.1	Pipe	212.37	208.36	205.98	200.73	206.13	200.84	6.24	7.52	7.17	0.37	4.78	9.13	0.15	0.15
Pipe - (44) (SD_)	ST 1632B	ST 1631B	18	1.50	43.34	0.5	Pipe	213.29	211.32	207.18	206.97	209.36	209.00	3.93	2.32	7.31	9.66	5.45	4.14	2.18	1.45
Pipe - (32)	ST 1622B	ST 1616B	24	2.00	50.81	10.8	Pipe	210.92	210.14	202.26	196.99	202.94	197.92	7.99	12.22	72.86	17.88	18.19	23.19	0.93	0.47
Pipe - (35)	ST 1623B	ST 1622B	12	1.00	39.44	3.5	Pipe	210.80	210.92	203.86	202.46	204.41	202.94	6.39	7.99	6.71	3.90	8.86	8.55	0.55	0.55
Pipe - (43) (SD_)	ST 1631B	ST 1630B	18	1.50	267.41	0.4	Pipe	211.32	217.25	206.77	205.60	209.00	206.62	2.32	10.63	6.95	9.61	5.50	3.93	2.23	1.48
Pipe - (33)	ST 1615B	ST 1614B	24	2.00	50.20	1.9	Pipe	208.78	205.02	195.62	194.66	196.91	196.29	11.87	8.73	31.28	19.24	8.77	9.96	1.63	0.82
Pipe - (48)	ST 1617B	ST 1616B	12	1.00	110.97	3.2	Pipe	208.36	210.14	200.53	196.99	200.84	197.92	7.52	12.22	6.36	1.29	4.99	8.10	0.93	0.93
Pipe - (47) (SD_)	ST 1620B	ST 1619B	12	1.00	60.62	0.5	Pipe	208.07	207.34	201.54	201.26	201.54	201.50	6.53	5.84	2.42	0.00	0.00	3.08	0.24	0.00
Pipe - (47) (1) (SD_)	ST 1619B	ST 1617B	12	1.00	74.65	0.4	Pipe	207.34	208.36	201.06	200.73	201.50	200.84	5.84	7.52	2.37	0.93	2.83	3.02	0.44	0.44
Pipe - (119)	ST 1614B	Pond	24	2.00	43.98	2.8	Pipe	205.02	197.00	195.22	194.00	196.29	195.75	8.73	1.25	37.68	15.67	8.59	11.99	1.75	0.88
Pipe-203	ST 1614B	ST 1613B	12	1.00	30.00	0.4	Pipe	205.02	203.06	194.46	194.33	196.29	196.01	8.73	7.05	2.35	3.62	4.58	2.99	1.83	1.83
Pipe - 50	ST 1612B	Outfall	12	1.00	201.05	24.7	Pipe	197.06	145.00	190.97	141.39	191.77	142.10	5.29	2.91	17.69	17.17	25.67	22.53	0.80	0.80
Pipe-204	ST 1613B	Pond	12	1.00	28.68	0.5	Pipe	203.06	197.00	194.13	194.00	196.01	195.75	7.05	1.25	2.40	3.61	4.57	3.05	1.88	1.88
Pipe-33(2)	ST 1616B	ST 1615B	24	2.00	50.40	1.9	Pipe	210.14	208.78	196.79	195.82	197.92	196.91	12.22	11.87	31.38	19.23	10.49	9.99	1.13	0.57
Pipe-30	ST 1626B	ST 1625B	24	2.00	94.76	0.4	Pipe	213.51	211.99	203.36	202.94	204.82	204.19	8.70	7.80	15.06	13.95	5.75	4.79	1.46	0.73
Pipe-41(2)	ST 1530	ST 1529	18	1.50	56.70	1.3	Pipe	223.33	221.02	210.57	209.83	211.53	210.65	11.80	10.37	12.00	8.83	7.76	6.79	0.96	0.64
Pipe-42-22	ST 1529	ST 1528	18	1.50	42.38	1.3	Pipe	221.02	218.75	209.63	209.08	210.65	210.18	10.37	8.57	11.97	8.99	6.98	6.77	1.10	0.73

Exhibit H: Geotechnical Report



Real-World Geotechnical Solutions
Investigation • Design • Construction Support

Geotechnical Engineering Report

Project Information: Ridgecrest
GeoPacific Project No. 24-6557
June 20, 2024

Site Location: 7400 SW Frog Pond Lane
Wilsonville, Oregon

Client: Dan Grimberg
West Hills Land Development
3330 NW Yeon Avenue, Suite 200
Portland, Oregon 97210
Via email: dan@westhillsdevelopment.com

CC: Rand Waltz, AKS Engineering & Forestry, LLC
via email: rand@aks-eng.com

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Real-World Geotechnical Solutions
Investigation • Design • Construction Support

June 20, 2024
Project No. 24-6557

Dan Grimberg
West Hills Land Development
3330 NW Yeon Avenue, Suite 200
Portland, Oregon 97210
Via email: dan@westhillsdevelopment.com

CC: Rand Waltz, AKS Engineering & Forestry, LLC via email: rand@aks-eng.com

**SUBJECT: GEOTECHNICAL ENGINEERING REPORT
RIDGECREST
7400 SW FROG POND LANE
WILSONVILLE, OREGON**

1.0 PROJECT INFORMATION

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 accordance with GeoPacific Proposal No. P-8744, dated March 29, 2024, and your subsequent authorization of our proposal and *General Conditions for Geotechnical Services*.

2.0 SITE AND PROJECT DESCRIPTION

The subject site is approximately 9 acres in size and located on the south side of SW Frog Pond Lane in the City of Wilsonville, Clackamas County, Oregon (Figure 1). Topography is gently sloping to the west with grades of 5 percent or less. The site is currently occupied by one home and several outbuildings. Vegetation consists primarily of short grasses and dense to sparse trees.

It is our understanding that the site will be developed for 28 lots for single family homes, new streets, water quality facilities, open space, and associated underground utilities (Figure 2). A grading plan has not been provided for our review; however, we anticipate maximum cuts and fill may be up to 8 feet.

3.0 REGIONAL 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

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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 (Yeats et al., 1996; Gannett and Caldwell, 1998). The last of these outburst floods occurred about 10,000 years ago. These deposits typically consist of 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.

4.0 REGIONAL SEISMIC SETTING

At least three major fault zones capable of generating damaging earthquakes are thought to exist in the vicinity of the subject site. These include the Portland Hills Fault Zone, the Gales Creek-Newberg-Mt. Angel Structural Zone, and the Cascadia Subduction Zone.

4.1 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 reportedly 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 located approximately 9.8 miles northeast of the site. The Oatfield Fault occurs along the western side of the Portland Hills and is located approximately 8.7 miles northeast of the site. The East Bank Fault occurs along the eastern margin of the Willamette River and is located approximately 14.5 miles northeast of the site. The accuracy of the fault mapping is stated to be within 500 meters (Wong, et al., 2000).

According to the USGS Earthquake Hazards Program, the fault was originally mapped as a down-to-the-northeast normal fault but has also been mapped as part of a regional-scale zone of right-lateral, oblique slip faults, and as a steep escarpment caused by asymmetrical folding above a southwest dipping, blind thrust fault. The Portland Hills fault offsets the Miocene age Columbia River Basalts, and Miocene to Pliocene aged sedimentary rocks of the Troutdale Formation. No fault scarps on surficial Quaternary deposits have been described along the fault trace, and the fault is mapped as buried by the Pleistocene aged Missoula flood deposits. 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).

4.2 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 10.1 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 or Newberg Faults (the faults closest to the subject site); 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).

4.3 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 along the Oregon Coast at depths of between 20 and 40 kilometers below the surface.

5.0 FIELD EXPLORATION AND SUBSURFACE CONDITIONS

Our subsurface explorations for this report were conducted on April 29, 2024. A total of seven exploratory test pits (TP-1 through TP-7) were excavated to depths of 8 to 10 feet below the existing ground surface (bgs) at the site by Alpha Locating, Inc. using a medium sized trackhoe. The locations of the explorations are presented on Figure 2. It should be noted that exploration locations were located 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.

A GeoPacific Engineering geologist continuously monitored the field exploration program and logged the test pits. Soils observed in the explorations were classified in general accordance with the Unified Soil Classification System (USCS). During exploration, our geologist also noted geotechnical conditions such as soil consistency, moisture and groundwater conditions. Logs of test pits are attached to this report. The following report sections are based on the exploration program and summarize subsurface conditions encountered at the site.

5.1 Soil Descriptions

On-site soils consist of undocumented fill, topsoil horizon, tilled zone, and soils belonging to the Willamette Formation as described below.

Undocumented Fill: Undocumented fill was encountered at the ground surface in test pit TP-1. The fill generally consisted of silt (ML) with gravel and charcoal fragments that extended to a depth of 2.5 feet. Other areas of fill may be present outside our exploration locations, especially in the vicinity of the existing structures and driveways.

Topsoil Horizon: The ground surface in test pit TP-2 through TP-7 was directly underlain by topsoil horizon. The topsoil horizon generally consisted of approximately 9 to 12 inches of moderately to highly organic, brown silt (OL) that contained fine grass roots throughout. A thin topsoil horizon had developed on the fill at the location of test pit TP-1.

Tilled Zone: A tilled topsoil horizon consisting of brown silt (ML) with a low to very low organic content was encountered beneath the topsoil horizon in test pits TP-3 through TP-5. The tilled zone extended to depths of 2 to 2.5 feet, generally had a medium stiff to stiff consistency, and contained fine roots.

Willamette Formation: Underlying the undocumented fill in test pit TP-1, the tilled zone in test pits TP-3 through TP-5, and the topsoil horizon in test pits TP-2, TP-6, and TP-7 were soils belonging to the Willamette Formation. These soils typically consisted of light brown, stiff to very stiff, silt (ML), silt with trace clay, and clayey silt that displayed subtle to strong orange and gray mottling. Soil belonging to the Willamette Formation extended beyond the maximum depth of exploration in test pits TP-1 through TP-7 (8 to 10 feet).

5.2 Shrink-Swell Potential

The soils encountered in our explorations consisted of silt with varying clay content that exhibited low plasticity. Based upon the results of our observations and our local experience with the soil conditions in the vicinity of the subject site, the shrink-swell potential of the soil types is considered to be low. Special design measures are not considered necessary to minimize the risk of uncontrolled damage of foundations as a result of potential soil expansion at this site. However, these soil types are moisture sensitive, and will be difficult to work with during periods of wet weather.

5.3 Groundwater and Soil Moisture

On April 29, 2024, soils encountered in our explorations were moist to wet in zones of seepage. Perched groundwater seepage was encountered in test pit TP-3 at a depth of 9.5 feet and discharge was visually estimated at less than ¼ gallon per minute. Our review of nearby water well logs indicate that static groundwater is present at a depth of approximately 40 to 60 feet below the native ground surface (Oregon Water Resources Department, 2024).

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. Perched groundwater may be encountered in localized areas and seeps and springs may exist in areas not explored and may become evident during site grading and removal of undocumented fill. If groundwater springs or seeps are observed to be present during site grading, subdrains may be needed to control and divert subsurface water. The geotechnical engineer should be alerted by the earthworks contractor to any subsurface springs that become apparent during site grading for additional evaluation and recommendations.

5.4 Infiltration Testing

Soil infiltration testing was performed using the pushed pipe infiltration method in test pits TP-1 through TP-3. Soil in the test pits was pre-saturated for a period of over 2 hours. The water level was measured to the nearest tenth of an inch every fifteen minutes to half hour with reference to the ground surface. Falling head infiltration testing continued until rates stabilized. Table 1 presents the results of our falling head infiltration tests.

Table 1. Summary of Infiltration Test Results

Test Pit	Depth (feet)	Soil Type	Infiltration Rate (in/hr)	Hydraulic Head Range (inches)
TP-1	8	Silt (ML)	0.3	8-9
TP-2	9	Silt (ML) trace clay	0	31-32
TP-3	10	Silt (ML) trace clay	0	26-27

Due to the presence of fine grained soil conditions, it is our opinion that the site is not suitable for infiltration.

5.5 Existing Subgrade Resilient Modulus

On April 29, 2024, GeoPacific conducted an evaluation of the subgrade conditions beneath the existing ground surfaces. We performed in-place field testing of native subgrade soil strength using a KSE DCP K-100 Model with a 17.6 lbs hammer portable dynamic cone penetrometer (PDCP) within each testing location. The locations of the PDCP tests are presented on Figure 2. Results of the PDCP testing are presented in the appendix of this report. Table 2 summarizes the results of our PDCP testing.

Table 2: PDCP Test Results

Field Test Designation	Test Location (See Figure 2)	Depth Interval of Test Below Ground Surface (in.)	Average Penetration Per Blow (mm)	Correlated CBR	Soil Resilient Modulus (psi)
PDCP-1	Local – Street A	4.9 – 37.1	52.4	3.5	5,202
PDCP-2	Local – Street B	8.4 – 36.1	46.9	3.9	5,884
PDCP-3	Local – SW Painter Dr	7.4 – 35.9	55.7	3.2	4,856
PDCP-4	Local – Street C	7.9 – 37.3	53.3	3.4	5,095
PDCP-5	Local – Street D	6.8 – 35.4	90.8	1.9	2,808
PDCP-6	Local – SW Woodbury Loop	2.4 – 36.0	71.1	2.5	3,692

Based on the results of our PDCP testing, we estimate that the native subgrade underlying the proposed improvement area generally exhibits a resilient modulus ranging from approximately 3,692 to 5,884 psi. At PDCP-5 we observed a resilient modulus of 2,808 psi. However, this low value appears to be an outlier and subgrade that soft would need to be mitigated during construction. For analysis and design purposes, we conservatively assume that the native subgrade soils will exhibit a resilient modulus of 3,692 psi under saturated conditions, which correlates to a CBR value of 2.5.

6.0 CONCLUSIONS AND RECOMMENDATIONS

Our site investigation indicates that the proposed construction appears to be geotechnically feasible, provided that the recommendations of this report are incorporated into the design and construction phases of the project. The primary geotechnical concerns for the project include:

1. The presence of a tilled zone extending to depths of 2 to 2.5 feet encountered in test pits TP-3 through TP-5. The tilled zone generally had a low to very low organic content. Additional depths of overexcavation for subgrade preparation and foundations may be required in these areas.
2. The presence of undocumented fill. Undocumented fill was encountered in test pit TP-1 to a depth of 2.5 feet. Other areas of fill may be present outside our exploration locations, especially in the vicinity of the existing structures and driveways.

These materials are unsuitable for foundation support due to inconsistency in density and GeoPacific recommends their removal. The undocumented fill and disturbed native soils may potentially be reused as engineered fill with proper sorting and organic material removed. We recommend that undocumented fill material be removed and sorted for potential reuse as structural fill per the engineered fill recommendations of this report.

3. The presence of shallow perched groundwater conditions that could make utility trenching difficult, especially in the winter months. Although not encountered on the subject site,

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minor caving was encountered in test pits performed on the property immediately to the east of the site. Adequate shoring (and dewatering) should be maintained.

4. The presence of low permeability soils. Our infiltration testing indicates on site, fine grained soils are not suitable for infiltration of stormwater.

The following report sections provide recommendations for site development and construction in accordance with the current applicable codes and local standards of practice.

6.1 Site Preparation Recommendations

Areas of proposed construction and areas to receive fill should be cleared of any organic and inorganic debris. Inorganic debris and organic materials from clearing should be removed from the site. Organic-rich soils and root zones should then be stripped from construction areas of the site or where engineered fill is to be placed. Depth of stripping of existing topsoil is estimated to be approximately 6 to 9 inches across the majority of the site, however depth of organic soil layers may increase in areas. The final depth of soil removal will be determined based on a site inspection after the stripping/excavation has been performed. Stripped topsoil should be removed from areas proposed for placement of engineered fill. 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.

If encountered, undocumented fills and any subsurface structures (dry wells, basements, driveway and landscaping fill, old utility lines, septic leach fields, field drain tiles, etc.) should be completely removed and the excavations backfilled with engineered fill. Field drain tiles should be intercepted at the high end of the site and routed to the storm drain system.

Undocumented fill soils were encountered in test pit TP-1 to a depth of 2.5 feet, and medium-stiff, tilled soil was encountered in test pits TP-3 through TP-5. Other areas and thicker areas of undocumented fill may be present outside our exploration locations, especially in the vicinity of the existing structures and driveways. Undocumented fill and any buried topsoil horizons should be removed to firm inorganic native soils and replaced with properly compacted engineered fill. Organic or otherwise deleterious portions of the fill should be exported from the site. Portions of undocumented fill soils that do not contain significant percentages of organics may be stockpiled for later use as engineered fill provided they are properly moisture conditioned for compaction and not mixed with topsoil or other organic/unsuitable materials. The final depth of removal should be determined on the basis of a site inspection after the initial stripping / fill excavation has been performed.

Once topsoil stripping and removal of organic and inorganic debris are approved in a particular area, we recommend that areas proposed for placement of engineered fill are scarified to a minimum depth of 12 inches and recompacted prior to placement of structural fill. Prior to placement of engineered fill, the underlying soils should be over-excavated, ripped, aerated to optimum moisture content, and recompacted to project specifications for engineered fill as determined by the Standard Proctor (ASTM D698). 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

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scraper or dump truck. For smaller areas where access is restricted, the subgrade should be evaluated by probing the soil with a steel probe.

Areas proposed to be left at grade may require additional over-excavation of foundation areas in order to reach soils which will provide adequate bearing support for the proposed foundations. Site earthwork may be impacted by shallow groundwater. Stabilization of subgrade soils will require aeration and recompaction. If subgrade soils are found to be difficult to stabilize, over-excavation, placement of granular soils, or cement treatment of subgrade soils may be feasible options. The depth of overexcavation, if required, should be evaluated by the geotechnical engineer at the time of construction.

6.2 Engineered Fill

All grading for the proposed construction should be performed as engineered grading in accordance with the applicable building code at the time of construction with the exceptions and additions noted herein. Areas proposed for fill placement should be prepared as described in the Site Preparation Recommendations section. Surface soils should then be scarified and recompacted prior to placement of structural fill. 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 12 inches using standard compaction equipment. We recommend that engineered fill be compacted to at least 90 percent of the maximum dry density determined by ASTM D1557 (Modified Proctor) or equivalent. Soils should be moisture conditioned to within two percent of optimum moisture. 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 may be impacted by shallow groundwater, soil moisture and wet weather conditions. Earthwork in wet weather would likely require extensive use of additional crushed aggregate, cement or lime treatment, or other special measures, at considerable additional cost compared to earthwork performed under dry-weather conditions.

6.3 Excavating Conditions and Utility Trench Backfill

Subsurface test pit 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 and moderate caving was observed in test pits performed on the adjacent property to the east. These conditions could make utility trenching difficult, especially in the winter months, and adequate shoring should be maintained.

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We anticipate that onsite soils can generally be excavated using conventional heavy equipment. 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. 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 native soils, to a depth of approximately 15 feet bgs, classify as Type B Soils and temporary excavation side slope inclinations as steep as 1H:1V may be assumed for planning purposes. These cut slope inclinations are applicable to excavations above the water table only.

Shallow, perched groundwater may be encountered at the site and should be anticipated in excavations and utility trenches. Based on our review of available well logs, we anticipate that static groundwater is present at depths of 40 to 60 feet (Oregon Water Resources Department, 2024). 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.

Underground utility pipes should be installed in accordance with the procedures specified in ASTM D2321 and City of Wilsonville standards. We recommend that the upper 4 feet of structural trench backfill be compacted to at least 95 percent of the maximum dry density obtained by the Modified Proctor (ASTM D698) or equivalent. Structural trench backfill below 4 feet should be compacted to at least 90 percent of the maximum dry density obtained by the Modified Proctor (ASTM D1557) or equivalent. Initial backfill lift thicknesses 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, at least one density test is taken for every 4 vertical feet of backfill on each 100-lineal-foot section of trench.

6.4 Erosion Control Considerations

During our field exploration program, we did not observe soil and topographic conditions which are considered highly susceptible to erosion. 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, fiber rolls, and silt fences. If used, these erosion control devices should 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.

6.5 Wet Weather Earthwork

Soils underlying the site are likely to be moisture sensitive and will 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 require expensive measures such as cement treatment or imported granular material to compact areas where fill may be proposed 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 passing the No. 200 sieve. 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.
- Geotextile silt fences, straw wattles, and fiber rolls 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.

6.6 Spread Foundations

Based upon communication with the client, GeoPacific understands that the proposed development at the site will consist of the construction of residential lots for single family homes. The grading plan has not been finalized at this time. We anticipate cuts and fills up to 8 feet may be planned. The proposed single-family residential homes will likely be constructed on typical spread foundations with

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square column footings, continuous strip footings, and crawl spaces. We anticipate wood-framed construction above the foundations with maximum structural loading on column footings and continuous strip footings on the order of 10 to 35 kips, and 2 to 7 kips respectively.

The proposed residential structures may likely be supported on shallow foundations bearing on competent undisturbed, nonexpansive native soils and/or engineered fill, appropriately designed and constructed as recommended in this report. Medium stiff to stiff tilled soils were encountered at depths of 2 to 2.5 feet in test pits TP-3 through TP-5. Additional depths of excavation for subgrade preparation and foundations may be required in areas. Areas where homes are to be constructed where no engineered fill will be placed should either be prepared as recommended for roadway areas; or the foundation envelopes of the proposed homes should be over-excavated to expose native soils on a lot by lot basis. (See *Site Preparation Recommendations* section).

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. If soft soil conditions are encountered at footing subgrade elevation, they should be removed and replaced with compacted crushed aggregate.

The anticipated allowable soil bearing pressure is 1,500 lbs/ft² for footings bearing on competent, native soil and/or engineered fill. The recommended maximum allowable bearing pressure may be increased by 1/3 for short-term transient conditions such as wind and seismic loading. For loads heavier than 35 kips, the geotechnical engineer should be consulted. If heavier loads than described above are proposed, it may be necessary to over-excavate point load areas and replace with additional compacted crushed aggregate. 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 ¾ 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 disturbed 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 over-excavation of footings and backfill with compacted, crushed aggregate.

Our recommendations are for residential construction incorporating raised wood floors and conventional spread footing foundations. After site development, a Final Soil Engineer's Report should either confirm or modify the above recommendations.

6.7 Concrete Slabs-on-Grade

Preparation of areas beneath concrete slab-on-grade floors should be performed as described in the *Site Preparation Recommendations* and *Spread Foundations* sections of this report. 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

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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 stiff, fine -grained soils anticipated to be present at foundation subgrade elevation following adequate site preparation as described above. This value assumes the concrete slab system is designed and constructed as recommended herein, with a minimum thickness of 8 inches of 1½"-0 crushed aggregate beneath the slab. 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 95 percent of its maximum dry density as determined by ASTM D1557 (Modified Proctor) 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. 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.

In the influence zones of proposed concrete slabs, undocumented fills, buried topsoil, and subsurface structures (tile drains, basements, driveway and landscaping fill, old utility lines, cisterns, septic leach fields, etc.) should be removed and the excavations backfilled with engineered fill. Undocumented fill material was observed in test pit exploration TP-1 extending to a depth of 2.5 feet. The undocumented fill soils may potentially be reused as engineered fill if sorted properly. Soils sorted for potential reuse should be inspected by the geotechnical engineer during excavation.

6.8 Permanent Below-Grade Foundation Walls

Lateral earth pressures against below-grade foundation 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 the recommended drainage provisions are incorporated, 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,

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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 300 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.

6.9 Footing and Roof Drains

Based on the subsurface conditions encountered in our explorations, footing drains would not be required by code. However, footing drains may be desired in order to lower the risk of damage to the proposed structure due to water intrusion. If implemented, the outside edge of perimeter footings should be provided with a drainage system consisting of 3-inch diameter, slotted, flexible plastic pipe embedded in a minimum of 1 ft³ per lineal foot of clean, free-draining gravel or 1 1/2" - 3/4" 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. Water collected from the footing 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 foundation drains in order to reduce the potential for clogging. The footing 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.

Footing drains are recommended to prevent detrimental effects of surface water runoff on foundations – not to dewater groundwater. Footing 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, if utilized, is required by code.

7.0 PAVEMENT DESIGN

We understand that development at the site may include new public local streets. GeoPacific conducted an investigation of subgrade conditions under the proposed roadway areas and conducted flexible pavement design calculations to support the construction of new public local roads supporting 20 years of traffic, per City of Wilsonville standards.

Based on our understanding of typical traffic for local roads in the area, we estimated an average daily traffic (ADT) for the site of 280 trips per day. Using the noted ADT, we estimated an 18-kip Equivalent Single Axle Load (ESAL) count of 50,000 over 20 years (through 2043), accounting for 2 percent projected population growth annually. The anticipated traffic is assumed to primarily consist of passenger vehicles traveling to and from the residences, weekly trash and recycling pickups, and delivery vehicles. The expected traffic incorporates emergency vehicles with a gross weight of up to 75,000 lbs and point loads up to 12,500 lbs. Table 3 presents a summary of design input parameters and the required structural number to support 20 years of vehicle traffic, per City of Wilsonville standards. Pavement design and ESAL calculations are also attached to this report.

**Table 3: Pavement Design Input Parameters and Required Structural Number:
 New Public Interior Roads**

Input Parameter	Design Value (20 Years)
18-kip ESAL Initial Performance Period	50,000
Initial Serviceability	4.2
Terminal Serviceability	2.5
Reliability Level	85 Percent
Overall Standard Deviation	0.5
Roadbed Soil Resilient Modulus (PSI)	3,692
Required Structural Number	2.72

7.1 20-Year Flexible Pavement Design: Interior Local Roads

Table 4 presents our recommended minimum dry-weather pavement sections for the new pavement construction of public local roads in the interior of the Ridgecrest Subdivision, supporting 20 years of vehicle traffic per City of Wilsonville standards. It is our understanding that the City of Wilsonville requires a minimum of 4.5 inches of asphalt when asphalt concrete is constructed between October 15th and March 15th. Therefore, our pavement design includes at least 4.5 inches of asphalt, so that the pavement section can be applied at any time of the year. It is our understanding that the City of Wilsonville requires that geotextile fabric be placed over the surface of the subgrade prior to the placement of base rock. It should be noted that, as described in the following report sections, additional base rock or other mitigative measures may be necessary in wet weather conditions and/or where areas of soft subgrade are encountered. The City of Wilsonville requires that the base lift of asphalt incorporate ¾” aggregate. Pavement design calculations are attached to this report.

Table 4: Recommended Minimum Summer Pavement Section: New Public Interior Roads

Material Layer	Section Thickness (in.)	Structural Coefficient	Compaction Standard
Asphaltic Concrete Wearing Course (1/2-inch Mix)	2.0	0.42	92% of Max Density AASHTO T-209
Asphaltic Base Lift (3/4-inch Mix)	2.5	0.42	92% of Max Density AASHTO T-209
Crushed Aggregate Base ¾”-0 (leveling course)	2.0	0.10	95% of Modified Proctor AASHTO T-180
Crushed Aggregate Base 1½”-0	10.0	0.10	95% of Modified Proctor AASHTO T-180
Geotextile Fabric (Required by City of Wilsonville)			
Subgrade (Consisting of Soil)		3,692 PSI	95% of Standard Proctor AASHTO T-99 or approved native
Total Calculated Structural Number		2.89 > 2.72	

7.2 Subgrade Preparation

Any pockets of organic debris or loose fill encountered during subgrade preparation should be removed and replaced with engineered fill (see *Site Preparation Recommendations*). In order to verify subgrade strength, we recommend proof-rolling directly on the subgrade with a loaded dump truck during dry weather and on top of the base course in wet weather. Soft areas that pump, rut, or weave should be stabilized prior to paving. We observed soft subgrade soils at PDGP-5 during our soil strength testing explorations. Any pockets of organic debris or loose fill encountered during subgrade preparation should be removed and replaced with engineered fill. Undocumented fill material or disturbed soils, where encountered, will need to be removed and replaced with engineered fill. (see *Site Preparation Recommendations*). Per City of Wilsonville standards, crushed aggregate shall be separated from subgrade soils using a geotextile fabric.

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. General recommendations for wet weather pavement sections are provided below.

During the 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 are performed for every 100 to 200 linear feet of paving.

7.3 Wet Weather Construction Pavement Section

This section presents our recommendations for wet weather pavement sections and the construction for new pavement sections at the project. These wet weather pavement section recommendations are intended for use in situations where it is not feasible to compact the subgrade soils to project requirements, due to wet subgrade soil conditions, and/or construction during wet weather. Based on our site review, we recommend a wet weather section with a minimum subgrade deepening of 6 to 12 inches to accommodate a working subbase of additional 1½"-0 crushed rock. Geotextile fabric, Mirafi 500x or equivalent, should be placed on subgrade soils prior to placement of base rock.

In some instances, it may be preferable to use a subbase material in combination with over-excavation and increasing the thickness of the rock section. GeoPacific should be consulted for additional recommendations regarding use of additional subbase in wet weather pavement sections if it is desired to pursue this alternative. Cement treatment of the subgrade may also be considered instead of over-excavation. For planning purposes, we anticipate that treatment of the onsite soils would involve mixing cement powder to approximately 6 percent cement content and a mixing depth on the order of 12 to 18 inches.

With implementation of the above recommendations, it is our opinion that the resulting pavement section will provide equivalent or greater structural strength than the dry weather pavement section currently planned. However, it should be noted that construction in wet weather is difficult, and the performance of pavement subgrades depend on a number of factors including the weather conditions, the contractor's methods, and the amount of traffic the road is subjected to. There is a potential that soft spots may develop even with implementation of the wet weather provisions

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recommended in this letter. If soft spots in the subgrade are identified during roadway excavation, or develop prior to paving, the soft spots should be over-excavated and backfilled with additional crushed rock.

During subgrade excavation, care should be taken to avoid disturbing the subgrade soils. Removals should be performed using an excavator with a smooth-bladed bucket. Truck traffic should be limited until an adequate working surface has been established. We suggest that the crushed rock be spread using bulldozer equipment rather than dump trucks, to reduce the amount of traffic and potential disturbance of subgrade soils. Care should be taken to avoid over-compaction of the base course materials, which could create pumping, unstable subgrade soil conditions. Heavy and/or vibratory compaction efforts should be applied with caution. Following placement and compaction of the crushed rock to project specifications (95 percent of Modified Proctor), a finish proof-roll should be performed before paving.

The above recommendations are subject to field verification. GeoPacific should be on-site during construction to verify subgrade strength and to take density tests on the engineered fill, base rock and asphaltic pavement materials.

8.0 SEISMIC DESIGN

The Oregon Department of Geology and Mineral Industries (Dogami), Oregon HazVu: 2024 Statewide GeoHazards Viewer indicates that the site is in an area where *very strong* ground shaking is anticipated during an earthquake (Dogami HazVu, 2024). Structures should be designed to resist earthquake loading in accordance with the methodology described in the 2021 International Building Code (IBC) with applicable Oregon Structural Specialty Code (OSSC) revisions (current 2022). We recommend Site Class D be used for design as defined in ASCE 7-16, Chapter 20, and Table 20.3-1 and seismic design category D₀ as defined in 2021 International Residential Code (IRC) Table R301.2.2.1.1. Design values determined for the site using the ATC (Applied Technology Council) 2024 Hazards by Location Online Tool are summarized in Table 5 below, and are based upon existing soil conditions.

Table 5. Recommended Earthquake Ground Motion Parameters (ASCE 7-16)

Parameter	Value
Location (Lat, Long), degrees	45.321, -122.753
Horizontal Design Response Parameters, 2% Exceedance in 50 years:	
Peak Ground Acceleration PGA_M	0.458 g
Short Period, S_s	0.82 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 (D ₀ per 2021 IRC)

* 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 2022 with the assumption that Exception 2 of ASCE 7-16 Chapter 11.4.8 is met per the Structural Engineer. 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.

8.1 Soil Liquefaction

The Oregon Department of Geology and Mineral Industries (DOGAMI), Oregon HazVu: 2024 Statewide GeoHazards Viewer indicates that the site is in an area considered to be at *low* risk for soil liquefaction during an earthquake. Soil liquefaction is a phenomenon wherein saturated soil deposits temporarily lose strength and behave as a liquid in response to ground shaking caused by strong earthquakes. Soil liquefaction is generally limited to loose sands and granular soils located below the water table, and fine-grained soils with a plasticity index less than 15.

Our subsurface explorations indicate that the site is underlain by silt catastrophic flood deposits. Although some perched groundwater was observed at one location during our subsurface soil explorations, static groundwater was not. Our review of the log of the property's water well indicates static groundwater is present at a depth of 40 to 60 feet below the ground surface (Oregon Water Resources Department, 2024). Soil moisture contents were generally moist to wet in areas of seepage. Based upon the results of our study, it is our opinion that damage due to soil liquefaction or lateral spreading during a seismic event should be considered to be low and that special design measures are not considered necessary to account for permanent deformations due to liquefaction or lateral spreading.

9.0 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, GeoPacific 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.

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Within the limitations of scope, schedule and budget, GeoPacific 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.

Reviewed by: James D. Imbrie, G.E., C.E.G.
Principal Geotechnical Engineer



Beth K. Rapp, C.E.G.
Senior Engineering Geologist



RENEWS: June 30, 2026

Thomas J. Torkelson, P.E.
Project Engineer

Geotechnical Engineering Report
Project No. 24-6557 Ridgecrest, Wilsonville, Oregon

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CHECKLIST OF RECOMMENDED GEOTECHNICAL TESTING AND OBSERVATION

Item	Procedure	Timeframe	Whom	Done
1	Preconstruction meeting	Prior to beginning site work	Contractor, Developer, Civil and Geotechnical Engineers	
2	Fill removal from site or sorting and stockpiling	Prior to mass stripping	Soil Technician/ Geotechnical Engineer	
3	Stripping, aeration, and root-picking operations	During stripping	Soil Technician	
4	Compaction testing of engineered fill (90% of Modified Proctor)	During filling, tested every 2 vertical feet	Soil Technician	
5	Compaction testing of trench backfill (95% of Modified Proctor above 4 feet - 90% of Modified Proctor below 4 feet)	During backfilling, tested every 4 vertical feet for every 200 lineal feet	Soil Technician	
7	Street Subgrade Inspection	Prior to placing base course	Soil Technician	
8	Base course compaction (95% of Modified Proctor)	Prior to paving, tested every 200 lineal feet	Soil Technician	
9	Foundation Subgrade Inspection	During Foundation Excavation	Soil Technician/ Geotechnical Engineer	



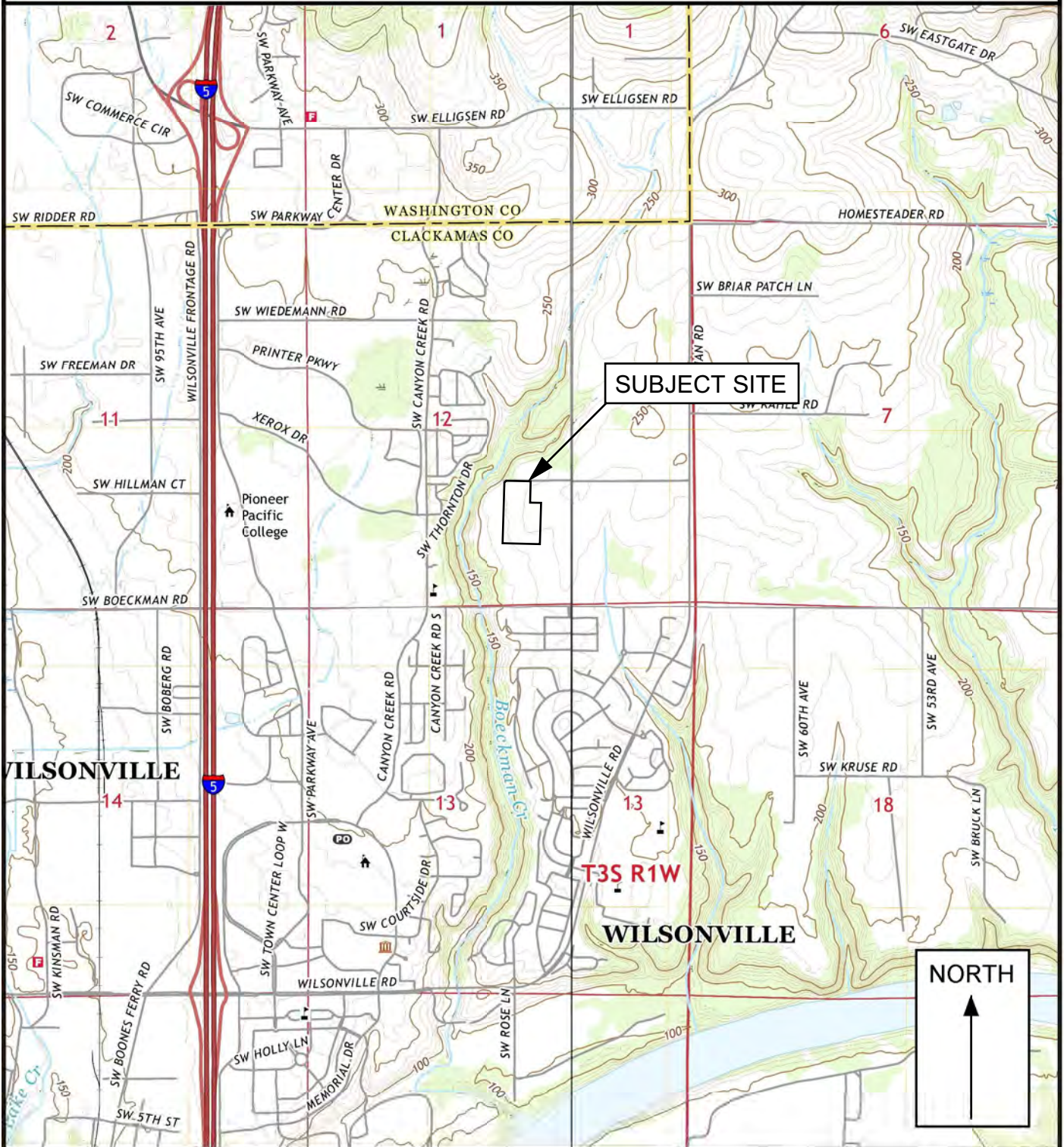
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FIGURES



14835 SW 72nd Avenue
 Portland, Oregon 97224
 Tel: (503) 598-8445

VICINITY MAP

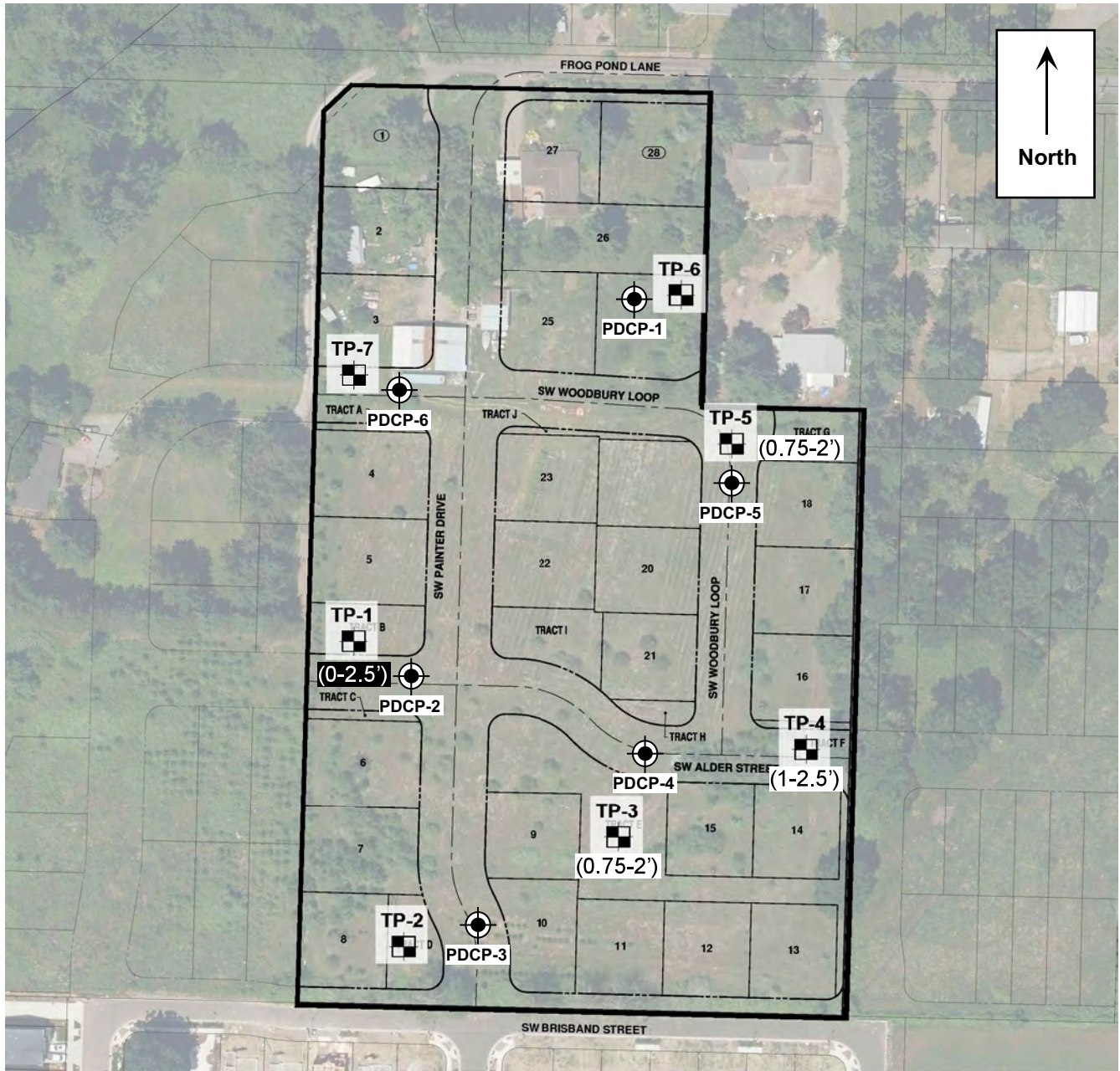


<p>Legend</p> <p>Base map: U.S. Geological Survey 7.5 minute Topographic Map Series, Canby, Oregon Quadrangle, and Sherwood, Oregon Quadrangle, 2020.</p>	<p>Approximate Scale 1 in = 2,000 feet</p>	<p>Date: 6/20/2024 Drawn by: EKR</p>
<p>Project: Ridgecrest Wilsonville, Oregon</p>	<p>Project No. 24-6557</p>	<p>FIGURE 1</p>



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SITE PLAN AND EXPLORATION LOCATIONS



Basemap provided by AKS Engineering & Forestry, LLC, dated 6/10/2024

Legend

TP-1



Test Pit Designation and Approximate Location

(0-2.5')

Depth of Undocumented Fill Encountered

(1-2.5')

Depth of Red Zone Encountered



PDCP-1

Penetrometer Designation and Approximate Location

Date: 6/20/2024

Drawn by: EKR

APPROPRIATE SCALE 1"=100'

Project: Residential
 5th Mile, Oregon

Project No. 24-004

FIGURE 2



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EXPLORATION LOGS



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TEST PIT LOG

Project: : i. l ecrest
 ~ ilson, ille, Ore! " n

Project No. 24-2113

Test Pit No. **TP-1**

Depth (ft)	Pocket Penetrometer (tons/ft²)	Sample Type	In-Situ Dry Density (lb/ft³)	Moisture Content (%)	Water Bearing "one	Material Description
0	~(1)					moderately organic SILT (OL-) , dark br< n, fine roots throughout, loose, <et (Topsoil Horizon Developed on Fill)
0.6	0(6)					Stiff to very stiff, SILT () , trace gravel, light br< n, micaceous, trace black staining, strong orange and gray mottling, with charcoal fra! ents, moist (Undocumented Fill)
0.6	~(6)					
1.0	~(1)					Stiff to very stiff, SILT () , li! ht br< n, mi\$aceous, subtle orange and gray "tting, m" ist (Willa ette For ation
1						
2						
3						
4						
5						Test Pit Terminated at 8 Feet.
6						Note: No seepage or groundwater encountered.
7						
8						
9						
10						
11						
12						
13						

)*+** D

100 to 1,000 g
bag Sample

5 Gal. bucket
ucket Sample

Shelby Tube Sample

Seepage

Water bearing Zone

Water Level at Abandonment

Date Excavated: 4/29/2024
)"! ! ed By: B. Rapp
 Surface Elevation: 219 Feet



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TEST PIT LOG

Project: Wilson, Oregon

Project No. 24-2113

Test Pit No. **TP-2**

Depth (ft)	Pocket Penetrometer (tons/ft²)	Sample Type	In-Situ Dry Density (lb/ft³)	Moisture Content (%)	Water Bearing Zone	Material Description
0-6	~6					Moderately to highly organic SILT (OL-), dark brown, fine roots throughout, loose, moist (Topsoil = ripon)
6-10	0(1)					Stiff to very stiff, SILT (S), trace clay, light brown, micaceous, trace black staining, strong orange and gray mottling, moist (Willamette Formation)
10-13	0(6)					Test Pit Terminated at 9 Feet. Note: No seepage or groundwater encountered.

Legend:

- 100 to 1,000 g Bag Sample
- 5 Gal. Bucket Sample
- Shelby Tube Sample
- Seepage
- Water Bearing Zone
- Water Level at Abandonment

Date Excavated: 4/29/2024
 Fielded By: B. Rapp
 Surface Elevation: 219 Feet



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TEST PIT LOG

Project: : i. l ecrest
 Wilson, ille, Ore!" n

Project No. 24-2113

Test Pit No. **TP-3**

Depth (ft)	Pocket Penetrometer (tons/ft²)	Sample Type	In-Situ Dry Density (lb/ft³)	Moisture Content (%)	Water Bearing "one	Material Description
0	1					Moderately to highly organic SILT (OL-), dark brown, fine roots throughout, 4 inch thick root mat, loose, moist (Topsoil Horizon)
0.5	6					Medium stiff, SILT (ML), light brown, micaceous, trace roots, low organic content, moist (Tilled Zone)
1	6					Stiff, SILT (MH), trace clay, light brown, micaceous, strong orange and gray mottling, trace black staining, moist (Willamette Formation)
2	6					
3	6					
4	6					
5	6					Test Pit Terminated at 10 Feet. Note: Groundwater seepage encountered at 9.5 feet. Discharge visually estimated at less than 1/4 gallon per minute.
6						
7						
8						
9						
10						

Legend:

- 100 to 1,000 g Bag Sample
- 5 Gal. Bucket Sample
- Shelby Tube Sample
- Seepage
- Water Bearing Zone
- Water Level at Abandonment

Date Excavated: 4/29/2024
 Fielded By: B. Rapp
 Surface Elevation: 227 Feet



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TEST PIT LOG

Project: Wilson, Oregon

Project No. 24-2113

Test Pit No. **TP-4**

Depth (ft)	Pocket Penetrometer (tons/ft²)	Sample Type	In-Situ Dry Density (lb/ft³)	Moisture Content (%)	Water Bearing Zone	Material Description
0	16					Moderately organic SILT (OL-), brown, 3 inch thick root mat, loose, moist (Topsoil = Oregon)
0.6	16					Medium stiff to stiff, clayey SILT (CL), light brown, micaceous, low organic content, subtle orange and gray mottling, trace fine roots, moist (Tilled Zone)
1.0	16					Stiff to very stiff, SILT (CL), trace clay, light brown, micaceous, trace black staining, strong orange and gray mottling, moist (Willamette Formation)
5.0						Stiff, SILT (CL), light brown, micaceous, strong orange and gray mottling, moist (Willamette Formation)
10.0						Test Pit Terminated at 10 Feet. Note: No seepage or groundwater encountered.

Legend:

- 100 to 1,000 g bag Sample
- 5 Gal. bucket Sample
- Shelby Tube Sample
- Seepage
- Water Bearing Zone
- Water Level at Abandonment

Date Excavated: 4/29/2024
 Field Notes By: B. Rapp
 Surface Elevation: 233 Feet



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 Tel: (503) 598-8445

TEST PIT LOG

Project: Wilson, Illinois, Oregon

Project No. 24-2113

Test Pit No. **TP-5**

Depth (ft)	Pocket Penetrometer (tons/ft²)	Sample Type	In-Situ Dry Density (lb/ft³)	Moisture Content (%)	Water Bearing Zone	Material Description
0	6					Moderately organic SILT (OL-), dark brown, fine roots throughout, 3 to 4 inch thick root mat, loose, moist (Topsoil Horizon)
0.5	6					Stiff, SILT (S), trace clay, light brown, very low organic content, micaceous, trace fine roots, moist (Tilled Zone)
1	1					Stiff to very stiff, SILT (S), light brown, micaceous, strong orange and gray mottling, trace black staining, moist (Willamette Formation)
1.5	1					
2						
2.5						
3						<p>Test Pit Terminated at 10 Feet.</p> <p>Note: No seepage or groundwater encountered.</p>
3.5						
4						
4.5						
5						
5.5						
6						
6.5						
7						
7.5						
8						
8.5						
9						
9.5						
10						

Legend:

- 100 to 1,000 g Bag Sample
- 5 Gal. Bucket Sample
- Shelby Tube Sample
- Seepage
- Water Bearing Zone
- Water Level at Abandonment

Date Excavated: 4/29/2024
 Fielded By: B. Rapp
 Surface Elevation: 233 Feet



14835 SW 72n A"en#e
 Portland, Oregon 97224
 Tel: (503) 598-8445

TEST PIT LOG

Project: Wilson, Oregon

Project No. 24-2113

Test Pit No. **TP-6**

Depth (ft)	Pocket Penetrometer (tons/ft²)	Sample Type	In-Situ Dry Density (lb/ft³)	Moisture Content (%)	Water Bearing (one)	Material Description
0	6					Highly organic SILT (OL-), dark brown, fine roots throughout, loose, moist (Topsoil = 0-1)
1	11					Stiff, SILT (CL), light brown, micaceous, strong orange and gray mottling throughout, moist (Willaette Foundation)
2	10					
3	10					
4						<p>Test Pit Terminated at 8 Feet.</p> <p>Note: No seepage or groundwater encountered.</p>
5						
6						
7						
8						
9						
10						
11						
12						
13						

Legend:

- 100 to 1,000 g Bag Sample
- 5 Gal. Bucket Sample
- Shelby Tube Sample
- Seepage
- Water Bearing Zone
- Water Level at Abandonment

Date Excavated: 4/29/2024
 Prepared By: B. Rapp
 Surface Elevation: 230 Feet



14835 SW 72n A"en#e
 Portland, Oregon 97224
 Tel: (503) 598-8445

TEST PIT LOG

Project: : i. l ecrest
 Wilson, ille, Ore! n

Project No. 24-2113

Test Pit No. **TP-7**

Depth (ft)	Pocket Penetrometer (tons/ft²)	Sample Type	In-Situ Dry Density (lb/ft³)	Moisture Content (%)	Water Bearing Zone	Material Description
0	&(1)					Highly organic SILT (OL-) , dark brown, fine roots throughout, 4 inch thick root mat, loose, moist (Topsoil Horizon)
1	&(1)					Stiff to very stiff, SILT () , light brown, micaceous, strong orange and gray mottling below 3 feet, moist (Willamette Formation)
2	&(1)					
3	&(1)					
4	&(1)					
5						Test Pit Terminated at 9 Feet. Note: No seepage or groundwater encountered.
6						
7						
8						
9						
10						
11						
12						
13						

)*+** 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: 4/29/2024
 Digged By: B. Rapp
 Surface Elevation: 219 Feet



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FLEXIBLE PAVEMENT DESIGN CALCULATIONS



PORTABLE DYNAMIC CONE PENETROMETER / CALIFORNIA BEARING RATIO CORELATION

Project: Ridgecrest
Project #: 24-6557
Test Designation: PDCP-1
Location: See Figure 2
Existing A/C Thickness: N/A
Existing B/C Thickness: N/A
Subgrade: SILT (ML)

Date: 4/29/2024
Recorded by: AWC

Shaft Length (in)	Start Depth (in)	Start Depth (mm)	Initial Reading (in)
36	0.0	0.0	8.6

Portable Dynamic Cone Penetrometer: KSE DCP K-100
 Model, ASTM D6951, 17.6 lbs Hammer

Blows	Depth (In)	Test Depth (ft)	Total Depth (mm)	mm/blow	Correlated CBR	Correlated PSI
1	11.2	0.93	284.48	66.0	2.7	4011
1	13.7	1.14	347.98	63.5	2.8	4191
1	16.8	1.40	426.72	78.7	2.2	3294
1	20.1	1.68	510.54	83.8	2.0	3071
1	23.0	1.92	584.20	73.7	2.4	3550
1	26.0	2.17	660.40	76.2	2.3	3417
1	28.4	2.37	721.36	61.0	2.9	4388
1	29.8	2.48	756.92	35.6	5.3	8024
1	31.0	2.58	787.40	30.5	6.4	9536
1	32.1	2.68	815.34	27.9	7.0	10512
1	33.2	2.77	843.28	27.9	7.0	10512
1	34.3	2.86	871.22	27.9	7.0	10512
1	35.4	2.95	899.16	27.9	7.0	10512
Average				52.4	3.5	5202



PORTABLE DYNAMIC CONE PENETROMETER / CALIFORNIA BEARING RATIO CORELATION

Project: Ridgecrest
Project #: 24-6557
Test Designation: PDCP-2
Location: See Figure 2
Existing A/C Thickness: N/A
Existing B/C Thickness: N/A
Subgrade: SILT (ML)

Date: 4/29/2024
Recorded by: AWC

Shaft Length (in)	Start Depth (in)	Start Depth (mm)	Initial Reading (in)
36	0.0	0.0	8.4

Portable Dynamic Cone Penetrometer: KSE DCP K-100
 Model, ASTM D6951, 17.6 lbs Hammer

Blows	Depth (In)	Test Depth (ft)	Total Depth (mm)	mm/blow	Correlated CBR	Correlated PSI
1	12.7	1.06	322.58	109.2	1.5	2283
1	15.7	1.31	398.78	76.2	2.3	3417
1	18.6	1.55	472.44	73.7	2.4	3550
1	20.6	1.72	523.24	50.8	3.6	5382
1	22.2	1.85	563.88	40.6	4.6	6909
1	24.0	2.00	609.60	45.7	4.0	6056
1	25.2	2.10	640.08	30.5	6.4	9536
1	26.7	2.23	678.18	38.1	5.0	7427
1	28.2	2.35	716.28	38.1	5.0	7427
1	29.7	2.48	754.38	38.1	5.0	7427
5	36.1	3.01	916.94	32.5	5.9	8871
Average				46.9	3.9	5884



PORTABLE DYNAMIC CONE PENETROMETER / CALIFORNIA BEARING RATIO CORELATION

Project: Ridgecrest
Project #: 24-6557
Test Designation: PDCP-3
Location: See Figure 2
Existing A/C Thickness: N/A
Existing B/C Thickness: N/A
Subgrade: SILT (ML)

Date: 4/29/2024
Recorded by: AWC

Shaft Length (in)	Start Depth (in)	Start Depth (mm)	Initial Reading (in)
36	0.0	0.0	7.4

Portable Dynamic Cone Penetrometer: KSE DCP K-100
 Model, ASTM D6951, 17.6 lbs Hammer

Blows	Depth (In)	Test Depth (ft)	Total Depth (mm)	mm/blow	Correlated CBR	Correlated PSI
1	11.7	0.98	297.18	109.2	1.5	2283
1	15.2	1.27	386.08	88.9	1.9	2875
1	17.2	1.43	436.88	50.8	3.6	5382
1	19.2	1.60	487.68	50.8	3.6	5382
1	21.2	1.77	538.48	50.8	3.6	5382
1	24.0	2.00	609.60	71.1	2.5	3692
1	26.1	2.18	662.94	53.3	3.4	5095
1	28.2	2.35	716.28	53.3	3.4	5095
1	30.3	2.53	769.62	53.3	3.4	5095
1	32.1	2.68	815.34	45.7	4.0	6056
1	33.5	2.79	850.90	35.6	5.3	8024
1	34.8	2.90	883.92	33.0	5.8	8719
1	35.9	2.99	911.86	27.9	7.0	10512
Average				55.7	3.2	4856



PORTABLE DYNAMIC CONE PENETROMETER / CALIFORNIA BEARING RATIO CORELATION

Project: Ridgecrest
Project #: 24-6557
Test Designation: PDCP-4
Location: See Figure 2
Existing A/C Thickness: N/A
Existing B/C Thickness: N/A
Subgrade: SILT (ML)

Date: 4/29/2024
Recorded by: AWC

Shaft Length (in)	Start Depth (in)	Start Depth (mm)	Initial Reading (in)
36	0.0	0.0	7.9

Portable Dynamic Cone Penetrometer: KSE DCP K-100
 Model, ASTM D6951, 17.6 lbs Hammer

Blows	Depth (In)	Test Depth (ft)	Total Depth (mm)	mm/blow	Correlated CBR	Correlated PSI
1	11.1	0.93	281.94	81.3	2.1	3179
1	13.9	1.16	353.06	71.1	2.5	3692
1	16.1	1.34	408.94	55.9	3.2	4837
1	18.1	1.51	459.74	50.8	3.6	5382
1	19.9	1.66	505.46	45.7	4.0	6056
1	21.9	1.83	556.26	50.8	3.6	5382
1	23.8	1.98	604.52	48.3	3.8	5700
1	25.9	2.16	657.86	53.3	3.4	5095
1	28.2	2.35	716.28	58.4	3.1	4602
1	30.2	2.52	767.08	50.8	3.6	5382
1	31.6	2.63	802.64	35.6	5.3	8024
1	33.3	2.78	845.82	43.2	4.3	6456
1	35.2	2.93	894.08	48.3	3.8	5700
1	37.3	3.11	947.42	53.3	3.4	5095
Average				53.3	3.4	5095



PORTABLE DYNAMIC CONE PENETROMETER / CALIFORNIA BEARING RATIO CORELATION

Project: Ridgecrest
Project #: 24-6557
Test Designation: PDCP-5
Location: See Figure 2
Existing A/C Thickness: N/A
Existing B/C Thickness: N/A
Subgrade: SILT (ML)

Date: 4/29/2024
Recorded by: AWC

Shaft Length (in)	Start Depth (in)	Start Depth (mm)	Initial Reading (in)
36	0.0	0.0	6.8

Portable Dynamic Cone Penetrometer: KSE DCP K-100
 Model, ASTM D6951, 17.6 lbs Hammer

Blows	Depth (In)	Test Depth (ft)	Total Depth (mm)	mm/blow	Correlated CBR	Correlated PSI
1	10.8	0.90	274.32	101.6	1.7	2476
1	13.6	1.13	345.44	71.1	2.5	3692
1	16.5	1.38	419.10	73.7	2.4	3550
1	25.8	2.15	655.32	236.2	0.6	962
1	28.4	2.37	721.36	66.0	2.7	4011
1	31.4	2.62	797.56	76.2	2.3	3417
1	33.6	2.80	853.44	55.9	3.2	4837
1	35.4	2.95	899.16	45.7	4.0	6056
Average				90.8	1.9	2808



PORTABLE DYNAMIC CONE PENETROMETER / CALIFORNIA BEARING RATIO CORELATION

Project: Ridgecrest
Project #: 24-6557
Test Designation: PDCP-4
Location: See Figure 2
Existing A/C Thickness: N/A
Existing B/C Thickness: N/A
Subgrade: SILT (ML)

Date: 4/29/2024
Recorded by: AWC

Shaft Length (in)	Start Depth (in)	Start Depth (mm)	Initial Reading (in)
36	0.0	0.0	2.4

Portable Dynamic Cone Penetrometer: KSE DCP K-100
 Model, ASTM D6951, 17.6 lbs Hammer

Blows	Depth (In)	Test Depth (ft)	Total Depth (mm)	mm/blow	Correlated CBR	Correlated PSI
1	10.6	0.88	269.24	208.3	0.7	1108
1	13.8	1.15	350.52	81.3	2.1	3179
1	17.5	1.46	444.50	94.0	1.8	2702
1	20.4	1.70	518.16	73.7	2.4	3550
1	23.2	1.93	589.28	71.1	2.5	3692
1	25.7	2.14	652.78	63.5	2.8	4191
1	27.7	2.31	703.58	50.8	3.6	5382
1	29.2	2.43	741.68	38.1	5.0	7427
1	30.5	2.54	774.70	33.0	5.8	8719
1	32.2	2.68	817.88	43.2	4.3	6456
1	34.2	2.85	868.68	50.8	3.6	5382
1	36.0	3.00	914.40	45.7	4.0	6056
Average				71.1	2.5	3692

=====

DARWin(tm) - Pavement Design

A Proprietary AASHTOWARE(tm)
Computer Software Product

Flexible Structural Design Module

Project Description

24-6557 - Ridgecrest - Interior Roadways

Flexible Structural Design Module Data

18-kip ESALs Over Initial Performance Period: 50,000
Initial Serviceability: 4.2
Terminal Serviceability: 2.5
Reliability Level (%): 85
Overall Standard Deviation: .5
Roadbed Soil Resilient Modulus (PSI): 3,692
Stage Construction: 1

Calculated Structural Number: 2.72

Specified Layer Design

Layer: 1
Material Description: New A/C
Structural Coefficient (Ai): .42
Drainage Coefficient (Mi): 1
Layer Thickness (Di) (in): 4.50
Calculated Layer SN: 1.89

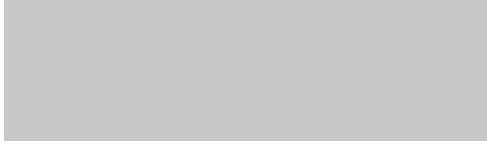
Layer: 2
Material Description: 3/4''-0 Aggregate Levelling C
Structural Coefficient (Ai): .1
Drainage Coefficient (Mi): 1
Layer Thickness (Di) (in): 2.00
Calculated Layer SN: .20

Layer: 3
Material Description: 1.5" Aggregate Base
Structural Coefficient (Ai): .1
Drainage Coefficient (Mi): 1
Layer Thickness (Di) (in): 8.00
Calculated Layer SN: .80

Total Thickness (in): 14.50
Total Calculated SN: 2.89

Exhibit I: Draft CC&Rs

AFTER RECORDING, RETURN TO:



**DECLARATION OF
COVENANTS, CONDITIONS, AND RESTRICTIONS FOR**



DRAFT

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DRAFT

**DECLARATION OF
COVENANTS, CONDITIONS, AND RESTRICTIONS
FOR MARION POINTE HOMEOWNERS ASSOCIATION**

THIS DECLARATION OF COVENANTS, CONDITIONS, AND RESTRICTIONS FOR [REDACTED] (“Declaration”) is made this ___ day of _____, 202__ by [REDACTED], an Oregon limited liability company, as the Declarant (“Declarant”).

WHEREAS, the Declarant is the Owner or controls all that certain real Property and improvements thereon located in the City of [REDACTED], [REDACTED] County, State of Oregon, described in the Plat of [REDACTED] incorporated herein by reference, and also referred to as [REDACTED] (“the Property”), recorded concurrently with this Declaration; and

WHEREAS, the Declarant intends to develop the Property as a residential subdivision, and to establish [REDACTED] as a Class I planned community under the Oregon Planned Community Act, the Declarant desires to impose these mutually beneficial covenants, conditions, restrictions, easements, Assessments and liens on the Property under a comprehensive General Plan of Development for the benefit of all of the Owners, Lots, and Commonly Maintained Property in the Property; and

WHEREAS, the Declarant has deemed it desirable for the preservation of the values and amenities in the Property to create the Association, to which will be delegated and assigned the powers and authority to own, maintain, and administer the Association, Commonly Maintained Property and facilities, and administer and enforce the covenants, conditions, and restrictions of this Declaration, and collect and disburse the Assessments and charges hereinafter created.

NOW THEREFORE, the Declarant declares that the Property shall be held, transferred, sold, conveyed and occupied subject to the Act, as may be amended from time to time, and subject to the following covenants, conditions, restrictions, easements, Assessments, charges and liens, as noted herein, which shall run with the land, and shall be binding upon all parties having or acquiring any right, title, or interest in the Property, or any part thereof, and shall inure to the benefit of the Association and of each Owner.

ARTICLE 1 - DEFINITIONS

- 1.1. “Act” shall mean the Oregon Planned Community Act Chapter 94.
- 1.2. “Architectural Review Committee” or “ARC” shall mean the Declarant until the Turnover Meeting, and thereafter shall refer to the Board unless the Board has appointed a separate body to carry out the functions of Article 6, in which case the “ARC” shall refer to said body.
- 1.3. “Articles” shall mean the Articles of Incorporation for the Marion Pointe Homeowners Association, which have been or shall be filed by the Declarant with the Oregon Corporation Division on or prior to conveyance of the first Lot to an Owner other than the Declarant.
- 1.4. “Assessments” shall mean all Assessments and other charges, fines and fees imposed by the Association on an Owner in accordance with this Declaration, the Bylaws, Rules and Regulations or Design Guidelines of the Association, or the provisions of the Act, including, without limitation, Common Assessments, Limited Assessments, Special Assessments, and Reserve Fund Assessments, as provided in Article 10 of this Declaration, or any declaration annexing additional property to the Association.
- 1.5. “Association” shall mean the Marion Pointe Homeowners Association, its successors and assigns.
- 1.6. “Board” or “Board of Directors” shall mean the Board of Directors of the Association.
- 1.7. “Bylaws” shall mean the Bylaws of the Association which have been or shall be recorded by the Declarant on or prior to conveyance of the first Lot to an Owner other than Declarant.
- 1.8. “Common Areas” shall mean and refer to any areas, including any improvements thereon, which are intended to be devoted to the common use and enjoyment of all of the Owners of all of the Lots. Common Areas shall be owned and maintained by the Association in a good and safe condition and in a manner consistent with that required by all government regulations and ordinances. Common Areas include:
 - 1.8.1 Tract “A”, which is for pedestrian access and is subject to a pedestrian access easement and public bicycle easement;
 - 1.8.2 Tract “B”, which is for pedestrian access and is subject to a pedestrian access easement and public bicycle easement;
 - 1.8.3 Tract “F”, which is for pedestrian access and is subject to a pedestrian access easement and public bicycle easement;

1.8.4 Tract "I", which is for the entry monument and landscaping, and is subject to a pedestrian access easement and public bicycle easement.

1.9. "City" shall mean City of [REDACTED].

1.10. "Commonly Maintained Property" shall mean all areas of the Property which are maintained by the Association, including: (i) Tracts, (ii) Common Areas; (iii) Limited Common Areas; (iv) such other Property or improvements that the Board may deem appropriate for the Association to maintain; and (v) any such other Property or improvements annexed to the Association and designated Commonly Maintained Property by the Declarant.

1.11. "Declarant" shall mean Tukwila Development, LLC, an Oregon limited liability company, successors or assigns, or any successor or assign to all remainder of its interests in the development of the Property. All successors Declarant shall have the same rights and interest as the initial Declarant. The "Declarant" shall not refer to any other subsequent purchaser of a Lot or Home.

1.12. "Declaration" shall mean the covenants, conditions, restrictions, and all other provisions set forth in this Declaration of Covenants, Conditions and Restrictions for the Property.

1.13. "Design Guidelines" shall mean the procedures and specific architectural rules, regulations and requirements as may be adopted from time to time by the ARC for review, and approval or denial of any design, installation and construction related to improvements proposed on the Property.

1.14. "Front Yard" shall mean all of the Lot, except that portion upon which Structures are located, that portion where driveways are located, and that portion within the fenced-in rear or side yards, if any, and includes any portion of the street right of way between the curb and the property line, with the exception of where sidewalks are located.

1.15. "Front Yard Maintained Lots" shall mean Lots 1 through 87 of the Plat, for which the Association provides Front Yard maintenance as set forth in the Declaration. Additional Front Yard Maintained Units may be annexed into the Association by future annexation declarations and plats.

1.16. "General Plan of Development" shall mean the Declarant's General Plan of Development of the Property, as approved by appropriate governmental agencies as required, as may be amended by the Declarant from time to time.

1.17. "Governing Documents" shall mean this Declaration, together with the Articles of Incorporation, Bylaws of the Association, Rules and Regulations, Design Guidelines, or other written instrument by which the Association has the authority to exercise any of the powers provided for in the Governing Documents or the Act to manage, maintain, or otherwise affect the Property under its jurisdiction, as may be amended from time to time.

1.29. “Termination Date” shall mean the date the Declarant’s Class B Membership is terminated as defined in Article 7.

1.30. “Tract” shall mean a parcel of land shown on the Plat and denoted by the word “Tract.” Tract refers to any Tract denoted on the Plat, as well as any Tracts annexed to the Association. The Declarant shall convey Tracts ‘A’ through ‘I’ to the Association. The Association shall assume the maintenance obligation of such Tracts for the benefit of the Owners.

1.31. “Turnover Meeting” shall be the meeting called by the Declarant for the purpose of turning over administrative control of the Association to the Class A Members, as described in Article 8 of this Declaration.

ARTICLE 2 - PROPERTY SUBJECT TO THIS DECLARATION

2.1 The Property. The Property which is and shall be held, transferred, sold, conveyed, and occupied subject to this Declaration is located in the City of ██████████ County, Oregon, in that certain Plat entitled ██████████ filed in the plat records of ██████████ County, Oregon, more particularly described as Lots 1 through 87 and Tracts “A” through “I” of ██████████.

2.2 Declarant’s Authority to Annex Additional Property. The Declarant may, at its sole option, annex additional Property into the Association to be subject to the terms hereof, to the same extent as if originally included herein, and subject such annexed Property to other terms, covenants, conditions, easements, restrictions and Assessments. The Declarant currently anticipates that there will be a total of approximately 87 Lots in the Property, including the Lots on the Plat, and Lots expected to be created and annexed into the Property, but this number may be adjusted at any time at the sole discretion of the Declarant.

2.2.1 Eligible Property. There is no limitation on the number of Lots which the Declarant may annex into the Property, or the right of the Declarant to annex Commonly Maintained Property, except as may be established by applicable ordinances, agreements, or land use approvals.

2.2.2 Consent or Joinder Not Required. No consent or joinder of any Class A Member as defined in this Declaration, or other party, except the record owner of the land being annexed, shall be necessary to affect any annexation made pursuant to this Article.

2.2.3 Declaration of Annexation. Annexation shall be evidenced by a written Declaration of Annexation executed by the Declarant, or in the case of an annexation by Board-action, by the Board, the Members, and the owners of the property being annexed. A Declaration of Annexation shall set forth the legal description of the property being annexed, and any additional covenants, conditions and restrictions to be applied to such annexed Property. Notwithstanding any provision apparently to the contrary, a Declaration of Annexation may:

2.2.3.1 establish new land classifications, and limitations, uses, restrictions, covenants and conditions with respect thereto, as the Declarant may deem to be appropriate for the development of the annexed Property;

2.2.3.2 with respect to existing land classifications, establish additional or different limitations, uses, restrictions, covenants, and conditions with respect thereto, as the Declarant may deem to be appropriate for the development of the annexed Property; or

2.2.3.3 contain provisions necessary or appropriate to comply with any condition, requirement, or imposition of any governmental or regulatory authority.

Without limitation of the meaning of the foregoing provisions of this Section 2.2.3, in any Declaration of Annexation, the Declarant may, but shall not be obligated to: (i) establish different types of Lots, and have particular rights and obligations pertain to different types of Lots; (ii) establish easements particular to different Lots; (iii) establish Assessments that pertain only to certain types of Lots; (iv) establish maintenance obligations of the Association, or of the Owners, that vary in accordance with different types of Lots or different Common Areas or Limited Common Areas; (v) establish insurance and casualty provisions that relate to certain types of Lots and not others; and (vi) establish Limited Common Areas that benefit particular Lots to the exclusion of other Lots, and provisions particular to such Limited Common Areas.

2.2.4 Voting Rights of Annexed Lots; Allocation of Assessments. Upon annexation, additional Lots so annexed shall be entitled to voting rights, and except as provided in Section 10.3 of this Declaration, said annexed Lots shall be responsible for payments or Assessments as required for that fiscal year. At the beginning of the next fiscal year, Assessments shall be reallocated and reapportioned equally based on the total number of Lots in the Association following such annexations.

2.2.5 No Duty to Annex. Nothing herein contained shall establish any duty or obligation on the part of the Declarant, or any Member, to annex any property into the Association, and no owner of property excluded from the Association shall have any right to have such property annexed thereto.

ARTICLE 3 - OWNERSHIP, EASEMENTS, AND MAINTENANCE RESPONSIBILITIES

3.1 Non-Severability. The interest of all of the Owners in the use and benefit of the Commonly Maintained Property shall be appurtenant to the Lot owned by the Owner. No Lot shall be conveyed by the Owner separately from the interest in the Commonly Maintained Property. There shall be no judicial partition of the Commonly Maintained Property. Each Owner, whether by deed, gift, devise, or operation of law, for the Owner's own 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 Commonly Maintained Property, and does further agree that no action for judicial partition shall be instituted, prosecuted, or reduced to judgment. The ownership interest in the Commonly Maintained Property and Lots described in this Article are subject to the easements granted and reserved in this Declaration and in the Plat. Each of the easements reserved or granted herein shall be deemed to be

established upon the recordation of this Declaration, and shall be deemed to be covenants running with the land for the use and benefit of the Owners and their Lots.

3.2 Ownership of Lots. Title to each Lot in the Property shall be conveyed in fee to an Owner. If more than one person or entity owns an undivided interest in the same Lot, such persons or entities shall constitute one Owner. No Lot shall be divided or combined with any other Lot without the prior written approval of the ARC, and of the Declarant, so long as the Declarant owns any Lot.

3.3 Ownership of Common Areas. Title to the Common Areas shall be conveyed to the Association prior to the Turnover Meeting. If following the Turnover Meeting, the Declarant has yet to convey to the Association Common Areas or Commonly Maintained Property intended to be owned by the Association, if requested by the Declarant, the Association shall accept ownership of said property. Moreover, the Association shall accept ownership whether the delay in conveyance was caused by a past error or omission caused by or due in part to the Declarant. The Declarant or the Board may convey title to any Common Areas, including Common Areas annexed to the Association in the future, to a city, county, or other governmental or regulatory authority.

3.4 Easements. Individual deeds to Lots may, but shall not be required to, set forth the easements specified in this Article.

3.4.1 Plat Easements. The Property is subject to the easements and rights of way shown or noted on the Plat.

3.4.2 Common Area Easements. Every Owner shall have a non-exclusive right and easement of use and enjoyment in and to the Common Areas, which shall be appurtenant to and shall pass with the title to every Lot.

3.4.3 Limited Common Area Easements. Lot Owners benefited by a Limited Common Area shall have a non-exclusive right and easement of use and enjoyment in and to the Limited Common Area which benefits their Lot, which shall be appurtenant to and shall pass with the title to their Lot.

3.4.4 Declarant's Easements. So long as the Declarant owns any Lot, the Declarant hereby reserves to itself, and for its successors and assigns, the following:

3.4.4.1 Easements in, on, over, under, and across the Commonly Maintained Property in order to carry out sales activities necessary or convenient for the sale of Lots;

3.4.4.2 Perpetual easements and rights-of-way for access in, on, over, under, and across the Commonly Maintained Property for construction, utilities, communication lines, drainage, and ingress and egress for the benefit of the Lots or other property owned by the Declarant;

3.4.4.3 The right and easement of ingress and egress in, on, over, under, and across the Commonly Maintained Property, 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 improvements on the Property or other real property owned by the Declarant, in such a way as to not unreasonably interfere with the occupancy, use, enjoyment, or access to an Owner's Lot by that Owner, or that Owner's family, tenants, guests, or invitees; and

3.4.4.4 The right and easement to install and maintain landscape improvements on all Lots and Commonly Maintained Property as the Declarant deems necessary for sales and marketing purposes. The Declarant is not obligated to provide any landscaping or improvements in the Property.

3.4.5 Association's Easements. There are hereby reserved and granted to the Association and its duly authorized agents and representatives, such non-exclusive easements in, on, over, under, and across the Property as are necessary to perform the duties and obligations of the Association set forth in the Governing Documents, as the same may be amended or supplemented.

3.4.6 Government and Regulatory Authority. There are hereby reserved and granted such non-exclusive easements in, on, over, under, and across the Commonly Maintained Property to all governmental and quasi-government entities, agencies, utilities, and their agents for the purposes of performing their duties in the Property.

3.4.7 Additional Easements. Notwithstanding anything expressed or implied to the contrary, this Declaration shall be subject to all easements granted by the Declarant for the installation and maintenance of utilities and drainage facilities necessary for the development of the Property. No structure, planting, or other material shall be placed or permitted to remain within any easement which may have an adverse effect on the easement's intended use, or damage or interfere with the installation or maintenance of utilities, or which may obstruct, retard, or change the direction or flow of water through drainage channels within any easement.

3.5 Maintenance Obligations. All landscaping and improvements on the Property shall be maintained and cared for in a manner consistent with the standard of design and quality as originally established by the Declarant or the ARC.

3.5.1 Association Maintenance Obligations. Except as otherwise provided in this Declaration, the Association, at the Association's expense, shall maintain, repair and replace any landscaping, improvements and utility installations in the Commonly Maintained Property, in a clean and attractive condition, and provide for all necessary services, and cause all acts to be done which may be necessary or proper to ensure the maintenance of the Commonly Maintained Property in a first-class condition. Notwithstanding, unless otherwise provided in this Declaration, the Association's maintenance obligations within Limited Common Areas shall be limited to maintenance obligations and shall thereby exclude repair and replacement obligations .

3.5.1.1 The Association shall be responsible for the maintenance of the stormwater infrastructure located within the easement described in instrument #2022 00047361, recorded in Marion County records in Reel 4765, Page 226.

3.5.1.2 Tracts 'A' through 'I' shall be maintained by the Association.

3.5.2 Owner Maintenance Obligations. Except as otherwise provided in this Declaration, the Owner, at the Owner's expense, shall maintain, repair and replace landscaping, improvements and utility installations on their respective Lot in a clean and attractive condition. Owners shall provide for all necessary services and cause all acts to be done which may be necessary or proper, to ensure the maintenance of their Lot in a first-class condition, and to not create a hazard of any kind. Such maintenance shall include, without limitation, painting or staining, and repair, replacement and care of roofs, gutters, downspouts, drainage systems, walkways, glass surfaces, and other exterior improvements, including improvements located outside of building envelopes, unless otherwise provided in this Declaration. In addition, each Owner shall keep shrubs, trees, grass, and plantings of every kind neatly trimmed, fertilized, and properly cultivated. Diseased or dead lawns, trees, ground cover or shrubs shall be promptly removed and replaced. Owners shall keep Lots free of trash, weeds, and other unsightly materials. Maintenance must be of an acceptable quality to the Board at all times, and Owners shall hold the Association harmless from any costs associated with Owner maintenance obligations.

3.5.2.3 Lots 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, and 49 are subject to a Public Access and Utility Easement as delineated on the recorded Plat. Each Owner of these Lots bears the responsibility for the maintenance and repair of all improvements located within the easement area located on their Lot. This includes, but is not limited to, asphalt and concrete surfaces, sewer laterals, storm laterals, water lines, electrical infrastructure, and landscaping. Owners of said lots may also privately agree to share costs for the maintenance and/or repair of the above-mentioned improvements. Lots 21 through 24 are encumbered by a thirty-foot (30.00') public Sanitary Sewer Easement (SSE). The City shall be responsible for the maintenance and/or repair of the sewer mainline, and manholes contained within the thirty-foot public Sanitary Sewer Easement (SSE).

3.5.2.4 Except as otherwise provided in this Declaration, Lot Owners shall preserve and maintain street trees, and planter strip landscaping and sidewalks along the frontage of their respective Lot, in good conditions at all times, and shall be solely responsible for all associated maintenance costs, including the cost of replacement if necessary. All replacement, including the replacement of landscaping and street trees, shall be approved by the ARC, and must be consistent with all government regulations and ordinances.

3.5.3 Right of Maintenance and Entry by Association. If an Owner fails to perform maintenance or repair which the Owner is obligated to perform pursuant to this Declaration, and if the Board determines, after notice and a hearing, given pursuant to the provisions of the Bylaws, that such maintenance or repair is necessary to preserve the attractiveness, quality, nature or value of the Property, the Board may cause such maintenance or repair in connection therewith to be performed, and may enter and perform work on any Lot whenever entry is necessary in connection with the performance of any maintenance or construction which the Board is authorized to undertake. 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. All maintenance or repairs performed on behalf of Lot Owners shall be at the Owner's sole expense.

3.6 Front Yard Maintained Lots. The Association shall maintain the Front Yards of all Front Yard Maintained Lots as defined herein.

3.6.1 Maintenance shall include lawn care, irrigation, plant pruning and bark mulch application. Except as otherwise provided by this Declaration, maintenance shall exclude retaining walls.

3.6.2 systemLandscaping in Front Yards, including related irrigation controllers, monitors, and equipment, belongs to the Association. The Association shall have an access easement and right of access to each such controller, monitor or other equipment. Irrigation settings shall be set by the Association, and no Owner shall tamper with or change such settings.

3.6.3 Each Owner shall be responsible for installation and maintenance of any landscaping within the private yards, if any.

3.6.4 An Owner may not change the Front Yard landscaping or install additional Front Yard landscaping without the prior written approval of the Board of Directors. Landscape irrigation controllers and settings shall be set by the Association and no Owner shall tamper with or change such controllers and settings. The Association shall have right of access to each control box.

ARTICLE 4 - LOTS AND HOMES

4.1 Residential Use. Lots shall be used for residential purposes only. Except with the consent of the Board, and except for certain family childcare activities as permitted by applicable state and federal law, no trade, craft, business, profession, commercial activity, or similar activity of any kind shall be conducted on any Lot, nor shall any goods, equipment, vehicles, materials, or supplies used in connection with any trade, service, or business, be kept or stored on any Lot. Nothing in this Section shall be deemed to prohibit: (a) activities relating to the sale of Homes or Lots; (b) the right of the Declarant or any contractor or home builder to construct a Home on any Lot, to store construction materials and equipment on such Lots in the normal course of construction, to use any Home as a sales office or model Home for purposes of sales, and to maintain a temporary construction office or trailer on-site; and (c) the right of the Owner of a Lot to maintain the Owner's professional or personal library, keep the Owner's personal business or professional records or accounts, handle the Owner's personal business or professional telephone calls, or confer with business or professional associates, clients, or customers in the Owner's Home, so long as such activity is not observable outside of the Home, does not materially increase parking or vehicular traffic, and is not in violation of applicable government regulations and ordinances. The Board shall not approve commercial activities otherwise prohibited by this Section, unless the Board determines that only normal residential activities would be observable outside of the Home, that parking

and vehicular traffic would not be materially increased, and that the activities would not be in violation of applicable government regulations and ordinances.

4.2 ARC Approval. Except as provided for in Section 4.3 of this Declaration, no construction, reconstruction, installation, or exterior alterations shall occur on any Lot unless the approval of the ARC is first obtained pursuant to Article 6.

4.3 Declarant's Design, Construction and Installation. All construction designs, materials, and product specifications proposed by the Declarant may vary from any or all requirements specified in this Article, and all construction performed by, or contracted for by the Declarant, shall be presumed to have satisfied all requirements of this Article, or have been granted a variance thereto.

4.4 Minimum Design Guidelines. The following restrictions are minimum standards applicable to all Lots:

4.4.1 Height. No Home shall exceed two (2) stories in height above the ground, excluding basement and garage levels.

4.4.2 Garages. A garage must be constructed on each Lot. Garages may be used as a sales office by the Declarant, but must be converted to a garage before permanent occupancy. Garages are to be maintained primarily for the storage of automobiles or similar vehicles. No garage may be permanently enclosed or otherwise used for habitation, nor may any garage door be removed except when necessary to repair or replace a garage door with the same type of garage door.

4.4.3 Security Doors/Windows and Screen Doors. No security doors, or exterior security bars or devices on windows and doors shall be installed without the prior written approval of the ARC. If the ARC approves any type of security door or window security, such approval shall encourage or require a single style for all Homes having requested said approval, so as to maintain a uniform and aesthetic appearance on the Property.

4.5 Completion of Construction. The construction of any building on any Lot, including painting and all exterior finish, so as to present a finished appearance when viewed from any angle, shall be completed within six (6) months from the beginning of the construction. In the event of undue hardship due to weather conditions, this provision may be extended for a reasonable length of time upon written approval from the ARC. During the construction period, the Lot and building area shall be kept in a workmanlike order, reasonably clean and free of litter, and shall be equipped with an on-site garbage disposal facility. If construction has not commenced within three (3) months after the project has been approved by the ARC, the approval shall expire, unless the Owner has applied for and received an extension of time approval from the ARC.

4.6 Completion of Landscaping. All landscape on all Lots shall be completed no later than six (6) months after the date of first occupancy. No Owner may connect to any Association maintained or Association-owned irrigation system. Landscape installation on Lots by Owners is subject to approval by the ARC, as provided in Article 6.

4.7 Rental of Homes. An Owner shall be entitled to rent the Owner's Home if:

4.7.1 Written Rental Agreements Required. There is a written rental or lease agreement specifying that: (i) the tenant shall be subject to all provisions of the Governing Documents; and (ii) failure to comply with any provision of the Governing Documents shall constitute a default under the rental or lease agreement.

4.7.2 Tenant Must Be Given Documents. The Owner must give each tenant a copy of the Declaration, Bylaws, Rules and Regulations, and Design Guidelines.

4.7.3 Owner Responsibility. The Owner shall be solely responsible for any violations by a tenant, and shall be solely responsible for either correcting or eliminating such violations, or ensuring the tenant corrects or eliminates such violations.

4.8 Animals. No animals, livestock or poultry of any kind shall be raised, bred, kept or permitted on any Lot, other than a reasonable number of domestic household pets, which are not kept, bred or raised for commercial purposes, and which are reasonably controlled, so as not to be a nuisance. Any inconvenience, damage or unpleasantness caused by such pets, including noise, shall be the responsibility of the respective Owners thereof. No dogs shall be permitted to roam the Property unattended, and all dogs shall be kept on a leash while outside of a Lot. It is the sole responsibility of any pet owner to immediately cleanup any pet waste deposited upon any Lot, or Commonly Maintained Property. An Owner may be required to remove a pet from the Property upon the Owner's receipt of a third notice in writing from the Board documenting the Owner's violation of any rule, regulation or restriction governing pets in the Property. A "reasonable number of domestic household pets" and the definition of "domestic household pets" shall be subject to Rules and Regulations adopted by the Board at its sole discretion.

4.9 Sound and Noise. No sound or noise shall be emitted from any portion of the home or lot that disrupts the quiet enjoyment of any other member of the Association. Specific rules and regulations may be adopted by the Board at its sole discretion, with the following minimum guidelines included:

4.10

4.9.1 No pet shall emit more than ten (10) continuous minutes or twenty-five (25) minutes of intermittent sound within any one (1) hour period.

4.9.2 Music or any other sound shall not exceed 55 decibels for measured from the boundary of the property at any time.

4.9.3 10PM to 7AM are the "quiet" period. No noise or sound may exceed 45 decibels during these hours for any reason.

4.9.4 The Board at its discretion, may levy the expense for noise monitoring against the owner's lot as a Special Assessment.

4.11

4.12 Nuisance. No noxious, harmful, or offensive activities shall be carried out upon the Property, nor shall anything be done or placed on the Property which interferes with, or jeopardizes the enjoyment of, or which is a source of annoyance to, the other Owners or Occupants.

4.13 Parking. Parking of boats, trailers, commercial vehicles, mobile homes, campers, or other recreational vehicles or equipment, regardless of weight, shall never be allowed on Commonly Maintained Property, and shall only be allowed on a Lot when parked within a fenced area subject to approval by the ARC. Parking shall only be permitted in garages or driveways if no portion of the vehicle overhangs any streets, sidewalks, or pathways. In addition, parking of vehicles is prohibited anywhere on the Property which is designated as a “no parking” area. Vehicles parked in said “no parking” areas are subject to being towed, and the Board at its discretion, may levy the expense of towing such vehicle against the Owner’s Lot as a Special Assessment.

4.14 Vehicles in Disrepair. No Owner shall permit any vehicle which is not currently licensed, or is in an extreme state of disrepair, to be abandoned or to remain parked upon any Lot for a period in excess of forty-eight (48) hours, or on Commonly Maintained Property for any length of time. A vehicle shall be deemed in an “extreme state of disrepair” when the Board reasonably determines that its presence offends Owners or Occupants. Should any Owner fail to remove such vehicle within five (5) business days following the date on which the Board mailed the notice of the violation to the Owner, the Association may have the vehicle removed from the Property and charge the expense of such removal to the Owner. All oil or grease on any streets, sidewalks, driveways, or Commonly Maintained Property shall be cleaned up immediately by the Owner.

4.15 Signs. No signs shall be erected or maintained on any Lot, except that a maximum of one (1) “For Sale” sign placed by the Owner, the Declarant, 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, subject to the provisions of Section 9.4 of this Declaration, and applicable government regulations and ordinances. The restrictions contained in this Section shall not prohibit the temporary placement of political signs on any Lot by the Owner or Occupant, or construction and marketing related signage by the Declarant or its contractors, subject to compliance with applicable government regulations and ordinances. No signs of any kind, other than the Declarant’s marketing signs, or any Association signs as approved by the Board for the common good of the Community, will be allowed on Commonly Maintained Property. The foregoing restrictions shall not be deemed to prohibit the display of the flag of the United States by an Owner or Occupant of a Lot, if the flag is displayed on the Lot in a manner consistent with federal flag display law, 4 U.S.C. § 1 *et seq.*, as well as any other applicable state and Federal regulations. The Board may adopt reasonable Rules and Regulations consistent with all applicable laws and regulations, regarding the placement and manner of display of such flags, and the location and size of the flagpoles.

4.16 Rubbish and Trash. The Property shall not be used as a dumping ground for trash or rubbish of any kind. All garbage and other waste shall be kept out of the public view, and in appropriate containers for timely and proper disposal. Yard

rakings, dirt and other material resulting from landscaping or related work shall not be dumped onto streets, Commonly Maintained Property, or any other Lots. Each Owner is responsible for trash disposal and shall remove individual trash containers from the public view within twelve (12) hours of collection. Trash and storage containers shall not be visible from any adjacent street or neighboring Lot, and shall not be allowed to emit any odors, or attract insects or rodents. Should any Owner fail to remove any trash, rubbish, garbage, yard rakings or any such materials from any Lots, streets, or Commonly Maintained Property, where deposited by the Owner, within five (5) business days following the date on which the notice of violation is mailed to the Owner by the Board, the Association may have such materials removed, and levy the expense of such removal against the Owner's Lot as a Special Assessment.

4.17 Fences and Hedges. No fences or boundary hedges shall be installed without the prior written approval of the ARC. Further, all fences must satisfy all government regulations and ordinances. Except as otherwise provided in this Declaration, any fencing installed on any Lot either by the Lot Owner, or by the Declarant, will be the Lot Owner's maintenance responsibility. All fences shall be maintained in a condition acceptable to the Board and the ARC. If stained, stained fencing shall be maintained using Sherwin Williams Exterior Semi-Transparent Stain in SW 3542 Charwood, or a matching stain color from another manufacturer. Any variance to approved designs and materials shall be "equal to, or better than", and will require ARC approval.

4.18 Basketball Equipment; Service Facilities; Utilities. All basketball hoops and backboards shall be portable, and shall not be affixed to a garage, Home, stationary post, or other structure on a Home. When not in use, basketball hoops and backboards shall not be visible from streets or Lots. Service facilities, e.g., garbage containers, clotheslines, air conditioning compressors, heat pumps etc., shall be screened such that they are not visible from a street or a neighboring Lot at any time. The exterior location of service facilities shall be approved in advance by the ARC. Said locations must take into consideration visual and auditory impacts on adjacent Homes.

4.19 Antennas and Satellite Dishes; Solar Collectors. No Owner may erect or maintain a television or radio receiving or transmitting antenna, or similar implement or apparatus, or solar panels upon any Lot, unless such apparatus is erected and maintained in such a way that it is screened from public view along the street directly in front (and from the side, in the case of a corner Lot) of the Home erected on such Lot. No such apparatus shall be erected without the prior written consent of the ARC. Exterior satellite dishes with a surface diameter of eighteen (18) inches or less may be placed on any Lot, subject to ARC approval, so long as they are installed above the first story (at least eight feet off the ground), and fully below the highest peak of the roof, in the least noticeable location as possible, such as at the eaves or another break in the natural lines of the Home. The ARC shall have the absolute authority to determine whether the placement of the satellite dish or solar panels fits these standards. The authority of the ARC with respect to antennae and satellite dishes shall be subject to any regulations issued by the Federal Communications Commission ("FCC"), or any other applicable governmental or regulatory authority.

4.20 Window Coverings. Window coverings shall not be visible from any public or private street at any time after occupancy of the Home, other than commercially produced curtains, shutters, drapes or blinds or non-commercially produced window coverings of a quality comparable to commercially produced products.

4.21 Heating and Air Conditioning. Exterior air conditioning or heating units shall be approved in advance by the ARC, including, without limitation, the location on the Home. Window mounted air conditioners shall not be allowed.

4.22 Exterior Lighting or Noisemaking Devices. Except with the consent of the ARC, no exterior lighting or noisemaking devices shall be installed or maintained on any Lot, other than security and fire alarms. Area, flood, and ornamental lighting must be covered or shielded, or directed downward, so as to maintain lighting of a subdued nature. False alarms of security and fire systems will not be allowed to repeatedly occur. Seasonal holiday lighting and decorations are permissible if consistent with any applicable Rules and Regulations, and if removed within thirty (30) calendar days after the celebrated holiday.

4.23 Detached Building. No permanent or removable detached accessory buildings, including, but not limited to, storage buildings, greenhouses, children's playhouses and similar structures, shall be built without the prior written consent of the ARC, and may not be built in any front yards adjacent to a street. All such detached buildings must satisfy all government regulations and ordinances. Except as permitted by state and federal law, no detached buildings shall be used as additional living space, and none shall contain any plumbing. Permanent detached buildings shall be of a one (1) story design, shall not exceed ten and one-half feet (10.5') in height above the existing grade of the Lot, and shall be constructed of wood, with roofing and siding colors, styles, and finishes that match that of the exterior materials of the Home. Metal sheds are prohibited. Heavy duty rubber or unbreakable plastic or composite storage sheds that are portable and temporary in nature, may be approved by the ARC provided that they are: (i) a maximum of ten and one-half feet (10.5') in height above the existing grade of the Lot; (ii) screened or hidden from the view of neighboring Homes and Commonly Maintained Property; and (iii) aesthetically harmonious with the Home in terms of colors, textures and finishes, e.g., pebbled/muted/dull.

4.24 Damage or Destruction to Home 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 (iii) in the immediately preceding sentence must be performed so that the improvements are in substantially the same condition in which they existed prior to the damage, subject to current government regulations and ordinances. The Owner must commence such work within sixty (60) calendar days after the damage occurs, and must complete the work within six (6) months thereafter. In the event the Owner fails to commence such work within the six (6)-month period, the Association shall have the right, but not the obligation, to commence such work on behalf of, and for the sole account of, the Owner.

4.25 Grades, Slopes, and Drainage. There shall be no modification to or interference with the established grading and drainage patterns or other systems in, on, over, under, and across any Lot or Commonly Maintained Property, unless properly engineered and permitted by all applicable governmental or regulatory authorities, if required, and as approved by the ARC. Notwithstanding the foregoing, however, any permitted modifications to the established grading and drainage patterns may not adversely affect other Lots, Commonly Maintained Property, or real property on or outside of the Property. The term “established grading and drainage patterns” shall mean any Declarant installed walls, grading, drainage systems, conduits, and inlets and outlets, designed and constructed on the Property.

4.26 Environmental Issues. Each Owner acknowledges that the Property includes environmentally sensitive areas and that there are common stormwater drainage systems in the Property. The environmentally sensitive areas and stormwater drainage systems shall be kept free from debris. Each Owner and the Association shall comply with all government regulations and ordinances regarding the storage, disposal or release of hazardous materials. No dumping, spilling, releasing, or washing of hazardous materials, waste, or debris shall be done or permitted by any Owner or the Association in the Property. All Owners and the Association shall dispose of any hazardous materials off site.

4.27 Security. The Association is not responsible for the security of the Property or any Homes. Owners are exclusively responsible for security of their Lots and Homes.

4.28 Association Rules and Regulations. Except as otherwise provided in this Declaration, subject to compliance with the Act, the Board, from time to time, may adopt, modify, or revoke Rules and Regulations governing the conduct of persons and the operation or use of the Property, as it may deem necessary or appropriate in order to ensure the peaceful and orderly use and enjoyment of the Property. A copy of any Rules and Regulations, upon adoption, amendment, modification or revocation thereof, shall be promptly delivered by the Board 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.

4.29 City and County Ordinances and Regulations. The standards and restrictions of this Article 4 shall be the minimum required. To the extent the ordinances and regulations of the City of Woodburn or Marion County, Oregon are more restrictive, the ordinances and regulations of the City of Woodburn or Marion County, Oregon, or any jurisdiction the Property may be annexed into, shall prevail.

4.30 Violation. The Association may impose a fine, charge or penalty for any violation of the Governing Documents after having given notice of the violation and an opportunity for a hearing as provided in Article 4 of the Bylaws. Additionally, the Association may seek injunctions or other equitable relief, or may file an action for money damages owing from such violations.

4.31 Application of Restrictions. Nothing in the Governing Documents shall:

4.31.1 prohibit an Owner from displaying a portable, removable United States flag in a respectful manner, consistent with Title 36 U.S.C. Chapter 10, on such Owner's Lot; or

4.31.2 prohibit an Owner from installing or using an electric vehicle charging station on such Owner's Lot in compliance with O.R.S. §94.762; or

4.31.3 prohibit an Owner from installing or using solar energy systems, as defined in O.R.S. §94.778, as a source for heating, cooling, or electrical energy on such Owner's Lot; or

4.31.4 prohibit an Owner from displaying signs in a manner provided under Section 4.12 of this Declaration, on such Owner's Lot.

Notwithstanding, the Owner shall first comply with the application and review procedures set forth in Article 6 of this Declaration, and in the Design Guidelines, if adopted by the ARC.

ARTICLE 5 - COMMONLY MAINTAINED PROPERTY

5.1. Use of Commonly Maintained Property. Use of Commonly Maintained Property is subject to the provisions of this Declaration, the Bylaws, Articles, Rules and Regulations, and Design Guidelines. There shall be no obstruction on any part of the Commonly Maintained Property. Nothing shall be stored or kept on Commonly Maintained Property without the prior written consent of the Board, which may be withheld at the Board's sole discretion. No alterations or additions to the Commonly Maintained Property shall be permitted without the prior written approval of the Board, which may be withheld at the Board's sole discretion. Nothing shall be stored or kept in Homes, or on Lots or Commonly Maintained Property which will increase the rate of insurance for the Commonly Maintained Property without the prior written consent of the Board, which may be withheld at the Board's sole discretion.

5.2. Alterations to Commonly Maintained Property. The Declarant does not choose to limit its rights to add improvements to the Commonly Maintained Property, and nothing in this Declaration shall be deemed to require The Declarant to build any improvement on the Commonly Maintained Property. After all the Lots have been conveyed to Owners other than the Declarant, or Declarant's successors or assigns, the Association may construct, reconstruct, or alter any improvement situated upon the Commonly Maintained Property as allowed hereunder. A proposal for any construction of, or alteration, maintenance or repair to Commonly Maintained Property may be made at any meeting of the Association. A proposal may be adopted by the Board, subject to the limitations contained in the Bylaws and the Declaration.

5.3. Funding for Commonly Maintained Property. Expenditures for alterations, deferred maintenance, or repairs to an existing capital improvement, including improvements on Commonly Maintained Property, for which a reserve Assessment has been collected by the Association shall be made from the Reserve Fund(s). As provided in Article 10 of this Declaration, if sufficient funds are not available from the Operating Fund or Reserve Fund, by a vote of approval of a majority of the Board, the

Board may levy a Special Assessment to make repairs or renovations to Commonly Maintained Property.

5.4. Condemnation of Commonly Maintained Property. If all or any portion of the Commonly Maintained Property 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 which at the Board's discretion is in the best interest of the Association. The Association shall represent the interest of all Owners in any negotiation, suit, action, or settlement in connection with such matters.

5.5. Damage or Destruction of Commonly Maintained Property. In the event any portion of Commonly Maintained Property is damaged or destroyed by an Owner, or any of the Owner's Occupants, guests, tenants, licensees, agents, pets or members of the Owner's family, in a manner that would subject such Owner to liability for such damage under Oregon law, such Owner does hereby authorize the Association to repair such damage. The Association shall repair the damage and restore the area in a workmanlike manner as originally constructed or installed, or as may be modified or altered subsequently by the Association at the discretion of the Board. The reasonable cost necessary for such repairs shall become a Special Assessment levied upon the Lot of the Owner who caused, or is responsible for such damage.

ARTICLE 6 - ARCHITECTURAL REVIEW COMMITTEE

6.1 Architectural Review Committee (ARC). It is the intent and purpose of this Declaration and the ARC to ensure the quality of workmanship and materials, and to ensure the harmony of exterior design with existing improvements and landscaping. All construction must comply with all government regulations and ordinances. The ARC is not responsible for determining compliance with structural and building codes, solar ordinances, zoning codes, or other government regulations and ordinances. Compliance with the foregoing is the sole responsibility of the Lot Owner. Except as provided for in Section 6.2 of this Declaration, in all cases in which ARC approval is required by this Declaration, the provisions of this Article shall apply.

6.2 Declarant's Design, Construction, and Installation. All original construction designs, materials, and product specifications by the Declarant may vary from any or all requirements specified in this Declaration, and all construction performed by, or contracted for by the Declarant, shall be presumed to have satisfied all the requirements of this Declaration, or have been granted a variance thereto.

6.3 ARC Appointment and Removal. Until the Turnover Meeting, the Declarant reserves the right to appoint all the members of the ARC, including all replacements thereto, and to appoint as few as one (1) member to the ARC. Following the Turnover Meeting, the ARC shall consist of no fewer than three (3) members and no more than five (5) members, as the Board may appoint from time to time. The terms of office for each member of the ARC shall be for one (1) year, unless the Board directors serve as the members of the ARC, in which event, their terms as ARC members shall be the same as their terms as Board directors. The Board may appoint any or all of its directors to the ARC, and there shall be no requirement for non-Board directors to

be appointed to the ARC. The Board may appoint one or more members to the ARC who are not Owners, but who have special expertise regarding the matters which come before the ARC. At the sole discretion of the Board, such non-Owner members of the ARC may be paid, and that cost reimbursed by ARC applicants or the Association.

6.4 ARC Review. The ARC shall consider and act upon the proposals and plans submitted for ARC approval pursuant to this Article. No improvement shall be commenced, erected, placed, or altered on any Lot until the proposed improvement has been approved by the ARC. Said improvements include, but are not limited to, Homes, exterior remodeling or improvements, storage shelters, greenhouses, swimming pools, spas, patios, fencing, landscaping, or basketball hoops. The procedure and specific requirements for ARC review may be set forth in Design Guidelines as provided in Section 6.5 of this Declaration.

6.5 ARC Design Guidelines. The ARC, from time to time, at its sole discretion, may adopt Design Guidelines. The Design Guidelines shall interpret and implement the provisions of this Declaration for procedure and specific requirements for all design, installation and construction, including, but not limited to, design, location, quantity, nature, shape, height, materials, colors, and similar features which may be used in the Property; provided, however, that the Design Guidelines shall not be in derogation of the minimum standards established by this Declaration.

6.6 ARC 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 members of the ARC.

6.7 ARC Decision. All ARC decisions shall be in writing. The ARC shall render its decision with respect to an application within sixty (60) calendar days after it has received all materials required to review the application and the application has been deemed complete by the ARC.. In the event the ARC fails to render its decision within sixty (60) calendar days of receiving all materials required to review the application, the application shall automatically be deemed approved. Provided, however, the ARC shall be entitled to request one or more extension(s) of time, not to exceed forty-five (45) calendar days. In the event of such extension request(s), if the ARC does not render its decision within fifteen (15) calendar days after the expiration of the extension(s), 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.

6.8 ARC Approval. Approval by the ARC does not imply government approval; it is the Lot Owner's sole responsibility to obtain all applicable government permits and approvals. The ARC's approval of any application shall automatically expire three (3) months after issuance, unless construction or installation of the work has been commenced, or the Lot Owner has applied for and received an extension of time approval from the ARC.

6.9 ARC Discretion. The ARC may, at its sole discretion, withhold consent to any proposed application if the ARC finds the application would be inappropriate for

a particular Lot, or incompatible with the Design Guidelines that the ARC intends for the Property. Consideration such as siting or location on the Lot, quantity, shape, size, color, design, height, solar access, or other effects on the enjoyment of other Lots or Commonly Maintained Property, and any other factors which the ARC reasonably believes to be relevant, may be taken into consideration by the ARC in determining whether or not to consent to any proposed work. At its discretion, the ARC may choose to conditionally approval applications, thereby granting approval if the applicant satisfies certain conditions pertaining thereto. In reviewing applications in which the ARC recognizes a possible visual or auditory impact to other Homes, Lots, streets, or Commonly Maintained Property, the ARC may impose conditions including, but not limited to, screening, fencing, vegetative buffers, reduced heights, etc. At its discretion, the ARC may require additional conditions, so as to ensure quality of workmanship and materials, and to ensure the harmony of the exterior design with existing improvements and landscaping.

6.10 Nonwaiver. Consent by the ARC to any matter proposed to it, or within its jurisdiction, shall not be deemed to constitute a precedent or waiver impairing the ARC's right to withhold approval of any similar matter thereafter proposed, or submitted to it for consent.

6.11 Appeal. If any Lot Owner perceives an action of the ARC to have an adverse impact on their property, said Lot Owner may appeal such action to the Board. Appeals shall be made in writing within ten (10) business days of the ARC's action, and shall contain specific objections or mitigating circumstances justifying the appeal. If the Board is already acting as the ARC, the appeal shall be treated as a request for a rehearing, but in such case, the Board must host a meeting and receive evidence and argument. A final, conclusive decision shall be made by the Board within fifteen (15) business days after receipt of such notification of appeal. The determination of the Board shall be final.

6.12 ARC Inspections. The ARC shall, from time to time, inspect 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 send the Owner a notice of noncompliance, specifying the particulars of the noncompliance, and requiring the Owner to take the necessary action to bring the work into compliance.

6.13 Determination of Noncompliance. If the ARC sends an Owner a notice of noncompliance as provided in Section 6.12 of this Declaration, and if the Owner fails to diligently commence to remedy such noncompliance in accordance with the provisions of the notice of noncompliance, then at the expiration of the seventh (7th) day from the date of such notice of noncompliance, the ARC shall provide the Owner a notice of a hearing to consider the Owner's continuing noncompliance. The hearing shall be set not more than thirty (30) business days from the date of the notice of the hearing. 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 correcting it. The ARC shall then require the Owner to remedy or remove the noncompliance within a period of not more than ten (10) business days from the date of the hearing. If the Owner does not comply with the ARC's ruling within such period, or within any

extension of such period as the ARC, at its discretion, may grant, the Association may: (a) remove the noncomplying improvement; (b) remedy the noncompliance; or (c) file suit to compel compliance. The costs of such action shall be assessed as a Special Assessment, as provided for in Section 10.7.2 of this Declaration, against the Owner and the Owner's Lot, including all attorneys' fees and other costs expended and incurred to enforce compliance before suit or action is filed, and at trial, or on any appeal or review of therefrom.

6.14 Liability. Neither the ARC, the Board, their agents, nor any member thereof, shall be liable to any Owner, Occupant, or builder for any damage, loss, or prejudice suffered, or claimed to be suffered, arising from any action by the ARC or a member thereof, or failure of the ARC or a member thereof, provided only that the ARC or the member thereof, has acted in good faith in accordance with the actual knowledge possessed by the ARC or the member thereof.

6.15 Estoppel Certificate. Within twenty-one (21) calendar days after a written request is delivered to the ARC by an Owner, and upon payment to the ARC of a reasonable fee fixed by the ARC to cover costs, the ARC shall provide such Owner with a certificate acknowledged and executed by the ARC, certifying with respect to any Lot owned by the Owner, that as of the date thereof either: (a) all improvements made on, done, upon, or within such Lot by the Owner comply with this Declaration, any Rules and Regulations adopted by the Board, and any Design Guidelines adopted by the ARC; 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 the Owner's heirs, devisees, successors, and assigns shall be entitled to rely on the certificate with respect to the matters set forth. The certificate shall be conclusive as between the Declarant, the ARC, the Association, all of the Owners, and all such persons deriving an interest through any of them.

ARTICLE 7 – MARION POINTE HOMEOWNERS ASSOCIATION

7.1 Membership. Each Owner shall be a mandatory 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 automatically transfers membership in the Association. Without any other act or acknowledgement, Occupants and Owners shall be governed and controlled by the Governing Documents, and any amendments thereof.

7.2 Voting Rights. The Association shall have two (2) classes of voting Members.

7.2.1 Class A. Class A Members shall be all of the Owners of Lots other than the Declarant. 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.

7.2.2 Class B. The Class B Member shall be the 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 (the "Termination Date") upon the earlier of:

7.2.2.1 The date that Lots representing one hundred percent (100%) of Lots anticipated to be created and subject to this Declaration, including any anticipated annexation of additional Lots, have been conveyed to Owners other than the Declarant, or Declarant's successors or assigns; or

7.2.2.2 At such earlier time as the Declarant may elect in writing to terminate Class B membership.

After the Termination Date, each Owner, including the 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.

7.3 Proxy. Each Owner may cast the Owner's vote in person, by a proxy executed by the Owner, or by written ballot. An Owner may not revoke a proxy given pursuant to this Article, except by actual notice or 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.

7.4 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, a tie vote does not constitute a majority or approval of any motion or resolution. 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 will fractional voting be allowed. Fractional or split votes shall be disregarded, except for purposes of determining a quorum.

ARTICLE 8 - DECLARANT CONTROL

8.1 Declarant Control Period; Interim Board. The Declarant hereby reserves administrative control of the Association. As provided in Article 8 of the Bylaws, until the Turnover Meeting, the Declarant, in its sole discretion, shall have the right to appoint and remove directors of the interim Board, which shall manage the affairs of the Association, and which shall be vested with all the powers and rights of the Board.

8.2 Turnover Meeting. Within ninety (90) days after the Termination Date, the Declarant shall call for the Turnover Meeting as provided in Section 3.3 of the Bylaws, for the purpose of turning over administrative control of the Association to the Class A Members.

ARTICLE 9 - DECLARANT'S SPECIAL RIGHTS

9.1 General. The Declarant is undertaking the work of developing Lots and improvements on the Property. The completion of the General Plan of Development

and the marketing and sale of the Lots is essential to the establishment and welfare of the Property as a residential community. Until all of the Homes on all of the Lots on the Property have been constructed, fully completed and sold, the Declarant shall have the special rights set forth in this Article 9.

9.2 Declarant's Easements. The Declarant has reserved easements over the Property as more fully described in Section 3.4 of this Declaration.

9.3 Construction by Declarant. All construction by the Declarant is presumed to have been approved by the ARC, and to satisfy any and all standards of this Declaration and the Association.

9.4 Marketing Rights. The Declarant shall have the right to maintain a construction trailer, sales office, and model Homes on one or more of the Lots which the Declarant may or may not own, to be staffed by the employees of the Declarant, or any licensed real estate sales agents. The Declarant and prospective purchasers and their agents shall have the right to use and occupy the construction trailer, sales office, and model Homes during reasonable hours any day of the week. The Declarant may maintain a reasonable number of "For Sale" signs at reasonable locations on the Property, including, without limitation, the Commonly Maintained Property.

9.5 Appearance and Design of the Property. The Declarant shall not be prevented from changing the exterior appearance of the Commonly Maintained Property, including the landscaping or any other matter directly or indirectly connected with the General Plan of Development, in any manner deemed desirable by the Declarant, provided that the Declarant obtains governmental consents required by law. The construction and material standards of Article 4 notwithstanding, the Declarant may change exterior and interior designs of Homes and Lots from its initial plans and the provisions in this Declaration, without notice. This may include, but is not limited to, designs, colors, and type of materials, provided the Declarant obtains any governmental consent required by law.

ARTICLE 10 - FUNDS AND ASSESSMENTS

10.1 Purpose of Assessments. The Assessments levied by the Association shall be used exclusively to promote the recreation, health, safety, and welfare of the Owners and Occupants and for the improvement, operation and maintenance of areas of the Property outlined herein as the maintenance responsibility of the Association, including administrative costs and insurance for the Association.

10.2 Basis and Commencement of Assessments. The Board shall have the authority to levy Assessments against all Lots which have closed escrow to an Owner, other than the Declarant, or the Declarant's successors or assigns, whether or not such Lots have been improved with a substantially completed Home. Assessments for all Lots conveyed by the Declarant to Owner, either by deed or land sale contract, shall begin on the day of the recording of the deed or land sale contract conveying or contracting to convey the Lot to the new Owner.

10.3 Types of Accounts. Assessments may be a combination of: (i) operating funds collected for current maintenance and operation, which shall be deposited into the Operating Fund; and (ii) reserve funds collected for replacement and deferred maintenance of capital improvements, which shall be deposited into the Reserve Fund, all as more particularly described below.

10.3.1 Operating Fund. Those portions of Assessments collected by the Association for current maintenance and operation expenses will be deposited in a separate bank account to be known as the “Operating Fund”.

10.3.2 Reserve Fund. If any, those portions of the Assessments collected by the Association as reserves for the replacement and deferred maintenance of capital improvements for which the Association is responsible pursuant to this Declaration, and which will normally require replacement in more than one (1) and less than thirty (30) years, will be deposited in a separate bank account to be known as the “Reserve Fund”. The Reserve Fund need not include those items that could reasonably be funded from the Operating Fund, or for which one or more Owner is responsible for maintenance and replacement under the provisions of this Declaration or the Bylaws. Withdrawal of funds from the Association’s Reserve Fund, if any, shall require written, or digital approval of two (2) directors.

10.4 Types and Frequency of Assessments. Types of Assessments include, but are not limited to, Common Assessments, Limited Assessments, Special Assessments, and Reserve Fund Assessments. Common, Limited and Reserve Fund Assessments for each fiscal year shall be established when the Board approves the current budget for that fiscal year. If the Board has yet to establish the budget for that fiscal year, the Common, Limited and Reserve Fund Assessments established in the prior year shall continue until new Assessments have been established. The fiscal year shall be the calendar year unless another year is adopted by the Board. Common, Special and Reserve Fund Assessments shall be levied on a monthly basis unless otherwise adopted by the Board. Special Assessments may be levied at any time, as provided in Section 10.7 of this Declaration.

10.5 Common Assessments. Common expenses include expenditures made by or financial liabilities incurred by the Association for the benefit of all of the Owners of the Lots. The Board shall have the authority to levy said common expenses against all Lots equally as Common Assessments (“Common Assessments”).

10.6 Limited Assessments. Limited expenses include expenditures made by or financial liabilities incurred by the Association for the benefit of fewer than all of the Owners of the Lots, including allocations to the Reserve Fund(s) pertaining thereto. The Board shall have the authority to levy said limited expenses against only such benefited Lots as Limited Assessments (“Limited Assessments”). Limited Assessments include, but are not limited to, expenditures made by or financial liabilities incurred by the Association in the management, improvement, maintenance or operation of the following:

10.6.1 All costs, expenses and expenditures made by or financial liabilities incurred by the Association, including legal fees, for corrective action performed pursuant to this Declaration or the Bylaws that is required as a result of the willful or

negligent actions or omissions of the Owner or the Owner's tenants, family members, guests, contractors, or invitees, or for a common expense or any part of a common expense that benefits a particular Lot or Lots rather than all the Lots, as identified in this Declaration or as otherwise determined in the sole discretion of the Board.

10.6.2 All costs, expenses and expenditures made by or financial liabilities incurred by the Association in connection with the maintenance, repair and replacement of a Limited Common Area, including all reserve assessments pertaining thereto, shall be assessed as Limited Assessments equally among the Owners who have the exclusive use and enjoyment of the Limited Common Area, unless the costs are attributable to the willful or negligent actions or omissions of a particular Owner or a particular Owner's tenants, family members, guests, contractors, or invitees, in which case the costs shall be assessed to that particular Owner as a Limited Assessment.

10.6.3 All costs, expenses and expenditures made by or financial liabilities incurred by the Association in connection with the maintenance of Front Yard Maintained Lots, including all Reserve Assessments pertaining thereto, shall be assessed equally among the Owners of the Front Yard Maintained Lots as Limited Assessments, unless the costs are attributable to the willful or negligent actions or omissions of a particular Owner or a particular Owner's tenants, family members, guests, contractors, or invitees, in which case the costs shall be assessed to that particular Owner as a Limited Assessment.

10.7 Special Assessments. The Board shall have the authority to levy during any fiscal year Special Assessments ("Special Assessments") against a Lot or all of the Lots in the following manner for the following purposes:

10.7.1 Deficits in Operating Budget. To correct a deficit in the operating budget, by a vote of approval of a majority of the Board;

10.7.2 Breach of Documents. To collect amounts due to the Association from an Owner for breach of the Owner's obligations under the Declaration, Bylaws, Rules and Regulations, or Design Guidelines, by a vote of approval of a majority of the Board, including all costs and expenses incurred by the Association, including legal fees, for corrective action performed pursuant to this Declaration or the Bylaws that is required as a result of the willful or negligent actions or omissions of the Owner or the Owner's tenants, family members, guests, contractors, invitees, or pets.

10.7.3 Repairs. To make repairs or renovations to the Commonly Maintained Property if sufficient funds are not available from the Operating Fund or Reserve Fund, by a vote of approval of a majority of the Board; or

10.7.4 Capital Improvements. To make capital acquisitions, additions or improvements, by a vote of approval of at least seventy-five percent (75%) of all votes allocated to the Lots.

Special Assessments may be deposited into the Operating Fund or the Reserve Fund, at the discretion of the Board.

10.8 Reserve Fund Assessments. For purposes of funding the Reserve Fund, the Declarant initially, and thereafter the Association may impose an Assessment to be called the “Reserve Fund Assessment” against each Lot, which Assessment shall be spread equally over the Lots, except as otherwise provided in Section 10.6 and 10.7 of this Declaration. The Reserve Fund Assessment, if any, shall be based on the reserve study, and updates thereof, described in Section 10.8.4, or other sources of reliable information. Nothing herein shall limit the authority of the Declarant or the Association to establish other separate and unrelated Reserve Funds that are funded by Assessments for reserves, that are in addition to the Reserve Fund, or that relate only to a particular type or category of Lot. The Reserve Fund shall be kept separate from other funds and may be used only for the purposes for which reserves have been established as specified in this Article.

10.8.1 The Declarant may elect to defer payment of the Reserve Fund Assessments due on the Lots it owns until the date of the conveyance of the Lot to an Owner. However, the Declarant may not defer such payment beyond the date of the Turnover Meeting or, if no Turnover Meeting is held, beyond the date the Owners assume administrative control of the Association. The books and records of the Association shall reflect the amount owing from the Declarant for all Reserve Fund Assessments.

10.8.2 After the Turnover Meeting, or at such time as the Owners have assumed administrative control of the Association, if the Board has adopted a resolution, which may be an annual continuing resolution authorizing the borrowing of funds, the Board may borrow funds from the Reserve Fund to meet high seasonal demands on the Operating Fund, or to meet other unexpected increases in expenses. Such funds borrowed from the Reserve Fund shall be repaid by levying Common, Limited or Special Assessments against the Lots. Not later than the adoption of the budget for the following year, the Board shall adopt by resolution a written payment plan providing for the repayment of the borrowed funds within a reasonable period.

10.8.3 Reserve Study. If the Declarant elects to establish a Reserve Fund, the Declarant initially, and thereafter the Board, shall on behalf of the Association, annually conduct a reserve study, or review and update an existing reserve study, of the Commonly Maintained Property to determine the requirements of the Reserve Fund described in Sections 10.3.2 and 10.8 of this Declaration. The reserve study shall include:

10.8.3.1 The starting balance of the reserve account for the current fiscal year;

10.8.3.2 Identify all items for which reserves are or will be established;

10.8.3.3 The estimated remaining useful life of each item for which reserves are or will be established, as of the date of the study or review;

10.8.3.4 The estimated cost of maintenance, repair and replacement at the end of the useful life of each item for which reserves are, or will be established;

10.8.3.5 The rate of inflation during the current fiscal year;

10.8.3.6 Returns on any invested reserves or investments; and

10.8.3.7 A thirty (30) year plan with regular and adequate contributions, adjusted by estimated inflation and interest earned on the Reserve Fund, to meet the maintenance, repair, and replacement schedule.

10.8.4 After reviewing a Reserve Study, or update thereto, the Board, at its discretion, without any action by Owners, may adjust the amount of the Reserve Fund Assessments, and may provide for other reserve items to be included within the reserve studies and Reserve Fund Assessments. Provided, however, unless the Board determines that the Reserve Fund will be adequately funded for the following year, the Board or the Owners may not vote to eliminate funding a Reserve Fund required under this Article, Provided, however, following the Turnover Meeting, on an annual basis, The Board, with the approval of all of the Owners, may elect to not fund a Reserve Fund for the following year. The amount of the Reserve Fund, if any, shall constitute an asset of the Association and shall not be refunded or distributed to any Owner.

10.9 Working Capital Fund. The Declarant shall establish in the name of the Association a working capital fund for the Association. At the time of closing of each Sale of each Lot, the purchaser of such Lot shall make a contribution of \$250.00 to the working capital fund. Amounts paid into this fund shall not be considered advance payments of the Assessments described in Section 10.4 through 10.8. The working capital fund shall be available for unexpected expenses, budget shortfalls, and capital expenditures, to be used at the discretion of the Declarant prior to the Turnover Meeting, and at the discretion the Board after the Turnover Meeting, or at such time as the Board has assumed administrative control of the Association.

10.10 Budget. Regardless of the number of Members or the amount of assets of the Association, each year the Board shall prepare, approve, and make available to each Member a pro forma operating statement (budget) containing:

10.10.1 the estimated revenue and expenses on an accrual basis;

10.10.2 the amount of the total cash reserves of the Association currently available for replacement or major repair of the Common Maintained Property, and for contingencies;

10.10.3 an itemized estimate for the remaining life of, and the methods of funding to defray repair, replacement or additions to major components of the Common Maintained Property; and

10.10.4 a general statement setting forth the procedures used by the Board in the calculation and establishment of reserves to defray the costs and repair, replacement, or additions to major components of the Common Maintained Property.

The budget shall be approved by the Board no later than the date on which Assessments are scheduled to commence. Thereafter, the Board shall annually prepare and approve the budget and distribute a summary thereof to each Member, together with written notice of the amount of Assessments to be levied against the Owner's Lot, not less than thirty (30) days and not more than ninety (90) days prior to the beginning of the fiscal year. Should the Board fail to adopt an updated annual budget, the previously approved budget shall remain in effect.

10.11 Default in Payment of Assessments; Enforcement of Liens.

10.11.1 Personal Obligation. All Assessments properly imposed under this Declaration or the Bylaws shall be the joint and several personal obligations of all of the Owner(s) of the Lot(s) to which such Assessments pertain. In a voluntary conveyance, the grantees shall be jointly and severally liable with the grantor(s) for all Association Assessments imposed through the recording date of the instrument affecting 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.

10.11.2 Association Lien. If at any time, any Assessment, or installment thereof, is delinquent, the Association, by and through its Board or any management agent, may file a notice of lien in the deed records of Marion County, Oregon, against the Lot in respect to which the delinquency pertains. Once filed, such lien shall accumulate all future Assessments or installments, interest, late fees, penalties, fines, attorneys' fees (whether or not suitor action is instituted), and other appropriate costs properly chargeable to an Owner by the Association, until such amounts are fully paid. The provisions regarding the attachment, notice, recordation, duration, and foreclosure of liens established on real property under applicable state and federal law, as the same may be amended, shall apply to the Association's lien. The lien shall be foreclosed in accordance with the provisions regarding the foreclosure of liens under applicable state and federal law, except that the Association's lien may be continued in force for a period not to exceed six (6) years from the date the Assessment is due. The lien of the Association shall be superior to all other liens and encumbrances except property taxes and Assessments, and any first mortgage or deed of trust.

10.11.3 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, Rules and Regulations, or Design Guidelines. The adoption of such impositions shall be communicated to all Owners in writing not less than thirty (30) calendar days before the effective date, by a notice mailed to the Assessment billing addresses of such Owners. Such impositions shall be considered Assessments which are lienable and collectible in the same manner as any other Assessments. Provided, however, no fine or penalty for violation of this Declaration, the Bylaws, Rules and Regulations or Design Guidelines (other than late fees, fines, or interest arising from an Owner's failure to pay Assessments), may be imposed against an Owner or their Lot until such Owner is given an opportunity for a hearing as provided in Section 4.14 of the Bylaws.

10.11.4 Acceleration of Assessments. In the event an Owner is delinquent in payment of any Assessment or installment on any Assessment, the Association, upon not less than ten (10) days written notice to the Owner, may accelerate the due date of the full Common, Limited or Reserve Fund Assessments for that fiscal year, and all future installments of any Special Assessments.

10.11.5 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 their Lot, or shall be entitled to the appointment of a receiver. Any default by the Owner in any provisions of the Declaration or Bylaws shall be deemed to be a default by the Owner of any mortgage to which the Owner is party, or to which the Lot is subject.

10.12 Covenants to Pay and Funds Held. The Declarant, on behalf of each and every subsequent Owner of any Lot, covenants and agrees that each Lot will pay the Association the Assessments and any additional charges levied pursuant to this Article 10. The Assessments collected by the Association shall be held by the Association for and on behalf of each Owner, and shall be used solely for the operation, care, and maintenance of the Property as provided by this Declaration. Upon the Sale or transfer of any Lot, the Owner's interest in the funds shall be deemed automatically transferred to the successor in interest of such Owner, and is nonrefundable.

ARTICLE 11 - GENERAL PROVISIONS

11.1 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 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 their 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 which 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 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 which created said liability.

11.2 Enforcement; Attorneys' Fees. The Association, Owners, or any mortgagee on any Lot shall have the right to enforce all of the covenants, conditions, restrictions, reservations, easements, liens, charges and Assessments now, or hereinafter imposed, by any of the provisions of this Declaration, as may pertain 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, restriction, reservation, easement, lien, charge or Assessment herein contained shall in no event be deemed a waiver of their right to do so thereafter. The prevailing party in any such action or appeal, or review therefrom, shall be entitled to recovery of reasonable attorneys' fees and costs.

11.3 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.

11.4 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, amendments which do not constitute rescission or termination of the Declaration may be adopted as provided in Section 11.5 and 11.6 below.

11.5 Amendment.

11.5.1 The Declarant hereby reserves all rights to amend the Governing Documents as allowed under this Declaration, the Governing Documents, and the Act, including but not limited to the right to record corrective amendments or supplements to the Governing Documents, without providing notice to or gaining approval from Lot Owners.

11.5.2 Prior to the Sale of any Lot to an Owner other than the Declarant's successors or assigns, the Declarant reserves the right to amend this Declaration, the Bylaws, and Articles of Incorporation without providing notice to or gaining approval from any Class A Member.

11.5.3 Following the Sale of any Lot to an owner other than the Declarant's successors or assigns, the Declarant may not amend the Declaration to increase the scope of the Declarant's special rights reserved in this Declaration without the approval of Owners representing seventy-five percent (75%) of all votes allocated to the Lots, not including the Declarant. Further, prior to the Turnover Meeting, any amendment to this Declaration requires the consent of the Declarant.

11.5.4 Following the Turnover Meeting, in accordance with applicable state and federal law, a majority of the Board or at least thirty percent (30%) of the Owners, may propose an amendment to this Declaration; such amendment requires approval from not less than seventy-five percent (75%) the total votes in the Association. Provided, however, no amendment limiting or affecting the Declarant's special rights provided in Article 9, may be adopted without the express written consent of the Declarant, or its successors and assigns. No amendment of this Declaration shall affect an amendment of the Bylaws or Articles without compliance with the provisions of such documents. All amendments must be executed, certified, and recorded as provided by law.

11.5.5 Unilateral Amendment by Declarant. Pursuant to applicable state and federal law, the 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, the United States Department of Veterans Affairs, any department, bureau, board, commission, or agency of the United States, 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.

11.5.6 No amendment of this Declaration shall affect an amendment of the Bylaws or Articles without compliance with the provisions of such documents. All amendments must be executed, certified, and recorded as provided by law.

11.5.7 No amendment may restrict, eliminate, or otherwise modify any of the Declarant's special rights or other rights of Declarant reserved herein, which have not previously expired, without the consent of the Declarant.

11.6 Release of Right of Control. The Declarant may give up its right of control in writing at any time by notice to the Association.

11.7 Personal Pronouns and Pluralization of Terms. All personal pronouns used in this Declaration, whether used in the masculine, feminine, or neuter gender, shall include all other genders; the singular shall apply to the plural and vice versa.

11.8 Resolution of Document Conflicts. In the event of a conflict among any of the provisions in the documents governing the Association, such conflict shall be resolved by looking to the following documents in the order shown below:

1. Declaration of Covenants, Conditions, and Restrictions;
2. Articles of Incorporation;
3. Bylaws;
4. Rules and Regulations;
5. Design Guidelines.

[SIGNATURES AND NOTARIAL ACKNOWLEDGEMENTS ON FOLLOWING PAGE]

Exhibit J: Annexation Legal Description and Exhibit



EXHIBIT A

City Annexation

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 northeast corner of the plat "Morgan Farm No. 2", Plat No. 4610, Clackamas County Plat Records, also being on the north right-of-way line of SW Brisbane Street (11.00 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 $88^{\circ}36'21''$ West 30.96 feet to the southeast corner of Document Number 2003-083133, Clackamas County Deed Records, and the Point of Beginning; thence continuing along said north right-of-way line and said city limits line, North $88^{\circ}36'21''$ West 508.13 feet to the southwest corner of said Deed; thence along the west line of said Deed and said city limits line, North $01^{\circ}40'32''$ East 832.32 feet to the south corner of Book 191, Page 426, Clackamas County Deed Records; thence along the southeast line of said Deed and said city limits line, North $46^{\circ}32'34''$ East 36.85 feet to the south right-of-way line of SW Frog Pond Lane (16.50 feet from centerline); thence along said south right-of-way line and said city limits line, South $88^{\circ}35'24''$ East 331.55 feet to the northwest corner of Document Number 2018-028153, Clackamas County Deed Records; thence leaving said city limits line along the west line of said Deed, South $01^{\circ}38'13''$ West 290.58 feet to the southwest corner of said Deed; thence along the south line of said Deed, South $88^{\circ}35'24''$ East 150.00 feet to the southeast corner of said Deed, also being on the east line of said Document Number 2003-083133; thence along said east line, South $01^{\circ}38'13''$ West 567.59 feet to the Point of Beginning.

The above described tract of land contains 9.00 acres, more or less.

6/3/2024

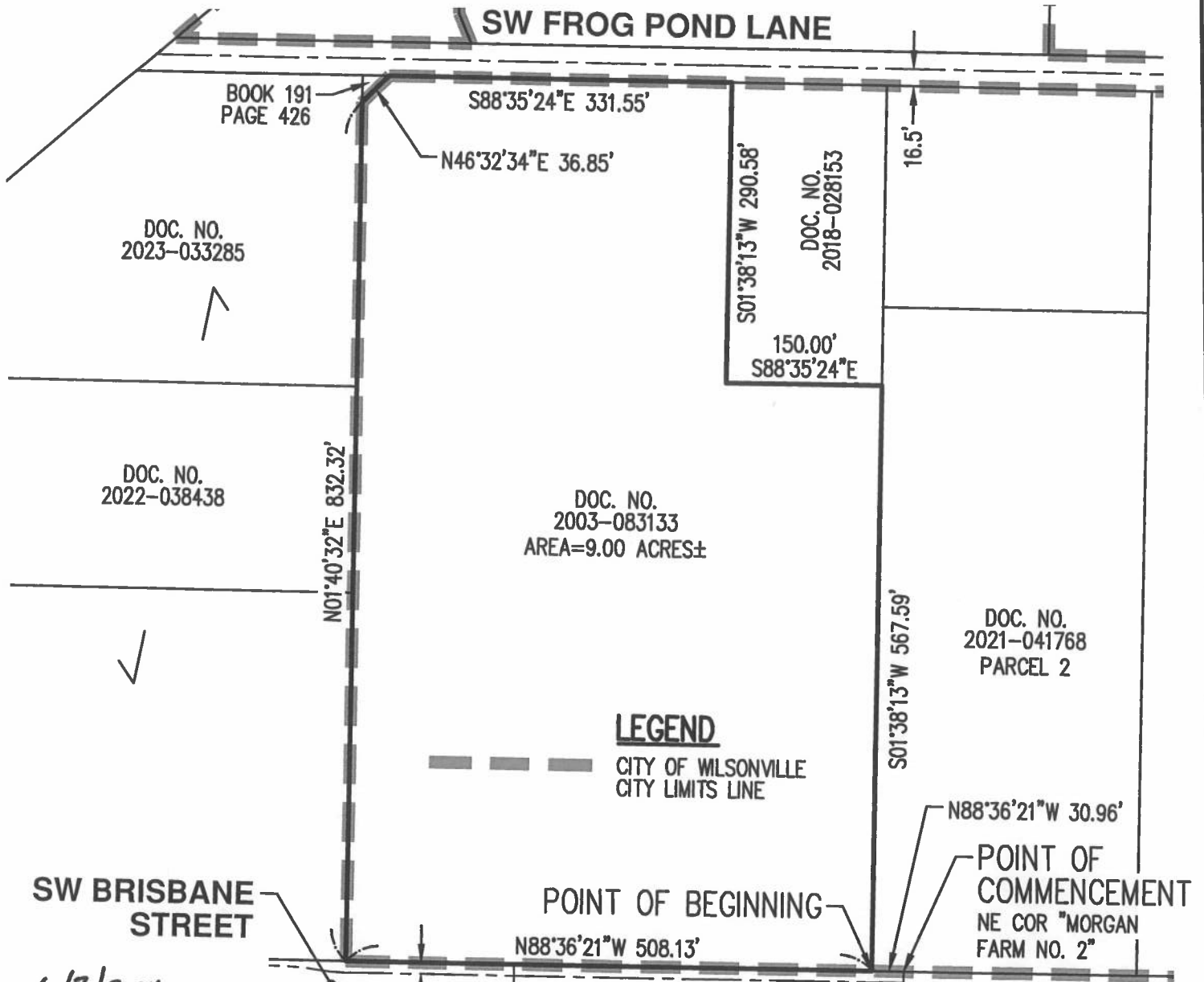
REGISTERED
PROFESSIONAL
LAND SURVEYOR

OREGON
JANUARY 12, 2016
MICHAEL S. KALINA
89558PLS

RENEWS: 6/30/25

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



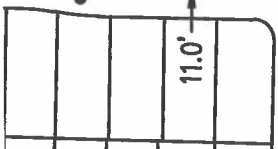
6/3/2024

REGISTERED
PROFESSIONAL
LAND SURVEYOR

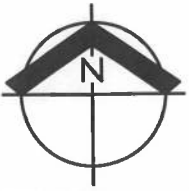
Michael S. Kalina

OREGON
JANUARY 12, 2016
MICHAEL S. KALINA
89558PLS

RENEWS: 6/30/25



SCALE: 1"=150 FEET



AKS ENGINEERING & FORESTRY, LLC
12965 SW HERMAN RD, STE 100
TUALATIN, OR 97062
503.563.6151 WWW.AKS-ENG.COM



CITY ANNEXATION

TL 31W12D 01100	
DRWN: WCB	CHKD: MSK
AKS JOB: 10411	EXHIBIT B

Petitions and
Exhibit K: Annexation County Certifications

Λ

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 #	% SEC	T	R		
<i>Maureen O'Hagan</i>	Maureen O'Hagan Trust	X			7400 SW Frog Pond Lane Wilsonville, OR 97070	1100	12	3S	1W	323	6-10-24
<i>Eric J. Moreland</i>	Eric J. Moreland		X		7400 SW Frog Pond Lane Wilsonville, OR 97070						6-12-2024

- * PO - Property Owner
- RV - Registered Voter
- OV - Property Owner & Registered Voter

CERTIFICATION OF REGISTERED VOTERS

I hereby certify that the attached petition contains the names of at least 50% of the electors registered in the territory proposed for annexation as described in the attached petition.

NAME: Tiffany Clark
TITLE: Elections Analyst / Deputy Clerk
DEPARTMENT: Elections
COUNTY OF: Clackamas
DATE: 6-14-2024



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 31W12D) 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: Mary Neigel
TITLE: GIS Cartographer 2
DEPARTMENT: Assessment + Tax
COUNTY OF: Clackamas
DATE: 06.11.24



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: Mary Neigel
TITLE: GIS Cartographer 2
DEPARTMENT: Assessment & Tax
COUNTY OF: Clackamas
DATE: 06.11.24



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.

700
4.07 Ac.
7315

3.00 Ac.
7115
7117

N01°03'30"E
231.53'

S01°42'32"W
355.85'

S 89°

SOUTH
198'

275.37'

12.20'

S88°35'30"E

554.86'

344.59'

354.59'

S 89° 45' 30" W

(HOUSE)

33'

1100
9.00 Ac.
7400

1101
1.00 Ac.
7320

1200
1.25 Ac.
7252

1400
5.00 Ac.
7130

3500
0.01 Ac.

331.7'

150'

253.62'

507.7'

254.08'

290.4'

290.4'

214.5'

214.5'

150'

1300
3.75 Ac.

302.18 +/-

20' EASEMENT

BLA 2022-017577

S1°40'32"W
832.32'

858'

355.73'

70'

507.7'

S88°36'00"E

508.13'

SW

28'

253.62'

254.08'

BRISBAND

STRE

DR.

DR.



700
4.07 Ac.
7315

3.00 Ac.
7115
7117

N01°03'30"E
231.53'

355.85'
S01°42'32"W

S 89°
198'

275.37'

S88°35'30"E 554.86'

344.59' -354.59'

S 89° 45' 30" W

(HOUSE)

3500
0.01 Ac.

1100
9.00 Ac.
7400

1101
1.00 Ac.
7320

1200
1.25 Ac.
7252

1400
5.00 Ac.
7130

2060.8' W
1716' N
from SE
Cor. Sec. 12

302.18 +/-
20' EASEMENT

BLA 2022-017577

S1°40'32"W
832.32'

355.73'

70'

331.7'

290.4'

150'

290.4'

N1°38'13"E
643.5'
567.59'

28'

253.62'

507.7'

254.08'

214.5'

858'

643.5'



S88°36'00"E
508.13'

SW

BRISBAND STREET

DR.

DR.

Exhibit L: Preliminary Conceptual Elevations











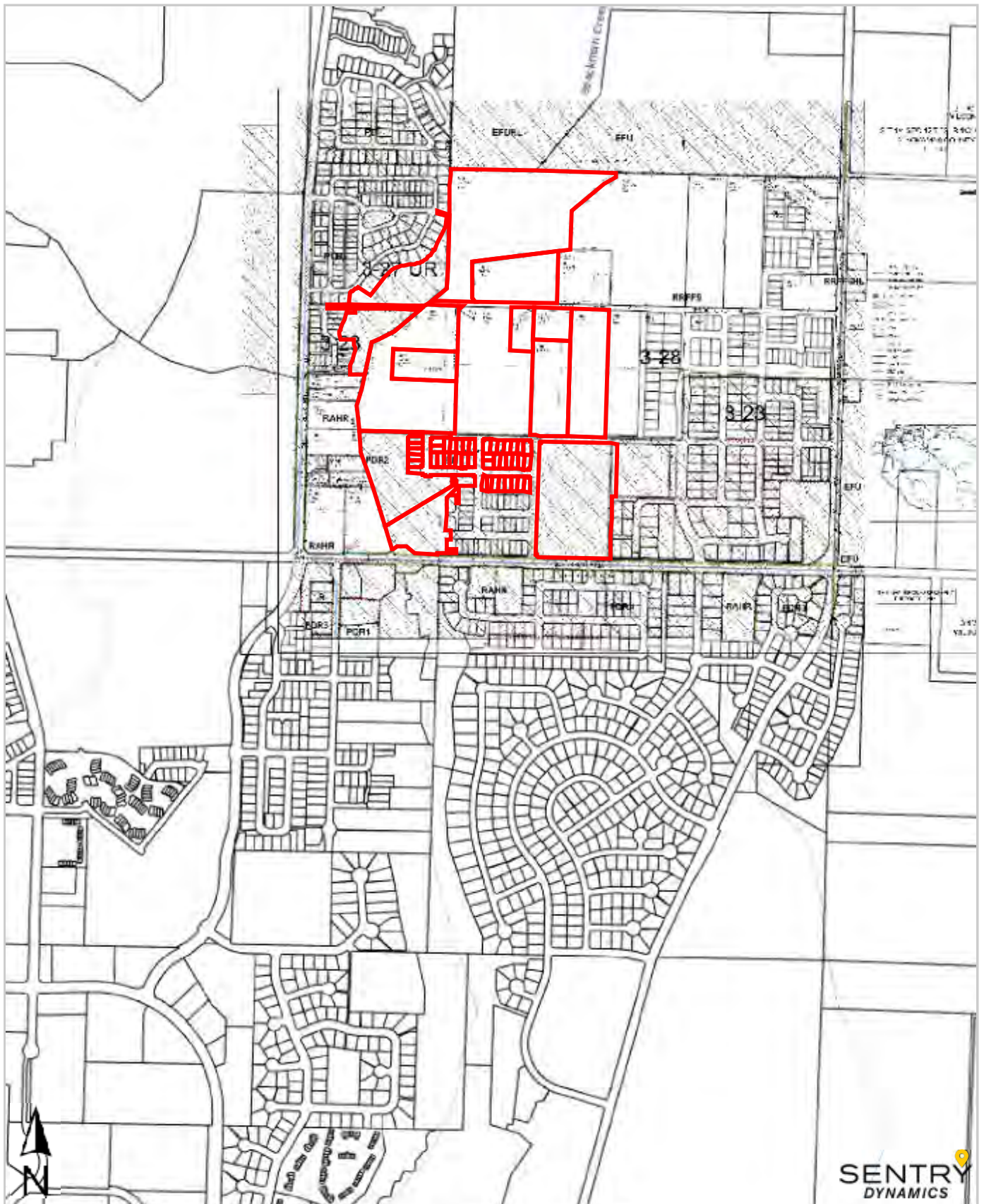








Exhibit M: 250-Foot Radius Notification Labels



This map/plat is being furnished as an aid in locating the herein described land in relation to adjoining streets, natural boundaries and other land, and is not a survey of the land depicted. Except to the extent a policy of title insurance is expressly modified by endorsement, if any, the company does not insure dimensions, distances, location of easements, acreage or other matters shown thereon.

31W12D 00601
Amber Kindred
7475 SW Frog Pond Ln
Wilsonville, OR 97070

31W12CA13900
City Of Wilsonville
29799 SW Town Center Loop E
Wilsonville, OR 97070

31W12D 00700
Venture Properties Inc
4230 Galewood St #100
Lake Oswego, OR 97035

31W12D 01101
Victor Foksha
28576 SW Cascade Loop
Wilsonville, OR 97070

31W12D 01200
Sullivan Homes LLC
5832 Firestone Ct
San Jose, CA 95138

31W12D 01300
Sullivan Homes LLC
5832 Firestone Ct
San Jose, CA 95138

31W12D 01400
Paul Woebkenberg Jr
7130 SW Frog Pond Ln
Wilsonville, OR 97070

31W12DC04500
West Linn-Wils Sch Dist #3
22210 SW Stafford Rd
Tualatin, OR 97062

31W12D 02800
West Hills Land Development LLC
3330 NW Yeon Ave Ste 100
Portland, OR 97210

31W12D 02801
West Hills Land Development LLC
3330 NW Yeon Ave Ste 100
Portland, OR 97210

31W12CA02200
Cr Canyon
5000 SW Meadows Rd #151
Lake Oswego, OR 97035

31W12D 03500
West Hills Land Development LLC
3330 NW Yeon Ste 200
Portland, OR 97210

31W12CA16600
Mission Homes Northwest LLC
PO Box 1689
Lake Oswego, OR 97035

31W12DC04200
Morgan Farm Owners Assoc
PO Box 8550
Bend, OR 97708

31W12DC04300
City Of Wilsonville
29799 SW Town Center Loop E
Wilsonville, OR 97070

31W12DC04600
Johann Reimers
7270 SW Woodbury Loop
Wilsonville, OR 97070

31W12DC04700
Steven Lesky
7262 SW Woodbury Loop
Wilsonville, OR 97070

31W12DC04800
Dorothy Oler
7254 SW Woodbury Loop
Wilsonville, OR 97070

31W12DC04900
Timothy Johnson
7246 SW Woodbury Loop
Wilsonville, OR 97070

31W12DC05000
Tinggang Li
7238 SW Woodbury Loop
Wilsonville, OR 97070

31W12DC05100
Kristin McCallum
7230 SW Woodbury Loop
Wilsonville, OR 97070

31W12DC05200
Donald Olson
7222 SW Woodbury Loop
Wilsonville, OR 97070

31W12DC05300
Imran Haider
7214 SW Woodbury Loop
Wilsonville, OR 97070

31W12DC05400
Austin Hanlon
27752 SW Painter Dr
Wilsonville, OR 97070

31W12DC05500
Thunyarak Katikavongkhachorn
27740 SW Painter Dr
Wilsonville, OR 97070

31W12DC05600
Taylor Collins
7255 SW Woodbury Loop
Wilsonville, OR 97070

31W12DC05700
Sudhir Isharwal
7247 SW Woodbury Loop
Wilsonville, OR 97070

31W12DC05800
Stephanie Saito
7239 SW Woodbury Loop
Wilsonville, OR 97070

31W12DC05900
Claudia Gonzales
7231 SW Woodbury Loop
Wilsonville, OR 97070

31W12DC06000
Erica Dephillips
7223 SW Woodbury Loop
Wilsonville, OR 97070

31W12DC06100
Mary Darm
16755 Graef Cir
Lake Oswego, OR 97035

31W12DC06200
Julie Shelton-Egan
7216 SW Brisband Loop
Wilsonville, OR 97070

31W12DC06300
Ding William & Na Li
7224 SW Brisband St
Wilsonville, OR 97070

31W12DC06400
Rory Morgan
7232 SW Brisband St
Wilsonville, OR 97070

31W12DC06500
Rachel Obrien
7240 SW Brisband St
Wilsonville, OR 97070

31W12DC06600
Kameron Beeks
7248 SW Brisband St
Wilsonville, OR 97070

31W12DC06700
Michael Vu
7256 SW Brisband St
Wilsonville, OR 97070

31W12DC06800
Lauren McIver
7264 SW Brisband St
Wilsonville, OR 97070

31W12DC06900
Name Suppressed
7351 SW Woodbury Loop
Wilsonville, OR 97070

31W12DC07000
Richard Ching
7343 SW Woodbury Loop
Wilsonville, OR 97070

31W12DC07100
Rhonda Hidalgo
7335 SW Woodbury Loop
Wilsonville, OR 97070

31W12DC07200
Susan A Wells
7327 SW Woodbury Loop
Wilsonville, OR 97070

31W12DC07300
Taylor Stinson
7319 SW Woodbury Loop
Wilsonville, OR 97070

31W12DC07400
Lillian Kardas
7311 SW Woodbury Loop
Wilsonville, OR 97070

31W12DC07500
Erin Desemple
PO Box 3737
Wilsonville, OR 97070

31W12DC07600
Jim Fettig
17705 NE Chehalem Dr
Newberg, OR 97132

31W12DC07700
Kathy Le
7312 SW Brisband St
Wilsonville, OR 97070

31W12DC07800
Joseph Amavisca
7320 SW Brisband St
Wilsonville, OR 97070

31W12DC07900
William Wills Jr
7328 SW Brisband St
Wilsonville, OR 97070

31W12DC08000
Gary A
7336 SW Brisband St
Wilsonville, OR 97070

31W12DC08100
Melissa Rose-Essaadi
7384 SW Woodbury Loop
Wilsonville, OR 97070

31W12DC08300
Roslyn Mauer
7367 SW Woodbury Loop
Wilsonville, OR 97070

31W12DC08400
Sandra Bachulis
7375 SW Woodbury Loop
Wilsonville, OR 97070

31W12DC08500
Elias Jamali
7383 SW Woodbury Loop
Wilsonville, OR 97070

31W12DC08600
Jonathan Jelmini
1725 SW Woodbury Loop
Wilsonville, OR 97070

31W12DC08700
Duane Fromhart
7399 SW Woodbury Loop
Wilsonville, OR 97070

31W12DC08800
City Of Wilsonville
29799 SW Town Center Loop E
Wilsonville, OR 97070

31W12DC08900
Lake Crystal
PO Box 8550
Bend, OR 97708

Exhibit N: Service Provider Letters

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

AKS Engineering & Forestry, LLC
Applicant Name: Contact: Larry Pankey, PE
Address: 12965 SW Herman Rd, Ste 100, Tualatin, OR 97062
Phone: 503-563-6151
Email: pankeyl@aks-eng.com
Site Address: 7400 SW Frog Pond Lane
City: Wilsonville
Map & Tax Lot #: Tax lot 1100 Tax Map 3.1W.12D
Business Name: O'Hogan Living Trust
Land Use/Building Jurisdiction: Wilsonville
Land Use/ Building Permit #

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

54-lot single-family attached subdivision on ±9-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 # 2024-0073
Permit Type: SPP-Wilsonville
Submittal Date: 5/24/2024
Assigned To: McGladrey
Due Date: 5/30/2024
Fees Due: N/A
Fees Paid: N/A

Approval/Inspection Conditions

(For Fire Marshal's Office Use Only)

This section is for application approval only

Alex Mc... 5/30/2024
Fire Marshal or Designee Date

Conditions:

A TVF&R final inspection is required for this project.

See Attached Conditions: Yes No

Site Inspection Required: Yes No

This section used when site inspection is required

Inspection Comments:

Final TVFR Approval Signature & Emp ID Date

ASSUMPTIONS AND DISCLAIMERS:

1. PROPERTY LINES AND RIGHT-OF-WAY LINES ARE BASED ON GIS INFORMATION AND ARE CONSIDERED APPROXIMATE.
2. NO BOUNDARY OR TOPOGRAPHIC SURVEY HAS BEEN PERFORMED AT THIS TIME.
3. THIS MAP IS FOR FEASIBILITY PURPOSES AND DOES NOT REPRESENT A PROPERTY BOUNDARY SURVEY.
4. CONTOUR DATA IS PER LIDAR AND SHOULD BE CONSIDERED APPROXIMATE.
5. THE AERIAL PHOTO SHOWN IS FROM 2021

SUBDISTRICT 7 RESIDENTIAL NEIGHBORHOOD (RN) (R-10 LARGE LOT) DEVELOPMENT STANDARDS:

LOT DIMENSIONS

- MIN. SINGLE FAMILY LOT SIZE - 8,000 SF
- MIN. LOT DEPTH - 60'
- MIN. LOT WIDTH - 40'

MIN. SETBACKS:

- FRONT - 20' - FRONT PORCH MAY EXTEND 5' INTO SETBACK
- REAR - 20'
- GARAGE - 20'
- SIDE - ON LOTS GREATER THAN 10,000 SF WITH FRONTAGE 70' OR WIDER, MIN. COMBINED SIDE YARD SETBACKS TOTAL 20' WITH MIN. OF 10'. ON OTHER LOTS, MIN. SIDE SETBACK IS 5'. ON CORNER LOTS, MIN. IS 10'.

LOT COVERAGE

- MAX. LOT COVERAGE BY BUILDINGS: 40%
- MIN. DENSITY - 5
- MAX DENSITY - 6

SUBDISTRICT 4 RESIDENTIAL NEIGHBORHOOD (RN) (R-7 MEDIUM LOT) DEVELOPMENT STANDARDS:

LOT DIMENSIONS

- MIN. SINGLE FAMILY LOT SIZE - 6,000 SF
- MIN. LOT DEPTH - 60'
- MIN. LOT WIDTH - 35'

MIN. SETBACKS:

- FRONT - 15' - FRONT PORCH MAY EXTEND 5' INTO SETBACK
- REAR - 15'
- GARAGE - 20'
- SIDE - ON LOTS GREATER THAN 10,000 SF WITH FRONTAGE 70' OR WIDER, MIN. COMBINED SIDE YARD SETBACKS TOTAL 20' WITH MIN. OF 10'. ON OTHER LOTS, MIN. SIDE SETBACK IS 5'. ON CORNER LOTS, MIN. IS 10'.

LOT COVERAGE

- MAX. LOT COVERAGE BY BUILDINGS: 45%
- MIN. DENSITY - 19
- MAX DENSITY - 24



APPROVED PLANS
 APPROVAL OF PLANS IS NOT AN APPROVAL OF OMISSIONS OR OVERSIGHTS.
 Alex McEll
 Deputy Fire Marshal II

TVF&R Permit #2024-0073

Note: A TVF&R final inspection is required for this project.



FROG POND OVERLOOK
 (FUTURE, BY OTHERS)

FROG POND TERRACE
 (FUTURE, BY OTHERS)

RN SUBDISTRICT 4
 R7

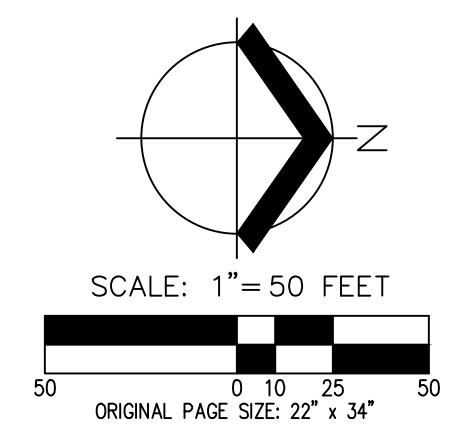
RN SUBDISTRICT 7
 R10

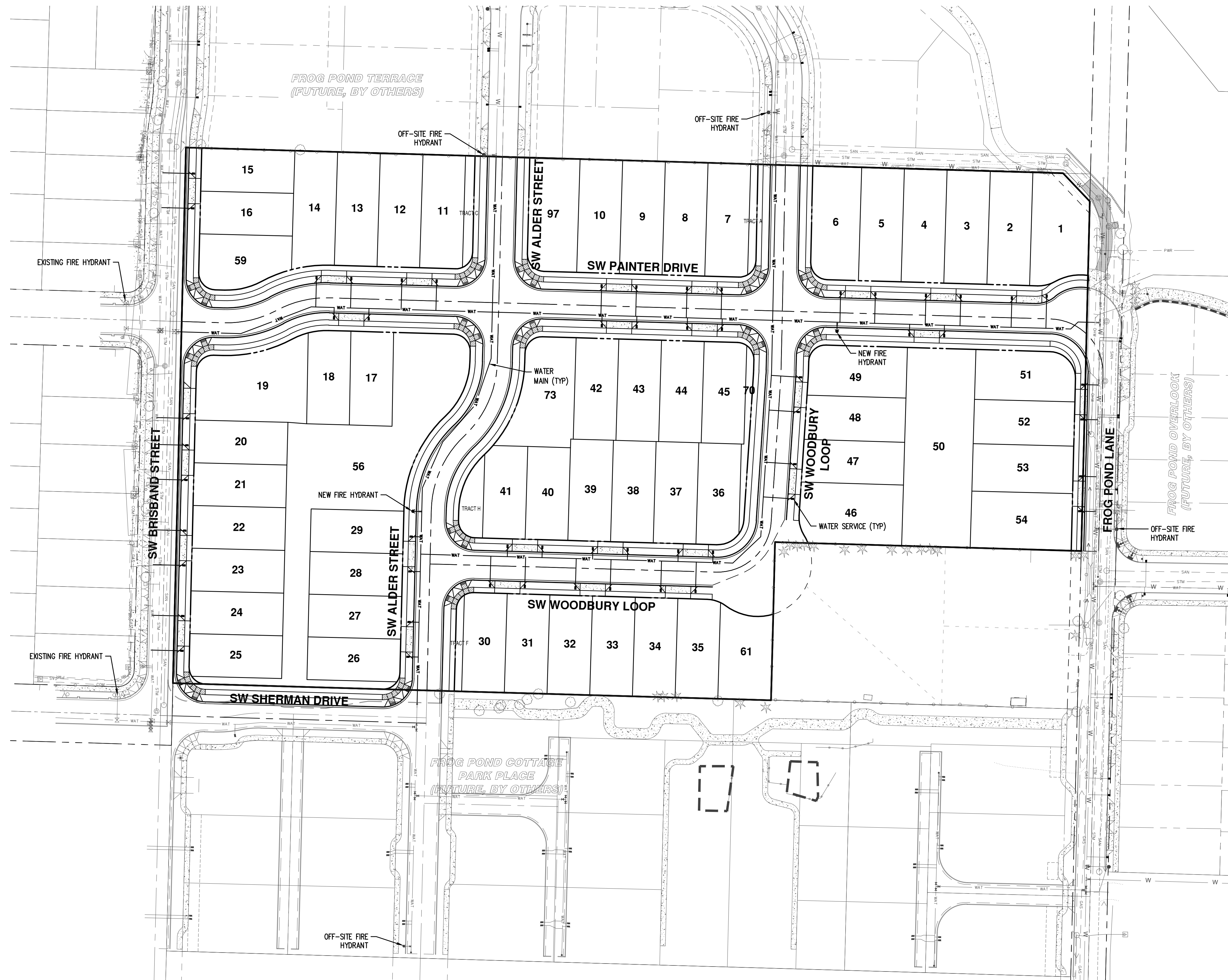
FROG POND COTTAGE
 PARK PLACE
 (FUTURE, BY OTHERS)

**PRELIMINARY MIDDLE HOUSING LAND DIVISION PLAT
 7400 SW FROG POND LANE
 WILSONVILLE, OREGON**

**PRELIMINARY
 NOT FOR
 CONSTRUCTION**

JOB NUMBER:	10411
DATE:	05/24/2024
DESIGNED BY:	LTP
DRAWN BY:	AC
CHECKED BY:	MBH



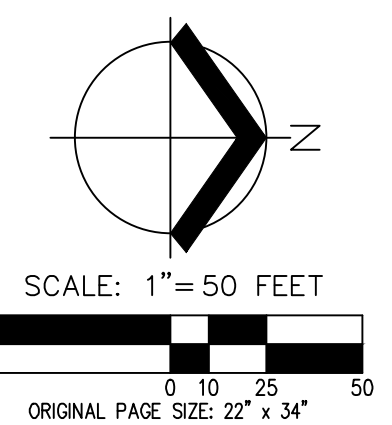


APPROVED PLANS

APPROVAL OF PLANS IS NOT AN APPROVAL OF OMISSIONS OR OVERSIGHTS.

Alex McEll
 Deputy Fire Marshal II

TVF&R Permit #2024-0073



**PRELIMINARY COMPOSITE UTILITY PLAN
 7400 SW FROG POND LANE**

WILSONVILLE, OREGON

**PRELIMINARY
 NOT FOR
 CONSTRUCTION**

JOB NUMBER:	10411
DATE:	05/24/2024
DESIGNED BY:	LTP
DRAWN BY:	AC
CHECKED BY:	MBH



June 5, 2024

Glen Southerland
AKS Engineering and Forestry, LLC
Re: Frog Pond West Development
Wilsonville OR, 97070

Dear Glen,

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 commercial waste removal and recycling services as needed on a weekly basis for this location

Your design plans that we received on 5/24/2024, of single-family dwellings on individual lots, each dwelling facing their respective residential streets of 28' in width which are navigable for our collection vehicles. All units have driveway transitions to the roadways and provide adequate space for placement of residential trash and recycle receptacles for collection by Republic Services. Each dwelling will be responsible for their individual service accounts with Republic Services at the established franchise rates.

Thanks Glen, 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 large, sweeping flourish extending upwards and to the right.

Kelly Herrod
Operations Supervisor
Republic Services Inc.

Exhibit O: Arborist Memo

August 9, 2024

Cindy Luxhoj
Associate Planner, City of Wilsonville
503-570-1572



**RE: Ridgecrest (7400 SW Frog Pond Lane, Wilsonville, Oregon) – Pathway Design Letter
(AKS Job #10411)**

Dear Ms. Luxhoj,

The purpose of this letter is to address pathway design adjacent to off-site trees on the Ridgecrest Subdivision project. As shown on the attached plan, a pedestrian path is proposed through Tract G, within the assumed root zones of off-site trees #10905 and #10980. Tree protection fencing is proposed approximately 20 feet north of the property line to protect the subject trees. To minimize root zone impacts to the subject trees, it is recommended that the path be narrowed to the maximum extent possible within the tree protection area defined by the tree protection fence (as highlighted on the attached plan). Additionally, it is recommended that the path be constructed per the “Pedestrian Path Construction Note” on the attached plans. A certified arborist shall be on site during path construction within the tree protection area.

Arborist Disclosure Statement:

Arborists are tree specialists who use their education, knowledge, training, and experience to examine trees, recommend measures to enhance the health of trees, and attempt to reduce the risk of living near trees. The Client and Jurisdiction may choose to accept or disregard the recommendations of the arborist, or seek additional advice. Arborists cannot detect every condition that could possibly lead to the structural failure of a tree. Trees are living organisms that fail in ways we do not fully understand. Conditions are often hidden within trees and below ground. Arborists cannot guarantee that a tree will be healthy or safe under all circumstances, or for a specified period of time. Likewise, remedial treatments, like medicine, cannot be guaranteed. Trees can be managed, but they cannot be controlled. To live near trees is to accept some degree of risk. The only way to eliminate all risk associated with trees is to eliminate all trees.

Neither this author nor AKS Engineering & Forestry, LLC have assumed any responsibility for liability associated with the trees on or adjacent to this site.

Sincerely,

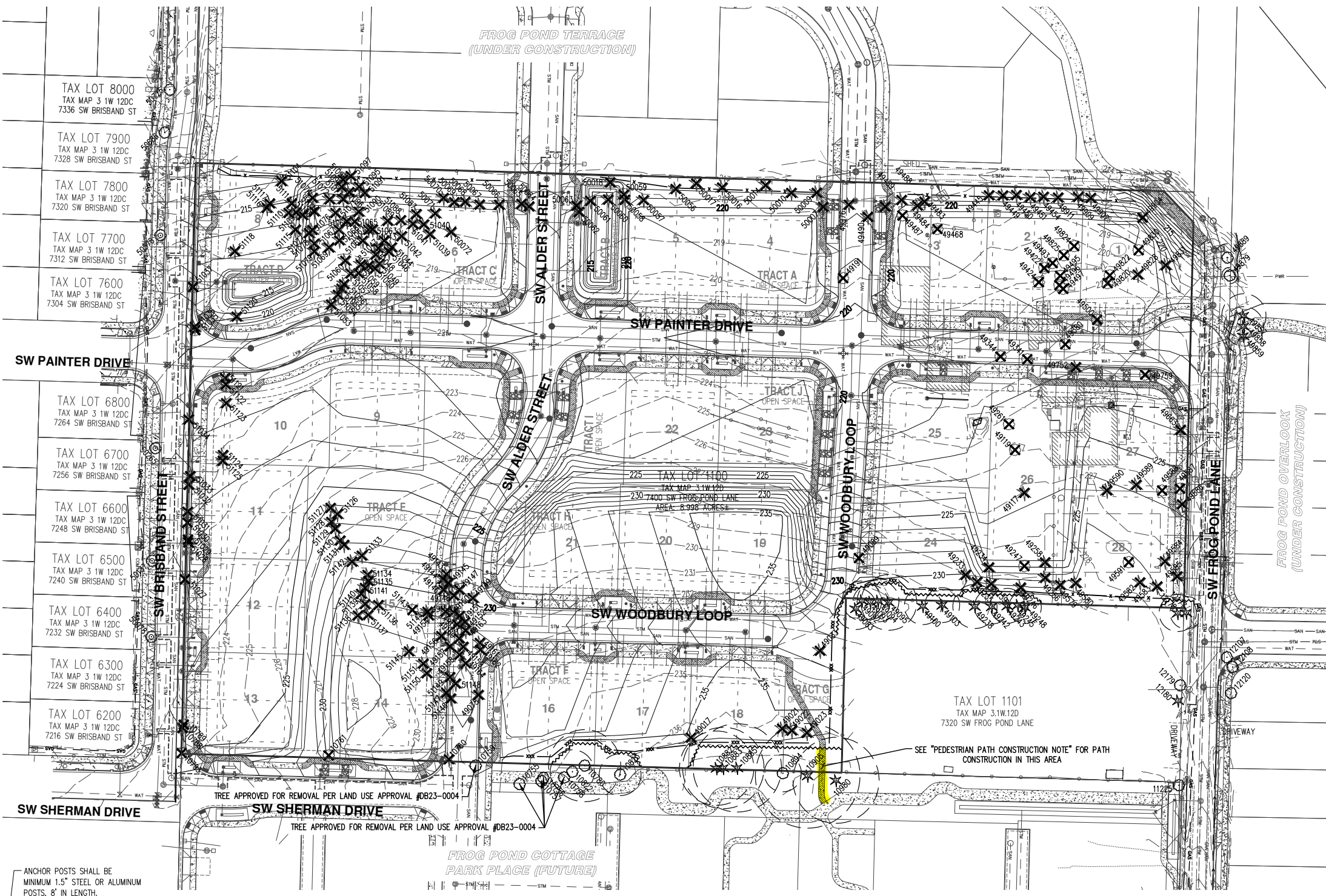
AKS ENGINEERING & FORESTRY, LLC

A handwritten signature in black ink that reads 'Bennett R. Kocsis'.

Bennett R. Kocsis
Certified Arborist, Qualified Tree Risk Assessor
12965 SW Herman Road, Suite 100
(503) 563-6151 | kocsisb@aks-eng.com



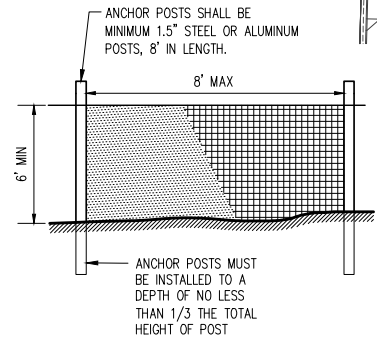
BENNETT R. KOCSIS
CERTIFICATE NUMBER: PN 8877A
EXPIRATION DATE: 12/31/2025



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/CONSTRUCTION FENCE (TREE PROTECTION AREA)		
ORANGE SEDIMENT FENCE		
STRAW WATTLE		
ASSUMED TREE ROOT ZONE (1-FT RADIUS PER 1-IN OF DBH)		

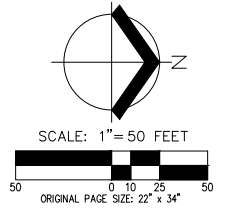
PRELIMINARY TREE PRESERVATION AND REMOVAL PLAN
RIDGECREST WEST HILLS LAND DEVELOPMENT, LLC
WILSONVILLE, OREGON



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

TREE PROTECTION FENCE

PEDESTRIAN PATH CONSTRUCTION NOTE:
 PEDESTRIAN PATH BEING PLACED NEAR TREES TO BE PRESERVED SHALL BE CONSTRUCTED BY STRIPPING GRASS/ORGANIC MATERIAL TO BARE SOIL, BEING CAREFUL NOT TO DAMAGE TREE ROOTS, AND THEN PLACING PATH CONSTRUCTION MATERIALS. EXCAVATION BEYOND STRIPPING GRASS/ORGANIC MATERIAL SHALL NOT OCCUR. IF NECESSARY TO LEVEL THE PATH, MINOR AMOUNTS OF FILL MATERIAL SHALL BE USED INSTEAD OF EXCAVATING SOIL. THE PROJECT ARBORIST MAY REQUIRE ADDITIONAL TREE PROTECTION MEASURES OR ALTERNATIVE CONSTRUCTION METHODS. A CERTIFIED ARBORIST SHALL BE ONSITE DURING PATH CONSTRUCTION IN THIS AREA.



PRELIMINARY NOT FOR CONSTRUCTION

BENNETT R. KOCSIS
 CERTIFICATE NUMBER: PN 9874
 EXPIRATION DATE: 12/31/2025

REGISTERED PROFESSIONAL LANDSCAPE ARCHITECT
PRELIMINARY NOT FOR CONSTRUCTION
 CONSTRUCTION
 B. WILSONVILLE, OREGON
 RENEWAL DATE: 6/30/25

JOB NUMBER: 10411
 DATE: 06/20/2024
 DESIGNED BY: LTP
 DRAWN BY: AC
 CHECKED BY: MBH

Detailed Tree Inventory for Frog Pond O'Hogan

AKS Job No. [10411] - Evaluation Date: 05/10/2024 - Evaluated by: BRK

Tree #	DBH (in.)	Avg. Crown Radius (ft)	Tree Species Common Name (Scientific name)	Comments	Health Rating*	Structure Rating**	Remove/Preserve
10755	20,12	19	Oregon White Oak (Quercus garryana)	OFFSITE; Removed with land use approval #DB23-0004	1	2	Preserve
10756	31	25	Oregon White Oak (Quercus garryana)	OFFSITE; Removed with land use approval #DB23-0004	1	2	Preserve
10757	10,7	30	Oregon White Oak (Quercus garryana)	OFFSITE; Removed with land use approval #DB23-0004	2	2	Preserve
10758	25	0	Oregon White Oak (Quercus garryana)	OFFSITE; Removed with land use approval #DB23-0004	3	3	Preserve
10759	39	31	Oregon White Oak (Quercus garryana)	OFFSITE; Removed with land use approval #DB23-0004	1	2	Preserve
10760	23	27	Douglas-fir (Pseudotsuga menziesii)		1	1	Remove
10761	49	31	Oregon White Oak (Quercus garryana)	Suspected oak borer infestation; Large section of dieback and flagging in crown; Codominant base	2	3	Remove
10780	31	31	Oregon White Oak (Quercus garryana)	LINE TREE	1	1	Preserve
10788	8	0	English Hawthorn (Crataegus monogyna)	LINE TREE; Dead (~15')	3	3	Remove
10789	7	0	English Hawthorn (Crataegus monogyna)	Dead (~15')	3	3	Remove
10793	6, 6, 6, 6, 7	0	English Hawthorn (Crataegus monogyna)	LINE TREE; Dead (~15')	3	3	Remove
10822	19	13	Oregon White Oak (Quercus garryana)	OFFSITE; Many epicormic sprouts; Dead branches; Sparse canopy	2	2	Preserve
10823	18,17	15	Oregon White Oak (Quercus garryana)	OFFSITE; Codominant base	1	1	Preserve
10882	32	20	Douglas-fir (Pseudotsuga menziesii)	LINE TREE	1	1	Preserve
10883	35	23	Douglas-fir (Pseudotsuga menziesii)	LINE TREE	1	1	Preserve
10885	38	30	Douglas-fir (Pseudotsuga menziesii)	LINE TREE	1	1	Preserve
10894	16	19	Bigleaf Maple (Acer macrophyllum)	OFFSITE; Evaluated from behind a fence; 1-sided canopy (W); Lean (W)	1	2	Preserve
10905	45	16	Douglas-fir (Pseudotsuga menziesii)	OFFSITE; Abnormal dead branches; Epicormic sprouting	2	1	Preserve
10980	37	15	Douglas-fir (Pseudotsuga menziesii)	OFFSITE; Abnormal dead branches; Epicormic sprouting	2	1	Preserve
11225	10,9,6	31	Norway Maple (Acer platanoides)		1	1	Remove
12107	26	40	Red Oak (Quercus rubra)	OFFSITE	1	1	Preserve
12108	19	40	Red Oak (Quercus rubra)	OFFSITE; Slight lean (S)	1	1	Preserve
12120	17,18	37	Red Oak (Quercus rubra)	OFFSITE; 1-sided canopy (E)	1	1	Preserve
12177	14	10	Scotch Pine (Pinus sylvestris)	OFFSITE; Topped for overhead wires; Many leaders at top	2	3	Preserve
12178	16	17	Scotch Pine (Pinus sylvestris)	OFFSITE	1	1	Preserve
12179	9	16	Japanese Maple (Acer palmatum)	OFFSITE	1	1	Preserve
12180	17	19	Deodar Cedar (Cedrus deodara)	OFFSITE; Some limbs pruned for overhead wires	1	1	Preserve
49017	7	6	Ponderosa Pine (Pinus ponderosa)		1	1	Remove
49021	7	5	Douglas-fir (Pseudotsuga menziesii)		1	1	Remove
49022	6	5	Douglas-fir (Pseudotsuga menziesii)		1	1	Remove
49023	6	5	Douglas-fir (Pseudotsuga menziesii)		1	1	Remove
49033	8	6	Ponderosa Pine (Pinus ponderosa)		1	1	Remove
49075	6	7	Douglas-fir (Pseudotsuga menziesii)	Nursery Stock	1	1	Remove
49083	18	14	Douglas-fir (Pseudotsuga menziesii)	Offsite; Evaluated from behind a fence	1	1	Preserve
49089	12	15	Cherry (Prunus spp.)		1	1	Remove
49092	17	17	Douglas-fir (Pseudotsuga menziesii)	OFFSITE; Evaluated from behind a fence; Broken top; Weak leaders	2	3	Preserve
49093	15	9	Douglas-fir (Pseudotsuga menziesii)	OFFSITE; Evaluated from behind a fence	1	1	Preserve
49094	18	18	Douglas-fir (Pseudotsuga menziesii)	OFFSITE; Evaluated from behind a fence	1	1	Preserve
49095	24	19	Douglas-fir (Pseudotsuga menziesii)	OFFSITE; Evaluated from behind a fence; Sweep (W)	1	1	Preserve
49100	16	11	Scotch Pine (Pinus sylvestris)	OFFSITE; Evaluated from behind a fence	1	1	Preserve
49103	15	10	Scotch Pine (Pinus sylvestris)	OFFSITE; Evaluated from behind a fence	1	1	Preserve
49117	35	26	Douglas-fir (Pseudotsuga menziesii)		1	1	Remove
49119	14	15	Norway Maple (Acer platanoides)		1	1	Remove
49143	6,8	10	Leyland Cypress (Cupressus x leylandii)		1	1	Remove
49144	7	8	Leyland Cypress (Cupressus x leylandii)		1	1	Remove
49145	8	4	Leyland Cypress (Cupressus x leylandii)		1	1	Remove
49146	9	5	Leyland Cypress (Cupressus x leylandii)		1	1	Remove
49147	9	9	Douglas-fir (Pseudotsuga menziesii)	Nursery Stock	1	1	Remove
49148	9	10	Leyland Cypress (Cupressus x leylandii)	Nursery Stock	1	1	Remove
49149	7	5	Ponderosa Pine (Pinus ponderosa)	Nursery Stock	1	1	Remove
49150	10	7	Douglas-fir (Pseudotsuga menziesii)	Nursery Stock	1	1	Remove
49151	8	7	Leyland Cypress (Cupressus x leylandii)	Nursery Stock	1	1	Remove
49152	6	6	Leyland Cypress (Cupressus x leylandii)	Nursery Stock	1	1	Remove
49153	8	4	Leyland Cypress (Cupressus x leylandii)	Nursery Stock	1	1	Remove
49154	8	7	Douglas-fir (Pseudotsuga menziesii)	Nursery Stock	1	1	Remove
49155	8	6	Douglas-fir (Pseudotsuga menziesii)	Nursery Stock	1	1	Remove
49156	7	3	Leyland Cypress (Cupressus x leylandii)	Nursery Stock	1	1	Remove
49157	10	4	Leyland Cypress (Cupressus x leylandii)	Nursery Stock	1	1	Remove
49158	9	3	Leyland Cypress (Cupressus x leylandii)	Nursery Stock	1	1	Remove
49159	8	4	Leyland Cypress (Cupressus x leylandii)	Nursery Stock	1	1	Remove
49160	9	3	Leyland Cypress (Cupressus x leylandii)	Nursery Stock	1	1	Remove
49161	6	5	Douglas-fir (Pseudotsuga menziesii)	Nursery Stock	1	1	Remove
49162	8	5	Ponderosa Pine (Pinus ponderosa)	Nursery Stock	1	1	Remove
49163	9	7	Douglas-fir (Pseudotsuga menziesii)	Nursery Stock	1	1	Remove
49164	12	10	Leyland Cypress (Cupressus x leylandii)	Nursery Stock	1	1	Remove
49191	10	12	Norway Maple (Acer platanoides)		1	1	Remove
49233	6	11	Norway Spruce (Picea abies)		1	1	Remove
49234	7	5	Ponderosa Pine (Pinus ponderosa)		1	1	Remove
49235	8	8	Scotch Pine (Pinus sylvestris)		1	1	Remove
49238	19	12	Scotch Pine (Pinus sylvestris)	OFFSITE; Evaluated from behind a fence	1	1	Preserve
49239	9	5	Incense Cedar (Calocedrus decurrens)		1	1	Remove
49242	15	13	Scotch Pine (Pinus sylvestris)	OFFSITE; Evaluated from behind a fence	1	1	Preserve
49243	15	11	Scotch Pine (Pinus sylvestris)	OFFSITE; Evaluated from behind a fence	1	1	Preserve
49245	9	11	Scotch Pine (Pinus sylvestris)	OFFSITE; Evaluated from behind a fence	1	1	Preserve
49246	6	6	Western Redcedar (Thuja plicata)		1	1	Remove
49247	8	7	Horse Chestnut (Aesculus hippocastanum)		1	1	Remove
49248	14	11	Scotch Pine (Pinus sylvestris)	OFFSITE; Evaluated from behind a fence	1	1	Preserve
49256	10	6	Giant Sequoia (Sequoiadendron giganteum)		1	1	Remove
49258	7	6	Western Redcedar (Thuja plicata)		1	1	Remove
49261	9	11	Cherry (Prunus spp.)		1	1	Remove
49341	33	34	Black Walnut (Juglans nigra)	Some broken and dead limbs	2	1	Remove
49344	43	32	Black Walnut (Juglans nigra)	Some broken and dead limbs	2	1	Remove
49380	6, 6, 6, 6, 8,	13	English Holly (Ilex aquifolium)		1	1	Remove
49422	10	10	American Elm (Ulmus americana)	Broken top; Many broken limbs	2	3	Remove

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Tree #	DBH (in.)	Avg. Crown Radius (ft)	Tree Species Common Name (Scientific name)	Comments	Health Rating*	Structure Rating**	Remove/Preserve
49424	11	21	American Elm (Ulmus americana)	1-sided canopy (S)	1	1	Remove
49445	26	22	Douglas-fir (Pseudotsuga menziesii)		1	1	Remove
49449	13	9	Douglas-fir (Pseudotsuga menziesii)	Broken at 30'	3	3	Remove
49450	15	16	Douglas-fir (Pseudotsuga menziesii)		1	1	Remove
49451	20	16	Douglas-fir (Pseudotsuga menziesii)		1	1	Remove
49454	17	16	Douglas-fir (Pseudotsuga menziesii)		1	1	Remove
49468	9	11	Oregon Ash (Fraxinus latifolia)		1	1	Remove
49483	21	7	Giant Sequoia (Sequoiadendron giganteum)	Dead at very top	2	1	Remove
49484	9	13	Deodar Cedar (Cedrus deodara)		1	1	Remove
49487	6	5	Mountain Ash (Sorbus americana)	Many bore holes	2	2	Remove
49488	10	7	Blue Atlas Cedar (Cedrus atlantica)		1	1	Remove
49489	8	6	Weeping Cypress (Chamaecyparis spp.)		1	1	Remove
49490	8	7	Blue Spruce (Picea pungens)		1	1	Remove
49493	8	10	American Elm (Ulmus americana)	Broken tops; Lean (SW)	2	3	Remove
49495	16	20	American Elm (Ulmus americana)	lean (W); Some dead branches	1	2	Remove
49496	16	21	American Elm (Ulmus americana)	Lean (S)	1	2	Remove
49497	22	22	American Elm (Ulmus americana)	Lean (E)	1	2	Remove
49500	15, 25, 27, 28	32	Horse Chestnut (Aesculus hippocastanum)	Sluffing bark; Dead wood in base; Bore holes; Some limbs pruned for overhead wires	2	3	Remove
49579	17	14	Douglas-fir (Pseudotsuga menziesii)		1	1	Remove
49580	8	4	Giant Sequoia (Sequoiadendron giganteum)		1	1	Remove
49582	10	10	Blue Atlas Cedar (Cedrus atlantica)		1	1	Remove
49583	6	3	Incense Cedar (Calocedrus decurrens)		1	1	Remove
49584	10	6	Incense Cedar (Calocedrus decurrens)		1	1	Remove
49585	19	14	Douglas-fir (Pseudotsuga menziesii)	Some limbs pruned for overhead wires	1	1	Remove
49586	9	10	Arizona Cypress (Cupressus arizonica)		1	1	Remove
49587	7	12	Rhododendron (Rhododendron spp.)		1	1	Remove
49588	10	11	Oregon White Oak (Quercus garryana)		1	1	Remove
49589	37	30	Douglas-fir (Pseudotsuga menziesii)		1	1	Remove
49590	9	13	Redwood (Sequoia sempervirens)		1	1	Remove
49591	7	7	Norway Maple (Acer platanoides)	Cavity with decay up bole; Sluffing bark; Dieback	3	2	Remove
49663	15	13	Lodgepole Pine (Pinus contorta)	Topped for overhead wires; Lean (S)	2	3	Remove
49752	17	15	Redwood (Sequoia sempervirens)		1	1	Remove
49759	11	15	Purpleleaf Plum (Prunus cerasifera)	Failed codominant stem; Fungal growth on base; Dieback	2	3	Remove
49820	8	16	American Elm (Ulmus americana)		1	1	Remove
49822	6	15	American Elm (Ulmus americana)	broken top; 1-sided canopy (W)	2	3	Remove
49824	6	13	American Elm (Ulmus americana)	broken top; 1-sided canopy (W)	2	3	Remove
49825	10	9	American Elm (Ulmus americana)	broken top; 1-sided canopy (W)	2	3	Remove
49828	27	17	Douglas-fir (Pseudotsuga menziesii)		1	1	Remove
49830	9,9	13	English Walnut (Juglans regia)	Many broken limbs with decay; In significant decline	3	3	Remove
49831	7	8	Lodgepole Pine (Pinus contorta)	Broken at 6'	3	3	Remove
49857	19	19	Douglas-fir (Pseudotsuga menziesii)	OFFSITE	1	1	Preserve
49858	17	20	Douglas-fir (Pseudotsuga menziesii)	OFFSITE; Historically broken top; Crooked top	2	2	Preserve
49859	16	19	Douglas-fir (Pseudotsuga menziesii)	OFFSITE	1	1	Preserve
49879	7	17	Cherry (Prunus spp.)	OFFSITE	1	1	Preserve
49889	9, 12	18	Cherry (Prunus spp.)	OFFSITE	1	1	Preserve
49904	7, 8, 8	0	English Walnut (Juglans regia)	Dead	3	3	Remove
49907	15	14	Douglas-fir (Pseudotsuga menziesii)		1	1	Remove
49909	12	13	Douglas-fir (Pseudotsuga menziesii)		1	1	Remove
49911	12	12	Douglas-fir (Pseudotsuga menziesii)		1	1	Remove
49976	6, 6, 8, 9	15	Incense Cedar (Calocedrus decurrens)		1	1	Remove
50007	6	5	Ponderosa Pine (Pinus ponderosa)	Nursery Stock	1	1	Remove
50009	9	5	Giant Sequoia (Sequoiadendron giganteum)	Nursery Stock	1	1	Remove
50010	8	7	Ponderosa Pine (Pinus ponderosa)	Nursery Stock	1	1	Remove
50014	6	4	Ponderosa Pine (Pinus ponderosa)	Nursery Stock	1	1	Remove
50016	8	5	Ponderosa Pine (Pinus ponderosa)	Nursery Stock	1	1	Remove
50017	7	7	Douglas-fir (Pseudotsuga menziesii)	Nursery Stock	1	1	Remove
50018	6	4	Ponderosa Pine (Pinus ponderosa)	Nursery Stock	1	1	Remove
50056	7	4	Ponderosa Pine (Pinus ponderosa)	Nursery Stock	1	1	Remove
50057	6	6	Ponderosa Pine (Pinus ponderosa)	Nursery Stock	1	1	Remove
50058	8	7	Ponderosa Pine (Pinus ponderosa)	Nursery Stock	1	1	Remove
50059	6	4	Douglas-fir (Pseudotsuga menziesii)	Nursery Stock	1	1	Remove
50060	8	6	Ponderosa Pine (Pinus ponderosa)	Nursery Stock	1	1	Remove
50061	9	5	Ponderosa Pine (Pinus ponderosa)	Nursery Stock	1	1	Remove
50062	8	4	Giant Sequoia (Sequoiadendron giganteum)	Nursery Stock	1	1	Remove
50063	6	8	Douglas-fir (Pseudotsuga menziesii)	Nursery Stock	1	1	Remove
50064	6	3	Giant Sequoia (Sequoiadendron giganteum)	Nursery Stock	1	1	Remove
50065	6	3	Giant Sequoia (Sequoiadendron giganteum)	Nursery Stock	1	1	Remove
50066	6	3	Giant Sequoia (Sequoiadendron giganteum)	Nursery Stock	1	1	Remove
50067	9	6	Ponderosa Pine (Pinus ponderosa)	Nursery Stock	1	1	Remove
50068	7	6	Douglas-fir (Pseudotsuga menziesii)	Nursery Stock	1	1	Remove
50069	6	3	Giant Sequoia (Sequoiadendron giganteum)	Nursery Stock	1	1	Remove
50070	6	5	Norway Spruce (Picea abies)	Nursery Stock	1	1	Remove
50071	10	8	Douglas-fir (Pseudotsuga menziesii)	Nursery Stock	1	1	Remove
50072	14	10	Scotch Pine (Pinus sylvestris)	Nursery Stock	1	1	Remove
50078	2	1	Redbud (Cercis canadensis)	OFFSITE; Street Tree	1	1	Preserve
50137	2	1	Redbud (Cercis canadensis)	OFFSITE; Street Tree	1	1	Preserve
50265	2	1	Redbud (Cercis canadensis)	OFFSITE; Street Tree	1	1	Preserve
50578	2	1	Redbud (Cercis canadensis)	OFFSITE; Street Tree	1	1	Preserve
50686	2	1	Redbud (Cercis canadensis)	OFFSITE; Street Tree	1	1	Preserve
50725	2	1	Redbud (Cercis canadensis)	OFFSITE; Street Tree	1	1	Preserve
51027	7	0	English Hawthorn (Crataegus monogyna)	OFFSITE; Dead (~15')	3	3	Preserve
51028	6,7	6	English Hawthorn (Crataegus monogyna)	Dead tops; Broken tops; In decline	3	3	Remove
51029	10	10	English Hawthorn (Crataegus monogyna)	Dead tops; Broken tops; In decline	3	3	Remove
5							