Tentative Subdivision Application

17687 SW Brookman Road

Prepared for:
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Submitted to:
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Project Summary

Request:	Application for approval of a tentative plat for the Brookman Place Subdivision, a 10-lot residential development.
Location:	17687 SW Brookman Road, Sherwood, Oregon 97140 Washington County Assessor's Map No. 3s-1-06B, Lot 101
Owner/Applicant:	Walker John Olivia Beach, LLC P.O. Box 7534 Olympia, Washington 98507 Phone: 541-921-1247 Email: walker@oliviabeach.com
Engineer/Planner:	**Reece & associates, Inc.** 321 1st Avenue Suite 3A Albany OR 97321 541-926-2428 Engineer: David J. Reece, PE dave@r-aengineering.com Planner: Hayden Wooton haydenw@r-aengineering.com

Exhibits
A – Washington County Assessor's Map No. 3s-1-06B
B – Aerial Photograph
C – FIRM 41067C0603F
D – Design Exception
E – Emergency Vehicle Movements
F – Arborist Report
G – Mailing Labels
H – Title Report

Plan Set
1.0 – Cover Sheet
2.0 – Surrounding Land Uses
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I. Project Description

Olivia Beach, LLC, the applicant, requests tentative approval to divide a two-acre parcel into 10 lots for single-family dwellings. The subject property is located at 17687 SW Brookman Road and can be identified as Washington County Assessor's Map No. 3s-1-06B, Tax Lot 101 (Exhibit A).

Located within the Brookman Addition Concept Plan, the subject property was brought into the City of Sherwood Urban Growth Boundary in 2002 when the Metropolitan Service District (Metro) signed Ordinance No. 02-0969B. More recently, in 2021, the City of Sherwood annexed the property into city limits by approving Ordinance No. 2021-003. Once annexed, the property became zoned Medium Density Residential High (MDRH) by the City of Sherwood. Lastly, in January 2022, Ordinance No. 22-1473 was approved by Metro Council and the subject property was annexed into Metro's service boundary as well.

The MDRH zoning district requires a minimum lot size of 5,000 square feet. As such, the proposed lot sizes range between 5,002 square feet and 10,481. This project will have an average lot size of 5,887.3 square feet. Along with its 10 proposed lots, this subdivision will also create a 3,428 square-foot common open space tract and a 3,677 square-foot stormwater tract. The Brookman Place Subdivision will extend SW Wapato Island Drive and construct frontage improvements on SW Brookman Road to serve the newly created lot. These improvements will require a total of 21,172 square feet to be dedicated as right-of-way.

This application narrative includes findings of fact that demonstrate compliance with all applicable sections of the Sherwood Zoning and Development Code (SZCDC). Applicable standards and criteria of the SZCDC will appear in *italics* followed by the applicant's response in regular font.

II. Existing Conditions

The subject property has frontage along SW Brookman Road, which is an unimproved arterial street under Washington County's jurisdiction. Recently, development of the Middlebrook Subdivision – the 145-lot land division identified as Case No. SUB18-02 was approved by the Sherwood Planning Commission on July 15th, 2019, and its appeal period ended on July 29th, 2019 – constructed a new street, SW Wapato Island Drive that terminates at the subject property's eastern property line allowing for convenient extension. SW Wapato Island Drive is a fully improved local street under the City of Sherwood's jurisdiction.

On-site elevations range from 202 feet to 212 feet above mean sea level. Higher elevations tend to be located near the north, south, and west property lines; the property slopes towards a central point on the eastern property line where a private stormwater catch basin is located just off-site. Most of the property is unimproved yard with patches of trees near the property boundaries; however, there are several residential improvements including a single-family dwelling, garage, shed, septic system, and well. With the exception of the single-family home, all of these improvements will be removed. Currently, the existing dwelling, located near the northwest corner of property, is access via a gravel driveway sited along the western property line and connects to SW Brookman Road. Adjacent zones and land uses include (Please refer to Exhibit B for an Aerial Photograph and Sheet 2.0 for Surrounding Land Uses):

North: The Middlebrook Subdivision is zoned a combination of Medium Density Residential High (MDRH) and Medium Density Residential Low (MDRL) by the City of Sherwood.

South: Two properties containing residential development (17692 and 17636 SW Brookman Road) zoned Agriculture and Forest District (AF-5) by Washington County.

East: The Middlebrook Subdivision is zoned a combination of Medium Density Residential High (MDRH) and Medium Density Residential Low (MDRL) by the City of Sherwood.

West: One property (17601 SW Brookman Road) zoned Medium Density Residential Low (MDRL) by the City of Sherwood.

III. Chapter 16.12 – Residential Land Use Districts

16.12.010. Purpose and Density Requirements

D. Medium Density Residential High (MDRH)

The MDRH zoning district provides for a variety of medium density housing, including single-family, two-family housing, manufactured housing, multi-family housing, and other related uses with a density of 5.5 to 11 dwelling units per acre. Minor land partitions are exempt from the minimum density requirement.

Response: The proposed Brookman Place Subdivision will create 10 lots for single-family residences on two acres of land. SZCDC defines density as "the number of dwelling units per net buildable acre," and a net buildable acre is considered to be "an area measuring 43,560 square feet after excluding present and future rights-of-way and environmental constrained areas." Density calculations for the proposed project are as follows:

Gross Site Area = 2 acres (87,150 square feet)
Future Right-of-Way = 0.49 acres (21,172 square feet)
87,150 sq. ft. – 21,172 sq. ft. = 65,978 (1.51 acres)
10 lots / 1.51 acres = 6.6 units per acre

At 6.8 units per acre, the proposed subdivision is within the permitted density range required by the MDRH zoning district. Therefore, this standard is met.

16.12.020. Allowed Residential Land Uses

A. Residential Land Uses

The table below identifies the land uses that are allowed in Residential Districts. The specific land use categories are described and defined in Chapter 16.10.

Response: The Brookman Place Subdivision will create lots intended for detached, single-family dwellings. As previously mentioned, the City of Sherwood has applied the MDRH zoning district to the property. In this zone, single-family dwellings as proposed are considered a permitted use by the table in SZCDC §16.12.020(A). Therefore, this standard is met.

16.12.030 Residential Land Use Development Standards

A. Generally.

No lot area, setback, yard, landscaped area, open space, off-street parking or loading area, or other site dimension or requirement, existing on, or after, the effective date of this Code shall be reduced below the minimum required by this Code. Nor shall the conveyance of any portion of a lot, for other than a public use or right-of-way, leave a lot or structure on the remainder of said lot with less than minimum Code dimensions, area, setbacks or other requirements, except as permitted by Chapter 16.84. (Variance and Adjustments)

Response: The proposed subdivision does not reduce standards below the minimum required by this code unless a deviation is situationally permitted. Therefore, this standard is met.

C. Development Standards per Residential Zone.

Response: The subject property is zoned MDRH by the City of Sherwood; consequently, all newly created lots must comply with the applicable standards outlined in this zoning district.

Minimum Lot Areas: As stated in Section I of this application narrative, "The MDRH zoning district requires a minimum lot size of 5,000 square feet. As such, the proposed lot sizes range between 5,002 square feet and 10,481. This project will have an average lot size of 5,887.3 square feet." Therefore, this standard is met.

Minimum Lot Width at Front Property Line: SZCDC §16.12.030(C) requires properties in the MDRH zoning district to be 25 feet wide at the front property line. Each lot has at least 25 feet of frontage along the proposed extension of SW Wapato Island Drive. Therefore, this standard is met.

Minimum Lot Width at Building Line: In the MDRH zoning district, lots intended for the construction of single-family dwellings must be 50 feet wide at the building line. While exact building footprints and locations have not yet been determined, each lot will need to provide a 50-foot-width at an eventual building. This standard will be reviewed further during the Building Permit Application process.

One proposed lot, Lot 3, will be occupied by an existing dwelling. Because the location of this building is already known, it is possible to determine compliance with this standard. At the building line for the existing dwelling, Lot 3 has a width of 57 feet. The minimum front yard setback and face of garage setback will serve as the building line for these lots. Therefore, to the extent possible at this time, this standard is met.

Lot Depth: The minimum lot depth is 80 feet in the MDRH zoning district. All proposed lots have an average horizontal distance greater than 80 feet between the front and rear lot lines when measured in the direction of the side lot lines. It should be noted for the purposes of this standard, the southern side lot line of Lot 5 is considered to begin at the midpoint of the curve along SW Wapato Island Drive. The western side lot line of Lot 10 is considered to begin at the north midpoint of the curve along SW Wapato Island Drive.

Maximum Height: The maximum height in the MDRH zoning district is 35 feet or 2.5 stories. Compliance with this standard will be reviewed during the Building Permit Application process. The existing dwelling complies with this standard because it is only one story tall.

Setbacks: The MDRH zoning district requires a front yard setback of 14 feet, a rear yard setback of 20 feet, a side yard setback of 5 feet, a corner lot street side setback of 15 feet, and a face of garage setback of 20 feet. Future dwellings will be reviewed for compliance with these standards during the Building Permit Application process. Therefore, to the extent possible at this time, this standard is met.

16.12.040. Community Design

For standards relating to off-street parking and loading, energy conservation, historic resources, environmental resources, landscaping, access and egress, signs, parks and open space, on-site storage, and site design, see Divisions V, VIII, IX.

Response: This application narrative demonstrates compliance with the applicable standards relating to off-street parking, energy conservation, landscaping, access and egress, parks and open space, and site design. Therefore, this standard is met.

16.12.050. Floodplain

Except as otherwise provided, Section 16.134.020 shall apply.

Response: The subject property is not located within a floodplain (Exhibit C). Therefore, this standard does not apply.

IV. Chapter 16.50 – Accessory Structures, Architectural Features, and Decks

16.50.010. Standards and Definition

B. Generally

For uses located within a residential zoning district, accessory uses, buildings, and structures shall comply with all requirements for principal uses, buildings, and structures except where specifically modified below; and shall also comply with the City of Sherwood Building Code as amended. Where this Code and the Building Code conflict, the most stringent shall apply.

Response: Accessory structures, architectural features, and decks will be reviewed for compliance with these standards along during the Building Permit Application process. These improvements are not included with this tentative subdivision application. Therefore, standards in this chapter do not apply at this time.

V. Chapter 16.58 – Clear Vision and Fence Standards

16.58.010. Clear Vision

A. A clear vision area shall be maintained on the corners of all property at the intersection of two (2) streets, intersection of a street with a railroad, or intersection of a street with an alley or private driveway.

Response: While the proposed subdivision does not include the construction of an intersection of two streets, clear vision areas will be mainlined on the intersections of SW Wapato Island Drive and all private driveways. Therefore, this standard will be met.

B. A clear vision area shall consist of a triangular area, two (2) sides of which are lot lines measured from the corner intersection of the street lot lines for a distance specified in this regulation; or, where the lot lines have rounded corners, the lot lines extended in a straight line to a point of intersection, and so measured, and the third side of which is a line across the corner of the lot joining the non-intersecting ends of the other two (2) sides.

Response: Clear vision areas will consist of a triangular area compliant with the dimensional requirements of this section. Therefore, this standard will be met.

C. A clear vision area shall contain no planting, sight obscuring fence, wall, structure, or temporary or permanent obstruction exceeding two and one-half (2½) feet in height, measured from the top of the curb, or where no curb exists, from the established street center line grade, except that trees exceeding this height may be located in this area, provided all branches and foliage are removed to the height of seven (7) feet above the ground on the sidewalk side and ten (10) feet on the street side.

Response: Clear vision areas shall not contain any of the prohibited items identified by this code section. Therefore, this standard will be met.

VI. Chapter 16.60 – Yard Requirements

16.60.010. Through Lots.

On a through lot the front yard requirements of the zone in which such a lot is located shall apply to the street frontage where the lot receives vehicle access; except where access is from an alley, the front yard requirements shall apply to the street opposite the alley.

Response: Lots 6, 7, 8, and 9 will have frontage on both SW Wapato Island Drive and SW Brookman Road. These lots will receive vehicle access from the proposed SW Wapato Island Drive extension. Front yard requirements of the MDRH zoning district were applied to the SW Wapato Island Drive frontage. Therefore, this standard is met.

16.60.020. Corner Lots.

On a corner lot, or a reversed corner lot of a block oblong in shape, the short street side may be used as the front of the lot provided:

A. The front yard setback shall not be less than twenty-five (25) feet; except where otherwise allowed by the applicable zoning district and subject to vision clearance requirements.

B. The side yard requirements on the long street side shall conform to the front yard requirement of the zone in which the building is located.

Response: The proposed subdivision will create two corner lots, Lot 5 and 10. As required by this standard, the short street side of Lots 5 and 10 would serve as its front yard. When setbacks are reviewed during the Building Permit Application process the front yard and street side yard setbacks will comply with the applicable standards of the MDRH zoning districts. Therefore, this standard is met.

16.60.030. Yards.

A. Except for landscaping, every part of a required yard (also referred to as minimum setback) shall be open and unobstructed from its lowest point to the sky, except that architectural features such as awnings, fire escapes, open stairways, chimneys, or accessory structures permitted in accordance with Chapter 16.50 (Accessory Structures) may be permitted when so placed as not to obstruct light and ventilation.

Response: Buildings, structures, and their architectural features are not included in this land use application; consequently, there are no encroachments proposed that would be governed by this section. Therefore, this standard does not apply.

B. Where a side or rear yard is not required, and a primary structure is not erected directly on the property line, a primary structure must be set back at least three (3) feet.

Response: Yard setbacks will be enforced as required by the MDRH zoning district; therefore, this standard does not apply.

VII. Chapter 16.72 – Procedures for Processing Development Permits

16.72.010. Generally

A. Classifications

Except for Final Development Plans for Planned Unit Developments, which are reviewed per Section 16.40.030, all quasi-judicial development permit applications and legislative land use actions shall be classified as one of the following:

2. Type II

The Following quasi-judicial actions shall be subject to a Type II review process:

i. Subdivisions between 4-10 lots

Response: The applicant is proposing a 10-lot residential subdivision, which must be and will be processed through a Type II quasi-judicial review process. Noticing will be performed according to SZCDC §16.72.020. Therefore, this standard is met.

VIII. Chapter 16.92 – Landscaping

16.92.020. Landscaping Materials

A. Required landscaped areas shall include an appropriate combination of native evergreen or deciduous trees and shrubs, evergreen ground cover, and perennial plantings. Trees to be planted in or adjacent to public rights-of-way shall meet the requirements of this Chapter. Plants may be selected from the City's "Suggested Plant Lists for Required Landscaping Manual" or suitable for the Pacific Northwest climate and verified by a landscape architect or certified landscape professional.

1. Ground Cover Plants

a. All of the landscape that is not planted with trees and shrubs must be planted in ground cover plants, which may include grasses. Mulch is not a substitute for ground cover, but is allowed in addition to the ground cover plants.

b. Ground cover plants other than grasses must be at least the four-inch pot size and spaced at distances appropriate for the plant species. Ground cover plants must be planted at a density that will cover the entire area within three (3) years from the time of planting.

Response: The proposed subdivision includes the installation of groundcover compliant with this code in the locations identified on Sheet 7.0, Landscape Plan, of the attached tentative plan set.

2. Shrubs

a. All shrubs must be of sufficient size and number to be at full growth within three (3) years of planting.

b. Shrubs must be at least the one-gallon container size at the time of planting.

Response: The proposed subdivision includes the installation of shrubs compliant with this code in the locations identified on Sheet 7.0, Landscape Plan, of the attached tentative plan set.

3. Trees

a. Trees at the time of planting must be fully branched and must be a minimum of two (2) caliper inches and at least six (6) feet in height.

b. Existing trees may be used to meet the standards of this chapter, as described in Section 16.92.020.C.2.

Response: The proposed subdivision includes the installation of trees compliant with this code in the locations identified on Sheet 7.0, Landscape Plan, of the attached tentative plan set.

B. Plant Material Selection and Preparation

1. Required landscaping materials shall be established and maintained in a healthy condition and of a size sufficient to meet the intent of the approved landscaping plan. Specifications shall be submitted showing that adequate preparation of the topsoil and subsoil will be undertaken.

2. Landscape materials should be selected and sited to produce a hardy and drought-resistant landscape area. Selection of the plants should include consideration of soil type, and depth, the amount of maintenance required, spacing, exposure to sun and wind, the slope and contours of the site, and compatibility with existing native vegetation preserved on the site.

Response: The required landscape materials shall be established and maintained in a healthy condition; however, this standard is unable to be enforced until the time of installation, so conformance with this requirement will be demonstrated then. A detail illustrating the adequate preparation of the topsoil and subsoil will be provided alongside construction documents for the proposed subdivision. Landscape materials were selected according to the considerations outlined in this requirement. Therefore, this standard will be met upon completion of the subdivision.

16.92.040 Installation and Maintenance Standards

A. Installation

All required landscaping must be in-ground, except when in raised planters that are used to meet minimum Clean Water Services storm water management requirements. Plant materials must be installed to current nursery industry standards. Plant materials must be properly supported to ensure survival. Support devices such as guy wires or stakes must not interfere with vehicular or pedestrian movement.

B. Maintenance and Mitigation of Landscaped Areas

1. Maintenance of existing non-invasive native vegetation is encouraged within a development and required for portions of the property not being developed.

2. All landscaping shall be maintained in a manner consistent with the intent of the approved landscaping plan.

3. Any required landscaping trees removed must be replanted consistent with the approved landscaping plan and comply with § 16.142, (Parks, Trees and Open Space).

Response: While the applicant intends to comply with the applicable installation and maintenance requirements outlined in this section, these standards cannot be reviewed during the tentative plat application process. Instead, these standards will be enforced at the time of planting. Therefore, at the appropriate time, these standards will be met.

C. Irrigation

The intent of this standard is to ensure that plants will survive the critical establishment period when they are most vulnerable due to lack of watering. All landscaped areas must provide an irrigation system, as stated in Option 1, 2, or 3.

1. Option 1: A permanent built-in irrigation system with an automatic controller installed.

2. Option 2: An irrigation system designed and certified by a licensed landscape architect or other qualified professional as part of the landscape plan, which provides sufficient water to ensure that the plants become established. The system does not have to be permanent if the plants chosen can survive independently once established.

3. Option 3: Irrigation by hand. If the applicant chooses this option, an inspection will be required one (1) year after final inspection to ensure that the landscaping has become established.

Response: At this time, the applicant intends to provide irrigation by hand but would like to reserve the right to implement Options 1 or 2 should either be determined more appropriate in the future. Therefore, this standard is met.

IX. Chapter 16.94 – Off-Street Parking and Loading

16.94.010 General Requirements

A. Off-Street Parking Required

No site shall be used for the parking of vehicles until plans are approved providing for off-street parking and loading space as required by this Code. Any change in uses or structures that reduces the current off-street parking and loading spaces provided on site, or that increases the need for off-street parking or loading requirements shall be unlawful and a violation of this Code, unless additional off-street parking or loading areas are provided in accordance with Section 16.94.020, or unless a variance from the minimum or maximum parking standards is approved in accordance with Chapter 16.84 Variances.

Response: The proposed extension of SW Wapato Island Drive will not permit on-street parking within the boundaries of the Brookman Place Subdivision. Two off-street parking spaces will be provided for each lot. While final driveway locations have not been confirmed, preliminary driveway curb-cut locations have been identified on the tentative plans. Therefore, to the extent possible at this time, this standard is met.

B. Deferral of Improvements

Off-street parking and loading spaces shall be completed prior to the issuance of occupancy permits, unless the City determines that weather conditions, lack of available surfacing materials, or other circumstances beyond the control of the applicant make completion impossible. In such circumstances, security equal to one hundred twenty five (125) percent of the cost of the parking and loading area is provided the City. "Security" may consist of a performance bond payable to the City, cash, certified check, or other assurance of completion approved by the City. If the installation of the parking or loading area is not completed within one (1) year, the security may be used by the City to complete the installation.

Response: This application is requesting approval of a tentative subdivision plan and not a building permit. Off-street parking shall be constructed prior to the issuance of an occupancy permit for each individual dwelling. This standard will be met.

D. Prohibited Uses

Required parking, loading and maneuvering areas shall not be used for long-term storage or sale of vehicles or other materials, and shall not be rented, leased or assigned to any person or organization not using or occupying the building or use served.

Response: Off-street parking spaces within the proposed subdivision will be limited to standard residential uses. Compliance with this standard will be the responsibility of the future property owners. This standard will be met.

E. Location

1. Residential off-street parking spaces:

a. Shall be located on the same lot or development as the residential use.

b. Shall not include garages or enclosed buildings with the exception of a parking structure in multifamily developments where three (3) or more spaces are not individually enclosed. (Example: Underground or multi-level parking structures).

Response: Each individual lot will contain adequate driveway area to provide two off-street parking spaces. Therefore, this standard is met.

F. Marking

All parking, loading or maneuvering areas shall be clearly marked and painted. All interior drives and access aisles shall be clearly marked and signed to show the direction of flow and maintain vehicular and pedestrian safety.

Response: Residential driveways are not required to be marked or painted. Therefore, this standard does not apply.

G. Surface and Drainage

1. All parking and loading areas shall be improved with a permanent hard surface such as asphalt, concrete or a durable pervious surface. Use of pervious paving material is encouraged and preferred where appropriate considering soils, location, anticipated vehicle usage and other pertinent factors.

2. Parking and loading areas shall include storm water drainage facilities approved by the City Engineer or Building Official.

Response: All driveways will be constructed with a permanent hard surface and will be sloped to ensure stormwater drains to the conveyance systems in public right-of-way. Therefore, this standard is met.

H. Repairs

Parking and loading areas shall be kept clean and in good repair. Breaks in paved surfaces shall be repaired. Broken or splintered wheel stops shall be replaced. Painted parking space boundaries and directional symbols shall be maintained in a readable condition.

Response: Repairs shall be the responsibility of future property owners. This standard will be met.

16.94.020 Off-Street Parking Standards

A. Generally

Where square feet are specified, the area measured shall be the gross building floor area primary to the functioning of the proposed use. Where employees are specified, persons counted shall be those working on the premises, including proprietors, during the largest shift at peak season. Fractional space requirements shall be counted as a whole space. The Review Authority may determine alternate off - street parking and loading requirements for a use not specifically listed in this Section based upon the requirements of comparable uses.

Response: As previously stated, "Two off-street parking spaces will be provided for each lot. While final driveway locations have not been confirmed, preliminary driveway curb-cut locations have been identified on the tentative plans. Therefore, to the extent possible at this time, this standard is met."

B. Dimensional and General Configuration Standards

1. Dimensions For the purpose of this Chapter, a "parking space" means a stall nine (9) feet in width and twenty (20) feet in length. Up to twenty five (25) percent of required parking spaces may have a minimum dimension of eight (8) feet in width and eighteen (18) feet in length so long as they are signed as compact car stalls.

Response: Because this application is for approval a tentative subdivision application, it does not include shared, marked, or public off-street parking areas. Therefore, this standard does not apply.

X. Chapter 16.96 – On-Site Circulation

16.96.010 On-Site Pedestrian and Bicycle Circulation

A. Purpose

On-site facilities shall be provided that accommodate safe and convenient pedestrian access within new subdivisions, multi-family developments, planned unit developments, shopping centers and commercial districts, and connecting to adjacent residential areas and neighborhood activity centers within one-half mile of the development. Neighborhood activity centers include but are not limited to existing or planned schools, parks, shopping areas, transit stops or employment centers. All new development, (except single-family detached housing), shall provide a continuous system of private pathways/sidewalks.

Response: Walkways will be constructed throughout the proposed subdivision to provide pedestrian access to the common open space tract and connect SW Brookman Road to SW Wapato Island Drive. Additionally, sidewalks compliant with the applicable street sections will be provided on both sides of SW Wapato Island Drive and along the property's SW Brookman Road frontage. Therefore, this standard is met.

D. Connection to Streets

1. Except for joint access per this Section, all ingress and egress to a use or parcel shall connect directly to a public street, excepting alleyways with paved sidewalk.

Response: All proposed lots will have direct access to SW Wapato Island Drive. Therefore, this standard is met.

F. Access to Major Roadways

Points of ingress or egress to and from Highway 99W and arterials designated on the Transportation Plan Map, attached as Appendix C of the Community Development Plan, Part II, shall be limited as follows:

1. Single and two-family uses and manufactured homes on individual residential lots developed after the effective date of this Code shall not be granted permanent driveway ingress or egress from Highway 99W and arterial roadways. If alternative public access is not available at the time of development, provisions shall be made for temporary access which shall be discontinued upon the availability of alternative access.

Response: Lots 6, 7, 8, and 9 have frontage along SW Brookman Road, an arterial street. These lots will be provided access via SW Wapato Island Drive not SW Brookman Road. Therefore, this standard is met.

16.96.020 Minimum – Residential Standards

Minimum standards for private, on-site circulation improvements in residential developments:

A. Driveways

1. Single-Family: One (1) driveway improved with hard surface pavement with a minimum width of ten (10) feet, not to exceed a grade of 14%. Permeable surfaces and planting strips between driveway ramps are encouraged in order to reduce stormwater runoff.

Response: Proposed Driveways will be paved, have a width greater than 10 feet, and not exceed a grade of 14%. Therefore, this standard is met.

XI. Chapter 16.106 – Transportation Facilities

16.106.010 Generally

A. Creation

Public streets shall be created in accordance with provisions of this Chapter. Except as otherwise provided, all street improvements and rights-of-way shall conform to standards for the City's functional street classification, as shown on the Transportation System Plan (TSP) Map (Figure 17) and other applicable City standards. The following table depicts the guidelines for the street characteristics.

Response: The subject property has frontage along SW Brookman Road, and SW Wapato Island Drive terminates on its eastern boundary. SW Wapato Island Drive is classified as a local street by the City of Sherwood and will be extended to serve the proposed subdivision. The proposed extension will continue to the street section established by the Middlebrook Subdivision. Sheet 4.0 – Transportation illustrates the proposed street section. The proposed street section mirrors the local street section shown in Transportation System Plan Figure 17.

SW Brookman Road is an arterial street under Washington County's jurisdiction. The proposed frontage improvements to SW Brookman Road are shown on Sheet 4.0 – Transportation. Similar to SW Wapato Island Drive improvements and widths constructed along with the Middlebrook Subdivision will be extended across the subject property's SW Brookman Road frontage with minor alterations to account for differences between properties. These improvements are designed to Washington County standards. Therefore, this standard is met.

B. Street Naming

Response: The proposed subdivision does not create new street; it will continue already existing streets. Therefore, no new street names are required, and this standard does not apply.

16.106.020 Required Improvements

A. Generally

Except as otherwise provided, all developments containing or abutting an existing or proposed street, that is either unimproved or substandard in right-of-way width or improvement, shall dedicate the necessary right-of-way prior to the issuance of building permits and/or complete acceptable improvements prior to issuance of occupancy permits. Right-of-way requirements are based on functional classification of the street network as established in the Transportation System Plan, Figure 17.

Response: Because the subject property has frontage on SW Brookman Road which fails to comply with its classification's prescribed street section, the proposed subdivision will dedicate the 34.5 feet of right-of-way necessary to contain the frontage improvements illustrated on Sheet 4.0 – Transportation. Therefore, this standard is met.

B. Existing Streets

Except as otherwise provided, when a development abuts an existing street, the improvements requirement shall apply to that portion of the street right-of-way located between the centerline of the right-of-way and the property line of the lot proposed for development. In no event shall a required street improvement for an existing street exceed a pavement width of thirty (30) feet.

Response: As stated in the applicant's response to SZCDC §16.106.020(A), 34.5 feet of right-of-way will be dedicated along the property's SW Brookman Road frontage. However, improvements only include 26 feet of paving, which does not exceed the 30-foot maximum implemented by this code requirement. Therefore, this standard is met.

C. Proposed Streets

1. Except as otherwise provided, when a development includes or abuts a proposed street, in no event shall the required street improvement exceed a pavement width of forty (40) feet.

2. Half Streets: When a half street is created, a minimum of 22 feet of driving surface shall be provided by the developer.

Response: The proposed extension of SW Wapato Island Drive will be classified as a local street, constructed to the appropriate street standards, and not exceed a pavement width of 40 feet. Therefore, this standard is met.

D. Extent of Improvements

1. Streets required pursuant to this Chapter shall be dedicated and improved consistent with Chapter 6 of the Community Development Plan, the TSP and applicable City specifications included in the City of Sherwood Construction Standards. Streets shall include curbs, sidewalks, catch basins, street lights, and street trees. Improvements shall also include any bikeways designated on the Transportation System Plan map. Applicant may be required to dedicate land for required public improvements only when the exaction is directly related to and roughly proportional to the impact of the development, pursuant to Section 16.106.090.

Response: The proposed streets will include curb, sidewalks, catch basins, streetlights, and street trees as illustrated on Sheet 4.0 of the tentative plan set. The Transportation System Plan (TSP) identifies a bike lane on SW Brookman Road, and that lane will be provided via a 12-foot-wide multi-use path/sidewalk. Therefore, this standard is met.

E. Transportation Modifications

1. A modification to a standard contained within this Chapter and Section 16.58.010 and the standard cross sections contained in Chapter 8 of the adopted TSP may be granted in accordance with the procedures and criteria set out in this section.

2. A modification request concerns a deviation from the general design standards for public facilities, in this Chapter, Section 16.58.010, or Chapter 8 in the adopted Transportation System Plan. The standards that may be modified include but are not limited to:

c. Horizontal alignment.

Response: A modification to Section 210.3.A.3 of the City of Sherwood Engineering Manual is required to approve a horizontal curve radius less than 185 feet. The proposed street will have a centerline curve radius of 100 feet. This centerline curve radius is necessary to ensure the existing dwelling complies with the front setback standard, provide an eight-foot-wide public utility easement, and create better opportunities for future street extension.

4. Criteria for Modification: Modifications may be granted when criterion 4a and any one of criteria 4b through 4e are met:

a. Consideration shall be given to public safety, durability, cost of maintenance, function, appearance, and other appropriate factors to advance the goals of the adopted Sherwood Comprehensive Plan and Transportation System Plan as a whole. Any modification shall be the minimum necessary to alleviate the hardship or disproportional impact.

Response: The proposed modification will not alter the street's durability, appearance, or increase the cost of maintenance. To preserve public safety and function, several mitigation efforts will be performed to counteract the effects of a smaller centerline radius. These efforts include installing curve and speed signage and not permitting on-street parking. Additionally, the applicant has provided documentation demonstrating the proposed modification does not affect emergency vehicle traffic. Therefore, this criterion is met.

b. Topography, right-of-way, existing construction or physical conditions, or other geographic conditions impose an unusual hardship on the applicant, and an equivalent alternative which can accomplish the same design purpose is available.

Response: An existing single-family dwelling is located on the subject property. If the proposed street extension were to comply with the 185-foot minimum horizontal curve radius, it would be constructed approximately 2.4 feet from the existing dwelling. As a result, the dwelling would not comply with the applicable front yard setback for the MDRH zoning district, and an eight-foot-wide public utility easement could not be provided along the north side of the street extension. Additionally, there are no variance procedures that could be used to permit an 11.4-foot encroachment into the front yard setback standard. Reducing the minimum horizontal curve radius to 100 feet would ensure compliance with public utility easement requirements and allow the dwelling to comply with the front yard setback. Therefore, criterion is met.

16.106.030 Location

A. Generally

The location, width and grade of streets shall be considered in their relation to existing and planned streets, topographical conditions, and proposed land uses. The proposed street system shall provide adequate, convenient and safe traffic and pedestrian circulation, and intersection angles, grades, tangents, and curves shall be adequate for expected traffic volumes. Street alignments shall be consistent with solar access requirements as per Chapter 16.156, and topographical considerations.

Response: SW Wapato Island Drive is classified as a local street by the City of Sherwood and will be extended to serve the proposed subdivision. The proposed extension will continue to the improvements and widths established by the Middlebrook Subdivision. Sheet 4.0 – Transportation illustrates the proposed street section.

SW Brookman Road is an arterial street under Washington County's jurisdiction. The proposed frontage improvements to SW Brookman Road are shown on Sheet 4.0 – Transportation. The Brookman Place Subdivision includes a 34.5-foot right-of-way dedication along its SW Brookman Road frontage. Therefore, this standard is met.

B. Street Connectivity and Future Street Systems

1. Future Street Systems. The arrangement of public streets shall provide for the continuation and establishment of future street systems as shown on the Local Street Connectivity Map contained in the adopted Transportation System Plan (Figure 16).

Response: The Local Street Connectivity plan (Figure 18) illustrated conceptual street connections to SW Brookman Road. Because these intersections are conceptual, actual locations may vary. As such, the required connection near the subject property is considered to be SW White Oak Terrace constructed within the Middlebrook Subdivision, and the proposed subdivision cannot construct another north-south access to SW Brookman Road due to the access spacing requirements in SZCDC §16.106.040(B)(3). Therefore, this standard is met.

2. *Connectivity Map Required. New residential, commercial, and mixed use development involving the construction of new streets shall be submitted with a site plan that implements, responds to and expands on the Local Street Connectivity map contained in the TSP.*
   a. *A project is deemed to be consistent with the Local Street Connectivity map when it provides a street connection in the general vicinity of the connection(s) shown on the map, or where such connection is not practicable due to topography or other physical constraints; it shall provide an alternate connection approved by the decision-maker.*
   b. *Where a developer does not control all of the land that is necessary to complete a planned street connection, the development shall provide for as much of the designated connection as practicable and not prevent the street from continuing in the future.*
   c. *Where a development is disproportionately impacted by a required street connection, or it provides more than its proportionate share of street improvements along property line (i.e., by building more than 3/4 width street), the developer shall be entitled to System Development charge credits, as determined by the City Engineer.*
   d. *Driveways that are more than 24 feet in width shall align with existing streets or planned streets as shown in the Local Street Connectivity Map in the adopted Transportation System Plan (Figure 17), except where prevented by topography, rail lines, freeways, pre-existing development, or leases, easements, or covenants.*

Response: As mentioned in the applicant's response to SZCDC §16.106.030(B)(1), access to SW Brookman Road near the subject property is provided via SW White Oak Terrace. SW Wapato Island Drive, another street constructed by the Middlebrook Subdivision intersects with SW White Oak Terrace before extending approximately 103 feet west to terminate the subject property's eastern boundary. This street will be extended through the proposed subdivision to provide connectivity. Therefore, no additional street connectivity is required, and this standard is met.

3. *Block Length. For new streets except arterials, block length shall not exceed 530 feet. The length of blocks adjacent to arterials shall not exceed 1,800 feet.*

Response: The proposed subdivision will not create a complete block. The Middlebrook Subdivision extended SW Wapato Island Drive approximately 103 feet from its intersection with SW White Oak Terrace. The proposed subdivision will then extend this street another 274 feet. Future development could extend this street another 153 feet before another local street connection would be necessary. Therefore, this standard is met.

4. Where streets must cross water features identified in Title 3 of the Urban Growth Management Functional Plan (UGMFP), provide crossings at an average spacing of 800 to 1,200 feet, unless habitat quality or length of crossing prevents a full street connection.

Response: There are no water features on-site. Therefore, this standard does not apply.

5. Where full street connections over water features identified in Title 3 of the UGMFP cannot be constructed in centers, main streets and station communities (including direct connections from adjacent neighborhoods), or spacing of full street crossings exceeds 1,200 feet, provide bicycle and pedestrian crossings at an average spacing of 530 feet, unless exceptional habitat quality or length of crossing prevents a connection.

Response: There are no water features on-site. Therefore, this standard does not apply.

6. Pedestrian and Bicycle Connectivity. Paved bike and pedestrian accessways consistent with cross section standards in Figure 8-6 of the TSP shall be provided on public easements or right- of-way when full street connections are not possible, with spacing between connections of no more than 300 feet. Multi-use paths shall be built according to the Pedestrian and Bike Master Plans in the adopted TSP.

Response: Pedestrian and bicycle connectivity will be provided via the sidewalk improvements associated with extension of SW Wapato Island Drive and SW Brookman Road frontage improvements. While the TSP does not identify any pedestrian or bicycle routes on the subject property other than along the property's SW Brookman Road frontage, a pedestrian walkway will connect the two public streets within or adjacent to the boundaries of the proposed subdivision. Additionally, there is no location where a full street connection is required but a pedestrian path is provided in its place. Therefore, this standard is met.

C. Underground Utilities

All public and private underground utilities, including sanitary sewers and storm water drains, shall be constructed prior to the surfacing of streets. Stubs for service connections shall be long enough to avoid disturbing the street improvements when service connections are made.

Response: It is the applicant's intention to construct public and private utilities underground prior to surfacing the proposed streets. This standard will be met.

16.106.040 Design

Standard cross sections showing street design and pavement dimensions are located in the City of Sherwood's Engineering Design Manual.

A. Reserve Strips

Reserve strips or street plugs controlling access or extensions to streets are not allowed unless necessary for the protection of the public welfare or of substantial property rights. All reserve strips shall be dedicated to the appropriate jurisdiction that maintains the street.

Response: The proposed subdivision does not reserve strips or street plugs. Therefore, this standard does not apply.

B. Alignment

All proposed streets shall, as far as practicable, be in alignment with existing streets. In no case shall the staggering of streets create a "T" intersection or a dangerous condition. Street offsets of less than one hundred (100) feet are not allowed.

Response: The proposed subdivision does not include the construction of a street intersection. Therefore, this standard does not apply.

C. Future Extension

Where necessary to access or permit future subdivision or development of adjoining land, streets must extend to the boundary of the proposed development and provide the required roadway width. Dead-end streets less than 100' in length must comply with the Engineering Design Manual.

A durable sign must be installed at the applicant's expense. The sign is required to notify the public of the intent to construct future streets. The sign must read as follows: "This road will be extended with future development. For more information contact the City of Sherwood Engineering Department."

Response: The property immediately west of the subject property has the potential to be subdivided in the future. As such, the applicant proposes to extend SW Wapato Island Drive to its western boundary allowing for a convenient future street extension. The applicant will install a sign reading “This road will be extended with future development. For more information contact the City of Sherwood Engineering Department.” as required by this standard. Therefore, this standard is met.

D. Intersection Angles

Streets shall intersect as near to ninety (90) degree angles as practical, except where topography requires a lesser angle. In all cases, the applicant shall comply with the Engineering Design Manual.

Response: As previously noted, the proposed subdivision does not include the construction of a street intersection. Therefore, this standard does not apply.

F. Grades and Curves

Grades shall be evaluated by the City Engineer and comply with the Engineering Design Manual.

Response: City of Sherwood Engineering Department will review the final engineering plans for compliance with the applicable standards governing street grades and curves. This standard will be met.

H. Buffering of Major Streets

Where a development abuts Highway 99W, or an existing or proposed principal arterial, arterial or collector street, or neighborhood route, adequate protection for residential properties must be provided, through and local traffic be separated, and traffic conflicts minimized. In addition, visual corridors pursuant to Section 16.142.040, and all applicable access provisions of Chapter 16.96, are to be met. Buffering may be achieved by: parallel access streets, lots of extra depth abutting the major street with frontage along another street, or other treatment suitable to meet the objectives of this Code.

Response: Through compliance with Section 16.142.040 and Chapter 16.96, as demonstrated by this application narrative, the proposed subdivision provides adequate buffering between residential uses and the adjacent arterial street, SW Brookman Road. Therefore, this standard is met.

M. Vehicular Access Management

All developments shall have legal access to a public road. Access onto public streets shall be permitted upon demonstration of compliance with the provisions of adopted street standards in the Engineering Design Manual.

2. Roadway Access

No use will be permitted to have direct access to a street or road except as specified below. Access spacing shall be measured from existing or approved accesses on either side of a street or road. The lowest functional classification street available to the legal lot, including alleys within a public easement, shall take precedence for new access points.

a. Local Streets:

Minimum right-of-way radius is fifteen (15) feet. Access will not be permitted within ten (10) feet of Point "B," if no radius exists, access will not be permitted within twenty-five (25) feet of Point "A." Access points near an intersection with a Neighborhood Route, Collector or Arterial shall be located beyond the influence of standing queues of the intersection in accordance with AASHTO standards. This requirement may result in access spacing greater than ten (10) feet.

Response: Please refer to Sheet 4.0 of the attached tentative plan set for a visual illustration of how the proposed development complies with the vehicular access management standards in this section. Therefore, this standard is met.

16.106.060 Sidewalks

A. Required Improvements

1. Except as otherwise provided, sidewalks shall be installed on both sides of a public street and in any special pedestrian way within new development.

2. For Highway 99W, arterials, or in special industrial districts, the City Manager or designee may approve a development without sidewalks if alternative pedestrian routes are available.

3. In the case of approved cul-de-sacs serving less than fifteen (15) dwelling units, sidewalks on one side only may be approved by the City Manager or designee.

Response: As noted on Sheet 4.0 of the tentative plans, sidewalks will be constructed on both sides of SW Wapato Island Drive and along the property' SW Brookman Road frontage. Therefore, this standard is met.

B. Design Standards

1. Arterials and Collector Streets

Arterial and collector streets shall have minimum six (6) or eight (8) foot wide sidewalks/multi-use paths, located as required by this Code. Residential areas shall have a minimum of a six (6) foot wide sidewalk and commercial industrial areas shall have a minimum of an eight (8) foot wide sidewalk.

Response: A 12-foot-wide sidewalk/multi-use path will be constructed along the subject property's SW Brookman Road frontage in accordance with Washington County standards. Therefore, this standard is met.

2. Local Streets

Local streets shall have minimum five (5) foot wide sidewalks, located as required by this Code.

Response: Six-foot-wide sidewalks will be constructed on both sides of SW Wapato Island Drive. Therefore, this standard is met.

3. Handicapped Ramps

Sidewalk handicapped ramps shall be provided at all intersections.

Response: Whenever required sidewalk handicapped ramps will be provided; however, there are no intersections located within the proposed subdivision. Therefore, this standard is met.

C. Pedestrian and Bicycle Paths

Provide bike and pedestrian connections on public easements or right-of-way when full street connections are not possible, with spacing between connections of no more than 330 feet except where prevented by topography, barriers such as railroads or highways, or environmental constraints such as rivers and streams.

Response: There are no required street connections that cannot be constructed. Therefore, this standard does not apply.

XII. Chapter 16.108 – Improvement Plan Review

16.108.010 Preparation and Submission

An improvement plan shall be prepared and stamped by a Registered Civil Engineer certifying compliance with City specifications. Two (2) sets of the plan shall be submitted to the City for review. An improvements plan shall be accompanied by a review fee as per this Section.

Response: An Engineering Public Improvement Plan will be submitted to the City of Sherwood prior to construction. This standard will be met.

16.108.040 Acceptance of Improvements

A. Final Inspection

At such time as all public improvements, except those specifically approved for later installation, have been completed, the applicant shall notify the City of the readiness for final inspection.

Response: The applicant will notify the City of Sherwood that public improvements have been completed and it is appropriate for city staff to perform their final inspection. This standard will be met.

B. Notification of Acceptance

The City shall give written notice of acceptance of the improvements upon finding that the applicant has met the requirements of this Chapter and the specifications of all approved plans.

Response: The city will provide written notice of acceptance of the improvements to the applicant after completion of their final inspection. This standard will be met.

C. Maintenance Bond

Prior to City acceptance of public improvements, the applicant shall provide the City a maintenance bond computed at ten percent (10%) of the full value of the improvements, for the purpose of correcting any defective work or maintenance that becomes apparent or arises within two (2) years after final acceptance of the public improvements.

Response: The applicant will provide a maintenance bond computed at 10 percent of the full value of improvements upon acceptance of those public improvements. This standard will be met.

XIII. Chapter 16.110 – Sanitary Sewers

16.110.010 Requirement Improvements

Sanitary sewers shall be installed to serve all new developments and shall connect to existing sanitary sewer mains. Provided, however, that when impractical to immediately connect to a trunk sewer system, the use of septic tanks may be approved, if sealed sewer laterals are installed for future connection and the temporary system meets all other applicable City, Clean Water Services, Washington County and State sewage disposal standards.

Response: The sanitary sewer line in SW Wapato Island Drive will be extended to serve new lots created by this subdivision. Improvements will be engineered to meet all applicable City, Clean Water Services, Washington County, and State standards. Therefore, this standard is met.

16.110.020 Design Standards

A. Capacity

Sanitary sewers shall be constructed, located, sized, and installed at standards consistent with this Code, the Sanitary Sewer Service Plan Map in the Sanitary Sewer Master Plan, and other applicable Clean Water Services and City standards, in order to adequately serve the proposed development and allow for future extensions.

B. Capacity

1. When sewer facilities will, without further construction, directly serve property outside a proposed development, gradual reimbursement may be used to equitably distribute the cost of that over-sized system.

2. Reimbursement shall be in an amount estimated by the City to be a proportionate share of the cost for each connection made to the sewer by property owners outside of the development, for a period of ten (10) years from the time of installation of the sewers. The boundary of the reimbursement area and the method of determining proportionate shares shall be determined by the City. Reimbursement shall only be made as additional connections are made and shall be collected as a surcharge in addition to normal connection charges.

Response: The applicant will coordinate with city staff to ensure sanitary sewer infrastructure is properly sized or oversized to serve future development. If any infrastructure is oversized, the applicant will work with the city and Clean Water Services to calculate the appropriate reimbursement for said oversized improvements. Therefore, this standard is met.

XIV. Chapter 16.112 – Water Supply

16.112.010 Required Improvements

Water lines and fire hydrants conforming to City and Fire District standards shall be installed to serve all building sites in a proposed development. All waterlines shall be connected to existing water mains or shall construct new mains appropriately sized and located in accordance with the Water System Master Plan.

Response: Proposed waterlines and fire hydrants are shown on Sheet 6.0 of the tentative plan set. These improvements will be engineered to comply with applicable City and Tualatin Valley Fire and Rescue standards. Therefore, this standard is met.

16.112.020 Design Standards

A. Capacity

Water lines providing potable water supply shall be sized, constructed, located and installed at standards consistent with this Code, the Water System Master Plan, the City's Design and Construction Manual, and with other applicable City standards and specifications, in order to adequately serve the proposed development and allow for future extensions.

B. Fire Protection

All new development shall comply with the fire protection requirements of Chapter 16.116, the applicable portions of Chapter 7 of the Community Development Plan, and the Fire District.

C. Over-Sizing

1. When water mains will, without further construction, directly serve property outside a proposed development, gradual reimbursement may be used to equitably distribute the cost of that over-sized system.

2. Reimbursement shall be in an amount estimated by the City to be the proportionate share of the cost of each connection made to the water mains by property owners outside the development, for a period of ten (10) years from the time of installation of the mains. The boundary of the reimbursement area and the method of determining proportionate shares shall be determined by the City. Reimbursement shall only be made as additional connections are made and shall be collected as a surcharge in addition to normal connection charges.

3. When over-sizing is required in accordance with the Water System Master Plan, it shall be installed per the Water System Master Plan. Compensation for over-sizing may be provided through direct reimbursement, from the City, after mainlines have been accepted. Reimbursement of this nature would be utilized when the cost of over-sizing is for system wide improvements.

Response: Please refer to the applicant's response to SMC 16.116.020(A)-(D) for more information relating to the proposed fire protection systems. The findings and conclusions from the previously mentioned responses are incorporated here by reference.

The applicant will coordinate with city staff to ensure water lines are properly sized or oversized to serve future development. If any infrastructure is oversized, the applicant will work with the city to calculate the appropriate reimbursement for said oversized improvements. Therefore, this standard is met.

XV. Chapter 16.114 – Stormwater

16.114.010 Required Improvements

Storm water facilities, including appropriate source control and conveyance facilities, shall be installed in new developments and shall connect to the existing downstream drainage systems consistent with the Comprehensive Plan and the requirements of the Clean Water Services water quality regulations contained in their Design and Construction Standards R&O 04-9, or its replacement.

Response: Proposed stormwater drainage facilities are shown on Sheet 6.0 of the tentative plan set. These improvements will be engineered to comply with applicable City and Clean Water Services standards. Therefore, this standard is met.

16.114.020 Design Standards

A. Capacity

Storm water drainage systems shall be sized, constructed, located, and installed at standards consistent with this Code, the Storm Drainage Master Plan Map, attached as Exhibit E, Chapter 7 of the Community Development Plan, other applicable City standards, the Clean Water Services Design and Construction standards R&O 04-9 or its replacement, and hydrologic data and improvement plans submitted by the developer.

B. On-Site Source Control

Storm water detention and groundwater recharge improvements, including but not limited to such facilities as dry wells, detention ponds, and roof top ponds shall be constructed according to Clean Water Services Design and Construction Standards.

C. Conveyance System

The size, capacity and location of storm water sewers and other storm water conveyance improvements shall be adequate to serve the development and accommodate upstream and downstream flow. If an upstream area discharges through the property proposed for development, the drainage system shall provide capacity to the receive storm water discharge from the upstream area. If downstream drainage systems are not sufficient to receive an increase in storm water caused by new development, provisions shall be made by the developer to increase the downstream capacity or to provide detention such that the new development will not increase the storm water caused by the new development.

Response: An analysis of the development's stormwater drainage was completed in the Brookman Place Subdivision Preliminary Storm Drainage Report dated July 28, 2022. This report has been attached to this application narrative. Therefore, these standards are met.

XVI. Chapter 16.116 – Fire Protection

16.116.010 Required Improvements

When land is developed so that any commercial or industrial structure is further than two hundred and fifty (250) feet or any residential structure is further than five hundred (500) feet from an adequate water supply for fire protection, as determined by the Fire District, the developer shall provide fire protection facilities necessary to provide adequate water supply and fire safety.

Response: All proposed structures are residential and within 500 feet of adequate water supply for fire protection. Therefore, this standard is met.

16.116.020 Standards

A. Capacity

All fire protection facilities shall be approved by and meet the specifications of the Fire District, and shall be sized, constructed, located, and installed consistent with this Code, Chapter 7 of the Community Development Plan, and other applicable City standards, in order to adequately protect life and property in the proposed development.

Response: The proposed fire protection facilities have been designed to ensure their size, location, and eventual construction complies with the specifications of the Tualatin Valley Fire and Rescue District. Therefore, this standard is met.

B. Fire Flow

Standards published by the Insurance Services Office, entitled "Guide for Determination of Required Fire Flows" shall determine the capacity of facilities required to furnish an adequate fire flow. Fire protection facilities shall be adequate to convey quantities of water, as determined by ISO standards, to any outlet in the system, at no less than twenty (20) pounds per square inch residual pressure. Water supply for fire protection purposes shall be restricted to that available from the City water system. The location of hydrants shall be taken into account in determining whether an adequate water supply exists.

Response: Water systems will be designed to ensure that adequate fire flow will be provided to the proposed subdivision. This will be demonstrated during staff review of the applicant's Engineering Public Improvement Plan documents. Therefore, this standard will be met.

C. Access to Facilities

Whenever any hydrant or other appurtenance for use by the Fire District is required by this Chapter, adequate ingress and egress shall be provided. Access shall be in the form of an improved, permanently maintained roadway or open paved area, or any combination thereof, designed, constructed, and at all times maintained, to be clear and unobstructed. Widths, height clearances, ingress and egress shall be adequate for District firefighting equipment. The Fire District, may further prohibit vehicular parking along private accessways in order to keep them clear and unobstructed, and cause notice to that effect to be posted.

Response: The proposed hydrant is located adjacent to SW Wapato Island Drive, a public street. Fire apparatus movements in and out of the proposed subdivision are shown on Exhibit E. Therefore, this standard is met.

D. Hydrants

Hydrants located along private, accessways shall either have curbs painted yellow or otherwise marked prohibiting parking for a distance of at least fifteen (15) feet in either direction, or where curbs do not exist, markings shall be painted on the pavement, or signs erected, or both, given notice that parking is prohibited for at least fifteen (15) feet in either direction.

Response: The proposed hydrant is located on SW Wapato Island Drive, a public street. Therefore, this standard does not apply.

XVII. Chapter 16.118 – Public and Private Utilities

16.118.020 Standard

A. Installation of utilities shall be provided in public utility easements and shall be sized, constructed, located and installed consistent with this Code, and applicable utility company and City standards.

B. Public utility easements shall be a minimum of eight (8) feet in width unless a reduced width is specifically exempted by the City Engineer. An eight-foot wide public utility easement (PUE) shall be provided on private property along all public street frontages. This standard does not apply to developments within the Old Town Overlay.

C. Public utility easements shall be a minimum of eight (8) feet in width unless a reduced width is specifically exempted by the City Engineer. An eight-foot wide public utility easement (PUE) shall be provided on private property along all public street frontages. This standard does not apply to developments within the Old Town Overlay.

D. Franchise utility conduits shall be installed per the utility design and specification standards of the utility agency.

E. Public Telecommunication conduits and appurtenances shall be installed per the City of Sherwood telecommunication design standards.

Response: Utilities shall be installed in eight-foot-wide public utilities easements provided along all newly created public street frontages. The applicant will coordinate with franchise utility agencies to ensure installation is performed according to the appropriate specifications and standards. Therefore, these standards are met.

16.118.030 Underground Facilities

Except as otherwise provided, all utility facilities, including but not limited to, electric power, telephone, natural gas, lighting, cable television, and telecommunication cable, shall be placed underground, unless specifically authorized for above ground installation, because the points of connection to existing utilities make underground installation impractical, or for other reasons deemed acceptable by the City.

Response: All utilities listed in this standard, unless otherwise permitted, will be placed underground. Therefore, this standard will be met.

XVIII. Chapter 16.120 – Subdivision

16.120.020 General Subdivision Provisions

A. Approval of a subdivision occurs through a two-step process: the preliminary plat and the final plat.

1. The preliminary plat shall be approved by the Approval Authority before the final plat can be submitted for approval consideration; and

2. The final plat shall reflect all conditions of approval of the preliminary plat.

Response: This application is for a preliminary subdivision plat, which will be processed through a Type II quasi-judicial review procedure. If approved, when appropriate, the applicant will submit a final plat reflecting all conditions of approval associated with approval of this preliminary plat. Therefore, this standard is met.

B. All subdivision proposals shall conform to all state regulations set forth in ORS Chapter 92, Subdivisions and Partitions.

Response: The applicable standards from ORS Chapter 92 regarding subdivisions are implemented through the City of Sherwood's Zoning and Development Code. Therefore, because the proposed Brookman Place Subdivision complies with SZCDC, as demonstrated by this application narrative, it also complies with the relevant standards in ORS Chapter 92. This standard is met.

C. Future re-division

When subdividing tracts into large lots, the Approval Authority shall require that the lots be of such size and shape as to facilitate future re-division in accordance with the requirements of the zoning district and this Division.

Response: No proposed lots are of such size and shape as to facilitate future re-division in accordance with the MDRH zoning district. Therefore, this standard does not apply.

D. Future Partitioning

When subdividing tracts into large lots which may be resubdivided, the City shall require that the lots be of a size and shape, and apply additional building site restrictions, to allow for the subsequent division of any parcel into lots of smaller size and the creation and extension of future streets.

Response: The Brookman Place Subdivision will create one lot, Lot 3, that could potentially be partitioned in the future. However, it is unlikely a future partition could create two lots that comply with the appropriate dimensional standards despite Lot 3's area due to the parent lot's dimensions and locations of improvements. Therefore, this standard does not apply.

E. Lot Averaging

Lot size may be averaged to allow lots less than the minimum lot size allowed in the underlying zoning district subject to the following regulations:

1. The average lot area for all lots is not less than allowed by the underlying zoning district.

2. No lot created under this provision shall be less than 90 % of the minimum lot size allowed in the underlying zoning district.

3. The maximum lot size cannot be greater than 10 % of the minimum lot size.

Response: The applicant is not proposing to utilize the lot averaging standard. Therefore, this standard does not apply.

F. Required Setbacks

All required building setback lines as established by this Code, shall be shown in the preliminary subdivision plat.

Response: Sheet 8.0 of the tentative plan set shows all required building setbacks lines applicable in the MDRH zoning district. Therefore, this standard is met.

G. Property Sales

No property shall be disposed of, transferred, or sold until required subdivision approvals are obtained, pursuant to this Code.

Response: The applicant will not dispose of, transfer, or sell property until the subdivision process is completed in accordance with SZCDC. Therefore, this standard is met.

16.120.030 Approval Procedure-Preliminary Plat

A. Approval Authority

1. The approving authority for preliminary and final plats of subdivisions shall be in accordance with Section 16.72.010 of this Code.

a. A subdivision application for 4-10 lots will follow a Type II review process.

Response: The applicant is proposing a 10-lot residential subdivision, which must be and will be processed through a Type II quasi-judicial review process. Noticing will be performed according to SZCDC §16.72.020. Therefore, this standard is met.

16.120.040 Approval Criteria: Preliminary Plat

No preliminary plat shall be approved unless:

A. Streets and roads conform to plats approved for adjoining properties as to widths, alignments, grades, and other standards, unless the City determines that the public interest is served by modifying streets or road patterns.

Response: To the greatest extent possible, the proposed subdivision continues the widths, grades, and street sections established for SW Wapato Island Drive and SW Brookman Road established by the adjacent Middlebrook Subdivision. Although, the applicant had to make alterations to alignment to account for unique elements of the subject property as described earlier in this application narrative. Therefore, this standard is met.

B. Streets and roads held for private use are clearly indicated on the plat and all reservations or restrictions relating to such private roads and streets are set forth thereon.

Response: The proposed subdivision does not include the construction of street held for private use. Therefore, this standard does not apply.

C. The plat complies with applicable zoning district standards and design standards in Division II, and all provisions of Divisions IV, VI, VIII and IX. The subdivision complies with Chapter 16.128 (Land Division Design Standards).

Response: This application narrative and accompanying plan set demonstrate that the Brookman Place Subdivision complies with the applicable standards in Divisions II, IV, VI, VIII, IX, and Chapter 16.128. Therefore, this standard is met.

D. Adequate water, sanitary sewer, and other public facilities exist to support the use of land proposed in the plat.

Response: As demonstrated by the applicant's responses to standards listed in Division VI, adequate water, sanitary sewer, and other public facilities will be constructed to support the proposed subdivision. Therefore, this standard is met.

E. Development of additional, contiguous property under the same ownership can be accomplished in accordance with this Code.

Response: There is no remainder of property under the same ownership to consider with this application. Therefore, this criterion does not apply.

F. Adjoining land can either be developed independently or is provided access that will allow development in accordance with this Code.

Response: Only one adjoining property is not already developed, tax lot 200 on Washington County Assessor's Map 3s-1-6B. The Middlebrook Subdivision extended SW Chestnut Terrace, a local public street, to this property's northern boundary. Additionally, the proposed subdivision

will extend SW Wapato Island Drive, another local public street, to tax lot 200's eastern boundary. Therefore, this property has multiple access points, and this standard is met.

G. Tree and woodland inventories have been submitted and approved as per Section 16.142.060.

Response: An arborist report has been attached to this application narrative as Exhibit F. Therefore, this standard is met.

H. The plat clearly shows the proposed lot numbers, setbacks, dedications and easements.

Response: Sheet 8.0 of the tentative plan set shows allot numbers, setbacks, dedications, and easements. Therefore, this standard is met.

I. A minimum of five percent (5%) open space has been provided per Section 16.44.010.B.8 (Townhome-Standards) or Section 16.142.030 (Parks, Open Spaces and Trees-Single-Family Residential Subdivisions), if applicable.

Response: The Brookman Place Subdivision has a net buildable acreage of 1.48 acres or 64,295 square feet. Five percent of this area is 3,214.75 square feet. To ensure adequate open space has been preserved, the proposed subdivision will create a 3,428 square foot tract set aside for common open space. Therefore, this standard is met.

XIX. Chapter 16.128 – Land Division Design Standards

16.128.010 Blocks

A. Connectivity

1. Block Size

The length, width, and shape of blocks shall be designed to provide adequate building sites for the uses proposed, and for convenient access, circulation, traffic control and safety.

Response: A partial block was constructed by the Middlebrook Subdivision. The proposed subdivision will construct another portion of this block but will not complete it. There is opportunity for the adjacent property to extend the street a significant distance before a connection is required. Therefore, this standard is met.

2. Block length

Block length standards shall be in accordance with Section 16.108.040. Generally, blocks shall not exceed five-hundred thirty (530) feet in length, except blocks adjacent to principal arterial, which shall not exceed one thousand eight hundred (1,800) feet. The extension of streets and the formation of blocks shall conform to the Local Street Network map contained in the Transportation System Plan.

Response: The findings and conclusions from the applicant's response to SZCDC §16.106.030(B)(3) are incorporated herein by reference. Therefore, this standard is met.

3. Pedestrian and Bicycle Connectivity. Paved bike and pedestrian accessways shall be provided on public easements or right-of-way consistent with Figure 7.401.

Response: Paved bicycle and pedestrian accessways are provided throughout the subdivision via shared surface of SW Wapato Island Drive, a bike lane on SW Brookman Road, and two accessways internal accessways. These accessways provide pedestrian connection to the common open space tract and connect SW Wapato Island Drive and SW Brookman Road. Therefore, this standard is met.

B. Utilities Easements for sewers, drainage, water mains, electric lines, or other utilities shall be dedicated or provided for by deed. Easements shall be a minimum of ten (10) feet in width and centered on rear or side lot lines; except for tie-back easements, which shall be six (6) feet wide by twenty (20) feet long on side lot lines at the change of direction.

Response: Where necessary, utility easements have been provided for sanitary sewer, stormwater drainage, and franchise utilities. Easements are noted on Sheet 8.0 of the attached tentative plan set. These easements are an appropriate width given their use. Therefore, this standard is met.

C. Drainages

Where a subdivision is traversed by a watercourse, drainage way, channel or street, drainage easements or rights-of-way shall be provided conforming substantially to the alignment and size of the drainage.

Response: The proposed subdivision is not traversed by a watercourse, drainage way, or channel. Therefore, this standard does not apply.

16.128.020 Pedestrian and Bicycle Ways

Pedestrian or bicycle ways may be required to connect cul-de-sacs, divide through an unusually long or oddly shaped block, or to otherwise provide adequate circulation.

Response: The proposed subdivision does not construct a cul-de-sac, nor is there one nearby to connect to. However, the proposed subdivision will construct a pedestrian way between SW Brookman Road's sidewalk and SW Wapato Island Drive. Therefore, this standard is met.

16.128.030 Lots

A. Size and Shape

Lot size, width, shape, and orientation shall be appropriate for the location and topography of the subdivision or partition, and shall comply with applicable zoning district requirements, with the following exception:

Response: As demonstrated by this application narrative, all proposed lots comply with the size, depth, and width standards outlined in the MDRH zoning district. Therefore, this standard is met.

B. Access

All lots in a subdivision shall abut a public street, except as allowed for infill development under Chapter 16.68.

Response: As demonstrated by the tentative plan, all proposed lots have frontage along a public street. Therefore, this standard is met.

C. Double Frontage

Double frontage and reversed frontage lots are prohibited except where essential to provide separation of residential development from railroads, traffic arteries, adjacent nonresidential uses, or to overcome specific topographical or orientation problems. A five (5) foot wide or greater easement for planting and screening may be required.

Response: Lots 6, 7, 8, and 9 will be double frontage lots. These lots were necessary to provide separation between residential development and SW Brookman Road, an arterial street. Each of these lots will have a 15-foot visual corridor easement and landscaping to decrease the impacts of traffic on SW Brookman Road on the nearby residential development. Therefore, this standard is met.

D. Side Lot Lines Side lot lines shall, as far as practicable, run at right angles to the street upon which the lots face, except that on curved streets side lot lines shall be radial to the curve of the street.

Response: Wherever practicable side lot lines are at right angles to the street the property faces. There are several lots with frontage along curved streets. These lots have side lot lines that are radial to the curve of the street. Please refer to the tentative plans for a visual demonstration of compliance with this standard. Therefore, this standard is met.

E. Grading

Grading of building sites shall conform to the following standards, except when topography of physical conditions warrants special exceptions:

1. Cut slopes shall not exceed one (1) and one-half (1 1/2) feet horizontally to one (1) foot vertically.

2. Fill slopes shall not exceed two (2) feet horizontally to one (1) foot vertically.

Response: Preliminary grading is illustrated on Sheets 5.0 and 6.0 of the tentative plan set. Proposed cuts does not exceed one (1) and one-half (1 1/2) feet horizontally to one (1) foot vertically, and fill does not exceed two (2) feet horizontally to one (1) foot vertically. Therefore, this standard is met.

XX. Chapter 16.142 – Parks, Trees, and Open Spaces

16.142.030 Single-Family or Duplex Residential Subdivision

A. A minimum of five percent (5%) of the net buildable site (after exclusion of public right-of-way and environmentally constrained areas) shall be maintained as "open space". Open space must include usable areas such as public parks, swimming and wading pools, grass areas for picnics and recreational play, walking paths, and other like space.

Response: As mentioned in the applicant's response to §SZCDC 16.120.040(I), the subdivision will set aside more than five percent of the net buildable area as common open space. Therefore, this standard is met.

C. The open space shall be conveyed in accordance with one of the following methods:

1. By dedication to the City as public open space (if acceptable to the City). Open space proposed for dedication to the City must be acceptable to the City Manager or the Manager's designee with regard to the size, shape, location, improvement, environmental condition, and budgetary and maintenance abilities;

2. By leasing or conveying title (including beneficial ownership) to a corporation, homeowners' association or other legal entity, with the City retaining the development rights to the open space. The terms of such lease or other instrument of conveyance must include provisions (e.g., maintenance, property tax payment, etc.) suitable to the City.

Response: The common open space tract will be owned and maintained by a homeowners' association established for the Brookman Place Subdivision. Therefore, this standard is met.

16.142.040 Visual Corridors

A. Corridors Required

New developments located outside of the Old Town Overlay with frontage on Highway 99W, or arterial or collector streets designated on Figure 8-1 of the Transportation System Plan shall be required to establish a landscaped visual corridor according to the following standards:

2. Arterials – 15 feet

In residential developments where fences are typically desired adjoining the above described major street the corridor may be placed in the road right-of-way between the property line and the sidewalk. In all other developments, the visual corridor shall be on private property adjacent to the right-of-way.

Response: Several of the proposed lots have frontage along an arterial street, SW Brookman Road. These lots will have a 15-foot-wide visual corridor easement established along this frontage. Therefore, this standard is met.

B. Landscape Materials

The required visual corridor areas shall be planted as specified by the review authority to provide a continuous visual and/or acoustical buffer between major streets and developed uses. Except as provided for above, fences and walls shall not be substituted for landscaping within the visual corridor. Uniformly planted, drought resistant street trees and ground cover, as specified in Section 16.142.060, shall be planted in the corridor by the developer. The improvements shall be included in the compliance agreement. In no case shall trees be removed from the required visual corridor.

Response: Sheet 7.0 illustrates the proposed landscaping to be located inside the 15-foot-wide visual corridor easement. Therefore, this standard is met.

C. Establishment and Maintenance

Designated visual corridors shall be established as a portion of landscaping requirements pursuant to Chapter 16.92. To assure continuous maintenance of the visual corridors, the review authority may require that the development rights to the corridor areas be dedicated to the City or that restrictive covenants be recorded prior to the issuance of a building permit.

Response: Restrictive covenants will be recorded alongside the final subdivision plat to ensure maintenance of the visual corridor area. Therefore, this standard is met.

D. Required Yard

Visual corridors may be established in required yards, except that where the required visual corridor width exceeds the required yard width, the visual corridor requirement shall take precedence. In no case shall buildings be sited within the required visual corridor, with the exception of front porches on townhomes, as permitted in Section 16.44.010(E)(4)(c).

Response: The required visual corridor will be located within the rear yard setback of the subject lots. There are no proposed encroachments into the required setback or visual corridor. Therefore, this standard is met.

16.142.060 Street Trees

A. Installation of Street Trees on New or Redeveloped Property

Trees are required to be planted to the following specifications along public streets abutting or within any new development or re-development. Planting of such trees shall be a condition of development approval. The City shall be subject to the same standards for any developments involving City-owned property, or when constructing or reconstructing City streets. After installing street trees, the property owner shall be responsible for maintaining the street trees on the owner's property or within the right-of-way adjacent to the owner's property.

1. Location: Trees shall be planted within the planter strip along a newly created or improved streets. In the event that a planter strip is not required or available, the trees shall be planted on private property within the front yard setback area or within public street right-of-way between front property lines and street curb lines or as required by the City.

2. Size: Trees shall have a minimum trunk diameter of two (2) caliper inches, which is measured six inches above the soil line, and a minimum height of six (6) feet when planted.

3. Types: Developments shall include a variety of street trees. The trees planted shall be chosen from those listed in 16.142.080 of this Code.

4. Required Street Trees and Spacing:

a. The minimum spacing is based on the maximum canopy spread identified in the recommended street tree list in section 16.142.080 with the intent of providing a continuous canopy without openings between the trees. For example, if a tree has a canopy of forty (40) feet, the spacing between trees is forty (40) feet. If the tree is not on the list, the mature canopy width must be provided to the planning department by a certified arborist.

b. All new developments shall provide adequate tree planting along all public streets. The number and spacing of trees shall be determined based on the type of tree and the spacing standards described in a. above and considering driveways, street light locations and utility connections. Unless exempt per c. below, trees shall not be spaced more than forty (40) feet apart in any development.

c. A new development may exceed the forty-foot spacing requirement under section b. above, under the following circumstances:

(1) Installing the tree would interfere with existing utility lines and no substitute tree is appropriate for the site; or

(2) There is not adequate space in which to plant a street tree due to driveway or street light locations, vision clearance or utility connections, provided the driveways, street light or utilities could not be reasonably located elsewhere so as to accommodate adequate room for street trees; and

(3) The street trees are spaced as close as possible given the site limitations in (1) and (2) above.

(4) The location of street trees in an ODOT or Washington County right-of-way may require approval, respectively, by ODOT or Washington County and are subject to the relevant state or county standards.

(5) For arterial and collector streets, the City may require planted medians in lieu of paved twelve-foot wide center turning lanes, planted with trees to the specifications of this subsection.

Response: Sheet 7.0 of the tentative plan set provides a visual landscape plan detailing the species, size, and location of all proposed street trees. Please refer to this plan as an illustration of compliance with this standard. Therefore, this standard is met.

16.142.070 Trees on Property Subject to Certain Land Use Applications

C. Inventory

1. To assist the City in making its determinations on the retention of trees and woodlands, land use applications including Type II - IV development shall include a tree and woodland inventory and report. The report shall be prepared by a qualified professional and must contain the following information:

a. Tree size (in DBH and canopy area)'

b. Tree species

c. The condition of the tree with notes as applicable explaining the assessment

d. The location of the tree on the site

e. The location of the tree relative to the planned improvements

f. Assessment of whether the tree must be removed to accommodate the development

g. Recommendations on measures that must be taken to preserve trees during the construction that are not proposed to be removed.

2. In addition to the general requirements of this Section, the tree and woodland inventory's mapping and report shall also include, but is not limited to, the specific information outlined in the appropriate land use application materials packet.

Response: An arborist report prepared in compliance with these requirements has been attached to this application narrative (Exhibit F). Therefore, these standards are met.

D. Retention requirements

1. Trees may be considered for removal to accommodate the development including buildings, parking, walkways, grading etc., provided the development satisfies of D.2 or D.3, below.

Response: Due to either the placement of required utilities or the tree's health, the proposed subdivision will remove all trees currently on-site. However, as demonstrated below, the proposed subdivision complies with SZCDC §16.142.070(D)(2). Therefore, this standard is met.

2. Required Tree Canopy - Residential Developments (Single Family Attached, Single Family Detached and Two - Family)

Each net development site shall provide a variety of trees to achieve a minimum total tree canopy of 40 percent. The canopy percentage is based on the expected mature canopy of each tree by using the equation πr 2 to calculate the expected square footage of canopy for each tree. The expected mature canopy is counted for each tree regardless of an overlap of multiple tree canopies.

The canopy requirement can be achieved by retaining existing trees or planting new trees. Required street trees can be used toward the total on site canopy required to meet this standard. The expected mature canopy spread of the new trees will be counted toward the needed canopy cover. A certified arborist or other qualified professional shall provide the estimated tree canopy of the proposed trees to the planning department for review.

Response: The proposed subdivision has a net developable area of 64,295 square feet. The total mature canopy coverage of all proposed trees is 33,222 square feet, or 52 percent of the net buildable area. Therefore, this standard is met.

XXI. Chapter 16.156 – Energy Conservation

16.156.020 Standards

A. Building Orientation - The maximum number of buildings feasible shall receive sunlight sufficient for using solar energy systems for space, water or industrial process heating or cooling. Buildings and vegetation shall be sited with respect to each other and the topography of the site so that unobstructed sunlight reaches the south wall of the greatest possible number of buildings between the hours of 9:00 AM and 3:00 PM, Pacific Standard Time on December 21st.

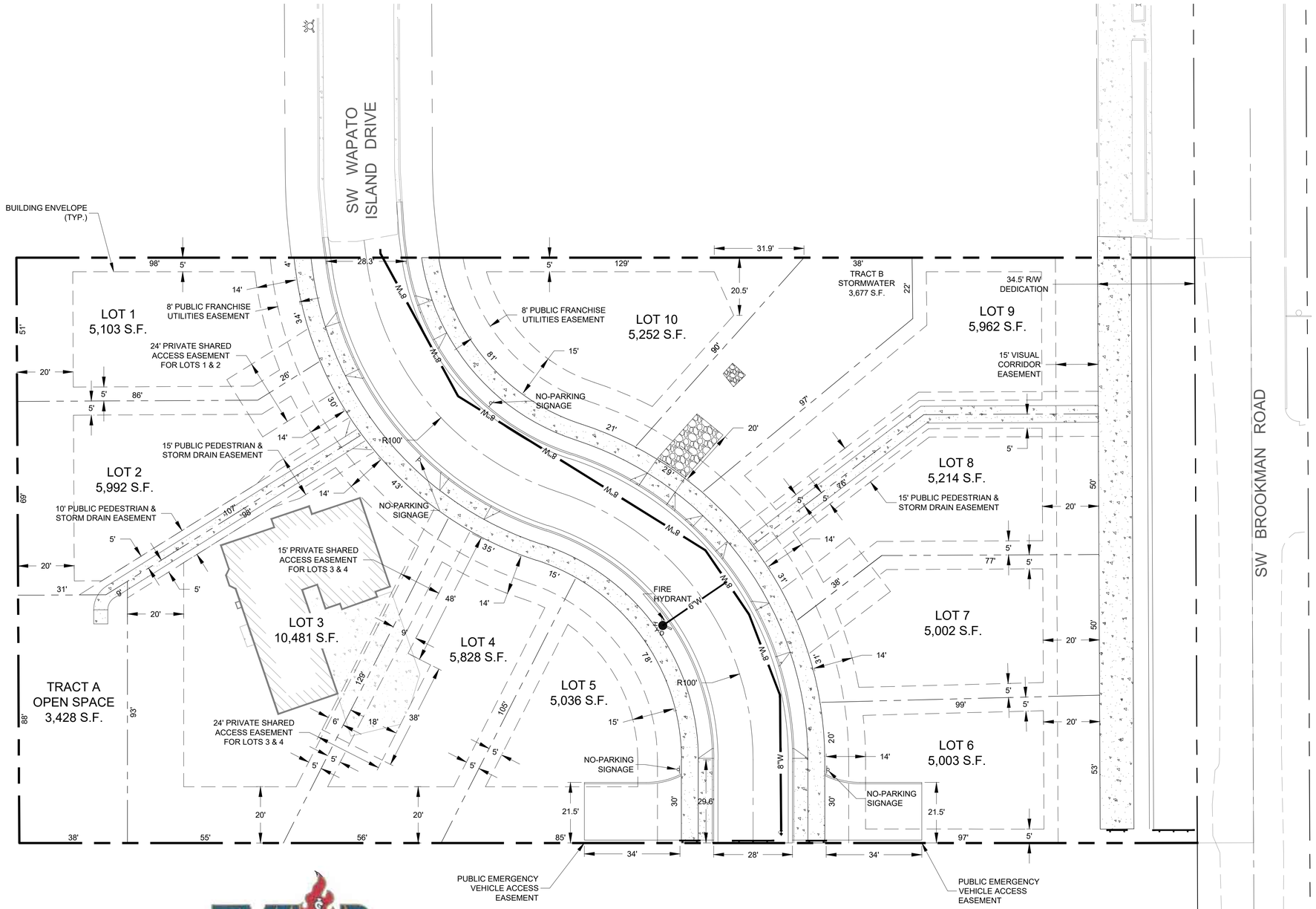
Response: Because the street constructed to serve the proposed subdivision generally have an east-west orientation, the eventual homes will receive consistent sunlight to their southern façades. Therefore, this standard is met.

B. Wind - The cooling effects of prevailing summer breezes and shading vegetation shall be accounted for in site design. The extent solar access to adjacent sites is not impaired vegetation shall be used to moderate prevailing winter wind on the site.

Response: Required setbacks and open space requirements will ensure that summer breezes will have pathways to cool the future residences, and during the winter months the proposed vegetation will serve as wind breaks. Therefore, this standard is met.

XXII. Conclusion

This application narrative and accompanying plan set demonstrate that all applicable provisions of the City of Sherwood Zoning and Development Code have satisfied. Reece & Associates, Inc., on behalf of the applicant, Olivia Beach, LLC, respectfully request approval of this application.



TVFR
Tualatin Valley Fire & Rescue

APPROVED PLANS

APPROVAL OF PLANS IS NOT AN APPROVAL OF OMISSIONS OR OVERSIGHTS.

Deputy Fire Marshal II

SITE PLAN
SCALE: 1" = 20'

GRAPHIC SCALE
20 0 10 20 40 80
(IN FEET)
1 inch = 20 ft.

PRELIMINARY - NOT FOR CONSTRUCTION

Reece & associates, inc.
321 first avenue east, suite 3a
albany, oregon 97321
phone: 541-926-2428
fax: 541-926-2456
PLANNING SERVICES
ENGINEERING SERVICES

REGISTERED PROFESSIONAL ENGINEER
11,749
OREGON
JULY 16, 1982
DAVID J. REECE
PRELIMINARY
RENEWS 12/31/22

BROOKMAN PLACE TENTATIVE PLAT
FIRE SAFETY PLAN

OLIVIA BEACH, LLC
SHERWOOD, OREGON

PLAN REVISIONS

No.	DATE	BY

R&a PROJECT NO.
OBC2001

DATE	07/07/2022
DESIGNED	A. VASQUEZ
ENGINEER	D. REECE
CHECKED	H. WOOTON
SCALE	AS INDICATED

SHEET NUMBER
FS-1

FIRE CODE / LAND USE / BUILDING REVIEW APPLICATION

Tualatin Valley Fire & Rescue

North Operating Center
11945 SW 70th Avenue
Tigard, OR 97223
Phone: 503-649-8577

South Operating Center
8445 SW Elligsen Rd
Wilsonville, OR 97070
Phone: 503-649-8577

REV 6-30-20

Project Information

Applicant Name: Walker John
Address: P.O. Box 7534, Olympia, WA 98507
Phone: 541-921-1247
Email: walker@urbanolympia.com
Site Address: 17687 SW Brookman Road
City: Sherwood
Map & Tax Lot #: Map No 3s106B, Lot 101
Business Name: Olivia Beach, LLC
Land Use/Building Jurisdiction: City of Sherwood
Land Use/ Building Permit # LU2022-008

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

A subdivision to divide a 2.00-acre parcel into ten lots for detached, single-family dwellings.

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 # 2022-0084
Permit Type: SPP
Submittal Date: 7/22/22
Assigned To: OARBY/ARM
Due Date: 7/22/22
Fees Due:
Fees Paid:

Approval/Inspection Conditions

(For Fire Marshal's Office Use Only)

This section is for application approval only

0806 7/22/22
Fire Marshal or Designee Date

Conditions:

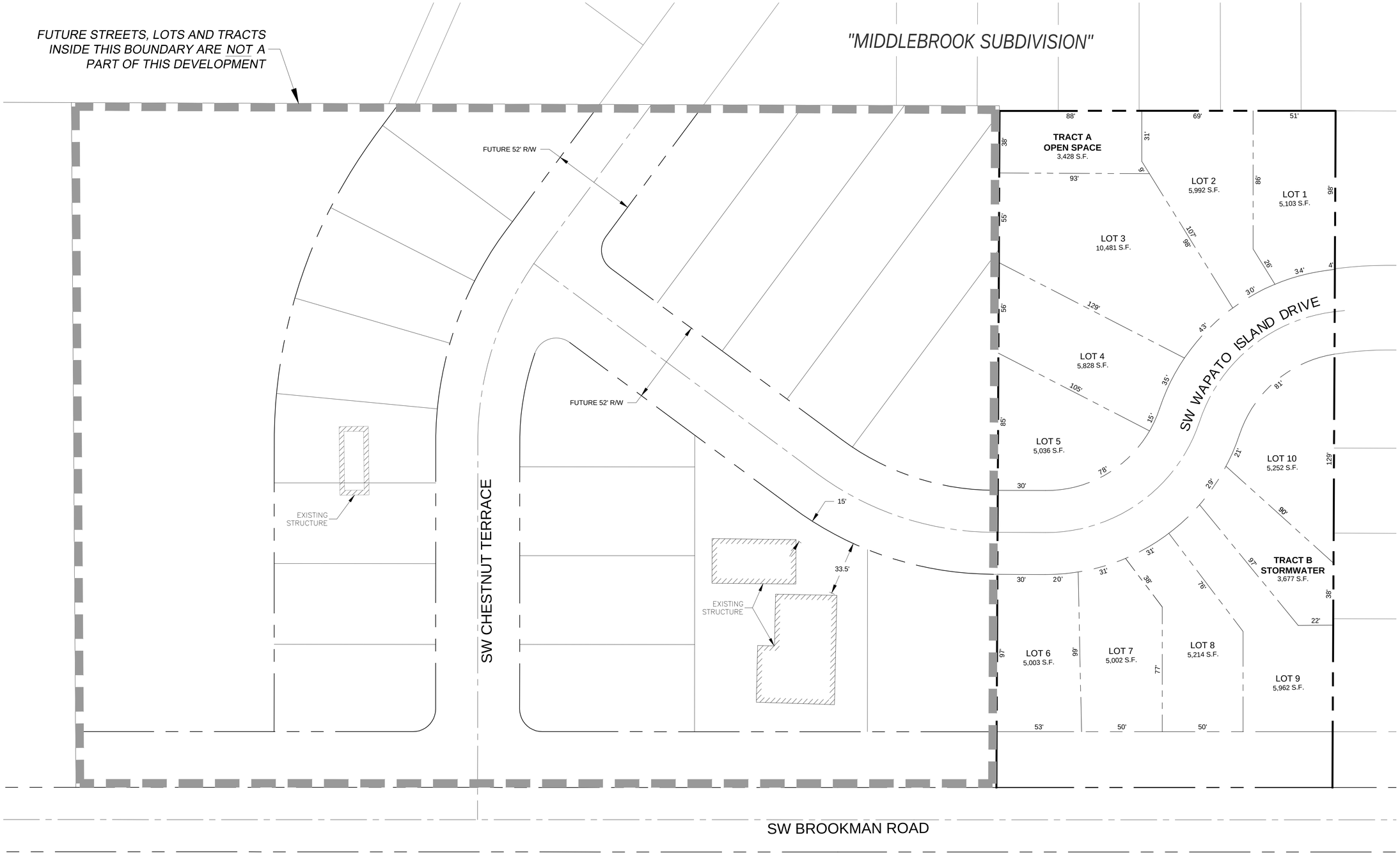
See Attached Conditions: ☐ Yes ☑ No

Site Inspection Required: ☐ Yes ☑ No

This section used when site inspection is required

Inspection Comments:

Final TVFR Approval Signature & Emp ID Date



SITE PLAN
SCALE: 1" = 30'

GRAPHIC SCALE
30 0 15 30 60 120
(IN FEET)
1 inch = 30 ft.

PRELIMINARY - NOT FOR CONSTRUCTION

Reece & associates, inc.
321 first avenue east, suite 3a
albany, oregon 97321
phone: 541-926-2428
fax: 541-926-2456
PLANNING SERVICES
ENGINEERING SERVICES

REGISTERED PROFESSIONAL ENGINEER
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OREGON
JULY 16, 1982
DAVID J. REECE
PRELIMINARY
RENEWS 12/31/22

BROOKMAN PLACE TENTATIVE PLAT
FUTURE STREET PLAN EXHIBIT

OLIVIA BEACH, LLC
SHERWOOD, OREGON

PLAN REVISIONS

No.	DATE	BY

R&a PROJECT NO.
OBC2001

DATE	08/02/2022
DESIGNED	A. VASQUEZ
ENGINEER	D. REECE
CHECKED	H. WOOTON
SCALE	AS INDICATED

SHEET NUMBER
1

STORM DRAINAGE REPORT

BROOKMAN PLACE SUBDIVISION

WASHINGTON COUNTY ASSESSOR'S MAP NO. **3S-1-06B**, LOT **101**
SHERWOOD, OREGON

PREPARED FOR:
WALKER JOHN, OWNER
OLIVIA BEACH SALES & CONSTRUCTION
3329 SW HWY 101
LINCOLN CITY, OR 97367

PREPARED BY:
REECE & ASSOCIATES, INC.
321 1ST AVE. EAST, SUITE 3A
ALBANY, OR 97321
541-926-2428

RENEWS 12/31/22

DAVID J REECE, PE
JULY 28, 2022

ENGINEERING SERVICES R&C PLANNING SERVICES
Reece & associates, inc.

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Plans to Accompany Report

D1 – Pre-Development Drainage Plan
D2 – Post-Development Drainage Plan

Exhibit A – USGS Soils Map and Soils Information
Exhibit B – Bio-Filtration Swale

HydroCAD® Report

1- Project Description:

This storm drainage report has been developed for the proposed Brookman Place Subdivision in Sherwood, Oregon. The 2-acre site, located in SW Sherwood off SW Brookman Road, is proposed for development into a 10-lot subdivision for single-family residences. Access to the site will be via the westward extension of SW Wapato Island Drive.

Post-developed runoff rates will be attenuated to the pre-developed runoff rates using an above ground detention facility with an outflow control structure, and water quality will be managed via a vegetated swale built into the bottom of the detention facility.

2- Regulatory Design Standards:

The City of Sherwood defers to the Clean Water Services (CWS) Standards for Runoff Treatment and Control. Standards referenced for this Storm Drainage Report include Chapter 4 of the CWS Construction Specifications, R&O 19-5 Amended by R&O 19-22, adopted November 12, 2019. The purpose of these standards is to prevent or reduce adverse impacts to the drainage system and water resources of the Tualatin River Basin.

Per the above stated code, and preliminary conversations with the City of Sherwood engineering department, a hydromodification category for the site needed to be established to determine allowable methods for treatment and flow-matching detention.

The proposed site is shown in an "Expansion Area" of the Hydromodification Web Map Tool[1], and risk level, based on the point of discharge, is "Moderate". The project's new and existing impervious surface for the site totals less than 80,000 SF which puts the project size at "Medium". Per Table 4-2 in the CWS Design Standards, the combination of these factors puts the proposed project site in Category 3. Category 3 projects may address hydromodification through Peak-Flow Matching Detention and management of at least 30% of the runoff from the site through a LIDA per Table 4-3. Both detention ponds and vegetated swales, as proposed for this site, are approved LIDA for stormwater runoff management.

3- Methodology:

Stormwater runoff values calculated in this report were determined using HydroCAD®, a computer aided design tool utilized for modeling stormwater runoff per the procedures outlined in (TR-55), Urban Hydrology for Small Watersheds, from the United States Department of Agriculture (USDA). This method relies on data gathered from the USDA Soil Conservation Service and standard hydraulics equations. Peak discharges were found in HydroCAD® using the Soil Conservation Services (SCS) method, based on the standard Type 1A rainfall distribution for all storm events. Peak 24-Hour rainfall events for the City of Sherwood were taken from Table 4-4 in the CWS standards.

4- Precipitation:

The design storm events used in this analysis are the 2-Year, 5-Year, 10-Year, and 25-Year recurrence intervals. The 100-Year storm event is included as well for facility sizing. All 24-Hours design storm quantities for each event are distributed over the NRCS Type 1A rainfall distribution. ***Table 1*** below lists the 24-Hour rainfall design storm events for each recurrence interval as used by the City of Sherwood.

[1] https://cws.maps.arcgis.com/apps/webappviewer/index.html?id=ab298d7dc7034dfa9f069a226a762e2b

Table 1: City of Sherwood Design Storms

Storm Event	Inches in 24-hrs
2-year	2.50
5-year	3.10
10-year	3.45
25-year	3.90
100-year	4.50

5- Pre-Development Drainage: (refer to D1*: Pre-development Drainage*)

The pre-development drainage calculations were performed assuming the site is a combination of brush, gravel, and home/driveway structures. A weighted Curve Number (CN) of 77 was established for the pre-development conditions. For Time of Concentration (Tc) on the site, assuming sheet flow over 298 feet of dense grass, was established at 28.3 minutes.

Soils information for the site was taken from the online version of the United States Department of Agriculture (USDA) web soil survey.[2] 99% of the soils on the site consist of Aloha Silt Loam with only 1% of Huberly Silt Loam (0-3% Slopes). Both soils are HSG Type C/D, which are classified as being somewhat poorly to poorly draining. Type "D" soils were used for the purposes of this site evaluation. The soils map and further information about the soils on the site can be found in Exhibit A.

6- Post-Development Drainage: (refer to D2*: Post-development Drainage*)

The post-development drainage calculations account for the new and existing-to-remain pervious and impervious surfaces that will exist on the site after construction. Per CWS sizing standards, new home construction on single-family lots shall contain a maximum of 2,640 square feet of impervious surface. For 9 new homes, this totals 23,760 SF of impervious surface. Combined with the existing home and driveway-to-remain (new Lot 3), and new ROW improvements for SW Wapato Island Drive, total impervious surfaces for the site are approximately 1 acre. The remaining 1 acre of the site will consist of pervious surfaces such as yards and open space.

Per City of Sherwood requirements, stormwater runoff from individual lots must be directed to the storm sewer system, rather than flowing to the street via weepholes prior to entering the system. Once runoff has entered the system, but prior to being released to the above-ground detention pond between lots 9 and 10, water will enter a Pre-Treatment Manhole, per CWS standard details. Water will flow from the pretreatment manhole to the detention pond, where the stormwater runoff flow rate will be managed using an outlet control manhole, and water quality will be managed using a vegetated swale in the bottom of the detention facility. Further information on water quality treatment methods can be found in Section 7 of this report.

[2] https://websoilsurvey.nrcs.usda.gov/app/WebSoilSurvey.aspx

Table 2: Summary of HydroCAD® Nodes

Node	**Area** (acres)	**CN**	**$Q_{2\text{-Year}}$** (cfs)	**$Q_{5\text{-Year}}$** (cfs)	**$Q_{10\text{-Year}}$** (cfs)	**$Q_{25\text{-Year}}$** (cfs)
Pre (1S)	2.00	77	0.21	0.39	0.50	0.66
Post (2S)	2.00	89	0.73	1.02	1.19	1.42
Pond (1P)	n/a	n/a	0.10	0.15	0.20	0.29
Post Total	n/a	n/a	0.10	0.15	0.20	0.29

For Category 3 projects, flow-matching requirements include post-developed runoff of the 2-year storm be released at half the rate of the pre-developed rate for the same storm. The proposed pond and outflow controls achieve this requirement.

The detention facility, designed with vertical walls, has a total available storage capacity of 12,225 cf. The maximum height of the facility is 5 feet, with a maximum ponding depth of 3.63 feet, during the 100-year storm event. Expected storage volumes and maximum elevations for each storm event are presented below in ***Table 3***.

Table 3: Storage and Maximum Elevations at Pond 1P

Storm Event	**Storage** (cf)	**Peak Elevation** (ft)
2-Year	6,386	202.88
5-Year	7,653	203.37
10-Year	7,896	203.46
25-Year	8,082	203.53
100-Year	8,338	203.63

The upper elevation of the detention facility is designed to be at 205.00. With peak 100-year storm flow elevations reaching 203.63, this means there's more than the minimum 1-foot of freeboard to avoid damage to the facilities or surrounding properties.

7- Water Quality:

Per CWS Standards, vegetated swales are acceptable LIDA for treatment of stormwater runoff. The proposed swale in the detention facility has been sized according to the CWS standards. This swale will treat not only the runoff from the new development but is proposed to treat runoff from Brookman Road. All runoff will first go through a CWS standard Pre-Treatment Manhole before entering the detention facility for treatment and detention before leaving the site and entering the Sherwood public storm drain system.

Vegetated swales must be a minimum of 100 feet in length, with a slope of at least 0.5% and a bottom width of at least 2 feet. The designed vegetated swale for the site is approximately 125 feet in length, at a 0.5% slope, and has a bottom width of 3 feet. This leads to a 11.42-minute residence time for the water quality storm, exceeding the minimum required 9.0-minute residence time per CWS. Further calculations for the vegetated swale can be found in Exhibit B.

8- Conclusion:

Based on this stormwater analysis, stormwater runoff from the proposed development will be effectively managed to comply with all applicable design standards using an above ground detention facility. Post-development peak runoff rates will be attenuated to the pre-development rates for the site. Water quality standards will be met using a vegetated biofiltration swale placed in the detention facility onsite.

Plans to Accompany Report

D1 – Pre-Development Drainage Plan
D2 – Post-Development Drainage Plan

Exhibit A – USGS Soils Map and Soils Information
Exhibit B – Bio-Filtration Swale

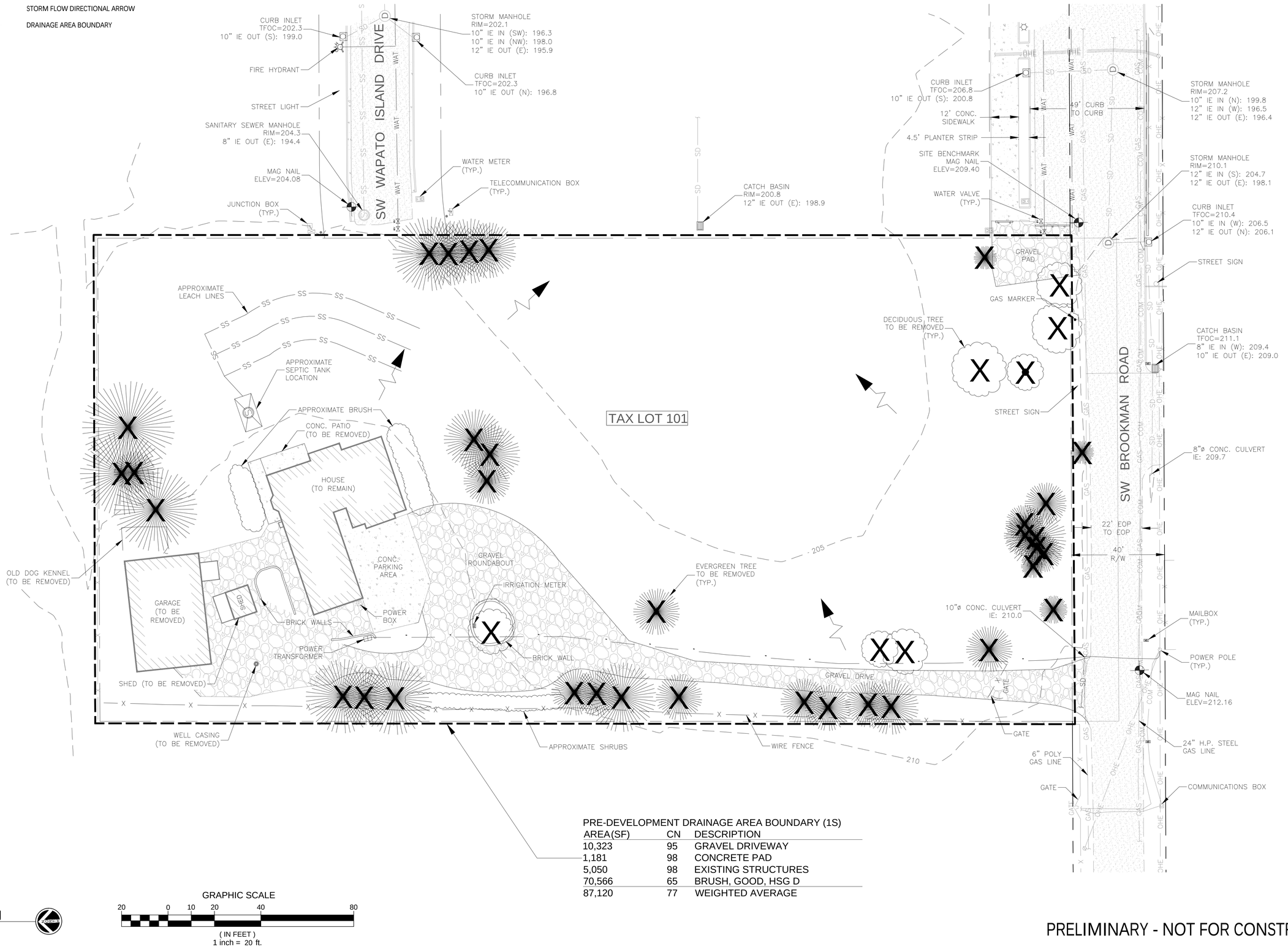
HydroCAD® Report

SITE LEGEND

SUBJECT PROPERTY LINE

STORM FLOW DIRECTIONAL ARROW

DRAINAGE AREA BOUNDARY



PRE-DEVELOPMENT DRAINAGE AREA BOUNDARY (1S)

AREA(SF)	CN	DESCRIPTION
10,323	95	GRAVEL DRIVEWAY
1,181	98	CONCRETE PAD
5,050	98	EXISTING STRUCTURES
70,566	65	BRUSH, GOOD, HSG D
87,120	77	WEIGHTED AVERAGE

SITE PLAN
SCALE: 1" = 20'

GRAPHIC SCALE
20 0 10 20 40 80
(IN FEET)
1 inch = 20 ft.

PRELIMINARY - NOT FOR CONSTRUCTION

Reece & associates, inc.
321 first avenue east, suite 3a
albany, oregon 97321
phone: 541-926-2428
fax: 541-926-2456
PLANNING SERVICES
ENGINEERING SERVICES

REGISTERED PROFESSIONAL ENGINEER
11,749
OREGON
JULY 16, 1982
DAVID J. REECE
PRELIMINARY
RENEWS 12/31/22

BROOKMAN PLACE STORMWATER EXHIBITS
PRE-DEVELOPMENT DRAINAGE

OLIVIA BEACH, LLC
SHERWOOD, OREGON

PLAN REVISIONS

No.	DATE	BY

R&a PROJECT NO.
OBC2001

DATE	07/27/2022
DESIGNED	A. CECCHINI
ENGINEER	D. REECE
CHECKED	H. WOOTON
SCALE	AS INDICATED

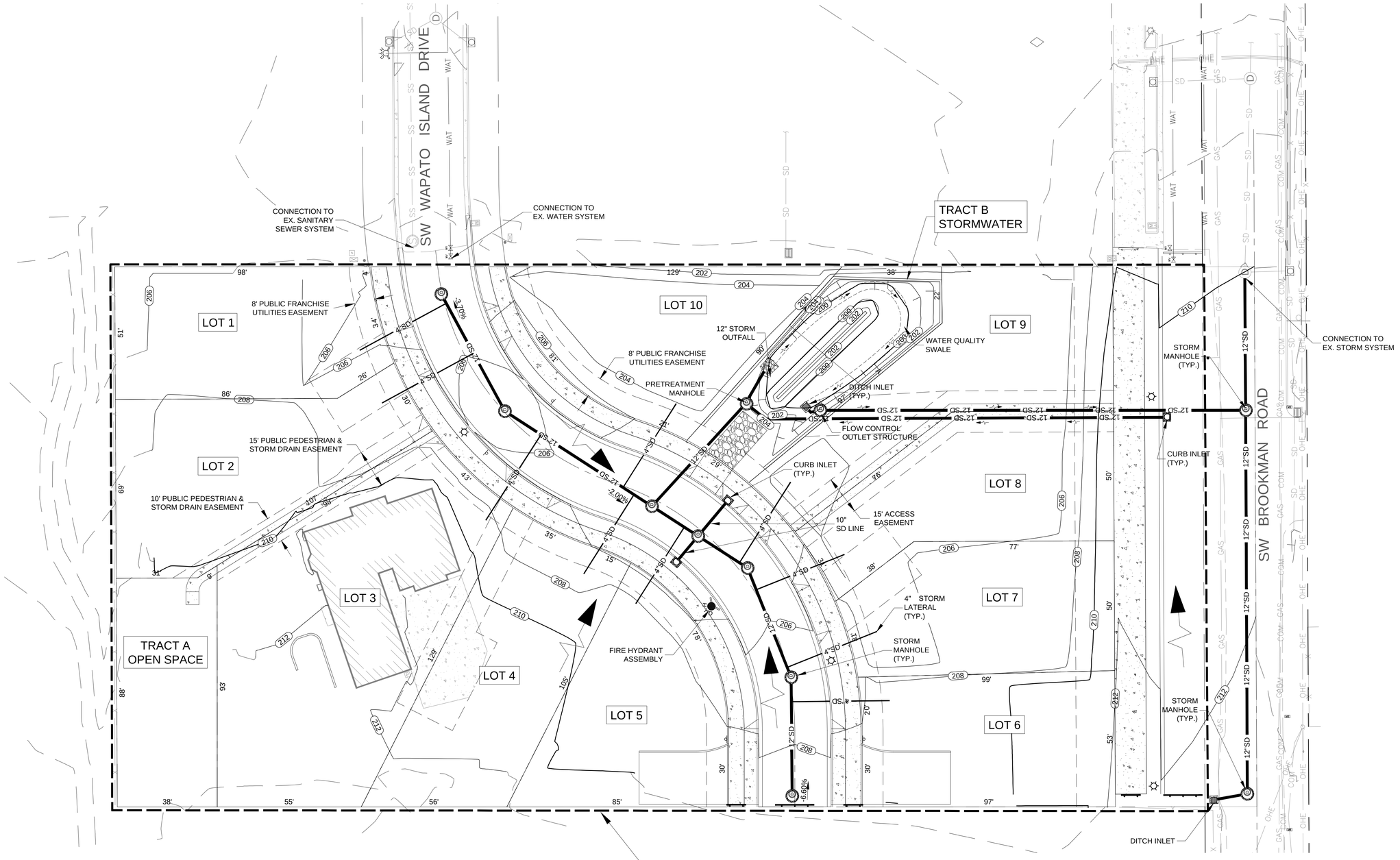
D1

SITE LEGEND

SUBJECT PROPERTY LINE

STORM FLOW DIRECTIONAL ARROW

DRAINAGE AREA BOUNDARY



PRE-DEVELOPMENT DRAINAGE AREA BOUNDARY (2S)

AREA (SF)	CN	DESCRIPTION
43,615	80	75% GRASS COVER, GOOD, HSG D
23,760	98	MAX LOT BUILDABLE
3,865	98	EXISTING STRUCTURES (LOT 3)
15,880	98	HMAC/PCC
87,120	89	WEIGHTED AVERAGE

GRAPHIC SCALE

20 0 10 20 40 80

(IN FEET)

1 inch = 20 ft.

SITE PLAN

SCALE: 1" = 20'

PRELIMINARY - NOT FOR CONSTRUCTION

Reece & associates, inc.
321 first avenue east, suite 3a
albany, oregon 97321
phone: 541-926-2428
fax: 541-926-2456

PLANNING SERVICES

ENGINEERING SERVICES

REGISTERED PROFESSIONAL ENGINEER
11,749
OREGON
JULY 16, 1982
DAVID J. REECE
PRELIMINARY
RENEWS 12/31/22

BROOKMAN PLACE STORMWATER EXHIBITS

POST-DEVELOPMENT DRAINAGE

OLIVIA BEACH, LLC
SHERWOOD, OREGON

PLAN REVISIONS

No.	DATE	BY

R&A PROJECT NO.
OBC2001

DATE	07/27/2022
DESIGNED	A. CECCHINI
ENGINEER	D. REECE
CHECKED	H. WOOTON
SCALE	AS INDICATED

D2

EXHIBIT A - USGS SOILS MAP

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: Washington County, Oregon
Survey Area Data: Version 21, Oct 27, 2021

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

Date(s) aerial images were photographed: Sep 19, 2018—Oct 20, 2018

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
1 HSG C/D	Aloha silt loam	2.0	99.2%
2225A HSG C/D	Huberly silt loam, 0 to 3 percent slopes	0.0	0.8%
Totals for Area of Interest		**2.1**	**100.0%**

Map Unit Description

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 in this report, 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, soils that are similar to the named components, and some minor components that differ in use and management from the major soils.

Most of the soils similar to the major components 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. Some minor components, however, have properties and behavior 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 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*. All the soils of a series have major horizons that are similar in composition, thickness, and arrangement. Soils of a given 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.

Additional information about the map units described in this report is available in other soil reports, which give properties of the soils and the limitations, capabilities, and potentials for many uses. Also, the narratives that accompany the soil reports define some of the properties included in the map unit descriptions.

Washington County, Oregon

1—Aloha silt loam

Map Unit Setting

National map unit symbol: 21x8
Elevation: 150 to 250 feet
Mean annual precipitation: 40 to 60 inches
Mean annual air temperature: 52 to 54 degrees F
Frost-free period: 160 to 210 days

Farmland classification: Prime farmland if drained

Map Unit Composition

Aloha and similar soils: 90 percent
Minor components: 1 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: Old loamy alluvium

Typical profile

H1 - 0 to 8 inches: silt loam
H2 - 8 to 46 inches: silt loam
H3 - 46 to 65 inches: silt loam

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Somewhat poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.57 in/hr)
Depth to water table: About 18 to 24 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: High (about 11.8 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: 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

Data Source Information

Soil Survey Area: Washington County, Oregon
Survey Area Data: Version 21, Oct 27, 2021

Map Unit Description

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 in this report, along with the maps, can be used to determine the composition and properties of a unit.

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The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. All the soils of a series have major horizons that are similar in composition, thickness, and arrangement. Soils of a given 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.

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Additional information about the map units described in this report is available in other soil reports, which give properties of the soils and the limitations, capabilities, and potentials for many uses. Also, the narratives that accompany the soil reports define some of the properties included in the map unit descriptions.

Washington County, Oregon

2225A—Huberly silt loam, 0 to 3 percent slopes

Map Unit Setting

National map unit symbol: 2sv3y
Elevation: 150 to 260 feet
Mean annual precipitation: 39 to 51 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

Huberly and similar soils: 90 percent
Minor components: 3 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Huberly

Setting

Landform: Swales on terraces
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Concave
Parent material: Silty glaciolacustrine deposits

Typical profile

A - 0 to 8 inches: silt loam
BAg - 8 to 15 inches: silt loam
Btg - 15 to 25 inches: silt loam
2Btx1 - 25 to 38 inches: silt loam
2Btx2 - 38 to 59 inches: silt loam

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Low to moderately low (0.01 to 0.01 in/hr)
Depth to water table: About 0 to 8 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 5.7 inches)

Interpretive groups

Land capability classification (irrigated): 3w
Land capability classification (nonirrigated): 3w
Hydrologic Soil Group: C/D
Ecological site: R002XC007OR - Valley Swale Group
Forage suitability group: Poorly Drained (G002XY006OR)
Other vegetative classification: Poorly Drained (G002XY006OR)
Hydric soil rating: Yes

Minor Components

Verboort

Percent of map unit: 3 percent
Landform: Terraces
Landform position (three-dimensional): Tread
Down-slope shape: Concave
Across-slope shape: Concave
Other vegetative classification: Poorly Drained (G002XY006OR)

Hydric soil rating: Yes

Data Source Information

Soil Survey Area: Washington County, Oregon
Survey Area Data: Version 21, Oct 27, 2021

EXHIBIT B - BIO-FILTRATION SWALE

Date: 7/27/2022

Project: OBC2001 - Sherwood

Reece & associates, inc.

Swale #: 1P

Color Key:	Calculated	Entered	Constant

Biofiltration Swale Design

Minimum Bottom Width [ft]	DESIGN Bottom Width [ft]	Mannings n	Check 0.17 Depth [ft]	Slope [%]	
3.14	3	0.2	0.33	0.5%	OK!

2" [0.17] = frequently mowed
4" [0.33]= not requently mowed
(S < 1.5% requires an underdrain)

Design Storms Runoff (cfs)	
100-yr	1.73
WQ	0.26

Minimum Swale Len (FT)	DESIGN Swale Len (FT)
98.5	125

Area (sf)	Velocity	
1.4256	0.182	Side slope: 4 :1

Max = 1 fps OK!

Velocity		Residence Time		
0.182	[ft/sec]	11.42	Mins.	OK!

100 year velocity check

Q_{100}=	1.73	OK!
V_{100}=	1.21	FPS < 3.0 FPS?

Source: Calculations used in this spreadsheet were developed based on the Methods of Analysis presented in chapter 6.1.1.1 of the 2009 Surface Water Design Manual for King County, Washington.

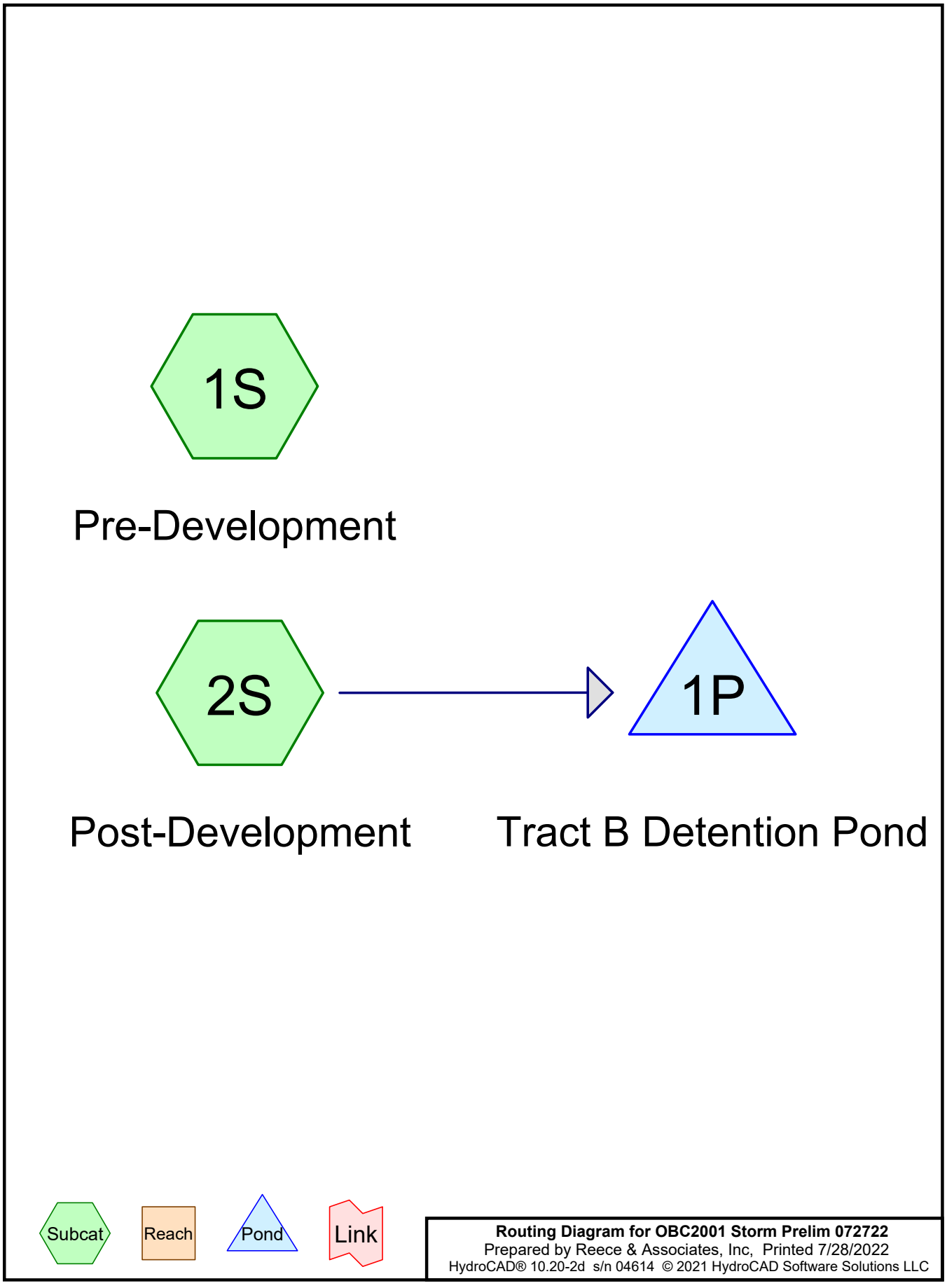
High flow rate capacity check:

Wetted P : **3.66** FT

R_H: **0.39**

$$Q = \frac{1.49}{n} A R^{0.67} s^{0.5}$$

	A	$R^{0.67}$	$s^{0.5}$	
1.49	1.4256	0.53167486	0.0707107	2.00 CFS
0.04				



Routing Diagram for OBC2001 Storm Prelim 072722
Prepared by Reece & Associates, Inc, Printed 7/28/2022

Rainfall Events Listing (selected events)

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	2-Year	Type IA 24-hr		Default	24.00	1	2.50	2
2	5-Year	Type IA 24-hr		Default	24.00	1	3.10	2
3	10-Year	Type IA 24-hr		Default	24.00	1	3.45	2
4	25-Year	Type IA 24-hr		Default	24.00	1	3.90	2
5	100-Year	Type IA 24-hr		Default	24.00	1	4.50	2
6	WQ 1"	Type IA 24-hr		Trim	4.00	1	1.00	2

Time span=0.00-60.00 hrs, dt=0.01 hrs, 6001 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment1S: Pre-Development Runoff Area=87,120 sf 7.15% Impervious Runoff Depth=0.74"
Flow Length=298' Slope=0.0436 '/' Tc=28.3 min CN=77 Runoff=0.21 cfs 0.123 af

Subcatchment2S: Post-Development Runoff Area=87,120 sf 49.94% Impervious Runoff Depth=1.45"
Flow Length=250' Slope=0.0320 '/' Tc=1.1 min CN=89 Runoff=0.73 cfs 0.242 af

Pond 1P: Tract B Detention Pond Peak Elev=202.88' Storage=6,386 cf Inflow=0.73 cfs 0.242 af
Outflow=0.10 cfs 0.205 af

Total Runoff Area = 4.000 ac Runoff Volume = 0.366 af Average Runoff Depth = 1.10"
71.46% Pervious = 2.858 ac 28.54% Impervious = 1.142 ac

Summary for Subcatchment 1S: Pre-Development

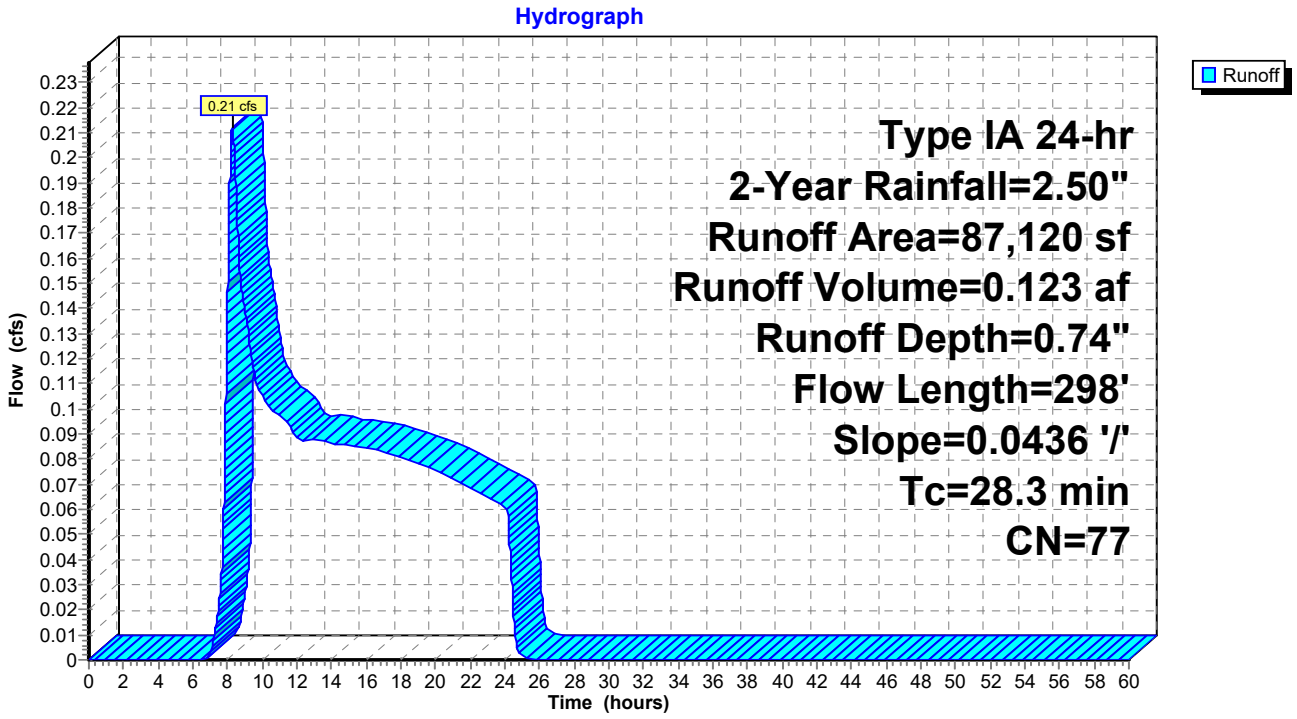
Runoff = 0.21 cfs @ 8.27 hrs, Volume= 0.123 af, Depth= 0.74"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type IA 24-hr 2-Year Rainfall=2.50"

	Area (sf)	CN	Description
*	10,323	95	Gravel Driveway
*	1,181	98	Concrete Pad
*	5,050	98	Structures
	70,566	73	Brush, Good, HSG D
	87,120	77	Weighted Average
	80,889		92.85% Pervious Area
	6,231		7.15% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
28.3	298	0.0436	0.18		**Sheet Flow, Pre-Sheet** Grass: Dense n= 0.240 P2= 2.50"

Subcatchment 1S: Pre-Development



Summary for Subcatchment 2S: Post-Development

[49] Hint: Tc<2dt may require smaller dt

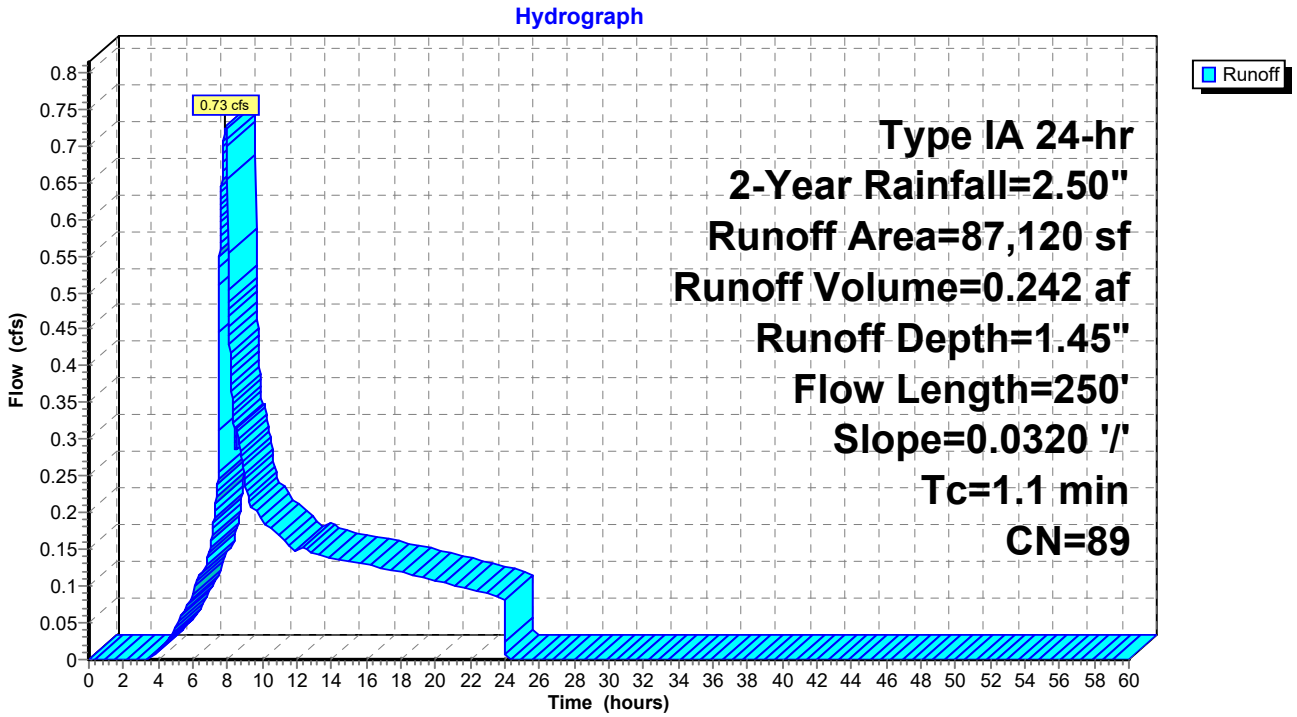
Runoff = 0.73 cfs @ 7.88 hrs, Volume= 0.242 af, Depth= 1.45"
Routed to Pond 1P : Tract B Detention Pond

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type IA 24-hr 2-Year Rainfall=2.50"

	Area (sf)	CN	Description
	43,615	80	>75% Grass cover, Good, HSG D
*	23,760	98	Max Lot Buildable
*	15,880	98	ROW
*	3,865	98	Existing (Lot 3)
	87,120	89	Weighted Average
	43,615		50.06% Pervious Area
	43,505		49.94% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.1	250	0.0320	3.63		**Shallow Concentrated Flow, Post-Conc. Flow** Paved Kv= 20.3 fps

Subcatchment 2S: Post-Development



Summary for Pond 1P: Tract B Detention Pond

Inflow Area = 2.000 ac, 49.94% Impervious, Inflow Depth = 1.45" for 2-Year event
Inflow = 0.73 cfs @ 7.88 hrs, Volume= 0.242 af
Outflow = 0.10 cfs @ 21.05 hrs, Volume= 0.205 af, Atten= 86%, Lag= 790.4 min
Primary = 0.10 cfs @ 21.05 hrs, Volume= 0.205 af
Routed to nonexistent node 2R

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 202.88' @ 21.05 hrs Surf.Area= 2,540 sf Storage= 6,386 cf

Plug-Flow detention time= 1,053.3 min calculated for 0.205 af (84% of inflow)
Center-of-Mass det. time= 957.1 min (1,728.4 - 771.3)

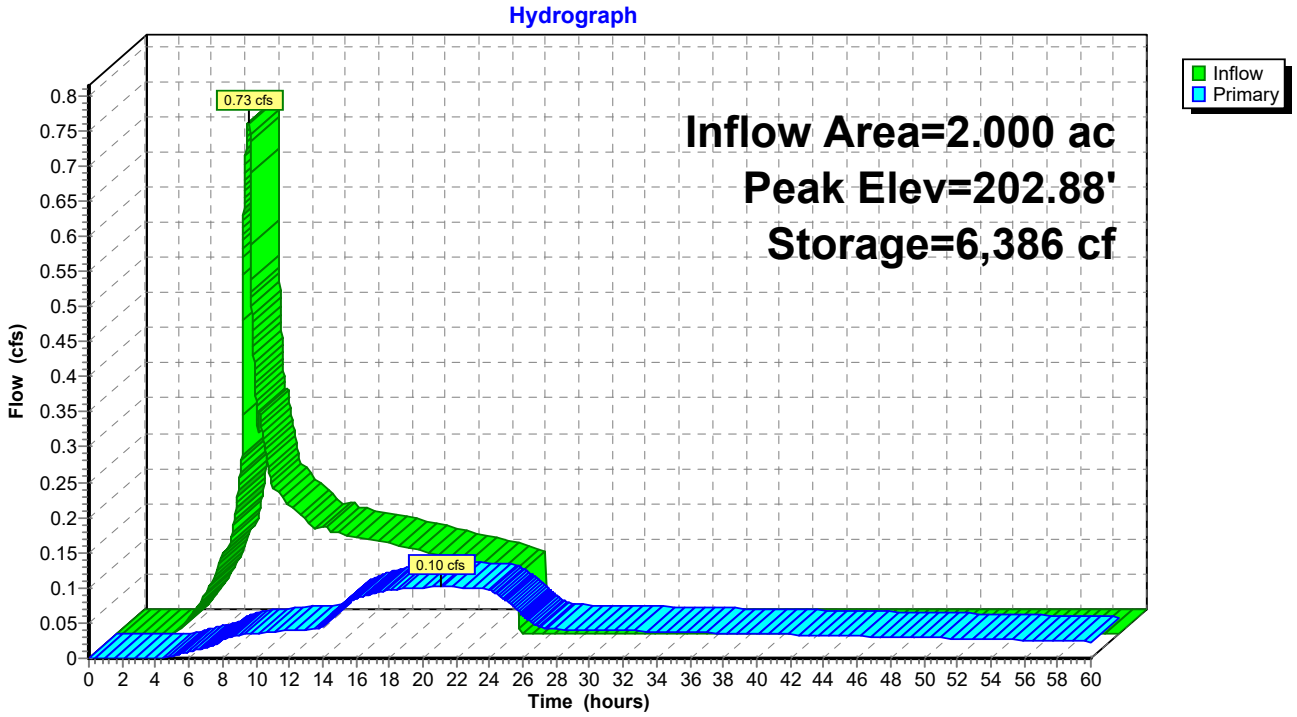
Volume	Invert	Avail.Storage	Storage Description
#1	200.00'	12,225 cf	**Detention Facility (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
200.00	1,850	0	0
202.00	2,375	4,225	4,225
204.00	2,750	5,125	9,350
205.00	3,000	2,875	12,225

Device	Routing	Invert	Outlet Devices
#1	Primary	200.00'	**12.0" Vert. 12" Private Storm Easement** C= 0.600 Limited to weir flow at low heads
#2	Device 1	200.00'	**1.0" Vert. 1" Weep Hole** C= 0.600 Limited to weir flow at low heads
#3	Device 1	202.50'	**2.0" Vert. 2" Outlet** C= 0.600 Limited to weir flow at low heads
#4	Device 1	203.35'	**12.0" Vert. 12" Outlet** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.10 cfs @ 21.05 hrs HW=202.88' (Free Discharge)
↑**1=12" Private Storm Easement** (Passes 0.10 cfs of 5.83 cfs potential flow)
↑**2=1" Weep Hole** (Orifice Controls 0.04 cfs @ 8.11 fps)
3=2" Outlet (Orifice Controls 0.06 cfs @ 2.62 fps)
4=12" Outlet (Controls 0.00 cfs)

Pond 1P: Tract B Detention Pond



Time span=0.00-60.00 hrs, dt=0.01 hrs, 6001 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment1S: Pre-Development Runoff Area=87,120 sf 7.15% Impervious Runoff Depth=1.14"
Flow Length=298' Slope=0.0436 '/' Tc=28.3 min CN=77 Runoff=0.39 cfs 0.190 af

Subcatchment2S: Post-Development Runoff Area=87,120 sf 49.94% Impervious Runoff Depth=1.99"
Flow Length=250' Slope=0.0320 '/' Tc=1.1 min CN=89 Runoff=1.02 cfs 0.332 af

Pond 1P: Tract B Detention Pond Peak Elev=203.37' Storage=7,653 cf Inflow=1.02 cfs 0.332 af
Outflow=0.15 cfs 0.289 af

Total Runoff Area = 4.000 ac Runoff Volume = 0.522 af Average Runoff Depth = 1.57"
71.46% Pervious = 2.858 ac 28.54% Impervious = 1.142 ac

Summary for Subcatchment 1S: Pre-Development

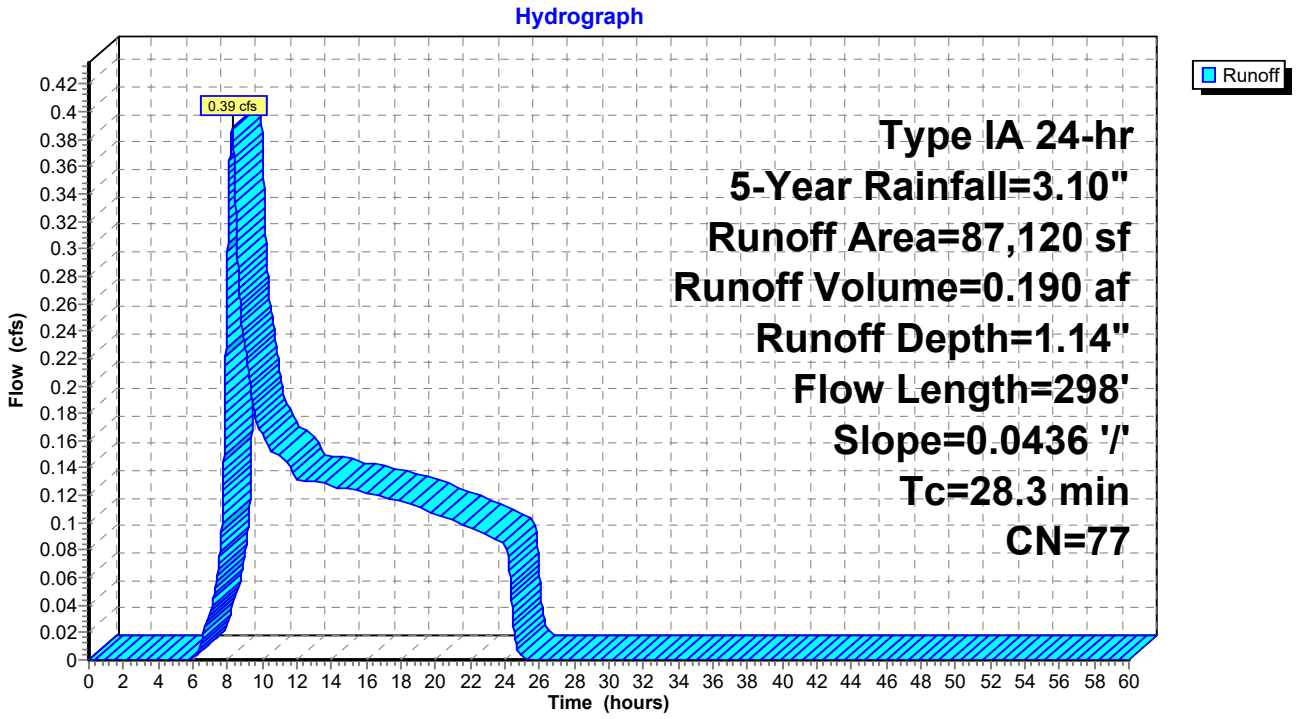
Runoff = 0.39 cfs @ 8.26 hrs, Volume= 0.190 af, Depth= 1.14"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type IA 24-hr 5-Year Rainfall=3.10"

	Area (sf)	CN	Description
*	10,323	95	Gravel Driveway
*	1,181	98	Concrete Pad
*	5,050	98	Structures
	70,566	73	Brush, Good, HSG D
	87,120	77	Weighted Average
	80,889		92.85% Pervious Area
	6,231		7.15% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
28.3	298	0.0436	0.18		**Sheet Flow, Pre-Sheet** Grass: Dense n= 0.240 P2= 2.50"

Subcatchment 1S: Pre-Development



Summary for Subcatchment 2S: Post-Development

[49] Hint: Tc<2dt may require smaller dt

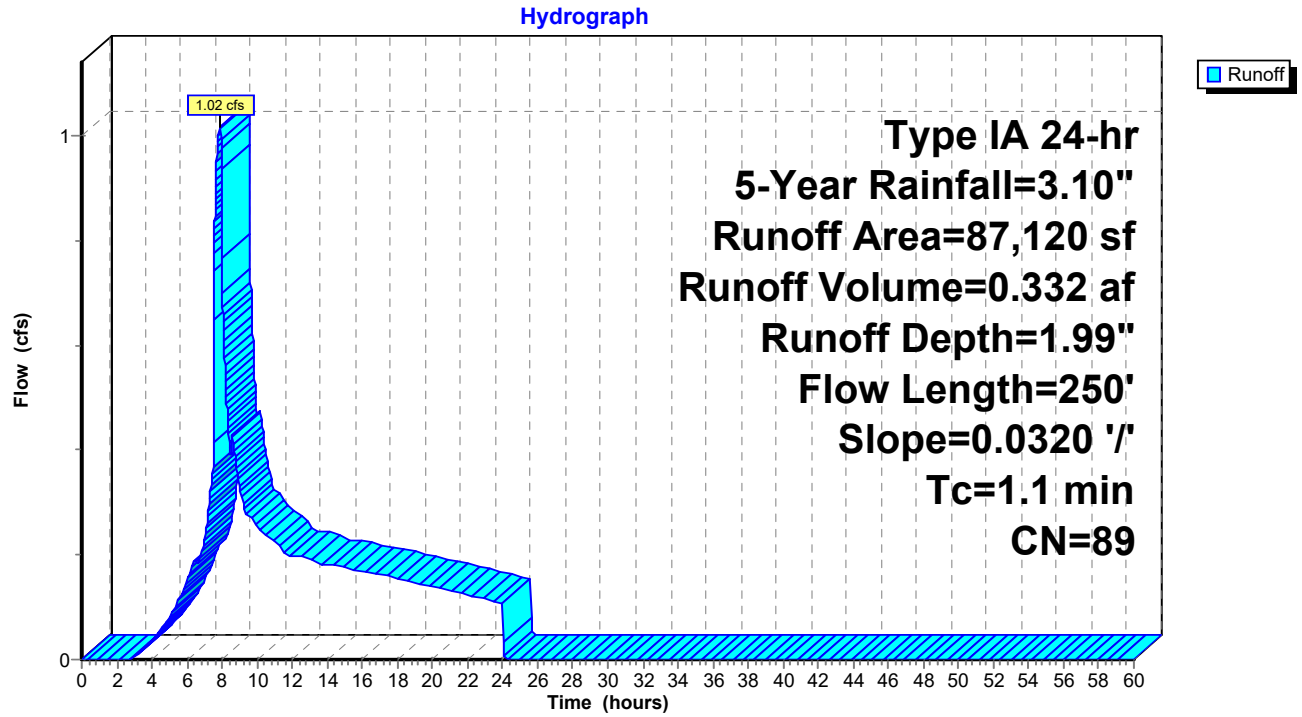
Runoff = 1.02 cfs @ 7.86 hrs, Volume= 0.332 af, Depth= 1.99"
Routed to Pond 1P : Tract B Detention Pond

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type IA 24-hr 5-Year Rainfall=3.10"

	Area (sf)	CN	Description
	43,615	80	>75% Grass cover, Good, HSG D
*	23,760	98	Max Lot Buildable
*	15,880	98	ROW
*	3,865	98	Existing (Lot 3)
	87,120	89	Weighted Average
	43,615		50.06% Pervious Area
	43,505		49.94% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.1	250	0.0320	3.63		**Shallow Concentrated Flow, Post-Conc. Flow** Paved Kv= 20.3 fps

Subcatchment 2S: Post-Development



Summary for Pond 1P: Tract B Detention Pond

Inflow Area = 2.000 ac, 49.94% Impervious, Inflow Depth = 1.99" for 5-Year event
Inflow = 1.02 cfs @ 7.86 hrs, Volume= 0.332 af
Outflow = 0.15 cfs @ 19.24 hrs, Volume= 0.289 af, Atten= 86%, Lag= 682.5 min
Primary = 0.15 cfs @ 19.24 hrs, Volume= 0.289 af
Routed to nonexistent node 2R

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 203.37' @ 19.24 hrs Surf.Area= 2,632 sf Storage= 7,653 cf

Plug-Flow detention time= 889.7 min calculated for 0.289 af (87% of inflow)
Center-of-Mass det. time= 807.1 min (1,560.5 - 753.4)

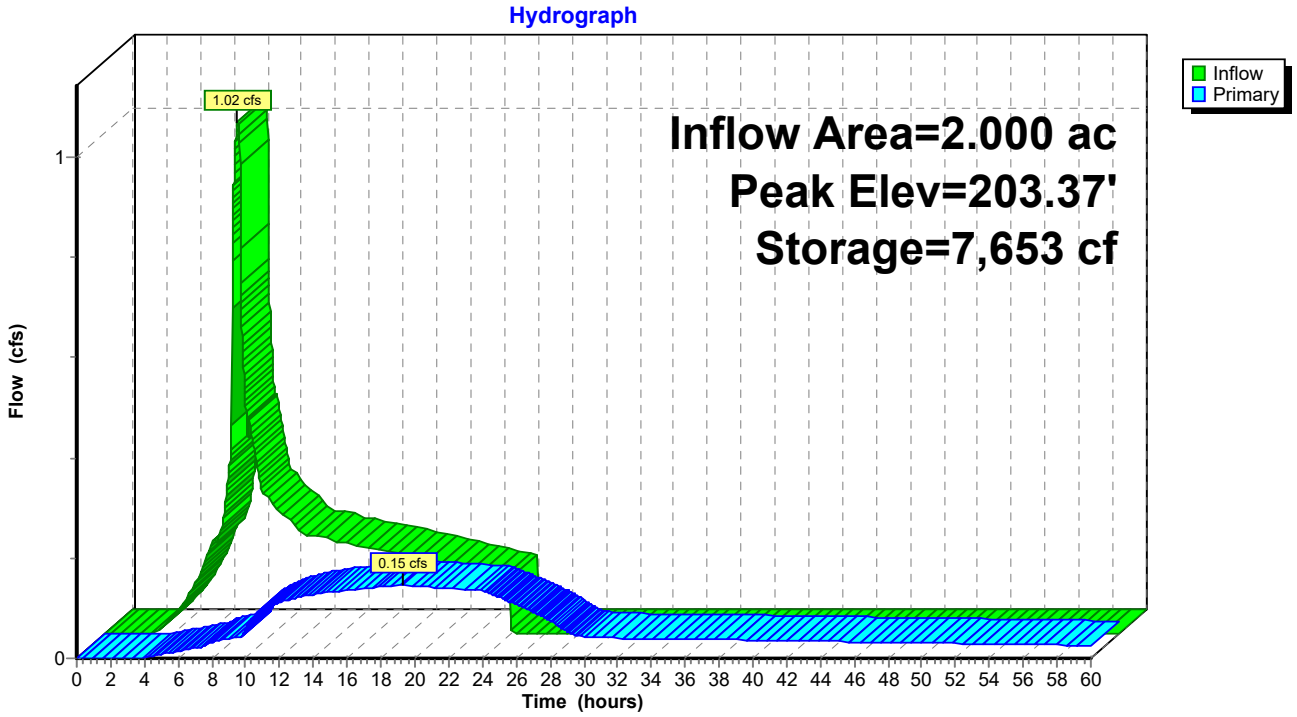
Volume	Invert	Avail.Storage	Storage Description
#1	200.00'	12,225 cf	**Detention Facility (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
200.00	1,850	0	0
202.00	2,375	4,225	4,225
204.00	2,750	5,125	9,350
205.00	3,000	2,875	12,225

Device	Routing	Invert	Outlet Devices
#1	Primary	200.00'	**12.0" Vert. 12" Private Storm Easement** C= 0.600 Limited to weir flow at low heads
#2	Device 1	200.00'	**1.0" Vert. 1" Weep Hole** C= 0.600 Limited to weir flow at low heads
#3	Device 1	202.50'	**2.0" Vert. 2" Outlet** C= 0.600 Limited to weir flow at low heads
#4	Device 1	203.35'	**12.0" Vert. 12" Outlet** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.14 cfs @ 19.24 hrs HW=203.37' (Free Discharge)
└**1=12" Private Storm Easement** (Passes 0.14 cfs of 6.41 cfs potential flow)
  ├**2=1" Weep Hole** (Orifice Controls 0.05 cfs @ 8.78 fps)
  ├**3=2" Outlet** (Orifice Controls 0.09 cfs @ 4.27 fps)
  └**4=12" Outlet** (Orifice Controls 0.00 cfs @ 0.47 fps)

Pond 1P: Tract B Detention Pond



Time span=0.00-60.00 hrs, dt=0.01 hrs, 6001 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment1S: Pre-Development Runoff Area=87,120 sf 7.15% Impervious Runoff Depth=1.39"
Flow Length=298' Slope=0.0436 '/' Tc=28.3 min CN=77 Runoff=0.50 cfs 0.232 af

Subcatchment2S: Post-Development Runoff Area=87,120 sf 49.94% Impervious Runoff Depth=2.31"
Flow Length=250' Slope=0.0320 '/' Tc=1.1 min CN=89 Runoff=1.19 cfs 0.385 af

Pond 1P: Tract B Detention Pond Peak Elev=203.46' Storage=7,896 cf Inflow=1.19 cfs 0.385 af
Outflow=0.20 cfs 0.341 af

Total Runoff Area = 4.000 ac Runoff Volume = 0.617 af Average Runoff Depth = 1.85"
71.46% Pervious = 2.858 ac 28.54% Impervious = 1.142 ac

Summary for Subcatchment 1S: Pre-Development

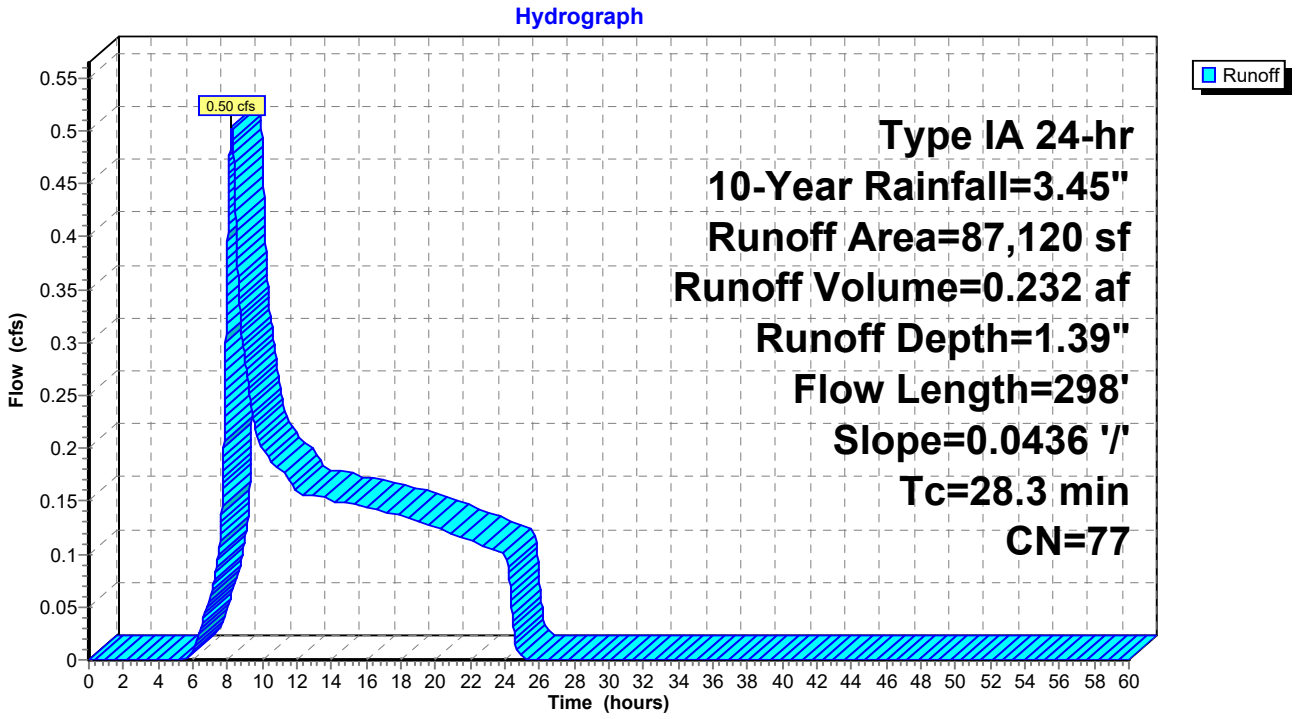
Runoff = 0.50 cfs @ 8.24 hrs, Volume= 0.232 af, Depth= 1.39"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type IA 24-hr 10-Year Rainfall=3.45"

	Area (sf)	CN	Description
*	10,323	95	Gravel Driveway
*	1,181	98	Concrete Pad
*	5,050	98	Structures
	70,566	73	Brush, Good, HSG D
	87,120	77	Weighted Average
	80,889		92.85% Pervious Area
	6,231		7.15% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
28.3	298	0.0436	0.18		**Sheet Flow, Pre-Sheet** Grass: Dense n= 0.240 P2= 2.50"

Subcatchment 1S: Pre-Development



Summary for Subcatchment 2S: Post-Development

[49] Hint: Tc<2dt may require smaller dt

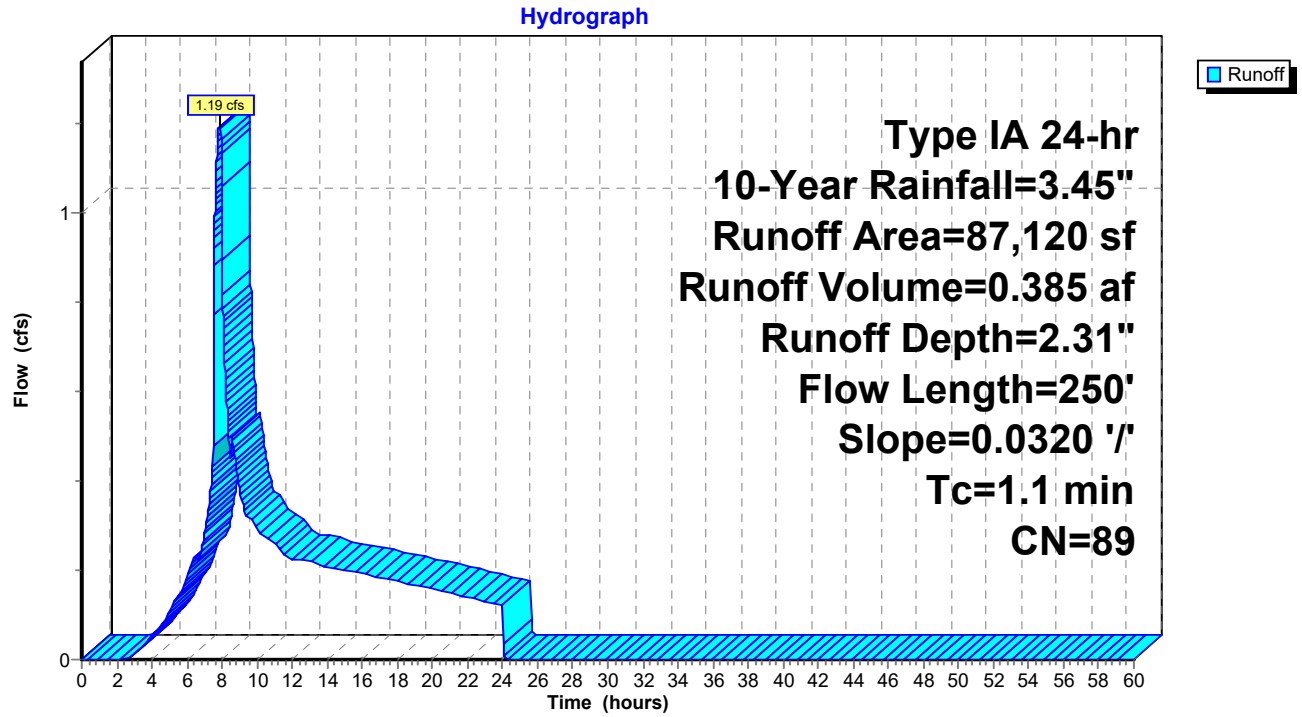
Runoff = 1.19 cfs @ 7.85 hrs, Volume= 0.385 af, Depth= 2.31"
Routed to Pond 1P : Tract B Detention Pond

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type IA 24-hr 10-Year Rainfall=3.45"

	Area (sf)	CN	Description
	43,615	80	>75% Grass cover, Good, HSG D
*	23,760	98	Max Lot Buildable
*	15,880	98	ROW
*	3,865	98	Existing (Lot 3)
	87,120	89	Weighted Average
	43,615		50.06% Pervious Area
	43,505		49.94% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.1	250	0.0320	3.63		**Shallow Concentrated Flow, Post-Conc. Flow** Paved Kv= 20.3 fps

Subcatchment 2S: Post-Development



Summary for Pond 1P: Tract B Detention Pond

Inflow Area = 2.000 ac, 49.94% Impervious, Inflow Depth = 2.31" for 10-Year event
Inflow = 1.19 cfs @ 7.85 hrs, Volume= 0.385 af
Outflow = 0.20 cfs @ 14.60 hrs, Volume= 0.341 af, Atten= 83%, Lag= 404.8 min
Primary = 0.20 cfs @ 14.60 hrs, Volume= 0.341 af
Routed to nonexistent node 2R

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 203.46' @ 14.60 hrs Surf.Area= 2,649 sf Storage= 7,896 cf

Plug-Flow detention time= 794.1 min calculated for 0.341 af (89% of inflow)
Center-of-Mass det. time= 720.5 min (1,465.6 - 745.1)

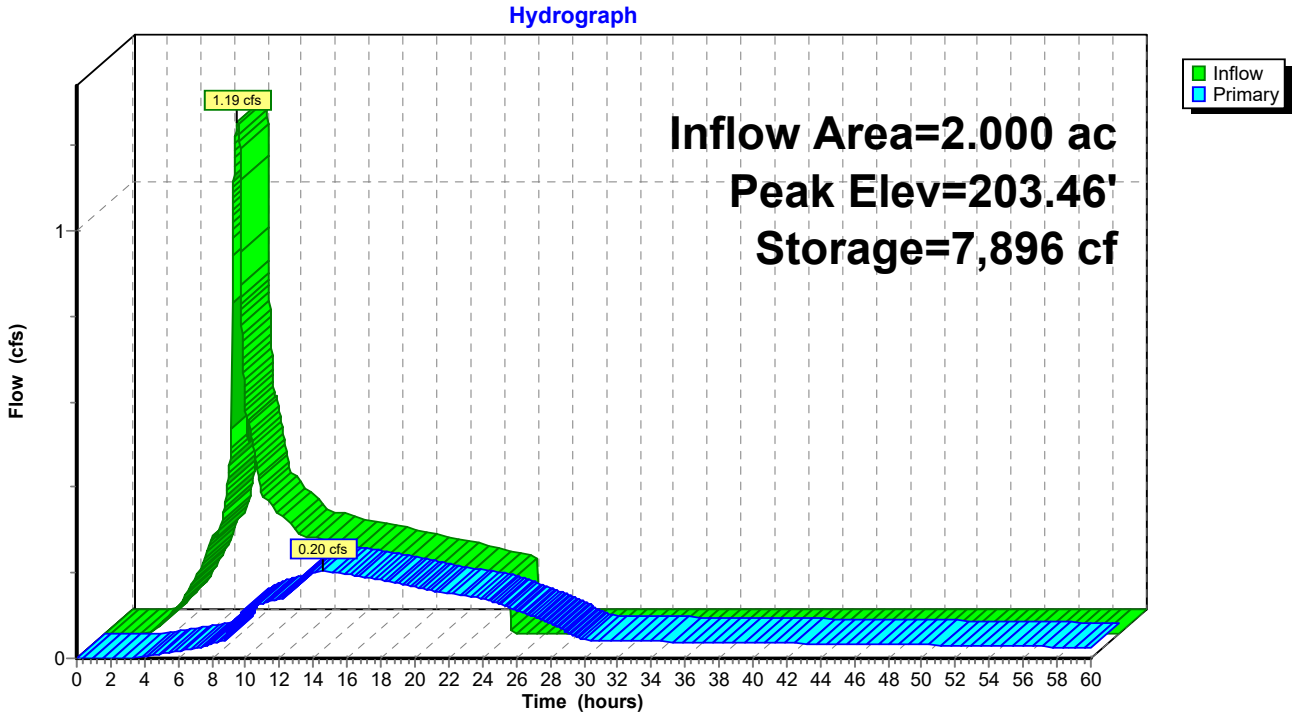
Volume	Invert	Avail.Storage	Storage Description
#1	200.00'	12,225 cf	**Detention Facility (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
200.00	1,850	0	0
202.00	2,375	4,225	4,225
204.00	2,750	5,125	9,350
205.00	3,000	2,875	12,225

Device	Routing	Invert	Outlet Devices
#1	Primary	200.00'	**12.0" Vert. 12" Private Storm Easement** C= 0.600 Limited to weir flow at low heads
#2	Device 1	200.00'	**1.0" Vert. 1" Weep Hole** C= 0.600 Limited to weir flow at low heads
#3	Device 1	202.50'	**2.0" Vert. 2" Outlet** C= 0.600 Limited to weir flow at low heads
#4	Device 1	203.35'	**12.0" Vert. 12" Outlet** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.20 cfs @ 14.60 hrs HW=203.46' (Free Discharge)
└**1=12" Private Storm Easement** (Passes 0.20 cfs of 6.51 cfs potential flow)
  ├**2=1" Weep Hole** (Orifice Controls 0.05 cfs @ 8.90 fps)
  ├**3=2" Outlet** (Orifice Controls 0.10 cfs @ 4.51 fps)
  └**4=12" Outlet** (Orifice Controls 0.05 cfs @ 1.14 fps)

Pond 1P: Tract B Detention Pond



Time span=0.00-60.00 hrs, dt=0.01 hrs, 6001 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment1S: Pre-Development Runoff Area=87,120 sf 7.15% Impervious Runoff Depth=1.73"
Flow Length=298' Slope=0.0436 '/' Tc=28.3 min CN=77 Runoff=0.66 cfs 0.289 af

Subcatchment2S: Post-Development Runoff Area=87,120 sf 49.94% Impervious Runoff Depth=2.73"
Flow Length=250' Slope=0.0320 '/' Tc=1.1 min CN=89 Runoff=1.42 cfs 0.455 af

Pond 1P: Tract B Detention Pond Peak Elev=203.53' Storage=8,082 cf Inflow=1.42 cfs 0.455 af
Outflow=0.29 cfs 0.411 af

Total Runoff Area = 4.000 ac Runoff Volume = 0.744 af Average Runoff Depth = 2.23"
71.46% Pervious = 2.858 ac 28.54% Impervious = 1.142 ac

Summary for Subcatchment 1S: Pre-Development

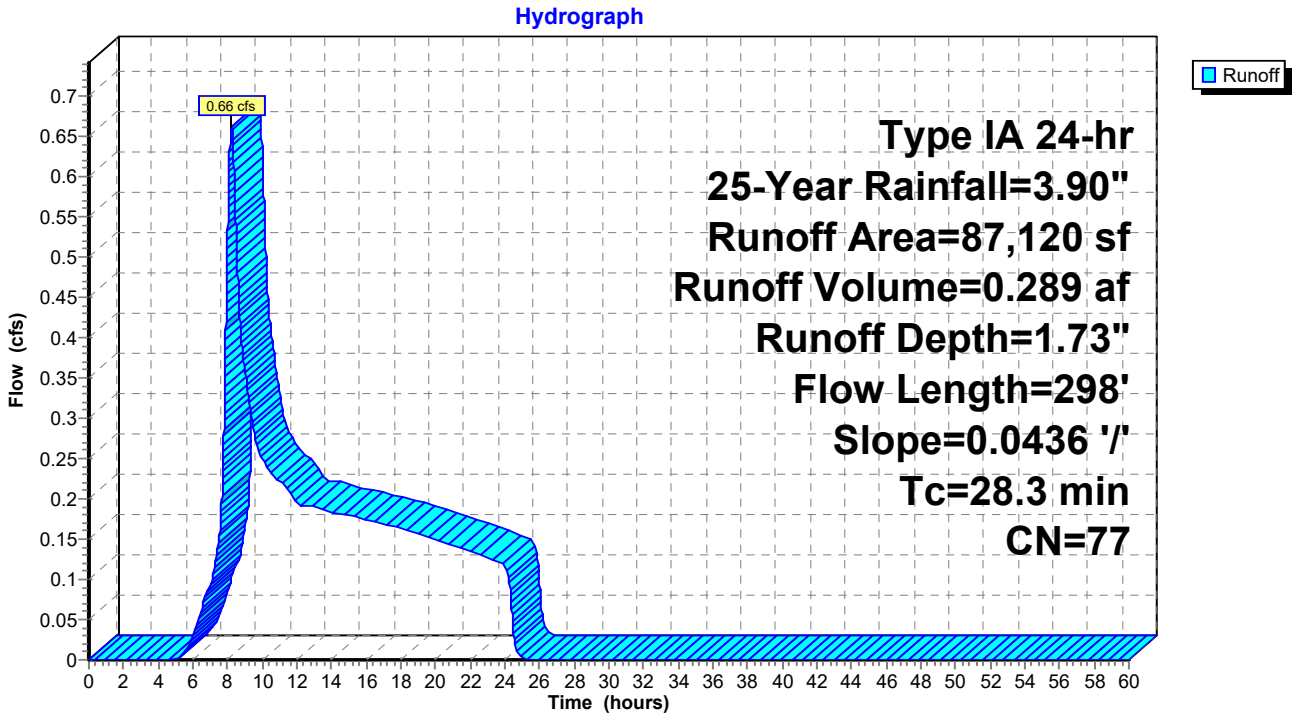
Runoff = 0.66 cfs @ 8.22 hrs, Volume= 0.289 af, Depth= 1.73"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type IA 24-hr 25-Year Rainfall=3.90"

	Area (sf)	CN	Description
*	10,323	95	Gravel Driveway
*	1,181	98	Concrete Pad
*	5,050	98	Structures
	70,566	73	Brush, Good, HSG D
	87,120	77	Weighted Average
	80,889		92.85% Pervious Area
	6,231		7.15% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
28.3	298	0.0436	0.18		**Sheet Flow, Pre-Sheet** Grass: Dense n= 0.240 P2= 2.50"

Subcatchment 1S: Pre-Development



Summary for Subcatchment 2S: Post-Development

[49] Hint: Tc<2dt may require smaller dt

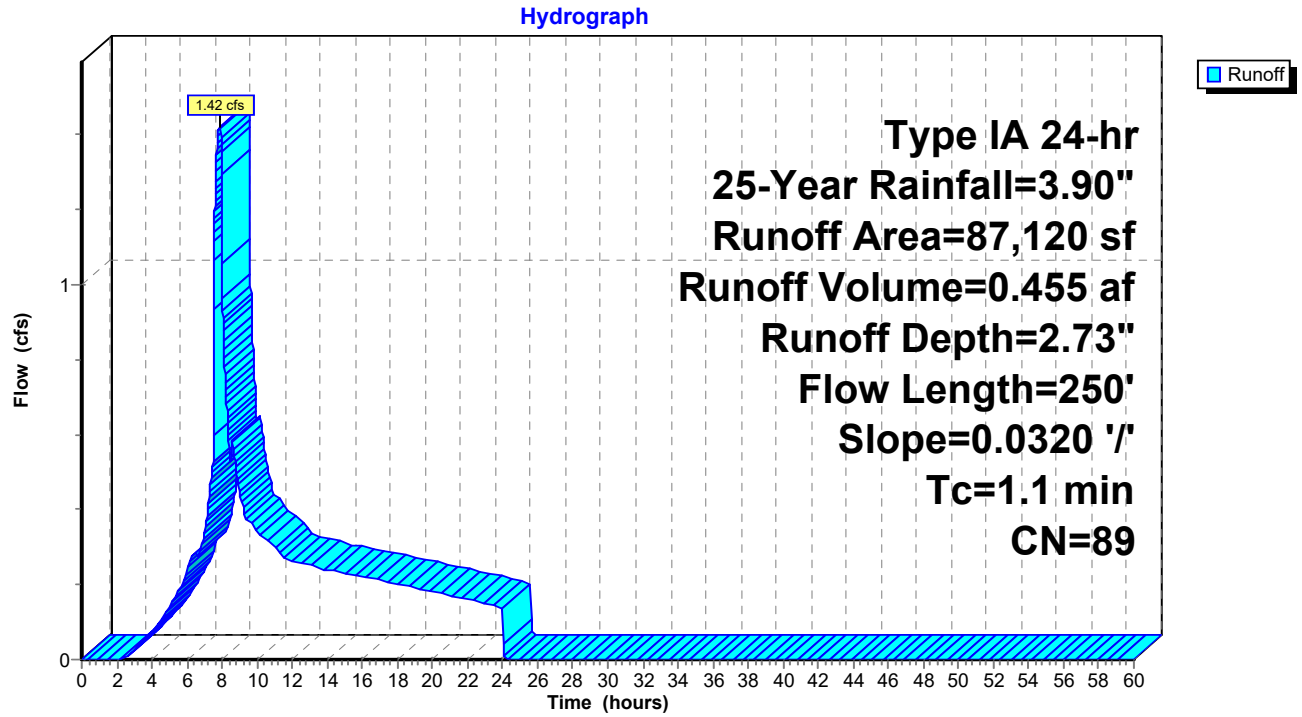
Runoff = 1.42 cfs @ 7.85 hrs, Volume= 0.455 af, Depth= 2.73"
Routed to Pond 1P : Tract B Detention Pond

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type IA 24-hr 25-Year Rainfall=3.90"

	Area (sf)	CN	Description
	43,615	80	>75% Grass cover, Good, HSG D
*	23,760	98	Max Lot Buildable
*	15,880	98	ROW
*	3,865	98	Existing (Lot 3)
	87,120	89	Weighted Average
	43,615		50.06% Pervious Area
	43,505		49.94% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.1	250	0.0320	3.63		**Shallow Concentrated Flow, Post-Conc. Flow** Paved Kv= 20.3 fps

Subcatchment 2S: Post-Development



Summary for Pond 1P: Tract B Detention Pond

Inflow Area = 2.000 ac, 49.94% Impervious, Inflow Depth = 2.73" for 25-Year event
Inflow = 1.42 cfs @ 7.85 hrs, Volume= 0.455 af
Outflow = 0.29 cfs @ 11.14 hrs, Volume= 0.411 af, Atten= 79%, Lag= 197.6 min
Primary = 0.29 cfs @ 11.14 hrs, Volume= 0.411 af
Routed to nonexistent node 2R

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 203.53' @ 11.14 hrs Surf.Area= 2,662 sf Storage= 8,082 cf

Plug-Flow detention time= 686.5 min calculated for 0.411 af (90% of inflow)
Center-of-Mass det. time= 622.0 min (1,358.2 - 736.2)

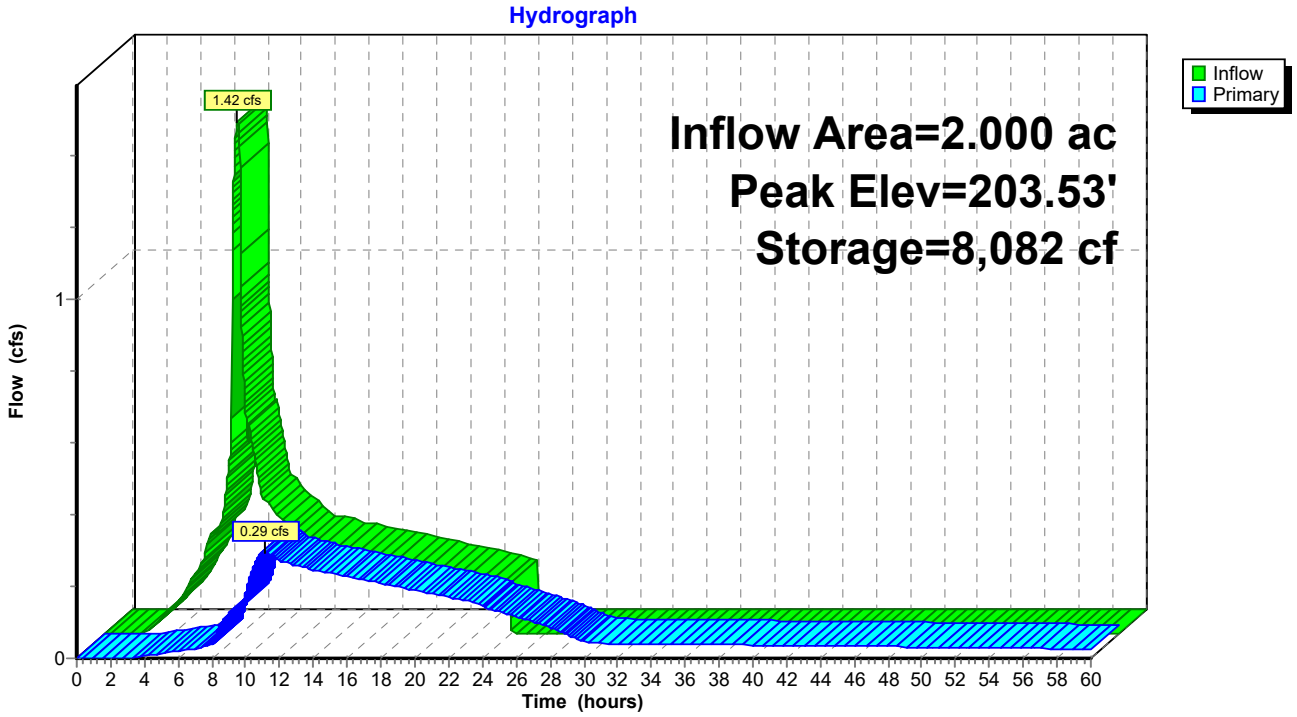
Volume	Invert	Avail.Storage	Storage Description
#1	200.00'	12,225 cf	**Detention Facility (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
200.00	1,850	0	0
202.00	2,375	4,225	4,225
204.00	2,750	5,125	9,350
205.00	3,000	2,875	12,225

Device	Routing	Invert	Outlet Devices
#1	Primary	200.00'	**12.0" Vert. 12" Private Storm Easement** C= 0.600 Limited to weir flow at low heads
#2	Device 1	200.00'	**1.0" Vert. 1" Weep Hole** C= 0.600 Limited to weir flow at low heads
#3	Device 1	202.50'	**2.0" Vert. 2" Outlet** C= 0.600 Limited to weir flow at low heads
#4	Device 1	203.35'	**12.0" Vert. 12" Outlet** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.29 cfs @ 11.14 hrs HW=203.53' (Free Discharge)
↑**1=12" Private Storm Easement** (Passes 0.29 cfs of 6.58 cfs potential flow)
↑**2=1" Weep Hole** (Orifice Controls 0.05 cfs @ 8.99 fps)
3=2" Outlet (Orifice Controls 0.10 cfs @ 4.69 fps)
4=12" Outlet (Orifice Controls 0.14 cfs @ 1.45 fps)

Pond 1P: Tract B Detention Pond



Time span=0.00-60.00 hrs, dt=0.01 hrs, 6001 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment1S: Pre-Development Runoff Area=87,120 sf 7.15% Impervious Runoff Depth=2.21"
Flow Length=298' Slope=0.0436 '/' Tc=28.3 min CN=77 Runoff=0.89 cfs 0.368 af

Subcatchment2S: Post-Development Runoff Area=87,120 sf 49.94% Impervious Runoff Depth=3.30"
Flow Length=250' Slope=0.0320 '/' Tc=1.1 min CN=89 Runoff=1.73 cfs 0.549 af

Pond 1P: Tract B Detention Pond Peak Elev=203.63' Storage=8,338 cf Inflow=1.73 cfs 0.549 af
Outflow=0.48 cfs 0.505 af

Total Runoff Area = 4.000 ac Runoff Volume = 0.918 af Average Runoff Depth = 2.75"
71.46% Pervious = 2.858 ac 28.54% Impervious = 1.142 ac

Summary for Subcatchment 1S: Pre-Development

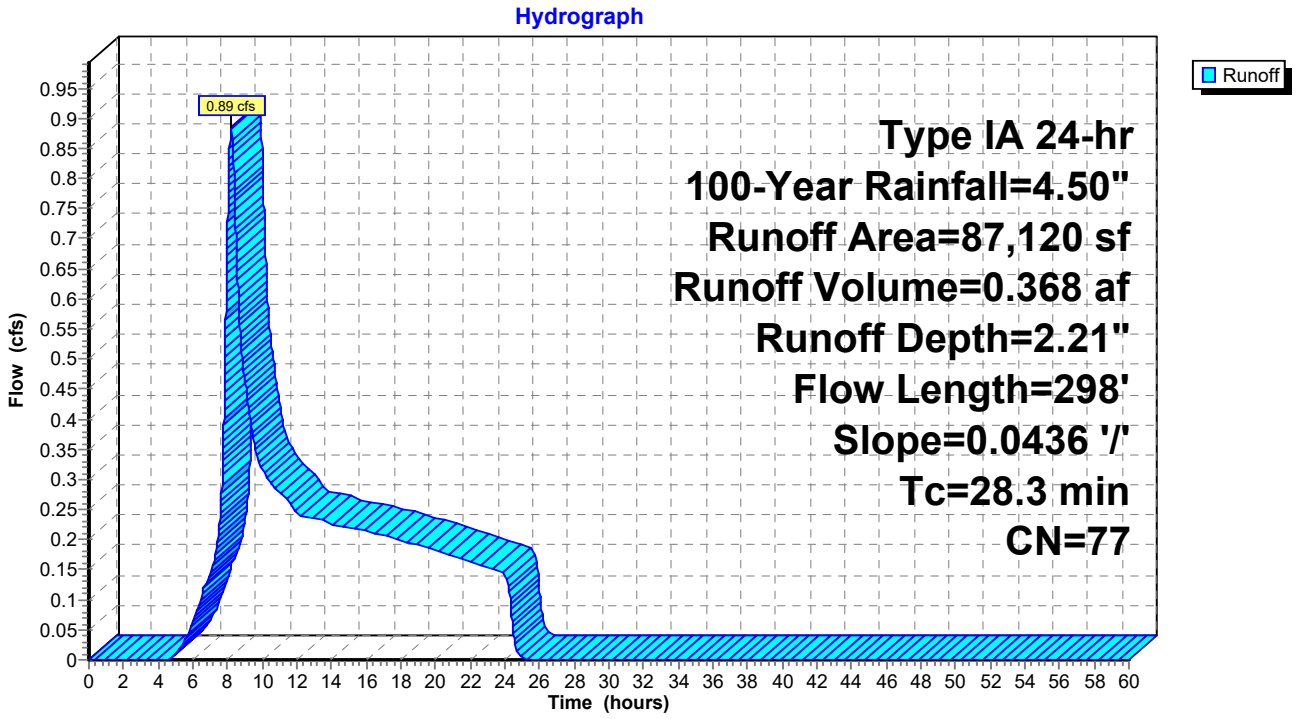
Runoff = 0.89 cfs @ 8.21 hrs, Volume= 0.368 af, Depth= 2.21"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type IA 24-hr 100-Year Rainfall=4.50"

	Area (sf)	CN	Description
*	10,323	95	Gravel Driveway
*	1,181	98	Concrete Pad
*	5,050	98	Structures
	70,566	73	Brush, Good, HSG D
	87,120	77	Weighted Average
	80,889		92.85% Pervious Area
	6,231		7.15% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
28.3	298	0.0436	0.18		**Sheet Flow, Pre-Sheet** Grass: Dense n= 0.240 P2= 2.50"

Subcatchment 1S: Pre-Development



Summary for Subcatchment 2S: Post-Development

[49] Hint: Tc<2dt may require smaller dt

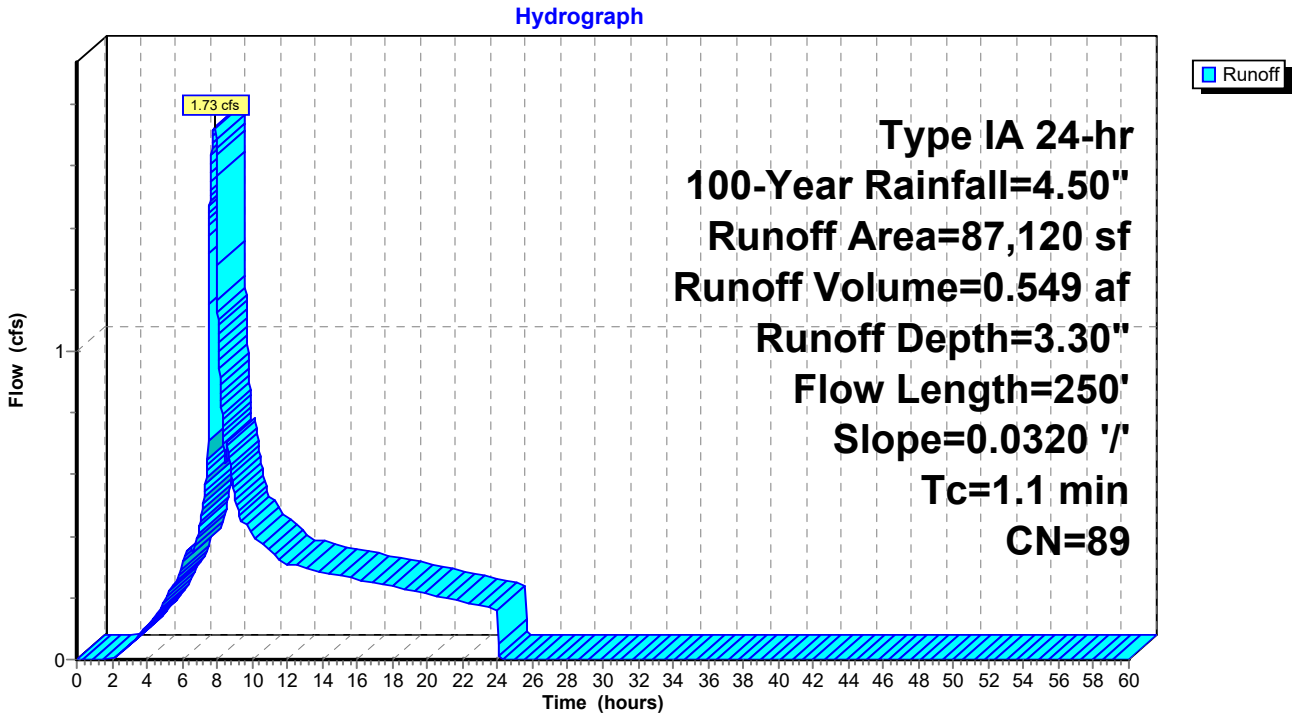
Runoff = 1.73 cfs @ 7.84 hrs, Volume= 0.549 af, Depth= 3.30"
Routed to Pond 1P : Tract B Detention Pond

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type IA 24-hr 100-Year Rainfall=4.50"

	Area (sf)	CN	Description
	43,615	80	>75% Grass cover, Good, HSG D
*	23,760	98	Max Lot Buildable
*	15,880	98	ROW
*	3,865	98	Existing (Lot 3)
	87,120	89	Weighted Average
	43,615		50.06% Pervious Area
	43,505		49.94% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.1	250	0.0320	3.63		**Shallow Concentrated Flow, Post-Conc. Flow** Paved Kv= 20.3 fps

Subcatchment 2S: Post-Development



Summary for Pond 1P: Tract B Detention Pond

Inflow Area = 2.000 ac, 49.94% Impervious, Inflow Depth = 3.30" for 100-Year event
Inflow = 1.73 cfs @ 7.84 hrs, Volume= 0.549 af
Outflow = 0.48 cfs @ 9.22 hrs, Volume= 0.505 af, Atten= 72%, Lag= 83.0 min
Primary = 0.48 cfs @ 9.22 hrs, Volume= 0.505 af
Routed to nonexistent node 2R

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 203.63' @ 9.22 hrs Surf.Area= 2,680 sf Storage= 8,338 cf

Plug-Flow detention time= 576.6 min calculated for 0.505 af (92% of inflow)
Center-of-Mass det. time= 522.0 min (1,248.4 - 726.5)

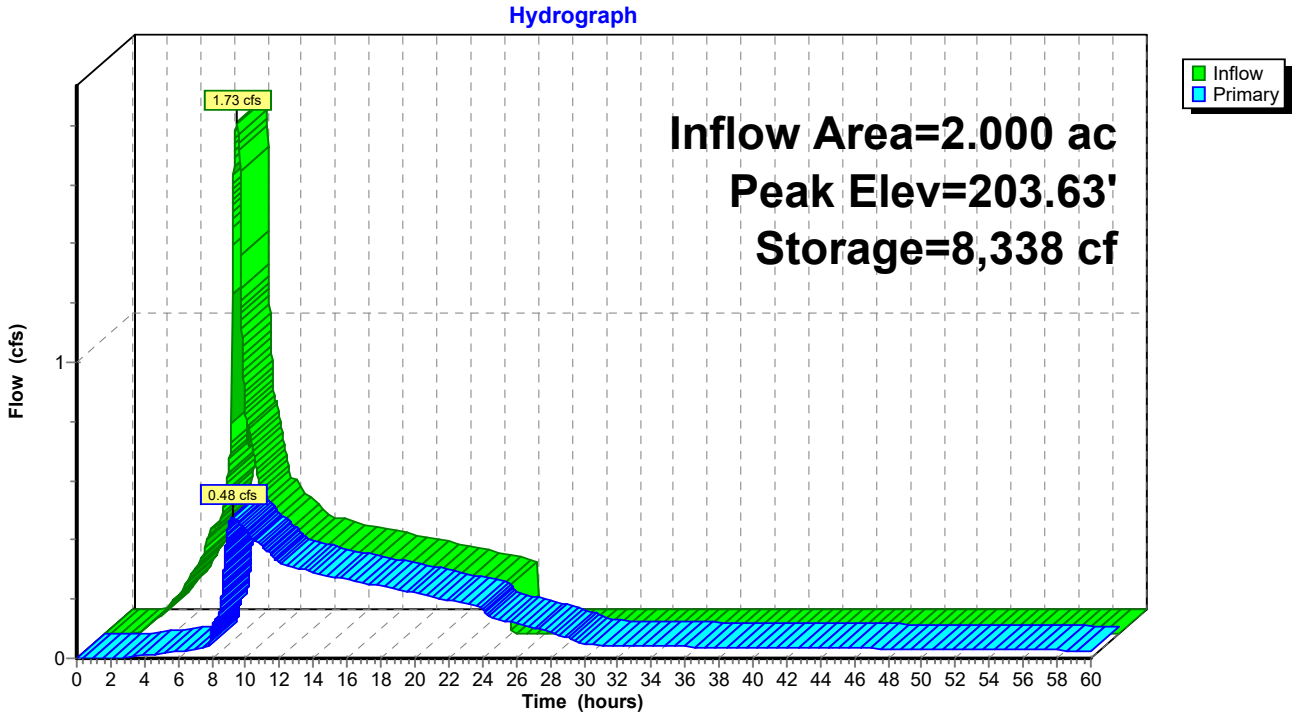
Volume	Invert	Avail.Storage	Storage Description
#1	200.00'	12,225 cf	**Detention Facility (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
200.00	1,850	0	0
202.00	2,375	4,225	4,225
204.00	2,750	5,125	9,350
205.00	3,000	2,875	12,225

Device	Routing	Invert	Outlet Devices
#1	Primary	200.00'	**12.0" Vert. 12" Private Storm Easement** C= 0.600 Limited to weir flow at low heads
#2	Device 1	200.00'	**1.0" Vert. 1" Weep Hole** C= 0.600 Limited to weir flow at low heads
#3	Device 1	202.50'	**2.0" Vert. 2" Outlet** C= 0.600 Limited to weir flow at low heads
#4	Device 1	203.35'	**12.0" Vert. 12" Outlet** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.48 cfs @ 9.22 hrs HW=203.63' (Free Discharge)
↑**1=12" Private Storm Easement** (Passes 0.48 cfs of 6.69 cfs potential flow)
↑**2=1" Weep Hole** (Orifice Controls 0.05 cfs @ 9.12 fps)
3=2" Outlet (Orifice Controls 0.11 cfs @ 4.92 fps)
4=12" Outlet (Orifice Controls 0.32 cfs @ 1.79 fps)

Pond 1P: Tract B Detention Pond



Time span=0.00-60.00 hrs, dt=0.01 hrs, 6001 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment1S: Pre-Development Runoff Area=87,120 sf 7.15% Impervious Runoff Depth=0.05"
Flow Length=298' Slope=0.0436 '/' Tc=28.3 min CN=77 Runoff=0.08 cfs 0.008 af

Subcatchment2S: Post-Development Runoff Area=87,120 sf 49.94% Impervious Runoff Depth=0.28"
Flow Length=250' Slope=0.0320 '/' Tc=1.1 min CN=89 Runoff=0.26 cfs 0.047 af

Pond 1P: Tract B Detention Pond Peak Elev=200.97' Storage=1,913 cf Inflow=0.26 cfs 0.047 af
Outflow=0.03 cfs 0.047 af

Total Runoff Area = 4.000 ac Runoff Volume = 0.055 af Average Runoff Depth = 0.17"
71.46% Pervious = 2.858 ac 28.54% Impervious = 1.142 ac

Summary for Subcatchment 1S: Pre-Development

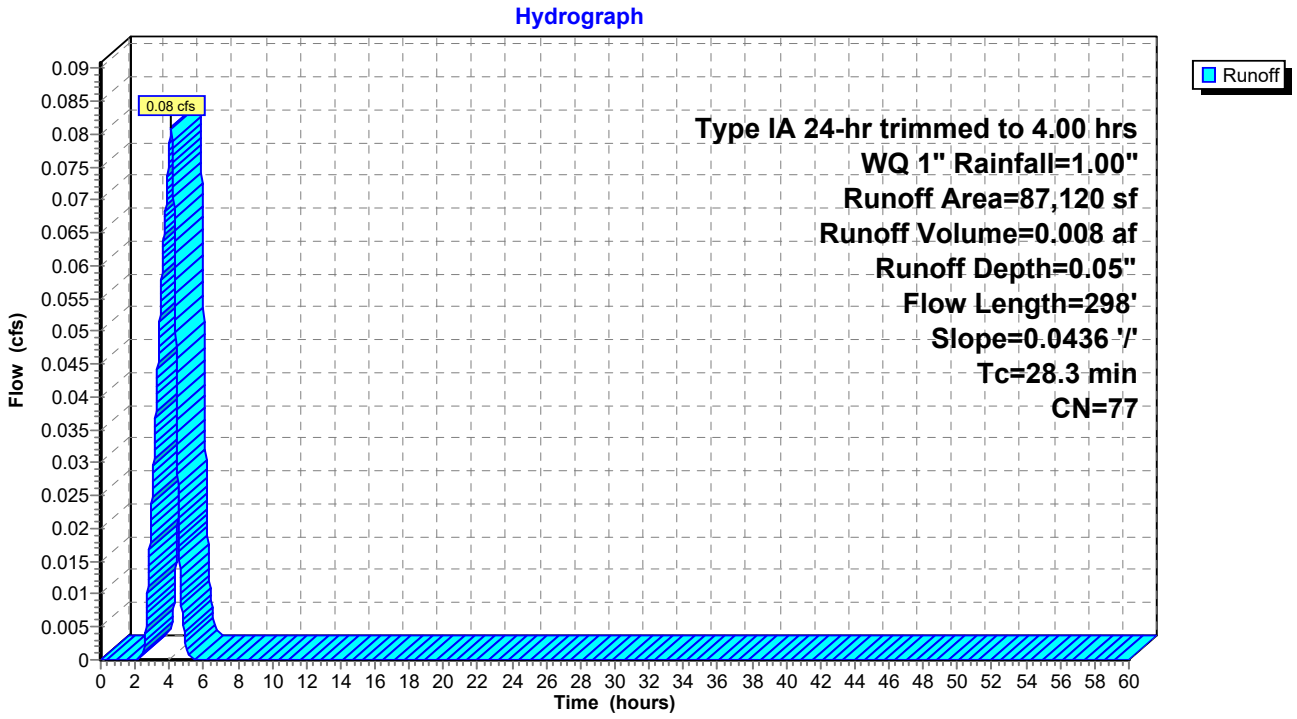
Runoff = 0.08 cfs @ 4.12 hrs, Volume= 0.008 af, Depth= 0.05"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type IA 24-hr trimmed to 4.00 hrs WQ 1" Rainfall=1.00"

	Area (sf)	CN	Description
*	10,323	95	Gravel Driveway
*	1,181	98	Concrete Pad
*	5,050	98	Structures
	70,566	73	Brush, Good, HSG D
	87,120	77	Weighted Average
	80,889		92.85% Pervious Area
	6,231		7.15% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
28.3	298	0.0436	0.18		**Sheet Flow, Pre-Sheet** Grass: Dense n= 0.240 P2= 2.50"

Subcatchment 1S: Pre-Development



Summary for Subcatchment 2S: Post-Development

[49] Hint: Tc<2dt may require smaller dt

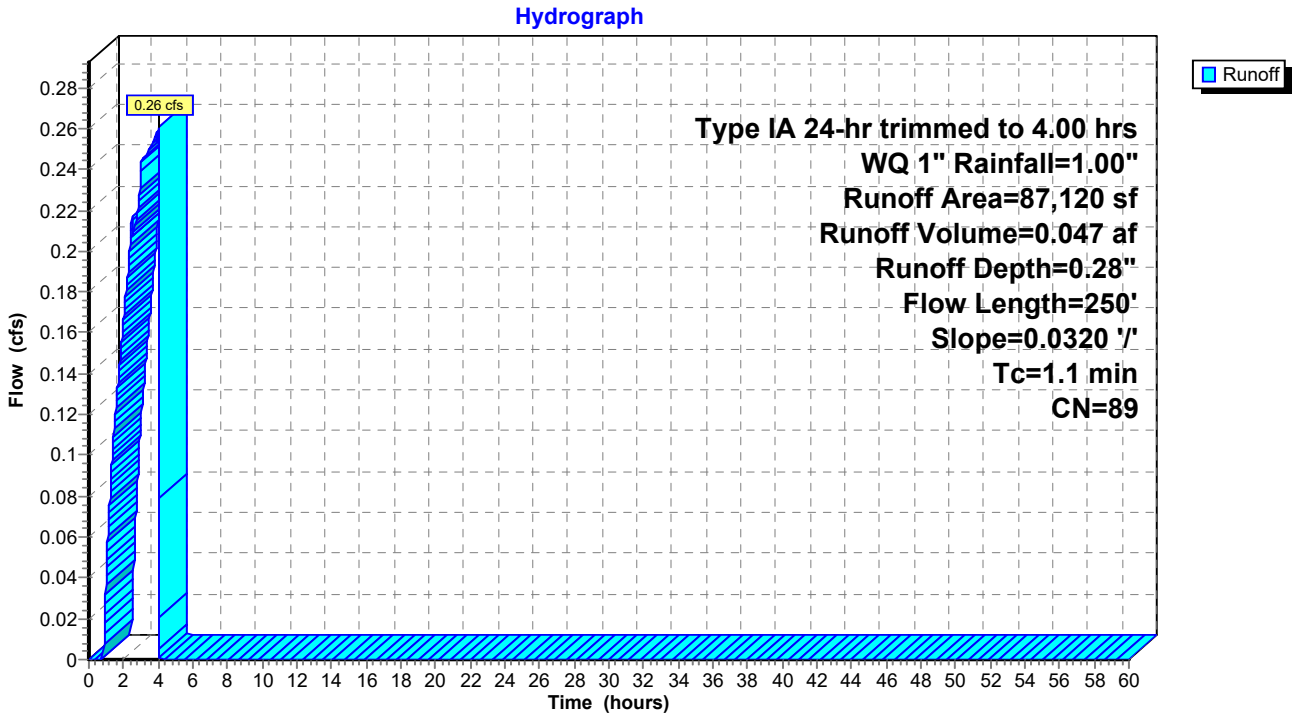
Runoff = 0.26 cfs @ 3.99 hrs, Volume= 0.047 af, Depth= 0.28"
Routed to Pond 1P : Tract B Detention Pond

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type IA 24-hr trimmed to 4.00 hrs WQ 1" Rainfall=1.00"

	Area (sf)	CN	Description
	43,615	80	>75% Grass cover, Good, HSG D
*	23,760	98	Max Lot Buildable
*	15,880	98	ROW
*	3,865	98	Existing (Lot 3)
	87,120	89	Weighted Average
	43,615		50.06% Pervious Area
	43,505		49.94% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.1	250	0.0320	3.63		**Shallow Concentrated Flow, Post-Conc. Flow** Paved Kv= 20.3 fps

Subcatchment 2S: Post-Development



Summary for Pond 1P: Tract B Detention Pond

Inflow Area = 2.000 ac, 49.94% Impervious, Inflow Depth = 0.28" for WQ 1" event
Inflow = 0.26 cfs @ 3.99 hrs, Volume= 0.047 af
Outflow = 0.03 cfs @ 4.03 hrs, Volume= 0.047 af, Atten= 90%, Lag= 2.5 min
Primary = 0.03 cfs @ 4.03 hrs, Volume= 0.047 af
Routed to nonexistent node 2R

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 200.97' @ 4.03 hrs Surf.Area= 2,104 sf Storage= 1,913 cf

Plug-Flow detention time= 867.2 min calculated for 0.047 af (99% of inflow)
Center-of-Mass det. time= 867.2 min (1,033.6 - 166.4)

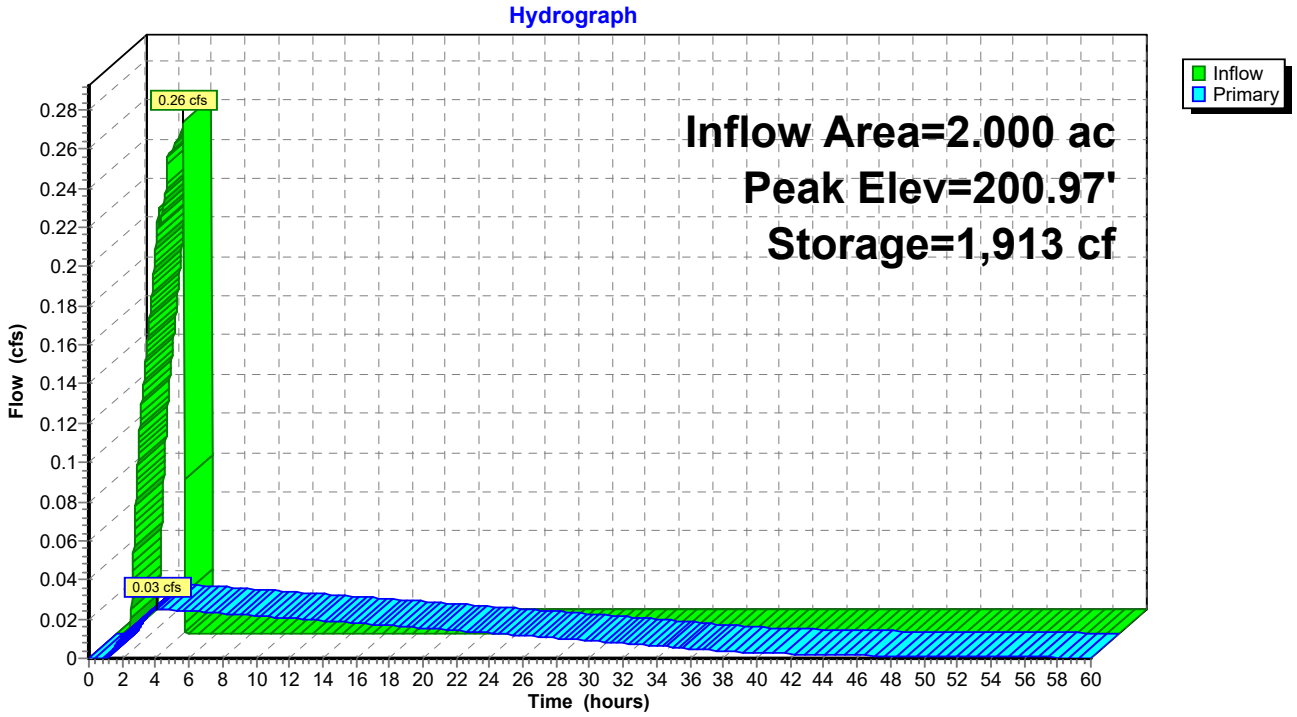
Volume	Invert	Avail.Storage	Storage Description
#1	200.00'	12,225 cf	**Detention Facility (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
200.00	1,850	0	0
202.00	2,375	4,225	4,225
204.00	2,750	5,125	9,350
205.00	3,000	2,875	12,225

Device	Routing	Invert	Outlet Devices
#1	Primary	200.00'	**12.0" Vert. 12" Private Storm Easement** C= 0.600 Limited to weir flow at low heads
#2	Device 1	200.00'	**1.0" Vert. 1" Weep Hole** C= 0.600 Limited to weir flow at low heads
#3	Device 1	202.50'	**2.0" Vert. 2" Outlet** C= 0.600 Limited to weir flow at low heads
#4	Device 1	203.35'	**12.0" Vert. 12" Outlet** C= 0.600 Limited to weir flow at low heads

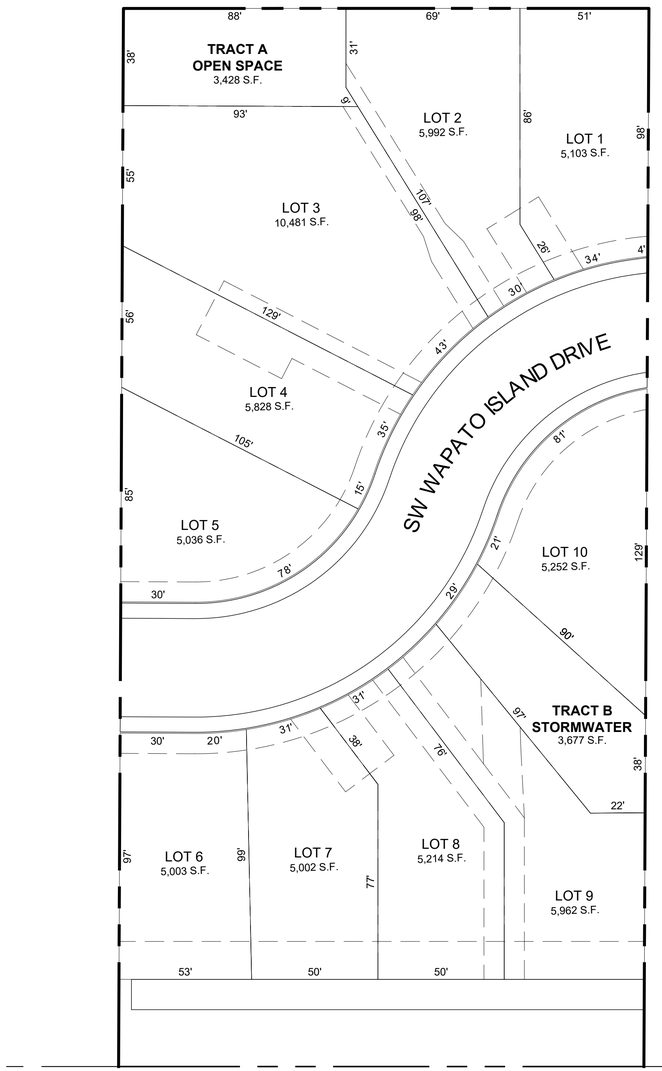
Primary OutFlow Max=0.03 cfs @ 4.03 hrs HW=200.97' (Free Discharge)
↑**1=12" Private Storm Easement** (Passes 0.03 cfs of 2.60 cfs potential flow)
↑**2=1" Weep Hole** (Orifice Controls 0.03 cfs @ 4.63 fps)
3=2" Outlet (Controls 0.00 cfs)
4=12" Outlet (Controls 0.00 cfs)

Pond 1P: Tract B Detention Pond



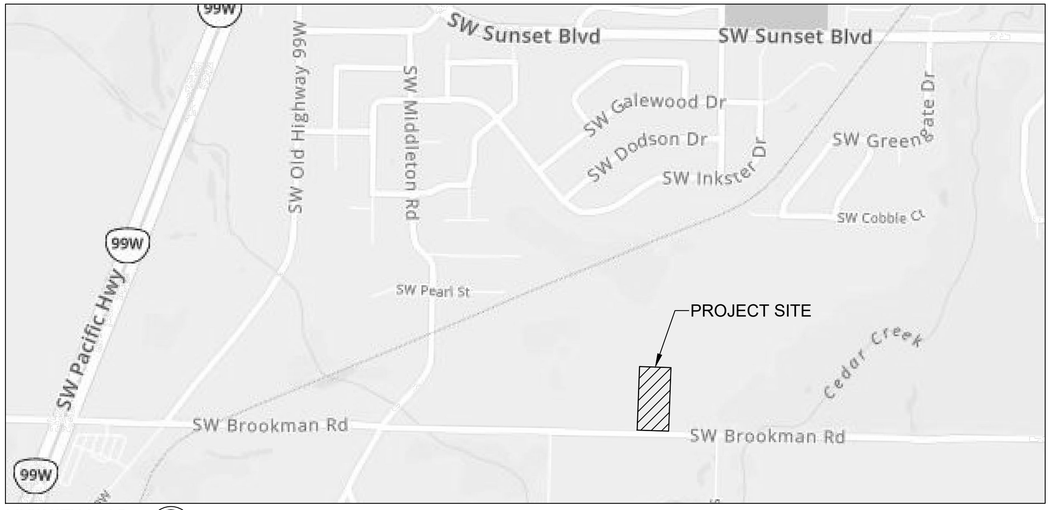
BROOKMAN PLACE TENTATIVE PLAT

SHERWOOD, OREGON



SITE PLAN
SCALE: 1" = 30'

GRAPHIC SCALE
30 0 15 30 60 120
(IN FEET)
1 inch = 30 ft.



VICINITY MAP
SCALE: 1" = 500'

SITE LEGEND

NOTE: LINETYPE THICKNESS OR TEXT MAY BE MODIFIED TO DESCRIBE SIZE OF PIPE

EXISTING SYMBOL	EXISTING DESCRIPTION	PROPOSED SYMBOL	PROPOSED DESCRIPTION
	ADJACENT PROPERTY LINE		ADJACENT PROPERTY LINE
	SUBJECT PROPERTY LINE		PROPERTY LINE
	EASEMENT		EASEMENT
300	MAJOR CONTOUR	300	MAJOR CONTOUR
300	MINOR CONTOUR	300	MINOR CONTOUR
	EDGE OF PAVEMENT		EDGE OF PAVEMENT
	PAVEMENT		PAVEMENT
	GRAVEL		GRAVEL
	CONCRETE		CONCRETE
	BUILDING		BUILDING
X X	FENCE	X X	FENCE
SD SD	STORM LINE	SD SD	STORM LINE
D	STORM MANHOLE	D	STORM MANHOLE
	STORM INLET		STORM INLET / DITCH INLET
	CURB INLET		CURB INLET
	CULVERT		CULVERT
W W	WATERLINE	W	WATERLINE
	WATER METER		WATER METER
	FIRE HYDRANT		FIRE HYDRANT
WV	WATER VALVE	WV	WATER VALVE
SS SS	SANITARY SEWER LINE	SS SS SS	SANITARY SEWER LINE
S	SANITARY SEWER MANHOLE	S	SANITARY SEWER MANHOLE
C	SANITARY CLEANOUT	C	SANITARY CLEANOUT
OHE OHE	OVERHEAD POWER	UGE UGE	UNDERGROUND POWER
	STREET LIGHT		PARKING LIGHT / STREET LIGHT
	UTILITY POLE		UTILITY POLE
COM COM	COMMUNICATIONS LINE	COM COM	COMMUNICATIONS LINE
GAS	GAS PIPELINE	GAS	GAS PIPELINE
	SIGN		SIGN
TELE	TELEPHONE LINE	TELE	TELEPHONE LINE
	TREE TO REMAIN		LANDSCAPED AREA
XX	TREE TO BE REMOVED		TREE

OWNER/DEVELOPER:

OLIVIA BEACH SALES & CONSTRUCTION
3329 SW HWY 101
LINCOLN CITY, OR 97367
PHONE: 541-921-1247
EMAIL: info@oliviabeach.com

CIVIL ENGINEERING:

REECE & ASSOCIATES, INC
C/O DAVID J. REECE, PE
321 FIRST AVENUE EAST, SUITE 3A
ALBANY, OR 97321
PHONE: 541-926-2428
EMAIL: dave@r-aengineering.com

SURVEYOR:

COLE SURVEYING, LLC
6765 PHILOMATH BLVD
CORVALLIS, OR 97333
TELEPHONE: 541-929-5500
EMAIL: colesurveying.com

ARBORIST:

DAVID D. HUNTER, CONSULTING ARBORIST, LLC
REGISTERED CONSULTING ARBORIST #408
C/O DAVID D. HUNTER
P.O. BOX 324
FOREST GROVE, OR 97116-0324
EMAIL: ddhunterarborist@aol.com

PROPERTY INFORMATION:

TAX LOT 101
N.W. ¼ SECTION 6
T. 03 S. - R. 01 W., W.M.

PROPERTY ADDRESS:

17687 SW BROOKMAN RD

ZONING:

MDRH - MEDIUM DENSITY RESIDENTIAL HIGH

WATER SYSTEM:

WATER DISTRIBUTION IS BY THE CITY OF SHERWOOD

SANITARY SEWER:

SANITARY SEWER IS BY THE CITY OF SHERWOOD

AREA RATIONALE:

GROSS AREA:	87,150 S.F.	(2.00 AC.)
AREA IN R/W:	22,855 S.F.	(0.52 AC.)
AREA IN TRACT:	7,105 S.F.	(0.08 AC.)
NET BUILDABLE AREA:	64,295 S.F.	(1.48 AC.)
NUMBER OF LOTS:	10	

NET DENSITY CALCULATION:
6.8 DWELLING UNITS PER ACRE

SENSITIVE AREAS:

1. THERE ARE NO STREAMS ON THE SITE.
2. THERE ARE NO PONDS ON THE SITE.
3. THERE ARE NO DELINEATED WETLANDS ON THE SITE.
4. THERE ARE NO DRAINAGE WAYS ON THE SITE.
5. THERE ARE NO SENSITIVE AREAS ON THE SITE THAT REQUIRE A VEGETATIVE CORRIDOR.
6. THIS SITE IS LOCATED WITHIN ZONE "X", OUTSIDE OF THE 1% AND 0.2% ANNUAL CHANCE FLOODPLAINS AS DESIGNATED ON THE FLOOD INSURANCE RATE MAP (FIRM) NUMBER 41067C0603F, LAST REVISED OCTOBER 19, 2018.

SHEET INDEX:

PRELIMINARY - NOT FOR CONSTRUCTION

Reece & associates, inc.
321 first avenue east, suite 3a
albany, oregon 97321
phone: 541-926-2428
fax: 541-926-2456
PLANNING SERVICES
ENGINEERING SERVICES

REGISTERED PROFESSIONAL ENGINEER
11,749
OREGON
JULY 16, 1982
DAVID J. REECE
RENEWS 12/31/22
PRELIMINARY

BROOKMAN PLACE TENTATIVE PLAT
COVER SHEET
OLIVIA BEACH, LLC
SHERWOOD, OREGON

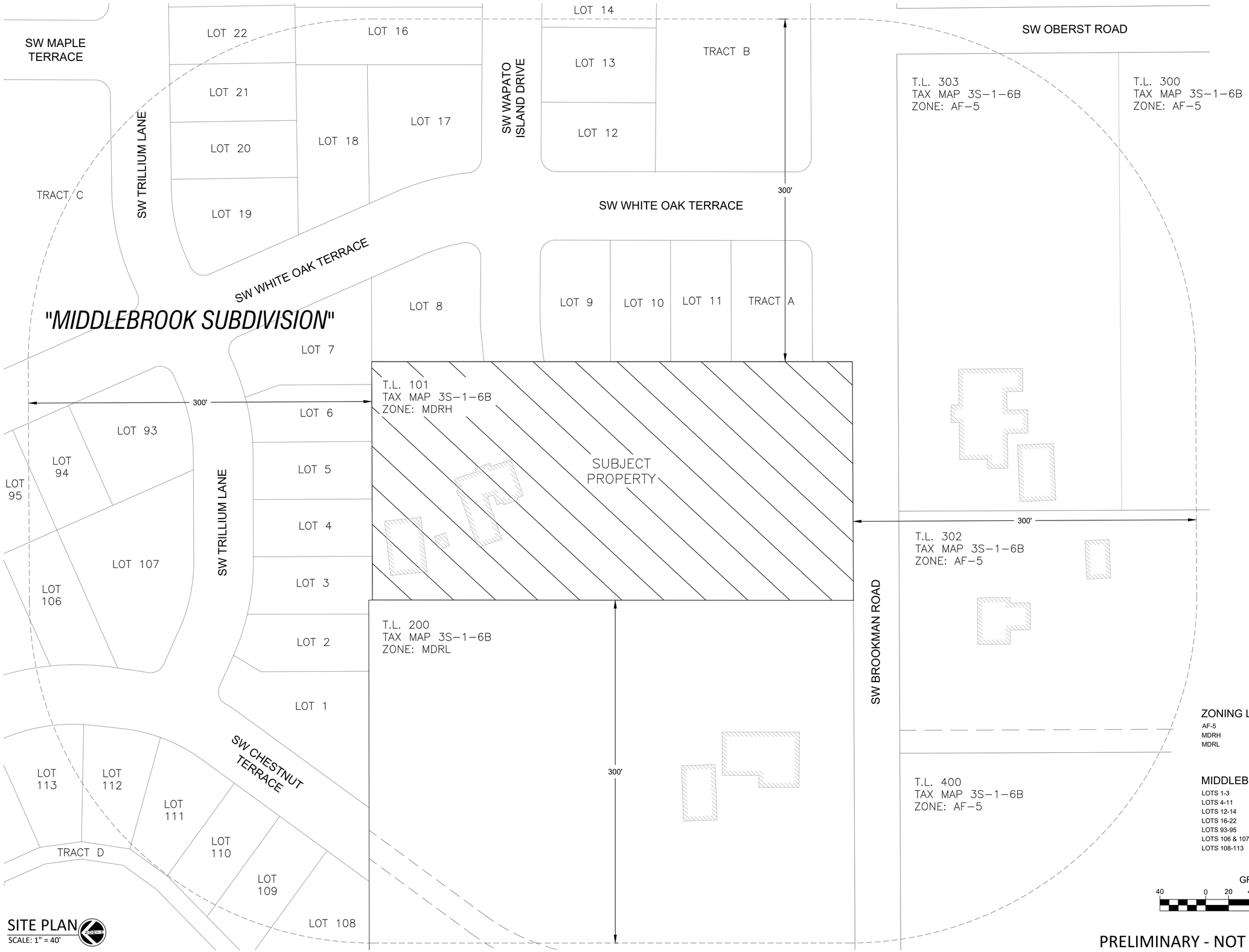
PLAN REVISIONS

No.	DATE	BY

R&A PROJECT NO.
OBC2001

DATE	07/07/2022
DESIGNED	A. VASQUEZ
ENGINEER	D. REECE
CHECKED	H. WOOTON
SCALE	AS INDICATED

SHEET NUMBER
1.0



SITE PLAN
SCALE: 1" = 40'

ZONING LEGEND

AF-5	AGRICULTURE AND FOREST DISTRICT
MDRH	MEDIUM DENSITY RESIDENTIAL HIGH
MDRL	MEDIUM DENSITY RESIDENTIAL LOW

MIDDLEBROOK SUBDIVISION ZONING

LOTS 1-3	MDRL	TRACT A	MDRH
LOTS 4-11	MDRH	TRACT B	MDRL
LOTS 12-14	MDRL	TRACT C	MDRL
LOTS 16-22	MDRL	TRACT D	MDRL
LOTS 93-95	MDRH		
LOTS 106 & 107	MDRH & MDRL		
LOTS 108-113	MDRL		

GRAPHIC SCALE

40 0 20 40 80 160

(IN FEET)
1 inch = 40 ft.

PRELIMINARY - NOT FOR CONSTRUCTION

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albany, oregon 97321
phone: 541-926-2428
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PLANNING SERVICES
ENGINEERING SERVICES

REGISTERED PROFESSIONAL ENGINEER 11,749 OREGON JULY 16, 1982 DAVID J. REECE
PRELIMINARY
RENEWS 12/31/22

BROOKMAN PLACE TENTATIVE PLAT
SURROUNDING LAND USES

OLIVIA BEACH, LLC
SHERWOOD, OREGON

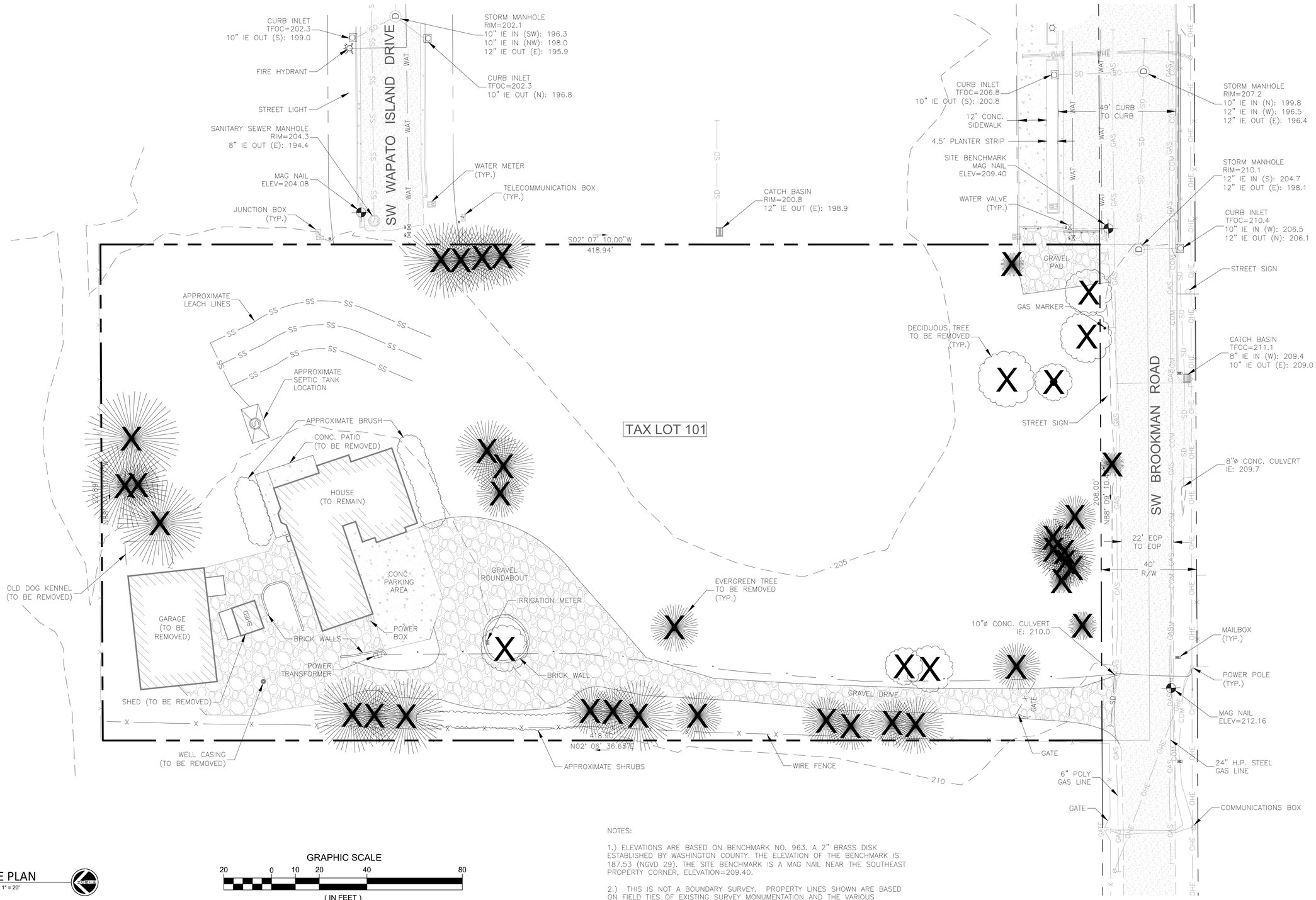
PLAN REVISIONS

No.	DATE	BY

R&a PROJECT NO.
OBC2001

DATE	07/07/2022
DESIGNED	A. VASQUEZ
ENGINEER	D. REECE
CHECKED	H. WOOTON
SCALE	AS INDICATED

SHEET NUMBER
2.0



SITE PLAN
SCALE: 1" = 20'

GRAPHIC SCALE
20 0 10 20 40 80
(IN FEET)
1 inch = 20 ft.

NOTES:

1.) ELEVATIONS ARE BASED ON BENCHMARK NO. 963. A 2" BRASS DISK ESTABLISHED BY WASHINGTON COUNTY. THE ELEVATION OF THE BENCHMARK IS 187.53 (NGVD 29). THE SITE BENCHMARK IS A MAG NAIL NEAR THE SOUTHEAST PROPERTY CORNER, ELEVATION=209.40.

2.) THIS IS NOT A BOUNDARY SURVEY. PROPERTY LINES SHOWN ARE BASED ON FIELD TIES OF EXISTING SURVEY MONUMENTATION AND THE VARIOUS SURVEYS OF RECORD.

3.) LOCATION OF SEPTIC TANK, DISTRIBUTION BOXES, SPLITTER BOXES, AND DRAIN LINES WERE ALL DRAWN IN BASED STRICTLY ON FIELD TIES AND RECORD INFORMATION FROM THE HOME OWNER. THE LOCATION OF SAID ITEMS COULD NOT BE FIELD VERIFIED AND WERE SHOWN AS AN APPROXIMATE LOCATION.

PRELIMINARY - NOT FOR CONSTRUCTION

Reece & associates, inc.
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albany, oregon 97321
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PLANNING SERVICES
ENGINEERING SERVICES

REGISTERED PROFESSIONAL ENGINEER
11,749
OREGON
JULY 16, 1982
DAVID J. REECE
RENEWS 12/31/22
PRELIMINARY

BROOKMAN PLACE TENTATIVE PLAT
EXISTING SITE CONDITIONS

OLIVIA BEACH, LLC
SHERWOOD, OREGON

PLAN REVISIONS

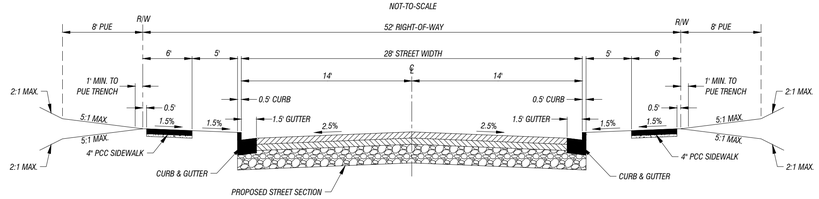
No.	DATE	BY

R&a PROJECT NO.
OBC2001

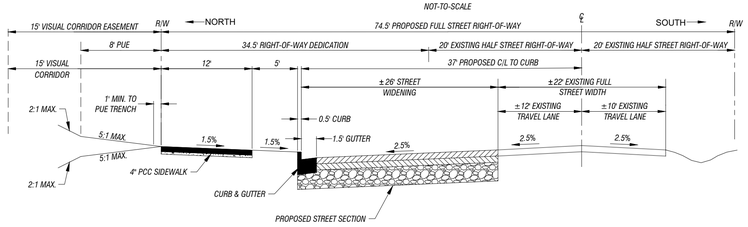
DATE	07/07/2022
DESIGNED	A. VASQUEZ
ENGINEER	D. REECE
CHECKED	H. WOOTON
SCALE	AS INDICATED

SHEET NUMBER
3.0

LOCAL STREET TYPICAL SECTION
SW WAPATO ISLAND DRIVE
NOT-TO-SCALE



ARTERIAL STREET TYPICAL SECTION
SW BROOKMAN ROAD RIGHT-OF-WAY DEDICATION & HALF STREET WIDENING
NOT-TO-SCALE



SIGNS PER MUTCD

R7-1

R7-6-9A

SITE PLAN
SCALE: 1" = 20'

GRAPHIC SCALE
20 0 10 20 40 80
(IN FEET)
1 inch = 20 ft.

PRELIMINARY - NOT FOR CONSTRUCTION

Reece & associates, inc.
321 first avenue east, suite 3a
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11,749
OREGON
JULY 16, 1982
DAVID J. REECE
PRELIMINARY
RENEWS 12/31/22

BROOKMAN PLACE TENTATIVE PLAT
TRANSPORTATION

OLIVIA BEACH, LLC
SHERWOOD, OREGON

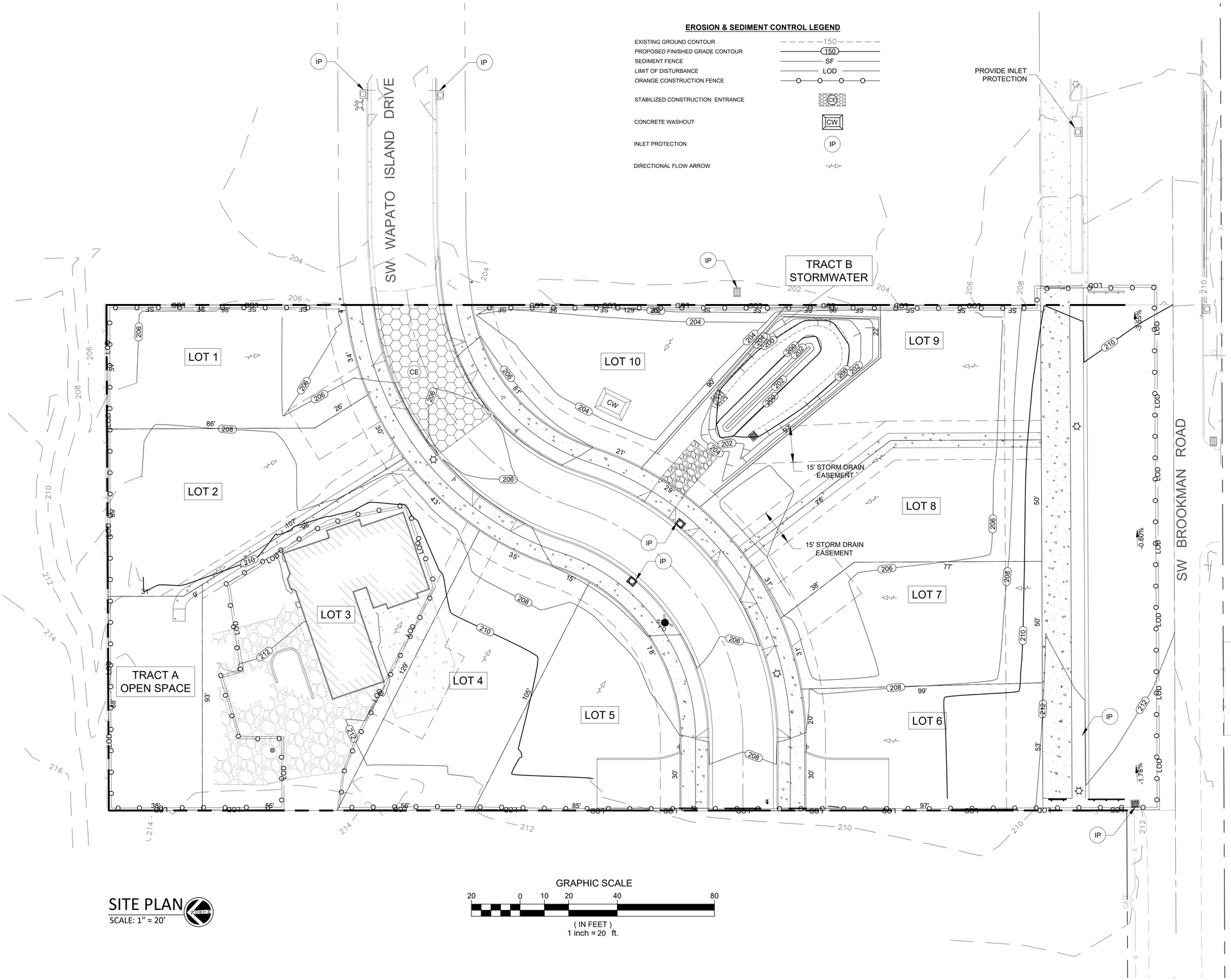
PLAN REVISIONS		
No.	DATE	BY

R&a PROJECT NO.	OBC2001
DATE	07/07/2022
DESIGNED	A. VASQUEZ
ENGINEER	D. REECE
CHECKED	H. WOOTON
SCALE	AS INDICATED

SHEET NUMBER
4.0

EROSION & SEDIMENT CONTROL LEGEND

EXISTING GROUND CONTOUR	150
PROPOSED FINISHED GRADE CONTOUR	150
SEDIMENT FENCE	SF
LIMIT OF DISTURBANCE	LOD
ORANGE CONSTRUCTION FENCE	
STABILIZED CONSTRUCTION ENTRANCE	CE
CONCRETE WASHOUT	CW
INLET PROTECTION	IP
DIRECTIONAL FLOW ARROW	



SITE PLAN
SCALE: 1" = 20'

GRAPHIC SCALE
20 0 10 20 40 80
(IN FEET)
1 inch = 20 ft.

PRELIMINARY - NOT FOR CONSTRUCTION

Reece & associates, inc.
321 first avenue east, suite 3a
albany, oregon 97321
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PLANNING SERVICES
ENGINEERING SERVICES

REGISTERED PROFESSIONAL ENGINEER
11,749
OREGON
JANUARY 16, 1982
DAVID J. REECE
PRELIMINARY
RENEWS 12/31/22

BROOKMAN PLACE TENTATIVE PLAT
GRADING & EROSION CONTROL

OLIVIA BEACH, LLC
SHERWOOD, OREGON

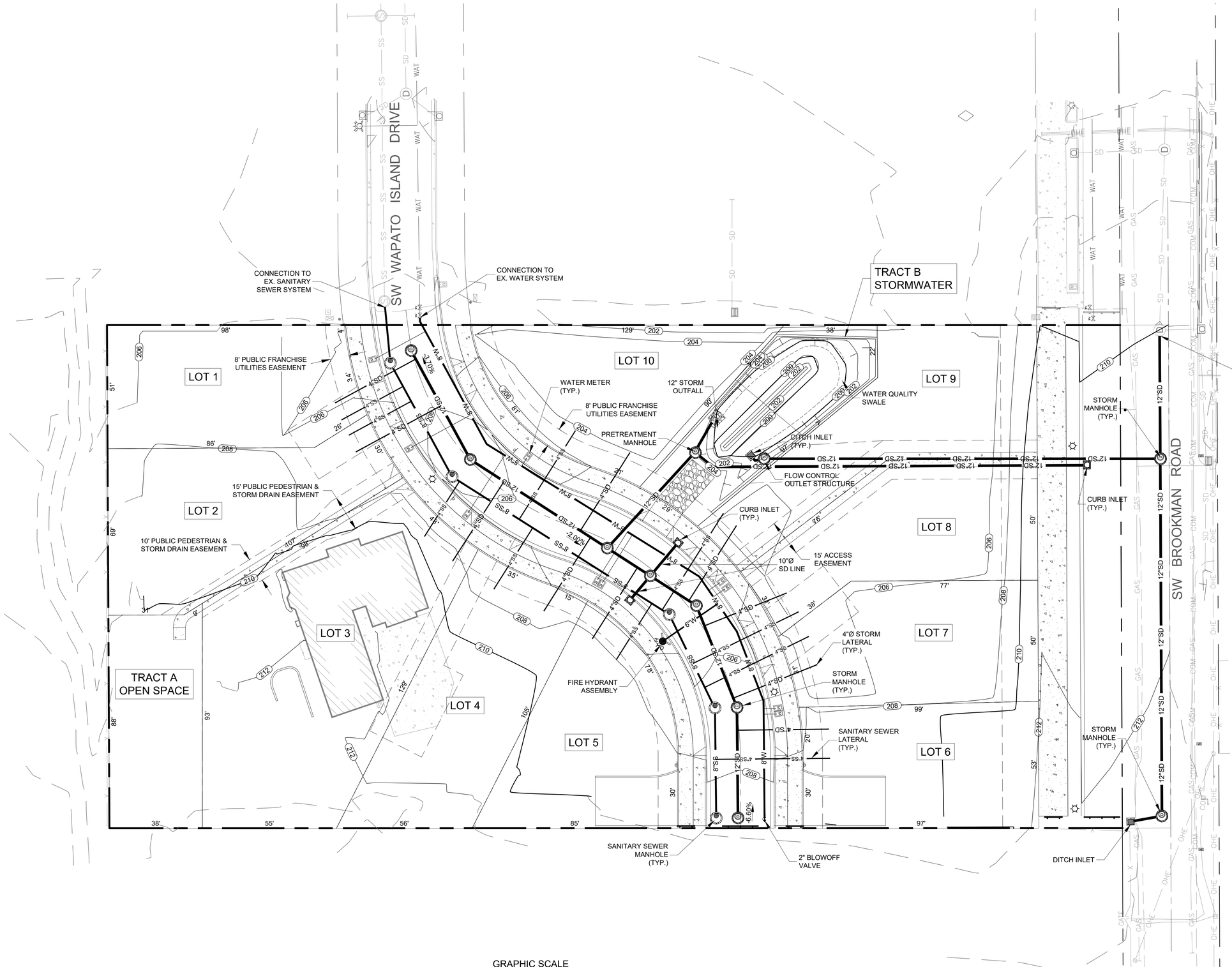
PLAN REVISIONS

No.	DATE	BY

R&A PROJECT NO.
OBC2001

DATE	07/07/2022
DESIGNED	A. VASQUEZ
ENGINEER	D. REECE
CHECKED	H. WOOTON
SCALE	AS INDICATED

SHEET NUMBER
5.0



SITE PLAN
SCALE: 1" = 20'

GRAPHIC SCALE
20 0 10 20 40 80
(IN FEET)
1 inch = 20 ft.

PRELIMINARY - NOT FOR CONSTRUCTION

Reece & associates, inc.
321 first avenue east, suite 3a
albany, oregon 97321
phone: 541-926-2428
fax: 541-926-2456
PLANNING SERVICES
ENGINEERING SERVICES

REGISTERED PROFESSIONAL ENGINEER
11,749
OREGON
JULY 16, 1982
DAVID J. REECE
RENEWS 12/31/22
PRELIMINARY

BROOKMAN PLACE TENTATIVE PLAT
UTILITIES

OLIVIA BEACH, LLC
SHERWOOD, OREGON

PLAN REVISIONS		
No.	DATE	BY

R&a PROJECT NO.	OBC2001
DATE	07/07/2022
DESIGNED	A. VASQUEZ
ENGINEER	D. REECE
CHECKED	H. WOOTON
SCALE	AS INDICATED

SHEET NUMBER
6.0

STREET TREE LEGEND & PLANT SCHEDULE

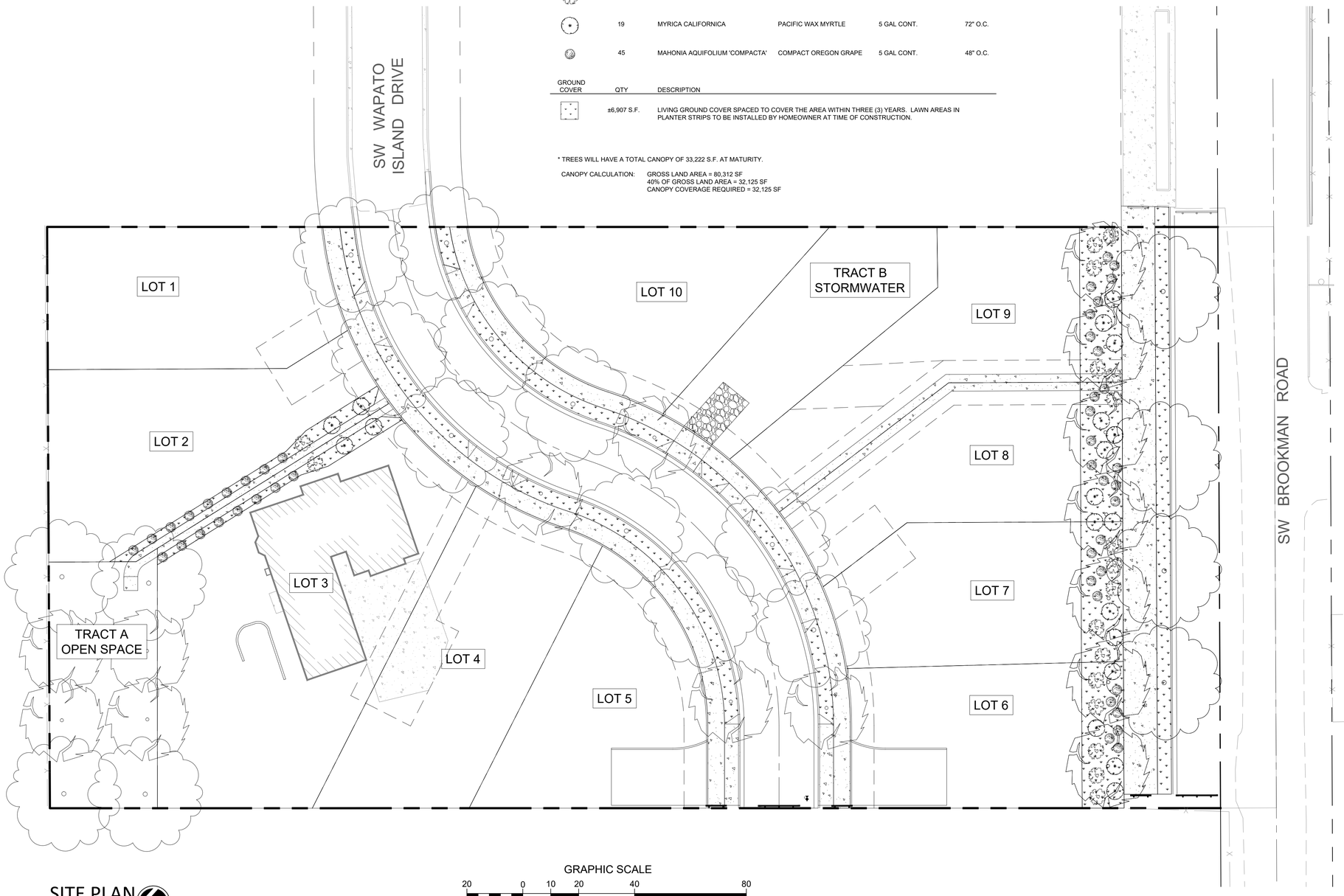
TREES	QTY	BOTANICAL NAME	COMMON NAME	SIZE	CANOPY SPREAD *
	18	TILIA AMERICANA	AMERICAN LINDEN	2" CAL B&B (MIN. 6' HT)	40'
	15	ACER RUBRUM 'TILFORD'	TILFORD RED MAPLE	2" CAL B&B (MIN. 6' HT)	30'

SHRUBS	QTY	BOTANICAL NAME	COMMON NAME	CONTAINER	SPACING
	18	CORNUS SERICEA 'FLAVIRAMEA'	YELLOW TWIG DOGWOOD	1 GAL CONT.	72" O.C.
	19	MYRICA CALIFORNICA	PACIFIC WAX MYRTLE	5 GAL CONT.	72" O.C.
	45	MAHONIA AQUIFOLIUM 'COMPACTA'	COMPACT OREGON GRAPE	5 GAL CONT.	48" O.C.

GROUND COVER	QTY	DESCRIPTION
	±6,907 S.F.	LIVING GROUND COVER SPACED TO COVER THE AREA WITHIN THREE (3) YEARS. LAWN AREAS IN PLANTER STRIPS TO BE INSTALLED BY HOMEOWNER AT TIME OF CONSTRUCTION.

* TREES WILL HAVE A TOTAL CANOPY OF 33,222 S.F. AT MATURITY.

CANOPY CALCULATION: GROSS LAND AREA = 80,312 SF
40% OF GROSS LAND AREA = 32,125 SF
CANOPY COVERAGE REQUIRED = 32,125 SF



SITE PLAN
SCALE: 1" = 20'

GRAPHIC SCALE
20 0 10 20 40 80
(IN FEET)
1 inch = 20 ft.

PRELIMINARY - NOT FOR CONSTRUCTION

Reece & associates, inc.
321 first avenue east, suite 3a
albany, oregon 97321
phone: 541-926-2428
fax: 541-926-2456
PLANNING SERVICES
R&A ENGINEERING SERVICES

REGISTERED PROFESSIONAL ENGINEER
11,749
OREGON
JULY 16, 1982
DAVID J. REECE
PRELIMINARY
RENEWS 12/31/22

BROOKMAN PLACE TENTATIVE PLAT
LANDSCAPE PLAN

OLIVIA BEACH, LLC
SHERWOOD, OREGON

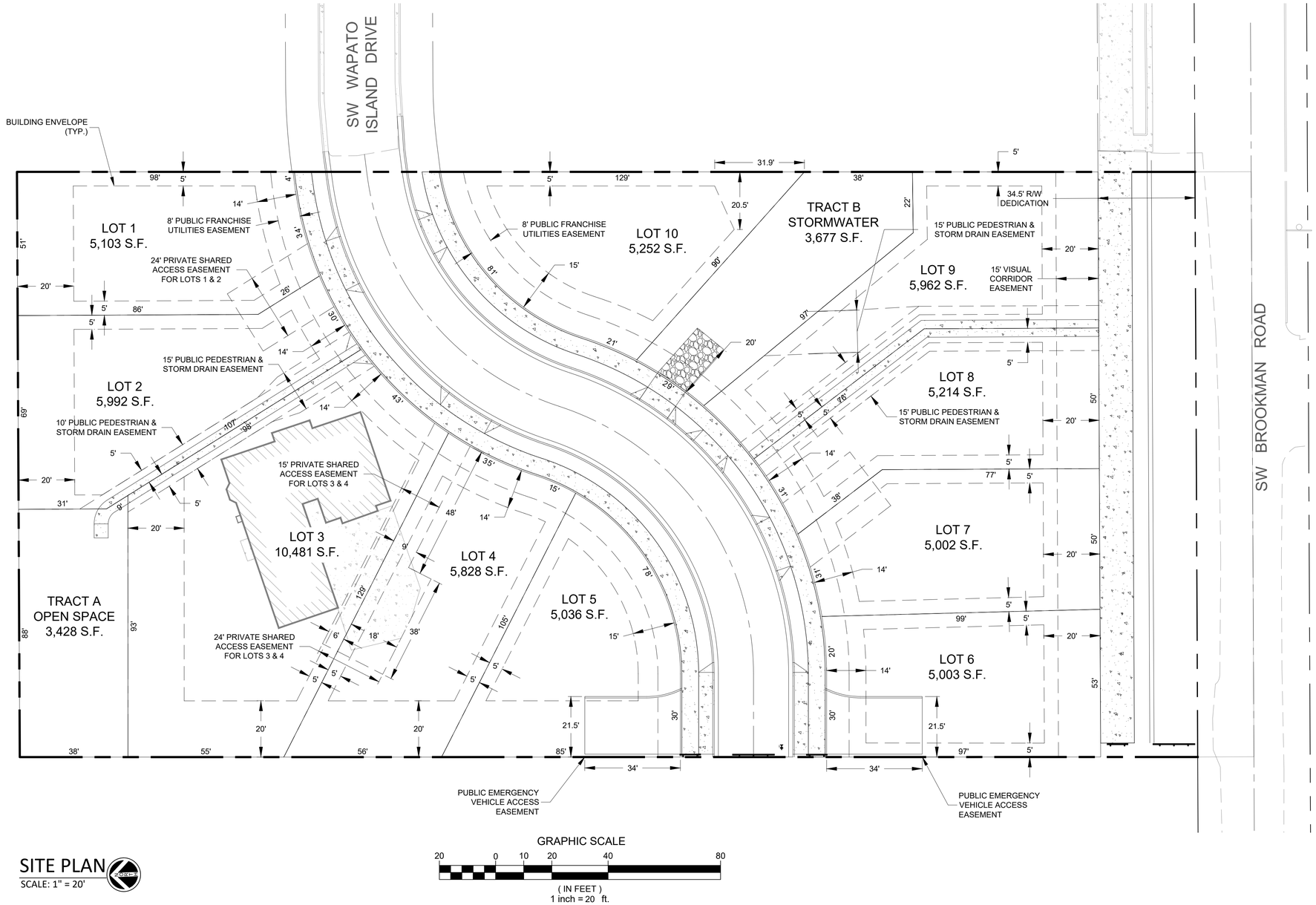
PLAN REVISIONS

No.	DATE	BY

R&A PROJECT NO.
OBC2001

DATE	07/07/2022
DESIGNED	A. VASQUEZ
ENGINEER	D. REECE
CHECKED	H. WOOTON
SCALE	AS INDICATED

SHEET NUMBER
7.0



SITE PLAN
SCALE: 1" = 20'

GRAPHIC SCALE
20 0 10 20 40 80
(IN FEET)
1 inch = 20 ft.

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