CITY OF Salem AT YOUR SERVICE

Land Use Application

Planning/Permit Application Center
City Hall / 555 Liberty St. SE / Room 320 / Salem, OR 97301-3513
503-588-6173 * planning@cityofsalem.net
If you need the following translated in Spanish, please call 503-588-6256.
Si usted necesita lo siguiente traducido en español, por favor llame 503-588-6256.

(For office use only)
Permit #:

Application type

Please describe the type of land use action requested:

Subdivision

Work site location and information

Street address or location of subject property	6719 Devon Avenue
Total size of subject property	19.89 Acres
Assessor tax lot numbers	083W22C/Tax Lot 300
Existing use structures and/or other improvements on site	SFD and Vacant
Zoning	RA
Comprehensive Plan Designation	'Developing Residential'
Project description	Subdivision

People information

	Name	Full Mailing Address	Phone Number and Email address
Applicant	HSF Development, LLC	3425 Boone Road SE Salem, Oregon 97317	
Agent	Brandie Dalton Land-Use Consultant	Multi/Tech Engineering 1155 SE 13th Street, Salem, OR, 97302	503-363-9227 bdalton@mtengineering.net

Project information

Project Valuation for Site Plan Review	
Neighborhood Association	South Gateway Neighborhood Association
Have you contacted the Neighborhood Association?	○ Yes ⊙ No
Date Neighborhood Association contacted	
Describe contact with the affected Neighborhood Association (The City of Salem recognizes, values, and supports the involvement of residents in land use decisions affecting neighborhoods across the city and strongly encourages anyone requesting approval for any land use proposal to contact the affected neighborhood association(s) as early in the process as possible.)	
Have you contacted Salem-Keizer Transit?	○ Yes ⊙ No
Date Salem-Keizer Transit contacted	
Describe contact with Salem-Keizer Transit	

Authorization by property owner(s)/applicant

***If the applicant and/or property owner is a Limited Liability Company (LLC), please also provide a list of all members of the LLC with your application.**

Copyright release for government entities: I hereby grant permission to the City of Salem to copy, in whole or part, drawings and all other materials submitted by me, my agents, or representatives. This grant of permission extends to all copies needed for administration of the City's regulatory, administrative, and legal functions, including sharing of information with other governmental entities.

Authorizations: Property owners and contract purchasers are required to authorize the filing of this application and must sign below.

- **All signatures represent that they have full legal capacity to and hereby do authorize the filing of this application and certify that the information and exhibits herewith submitted are true and correct.**
- **I (we) hereby grant consent to the City of Salem and its officers, agents, employees, and/or independent contractors to enter the property identified above to conduct any and all inspections that are considered appropriate by the City to process this application.**
- **I (we) hereby give notice of the following concealed or unconcealed dangerous conditions on the property:**

Electronic signature certification: By attaching an electronic signature (whether typed, graphical or free form) I certify herein that I have read, understood and confirm all the statements listed above and throughout the application form.

Authorized Signature: Devon Property LLC Anthony R Kreiteberg, Manager

Print Name: Anthony R Kreiteberg, Manager Date: 11/9/20

Address (include ZIP):

Authorized Signature:

Print Name: Date:

Address (include ZIP):

(For office use only)		
Received by Sally Long	Date: 11-18-2020	Receipt Number: 20-118048-LD

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Save the file to your computer and email to planning@cityofsalem.net.

CITY OF Salem AT YOUR SERVICE

Land Use Application

Planning/Permit Application Center
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503-588-6173 * planning@cityofsalem.net
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(For office use only)
Permit #:

Application type

Please describe the type of land use action requested:

Subdivision Modification (SUB19-05MOD1)

Work site location and information

Street address or location of subject property	6719 Devon Avenue
Total size of subject property	19.89 Acres
Assessor tax lot numbers	083W22C/Tax Lot 300
Existing use structures and/or other improvements on site	SFD and Vacant
Zoning	RA
Comprehensive Plan Designation	'Developing Residential'
Project description	Modify SUB19-05MOD1 as outlined on the Site Plans and in the Findings

People information

	Name	Full Mailing Address	Phone Number and Email address
Applicant	HSF Development, LLC	3425 Boone Road SE Salem, Oregon 97317	
Agent	Brandie Dalton Land-Use Consultant	Multi/Tech Engineering 1155 SE 13th Street, Salem, OR, 97302	503-363-9227 bdalton@mtengineering.net

Project information

Project Valuation for Site Plan Review	
Neighborhood Association	South Gateway Neighborhood Association
Have you contacted the Neighborhood Association?	○ Yes ⊙ No
Date Neighborhood Association contacted	
Describe contact with the affected Neighborhood Association (The City of Salem recognizes, values, and supports the involvement of residents in land use decisions affecting neighborhoods across the city and strongly encourages anyone requesting approval for any land use proposal to contact the affected neighborhood association(s) as early in the process as possible.)	
Have you contacted Salem-Keizer Transit?	○ Yes ⊙ No
Date Salem-Keizer Transit contacted	
Describe contact with Salem-Keizer Transit	

Authorization by property owner(s)/applicant

***If the applicant and/or property owner is a Limited Liability Company (LLC), please also provide a list of all members of the LLC with your application.**

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Authorizations: Property owners and contract purchasers are required to authorize the filing of this application and must sign below.

- **All signatures represent that they have full legal capacity to and hereby do authorize the filing of this application and certify that the information and exhibits herewith submitted are true and correct.**
- **I (we) hereby grant consent to the City of Salem and its officers, agents, employees, and/or independent contractors to enter the property identified above to conduct any and all inspections that are considered appropriate by the City to process this application.**
- **I (we) hereby give notice of the following concealed or unconcealed dangerous conditions on the property:**

Electronic signature certification: By attaching an electronic signature (whether typed, graphical or free form) I certify herein that I have read, understood and confirm all the statements listed above and throughout the application form.

Authorized Signature: Devon Property LLC Anthony R Kreiteberg, Manager

Print Name: Anthony R Kreiteberg, Manager Date: 11/9/20

Address (include ZIP):

Authorized Signature:

Print Name: Date:

Address (include ZIP):

(For office use only)		
Received by	Date:	Receipt Number:

Not using Internet Explorer?
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Tree Conservation Plan Adjustment Application

Planning/Permit Application Center
City Hall / 555 Liberty St. SE / Room 320 / Salem, OR 97301-3513
503-588-6173 * planning@cityofsalem.net
If you need the following translated in Spanish, please call 503-588-6256.
Si usted necesita lo siguiente traducido en español, por favor llame 503-588-6256.

(For office use only)
Permit #:

Work site location and information

Street address or location of subject property	6719 Devon Avenue SE
Lot size	19.74 Acres
Proposed use or type of development	SFD Subdivision
Original Tree Conservation Plan (TCP) case number	TCP19-10
Associated Subdivision/Partition case number	SUB19-05MOD1

People information

	Name	Full Mailing Address	Phone Number and Email address
Applicant	HSF Devlopment, LLC	3425 Boone Road SE Salem, Oregon 97317	

Project information

Total number of trees on subject property prior to development	64
Number of trees to be removed under original TCP	54
Number of additional trees to be removed under all previously approved TCP Adjustments	0
Number of trees to be removed under this TCP adjustment	54
Total number of trees to be removed	54
Total number of trees to be retained	10
Percent of original trees retained after this adjustment	15%
Description of trees to be removed (species and size [dbh])	See Attached Tree Plan

Reason for adjustment (attach additional pages if needed)

Modification to SUB19-05MOD1. Street realignment due to topography will cause teh removal of addtional trees.

Authorization by property owner(s)/applicant

***If the applicant and/or property owner is a Limited Liability Company (LLC), please also provide a list of all members of the LLC with your application.**

Copyright release for government entities: I hereby grant permission to the City of Salem to copy, in whole or part, drawings and all other materials submitted by me, my agents, or representatives. This grant of permission extends to all copies needed for administration of the City's regulatory, administrative, and legal functions, including sharing of information with other governmental entities.

Electronic signature certification: By attaching an electronic signature (whether typed, graphical or free form) I certify herein that I have read, understood and confirm all the statements listed above and throughout the application form.

Authorized Signature: Brandie Dalton

Print Name: Brandie Dalton Date: 11-9-2020

(For office use only)		
Received by	Date:	Receipt Number:

Not using Internet Explorer?
Save the file to your computer and email to planning@cityofsalem.net.

Section 2 (to be completed by staff)

Is TCPA inconsistent with approved TCP (or most recently approved TCPA)?	Yes	No
Are more than 5 additional trees to be removed?	Yes	No
Are less than 25% of total trees retained?	Yes	No
Are riparian trees/native vegetation to be removed?	Yes	No
Are significant trees to be removed?	Yes	No

If "Yes" is checked for any of the above questions, refer to extended review. Otherwise, review over-the-counter.

Check one of the following:
1. Adjustment to be reviewed over-the-counter.
2. Adjustment to be referred to Current Planning for extended review.

Section 3 (to be completed by staff)

Staff Finding: Adequate staff review has been completed in order to issue a decision on the proposed Tree Conservation Plan Adjustment. The Urban Planning Administrator or designee hereby elects to: (Check appropriate box.)

Approve this adjustment to TCP _____ pursuant to SRC 808.040. Staff has established that all applicable requirements of SRC Chapter 808, Preservation of Trees and Vegetation, have been met or shall be met by conditions of approval. The applicant shall be subject to the requirements of this decision, which is binding on the property until the issuance of a Notice of Final Completion. Any conditions or replanting requirements imposed by this approval shall be in addition to, and not in lieu of, any other conditions or replanting requirements previously or subsequently required for the original Tree Conservation Plan and any concurrent adjustments made thereto.

Deny this adjustment to TCP_____ pursuant to SRC 808.040. The applicant has failed to demonstrate adequate justification for the removal of trees proposed for removal under this adjustment and/or the applicable requirements of SRC Chapter 808, Preservation of Trees and Vegetation, have not been met.

Approval

Approval of this Tree Conservation Plan Adjustment shall require compliance with the following conditions as authorized by SRC 808.040(e):

1. The property owner, developer, and all representatives thereof shall comply with the **conditions attached hereto as Attachment 1**.
2. The property owner, developer, and all representatives thereof shall comply with the following additional condition(s):

Date of Decision:

Staff Name:

Staff Signature:

Appeals: Pursuant to SRC 300.420(e)(1)(C), the decision on a Tree Conservation Plan Adjustment may be appealed, pursuant to SRC 300.1010. Only the applicant or the owner of the subject property have standing to appeal the decision on a Tree Conservation Plan Adjustment. The decision of the Hearings Officer on appeal shall be the final decision of the City.

Attachment 1: Additional Conditions of Approval
Attachment 2: Tree Conservation Plan Adjustment

Attachment 1: Additional Conditions of Approval

The submitted Tree Conservation Plan Adjustment is consistent with the provisions of SRC Chapter 808. The developer, and all representatives thereof, shall comply with all applicable SRC Chapter 808 development standards, and shall comply with the following conditions:

1. No tree designated for removal on the approved Tree Conservation Plan Adjustment shall be removed prior to the Tree Conservation Plan Adjustment approval date.

2. Any changes to the approved Tree Conservation Plan Adjustment must be submitted to the Community Development Department in the form of another Tree Conservation Plan Adjustment application for review and approval.

3. No tree designated for preservation may be removed or critically damaged unless and until a Tree Conservation Plan Adjustment application is submitted to the Community Development Department and approval has been granted by the Planning Administrator. Failure to preserve trees marked for preservation may result in a civil penalty.

4. Prior to and during any grubbing, grading and construction activities, **all trees designated for preservation shall be protected from removal or critical damage. Trees designated for protection shall be clearly marked on-site.**

5. All trees and native vegetation designated for preservation under the tree conservation plan shall be marked and protected during construction. Any heritage tree or significant tree shall require that at least 70 percent of a circular area beneath the tree measuring one foot in radius for every one inch of dbh be protected by an above ground high-visibility silt fence, or its equivalent. **No grubbing, grading, construction, vehicle parking, or storage/disposal of materials/fill shall be allowed inside the protective fencing**. Protection measures shall continue until the issuance of a Notice of Final Completion for the single family or two family dwelling.

6. Each lot or parcel within the development proposal shall comply with the tree planting requirements set forth in SRC 808.050.

AmeriTitle

THIS SPACE RESERVED FOR RECORDER'S USE

After recording return to:
HSF Development, LLC
3425 Boone Road SE
Salem, OR 97317

Until a change is requested all tax statements shall be sent to the following address:
HSF Development, LLC
3425 Boone Road SE
Salem, OR 97317
File No. 179268AM

REEL 4009 PAGE 121
MARION COUNTY
BILL BURGESS, COUNTY CLERK
10-27-2017 11:30 am.
Control Number 481502 $ 51.00
Instrument 2017 00056188

STATUTORY WARRANTY DEED

Susan Ballard and Edward Kirasich, not as tenants in common but with right of survivorship ,

Grantor(s), hereby convey and warrant to

HSF Development, LLC, an Oregon limited liability company

Grantee(s), the following described real property in the County of Marion and State of Oregon free of encumbrances except as specifically set forth herein:

Lots 12 and 13, SUNNYSIDE FRUIT FARMS No. 8, Marion County, Oregon

The true and actual consideration for this conveyance **PURSUANT TO AN IRC 1031 TAX DEFERRED EXCHANGE ON BEHALF OF GRANTOR/GRANTEE.**

The above-described property is free of encumbrances except all those items of record, if any, as of the date of this deed and those shown below, if any:

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

AmeriTitle 179268AM

Dated this 20 day of Oct, 2017

Susan Ballard

Edward Kirasich

State of Oregon } ss
County of Marion}

On this 20 day of October, 2017, before me, Tasha Walery a Notary Public in and for said state, personally appeared Susan Ballard and Edward Kirasich, known or identified to me to be the person(s) whose name(s) is/are subscribed to the within Instrument and acknowledged to me that he/she/they executed same.
IN WITNESS WHEREOF, I have hereunto set my hand and affixed my official seal the day and year in this certificate first above written.

Notary Public for the State of Oregon
Residing at: Keizer
Commission Expires: 10-14-18

OFFICIAL STAMP
TASHA MARIE WALERY
NOTARY PUBLIC - OREGON
COMMISSION NO. 933073
MY COMMISSION EXPIRES OCTOBER 14, 2018

REEL: 4009 PAGE: 121

October 27, 2017, 11:30 am.

CONTROL #: 481502

State of Oregon
County of Marion

I hereby certify that the attached instrument was received and duly recorded by me in Marion County records:

FEE: $ 51.00

BILL BURGESS
COUNTY CLERK

THIS IS NOT AN INVOICE.

Business Name Search

New Search | Printer Friendly

Business Entity Data

10-31-2017
09:03

Registry Nbr	Entity Type	Entity Status	Jurisdiction	Registry Date	Next Renewal Date	Renewal Due?
1086161-94	DLLC	ACT	OREGON	02-11-2015	02-11-2018	
Entity Name	HSF DEVELOPMENT LLC					
Foreign Name						

New Search | Printer Friendly

Associated Names

Type	PPB	PRINCIPAL PLACE OF BUSINESS				
Addr 1	3425 BOONE RD SE					
Addr 2						
CSZ	SALEM	OR	97317		**Country**	UNITED STATES OF AMERICA

Please click here for general information about registered agents and service of process.

Type	AGT	REGISTERED AGENT	**Start Date**	02-11-2015	**Resign Date**	
Of Record	158720-88	CORPORATION SERVICE COMPANY				
Addr 1	1127 BROADWAY STREET NE STE 310					
Addr 2						
CSZ	SALEM	OR	97301		**Country**	UNITED STATES OF AMERICA

Type	MAL	MAILING ADDRESS				
Addr 1	3425 BOONE ROAD SE					
Addr 2						
CSZ	SALEM	OR	97317		**Country**	UNITED STATES OF AMERICA

Type	MGR	MANAGER			**Resign Date**	
Name	CHRIS		JUNDT			
Addr 1	3425 BOONE RD SE					
Addr 2						

CSZ	SALEM	OR	97317		Country	UNITED STATES OF AMERICA

Type	MGR	MANAGER			Resign Date	
Name	ANTHONY	R	KREITZBERG			
Addr 1	3425 BOONE RD SE					
Addr 2						
CSZ	SALEM	OR	97317		Country	UNITED STATES OF AMERICA

Type	MGR	MANAGER			Resign Date	
Name	KELLEY	D	HAMILTON			
Addr 1	3425 BOONE ROAD SE					
Addr 2						
CSZ	SALEM	OR	97317		Country	UNITED STATES OF AMERICA

New Search Printer Friendly

Name History

Business Entity Name	Name Type	Name Status	Start Date	End Date
HSF DEVELOPMENT LLC	EN	CUR	02-11-2015	

Please read before ordering Copies.

New Search Printer Friendly

Summary History

Image Available	Action	Transaction Date	Effective Date	Status	Name/Agent Change	Dissolved By
	AMENDED ANNUAL REPORT	01-13-2017		FI		
	AMENDED ANNUAL REPORT	01-20-2016		FI		
	CHANGE OF REGISTERED AGENT/ADDRESS	03-24-2015		FI		
	ARTICLES OF ORGANIZATION	02-11-2015		FI	Agent	

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ARTICLES OF ORGANIZATION

Corporation Division
www.filinginoregon.com

E-FILED
Feb 11, 2015
OREGON SECRETARY OF STATE

REGISTRY NUMBER

108616194

TYPE

DOMESTIC LIMITED LIABILITY COMPANY

1. ENTITY NAME

HSF DEVELOPMENT LLC

2. MAILING ADDRESS

3425 BOONE ROAD SE
SALEM OR 97317 USA

3. NAME & ADDRESS OF REGISTERED AGENT

15872088 - CORPORATION SERVICE COMPANY

285 LIBERTY ST NE
SALEM OR 97301 USA

4. ORGANIZERS

ANTHONY RAY KREITZBERG

3425 BOONE RD SE
SALEM OR 97317 USA

5. MEMBERS/MANAGERS

MANAGER

KELLEY D HAMILTON

3425 BOONE ROAD SE
SALEM OR 97317 USA

6. DURATION

PERPETUAL

7. MANAGEMENT

This Limited Liability Company will be manager-managed by one or more managers

8. OPTIONAL PROVISIONS

To the fullest extent permitted under the law of Oregon, as such law exists or may hereafter be amended, LLC shall defend, indemnify, and hold harmless each Member and/or Manager of LLC against any and all claims and liabilities to which such Member and/or Manager has or becomes subject by reason of serving or having served as such Member and/or Manager or by reason of any action alleged to have been taken, omitted, or neglected by such Member and/or Manager in his, her or its capacity as Member or Manager. LLC may provide indemnification to employees and agents of LLC. This indemnification will not be exclusive of any other rights to which any person

may be entitled under statute, agreement, resolution, contract, or otherwise.

The company elects to indemnify its members, managers, employees, agents for liability and related expenses under ORS 63.160 to 63.170.

By my signature, I declare as an authorized authority, that this filing has been examined by me and is, to the best of my knowledge and belief, true, correct, and complete. Making false statements in this document is against the law and may be penalized by fines, imprisonment, or both.

By typing my name in the electronic signature field, I am agreeing to conduct business electronically with the State of Oregon. I understand that transactions and/or signatures in records may not be denied legal effect solely because they are conducted, executed, or prepared in electronic form and that if a law requires a record or signature to be in writing, an electronic record or signature satisfies that requirement.

ELECTRONIC SIGNATURE

NAME

ANTHONY RAY KREITZBERG

TITLE

ORGANIZER

DATE SIGNED

02-11-2015

OPERATING AGREEMENT

of

HSF DEVELOPMENT LLC

OPERATING AGREEMENT

OF

HSF DEVELOPMENT LLC

an Oregon Limited Liability Company

THE OWNERSHIP INTERESTS REFLECTED IN THIS OPERATING AGREEMENT MAY REPRESENT SECURITIES THAT HAVE NOT BEEN REGISTERED WITH THE SECURITIES AND EXCHANGE COMMISSION UNDER THE SECURITIES ACT OF 1933. SUCH OWNERSHIP INTERESTS MAY NOT BE OFFERED FOR SALE, SOLD, TRANSFERRED, PLEDGED, OR OTHERWISE DISPOSED OF BY A MEMBER IN THE ABSENCE OF AN EFFECTIVE REGISTRATION STATEMENT UNDER THE SECURITIES ACT OF 1933 AND APPLICABLE STATE SECURITIES LAWS OR AN OPINION OF COUNSEL SATISFACTORY TO THE COMPANY THAT REGISTRATION UNDER THE SECURITIES ACT OF 1933 IS NOT REQUIRED.

The undersigned Member(s), desiring to form a limited liability company under the Oregon Limited Liability Company Act, hereby agree as follows:

ARTICLE 1
FORMATION

1.1 Name. The name of the limited liability company (the "LLC") is "HSF Development LLC ".

1.2 Articles of Organization. Articles of Organization for the LLC were filed with the Oregon Secretary of State on February 11, 2015.

1.3 Effective Date. The effective date of adoption of this Operating Agreement ("Agreement") for the LLC is February 11, 2015.

1.4 Federal Employer Identification Number. The federal employer identification number (EIN) assigned to the LLC is EIN # 47-3162006.

1.5 Duration. The LLC shall continue until terminated as provided in this Agreement or under Oregon law.

1.6 Principal Place of Business. The principal office of the LLC shall initially be located at 3425 Boone Road SE, Salem, Oregon 97317. The Members may relocate the principal office or establish additional offices from time to time.

1.7 Registered Office and Registered Agent. The LLC's initial registered office shall be at 285 Liberty Street NE, Salem, Oregon 97301, and the name of its initial registered agent at such address shall be Corporation Service Company.

1.8 Management of LLC. The LLC shall be managed by a Manager or Managers.

1.9 Purposes and Powers. The primary purpose and general character of the business of the LLC is to initially acquire the property described in Exhibit "A" and develop the property into single family residential housing. The LLC may also acquire and develop other properties for this purpose. This general undertaking of the LLC will be referred to in this Agreement as "the Project". This LLC shall be a single-purpose entity; provided, however, that the LLC may have more than one asset and may engage in any lawful business permitted under Oregon law or the laws of any jurisdiction in which the LLC may do business if to do so does not constitute a breach of any contractual, trust deed, note, mortgage or other obligation of the LLC.

1.10 Title to Property. All LLC property shall be owned by the LLC as an entity, and no Member shall have any ownership interest in such property in the Member's individual name or right, and any Member's interest in the LLC shall be personal property for all purposes. Except as otherwise provided in this Agreement, the LLC shall hold all LLC property in the name of the LLC and not in the name or names of any Member or Members. However, if the Managers decide it is appropriate, a Member or the trustee of a trust which is a Member of the LLC may hold an LLC asset in his or her individual name in trust for the LLC.

ARTICLE 2
MEMBERS, CONTRIBUTIONS, AND INTERESTS

2.1 Initial Members. Each of the Member(s) agree to make the following contributions, receive the following Membership Units, and have the following initial capital accounts:

Member Name	Description of Contribution	Membership Units	%
Kelley D. Hamilton, Trustee of the Kelley D. Hamilton Trust dated April 1, 2008 ("Hamilton")	A bundle of contract rights, development concepts and reputation described in Exhibit B, attached hereto and made a part hereof by this reference.	1,000	100%

2.2 Certificates of Membership Units. The LLC may, but is not required to, issue each Member a Certificate of Membership indicating the Membership Units owned by each Member.

2.3 Other Business of Members. Any Member may engage independently or with others in other business and investment ventures of every nature and description and shall have no obligation to account to the LLC for such business or investments or for business or investment opportunities.

2.4 Additional Contributions. In addition to the capital contributions listed above, additional capital contributions shall be accepted from existing Members only if all the Members unanimously approve and set the maximum total amount of the additional capital contributions. If the Members unanimously agree to make additional capital contributions, the Members shall make additional capital contributions on a pro-rata basis in proportion to their Membership Units or as otherwise may be unanimously agreed among the Members.

2.5 No Interest on Capital Contributions. No interest shall be paid on capital contributions.

2.6 Capital Accounts. The LLC shall establish and maintain capital accounts with respect to each Member in accordance with the rules found in Treas. Reg. Section 1.704-1(b).

ARTICLE 3
MEMBER MEETINGS

3.1 Annual Meeting. An annual meeting of the Members may be held at a time, date and place specified by the Managers and communicated by notice to the Members. At such annual meeting, the Members shall transact all business, which is properly brought before the meeting.

3.2 Special Meetings. A special meeting of Members shall be held if the Managers requests such meeting by providing notice of the time, date, place and purpose of the meeting to the Members. A special meeting of Members shall be held if any Member requests such meeting by signing, dating and delivering to the LLC's registered office a written demand for the meeting, which describes the purpose or purposes for which such meeting is to be held. All special meetings shall be held at a time, date and place designated by the Managers specified in the notice of this special meeting prepared by the Managers. In the event a Member requests a special meeting, the Managers shall set the date of such meeting not more than 30 days after receiving notice of the Member's request.

3.3 Notice of Meeting. Notice of the time, date and place of each Member meeting shall be mailed to each Member not earlier than 60 days nor less than 10 days before the meeting date. The notice must include a description of the time, date, place and purpose for which the meeting is called.

3.4 Record Date. The persons entitled to notice of and to vote at a Member meeting and their respective ownership interests shall be determined on the date on which the notice of the meeting was first mailed or otherwise delivered to Members (the record date).

3.5 Quorum. The presence, in person or by proxy, of Members holding at least 50% of the Membership Units shall constitute a quorum.

3.6 Proxies. A Member may be represented at a meeting by a person or entity holding such Member's written proxy.

3.7 Voting. On each matter requiring action by the Members, each Member shall be entitled to one vote for each Membership Unit. Whenever the phrase "Majority of the Members" or "Majority of the Membership Units" is used in relation to voting, it means the decision voted on requires the affirmative vote of more than 50% of the Membership Units. Unless otherwise provided in this Agreement, all matters requiring action by the Members shall be approved by vote of a Majority of the Membership Units.

3.8 Meeting of all Members. Notwithstanding any other provision of this Agreement, if all of the Members hold a meeting at any time and place, such meeting shall be valid without call or notice; and any lawful action taken at such meeting shall be the action of the Members.

3.9 Action Without Meeting. Any action required or permitted to be taken by the Members at a meeting may be taken without a meeting if a consent in writing, describing the

action taken, is signed by all of the Members and is included in the minutes or filed with the LLC's record of meetings.

3.10 Meetings by Telephone. Meetings of the Members may be held by telephone conference or by any other means of communication by which all participants can communicate with each other simultaneously during the meeting, and such participation shall constitute presence in person at the meeting.

3.11 Actions Requiring Unanimous Vote of Members. The following actions require the unanimous approval of the Members:

3.11.1 Admitting an additional Member;

3.11.2 Issuing additional Membership Units;

3.11.3 Amending or restating the Articles of Organization or this Agreement;

3.11.4 Electing a Manager who is not:

3.11.4.1 the trustor of a trust that is a Member of the LLC; nor

3.11.4.2 a Member of the LLC.

3.11.5 Merging the LLC with another entity;

3.11.6 Except as specifically provided in this Agreement, borrowing funds from any person or entity which requires the personal guarantee of all of the Members;

3.11.7 Requiring additional capital contributions; or

3.11.8 Allowing the LLC to loan LLC funds to a Member or entity owned by any Member.

ARTICLE 4
MANAGEMENT

4.1 Management by Managers. The LLC shall be managed by one (1) or more Managers who shall be elected by the affirmative vote of a Majority of the Membership Units. The Managers shall not be compensated for serving as Managers unless otherwise agreed by the holders of a Majority of the Membership Units. However, the Managers may be reasonably compensated for services provided to the LLC which are not merely services incident to serving as Manager.

4.2 Initial Managers and Replacement of Managers. The initial Managers of the LLC shall be Kelley D. Hamilton, Chris Jundt and Anthony R. Kreitzberg. The initial Managers shall continue as Managers until replaced by the affirmative vote of a Majority of the Membership Units.

4.3 Removal of Manager by Members. By affirmative vote of Members owning a Majority of the Membership Units, the Members, in such Members' sole discretion, may remove

one or more Managers. In the event of the removal of one or more Managers, the remaining Manager or Managers, if any, shall serve as Manager of the LLC. In the event of the removal of a sole Manager or all of the Managers, a replacement Manager shall be elected by an affirmative vote of a Majority of Membership Units. However, in the event the Members fail to elect a new Manager by the affirmative vote of a Majority of the Membership Units, the selection of a Manager shall be determined according to the dispute resolution provisions in this Agreement. In such event, until a new Manager is selected, the Members of the LLC shall act as Managers.

4.4 Election of Managers. Once properly elected, a Manager shall serve until such time as the Manager's death, resignation, removal, or at such time as a new Manager is properly elected by the Members. Upon replacement or removal of the initial Managers, the name of the newly-elected Managers and the date upon which such Managers is elected shall be set out in the space provided below and initialed by Members owning a Majority of the Membership Units electing such Managers. Unless this original Agreement so reflects a managerial change, it is conclusively presumed that the initial Managers continue as Manager of this LLC.

Manager	Date of Election	Member's Initials
_____	_____	_____
_____	_____	_____
_____	_____	_____

4.5 Manager Powers. All Managers shall have the right to participate in the management of the LLC, and each Manager shall have authority to make all decisions relating in any way to the LLC except decisions requiring unanimous approval of the Members of the LLC as provided in this Agreement.

4.6 Borrowing. The Managers are authorized to borrow funds and pledge assets to secure funds. The Managers may borrow funds from all or any Member and in such case shall pay interest at the rate of four percent (4%) per annum above *Wall Street Journal* published prime rate. No distribution shall be made from the LLC until all loans from Members have been paid in full.

4.7 Other Activities. The Managers may have other business interests and may engage in other activities in addition to those relating to the LLC. This Section does not change each Manager's duty to act in a manner that the Manager reasonably believes to be in the best interests of the LLC.

4.8 Meetings. If more than one Manager is elected, the Managers may hold meetings at such place and time as is agreed upon by the Managers. No written notice of such meeting is necessary.

4.9 Vacancy. If a vacancy occurs in the office of the Managers, the vacancy shall be filled by the affirmative vote of Members owning a Majority of the Membership Units.

ARTICLE 5
ACCOUNTING AND RECORDS

5.1 Books of Account. The LLC's books and records, a register showing the names, addresses, and Membership Units of the Members, and a copy of this Agreement shall be maintained at the principal office of the LLC; and each Member shall have access thereto at all reasonable times. The Managers shall keep books and records of the operation of the LLC which are appropriate and adequate for the LLC's business and for the carrying out of this Agreement. Accounting records shall be kept in accordance with a comprehensive income tax basis of accounting.

5.2 Fiscal Year. The fiscal year of the LLC shall be the calendar year.

5.3 Tax Returns. The Managers shall cause all required federal and state income tax returns for the LLC to be prepared and timely filed with the appropriate authorities. Within 90 days after the end of each fiscal year or such later date as the Members may agree by majority vote, each Member shall be furnished a statement suitable for use in the preparation of the Member's income tax return, showing the amounts of any distributions, contributions, gains, losses, profits, or credits allocated to the Member during such fiscal year. No Member may obtain damages of any kind or other relief against the LLC for failure to complete the accounting and tax returns within 90 days but may demand records, hire an accountant, and be reimbursed for actual expenses.

ARTICLE 6
ALLOCATIONS AND DISTRIBUTIONS

6.1 Allocations of Income and Loss for Tax Purposes. Subject to the Special Allocations and Limitations set forth herein and in Appendices hereto, the profits and losses of the LLC for each fiscal year will be allocated among the Members pro rata in proportion to their Membership Units. All items of income, gain, loss, deduction, and credit shall be allocated among all Members in proportion to their Membership Units.

6.2 Distributions. Other than distributions in liquidation of the LLC as provided in this Agreement, the Managers, in the Managers' sole discretion, shall authorize cash distributions to the Members as may be reasonable in view of the cash reserves of the LLC. Such distribution shall be made to all Members *pro rata*, based upon each Member's percent of Membership Units.

6.3 Tax Consequences. It is understood that Members may have varying tax consequences relating to distributions from the LLC, and the LLC makes no representations, warranties, or promises relating to the tax obligations or consequences of any Member.

6.4 Distributions in Liquidation. Distributions in liquidation of the LLC or a Member's interest in the LLC, shall be made to the Members in the manner provided in this Agreement.

6.5 Allocation of Income and Loss. Members will be allocated income to the extent of the distributions paid to them. Except as otherwise provided herein, all other income, expenses and/or losses shall be allocated among the Members *pro rata*, based upon each Member's percent of Membership Units.

6.6 Special Allocations and Limitations. In order to comply with federal income tax regulations regarding the substantial economic effect of company allocations in the special circumstances described in Appendix 6.6, all allocations of company income, gain, loss, and deductions are subject to the special allocations, definitions, and limitations found in Appendix 6.6.

ARTICLE 7
TRANSFERS OF INTEREST

7.1 Permitted Transfers. Notwithstanding any other provision of this Agreement, the Members agree that the following transfers shall be permitted transfers and shall not be deemed a transfer restricted under this Agreement:

7.1.1 Any transfer from one existing Member of the LLC to another existing Member of the LLC.

7.1.2 Any transfer from an individual Member to a trust of which the individual Member is the trustor or from a trust which is a Member to the individual who is the trustor of such trust; provided, however, that such Member shall provide the LLC with a Certification of Trust complies with the laws of the state in which the LLC is organized.

7.1.3 Any transfer from a Member to the spouse of the Member or a trust for the benefit of the spouse or children of the Member or its trustor or to a family LLC, the Members of which are such spouse or children. Provided, however, that this LLC shall be entitled to a copy of the certification of such trust and/or Agreement of such LLC; and provided further that such spouse, trust, and/or LLC shall become a signatory to this Agreement.

7.2 Security Interest in Member's Units as Collateral. A Member shall not be allowed to grant a security interest in Member's Membership Units as collateral for a loan unless such Member has previously obtained the written consent to do so from Members owning a Majority of the Membership Units. Such security interest shall: (a) include only the Member's right to receive distributions; (b) not act in any way to encumber any LLC property; and (c) only encumber the Member's Membership Units in the LLC. Such consent shall not be unreasonably withheld. In the event that a Member requests such consent, such Member shall pay all of the LLC's and remaining Members' expenses incurred in determining whether consent should be granted, including but not limited to the costs for attorney fees, accounting fees, title reports, UCC reports, credit reports, review and verification of credit applications, document preparation, recording fees, if any.

7.3 Restriction on Sale. Except as otherwise specifically provided herein, this Agreement is personal to the named members and none of them, individually, jointly, as trustor, trustee, or beneficiary of a trust shall in any manner or by operation of law sell, exchange, assign, pledge, give, or otherwise transfer or encumber all or any part of any interest in this LLC without obtaining the prior written consent of Members owning a Majority of the Membership Units of

the LLC. Under this Agreement, the word "transfer" means the voluntary or involuntary, direct or indirect, sale, transfer, license, sublease, *inter vivos* transfer, testamentary disposition, or other disposition of a Member's Membership Units, including but not limited to any change in ownership as a result of divorce, insolvency, bankruptcy, operation of law or otherwise, and any change in ownership upon the death of a Member by will, declaration, transfer in trust, or under the laws of intestate succession of any state. It is expressly agreed by each Member that no Member shall make or enter into any agreement or contract with a third party or make any will, trust agreement, deed, or gift which would tend to amend, alter, abrogate the provisions, or act in contravention of the terms of this Agreement. The provisions of this Agreement shall be binding upon all persons claiming the rights of any Member, including but not limited to the spouse, heirs, personal representatives, administrators, trustees, trustors, creditors, and beneficiaries of any trust of any Member.

7.4 Events Requiring Sale of Membership Units of a Member. The following shall govern voluntary and mandatory sales of LLC Membership Units by Members:

7.4.1 *Deadlock.* If any disagreement shall arise among the Members creating a deadlock in decision making relating to the operations of the LLC thus hindering the ability to carry on the business of the LLC, the disagreement shall be resolved in accordance with the Dispute Resolution Provisions of this Agreement. If any Member of this LLC is unwilling to abide by the decision obtained through the dispute resolution process relating to a deadlock or otherwise, then such dissenting Member shall offer Member's Membership Units in the LLC to the LLC and the remaining Members for the fair market value of such dissenting Member's Membership Units without deduction for minority status or lack of marketability.

7.4.2 *Desire to Sell/Death of a Member.* If any Member desires to no longer be a Member of the LLC or to sell such Member's Membership Units, then such Member shall offer such Member's Membership Units in the LLC to the LLC and the remaining Members for the fair market value of such Membership Units, without deduction for minority status or lack of marketability. Upon the death of any Member or the grantor of any trust that is a Member, the Membership Units owned by such Member shall be offered to the LLC and the remaining Members for the fair market value of such Membership Units, without deduction for minority status or lack of marketability.

7.4.3 *Other Events Requiring Sale.* Upon the occurrence of any of the following events relating to any Member, such Member shall offer to sell Member's Membership Units in the LLC to the LLC and the remaining Members for the fair market value of such Member's Membership Units, with deduction for minority ownership and lack of marketability: (i) the Member makes an assignment for the benefit of creditors; (ii) the Member files a voluntary petition for bankruptcy; (iii) the Member is adjudicated a bankrupt or insolvent; (iv) the Member files a petition or answer seeking for the Member any reorganization, arrangement for the benefit of creditors, composition of debts and assets, readjustment of debts and assets, liquidation of assets, or dissolution of marriage or similar relief under any statute, law, or regulation, or any other event not otherwise mentioned in this Section 7.4.

7.5 Valuation of Membership Units of a Member. In every instance involving the voluntary or mandatory purchase or sale of Membership Units in this LLC, if the parties cannot agree on the fair market value with or without discount for minority ownership and/or marketability of the LLC Membership Units of any Member whose Membership Units must be

voluntarily or mandatorily sold as described above, then the fair market value issue, with or without discount for minority ownership or marketability, shall be resolved in accordance with the dispute resolution provisions in this Agreement. The decision obtained through the dispute resolution procedure shall be binding on the parties. Such fair market value with or without discount, as the case may be, is referred to herein as the "Purchase Price".

7.6 Options to Purchase Membership Units of a Member. In every instance involving the voluntary or mandatory purchase or sale of Membership Units in this LLC and after the fair market value with or without discounts for minority ownership and/or marketability has been determined by agreement or through the dispute resolution procedure established in this Agreement, then:

7.6.1 *First Option to LLC.* For a period not exceeding 60 days from the date a Purchase Price for the Membership Units has been determined, the LLC shall have the option to purchase such Membership Units, which option may be exercised by giving written notice of the LLC's intent to purchase such Units at the Purchase Price which shall be paid pursuant to the terms provided in this Agreement to the transferring Member or the transferring Member's estate and shall be secured by the Membership Units so transferred.

7.6.2 *Second Option to Non-transferring Members.* If the LLC does not exercise its right to purchase Membership Units as provided above, the remaining Members, jointly or severally, shall have the option to purchase all such Membership Units at the Purchase Price determined pursuant to the terms of this Agreement. The non-transferring Members shall provide written notice of intent to exercise their option at any time within 60 days following the last date by which the LLC may give notice of its intent to exercise such rights. If more than one non-transferring Member desires to purchase all or any portion of such Membership Units, such Membership Units shall be purchased by such non-transferring Members in proportions upon which they agree or, in the absence of some other agreement among the non-transferring Members, in proportion to the existing Membership Units of each non-transferring Member.

7.7 Payment for Member's Membership Units. The LLC or the remaining Members, as the case may be, in their sole discretion, shall choose one of the following methods for payment of the Purchase Price for a Member's Membership Units purchased pursuant to this Agreement:

7.7.1 In cash within 30 days of the exercise of the option to purchase; or

7.7.2 In monthly installments amortized over a period of 25 years, including interest on the unpaid balance at the rate of 8% per annum, with no penalty for prepayment. If such deferred payment is opted by either the LLC or the remaining Members, such Purchase Price shall be memorialized by an installment note of the LLC or the non-transferring, purchasing Members, payable to the transferring Member or the transferring Member's estate. The installment note shall be secured by the Membership Units purchased by the LLC or the remaining Members, as the case may be; and the entire balance due on such installment note shall be due and payable in full upon the sale of all or substantially all of the LLC assets unless the sale is part of a tax deferred exchange.

7.8 Substituted Parties. Except in the case of permitted transfers defined in Section 7.1, upon any transfer of Membership Units, the transferee shall not become a fully

substituted Member with full membership rights unless and until: (a) the transferee is approved as a substitute Member by remaining Members holding all of the remaining Membership Units; (b) the transferee delivers to the LLC any and all personal financial statements or other information requested by the LLC; (c) the transferee pays for any credit reports requested by the LLC; (d) the transferee pays for all legal documentation necessary to effectuate the transfer, including legal costs of the LLC; and (e) the transferee executes and delivers to the LLC all documents necessary or appropriate in the opinion of counsel for the LLC to effect the transfer and to confirm the agreement of the permitted assignee to be bound by the provisions of this Agreement.

7.8.1 Upon any transfer of Membership Units in which the transferee is not admitted as a substitute Member, the Membership Units held by such transferee shall not include any right to participate in management of the LLC, including any right to vote, consent to, or approve any actions of the Manager and shall not include any right to information about the LLC, its operations or its financial condition. In addition, if the transferee is not admitted as a substitute Member, the transferee shall be allocated distributions for tax purposes, but the distribution of funds to such Member shall not be made. Such funds shall be held in a suspense account by the LLC until such time as such transferee is admitted as a substitute Member or upon dissolution of the LLC. Following any transfer to a transferee who is not admitted as a substitute Member, the transferring Member's power and right to vote or consent to any matters submitted to the Members to receive any distributions shall be terminated; and any Membership Units of the remaining Members for purposes only of such votes, consents, and participation in management shall be proportionately increased until such time, if any, as such transferee becomes admitted as a substitute Member.

7.9 Failure to Exercise Option. If neither the LLC nor the non-transferring Members agree to purchase the Membership Units of a Member who offers to or is required to offer to sell such Member's Membership Units to the LLC and/or the remaining Members as provided above, the restrictions of this Agreement on transfer of such Membership Units shall be removed; except that: (i) such Membership Units shall not be sold or transferred in any way to any third party for a purchase price less than the Purchase Price determined under the paragraph entitled **Valuation of Membership Units of a Member**, (ii) such Membership Units shall not be sold on terms more favorable to the purchaser than those provided in the paragraph entitled **Payment for Member's Membership Units**, and (iii) the rights of the transferee of such Membership Units shall be restricted as provided in the paragraph entitled **Substituted Parties** in this Agreement, and (iv) if such Membership Units are not sold by such Member within one (1) year of the determination of the Purchase Price pursuant to the provisions of this Agreement, then the provisions and restrictions of this Agreement relating to the transfer of Membership Units shall apply, and the options of the LLC and the remaining Members shall be reinstated.

ARTICLE 8
DISSOLUTION AND WINDING UP OF THE LLC

8.1 Dissolution. Except as otherwise provided in this Agreement, the LLC shall be dissolved: (a) at the time, if any, for dissolution specified in the Articles of Organization; (b) within four (4) years of the sale, transfer, or other disposition of all of the assets of the LLC unless otherwise agreed by the Members; (c) upon the agreement of Members owning more than 50% of the Membership Units of this LLC. Provided, however, that, if such dissolution would

constitute an event of default of any contractual obligation of the LLC, then the LLC shall not be dissolved.

8.2 Winding Up. Upon the dissolution of the LLC, the assets shall be liquidated as promptly as is consistent with obtaining their fair market value, and the proceeds shall be applied and distributed and allocated as promptly as is commercially reasonable in the following order:

8.2.1 To the payment and discharge of the expenses of liquidation.

8.2.2 To the payment and discharge of all of the debts and liabilities of the LLC to persons or organizations other than the Members.

8.2.3 To the payment and discharge of any debts and liabilities to Members.

8.2.4 To the Members in the amount of the positive balances in their respective capital accounts on the date of distribution. If the amount available for such distribution to the Members is insufficient to bring all their positive capital account balances to zero, then payment shall be made on a pro-rata basis to all the Members in the same proportion that the positive balance in the capital account of each Member bears to the aggregate amount of the positive balances in the capital accounts of all Members.

8.2.5 Any proceeds remaining shall be distributed to the Members on a pro rata basis in proportion to their Membership Units.

8.3 Tax Consequences. It is understood that the Members may have varying consequences relating to distributions upon liquidation of the LLC, and the LLC makes no representations, warranties or promises relating to the tax obligations or consequences of any Member. To the extent of any negative capital account after distribution of all liquidation proceeds relating to any Member, the LLC shall release the Member from the obligation of repaying the negative capital account; and the Member shall be responsible for paying any tax liability that may result therefrom.

ARTICLE 9
INDEMNIFICATION

9.1 Indemnification. To the fullest extent permitted under the law of the state of organization of the LLC, as such law exists or may hereafter be amended, the LLC shall defend, indemnify, and hold harmless each Member and/or Manager of the LLC against any and all claims and liabilities to which such Member and/or Manager has or shall become subject by reason of serving or having served as such Member and/or Manager or by reason of any action alleged to have been taken, omitted, or neglected by such Member and/or Manager. The LLC may provide indemnification to employees and agents of the LLC. The indemnification provided in this Section shall not be exclusive of any other rights to which any person may be entitled under statute, agreement, resolution, contract, or otherwise.

9.2 Limitation of Liability. Members managing the LLC shall not be liable to the LLC or its Members for monetary damages or otherwise for conduct as Member and/or Manager except to the extent that the Limited Liability Company Act of the state in which this LLC was organized, as it now exists or may hereafter be amended, prohibits elimination or limitation of

Manager or Member liability. No repeal or amendment of this Section of this Agreement or of the Limited Liability Company Act of the state in which this LLC was organized shall adversely affect any right or protection of a Manager or Member for actions or omissions prior to the repeal or amendment.

ARTICLE 10
AMENDMENTS

10.1 By Members. The Members may amend or repeal the provisions of this Agreement by unanimous agreement of the Members set forth in writing or by unanimous action taken at a meeting of Members called for that purpose. This Agreement may not be amended or repealed by oral agreement of the Members.

ARTICLE 11
MISCELLANEOUS

11.1 Additional Documents. Each Member shall execute such additional documents and take such actions as are reasonably requested in order to complete or confirm the transactions contemplated by this Agreement.

11.2 Dispute Resolution. In the event there is any dispute between or among the parties to this Agreement relating in any way to this Agreement, the parties must mediate such dispute before commencing any legal action. No party to this Agreement can bring legal action or demand mandatory arbitration against another party to this Agreement without first participating in mediation, unless one party refuses to submit to mediation and legal action is brought to specifically enforce this mandatory mediation provision of this Agreement. If the parties cannot agree upon the person to act as the mediator, then the U.S. Arbitration and Mediation Service of Portland, Oregon, shall select a person to act as the mediator. The mediator's charges and expenses shall be split by the parties on a 50/50 basis. Mediation fees and costs do not include each party's attorney fees and costs. Each party shall be responsible for his or her own attorney fees and costs at mediation. Should the dispute not be resolved by mediation, the parties agree to submit any dispute between the parties relating in any way to this Agreement to binding arbitration with the U.S. Arbitration and Mediation Service of Portland, Oregon, and shall utilize such service's rules of procedure. If the parties cannot agree upon an individual to act as the arbitrator, then the U.S. Arbitration and Mediation Service of Portland, Oregon, shall select a person to act as the arbitrator. If the dispute goes to arbitration, the prevailing party shall be entitled to such party's attorney's fees and costs incurred in the arbitration process. The decision of an arbitrator shall be final and not subject to any appeal and shall be enforceable in a court of competent jurisdiction. The arbitration provisions in this Agreement shall not be enforced in the event every indispensable and necessary party to the arbitration cannot be brought within the jurisdiction of the arbitrator. In that event, or in the event that this dispute resolution paragraph is deemed to be unenforceable as to any party, actual or alleged, then the parties, actual or alleged, to this Agreement may enter into any litigation filed by such parties relating hereto.

11.2.1 *Dispute Resolution in the Event of a Deadlock.* In any instance in which there is a deadlock between or among multiple parties, such decision shall be referred to the dispute resolution procedure described above. In such event, the LLC shall pay all costs of mediation and arbitration. The decision of the arbitrator shall be final and not be subject to any appeal and shall be enforceable in a court of competent jurisdiction.

11.2.2 *Loss of Rights for Failure to Submit to Dispute Resolution.* Except as provided above in this section 11.2, anyone who refuses to submit to the dispute resolution provisions of this Agreement shall lose all rights under this Agreement including the right to receive any income or property under this Agreement.

11.3 Governing Law. This Agreement shall be governed by the law of the state of Oregon where the LLC was organized.

11.4 Headings. Headings in this Agreement are for convenience only and shall not affect its meaning.

11.5 Severability. The invalidity or unenforceability of any provision of this Agreement shall not affect the validity or enforceability of the remaining provisions.

11.6 Third-party Beneficiaries. The provisions of this Agreement are intended solely for the benefit of the Members and shall create no rights or obligations enforceable by any third party, including creditors of the LLC, except as otherwise provided by applicable law.

This Operating Agreement is entered into effective February 11, 2015 by the undersigned.

SOLE MEMBER:

Kelley D. Hamilton Trust dated April 1, 2008

By _____
Kelley D. Hamilton, Trustee

EXHIBIT A
List of Lots

	Lot #	
Holder Lots	36	
	37	
	38	
	39	
	40	
	41	
	42	
	43	
	44	5604 Wigeon, Salem
	58	
	61	
	62	
	64	5620 Cinnamon Teal, Salem
	65	
	66	
	69	5625 Wigeon, Salem
	70	5635 Wigeon, Salem
	74	291 Gadwall
	75	
	76	
	77	
	78	
Independence	54	769 Morning Glory, Independence
	55	759 Morning Glory, Independence
Newport	1	835 Jeffries Ct, Newport
West Salem	284	Mayfly West, Salem
	342	Deer Ridge Estates

EXHIBIT B

Description of Capital Contribution of Hamilton

1. All guarantees and warranties owned by Hamilton that in any way affect the real property on which LLC will construct improvements.

2. All permits, licenses, approvals, and consents issued to Hamilton or their assigns and required for the development or construction of the Project.

3. All designs, plans, specifications, engineering, or layout documents for the Project.

4. All approvals, consents, guarantees, and agreements issued to or obtained by Hamilton to facilitate construction of the Project and/or financing therefor.

5. Any and all agreements and commitments for construction financing and/or any other financing required for construction of the Project.

6. All other development rights and other intangible property, prepaid assets, and other unamortized assets owned by Hamilton relating to the Project, including Hamilton's development reputation and credibility.

APPENDIX 6.6

6.6.1 *Adjusted Capital Account Deficit* means a deficit balance in any Member's Capital Account at the end of any fiscal year, after adjustment to reflect any Adjustment Items, to the extent that the deficit exceeds the amount of a member's shares of Company Minimum Gain and Member Non-recourse Debt minimum Gain (if any) that the Member is deemed to be obligated to restore pursuant to Treasury Regulation §§1.704-2(g)(1) and 1.704-2(i)(5).

6.6.2 *Adjustment Items* means adjustments, allocations, and distributions described in Treasury Regulation §§1.704-1(b)(2)(ii)(d)(4), (5), and (6).

6.6.3 *Capital Account* means the account maintained for each Member pursuant to Section 2.5.

6.6.4 *Company Minimum Gain* means, as of any date, the amount of gain, if any, that would be recognized by the Company for federal income tax purposes, as if it disposed of property in a taxable transaction on that date in full satisfaction of any non-recourse liability secured by the property, computed in accordance with Treasury Regulation §1.704-2(d)(1).

6.6.5 *Member Non-recourse Debt* has the same meaning as "partner non-recourse debt" set forth in Treasury Regulation §1.704-2(b)(4).

6.6.6 *Member Non-recourse Debt Minimum Gain* means an amount, with respect to each Member non-recourse Debt, equal to the Company Minimum Gain that would result if such Member Non-recourse Debt were treated as a non-recourse Liability, determined pursuant to Treasury Regulation §1.704-2(i)(2) and (3).

6.6.7 *Member Non-recourse Deductions* has the same meaning as "partner non-recourse deductions" set forth in Treasury Regulation §1.704-2(i)(2). The amount of Member non-recourse Deductions with respect to a Member non-recourse Debt for a Company fiscal year equals the excess, if any, of" (A) the net increase, if any, in the amount of the Company minimum Gain attributable to such Member Non-recourse Debt during the fiscal year over (B) the aggregate amount of any distribution during the fiscal year to the Member that bears the economic risk of loss for such Member Non-recourse Debt to the extent the distributions are from proceeds of the Member Non-recourse Debt and are allocable to an increase in Member Non-recourse Debt Minimum Gain attributable to the Member Non-recourse Debt, determined pursuant to Treasury Regulation §1.704-2(i).

6.6.8 *Non-recourse Deductions* has the meaning set forth in Treasury Regulation §1.704-2(c). The amount of Non-recourse Deduction for a Company fiscal year equals excess, if any, of the net increase, if any, in the amount of Company Minimum Gain during that fiscal year over the aggregate amount of any distributions during that fiscal year of proceeds of a non-recourse Liability that are allocable to an increase in Company Minimum Gain, determined pursuant to Treasury Regulation §1.704-2(c).

6.6.9 *Non-recourse Liability* has the meaning set forth in Treasury Regulation §1.704-2(b)(3).

6.6.10 *Limitations on Allocations of Loss.* In no event will any Company loss or deduction, or item thereof, be allocated to any Member to the extent that the member has, or would have as a result of the allocation, an Adjusted Capital Account Deficit in the Member's Capital Account as of the end of the Company taxable year to which the allocation relates. Any loss or deduction, the allocation of which to a Member is disallowed by the foregoing restriction, will be reallocated to those Members who do not have an Adjusted Capital Account Deficit as of the end of such taxable year.

6.6.11 *Company Minimum Gain Chargeback.* If there is a net decrease in Company Minimum Gain during any Company taxable year, each Member will be specially allocated, before any other allocation of Company income, gain, loss, or deduction for the taxable year, items of Company income and gain for the taxable year (and, if necessary, subsequent years) in proportion to and to the extent of an amount equal to each Member's share of the net decrease in Company Minimum Gain determine in accordance with Treasury Regulation §1.704-2(g)(2). This Paragraph is intended to comply with and will be interpreted consistently with the "minimum gain chargeback" provisions of Treasury Regulation §1.704-2(f).

6.6.12 *Member Non-recourse Debt Minimum Gain Chargeback.* Notwithstanding any other provision of Article 6 of the Agreement or this Appendix 6.6, except paragraph 6.6.11. of this Appendix, if there is a net decrease in Member Non-recourse Debt minimum Gain attributable to a Member Non-recourse Debt during any taxable year of the Company, each Member who has a share of the Member non-recourse Debt Minimum Gain attributable to such Member Non-recourse Debt, determined in accordance with Treasury Regulation §1.704-2(i)(5), will be specially allocated items of Company income and gain for such year (and, if necessary, subsequent years) in an amount equal to such Member's share of the net decrease in Member Non-recourse Debt, determined in accordance with Treasury Regulation §1.704-2(i)(4). Allocations pursuant to this Paragraph 6.6.12 will be made in proportion to the respective amounts required to be allocated to each Member pursuant thereto. The items to be so allocated will be determined in accordance with Treasury Regulation §1.704-2(i)(4). This Paragraph 6.6.12 is intended to comply with, and will be interpreted consistently with, the partner non-recourse debt minimum gain chargeback provisions of Treasury Regulations §1.704-2(i)(4).

6.6.13 *Qualified Income Offset.* Notwithstanding any other provision of the Agreement or this Appendix except Paragraphs 6.6.11 and 6.6.12 of this Appendix 6.6, in the event any Member for any reason receives an Adjustment Item for any fiscal year that results in an Adjusted Capital Account Deficit for that Member, the Member will be specially allocated items of Company income and gain (consisting of a pro rata portion of each item of Company income, including gross income, and gain for the year) in an amount and manner sufficient to eliminate the Adjusted Capital Account Deficit, if any, created by such Adjustment Item as quickly as possible. This Paragraph 6.6.13 is intended to comply with the "qualified income offset" requirements of Treasury Regulation §1.704-1(b)(2)(ii)(d) and will be interpreted and applied consistently therewith.

6.6.14 *Offsetting Allocations.* Any special allocations of items of income, gain, loss, or deduction pursuant to Paragraphs 6.6.11, 6.6.12 or 6.6.13 of this Appendix 6.6 will be taken into

account in computing subsequent allocations of Company income, gain, loss or deduction pursuant to Article 6 so that the net amount of any items so allocated and all other income, gain, loss, deductions, and items thereof allocated to each Member pursuant to Article 6 will, to the extent possible, be equal to the net amount that would have been allocated to each Member pursuant to Article 6 if the special allocation had not occurred.

6.6.15 *Allocations with respect to Contributed or Revalued Property.* Notwithstanding any other provision of Article 6 of this Agreement, in the event Internal Revenue Code ("IRC") §704(c) or IRC §704(c) principles applicable under Treasury Regulation §1.704-1(b)(2)(iv) require allocations of Company income, gain, loss, or deductions for income tax purposes in a manner different than otherwise provided in Article 6 of this Agreement, the provisions of IRC §704(c) and the regulations thereunder will control such allocations among the Members for income tax purposes. Any item of income, gain, loss, and deduction with respect to any property (other than cash) that has been contributed to the Company by a Member or that has been revalued for Capital Account purposes under this Agreement pursuant to Treasury Regulation §1.704-1(b)(2)(iv) and which is required or permitted to be allocated to such Member for income tax purposes under IRC §704(c) so as to take into account the variation between the tax basis of such contributed or revalued property and its fair market value at the time of its contribution or revaluation will be allocated solely for income tax purposes in the manner so required or permitted under IRC §704(c) using the method described in Treasury Regulation §1.704-3 (or any successor regulation) selected by the Manager.

OPERATING AGREEMENT

of

HSF DEVELOPMENT LLC

OPERATING AGREEMENT

OF

HSF DEVELOPMENT LLC

an Oregon Limited Liability Company

THE OWNERSHIP INTERESTS REFLECTED IN THIS OPERATING AGREEMENT MAY REPRESENT SECURITIES THAT HAVE NOT BEEN REGISTERED WITH THE SECURITIES AND EXCHANGE COMMISSION UNDER THE SECURITIES ACT OF 1933. SUCH OWNERSHIP INTERESTS MAY NOT BE OFFERED FOR SALE, SOLD, TRANSFERRED, PLEDGED, OR OTHERWISE DISPOSED OF BY A MEMBER IN THE ABSENCE OF AN EFFECTIVE REGISTRATION STATEMENT UNDER THE SECURITIES ACT OF 1933 AND APPLICABLE STATE SECURITIES LAWS OR AN OPINION OF COUNSEL SATISFACTORY TO THE COMPANY THAT REGISTRATION UNDER THE SECURITIES ACT OF 1933 IS NOT REQUIRED.

The undersigned Member(s), desiring to form a limited liability company under the Oregon Limited Liability Company Act, hereby agree as follows:

ARTICLE 1
FORMATION

1.1 Name. The name of the limited liability company (the "LLC") is "HSF Development LLC ".

1.2 Articles of Organization. Articles of Organization for the LLC were filed with the Oregon Secretary of State on February 11, 2015.

1.3 Effective Date. The effective date of adoption of this Operating Agreement ("Agreement") for the LLC is February 11, 2015.

1.4 Federal Employer Identification Number. The federal employer identification number (EIN) assigned to the LLC is EIN # 47-3162006.

1.5 Duration. The LLC shall continue until terminated as provided in this Agreement or under Oregon law.

1.6 Principal Place of Business. The principal office of the LLC shall initially be located at 3425 Boone Road SE, Salem, Oregon 97317. The Members may relocate the principal office or establish additional offices from time to time.

1.7 Registered Office and Registered Agent. The LLC's initial registered office shall be at 285 Liberty Street NE, Salem, Oregon 97301, and the name of its initial registered agent at such address shall be Corporation Service Company.

1.8 Management of LLC. The LLC shall be managed by a Manager or Managers.

1.9 Purposes and Powers. The primary purpose and general character of the business of the LLC is to initially acquire the property described in Exhibit "A" and develop the property into single family residential housing. The LLC may also acquire and develop other properties for this purpose. This general undertaking of the LLC will be referred to in this Agreement as "the Project". This LLC shall be a single-purpose entity; provided, however, that the LLC may have more than one asset and may engage in any lawful business permitted under Oregon law or the laws of any jurisdiction in which the LLC may do business if to do so does not constitute a breach of any contractual, trust deed, note, mortgage or other obligation of the LLC.

1.10 Title to Property. All LLC property shall be owned by the LLC as an entity, and no Member shall have any ownership interest in such property in the Member's individual name or right, and any Member's interest in the LLC shall be personal property for all purposes. Except as otherwise provided in this Agreement, the LLC shall hold all LLC property in the name of the LLC and not in the name or names of any Member or Members. However, if the Managers decide it is appropriate, a Member or the trustee of a trust which is a Member of the LLC may hold an LLC asset in his or her individual name in trust for the LLC.

ARTICLE 2
MEMBERS, CONTRIBUTIONS, AND INTERESTS

2.1 Initial Members. Each of the Member(s) agree to make the following contributions, receive the following Membership Units, and have the following initial capital accounts:

Member Name	Description of Contribution	Membership Units	%
Kelley D. Hamilton, Trustee of the Kelley D. Hamilton Trust dated April 1, 2008 ("Hamilton")	A bundle of contract rights, development concepts and reputation described in Exhibit B, attached hereto and made a part hereof by this reference.	1,000	100%

2.2 Certificates of Membership Units. The LLC may, but is not required to, issue each Member a Certificate of Membership indicating the Membership Units owned by each Member.

2.3 Other Business of Members. Any Member may engage independently or with others in other business and investment ventures of every nature and description and shall have no obligation to account to the LLC for such business or investments or for business or investment opportunities.

2.4 Additional Contributions. In addition to the capital contributions listed above, additional capital contributions shall be accepted from existing Members only if all the Members unanimously approve and set the maximum total amount of the additional capital contributions. If the Members unanimously agree to make additional capital contributions, the Members shall make additional capital contributions on a pro-rata basis in proportion to their Membership Units or as otherwise may be unanimously agreed among the Members.

2.5 No Interest on Capital Contributions. No interest shall be paid on capital contributions.

2.6 Capital Accounts. The LLC shall establish and maintain capital accounts with respect to each Member in accordance with the rules found in Treas. Reg. Section 1.704-1(b).

ARTICLE 3
MEMBER MEETINGS

3.1 Annual Meeting. An annual meeting of the Members may be held at a time, date and place specified by the Managers and communicated by notice to the Members. At such annual meeting, the Members shall transact all business, which is properly brought before the meeting.

3.2 Special Meetings. A special meeting of Members shall be held if the Managers requests such meeting by providing notice of the time, date, place and purpose of the meeting to the Members. A special meeting of Members shall be held if any Member requests such meeting by signing, dating and delivering to the LLC's registered office a written demand for the meeting, which describes the purpose or purposes for which such meeting is to be held. All special meetings shall be held at a time, date and place designated by the Managers specified in the notice of this special meeting prepared by the Managers. In the event a Member requests a special meeting, the Managers shall set the date of such meeting not more than 30 days after receiving notice of the Member's request.

3.3 Notice of Meeting. Notice of the time, date and place of each Member meeting shall be mailed to each Member not earlier than 60 days nor less than 10 days before the meeting date. The notice must include a description of the time, date, place and purpose for which the meeting is called.

3.4 Record Date. The persons entitled to notice of and to vote at a Member meeting and their respective ownership interests shall be determined on the date on which the notice of the meeting was first mailed or otherwise delivered to Members (the record date).

3.5 Quorum. The presence, in person or by proxy, of Members holding at least 50% of the Membership Units shall constitute a quorum.

3.6 Proxies. A Member may be represented at a meeting by a person or entity holding such Member's written proxy.

3.7 Voting. On each matter requiring action by the Members, each Member shall be entitled to one vote for each Membership Unit. Whenever the phrase "Majority of the Members" or "Majority of the Membership Units" is used in relation to voting, it means the decision voted on requires the affirmative vote of more than 50% of the Membership Units. Unless otherwise provided in this Agreement, all matters requiring action by the Members shall be approved by vote of a Majority of the Membership Units.

3.8 Meeting of all Members. Notwithstanding any other provision of this Agreement, if all of the Members hold a meeting at any time and place, such meeting shall be valid without call or notice; and any lawful action taken at such meeting shall be the action of the Members.

3.9 Action Without Meeting. Any action required or permitted to be taken by the Members at a meeting may be taken without a meeting if a consent in writing, describing the

action taken, is signed by all of the Members and is included in the minutes or filed with the LLC's record of meetings.

3.10 Meetings by Telephone. Meetings of the Members may be held by telephone conference or by any other means of communication by which all participants can communicate with each other simultaneously during the meeting, and such participation shall constitute presence in person at the meeting.

3.11 Actions Requiring Unanimous Vote of Members. The following actions require the unanimous approval of the Members:

3.11.1 Admitting an additional Member;

3.11.2 Issuing additional Membership Units;

3.11.3 Amending or restating the Articles of Organization or this Agreement;

3.11.4 Electing a Manager who is not:

3.11.4.1 the trustor of a trust that is a Member of the LLC; nor

3.11.4.2 a Member of the LLC.

3.11.5 Merging the LLC with another entity;

3.11.6 Except as specifically provided in this Agreement, borrowing funds from any person or entity which requires the personal guarantee of all of the Members;

3.11.7 Requiring additional capital contributions; or

3.11.8 Allowing the LLC to loan LLC funds to a Member or entity owned by any Member.

ARTICLE 4
MANAGEMENT

4.1 Management by Managers. The LLC shall be managed by one (1) or more Managers who shall be elected by the affirmative vote of a Majority of the Membership Units. The Managers shall not be compensated for serving as Managers unless otherwise agreed by the holders of a Majority of the Membership Units. However, the Managers may be reasonably compensated for services provided to the LLC which are not merely services incident to serving as Manager.

4.2 Initial Managers and Replacement of Managers. The initial Managers of the LLC shall be Kelley D. Hamilton, Chris Jundt and Anthony R. Kreitzberg. The initial Managers shall continue as Managers until replaced by the affirmative vote of a Majority of the Membership Units.

4.3 Removal of Manager by Members. By affirmative vote of Members owning a Majority of the Membership Units, the Members, in such Members' sole discretion, may remove

one or more Managers. In the event of the removal of one or more Managers, the remaining Manager or Managers, if any, shall serve as Manager of the LLC. In the event of the removal of a sole Manager or all of the Managers, a replacement Manager shall be elected by an affirmative vote of a Majority of Membership Units. However, in the event the Members fail to elect a new Manager by the affirmative vote of a Majority of the Membership Units, the selection of a Manager shall be determined according to the dispute resolution provisions in this Agreement. In such event, until a new Manager is selected, the Members of the LLC shall act as Managers.

4.4 Election of Managers. Once properly elected, a Manager shall serve until such time as the Manager's death, resignation, removal, or at such time as a new Manager is properly elected by the Members. Upon replacement or removal of the initial Managers, the name of the newly-elected Managers and the date upon which such Managers is elected shall be set out in the space provided below and initialed by Members owning a Majority of the Membership Units electing such Managers. Unless this original Agreement so reflects a managerial change, it is conclusively presumed that the initial Managers continue as Manager of this LLC.

Manager	Date of Election	Member's Initials
_____	_____	_____
_____	_____	_____
_____	_____	_____

4.5 Manager Powers. All Managers shall have the right to participate in the management of the LLC, and each Manager shall have authority to make all decisions relating in any way to the LLC except decisions requiring unanimous approval of the Members of the LLC as provided in this Agreement.

4.6 Borrowing. The Managers are authorized to borrow funds and pledge assets to secure funds. The Managers may borrow funds from all or any Member and in such case shall pay interest at the rate of four percent (4%) per annum above *Wall Street Journal* published prime rate. No distribution shall be made from the LLC until all loans from Members have been paid in full.

4.7 Other Activities. The Managers may have other business interests and may engage in other activities in addition to those relating to the LLC. This Section does not change each Manager's duty to act in a manner that the Manager reasonably believes to be in the best interests of the LLC.

4.8 Meetings. If more than one Manager is elected, the Managers may hold meetings at such place and time as is agreed upon by the Managers. No written notice of such meeting is necessary.

4.9 Vacancy. If a vacancy occurs in the office of the Managers, the vacancy shall be filled by the affirmative vote of Members owning a Majority of the Membership Units.

ARTICLE 5
ACCOUNTING AND RECORDS

5.1 Books of Account. The LLC's books and records, a register showing the names, addresses, and Membership Units of the Members, and a copy of this Agreement shall be maintained at the principal office of the LLC; and each Member shall have access thereto at all reasonable times. The Managers shall keep books and records of the operation of the LLC which are appropriate and adequate for the LLC's business and for the carrying out of this Agreement. Accounting records shall be kept in accordance with a comprehensive income tax basis of accounting.

5.2 Fiscal Year. The fiscal year of the LLC shall be the calendar year.

5.3 Tax Returns. The Managers shall cause all required federal and state income tax returns for the LLC to be prepared and timely filed with the appropriate authorities. Within 90 days after the end of each fiscal year or such later date as the Members may agree by majority vote, each Member shall be furnished a statement suitable for use in the preparation of the Member's income tax return, showing the amounts of any distributions, contributions, gains, losses, profits, or credits allocated to the Member during such fiscal year. No Member may obtain damages of any kind or other relief against the LLC for failure to complete the accounting and tax returns within 90 days but may demand records, hire an accountant, and be reimbursed for actual expenses.

ARTICLE 6
ALLOCATIONS AND DISTRIBUTIONS

6.1 Allocations of Income and Loss for Tax Purposes. Subject to the Special Allocations and Limitations set forth herein and in Appendices hereto, the profits and losses of the LLC for each fiscal year will be allocated among the Members pro rata in proportion to their Membership Units. All items of income, gain, loss, deduction, and credit shall be allocated among all Members in proportion to their Membership Units.

6.2 Distributions. Other than distributions in liquidation of the LLC as provided in this Agreement, the Managers, in the Managers' sole discretion, shall authorize cash distributions to the Members as may be reasonable in view of the cash reserves of the LLC. Such distribution shall be made to all Members *pro rata*, based upon each Member's percent of Membership Units.

6.3 Tax Consequences. It is understood that Members may have varying tax consequences relating to distributions from the LLC, and the LLC makes no representations, warranties, or promises relating to the tax obligations or consequences of any Member.

6.4 Distributions in Liquidation. Distributions in liquidation of the LLC or a Member's interest in the LLC, shall be made to the Members in the manner provided in this Agreement.

6.5 Allocation of Income and Loss. Members will be allocated income to the extent of the distributions paid to them. Except as otherwise provided herein, all other income, expenses and/or losses shall be allocated among the Members *pro rata*, based upon each Member's percent of Membership Units.

6.6 Special Allocations and Limitations. In order to comply with federal income tax regulations regarding the substantial economic effect of company allocations in the special circumstances described in Appendix 6.6, all allocations of company income, gain, loss, and deductions are subject to the special allocations, definitions, and limitations found in Appendix 6.6.

ARTICLE 7
TRANSFERS OF INTEREST

7.1 Permitted Transfers. Notwithstanding any other provision of this Agreement, the Members agree that the following transfers shall be permitted transfers and shall not be deemed a transfer restricted under this Agreement:

7.1.1 Any transfer from one existing Member of the LLC to another existing Member of the LLC.

7.1.2 Any transfer from an individual Member to a trust of which the individual Member is the trustor or from a trust which is a Member to the individual who is the trustor of such trust; provided, however, that such Member shall provide the LLC with a Certification of Trust complies with the laws of the state in which the LLC is organized.

7.1.3 Any transfer from a Member to the spouse of the Member or a trust for the benefit of the spouse or children of the Member or its trustor or to a family LLC, the Members of which are such spouse or children. Provided, however, that this LLC shall be entitled to a copy of the certification of such trust and/or Agreement of such LLC; and provided further that such spouse, trust, and/or LLC shall become a signatory to this Agreement.

7.2 Security Interest in Member's Units as Collateral. A Member shall not be allowed to grant a security interest in Member's Membership Units as collateral for a loan unless such Member has previously obtained the written consent to do so from Members owning a Majority of the Membership Units. Such security interest shall: (a) include only the Member's right to receive distributions; (b) not act in any way to encumber any LLC property; and (c) only encumber the Member's Membership Units in the LLC. Such consent shall not be unreasonably withheld. In the event that a Member requests such consent, such Member shall pay all of the LLC's and remaining Members' expenses incurred in determining whether consent should be granted, including but not limited to the costs for attorney fees, accounting fees, title reports, UCC reports, credit reports, review and verification of credit applications, document preparation, recording fees, if any.

7.3 Restriction on Sale. Except as otherwise specifically provided herein, this Agreement is personal to the named members and none of them, individually, jointly, as trustor, trustee, or beneficiary of a trust shall in any manner or by operation of law sell, exchange, assign, pledge, give, or otherwise transfer or encumber all or any part of any interest in this LLC without obtaining the prior written consent of Members owning a Majority of the Membership Units of

the LLC. Under this Agreement, the word "transfer" means the voluntary or involuntary, direct or indirect, sale, transfer, license, sublease, *inter vivos* transfer, testamentary disposition, or other disposition of a Member's Membership Units, including but not limited to any change in ownership as a result of divorce, insolvency, bankruptcy, operation of law or otherwise, and any change in ownership upon the death of a Member by will, declaration, transfer in trust, or under the laws of intestate succession of any state. It is expressly agreed by each Member that no Member shall make or enter into any agreement or contract with a third party or make any will, trust agreement, deed, or gift which would tend to amend, alter, abrogate the provisions, or act in contravention of the terms of this Agreement. The provisions of this Agreement shall be binding upon all persons claiming the rights of any Member, including but not limited to the spouse, heirs, personal representatives, administrators, trustees, trustors, creditors, and beneficiaries of any trust of any Member.

7.4 Events Requiring Sale of Membership Units of a Member. The following shall govern voluntary and mandatory sales of LLC Membership Units by Members:

7.4.1 *Deadlock.* If any disagreement shall arise among the Members creating a deadlock in decision making relating to the operations of the LLC thus hindering the ability to carry on the business of the LLC, the disagreement shall be resolved in accordance with the Dispute Resolution Provisions of this Agreement. If any Member of this LLC is unwilling to abide by the decision obtained through the dispute resolution process relating to a deadlock or otherwise, then such dissenting Member shall offer Member's Membership Units in the LLC to the LLC and the remaining Members for the fair market value of such dissenting Member's Membership Units without deduction for minority status or lack of marketability.

7.4.2 *Desire to Sell/Death of a Member.* If any Member desires to no longer be a Member of the LLC or to sell such Member's Membership Units, then such Member shall offer such Member's Membership Units in the LLC to the LLC and the remaining Members for the fair market value of such Membership Units, without deduction for minority status or lack of marketability. Upon the death of any Member or the grantor of any trust that is a Member, the Membership Units owned by such Member shall be offered to the LLC and the remaining Members for the fair market value of such Membership Units, without deduction for minority status or lack of marketability.

7.4.3 *Other Events Requiring Sale.* Upon the occurrence of any of the following events relating to any Member, such Member shall offer to sell Member's Membership Units in the LLC to the LLC and the remaining Members for the fair market value of such Member's Membership Units, with deduction for minority ownership and lack of marketability: (i) the Member makes an assignment for the benefit of creditors; (ii) the Member files a voluntary petition for bankruptcy; (iii) the Member is adjudicated a bankrupt or insolvent; (iv) the Member files a petition or answer seeking for the Member any reorganization, arrangement for the benefit of creditors, composition of debts and assets, readjustment of debts and assets, liquidation of assets, or dissolution of marriage or similar relief under any statute, law, or regulation, or any other event not otherwise mentioned in this Section 7.4.

7.5 Valuation of Membership Units of a Member. In every instance involving the voluntary or mandatory purchase or sale of Membership Units in this LLC, if the parties cannot agree on the fair market value with or without discount for minority ownership and/or marketability of the LLC Membership Units of any Member whose Membership Units must be

voluntarily or mandatorily sold as described above, then the fair market value issue, with or without discount for minority ownership or marketability, shall be resolved in accordance with the dispute resolution provisions in this Agreement. The decision obtained through the dispute resolution procedure shall be binding on the parties. Such fair market value with or without discount, as the case may be, is referred to herein as the "Purchase Price".

7.6 Options to Purchase Membership Units of a Member. In every instance involving the voluntary or mandatory purchase or sale of Membership Units in this LLC and after the fair market value with or without discounts for minority ownership and/or marketability has been determined by agreement or through the dispute resolution procedure established in this Agreement, then:

7.6.1 *First Option to LLC.* For a period not exceeding 60 days from the date a Purchase Price for the Membership Units has been determined, the LLC shall have the option to purchase such Membership Units, which option may be exercised by giving written notice of the LLC's intent to purchase such Units at the Purchase Price which shall be paid pursuant to the terms provided in this Agreement to the transferring Member or the transferring Member's estate and shall be secured by the Membership Units so transferred.

7.6.2 *Second Option to Non-transferring Members.* If the LLC does not exercise its right to purchase Membership Units as provided above, the remaining Members, jointly or severally, shall have the option to purchase all such Membership Units at the Purchase Price determined pursuant to the terms of this Agreement. The non-transferring Members shall provide written notice of intent to exercise their option at any time within 60 days following the last date by which the LLC may give notice of its intent to exercise such rights. If more than one non-transferring Member desires to purchase all or any portion of such Membership Units, such Membership Units shall be purchased by such non-transferring Members in proportions upon which they agree or, in the absence of some other agreement among the non-transferring Members, in proportion to the existing Membership Units of each non-transferring Member.

7.7 Payment for Member's Membership Units. The LLC or the remaining Members, as the case may be, in their sole discretion, shall choose one of the following methods for payment of the Purchase Price for a Member's Membership Units purchased pursuant to this Agreement:

7.7.1 In cash within 30 days of the exercise of the option to purchase; or

7.7.2 In monthly installments amortized over a period of 25 years, including interest on the unpaid balance at the rate of 8% per annum, with no penalty for prepayment. If such deferred payment is opted by either the LLC or the remaining Members, such Purchase Price shall be memorialized by an installment note of the LLC or the non-transferring, purchasing Members, payable to the transferring Member or the transferring Member's estate. The installment note shall be secured by the Membership Units purchased by the LLC or the remaining Members, as the case may be; and the entire balance due on such installment note shall be due and payable in full upon the sale of all or substantially all of the LLC assets unless the sale is part of a tax deferred exchange.

7.8 Substituted Parties. Except in the case of permitted transfers defined in Section 7.1, upon any transfer of Membership Units, the transferee shall not become a fully

substituted Member with full membership rights unless and until: (a) the transferee is approved as a substitute Member by remaining Members holding all of the remaining Membership Units; (b) the transferee delivers to the LLC any and all personal financial statements or other information requested by the LLC; (c) the transferee pays for any credit reports requested by the LLC; (d) the transferee pays for all legal documentation necessary to effectuate the transfer, including legal costs of the LLC; and (e) the transferee executes and delivers to the LLC all documents necessary or appropriate in the opinion of counsel for the LLC to effect the transfer and to confirm the agreement of the permitted assignee to be bound by the provisions of this Agreement.

7.8.1 Upon any transfer of Membership Units in which the transferee is not admitted as a substitute Member, the Membership Units held by such transferee shall not include any right to participate in management of the LLC, including any right to vote, consent to, or approve any actions of the Manager and shall not include any right to information about the LLC, its operations or its financial condition. In addition, if the transferee is not admitted as a substitute Member, the transferee shall be allocated distributions for tax purposes, but the distribution of funds to such Member shall not be made. Such funds shall be held in a suspense account by the LLC until such time as such transferee is admitted as a substitute Member or upon dissolution of the LLC. Following any transfer to a transferee who is not admitted as a substitute Member, the transferring Member's power and right to vote or consent to any matters submitted to the Members to receive any distributions shall be terminated; and any Membership Units of the remaining Members for purposes only of such votes, consents, and participation in management shall be proportionately increased until such time, if any, as such transferee becomes admitted as a substitute Member.

7.9 Failure to Exercise Option. If neither the LLC nor the non-transferring Members agree to purchase the Membership Units of a Member who offers to or is required to offer to sell such Member's Membership Units to the LLC and/or the remaining Members as provided above, the restrictions of this Agreement on transfer of such Membership Units shall be removed; except that: (i) such Membership Units shall not be sold or transferred in any way to any third party for a purchase price less than the Purchase Price determined under the paragraph entitled **Valuation of Membership Units of a Member**, (ii) such Membership Units shall not be sold on terms more favorable to the purchaser than those provided in the paragraph entitled **Payment for Member's Membership Units**, and (iii) the rights of the transferee of such Membership Units shall be restricted as provided in the paragraph entitled **Substituted Parties** in this Agreement, and (iv) if such Membership Units are not sold by such Member within one (1) year of the determination of the Purchase Price pursuant to the provisions of this Agreement, then the provisions and restrictions of this Agreement relating to the transfer of Membership Units shall apply, and the options of the LLC and the remaining Members shall be reinstated.

ARTICLE 8
DISSOLUTION AND WINDING UP OF THE LLC

8.1 Dissolution. Except as otherwise provided in this Agreement, the LLC shall be dissolved: (a) at the time, if any, for dissolution specified in the Articles of Organization; (b) within four (4) years of the sale, transfer, or other disposition of all of the assets of the LLC unless otherwise agreed by the Members; (c) upon the agreement of Members owning more than 50% of the Membership Units of this LLC. Provided, however, that, if such dissolution would

constitute an event of default of any contractual obligation of the LLC, then the LLC shall not be dissolved.

8.2 Winding Up. Upon the dissolution of the LLC, the assets shall be liquidated as promptly as is consistent with obtaining their fair market value, and the proceeds shall be applied and distributed and allocated as promptly as is commercially reasonable in the following order:

8.2.1 To the payment and discharge of the expenses of liquidation.

8.2.2 To the payment and discharge of all of the debts and liabilities of the LLC to persons or organizations other than the Members.

8.2.3 To the payment and discharge of any debts and liabilities to Members.

8.2.4 To the Members in the amount of the positive balances in their respective capital accounts on the date of distribution. If the amount available for such distribution to the Members is insufficient to bring all their positive capital account balances to zero, then payment shall be made on a pro-rata basis to all the Members in the same proportion that the positive balance in the capital account of each Member bears to the aggregate amount of the positive balances in the capital accounts of all Members.

8.2.5 Any proceeds remaining shall be distributed to the Members on a pro rata basis in proportion to their Membership Units.

8.3 Tax Consequences. It is understood that the Members may have varying consequences relating to distributions upon liquidation of the LLC, and the LLC makes no representations, warranties or promises relating to the tax obligations or consequences of any Member. To the extent of any negative capital account after distribution of all liquidation proceeds relating to any Member, the LLC shall release the Member from the obligation of repaying the negative capital account; and the Member shall be responsible for paying any tax liability that may result therefrom.

ARTICLE 9
INDEMNIFICATION

9.1 Indemnification. To the fullest extent permitted under the law of the state of organization of the LLC, as such law exists or may hereafter be amended, the LLC shall defend, indemnify, and hold harmless each Member and/or Manager of the LLC against any and all claims and liabilities to which such Member and/or Manager has or shall become subject by reason of serving or having served as such Member and/or Manager or by reason of any action alleged to have been taken, omitted, or neglected by such Member and/or Manager. The LLC may provide indemnification to employees and agents of the LLC. The indemnification provided in this Section shall not be exclusive of any other rights to which any person may be entitled under statute, agreement, resolution, contract, or otherwise.

9.2 Limitation of Liability. Members managing the LLC shall not be liable to the LLC or its Members for monetary damages or otherwise for conduct as Member and/or Manager except to the extent that the Limited Liability Company Act of the state in which this LLC was organized, as it now exists or may hereafter be amended, prohibits elimination or limitation of

Manager or Member liability. No repeal or amendment of this Section of this Agreement or of the Limited Liability Company Act of the state in which this LLC was organized shall adversely affect any right or protection of a Manager or Member for actions or omissions prior to the repeal or amendment.

ARTICLE 10
AMENDMENTS

10.1 By Members. The Members may amend or repeal the provisions of this Agreement by unanimous agreement of the Members set forth in writing or by unanimous action taken at a meeting of Members called for that purpose. This Agreement may not be amended or repealed by oral agreement of the Members.

ARTICLE 11
MISCELLANEOUS

11.1 Additional Documents. Each Member shall execute such additional documents and take such actions as are reasonably requested in order to complete or confirm the transactions contemplated by this Agreement.

11.2 Dispute Resolution. In the event there is any dispute between or among the parties to this Agreement relating in any way to this Agreement, the parties must mediate such dispute before commencing any legal action. No party to this Agreement can bring legal action or demand mandatory arbitration against another party to this Agreement without first participating in mediation, unless one party refuses to submit to mediation and legal action is brought to specifically enforce this mandatory mediation provision of this Agreement. If the parties cannot agree upon the person to act as the mediator, then the U.S. Arbitration and Mediation Service of Portland, Oregon, shall select a person to act as the mediator. The mediator's charges and expenses shall be split by the parties on a 50/50 basis. Mediation fees and costs do not include each party's attorney fees and costs. Each party shall be responsible for his or her own attorney fees and costs at mediation. Should the dispute not be resolved by mediation, the parties agree to submit any dispute between the parties relating in any way to this Agreement to binding arbitration with the U.S. Arbitration and Mediation Service of Portland, Oregon, and shall utilize such service's rules of procedure. If the parties cannot agree upon an individual to act as the arbitrator, then the U.S. Arbitration and Mediation Service of Portland, Oregon, shall select a person to act as the arbitrator. If the dispute goes to arbitration, the prevailing party shall be entitled to such party's attorney's fees and costs incurred in the arbitration process. The decision of an arbitrator shall be final and not subject to any appeal and shall be enforceable in a court of competent jurisdiction. The arbitration provisions in this Agreement shall not be enforced in the event every indispensable and necessary party to the arbitration cannot be brought within the jurisdiction of the arbitrator. In that event, or in the event that this dispute resolution paragraph is deemed to be unenforceable as to any party, actual or alleged, then the parties, actual or alleged, to this Agreement may enter into any litigation filed by such parties relating hereto.

11.2.1 *Dispute Resolution in the Event of a Deadlock.* In any instance in which there is a deadlock between or among multiple parties, such decision shall be referred to the dispute resolution procedure described above. In such event, the LLC shall pay all costs of mediation and arbitration. The decision of the arbitrator shall be final and not be subject to any appeal and shall be enforceable in a court of competent jurisdiction.

11.2.2 *Loss of Rights for Failure to Submit to Dispute Resolution.* Except as provided above in this section 11.2, anyone who refuses to submit to the dispute resolution provisions of this Agreement shall lose all rights under this Agreement including the right to receive any income or property under this Agreement.

11.3 Governing Law. This Agreement shall be governed by the law of the state of Oregon where the LLC was organized.

11.4 Headings. Headings in this Agreement are for convenience only and shall not affect its meaning.

11.5 Severability. The invalidity or unenforceability of any provision of this Agreement shall not affect the validity or enforceability of the remaining provisions.

11.6 Third-party Beneficiaries. The provisions of this Agreement are intended solely for the benefit of the Members and shall create no rights or obligations enforceable by any third party, including creditors of the LLC, except as otherwise provided by applicable law.

This Operating Agreement is entered into effective February 11, 2015 by the undersigned.

SOLE MEMBER:

Kelley D. Hamilton Trust dated April 1, 2008

By _____
Kelley D. Hamilton, Trustee

EXHIBIT A
List of Lots

	Lot #	
Holder Lots	36	
	37	
	38	
	39	
	40	
	41	
	42	
	43	
	44	5604 Wigeon, Salem
	58	
	61	
	62	
	64	5620 Cinnamon Teal, Salem
	65	
	66	
	69	5625 Wigeon, Salem
	70	5635 Wigeon, Salem
	74	291 Gadwall
	75	
	76	
	77	
	78	
Independence	54	769 Morning Glory, Independence
	55	759 Morning Glory, Independence
Newport	1	835 Jeffries Ct, Newport
West Salem	284	Mayfly West, Salem
	342	Deer Ridge Estates

EXHIBIT B

Description of Capital Contribution of Hamilton

1. All guarantees and warranties owned by Hamilton that in any way affect the real property on which LLC will construct improvements.

2. All permits, licenses, approvals, and consents issued to Hamilton or their assigns and required for the development or construction of the Project.

3. All designs, plans, specifications, engineering, or layout documents for the Project.

4. All approvals, consents, guarantees, and agreements issued to or obtained by Hamilton to facilitate construction of the Project and/or financing therefor.

5. Any and all agreements and commitments for construction financing and/or any other financing required for construction of the Project.

6. All other development rights and other intangible property, prepaid assets, and other unamortized assets owned by Hamilton relating to the Project, including Hamilton's development reputation and credibility.

APPENDIX 6.6

6.6.1 *Adjusted Capital Account Deficit* means a deficit balance in any Member's Capital Account at the end of any fiscal year, after adjustment to reflect any Adjustment Items, to the extent that the deficit exceeds the amount of a member's shares of Company Minimum Gain and Member Non-recourse Debt minimum Gain (if any) that the Member is deemed to be obligated to restore pursuant to Treasury Regulation §§1.704-2(g)(1) and 1.704-2(i)(5).

6.6.2 *Adjustment Items* means adjustments, allocations, and distributions described in Treasury Regulation §§1.704-1(b)(2)(ii)(d)(4), (5), and (6).

6.6.3 *Capital Account* means the account maintained for each Member pursuant to Section 2.5.

6.6.4 *Company Minimum Gain* means, as of any date, the amount of gain, if any, that would be recognized by the Company for federal income tax purposes, as if it disposed of property in a taxable transaction on that date in full satisfaction of any non-recourse liability secured by the property, computed in accordance with Treasury Regulation §1.704-2(d)(1).

6.6.5 *Member Non-recourse Debt* has the same meaning as "partner non-recourse debt" set forth in Treasury Regulation §1.704-2(b)(4).

6.6.6 *Member Non-recourse Debt Minimum Gain* means an amount, with respect to each Member non-recourse Debt, equal to the Company Minimum Gain that would result if such Member Non-recourse Debt were treated as a non-recourse Liability, determined pursuant to Treasury Regulation §1.704-2(i)(2) and (3).

6.6.7 *Member Non-recourse Deductions* has the same meaning as "partner non-recourse deductions" set forth in Treasury Regulation §1.704-2(i)(2). The amount of Member non-recourse Deductions with respect to a Member non-recourse Debt for a Company fiscal year equals the excess, if any, of" (A) the net increase, if any, in the amount of the Company minimum Gain attributable to such Member Non-recourse Debt during the fiscal year over (B) the aggregate amount of any distribution during the fiscal year to the Member that bears the economic risk of loss for such Member Non-recourse Debt to the extent the distributions are from proceeds of the Member Non-recourse Debt and are allocable to an increase in Member Non-recourse Debt Minimum Gain attributable to the Member Non-recourse Debt, determined pursuant to Treasury Regulation §1.704-2(i).

6.6.8 *Non-recourse Deductions* has the meaning set forth in Treasury Regulation §1.704-2(c). The amount of Non-recourse Deduction for a Company fiscal year equals excess, if any, of the net increase, if any, in the amount of Company Minimum Gain during that fiscal year over the aggregate amount of any distributions during that fiscal year of proceeds of a non-recourse Liability that are allocable to an increase in Company Minimum Gain, determined pursuant to Treasury Regulation §1.704-2(c).

6.6.9 *Non-recourse Liability* has the meaning set forth in Treasury Regulation §1.704-2(b)(3).

6.6.10 *Limitations on Allocations of Loss.* In no event will any Company loss or deduction, or item thereof, be allocated to any Member to the extent that the member has, or would have as a result of the allocation, an Adjusted Capital Account Deficit in the Member's Capital Account as of the end of the Company taxable year to which the allocation relates. Any loss or deduction, the allocation of which to a Member is disallowed by the foregoing restriction, will be reallocated to those Members who do not have an Adjusted Capital Account Deficit as of the end of such taxable year.

6.6.11 *Company Minimum Gain Chargeback.* If there is a net decrease in Company Minimum Gain during any Company taxable year, each Member will be specially allocated, before any other allocation of Company income, gain, loss, or deduction for the taxable year, items of Company income and gain for the taxable year (and, if necessary, subsequent years) in proportion to and to the extent of an amount equal to each Member's share of the net decrease in Company Minimum Gain determine in accordance with Treasury Regulation §1.704-2(g)(2). This Paragraph is intended to comply with and will be interpreted consistently with the "minimum gain chargeback" provisions of Treasury Regulation §1.704-2(f).

6.6.12 *Member Non-recourse Debt Minimum Gain Chargeback.* Notwithstanding any other provision of Article 6 of the Agreement or this Appendix 6.6, except paragraph 6.6.11. of this Appendix, if there is a net decrease in Member Non-recourse Debt minimum Gain attributable to a Member Non-recourse Debt during any taxable year of the Company, each Member who has a share of the Member non-recourse Debt Minimum Gain attributable to such Member Non-recourse Debt, determined in accordance with Treasury Regulation §1.704-2(i)(5), will be specially allocated items of Company income and gain for such year (and, if necessary, subsequent years) in an amount equal to such Member's share of the net decrease in Member Non-recourse Debt, determined in accordance with Treasury Regulation §1.704-2(i)(4). Allocations pursuant to this Paragraph 6.6.12 will be made in proportion to the respective amounts required to be allocated to each Member pursuant thereto. The items to be so allocated will be determined in accordance with Treasury Regulation §1.704-2(i)(4). This Paragraph 6.6.12 is intended to comply with, and will be interpreted consistently with, the partner non-recourse debt minimum gain chargeback provisions of Treasury Regulations §1.704-2(i)(4).

6.6.13 *Qualified Income Offset.* Notwithstanding any other provision of the Agreement or this Appendix except Paragraphs 6.6.11 and 6.6.12 of this Appendix 6.6, in the event any Member for any reason receives an Adjustment Item for any fiscal year that results in an Adjusted Capital Account Deficit for that Member, the Member will be specially allocated items of Company income and gain (consisting of a pro rata portion of each item of Company income, including gross income, and gain for the year) in an amount and manner sufficient to eliminate the Adjusted Capital Account Deficit, if any, created by such Adjustment Item as quickly as possible. This Paragraph 6.6.13 is intended to comply with the "qualified income offset" requirements of Treasury Regulation §1.704-1(b)(2)(ii)(d) and will be interpreted and applied consistently therewith.

6.6.14 *Offsetting Allocations.* Any special allocations of items of income, gain, loss, or deduction pursuant to Paragraphs 6.6.11, 6.6.12 or 6.6.13 of this Appendix 6.6 will be taken into

account in computing subsequent allocations of Company income, gain, loss or deduction pursuant to Article 6 so that the net amount of any items so allocated and all other income, gain, loss, deductions, and items thereof allocated to each Member pursuant to Article 6 will, to the extent possible, be equal to the net amount that would have been allocated to each Member pursuant to Article 6 if the special allocation had not occurred.

6.6.15 *Allocations with respect to Contributed or Revalued Property.* Notwithstanding any other provision of Article 6 of this Agreement, in the event Internal Revenue Code ("IRC") §704(c) or IRC §704(c) principles applicable under Treasury Regulation §1.704-1(b)(2)(iv) require allocations of Company income, gain, loss, or deductions for income tax purposes in a manner different than otherwise provided in Article 6 of this Agreement, the provisions of IRC §704(c) and the regulations thereunder will control such allocations among the Members for income tax purposes. Any item of income, gain, loss, and deduction with respect to any property (other than cash) that has been contributed to the Company by a Member or that has been revalued for Capital Account purposes under this Agreement pursuant to Treasury Regulation §1.704-1(b)(2)(iv) and which is required or permitted to be allocated to such Member for income tax purposes under IRC §704(c) so as to take into account the variation between the tax basis of such contributed or revalued property and its fair market value at the time of its contribution or revaluation will be allocated solely for income tax purposes in the manner so required or permitted under IRC §704(c) using the method described in Treasury Regulation §1.704-3 (or any successor regulation) selected by the Manager.

AmeriTitle
320 Church St. NE, Salem, OR 97301
PHONE (503)581-1431 FAX (503)364-8716

September 28, 2018
File Number: 262404AM
Report No.: **1**
Title Officer: Matt Paslay
Escrow Officer: Tasha Walery

PRELIMINARY TITLE REPORT

Property Address: 6719 Devon Ave SE, Salem, OR 97306

Policy or Policies to be issued:	Liability	Premium
ALTA LENDER'S RESIDENTIAL (X) EXTENDED ( ) STANDARD	$100,000.00	$473.00
Proposed Insured:		
Endorsements: OTIRO - End 209.10-06, 222-06 and 208.1-06		$100.00
Local Government Lien Search		$40.00

We are prepared to issue ALTA (06/17/06) title insurance policy(ies) of Old Republic National Title Insurance Company, in the usual form insuring the title to the land described as follows:

Legal description attached hereto and made a part hereof marked Exhibit "A"

and dated as of 20th day of September, 2018 at 7:30 a.m., title is vested in:

HSF Development LLC, an Oregon Limited Liability Company

The estate or interest in the land described or referred to in this Preliminary Title Report and covered herein is:

FEE SIMPLE

Except for the items properly cleared through closing, Schedule B of the proposed policy or policies will not insure against loss or damage which may arise by reason of the following:

GENERAL EXCEPTIONS:

1. Taxes or assessments which are not shown as existing liens by the records of any taxing authority that levies taxes or assessments on real property or by the Public Records; proceedings by a public agency which may result in taxes or assessments, or notices of such proceedings, whether or not shown by the records of such agency or by the Public Records.

2. Facts, rights, interests or claims which are not shown by the Public Records but which could be ascertained by an inspection of the Land or by making inquiry of persons in possession thereof.

3. Easements, or claims of easement, not shown by the Public Records; reservations or exceptions in patents or in Acts authorizing the issuance thereof; water rights, claims or title to water.

4. Any encroachment (of existing improvements located on the subject Land onto adjoining Land or of existing improvements located on adjoining Land onto the subject Land) encumbrance, violation, variation, or adverse circumstance affecting the Title that would be disclosed by an accurate and complete land survey of the subject Land.

5. Any lien, or right to a lien, for services, labor, material, equipment rental, or workers compensation heretofore or hereafter furnished, imposed by law and not shown by the Public Records.

EXCEPTIONS 1 THROUGH 5 ABOVE APPLY TO STANDARD COVERAGE POLICIES AND MAY BE MODIFIED OR ELIMINATED ON AN EXTENDED COVERAGE POLICY.

SPECIAL EXCEPTIONS:

Tax Information:
Taxes assessed under Code No. 92400230 Account No. R93743 Map No. 08S-03W-22C 300
NOTE: The 2017-2018 Taxes: $5,508.75, are Paid

6. The 2018-2019 Taxes: A lien not yet due or payable.
7. City liens, if any, of the City of Salem.
8. The property lies within and is subject to the levies and assessments of the Marion Soil and Water Conservation District.
9. The rights of the public in and to that portion of the herein described property lying within the limits of public roads, streets or highways.
10. Rights of the public and governmental bodies in and to that portion of said premises now or at any time lying below the high water line of unnamed creek, including any ownership rights which may be claimed by the State of Oregon as to any portion now or at any time lying below the ordinary high water line.

    Such rights and easements for navigation and fishing as may exist over that portion of the property now or at any time lying beneath the waters of unnamed creek.

    All matters arising from any shifting in the course of unnamed creek including but not limited to accretion, reliction and avulsion.
11. Unrecorded leaseholds, if any, and the rights of vendors and holders of security interest in personal property of tenants to remove said personal property at the expiration of the term.

12. The Company will require a copy the Operating Agreement (including any approvals of withdrawal of member(s) or acceptance of new member(s)) and the Articles of Organization of HSF Development, LLC for its examination prior to closing. Any conveyance or encumbrance of the Limited Liability Company's property must be executed by all of the members unless otherwise provided for in the Operating Agreement.

    The Company reserves the right to add additional items or make further requirements after review of the requested documentation.

13. Annexation Agreement, including the terms and provisions thereof,
    Recorded: January 4, 2018
    Instrument No.: Reel: 4032 Page: 399

14. Resolution 2018-24, including the terms and provisions thereof,
    Recorded: June 14, 2018
    Instrument No.: Reel: 4088 Page: 67

15. Any statutory lien for labor or material, which now has gained, or hereafter may gain priority over the lien of the insured mortgage.

    To remove this item, the Company will require an affidavit and indemnity on a form supplied by the Company.

    IF THE ABOVE EXCEPTION IS TO BE REMOVED FROM A FORTHCOMING POLICY PRIOR TO THE EXPIRATION OF THE STATUTORY LIEN PERIOD, THE COMPANY MUST BE CONTACTED REGARDING ITS UNDERWRITING REQUIREMENTS FOR EARLY ISSUE.

16. Persons in possession or claiming the right of possession.

    To remove this item, the Company will require an affidavit and indemnity on a form supplied by the Company.

INFORMATIONAL NOTES:

NOTE: As of the date hereof, there are no matters against the party(ies) shown below which would appear as exceptions to coverage in a title insurance product:
Parties:
HSF Development LLC

NOTE: We find no activity in the past 24 months regarding transfer of title to subject property.

NOTE: The following is the last deed of record affecting said land,
Document: Statutory Warranty Deed
Grantor: Susan Ballard and Edward Kirasich, not as tenants in common but with right of survivorship
Grantee: HSF Development, LLC, an Oregon Limited Liability Company
Recorded: October 27, 2017
Instrument No.: Reel; 4009 Page: 121

NOTE: Any map or sketch enclosed as an attachment herewith is furnished for information purposes only to assist in property location with reference to streets and other parcels. No representation is made as to accuracy and the company assumes no liability for any loss occurring by reason of reliance thereon.

NOTE: Your application for title insurance was placed by reference to only a street address or tax identification number. Based on our records, we believe that the legal description in this report covers the parcel(s) of Land that you requested. If the legal description is incorrect, the parties to the transaction must notify the Company and/or the settlement company in order to prevent errors and to be certain that the correct parcel(s) of Land will appear on any documents to be recorded in connection with this transaction and on the policy of title insurance.

THIS PRELIMINARY TITLE REPORT IS NOT AN ABSTRACT OF TITLE, REPORT OF THE CONDITION OF TITLE, LEGAL OPINION, OPINION OF TITLE, OR OTHER REPRESENTATION OF THE STATUS OF TITLE. THE PROCEDURES USED BY THE COMPANY TO DETERMINE INSURABILITY OF THE TITLE, INCLUDING ANY SEARCH AND EXAMINATION, ARE PROPRIETARY TO THE COMPANY, WERE PERFORMED SOLELY FOR THE BENEFIT OF THE COMPANY, AND CREATE NO EXTRACONTRACTUAL LIABILITY TO ANY PERSON, INCLUDING A PROPOSED INSURED.

This report is preliminary to the issuance of a policy of title insurance and shall become null and void unless a policy is issued and the full premium paid.

End of Report

"Superior Service with Commitment and Respect for Customers and Employees"

EXHIBIT "A"
LEGAL DESCRIPTION

Lots 12 and 13, SUNNYSIDE FRUIT FARMS NO. 8, Marion County, Oregon.

MULTI/TECH
ENGINEERING SERVICES, INC.

1155 13th Street SE
Salem, Oregon 97302
(503) 363-9227

Devon Subdivision

Subdivision 19-109483-LD

Alternative Street Standards Request

May 16th, 2019



This is a request for approval to use "Alternative Street Standards" for this project. The specific requests are to allow the construction of streets within the proposed subdivision to have street grades in excess of the maximum allowed as follows:

- The extension of Lone Oak from Sahalee Drive to Rees Hill Road with street grades in excess of the maximum of 8% for a collector street.
- The construction of One Avenue with a maximum street grade of 15% for a portion between Three Street and Four Street
- The construction of Two Avenue with a maximum street grade of 15% from Lone Oak Road to Three Street.

Within the UDC, Section 803 sets out the criteria for the use and request of alternative street standards.

Sec. 803.065. - Alternative street standards.

(a) The Director may authorize the use of one or more alternative street standards:

(1) Where existing development or physical constraints make compliance with the standards set forth in this chapter impracticable;

(2) Where the development site is served by fully developed streets that met the standards in effect at the time the streets were originally constructed; or

(3) Where topography or other conditions make the construction that conforms to the standards impossible or undesirable.

(b) Authorization of an alternative street standard may require additional or alternative right-of-way width, easements, and improvements to accommodate the design and construction using the alternative standard.

We make this request based on the following:

The site is located south of the Creekside development in the area where some excessive topographic features exist.

(1) Where existing development or physical constraints make compliance with the standards set forth in this chapter impracticable;

The Creekside project in keeping with the City of Salem TSP stubbed Lone Oak Road to the south, following a low, drainage area. The location of the street, it's elevation, and the TSP alignment forces the use of some street grades in excess of the design standard maximum slope of 8%. The site and adjoining area topographic features force the use of such street grades to facilitate the extension and connection of this roadway to Rees Hill Road.

(3) Where topography or other conditions make the construction that conforms to the standards impossible or undesirable.

The western portion of the project site has excessive topographic features, much of the western area well in excess of 12% and some close to 16%. The connection of Two Ave to Lone Oak Road, at the elevation it must be set at to limit the portion of the roadway with slopes over 8%, forces the use of slopes in excess of 12% for this local street.

Using a maximum street grade of 12% would force excessive grading activities on the site for access to the lots and would greatly increase the costs for the construction of the project.

The same impacts of the topographic features of the site along with the desire to not have excessive grading activities and excessive grading costs, requires the use of a short section of street grades in excess of 12%.

With the present design requirements to provide ADA accessible intersections, greatly impacts the street grades and again impacts the cost of construction as well as the ability to access the new lots and the grades of the future home driveways.

The need to limit cross slopes thru the intersections forces the streets to be flatter for longer distances with a 60 foot right of way, again impacting the accessibility to the future homes.

With that we request the approval for the use of alternative street standards for the use of street slopes in excess of the design standard maximums.

Devon Avenue

Subdivision Application

Modification-November 10, 2020

BACKGROUND:

On July 17, 2017, Pre-Application Conference (PRE-AP) 17-57 was held with the City staff to discuss the development of property located at 6719 Devon Avenue SE.

On June 11, 2018, the subject property was annexed into the City of Salem on June 11, 2018, by City Council.

On May 29, 2018, Urban Growth Area Permit (UGA) 17-06 was approved by staff on May 29, 2018.

On July 29, 2019, SUB19-05 was approved for the subject property. The approval allows the site to develop about 19.74 acres into an 84-lot single family subdivision.

On January 23, 2020, SUB19-05MOD1 was approved for the subject property. The approval modified SUB19-05.

PROPOSAL:

The applicant is requesting a modification to the SUB19-05MOD1 approval: The following modifications are being made:

1) **Alpha Avenue street alignment has changed**
2) **Delta Court street alignment has changed**
3) **Alternative Street Standards to Alpha Avenue to allow a narrow planter strip (4')**
4)

Original	**Proposed**
Phase 1: Lots 1-42	**Phase 1: Lots 1-46**
Phase 2: Lots 43-65	**Phase 2: Lots 47-88**
Phase 3: Lots 66-84	

Alternative Proposal:

The applicant has also provided an alternative proposal that would allow the elimination of the Chi Street connection to the north. The Chi Street connection will be difficult to construct due to the topography to the north. Furthermore, there are more than adequate street connections provided to the north as shown on the site plan. See sheet AP101.

SITE VICINITY and CHARACTERISTICS:

The subject property is located at 6719 Devon Avenue. The subject property is identified as 083W22C/Tax Lots 300.



The surrounding properties are zoned and used as follows:

North:	RA (Residential Agriculture) and RS (Single Family Residential); vacant land
East:	Across Devon Avenue; RS (Single Family Residential); vacant lots, and existing single-family dwellings
South:	Outside City Limits, Marion County-UT; vacant land and existing single-family dwellings
West:	Outside City Limits, Marion County-UT; vacant land and existing single-family dwellings

CRITERIA AND APPLICANT'S REASONS ADDRESSING UDC 205.010(d)(1):

The proposed modification does not change or impact compliance with the required criteria.

The intent of the subdivision code is providing for orderly development through the application of appropriate rules and regulations. Pursuant to the application of the current enabling statutes, these regulations are those cited in UDC 205.010(d) and UDC 205.015(d). The decision criteria for subdivisions without a concurrent variance under UDC 205.010(d) and UDC 205.015(d) must be found to exist before an affirmative decision may be made for a subdivision application.

(1) The tentative subdivision plan complies with the standards of this Chapter and with all applicable provisions of the UDC, including, but not limited to, the following:

Findings: The Salem Revised Code (SRC), which includes the Salem Zoning Code, implements the Salem Area Comprehensive Plan land use goals, and governs

development of property within the city limits. The subdivision process reviews development for compliance with city standards and requirements contained in the Subdivision Code, Zoning Code, Salem TSP and the Water, Sewer and Storm Drain System Master Plans, and adopted design documents applicable to residential development. The proposed meets all applicable provisions of the Salem Revised Code.

(A) Lot standards, including, but not limited to, standards for lot area, lot width and depth, lot frontage and designation of front and rear lot lines.

Findings: The proposal does not require any variances to lot development standards specified in the Code.

Minimum Lot Area and Dimensions: As shown on the site plan, all 88 lots meet lot size (4,000 square feet) and lot dimension (40' by 70') standards as required under UDC Chapters 510 and 511. The proposed lots range in size from 5,399 square feet to 13,174 square feet in size, with and average lot size of 6,772 square feet.

There are five flag-lots within the proposed subdivision (Lots 20, 21, 35, 36, and 65).

Additional reviews occur at the time of building permits to assure compliance with the zoning code. Compliance with conditions of approval to satisfy the subdivision ordinance is also checked prior to city staff signing the final subdivision plat.

The proposal can conform to applicable conditions imposed as necessary to ensure that development conforms to the standards of the subdivision code and with existing development and public facilities. As shown on the site plans, all lots meet the required lot size, lot depth, and lot width. At the time of development of the lots, building permits will be required. Setbacks will be reviewed for compliance at the time of building permit submittal. The proposed subdivision is and will be in compliance with lot standard requirements and required access.

Therefore, this criteria has been met.

(B) City infrastructure standards.

Findings: Water, sewer, storm drainage plans will be submitted to the Public Works Department for final plat and construction plan approval at the final plat stage. The tentative site plan illustrates the location of the public utility lines. The proposal meets applicable Salem Area Comprehensive Plan Residential Policies for properties within the Urban Growth Boundary. The proposal encourages the efficient use of developable residential land. Public facilities and services are or will be available to serve the site, including services such as water, sanitary and storm sewer and fire/life/safety services.

The applicant is proposing to divide the subject property into 88 single family residential lot, with three lots designated for stormwater detention (Tracts A, B, and C). There is a S-4 water pump station located south of Lot 6. The property that pump station is located on it not part of this subdivision.

Therefore, this criteria has been met.

(C) Any special development standards, including, but not limited to, floodplain development, special setbacks, geological or geotechnical analysis, and vision clearance.

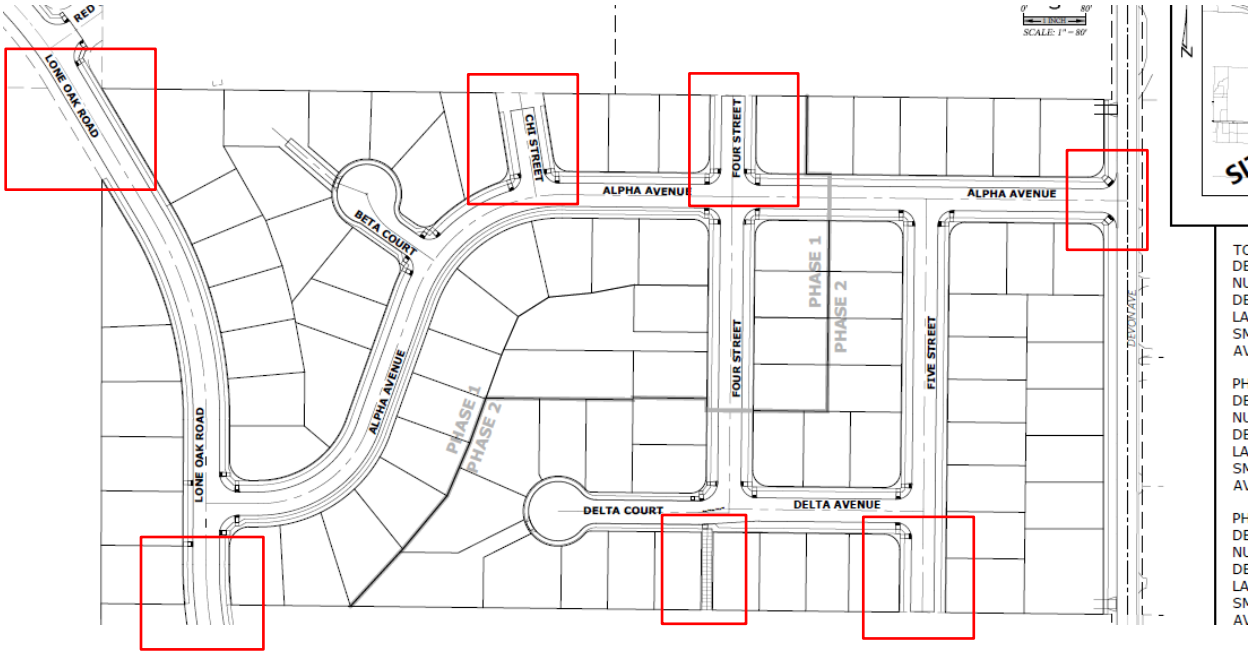
Findings: There are no wetlands or floodplains located on the subject property.

A geological assessment is required for this site. There are landslide hazards identified on the site. A geological assessment date August 11, 2017 was approved as part of the original subdivision approval. This criteria has been met.

(2) The tentative subdivision plan does not impede the future use or development of the property or adjacent land.

Findings: The proposal is for the entire subject property and will be developed into 88 lots. As shown on the site plan. Therefore, a shadow plan is not required.

The properties to the northeast and northwest have the potential to be developed or currently have development approvals. The properties to the west and south are vacant, they are also located outside the City limits. Two stub streets have been provided to the northeast and northwest properties, two stub streets and a pedestrian path have been provided to the south, and a connection to Lone Oak to the west for future development.



The applicant has provided sufficient information to show how all the proposed street and pedestrian connections will be provided.

All proposed lots and surrounding properties have direct access onto the existing internal street system. The subdivision does not impede the future use of the property or adjacent land. Adequate connections to adjacent properties have been provided for future development.

Therefore, this criteria has been met.

(3) Development within the tentative subdivision plan can be adequately served by City infrastructure.

Findings: Water, sewer, storm drainage plans will be submitted to the Public Works Department for final plat and construction plan approval at the final plat stage. The tentative site plan illustrates the location of the public utility lines. The proposal meets applicable Salem Area Comprehensive Plan Residential Policies for properties within the Urban Growth Boundary. The proposal encourages the efficient use of developable residential land. Public facilities and services are or will be available to serve the site, including services such as water, sanitary and storm sewer and fire/life/safety services.

The subject property is within ½ mile from Creekside Golf Course to the north, Rees Hill Park and Battle Creek Elementary School to the east. Therefore, the subject property is served by parks.

Water, sewer, storm drainage plans will be submitted to the Public Works Department

for final plat and construction plan approval at the final plat stage. The tentative site plan illustrates the location of the public utility lines. On-site detention and a pump station are being provided within the proposed subdivision.

In conclusion, the location and design of the proposed subdivision allows for public sanitary sewer, water service, and storm drainage to be conveniently provided.

Therefore, this criterion has been satisfied.

Proposed Stormwater Management System:

Findings: Stormwater quality and quantity are required for this development. An LID (low impact development) Stormwater technique will be used to mitigate the increase in pollutants contributed from development. This system may also be used to provide storage and water quantity control. The exact system will be determined at the time of design. Any proposed technique will meet City of Salem Stormwater Management standards in means and methods to provide all aspects of Stormwater management.

A Preliminary Drainage Report dated October 12, 2018 was provided and approved as part the original approval.

(4) The street system in and adjacent to the tentative subdivision plan conforms to the Salem Transportation System Plan.

Findings: The major street system is in place due to prior development. Devon Avenue is located to the east of the site and Lone Oak Road is located northwest of the site. Devon Avenue is designated as a 'local street' and Lone Oak Road is designated as a 'collector' on the Salem Transportation System Plan.

The existing and proposed street systems conform to the City's Transportation Plan. All street design and improvements will be determined through the subdivision review process and regulated through the Conditions of Approval. The applicant is also requesting an alternative street standard to allow Lone Oak Road, One Avenue (Beta Court), and Two Avenue (Alpha Avenue) to exceed a 12-percent street grade. However, the proposed internal streets will be designed to street standards.

In the original approval alternative street standards to street grade was approved. As shown on the street section provided, Lone Oak Road will have a 13% street grade. One Avenue (Beta Court) will have a 14.83% street grade, and Two Avenue (Alpha Avenue) will have a 15% street grade. Due to the topography of the site and the proposed street alignments with existing streets, along with required stub street connections, these proposed streets within the subdivision exceed the street grade allowed. The applicant's engineer has provided a detailed memo address the alternative street standard criteria. See attached memo dated May 16, 2019.

Alternative street standards were approved with the original subdivision approval.

The intent of the maximum street grade is to allow vehicles to climb and descend the street safely in all conditions. The internal streets proposed will provide safe and efficient circulation throughout the subdivision. As shown on the street sections provided, there is only curtain sections of each street that will exceed the allowed street grade. All streets within the proposed subdivision will be designed to provide safe and efficient conditions.

There are several access points provided throughout the proposed subdivision which provide alternative access options.

The intent of the standard is being met; therefore, the proposal equally meets the intent of the maximum street grade standard.

The applicant is also requesting an Alternative Street Standard to allow the planter strip along Alpha Avenue to be 4 feet in width where 8 feet is required.

The major street network in the area has been established and is consistent with the Transportation System Plan which implements the Comprehensive Plan. Public Works Department will address any applicable requirements for right-of-way conveyance that might be required because of this subdivision.

Therefore, the existing street system and proposed street improvements will be in compliance with the STSP.

Transportation Planning Rule Review:

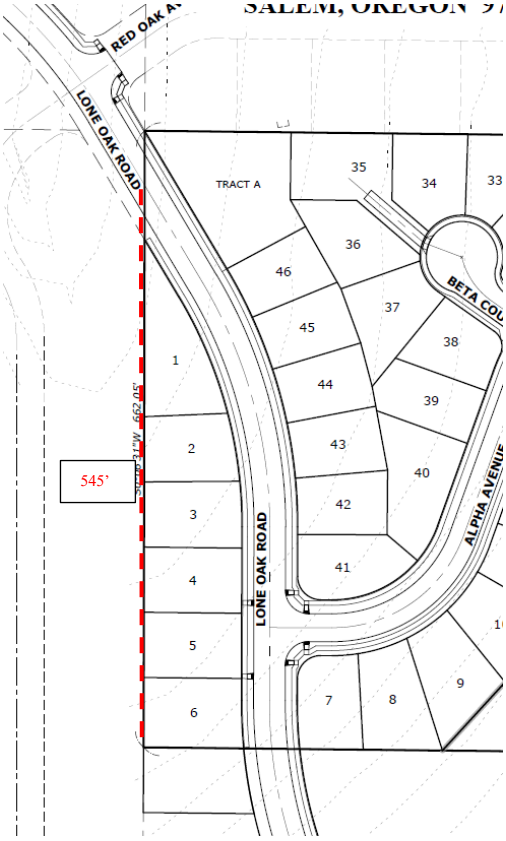
The City of Salem's TPR encourages a reduction in automobile trips by capitalizing on transit opportunities and by creating an environment that encourages people to walk. The proposed subdivision is a "limited land use decision" pursuant to Oregon Revised Statute (ORS) 197.015 and has therefore been reviewed for consistency with the State's TPR multi-modal connectivity requirements.

In conclusion, the development will provide bicycle and pedestrian facilities on-site to encourage people to walk and reduce vehicle trips. The development on the property will allow residents to reduce vehicle usage, by the convenience of bicycle and pedestrian paths to and from the uses and existing sidewalk system. Therefore, the proposed subdivision is in compliance with the intent of the TPR to reduce vehicle usage and encourage other modes of transportation to and from the site.

(5) The street system in and adjacent to the tentative subdivision plan is designed so as to provide for the safe, orderly, and efficient circulation of traffic into, through, and out of the subdivision.

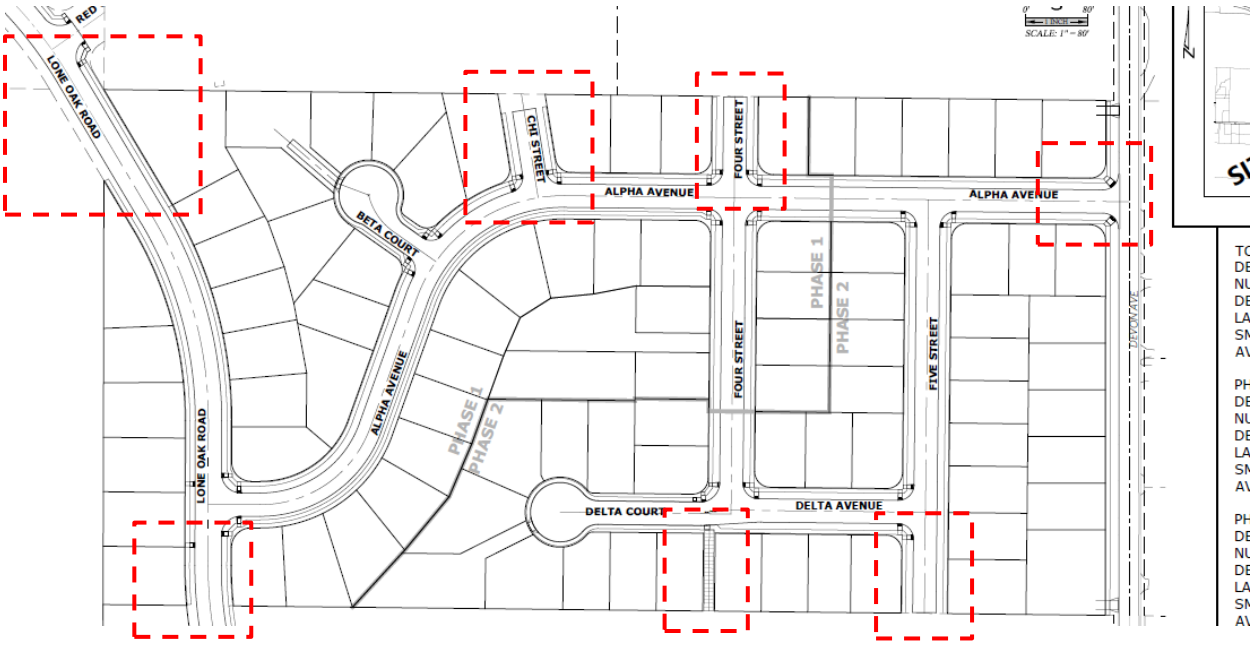
Findings: The subject property is located in a developed and developing area where improved streets and sidewalks exist and continue with new development. The local street system serving the development provides the necessary connections and access to the local streets and circulation system serving this residential neighborhood.

Block Length: Blocks shall be a maximum of 600 feet between street centerlines. The length of the blocks was taken into consideration at the time of design layout. The block lengths within the subdivision do not exceed 600 feet in length. There are more than enough street connections within the proposed development.



The properties to the northeast and northwest have the potential to be developed or currently have development approvals. The properties to the west and south are vacant, they are also located outside the City limits. Two stub streets have been provided to the northeast and northwest properties, two stub streets and a pedestrian path have been provided to the south, and a connection to Lone Oak to the west for future development. Due to the topography of the lot to the west, an additional street

connection to the west is not feasible.



Two street connections have been provided to the north (northwest and northeast), two street connections to the south along with a pedestrian path, a street connection to the east onto Devon Avenue has been provided, and a connection to Lone Oak to the west. By providing these connections, block length and connectivity have been met.

As shown on the site plan, the proposed subdivision provides a safe an efficient circulation pattern in the development for vehicles and pedestrians.

Access to, within, and from the development must be consistent with applicable requirements of the Transportation Planning Rule Requirements (TPR) that requires that development provide connectivity between land uses and transportation. Under the Rule, developments are responsible for providing for the safe and efficient circulation of vehicles, bicycles, and pedestrians into, through, and out of a development. The proposal develops the subject property within an established residential area where local and arterial streets and mass transit facilities exist. These facilities connect the transportation system to the surrounding residential neighborhoods.

The proposal develops the subject property within an established residential area where local and arterial streets and mass transit facilities exist. These facilities connect the transportation system to the surrounding residential neighborhoods.

The Public Works Department will address the level of street improvements that are roughly proportional to assure conformance to the development to subdivision code and applicable transportation system plan requirements. Completion of conditions of

approval prior to the signing of the final plat will satisfy this criterion for the subdivision application.

In conclusion, the proposed street plan provides the best economic, safe, and efficient circulation of traffic possible under the circumstances. The proposed subdivision demonstrates this review criterion can be met.

Therefore, this criterion has been satisfied.

(6) The tentative subdivision plan provides safe and convenient bicycle and pedestrian access from within the subdivision to adjacent residential areas and transit stops, and to neighborhood activity centers within one-half mile of the development. For purposes of this criterion, neighborhood activity centers include, but are not limited to, existing or planned schools, parks, shopping areas, transit stops, or employment centers.

Findings: The subdivision is served with adequate transportation infrastructure and the street system adjacent the property conforms to the Transportation System Plan and provides for safe, orderly, and efficient circulation of traffic into, through, and out of the subject property on to the public street system.

Therefore, via paved streets and sidewalks, safe and convenient bicycle and pedestrian access will be provided to the site and to adjacent neighborhoods.

Therefore, this criteria has been met.

(7) The tentative subdivision plan mitigates impacts to the transportation system consistent with the approved Traffic Impact Analysis, where applicable.

Findings: The proposal is for an 88-lot subdivision. The size of the proposed subdivision does not warrant the need for a Traffic Impact Analysis. The proposed subdivision plan mitigates impacts to transportation system by providing adequate access and circulation for all 88-lots.

Therefore, this criterion has been met.

(8) The tentative subdivision plan takes into account the topography and vegetation of the site so the need for variances is minimized to the greatest extent practicable.

Findings: All lots are in compliance with the UDC/SRC. Therefore, no variances have been requested.

(9) The tentative subdivision plan takes into account the topography and vegetation of the site, such that the least disruption of the site, topography, and vegetation will result from the reasonable development of the lots.

Findings: The subdivision code requires City approval of lots be suitable for the general purpose for which they are likely to be developed. No lots can be of such a size or configuration that is detrimental to public health, safety, or welfare or sanitary needs of users of the parcel or lot.

The subdivision plan takes into consideration the topography and vegetation of the site. The proposed lots are of sufficient size and dimensions to permit future development. The lot dimensions are illustrated on the tentative site plan and are in conformance to the minimum standards in UDC 510 and 511. Final conformance to minimum lot size and buildable lot area will be confirmed when the final plat is submitted to the City for review and approval.

There are 64 trees located within the boundary of the site. Fifty-four (54) trees are designated for removal, with ten (10) trees designated to remain. Fifteen (15%) percent of the trees on the site will be preserved. Trees designated for removal are within the right-of-way, the building envelop or within an area close to the building envelope but have the potential of being damaged during grading and construction.

Due to the required street extension to the north, south and west, several trees had to be removed to accommodate the pedestrian and vehicle extensions. Therefore, the removal of these 54 trees is necessary for development of the site.

There are no heritage or significant trees (Oregon White Oak) on the site.

The layout of the lots takes into consideration the topography and vegetation of the site. All lots are in compliance with the UDC. Therefore, no variances have been requested.

Therefore, this criteria has been met.

10) When the tentative subdivision plan requires an Urban Growth Preliminary Declaration under SRC Chapter 200, the tentative subdivision plan is designed in a manner that ensures that the conditions requiring the construction of on-site infrastructure in the Urban Growth Preliminary Declaration will occur, and, if off-site improvements are required in the Urban Growth Preliminary Declaration, construction of any off-site improvements is assured.

Findings: The property and development are located inside the Urban Service Area (USA). However, an Urban Growth Preliminary Declaration is required and has been approved. Urban Growth Area Permit (UGA) 17-06 was approved by staff on May 29, 2018. As required by code, all requirements of the UGA will be met prior to development or recording of the final plat. Therefore, this criterion has been met.

TREE CONSERVATION/REMOVAL PLAN

There are 64 trees located within the boundary of the site. Fifty-four (54) trees are designated for removal, with ten (10) trees designated to remain. Fifteen (15%) percent of the trees on the site will be preserved. Trees designated for removal are within the right-of-way, the building envelop or within an area close to the building envelope but have the potential of being damaged during grading and construction.

Due to the required street extension to the north, south and west, several trees had to be removed to accommodate the pedestrian and vehicle extensions. Therefore, the removal of these 54 trees is necessary for development of the site.

There are no heritage or significant trees (Oregon White Oak) on the site.

Tree Conservation Plan (TCP19-10) was approved for the original subdivision on October 23, 2019. The applicant is requesting a Tree Conservation Plan Adjustment.

CLASS-2 ADJUSTMENT

The applicant is requesting an adjustment to SRC 803.035(c):

> ***(c) Alignment and Grade. All streets shall be designed with a vertical alignment that conforms to the Public Works Design Standards. No grade of parkway, major arterial, or minor arterial shall exceed 6 percent. No grade of a collector street shall exceed 8 percent. No grade of a local street shall exceed 12 percent.***

Lone Oak Road runs north/south through the development and is designated as a 'collector' street. One Avenue (Beta Court) and Two Avenue (Alpha Avenue) run east/west through the site and are designated as 'local' streets. The applicant is requesting an adjustment to allow Lone Oak Road to exceed the 8 percent street grade allowed, and an adjustment to allow One Avenue (Beta Court) and Two Avenue (Alpha Avenue) to exceed the 12 percent street grade allowed.

The applicant has addressed criteria for Alternative Street Standards for street grade. See attached memo dated May 16, 2019.

Adjustment Criteria-SRC 250.005(d)(2) Criteria

> ***(A) The purpose underlying the specific development standard proposed for adjustment is:***
>
> ***(i) Clearly inapplicable to the proposed development; or***
> ***(ii) Equally or better met by the proposed development.***

(B) If located within a residential zone, the proposed development will not detract from the livability or appearance of the residential area.

(C) If more than one adjustment has been requested, the cumulative effect of all the adjustments result in a project which is still consistent with the overall purpose of the zone.

Applicant Findings:

(A) The applicant is requesting an adjustment to street grade. As shown on the street section provided, Lone Oak Road will have a 12.25% street grade. One Avenue (Beta Court) will have a 14.83% street grade, and Two Avenue (Alpha Avenue) will have a 15% street grade. Due to the topography of the site and the proposed street alignments with existing streets, along with required stub street connections, these proposed streets within the subdivision exceed the street grade allowed.

(B) The intent of the maximum street grade is to allow vehicles to climb and descend the street safely in all conditions. The internal streets proposed will provide safe and efficient circulation throughout the subdivision. As shown on the street sections provided, there is only curtain sections of each street that will exceed the allowed street grade. All streets within the proposed subdivision will be designed to provide safe and efficient conditions.

There are several access points provided throughout the proposed subdivision which provide alternative access options.

The intent of the standard is being met; therefore, the proposal equally meets the intent of the maximum street grade standard.

(C) Due to topography and existing streets in this area, the proposed streets are typical of streets within existing subdivisions within Salem. The streets will be designed to public works standards and will provide efficient circulation throughout the development and to existing surrounding neighborhoods, therefore, the greater street grade will not distract from the livability or appearance of the residential area.

(D) The applicant is not requesting more than one adjustment. Therefore, this criteria is not applicable.

PHASED SUBDIVISION 205-015(D)

Criteria. A tentative phased subdivision plan shall be approved if all of the following criteria are met:

(1) The tentative phased subdivision plan meets all of the criteria for tentative subdivision plan approval set forth in SRC 205.010(d).

Applicant Findings: The subject property is about 19.74 acres in size and zoned RA (Residential Agriculture). The subject property is located at 6719 Devon Avenue. The subject property is identified as 083W22C/Tax Lots 300. The applicant is proposing to divide the subject property into 88 single family residential lot, with four lots designated for stormwater detention.

The applicant is requesting a modification to the SUB19-05 approval to allow the subdivision to be developed in two (2) Phases.

Original	Proposed
Phase 1: Lots 1-42	Phase 1: Lots 1-46
Phase 2: Lots 43-65	Phase 2: Lots 47-88
Phase 3: Lots 66-84	

The proposed phased subdivision meets all the criteria for a tentative subdivision as outlined above under SRC 205.010(d).

(2) Connectivity for streets and City utilities between each phase ensures the orderly and efficient construction of required public improvements among all phases.

Applicant Findings: The subject property is located in a developed and developing area where improved streets and sidewalks exist and continue with new development. The local street system serving the development provides the necessary connections and access to the local streets and circulation system serving this residential neighborhood.

Block Length: Blocks shall be a maximum of 600 feet between street centerlines. The length of the blocks was taken into consideration at the time of design layout. The block lengths within the subdivision do not exceed 600 feet in length. There are more than enough street connections within the proposed development.

The properties to the northeast and northwest have the potential to be developed or currently have development approvals. The properties to the west and south are vacant, they are also located outside the City limits. Two stub streets have been provided to the northeast and northwest properties, two stub streets and a pedestrian path have been provided to the south, and a connection to Lone Oak to the west for

future development. Due to the topography of the lot to the west, an additional street connection to the west is not feasible.

Two street connections have been provided to the north (northwest and northeast), two street connections to the south along with a pedestrian path, a street connection to the east onto Devon Avenue has been provided, and a connection to Lone Oak to the west. By providing these connections, block length and connectivity have been met.

As shown on the site plan, the proposed subdivision provides a safe an efficient circulation pattern in the development for vehicles and pedestrians.

Access to, within, and from the development must be consistent with applicable requirements of the Transportation Planning Rule Requirements (TPR) that requires that development provide connectivity between land uses and transportation. Under the Rule, developments are responsible for providing for the safe and efficient circulation of vehicles, bicycles, and pedestrians into, through, and out of a development. The proposal develops the subject property within an established residential area where local and arterial streets and mass transit facilities exist. These facilities connect the transportation system to the surrounding residential neighborhoods.

The proposed phased subdivision will not impede the future development of other phases as shown on the site plan. All phases will have access to the internal street system and the existing street system.

Each phase will ensure the orderly and efficient construction of the required improvements as required by Conditions of Approval and Code compliance. Therefore, this criteria has been met.

(3) Each phase is substantially and functionally self-contained and self-sustaining with regard to required public improvements.

Applicant Findings: Each phase is required to provide the needed improvements to accommodate that phase. Due to the required conditions of approval and City standards all two (2) Phases will be functionally self-contained and self-sustaining as shown on the site plans.

(4) Each phase is designed in such a manner that all phases support the infrastructure requirements for the phased subdivision as a whole.

Applicant Findings: The applicant will be required to comply with conditions of approval that will be designed to ensure that the phases are developed to support the infrastructure requirements for each phase and the subdivision as a whole. See attached site plans.

MODIFICATION CRITERIA-UDC 205-070(D)

Criteria. An application for modification pursuant to this section shall be approved if all of the following criteria are met:

(1) The proposed modification is not substantially inconsistent with the conditions of the original approval; and

Applicant Findings: The applicant is requesting a modification to the SUB19-05MOD1 approval: The following modifications are being proposed:

1) Alpha Avenue street alignment has changed
2) Delta Court street alignment has changed
3) Alternative Street Standards to Alpha Avenue to allow a narrow planter strip (4')
4)

Original	Proposed
Phase 1: Lots 1-42	Phase 1: Lots 1-46
Phase 2: Lots 43-65	Phase 2: Lots 47-88
Phase 3: Lots 66-84	

The modification is in conformance with the original approval and conditions of approval. The modification will not revise or eliminate any of the Conditions of Approval for SUB19-05MOD1.

Therefore, the modification is not and will not be inconsistent with conditions of original approval.

(2) The proposed modification will not result in significant changes to the physical appearance of the development, the use of the site, and the impacts on surrounding properties.

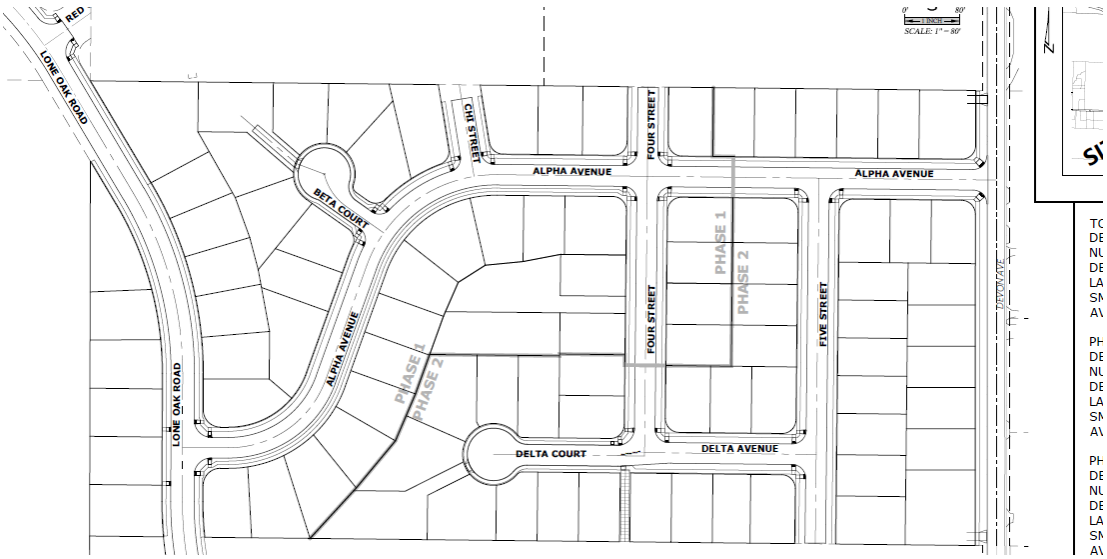
Applicant Findings: The proposed modification does not result in significant physical changes as shown on the site plan.

The street realignments to Alpha Avenue and Delta Court had to be made due to topography of the site. The applicant is requesting Alternative Street Standards to Alpha Avenue to allow a narrow planter strip (4'). The grading that was needed to accommodate those street locations originally approved, created steep slope issues on the stie. The realignment of the streets has helped to eliminated steep slope issues in these areas of the proposed subdivision.

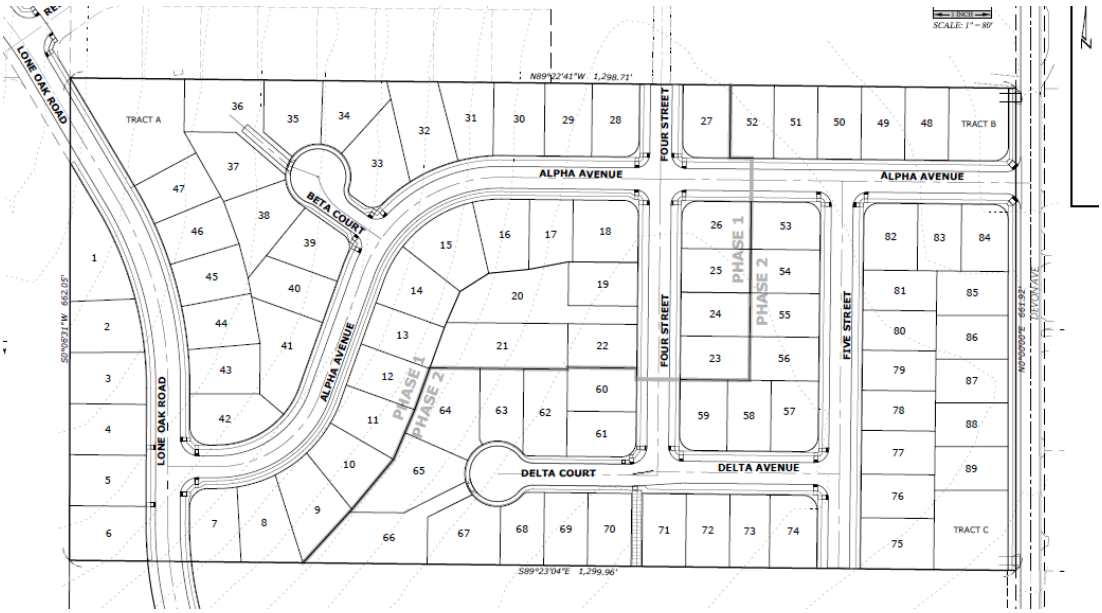
Original:



Proposed Modification:



Alternative Proposed Modification:



Conclusion

The applicant is requesting a modification to the SUB19-05MOD1 approval. The following modifications are being proposed:

1) Alpha Avenue street alignment has changed
2) Delta Court street alignment has changed
3) Alternative Street Standards to Alpha Avenue to allow a narrow planter strip (4')
4)

Original	Proposed
Phase 1: Lots 1-42	Phase 1: Lots 1-46
Phase 2: Lots 43-65	Phase 2: Lots 47-88
Phase 3: Lots 66-84	

The proposed modification is in compliance with all applicable Code and the original Conditions of Approval. All Conditions of Approval will be met as specified in the SUB19-05MOD1, along with requirements of this proposed modified decision.

TRANSMITTAL

MULTI/TECH
ENGINEERING SERVICES, INC.

DATE: November 9, 2020 **JOB #:** 6502

TO: Planning Division
Community Development
Room 305

PROJECT: Devon Subdivision

FROM: Brandie Dalton, Land-Use Planner

RE: ***TREE CONSERVATION PLAN ADJUSTMENT FOR TCP19-10***

ENCLOSED IS A TREE CONSERVATION PLAN ADJUSTMENT FOR THE DEVON SUBDIVISION (SUB19-05MOD1). AFTER BEING OUT ON THE SITE, IT WAS DETERMINED THAT THE ORIGINAL TREE COUNT IS 64 (63 NOTED IN ORIGINAL APPROVAL) TREES WITHIN THE BOUNDARY. FURTHERMORE, DUE TO THE NEEDED STREET REALIGNMENTS WITHIN THE SUBDIVISION, THE TREE PLAN NEEDED TO BE ADJUSTED. THE APPLICANT IS REQUESTING A TREE CONSERVATION ADJUSTMENT IN ORDER TO REMOVE 54 TREES. ON OCTOBER 23, 2019, THE APPLICANT WAS GIVEN APPROVAL TO REMOVE TREES ON THE SITE THROUGH TREE CONSERVATION PLAN (TCP) 19-10.

SRC 808.040(D):

(1) THERE ARE SPECIAL CONDITIONS THAT COULD NOT HAVE BEEN ANTICIPATED AT THE TIME THE TREE CONSERVATION PLAN WAS SUBMITTED THAT CREATED UNREASONABLE HARDSHIPS OR PRACTICAL DIFFICULTIES.

APPLICANT FINDINGS: TCP 19-10 ALLOWED THE APPLICANT APPROVAL TO REMOVE 51 TREES ON THE SITE WHILE PRESERVING 12 TREES (19%), OF THE ORIGINAL TREES WITHIN SUB19-05MOD1.

AFTER STARTING WORK AND GRADING ON THE SITE, IT WAS DETERMINED THAT THERE ARE ACTUALLY 64 (NOT 63) TREES ON THE SITE AND THAT 54 TREES WILL NEED TO BE REMOVED INSTEAD OF 51. ALSO, AFTER STARTING ENGINEERING ON THE SITE, IT WAS DETERMINED THAT ALPHA AVENUE AND DELTA COURT NEEDED TO BE REALIGNED IN ORDER TO ELIMINATE THE NEED FOR DEEP CUTS.

THE APPLICANT IS REQUESTING THE REMOVAL OF 54 TREES ON THE SITE. THESE TREES NEED TO BE REMOVED IN ORDER TO AVOID DAMAGING THE TREES OR CAUSING SAFETY ISSUES LATER DUE TO UNSTABLE TREES. SEVERAL OF THE TREES ALSO NEED TO BE REMOVED BECAUSE THEY ARE NOW LOCATED WITHIN RIGHT-OF-WAY. THEREFORE, THE APPLICANT IS REQUESTING APPROVAL TO REMOVE 3 ADDITIONAL TREES ON THE SITE.

Multi/Tech Engineering Services, Inc.
1155 13th Street SE
Salem OR 97302

(503) 363-9227 PHONE
(503) 364-1260 FAX
office@mtengineering.net

(2) When the Tree Conservation Plan Adjustment proposes the removal of a significant tree, there are no reasonable design alternative that would enable preservation of the tree.

Applicant Findings: There are no significant trees located within the boundary of the approved subdivision. Therefore, this criteria is not applicable.

(3) When the Tree Conservation Plan Adjustment proposes the removal of a tree or native vegetation within a riparian corridor, there are no reasonable design alternatives that would enable preservation of the tree or native vegetation.

Applicant Findings: There is no riparian corridor located on the subject property. Therefore, this criteria is not applicable.

(4) When the Tree Conservation Plan Adjustment proposes to reduce the number of trees preserved in the original tree conservation plan below 25 percent, only those trees reasonably necessary to accommodate the proposed development are designated for removal.

Applicant Findings: The proposed TCPA will result in the removal of 3 additional trees while preserving 10 trees (15%) on the site within the Devon Subdivision (SUB19-05MOD1).

Tree Inventory

Total Trees on Site:	64
Trees to be Removed:	54
Trees to Remain:	10

If you have any questions regarding this issue please feel free to contact us. Thank you.

Brandie Dalton
Land-Use Planner
bdalton@mtengineering.net

Multi/Tech Engineering Services, Inc.
1155 13th Street SE
Salem OR 97302

(503) 363-9227 PHONE
(503) 364-1260 FAX
office@mtengineering.net

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REDMOND GEOTECHNICAL SERVICES

Geotechnical Investigation

and

Geologic Hazard Assessment Services

Proposed Devon Avenue Residential Subdivision Site

Tax Lot No. 300 (Lots 13 and 14)

6719 Devon Avenue SE

Salem (Marion County), Oregon

for

Multi/Tech Engineering Services, Inc.

Project No. 1001.052.G
August 11, 2017

REDMOND GEOTECHNICAL SERVICES

August 11, 2017

Mr. Mark D. Grenz
Multi/Tech Engineering Services, Inc.
1155 13th Street SE
Salem, Oregon 97302

Dear Mr. Grenz:

Re: Geotechnical Investigation and Geologic Hazard Assessment Services, Proposed Devon Avenue Residential Subdivision Site, Tax Lot No. 300 (Lots 13 and 14), 6719 Devon Avenue SE, Salem (Marion County), Oregon

Submitted herewith is our report entitled "Geotechnical Investigation and Geologic Hazard Assessment Services, Proposed Devon Avenue Residential Subdivision Site, Tax Lot No. 300 (Lots 13 and 14), 6719 Devon Avenue SE, Salem (Marion County), Oregon". The scope of our services was outlined in our formal discussions with Mr. Mark D. Grenz of Multi/Tech Engineering Services, Inc on June 29, 2017. Verbal authorization of our services was provided by Mr. Mark D. Grenz on June 29, 2017.

During the course of our investigation, we have kept you and/or others advised of our schedule and preliminary findings. We appreciate the opportunity to assist you with this phase of the project. Should you have any questions regarding this report, please do not hesitate to call.

Sincerely,

Daniel M. Redmond, P.E., G.E.
President/Principal Engineer



12-3-18

PO Box 20547 • Portland, Oregon 97294 • Fax 503/286-7176 • Phone 503/285-0598

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Test Pit Logs and Laboratory Data

APPENDIX B

Geologic Hazard Study

GEOTECHNICAL INVESTIGATION AND GEOLOGIC HAZARD ASSESSMENT
PROPOSED DEVON AVENUE RESIDENTIAL DEVELOPMENT SITE
TAX LOT NO. 300 (LOTS 13 AND 14)
6719 DEVON AVENUE SE
SALEM (MARION COUNTY) OREGON

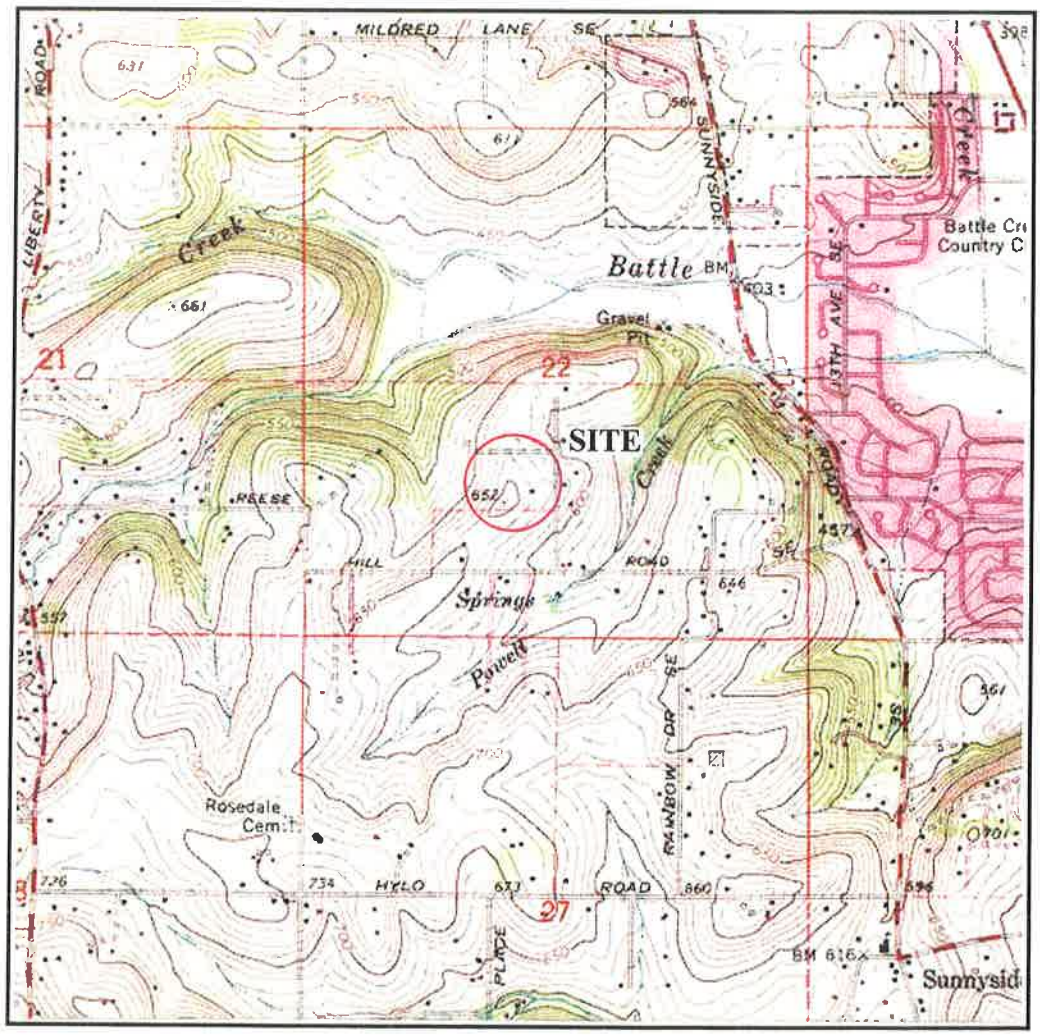
INTRODUCTION

Redmond Geotechnical Services, LLC is please to submit to you the results of our Geotechnical Investigation and Geologic Hazard Assessment at the site of the proposed new residential development located to the west of Devon Avenue SE and to the north of Reese Hill Road SE in Salem (Marion County), Oregon. The general location of the subject site is shown on the Site Vicinity Map, Figure No. 1. The purpose of our geotechnical investigation and geologic hazard study services at this time was to explore the existing subsurface soils and/or groundwater conditions across the subject site and to evaluate any potential concerns with regard to potential slope failure at the site as well as to develop and/or provide appropriate geotechnical design and construction recommendations for the proposed new residential development project.

PROJECT DESCRIPTION

We understand that present plans are to develop the subject property into new single-family residential lots. Although the project is still in the preliminary planning stages, we understand that the proposed new residential development will consist of the construction of approximately ninety (90) new single-family residential lots ranging in size from about 6,000 to 10,000 square feet (see Site Exploration Plan, Figure No. 2). The new residential homes are anticipated to be of two- and/or three-story structures constructed with wood framing. Support of the new residential structures is anticipated to consist primarily of conventional shallow strip (continuous) footings although some individual (column) footings may also be required. Structural loading information, although unavailable at this time, is anticipated to be fairly typical and light for this type of wood-frame single-family residential structure and is expected to result in maximum dead plus live continuous (strip) and individual (column) footing loads on the order of about 1.5 to 2.5 kips per lineal foot (klf) and 10 to 25 kips, respectively.

Although a site grading plan is not available at this time, we understand that both cuts and fills are presently planned for the residential project. In general, relatively minor cuts and/or fills (i.e., 5 to 8 feet) will be required across the proposed residential lots as well as the proposed new public street improvements. In this regard, due to the existing and/or finish grade sloping site conditions, some of the proposed new single-family residential structures and/or lots may also include the construction of a partial below grade floor(s) and/or retaining walls.



SIDNEY QUADRANGLE
OREGON
7.5 MINUTE SERIES (TOPOGRAPHIC)
SE/4 SALEM 15' QUADRANGLE

SCALE 1:24 000

1 0 1/2 1 MILE
1000 0 1000 2000 3000 4000 5000 6000 7000 FEET
1 .5 0 1 KILOMETER

CONTOUR INTERVAL 10 FEET
DOTTED LINES REPRESENT 5-FOOT CONTOURS
NATIONAL GEODETIC VERTICAL DATUM OF 1929

SITE VICINITY MAP

Project No. 1001.052.G	**DEVON AVENUE SUBDIVISION** **TL 300, 6719 DEVON AVENUE SE**	Figure No. 1

Other associated site improvements for the project will include construction of new public street improvements along Devon Avenue SE as well as new local residential streets. Additionally, the project will include the construction of new underground utility services as well as new concrete curbs and sidewalks. Further, we understand that the project will also include the collection of storm water from hard and//or impervious surfaces (i.e., roofs and pavements) for possible on-site treatment and/or disposal in a storm water system designed by the project civil engineer.

SCOPE OF WORK

The purpose of our geotechnical and/or geologic studies was to evaluate the overall subsurface soil and/or groundwater conditions underlying the subject site with regard to the proposed new residential development and construction at the site and any associated impacts or concerns with respect to potential slope failure at the site as well as provide appropriate geotechnical design and construction recommendations for the project. Additionally, due to the moderately steep sloping site gradients, a slope stability analysis was also performed.

Specifically, our geotechnical investigation and landslide hazard study performed as a collaboration with Northwest Geological Services, Inc. (NWGS, Inc.) included the following scope of work items:

1. Review of available and relevant geologic and/or geotechnical investigation reports for the subject site and/or area.

2. A detailed field reconnaissance and subsurface exploration program of the soil and ground water conditions underlying the site by means of eight (8) exploratory test pit excavations. The exploratory test pits were excavated to depths ranging from about five (5) to six (6) feet beneath existing site grades at the approximate locations as shown on the Site Exploration Plan, Figure No. 2. Additionally, field infiltration testing was also performed within two (2) of the test pit excavations.

3. Laboratory testing to evaluate and identify pertinent physical and engineering properties of the subsurface soils encountered relative to the planned site development and construction at the site. The laboratory testing program included tests to help evaluate the natural (field) moisture content and dry density, maximum dry density and optimum moisture content, expansion index, gradational characteristics, Atterberg Limits and (remolded) direct shear strength tests as well as "R"-value tests.

4. A literature review and engineering evaluation and assessment of the regional seismicity to evaluate the potential ground motion hazard(s) at the subject site. The evaluation and assessment included a review of the regional earthquake history and sources such as potential seismic sources, maximum credible earthquakes, and reoccurrence intervals as well as a discussion of the possible ground response to the selected design earthquake(s), fault rupture, landsliding, liquefaction, and tsunami and seiche flooding.

5. Engineering analyses utilizing the field and laboratory data as a basis for furnishing recommendations for foundation support of the proposed new residential structures. Recommendations include maximum design allowable contact bearing pressure(s), depth of footing embedment, estimates of foundation settlement, lateral soil resistance, and foundation subgrade preparation. Additionally, construction and/or permanent subsurface water drainage considerations have also been prepared. Further, our report includes recommendations regarding site preparation, placement and compaction of structural fill materials, suitability of the on-site soils for use as structural fill, criteria for import fill materials as well as preparation of foundation, pavement and/or floor slab subgrades.

6. Flexible pavement design and construction recommendations for the proposed new public street improvements.

SITE CONDITIONS

Site Geology

The subject site and/or area is underlain by highly weathered Basalt bedrock deposits and/or residual soils of the Columbia River Basalt formation. A more detailed description of the site geology across and/or beneath the site is presented in the Geologic Hazard Study in Appendix B.

Surface Conditions

The subject proposed new residential development property consists of one (1) rectangular shaped tax lot (Tax Lot 300) which includes Lots 13 and 14 and encompasses a total plan area of approximately 19.89 acres. The proposed residential development property is roughly located to the west of Devon Avenue SE and to the north of Reese Hill Road SE. The easterly portion of the subject proposed residential development site is presently improved and contain existing single-family residential homes while the remainder of the site is unimproved and consist of existing open land. Surface vegetation across the site generally consists of a light to moderate growth of grass, weeds and brush as well as numerous small to large size trees. Additionally, an existing seasonal drainage basin is located along the westerly portion of the site.

Topographically, the site is characterized as gently to moderately sloping terrain (10 to 25 percent) descending downward from the central portion of the site towards the west and east with overall topographic relief estimated at about seventy (70) feet and ranges from a low about Elevation 580 feet near the northwesterly corner of the subject site to a high of about Elevation 650 near the central portion of the site.

Subsurface Soil Conditions

Our understanding of the subsurface soil conditions underlying the site was developed by means of eight (8) exploratory test pits excavated to depths ranging from about five (5) to six (6) feet beneath existing site grades on July 11, 2017 with a John Deere 200C track-mounted excavator.

The location of the exploratory test pits were located in the field by marking off distances from existing and/or known site features and are shown in relation to the proposed new residential structures and/or site improvements on the Site Exploration Plan, Figure No. 2. Detailed logs of the test pit explorations, presenting conditions encountered at each location explored, are presented in the Appendix, Figure No's. A-5 through A-8.

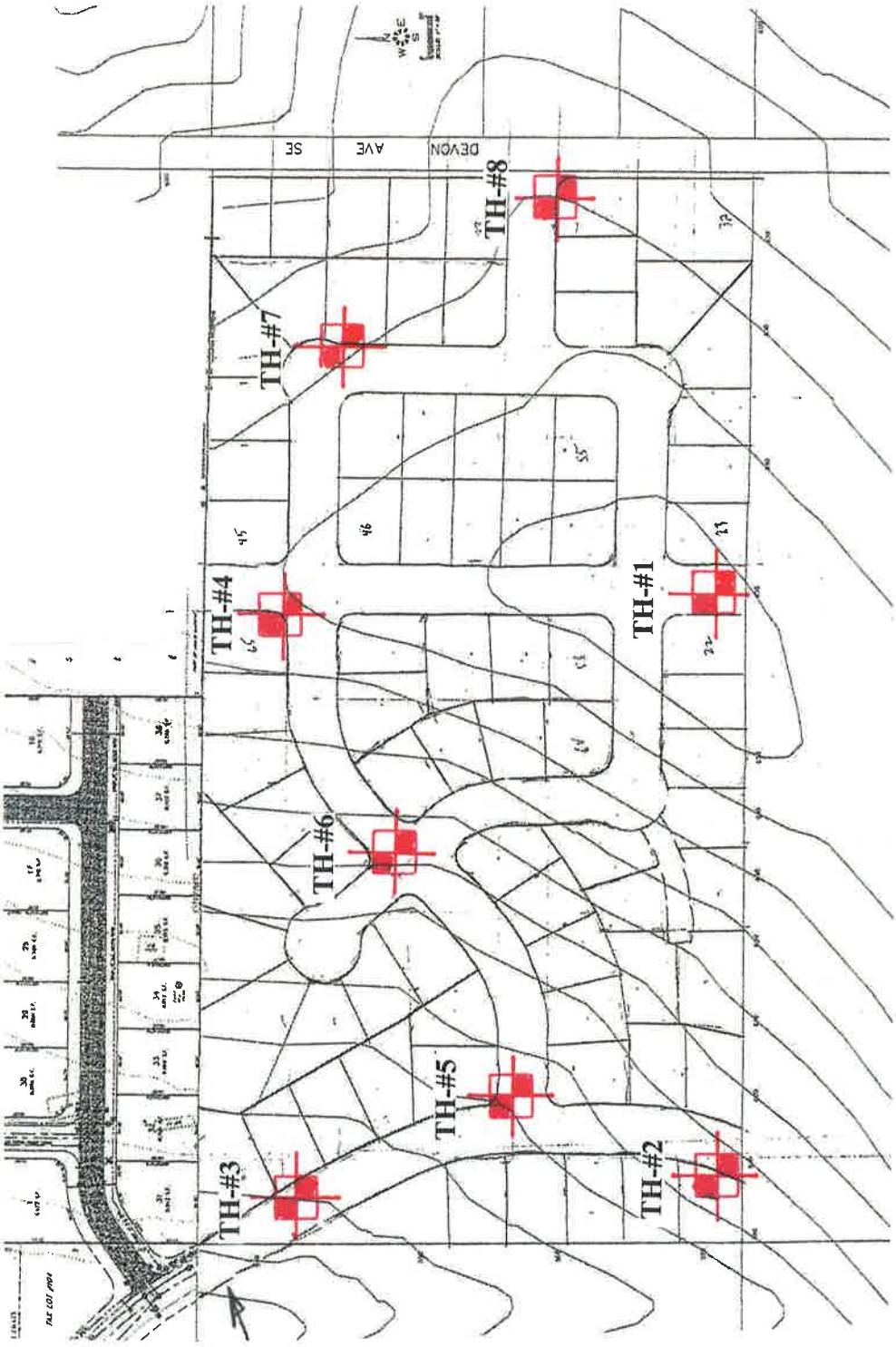
The exploratory test pit excavations were observed by staff from Redmond Geotechnical Services, LLC who logged each of the test pit explorations and obtained representative samples of the subsurface soils encountered across the site. Additionally, the elevation of the exploratory test pit excavations were referenced from the proposed Site Development Plan prepared by Project Delivery Group. and should be considered as approximate. All subsurface soils encountered at the site and/or within the exploratory test pit excavations were logged and classified in general conformance with the Unified Soil Classification System (USCS) which is outlined on Figure No. A-4.

The test pit explorations revealed that the subject site is underlain by native soil deposits comprised of highly weathered bedrock and/or residual soils composed of a surficial layer of dark brown, moist, soft, organic, sandy, clayey silt topsoil materials to depths of about 6 to 12 inches. These surficial topsoil materials were inturn underlain by residual soils composed of medium to reddish--brown, moist to very moist, medium stiff to stiff, sandy, clayey silt to a depth of about two (2) to four (4) feet beneath the existing site and/or surface grades. These upper clayey silt (residual) subgrade soils are best characterized by relatively low to moderate strength and moderate compressibility. These upper clayey silt subgrade soils were inturn underlain by medium to orangish-brown, moist to very moist, medium dense becoming dense at depth, clayey, silty sand to highly weathered bedrock deposits to the maximum depth explored of about six (6) feet beneath the existing site and/or surface grades. These clayey, silty sand subgrade soils and/or highly weathered bedrock deposits are best characterized by relatively moderate to high strength and low compressibility.

Groundwater

Groundwater was generally not encountered within any of the exploratory test pit explorations (TH-#1 through TH-#8) at the time of excavation to depths of at least six (6) feet beneath existing surface grades. However, the westerly portion of the subject property is bounded by an existing seasonal drainage basin and/or surface feature.

In this regard, although groundwater elevations at the site may fluctuate seasonally in accordance with rainfall conditions and/or associated with runoff within the westerly drainage basins as well as changes in site utilization, we are generally of the opinion that the static water levels and/or surface water ponding not observed during our recent field exploration work generally reflect a high seasonal groundwater level(s) at and/or beneath the site.



SITE EXPLORATION PLAN

Project No. 1001.052.G	**DEVON AVENUE SUBDIVISION** **TL 300, 6719 DEVON AVENUE SE**	Figure No. 2

INFILTRATION TESTING

We performed two (2) field infiltration tests at the site on July 11, 2017. The infiltration tests were performed in test holes TH-#2 and TH-#3 at depths of between two (2) to three (3) feet beneath the existing site and/or surface grades. The subgrade soils encountered in the infiltration test hole consisted of sandy, clayey silt.

The infiltration testing was performed in general conformance with current EPA and/or the City of Salem Department of Public Works Administrative Rules Chapter 109 Division 004 Appendix C Encased Falling Head test method which consisted of advancing a 6-inch diameter PVC pipe approximately 6 inches into the exposed soil horizon at each test location. Using a steady water flow, water was discharged into the pipe and allowed to penetrate and saturate the subgrade soils. The water level was adjusted over a two (2) hour period and allowed to achieve a saturated subgrade soil condition consistent with the bottom elevation of the surrounding test pit excavation. Following the required saturating period, water was again added into the PVC pipe and the time and/or rate at which the water level dropped was monitored and recorded. Each measurable drop in the water level was recorded until a consistent infiltration rate was observed and/or repeated.

Based on the results of the field infiltration testing at the site, we have found that the native sandy, clayey silt subgrade soil deposits posses an ultimate infiltration rate on the order of about 0.6 to 0.8 inches per hour (in/hr).

LABORATORY TESTING

Representative samples of the on-site subsurface soils were collected at selected depths and intervals from various test pit excavations and returned to our laboratory for further examination and testing and/or to aid in the classification of the subsurface soils as well as to help evaluate and identify their engineering strength and compressibility characteristics. The laboratory testing consisted of visual and textural sample inspection, moisture content and dry density determinations, maximum dry density and optimum moisture content, expansion index, gradation analyses and Atterberg Limits as well as (remolded) direct shear strength and "R"-value tests. Results of the various laboratory tests are presented in the Appendix, Figure No's. A-9 through A-13.

SEISMICITY AND EARTHQUAKE SOURCES

The seismicity of the southwest Washington and northwest Oregon area, and hence the potential for ground shaking, is controlled by three separate fault mechanisms. These include the Cascadia Subduction Zone (CSZ), the mid-depth intraplate zone, and the relatively shallow crustal zone. Descriptions of these potential earthquake sources are presented below.

The CSZ is located offshore and extends from northern California to British Columbia. Within this zone, the oceanic Juan de Fuca Plate is being subducted beneath the continental North American Plate to the east. The interface between these two plates is located at a depth of approximately 15 to 20 kilometers (km). The seismicity of the CSZ is subject to several uncertainties, including the maximum earthquake magnitude and the recurrence intervals associated with various magnitude earthquakes. Anecdotal evidence of previous CSZ earthquakes has been observed within coastal marshes along the Washington and Oregon coastlines. Sequences of interlayered peat and sands have been interpreted to be the result of large Subduction zone earthquakes occurring at intervals on the order of 300 to 500 years, with the most recent event taking place approximately 300 years ago. A study by Geomatrix (1995) and/or USGS (2008) suggests that the maximum earthquake associated with the CSZ is moment magnitude (Mw) 8 to 9. This is based on an empirical expression relating moment magnitude to the area of fault rupture derived from earthquakes that have occurred within Subduction zones in other parts of the world. An Mw 9 earthquake would involve a rupture of the entire CSZ. As discussed by Geomatrix (1995) this has not occurred in other subduction zones that have exhibited much higher levels of historical seismicity than the CSZ. However, the 2008 USGS report has assigned a probability of 0.67 for a Mw 9 earthquake and a probability of 0.33 for a Mw 8.3 earthquake. For the purpose of this study an earthquake of Mw 9.0 was assumed to occur within the CSZ.

The intraplate zone encompasses the portion of the subducting Juan de Fuca Plate located at a depth of approximately 30 to 50 km below western Washington and western Oregon. Very low levels of seismicity have been observed within the intraplate zone in western Oregon and western Washington. However, much higher levels of seismicity within this zone have been recorded in Washington and California. Several reasons for this seismic quiescence were suggested in the Geomatrix (1995) study and include changes in the direction of Subduction between Oregon, Washington, and British Columbia as well as the effects of volcanic activity along the Cascade Range. Historical activity associated with the intraplate zone includes the 1949 Olympia magnitude 7.1 and the 1965 Puget Sound magnitude 6.5 earthquakes. Based on the data presented within the Geomatrix (1995) report, an earthquake of magnitude 7.25 has been chosen to represent the seismic potential of the intraplate zone.

The third source of seismicity that can result in ground shaking within the Vancouver and southwest Washington area is near-surface crustal earthquakes occurring within the North American Plate. The historical seismicity of crustal earthquakes in this area is higher than the seismicity associated with the CSZ and the intraplate zone. The 1993 Scotts Mills (magnitude 5.6) and Klamath Falls (magnitude 6.0), Oregon earthquakes were crustal earthquakes.

Liquefaction

Seismic induced soil liquefaction is a phenomenon in which lose, granular soils and some silty soils, located below the water table, develop high pore water pressures and lose strength due to ground vibrations induced by earthquakes. Soil liquefaction can result in lateral flow of material into river channels, ground settlements and increased lateral and uplift pressures on underground structures.

Buildings supported on soils that have liquefied often settle and tilt and may displace laterally. Soils located above the ground water table cannot liquefy, but granular soils located above the water table may settle during the earthquake shaking.

Our review of the subsurface soil test pit logs from our exploratory field explorations (TH-#1 through TH-#8) and laboratory test results indicate that the site is generally underlain by medium stiff to stiff, sandy, clayey silt soils and/or medium dense to dense highly weathered bedrock deposits to depths of at least 6.0 feet beneath existing site grades. Additionally, groundwater was generally not encountered within any of the exploratory test pit excavations (TH-#1 through TH-#8) at the site during our field exploration work to depths of at least 6.0 feet.

As such, due to the medium stiff to stiff and/or cohesive nature of the sandy, clayey silt subgrade soils and/or medium dense to dense highly weathered bedrock deposits beneath the site, it is our opinion that the native sandy, clayey silt subgrade soil and/or highly weathered bedrock deposits located beneath the subject site have a very low potential for liquefaction during the design earthquake motions previously described.

Landslides

No ancient and/or active landslides were observed or are known to be present on the subject site. Additionally, development of the subject site into the planned residential homes sites does not appear to present a potential geologic and/or landslide hazard provided that the site grading and development activities conform with the recommendations presented within this report. A more detailed assessment of the potential landslide hazard of the subject site is presented in the Geologic Hazard Study in Appendix B.

Surface Rupture

Although the site is generally located within a region of the country known for seismic activity, no known faults exist on and/or immediately adjacent to the subject site. As such, the risk of surface rupture due to faulting is considered negligible.

Tsunami and Seiche

A tsunami, or seismic sea wave, is produced when a major fault under the ocean floor moves vertically and shifts the water column above it. A seiche is a periodic oscillation of a body of water resulting in changing water levels, sometimes caused by an earthquake. Tsunami and seiche are not considered a potential hazard at this site because the site is not near to the coast and/or there are no adjacent significant bodies of water.

Flooding and Erosion

Stream flooding is a potential hazard that should be considered in lowland areas of Marion County and Salem. The FEMA (Federal Emergency Management Agency) flood maps should be reviewed as part of the design for the proposed new residential structures and site improvements. Elevations of structures on the site should be designed based upon consultants reports, FEMA (Federal Emergency Management Agency), and Marion County requirements for the 100-year flood levels of any nearby creeks, streams and/or drainage basins.

CONCLUSIONS AND RECOMMENDATIONS

General

Based on the results of our field explorations, laboratory testing, and engineering analyses, it is our opinion that the site is presently stable and suitable for the proposed new single-family residential development and its associated site improvements provided that the recommendations contained within this report are properly incorporated into the design and construction of the project.

The primary features of concern at the site are 1) the presence of highly moisture sensitive clayey and silty (residual) subgrade soils across the site, 2) the presence of gently to moderately sloping site conditions across the proposed new residential lots and/or home sites, and 3) the relatively low infiltration rates anticipated within the near surface clayey and silty subgrade soils.

With regard to the moisture sensitive clayey and silty residual subgrade soils, we are generally of the opinion that all site grading and earthwork activities be scheduled for the drier summer months which is typically June through September.

In regards to the gently to moderately sloping site conditions across the proposed new residential home sites and/or lots, we are of the opinion that site grading and/or structural fill placement should be minimized where possible and should generally limit cuts and/or fills to about eight (8) feet or less without the approval of the Geotechnical Engineer. Additionally, where existing site slopes and/or surface grades exceed about 20 percent (1V:5H) and in order to construct the proposed new residential lots and/or new local residential streets, benching and keying of all fills into the natural site slopes may be required.

With regard to the relatively low infiltration rates anticipated within the residual clayey and silty subgrade soils beneath the site, we generally do not recommend any storm water infiltration within structural and/or embankment fills. However, some limited storm water infiltration may be feasible within the lower westerly portion of the subject property as well as the proposed residential lots and/or areas of the site where the existing and/or finish slope gradients are no steeper than about 20 percent (1V:5H). In this regard, we recommend that all proposed storm water detention and/or infiltration systems for the project be reviewed and approved by Redmond Geotechnical Services, LLC.

The following sections of this report provide specific recommendations regarding subgrade preparation and grading as well as foundation and floor slab design and construction for the new residential development project.

Site Preparation

As an initial step in site preparation, we recommend that the proposed new residential building sites and/or lots as well as their associated structural and/or site improvement area(s) be stripped and cleared of all existing improvements, any existing unsuitable fill materials, surface debris, existing vegetation, topsoil materials, and/or any other deleterious materials present at the time of construction. In general, we envision that the site stripping to remove existing vegetation and topsoil materials will generally be about 6 to 12 inches. However, localized areas requiring deeper removals, such as existing undocumented and/or unsuitable fill materials as well as old foundation remnants, will likely be encountered and should be evaluated at the time of construction by the Geotechnical Engineer. The stripped and cleared materials should be properly disposed of as they are generally considered unsuitable for use/reuse as fill materials.

Following the completion of the site stripping and clearing work and prior to the placement of any required structural fill materials and/or structural improvements, the exposed subgrade soils within the planned structural improvement area(s) should be inspected and approved by the Geotechnical Engineer and possibly proof-rolled with a half and/or fully loaded dump truck. Areas found to be soft or otherwise unsuitable should be over-excavated and removed or scarified and recompacted as structural fill. During wet and/or inclement weather conditions, proof rolling and/or scarification and recompaction as noted above may not be appropriate.

The on-site native sandy, clayey silt (residual) subgrade soil materials are generally considered suitable for use/reuse as structural fill materials provided that they are free of organic materials, debris, and rock fragments in excess of about 6 inches in dimension. However, if site grading is performed during wet or inclement weather conditions, the use of some of the on-site native soil materials which contain significant silt and clay sized particles will be difficult at best. In this regard, during wet or inclement weather conditions, we recommend that an import structural fill material be utilized which should consist of a free-draining (clean) granular fill (sand & gravel) containing no more than about 5 percent fines. Representative samples of the materials which are to be used as structural fill materials should be submitted to the Geotechnical Engineer and/or laboratory for approval and determination of the maximum dry density and optimum moisture content for compaction.

In general, all site earthwork and grading activities should be scheduled for the drier summer months (June through September) if possible. However, if wet weather site preparation and grading is required, it is generally recommended that the stripping of topsoil materials be accomplished with a tracked excavator utilizing a large smooth-toothed bucket working from areas yet to be excavated. Additionally, the loading of strippings into trucks and/or protection of moisture sensitive subgrade soils will also be required during wet weather grading and construction.

In this regard, we recommend that areas in which construction equipment will be traveling be protected by covering the exposed subgrade soils with a woven geotextile fabric such as Mirafi FW404 followed by at least 12 inches or more of crushed aggregate base rock. Further, the geotextile fabric should have a minimum Mullen burst strength of at least 250 pounds per square inch for puncture resistance and an apparent opening size (AOS) between the U.S. Standard No. 70 and No. 100 sieves.

All structural fill materials placed within the new building and/or pavement areas should be moistened or dried as necessary to near (within 3 percent) optimum moisture conditions and compacted by mechanical means to a minimum of 92 percent of the maximum dry density as determined by the ASTM D-1557 (AASHTO T-180) test procedures. Structural fill materials should be placed in lifts (layers) such that when compacted do not exceed about 8 to 9 inches. Additionally, all fill materials placed within five (5) lineal feet of the perimeter (limits) of the proposed residential structures and/or pavements should be considered structural fill. Additionally, due to the sloping site conditions, we recommend that all structural fill materials planned in areas where existing surface and/or slope gradients exceed about 20 percent (1V:5H) be properly benched and/or keyed into the native (natural) slope subgrade soils. In general, a bench width of approximately ten (10) feet and a keyway depth of approximately two (2) foot is recommended. However, the actual bench width and keyway depth should be determined at the time of construction by the Geotechnical Engineer. Further, all fill slopes should be constructed with a finish slope surface gradient no steeper than about 2H:1V.

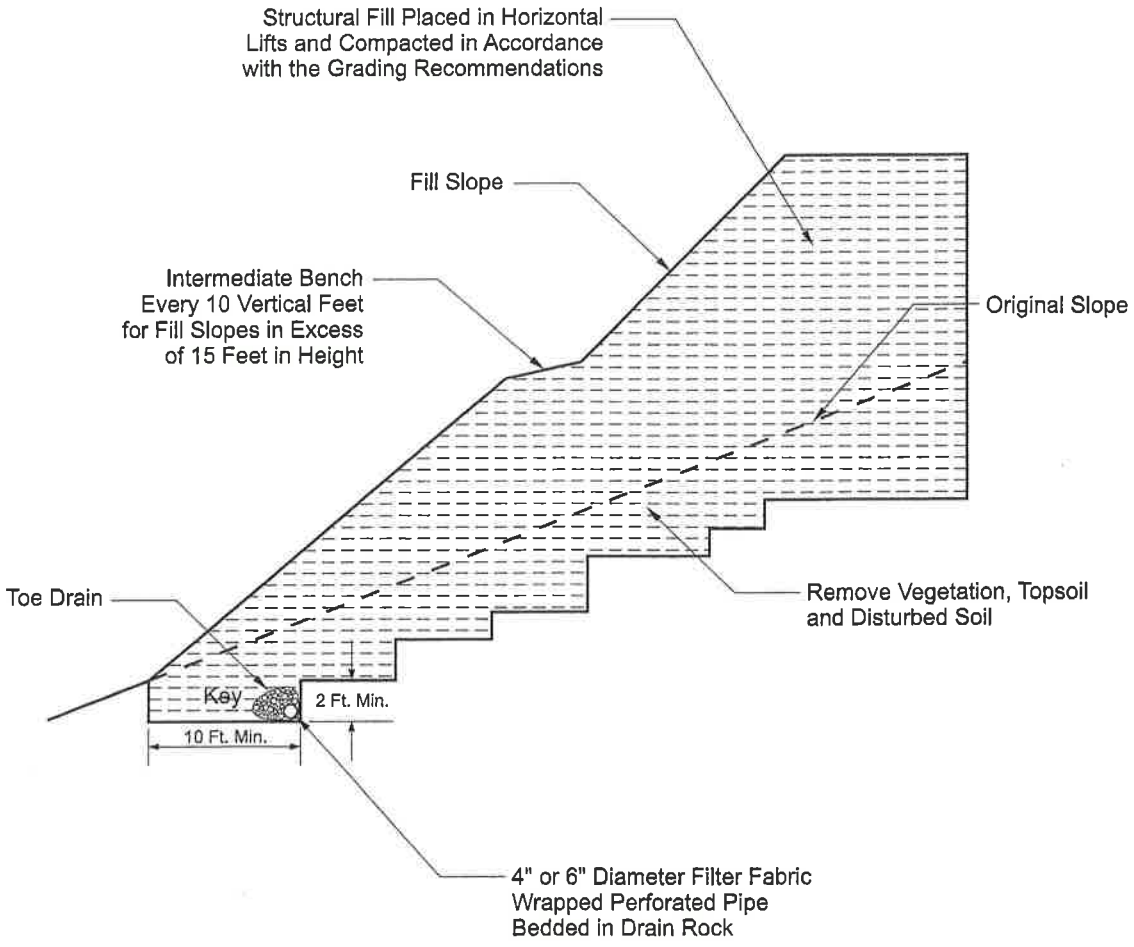
As such, settlement sensitive site and/or surface improvements (i.e., concrete curbs and sidewalks) should not be constructed until after primary consolidation and/or settlement has been completed. All aspects of the site grading, including a review of the proposed site grading plan(s), should be approved and/or monitored by a representative of Redmond Geotechnical Services, LLC.

Foundation Support

Based on the results of our investigation, it is our opinion that the site of the proposed new residential development is suitable for support of the two- and/or three-story wood-frame structures provided that the following foundation design recommendations are followed. The following sections of this report present specific foundation design and construction recommendations for the planned new residential structures.

Shallow Foundations

In general, conventional shallow continuous (strip) footings and individual (spread) column footings may be supported by approved native (untreated) subgrade soil materials and/or silty structural fill soils based on an allowable contact bearing pressure of about 2,000 pounds per square foot (psf). This recommended allowable contact bearing pressure is intended for dead loads and sustained live loads and may be increased by one-third for the total of all loads including short-term wind or seismic loads.



TYPICAL FILL SLOPE DETAIL

Project No. 1001.052.G	**DEVON AVENUE SUBDIVISION TL 300, 6719 DEVON AVENUE SE**	Figure No. 3

In general, continuous strip footings should have a minimum width of at least 16 inches and be embedded at least 18 inches below the lowest adjacent finish grade (includes frost protection). Individual column footings (where required) should be embedded at least 18 inches below grade and have a minimum width of at least 24 inches. Additionally, if foundation excavation and construction work is planned to be performed during wet and/or inclement weather conditions, we recommend that a 2 to 4 inch layer of compacted crushed rock be used to help protect the exposed foundation bearing surfaces until the placement of concrete.

Total and differential settlements of foundations constructed as recommended above and supported by approved native subgrade soils or by properly compacted structural fill materials are expected to be well within the tolerable limits for this type of lightly loaded wood-frame structure and should generally be less than about 1-inch and 1/2-inch, respectively.

Allowable lateral frictional resistance between the base of the footing element and the supporting subgrade bearing soil can be expressed as the applied vertical load multiplied by a coefficient of friction of 0.30 and 0.50 for native silty subgrade soils and/or import gravel fill materials, respectively. In addition, lateral loads may be resisted by passive earth pressures on footings poured "neat" against in-situ (native) subgrade soils or properly backfilled with structural fill materials based on an equivalent fluid density of 250 pounds per cubic foot (pcf). This recommended value includes a factor of safety of approximately 1.5 which is appropriate due to the amount of movement required to develop full passive resistance.

Floor Slab Support

In order to provide uniform subgrade reaction beneath concrete slab-on-grade floors, we recommend that the floor slab area be underlain by a minimum of 6 inches of free-draining (less than 5 percent passing the No. 200 sieve), well-graded, crushed rock. The crushed rock should help provide a capillary break to prevent migration of moisture through the slab. However, additional moisture protection can be provided by using a 10-mil polyolefin geo-membrane sheet such as StegoWrap.

The base course materials should be compacted to at least 95 percent of the maximum dry density as determined by the ASTM D-1557 (AASHTO T-180) test procedures. Where floor slab subgrade materials are undisturbed, firm and stable and where the underslab aggregate base rock section has been prepared and compacted as recommended above, we recommend that a modulus of subgrade reaction of 150 pci be used for design.

Retaining/Below Grade Walls

Retaining and/or below grade walls should be designed to resist lateral earth pressures imposed by native soils or granular backfill materials as well as any adjacent surcharge loads. For walls which are unrestrained at the top and free to rotate about their base, we recommend that active earth pressures be computed on the basis of the following equivalent fluid densities:

Non-Restrained Retaining Wall Pressure Design Recommendations

Slope Backfill (Horizontal/Vertical)	Equivalent Fluid Density/Silt (pcf)	Equivalent Fluid Density/Gravel (pcf)
Level	35	30
3H:1V	60	50
2H:1V	90	80

For walls which are fully restrained at the top and prevented from rotation about their base, we recommend that at-rest earth pressures be computed on the basis of the following equivalent fluid densities:

Restrained Retaining Wall Pressure Design Recommendations

Slope Backfill (Horizontal/Vertical)	Equivalent Fluid Density/Silt (pcf)	Equivalent Fluid Density/Gravel (pcf)
Level	45	35
3H:1V	65	60
2H:1V	95	90

The above recommended values assume that the walls will be adequately drained to prevent the buildup of hydrostatic pressures. Where wall drainage will not be present and/or if adjacent surcharge loading is present, the above recommended values will be significantly higher.

Backfill materials behind walls should be compacted to 90 percent of the maximum dry density as determined by the ASTM D-1557 (AASHTO T-180) test procedures. Special care should be taken to avoid over-compaction near the walls which could result in higher lateral earth pressures than those indicated herein. In areas within three (3) to five (5) feet behind walls, we recommend the use of hand-operated compaction equipment.

Pavements

Flexible pavement design for the proposed street improvements along the west side of Devon Avenue SE as well as the proposed new street improvements for the residential development project was determined in accordance with the City of Salem Department of Public Works Administrative Rules Chapter 109-006 (Street Design Standards) Section 6 dated January 1, 2014.

Specifically, on July 11, 2016, samples of the subgrade soils from the existing and/or proposed public streets were collected by means of various test hole excavations. The subgrade soils encountered in the test holes located across the proposed residential subdivision site as well as along the westerly side of the existing pavement grade of Devon Avenue SE and/or across the proposed new public street improvement areas generally consisted of native and/or residual soils comprised of medium to reddish-brown, medium stiff to stiff, sandy, clayey SILT (ML).

The subgrade soil samples collected at the site were tested in the laboratory in accordance with the ASTM Vol. 4.08 Part D-2844-69 (AASHTO T-190-93) test method for the determination of the subgrade soil "R"-value and expansion pressure. The results of the "R"-value testing was then converted to an equivalent Resilient Modulus (M_{RSG}) in accordance with current AASHTO methodology. The results of the laboratory "R"-value tests revealed that the subgrade soils have an apparent "R"-value of between 28 and 30 with an average "R"-value of 29 (see Figure No. A-12). Using the current AASHTO methodology for converting "R"-value to Resilient Modulus (M_{RSG}), the subgrade soils have a Resilient Modulus (M_{RSG}) of about 5,865 psi which is classified a "Fair" (M_{RSG} = 5,000 psi to 10,000 psi).

In addition to the above, Dynamic Cone Penetration (DCP) tests were performed along the proposed new interior public street alignment at approximate 100- to 200-feet intervals. The results of the DCP tests found that the underlying native sandy, clayey silt subgrade soils have a DCP value of between 3 to 4 blows per 2-inches which correlates to a California Bearing Ratio (CBR) of between 12 and 15. Using current AASHTO methodology for converting CBR to Resilient Modulus (M_{RSG}), the subgrade soils have a Resilient Modulus (M_{RSG}) of between 10,637 and 12,392 psi with an average M_{RSG} of 11,530 psi which is classified as "Fair" (M_{RSG} = 5,000 psi to 10,000 psi).

Devon Avenue SE

The following documents and/or design input parameters were used to help determine the flexible pavement section design for improvements to Devon Avenue SE:

- **Street Classification:** Collector Street
- **Design Life:** 20 years
- **Serviceability:** 4.2 initial, 2.5 terminal
- **Traffic Loading Data:** 1,000,000 18-kip EAL's
- **Reliability Level:** 90%
- **Drainage Coefficient:** 1.0 (asphalt), 0.8 (aggregate)
- **Asphalt Structural Coefficient:** 0.41
- **Aggregate Structural Coefficient:** 0.10

Based on the above design input parameters and using the design procedures contained within the AASHTO 1993 Design of Pavement Structures Manual, a Structural Number (SN) of 4.1 was determined.

In this regard, we recommend the following flexible pavement section for the new improvements to Devon Avenue SE:

Material Type	Pavement Section (inches)
Asphaltic Concrete	5.0
Aggregate Base Rock	14.0

Local Residential Streets

The following documents and/or design input parameters were used to help determine the flexible pavement section design for new local residential streets:

- **Street Classification:** Local Residential Street
- **Design Life:** 25 years
- **Serviceability:** 4.2 initial, 2.5 terminal
- **Traffic Loading Data:** 100,000 18-kip EAL's
- **Reliability Level:** 90%
- **Drainage Coefficient:** 1.0 (asphalt), 0.8 (aggregate)
- **Asphalt Structural Coefficient:** 0.41
- **Aggregate Structural Coefficient:** 0.10

Based on the above design input parameters and using the design procedures contained within the AASHTO 1993 Design of Pavement Structures Manual, a Structural Number (SN) of 2.6 was determined.

In this regard, we recommend the following flexible pavement section for the construction of new Local Residential Streets:

Material Type	Pavement Section (inches)
Asphaltic Concrete	4.0
Aggregate Base Rock	10.0

Wet Weather Grading and Soft Spot Mitigation

Construction of the proposed new public street improvements is generally recommended during dry weather. However, during wet weather grading and construction, excavation to subgrade can proceed during periods of light to moderate rainfall provided that the subgrade remains covered with aggregate. A total aggregate thickness of 8-inches may be necessary to protect the subgrade soils from heavy construction traffic. Construction traffic should not be allowed directly on the exposed subgrade but only atop a sufficient compacted base rock thickness to help mitigate subgrade pumping.

If the subgrade becomes wet and pumps, no construction traffic shall be allowed on the road alignment. Positive site drainage away from the street shall be maintained if site paving will not occur before the on-set of the wet season.

Depending on the timing for the project, any soft subgrade found during proof-rolling or by visual observations can either be removed and replaced with properly dried and compacted fill soils or removed and replaced with compacted crushed aggregate. However, and where approved by the Geotechnical Engineer, the soft area may be covered with a bi-axial geogrid and covered with compacted crushed aggregate.

Soil Shrink-Swell and Frost Heave

The results of the laboratory "R"-value tests indicate that the native subgrade soils possess a low to moderate expansion potential. As such, the exposed subgrade soils should not be allowed to completely dry and should be moistened to near optimum moisture content (plus or minus 3 percent) at the time of the placement of the crushed aggregate base rock materials. Additionally, exposure of the subgrade soils to freezing weather may result in frost heave and softening of the subgrade. As such, all subgrade soils exposed to freezing weather should be evaluated and approved by the Geotechnical Engineer prior to the placement of the crushed aggregate base rock materials.

Excavation/Slopes

Temporary excavations of up to about four (4) feet in depth may be constructed with near vertical inclinations. Temporary excavations greater than about four (4) feet but less than eight (8) feet should be excavated with inclinations of at least 1 to 1 (horizontal to vertical) or properly braced/shored. Where excavations are planned to exceed about eight (8) feet, this office should be consulted. All shoring systems and/or temporary excavation bracing for the project should be the responsibility of the excavation contractor. Permanent slopes should be constructed no steeper than about 2H to 1V unless approved by the Geotechnical Engineer.

Depending on the time of year in which trench excavations occur, trench dewatering may be required in order to maintain dry working conditions if the invert elevations of the proposed utilities are located at and/or below the groundwater level. If groundwater is encountered during utility excavation work, we recommend placing trench stabilization materials along the base of the excavation. Trench stabilization materials should consist of 1-foot of well-graded gravel, crushed gravel, or crushed rock with a maximum particle size of 4 inches and less than 5 percent fines passing the No. 200 sieve. The material should be free of organic matter and other deleterious material and placed in a single lift and compacted until well keyed.

Surface Drainage/Groundwater

We recommend that positive measures be taken to properly finish grade the site so that drainage waters from the residential structures and landscaping areas as well as adjacent properties or buildings are directed away from the new residential structures foundations and/or floor slabs.

All roof drainage should be directed into conduits that carry runoff water away from the residential structures to a suitable outfall. Roof downspouts should not be connected to foundation drains. A minimum ground slope of about 2 percent is generally recommended in unpaved areas around the proposed new residential structures.

Groundwater was not encountered at the site in any of the exploratory test pits (TH-#1 through TH-#8) at the time of excavation to depths of at least 7 feet beneath existing site grades. Additionally, surface water ponding was not observed at the site during our field exploration work. However, the northeasterly portion of the site contains an existing seasonal drainage basin feature. Further, groundwater elevations in the area and/or across the subject property may fluctuate seasonally and may temporarily pond/perch near the ground surface during periods of prolonged rainfall.

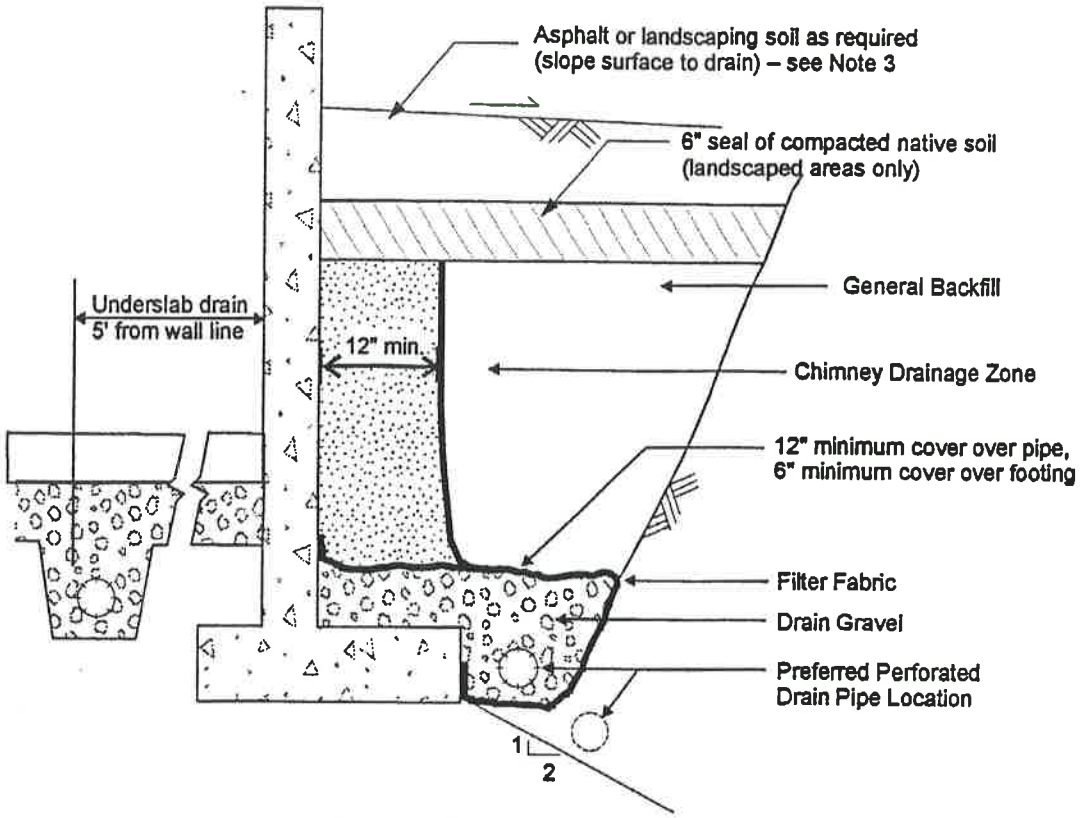
As such, based on our current understand of the possible site grading required to bring the subject site and/or residential lots to finish design grade(s), we are of the opinion that an underslab drainage system is not required for the proposed single-family residential structures. However, a perimeter foundation drain is recommended for any perimeter footings and/or below grade retaining walls. A typical recommended perimeter footing/retaining wall drain detail is shown on Figure No. 4. Further, due to our understanding that various surface infiltration ditches and/or swales may be utilized for the project as well as the relatively low infiltration rates of the near surface sandy, clayey silt subgrade soils anticipated within and/or near to the foundation bearing level of the proposed residential structures, we are generally of the opinion that storm water detention and/or disposal systems should not be utilized within the residential lots and/or around the proposed residential structures unless approved by the Geotechnical Engineer.

Design Infiltration Rates

Based on the results of our field infiltration testing, we recommend using the following infiltration rate to design any on-site near surface storm water infiltration and/or disposal systems for the project:

Subgrade Soil Type	**Recommended Infiltration Rate**
sandy, clayey SILT (ML)	0.3 to 0.4 inches per hour (in/hr)

Note: A safety factor of two (2) was used to calculate the above recommended design infiltration rate. Additionally, given the gradational variability of the on-site sandy, clayey sit subgrade soils beneath the site as well as the anticipation of some site grading for the project, it is generally recommended that field testing be performed during and/or following construction of any on-site storm water infiltration system(s) in order to confirm that the above recommended design infiltration rates are appropriate.



SCHEMATIC - NOT TO SCALE

NOTES:

1. Filter Fabric to be non-woven geotextile (Amoco 4545, Mirafi 140N, or equivalent)
2. Lay perforated drain pipe on minimum 0.5% gradient, widening excavation as required. Maintain pipe above 2:1 slope, as shown.
3. All-granular backfill is recommended for support of slabs, pavements, etc. (see text for structural fill).
4. Drain gravel to be clean, washed ¾" to 1½" gravel.
5. General backfill to be on-site gravels, or ¾""-0 or 1½"-0 crushed rock compacted to 92% Modified Proctor (AASHTO T-180).
6. Chimney drainage zone to be 12" wide (minimum) zone of clean washed, medium to coarse sand or drain gravel if protected with filter fabric. Alternatively, prefabricated drainage structures (Miradrain 6000 or similar) may be used.

PERIMETER FOOTING/RETAINING WALL DETAIL

Project No. 1001.052.G	DEVON AVENUE SUBDIVISION TL 300, 6719 DEVON AVENUE SE	Figure No. 4

Seismic Design Considerations

Structures at the site should be designed to resist earthquake loading in accordance with the methodology described in the latest edition (2014) of the State of Oregon Structural Specialty Code (OSSC) and/or Amendments to the 2015 International Building Code (IBC). The maximum considered earthquake ground motion for short period and 1.0 period spectral response may be determined from the Oregon Structural Specialty Code and/or from the National Earthquake Hazard Reduction Program (NEHRP) "Recommended Provisions for Seismic Regulations for New Buildings and Other Structures" published by the Building Seismic Safety Council.

We recommend Site Class "C" be used for design. Using this information, the structural engineer can select the appropriate site coefficient values (F_a and F_v) from the 2015 IBC to determine the maximum considered earthquake spectral response acceleration for the project. However, we have assumed the following response spectrum for the project:

Table 1. Recommended Seismic Design Parameters

Site Class	S_S	S_1	Fa	Fv	S_{MS}	S_{M1}	S_{DS}	S_{D1}
C	0.917	0.435	1.033	1.365	0.947	0.594	0.631	0.396

Notes: 1. S_S and S_1 were established based on the USGS 2015 mapped maximum considered earthquake spectral acceleration maps for 2% probability of exceedence in 50 years.

2. Fa and Fv were established based on IBC 2015 tables using the selected S_S and S_1 values.

CONSTRUCTION MONITORING AND TESTING

We recommend that **Redmond Geotechnical Services, LLC** be retained to provide construction monitoring and testing services during all earthwork operations for the proposed new residential development. The purpose of our monitoring services would be to confirm that the site conditions reported herein are as anticipated, provide field recommendations as required based on the actual conditions encountered, document the activities of the grading contractor and assess his/her compliance with the project specifications and recommendations. It is important that our representative meet with the contractor prior to any site grading to help establish a plan that will minimize costly over-excavation and site preparation work. Of primary importance will be observations made during site preparation and stripping, structural fill placement, footing excavations and construction as well as retaining wall backfill.

CLOSURE AND LIMITATIONS

This report is intended for the exclusive use of the addressee and/or their representative(s) to use to design and construct the proposed new single-family residential structures and their associated site improvements described herein as well as to prepare any related construction documents. The conclusions and recommendations contained in this report are based on site conditions as they presently exist and assume that the explorations are representative of the subsurface conditions between the explorations and/or at other locations across the study area. The data, analyses, and recommendations herein may not be appropriate for other structures and/or purposes. We recommend that parties contemplating other structures and/or purposes contact our office. In the absence of our written approval, we make no representation and assume no responsibility to other parties regarding this report. Additionally, the above recommendations are contingent on Redmond Geotechnical Services, LLC being retained to provide all site inspections and constriction monitoring services for this project. Redmond Geotechnical Services, LLC will not assume any responsibility and/or liability for any engineering judgment, inspection and/or testing services performed by others.

It is the owners/developers responsibility for insuring that the project designers and/or contractors involved with this project implement our recommendations into the final design plans, specifications and/or construction activities for the project. Further, in order to avoid delays during construction, we recommend that the final design plans and specifications for the project be reviewed by our office to evaluate as to whether our recommendations have been properly interpreted and incorporated into the project.

If during any future site grading and construction, subsurface conditions different from those encountered in the explorations are observed or appear to be present beneath excavations, we should be advised immediately so that we may review these conditions and evaluate whether modifications of the design criteria are required. We also should be advised if significant modifications of the proposed site development are anticipated so that we may review our conclusions and recommendations.

LEVEL OF CARE

The services performed by the Geotechnical Engineer for this project have been conducted with that level of care and skill ordinarily exercised by members of the profession currently practicing in the area under similar budget and time restraints. No warranty or other conditions, either expressed or implied, is made.

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Appendix "A"

Test Pit Logs and Laboratory Test Data

APPENDIX

FIELD EXPLORATIONS AND LABORATORY TESTING

FIELD EXPLORATION

Subsurface conditions at the site were explored by excavating eight (8) exploratory test pits (TH-#1 through TH-#8) on July 11, 2017. The approximate location of the test pit explorations are shown in relation to the proposed new residential lots and the associated site improvements on the Site Exploration Plan, Figure No. 2.

The test pits were excavated using track-mounted excavating equipment in general conformance with ASTM Methods in Vol. 4.08, D-1586-94 and D-1587-83. The test pits were excavated to depths ranging from about 5.0 to 6.0 feet beneath existing site grades. Detailed logs of the test pits are presented on the Log of Test Pits, Figure No's. A-5 through A-8. The soils were classified in accordance with the Unified Soil Classification System (USCS), which is outlined on Figure No. A-4.

The exploration program was coordinated by a field engineer who monitored the excavating and exploration activity, obtained representative samples of the subsurface soils encountered, classified the soils by visual and textural examination, and maintained continuous logs of the subsurface conditions. Disturbed and/or undisturbed samples of the subsurface soils were obtained at appropriate depths and/or intervals and placed in plastic bags and/or with a thin walled ring sample.

Groundwater was not encountered in any of the exploratory test pits (TH-#1 through TH-#8) at the time of excavating to depths of at least 6.0 feet beneath existing surface grades.

LABORATORY TESTING

Pertinent physical and engineering characteristics of the soils encountered during our subsurface investigation were evaluated by a laboratory testing program to be used as a basis for selection of soil design parameters and for correlation purposes. Selected tests were conducted on representative soil samples. The program consisted of tests to evaluate the existing (in-situ) moisture-density, maximum dry density and optimum moisture content, expansion index, gradational characteristics, and Atterberg Limits as well as direct shear strength and "R"-value tests.

Dry Density and Moisture Content Determinations

Density and moisture content determinations were performed on both disturbed and relatively undisturbed samples from the test pit explorations in general conformance with ASTM Vol. 4.08 Part D-216. The results of these tests were used to calculate existing overburden pressures and to correlate strength and compressibility characteristics of the soils. Test results are shown on the test pit logs at the appropriate sample depths.

Maximum Dry Density

Two (2) Maximum Dry Density and Optimum Moisture Content tests were performed on representative samples of the on-site sandy, clayey silt subgrade soils in accordance with ASTM Vol. 4.08 Part D-1557. This tests were conducted to help establish various engineering properties for use as structural fill. The test results are presented on Figure No. A-9.

Expansion Index

Two (2) Expansion Index tests were performed on representative samples of the near surface clayey silt subgrade soils in accordance with ASTM Vol. 4.08 Part D-4829-95. The tests were conducted to help evaluate the expansive properties of the near surface soils and their potential impact to residential foundations. The test results are presented on Figure No. A-9.

Atterberg Limits

Two (2) Liquid Limit (LL) and Plastic Limit (PL) tests were performed on representative samples of the sandy, clayey silt subgrade soils in accordance with ASTM Vol. 4.08 Part D-4318-85. These tests were conducted to facilitate classification of the soils and for correlation purposes. The test results appear on Figure No. A-10.

Gradation Analysis

Two (2) Gradation analyses were performed on representative samples of the sandy, clayey silt subgrade soils in accordance with ASTM Vol. 4.08 Part D-422. The test results were used to classify the soil in accordance with the Unified Soil Classification System (USCS). The test results are shown graphically on Figure No. A-11.

Direct Shear Strength Test

One (1) Direct Shear Strength test was performed on an undisturbed and/or remolded sample at a continuous rate of shearing deflection (0.02 inches per minute) in accordance with ASTM Vol. 4.08 Part D-3080-79. The test results were used to determine engineering strength properties and are shown graphically on Figure No. A-12.

"R"-Value Tests

Two (2) "R"-value tests were performed on remolded sandy, clayey silt subgrade soil samples in accordance with ASTM Vol. 4.08 Part D-2844. The test results were used to help evaluate the subgrade soils supporting and performance capabilities when subjected to traffic loading. The test results are shown on Figure No. A-13.

The following figures are attached and complete the Appendix:

Figure No. A-4	Key To Exploratory Test Pit Logs
Figure No's. A-5 through A-8	Log of Test Pits/Dynamic Cone
Figure No. A-9	Maximum Density & Expansion Index Test Results
Figure No. A-10	Atterberg Limits Test Results
Figure No. A-11	Gradation Test Results
Figure No. A-12	Direct Shear Strength Test Results
Figure No. A-13	Results of "R"-Value Tests
Figure No's. A-14 and A-15	Field Infiltration Test Results

PRIMARY DIVISIONS			GROUP SYMBOL	SECONDARY DIVISIONS
COARSE GRAINED SOILS — MORE THAN HALF OF MATERIAL IS LARGER THAN NO. 200 SIEVE SIZE	GRAVELS — MORE THAN HALF OF COARSE FRACTION IS LARGER THAN NO. 4 SIEVE	CLEAN GRAVELS (LESS THAN 5% FINES)	GW	Well graded gravels, gravel-sand mixtures, little or no fines.
			GP	Poorly graded gravels or gravel-sand mixtures, little or no fines.
		GRAVEL WITH FINES	GM	Silty gravels, gravel-sand-silt mixtures, non-plastic fines.
			GC	Clayey gravels, gravel-sand-clay mixtures, plastic fines.
	SANDS — MORE THAN HALF OF COARSE FRACTION IS SMALLER THAN NO. 4 SIEVE	CLEAN SANDS (LESS THAN 5% FINES)	SW	Well graded sands, gravelly sands, little or no fines.
			SP	Poorly graded sands or gravelly sands, little or no fines.
		SANDS WITH FINES	SM	Silty sands, sand-silt mixtures, non-plastic fines.
			SC	Clayey sands, sand-clay mixtures, plastic fines.
FINE GRAINED SOILS — MORE THAN HALF OF MATERIAL IS SMALLER THAN NO. 200 SIEVE SIZE	SILTS AND CLAYS — LIQUID LIMIT IS LESS THAN 50%		ML	Inorganic silts and very fine sands, rock flour, silty or clayey fine sands or clayey silts with slight plasticity.
			CL	Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays, lean clays.
			OL	Organic silts and organic silty clays of low plasticity.
	SILTS AND CLAYS — LIQUID LIMIT IS GREATER THAN 50%		MH	Inorganic silts, micaceous or diatomaceous fine sandy or silty soils, elastic silts.
			CH	Inorganic clays of high plasticity, fat clays.
			OH	Organic clays of medium to high plasticity, organic silts.
HIGHLY ORGANIC SOILS			Pt	Peat and other highly organic soils.

DEFINITION OF TERMS

	U.S. STANDARD SERIES SIEVE			CLEAR SQUARE SIEVE OPENINGS				
	200	40	10	4	3/4"	3"	12"	
SILTS AND CLAYS	SAND			GRAVEL		COBBLES	BOULDERS	
	FINE	MEDIUM	COARSE	FINE	COARSE			

GRAIN SIZES

SANDS, GRAVELS AND NON-PLASTIC SILTS	BLOWS/FOOT†
VERY LOOSE	0 - 4
LOOSE	4 - 10
MEDIUM DENSE	10 - 30
DENSE	30 - 50
VERY DENSE	OVER 50

RELATIVE DENSITY

CLAYS AND PLASTIC SILTS	STRENGTH‡	BLOWS/FOOT†
VERY SOFT	0 - 1/4	0 - 2
SOFT	1/4 - 1/2	2 - 4
FIRM	1/2 - 1	4 - 8
STIFF	1 - 2	8 - 16
VERY STIFF	2 - 4	16 - 32
HARD	OVER 4	OVER 32

CONSISTENCY

†Number of blows of 140 pound hammer falling 30 inches to drive a 2 inch O.D. (1-3/8 inch I.D.) split spoon (ASTM D-1586).

‡Unconfined compressive strength in tons/sq. ft. as determined by laboratory testing or approximated by the standard penetration test (ASTM D-1586), pocket penetrometer, torvane, or visual observation.

REDMOND GEOTECHNICAL SERVICES
PO BOX 20547 • PORTLAND, OREGON 97294

KEY TO EXPLORATORY TEST PIT LOGS
Unified Soil Classification System (ASTM D-2487)

DEVON AVENUE SUBDIVISION
TL 300, 6719 DEVON AVENUE SE

PROJECT NO.	DATE	
1001.052.G	8/11/17	Figure A-4

BACKHOE COMPANY: Gene S McMurrin BUCKET SIZE: 24 inches DATE: 7/11/17

DEPTH (FEET)	BAG SAMPLE	DENSITY TEST	DRY DENSITY (pcf)	MOISTURE CONTENT (%)	SOIL CLASS. (U.S.C.S.)	SOIL DESCRIPTION
TEST PIT NO. TH-#1 ELEVATION						
0					ML	Dark brown, moist, soft, organic, sandy, clayey SILT (Topsoil)
	X			21.1		
					ML	Medium to reddish-brown, moist to very moist, medium stiff to stiff, sandy, clayey SILT
	X			14.8		
5					SM/RK	Medium to orangish-brown, moist, medium dense to dense, clayey, silty SAND to highly weathered bedrock
						Total Depth = 6.0 feet No groundwater encountered at time of exploration
10						
15						
TEST PIT NO. TH-#2 ELEVATION						
0					ML	Dark brown, moist, soft, organic, sandy, clayey SILT (Topsoil)
	X			33.5		
					ML	Medium to reddish-brown, moist to very moist, medium stiff to stiff, sandy, clayey SILT
5					SM/RK	Medium to orangish-brown, moist to very moist, medium dense to dense, clayey, silty SAND to highly weathered bedrock
						Total Depth = 6.0 feet No groundwater encountered at time of exploration
10						
15						

LOG OF TEST PITS

PROJECT NO. 1001.052.G | DEVON AVENUE SUBDIVISION | FIGURE NO. A-5

BACKHOE COMPANY: Gene S. McMurrin BUCKET SIZE: 24 inches DATE: 7/11/17

DEPTH (FEET)	BAG SAMPLE	DENSITY TEST	DRY DENSITY (pcf)	MOISTURE CONTENT (%)	SOIL CLASS. (U.S.C.S.)	SOIL DESCRIPTION
						TEST PIT NO. TH-#3 ELEVATION
0					ML	Dark brown, moist, soft, organic, sandy, clayey SILT (Topsoil)
	X			26.6	ML	Medium to reddish-brown, moist to very moist, medium stiff to stiff, sandy, clayey SILT
	X			15.1		
5					SM/RK	Medium to orangish-brown, moist to very moist, medium dense to dense, clayey, silty SAND to highly weathered bedrock
						Total Depth = 5.0 feet No groundwater encountered at time of exploration
10						
15						
						TEST PIT NO. TH-#4 ELEVATION
0					ML	Dark brown, moist, soft, organic, sandy, clayey SILT (Topsoil)
	X			20.5	ML	Medium to reddish-brown, moist to very moist, medium stiff to stiff, sandy, clayey SILT
5					SM/RK	Medium to orangish-brown, moist, medium dense to dense, clayey, silty SAND to highly weathered bedrock
						Total Depth = 5.0 feet No groundwater encountered at time of exploration
10						
15						

LOG OF TEST PITS

PROJECT NO. 1001.052.G | DEVON AVENUE SUBDIVISION | FIGURE NO. A-6

BACKHOE COMPANY: Gene S. McMurrin BUCKET SIZE: 24 inches DATE: 7/11/17

DEPTH (FEET)	BAG SAMPLE	DENSITY TEST	DRY DENSITY (pcf)	MOISTURE CONTENT (%)	SOIL CLASS. (U.S.C.S.)	SOIL DESCRIPTION
						TEST PIT NO. TH-#5 ELEVATION
0					ML	Dark brown, moist, soft, organic, sandy, clayey SILT (Topsoil)
					ML	Medium to reddish-brown, moist to very moist, medium stiff to stiff, sandy, clayey SILT
5					SM/RK	Medium to orangish-brown, moist to very moist, medium dense to dense, clayey, silty SAND to highly weathered bedrock
						Total Depth = 5.0 feet No groundwater encountered at time of exploration
10						
15						
						TEST PIT NO. TH-#6 ELEVATION
0					ML	Dark brown, moist, soft, organic, sandy, clayey SILT (Topsoil)
					ML	Medium to reddish-brown, moist to very moist, medium stiff to stiff, sandy, clayey SILT
5					SM/RK	Medium to orangish-brown, moist, medium dense to dense, clayey, silty SAND to highly weathered bedrock
						Total Depth = 6.0 feet No groundwater encountered at time of exploration
10						
15						

LOG OF TEST PITS

PROJECT NO. 1001.052.G | DEVON AVENUE SUBDIVISION | FIGURE NO. A-7

BACKHOE COMPANY: Gene S. McMurrin BUCKET SIZE: 24 inches DATE: 7/11/17

DEPTH (FEET)	BAG SAMPLE	DENSITY TEST	DRY DENSITY (pcf)	MOISTURE CONTENT (%)	SOIL CLASS. (U.S.C.S.)	SOIL DESCRIPTION
						TEST PIT NO. TH-#7 ELEVATION
0					ML	Dark brown, moist, soft, organic, sandy, clayey SILT (Topsoil)
					ML	Medium to reddish-brown, moist to very moist, medium stiff to stiff, sandy, clayey SILT
5					SM/RK	Medium to orangish-brown, moist, medium dense to dense, clayey, silty SAND to highly weathered bedrock
						Total Depth = 5.0 feet No groundwater encountered at time of exploration
10						
15						
						TEST PIT NO. TH-#8 ELEVATION
0	X			19.9	ML	Dark brown, moist, soft, organic, sandy, clayey SILT (Topsoil)
					ML	Medium to reddish-brown, moust to very moist, medium stiff to stiff, sandy, clayey SILT
5					SM/RK	Medium to orangish-brown, moist, medium dense to dense, clayey, silty SAND to highly weathered bedrock
						Total Depth = 5.0 feet No groundwater encountered at time of exploration
10						
15						

LOG OF TEST PITS

PROJECT NO. 1001.052.G | DEVON AVENUE SUBDIVISION | FIGURE NO. A-8

MAXIMUM DENSITY TEST RESULTS

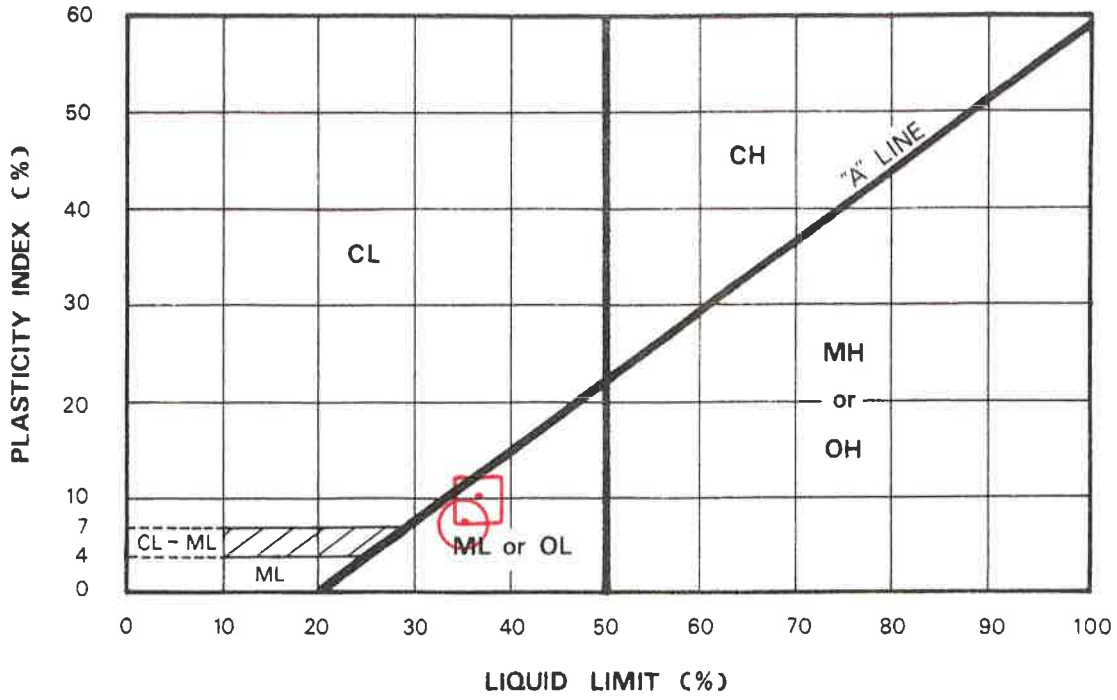
SAMPLE LOCATION	SOIL DESCRIPTION	MAXIMUM DRY DENSITY (pcf)	OPTIMUM MOISTURE CONTENT (%)
TH-#1 @ 1.5'	Medium to reddish-brown, sandy, clayey SILT (ML)	102.0	28.0
TH-#2 @ 1.5'	Medium to reddish-brown, sandy, clayey SILT (ML)	100.0	30.0

EXPANSION INDEX TEST RESULTS

SAMPLE LOCATION	INITIAL MOISTURE (%)	COMPACTED DRY DENSITY (pcf)	FINAL MOISTURE (%)	VOLUMETRIC SWELL (%)	EXPANSION INDEX	EXPANSIVE CLASS.

MAXIMUM DENSITY & EXPANSION INDEX TEST RESULTS

PROJECT NO.: 1001.052.G | DEVON AVENUE SUBDIVISION | FIGURE NO.: A-9



KEY SYMBOL	BORING NO.	SAMPLE DEPTH (feet)	NATURAL WATER CONTENT %	LIQUID LIMIT %	PLASTICITY INDEX %	PASSING NO. 200 SIEVE %	LIQUIDITY INDEX	UNIFIED SOIL CLASSIFICATION SYMBOL
⊙	TH-#1	1.5	21.1	35.0	7.2	90.9		ML
▣	TH-#2	1.5	33.5	37.2	10.1	86.3		ML

REDMOND GEOTECHNICAL SERVICES
PO BOX 20547 • PORTLAND, OREGON 97294

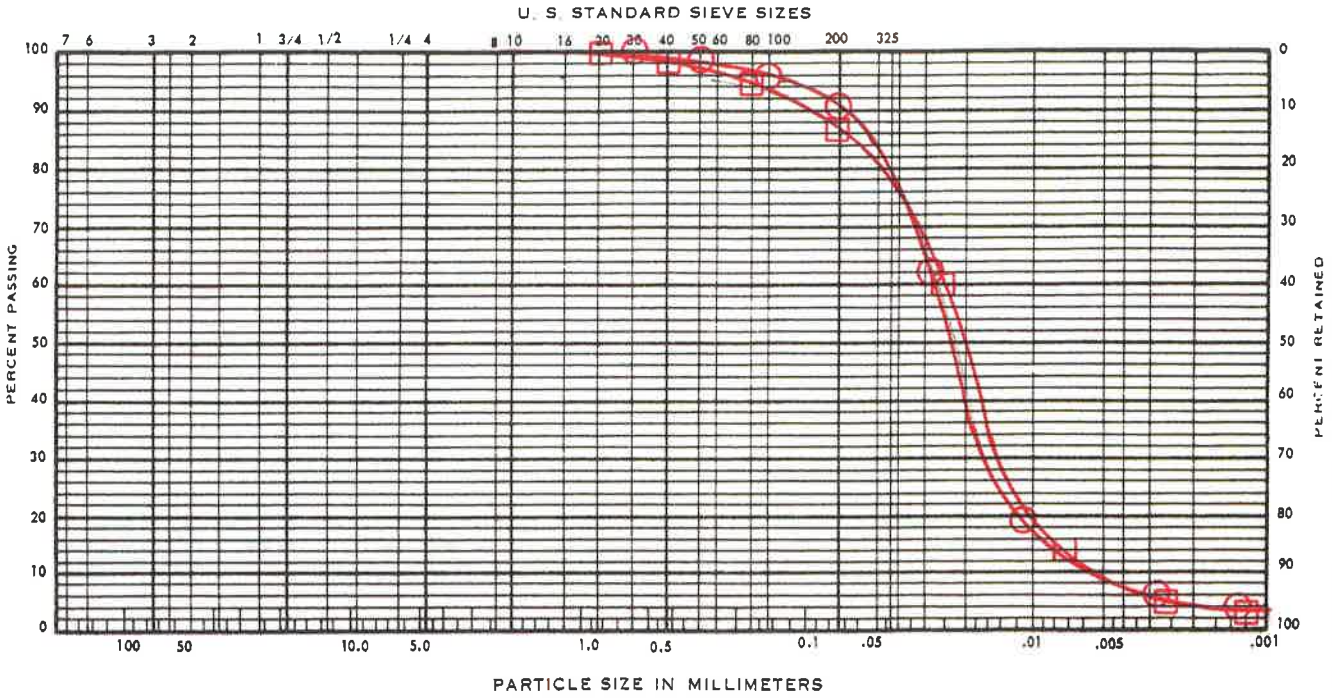
PLASTICITY CHART AND DATA

DEVON AVENUE SUBDIVISION
TL 300, 6719 DEVON AVENUE SE

PROJECT NO.	DATE	
1001.052.G	8/11/17	Figure A-10

UNIFIED SOIL CLASSIFICATION SYSTEM

(ASTM D 422-72)



COBBLES	GRAVEL		SAND			SILT AND CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE	

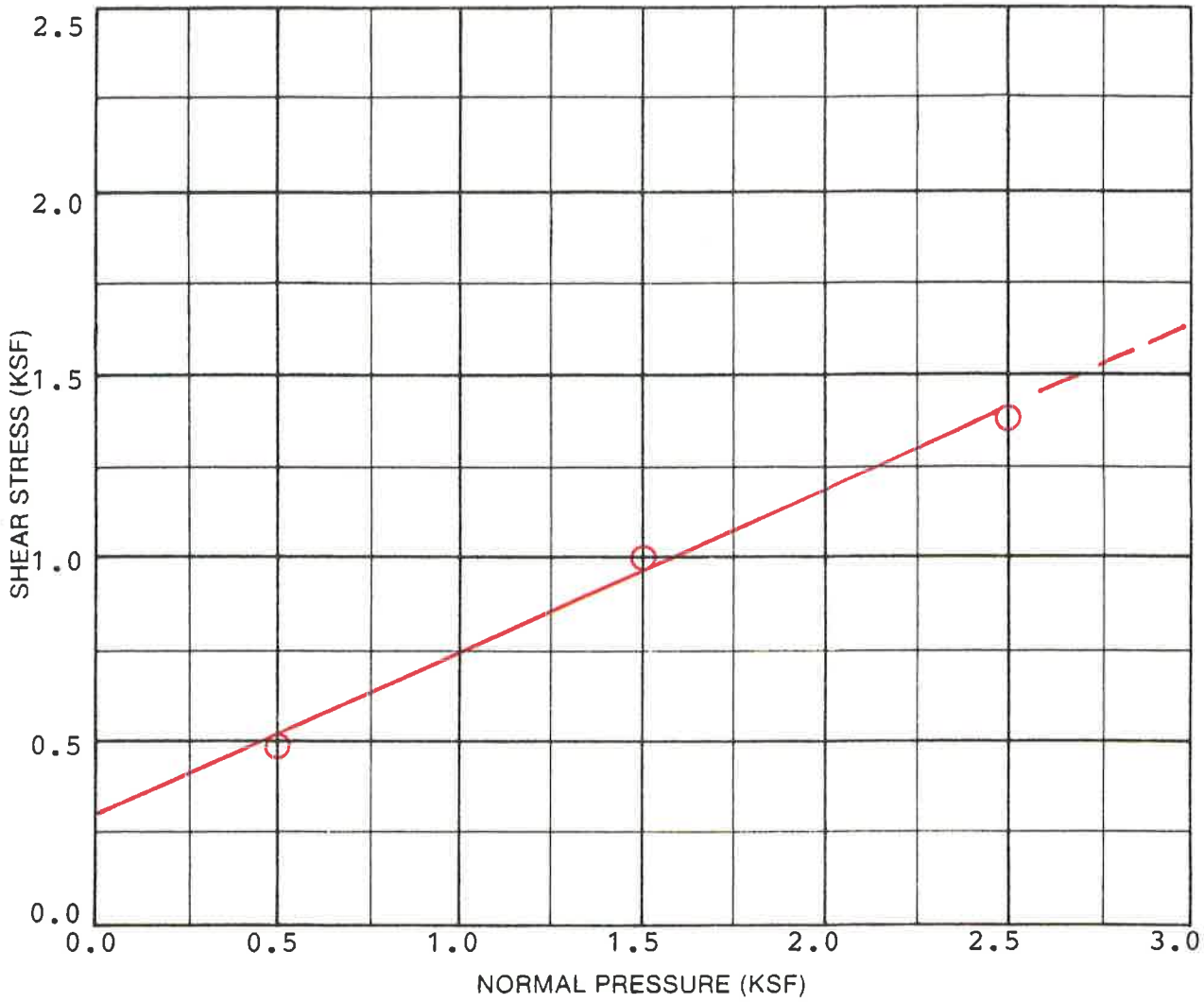
KEY SYMBOL	BORING NO.	SAMPLE DEPTH (feet)	ELEV. (feet)	UNIFIED SOIL CLASSIFICATION SYMBOL	SAMPLE DESCRIPTION
⊖	TH-#1	1.5		ML	Medium to reddish-brown, sandy, clayey SILT
⊟	TH-#2	1.5		ML	Medium to reddish-brown, sandy, clayey SILT

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GRADATION TEST DATA

DEVON AVENUE SUBDIVISION
TL 300, 6719 DEVON AVENUE SE

PROJECT NO.	DATE	FIGURE A-11



SAMPLE DATA	
DESCRIPTION: Medium to reddish-brown, sandy, clayey SILT (ML) (Remolded)	
BORING NO.: TH-#2	
DEPTH (ft.): 1.5'	ELEVATION (ft):
TEST RESULTS	
APPARENT COHESION (C): 300 psf	
APPARENT ANGLE OF INTERNAL FRICTION (Φ): 22°	

TEST DATA				
TEST NUMBER	1	2	3	4
NORMAL PRESSURE (KSF)	0.5	1.5	2.5	
SHEAR STRENGTH (KSF)	0.5	1.0	1.4	
INITIAL H_2O CONTENT (%)	30.0	30.0	30.0	
FINAL H_2O CONTENT (%)	30.6	26.1	20.9	
INITIAL DRY DENSITY (PCF)	90.0	90.0	90.0	
FINAL DRY DENSITY (PCF)	90.4	94.6	99.8	
STRAIN RATE: 0.02 inches per minute				

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PO Box 20547 • Portland, Oregon 97294

DIRECT SHEAR TEST DATA

DEVON AVENUE SUBDIVISION
TL 300, 6719 DEVON AVENUE SE

PROJECT NO	DATE	Figure A-12

RESULTS OF R (RESISTANCE) VALUE TESTS

SAMPLE LOCATION: TH-#1

SAMPLE DEPTH: 1.5 feet bgs

Specimen	A	B	C
Exudation Pressure (psi)	219	329	431
Expansion Dial (o.ooo1")	0	1	3
Expansion Pressure (psf)	0	3	9
Moisture Content (%)	30.6	27.4	22.1
Dry Density (pcf)	93.4	98.2	102.6
Resistance Value, "R"	17	29	37
"R"-Value at 300 psi Exudation Pressure = 28			

SAMPLE LOCATION: TH-#2

SAMPLE DEPTH: 1.5 feet bgs

Specimen	A	B	C
Exudation Pressure (psi)	208	326	439
Expansion Dial (0.0001")	0	2	5
Expansion Pressure (psf)	0	6	15
Moisture Content (%)	32.3	28.6	23.9
Dry Density (pcf)	92.1	96.1	100.7
Resistance Value "R"	15	27	35
"R"-Value at 300 psi Exudation Pressure = 26			

Division 004 Appendix C - Infiltration Testing

Location: TL 300, 6719 Devon Avenue SE	**Date:** July 11, 2017	**Test Hole:** TH-#2
Depth to Bottom of Hole: 3.0 feet	**Hole Diameter:** 6 inches	**Test Method:** Encased Falling Head
Tester's Name: Daniel M. Redmond, P.E., G.E. **Tester's Company:** Redmond Geotechnical Services, LLC		**Tester's Contact Number:** 503-285-0598

Depth (feet)	Soil Characteristics
0-0.5	Dark brown Topsoil
0.5-3.0	Medium to reddish-brown, sandy, clayey SILT (ML)

Time	Time Interval (Minutes)	Measurement (inches)	Drop in Water (inches)	Infiltration Rate (inches/hour)	Remarks
10:00	0	24.00	----		Filled w/12" water
10:20	20	24.50	0.50	1.50	
10:40	20	24.92	0.42	1.26	
11:00	20	25.27	0.35	1.05	
11:20	20	25.57	0.30	0.90	
11:40	20	25.83	0.26	0.78	
12:00	20	26.06	0.23	0.69	
12:20	20	26.27	0.21	0.63	
12:40	20	26.47	0.20	0.60	

Infiltration Test Data Table

Division 004 Appendix C - Infiltration Testing

Location: TL 300, 6719 Devon Avenue SE	**Date:** July 11, 2017	**Test Hole:** TH-#3
Depth to Bottom of Hole: 2.0 feet	**Hole Diameter:** 6 inches	**Test Method:** Encased Falling Head
Tester's Name: Daniel M. Redmond, P.E., G.E. **Tester's Company:** Redmond Geotechnical Services, LLC		**Tester's Contact Number:** 503-285-0598

Depth (feet)	Soil Characteristics
0-0.5	Dark brown Topsoil
0.5-2.0	Medium to reddish-brown, sandy, clayey SILT (ML)

Time	Time Interval (Minutes)	Measurement (inches)	Drop in Water (inches)	Infiltration Rate (inches/hour)	Remarks
10:20	0	12.00	----		Filled w/12" water
10:40	20	12.70	0.70	2.10	
11:00	20	13.22	0.52	1.56	
11:20	20	13.66	0.44	1.32	
11:40	20	14.04	0.38	1.14	
12:00	20	14.37	0.33	0.99	
12:20	20	14.67	0.30	0.90	
12:40	20	14.95	0.28	0.84	
1:00	20	15.22	0.27	0.81	

Infiltration Test Data Table

Appendix "B"

Geologic Hazard Assessment

NORTHWEST GEOLOGICAL SERVICES, INC.
Consulting Geologists and Hydrogeologists
2505 N.E. 42nd Avenue, Portland, Oregon 97213-1201
503-249-1093 ngs@teleport.com

Redmond Geotechnical Services, LLC 27 July 2017
P.O. Box 20547
Portland, Oregon 97294

Attn: Dan Redmond

Geological Assessment
8S/3W-22C Tax Lot 300
Salem, Marion County, Oregon

Dear Dan:

The purpose of this letter is to present Northwest Geological Services, Inc. (NGS') Geologic Hazard Assessment for the above referenced property. This study includes the engineering geology tasks required by Salem and Marion County to develop in areas that appear to have potential geologic hazards. We understand that our services are in support of your client's efforts to partition and develop the property for residential use. The current proposal is to partition the site into approximately 80 residential lots with access streets, and infrastructure as needed. The work for this study was done in accordance with your email authorization of 28 June 2017.

1. SCOPE OF STUDY

The scope of our study was limited to the engineering geologic consultation necessary to assess potential slope hazards, as required by Salem and Marion County. Specifically, our work included:

- Obtain and review LIDAR and historic aerial photographs of the site;
- Obtain and review well logs for the site area;
- Review available geologic and geologic hazard investigations of the site and site area;
- Conduct a geologic reconnaissance of the site and adjacent area;
- Evaluate the potential landslide hazards using the information developed; and,
- Prepare this letter describing our work, findings and recommendations.

Our work did not include some items the County may request for Geological Assessments of slope hazard areas. Specifically, the excluded items are: site grading plans showing cuts and fills; and geologic cross sections showing subsurface conditions. We understand the grading plan will be developed as part of the plans for the building permit application for the site. In our opinion, the geology of the site is simple (Sections 3 and 4) and a cross section is not required to comprehend the subsurface conditions. Nor is a grading plan necessary to asses the stability of the natural slopes. However, those items should be developed in the Geotechnical report for the site.

2. SITE SETTING

The site is south of Battle Creek, north of Rees Hill Rd. and west of Devon Ave SE (Figures 1 and 2) in the northeast corner of the southwest quarter of Section 22, T8S/R3W. The 19.89 acre property is currently accessed from Devon Ave SE. City of Salem Zoning Map 8322S (S ½ 22-8S3W) shows the site is zoned RA (Residential Agricultural). The site is in the South Salem Hills Ground Water Limited Area.

2.1 Location and Physiography

The property is south of Battle Creek and straddles the summit of Reese Hill, a NE-SW ridge that extends from Hylo Rd. SE northeast to Battle Creek (Figures 1 and 2). An intermittent tributary of Battle Creek extend N-S just west of the site. Elevations at the site range from about 652 ft in the south central area (i.e., Reese Hill) down to about 546 ft at the NW corner (Figures 1 and 4). Overall slopes are gentle, but local steep areas occur (Figures 1, 2, 4 and Section 3.2). The overall slope west from the crest of Reese Hill averages 11% to 14%. The slope east towards Devon Ave SE averages 4% to 7%. Both west and east slopes have locally irregular topography with small scale areas of slope up to 30% or rarely 50% (Figure 4). These declivities are 4 to 6 ft high by 20 to 50 ft wide mounds. They lack corresponding uphill depressions as one would expect of slope failures.[1]

The west northeast parts of the site – the areas with irregular topography – are currently covered by mixed conifer and deciduous trees with understory brush (Figure 2). The mature trees have significant root mounds because of the shallow site soils (Figures 4 and 7). Additionally, many of the irregularities appear to be remnants of the former prune orchards. The central and east parts of the site are cleared field with scattered mature Douglas Firs in the SW corner. The existing residence and outbuildings are located in the SW corner (Figure 2).

There are no drainage ways on the site. Drainage is by sheet runoff and via small, shallow declivities developed during past logging and farming of the property. Drainage is towards an unnamed tributary of Battle Creek[2] located about just west of the site and Powell Creek east of the site (Figures 1).

The geology of the area around the site (Section 2.3) is very well known. It was mapped by the State (Bella, 1981), for a Portland State MS thesis (Hoffman, 1981), by the USGS (Beeson and Tolan, 2001) and by us for Chinook Estates and Marion County (NGS, 1994, 1997). Figure 5 shows our mapping of the area around the site.[3] All studies found the site underlain by Miocene volcanic rocks of the Columbia River Basalt (Figures 3 and 4) and pre-basalt sedimentary strata at considerable depth (Section 2.3).

2.2 Site Area Geology

The site lies on the north flank of the west Salem Hills. These hills are an anticlinal uplift that extends from the Willamette River north about 10 miles to Salem and from the

1 The detailed topography (Figures 4 and 7) is interpreted from LIDAR flown for DOGAMI in 2009. Reconnaissance and digital images indicate that site clearing has smoothed or removed some irregularities.

2 Informally called Champion Swale by the City and shown as that on the City LIDAR (figures 4 and 7).

3 The geologic interpretation shown on Figure 5 is based on surficial geologic mapping, aerial photo interpretation, and our evaluation of over 200 water well logs (NGS, 1997). Identification of basalt flows is based on our previous experience and several chemical analyses done by Hoffman (1981).

river to east of I-5. Bella (1981) mapped the site as underlain by Columbia River Basalt (CRB), in substantial agreement with earlier mapping by the U.S. Geological Survey (Fox-worthy, 1970). Both studies found the CRB to be at least 350 ft thick in the site area. Our mapping (Figure 5) and review of well logs in the area indicates that the CRB is at least 350 to 400 ft thick beneath the site. The review also suggests the basalt dips gently north and northeast towards Salem.

Mapping by Hoffman (1981) identified the individual flows within the CRB. The east part of the site is underlain by the youngest hi-magnesium flow of the Grande Ronde Basalt (now known as the Sentinel Bluffs). The Winter Water flow of the Grande Ronde Basalt underlies the steeper slopes marginal to the unnamed drainage west of the site (Figures 4 and 5).

In the site area, the upper few feet of the basalt bedrock underlying ridges and hillsides is generally weathered or decomposed to a hard, red-brown gritty, silty clay or clayey silt. However, the original volcanic texture of the basalt is preserved by the weathering. Thus, the basalt is generally recognizable, even when decomposed.[4] The distinction is important, because the marine sedimentary strata are often involved in slope failures. The weathered basalt is generally not involved in slope failures, except where its physical properties have been ignored during development.

2.3 State and City Estimates of Landslide Hazard Susceptibility

The State conducted assessments of potential landslide hazards for Salem and Marion County. These included notably slide-prone parts of the area (OFR O-77-4 by Schlicker, 1977), the west Salem Hills (IMS-6 by Harvey and Peterson, 1998) and IMS-17 (Hofmeister and others, 2000). These assessments were based on the available geologic studies, including the aforementioned NGS studies, information about soils strength and GIS modeling using the USGS topographic DEM.

IMS-6 does not extend east to the site nor is the site in an active or inactive landslide area (e.g., as defined by OFR O-77-4). IMS-17 estimates the site ranges from very low to moderate relative risk of earth-induced landsliding (Figure 6). The latest State estimates are incorporated into SLIDO[5] that shows no nearby active, historic or prehistoric landslides. However, the SLIDO landslide susceptibility map shows no to moderate landslide hazard in agreement with IMS-17 estimates.

In our experience, IMS-6 estimates for water induced landslide risks in areas similar to the site are generally Category 4. Thus, were this site within the area covered by IMS-6, it would likely have a low to moderate risk of water induced landslides.

The City of Salem provides Landslide Hazard Maps based on slope (generally from LIDAR) and available risk assessments from various government sources (Figure 7). Salem's map assigns 2 to 3 landslide hazard points (low to moderate) to the site.

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4 However, the relict volcanic texture in soils derived from weathering of volcanic units can be hard to see on a cloudy or rainy day. Thus, some investigators have incorrectly mapped decomposed Columbia River Basalt as weathered tuffaceous sedimentary strata, Willamette Silt, or even landslide deposits.

5 SLIDO is Oregon State DOGAMI's Statewide Landslide Information Layer for Oregon. SLIDO compiles available DOGAMI & USGS geologic and hazard mapping: http://www.oregongeology.org/sub/slido/

3. SITE SPECIFIC STUDIES

3.1 Previous Site Development

We reviewed available historic topographic maps and aerial photographs[6] for indications of slope failures at and near the site. The aerial photographs were also reviewed to identify potential areas of cut or fill made during previous use or development of the site.

The maps and photos show that the site has a long history of use as orchard and pasture. The 1936 (Figure 8) and 1944 aerial photos, and the 1950s topographic map and aerial photos show the site as mostly prune orchard typical of the area (Meyering, 2008) with a residence in the southwest part. By 1955, the summit area was cleared of trees and used as pasture. The 1967 photos show the orchard was mostly cut with a few conifers starting in the NW and along Devon Ave SE. A few fruit tree remained along the west end of the site. Most of the site appears fallow and unused in 1967 and in 1976. However, the 1971 and 1985 photos show the east 1/3 of the site around the residence mowed, presumably for hay and/or fire control. The remainder appears to be brush and conifers. The 1990 and 1994 images show only a 2 to 3 acre area around the residence was maintained as yard. The remainder was brush and maturing conifers with a few trails cleared through the site. Digital imagery shows that from 2010 through the summer of 2016 the site was progressively cleared, trees thinned and topography between the trees smoothed.

In summary, the historic maps and photos show the site has been farm and/or orchard with a residence since the 1930s. Properties north, east and south have also been small farms and/or low-density residential. Property to the west has been intermittently logged and cleared as wood lot.

No signs of slope instability or failure were observed on the aerial photographs we examined. The resolution of the aerial photos is adequate to see vehicles on roads and relatively minor earthworks. Consequently, we believe that any significant slope failure should have been identifiable on the photos we reviewed.

3.2 Surface and Subsurface Observations

We conducted a walking reconnaissance of the site, and observed road cuts and accessible excavations in the site neighborhood. As noted, we previously mapped the site area and also conducted an assessment of TL 200 immediately north (NGS, 2008), so we reviewed maps and notes our previous work for this study.

At the highest site elevations, the surficial soils are mostly derived from weathering of the basalt bedrock with an admixture of loess blown up from the Willamette floodplain. These soils generally have a thin topsoil of fine to medium sandy clayey SILT with abundant organic material and occasional pebbles, cobbles and boulders of weathered rock. On slopes below the ridgetop, soils are decomposed basalt: red brown, stiff to hard silty sandy CLAY to sandy clayey SILT with sparse to abundant rock fragments.

Four test pits were excavated on 11 July 2017 to assess site soils (Figure 7). TP-1, -2 and -4 found severely weathered Sentinel Bluffs basalt at 3 ft, 3.5 ft and 2.5 ft, respectively. TP-3 found small boulders of weathered Winter Water basalt at 1 ft. The boulders were in a

6 Stereo pairs of aerial photos taken in 1936, 1944, 1955, 1967, 1971, 1976, 1985, 1990 and 2000 were reviewed. We also reviewed USGS, Google Earth and Earth Explorer imagery from 1994-2016.

matrix of severely weathered to decomposed basalt. Practical refusal with the small excavator was reached at depths of 3 to 5 ft in all test pits.

Soils above the weathered basalt were 1 to 2 ft of medium, red brown fine sandy SILT (loess) in TP-1 and -4. Weathered basalt in TP-3 was overlain by medium, red brown clayey SILT that graded to stiff at 2.5 ft and to hard decomposed basalt from 2.5 to 3.5-4 ft. In TP-4 the basalt was overlain by 1 ft of organic SILT topsoil.

The complete natural weathering profile is exposed north of the site in an excavation along Sahalee Dr SE. (Figure 4). About 1/4 mile north of the site, excavations for Lone Oak Rd SE expose unweathered Sentinel Bluffs and Winterwater basalt at depths of 8 to 15 ft.

In summary, soils exposed in the test pits at the site are consistent with soils in the surrounding area: thin, competent surficial soils derived mostly from in-situ weathering of the basalt with an admixture of loess along ridges and uplands. Valley soils are also competent, thin and a mix of colluvium and decomposed basalt.

3.3 Ground Water Observations

No seeps or springs were observed at the site. Springs have been reported at the contact between Sentinel Bluffs and Winterwater Basalt on neighboring properties. The nearest recorded spring is south of the site just south of Rees Hill Rd SE.

Driller's logs of nearby wells indicate that the regional water table is below the elevation of the Battle Creek flood plain. Most wells have modest yields and depths to water of 170 to 250 ft. However, local perched zones occur between the basalt flows. Such perched zones supply the aforementioned springs.

We suspect that the relatively clayey, moderately-low-permeability soils saturate quickly during heavy precipitation. That is because the severely weathered top of the basalt bedrock is shallow and relatively impervious compared to the overlying soils.

4. Interpretation of Site Conditions

The reconnaissance, test pits, area roadcuts and excavations, and historic aerial photographs, confirm that the site is underlain by bedrock consisting of Columbia River Basalt, as mapped previously (NGS, 1994, 1997, 2008). The top of the Basalt is severely weathered to decomposed, but it is still relatively competent material. The relatively fresh bedrock on the slopes is typically covered by 3 to 5 ft of soils (decomposed rock). However, basalt crops out locally and may be found near ground surface anywhere in the immediate site area.[7]

Typically, the soils derived from the basalt creep on moderate and steep slopes. Curved and pistol-butted trees are present on the steepest slopes at the site and these trees are consistent with soil creep. However, the 60 to 80 year-old firs are erect at the tops, indicating that creep is slow enough for the trees to keep up with it.

Available information indicates that the Basalt extends for 350 to 400 ft depth below the site. Site mapping indicates that the flows dip gently north beneath the site. Together

[7] Except that bedrock is at greater depths below the alluvium of the Battle Creek floodplain, north of the site, and its tributaries east and west of the site.

with the competent nature of the site materials, it seems most unlikely to us that there is any significant risk of slope failure involving the bedrock. This interpretation is **supported** by a complete lack of evidence that the site has suffered from slope instability in the past.

However, a few cuts for roads in the area have failed locally where they were too steep or became locally saturated during intense storms. Additionally, our previous experience in the area indicates that careful design and construction is required to use local soils as fill.

5. Conclusions and Recommendations

We found no evidence that slopes at the site have ever failed, nor indication that they will fail under the expected range of future conditions. The site and neighbors have survived severe rainfall events in 1964, 1974, 1994, 1996, 2003, 2006 and most recently December 2016. Numerous slides occurred at other sites in the Salem region during these severe storms.

Even though the site soils have not failed, they do creep, and similar soils have failed locally in overly-steep excavations (NGS, 2008). Consequently, we recommend that foundations be placed on competent material. Foundations and retaining walls should be designed by a qualified professional to withstand forces from soil creep and lateral loads from earthquakes. Given the thin soils and shallow depth to weathered bedrock, this requirement should not be onerous.

Cuts higher than 4 ft and steeper than 1V:2H, and fills more than 2 ft thick, should be designed by a qualified professional and the design reviewed by a geotechnical engineer. Walls, including retaining walls or foundation walls higher than 4 ft, should also be designed by a qualified professional and the design reviewed by a geotechnical Engineer.

Additionally, we recommend against infiltration of large volumes of water into the small volumes of ground, particularly during intense rainfall events such as those noted above. Some slope failures in the Eola and Salem Hills have been caused by injection of large volumes of storm water. Consequently, it is our opinion that surface runoff from roofs and pavements should be dispersed over a broad area to simulate natural conditions. If it is found necessary to dispose of large amounts runoff to the soil, the location and method should be thoroughly evaluated by a qualified professional. Your geotechnical Engineer should also review any such plans.

In our opinion, if you follow the above recommendations, partitioning and development of TL 300 for single family residences as you propose (Figure 9) should not increase the potential for slope hazards on the site or adjacent properties.

6. LIMITATIONS AND LIABILITY

We call your attention to the paragraphs on Warranty and Liability in the General Conditions (dated 1/2016) approved previously by you. Interpretations and recommendations presented herein are based on limited data and observations. Actual subsurface conditions may vary from those inferred from the limited information available to us. If site excavations for development find conditions to differ significantly from those inferred

herein, you should contact us and provide an opportunity for us to review our recommendations for the site.

We thank you for the opportunity to assist you with your project. Please contact us if you have questions about the report.

Yours very truly,
Northwest Geological Services, Inc.



Clive F. (Rick) Kienle, Jr., PhD, CEG
Principal Geologist and Vice President

NGS Reference 235.96-1

7. REFERENCES

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8S/3W-22C Tax Lot 300		
Salem, Marion County, Oregon		
Landslide Hazard Study		
	Site Location Map	
NGS, Inc.	July 2017	Figure 1



8S/3W-22C Tax Lot 300
Salem, Marion County, Oregon
Landslide Hazard Study
Oblique View 23 July 2016 Aerial Image

NGS, Inc.	July 2017	Figure 2

N E SSE



Panorama of central part of site looking N (on left) and around to SSE (on right). Note brush mound at far right behind vehicle.



Mature Douglas Firs at the East end of the site show slight curvature from moderate creep in the thin site soil.

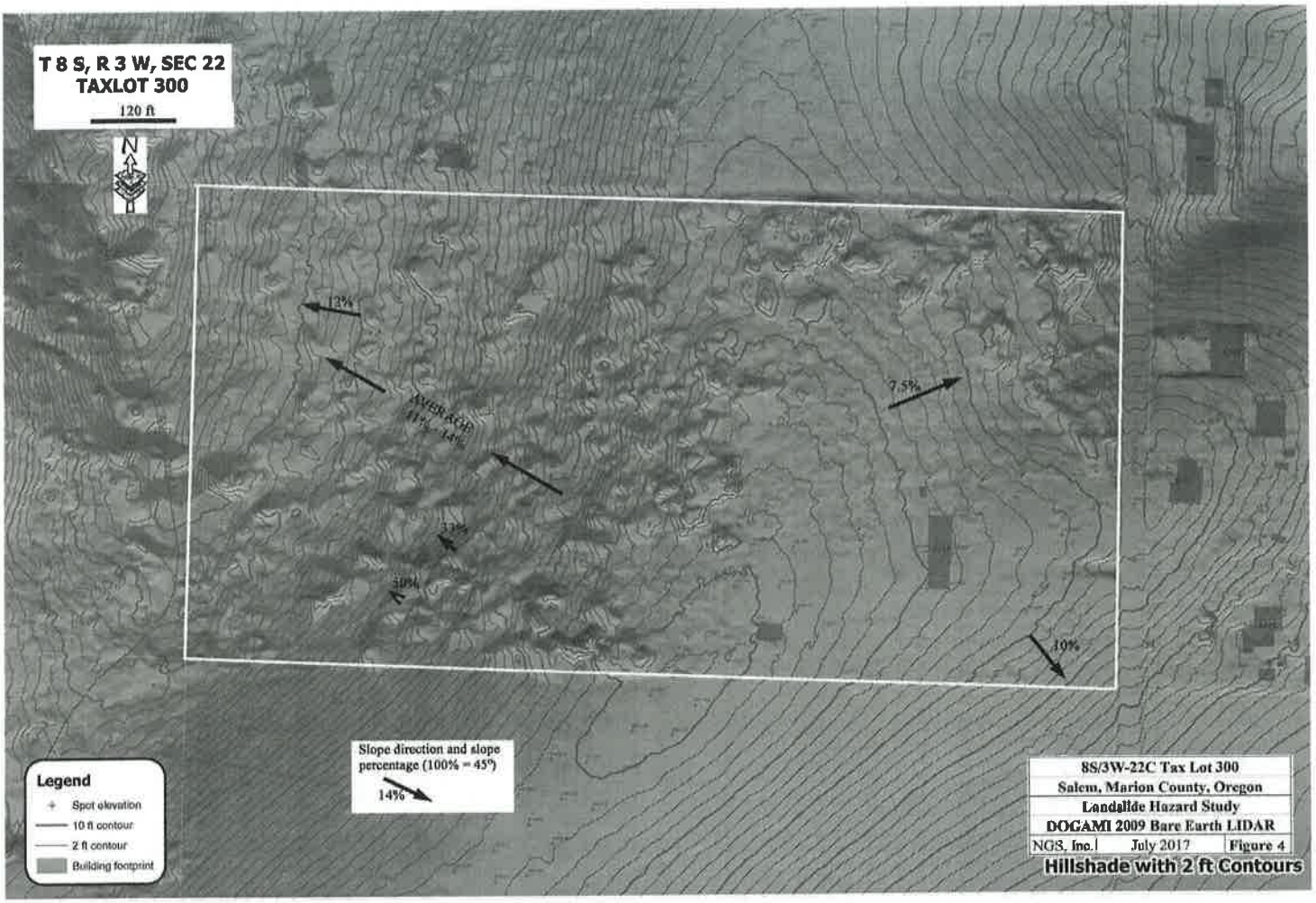


Smooth topography in NE part of site is typical of the entire site with exception of brush-covered piles of soil and woody debris left from clearing old orchard.

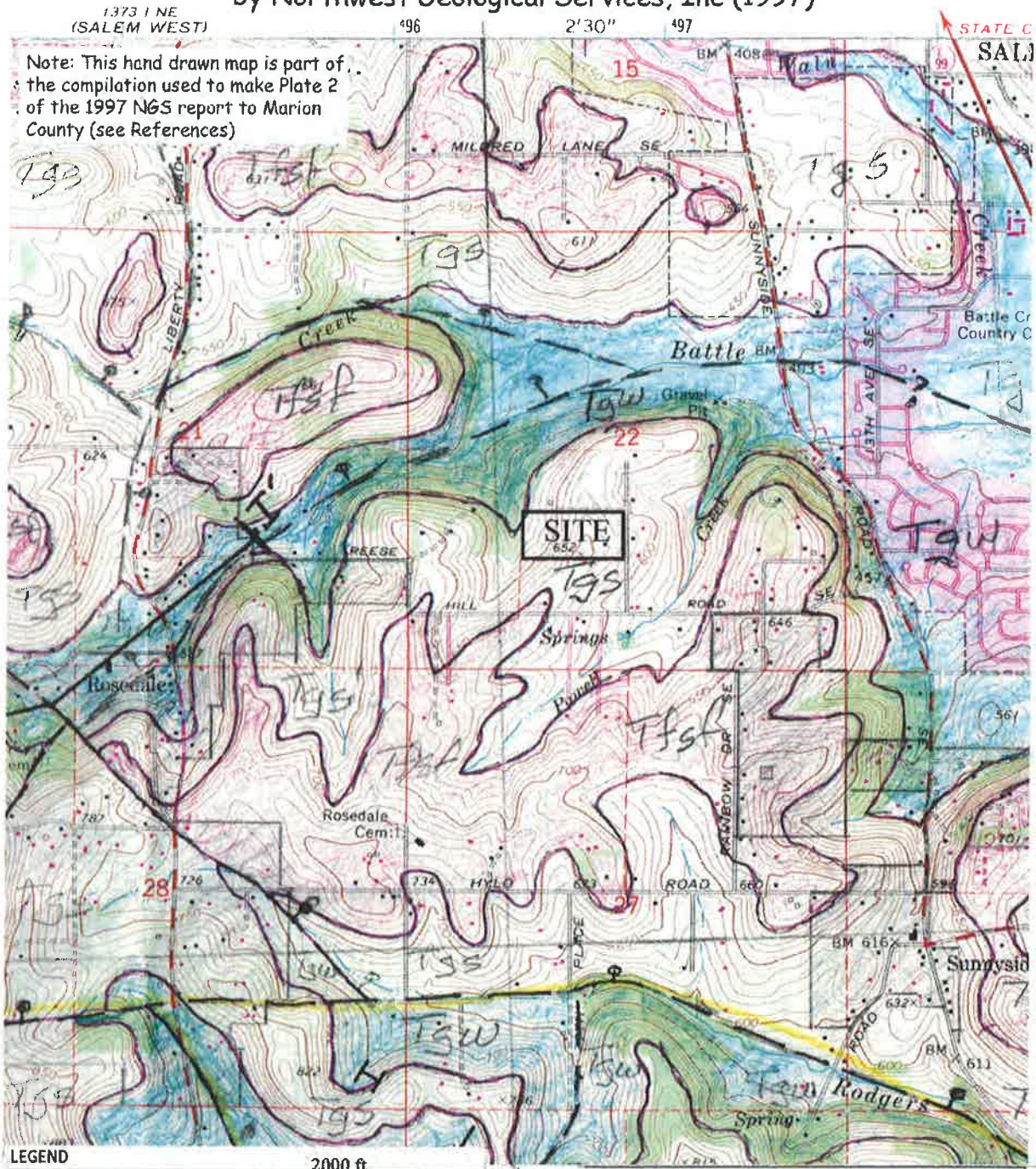


Decomposed Sentinel Bluff basalt spoils from test pit TP-1

8S/3W-22C Tax Lot 300		
Salem, Marion County, Oregon		
Landslide Hazard Study		
Site Photographs		
NGS, Inc.	July 2017	Figure 3


T 8 S, R 3 W, SEC 22
TAXLOT 300
120 ft
N
13%
AVERAGE
11% - 14%
33%
30%
7.5%
10%
Slope direction and slope percentage (100% = 45°)
14%
Legend
Spot elevation
10 ft contour
2 ft contour
Building footprint
8S/3W-22C Tax Lot 300
Salem, Marion County, Oregon
Landslide Hazard Study
DOGAMI 2009 Bare Earth LIDAR
NG3, Inc. | July 2017 | Figure 4
Hillshade with 2 ft Contours

Portion of Geologic Map of Sidney Quadrangle by Northwest Geological Services, Inc (1997)



LEGEND

2000 ft

N

Geologic Bedrock Units

Tfs - Basalt of Silver Falls (Frenchman Springs Mamber, Wanapum Basalt)

Tfg - Basalt of Gingko (Frenchman Springs Mamber, Wanapum Basalt)

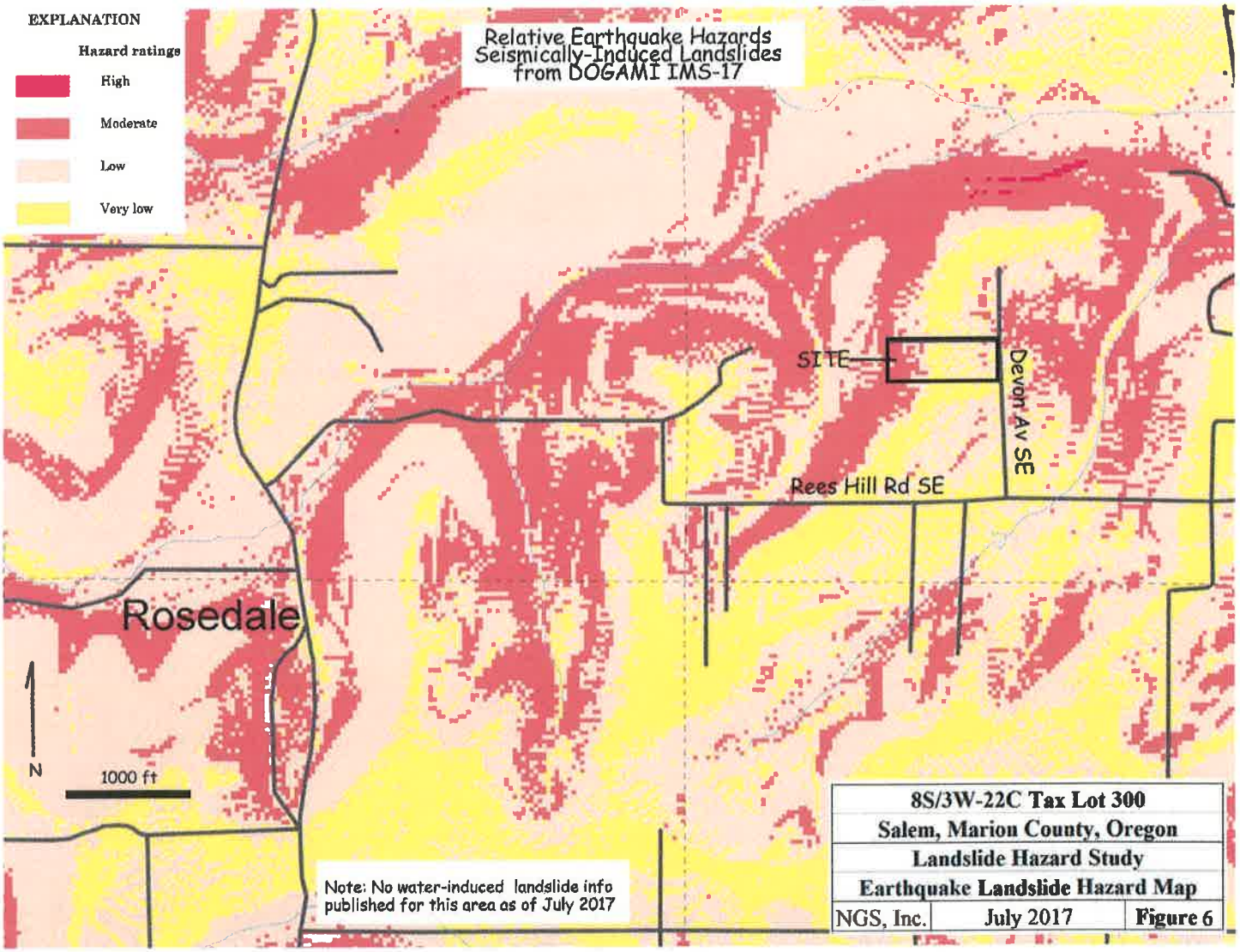
Tgs - Sentinel Bluff Basalt (Grand Ronde Basalt)

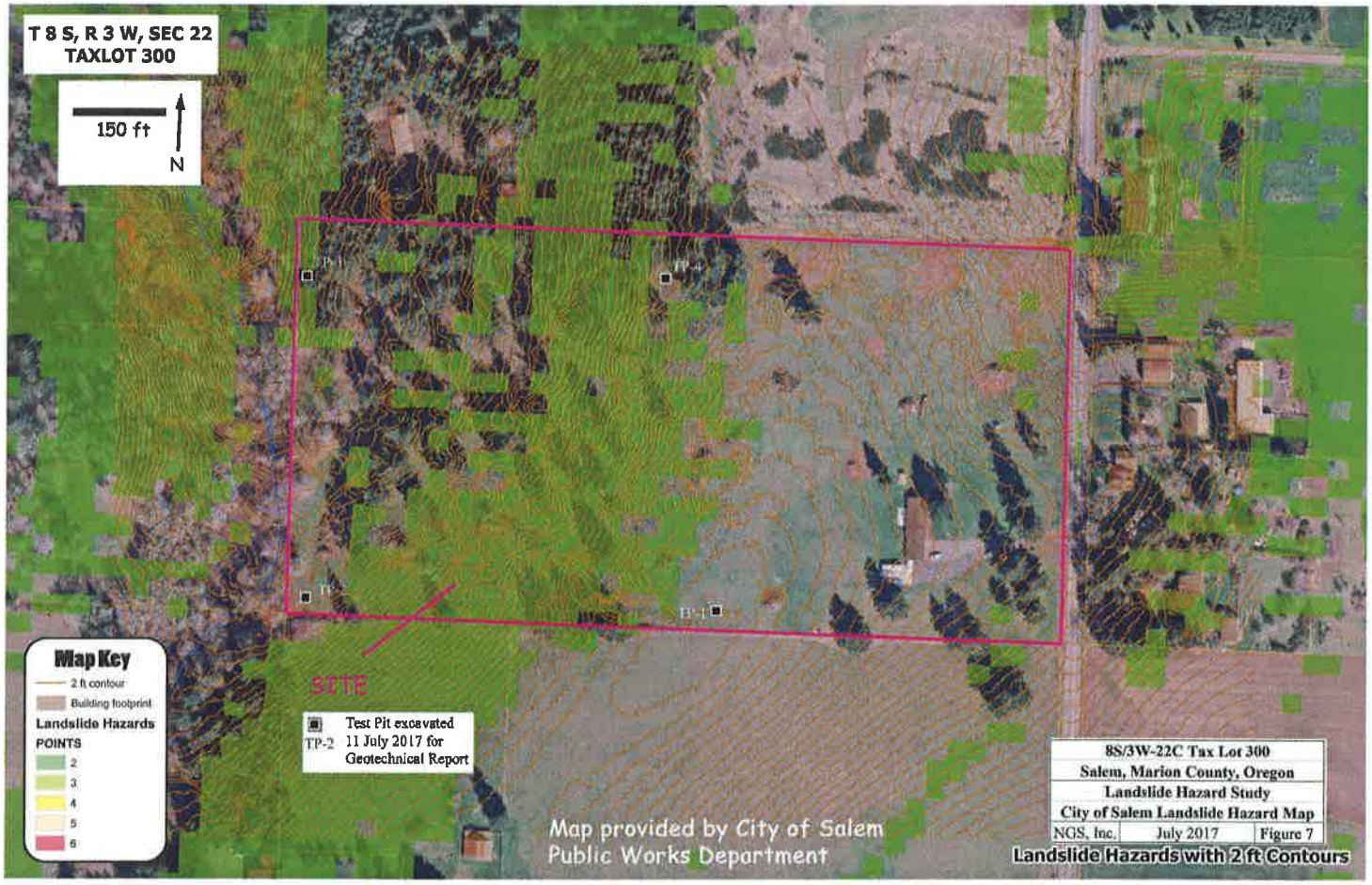
Tgw - Winterwater Basalt (Grande Ronde Basalt)

Geologic Structures

Normal Fault, ball on down side, dashed where approximate

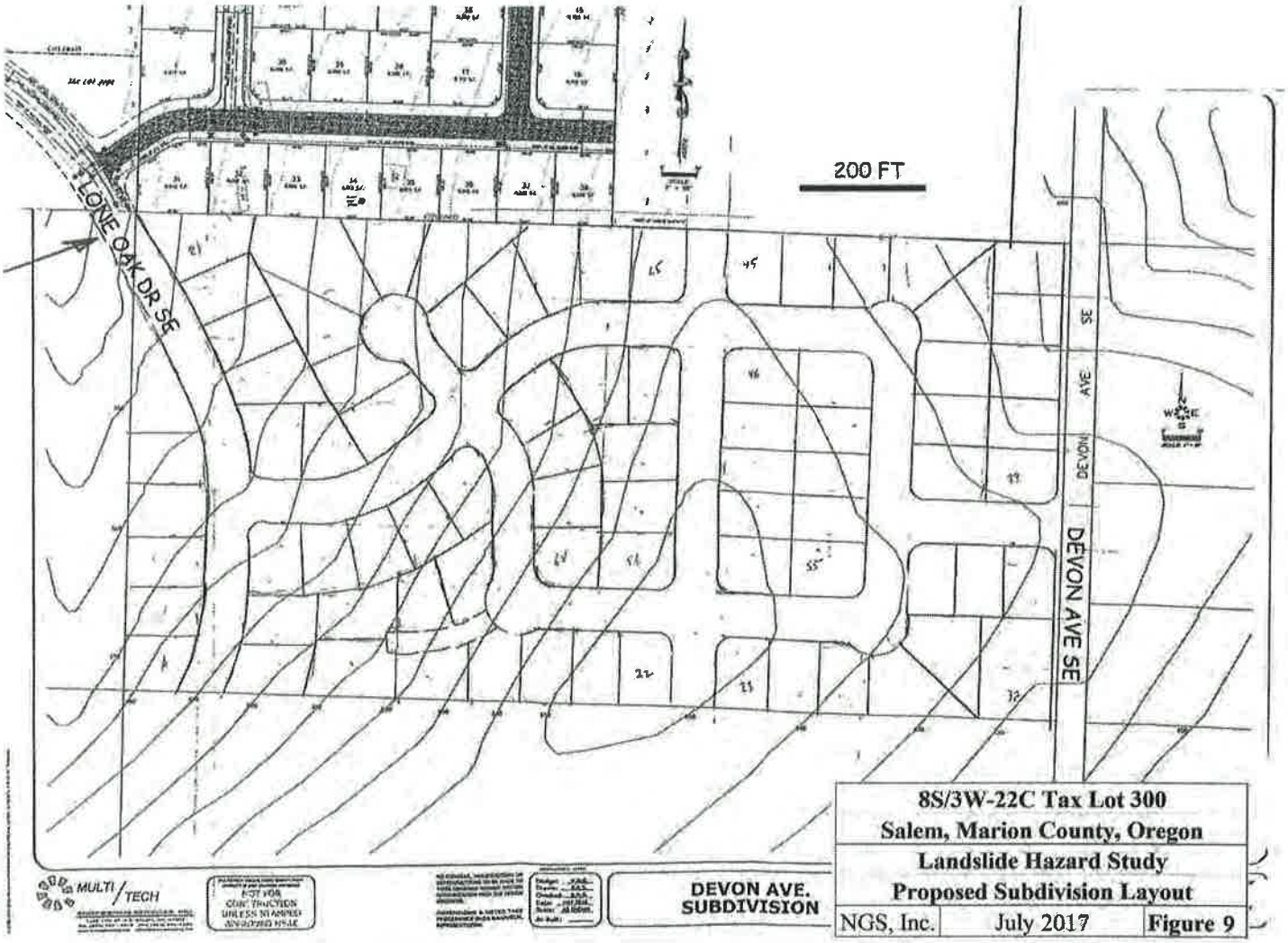
8S/3W-22C Tax Lot 300		
Salem, Marion County, Oregon		
Landslide Hazard Study		
Area Geologic Map		
NGS, Inc.	July 2017	**Figure 5**


EXPLANATION
Hazard ratings
High
Moderate
Low
Very low
Relative Earthquake Hazards
Seismically-Induced Landslides
from DOGAMI IMS-17
SITE
Devon Av SE
Rees Hill Rd SE
Rosedale
N
1000 ft
Note: No water-induced landslide info published for this area as of July 2017
8S/3W-22C Tax Lot 300
Salem, Marion County, Oregon
Landslide Hazard Study
Earthquake Landslide Hazard Map
NGS, Inc.
July 2017
Figure 6


T 8 S, R 3 W, SEC 22
TAXLOT 300
150 ft
N
TP-1
TP-4
TP-3
B-1
SITE
Map Key
2 ft contour
Building footprint
Landslide Hazards
POINTS
2
3
4
5
6
TP-2 Test Pit excavated 11 July 2017 for Geotechnical Report
Map provided by City of Salem Public Works Department
8S/3W-22C Tax Lot 300
Salem, Marion County, Oregon
Landslide Hazard Study
City of Salem Landslide Hazard Map
NGS, Inc. July 2017 Figure 7
Landslide Hazards with 2 ft Contours



8S/3W-22C Tax Lot 300		
Salem, Marion County, Oregon		
Landslide Hazard Study		
1936 Aerial Photograph		
NGS, Inc.	July 2017	Figure 8



8S/3W-22C Tax Lot 300
Salem, Marion County, Oregon
Landslide Hazard Study
Proposed Subdivision Layout

NGS, Inc.	July 2017	**Figure 9**

CITY OF Salem AT YOUR SERVICE

City of Salem, Oregon
Community Development Department
Planning Division

Permit Application Center
Phone: 503-588-6213
Fax: 503-588-6005
www.cityofsalem.net/planning
@Salem_Planning

Expedited Land Division Application Form (ORS 197.360-380)

What is an Expedited Land Division?

The expedited land division process provides an alternative to the standard procedures for certain land division requests. An applicant may choose to use the expedited land division process if their land division request meets all of the applicable requirements specified in Oregon Revised Statute (ORS) 197.360 (see reverse side). The steps in this procedure differ from the regular subdivision procedure, but still include a public review and opportunity for appeal. The steps are described in ORS 197.365-375.

Is it faster than the regular subdivision process?

The expedited land division process is intended to streamline the regular land use process that land divisions normally follow under state law, which allows up to 120 days for final city approval. In Salem, however, the typical processing time for a land division application (subdivision, partition, or replat) that meets city standards and is complete when submitted, is far less than the 120 days that state law allows. Therefore, in Salem, in many cases there is no difference in processing time between a regular land division and expedited land division.

What are the requirements to qualify for the Expedited Land Division process?

ORS 197.360 lists the requirements to qualify for an expedited land division review. These requirements are summarized below. The full text of ORS 197.360 is included on the reverse side of this form.

The proposed land division (i.e. subdivision, partition, or replat):

1. Must be on residentially zoned land and must be solely for the purposes of residential use;
2. Must not create building lots that provide for dwellings or accessory buildings within areas that contain natural resource protections, such as, but not limited to, the Willamette Greenway;
3. Must satisfy all City street standards and connectivity requirements; and
4. Must either:
    a. *Create enough lots or parcels to allow building residential units at 80 percent or more of the maximum net density permitted by the zoning designation of the site; or*
    b. *Will be sold or rented to households with incomes below 120 percent of the median family income for the county in which the project is built.*

Why am I receiving this application form for Expedited Land Division now?

The expedited land division process has existed since 1995; however, the 2015 Oregon Legislature required that all land division applicants be notified of the expedited land division option and how to apply.

Are you applying for an Expedited Land Division?

Yes ☐ **No** ☒ (If yes, then attach a written description of how the proposal satisfies ORS 197.360)

Applicant Name: Brandie L Dalton Telephone: 503-363-9227

Applicant Mailing Address: 1155 SE 13th, Salem, OR 97302

Site Address: 6719 Devon Avenue

Brandie Dalton Brandie Dalton 11-9-2020

(Signature) (Print Name) (Date)

ORS 197.360:

(1) As used in this section:

(a) "Expedited land division" means a division of land under ORS 92.010 to 92.192, 92.205 to 92.245 or 92.830 to 92.845 by a local government that:

(A) Includes only land that is zoned for residential uses and is within an urban growth boundary.

(B) Is solely for the purposes of residential use, including recreational or open space uses accessory to residential use.

(C) Does not provide for dwellings or accessory buildings to be located on land that is specifically mapped and designated in the comprehensive plan and land use regulations for full or partial protection of natural features under the statewide planning goals that protect:

(i) Open spaces, scenic and historic areas and natural resources;

(ii) The Willamette River Greenway;

(iii) Estuarine resources;

(iv) Coastal shorelands; and

(v) Beaches and dunes.

(D) Satisfies minimum street or other right-of-way connectivity standards established by acknowledged land use regulations or, if such standards are not contained in the applicable regulations, as required by statewide planning goals or rules.

(E) Will result in development that either:

(i) Creates enough lots or parcels to allow building residential units at 80 percent or more of the maximum net density permitted by the zoning designation of the site; or

(ii) Will be sold or rented to households with incomes below 120 percent of the median family income for the county in which the project is built.

(b) "Expedited land division" includes land divisions that create three or fewer parcels under ORS 92.010 to 92.192 and meet the criteria set forth in paragraph (a) of this subsection.

(2) An expedited land division as described in this section is not a land use decision or a limited land use decision under ORS 197.015 or a permit under ORS 215.402 or 227.160.

(3) The provisions of ORS 197.360 to 197.380 apply to all elements of a local government comprehensive plan and land use regulations applicable to a land division, including any planned unit development standards and any procedures designed to regulate:

(a) The physical characteristics of permitted uses;

(b) The dimensions of the lots or parcels to be created; or

(c) Transportation, sewer, water, drainage and other facilities or services necessary for the proposed development, including but not limited to right-of-way standards, facility dimensions and on-site and off-site improvements.

(4) An application for an expedited land division submitted to a local government shall describe the manner in which the proposed division complies with each of the provisions of subsection (1) of this section.

#6502

MARION COUNTY
SUBDIVISION/CONDOMINIUM NAME REQUEST

Marion County Surveyor – 5155 Silverton Road NE, Salem, OR 97305
Fax 503-588-7970 Phone 503-588-5155

Proposed Subdivision Name : (Please do not use the word "Subdivision" as part of the name.)

NOTE: ***Reserved names expire 2 years from original approval date.***

Grantham Crest

Applicant Name: HSE Development, LLC

Address: 3425 Boone Rd SE
Salem/OR
97317

Owner/Developer: Same as above

Phone: 503-363-9727 Date: 9-21-18

Location: Is the subdivision in a city? Yes ✓ No ____

City Name: Salem

Section: 8 Township: 22 Range: 3W
083W22C/TL 300

Office Use Only

Date Received: 9/21/2018

The Proposed Name is:

X Approved as Submitted ***(approval expires in 2 years)***

____ Not Approved for the following reason(s):

Phil R. Jones Date 9/24/2018
Marion County Surveyor

MARION COUNTY
SUBDIVISION/CONDOMINIUM NAME REQUEST

Marion County Surveyor – 5155 Silverton Road NE, Salem, OR 97305
Fax 503-588-7970 Phone 503-588-5155

Proposed Subdivision Name : (Please do not use the word "Subdivision" as part of the name.)

NOTE: ***Reserved names expire 2 years from original approval date.***

Northstar Phase 2

Applicant Name: Karl Ivanov

Address: 9550 SE Clackamas Rd
Clackamas, OR 97015

Owner/Developer: Karl Ivanov

Phone: 503-655-7933 Date: 9-21-18

Location: Is the subdivision in a city? Yes ✓ No_____

City Name: Salem

Section: 32 Township: 6S Range: 2W

Office Use Only

Date Received: 9/21/2018

The Proposed Name is:

X Approved as Submitted ***(approval expires in 2 years)***

_____ Not Approved for the following reason(s):

Phil R Jones Date 9/24/2018
Marion County Surveyor

NOTICE OF DECISION

PLANNING DIVISION
555 LIBERTY ST. SE, RM 305
SALEM, OREGON 97301
PHONE: 503-588-6173
FAX: 503-588-6005

CITY OF Salem AT YOUR SERVICE

Si necesita ayuda para comprender esta informacion, por favor llame 503-588-6173

DECISION OF THE PLANNING ADMINISTRATOR

SUBDIVISION CASE NO.: SUB19-05

APPLICATION NO. : 19-109483-LD

NOTICE OF DECISION DATE: July 29, 2019

REQUEST: A tentative subdivision plan to divide approximately 19.89 acres into 84 lots ranging in size from 6,000 square feet to 10,630 square feet. The applicant is requesting an alternative street standard to increase the grade of Lone Oak Road SE (collector) from eight percent to twelve percent and increase the grade of two local streets, One Avenue and Two Avenue, from twelve percent to approximately fifteen percent.

The subject property is approximately 19.89 acres in size, zoned RS (Single Family Residential), and located at 6719 Devon Avenue SE (Marion County Assessor Map and Tax Lot Numbers 083W22C00300).

APPLICANT(S): HSF Development, LLC (Chris Jundt, Anthony R. Kreitzberg, Kelley D. Hamilton)

OWNER(S): Devon Property, LLC (Kelley D. Hamilton)

LOCATION: 6719 Devon Avenue SE / 97306

CRITERIA: Subdivision: SRC 205.010(d)

FINDINGS: The facts and findings are in the attached Order dated July 29, 2019.

DECISION: The Planning Administrator **APPROVED** Subdivision Case No.: SUB19-05 subject to the following conditions of approval:

Condition 1: Lots 9-15 and 79-82 shall have fire sprinklers provided at the time of building permits or meets the City of Salem Fire Department standards.

Condition 2: Obtain demolition permits and remove all structures (dwelling and accessory structure) located on the subject property.

Condition 3: The designated front lot line for lots 19, 20, 42, 63, and 69 are as follows:

Lot Number	Front Lot Line
Lot 9	West
Lot 19	North
Lot 20	North
Lot 42	South
Lot 63	South
Lot 69	South

Condition 4: Prior to final plat, the applicant shall provide stormwater service to properties within the Powell Creek basin by:

a. Between Powell Creek and the subject property, acquire easements from downstream property owners and construct off-site improvements as needed to convey stormwater runoff from the proposed development to Powell Creek pursuant to PWDS; or

b. Demonstrate preservation of downstream stream health through the use of continuous flow simulation that simulates such hydrologic factors as interception, soil moisture, surface runoff, interflow, base flow, evapotranspiration, and ground-water recharge. The flow control system shall be designed to match peak flow rates and durations from the pre-developed to the developed condition for the ½ 2-year, 5-year, 10-year, 25-year, and 100-year events.

Condition 5: Prior to final plat, the applicant shall comply with the conditions of approval for UG Preliminary Declaration Case No. UGA17-06:

a. Condition 1 – Acquire and convey land for dedication of right-of-way to equal a width of 60 feet in an alignment approved by the Public Works Director as specified for the future Collector street in the Salem Transportation System Plan (TSP) from the existing terminus of Lone Oak Road SE at Sahalee Drive SE to Rees Hill Road SE.

b. Condition 2 – Construct Lone Oak Road SE with a minimum 34-foot-wide full Collector street improvement within the subject property and from the north line of the subject property to Sahalee Drive SE.

c. Condition 3 – Construct Lone Oak Road SE with a minimum 34-foot-wide linking street improvement from the south line of the subject property to Rees Hill Road SE.

d. Condition 4 – Pay the applicable reimbursement fee as established in the Lone Oak Road Reimbursement District pursuant to Resolution 2018-08 to contribute the development's proportional share of the costs of the full Collector street improvement of Lone Oak Road SE from Muirfield Avenue SE to Rees Hill Road SE (in the event the Reimbursement District is terminated prior to final plat approval, no reimbursement fee shall be due). The reimbursement fee shall be credited toward the performance guarantee amount required in SRC 110.100(c) for Lone Oak Road SE construction.

e. Condition 5 – Convey land for dedication along the entire frontage of Devon Avenue SE to equal 30 feet from centerline.

f. Condition 6 – Construct a half-street improvement to Local street standards along the entire frontage of Devon Avenue SE.

g. Condition 7 – Construct 8-inch Salem Wastewater Management Master Plan sewer lines necessary to serve the development. The nearest available sewer main appears to be located at the terminus of Lone Oak Road SE at Sahalee Drive SE.

h. Condition 8 – As a condition of development within the S-3 water service area, the applicant shall construct the following facilities as specified in the Water System Master Plan and approved by the Public Works Director:

   1. A 12-inch S-3 main in the portion of Lone Oak Road SE within the subject property.
   2. A 12-inch S-3 main connecting east/west through the property from Lone Oak Road SE to Devon Avenue SE.
   3. A 12-inch S-3 main along the entire frontage of Devon Avenue SE.

i. A 12-inch S-3 main in Lone Oak Road SE from the north line of the subject property to the existing main at the Lone Oak Road SE/Sahalee Drive SE intersection and/or from the south line of the subject property to the existing main in Rees Hill Road SE.

j. Condition 9 – As a condition of development within the S-4 water service area, the applicant shall construct the following facilities as specified in the Water System Master Plan and approved by the Public Works Director:
   1. An S-4 domestic pump station with sufficient capacity to serve entire the S-4 water service area between Lone Oak Road SE and Devon Avenue SE.
   2. An 8-inch S-4 main from the pump station to the S-4 water service area within the subject property.
   3. One or more 8-inch S-4 mains to serve each lot within the S-4 service area.
   4. An 8-inch S-4 main extended to the south line of the subject property.
   5. One or more S-3 mains that provide adequate fire flow to the entire S-4 area

Condition 6: Prior to final plat, a site plan review application shall be approved for the construction of the proposed pumping station.

Condition 7: Construct water, stormwater, and sewer systems to serve each lot

Condition 8: Any existing septic tank systems on the subject property shall be abandoned in accordance with Department of Environmental Quality standards.

Condition 9: Construct internal streets to local street standards, except for an alternative street grade up to 15 percent is authorized for portions of One Street and Two Street as shown in Attachment B.

Condition 10: Dedicate a 10-foot-wide public utility easement (PUE) along the street frontage of all internal streets.

Condition 11: The proposed 15-foot pedestrian pathway shall be relocated between Lot 16 and Lot 17.

Condition 12: Prior to final plat, the applicant have an approved tree conservation plan.

The rights granted by the attached decision must be exercised, or an extension granted, by August 14, 2021 or this approval shall be null and void.

Application Deemed Complete:	July 2, 2019
Notice of Decision Mailing Date:	July 29, 2019
Decision Effective Date:	August 14, 2019
State Mandate Date:	October 30, 2019

Case Manager: Olivia Glantz, OGlantz@cityofsalem.net

This decision is final unless written appeal from an aggrieved party is filed with the City of Salem Planning Division, Room 305, 555 Liberty Street SE, Salem OR 97301, **no later than 5:00 p.m., Tuesday, August 13, 2019.** The notice of appeal must contain the information required by SRC 300.1020 and must state where the decision failed to conform to the provisions of the applicable code section, SRC Chapter(s) 205. The appeal must be filed in duplicate with the City of Salem Planning Division. The appeal fee must be paid at the time of filing. If the appeal is untimely and/or lacks the proper fee, the appeal will be rejected. The Salem Planning Commission will review the appeal at a public hearing. After the hearing, the Planning Commission may amend, rescind, or affirm the action, or refer the matter to staff for additional information.

The complete case file, including findings, conclusions and conditions of approval, if any, is available for review at the Planning Division office, Room 305, City Hall, 555 Liberty Street SE, during regular business hours.

http://www.cityofsalem.net/planning

BEFORE THE PLANNING ADMINISTRATOR
OF THE CITY OF SALEM
(SUBDIVISION PLAT NO. 17-02)

Si necesita ayuda para comprender esta información, por favor llame 503-588-6173
http://www.cityofsalem.net/planning

IN THE MATTER OF THE	**)**	**FINDINGS AND ORDER**
TENTATIVE APPROVAL OF	**)**	
SUBDIVISION PLAT NO. 19-05;	**)**	
6719 DEVON AVENUE SE	**)**	**JULY 29, 2019**

REQUEST

A tentative subdivision plan to divide approximately 19.89 acres into 84 lots ranging in size from 6,000 square feet to 10,115 square feet. The applicant is requesting an alternative street standard to increase the grade of Lone Oak Road SE (collector) from eight percent to twelve percent and increase the grade of two local streets, One Avenue and Two Avenue, from twelve percent to approximately fifteen percent.

The subject property is approximately 19.89 acres in size, zoned RS (Single Family Residential), and located at 6719 Devon Avenue SE (Marion County Assessor Map and Tax Lot Numbers 083W22C00300).

DECISION

The tentative subdivision plan is APPROVED subject to the applicable standards of the Salem Revised Code, the findings contained herein, and the following conditions of final plat approval, unless otherwise indicated:

Condition 1: Lots 9-15 and 79-82 shall have fire sprinklers provided at the time of building permits or meets the City of Salem Fire Department standards.

Condition 2: Obtain demolition permits and remove all structures (dwelling and accessory structure) located on the subject property.

Condition 3: The designated front lot line for lots 19, 20, 42, 63, and 69 are as follows:

Lot Number	Front Lot Line
Lot 9	West
Lot 19	North
Lot 20	North
Lot 42	South
Lot 63	South
Lot 69	South

Condition 4: Prior to final plat, the applicant shall provide stormwater service to properties within the Powell Creek basin by:

a. Between Powell Creek and the subject property, acquire easements from downstream property owners and construct off-site improvements as needed to convey stormwater runoff from the proposed development to Powell Creek pursuant to PWDS; or

b. Demonstrate preservation of downstream stream health through the use of continuous flow simulation that simulates such hydrologic factors as interception, soil moisture, surface runoff, interflow, base flow, evapotranspiration, and ground-water recharge. The flow control system shall be designed to match peak flow rates and durations from the pre-developed to the developed condition for the ½ 2-year, 5-year, 10-year, 25-year, and 100-year events.

Condition 5: Prior to final plat, the applicant shall comply with the conditions of approval for UG Pr Declaration Case No. UGA17-06:

a. Condition 1 – Acquire and convey land for dedication of right-of-way to equal a width of 60 feet in an alignment approved by the Public Works Director as specified for the future Collector street in the Salem Transportation System Plan (TSP) from the existing terminus of Lone Oak Road SE at Sahalee Drive SE to Rees Hill Road SE.

b. Condition 2 – Construct Lone Oak Road SE with a minimum 34-foot-wide full Collector street improvement within the subject property and from the north line of the subject property to Sahalee Drive SE.

c. Condition 3 – Construct Lone Oak Road SE with a minimum 34-foot-wide linking street improvement from the south line of the subject property to Rees Hill Road SE.

d. Condition 4 – Pay the applicable reimbursement fee as established in the Lone Oak Road Reimbursement District pursuant to Resolution 2018-08 to contribute the development's proportional share of the costs of the full Collector street improvement of Lone Oak Road SE from Muirfield Avenue SE to Rees Hill Road SE (in the event the Reimbursement District is terminated prior to final plat approval, no reimbursement fee shall be due). The reimbursement fee shall be credited toward the performance guarantee amount required in SRC 110.100(c) for Lone Oak Road SE construction.

e. Condition 5 – Convey land for dedication along the entire frontage of Devon Avenue SE to equal 30 feet from centerline.

f. Condition 6 – Construct a half-street improvement to Local street standards along the entire frontage of Devon Avenue SE.

g. Condition 7 – Construct 8-inch Salem Wastewater Management Master Plan sewer lines necessary to serve the development. The nearest available sewer main appears to be located at the terminus of Lone Oak Road SE at Sahalee Drive SE.

h. Condition 8 – As a condition of development within the S-3 water service area, the applicant shall construct the following facilities as specified in the Water System Master Plan and approved by the Public Works Director:

   1. A 12-inch S-3 main in the portion of Lone Oak Road SE within the subject property.
   2. A 12-inch S-3 main connecting east/west through the property from Lone Oak Road SE to Devon Avenue SE.
   3. A 12-inch S-3 main along the entire frontage of Devon Avenue SE.
   4. A 12-inch S-3 main in Lone Oak Road SE from the north line of the subject property to the existing main at the Lone Oak Road SE/Sahalee Drive SE intersection and/or from the south line of the subject property to the existing main in Rees Hill Road SE.

i. Condition 9 – As a condition of development within the S-4 water service area, the applicant shall construct the following facilities as specified in the Water System Master Plan and approved by the Public Works Director:
   1. An S-4 domestic pump station with sufficient capacity to serve entire the S-4 water service area between Lone Oak Road SE and Devon Avenue SE.
   2. An 8-inch S-4 main from the pump station to the S-4 water service area within the subject property.
   3. One or more 8-inch S-4 mains to serve each lot within the S-4 service area.
   4. An 8-inch S-4 main extended to the south line of the subject property.
   5. One or more S-3 mains that provide adequate fire flow to the entire S-4 area

Condition 6: Prior to final plat, a site plan review application shall be approved for the construction of the proposed pumping station.

Condition 7: Construct water, stormwater, and sewer systems to serve each lot

Condition 8: Any existing septic tank systems on the subject property shall be abandoned in accordance with Department of Environmental Quality standards.

Condition 9: Construct internal streets to local street standards, except for an alternative street grade up to 15 percent is authorized for portions of One Street and Two Street as shown in Attachment B.

Condition 10: Dedicate a 10-foot-wide public utility easement (PUE) along the street frontage of all internal streets.

Condition 11: The proposed 15-foot pedestrian pathway shall be relocated between Lot 16 and Lot 17.

Condition 12: Prior to final plat, the applicant have an approved tree conservation plan.

PROCEDURAL FINDINGS

1. On April 18, 2019, an application for a Tentative Subdivision Plan was filed proposing to divide a 19.89 acre property at 6719 Devon Avenue SE (Attachment B) into 84 lots.

2. After the applicant submitted additional required information, the application was deemed complete for processing on July 2, 2019. Notice to surrounding property owners was mailed pursuant to Salem Revised Code on July 3, 2019.

3. The state-mandated local decision deadline is October 30, 2019.

SUBSTANTIVE FINDINGS

1. Proposal

The tentative plan proposes to divide the property into 84 lots, ranging from 6,000 square feet to 10,115 square feet (Attachment B). All lots within the subdivision are proposed to take access directly from public streets.

The applicant has not proposed any specific phasing for the subdivision or residential development. The proposed configuration does not include any double frontage lots.

2. Existing Conditions

Site and Vicinity

The subject property consists of one rectangular tax lot extending approximately 1,300 feet eastward from the connection with Lone Oak Road frontage. The abutting properties to the north, south and east are vacant undeveloped properties. One of the 10 acre properties to the north has been previously approved for a single family subdivision (SUB08-4). The previously approved subdivision on the northern 10 acres required as a condition of approval connection to the subject property.

The eastern portion of the tax lot, near the Devon Avenue SE frontage, is developed with single family residences. The western portion have remained undeveloped over the years. The tentative subdivision plan shows the existing dwelling and accessory structures will be removed.

The vicinity is primarily characterized by rural residential areas, agricultural use and the approximately 600 feet of continuous frontage along Devon Avenue SE. Overall elevation change on the site ranges from approximately 652 feet to 542 feet above sea level, sloping downward to Devon Avenue SE frontage to the east property line and the west property line. Environmental resource and natural hazard maps show no areas of wetlands, or floodplains on the subject property. The subject property has a steep slope and landslide hazard areas on the western portion.

Salem Area Comprehensive Plan (SACP) Designation

Urban Growth Policies: The subject property is located inside of the Salem Urban Growth Boundary and inside the corporate city limits.

Comprehensive Plan Map: The subject property is designated "Single Family Residential" on the Salem Area Comprehensive Plan (SACP) Map. The surrounding properties are designated as follows:

North: Developing Residential

South: Developing Residential

East: (Across Devon Avenue SE) Developing Residential

West: Developing Residential

Zoning and Surrounding Land Use

The subject property is zoned RS (Single Family Residential) and is currently occupied by a single family residence. The surrounding properties are zoned and used as follows:

North: RA (Residential Agriculture); large lot single family residential

South: UT-10 (Urban Transition - 10 Acres); large lot single family residential

East: (Across Devon Avenue SE) UT-10 (Urban Transition - 10 Acres); large lot single family residential

West: UT-10 (Urban Transition - 10 Acres); large lot single family residential

Relationship to Urban Service Area

The subject property is outside of the City's Urban Service Area. The subject property has received approval for an Urban Growth Preliminary Declaration (UGA17-06)

Infrastructure

Water: The subject property is located within the S-3 water service level, below an elevation of 629-feet, and partially in S-4 water service level, above 629 feet.

A 10-inch S-3 water line is located in Devon Avenue SE. Mains of this size generally convey flows of 700 to 1,700 gallons per minute.

A 10-inch S-3 water line is located in Lone Oak Road SE. Mains of this size generally convey flows of 700 to 1,700 gallons per minute.

A 16-inch S-3 water line is located in Rees Hill Road SE. Mains of this size generally convey flows of 3,800 to 8,800 gallons per minute.

There is no existing S-4 water system.

Sewer: The property is split into two sewage drainage basins – partially toward the west line and partially toward the east.

The nearest adequate linking facility for the west basin appears to be an existing 8-inch sewer line approximately 400 feet to the northwest of the property in Lone Oak Road SE.

The nearest adequate linking facility for the east basin appears to be an existing 8-inch sewer line approximately 850 feet to the northeast of the property. The east basin may be able to receive service from the existing sewer main in Lone Oak Road SE.

Storm Drainage: Champion Swale is mapped to the west of the subject property, while an unidentified creek runs through the western portion of the property. Powell Creek is mapped east of the subject property. No public storm mains are adjacent to the proposed development.

The subject property is within the Battle Creek Drainage Basin.

Parks: The subject property abuts the lot designated for the future Neighborhood Park (NP 28) along its southern boundary. This property was recently purchased by the City to be developed as NP 28. A street connection and a pedestrian connection are proposed with the tentative plan. Since the City has purchased NP 28, condition 10 of UGA17-06 has been satisfied.

Streets: Lone Oak Road SE right of way currently abuts the subject property to the north. Although, the improvement terminates at Sahalee Drive SE, approximately 500-feet north of the subject property. This segment of Lone Oak Road SE is designated as a Collector street in the Salem Transportation System Plan (TSP).

- The standard for this street classification is a 34-foot improvement within a 60-foot right-of-way.
- The portion of Lone Oak Road SE currently terminates at it's intersection with Sahalee Drive SE.

Devon Avenue SE abuts the subject property along the southern boundary of the subject property, is designated as a local street in the TSP and under Marion County jurisdiction.

- The standard for this street classification is a 30-foot-wide improvement within a 60-foot-wide right-of-way.
- The abutting portion of Devon Avenue SE has an approximate 26-foot-wide improvement within a 40-foot-wide right-of-way.

3. Land Use History

UGA17-06: An Urban Growth Area Permit to determine public facilities and infrastructure required to develop 19.89 acres for single family development.

Anxc-725: An annexation of approximately 20.35 acres of territory, including approximately 19.74 acres of private property and 0.61 acres of right-of-way of Devon Avenue SE.

4. Public and Private Agency Review

Public Works Department - The City of Salem Public Works Department, Development Services Section, reviewed the proposal and has provided their comments and recommendation for plat approval. Their memorandum is included as Attachment D.

Fire Department - The Salem Fire Department submitted comments indicating that if Lone Oak Road SE is going to be extend from Sahalee Drive SE to Rees Hill Road SE, the second required means of Fire Department access will be provided to this development. Fire hydrants are required within 600 feet of all portions of the structures. Two Avenue has a slope in excess of 12% for over 200 feet, therefore Lots 9, 10, 11, 12, 13, 14, 15, 79, 80, 81, and 82 will require fire sprinklers. Lots 9 and 10 will require fire sprinklers unless access if provided from Lone Oak and Lot 79 may not require

sprinklers if access is taken from Three Street. To ensure adequate fire safety the following conditions applies:

Condition 1: Lots 9-15 and 79-82 shall have fire sprinklers provided at the time of building permits or meets the City of Salem Fire Department standards.

Salem-Keizer Public Schools – Planning and Property Services staff for the school district reviewed the proposal and submitted comments indicating that sufficient school capacity exists at the middle school and high school level to serve future development within the proposed subdivision but not at the elementary school level. The school district indicated that the subject property is eligible for transportation to all three schools.

Marion County Public Works – The Marion County Public Works Department commented in regards to construction traffic on Rees Hill Road. Construction vehicles are not part of the subdivision review and the applicant has been provided comments from Marion County.

5. Neighborhood Association Comments

The subject property is within the South Gateway Neighborhood Association. Notice of the application was provided to the neighborhood association, pursuant to SRC 300.620(b)(2)(B)(iii), which requires public notice to be sent to "any City-recognized neighborhood association whose boundaries include, or are adjacent to, the subject property." No comments were received from the South Gateway Neighborhood Association prior to the comment deadline.

6. Public Comments

All property owners within 250 feet of the subject property were mailed notification of the proposed subdivision. One property owner in the vicinity of the site submitted comments prior to the comment deadline. Comments received expressed concerns with the following issues:

A. **Traffic**. Comments indicate that a traffic along Rees Hill Road SE is dangerous and narrow when lined with cars. Reduced sight lines near Reese Hill Road and Liberty Road S due to utilities, landscaping and slope.

Staff Response: The proposed subdivision will result in a boundary street improvement of Devon Lane SE along the frontage of the subject property to local street standards and the extension of new local streets through the subdivision are in conformance with current standards for vehicle, pedestrian, and bicycle facilities. The applicant will be connecting Lone Oak Street to Reese Hill Road. These streets will connect to existing streets and fill in gaps within the current street network. Because the proposed development will not generate traffic volumes sufficient to require a traffic impact analysis (TIA) under SRC 803.015,

off-site mitigation to the existing transportation system is not warranted as a condition of the proposed development. The Assistant City Traffic Engineer has had an opportunity to review the proposal and has indicated that as proposed, the street network will provide for safe, orderly, and efficient circulation of traffic into, through, and out of the subdivision.

7. Criteria for Granting a Tentative Subdivision

The Salem Revised Code (SRC), which includes the Unified Development Code (UDC), implements the Salem Area Comprehensive Plan land use goals, and governs development of property within the city limits. The subdivision process reviews development for compliance with City standards and requirements contained in the UDC, the Salem Transportation System Plan (TSP), and the Water, Sewer, and Storm Drain System Master Plans. A second review occurs for the created lots at the time of site plan review/building permit review to assure compliance with the UDC. Compliance with conditions of approval to satisfy the UDC is checked prior to city staff signing the final subdivision plat.

SRC Chapter 205.010(d) sets forth the criteria that must be met before approval can be granted to a subdivision request. The following subsections are organized with approval criteria shown in bold, followed by findings of fact upon which the Planning Administrator's decision is based. The requirements of SRC 205.010(d) are addressed within the specific findings which evaluate the proposal's conformance with the applicable criteria. Lack of compliance with the following criteria is grounds for denial of tentative plan or for the issuance of conditions of approval to more fully satisfy the criteria.

SRC 205.010(d)(1): The tentative subdivision complies with all standards of this Chapter and with all applicable provisions of the UDC, including, but not limited to, the following:

(A) Lot standards, including, but not limited to, standards for lot area, lot width and depth, lot frontage, and designation of front and rear lot lines.

SRC Chapter 511 (Single Family Residential): The proposed subdivision would divide the 19.89-acre property into 85 lots and street rights-of-way with no remainder. The subject property is currently zoned RS (Single Family Residential).

The minimum lot area requirements of the RS zone are established under SRC 511.010(a) as follows:

Lot Standards for RS zone (*see* SRC Chapter 511, Table 511-2)

Requirement	Minimum Standard
Lot Area (Single Family)	4,000 square feet
Lot Width	40 feet

Lot Depth (Single Family)	70 feet
Street Frontage	40 feet

Proposed lots in the subdivision range from approximately 6,000 square feet to 10,115 square feet. The proposed lots exceed minimum lot area, dimension, and frontage requirements and therefore conform to the applicable standards. The proposed lots within the subdivision are also of sufficient size and dimension to permit future development of uses allowed within the zone.

Setback Requirements: SRC Chapter 511 establishes the following setback standards for development within an RS (Single Family Residential) zone:

Front Yards and Yards Adjacent to Streets:

- Minimum 12 feet (minimum 20 feet when adjacent to a street designated 'Collector', 'Arterial', or 'Parkway')

- Minimum 20 feet for garages

Rear Yards:

- Minimum 14 feet (for any portion of a main building not more than one story in height); or

- Minimum 20 feet (for any portion of a main building greater than one story in height)

Interior Side Yards:

- Minimum 5 feet

The western portion of the subject property is primarily undeveloped and the eastern portion contains a single family dwelling and accessory structure. The proposal does not indicate that either structure is to remain as part of the subdivision. In order to ensure that the subject property complies with the setback and use requirements of the RS zone upon recording of the plat, the following condition shall apply:

Condition 2: Obtain demolition permits and remove all structures (dwelling and accessory structure) located on the subject property.

Setbacks on the proposed lots will be evaluated at the time of building permit.

As conditioned, the proposal meets the requirements of SRC Chapter 511.

SRC Chapter 800 (General Development Standards):

SRC 800.015(a) (Buildings to be on a Lot): Pursuant to SRC 800.015(a), every building or structure shall be entirely located on a lot. The subject property is primarily undeveloped, except for a single family residence on the eastern portion of each tax lot. The applicant is not proposing to retain the dwelling as part of the proposed development. Based on the proposed tentative subdivision layout the dwelling and accessory structure would cross proposed lot lines, and building envelopes. Condition 2 requires the applicant to obtain demolition permits and remove these structures prior to final plat, thereby ensuring compliance with SRC 800.015(a).

SRC 800.020 (Designation of Lot Lines): SRC 800.020 establishes front lot line designation requirements for corner lots, double frontage lots, flag lots, and all other lots. There is one double frontage lot, no flag lots and several corner lots proposed within the subdivision. The proposed subdivision has several corner lots, which meet the minimum depth and width for each frontage. Although, lots 18, 41, 50, 51, 60, 61, and 69 do not have the minimum width for each frontage. In addition, the single double frontage lot does not have adequate frontage along Two Avenue and would only be able to take access from Lone Oak Road. As a condition of approval the front lot lines on lots 9, 19, 20, 42, 63, and 69 shall be as listed below:

Condition 3: The designated front lot line for lots 19, 20, 42, 63, and 69 are as follows:

Lot Number	Front Lot Line
Lot 9	West
Lot 19	North
Lot 20	North
Lot 42	South
Lot 63	South
Lot 69	South

As conditioned, the proposal conforms to the requirements of SRC Chapter 800.

(B) City Infrastructure Standards.

The Public Works Department reviewed the proposal for compliance with the City's public facility plans pertaining to provision of water, sewer, and storm drainage facilities. While SRC Chapter 205 does not require submission of utility construction plans prior to tentative subdivision plan approval, it is the responsibility of the applicant to design and construct adequate City water, sewer, and storm drainage facilities to serve the proposed development prior to final plat approval without impeding service to the surrounding area.

SRC Chapter 71 (Stormwater): The proposed partition is subject to the stormwater requirements of SRC Chapter 71 and the revised Public Works Design Standards

(PWDS) as adopted in Administrative Rule 109, Division 004. To demonstrate that the proposed parcels can meet the PWDS, the applicant shall provide an engineered tentative stormwater design to accommodate future impervious surface on all lots.

Public Works staff has reviewed the tentative stormwater design and recommends that additional area will be required to accommodate the stormwater facilities needed to serve the proposed development. The final stormwater facility requirements will be determined at the time of construction plan approval.

The nearest available public storm system appears to be Champion Swale to the west and county ditches along Devon Avenue SE to the east of the subject property. The applicant shall link the on-site system to existing facilities that are defined as adequate under SRC 200.005.

The applicant has two options for providing stormwater service to properties within the Powell Creek basin: (1) Between Powell Creek and the subject property, acquire easements from downstream property owners and construct off-site improvements as needed to convey stormwater runoff from the proposed development to Powell Creek pursuant to PWDS; or (2) Demonstrate preservation of downstream stream health through the use of continuous flow simulation that simulates such hydrologic factors as interception, soil moisture, surface runoff, interflow, base flow, evapotranspiration, and ground-water recharge. The flow control system shall be designed to match peak flow rates and durations from the pre-developed to the developed condition for the ½ 2-year, 5-year, 10-year, 25-year, and 100-year events.

In order to ensure that the subdivision can accommodate required stormwater facilities, the following condition of plat approval shall apply:

Condition 4: Prior to final plat, the applicant shall provide stormwater service to properties within the Powell Creek basin by:

a. Between Powell Creek and the subject property, acquire easements from downstream property owners and construct off-site improvements as needed to convey stormwater runoff from the proposed development to Powell Creek pursuant to PWDS; or

b. Demonstrate preservation of downstream stream health through the use of continuous flow simulation that simulates such hydrologic factors as interception, soil moisture, surface runoff, interflow, base flow, evapotranspiration, and ground-water recharge. The flow control system shall be designed to match peak flow rates and durations from the pre-developed to the developed condition for the ½ 2-year, 5-year, 10-year, 25-year, and 100-year events.

As conditioned, the proposal meets the requirements of SRC Chapter 71.

SRC Chapter 200 (Urban Growth Management): The Urban Growth Management Program requires that an Urban Growth Area (UGA) Development Permit must be obtained prior to development of property outside the Salem Urban Service Area. The subject property is located outside the Urban Service Area and an application for an Urban Growth Preliminary Declaration (UGA17-06) for the subject property has been previously approved. As indicated by the Public Works Department, water, sewer, and stormwater infrastructure is available to serve the proposed development, subject to the requirements listed in the Urban Growth Preliminary Declaration. Pursuant to SRC 200.025(e), the developer must construct these improvements as a condition of approval for the tentative subdivision plan. To ensure compliance with UGA17-06, the following conditions apply:

Condition 5: Prior to final plat, the applicant shall comply with the conditions of approval for UG Preliminary Declaration Case No. UGA17-06:

a. Condition 1 – Acquire and convey land for dedication of right-of-way to equal a width of 60 feet in an alignment approved by the Public Works Director as specified for the future Collector street in the Salem Transportation System Plan (TSP) from the existing terminus of Lone Oak Road SE at Sahalee Drive SE to Rees Hill Road SE.

b. Condition 2 – Construct Lone Oak Road SE with a minimum 34-foot-wide full Collector street improvement within the subject property and from the north line of the subject property to Sahalee Drive SE.

c. Condition 3 – Construct Lone Oak Road SE with a minimum 34-foot-wide linking street improvement from the south line of the subject property to Rees Hill Road SE.

d. Condition 4 – Pay the applicable reimbursement fee as established in the Lone Oak Road Reimbursement District pursuant to Resolution 2018-08 to contribute the development's proportional share of the costs of the full Collector street improvement of Lone Oak Road SE from Muirfield Avenue SE to Rees Hill Road SE (in the event the Reimbursement District is terminated prior to final plat approval, no reimbursement fee shall be due). The reimbursement fee shall be credited toward the performance guarantee amount required in SRC 110.100(c) for Lone Oak Road SE construction.

e. Condition 5 – Convey land for dedication along the entire frontage of Devon Avenue SE to equal 30 feet from centerline.

f. Condition 6 – Construct a half-street improvement to Local street standards along the entire frontage of Devon Avenue SE.

g. Condition 7 – Construct 8-inch Salem Wastewater Management Master Plan sewer lines necessary to serve the development. The nearest

available sewer main appears to be located at the terminus of Lone Oak Road SE at Sahalee Drive SE.

h. Condition 8 – As a condition of development within the S-3 water service area, the applicant shall construct the following facilities as specified in the Water System Master Plan and approved by the Public Works Director:

    1. A 12-inch S-3 main in the portion of Lone Oak Road SE within the subject property.
    2. A 12-inch S-3 main connecting east/west through the property from Lone Oak Road SE to Devon Avenue SE.
    3. A 12-inch S-3 main along the entire frontage of Devon Avenue SE.
    4. A 12-inch S-3 main in Lone Oak Road SE from the north line of the subject property to the existing main at the Lone Oak Road SE/Sahalee Drive SE intersection and/or from the south line of the subject property to the existing main in Rees Hill Road SE.

i. Condition 9 – As a condition of development within the S-4 water service area, the applicant shall construct the following facilities as specified in the Water System Master Plan and approved by the Public Works Director:
    1. An S-4 domestic pump station with sufficient capacity to serve entire the S-4 water service area between Lone Oak Road SE and Devon Avenue SE.
    2. An 8-inch S-4 main from the pump station to the S-4 water service area within the subject property.
    3. One or more 8-inch S-4 mains to serve each lot within the S-4 service area.
    4. An 8-inch S-4 main extended to the south line of the subject property.
    5. One or more S-3 mains that provide adequate fire flow to the entire S-4 area

Subject to the conditions of approval of the corresponding Urban Growth Preliminary Declaration, the proposal meets the requirements of SRC Chapter 200.

SRC Chapter 802 (Public Improvements): Comments from the Public Works Department indicate that water and sewer infrastructure will be available to the site and appears to be adequate to serve the proposed subdivision once the conditions of UGA17-06 are complete. Specifications for required public improvements are summarized in the Public Works Department memo dated July 25, 2019 (Attachment D).

The subject property is located outside of the Urban Service Area and Urban Growth Preliminary Declaration Case No. UGA17-06 was issued July 17, 2018. Pursuant to SRC 200.055, 200.060, 200.065, 200.070, the proposed development shall be linked to existing adequate facilities as defined in SRC 200.005. Developments are also required to extend public utility services to serve upstream and neighboring properties. The

applicant shall provide linking water mains consistent with the Water System Master Plan adequate to convey fire flows to serve the proposed development as specified in the Water Distribution Design Standards. These improvements ensure that permanent water service is available in accordance with the Water System Master Plan.

As a condition above and in UGA17-06 within the S-3 water service area, the applicant shall construct the following facilities as specified in the Water System Master Plan and approved by the Public Works Director:

1. A 12-inch S-3 main in the portion of Lone Oak Road SE within the subject property.

2. A 12-inch S-3 main connecting east/west through the property from Lone Oak Road SE to Devon Avenue SE.

3. A 12-inch S-3 main along the entire frontage of Devon Avenue SE.

4. A 12-inch S-3 main in Lone Oak Road SE from the north line of the subject property to the existing main at the Lone Oak Road SE/Sahalee Drive SE intersection and/or from the south line of the subject property to the existing main in Rees Hill Road SE.

Based on the topography of the subject property, the S-4 area of the proposed development shall receive domestic service from the S-4 service level and fire service from the S-3 service level. As a condition above and in UGA17-06 within the S-4 water service area, the applicant shall construct the following facilities as specified in the Water System Master Plan and approved by the Public Works Director:

1. An S-4 domestic pump station with sufficient capacity to serve entire the S-4 water service area between Lone Oak Road SE and Devon Avenue SE.

2. An 8-inch S-4 main from the pump station to the S-4 water service area within the subject property.

3. One or more 8-inch S-4 mains to serve each lot within the S-4 service area.

4. An 8-inch S-4 main extended to the south line of the subject property.

5. One or more S-3 mains that provide adequate fire flow to the entire S-4 area.

As a condition of sewer service, all developments will be required to provide public sewers to adjacent upstream parcels. This shall include the extension of sewer mains in easements or rights-of-way across the property to adjoining properties, and across the street frontage of the property to adjoining properties when the main is located in the street right-of-way. This shall include trunk sewers that are oversized to provide capacity for upstream development (PWDS Sewer Division 003). Pursuant to SRC 200.060, the proposed development shall be linked to adequate facilities by the construction of sewer lines and pumping stations, which are necessary to connect to

such existing sewer facilities. The nearest available sewer facility appears to be located in Sahalee Drive SE, both northwest and northeast of the subject property. As conditioned above and in UGA17-06, the applicant shall construct 8-inch Salem Wastewater Management Master Plan sewer lines necessary to serve the development and upstream parcels. The applicant shall construct the Salem Wastewater Management Master Plan improvements and link the site to existing facilities that are defined as adequate under SRC 200.005 and conditioned above. Since a pumping station is required, a Site Plan Review application will be required prior to final plat to ensure the building will meet requirements of the UDC.

Condition 6: Prior to final plat, a site plan review application shall be approved for the construction of the proposed pumping station.

Condition 7: Construct water, stormwater, and sewer systems to serve each lot

The existing dwellings on the property appear to be served by private well and septic systems. In order to ensure that the existing septic systems are abandoned in compliance with state and local standards, the following condition shall apply:

Condition 8: Any existing septic tank systems on the subject property shall be abandoned in accordance with Department of Environmental Quality standards.

As conditioned, the proposal meets the requirements of SRC Chapter 802.

SRC Chapter 803 (Streets and Right-of-Way Improvements):

SRC 803.015 (Traffic Impact Analysis): The previous Urban Growth Preliminary Declaration permit conditioned prior to any development, the applicant shall acquire and convey land for right-of-way for the future collector form Lone Oak Road at Sahalee Drive to Reed Hill Road SE. The proposed 85-lot subdivision generates less than 1,000 average daily vehicle trips to Lone Oak Road, a collector, and less than 200 average daily trips to Devon Avenue, a local street. Therefore, a TIA is not required as part of the proposed subdivision submittal.

SRC 803.020 (Public and Private Streets): The applicant proposes for all internal streets within the subdivision to be public streets.

SRC 803.025 (Right-of-Way and Pavement Widths): Lone Oak Road SE is a future Collector street along the western boundary of the subject property in the Salem TSP and is planned to connect Muirfield Avenue SE to Rees Hill Road SE. The applicant is required to acquire and convey land for right-of-way for the future collector form Lone Oak Road at Sahalee Drive to Reed Hill Road SE. As conditioned by UGA17-06, the dedication of Lone Oak Road 60-foot right-of-way width and constructed with a minimum of 34-foot wide full Collector Street from Sahalee Drive to the south property line of the subject property. The remainder of Lone Oak Road (Collector) from the south

property line to Rees Hill Road will be constructed with a minimum of 34-foot wide linking street improvement.

City Council approved the Lone Oak Reimbursement District under Resolution 2018-08 on January 22, 2018. This district provides a funding mechanism for completion of Lone Oak Road SE from Muirfield Avenue SE to Rees Hill Road SE so that all benefited properties pay a proportional share of the cost for street improvements. Pursuant to Resolution 2018-08, the applicant is required to pay the applicable reimbursement fee as established in the Lone Oak Road Reimbursement District for development's proportional share of the costs of the full Collector street improvement of Lone Oak Road SE from Muirfield Avenue SE to Rees Hill Road SE. The reimbursement fee shall be credited toward the performance guarantee amount required in SRC 110.100(c) for the construction of Lone Oak Road SE.

Devon Avenue abuts the subject property and does not meet the current right-of-way or improvement width standards for a Local street. In implementing boundary street requirements pursuant to SRC 803.040, Conditions 5 and 6 of UGA17-06 require the applicant to dedicate additional right-of-way and construct a 23-foot-wide half street improvement, consistent with the applicable requirements for the segment of Devon Avenue SE abutting the development. The tentative subdivision plan shows the extension of Lone Oak Road as a 60-foot-wide right-of-way, but does not meet the standards for a Collector street set forth in SRC 803.025.

All internal streets will be constructed to Local Street standards as specified in the Salem TSP, with the exception of the proposed One Street SE and Two Street SE on the applicant's tentative plan. The applicant is requesting an alternative street standard for One Street SE and Two Street SE to allow for grade greater than 12 percent due to the existing topography and physical constraints of the site. Pursuant to SRC 803.065(a), the Director may authorize the use of one or more alternate street standards: (1) where existing development or physical constraints make compliance with the standards set forth in this chapter impracticable; and (3) where topography or other conditions make the construction that conforms to the standards impossible or undesirable. Based on topographic constraints, the Public Works Director authorizes the proposed grade of up to 15 percent for One Street SE and Two Street SE in conformance with the applicant's proposed plan. To ensure local street standards are met the following condition applies:

Condition 9: Construct internal streets to local street standards, except for an alternative street grade up to 15 percent is authorized for portions of One Street and Two Street as shown in Attachment B.

As conditioned, the proposal meets this requirement.

SRC 803.030 (Street Spacing): The subject property consists of one tax lot surrounded by undeveloped residential land to the north, south, and west. The proposed configuration of the subdivision provides for at least 600-foot block length, required by subsection (a). In addition, local street connections are provided to adjoining

undeveloped properties for eventual connection to the street system. The proposal does provide connection to both properties abutting to the north, one which has been granted previous approval to subdivide the property into 38 lots. The approval included a condition of approval to provide the required connection to the subject property, which is consistent with the applicant's proposal.

The west side of Lone Oak Road will exceed the 600-foot block length, due to topography and existing conditions. The proposal meets the exception of SRC 803.030(b), due to topography and the City of Salem Park located just south of the property, block length cannot be reasonably met.

SRC 803.035 (Street Standards): The proposed alignment of streets within the subdivision does not result in street spacing in excess of the maximum lengths established in subsection (a). Subsection (a) requires streets within the subdivision to provide connectivity to existing streets and undeveloped properties within the vicinity of the subject property. The property abuts undeveloped, residentially zoned, property zoned to the north, south and east. The proposed subdivision plan provides internal street connectivity by extending Lone Oak Road from S from Sahalee Drive to the southern property line and connection to the undeveloped northwest, northeast property and southern property; these internal streets in turn provide several points of connection to these existing boundary streets and the surrounding street network.

Subsection (l) requires sidewalks to be constructed parallel to and one foot from the adjacent right-of-way and the construction of sidewalks as part of street improvement projects.

The tentative subdivision plat shows property line sidewalks, which is consistent with SRC 803.035(l). Generally, sidewalks along the frontage of lots platted for single family residential development are installed at the time of home construction. This allows eventual building permit applicants for single family dwellings to select driveway alignment and apron placement along the lot frontage prior to installing sidewalks.

Subsection (m) requires streets identified in the Salem Transportation System Plan (TSP) Bicycle System Map as requiring a bicycle facility to conform to the designation of the TSP and Public Works Design Standards. The TSP Bicycle Map designates Lone Oak Road SE at the location of the subject property as a "Constructed Bike lane" route. Collector Street improvements along Lone Oak Road are required with the proposal, and shall include a bike lane.

Pursuant to subsection (n), public utility easements (PUEs) may be required for all streets. Comment from Portland General Electric, the franchise utility provider of electricity for the subject property, request a 10-foot-wide PUE on all street front lots. In order to ensure adequate access for the provision of electricity and other utilities, the following condition shall apply:

Condition 10: Dedicate a 10-foot-wide public utility easement (PUE) along the street frontage of all internal streets.

As conditioned, the proposal conforms to applicable street standards.

SRC 803.040 (Boundary Streets): Devon Road SE abuts the subject property and does not meet the current right-of-way or improvement width standards for a Local street. In addition, In addition, a future Collector Street (Lone Oak Road SE) goes through the subject property. In order to ensure that boundary street improvements are implemented consistent with the Transportation System Plan and Public Works Design Standards, Condition 5 above and Conditions 5 and 6 of UGA17-06 apply prior to plat.

As conditioned, the proposal meets the requirements of SRC 803.040.

(C) Any special development standards, including, but not limited to, floodplain development, special setbacks, geological or geotechnical analysis, and vision clearance.

SRC Chapter 808 (Preservation of Trees and Vegetation): The City's tree preservation ordinance protects Heritage Trees, Significant Trees (including Oregon White Oaks with diameter-at-breast-height of 24 inches or greater), trees and native vegetation in riparian corridors, and trees on lots and parcels greater than 20,000 square feet.

In addition, SRC 808.035(a) requires a Tree Conservation Plan for a development proposal involving the creation of lots or parcels to be used for the construction of single-family dwelling units, where trees are proposed for removal. A Tree Conservation Plan (TCP19-10) was submitted in conjunction with the subdivision tentative plan. The Tree Conservation Plan identifies 63 trees on the subject property, with 52 trees proposed for removal, which does not preserve 25% of trees on the subject property. The applicant did not provide evidence on the necessity of preserving less than 25% of the trees on site. As part of the tree conservation plan application, the applicant will need to submit an accurate and updated tree conservation plan map and appropriate findings. The proposed pedestrian pathway to the future park will remove an 18" Fir tree, to ensure the 18" Fir tree will remain, the pedestrian pathway shall be moved to the eastern line of Lot 16. The relocation would not require the removal of any trees. To ensure compliance with SRC 808, the following conditions apply:

Condition 11: The proposed 15-foot pedestrian pathway shall be relocated between Lot 16 and Lot 17.

Condition 12: Prior to final plat, the applicant have an approved tree conservation plan.

As proposed, the tentative subdivision plan conforms to all applicable SRC Chapter 808 requirements.

SRC Chapter 809 (Wetlands): Grading and construction activities within wetlands are regulated by the Oregon Department of State Lands (DSL) and US Army Corps of Engineers. State and Federal wetlands laws are also administered by the DSL and Army Corps, and potential impacts to jurisdictional wetlands are addressed through

application and enforcement of appropriate mitigation measures. SRC Chapter 809 establishes requirements for notification of DSL when an application for development is received in an area designated as a wetland on the official wetlands map.

The Salem-Keizer Local Wetland Inventory (LWI) does not identify any wetlands on the subject property. As proposed, the tentative subdivision plan conforms to all applicable SRC Chapter 809 requirements.

SRC Chapter 810 (Landslide Hazards): The City's landslide hazard ordinance (SRC Chapter 810) establishes standards and requirements for the development of land within areas of identified landslide hazard susceptibility. According to the City's adopted landslide hazard susceptibility maps, there no areas of landslide susceptibility on the subject property.

As proposed, the tentative subdivision plan complies with all applicable special development standards.

SRC 205.010(d)(2): The tentative subdivision plan does not impede the future use or development of the property or adjacent land.

Finding: The subject property consists of one tax lot surrounded by undeveloped residential land to the north, south, and west. The proposed configuration of the subdivision provides for at least 600-foot block length, required by subsection (a). In addition, local street connections are provided to adjoining undeveloped properties for eventual connection to the street system. The proposal does provide connection to both properties abutting to the north, one which has been granted previous approval to subdivide the property into 84 lots. The approval included a condition of approval to provide the required connection to the subject property, which is consistent with the applicant's proposal.

The west side of Lone Oak Road will exceed the 600-foot block length, due to topography and existing conditions. The proposal meets the exception of SRC 803.030(b), due to topography and the City of Salem Park located just south of the property, block length cannot be reasonably met.

SRC 205.010(d)(3): Development within the tentative subdivision plan can be adequately served by City infrastructure.

Finding: Water and sewer infrastructure is available along the perimeter of the site and appears to be adequate to serve the property as shown on the applicant's preliminary utility plan. Developments are required to extend public utility services to serve upstream and neighboring properties; the tentative utility plan appears to meet that requirement. Conditions of approval require decommissioning of septic systems serving the existing lots, an engineered stormwater design to accommodate future impervious surfaces, and dedication of a public utility easement to allow installation and maintenance of private utility infrastructure.

The Public Works Department reviewed the proposal for consistency with the Comprehensive Parks Master Plan Update and found that the subject property is served by the recent purchase of a future neighborhood park (NP-28), an undeveloped park site which abuts the southern boundary of the proposed subdivision. No park-related improvements are required as a condition of development and Condition 10 of UGA17-06 is satisfied.

All public and private City infrastructure proposed to be located in the public right-of-way shall be constructed or secured per SRC 205.035(c)(6)(B) prior to final plat approval. Any easements needed to serve the proposed lots with City infrastructure shall be shown on the final plat.

The proposal meets this criterion.

SRC 205.010(d)(4): The street system in and adjacent to the tentative subdivision plan conforms to the Salem Transportation System Plan.

Finding: Devon Avenue SE abutting the subject property does not meet the improvement and right-of-way widths for a minor arterial classification as shown in the Salem Transportation System Plan (TSP). Boundary street improvements are required. As identified in the conditions of approval, the applicant is required to dedicate right-of-way and construct half-street improvements, along the entire frontage of the subject property on Devon Avenue SE.

Lone Oak Road SE is a future Collector street along the western boundary of the subject property in the Salem TSP and is planned to connect Muirfield Avenue SE to Rees Hill Road SE. The applicant is required to acquire and convey land for right-of-way for the future collector form Lone Oak Road at Sahalee Drive to Reed Hill Road SE. As conditioned by UGA17-06, the dedication of Lone Oak Road 60-foot right-of-way width and constructed with a minimum of 34-foot wide full Collector Street from Shahalee Drive to the south property line of the subject property. The remainder of Lone Oak Road (Collector) from the south property line to Rees Hill Road will be constructed with a minimum of 34-foot wide linking street improvement.

City Council approved the Lone Oak Reimbursement District under Resolution 2018-08 on January 22, 2018. This district provides a funding mechanism for completion of Lone Oak Road SE from Muirfield Avenue SE to Rees Hill Road SE so that all benefited properties pay a proportional share of the cost for street improvements. Pursuant to Resolution 2018-08, the applicant is required to pay the applicable reimbursement fee as established in the Lone Oak Road Reimbursement District for development's proportional share of the costs of the full Collector street improvement of Lone Oak Road SE from Muirfield Avenue SE to Rees Hill Road SE. The reimbursement fee shall be credited toward the performance guarantee amount required in SRC 110.100(c) for the construction of Lone Oak Road SE.

The proposal meets this criterion.

SRC 205.010(d)(5): The street system in and adjacent to the tentative subdivision plan is designed so as to provide for the safe, orderly, and efficient circulation of traffic into, through, and out of the subdivision.

Finding: Condition 5 implement required boundary street improvements along the Devon Avenue SE and Lone Oak Road SE. In addition to the boundary improvement, internal circulation would be provided throughout the subdivision.

The proposed network of boundary and internal streets serving the subdivision provides access to all lots within the subdivision. The subdivision, as proposed and conditioned, is served with adequate transportation infrastructure. The street system adjacent to the subdivided property will conform to the Salem Transportation System Plan, and provide for safe, orderly, and efficient circulation of traffic into, through, and out of the subdivision.

The proposal meets this criterion.

SRC 205.010(d)(6): The tentative subdivision plan provides safe and convenient bicycle and pedestrian access from within the subdivision to adjacent residential areas and transit stops, and to neighborhood activity centers within one-half mile of the development. For purposes of this criterion, neighborhood activity centers include, but are not limited to, existing or planned schools, parks, shopping areas, transit stops, or employment centers.

Finding: The proposed subdivision is situated within one-half mile of three neighborhood activity centers:

- Rolling Hills Christian School, a private school, is approximately a half mile to the east.

- Creekside Golf Course, a 130 acre private golf course located at 6250 Country Club Drive SE, approximately 1,400 feet north of the subject property.

- No bus stops or routes within the general vicinity.

The proposed subdivision is accessed by an existing collector street and the extension of a local street into the subject property. The subject property will provide internal streets with safe and convenient bicycle and pedestrian access, and provide boundary street improvements connecting northward to existing bicycle and pedestrian facilities on Lone Oak Road.

The proposal meets this criterion.

SRC 205.010(d)(7): The tentative subdivision plan mitigates impacts to the transportation system consistent with the approved Traffic Impact Analysis, where applicable.

Finding: The Public Works Department has reviewed the proposal and finds that the 84-lot subdivision will generate less than 1,000 average daily vehicle trips to Lone Oak Road SE, designated in the Transportation System Plan as a collector, and less than 200 average daily trips to Devon Avenue SE, designated as a local street. Accordingly, a Transportation Impact Analysis is not required as part of the review of the tentative subdivision plan, pursuant to SRC 803.015(b).

SRC 200.010(d)(8): The tentative subdivision plan takes into account the topography and vegetation of the site so the need for variances is minimized to the greatest extent practicable.

Finding: The proposed subdivision has been reviewed to ensure that adequate measures have been planned to alleviate natural or fabricated hazards and limitations to development, including topography and vegetation of the site. The configuration of lots on the subject property makes logical use of the remaining developable land. As described in findings above, the lot and street configuration proposed by the applicant meets applicable development standards without the need for any variances. No existing conditions of topography or vegetation have been identified on the site which would necessitate variances during future development of the property. The layout allows for reasonable development of all lots within the subdivision without variances from the UDC.

The proposal meets this criterion.

SRC 200.010(d)(9): The tentative subdivision plan takes into account the topography and vegetation of the site, such that the least disruption of the site, topography, and vegetation will result from the reasonable development of the lots.

Finding: The tentative subdivision plan configures lots and streets to allow single family residential development of the site while minimizing disruptions to topography and vegetation. The extension of Lone Oak Road provides a logical extension of the existing street network and allows an arrangement of home sites that takes into account the existing topography. The tree conservation plan submitted in conjunction with the tentative subdivision plan will be reviewed pursuant to SRC 808, as conditioned above.

The proposal meets this criterion.

SRC 200.010(d)(10): When the tentative subdivision plan requires an Urban Growth Preliminary Declaration under SRC Chapter 200, the tentative subdivision plan is designed in a manner that ensures that the conditions requiring the construction of on-site infrastructure in the Urban Growth Preliminary Declaration will occur, and, if off-site improvements are required in the Urban Growth Preliminary Declaration, construction of any off-site improvements is assured.

Finding: The subject property is located outside of the Urban Service Area but has a previous approval (UGA17-06). Therefore, this criterion does not apply.

8. Conclusion

Based upon review of SRC 205.005, the findings contained under Section 7 above, and the comments described, the tentative subdivision plan complies with the requirements for an affirmative decision. Approval will not adversely affect the safe and healthful development and access to any adjoining lands.

IT IS HEREBY ORDERED

That Tentative Subdivision Plan Case No. 17-02, on property RS (Single Family Residential), and located at 6719 Devon Avenue SE (Marion County Assessor Map and Tax Lot Numbers 083W22C00300)., is **APPROVED** subject to the applicable standards of the Salem Revised Code, the findings contained herein, and the conditions of approval listed below, which must be completed prior to final plat approval, unless otherwise indicated:

Condition 1: Lots 9-15 and 79-82 shall have fire sprinklers provided at the time of building permits or meets the City of Salem Fire Department standards.

Condition 2: Obtain demolition permits and remove all structures (dwelling and accessory structure) located on the subject property.

Condition 3: The designated front lot line for lots 19, 20, 42, 63, and 69 are as follows:

Lot Number	Front Lot Line
Lot 9	West
Lot 19	North
Lot 20	North
Lot 42	South
Lot 63	South
Lot 69	South

Condition 4: Prior to final plat, the applicant shall provide stormwater service to properties within the Powell Creek basin by:

c. Between Powell Creek and the subject property, acquire easements from downstream property owners and construct off-site improvements as needed to convey stormwater runoff from the proposed development to Powell Creek pursuant to PWDS; or

d. Demonstrate preservation of downstream stream health through the use of continuous flow simulation that simulates such hydrologic factors as interception, soil moisture, surface runoff, interflow, base flow, evapotranspiration, and ground-water recharge. The flow control system shall be designed to match peak flow rates and durations from the pre-developed to the developed condition for the ½ 2-year, 5-year, 10-year, 25-year, and 100-year events.

Condition 5: Prior to final plat, the applicant shall comply with the conditions of approval for UG Preliminary Declaration Case No. UGA17-06:

a. Condition 1 – Acquire and convey land for dedication of right-of-way to equal a width of 60 feet in an alignment approved by the Public Works Director as specified for the future Collector street in the Salem Transportation System Plan (TSP) from the existing terminus of Lone Oak Road SE at Sahalee Drive SE to Rees Hill Road SE.

b. Condition 2 – Construct Lone Oak Road SE with a minimum 34-foot-wide full Collector street improvement within the subject property and from the north line of the subject property to Sahalee Drive SE.

c. Condition 3 – Construct Lone Oak Road SE with a minimum 34-foot-wide linking street improvement from the south line of the subject property to Rees Hill Road SE.

d. Condition 4 – Pay the applicable reimbursement fee as established in the Lone Oak Road Reimbursement District pursuant to Resolution 2018-08 to contribute the development's proportional share of the costs of the full Collector street improvement of Lone Oak Road SE from Muirfield Avenue SE to Rees Hill Road SE (in the event the Reimbursement District is terminated prior to final plat approval, no reimbursement fee shall be due). The reimbursement fee shall be credited toward the performance guarantee amount required in SRC 110.100(c) for Lone Oak Road SE construction.

e. Condition 5 – Convey land for dedication along the entire frontage of Devon Avenue SE to equal 30 feet from centerline.

f. Condition 6 – Construct a half-street improvement to Local street standards along the entire frontage of Devon Avenue SE.

g. Condition 7 – Construct 8-inch Salem Wastewater Management Master Plan sewer lines necessary to serve the development. The nearest available sewer main appears to be located at the terminus of Lone Oak Road SE at Sahalee Drive SE.

h. Condition 8 – As a condition of development within the S-3 water service area, the applicant shall construct the following facilities as specified in the Water System Master Plan and approved by the Public Works Director:

    1. A 12-inch S-3 main in the portion of Lone Oak Road SE within the subject property.
    2. A 12-inch S-3 main connecting east/west through the property from Lone Oak Road SE to Devon Avenue SE.

3. A 12-inch S-3 main along the entire frontage of Devon Avenue SE.
4. A 12-inch S-3 main in Lone Oak Road SE from the north line of the subject property to the existing main at the Lone Oak Road SE/Sahalee Drive SE intersection and/or from the south line of the subject property to the existing main in Rees Hill Road SE.

i. Condition 9 – As a condition of development within the S-4 water service area, the applicant shall construct the following facilities as specified in the Water System Master Plan and approved by the Public Works Director:
   1. An S-4 domestic pump station with sufficient capacity to serve entire the S-4 water service area between Lone Oak Road SE and Devon Avenue SE.
   2. An 8-inch S-4 main from the pump station to the S-4 water service area within the subject property.
   3. One or more 8-inch S-4 mains to serve each lot within the S-4 service area.
   4. An 8-inch S-4 main extended to the south line of the subject property.
   5. One or more S-3 mains that provide adequate fire flow to the entire S-4 area

Condition 6: Prior to final plat, a site plan review application shall be approved for the construction of the proposed pumping station.

Condition 7: Construct water, stormwater, and sewer systems to serve each lot

Condition 8: Any existing septic tank systems on the subject property shall be abandoned in accordance with Department of Environmental Quality standards.

Condition 9: Construct internal streets to local street standards, except for an alternative street grade up to 15 percent is authorized for portions of One Street and Two Street as shown in Attachment B.

Condition 10: Dedicate a 10-foot-wide public utility easement (PUE) along the street frontage of all internal streets.

Condition 11: The proposed 15-foot pedestrian pathway shall be relocated between Lot 16 and Lot 17.

Condition 12: Prior to final plat, the applicant have an approved tree conservation plan.

Olivia Glantz, Planning Administrator Designee

Attachments: A. Vicinity Map
B. Tentative Subdivision Plan and Street Profiles
C. Applicant's Written Statement on Tentative Subdivision Plan
D. City of Salem Public Works Department Comments

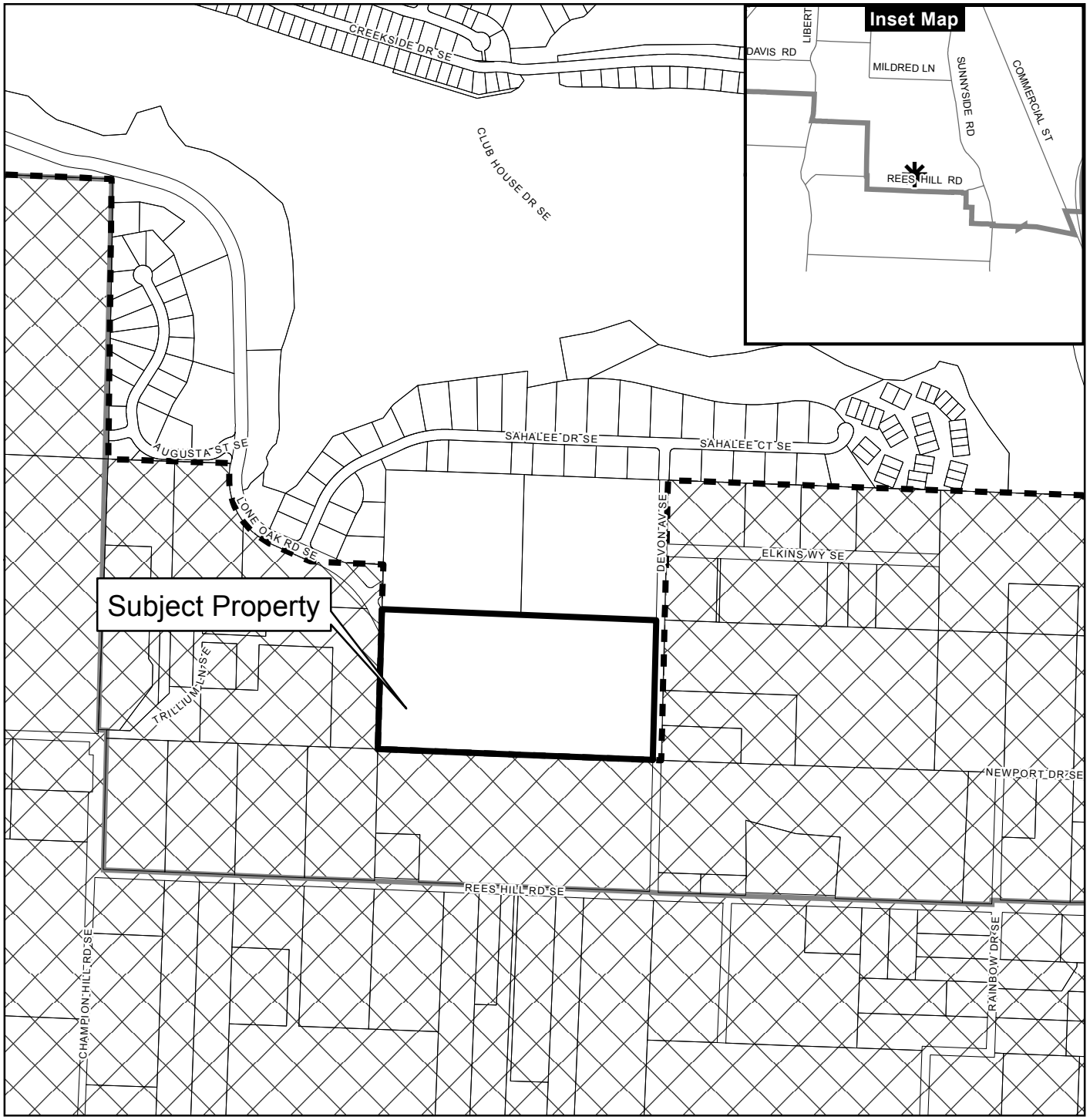
Application Deemed Complete:	July 2, 2019
Notice of Decision Mailing Date:	July 29, 2019
Decision Effective Date:	August 14, 2019
State Mandated Decision Date:	October 30, 2019

The rights granted by this decision must be exercised or extension granted by August 14, 2021 or this approval shall be null and void.

A copy of the complete Case File is available for review during regular business hours at the Planning Division office, 555 Liberty Street SE, Room 305, Salem OR 97301.

This decision is final unless written appeal from a party with standing to appeal, along with an appeal fee, is filed with the City of Salem Planning Division, Room 305, 555 Liberty Street SE, Salem, Oregon 97301, no later than **Tuesday, August 13, 2019, 5:00 p.m.** The notice of appeal must contain the information required by SRC 300.1020. The notice of appeal must be filed in duplicate with the City of Salem Planning Division. The appeal fee must be paid at the time of filing. If the notice of appeal is untimely and/or lacks the proper fee, the notice of appeal will be rejected. The Salem Planning Commission will review the appeal at a public hearing. The Planning Commission may amend, rescind, or affirm the action or refer the matter to staff for additional information.

Vicinity Map
6719 Devon Avenue SE



Legend

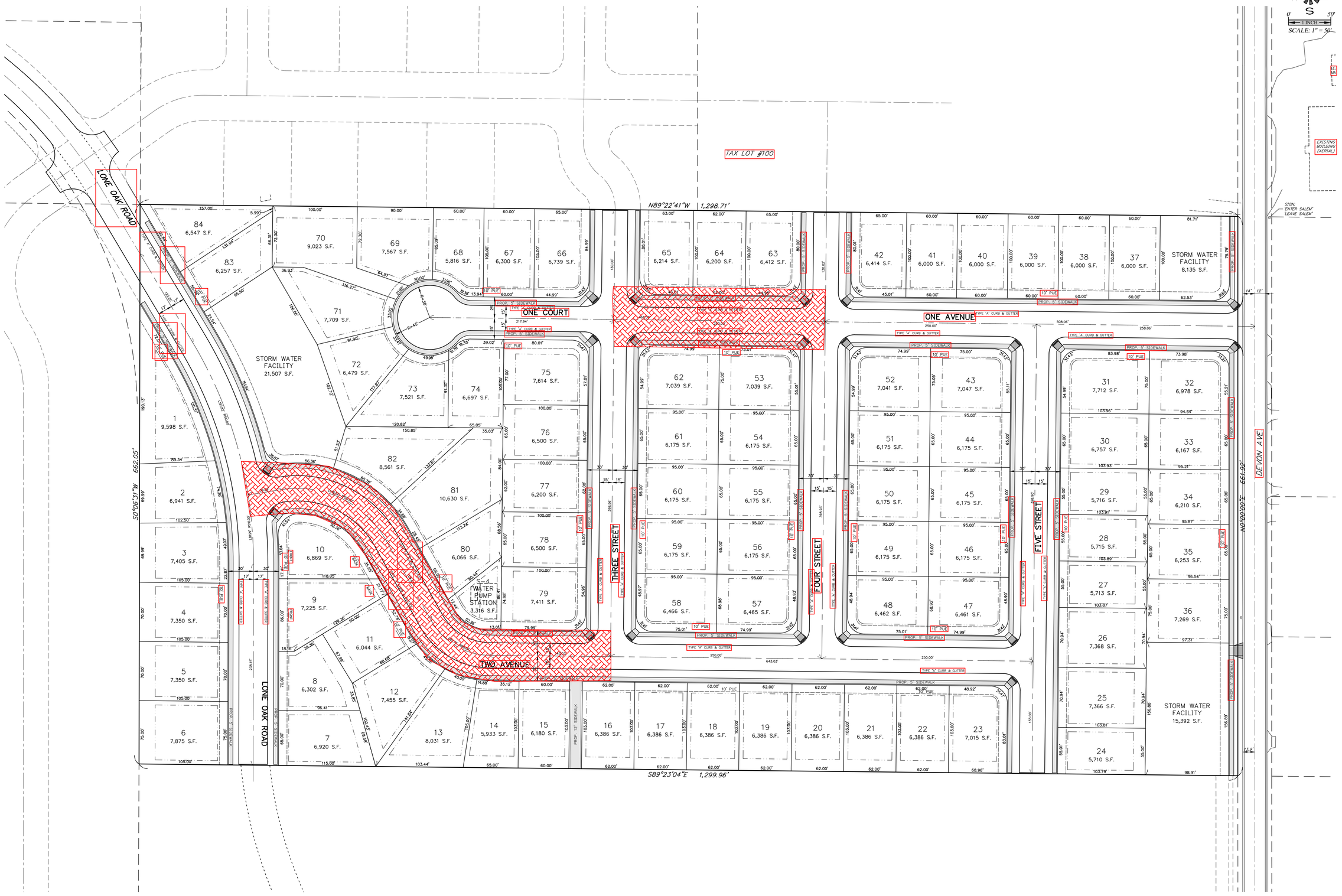
- Taxlots
- Urban Growth Boundary
- City Limits
- Outside Salem City Limits
- Historic District
- Schools
- Parks

0 100 200 400 Feet

CITY OF Salem AT YOUR SERVICE
Community Development Dept.

This product is provided as is, without warranty. In no event is the City of Salem liable for damages from the use of this product. This product is subject to license and copyright limitations and further distribution or resale is prohibited.

Attachment B



MULTI/TECH
ENGINEERING SERVICES, INC.
1155 13th ST. S.E. SALEM, OR. 97302
PH. (503) 363-9227 FAX (503) 364-1260
www.mtengineering.net office@mtengineering.net

SITE PLAN

DEVON ESTATES

NO CHANGES, MODIFICATIONS OR CONSTRUCTION TO BE MADE TO THESE DRAWINGS WITHOUT WRITTEN AUTHORIZATION FROM THE DESIGN ENGINEER.

DIMENSIONS & NOTES TAKE PRECEDENCE OVER SCALED GRAPHICAL REPRESENTATION.

P.H.S. 06/19/2019

650D P201SITE

Design: M.D.G.
Drawn: P.H.S.
Checked: B.M.G.
Date: NOV. 2017
Scale: AS SHOWN

REGISTERED PROFESSIONAL ENGINEER
OREGON
JULY 14, 1978
MARK D. GRENZ

EXPIRES: 06-30-2019

JOB # 6502

P201

1. REVISED SITE PLAN PER CITY

J:\6500-6599\6502-DevonAvenueSubdivision\Dwg\6502site.dwg, P201SITE, 6/24/2019 5:14:33 PM, PSounders

Devon Avenue

Subdivision Application

Revised-April 26, 2019

BACKGROUND:

On July 17, 2017, Pre-Application Conference (PRE-AP) 17-57 was held with the City staff to discuss the development of property located at 6719 Devon Avenue SE.

On June 11, 2018, the subject property was annexed into the City of Salem on June 11, 2018, by City Council.

On May 29, 2018, Urban Growth Area Permit (UGA) 17-06 was approved by staff on May 29, 2018.

PROPOSAL:

The subject property is about 19.74 acres in size and zoned RA (Residential Agriculture). The applicant is proposing to divide the subject property into 85 single family residential lot, with two lots designated for stormwater detention (located north of Lot 85 and east of Lot 37). There is also an S-4 water pump station located between Lots 79 and 80.

The applicant is also requesting an Alternative Street Standard to allow Lone Oak Road, One Avenue, and Two Avenue to exceed a 12-percent street grade.

SITE VICINITY and CHARACTERISTICS:

The subject property is located at 6719 Devon Avenue. The subject property is identified as 083W22C/Tax Lots 300.



The surrounding properties are zoned and used as follows:

North:	RA (Residential Agriculture) and RS (Single Family Residential); vacant land
East:	Across Devon Avenue; RS (Single Family Residential); vacant lots, and existing single-family dwellings
South:	Outside City Limits, Marion County-UT; vacant land and existing single-family dwellings
West:	Outside City Limits, Marion County-UT; vacant land and existing single-family dwellings

CRITERIA AND APPLICANT'S REASONS ADDRESSING UDC 205.010(d)(1):

The intent of the subdivision code is providing for orderly development through the application of appropriate rules and regulations. Pursuant to the application of the current enabling statutes, these regulations are those cited in UDC 205.010(d) and UDC 205.015(d). The decision criteria for subdivisions without a concurrent variance under UDC 205.010(d) and UDC 205.015(d) must be found to exist before an affirmative decision may be made for a subdivision application.

(1) The tentative subdivision plan complies with the standards of this Chapter and with all applicable provisions of the UDC, including, but not limited to, the following:

Findings: The Salem Revised Code (SRC), which includes the Salem Zoning Code, implements the Salem Area Comprehensive Plan land use goals, and governs development of property within the city limits. The subdivision process reviews development for compliance with city standards and requirements contained in the Subdivision Code, Zoning Code, Salem TSP and the Water, Sewer and Storm Drain

System Master Plans, and adopted design documents applicable to residential development. The proposed meets all applicable provisions of the Salem Revised Code.

(A) Lot standards, including, but not limited to, standards for lot area, lot width and depth, lot frontage and designation of front and rear lot lines.

Findings: The proposal does not require any variances to lot development standards specified in the Code.

Minimum Lot Area and Dimensions: As shown on the site plan, all 85 lots meet lot size (4,000 square feet) and lot dimension (40' by 70') standards as required under UDC Chapters 510 and 511. The proposed lots range in size from 5,933 square feet to 10,727 square feet in size, with and average lot size of 6,884 square feet.

Additional reviews occur at the time of building permits to assure compliance with the zoning code. Compliance with conditions of approval to satisfy the subdivision ordinance is also checked prior to city staff signing the final subdivision plat.

The proposal can conform to applicable conditions imposed as necessary to ensure that development conforms to the standards of the subdivision code and with existing development and public facilities. As shown on the site plans, all lots meet the required lot size, lot depth, and lot width. At the time of development of the lots, building permits will be required. Setbacks will be reviewed for compliance at the time of building permit submittal. The proposed subdivision is and will be in compliance with lot standard requirements and required access.

Therefore, this criteria has been met.

(B) City infrastructure standards.

Findings: Water, sewer, storm drainage plans will be submitted to the Public Works Department for final plat and construction plan approval at the final plat stage. The tentative site plan illustrates the location of the public utility lines. The proposal meets applicable Salem Area Comprehensive Plan Residential Policies for properties within the Urban Growth Boundary. The proposal encourages the efficient use of developable residential land. Public facilities and services are or will be available to serve the site, including services such as water, sanitary and storm sewer and fire/life/safety services.

Two lots within the proposed subdivision are designated for stormwater detention (located north of Lot 85 and east of Lot 37). There is also an S-4 water pump station located between Lots 79 and 80.

Therefore, this criteria has been met.

(C) Any special development standards, including, but not limited to, floodplain development, special setbacks, geological or geotechnical analysis, and vision clearance.

Findings: There are no wetlands or floodplains located on the subject property.

A geological assessment is required for this site. There are landslide hazards identified on the site. A geological assessment has been provided as part of this application packet. This criteria has been met.

(2) The tentative subdivision plan does not impede the future use or development of the property or adjacent land.

Findings: The proposal is for the entire subject property and will be developed into 85 lots. As shown on the site plan. Therefore, a shadow plan is not required.

The abutting properties to the east and northwest are developed. The properties to the west and south are vacant, they are also located outside the City limits. Two stub streets have been provided to the north, two stub streets to the south, and a connection to Lone Oak to the west for future development. Due to the topography of the lot to the west, an additional street connection to the west is not feasible.

All proposed lots and surrounding properties have direct access onto the existing internal street system. The subdivision does not impede the future use of the property or adjacent land. Adequate connections to adjacent properties have been provided for future development.

Therefore, this criteria has been met.

(3) Development within the tentative subdivision plan can be adequately served by City infrastructure.

Findings: Water, sewer, storm drainage plans will be submitted to the Public Works Department for final plat and construction plan approval at the final plat stage. The tentative site plan illustrates the location of the public utility lines. The proposal meets applicable Salem Area Comprehensive Plan Residential Policies for properties within the Urban Growth Boundary. The proposal encourages the efficient use of developable residential land. Public facilities and services are or will be available to serve the site, including services such as water, sanitary and storm sewer and fire/life/safety services.

The subject property is within ½ mile from Creekside Golf Course to the north, Rees Hill Park and Battle Creek Elementary School to the east. Therefore, the subject property is served by parks.

Water, sewer, storm drainage plans will be submitted to the Public Works Department for final plat and construction plan approval at the final plat stage. The tentative site plan illustrates the location of the public utility lines. On-site detention and a pump station are being provided within the proposed subdivision.

In conclusion, the location and design of the proposed subdivision allows for public sanitary sewer, water service, and storm drainage to be conveniently provided.

Therefore, this criterion has been satisfied.

Proposed Stormwater Management System:

Findings: Stormwater quality and quantity are required for this development. An LID (low impact development) Stormwater technique will be used to mitigate the increase in pollutants contributed from development. This system may also be used to provide storage and water quantity control. The exact system will be determined at the time of design. Any proposed technique will meet City of Salem Stormwater Management standards in means and methods to provide all aspects of Stormwater management.

A Preliminary Drainage Report dated October 12, 2018 has been provided as part of this package.

(4) The street system in and adjacent to the tentative subdivision plan conforms to the Salem Transportation System Plan.

Findings: The major street system is in place due to prior development. Devon Avenue is located to the east of the site and Lone Oak Road. Devon Avenue is designated as a 'local street' and Lone Oak Road is designated as a 'collector' on the Salem Transportation System Plan.

The existing and proposed street systems conform to the City's Transportation Plan. All street design and improvements will be determined through the subdivision review process and regulated through the Conditions of Approval. The applicant is also requesting an alternative street standard to allow Lone Oak Road, One Avenue, and Two Avenue to exceed a 12-percent street grade. However, the proposed internal streets will be designed to street standards.

The applicant is requesting an alternative street standard to street grade. As shown on the street section provided, Lone Oak Road will have a 12.25% street grade. One Avenue will have a 14.68% street grade, and Two Avenue will have a 15% street grade.

Due to the topography of the site and the proposed street alignments with existing streets, along with required stub street connections, these proposed streets within the subdivision exceed the street grade allowed.

The intent of the maximum street grade is to allow vehicles to climb and descend the street safely in all conditions. The internal streets proposed will provide safe and efficient circulation throughout the subdivision. As shown on the street sections provided, there is only curtain sections of each street that will exceed the allowed street grade. All streets within the proposed subdivision will be designed to provide safe and efficient conditions.

There are several access points provided throughout the proposed subdivision which provide alternative access options.

The intent of the standard is being met; therefore, the proposal equally meets the intent of the maximum street grade standard.

The major street network in the area has been established and is consistent with the Transportation System Plan which implements the Comprehensive Plan. Public Works Department will address any applicable requirements for right-of-way conveyance that might be required because of this subdivision.

Therefore, the existing street system and proposed street improvements will be in compliance with the STSP.

Transportation Planning Rule Review:

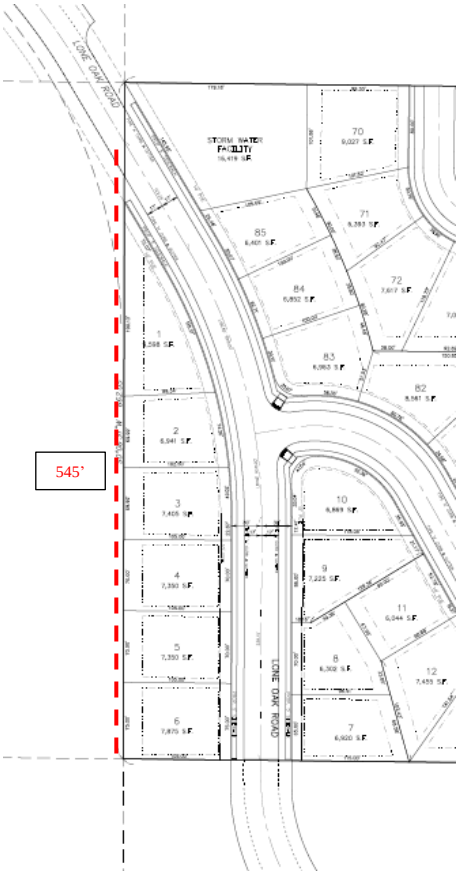
The City of Salem's TPR encourages a reduction in automobile trips by capitalizing on transit opportunities and by creating an environment that encourages people to walk. The proposed subdivision is a "limited land use decision" pursuant to Oregon Revised Statute (ORS) 197.015 and has therefore been reviewed for consistency with the State's TPR multi-modal connectivity requirements.

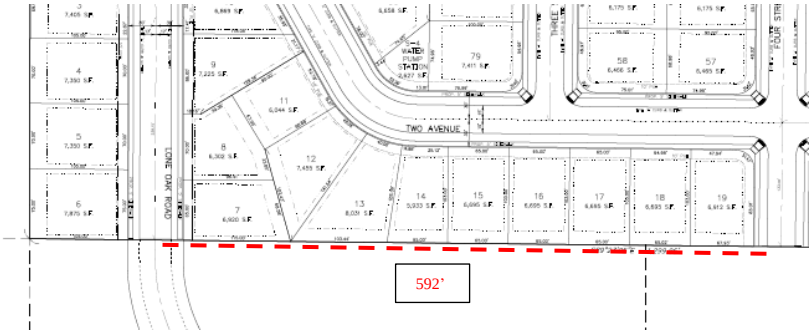
In conclusion, the development will provide bicycle and pedestrian facilities on-site to encourage people to walk and reduce vehicle trips. The development on the property will allow residents to reduce vehicle usage, by the convenience of bicycle and pedestrian paths to and from the uses and existing sidewalk system. Therefore, the proposed subdivision is in compliance with the intent of the TPR to reduce vehicle usage and encourage other modes of transportation to and from the site.

(5) The street system in and adjacent to the tentative subdivision plan is designed so as to provide for the safe, orderly, and efficient circulation of traffic into, through, and out of the subdivision.

Findings: The subject property is located in a developed and developing area where improved streets and sidewalks exist and continue with new development. The local street system serving the development provides the necessary connections and access to the local streets and circulation system serving this residential neighborhood.

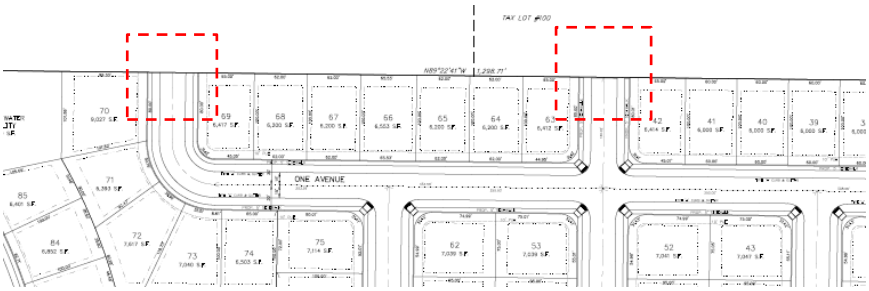
Block Length: Blocks shall be a maximum of 600 feet between street centerlines. The length of the blocks was taken into consideration at the time of design layout. There are more than enough street connections within the proposed development.



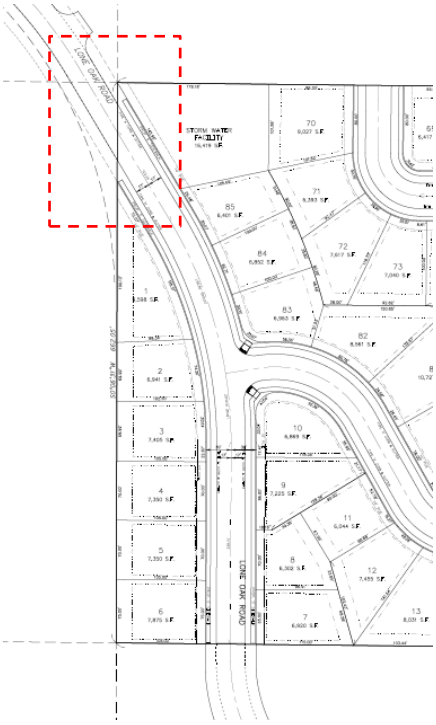


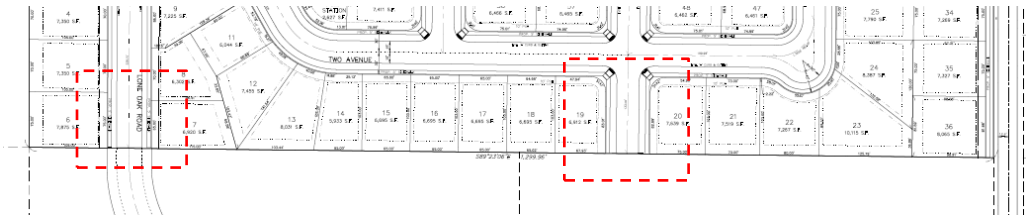
The abutting properties to the east and north are developed or proposed for

development. Street connections to the north have been provided for future development of those properties.



The properties to the west and south are vacant, they are also located outside the City limits. A street connection to the northwest, via Lone Oak Road, is being providing for circulation through the neighborhood. However, due to the topography of the lot to the west, an additional street connection to the west is not feasible.





Two street connections have been provided to the north, two street connections to the

south, and a street connection to the east and a connection to Lone Oak to the west for future development. By providing these connections, block length and connectivity have been met.
As shown on the site plan, the proposed subdivision provides a safe an efficient circulation pattern in the development for vehicles and pedestrians.

Access to, within, and from the development must be consistent with applicable requirements of the Transportation Planning Rule Requirements (TPR) that requires that development provide connectivity between land uses and transportation. Under the Rule, developments are responsible for providing for the safe and efficient circulation of vehicles, bicycles, and pedestrians into, through, and out of a development. The proposal develops the subject property within an established residential area where local and arterial streets and mass transit facilities exist. These facilities connect the transportation system to the surrounding residential neighborhoods.

The proposal develops the subject property within an established residential area where local and arterial streets and mass transit facilities exist. These facilities connect the transportation system to the surrounding residential neighborhoods.

The Public Works Department will address the level of street improvements that are roughly proportional to assure conformance to the development to subdivision code and applicable transportation system plan requirements. Completion of conditions of approval prior to the signing of the final plat will satisfy this criterion for the subdivision application.

In conclusion, the proposed street plan provides the best economic, safe, and efficient circulation of traffic possible under the circumstances. The proposed subdivision demonstrates this review criterion can be met.

Therefore, this criterion has been satisfied.

(6) The tentative subdivision plan provides safe and convenient bicycle and pedestrian access from within the subdivision to adjacent residential areas and transit stops, and to neighborhood activity centers within one-half mile of the development. For purposes of this criterion, neighborhood activity centers include, but are not limited to, existing or planned schools, parks, shopping areas, transit stops, or employment centers.

Findings: The subdivision is served with adequate transportation infrastructure and the street system adjacent the property conforms to the Transportation System Plan and provides for safe, orderly, and efficient circulation of traffic into, through, and out of the subject property on to the public street system.

Therefore, via paved streets and sidewalks, safe and convenient bicycle and pedestrian access will be provided to the site and to adjacent neighborhoods.

Therefore, this criteria has been met.

(7) The tentative subdivision plan mitigates impacts to the transportation system consistent with the approved Traffic Impact Analysis, where applicable.

Findings: The proposal is for an 85-lot subdivision. The size of the proposed subdivision does not warrant the need for a Traffic Impact Analysis. The proposed subdivision plan mitigates impacts to transportation system by providing adequate access and circulation for all 85-lots.

Therefore, this criterion has been met.

(8) The tentative subdivision plan takes into account the topography and vegetation of the site so the need for variances is minimized to the greatest extent practicable.

Findings: All lots are in compliance with the UDC/SRC. Therefore, no variances have been requested.

(9) The tentative subdivision plan takes into account the topography and vegetation of the site, such that the least disruption of the site, topography, and vegetation will result from the reasonable development of the lots.

Findings: The subdivision code requires City approval of lots be suitable for the general purpose for which they are likely to be developed. No lots can be of such a size or configuration that is detrimental to public health, safety, or welfare or sanitary needs of users of the parcel or lot.

The subdivision plan takes into consideration the topography and vegetation of the site. The proposed lots are of sufficient size and dimensions to permit future development. The lot dimensions are illustrated on the tentative site plan and are in conformance to the minimum standards in UDC 510 and 511. Final conformance to minimum lot size and buildable lot area will be confirmed when the final plat is submitted to the City for review and approval.

There are 63 trees located within the boundary of the site. Forty-seven (47) trees are designated for removal, with sixteen (16) trees designated to remain. Twenty-five (25%) percent of the trees on the site will be preserved. Trees designated for removal are within the right-of-way, the building envelop or within an area close to the building envelope, but have the potential of being damaged during grading and construction. Therefore, the removal of these 47 trees is necessary for development of the site.

There are no heritage or significant trees (Oregon White Oak) on the site.

The layout of the lots takes into consideration the topography and vegetation of the site. All lots are in compliance with the UDC. Therefore, no variances have been requested.

Therefore, this criteria has been met.

10) When the tentative subdivision plan requires an Urban Growth Preliminary Declaration under SRC Chapter 200, the tentative subdivision plan is designed in a manner that ensures that the conditions requiring the construction of on-site infrastructure in the Urban Growth Preliminary Declaration will occur, and, if off-site improvements are required in the Urban Growth Preliminary Declaration, construction of any off-site improvements is assured.

Findings: The property and development are located inside the Urban Service Area (USA). However, an Urban Growth Preliminary Declaration is required and has been approved. Urban Growth Area Permit (UGA) 17-06 was approved by staff on May 29, 2018. As required by code, all requirements of the UGA will be met prior to development or recording of the final plat.

Therefore, this criterion has been met.

TREE CONSERVATION/REMOVAL PLAN

There are 63 trees located within the boundary of the site. Forty-seven (47) trees are designated for removal, with sixteen (16) trees designated to remain. Twenty-five (25%) percent of the trees on the site will be preserved. Trees designated for removal are within the right-of-way, the building envelop or within an area close to the building envelope, but have the potential of being damaged during grading and construction. Therefore, the removal of these 47 trees is necessary for development of the site.

There are no heritage or significant trees (Oregon White Oak) on the site.

Class-2 Adjustment

The applicant is requesting an adjustment to SRC 803.035(c):

> ***(c) Alignment and Grade. All streets shall be designed with a vertical alignment that conforms to the Public Works Design Standards. No grade of parkway, major arterial, or minor arterial shall exceed 6 percent. No grade of a collector street shall exceed 8 percent. No grade of a local street shall exceed 12 percent.***

Lone Oak Road runs north/south through the development and is designated as a 'collector' street. One Avenue and Two Avenue run east/west through the site and are designated as 'local' streets. The applicant is requesting an adjustment to allow Lone Oak Road to exceed the 8 percent street grade allowed, and an adjustment to allow One Avenue and Two Avenue to exceed the 12 percent street grade allowed.

Adjustment Criteria-SRC 250.005(d)(2) Criteria

(A) The purpose underlying the specific development standard proposed for adjustment is:

(i) Clearly inapplicable to the proposed development; or
(ii) Equally or better met by the proposed development.

(B) If located within a residential zone, the proposed development will not detract from the livability or appearance of the residential area.

(C) If more than one adjustment has been requested, the cumulative effect of all the adjustments result in a project which is still consistent with the overall purpose of the zone.

Applicant Findings:

(A) The applicant is not requesting more than one adjustment. Therefore, this criteria is not applicable.

CITY OF Salem AT YOUR SERVICE

MEMO

TO: Olivia Glantz, Planner III
Community Development Department

FROM: Glenn J. Davis, PE, CFM, Chief Development Engineer
Public Works Department

DATE: July 26, 2019

SUBJECT: **PUBLIC WORKS RECOMMENDATIONS**
SUB19-05 (19-109483-LD)
6719 DEVON AVENUE SE
84-LOT SUBDIVISION

PROPOSAL

A tentative subdivision plan to divide approximately 19.89 acres into 84 lots ranging in size from 6,000 square feet to 10,630 square feet. The applicant is requesting an alternative street standard to increase the grade of Lone Oak Road SE (collector) from eight percent to twelve percent and increase the grade of two Local streets, One Avenue and Two Avenue, from twelve percent to approximately fifteen percent.

The subject property is approximately 19.89 acres in size, zoned RS (Single Family Residential), and located at 6719 Devon Avenue SE (Marion County Assessor Map and Tax Lot Number 083W22C00300).

RECOMMENDED CONDITIONS OF APPROVAL

1. Comply with the conditions of approval for UG Preliminary Declaration Case No. UGA17-06, copied below:

    a. Condition 1–Acquire and convey land for dedication of right-of-way to equal a width of 60 feet in an alignment approved by the Public Works Director as specified for the future Collector street in the Salem TSP from the existing terminus of Lone Oak Road SE at Sahalee Drive SE to Rees Hill Road SE.

    b. Condition 2–Construct Lone Oak Road SE with a minimum 34-foot-wide full Collector street improvement within the subject property and from the north line of the subject property to Sahalee Drive SE.

    c. Condition 3–Construct Lone Oak Road SE with a minimum 34-foot-wide

Code authority references are abbreviated in this document as follows: *Salem Revised Code* (SRC); *Public Works Design Standards* (PWDS); *Salem Transportation System Plan* (Salem TSP); and *Stormwater Management Plan* (SMP).

linking street improvement from the south line of the subject property to Rees Hill Road SE.

d. Condition 4–Pay the applicable reimbursement fee as established in the Lone Oak Road Reimbursement District pursuant to Resolution 2018-08 to contribute the development's proportional share of the costs of the full Collector street improvement of Lone Oak Road SE from Muirfield Avenue SE to Rees Hill Road SE (in the event the Reimbursement District is terminated prior to final plat approval, no reimbursement fee shall be due). The reimbursement fee shall be credited toward the performance guarantee amount required in SRC 110.100(c) for Lone Oak Road SE construction.

e. Condition 5–Convey land for dedication along the entire frontage of Devon Avenue SE to equal 30 feet from centerline.

f. Condition 6–Construct a half-street improvement to Local street standards along the entire frontage of Devon Avenue SE.

g. Condition 7–Construct 8-inch Salem Wastewater Management Master Plan sewer lines necessary to serve the development. The nearest available sewer main appears to be located at the terminus of Lone Oak Road SE at Sahalee Drive SE.

h. Condition 8–As a condition of development within the S-3 water service area, the applicant shall construct the following facilities as specified in the Water System Master Plan and approved by the Public Works Director:

    i. A 12-inch S-3 main in the portion of Lone Oak Road SE within the subject property.

    ii. A 12-inch S-3 main connecting east/west through the property from Lone Oak Road SE to Devon Avenue SE.

    iii. A 12-inch S-3 main along the entire frontage of Devon Avenue SE.

    iv. A 12-inch S-3 main in Lone Oak Road SE from the north line of the subject property to the existing main at the Lone Oak Road SE and Sahalee Drive SE intersection and /r from the south line of the subject property to the existing main in Rees Hill Road SE.

i. Condition 9–As a condition of development within the S-4 water service area, the applicant shall construct the following facilities as specified in the Water System Master Plan and approved by the Public Works Director:

i. An S-4 domestic pump station with sufficient capacity to serve entire the S-4 water service area between Lone Oak Road SE and Devon Avenue SE.

ii. An 8-inch S-4 main from the pump station to the S-4 water service area within the subject property.

iii. One or more 8-inch S-4 mains to serve each lot within the S-4 service area.

iv. An 8-inch S-4 main extended to the south line of the subject property.

v. One or more S-3 mains that provide adequate fire flow to the entire S-4 area.

2. Construct internal streets to Local street standards. An alternative street grade up to 15 percent is authorized for the portion of One Street SE between Three Street SE and Four Street SE, and for the portion of Two Street SE between Three Street SE and Lone Oak Road SE.

3. Dedicate a 10-foot public utility easement along the street frontage of all abutting and internal streets.

4. Construct water, stormwater, and sewer systems to serve each lot.

5. The applicant has two options for providing stormwater service to properties within the Powell Creek basin:

   a. Between Powell Creek and the subject property, acquire easements from downstream property owners and construct off-site improvements as needed to convey stormwater runoff from the proposed development to Powell Creek pursuant to PWDS; or

   b. Demonstrate preservation of downstream stream health through the use of continuous flow simulation that simulates such hydrologic factors as interception, soil moisture, surface runoff, interflow, base flow, evapotranspiration, and ground-water recharge. The flow control system shall be designed to match peak flow rates and durations from the pre-developed to the developed condition for the half 2-year, 5-year, 10-year, 25-year, and 100-year events.

MEMO

FACTS

Streets

1. Lone Oak Road SE

   a. Standard—This street is designated as a Collector street in the *Salem TSP*. The standard for this street classification is a 34-foot-wide improvement within a 60-foot-wide right-of-way.

   b. Existing Condition—This street terminates near Sahalee Drive SE northwest of the subject property.

2. Devon Avenue SE

   a. Standard—This street is currently under Marion County jurisdiction and is designated as a Local street in the *Salem TSP*. The standard for this street classification is a 30-foot-wide improvement within a 60-foot-wide right-of-way.

   b. Existing Condition—This street has an approximate 26-foot improvement within a 40-foot-wide right-of-way abutting the subject property.

Storm Drainage

1. Existing Stormwater

   a. Champion Swale is mapped to the west of the subject property, while an unidentified creek runs through the western portion of the property. Powell Creek is mapped east of the subject property. No public storm mains are adjacent to the proposed development.

   b. The subject property is within the Battle Creek Drainage Basin.

Water

1. Existing Water

   a. The subject property is located partially in the S-3 water service level, below an elevation of 629 feet, and partially in the S-4 water service level, above 629 feet.

   b. A 10-inch S-3 water line is located in Devon Avenue SE. Mains of this size generally convey flows of 700 to 1,700 gallons per minute.

   c. A 10-inch S-3 water line is located in Lone Oak Road SE. Mains of this size generally convey flows of 700 to 1,700 gallons per minute.

d. A 16-inch S-3 water line is located in Rees Hill Road SE. Mains of this size generally convey flows of 3,800 to 8,800 gallons per minute.

e. There is no existing S-4 water system.

Sanitary Sewer

1. Existing Sewer

   a. The property is split into two sewage drainage basins, partially toward the west line and partially toward the east.

   b. The nearest adequate linking facility for the west basin appears to be an existing 8-inch sewer line approximately 400 feet to the northwest of the property in Lone Oak Road SE.

   c. The nearest adequate linking facility for the east basin appears to be an existing 8-inch sewer line approximately 850 feet to the northeast of the property. The east basin may be able to receive service from the existing sewer main in Lone Oak Road SE.

Parks

The subject property abuts the lot designated for the future Neighborhood Park (NP 28) along its southern boundary. This property was recently purchased by the City to be developed as NP 28. A street connection and a pedestrian connection are proposed with the tentative plan.

CRITERIA AND FINDINGS

The following code references indicate the criteria that must be found to exist before an affirmative decision may be made. The applicable criteria and the corresponding findings are as follows:

SRC 205.010(d)(1)—The tentative subdivision plan complies with the standards of this Chapter and with all applicable provisions of the Unified Development Code, including, but not limited to the following:

1. Lot standards, including, but not limited to, standards for lot area, lot width and depth, lot frontage, and designation of front and rear lot lines;

2. City infrastructure standards; and

3. Any special development standards, including, but not limited to floodplain

development, special setbacks, geological or geotechnical analysis, and vision clearance.

Findings—The applicant shall provide the required field survey and subdivision plat per Statute and Code requirements outlined in the *Oregon Revised Statutes* (ORS) and SRC. If said documents do not comply with the requirements outlined in ORS and SRC, and as per SRC Chapter 205, the approval of the subdivision plat by the City Surveyor may be delayed or denied based on the non-compliant violation. It is recommended the applicant request a pre-plat review meeting between the City Surveyor and the applicant's project surveyor to ensure compliance with ORS 672.005(2)(g)&(h), 672.007(2)(b), 672.045(2), 672.060(4), *Oregon Administrative Rules* 850-020-0015(4)&(10), 820-020-0020(2), and 820-020-0045(5).

Trees that are located in the right-of-way require Tree Removal permits pursuant to SRC Chapter 86 and/or tree protection measures pursuant to PWDS.

Public Works staff has reviewed the Flood Insurance Study and Flood Insurance Rate Maps and has determined that no floodplain or floodway areas exist on the subject property.

A 10-foot-wide public utility easement is required along the frontages of all internal streets and along the frontages of Lone Oak Road SE and Devon Avenue SE pursuant to SRC 803.035(n).

The Salem-Keizer Local Wetland Inventory shows that there are wetland channels and/or hydric soils mapped on the property. The applicant should contact the Oregon Department of State Lands to verify if any permits are required for development or construction in the vicinity of the mapped wetland area(s). Wetland notice was sent to the Oregon Department of State Lands pursuant to SRC 809.025.

According to the City's adopted landslide hazard susceptibility maps and SRC Chapter 810 (Landslide Hazards), there are areas of landslide susceptibility on the subject property. There are 2 mapped site points for the property pursuant to SRC Chapter 810. The proposed subdivision adds three activity points to the proposal, which results in a total of 5 points. Therefore, the proposed subdivision is classified as a moderate landslide risk and requires a geologic assessment. A geologic assessment, prepared by Redmond Geotechnical Services and dated August 11, 2017, was submitted to the City of Salem. This assessment demonstrates the subject property could be subdivided and developed with single-family dwellings, without increasing the potential for slope hazard on the site or adjacent properties.

SRC 205.010(d)(3)—Development within the tentative subdivision plan can be adequately served by City infrastructure.

Findings—The subject property is located outside of the Urban Service Area and Urban Growth Preliminary Declaration Case No. UGA17-06 was issued July 17, 2018. Pursuant to SRC 200.055, 200.060, 200.065, 200.070, the proposed development shall be linked to existing adequate facilities as defined in SRC 200.005. Developments are also required to extend public utility services to serve upstream and neighboring properties. The applicant shall provide linking water mains consistent with the *Water System Master Plan* adequate to convey fire flows to serve the proposed development as specified in the *Water Distribution Design Standards*. These improvements ensure that permanent water service is available in accordance with the *Water System Master Plan*.

As a condition of development within the S-3 water service area, the applicant shall construct the following facilities as specified in the *Water System Master Plan* and approved by the Public Works Director:

1. A 12-inch S-3 main in the portion of Lone Oak Road SE within the subject property.

2. A 12-inch S-3 main connecting east/west through the property from Lone Oak Road SE to Devon Avenue SE.

3. A 12-inch S-3 main along the entire frontage of Devon Avenue SE.

4. A 12-inch S-3 main in Lone Oak Road SE from the north line of the subject property to the existing main at the Lone Oak Road SE and Sahalee Drive SE intersection and or from the south line of the subject property to the existing main in Rees Hill Road SE.

Based on the topography of the subject property, the S-4 area of the proposed development shall receive domestic service from the S-4 service level and fire service from the S-3 service level. As a condition of development within the S-4 water service area, the applicant shall construct the following facilities as specified in the Water System Master Plan and approved by the Public Works Director:

1. An S-4 domestic pump station with sufficient capacity to serve entire the S-4 water service area between Lone Oak Road SE and Devon Avenue SE.

2. An 8-inch S-4 main from the pump station to the S-4 water service area within the subject property.

3. One or more 8-inch S-4 mains to serve each lot within the S-4 service area.

4. An 8-inch S-4 main extended to the south line of the subject property.

5. One or more S-3 mains that provide adequate fire flow to the entire S-4 area.

MEMO

As a condition of sewer service, all developments will be required to provide public sewers to adjacent upstream parcels. This shall include the extension of sewer mains in easements or rights-of-way across the property to adjoining properties, and across the street frontage of the property to adjoining properties when the main is located in the street right-of-way. This shall include trunk sewers that are oversized to provide capacity for upstream development (PWDS Sewer Division 003). Pursuant to SRC 200.060, the proposed development shall be linked to adequate facilities by the construction of sewer lines and pumping stations, which are necessary to connect to such existing sewer facilities. The nearest available sewer facility appears to be located in Sahalee Drive SE, both northwest and northeast of the subject property. The applicant shall construct 8-inch Salem Wastewater Management Master Plan sewer lines necessary to serve the development and upstream parcels. The applicant shall construct the *Salem Wastewater Management Master Plan* improvements and link the site to existing facilities that are defined as adequate under SRC 200.005.

The proposed development is subject to SRC Chapter 71 and the revised PWDS as adopted in Administrative Rule 109, Division 004. To demonstrate the proposed parcels can meet the PWDS, the applicant shall provide an engineered tentative stormwater design to accommodate future impervious surface on all proposed lots. Public Works staff has reviewed the tentative stormwater design and recommends that additional area will be required to accommodate the stormwater facilities needed to serve the proposed development. The final stormwater facility requirements will be determined at the time of construction plan approval.

The nearest available public storm system appears to be Champion Swale to the west and county ditches along Devon Avenue SE to the east of the subject property. The applicant shall link the on-site system to existing facilities that are defined as adequate under SRC 200.005. The applicant has two options for providing stormwater service to properties within the Powell Creek basin: (1) Between Powell Creek and the subject property, acquire easements from downstream property owners and construct off-site improvements as needed to convey stormwater runoff from the proposed development to Powell Creek pursuant to PWDS; or (2) Demonstrate preservation of downstream stream health through the use of continuous flow simulation that simulates such hydrologic factors as interception, soil moisture, surface runoff, interflow, base flow, evapotranspiration, and ground-water recharge. The flow control system shall be designed to match peak flow rates and durations from the pre-developed to the developed condition for the half 2-year, 5-year, 10-year, 25-year, and 100-year events.

As specified in the conditions of approval, private water, sewer, and storm services shall be constructed to serve each lot as a condition of plat approval. All public and private City infrastructure proposed to be located in the public right-of-way shall be constructed or secured per SRC 205.035(c)(7)(B) prior to final plat approval. Any easements needed to serve the proposed parcels with City infrastructure shall be shown on the final plat.

SRC 205.010(d)(4) and SRC 205.0010(d)(5)—The street system in and adjacent to the tentative subdivision plan conforms to the *Salem Transportation System Plan*. The street system in and adjacent to the tentative subdivision plan is designed so as to provide for the safe, orderly, and efficient circulation of traffic into, through, and out of the subdivision.

Finding— Pursuant to SRC 200.055(c), all streets abutting the property boundaries shall be designed to the greater of the standards of SRC Chapter 803 and the standards of linking streets in SRC 200.055(b).

Lone Oak Road SE is a future Collector street along the western boundary of the subject property in the Salem TSP and is planned to connect Muirfield Avenue SE to Rees Hill Road SE. To provide safe, orderly, and efficient circulation of traffic into, through, and out of the subdivision, the applicant shall acquire and convey land for dedication of right-of-way to equal a width of 60 feet in an alignment approved by the Public Works Director as specified for the future Collector street from the existing terminus of Lone Oak Road SE at Sahalee Drive SE to Rees Hill Road SE, construct Lone Oak Road SE with a minimum 34-foot-wide full Collector street improvement from Sahalee Drive SE to the south line of the subject property, and construct Lone Oak Road SE with a minimum 34-foot-wide linking street improvement from the south line of the subject property to Rees Hill Road SE pursuant to SRC Chapters 200 and 803.

City Council approved the Lone Oak Reimbursement District under Resolution 2018-08 on January 22, 2018. This district provides a funding mechanism for completion of Lone Oak Road SE from Muirfield Avenue SE to Rees Hill Road SE so that all benefited properties pay a proportional share of the cost for street improvements. Pursuant to Resolution 2018-08, the applicant is required to pay the applicable reimbursement fee as established in the Lone Oak Road Reimbursement District for development's proportional share of the costs of the full Collector street improvement of Lone Oak Road SE from Muirfield Avenue SE to Rees Hill Road SE. The reimbursement fee shall be credited toward the performance guarantee amount required in SRC 110.100(c) for the construction of Lone Oak Road SE.

Devon Avenue SE abuts the subject property and does not meet the current standard for a Local street. As identified in the conditions of approval, the applicant is required to convey land for dedication equal to 30 feet from the centerline and construct a half-street improvement along the entire frontage of Devon Avenue SE pursuant to SRC Chapter 803 and PWDS.

All internal streets will be constructed to Local Street standards as specified in the Salem TSP, with the exception of the proposed One Street SE and Two Street SE on the applicant's tentative plan. The applicant is requesting an alternative street standard for One Street SE and Two Street SE to allow for grade greater than 12 percent due to the existing topography and physical constraints of the site. Pursuant to

SRC 803.065(a), the Director may authorize the use of one or more alternate street standards: (1) where existing development or physical constraints make compliance with the standards set forth in this chapter impracticable; and (3) where topography or other conditions make the construction that conforms to the standards impossible or undesirable. Based on topographic constraints, the Public Works Director authorizes the proposed grade of up to 15 percent for the portion of One Street SE between Three Street SE and Four Street SE, and for the portion of Two Street SE between Three Street SE and Lone Oak Road SE.

SRC 205.010(d)(6)—The tentative subdivision plan provides safe and convenient bicycle and pedestrian access from within the subdivision to adjacent residential areas and transit stops, and to neighborhood activity centers within one-half mile of the development. For purposes of this criterion, neighborhood activity centers include, but are not limited to, existing or planned schools, parks, shopping areas, transit stops, or employment centers.

Findings—Future Neighborhood Park (NP 28) is a recently purchased, undeveloped park site that abuts the southern boundary of the proposed development. This park acquisition satisfies condition 10 of UG Preliminary Declaration Case No. UGA17-06. A street connection and a pedestrian sidewalk connection are proposed from the subject property to the park. The pedestrian path shall be constructed to Public Works Standard Plan No. 314. Curb ramps shall be constructed to PWDS. No park-related improvements are recommended as a condition of development.

SRC 205.010(d)(7)—The tentative subdivision plan mitigates impacts to the transportation system consistent with the approved Traffic Impact Analysis (TIA), where applicable.

Findings— The proposed 84-lot subdivision generates less than 1,000 average daily vehicle trips to Lone Oak Road SE (a Collector street). Therefore, a TIA was not required as part of the proposed subdivision submittal.

Prepared by: Jennifer Scott, Program Manager
cc: File

NOTICE OF DECISION

PLANNING DIVISION
555 LIBERTY ST. SE, RM 305
SALEM, OREGON 97301
PHONE: 503-588-6173
FAX: 503-588-6005

CITY OF Salem AT YOUR SERVICE

Si necesita ayuda para comprender esta informacion, por forvor llame 503-588-6173

ADMINISTRATIVE DECISION FOR MODIFICATION OF TENTATIVE SUBDIVISION PLAN

CASE NO.:	SUB19-05MOD1
AMANDA NO.:	19-125355-LD
DATE OF DECISION :	January 23, 2020
PROPERTY LOCATION:	6719 Devon Avenue SE
APPLICANT:	

REQUEST

Modification of the approval of SUB19-05 (the "Grantham Crest" subdivision) to add phasing. The request is to add three phases, Phase 1 with 42 Lots, Phase 2 with 23 Lots and Phase 3 with 19 Lots. The modification does not result in additional lots.

The subject property is approximately 19.89 acres in size, zoned RS (Single Family Residential), and located at 6719 Devon Avenue SE (Marion County Assessor Map and Tax Lot Numbers 083W22C00300).

DECISION

The requested modification of the tentative subdivision plan is APPROVED subject to the applicable standards of the Salem Revised Code, the findings contained herein, and the findings and conditions adopted in the approval of Tentative Subdivision plan, SUB19-05, unless otherwise indicated. Conditions are amended to include the following phasing:

All Phases:

Condition 1: The subdivision shall be phased in the following order:
Phase 1: 42 Lots
Phase 2: 23 Lots
Phase 3: 19 Lots

Condition 2: Lots 9-15 and 79-82 shall have fire sprinklers provided at the time of building permits or meets the City of Salem Fire Department standards.

Condition 3: Obtain demolition permits and remove all structures (dwelling and accessory structure) located on the subject property.

Condition 4: The designated front lot line for lots 9, 23, 24, 44, 45 and 77 are as follows:

Lot Number	Front Lot Line
Lot 9	West
Lot 23	South
Lot 24	South
Lot 44	South
Lot 45	South
Lot 77	North

Condition 5: Construct water, stormwater, and sewer systems to serve each lot.

Condition 6: Any existing septic tank systems on the subject property shall be abandoned in accordance with Department of Environmental Quality standards.

Condition 7: Construct internal streets to local street standards, except for an alternative street grade up to 15 percent is authorized for portions of One Street and Two Street as shown in Attachment B.

Condition 8: Dedicate a 10-foot-wide public utility easement (PUE) along the street frontage of all internal streets.

Condition 9: Prior to final plat, the applicant have an approved tree conservation plan.

Phase I

Condition 10: Prior to final plat, the applicant shall comply with the conditions of approval for UG Preliminary Declaration Case No. UGA17-06:

a. Condition 1 – Acquire and convey land for dedication of right-of-way to equal a width of 60 feet in an alignment approved by the Public Works Director as specified for the future Collector street in the Salem Transportation System Plan (TSP) from the existing terminus of Lone Oak Road SE at Sahalee Drive SE to Rees Hill Road SE.

b. Condition 2 – Construct Lone Oak Road SE with a minimum 34-foot-wide full Collector street improvement within the subject property and from the north line of the subject property to Sahalee Drive SE.

c. Condition 3 – Construct Lone Oak Road SE with a minimum 34-foot-wide linking street improvement from the south line of the subject property to Rees Hill Road SE.

d. Condition 4 – Pay the applicable reimbursement fee, applicable for each phase, as established in the Lone Oak Road Reimbursement District pursuant to Resolution 2018-08 to contribute the development's proportional share of the costs of the full Collector street improvement of Lone Oak Road SE from Muirfield Avenue SE to Rees Hill Road SE (in the event the Reimbursement District is terminated prior to final plat approval, no reimbursement fee shall be due). The reimbursement fee shall be credited toward the performance guarantee amount required in SRC 110.100(c) for Lone Oak Road SE construction.

e. Condition 7 – Construct 8-inch Salem Wastewater Management Master Plan sewer lines necessary to serve the development. The nearest available sewer main appears to be located at the terminus of Lone Oak Road SE at Sahalee Drive SE.

f. Condition 8 – As a condition of development within the S-3 water service area, the applicant shall construct the following facilities, within the respective phases, as specified in the Water System Master Plan and approved by the Public Works Director:

   i. A 12-inch S-3 main in the portion of Lone Oak Road SE within the subject property.
   ii. A 12-inch S-3 main connecting east/west through the property from Lone Oak Road SE to Devon Avenue SE, within Phase I.
   iii. A 12-inch S-3 main in Lone Oak Road SE from the north line of the subject property to the existing main at the Lone Oak Road SE/Sahalee Drive SE intersection and/or from the south line of the subject property to the existing main in Rees Hill Road SE.

g. Condition 9 – As a condition of development within the S-4 water service area, the applicant shall construct the following facilities as specified in the Water System Master Plan and approved by the Public Works Director:
   i. An S-4 domestic pump station with sufficient capacity to serve entire the S-4 water service area between Lone Oak Road SE and Devon Avenue SE.
   ii. An 8-inch S-4 main from the pump station to the S-4 water service area within the subject property.
   iii. One or more 8-inch S-4 mains to serve each lot within the S-4 service area.
   iv. An 8-inch S-4 main extended to the south line of the subject property.
   v. One or more S-3 mains that provide adequate fire flow to the entire S-4 area.

Condition 11: Prior to final plat, a site plan review application shall be approved for the construction of the proposed pump station.

Condition 12: The proposed 15-foot pedestrian pathway shall be relocated between Lot 16 and Lot 17.

Phase II

Condition 13: Prior to final plat, the applicant shall provide stormwater service to properties within the Powell Creek basin by:

a. Between Powell Creek and the subject property, acquire easements from downstream property owners and construct off-site improvements as needed to convey stormwater runoff from the proposed development to Powell Creek pursuant to PWDS; or

b. Demonstrate preservation of downstream stream health through the use of continuous flow simulation that simulates such hydrologic factors as interception, soil moisture, surface runoff, interflow, base flow, evapotranspiration, and ground-water

recharge. The flow control system shall be designed to match peak flow rates and durations from the pre-developed to the developed condition for the half 2-year, 5-year, 10-year, 25-year, and 100-year events.

Condition 14: Prior to final plat, the applicant shall comply with the conditions of approval for UG Preliminary Declaration Case No. UGA17-06:

a. Condition 4 – Pay the applicable reimbursement fee, applicable for each phase, as established in the Lone Oak Road Reimbursement District pursuant to Resolution 2018-08 to contribute the development's proportional share of the costs of the full Collector street improvement of Lone Oak Road SE from Muirfield Avenue SE to Rees Hill Road SE (in the event the Reimbursement District is terminated prior to final plat approval, no reimbursement fee shall be due). The reimbursement fee shall be credited toward the performance guarantee amount required in SRC 110.100(c) for Lone Oak Road SE construction.

b. Condition 5 – Convey land for dedication ~~along the entire~~ frontage abutting Phase II of Devon Avenue SE to equal 30 feet from centerline.

c. Condition 6 – Construct a half-street improvement to Local street standards along frontage abutting Phase II of Devon Avenue SE to equal 30 feet from centerline.

d. Condition 8 – As a condition of development within the S-3 water service area, the applicant shall construct the following facilities as specified in the Water System Master Plan and approved by the Public Works Director:

   i. A 12-inch S-3 main connecting east/west through the property from Lone Oak Road SE to Devon Avenue SE, within Phase II.
   ii. A 12-inch S-3 main along the entire frontage of Devon Avenue SE, abutting in Phase II.

e. Condition 9 – As a condition of development within the S-4 water service area, the applicant shall construct the following facilities as specified in the Water System Master Plan and approved by the Public Works Director:
   i. An 8-inch S-4 main from the pump station to the S-4 water service area within the subject property, within Phase II.
   ii. One or more 8-inch S-4 mains to serve each lot within the S-4 service area within Phase II.
   iii. One or more S-3 mains that provide adequate fire flow to the entire S-4 area within Phase II.

Phase III

Condition 15: Prior to final plat, the applicant shall provide stormwater service to properties within the Powell Creek basin by:

a. Between Powell Creek and the subject property, acquire easements from downstream property owners and construct off-site improvements as needed to convey stormwater runoff from the proposed development to Powell Creek pursuant to PWDS; or

b. Demonstrate preservation of downstream stream health through the use of continuous flow simulation that simulates such hydrologic factors as interception, soil moisture, surface runoff, interflow, base flow, evapotranspiration, and ground-water recharge. The flow control system shall be designed to match peak flow rates and durations from the pre-developed to the developed condition for the half 2-year, 5-year, 10-year, 25-year, and 100-year events.

Condition 16: Prior to final plat, the applicant shall comply with the conditions of approval for UG Preliminary Declaration Case No. UGA17-06:

a. Condition 4 – Pay the applicable reimbursement fee, applicable for each phase, as established in the Lone Oak Road Reimbursement District pursuant to Resolution 2018-08 to contribute the development's proportional share of the costs of the full Collector street improvement of Lone Oak Road SE from Muirfield Avenue SE to Rees Hill Road SE (in the event the Reimbursement District is terminated prior to final plat approval, no reimbursement fee shall be due). The reimbursement fee shall be credited toward the performance guarantee amount required in SRC 110.100(c) for Lone Oak Road SE construction.

b. Condition 5 – Convey land for dedication along the entire frontage abutting Phase III of Devon Avenue SE to equal 30 feet from centerline.

c. Condition 6 – Construct a half-street improvement to Local street standards along frontage abutting Phase III of Devon Avenue SE to equal 30 feet from centerline.

d. Condition 8 – As a condition of development within the S-3 water service area, the applicant shall construct the following facilities as specified in the Water System Master Plan and approved by the Public Works Director:

    i. A 12-inch S-3 main along the entire frontage of Devon Avenue SE, abutting in Phase III.

e. Condition 9 – As a condition of development within the S-4 water service area, the applicant shall construct the following facilities as specified in the Water System Master Plan and approved by the Public Works Director:
    i. An 8-inch S-4 main from the pump station to the S-4 water service area within the subject property, within Phase III.
    ii. One or more 8-inch S-4 mains to serve each lot within the S-4 service area within Phase III.
    iii. One or more S-3 mains that provide adequate fire flow to the entire S-4 area within Phase III.

BACKGROUND

On July 29, 2019, the Planning Administrator approved Tentative Subdivision plan, SUB1-05 ("Grantham Crest"), which proposed to divide approximately 19.89 acres into 84 lots (Attachment B).

Pursuant to the order approving SUB19-05, the subdivision will expire on August 14, 2021.

PUBLIC COMMENT

Public and Private Agency Review

Public Works Department - The City of Salem Public Works Department, Development Services Section, reviewed the proposal and has provided their comments and recommendation for plat approval. Their memorandum is included as Attachment D.

Fire Department - The Salem Fire Department commented that the existing fire department access and water supply requirements remain in effect. The modification to include the phased development, when a development exceeds 30 dwelling units a second approved means of fire department access is required unless ALL structures are provided with an approved fire sprinkler system.

Salem-Keizer Public Schools – Planning and Property Services staff for the school district reviewed the proposal and submitted comments indicating that sufficient school capacity exists at the elementary and middle school levels to serve future development within the proposed subdivision but not at the high school level. The school district indicated that the subject property is not within the "walk zone" of the schools but is eligible for transportation to the elementary, middle and high schools.

Neighborhood Association Comments

The subject property is within the South Gateway Neighborhood Association. Notice of the application was provided to the neighborhood association, pursuant to SRC 300.620(b)(2)(B)(iii), which requires public notice to be sent to "any City-recognized neighborhood association whose boundaries include, or are adjacent to, the subject property." No comments were received from the South Gateway Neighborhood Association prior to the comment deadline.

Public Comments

All property owners within 250 feet of the subject property were mailed notification of the proposed subdivision. Two property owners in the vicinity of the site submitted comments prior to the comment deadline. Comments received expressed concerns with the following issues:

Traffic. Comments indicate that a traffic along Devon Road SE is dangerous and narrow when lined with cars. Concerns about the timing of Lone Oak Road being built as part of Phase 1.

Staff Response: The proposed subdivision will result in a boundary street improvement of Devon Lane SE along the frontage of the subject property to local street standards and the extension of new local streets through the subdivision are in conformance with current standards for vehicle, pedestrian, and bicycle facilities. The applicant will be connecting Lone Oak Street to Reese Hill Road, as part of the first Phase of the

subdivision. These streets will connect to existing streets and fill in gaps within the current street network. Because the proposed development will not generate traffic volumes sufficient to require a traffic impact analysis (TIA) under SRC 803.015, off-site mitigation to the existing transportation system is not warranted as a condition of the proposed development. The Assistant City Traffic Engineer has had an opportunity to review the proposal and has indicated that as proposed, the street network will provide for safe, orderly, and efficient circulation of traffic into, through, and out of the subdivision.

FINDINGS

The subject property is a 19.89-acre property addressed as 6719 Devon Avenue SE (Attachment A). In 2019, the Planning Administrator approved the tentative subdivision plan for Grantham Crest, an 84-lot subdivision (SUB19-05) located on the subject property.

The subdivision process reviews development for compliance with City standards and requirements contained in the UDC, the Salem Transportation System Plan (TSP), and the Water, Sewer, and Storm Drain System Master Plans. A second review occurs for the created lots at the time of site plan review/building permit review to assure compliance with the UDC. Compliance with conditions of approval to satisfy the UDC is checked prior to city staff signing the final subdivision plat.

A final plat has not been approved or recorded for the tentative subdivision as originally proposed. No changes to the configuration of internal streets are proposed, and points of access to the existing street network would remain the same. The applicant is proposing to record the subdivision in phases. The request is to add three phases, Phase 1 with 42 Lots, Phase 2 with 23 Lots and Phase 3 with 19 Lots. The modification does not result in additional lots.

1. Criteria for Modification of the Approval of a Tentative Subdivision Plan (SRC 205.070(d)):

SRC 205.070(d) establishes the following approval criteria for modification of the approval of a tentative subdivision plan.

SRC 205.070(d)(1): The proposed modification is not substantially inconsistent with the conditions of the original approval.

Finding: As originally approved, the proposed tentative subdivision plan would divide approximately 19.89 acres into 84 lots for single family residential development. The Planning Administrator approved the application (Case No. SUB19-05), subject to 12 conditions of final plat approval (Attachment B). A phased subdivision plan has additional criteria than which was previously approved under SUB19-05. Below the approval criteria for a tentative phased subdivision plan is addressed:

SRC 205.015(d)(1) The tentative phased subdivision plan meets all of the criteria for tentative subdivision plan approval set forth in SRC 205.010(d).

Finding: The decision criteria for SUB19-05 is addressed in the original decision, Attachment B.

SRC 205.015(d)(2) Connectivity for streets and City utilities between each phase ensures the orderly and efficient construction of required public improvements among all phases.

Finding: The phasing for a configuration of the proposed internal street system will allow public streets and utilities within street rights-of-way to be extended from each phase in a logical and efficient manner. To ensure the phasing is orderly and efficient the following condition applies:

Condition 1: The subdivision shall be phased in the following order:

Phase 1: 42 Lots
Phase 2: 23 Lots
Phase 3: 19 Lots

The proposed modification merely divides the overall project into three distinct phases and does not change any other aspects of the original application. The conditions of the original approval are unchanged, except to update new numbering on the proposed lots and that they are implemented within each phase as applicable. The order and phasing of conditions are listed below:

All Phases:

Condition 2: Lots 9-15 and 79-82 shall have fire sprinklers provided at the time of building permits or meets the City of Salem Fire Department standards.

Condition 3: Obtain demolition permits and remove all structures (dwelling and accessory structure) located on the subject property.

Condition 4: The designated front lot line for lots ~~19, 20, 42, 63, and 69~~ **9, 23, 24, 44, 45 and 77** are as follows:

Lot Number	Front Lot Line
Lot 9	West
Lot ~~19~~ **23**	~~North~~ **South**
Lot ~~20~~ **24**	~~North~~ **South**
Lot ~~42~~ **44**	South
Lot ~~63~~ **45**	South
Lot ~~69~~ **77**	~~South~~ **North**

~~**Condition 4:** Prior to final plat, the applicant shall provide stormwater service to properties within the Powell Creek basin by:~~

~~a. Between Powell Creek and the subject property, acquire easements from downstream property owners and construct off-site improvements as needed to convey stormwater runoff from the proposed development to Powell Creek pursuant to PWDS; or~~

~~b. Demonstrate preservation of downstream stream health through the use of continuous flow simulation that simulates such hydrologic factors as interception, soil moisture, surface runoff, interflow, base flow, evapotranspiration, and ground-water recharge. The flow control system shall be designed to match peak flow rates and durations from the pre-developed to the developed condition for the half 2-year, 5-year, 10-year, 25-year, and 100-year events.~~

Condition 5: Construct water, stormwater, and sewer systems to serve each lot.

Condition 6: Any existing septic tank systems on the subject property shall be abandoned in accordance with Department of Environmental Quality standards.

Condition 7: Construct internal streets to local street standards, except for an alternative street grade up to 15 percent is authorized for portions of One Street and Two Street as shown in Attachment B.

Condition 8: Dedicate a 10-foot-wide public utility easement (PUE) along the street frontage of all internal streets.

Condition 9: Prior to final plat, the applicant have an approved tree conservation plan.

Phase I

Condition 10: Prior to final plat, the applicant shall comply with the conditions of approval for UG Preliminary Declaration Case No. UGA17-06:

a. Condition 1 – Acquire and convey land for dedication of right-of-way to equal a width of 60 feet in an alignment approved by the Public Works Director as specified for the future Collector street in the Salem Transportation System Plan (TSP) from the existing terminus of Lone Oak Road SE at Sahalee Drive SE to Rees Hill Road SE.

b. Condition 2 – Construct Lone Oak Road SE with a minimum 34-foot-wide full Collector street improvement within the subject property and from the north line of the subject property to Sahalee Drive SE.

c. Condition 3 – Construct Lone Oak Road SE with a minimum 34-foot-wide linking street improvement from the south line of the subject property to Rees Hill Road SE.

d. Condition 4 – Pay the applicable reimbursement fee, applicable for each phase, as established in the Lone Oak Road Reimbursement District pursuant to Resolution 2018-08 to contribute the development's proportional share of the costs of the full Collector street improvement of Lone Oak Road SE from Muirfield Avenue SE to Rees Hill Road SE (in the event the Reimbursement District is terminated prior to final plat approval, no reimbursement fee shall be due). The

reimbursement fee shall be credited toward the performance guarantee amount required in SRC 110.100(c) for Lone Oak Road SE construction.

~~e. Condition 5 – Convey land for dedication along the entire frontage of Devon Avenue SE to equal 30 feet from centerline.~~

~~f. Condition 6 – Construct a half-street improvement to Local street standards along the entire frontage of Devon Avenue SE.~~

g. Condition 7 – Construct 8-inch Salem Wastewater Management Master Plan sewer lines necessary to serve the development. The nearest available sewer main appears to be located at the terminus of Lone Oak Road SE at Sahalee Drive SE.

h. Condition 8 – As a condition of development within the S-3 water service area, the applicant shall construct the following facilities, within the respective phases, as specified in the Water System Master Plan and approved by the Public Works Director:

   i. A 12-inch S-3 main in the portion of Lone Oak Road SE within the subject property.
   ii. A 12-inch S-3 main connecting east/west through the property from Lone Oak Road SE to Devon Avenue SE, within Phase I.
   ~~iii. A 12-inch S-3 main along the entire frontage of Devon Avenue SE.~~
   iv. A 12-inch S-3 main in Lone Oak Road SE from the north line of the subject property to the existing main at the Lone Oak Road SE/Sahalee Drive SE intersection and/or from the south line of the subject property to the existing main in Rees Hill Road SE.

i. Condition 9 – As a condition of development within the S-4 water service area, the applicant shall construct the following facilities as specified in the Water System Master Plan and approved by the Public Works Director:
   i. An S-4 domestic pump station with sufficient capacity to serve entire the S-4 water service area between Lone Oak Road SE and Devon Avenue SE.
   ii. An 8-inch S-4 main from the pump station to the S-4 water service area within the subject property.
   iii. One or more 8-inch S-4 mains to serve each lot within the S-4 service area.
   iv. An 8-inch S-4 main extended to the south line of the subject property.
   v. One or more S-3 mains that provide adequate fire flow to the entire S-4 area.

Condition 11: Prior to final plat, a site plan review application shall be approved for the construction of the proposed pump station.

Condition 12: The proposed 15-foot pedestrian pathway shall be relocated between Lot 16 and Lot 17.

Phase II

Condition 13: Prior to final plat, the applicant shall provide stormwater service to properties within the Powell Creek basin by:

a. Between Powell Creek and the subject property, acquire easements from downstream property owners and construct off-site improvements as needed to convey stormwater runoff from the proposed development to Powell Creek pursuant to PWDS; or

b. Demonstrate preservation of downstream stream health through the use of continuous flow simulation that simulates such hydrologic factors as interception, soil moisture, surface runoff, interflow, base flow, evapotranspiration, and ground-water recharge. The flow control system shall be designed to match peak flow rates and durations from the pre-developed to the developed condition for the half 2-year, 5-year, 10-year, 25-year, and 100-year events.

Condition 14: Prior to final plat, the applicant shall comply with the conditions of approval for UG Preliminary Declaration Case No. UGA17-06:

a. Condition 4 – Pay the applicable reimbursement fee, applicable for each phase, as established in the Lone Oak Road Reimbursement District pursuant to Resolution 2018-08 to contribute the development's proportional share of the costs of the full Collector street improvement of Lone Oak Road SE from Muirfield Avenue SE to Rees Hill Road SE (in the event the Reimbursement District is terminated prior to final plat approval, no reimbursement fee shall be due). The reimbursement fee shall be credited toward the performance guarantee amount required in SRC 110.100(c) for Lone Oak Road SE construction.

b. Condition 5 – Convey land for dedication ~~along the entire~~ frontage abutting Phase II of Devon Avenue SE to equal 30 feet from centerline.

c. Condition 6 – Construct a half-street improvement to Local street standards along frontage abutting Phase II of Devon Avenue SE to equal 30 feet from centerline.

d. Condition 8 – As a condition of development within the S-3 water service area, the applicant shall construct the following facilities as specified in the Water System Master Plan and approved by the Public Works Director:

   i. A 12-inch S-3 main connecting east/west through the property from Lone Oak Road SE to Devon Avenue SE, within Phase II.
   ii. A 12-inch S-3 main along the entire frontage of Devon Avenue SE, abutting in Phase II.

e. Condition 9 – As a condition of development within the S-4 water service area, the applicant shall construct the following facilities as specified in the Water System Master Plan and approved by the Public Works Director:

i. An 8-inch S-4 main from the pump station to the S-4 water service area within the subject property, within Phase II.
ii. One or more 8-inch S-4 mains to serve each lot within the S-4 service area within Phase II.
iii. One or more S-3 mains that provide adequate fire flow to the entire S-4 area within Phase II.

Phase III

Condition 15: Prior to final plat, the applicant shall provide stormwater service to properties within the Powell Creek basin by:

a. Between Powell Creek and the subject property, acquire easements from downstream property owners and construct off-site improvements as needed to convey stormwater runoff from the proposed development to Powell Creek pursuant to PWDS; or

b. Demonstrate preservation of downstream stream health through the use of continuous flow simulation that simulates such hydrologic factors as interception, soil moisture, surface runoff, interflow, base flow, evapotranspiration, and ground-water recharge. The flow control system shall be designed to match peak flow rates and durations from the pre-developed to the developed condition for the half 2-year, 5-year, 10-year, 25-year, and 100-year events.

Condition 16: Prior to final plat, the applicant shall comply with the conditions of approval for UG Preliminary Declaration Case No. UGA17-06:

a. Condition 4 – Pay the applicable reimbursement fee, applicable for each phase, as established in the Lone Oak Road Reimbursement District pursuant to Resolution 2018-08 to contribute the development's proportional share of the costs of the full Collector street improvement of Lone Oak Road SE from Muirfield Avenue SE to Rees Hill Road SE (in the event the Reimbursement District is terminated prior to final plat approval, no reimbursement fee shall be due). The reimbursement fee shall be credited toward the performance guarantee amount required in SRC 110.100(c) for Lone Oak Road SE construction.

b. Condition 5 – Convey land for dedication ~~along the entire~~ frontage abutting Phase III of Devon Avenue SE to equal 30 feet from centerline.

c. Condition 6 – Construct a half-street improvement to Local street standards along frontage abutting Phase III of Devon Avenue SE to equal 30 feet from centerline.

d. Condition 8 – As a condition of development within the S-3 water service area, the applicant shall construct the following facilities as specified in the Water System Master Plan and approved by the Public Works Director:

~~i. A 12-inch S-3 main connecting east/west through the property from Lone Oak Road SE to Devon Avenue SE.~~

ii. A 12-inch S-3 main along the entire frontage of Devon Avenue SE, abutting in Phase III.

i. Condition 9 – As a condition of development within the S-4 water service area, the applicant shall construct the following facilities as specified in the Water System Master Plan and approved by the Public Works Director:
   i. An 8-inch S-4 main from the pump station to the S-4 water service area within the subject property, within Phase III.
   ii. One or more 8-inch S-4 mains to serve each lot within the S-4 service area within Phase III.
   iii. One or more S-3 mains that provide adequate fire flow to the entire S-4 area within Phase III.

The proposed phased subdivision will not impede the future development of other phases as shown on the site plan. All phases will have access to the internal street system and the existing street system.

Each phase will ensure the orderly and efficient construction of the required improvements as required by Conditions of Approval and Code compliance. Therefore, this criterion has been met.

SRC 205.015(d)(3) Each phase is substantially and functionally self-contained and self-sustaining with regard to required public improvements.

Finding: The proposed phasing boundary, as shown on the proposed utility plan, provides for Phase 1 to function as a standalone subdivision, while retaining logical connections to future development of Phase 2 and 3.

SRC 205.015(d)(4) Each phase is designed in such a manner that all phases support the infrastructure requirements for the phased subdivision as a whole.

Finding: The proposed configuration of lots and streets within both phases are designed to provide for efficient connection of utilities and other infrastructure from Phase 1 to Phase 2 and Phase 2 to Phase 3. Because there are only three phases proposed, a design which supports the orderly and efficient extension of utilities to Phase 2 and Phase 3 effectively ensures that infrastructure requirements are supported for the phased subdivision as a whole.

The proposal meets this criterion.

SRC 205.070(d)(2): The proposed modification will not result in significant changes to the physical appearance of the development, the use of the site, and the impacts on surrounding properties.

Finding: The applicant does not propose to change the use of the site, which would be subdivided into lots for single family residential development. The applicant is proposing to phase the 84-lot subdivision, Phase 1 with 42 Lots, Phase 2 with 23 Lots and Phase 3 with 19 Lots. The modification does not result in additional lots.

The conditions are amended to reflect the requirements of each phase, there are no other modifications to the decision.

The modification does not result in reconfiguration of the existing subdivision plan and is in substantial conformance with the original approval conditions. The Tree Conservation Plan approved for the tentative subdivision plan has not altered by the requested modification and would remain in effect.

The physical appearance of the completed development would remain essentially the same as originally proposed, with no changes to the internal street system or lot configuration. Because of the identical configuration and use of the eventual completed subdivision, the requested modification would not increase or otherwise change impacts on surrounding properties. The proposal meets this criterion.

2. Effect on Expiration Period of Original Approval:

Pursuant to SRC 205.070(e), "the effect of a modification upon the expiration period of the original approval, if any, shall be established in the modification decision."

Finding: The original subdivision was recently approved and the request to phase will allow additional time for phases 2 and 3. Due to the recent approval the expiration from the original decision will remain for the first phase of the subdivision, the applicable expiration period and extensions allowed for a Phased Tentative Subdivision Plan, as set forth in SRC Chapter 300, Table 300-3, shall apply to the proposal as follows:

Phase 1: Expires August 14, 2021. Up to 4 extensions are allowed, with a maximum period of 2 years for each extension.

Phase 2 & Phase 3: Expires August 14, 2031. No extensions are allowed.

DECISION

The requested modification of the tentative subdivision plan is **APPROVED** subject to the applicable standards of the Salem Revised Code, the findings contained herein, the findings and conditions adopted in the approval of tentative subdivision plan SUB19-05 and the following modified condition:

All Phases:

Condition 1: The subdivision shall be phased in the following order:
Phase 1: 42 Lots
Phase 2: 23 Lots
Phase 3: 19 Lots

Condition 2: Lots 9-15 and 79-82 shall have fire sprinklers provided at the time of building permits or meets the City of Salem Fire Department standards.

Condition 3: Obtain demolition permits and remove all structures (dwelling and accessory structure) located on the subject property.

Condition 4: The designated front lot line for lots 9, 23, 24, 44, 45 and 77 are as follows:

Lot Number	Front Lot Line
Lot 9	West
Lot 23	South
Lot 24	South
Lot 44	South
Lot 45	South
Lot 77	North

Condition 5: Construct water, stormwater, and sewer systems to serve each lot.

Condition 6: Any existing septic tank systems on the subject property shall be abandoned in accordance with Department of Environmental Quality standards.

Condition 7: Construct internal streets to local street standards, except for an alternative street grade up to 15 percent is authorized for portions of One Street and Two Street as shown in Attachment B.

Condition 8: Dedicate a 10-foot-wide public utility easement (PUE) along the street frontage of all internal streets.

Condition 9: Prior to final plat, the applicant have an approved tree conservation plan.

Phase I

Condition 10: Prior to final plat, the applicant shall comply with the conditions of approval for UG Preliminary Declaration Case No. UGA17-06:

a. Condition 1 – Acquire and convey land for dedication of right-of-way to equal a width of 60 feet in an alignment approved by the Public Works Director as specified for the future Collector street in the Salem Transportation System Plan (TSP) from the existing terminus of Lone Oak Road SE at Sahalee Drive SE to Rees Hill Road SE.

b. Condition 2 – Construct Lone Oak Road SE with a minimum 34-foot-wide full Collector street improvement within the subject property and from the north line of the subject property to Sahalee Drive SE.

c. Condition 3 – Construct Lone Oak Road SE with a minimum 34-foot-wide linking street improvement from the south line of the subject property to Rees Hill Road SE.

d. Condition 4 – Pay the applicable reimbursement fee, applicable for each phase, as established in the Lone Oak Road Reimbursement District pursuant to Resolution 2018-08 to contribute the development's proportional share of the costs of the full Collector street improvement of Lone Oak Road SE from Muirfield Avenue SE to Rees Hill Road SE (in the event the Reimbursement District is

terminated prior to final plat approval, no reimbursement fee shall be due). The reimbursement fee shall be credited toward the performance guarantee amount required in SRC 110.100(c) for Lone Oak Road SE construction.

e. Condition 7 – Construct 8-inch Salem Wastewater Management Master Plan sewer lines necessary to serve the development. The nearest available sewer main appears to be located at the terminus of Lone Oak Road SE at Sahalee Drive SE.

f. Condition 8 – As a condition of development within the S-3 water service area, the applicant shall construct the following facilities, within the respective phases, as specified in the Water System Master Plan and approved by the Public Works Director:

   i. A 12-inch S-3 main in the portion of Lone Oak Road SE within the subject property.
   ii. A 12-inch S-3 main connecting east/west through the property from Lone Oak Road SE to Devon Avenue SE, within Phase I.
   iii. A 12-inch S-3 main in Lone Oak Road SE from the north line of the subject property to the existing main at the Lone Oak Road SE/Sahalee Drive SE intersection and/or from the south line of the subject property to the existing main in Rees Hill Road SE.

g. Condition 9 – As a condition of development within the S-4 water service area, the applicant shall construct the following facilities as specified in the Water System Master Plan and approved by the Public Works Director:
   i. An S-4 domestic pump station with sufficient capacity to serve entire the S-4 water service area between Lone Oak Road SE and Devon Avenue SE.
   ii. An 8-inch S-4 main from the pump station to the S-4 water service area within the subject property.
   iii. One or more 8-inch S-4 mains to serve each lot within the S-4 service area.
   iv. An 8-inch S-4 main extended to the south line of the subject property.
   v. One or more S-3 mains that provide adequate fire flow to the entire S-4 area.

Condition 11: Prior to final plat, a site plan review application shall be approved for the construction of the proposed pump station.

Condition 12: The proposed 15-foot pedestrian pathway shall be relocated between Lot 16 and Lot 17.

Phase II

Condition 13: Prior to final plat, the applicant shall provide stormwater service to properties within the Powell Creek basin by:

c. Between Powell Creek and the subject property, acquire easements from downstream property owners and construct off-site improvements as needed to convey stormwater runoff from the proposed development to Powell Creek pursuant to PWDS; or

d. Demonstrate preservation of downstream stream health through the use of continuous flow simulation that simulates such hydrologic factors as interception, soil moisture, surface runoff, interflow, base flow, evapotranspiration, and ground-water recharge. The flow control system shall be designed to match peak flow rates and durations from the pre-developed to the developed condition for the half 2-year, 5-year, 10-year, 25-year, and 100-year events.

Condition 14: Prior to final plat, the applicant shall comply with the conditions of approval for UG Preliminary Declaration Case No. UGA17-06:

a. Condition 4 – Pay the applicable reimbursement fee, applicable for each phase, as established in the Lone Oak Road Reimbursement District pursuant to Resolution 2018-08 to contribute the development's proportional share of the costs of the full Collector street improvement of Lone Oak Road SE from Muirfield Avenue SE to Rees Hill Road SE (in the event the Reimbursement District is terminated prior to final plat approval, no reimbursement fee shall be due). The reimbursement fee shall be credited toward the performance guarantee amount required in SRC 110.100(c) for Lone Oak Road SE construction.

b. Condition 5 – Convey land for dedication ~~along the entire~~ frontage abutting Phase II of Devon Avenue SE to equal 30 feet from centerline.

c. Condition 6 – Construct a half-street improvement to Local street standards along frontage abutting Phase II of Devon Avenue SE to equal 30 feet from centerline.

d. Condition 8 – As a condition of development within the S-3 water service area, the applicant shall construct the following facilities as specified in the Water System Master Plan and approved by the Public Works Director:

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   ii. A 12-inch S-3 main along the entire frontage of Devon Avenue SE, abutting in Phase II.

e. Condition 9 – As a condition of development within the S-4 water service area, the applicant shall construct the following facilities as specified in the Water System Master Plan and approved by the Public Works Director:
   i. An 8-inch S-4 main from the pump station to the S-4 water service area within the subject property, within Phase II.
   ii. One or more 8-inch S-4 mains to serve each lot within the S-4 service area within Phase II.
   iii. One or more S-3 mains that provide adequate fire flow to the entire S-4 area within Phase II.

Phase III

Condition 15: Prior to final plat, the applicant shall provide stormwater service to properties within the Powell Creek basin by:

a. Between Powell Creek and the subject property, acquire easements from

downstream property owners and construct off-site improvements as needed to convey stormwater runoff from the proposed development to Powell Creek pursuant to PWDS; or

b. Demonstrate preservation of downstream stream health through the use of continuous flow simulation that simulates such hydrologic factors as interception, soil moisture, surface runoff, interflow, base flow, evapotranspiration, and ground-water recharge. The flow control system shall be designed to match peak flow rates and durations from the pre-developed to the developed condition for the half 2-year, 5-year, 10-year, 25-year, and 100-year events.

Condition 16: Prior to final plat, the applicant shall comply with the conditions of approval for UG Preliminary Declaration Case No. UGA17-06:

a. Condition 4 – Pay the applicable reimbursement fee, applicable for each phase, as established in the Lone Oak Road Reimbursement District pursuant to Resolution 2018-08 to contribute the development's proportional share of the costs of the full Collector street improvement of Lone Oak Road SE from Muirfield Avenue SE to Rees Hill Road SE (in the event the Reimbursement District is terminated prior to final plat approval, no reimbursement fee shall be due). The reimbursement fee shall be credited toward the performance guarantee amount required in SRC 110.100(c) for Lone Oak Road SE construction.

b. Condition 5 – Convey land for dedication ~~along the entire~~ frontage abutting Phase III of Devon Avenue SE to equal 30 feet from centerline.

c. Condition 6 – Construct a half-street improvement to Local street standards along frontage abutting Phase III of Devon Avenue SE to equal 30 feet from centerline.

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e. Condition 9 – As a condition of development within the S-4 water service area, the applicant shall construct the following facilities as specified in the Water System Master Plan and approved by the Public Works Director:
   i. An 8-inch S-4 main from the pump station to the S-4 water service area within the subject property, within Phase III.
   ii. One or more 8-inch S-4 mains to serve each lot within the S-4 service area within Phase III.
   iii. One or more S-3 mains that provide adequate fire flow to the entire S-4 area within Phase III.



Olivia Glantz, Planning Administrator Designee

Planning Administrator Designee

Attachments: A. Vicinity Map
B. Planning Administrator decision approving SUB19-05
C. Modified Subdivision Plan
D. Public Works Memo

Application Deemed Complete:	December 27, 2019
Notice of Decision Mailing Date:	January 23, 2020
Decision Effective Date:	February 8, 2020
State Mandated Decision Date:	April 25, 2020

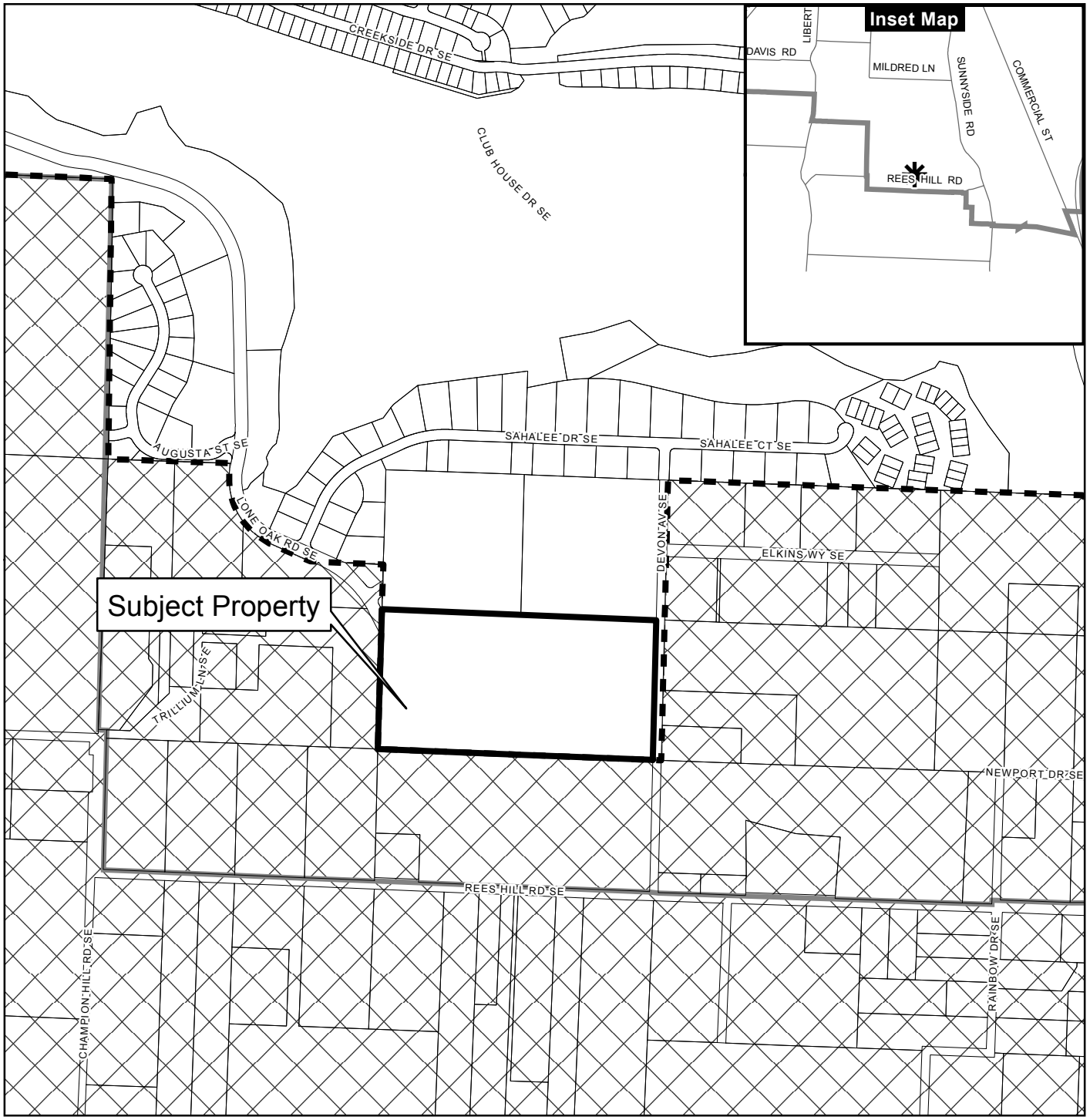
A copy of the complete Case File is available for review during regular business hours at the Planning Division office, 555 Liberty Street SE, Room 305, Salem OR 97301.

The rights granted by this decision must be exercised or extension granted by February 8, 2022 or this approval shall be null and void.

This decision is final unless written appeal from a party with standing to appeal, along with an appeal fee, is filed with the City of Salem Planning Division, Room 305, 555 Liberty Street SE, Salem, Oregon 97301, no later than **Friday, February 7, 2020, 5:00 p.m.** The notice of appeal must contain the information required by SRC 300.1020. The notice of appeal must be filed in duplicate with the City of Salem Planning Division. The appeal fee must be paid at the time of filing. If the notice of appeal is untimely and/or lacks the proper fee, the notice of appeal will be rejected. The Salem Planning Commission will review the appeal at a public hearing. The Planning Commission may amend, rescind, or affirm the action or refer the matter to staff for additional information.

cc: Alan Kessler, GIS

Vicinity Map
6719 Devon Avenue SE



Legend

- Taxlots
- Urban Growth Boundary
- City Limits
- Outside Salem City Limits
- Historic District
- Schools
- Parks

0 100 200 400 Feet

CITY OF Salem AT YOUR SERVICE
Community Development Dept.

This product is provided as is, without warranty. In no event is the City of Salem liable for damages from the use of this product. This product is subject to license and copyright limitations and further distribution or resale is prohibited.

NOTICE OF DECISION

PLANNING DIVISION
555 LIBERTY ST. SE, RM 305
SALEM, OREGON 97301
PHONE: 503-588-6173
FAX: 503-588-6005

CITY OF Salem AT YOUR SERVICE

Si necesita ayuda para comprender esta informacion, por favor llame 503-588-6173

DECISION OF THE PLANNING ADMINISTRATOR

SUBDIVISION CASE NO.: SUB19-05

APPLICATION NO. : 19-109483-LD

NOTICE OF DECISION DATE: July 29, 2019

REQUEST: A tentative subdivision plan to divide approximately 19.89 acres into 84 lots ranging in size from 6,000 square feet to 10,630 square feet. The applicant is requesting an alternative street standard to increase the grade of Lone Oak Road SE (collector) from eight percent to twelve percent and increase the grade of two local streets, One Avenue and Two Avenue, from twelve percent to approximately fifteen percent.

The subject property is approximately 19.89 acres in size, zoned RS (Single Family Residential), and located at 6719 Devon Avenue SE (Marion County Assessor Map and Tax Lot Numbers 083W22C00300).

APPLICANT(S): HSF Development, LLC (Chris Jundt, Anthony R. Kreitzberg, Kelley D. Hamilton)

OWNER(S): Devon Property, LLC (Kelley D. Hamilton)

LOCATION: 6719 Devon Avenue SE / 97306

CRITERIA: Subdivision: SRC 205.010(d)

FINDINGS: The facts and findings are in the attached Order dated July 29, 2019.

DECISION: The Planning Administrator **APPROVED** Subdivision Case No.: SUB19-05 subject to the following conditions of approval:

Condition 1: Lots 9-15 and 79-82 shall have fire sprinklers provided at the time of building permits or meets the City of Salem Fire Department standards.

Condition 2: Obtain demolition permits and remove all structures (dwelling and accessory structure) located on the subject property.

Condition 3: The designated front lot line for lots 19, 20, 42, 63, and 69 are as follows:

Lot Number	Front Lot Line
Lot 9	West
Lot 19	North
Lot 20	North
Lot 42	South
Lot 63	South
Lot 69	South

Condition 4: Prior to final plat, the applicant shall provide stormwater service to properties within the Powell Creek basin by:

a. Between Powell Creek and the subject property, acquire easements from downstream property owners and construct off-site improvements as needed to convey stormwater runoff from the proposed development to Powell Creek pursuant to PWDS; or

b. Demonstrate preservation of downstream stream health through the use of continuous flow simulation that simulates such hydrologic factors as interception, soil moisture, surface runoff, interflow, base flow, evapotranspiration, and ground-water recharge. The flow control system shall be designed to match peak flow rates and durations from the pre-developed to the developed condition for the ½ 2-year, 5-year, 10-year, 25-year, and 100-year events.

Condition 5: Prior to final plat, the applicant shall comply with the conditions of approval for UG Preliminary Declaration Case No. UGA17-06:

a. Condition 1 – Acquire and convey land for dedication of right-of-way to equal a width of 60 feet in an alignment approved by the Public Works Director as specified for the future Collector street in the Salem Transportation System Plan (TSP) from the existing terminus of Lone Oak Road SE at Sahalee Drive SE to Rees Hill Road SE.

b. Condition 2 – Construct Lone Oak Road SE with a minimum 34-foot-wide full Collector street improvement within the subject property and from the north line of the subject property to Sahalee Drive SE.

c. Condition 3 – Construct Lone Oak Road SE with a minimum 34-foot-wide linking street improvement from the south line of the subject property to Rees Hill Road SE.

d. Condition 4 – Pay the applicable reimbursement fee as established in the Lone Oak Road Reimbursement District pursuant to Resolution 2018-08 to contribute the development's proportional share of the costs of the full Collector street improvement of Lone Oak Road SE from Muirfield Avenue SE to Rees Hill Road SE (in the event the Reimbursement District is terminated prior to final plat approval, no reimbursement fee shall be due). The reimbursement fee shall be credited toward the performance guarantee amount required in SRC 110.100(c) for Lone Oak Road SE construction.

e. Condition 5 – Convey land for dedication along the entire frontage of Devon Avenue SE to equal 30 feet from centerline.

f. Condition 6 – Construct a half-street improvement to Local street standards along the entire frontage of Devon Avenue SE.

g. Condition 7 – Construct 8-inch Salem Wastewater Management Master Plan sewer lines necessary to serve the development. The nearest available sewer main appears to be located at the terminus of Lone Oak Road SE at Sahalee Drive SE.

h. Condition 8 – As a condition of development within the S-3 water service area, the applicant shall construct the following facilities as specified in the Water System Master Plan and approved by the Public Works Director:

   1. A 12-inch S-3 main in the portion of Lone Oak Road SE within the subject property.
   2. A 12-inch S-3 main connecting east/west through the property from Lone Oak Road SE to Devon Avenue SE.
   3. A 12-inch S-3 main along the entire frontage of Devon Avenue SE.

i. A 12-inch S-3 main in Lone Oak Road SE from the north line of the subject property to the existing main at the Lone Oak Road SE/Sahalee Drive SE intersection and/or from the south line of the subject property to the existing main in Rees Hill Road SE.

j. Condition 9 – As a condition of development within the S-4 water service area, the applicant shall construct the following facilities as specified in the Water System Master Plan and approved by the Public Works Director:
   1. An S-4 domestic pump station with sufficient capacity to serve entire the S-4 water service area between Lone Oak Road SE and Devon Avenue SE.
   2. An 8-inch S-4 main from the pump station to the S-4 water service area within the subject property.
   3. One or more 8-inch S-4 mains to serve each lot within the S-4 service area.
   4. An 8-inch S-4 main extended to the south line of the subject property.
   5. One or more S-3 mains that provide adequate fire flow to the entire S-4 area

Condition 6: Prior to final plat, a site plan review application shall be approved for the construction of the proposed pumping station.

Condition 7: Construct water, stormwater, and sewer systems to serve each lot

Condition 8: Any existing septic tank systems on the subject property shall be abandoned in accordance with Department of Environmental Quality standards.

Condition 9: Construct internal streets to local street standards, except for an alternative street grade up to 15 percent is authorized for portions of One Street and Two Street as shown in Attachment B.

Condition 10: Dedicate a 10-foot-wide public utility easement (PUE) along the street frontage of all internal streets.

Condition 11: The proposed 15-foot pedestrian pathway shall be relocated between Lot 16 and Lot 17.

Condition 12: Prior to final plat, the applicant have an approved tree conservation plan.

The rights granted by the attached decision must be exercised, or an extension granted, by August 14, 2021 or this approval shall be null and void.

Application Deemed Complete:	July 2, 2019
Notice of Decision Mailing Date:	July 29, 2019
Decision Effective Date:	August 14, 2019
State Mandate Date:	October 30, 2019

Case Manager: Olivia Glantz, OGlantz@cityofsalem.net

This decision is final unless written appeal from an aggrieved party is filed with the City of Salem Planning Division, Room 305, 555 Liberty Street SE, Salem OR 97301, **no later than 5:00 p.m., Tuesday, August 13, 2019.** The notice of appeal must contain the information required by SRC 300.1020 and must state where the decision failed to conform to the provisions of the applicable code section, SRC Chapter(s) 205. The appeal must be filed in duplicate with the City of Salem Planning Division. The appeal fee must be paid at the time of filing. If the appeal is untimely and/or lacks the proper fee, the appeal will be rejected. The Salem Planning Commission will review the appeal at a public hearing. After the hearing, the Planning Commission may amend, rescind, or affirm the action, or refer the matter to staff for additional information.

The complete case file, including findings, conclusions and conditions of approval, if any, is available for review at the Planning Division office, Room 305, City Hall, 555 Liberty Street SE, during regular business hours.

http://www.cityofsalem.net/planning

BEFORE THE PLANNING ADMINISTRATOR
OF THE CITY OF SALEM
(SUBDIVISION PLAT NO. 17-02)

Si necesita ayuda para comprender esta información, por favor llame 503-588-6173
http://www.cityofsalem.net/planning

IN THE MATTER OF THE	**)**	**FINDINGS AND ORDER**
TENTATIVE APPROVAL OF	**)**	
SUBDIVISION PLAT NO. 19-05;	**)**	
6719 DEVON AVENUE SE	**)**	**JULY 29, 2019**

REQUEST

A tentative subdivision plan to divide approximately 19.89 acres into 84 lots ranging in size from 6,000 square feet to 10,115 square feet. The applicant is requesting an alternative street standard to increase the grade of Lone Oak Road SE (collector) from eight percent to twelve percent and increase the grade of two local streets, One Avenue and Two Avenue, from twelve percent to approximately fifteen percent.

The subject property is approximately 19.89 acres in size, zoned RS (Single Family Residential), and located at 6719 Devon Avenue SE (Marion County Assessor Map and Tax Lot Numbers 083W22C00300).

DECISION

The tentative subdivision plan is APPROVED subject to the applicable standards of the Salem Revised Code, the findings contained herein, and the following conditions of final plat approval, unless otherwise indicated:

Condition 1: Lots 9-15 and 79-82 shall have fire sprinklers provided at the time of building permits or meets the City of Salem Fire Department standards.

Condition 2: Obtain demolition permits and remove all structures (dwelling and accessory structure) located on the subject property.

Condition 3: The designated front lot line for lots 19, 20, 42, 63, and 69 are as follows:

Lot Number	Front Lot Line
Lot 9	West
Lot 19	North
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Lot 69	South

Condition 4: Prior to final plat, the applicant shall provide stormwater service to properties within the Powell Creek basin by:

a. Between Powell Creek and the subject property, acquire easements from downstream property owners and construct off-site improvements as needed to convey stormwater runoff from the proposed development to Powell Creek pursuant to PWDS; or

b. Demonstrate preservation of downstream stream health through the use of continuous flow simulation that simulates such hydrologic factors as interception, soil moisture, surface runoff, interflow, base flow, evapotranspiration, and ground-water recharge. The flow control system shall be designed to match peak flow rates and durations from the pre-developed to the developed condition for the ½ 2-year, 5-year, 10-year, 25-year, and 100-year events.

Condition 5: Prior to final plat, the applicant shall comply with the conditions of approval for UG Pr Declaration Case No. UGA17-06:

a. Condition 1 – Acquire and convey land for dedication of right-of-way to equal a width of 60 feet in an alignment approved by the Public Works Director as specified for the future Collector street in the Salem Transportation System Plan (TSP) from the existing terminus of Lone Oak Road SE at Sahalee Drive SE to Rees Hill Road SE.

b. Condition 2 – Construct Lone Oak Road SE with a minimum 34-foot-wide full Collector street improvement within the subject property and from the north line of the subject property to Sahalee Drive SE.

c. Condition 3 – Construct Lone Oak Road SE with a minimum 34-foot-wide linking street improvement from the south line of the subject property to Rees Hill Road SE.

d. Condition 4 – Pay the applicable reimbursement fee as established in the Lone Oak Road Reimbursement District pursuant to Resolution 2018-08 to contribute the development's proportional share of the costs of the full Collector street improvement of Lone Oak Road SE from Muirfield Avenue SE to Rees Hill Road SE (in the event the Reimbursement District is terminated prior to final plat approval, no reimbursement fee shall be due). The reimbursement fee shall be credited toward the performance guarantee amount required in SRC 110.100(c) for Lone Oak Road SE construction.

e. Condition 5 – Convey land for dedication along the entire frontage of Devon Avenue SE to equal 30 feet from centerline.

f. Condition 6 – Construct a half-street improvement to Local street standards along the entire frontage of Devon Avenue SE.

g. Condition 7 – Construct 8-inch Salem Wastewater Management Master Plan sewer lines necessary to serve the development. The nearest available sewer main appears to be located at the terminus of Lone Oak Road SE at Sahalee Drive SE.

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   1. A 12-inch S-3 main in the portion of Lone Oak Road SE within the subject property.
   2. A 12-inch S-3 main connecting east/west through the property from Lone Oak Road SE to Devon Avenue SE.
   3. A 12-inch S-3 main along the entire frontage of Devon Avenue SE.
   4. A 12-inch S-3 main in Lone Oak Road SE from the north line of the subject property to the existing main at the Lone Oak Road SE/Sahalee Drive SE intersection and/or from the south line of the subject property to the existing main in Rees Hill Road SE.

i. Condition 9 – As a condition of development within the S-4 water service area, the applicant shall construct the following facilities as specified in the Water System Master Plan and approved by the Public Works Director:
   1. An S-4 domestic pump station with sufficient capacity to serve entire the S-4 water service area between Lone Oak Road SE and Devon Avenue SE.
   2. An 8-inch S-4 main from the pump station to the S-4 water service area within the subject property.
   3. One or more 8-inch S-4 mains to serve each lot within the S-4 service area.
   4. An 8-inch S-4 main extended to the south line of the subject property.
   5. One or more S-3 mains that provide adequate fire flow to the entire S-4 area

Condition 6: Prior to final plat, a site plan review application shall be approved for the construction of the proposed pumping station.

Condition 7: Construct water, stormwater, and sewer systems to serve each lot

Condition 8: Any existing septic tank systems on the subject property shall be abandoned in accordance with Department of Environmental Quality standards.

Condition 9: Construct internal streets to local street standards, except for an alternative street grade up to 15 percent is authorized for portions of One Street and Two Street as shown in Attachment B.

Condition 10: Dedicate a 10-foot-wide public utility easement (PUE) along the street frontage of all internal streets.

Condition 11: The proposed 15-foot pedestrian pathway shall be relocated between Lot 16 and Lot 17.

Condition 12: Prior to final plat, the applicant have an approved tree conservation plan.

PROCEDURAL FINDINGS

1. On April 18, 2019, an application for a Tentative Subdivision Plan was filed proposing to divide a 19.89 acre property at 6719 Devon Avenue SE (Attachment B) into 84 lots.

2. After the applicant submitted additional required information, the application was deemed complete for processing on July 2, 2019. Notice to surrounding property owners was mailed pursuant to Salem Revised Code on July 3, 2019.

3. The state-mandated local decision deadline is October 30, 2019.

SUBSTANTIVE FINDINGS

1. Proposal

The tentative plan proposes to divide the property into 84 lots, ranging from 6,000 square feet to 10,115 square feet (Attachment B). All lots within the subdivision are proposed to take access directly from public streets.

The applicant has not proposed any specific phasing for the subdivision or residential development. The proposed configuration does not include any double frontage lots.

2. Existing Conditions

Site and Vicinity

The subject property consists of one rectangular tax lot extending approximately 1,300 feet eastward from the connection with Lone Oak Road frontage. The abutting properties to the north, south and east are vacant undeveloped properties. One of the 10 acre properties to the north has been previously approved for a single family subdivision (SUB08-4). The previously approved subdivision on the northern 10 acres required as a condition of approval connection to the subject property.

The eastern portion of the tax lot, near the Devon Avenue SE frontage, is developed with single family residences. The western portion have remained undeveloped over the years. The tentative subdivision plan shows the existing dwelling and accessory structures will be removed.

The vicinity is primarily characterized by rural residential areas, agricultural use and the approximately 600 feet of continuous frontage along Devon Avenue SE. Overall elevation change on the site ranges from approximately 652 feet to 542 feet above sea level, sloping downward to Devon Avenue SE frontage to the east property line and the west property line. Environmental resource and natural hazard maps show no areas of wetlands, or floodplains on the subject property. The subject property has a steep slope and landslide hazard areas on the western portion.

Salem Area Comprehensive Plan (SACP) Designation

Urban Growth Policies: The subject property is located inside of the Salem Urban Growth Boundary and inside the corporate city limits.

Comprehensive Plan Map: The subject property is designated "Single Family Residential" on the Salem Area Comprehensive Plan (SACP) Map. The surrounding properties are designated as follows:

North: Developing Residential

South: Developing Residential

East: (Across Devon Avenue SE) Developing Residential

West: Developing Residential

Zoning and Surrounding Land Use

The subject property is zoned RS (Single Family Residential) and is currently occupied by a single family residence. The surrounding properties are zoned and used as follows:

North: RA (Residential Agriculture); large lot single family residential

South: UT-10 (Urban Transition - 10 Acres); large lot single family residential

East: (Across Devon Avenue SE) UT-10 (Urban Transition - 10 Acres); large lot single family residential

West: UT-10 (Urban Transition - 10 Acres); large lot single family residential

Relationship to Urban Service Area

The subject property is outside of the City's Urban Service Area. The subject property has received approval for an Urban Growth Preliminary Declaration (UGA17-06)

Infrastructure

Water: The subject property is located within the S-3 water service level, below an elevation of 629-feet, and partially in S-4 water service level, above 629 feet.

A 10-inch S-3 water line is located in Devon Avenue SE. Mains of this size generally convey flows of 700 to 1,700 gallons per minute.

A 10-inch S-3 water line is located in Lone Oak Road SE. Mains of this size generally convey flows of 700 to 1,700 gallons per minute.

A 16-inch S-3 water line is located in Rees Hill Road SE. Mains of this size generally convey flows of 3,800 to 8,800 gallons per minute.

There is no existing S-4 water system.

Sewer: The property is split into two sewage drainage basins – partially toward the west line and partially toward the east.

The nearest adequate linking facility for the west basin appears to be an existing 8-inch sewer line approximately 400 feet to the northwest of the property in Lone Oak Road SE.

The nearest adequate linking facility for the east basin appears to be an existing 8-inch sewer line approximately 850 feet to the northeast of the property. The east basin may be able to receive service from the existing sewer main in Lone Oak Road SE.

Storm Drainage: Champion Swale is mapped to the west of the subject property, while an unidentified creek runs through the western portion of the property. Powell Creek is mapped east of the subject property. No public storm mains are adjacent to the proposed development.

The subject property is within the Battle Creek Drainage Basin.

Parks: The subject property abuts the lot designated for the future Neighborhood Park (NP 28) along its southern boundary. This property was recently purchased by the City to be developed as NP 28. A street connection and a pedestrian connection are proposed with the tentative plan. Since the City has purchased NP 28, condition 10 of UGA17-06 has been satisfied.

Streets: Lone Oak Road SE right of way currently abuts the subject property to the north. Although, the improvement terminates at Sahalee Drive SE, approximately 500-feet north of the subject property. This segment of Lone Oak Road SE is designated as a Collector street in the Salem Transportation System Plan (TSP).

- The standard for this street classification is a 34-foot improvement within a 60-foot right-of-way.
- The portion of Lone Oak Road SE currently terminates at it's intersection with Sahalee Drive SE.

Devon Avenue SE abuts the subject property along the southern boundary of the subject property, is designated as a local street in the TSP and under Marion County jurisdiction.

- The standard for this street classification is a 30-foot-wide improvement within a 60-foot-wide right-of-way.
- The abutting portion of Devon Avenue SE has an approximate 26-foot-wide improvement within a 40-foot-wide right-of-way.

3. Land Use History

UGA17-06: An Urban Growth Area Permit to determine public facilities and infrastructure required to develop 19.89 acres for single family development.

Anxc-725: An annexation of approximately 20.35 acres of territory, including approximately 19.74 acres of private property and 0.61 acres of right-of-way of Devon Avenue SE.

4. Public and Private Agency Review

Public Works Department - The City of Salem Public Works Department, Development Services Section, reviewed the proposal and has provided their comments and recommendation for plat approval. Their memorandum is included as Attachment D.

Fire Department - The Salem Fire Department submitted comments indicating that if Lone Oak Road SE is going to be extend from Sahalee Drive SE to Rees Hill Road SE, the second required means of Fire Department access will be provided to this development. Fire hydrants are required within 600 feet of all portions of the structures. Two Avenue has a slope in excess of 12% for over 200 feet, therefore Lots 9, 10, 11, 12, 13, 14, 15, 79, 80, 81, and 82 will require fire sprinklers. Lots 9 and 10 will require fire sprinklers unless access if provided from Lone Oak and Lot 79 may not require

sprinklers if access is taken from Three Street. To ensure adequate fire safety the following conditions applies:

Condition 1: Lots 9-15 and 79-82 shall have fire sprinklers provided at the time of building permits or meets the City of Salem Fire Department standards.

Salem-Keizer Public Schools – Planning and Property Services staff for the school district reviewed the proposal and submitted comments indicating that sufficient school capacity exists at the middle school and high school level to serve future development within the proposed subdivision but not at the elementary school level. The school district indicated that the subject property is eligible for transportation to all three schools.

Marion County Public Works – The Marion County Public Works Department commented in regards to construction traffic on Rees Hill Road. Construction vehicles are not part of the subdivision review and the applicant has been provided comments from Marion County.

5. Neighborhood Association Comments

The subject property is within the South Gateway Neighborhood Association. Notice of the application was provided to the neighborhood association, pursuant to SRC 300.620(b)(2)(B)(iii), which requires public notice to be sent to "any City-recognized neighborhood association whose boundaries include, or are adjacent to, the subject property." No comments were received from the South Gateway Neighborhood Association prior to the comment deadline.

6. Public Comments

All property owners within 250 feet of the subject property were mailed notification of the proposed subdivision. One property owner in the vicinity of the site submitted comments prior to the comment deadline. Comments received expressed concerns with the following issues:

A. **Traffic**. Comments indicate that a traffic along Rees Hill Road SE is dangerous and narrow when lined with cars. Reduced sight lines near Reese Hill Road and Liberty Road S due to utilities, landscaping and slope.

Staff Response: The proposed subdivision will result in a boundary street improvement of Devon Lane SE along the frontage of the subject property to local street standards and the extension of new local streets through the subdivision are in conformance with current standards for vehicle, pedestrian, and bicycle facilities. The applicant will be connecting Lone Oak Street to Reese Hill Road. These streets will connect to existing streets and fill in gaps within the current street network. Because the proposed development will not generate traffic volumes sufficient to require a traffic impact analysis (TIA) under SRC 803.015,

off-site mitigation to the existing transportation system is not warranted as a condition of the proposed development. The Assistant City Traffic Engineer has had an opportunity to review the proposal and has indicated that as proposed, the street network will provide for safe, orderly, and efficient circulation of traffic into, through, and out of the subdivision.

7. Criteria for Granting a Tentative Subdivision

The Salem Revised Code (SRC), which includes the Unified Development Code (UDC), implements the Salem Area Comprehensive Plan land use goals, and governs development of property within the city limits. The subdivision process reviews development for compliance with City standards and requirements contained in the UDC, the Salem Transportation System Plan (TSP), and the Water, Sewer, and Storm Drain System Master Plans. A second review occurs for the created lots at the time of site plan review/building permit review to assure compliance with the UDC. Compliance with conditions of approval to satisfy the UDC is checked prior to city staff signing the final subdivision plat.

SRC Chapter 205.010(d) sets forth the criteria that must be met before approval can be granted to a subdivision request. The following subsections are organized with approval criteria shown in bold, followed by findings of fact upon which the Planning Administrator's decision is based. The requirements of SRC 205.010(d) are addressed within the specific findings which evaluate the proposal's conformance with the applicable criteria. Lack of compliance with the following criteria is grounds for denial of tentative plan or for the issuance of conditions of approval to more fully satisfy the criteria.

SRC 205.010(d)(1): The tentative subdivision complies with all standards of this Chapter and with all applicable provisions of the UDC, including, but not limited to, the following:

(A) Lot standards, including, but not limited to, standards for lot area, lot width and depth, lot frontage, and designation of front and rear lot lines.

SRC Chapter 511 (Single Family Residential): The proposed subdivision would divide the 19.89-acre property into 85 lots and street rights-of-way with no remainder. The subject property is currently zoned RS (Single Family Residential).

The minimum lot area requirements of the RS zone are established under SRC 511.010(a) as follows:

Lot Standards for RS zone (*see* SRC Chapter 511, Table 511-2)

Requirement	Minimum Standard
Lot Area (Single Family)	4,000 square feet
Lot Width	40 feet

Lot Depth (Single Family)	70 feet
Street Frontage	40 feet

Proposed lots in the subdivision range from approximately 6,000 square feet to 10,115 square feet. The proposed lots exceed minimum lot area, dimension, and frontage requirements and therefore conform to the applicable standards. The proposed lots within the subdivision are also of sufficient size and dimension to permit future development of uses allowed within the zone.

Setback Requirements: SRC Chapter 511 establishes the following setback standards for development within an RS (Single Family Residential) zone:

Front Yards and Yards Adjacent to Streets:

- Minimum 12 feet (minimum 20 feet when adjacent to a street designated 'Collector', 'Arterial', or 'Parkway')

- Minimum 20 feet for garages

Rear Yards:

- Minimum 14 feet (for any portion of a main building not more than one story in height); or

- Minimum 20 feet (for any portion of a main building greater than one story in height)

Interior Side Yards:

- Minimum 5 feet

The western portion of the subject property is primarily undeveloped and the eastern portion contains a single family dwelling and accessory structure. The proposal does not indicate that either structure is to remain as part of the subdivision. In order to ensure that the subject property complies with the setback and use requirements of the RS zone upon recording of the plat, the following condition shall apply:

Condition 2: Obtain demolition permits and remove all structures (dwelling and accessory structure) located on the subject property.

Setbacks on the proposed lots will be evaluated at the time of building permit.

As conditioned, the proposal meets the requirements of SRC Chapter 511.

SRC Chapter 800 (General Development Standards):

SRC 800.015(a) (Buildings to be on a Lot): Pursuant to SRC 800.015(a), every building or structure shall be entirely located on a lot. The subject property is primarily undeveloped, except for a single family residence on the eastern portion of each tax lot. The applicant is not proposing to retain the dwelling as part of the proposed development. Based on the proposed tentative subdivision layout the dwelling and accessory structure would cross proposed lot lines, and building envelopes. Condition 2 requires the applicant to obtain demolition permits and remove these structures prior to final plat, thereby ensuring compliance with SRC 800.015(a).

SRC 800.020 (Designation of Lot Lines): SRC 800.020 establishes front lot line designation requirements for corner lots, double frontage lots, flag lots, and all other lots. There is one double frontage lot, no flag lots and several corner lots proposed within the subdivision. The proposed subdivision has several corner lots, which meet the minimum depth and width for each frontage. Although, lots 18, 41, 50, 51, 60, 61, and 69 do not have the minimum width for each frontage. In addition, the single double frontage lot does not have adequate frontage along Two Avenue and would only be able to take access from Lone Oak Road. As a condition of approval the front lot lines on lots 9, 19, 20, 42, 63, and 69 shall be as listed below:

Condition 3: The designated front lot line for lots 19, 20, 42, 63, and 69 are as follows:

Lot Number	Front Lot Line
Lot 9	West
Lot 19	North
Lot 20	North
Lot 42	South
Lot 63	South
Lot 69	South

As conditioned, the proposal conforms to the requirements of SRC Chapter 800.

(B) City Infrastructure Standards.

The Public Works Department reviewed the proposal for compliance with the City's public facility plans pertaining to provision of water, sewer, and storm drainage facilities. While SRC Chapter 205 does not require submission of utility construction plans prior to tentative subdivision plan approval, it is the responsibility of the applicant to design and construct adequate City water, sewer, and storm drainage facilities to serve the proposed development prior to final plat approval without impeding service to the surrounding area.

SRC Chapter 71 (Stormwater): The proposed partition is subject to the stormwater requirements of SRC Chapter 71 and the revised Public Works Design Standards

(PWDS) as adopted in Administrative Rule 109, Division 004. To demonstrate that the proposed parcels can meet the PWDS, the applicant shall provide an engineered tentative stormwater design to accommodate future impervious surface on all lots.

Public Works staff has reviewed the tentative stormwater design and recommends that additional area will be required to accommodate the stormwater facilities needed to serve the proposed development. The final stormwater facility requirements will be determined at the time of construction plan approval.

The nearest available public storm system appears to be Champion Swale to the west and county ditches along Devon Avenue SE to the east of the subject property. The applicant shall link the on-site system to existing facilities that are defined as adequate under SRC 200.005.

The applicant has two options for providing stormwater service to properties within the Powell Creek basin: (1) Between Powell Creek and the subject property, acquire easements from downstream property owners and construct off-site improvements as needed to convey stormwater runoff from the proposed development to Powell Creek pursuant to PWDS; or (2) Demonstrate preservation of downstream stream health through the use of continuous flow simulation that simulates such hydrologic factors as interception, soil moisture, surface runoff, interflow, base flow, evapotranspiration, and ground-water recharge. The flow control system shall be designed to match peak flow rates and durations from the pre-developed to the developed condition for the ½ 2-year, 5-year, 10-year, 25-year, and 100-year events.

In order to ensure that the subdivision can accommodate required stormwater facilities, the following condition of plat approval shall apply:

Condition 4: Prior to final plat, the applicant shall provide stormwater service to properties within the Powell Creek basin by:

a. Between Powell Creek and the subject property, acquire easements from downstream property owners and construct off-site improvements as needed to convey stormwater runoff from the proposed development to Powell Creek pursuant to PWDS; or

b. Demonstrate preservation of downstream stream health through the use of continuous flow simulation that simulates such hydrologic factors as interception, soil moisture, surface runoff, interflow, base flow, evapotranspiration, and ground-water recharge. The flow control system shall be designed to match peak flow rates and durations from the pre-developed to the developed condition for the ½ 2-year, 5-year, 10-year, 25-year, and 100-year events.

As conditioned, the proposal meets the requirements of SRC Chapter 71.

SRC Chapter 200 (Urban Growth Management): The Urban Growth Management Program requires that an Urban Growth Area (UGA) Development Permit must be obtained prior to development of property outside the Salem Urban Service Area. The subject property is located outside the Urban Service Area and an application for an Urban Growth Preliminary Declaration (UGA17-06) for the subject property has been previously approved. As indicated by the Public Works Department, water, sewer, and stormwater infrastructure is available to serve the proposed development, subject to the requirements listed in the Urban Growth Preliminary Declaration. Pursuant to SRC 200.025(e), the developer must construct these improvements as a condition of approval for the tentative subdivision plan. To ensure compliance with UGA17-06, the following conditions apply:

Condition 5: Prior to final plat, the applicant shall comply with the conditions of approval for UG Preliminary Declaration Case No. UGA17-06:

a. Condition 1 – Acquire and convey land for dedication of right-of-way to equal a width of 60 feet in an alignment approved by the Public Works Director as specified for the future Collector street in the Salem Transportation System Plan (TSP) from the existing terminus of Lone Oak Road SE at Sahalee Drive SE to Rees Hill Road SE.

b. Condition 2 – Construct Lone Oak Road SE with a minimum 34-foot-wide full Collector street improvement within the subject property and from the north line of the subject property to Sahalee Drive SE.

c. Condition 3 – Construct Lone Oak Road SE with a minimum 34-foot-wide linking street improvement from the south line of the subject property to Rees Hill Road SE.

d. Condition 4 – Pay the applicable reimbursement fee as established in the Lone Oak Road Reimbursement District pursuant to Resolution 2018-08 to contribute the development's proportional share of the costs of the full Collector street improvement of Lone Oak Road SE from Muirfield Avenue SE to Rees Hill Road SE (in the event the Reimbursement District is terminated prior to final plat approval, no reimbursement fee shall be due). The reimbursement fee shall be credited toward the performance guarantee amount required in SRC 110.100(c) for Lone Oak Road SE construction.

e. Condition 5 – Convey land for dedication along the entire frontage of Devon Avenue SE to equal 30 feet from centerline.

f. Condition 6 – Construct a half-street improvement to Local street standards along the entire frontage of Devon Avenue SE.

g. Condition 7 – Construct 8-inch Salem Wastewater Management Master Plan sewer lines necessary to serve the development. The nearest

available sewer main appears to be located at the terminus of Lone Oak Road SE at Sahalee Drive SE.

h. Condition 8 – As a condition of development within the S-3 water service area, the applicant shall construct the following facilities as specified in the Water System Master Plan and approved by the Public Works Director:

    1. A 12-inch S-3 main in the portion of Lone Oak Road SE within the subject property.
    2. A 12-inch S-3 main connecting east/west through the property from Lone Oak Road SE to Devon Avenue SE.
    3. A 12-inch S-3 main along the entire frontage of Devon Avenue SE.
    4. A 12-inch S-3 main in Lone Oak Road SE from the north line of the subject property to the existing main at the Lone Oak Road SE/Sahalee Drive SE intersection and/or from the south line of the subject property to the existing main in Rees Hill Road SE.

i. Condition 9 – As a condition of development within the S-4 water service area, the applicant shall construct the following facilities as specified in the Water System Master Plan and approved by the Public Works Director:
    1. An S-4 domestic pump station with sufficient capacity to serve entire the S-4 water service area between Lone Oak Road SE and Devon Avenue SE.
    2. An 8-inch S-4 main from the pump station to the S-4 water service area within the subject property.
    3. One or more 8-inch S-4 mains to serve each lot within the S-4 service area.
    4. An 8-inch S-4 main extended to the south line of the subject property.
    5. One or more S-3 mains that provide adequate fire flow to the entire S-4 area

Subject to the conditions of approval of the corresponding Urban Growth Preliminary Declaration, the proposal meets the requirements of SRC Chapter 200.

SRC Chapter 802 (Public Improvements): Comments from the Public Works Department indicate that water and sewer infrastructure will be available to the site and appears to be adequate to serve the proposed subdivision once the conditions of UGA17-06 are complete. Specifications for required public improvements are summarized in the Public Works Department memo dated July 25, 2019 (Attachment D).

The subject property is located outside of the Urban Service Area and Urban Growth Preliminary Declaration Case No. UGA17-06 was issued July 17, 2018. Pursuant to SRC 200.055, 200.060, 200.065, 200.070, the proposed development shall be linked to existing adequate facilities as defined in SRC 200.005. Developments are also required to extend public utility services to serve upstream and neighboring properties. The

applicant shall provide linking water mains consistent with the Water System Master Plan adequate to convey fire flows to serve the proposed development as specified in the Water Distribution Design Standards. These improvements ensure that permanent water service is available in accordance with the Water System Master Plan.

As a condition above and in UGA17-06 within the S-3 water service area, the applicant shall construct the following facilities as specified in the Water System Master Plan and approved by the Public Works Director:

1. A 12-inch S-3 main in the portion of Lone Oak Road SE within the subject property.

2. A 12-inch S-3 main connecting east/west through the property from Lone Oak Road SE to Devon Avenue SE.

3. A 12-inch S-3 main along the entire frontage of Devon Avenue SE.

4. A 12-inch S-3 main in Lone Oak Road SE from the north line of the subject property to the existing main at the Lone Oak Road SE/Sahalee Drive SE intersection and/or from the south line of the subject property to the existing main in Rees Hill Road SE.

Based on the topography of the subject property, the S-4 area of the proposed development shall receive domestic service from the S-4 service level and fire service from the S-3 service level. As a condition above and in UGA17-06 within the S-4 water service area, the applicant shall construct the following facilities as specified in the Water System Master Plan and approved by the Public Works Director:

1. An S-4 domestic pump station with sufficient capacity to serve entire the S-4 water service area between Lone Oak Road SE and Devon Avenue SE.

2. An 8-inch S-4 main from the pump station to the S-4 water service area within the subject property.

3. One or more 8-inch S-4 mains to serve each lot within the S-4 service area.

4. An 8-inch S-4 main extended to the south line of the subject property.

5. One or more S-3 mains that provide adequate fire flow to the entire S-4 area.

As a condition of sewer service, all developments will be required to provide public sewers to adjacent upstream parcels. This shall include the extension of sewer mains in easements or rights-of-way across the property to adjoining properties, and across the street frontage of the property to adjoining properties when the main is located in the street right-of-way. This shall include trunk sewers that are oversized to provide capacity for upstream development (PWDS Sewer Division 003). Pursuant to SRC 200.060, the proposed development shall be linked to adequate facilities by the construction of sewer lines and pumping stations, which are necessary to connect to

such existing sewer facilities. The nearest available sewer facility appears to be located in Sahalee Drive SE, both northwest and northeast of the subject property. As conditioned above and in UGA17-06, the applicant shall construct 8-inch Salem Wastewater Management Master Plan sewer lines necessary to serve the development and upstream parcels. The applicant shall construct the Salem Wastewater Management Master Plan improvements and link the site to existing facilities that are defined as adequate under SRC 200.005 and conditioned above. Since a pumping station is required, a Site Plan Review application will be required prior to final plat to ensure the building will meet requirements of the UDC.

Condition 6: Prior to final plat, a site plan review application shall be approved for the construction of the proposed pumping station.

Condition 7: Construct water, stormwater, and sewer systems to serve each lot

The existing dwellings on the property appear to be served by private well and septic systems. In order to ensure that the existing septic systems are abandoned in compliance with state and local standards, the following condition shall apply:

Condition 8: Any existing septic tank systems on the subject property shall be abandoned in accordance with Department of Environmental Quality standards.

As conditioned, the proposal meets the requirements of SRC Chapter 802.

SRC Chapter 803 (Streets and Right-of-Way Improvements):

SRC 803.015 (Traffic Impact Analysis): The previous Urban Growth Preliminary Declaration permit conditioned prior to any development, the applicant shall acquire and convey land for right-of-way for the future collector form Lone Oak Road at Sahalee Drive to Reed Hill Road SE. The proposed 85-lot subdivision generates less than 1,000 average daily vehicle trips to Lone Oak Road, a collector, and less than 200 average daily trips to Devon Avenue, a local street. Therefore, a TIA is not required as part of the proposed subdivision submittal.

SRC 803.020 (Public and Private Streets): The applicant proposes for all internal streets within the subdivision to be public streets.

SRC 803.025 (Right-of-Way and Pavement Widths): Lone Oak Road SE is a future Collector street along the western boundary of the subject property in the Salem TSP and is planned to connect Muirfield Avenue SE to Rees Hill Road SE. The applicant is required to acquire and convey land for right-of-way for the future collector form Lone Oak Road at Sahalee Drive to Reed Hill Road SE. As conditioned by UGA17-06, the dedication of Lone Oak Road 60-foot right-of-way width and constructed with a minimum of 34-foot wide full Collector Street from Sahalee Drive to the south property line of the subject property. The remainder of Lone Oak Road (Collector) from the south

property line to Rees Hill Road will be constructed with a minimum of 34-foot wide linking street improvement.

City Council approved the Lone Oak Reimbursement District under Resolution 2018-08 on January 22, 2018. This district provides a funding mechanism for completion of Lone Oak Road SE from Muirfield Avenue SE to Rees Hill Road SE so that all benefited properties pay a proportional share of the cost for street improvements. Pursuant to Resolution 2018-08, the applicant is required to pay the applicable reimbursement fee as established in the Lone Oak Road Reimbursement District for development's proportional share of the costs of the full Collector street improvement of Lone Oak Road SE from Muirfield Avenue SE to Rees Hill Road SE. The reimbursement fee shall be credited toward the performance guarantee amount required in SRC 110.100(c) for the construction of Lone Oak Road SE.

Devon Avenue abuts the subject property and does not meet the current right-of-way or improvement width standards for a Local street. In implementing boundary street requirements pursuant to SRC 803.040, Conditions 5 and 6 of UGA17-06 require the applicant to dedicate additional right-of-way and construct a 23-foot-wide half street improvement, consistent with the applicable requirements for the segment of Devon Avenue SE abutting the development. The tentative subdivision plan shows the extension of Lone Oak Road as a 60-foot-wide right-of-way, but does not meet the standards for a Collector street set forth in SRC 803.025.

All internal streets will be constructed to Local Street standards as specified in the Salem TSP, with the exception of the proposed One Street SE and Two Street SE on the applicant's tentative plan. The applicant is requesting an alternative street standard for One Street SE and Two Street SE to allow for grade greater than 12 percent due to the existing topography and physical constraints of the site. Pursuant to SRC 803.065(a), the Director may authorize the use of one or more alternate street standards: (1) where existing development or physical constraints make compliance with the standards set forth in this chapter impracticable; and (3) where topography or other conditions make the construction that conforms to the standards impossible or undesirable. Based on topographic constraints, the Public Works Director authorizes the proposed grade of up to 15 percent for One Street SE and Two Street SE in conformance with the applicant's proposed plan. To ensure local street standards are met the following condition applies:

Condition 9: Construct internal streets to local street standards, except for an alternative street grade up to 15 percent is authorized for portions of One Street and Two Street as shown in Attachment B.

As conditioned, the proposal meets this requirement.

SRC 803.030 (Street Spacing): The subject property consists of one tax lot surrounded by undeveloped residential land to the north, south, and west. The proposed configuration of the subdivision provides for at least 600-foot block length, required by subsection (a). In addition, local street connections are provided to adjoining

undeveloped properties for eventual connection to the street system. The proposal does provide connection to both properties abutting to the north, one which has been granted previous approval to subdivide the property into 38 lots. The approval included a condition of approval to provide the required connection to the subject property, which is consistent with the applicant's proposal.

The west side of Lone Oak Road will exceed the 600-foot block length, due to topography and existing conditions. The proposal meets the exception of SRC 803.030(b), due to topography and the City of Salem Park located just south of the property, block length cannot be reasonably met.

SRC 803.035 (Street Standards): The proposed alignment of streets within the subdivision does not result in street spacing in excess of the maximum lengths established in subsection (a). Subsection (a) requires streets within the subdivision to provide connectivity to existing streets and undeveloped properties within the vicinity of the subject property. The property abuts undeveloped, residentially zoned, property zoned to the north, south and east. The proposed subdivision plan provides internal street connectivity by extending Lone Oak Road from S from Sahalee Drive to the southern property line and connection to the undeveloped northwest, northeast property and southern property; these internal streets in turn provide several points of connection to these existing boundary streets and the surrounding street network.

Subsection (l) requires sidewalks to be constructed parallel to and one foot from the adjacent right-of-way and the construction of sidewalks as part of street improvement projects.

The tentative subdivision plat shows property line sidewalks, which is consistent with SRC 803.035(l). Generally, sidewalks along the frontage of lots platted for single family residential development are installed at the time of home construction. This allows eventual building permit applicants for single family dwellings to select driveway alignment and apron placement along the lot frontage prior to installing sidewalks.

Subsection (m) requires streets identified in the Salem Transportation System Plan (TSP) Bicycle System Map as requiring a bicycle facility to conform to the designation of the TSP and Public Works Design Standards. The TSP Bicycle Map designates Lone Oak Road SE at the location of the subject property as a "Constructed Bike lane" route. Collector Street improvements along Lone Oak Road are required with the proposal, and shall include a bike lane.

Pursuant to subsection (n), public utility easements (PUEs) may be required for all streets. Comment from Portland General Electric, the franchise utility provider of electricity for the subject property, request a 10-foot-wide PUE on all street front lots. In order to ensure adequate access for the provision of electricity and other utilities, the following condition shall apply:

Condition 10: Dedicate a 10-foot-wide public utility easement (PUE) along the street frontage of all internal streets.

As conditioned, the proposal conforms to applicable street standards.

SRC 803.040 (Boundary Streets): Devon Road SE abuts the subject property and does not meet the current right-of-way or improvement width standards for a Local street. In addition, In addition, a future Collector Street (Lone Oak Road SE) goes through the subject property. In order to ensure that boundary street improvements are implemented consistent with the Transportation System Plan and Public Works Design Standards, Condition 5 above and Conditions 5 and 6 of UGA17-06 apply prior to plat.

As conditioned, the proposal meets the requirements of SRC 803.040.

(C) Any special development standards, including, but not limited to, floodplain development, special setbacks, geological or geotechnical analysis, and vision clearance.

SRC Chapter 808 (Preservation of Trees and Vegetation): The City's tree preservation ordinance protects Heritage Trees, Significant Trees (including Oregon White Oaks with diameter-at-breast-height of 24 inches or greater), trees and native vegetation in riparian corridors, and trees on lots and parcels greater than 20,000 square feet.

In addition, SRC 808.035(a) requires a Tree Conservation Plan for a development proposal involving the creation of lots or parcels to be used for the construction of single-family dwelling units, where trees are proposed for removal. A Tree Conservation Plan (TCP19-10) was submitted in conjunction with the subdivision tentative plan. The Tree Conservation Plan identifies 63 trees on the subject property, with 52 trees proposed for removal, which does not preserve 25% of trees on the subject property. The applicant did not provide evidence on the necessity of preserving less than 25% of the trees on site. As part of the tree conservation plan application, the applicant will need to submit an accurate and updated tree conservation plan map and appropriate findings. The proposed pedestrian pathway to the future park will remove an 18" Fir tree, to ensure the 18" Fir tree will remain, the pedestrian pathway shall be moved to the eastern line of Lot 16. The relocation would not require the removal of any trees. To ensure compliance with SRC 808, the following conditions apply:

Condition 11: The proposed 15-foot pedestrian pathway shall be relocated between Lot 16 and Lot 17.

Condition 12: Prior to final plat, the applicant have an approved tree conservation plan.

As proposed, the tentative subdivision plan conforms to all applicable SRC Chapter 808 requirements.

SRC Chapter 809 (Wetlands): Grading and construction activities within wetlands are regulated by the Oregon Department of State Lands (DSL) and US Army Corps of Engineers. State and Federal wetlands laws are also administered by the DSL and Army Corps, and potential impacts to jurisdictional wetlands are addressed through

application and enforcement of appropriate mitigation measures. SRC Chapter 809 establishes requirements for notification of DSL when an application for development is received in an area designated as a wetland on the official wetlands map.

The Salem-Keizer Local Wetland Inventory (LWI) does not identify any wetlands on the subject property. As proposed, the tentative subdivision plan conforms to all applicable SRC Chapter 809 requirements.

SRC Chapter 810 (Landslide Hazards): The City's landslide hazard ordinance (SRC Chapter 810) establishes standards and requirements for the development of land within areas of identified landslide hazard susceptibility. According to the City's adopted landslide hazard susceptibility maps, there no areas of landslide susceptibility on the subject property.

As proposed, the tentative subdivision plan complies with all applicable special development standards.

SRC 205.010(d)(2): The tentative subdivision plan does not impede the future use or development of the property or adjacent land.

Finding: The subject property consists of one tax lot surrounded by undeveloped residential land to the north, south, and west. The proposed configuration of the subdivision provides for at least 600-foot block length, required by subsection (a). In addition, local street connections are provided to adjoining undeveloped properties for eventual connection to the street system. The proposal does provide connection to both properties abutting to the north, one which has been granted previous approval to subdivide the property into 84 lots. The approval included a condition of approval to provide the required connection to the subject property, which is consistent with the applicant's proposal.

The west side of Lone Oak Road will exceed the 600-foot block length, due to topography and existing conditions. The proposal meets the exception of SRC 803.030(b), due to topography and the City of Salem Park located just south of the property, block length cannot be reasonably met.

SRC 205.010(d)(3): Development within the tentative subdivision plan can be adequately served by City infrastructure.

Finding: Water and sewer infrastructure is available along the perimeter of the site and appears to be adequate to serve the property as shown on the applicant's preliminary utility plan. Developments are required to extend public utility services to serve upstream and neighboring properties; the tentative utility plan appears to meet that requirement. Conditions of approval require decommissioning of septic systems serving the existing lots, an engineered stormwater design to accommodate future impervious surfaces, and dedication of a public utility easement to allow installation and maintenance of private utility infrastructure.

The Public Works Department reviewed the proposal for consistency with the Comprehensive Parks Master Plan Update and found that the subject property is served by the recent purchase of a future neighborhood park (NP-28), an undeveloped park site which abuts the southern boundary of the proposed subdivision. No park-related improvements are required as a condition of development and Condition 10 of UGA17-06 is satisfied.

All public and private City infrastructure proposed to be located in the public right-of-way shall be constructed or secured per SRC 205.035(c)(6)(B) prior to final plat approval. Any easements needed to serve the proposed lots with City infrastructure shall be shown on the final plat.

The proposal meets this criterion.

SRC 205.010(d)(4): The street system in and adjacent to the tentative subdivision plan conforms to the Salem Transportation System Plan.

Finding: Devon Avenue SE abutting the subject property does not meet the improvement and right-of-way widths for a minor arterial classification as shown in the Salem Transportation System Plan (TSP). Boundary street improvements are required. As identified in the conditions of approval, the applicant is required to dedicate right-of-way and construct half-street improvements, along the entire frontage of the subject property on Devon Avenue SE.

Lone Oak Road SE is a future Collector street along the western boundary of the subject property in the Salem TSP and is planned to connect Muirfield Avenue SE to Rees Hill Road SE. The applicant is required to acquire and convey land for right-of-way for the future collector form Lone Oak Road at Sahalee Drive to Reed Hill Road SE. As conditioned by UGA17-06, the dedication of Lone Oak Road 60-foot right-of-way width and constructed with a minimum of 34-foot wide full Collector Street from Shahalee Drive to the south property line of the subject property. The remainder of Lone Oak Road (Collector) from the south property line to Rees Hill Road will be constructed with a minimum of 34-foot wide linking street improvement.

City Council approved the Lone Oak Reimbursement District under Resolution 2018-08 on January 22, 2018. This district provides a funding mechanism for completion of Lone Oak Road SE from Muirfield Avenue SE to Rees Hill Road SE so that all benefited properties pay a proportional share of the cost for street improvements. Pursuant to Resolution 2018-08, the applicant is required to pay the applicable reimbursement fee as established in the Lone Oak Road Reimbursement District for development's proportional share of the costs of the full Collector street improvement of Lone Oak Road SE from Muirfield Avenue SE to Rees Hill Road SE. The reimbursement fee shall be credited toward the performance guarantee amount required in SRC 110.100(c) for the construction of Lone Oak Road SE.

The proposal meets this criterion.

SRC 205.010(d)(5): The street system in and adjacent to the tentative subdivision plan is designed so as to provide for the safe, orderly, and efficient circulation of traffic into, through, and out of the subdivision.

Finding: Condition 5 implement required boundary street improvements along the Devon Avenue SE and Lone Oak Road SE. In addition to the boundary improvement, internal circulation would be provided throughout the subdivision.

The proposed network of boundary and internal streets serving the subdivision provides access to all lots within the subdivision. The subdivision, as proposed and conditioned, is served with adequate transportation infrastructure. The street system adjacent to the subdivided property will conform to the Salem Transportation System Plan, and provide for safe, orderly, and efficient circulation of traffic into, through, and out of the subdivision.

The proposal meets this criterion.

SRC 205.010(d)(6): The tentative subdivision plan provides safe and convenient bicycle and pedestrian access from within the subdivision to adjacent residential areas and transit stops, and to neighborhood activity centers within one-half mile of the development. For purposes of this criterion, neighborhood activity centers include, but are not limited to, existing or planned schools, parks, shopping areas, transit stops, or employment centers.

Finding: The proposed subdivision is situated within one-half mile of three neighborhood activity centers:

- Rolling Hills Christian School, a private school, is approximately a half mile to the east.

- Creekside Golf Course, a 130 acre private golf course located at 6250 Country Club Drive SE, approximately 1,400 feet north of the subject property.

- No bus stops or routes within the general vicinity.

The proposed subdivision is accessed by an existing collector street and the extension of a local street into the subject property. The subject property will provide internal streets with safe and convenient bicycle and pedestrian access, and provide boundary street improvements connecting northward to existing bicycle and pedestrian facilities on Lone Oak Road.

The proposal meets this criterion.

SRC 205.010(d)(7): The tentative subdivision plan mitigates impacts to the transportation system consistent with the approved Traffic Impact Analysis, where applicable.

Finding: The Public Works Department has reviewed the proposal and finds that the 84-lot subdivision will generate less than 1,000 average daily vehicle trips to Lone Oak Road SE, designated in the Transportation System Plan as a collector, and less than 200 average daily trips to Devon Avenue SE, designated as a local street. Accordingly, a Transportation Impact Analysis is not required as part of the review of the tentative subdivision plan, pursuant to SRC 803.015(b).

SRC 200.010(d)(8): The tentative subdivision plan takes into account the topography and vegetation of the site so the need for variances is minimized to the greatest extent practicable.

Finding: The proposed subdivision has been reviewed to ensure that adequate measures have been planned to alleviate natural or fabricated hazards and limitations to development, including topography and vegetation of the site. The configuration of lots on the subject property makes logical use of the remaining developable land. As described in findings above, the lot and street configuration proposed by the applicant meets applicable development standards without the need for any variances. No existing conditions of topography or vegetation have been identified on the site which would necessitate variances during future development of the property. The layout allows for reasonable development of all lots within the subdivision without variances from the UDC.

The proposal meets this criterion.

SRC 200.010(d)(9): The tentative subdivision plan takes into account the topography and vegetation of the site, such that the least disruption of the site, topography, and vegetation will result from the reasonable development of the lots.

Finding: The tentative subdivision plan configures lots and streets to allow single family residential development of the site while minimizing disruptions to topography and vegetation. The extension of Lone Oak Road provides a logical extension of the existing street network and allows an arrangement of home sites that takes into account the existing topography. The tree conservation plan submitted in conjunction with the tentative subdivision plan will be reviewed pursuant to SRC 808, as conditioned above.

The proposal meets this criterion.

SRC 200.010(d)(10): When the tentative subdivision plan requires an Urban Growth Preliminary Declaration under SRC Chapter 200, the tentative subdivision plan is designed in a manner that ensures that the conditions requiring the construction of on-site infrastructure in the Urban Growth Preliminary Declaration will occur, and, if off-site improvements are required in the Urban Growth Preliminary Declaration, construction of any off-site improvements is assured.

Finding: The subject property is located outside of the Urban Service Area but has a previous approval (UGA17-06). Therefore, this criterion does not apply.

8. Conclusion

Based upon review of SRC 205.005, the findings contained under Section 7 above, and the comments described, the tentative subdivision plan complies with the requirements for an affirmative decision. Approval will not adversely affect the safe and healthful development and access to any adjoining lands.

IT IS HEREBY ORDERED

That Tentative Subdivision Plan Case No. 17-02, on property RS (Single Family Residential), and located at 6719 Devon Avenue SE (Marion County Assessor Map and Tax Lot Numbers 083W22C00300)., is **APPROVED** subject to the applicable standards of the Salem Revised Code, the findings contained herein, and the conditions of approval listed below, which must be completed prior to final plat approval, unless otherwise indicated:

Condition 1: Lots 9-15 and 79-82 shall have fire sprinklers provided at the time of building permits or meets the City of Salem Fire Department standards.

Condition 2: Obtain demolition permits and remove all structures (dwelling and accessory structure) located on the subject property.

Condition 3: The designated front lot line for lots 19, 20, 42, 63, and 69 are as follows:

Lot Number	Front Lot Line
Lot 9	West
Lot 19	North
Lot 20	North
Lot 42	South
Lot 63	South
Lot 69	South

Condition 4: Prior to final plat, the applicant shall provide stormwater service to properties within the Powell Creek basin by:

c. Between Powell Creek and the subject property, acquire easements from downstream property owners and construct off-site improvements as needed to convey stormwater runoff from the proposed development to Powell Creek pursuant to PWDS; or

d. Demonstrate preservation of downstream stream health through the use of continuous flow simulation that simulates such hydrologic factors as interception, soil moisture, surface runoff, interflow, base flow, evapotranspiration, and ground-water recharge. The flow control system shall be designed to match peak flow rates and durations from the pre-developed to the developed condition for the ½ 2-year, 5-year, 10-year, 25-year, and 100-year events.

Condition 5: Prior to final plat, the applicant shall comply with the conditions of approval for UG Preliminary Declaration Case No. UGA17-06:

a. Condition 1 – Acquire and convey land for dedication of right-of-way to equal a width of 60 feet in an alignment approved by the Public Works Director as specified for the future Collector street in the Salem Transportation System Plan (TSP) from the existing terminus of Lone Oak Road SE at Sahalee Drive SE to Rees Hill Road SE.

b. Condition 2 – Construct Lone Oak Road SE with a minimum 34-foot-wide full Collector street improvement within the subject property and from the north line of the subject property to Sahalee Drive SE.

c. Condition 3 – Construct Lone Oak Road SE with a minimum 34-foot-wide linking street improvement from the south line of the subject property to Rees Hill Road SE.

d. Condition 4 – Pay the applicable reimbursement fee as established in the Lone Oak Road Reimbursement District pursuant to Resolution 2018-08 to contribute the development's proportional share of the costs of the full Collector street improvement of Lone Oak Road SE from Muirfield Avenue SE to Rees Hill Road SE (in the event the Reimbursement District is terminated prior to final plat approval, no reimbursement fee shall be due). The reimbursement fee shall be credited toward the performance guarantee amount required in SRC 110.100(c) for Lone Oak Road SE construction.

e. Condition 5 – Convey land for dedication along the entire frontage of Devon Avenue SE to equal 30 feet from centerline.

f. Condition 6 – Construct a half-street improvement to Local street standards along the entire frontage of Devon Avenue SE.

g. Condition 7 – Construct 8-inch Salem Wastewater Management Master Plan sewer lines necessary to serve the development. The nearest available sewer main appears to be located at the terminus of Lone Oak Road SE at Sahalee Drive SE.

h. Condition 8 – As a condition of development within the S-3 water service area, the applicant shall construct the following facilities as specified in the Water System Master Plan and approved by the Public Works Director:

    1. A 12-inch S-3 main in the portion of Lone Oak Road SE within the subject property.
    2. A 12-inch S-3 main connecting east/west through the property from Lone Oak Road SE to Devon Avenue SE.

3. A 12-inch S-3 main along the entire frontage of Devon Avenue SE.
4. A 12-inch S-3 main in Lone Oak Road SE from the north line of the subject property to the existing main at the Lone Oak Road SE/Sahalee Drive SE intersection and/or from the south line of the subject property to the existing main in Rees Hill Road SE.

i. Condition 9 – As a condition of development within the S-4 water service area, the applicant shall construct the following facilities as specified in the Water System Master Plan and approved by the Public Works Director:
   1. An S-4 domestic pump station with sufficient capacity to serve entire the S-4 water service area between Lone Oak Road SE and Devon Avenue SE.
   2. An 8-inch S-4 main from the pump station to the S-4 water service area within the subject property.
   3. One or more 8-inch S-4 mains to serve each lot within the S-4 service area.
   4. An 8-inch S-4 main extended to the south line of the subject property.
   5. One or more S-3 mains that provide adequate fire flow to the entire S-4 area

Condition 6: Prior to final plat, a site plan review application shall be approved for the construction of the proposed pumping station.

Condition 7: Construct water, stormwater, and sewer systems to serve each lot

Condition 8: Any existing septic tank systems on the subject property shall be abandoned in accordance with Department of Environmental Quality standards.

Condition 9: Construct internal streets to local street standards, except for an alternative street grade up to 15 percent is authorized for portions of One Street and Two Street as shown in Attachment B.

Condition 10: Dedicate a 10-foot-wide public utility easement (PUE) along the street frontage of all internal streets.

Condition 11: The proposed 15-foot pedestrian pathway shall be relocated between Lot 16 and Lot 17.

Condition 12: Prior to final plat, the applicant have an approved tree conservation plan.

Olivia Glantz, Planning Administrator Designee

Attachments: A. Vicinity Map
B. Tentative Subdivision Plan and Street Profiles
C. Applicant's Written Statement on Tentative Subdivision Plan
D. City of Salem Public Works Department Comments

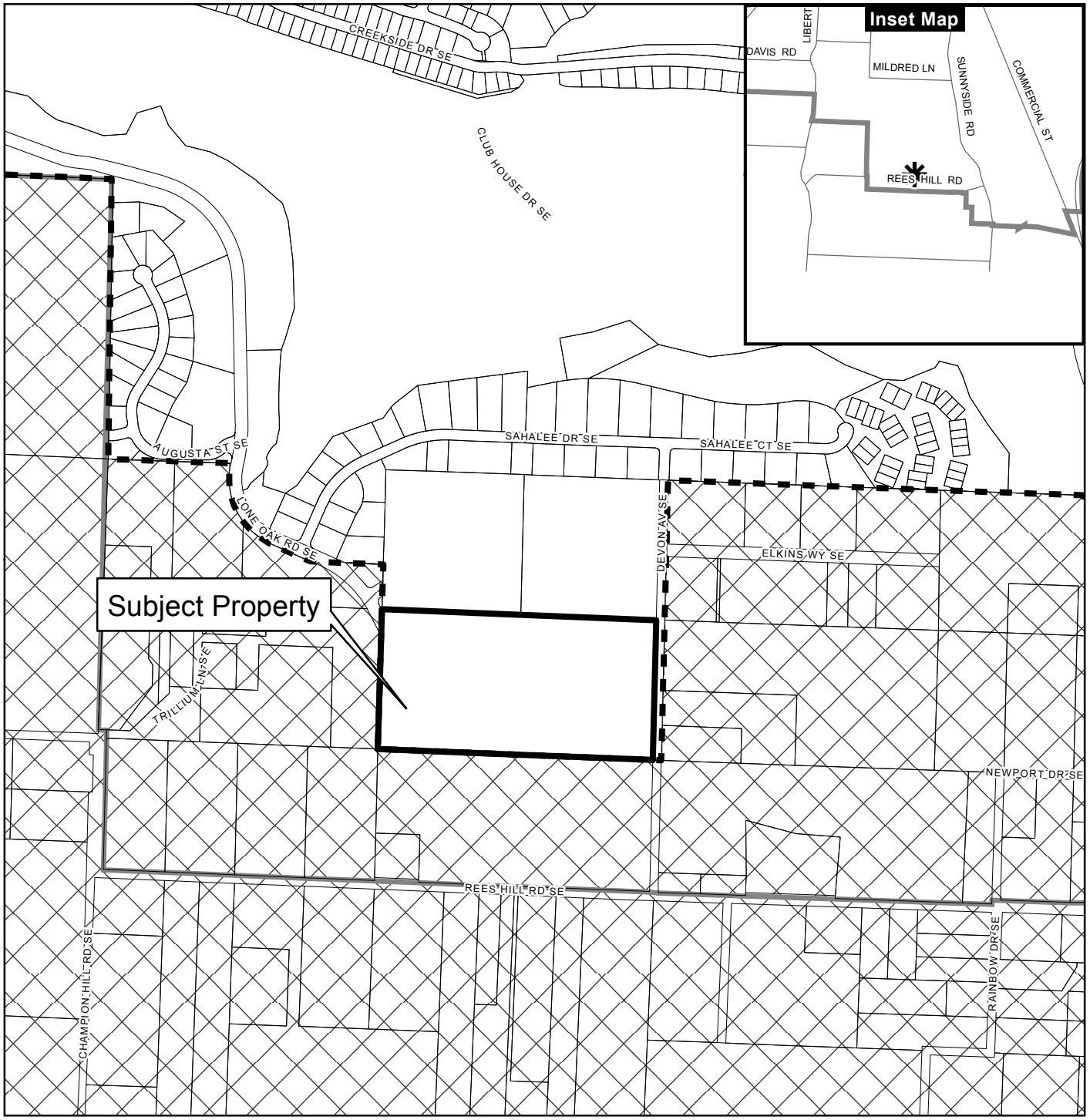
Application Deemed Complete:	July 2, 2019
Notice of Decision Mailing Date:	July 29, 2019
Decision Effective Date:	August 14, 2019
State Mandated Decision Date:	October 30, 2019

The rights granted by this decision must be exercised or extension granted by August 14, 2021 or this approval shall be null and void.

A copy of the complete Case File is available for review during regular business hours at the Planning Division office, 555 Liberty Street SE, Room 305, Salem OR 97301.

This decision is final unless written appeal from a party with standing to appeal, along with an appeal fee, is filed with the City of Salem Planning Division, Room 305, 555 Liberty Street SE, Salem, Oregon 97301, no later than **Tuesday, August 13, 2019, 5:00 p.m.** The notice of appeal must contain the information required by SRC 300.1020. The notice of appeal must be filed in duplicate with the City of Salem Planning Division. The appeal fee must be paid at the time of filing. If the notice of appeal is untimely and/or lacks the proper fee, the notice of appeal will be rejected. The Salem Planning Commission will review the appeal at a public hearing. The Planning Commission may amend, rescind, or affirm the action or refer the matter to staff for additional information.

Vicinity Map
6719 Devon Avenue SE



Legend

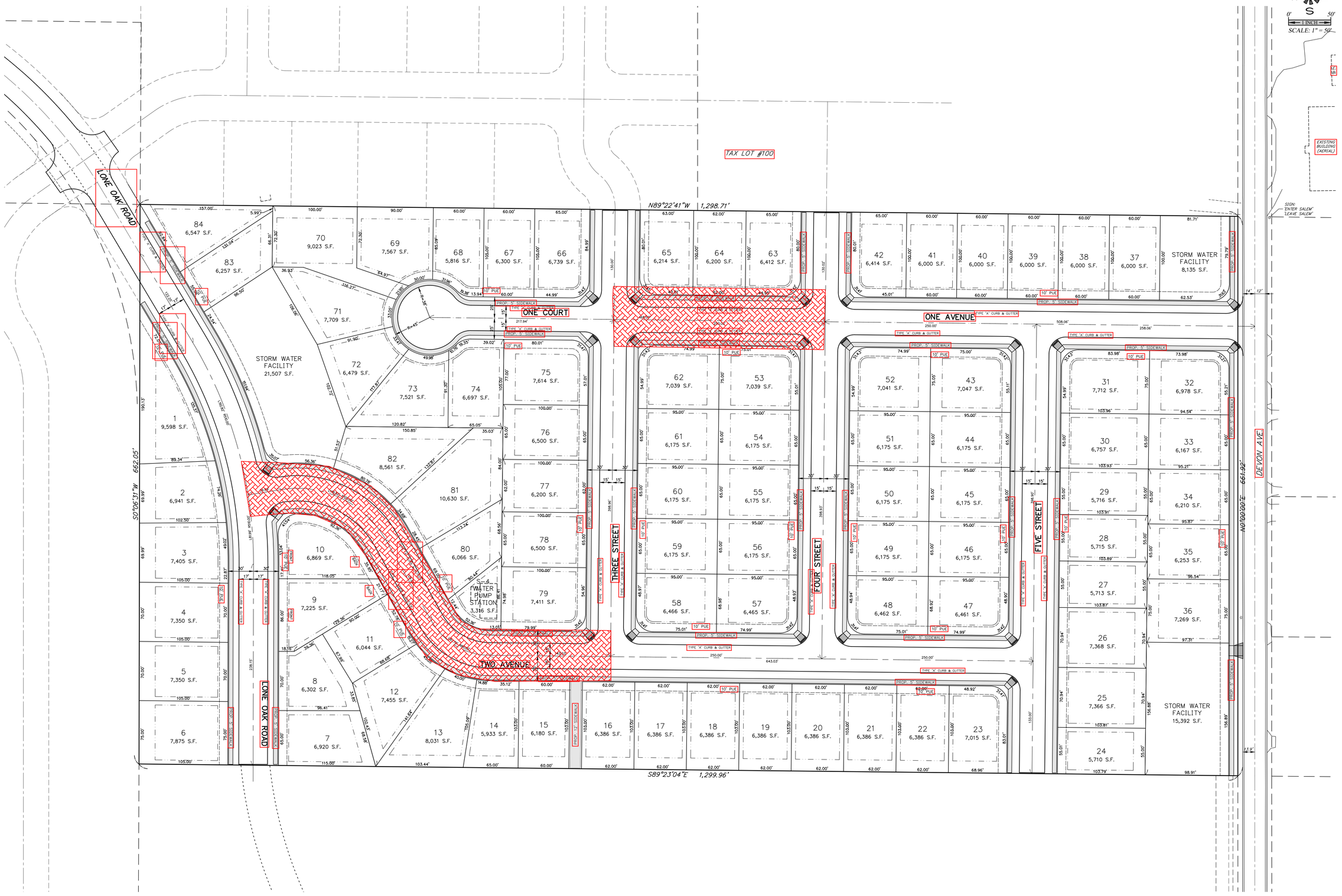
- Taxlots
- Urban Growth Boundary
- City Limits
- Outside Salem City Limits
- Historic District
- Schools
- Parks

0 100 200 400 Feet

CITY OF Salem AT YOUR SERVICE
Community Development Dept.

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Attachment B



MULTI/TECH
ENGINEERING SERVICES, INC.
1155 13th ST. S.E. SALEM, OR. 97302
PH. (503) 363-9227 FAX (503) 364-1260
www.mtengineering.net office@mtengineering.net

SITE PLAN

DEVON ESTATES

NO CHANGES, MODIFICATIONS OR CONSTRUCTION TO BE MADE TO THESE DRAWINGS WITHOUT WRITTEN AUTHORIZATION FROM THE DESIGN ENGINEER.

DIMENSIONS & NOTES TAKE PRECEDENCE OVER GRAPHICAL REPRESENTATION.

1.	REVISED SITE PLAN PER CITY	P.H.S. 06/19/2019

Design: M.D.G.
Drawn: P.H.S.
Checked: B.M.G.
Date: NOV. 2017
Scale: AS SHOWN

6502p P201SITE

REGISTERED PROFESSIONAL ENGINEER
OREGON
JULY 14, 1978
MARK D. GRENZ

EXPIRES: 06-30-2019

JOB # 6502

P201

Devon Avenue

Subdivision Application

Revised-April 26, 2019

BACKGROUND:

On July 17, 2017, Pre-Application Conference (PRE-AP) 17-57 was held with the City staff to discuss the development of property located at 6719 Devon Avenue SE.

On June 11, 2018, the subject property was annexed into the City of Salem on June 11, 2018, by City Council.

On May 29, 2018, Urban Growth Area Permit (UGA) 17-06 was approved by staff on May 29, 2018.

PROPOSAL:

The subject property is about 19.74 acres in size and zoned RA (Residential Agriculture). The applicant is proposing to divide the subject property into 85 single family residential lot, with two lots designated for stormwater detention (located north of Lot 85 and east of Lot 37). There is also an S-4 water pump station located between Lots 79 and 80.

The applicant is also requesting an Alternative Street Standard to allow Lone Oak Road, One Avenue, and Two Avenue to exceed a 12-percent street grade.

SITE VICINITY and CHARACTERISTICS:

The subject property is located at 6719 Devon Avenue. The subject property is identified as 083W22C/Tax Lots 300.



The surrounding properties are zoned and used as follows:

North:	RA (Residential Agriculture) and RS (Single Family Residential); vacant land
East:	Across Devon Avenue; RS (Single Family Residential); vacant lots, and existing single-family dwellings
South:	Outside City Limits, Marion County-UT; vacant land and existing single-family dwellings
West:	Outside City Limits, Marion County-UT; vacant land and existing single-family dwellings

CRITERIA AND APPLICANT'S REASONS ADDRESSING UDC 205.010(d)(1):

The intent of the subdivision code is providing for orderly development through the application of appropriate rules and regulations. Pursuant to the application of the current enabling statutes, these regulations are those cited in UDC 205.010(d) and UDC 205.015(d). The decision criteria for subdivisions without a concurrent variance under UDC 205.010(d) and UDC 205.015(d) must be found to exist before an affirmative decision may be made for a subdivision application.

(1) The tentative subdivision plan complies with the standards of this Chapter and with all applicable provisions of the UDC, including, but not limited to, the following:

Findings: The Salem Revised Code (SRC), which includes the Salem Zoning Code, implements the Salem Area Comprehensive Plan land use goals, and governs development of property within the city limits. The subdivision process reviews development for compliance with city standards and requirements contained in the Subdivision Code, Zoning Code, Salem TSP and the Water, Sewer and Storm Drain

System Master Plans, and adopted design documents applicable to residential development. The proposed meets all applicable provisions of the Salem Revised Code.

(A) Lot standards, including, but not limited to, standards for lot area, lot width and depth, lot frontage and designation of front and rear lot lines.

Findings: The proposal does not require any variances to lot development standards specified in the Code.

Minimum Lot Area and Dimensions: As shown on the site plan, all 85 lots meet lot size (4,000 square feet) and lot dimension (40' by 70') standards as required under UDC Chapters 510 and 511. The proposed lots range in size from 5,933 square feet to 10,727 square feet in size, with and average lot size of 6,884 square feet.

Additional reviews occur at the time of building permits to assure compliance with the zoning code. Compliance with conditions of approval to satisfy the subdivision ordinance is also checked prior to city staff signing the final subdivision plat.

The proposal can conform to applicable conditions imposed as necessary to ensure that development conforms to the standards of the subdivision code and with existing development and public facilities. As shown on the site plans, all lots meet the required lot size, lot depth, and lot width. At the time of development of the lots, building permits will be required. Setbacks will be reviewed for compliance at the time of building permit submittal. The proposed subdivision is and will be in compliance with lot standard requirements and required access.

Therefore, this criteria has been met.

(B) City infrastructure standards.

Findings: Water, sewer, storm drainage plans will be submitted to the Public Works Department for final plat and construction plan approval at the final plat stage. The tentative site plan illustrates the location of the public utility lines. The proposal meets applicable Salem Area Comprehensive Plan Residential Policies for properties within the Urban Growth Boundary. The proposal encourages the efficient use of developable residential land. Public facilities and services are or will be available to serve the site, including services such as water, sanitary and storm sewer and fire/life/safety services.

Two lots within the proposed subdivision are designated for stormwater detention (located north of Lot 85 and east of Lot 37). There is also an S-4 water pump station located between Lots 79 and 80.

Therefore, this criteria has been met.

(C) Any special development standards, including, but not limited to, floodplain development, special setbacks, geological or geotechnical analysis, and vision clearance.

Findings: There are no wetlands or floodplains located on the subject property.

A geological assessment is required for this site. There are landslide hazards identified on the site. A geological assessment has been provided as part of this application packet. This criteria has been met.

(2) The tentative subdivision plan does not impede the future use or development of the property or adjacent land.

Findings: The proposal is for the entire subject property and will be developed into 85 lots. As shown on the site plan. Therefore, a shadow plan is not required.

The abutting properties to the east and northwest are developed. The properties to the west and south are vacant, they are also located outside the City limits. Two stub streets have been provided to the north, two stub streets to the south, and a connection to Lone Oak to the west for future development. Due to the topography of the lot to the west, an additional street connection to the west is not feasible.

All proposed lots and surrounding properties have direct access onto the existing internal street system. The subdivision does not impede the future use of the property or adjacent land. Adequate connections to adjacent properties have been provided for future development.

Therefore, this criteria has been met.

(3) Development within the tentative subdivision plan can be adequately served by City infrastructure.

Findings: Water, sewer, storm drainage plans will be submitted to the Public Works Department for final plat and construction plan approval at the final plat stage. The tentative site plan illustrates the location of the public utility lines. The proposal meets applicable Salem Area Comprehensive Plan Residential Policies for properties within the Urban Growth Boundary. The proposal encourages the efficient use of developable residential land. Public facilities and services are or will be available to serve the site, including services such as water, sanitary and storm sewer and fire/life/safety services.

The subject property is within ½ mile from Creekside Golf Course to the north, Rees Hill Park and Battle Creek Elementary School to the east. Therefore, the subject property is served by parks.

Water, sewer, storm drainage plans will be submitted to the Public Works Department for final plat and construction plan approval at the final plat stage. The tentative site plan illustrates the location of the public utility lines. On-site detention and a pump station are being provided within the proposed subdivision.

In conclusion, the location and design of the proposed subdivision allows for public sanitary sewer, water service, and storm drainage to be conveniently provided.

Therefore, this criterion has been satisfied.

Proposed Stormwater Management System:

Findings: Stormwater quality and quantity are required for this development. An LID (low impact development) Stormwater technique will be used to mitigate the increase in pollutants contributed from development. This system may also be used to provide storage and water quantity control. The exact system will be determined at the time of design. Any proposed technique will meet City of Salem Stormwater Management standards in means and methods to provide all aspects of Stormwater management.

A Preliminary Drainage Report dated October 12, 2018 has been provided as part of this package.

(4) The street system in and adjacent to the tentative subdivision plan conforms to the Salem Transportation System Plan.

Findings: The major street system is in place due to prior development. Devon Avenue is located to the east of the site and Lone Oak Road. Devon Avenue is designated as a 'local street' and Lone Oak Road is designated as a 'collector' on the Salem Transportation System Plan.

The existing and proposed street systems conform to the City's Transportation Plan. All street design and improvements will be determined through the subdivision review process and regulated through the Conditions of Approval. The applicant is also requesting an alternative street standard to allow Lone Oak Road, One Avenue, and Two Avenue to exceed a 12-percent street grade. However, the proposed internal streets will be designed to street standards.

The applicant is requesting an alternative street standard to street grade. As shown on the street section provided, Lone Oak Road will have a 12.25% street grade. One Avenue will have a 14.68% street grade, and Two Avenue will have a 15% street grade.

Due to the topography of the site and the proposed street alignments with existing streets, along with required stub street connections, these proposed streets within the subdivision exceed the street grade allowed.

The intent of the maximum street grade is to allow vehicles to climb and descend the street safely in all conditions. The internal streets proposed will provide safe and efficient circulation throughout the subdivision. As shown on the street sections provided, there is only curtain sections of each street that will exceed the allowed street grade. All streets within the proposed subdivision will be designed to provide safe and efficient conditions.

There are several access points provided throughout the proposed subdivision which provide alternative access options.

The intent of the standard is being met; therefore, the proposal equally meets the intent of the maximum street grade standard.

The major street network in the area has been established and is consistent with the Transportation System Plan which implements the Comprehensive Plan. Public Works Department will address any applicable requirements for right-of-way conveyance that might be required because of this subdivision.

Therefore, the existing street system and proposed street improvements will be in compliance with the STSP.

Transportation Planning Rule Review:

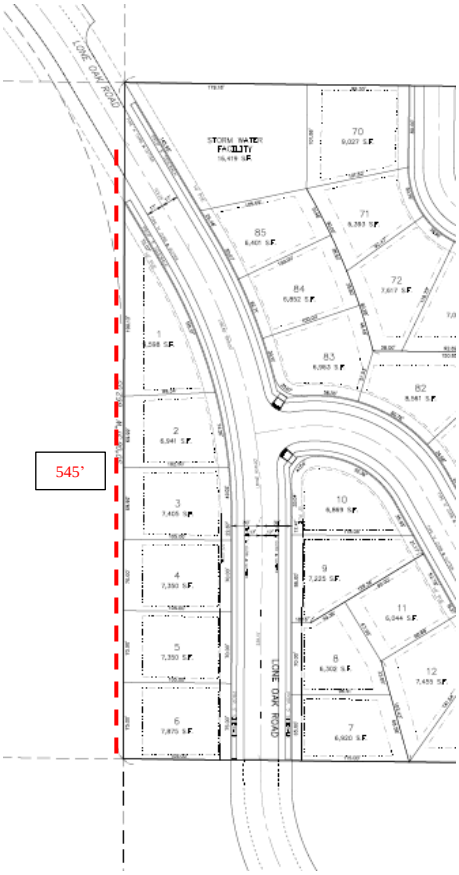
The City of Salem's TPR encourages a reduction in automobile trips by capitalizing on transit opportunities and by creating an environment that encourages people to walk. The proposed subdivision is a "limited land use decision" pursuant to Oregon Revised Statute (ORS) 197.015 and has therefore been reviewed for consistency with the State's TPR multi-modal connectivity requirements.

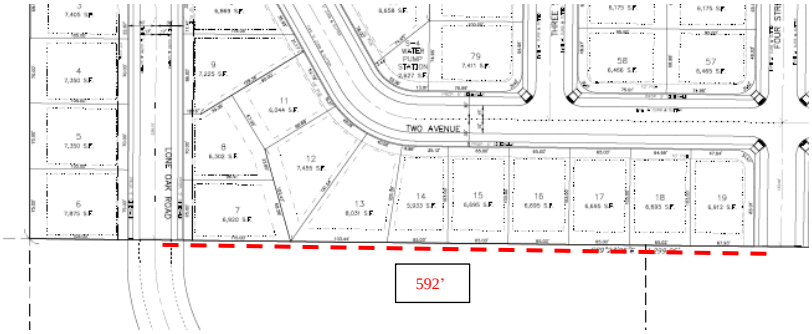
In conclusion, the development will provide bicycle and pedestrian facilities on-site to encourage people to walk and reduce vehicle trips. The development on the property will allow residents to reduce vehicle usage, by the convenience of bicycle and pedestrian paths to and from the uses and existing sidewalk system. Therefore, the proposed subdivision is in compliance with the intent of the TPR to reduce vehicle usage and encourage other modes of transportation to and from the site.

(5) The street system in and adjacent to the tentative subdivision plan is designed so as to provide for the safe, orderly, and efficient circulation of traffic into, through, and out of the subdivision.

Findings: The subject property is located in a developed and developing area where improved streets and sidewalks exist and continue with new development. The local street system serving the development provides the necessary connections and access to the local streets and circulation system serving this residential neighborhood.

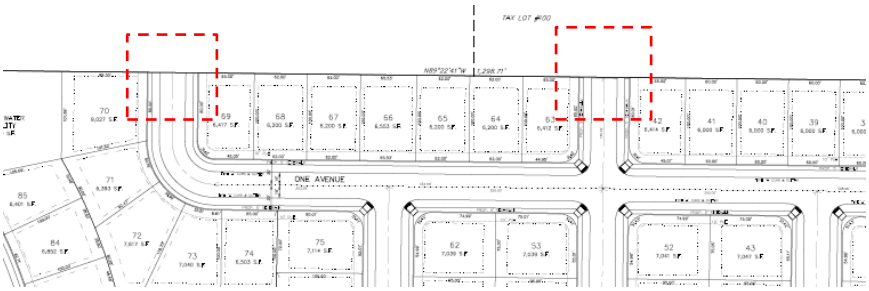
Block Length: Blocks shall be a maximum of 600 feet between street centerlines. The length of the blocks was taken into consideration at the time of design layout. There are more than enough street connections within the proposed development.



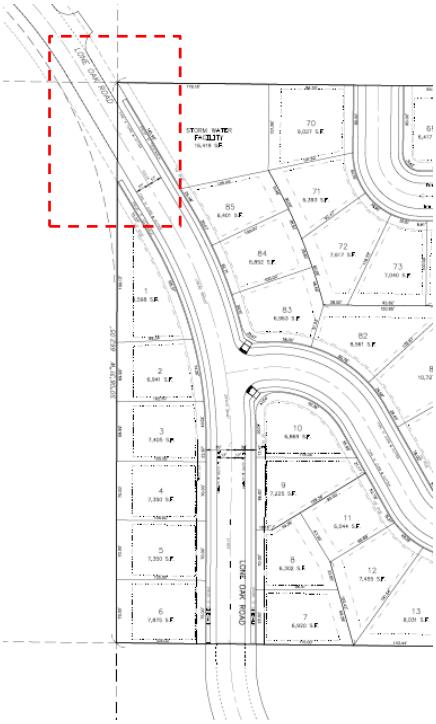


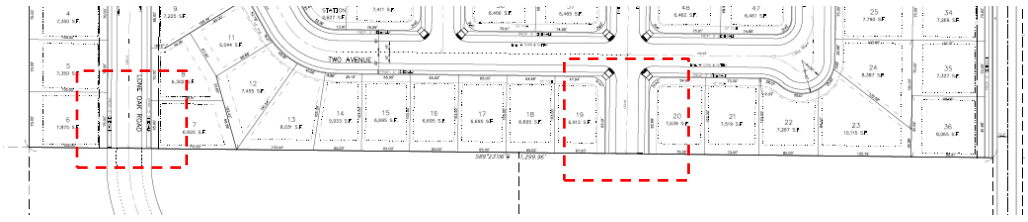
The abutting properties to the east and north are developed or proposed for

development. Street connections to the north have been provided for future development of those properties.



The properties to the west and south are vacant, they are also located outside the City limits. A street connection to the northwest, via Lone Oak Road, is being providing for circulation through the neighborhood. However, due to the topography of the lot to the west, an additional street connection to the west is not feasible.





Two street connections have been provided to the north, two street connections to the

south, and a street connection to the east and a connection to Lone Oak to the west for future development. By providing these connections, block length and connectivity have been met.
As shown on the site plan, the proposed subdivision provides a safe an efficient circulation pattern in the development for vehicles and pedestrians.

Access to, within, and from the development must be consistent with applicable requirements of the Transportation Planning Rule Requirements (TPR) that requires that development provide connectivity between land uses and transportation. Under the Rule, developments are responsible for providing for the safe and efficient circulation of vehicles, bicycles, and pedestrians into, through, and out of a development. The proposal develops the subject property within an established residential area where local and arterial streets and mass transit facilities exist. These facilities connect the transportation system to the surrounding residential neighborhoods.

The proposal develops the subject property within an established residential area where local and arterial streets and mass transit facilities exist. These facilities connect the transportation system to the surrounding residential neighborhoods.

The Public Works Department will address the level of street improvements that are roughly proportional to assure conformance to the development to subdivision code and applicable transportation system plan requirements. Completion of conditions of approval prior to the signing of the final plat will satisfy this criterion for the subdivision application.

In conclusion, the proposed street plan provides the best economic, safe, and efficient circulation of traffic possible under the circumstances. The proposed subdivision demonstrates this review criterion can be met.

Therefore, this criterion has been satisfied.

(6) The tentative subdivision plan provides safe and convenient bicycle and pedestrian access from within the subdivision to adjacent residential areas and transit stops, and to neighborhood activity centers within one-half mile of the development. For purposes of this criterion, neighborhood activity centers include, but are not limited to, existing or planned schools, parks, shopping areas, transit stops, or employment centers.

Findings: The subdivision is served with adequate transportation infrastructure and the street system adjacent the property conforms to the Transportation System Plan and provides for safe, orderly, and efficient circulation of traffic into, through, and out of the subject property on to the public street system.

Therefore, via paved streets and sidewalks, safe and convenient bicycle and pedestrian access will be provided to the site and to adjacent neighborhoods.

Therefore, this criteria has been met.

(7) The tentative subdivision plan mitigates impacts to the transportation system consistent with the approved Traffic Impact Analysis, where applicable.

Findings: The proposal is for an 85-lot subdivision. The size of the proposed subdivision does not warrant the need for a Traffic Impact Analysis. The proposed subdivision plan mitigates impacts to transportation system by providing adequate access and circulation for all 85-lots.

Therefore, this criterion has been met.

(8) The tentative subdivision plan takes into account the topography and vegetation of the site so the need for variances is minimized to the greatest extent practicable.

Findings: All lots are in compliance with the UDC/SRC. Therefore, no variances have been requested.

(9) The tentative subdivision plan takes into account the topography and vegetation of the site, such that the least disruption of the site, topography, and vegetation will result from the reasonable development of the lots.

Findings: The subdivision code requires City approval of lots be suitable for the general purpose for which they are likely to be developed. No lots can be of such a size or configuration that is detrimental to public health, safety, or welfare or sanitary needs of users of the parcel or lot.

The subdivision plan takes into consideration the topography and vegetation of the site. The proposed lots are of sufficient size and dimensions to permit future development. The lot dimensions are illustrated on the tentative site plan and are in conformance to the minimum standards in UDC 510 and 511. Final conformance to minimum lot size and buildable lot area will be confirmed when the final plat is submitted to the City for review and approval.

There are 63 trees located within the boundary of the site. Forty-seven (47) trees are designated for removal, with sixteen (16) trees designated to remain. Twenty-five (25%) percent of the trees on the site will be preserved. Trees designated for removal are within the right-of-way, the building envelop or within an area close to the building envelope, but have the potential of being damaged during grading and construction. Therefore, the removal of these 47 trees is necessary for development of the site.

There are no heritage or significant trees (Oregon White Oak) on the site.

The layout of the lots takes into consideration the topography and vegetation of the site. All lots are in compliance with the UDC. Therefore, no variances have been requested.

Therefore, this criteria has been met.

10) When the tentative subdivision plan requires an Urban Growth Preliminary Declaration under SRC Chapter 200, the tentative subdivision plan is designed in a manner that ensures that the conditions requiring the construction of on-site infrastructure in the Urban Growth Preliminary Declaration will occur, and, if off-site improvements are required in the Urban Growth Preliminary Declaration, construction of any off-site improvements is assured.

Findings: The property and development are located inside the Urban Service Area (USA). However, an Urban Growth Preliminary Declaration is required and has been approved. Urban Growth Area Permit (UGA) 17-06 was approved by staff on May 29, 2018. As required by code, all requirements of the UGA will be met prior to development or recording of the final plat.

Therefore, this criterion has been met.

TREE CONSERVATION/REMOVAL PLAN

There are 63 trees located within the boundary of the site. Forty-seven (47) trees are designated for removal, with sixteen (16) trees designated to remain. Twenty-five (25%) percent of the trees on the site will be preserved. Trees designated for removal are within the right-of-way, the building envelop or within an area close to the building envelope, but have the potential of being damaged during grading and construction. Therefore, the removal of these 47 trees is necessary for development of the site.

There are no heritage or significant trees (Oregon White Oak) on the site.

Class-2 Adjustment

The applicant is requesting an adjustment to SRC 803.035(c):

> ***(c) Alignment and Grade. All streets shall be designed with a vertical alignment that conforms to the Public Works Design Standards. No grade of parkway, major arterial, or minor arterial shall exceed 6 percent. No grade of a collector street shall exceed 8 percent. No grade of a local street shall exceed 12 percent.***

Lone Oak Road runs north/south through the development and is designated as a 'collector' street. One Avenue and Two Avenue run east/west through the site and are designated as 'local' streets. The applicant is requesting an adjustment to allow Lone Oak Road to exceed the 8 percent street grade allowed, and an adjustment to allow One Avenue and Two Avenue to exceed the 12 percent street grade allowed.

Adjustment Criteria-SRC 250.005(d)(2) Criteria

(A) The purpose underlying the specific development standard proposed for adjustment is:

(i) Clearly inapplicable to the proposed development; or
(ii) Equally or better met by the proposed development.

(B) If located within a residential zone, the proposed development will not detract from the livability or appearance of the residential area.

(C) If more than one adjustment has been requested, the cumulative effect of all the adjustments result in a project which is still consistent with the overall purpose of the zone.

Applicant Findings:

(A) The applicant is not requesting more than one adjustment. Therefore, this criteria is not applicable.

CITY OF Salem AT YOUR SERVICE

MEMO

TO: Olivia Glantz, Planner III
Community Development Department

FROM: Glenn J. Davis, PE, CFM, Chief Development Engineer
Public Works Department

DATE: July 26, 2019

SUBJECT: **PUBLIC WORKS RECOMMENDATIONS**
SUB19-05 (19-109483-LD)
6719 DEVON AVENUE SE
84-LOT SUBDIVISION

PROPOSAL

A tentative subdivision plan to divide approximately 19.89 acres into 84 lots ranging in size from 6,000 square feet to 10,630 square feet. The applicant is requesting an alternative street standard to increase the grade of Lone Oak Road SE (collector) from eight percent to twelve percent and increase the grade of two Local streets, One Avenue and Two Avenue, from twelve percent to approximately fifteen percent.

The subject property is approximately 19.89 acres in size, zoned RS (Single Family Residential), and located at 6719 Devon Avenue SE (Marion County Assessor Map and Tax Lot Number 083W22C00300).

RECOMMENDED CONDITIONS OF APPROVAL

1. Comply with the conditions of approval for UG Preliminary Declaration Case No. UGA17-06, copied below:

    a. Condition 1–Acquire and convey land for dedication of right-of-way to equal a width of 60 feet in an alignment approved by the Public Works Director as specified for the future Collector street in the Salem TSP from the existing terminus of Lone Oak Road SE at Sahalee Drive SE to Rees Hill Road SE.

    b. Condition 2–Construct Lone Oak Road SE with a minimum 34-foot-wide full Collector street improvement within the subject property and from the north line of the subject property to Sahalee Drive SE.

    c. Condition 3–Construct Lone Oak Road SE with a minimum 34-foot-wide

Code authority references are abbreviated in this document as follows: *Salem Revised Code* (SRC); *Public Works Design Standards* (PWDS); *Salem Transportation System Plan* (Salem TSP); and *Stormwater Management Plan* (SMP).

linking street improvement from the south line of the subject property to Rees Hill Road SE.

d. Condition 4–Pay the applicable reimbursement fee as established in the Lone Oak Road Reimbursement District pursuant to Resolution 2018-08 to contribute the development's proportional share of the costs of the full Collector street improvement of Lone Oak Road SE from Muirfield Avenue SE to Rees Hill Road SE (in the event the Reimbursement District is terminated prior to final plat approval, no reimbursement fee shall be due). The reimbursement fee shall be credited toward the performance guarantee amount required in SRC 110.100(c) for Lone Oak Road SE construction.

e. Condition 5–Convey land for dedication along the entire frontage of Devon Avenue SE to equal 30 feet from centerline.

f. Condition 6–Construct a half-street improvement to Local street standards along the entire frontage of Devon Avenue SE.

g. Condition 7–Construct 8-inch Salem Wastewater Management Master Plan sewer lines necessary to serve the development. The nearest available sewer main appears to be located at the terminus of Lone Oak Road SE at Sahalee Drive SE.

h. Condition 8–As a condition of development within the S-3 water service area, the applicant shall construct the following facilities as specified in the Water System Master Plan and approved by the Public Works Director:

    i. A 12-inch S-3 main in the portion of Lone Oak Road SE within the subject property.

    ii. A 12-inch S-3 main connecting east/west through the property from Lone Oak Road SE to Devon Avenue SE.

    iii. A 12-inch S-3 main along the entire frontage of Devon Avenue SE.

    iv. A 12-inch S-3 main in Lone Oak Road SE from the north line of the subject property to the existing main at the Lone Oak Road SE and Sahalee Drive SE intersection and /r from the south line of the subject property to the existing main in Rees Hill Road SE.

i. Condition 9–As a condition of development within the S-4 water service area, the applicant shall construct the following facilities as specified in the Water System Master Plan and approved by the Public Works Director:

i. An S-4 domestic pump station with sufficient capacity to serve entire the S-4 water service area between Lone Oak Road SE and Devon Avenue SE.

ii. An 8-inch S-4 main from the pump station to the S-4 water service area within the subject property.

iii. One or more 8-inch S-4 mains to serve each lot within the S-4 service area.

iv. An 8-inch S-4 main extended to the south line of the subject property.

v. One or more S-3 mains that provide adequate fire flow to the entire S-4 area.

2. Construct internal streets to Local street standards. An alternative street grade up to 15 percent is authorized for the portion of One Street SE between Three Street SE and Four Street SE, and for the portion of Two Street SE between Three Street SE and Lone Oak Road SE.

3. Dedicate a 10-foot public utility easement along the street frontage of all abutting and internal streets.

4. Construct water, stormwater, and sewer systems to serve each lot.

5. The applicant has two options for providing stormwater service to properties within the Powell Creek basin:

   a. Between Powell Creek and the subject property, acquire easements from downstream property owners and construct off-site improvements as needed to convey stormwater runoff from the proposed development to Powell Creek pursuant to PWDS; or

   b. Demonstrate preservation of downstream stream health through the use of continuous flow simulation that simulates such hydrologic factors as interception, soil moisture, surface runoff, interflow, base flow, evapotranspiration, and ground-water recharge. The flow control system shall be designed to match peak flow rates and durations from the pre-developed to the developed condition for the half 2-year, 5-year, 10-year, 25-year, and 100-year events.

MEMO

FACTS

Streets

1. Lone Oak Road SE

   a. Standard—This street is designated as a Collector street in the *Salem TSP*. The standard for this street classification is a 34-foot-wide improvement within a 60-foot-wide right-of-way.

   b. Existing Condition—This street terminates near Sahalee Drive SE northwest of the subject property.

2. Devon Avenue SE

   a. Standard—This street is currently under Marion County jurisdiction and is designated as a Local street in the *Salem TSP*. The standard for this street classification is a 30-foot-wide improvement within a 60-foot-wide right-of-way.

   b. Existing Condition—This street has an approximate 26-foot improvement within a 40-foot-wide right-of-way abutting the subject property.

Storm Drainage

1. Existing Stormwater

   a. Champion Swale is mapped to the west of the subject property, while an unidentified creek runs through the western portion of the property. Powell Creek is mapped east of the subject property. No public storm mains are adjacent to the proposed development.

   b. The subject property is within the Battle Creek Drainage Basin.

Water

1. Existing Water

   a. The subject property is located partially in the S-3 water service level, below an elevation of 629 feet, and partially in the S-4 water service level, above 629 feet.

   b. A 10-inch S-3 water line is located in Devon Avenue SE. Mains of this size generally convey flows of 700 to 1,700 gallons per minute.

   c. A 10-inch S-3 water line is located in Lone Oak Road SE. Mains of this size generally convey flows of 700 to 1,700 gallons per minute.

d. A 16-inch S-3 water line is located in Rees Hill Road SE. Mains of this size generally convey flows of 3,800 to 8,800 gallons per minute.

e. There is no existing S-4 water system.

Sanitary Sewer

1. Existing Sewer

   a. The property is split into two sewage drainage basins, partially toward the west line and partially toward the east.

   b. The nearest adequate linking facility for the west basin appears to be an existing 8-inch sewer line approximately 400 feet to the northwest of the property in Lone Oak Road SE.

   c. The nearest adequate linking facility for the east basin appears to be an existing 8-inch sewer line approximately 850 feet to the northeast of the property. The east basin may be able to receive service from the existing sewer main in Lone Oak Road SE.

Parks

The subject property abuts the lot designated for the future Neighborhood Park (NP 28) along its southern boundary. This property was recently purchased by the City to be developed as NP 28. A street connection and a pedestrian connection are proposed with the tentative plan.

CRITERIA AND FINDINGS

The following code references indicate the criteria that must be found to exist before an affirmative decision may be made. The applicable criteria and the corresponding findings are as follows:

SRC 205.010(d)(1)—The tentative subdivision plan complies with the standards of this Chapter and with all applicable provisions of the Unified Development Code, including, but not limited to the following:

1. Lot standards, including, but not limited to, standards for lot area, lot width and depth, lot frontage, and designation of front and rear lot lines;

2. City infrastructure standards; and

3. Any special development standards, including, but not limited to floodplain

development, special setbacks, geological or geotechnical analysis, and vision clearance.

Findings—The applicant shall provide the required field survey and subdivision plat per Statute and Code requirements outlined in the *Oregon Revised Statutes* (ORS) and SRC. If said documents do not comply with the requirements outlined in ORS and SRC, and as per SRC Chapter 205, the approval of the subdivision plat by the City Surveyor may be delayed or denied based on the non-compliant violation. It is recommended the applicant request a pre-plat review meeting between the City Surveyor and the applicant's project surveyor to ensure compliance with ORS 672.005(2)(g)&(h), 672.007(2)(b), 672.045(2), 672.060(4), *Oregon Administrative Rules* 850-020-0015(4)&(10), 820-020-0020(2), and 820-020-0045(5).

Trees that are located in the right-of-way require Tree Removal permits pursuant to SRC Chapter 86 and/or tree protection measures pursuant to PWDS.

Public Works staff has reviewed the Flood Insurance Study and Flood Insurance Rate Maps and has determined that no floodplain or floodway areas exist on the subject property.

A 10-foot-wide public utility easement is required along the frontages of all internal streets and along the frontages of Lone Oak Road SE and Devon Avenue SE pursuant to SRC 803.035(n).

The Salem-Keizer Local Wetland Inventory shows that there are wetland channels and/or hydric soils mapped on the property. The applicant should contact the Oregon Department of State Lands to verify if any permits are required for development or construction in the vicinity of the mapped wetland area(s). Wetland notice was sent to the Oregon Department of State Lands pursuant to SRC 809.025.

According to the City's adopted landslide hazard susceptibility maps and SRC Chapter 810 (Landslide Hazards), there are areas of landslide susceptibility on the subject property. There are 2 mapped site points for the property pursuant to SRC Chapter 810. The proposed subdivision adds three activity points to the proposal, which results in a total of 5 points. Therefore, the proposed subdivision is classified as a moderate landslide risk and requires a geologic assessment. A geologic assessment, prepared by Redmond Geotechnical Services and dated August 11, 2017, was submitted to the City of Salem. This assessment demonstrates the subject property could be subdivided and developed with single-family dwellings, without increasing the potential for slope hazard on the site or adjacent properties.

SRC 205.010(d)(3)—Development within the tentative subdivision plan can be adequately served by City infrastructure.

Findings—The subject property is located outside of the Urban Service Area and Urban Growth Preliminary Declaration Case No. UGA17-06 was issued July 17, 2018. Pursuant to SRC 200.055, 200.060, 200.065, 200.070, the proposed development shall be linked to existing adequate facilities as defined in SRC 200.005. Developments are also required to extend public utility services to serve upstream and neighboring properties. The applicant shall provide linking water mains consistent with the *Water System Master Plan* adequate to convey fire flows to serve the proposed development as specified in the *Water Distribution Design Standards*. These improvements ensure that permanent water service is available in accordance with the *Water System Master Plan*.

As a condition of development within the S-3 water service area, the applicant shall construct the following facilities as specified in the *Water System Master Plan* and approved by the Public Works Director:

1. A 12-inch S-3 main in the portion of Lone Oak Road SE within the subject property.

2. A 12-inch S-3 main connecting east/west through the property from Lone Oak Road SE to Devon Avenue SE.

3. A 12-inch S-3 main along the entire frontage of Devon Avenue SE.

4. A 12-inch S-3 main in Lone Oak Road SE from the north line of the subject property to the existing main at the Lone Oak Road SE and Sahalee Drive SE intersection and or from the south line of the subject property to the existing main in Rees Hill Road SE.

Based on the topography of the subject property, the S-4 area of the proposed development shall receive domestic service from the S-4 service level and fire service from the S-3 service level. As a condition of development within the S-4 water service area, the applicant shall construct the following facilities as specified in the Water System Master Plan and approved by the Public Works Director:

1. An S-4 domestic pump station with sufficient capacity to serve entire the S-4 water service area between Lone Oak Road SE and Devon Avenue SE.

2. An 8-inch S-4 main from the pump station to the S-4 water service area within the subject property.

3. One or more 8-inch S-4 mains to serve each lot within the S-4 service area.

4. An 8-inch S-4 main extended to the south line of the subject property.

5. One or more S-3 mains that provide adequate fire flow to the entire S-4 area.

MEMO

As a condition of sewer service, all developments will be required to provide public sewers to adjacent upstream parcels. This shall include the extension of sewer mains in easements or rights-of-way across the property to adjoining properties, and across the street frontage of the property to adjoining properties when the main is located in the street right-of-way. This shall include trunk sewers that are oversized to provide capacity for upstream development (PWDS Sewer Division 003). Pursuant to SRC 200.060, the proposed development shall be linked to adequate facilities by the construction of sewer lines and pumping stations, which are necessary to connect to such existing sewer facilities. The nearest available sewer facility appears to be located in Sahalee Drive SE, both northwest and northeast of the subject property. The applicant shall construct 8-inch Salem Wastewater Management Master Plan sewer lines necessary to serve the development and upstream parcels. The applicant shall construct the *Salem Wastewater Management Master Plan* improvements and link the site to existing facilities that are defined as adequate under SRC 200.005.

The proposed development is subject to SRC Chapter 71 and the revised PWDS as adopted in Administrative Rule 109, Division 004. To demonstrate the proposed parcels can meet the PWDS, the applicant shall provide an engineered tentative stormwater design to accommodate future impervious surface on all proposed lots. Public Works staff has reviewed the tentative stormwater design and recommends that additional area will be required to accommodate the stormwater facilities needed to serve the proposed development. The final stormwater facility requirements will be determined at the time of construction plan approval.

The nearest available public storm system appears to be Champion Swale to the west and county ditches along Devon Avenue SE to the east of the subject property. The applicant shall link the on-site system to existing facilities that are defined as adequate under SRC 200.005. The applicant has two options for providing stormwater service to properties within the Powell Creek basin: (1) Between Powell Creek and the subject property, acquire easements from downstream property owners and construct off-site improvements as needed to convey stormwater runoff from the proposed development to Powell Creek pursuant to PWDS; or (2) Demonstrate preservation of downstream stream health through the use of continuous flow simulation that simulates such hydrologic factors as interception, soil moisture, surface runoff, interflow, base flow, evapotranspiration, and ground-water recharge. The flow control system shall be designed to match peak flow rates and durations from the pre-developed to the developed condition for the half 2-year, 5-year, 10-year, 25-year, and 100-year events.

As specified in the conditions of approval, private water, sewer, and storm services shall be constructed to serve each lot as a condition of plat approval. All public and private City infrastructure proposed to be located in the public right-of-way shall be constructed or secured per SRC 205.035(c)(7)(B) prior to final plat approval. Any easements needed to serve the proposed parcels with City infrastructure shall be shown on the final plat.

SRC 205.010(d)(4) and SRC 205.0010(d)(5)—The street system in and adjacent to the tentative subdivision plan conforms to the *Salem Transportation System Plan*. The street system in and adjacent to the tentative subdivision plan is designed so as to provide for the safe, orderly, and efficient circulation of traffic into, through, and out of the subdivision.

Finding— Pursuant to SRC 200.055(c), all streets abutting the property boundaries shall be designed to the greater of the standards of SRC Chapter 803 and the standards of linking streets in SRC 200.055(b).

Lone Oak Road SE is a future Collector street along the western boundary of the subject property in the Salem TSP and is planned to connect Muirfield Avenue SE to Rees Hill Road SE. To provide safe, orderly, and efficient circulation of traffic into, through, and out of the subdivision, the applicant shall acquire and convey land for dedication of right-of-way to equal a width of 60 feet in an alignment approved by the Public Works Director as specified for the future Collector street from the existing terminus of Lone Oak Road SE at Sahalee Drive SE to Rees Hill Road SE, construct Lone Oak Road SE with a minimum 34-foot-wide full Collector street improvement from Sahalee Drive SE to the south line of the subject property, and construct Lone Oak Road SE with a minimum 34-foot-wide linking street improvement from the south line of the subject property to Rees Hill Road SE pursuant to SRC Chapters 200 and 803.

City Council approved the Lone Oak Reimbursement District under Resolution 2018-08 on January 22, 2018. This district provides a funding mechanism for completion of Lone Oak Road SE from Muirfield Avenue SE to Rees Hill Road SE so that all benefited properties pay a proportional share of the cost for street improvements. Pursuant to Resolution 2018-08, the applicant is required to pay the applicable reimbursement fee as established in the Lone Oak Road Reimbursement District for development's proportional share of the costs of the full Collector street improvement of Lone Oak Road SE from Muirfield Avenue SE to Rees Hill Road SE. The reimbursement fee shall be credited toward the performance guarantee amount required in SRC 110.100(c) for the construction of Lone Oak Road SE.

Devon Avenue SE abuts the subject property and does not meet the current standard for a Local street. As identified in the conditions of approval, the applicant is required to convey land for dedication equal to 30 feet from the centerline and construct a half-street improvement along the entire frontage of Devon Avenue SE pursuant to SRC Chapter 803 and PWDS.

All internal streets will be constructed to Local Street standards as specified in the Salem TSP, with the exception of the proposed One Street SE and Two Street SE on the applicant's tentative plan. The applicant is requesting an alternative street standard for One Street SE and Two Street SE to allow for grade greater than 12 percent due to the existing topography and physical constraints of the site. Pursuant to

SRC 803.065(a), the Director may authorize the use of one or more alternate street standards: (1) where existing development or physical constraints make compliance with the standards set forth in this chapter impracticable; and (3) where topography or other conditions make the construction that conforms to the standards impossible or undesirable. Based on topographic constraints, the Public Works Director authorizes the proposed grade of up to 15 percent for the portion of One Street SE between Three Street SE and Four Street SE, and for the portion of Two Street SE between Three Street SE and Lone Oak Road SE.

SRC 205.010(d)(6)—The tentative subdivision plan provides safe and convenient bicycle and pedestrian access from within the subdivision to adjacent residential areas and transit stops, and to neighborhood activity centers within one-half mile of the development. For purposes of this criterion, neighborhood activity centers include, but are not limited to, existing or planned schools, parks, shopping areas, transit stops, or employment centers.

Findings—Future Neighborhood Park (NP 28) is a recently purchased, undeveloped park site that abuts the southern boundary of the proposed development. This park acquisition satisfies condition 10 of UG Preliminary Declaration Case No. UGA17-06. A street connection and a pedestrian sidewalk connection are proposed from the subject property to the park. The pedestrian path shall be constructed to Public Works Standard Plan No. 314. Curb ramps shall be constructed to PWDS. No park-related improvements are recommended as a condition of development.

SRC 205.010(d)(7)—The tentative subdivision plan mitigates impacts to the transportation system consistent with the approved Traffic Impact Analysis (TIA), where applicable.

Findings— The proposed 84-lot subdivision generates less than 1,000 average daily vehicle trips to Lone Oak Road SE (a Collector street). Therefore, a TIA was not required as part of the proposed subdivision submittal.

Prepared by: Jennifer Scott, Program Manager
cc: File

Attachment C

DEVON ESTATES PHASE 1

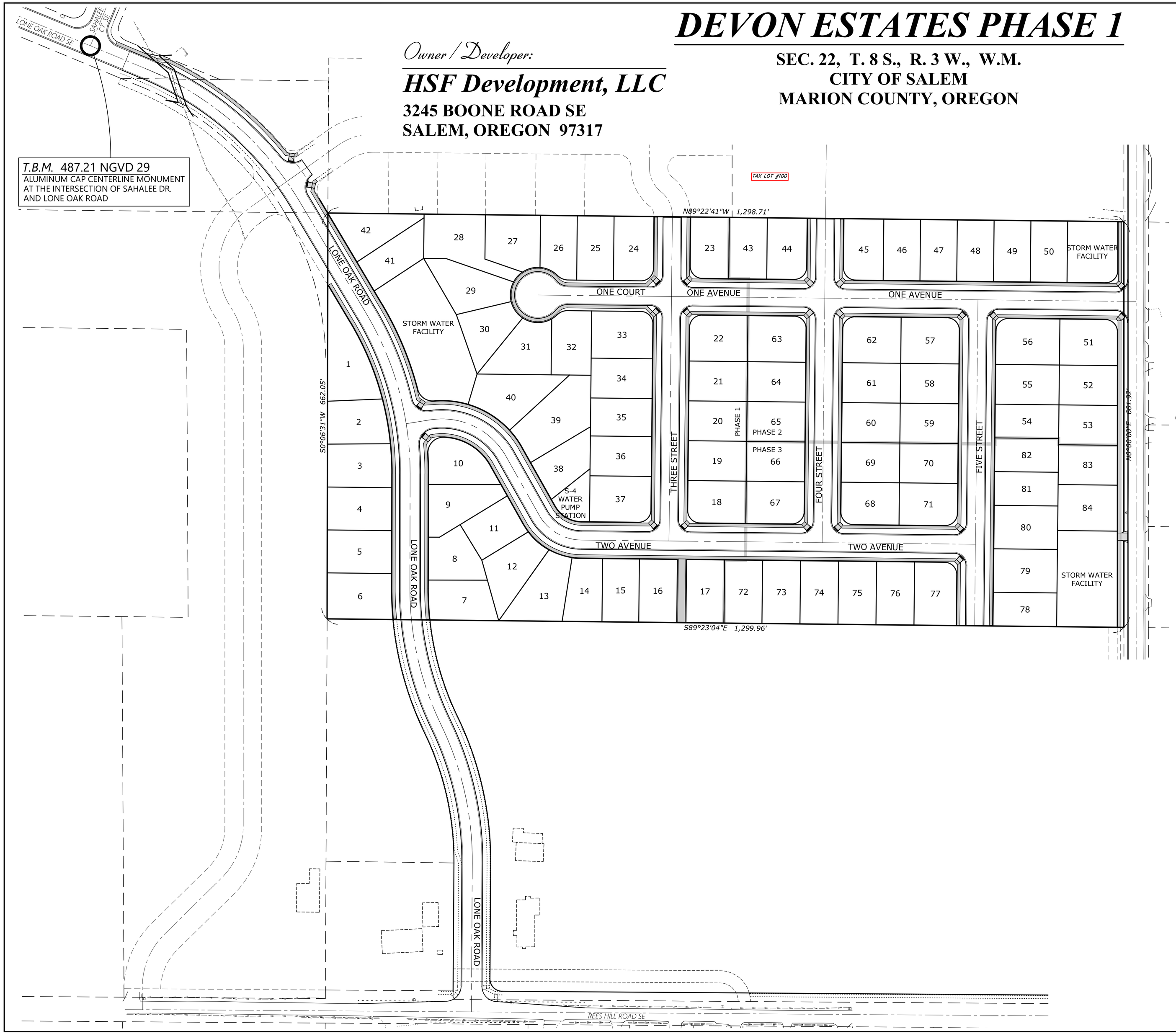
SEC. 22, T. 8 S., R. 3 W., W.M.
CITY OF SALEM
MARION COUNTY, OREGON

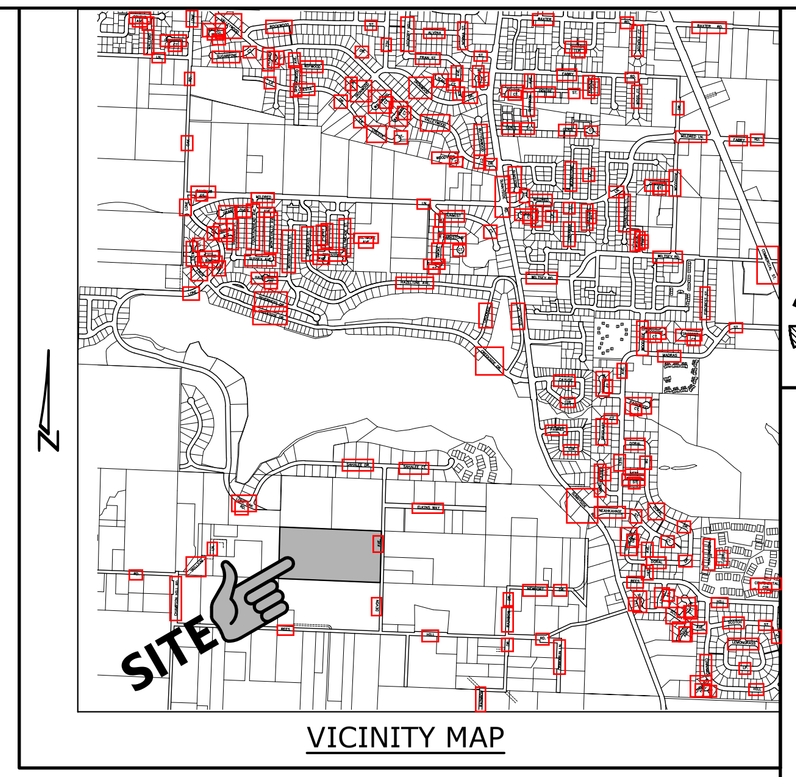
Owner / Developer:

HSF Development, LLC

3245 BOONE ROAD SE
SALEM, OREGON 97317

T.B.M. 487.21 NGVD 29
ALUMINUM CAP CENTERLINE MONUMENT AT THE INTERSECTION OF SAHALEE DR. AND LONE OAK ROAD





VICINITY MAP

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0' 80'
1 INCH
SCALE: 1" = 80'

MULTI/TECH
ENGINEERING SERVICES, INC.
1155 13th ST. S.E. SALEM, OR. 97302
PH. (503) 363-9227 FAX (503) 364-1260
www.mtengineering.net office@mtengineering.net

OVERALL SITE PLAN

DEVON ESTATES PHASE 1

NO CHANGES, MODIFICATIONS OR REPRODUCTIONS TO BE MADE TO THESE DRAWINGS WITHOUT WRITTEN AUTHORIZATION FROM THE DESIGN ENGINEER.

DIMENSIONS & NOTES TAKE PRECEDENCE OVER GRAPHICAL REPRESENTATION.

6502SitePlan 100SITE

Design: M.D.G.
Drawn: P.H.S.
Checked: B.M.G.
Date: NOV. 2017
Scale: AS SHOWN

As-Built: ---- ----

REGISTERED PROFESSIONAL ENGINEER
OREGON
JULY 14, 1978
MARK G. RENZ

EXPIRES: 06-30-2021

JOB # 6502

100

J:\6500-6599\6502--Devon Avenue Subdivision\Dwg2021\6502SitePlan.dwg, 100SITE, 12/6/2019 9:44:02 AM, PSaunders

Attachment D

CITY OF Salem AT YOUR SERVICE

MEMO

TO: Olivia Glantz, Planner III
Community Development Department

FROM: Glenn J. Davis, PE, CFM, Chief Development Engineer
Public Works Department

DATE: January 22, 2020

SUBJECT: **PUBLIC WORKS RECOMMENDATIONS**
SUB19-05MOD1 (19-125355-LD)
6719 DEVON AVENUE SE
SUBDIVISION MODIFICATION

PROPOSAL

Modification of the approval of SUB19-05 (the "Grantham Crest" subdivision) to add phasing. The request is to add three phases, Phase 1 with 42 Lots, Phase 2 with 23 lots and Phase 3 with 19 lots. The modification does not result in additional lots.

The subject property is approximately 19.89 acres in size, zoned RS (Single Family Residential), and located at 6719 Devon Avenue SE (Marion County Assessor Map and Tax Lot Numbers 083W22C00300).

RECOMMENDED CONDITIONS OF MODIFICATION APPROVAL

Modify the conditions of approval of SUB19-05 applicable to public works infrastructure as follows:

1. Condition 4—The applicant has two options for providing stormwater service to properties within the Powell Creek basin:

    a. Between Powell Creek and the subject property, acquire easements from downstream property owners and construct off-site improvements as needed to convey stormwater runoff from the proposed development to Powell Creek pursuant to PWDS; or

    b. Demonstrate preservation of downstream stream health through the use of continuous flow simulation that simulates such hydrologic factors as interception, soil moisture, surface runoff, interflow, base flow, evapotranspiration, and ground-water recharge. The flow control system shall be designed to match peak flow rates and durations from the pre-developed to the developed condition for the half 2-year, 5-year, 10-year, 25-year, and

Code authority references are abbreviated in this document as follows: *Salem Revised Code* (SRC); *Public Works Design Standards* (PWDS); *Salem Transportation System Plan* (Salem TSP); and *Stormwater Management Plan* (SMP).

100-year events.

Phasing: Required with Phases 2 and 3 as applicable.

2. Condition 5—Comply with the conditions of approval for UG Preliminary Declaration Case No. UGA17-06:

   a. UG Condition 1—Acquire and convey land for dedication of right-of-way to equal a width of 60 feet in an alignment approved by the Public Works Director as specified for the future Collector street in the Salem TSP from the existing terminus of Lone Oak Road SE at Sahalee Drive SE to Rees Hill Road SE. Phasing: Required with Phase 1.

   b. UG Condition 2—Construct Lone Oak Road SE with a minimum 34-foot-wide full Collector street improvement within the subject property and from the north line of the subject property to Sahalee Drive SE. Phasing: Required with Phase 1.

   c. UG Condition 3—Construct Lone Oak Road SE with a minimum 34-foot-wide linking street improvement from the south line of the subject property to Rees Hill Road SE. Phasing: Required with Phase 1.

   d. UG Condition 4—Pay the applicable reimbursement fee as established in the Lone Oak Road Reimbursement District pursuant to Resolution 2018-08 to contribute the development's proportional share of the costs of the full Collector street improvement of Lone Oak Road SE from Muirfield Avenue SE to Rees Hill Road SE (in the event the Reimbursement District is terminated prior to final plat approval, no reimbursement fee shall be due). The reimbursement fee shall be credited toward the performance guarantee amount required in SRC 110.100(c) for Lone Oak Road SE construction. Phasing: Required for each phase as applicable.

   e. UG Condition 5—Convey land for dedication along the entire frontage of Devon Avenue SE to equal 30 feet from centerline. Phasing: Required along the Phase 2 frontage for Phase 2 and along the Phase 3 frontage for Phase 3.

   f. UG Condition 6—Construct a half-street improvement to Local street standards along the entire frontage of Devon Avenue SE. Phasing: Required along the Phase 2 frontage for Phase 2 and along the Phase 3 frontage for Phase 3.

   g. UG Condition 7—Construct 8-inch Salem Wastewater Management Master Plan sewer lines necessary to serve the development. The nearest available sewer main appears to be located at the terminus of Lone Oak Road SE at Sahalee Drive SE. Phasing: Required with Phase 1.

h. UG Condition 8—As a condition of development within the S-3 water service area, the applicant shall construct the following facilities as specified in the Water System Master Plan and approved by the Public Works Director:

   i. A 12-inch S-3 main in the portion of Lone Oak Road SE within the subject property. Phasing: Required with Phase 1.

   ii. A 12-inch S-3 main connecting east/west through the property from Lone Oak Road SE to Devon Avenue SE. Phasing: Required with Phases 1 and 2 as applicable.

   iii. A 12-inch S-3 main along the entire frontage of Devon Avenue SE. Phasing: Required with Phases 2 and 3 as applicable.

   iv. A 12-inch S-3 main in Lone Oak Road SE from the north line of the subject property to the existing main at the Lone Oak Road SE and Sahalee Drive SE intersection and /r from the south line of the subject property to the existing main in Rees Hill Road SE. Phasing: Required with Phase 1.

i. UG Condition 9–As a condition of development within the S-4 water service area, the applicant shall construct the following facilities as specified in the Water System Master Plan and approved by the Public Works Director:

   i. An S-4 domestic pump station with sufficient capacity to serve entire the S-4 water service area between Lone Oak Road SE and Devon Avenue SE. Phasing: Required with Phase 1.

   ii. An 8-inch S-4 main from the pump station to the S-4 water service area within the subject property. Phasing: Required with each Phase as applicable.

   iii. One or more 8-inch S-4 mains to serve each lot within the S-4 service area. Phasing: Required with each Phase as applicable.

   iv. An 8-inch S-4 main extended to the south line of the subject property. Phasing: Required with Phase 1.

   v. One or more S-3 mains that provide adequate fire flow to the entire S-4 area. Phasing: Required with each Phase as applicable.

3. Condition 6—Prior to final plat, a site plan review application shall be approved for the construction of the proposed pump station. Phasing: Required with Phase 1.

4. Condition 7—Construct water, stormwater, and sewer systems to serve each lot.

Phasing: Required with each Phase as applicable.

5. Condition 9—Construct internal streets to Local street standards. An alternative street grade up to 15 percent is authorized for the portion of One Street SE between Three Street SE and Four Street SE, and for the portion of Two Street SE between Three Street SE and Lone Oak Road SE. Phasing: Required with each Phase as applicable.

6. Condition 10—Dedicate a 10-foot public utility easement along the street frontage of all abutting and internal streets. Phasing: Required with each Phase as applicable.

7. Condition 11—The proposed 15-foot pedestrian pathway shall be relocated between Lot 16 and Lot 17. Phasing: Required with Phase 1.

FACTS

Streets

1. Lone Oak Road SE

   a. Standard—This street is designated as a Collector street in the Salem TSP. The standard for this street classification is a 34-foot-wide improvement within a 60-foot-wide right-of-way.

   b. Existing Condition—This street terminates near Sahalee Drive SE northwest of the subject property.

2. Devon Avenue SE

   a. Standard—This street is currently under Marion County jurisdiction and is designated as a Local street in the Salem TSP. The standard for this street classification is a 30-foot-wide improvement within a 60-foot-wide right-of-way.

   b. Existing Condition—This street has an approximate 26-foot improvement within a 40-foot-wide right-of-way abutting the subject property.

Storm Drainage

1. Existing Stormwater

   a. Champion Swale is mapped to the west of the subject property, while an unidentified creek runs through the western portion of the property. Powell Creek is mapped east of the subject property. No public storm mains are adjacent to the proposed development.

b. The subject property is within the Battle Creek Drainage Basin.

Water

1. Existing Water

   a. The subject property is located partially in the S-3 water service level, below an elevation of 629 feet, and partially in the S-4 water service level, above 629 feet.

   b. A 10-inch S-3 water line is located in Devon Avenue SE. Mains of this size generally convey flows of 700 to 1,700 gallons per minute.

   c. A 10-inch S-3 water line is located in Lone Oak Road SE. Mains of this size generally convey flows of 700 to 1,700 gallons per minute.

   d. A 16-inch S-3 water line is located in Rees Hill Road SE. Mains of this size generally convey flows of 3,800 to 8,800 gallons per minute.

   e. There is no existing S-4 water system.

Sanitary Sewer

1. Existing Sewer

   a. The property is split into two sewage drainage basins, partially toward the west line and partially toward the east.

   b. The nearest adequate linking facility for the west basin appears to be an existing 8-inch sewer line approximately 400 feet to the northwest of the property in Lone Oak Road SE.

   c. The nearest adequate linking facility for the east basin appears to be an existing 8-inch sewer line approximately 850 feet to the northeast of the property. The east basin may be able to receive service from the existing sewer main in Lone Oak Road SE.

Parks

The subject property abuts the lot designated for the future Neighborhood Park (NP 28) along its southern boundary. This property was recently purchased by the City to be developed as NP 28. A street connection and a pedestrian connection are proposed with the tentative plan.

CRITERIA AND FINDINGS

SRC 205.070(d) indicates the criteria that must be found to exist before an affirmative decision can be made. The applicable criteria and the corresponding findings are as follows:

SRC 205.070(d)(1)—The proposed modification is not substantially inconsistent with the conditions of the original approval:

Finding—The proposed modification merely divides the overall project into three distinct phases and does not change any other aspects of the original application. The conditions of the original approval are unchanged, except that they are implemented within each phase as applicable.

SRC 205.070(d)(2)—The proposed modification will not result in significant changes to the physical appearance of the development, the use of the site, and the impacts on surrounding properties:

Finding – The proposed modification merely divides the overall project into three distinct phases and does not change any other aspects of the original application. The proposed modification does not change the physical appearance of the development, the use of the site, or the impacts on surrounding properties.

SRC 205.015(d)(3)—Each phase is substantially and functionally self-contained and self-sustaining with regard to required public improvements.

Finding – City infrastructure is available to serve individual phases in a way that is functionally self-contained and self-sustaining. In order to provide for safe circulation of traffic, the entire connection of Lone Oak Road SE from Sahalee to Rees Hill is required with Phase 1.

SRC 205.015(d)(4)—Each phase is designed in such a manner that all phases support the infrastructure requirements for the phased subdivision as a whole

Finding – The infrastructure requirements for the subdivision modification are unchanged from the original decision, except that the improvements will be constructed in phases. The improvements constructed in earlier phases will be constructed in such a manner that provides sufficient capacity to serve later phases.

Prepared by: Jennifer Scott, Program Manager
cc: File

NOTICE OF DECISION

PLANNING DIVISION
555 LIBERTY ST. SE, RM 305
SALEM, OREGON 97301
PHONE: 503-588-6173
FAX: 503-588-6005

CITY OF Salem AT YOUR SERVICE

Si necesita ayuda para comprender esta informacion, por forvor llame 503-588-6173

ADMINISTRATIVE DECISION FOR TREE CONSERVATION PLAN

CASE NO.:	TCP19-10
AMANDA NO.:	19-109779-NR
DATE OF DECISION:	October 23, 2019
PROPERTY LOCATION:	6719 Devon Avenue SE - 97306
APPLICANT:	HSF Development, LLC

REQUEST

A Tree Conservation Plan in conjunction with Subdivision Case No. SUB19-05, proposing the preservation of 12 trees on site, or 19 percent, out of a total of 63 trees. The subject property is approximately 19.74 acres in size, zoned RS (Single Family Residential), and located at 6719 Devon Avenue SE - 97306 (Marion County Assessor's Map and Tax Lot number 083W22C / 300).

FINDINGS

The subject property is located at 6719 Devon Avenue SE - 97306 (Marion County Assessor's Map and Tax Lot number 083W22C / 300) (Attachment A). The tree conservation plan (Attachment B) was submitted in conjunction with a subdivision application for the subject property (SUB19-05).

The tree conservation plan identifies a total of 63 trees above 10 inches diameter-at-breast-height (dbh) on the property, with 12 trees identified for preservation. There are no significant trees proposed for removal and no heritage trees, or riparian corridor trees or vegetation located on the property.

1. Tree Conservation Plan Approval Criteria (SRC 808.035(d)):

SRC 808.035(d) establishes the following approval criteria for tree conservation plans:

(1) No heritage trees are designated for removal;

(2) No significant trees are designated for removal, unless there are no reasonable design alternatives that would enable preservation of such trees;

(3) No trees or native vegetation in a riparian corridor are designated for removal, unless there are no reasonable design alternatives that would enable preservation of such trees or native vegetation;

(4) Not less than 25 percent of all trees located on the property are designated for preservation; provided, however, if less than 25 percent of all trees located on the property are designated for preservation, only those trees reasonably necessary to accommodate the proposed development shall be designated for removal.

2. Analysis of Tree Conservation Plan Approval Criteria:

(1) No heritage trees are designated for removal.

Finding: There are no heritage trees located on the subject property; therefore, the preservation requirements of SRC 808.035(d)(1) are not applicable to the tree conservation plan.

(2) No significant trees are designated for removal, unless there are no reasonable design alternatives that would enable preservation of such trees.

Finding: There is one significant tree located on the subject property. The applicant has identified this tree as number 83 and it is not proposed to be removed. Therefore, the preservation requirements of SRC 808.035(d)(2) are met.

(3) No trees or native vegetation in a riparian corridor are designated for removal, unless there are no reasonable design alternatives that would enable preservation of such trees or native vegetation.

Finding: There are no riparian corridors present on the subject property; therefore, the preservation requirements of SRC 808.035(d)(3) are not applicable to the tree conservation plan.

(4) Not less than 25 percent of all trees located on the property are designated for preservation; provided, however, if less than 25 percent of all trees located on the property are designated for preservation, only those trees reasonably necessary to accommodate the proposed development shall be designated for removal.

Finding: The applicant submitted a tree conservation plan indicating 12 of the 63 trees on the subject site would be preserved, or 19 percent of the trees, thus dropping below the minimum 25 percent retention standard in SRC 808.035(d)(4). Because the tree conservation plan proposes to preserve less than the minimum required 25 percent of the trees on the site, the applicant has provided a written statement identifying that required street grades and locations to serve the future proposed subdivision require additional tree removal. In addition, some trees fall within future building envelopes for future single-family homes within the subdivision. To offset the impacts of removing more than 25 percent of the trees on the subject property, each lot shall be subject to higher planting requirements as outlined below. With the additional tree planting requirements in place, the tree conservation plan complies with the requirements of SRC 808.035(d)(4).

3. SRC Chapter 808 Planting Requirements

SRC Chapter 808.050 establishes tree planting requirements for lots or parcels to be used for Single Family or Two Family uses. The specific number of trees that must be provided on each lot is based upon the requirements of Table 808-1, however, the proposal does not preserve the minimum 25 percent requirement for trees on site. To offset the impact of the tree removal, replanting shall take place as shown below:

Lot Size	Required Trees
Up to and including 6,000 square feet	3
6,001 to 7,000 square feet	4
7,001 to 8,000 square feet	5
8,001 to 9,000 square feet	6
Above 9,000 square feet	7

In the event there are insufficient existing trees on a lot or parcel to meet the requirements of the above replanting requirements, the deficiency shall be made up by planting trees that are at least 1.5 inches in caliper.

DECISION

The proposed Tree Conservation Plan is consistent with the provisions of SRC Chapter 808. The Tree Conservation Plan is hereby **APPROVED,** subject to SRC Chapter 808 and the following conditions, adopted pursuant to SRC 808.050(e)(2):

Condition 1: All trees designated for retention under the tree conservation plan shall be marked and protected during construction. Any heritage tree or significant tree shall require that at least 70 percent of a circular area beneath the tree measuring one foot in radius for every one inch of dbh be protected by an above ground silt fence or its equivalent. Tree protection measures shall remain in place until the issuance of Notice of Final Completion for the Single-Family dwelling or Two-Family dwelling.

Condition 2: Each lot or parcel within the development proposal shall comply with the tree planting requirements set forth in SRC 808.050, and the table in Section 3 of this decision.

Condition 3: The applicant shall obtain all required grading and erosion control permits if tree removal results in ground disturbance.

The applicant, and all representatives thereof, shall comply with all applicable development standards of SRC Chapter 808. The approved Tree Conservation Plan is on file with the City of Salem and is binding on the lots created by the partition of the subject property. No tree designated for removal on the approved Tree Conservation Plan shall be removed or critically damaged prior to the Tree Conservation Plan approval date.

B. Randall

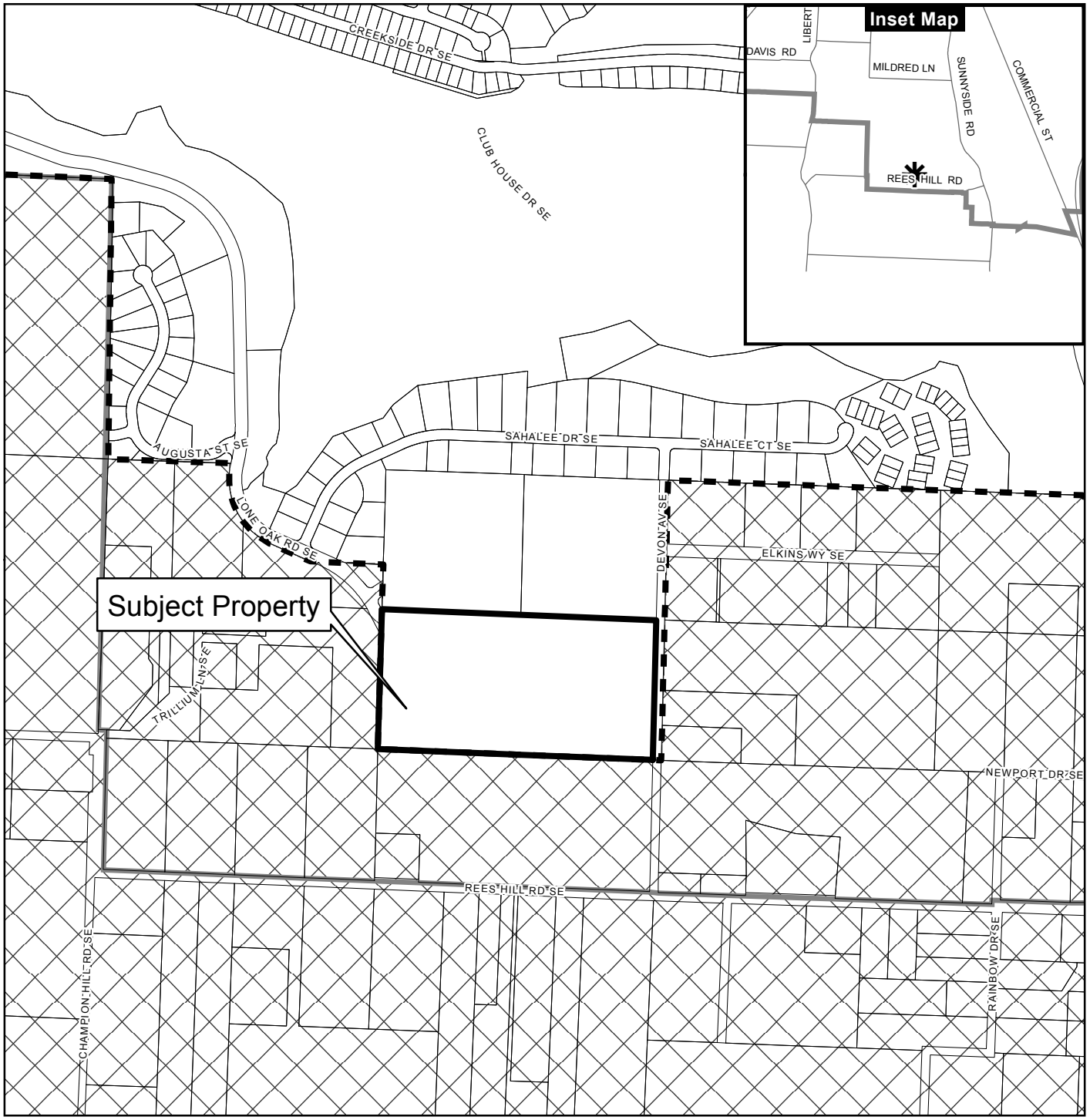
Britany Randall, Planner II
Planning Administrator Designee

Attachments: A. Vicinity Map
B. Approved Tree Conservation Plan

cc: Alan Kessler, GIS

ATTACHMENT A

Vicinity Map
6719 Devon Avenue SE



Legend

- Taxlots
- Urban Growth Boundary
- City Limits
- Outside Salem City Limits
- Historic District
- Schools
- Parks

0 100 200 400 Feet

CITY OF Salem AT YOUR SERVICE
Community Development Dept.

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ATTACHMENT B

PLANNING ACTION
APPROVED SUBJECT TO
DEVELOPMENT REQUIREMENTS
NOTED ON PLANS.
P Randall
Date and Signature of Planner
10/22/2019 1:32:25 PM

N
W E
S
0' 50'
1 INCH
SCALE: 1" = 50'

LONE OAK ROAD
TAX LOT #100
N89°22'41"W 1,298.71'
ONE COURT
ONE AVENUE
TWO AVENUE
THREE STREET
FOUR STREET
FIVE STREET
DEVON AVE.
S0°06'31"W 662.05'
N0°00'00"E 661.92'
S89°23'04"E 1,299.96'
STORM WATER FACILITY
S-4 WATER PUMP STATION
10' PUE
PROP. 5' SIDEWALK
PROP. 12' SIDEWALK
No sidewalk between Lot 15 & 16
New location of 12' sidewalk
Walkway moved to preserve 18" Fir tree

100.0% 63 TOTAL TREES WITHIN BOUNDARY
17.5% 11 MINIMUM TREES TO REMAIN
= EXISTING TREE WHICH MAY BE REMOVED
= EXISTING TREE TO REMAIN

MULTI/TECH
ENGINEERING SERVICES, INC.
1155 13th ST. S.E. SALEM, OR. 97302
PH. (503) 363-9227 FAX (503) 364-1260
www.mtengineering.net office@mtengineering.net

TREE CONSERVATION PLAN

DEVON ESTATES

NO CHANGES, MODIFICATIONS OR REPRODUCTIONS TO BE MADE TO THESE DRAWINGS WITHOUT WRITTEN AUTHORIZATION FROM THE DESIGN ENGINEER.

DIMENSIONS & NOTES TAKE PRECEDENCE OVER GRAPHICAL REPRESENTATION.

P.H.S. 06/24/2019
6502p P104TREE
Design: M.D.G.
Drawn: P.H.S.
Checked: B.M.G.
Date: NOV. 2017
Scale: AS SHOWN

REGISTERED PROFESSIONAL ENGINEER
OREGON
JULY 14, 1978
MARK D. GRENZ
EXPIRES: 06-30-2019

JOB # 6502

P104

1. REVISED LOT LAYOUT

J:\6500-6599\6502-DevonAvenueSubdivision\Dwg\6502p.dwg, P104TREE, 6/25/2019 10:28:43 AM, PSaunders

CITY OF Salem AT YOUR SERVICE
Community Development
Planning Division
555 Liberty Street SE / Room 305 • Salem OR 97301-3503 • Phone 503-588-6213 • TTY 503-588-6005
Fax 503-588-6005 • www.cityofsalem.net/planning • www.cityofsalem.net

December 15, 2020

Brandie Dalton
BDalton@mtengineering.net

RE: Phased Subdivision Application for 6719 Devon Avenue SE (AMANDA 20-118048-LD)

Ms. Dalton,

I am reviewing the partition application for completeness. The following information is required for staff to deem the application complete.

(1) **Neighborhood Association Contact.**

(2) **Tentative Subdivision Plan.** Please ensure that the written statement and Subdivision Plan are consistent. It appears that the amount of phases are incorrect in one document.

(3) **Written Statement.** Please ensure that the written statement and Subdivision Plan are consistent. It appears that the amount of phases are incorrect in one document

(4) A new S-4 water pump station is proposed to be located on a neighboring property owned by the City of Salem that was acquired for use as a future community park. The applicant is required to submit a formal letter to the Public Works Director requesting use of the park property. The letter should specify what alternatives were considered and why the pump station can no longer be located on the developer's property.

(5) The subdivision application was submitted after the effective date of Ordinance 8-20, which requires additional stormwater flow control facilities to be constructed for land divisions. The proposed tentative plan does not appear to provide sufficient area for stormwater flow control.

(6) Multiple street design exceptions are required based on the revised street alignment. The applicant shall submit an updated design exception request pursuant to PWDS prior to finalization of the tentative subdivision decision. *Preliminary review comments are attached.*

(7) Stormwater design related to Subdivision Condition No. 13 has been discussed at length between the Applicant's engineer and the City's Engineering Division. The condition is being reconsidered with this application.

The following items are identified deficiencies in your application and will need to be addressed. Failure to address issues could result in denial of application.

Please see attached ‘markups’ plans

The application will be deemed complete upon receipt of one of the following:

(1) All of the missing information;
(2) Some of the missing information and written notice from the applicant that no other information will be provided;
(3) Written notice from the applicant that none of the missing information will be provided.

You have until May 19, 2021 (180 days from the date the application was submitted) to respond in one of the three ways listed above, or the application will be deemed void.

Please submit the above requested materials and/information to our office through SPLASH, by mail, email, or in person. If you have questions, please contact me at (503) 540-2343 or odias@cityofsalem.net

The Salem Revised Code may be accessed online at the following location:

https://www.cityofsalem.net/Pages/salem-revised-code.aspx

Sincerely,

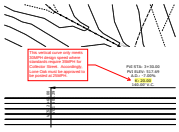


Olivia Dias
Current Planning Manager

\\CommDev\CDGroup\CD\PLANNING\Olivia\2020\LD\SUBDIVISION\Devon Subdivision, take two\Incomplete Letter.docx

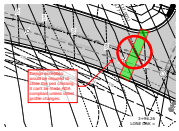
PW Completeness Review_Civil Plans_Devon Estates.pdf Markup Summary

[1] P401ST (3)



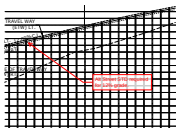
Subject: Group
Page Label: [1] P401ST
Author: dwhitehu
Date: 12/9/2020 3:04:16 PM
Status:
Color:
Layer:
Space:

This vertical curve only meets 30MPH design speed where standards require 35MPH for Collector Street. Accordingly, Lone Oak must be approved to be posted at 25MPH.



Subject: Group
Page Label: [1] P401ST
Author: dwhitehu
Date: 12/9/2020 3:14:09 PM
Status:
Color:
Layer:
Space:

Design exception would be required to close this ped crossing. It can't be made ADA compliant unless street profile changes.



Subject: Callout
Page Label: [1] P401ST
Author: dwhitehu
Date: 12/9/2020 3:14:46 PM
Status:
Color:
Layer:
Space:

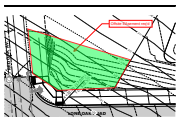
Alt Street STD required for 12% grade.

[1] P402ST (2)



Subject: Group
Page Label: [1] P402ST
Author: dwhitehu
Date: 12/9/2020 3:19:17 PM
Status:
Color:
Layer:
Space:

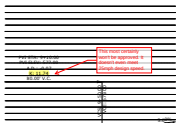
Design Exception



Subject: Group
Page Label: [1] P402ST
Author: dwhitehu
Date: 12/9/2020 3:20:41 PM
Status:
Color:
Layer:
Space:

Offsite EAsement req'd

[1] P403ST (2)



Subject: Group
Page Label: [1] P403ST
Author: dwhitehu
Date: 12/9/2020 3:22:24 PM
Status:
Color:
Layer:
Space:

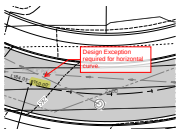
This most certainly won't be approved. It doesn't even meet 25mph design speed.



Subject: Group
Page Label: [1] P403ST
Author: dwhitehu
Date: 12/9/2020 3:25:53 PM
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Color:
Layer:
Space:

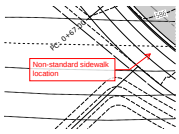
These ped crossing alignments won't be approved.

[1] P405ST (3)



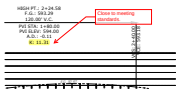
Subject: Group
Page Label: [1] P405ST
Author: dwhitehu
Date: 12/9/2020 4:17:46 PM
Status:
Color:
Layer:
Space:

Design Exception required for horizontal curve.



Subject: Callout
Page Label: [1] P405ST
Author: dwhitehu
Date: 12/9/2020 4:18:46 PM
Status:
Color:
Layer:
Space:

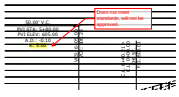
Non-standard sidewalk location



Subject: Group
Page Label: [1] P405ST
Author: dwhitehu
Date: 12/9/2020 4:19:30 PM
Status:
Color:
Layer:
Space:

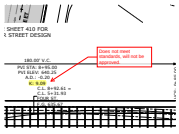
Close to meeting standards.

[1] P406ST (3)



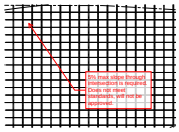
Subject: Group
Page Label: [1] P406ST
Author: dwhitehu
Date: 12/9/2020 4:20:33 PM
Status:
Color:
Layer:
Space:

Does not meet standards, will not be approved.



Subject: Group
Page Label: [1] P406ST
Author: dwhitehu
Date: 12/9/2020 4:21:13 PM
Status:
Color:
Layer:
Space:

Does not meet standards, will not be approved.

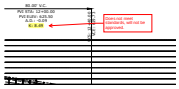


Subject: Callout
Page Label: [1] P406ST
Author: dwhitehu
Date: 12/9/2020 4:22:12 PM
Status:
Color:
Layer:
Space:

5% max slope through intersection is required.
Does not meet standards, will not be approved.

---

[1] P407ST (1)



Subject: Group
Page Label: [1] P407ST
Author: dwhitehu
Date: 12/9/2020 4:23:40 PM
Status:
Color:
Layer:
Space:

Does not meet standards, will not be approved.

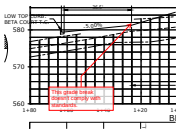
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[1] P408ST (2)



Subject: Group
Page Label: [1] P408ST
Author: dwhitehu
Date: 12/10/2020 11:47:34 AM
Status:
Color:
Layer:
Space:

Does not meet standards

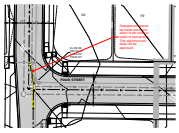


Subject: Callout
Page Label: [1] P408ST
Author: dwhitehu
Date: 12/10/2020 11:50:31 AM
Status:
Color:
Layer:
Space:

This grade break doesn't comply with standards.

---

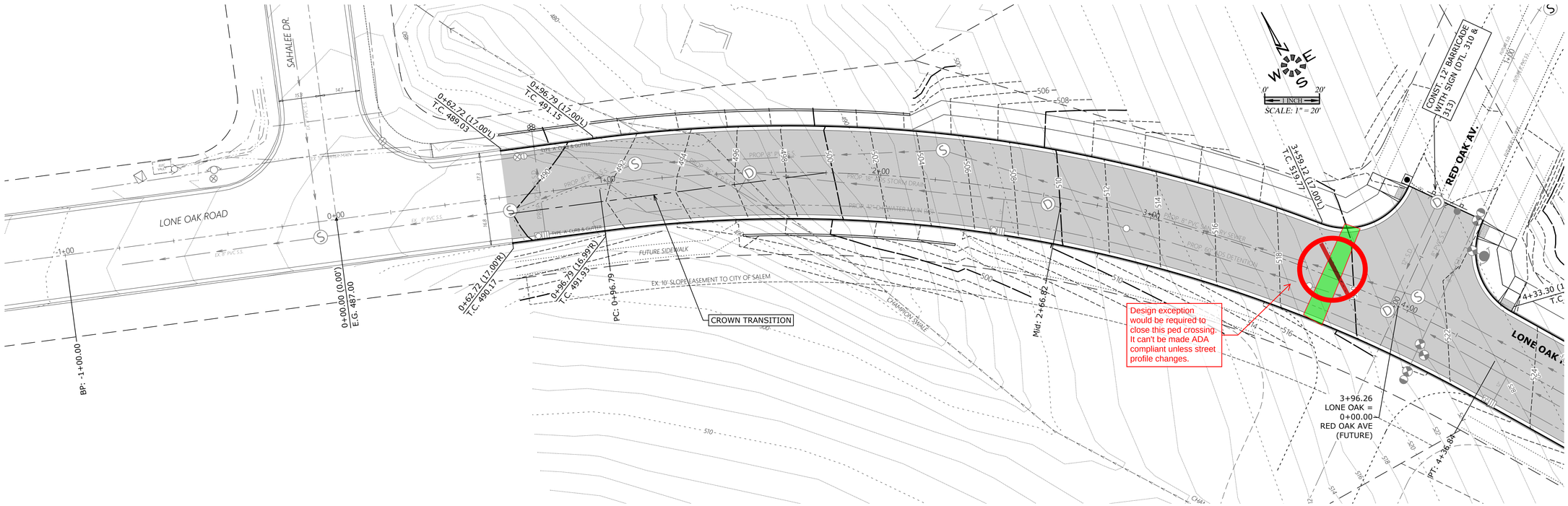
[1] P410ST (1)

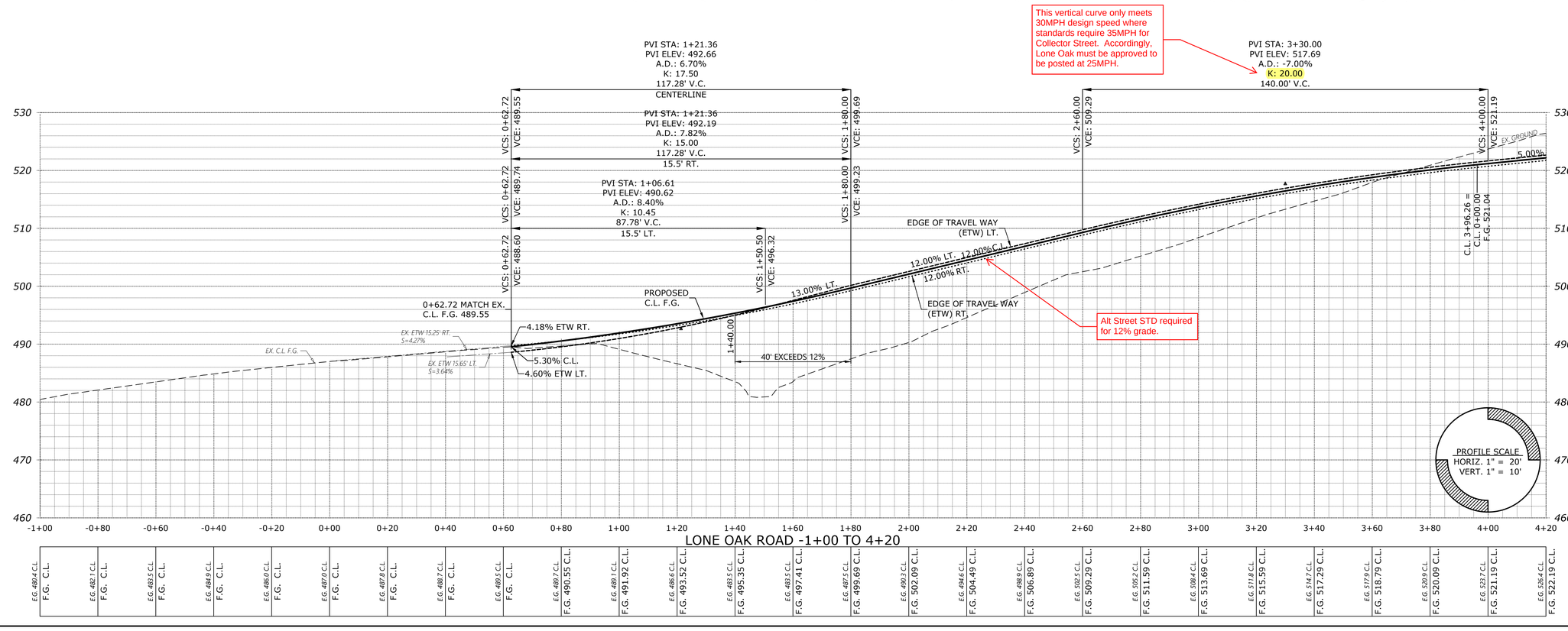


Subject: Group
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Author: KHottman
Date: 12/15/2020 5:23:37 PM
Status:
Color:
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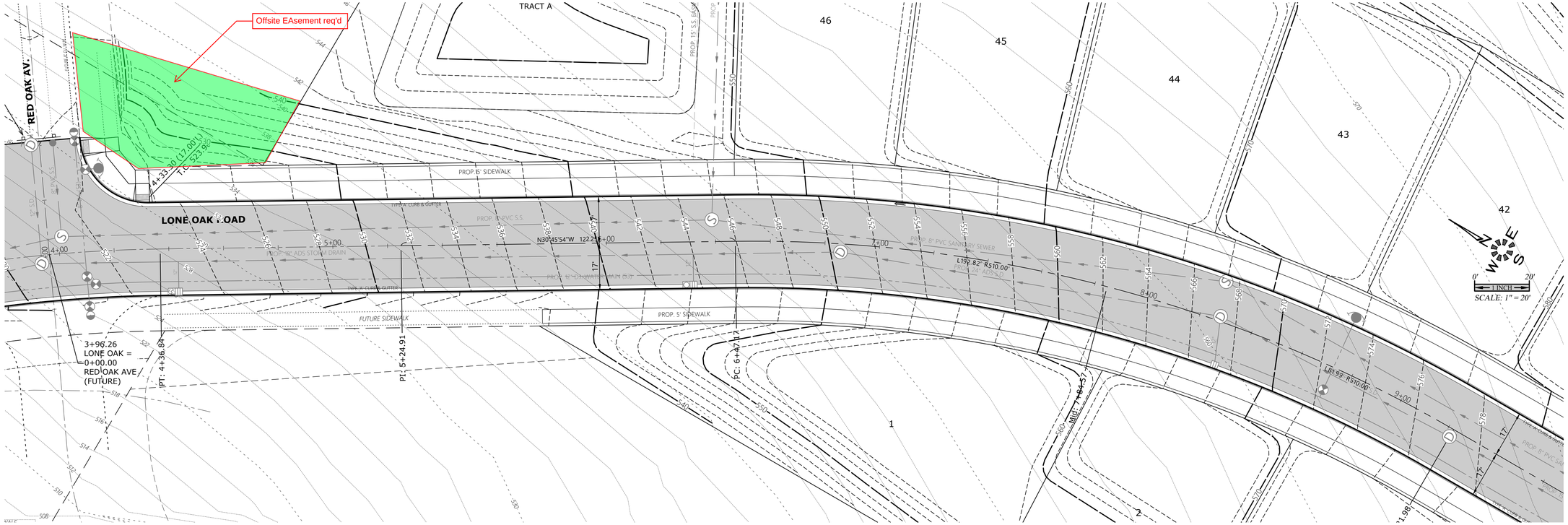
Realignment should be made mid-block, either to the north or south of intersection. This alignment will likely not be approved.

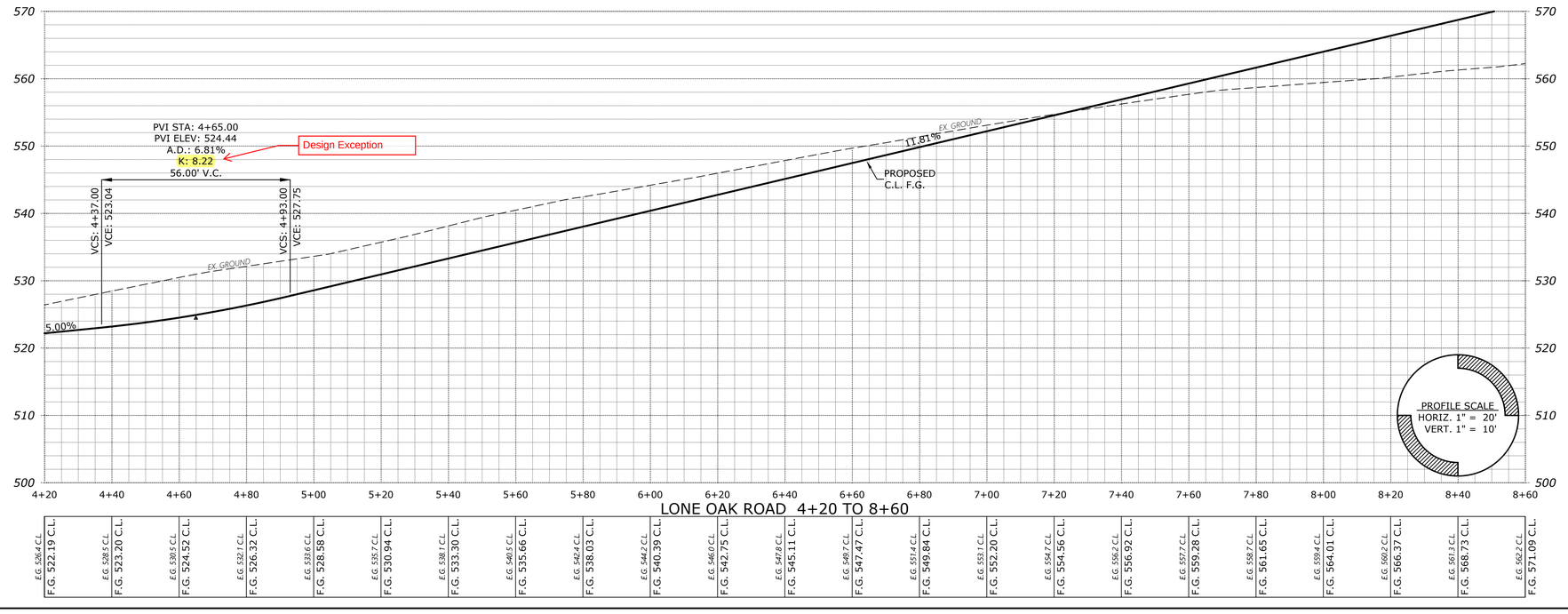
SEE SHEET 409 FOR
RED OAK AVE. DESIGN





| | | |





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PRELIMINARY STREET IMPROVEMENTS

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650ds20 P402ST

Design: M.D.G.
Drawn: P.H.S.
Checked: B.M.G.
Date: NOV. 2017
Scale: AS SHOWN
As-Built: ---- ----

REGISTERED PROFESSIONAL ENGINEER
OREGON JULY 14, 1978
MARK D. GRENZ

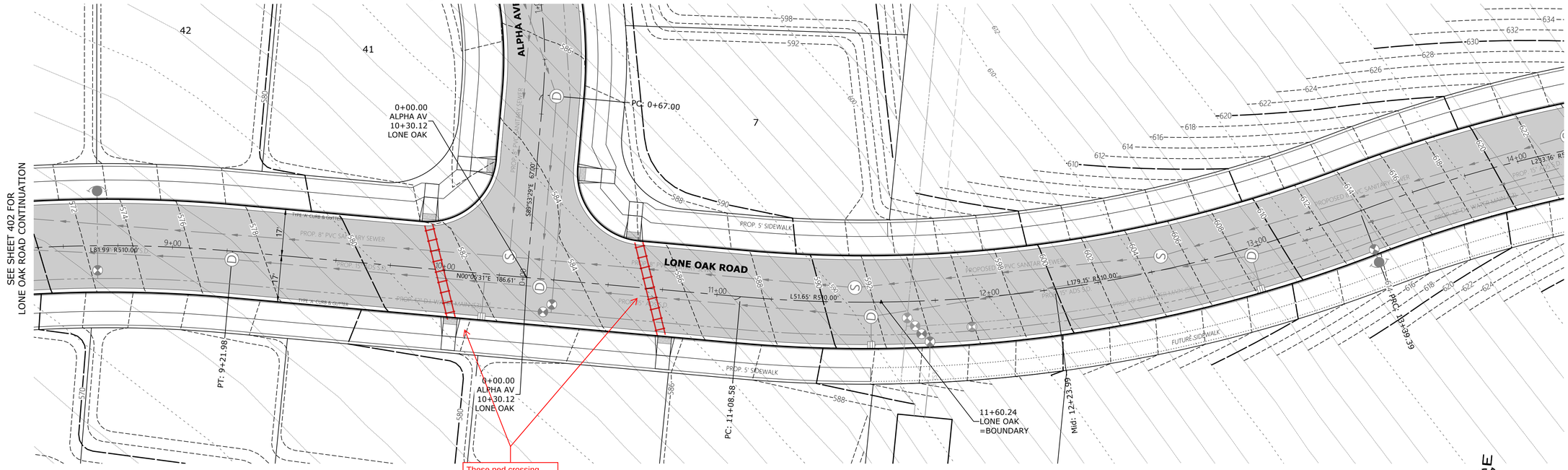
EXPIRES: 06-30-2021

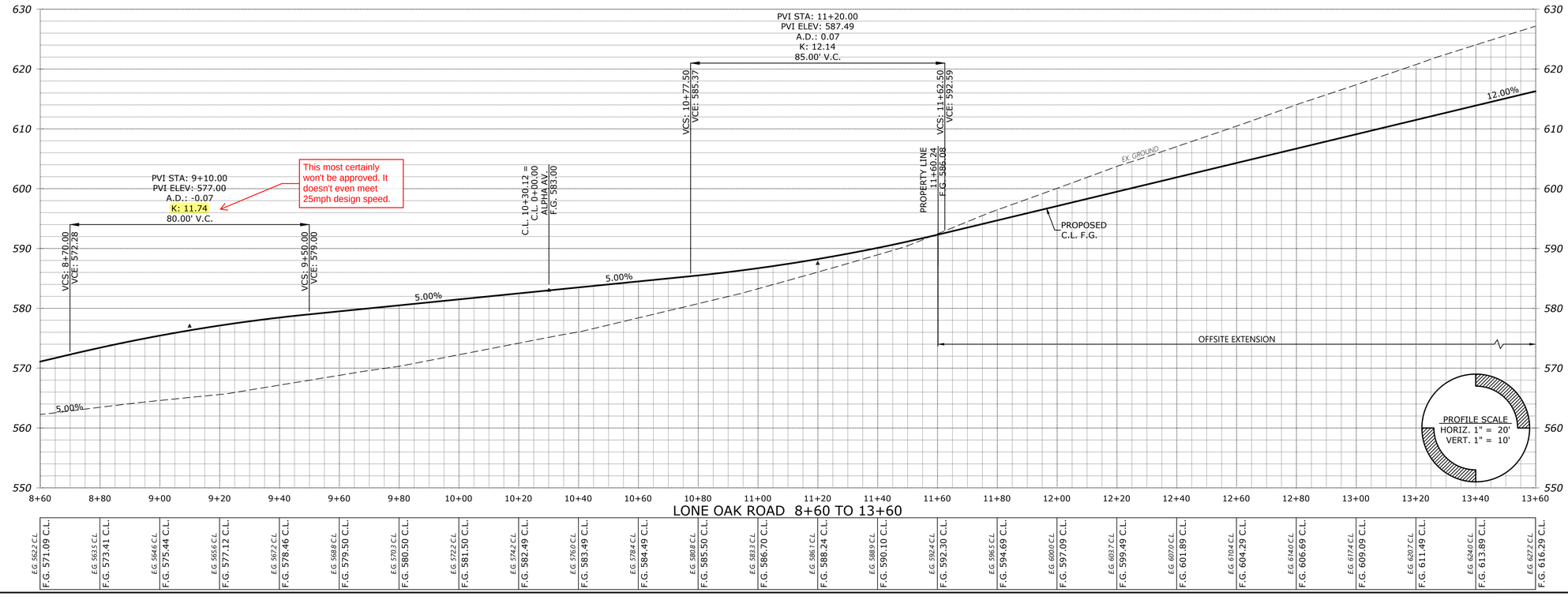
JOB # 6502

P402

J:\6501-6599\6502-DevonAvenueSubdivision\Dwg\DV\6502ds20.dwg, P402ST, 11/10/2020 1:45:57 PM, PSounders

SEE SHEET 405 TO 407 FOR ALPHA AV. DESIGN





E.G. 5622 C.L.	E.G. 5635 C.L.	E.G. 5646 C.L.	E.G. 5656 C.L.	E.G. 5672 C.L.	E.G. 5688 C.L.	E.G. 5703 C.L.	E.G. 5722 C.L.	E.G. 5742 C.L.	E.G. 5760 C.L.	E.G. 5784 C.L.	E.G. 5808 C.L.	E.G. 5833 C.L.	E.G. 5861 C.L.	E.G. 5889 C.L.	E.G. 5924 C.L.	E.G. 5965 C.L.	E.G. 6000 C.L.	E.G. 6037 C.L.	E.G. 6070 C.L.	E.G. 6104 C.L.	E.G. 6140 C.L.	E.G. 6174 C.L.	E.G. 6207 C.L.	E.G. 6240 C.L.	E.G. 6272 C.L.
F.G. 571.09 C.L.	F.G. 573.41 C.L.	F.G. 575.44 C.L.	F.G. 577.12 C.L.	F.G. 578.46 C.L.	F.G. 579.50 C.L.	F.G. 580.50 C.L.	F.G. 581.50 C.L.	F.G. 582.49 C.L.	F.G. 583.49 C.L.	F.G. 584.49 C.L.	F.G. 585.50 C.L.	F.G. 586.70 C.L.	F.G. 588.24 C.L.	F.G. 590.10 C.L.	F.G. 592.30 C.L.	F.G. 594.69 C.L.	F.G. 597.09 C.L.	F.G. 599.49 C.L.	F.G. 601.89 C.L.	F.G. 604.29 C.L.	F.G. 606.69 C.L.	F.G. 609.09 C.L.	F.G. 611.49 C.L.	F.G. 613.89 C.L.	F.G. 616.29 C.L.

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650x20 P403ST

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Drawn: P.H.S.
Checked: B.M.G.
Date: NOV. 2017
Scale: AS SHOWN
As-Built: ____

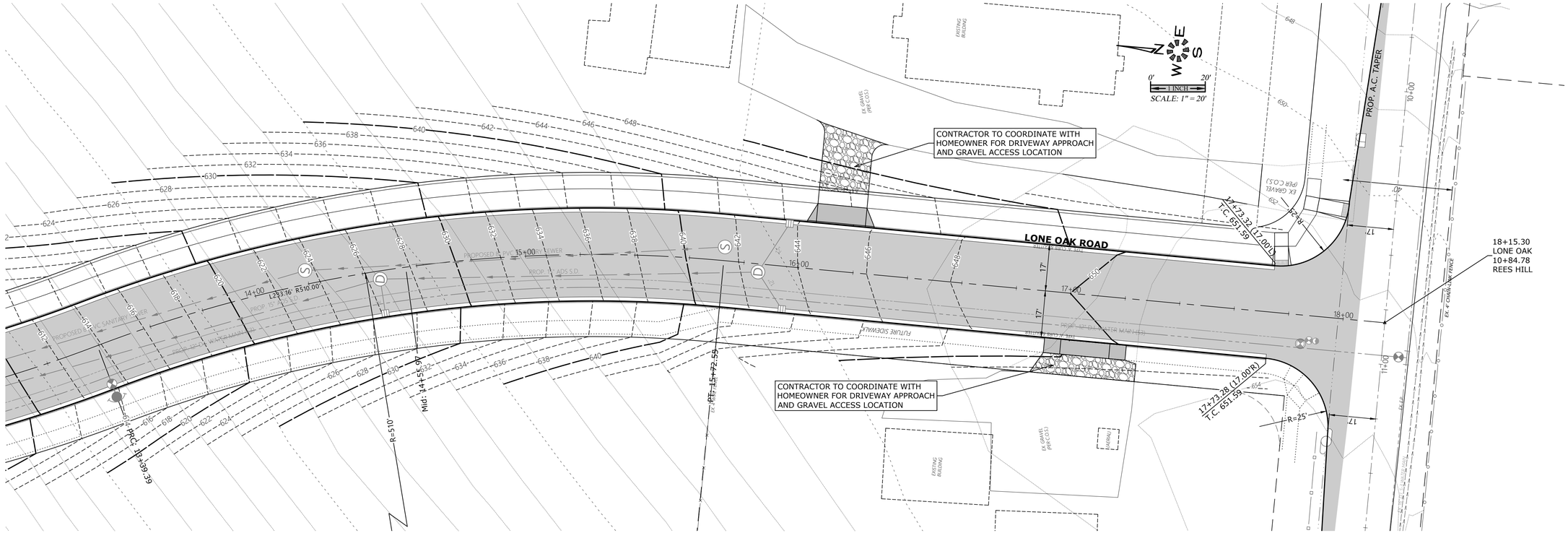
REGISTERED PROFESSIONAL ENGINEER 9654 OREGON JULY 14, 1978 MARK D. GRENZ

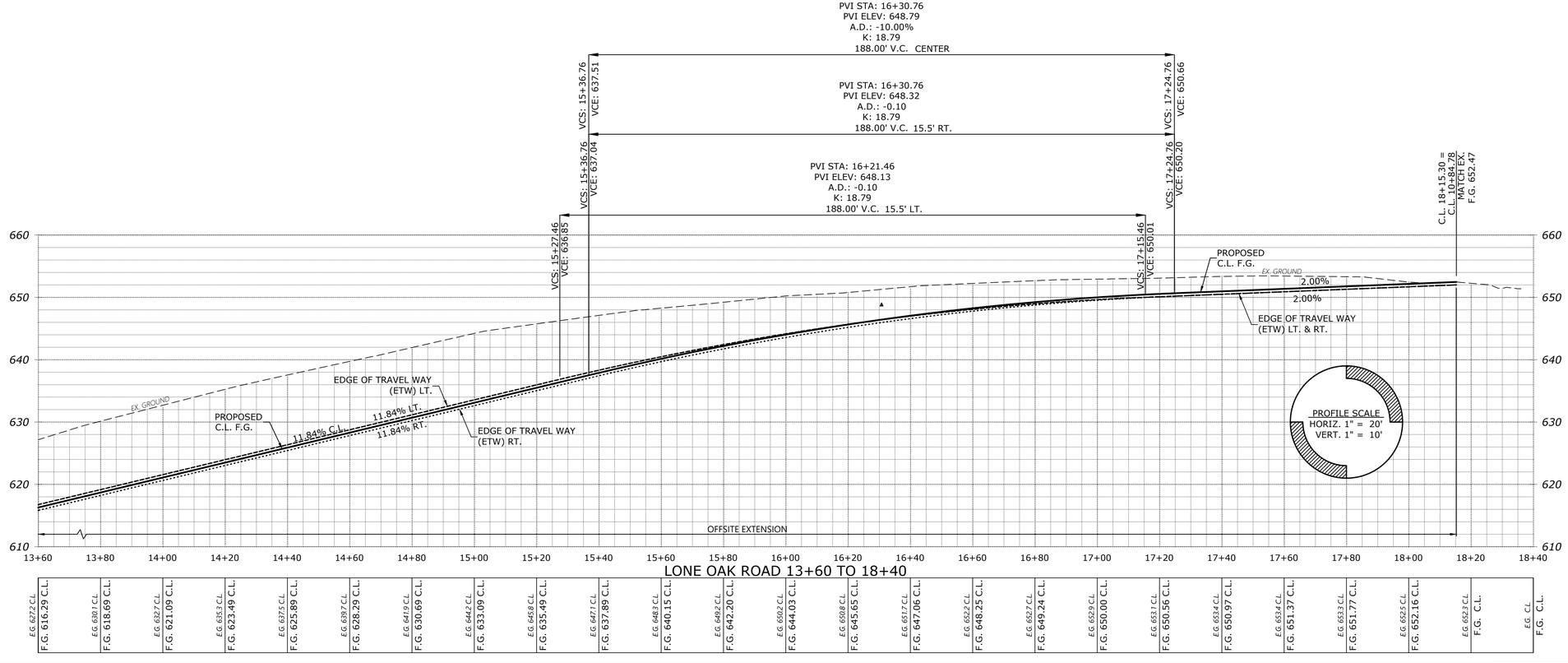
EXPIRES: 06-30-2021

JOB # 6502

P403

J:\6501-6599\6502-DevonAvenueSubdivision\Dwg\DV6502x20.dwg, P403ST, 11/10/2020 1:47:26 PM, PSaunders





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6500x20 P404ST

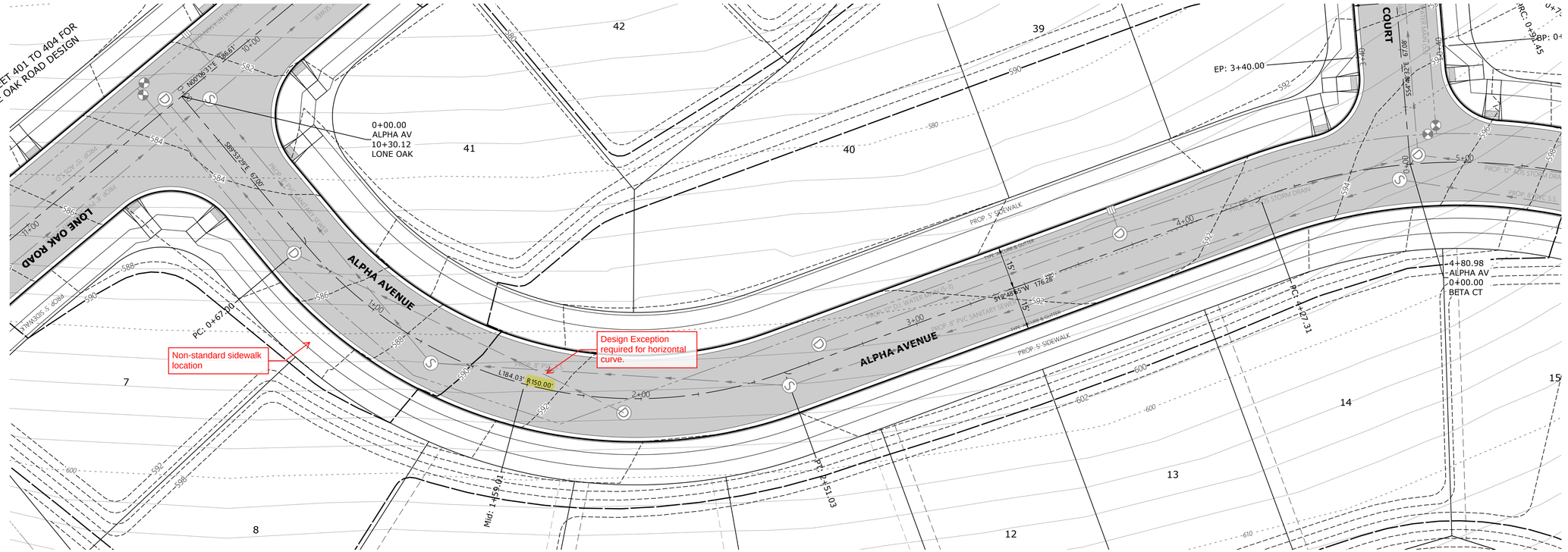
Design: M.D.G.
Drawn: P.H.S.
Checked: B.M.G.
Date: NOV. 2017
Scale: AS SHOWN
As-Built: ----

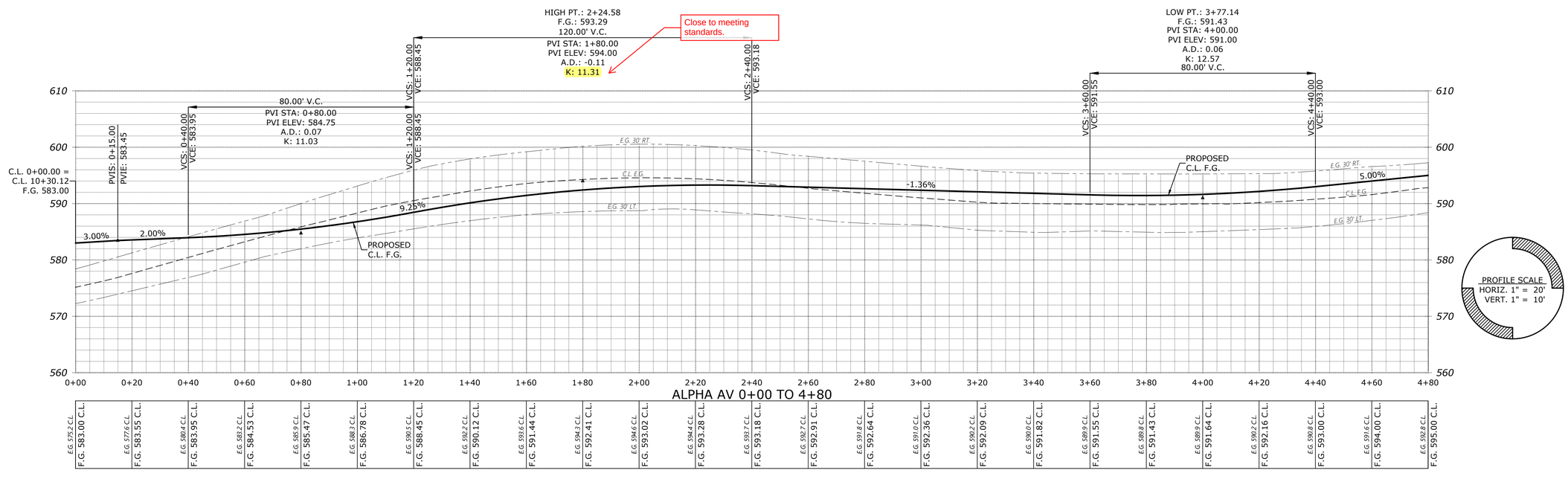
REGISTERED PROFESSIONAL ENGINEER
OREGON
JULY 14, 1978
MARK D. GRENZ
EXPIRES: 06-30-2021

JOB # 6502

P404

J:\6500-6599\6502-DevonAvenueSubdivision\Dwg\20\6502x20.dwg, P404ST, 11/10/2020 1:48:22 PM, PSounders





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PRELIMINARY STREET IMPROVEMENTS

DEVON ESTATES

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650x620 P405ST

Design: M.D.G.
Drawn: P.H.S.
Checked: B.M.G.
Date: NOV. 2017
Scale: AS SHOWN
As-Built: ----

REGISTERED PROFESSIONAL ENGINEER
OREGON
JULY 14, 1972
MARK D. GRENZ

EXPIRES: 06-30-2021

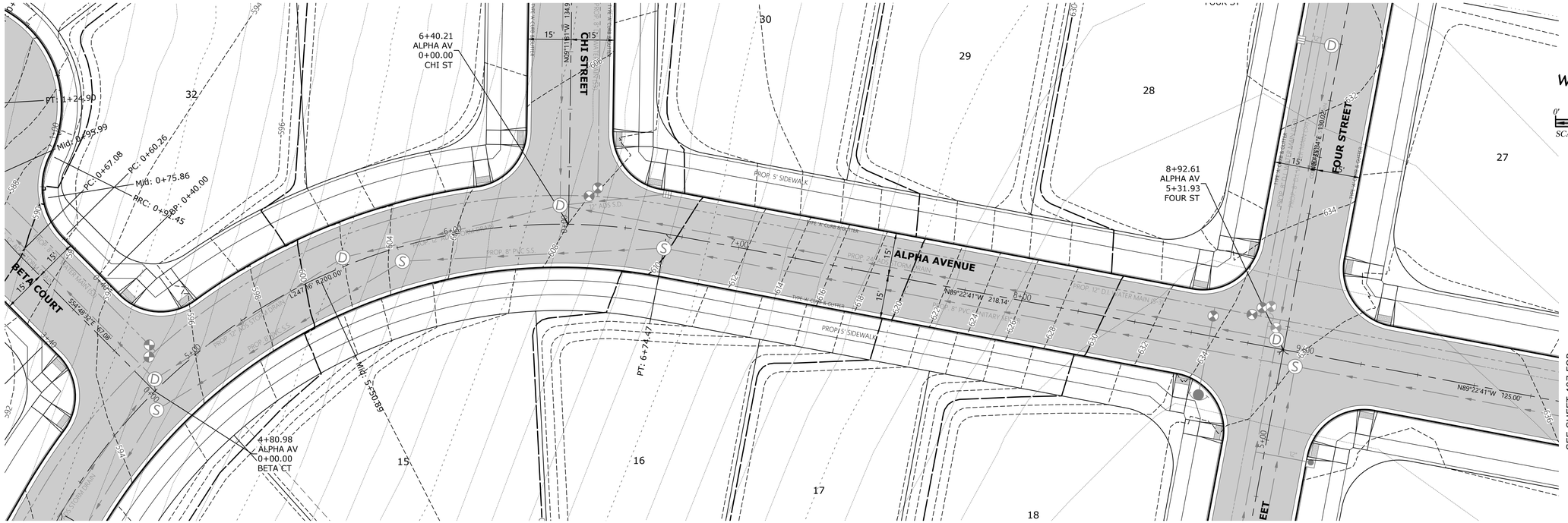
JOB # 6502

P405

J:\6500-6599\6502-DevonAvenueSubdivision\Dwg\Plan\6502b20.dwg, P405ST, 11/10/2020 1:48:47 PM, PSounders

SEE SHEET 409 FOR CHI ST. DESIGN

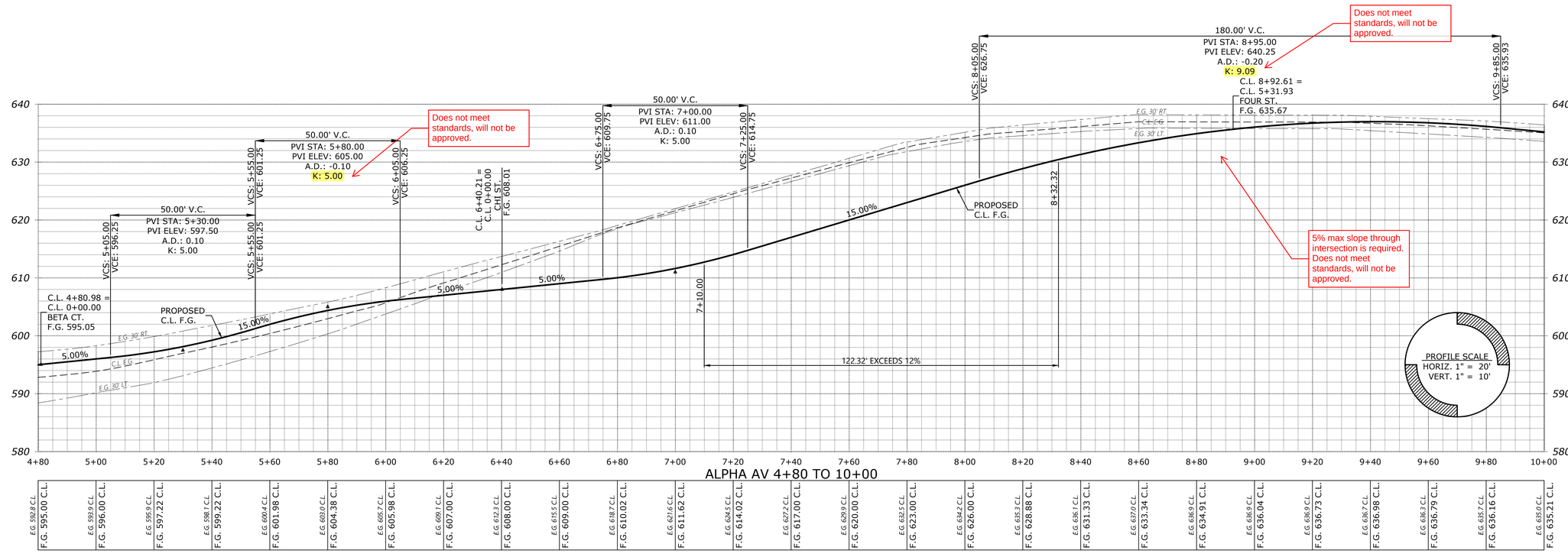
SEE SHEET 408 FOR BETA COURT DESIGN



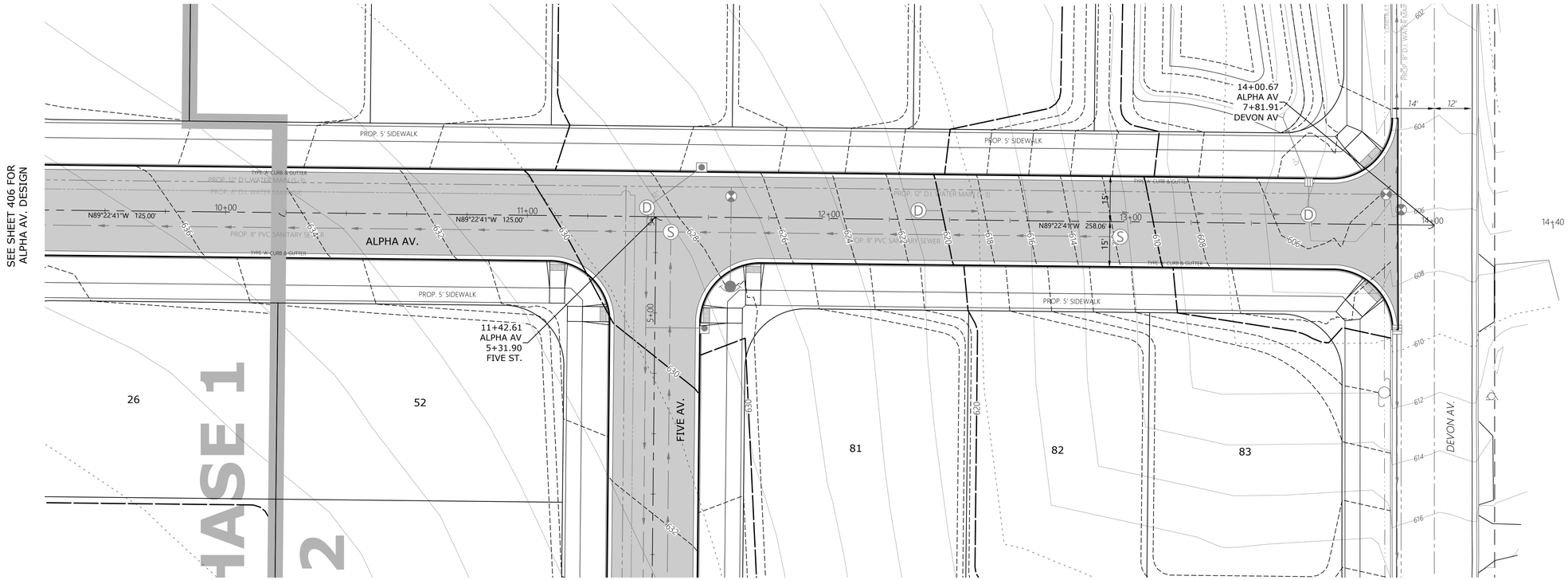
SEE SHEET 405 FOR ALPHA AV. CONTINUATION

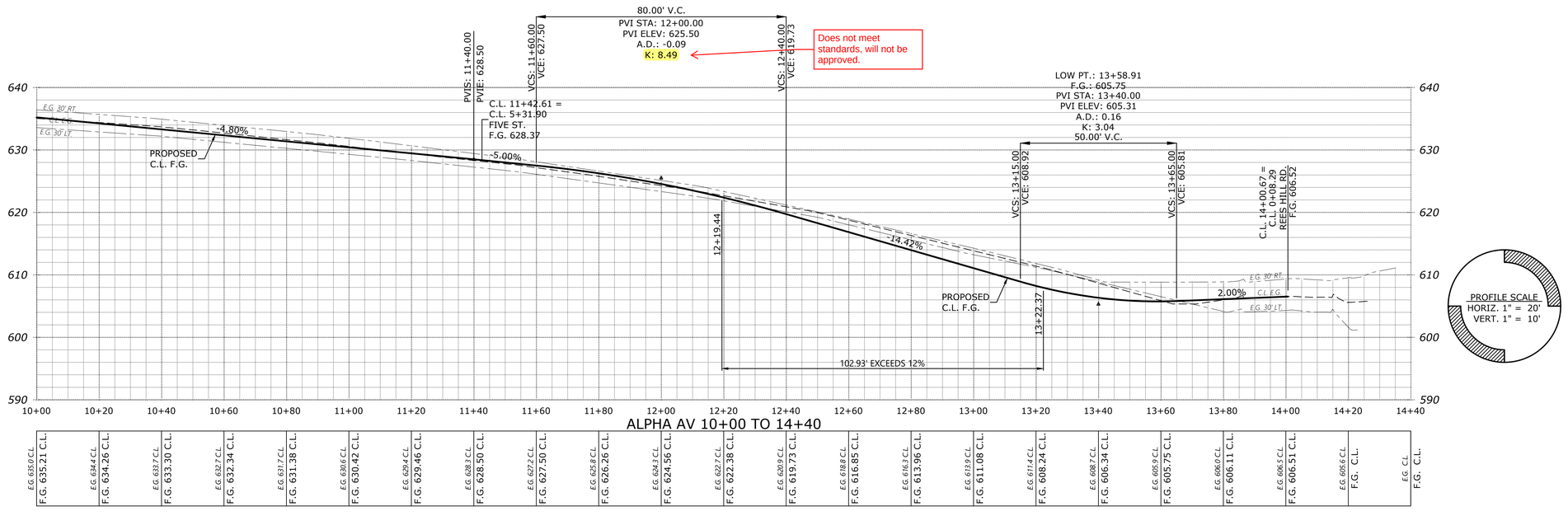
SEE SHEET 410 FOR FOUR STREET DESIGN

SEE SHEET 407 FOR ALPHA AV. CONTINUATION



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MULTI/TECH
ENGINEERING SERVICES, INC.
1155 13th ST. S.E. SALEM, OR. 97302
PH. (503) 363-9227 FAX (503) 364-1260
www.mtengineering.net office@mtengineering.net

PRELIMINARY STREET IMPROVEMENTS

DEVON ESTATES

NO CHANGES, MODIFICATIONS OR REPRODUCTIONS TO BE MADE TO THESE DRAWINGS WITHOUT WRITTEN AUTHORIZATION FROM THE DESIGN ENGINEER.

DIMENSIONS & NOTES TAKE PREFERENCE OVER GRAPHICAL REPRESENTATION.

6500x20 P407ST

Design: M.D.G.
Drawn: P.H.S.
Checked: B.M.G.
Date: NOV. 2017
Scale: AS SHOWN
As-Built: ____

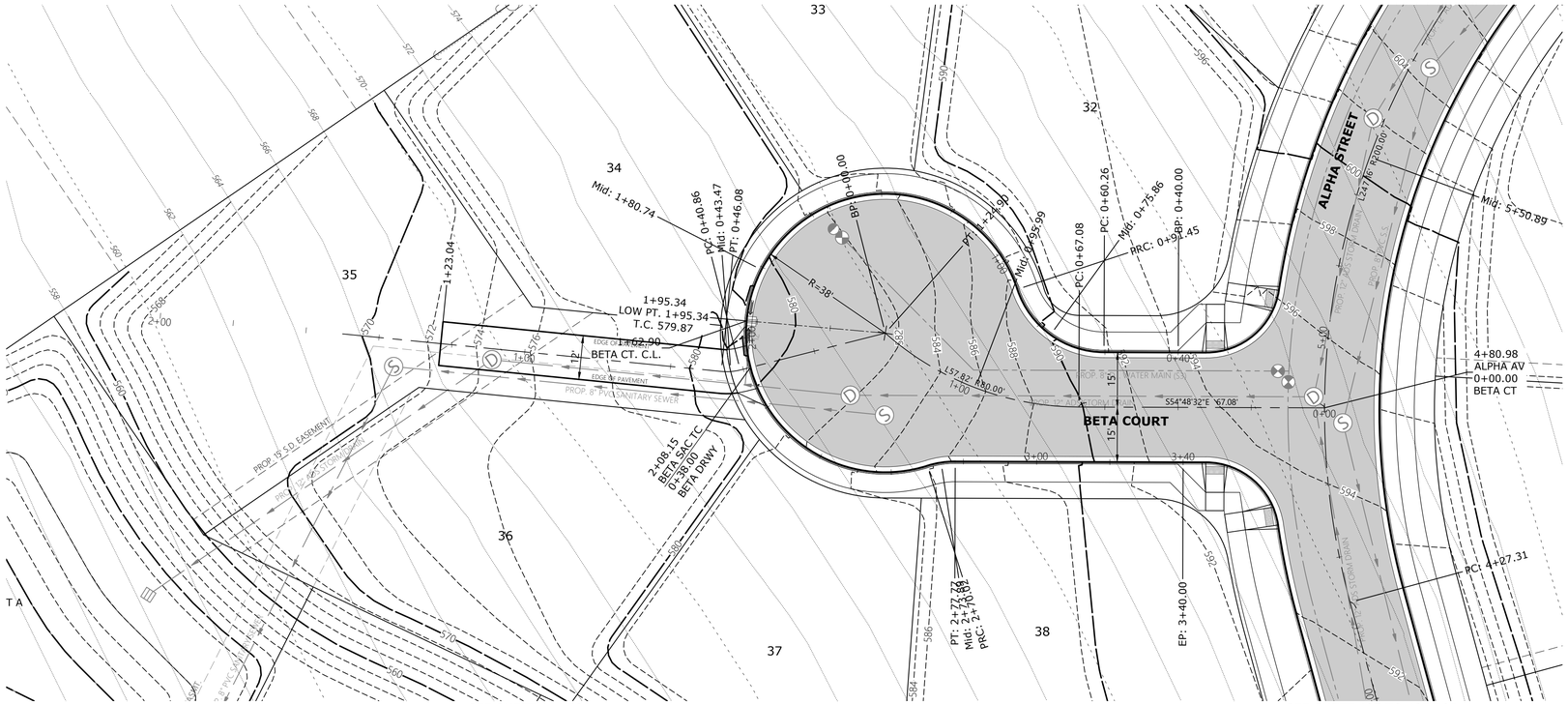
REGISTERED PROFESSIONAL ENGINEER
OREGON
JULY 14, 1978
MARK D. GRENZ

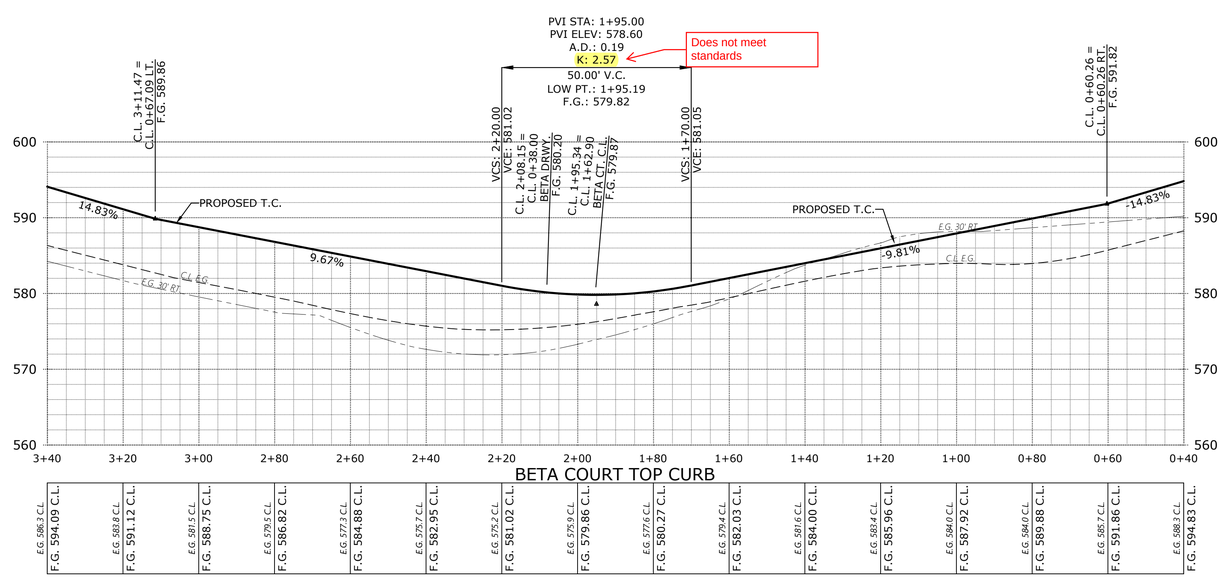
EXPIRES: 06-30-2021

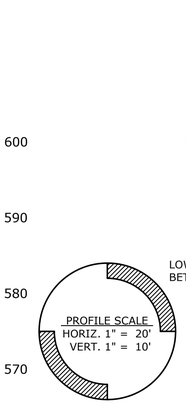
JOB # 6502

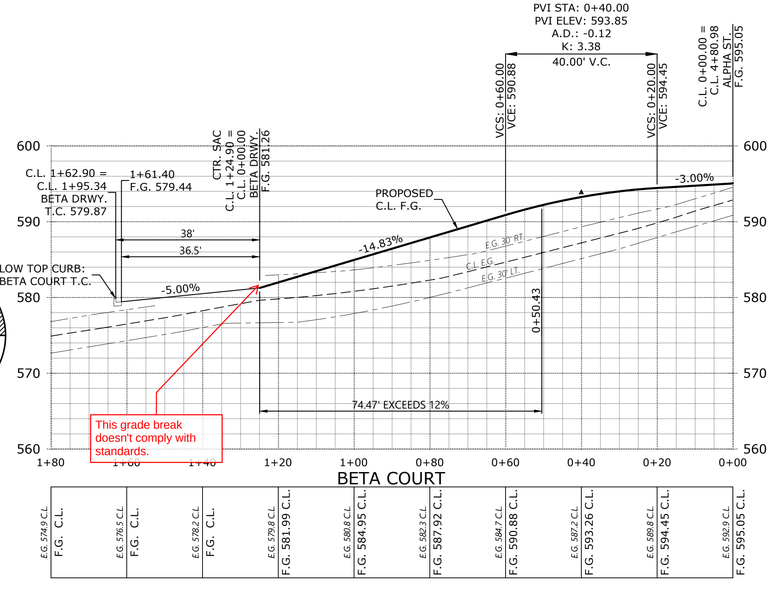
P407

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ENGINEERING SERVICES, INC.
1155 13th ST. S.E. SALEM, OR. 97302
PH. (503) 363-9227 FAX (503) 364-1260
www.mtengineering.net office@mtengineering.net

PRELIMINARY STREET IMPROVEMENTS

DEVON ESTATES

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DIMENSIONS & NOTES TAKE PRECEDENCE OVER GRAPHICAL REPRESENTATION.

6502b20 P408ST

Design: M.D.G.
Drawn: P.H.S.
Checked: B.M.G.
Date: NOV. 2017
Scale: AS SHOWN

As-Built: ____

REGISTERED PROFESSIONAL ENGINEER
OREGON
JULY 14, 1978
MARK D. GRENZ

EXPIRES: 06-30-2021

JOB # 6502

P408

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SEE SHEET 405 TO 407 FOR ALPHA AV. DESIGN

PROFILE SCALE
HORIZ. 1" = 20'
VERT. 1" = 10'

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ENGINEERING SERVICES, INC.
1155 13th ST. S.E. SALEM, OR. 97302
PH. (503) 363-9227 FAX (503) 364-1260
www.mtengineering.net office@mtengineering.net

PRELIMINARY STREET IMPROVEMENTS

DEVON ESTATES

NO CHANGES, MODIFICATIONS OR REPRODUCTIONS TO BE MADE TO THESE DRAWINGS WITHOUT WRITTEN AUTHORIZATION FROM THE DESIGN ENGINEER.

DIMENSIONS & NOTES TAKE PRECEDENCE OVER GRAPHICAL REPRESENTATION.

650x620 P409ST

Design: M.D.G.
Drawn: P.H.S.
Checked: B.M.G.
Date: NOV. 2017
Scale: AS SHOWN
As-Built: ----

REGISTERED PROFESSIONAL ENGINEER
OREGON
JULY 14, 1978
MARK D. GRENZ

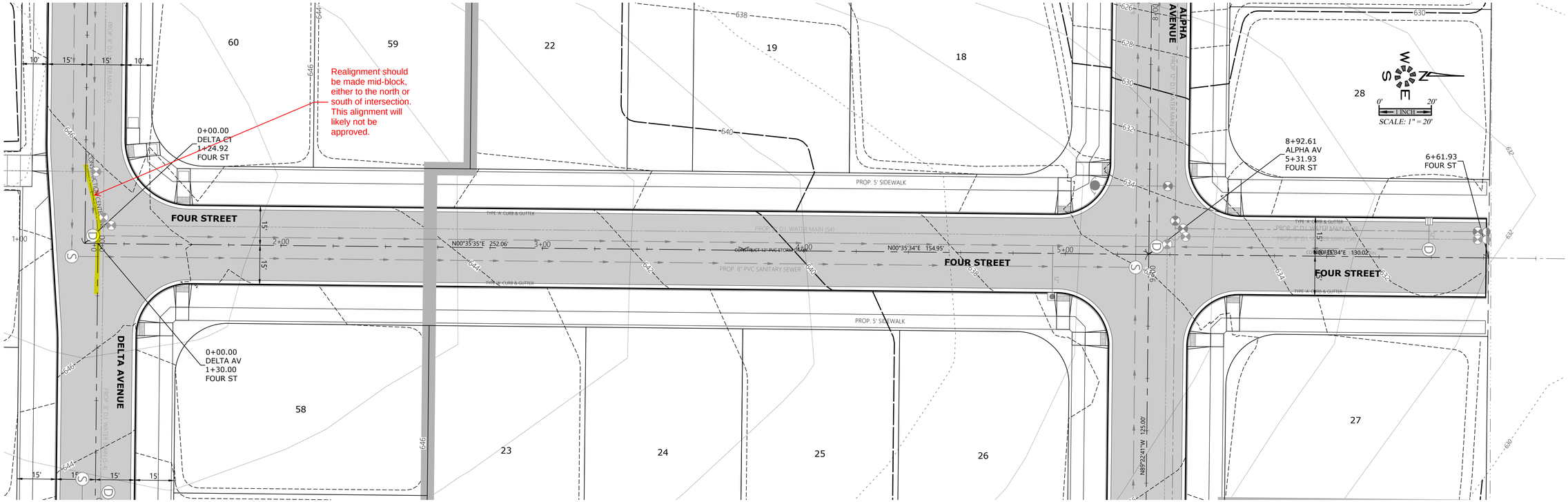
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JOB # 6502

P409

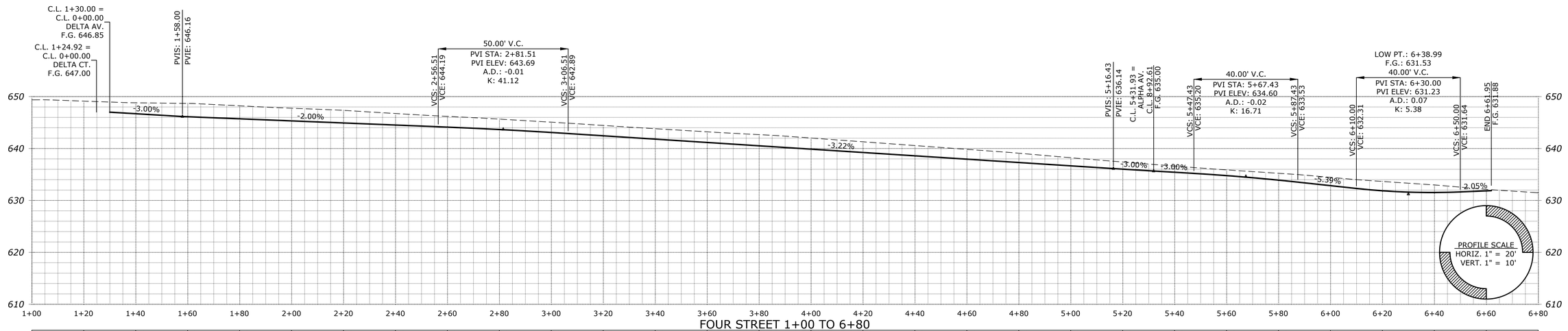
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SEE SHEET 412 FOR DELTA CT. DESIGN



SEE SHEET 413 FOR DELTA AV. DESIGN

SEE SHEET 405 TO 407 FOR ALPHA AV. DESIGN



FOUR STREET 1+00 TO 6+80

| | | |

Devon Avenue

Subdivision Application

January 22, 2021

BACKGROUND:

On July 17, 2017, Pre-Application Conference (PRE-AP) 17-57 was held with the City staff to discuss the development of property located at 6719 Devon Avenue SE.

On June 11, 2018, the subject property was annexed into the City of Salem on June 11, 2018, by City Council.

On May 29, 2018, Urban Growth Area Permit (UGA) 17-06 was approved by staff on May 29, 2018.

On July 29, 2019, SUB19-05 was approved for the subject property. The approval allows the site to develop about 19.74 acres into an 84-lot single family subdivision.

On January 23, 2020, SUB19-05MOD1 was approved for the subject property. The approval modified SUB19-05.

PROPOSAL:

The applicant is requesting to divide 19.74 acres into a 2 Phase Subdivision consisting of 89-lots.

Phase 1: Lots 1-46
Phase 2: Lots 47-89

The applicant is also requesting Alternative Street Standards for the following:

1) **Alternative Street Standard to allow the proposed cul-de-sac streets to be less than 60 feet in width (803.025).**
2) **Alternative Street Standard to allow the Lone Oak extension, Alpha Avenue, and Beta Court to exceed a 12-percent street grade.**
3) **Alternative Street Standards to allow a narrow planter strip (4').**

SITE VICINITY and CHARACTERISTICS:

The subject property is located at 6719 Devon Avenue. The subject property is identified as 083W22C/Tax Lots 300.



The surrounding properties are zoned and used as follows:

North:	RA (Residential Agriculture) and RS (Single Family Residential); vacant land
East:	Across Devon Avenue; RS (Single Family Residential); vacant lots, and existing single-family dwellings
South:	Outside City Limits, Marion County-UT; vacant land and existing single-family dwellings
West:	Outside City Limits, Marion County-UT; vacant land and existing single-family dwellings

CRITERIA AND APPLICANT'S REASONS ADDRESSING UDC 205.010(d)(1):

The proposed subdivision does not change or impact compliance with the required criteria.

The intent of the subdivision code is providing for orderly development through the application of appropriate rules and regulations. Pursuant to the application of the current enabling statutes, these regulations are those cited in UDC 205.010(d) and UDC 205.015(d). The decision criteria for subdivisions without a concurrent variance under UDC 205.010(d) and UDC 205.015(d) must be found to exist before an affirmative decision may be made for a subdivision application.

(1) The tentative subdivision plan complies with the standards of this Chapter and with all applicable provisions of the UDC, including, but not limited to, the following:

Findings: The Salem Revised Code (SRC), which includes the Salem Zoning Code, implements the Salem Area Comprehensive Plan land use goals, and governs

development of property within the city limits. The subdivision process reviews development for compliance with city standards and requirements contained in the Subdivision Code, Zoning Code, Salem TSP and the Water, Sewer and Storm Drain System Master Plans, and adopted design documents applicable to residential development. The proposed meets all applicable provisions of the Salem Revised Code.

(A) Lot standards, including, but not limited to, standards for lot area, lot width and depth, lot frontage and designation of front and rear lot lines.

Findings: The proposal does not require any variances to lot development standards specified in the Code.

Minimum Lot Area and Dimensions: As shown on the site plan, all 89 lots meet lot size (4,000 square feet) and lot dimension (40' by 70') standards as required under UDC Chapters 510 and 511. The proposed lots range in size from 5,500 square feet to 13,195 square feet in size, with and average lot size of 6,753 square feet.

There are five flag-lots within the proposed subdivision (Lots 20, 21, 35, 36, and 64).

Additional reviews occur at the time of building permits to assure compliance with the zoning code. Compliance with conditions of approval to satisfy the subdivision ordinance is also checked prior to city staff signing the final subdivision plat.

The proposal can conform to applicable conditions imposed as necessary to ensure that development conforms to the standards of the subdivision code and with existing development and public facilities. As shown on the site plans, all lots meet the required lot size, lot depth, and lot width. At the time of development of the lots, building permits will be required. Setbacks will be reviewed for compliance at the time of building permit submittal. The proposed subdivision is and will be in compliance with lot standard requirements and required access.

Therefore, this criteria has been met.

(B) City infrastructure standards.

Findings: Water, sewer, storm drainage plans will be submitted to the Public Works Department for final plat and construction plan approval at the final plat stage. The tentative site plan illustrates the location of the public utility lines. The proposal meets applicable Salem Area Comprehensive Plan Residential Policies for properties within the Urban Growth Boundary. The proposal encourages the efficient use of developable residential land. Public facilities and services are or will be available to serve the site, including services such as water, sanitary and storm sewer and fire/life/safety services.

The applicant is proposing to divide the subject property into 89 single family residential lot, with two lots designated for stormwater detention (Tracts A and B). There is a S-4 water pump station located south of Lot 6. The applicant is working with the City on the location of this pump station.

Therefore, this criteria has been met.

(C) Any special development standards, including, but not limited to, floodplain development, special setbacks, geological or geotechnical analysis, and vision clearance.

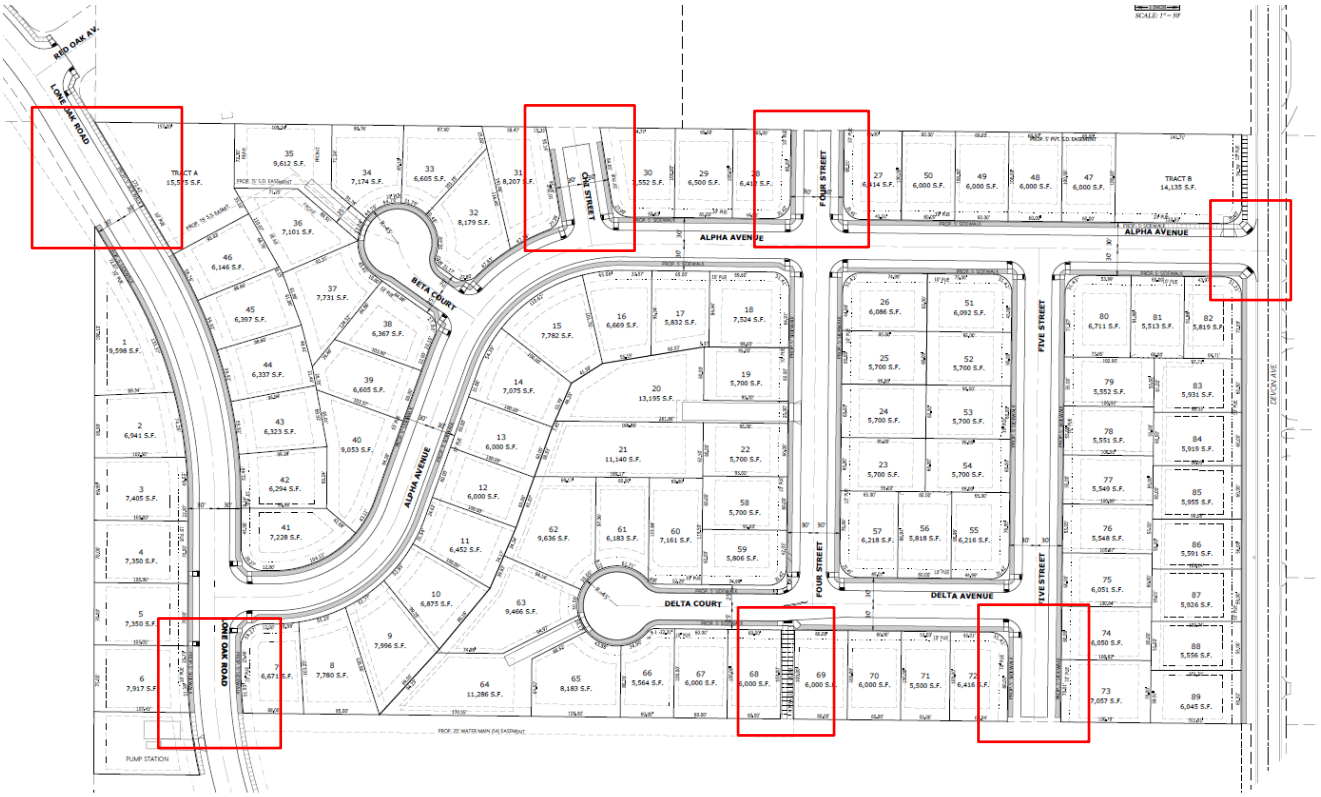
Findings: There are no wetlands or floodplains located on the subject property.

A geological assessment is required for this site. There are landslide hazards identified on the site. A geological assessment date August 11, 2017 was approved as part of the original subdivision approval. This criteria has been met.

(2) The tentative subdivision plan does not impede the future use or development of the property or adjacent land.

Findings: The proposal is for the entire subject property and will be developed into 89 lots. As shown on the site plan. Therefore, a shadow plan is not required.

The properties to the northeast and northwest have the potential to be developed or currently have development approvals. The properties to the west and south are vacant, they are also located outside the City limits. Two stub streets have been provided to the northeast and northwest properties, two stub streets and a pedestrian path have been provided to the south, a connection to Devon Avenue, and a connection to Lone Oak to the west for future development.



The applicant has provided sufficient information to show how all the proposed street and pedestrian connections will be provided.

All proposed lots and surrounding properties have direct access onto the existing internal street system. The subdivision does not impede the future use of the property or adjacent land. Adequate connections to adjacent properties have been provided for future development.

Therefore, this criteria has been met.

(3) Development within the tentative subdivision plan can be adequately served by City infrastructure.

Findings: Water, sewer, storm drainage plans will be submitted to the Public Works Department for final plat and construction plan approval at the final plat stage. The tentative site plan illustrates the location of the public utility lines. The proposal meets applicable Salem Area Comprehensive Plan Residential Policies for properties within the Urban Growth Boundary. The proposal encourages the efficient use of developable residential land. Public facilities and services are or will be available to serve the site, including services such as water, sanitary and storm sewer and fire/life/safety services. A Storm Drainage Report dated January 18, 2021 has been provided as part of this application.

The subject property is within ½ mile from Creekside Golf Course to the north, Rees Hill Park and Battle Creek Elementary School to the east. Therefore, the subject property is served by parks.

Water, sewer, storm drainage plans will be submitted to the Public Works Department for final plat and construction plan approval at the final plat stage. The tentative site plan illustrates the location of the public utility lines. On-site detention and a pump station are being provided within the proposed subdivision. A Storm Drainage Report dated January 18, 2021 has been provided as part of this application.

In conclusion, the location and design of the proposed subdivision allows for public sanitary sewer, water service, and storm drainage to be conveniently provided.

Therefore, this criterion has been satisfied.

Proposed Stormwater Management System:

Findings: Stormwater quality and quantity are required for this development. An LID (low impact development) Stormwater technique will be used to mitigate the increase in pollutants contributed from development. This system may also be used to provide storage and water quantity control. The exact system will be determined at the time of design. Any proposed technique will meet City of Salem Stormwater Management standards in means and methods to provide all aspects of Stormwater management.

A Preliminary Drainage Report dated October 12, 2018 was provided and approved as part the original approval. A new Drainage Report dated January 18, 2021 has been provided as part of this submittal.

(4) The street system in and adjacent to the tentative subdivision plan conforms to the Salem Transportation System Plan.

Findings: The major street system is in place due to prior development. Devon Avenue is located to the east of the site and Lone Oak Road is located northwest of the site. Devon Avenue is designated as a 'local street' and Lone Oak Road is designated as a 'collector' on the Salem Transportation System Plan.

All street design and improvements will be determined through the subdivision review process and regulated through the Conditions of Approval.

The applicant is also requesting Alternative Street Standards for the following:

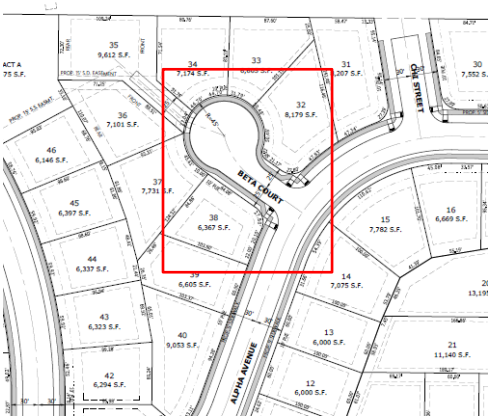
1) Alternative Street Standard to allow the proposed cul-de-sac streets to be less than 60 feet in width (803.025).
2) Alternative Street Standard to allow the Lone Oak extension, Alpha Avenue, and

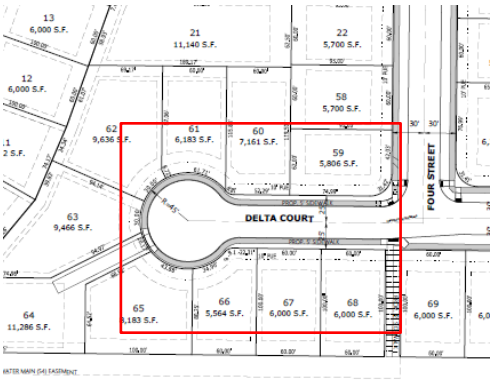
Beta Court to exceed a 12-percent street grade for a distance of less than 100 feet. We also request the use of a short section of grade in excess of 12 percent for the cul-de-sac off of Alpha Ave.

3) Alternative Street Standards to allow a narrow planter strip (4')
4) Alternative Street Standards to allow for the elimination of some of the mid-block pedestrian crossings to facilitate street grades and reduce the number of crossings provided.

Street Width: All street design and improvements will be determined through the subdivision review process and regulated through the Conditions of Approval. The applicant is requesting an alternative street standard to allow the proposed internal streets to be 50 feet in width where a 60-foot width is required.

The applicant is requesting an alternative street standard to street width and location. Due to the topography of the site and the proposed street alignments with existing and streets, the two cul-de-sacs due not meet the required 60-foot street width. The applicant has requested an alternative street design to allow 50-foot street widths.





The intent of the street width is to allow vehicles to maneuver the streets safely. The internal streets proposed will provide safe and efficient circulation throughout the

subdivision. As shown on the street sections provided, the street connect to existing streets that are 60-foot in width currently. The 50-foot street widths for the cul-de-sacs provide adequate width. Due to the topography of the site and the location of the existing street connections, additional street width is not feasible for the cul-de-sacs. All streets within the proposed subdivision will be designed to provide safe and efficient conditions.

Therefore, the existing street system and proposed street improvements will be in compliance with the STSP.

Street Grade: As shown on the street section provided, Lone Oak Road will have a 13% street grade. Beta Court will have a 14.83% street grade, and Alpha Avenue will have a 13% street grade. Due to the topography of the site and the proposed street alignments with existing streets, along with required stub street connections, these proposed streets within the subdivision exceed the street grade allowed. The applicant's engineer has provided a detailed memo address the alternative street standard criteria. Alternative street standards were approved with the original subdivision approval. See attached memo dated May 16, 2019.

The intent of the maximum street grade is to allow vehicles to climb and descend the street safely in all conditions. The internal streets proposed will provide safe and efficient circulation throughout the subdivision. As shown on the street sections provided, there is only curtain sections of each street that will exceed the allowed street grade. All streets within the proposed subdivision will be designed to provide safe and efficient conditions.

There are several access points provided throughout the proposed subdivision which provide alternative access options.

The intent of the standard is being met; therefore, the proposal equally meets the intent of the maximum street grade standard.

Planter Strip Width: The applicant is also requesting an Alternative Street Standard to allow the planter strip along Alpha Avenue to be 4 feet in width where 8 feet is required. This request is made to help reduce the grading impacts to the site on the upper side of the roadway. The street has been designed to provide a safe access way but the site topographic elements require major grading to the lots on the upper site. The short reduction in planter will allow for better access onto the lots, yet still provide the needed areas for street trees.

Mid-Block Crossings: The standards set out the need for mid-block crossings a street intersections on one side. The project has a section along Alpha Ave where several street intersections are provided with short distanced between them. The design as proposed would call for the elimination of some of those crossing, while still providing

ample options for pedestrians to cross from one side of the roadway to the other. The acceptance ramps on the opposite side create impacts to the driveway locations to the lots and having four (4) such ramps into a total of three consecutive lots is excessive.

The major street network in the area has been established and is consistent with the Transportation System Plan which implements the Comprehensive Plan. Public Works Department will address any applicable requirements for right-of-way conveyance that might be required because of this subdivision.

Therefore, the existing street system and proposed street improvements will be in compliance with the STSP.

Transportation Planning Rule Review:

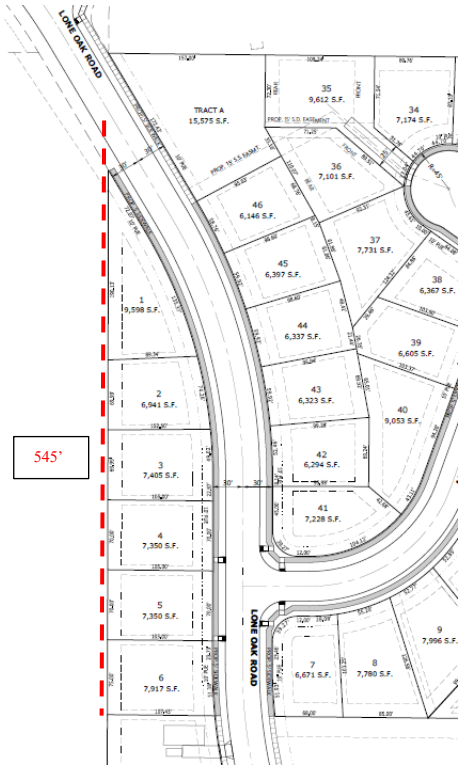
The City of Salem's TPR encourages a reduction in automobile trips by capitalizing on transit opportunities and by creating an environment that encourages people to walk. The proposed subdivision is a "limited land use decision" pursuant to Oregon Revised Statute (ORS) 197.015 and has therefore been reviewed for consistency with the State's TPR multi-modal connectivity requirements.

In conclusion, the development will provide bicycle and pedestrian facilities on-site to encourage people to walk and reduce vehicle trips. The development on the property will allow residents to reduce vehicle usage, by the convenience of bicycle and pedestrian paths to and from the uses and existing sidewalk system. Therefore, the proposed subdivision is in compliance with the intent of the TPR to reduce vehicle usage and encourage other modes of transportation to and from the site.

(5) The street system in and adjacent to the tentative subdivision plan is designed so as to provide for the safe, orderly, and efficient circulation of traffic into, through, and out of the subdivision.

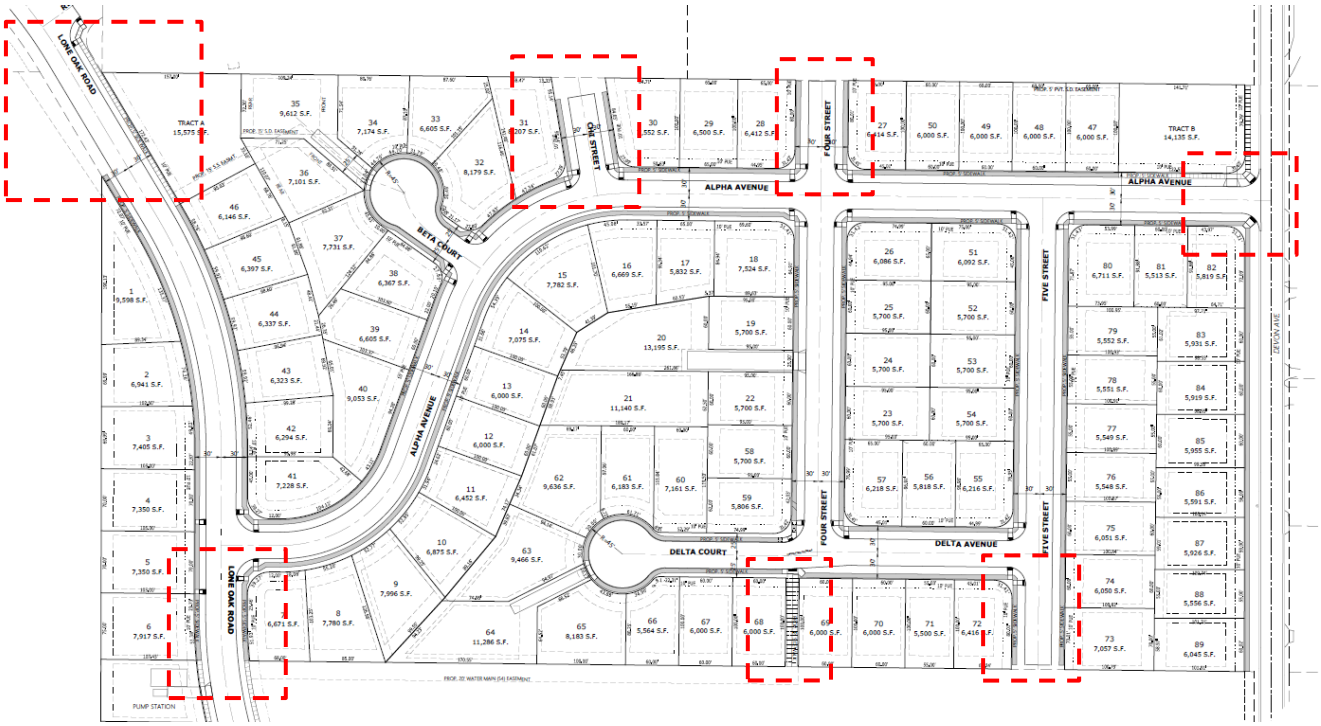
Findings: The subject property is located in a developed and developing area where improved streets and sidewalks exist and continue with new development. The local street system serving the development provides the necessary connections and access to the local streets and circulation system serving this residential neighborhood.

Block Length: Blocks shall be a maximum of 600 feet between street centerlines. The length of the blocks was taken into consideration at the time of design layout. The block lengths within the subdivision do not exceed 600 feet in length. There are more than enough street connections within the proposed development.



The properties to the northeast and northwest have the potential to be developed or currently have development approvals. The properties to the west and south are vacant, they are also located outside the City limits. Two stub streets have been provided to the northeast and northwest properties, two stub streets and a pedestrian path have been provided to the south, a connection to Devon Avenue, and a connection to Lone Oak to the west for future development.

Due to the topography of the lot to the west, an additional street connection to the west is not feasible.



Two street connections have been provided to the north (northwest and northeast), two street connections to the south along with a pedestrian path, a street connection to the east onto Devon Avenue has been provided, and a connection to Lone Oak to the west. By providing these connections, block length and connectivity have been met.

As shown on the site plan, the proposed subdivision provides a safe an efficient circulation pattern in the development for vehicles and pedestrians.

Access to, within, and from the development must be consistent with applicable requirements of the Transportation Planning Rule Requirements (TPR) that requires that development provide connectivity between land uses and transportation. Under the Rule, developments are responsible for providing for the safe and efficient circulation of vehicles, bicycles, and pedestrians into, through, and out of a development. The proposal develops the subject property within an established residential area where local and arterial streets and mass transit facilities exist. These facilities connect the transportation system to the surrounding residential neighborhoods.

The proposal develops the subject property within an established residential area where local and arterial streets and mass transit facilities exist. These facilities connect the transportation system to the surrounding residential neighborhoods.

The Public Works Department will address the level of street improvements that are

roughly proportional to assure conformance to the development to subdivision code and applicable transportation system plan requirements. Completion of conditions of approval prior to the signing of the final plat will satisfy this criterion for the subdivision application.

In conclusion, the proposed street plan provides the best economic, safe, and efficient circulation of traffic possible under the circumstances. The proposed subdivision demonstrates this review criterion can be met.

Therefore, this criterion has been satisfied.

(6) The tentative subdivision plan provides safe and convenient bicycle and pedestrian access from within the subdivision to adjacent residential areas and transit stops, and to neighborhood activity centers within one-half mile of the development. For purposes of this criterion, neighborhood activity centers include, but are not limited to, existing or planned schools, parks, shopping areas, transit stops, or employment centers.

Findings: The subdivision is served with adequate transportation infrastructure and the street system adjacent the property conforms to the Transportation System Plan and provides for safe, orderly, and efficient circulation of traffic into, through, and out of the subject property on to the public street system.

Therefore, via paved streets and sidewalks, safe and convenient bicycle and pedestrian access will be provided to the site and to adjacent neighborhoods.

Therefore, this criteria has been met.

(7) The tentative subdivision plan mitigates impacts to the transportation system consistent with the approved Traffic Impact Analysis, where applicable.

Findings: The proposal is for an 89-lot subdivision. The size of the proposed subdivision does not warrant the need for a Traffic Impact Analysis. The proposed subdivision plan mitigates impacts to transportation system by providing adequate access and circulation for all 89-lots.

Therefore, this criterion has been met.

(8) The tentative subdivision plan takes into account the topography and vegetation of the site so the need for variances is minimized to the greatest extent practicable.

Findings: All lots are in compliance with the UDC/SRC. Therefore, no variances have been requested.

(9) The tentative subdivision plan takes into account the topography and vegetation of the site, such that the least disruption of the site, topography, and vegetation will result from the reasonable development of the lots.

Findings: The subdivision code requires City approval of lots be suitable for the general purpose for which they are likely to be developed. No lots can be of such a size or configuration that is detrimental to public health, safety, or welfare or sanitary needs of users of the parcel or lot.

The subdivision plan takes into consideration the topography and vegetation of the site. The proposed lots are of sufficient size and dimensions to permit future development. The lot dimensions are illustrated on the tentative site plan and are in conformance to the minimum standards in UDC 510 and 511. Final conformance to minimum lot size and buildable lot area will be confirmed when the final plat is submitted to the City for review and approval.

There are 64 trees located within the boundary of the site. Fifty-four (54) trees are designated for removal, with ten (10) trees designated to remain. Sixteen (16%) percent of the trees on the site will be preserved. Trees designated for removal are within the right-of-way, the building envelop or within an area close to the building envelope but have the potential of being damaged during grading and construction.

Due to the required street extension to the north, south and west, several trees had to be removed to accommodate the pedestrian and vehicle extensions. Therefore, the removal of these 54 trees is necessary for development of the site.

There are no heritage or significant trees (Oregon White Oak) on the site.

The layout of the lots takes into consideration the topography and vegetation of the site. All lots are in compliance with the UDC. Therefore, no variances have been requested.

Therefore, this criteria has been met.

10) When the tentative subdivision plan requires an Urban Growth Preliminary Declaration under SRC Chapter 200, the tentative subdivision plan is designed in a manner that ensures that the conditions requiring the construction of on-site infrastructure in the Urban Growth Preliminary Declaration will occur, and, if off-site improvements are required in the Urban Growth Preliminary Declaration, construction of any off-site improvements is assured.

Findings: The property and development are located inside the Urban Service Area (USA). However, an Urban Growth Preliminary Declaration is required and has been approved. Urban Growth Area Permit (UGA) 17-06 was approved by staff on May 29, 2018. As required by code, all requirements of the UGA will be met prior to development or recording of the final plat. Therefore, this criterion has been met.

TREE CONSERVATION/REMOVAL PLAN

There are 64 trees located within the boundary of the site. Fifty-four (54) trees are designated for removal, with ten (10) trees designated to remain. Sixteen (16%) percent of the trees on the site will be preserved. Trees designated for removal are within the right-of-way, the building envelop or within an area close to the building envelope but have the potential of being damaged during grading and construction.

Due to the required street extension to the north, south and west, several trees had to be removed to accommodate the pedestrian and vehicle extensions. Therefore, the removal of these 54 trees is necessary for development of the site.

There are no heritage or significant trees (Oregon White Oak) on the site.

Tree Conservation Plan (TCP19-10) was approved for the original subdivision on October 23, 2019. The applicant is requesting a Tree Conservation Plan Adjustment.

PHASED SUBDIVISION 205-015(D)

The applicant is requesting to divide 19.74 acres into a two (2) Phase Subdivision consisting of 89-lots.

Criteria. A tentative phased subdivision plan shall be approved if all of the following criteria are met:

(1) The tentative phased subdivision plan meets all of the criteria for tentative subdivision plan approval set forth in SRC 205.010(d).

Applicant Findings: The subject property is about 19.74 acres in size and zoned RA (Residential Agriculture). The subject property is located at 6719 Devon Avenue. The subject property is identified as 083W22C/Tax Lots 300. The applicant is proposing to divide the subject property into 89 single family residential lot, with two tracts designated for stormwater detention.

Proposed:
Phase 1: Lots 1-46
Phase 2: Lots 47-89

The proposed phased subdivision meets all the criteria for a tentative subdivision as outlined above under SRC 205.010(d).

(2) Connectivity for streets and City utilities between each phase ensures the orderly and efficient construction of required public improvements among all phases.

Applicant Findings: The subject property is located in a developed and developing area where improved streets and sidewalks exist and continue with new development. The local street system serving the development provides the necessary connections and access to the local streets and circulation system serving this residential neighborhood.

Block Length: Blocks shall be a maximum of 600 feet between street centerlines. The length of the blocks was taken into consideration at the time of design layout. The block lengths within the subdivision do not exceed 600 feet in length. There are more than enough street connections within the proposed development. By providing these connections, block length and connectivity have been met.

The properties to the northeast and northwest have the potential to be developed or currently have development approvals. The properties to the west and south are vacant, they are also located outside the City limits. Two street connections have been provided to the north (northwest and northeast), two street connections to the south along with a pedestrian path, a street connection to the east onto Devon Avenue has been provided, and a connection to Lone Oak to the west. By providing these connections, block length and connectivity have been met. Due to the topography of the lot to the west, an additional street connection to the west is not feasible.

As shown on the site plan, the proposed subdivision provides a safe an efficient circulation pattern in the development for vehicles and pedestrians.

Access to, within, and from the development must be consistent with applicable requirements of the Transportation Planning Rule Requirements (TPR) that requires that development provide connectivity between land uses and transportation. Under the Rule, developments are responsible for providing for the safe and efficient circulation of vehicles, bicycles, and pedestrians into, through, and out of a development. The proposal develops the subject property within an established residential area where local and arterial streets and mass transit facilities exist. These facilities connect the transportation system to the surrounding residential neighborhoods.
The proposed phased subdivision will not impede the future development of other phases as shown on the site plan. All phases will have access to the internal street system and the existing street system.

Each phase will ensure the orderly and efficient construction of the required improvements as required by Conditions of Approval and Code compliance. Therefore, this criteria has been met.

(3) Each phase is substantially and functionally self-contained and self-sustaining with regard to required public improvements.

Applicant Findings: Each phase is required to provide the needed improvements to accommodate that phase. Due to the required conditions of approval and City

standards all two (2) Phases will be functionally self-contained and self-sustaining as shown on the site plans.

(4) Each phase is designed in such a manner that all phases support the infrastructure requirements for the phased subdivision as a whole.

Applicant Findings: The applicant will be required to comply with conditions of approval that will be designed to ensure that the phases are developed to support the infrastructure requirements for each phase and the subdivision as a whole. See attached site plans.

Conclusion

The applicant is requesting to divide 19.74 acres into a 2 Phase Subdivision consisting of 89-lots.

Phase 1: Lots 1-46
Phase 2: Lots 47-89

The applicant is also requesting Alternative Street Standards for the following:

1) Alternative Street Standard to allow the proposed cul-de-sac streets to be less than 60 feet in width (803.025).
2) Alternative Street Standard to allow the Lone Oak extension, Alpha Avenue, and Beta Court to exceed a 12-percent street grade.
3) Alternative Street Standards to allow a narrow planter strip (4')

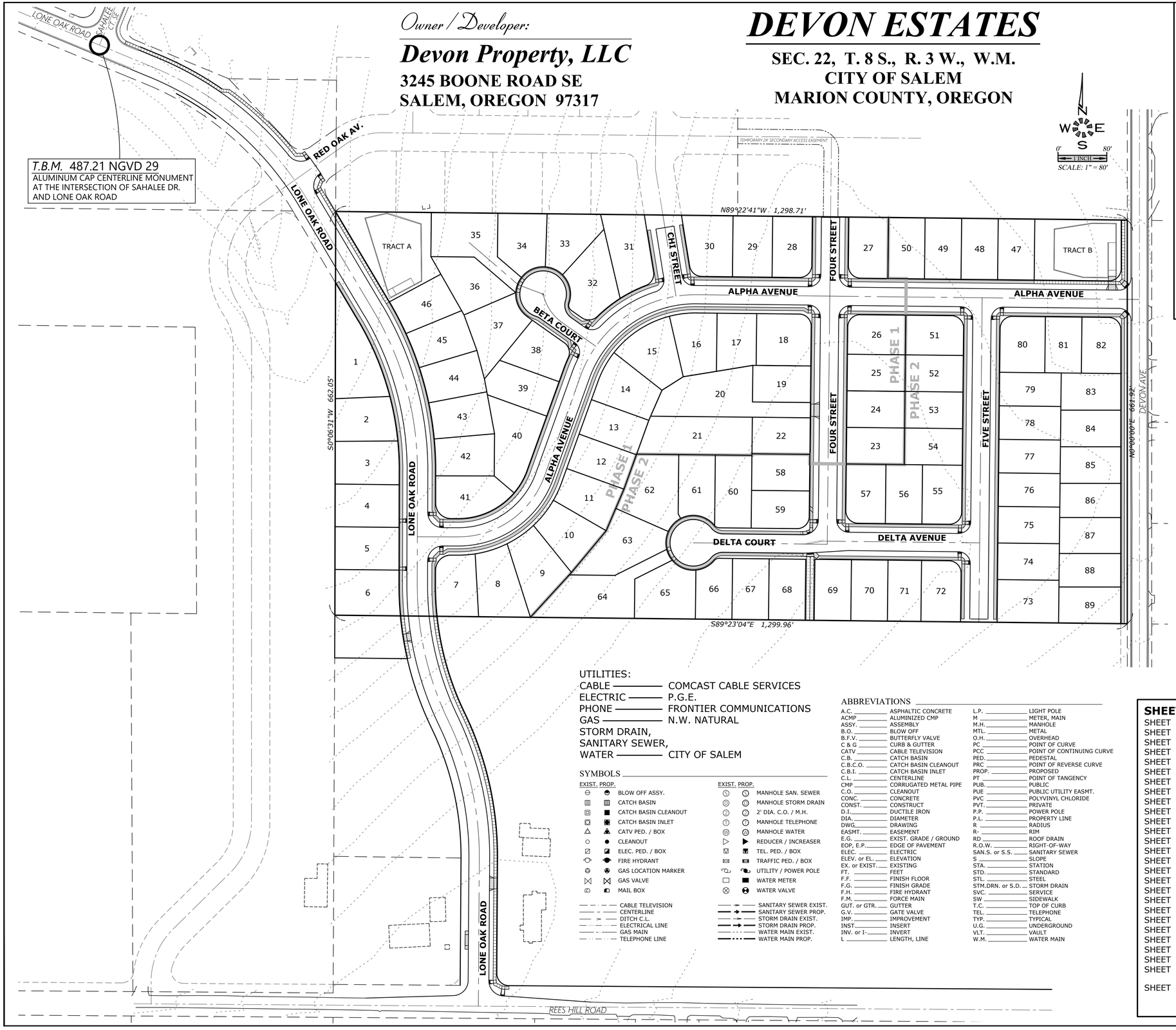
The proposed subdivision is in compliance with all applicable Code and the original Conditions of Approval. All Conditions of Approval will be met as specified in the SUB19-05MOD1, along with requirements of this proposed decision.

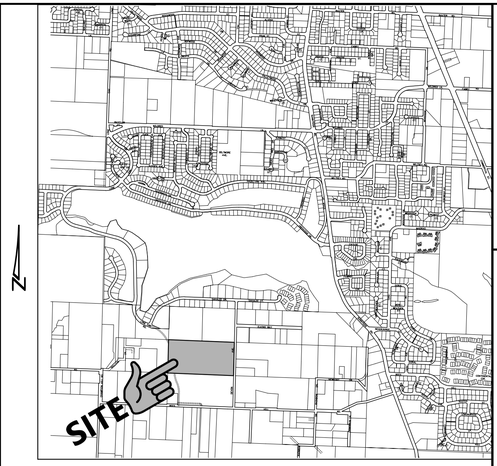
Owner / Developer:

Devon Property, LLC
3245 BOONE ROAD SE
SALEM, OREGON 97317

DEVON ESTATES

SEC. 22, T. 8 S., R. 3 W., W.M.
CITY OF SALEM
MARION COUNTY, OREGON





VICINITY MAP

TOTAL PARCEL SIZE:
DEVELOPABLE AREA ——— 19.745 Ac.
NUMBER OF UNITS ——— 89
DENSITY ——— 4.51 UNITS/Ac.
LARGEST LOT ——— 13,195 S.F.
SMALLEST LOT ——— 5,500 S.F.
AVERAGE ——— 6,753 S.F.

PHASE 1:
DEVELOPABLE AREA ——— 11.026 Ac.
NUMBER OF UNITS ——— 46
DENSITY ——— 4.17 UNITS/Ac.
LARGEST LOT ——— 13,195 S.F.
SMALLEST LOT ——— 5,700 S.F.
AVERAGE ——— 7,182 S.F.

PHASE 2:
DEVELOPABLE AREA ——— 8.719 Ac.
NUMBER OF UNITS ——— 43
DENSITY ——— 4.93 UNITS/Ac.
LARGEST LOT ——— 11,286 S.F.
SMALLEST LOT ——— 5,500 S.F.
AVERAGE ——— 6,295 S.F.

UTILITIES:
CABLE ——— COMCAST CABLE SERVICES
ELECTRIC ——— P.G.E.
PHONE ——— FRONTIER COMMUNICATIONS
GAS ——— N.W. NATURAL
STORM DRAIN,
SANITARY SEWER,
WATER ——— CITY OF SALEM

SYMBOLS

EXIST.	PROP.		EXIST.	PROP.	
⊖	◓	BLOW OFF ASSY.	Ⓢ	Ⓢ	MANHOLE SAN. SEWER
▥	▥	CATCH BASIN	Ⓓ	Ⓓ	MANHOLE STORM DRAIN
▣	■	CATCH BASIN CLEANOUT	②	②	2' DIA. C.O. / M.H.
▣	▩	CATCH BASIN INLET	Ⓣ	Ⓣ	MANHOLE TELEPHONE
△	▲	CATV PED. / BOX	Ⓦ	Ⓦ	MANHOLE WATER
○	●	CLEANOUT	▷	▶	REDUCER / INCREASER
◪	◪	ELEC. PED. / BOX	Ⓣ	Ⓣ	TEL. PED. / BOX
⬭	⬬	FIRE HYDRANT	▭	▭	TRAFFIC PED. / BOX
⊛	⊛	GAS LOCATION MARKER	○	○	UTILITY / POWER POLE
⋈	⋈	GAS VALVE	□	■	WATER METER
⌂	◧	MAIL BOX	⊗	⊗	WATER VALVE

CABLE TELEVISION
CENTERLINE
DITCH C.L.
ELECTRICAL LINE
GAS MAIN
TELEPHONE LINE

SANITARY SEWER EXIST.
SANITARY SEWER PROP.
STORM DRAIN EXIST.
STORM DRAIN PROP.
WATER MAIN EXIST.
WATER MAIN PROP.

ABBREVIATIONS

A.C.	ASPHALTIC CONCRETE	L.P.	LIGHT POLE
ACMP	ALUMINIZED CMP	M	METER, MAIN
ASSY.	ASSEMBLY	M.H.	MANHOLE
B.O.	BLOW OFF	MTL.	METAL
B.F.V.	BUTTERFLY VALVE	O.H.	OVERHEAD
C & G	CURB & GUTTER	PC	POINT OF CURVE
CATV	CABLE TELEVISION	PCC	POINT OF CONTINUING CURVE
C.B.	CATCH BASIN	PED.	PEDESTAL
C.B.C.O.	CATCH BASIN CLEANOUT	PRC	POINT OF REVERSE CURVE
C.B.I.	CATCH BASIN INLET	PROP.	PROPOSED
C.L.	CENTERLINE	PT	POINT OF TANGENCY
CMP	CORRUGATED METAL PIPE	PUB.	PUBLIC
C.O.	CLEANOUT	PUE	PUBLIC UTILITY EASMT.
CONC.	CONCRETE	PVC	POLYVINYL CHLORIDE
CONST.	CONSTRUCT	PVT.	PRIVATE
D.I.	DUCTILE IRON	P.P.	POWER POLE
DIA.	DIAMETER	P.L.	PROPERTY LINE
DWG.	DRAWING	R	RADIUS
EASMT.	EASEMENT	R-	RIM
E.G.	EXIST. GRADE / GROUND	RD	ROOF DRAIN
EOP, E.P.	EDGE OF PAVEMENT	R.O.W.	RIGHT-OF-WAY
ELEC.	ELECTRIC	SAN.S. or S.S.	SANITARY SEWER
ELEV. or EL.	ELEVATION	S	SLOPE
EX. or EXIST.	EXISTING	STA.	STATION
FT.	FEET	STD.	STANDARD
F.F.	FINISH FLOOR	STL.	STEEL
F.G.	FINISH GRADE	STM.DRN. or S.D.	STORM DRAIN
F.H.	FIRE HYDRANT	SVC.	SERVICE
F.M.	FORCE MAIN	SW	SIDEWALK
GUT. or GTR.	GUTTER	T.C.	TOP OF CURB
G.V.	GATE VALVE	TEL.	TELEPHONE
IMP.	IMPROVEMENT	TYP.	TYPICAL
INST.	INSERT	U.G.	UNDERGROUND
INV. or I-	INVERT	VLT.	VAULT
L	LENGTH, LINE	W.M.	WATER MAIN

SHEET INDEX

SHEET P101 COVER SHEET
SHEET P102 EXISTING CONDITIONS PLAN
SHEET P103 TREE CONSERVATION PLAN ——— ONSITE: WEST
SHEET P104 TREE CONSERVATION PLAN ——— ONSITE: EAST
SHEET P105 TREE CONSERVATION PLAN ——— OFFSITE
SHEET P201 SITE PLAN
SHEET P301 UTILITY PLAN ——— ONSITE
SHEET P302 UTILITY PLAN ——— OFFSITE: SOUTH & NORTHWEST
SHEET P303 DRAINAGE PLAN ——— ONSITE
SHEET P304 DRAINAGE PLAN ——— OFFSITE: SOUTH & NORTHWEST
SHEET P305 DRAINAGE PLAN ——— OFFSITE: NORTHEAST
SHEET P306 GRADING PLAN ——— ONSITE
SHEET P401 STREET PLAN & PROFILE ——— LONE OAK RD. -1+00 TO 4+20
SHEET P402 STREET PLAN & PROFILE ——— LONE OAK RD. 4+20 TO 8+60
SHEET P403 STREET PLAN & PROFILE ——— LONE OAK RD. 8+60 TO 13+60
SHEET P404 STREET PLAN & PROFILE ——— LONE OAK RD. 13+60 TO 18+40
SHEET P405 STREET PLAN & PROFILE ——— ALPHA AV. 0+00 TO 3+40
SHEET P406 STREET PLAN & PROFILE ——— ALPHA AV. 3+40 TO 7+60
SHEET P407 STREET PLAN & PROFILE ——— ALPHA AV. 7+60 TO 11+20
SHEET P408 STREET PLAN & PROFILE ——— ALPHA AV. 11+20 TO 14+40
SHEET P409 STREET PLAN & PROFILE ——— BETA CT.
SHEET P410 STREET PLAN & PROFILE ——— CHI ST.
SHEET P411 STREET PLAN & PROFILE ——— FOUR ST.
SHEET P412 STREET PLAN & PROFILE ——— FIVE ST.
SHEET P413 STREET PLAN & PROFILE ——— DELTA CT.
SHEET P414 STREET PLAN & PROFILE ——— PEDESTRIAN PATH TO PARK & DELTA AVENUE
SHEET P415 STREET PLAN & PROFILE ——— LOT 35 DRIVEWAY

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PRELIMINARY COVER SHEET

DEVON ESTATES

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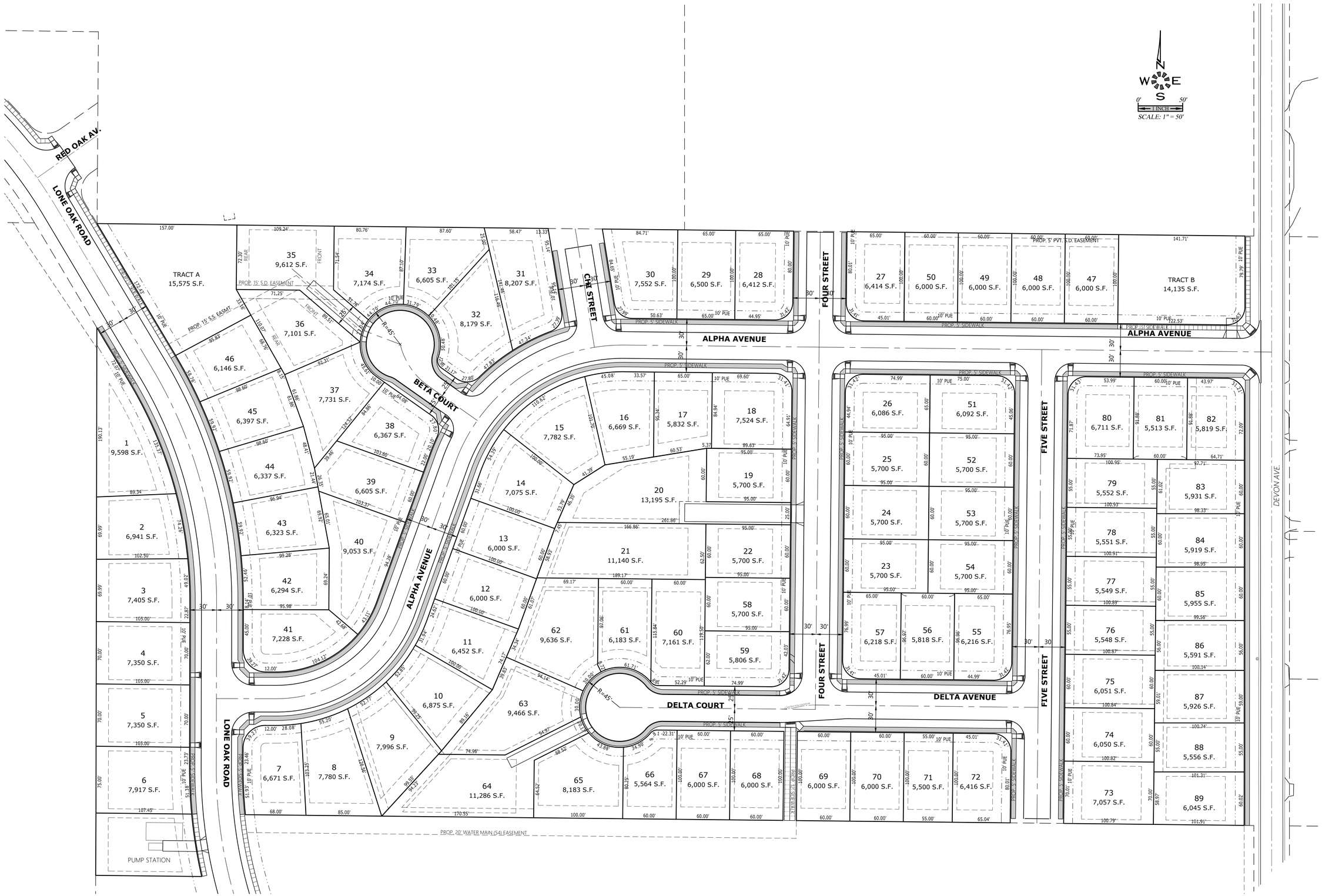
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EXPIRES: 06-30-2021

JOB # 6502

P101

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PRELIMINARY SITE PLAN

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JULY 14, 1978
MARK D. GRENZ
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JOB # 6502

P201

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N
W E
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0 40 80
SCALE: 1" = 80'

P102	JOB # 6502	06-30-2021	6502b20 P102XC Design: M.D.G. Drawn: P.H.S. Checked: M.D.G. Date: NOV. 2017 Scale: AS SHOWN As-Built: ----	NO CHANGES, MODIFICATIONS OR REPRODUCTIONS TO BE MADE TO THESE DRAWINGS WITHOUT WRITTEN AUTHORIZATION FROM THE DESIGN ENGINEER. DIMENSIONS & NOTES TAKE PRECEDENCE OVER GRAPHICAL REPRESENTATION.	**DEVON ESTATES** **PRELIMINARY EXISTING CONDITIONS PLAN**

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SEE SHEET 302 FOR
OFF-SITE UTILITY PLAN

MATCH LINE 1

MATCH LINE 2

SEE SHEET 302 FOR
OFF-SITE UTILITY PLAN

PUMP STATION

N
W E
S
0' 50'
1 INCH
SCALE: 1" = 50'

RED OAK AV.
LONE OAK ROAD
ALPHA AVENUE
BETA COURT
CHI STREET
FOUR STREET
FIVE STREET
DELTA COURT
DELTA AVENUE
DEVON AVE.

TRACT A
TRACT B

PROP. 15' S.D. EASEMENT
PROP. 12" ADS S.D.
PROP. 8" PVC S.D.
PROP. 5' PVT. S.D. EASEMENT
PROP. 8" PVC SANITARY SEWER
PROP. 15' S.S. EASMT.
PROP. 8" D.I. WATER MAIN (S-3)
PROP. 8" D.I. WATER MAIN (S-4)
PROP. 20' WATER MAIN (S-4) EASEMENT
PROP. 18" ADS S.D.M.
10' PUE
PROP. 24' ASPHALT PAVEMENT
PROP. 28' ASPHALT PAVEMENT
PROP. 34' ASPHALT PAVEMENT
PROP. 6" CURB & GUTTER
PROP. 8" PVC SANITARY SEWER
PROP. 8" D.I. WATER MAIN (S-4)
PROP. 12" D.I. WATER MAIN (S-3)
PROP. 8" D.I. WATER MAIN (S-3)
PROP. 8" PVC SANITARY SEWER
PROP. 8" D.I. WATER MAIN (S-4

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PRELIMINARY
UTILITY PLAN - OFFSITE: SOUTH & NORTHWEST

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MARK D. GRENZ
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JOB # 6502

P302

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100% 64 TOTAL TREES WITHIN BOUNDARY
16% 10 MINIMUM TREES TO REMAIN

⊗ = EXISTING TREE WHICH MAY BE REMOVED

⊙ = EXISTING TREE TO REMAIN

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PRELIMINARY TREE CONSERVATION PLAN - ONSITE: WEST

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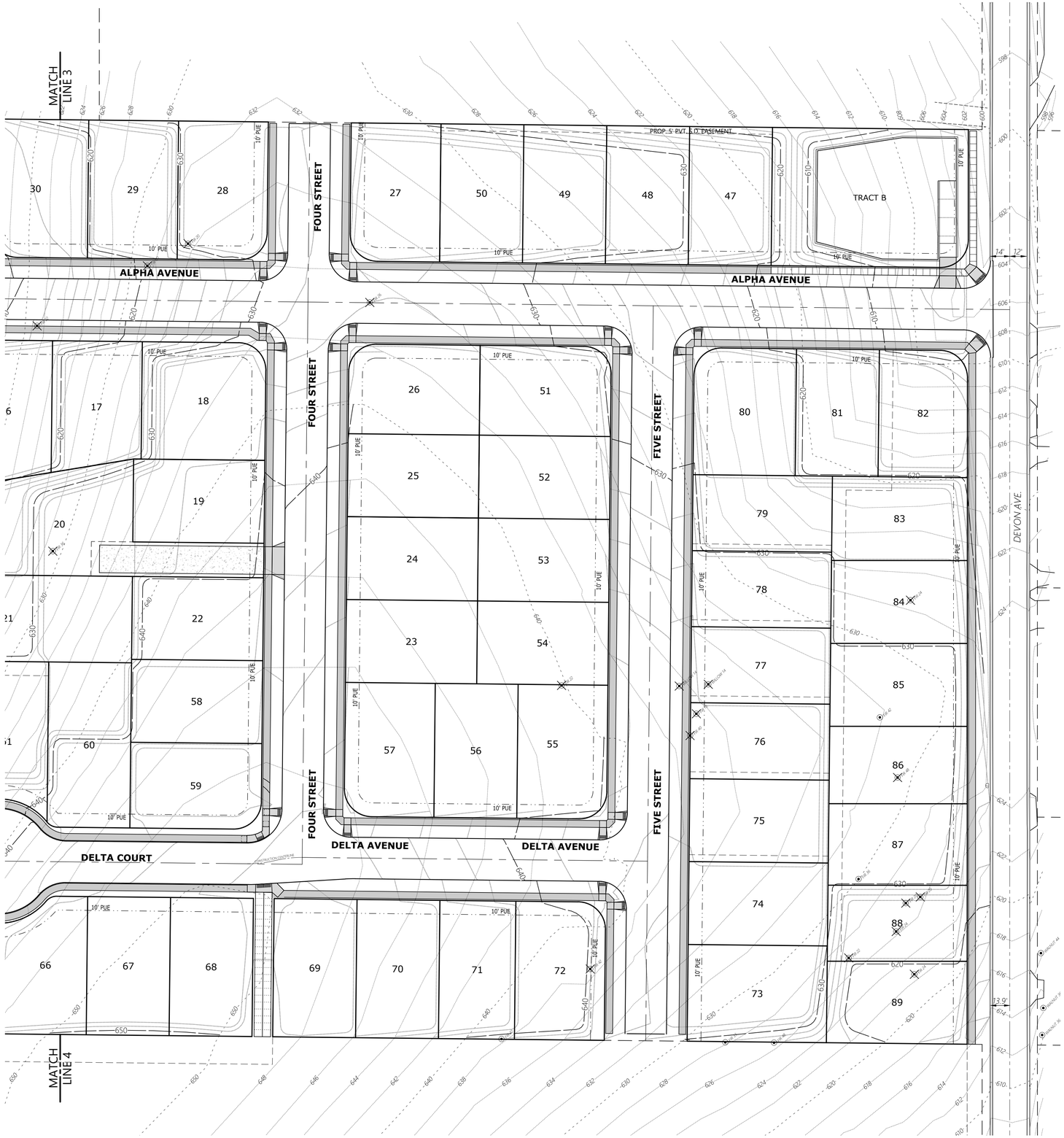
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Date: NOV. 2017
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JOB # 6502

P103

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N
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0' 40'
1 INCH
SCALE: 1" = 40'

100% 64 TOTAL TREES WITHIN BOUNDARY
16% 10 MINIMUM TREES TO REMAIN
X = EXISTING TREE WHICH MAY BE REMOVED
⊙ = EXISTING TREE TO REMAIN

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PRELIMINARY TREE CONSERVATION PLAN - ONSITE: EAST

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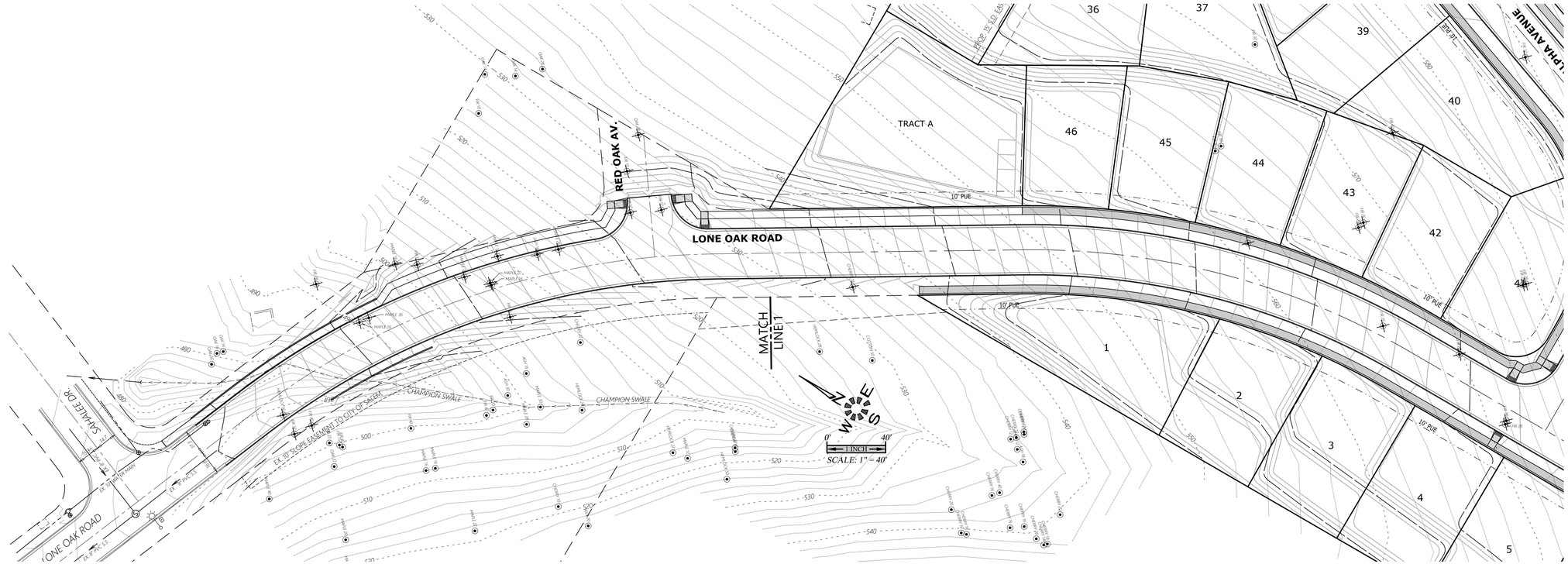
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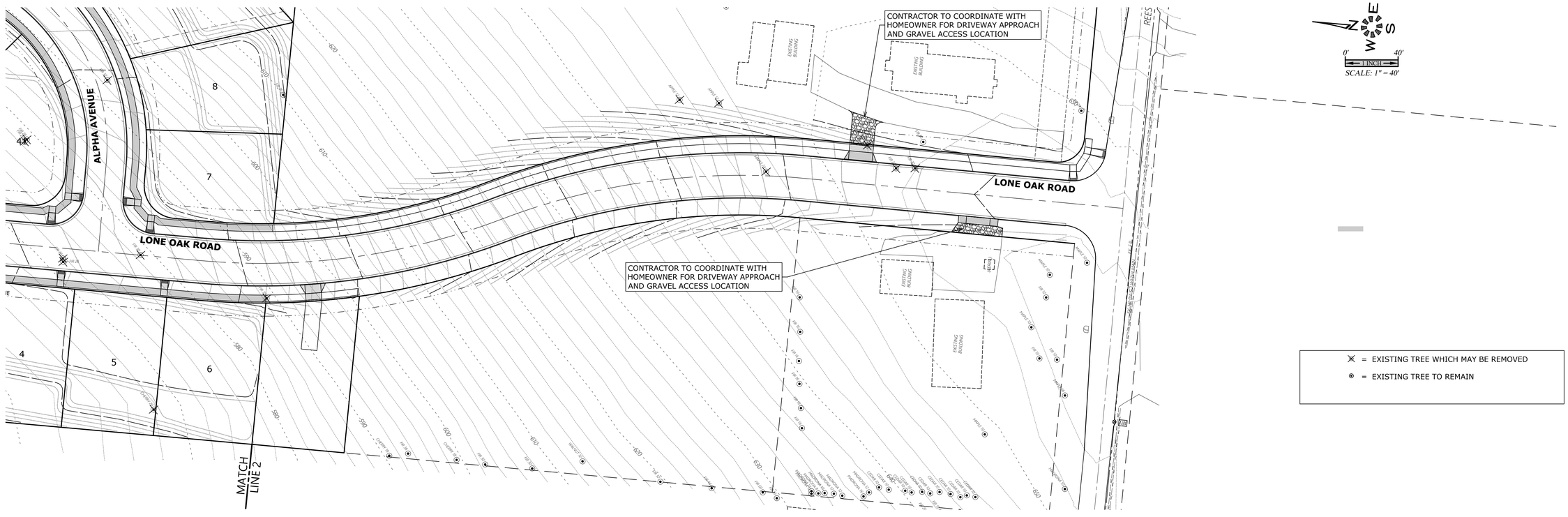
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JOB # 6502

P104

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PRELIMINARY TREE CONSERVATION PLAN - OFFSITE

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6500x500 PLOTTR

Design: M.D.G.
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Date: NOV. 2017
Scale: AS SHOWN
As-Built: ----

REGISTERED PROFESSIONAL ENGINEER
OREGON
JULY 14, 1978
MARK D. GRENZ

EXPIRES: 06-30-2021

JOB # 6502

P105

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P306

JOB # 6502

EXPIRES: 06-30-2021

6502b20 P306GRD

Design: M.D.G.
Drawn: P.H.S.
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DEVON ESTATES

PRELIMINARY GRADING PLAN - ONSITE

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SEE SHEET 304 FOR
OFF-SITE DRAINAGE PLAN

SEE SHEET 305
FOR N.E. OFF-SITE
DRAINAGE PLAN

PROP. 20' PERVIOUS CONC. DRIVEWAY

ALL NOTED DRIVEWAYS
TO BE PERVIOUS CONCRETE

N
W E
S

0' 50'
1 INCH
SCALE: 1" = 50'

RED OAK AV.
LONE OAK ROAD
BASIN #1
CAPACITY: 47,000 C.F.
TRACT A
BASIN #2
CAPACITY: 52,000 C.F.
TRACT B
CH1 STREET
ALPHA AVENUE
BETA COURT
DELTA COURT
DELTA AVENUE
FOUR STREET
FIVE STREET
DEVON AVE.
PUMP STATION
PROP. 15' S.D. EASEMENT
PROP. 12" ADS STORM DRAIN
PROP. 18" ADS STORM DRAIN
PROP. 5' SIDEWALK
PROP. 5' PVT. S.D. EASEMENT
PROP. 12" PERVIOUS CONC. DRIVEWAY
10' PUE
TO PIPE
TO CURB

SEE SHEET 304 FOR
OFF-SITE DRAINAGE PLAN

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PRELIMINARY
DRAINAGE PLAN - ONSITE

DEVON ESTATES

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6500x36 P303DRN

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Date: NOV. 2017
Scale: AS SHOWN
As-Built: ----

REGISTERED PROFESSIONAL ENGINEER
OREGON
JULY 14, 1978
MARK D. GRENZ
EXPIRES: 06-30-2021

JOB # 6502

P303

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PRELIMINARY DRAINAGE PLAN - OFFSITE: SOUTH & NORTHWEST

DEVON ESTATES

NO CHANGES, MODIFICATIONS OR REPRODUCTIONS TO BE MADE TO THESE DRAWINGS WITHOUT WRITTEN AUTHORIZATION FROM THE DESIGN ENGINEER.

DIMENSIONS & NOTES TAKE PRECEDENCE OVER GRAPHICAL REPRESENTATION.

6502x2D P304DRN

Design: M.D.G.
Drawn: P.H.S.
Checked: M.D.G.
Date: NOV. 2017
Scale: AS SHOWN
As-Built: ---- ----

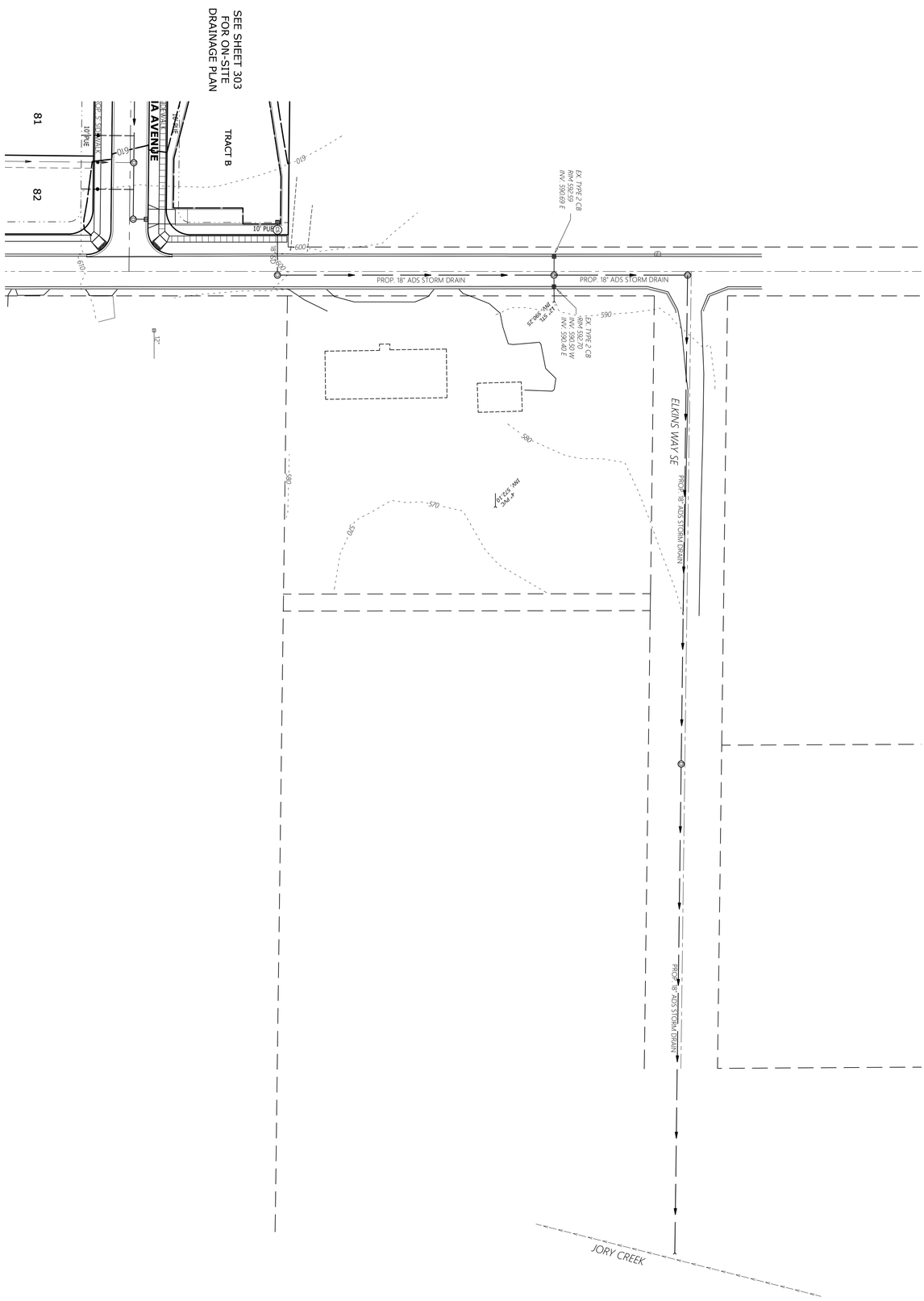
REGISTERED PROFESSIONAL ENGINEER
OREGON
JULY 14, 1978
MARK D. GRENZ
EXPIRES: 06-30-2021

JOB # 6502

P304

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6502b20 P305DRN

Design: M.D.G.
Drawn: P.H.S.
Checked: M.D.G.
Date: NOV. 2017
Scale: AS SHOWN
As-Built: ----

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DIMENSIONS & NOTES TAKE PRECEDENCE OVER GRAPHICAL REPRESENTATION.

DEVON ESTATES

PRELIMINARY DRAINAGE PLAN - OFFSITE: NORTHEAST

MULTI/TECH
ENGINEERING SERVICES, INC.
1155 13th ST. S.E. SALEM, OR. 97302
PH. (503) 363-9227 FAX (503) 364-1260
www.mtengineering.net office@mtengineering.net

P305

JOB # 6502

DATE: 06-30-2021

RENEWAL: 12-31-2021

REGISTERED PROFESSIONAL ENGINEER — OREGON — JULY 14, 1978 — MARK D. GRENZ

6502

PRELIMINARY DRAINAGE REPORT
FOR

Devon Estates
Salem, Oregon

Prepared For:
HSF Development, LLC
3245 Boone Road SE
Salem, Oregon 97317

January 18, 2021



MULTI/TECH
ENGINEERING SERVICES, INC.

1155 13th Street SE
Salem OR 97302
www.mtengineering.net

PHONE: (503) 363-9227
FAX: (503) 364-1260
EMAIL: mgrenz@mtengineering.net

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Appendix C	Time of Concentration
Appendix D	Stormwater Analysis
Appendix E	Water Quality Analysis

INTRODUCTION

The Devon Estates development is a proposed multi-phased subdivision that was previously approved under the City of Salem Planning Case No. SUB19-05. The site is located south of Sahalee Court SE and west of Devon Avenue SE. The parcel of land to be developed is Tax Lot 300 of Marion County Assessor's Map 08 3W 22C. A vicinity map and supporting maps are in Appendix A of this report. An aerial image of the site can be seen below.



Project Site

Green Stormwater Infrastructure (GSI) to the Maximum Extent Feasible (MEF) is being used for the new developed areas per City of Salem Administrative Rules, Chapter 109, Division 004, Stormwater System, Appendix 4E and Ordinance No. 8-20 (Standards). Stormwater facilities will be constructed to meet the City of Salem standards.

EXISTING CONDITIONS

The entire 19.6-acre site is generally rectangular in the shape. Surface conditions consists of grass, brush and minimal trees. There are no identified wetlands, streams or sensitive areas located on the property.

A topographical high point is located on the southerly side of the site. Drainage from this high point flows westerly and easterly. The maximum relief is approximately 112-feet with a high point elevation of 651. The abutting properties are zoned single family residential with nearby public improvements that include minimal storm water conveyance systems. Appendix A contains multiple maps of the site.

Soils

The Natural Resources Conservation Service (NRCS) Soil Resource Report for Marion County was used to determine a Hydrological Soil Group classification for runoff calculations. The report identifies the site soils to be Jory, Nekia and Salkum soils. The predominate soils are in the hydrologic soil group C. The report is in Appendix B.

Infiltration

Infiltration testing was performed at the site to determine percolation rate of the soil. Test results recommend design infiltration rates below 0.5 inches per hour. Appendix B contains the geotechnical report with recommended infiltration rates.

Water Quality Methodology

Because of the poor percolation rates of the soils and natural steep slopes located on the site, green stormwater facilities are designed as volume control facilities with filtration. Because of natural steep grades, a 1-acre portion of Lone Oak Drive will treat runoff via Manufactured Treatment Technology devices; Contech Stormwater Solutions storm filters.

Water Quality Analysis

Water quality flow rates were calculated with HydroCAD 10.00. The SCS TR-20 Unit Hydrograph method will be used to generate the hydrographs. A Type 1A storm and a 24-hour rainfall depth of 1.38 inches per hour will be used to determine the water quality flow rate.

Manufactured Treatment Technology Design

The manufactured treatment devices will be CONTECH Stormwater Solutions storm filter catch basins using ZPG media. The system is designed in accordance with the manufacturer's recommendations per City of Salem design standards.

STORMWATER QUANTITY ANALYSIS

Stormwater quantity (Flow Control) is being handled by on-site detention and within Lone Oak Road. Runoff from the development is being routed to the facilities that ultimately controls runoff to pre-developed flow rates.

Per the standards, one-half of the post development peak runoff rate of the two-year storm must be equal to or less than one-half of the peak runoff rate of the pre-developed two-year, 24-hour storm. This also applies to the 10-year through 100-year, 24-hour storm events. Because of natural steep slopes and other factors, runoff from the Lone Oak facility will be controlled to the 10-year through 100-year pre-developed rates only. A design exception was previously approved and will be resubmitted for approval.

The pre-developed flow rates were calculated using HydroCAD 10.00. Table 1 below lists the 24-hour rainfall depths used in the analysis of each storm event. Please note that the 2-year event was halved and then analyzed.

Table 1

Storm Event	24-hour Rainfall Depth (in)
Half of 2-year	1.1
10-year	3.2
25-year	3.6
100-year	4.4

For the pre-developed conditions, a time of concentration of 22.2 minutes was calculated for Basin 1 and 21.6 minutes for Basin #2. The time of concentration data is in Appendix C. The calculations are incorporated in the HydroCAD output located in Appendix D. The entire area was classified as "City of Salem Pre-Development, HSG C" with a Curve Number (CN) of 72. A pre-developed basin map is in Appendix A.

The SCS TR-20 Unit Hydrograph method was used to generate the hydrographs. A Type 1A rainfall distribution was used with the above rainfall depths. Table 2A and 2B below identifies the allowable pre-developed release rates for each storm event.

Table 2A

Storm Event	Basin #1 Allowable Release Rate (cfs)	Off-site Allowable Release Rate (cfs)	Control MH#1 Allowable Release Rate (cfs)	Off-site North Allowable Release Rate (cfs)	Control MH#2 Allowable Release Rate (cfs)
Half of 2-year	0.03	0.01	0.04	N/A	N/A
10-year	1.49	0.52	2.01	0.12	2.13
25-year	2.13	0.75	2.88	0.17	3.05
100-year	3.56	1.25	4.81	0.29	5.10

Table 2B

Storm Event	Basin #2 Allowable Release Rate (cfs)
Half of 2-year	0.03
10-year	1.24
25-year	1.77
100-year	2.96

The post-developed site flow rates were calculated using HydroCAD 10.00. A time of concentration of 10 minutes was assumed for all basins. The calculations are incorporated in the HydroCAD output located in Appendix D. Each on-site basin was classified as 60 percent "Impervious, HSG C" with a CN of 98 and 40 percent “> 75% Grass cover, HSG C” with a CN of 74. This was based on code setback requirements and City street section standards. Off-site areas contributing to the development’s drainage system were classified as "City of Salem Pre-Development, HSG C" with a Curve Number (CN) of 72 or “Impervious, HSG C” with a CN of 98.

The post-developed Lone Oak flow rates were also calculated using HydroCAD 10.00. A time of concentration of 5 minutes was assumed for the basin. The basin was classified as 90 percent "Impervious, HSG C" with a CN of 98 and 10 percent “> 75% Grass cover, HSG C” with a CN of 74. Table 3 below lists the CN values for the developed basin areas. A developed basin map is in Appendix A.

Table 3

Basin	Impervious Area (Ac) CN = 98	Predeveloped Area (AC) CN = 72	Landscape Area (Ac) CN = 74	TOTAL Area (Ac)	Composite CN
Basin 1	6.43	N/A	4.28	10.71	88
Basin 1B	0.35	N/A	0.36	0.71	86
Basin 2	5.33	N/A	3.56	8.89	88
Basin 2B	0.07	N/A	0.17	0.24	81
Off-site	0.50	3.26	N/A	3.76	75
Off-Site North	0.76	N/A	0.10	0.86	95

A 0.71-acre portion of Basin 1, developed Basin 1B, will not drain into the detention pond that will serve the westerly side of the development. To compensate for this uncontrolled release, allowable release rates have been reduced in portion of the undetained flow. Likewise, the same approach was also taken in Basin 2. Table 4A & 4B provides an overview.

Table 4A

Storm Event	Basin #1 Allowable Release Rate (cfs)	Undetained Release Rate (cfs)	Adjusted Allowable Release Rate (cfs)	Off-site North Allowable Release Rate (cfs)	Control MH#2 Allowable Release Rate (cfs)
Half of 2-year	0.04	0.02	0.02	N/A	N/A
10-year	2.01	0.32	1.69	0.12	1.81
25-year	2.88	0.39	2.49	0.17	2.66
100-year	4.81	0.53	4.28	0.29	4.57

Table 4B

Storm Event	Basin #2 Allowable Release Rate (cfs)	Undetained Release Rate (cfs)	Adjusted Allowable Release Rate (cfs)
Half of 2-year	0.03	0.003	0.03
10-year	1.24	0.08	1.16
25-year	1.77	0.10	1.67
100-year	2.96	0.15	2.81

DETENTION SYSTEM PHASE #1

In the detention analysis for this phase, the 10.7-acre site was considered a single basin draining into the detention pond. A basin map is in Appendix A. Site grading and conveyance pipe will direct stormwater runoff to the detention system. It should be noted that the Basin #1 pond has a capacity to detain 46,700 cubic feet of water. This exceeds the required detention volume of 34,700 cubic feet for the developed portion.

Based on the above design parameters, the half of the 2-year through the 100-year pre-developed release rates are controlled at 0.02, 1.62, 2.42 and 4.20 cfs. The release rates and detention requirements were generated from the HydroCAD software, which can be seen in Appendix D. Table 5 below summarizes the requirements for the storm events.

Table 5

Storm Event	Basin #1 Release Rate (cfs)	Required Detention Volume (ft^3)	Provided Detention Volume (ft^3)
Half of 2-year	0.02	11,950	46,700
10-year	1.62	25,425	46,700
25-year	2.42	28,850	46,700
100-year	4.20	34,700	46,700

(Basin #1 Pond Detention Summary)

Flow control is achieved with multiple orifices in a standard City of Salem control structure. The sizing of the orifice will use the standard orifice equation provided in the City of Salem Stormwater Management Manual.

Detention System Off-site North

In the detention analysis for this area, the 0.86-acre site was considered a single basin draining into the detention facility. A basin map is in Appendix A. Site grading and conveyance pipe will direct stormwater runoff to the detention pipe. The Lone Oak 60-inch detention pipe has a capacity to detain 2,350 cubic feet of water. This exceeds the required detention volume of 1,500 cubic feet for the Off-site North developed portion.

Based on the above design parameters, the 10-year through the 100-year pre-developed release rates are controlled at 2.06 cfs. The release rate and detention requirements were generated from the HydroCAD software, which can be seen in Appendix D. Table 6 below summarizes the requirements for the storm events.

Table 6

Storm Event	Control MH#2 Release Rate (cfs)	Required Detention Volume (ft^3)	Provided Detention Volume (ft^3)
10-year	1.76	151	2,350
25-year	2.59	385	2,350
100-year	4.46	1,480	2,350

(Off-site North Detention Summary)

Flow control is achieved with a single orifice in a standard City of Salem control structure. The sizing of the orifice uses the standard orifice equation provided in the City of Salem Stormwater Management Manual. Table 8 below identifies orifice size, elevation and the water surface elevation.

Detention System Phase #2

In the detention analysis for this phase, the 8.9-acre site was considered a single basin draining into the detention pond. A basin map is in Appendix A. Site grading and conveyance pipe will direct stormwater runoff to the detention system. It should be noted that the Basin #2 pond has a capacity to detain 52,000 cubic feet of water. This exceeds the required detention volume of 26,400 cubic feet for the developed portion.

Based on the above design parameters, the half of the 2-year through the 100-year pre-developed release rates are controlled at 0.03, 1.09, 1.52 and 2.67 cfs. The release rates and detention requirements were generated from the HydroCAD software, which can be seen in Appendix D. Table 7 below summarizes the requirements for the storm events.

Table 7

Storm Event	Basin #2 Release Rate (cfs)	Required Detention Volume (ft^3)	Provided Detention Volume (ft^3)
Half of 2-year	0.03	11,950	52,000
10-year	1.09	25,425	52,000
25-year	1.52	28,850	52,000
100-year	2.67	34,700	52,000

(Basin #2 Pond Detention Summary)

Flow control is achieved with multiple orifices in a standard City of Salem control structure. The sizing of the orifice will use the standard orifice equation provided in the City of Salem Stormwater Management Manual.

STORMWATER QUALITY ANALYSIS

Water quality flow rates were calculated using HydroCAD 10.00. The SCS TR-20 Unit Hydrograph method was used to generate the hydrographs. A Type 1A rainfall distribution was used with a 1.38 rainfall depth. Appendix E contains the analysis.

Detention Basins #1 and #3 serve as combination facilities and provide water quality treatment via filtration per City standards.

Because of natural slopes that exceed 10 percent along the lower portion of Lone Oak Drive, runoff will not drain into the water quality system. A manufactured stormwater treatment facility will be used to treat this runoff.

The proposed facility is a Contech StormFilter system using ZPG media. The filters will be in a catch basin with a high flow bypass to convey larger storm events. The media filters will be the 27-inch height type that have the capacity to treat 22.5 gpm per filter. The catch basins will be spaced at a maximum distance of 200-feet to treat a maximum area of approximately 12,000 square feet. 80 percent was considered impervious. A total of 3 catch basins in series will be installed along Lone Oak Drive. Appendix E contains the analysis and a generic plan of the Contech system. Table 8 below shows the required filters per catch basin.

Table 8

Storm Event	Basin WQ Flow Rate (cfs)	Basin WQ Flow Rate (gpm)	Required Filters	System Capacity (gpm)
WQ	0.05	22.4	1	22.5

CONCLUSION

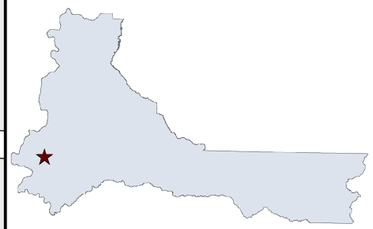
Based on the presented information, the preliminary design can meet the City of Salem water quality and quantity standards. If there are any questions regarding this analysis or the design, please contact Matthew Hendrick at Multi/Tech Engineering by phone at (503) 363-9227 or via e-mail at mhendrick@mtengineering.net.

Appendix A

08 3W 22C

SEE MAP 083W21
1/4 COR
SEE MAP 083W22BC
SEE MAP 083W22
SEE MAP 083W22BD
SAHALEE COURT
SEE MAP 083W22AC
924 01 00 0
VACATED BY 2774-0009
C OR SEC
DEVON AVE
SAHALEE DR
LONE OAK RD
924 01 00 0
924 00 23 0
024 00 23 0
SEE MAP 083W21DA
SEE MAP 083W22CB
200 10.01 AC
100 9.71 AC
CS 32922
924 01 00 0
ELKINS WAY SE
SUNNY SIDE
300 19.89 AC
Site
924 00 23 0
SEE MAP 083W22DB
924 00
DEVON AVE SE
LL ROAD SE (CR 831)
TRILLIUM LANE
700 4.15 AC
600 4.70 AC
601 4.70 AC
500 4.73 AC
CS 32829
FARMS
400 PARCEL 1 17.48 AC
P.A.R.T. PLAT 1994-106
401 PARCEL 2 1.00 AC
20' ACCESS EASEMENT
REES HILL ROAD SE
(CR 831)
DEVON AVE SE (CR 831)
SEE MAP 083W22DC
REES HILL ROAD
SEE MAP 083W21DD
800 2.02 AC
1100 5.00 AC
1300 5.03 AC
1400 17.77 AC
1500 5.00 AC
1600 5.00 AC
1700 4.97 AC
1800 1.25 AC
2100 3.61 AC
2200 3.99 AC
2300 9.97 AC
FRUIT
NO. 3
CHAMPION HILL ROAD SE
900 5.36 AC
1401 2.23 AC
1900 3.77 AC
CREEK
POWELL
PUBLIC ROAD
1/4 COR
1000 2.65 AC
024 00 23 0
SUNNY SIDE FRUIT FARMS NO. 3
2000 2.35 AC
SEE MAP 083W28A
SEE MAP 083W27A
SEE MAP 083W27B
08 3W 22C

08 3W 22C
SALEM



MARION COUNTY, OREGON

SW1/4 SEC22 T8S R3W W.M.
SCALE 1" = 200'

LEGEND

LINE TYPES

- Taxlot Boundary
- Historical Boundary
- Road Right-of-Way
- Easement
- Railroad Right-of-Way
- Railroad Centerline
- Private Road ROW
- Taxcode Line
- Subdivision/Plat Bndry
- Map Boundary
- Waterline - Taxlot Bndry
- Waterline - Non Bndry

CORNER TYPES

- + 1/16TH Section Cor.
- 1/4 Section Cor.
- DLC Corner
- 16 15 / 21 22 Section Corner

NUMBERS

Tax Code Number
000 00 00 0

Acreage
0.25 AC

All acres listed are Net Acres, excluding any portions of the taxlot within public ROWs

NOTES

Tick Marks: A tick mark in the road indicates that the labeled dimension extends into the public ROW

200.00
175.00

CANCELLED NUMBERS

1200

DISCLAIMER: THIS MAP WAS PREPARED FOR ASSESSMENT PURPOSES ONLY

Marion County OREGON — Assessors Office Cartography Dept

FOR ADDITIONAL MAPS VISIT OUR WEBSITE AT
www.co.marion.or.us

PLOT DATE: 1/24/2018

SALEM
08 3W 22C

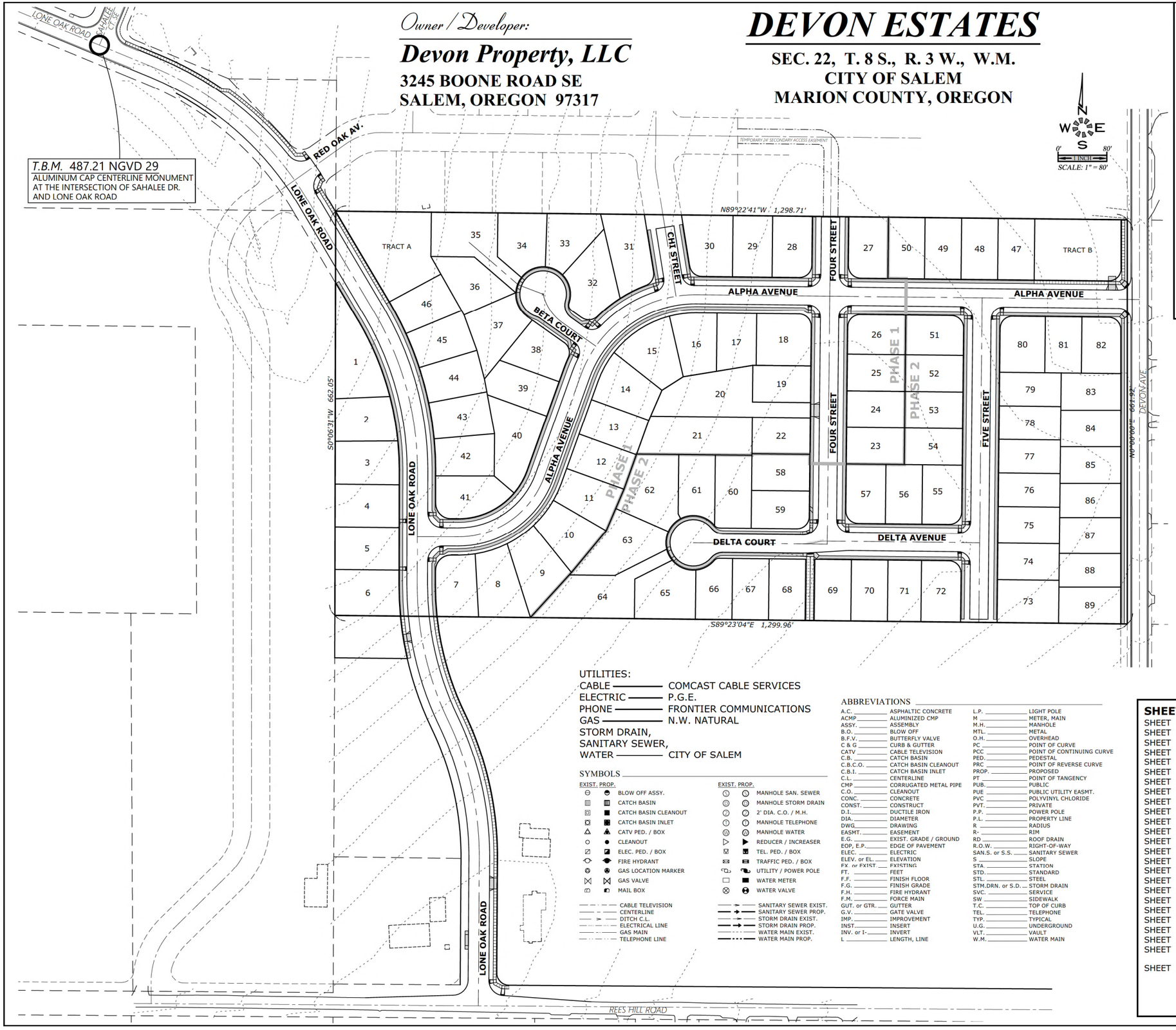
DEVON ESTATES

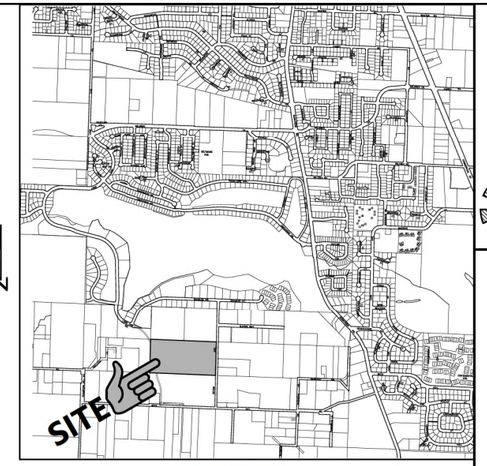
SEC. 22, T. 8 S., R. 3 W., W.M.
CITY OF SALEM
MARION COUNTY, OREGON

Owner / Developer:

Devon Property, LLC
3245 BOONE ROAD SE
SALEM, OREGON 97317

T.B.M. 487.21 NGVD 29
ALUMINUM CAP CENTERLINE MONUMENT AT THE INTERSECTION OF SAHALEE DR. AND LONE OAK ROAD





VICINITY MAP

TOTAL PARCEL SIZE:
DEVELOPABLE AREA — 19.745 Ac.
NUMBER OF UNITS — 89
DENSITY — 4.51 UNITS/Ac.
LARGEST LOT — 13,195 S.F.
SMALLEST LOT — 5,500 S.F.
AVERAGE — 6,753 S.F.

PHASE 1:
DEVELOPABLE AREA — 11.026 Ac.
NUMBER OF UNITS — 46
DENSITY — 4.17 UNITS/Ac.
LARGEST LOT — 13,195 S.F.
SMALLEST LOT — 5,700 S.F.
AVERAGE — 7,182 S.F.

PHASE 2:
DEVELOPABLE AREA — 8.719 Ac.
NUMBER OF UNITS — 43
DENSITY — 4.93 UNITS/Ac.
LARGEST LOT — 11,286 S.F.
SMALLEST LOT — 5,500 S.F.
AVERAGE — 6,295 S.F.

Drawing is NOT to scale

UTILITIES:
CABLE — COMCAST CABLE SERVICES
ELECTRIC — P.G.E.
PHONE — FRONTIER COMMUNICATIONS
GAS — N.W. NATURAL
STORM DRAIN, SANITARY SEWER, WATER — CITY OF SALEM

SYMBOLS

EXIST. PROP.		EXIST. PROP.	
⊖	BLOW OFF ASSY.	Ⓢ	MANHOLE SAN. SEWER
▥	CATCH BASIN	Ⓓ	MANHOLE STORM DRAIN
▣	CATCH BASIN CLEANOUT	②	2' DIA. C.O. / M.H.
▦	CATCH BASIN INLET	Ⓣ	MANHOLE TELEPHONE
△	CATV PED. / BOX	Ⓦ	MANHOLE WATER
○	CLEANOUT	▷	REDUCER / INCREASER
◪	ELEC. PED. / BOX	▣	TEL. PED. / BOX
⛑	FIRE HYDRANT	▭	TRAFFIC PED. / BOX
◉	GAS LOCATION MARKER	⚲	UTILITY / POWER POLE
⋈	GAS VALVE	□	WATER METER
▭	MAIL BOX	⊗	WATER VALVE
	CABLE TELEVISION		SANITARY SEWER EXIST.
	CENTERLINE		SANITARY SEWER PROP.
	DITCH C.L.		STORM DRAIN EXIST.
	ELECTRICAL LINE		STORM DRAIN PROP.
	GAS MAIN		WATER MAIN EXIST.
	TELEPHONE LINE		WATER MAIN PROP.

ABBREVIATIONS

A.C.	ASPHALTIC CONCRETE	L.P.	LIGHT POLE
ACMP	ALUMINIZED CMP	M	METER, MAIN
ASSY.	ASSEMBLY	M.H.	MANHOLE
B.O.	BLOW OFF	MTL.	METAL
B.F.V.	BUTTERFLY VALVE	O.H.	OVERHEAD
C & G	CURB & GUTTER	PC	POINT OF CURVE
CATV	CABLE TELEVISION	PCC	POINT OF CONTINUING CURVE
C.B.	CATCH BASIN	PED.	PEDESTAL
C.B.C.O.	CATCH BASIN CLEANOUT	PRC	POINT OF REVERSE CURVE
C.B.I.	CATCH BASIN INLET	PROP.	PROPOSED
C.L.	CENTERLINE	PT	POINT OF TANGENCY
CMP	CORRUGATED METAL PIPE	PUB.	PUBLIC
C.O.	CLEANOUT	PUE	PUBLIC UTILITY EASMT.
CONC.	CONCRETE	PVC	POLYVINYL CHLORIDE
CONST.	CONSTRUCT	PVT.	PRIVATE
D.I.	DUCTILE IRON	P.P.	POWER POLE
DIA.	DIAMETER	P.L.	PROPERTY LINE
DWG.	DRAWING	R	RADIUS
EASMT.	EASEMENT	R-	RIM
E.G.	EXIST. GRADE / GROUND	RD	ROOF DRAIN
EOP, E.P.	EDGE OF PAVEMENT	R.O.W.	RIGHT-OF-WAY
ELEC.	ELECTRIC	SAN.S. or S.S.	SANITARY SEWER
ELEV. or EL.	ELEVATION	S	SLOPE
FX. or EXIST.	EXISTING	STA.	STATION
FT.	FEET	STD.	STANDARD
F.F.	FINISH FLOOR	STL.	STEEL
F.G.	FINISH GRADE	STM.DRN. or S.D.	STORM DRAIN
F.H.	FIRE HYDRANT	SVC.	SERVICE
F.M.	FORCE MAIN	SW	SIDEWALK
GUT. or GTR.	GUTTER	T.C.	TOP OF CURB
G.V.	GATE VALVE	TEL.	TELEPHONE
IMP.	IMPROVEMENT	TYP.	TYPICAL
INST.	INSERT	U.G.	UNDERGROUND
INV. or I-	INVERT	VLT.	VAULT
L	LENGTH, LINE	W.M.	WATER MAIN

SHEET INDEX

SHEET P101	COVER SHEET	
SHEET P102	EXISTING CONDITIONS PLAN	
SHEET P103	TREE CONSERVATION PLAN	ONSITE: WEST
SHEET P104	TREE CONSERVATION PLAN	ONSITE: EAST
SHEET P105	TREE CONSERVATION PLAN	OFFSITE
SHEET P201	SITE PLAN	
SHEET P301	UTILITY PLAN	ONSITE
SHEET P302	UTILITY PLAN	OFFSITE
SHEET P303	DRAINAGE PLAN	ONSITE
SHEET P304	DRAINAGE PLAN	OFFSITE
SHEET P305	GRADING PLAN	ONSITE
SHEET P401	STREET PLAN & PROFILE	LONE OAK RD. -1+00 TO 4+20
SHEET P402	STREET PLAN & PROFILE	LONE OAK RD. 4+20 TO 8+60
SHEET P403	STREET PLAN & PROFILE	LONE OAK RD. 8+60 TO13+60
SHEET P404	STREET PLAN & PROFILE	LONE OAK RD. 13+60 TO 18+40
SHEET P405	STREET PLAN & PROFILE	ALPHA AV. 0+00 TO 4+80
SHEET P406	STREET PLAN & PROFILE	ALPHA AV. 4+80 TO 10+00
SHEET P407	STREET PLAN & PROFILE	ALPHA AV. 10+00 TO 14+40
SHEET P408	STREET PLAN & PROFILE	BETA CT.
SHEET P409	STREET PLAN & PROFILE	CHI ST.
SHEET P410	STREET PLAN & PROFILE	FOUR ST. 1+00 TO 6+80
SHEET P411	STREET PLAN & PROFILE	FIVE ST.
SHEET P412	STREET PLAN & PROFILE	DELTA CT.
SHEET P413	STREET PLAN & PROFILE	PEDESTRIAN PATH TO PARK & DELTA AVENUE
SHEET P414	STREET PLAN & PROFILE	LOT 30 DRIVEWAY

MULTI/TECH
ENGINEERING SERVICES, INC.
1155 13th ST. S.E. SALEM, OR. 97302
PH. (503) 363-9227 FAX (503) 364-1260
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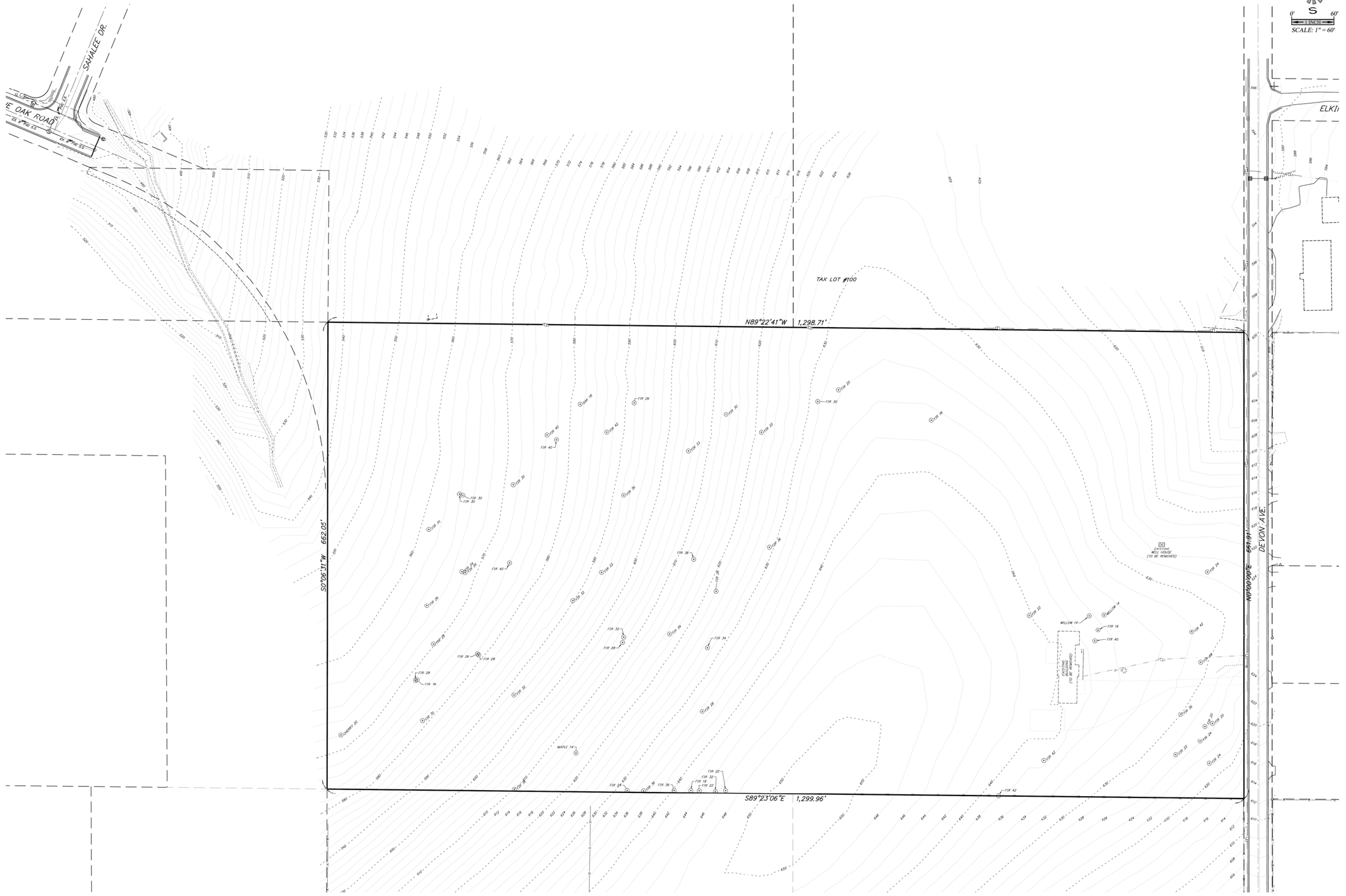
REGISTERED PROFESSIONAL ENGINEER
OREGON
JULY 1, 1978
HAROLD B. MCENTEE
EXPIRES: 06-30-2021

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EXISTING CONDITIONS PLAN

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REGISTERED PROFESSIONAL ENGINEER
OREGON
JUNE 14, 2005
MARK D. GRENZ

EXPIRES: 06-30-2019

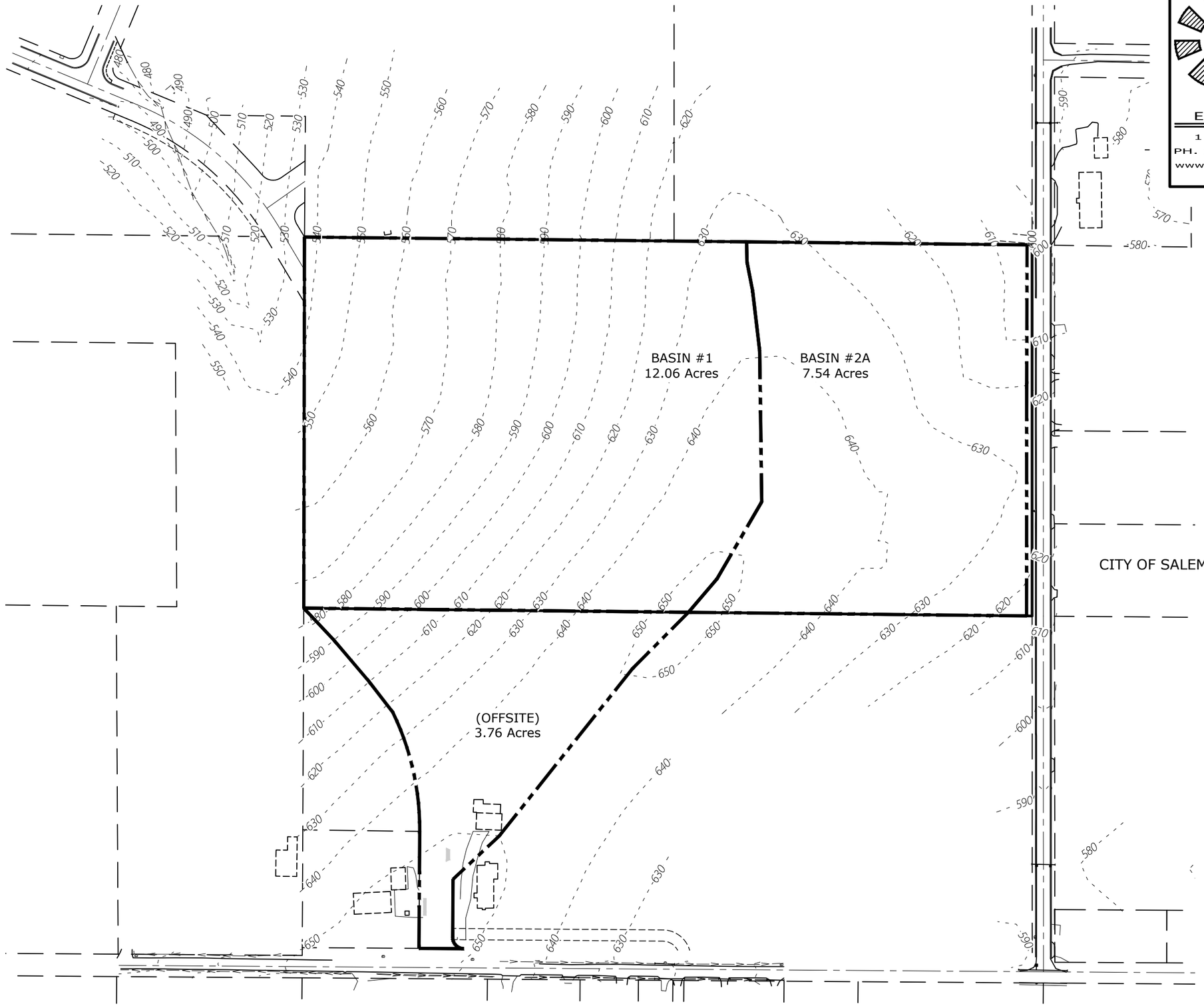
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PRE-DEVELOPED BASIN MAP



N
W E
S

NOT TO SCALE

CITY OF SALEM PREDEVELOPED HSG C CN=72

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PH. (503) 363 - 9227 FAX (503) 364-1260
www.mtengineering.net office@mtengineering.net

POST-DEVELOPED BASIN MAP

DETENTION BASIN #2 CAPACITY: 2,350 C.F.

BASIN 2B✱
0.07 Acre IMPERVIOUS SURFACE – HSG C CN = 98
0.17 Acre LANDSCAPE ——— HSG C CN = 74

DETENTION BASIN #1 CAPACITY: 47,000 C.F.

BASIN: OFFSITE NORTH 0.86 Acre

FUTURE DETENTION BASIN #3 CAPACITY: 52,000 C.F.

BASIN 1B✱
0.71 Acre

BASIN 1
10.71 Acres

BASIN 2
8.89 Acres

BASIN 2B✱
0.27 Acre

(OFFSITE)
3.76 Acres

N
W E
S
NOT TO SCALE

BASIN 1B✱
50% IMPERVIOUS SURFACE —— HSG C CN = 98
50% LANDSCAPE ——— HSG C CN = 74

DEVELOPED SITE (BASIN 1 & 2)
60% IMPERVIOUS SURFACE —— HSG C CN = 98
40% LANDSCAPE ——— HSG C CN = 74

OFFSITE:
CITY OF SALEM PREDEVELOPED — HSG C CN = 72
3.76 Acres
IMPERVIOUS SURFACE ——— HSG C CN = 98
0.50 Acre

OFFSITE NORTH:
0.76 Acre IMPERVIOUS SURFACE – HSG C CN = 98
0.10 Acre LANDSCAPE ——— HSG C CN = 74

✱ = CALCULATED FLOW RATES FROM THESE BASINS WERE REMOVED FROM THE PARENT BASINS ALLOWABLE RUNOFF RATE.

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Appendix B

United States Department of Agriculture

NRCS

Natural Resources Conservation Service

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

Custom Soil Resource Report for Marion County Area, Oregon

Devon Estates



October 11, 2018

Hydrologic Soil Group—Marion County Area, Oregon
(Devon Estates)



Map Scale: 1:2,190 if printed on A landscape (11" x 8.5") sheet.

N

Meters
0 30 60 120 180

Feet
0 100 200 400 600

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 10N WGS84

MAP LEGEND

Area of Interest (AOI)

- Area of Interest (AOI)

Soils

Soil Rating Polygons

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

Soil Rating Lines

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

Soil Rating Points

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

Water Features

- Streams and Canals

Transportation

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

Background

- Aerial Photography

MAP INFORMATION

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

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

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

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

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

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

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

Soil Survey Area: Marion County Area, Oregon
Survey Area Data: Version 15, Sep 18, 2018

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

Date(s) aerial images were photographed: Jun 15, 2015—Jun 23, 2015

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

Hydrologic Soil Group

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
JoC	Jory silty clay loam, 7 to 12 percent slopes	C	1.8	8.8%
JoD	Jory silty clay loam, 12 to 20 percent slopes	C	10.3	50.5%
NeB	Nekia silty clay loam, 2 to 7 percent slopes	C	7.1	34.7%
NeC	Nekia silty clay loam, 7 to 12 percent slopes	C	0.4	1.8%
SlB	Salkum silty clay loam, basin, 0 to 6 percent slopes	B	0.8	4.1%
Totals for Area of Interest			**20.5**	**100.0%**

Description

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

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

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

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

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

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

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

Rating Options

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

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REDMOND GEOTECHNICAL SERVICES

Geotechnical Investigation

and

Geologic Hazard Assessment Services

Proposed Devon Avenue Residential Subdivision Site

Tax Lot No. 300 (Lots 13 and 14)

6719 Devon Avenue SE

Salem (Marion County), Oregon

for

Multi/Tech Engineering Services, Inc.

Project No. 1001.052.G
August 11, 2017

REDMOND GEOTECHNICAL SERVICES

August 11, 2017

Mr. Mark D. Grenz
Multi/Tech Engineering Services, Inc.
1155 13th Street SE
Salem, Oregon 97302

Dear Mr. Grenz:

Re: Geotechnical Investigation and Geologic Hazard Assessment Services, Proposed Devon Avenue Residential Subdivision Site, Tax Lot No. 300 (Lots 13 and 14), 6719 Devon Avenue SE, Salem (Marion County), Oregon

Submitted herewith is our report entitled "Geotechnical Investigation and Geologic Hazard Assessment Services, Proposed Devon Avenue Residential Subdivision Site, Tax Lot No. 300 (Lots 13 and 14), 6719 Devon Avenue SE, Salem (Marion County), Oregon". The scope of our services was outlined in our formal discussions with Mr. Mark D. Grenz of Multi/Tech Engineering Services, Inc on June 29, 2017. Verbal authorization of our services was provided by Mr. Mark D. Grenz on June 29, 2017.

During the course of our investigation, we have kept you and/or others advised of our schedule and preliminary findings. We appreciate the opportunity to assist you with this phase of the project. Should you have any questions regarding this report, please do not hesitate to call.

Sincerely,

Daniel M. Redmond, P.E., G.E.
President/Principal Engineer



12-3-18

PO Box 20547 • Portland, Oregon 97294 • Fax 503/286-7176 • Phone 503/285-0598

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Figure No. 1 - Site Vicinity Map
Figure No. 2 - Site Exploration Plan
Figure No. 3 - Typical Fill Slope Grading Detail
Figure No. 4 - Perimeter Footing/Retaining Wall Drain Detail

APPENDIX A

Test Pit Logs and Laboratory Data

APPENDIX B

Geologic Hazard Study

GEOTECHNICAL INVESTIGATION AND GEOLOGIC HAZARD ASSESSMENT
PROPOSED DEVON AVENUE RESIDENTIAL DEVELOPMENT SITE
TAX LOT NO. 300 (LOTS 13 AND 14)
6719 DEVON AVENUE SE
SALEM (MARION COUNTY) OREGON

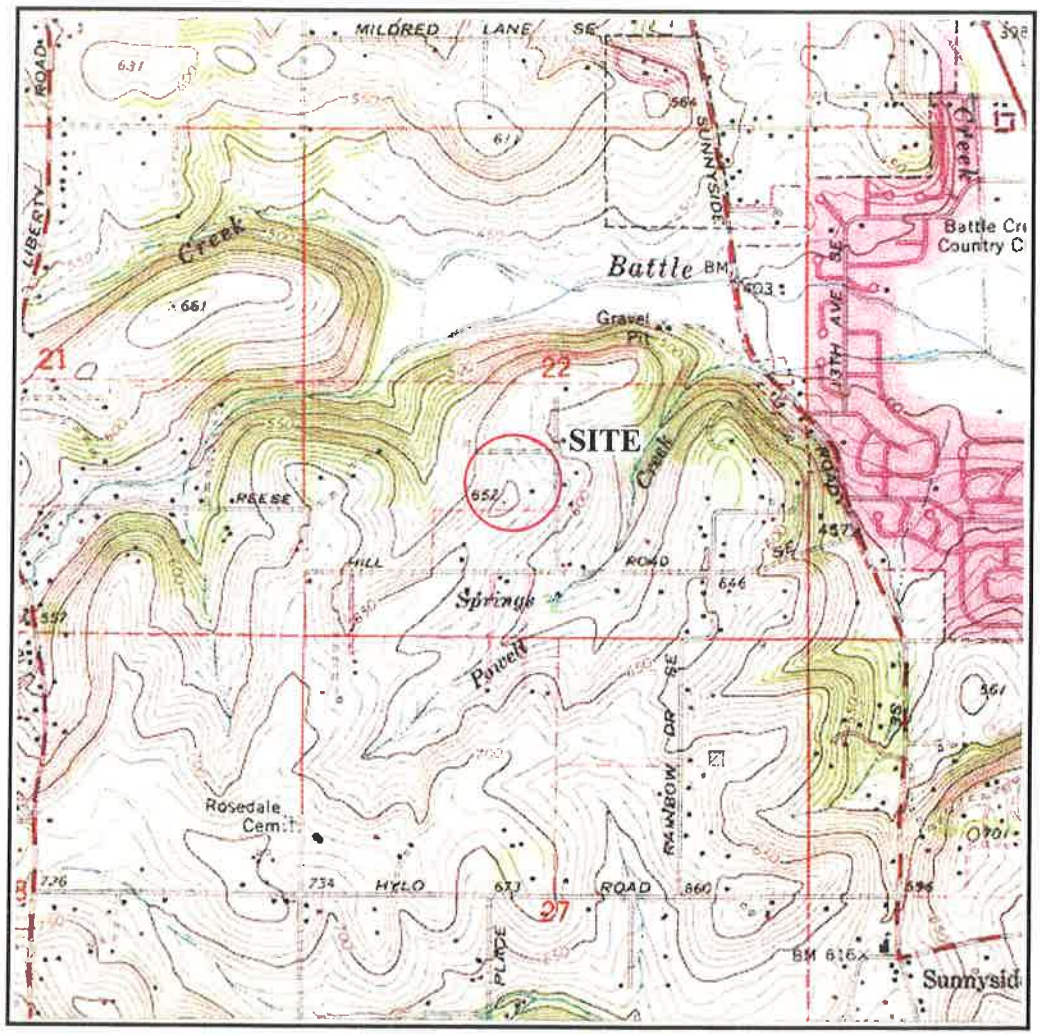
INTRODUCTION

Redmond Geotechnical Services, LLC is please to submit to you the results of our Geotechnical Investigation and Geologic Hazard Assessment at the site of the proposed new residential development located to the west of Devon Avenue SE and to the north of Reese Hill Road SE in Salem (Marion County), Oregon. The general location of the subject site is shown on the Site Vicinity Map, Figure No. 1. The purpose of our geotechnical investigation and geologic hazard study services at this time was to explore the existing subsurface soils and/or groundwater conditions across the subject site and to evaluate any potential concerns with regard to potential slope failure at the site as well as to develop and/or provide appropriate geotechnical design and construction recommendations for the proposed new residential development project.

PROJECT DESCRIPTION

We understand that present plans are to develop the subject property into new single-family residential lots. Although the project is still in the preliminary planning stages, we understand that the proposed new residential development will consist of the construction of approximately ninety (90) new single-family residential lots ranging in size from about 6,000 to 10,000 square feet (see Site Exploration Plan, Figure No. 2). The new residential homes are anticipated to be of two- and/or three-story structures constructed with wood framing. Support of the new residential structures is anticipated to consist primarily of conventional shallow strip (continuous) footings although some individual (column) footings may also be required. Structural loading information, although unavailable at this time, is anticipated to be fairly typical and light for this type of wood-frame single-family residential structure and is expected to result in maximum dead plus live continuous (strip) and individual (column) footing loads on the order of about 1.5 to 2.5 kips per lineal foot (klf) and 10 to 25 kips, respectively.

Although a site grading plan is not available at this time, we understand that both cuts and fills are presently planned for the residential project. In general, relatively minor cuts and/or fills (i.e., 5 to 8 feet) will be required across the proposed residential lots as well as the proposed new public street improvements. In this regard, due to the existing and/or finish grade sloping site conditions, some of the proposed new single-family residential structures and/or lots may also include the construction of a partial below grade floor(s) and/or retaining walls.



SIDNEY QUADRANGLE
OREGON
7.5 MINUTE SERIES (TOPOGRAPHIC)
SE/4 SALEM 15' QUADRANGLE

SCALE 1:24 000

1 0 1/2 1 MILE
1000 0 1000 2000 3000 4000 5000 6000 7000 FEET
1 .5 0 1 KILOMETER

CONTOUR INTERVAL 10 FEET
DOTTED LINES REPRESENT 5-FOOT CONTOURS
NATIONAL GEODETIC VERTICAL DATUM OF 1929

SITE VICINITY MAP

Project No. 1001.052.G	**DEVON AVENUE SUBDIVISION** **TL 300, 6719 DEVON AVENUE SE**	Figure No. 1

Other associated site improvements for the project will include construction of new public street improvements along Devon Avenue SE as well as new local residential streets. Additionally, the project will include the construction of new underground utility services as well as new concrete curbs and sidewalks. Further, we understand that the project will also include the collection of storm water from hard and//or impervious surfaces (i.e., roofs and pavements) for possible on-site treatment and/or disposal in a storm water system designed by the project civil engineer.

SCOPE OF WORK

The purpose of our geotechnical and/or geologic studies was to evaluate the overall subsurface soil and/or groundwater conditions underlying the subject site with regard to the proposed new residential development and construction at the site and any associated impacts or concerns with respect to potential slope failure at the site as well as provide appropriate geotechnical design and construction recommendations for the project. Additionally, due to the moderately steep sloping site gradients, a slope stability analysis was also performed.

Specifically, our geotechnical investigation and landslide hazard study performed as a collaboration with Northwest Geological Services, Inc. (NWGS, Inc.) included the following scope of work items:

1. Review of available and relevant geologic and/or geotechnical investigation reports for the subject site and/or area.

2. A detailed field reconnaissance and subsurface exploration program of the soil and ground water conditions underlying the site by means of eight (8) exploratory test pit excavations. The exploratory test pits were excavated to depths ranging from about five (5) to six (6) feet beneath existing site grades at the approximate locations as shown on the Site Exploration Plan, Figure No. 2. Additionally, field infiltration testing was also performed within two (2) of the test pit excavations.

3. Laboratory testing to evaluate and identify pertinent physical and engineering properties of the subsurface soils encountered relative to the planned site development and construction at the site. The laboratory testing program included tests to help evaluate the natural (field) moisture content and dry density, maximum dry density and optimum moisture content, expansion index, gradational characteristics, Atterberg Limits and (remolded) direct shear strength tests as well as "R"-value tests.

4. A literature review and engineering evaluation and assessment of the regional seismicity to evaluate the potential ground motion hazard(s) at the subject site. The evaluation and assessment included a review of the regional earthquake history and sources such as potential seismic sources, maximum credible earthquakes, and reoccurrence intervals as well as a discussion of the possible ground response to the selected design earthquake(s), fault rupture, landsliding, liquefaction, and tsunami and seiche flooding.

5. Engineering analyses utilizing the field and laboratory data as a basis for furnishing recommendations for foundation support of the proposed new residential structures. Recommendations include maximum design allowable contact bearing pressure(s), depth of footing embedment, estimates of foundation settlement, lateral soil resistance, and foundation subgrade preparation. Additionally, construction and/or permanent subsurface water drainage considerations have also been prepared. Further, our report includes recommendations regarding site preparation, placement and compaction of structural fill materials, suitability of the on-site soils for use as structural fill, criteria for import fill materials as well as preparation of foundation, pavement and/or floor slab subgrades.

6. Flexible pavement design and construction recommendations for the proposed new public street improvements.

SITE CONDITIONS

Site Geology

The subject site and/or area is underlain by highly weathered Basalt bedrock deposits and/or residual soils of the Columbia River Basalt formation. A more detailed description of the site geology across and/or beneath the site is presented in the Geologic Hazard Study in Appendix B.

Surface Conditions

The subject proposed new residential development property consists of one (1) rectangular shaped tax lot (Tax Lot 300) which includes Lots 13 and 14 and encompasses a total plan area of approximately 19.89 acres. The proposed residential development property is roughly located to the west of Devon Avenue SE and to the north of Reese Hill Road SE. The easterly portion of the subject proposed residential development site is presently improved and contain existing single-family residential homes while the remainder of the site is unimproved and consist of existing open land. Surface vegetation across the site generally consists of a light to moderate growth of grass, weeds and brush as well as numerous small to large size trees. Additionally, an existing seasonal drainage basin is located along the westerly portion of the site.

Topographically, the site is characterized as gently to moderately sloping terrain (10 to 25 percent) descending downward from the central portion of the site towards the west and east with overall topographic relief estimated at about seventy (70) feet and ranges from a low about Elevation 580 feet near the northwesterly corner of the subject site to a high of about Elevation 650 near the central portion of the site.

Subsurface Soil Conditions

Our understanding of the subsurface soil conditions underlying the site was developed by means of eight (8) exploratory test pits excavated to depths ranging from about five (5) to six (6) feet beneath existing site grades on July 11, 2017 with a John Deere 200C track-mounted excavator.

The location of the exploratory test pits were located in the field by marking off distances from existing and/or known site features and are shown in relation to the proposed new residential structures and/or site improvements on the Site Exploration Plan, Figure No. 2. Detailed logs of the test pit explorations, presenting conditions encountered at each location explored, are presented in the Appendix, Figure No's. A-5 through A-8.

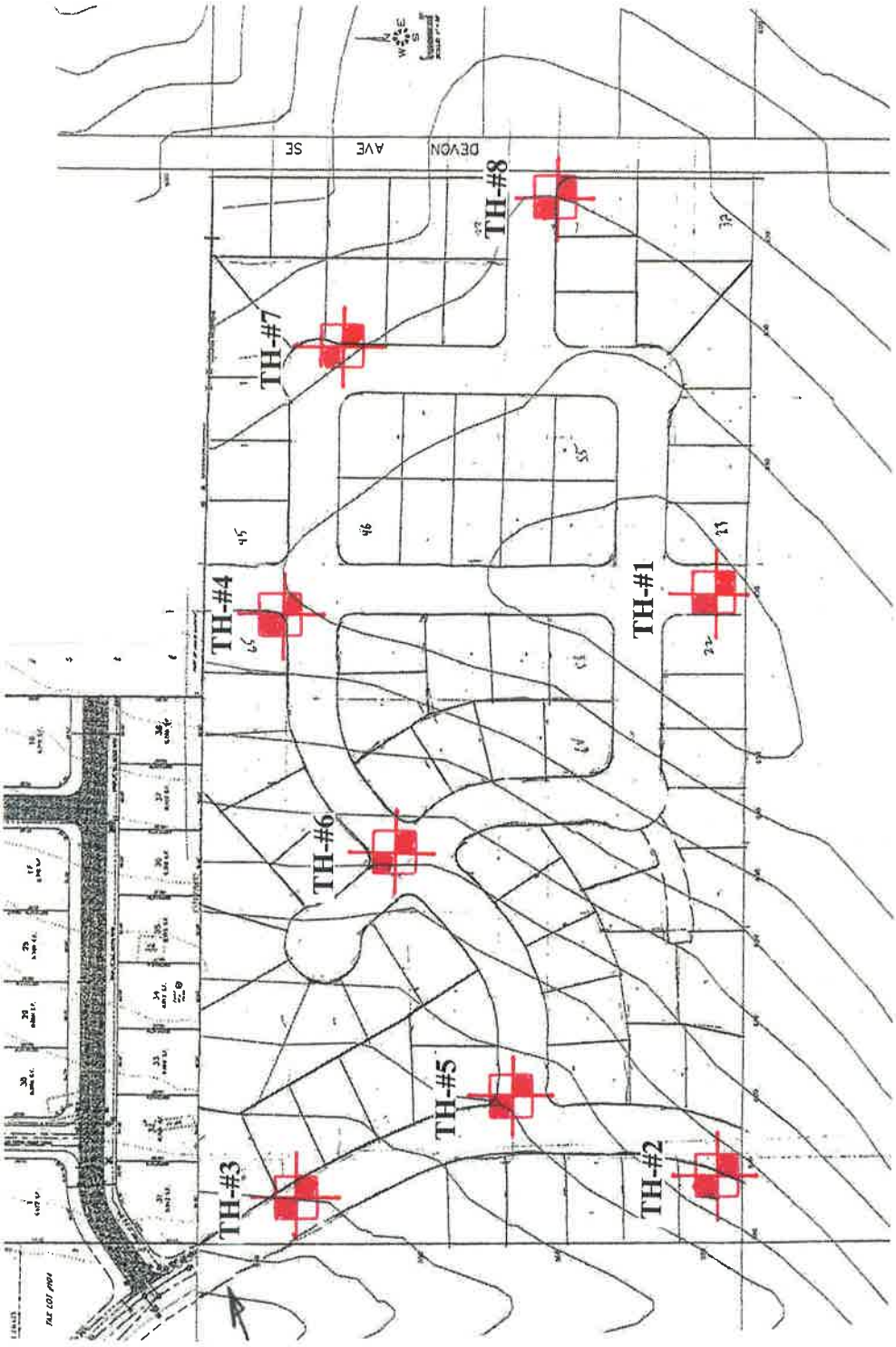
The exploratory test pit excavations were observed by staff from Redmond Geotechnical Services, LLC who logged each of the test pit explorations and obtained representative samples of the subsurface soils encountered across the site. Additionally, the elevation of the exploratory test pit excavations were referenced from the proposed Site Development Plan prepared by Project Delivery Group. and should be considered as approximate. All subsurface soils encountered at the site and/or within the exploratory test pit excavations were logged and classified in general conformance with the Unified Soil Classification System (USCS) which is outlined on Figure No. A-4.

The test pit explorations revealed that the subject site is underlain by native soil deposits comprised of highly weathered bedrock and/or residual soils composed of a surficial layer of dark brown, moist, soft, organic, sandy, clayey silt topsoil materials to depths of about 6 to 12 inches. These surficial topsoil materials were inturn underlain by residual soils composed of medium to reddish--brown, moist to very moist, medium stiff to stiff, sandy, clayey silt to a depth of about two (2) to four (4) feet beneath the existing site and/or surface grades. These upper clayey silt (residual) subgrade soils are best characterized by relatively low to moderate strength and moderate compressibility. These upper clayey silt subgrade soils were inturn underlain by medium to orangish-brown, moist to very moist, medium dense becoming dense at depth, clayey, silty sand to highly weathered bedrock deposits to the maximum depth explored of about six (6) feet beneath the existing site and/or surface grades. These clayey, silty sand subgrade soils and/or highly weathered bedrock deposits are best characterized by relatively moderate to high strength and low compressibility.

Groundwater

Groundwater was generally not encountered within any of the exploratory test pit explorations (TH-#1 through TH-#8) at the time of excavation to depths of at least six (6) feet beneath existing surface grades. However, the westerly portion of the subject property is bounded by an existing seasonal drainage basin and/or surface feature.

In this regard, although groundwater elevations at the site may fluctuate seasonally in accordance with rainfall conditions and/or associated with runoff within the westerly drainage basins as well as changes in site utilization, we are generally of the opinion that the static water levels and/or surface water ponding not observed during our recent field exploration work generally reflect a high seasonal groundwater level(s) at and/or beneath the site.



SITE EXPLORATION PLAN

Project No. 1001.052.G	**DEVON AVENUE SUBDIVISION** **TL 300, 6719 DEVON AVENUE SE**	Figure No. 2

INFILTRATION TESTING

We performed two (2) field infiltration tests at the site on July 11, 2017. The infiltration tests were performed in test holes TH-#2 and TH-#3 at depths of between two (2) to three (3) feet beneath the existing site and/or surface grades. The subgrade soils encountered in the infiltration test hole consisted of sandy, clayey silt.

The infiltration testing was performed in general conformance with current EPA and/or the City of Salem Department of Public Works Administrative Rules Chapter 109 Division 004 Appendix C Encased Falling Head test method which consisted of advancing a 6-inch diameter PVC pipe approximately 6 inches into the exposed soil horizon at each test location. Using a steady water flow, water was discharged into the pipe and allowed to penetrate and saturate the subgrade soils. The water level was adjusted over a two (2) hour period and allowed to achieve a saturated subgrade soil condition consistent with the bottom elevation of the surrounding test pit excavation. Following the required saturating period, water was again added into the PVC pipe and the time and/or rate at which the water level dropped was monitored and recorded. Each measurable drop in the water level was recorded until a consistent infiltration rate was observed and/or repeated.

Based on the results of the field infiltration testing at the site, we have found that the native sandy, clayey silt subgrade soil deposits posses an ultimate infiltration rate on the order of about 0.6 to 0.8 inches per hour (in/hr).

LABORATORY TESTING

Representative samples of the on-site subsurface soils were collected at selected depths and intervals from various test pit excavations and returned to our laboratory for further examination and testing and/or to aid in the classification of the subsurface soils as well as to help evaluate and identify their engineering strength and compressibility characteristics. The laboratory testing consisted of visual and textural sample inspection, moisture content and dry density determinations, maximum dry density and optimum moisture content, expansion index, gradation analyses and Atterberg Limits as well as (remolded) direct shear strength and "R"-value tests. Results of the various laboratory tests are presented in the Appendix, Figure No's. A-9 through A-13.

SEISMICITY AND EARTHQUAKE SOURCES

The seismicity of the southwest Washington and northwest Oregon area, and hence the potential for ground shaking, is controlled by three separate fault mechanisms. These include the Cascadia Subduction Zone (CSZ), the mid-depth intraplate zone, and the relatively shallow crustal zone. Descriptions of these potential earthquake sources are presented below.

The CSZ is located offshore and extends from northern California to British Columbia. Within this zone, the oceanic Juan de Fuca Plate is being subducted beneath the continental North American Plate to the east. The interface between these two plates is located at a depth of approximately 15 to 20 kilometers (km). The seismicity of the CSZ is subject to several uncertainties, including the maximum earthquake magnitude and the recurrence intervals associated with various magnitude earthquakes. Anecdotal evidence of previous CSZ earthquakes has been observed within coastal marshes along the Washington and Oregon coastlines. Sequences of interlayered peat and sands have been interpreted to be the result of large Subduction zone earthquakes occurring at intervals on the order of 300 to 500 years, with the most recent event taking place approximately 300 years ago. A study by Geomatrix (1995) and/or USGS (2008) suggests that the maximum earthquake associated with the CSZ is moment magnitude (Mw) 8 to 9. This is based on an empirical expression relating moment magnitude to the area of fault rupture derived from earthquakes that have occurred within Subduction zones in other parts of the world. An Mw 9 earthquake would involve a rupture of the entire CSZ. As discussed by Geomatrix (1995) this has not occurred in other subduction zones that have exhibited much higher levels of historical seismicity than the CSZ. However, the 2008 USGS report has assigned a probability of 0.67 for a Mw 9 earthquake and a probability of 0.33 for a Mw 8.3 earthquake. For the purpose of this study an earthquake of Mw 9.0 was assumed to occur within the CSZ.

The intraplate zone encompasses the portion of the subducting Juan de Fuca Plate located at a depth of approximately 30 to 50 km below western Washington and western Oregon. Very low levels of seismicity have been observed within the intraplate zone in western Oregon and western Washington. However, much higher levels of seismicity within this zone have been recorded in Washington and California. Several reasons for this seismic quiescence were suggested in the Geomatrix (1995) study and include changes in the direction of Subduction between Oregon, Washington, and British Columbia as well as the effects of volcanic activity along the Cascade Range. Historical activity associated with the intraplate zone includes the 1949 Olympia magnitude 7.1 and the 1965 Puget Sound magnitude 6.5 earthquakes. Based on the data presented within the Geomatrix (1995) report, an earthquake of magnitude 7.25 has been chosen to represent the seismic potential of the intraplate zone.

The third source of seismicity that can result in ground shaking within the Vancouver and southwest Washington area is near-surface crustal earthquakes occurring within the North American Plate. The historical seismicity of crustal earthquakes in this area is higher than the seismicity associated with the CSZ and the intraplate zone. The 1993 Scotts Mills (magnitude 5.6) and Klamath Falls (magnitude 6.0), Oregon earthquakes were crustal earthquakes.

Liquefaction

Seismic induced soil liquefaction is a phenomenon in which lose, granular soils and some silty soils, located below the water table, develop high pore water pressures and lose strength due to ground vibrations induced by earthquakes. Soil liquefaction can result in lateral flow of material into river channels, ground settlements and increased lateral and uplift pressures on underground structures.

Buildings supported on soils that have liquefied often settle and tilt and may displace laterally. Soils located above the ground water table cannot liquefy, but granular soils located above the water table may settle during the earthquake shaking.

Our review of the subsurface soil test pit logs from our exploratory field explorations (TH-#1 through TH-#8) and laboratory test results indicate that the site is generally underlain by medium stiff to stiff, sandy, clayey silt soils and/or medium dense to dense highly weathered bedrock deposits to depths of at least 6.0 feet beneath existing site grades. Additionally, groundwater was generally not encountered within any of the exploratory test pit excavations (TH-#1 through TH-#8) at the site during our field exploration work to depths of at least 6.0 feet.

As such, due to the medium stiff to stiff and/or cohesive nature of the sandy, clayey silt subgrade soils and/or medium dense to dense highly weathered bedrock deposits beneath the site, it is our opinion that the native sandy, clayey silt subgrade soil and/or highly weathered bedrock deposits located beneath the subject site have a very low potential for liquefaction during the design earthquake motions previously described.

Landslides

No ancient and/or active landslides were observed or are known to be present on the subject site. Additionally, development of the subject site into the planned residential homes sites does not appear to present a potential geologic and/or landslide hazard provided that the site grading and development activities conform with the recommendations presented within this report. A more detailed assessment of the potential landslide hazard of the subject site is presented in the Geologic Hazard Study in Appendix B.

Surface Rupture

Although the site is generally located within a region of the country known for seismic activity, no known faults exist on and/or immediately adjacent to the subject site. As such, the risk of surface rupture due to faulting is considered negligible.

Tsunami and Seiche

A tsunami, or seismic sea wave, is produced when a major fault under the ocean floor moves vertically and shifts the water column above it. A seiche is a periodic oscillation of a body of water resulting in changing water levels, sometimes caused by an earthquake. Tsunami and seiche are not considered a potential hazard at this site because the site is not near to the coast and/or there are no adjacent significant bodies of water.

Flooding and Erosion

Stream flooding is a potential hazard that should be considered in lowland areas of Marion County and Salem. The FEMA (Federal Emergency Management Agency) flood maps should be reviewed as part of the design for the proposed new residential structures and site improvements. Elevations of structures on the site should be designed based upon consultants reports, FEMA (Federal Emergency Management Agency), and Marion County requirements for the 100-year flood levels of any nearby creeks, streams and/or drainage basins.

CONCLUSIONS AND RECOMMENDATIONS

General

Based on the results of our field explorations, laboratory testing, and engineering analyses, it is our opinion that the site is presently stable and suitable for the proposed new single-family residential development and its associated site improvements provided that the recommendations contained within this report are properly incorporated into the design and construction of the project.

The primary features of concern at the site are 1) the presence of highly moisture sensitive clayey and silty (residual) subgrade soils across the site, 2) the presence of gently to moderately sloping site conditions across the proposed new residential lots and/or home sites, and 3) the relatively low infiltration rates anticipated within the near surface clayey and silty subgrade soils.

With regard to the moisture sensitive clayey and silty residual subgrade soils, we are generally of the opinion that all site grading and earthwork activities be scheduled for the drier summer months which is typically June through September.

In regards to the gently to moderately sloping site conditions across the proposed new residential home sites and/or lots, we are of the opinion that site grading and/or structural fill placement should be minimized where possible and should generally limit cuts and/or fills to about eight (8) feet or less without the approval of the Geotechnical Engineer. Additionally, where existing site slopes and/or surface grades exceed about 20 percent (1V:5H) and in order to construct the proposed new residential lots and/or new local residential streets, benching and keying of all fills into the natural site slopes may be required.

With regard to the relatively low infiltration rates anticipated within the residual clayey and silty subgrade soils beneath the site, we generally do not recommend any storm water infiltration within structural and/or embankment fills. However, some limited storm water infiltration may be feasible within the lower westerly portion of the subject property as well as the proposed residential lots and/or areas of the site where the existing and/or finish slope gradients are no steeper than about 20 percent (1V:5H). In this regard, we recommend that all proposed storm water detention and/or infiltration systems for the project be reviewed and approved by Redmond Geotechnical Services, LLC.

The following sections of this report provide specific recommendations regarding subgrade preparation and grading as well as foundation and floor slab design and construction for the new residential development project.

Site Preparation

As an initial step in site preparation, we recommend that the proposed new residential building sites and/or lots as well as their associated structural and/or site improvement area(s) be stripped and cleared of all existing improvements, any existing unsuitable fill materials, surface debris, existing vegetation, topsoil materials, and/or any other deleterious materials present at the time of construction. In general, we envision that the site stripping to remove existing vegetation and topsoil materials will generally be about 6 to 12 inches. However, localized areas requiring deeper removals, such as existing undocumented and/or unsuitable fill materials as well as old foundation remnants, will likely be encountered and should be evaluated at the time of construction by the Geotechnical Engineer. The stripped and cleared materials should be properly disposed of as they are generally considered unsuitable for use/reuse as fill materials.

Following the completion of the site stripping and clearing work and prior to the placement of any required structural fill materials and/or structural improvements, the exposed subgrade soils within the planned structural improvement area(s) should be inspected and approved by the Geotechnical Engineer and possibly proof-rolled with a half and/or fully loaded dump truck. Areas found to be soft or otherwise unsuitable should be over-excavated and removed or scarified and recompacted as structural fill. During wet and/or inclement weather conditions, proof rolling and/or scarification and recompaction as noted above may not be appropriate.

The on-site native sandy, clayey silt (residual) subgrade soil materials are generally considered suitable for use/reuse as structural fill materials provided that they are free of organic materials, debris, and rock fragments in excess of about 6 inches in dimension. However, if site grading is performed during wet or inclement weather conditions, the use of some of the on-site native soil materials which contain significant silt and clay sized particles will be difficult at best. In this regard, during wet or inclement weather conditions, we recommend that an import structural fill material be utilized which should consist of a free-draining (clean) granular fill (sand & gravel) containing no more than about 5 percent fines. Representative samples of the materials which are to be used as structural fill materials should be submitted to the Geotechnical Engineer and/or laboratory for approval and determination of the maximum dry density and optimum moisture content for compaction.

In general, all site earthwork and grading activities should be scheduled for the drier summer months (June through September) if possible. However, if wet weather site preparation and grading is required, it is generally recommended that the stripping of topsoil materials be accomplished with a tracked excavator utilizing a large smooth-toothed bucket working from areas yet to be excavated. Additionally, the loading of strippings into trucks and/or protection of moisture sensitive subgrade soils will also be required during wet weather grading and construction.

In this regard, we recommend that areas in which construction equipment will be traveling be protected by covering the exposed subgrade soils with a woven geotextile fabric such as Mirafi FW404 followed by at least 12 inches or more of crushed aggregate base rock. Further, the geotextile fabric should have a minimum Mullen burst strength of at least 250 pounds per square inch for puncture resistance and an apparent opening size (AOS) between the U.S. Standard No. 70 and No. 100 sieves.

All structural fill materials placed within the new building and/or pavement areas should be moistened or dried as necessary to near (within 3 percent) optimum moisture conditions and compacted by mechanical means to a minimum of 92 percent of the maximum dry density as determined by the ASTM D-1557 (AASHTO T-180) test procedures. Structural fill materials should be placed in lifts (layers) such that when compacted do not exceed about 8 to 9 inches. Additionally, all fill materials placed within five (5) lineal feet of the perimeter (limits) of the proposed residential structures and/or pavements should be considered structural fill. Additionally, due to the sloping site conditions, we recommend that all structural fill materials planned in areas where existing surface and/or slope gradients exceed about 20 percent (1V:5H) be properly benched and/or keyed into the native (natural) slope subgrade soils. In general, a bench width of approximately ten (10) feet and a keyway depth of approximately two (2) foot is recommended. However, the actual bench width and keyway depth should be determined at the time of construction by the Geotechnical Engineer. Further, all fill slopes should be constructed with a finish slope surface gradient no steeper than about 2H:1V.

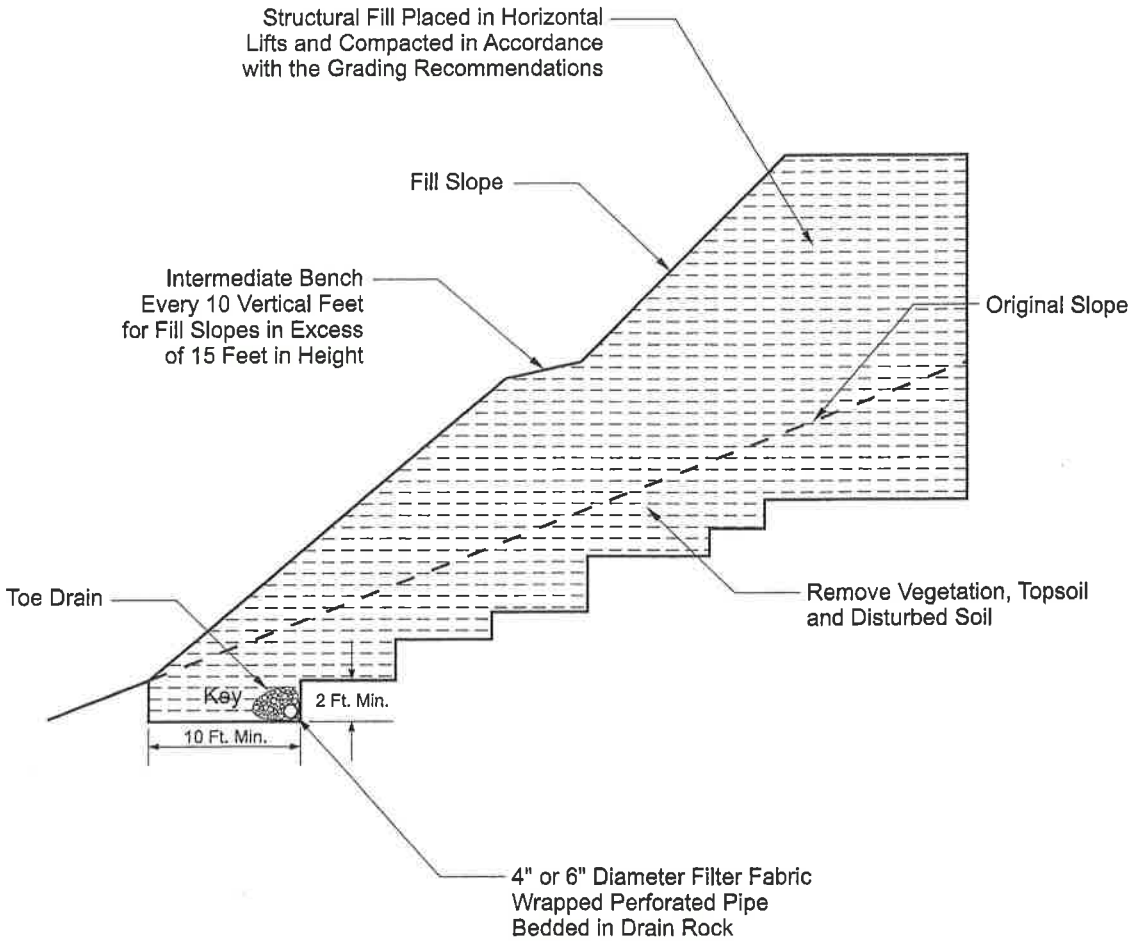
As such, settlement sensitive site and/or surface improvements (i.e., concrete curbs and sidewalks) should not be constructed until after primary consolidation and/or settlement has been completed. All aspects of the site grading, including a review of the proposed site grading plan(s), should be approved and/or monitored by a representative of Redmond Geotechnical Services, LLC.

Foundation Support

Based on the results of our investigation, it is our opinion that the site of the proposed new residential development is suitable for support of the two- and/or three-story wood-frame structures provided that the following foundation design recommendations are followed. The following sections of this report present specific foundation design and construction recommendations for the planned new residential structures.

Shallow Foundations

In general, conventional shallow continuous (strip) footings and individual (spread) column footings may be supported by approved native (untreated) subgrade soil materials and/or silty structural fill soils based on an allowable contact bearing pressure of about 2,000 pounds per square foot (psf). This recommended allowable contact bearing pressure is intended for dead loads and sustained live loads and may be increased by one-third for the total of all loads including short-term wind or seismic loads.



TYPICAL FILL SLOPE DETAIL

Project No. 1001.052.G	**DEVON AVENUE SUBDIVISION TL 300, 6719 DEVON AVENUE SE**	Figure No. 3

In general, continuous strip footings should have a minimum width of at least 16 inches and be embedded at least 18 inches below the lowest adjacent finish grade (includes frost protection). Individual column footings (where required) should be embedded at least 18 inches below grade and have a minimum width of at least 24 inches. Additionally, if foundation excavation and construction work is planned to be performed during wet and/or inclement weather conditions, we recommend that a 2 to 4 inch layer of compacted crushed rock be used to help protect the exposed foundation bearing surfaces until the placement of concrete.

Total and differential settlements of foundations constructed as recommended above and supported by approved native subgrade soils or by properly compacted structural fill materials are expected to be well within the tolerable limits for this type of lightly loaded wood-frame structure and should generally be less than about 1-inch and 1/2-inch, respectively.

Allowable lateral frictional resistance between the base of the footing element and the supporting subgrade bearing soil can be expressed as the applied vertical load multiplied by a coefficient of friction of 0.30 and 0.50 for native silty subgrade soils and/or import gravel fill materials, respectively. In addition, lateral loads may be resisted by passive earth pressures on footings poured "neat" against in-situ (native) subgrade soils or properly backfilled with structural fill materials based on an equivalent fluid density of 250 pounds per cubic foot (pcf). This recommended value includes a factor of safety of approximately 1.5 which is appropriate due to the amount of movement required to develop full passive resistance.

Floor Slab Support

In order to provide uniform subgrade reaction beneath concrete slab-on-grade floors, we recommend that the floor slab area be underlain by a minimum of 6 inches of free-draining (less than 5 percent passing the No. 200 sieve), well-graded, crushed rock. The crushed rock should help provide a capillary break to prevent migration of moisture through the slab. However, additional moisture protection can be provided by using a 10-mil polyolefin geo-membrane sheet such as StegoWrap.

The base course materials should be compacted to at least 95 percent of the maximum dry density as determined by the ASTM D-1557 (AASHTO T-180) test procedures. Where floor slab subgrade materials are undisturbed, firm and stable and where the underslab aggregate base rock section has been prepared and compacted as recommended above, we recommend that a modulus of subgrade reaction of 150 pci be used for design.

Retaining/Below Grade Walls

Retaining and/or below grade walls should be designed to resist lateral earth pressures imposed by native soils or granular backfill materials as well as any adjacent surcharge loads. For walls which are unrestrained at the top and free to rotate about their base, we recommend that active earth pressures be computed on the basis of the following equivalent fluid densities:

Non-Restrained Retaining Wall Pressure Design Recommendations

Slope Backfill (Horizontal/Vertical)	Equivalent Fluid Density/Silt (pcf)	Equivalent Fluid Density/Gravel (pcf)
Level	35	30
3H:1V	60	50
2H:1V	90	80

For walls which are fully restrained at the top and prevented from rotation about their base, we recommend that at-rest earth pressures be computed on the basis of the following equivalent fluid densities:

Restrained Retaining Wall Pressure Design Recommendations

Slope Backfill (Horizontal/Vertical)	Equivalent Fluid Density/Silt (pcf)	Equivalent Fluid Density/Gravel (pcf)
Level	45	35
3H:1V	65	60
2H:1V	95	90

The above recommended values assume that the walls will be adequately drained to prevent the buildup of hydrostatic pressures. Where wall drainage will not be present and/or if adjacent surcharge loading is present, the above recommended values will be significantly higher.

Backfill materials behind walls should be compacted to 90 percent of the maximum dry density as determined by the ASTM D-1557 (AASHTO T-180) test procedures. Special care should be taken to avoid over-compaction near the walls which could result in higher lateral earth pressures than those indicated herein. In areas within three (3) to five (5) feet behind walls, we recommend the use of hand-operated compaction equipment.

Pavements

Flexible pavement design for the proposed street improvements along the west side of Devon Avenue SE as well as the proposed new street improvements for the residential development project was determined in accordance with the City of Salem Department of Public Works Administrative Rules Chapter 109-006 (Street Design Standards) Section 6 dated January 1, 2014.

Specifically, on July 11, 2016, samples of the subgrade soils from the existing and/or proposed public streets were collected by means of various test hole excavations. The subgrade soils encountered in the test holes located across the proposed residential subdivision site as well as along the westerly side of the existing pavement grade of Devon Avenue SE and/or across the proposed new public street improvement areas generally consisted of native and/or residual soils comprised of medium to reddish-brown, medium stiff to stiff, sandy, clayey SILT (ML).

The subgrade soil samples collected at the site were tested in the laboratory in accordance with the ASTM Vol. 4.08 Part D-2844-69 (AASHTO T-190-93) test method for the determination of the subgrade soil "R"-value and expansion pressure. The results of the "R"-value testing was then converted to an equivalent Resilient Modulus (M_{RSG}) in accordance with current AASHTO methodology. The results of the laboratory "R"-value tests revealed that the subgrade soils have an apparent "R"-value of between 28 and 30 with an average "R"-value of 29 (see Figure No. A-12). Using the current AASHTO methodology for converting "R"-value to Resilient Modulus (M_{RSG}), the subgrade soils have a Resilient Modulus (M_{RSG}) of about 5,865 psi which is classified a "Fair" (M_{RSG} = 5,000 psi to 10,000 psi).

In addition to the above, Dynamic Cone Penetration (DCP) tests were performed along the proposed new interior public street alignment at approximate 100- to 200-feet intervals. The results of the DCP tests found that the underlying native sandy, clayey silt subgrade soils have a DCP value of between 3 to 4 blows per 2-inches which correlates to a California Bearing Ratio (CBR) of between 12 and 15. Using current AASHTO methodology for converting CBR to Resilient Modulus (M_{RSG}), the subgrade soils have a Resilient Modulus (M_{RSG}) of between 10,637 and 12,392 psi with an average M_{RSG} of 11,530 psi which is classified as "Fair" (M_{RSG} = 5,000 psi to 10,000 psi).

Devon Avenue SE

The following documents and/or design input parameters were used to help determine the flexible pavement section design for improvements to Devon Avenue SE:

- **Street Classification:** Collector Street
- **Design Life:** 20 years
- **Serviceability:** 4.2 initial, 2.5 terminal
- **Traffic Loading Data:** 1,000,000 18-kip EAL's
- **Reliability Level:** 90%
- **Drainage Coefficient:** 1.0 (asphalt), 0.8 (aggregate)
- **Asphalt Structural Coefficient:** 0.41
- **Aggregate Structural Coefficient:** 0.10

Based on the above design input parameters and using the design procedures contained within the AASHTO 1993 Design of Pavement Structures Manual, a Structural Number (SN) of 4.1 was determined.

In this regard, we recommend the following flexible pavement section for the new improvements to Devon Avenue SE:

Material Type	Pavement Section (inches)
Asphaltic Concrete	5.0
Aggregate Base Rock	14.0

Local Residential Streets

The following documents and/or design input parameters were used to help determine the flexible pavement section design for new local residential streets:

- **Street Classification:** Local Residential Street
- **Design Life:** 25 years
- **Serviceability:** 4.2 initial, 2.5 terminal
- **Traffic Loading Data:** 100,000 18-kip EAL's
- **Reliability Level:** 90%
- **Drainage Coefficient:** 1.0 (asphalt), 0.8 (aggregate)
- **Asphalt Structural Coefficient:** 0.41
- **Aggregate Structural Coefficient:** 0.10

Based on the above design input parameters and using the design procedures contained within the AASHTO 1993 Design of Pavement Structures Manual, a Structural Number (SN) of 2.6 was determined.

In this regard, we recommend the following flexible pavement section for the construction of new Local Residential Streets:

Material Type	Pavement Section (inches)
Asphaltic Concrete	4.0
Aggregate Base Rock	10.0

Wet Weather Grading and Soft Spot Mitigation

Construction of the proposed new public street improvements is generally recommended during dry weather. However, during wet weather grading and construction, excavation to subgrade can proceed during periods of light to moderate rainfall provided that the subgrade remains covered with aggregate. A total aggregate thickness of 8-inches may be necessary to protect the subgrade soils from heavy construction traffic. Construction traffic should not be allowed directly on the exposed subgrade but only atop a sufficient compacted base rock thickness to help mitigate subgrade pumping.

If the subgrade becomes wet and pumps, no construction traffic shall be allowed on the road alignment. Positive site drainage away from the street shall be maintained if site paving will not occur before the on-set of the wet season.

Depending on the timing for the project, any soft subgrade found during proof-rolling or by visual observations can either be removed and replaced with properly dried and compacted fill soils or removed and replaced with compacted crushed aggregate. However, and where approved by the Geotechnical Engineer, the soft area may be covered with a bi-axial geogrid and covered with compacted crushed aggregate.

Soil Shrink-Swell and Frost Heave

The results of the laboratory "R"-value tests indicate that the native subgrade soils possess a low to moderate expansion potential. As such, the exposed subgrade soils should not be allowed to completely dry and should be moistened to near optimum moisture content (plus or minus 3 percent) at the time of the placement of the crushed aggregate base rock materials. Additionally, exposure of the subgrade soils to freezing weather may result in frost heave and softening of the subgrade. As such, all subgrade soils exposed to freezing weather should be evaluated and approved by the Geotechnical Engineer prior to the placement of the crushed aggregate base rock materials.

Excavation/Slopes

Temporary excavations of up to about four (4) feet in depth may be constructed with near vertical inclinations. Temporary excavations greater than about four (4) feet but less than eight (8) feet should be excavated with inclinations of at least 1 to 1 (horizontal to vertical) or properly braced/shored. Where excavations are planned to exceed about eight (8) feet, this office should be consulted. All shoring systems and/or temporary excavation bracing for the project should be the responsibility of the excavation contractor. Permanent slopes should be constructed no steeper than about 2H to 1V unless approved by the Geotechnical Engineer.

Depending on the time of year in which trench excavations occur, trench dewatering may be required in order to maintain dry working conditions if the invert elevations of the proposed utilities are located at and/or below the groundwater level. If groundwater is encountered during utility excavation work, we recommend placing trench stabilization materials along the base of the excavation. Trench stabilization materials should consist of 1-foot of well-graded gravel, crushed gravel, or crushed rock with a maximum particle size of 4 inches and less than 5 percent fines passing the No. 200 sieve. The material should be free of organic matter and other deleterious material and placed in a single lift and compacted until well keyed.

Surface Drainage/Groundwater

We recommend that positive measures be taken to properly finish grade the site so that drainage waters from the residential structures and landscaping areas as well as adjacent properties or buildings are directed away from the new residential structures foundations and/or floor slabs.

All roof drainage should be directed into conduits that carry runoff water away from the residential structures to a suitable outfall. Roof downspouts should not be connected to foundation drains. A minimum ground slope of about 2 percent is generally recommended in unpaved areas around the proposed new residential structures.

Groundwater was not encountered at the site in any of the exploratory test pits (TH-#1 through TH-#8) at the time of excavation to depths of at least 7 feet beneath existing site grades. Additionally, surface water ponding was not observed at the site during our field exploration work. However, the northeasterly portion of the site contains an existing seasonal drainage basin feature. Further, groundwater elevations in the area and/or across the subject property may fluctuate seasonally and may temporarily pond/perch near the ground surface during periods of prolonged rainfall.

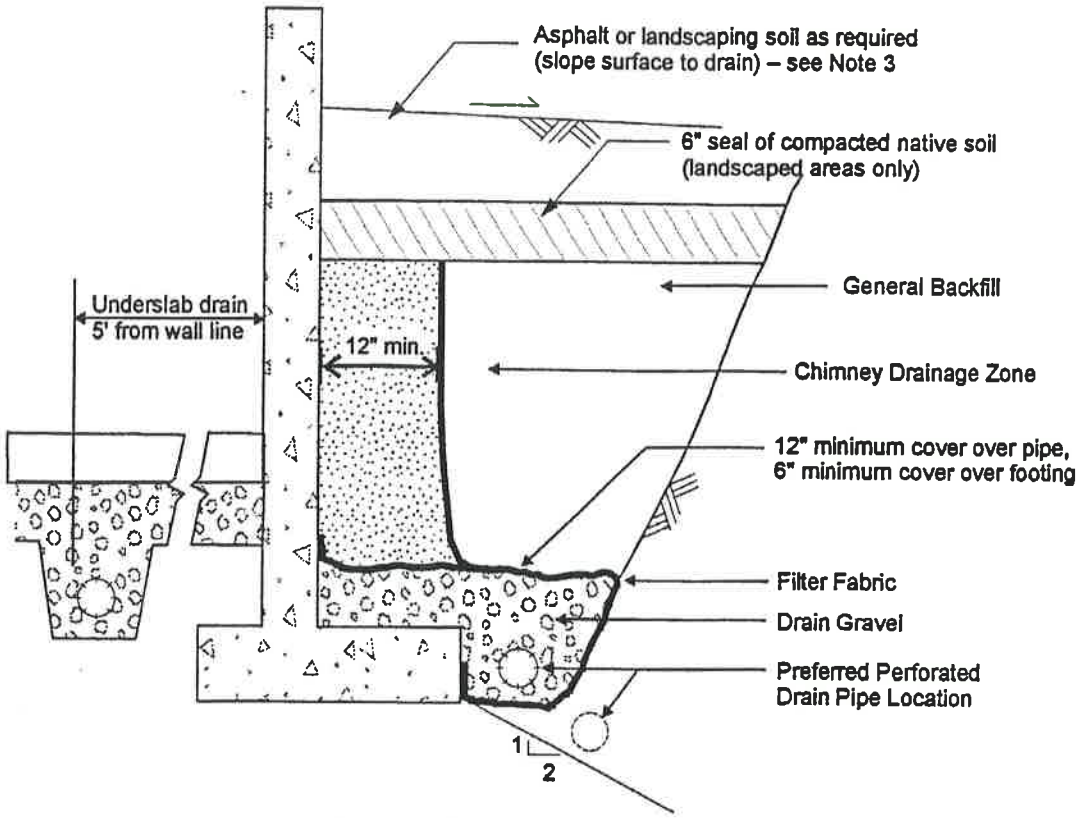
As such, based on our current understand of the possible site grading required to bring the subject site and/or residential lots to finish design grade(s), we are of the opinion that an underslab drainage system is not required for the proposed single-family residential structures. However, a perimeter foundation drain is recommended for any perimeter footings and/or below grade retaining walls. A typical recommended perimeter footing/retaining wall drain detail is shown on Figure No. 4. Further, due to our understanding that various surface infiltration ditches and/or swales may be utilized for the project as well as the relatively low infiltration rates of the near surface sandy, clayey silt subgrade soils anticipated within and/or near to the foundation bearing level of the proposed residential structures, we are generally of the opinion that storm water detention and/or disposal systems should not be utilized within the residential lots and/or around the proposed residential structures unless approved by the Geotechnical Engineer.

Design Infiltration Rates

Based on the results of our field infiltration testing, we recommend using the following infiltration rate to design any on-site near surface storm water infiltration and/or disposal systems for the project:

Subgrade Soil Type	**Recommended Infiltration Rate**
sandy, clayey SILT (ML)	0.3 to 0.4 inches per hour (in/hr)

Note: A safety factor of two (2) was used to calculate the above recommended design infiltration rate. Additionally, given the gradational variability of the on-site sandy, clayey sit subgrade soils beneath the site as well as the anticipation of some site grading for the project, it is generally recommended that field testing be performed during and/or following construction of any on-site storm water infiltration system(s) in order to confirm that the above recommended design infiltration rates are appropriate.



SCHEMATIC - NOT TO SCALE

NOTES:

1. Filter Fabric to be non-woven geotextile (Amoco 4545, Mirafi 140N, or equivalent)
2. Lay perforated drain pipe on minimum 0.5% gradient, widening excavation as required. Maintain pipe above 2:1 slope, as shown.
3. All-granular backfill is recommended for support of slabs, pavements, etc. (see text for structural fill).
4. Drain gravel to be clean, washed ¾" to 1½" gravel.
5. General backfill to be on-site gravels, or ¾""-0 or 1½"-0 crushed rock compacted to 92% Modified Proctor (AASHTO T-180).
6. Chimney drainage zone to be 12" wide (minimum) zone of clean washed, medium to coarse sand or drain gravel if protected with filter fabric. Alternatively, prefabricated drainage structures (Miradrain 6000 or similar) may be used.

PERIMETER FOOTING/RETAINING WALL DETAIL

Project No. 1001.052.G	DEVON AVENUE SUBDIVISION TL 300, 6719 DEVON AVENUE SE	Figure No. 4

Seismic Design Considerations

Structures at the site should be designed to resist earthquake loading in accordance with the methodology described in the latest edition (2014) of the State of Oregon Structural Specialty Code (OSSC) and/or Amendments to the 2015 International Building Code (IBC). The maximum considered earthquake ground motion for short period and 1.0 period spectral response may be determined from the Oregon Structural Specialty Code and/or from the National Earthquake Hazard Reduction Program (NEHRP) "Recommended Provisions for Seismic Regulations for New Buildings and Other Structures" published by the Building Seismic Safety Council.

We recommend Site Class "C" be used for design. Using this information, the structural engineer can select the appropriate site coefficient values (F_a and F_v) from the 2015 IBC to determine the maximum considered earthquake spectral response acceleration for the project. However, we have assumed the following response spectrum for the project:

Table 1. Recommended Seismic Design Parameters

Site Class	S_S	S_1	Fa	Fv	S_{MS}	S_{M1}	S_{DS}	S_{D1}
C	0.917	0.435	1.033	1.365	0.947	0.594	0.631	0.396

Notes: 1. S_S and S_1 were established based on the USGS 2015 mapped maximum considered earthquake spectral acceleration maps for 2% probability of exceedence in 50 years.

2. Fa and Fv were established based on IBC 2015 tables using the selected S_S and S_1 values.

CONSTRUCTION MONITORING AND TESTING

We recommend that **Redmond Geotechnical Services, LLC** be retained to provide construction monitoring and testing services during all earthwork operations for the proposed new residential development. The purpose of our monitoring services would be to confirm that the site conditions reported herein are as anticipated, provide field recommendations as required based on the actual conditions encountered, document the activities of the grading contractor and assess his/her compliance with the project specifications and recommendations. It is important that our representative meet with the contractor prior to any site grading to help establish a plan that will minimize costly over-excavation and site preparation work. Of primary importance will be observations made during site preparation and stripping, structural fill placement, footing excavations and construction as well as retaining wall backfill.

CLOSURE AND LIMITATIONS

This report is intended for the exclusive use of the addressee and/or their representative(s) to use to design and construct the proposed new single-family residential structures and their associated site improvements described herein as well as to prepare any related construction documents. The conclusions and recommendations contained in this report are based on site conditions as they presently exist and assume that the explorations are representative of the subsurface conditions between the explorations and/or at other locations across the study area. The data, analyses, and recommendations herein may not be appropriate for other structures and/or purposes. We recommend that parties contemplating other structures and/or purposes contact our office. In the absence of our written approval, we make no representation and assume no responsibility to other parties regarding this report. Additionally, the above recommendations are contingent on Redmond Geotechnical Services, LLC being retained to provide all site inspections and constriction monitoring services for this project. Redmond Geotechnical Services, LLC will not assume any responsibility and/or liability for any engineering judgment, inspection and/or testing services performed by others.

It is the owners/developers responsibility for insuring that the project designers and/or contractors involved with this project implement our recommendations into the final design plans, specifications and/or construction activities for the project. Further, in order to avoid delays during construction, we recommend that the final design plans and specifications for the project be reviewed by our office to evaluate as to whether our recommendations have been properly interpreted and incorporated into the project.

If during any future site grading and construction, subsurface conditions different from those encountered in the explorations are observed or appear to be present beneath excavations, we should be advised immediately so that we may review these conditions and evaluate whether modifications of the design criteria are required. We also should be advised if significant modifications of the proposed site development are anticipated so that we may review our conclusions and recommendations.

LEVEL OF CARE

The services performed by the Geotechnical Engineer for this project have been conducted with that level of care and skill ordinarily exercised by members of the profession currently practicing in the area under similar budget and time restraints. No warranty or other conditions, either expressed or implied, is made.

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Appendix "A"

Test Pit Logs and Laboratory Test Data

APPENDIX

FIELD EXPLORATIONS AND LABORATORY TESTING

FIELD EXPLORATION

Subsurface conditions at the site were explored by excavating eight (8) exploratory test pits (TH-#1 through TH-#8) on July 11, 2017. The approximate location of the test pit explorations are shown in relation to the proposed new residential lots and the associated site improvements on the Site Exploration Plan, Figure No. 2.

The test pits were excavated using track-mounted excavating equipment in general conformance with ASTM Methods in Vol. 4.08, D-1586-94 and D-1587-83. The test pits were excavated to depths ranging from about 5.0 to 6.0 feet beneath existing site grades. Detailed logs of the test pits are presented on the Log of Test Pits, Figure No's. A-5 through A-8. The soils were classified in accordance with the Unified Soil Classification System (USCS), which is outlined on Figure No. A-4.

The exploration program was coordinated by a field engineer who monitored the excavating and exploration activity, obtained representative samples of the subsurface soils encountered, classified the soils by visual and textural examination, and maintained continuous logs of the subsurface conditions. Disturbed and/or undisturbed samples of the subsurface soils were obtained at appropriate depths and/or intervals and placed in plastic bags and/or with a thin walled ring sample.

Groundwater was not encountered in any of the exploratory test pits (TH-#1 through TH-#8) at the time of excavating to depths of at least 6.0 feet beneath existing surface grades.

LABORATORY TESTING

Pertinent physical and engineering characteristics of the soils encountered during our subsurface investigation were evaluated by a laboratory testing program to be used as a basis for selection of soil design parameters and for correlation purposes. Selected tests were conducted on representative soil samples. The program consisted of tests to evaluate the existing (in-situ) moisture-density, maximum dry density and optimum moisture content, expansion index, gradational characteristics, and Atterberg Limits as well as direct shear strength and "R"-value tests.

Dry Density and Moisture Content Determinations

Density and moisture content determinations were performed on both disturbed and relatively undisturbed samples from the test pit explorations in general conformance with ASTM Vol. 4.08 Part D-216. The results of these tests were used to calculate existing overburden pressures and to correlate strength and compressibility characteristics of the soils. Test results are shown on the test pit logs at the appropriate sample depths.

Maximum Dry Density

Two (2) Maximum Dry Density and Optimum Moisture Content tests were performed on representative samples of the on-site sandy, clayey silt subgrade soils in accordance with ASTM Vol. 4.08 Part D-1557. This tests were conducted to help establish various engineering properties for use as structural fill. The test results are presented on Figure No. A-9.

Expansion Index

Two (2) Expansion Index tests were performed on representative samples of the near surface clayey silt subgrade soils in accordance with ASTM Vol. 4.08 Part D-4829-95. The tests were conducted to help evaluate the expansive properties of the near surface soils and their potential impact to residential foundations. The test results are presented on Figure No. A-9.

Atterberg Limits

Two (2) Liquid Limit (LL) and Plastic Limit (PL) tests were performed on representative samples of the sandy, clayey silt subgrade soils in accordance with ASTM Vol. 4.08 Part D-4318-85. These tests were conducted to facilitate classification of the soils and for correlation purposes. The test results appear on Figure No. A-10.

Gradation Analysis

Two (2) Gradation analyses were performed on representative samples of the sandy, clayey silt subgrade soils in accordance with ASTM Vol. 4.08 Part D-422. The test results were used to classify the soil in accordance with the Unified Soil Classification System (USCS). The test results are shown graphically on Figure No. A-11.

Direct Shear Strength Test

One (1) Direct Shear Strength test was performed on an undisturbed and/or remolded sample at a continuous rate of shearing deflection (0.02 inches per minute) in accordance with ASTM Vol. 4.08 Part D-3080-79. The test results were used to determine engineering strength properties and are shown graphically on Figure No. A-12.

"R"-Value Tests

Two (2) "R"-value tests were performed on remolded sandy, clayey silt subgrade soil samples in accordance with ASTM Vol. 4.08 Part D-2844. The test results were used to help evaluate the subgrade soils supporting and performance capabilities when subjected to traffic loading. The test results are shown on Figure No. A-13.

The following figures are attached and complete the Appendix:

Figure No. A-4	Key To Exploratory Test Pit Logs
Figure No's. A-5 through A-8	Log of Test Pits/Dynamic Cone
Figure No. A-9	Maximum Density & Expansion Index Test Results
Figure No. A-10	Atterberg Limits Test Results
Figure No. A-11	Gradation Test Results
Figure No. A-12	Direct Shear Strength Test Results
Figure No. A-13	Results of "R"-Value Tests
Figure No's. A-14 and A-15	Field Infiltration Test Results

PRIMARY DIVISIONS			GROUP SYMBOL	SECONDARY DIVISIONS
COARSE GRAINED SOILS — MORE THAN HALF OF MATERIAL IS LARGER THAN NO. 200 SIEVE SIZE	GRAVELS — MORE THAN HALF OF COARSE FRACTION IS LARGER THAN NO. 4 SIEVE	CLEAN GRAVELS (LESS THAN 5% FINES)	GW	Well graded gravels, gravel-sand mixtures, little or no fines.
			GP	Poorly graded gravels or gravel-sand mixtures, little or no fines.
		GRAVEL WITH FINES	GM	Silty gravels, gravel-sand-silt mixtures, non-plastic fines.
			GC	Clayey gravels, gravel-sand-clay mixtures, plastic fines.
	SANDS — MORE THAN HALF OF COARSE FRACTION IS SMALLER THAN NO. 4 SIEVE	CLEAN SANDS (LESS THAN 5% FINES)	SW	Well graded sands, gravelly sands, little or no fines.
			SP	Poorly graded sands or gravelly sands, little or no fines.
		SANDS WITH FINES	SM	Silty sands, sand-silt mixtures, non-plastic fines.
			SC	Clayey sands, sand-clay mixtures, plastic fines.
FINE GRAINED SOILS — MORE THAN HALF OF MATERIAL IS SMALLER THAN NO. 200 SIEVE SIZE	SILTS AND CLAYS — LIQUID LIMIT IS LESS THAN 50%		ML	Inorganic silts and very fine sands, rock flour, silty or clayey fine sands or clayey silts with slight plasticity.
			CL	Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays, lean clays.
			OL	Organic silts and organic silty clays of low plasticity.
	SILTS AND CLAYS — LIQUID LIMIT IS GREATER THAN 50%		MH	Inorganic silts, micaceous or diatomaceous fine sandy or silty soils, elastic silts.
			CH	Inorganic clays of high plasticity, fat clays.
			OH	Organic clays of medium to high plasticity, organic silts.
HIGHLY ORGANIC SOILS			Pt	Peat and other highly organic soils.

DEFINITION OF TERMS

	U.S. STANDARD SERIES SIEVE			CLEAR SQUARE SIEVE OPENINGS				
	200	40	10	4	3/4"	3"	12"	
SILTS AND CLAYS	SAND			GRAVEL		COBBLES	BOULDERS	
	FINE	MEDIUM	COARSE	FINE	COARSE			

GRAIN SIZES

SANDS, GRAVELS AND NON-PLASTIC SILTS	BLOWS/FOOT†
VERY LOOSE	0 - 4
LOOSE	4 - 10
MEDIUM DENSE	10 - 30
DENSE	30 - 50
VERY DENSE	OVER 50

RELATIVE DENSITY

CLAYS AND PLASTIC SILTS	STRENGTH‡	BLOWS/FOOT†
VERY SOFT	0 - 1/4	0 - 2
SOFT	1/4 - 1/2	2 - 4
FIRM	1/2 - 1	4 - 8
STIFF	1 - 2	8 - 16
VERY STIFF	2 - 4	16 - 32
HARD	OVER 4	OVER 32

CONSISTENCY

†Number of blows of 140 pound hammer falling 30 inches to drive a 2 inch O.D. (1-3/8 inch I.D.) split spoon (ASTM D-1586).

‡Unconfined compressive strength in tons/sq. ft. as determined by laboratory testing or approximated by the standard penetration test (ASTM D-1586), pocket penetrometer, torvane, or visual observation.

REDMOND GEOTECHNICAL SERVICES
PO BOX 20547 • PORTLAND, OREGON 97294

KEY TO EXPLORATORY TEST PIT LOGS
Unified Soil Classification System (ASTM D-2487)

DEVON AVENUE SUBDIVISION
TL 300, 6719 DEVON AVENUE SE

PROJECT NO.	DATE	
1001.052.G	8/11/17	Figure A-4

BACKHOE COMPANY: Gene S McMurrin BUCKET SIZE: 24 inches DATE: 7/11/17

DEPTH (FEET)	BAG SAMPLE	DENSITY TEST	DRY DENSITY (pcf)	MOISTURE CONTENT (%)	SOIL CLASS. (U.S.C.S.)	SOIL DESCRIPTION
TEST PIT NO. TH-#1 ELEVATION						
0					ML	Dark brown, moist, soft, organic, sandy, clayey SILT (Topsoil)
	X			21.1		
					ML	Medium to reddish-brown, moist to very moist, medium stiff to stiff, sandy, clayey SILT
	X			14.8		
5					SM/RK	Medium to orangish-brown, moist, medium dense to dense, clayey, silty SAND to highly weathered bedrock
						Total Depth = 6.0 feet No groundwater encountered at time of exploration
10						
15						
TEST PIT NO. TH-#2 ELEVATION						
0					ML	Dark brown, moist, soft, organic, sandy, clayey SILT (Topsoil)
	X			33.5		
					ML	Medium to reddish-brown, moist to very moist, medium stiff to stiff, sandy, clayey SILT
5					SM/RK	Medium to orangish-brown, moist to very moist, medium dense to dense, clayey, silty SAND to highly weathered bedrock
						Total Depth = 6.0 feet No groundwater encountered at time of exploration
10						
15						

LOG OF TEST PITS

PROJECT NO. 1001.052.G | DEVON AVENUE SUBDIVISION | FIGURE NO. A-5

BACKHOE COMPANY: Gene S. McMurrin BUCKET SIZE: 24 inches DATE: 7/11/17

DEPTH (FEET)	BAG SAMPLE	DENSITY TEST	DRY DENSITY (pcf)	MOISTURE CONTENT (%)	SOIL CLASS. (U.S.C.S.)	SOIL DESCRIPTION
						TEST PIT NO. TH-#3 ELEVATION
0					ML	Dark brown, moist, soft, organic, sandy, clayey SILT (Topsoil)
	X			26.6	ML	Medium to reddish-brown, moist to very moist, medium stiff to stiff, sandy, clayey SILT
	X			15.1		
5					SM/RK	Medium to orangish-brown, moist to very moist, medium dense to dense, clayey, silty SAND to highly weathered bedrock
						Total Depth = 5.0 feet No groundwater encountered at time of exploration
10						
15						
						TEST PIT NO. TH-#4 ELEVATION
0					ML	Dark brown, moist, soft, organic, sandy, clayey SILT (Topsoil)
	X			20.5	ML	Medium to reddish-brown, moist to very moist, medium stiff to stiff, sandy, clayey SILT
5					SM/RK	Medium to orangish-brown, moist, medium dense to dense, clayey, silty SAND to highly weathered bedrock
						Total Depth = 5.0 feet No groundwater encountered at time of exploration
10						
15						

LOG OF TEST PITS

PROJECT NO. 1001.052.G | DEVON AVENUE SUBDIVISION | FIGURE NO. A-6

BACKHOE COMPANY: Gene S. McMurrin BUCKET SIZE: 24 inches DATE: 7/11/17

DEPTH (FEET)	BAG SAMPLE	DENSITY TEST	DRY DENSITY (pcf)	MOISTURE CONTENT (%)	SOIL CLASS. (U.S.C.S.)	SOIL DESCRIPTION
						TEST PIT NO. TH-#5 ELEVATION
0					ML	Dark brown, moist, soft, organic, sandy, clayey SILT (Topsoil)
					ML	Medium to reddish-brown, moist to very moist, medium stiff to stiff, sandy, clayey SILT
5					SM/RK	Medium to orangish-brown, moist to very moist, medium dense to dense, clayey, silty SAND to highly weathered bedrock
						Total Depth = 5.0 feet No groundwater encountered at time of exploration
10						
15						
						TEST PIT NO. TH-#6 ELEVATION
0					ML	Dark brown, moist, soft, organic, sandy, clayey SILT (Topsoil)
					ML	Medium to reddish-brown, moist to very moist, medium stiff to stiff, sandy, clayey SILT
5					SM/RK	Medium to orangish-brown, moist, medium dense to dense, clayey, silty SAND to highly weathered bedrock
						Total Depth = 6.0 feet No groundwater encountered at time of exploration
10						
15						

LOG OF TEST PITS

PROJECT NO. 1001.052.G | DEVON AVENUE SUBDIVISION | FIGURE NO. A-7

BACKHOE COMPANY: Gene S. McMurrin BUCKET SIZE: 24 inches DATE: 7/11/17

DEPTH (FEET)	BAG SAMPLE	DENSITY TEST	DRY DENSITY (pcf)	MOISTURE CONTENT (%)	SOIL CLASS. (U.S.C.S.)	SOIL DESCRIPTION
						TEST PIT NO. TH-#7 ELEVATION
0					ML	Dark brown, moist, soft, organic, sandy, clayey SILT (Topsoil)
					ML	Medium to reddish-brown, moist to very moist, medium stiff to stiff, sandy, clayey SILT
5					SM/RK	Medium to orangish-brown, moist, medium dense to dense, clayey, silty SAND to highly weathered bedrock
						Total Depth = 5.0 feet No groundwater encountered at time of exploration
10						
15						
						TEST PIT NO. TH-#8 ELEVATION
0	X			19.9	ML	Dark brown, moist, soft, organic, sandy, clayey SILT (Topsoil)
					ML	Medium to reddish-brown, moust to very moist, medium stiff to stiff, sandy, clayey SILT
5					SM/RK	Medium to orangish-brown, moist, medium dense to dense, clayey, silty SAND to highly weathered bedrock
						Total Depth = 5.0 feet No groundwater encountered at time of exploration
10						
15						

LOG OF TEST PITS

PROJECT NO. 1001.052.G | DEVON AVENUE SUBDIVISION | FIGURE NO. A-8

MAXIMUM DENSITY TEST RESULTS

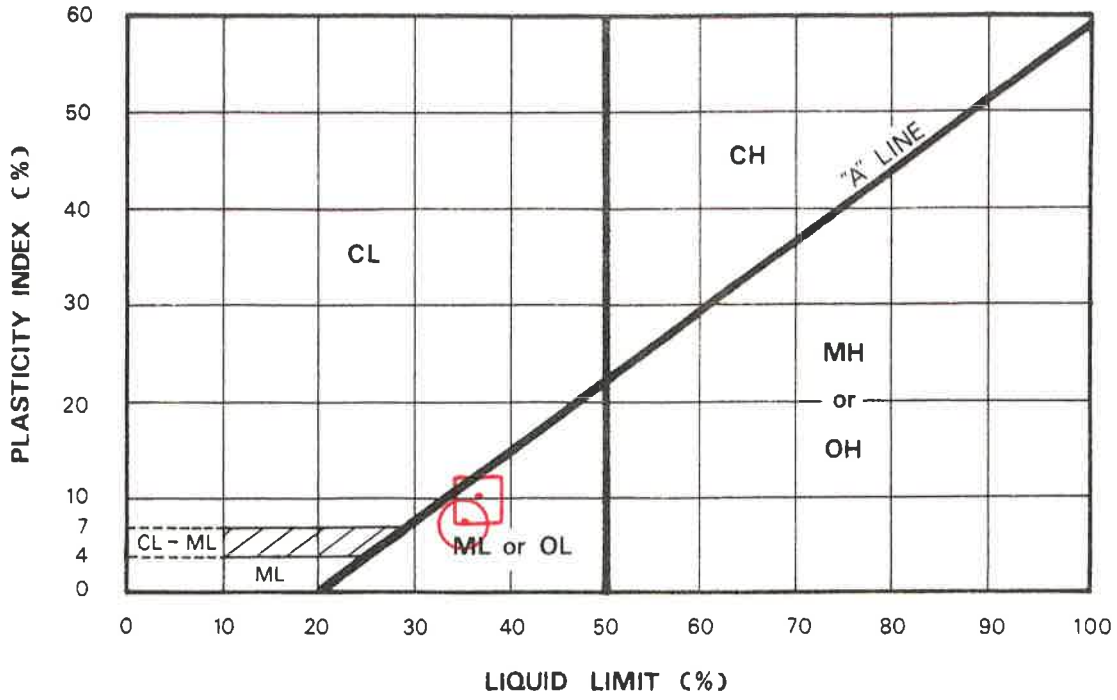
SAMPLE LOCATION	SOIL DESCRIPTION	MAXIMUM DRY DENSITY (pcf)	OPTIMUM MOISTURE CONTENT (%)
TH-#1 @ 1.5'	Medium to reddish-brown, sandy, clayey SILT (ML)	102.0	28.0
TH-#2 @ 1.5'	Medium to reddish-brown, sandy, clayey SILT (ML)	100.0	30.0

EXPANSION INDEX TEST RESULTS

SAMPLE LOCATION	INITIAL MOISTURE (%)	COMPACTED DRY DENSITY (pcf)	FINAL MOISTURE (%)	VOLUMETRIC SWELL (%)	EXPANSION INDEX	EXPANSIVE CLASS.

MAXIMUM DENSITY & EXPANSION INDEX TEST RESULTS

PROJECT NO.: 1001.052.G | DEVON AVENUE SUBDIVISION | FIGURE NO.: A-9



KEY SYMBOL	BORING NO.	SAMPLE DEPTH (feet)	NATURAL WATER CONTENT %	LIQUID LIMIT %	PLASTICITY INDEX %	PASSING NO. 200 SIEVE %	LIQUIDITY INDEX	UNIFIED SOIL CLASSIFICATION SYMBOL
⊙	TH-#1	1.5	21.1	35.0	7.2	90.9		ML
▣	TH-#2	1.5	33.5	37.2	10.1	86.3		ML

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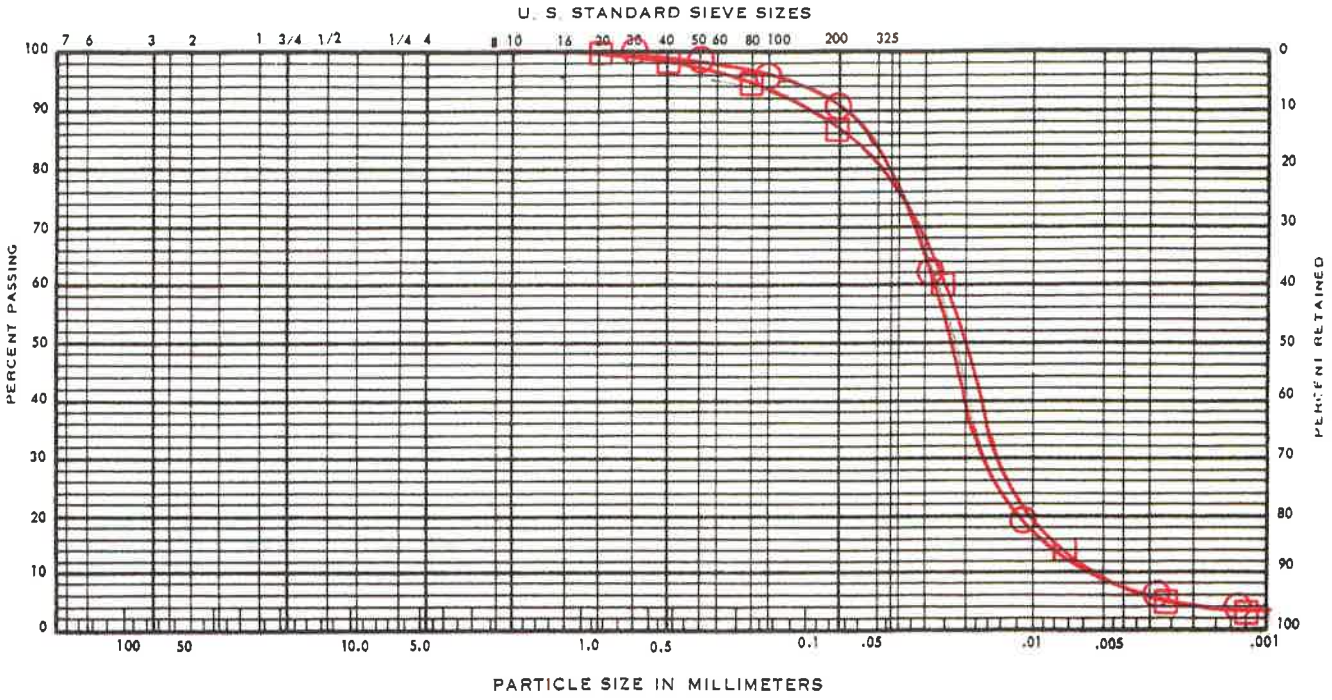
PLASTICITY CHART AND DATA

DEVON AVENUE SUBDIVISION
TL 300, 6719 DEVON AVENUE SE

PROJECT NO.	DATE	
1001.052.G	8/11/17	Figure A-10

UNIFIED SOIL CLASSIFICATION SYSTEM

(ASTM D 422-72)



COBBLES	GRAVEL		SAND			SILT AND CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE	

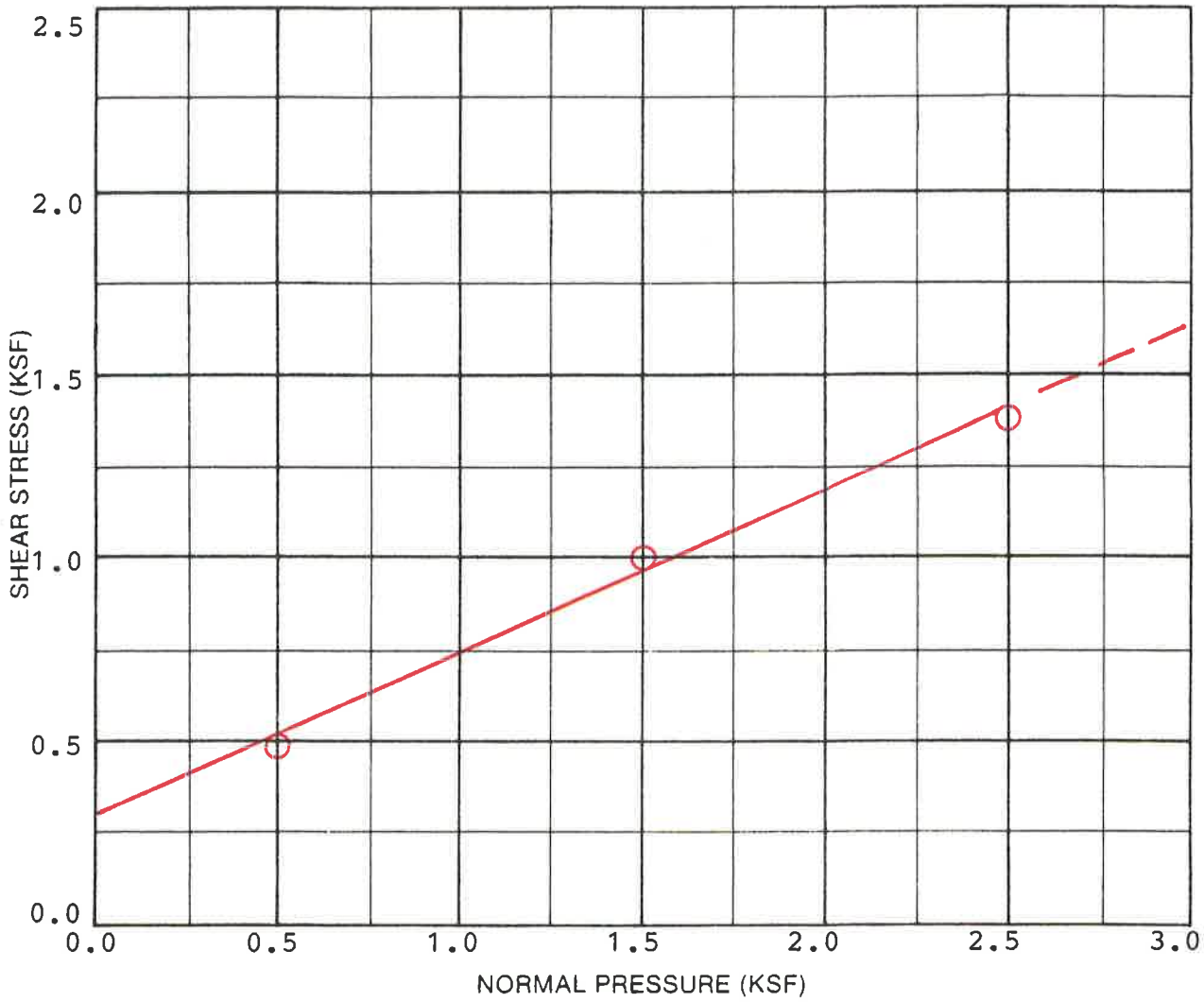
KEY SYMBOL	BORING NO.	SAMPLE DEPTH (feet)	ELEV. (feet)	UNIFIED SOIL CLASSIFICATION SYMBOL	SAMPLE DESCRIPTION
⊖	TH-#1	1.5		ML	Medium to reddish-brown, sandy, clayey SILT
⊟	TH-#2	1.5		ML	Medium to reddish-brown, sandy, clayey SILT

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GRADATION TEST DATA

DEVON AVENUE SUBDIVISION
TL 300, 6719 DEVON AVENUE SE

PROJECT NO.	DATE	FIGURE A-11



SAMPLE DATA	
DESCRIPTION: Medium to reddish-brown, sandy, clayey SILT (ML) (Remolded)	
BORING NO.: TH-#2	
DEPTH (ft.): 1.5'	ELEVATION (ft):
TEST RESULTS	
APPARENT COHESION (C): 300 psf	
APPARENT ANGLE OF INTERNAL FRICTION (Φ): 22°	

TEST DATA				
TEST NUMBER	1	2	3	4
NORMAL PRESSURE (KSF)	0.5	1.5	2.5	
SHEAR STRENGTH (KSF)	0.5	1.0	1.4	
INITIAL H_2O CONTENT (%)	30.0	30.0	30.0	
FINAL H_2O CONTENT (%)	30.6	26.1	20.9	
INITIAL DRY DENSITY (PCF)	90.0	90.0	90.0	
FINAL DRY DENSITY (PCF)	90.4	94.6	99.8	
STRAIN RATE: 0.02 inches per minute				

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DIRECT SHEAR TEST DATA

DEVON AVENUE SUBDIVISION
TL 300, 6719 DEVON AVENUE SE

PROJECT NO	DATE	Figure A-12

RESULTS OF R (RESISTANCE) VALUE TESTS

SAMPLE LOCATION: TH-#1

SAMPLE DEPTH: 1.5 feet bgs

Specimen	A	B	C
Exudation Pressure (psi)	219	329	431
Expansion Dial (o.ooo1")	0	1	3
Expansion Pressure (psf)	0	3	9
Moisture Content (%)	30.6	27.4	22.1
Dry Density (pcf)	93.4	98.2	102.6
Resistance Value, "R"	17	29	37
"R"-Value at 300 psi Exudation Pressure = 28			

SAMPLE LOCATION: TH-#2

SAMPLE DEPTH: 1.5 feet bgs

Specimen	A	B	C
Exudation Pressure (psi)	208	326	439
Expansion Dial (0.0001")	0	2	5
Expansion Pressure (psf)	0	6	15
Moisture Content (%)	32.3	28.6	23.9
Dry Density (pcf)	92.1	96.1	100.7
Resistance Value "R"	15	27	35
"R"-Value at 300 psi Exudation Pressure = 26			

Division 004 Appendix C - Infiltration Testing

Location: TL 300, 6719 Devon Avenue SE	**Date:** July 11, 2017	**Test Hole:** TH-#2
Depth to Bottom of Hole: 3.0 feet	**Hole Diameter:** 6 inches	**Test Method:** Encased Falling Head
Tester's Name: Daniel M. Redmond, P.E., G.E. **Tester's Company:** Redmond Geotechnical Services, LLC		**Tester's Contact Number:** 503-285-0598

Depth (feet)	Soil Characteristics
0-0.5	Dark brown Topsoil
0.5-3.0	Medium to reddish-brown, sandy, clayey SILT (ML)

Time	Time Interval (Minutes)	Measurement (inches)	Drop in Water (inches)	Infiltration Rate (inches/hour)	Remarks
10:00	0	24.00	----		Filled w/12" water
10:20	20	24.50	0.50	1.50	
10:40	20	24.92	0.42	1.26	
11:00	20	25.27	0.35	1.05	
11:20	20	25.57	0.30	0.90	
11:40	20	25.83	0.26	0.78	
12:00	20	26.06	0.23	0.69	
12:20	20	26.27	0.21	0.63	
12:40	20	26.47	0.20	0.60	

Infiltration Test Data Table

Division 004 Appendix C - Infiltration Testing

Location: TL 300, 6719 Devon Avenue SE	**Date:** July 11, 2017	**Test Hole:** TH-#3
Depth to Bottom of Hole: 2.0 feet	**Hole Diameter:** 6 inches	**Test Method:** Encased Falling Head
Tester's Name: Daniel M. Redmond, P.E., G.E. **Tester's Company:** Redmond Geotechnical Services, LLC		**Tester's Contact Number:** 503-285-0598

Depth (feet)	Soil Characteristics
0-0.5	Dark brown Topsoil
0.5-2.0	Medium to reddish-brown, sandy, clayey SILT (ML)

Time	Time Interval (Minutes)	Measurement (inches)	Drop in Water (inches)	Infiltration Rate (inches/hour)	Remarks
10:20	0	12.00	----		Filled w/12" water
10:40	20	12.70	0.70	2.10	
11:00	20	13.22	0.52	1.56	
11:20	20	13.66	0.44	1.32	
11:40	20	14.04	0.38	1.14	
12:00	20	14.37	0.33	0.99	
12:20	20	14.67	0.30	0.90	
12:40	20	14.95	0.28	0.84	
1:00	20	15.22	0.27	0.81	

Infiltration Test Data Table

Appendix "B"

Geologic Hazard Assessment

NORTHWEST GEOLOGICAL SERVICES, INC.
Consulting Geologists and Hydrogeologists
2505 N.E. 42nd Avenue, Portland, Oregon 97213-1201
503-249-1093 ngs@teleport.com

Redmond Geotechnical Services, LLC 27 July 2017
P.O. Box 20547
Portland, Oregon 97294

Attn: Dan Redmond

Geological Assessment
8S/3W-22C Tax Lot 300
Salem, Marion County, Oregon

Dear Dan:

The purpose of this letter is to present Northwest Geological Services, Inc. (NGS') Geologic Hazard Assessment for the above referenced property. This study includes the engineering geology tasks required by Salem and Marion County to develop in areas that appear to have potential geologic hazards. We understand that our services are in support of your client's efforts to partition and develop the property for residential use. The current proposal is to partition the site into approximately 80 residential lots with access streets, and infrastructure as needed. The work for this study was done in accordance with your email authorization of 28 June 2017.

1. SCOPE OF STUDY

The scope of our study was limited to the engineering geologic consultation necessary to assess potential slope hazards, as required by Salem and Marion County. Specifically, our work included:

- Obtain and review LIDAR and historic aerial photographs of the site;
- Obtain and review well logs for the site area;
- Review available geologic and geologic hazard investigations of the site and site area;
- Conduct a geologic reconnaissance of the site and adjacent area;
- Evaluate the potential landslide hazards using the information developed; and,
- Prepare this letter describing our work, findings and recommendations.

Our work did not include some items the County may request for Geological Assessments of slope hazard areas. Specifically, the excluded items are: site grading plans showing cuts and fills; and geologic cross sections showing subsurface conditions. We understand the grading plan will be developed as part of the plans for the building permit application for the site. In our opinion, the geology of the site is simple (Sections 3 and 4) and a cross section is not required to comprehend the subsurface conditions. Nor is a grading plan necessary to asses the stability of the natural slopes. However, those items should be developed in the Geotechnical report for the site.

2. SITE SETTING

The site is south of Battle Creek, north of Rees Hill Rd. and west of Devon Ave SE (Figures 1 and 2) in the northeast corner of the southwest quarter of Section 22, T8S/R3W. The 19.89 acre property is currently accessed from Devon Ave SE. City of Salem Zoning Map 8322S (S ½ 22-8S3W) shows the site is zoned RA (Residential Agricultural). The site is in the South Salem Hills Ground Water Limited Area.

2.1 Location and Physiography

The property is south of Battle Creek and straddles the summit of Reese Hill, a NE-SW ridge that extends from Hylo Rd. SE northeast to Battle Creek (Figures 1 and 2). An intermittent tributary of Battle Creek extend N-S just west of the site. Elevations at the site range from about 652 ft in the south central area (i.e., Reese Hill) down to about 546 ft at the NW corner (Figures 1 and 4). Overall slopes are gentle, but local steep areas occur (Figures 1, 2, 4 and Section 3.2). The overall slope west from the crest of Reese Hill averages 11% to 14%. The slope east towards Devon Ave SE averages 4% to 7%. Both west and east slopes have locally irregular topography with small scale areas of slope up to 30% or rarely 50% (Figure 4). These declivities are 4 to 6 ft high by 20 to 50 ft wide mounds. They lack corresponding uphill depressions as one would expect of slope failures.[1]

The west northeast parts of the site – the areas with irregular topography – are currently covered by mixed conifer and deciduous trees with understory brush (Figure 2). The mature trees have significant root mounds because of the shallow site soils (Figures 4 and 7). Additionally, many of the irregularities appear to be remnants of the former prune orchards. The central and east parts of the site are cleared field with scattered mature Douglas Firs in the SW corner. The existing residence and outbuildings are located in the SW corner (Figure 2).

There are no drainage ways on the site. Drainage is by sheet runoff and via small, shallow declivities developed during past logging and farming of the property. Drainage is towards an unnamed tributary of Battle Creek[2] located about just west of the site and Powell Creek east of the site (Figures 1).

The geology of the area around the site (Section 2.3) is very well known. It was mapped by the State (Bella, 1981), for a Portland State MS thesis (Hoffman, 1981), by the USGS (Beeson and Tolan, 2001) and by us for Chinook Estates and Marion County (NGS, 1994, 1997). Figure 5 shows our mapping of the area around the site.[3] All studies found the site underlain by Miocene volcanic rocks of the Columbia River Basalt (Figures 3 and 4) and pre-basalt sedimentary strata at considerable depth (Section 2.3).

2.2 Site Area Geology

The site lies on the north flank of the west Salem Hills. These hills are an anticlinal uplift that extends from the Willamette River north about 10 miles to Salem and from the

1 The detailed topography (Figures 4 and 7) is interpreted from LIDAR flown for DOGAMI in 2009. Reconnaissance and digital images indicate that site clearing has smoothed or removed some irregularities.

2 Informally called Champion Swale by the City and shown as that on the City LIDAR (figures 4 and 7).

3 The geologic interpretation shown on Figure 5 is based on surficial geologic mapping, aerial photo interpretation, and our evaluation of over 200 water well logs (NGS, 1997). Identification of basalt flows is based on our previous experience and several chemical analyses done by Hoffman (1981).

river to east of I-5. Bella (1981) mapped the site as underlain by Columbia River Basalt (CRB), in substantial agreement with earlier mapping by the U.S. Geological Survey (Fox-worthy, 1970). Both studies found the CRB to be at least 350 ft thick in the site area. Our mapping (Figure 5) and review of well logs in the area indicates that the CRB is at least 350 to 400 ft thick beneath the site. The review also suggests the basalt dips gently north and northeast towards Salem.

Mapping by Hoffman (1981) identified the individual flows within the CRB. The east part of the site is underlain by the youngest hi-magnesium flow of the Grande Ronde Basalt (now known as the Sentinel Bluffs). The Winter Water flow of the Grande Ronde Basalt underlies the steeper slopes marginal to the unnamed drainage west of the site (Figures 4 and 5).

In the site area, the upper few feet of the basalt bedrock underlying ridges and hillsides is generally weathered or decomposed to a hard, red-brown gritty, silty clay or clayey silt. However, the original volcanic texture of the basalt is preserved by the weathering. Thus, the basalt is generally recognizable, even when decomposed.[4] The distinction is important, because the marine sedimentary strata are often involved in slope failures. The weathered basalt is generally not involved in slope failures, except where its physical properties have been ignored during development.

2.3 State and City Estimates of Landslide Hazard Susceptibility

The State conducted assessments of potential landslide hazards for Salem and Marion County. These included notably slide-prone parts of the area (OFR O-77-4 by Schlicker, 1977), the west Salem Hills (IMS-6 by Harvey and Peterson, 1998) and IMS-17 (Hofmeister and others, 2000). These assessments were based on the available geologic studies, including the aforementioned NGS studies, information about soils strength and GIS modeling using the USGS topographic DEM.

IMS-6 does not extend east to the site nor is the site in an active or inactive landslide area (e.g., as defined by OFR O-77-4). IMS-17 estimates the site ranges from very low to moderate relative risk of earth-induced landsliding (Figure 6). The latest State estimates are incorporated into SLIDO[5] that shows no nearby active, historic or prehistoric landslides. However, the SLIDO landslide susceptibility map shows no to moderate landslide hazard in agreement with IMS-17 estimates.

In our experience, IMS-6 estimates for water induced landslide risks in areas similar to the site are generally Category 4. Thus, were this site within the area covered by IMS-6, it would likely have a low to moderate risk of water induced landslides.

The City of Salem provides Landslide Hazard Maps based on slope (generally from LIDAR) and available risk assessments from various government sources (Figure 7). Salem's map assigns 2 to 3 landslide hazard points (low to moderate) to the site.

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4 However, the relict volcanic texture in soils derived from weathering of volcanic units can be hard to see on a cloudy or rainy day. Thus, some investigators have incorrectly mapped decomposed Columbia River Basalt as weathered tuffaceous sedimentary strata, Willamette Silt, or even landslide deposits.

5 SLIDO is Oregon State DOGAMI's Statewide Landslide Information Layer for Oregon. SLIDO compiles available DOGAMI & USGS geologic and hazard mapping: http://www.oregongeology.org/sub/slido/

3. SITE SPECIFIC STUDIES

3.1 Previous Site Development

We reviewed available historic topographic maps and aerial photographs[6] for indications of slope failures at and near the site. The aerial photographs were also reviewed to identify potential areas of cut or fill made during previous use or development of the site.

The maps and photos show that the site has a long history of use as orchard and pasture. The 1936 (Figure 8) and 1944 aerial photos, and the 1950s topographic map and aerial photos show the site as mostly prune orchard typical of the area (Meyering, 2008) with a residence in the southwest part. By 1955, the summit area was cleared of trees and used as pasture. The 1967 photos show the orchard was mostly cut with a few conifers starting in the NW and along Devon Ave SE. A few fruit tree remained along the west end of the site. Most of the site appears fallow and unused in 1967 and in 1976. However, the 1971 and 1985 photos show the east 1/3 of the site around the residence mowed, presumably for hay and/or fire control. The remainder appears to be brush and conifers. The 1990 and 1994 images show only a 2 to 3 acre area around the residence was maintained as yard. The remainder was brush and maturing conifers with a few trails cleared through the site. Digital imagery shows that from 2010 through the summer of 2016 the site was progressively cleared, trees thinned and topography between the trees smoothed.

In summary, the historic maps and photos show the site has been farm and/or orchard with a residence since the 1930s. Properties north, east and south have also been small farms and/or low-density residential. Property to the west has been intermittently logged and cleared as wood lot.

No signs of slope instability or failure were observed on the aerial photographs we examined. The resolution of the aerial photos is adequate to see vehicles on roads and relatively minor earthworks. Consequently, we believe that any significant slope failure should have been identifiable on the photos we reviewed.

3.2 Surface and Subsurface Observations

We conducted a walking reconnaissance of the site, and observed road cuts and accessible excavations in the site neighborhood. As noted, we previously mapped the site area and also conducted an assessment of TL 200 immediately north (NGS, 2008), so we reviewed maps and notes our previous work for this study.

At the highest site elevations, the surficial soils are mostly derived from weathering of the basalt bedrock with an admixture of loess blown up from the Willamette floodplain. These soils generally have a thin topsoil of fine to medium sandy clayey SILT with abundant organic material and occasional pebbles, cobbles and boulders of weathered rock. On slopes below the ridgetop, soils are decomposed basalt: red brown, stiff to hard silty sandy CLAY to sandy clayey SILT with sparse to abundant rock fragments.

Four test pits were excavated on 11 July 2017 to assess site soils (Figure 7). TP-1, -2 and -4 found severely weathered Sentinel Bluffs basalt at 3 ft, 3.5 ft and 2.5 ft, respectively. TP-3 found small boulders of weathered Winter Water basalt at 1 ft. The boulders were in a

6 Stereo pairs of aerial photos taken in 1936, 1944, 1955, 1967, 1971, 1976, 1985, 1990 and 2000 were reviewed. We also reviewed USGS, Google Earth and Earth Explorer imagery from 1994-2016.

matrix of severely weathered to decomposed basalt. Practical refusal with the small excavator was reached at depths of 3 to 5 ft in all test pits.

Soils above the weathered basalt were 1 to 2 ft of medium, red brown fine sandy SILT (loess) in TP-1 and -4. Weathered basalt in TP-3 was overlain by medium, red brown clayey SILT that graded to stiff at 2.5 ft and to hard decomposed basalt from 2.5 to 3.5-4 ft. In TP-4 the basalt was overlain by 1 ft of organic SILT topsoil.

The complete natural weathering profile is exposed north of the site in an excavation along Sahalee Dr SE. (Figure 4). About 1/4 mile north of the site, excavations for Lone Oak Rd SE expose unweathered Sentinel Bluffs and Winterwater basalt at depths of 8 to 15 ft.

In summary, soils exposed in the test pits at the site are consistent with soils in the surrounding area: thin, competent surficial soils derived mostly from in-situ weathering of the basalt with an admixture of loess along ridges and uplands. Valley soils are also competent, thin and a mix of colluvium and decomposed basalt.

3.3 Ground Water Observations

No seeps or springs were observed at the site. Springs have been reported at the contact between Sentinel Bluffs and Winterwater Basalt on neighboring properties. The nearest recorded spring is south of the site just south of Rees Hill Rd SE.

Driller's logs of nearby wells indicate that the regional water table is below the elevation of the Battle Creek flood plain. Most wells have modest yields and depths to water of 170 to 250 ft. However, local perched zones occur between the basalt flows. Such perched zones supply the aforementioned springs.

We suspect that the relatively clayey, moderately-low-permeability soils saturate quickly during heavy precipitation. That is because the severely weathered top of the basalt bedrock is shallow and relatively impervious compared to the overlying soils.

4. Interpretation of Site Conditions

The reconnaissance, test pits, area roadcuts and excavations, and historic aerial photographs, confirm that the site is underlain by bedrock consisting of Columbia River Basalt, as mapped previously (NGS, 1994, 1997, 2008). The top of the Basalt is severely weathered to decomposed, but it is still relatively competent material. The relatively fresh bedrock on the slopes is typically covered by 3 to 5 ft of soils (decomposed rock). However, basalt crops out locally and may be found near ground surface anywhere in the immediate site area.[7]

Typically, the soils derived from the basalt creep on moderate and steep slopes. Curved and pistol-butted trees are present on the steepest slopes at the site and these trees are consistent with soil creep. However, the 60 to 80 year-old firs are erect at the tops, indicating that creep is slow enough for the trees to keep up with it.

Available information indicates that the Basalt extends for 350 to 400 ft depth below the site. Site mapping indicates that the flows dip gently north beneath the site. Together

[7] Except that bedrock is at greater depths below the alluvium of the Battle Creek floodplain, north of the site, and its tributaries east and west of the site.

with the competent nature of the site materials, it seems most unlikely to us that there is any significant risk of slope failure involving the bedrock. This interpretation is **supported** by a complete lack of evidence that the site has suffered from slope instability in the past.

However, a few cuts for roads in the area have failed locally where they were too steep or became locally saturated during intense storms. Additionally, our previous experience in the area indicates that careful design and construction is required to use local soils as fill.

5. Conclusions and Recommendations

We found no evidence that slopes at the site have ever failed, nor indication that they will fail under the expected range of future conditions. The site and neighbors have survived severe rainfall events in 1964, 1974, 1994, 1996, 2003, 2006 and most recently December 2016. Numerous slides occurred at other sites in the Salem region during these severe storms.

Even though the site soils have not failed, they do creep, and similar soils have failed locally in overly-steep excavations (NGS, 2008). Consequently, we recommend that foundations be placed on competent material. Foundations and retaining walls should be designed by a qualified professional to withstand forces from soil creep and lateral loads from earthquakes. Given the thin soils and shallow depth to weathered bedrock, this requirement should not be onerous.

Cuts higher than 4 ft and steeper than 1V:2H, and fills more than 2 ft thick, should be designed by a qualified professional and the design reviewed by a geotechnical engineer. Walls, including retaining walls or foundation walls higher than 4 ft, should also be designed by a qualified professional and the design reviewed by a geotechnical Engineer.

Additionally, we recommend against infiltration of large volumes of water into the small volumes of ground, particularly during intense rainfall events such as those noted above. Some slope failures in the Eola and Salem Hills have been caused by injection of large volumes of storm water. Consequently, it is our opinion that surface runoff from roofs and pavements should be dispersed over a broad area to simulate natural conditions. If it is found necessary to dispose of large amounts runoff to the soil, the location and method should be thoroughly evaluated by a qualified professional. Your geotechnical Engineer should also review any such plans.

In our opinion, if you follow the above recommendations, partitioning and development of TL 300 for single family residences as you propose (Figure 9) should not increase the potential for slope hazards on the site or adjacent properties.

6. LIMITATIONS AND LIABILITY

We call your attention to the paragraphs on Warranty and Liability in the General Conditions (dated 1/2016) approved previously by you. Interpretations and recommendations presented herein are based on limited data and observations. Actual subsurface conditions may vary from those inferred from the limited information available to us. If site excavations for development find conditions to differ significantly from those inferred

herein, you should contact us and provide an opportunity for us to review our recommendations for the site.

We thank you for the opportunity to assist you with your project. Please contact us if you have questions about the report.

Yours very truly,
Northwest Geological Services, Inc.



Clive F. (Rick) Kienle, Jr., PhD, CEG
Principal Geologist and Vice President

NGS Reference 235.96-1

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8S/3W-22C Tax Lot 300		
Salem, Marion County, Oregon		
Landslide Hazard Study		
	Site Location Map	
NGS, Inc.	July 2017	Figure 1



8S/3W-22C Tax Lot 300
Salem, Marion County, Oregon
Landslide Hazard Study
Oblique View 23 July 2016 Aerial Image

NGS, Inc.	July 2017	Figure 2

N E SSE



Panorama of central part of site looking N (on left) and around to SSE (on right). Note brush mound at far right behind vehicle.



Mature Douglas Firs at the East end of the site show slight curvature from moderate creep in the thin site soil.

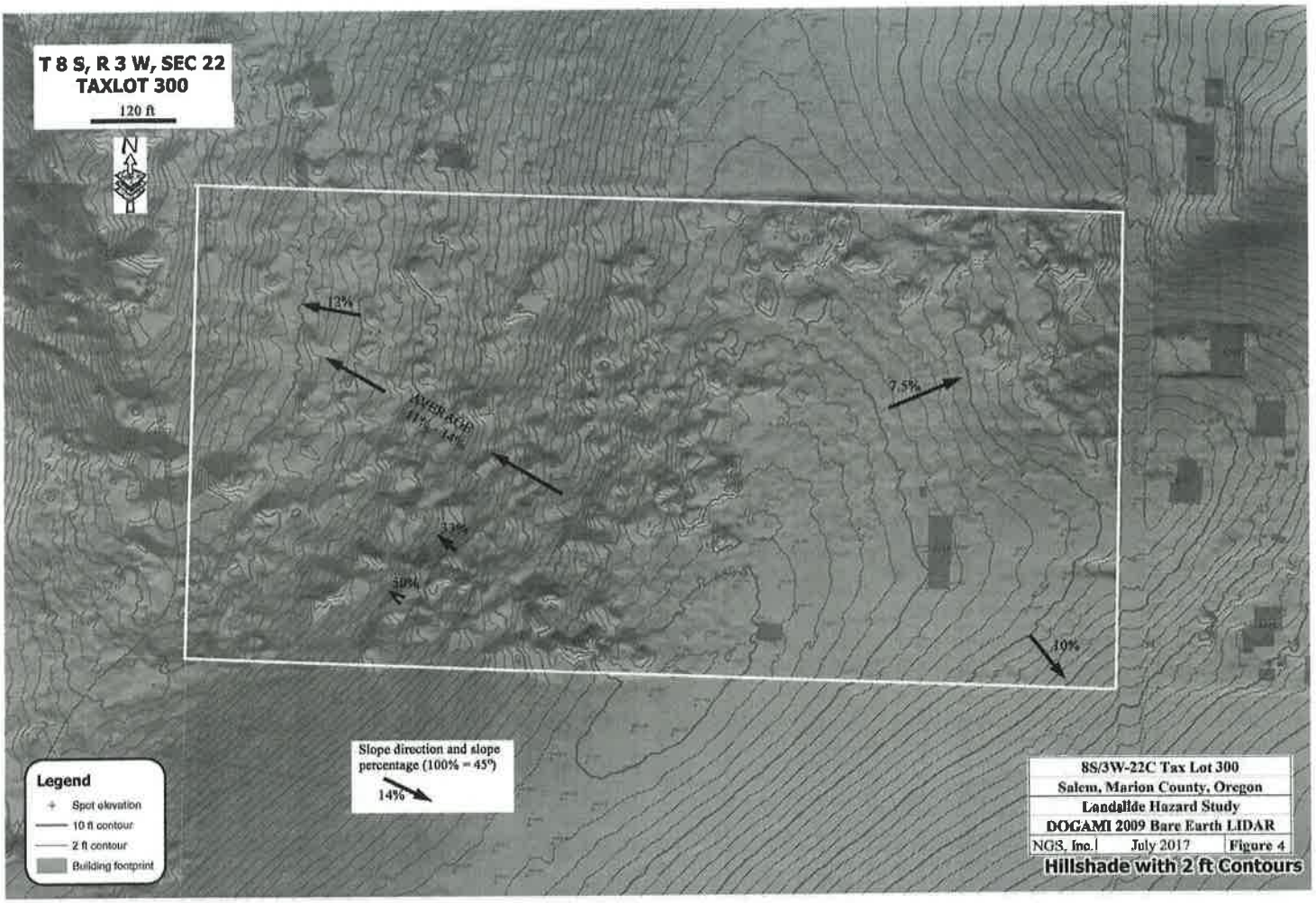


Smooth topography in NE part of site is typical of the entire site with exception of brush-covered piles of soil and woody debris left from clearing old orchard.

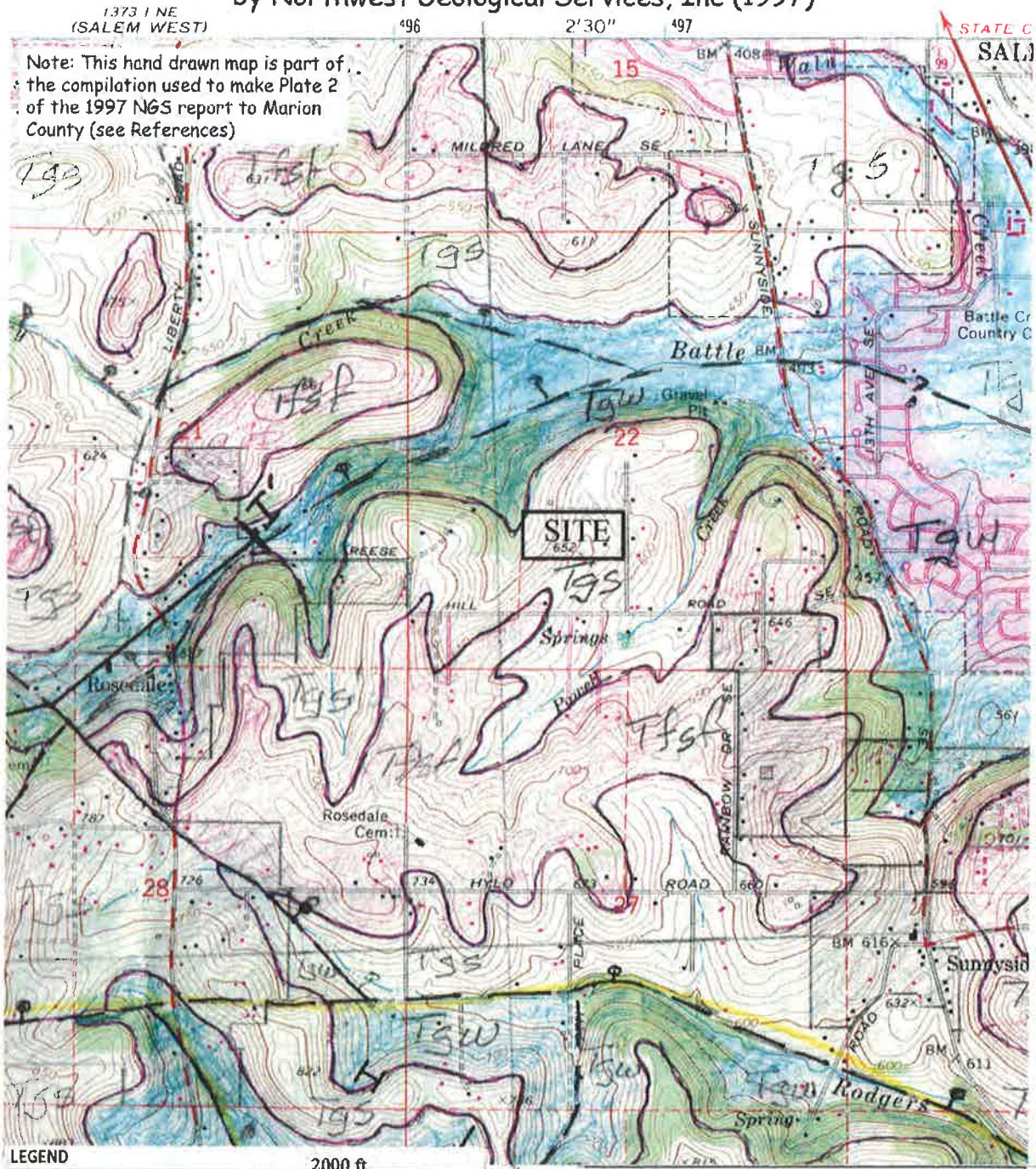


Decomposed Sentinel Bluff basalt spoils from test pit TP-1

8S/3W-22C Tax Lot 300		
Salem, Marion County, Oregon		
Landslide Hazard Study		
Site Photographs		
NGS, Inc.	July 2017	Figure 3


T 8 S, R 3 W, SEC 22
TAXLOT 300
120 ft
N
13%
AVERAGE
11% - 14%
33%
30%
7.5%
10%
Slope direction and slope percentage (100% = 45°)
14%
Legend
Spot elevation
10 ft contour
2 ft contour
Building footprint
8S/3W-22C Tax Lot 300
Salem, Marion County, Oregon
Landslide Hazard Study
DOGAMI 2009 Bare Earth LIDAR
NG3, Inc. | July 2017 | Figure 4
Hillshade with 2 ft Contours

Portion of Geologic Map of Sidney Quadrangle by Northwest Geological Services, Inc (1997)



LEGEND

2000 ft

N

Geologic Bedrock Units

Tfs - Basalt of Silver Falls (Frenchman Springs Mamber, Wanapum Basalt)

Tfg - Basalt of Gingko (Frenchman Springs Mamber, Wanapum Basalt)

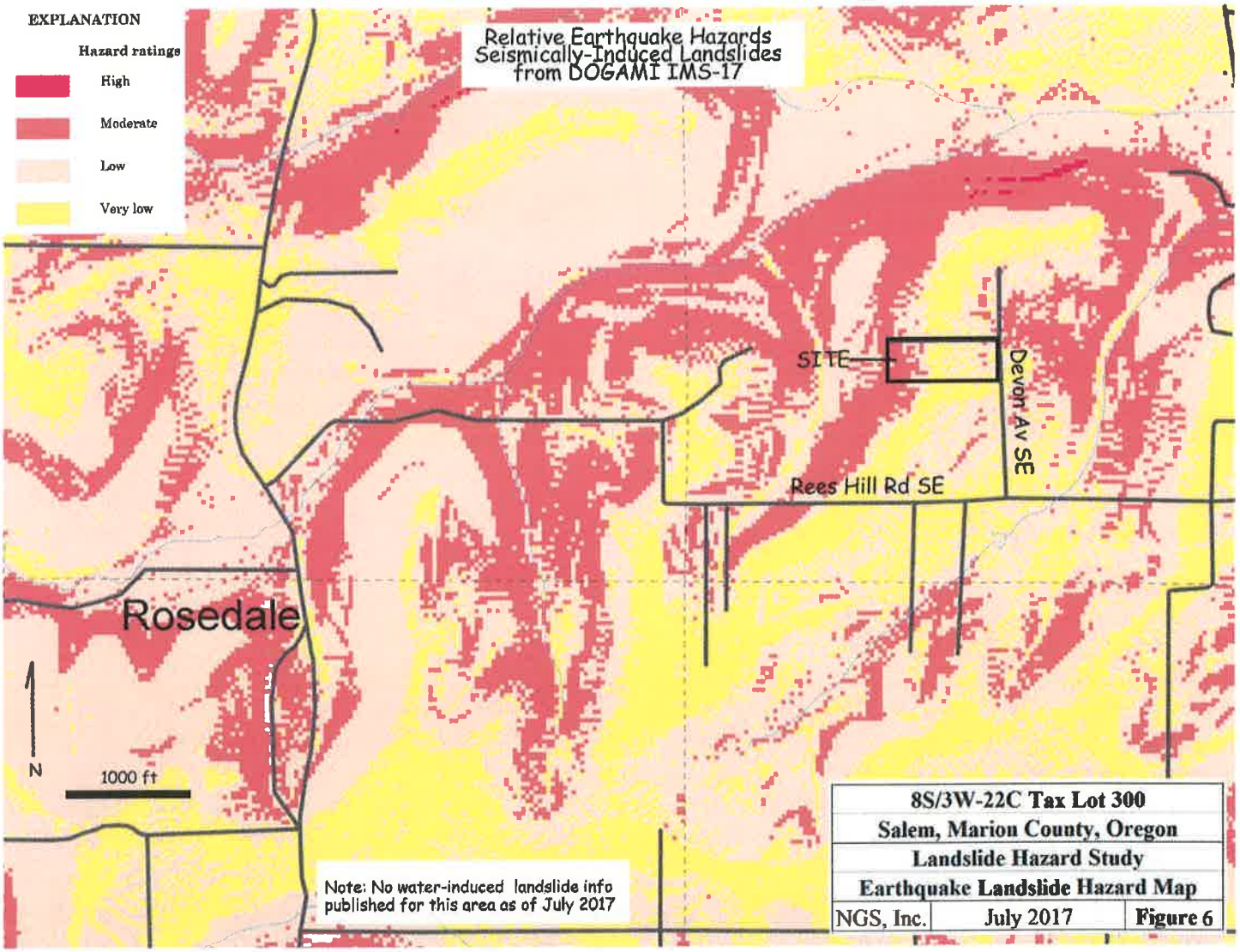
Tgs - Sentinel Bluff Basalt (Grand Ronde Basalt)

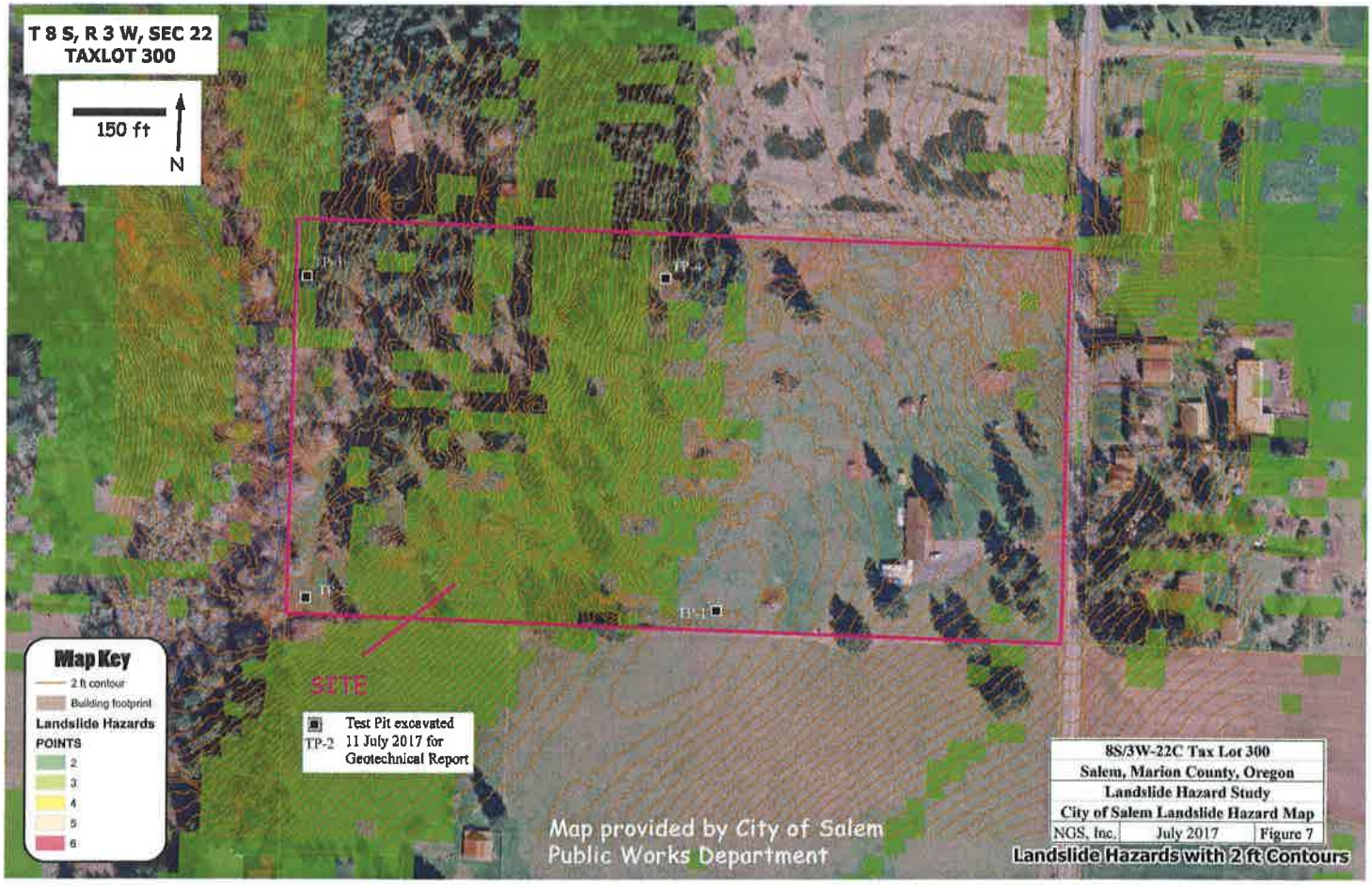
Tgw - Winterwater Basalt (Grande Ronde Basalt)

Geologic Structures

Normal Fault, ball on down side, dashed where approximate

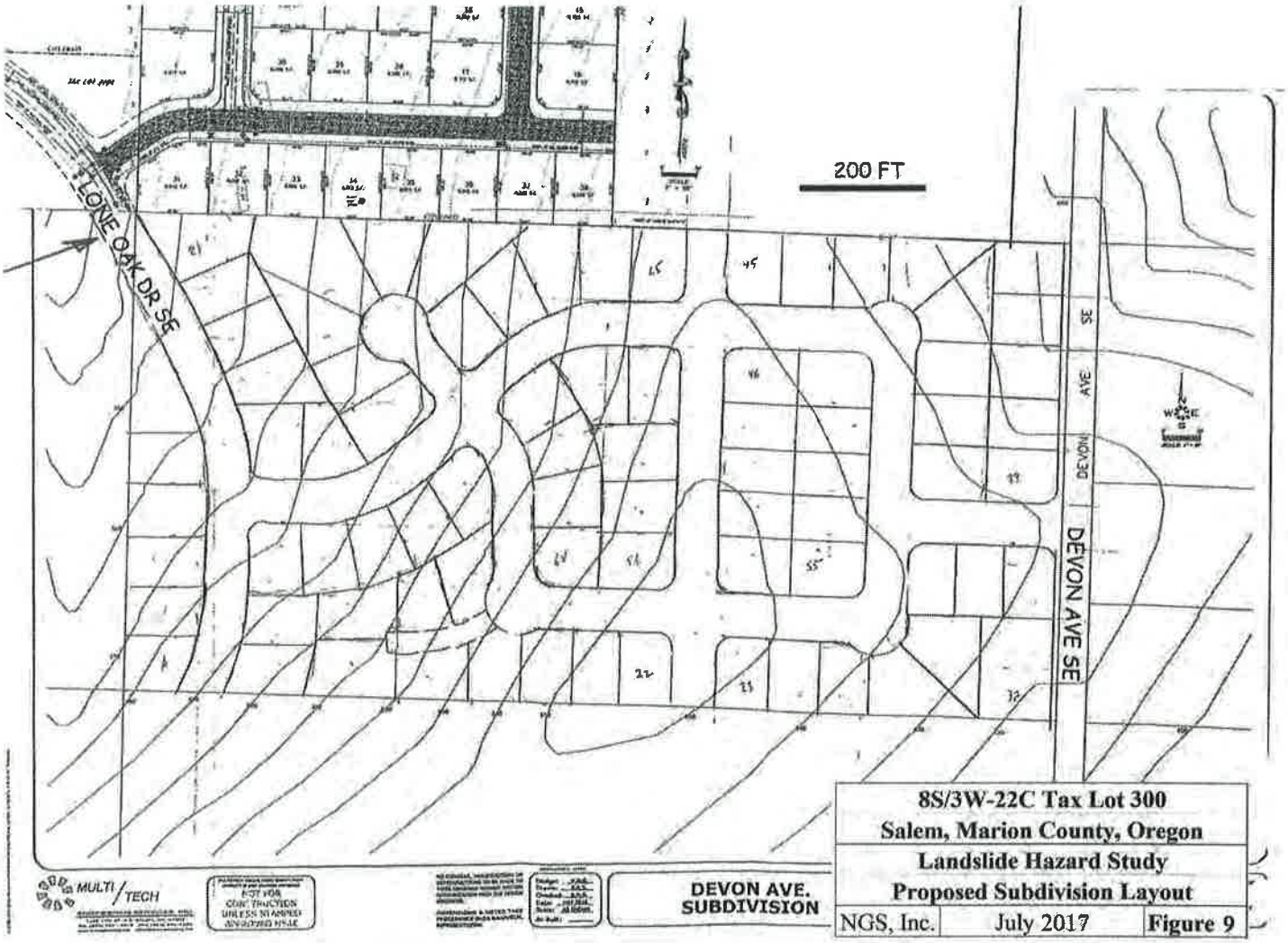
8S/3W-22C Tax Lot 300		
Salem, Marion County, Oregon		
Landslide Hazard Study		
Area Geologic Map		
NGS, Inc.	July 2017	**Figure 5**


EXPLANATION
Hazard ratings
High
Moderate
Low
Very low
Relative Earthquake Hazards
Seismically-Induced Landslides
from DOGAMI IMS-17
SITE
Devon Av SE
Rees Hill Rd SE
Rosedale
N
1000 ft
Note: No water-induced landslide info published for this area as of July 2017
8S/3W-22C Tax Lot 300
Salem, Marion County, Oregon
Landslide Hazard Study
Earthquake Landslide Hazard Map
NGS, Inc.
July 2017
Figure 6


T 8 S, R 3 W, SEC 22
TAXLOT 300
150 ft
N
TP-1
TP-4
TP-3
B-1
SITE
Map Key
2 ft contour
Building footprint
Landslide Hazards
POINTS
2
3
4
5
6
TP-2 Test Pit excavated 11 July 2017 for Geotechnical Report
Map provided by City of Salem Public Works Department
8S/3W-22C Tax Lot 300
Salem, Marion County, Oregon
Landslide Hazard Study
City of Salem Landslide Hazard Map
NGS, Inc. July 2017 Figure 7
Landslide Hazards with 2 ft Contours



8S/3W-22C Tax Lot 300		
Salem, Marion County, Oregon		
Landslide Hazard Study		
1936 Aerial Photograph		
NGS, Inc.	July 2017	Figure 8



8S/3W-22C Tax Lot 300
Salem, Marion County, Oregon
Landslide Hazard Study
Proposed Subdivision Layout

NGS, Inc.	July 2017	**Figure 9**

Appendix C

Time of Concentration

Drawing is NOT to Scale

SCALE: 1" = 60'

Point F
Elev. 604

L = 510'

Point E
Elev. 642

Point D
Elev. 651

L = 230'

Point C
Elev. 539

L = 580'

Point B
Elev. 622

L = 250'

Point A
Elev. 651

SAHALEE DR.

LONE OAK ROAD

DEVON AVE.

TAX LOT #100

N89°22'41"W 1,298.71'

S0°06'31"W 662.05'

N0°00'00"E 661.91'

S89°23'06"E 1,299.96'

MULTI/TECH

ENGINEERING SERVICES, INC.
1155 13th ST. SE. SALEM, OR. 97302
(503) 363-9227 FAX: (503) 364-1260
www.mtengineering.net office@mtengineering.net

EXISTING CONDITIONS PLAN

DEVON ESTATES

NO CHANGES, MODIFICATIONS OR REPRODUCTIONS TO BE MADE TO THESE DRAWINGS WITHOUT WRITTEN AUTHORIZATION FROM THE DESIGN ENGINEER.

DIMENSIONS & NOTES TAKE PRECEDENCE OVER GRAPHICAL REPRESENTATION.

Design: M.D.G.
Drawn: P.H.S.
Checked: B.M.G.
Date: NOV. 2017
Scale: AS SHOWN

REGISTERED PROFESSIONAL ENGINEER
OREGON
JUNE 14, 2013
MARK D. GRENZ

EXPIRES: 06-30-2019

JOB # 6502

P102

J:\6500-6599\6502-DevonAvenueSubdivision\Dwg\6502p.dwg, P102XC, 12/10/2018 3:44:28 PM, PStorders

Worksheet 3: Time of Concentration (T_c) or travel time (T_t)

Project	By	Date
Devon Estates (Basin #1)	M. Hendrick	10/2018
Location	**Checked**	**Date**
Salem, Oregon		

Check one: ☑ Present ☐ Developed

Check one: ☑ T_c ☑ T_t through subarea

Notes: Space for as many as two segments per flow type can be used for each worksheet.
Include a map, schematic, or description of flow segments.

Sheet flow (Applicable to Tc only)

	Segment ID	A-B	
1.	Surface description (Table 4D-4)	Meadow/Pasture/Farm	
2.	Manning's roughness coefficient, n (Table 4D-4)	0.15	
3.	Flow length, L (total L † 300 ft) ft	250	
4.	Two-year 24-hour rainfall, P_2 in	2.2	
5.	Land slope, s ft/ft	0.116	
6.	$T_t = \frac{0.007\ (nL)^{0.8}}{P_2^{0.5}\ s^{0.4}}$ Compute T_t hr	0.20 +	= 0.20

Shallow concentrated flow

	Segment ID	B-C	
7.	Surface description (paved or unpaved)	Forest & Meadow	
8.	Flow length, L ft	580	
9.	Watercourse slope, s ft/ft	0.143	
10.	Average velocity, V (figure 3-1) ft/s	0.95	
11.	$T_t = \frac{L}{3600\ V}$ Compute T_t hr	0.17 +	= 0.17

Channel flow

	Segment ID		
12.	Cross sectional flow area, a ft^2		
13.	Wetted perimeter, p_w ft		
14.	Hydraulic radius, $r = \frac{a}{p_w}$ Compute r ft		
15	Channel slope, s ft/ft		
16.	Manning's roughness coefficient, n		
17.	$V = \frac{1.49\ r^{2/3}\ s^{1/2}}{n}$ Compute V ft/s		
18.	~~Flow~~ length, L ft		
19.	$T_t = \frac{L}{3600\ V}$ Compute T_t hr	+	=
20.	Watershed or subarea T_c or T_t (add T_t in steps 6, 11, and 19) Hr		0.37

0.37 Hrs = 22.2 Minutes

Worksheet 3: Time of Concentration (T_c) or travel time (T_t)

Project	By	Date
Devon Estates (Basin #2)	M. Hendrick	1/2021
Location	**Checked**	**Date**
Salem, Oregon		

Check one: ☑ Present ☐ Developed

Check one: ☑ T_c ☑ T_t through subarea

Notes: Space for as many as two segments per flow type can be used for each worksheet.
Include a map, schematic, or description of flow segments.

Sheet flow (Applicable to Tc only)

	Segment ID	D-E		
1.	Surface description (Table 4D-4)	Meadow/Pasture/Farm		
2.	Manning's roughness coefficient, n (Table 4D-4)	0.15		
3.	Flow length, L (total L † 300 ft) ft	230		
4.	Two-year 24-hour rainfall, P_2 in	2.2		
5.	Land slope, s ft/ft	0.039		
6.	$T_t = \frac{0.007\ (nL)^{0.8}}{P_2^{0.5}\ s^{0.4}}$ Compute T_t hr	0.29	+	= 0.29

Shallow concentrated flow

	Segment ID	E-F		
7.	Surface description (paved or unpaved)	Pasture		
8.	Flow length, L ft	510		
9.	Watercourse slope, s ft/ft	0.075		
10.	Average velocity, V (figure 3-1) ft/s	2.0		
11.	$T_t = \frac{L}{3600\ V}$ Compute T_t hr	0.07	+	= 0.07

Channel flow

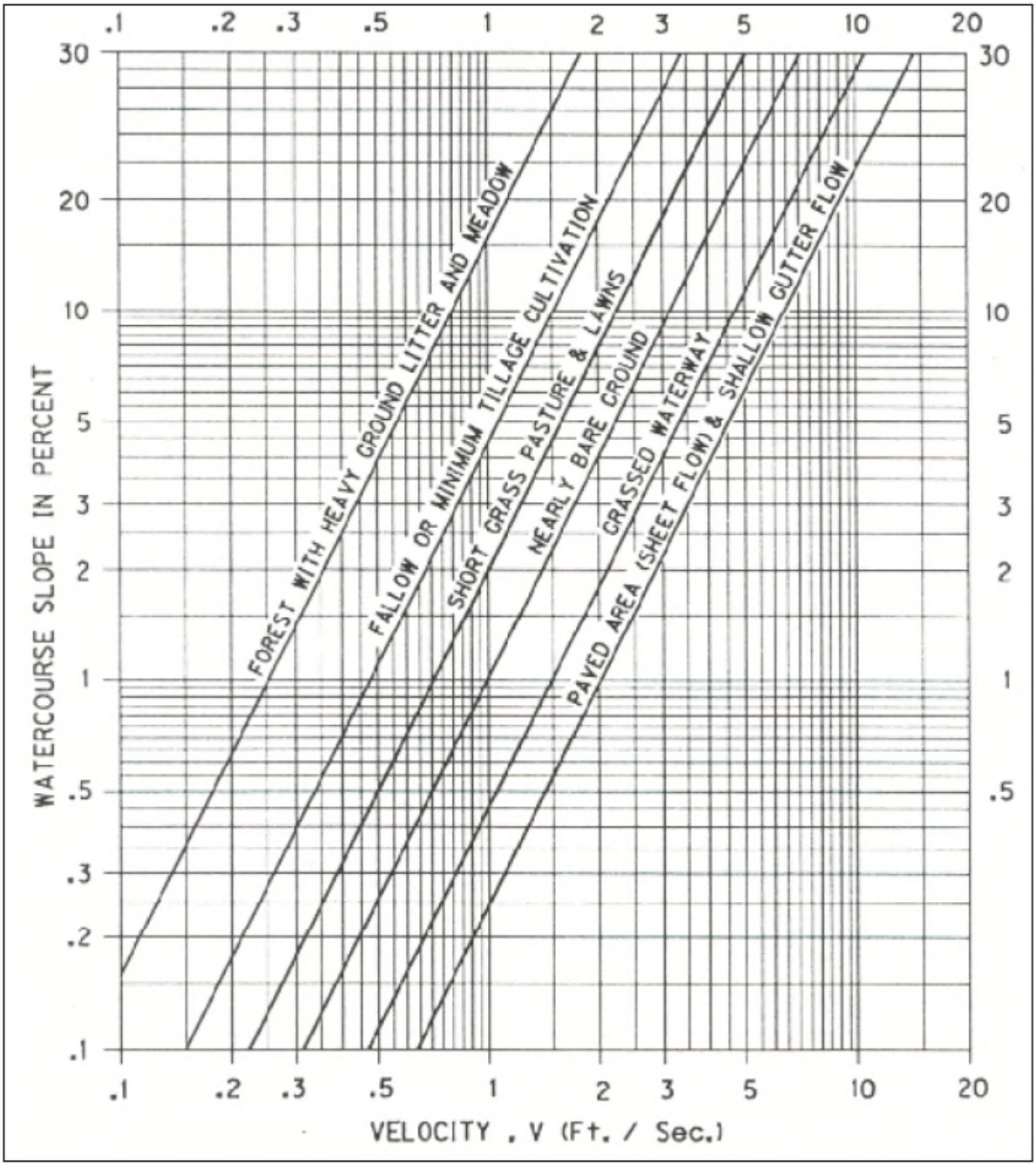
	Segment ID			
12.	Cross sectional flow area, a ft^2			
13.	Wetted perimeter, p_w ft			
14.	Hydraulic radius, $r = \frac{a}{p_w}$ Compute r ft			
15	Channel slope, s ft/ft			
16.	Manning's roughness coefficient, n			
17.	$V = \frac{1.49\ r^{2/3}\ s^{1/2}}{n}$ Compute V ft/s			
18.	~~Flow~~ length, L ft			
19.	$T_t = \frac{L}{3600\ V}$ Compute T_t hr		+	=

20. Watershed or subarea T_c or T_t (add T_t in steps 6, 11, and 19) Hr **0.36**

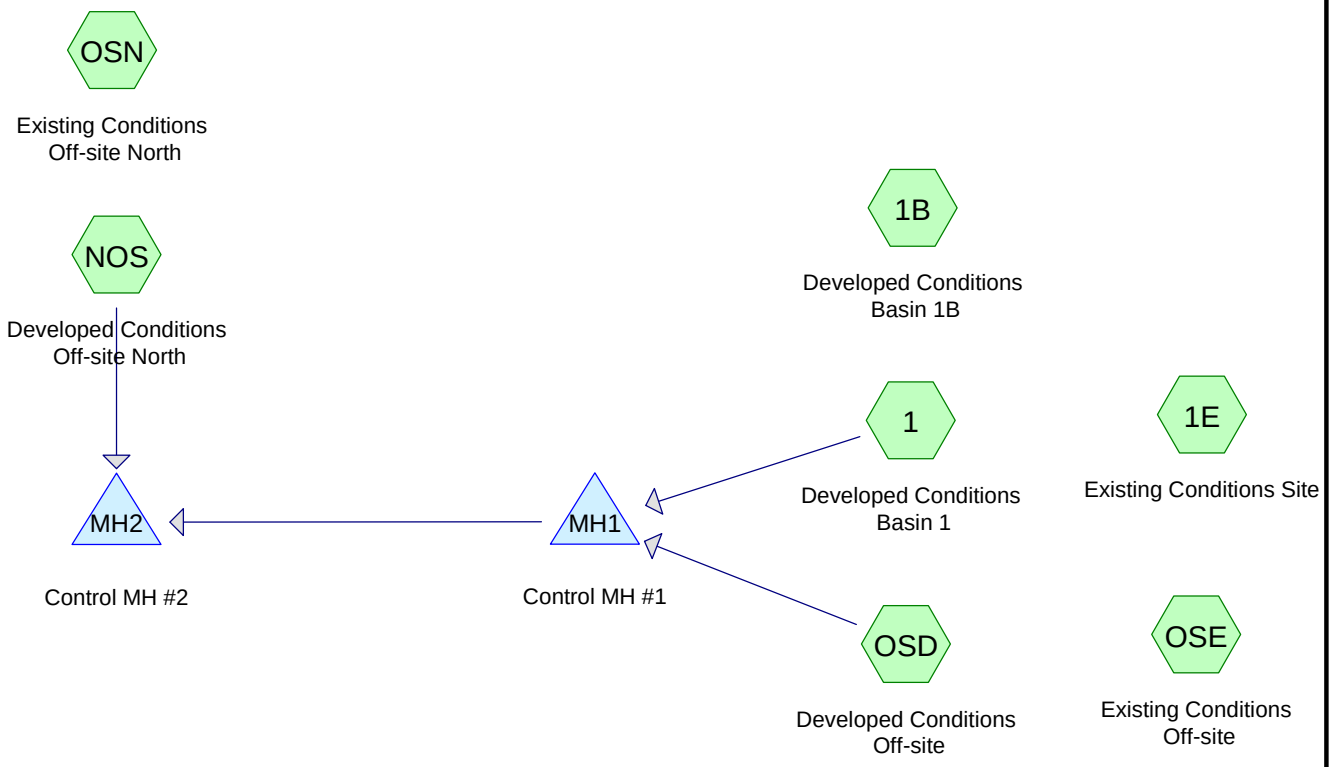
0.36 Hrs = 21.6 Minutes

Manning's Roughness Coefficients for Overland Sheet Flow	
Surface Types:	**n**
Impervious Areas	0.014
Gravel Pavement	0.02
Developed: Landscape Areas (Except Lawns)	0.08
Undeveloped: Meadow, Pasture, or Farm	0.15
Developed: Lawns	0.24
Pre-developed: Mixed	0.30
Pre-developed: Woodland and Forest	0.40
Development Types:	**n**
Commercial Development	0.015
Industrial Development, Heavy	0.04
Industrial Development, Light	0.05
Dense Residential (over 6 units/acre)	0.08
Normal Residential (3 to 6 units/acre)	0.20
Light Residential (1 to 3 units/acre)	0.30
Parks	0.40

Table 4D-4. Manning's Roughness Coefficients for Overland Sheet Flow


.1
.2
.3
.5
1
2
3
5
10
20
30
20
10
5
3
2
1
.5
.3
.2
.1
WATERCOURSE SLOPE IN PERCENT
FOREST WITH HEAVY GROUND LITTER AND MEADOW
FALLOW OR MINIMUM TILLAGE CULTIVATION
SHORT GRASS PASTURE & LAWNS
NEARLY BARE GROUND
GRASSED WATERWAY
PAVED AREA (SHEET FLOW) & SHALLOW GUTTER FLOW
VELOCITY , V (Ft. / Sec.)

Appendix D



Subcat Reach Pond Link

Routing Diagram for 20210112 Devon Estates Phase 1 Master
Prepared by Multitech Engineering Services, Inc., Printed 1/19/2021
HydroCAD® 10.10-4a s/n 09412 © 2020 HydroCAD Software Solutions LLC

Summary for Subcatchment 1E: Existing Conditions Site

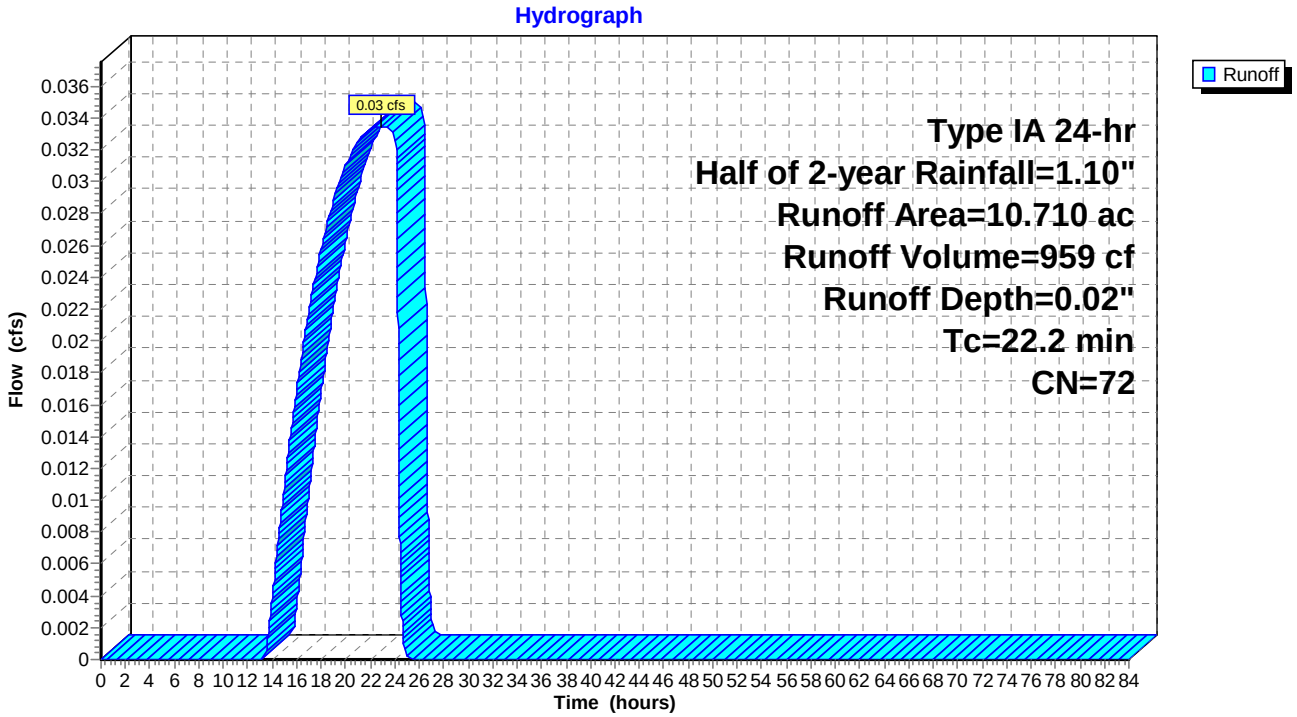
Runoff = 0.03 cfs @ 22.82 hrs, Volume= 959 cf, Depth= 0.02"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-84.00 hrs, dt= 0.01 hrs
Type IA 24-hr Half of 2-year Rainfall=1.10"

	Area (ac)	CN	Description
*	10.710	72	City of Salem Pre-development, HSG C
	10.710	72	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
22.2					**Direct Entry, TR-55 Worksheet**

Subcatchment 1E: Existing Conditions Site



Summary for Subcatchment OSE: Existing Conditions Off-site

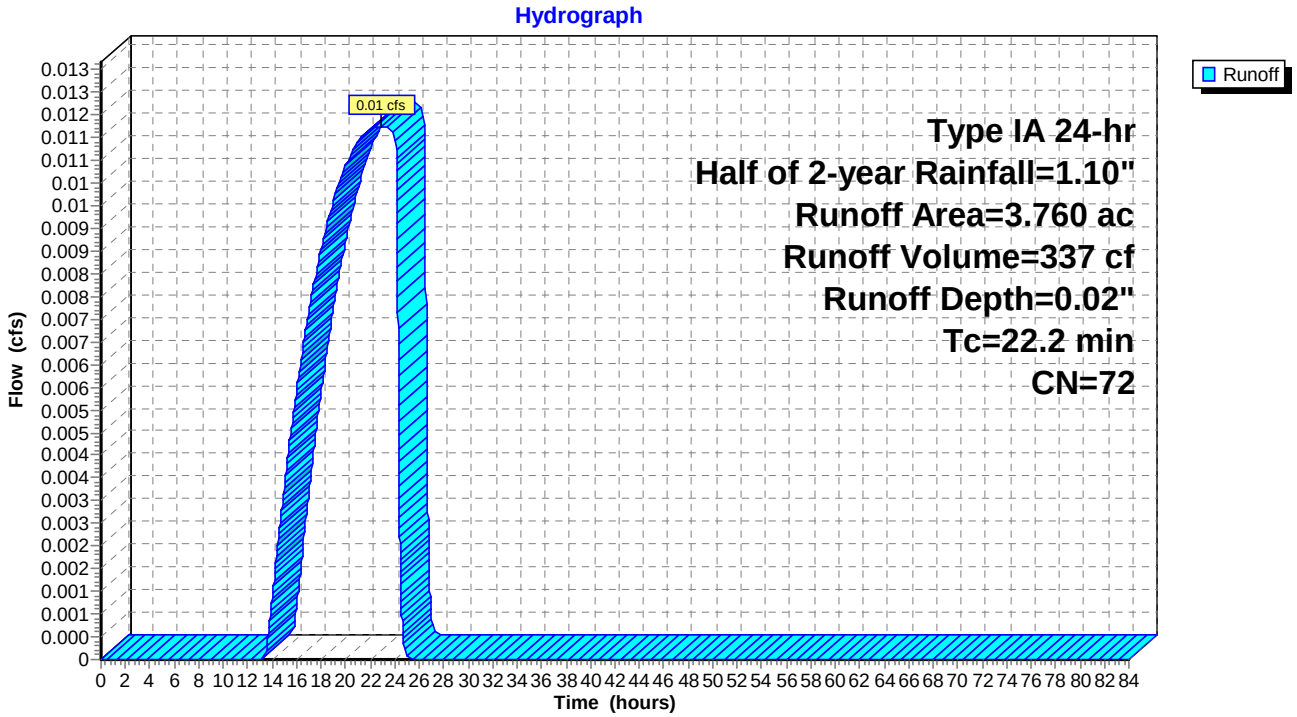
Runoff = 0.01 cfs @ 22.82 hrs, Volume= 337 cf, Depth= 0.02"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-84.00 hrs, dt= 0.01 hrs
Type IA 24-hr Half of 2-year Rainfall=1.10"

	Area (ac)	CN	Description
*	3.760	72	City of Salem Pre-development, HSG C
	3.760	72	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
22.2					**Direct Entry, TR-55 Worksheet**

Subcatchment OSE: Existing Conditions Off-site



Summary for Subcatchment 1B: Developed Conditions Basin 1B

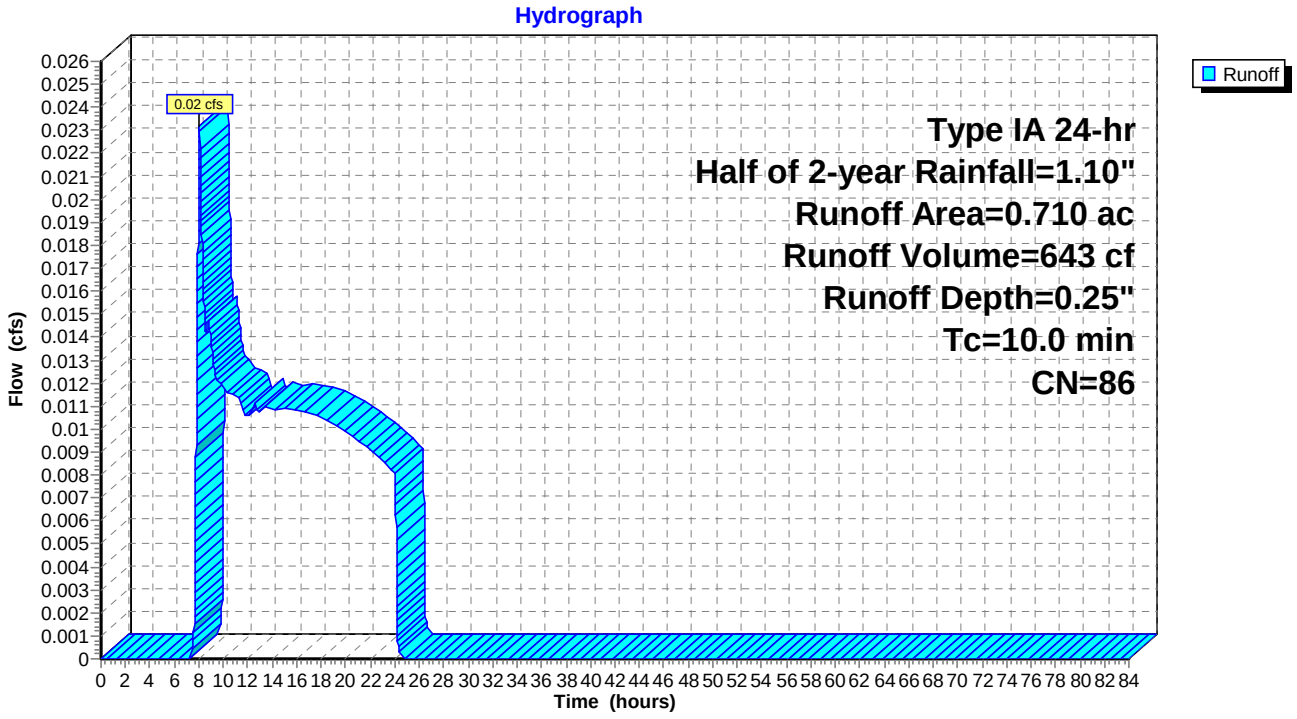
Runoff = 0.02 cfs @ 8.07 hrs, Volume= 643 cf, Depth= 0.25"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-84.00 hrs, dt= 0.01 hrs
Type IA 24-hr Half of 2-year Rainfall=1.10"

	Area (ac)	CN	Description
*	0.350	98	Roofs,pavement, concrete, HSG C
	0.360	74	>75% Grass cover, Good, HSG C
	0.710	86	Weighted Average
	0.360	74	50.70% Pervious Area
	0.350	98	49.30% Impervious Area

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

Subcatchment 1B: Developed Conditions Basin 1B



Summary for Subcatchment 1: Developed Conditions Basin 1

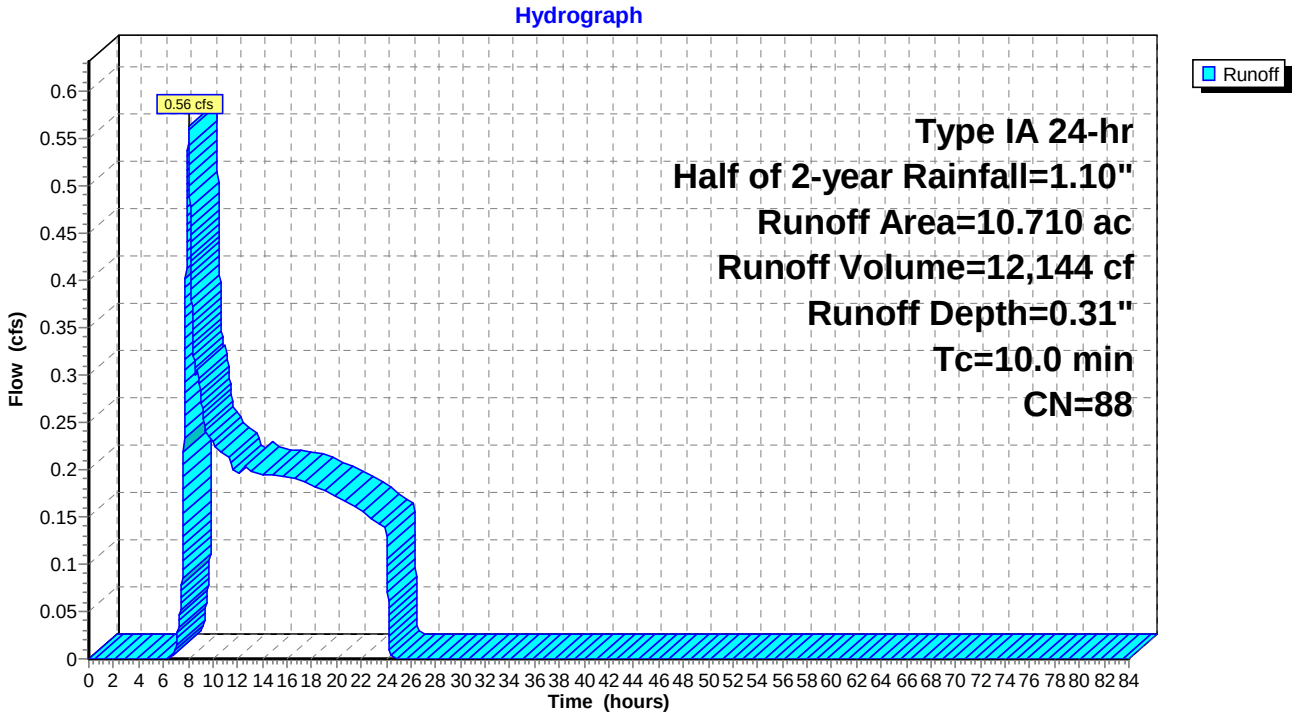
Runoff = 0.56 cfs @ 8.06 hrs, Volume= 12,144 cf, Depth= 0.31"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-84.00 hrs, dt= 0.01 hrs
Type IA 24-hr Half of 2-year Rainfall=1.10"

	Area (ac)	CN	Description
*	6.430	98	Roofs,pavement, concrete, HSG C
	4.280	74	>75% Grass cover, Good, HSG C
	10.710	88	Weighted Average
	4.280	74	39.96% Pervious Area
	6.430	98	60.04% Impervious Area

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

Subcatchment 1: Developed Conditions Basin 1



Summary for Subcatchment OSD: Developed Conditions Off-site

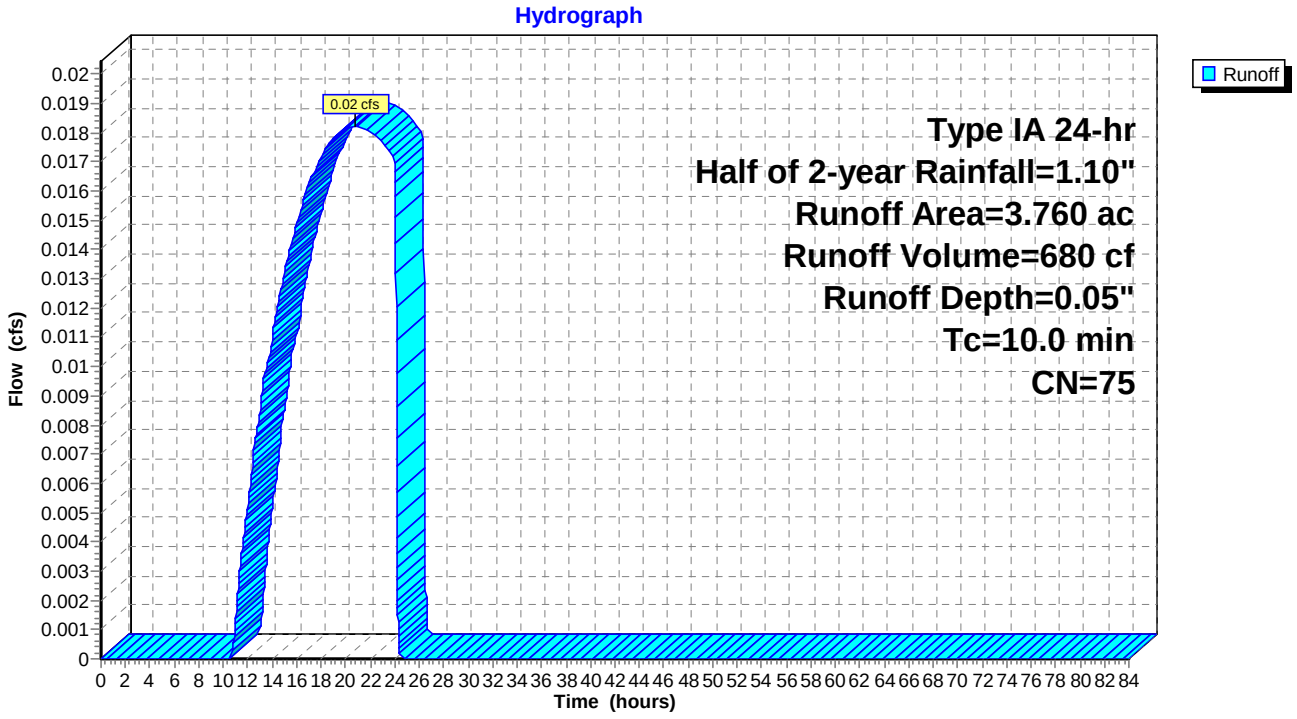
Runoff = 0.02 cfs @ 20.81 hrs, Volume= 680 cf, Depth= 0.05"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-84.00 hrs, dt= 0.01 hrs
Type IA 24-hr Half of 2-year Rainfall=1.10"

	Area (ac)	CN	Description
*	3.260	72	City of Salem Pre-developed, HSG C
	0.500	98	Paved roads w/curbs & sewers, HSG C
	3.760	75	Weighted Average
	3.260	72	86.70% Pervious Area
	0.500	98	13.30% Impervious Area

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

Subcatchment OSD: Developed Conditions Off-site



Summary for Pond MH1: Control MH #1

Inflow Area = 630,313 sf, 47.89% Impervious, Inflow Depth = 0.24" for Half of 2-year event
Inflow = 0.56 cfs @ 8.06 hrs, Volume= 12,825 cf
Outflow = 0.02 cfs @ 24.25 hrs, Volume= 4,252 cf, Atten= 97%, Lag= 971.6 min
Primary = 0.02 cfs @ 24.25 hrs, Volume= 4,252 cf

Routing by Stor-Ind method, Time Span= 0.00-84.00 hrs, dt= 0.01 hrs
Peak Elev= 542.91' @ 24.25 hrs Surf.Area= 8,500 sf Storage= 11,937 cf
Flood Elev= 561.00' Surf.Area= 8,500 sf Storage= 55,229 cf

Plug-Flow detention time= 2,203.0 min calculated for 4,251 cf (33% of inflow)
Center-of-Mass det. time= 1,868.7 min (2,766.1 - 897.3)

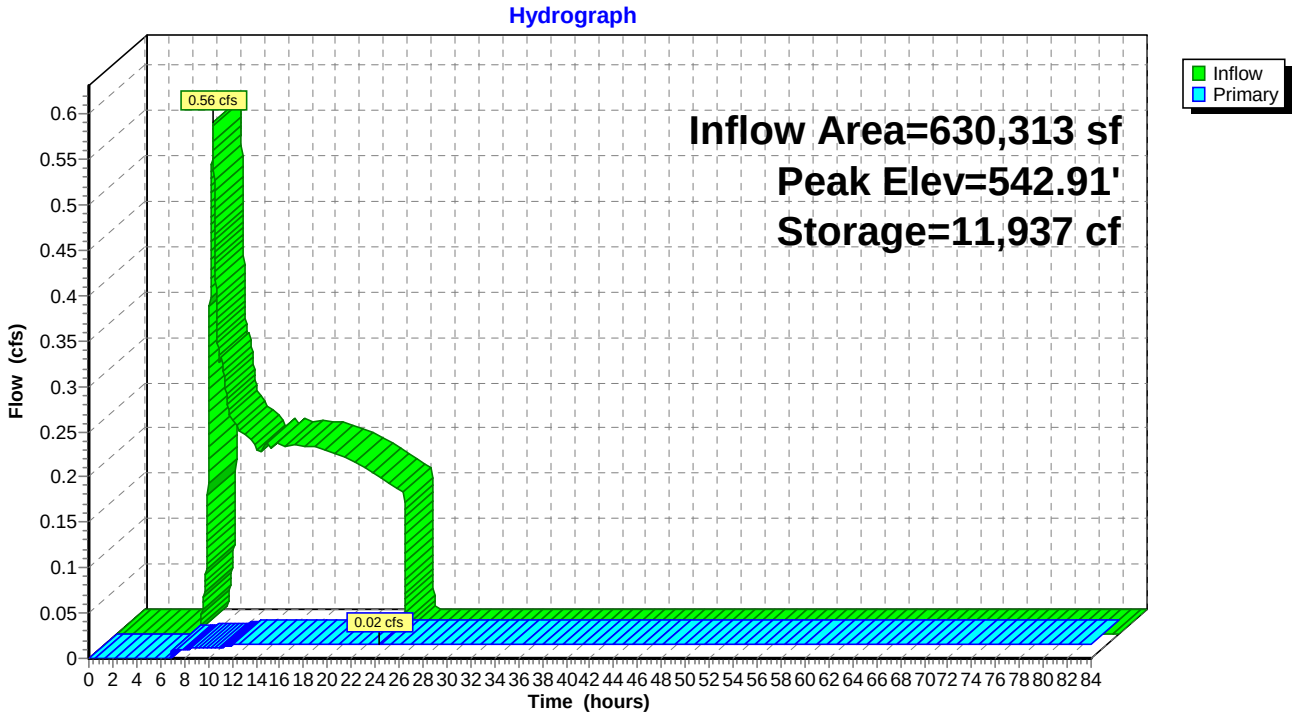
Volume	Invert	Avail.Storage	Storage Description
#1	537.00'	55,229 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
537.00	4	0.0	0	0
539.24	8,500	0.0	0	0
539.25	8,500	40.0	34	34
540.24	8,500	40.0	3,366	3,400
540.25	8,500	5.0	4	3,404
541.99	8,500	5.0	740	4,144
542.00	8,500	100.0	85	4,229
544.00	8,500	100.0	17,000	21,229
546.00	8,500	100.0	17,000	38,229
547.00	8,500	100.0	8,500	46,729
548.00	8,500	100.0	8,500	55,229

Device	Routing	Invert	Outlet Devices
#1	Primary	537.00'	**18.0" Round 18" Pipe** L= 62.0' RCP, rounded edge headwall, Ke= 0.100 Inlet / Outlet Invert= 537.00' / 535.00' S= 0.0323 '/' Cc= 0.900 n= 0.013, Flow Area= 1.77 sf
#2	Device 1	537.00'	**0.5" Vert. Orifice #1** C= 0.600 Limited to weir flow at low heads
#3	Device 1	543.00'	**7.5" Vert. Orifice #2** C= 0.600 Limited to weir flow at low heads
#4	Device 1	544.50'	**9.5" Vert. Orifice #3** C= 0.600 Limited to weir flow at low heads
#5	Device 1	547.00'	**24.0" Horiz. Overflow** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.02 cfs @ 24.25 hrs HW=542.91' (Free Discharge)
└**1=18" Pipe** (Passes 0.02 cfs of 24.02 cfs potential flow)
  ├**2=Orifice #1** (Orifice Controls 0.02 cfs @ 11.68 fps)
  ├**3=Orifice #2** (Controls 0.00 cfs)
  ├**4=Orifice #3** (Controls 0.00 cfs)
  └**5=Overflow** (Controls 0.00 cfs)

Pond MH1: Control MH #1



Summary for Subcatchment OSN: Existing Conditions Off-site North

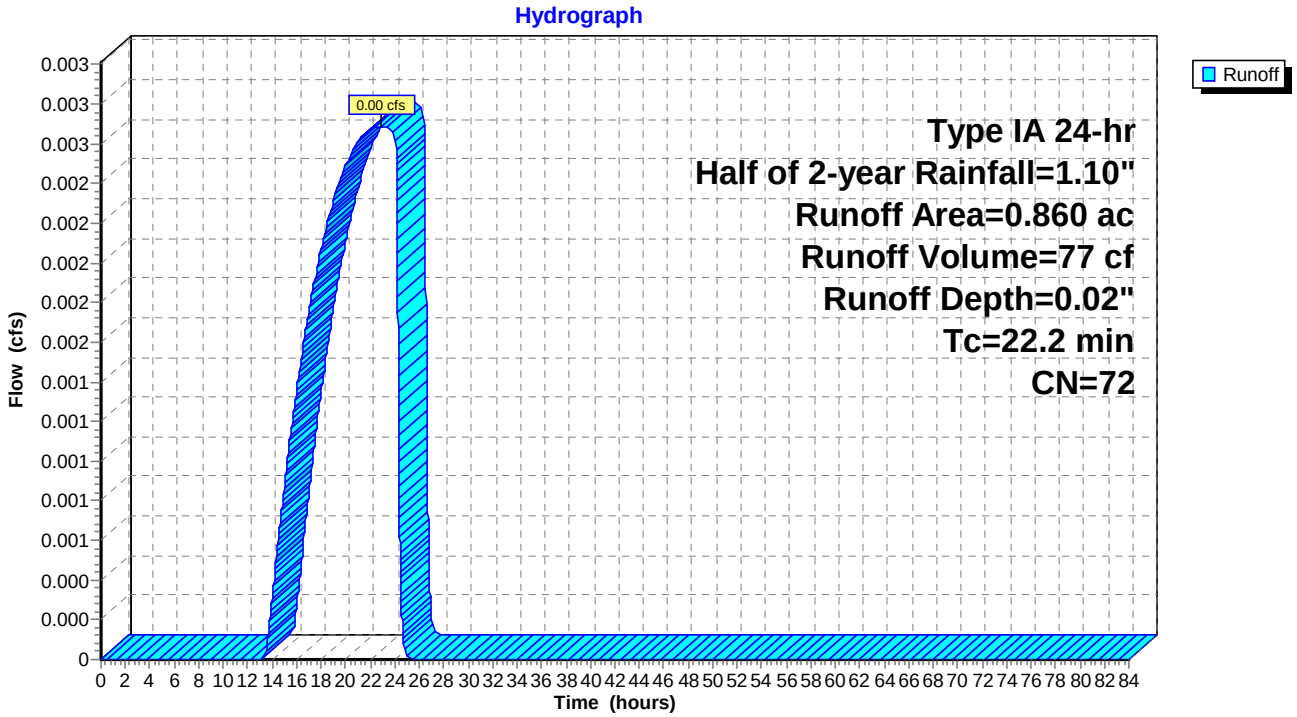
Runoff = 0.00 cfs @ 22.82 hrs, Volume= 77 cf, Depth= 0.02"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-84.00 hrs, dt= 0.01 hrs
Type IA 24-hr Half of 2-year Rainfall=1.10"

	Area (ac)	CN	Description
*	0.860	72	City of Salem Pre-development, HSG C
	0.860	72	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
22.2					**Direct Entry, TR-55 Worksheet**

Subcatchment OSN: Existing Conditions Off-site North



Summary for Subcatchment NOS: Developed Conditions Off-site North

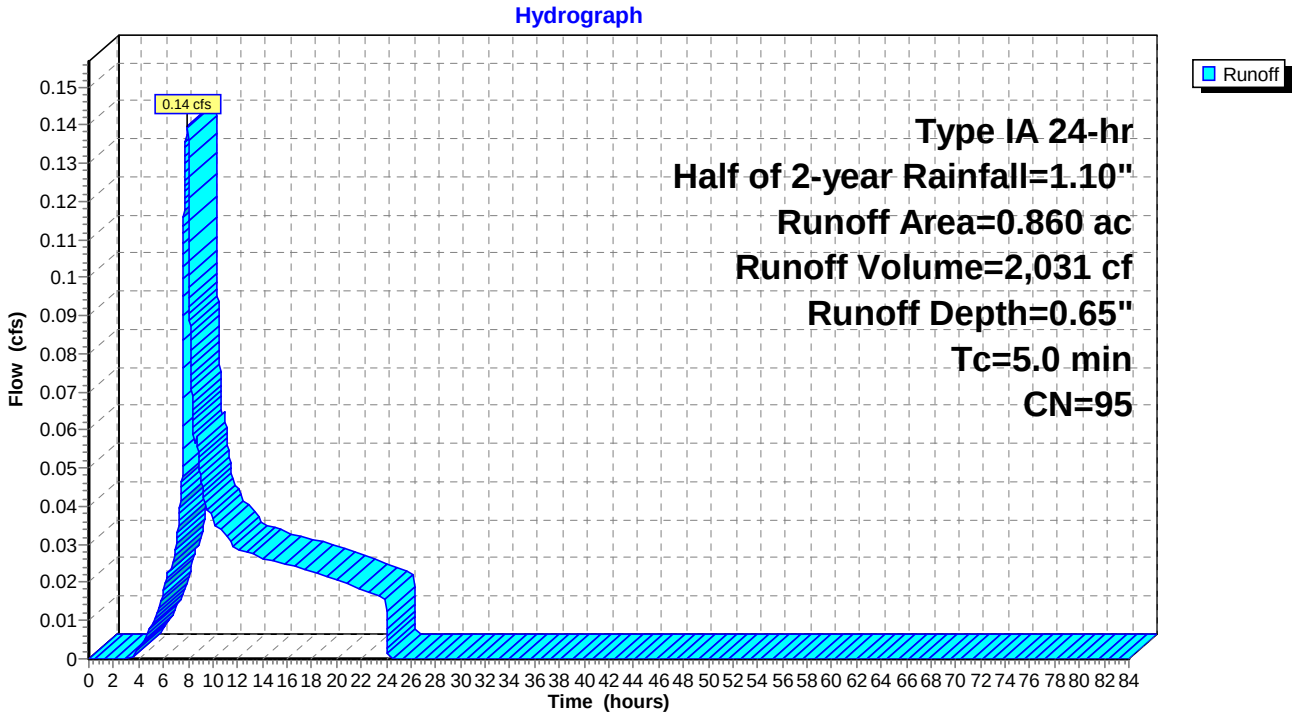
Runoff = 0.14 cfs @ 7.94 hrs, Volume= 2,031 cf, Depth= 0.65"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-84.00 hrs, dt= 0.01 hrs
Type IA 24-hr Half of 2-year Rainfall=1.10"

	Area (ac)	CN	Description
*	0.760	98	Roofs,pavement, concrete, HSG C
	0.100	74	>75% Grass cover, Good, HSG C
	0.860	95	Weighted Average
	0.100	74	11.63% Pervious Area
	0.760	98	88.37% Impervious Area

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

Subcatchment NOS: Developed Conditions Off-site North



Summary for Pond MH2: Control MH #2

Inflow Area = 667,775 sf, 50.16% Impervious, Inflow Depth > 0.11" for Half of 2-year event
Inflow = 0.15 cfs @ 7.94 hrs, Volume= 6,283 cf
Outflow = 0.15 cfs @ 7.95 hrs, Volume= 6,282 cf, Atten= 0%, Lag= 0.6 min
Primary = 0.15 cfs @ 7.95 hrs, Volume= 6,282 cf

Routing by Stor-Ind method, Time Span= 0.00-84.00 hrs, dt= 0.01 hrs
Peak Elev= 502.16' @ 7.95 hrs Surf.Area= 51 sf Storage= 4 cf

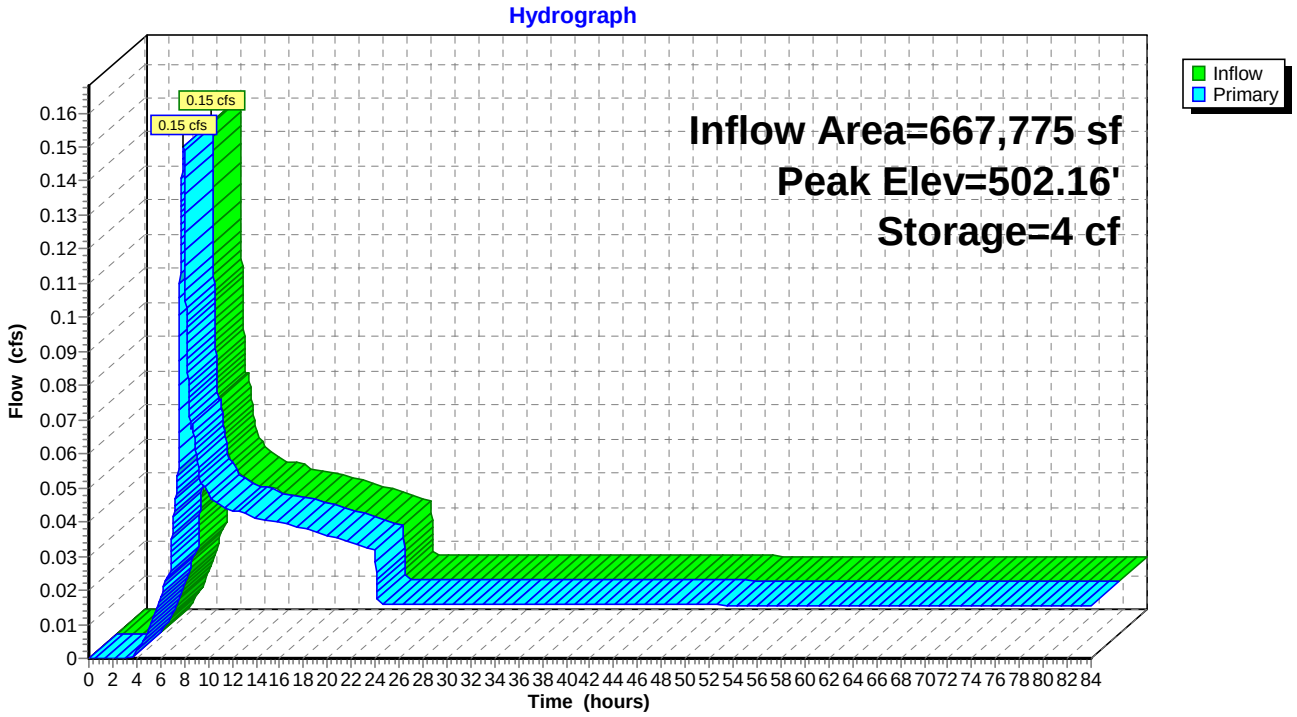
Plug-Flow detention time= 0.3 min calculated for 6,282 cf (100% of inflow)
Center-of-Mass det. time= 0.2 min (2,121.7 - 2,121.5)

Volume	Invert	Avail.Storage	Storage Description
#1	501.96'	2,356 cf	**60.0" Round 60" Detention Pipe** L= 120.0' S= 0.0050 '/'

Device	Routing	Invert	Outlet Devices
#1	Primary	499.77'	**18.0" Round Culvert** L= 110.0' RCP, rounded edge headwall, Ke= 0.100 Inlet / Outlet Invert= 499.77' / 484.72' S= 0.1368 '/' Cc= 0.900 n= 0.013, Flow Area= 1.77 sf
#2	Device 1	501.96'	**10.0" Vert. Orifice #1** C= 0.600 Limited to weir flow at low heads
#3	Device 1	507.50'	**18.0" Horiz. Overflow** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.15 cfs @ 7.95 hrs HW=502.16' (Free Discharge)
└**1=Culvert** (Passes 0.15 cfs of 14.84 cfs potential flow)
  ├**2=Orifice #1** (Orifice Controls 0.15 cfs @ 1.51 fps)
  └**3=Overflow** (Controls 0.00 cfs)

Pond MH2: Control MH #2



Summary for Subcatchment 1E: Existing Conditions Site

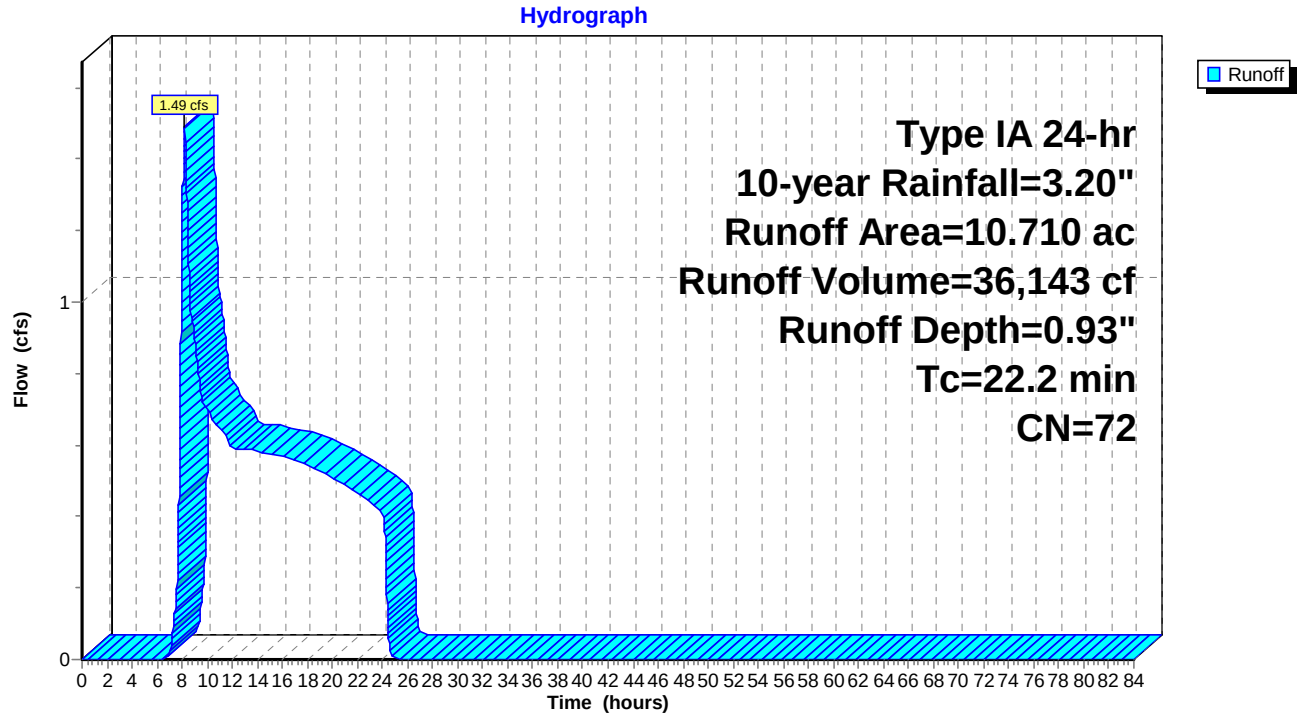
Runoff = 1.49 cfs @ 8.20 hrs, Volume= 36,143 cf, Depth= 0.93"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-84.00 hrs, dt= 0.01 hrs
Type IA 24-hr 10-year Rainfall=3.20"

	Area (ac)	CN	Description
*	10.710	72	City of Salem Pre-development, HSG C
	10.710	72	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
22.2					**Direct Entry, TR-55 Worksheet**

Subcatchment 1E: Existing Conditions Site



Summary for Subcatchment OSE: Existing Conditions Off-site

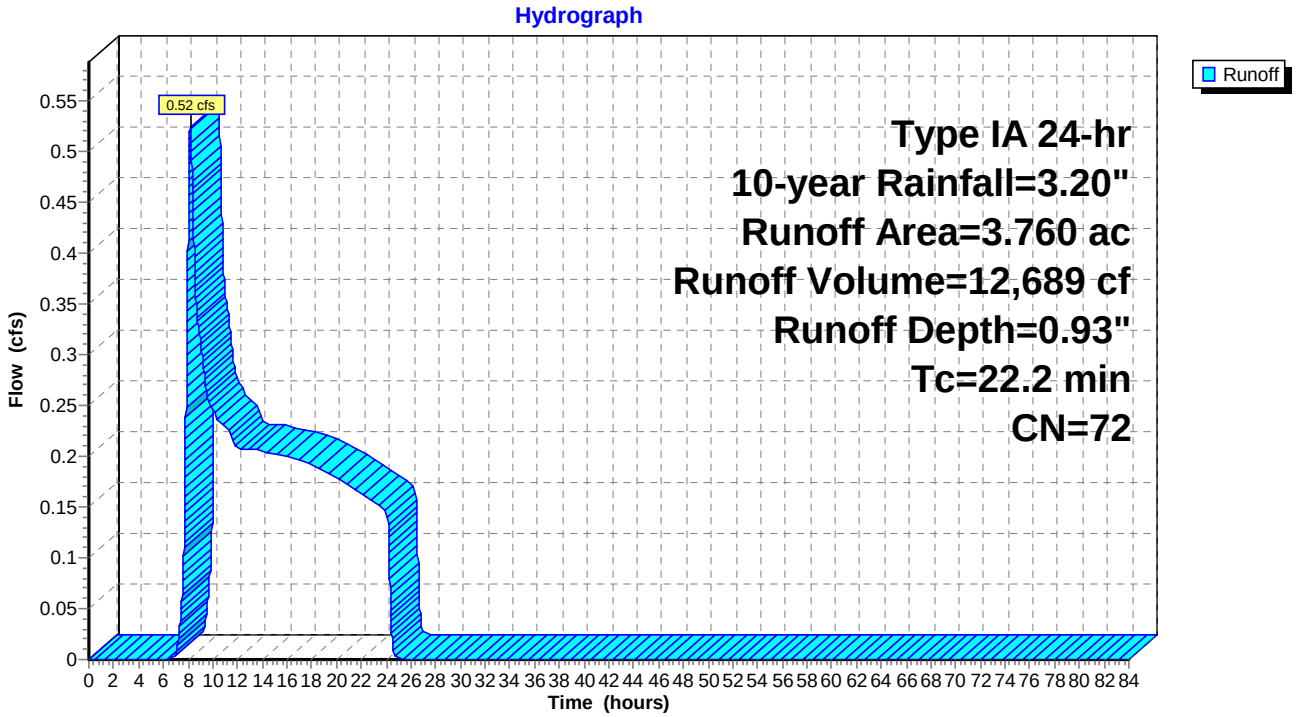
Runoff = 0.52 cfs @ 8.20 hrs, Volume= 12,689 cf, Depth= 0.93"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-84.00 hrs, dt= 0.01 hrs
Type IA 24-hr 10-year Rainfall=3.20"

	Area (ac)	CN	Description
*	3.760	72	City of Salem Pre-development, HSG C
	3.760	72	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
22.2					**Direct Entry, TR-55 Worksheet**

Subcatchment OSE: Existing Conditions Off-site



Summary for Subcatchment 1B: Developed Conditions Basin 1B

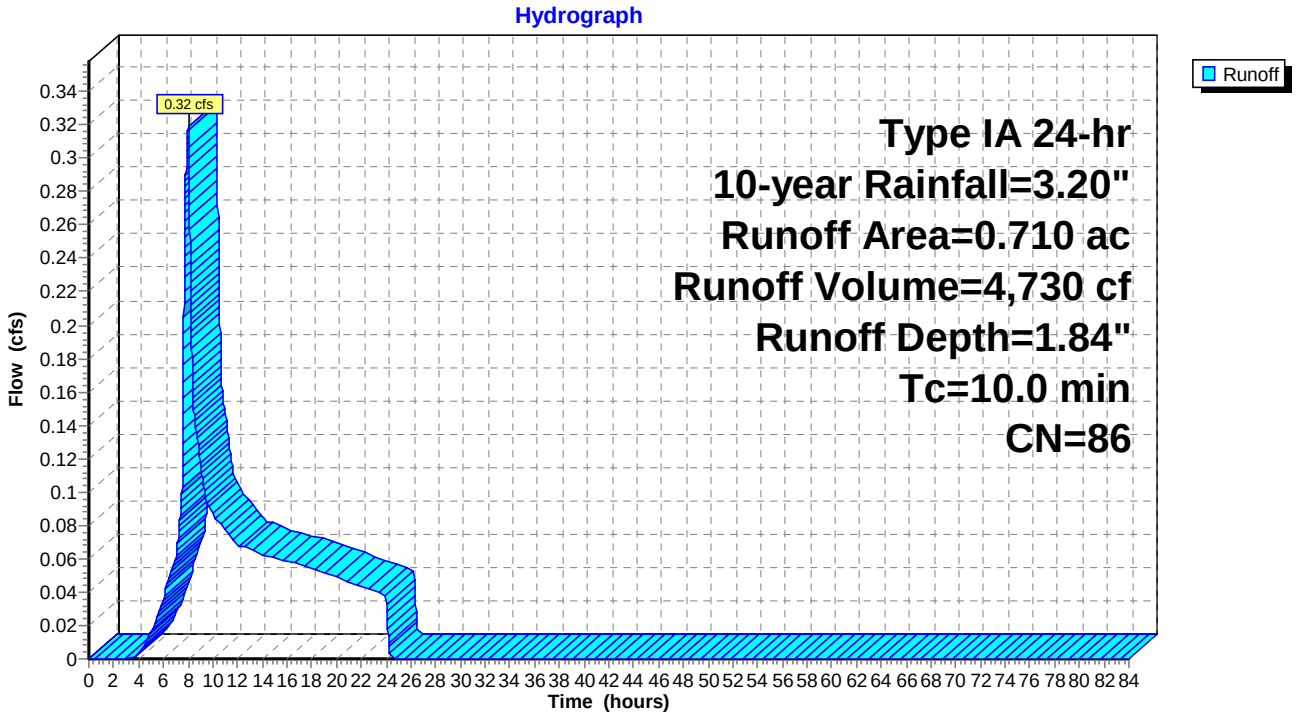
Runoff = 0.32 cfs @ 8.01 hrs, Volume= 4,730 cf, Depth= 1.84"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-84.00 hrs, dt= 0.01 hrs
Type IA 24-hr 10-year Rainfall=3.20"

	Area (ac)	CN	Description
*	0.350	98	Roofs,pavement, concrete, HSG C
	0.360	74	>75% Grass cover, Good, HSG C
	0.710	86	Weighted Average
	0.360	74	50.70% Pervious Area
	0.350	98	49.30% Impervious Area

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

Subcatchment 1B: Developed Conditions Basin 1B



Summary for Subcatchment 1: Developed Conditions Basin 1

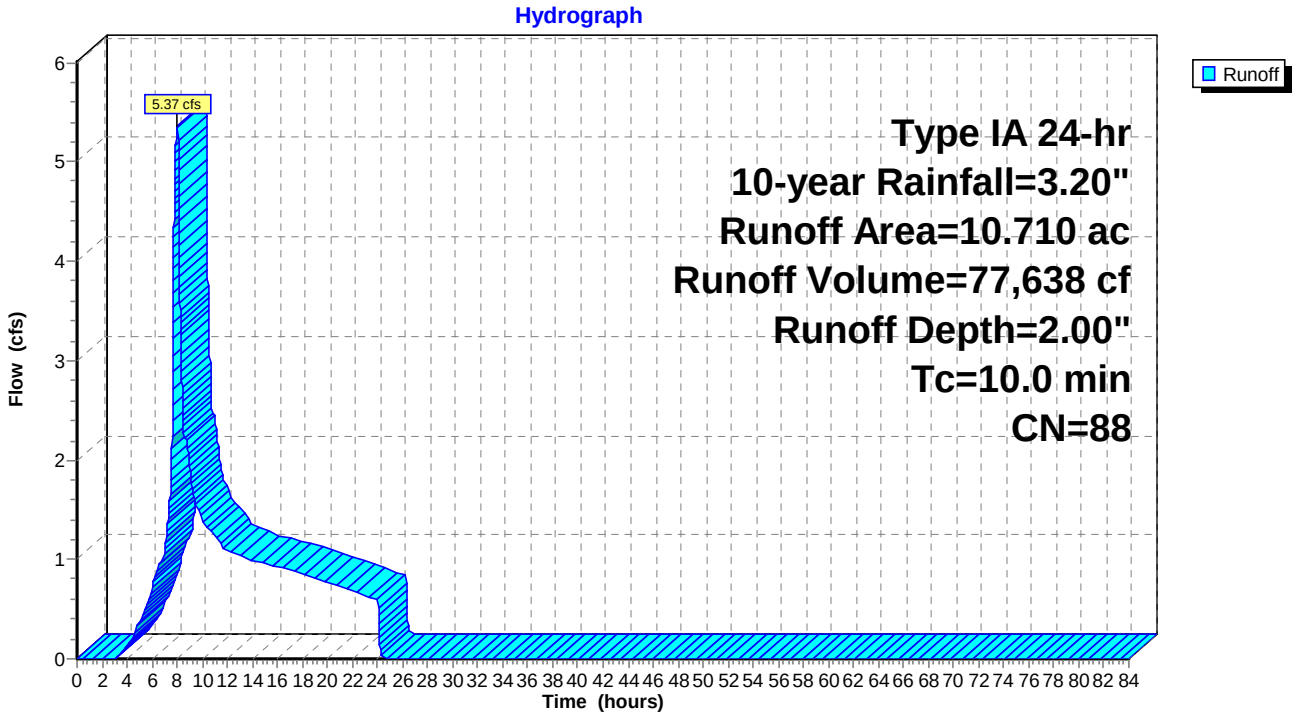
Runoff = 5.37 cfs @ 8.01 hrs, Volume= 77,638 cf, Depth= 2.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-84.00 hrs, dt= 0.01 hrs
Type IA 24-hr 10-year Rainfall=3.20"

	Area (ac)	CN	Description
*	6.430	98	Roofs,pavement, concrete, HSG C
	4.280	74	>75% Grass cover, Good, HSG C
	10.710	88	Weighted Average
	4.280	74	39.96% Pervious Area
	6.430	98	60.04% Impervious Area

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

Subcatchment 1: Developed Conditions Basin 1



Summary for Subcatchment OSD: Developed Conditions Off-site

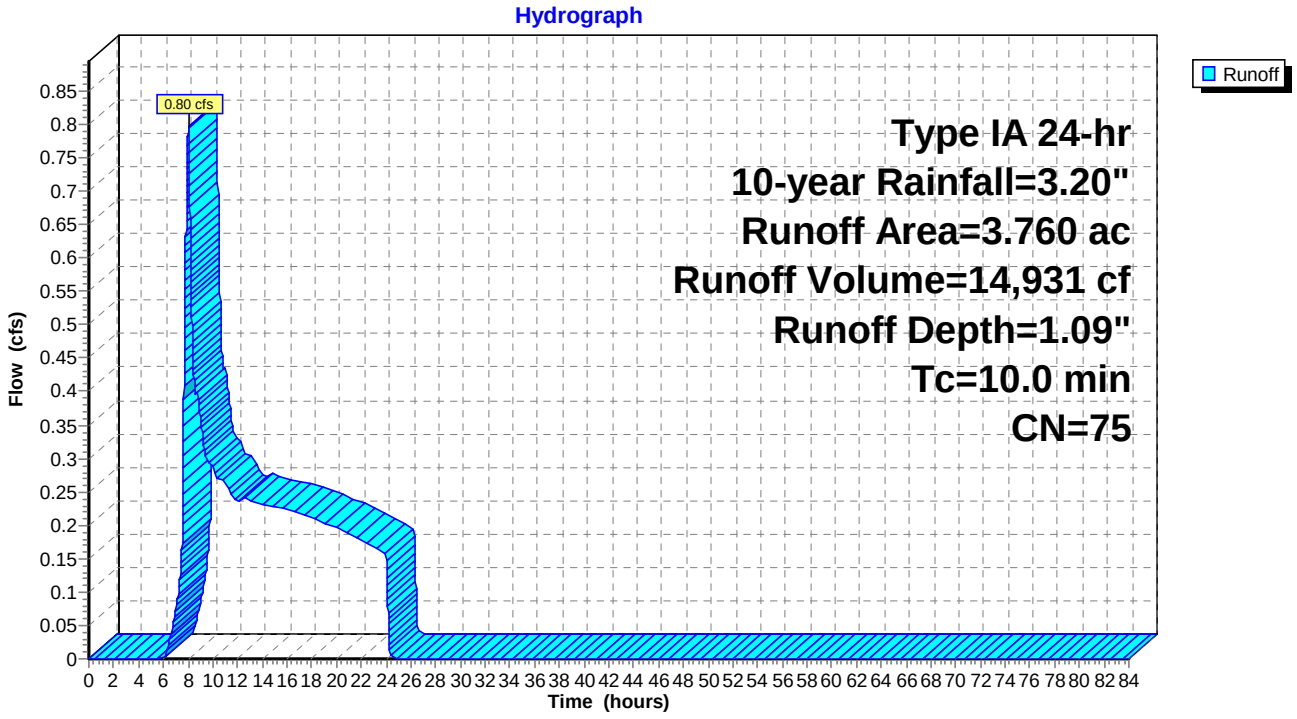
Runoff = 0.80 cfs @ 8.05 hrs, Volume= 14,931 cf, Depth= 1.09"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-84.00 hrs, dt= 0.01 hrs
Type IA 24-hr 10-year Rainfall=3.20"

	Area (ac)	CN	Description
*	3.260	72	City of Salem Pre-developed, HSG C
	0.500	98	Paved roads w/curbs & sewers, HSG C
	3.760	75	Weighted Average
	3.260	72	86.70% Pervious Area
	0.500	98	13.30% Impervious Area

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

Subcatchment OSD: Developed Conditions Off-site



Summary for Pond MH1: Control MH #1

Inflow Area = 630,313 sf, 47.89% Impervious, Inflow Depth = 1.76" for 10-year event
Inflow = 6.16 cfs @ 8.01 hrs, Volume= 92,569 cf
Outflow = 1.62 cfs @ 10.23 hrs, Volume= 82,686 cf, Atten= 74%, Lag= 133.0 min
Primary = 1.62 cfs @ 10.23 hrs, Volume= 82,686 cf

Routing by Stor-Ind method, Time Span= 0.00-84.00 hrs, dt= 0.01 hrs
Peak Elev= 544.49' @ 10.23 hrs Surf.Area= 8,500 sf Storage= 25,424 cf
Flood Elev= 561.00' Surf.Area= 8,500 sf Storage= 55,229 cf

Plug-Flow detention time= 334.9 min calculated for 82,676 cf (89% of inflow)
Center-of-Mass det. time= 267.8 min (1,049.8 - 781.9)

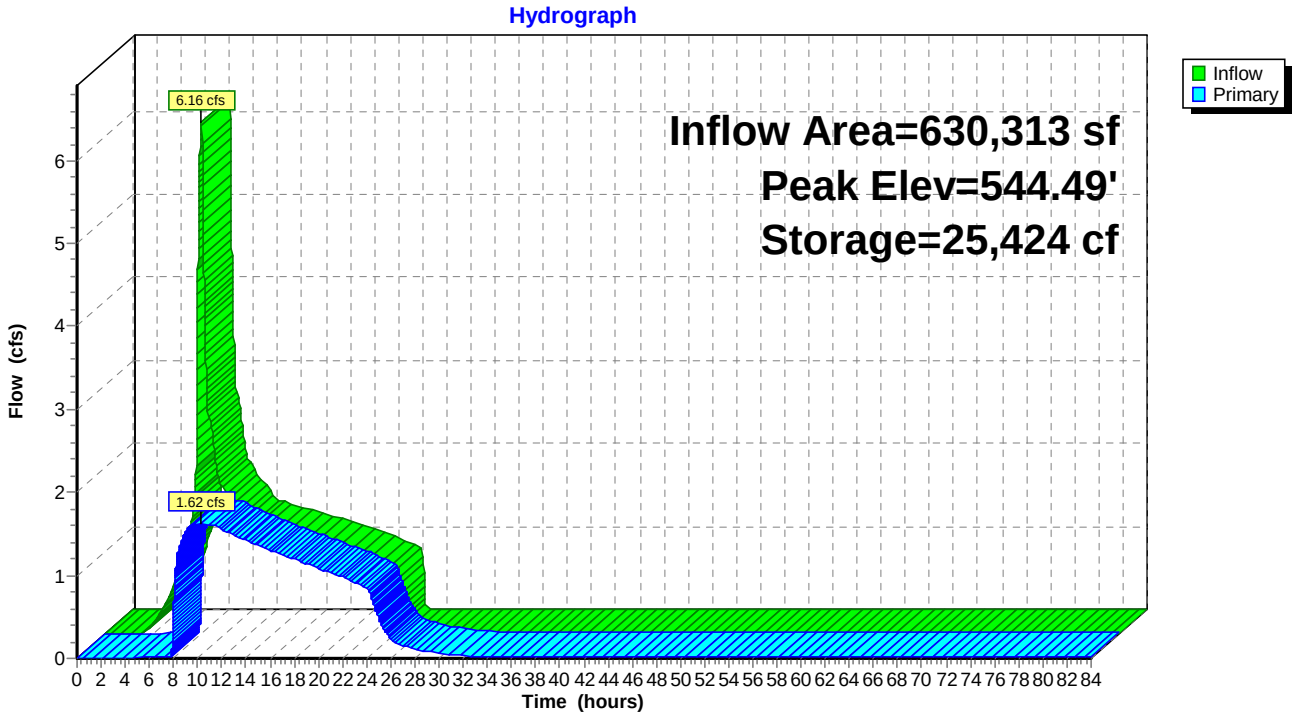
Volume	Invert	Avail.Storage	Storage Description
#1	537.00'	55,229 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
537.00	4	0.0	0	0
539.24	8,500	0.0	0	0
539.25	8,500	40.0	34	34
540.24	8,500	40.0	3,366	3,400
540.25	8,500	5.0	4	3,404
541.99	8,500	5.0	740	4,144
542.00	8,500	100.0	85	4,229
544.00	8,500	100.0	17,000	21,229
546.00	8,500	100.0	17,000	38,229
547.00	8,500	100.0	8,500	46,729
548.00	8,500	100.0	8,500	55,229

Device	Routing	Invert	Outlet Devices
#1	Primary	537.00'	**18.0" Round 18" Pipe** L= 62.0' RCP, rounded edge headwall, Ke= 0.100 Inlet / Outlet Invert= 537.00' / 535.00' S= 0.0323 '/' Cc= 0.900 n= 0.013, Flow Area= 1.77 sf
#2	Device 1	537.00'	**0.5" Vert. Orifice #1** C= 0.600 Limited to weir flow at low heads
#3	Device 1	543.00'	**7.5" Vert. Orifice #2** C= 0.600 Limited to weir flow at low heads
#4	Device 1	544.50'	**9.5" Vert. Orifice #3** C= 0.600 Limited to weir flow at low heads
#5	Device 1	547.00'	**24.0" Horiz. Overflow** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=1.62 cfs @ 10.23 hrs HW=544.49' (Free Discharge)
└**1=18" Pipe** (Passes 1.62 cfs of 26.83 cfs potential flow)
  ├**2=Orifice #1** (Orifice Controls 0.02 cfs @ 13.16 fps)
  ├**3=Orifice #2** (Orifice Controls 1.61 cfs @ 5.23 fps)
  ├**4=Orifice #3** (Controls 0.00 cfs)
  └**5=Overflow** (Controls 0.00 cfs)

Pond MH1: Control MH #1



Summary for Subcatchment OSN: Existing Conditions Off-site North

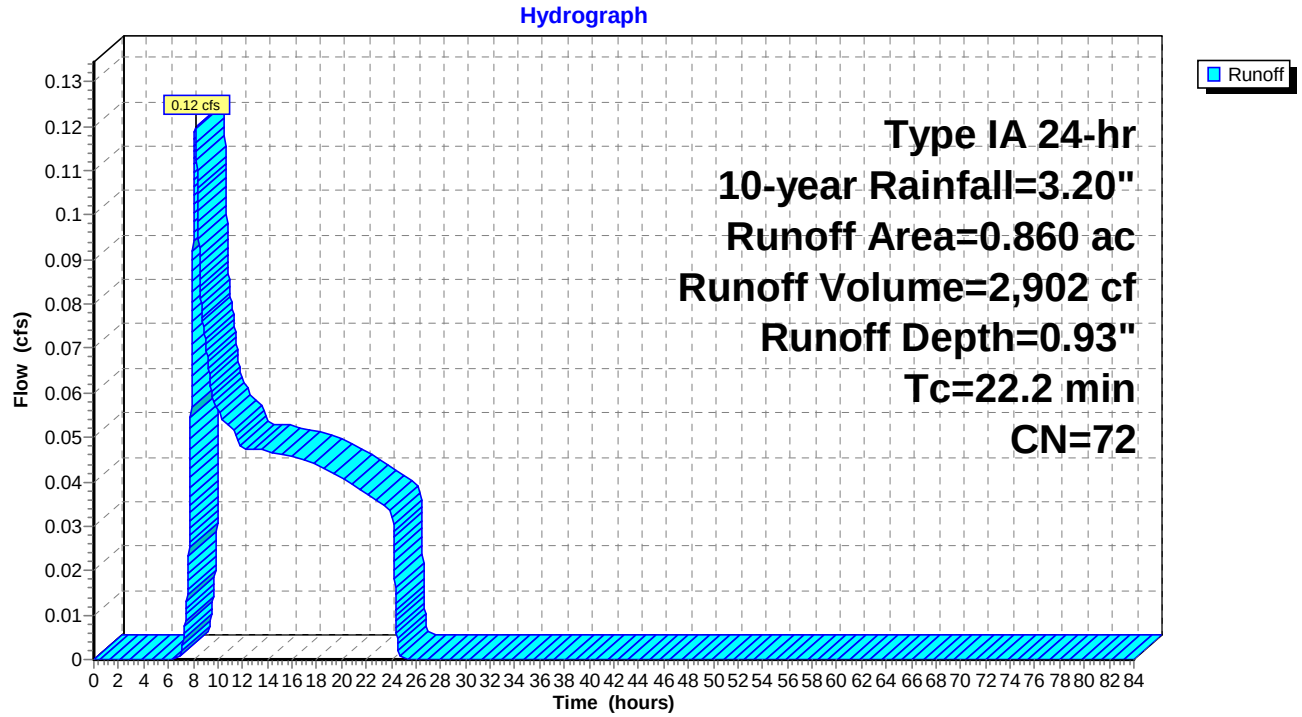
Runoff = 0.12 cfs @ 8.20 hrs, Volume= 2,902 cf, Depth= 0.93"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-84.00 hrs, dt= 0.01 hrs
Type IA 24-hr 10-year Rainfall=3.20"

	Area (ac)	CN	Description
*	0.860	72	City of Salem Pre-development, HSG C
	0.860	72	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
22.2					**Direct Entry, TR-55 Worksheet**

Subcatchment OSN: Existing Conditions Off-site North



Summary for Subcatchment NOS: Developed Conditions Off-site North

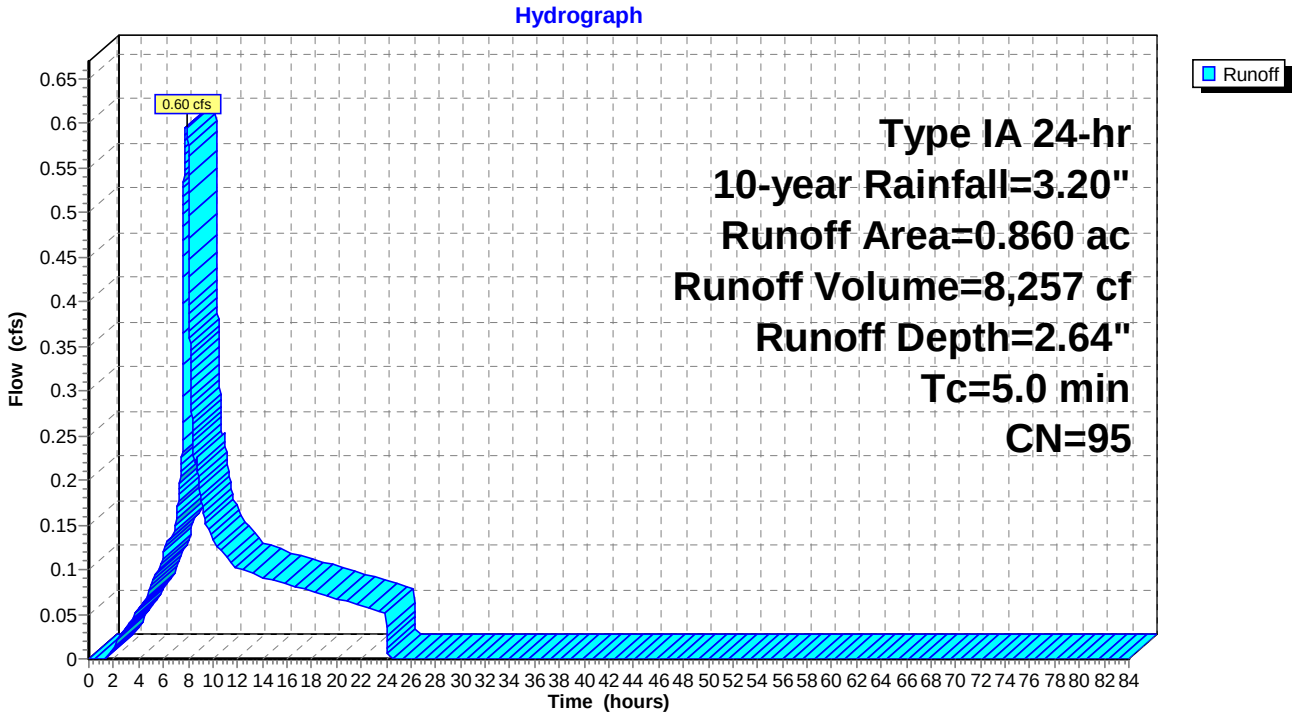
Runoff = 0.60 cfs @ 7.88 hrs, Volume= 8,257 cf, Depth= 2.64"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-84.00 hrs, dt= 0.01 hrs
Type IA 24-hr 10-year Rainfall=3.20"

	Area (ac)	CN	Description
*	0.760	98	Roofs,pavement, concrete, HSG C
	0.100	74	>75% Grass cover, Good, HSG C
	0.860	95	Weighted Average
	0.100	74	11.63% Pervious Area
	0.760	98	88.37% Impervious Area

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

Subcatchment NOS: Developed Conditions Off-site North



Summary for Pond MH2: Control MH #2

Inflow Area = 667,775 sf, 50.16% Impervious, Inflow Depth > 1.63" for 10-year event
Inflow = 1.76 cfs @ 9.96 hrs, Volume= 90,942 cf
Outflow = 1.76 cfs @ 10.02 hrs, Volume= 90,942 cf, Atten= 0%, Lag= 3.3 min
Primary = 1.76 cfs @ 10.02 hrs, Volume= 90,942 cf

Routing by Stor-Ind method, Time Span= 0.00-84.00 hrs, dt= 0.01 hrs
Peak Elev= 502.82' @ 10.02 hrs Surf.Area= 374 sf Storage= 151 cf

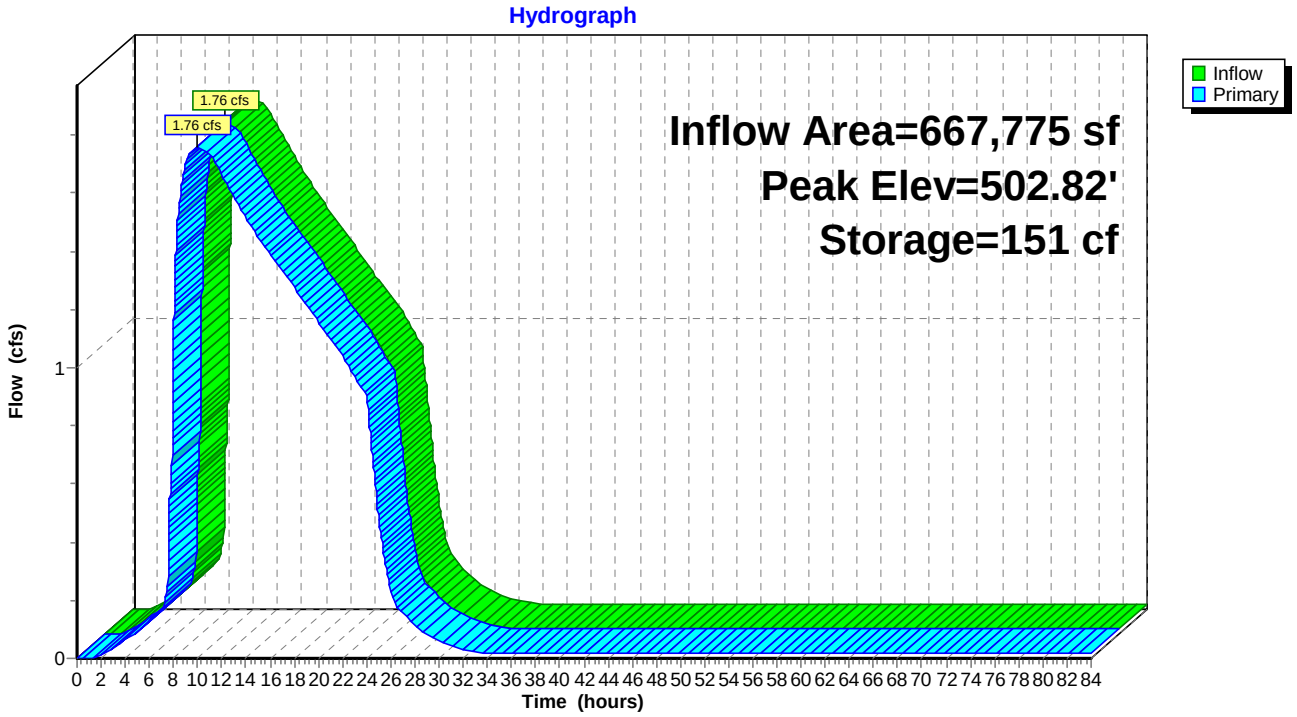
Plug-Flow detention time= 1.1 min calculated for 90,942 cf (100% of inflow)
Center-of-Mass det. time= 1.1 min (1,019.1 - 1,018.0)

Volume	Invert	Avail.Storage	Storage Description
#1	501.96'	2,356 cf	**60.0" Round 60" Detention Pipe** L= 120.0' S= 0.0050 '/'

Device	Routing	Invert	Outlet Devices
#1	Primary	499.77'	**18.0" Round Culvert** L= 110.0' RCP, rounded edge headwall, Ke= 0.100 Inlet / Outlet Invert= 499.77' / 484.72' S= 0.1368 '/' Cc= 0.900 n= 0.013, Flow Area= 1.77 sf
#2	Device 1	501.96'	**10.0" Vert. Orifice #1** C= 0.600 Limited to weir flow at low heads
#3	Device 1	507.50'	**18.0" Horiz. Overflow** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=1.76 cfs @ 10.02 hrs HW=502.82' (Free Discharge)
└**1=Culvert** (Passes 1.76 cfs of 17.61 cfs potential flow)
  ├**2=Orifice #1** (Orifice Controls 1.76 cfs @ 3.22 fps)
  └**3=Overflow** (Controls 0.00 cfs)

Pond MH2: Control MH #2



Summary for Subcatchment 1E: Existing Conditions Site

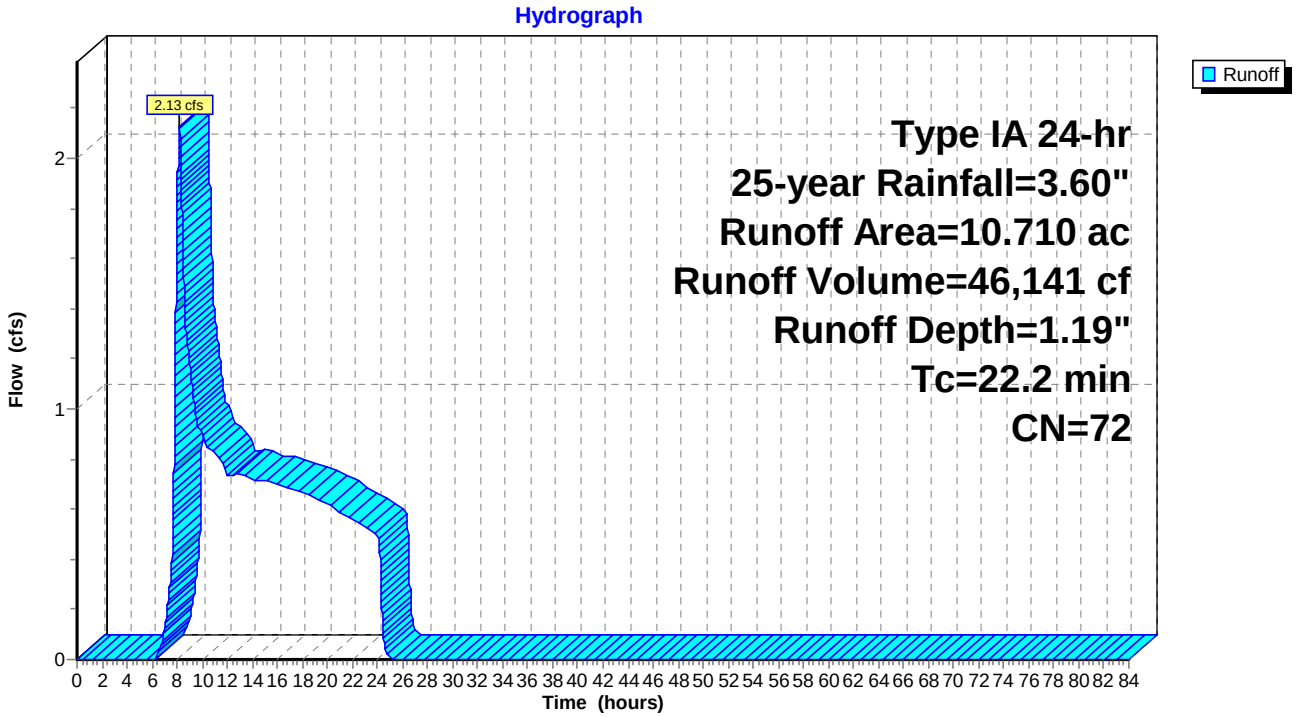
Runoff = 2.13 cfs @ 8.17 hrs, Volume= 46,141 cf, Depth= 1.19"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-84.00 hrs, dt= 0.01 hrs
Type IA 24-hr 25-year Rainfall=3.60"

	Area (ac)	CN	Description
*	10.710	72	City of Salem Pre-development, HSG C
	10.710	72	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
22.2					**Direct Entry, TR-55 Worksheet**

Subcatchment 1E: Existing Conditions Site



Summary for Subcatchment OSE: Existing Conditions Off-site

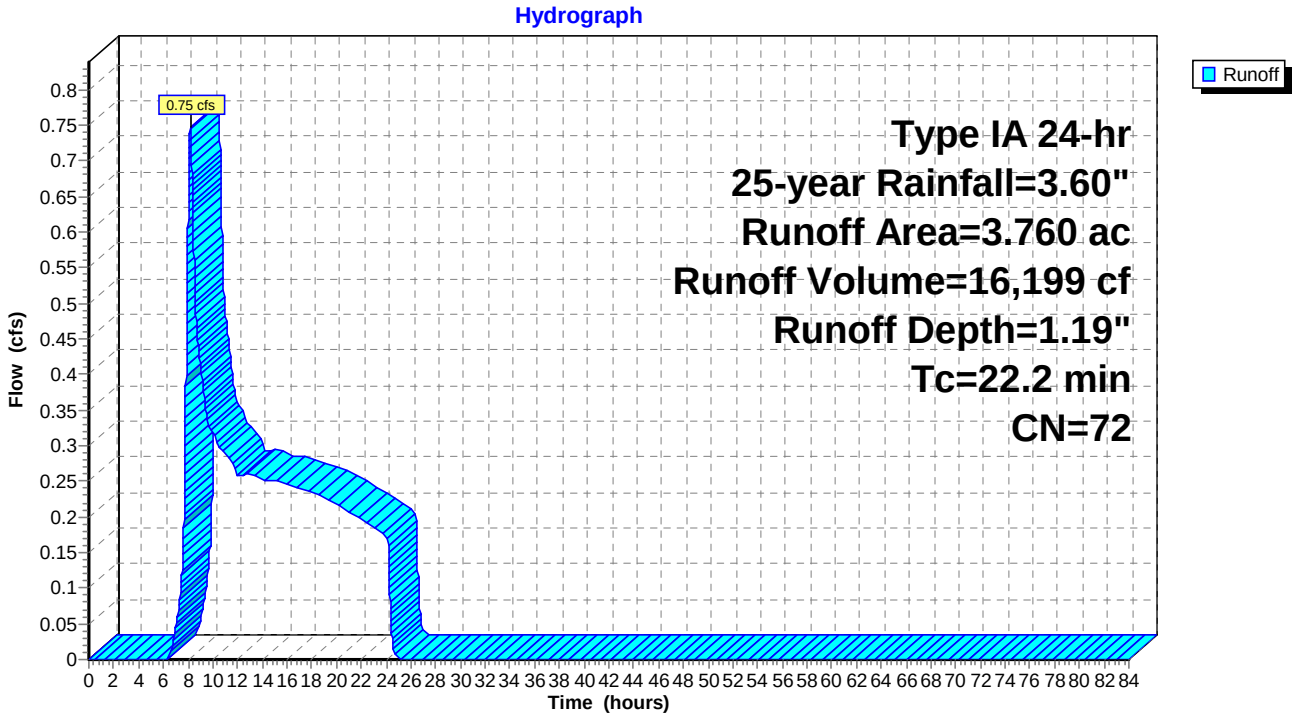
Runoff = 0.75 cfs @ 8.17 hrs, Volume= 16,199 cf, Depth= 1.19"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-84.00 hrs, dt= 0.01 hrs
Type IA 24-hr 25-year Rainfall=3.60"

	Area (ac)	CN	Description
*	3.760	72	City of Salem Pre-development, HSG C
	3.760	72	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
22.2					**Direct Entry, TR-55 Worksheet**

Subcatchment OSE: Existing Conditions Off-site



Summary for Subcatchment 1B: Developed Conditions Basin 1B

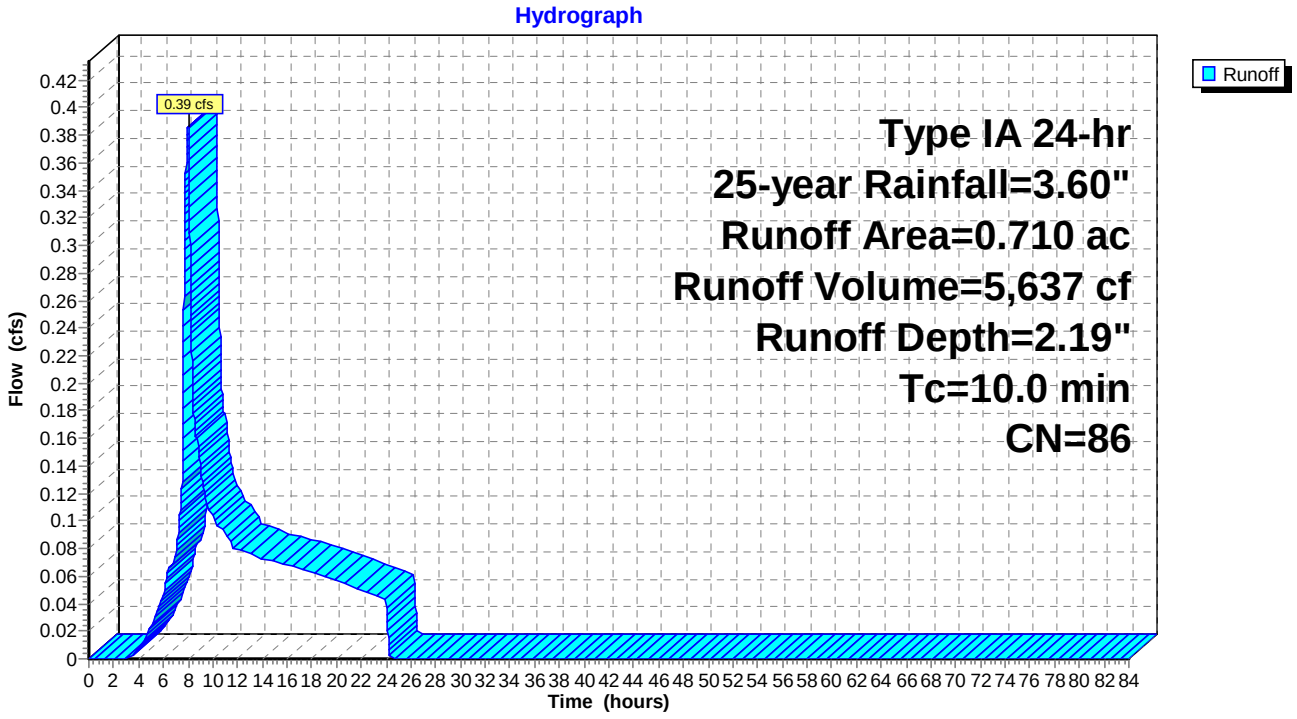
Runoff = 0.39 cfs @ 8.01 hrs, Volume= 5,637 cf, Depth= 2.19"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-84.00 hrs, dt= 0.01 hrs
Type IA 24-hr 25-year Rainfall=3.60"

	Area (ac)	CN	Description
*	0.350	98	Roofs,pavement, concrete, HSG C
	0.360	74	>75% Grass cover, Good, HSG C
	0.710	86	Weighted Average
	0.360	74	50.70% Pervious Area
	0.350	98	49.30% Impervious Area

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

Subcatchment 1B: Developed Conditions Basin 1B



Summary for Subcatchment 1: Developed Conditions Basin 1

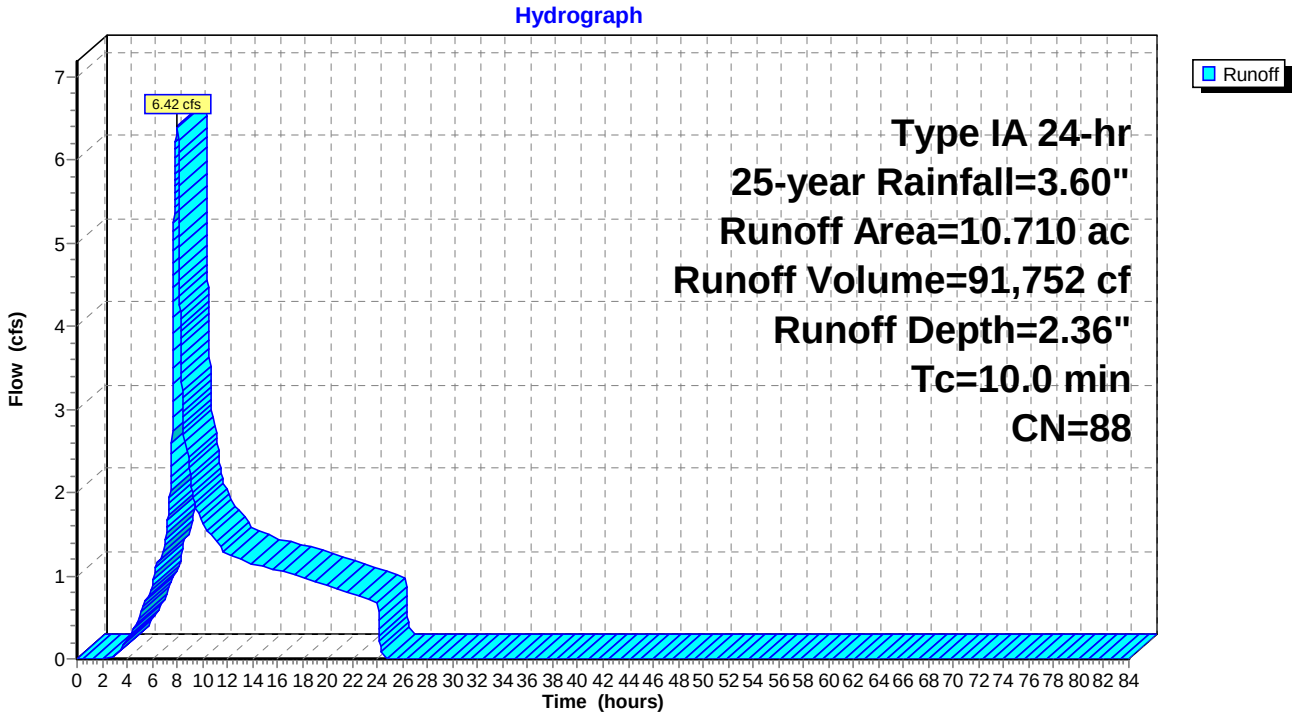
Runoff = 6.42 cfs @ 7.99 hrs, Volume= 91,752 cf, Depth= 2.36"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-84.00 hrs, dt= 0.01 hrs
Type IA 24-hr 25-year Rainfall=3.60"

	Area (ac)	CN	Description
*	6.430	98	Roofs,pavement, concrete, HSG C
	4.280	74	>75% Grass cover, Good, HSG C
	10.710	88	Weighted Average
	4.280	74	39.96% Pervious Area
	6.430	98	60.04% Impervious Area

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

Subcatchment 1: Developed Conditions Basin 1



Summary for Subcatchment OSD: Developed Conditions Off-site

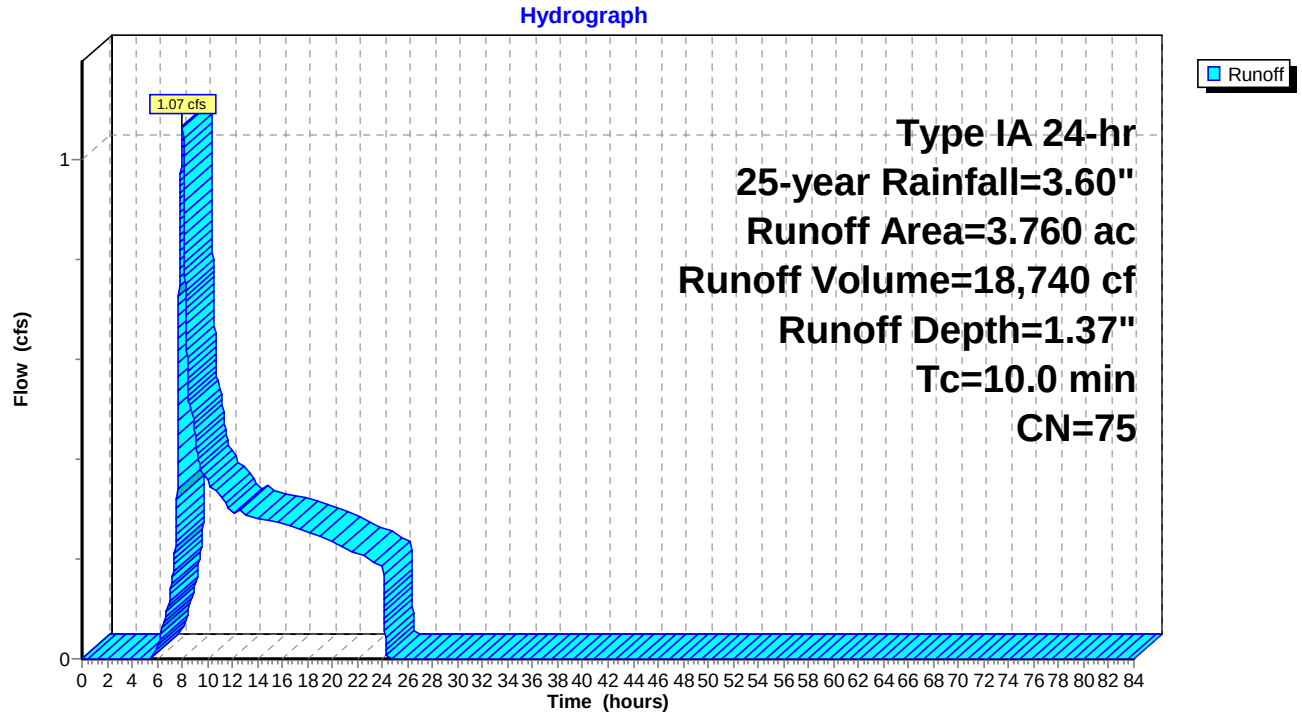
Runoff = 1.07 cfs @ 8.04 hrs, Volume= 18,740 cf, Depth= 1.37"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-84.00 hrs, dt= 0.01 hrs
Type IA 24-hr 25-year Rainfall=3.60"

	Area (ac)	CN	Description
*	3.260	72	City of Salem Pre-developed, HSG C
	0.500	98	Paved roads w/curbs & sewers, HSG C
	3.760	75	Weighted Average
	3.260	72	86.70% Pervious Area
	0.500	98	13.30% Impervious Area

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

Subcatchment OSD: Developed Conditions Off-site



Summary for Pond MH1: Control MH #1

Inflow Area = 630,313 sf, 47.89% Impervious, Inflow Depth = 2.10" for 25-year event
Inflow = 7.48 cfs @ 8.01 hrs, Volume= 110,493 cf
Outflow = 2.41 cfs @ 9.23 hrs, Volume= 100,591 cf, Atten= 68%, Lag= 73.1 min
Primary = 2.41 cfs @ 9.23 hrs, Volume= 100,591 cf

Routing by Stor-Ind method, Time Span= 0.00-84.00 hrs, dt= 0.01 hrs
Peak Elev= 544.89' @ 9.23 hrs Surf.Area= 8,500 sf Storage= 28,836 cf
Flood Elev= 561.00' Surf.Area= 8,500 sf Storage= 55,229 cf

Plug-Flow detention time= 302.0 min calculated for 100,579 cf (91% of inflow)
Center-of-Mass det. time= 244.7 min (1,017.1 - 772.4)

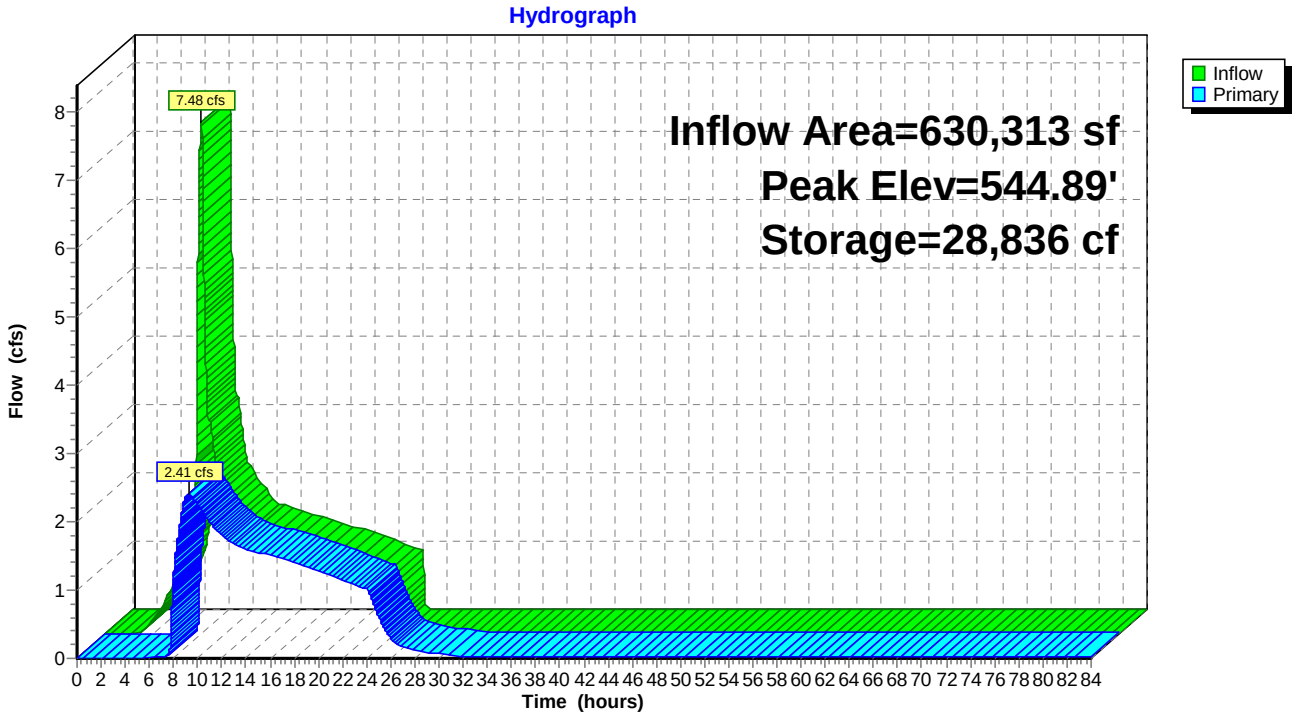
Volume	Invert	Avail.Storage	Storage Description
#1	537.00'	55,229 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
537.00	4	0.0	0	0
539.24	8,500	0.0	0	0
539.25	8,500	40.0	34	34
540.24	8,500	40.0	3,366	3,400
540.25	8,500	5.0	4	3,404
541.99	8,500	5.0	740	4,144
542.00	8,500	100.0	85	4,229
544.00	8,500	100.0	17,000	21,229
546.00	8,500	100.0	17,000	38,229
547.00	8,500	100.0	8,500	46,729
548.00	8,500	100.0	8,500	55,229

Device	Routing	Invert	Outlet Devices
#1	Primary	537.00'	**18.0" Round 18" Pipe** L= 62.0' RCP, rounded edge headwall, Ke= 0.100 Inlet / Outlet Invert= 537.00' / 535.00' S= 0.0323 '/' Cc= 0.900 n= 0.013, Flow Area= 1.77 sf
#2	Device 1	537.00'	**0.5" Vert. Orifice #1** C= 0.600 Limited to weir flow at low heads
#3	Device 1	543.00'	**7.5" Vert. Orifice #2** C= 0.600 Limited to weir flow at low heads
#4	Device 1	544.50'	**9.5" Vert. Orifice #3** C= 0.600 Limited to weir flow at low heads
#5	Device 1	547.00'	**24.0" Horiz. Overflow** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=2.40 cfs @ 9.23 hrs HW=544.89' (Free Discharge)
└**1=18" Pipe** (Passes 2.40 cfs of 27.49 cfs potential flow)
  ├**2=Orifice #1** (Orifice Controls 0.02 cfs @ 13.51 fps)
  ├**3=Orifice #2** (Orifice Controls 1.86 cfs @ 6.06 fps)
  ├**4=Orifice #3** (Orifice Controls 0.53 cfs @ 2.14 fps)
  └**5=Overflow** (Controls 0.00 cfs)

Pond MH1: Control MH #1



Summary for Subcatchment OSN: Existing Conditions Off-site North

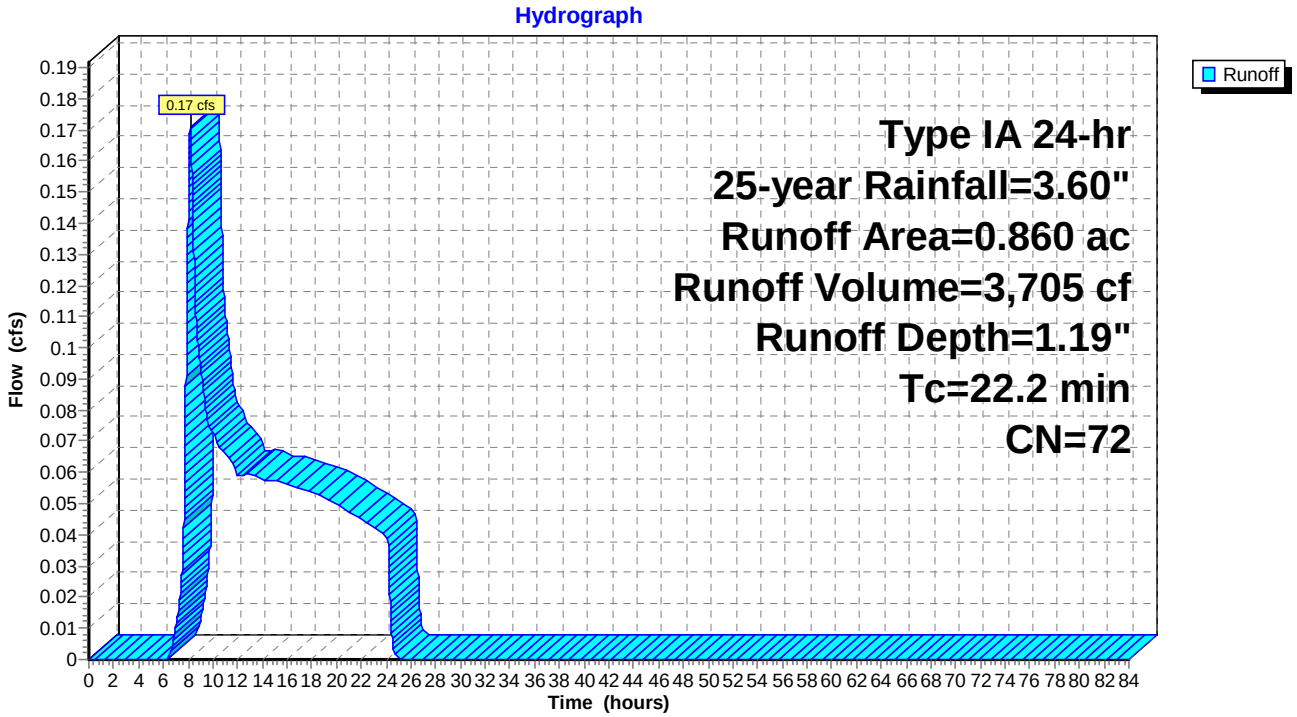
Runoff = 0.17 cfs @ 8.17 hrs, Volume= 3,705 cf, Depth= 1.19"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-84.00 hrs, dt= 0.01 hrs
Type IA 24-hr 25-year Rainfall=3.60"

	Area (ac)	CN	Description
*	0.860	72	City of Salem Pre-development, HSG C
	0.860	72	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
22.2					**Direct Entry, TR-55 Worksheet**

Subcatchment OSN: Existing Conditions Off-site North



Summary for Subcatchment NOS: Developed Conditions Off-site North

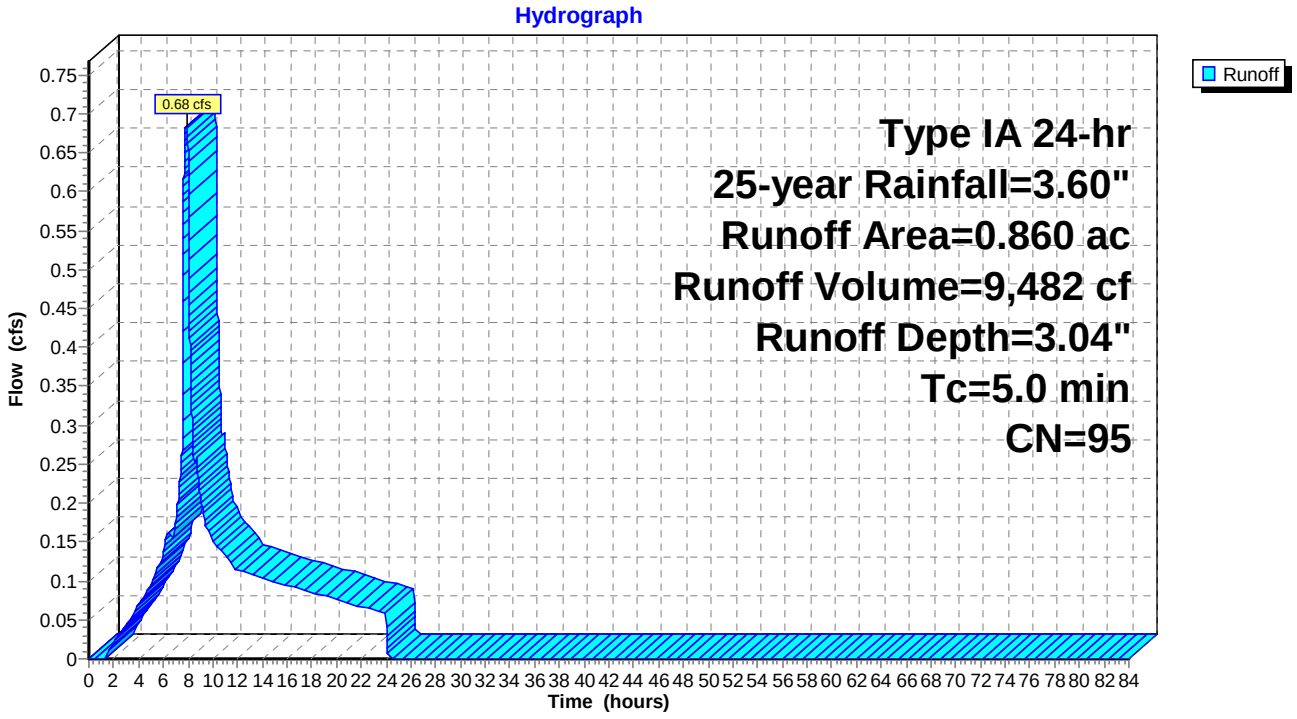
Runoff = 0.68 cfs @ 7.87 hrs, Volume= 9,482 cf, Depth= 3.04"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-84.00 hrs, dt= 0.01 hrs
Type IA 24-hr 25-year Rainfall=3.60"

	Area (ac)	CN	Description
*	0.760	98	Roofs,pavement, concrete, HSG C
	0.100	74	>75% Grass cover, Good, HSG C
	0.860	95	Weighted Average
	0.100	74	11.63% Pervious Area
	0.760	98	88.37% Impervious Area

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

Subcatchment NOS: Developed Conditions Off-site North



Summary for Pond MH2: Control MH #2

Inflow Area = 667,775 sf, 50.16% Impervious, Inflow Depth > 1.98" for 25-year event
Inflow = 2.60 cfs @ 9.16 hrs, Volume= 110,073 cf
Outflow = 2.59 cfs @ 9.27 hrs, Volume= 110,073 cf, Atten= 0%, Lag= 6.6 min
Primary = 2.59 cfs @ 9.27 hrs, Volume= 110,073 cf

Routing by Stor-Ind method, Time Span= 0.00-84.00 hrs, dt= 0.01 hrs
Peak Elev= 503.35' @ 9.27 hrs Surf.Area= 493 sf Storage= 383 cf

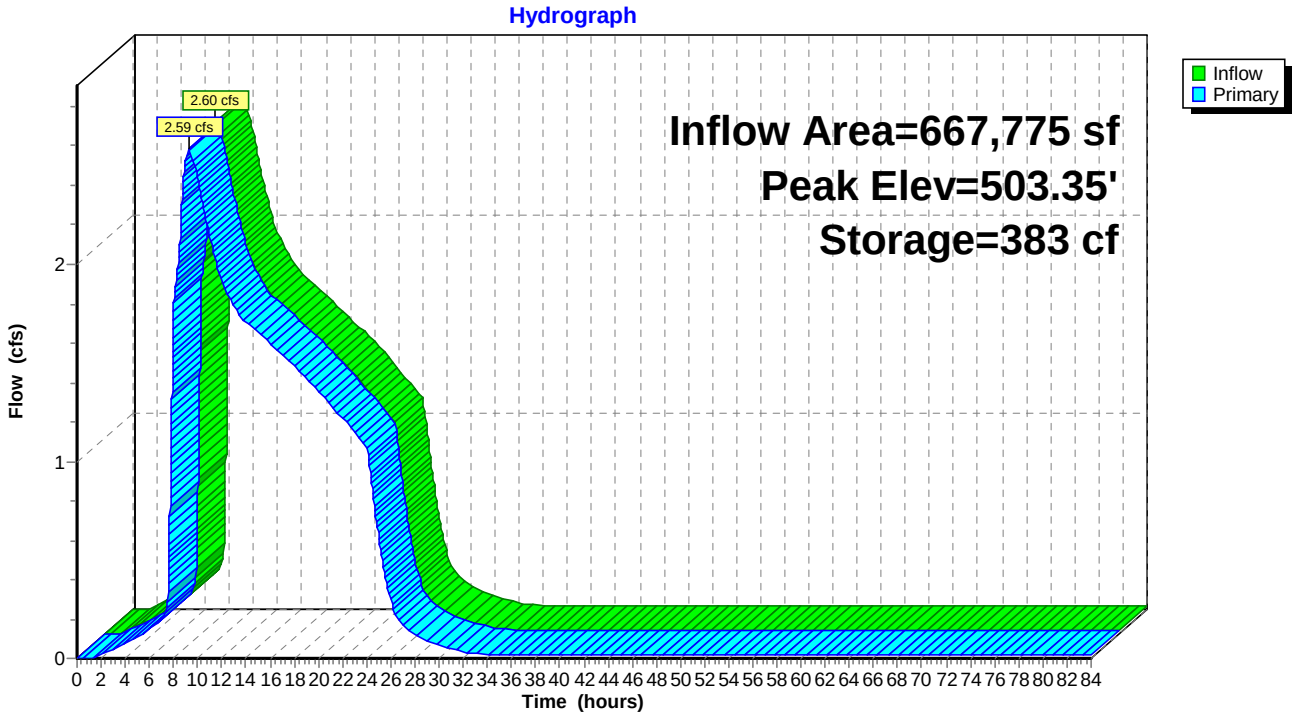
Plug-Flow detention time= 1.4 min calculated for 110,073 cf (100% of inflow)
Center-of-Mass det. time= 1.4 min (990.7 - 989.3)

Volume	Invert	Avail.Storage	Storage Description
#1	501.96'	2,356 cf	**60.0" Round 60" Detention Pipe** L= 120.0' S= 0.0050 '/'

Device	Routing	Invert	Outlet Devices
#1	Primary	499.77'	**18.0" Round Culvert** L= 110.0' RCP, rounded edge headwall, Ke= 0.100 Inlet / Outlet Invert= 499.77' / 484.72' S= 0.1368 '/' Cc= 0.900 n= 0.013, Flow Area= 1.77 sf
#2	Device 1	501.96'	**10.0" Vert. Orifice #1** C= 0.600 Limited to weir flow at low heads
#3	Device 1	507.50'	**18.0" Horiz. Overflow** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=2.59 cfs @ 9.27 hrs HW=503.35' (Free Discharge)
└**1=Culvert** (Passes 2.59 cfs of 19.52 cfs potential flow)
  └**2=Orifice #1** (Orifice Controls 2.59 cfs @ 4.75 fps)
  └**3=Overflow** (Controls 0.00 cfs)

Pond MH2: Control MH #2



Summary for Subcatchment 1E: Existing Conditions Site

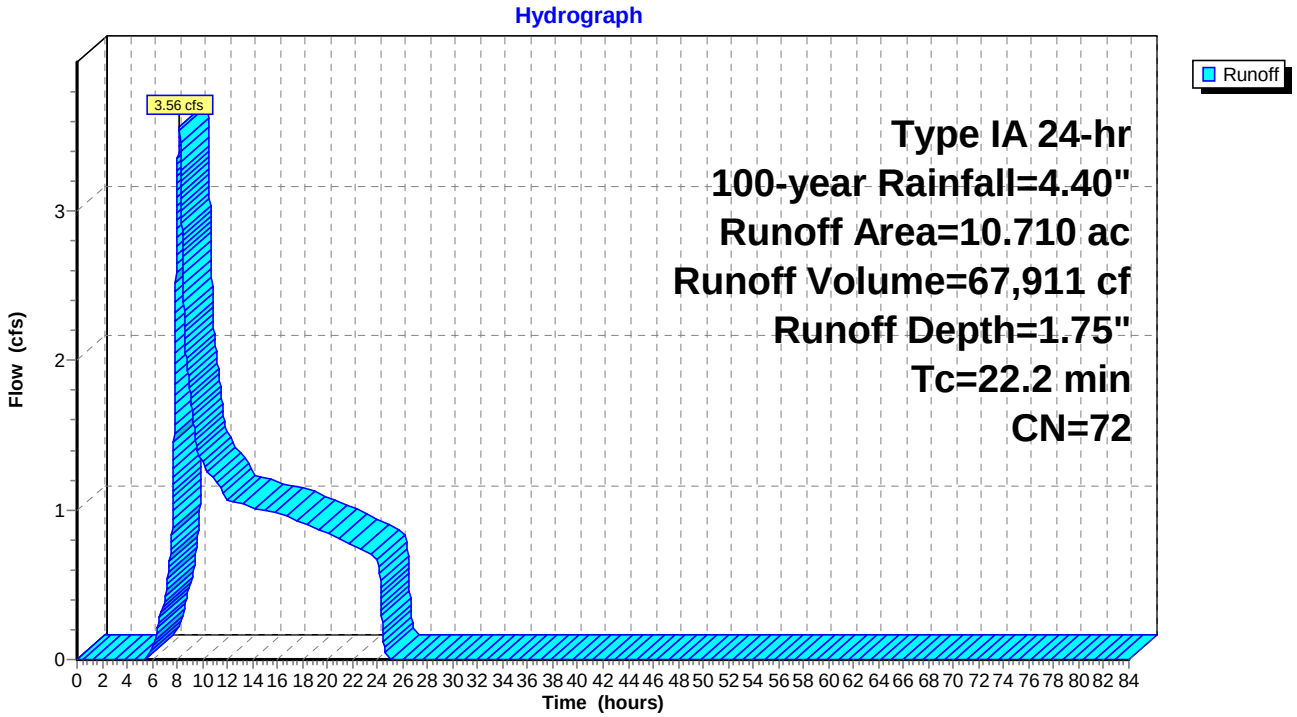
Runoff = 3.56 cfs @ 8.16 hrs, Volume= 67,911 cf, Depth= 1.75"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-84.00 hrs, dt= 0.01 hrs
Type IA 24-hr 100-year Rainfall=4.40"

	Area (ac)	CN	Description
*	10.710	72	City of Salem Pre-development, HSG C
	10.710	72	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
22.2					**Direct Entry, TR-55 Worksheet**

Subcatchment 1E: Existing Conditions Site



Summary for Subcatchment OSE: Existing Conditions Off-site

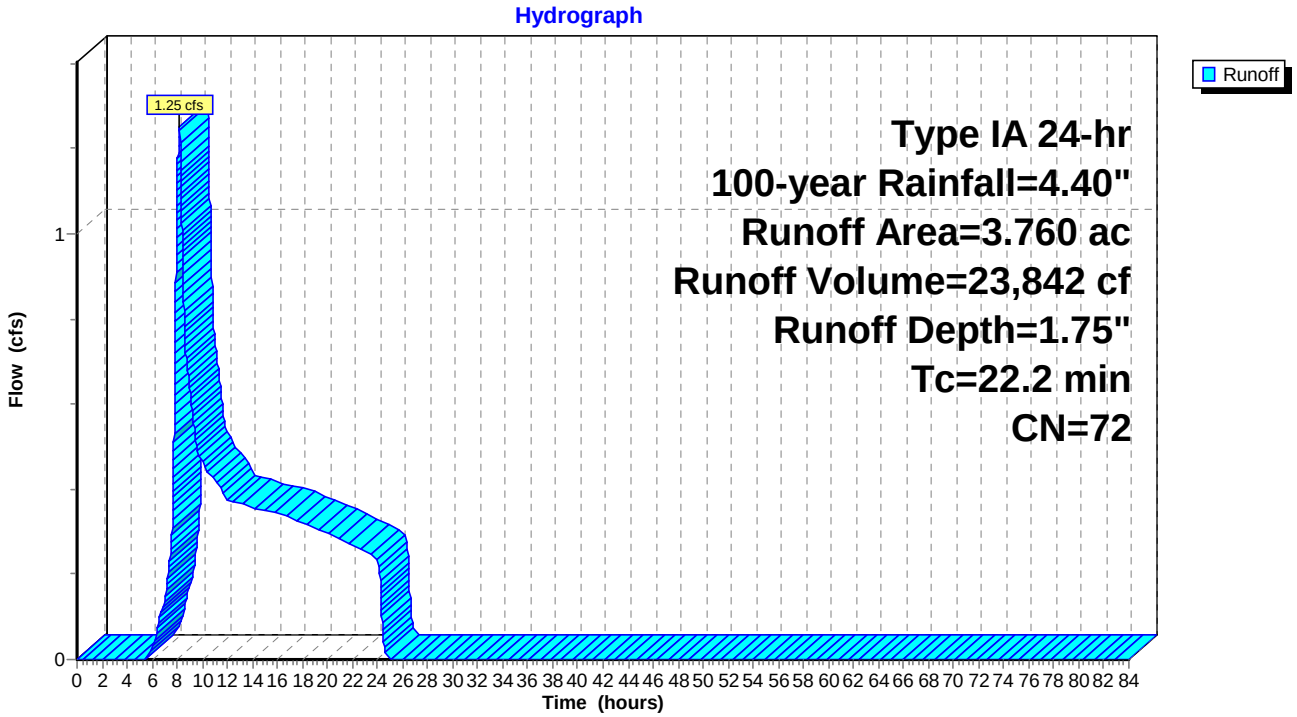
Runoff = 1.25 cfs @ 8.16 hrs, Volume= 23,842 cf, Depth= 1.75"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-84.00 hrs, dt= 0.01 hrs
Type IA 24-hr 100-year Rainfall=4.40"

	Area (ac)	CN	Description
*	3.760	72	City of Salem Pre-development, HSG C
	3.760	72	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
22.2					**Direct Entry, TR-55 Worksheet**

Subcatchment OSE: Existing Conditions Off-site



Summary for Subcatchment 1B: Developed Conditions Basin 1B

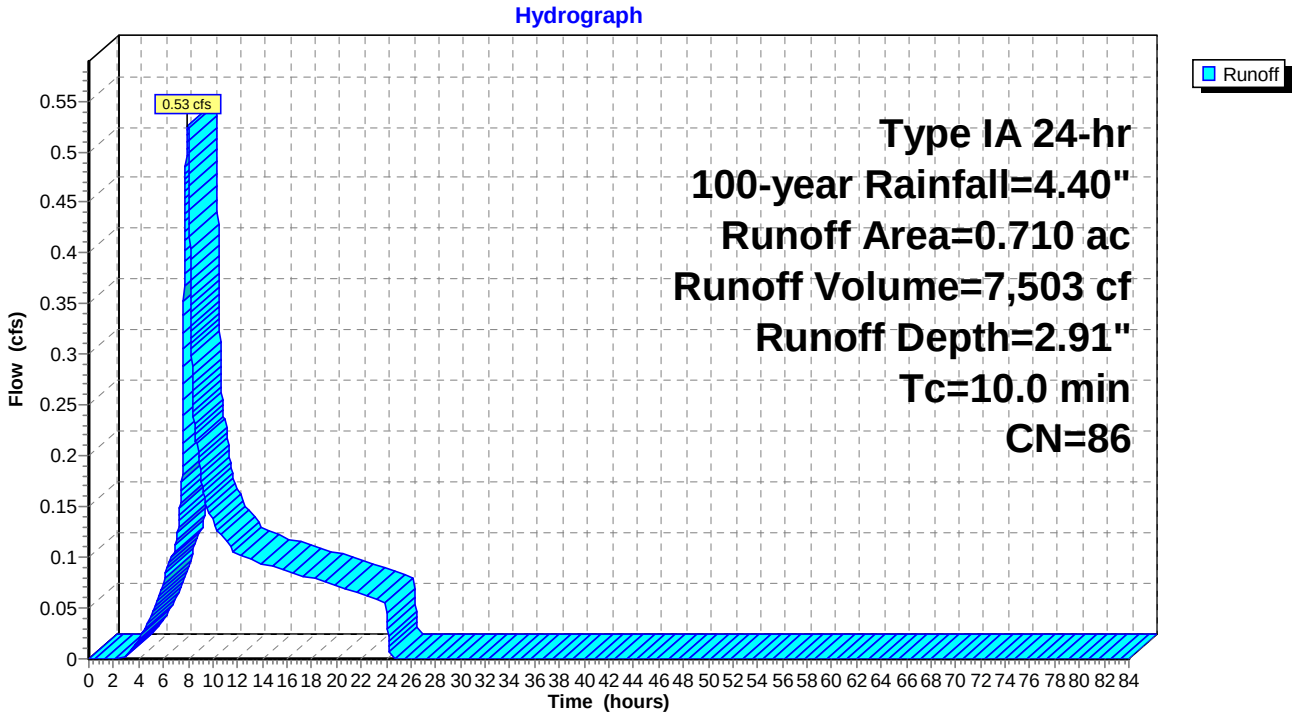
Runoff = 0.53 cfs @ 7.99 hrs, Volume= 7,503 cf, Depth= 2.91"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-84.00 hrs, dt= 0.01 hrs
Type IA 24-hr 100-year Rainfall=4.40"

	Area (ac)	CN	Description
*	0.350	98	Roofs,pavement, concrete, HSG C
	0.360	74	>75% Grass cover, Good, HSG C
	0.710	86	Weighted Average
	0.360	74	50.70% Pervious Area
	0.350	98	49.30% Impervious Area

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

Subcatchment 1B: Developed Conditions Basin 1B



Summary for Subcatchment 1: Developed Conditions Basin 1

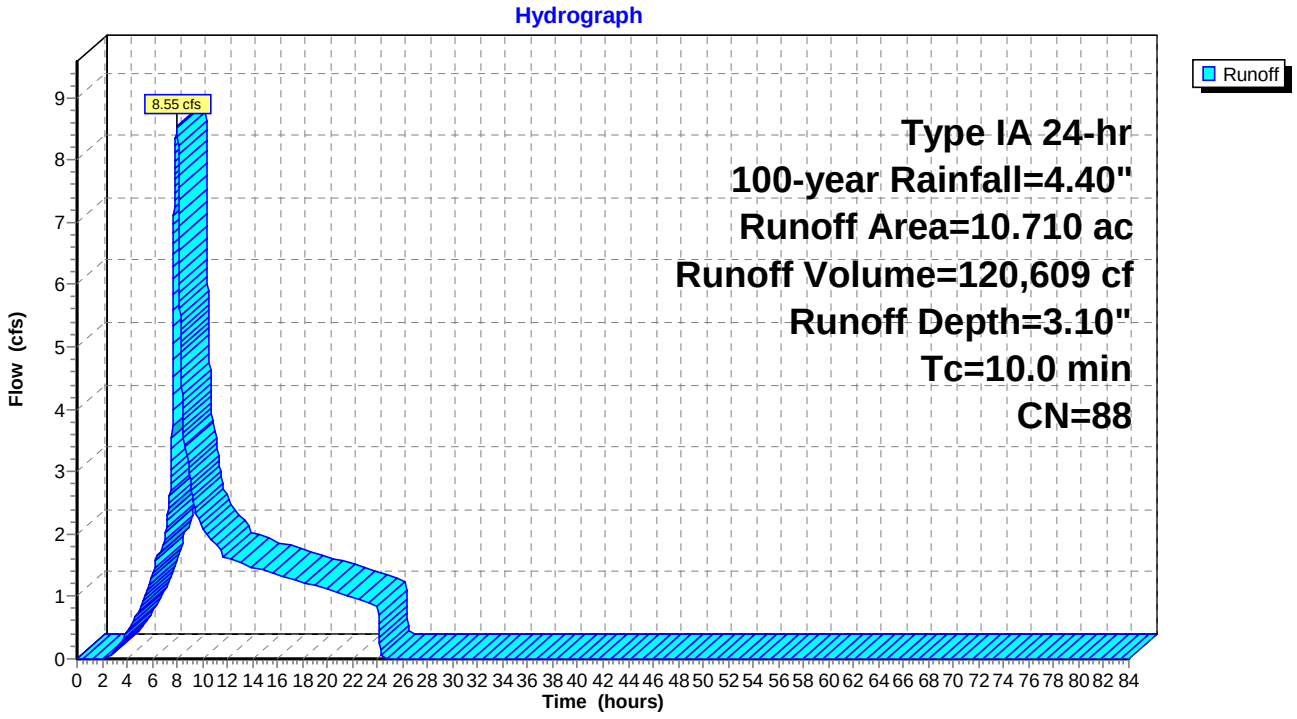
Runoff = 8.55 cfs @ 7.99 hrs, Volume= 120,609 cf, Depth= 3.10"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-84.00 hrs, dt= 0.01 hrs
Type IA 24-hr 100-year Rainfall=4.40"

	Area (ac)	CN	Description
*	6.430	98	Roofs,pavement, concrete, HSG C
	4.280	74	>75% Grass cover, Good, HSG C
	10.710	88	Weighted Average
	4.280	74	39.96% Pervious Area
	6.430	98	60.04% Impervious Area

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

Subcatchment 1: Developed Conditions Basin 1



Summary for Subcatchment OSD: Developed Conditions Off-site

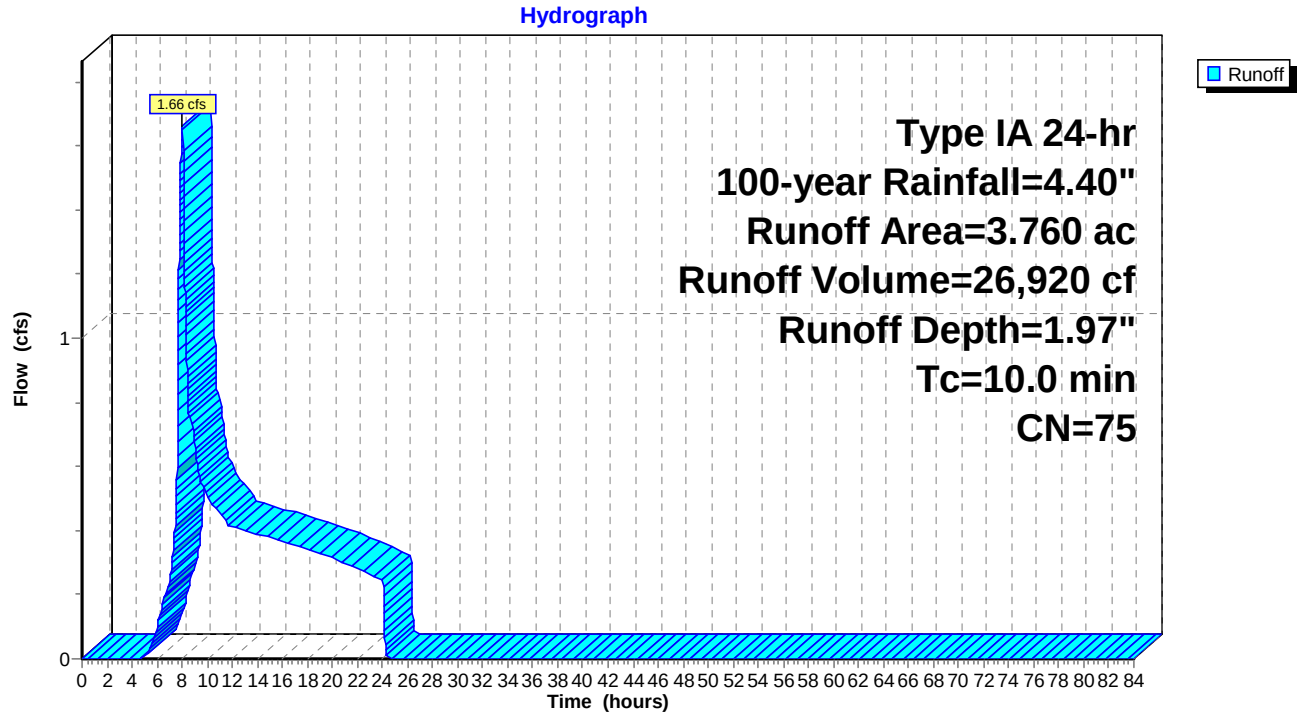
Runoff = 1.66 cfs @ 8.03 hrs, Volume= 26,920 cf, Depth= 1.97"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-84.00 hrs, dt= 0.01 hrs
Type IA 24-hr 100-year Rainfall=4.40"

	Area (ac)	CN	Description
*	3.260	72	City of Salem Pre-developed, HSG C
	0.500	98	Paved roads w/curbs & sewers, HSG C
	3.760	75	Weighted Average
	3.260	72	86.70% Pervious Area
	0.500	98	13.30% Impervious Area

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

Subcatchment OSD: Developed Conditions Off-site



Summary for Pond MH1: Control MH #1

Inflow Area = 630,313 sf, 47.89% Impervious, Inflow Depth = 2.81" for 100-year event
Inflow = 10.20 cfs @ 7.99 hrs, Volume= 147,528 cf
Outflow = 4.20 cfs @ 8.56 hrs, Volume= 137,591 cf, Atten= 59%, Lag= 33.9 min
Primary = 4.20 cfs @ 8.56 hrs, Volume= 137,591 cf

Routing by Stor-Ind method, Time Span= 0.00-84.00 hrs, dt= 0.01 hrs
Peak Elev= 545.58' @ 8.56 hrs Surf.Area= 8,500 sf Storage= 34,669 cf
Flood Elev= 561.00' Surf.Area= 8,500 sf Storage= 55,229 cf

Plug-Flow detention time= 251.9 min calculated for 137,575 cf (93% of inflow)
Center-of-Mass det. time= 207.5 min (964.7 - 757.2)

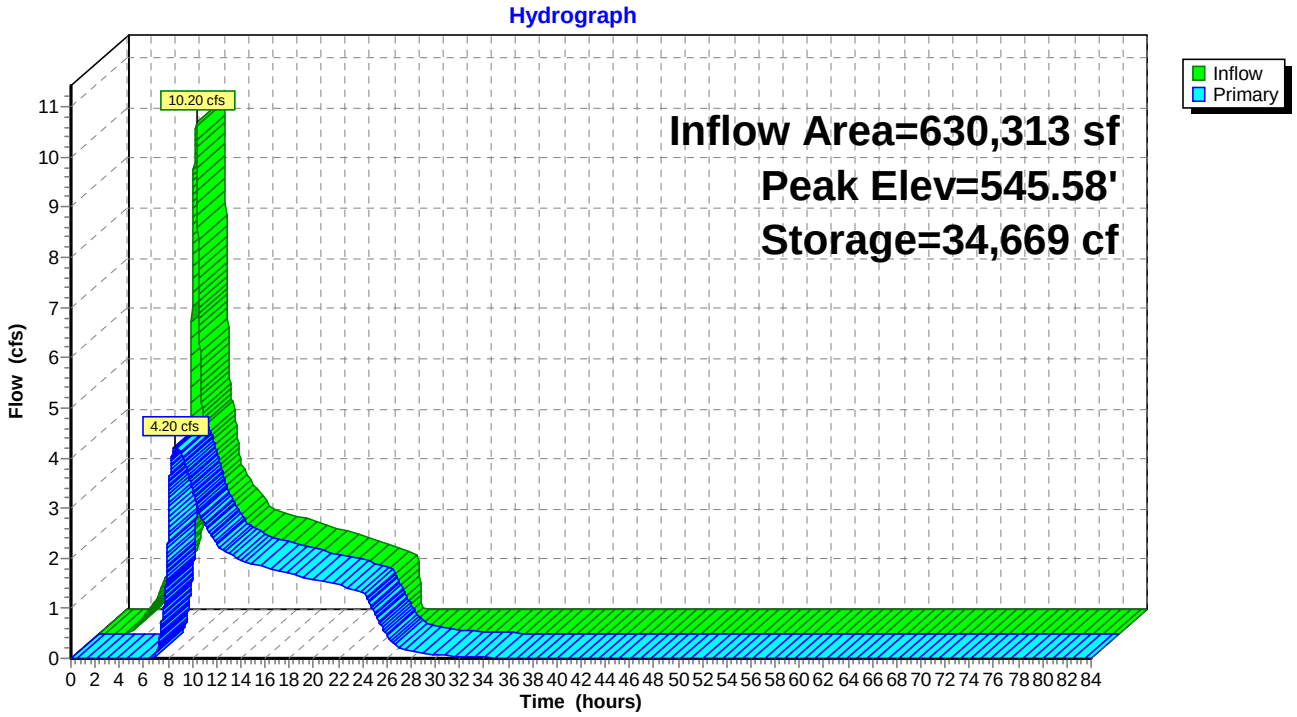
Volume	Invert	Avail.Storage	Storage Description
#1	537.00'	55,229 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
537.00	4	0.0	0	0
539.24	8,500	0.0	0	0
539.25	8,500	40.0	34	34
540.24	8,500	40.0	3,366	3,400
540.25	8,500	5.0	4	3,404
541.99	8,500	5.0	740	4,144
542.00	8,500	100.0	85	4,229
544.00	8,500	100.0	17,000	21,229
546.00	8,500	100.0	17,000	38,229
547.00	8,500	100.0	8,500	46,729
548.00	8,500	100.0	8,500	55,229

Device	Routing	Invert	Outlet Devices
#1	Primary	537.00'	**18.0" Round 18" Pipe** L= 62.0' RCP, rounded edge headwall, Ke= 0.100 Inlet / Outlet Invert= 537.00' / 535.00' S= 0.0323 '/' Cc= 0.900 n= 0.013, Flow Area= 1.77 sf
#2	Device 1	537.00'	**0.5" Vert. Orifice #1** C= 0.600 Limited to weir flow at low heads
#3	Device 1	543.00'	**7.5" Vert. Orifice #2** C= 0.600 Limited to weir flow at low heads
#4	Device 1	544.50'	**9.5" Vert. Orifice #3** C= 0.600 Limited to weir flow at low heads
#5	Device 1	547.00'	**24.0" Horiz. Overflow** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=4.21 cfs @ 8.56 hrs HW=545.58' (Free Discharge)
└**1=18" Pipe** (Passes 4.21 cfs of 28.59 cfs potential flow)
  ├**2=Orifice #1** (Orifice Controls 0.02 cfs @ 14.09 fps)
  ├**3=Orifice #2** (Orifice Controls 2.22 cfs @ 7.25 fps)
  ├**4=Orifice #3** (Orifice Controls 1.96 cfs @ 3.99 fps)
  └**5=Overflow** (Controls 0.00 cfs)

Pond MH1: Control MH #1



Summary for Subcatchment OSN: Existing Conditions Off-site North

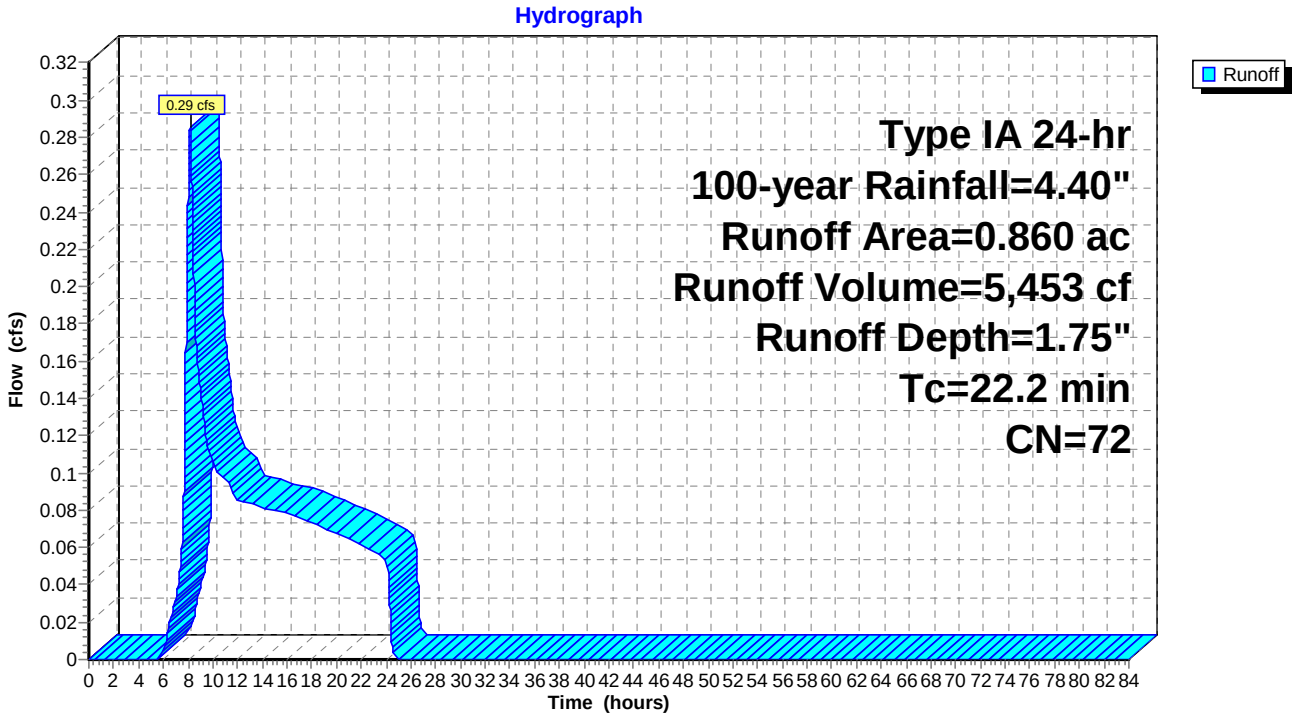
Runoff = 0.29 cfs @ 8.16 hrs, Volume= 5,453 cf, Depth= 1.75"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-84.00 hrs, dt= 0.01 hrs
Type IA 24-hr 100-year Rainfall=4.40"

	Area (ac)	CN	Description
*	0.860	72	City of Salem Pre-development, HSG C
	0.860	72	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
22.2					**Direct Entry, TR-55 Worksheet**

Subcatchment OSN: Existing Conditions Off-site North



Summary for Subcatchment NOS: Developed Conditions Off-site North

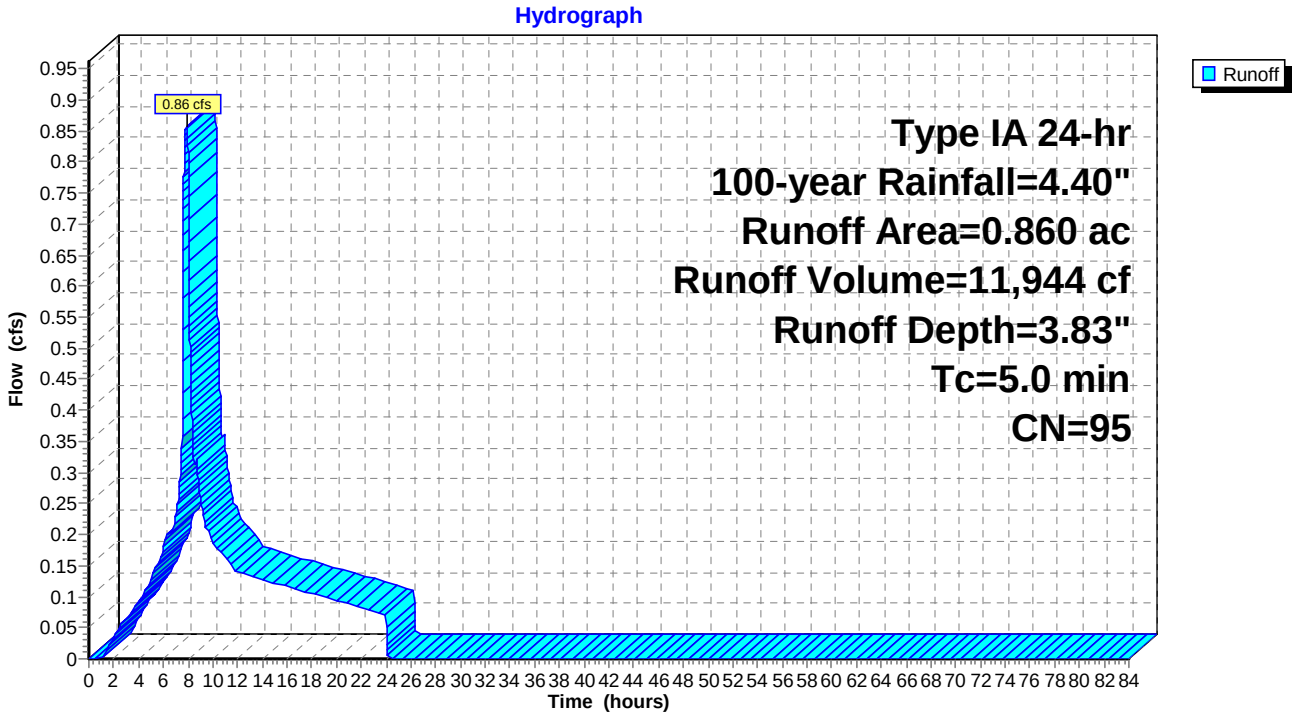
Runoff = 0.86 cfs @ 7.87 hrs, Volume= 11,944 cf, Depth= 3.83"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-84.00 hrs, dt= 0.01 hrs
Type IA 24-hr 100-year Rainfall=4.40"

	Area (ac)	CN	Description
*	0.760	98	Roofs,pavement, concrete, HSG C
	0.100	74	>75% Grass cover, Good, HSG C
	0.860	95	Weighted Average
	0.100	74	11.63% Pervious Area
	0.760	98	88.37% Impervious Area

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

Subcatchment NOS: Developed Conditions Off-site North



Summary for Pond MH2: Control MH #2

Inflow Area = 667,775 sf, 50.16% Impervious, Inflow Depth > 2.69" for 100-year event
Inflow = 4.52 cfs @ 8.61 hrs, Volume= 149,535 cf
Outflow = 4.46 cfs @ 8.87 hrs, Volume= 149,534 cf, Atten= 1%, Lag= 15.9 min
Primary = 4.46 cfs @ 8.87 hrs, Volume= 149,534 cf

Routing by Stor-Ind method, Time Span= 0.00-84.00 hrs, dt= 0.01 hrs
Peak Elev= 505.27' @ 8.87 hrs Surf.Area= 586 sf Storage= 1,479 cf

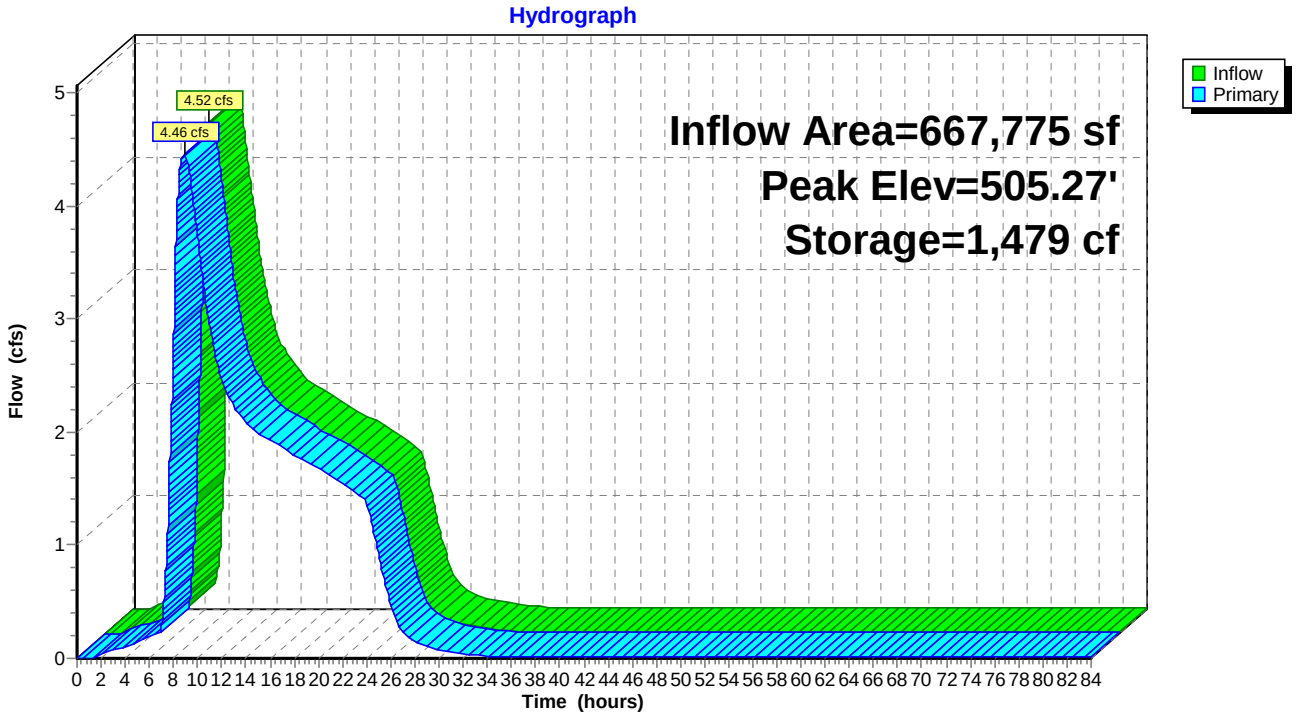
Plug-Flow detention time= 2.4 min calculated for 149,517 cf (100% of inflow)
Center-of-Mass det. time= 2.4 min (944.8 - 942.5)

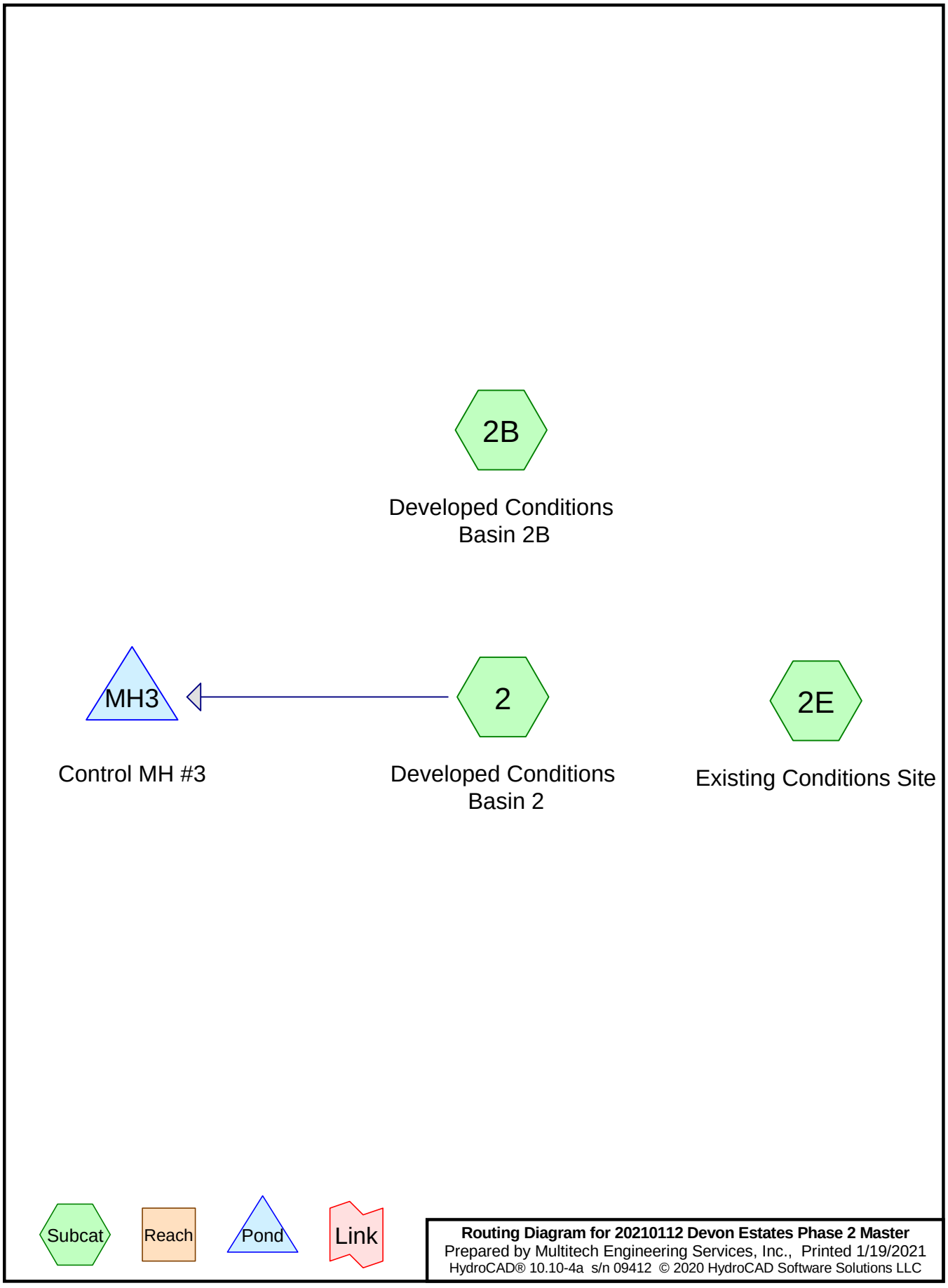
Volume	Invert	Avail.Storage	Storage Description
#1	501.96'	2,356 cf	**60.0" Round 60" Detention Pipe** L= 120.0' S= 0.0050 '/'

Device	Routing	Invert	Outlet Devices
#1	Primary	499.77'	**18.0" Round Culvert** L= 110.0' RCP, rounded edge headwall, Ke= 0.100 Inlet / Outlet Invert= 499.77' / 484.72' S= 0.1368 '/' Cc= 0.900 n= 0.013, Flow Area= 1.77 sf
#2	Device 1	501.96'	**10.0" Vert. Orifice #1** C= 0.600 Limited to weir flow at low heads
#3	Device 1	507.50'	**18.0" Horiz. Overflow** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=4.46 cfs @ 8.87 hrs HW=505.27' (Free Discharge)
└**1=Culvert** (Passes 4.46 cfs of 25.28 cfs potential flow)
  ├**2=Orifice #1** (Orifice Controls 4.46 cfs @ 8.18 fps)
  └**3=Overflow** (Controls 0.00 cfs)

Pond MH2: Control MH #2




2B
Developed Conditions
Basin 2B
MH3
Control MH #3
2
Developed Conditions
Basin 2
2E
Existing Conditions Site
Subcat
Reach
Pond
Link
Routing Diagram for 20210112 Devon Estates Phase 2 Master
Prepared by Multitech Engineering Services, Inc., Printed 1/19/2021
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Summary for Subcatchment 2E: Existing Conditions Site

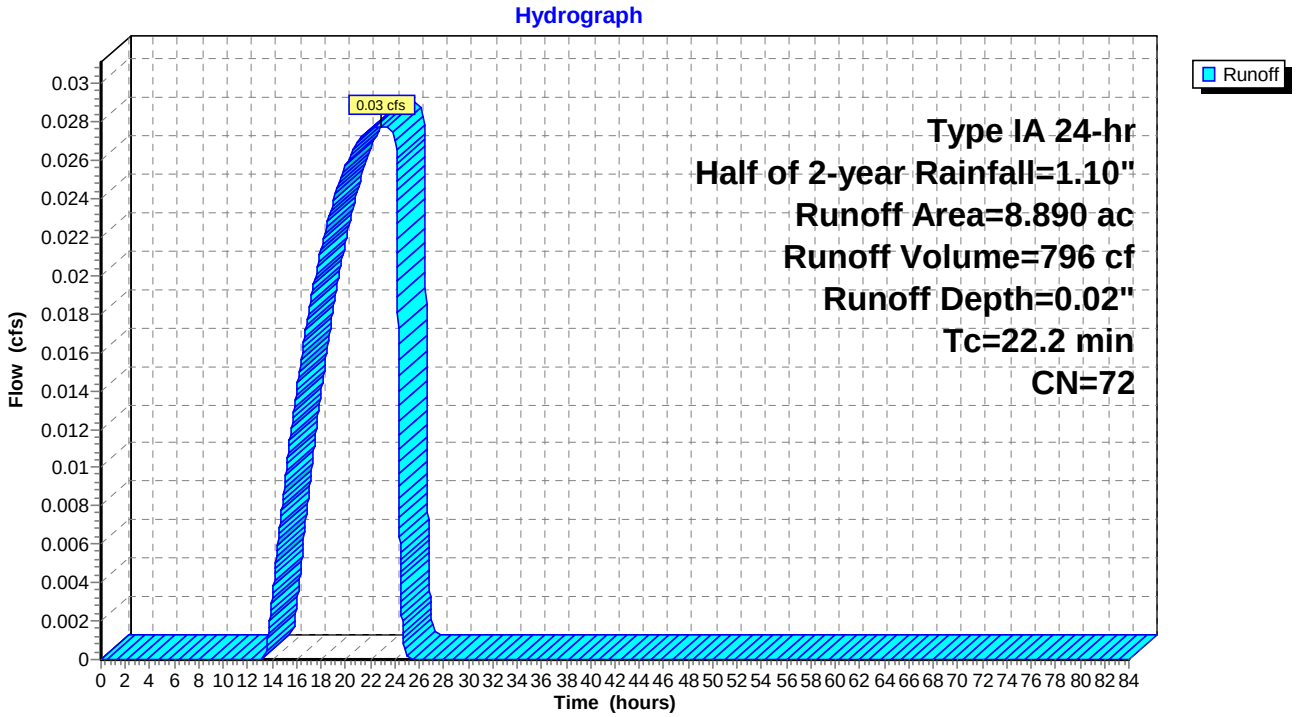
Runoff = 0.03 cfs @ 22.82 hrs, Volume= 796 cf, Depth= 0.02"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-84.00 hrs, dt= 0.01 hrs
Type IA 24-hr Half of 2-year Rainfall=1.10"

	Area (ac)	CN	Description
*	8.890	72	City of Salem Pre-development, HSG C
	8.890	72	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
22.2					**Direct Entry, TR-55 Worksheet**

Subcatchment 2E: Existing Conditions Site



Summary for Subcatchment 2B: Developed Conditions Basin 2B

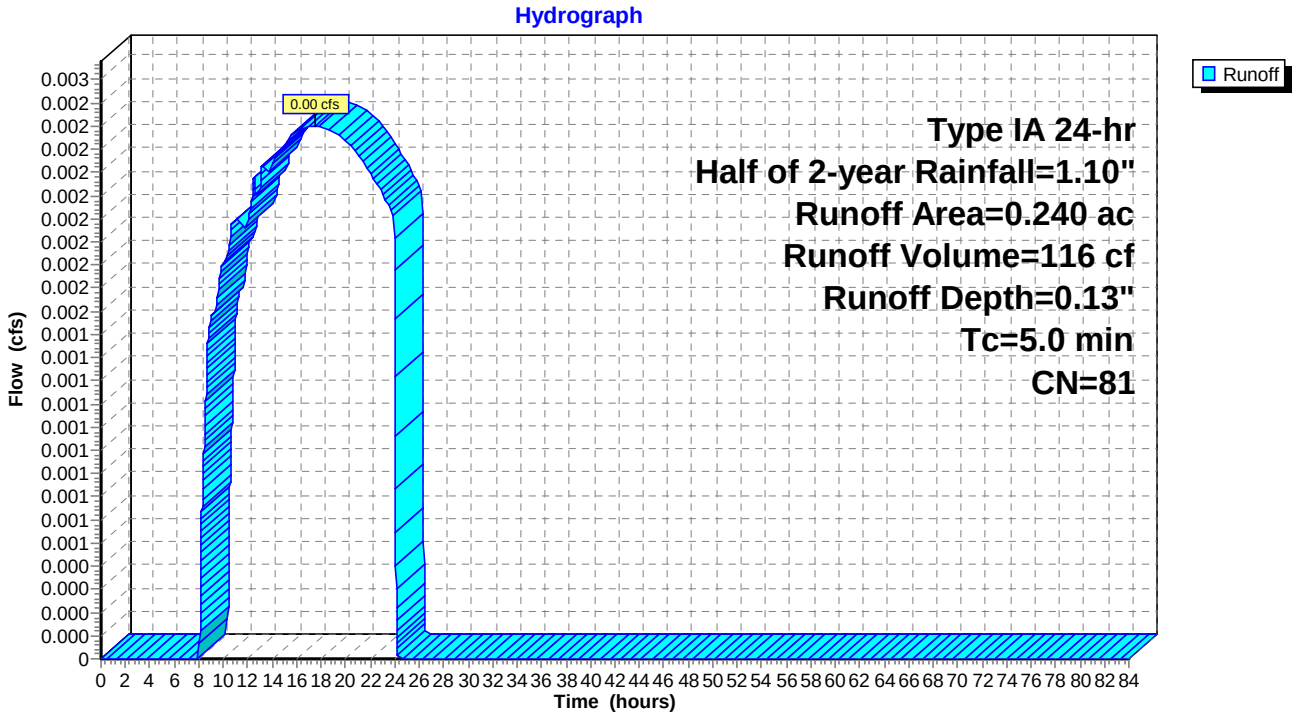
Runoff = 0.00 cfs @ 17.45 hrs, Volume= 116 cf, Depth= 0.13"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-84.00 hrs, dt= 0.01 hrs
Type IA 24-hr Half of 2-year Rainfall=1.10"

	Area (ac)	CN	Description
*	0.070	98	Roofs,pavement, concrete, HSG C
	0.170	74	>75% Grass cover, Good, HSG C
	0.240	81	Weighted Average
	0.170	74	70.83% Pervious Area
	0.070	98	29.17% Impervious Area

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

Subcatchment 2B: Developed Conditions Basin 2B



Summary for Subcatchment 2: Developed Conditions Basin 2

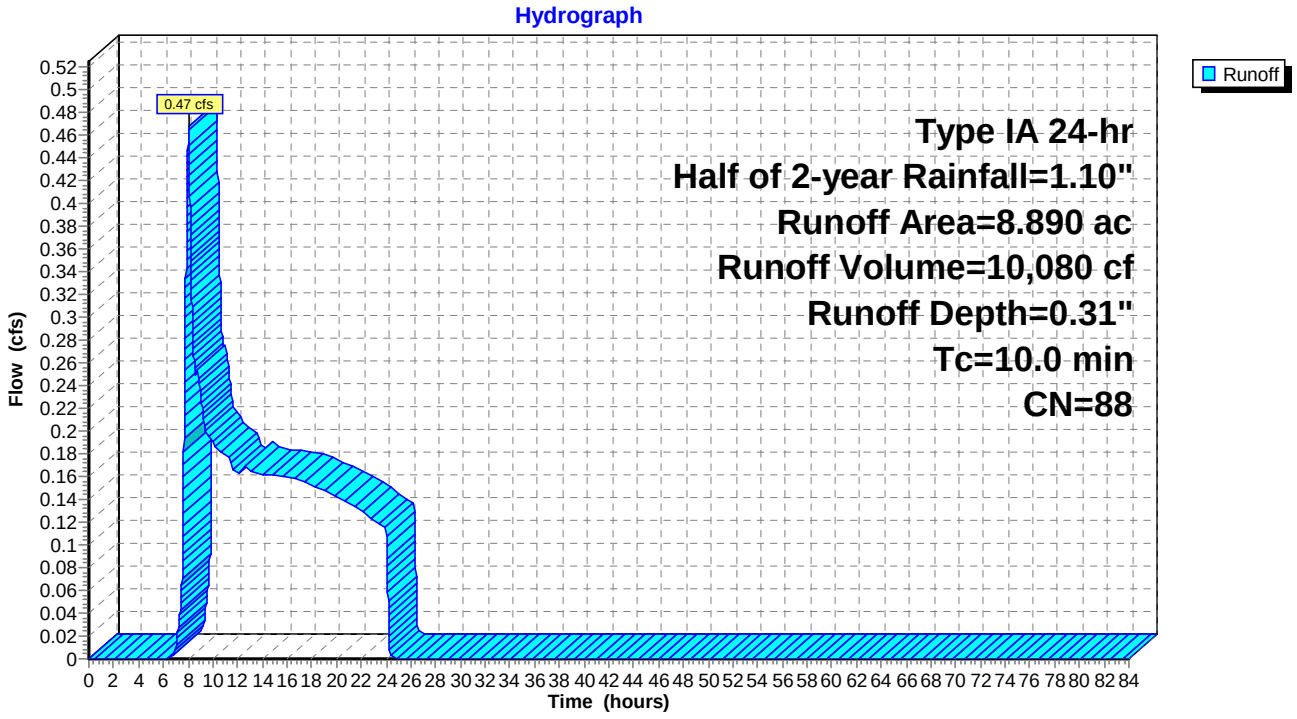
Runoff = 0.47 cfs @ 8.06 hrs, Volume= 10,080 cf, Depth= 0.31"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-84.00 hrs, dt= 0.01 hrs
Type IA 24-hr Half of 2-year Rainfall=1.10"

	Area (ac)	CN	Description
*	5.330	98	Roofs,pavement, concrete, HSG C
	3.560	74	>75% Grass cover, Good, HSG C
	8.890	88	Weighted Average
	3.560	74	40.04% Pervious Area
	5.330	98	59.96% Impervious Area

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

Subcatchment 2: Developed Conditions Basin 2



Summary for Pond MH3: Control MH #3

Inflow Area = 387,248 sf, 59.96% Impervious, Inflow Depth = 0.31" for Half of 2-year event
Inflow = 0.47 cfs @ 8.06 hrs, Volume= 10,080 cf
Outflow = 0.03 cfs @ 24.18 hrs, Volume= 7,222 cf, Atten= 93%, Lag= 967.7 min
Primary = 0.03 cfs @ 24.18 hrs, Volume= 7,222 cf

Routing by Stor-Ind method, Time Span= 0.00-84.00 hrs, dt= 0.01 hrs
Peak Elev= 600.58' @ 24.18 hrs Surf.Area= 8,000 sf Storage= 8,611 cf
Flood Elev= 606.00' Surf.Area= 8,000 sf Storage= 51,980 cf

Plug-Flow detention time= 1,945.8 min calculated for 7,221 cf (72% of inflow)
Center-of-Mass det. time= 1,796.2 min (2,681.2 - 884.9)

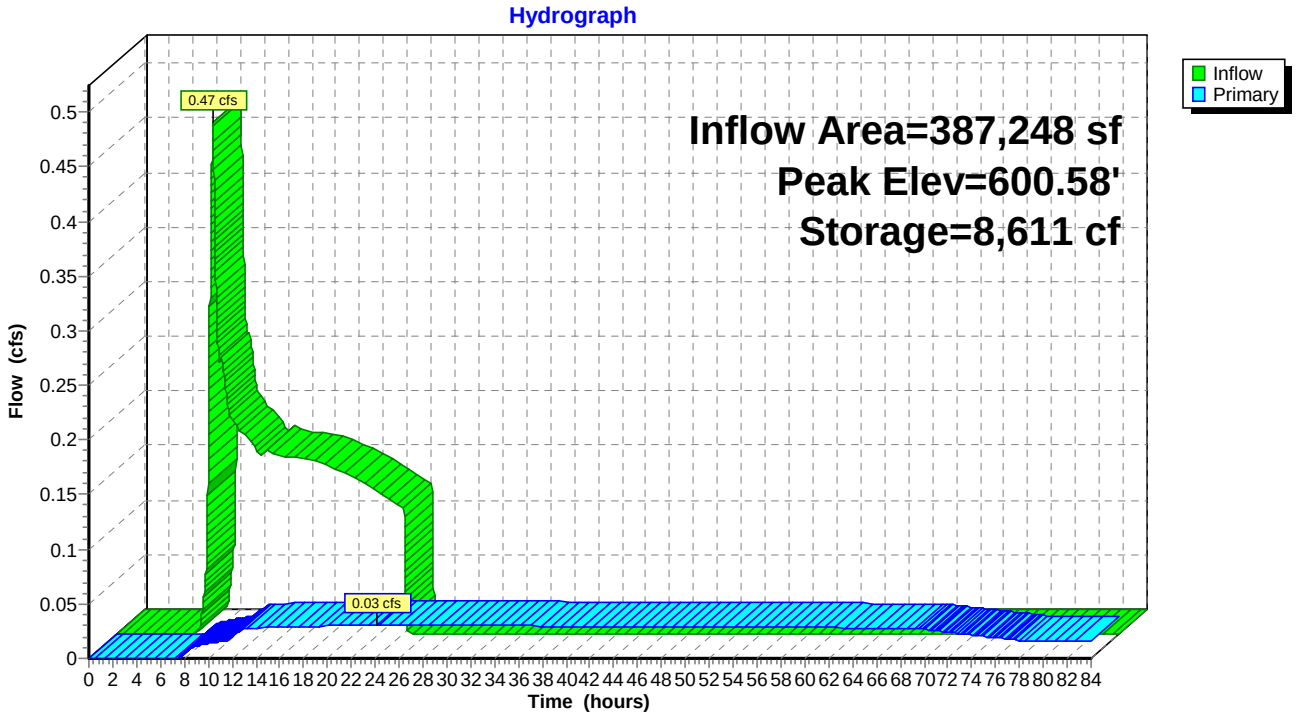
Volume	Invert	Avail.Storage	Storage Description
#1	597.24'	59,980 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
597.24	8,000	0.0	0	0
597.25	8,000	40.0	32	32
598.24	8,000	40.0	3,168	3,200
598.25	8,000	5.0	4	3,204
599.99	8,000	5.0	696	3,900
600.00	8,000	100.0	80	3,980
602.00	8,000	100.0	16,000	19,980
604.00	8,000	100.0	16,000	35,980
606.00	8,000	100.0	16,000	51,980
607.00	8,000	100.0	8,000	59,980

Device	Routing	Invert	Outlet Devices
#1	Primary	597.25'	**18.0" Round 18" Pipe** L= 50.0' RCP, rounded edge headwall, Ke= 0.100 Inlet / Outlet Invert= 597.25' / 597.00' S= 0.0050 '/' Cc= 0.900 n= 0.013, Flow Area= 1.77 sf
#2	Device 1	597.25'	**0.8" Vert. Orifice #1** C= 0.600 Limited to weir flow at low heads
#3	Device 1	600.75'	**6.5" Vert. Orifice #2** C= 0.600 Limited to weir flow at low heads
#4	Device 1	602.00'	**8.0" Vert. Orifice #3** C= 0.600 Limited to weir flow at low heads
#5	Device 1	606.00'	**18.0" Horiz. Overflow** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.03 cfs @ 24.18 hrs HW=600.58' (Free Discharge)
└**1=18" Pipe** (Passes 0.03 cfs of 14.41 cfs potential flow)
  ├**2=Orifice #1** (Orifice Controls 0.03 cfs @ 8.74 fps)
  ├**3=Orifice #2** (Controls 0.00 cfs)
  ├**4=Orifice #3** (Controls 0.00 cfs)
  └**5=Overflow** (Controls 0.00 cfs)

Pond MH3: Control MH #3



Summary for Subcatchment 2E: Existing Conditions Site

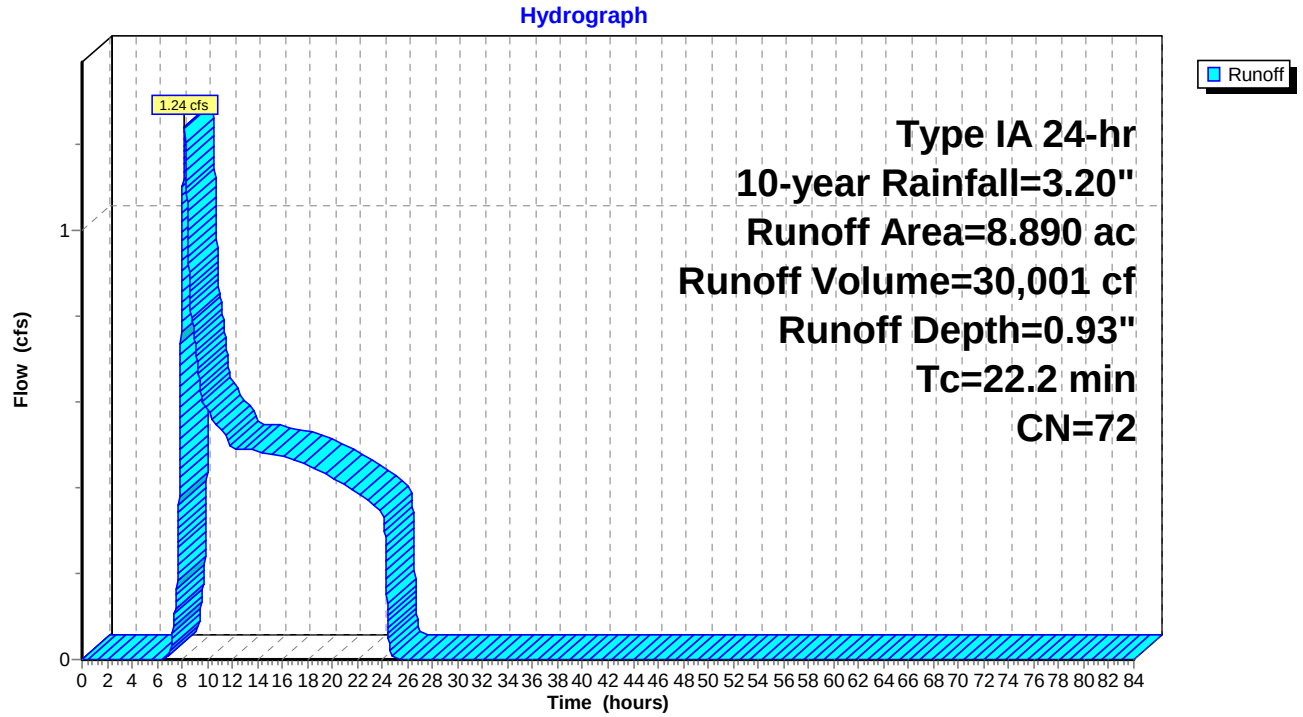
Runoff = 1.24 cfs @ 8.20 hrs, Volume= 30,001 cf, Depth= 0.93"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-84.00 hrs, dt= 0.01 hrs
Type IA 24-hr 10-year Rainfall=3.20"

	Area (ac)	CN	Description
*	8.890	72	City of Salem Pre-development, HSG C
	8.890	72	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
22.2					**Direct Entry, TR-55 Worksheet**

Subcatchment 2E: Existing Conditions Site



Summary for Subcatchment 2B: Developed Conditions Basin 2B

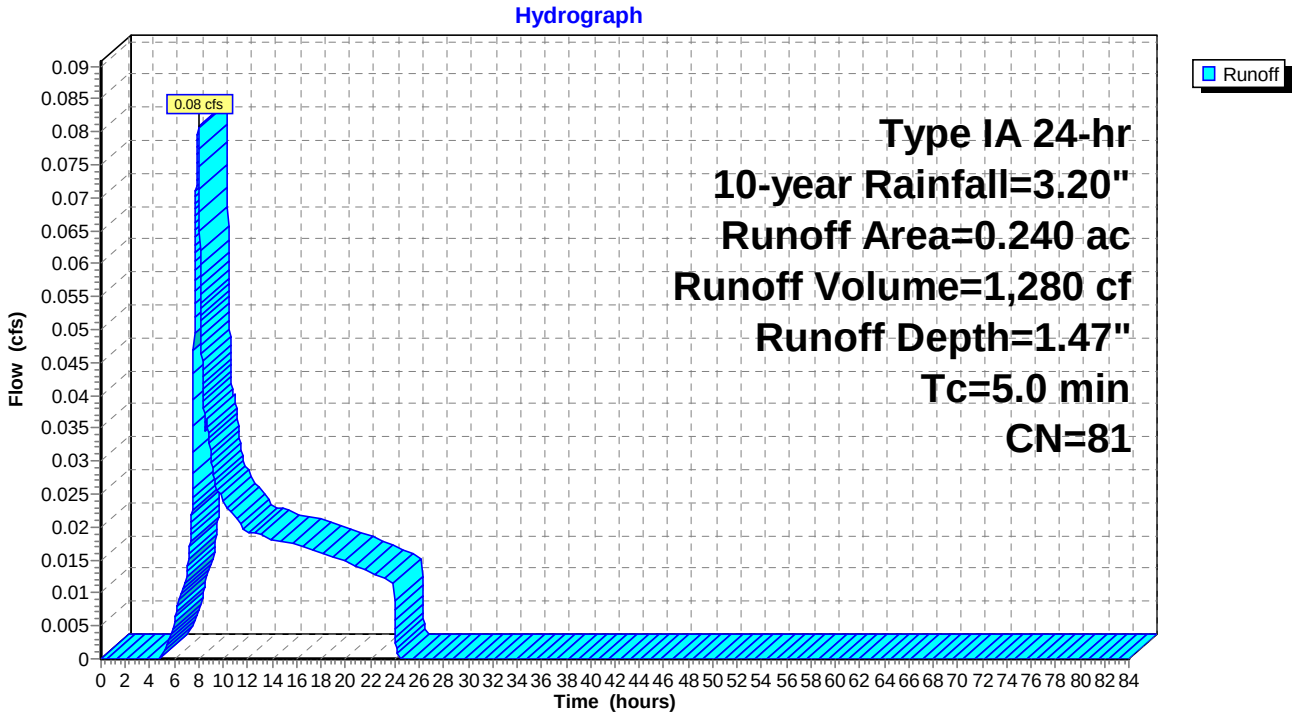
Runoff = 0.08 cfs @ 7.98 hrs, Volume= 1,280 cf, Depth= 1.47"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-84.00 hrs, dt= 0.01 hrs
Type IA 24-hr 10-year Rainfall=3.20"

	Area (ac)	CN	Description
*	0.070	98	Roofs,pavement, concrete, HSG C
	0.170	74	>75% Grass cover, Good, HSG C
	0.240	81	Weighted Average
	0.170	74	70.83% Pervious Area
	0.070	98	29.17% Impervious Area

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

Subcatchment 2B: Developed Conditions Basin 2B



Summary for Subcatchment 2: Developed Conditions Basin 2

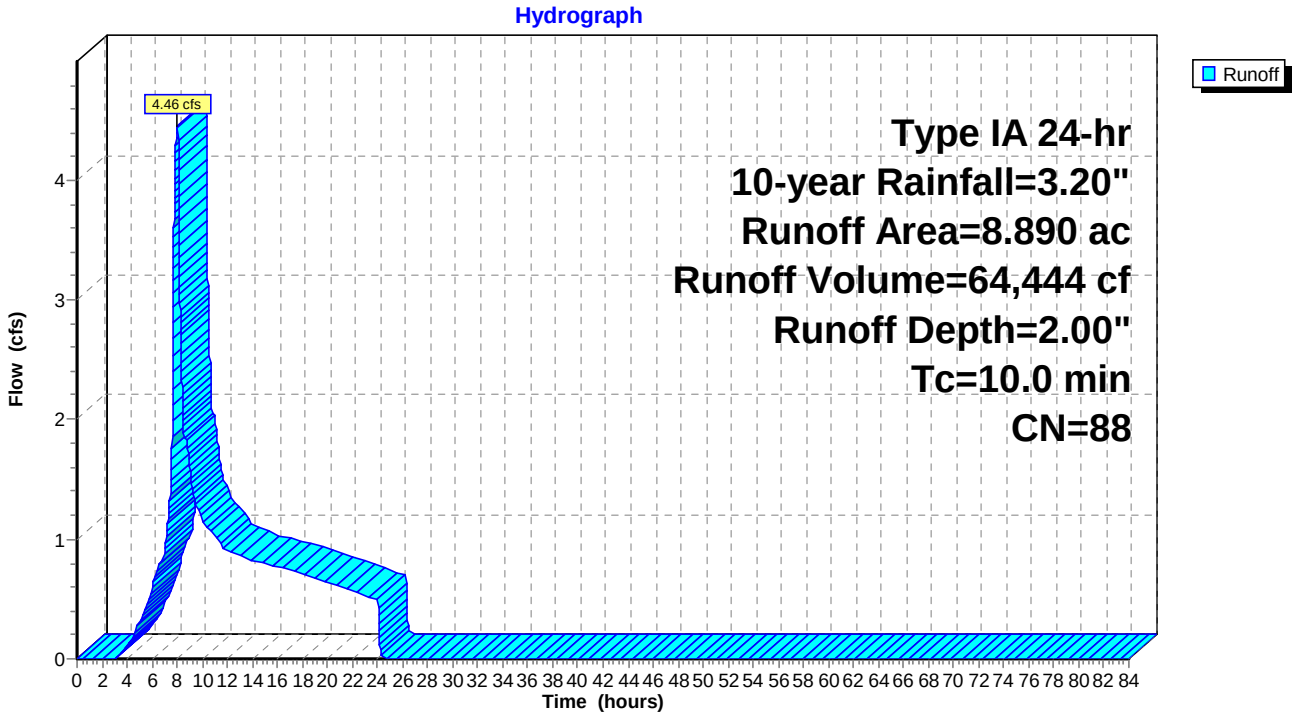
Runoff = 4.46 cfs @ 8.01 hrs, Volume= 64,444 cf, Depth= 2.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-84.00 hrs, dt= 0.01 hrs
Type IA 24-hr 10-year Rainfall=3.20"

	Area (ac)	CN	Description
*	5.330	98	Roofs,pavement, concrete, HSG C
	3.560	74	>75% Grass cover, Good, HSG C
	8.890	88	Weighted Average
	3.560	74	40.04% Pervious Area
	5.330	98	59.96% Impervious Area

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

Subcatchment 2: Developed Conditions Basin 2



Summary for Pond MH3: Control MH #3

Inflow Area = 387,248 sf, 59.96% Impervious, Inflow Depth = 2.00" for 10-year event
Inflow = 4.46 cfs @ 8.01 hrs, Volume= 64,444 cf
Outflow = 1.09 cfs @ 10.35 hrs, Volume= 59,862 cf, Atten= 75%, Lag= 140.6 min
Primary = 1.09 cfs @ 10.35 hrs, Volume= 59,862 cf

Routing by Stor-Ind method, Time Span= 0.00-84.00 hrs, dt= 0.01 hrs
Peak Elev= 601.93' @ 10.35 hrs Surf.Area= 8,000 sf Storage= 19,416 cf
Flood Elev= 606.00' Surf.Area= 8,000 sf Storage= 51,980 cf

Plug-Flow detention time= 473.7 min calculated for 59,862 cf (93% of inflow)
Center-of-Mass det. time= 427.1 min (1,194.1 - 766.9)

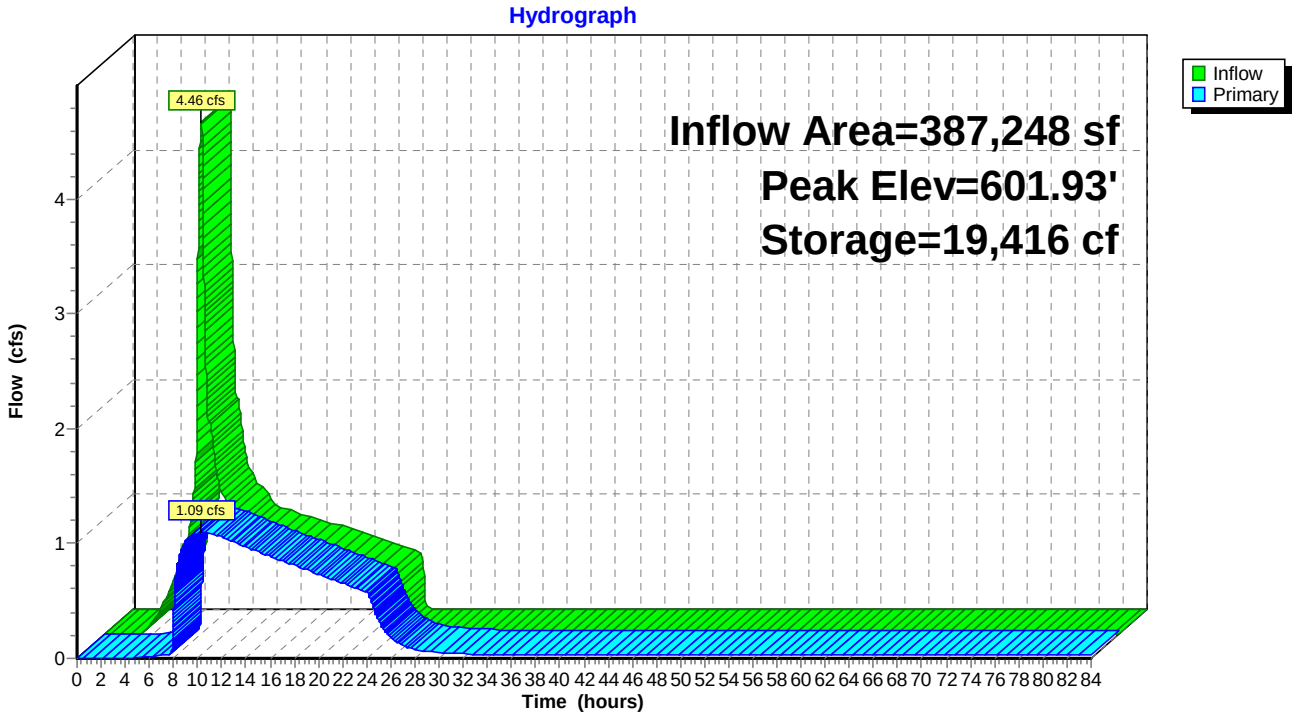
Volume	Invert	Avail.Storage	Storage Description
#1	597.24'	59,980 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
597.24	8,000	0.0	0	0
597.25	8,000	40.0	32	32
598.24	8,000	40.0	3,168	3,200
598.25	8,000	5.0	4	3,204
599.99	8,000	5.0	696	3,900
600.00	8,000	100.0	80	3,980
602.00	8,000	100.0	16,000	19,980
604.00	8,000	100.0	16,000	35,980
606.00	8,000	100.0	16,000	51,980
607.00	8,000	100.0	8,000	59,980

Device	Routing	Invert	Outlet Devices
#1	Primary	597.25'	**18.0" Round 18" Pipe** L= 50.0' RCP, rounded edge headwall, Ke= 0.100 Inlet / Outlet Invert= 597.25' / 597.00' S= 0.0050 '/' Cc= 0.900 n= 0.013, Flow Area= 1.77 sf
#2	Device 1	597.25'	**0.8" Vert. Orifice #1** C= 0.600 Limited to weir flow at low heads
#3	Device 1	600.75'	**6.5" Vert. Orifice #2** C= 0.600 Limited to weir flow at low heads
#4	Device 1	602.00'	**8.0" Vert. Orifice #3** C= 0.600 Limited to weir flow at low heads
#5	Device 1	606.00'	**18.0" Horiz. Overflow** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=1.09 cfs @ 10.35 hrs HW=601.93' (Free Discharge)
└**1=18" Pipe** (Passes 1.09 cfs of 18.50 cfs potential flow)
  ├**2=Orifice #1** (Orifice Controls 0.04 cfs @ 10.38 fps)
  ├**3=Orifice #2** (Orifice Controls 1.06 cfs @ 4.59 fps)
  ├**4=Orifice #3** (Controls 0.00 cfs)
  └**5=Overflow** (Controls 0.00 cfs)

Pond MH3: Control MH #3



Summary for Subcatchment 2E: Existing Conditions Site

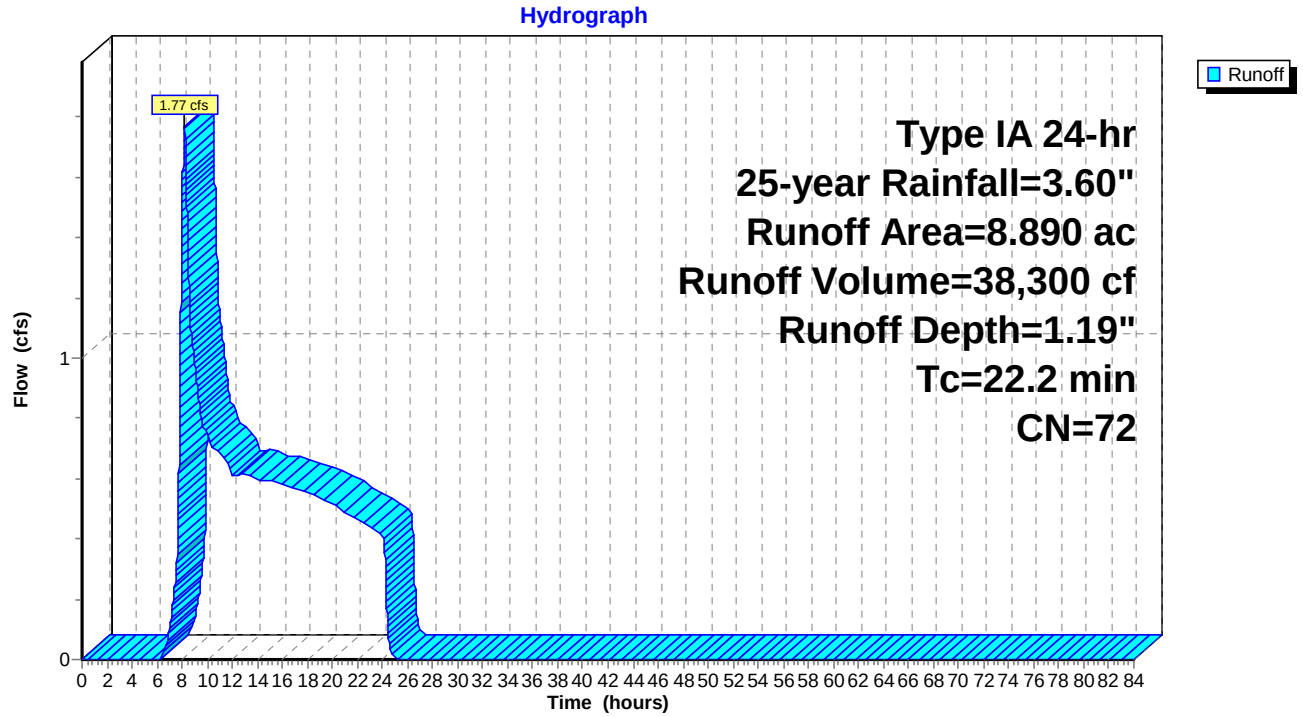
Runoff = 1.77 cfs @ 8.17 hrs, Volume= 38,300 cf, Depth= 1.19"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-84.00 hrs, dt= 0.01 hrs
Type IA 24-hr 25-year Rainfall=3.60"

	Area (ac)	CN	Description
*	8.890	72	City of Salem Pre-development, HSG C
	8.890	72	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
22.2					**Direct Entry, TR-55 Worksheet**

Subcatchment 2E: Existing Conditions Site



Summary for Subcatchment 2B: Developed Conditions Basin 2B

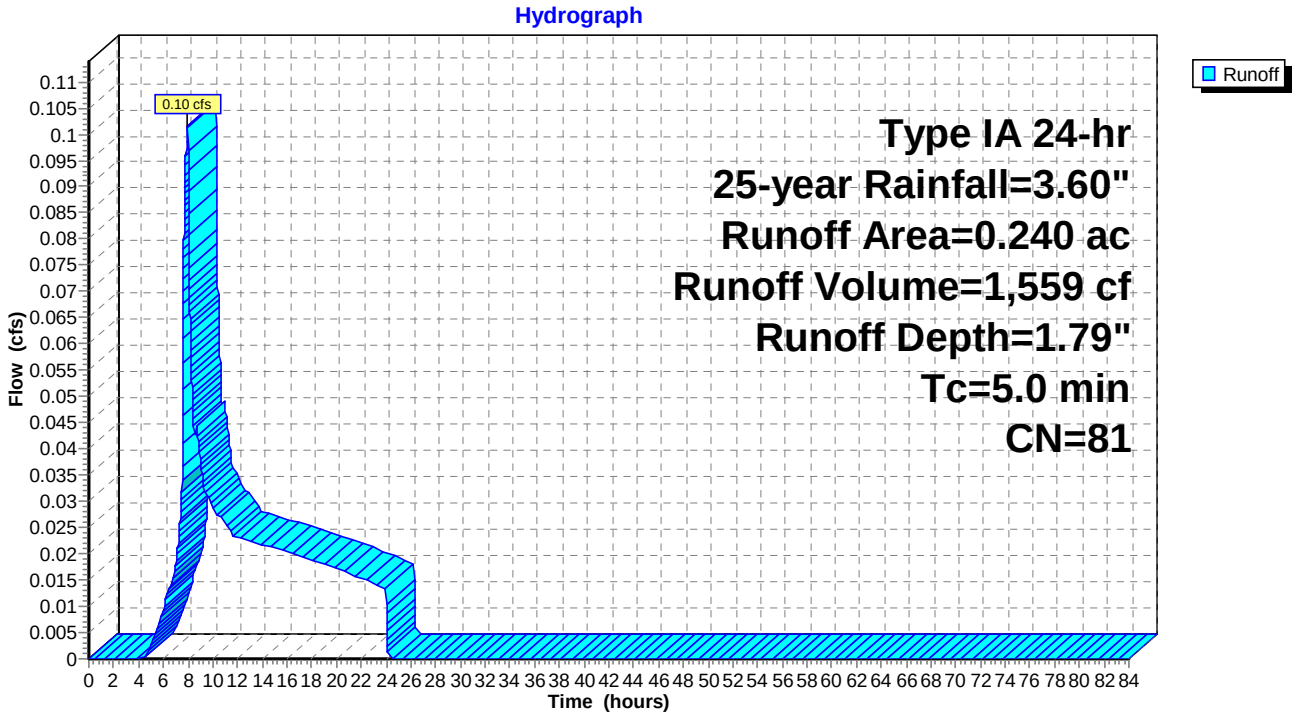
Runoff = 0.10 cfs @ 7.96 hrs, Volume= 1,559 cf, Depth= 1.79"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-84.00 hrs, dt= 0.01 hrs
Type IA 24-hr 25-year Rainfall=3.60"

	Area (ac)	CN	Description
*	0.070	98	Roofs,pavement, concrete, HSG C
	0.170	74	>75% Grass cover, Good, HSG C
	0.240	81	Weighted Average
	0.170	74	70.83% Pervious Area
	0.070	98	29.17% Impervious Area

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

Subcatchment 2B: Developed Conditions Basin 2B



Summary for Subcatchment 2: Developed Conditions Basin 2

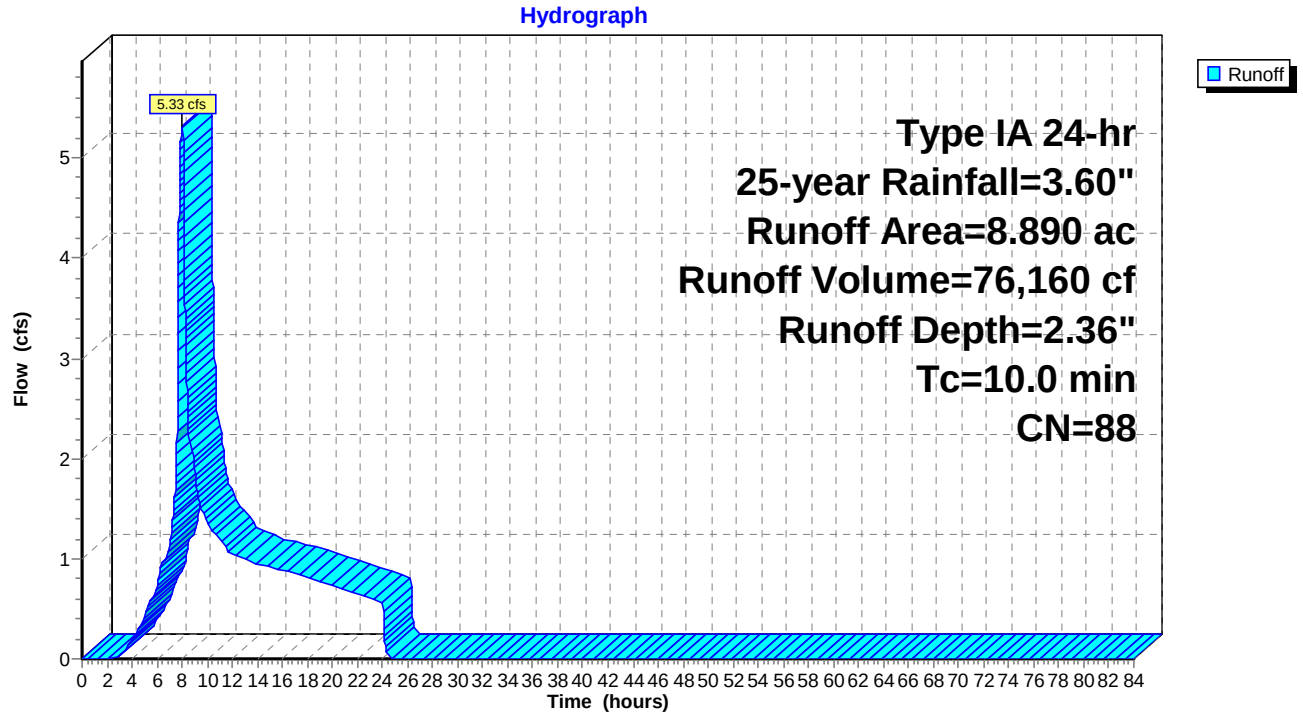
Runoff = 5.33 cfs @ 7.99 hrs, Volume= 76,160 cf, Depth= 2.36"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-84.00 hrs, dt= 0.01 hrs
Type IA 24-hr 25-year Rainfall=3.60"

	Area (ac)	CN	Description
*	5.330	98	Roofs,pavement, concrete, HSG C
	3.560	74	>75% Grass cover, Good, HSG C
	8.890	88	Weighted Average
	3.560	74	40.04% Pervious Area
	5.330	98	59.96% Impervious Area

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

Subcatchment 2: Developed Conditions Basin 2



Summary for Pond MH3: Control MH #3

Inflow Area = 387,248 sf, 59.96% Impervious, Inflow Depth = 2.36" for 25-year event
Inflow = 5.33 cfs @ 7.99 hrs, Volume= 76,160 cf
Outflow = 1.52 cfs @ 9.42 hrs, Volume= 71,542 cf, Atten= 71%, Lag= 85.7 min
Primary = 1.52 cfs @ 9.42 hrs, Volume= 71,542 cf

Routing by Stor-Ind method, Time Span= 0.00-84.00 hrs, dt= 0.01 hrs
Peak Elev= 602.27' @ 9.42 hrs Surf.Area= 8,000 sf Storage= 22,155 cf
Flood Elev= 606.00' Surf.Area= 8,000 sf Storage= 51,980 cf

Plug-Flow detention time= 425.5 min calculated for 71,542 cf (94% of inflow)
Center-of-Mass det. time= 385.1 min (1,142.7 - 757.6)

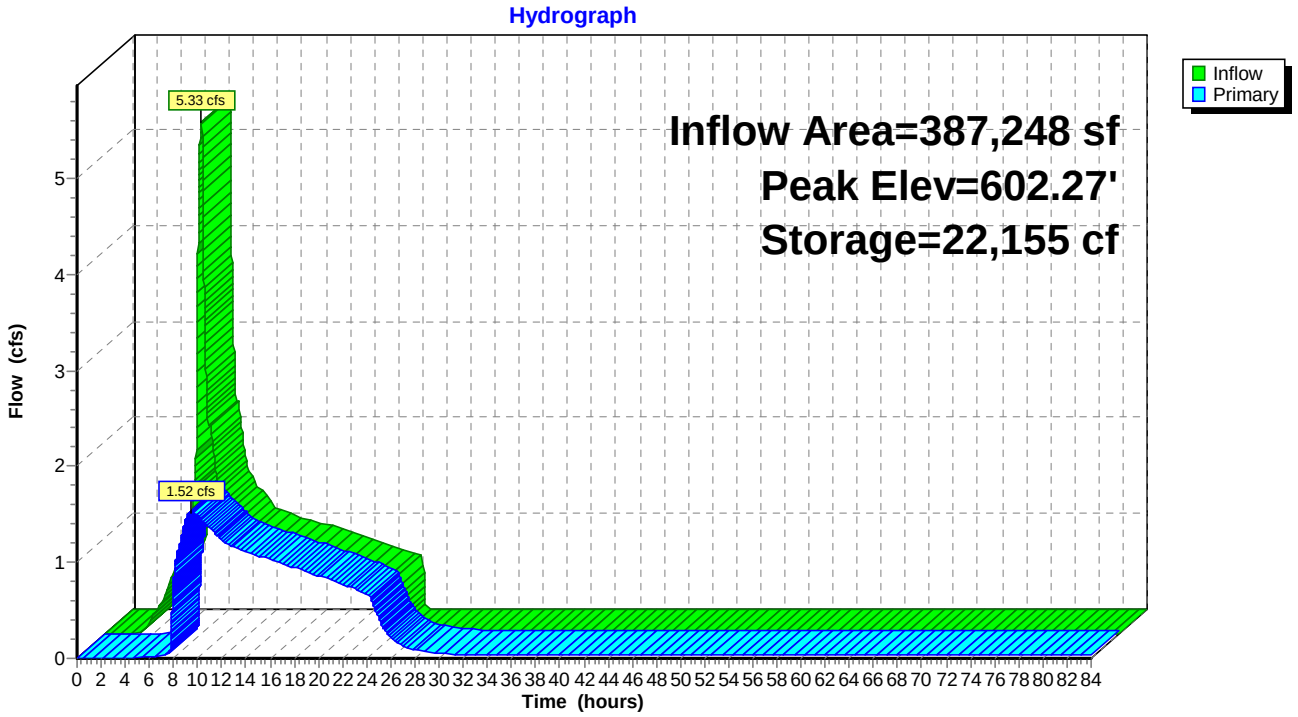
Volume	Invert	Avail.Storage	Storage Description
#1	597.24'	59,980 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
597.24	8,000	0.0	0	0
597.25	8,000	40.0	32	32
598.24	8,000	40.0	3,168	3,200
598.25	8,000	5.0	4	3,204
599.99	8,000	5.0	696	3,900
600.00	8,000	100.0	80	3,980
602.00	8,000	100.0	16,000	19,980
604.00	8,000	100.0	16,000	35,980
606.00	8,000	100.0	16,000	51,980
607.00	8,000	100.0	8,000	59,980

Device	Routing	Invert	Outlet Devices
#1	Primary	597.25'	**18.0" Round 18" Pipe** L= 50.0' RCP, rounded edge headwall, Ke= 0.100 Inlet / Outlet Invert= 597.25' / 597.00' S= 0.0050 '/' Cc= 0.900 n= 0.013, Flow Area= 1.77 sf
#2	Device 1	597.25'	**0.8" Vert. Orifice #1** C= 0.600 Limited to weir flow at low heads
#3	Device 1	600.75'	**6.5" Vert. Orifice #2** C= 0.600 Limited to weir flow at low heads
#4	Device 1	602.00'	**8.0" Vert. Orifice #3** C= 0.600 Limited to weir flow at low heads
#5	Device 1	606.00'	**18.0" Horiz. Overflow** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=1.52 cfs @ 9.42 hrs HW=602.27' (Free Discharge)
└**1=18" Pipe** (Passes 1.52 cfs of 19.41 cfs potential flow)
  ├**2=Orifice #1** (Orifice Controls 0.04 cfs @ 10.75 fps)
  ├**3=Orifice #2** (Orifice Controls 1.24 cfs @ 5.39 fps)
  ├**4=Orifice #3** (Orifice Controls 0.24 cfs @ 1.78 fps)
  └**5=Overflow** (Controls 0.00 cfs)

Pond MH3: Control MH #3



Summary for Subcatchment 2E: Existing Conditions Site

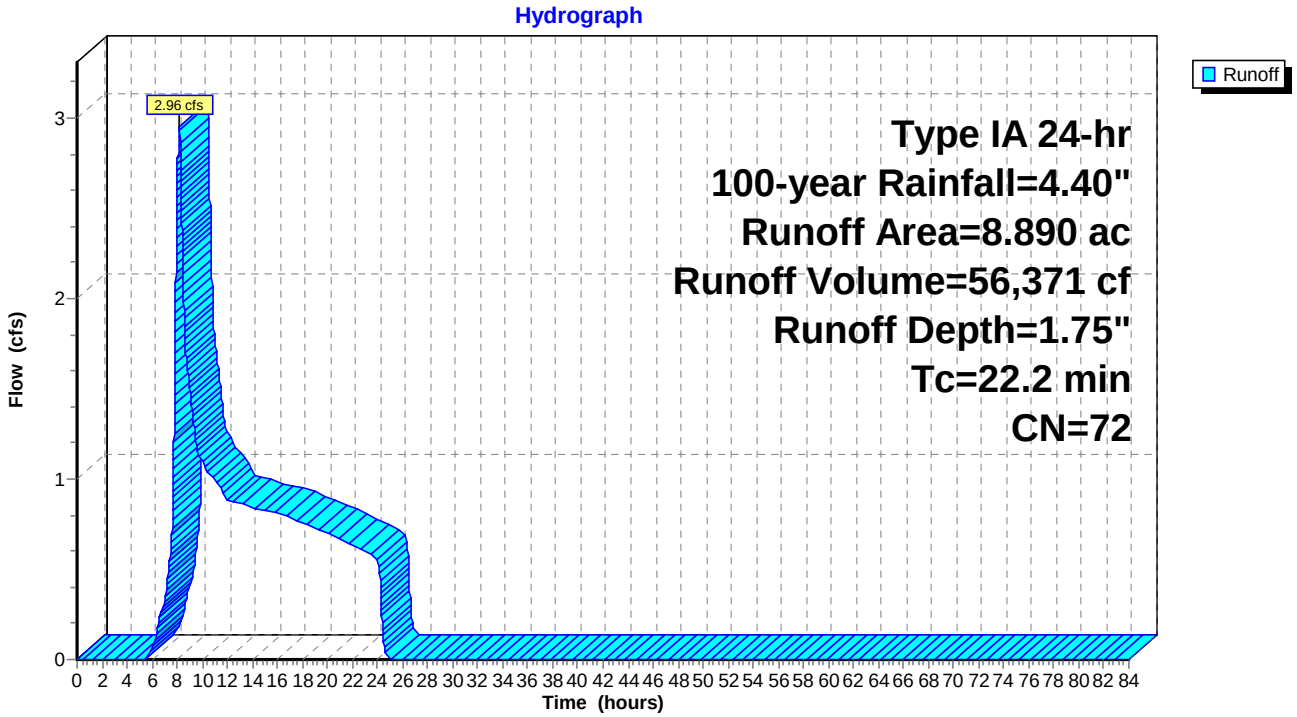
Runoff = 2.96 cfs @ 8.16 hrs, Volume= 56,371 cf, Depth= 1.75"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-84.00 hrs, dt= 0.01 hrs
Type IA 24-hr 100-year Rainfall=4.40"

	Area (ac)	CN	Description
*	8.890	72	City of Salem Pre-development, HSG C
	8.890	72	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
22.2					**Direct Entry, TR-55 Worksheet**

Subcatchment 2E: Existing Conditions Site



Summary for Subcatchment 2B: Developed Conditions Basin 2B

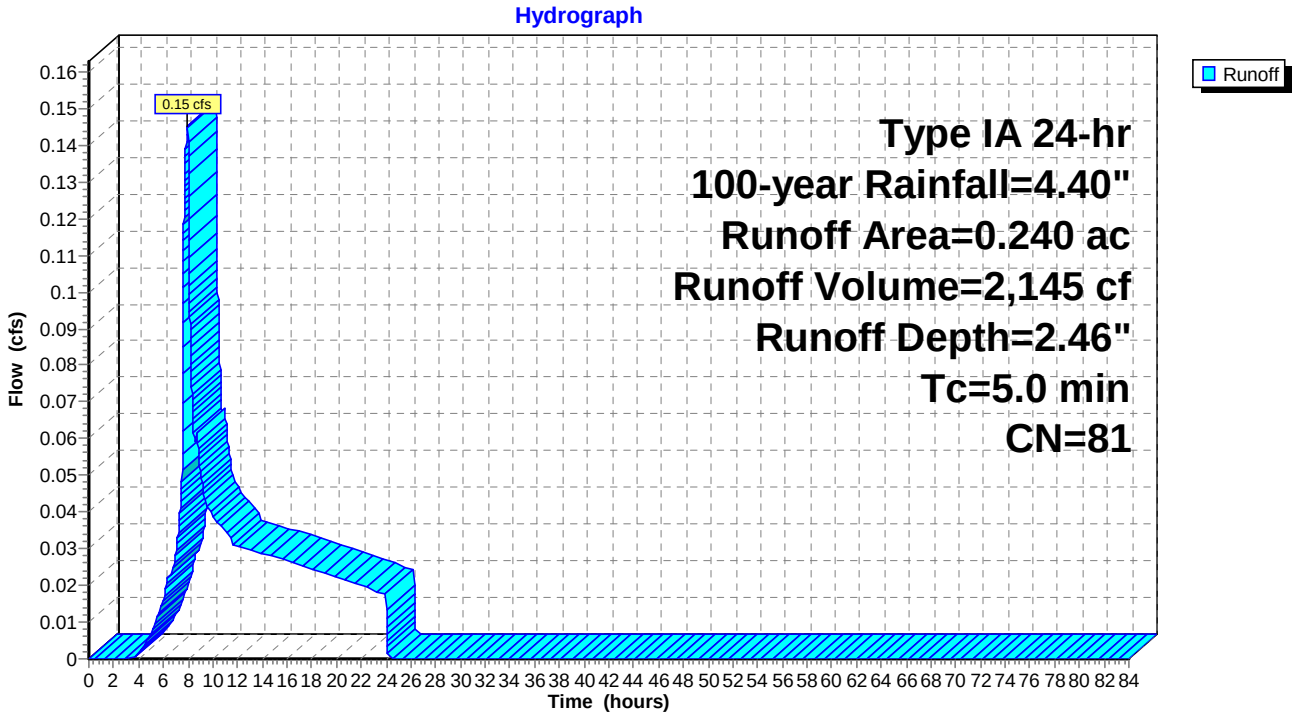
Runoff = 0.15 cfs @ 7.94 hrs, Volume= 2,145 cf, Depth= 2.46"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-84.00 hrs, dt= 0.01 hrs
Type IA 24-hr 100-year Rainfall=4.40"

	Area (ac)	CN	Description
*	0.070	98	Roofs,pavement, concrete, HSG C
	0.170	74	>75% Grass cover, Good, HSG C
	0.240	81	Weighted Average
	0.170	74	70.83% Pervious Area
	0.070	98	29.17% Impervious Area

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

Subcatchment 2B: Developed Conditions Basin 2B



Summary for Subcatchment 2: Developed Conditions Basin 2

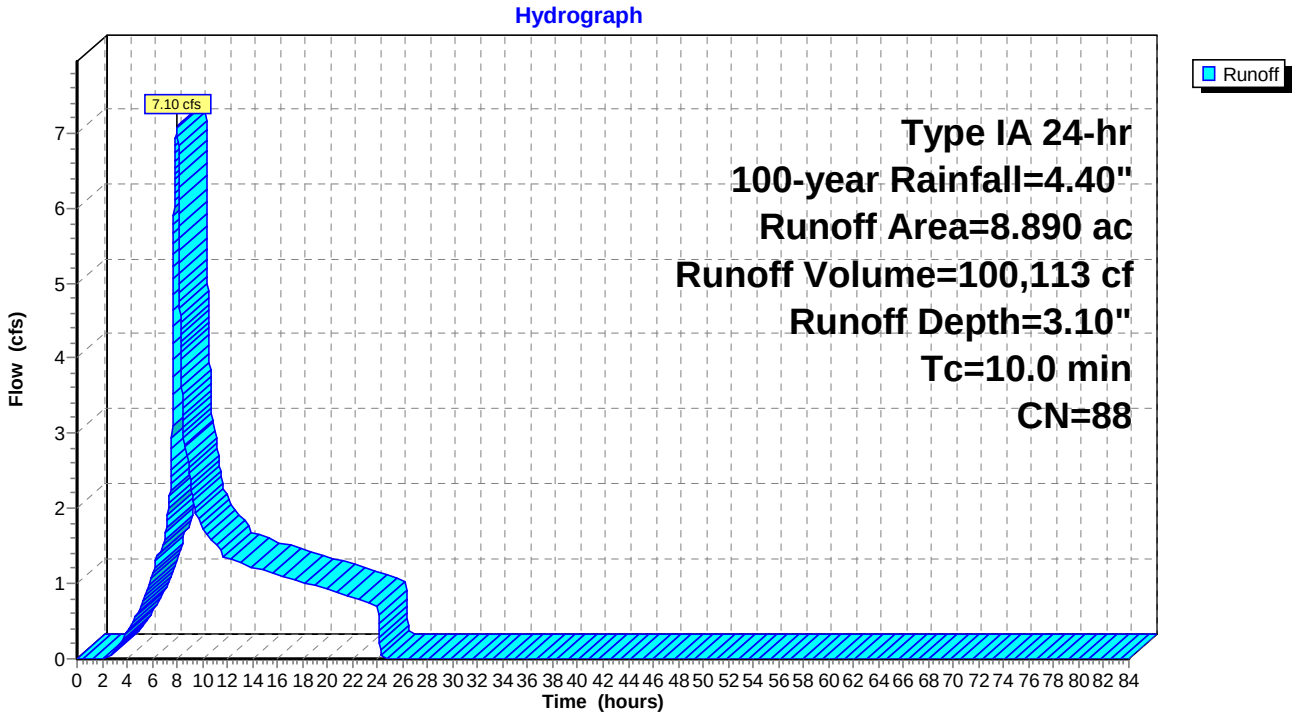
Runoff = 7.10 cfs @ 7.99 hrs, Volume= 100,113 cf, Depth= 3.10"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-84.00 hrs, dt= 0.01 hrs
Type IA 24-hr 100-year Rainfall=4.40"

	Area (ac)	CN	Description
*	5.330	98	Roofs,pavement, concrete, HSG C
	3.560	74	>75% Grass cover, Good, HSG C
	8.890	88	Weighted Average
	3.560	74	40.04% Pervious Area
	5.330	98	59.96% Impervious Area

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

Subcatchment 2: Developed Conditions Basin 2



Summary for Pond MH3: Control MH #3

Inflow Area = 387,248 sf, 59.96% Impervious, Inflow Depth = 3.10" for 100-year event
Inflow = 7.10 cfs @ 7.99 hrs, Volume= 100,113 cf
Outflow = 2.67 cfs @ 8.86 hrs, Volume= 95,428 cf, Atten= 62%, Lag= 52.0 min
Primary = 2.67 cfs @ 8.86 hrs, Volume= 95,428 cf

Routing by Stor-Ind method, Time Span= 0.00-84.00 hrs, dt= 0.01 hrs
Peak Elev= 602.80' @ 8.86 hrs Surf.Area= 8,000 sf Storage= 26,404 cf
Flood Elev= 606.00' Surf.Area= 8,000 sf Storage= 51,980 cf

Plug-Flow detention time= 352.1 min calculated for 95,428 cf (95% of inflow)
Center-of-Mass det. time= 320.1 min (1,062.9 - 742.9)

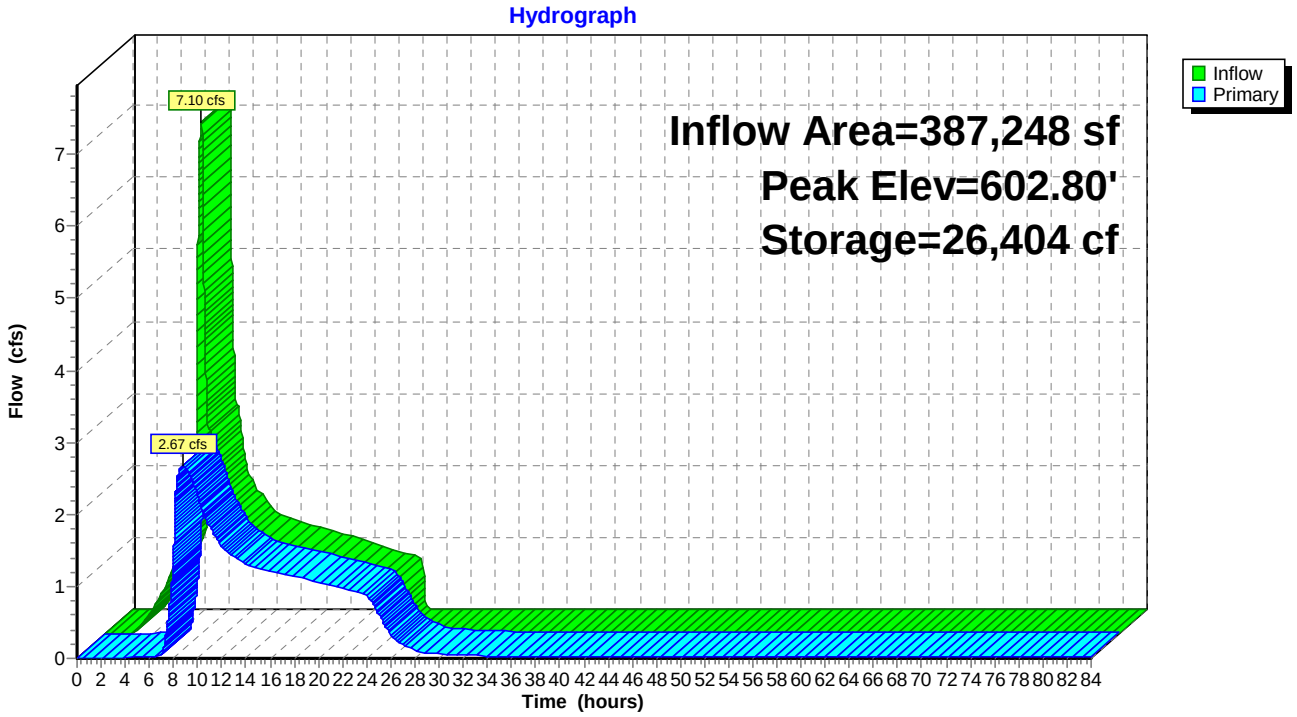
Volume	Invert	Avail.Storage	Storage Description
#1	597.24'	59,980 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
597.24	8,000	0.0	0	0
597.25	8,000	40.0	32	32
598.24	8,000	40.0	3,168	3,200
598.25	8,000	5.0	4	3,204
599.99	8,000	5.0	696	3,900
600.00	8,000	100.0	80	3,980
602.00	8,000	100.0	16,000	19,980
604.00	8,000	100.0	16,000	35,980
606.00	8,000	100.0	16,000	51,980
607.00	8,000	100.0	8,000	59,980

Device	Routing	Invert	Outlet Devices
#1	Primary	597.25'	**18.0" Round 18" Pipe** L= 50.0' RCP, rounded edge headwall, Ke= 0.100 Inlet / Outlet Invert= 597.25' / 597.00' S= 0.0050 '/' Cc= 0.900 n= 0.013, Flow Area= 1.77 sf
#2	Device 1	597.25'	**0.8" Vert. Orifice #1** C= 0.600 Limited to weir flow at low heads
#3	Device 1	600.75'	**6.5" Vert. Orifice #2** C= 0.600 Limited to weir flow at low heads
#4	Device 1	602.00'	**8.0" Vert. Orifice #3** C= 0.600 Limited to weir flow at low heads
#5	Device 1	606.00'	**18.0" Horiz. Overflow** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=2.67 cfs @ 8.86 hrs HW=602.80' (Free Discharge)
└**1=18" Pipe** (Passes 2.67 cfs of 20.73 cfs potential flow)
  ├**2=Orifice #1** (Orifice Controls 0.04 cfs @ 11.31 fps)
  ├**3=Orifice #2** (Orifice Controls 1.48 cfs @ 6.43 fps)
  ├**4=Orifice #3** (Orifice Controls 1.15 cfs @ 3.30 fps)
  └**5=Overflow** (Controls 0.00 cfs)

Pond MH3: Control MH #3



Drawing is NOT to scale

Basin #1
46,700 cu. ft
Capacity

Basin #3
52,000 cu. ft.
Capacity

SEE SHEET 302 FOR
OFF-SITE UTILITY PLAN

MATCH LINE 1

MATCH LINE 2

RED OAK AV.

LONE OAK ROAD

ALPHA AVENUE

BETA COURT

CHI STREET

DELTA COURT

DELTA AVENUE

FOUR STREET

FIVE STREET

DEVON AVE

TRACT A

TRACT B

PUMP STATION

SEE SHEET 302 FOR
OFF-SITE UTILITY PLAN

N
W E
S
0' 50'
1 INCH
SCALE: 1" = 50'

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ENGINEERING SERVICES, INC.
1155 13th ST. S.E. SALEM, OR. 97302
PH. (503) 363-9227 FAX (503) 364-1260
www.mtengineering.net office@mtengineering.net

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UTILITY PLAN - ONSITE

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6500x36 P301UT

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Drawn: P.H.S.
Checked: B.M.G.
Date: NOV. 2017
Scale: AS SHOWN
As-Built: ---

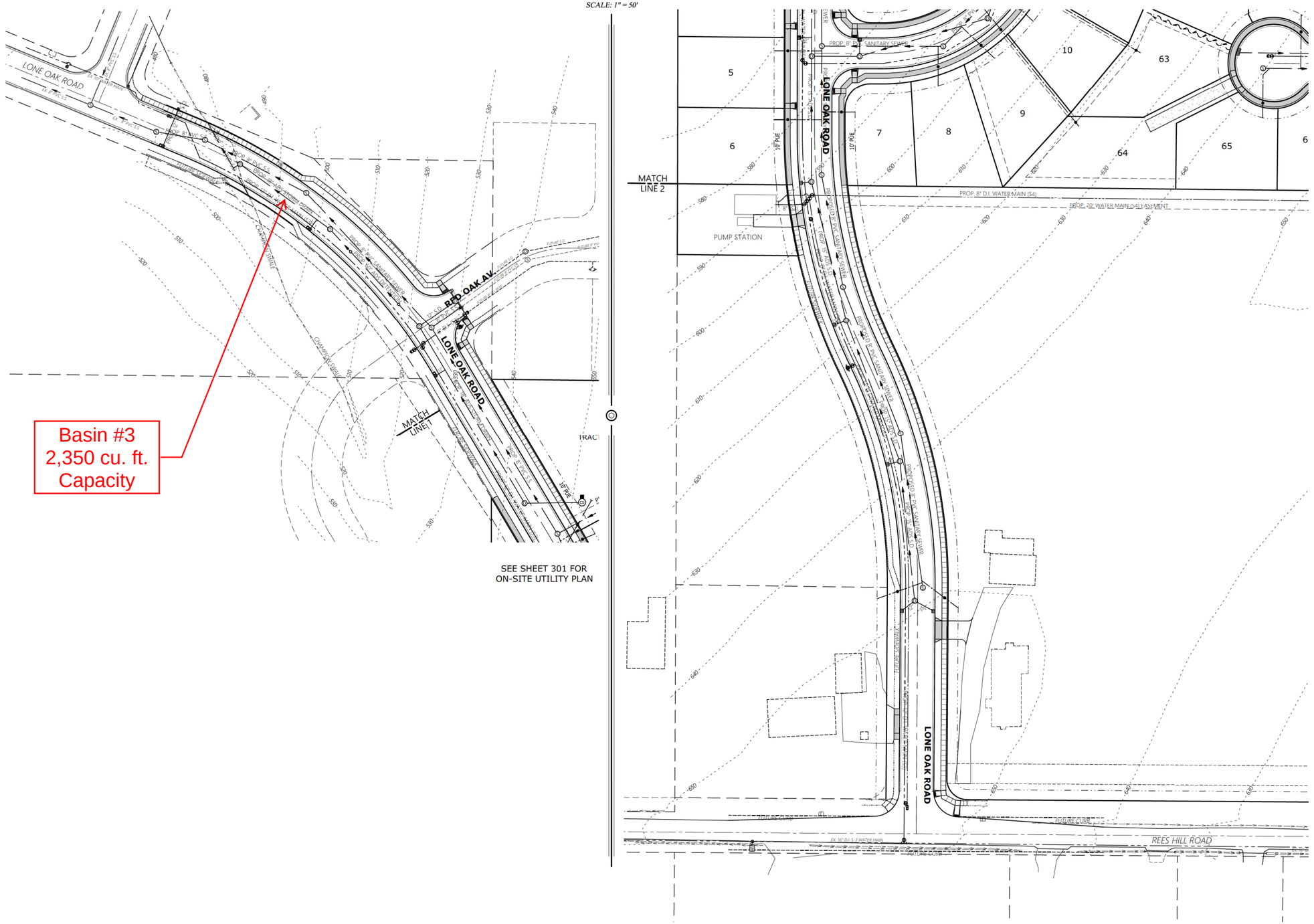
REGISTERED PROFESSIONAL ENGINEER
OREGON
JULY 14, 1978
MARK D. GRENZ

EXPIRES: 06-30-2021

JOB # 6502

P301

J:\6500-6599\6502-DevonAvenueSubdivision\Dwg\01 \6502sDE.dwg, P301UT, 1/19/2021 12:36:50 PM, PSouders



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6502b2c P302UT

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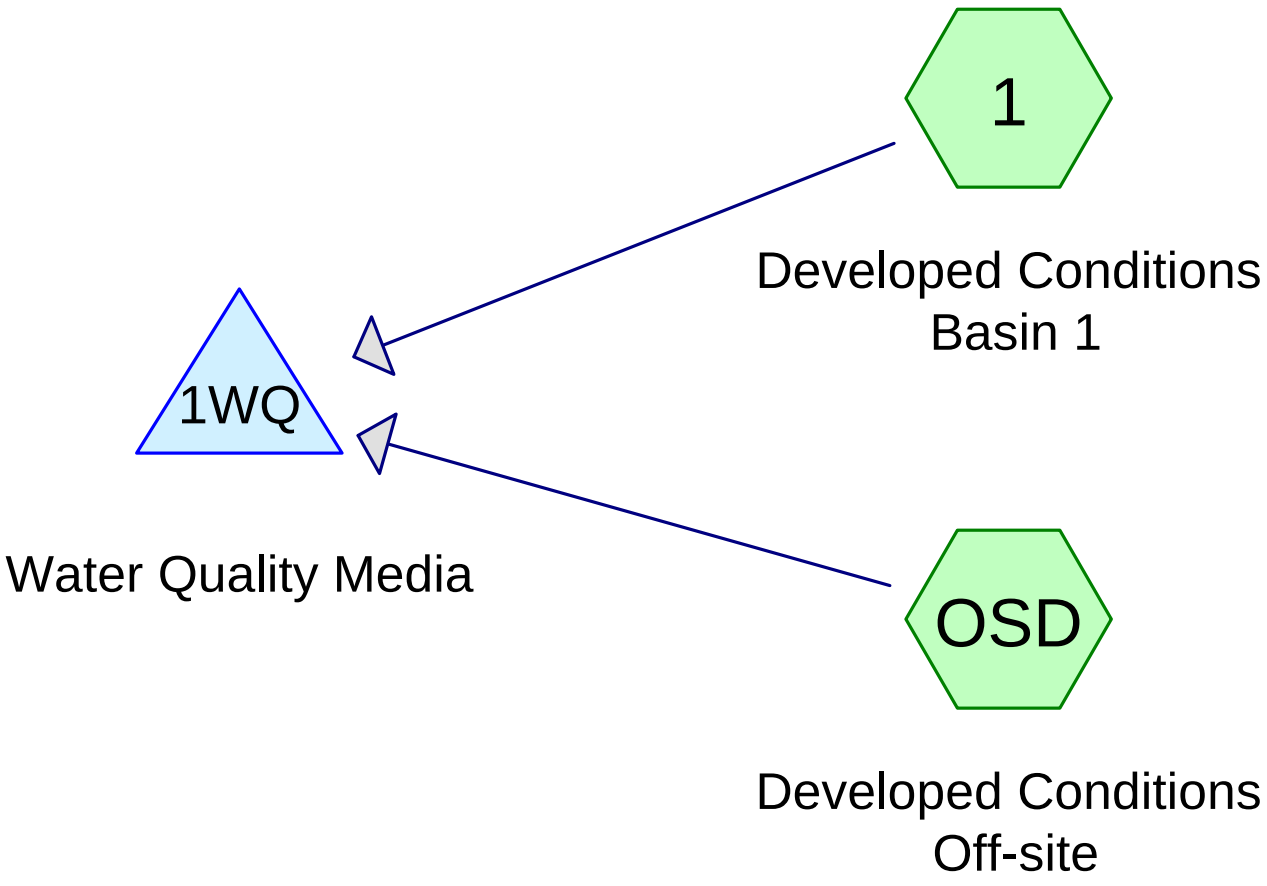
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OREGON
JULY 14, 1978
MARK D. GRENZ
EXPIRES: 06-30-2021

JOB # 6502

P302

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Appendix E



Subcat Reach Pond Link

Routing Diagram for 20210112 Devon Estates Phase 1 WQ
Prepared by Multitech Engineering Services, Inc., Printed 1/19/2021
HydroCAD® 10.10-4a s/n 09412 © 2020 HydroCAD Software Solutions LLC

Summary for Subcatchment 1: Developed Conditions Basin 1

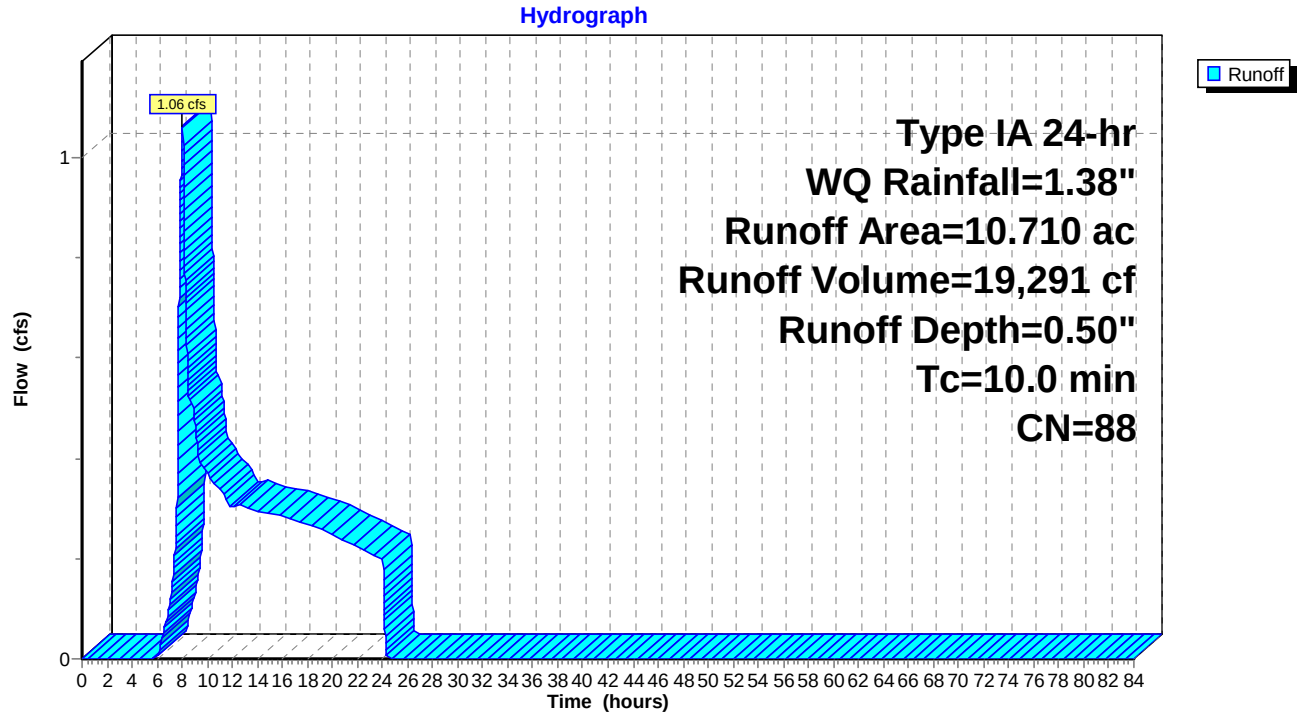
Runoff = 1.06 cfs @ 8.04 hrs, Volume= 19,291 cf, Depth= 0.50"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-84.00 hrs, dt= 0.01 hrs
Type IA 24-hr WQ Rainfall=1.38"

	Area (ac)	CN	Description
*	6.430	98	Roofs,pavement, concrete, HSG C
	4.280	74	>75% Grass cover, Good, HSG C
	10.710	88	Weighted Average
	4.280	74	39.96% Pervious Area
	6.430	98	60.04% Impervious Area

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

Subcatchment 1: Developed Conditions Basin 1



Summary for Subcatchment OSD: Developed Conditions Off-site

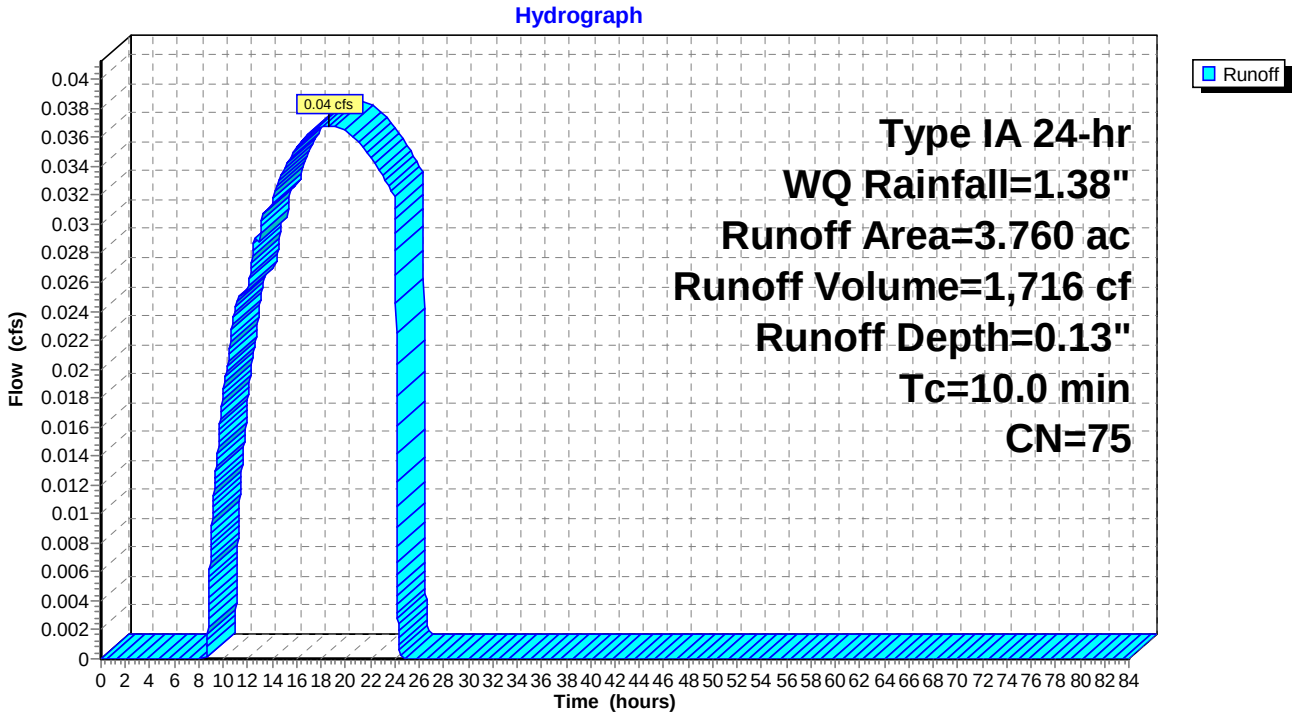
Runoff = 0.04 cfs @ 18.61 hrs, Volume= 1,716 cf, Depth= 0.13"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-84.00 hrs, dt= 0.01 hrs
Type IA 24-hr WQ Rainfall=1.38"

	Area (ac)	CN	Description
*	3.260	72	City of Salem Pre-developed, HSG C
	0.500	98	Paved roads w/curbs & sewers, HSG C
	3.760	75	Weighted Average
	3.260	72	86.70% Pervious Area
	0.500	98	13.30% Impervious Area

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

Subcatchment OSD: Developed Conditions Off-site



Summary for Pond 1WQ: Water Quality Media

Inflow Area = 630,313 sf, 47.89% Impervious, Inflow Depth = 0.40" for WQ event
Inflow = 1.06 cfs @ 8.04 hrs, Volume= 21,007 cf
Outflow = 0.39 cfs @ 7.67 hrs, Volume= 21,007 cf, Atten= 63%, Lag= 0.0 min
Primary = 0.39 cfs @ 7.67 hrs, Volume= 21,007 cf
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf

Routing by Stor-Ind method, Time Span= 0.00-84.00 hrs, dt= 0.01 hrs
Peak Elev= 542.18' @ 9.92 hrs Surf.Area= 8,500 sf Storage= 1,601 cf
Flood Elev= 562.00' Surf.Area= 8,500 sf Storage= 51,085 cf

Plug-Flow detention time= 29.2 min calculated for 21,004 cf (100% of inflow)
Center-of-Mass det. time= 29.2 min (896.9 - 867.7)

Volume	Invert	Avail.Storage	Storage Description
#1	541.99'	51,085 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

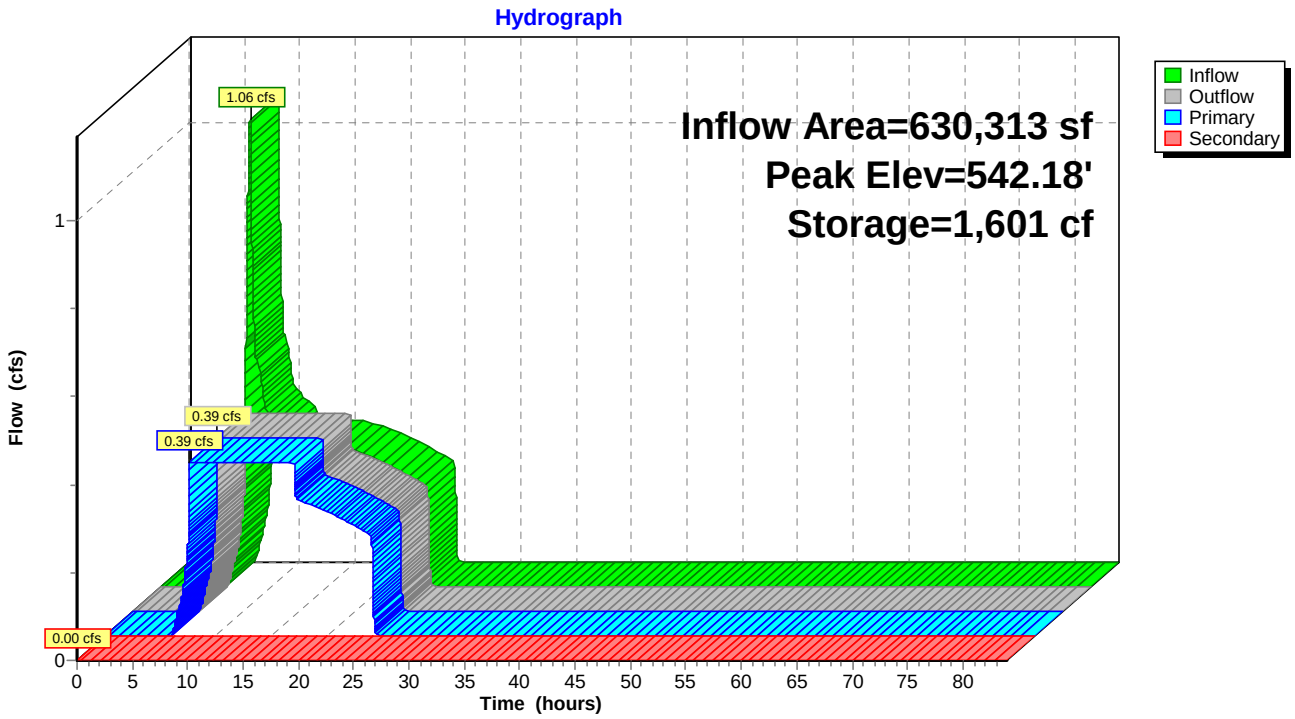
Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
541.99	8,500	0.0	0	0
542.00	8,500	100.0	85	85
544.00	8,500	100.0	17,000	17,085
546.00	8,500	100.0	17,000	34,085
547.00	8,500	100.0	8,500	42,585
548.00	8,500	100.0	8,500	51,085

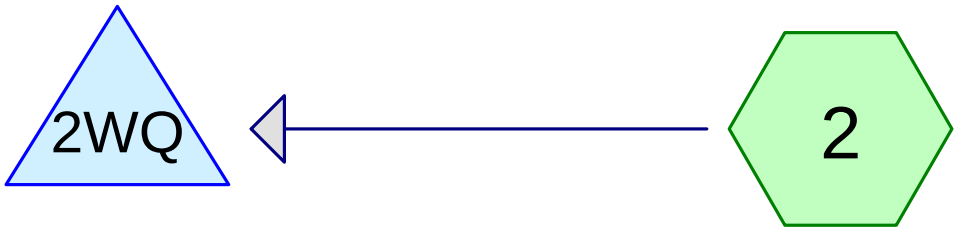
Device	Routing	Invert	Outlet Devices
#1	Primary	541.99'	**2.000 in/hr Exfiltration over Surface area**
#2	Secondary	543.00'	**24.0" Horiz. Beehive Overflow** C= 0.600 Limited to weir flow at low heads
#3	Secondary	547.00'	**15.0" Horiz. Emergency Overflow CB** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.39 cfs @ 7.67 hrs HW=542.00' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 0.39 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=541.99' (Free Discharge)
├**2=Beehive Overflow** (Controls 0.00 cfs)
└**3=Emergency Overflow CB** (Controls 0.00 cfs)

Pond 1WQ: Water Quality Media





Water Quality Media

Developed Conditions
Basin 2

Subcat Reach Pond Link

Routing Diagram for 20210112 Devon Estates Phase 2 WQ
Prepared by Multitech Engineering Services, Inc., Printed 1/19/2021
HydroCAD® 10.10-4a s/n 09412 © 2020 HydroCAD Software Solutions LLC

Summary for Subcatchment 2: Developed Conditions Basin 2

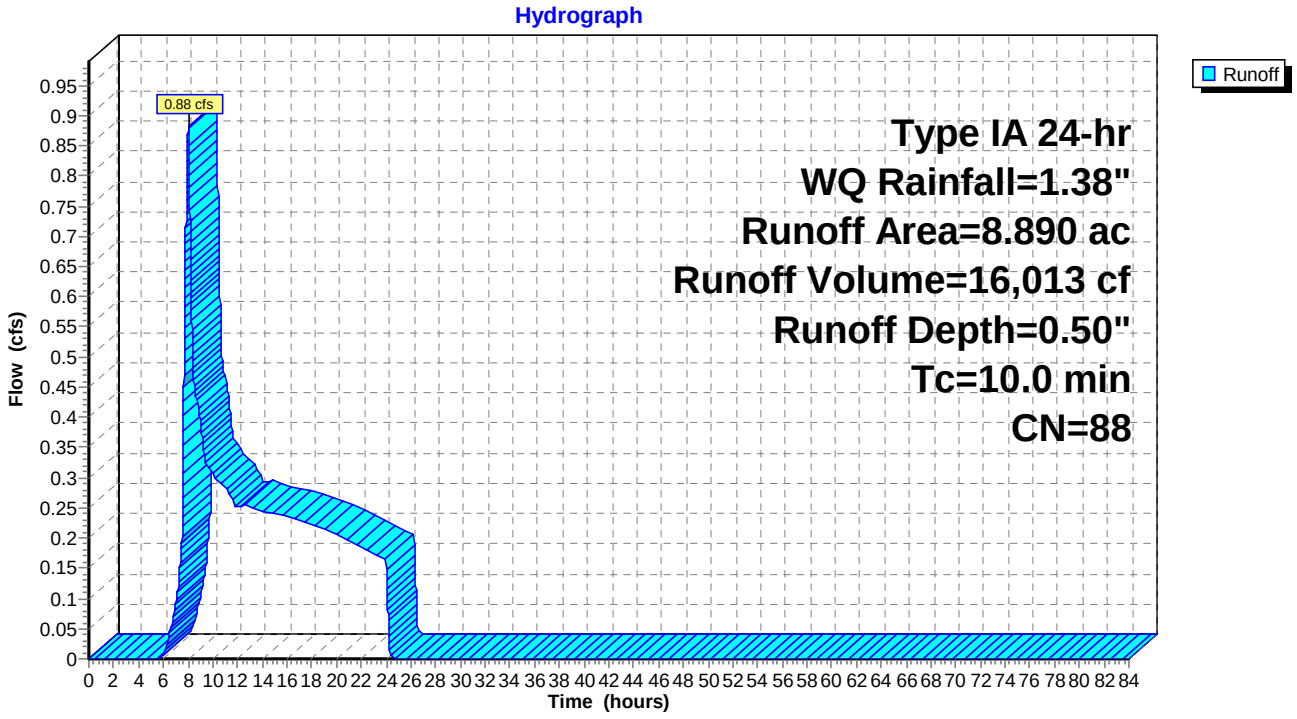
Runoff = 0.88 cfs @ 8.04 hrs, Volume= 16,013 cf, Depth= 0.50"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-84.00 hrs, dt= 0.01 hrs
Type IA 24-hr WQ Rainfall=1.38"

	Area (ac)	CN	Description
*	5.330	98	Roofs,pavement, concrete, HSG C
	3.560	74	>75% Grass cover, Good, HSG C
	8.890	88	Weighted Average
	3.560	74	40.04% Pervious Area
	5.330	98	59.96% Impervious Area

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

Subcatchment 2: Developed Conditions Basin 2



Summary for Pond 2WQ: Water Quality Media

Inflow Area = 387,248 sf, 59.96% Impervious, Inflow Depth = 0.50" for WQ event
Inflow = 0.88 cfs @ 8.04 hrs, Volume= 16,013 cf
Outflow = 0.37 cfs @ 7.69 hrs, Volume= 16,013 cf, Atten= 58%, Lag= 0.0 min
Primary = 0.37 cfs @ 7.69 hrs, Volume= 16,013 cf
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf

Routing by Stor-Ind method, Time Span= 0.00-84.00 hrs, dt= 0.01 hrs
Peak Elev= 600.12' @ 9.12 hrs Surf.Area= 8,000 sf Storage= 1,058 cf
Flood Elev= 606.00' Surf.Area= 8,000 sf Storage= 48,080 cf

Plug-Flow detention time= 14.5 min calculated for 16,011 cf (100% of inflow)
Center-of-Mass det. time= 14.5 min (867.5 - 853.0)

Volume	Invert	Avail.Storage	Storage Description
#1	599.99'	56,080 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

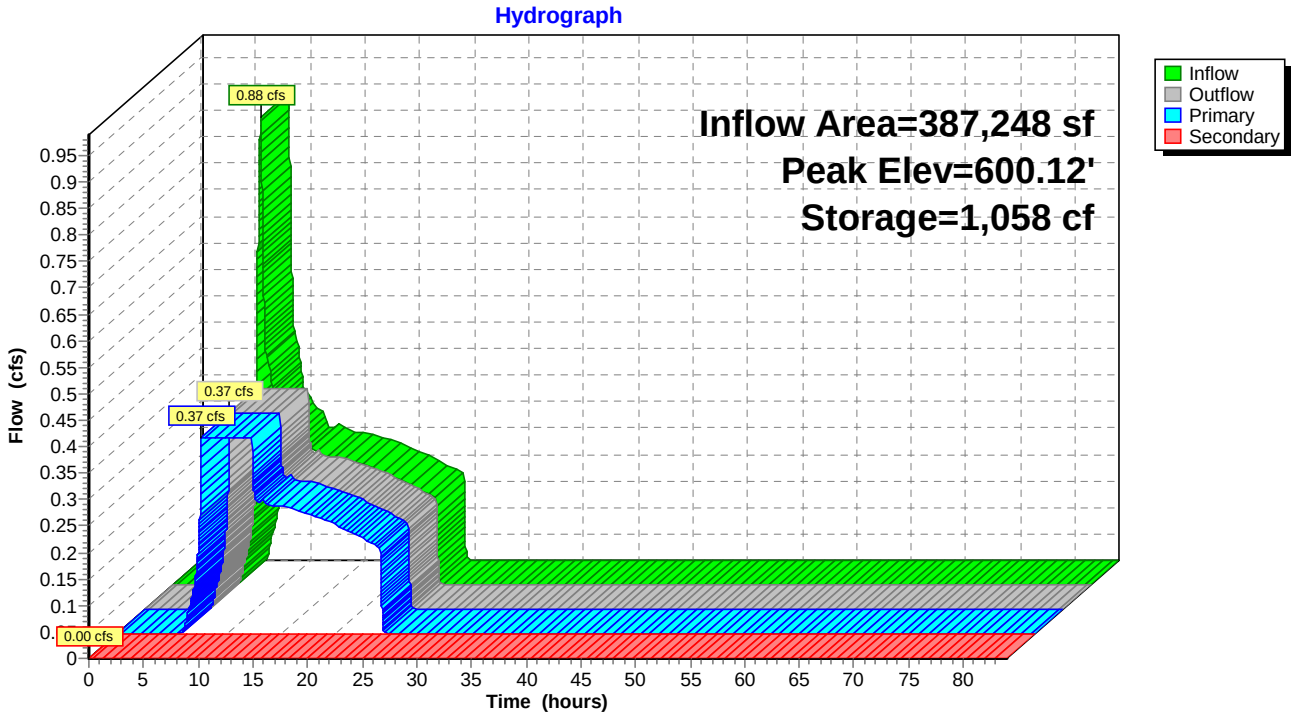
Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
599.99	8,000	0.0	0	0
600.00	8,000	100.0	80	80
602.00	8,000	100.0	16,000	16,080
604.00	8,000	100.0	16,000	32,080
606.00	8,000	100.0	16,000	48,080
607.00	8,000	100.0	8,000	56,080

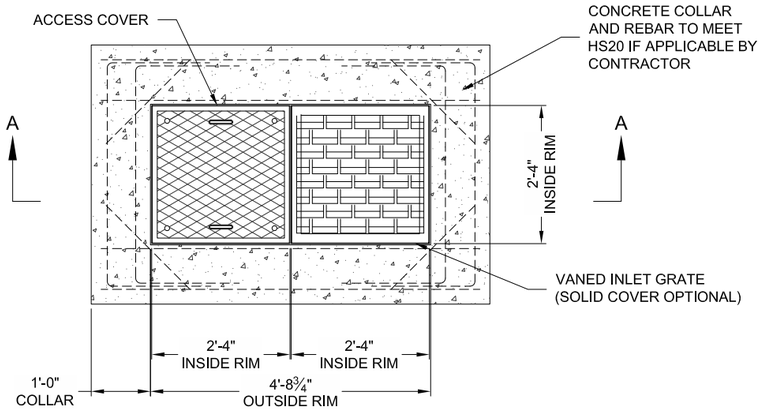
Device	Routing	Invert	Outlet Devices
#1	Primary	599.99'	**2.000 in/hr Exfiltration over Surface area**
#2	Secondary	600.25'	**24.0" Horiz. Beehive Overflow** C= 0.600 Limited to weir flow at low heads
#3	Secondary	606.00'	**15.0" Horiz. Emergency Overflow CB** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.37 cfs @ 7.69 hrs HW=600.00' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 0.37 cfs)

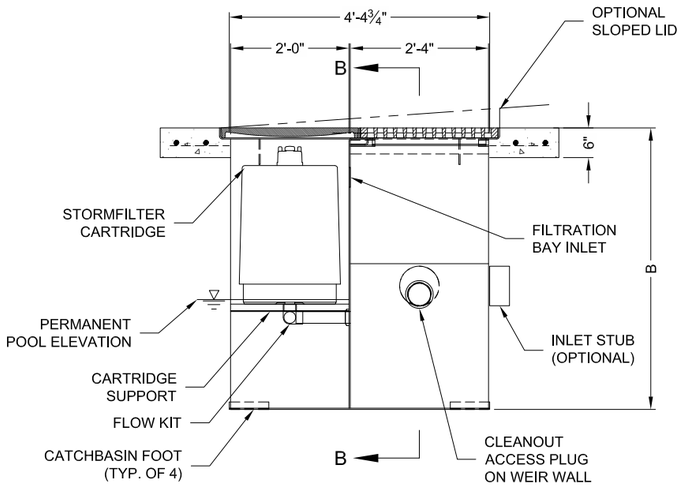
Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=599.99' (Free Discharge)
├**2=Beehive Overflow** (Controls 0.00 cfs)
└**3=Emergency Overflow CB** (Controls 0.00 cfs)

Pond 2WQ: Water Quality Media

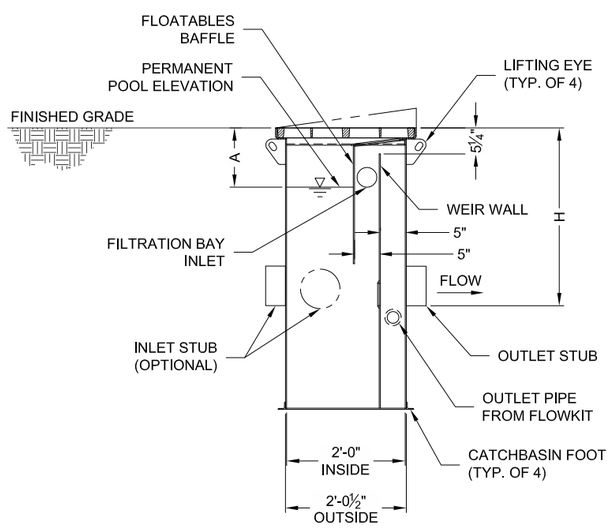




PLAN VIEW



SECTION A-A



SECTION B-B

STORMFILTER STEEL CATCHBASIN DESIGN NOTES

STORMFILTER TREATMENT CAPACITY IS A FUNCTION OF THE CARTRIDGE SELECTION AND THE NUMBER OF CARTRIDGES. 1 CARTRIDGE CATCHBASIN HAS A MAXIMUM OF ONE CARTRIDGE. SYSTEM IS SHOWN WITH A 27" CARTRIDGE, AND IS ALSO AVAILABLE WITH AN 18" CARTRIDGE. STORMFILTER CATCHBASIN CONFIGURATIONS ARE AVAILABLE WITH A DRY INLET BAY FOR VECTOR CONTROL.
PEAK HYDRAULIC CAPACITY PER TABLE BELOW. IF THE SITE CONDITIONS EXCEED PEAK HYDRAULIC CAPACITY, AN UPSTREAM BYPASS STRUCTURE IS REQUIRED.

CARTRIDGE SELECTION

CARTRIDGE HEIGHT	27"			18"			18" DEEP		
RECOMMENDED HYDRAULIC DROP (H)	3.05'			2.3'			3.3'		
SPECIFIC FLOW RATE (gpm/sf)	2 gpm/sf	1.67* gpm/sf	1 gpm/sf	2 gpm/sf	1.67* gpm/sf	1 gpm/sf	2 gpm/sf	1.67* gpm/sf	1 gpm/sf
CARTRIDGE FLOW RATE (gpm)	22.5	18.79	11.25	15	12.53	7.5	15	12.53	7.5
PEAK HYDRAULIC CAPACITY	1.0			1.0			1.8		
INLET PERMANENT POOL LEVEL (A)	1'-0"			1'-0"			2'-0"		
OVERALL STRUCTURE HEIGHT (B)	4'-9"			3'-9"			4'-9"		

* 1.67 gpm/sf SPECIFIC FLOW RATE IS APPROVED WITH PHOSPHOSORB® (PSORB) MEDIA ONLY

GENERAL NOTES
1. CONTECH TO PROVIDE ALL MATERIALS UNLESS NOTED OTHERWISE.
2. FOR SITE SPECIFIC DRAWINGS WITH DETAILED STORMFILTER CATCHBASIN STRUCTURE DIMENSIONS AND WEIGHTS, PLEASE CONTACT YOUR CONTECH ENGINEERED SOLUTIONS LLC REPRESENTATIVE. www.contechES.com
3. STORMFILTER CATCHBASIN WATER QUALITY STRUCTURE SHALL BE IN ACCORDANCE WITH ALL DESIGN DATA AND INFORMATION CONTAINED IN THIS DRAWING.
4. INLET SHOULD NOT BE LOWER THAN OUTLET. INLET (IF APPLICABLE) AND OUTLET PIPING TO BE SPECIFIED BY ENGINEER AND PROVIDED BY CONTRACTOR.
5. MANUFACTURER TO APPLY A SURFACE BEAD WELD IN THE SHAPE OF THE LETTER "O" ABOVE THE OUTLET PIPE STUB ON THE EXTERIOR SURFACE OF THE STEEL SFCB.
6. STORMFILTER CATCHBASIN EQUIPPED WITH 4 INCH (APPROXIMATE) LONG STUBS FOR INLET (IF APPLICABLE) AND OUTLET PIPING. STANDARD OUTLET STUB IS 8 INCHES IN DIAMETER. MAXIMUM OUTLET STUB IS 15 INCHES IN DIAMETER. CONNECTION TO COLLECTION PIPING CAN BE MADE USING FLEXIBLE COUPLING BY CONTRACTOR.
7. STEEL STRUCTURE TO BE MANUFACTURED OF 1/4 INCH STEEL PLATE. CASTINGS SHALL MEET AASHTO M306 LOAD RATING. TO MEET HS20 LOAD RATING ON STRUCTURE, A CONCRETE COLLAR IS REQUIRED. WHEN REQUIRED, CONCRETE COLLAR WITH #4 REINFORCING BARS TO BE PROVIDED BY CONTRACTOR.
8. FILTER CARTRIDGES SHALL BE MEDIA-FILLED, PASSIVE, SIPHON ACTUATED, RADIAL FLOW, AND SELF CLEANING. RADIAL MEDIA DEPTH SHALL BE 7-INCHES. FILTER MEDIA CONTACT TIME SHALL BE AT LEAST 38 SECONDS.
9. SPECIFIC FLOW RATE IS EQUAL TO THE FILTER TREATMENT CAPACITY (gpm) DIVIDED BY THE FILTER CONTACT SURFACE AREA (sq ft).

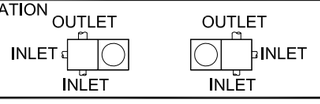
INSTALLATION NOTES
A. ANY SUB-BASE, BACKFILL DEPTH, AND/OR ANTI-FLOTATION PROVISIONS ARE SITE-SPECIFIC DESIGN CONSIDERATIONS AND SHALL BE SPECIFIED BY ENGINEER OF RECORD.
B. CONTRACTOR TO PROVIDE EQUIPMENT WITH SUFFICIENT LIFTING AND REACH CAPACITY TO LIFT AND SET THE CATCHBASIN (LIFTING CLUTCHES PROVIDED).
C. CONTRACTOR TO TAKE APPROPRIATE MEASURES TO PROTECT CARTRIDGES FROM CONSTRUCTION-RELATED EROSION RUNOFF.

1-CARTRIDGE CATCHBASIN STORMFILTER DATA

STRUCTURE ID	XXX
WATER QUALITY FLOW RATE (cfs)	X.XX
PEAK FLOW RATE (<1 cfs)	X.XX
RETURN PERIOD OF PEAK FLOW (yrs)	XXX
CARTRIDGE HEIGHT (27", 18", 18" DEEP)	XX
CARTRIDGE FLOW RATE (gpm)	XX
MEDIA TYPE (PERLITE, ZPG, PSORB)	XXXXX
RIM ELEVATION	XXX.XX'

PIPE DATA:	I.E.	DIAMETER
INLET STUB	XXX.XX'	XX"
OUTLET STUB	XXX.XX'	XX"

CONFIGURATION



SLOPED LID	YES\NO
SOLID COVER	YES\NO

NOTES/SPECIAL REQUIREMENTS:

The Stormwater Management StormFilter®
THIS PRODUCT MAY BE PROTECTED BY ONE OR MORE OF THE FOLLOWING U.S. PATENTS: 5,322,629; 5,524,370; 5,707,527; 5,985,157; 6,027,639; 6,649,048; RELATED FOREIGN PATENTS, OR OTHER PATENTS PENDING.

CONTECH® ENGINEERED SOLUTIONS LLC
www.contechES.com
9025 Centre Pointe Dr., Suite 400, West Chester, OH 45069
800-526-3999 513-645-7000 513-645-7993 FAX

1 CARTRIDGE CATCHBASIN STORMFILTER STANDARD DETAIL

I:\COMMON\CAD\TREATMENT\10 STORMFILTER\40 STANDARD DRAWINGS\SFCB\SFCB-S\DWG\SFCB1-DTL.DWG 7/8/2016 2:42 PM

Brandie Dalton

From: Brandie Dalton
Sent: Wednesday, December 16, 2020 7:59 AM
To: 'Glenn Baly'
Subject: Devon Subdivision
Attachments: 60-Site-Plan-P201SP.pdf; 60-Cover-Plan--P101CO.pdf

Glen,

I am wanting to let the NA know that we are modifying our Devon Avenue Subdivision. The modification creates 2 phases and realigns a few streets due to topography. If you have any questions please let me know.

Thank you,

Brandie Dalton
Land-Use Planner
Multi/Tech Engineering Services, Inc
1155 SE 13th Street
Salem, Oregon 97302
(503) 363-9227



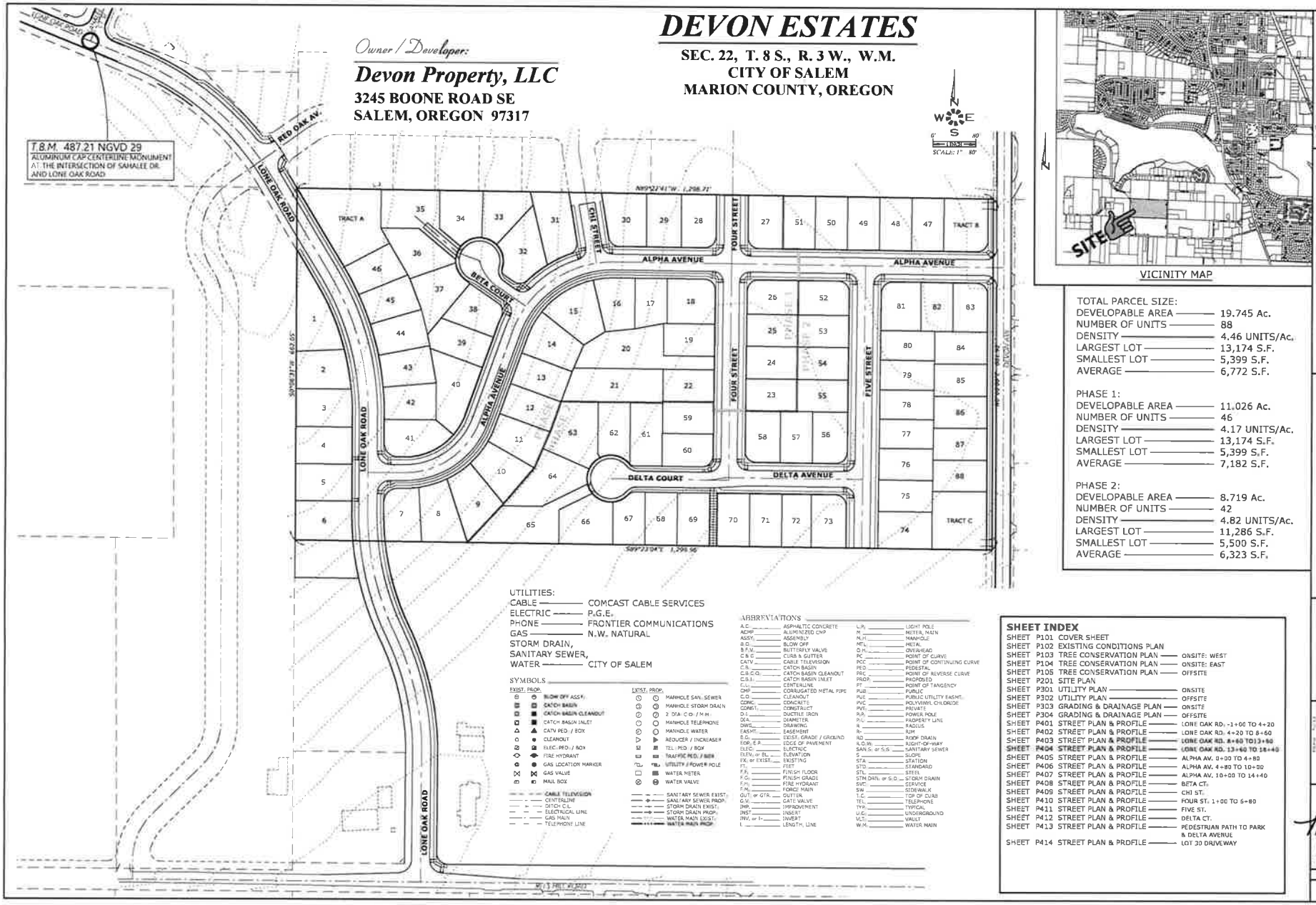
P201	Design: M.D.G. Drawn: P.H.S. Checked: B.M.G. Date: NOV., 2017 Scale: AS SHOWN As-Built:	NO CHANGES, MODIFICATIONS OR REPRODUCTIONS TO BE MADE TO THESE DRAWINGS WITHOUT WRITTEN AUTHORIZATION FROM THE DESIGN ENGINEER. DIMENSIONS & NOTES TAKE PRECEDENCE OVER GRAPHICAL REPRESENTATION.	**DEVON ESTATES**	**PRELIMINARY SITE PLAN**	MULTI/TECH ENGINEERING SERVICES, INC.

DEVON ESTATES

SEC. 22, T. 8 S., R. 3 W., W.M.
CITY OF SALEM
MARION COUNTY, OREGON

Owner / Developer:

Devon Property, LLC
3245 BOONE ROAD SE
SALEM, OREGON 97317



VICINITY MAP

TOTAL PARCEL SIZE:
DEVELOPABLE AREA ——— 19.745 Ac.
NUMBER OF UNITS ——— 88
DENSITY ——— 4.46 UNITS/Ac.
LARGEST LOT ——— 13,174 S.F.
SMALLEST LOT ——— 5,399 S.F.
AVERAGE ——— 6,772 S.F.

PHASE 1:
DEVELOPABLE AREA ——— 11.026 Ac.
NUMBER OF UNITS ——— 46
DENSITY ——— 4.17 UNITS/Ac.
LARGEST LOT ——— 13,174 S.F.
SMALLEST LOT ——— 5,399 S.F.
AVERAGE ——— 7,182 S.F.

PHASE 2:
DEVELOPABLE AREA ——— 8.719 Ac.
NUMBER OF UNITS ——— 42
DENSITY ——— 4.82 UNITS/Ac.
LARGEST LOT ——— 11,286 S.F.
SMALLEST LOT ——— 5,500 S.F.
AVERAGE ——— 6,323 S.F.

UTILITIES:
CABLE ——— COMCAST CABLE SERVICES
ELECTRIC ——— P.G.E.
PHONE ——— FRONTIER COMMUNICATIONS
GAS ——— N.W. NATURAL
STORM DRAIN,
SANITARY SEWER,
WATER ——— CITY OF SALEM

SYMBOLS

EXIST.	PROP.	
		BLOW OFF ASS'Y.
		CATCH BASIN
		CATCH BASIN CLEANOUT
		CATCH BASIN INLET
		CATV PED. / BOX
		CLEANOUT
		ELEC. PED. / BOX
		FIRE HYDRANT
		GAS LOCATION MARKER
		GAS VALVE
		MAIL BOX
		MANHOLE SAN. SEWER
		MANHOLE STORM DRAIN
		2 DIA. C.O. / M.H.
		MANHOLE TELEPHONE
		MANHOLE WATER
		REDUCER / INCREASER
		TEL. PED. / BOX
		TRAFFIC PED. / BOX
		UTILITY POLE/POWER POLE
		WATER METER
		WATER VALVE

CABLE TELEVISION
CENTERLINE
DITCH C.L.
ELECTRICAL LINE
GAS MAIN
TELEPHONE LINE
SANITARY SEWER EXIST.
SANITARY SEWER PROP.
STORM DRAIN EXIST.
STORM DRAIN PROP.
WATER MAIN EXIST.
WATER MAIN PROP.

ABBREVIATIONS

A.C.	ASPHALTIC CONCRETE	L.P.	LIGHT POLE
ACMP	ALUMINIZED CMP	M	METER, MAIN
ASSY.	ASSEMBLY	M.H.	MANHOLE
B.O.	BLOW OFF	MTL.	METAL
B.F.V.	BUTTERFLY VALVE	O.H.	OVERHEAD
C & G	CURB & GUTTER	PC	POINT OF CURVE
CATV	CABLE TELEVISION	PCC	POINT OF CONTINUING CURVE
C.B.	CATCH BASIN	PED.	PEDESTAL
C.B.C.O.	CATCH BASIN CLEANOUT	PRC	POINT OF REVERSE CURVE
C.B.I.	CATCH BASIN INLET	PROP.	PROPOSED
C/L	CENTERLINE	PT	POINT OF TANGENCY
CMP	CORRUGATED METAL PIPE	PUB.	PUBLIC
C.O.	CLEANOUT	PUE	PUBLIC UTILITY EASMT.
CONC.	CONCRETE	PVC	POLYVINYL CHLORIDE
CONST.	CONSTRUCT	PVT.	PRIVATE
D.I.	DUCTILE IRON	P.P.	POWER POLE
DIA.	DIAMETER	P.L.	PROPERTY LINE
DWG.	DRAWING	R	RADIUS
EASMT.	EASEMENT	R-	RUN
E.G.	EXIST. GRADE / GROUND	RD	ROOF DRAIN
EOP, E.P.	EDGE OF PAVEMENT	R.O.W.	RIGHT-OF-WAY
ELEC.	ELECTRIC	SAN.S. or S.S.	SANITARY SEWER
ELEV. or EL.	ELEVATION	S	SLOPE
EX. or EXIST.	EXISTING	STA.	STATION
FT.	FEET	STD.	STANDARD
F.F.	FINISH FLOOR	STL.	STEEL
F.G.	FINISH GRADE	STM DRN. or S.D.	STORM DRAIN
F.H.	FIRE HYDRANT	SVC.	SERVICE
F.M.	FORCE MAIN	SW	SIDEWALK
GUT. or GTR.	GUTTER	T.C.	TOP OF CURB
G.V.	GATE VALVE	TEL.	TELEPHONE
IMP.	IMPROVEMENT	TYP.	TYPICAL
INST.	INSERT	U.G.	UNDERGROUND
INV. or I-	INVERT	VLT.	VAULT
L	LENGTH, LINE	W.M.	WATER MAIN

SHEET INDEX

SHEET P101 COVER SHEET
SHEET P102 EXISTING CONDITIONS PLAN
SHEET P103 TREE CONSERVATION PLAN ——— ONSITE: WEST
SHEET P104 TREE CONSERVATION PLAN ——— ONSITE: EAST
SHEET P105 TREE CONSERVATION PLAN ——— OFFSITE
SHEET P201 SITE PLAN
SHEET P301 UTILITY PLAN ——— ONSITE
SHEET P302 UTILITY PLAN ——— OFFSITE
SHEET P303 GRADING & DRAINAGE PLAN ——— ONSITE
SHEET P304 GRADING & DRAINAGE PLAN ——— OFFSITE
SHEET P401 STREET PLAN & PROFILE ——— LONE OAK RD.: -1+00 TO 4+20
SHEET P402 STREET PLAN & PROFILE ——— LONE OAK RD.: 4+20 TO 8+60
SHEET P403 STREET PLAN & PROFILE ——— LONE OAK RD.: 8+60 TO 13+90
SHEET P404 STREET PLAN & PROFILE ——— LONE OAK RD.: 13+60 TO 18+40
SHEET P405 STREET PLAN & PROFILE ——— ALPHA AV.: 0+00 TO 4+80
SHEET P406 STREET PLAN & PROFILE ——— ALPHA AV.: 4+80 TO 10+00
SHEET P407 STREET PLAN & PROFILE ——— ALPHA AV.: 10+00 TO 14+40
SHEET P408 STREET PLAN & PROFILE ——— BETA CT.
SHEET P409 STREET PLAN & PROFILE ——— CHI ST.
SHEET P410 STREET PLAN & PROFILE ——— FOUR ST.: 1+00 TO 6+80
SHEET P411 STREET PLAN & PROFILE ——— FIVE ST.
SHEET P412 STREET PLAN & PROFILE ——— DELTA CT.
SHEET P413 STREET PLAN & PROFILE ——— PEDESTRIAN PATH TO PARK & DELTA AVENUE
SHEET P414 STREET PLAN & PROFILE ——— LOT 30 DRIVEWAY

MULTI/TECH ENGINEERING SERVICES, INC.
1155 13th ST. S.E. SALEM, OR. 97302
(503) 363-9227 FAX: (503) 363-1155
contact@multi-tech-engineering.com

PRELIMINARY COVER SHEET

DEVON ESTATES

NO CHANGES, MODIFICATIONS OR REPRODUCTIONS TO BE MADE TO THESE DRAWINGS WITHOUT PRIOR WRITTEN AUTHORIZATION FROM THE DESIGN ENGINEER.

DIMENSIONS & NOTES TAKE PRECEDENCE OVER GRAPHICAL REPRESENTATION.

Design: M.D.G.
Drawn: P.H.S.
Checked: B.M.G.
Date: NOV. 2017
Scale: AS SHOWN
As-Built:

EXPIRES: 06-30-2021

JOB # 6502

P101

MULTI/TECH
ENGINEERING SERVICES, INC.
1155 13th ST. S.E. SALEM, OR. 97302
PH. (503) 363-9227 FAX (503) 364-1260
www.mtengineering.net office@mtengineering.net

PRELIMINARY STREET IMPROVEMENTS

DEVON ESTATES

NO CHANGES, MODIFICATIONS OR REPRODUCTIONS TO BE MADE TO THESE DRAWINGS WITHOUT WRITTEN AUTHORIZATION FROM THE DESIGN ENGINEER.

DIMENSIONS & NOTES TAKE PRECEDENCE OVER GRAPHICAL REPRESENTATION.

650x620 P405ST

Design: M.D.G.
Drawn: P.H.S.
Checked: M.D.G.
Date: NOV. 2017
Scale: AS SHOWN
As-Built: ----

REGISTERED PROFESSIONAL ENGINEER
OREGON
JULY 14, 1977
MARK D. GRENZ

EXPIRES: 06-30-2021

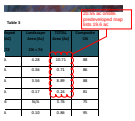
JOB # 6502

P405

J:\6501-6599\6502-DevonAvenueSubdivision\Dwg\DOT\6502x620.dwg, P405ST, 1/21/2021 4:06:53 PM, PSounders

20-118048-LD_SD Report.pdf Markup Summary

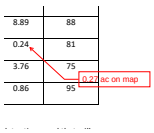
roseh (8)



Subject: Cloud+
Page Label: 7
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Author: roseh
Date: 2/2/2021 1:05:47 PM
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20.55 ac onsite.
predeveloped map lists 19.6 ac

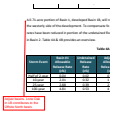
The table has been revised to show accurate ares.



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Author: roseh
Date: 2/2/2021 1:06:16 PM
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0.27 ac on map

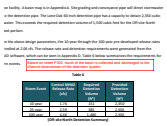
0.03 acres has been removed because pervious concrete will be used. A narrative has been added explaining this. If still an issue, final report will reflect what is desired by the review engineer.



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Adjust basins. Lone Oak in 1B contributes to the Offsite North basin.

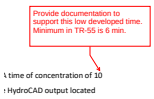
A final design has not been completed to date and is not know if runoff can be conveyed to a drainage system. The flow rate from this area has been removed from the allowable rate in the preliminary analysis. This demonstrates the detention system is feasible and meets the requirements for a preliminary drainage report. I believe that is the intent of a preliminary SWMP.



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Author: roseh
Date: 2/2/2021 1:29:00 PM
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Based on sheet P302, much of the basin is collected and discharged to the channel downstream of the detention system.

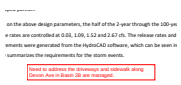
I do not understand the thought you are trying to convey. Runoff from Phase 1 and Lone Oak will be conveyed to the historical outlet channel. I believe it is identified as Champion Swale. The final SWMP will have a detail description explaining this that meets Public Works standards.



Subject: Callout
Page Label: 6
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Author: roseh
Date: 2/2/2021 12:55:19 PM
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Provide documentation to support this low developed time. Minimum in TR-55 is 6 min.

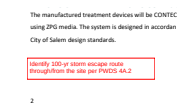
This is a preliminary SWMP to demonstrate a storm system can be designed for the site. There has been no design work for the conveyance system to calculate an accurate time. An assumed time-of-concentration of 10-minutes is a very good assumption. I would like to note that the difference in flow rates for the two times is insignificant and will not have a negative impact on the system.



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Author: roseh
Date: 2/2/2021 2:21:35 PM
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Need to address the driveways and sidewalk along Devon Ave in Basin 2B are managed.

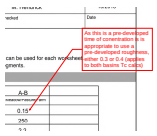
Driveways will be pervious concrete. Runoff will shown to be addressed in the engineering design phase. Note that runoff has been remove in the preliminary SWMP as a place holder and to demonstrate the system will have the capacity to handle runoff.



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Author: roseh
Date: 2/2/2021 2:46:09 PM
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Identify 100-yr storm escape route through/from the site per PWDS 4A.2

I do not know that routes as of yet and it will be addressed in the final SWMP. This is a preliminary SWMP demonstrating we have the capacity to serve the development. I believe that is the intent of a preliminary SWMP; to show development is feasible and will meet City standards.



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Status:
Checkmark: Unchecked
Author: roseh
Date: 2/2/2021 3:19:13 PM
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As this is a pre-developed time of conentration is is appropriate to use a pre-developed roughness, either 0.3 or 0.4 (applies to both basins Tc calcs)

The Manning's runoff coefficient used is from Table 4D-4 in Section 4D.4. The surface type is Undeveloped: Meadow, Pasture, or Farm. The parcel of land is not Woodland and Forest or Mixed. The manual doesn't even define Mixed and I'm not sure what it equates to. The coefficient used accurately reflects the conditions on site to calculate a reasonable time of concentration and is based on sound engineering judgment. This is even more critical now that City standards requires the 25-year and 100-year storm events to be detained on site. Feel free to contact me if you wish to discuss this in greater detail.

MULTI/TECH
ENGINEERING SERVICES, INC.

1155 13th Street SE
Salem, Oregon 97302
(503) 363-9227

January 20th, 2021

Peter Fernandez, P.E.
Director of Public Works
City of Salem
555 Liberty Street SE
Salem, OR 97301

RE: Lone Oak S-4 Pump Station
Proposed Location

Dear Peter,

Our office is working on the Devon Estates project in South Salem, north of Rees Hill Road.

The project involves the extension of Lone Oak Road from its present terminus south to Rees Hill Road. As part of the project, a S-4 Pump Station is required for the subdivision and for the area adjacent to the subdivision that is in the S-4 service level.

We are in the process of a modification to the subdivision approval that was obtained for the project a couple of years ago. As part of the approval, the project was required to locate the proposed pump station within the project area in a location acceptable to Public Works.

In the process of doing the conceptual designs for the project, it was determined that extensive grading work would be needed to provide street access onto and through the site as well as to create lots with sufficient buildable area. The ability to locate the pump station within the development limits just did not work with the grading plans, street grades and lot configurations.

As part of our prior review with staff, it was noted that we needed to extend the S-4 water facilities not only to the project, but to the future Park Site and in the Lone Oak Extension south to Reese Hill Road. The project will

also be constructing the S-3 Water main along the new Lone Oak Extension from the present S-3 system in Reese Hill Road north to connect to the water system in the existing Lone Oak intersection with Sahalee.

The City of Salem recently acquired the property to the south of the Devon project along Rees Hill Road for a future park site. In additional discussions with Staff, it was noted that the property located on the west side of the Lone Oak Extension would not be part of the park but would-be surplus property at this time.

We elected to look into the placement of the pump station on the northern most portion of this parcel. It was a site that was in a good location for pump facilities. Direct access to the S-3 water main being constructed. On the edge of the S-4 service area for extension to the south and into the Park.

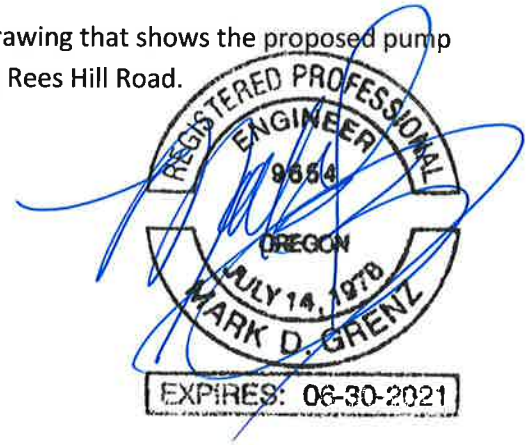
Given that the site is currently under City ownership, SDC funds would not need to be expended to pay for the pump station site as would be the case if located within the development.

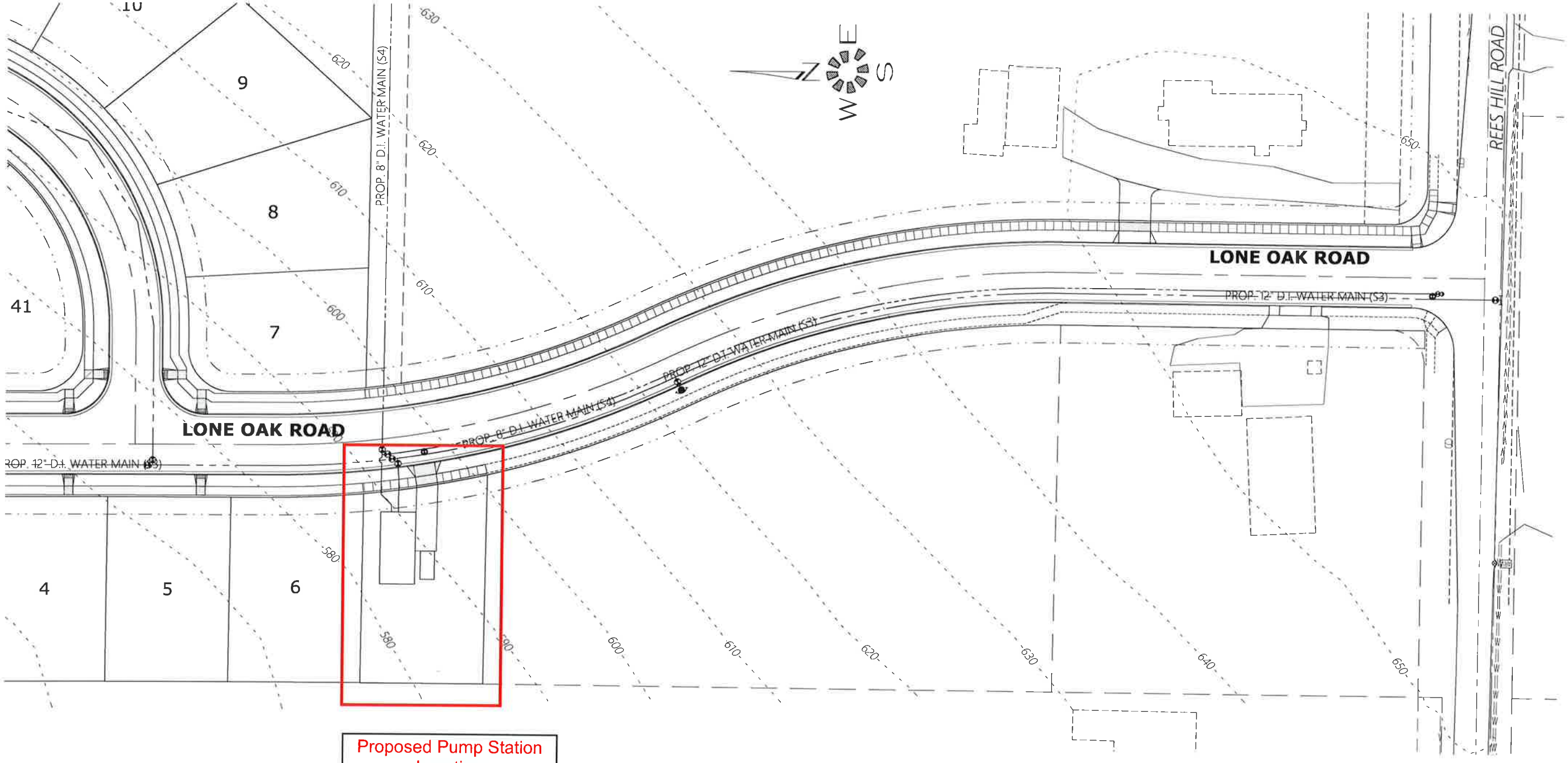
The site can be graded such that more than the needed usable area can be created to meet the goals of Public Works Operations Group.

Based on the above, we request your approval to make use of this site for the new pump station for an efficient and cost-effective location.

If you have any questions, please contact our office. We have included a drawing that shows the proposed pump station location relative to the southwest portion of the Devon project and Rees Hill Road.

Thanks for your consideration in this matter.





MULTI/TECH

ENGINEERING SERVICES, INC.

1155 13th ST. S.E. SALEM, OR. 97302

PH. (503) 363 - 9227 FAX (503) 364-1260

www.mtengineering.net office@mtengineering.net

6502-WatPump1.dwg

J:\6500-6599\6502-DevonAvenueSubdivision\Dwg20\6502b20.dwg, WatPump1, 2/8/2021 5:29:21 PM, PSaunders

6502

PRELIMINARY DRAINAGE REPORT
FOR

Devon Estates
Salem, Oregon

Prepared For:
HSF Development, LLC
3245 Boone Road SE
Salem, Oregon 97317

February 17, 2021



MULTI/TECH
ENGINEERING SERVICES, INC.

1155 13th Street SE
Salem OR 97302
www.mtengineering.net

PHONE: (503) 363-9227
FAX: (503) 364-1260
EMAIL: mgrenz@mtengineering.net

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INTRODUCTION

The Devon Estates development is a proposed multi-phased subdivision that was previously approved under the City of Salem Planning Case No. SUB19-05. The site is located south of Sahalee Court SE and west of Devon Avenue SE. The parcel of land to be developed is Tax Lot 300 of Marion County Assessor's Map 08 3W 22C. A vicinity map and supporting maps are in Appendix A of this report. An aerial image of the site can be seen below.



Project Site

Green Stormwater Infrastructure (GSI) to the Maximum Extent Feasible (MEF) is being used for the new developed areas per City of Salem Administrative Rules, Chapter 109, Division 004, Stormwater System, Appendix 4E and Ordinance No. 8-20 (Standards). Stormwater facilities will be constructed to meet the City of Salem standards.

EXISTING CONDITIONS

The entire 19.6-acre site is generally rectangular in the shape. Surface conditions consists of grass, brush and minimal trees. There are no identified wetlands, streams or sensitive areas located on the property.

A topographical high point is located on the southerly side of the site. Drainage from this high point flows westerly and easterly. The maximum relief is approximately 112-feet with a high point elevation of 651. The abutting properties are zoned single family residential with nearby public improvements that include minimal storm water conveyance systems. Appendix A contains multiple maps of the site.

Soils

The Natural Resources Conservation Service (NRCS) Soil Resource Report for Marion County was used to determine a Hydrological Soil Group classification for runoff calculations. The report identifies the site soils to be Jory, Nekia and Salkum soils. The predominate soils are in the hydrologic soil group C. The report is in Appendix B.

Infiltration

Infiltration testing was performed at the site to determine percolation rate of the soil. Test results recommend design infiltration rates below 0.5 inches per hour. Appendix B contains the geotechnical report with recommended infiltration rates.

Water Quality Methodology

Because of the poor percolation rates of the soils and natural steep slopes located on the site, green stormwater facilities are designed as volume control facilities with filtration. Because of natural steep grades, a 1-acre portion of Lone Oak Drive will treat runoff via Manufactured Treatment Technology devices; Contech Stormwater Solutions storm filters.

Water Quality Analysis

Water quality flow rates were calculated with HydroCAD 10.00. The SCS TR-20 Unit Hydrograph method will be used to generate the hydrographs. A Type 1A storm and a 24-hour rainfall depth of 1.38 inches per hour will be used to determine the water quality flow rate.

Manufactured Treatment Technology Design

The manufactured treatment devices will be CONTECH Stormwater Solutions storm filter catch basins using ZPG media. The system is designed in accordance with the manufacturer's recommendations per City of Salem design standards.

STORMWATER QUANTITY ANALYSIS

Stormwater quantity (Flow Control) is being handled by on-site detention and within Lone Oak Road. Runoff from the development is being routed to the facilities that ultimately controls runoff to pre-developed flow rates.

Per the standards, one-half of the post development peak runoff rate of the two-year storm must be equal to or less than one-half of the peak runoff rate of the pre-developed two-year, 24-hour storm. This also applies to the 10-year through 100-year, 24-hour storm events. Because of natural steep slopes and other factors, runoff from the Lone Oak facility will be controlled to the 10-year through 100-year pre-developed rates only. A design exception was previously approved and will be resubmitted for approval.

The pre-developed flow rates were calculated using HydroCAD 10.00. Table 1 below lists the 24-hour rainfall depths used in the analysis of each storm event. Please note that the 2-year event was halved and then analyzed.

Table 1

Storm Event	24-hour Rainfall Depth (in)
Half of 2-year	1.1
10-year	3.2
25-year	3.6
100-year	4.4

For the pre-developed conditions, a time of concentration of 22.2 minutes was calculated for Basin 1 and 21.6 minutes for Basin #2. The time of concentration data is in Appendix C. The calculations are incorporated in the HydroCAD output located in Appendix D. The entire area was classified as "City of Salem Pre-Development, HSG C" with a Curve Number (CN) of 72. A pre-developed basin map is in Appendix A.

The SCS TR-20 Unit Hydrograph method was used to generate the hydrographs. A Type 1A rainfall distribution was used with the above rainfall depths. Table 2A and 2B below identifies the allowable pre-developed release rates for each storm event.

Table 2A

Storm Event	Basin #1 Allowable Release Rate (cfs)	Off-site Allowable Release Rate (cfs)	Control MH#1 Allowable Release Rate (cfs)	Off-site North Allowable Release Rate (cfs)	Control MH#2 Allowable Release Rate (cfs)
Half of 2-year	0.03	0.01	0.04	N/A	N/A
10-year	1.49	0.52	2.01	0.12	2.13
25-year	2.13	0.75	2.88	0.17	3.05
100-year	3.56	1.25	4.81	0.29	5.10

Table 2B

Storm Event	Basin #2 Allowable Release Rate (cfs)
Half of 2-year	0.03
10-year	1.24
25-year	1.77
100-year	2.96

The post-developed site flow rates were calculated using HydroCAD 10.00. A time of concentration of 10 minutes was assumed for all basins. The calculations are incorporated in the HydroCAD output located in Appendix D. Each on-site basin was classified as 60 percent "Impervious, HSG C" with a CN of 98 and 40 percent “> 75% Grass cover, HSG C” with a CN of 74. This was based on code setback requirements and City street section standards. Off-site areas contributing to the development’s drainage system were classified as "City of Salem Pre-Development, HSG C" with a Curve Number (CN) of 72 or “Impervious, HSG C” with a CN of 98.

The post-developed Lone Oak flow rates were also calculated using HydroCAD 10.00. A time of concentration of 5 minutes was assumed for the basin. The basin was classified as 90 percent "Impervious, HSG C" with a CN of 98 and 10 percent “> 75% Grass cover, HSG C” with a CN of 74. Table 3 below lists the CN values for the developed basin areas. A developed basin map is in Appendix A.

Table 3

Basin	Impervious Area (Ac) CN = 98	Predeveloped Area (AC) CN = 72	Landscape Area (Ac) CN = 74	TOTAL Area (Ac)	Composite CN
Basin 1	6.00	N/A	4.00	10.00	88
Basin 1B	0.35	N/A	0.36	0.71	86
Basin 2	5.17	N/A	3.45	8.62	88
Basin 2B	0.07	N/A	0.17	0.24	81
Off-site	0.50	3.26	N/A	3.76	75
Off-Site North	0.76	N/A	0.10	0.86	95

A 0.71-acre portion of Basin 1, developed Basin 1B, will not drain into the detention pond that will serve the westerly side of the development. To compensate for this uncontrolled release, allowable release rates have been reduced in portion of the undetained flow. Likewise, the same approach was also taken in Basin 2. Table 4A & 4B provides an overview.

Table 4A

Storm Event	Control MH#1 Allowable Release Rate (cfs)	Undetained Release Rate (cfs)	Adjusted Allowable Release Rate (cfs)	Off-site North Allowable Release Rate (cfs)	Control MH#2 Allowable Release Rate (cfs)
Half of 2-year	0.04	0.02	0.02	N/A	N/A
10-year	2.01	0.32	1.69	0.12	1.81
25-year	2.88	0.39	2.49	0.17	2.66
100-year	4.81	0.53	4.28	0.29	4.57

Table 4B

Storm Event	Basin #2 Allowable Release Rate (cfs)	Undetained Release Rate (cfs)	Adjusted Allowable Release Rate (cfs)
Half of 2-year	0.03	0.003	0.03
10-year	1.24	0.08	1.16
25-year	1.77	0.10	1.67
100-year	2.96	0.15	2.81

DETENTION SYSTEM PHASE #1

In the detention analysis for this phase, the 10.0-acre site was considered a single basin draining into the detention pond. A basin map is in Appendix A. Site grading and conveyance pipe will direct stormwater runoff to the detention system. It should be noted that the Basin #1 pond has a capacity to detain 46,700 cubic feet of water. This exceeds the required detention volume of 33,740 cubic feet for the developed portion.

Based on the above design parameters, the half of the 2-year through the 100-year pre-developed release rates are controlled at 0.02, 1.52, 2.14 and 3.90 cfs. The release rates and detention requirements were generated from the HydroCAD software, which can be seen in Appendix D. Table 5 below summarizes the requirements for the storm events.

Table 5

Storm Event	Basin #1 Release Rate (cfs)	Required Detention Volume (ft^3)	Provided Detention Volume (ft^3)
Half of 2-year	0.02	11,150	46,700
10-year	1.52	25,225	46,700
25-year	2.14	27,900	46,700
100-year	3.90	33,740	46,700

(Basin #1 Pond Detention Summary)

Flow control is achieved with multiple orifices in a standard City of Salem control structure. The sizing of the orifice will use the standard orifice equation provided in the City of Salem Stormwater Management Manual.

Detention System Off-site North

In the detention analysis for this area, the 0.86-acre site was considered a single basin draining into the detention facility. A basin map is in Appendix A. Site grading and conveyance pipe will direct stormwater runoff to the detention pipe. The Lone Oak 60-inch detention pipe has a capacity to detain 2,350 cubic feet of water. This exceeds the required detention volume of 1,500 cubic feet for the Off-site North developed portion.

Based on the above design parameters, the 10-year through the 100-year pre-developed release rates are controlled at below the allowable rate. The release rate and detention requirements were generated from the HydroCAD software, which can be seen in Appendix D. Table 6 below summarizes the requirements for the storm events.

Table 6

Storm Event	Control MH#2 Release Rate (cfs)	Required Detention Volume (ft^3)	Provided Detention Volume (ft^3)
10-year	1.65	131	2,350
25-year	2.31	286	2,350
100-year	4.16	1,256	2,350

(Off-site North Detention Summary)

Flow control is achieved with a single orifice in a standard City of Salem control structure. The sizing of the orifice uses the standard orifice equation provided in the City of Salem Stormwater Management Manual. Table 8 below identifies orifice size, elevation and the water surface elevation.

Detention System Phase #2

In the detention analysis for this phase, the 8.9-acre site was considered a single basin draining into the detention pond. A basin map is in Appendix A. Site grading and conveyance pipe will direct stormwater runoff to the detention system. It should be noted that the Basin #2 pond has a capacity to detain 52,000 cubic feet of water. This exceeds the required detention volume of 25,900 cubic feet for the developed portion.

Based on the above design parameters, the half of the 2-year through the 100-year pre-developed release rates are controlled at 0.03, 1.06, 1.42 and 2.56 cfs. The release rates and detention requirements were generated from the HydroCAD software, which can be seen in Appendix D. Table 7 below summarizes the requirements for the storm events.

Table 7

Storm Event	Basin #2 Release Rate (cfs)	Required Detention Volume (ft^3)	Provided Detention Volume (ft^3)
Half of 2-year	0.03	8,325	52,000
10-year	1.06	18,935	52,000
25-year	1.42	21,750	52,000
100-year	2.56	25,900	52,000

(Basin #2 Pond Detention Summary)

Flow control is achieved with multiple orifices in a standard City of Salem control structure. The sizing of the orifice will use the standard orifice equation provided in the City of Salem Stormwater Management Manual.

It should be noted in the analysis for the area in Basin 2B, the area was reduced to 0.24 acres. Pervious concrete is proposed to be installed for all driveways fronting Devon Avenue SE to reduce runoff. Per City standards, the area can be ignored.

STORMWATER QUALITY ANALYSIS

Water quality flow rates were calculated using HydroCAD 10.00. The SCS TR-20 Unit Hydrograph method was used to generate the hydrographs. A Type 1A rainfall distribution was used with a 1.38 rainfall depth. Appendix E contains the analysis.

Detention Basins #1 and #3 serve as combination facilities and provide water quality treatment via filtration per City standards.

Because of natural slopes that exceed 10 percent along the lower portion of Lone Oak Drive, runoff will not drain into the water quality system. A manufactured stormwater treatment facility will be used to treat this runoff.

The proposed facility is a Contech StormFilter system using ZPG media. The filters will be in a catch basin with a high flow bypass to convey larger storm events. The media filters will be the 27-inch height type that have the capacity to treat 22.5 gpm per filter. The catch basins will be spaced at a maximum distance of 200-feet to treat a maximum area of approximately 12,000 square feet. 80 percent was considered impervious. A total of 3 catch basins in series will be installed along Lone Oak Drive. Appendix E contains the analysis and a generic plan of the Contech system. Table 8 below shows the required filters per catch basin.

Table 8

Storm Event	Basin WQ Flow Rate (cfs)	Basin WQ Flow Rate (gpm)	Required Filters	System Capacity (gpm)
WQ	0.05	22.4	1	22.5

CONCLUSION

Based on the presented information, the preliminary design can meet the City of Salem water quality and quantity standards. If there are any questions regarding this analysis or the design, please contact Matthew Hendrick at Multi/Tech Engineering by phone at (503) 363-9227 or via e-mail at mhendrick@mtengineering.net.

Appendix A

08 3W 22C

SEE MAP 083W21
4 COR
SEE MAP 083W22BC
SEE MAP 083W22
SEE MAP 083W22BD
SAHALEE COURT
SEE MAP 083W22AC
924 01 00 0
VACATED BY 2774-0009
C COR SEC
DEVON AVE
SAHALEE DR
LONE OAK RD
924 01 00 0
924 00 23 0
024 00 23 0
SEE MAP 083W21DA
SEE MAP 083W22CB
200 10.01 AC
100 9.71 AC
924 01 00 0
ELKINS WAY SE
SUNNY SIDE
300 19.89 AC
Site
924 00 23 0
SEE MAP 083W22DB
924 00
DEVON AVE SE
LL ROAD SE (CR 831)
TRILLIUM LANE
700 4.15 AC
600 4.70 AC
601 4.70 AC
500 4.73 AC
400 PARCEL 1 17.48 AC
FARMS
P.A.R.T. PLAT 1994-106
401 PARCEL 2 1.00 AC
20' ACCESS EASEMENT
REES HILL ROAD SE
(CR 831)
SEE MAP 083W22DC
REES HILL ROAD
SEE MAP 083W21DD
800 2.02 AC
1100 5.00 AC
1300 5.03 AC
1400 17.77 AC
1500 5.00 AC
1600 5.00 AC
1700 4.97 AC
1800 1.25 AC
2100 3.61 AC
2200 3.99 AC
2300 9.97 AC
024 00 23 0
900 5.36 AC
FRUIT
1401 2.23 AC
NO. 3
1900 3.77 AC
CHAMPION HILL ROAD SE
CREEK
POWELL
PUBLIC ROAD
1/4 COR
SEE MAP 083W28A
1000 2.65 AC
024 00 23 0
2000 2.35 AC
SUNNY SIDE FRUIT FARMS NO. 3
SEE MAP 083W27A
SEE MAP 083W27B
08 3W 22C

08 3W 22C
SALEM



MARION COUNTY, OREGON

SW1/4 SEC22 T8S R3W W.M.
SCALE 1" = 200'

LEGEND

LINE TYPES

- Taxlot Boundary
- Historical Boundary
- Road Right-of-Way
- Easement
- Railroad Right-of-Way
- Railroad Centerline
- Private Road ROW
- Taxcode Line
- Subdivision/Plat Bndry
- Map Boundary
- Waterline - Taxlot Bndry
- Waterline - Non Bndry

CORNER TYPES

- 1/16TH Section Cor.
- 1/4 Section Cor.
- DLC Corner
- Section Corner

NUMBERS

Tax Code Number
000 00 00 0

Acreage
0.25 AC

All acres listed are Net Acres, excluding any portions of the taxlot within public ROWs

NOTES

Tick Marks: A tick mark in the road indicates that the labeled dimension extends into the public ROW

200.00
175.00

CANCELLED NUMBERS

1200

DISCLAIMER: THIS MAP WAS PREPARED FOR ASSESSMENT PURPOSES ONLY

Marion County OREGON — Assessors Office Cartography Dept

FOR ADDITIONAL MAPS VISIT OUR WEBSITE AT
www.co.marion.or.us

PLOT DATE: 1/24/2018

SALEM
08 3W 22C

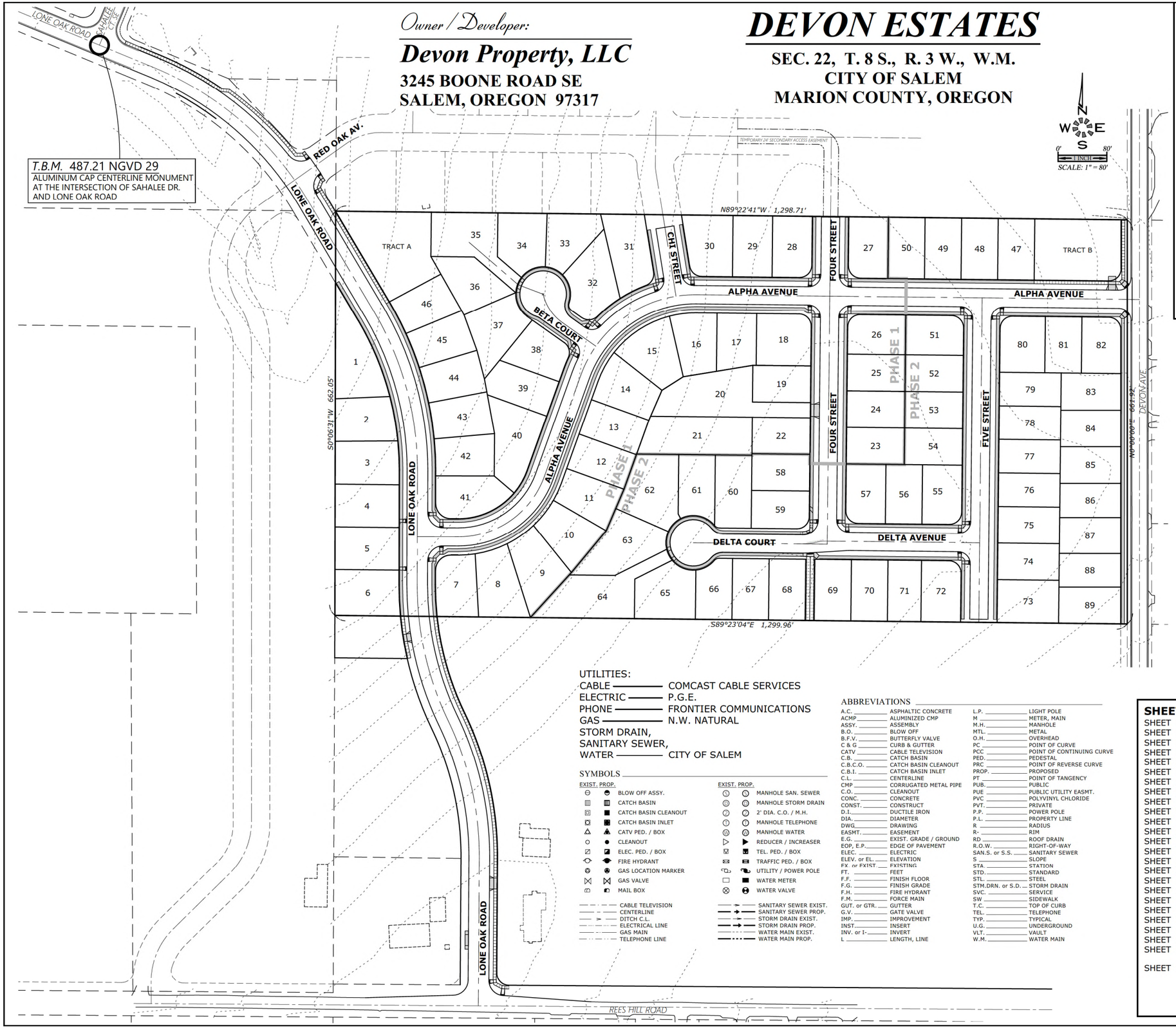
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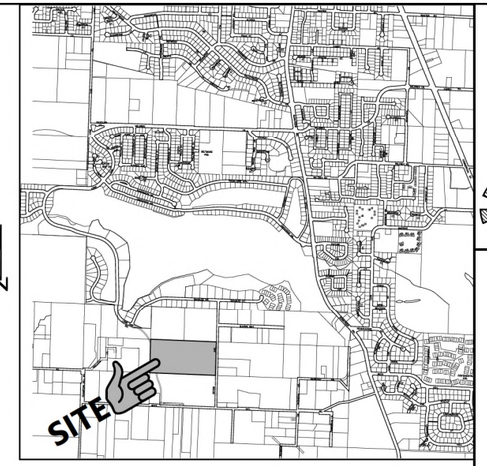
SEC. 22, T. 8 S., R. 3 W., W.M.
CITY OF SALEM
MARION COUNTY, OREGON

Owner / Developer:

Devon Property, LLC
3245 BOONE ROAD SE
SALEM, OREGON 97317

T.B.M. 487.21 NGVD 29
ALUMINUM CAP CENTERLINE MONUMENT AT THE INTERSECTION OF SAHALEE DR. AND LONE OAK ROAD





VICINITY MAP

TOTAL PARCEL SIZE:
DEVELOPABLE AREA — 19.745 Ac.
NUMBER OF UNITS — 89
DENSITY — 4.51 UNITS/Ac.
LARGEST LOT — 13,195 S.F.
SMALLEST LOT — 5,500 S.F.
AVERAGE — 6,753 S.F.

PHASE 1:
DEVELOPABLE AREA — 11.026 Ac.
NUMBER OF UNITS — 46
DENSITY — 4.17 UNITS/Ac.
LARGEST LOT — 13,195 S.F.
SMALLEST LOT — 5,700 S.F.
AVERAGE — 7,182 S.F.

PHASE 2:
DEVELOPABLE AREA — 8.719 Ac.
NUMBER OF UNITS — 43
DENSITY — 4.93 UNITS/Ac.
LARGEST LOT — 11,286 S.F.
SMALLEST LOT — 5,500 S.F.
AVERAGE — 6,295 S.F.

Drawing is NOT to scale

UTILITIES:
CABLE — COMCAST CABLE SERVICES
ELECTRIC — P.G.E.
PHONE — FRONTIER COMMUNICATIONS
GAS — N.W. NATURAL
STORM DRAIN, SANITARY SEWER, WATER — CITY OF SALEM

SYMBOLS

EXIST. PROP.		EXIST. PROP.	
⊖	BLOW OFF ASSY.	Ⓢ	MANHOLE SAN. SEWER
▥	CATCH BASIN	Ⓓ	MANHOLE STORM DRAIN
▣	CATCH BASIN CLEANOUT	②	2' DIA. C.O. / M.H.
▦	CATCH BASIN INLET	Ⓣ	MANHOLE TELEPHONE
△	CATV PED. / BOX	Ⓦ	MANHOLE WATER
○	CLEANOUT	▷	REDUCER / INCREASER
◪	ELEC. PED. / BOX	▣	TEL. PED. / BOX
⛑	FIRE HYDRANT	▭	TRAFFIC PED. / BOX
◉	GAS LOCATION MARKER	⚲	UTILITY / POWER POLE
⋈	GAS VALVE	□	WATER METER
▭	MAIL BOX	⊗	WATER VALVE
	CABLE TELEVISION		SANITARY SEWER EXIST.
	CENTERLINE		SANITARY SEWER PROP.
	DITCH C.L.		STORM DRAIN EXIST.
	ELECTRICAL LINE		STORM DRAIN PROP.
	GAS MAIN		WATER MAIN EXIST.
	TELEPHONE LINE		WATER MAIN PROP.

ABBREVIATIONS

A.C.	ASPHALTIC CONCRETE	L.P.	LIGHT POLE
ACMP	ALUMINIZED CMP	M	METER, MAIN
ASSY.	ASSEMBLY	M.H.	MANHOLE
B.O.	BLOW OFF	MTL.	METAL
B.F.V.	BUTTERFLY VALVE	O.H.	OVERHEAD
C & G	CURB & GUTTER	PC	POINT OF CURVE
CATV	CABLE TELEVISION	PCC	POINT OF CONTINUING CURVE
C.B.	CATCH BASIN	PED.	PEDESTAL
C.B.C.O.	CATCH BASIN CLEANOUT	PRC	POINT OF REVERSE CURVE
C.B.I.	CATCH BASIN INLET	PROP.	PROPOSED
C.L.	CENTERLINE	PT	POINT OF TANGENCY
CMP	CORRUGATED METAL PIPE	PUB.	PUBLIC
C.O.	CLEANOUT	PUE	PUBLIC UTILITY EASMT.
CONC.	CONCRETE	PVC	POLYVINYL CHLORIDE
CONST.	CONSTRUCT	PVT.	PRIVATE
D.I.	DUCTILE IRON	P.P.	POWER POLE
DIA.	DIAMETER	P.L.	PROPERTY LINE
DWG.	DRAWING	R	RADIUS
EASMT.	EASEMENT	R-	RIM
E.G.	EXIST. GRADE / GROUND	RD	ROOF DRAIN
EOP, E.P.	EDGE OF PAVEMENT	R.O.W.	RIGHT-OF-WAY
ELEC.	ELECTRIC	SAN.S. or S.S.	SANITARY SEWER
ELEV. or EL.	ELEVATION	S	SLOPE
FX. or EXIST.	EXISTING	STA.	STATION
FT.	FEET	STD.	STANDARD
F.F.	FINISH FLOOR	STL.	STEEL
F.G.	FINISH GRADE	STM.DRN. or S.D.	STORM DRAIN
F.H.	FIRE HYDRANT	SVC.	SERVICE
F.M.	FORCE MAIN	SW	SIDEWALK
GUT. or GTR.	GUTTER	T.C.	TOP OF CURB
G.V.	GATE VALVE	TEL.	TELEPHONE
IMP.	IMPROVEMENT	TYP.	TYPICAL
INST.	INSERT	U.G.	UNDERGROUND
INV. or I-	INVERT	VLT.	VAULT
L	LENGTH, LINE	W.M.	WATER MAIN

SHEET INDEX

SHEET P101	COVER SHEET	
SHEET P102	EXISTING CONDITIONS PLAN	
SHEET P103	TREE CONSERVATION PLAN	ONSITE: WEST
SHEET P104	TREE CONSERVATION PLAN	ONSITE: EAST
SHEET P105	TREE CONSERVATION PLAN	OFFSITE
SHEET P201	SITE PLAN	
SHEET P301	UTILITY PLAN	ONSITE
SHEET P302	UTILITY PLAN	OFFSITE
SHEET P303	DRAINAGE PLAN	ONSITE
SHEET P304	DRAINAGE PLAN	OFFSITE
SHEET P305	GRADING PLAN	ONSITE
SHEET P401	STREET PLAN & PROFILE	LONE OAK RD. -1+00 TO 4+20
SHEET P402	STREET PLAN & PROFILE	LONE OAK RD. 4+20 TO 8+60
SHEET P403	STREET PLAN & PROFILE	LONE OAK RD. 8+60 TO13+60
SHEET P404	STREET PLAN & PROFILE	LONE OAK RD. 13+60 TO 18+40
SHEET P405	STREET PLAN & PROFILE	ALPHA AV. 0+00 TO 4+80
SHEET P406	STREET PLAN & PROFILE	ALPHA AV. 4+80 TO 10+00
SHEET P407	STREET PLAN & PROFILE	ALPHA AV. 10+00 TO 14+40
SHEET P408	STREET PLAN & PROFILE	BETA CT.
SHEET P409	STREET PLAN & PROFILE	CHI ST.
SHEET P410	STREET PLAN & PROFILE	FOUR ST. 1+00 TO 6+80
SHEET P411	STREET PLAN & PROFILE	FIVE ST.
SHEET P412	STREET PLAN & PROFILE	DELTA CT.
SHEET P413	STREET PLAN & PROFILE	PEDESTRIAN PATH TO PARK & DELTA AVENUE
SHEET P414	STREET PLAN & PROFILE	LOT 30 DRIVEWAY

MULTI/TECH
ENGINEERING SERVICES, INC.
1155 13th ST. S.E. SALEM, OR. 97302
PH. (503) 363-9227 FAX (503) 364-1260
www.mtengineering.net office@mtengineering.net

PRELIMINARY COVER SHEET

DEVON ESTATES

NO CHANGES, MODIFICATIONS OR REPRODUCTIONS TO BE MADE TO THESE DRAWINGS WITHOUT WRITTEN AUTHORIZATION FROM THE DESIGN ENGINEER.

DIMENSIONS & NOTES TAKE PRECEDENCE OVER GRAPHICAL REPRESENTATION.

6500x20 P101CO
Design: M.D.G.
Drawn: P.H.S.
Checked: B.M.G.
Date: NOV. 2017
Scale: AS SHOWN
As-Built: ---

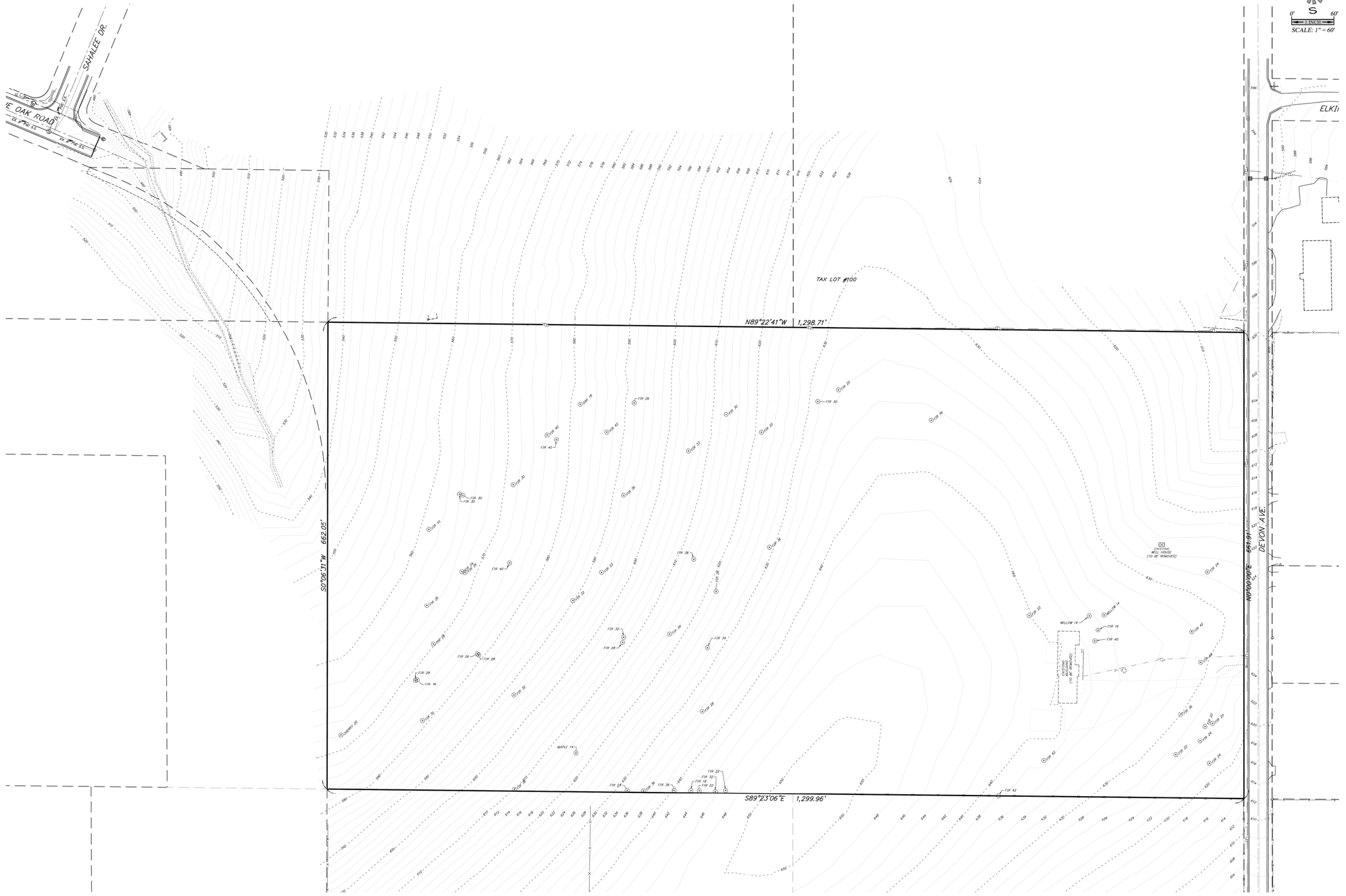
REGISTERED PROFESSIONAL ENGINEER
OREGON
JULY 1, 1978
HAROLD B. MCENTEE
EXPIRES: 06-30-2021

JOB # 6502

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Drawing is NOT to scale



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EXISTING CONDITIONS PLAN

DEVON ESTATES

NO CHANGES, MODIFICATIONS OR REPRODUCTIONS TO BE MADE TO THESE DRAWINGS WITHOUT WRITTEN AUTHORIZATION FROM THE DESIGN ENGINEER.

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6502p P102XC

Design: M.D.G.
Drawn: P.H.S.
Checked: B.M.G.
Date: NOV. 2017
Scale: AS SHOWN

REGISTERED PROFESSIONAL ENGINEER
OREGON
JUNE 14, 2005
MARK D. GRENZ

EXPIRES: 06-30-2019

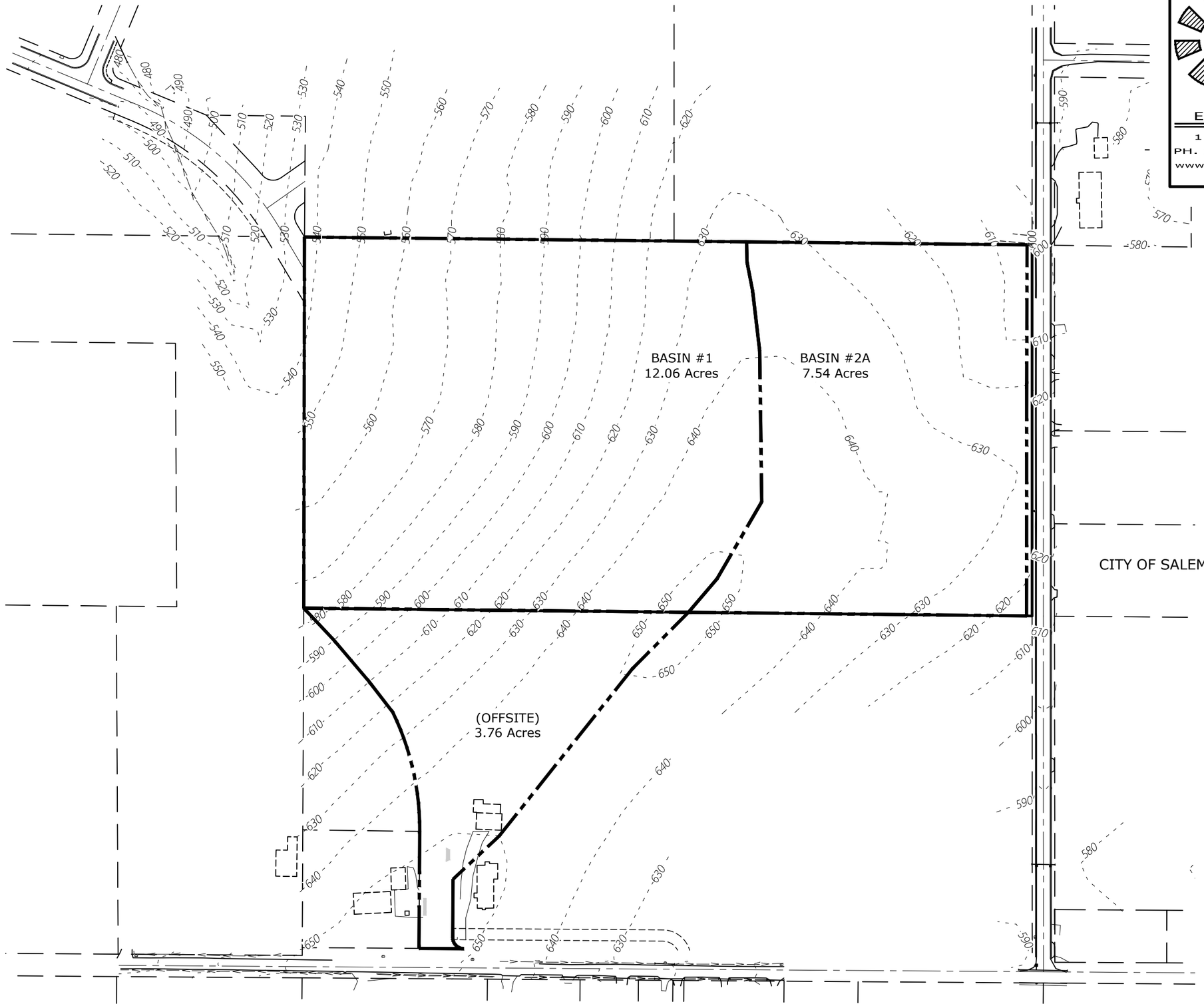
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PRE-DEVELOPED BASIN MAP



N
W E
S

NOT TO SCALE

CITY OF SALEM PREDEVELOPED HSG C CN=72

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POST-DEVELOPED BASIN MAP

DETENTION BASIN #2 CAPACITY: 2,350 C.F.

DETENTION BASIN #1 CAPACITY: 47,000 C.F.

FUTURE DETENTION BASIN #3 CAPACITY: 52,000 C.F.

BASIN 2B*
0.07 Acre IMPERVIOUS SURFACE – HSG C CN = 98
0.17 Acre LANDSCAPE ——— HSG C CN = 74

BASIN: OFFSITE NORTH 0.86 Acre

BASIN 1B*
0.71 Acre

BASIN 1
10.00 Acres

BASIN 2
8.62 Acres

BASIN 2B*
0.27 Acre

(OFFSITE)
3.76 Acres

N
W E
S
NOT TO SCALE

BASIN 1B*
50% IMPERVIOUS SURFACE —— HSG C CN = 98
50% LANDSCAPE ——— HSG C CN = 74

DEVELOPED SITE (BASIN 1 & 2)
60% IMPERVIOUS SURFACE —— HSG C CN = 98
40% LANDSCAPE ——— HSG C CN = 74

OFFSITE:
CITY OF SALEM PREDEVELOPED — HSG C CN = 72
3.76 Acres
IMPERVIOUS SURFACE ——— HSG C CN = 98
0.50 Acre

OFFSITE NORTH:
0.76 Acre IMPERVIOUS SURFACE – HSG C CN = 98
0.10 Acre LANDSCAPE ——— HSG C CN = 74

* = CALCULATED FLOW RATES FROM THESE BASINS WERE REMOVED FROM THE PARENT BASINS ALLOWABLE RUNOFF RATE.

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Appendix B

United States Department of Agriculture

NRCS

Natural Resources Conservation Service

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

Custom Soil Resource Report for Marion County Area, Oregon

Devon Estates



October 11, 2018

Hydrologic Soil Group—Marion County Area, Oregon
(Devon Estates)



Map Scale: 1:2,190 if printed on A landscape (11" x 8.5") sheet.

N

Meters
0 30 60 120 180

Feet
0 100 200 400 600

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 10N WGS84

MAP LEGEND

Area of Interest (AOI)

- Area of Interest (AOI)

Soils

Soil Rating Polygons

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

Soil Rating Lines

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

Soil Rating Points

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

Water Features

- Streams and Canals

Transportation

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

Background

- Aerial Photography

MAP INFORMATION

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

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

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

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

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

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

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

Soil Survey Area: Marion County Area, Oregon
Survey Area Data: Version 15, Sep 18, 2018

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

Date(s) aerial images were photographed: Jun 15, 2015—Jun 23, 2015

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

Hydrologic Soil Group

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
JoC	Jory silty clay loam, 7 to 12 percent slopes	C	1.8	8.8%
JoD	Jory silty clay loam, 12 to 20 percent slopes	C	10.3	50.5%
NeB	Nekia silty clay loam, 2 to 7 percent slopes	C	7.1	34.7%
NeC	Nekia silty clay loam, 7 to 12 percent slopes	C	0.4	1.8%
SlB	Salkum silty clay loam, basin, 0 to 6 percent slopes	B	0.8	4.1%
Totals for Area of Interest			**20.5**	**100.0%**

Description

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

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

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

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

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

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

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

Rating Options

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

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REDMOND GEOTECHNICAL SERVICES

Geotechnical Investigation

and

Geologic Hazard Assessment Services

Proposed Devon Avenue Residential Subdivision Site

Tax Lot No. 300 (Lots 13 and 14)

6719 Devon Avenue SE

Salem (Marion County), Oregon

for

Multi/Tech Engineering Services, Inc.

Project No. 1001.052.G
August 11, 2017

REDMOND GEOTECHNICAL SERVICES

August 11, 2017

Mr. Mark D. Grenz
Multi/Tech Engineering Services, Inc.
1155 13th Street SE
Salem, Oregon 97302

Dear Mr. Grenz:

Re: Geotechnical Investigation and Geologic Hazard Assessment Services, Proposed Devon Avenue Residential Subdivision Site, Tax Lot No. 300 (Lots 13 and 14), 6719 Devon Avenue SE, Salem (Marion County), Oregon

Submitted herewith is our report entitled "Geotechnical Investigation and Geologic Hazard Assessment Services, Proposed Devon Avenue Residential Subdivision Site, Tax Lot No. 300 (Lots 13 and 14), 6719 Devon Avenue SE, Salem (Marion County), Oregon". The scope of our services was outlined in our formal discussions with Mr. Mark D. Grenz of Multi/Tech Engineering Services, Inc on June 29, 2017. Verbal authorization of our services was provided by Mr. Mark D. Grenz on June 29, 2017.

During the course of our investigation, we have kept you and/or others advised of our schedule and preliminary findings. We appreciate the opportunity to assist you with this phase of the project. Should you have any questions regarding this report, please do not hesitate to call.

Sincerely,

Daniel M. Redmond, P.E., G.E.
President/Principal Engineer



12-3-18

PO Box 20547 • Portland, Oregon 97294 • Fax 503/286-7176 • Phone 503/285-0598

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Figure No. 1 - Site Vicinity Map
Figure No. 2 - Site Exploration Plan
Figure No. 3 - Typical Fill Slope Grading Detail
Figure No. 4 - Perimeter Footing/Retaining Wall Drain Detail

APPENDIX A

Test Pit Logs and Laboratory Data

APPENDIX B

Geologic Hazard Study

GEOTECHNICAL INVESTIGATION AND GEOLOGIC HAZARD ASSESSMENT
PROPOSED DEVON AVENUE RESIDENTIAL DEVELOPMENT SITE
TAX LOT NO. 300 (LOTS 13 AND 14)
6719 DEVON AVENUE SE
SALEM (MARION COUNTY) OREGON

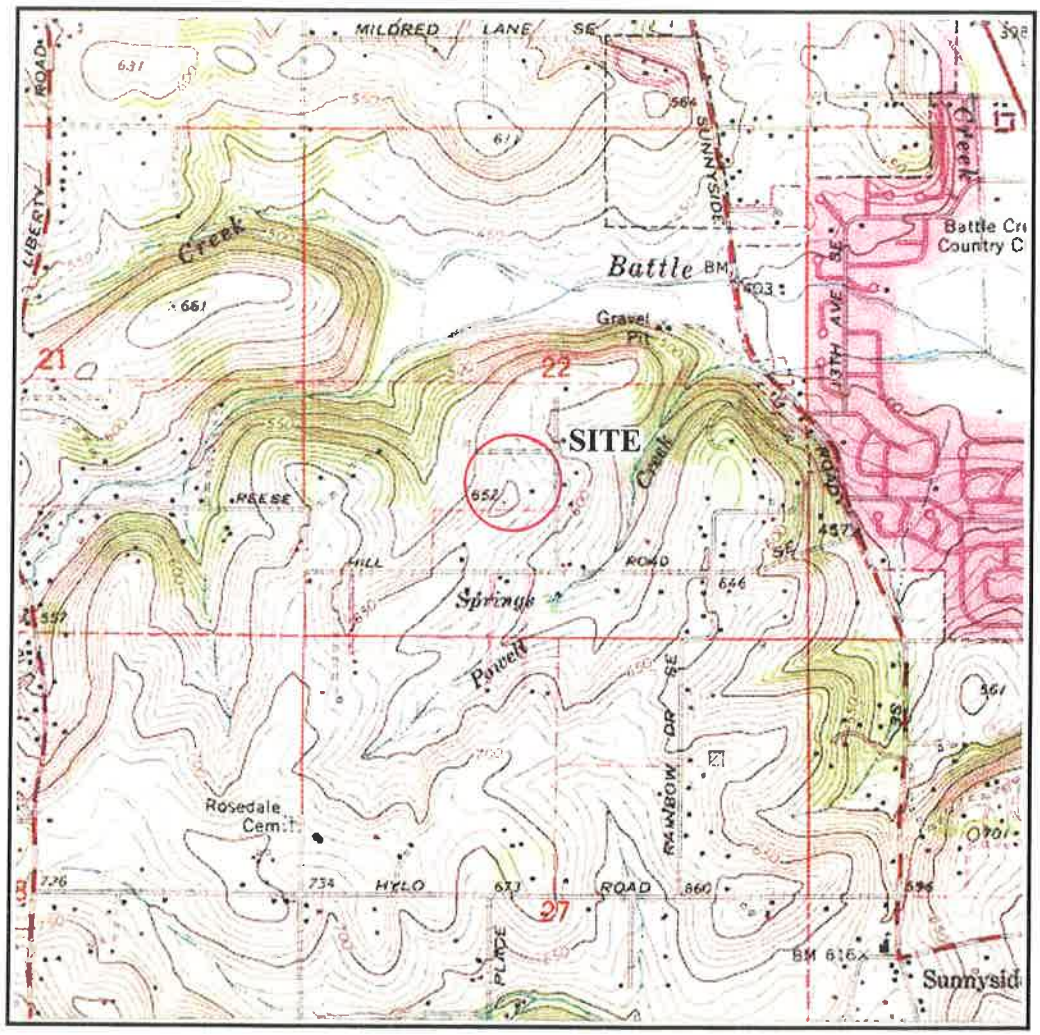
INTRODUCTION

Redmond Geotechnical Services, LLC is please to submit to you the results of our Geotechnical Investigation and Geologic Hazard Assessment at the site of the proposed new residential development located to the west of Devon Avenue SE and to the north of Reese Hill Road SE in Salem (Marion County), Oregon. The general location of the subject site is shown on the Site Vicinity Map, Figure No. 1. The purpose of our geotechnical investigation and geologic hazard study services at this time was to explore the existing subsurface soils and/or groundwater conditions across the subject site and to evaluate any potential concerns with regard to potential slope failure at the site as well as to develop and/or provide appropriate geotechnical design and construction recommendations for the proposed new residential development project.

PROJECT DESCRIPTION

We understand that present plans are to develop the subject property into new single-family residential lots. Although the project is still in the preliminary planning stages, we understand that the proposed new residential development will consist of the construction of approximately ninety (90) new single-family residential lots ranging in size from about 6,000 to 10,000 square feet (see Site Exploration Plan, Figure No. 2). The new residential homes are anticipated to be of two- and/or three-story structures constructed with wood framing. Support of the new residential structures is anticipated to consist primarily of conventional shallow strip (continuous) footings although some individual (column) footings may also be required. Structural loading information, although unavailable at this time, is anticipated to be fairly typical and light for this type of wood-frame single-family residential structure and is expected to result in maximum dead plus live continuous (strip) and individual (column) footing loads on the order of about 1.5 to 2.5 kips per lineal foot (klf) and 10 to 25 kips, respectively.

Although a site grading plan is not available at this time, we understand that both cuts and fills are presently planned for the residential project. In general, relatively minor cuts and/or fills (i.e., 5 to 8 feet) will be required across the proposed residential lots as well as the proposed new public street improvements. In this regard, due to the existing and/or finish grade sloping site conditions, some of the proposed new single-family residential structures and/or lots may also include the construction of a partial below grade floor(s) and/or retaining walls.



SIDNEY QUADRANGLE
OREGON
7.5 MINUTE SERIES (TOPOGRAPHIC)
SE/4 SALEM 15' QUADRANGLE

SCALE 1:24 000

1 0 1/2 1 MILE
1000 0 1000 2000 3000 4000 5000 6000 7000 FEET
1 .5 0 1 KILOMETER

CONTOUR INTERVAL 10 FEET
DOTTED LINES REPRESENT 5-FOOT CONTOURS
NATIONAL GEODETIC VERTICAL DATUM OF 1929

SITE VICINITY MAP

Project No. 1001.052.G	**DEVON AVENUE SUBDIVISION** **TL 300, 6719 DEVON AVENUE SE**	Figure No. 1

Other associated site improvements for the project will include construction of new public street improvements along Devon Avenue SE as well as new local residential streets. Additionally, the project will include the construction of new underground utility services as well as new concrete curbs and sidewalks. Further, we understand that the project will also include the collection of storm water from hard and//or impervious surfaces (i.e., roofs and pavements) for possible on-site treatment and/or disposal in a storm water system designed by the project civil engineer.

SCOPE OF WORK

The purpose of our geotechnical and/or geologic studies was to evaluate the overall subsurface soil and/or groundwater conditions underlying the subject site with regard to the proposed new residential development and construction at the site and any associated impacts or concerns with respect to potential slope failure at the site as well as provide appropriate geotechnical design and construction recommendations for the project. Additionally, due to the moderately steep sloping site gradients, a slope stability analysis was also performed.

Specifically, our geotechnical investigation and landslide hazard study performed as a collaboration with Northwest Geological Services, Inc. (NWGS, Inc.) included the following scope of work items:

1. Review of available and relevant geologic and/or geotechnical investigation reports for the subject site and/or area.

2. A detailed field reconnaissance and subsurface exploration program of the soil and ground water conditions underlying the site by means of eight (8) exploratory test pit excavations. The exploratory test pits were excavated to depths ranging from about five (5) to six (6) feet beneath existing site grades at the approximate locations as shown on the Site Exploration Plan, Figure No. 2. Additionally, field infiltration testing was also performed within two (2) of the test pit excavations.

3. Laboratory testing to evaluate and identify pertinent physical and engineering properties of the subsurface soils encountered relative to the planned site development and construction at the site. The laboratory testing program included tests to help evaluate the natural (field) moisture content and dry density, maximum dry density and optimum moisture content, expansion index, gradational characteristics, Atterberg Limits and (remolded) direct shear strength tests as well as "R"-value tests.

4. A literature review and engineering evaluation and assessment of the regional seismicity to evaluate the potential ground motion hazard(s) at the subject site. The evaluation and assessment included a review of the regional earthquake history and sources such as potential seismic sources, maximum credible earthquakes, and reoccurrence intervals as well as a discussion of the possible ground response to the selected design earthquake(s), fault rupture, landsliding, liquefaction, and tsunami and seiche flooding.

5. Engineering analyses utilizing the field and laboratory data as a basis for furnishing recommendations for foundation support of the proposed new residential structures. Recommendations include maximum design allowable contact bearing pressure(s), depth of footing embedment, estimates of foundation settlement, lateral soil resistance, and foundation subgrade preparation. Additionally, construction and/or permanent subsurface water drainage considerations have also been prepared. Further, our report includes recommendations regarding site preparation, placement and compaction of structural fill materials, suitability of the on-site soils for use as structural fill, criteria for import fill materials as well as preparation of foundation, pavement and/or floor slab subgrades.

6. Flexible pavement design and construction recommendations for the proposed new public street improvements.

SITE CONDITIONS

Site Geology

The subject site and/or area is underlain by highly weathered Basalt bedrock deposits and/or residual soils of the Columbia River Basalt formation. A more detailed description of the site geology across and/or beneath the site is presented in the Geologic Hazard Study in Appendix B.

Surface Conditions

The subject proposed new residential development property consists of one (1) rectangular shaped tax lot (Tax Lot 300) which includes Lots 13 and 14 and encompasses a total plan area of approximately 19.89 acres. The proposed residential development property is roughly located to the west of Devon Avenue SE and to the north of Reese Hill Road SE. The easterly portion of the subject proposed residential development site is presently improved and contain existing single-family residential homes while the remainder of the site is unimproved and consist of existing open land. Surface vegetation across the site generally consists of a light to moderate growth of grass, weeds and brush as well as numerous small to large size trees. Additionally, an existing seasonal drainage basin is located along the westerly portion of the site.

Topographically, the site is characterized as gently to moderately sloping terrain (10 to 25 percent) descending downward from the central portion of the site towards the west and east with overall topographic relief estimated at about seventy (70) feet and ranges from a low about Elevation 580 feet near the northwesterly corner of the subject site to a high of about Elevation 650 near the central portion of the site.

Subsurface Soil Conditions

Our understanding of the subsurface soil conditions underlying the site was developed by means of eight (8) exploratory test pits excavated to depths ranging from about five (5) to six (6) feet beneath existing site grades on July 11, 2017 with a John Deere 200C track-mounted excavator.

The location of the exploratory test pits were located in the field by marking off distances from existing and/or known site features and are shown in relation to the proposed new residential structures and/or site improvements on the Site Exploration Plan, Figure No. 2. Detailed logs of the test pit explorations, presenting conditions encountered at each location explored, are presented in the Appendix, Figure No's. A-5 through A-8.

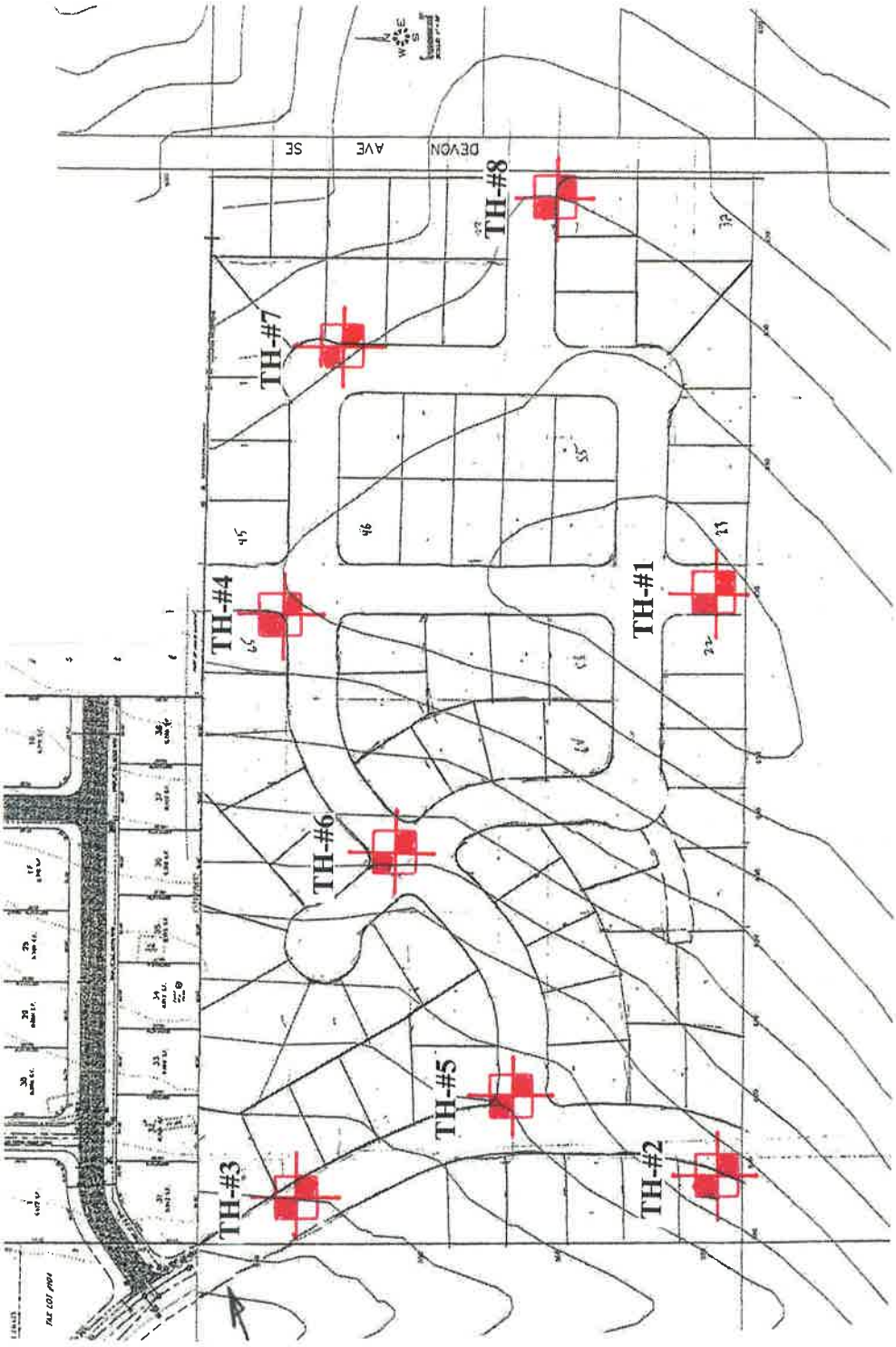
The exploratory test pit excavations were observed by staff from Redmond Geotechnical Services, LLC who logged each of the test pit explorations and obtained representative samples of the subsurface soils encountered across the site. Additionally, the elevation of the exploratory test pit excavations were referenced from the proposed Site Development Plan prepared by Project Delivery Group. and should be considered as approximate. All subsurface soils encountered at the site and/or within the exploratory test pit excavations were logged and classified in general conformance with the Unified Soil Classification System (USCS) which is outlined on Figure No. A-4.

The test pit explorations revealed that the subject site is underlain by native soil deposits comprised of highly weathered bedrock and/or residual soils composed of a surficial layer of dark brown, moist, soft, organic, sandy, clayey silt topsoil materials to depths of about 6 to 12 inches. These surficial topsoil materials were inturn underlain by residual soils composed of medium to reddish--brown, moist to very moist, medium stiff to stiff, sandy, clayey silt to a depth of about two (2) to four (4) feet beneath the existing site and/or surface grades. These upper clayey silt (residual) subgrade soils are best characterized by relatively low to moderate strength and moderate compressibility. These upper clayey silt subgrade soils were inturn underlain by medium to orangish-brown, moist to very moist, medium dense becoming dense at depth, clayey, silty sand to highly weathered bedrock deposits to the maximum depth explored of about six (6) feet beneath the existing site and/or surface grades. These clayey, silty sand subgrade soils and/or highly weathered bedrock deposits are best characterized by relatively moderate to high strength and low compressibility.

Groundwater

Groundwater was generally not encountered within any of the exploratory test pit explorations (TH-#1 through TH-#8) at the time of excavation to depths of at least six (6) feet beneath existing surface grades. However, the westerly portion of the subject property is bounded by an existing seasonal drainage basin and/or surface feature.

In this regard, although groundwater elevations at the site may fluctuate seasonally in accordance with rainfall conditions and/or associated with runoff within the westerly drainage basins as well as changes in site utilization, we are generally of the opinion that the static water levels and/or surface water ponding not observed during our recent field exploration work generally reflect a high seasonal groundwater level(s) at and/or beneath the site.



SITE EXPLORATION PLAN

Project No. 1001.052.G	**DEVON AVENUE SUBDIVISION** **TL 300, 6719 DEVON AVENUE SE**	Figure No. 2

INFILTRATION TESTING

We performed two (2) field infiltration tests at the site on July 11, 2017. The infiltration tests were performed in test holes TH-#2 and TH-#3 at depths of between two (2) to three (3) feet beneath the existing site and/or surface grades. The subgrade soils encountered in the infiltration test hole consisted of sandy, clayey silt.

The infiltration testing was performed in general conformance with current EPA and/or the City of Salem Department of Public Works Administrative Rules Chapter 109 Division 004 Appendix C Encased Falling Head test method which consisted of advancing a 6-inch diameter PVC pipe approximately 6 inches into the exposed soil horizon at each test location. Using a steady water flow, water was discharged into the pipe and allowed to penetrate and saturate the subgrade soils. The water level was adjusted over a two (2) hour period and allowed to achieve a saturated subgrade soil condition consistent with the bottom elevation of the surrounding test pit excavation. Following the required saturating period, water was again added into the PVC pipe and the time and/or rate at which the water level dropped was monitored and recorded. Each measurable drop in the water level was recorded until a consistent infiltration rate was observed and/or repeated.

Based on the results of the field infiltration testing at the site, we have found that the native sandy, clayey silt subgrade soil deposits posses an ultimate infiltration rate on the order of about 0.6 to 0.8 inches per hour (in/hr).

LABORATORY TESTING

Representative samples of the on-site subsurface soils were collected at selected depths and intervals from various test pit excavations and returned to our laboratory for further examination and testing and/or to aid in the classification of the subsurface soils as well as to help evaluate and identify their engineering strength and compressibility characteristics. The laboratory testing consisted of visual and textural sample inspection, moisture content and dry density determinations, maximum dry density and optimum moisture content, expansion index, gradation analyses and Atterberg Limits as well as (remolded) direct shear strength and "R"-value tests. Results of the various laboratory tests are presented in the Appendix, Figure No's. A-9 through A-13.

SEISMICITY AND EARTHQUAKE SOURCES

The seismicity of the southwest Washington and northwest Oregon area, and hence the potential for ground shaking, is controlled by three separate fault mechanisms. These include the Cascadia Subduction Zone (CSZ), the mid-depth intraplate zone, and the relatively shallow crustal zone. Descriptions of these potential earthquake sources are presented below.

The CSZ is located offshore and extends from northern California to British Columbia. Within this zone, the oceanic Juan de Fuca Plate is being subducted beneath the continental North American Plate to the east. The interface between these two plates is located at a depth of approximately 15 to 20 kilometers (km). The seismicity of the CSZ is subject to several uncertainties, including the maximum earthquake magnitude and the recurrence intervals associated with various magnitude earthquakes. Anecdotal evidence of previous CSZ earthquakes has been observed within coastal marshes along the Washington and Oregon coastlines. Sequences of interlayered peat and sands have been interpreted to be the result of large Subduction zone earthquakes occurring at intervals on the order of 300 to 500 years, with the most recent event taking place approximately 300 years ago. A study by Geomatrix (1995) and/or USGS (2008) suggests that the maximum earthquake associated with the CSZ is moment magnitude (Mw) 8 to 9. This is based on an empirical expression relating moment magnitude to the area of fault rupture derived from earthquakes that have occurred within Subduction zones in other parts of the world. An Mw 9 earthquake would involve a rupture of the entire CSZ. As discussed by Geomatrix (1995) this has not occurred in other subduction zones that have exhibited much higher levels of historical seismicity than the CSZ. However, the 2008 USGS report has assigned a probability of 0.67 for a Mw 9 earthquake and a probability of 0.33 for a Mw 8.3 earthquake. For the purpose of this study an earthquake of Mw 9.0 was assumed to occur within the CSZ.

The intraplate zone encompasses the portion of the subducting Juan de Fuca Plate located at a depth of approximately 30 to 50 km below western Washington and western Oregon. Very low levels of seismicity have been observed within the intraplate zone in western Oregon and western Washington. However, much higher levels of seismicity within this zone have been recorded in Washington and California. Several reasons for this seismic quiescence were suggested in the Geomatrix (1995) study and include changes in the direction of Subduction between Oregon, Washington, and British Columbia as well as the effects of volcanic activity along the Cascade Range. Historical activity associated with the intraplate zone includes the 1949 Olympia magnitude 7.1 and the 1965 Puget Sound magnitude 6.5 earthquakes. Based on the data presented within the Geomatrix (1995) report, an earthquake of magnitude 7.25 has been chosen to represent the seismic potential of the intraplate zone.

The third source of seismicity that can result in ground shaking within the Vancouver and southwest Washington area is near-surface crustal earthquakes occurring within the North American Plate. The historical seismicity of crustal earthquakes in this area is higher than the seismicity associated with the CSZ and the intraplate zone. The 1993 Scotts Mills (magnitude 5.6) and Klamath Falls (magnitude 6.0), Oregon earthquakes were crustal earthquakes.

Liquefaction

Seismic induced soil liquefaction is a phenomenon in which lose, granular soils and some silty soils, located below the water table, develop high pore water pressures and lose strength due to ground vibrations induced by earthquakes. Soil liquefaction can result in lateral flow of material into river channels, ground settlements and increased lateral and uplift pressures on underground structures.

Buildings supported on soils that have liquefied often settle and tilt and may displace laterally. Soils located above the ground water table cannot liquefy, but granular soils located above the water table may settle during the earthquake shaking.

Our review of the subsurface soil test pit logs from our exploratory field explorations (TH-#1 through TH-#8) and laboratory test results indicate that the site is generally underlain by medium stiff to stiff, sandy, clayey silt soils and/or medium dense to dense highly weathered bedrock deposits to depths of at least 6.0 feet beneath existing site grades. Additionally, groundwater was generally not encountered within any of the exploratory test pit excavations (TH-#1 through TH-#8) at the site during our field exploration work to depths of at least 6.0 feet.

As such, due to the medium stiff to stiff and/or cohesive nature of the sandy, clayey silt subgrade soils and/or medium dense to dense highly weathered bedrock deposits beneath the site, it is our opinion that the native sandy, clayey silt subgrade soil and/or highly weathered bedrock deposits located beneath the subject site have a very low potential for liquefaction during the design earthquake motions previously described.

Landslides

No ancient and/or active landslides were observed or are known to be present on the subject site. Additionally, development of the subject site into the planned residential homes sites does not appear to present a potential geologic and/or landslide hazard provided that the site grading and development activities conform with the recommendations presented within this report. A more detailed assessment of the potential landslide hazard of the subject site is presented in the Geologic Hazard Study in Appendix B.

Surface Rupture

Although the site is generally located within a region of the country known for seismic activity, no known faults exist on and/or immediately adjacent to the subject site. As such, the risk of surface rupture due to faulting is considered negligible.

Tsunami and Seiche

A tsunami, or seismic sea wave, is produced when a major fault under the ocean floor moves vertically and shifts the water column above it. A seiche is a periodic oscillation of a body of water resulting in changing water levels, sometimes caused by an earthquake. Tsunami and seiche are not considered a potential hazard at this site because the site is not near to the coast and/or there are no adjacent significant bodies of water.

Flooding and Erosion

Stream flooding is a potential hazard that should be considered in lowland areas of Marion County and Salem. The FEMA (Federal Emergency Management Agency) flood maps should be reviewed as part of the design for the proposed new residential structures and site improvements. Elevations of structures on the site should be designed based upon consultants reports, FEMA (Federal Emergency Management Agency), and Marion County requirements for the 100-year flood levels of any nearby creeks, streams and/or drainage basins.

CONCLUSIONS AND RECOMMENDATIONS

General

Based on the results of our field explorations, laboratory testing, and engineering analyses, it is our opinion that the site is presently stable and suitable for the proposed new single-family residential development and its associated site improvements provided that the recommendations contained within this report are properly incorporated into the design and construction of the project.

The primary features of concern at the site are 1) the presence of highly moisture sensitive clayey and silty (residual) subgrade soils across the site, 2) the presence of gently to moderately sloping site conditions across the proposed new residential lots and/or home sites, and 3) the relatively low infiltration rates anticipated within the near surface clayey and silty subgrade soils.

With regard to the moisture sensitive clayey and silty residual subgrade soils, we are generally of the opinion that all site grading and earthwork activities be scheduled for the drier summer months which is typically June through September.

In regards to the gently to moderately sloping site conditions across the proposed new residential home sites and/or lots, we are of the opinion that site grading and/or structural fill placement should be minimized where possible and should generally limit cuts and/or fills to about eight (8) feet or less without the approval of the Geotechnical Engineer. Additionally, where existing site slopes and/or surface grades exceed about 20 percent (1V:5H) and in order to construct the proposed new residential lots and/or new local residential streets, benching and keying of all fills into the natural site slopes may be required.

With regard to the relatively low infiltration rates anticipated within the residual clayey and silty subgrade soils beneath the site, we generally do not recommend any storm water infiltration within structural and/or embankment fills. However, some limited storm water infiltration may be feasible within the lower westerly portion of the subject property as well as the proposed residential lots and/or areas of the site where the existing and/or finish slope gradients are no steeper than about 20 percent (1V:5H). In this regard, we recommend that all proposed storm water detention and/or infiltration systems for the project be reviewed and approved by Redmond Geotechnical Services, LLC.

The following sections of this report provide specific recommendations regarding subgrade preparation and grading as well as foundation and floor slab design and construction for the new residential development project.

Site Preparation

As an initial step in site preparation, we recommend that the proposed new residential building sites and/or lots as well as their associated structural and/or site improvement area(s) be stripped and cleared of all existing improvements, any existing unsuitable fill materials, surface debris, existing vegetation, topsoil materials, and/or any other deleterious materials present at the time of construction. In general, we envision that the site stripping to remove existing vegetation and topsoil materials will generally be about 6 to 12 inches. However, localized areas requiring deeper removals, such as existing undocumented and/or unsuitable fill materials as well as old foundation remnants, will likely be encountered and should be evaluated at the time of construction by the Geotechnical Engineer. The stripped and cleared materials should be properly disposed of as they are generally considered unsuitable for use/reuse as fill materials.

Following the completion of the site stripping and clearing work and prior to the placement of any required structural fill materials and/or structural improvements, the exposed subgrade soils within the planned structural improvement area(s) should be inspected and approved by the Geotechnical Engineer and possibly proof-rolled with a half and/or fully loaded dump truck. Areas found to be soft or otherwise unsuitable should be over-excavated and removed or scarified and recompacted as structural fill. During wet and/or inclement weather conditions, proof rolling and/or scarification and recompaction as noted above may not be appropriate.

The on-site native sandy, clayey silt (residual) subgrade soil materials are generally considered suitable for use/reuse as structural fill materials provided that they are free of organic materials, debris, and rock fragments in excess of about 6 inches in dimension. However, if site grading is performed during wet or inclement weather conditions, the use of some of the on-site native soil materials which contain significant silt and clay sized particles will be difficult at best. In this regard, during wet or inclement weather conditions, we recommend that an import structural fill material be utilized which should consist of a free-draining (clean) granular fill (sand & gravel) containing no more than about 5 percent fines. Representative samples of the materials which are to be used as structural fill materials should be submitted to the Geotechnical Engineer and/or laboratory for approval and determination of the maximum dry density and optimum moisture content for compaction.

In general, all site earthwork and grading activities should be scheduled for the drier summer months (June through September) if possible. However, if wet weather site preparation and grading is required, it is generally recommended that the stripping of topsoil materials be accomplished with a tracked excavator utilizing a large smooth-toothed bucket working from areas yet to be excavated. Additionally, the loading of strippings into trucks and/or protection of moisture sensitive subgrade soils will also be required during wet weather grading and construction.

In this regard, we recommend that areas in which construction equipment will be traveling be protected by covering the exposed subgrade soils with a woven geotextile fabric such as Mirafi FW404 followed by at least 12 inches or more of crushed aggregate base rock. Further, the geotextile fabric should have a minimum Mullen burst strength of at least 250 pounds per square inch for puncture resistance and an apparent opening size (AOS) between the U.S. Standard No. 70 and No. 100 sieves.

All structural fill materials placed within the new building and/or pavement areas should be moistened or dried as necessary to near (within 3 percent) optimum moisture conditions and compacted by mechanical means to a minimum of 92 percent of the maximum dry density as determined by the ASTM D-1557 (AASHTO T-180) test procedures. Structural fill materials should be placed in lifts (layers) such that when compacted do not exceed about 8 to 9 inches. Additionally, all fill materials placed within five (5) lineal feet of the perimeter (limits) of the proposed residential structures and/or pavements should be considered structural fill. Additionally, due to the sloping site conditions, we recommend that all structural fill materials planned in areas where existing surface and/or slope gradients exceed about 20 percent (1V:5H) be properly benched and/or keyed into the native (natural) slope subgrade soils. In general, a bench width of approximately ten (10) feet and a keyway depth of approximately two (2) foot is recommended. However, the actual bench width and keyway depth should be determined at the time of construction by the Geotechnical Engineer. Further, all fill slopes should be constructed with a finish slope surface gradient no steeper than about 2H:1V.

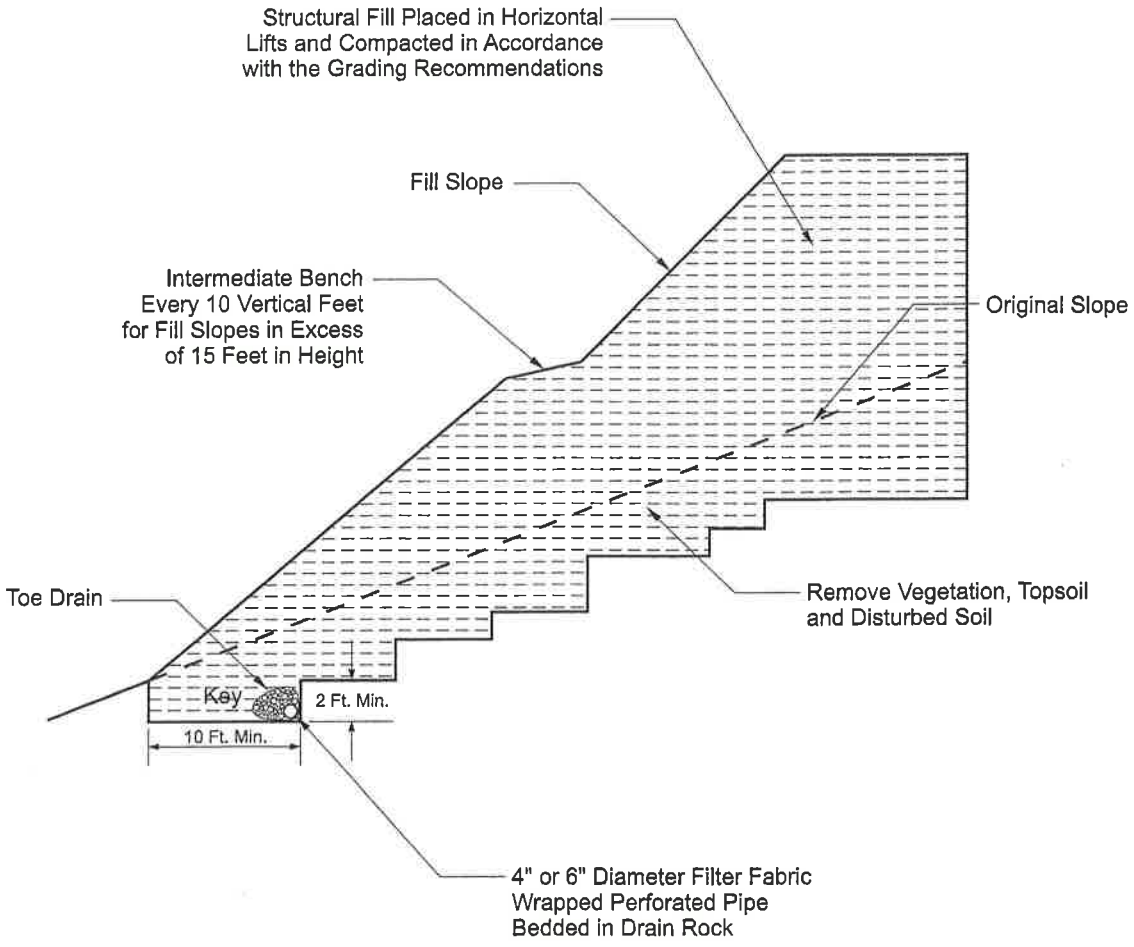
As such, settlement sensitive site and/or surface improvements (i.e., concrete curbs and sidewalks) should not be constructed until after primary consolidation and/or settlement has been completed. All aspects of the site grading, including a review of the proposed site grading plan(s), should be approved and/or monitored by a representative of Redmond Geotechnical Services, LLC.

Foundation Support

Based on the results of our investigation, it is our opinion that the site of the proposed new residential development is suitable for support of the two- and/or three-story wood-frame structures provided that the following foundation design recommendations are followed. The following sections of this report present specific foundation design and construction recommendations for the planned new residential structures.

Shallow Foundations

In general, conventional shallow continuous (strip) footings and individual (spread) column footings may be supported by approved native (untreated) subgrade soil materials and/or silty structural fill soils based on an allowable contact bearing pressure of about 2,000 pounds per square foot (psf). This recommended allowable contact bearing pressure is intended for dead loads and sustained live loads and may be increased by one-third for the total of all loads including short-term wind or seismic loads.



TYPICAL FILL SLOPE DETAIL

Project No. 1001.052.G	**DEVON AVENUE SUBDIVISION TL 300, 6719 DEVON AVENUE SE**	Figure No. 3

In general, continuous strip footings should have a minimum width of at least 16 inches and be embedded at least 18 inches below the lowest adjacent finish grade (includes frost protection). Individual column footings (where required) should be embedded at least 18 inches below grade and have a minimum width of at least 24 inches. Additionally, if foundation excavation and construction work is planned to be performed during wet and/or inclement weather conditions, we recommend that a 2 to 4 inch layer of compacted crushed rock be used to help protect the exposed foundation bearing surfaces until the placement of concrete.

Total and differential settlements of foundations constructed as recommended above and supported by approved native subgrade soils or by properly compacted structural fill materials are expected to be well within the tolerable limits for this type of lightly loaded wood-frame structure and should generally be less than about 1-inch and 1/2-inch, respectively.

Allowable lateral frictional resistance between the base of the footing element and the supporting subgrade bearing soil can be expressed as the applied vertical load multiplied by a coefficient of friction of 0.30 and 0.50 for native silty subgrade soils and/or import gravel fill materials, respectively. In addition, lateral loads may be resisted by passive earth pressures on footings poured "neat" against in-situ (native) subgrade soils or properly backfilled with structural fill materials based on an equivalent fluid density of 250 pounds per cubic foot (pcf). This recommended value includes a factor of safety of approximately 1.5 which is appropriate due to the amount of movement required to develop full passive resistance.

Floor Slab Support

In order to provide uniform subgrade reaction beneath concrete slab-on-grade floors, we recommend that the floor slab area be underlain by a minimum of 6 inches of free-draining (less than 5 percent passing the No. 200 sieve), well-graded, crushed rock. The crushed rock should help provide a capillary break to prevent migration of moisture through the slab. However, additional moisture protection can be provided by using a 10-mil polyolefin geo-membrane sheet such as StegoWrap.

The base course materials should be compacted to at least 95 percent of the maximum dry density as determined by the ASTM D-1557 (AASHTO T-180) test procedures. Where floor slab subgrade materials are undisturbed, firm and stable and where the underslab aggregate base rock section has been prepared and compacted as recommended above, we recommend that a modulus of subgrade reaction of 150 pci be used for design.

Retaining/Below Grade Walls

Retaining and/or below grade walls should be designed to resist lateral earth pressures imposed by native soils or granular backfill materials as well as any adjacent surcharge loads. For walls which are unrestrained at the top and free to rotate about their base, we recommend that active earth pressures be computed on the basis of the following equivalent fluid densities:

Non-Restrained Retaining Wall Pressure Design Recommendations

Slope Backfill (Horizontal/Vertical)	Equivalent Fluid Density/Silt (pcf)	Equivalent Fluid Density/Gravel (pcf)
Level	35	30
3H:1V	60	50
2H:1V	90	80

For walls which are fully restrained at the top and prevented from rotation about their base, we recommend that at-rest earth pressures be computed on the basis of the following equivalent fluid densities:

Restrained Retaining Wall Pressure Design Recommendations

Slope Backfill (Horizontal/Vertical)	Equivalent Fluid Density/Silt (pcf)	Equivalent Fluid Density/Gravel (pcf)
Level	45	35
3H:1V	65	60
2H:1V	95	90

The above recommended values assume that the walls will be adequately drained to prevent the buildup of hydrostatic pressures. Where wall drainage will not be present and/or if adjacent surcharge loading is present, the above recommended values will be significantly higher.

Backfill materials behind walls should be compacted to 90 percent of the maximum dry density as determined by the ASTM D-1557 (AASHTO T-180) test procedures. Special care should be taken to avoid over-compaction near the walls which could result in higher lateral earth pressures than those indicated herein. In areas within three (3) to five (5) feet behind walls, we recommend the use of hand-operated compaction equipment.

Pavements

Flexible pavement design for the proposed street improvements along the west side of Devon Avenue SE as well as the proposed new street improvements for the residential development project was determined in accordance with the City of Salem Department of Public Works Administrative Rules Chapter 109-006 (Street Design Standards) Section 6 dated January 1, 2014.

Specifically, on July 11, 2016, samples of the subgrade soils from the existing and/or proposed public streets were collected by means of various test hole excavations. The subgrade soils encountered in the test holes located across the proposed residential subdivision site as well as along the westerly side of the existing pavement grade of Devon Avenue SE and/or across the proposed new public street improvement areas generally consisted of native and/or residual soils comprised of medium to reddish-brown, medium stiff to stiff, sandy, clayey SILT (ML).

The subgrade soil samples collected at the site were tested in the laboratory in accordance with the ASTM Vol. 4.08 Part D-2844-69 (AASHTO T-190-93) test method for the determination of the subgrade soil "R"-value and expansion pressure. The results of the "R"-value testing was then converted to an equivalent Resilient Modulus (M_{RSG}) in accordance with current AASHTO methodology. The results of the laboratory "R"-value tests revealed that the subgrade soils have an apparent "R"-value of between 28 and 30 with an average "R"-value of 29 (see Figure No. A-12). Using the current AASHTO methodology for converting "R"-value to Resilient Modulus (M_{RSG}), the subgrade soils have a Resilient Modulus (M_{RSG}) of about 5,865 psi which is classified a "Fair" (M_{RSG} = 5,000 psi to 10,000 psi).

In addition to the above, Dynamic Cone Penetration (DCP) tests were performed along the proposed new interior public street alignment at approximate 100- to 200-feet intervals. The results of the DCP tests found that the underlying native sandy, clayey silt subgrade soils have a DCP value of between 3 to 4 blows per 2-inches which correlates to a California Bearing Ratio (CBR) of between 12 and 15. Using current AASHTO methodology for converting CBR to Resilient Modulus (M_{RSG}), the subgrade soils have a Resilient Modulus (M_{RSG}) of between 10,637 and 12,392 psi with an average M_{RSG} of 11,530 psi which is classified as "Fair" (M_{RSG} = 5,000 psi to 10,000 psi).

Devon Avenue SE

The following documents and/or design input parameters were used to help determine the flexible pavement section design for improvements to Devon Avenue SE:

- **Street Classification:** Collector Street
- **Design Life:** 20 years
- **Serviceability:** 4.2 initial, 2.5 terminal
- **Traffic Loading Data:** 1,000,000 18-kip EAL's
- **Reliability Level:** 90%
- **Drainage Coefficient:** 1.0 (asphalt), 0.8 (aggregate)
- **Asphalt Structural Coefficient:** 0.41
- **Aggregate Structural Coefficient:** 0.10

Based on the above design input parameters and using the design procedures contained within the AASHTO 1993 Design of Pavement Structures Manual, a Structural Number (SN) of 4.1 was determined.

In this regard, we recommend the following flexible pavement section for the new improvements to Devon Avenue SE:

Material Type	Pavement Section (inches)
Asphaltic Concrete	5.0
Aggregate Base Rock	14.0

Local Residential Streets

The following documents and/or design input parameters were used to help determine the flexible pavement section design for new local residential streets:

- **Street Classification:** Local Residential Street
- **Design Life:** 25 years
- **Serviceability:** 4.2 initial, 2.5 terminal
- **Traffic Loading Data:** 100,000 18-kip EAL's
- **Reliability Level:** 90%
- **Drainage Coefficient:** 1.0 (asphalt), 0.8 (aggregate)
- **Asphalt Structural Coefficient:** 0.41
- **Aggregate Structural Coefficient:** 0.10

Based on the above design input parameters and using the design procedures contained within the AASHTO 1993 Design of Pavement Structures Manual, a Structural Number (SN) of 2.6 was determined.

In this regard, we recommend the following flexible pavement section for the construction of new Local Residential Streets:

Material Type	Pavement Section (inches)
Asphaltic Concrete	4.0
Aggregate Base Rock	10.0

Wet Weather Grading and Soft Spot Mitigation

Construction of the proposed new public street improvements is generally recommended during dry weather. However, during wet weather grading and construction, excavation to subgrade can proceed during periods of light to moderate rainfall provided that the subgrade remains covered with aggregate. A total aggregate thickness of 8-inches may be necessary to protect the subgrade soils from heavy construction traffic. Construction traffic should not be allowed directly on the exposed subgrade but only atop a sufficient compacted base rock thickness to help mitigate subgrade pumping.

If the subgrade becomes wet and pumps, no construction traffic shall be allowed on the road alignment. Positive site drainage away from the street shall be maintained if site paving will not occur before the on-set of the wet season.

Depending on the timing for the project, any soft subgrade found during proof-rolling or by visual observations can either be removed and replaced with properly dried and compacted fill soils or removed and replaced with compacted crushed aggregate. However, and where approved by the Geotechnical Engineer, the soft area may be covered with a bi-axial geogrid and covered with compacted crushed aggregate.

Soil Shrink-Swell and Frost Heave

The results of the laboratory "R"-value tests indicate that the native subgrade soils possess a low to moderate expansion potential. As such, the exposed subgrade soils should not be allowed to completely dry and should be moistened to near optimum moisture content (plus or minus 3 percent) at the time of the placement of the crushed aggregate base rock materials. Additionally, exposure of the subgrade soils to freezing weather may result in frost heave and softening of the subgrade. As such, all subgrade soils exposed to freezing weather should be evaluated and approved by the Geotechnical Engineer prior to the placement of the crushed aggregate base rock materials.

Excavation/Slopes

Temporary excavations of up to about four (4) feet in depth may be constructed with near vertical inclinations. Temporary excavations greater than about four (4) feet but less than eight (8) feet should be excavated with inclinations of at least 1 to 1 (horizontal to vertical) or properly braced/shored. Where excavations are planned to exceed about eight (8) feet, this office should be consulted. All shoring systems and/or temporary excavation bracing for the project should be the responsibility of the excavation contractor. Permanent slopes should be constructed no steeper than about 2H to 1V unless approved by the Geotechnical Engineer.

Depending on the time of year in which trench excavations occur, trench dewatering may be required in order to maintain dry working conditions if the invert elevations of the proposed utilities are located at and/or below the groundwater level. If groundwater is encountered during utility excavation work, we recommend placing trench stabilization materials along the base of the excavation. Trench stabilization materials should consist of 1-foot of well-graded gravel, crushed gravel, or crushed rock with a maximum particle size of 4 inches and less than 5 percent fines passing the No. 200 sieve. The material should be free of organic matter and other deleterious material and placed in a single lift and compacted until well keyed.

Surface Drainage/Groundwater

We recommend that positive measures be taken to properly finish grade the site so that drainage waters from the residential structures and landscaping areas as well as adjacent properties or buildings are directed away from the new residential structures foundations and/or floor slabs.

All roof drainage should be directed into conduits that carry runoff water away from the residential structures to a suitable outfall. Roof downspouts should not be connected to foundation drains. A minimum ground slope of about 2 percent is generally recommended in unpaved areas around the proposed new residential structures.

Groundwater was not encountered at the site in any of the exploratory test pits (TH-#1 through TH-#8) at the time of excavation to depths of at least 7 feet beneath existing site grades. Additionally, surface water ponding was not observed at the site during our field exploration work. However, the northeasterly portion of the site contains an existing seasonal drainage basin feature. Further, groundwater elevations in the area and/or across the subject property may fluctuate seasonally and may temporarily pond/perch near the ground surface during periods of prolonged rainfall.

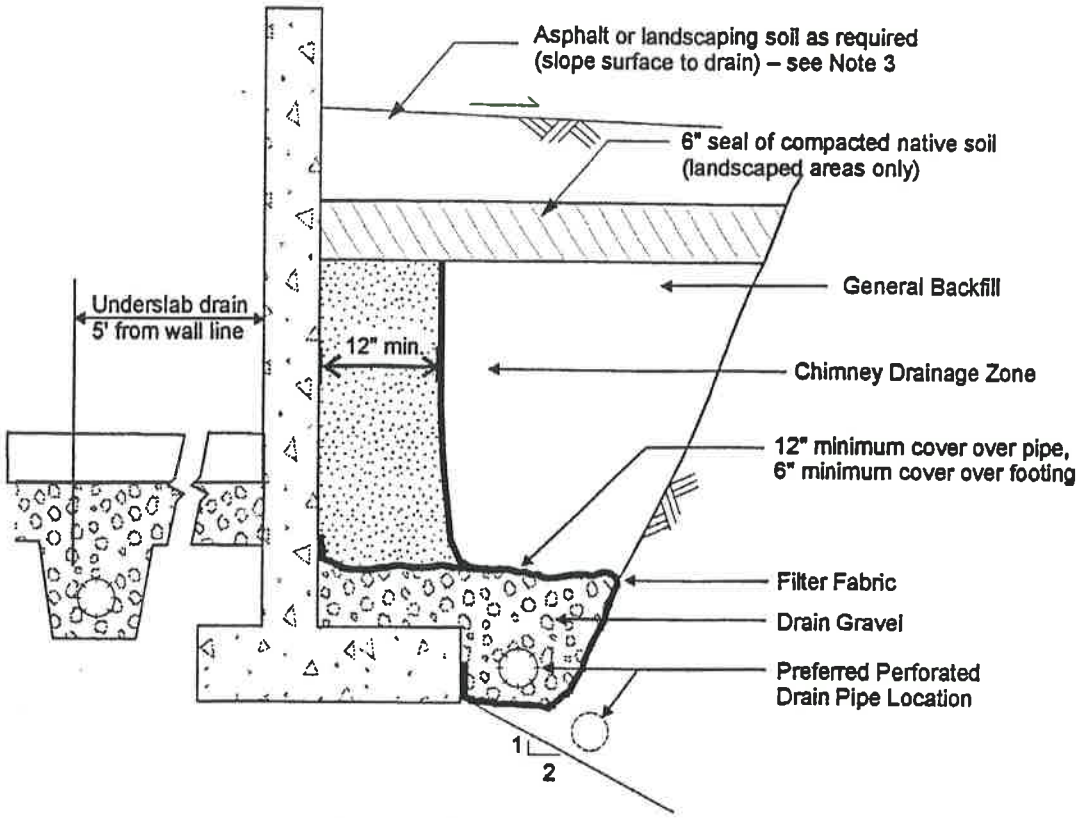
As such, based on our current understand of the possible site grading required to bring the subject site and/or residential lots to finish design grade(s), we are of the opinion that an underslab drainage system is not required for the proposed single-family residential structures. However, a perimeter foundation drain is recommended for any perimeter footings and/or below grade retaining walls. A typical recommended perimeter footing/retaining wall drain detail is shown on Figure No. 4. Further, due to our understanding that various surface infiltration ditches and/or swales may be utilized for the project as well as the relatively low infiltration rates of the near surface sandy, clayey silt subgrade soils anticipated within and/or near to the foundation bearing level of the proposed residential structures, we are generally of the opinion that storm water detention and/or disposal systems should not be utilized within the residential lots and/or around the proposed residential structures unless approved by the Geotechnical Engineer.

Design Infiltration Rates

Based on the results of our field infiltration testing, we recommend using the following infiltration rate to design any on-site near surface storm water infiltration and/or disposal systems for the project:

Subgrade Soil Type	**Recommended Infiltration Rate**
sandy, clayey SILT (ML)	0.3 to 0.4 inches per hour (in/hr)

Note: A safety factor of two (2) was used to calculate the above recommended design infiltration rate. Additionally, given the gradational variability of the on-site sandy, clayey sit subgrade soils beneath the site as well as the anticipation of some site grading for the project, it is generally recommended that field testing be performed during and/or following construction of any on-site storm water infiltration system(s) in order to confirm that the above recommended design infiltration rates are appropriate.



SCHEMATIC - NOT TO SCALE

NOTES:

1. Filter Fabric to be non-woven geotextile (Amoco 4545, Mirafi 140N, or equivalent)
2. Lay perforated drain pipe on minimum 0.5% gradient, widening excavation as required. Maintain pipe above 2:1 slope, as shown.
3. All-granular backfill is recommended for support of slabs, pavements, etc. (see text for structural fill).
4. Drain gravel to be clean, washed ¾" to 1½" gravel.
5. General backfill to be on-site gravels, or ¾""-0 or 1½"-0 crushed rock compacted to 92% Modified Proctor (AASHTO T-180).
6. Chimney drainage zone to be 12" wide (minimum) zone of clean washed, medium to coarse sand or drain gravel if protected with filter fabric. Alternatively, prefabricated drainage structures (Miradrain 6000 or similar) may be used.

PERIMETER FOOTING/RETAINING WALL DETAIL

Project No. 1001.052.G	DEVON AVENUE SUBDIVISION TL 300, 6719 DEVON AVENUE SE	Figure No. 4

Seismic Design Considerations

Structures at the site should be designed to resist earthquake loading in accordance with the methodology described in the latest edition (2014) of the State of Oregon Structural Specialty Code (OSSC) and/or Amendments to the 2015 International Building Code (IBC). The maximum considered earthquake ground motion for short period and 1.0 period spectral response may be determined from the Oregon Structural Specialty Code and/or from the National Earthquake Hazard Reduction Program (NEHRP) "Recommended Provisions for Seismic Regulations for New Buildings and Other Structures" published by the Building Seismic Safety Council.

We recommend Site Class "C" be used for design. Using this information, the structural engineer can select the appropriate site coefficient values (F_a and F_v) from the 2015 IBC to determine the maximum considered earthquake spectral response acceleration for the project. However, we have assumed the following response spectrum for the project:

Table 1. Recommended Seismic Design Parameters

Site Class	S_S	S_1	Fa	Fv	S_{MS}	S_{M1}	S_{DS}	S_{D1}
C	0.917	0.435	1.033	1.365	0.947	0.594	0.631	0.396

Notes: 1. S_S and S_1 were established based on the USGS 2015 mapped maximum considered earthquake spectral acceleration maps for 2% probability of exceedence in 50 years.

2. Fa and Fv were established based on IBC 2015 tables using the selected S_S and S_1 values.

CONSTRUCTION MONITORING AND TESTING

We recommend that **Redmond Geotechnical Services, LLC** be retained to provide construction monitoring and testing services during all earthwork operations for the proposed new residential development. The purpose of our monitoring services would be to confirm that the site conditions reported herein are as anticipated, provide field recommendations as required based on the actual conditions encountered, document the activities of the grading contractor and assess his/her compliance with the project specifications and recommendations. It is important that our representative meet with the contractor prior to any site grading to help establish a plan that will minimize costly over-excavation and site preparation work. Of primary importance will be observations made during site preparation and stripping, structural fill placement, footing excavations and construction as well as retaining wall backfill.

CLOSURE AND LIMITATIONS

This report is intended for the exclusive use of the addressee and/or their representative(s) to use to design and construct the proposed new single-family residential structures and their associated site improvements described herein as well as to prepare any related construction documents. The conclusions and recommendations contained in this report are based on site conditions as they presently exist and assume that the explorations are representative of the subsurface conditions between the explorations and/or at other locations across the study area. The data, analyses, and recommendations herein may not be appropriate for other structures and/or purposes. We recommend that parties contemplating other structures and/or purposes contact our office. In the absence of our written approval, we make no representation and assume no responsibility to other parties regarding this report. Additionally, the above recommendations are contingent on Redmond Geotechnical Services, LLC being retained to provide all site inspections and constriction monitoring services for this project. Redmond Geotechnical Services, LLC will not assume any responsibility and/or liability for any engineering judgment, inspection and/or testing services performed by others.

It is the owners/developers responsibility for insuring that the project designers and/or contractors involved with this project implement our recommendations into the final design plans, specifications and/or construction activities for the project. Further, in order to avoid delays during construction, we recommend that the final design plans and specifications for the project be reviewed by our office to evaluate as to whether our recommendations have been properly interpreted and incorporated into the project.

If during any future site grading and construction, subsurface conditions different from those encountered in the explorations are observed or appear to be present beneath excavations, we should be advised immediately so that we may review these conditions and evaluate whether modifications of the design criteria are required. We also should be advised if significant modifications of the proposed site development are anticipated so that we may review our conclusions and recommendations.

LEVEL OF CARE

The services performed by the Geotechnical Engineer for this project have been conducted with that level of care and skill ordinarily exercised by members of the profession currently practicing in the area under similar budget and time restraints. No warranty or other conditions, either expressed or implied, is made.

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Appendix "A"

Test Pit Logs and Laboratory Test Data

APPENDIX

FIELD EXPLORATIONS AND LABORATORY TESTING

FIELD EXPLORATION

Subsurface conditions at the site were explored by excavating eight (8) exploratory test pits (TH-#1 through TH-#8) on July 11, 2017. The approximate location of the test pit explorations are shown in relation to the proposed new residential lots and the associated site improvements on the Site Exploration Plan, Figure No. 2.

The test pits were excavated using track-mounted excavating equipment in general conformance with ASTM Methods in Vol. 4.08, D-1586-94 and D-1587-83. The test pits were excavated to depths ranging from about 5.0 to 6.0 feet beneath existing site grades. Detailed logs of the test pits are presented on the Log of Test Pits, Figure No's. A-5 through A-8. The soils were classified in accordance with the Unified Soil Classification System (USCS), which is outlined on Figure No. A-4.

The exploration program was coordinated by a field engineer who monitored the excavating and exploration activity, obtained representative samples of the subsurface soils encountered, classified the soils by visual and textural examination, and maintained continuous logs of the subsurface conditions. Disturbed and/or undisturbed samples of the subsurface soils were obtained at appropriate depths and/or intervals and placed in plastic bags and/or with a thin walled ring sample.

Groundwater was not encountered in any of the exploratory test pits (TH-#1 through TH-#8) at the time of excavating to depths of at least 6.0 feet beneath existing surface grades.

LABORATORY TESTING

Pertinent physical and engineering characteristics of the soils encountered during our subsurface investigation were evaluated by a laboratory testing program to be used as a basis for selection of soil design parameters and for correlation purposes. Selected tests were conducted on representative soil samples. The program consisted of tests to evaluate the existing (in-situ) moisture-density, maximum dry density and optimum moisture content, expansion index, gradational characteristics, and Atterberg Limits as well as direct shear strength and "R"-value tests.

Dry Density and Moisture Content Determinations

Density and moisture content determinations were performed on both disturbed and relatively undisturbed samples from the test pit explorations in general conformance with ASTM Vol. 4.08 Part D-216. The results of these tests were used to calculate existing overburden pressures and to correlate strength and compressibility characteristics of the soils. Test results are shown on the test pit logs at the appropriate sample depths.

Maximum Dry Density

Two (2) Maximum Dry Density and Optimum Moisture Content tests were performed on representative samples of the on-site sandy, clayey silt subgrade soils in accordance with ASTM Vol. 4.08 Part D-1557. This tests were conducted to help establish various engineering properties for use as structural fill. The test results are presented on Figure No. A-9.

Expansion Index

Two (2) Expansion Index tests were performed on representative samples of the near surface clayey silt subgrade soils in accordance with ASTM Vol. 4.08 Part D-4829-95. The tests were conducted to help evaluate the expansive properties of the near surface soils and their potential impact to residential foundations. The test results are presented on Figure No. A-9.

Atterberg Limits

Two (2) Liquid Limit (LL) and Plastic Limit (PL) tests were performed on representative samples of the sandy, clayey silt subgrade soils in accordance with ASTM Vol. 4.08 Part D-4318-85. These tests were conducted to facilitate classification of the soils and for correlation purposes. The test results appear on Figure No. A-10.

Gradation Analysis

Two (2) Gradation analyses were performed on representative samples of the sandy, clayey silt subgrade soils in accordance with ASTM Vol. 4.08 Part D-422. The test results were used to classify the soil in accordance with the Unified Soil Classification System (USCS). The test results are shown graphically on Figure No. A-11.

Direct Shear Strength Test

One (1) Direct Shear Strength test was performed on an undisturbed and/or remolded sample at a continuous rate of shearing deflection (0.02 inches per minute) in accordance with ASTM Vol. 4.08 Part D-3080-79. The test results were used to determine engineering strength properties and are shown graphically on Figure No. A-12.

"R"-Value Tests

Two (2) "R"-value tests were performed on remolded sandy, clayey silt subgrade soil samples in accordance with ASTM Vol. 4.08 Part D-2844. The test results were used to help evaluate the subgrade soils supporting and performance capabilities when subjected to traffic loading. The test results are shown on Figure No. A-13.

The following figures are attached and complete the Appendix:

Figure No. A-4	Key To Exploratory Test Pit Logs
Figure No's. A-5 through A-8	Log of Test Pits/Dynamic Cone
Figure No. A-9	Maximum Density & Expansion Index Test Results
Figure No. A-10	Atterberg Limits Test Results
Figure No. A-11	Gradation Test Results
Figure No. A-12	Direct Shear Strength Test Results
Figure No. A-13	Results of "R"-Value Tests
Figure No's. A-14 and A-15	Field Infiltration Test Results

PRIMARY DIVISIONS			GROUP SYMBOL	SECONDARY DIVISIONS
COARSE GRAINED SOILS — MORE THAN HALF OF MATERIAL IS LARGER THAN NO. 200 SIEVE SIZE	GRAVELS — MORE THAN HALF OF COARSE FRACTION IS LARGER THAN NO. 4 SIEVE	CLEAN GRAVELS (LESS THAN 5% FINES)	GW	Well graded gravels, gravel-sand mixtures, little or no fines.
			GP	Poorly graded gravels or gravel-sand mixtures, little or no fines.
		GRAVEL WITH FINES	GM	Silty gravels, gravel-sand-silt mixtures, non-plastic fines.
			GC	Clayey gravels, gravel-sand-clay mixtures, plastic fines.
	SANDS — MORE THAN HALF OF COARSE FRACTION IS SMALLER THAN NO. 4 SIEVE	CLEAN SANDS (LESS THAN 5% FINES)	SW	Well graded sands, gravelly sands, little or no fines.
			SP	Poorly graded sands or gravelly sands, little or no fines.
		SANDS WITH FINES	SM	Silty sands, sand-silt mixtures, non-plastic fines.
			SC	Clayey sands, sand-clay mixtures, plastic fines.
FINE GRAINED SOILS — MORE THAN HALF OF MATERIAL IS SMALLER THAN NO. 200 SIEVE SIZE	SILTS AND CLAYS — LIQUID LIMIT IS LESS THAN 50%		ML	Inorganic silts and very fine sands, rock flour, silty or clayey fine sands or clayey silts with slight plasticity.
			CL	Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays, lean clays.
			OL	Organic silts and organic silty clays of low plasticity.
	SILTS AND CLAYS — LIQUID LIMIT IS GREATER THAN 50%		MH	Inorganic silts, micaceous or diatomaceous fine sandy or silty soils, elastic silts.
			CH	Inorganic clays of high plasticity, fat clays.
			OH	Organic clays of medium to high plasticity, organic silts.
HIGHLY ORGANIC SOILS			Pt	Peat and other highly organic soils.

DEFINITION OF TERMS

	U.S. STANDARD SERIES SIEVE			CLEAR SQUARE SIEVE OPENINGS				
	200	40	10	4	3/4"	3"	12"	
SILTS AND CLAYS	SAND			GRAVEL		COBBLES	BOULDERS	
	FINE	MEDIUM	COARSE	FINE	COARSE			

GRAIN SIZES

SANDS, GRAVELS AND NON-PLASTIC SILTS	BLOWS/FOOT†
VERY LOOSE	0 - 4
LOOSE	4 - 10
MEDIUM DENSE	10 - 30
DENSE	30 - 50
VERY DENSE	OVER 50

RELATIVE DENSITY

CLAYS AND PLASTIC SILTS	STRENGTH‡	BLOWS/FOOT†
VERY SOFT	0 - 1/4	0 - 2
SOFT	1/4 - 1/2	2 - 4
FIRM	1/2 - 1	4 - 8
STIFF	1 - 2	8 - 16
VERY STIFF	2 - 4	16 - 32
HARD	OVER 4	OVER 32

CONSISTENCY

†Number of blows of 140 pound hammer falling 30 inches to drive a 2 inch O.D. (1-3/8 inch I.D.) split spoon (ASTM D-1586).

‡Unconfined compressive strength in tons/sq. ft. as determined by laboratory testing or approximated by the standard penetration test (ASTM D-1586), pocket penetrometer, torvane, or visual observation.

REDMOND GEOTECHNICAL SERVICES
PO BOX 20547 • PORTLAND, OREGON 97294

KEY TO EXPLORATORY TEST PIT LOGS
Unified Soil Classification System (ASTM D-2487)

DEVON AVENUE SUBDIVISION
TL 300, 6719 DEVON AVENUE SE

PROJECT NO.	DATE	
1001.052.G	8/11/17	Figure A-4

BACKHOE COMPANY: Gene S McMurrin BUCKET SIZE: 24 inches DATE: 7/11/17

DEPTH (FEET)	BAG SAMPLE	DENSITY TEST	DRY DENSITY (pcf)	MOISTURE CONTENT (%)	SOIL CLASS. (U.S.C.S.)	SOIL DESCRIPTION
TEST PIT NO. TH-#1 ELEVATION						
0					ML	Dark brown, moist, soft, organic, sandy, clayey SILT (Topsoil)
	X			21.1		
					ML	Medium to reddish-brown, moist to very moist, medium stiff to stiff, sandy, clayey SILT
	X			14.8		
5					SM/RK	Medium to orangish-brown, moist, medium dense to dense, clayey, silty SAND to highly weathered bedrock
						Total Depth = 6.0 feet No groundwater encountered at time of exploration
10						
15						
TEST PIT NO. TH-#2 ELEVATION						
0					ML	Dark brown, moist, soft, organic, sandy, clayey SILT (Topsoil)
	X			33.5		
					ML	Medium to reddish-brown, moist to very moist, medium stiff to stiff, sandy, clayey SILT
5					SM/RK	Medium to orangish-brown, moist to very moist, medium dense to dense, clayey, silty SAND to highly weathered bedrock
						Total Depth = 6.0 feet No groundwater encountered at time of exploration
10						
15						

LOG OF TEST PITS

PROJECT NO. 1001.052.G | DEVON AVENUE SUBDIVISION | FIGURE NO. A-5

BACKHOE COMPANY: Gene S. McMurrin BUCKET SIZE: 24 inches DATE: 7/11/17

DEPTH (FEET)	BAG SAMPLE	DENSITY TEST	DRY DENSITY (pcf)	MOISTURE CONTENT (%)	SOIL CLASS. (U.S.C.S.)	SOIL DESCRIPTION
						TEST PIT NO. TH-#3 ELEVATION
0					ML	Dark brown, moist, soft, organic, sandy, clayey SILT (Topsoil)
	X			26.6	ML	Medium to reddish-brown, moist to very moist, medium stiff to stiff, sandy, clayey SILT
	X			15.1		
5					SM/RK	Medium to orangish-brown, moist to very moist, medium dense to dense, clayey, silty SAND to highly weathered bedrock
						Total Depth = 5.0 feet No groundwater encountered at time of exploration
10						
15						
						TEST PIT NO. TH-#4 ELEVATION
0					ML	Dark brown, moist, soft, organic, sandy, clayey SILT (Topsoil)
	X			20.5	ML	Medium to reddish-brown, moist to very moist, medium stiff to stiff, sandy, clayey SILT
5					SM/RK	Medium to orangish-brown, moist, medium dense to dense, clayey, silty SAND to highly weathered bedrock
						Total Depth = 5.0 feet No groundwater encountered at time of exploration
10						
15						

LOG OF TEST PITS

PROJECT NO. 1001.052.G | DEVON AVENUE SUBDIVISION | FIGURE NO. A-6

BACKHOE COMPANY: Gene S. McMurrin BUCKET SIZE: 24 inches DATE: 7/11/17

DEPTH (FEET)	BAG SAMPLE	DENSITY TEST	DRY DENSITY (pcf)	MOISTURE CONTENT (%)	SOIL CLASS. (U.S.C.S.)	SOIL DESCRIPTION
						TEST PIT NO. TH-#5 ELEVATION
0					ML	Dark brown, moist, soft, organic, sandy, clayey SILT (Topsoil)
					ML	Medium to reddish-brown, moist to very moist, medium stiff to stiff, sandy, clayey SILT
5					SM/RK	Medium to orangish-brown, moist to very moist, medium dense to dense, clayey, silty SAND to highly weathered bedrock
						Total Depth = 5.0 feet No groundwater encountered at time of exploration
10						
15						
						TEST PIT NO. TH-#6 ELEVATION
0					ML	Dark brown, moist, soft, organic, sandy, clayey SILT (Topsoil)
					ML	Medium to reddish-brown, moist to very moist, medium stiff to stiff, sandy, clayey SILT
5					SM/RK	Medium to orangish-brown, moist, medium dense to dense, clayey, silty SAND to highly weathered bedrock
						Total Depth = 6.0 feet No groundwater encountered at time of exploration
10						
15						

LOG OF TEST PITS

PROJECT NO. 1001.052.G | DEVON AVENUE SUBDIVISION | FIGURE NO. A-7

BACKHOE COMPANY: Gene S. McMurrin BUCKET SIZE: 24 inches DATE: 7/11/17

DEPTH (FEET)	BAG SAMPLE	DENSITY TEST	DRY DENSITY (pcf)	MOISTURE CONTENT (%)	SOIL CLASS. (U.S.C.S.)	SOIL DESCRIPTION
						TEST PIT NO. TH-#7 ELEVATION
0					ML	Dark brown, moist, soft, organic, sandy, clayey SILT (Topsoil)
					ML	Medium to reddish-brown, moist to very moist, medium stiff to stiff, sandy, clayey SILT
5					SM/RK	Medium to orangish-brown, moist, medium dense to dense, clayey, silty SAND to highly weathered bedrock
						Total Depth = 5.0 feet No groundwater encountered at time of exploration
10						
15						
						TEST PIT NO. TH-#8 ELEVATION
0	X			19.9	ML	Dark brown, moist, soft, organic, sandy, clayey SILT (Topsoil)
					ML	Medium to reddish-brown, moust to very moist, medium stiff to stiff, sandy, clayey SILT
5					SM/RK	Medium to orangish-brown, moist, medium dense to dense, clayey, silty SAND to highly weathered bedrock
						Total Depth = 5.0 feet No groundwater encountered at time of exploration
10						
15						

LOG OF TEST PITS

PROJECT NO. 1001.052.G | DEVON AVENUE SUBDIVISION | FIGURE NO. A-8

MAXIMUM DENSITY TEST RESULTS

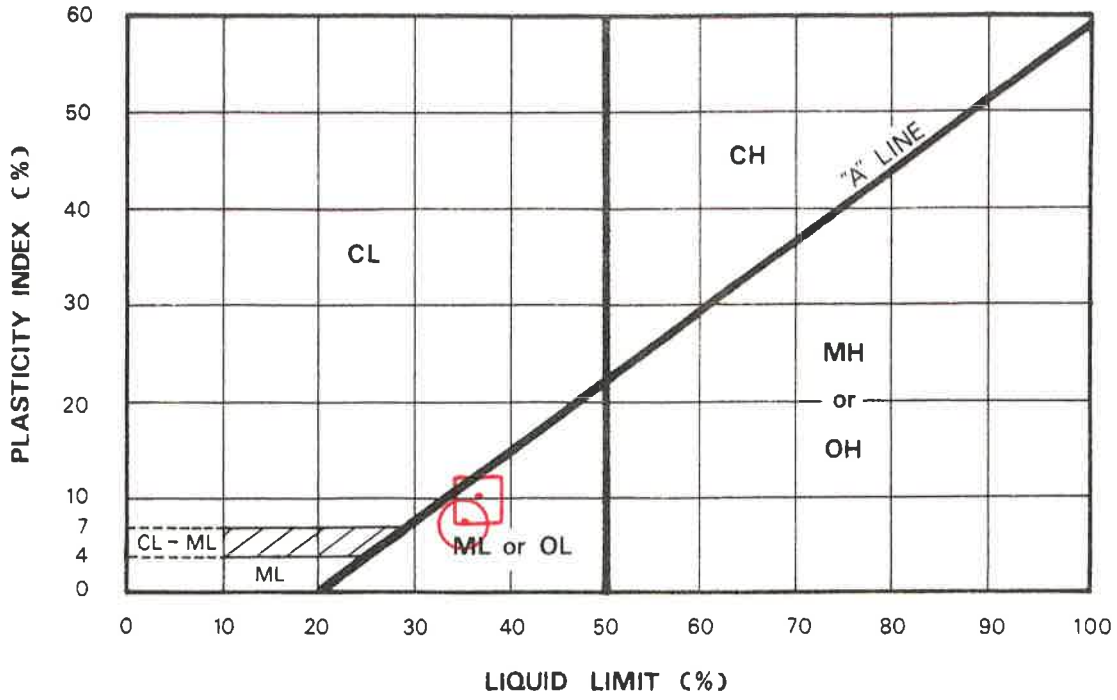
SAMPLE LOCATION	SOIL DESCRIPTION	MAXIMUM DRY DENSITY (pcf)	OPTIMUM MOISTURE CONTENT (%)
TH-#1 @ 1.5'	Medium to reddish-brown, sandy, clayey SILT (ML)	102.0	28.0
TH-#2 @ 1.5'	Medium to reddish-brown, sandy, clayey SILT (ML)	100.0	30.0

EXPANSION INDEX TEST RESULTS

SAMPLE LOCATION	INITIAL MOISTURE (%)	COMPACTED DRY DENSITY (pcf)	FINAL MOISTURE (%)	VOLUMETRIC SWELL (%)	EXPANSION INDEX	EXPANSIVE CLASS.

MAXIMUM DENSITY & EXPANSION INDEX TEST RESULTS

PROJECT NO.: 1001.052.G | DEVON AVENUE SUBDIVISION | FIGURE NO.: A-9



KEY SYMBOL	BORING NO.	SAMPLE DEPTH (feet)	NATURAL WATER CONTENT %	LIQUID LIMIT %	PLASTICITY INDEX %	PASSING NO. 200 SIEVE %	LIQUIDITY INDEX	UNIFIED SOIL CLASSIFICATION SYMBOL
⊙	TH-#1	1.5	21.1	35.0	7.2	90.9		ML
▣	TH-#2	1.5	33.5	37.2	10.1	86.3		ML

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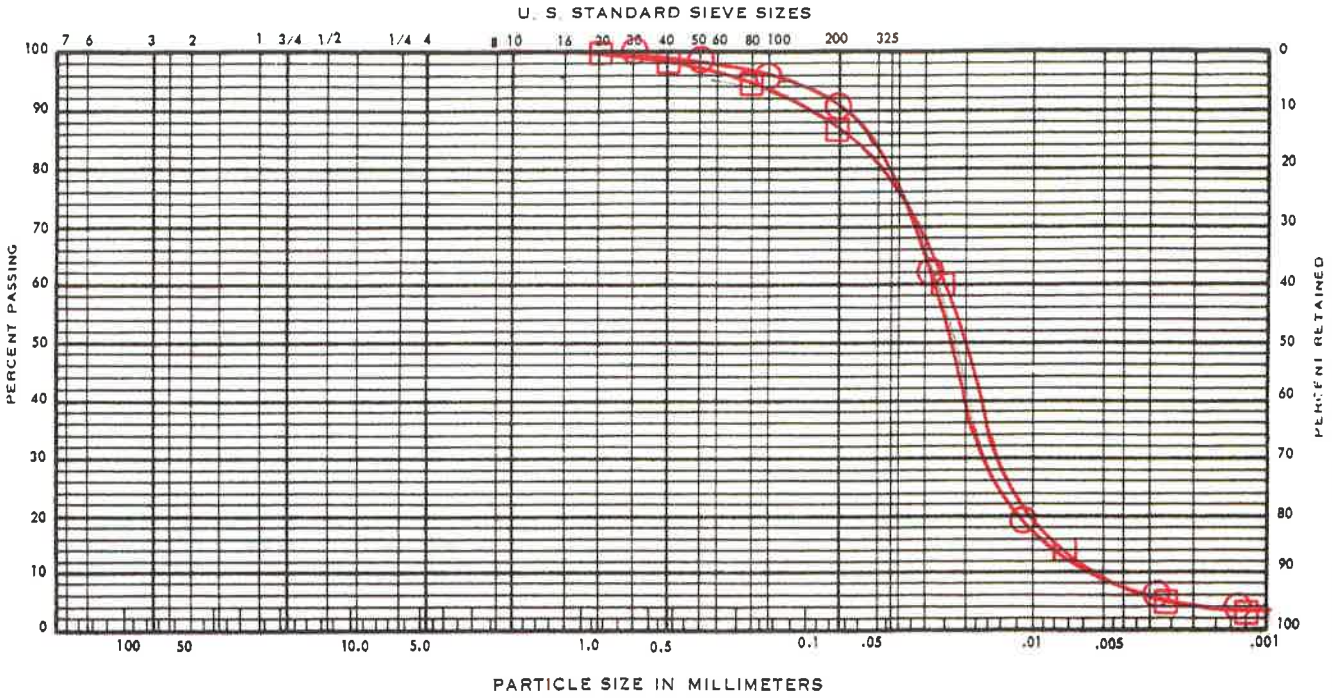
PLASTICITY CHART AND DATA

DEVON AVENUE SUBDIVISION
TL 300, 6719 DEVON AVENUE SE

PROJECT NO.	DATE	
1001.052.G	8/11/17	Figure A-10

UNIFIED SOIL CLASSIFICATION SYSTEM

(ASTM D 422-72)



COBBLES	GRAVEL		SAND			SILT AND CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE	

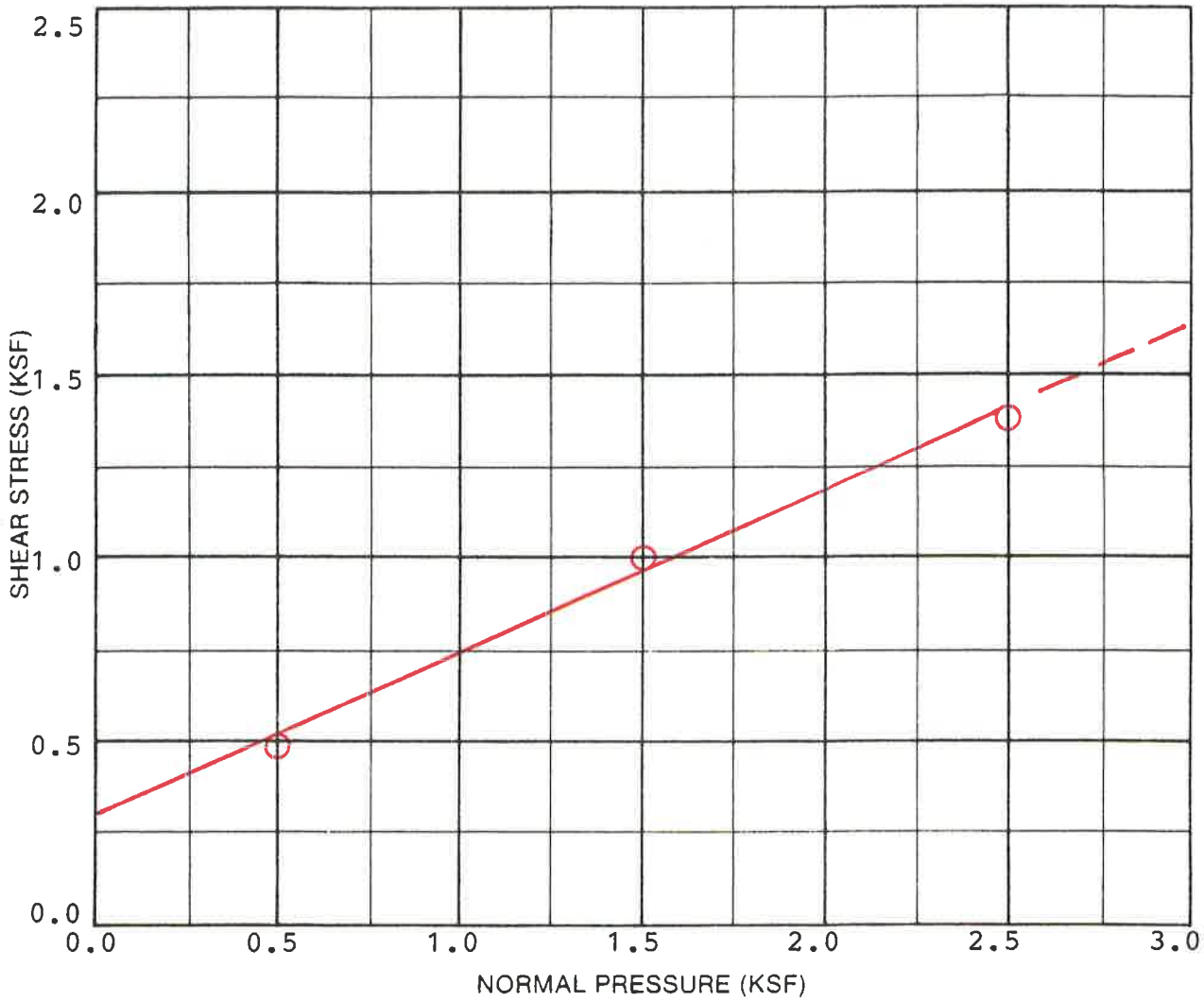
KEY SYMBOL	BORING NO.	SAMPLE DEPTH (feet)	ELEV. (feet)	UNIFIED SOIL CLASSIFICATION SYMBOL	SAMPLE DESCRIPTION
⊖	TH-#1	1.5		ML	Medium to reddish-brown, sandy, clayey SILT
⊟	TH-#2	1.5		ML	Medium to reddish-brown, sandy, clayey SILT

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GRADATION TEST DATA

DEVON AVENUE SUBDIVISION
TL 300, 6719 DEVON AVENUE SE

PROJECT NO.	DATE	FIGURE A-11



SAMPLE DATA	
DESCRIPTION: Medium to reddish-brown, sandy, clayey SILT (ML) (Remolded)	
BORING NO.: TH-#2	
DEPTH (ft.): 1.5'	ELEVATION (ft):
TEST RESULTS	
APPARENT COHESION (C): 300 psf	
APPARENT ANGLE OF INTERNAL FRICTION (Φ): 22°	

TEST DATA				
TEST NUMBER	1	2	3	4
NORMAL PRESSURE (KSF)	0.5	1.5	2.5	
SHEAR STRENGTH (KSF)	0.5	1.0	1.4	
INITIAL H_2O CONTENT (%)	30.0	30.0	30.0	
FINAL H_2O CONTENT (%)	30.6	26.1	20.9	
INITIAL DRY DENSITY (PCF)	90.0	90.0	90.0	
FINAL DRY DENSITY (PCF)	90.4	94.6	99.8	
STRAIN RATE: 0.02 inches per minute				

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DIRECT SHEAR TEST DATA

DEVON AVENUE SUBDIVISION
TL 300, 6719 DEVON AVENUE SE

PROJECT NO	DATE	Figure A-12

RESULTS OF R (RESISTANCE) VALUE TESTS

SAMPLE LOCATION: TH-#1

SAMPLE DEPTH: 1.5 feet bgs

Specimen	A	B	C
Exudation Pressure (psi)	219	329	431
Expansion Dial (o.ooo1")	0	1	3
Expansion Pressure (psf)	0	3	9
Moisture Content (%)	30.6	27.4	22.1
Dry Density (pcf)	93.4	98.2	102.6
Resistance Value, "R"	17	29	37
"R"-Value at 300 psi Exudation Pressure = 28			

SAMPLE LOCATION: TH-#2

SAMPLE DEPTH: 1.5 feet bgs

Specimen	A	B	C
Exudation Pressure (psi)	208	326	439
Expansion Dial (0.0001")	0	2	5
Expansion Pressure (psf)	0	6	15
Moisture Content (%)	32.3	28.6	23.9
Dry Density (pcf)	92.1	96.1	100.7
Resistance Value "R"	15	27	35
"R"-Value at 300 psi Exudation Pressure = 26			

Division 004 Appendix C - Infiltration Testing

Location: TL 300, 6719 Devon Avenue SE	**Date:** July 11, 2017	**Test Hole:** TH-#2
Depth to Bottom of Hole: 3.0 feet	**Hole Diameter:** 6 inches	**Test Method:** Encased Falling Head
Tester's Name: Daniel M. Redmond, P.E., G.E. **Tester's Company:** Redmond Geotechnical Services, LLC		**Tester's Contact Number:** 503-285-0598

Depth (feet)	Soil Characteristics
0-0.5	Dark brown Topsoil
0.5-3.0	Medium to reddish-brown, sandy, clayey SILT (ML)

Time	Time Interval (Minutes)	Measurement (inches)	Drop in Water (inches)	Infiltration Rate (inches/hour)	Remarks
10:00	0	24.00	----		Filled w/12" water
10:20	20	24.50	0.50	1.50	
10:40	20	24.92	0.42	1.26	
11:00	20	25.27	0.35	1.05	
11:20	20	25.57	0.30	0.90	
11:40	20	25.83	0.26	0.78	
12:00	20	26.06	0.23	0.69	
12:20	20	26.27	0.21	0.63	
12:40	20	26.47	0.20	0.60	

Infiltration Test Data Table

Division 004 Appendix C - Infiltration Testing

Location: TL 300, 6719 Devon Avenue SE	**Date:** July 11, 2017	**Test Hole:** TH-#3
Depth to Bottom of Hole: 2.0 feet	**Hole Diameter:** 6 inches	**Test Method:** Encased Falling Head
Tester's Name: Daniel M. Redmond, P.E., G.E. **Tester's Company:** Redmond Geotechnical Services, LLC		**Tester's Contact Number:** 503-285-0598

Depth (feet)	Soil Characteristics
0-0.5	Dark brown Topsoil
0.5-2.0	Medium to reddish-brown, sandy, clayey SILT (ML)

Time	Time Interval (Minutes)	Measurement (inches)	Drop in Water (inches)	Infiltration Rate (inches/hour)	Remarks
10:20	0	12.00	----		Filled w/12" water
10:40	20	12.70	0.70	2.10	
11:00	20	13.22	0.52	1.56	
11:20	20	13.66	0.44	1.32	
11:40	20	14.04	0.38	1.14	
12:00	20	14.37	0.33	0.99	
12:20	20	14.67	0.30	0.90	
12:40	20	14.95	0.28	0.84	
1:00	20	15.22	0.27	0.81	

Infiltration Test Data Table

Appendix "B"

Geologic Hazard Assessment

NORTHWEST GEOLOGICAL SERVICES, INC.
Consulting Geologists and Hydrogeologists
2505 N.E. 42nd Avenue, Portland, Oregon 97213-1201
503-249-1093 ngs@teleport.com

Redmond Geotechnical Services, LLC 27 July 2017
P.O. Box 20547
Portland, Oregon 97294

Attn: Dan Redmond

Geological Assessment
8S/3W-22C Tax Lot 300
Salem, Marion County, Oregon

Dear Dan:

The purpose of this letter is to present Northwest Geological Services, Inc. (NGS') Geologic Hazard Assessment for the above referenced property. This study includes the engineering geology tasks required by Salem and Marion County to develop in areas that appear to have potential geologic hazards. We understand that our services are in support of your client's efforts to partition and develop the property for residential use. The current proposal is to partition the site into approximately 80 residential lots with access streets, and infrastructure as needed. The work for this study was done in accordance with your email authorization of 28 June 2017.

1. SCOPE OF STUDY

The scope of our study was limited to the engineering geologic consultation necessary to assess potential slope hazards, as required by Salem and Marion County. Specifically, our work included:

- Obtain and review LIDAR and historic aerial photographs of the site;
- Obtain and review well logs for the site area;
- Review available geologic and geologic hazard investigations of the site and site area;
- Conduct a geologic reconnaissance of the site and adjacent area;
- Evaluate the potential landslide hazards using the information developed; and,
- Prepare this letter describing our work, findings and recommendations.

Our work did not include some items the County may request for Geological Assessments of slope hazard areas. Specifically, the excluded items are: site grading plans showing cuts and fills; and geologic cross sections showing subsurface conditions. We understand the grading plan will be developed as part of the plans for the building permit application for the site. In our opinion, the geology of the site is simple (Sections 3 and 4) and a cross section is not required to comprehend the subsurface conditions. Nor is a grading plan necessary to asses the stability of the natural slopes. However, those items should be developed in the Geotechnical report for the site.

2. SITE SETTING

The site is south of Battle Creek, north of Rees Hill Rd. and west of Devon Ave SE (Figures 1 and 2) in the northeast corner of the southwest quarter of Section 22, T8S/R3W. The 19.89 acre property is currently accessed from Devon Ave SE. City of Salem Zoning Map 8322S (S ½ 22-8S3W) shows the site is zoned RA (Residential Agricultural). The site is in the South Salem Hills Ground Water Limited Area.

2.1 Location and Physiography

The property is south of Battle Creek and straddles the summit of Reese Hill, a NE-SW ridge that extends from Hylo Rd. SE northeast to Battle Creek (Figures 1 and 2). An intermittent tributary of Battle Creek extend N-S just west of the site. Elevations at the site range from about 652 ft in the south central area (i.e., Reese Hill) down to about 546 ft at the NW corner (Figures 1 and 4). Overall slopes are gentle, but local steep areas occur (Figures 1, 2, 4 and Section 3.2). The overall slope west from the crest of Reese Hill averages 11% to 14%. The slope east towards Devon Ave SE averages 4% to 7%. Both west and east slopes have locally irregular topography with small scale areas of slope up to 30% or rarely 50% (Figure 4). These declivities are 4 to 6 ft high by 20 to 50 ft wide mounds. They lack corresponding uphill depressions as one would expect of slope failures.[1]

The west northeast parts of the site – the areas with irregular topography – are currently covered by mixed conifer and deciduous trees with understory brush (Figure 2). The mature trees have significant root mounds because of the shallow site soils (Figures 4 and 7). Additionally, many of the irregularities appear to be remnants of the former prune orchards. The central and east parts of the site are cleared field with scattered mature Douglas Firs in the SW corner. The existing residence and outbuildings are located in the SW corner (Figure 2).

There are no drainage ways on the site. Drainage is by sheet runoff and via small, shallow declivities developed during past logging and farming of the property. Drainage is towards an unnamed tributary of Battle Creek[2] located about just west of the site and Powell Creek east of the site (Figures 1).

The geology of the area around the site (Section 2.3) is very well known. It was mapped by the State (Bella, 1981), for a Portland State MS thesis (Hoffman, 1981), by the USGS (Beeson and Tolan, 2001) and by us for Chinook Estates and Marion County (NGS, 1994, 1997). Figure 5 shows our mapping of the area around the site.[3] All studies found the site underlain by Miocene volcanic rocks of the Columbia River Basalt (Figures 3 and 4) and pre-basalt sedimentary strata at considerable depth (Section 2.3).

2.2 Site Area Geology

The site lies on the north flank of the west Salem Hills. These hills are an anticlinal uplift that extends from the Willamette River north about 10 miles to Salem and from the

1 The detailed topography (Figures 4 and 7) is interpreted from LIDAR flown for DOGAMI in 2009. Reconnaissance and digital images indicate that site clearing has smoothed or removed some irregularities.

2 Informally called Champion Swale by the City and shown as that on the City LIDAR (figures 4 and 7).

3 The geologic interpretation shown on Figure 5 is based on surficial geologic mapping, aerial photo interpretation, and our evaluation of over 200 water well logs (NGS, 1997). Identification of basalt flows is based on our previous experience and several chemical analyses done by Hoffman (1981).

river to east of I-5. Bella (1981) mapped the site as underlain by Columbia River Basalt (CRB), in substantial agreement with earlier mapping by the U.S. Geological Survey (Fox-worthy, 1970). Both studies found the CRB to be at least 350 ft thick in the site area. Our mapping (Figure 5) and review of well logs in the area indicates that the CRB is at least 350 to 400 ft thick beneath the site. The review also suggests the basalt dips gently north and northeast towards Salem.

Mapping by Hoffman (1981) identified the individual flows within the CRB. The east part of the site is underlain by the youngest hi-magnesium flow of the Grande Ronde Basalt (now known as the Sentinel Bluffs). The Winter Water flow of the Grande Ronde Basalt underlies the steeper slopes marginal to the unnamed drainage west of the site (Figures 4 and 5).

In the site area, the upper few feet of the basalt bedrock underlying ridges and hillsides is generally weathered or decomposed to a hard, red-brown gritty, silty clay or clayey silt. However, the original volcanic texture of the basalt is preserved by the weathering. Thus, the basalt is generally recognizable, even when decomposed.[4] The distinction is important, because the marine sedimentary strata are often involved in slope failures. The weathered basalt is generally not involved in slope failures, except where its physical properties have been ignored during development.

2.3 State and City Estimates of Landslide Hazard Susceptibility

The State conducted assessments of potential landslide hazards for Salem and Marion County. These included notably slide-prone parts of the area (OFR O-77-4 by Schlicker, 1977), the west Salem Hills (IMS-6 by Harvey and Peterson, 1998) and IMS-17 (Hofmeister and others, 2000). These assessments were based on the available geologic studies, including the aforementioned NGS studies, information about soils strength and GIS modeling using the USGS topographic DEM.

IMS-6 does not extend east to the site nor is the site in an active or inactive landslide area (e.g., as defined by OFR O-77-4). IMS-17 estimates the site ranges from very low to moderate relative risk of earth-induced landsliding (Figure 6). The latest State estimates are incorporated into SLIDO[5] that shows no nearby active, historic or prehistoric landslides. However, the SLIDO landslide susceptibility map shows no to moderate landslide hazard in agreement with IMS-17 estimates.

In our experience, IMS-6 estimates for water induced landslide risks in areas similar to the site are generally Category 4. Thus, were this site within the area covered by IMS-6, it would likely have a low to moderate risk of water induced landslides.

The City of Salem provides Landslide Hazard Maps based on slope (generally from LIDAR) and available risk assessments from various government sources (Figure 7). Salem's map assigns 2 to 3 landslide hazard points (low to moderate) to the site.

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4 However, the relict volcanic texture in soils derived from weathering of volcanic units can be hard to see on a cloudy or rainy day. Thus, some investigators have incorrectly mapped decomposed Columbia River Basalt as weathered tuffaceous sedimentary strata, Willamette Silt, or even landslide deposits.

5 SLIDO is Oregon State DOGAMI's Statewide Landslide Information Layer for Oregon. SLIDO compiles available DOGAMI & USGS geologic and hazard mapping: http://www.oregongeology.org/sub/slido/

3. SITE SPECIFIC STUDIES

3.1 Previous Site Development

We reviewed available historic topographic maps and aerial photographs[6] for indications of slope failures at and near the site. The aerial photographs were also reviewed to identify potential areas of cut or fill made during previous use or development of the site.

The maps and photos show that the site has a long history of use as orchard and pasture. The 1936 (Figure 8) and 1944 aerial photos, and the 1950s topographic map and aerial photos show the site as mostly prune orchard typical of the area (Meyering, 2008) with a residence in the southwest part. By 1955, the summit area was cleared of trees and used as pasture. The 1967 photos show the orchard was mostly cut with a few conifers starting in the NW and along Devon Ave SE. A few fruit tree remained along the west end of the site. Most of the site appears fallow and unused in 1967 and in 1976. However, the 1971 and 1985 photos show the east 1/3 of the site around the residence mowed, presumably for hay and/or fire control. The remainder appears to be brush and conifers. The 1990 and 1994 images show only a 2 to 3 acre area around the residence was maintained as yard. The remainder was brush and maturing conifers with a few trails cleared through the site. Digital imagery shows that from 2010 through the summer of 2016 the site was progressively cleared, trees thinned and topography between the trees smoothed.

In summary, the historic maps and photos show the site has been farm and/or orchard with a residence since the 1930s. Properties north, east and south have also been small farms and/or low-density residential. Property to the west has been intermittently logged and cleared as wood lot.

No signs of slope instability or failure were observed on the aerial photographs we examined. The resolution of the aerial photos is adequate to see vehicles on roads and relatively minor earthworks. Consequently, we believe that any significant slope failure should have been identifiable on the photos we reviewed.

3.2 Surface and Subsurface Observations

We conducted a walking reconnaissance of the site, and observed road cuts and accessible excavations in the site neighborhood. As noted, we previously mapped the site area and also conducted an assessment of TL 200 immediately north (NGS, 2008), so we reviewed maps and notes our previous work for this study.

At the highest site elevations, the surficial soils are mostly derived from weathering of the basalt bedrock with an admixture of loess blown up from the Willamette floodplain. These soils generally have a thin topsoil of fine to medium sandy clayey SILT with abundant organic material and occasional pebbles, cobbles and boulders of weathered rock. On slopes below the ridgetop, soils are decomposed basalt: red brown, stiff to hard silty sandy CLAY to sandy clayey SILT with sparse to abundant rock fragments.

Four test pits were excavated on 11 July 2017 to assess site soils (Figure 7). TP-1, -2 and -4 found severely weathered Sentinel Bluffs basalt at 3 ft, 3.5 ft and 2.5 ft, respectively. TP-3 found small boulders of weathered Winter Water basalt at 1 ft. The boulders were in a

6 Stereo pairs of aerial photos taken in 1936, 1944, 1955, 1967, 1971, 1976, 1985, 1990 and 2000 were reviewed. We also reviewed USGS, Google Earth and Earth Explorer imagery from 1994-2016.

matrix of severely weathered to decomposed basalt. Practical refusal with the small excavator was reached at depths of 3 to 5 ft in all test pits.

Soils above the weathered basalt were 1 to 2 ft of medium, red brown fine sandy SILT (loess) in TP-1 and -4. Weathered basalt in TP-3 was overlain by medium, red brown clayey SILT that graded to stiff at 2.5 ft and to hard decomposed basalt from 2.5 to 3.5-4 ft. In TP-4 the basalt was overlain by 1 ft of organic SILT topsoil.

The complete natural weathering profile is exposed north of the site in an excavation along Sahalee Dr SE. (Figure 4). About 1/4 mile north of the site, excavations for Lone Oak Rd SE expose unweathered Sentinel Bluffs and Winterwater basalt at depths of 8 to 15 ft.

In summary, soils exposed in the test pits at the site are consistent with soils in the surrounding area: thin, competent surficial soils derived mostly from in-situ weathering of the basalt with an admixture of loess along ridges and uplands. Valley soils are also competent, thin and a mix of colluvium and decomposed basalt.

3.3 Ground Water Observations

No seeps or springs were observed at the site. Springs have been reported at the contact between Sentinel Bluffs and Winterwater Basalt on neighboring properties. The nearest recorded spring is south of the site just south of Rees Hill Rd SE.

Driller's logs of nearby wells indicate that the regional water table is below the elevation of the Battle Creek flood plain. Most wells have modest yields and depths to water of 170 to 250 ft. However, local perched zones occur between the basalt flows. Such perched zones supply the aforementioned springs.

We suspect that the relatively clayey, moderately-low-permeability soils saturate quickly during heavy precipitation. That is because the severely weathered top of the basalt bedrock is shallow and relatively impervious compared to the overlying soils.

4. Interpretation of Site Conditions

The reconnaissance, test pits, area roadcuts and excavations, and historic aerial photographs, confirm that the site is underlain by bedrock consisting of Columbia River Basalt, as mapped previously (NGS, 1994, 1997, 2008). The top of the Basalt is severely weathered to decomposed, but it is still relatively competent material. The relatively fresh bedrock on the slopes is typically covered by 3 to 5 ft of soils (decomposed rock). However, basalt crops out locally and may be found near ground surface anywhere in the immediate site area.[7]

Typically, the soils derived from the basalt creep on moderate and steep slopes. Curved and pistol-butted trees are present on the steepest slopes at the site and these trees are consistent with soil creep. However, the 60 to 80 year-old firs are erect at the tops, indicating that creep is slow enough for the trees to keep up with it.

Available information indicates that the Basalt extends for 350 to 400 ft depth below the site. Site mapping indicates that the flows dip gently north beneath the site. Together

[7] Except that bedrock is at greater depths below the alluvium of the Battle Creek floodplain, north of the site, and its tributaries east and west of the site.

with the competent nature of the site materials, it seems most unlikely to us that there is any significant risk of slope failure involving the bedrock. This interpretation is **supported** by a complete lack of evidence that the site has suffered from slope instability in the past.

However, a few cuts for roads in the area have failed locally where they were too steep or became locally saturated during intense storms. Additionally, our previous experience in the area indicates that careful design and construction is required to use local soils as fill.

5. Conclusions and Recommendations

We found no evidence that slopes at the site have ever failed, nor indication that they will fail under the expected range of future conditions. The site and neighbors have survived severe rainfall events in 1964, 1974, 1994, 1996, 2003, 2006 and most recently December 2016. Numerous slides occurred at other sites in the Salem region during these severe storms.

Even though the site soils have not failed, they do creep, and similar soils have failed locally in overly-steep excavations (NGS, 2008). Consequently, we recommend that foundations be placed on competent material. Foundations and retaining walls should be designed by a qualified professional to withstand forces from soil creep and lateral loads from earthquakes. Given the thin soils and shallow depth to weathered bedrock, this requirement should not be onerous.

Cuts higher than 4 ft and steeper than 1V:2H, and fills more than 2 ft thick, should be designed by a qualified professional and the design reviewed by a geotechnical engineer. Walls, including retaining walls or foundation walls higher than 4 ft, should also be designed by a qualified professional and the design reviewed by a geotechnical Engineer.

Additionally, we recommend against infiltration of large volumes of water into the small volumes of ground, particularly during intense rainfall events such as those noted above. Some slope failures in the Eola and Salem Hills have been caused by injection of large volumes of storm water. Consequently, it is our opinion that surface runoff from roofs and pavements should be dispersed over a broad area to simulate natural conditions. If it is found necessary to dispose of large amounts runoff to the soil, the location and method should be thoroughly evaluated by a qualified professional. Your geotechnical Engineer should also review any such plans.

In our opinion, if you follow the above recommendations, partitioning and development of TL 300 for single family residences as you propose (Figure 9) should not increase the potential for slope hazards on the site or adjacent properties.

6. LIMITATIONS AND LIABILITY

We call your attention to the paragraphs on Warranty and Liability in the General Conditions (dated 1/2016) approved previously by you. Interpretations and recommendations presented herein are based on limited data and observations. Actual subsurface conditions may vary from those inferred from the limited information available to us. If site excavations for development find conditions to differ significantly from those inferred

herein, you should contact us and provide an opportunity for us to review our recommendations for the site.

We thank you for the opportunity to assist you with your project. Please contact us if you have questions about the report.

Yours very truly,
Northwest Geological Services, Inc.



Clive F. (Rick) Kienle, Jr., PhD, CEG
Principal Geologist and Vice President

NGS Reference 235.96-1

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8S/3W-22C Tax Lot 300		
Salem, Marion County, Oregon		
Landslide Hazard Study		
	Site Location Map	
NGS, Inc.	July 2017	Figure 1



8S/3W-22C Tax Lot 300
Salem, Marion County, Oregon
Landslide Hazard Study
Oblique View 23 July 2016 Aerial Image

NGS, Inc.	July 2017	Figure 2

N E SSE



Panorama of central part of site looking N (on left) and around to SSE (on right). Note brush mound at far right behind vehicle.



Mature Douglas Firs at the East end of the site show slight curvature from moderate creep in the thin site soil.

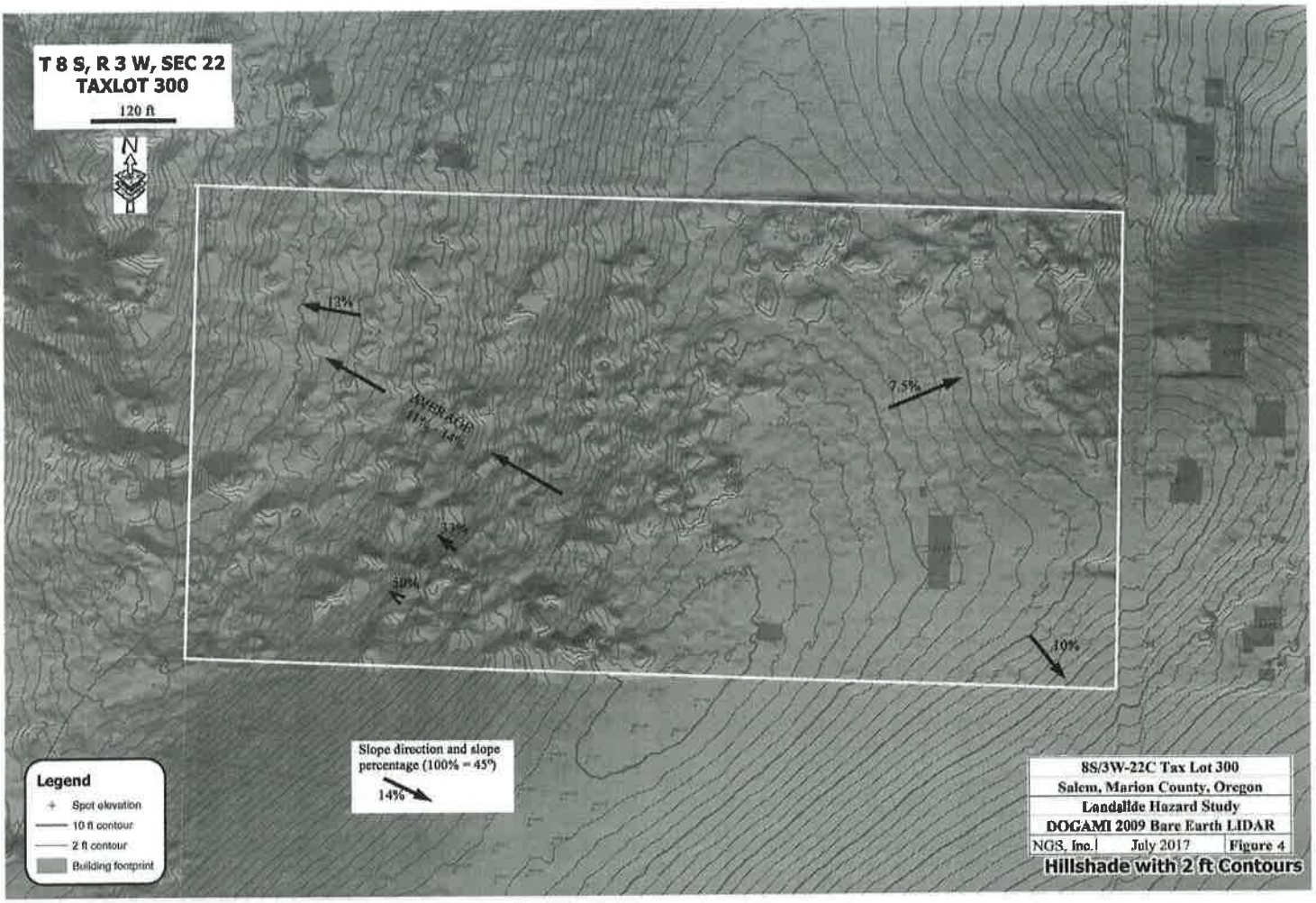


Smooth topography in NE part of site is typical of the entire site with exception of brush-covered piles of soil and woody debris left from clearing old orchard.

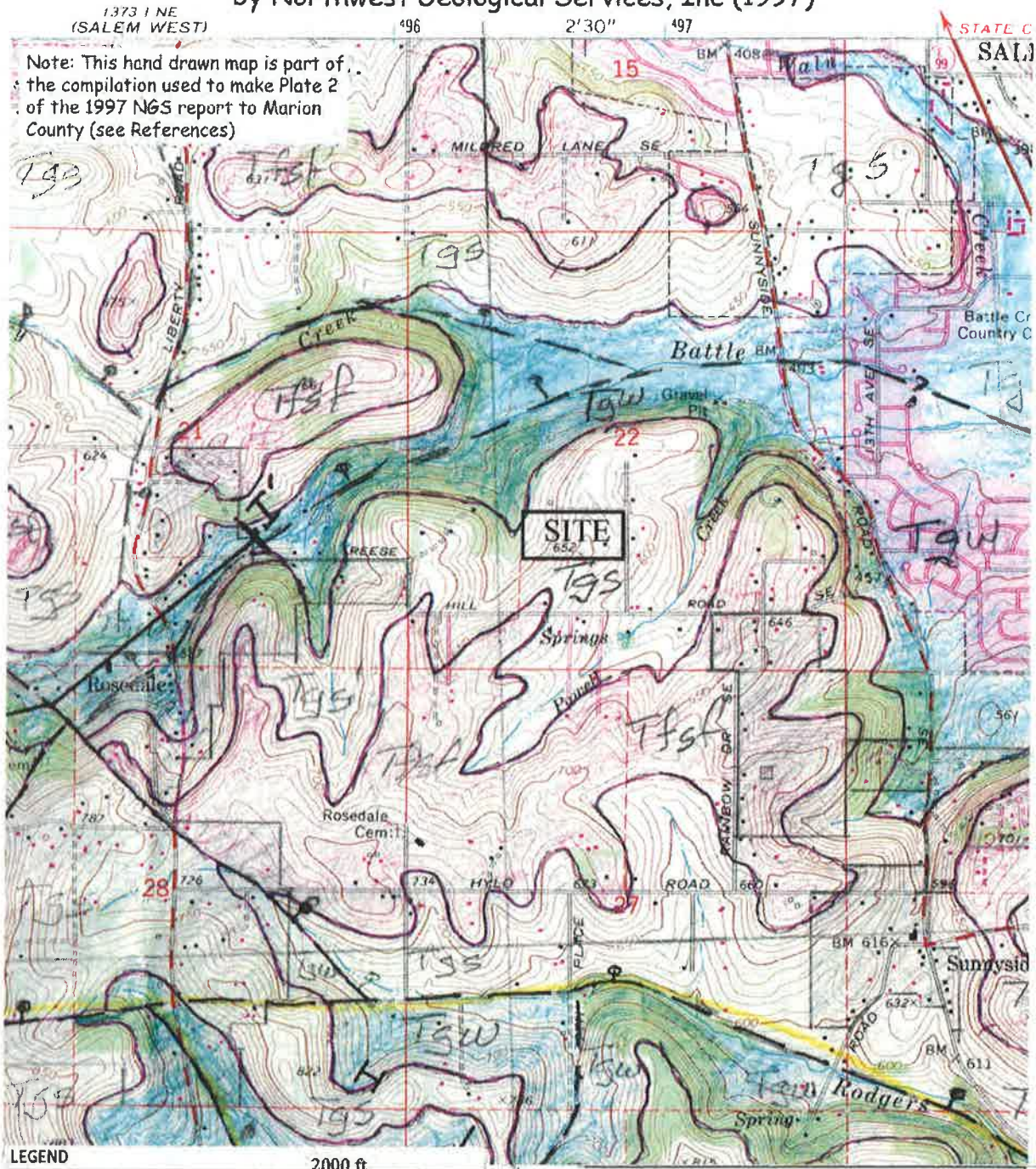


Decomposed Sentinel Bluff basalt spoils from test pit TP-1

8S/3W-22C Tax Lot 300		
Salem, Marion County, Oregon		
Landslide Hazard Study		
Site Photographs		
NGS, Inc.	July 2017	Figure 3


T 8 S, R 3 W, SEC 22
TAXLOT 300
120 ft
N
13%
AVERAGE
11% - 14%
33%
30%
7.5%
10%
Slope direction and slope percentage (100% = 45°)
14%
Legend
Spot elevation
10 ft contour
2 ft contour
Building footprint
8S/3W-22C Tax Lot 300
Salem, Marion County, Oregon
Landslide Hazard Study
DOGAMI 2009 Bare Earth LIDAR
NG3, Inc. | July 2017 | Figure 4
Hillshade with 2 ft Contours

Portion of Geologic Map of Sidney Quadrangle by Northwest Geological Services, Inc (1997)



LEGEND

2000 ft

N

Geologic Bedrock Units

Tfs - Basalt of Silver Falls (Frenchman Springs Mamber, Wanapum Basalt)

Tfg - Basalt of Gingko (Frenchman Springs Mamber, Wanapum Basalt)

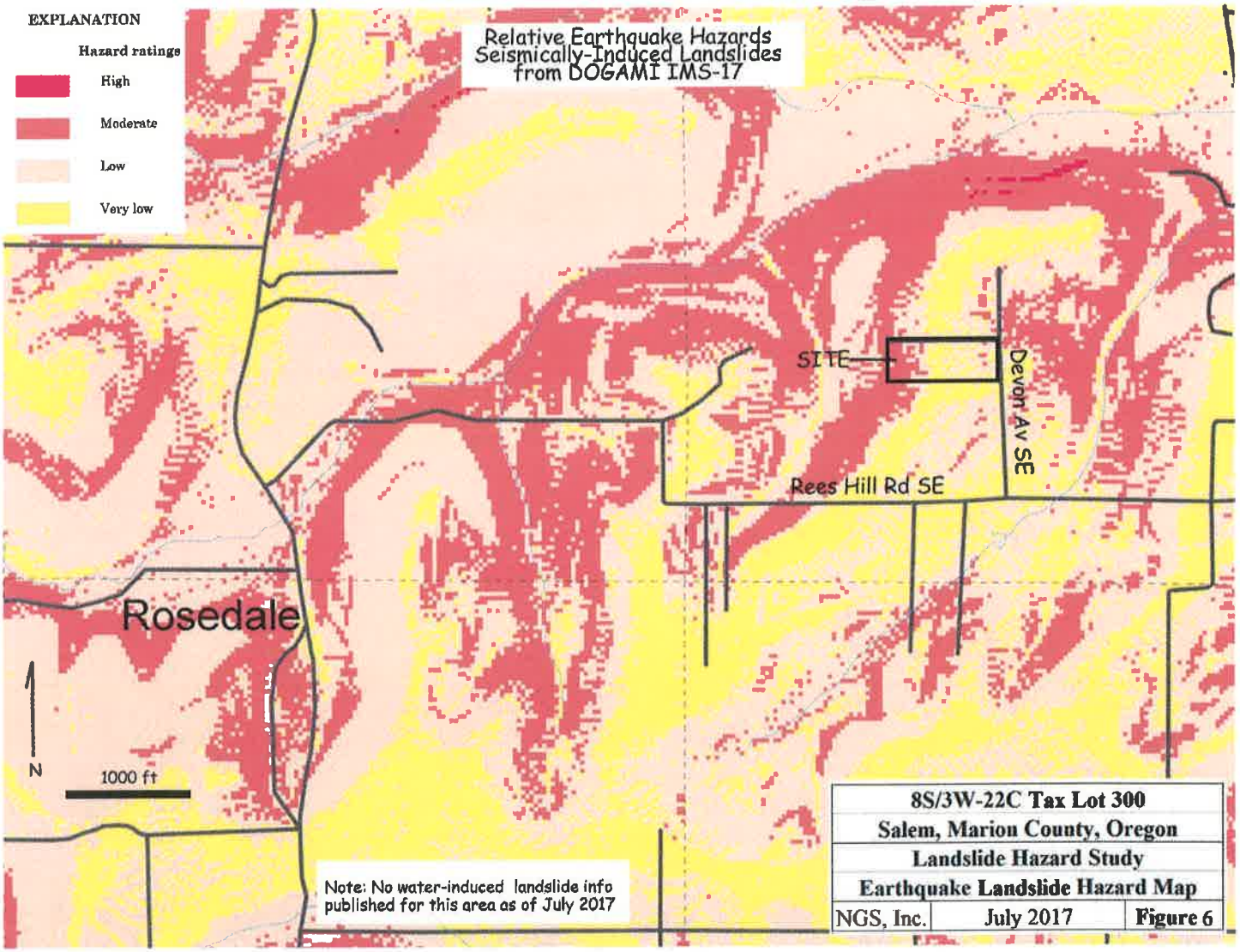
Tgs - Sentinel Bluff Basalt (Grand Ronde Basalt)

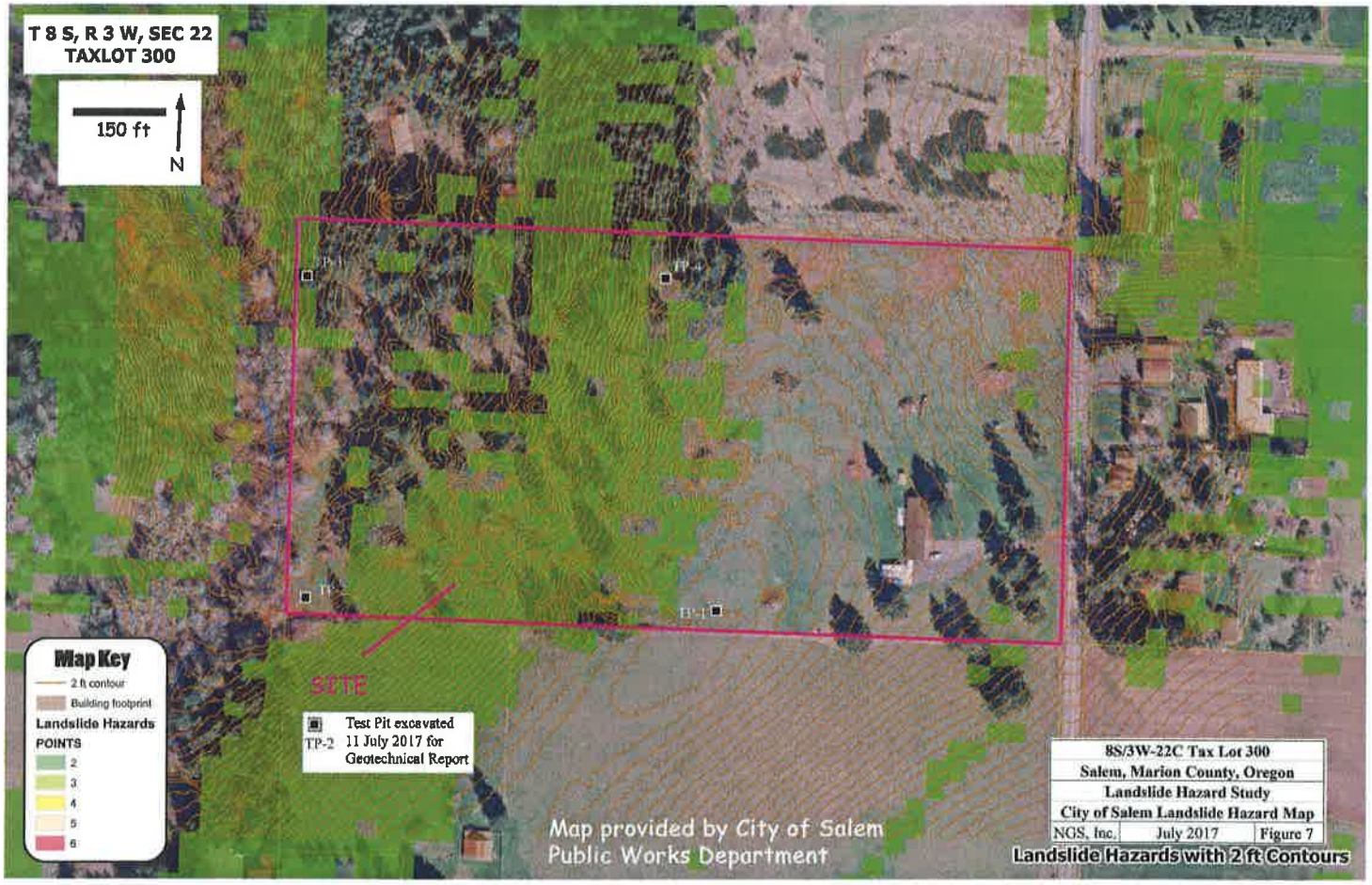
Tgw - Winterwater Basalt (Grande Ronde Basalt)

Geologic Structures

Normal Fault, ball on down side, dashed where approximate

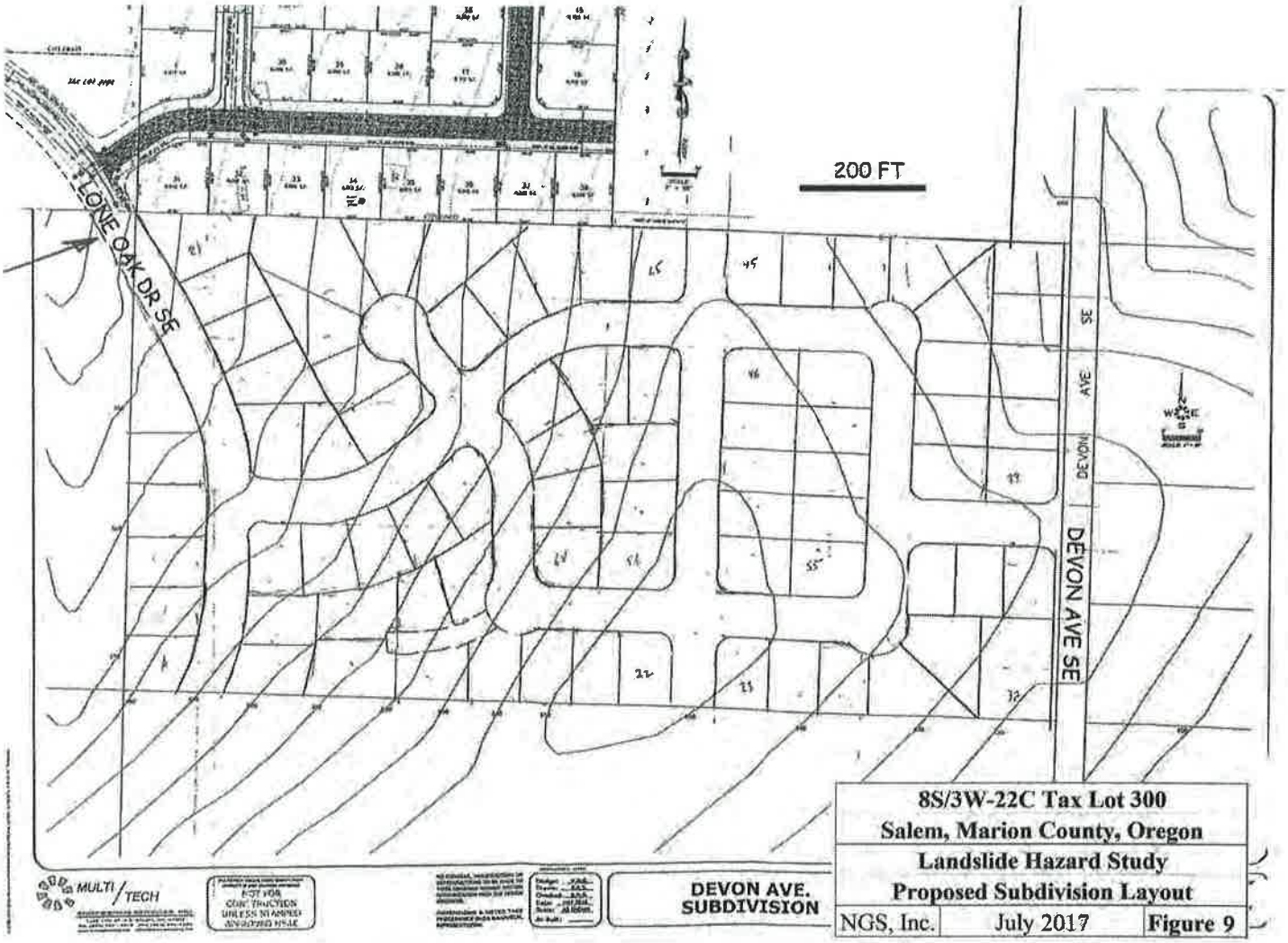
8S/3W-22C Tax Lot 300		
Salem, Marion County, Oregon		
Landslide Hazard Study		
Area Geologic Map		
NGS, Inc.	July 2017	**Figure 5**


EXPLANATION
Hazard ratings
High
Moderate
Low
Very low
Relative Earthquake Hazards
Seismically-Induced Landslides
from DOGAMI IMS-17
SITE
Devon Av SE
Rees Hill Rd SE
Rosedale
N
1000 ft
Note: No water-induced landslide info published for this area as of July 2017
8S/3W-22C Tax Lot 300
Salem, Marion County, Oregon
Landslide Hazard Study
Earthquake Landslide Hazard Map
NGS, Inc.
July 2017
Figure 6


T 8 S, R 3 W, SEC 22
TAXLOT 300
150 ft
N
TP-1
TP-4
TP-3
B-1
SITE
Map Key
2 ft contour
Building footprint
Landslide Hazards
POINTS
2
3
4
5
6
TP-2 Test Pit excavated 11 July 2017 for Geotechnical Report
Map provided by City of Salem Public Works Department
8S/3W-22C Tax Lot 300
Salem, Marion County, Oregon
Landslide Hazard Study
City of Salem Landslide Hazard Map
NGS, Inc. July 2017 Figure 7
Landslide Hazards with 2 ft Contours



8S/3W-22C Tax Lot 300		
Salem, Marion County, Oregon		
Landslide Hazard Study		
1936 Aerial Photograph		
NGS, Inc.	July 2017	Figure 8



8S/3W-22C Tax Lot 300
Salem, Marion County, Oregon
Landslide Hazard Study
Proposed Subdivision Layout

NGS, Inc.	July 2017	**Figure 9**

Appendix C

Time of Concentration

Drawing is NOT to Scale

SCALE: 1" = 60'

Point F
Elev. 604

L = 510'

Point E
Elev. 642

Point D
Elev. 651

L = 230'

Point C
Elev. 539

L = 580'

Point B
Elev. 622

L = 250'

Point A
Elev. 651

SAHALEE DR.

LONE OAK ROAD

DEVON AVE.

TAX LOT #100

N89°22'41"W 1,298.71'

S0°06'31"W 662.05'

N0°00'00"E 661.91'

S89°23'06"E 1,299.96'

MULTI/TECH

ENGINEERING SERVICES, INC.
1155 13th ST. SE. SALEM, OR. 97302
(503) 363-9227 FAX: (503) 364-1260
www.mtengineering.net office@mtengineering.net

EXISTING CONDITIONS PLAN

DEVON ESTATES

NO CHANGES, MODIFICATIONS OR REPRODUCTIONS TO BE MADE TO THESE DRAWINGS WITHOUT WRITTEN AUTHORIZATION FROM THE DESIGN ENGINEER.

DIMENSIONS & NOTES TAKE PRECEDENCE OVER GRAPHICAL REPRESENTATION.

Design: M.D.G.
Drawn: P.H.S.
Checked: B.M.G.
Date: NOV. 2017
Scale: AS SHOWN

REGISTERED PROFESSIONAL ENGINEER
OREGON
JUNE 14, 2013
MARK D. GRENZ

EXPIRES: 06-30-2019

JOB # 6502

P102

J:\6500-6599\6502-DevonAvenueSubdivision\Dwg\6502p.dwg, P102XC, 12/10/2018 3:44:28 PM, PStorders

Worksheet 3: Time of Concentration (T_c) or travel time (T_t)

Project	By	Date
Devon Estates (Basin #1)	M. Hendrick	10/2018
Location	**Checked**	**Date**
Salem, Oregon		

Check one: ☑ Present ☐ Developed

Check one: ☑ T_c ☑ T_t through subarea

Notes: Space for as many as two segments per flow type can be used for each worksheet.
Include a map, schematic, or description of flow segments.

Sheet flow (Applicable to Tc only)

	Segment ID	A-B	
1.	Surface description (Table 4D-4)	Meadow/Pasture/Farm	
2.	Manning's roughness coefficient, n (Table 4D-4)	0.15	
3.	Flow length, L (total L † 300 ft) ft	250	
4.	Two-year 24-hour rainfall, P_2 in	2.2	
5.	Land slope, s ft/ft	0.116	
6.	$T_t = \frac{0.007\ (nL)^{0.8}}{P_2^{0.5}\ s^{0.4}}$ Compute T_t hr	0.20 +	= 0.20

Shallow concentrated flow

	Segment ID	B-C	
7.	Surface description (paved or unpaved)	Forest & Meadow	
8.	Flow length, L ft	580	
9.	Watercourse slope, s ft/ft	0.143	
10.	Average velocity, V (figure 3-1) ft/s	0.95	
11.	$T_t = \frac{L}{3600\ V}$ Compute T_t hr	0.17 +	= 0.17

Channel flow

	Segment ID		
12.	Cross sectional flow area, a ft^2		
13.	Wetted perimeter, p_w ft		
14.	Hydraulic radius, $r = \frac{a}{p_w}$ Compute r ft		
15	Channel slope, s ft/ft		
16.	Manning's roughness coefficient, n		
17.	$V = \frac{1.49\ r^{2/3}\ s^{1/2}}{n}$ Compute V ft/s		
18.	~~Flow~~ length, L ft		
19.	$T_t = \frac{L}{3600\ V}$ Compute T_t hr	+	=
20.	Watershed or subarea T_c or T_t (add T_t in steps 6, 11, and 19) Hr		0.37

0.37 Hrs = 22.2 Minutes

Worksheet 3: Time of Concentration (T_c) or travel time (T_t)

Project	By	Date
Devon Estates (Basin #2)	M. Hendrick	1/2021
Location	**Checked**	**Date**
Salem, Oregon		

Check one: ☑ Present ☐ Developed

Check one: ☑ T_c ☑ T_t through subarea

Notes: Space for as many as two segments per flow type can be used for each worksheet.
Include a map, schematic, or description of flow segments.

Sheet flow (Applicable to Tc only)

	Segment ID	D-E		
1.	Surface description (Table 4D-4)	Meadow/Pasture/Farm		
2.	Manning's roughness coefficient, n (Table 4D-4)	0.15		
3.	Flow length, L (total L † 300 ft) ft	230		
4.	Two-year 24-hour rainfall, P_2 in	2.2		
5.	Land slope, s ft/ft	0.039		
6.	$T_t = \frac{0.007\ (nL)^{0.8}}{P_2^{0.5}\ s^{0.4}}$ Compute T_t hr	0.29	+	= 0.29

Shallow concentrated flow

	Segment ID	E-F		
7.	Surface description (paved or unpaved)	Pasture		
8.	Flow length, L ft	510		
9.	Watercourse slope, s ft/ft	0.075		
10.	Average velocity, V (figure 3-1) ft/s	2.0		
11.	$T_t = \frac{L}{3600\ V}$ Compute T_t hr	0.07	+	= 0.07

Channel flow

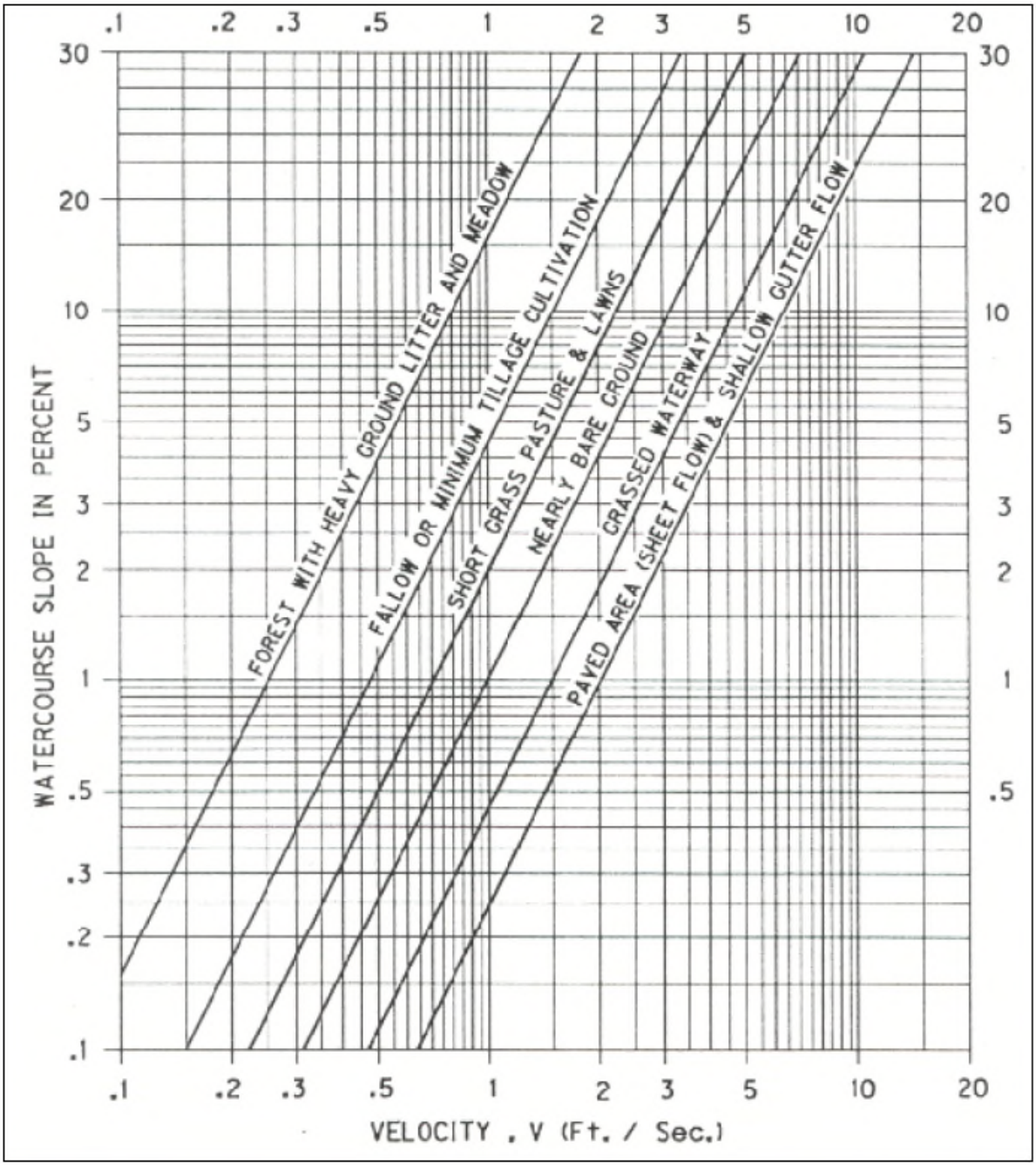
	Segment ID			
12.	Cross sectional flow area, a ft^2			
13.	Wetted perimeter, p_w ft			
14.	Hydraulic radius, $r = \frac{a}{p_w}$ Compute r ft			
15	Channel slope, s ft/ft			
16.	Manning's roughness coefficient, n			
17.	$V = \frac{1.49\ r^{2/3}\ s^{1/2}}{n}$ Compute V ft/s			
18.	~~Flow~~ length, L ft			
19.	$T_t = \frac{L}{3600\ V}$ Compute T_t hr		+	=

20. Watershed or subarea T_c or T_t (add T_t in steps 6, 11, and 19) Hr **0.36**

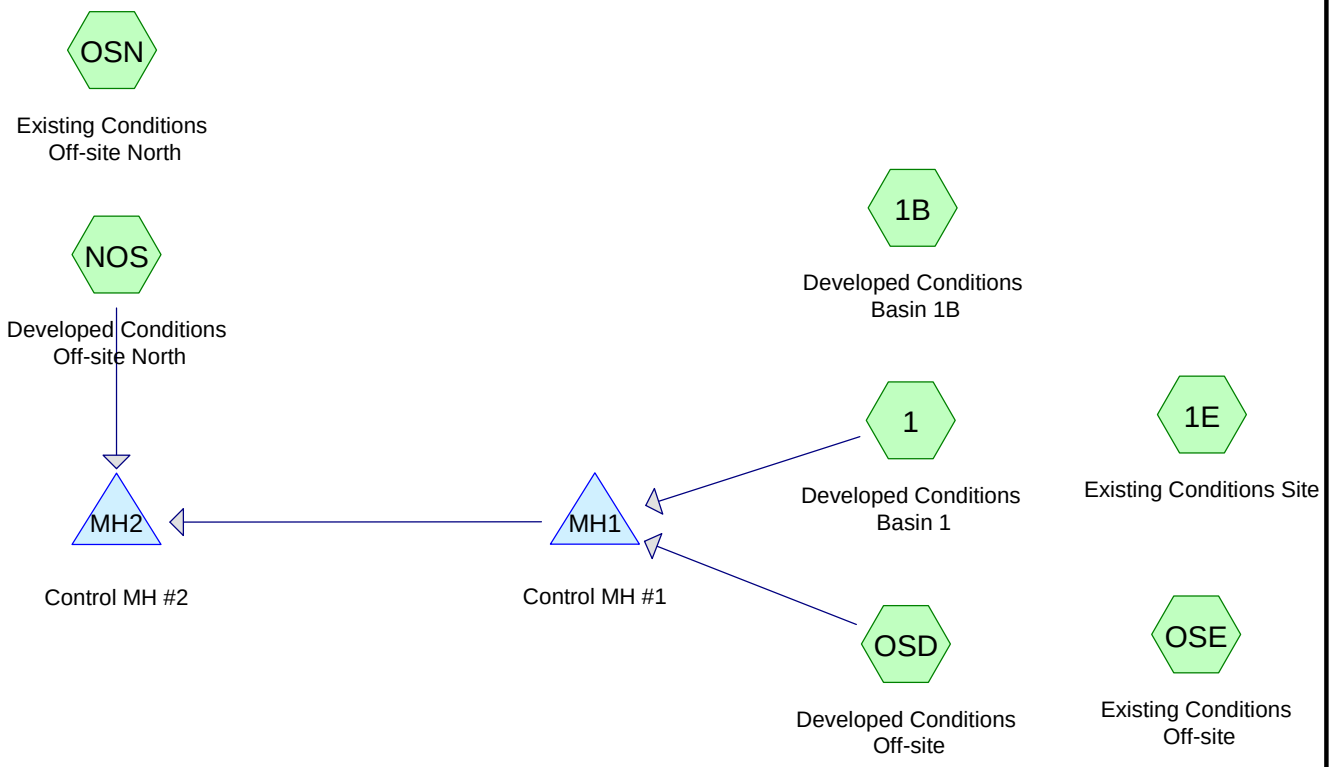
0.36 Hrs = 21.6 Minutes

Manning's Roughness Coefficients for Overland Sheet Flow	
Surface Types:	**n**
Impervious Areas	0.014
Gravel Pavement	0.02
Developed: Landscape Areas (Except Lawns)	0.08
Undeveloped: Meadow, Pasture, or Farm	0.15
Developed: Lawns	0.24
Pre-developed: Mixed	0.30
Pre-developed: Woodland and Forest	0.40
Development Types:	**n**
Commercial Development	0.015
Industrial Development, Heavy	0.04
Industrial Development, Light	0.05
Dense Residential (over 6 units/acre)	0.08
Normal Residential (3 to 6 units/acre)	0.20
Light Residential (1 to 3 units/acre)	0.30
Parks	0.40

Table 4D-4. Manning's Roughness Coefficients for Overland Sheet Flow


.1
.2
.3
.5
1
2
3
5
10
20
30
20
10
5
3
2
1
.5
.3
.2
.1
WATERCOURSE SLOPE IN PERCENT
FOREST WITH HEAVY GROUND LITTER AND MEADOW
FALLOW OR MINIMUM TILLAGE CULTIVATION
SHORT GRASS PASTURE & LAWNS
NEARLY BARE GROUND
GRASSED WATERWAY
PAVED AREA (SHEET FLOW) & SHALLOW GUTTER FLOW
VELOCITY , V (Ft. / Sec.)

Appendix D



Subcat Reach Pond Link

Routing Diagram for 20210112 Devon Estates Phase 1 Master
Prepared by Multitech Engineering Services, Inc., Printed 2/17/2021
HydroCAD® 10.10-4a s/n 09412 © 2020 HydroCAD Software Solutions LLC

Summary for Subcatchment 1E: Existing Conditions Site

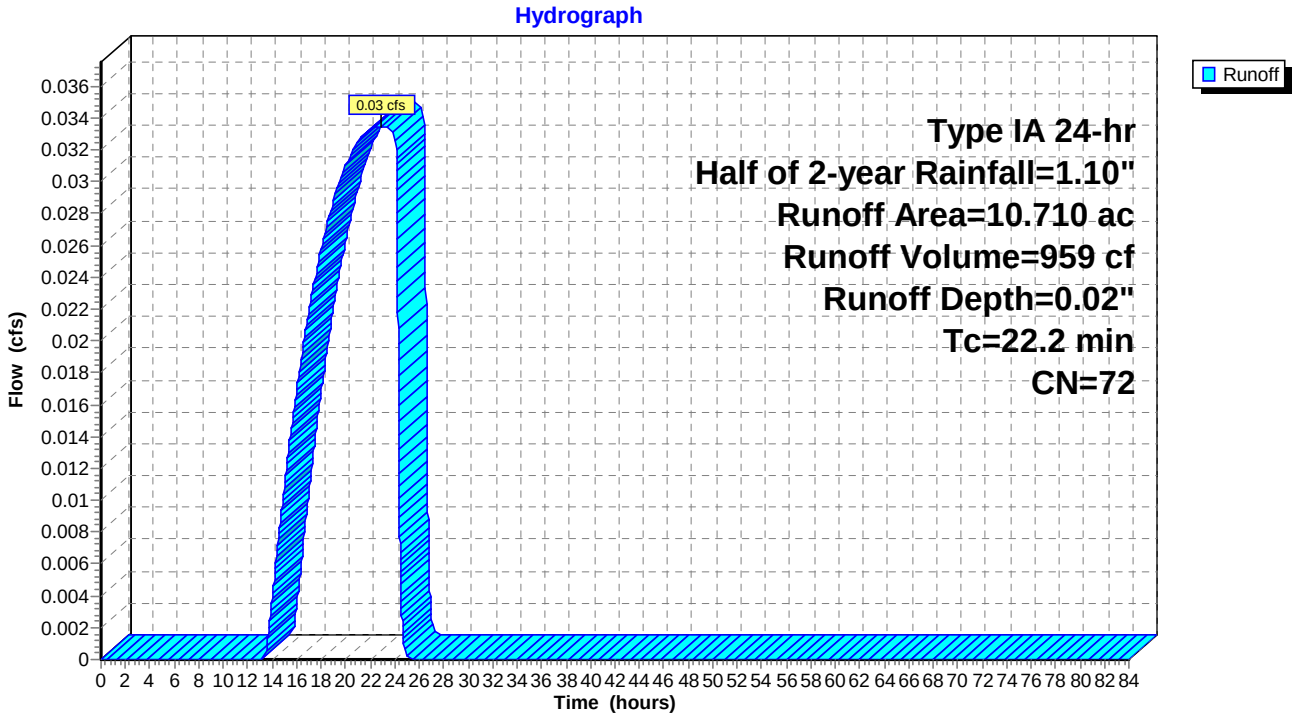
Runoff = 0.03 cfs @ 22.82 hrs, Volume= 959 cf, Depth= 0.02"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-84.00 hrs, dt= 0.01 hrs
Type IA 24-hr Half of 2-year Rainfall=1.10"

	Area (ac)	CN	Description
*	10.710	72	City of Salem Pre-development, HSG C
	10.710	72	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
22.2					**Direct Entry, TR-55 Worksheet**

Subcatchment 1E: Existing Conditions Site



Summary for Subcatchment OSE: Existing Conditions Off-site

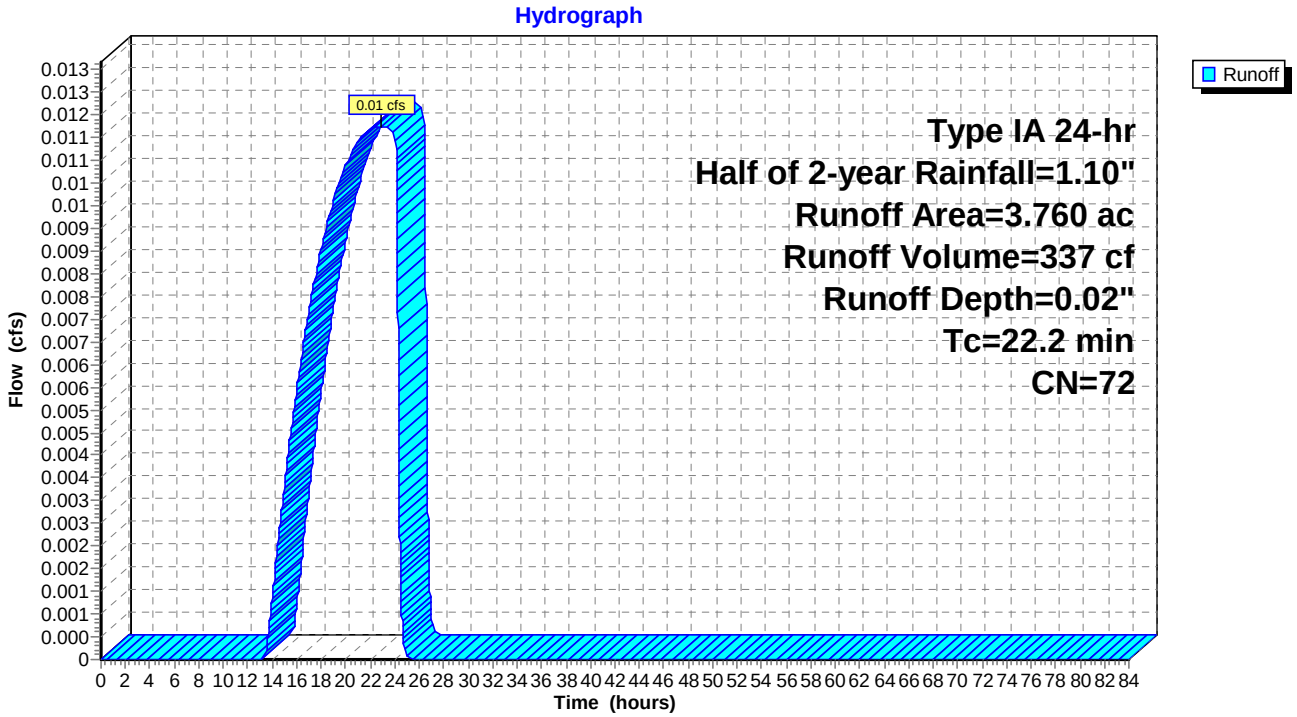
Runoff = 0.01 cfs @ 22.82 hrs, Volume= 337 cf, Depth= 0.02"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-84.00 hrs, dt= 0.01 hrs
Type IA 24-hr Half of 2-year Rainfall=1.10"

	Area (ac)	CN	Description
*	3.760	72	City of Salem Pre-development, HSG C
	3.760	72	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
22.2					**Direct Entry, TR-55 Worksheet**

Subcatchment OSE: Existing Conditions Off-site



Summary for Subcatchment 1B: Developed Conditions Basin 1B

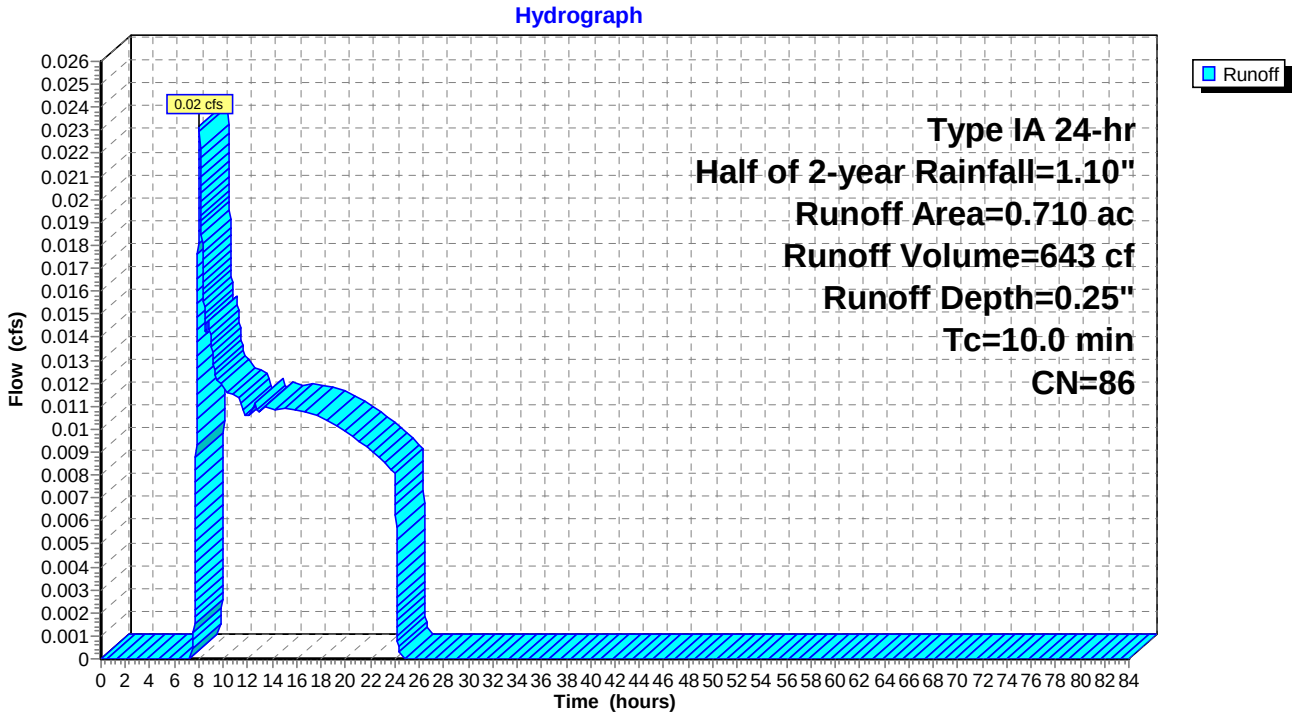
Runoff = 0.02 cfs @ 8.07 hrs, Volume= 643 cf, Depth= 0.25"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-84.00 hrs, dt= 0.01 hrs
Type IA 24-hr Half of 2-year Rainfall=1.10"

	Area (ac)	CN	Description
*	0.350	98	Roofs,pavement, concrete, HSG C
	0.360	74	>75% Grass cover, Good, HSG C
	0.710	86	Weighted Average
	0.360	74	50.70% Pervious Area
	0.350	98	49.30% Impervious Area

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

Subcatchment 1B: Developed Conditions Basin 1B



Summary for Subcatchment 1: Developed Conditions Basin 1

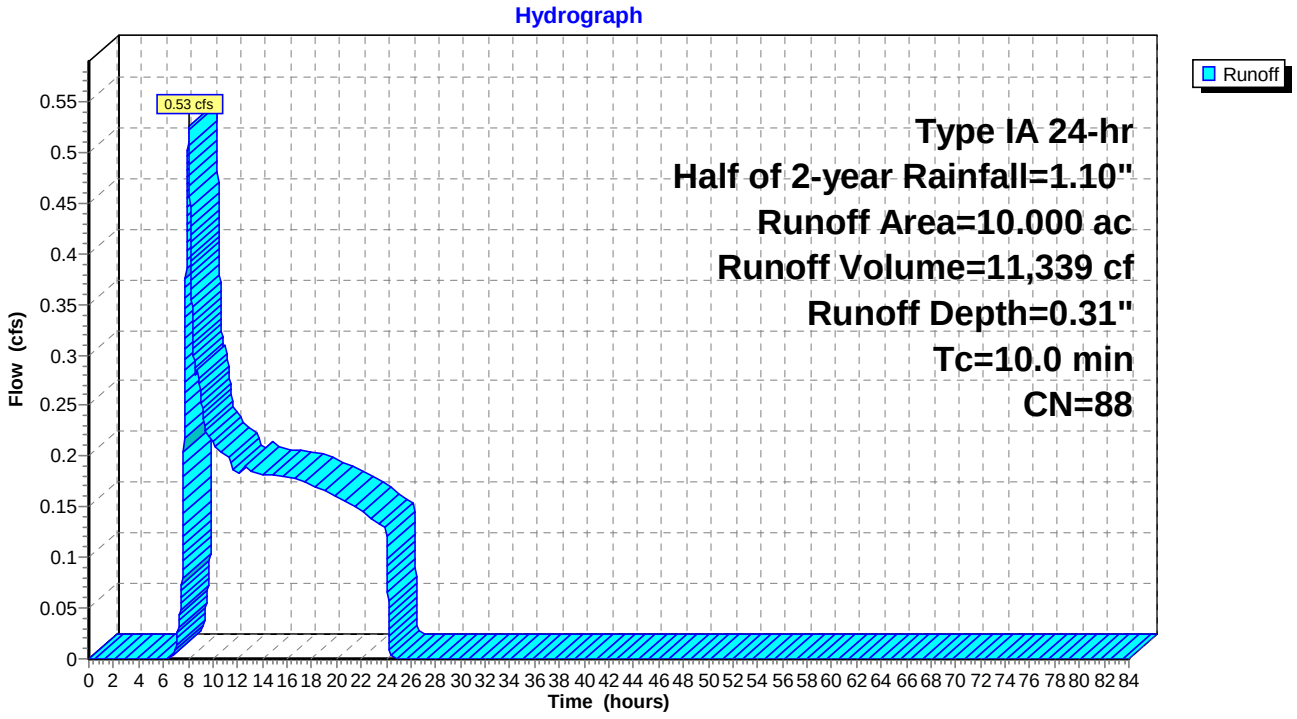
Runoff = 0.53 cfs @ 8.06 hrs, Volume= 11,339 cf, Depth= 0.31"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-84.00 hrs, dt= 0.01 hrs
Type IA 24-hr Half of 2-year Rainfall=1.10"

	Area (ac)	CN	Description
*	6.000	98	Roofs,pavement, concrete, HSG C
	4.000	74	>75% Grass cover, Good, HSG C
	10.000	88	Weighted Average
	4.000	74	40.00% Pervious Area
	6.000	98	60.00% Impervious Area

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

Subcatchment 1: Developed Conditions Basin 1



Summary for Subcatchment OSD: Developed Conditions Off-site

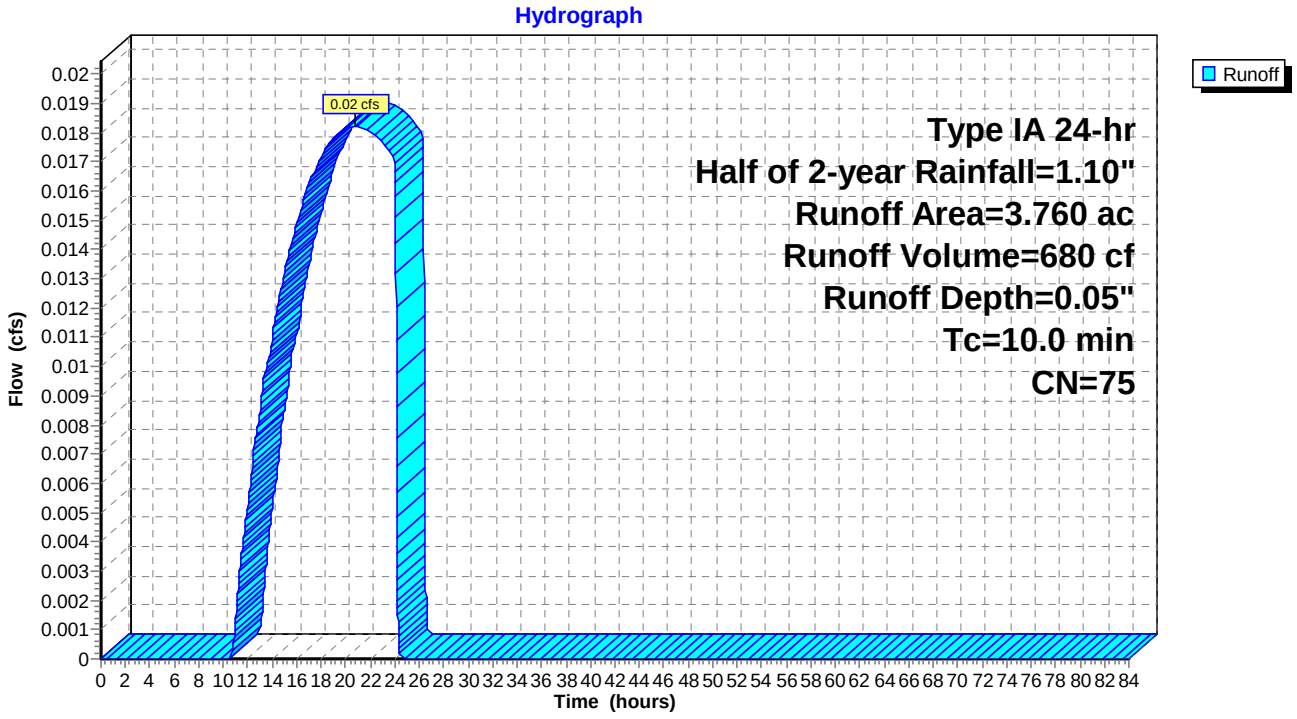
Runoff = 0.02 cfs @ 20.81 hrs, Volume= 680 cf, Depth= 0.05"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-84.00 hrs, dt= 0.01 hrs
Type IA 24-hr Half of 2-year Rainfall=1.10"

	Area (ac)	CN	Description
*	3.260	72	City of Salem Pre-developed, HSG C
	0.500	98	Paved roads w/curbs & sewers, HSG C
	3.760	75	Weighted Average
	3.260	72	86.70% Pervious Area
	0.500	98	13.30% Impervious Area

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

Subcatchment OSD: Developed Conditions Off-site



Summary for Pond MH1: Control MH #1

Inflow Area = 599,386 sf, 47.24% Impervious, Inflow Depth = 0.24" for Half of 2-year event
Inflow = 0.53 cfs @ 8.06 hrs, Volume= 12,020 cf
Outflow = 0.02 cfs @ 24.25 hrs, Volume= 4,215 cf, Atten= 97%, Lag= 971.3 min
Primary = 0.02 cfs @ 24.25 hrs, Volume= 4,215 cf

Routing by Stor-Ind method, Time Span= 0.00-84.00 hrs, dt= 0.01 hrs
Peak Elev= 542.81' @ 24.25 hrs Surf.Area= 8,500 sf Storage= 11,141 cf
Flood Elev= 561.00' Surf.Area= 8,500 sf Storage= 55,229 cf

Plug-Flow detention time= 2,195.1 min calculated for 4,215 cf (35% of inflow)
Center-of-Mass det. time= 1,869.0 min (2,767.1 - 898.2)

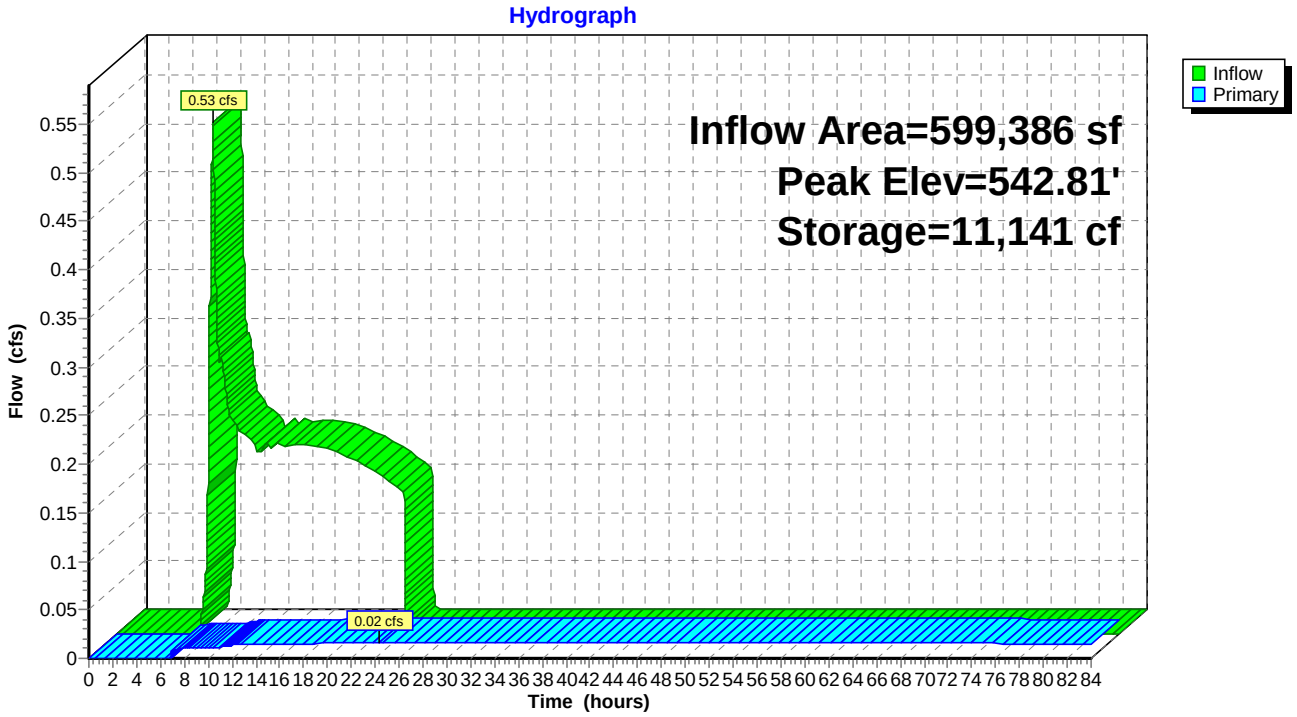
Volume	Invert	Avail.Storage	Storage Description
#1	537.00'	55,229 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
537.00	4	0.0	0	0
539.24	8,500	0.0	0	0
539.25	8,500	40.0	34	34
540.24	8,500	40.0	3,366	3,400
540.25	8,500	5.0	4	3,404
541.99	8,500	5.0	740	4,144
542.00	8,500	100.0	85	4,229
544.00	8,500	100.0	17,000	21,229
546.00	8,500	100.0	17,000	38,229
547.00	8,500	100.0	8,500	46,729
548.00	8,500	100.0	8,500	55,229

Device	Routing	Invert	Outlet Devices
#1	Primary	537.00'	**18.0" Round 18" Pipe** L= 62.0' RCP, rounded edge headwall, Ke= 0.100 Inlet / Outlet Invert= 537.00' / 535.00' S= 0.0323 '/' Cc= 0.900 n= 0.013, Flow Area= 1.77 sf
#2	Device 1	537.00'	**0.5" Vert. Orifice #1** C= 0.600 Limited to weir flow at low heads
#3	Device 1	543.00'	**7.5" Vert. Orifice #2** C= 0.600 Limited to weir flow at low heads
#4	Device 1	544.50'	**9.5" Vert. Orifice #3** C= 0.600 Limited to weir flow at low heads
#5	Device 1	547.00'	**24.0" Horiz. Overflow** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.02 cfs @ 24.25 hrs HW=542.81' (Free Discharge)
└**1=18" Pipe** (Passes 0.02 cfs of 23.84 cfs potential flow)
  ├**2=Orifice #1** (Orifice Controls 0.02 cfs @ 11.59 fps)
  ├**3=Orifice #2** (Controls 0.00 cfs)
  ├**4=Orifice #3** (Controls 0.00 cfs)
  └**5=Overflow** (Controls 0.00 cfs)

Pond MH1: Control MH #1



Summary for Subcatchment OSN: Existing Conditions Off-site North

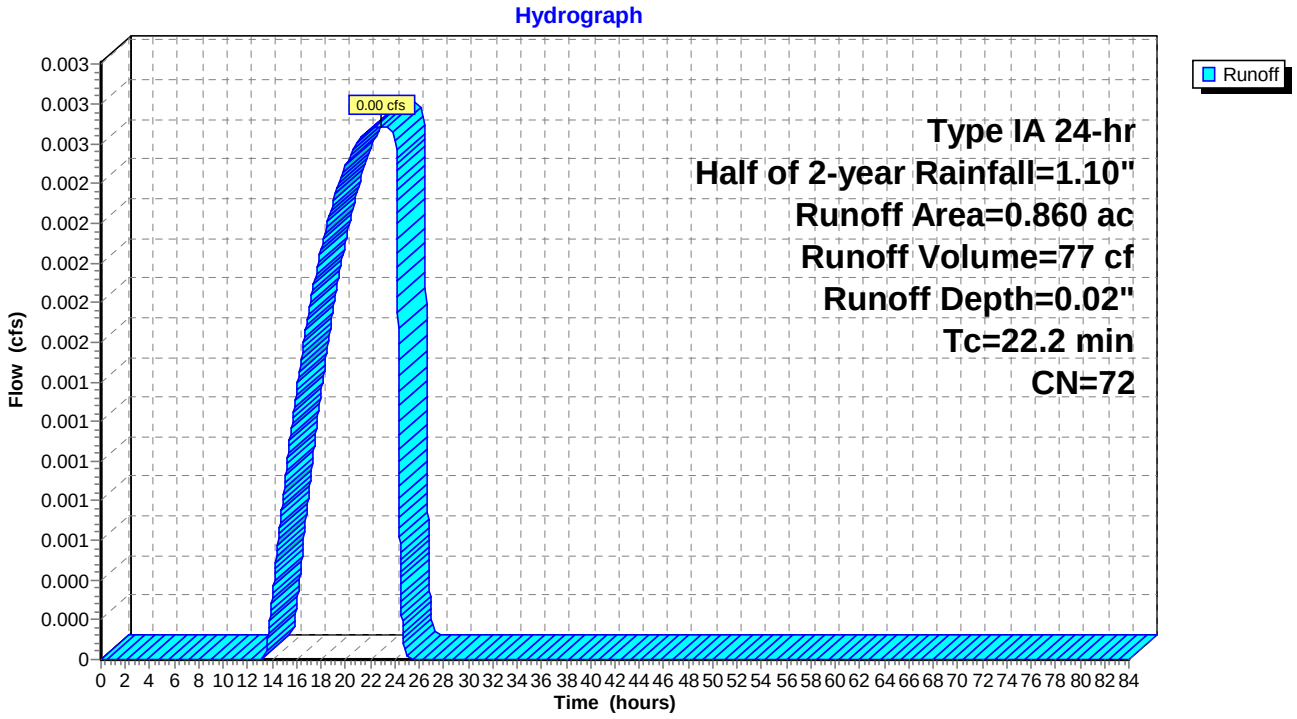
Runoff = 0.00 cfs @ 22.82 hrs, Volume= 77 cf, Depth= 0.02"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-84.00 hrs, dt= 0.01 hrs
Type IA 24-hr Half of 2-year Rainfall=1.10"

	Area (ac)	CN	Description
*	0.860	72	City of Salem Pre-development, HSG C
	0.860	72	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
22.2					**Direct Entry, TR-55 Worksheet**

Subcatchment OSN: Existing Conditions Off-site North



Summary for Subcatchment NOS: Developed Conditions Off-site North

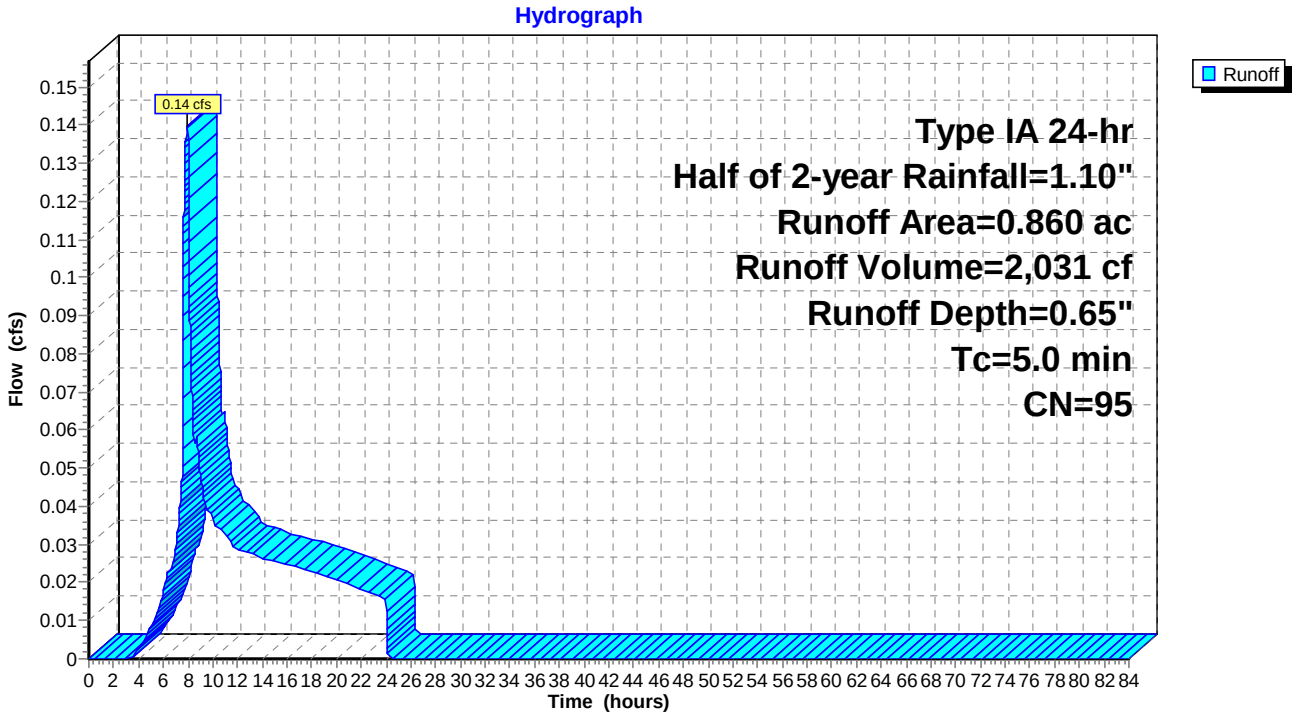
Runoff = 0.14 cfs @ 7.94 hrs, Volume= 2,031 cf, Depth= 0.65"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-84.00 hrs, dt= 0.01 hrs
Type IA 24-hr Half of 2-year Rainfall=1.10"

	Area (ac)	CN	Description
*	0.760	98	Roofs,pavement, concrete, HSG C
	0.100	74	>75% Grass cover, Good, HSG C
	0.860	95	Weighted Average
	0.100	74	11.63% Pervious Area
	0.760	98	88.37% Impervious Area

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

Subcatchment NOS: Developed Conditions Off-site North



Summary for Pond MH2: Control MH #2

Inflow Area = 636,847 sf, 49.66% Impervious, Inflow Depth > 0.12" for Half of 2-year event
Inflow = 0.15 cfs @ 7.94 hrs, Volume= 6,246 cf
Outflow = 0.15 cfs @ 7.95 hrs, Volume= 6,246 cf, Atten= 0%, Lag= 0.6 min
Primary = 0.15 cfs @ 7.95 hrs, Volume= 6,246 cf

Routing by Stor-Ind method, Time Span= 0.00-84.00 hrs, dt= 0.01 hrs
Peak Elev= 502.16' @ 7.95 hrs Surf.Area= 51 sf Storage= 4 cf

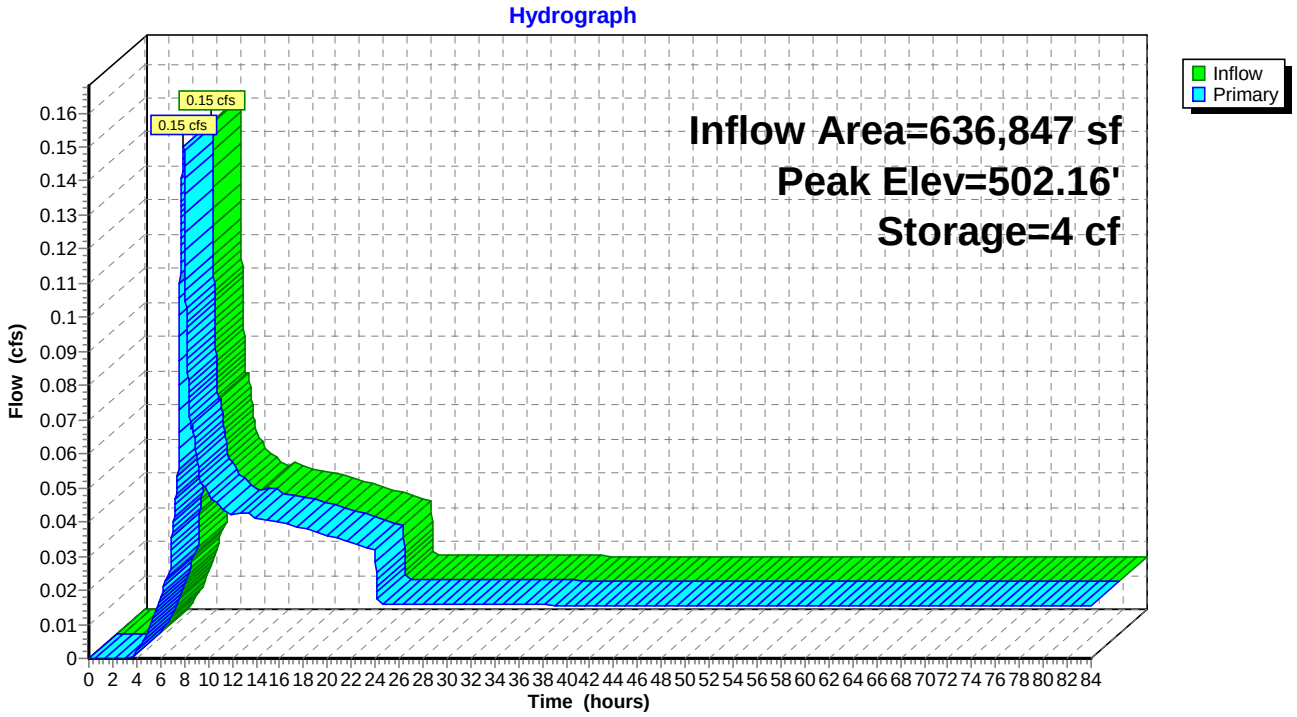
Plug-Flow detention time= 0.3 min calculated for 6,246 cf (100% of inflow)
Center-of-Mass det. time= 0.2 min (2,118.6 - 2,118.4)

Volume	Invert	Avail.Storage	Storage Description
#1	501.96'	2,356 cf	**60.0" Round 60" Detention Pipe** L= 120.0' S= 0.0050 '/'

Device	Routing	Invert	Outlet Devices
#1	Primary	499.77'	**18.0" Round Culvert** L= 110.0' RCP, rounded edge headwall, Ke= 0.100 Inlet / Outlet Invert= 499.77' / 484.72' S= 0.1368 '/' Cc= 0.900 n= 0.013, Flow Area= 1.77 sf
#2	Device 1	501.96'	**10.0" Vert. Orifice #1** C= 0.600 Limited to weir flow at low heads
#3	Device 1	507.50'	**18.0" Horiz. Overflow** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.15 cfs @ 7.95 hrs HW=502.16' (Free Discharge)
└**1=Culvert** (Passes 0.15 cfs of 14.84 cfs potential flow)
  ├**2=Orifice #1** (Orifice Controls 0.15 cfs @ 1.51 fps)
  └**3=Overflow** (Controls 0.00 cfs)

Pond MH2: Control MH #2



Summary for Subcatchment 1E: Existing Conditions Site

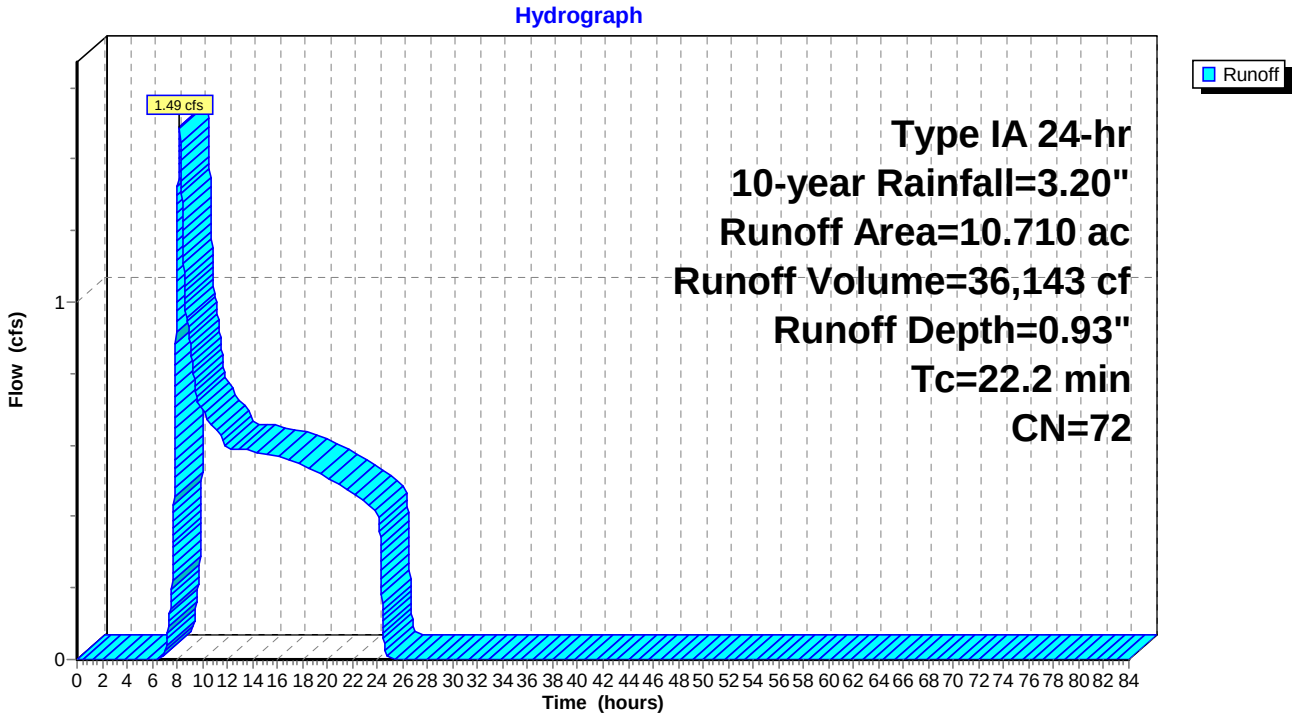
Runoff = 1.49 cfs @ 8.20 hrs, Volume= 36,143 cf, Depth= 0.93"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-84.00 hrs, dt= 0.01 hrs
Type IA 24-hr 10-year Rainfall=3.20"

	Area (ac)	CN	Description
*	10.710	72	City of Salem Pre-development, HSG C
	10.710	72	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
22.2					**Direct Entry, TR-55 Worksheet**

Subcatchment 1E: Existing Conditions Site



Summary for Subcatchment OSE: Existing Conditions Off-site

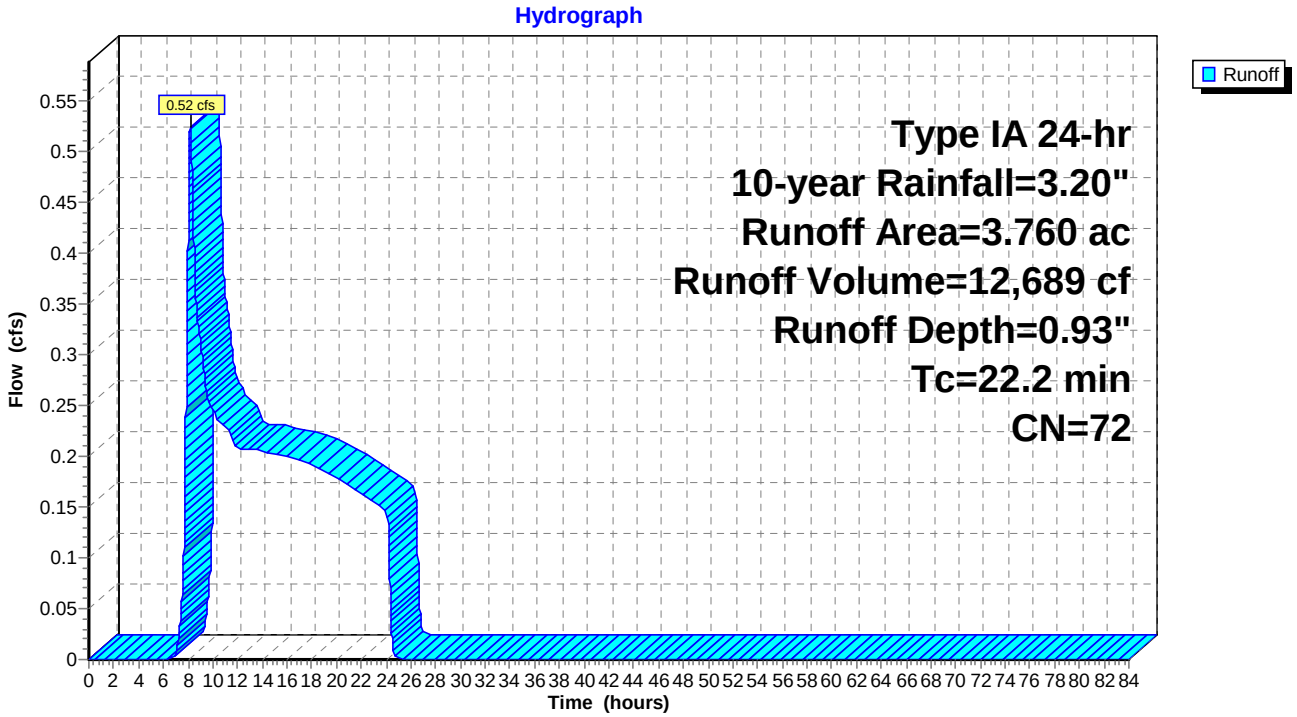
Runoff = 0.52 cfs @ 8.20 hrs, Volume= 12,689 cf, Depth= 0.93"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-84.00 hrs, dt= 0.01 hrs
Type IA 24-hr 10-year Rainfall=3.20"

	Area (ac)	CN	Description
*	3.760	72	City of Salem Pre-development, HSG C
	3.760	72	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
22.2					**Direct Entry, TR-55 Worksheet**

Subcatchment OSE: Existing Conditions Off-site



Summary for Subcatchment 1B: Developed Conditions Basin 1B

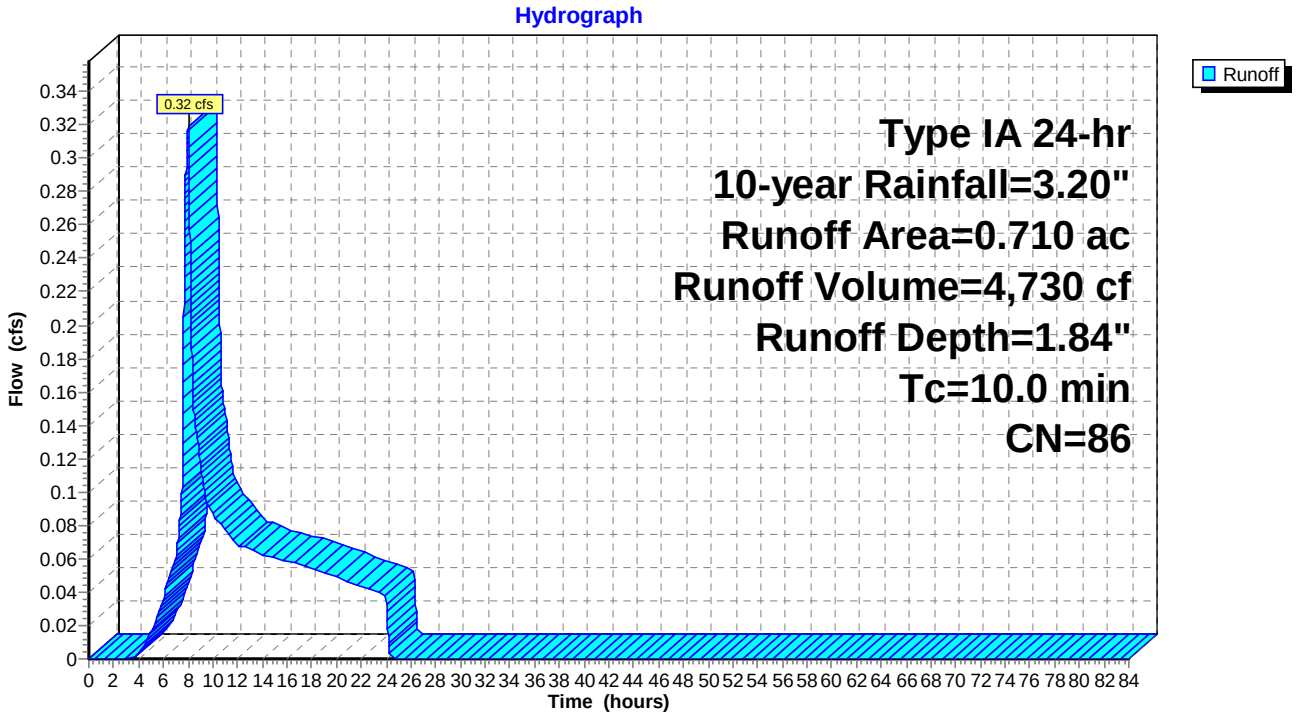
Runoff = 0.32 cfs @ 8.01 hrs, Volume= 4,730 cf, Depth= 1.84"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-84.00 hrs, dt= 0.01 hrs
Type IA 24-hr 10-year Rainfall=3.20"

	Area (ac)	CN	Description
*	0.350	98	Roofs,pavement, concrete, HSG C
	0.360	74	>75% Grass cover, Good, HSG C
	0.710	86	Weighted Average
	0.360	74	50.70% Pervious Area
	0.350	98	49.30% Impervious Area

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

Subcatchment 1B: Developed Conditions Basin 1B



Summary for Subcatchment 1: Developed Conditions Basin 1

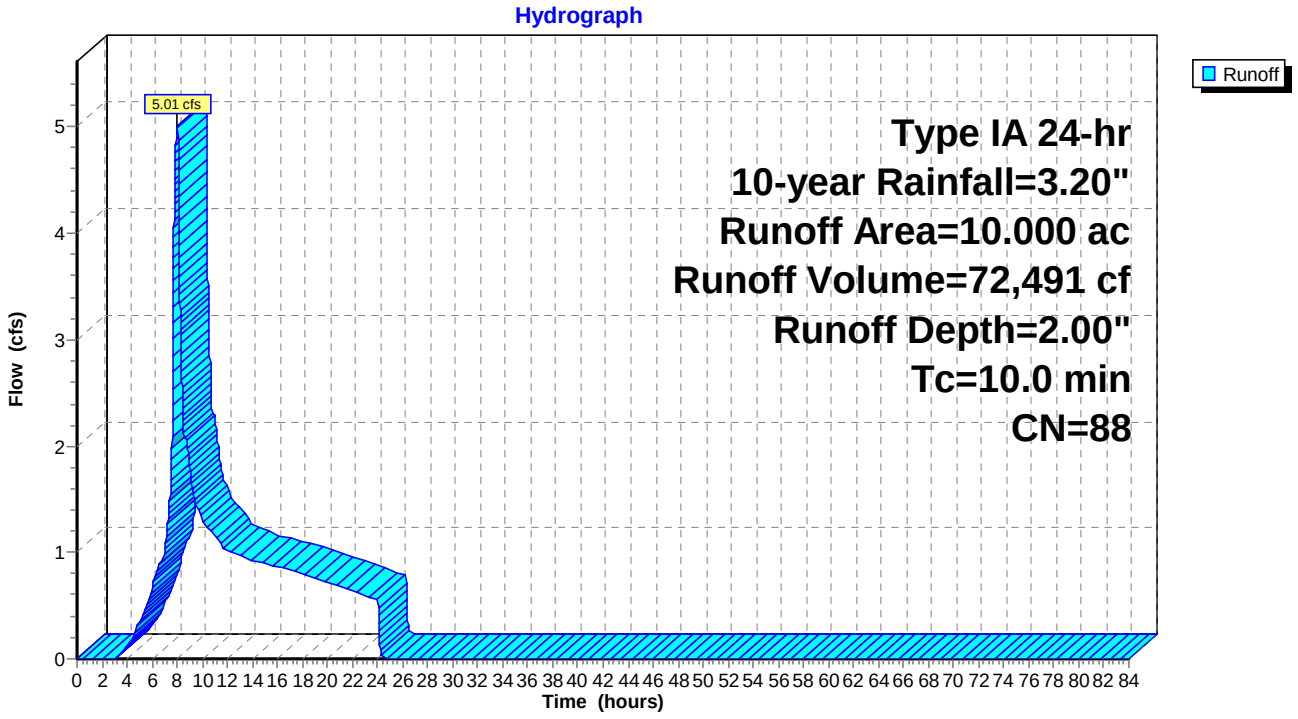
Runoff = 5.01 cfs @ 8.01 hrs, Volume= 72,491 cf, Depth= 2.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-84.00 hrs, dt= 0.01 hrs
Type IA 24-hr 10-year Rainfall=3.20"

	Area (ac)	CN	Description
*	6.000	98	Roofs,pavement, concrete, HSG C
	4.000	74	>75% Grass cover, Good, HSG C
	10.000	88	Weighted Average
	4.000	74	40.00% Pervious Area
	6.000	98	60.00% Impervious Area

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

Subcatchment 1: Developed Conditions Basin 1



Summary for Subcatchment OSD: Developed Conditions Off-site

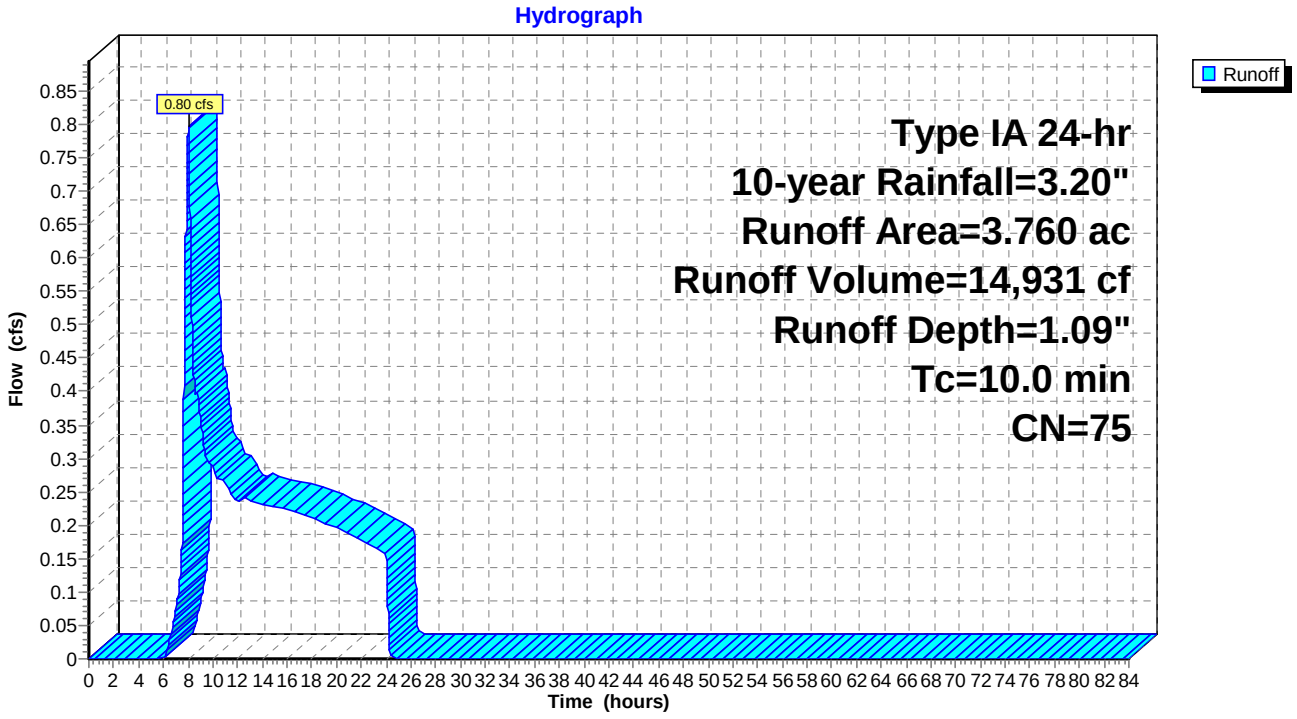
Runoff = 0.80 cfs @ 8.05 hrs, Volume= 14,931 cf, Depth= 1.09"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-84.00 hrs, dt= 0.01 hrs
Type IA 24-hr 10-year Rainfall=3.20"

	Area (ac)	CN	Description
*	3.260	72	City of Salem Pre-developed, HSG C
	0.500	98	Paved roads w/curbs & sewers, HSG C
	3.760	75	Weighted Average
	3.260	72	86.70% Pervious Area
	0.500	98	13.30% Impervious Area

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

Subcatchment OSD: Developed Conditions Off-site



Summary for Pond MH1: Control MH #1

Inflow Area = 599,386 sf, 47.24% Impervious, Inflow Depth = 1.75" for 10-year event
Inflow = 5.80 cfs @ 8.01 hrs, Volume= 87,422 cf
Outflow = 1.52 cfs @ 10.27 hrs, Volume= 77,544 cf, Atten= 74%, Lag= 135.5 min
Primary = 1.52 cfs @ 10.27 hrs, Volume= 77,544 cf

Routing by Stor-Ind method, Time Span= 0.00-84.00 hrs, dt= 0.01 hrs
Peak Elev= 544.35' @ 10.27 hrs Surf.Area= 8,500 sf Storage= 24,223 cf
Flood Elev= 561.00' Surf.Area= 8,500 sf Storage= 55,229 cf

Plug-Flow detention time= 345.4 min calculated for 77,535 cf (89% of inflow)
Center-of-Mass det. time= 274.7 min (1,057.5 - 782.8)

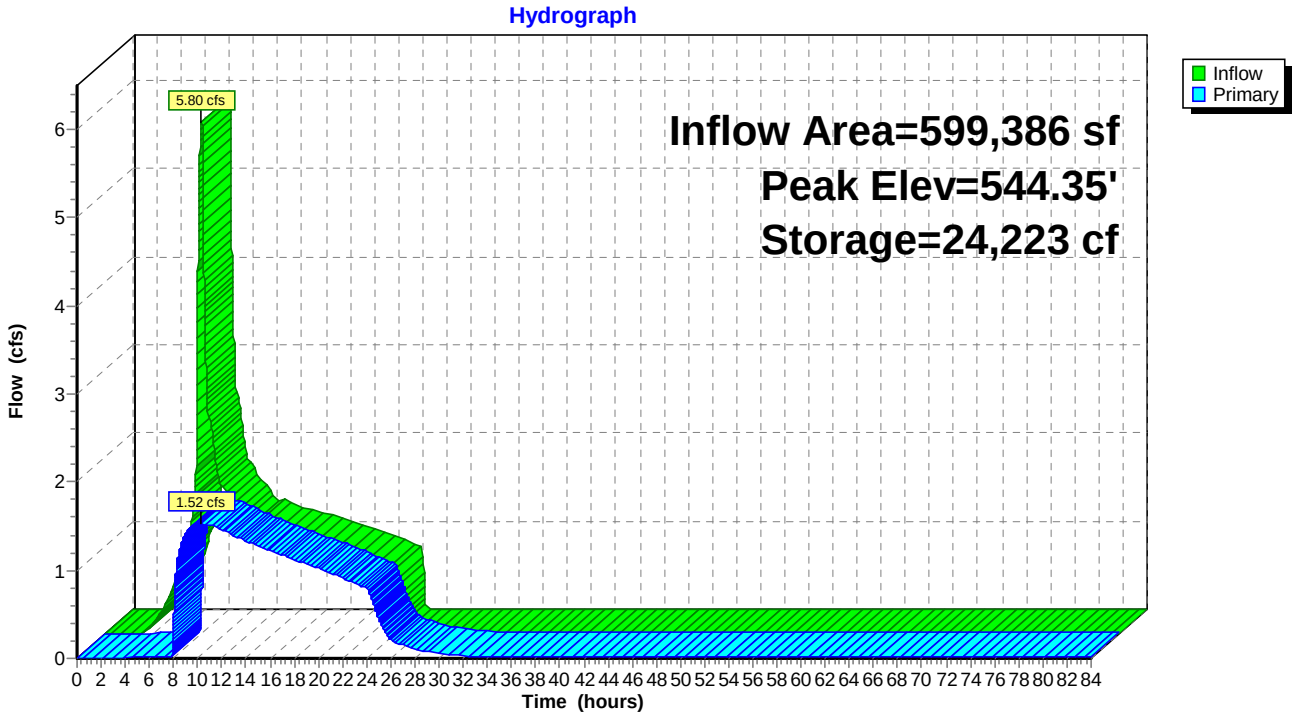
Volume	Invert	Avail.Storage	Storage Description
#1	537.00'	55,229 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
537.00	4	0.0	0	0
539.24	8,500	0.0	0	0
539.25	8,500	40.0	34	34
540.24	8,500	40.0	3,366	3,400
540.25	8,500	5.0	4	3,404
541.99	8,500	5.0	740	4,144
542.00	8,500	100.0	85	4,229
544.00	8,500	100.0	17,000	21,229
546.00	8,500	100.0	17,000	38,229
547.00	8,500	100.0	8,500	46,729
548.00	8,500	100.0	8,500	55,229

Device	Routing	Invert	Outlet Devices
#1	Primary	537.00'	**18.0" Round 18" Pipe** L= 62.0' RCP, rounded edge headwall, Ke= 0.100 Inlet / Outlet Invert= 537.00' / 535.00' S= 0.0323 '/' Cc= 0.900 n= 0.013, Flow Area= 1.77 sf
#2	Device 1	537.00'	**0.5" Vert. Orifice #1** C= 0.600 Limited to weir flow at low heads
#3	Device 1	543.00'	**7.5" Vert. Orifice #2** C= 0.600 Limited to weir flow at low heads
#4	Device 1	544.50'	**9.5" Vert. Orifice #3** C= 0.600 Limited to weir flow at low heads
#5	Device 1	547.00'	**24.0" Horiz. Overflow** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=1.52 cfs @ 10.27 hrs HW=544.35' (Free Discharge)
└**1=18" Pipe** (Passes 1.52 cfs of 26.59 cfs potential flow)
  ├**2=Orifice #1** (Orifice Controls 0.02 cfs @ 13.04 fps)
  ├**3=Orifice #2** (Orifice Controls 1.51 cfs @ 4.91 fps)
  ├**4=Orifice #3** (Controls 0.00 cfs)
  └**5=Overflow** (Controls 0.00 cfs)

Pond MH1: Control MH #1



Summary for Subcatchment OSN: Existing Conditions Off-site North

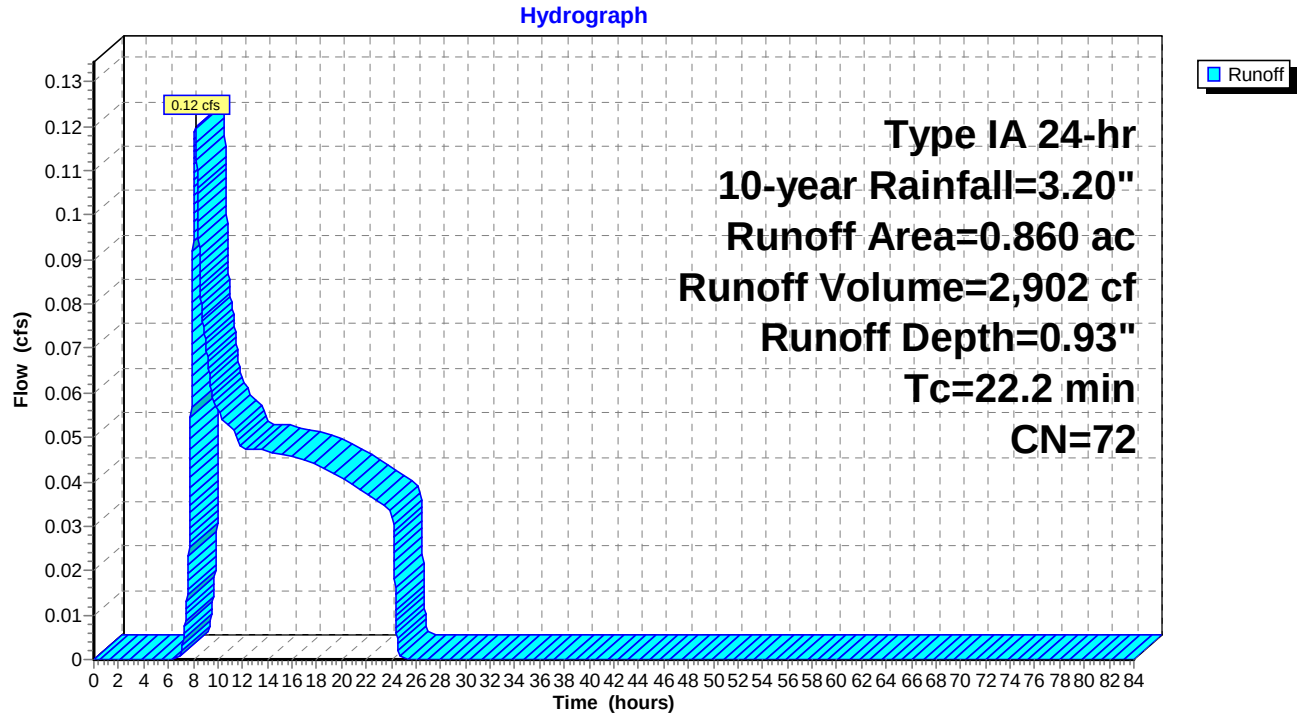
Runoff = 0.12 cfs @ 8.20 hrs, Volume= 2,902 cf, Depth= 0.93"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-84.00 hrs, dt= 0.01 hrs
Type IA 24-hr 10-year Rainfall=3.20"

	Area (ac)	CN	Description
*	0.860	72	City of Salem Pre-development, HSG C
	0.860	72	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
22.2					**Direct Entry, TR-55 Worksheet**

Subcatchment OSN: Existing Conditions Off-site North



Summary for Subcatchment NOS: Developed Conditions Off-site North

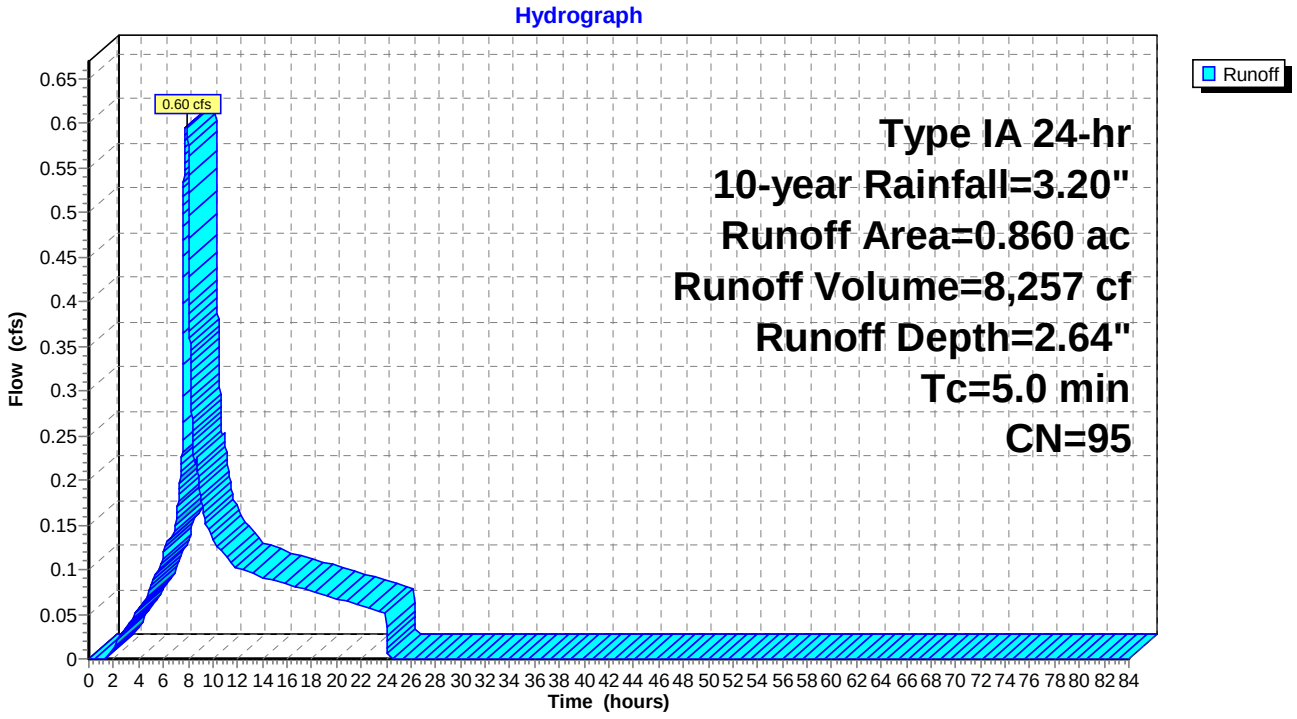
Runoff = 0.60 cfs @ 7.88 hrs, Volume= 8,257 cf, Depth= 2.64"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-84.00 hrs, dt= 0.01 hrs
Type IA 24-hr 10-year Rainfall=3.20"

	Area (ac)	CN	Description
*	0.760	98	Roofs,pavement, concrete, HSG C
	0.100	74	>75% Grass cover, Good, HSG C
	0.860	95	Weighted Average
	0.100	74	11.63% Pervious Area
	0.760	98	88.37% Impervious Area

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

Subcatchment NOS: Developed Conditions Off-site North



Summary for Pond MH2: Control MH #2

Inflow Area = 636,847 sf, 49.66% Impervious, Inflow Depth > 1.62" for 10-year event
Inflow = 1.65 cfs @ 10.01 hrs, Volume= 85,801 cf
Outflow = 1.65 cfs @ 10.04 hrs, Volume= 85,801 cf, Atten= 0%, Lag= 1.8 min
Primary = 1.65 cfs @ 10.04 hrs, Volume= 85,801 cf

Routing by Stor-Ind method, Time Span= 0.00-84.00 hrs, dt= 0.01 hrs
Peak Elev= 502.77' @ 10.04 hrs Surf.Area= 356 sf Storage= 131 cf

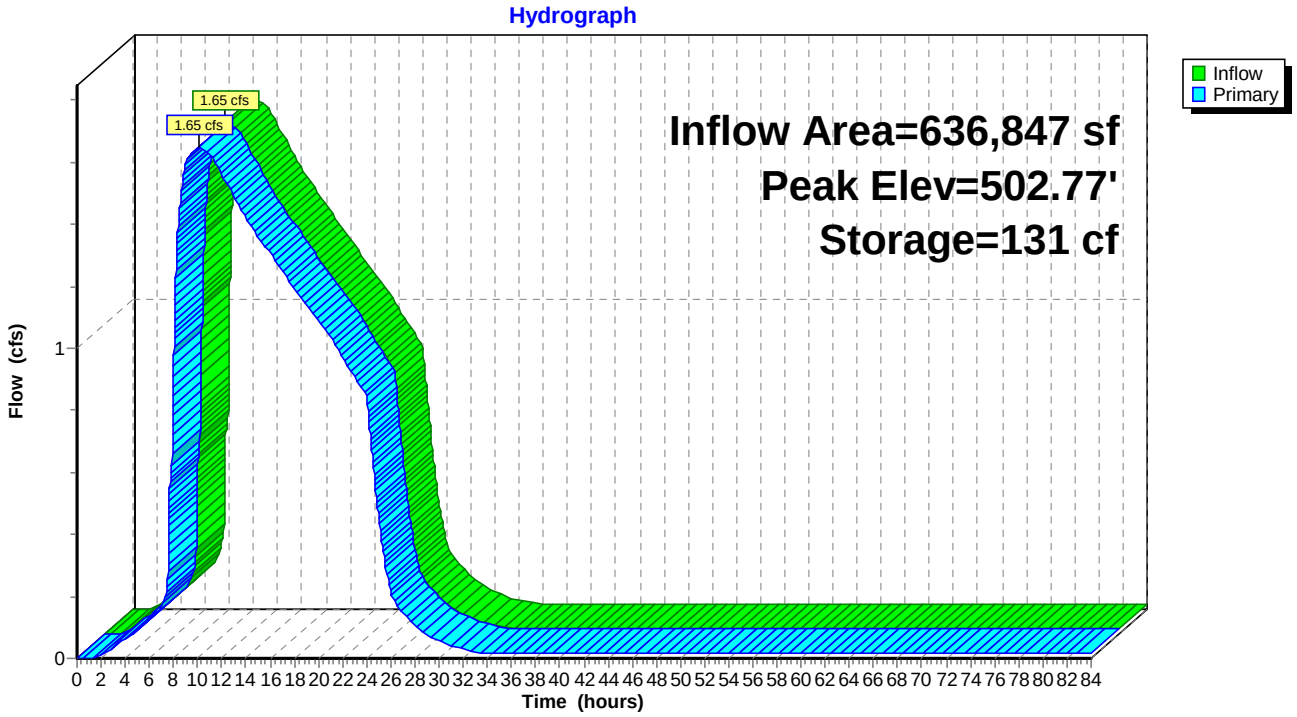
Plug-Flow detention time= 1.0 min calculated for 85,801 cf (100% of inflow)
Center-of-Mass det. time= 1.0 min (1,024.2 - 1,023.2)

Volume	Invert	Avail.Storage	Storage Description
#1	501.96'	2,356 cf	**60.0" Round 60" Detention Pipe** L= 120.0' S= 0.0050 '/'

Device	Routing	Invert	Outlet Devices
#1	Primary	499.77'	**18.0" Round Culvert** L= 110.0' RCP, rounded edge headwall, Ke= 0.100 Inlet / Outlet Invert= 499.77' / 484.72' S= 0.1368 '/' Cc= 0.900 n= 0.013, Flow Area= 1.77 sf
#2	Device 1	501.96'	**10.0" Vert. Orifice #1** C= 0.600 Limited to weir flow at low heads
#3	Device 1	507.50'	**18.0" Horiz. Overflow** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=1.66 cfs @ 10.04 hrs HW=502.77' (Free Discharge)
└**1=Culvert** (Passes 1.66 cfs of 17.41 cfs potential flow)
  ├**2=Orifice #1** (Orifice Controls 1.66 cfs @ 3.06 fps)
  └**3=Overflow** (Controls 0.00 cfs)

Pond MH2: Control MH #2



Summary for Subcatchment 1E: Existing Conditions Site

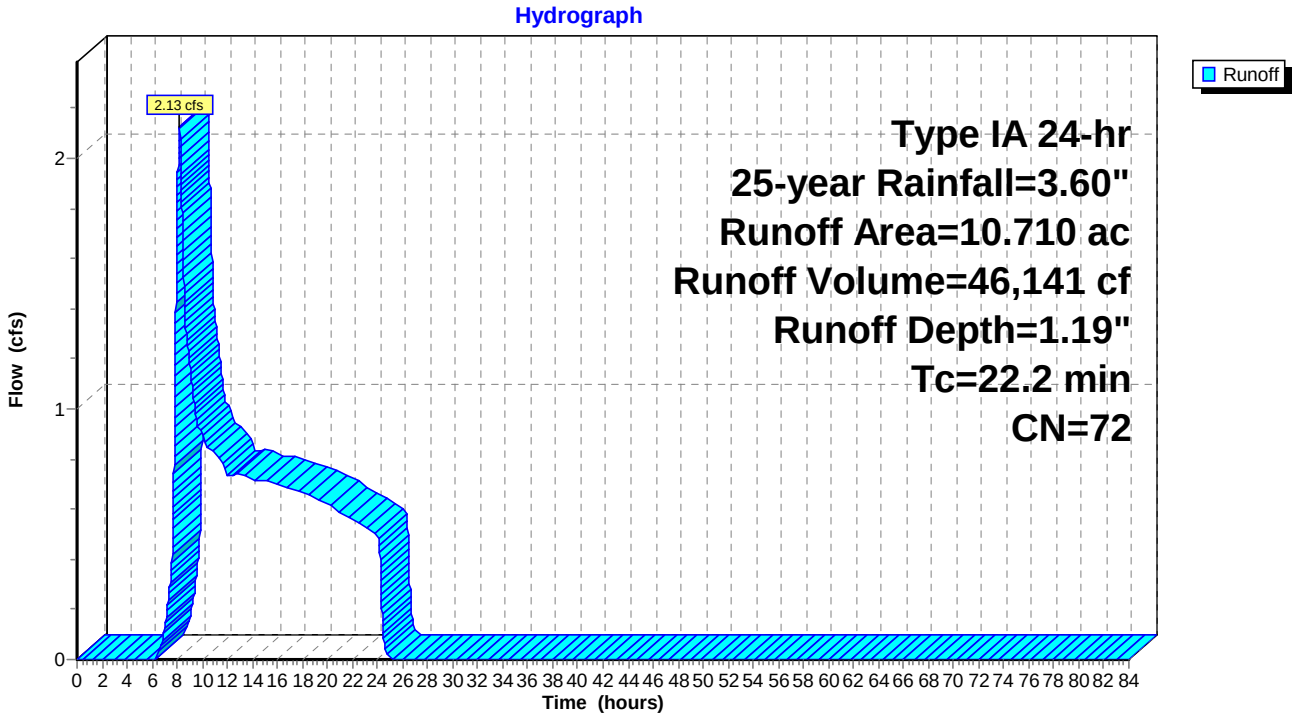
Runoff = 2.13 cfs @ 8.17 hrs, Volume= 46,141 cf, Depth= 1.19"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-84.00 hrs, dt= 0.01 hrs
Type IA 24-hr 25-year Rainfall=3.60"

	Area (ac)	CN	Description
*	10.710	72	City of Salem Pre-development, HSG C
	10.710	72	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
22.2					**Direct Entry, TR-55 Worksheet**

Subcatchment 1E: Existing Conditions Site



Summary for Subcatchment OSE: Existing Conditions Off-site

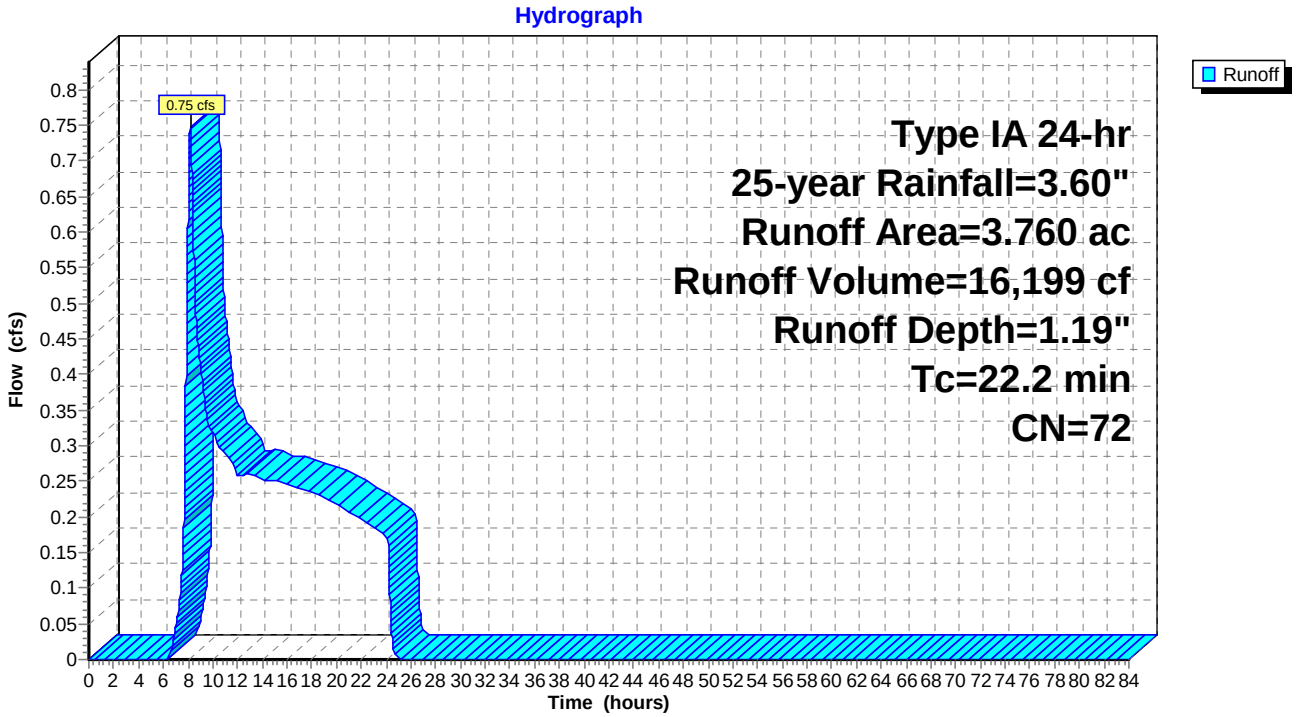
Runoff = 0.75 cfs @ 8.17 hrs, Volume= 16,199 cf, Depth= 1.19"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-84.00 hrs, dt= 0.01 hrs
Type IA 24-hr 25-year Rainfall=3.60"

	Area (ac)	CN	Description
*	3.760	72	City of Salem Pre-development, HSG C
	3.760	72	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
22.2					**Direct Entry, TR-55 Worksheet**

Subcatchment OSE: Existing Conditions Off-site



Summary for Subcatchment 1B: Developed Conditions Basin 1B

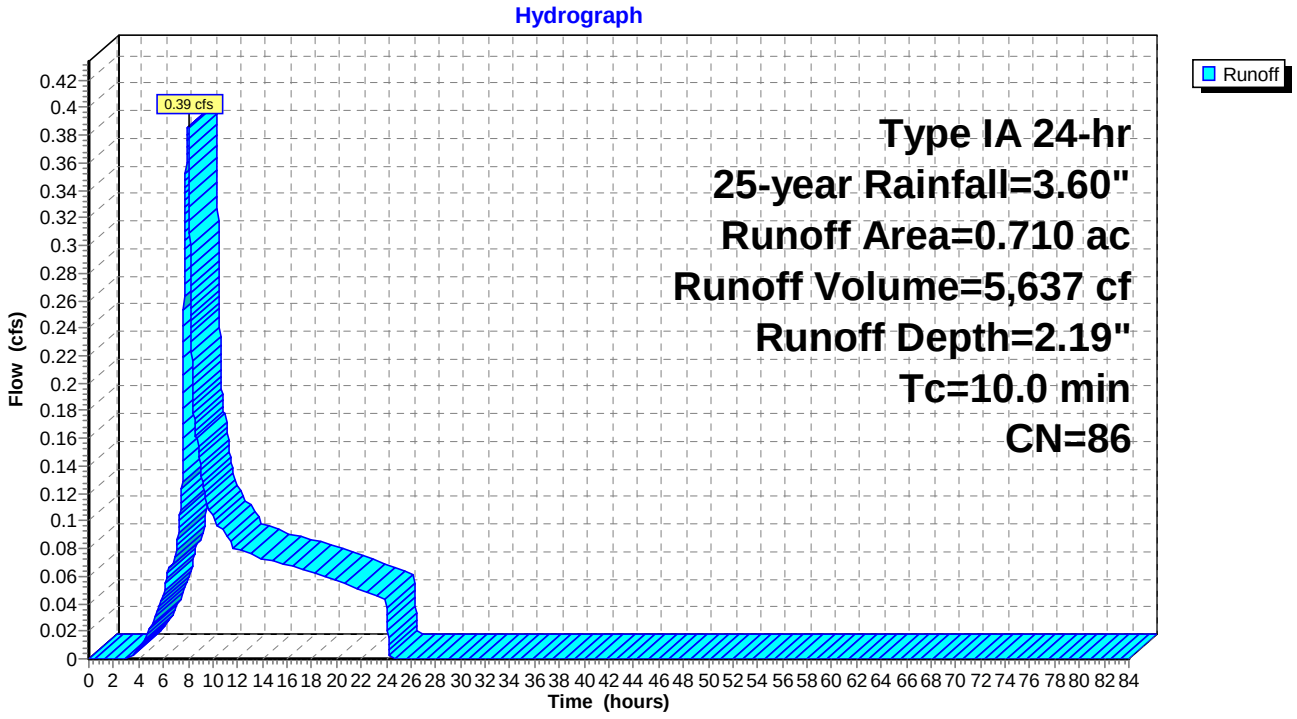
Runoff = 0.39 cfs @ 8.01 hrs, Volume= 5,637 cf, Depth= 2.19"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-84.00 hrs, dt= 0.01 hrs
Type IA 24-hr 25-year Rainfall=3.60"

	Area (ac)	CN	Description
*	0.350	98	Roofs,pavement, concrete, HSG C
	0.360	74	>75% Grass cover, Good, HSG C
	0.710	86	Weighted Average
	0.360	74	50.70% Pervious Area
	0.350	98	49.30% Impervious Area

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

Subcatchment 1B: Developed Conditions Basin 1B



Summary for Subcatchment 1: Developed Conditions Basin 1

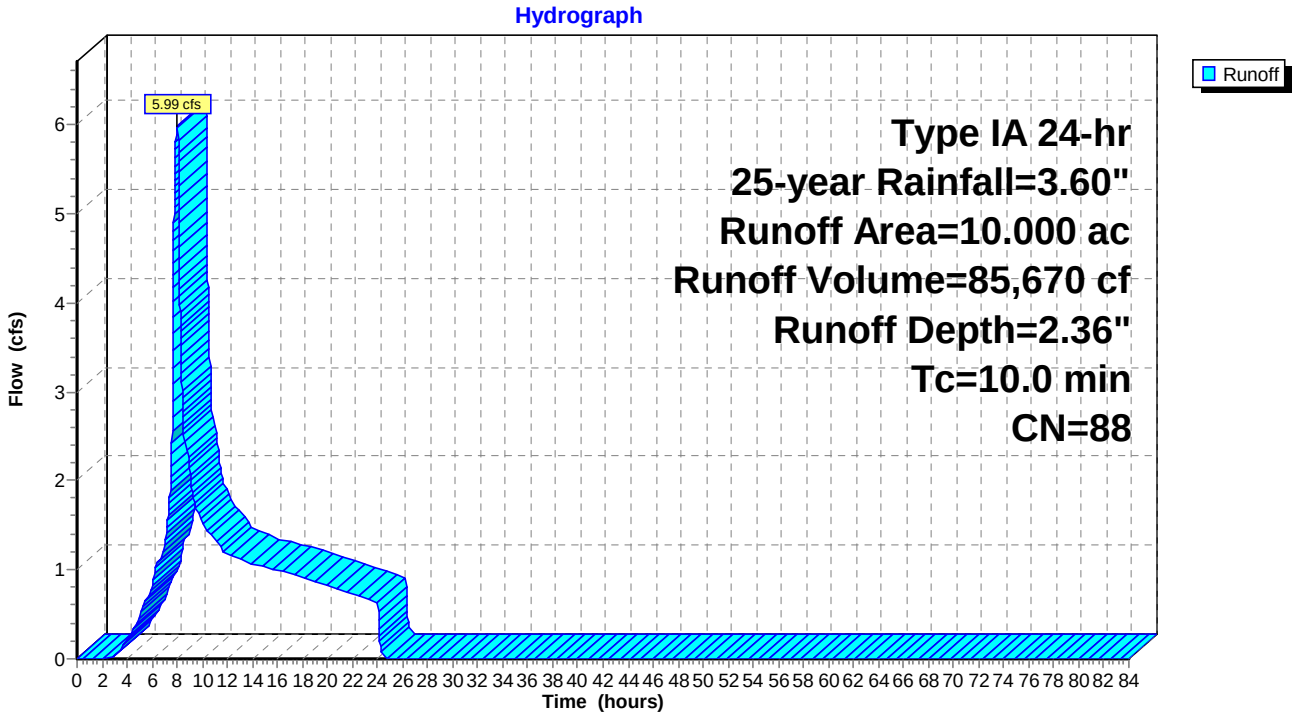
Runoff = 5.99 cfs @ 7.99 hrs, Volume= 85,670 cf, Depth= 2.36"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-84.00 hrs, dt= 0.01 hrs
Type IA 24-hr 25-year Rainfall=3.60"

	Area (ac)	CN	Description
*	6.000	98	Roofs,pavement, concrete, HSG C
	4.000	74	>75% Grass cover, Good, HSG C
	10.000	88	Weighted Average
	4.000	74	40.00% Pervious Area
	6.000	98	60.00% Impervious Area

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

Subcatchment 1: Developed Conditions Basin 1



Summary for Subcatchment OSD: Developed Conditions Off-site

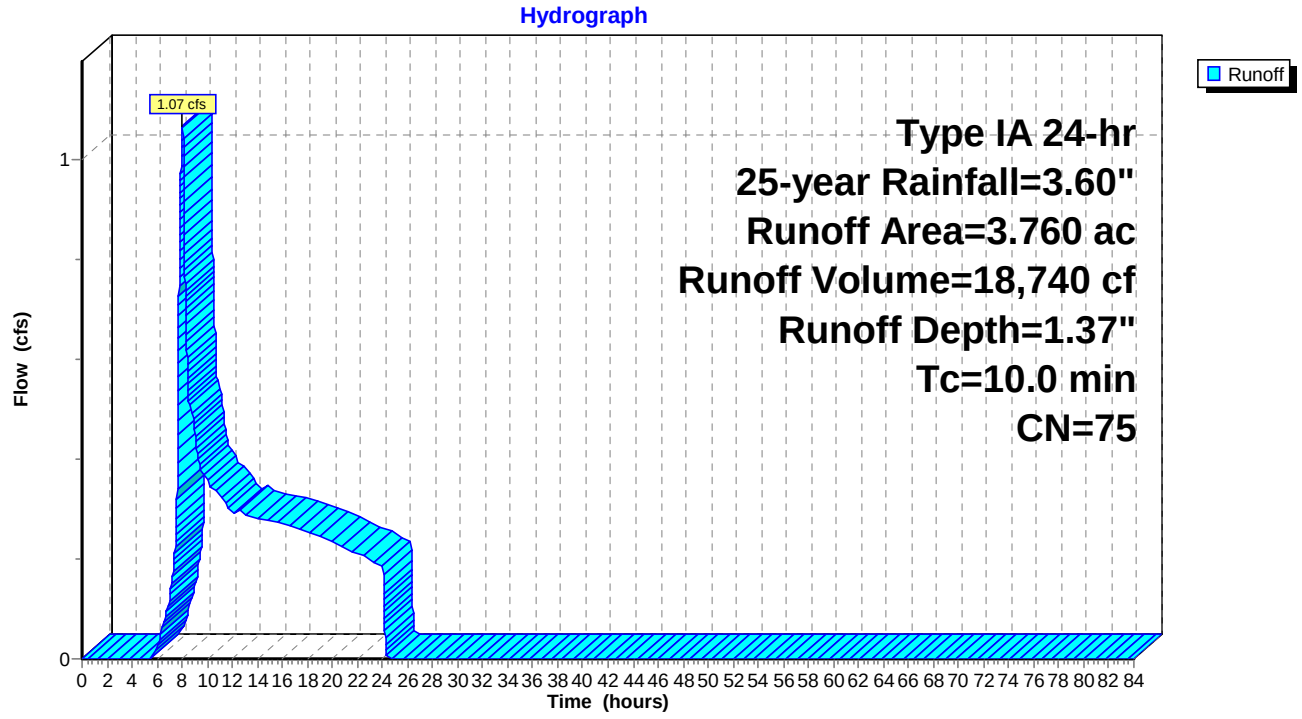
Runoff = 1.07 cfs @ 8.04 hrs, Volume= 18,740 cf, Depth= 1.37"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-84.00 hrs, dt= 0.01 hrs
Type IA 24-hr 25-year Rainfall=3.60"

	Area (ac)	CN	Description
*	3.260	72	City of Salem Pre-developed, HSG C
	0.500	98	Paved roads w/curbs & sewers, HSG C
	3.760	75	Weighted Average
	3.260	72	86.70% Pervious Area
	0.500	98	13.30% Impervious Area

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

Subcatchment OSD: Developed Conditions Off-site



Summary for Pond MH1: Control MH #1

Inflow Area = 599,386 sf, 47.24% Impervious, Inflow Depth = 2.09" for 25-year event
Inflow = 7.05 cfs @ 8.01 hrs, Volume= 104,410 cf
Outflow = 2.14 cfs @ 9.37 hrs, Volume= 94,516 cf, Atten= 70%, Lag= 81.6 min
Primary = 2.14 cfs @ 9.37 hrs, Volume= 94,516 cf

Routing by Stor-Ind method, Time Span= 0.00-84.00 hrs, dt= 0.01 hrs
Peak Elev= 544.79' @ 9.37 hrs Surf.Area= 8,500 sf Storage= 27,908 cf
Flood Elev= 561.00' Surf.Area= 8,500 sf Storage= 55,229 cf

Plug-Flow detention time= 312.9 min calculated for 94,504 cf (91% of inflow)
Center-of-Mass det. time= 252.4 min (1,025.7 - 773.2)

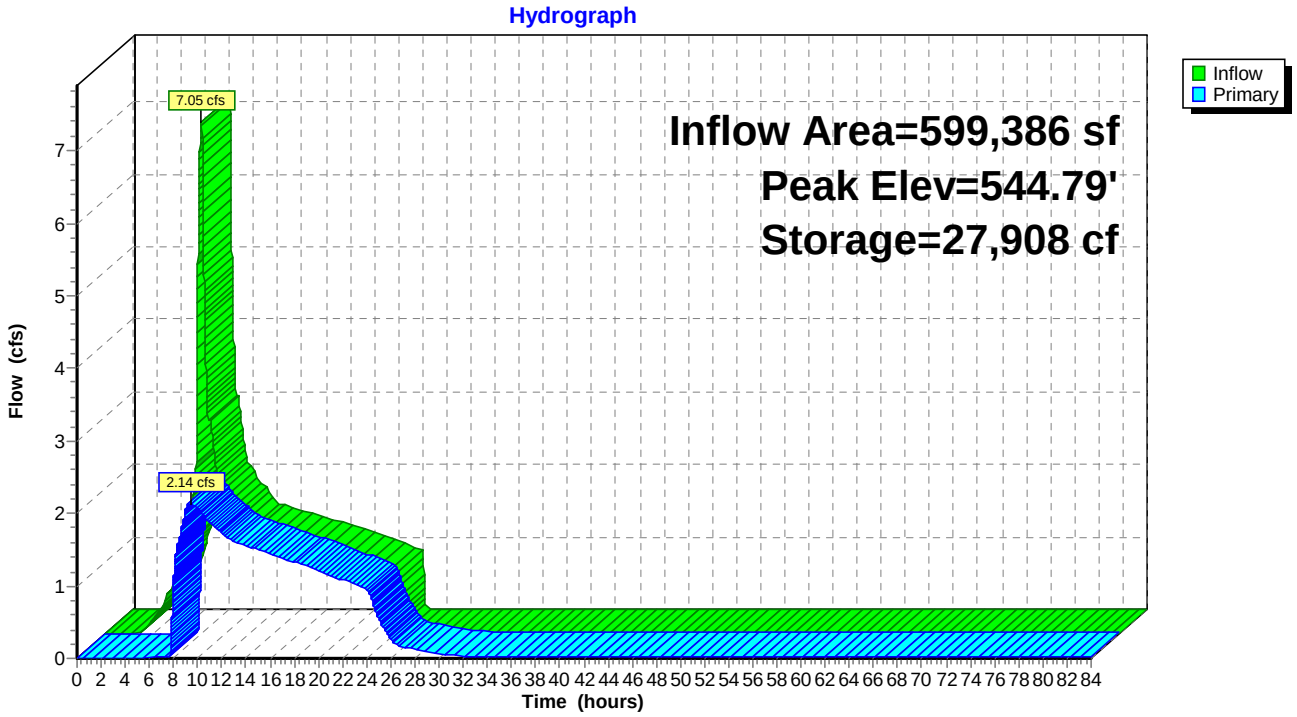
Volume	Invert	Avail.Storage	Storage Description
#1	537.00'	55,229 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
537.00	4	0.0	0	0
539.24	8,500	0.0	0	0
539.25	8,500	40.0	34	34
540.24	8,500	40.0	3,366	3,400
540.25	8,500	5.0	4	3,404
541.99	8,500	5.0	740	4,144
542.00	8,500	100.0	85	4,229
544.00	8,500	100.0	17,000	21,229
546.00	8,500	100.0	17,000	38,229
547.00	8,500	100.0	8,500	46,729
548.00	8,500	100.0	8,500	55,229

Device	Routing	Invert	Outlet Devices
#1	Primary	537.00'	**18.0" Round 18" Pipe** L= 62.0' RCP, rounded edge headwall, Ke= 0.100 Inlet / Outlet Invert= 537.00' / 535.00' S= 0.0323 '/' Cc= 0.900 n= 0.013, Flow Area= 1.77 sf
#2	Device 1	537.00'	**0.5" Vert. Orifice #1** C= 0.600 Limited to weir flow at low heads
#3	Device 1	543.00'	**7.5" Vert. Orifice #2** C= 0.600 Limited to weir flow at low heads
#4	Device 1	544.50'	**9.5" Vert. Orifice #3** C= 0.600 Limited to weir flow at low heads
#5	Device 1	547.00'	**24.0" Horiz. Overflow** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=2.10 cfs @ 9.37 hrs HW=544.79' (Free Discharge)
└**1=18" Pipe** (Passes 2.10 cfs of 27.31 cfs potential flow)
  ├**2=Orifice #1** (Orifice Controls 0.02 cfs @ 13.42 fps)
  ├**3=Orifice #2** (Orifice Controls 1.79 cfs @ 5.84 fps)
  ├**4=Orifice #3** (Orifice Controls 0.29 cfs @ 1.82 fps)
  └**5=Overflow** (Controls 0.00 cfs)

Pond MH1: Control MH #1



Summary for Subcatchment OSN: Existing Conditions Off-site North

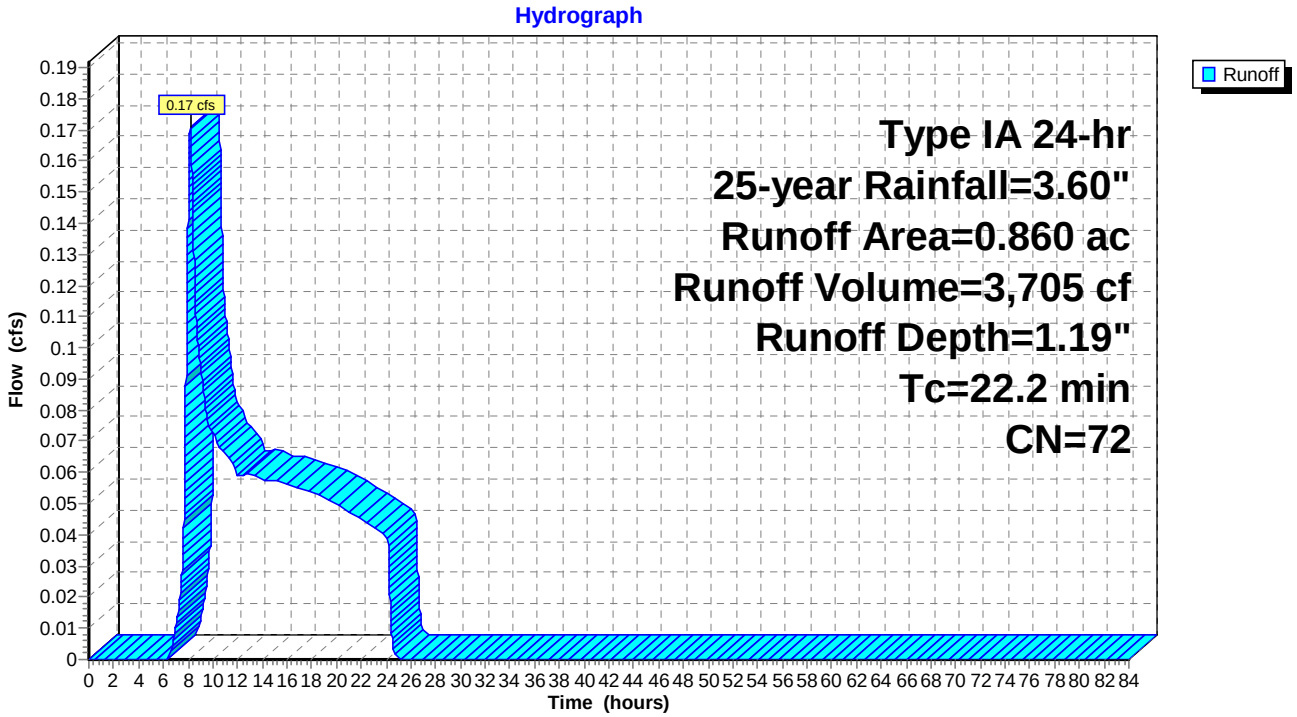
Runoff = 0.17 cfs @ 8.17 hrs, Volume= 3,705 cf, Depth= 1.19"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-84.00 hrs, dt= 0.01 hrs
Type IA 24-hr 25-year Rainfall=3.60"

	Area (ac)	CN	Description
*	0.860	72	City of Salem Pre-development, HSG C
	0.860	72	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
22.2					**Direct Entry, TR-55 Worksheet**

Subcatchment OSN: Existing Conditions Off-site North



Summary for Subcatchment NOS: Developed Conditions Off-site North

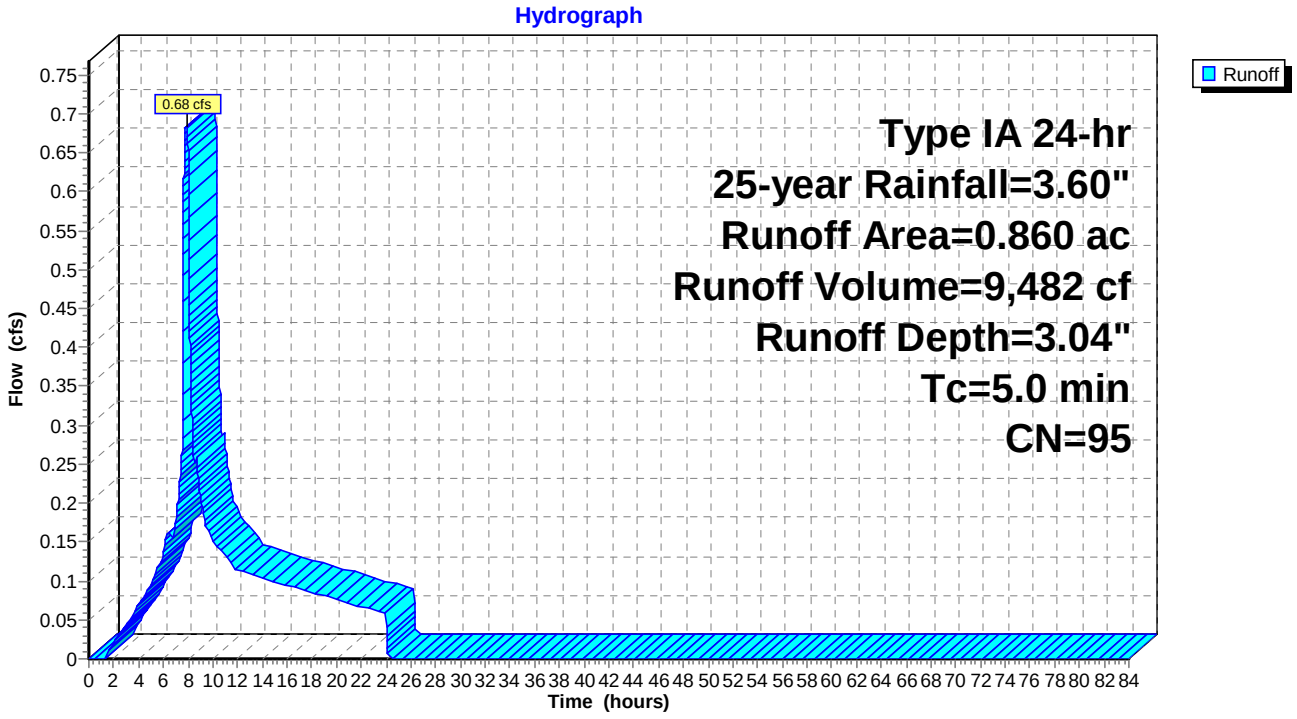
Runoff = 0.68 cfs @ 7.87 hrs, Volume= 9,482 cf, Depth= 3.04"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-84.00 hrs, dt= 0.01 hrs
Type IA 24-hr 25-year Rainfall=3.60"

	Area (ac)	CN	Description
*	0.760	98	Roofs,pavement, concrete, HSG C
	0.100	74	>75% Grass cover, Good, HSG C
	0.860	95	Weighted Average
	0.100	74	11.63% Pervious Area
	0.760	98	88.37% Impervious Area

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

Subcatchment NOS: Developed Conditions Off-site North



Summary for Pond MH2: Control MH #2

Inflow Area = 636,847 sf, 49.66% Impervious, Inflow Depth > 1.96" for 25-year event
Inflow = 2.31 cfs @ 9.29 hrs, Volume= 103,998 cf
Outflow = 2.31 cfs @ 9.39 hrs, Volume= 103,997 cf, Atten= 0%, Lag= 5.7 min
Primary = 2.31 cfs @ 9.39 hrs, Volume= 103,997 cf

Routing by Stor-Ind method, Time Span= 0.00-84.00 hrs, dt= 0.01 hrs
Peak Elev= 503.15' @ 9.39 hrs Surf.Area= 456 sf Storage= 286 cf

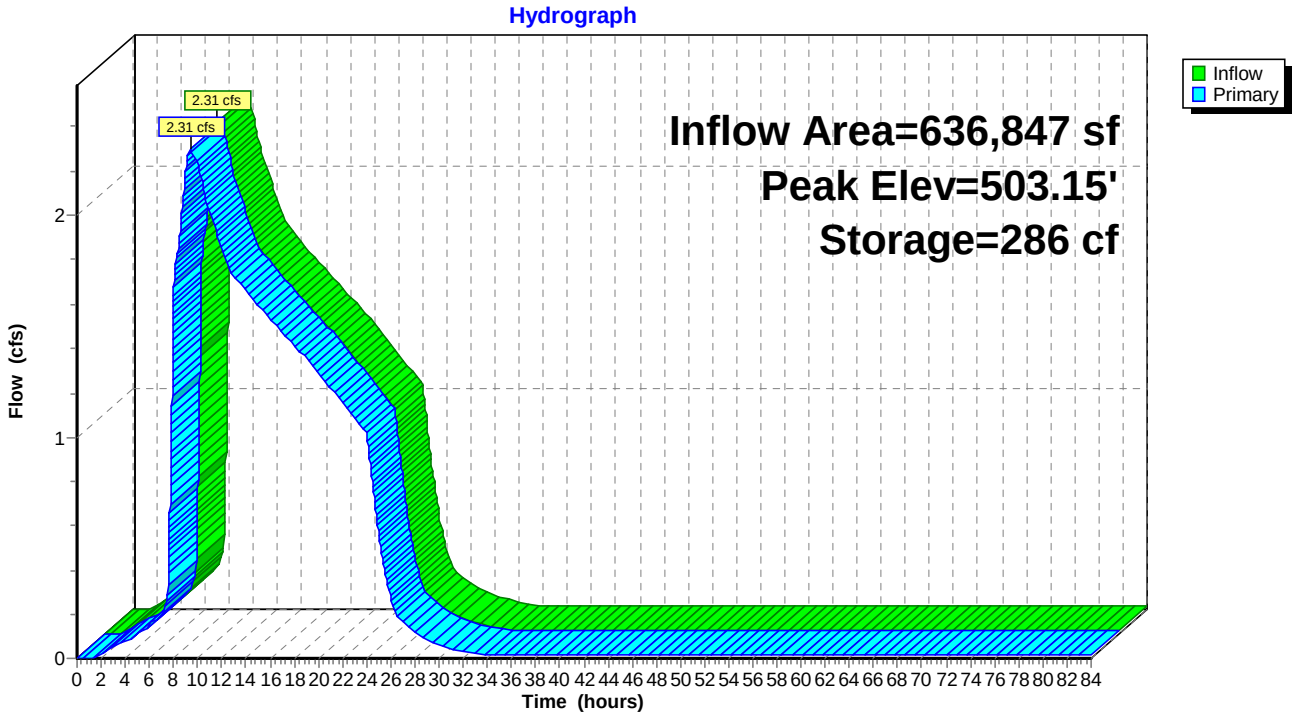
Plug-Flow detention time= 1.3 min calculated for 103,997 cf (100% of inflow)
Center-of-Mass det. time= 1.3 min (996.8 - 995.5)

Volume	Invert	Avail.Storage	Storage Description
#1	501.96'	2,356 cf	**60.0" Round 60" Detention Pipe** L= 120.0' S= 0.0050 '/'

Device	Routing	Invert	Outlet Devices
#1	Primary	499.77'	**18.0" Round Culvert** L= 110.0' RCP, rounded edge headwall, Ke= 0.100 Inlet / Outlet Invert= 499.77' / 484.72' S= 0.1368 '/' Cc= 0.900 n= 0.013, Flow Area= 1.77 sf
#2	Device 1	501.96'	**10.0" Vert. Orifice #1** C= 0.600 Limited to weir flow at low heads
#3	Device 1	507.50'	**18.0" Horiz. Overflow** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=2.31 cfs @ 9.39 hrs HW=503.15' (Free Discharge)
└**1=Culvert** (Passes 2.31 cfs of 18.81 cfs potential flow)
└**2=Orifice #1** (Orifice Controls 2.31 cfs @ 4.23 fps)
└**3=Overflow** (Controls 0.00 cfs)

Pond MH2: Control MH #2



Summary for Subcatchment 1E: Existing Conditions Site

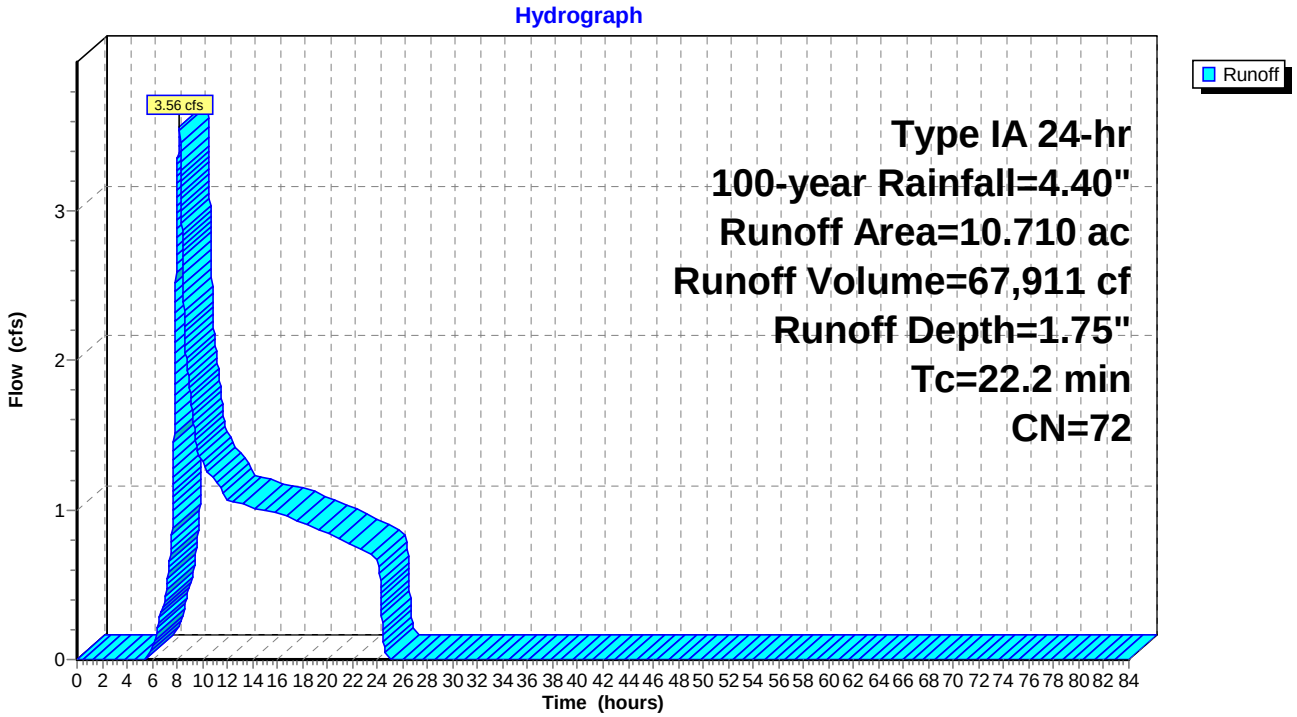
Runoff = 3.56 cfs @ 8.16 hrs, Volume= 67,911 cf, Depth= 1.75"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-84.00 hrs, dt= 0.01 hrs
Type IA 24-hr 100-year Rainfall=4.40"

	Area (ac)	CN	Description
*	10.710	72	City of Salem Pre-development, HSG C
	10.710	72	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
22.2					**Direct Entry, TR-55 Worksheet**

Subcatchment 1E: Existing Conditions Site



Summary for Subcatchment OSE: Existing Conditions Off-site

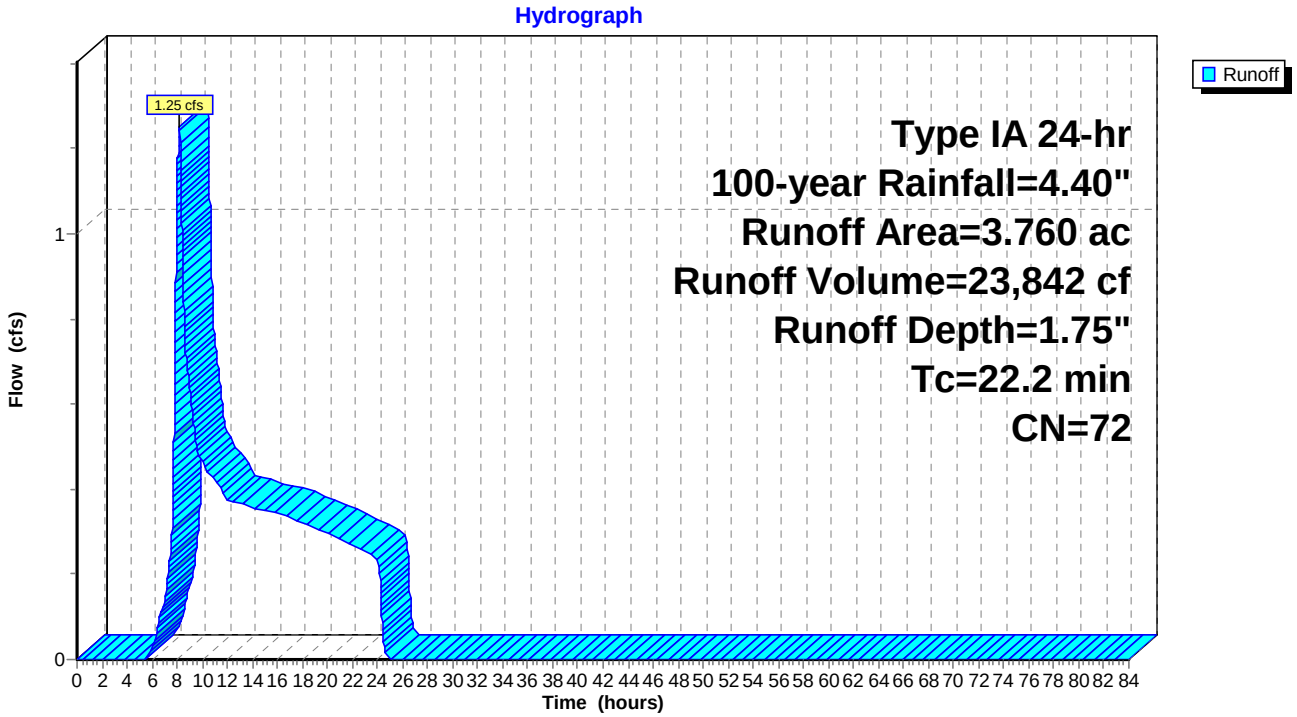
Runoff = 1.25 cfs @ 8.16 hrs, Volume= 23,842 cf, Depth= 1.75"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-84.00 hrs, dt= 0.01 hrs
Type IA 24-hr 100-year Rainfall=4.40"

	Area (ac)	CN	Description
*	3.760	72	City of Salem Pre-development, HSG C
	3.760	72	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
22.2					**Direct Entry, TR-55 Worksheet**

Subcatchment OSE: Existing Conditions Off-site



Summary for Subcatchment 1B: Developed Conditions Basin 1B

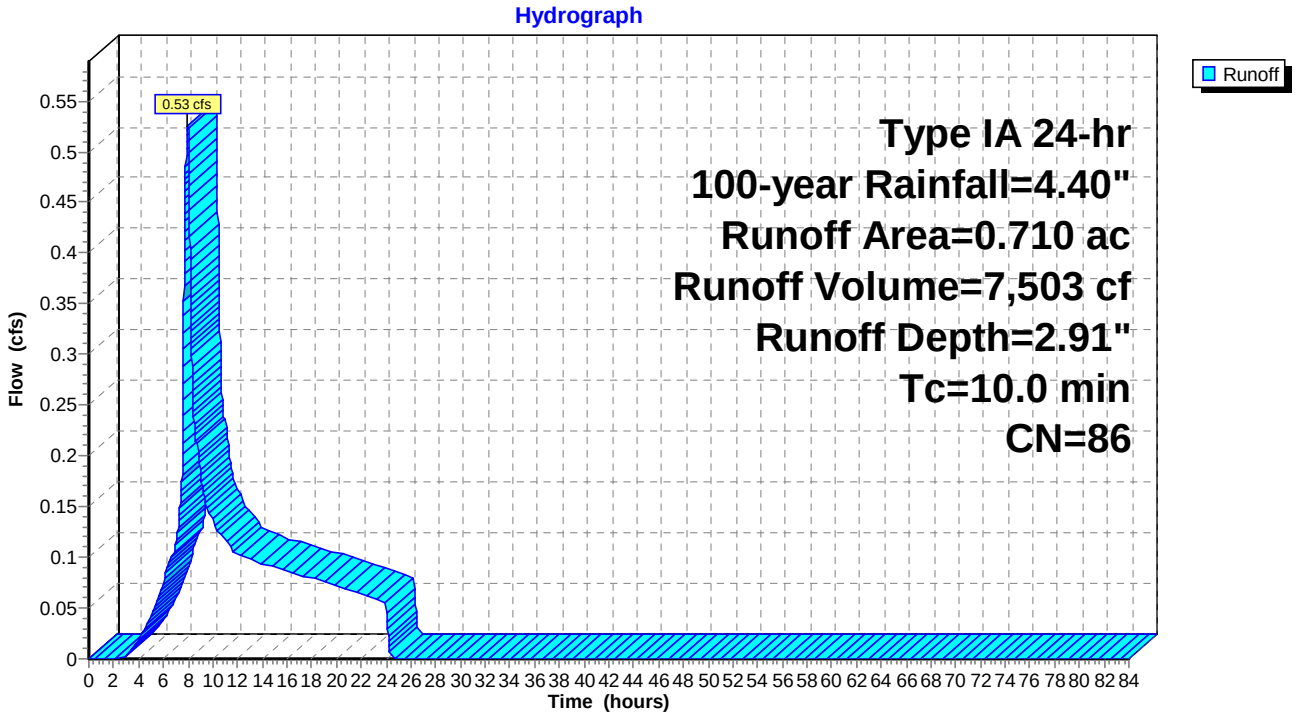
Runoff = 0.53 cfs @ 7.99 hrs, Volume= 7,503 cf, Depth= 2.91"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-84.00 hrs, dt= 0.01 hrs
Type IA 24-hr 100-year Rainfall=4.40"

	Area (ac)	CN	Description
*	0.350	98	Roofs,pavement, concrete, HSG C
	0.360	74	>75% Grass cover, Good, HSG C
	0.710	86	Weighted Average
	0.360	74	50.70% Pervious Area
	0.350	98	49.30% Impervious Area

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

Subcatchment 1B: Developed Conditions Basin 1B



Summary for Subcatchment 1: Developed Conditions Basin 1

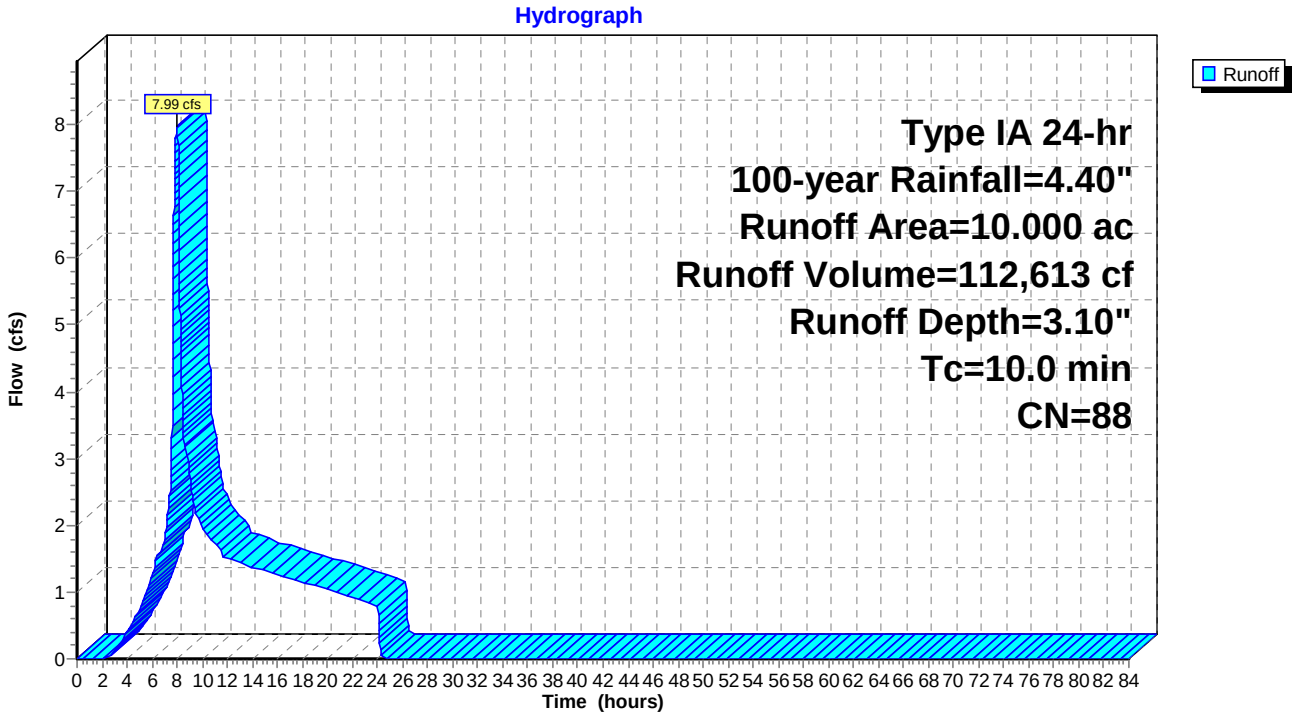
Runoff = 7.99 cfs @ 7.99 hrs, Volume= 112,613 cf, Depth= 3.10"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-84.00 hrs, dt= 0.01 hrs
Type IA 24-hr 100-year Rainfall=4.40"

	Area (ac)	CN	Description
*	6.000	98	Roofs,pavement, concrete, HSG C
	4.000	74	>75% Grass cover, Good, HSG C
	10.000	88	Weighted Average
	4.000	74	40.00% Pervious Area
	6.000	98	60.00% Impervious Area

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

Subcatchment 1: Developed Conditions Basin 1



Summary for Subcatchment OSD: Developed Conditions Off-site

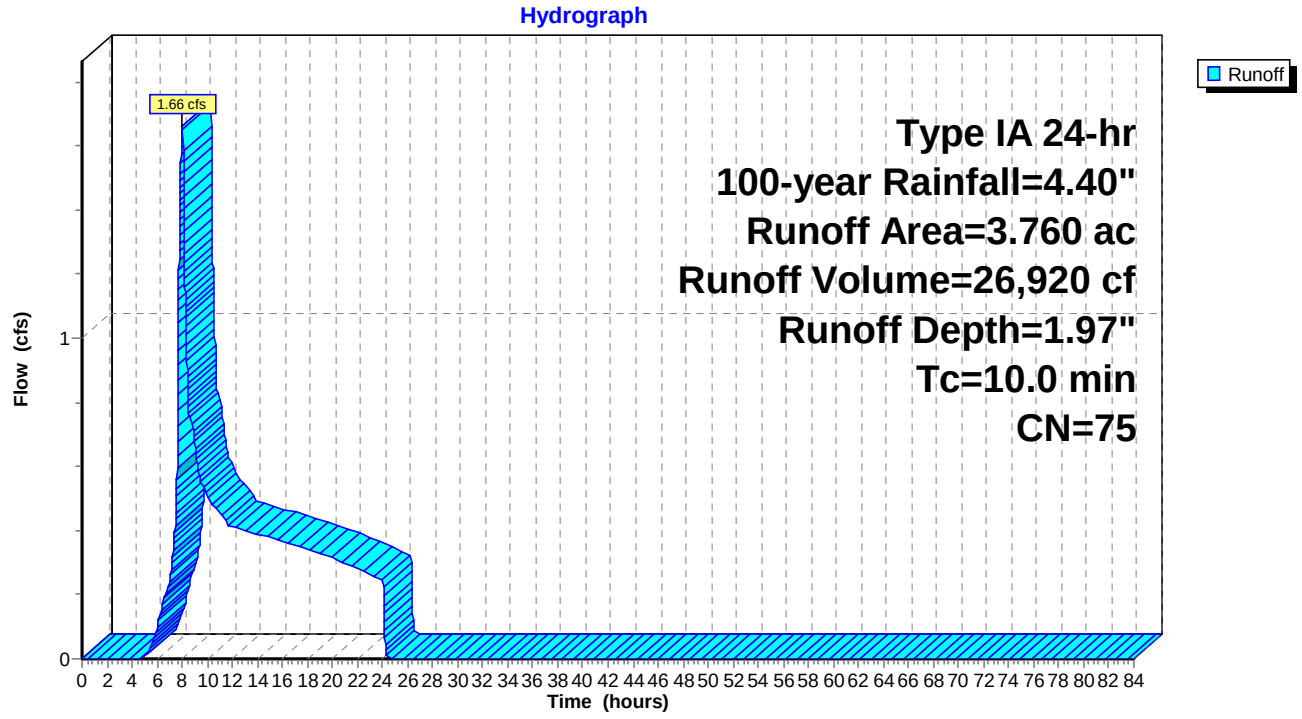
Runoff = 1.66 cfs @ 8.03 hrs, Volume= 26,920 cf, Depth= 1.97"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-84.00 hrs, dt= 0.01 hrs
Type IA 24-hr 100-year Rainfall=4.40"

	Area (ac)	CN	Description
*	3.260	72	City of Salem Pre-developed, HSG C
	0.500	98	Paved roads w/curbs & sewers, HSG C
	3.760	75	Weighted Average
	3.260	72	86.70% Pervious Area
	0.500	98	13.30% Impervious Area

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

Subcatchment OSD: Developed Conditions Off-site



Summary for Pond MH1: Control MH #1

Inflow Area = 599,386 sf, 47.24% Impervious, Inflow Depth = 2.79" for 100-year event
Inflow = 9.63 cfs @ 7.99 hrs, Volume= 139,533 cf
Outflow = 3.90 cfs @ 8.76 hrs, Volume= 129,604 cf, Atten= 60%, Lag= 46.3 min
Primary = 3.90 cfs @ 8.76 hrs, Volume= 129,604 cf

Routing by Stor-Ind method, Time Span= 0.00-84.00 hrs, dt= 0.01 hrs
Peak Elev= 545.43' @ 8.76 hrs Surf.Area= 8,500 sf Storage= 33,378 cf
Flood Elev= 561.00' Surf.Area= 8,500 sf Storage= 55,229 cf

Plug-Flow detention time= 261.0 min calculated for 129,588 cf (93% of inflow)
Center-of-Mass det. time= 214.2 min (972.2 - 758.0)

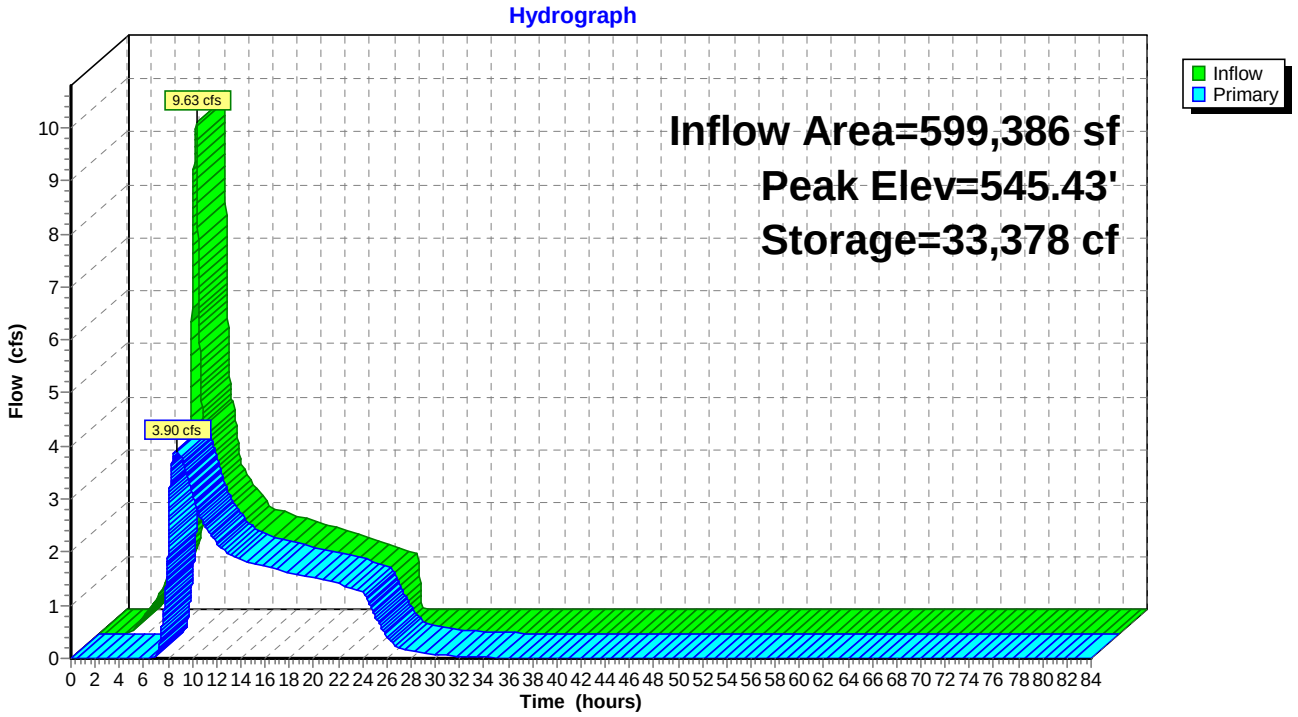
Volume	Invert	Avail.Storage	Storage Description
#1	537.00'	55,229 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
537.00	4	0.0	0	0
539.24	8,500	0.0	0	0
539.25	8,500	40.0	34	34
540.24	8,500	40.0	3,366	3,400
540.25	8,500	5.0	4	3,404
541.99	8,500	5.0	740	4,144
542.00	8,500	100.0	85	4,229
544.00	8,500	100.0	17,000	21,229
546.00	8,500	100.0	17,000	38,229
547.00	8,500	100.0	8,500	46,729
548.00	8,500	100.0	8,500	55,229

Device	Routing	Invert	Outlet Devices
#1	Primary	537.00'	**18.0" Round 18" Pipe** L= 62.0' RCP, rounded edge headwall, Ke= 0.100 Inlet / Outlet Invert= 537.00' / 535.00' S= 0.0323 '/' Cc= 0.900 n= 0.013, Flow Area= 1.77 sf
#2	Device 1	537.00'	**0.5" Vert. Orifice #1** C= 0.600 Limited to weir flow at low heads
#3	Device 1	543.00'	**7.5" Vert. Orifice #2** C= 0.600 Limited to weir flow at low heads
#4	Device 1	544.50'	**9.5" Vert. Orifice #3** C= 0.600 Limited to weir flow at low heads
#5	Device 1	547.00'	**24.0" Horiz. Overflow** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=3.90 cfs @ 8.76 hrs HW=545.43' (Free Discharge)
└**1=18" Pipe** (Passes 3.90 cfs of 28.35 cfs potential flow)
  ├**2=Orifice #1** (Orifice Controls 0.02 cfs @ 13.96 fps)
  ├**3=Orifice #2** (Orifice Controls 2.15 cfs @ 7.01 fps)
  ├**4=Orifice #3** (Orifice Controls 1.73 cfs @ 3.52 fps)
  └**5=Overflow** (Controls 0.00 cfs)

Pond MH1: Control MH #1



Summary for Subcatchment OSN: Existing Conditions Off-site North

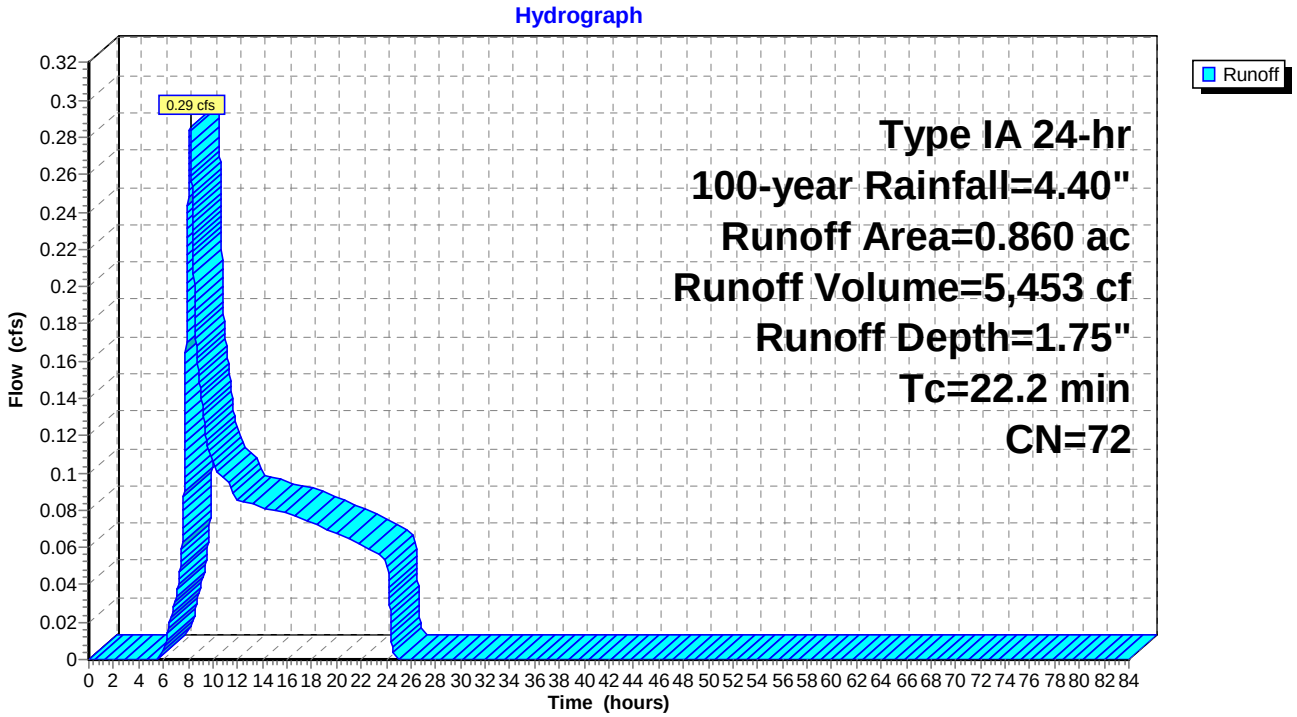
Runoff = 0.29 cfs @ 8.16 hrs, Volume= 5,453 cf, Depth= 1.75"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-84.00 hrs, dt= 0.01 hrs
Type IA 24-hr 100-year Rainfall=4.40"

	Area (ac)	CN	Description
*	0.860	72	City of Salem Pre-development, HSG C
	0.860	72	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
22.2					**Direct Entry, TR-55 Worksheet**

Subcatchment OSN: Existing Conditions Off-site North



Summary for Subcatchment NOS: Developed Conditions Off-site North

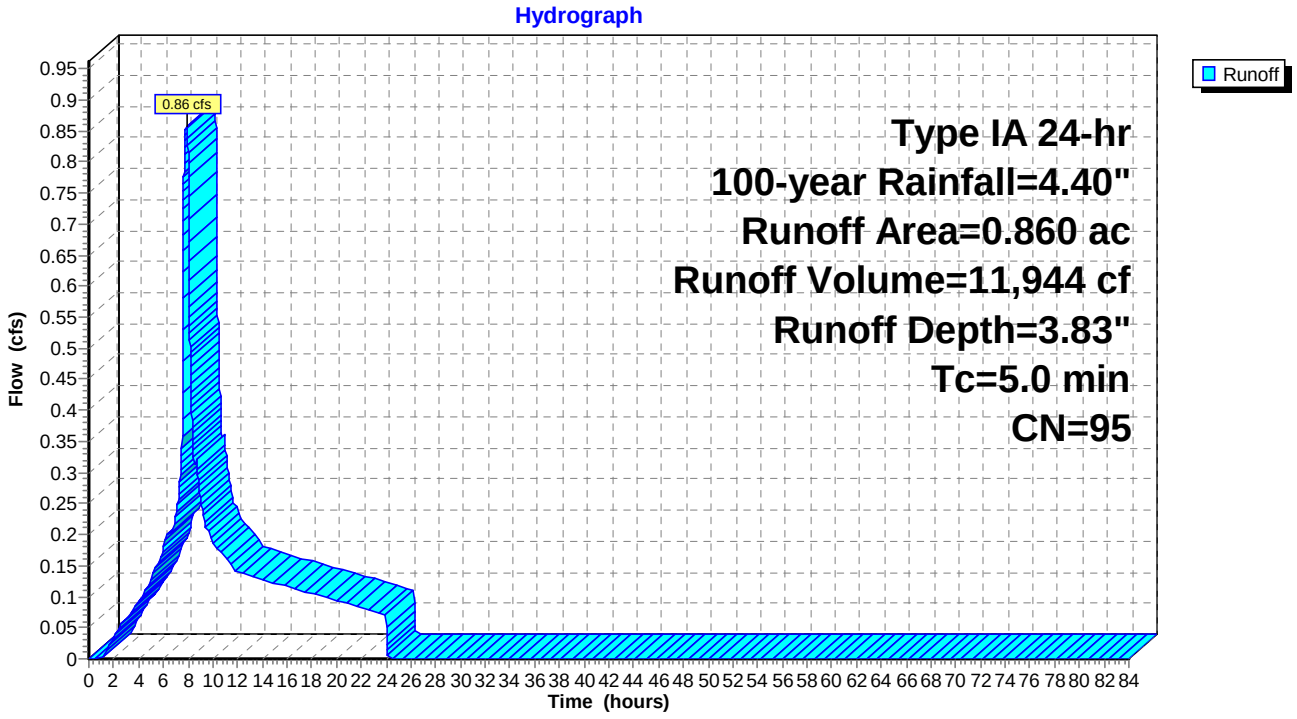
Runoff = 0.86 cfs @ 7.87 hrs, Volume= 11,944 cf, Depth= 3.83"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-84.00 hrs, dt= 0.01 hrs
Type IA 24-hr 100-year Rainfall=4.40"

	Area (ac)	CN	Description
*	0.760	98	Roofs,pavement, concrete, HSG C
	0.100	74	>75% Grass cover, Good, HSG C
	0.860	95	Weighted Average
	0.100	74	11.63% Pervious Area
	0.760	98	88.37% Impervious Area

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

Subcatchment NOS: Developed Conditions Off-site North



Summary for Pond MH2: Control MH #2

Inflow Area = 636,847 sf, 49.66% Impervious, Inflow Depth > 2.67" for 100-year event
Inflow = 4.21 cfs @ 8.62 hrs, Volume= 141,547 cf
Outflow = 4.16 cfs @ 8.89 hrs, Volume= 141,547 cf, Atten= 1%, Lag= 16.2 min
Primary = 4.16 cfs @ 8.89 hrs, Volume= 141,547 cf

Routing by Stor-Ind method, Time Span= 0.00-84.00 hrs, dt= 0.01 hrs
Peak Elev= 504.89' @ 8.89 hrs Surf.Area= 598 sf Storage= 1,256 cf

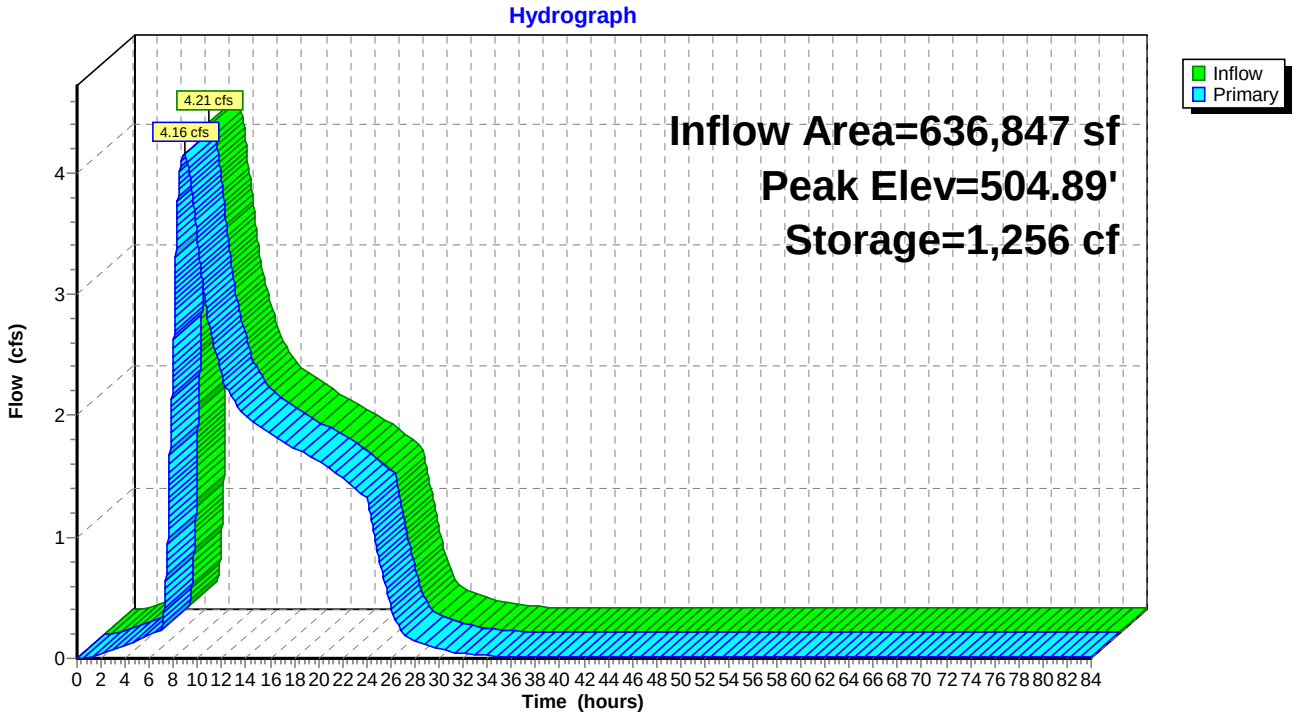
Plug-Flow detention time= 2.2 min calculated for 141,547 cf (100% of inflow)
Center-of-Mass det. time= 2.1 min (950.2 - 948.1)

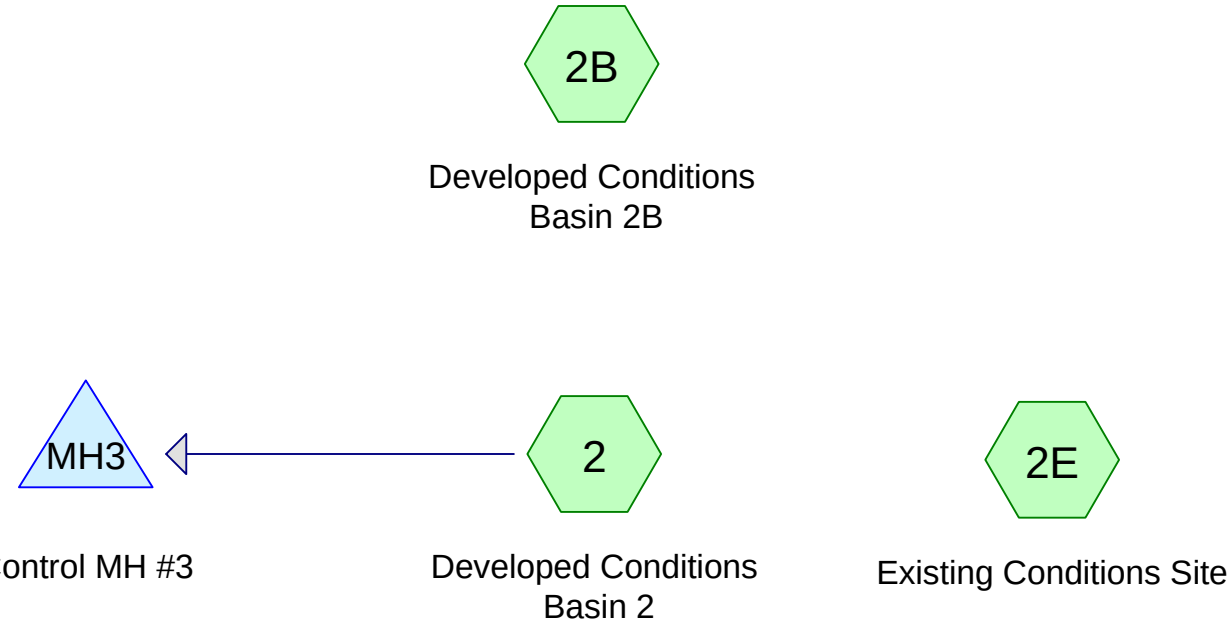
Volume	Invert	Avail.Storage	Storage Description
#1	501.96'	2,356 cf	**60.0" Round 60" Detention Pipe** L= 120.0' S= 0.0050 '/'

Device	Routing	Invert	Outlet Devices
#1	Primary	499.77'	**18.0" Round Culvert** L= 110.0' RCP, rounded edge headwall, Ke= 0.100 Inlet / Outlet Invert= 499.77' / 484.72' S= 0.1368 '/' Cc= 0.900 n= 0.013, Flow Area= 1.77 sf
#2	Device 1	501.96'	**10.0" Vert. Orifice #1** C= 0.600 Limited to weir flow at low heads
#3	Device 1	507.50'	**18.0" Horiz. Overflow** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=4.16 cfs @ 8.89 hrs HW=504.89' (Free Discharge)
└**1=Culvert** (Passes 4.16 cfs of 24.26 cfs potential flow)
  └**2=Orifice #1** (Orifice Controls 4.16 cfs @ 7.63 fps)
  └**3=Overflow** (Controls 0.00 cfs)

Pond MH2: Control MH #2





Subcat Reach Pond Link

Routing Diagram for 20210112 Devon Estates Phase 2 Master
Prepared by Multitech Engineering Services, Inc., Printed 2/17/2021
HydroCAD® 10.10-4a s/n 09412 © 2020 HydroCAD Software Solutions LLC

Summary for Subcatchment 2E: Existing Conditions Site

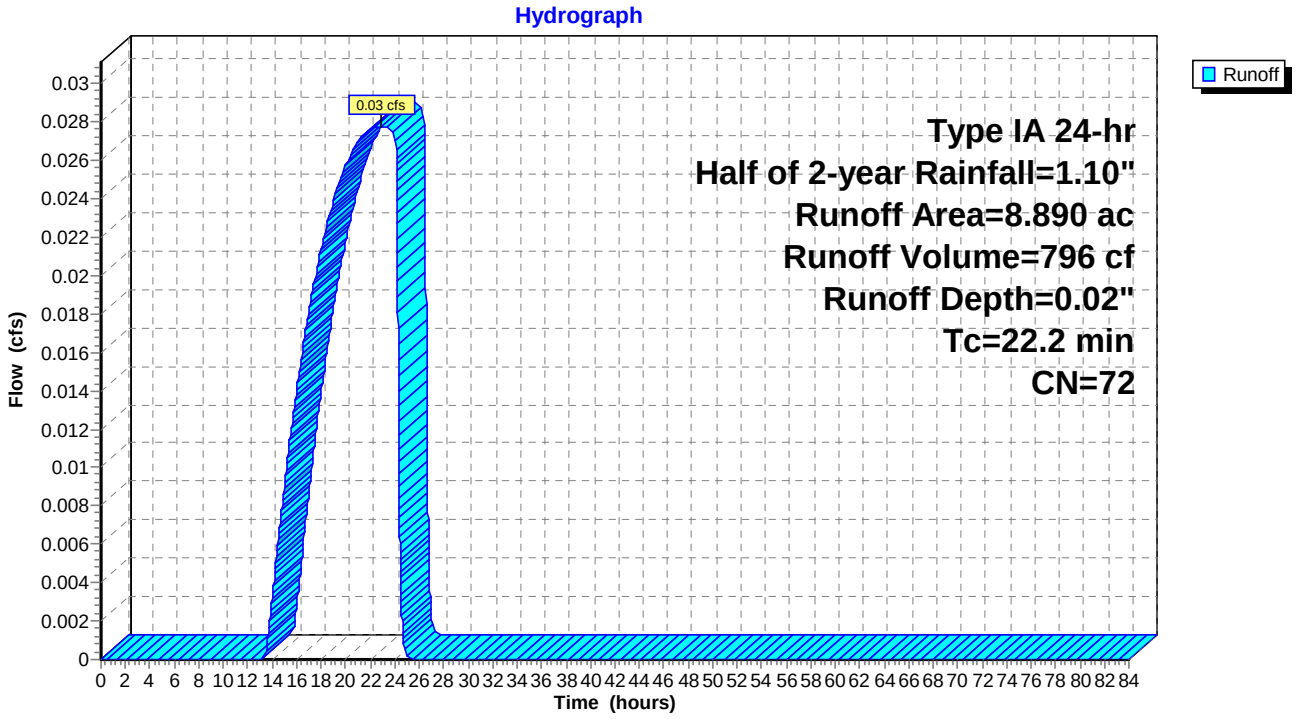
Runoff = 0.03 cfs @ 22.82 hrs, Volume= 796 cf, Depth= 0.02"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-84.00 hrs, dt= 0.01 hrs
Type IA 24-hr Half of 2-year Rainfall=1.10"

	Area (ac)	CN	Description
*	8.890	72	City of Salem Pre-development, HSG C
	8.890	72	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
22.2					**Direct Entry, TR-55 Worksheet**

Subcatchment 2E: Existing Conditions Site



Summary for Subcatchment 2B: Developed Conditions Basin 2B

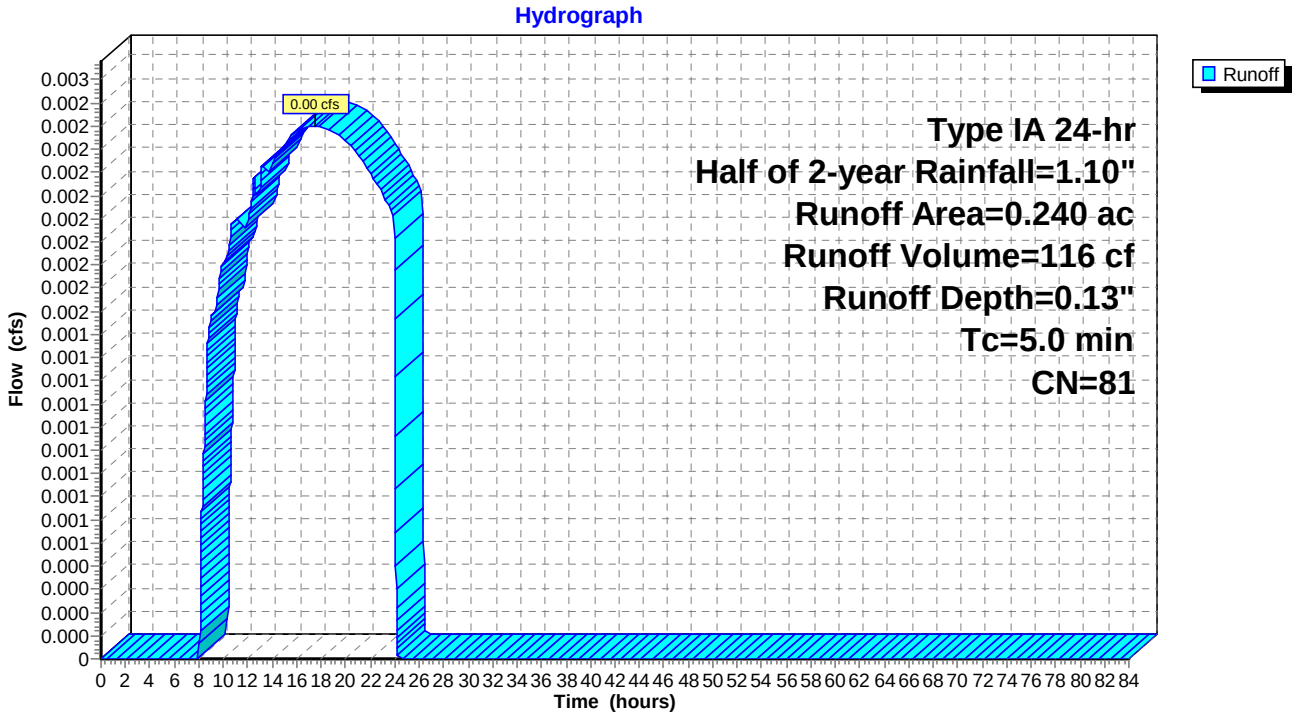
Runoff = 0.00 cfs @ 17.45 hrs, Volume= 116 cf, Depth= 0.13"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-84.00 hrs, dt= 0.01 hrs
Type IA 24-hr Half of 2-year Rainfall=1.10"

	Area (ac)	CN	Description
*	0.070	98	Roofs,pavement, concrete, HSG C
	0.170	74	>75% Grass cover, Good, HSG C
	0.240	81	Weighted Average
	0.170	74	70.83% Pervious Area
	0.070	98	29.17% Impervious Area

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

Subcatchment 2B: Developed Conditions Basin 2B



Summary for Subcatchment 2: Developed Conditions Basin 2

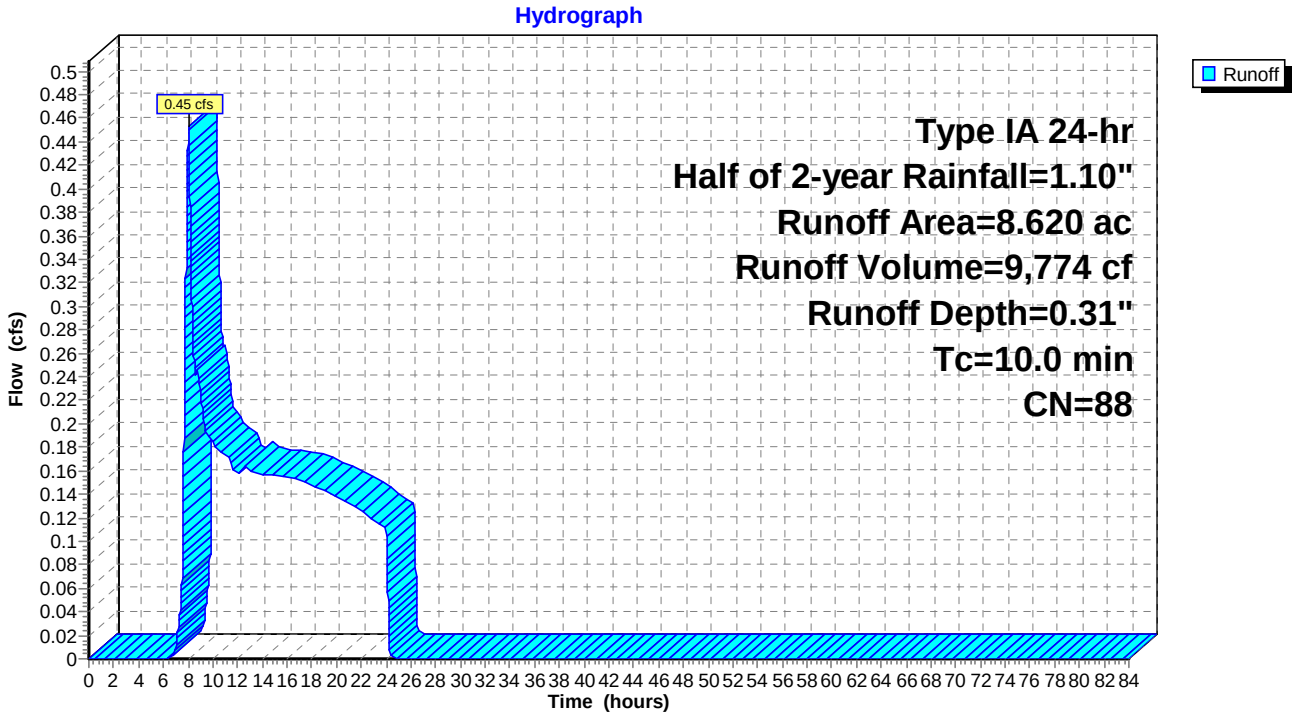
Runoff = 0.45 cfs @ 8.06 hrs, Volume= 9,774 cf, Depth= 0.31"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-84.00 hrs, dt= 0.01 hrs
Type IA 24-hr Half of 2-year Rainfall=1.10"

	Area (ac)	CN	Description
*	5.170	98	Roofs,pavement, concrete, HSG C
	3.450	74	>75% Grass cover, Good, HSG C
	8.620	88	Weighted Average
	3.450	74	40.02% Pervious Area
	5.170	98	59.98% Impervious Area

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

Subcatchment 2: Developed Conditions Basin 2



Summary for Pond MH3: Control MH #3

Inflow Area = 375,487 sf, 59.98% Impervious, Inflow Depth = 0.31" for Half of 2-year event
Inflow = 0.45 cfs @ 8.06 hrs, Volume= 9,774 cf
Outflow = 0.03 cfs @ 24.18 hrs, Volume= 7,061 cf, Atten= 93%, Lag= 967.6 min
Primary = 0.03 cfs @ 24.18 hrs, Volume= 7,061 cf

Routing by Stor-Ind method, Time Span= 0.00-84.00 hrs, dt= 0.01 hrs
Peak Elev= 600.54' @ 24.18 hrs Surf.Area= 8,000 sf Storage= 8,322 cf
Flood Elev= 606.00' Surf.Area= 8,000 sf Storage= 51,980 cf

Plug-Flow detention time= 1,918.4 min calculated for 7,060 cf (72% of inflow)
Center-of-Mass det. time= 1,771.9 min (2,656.8 - 884.9)

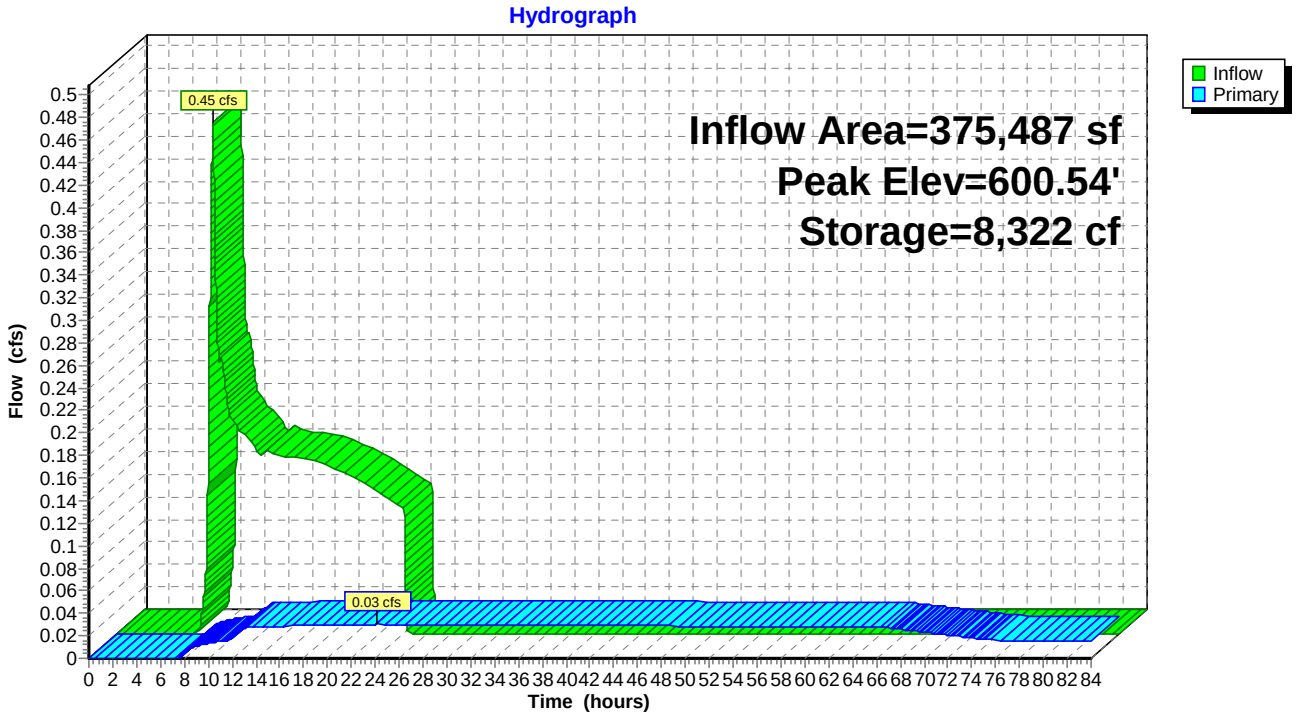
Volume	Invert	Avail.Storage	Storage Description
#1	597.24'	59,980 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
597.24	8,000	0.0	0	0
597.25	8,000	40.0	32	32
598.24	8,000	40.0	3,168	3,200
598.25	8,000	5.0	4	3,204
599.99	8,000	5.0	696	3,900
600.00	8,000	100.0	80	3,980
602.00	8,000	100.0	16,000	19,980
604.00	8,000	100.0	16,000	35,980
606.00	8,000	100.0	16,000	51,980
607.00	8,000	100.0	8,000	59,980

Device	Routing	Invert	Outlet Devices
#1	Primary	597.25'	**18.0" Round 18" Pipe** L= 50.0' RCP, rounded edge headwall, Ke= 0.100 Inlet / Outlet Invert= 597.25' / 597.00' S= 0.0050 '/' Cc= 0.900 n= 0.013, Flow Area= 1.77 sf
#2	Device 1	597.25'	**0.8" Vert. Orifice #1** C= 0.600 Limited to weir flow at low heads
#3	Device 1	600.75'	**6.5" Vert. Orifice #2** C= 0.600 Limited to weir flow at low heads
#4	Device 1	602.00'	**8.0" Vert. Orifice #3** C= 0.600 Limited to weir flow at low heads
#5	Device 1	606.00'	**18.0" Horiz. Overflow** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.03 cfs @ 24.18 hrs HW=600.54' (Free Discharge)
└**1=18" Pipe** (Passes 0.03 cfs of 14.28 cfs potential flow)
  ├**2=Orifice #1** (Orifice Controls 0.03 cfs @ 8.69 fps)
  ├**3=Orifice #2** (Controls 0.00 cfs)
  ├**4=Orifice #3** (Controls 0.00 cfs)
  └**5=Overflow** (Controls 0.00 cfs)

Pond MH3: Control MH #3



Summary for Subcatchment 2E: Existing Conditions Site

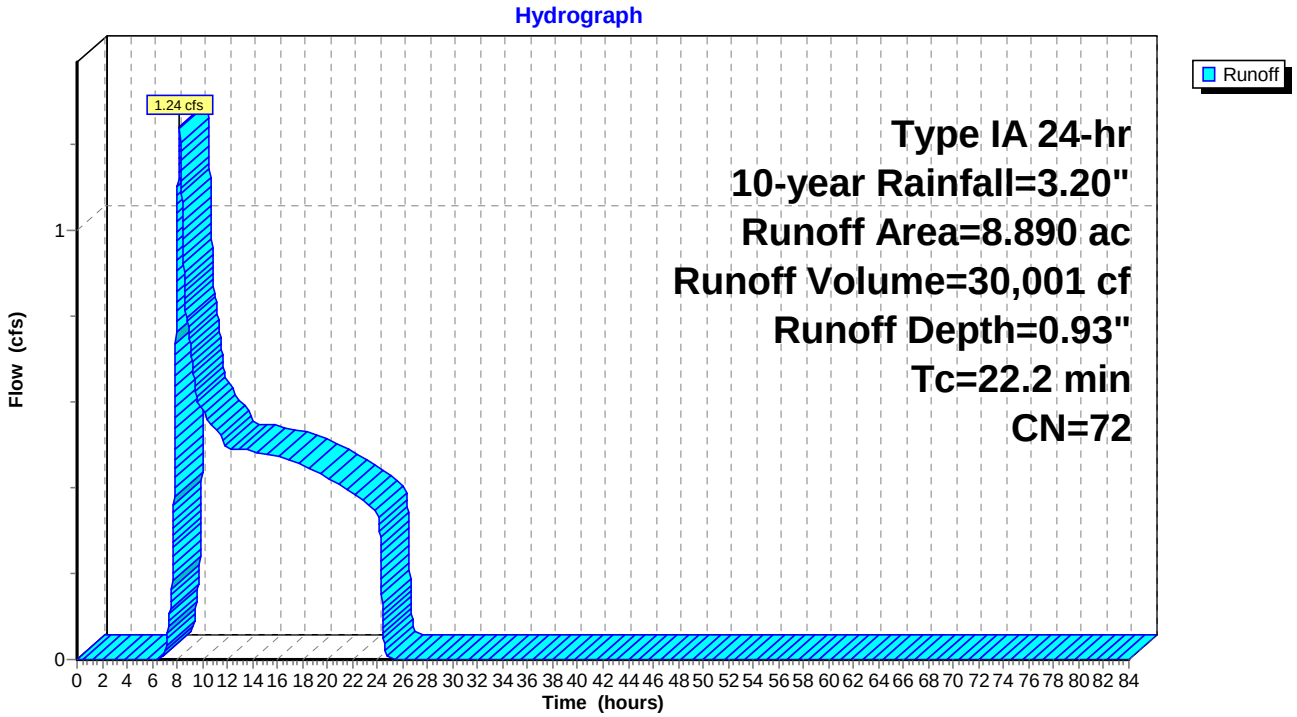
Runoff = 1.24 cfs @ 8.20 hrs, Volume= 30,001 cf, Depth= 0.93"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-84.00 hrs, dt= 0.01 hrs
Type IA 24-hr 10-year Rainfall=3.20"

	Area (ac)	CN	Description
*	8.890	72	City of Salem Pre-development, HSG C
	8.890	72	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
22.2					**Direct Entry, TR-55 Worksheet**

Subcatchment 2E: Existing Conditions Site



Summary for Subcatchment 2B: Developed Conditions Basin 2B

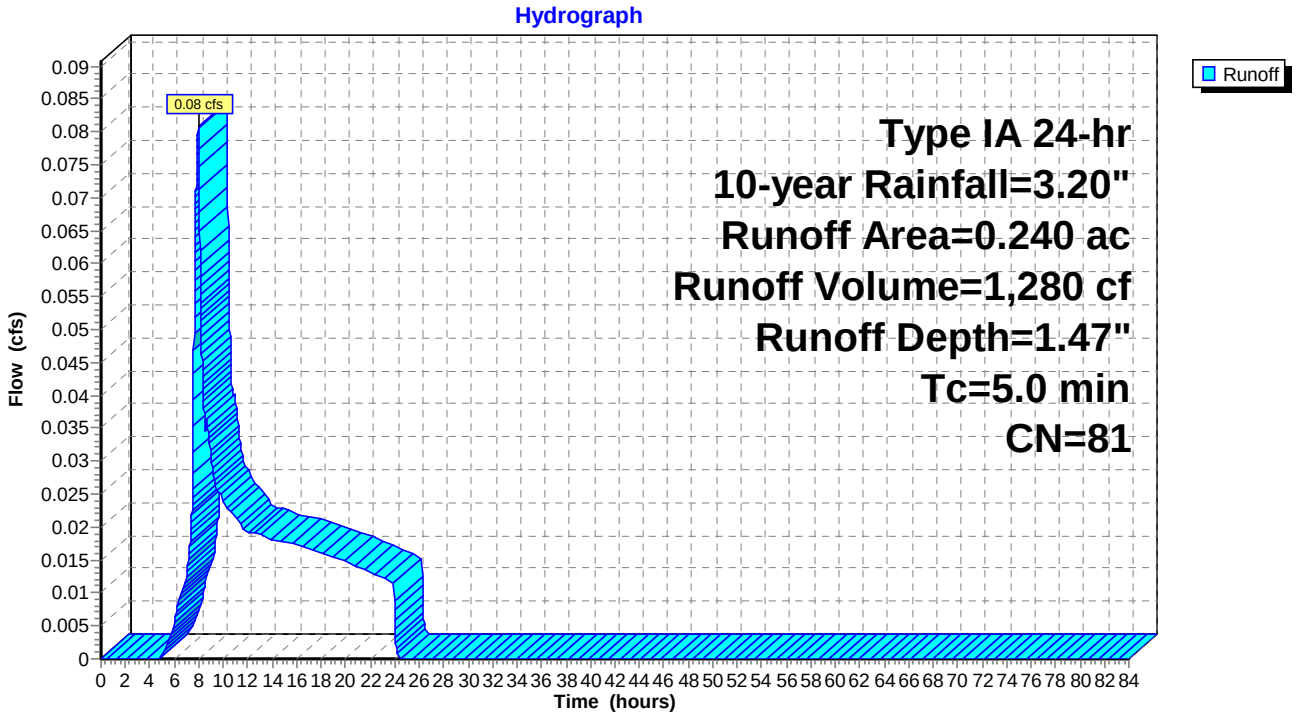
Runoff = 0.08 cfs @ 7.98 hrs, Volume= 1,280 cf, Depth= 1.47"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-84.00 hrs, dt= 0.01 hrs
Type IA 24-hr 10-year Rainfall=3.20"

	Area (ac)	CN	Description
*	0.070	98	Roofs,pavement, concrete, HSG C
	0.170	74	>75% Grass cover, Good, HSG C
	0.240	81	Weighted Average
	0.170	74	70.83% Pervious Area
	0.070	98	29.17% Impervious Area

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

Subcatchment 2B: Developed Conditions Basin 2B



Summary for Subcatchment 2: Developed Conditions Basin 2

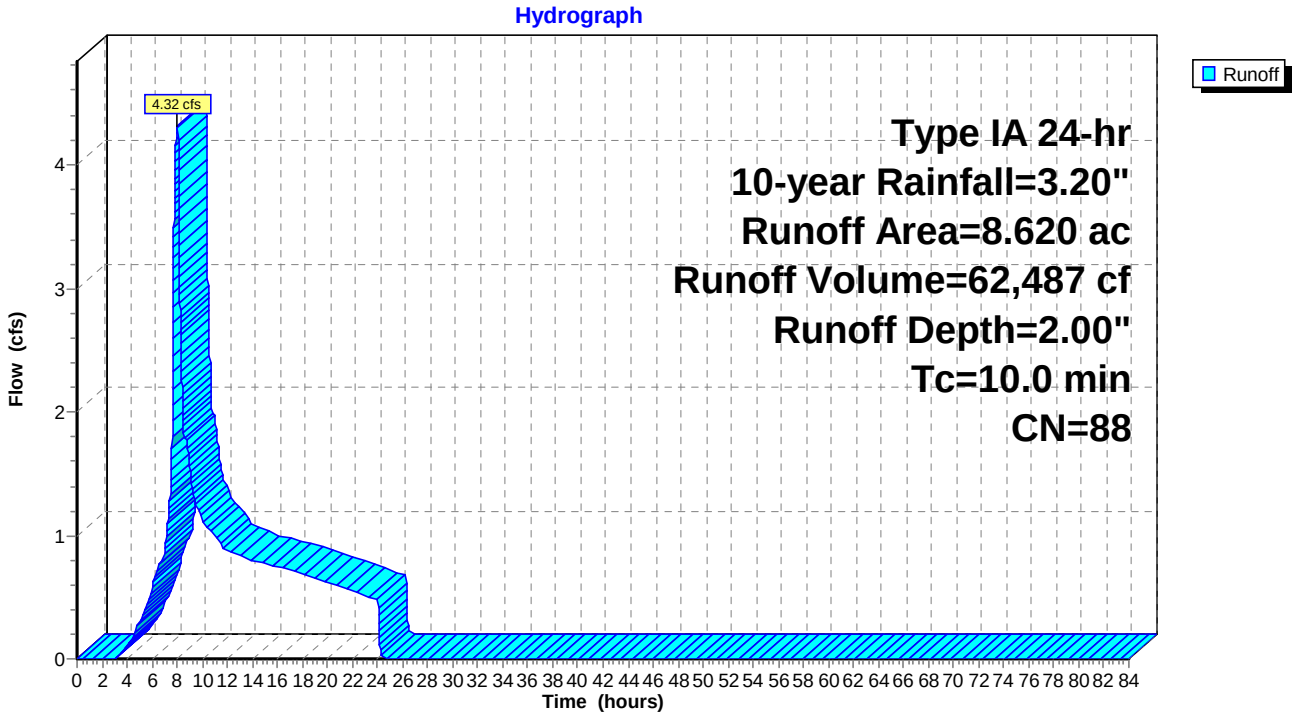
Runoff = 4.32 cfs @ 8.01 hrs, Volume= 62,487 cf, Depth= 2.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-84.00 hrs, dt= 0.01 hrs
Type IA 24-hr 10-year Rainfall=3.20"

	Area (ac)	CN	Description
*	5.170	98	Roofs,pavement, concrete, HSG C
	3.450	74	>75% Grass cover, Good, HSG C
	8.620	88	Weighted Average
	3.450	74	40.02% Pervious Area
	5.170	98	59.98% Impervious Area

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

Subcatchment 2: Developed Conditions Basin 2



Summary for Pond MH3: Control MH #3

Inflow Area = 375,487 sf, 59.98% Impervious, Inflow Depth = 2.00" for 10-year event
Inflow = 4.32 cfs @ 8.01 hrs, Volume= 62,487 cf
Outflow = 1.06 cfs @ 10.37 hrs, Volume= 57,912 cf, Atten= 76%, Lag= 141.7 min
Primary = 1.06 cfs @ 10.37 hrs, Volume= 57,912 cf

Routing by Stor-Ind method, Time Span= 0.00-84.00 hrs, dt= 0.01 hrs
Peak Elev= 601.87' @ 10.37 hrs Surf.Area= 8,000 sf Storage= 18,934 cf
Flood Elev= 606.00' Surf.Area= 8,000 sf Storage= 51,980 cf

Plug-Flow detention time= 483.3 min calculated for 57,912 cf (93% of inflow)
Center-of-Mass det. time= 435.4 min (1,202.4 - 766.9)

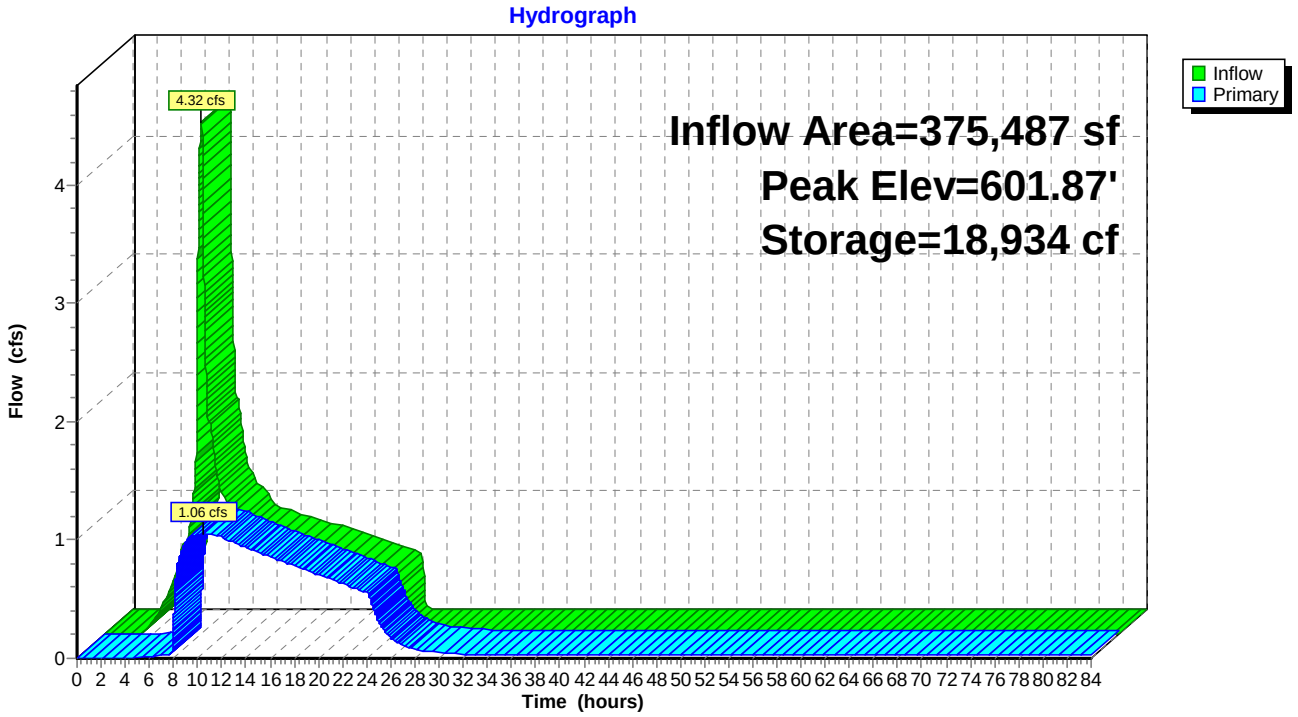
Volume	Invert	Avail.Storage	Storage Description
#1	597.24'	59,980 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
597.24	8,000	0.0	0	0
597.25	8,000	40.0	32	32
598.24	8,000	40.0	3,168	3,200
598.25	8,000	5.0	4	3,204
599.99	8,000	5.0	696	3,900
600.00	8,000	100.0	80	3,980
602.00	8,000	100.0	16,000	19,980
604.00	8,000	100.0	16,000	35,980
606.00	8,000	100.0	16,000	51,980
607.00	8,000	100.0	8,000	59,980

Device	Routing	Invert	Outlet Devices
#1	Primary	597.25'	**18.0" Round 18" Pipe** L= 50.0' RCP, rounded edge headwall, Ke= 0.100 Inlet / Outlet Invert= 597.25' / 597.00' S= 0.0050 '/' Cc= 0.900 n= 0.013, Flow Area= 1.77 sf
#2	Device 1	597.25'	**0.8" Vert. Orifice #1** C= 0.600 Limited to weir flow at low heads
#3	Device 1	600.75'	**6.5" Vert. Orifice #2** C= 0.600 Limited to weir flow at low heads
#4	Device 1	602.00'	**8.0" Vert. Orifice #3** C= 0.600 Limited to weir flow at low heads
#5	Device 1	606.00'	**18.0" Horiz. Overflow** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=1.06 cfs @ 10.37 hrs HW=601.87' (Free Discharge)
└**1=18" Pipe** (Passes 1.06 cfs of 18.34 cfs potential flow)
├**2=Orifice #1** (Orifice Controls 0.04 cfs @ 10.31 fps)
├**3=Orifice #2** (Orifice Controls 1.02 cfs @ 4.44 fps)
├**4=Orifice #3** (Controls 0.00 cfs)
└**5=Overflow** (Controls 0.00 cfs)

Pond MH3: Control MH #3



Summary for Subcatchment 2E: Existing Conditions Site

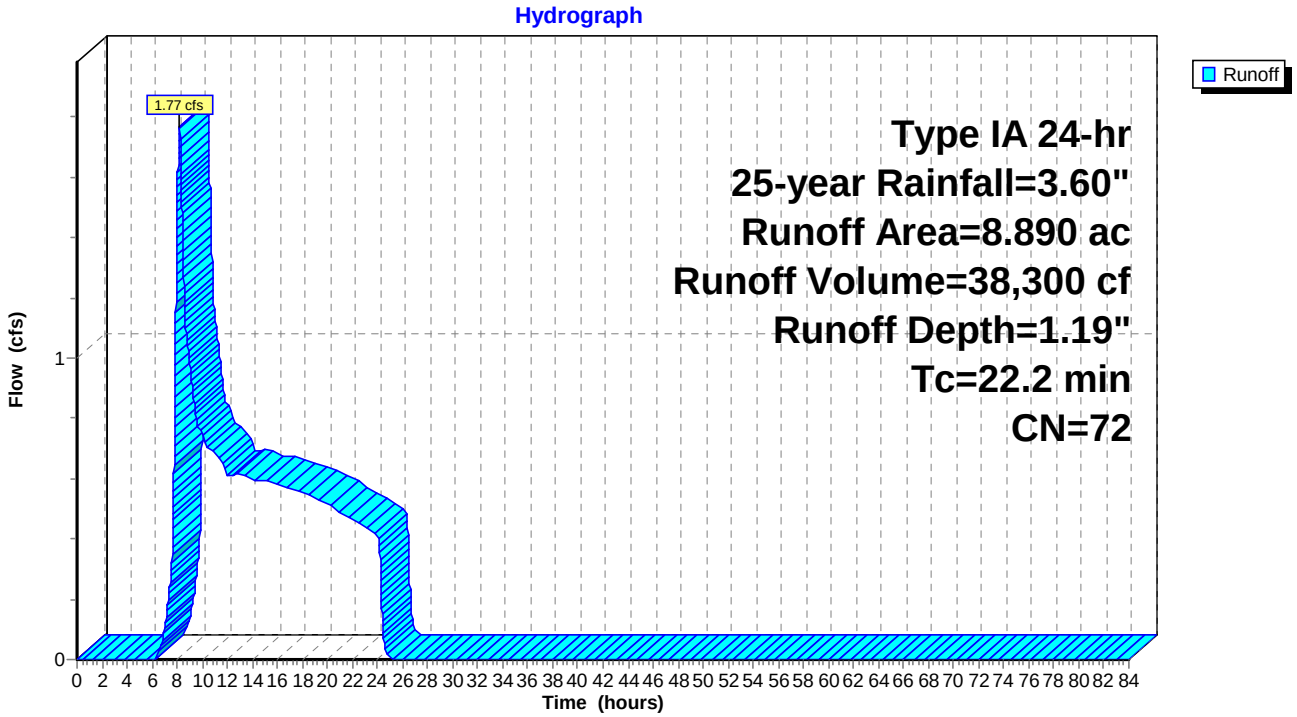
Runoff = 1.77 cfs @ 8.17 hrs, Volume= 38,300 cf, Depth= 1.19"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-84.00 hrs, dt= 0.01 hrs
Type IA 24-hr 25-year Rainfall=3.60"

	Area (ac)	CN	Description
*	8.890	72	City of Salem Pre-development, HSG C
	8.890	72	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
22.2					**Direct Entry, TR-55 Worksheet**

Subcatchment 2E: Existing Conditions Site



Summary for Subcatchment 2B: Developed Conditions Basin 2B

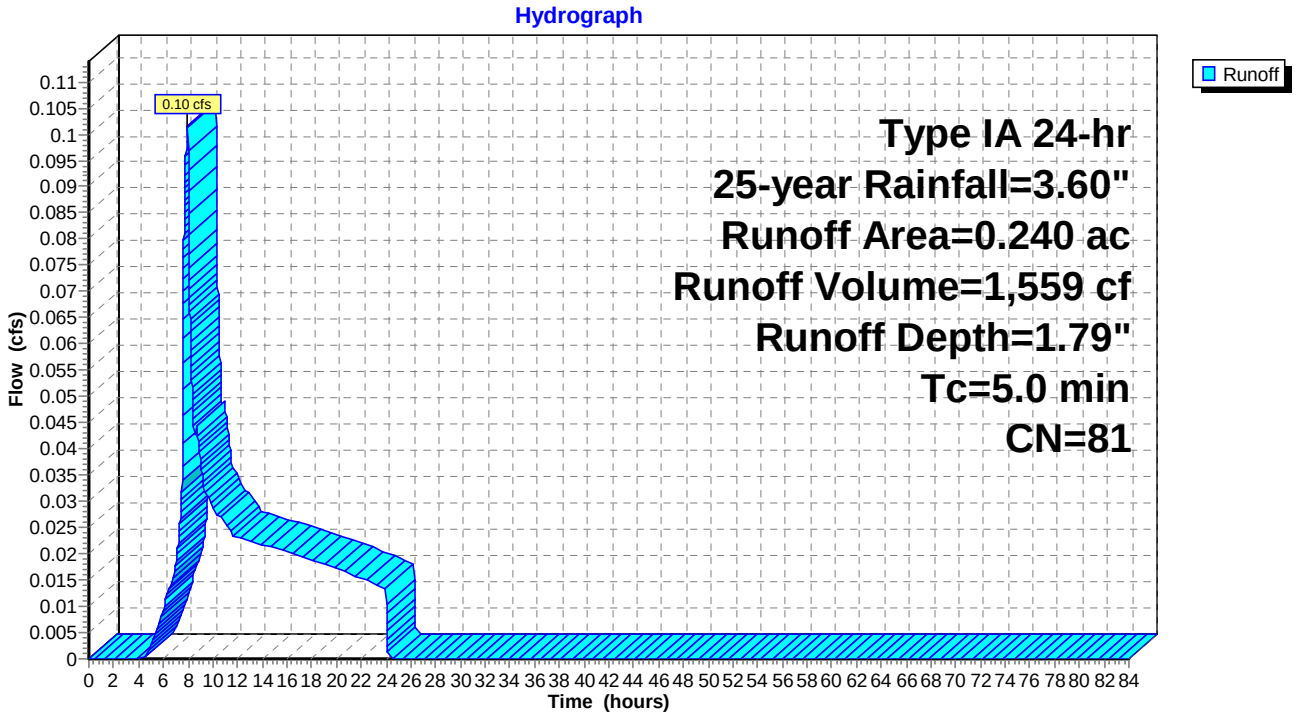
Runoff = 0.10 cfs @ 7.96 hrs, Volume= 1,559 cf, Depth= 1.79"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-84.00 hrs, dt= 0.01 hrs
Type IA 24-hr 25-year Rainfall=3.60"

	Area (ac)	CN	Description
*	0.070	98	Roofs,pavement, concrete, HSG C
	0.170	74	>75% Grass cover, Good, HSG C
	0.240	81	Weighted Average
	0.170	74	70.83% Pervious Area
	0.070	98	29.17% Impervious Area

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

Subcatchment 2B: Developed Conditions Basin 2B



Summary for Subcatchment 2: Developed Conditions Basin 2

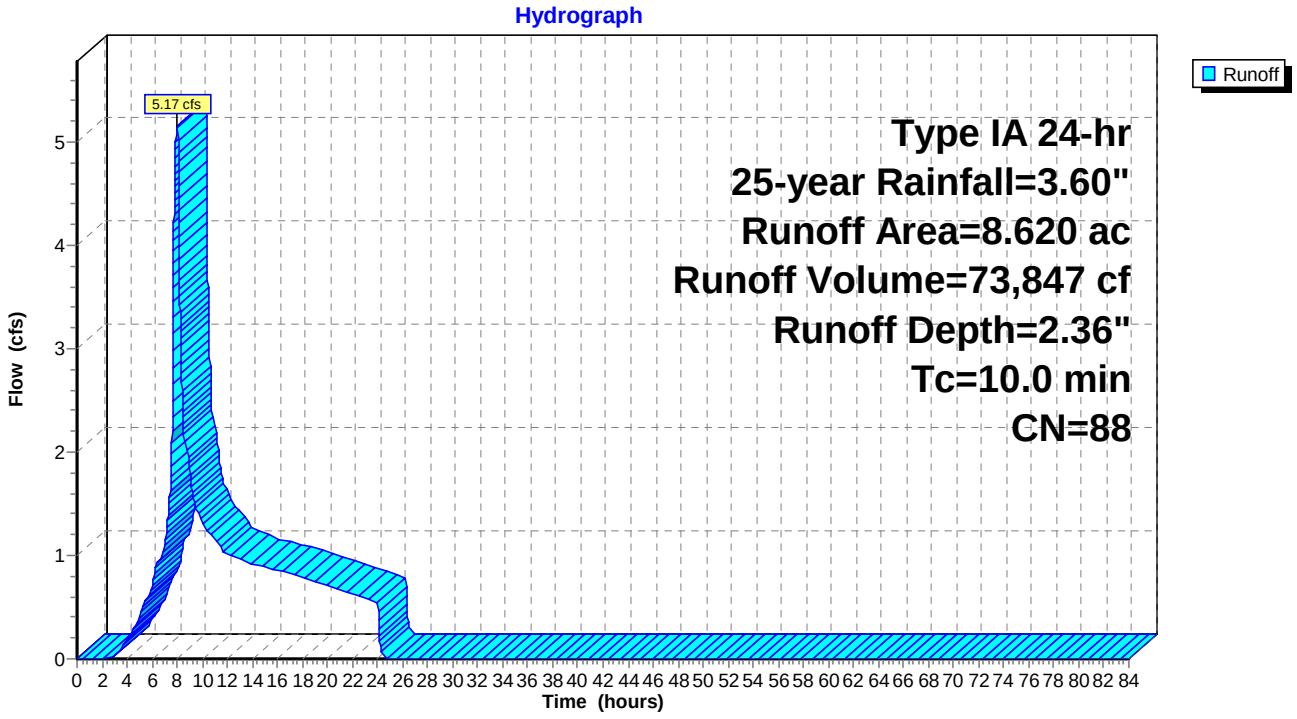
Runoff = 5.17 cfs @ 7.99 hrs, Volume= 73,847 cf, Depth= 2.36"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-84.00 hrs, dt= 0.01 hrs
Type IA 24-hr 25-year Rainfall=3.60"

	Area (ac)	CN	Description
*	5.170	98	Roofs,pavement, concrete, HSG C
	3.450	74	>75% Grass cover, Good, HSG C
	8.620	88	Weighted Average
	3.450	74	40.02% Pervious Area
	5.170	98	59.98% Impervious Area

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

Subcatchment 2: Developed Conditions Basin 2



Summary for Pond MH3: Control MH #3

Inflow Area = 375,487 sf, 59.98% Impervious, Inflow Depth = 2.36" for 25-year event
Inflow = 5.17 cfs @ 7.99 hrs, Volume= 73,847 cf
Outflow = 1.42 cfs @ 9.54 hrs, Volume= 69,238 cf, Atten= 73%, Lag= 92.9 min
Primary = 1.42 cfs @ 9.54 hrs, Volume= 69,238 cf

Routing by Stor-Ind method, Time Span= 0.00-84.00 hrs, dt= 0.01 hrs
Peak Elev= 602.22' @ 9.54 hrs Surf.Area= 8,000 sf Storage= 21,753 cf
Flood Elev= 606.00' Surf.Area= 8,000 sf Storage= 51,980 cf

Plug-Flow detention time= 434.4 min calculated for 69,229 cf (94% of inflow)
Center-of-Mass det. time= 393.2 min (1,150.8 - 757.6)

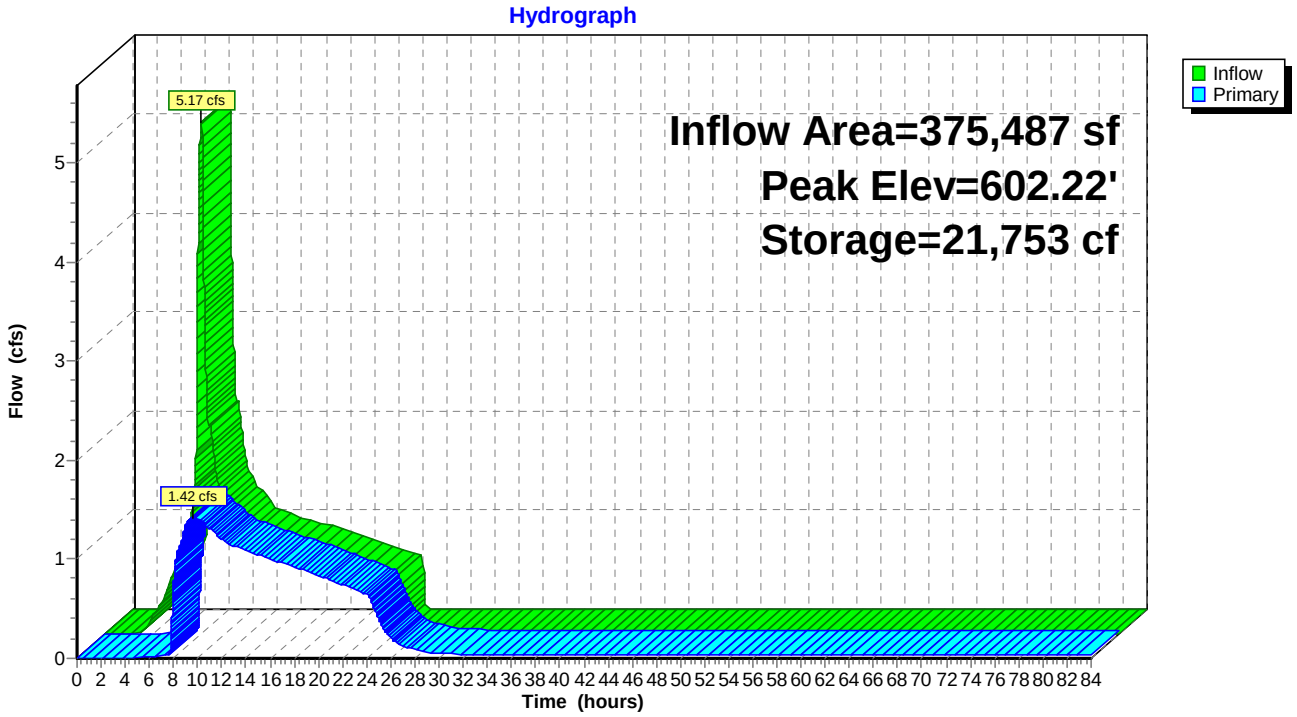
Volume	Invert	Avail.Storage	Storage Description
#1	597.24'	59,980 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
597.24	8,000	0.0	0	0
597.25	8,000	40.0	32	32
598.24	8,000	40.0	3,168	3,200
598.25	8,000	5.0	4	3,204
599.99	8,000	5.0	696	3,900
600.00	8,000	100.0	80	3,980
602.00	8,000	100.0	16,000	19,980
604.00	8,000	100.0	16,000	35,980
606.00	8,000	100.0	16,000	51,980
607.00	8,000	100.0	8,000	59,980

Device	Routing	Invert	Outlet Devices
#1	Primary	597.25'	**18.0" Round 18" Pipe** L= 50.0' RCP, rounded edge headwall, Ke= 0.100 Inlet / Outlet Invert= 597.25' / 597.00' S= 0.0050 '/' Cc= 0.900 n= 0.013, Flow Area= 1.77 sf
#2	Device 1	597.25'	**0.8" Vert. Orifice #1** C= 0.600 Limited to weir flow at low heads
#3	Device 1	600.75'	**6.5" Vert. Orifice #2** C= 0.600 Limited to weir flow at low heads
#4	Device 1	602.00'	**8.0" Vert. Orifice #3** C= 0.600 Limited to weir flow at low heads
#5	Device 1	606.00'	**18.0" Horiz. Overflow** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=1.42 cfs @ 9.54 hrs HW=602.22' (Free Discharge)
└**1=18" Pipe** (Passes 1.42 cfs of 19.28 cfs potential flow)
  ├**2=Orifice #1** (Orifice Controls 0.04 cfs @ 10.70 fps)
  ├**3=Orifice #2** (Orifice Controls 1.22 cfs @ 5.28 fps)
  ├**4=Orifice #3** (Orifice Controls 0.16 cfs @ 1.60 fps)
  └**5=Overflow** (Controls 0.00 cfs)

Pond MH3: Control MH #3



Summary for Subcatchment 2E: Existing Conditions Site

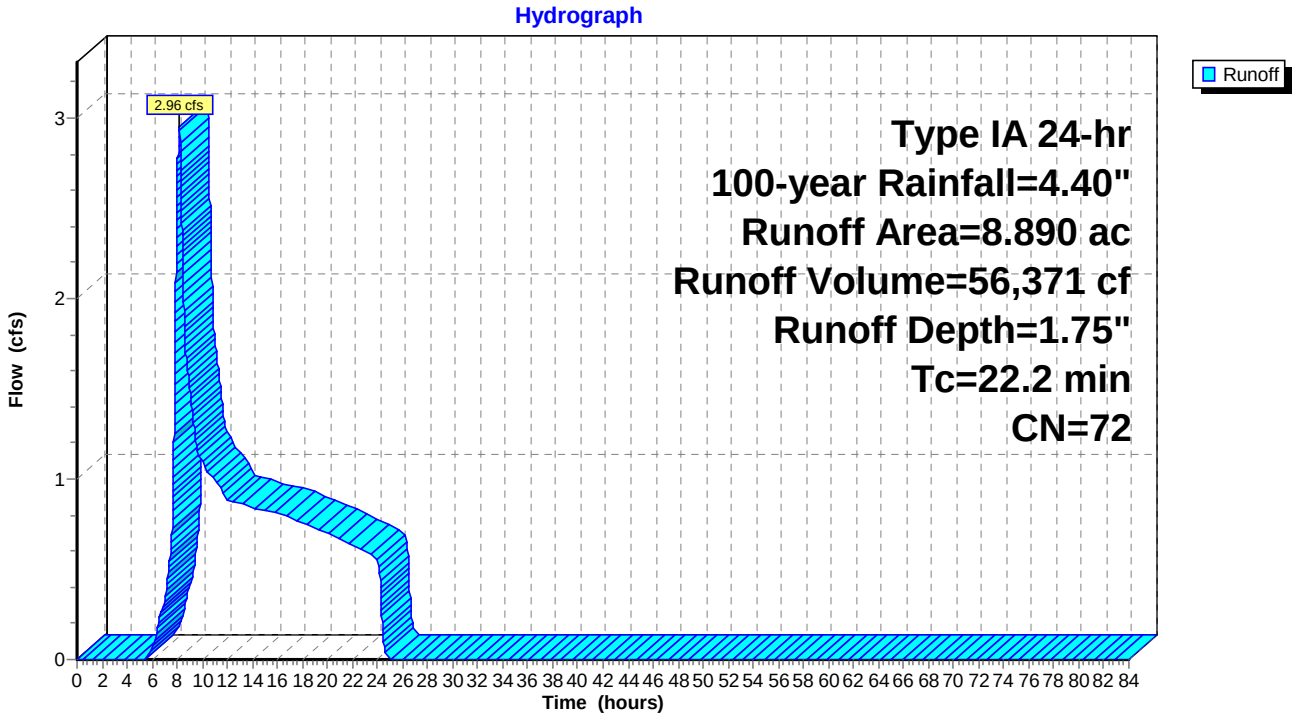
Runoff = 2.96 cfs @ 8.16 hrs, Volume= 56,371 cf, Depth= 1.75"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-84.00 hrs, dt= 0.01 hrs
Type IA 24-hr 100-year Rainfall=4.40"

	Area (ac)	CN	Description
*	8.890	72	City of Salem Pre-development, HSG C
	8.890	72	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
22.2					**Direct Entry, TR-55 Worksheet**

Subcatchment 2E: Existing Conditions Site



Summary for Subcatchment 2B: Developed Conditions Basin 2B

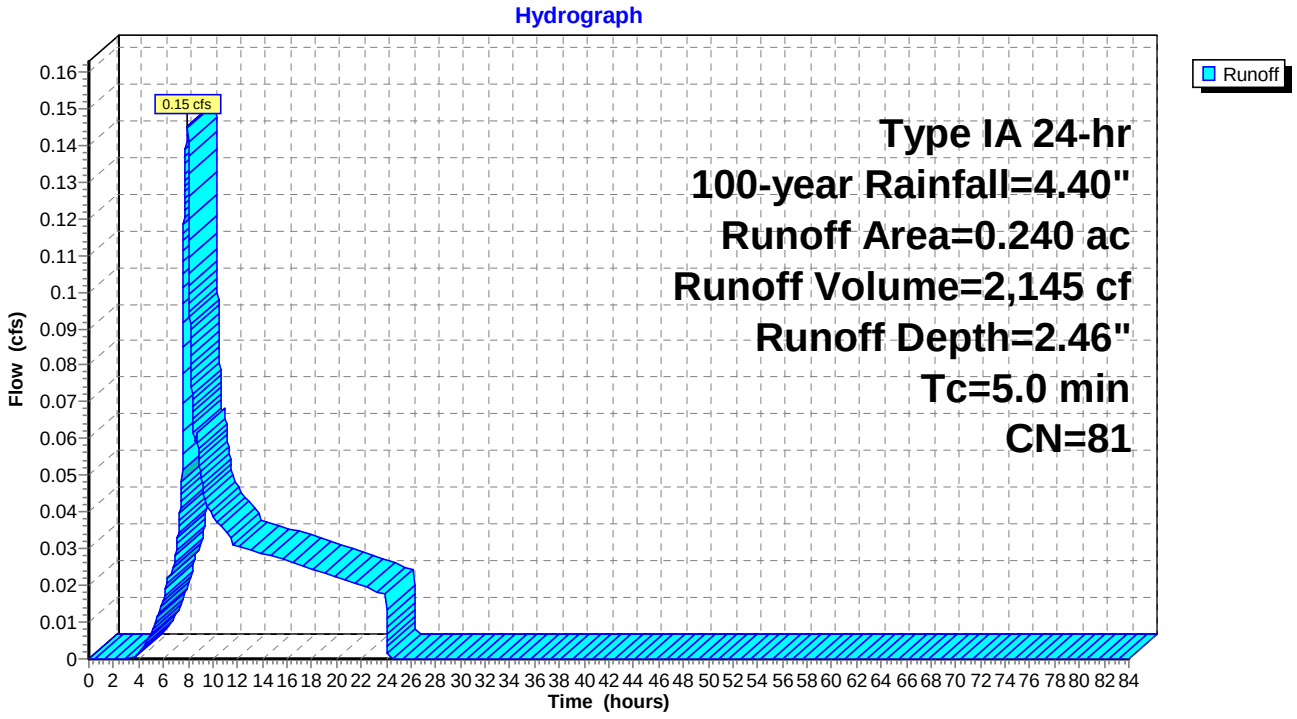
Runoff = 0.15 cfs @ 7.94 hrs, Volume= 2,145 cf, Depth= 2.46"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-84.00 hrs, dt= 0.01 hrs
Type IA 24-hr 100-year Rainfall=4.40"

	Area (ac)	CN	Description
*	0.070	98	Roofs,pavement, concrete, HSG C
	0.170	74	>75% Grass cover, Good, HSG C
	0.240	81	Weighted Average
	0.170	74	70.83% Pervious Area
	0.070	98	29.17% Impervious Area

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

Subcatchment 2B: Developed Conditions Basin 2B



Summary for Subcatchment 2: Developed Conditions Basin 2

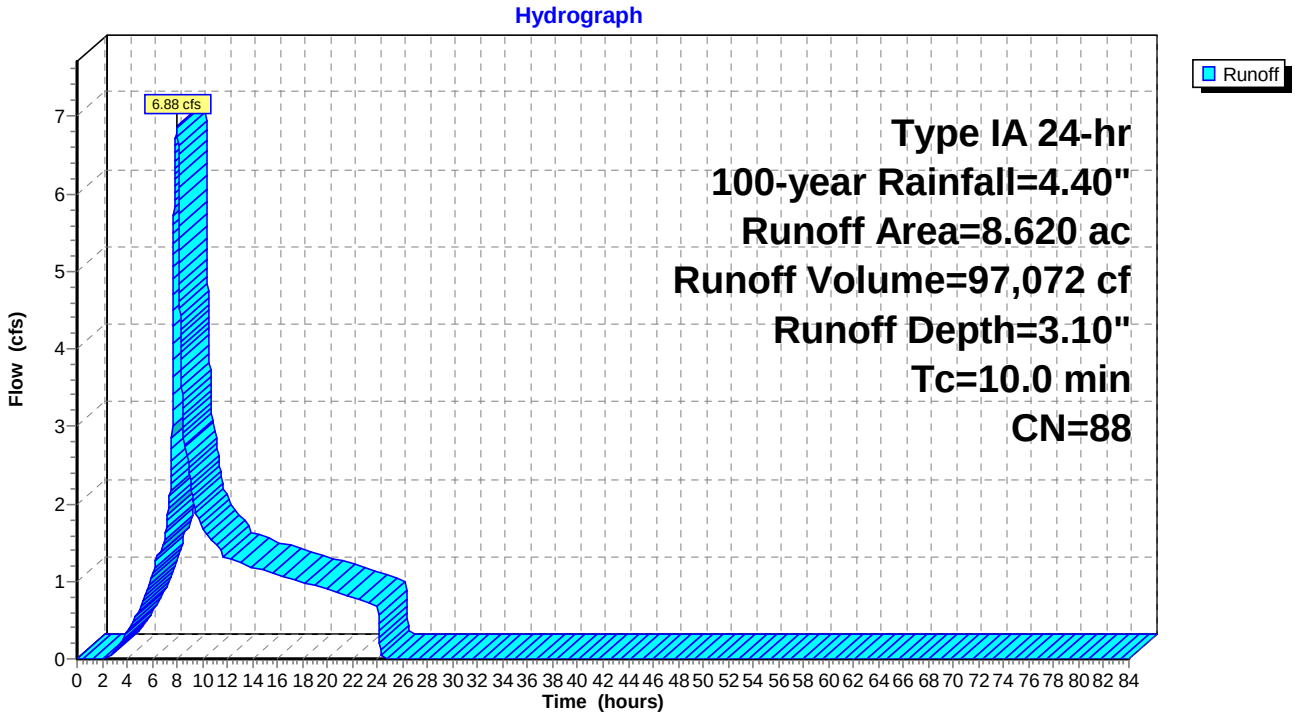
Runoff = 6.88 cfs @ 7.99 hrs, Volume= 97,072 cf, Depth= 3.10"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-84.00 hrs, dt= 0.01 hrs
Type IA 24-hr 100-year Rainfall=4.40"

	Area (ac)	CN	Description
*	5.170	98	Roofs,pavement, concrete, HSG C
	3.450	74	>75% Grass cover, Good, HSG C
	8.620	88	Weighted Average
	3.450	74	40.02% Pervious Area
	5.170	98	59.98% Impervious Area

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

Subcatchment 2: Developed Conditions Basin 2



Summary for Pond MH3: Control MH #3

Inflow Area = 375,487 sf, 59.98% Impervious, Inflow Depth = 3.10" for 100-year event
Inflow = 6.88 cfs @ 7.99 hrs, Volume= 97,072 cf
Outflow = 2.56 cfs @ 8.88 hrs, Volume= 92,397 cf, Atten= 63%, Lag= 53.3 min
Primary = 2.56 cfs @ 8.88 hrs, Volume= 92,397 cf

Routing by Stor-Ind method, Time Span= 0.00-84.00 hrs, dt= 0.01 hrs
Peak Elev= 602.74' @ 8.88 hrs Surf.Area= 8,000 sf Storage= 25,891 cf
Flood Elev= 606.00' Surf.Area= 8,000 sf Storage= 51,980 cf

Plug-Flow detention time= 359.3 min calculated for 92,386 cf (95% of inflow)
Center-of-Mass det. time= 326.8 min (1,069.7 - 742.9)

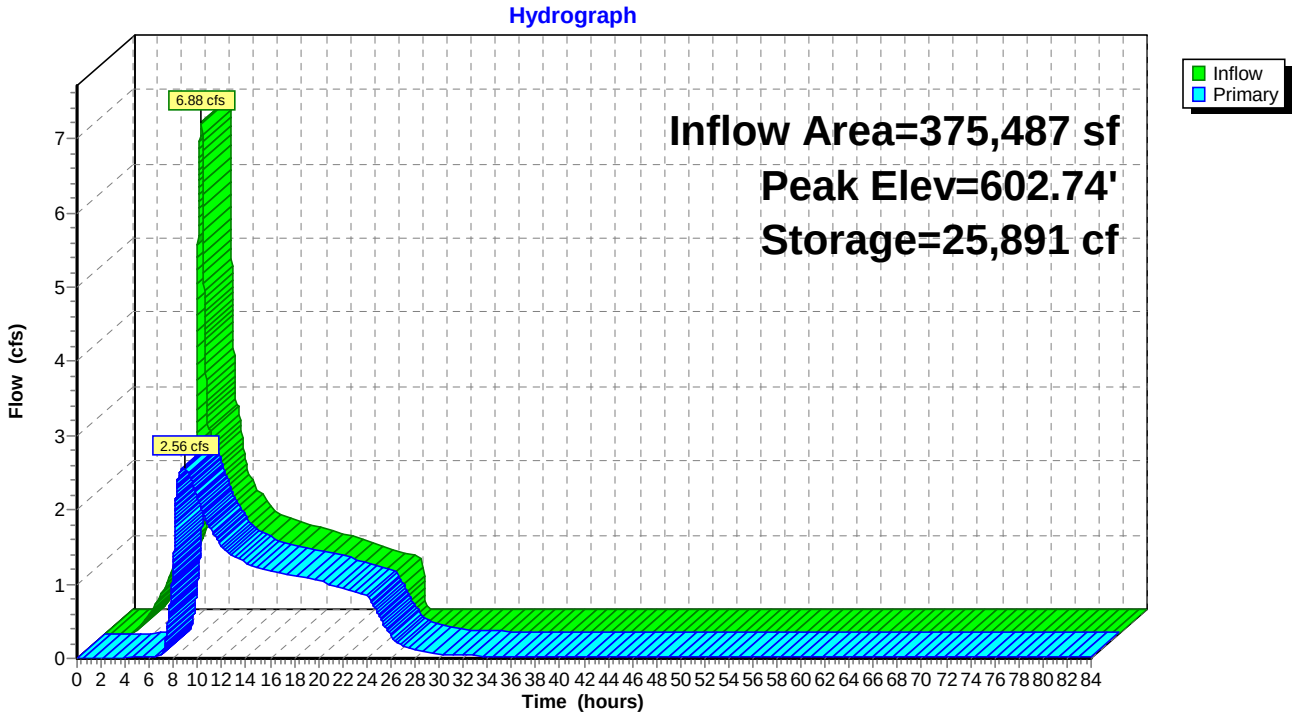
Volume	Invert	Avail.Storage	Storage Description
#1	597.24'	59,980 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
597.24	8,000	0.0	0	0
597.25	8,000	40.0	32	32
598.24	8,000	40.0	3,168	3,200
598.25	8,000	5.0	4	3,204
599.99	8,000	5.0	696	3,900
600.00	8,000	100.0	80	3,980
602.00	8,000	100.0	16,000	19,980
604.00	8,000	100.0	16,000	35,980
606.00	8,000	100.0	16,000	51,980
607.00	8,000	100.0	8,000	59,980

Device	Routing	Invert	Outlet Devices
#1	Primary	597.25'	**18.0" Round 18" Pipe** L= 50.0' RCP, rounded edge headwall, Ke= 0.100 Inlet / Outlet Invert= 597.25' / 597.00' S= 0.0050 '/' Cc= 0.900 n= 0.013, Flow Area= 1.77 sf
#2	Device 1	597.25'	**0.8" Vert. Orifice #1** C= 0.600 Limited to weir flow at low heads
#3	Device 1	600.75'	**6.5" Vert. Orifice #2** C= 0.600 Limited to weir flow at low heads
#4	Device 1	602.00'	**8.0" Vert. Orifice #3** C= 0.600 Limited to weir flow at low heads
#5	Device 1	606.00'	**18.0" Horiz. Overflow** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=2.56 cfs @ 8.88 hrs HW=602.74' (Free Discharge)
└**1=18" Pipe** (Passes 2.56 cfs of 20.57 cfs potential flow)
  ├**2=Orifice #1** (Orifice Controls 0.04 cfs @ 11.25 fps)
  ├**3=Orifice #2** (Orifice Controls 1.45 cfs @ 6.31 fps)
  ├**4=Orifice #3** (Orifice Controls 1.07 cfs @ 3.07 fps)
  └**5=Overflow** (Controls 0.00 cfs)

Pond MH3: Control MH #3



Drawing is NOT to scale

Basin #1
46,700 cu. ft
Capacity

Basin #3
52,000 cu. ft.
Capacity

SEE SHEET 302 FOR
OFF-SITE UTILITY PLAN

MATCH LINE 1

MATCH LINE 2

RED OAK AV.

LONE OAK ROAD

ALPHA AVENUE

BETA COURT

CHI STREET

DELTA COURT

DELTA AVENUE

FOUR STREET

FIVE STREET

DEVON AVE

TRACT A

TRACT B

PUMP STATION

SEE SHEET 302 FOR
OFF-SITE UTILITY PLAN

N
W E
S
0' 50'
1 INCH
SCALE: 1" = 50'

MULTI/TECH
ENGINEERING SERVICES, INC.
1155 13th ST. S.E. SALEM, OR. 97302
PH. (503) 363-9227 FAX (503) 364-1260
www.mtengineering.net office@mtengineering.net

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UTILITY PLAN - ONSITE

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6500x36 P301UT

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Drawn: P.H.S.
Checked: B.M.G.
Date: NOV. 2017
Scale: AS SHOWN
As-Built: ---

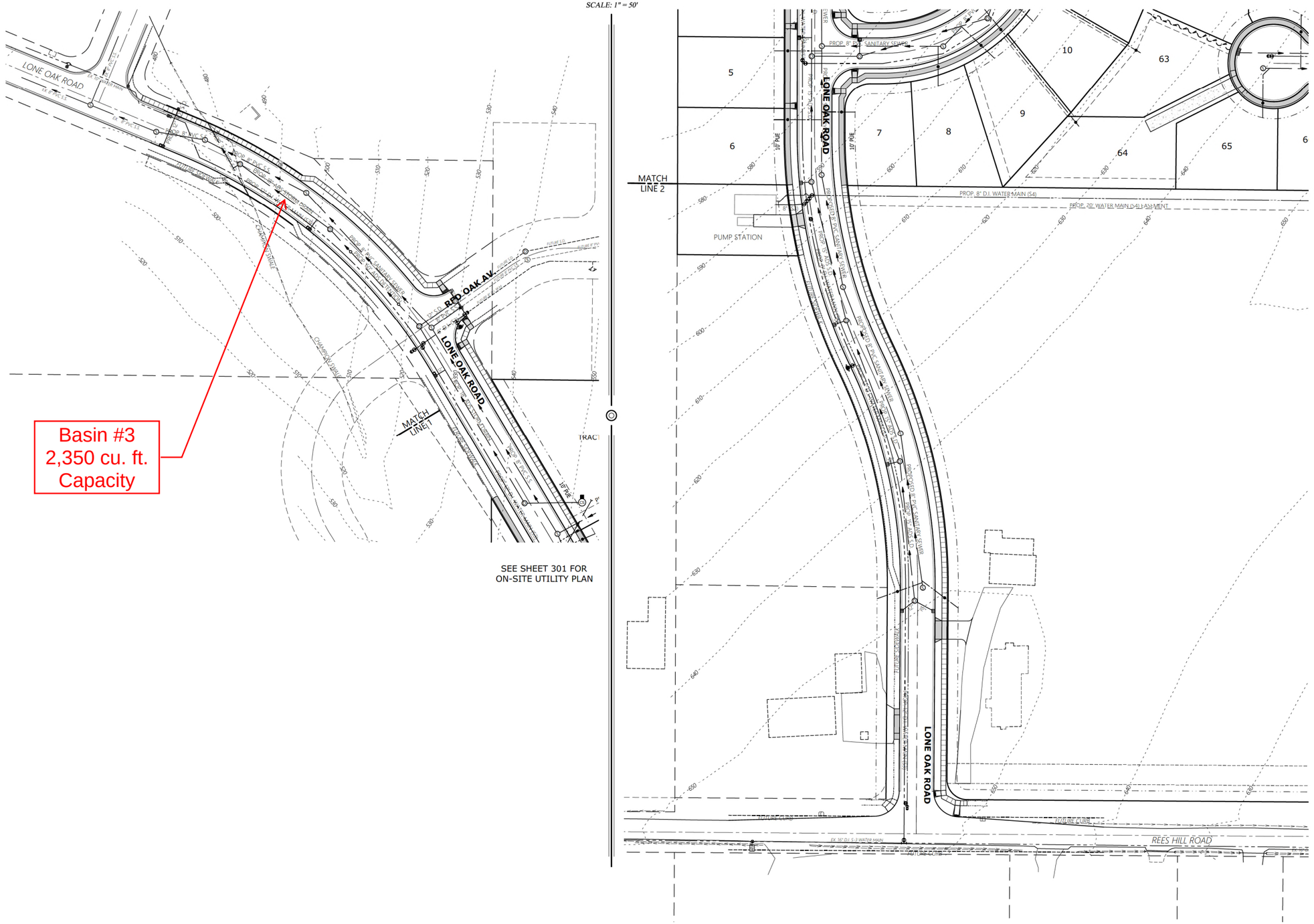
REGISTERED PROFESSIONAL ENGINEER
OREGON
JULY 14, 1978
MARK D. GRENZ

EXPIRES: 06-30-2021

JOB # 6502

P301

J:\6500-6599\6502-DevonAvenueSubdivision\Dwg\01 \6502sDE.dwg, P301UT, 1/19/2021 12:36:50 PM, PSouders



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6502b2c P302UT

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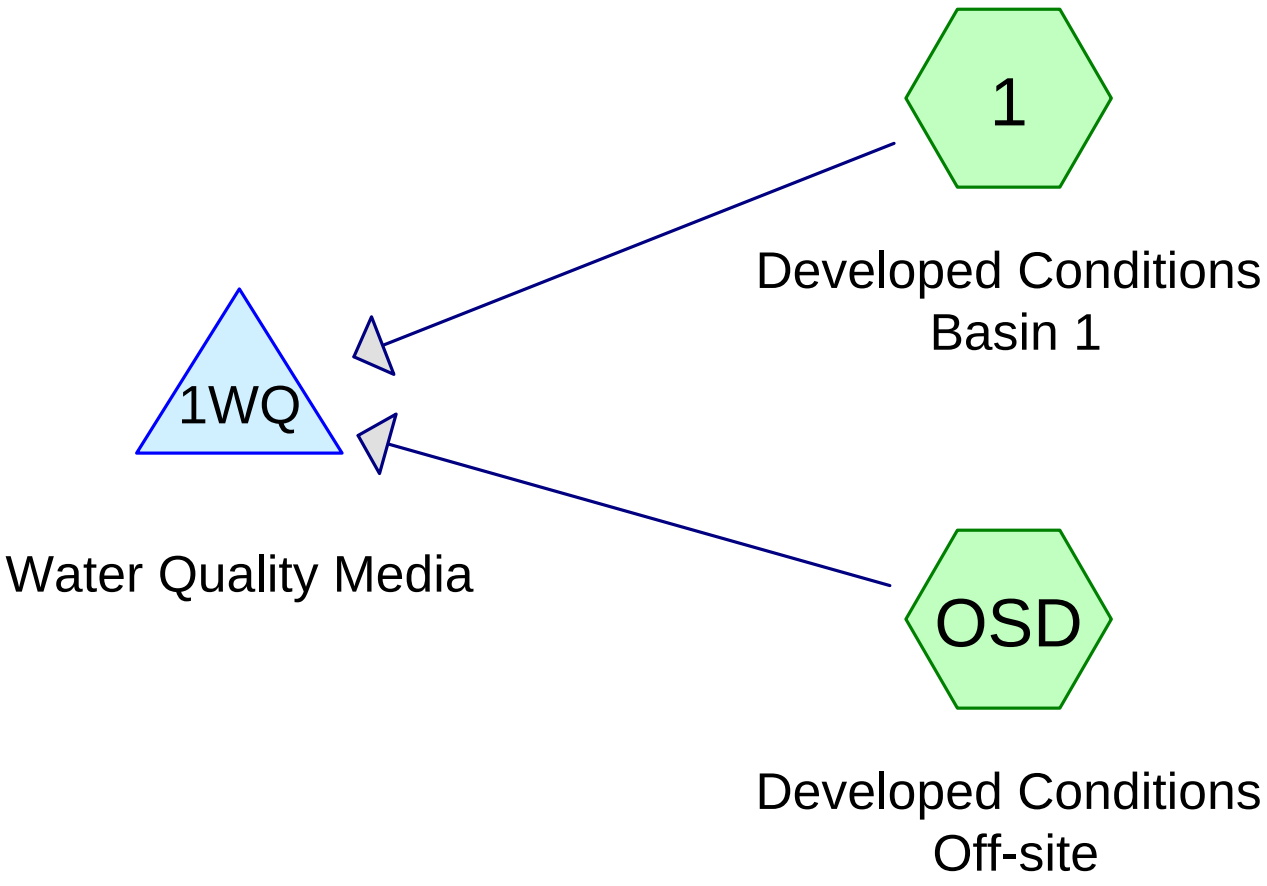
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OREGON
JULY 14, 1978
MARK D. GRENZ
EXPIRES: 06-30-2021

JOB # 6502

P302

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Appendix E



Subcat Reach Pond Link

Routing Diagram for 20210112 Devon Estates Phase 1 WQ
Prepared by Multitech Engineering Services, Inc., Printed 2/17/2021
HydroCAD® 10.10-4a s/n 09412 © 2020 HydroCAD Software Solutions LLC

Summary for Subcatchment 1: Developed Conditions Basin 1

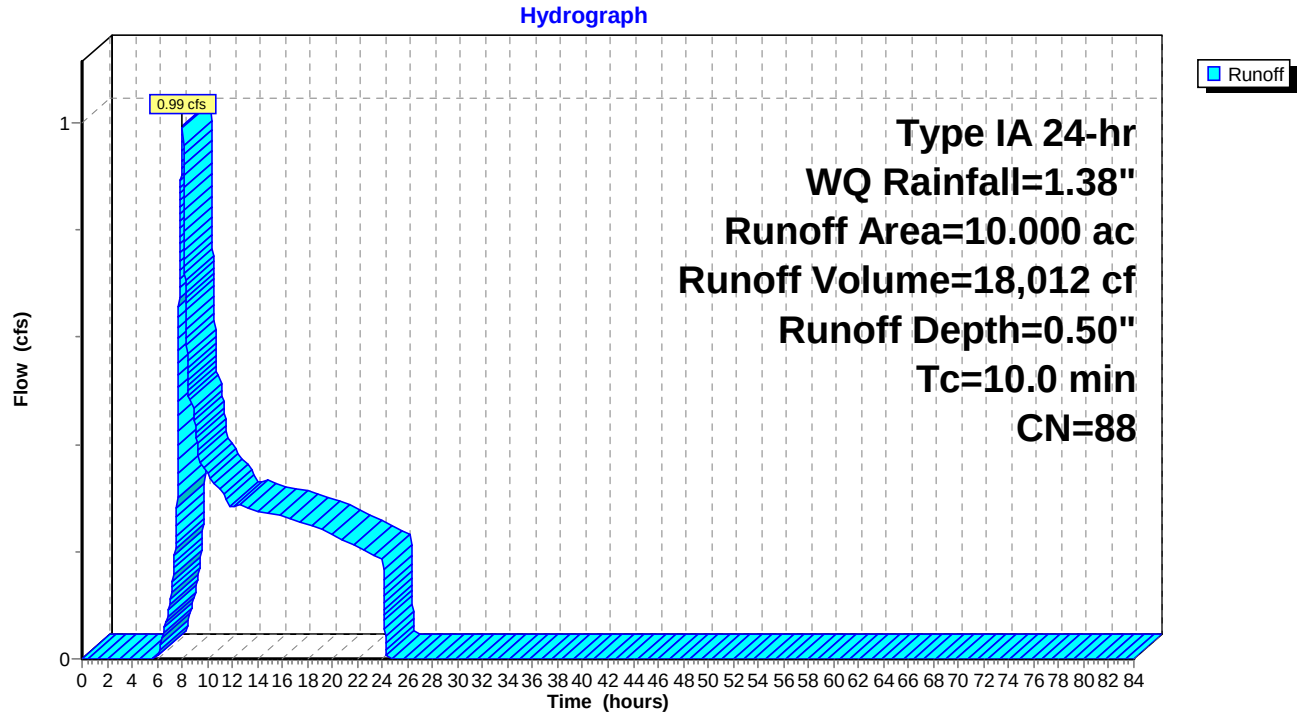
Runoff = 0.99 cfs @ 8.04 hrs, Volume= 18,012 cf, Depth= 0.50"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-84.00 hrs, dt= 0.01 hrs
Type IA 24-hr WQ Rainfall=1.38"

	Area (ac)	CN	Description
*	6.000	98	Roofs,pavement, concrete, HSG C
	4.000	74	>75% Grass cover, Good, HSG C
	10.000	88	Weighted Average
	4.000	74	40.00% Pervious Area
	6.000	98	60.00% Impervious Area

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

Subcatchment 1: Developed Conditions Basin 1



Summary for Subcatchment OSD: Developed Conditions Off-site

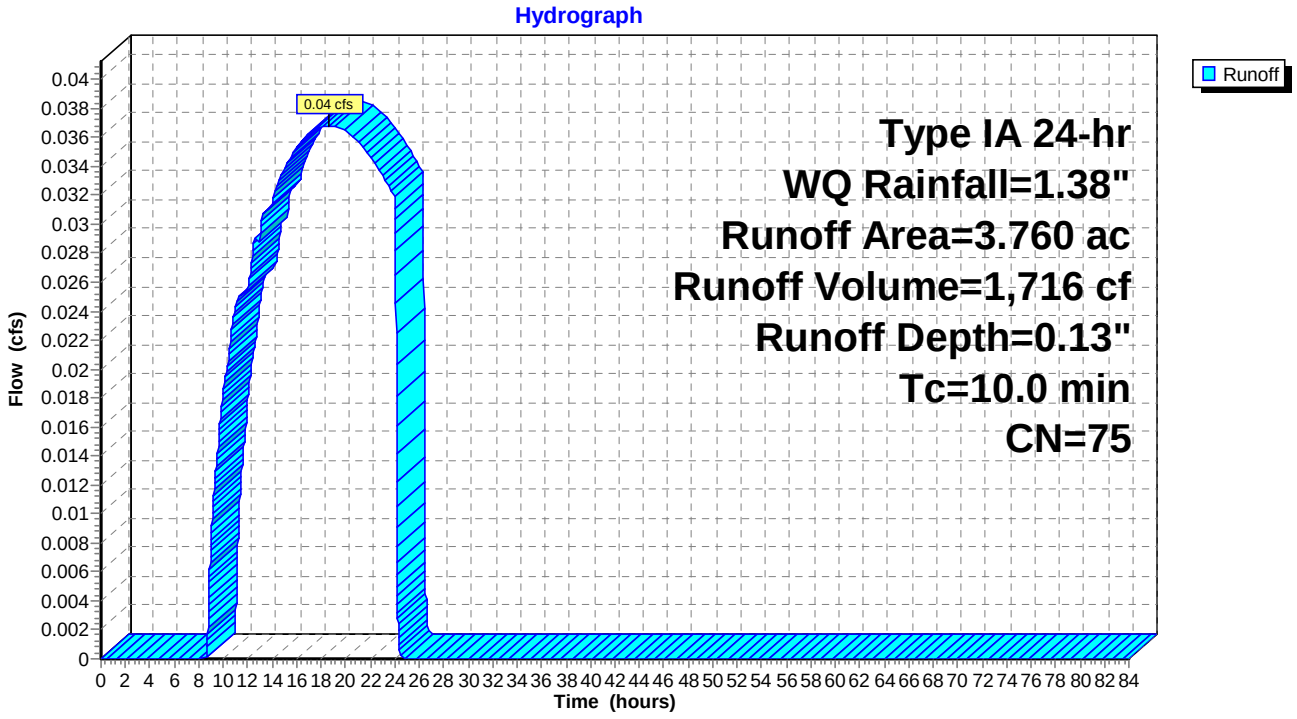
Runoff = 0.04 cfs @ 18.61 hrs, Volume= 1,716 cf, Depth= 0.13"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-84.00 hrs, dt= 0.01 hrs
Type IA 24-hr WQ Rainfall=1.38"

	Area (ac)	CN	Description
*	3.260	72	City of Salem Pre-developed, HSG C
	0.500	98	Paved roads w/curbs & sewers, HSG C
	3.760	75	Weighted Average
	3.260	72	86.70% Pervious Area
	0.500	98	13.30% Impervious Area

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

Subcatchment OSD: Developed Conditions Off-site



Summary for Pond 1WQ: Water Quality Media

Inflow Area = 599,386 sf, 47.24% Impervious, Inflow Depth = 0.39" for WQ event
Inflow = 0.99 cfs @ 8.04 hrs, Volume= 19,728 cf
Outflow = 0.39 cfs @ 7.68 hrs, Volume= 19,728 cf, Atten= 60%, Lag= 0.0 min
Primary = 0.39 cfs @ 7.68 hrs, Volume= 19,728 cf
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf

Routing by Stor-Ind method, Time Span= 0.00-84.00 hrs, dt= 0.01 hrs
Peak Elev= 542.15' @ 9.31 hrs Surf.Area= 8,500 sf Storage= 1,329 cf
Flood Elev= 562.00' Surf.Area= 8,500 sf Storage= 51,085 cf

Plug-Flow detention time= 19.9 min calculated for 19,726 cf (100% of inflow)
Center-of-Mass det. time= 19.9 min (888.6 - 868.7)

Volume	Invert	Avail.Storage	Storage Description
#1	541.99'	51,085 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

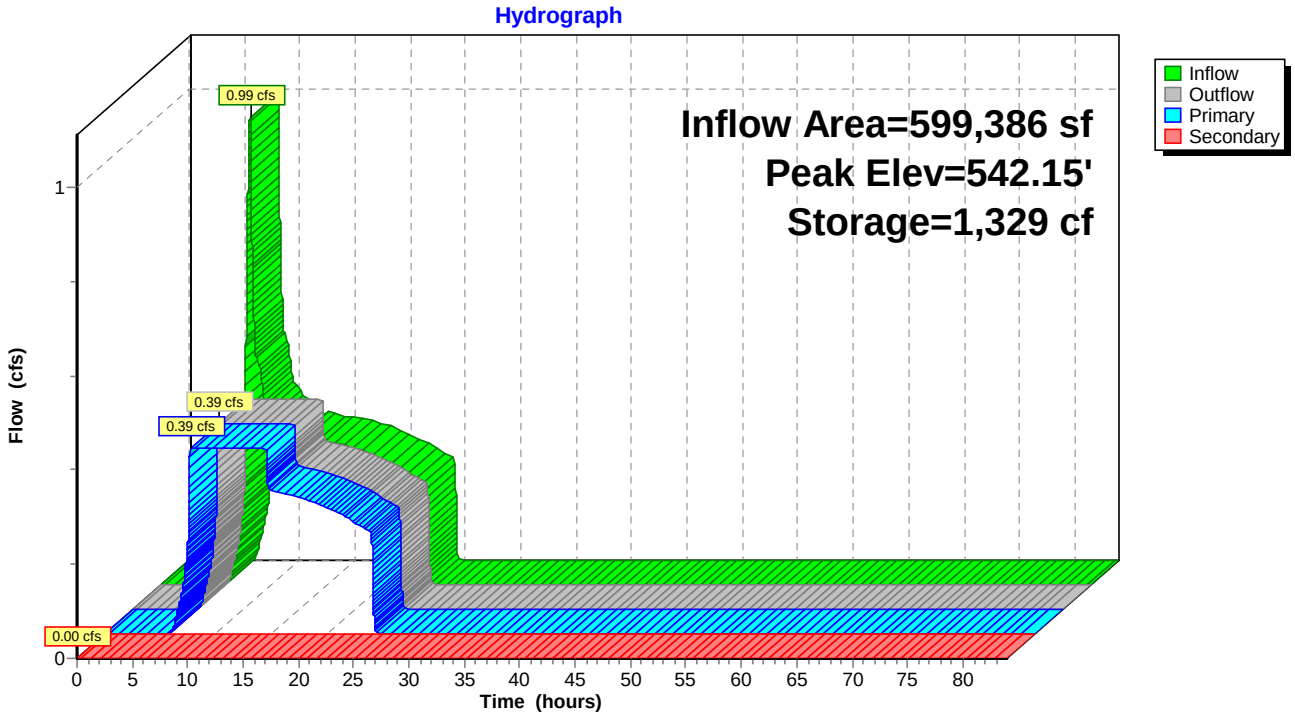
Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
541.99	8,500	0.0	0	0
542.00	8,500	100.0	85	85
544.00	8,500	100.0	17,000	17,085
546.00	8,500	100.0	17,000	34,085
547.00	8,500	100.0	8,500	42,585
548.00	8,500	100.0	8,500	51,085

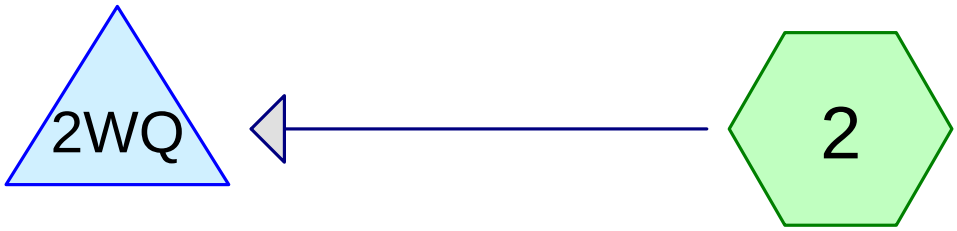
Device	Routing	Invert	Outlet Devices
#1	Primary	541.99'	**2.000 in/hr Exfiltration over Surface area**
#2	Secondary	543.00'	**24.0" Horiz. Beehive Overflow** C= 0.600 Limited to weir flow at low heads
#3	Secondary	547.00'	**15.0" Horiz. Emergency Overflow CB** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.39 cfs @ 7.68 hrs HW=542.00' (Free Discharge)
└─**1=Exfiltration** (Exfiltration Controls 0.39 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=541.99' (Free Discharge)
├─**2=Beehive Overflow** (Controls 0.00 cfs)
└─**3=Emergency Overflow CB** (Controls 0.00 cfs)

Pond 1WQ: Water Quality Media





Water Quality Media

Developed Conditions
Basin 2

Subcat Reach Pond Link

Routing Diagram for 20210112 Devon Estates Phase 2 WQ
Prepared by Multitech Engineering Services, Inc., Printed 2/17/2021
HydroCAD® 10.10-4a s/n 09412 © 2020 HydroCAD Software Solutions LLC

Summary for Subcatchment 2: Developed Conditions Basin 2

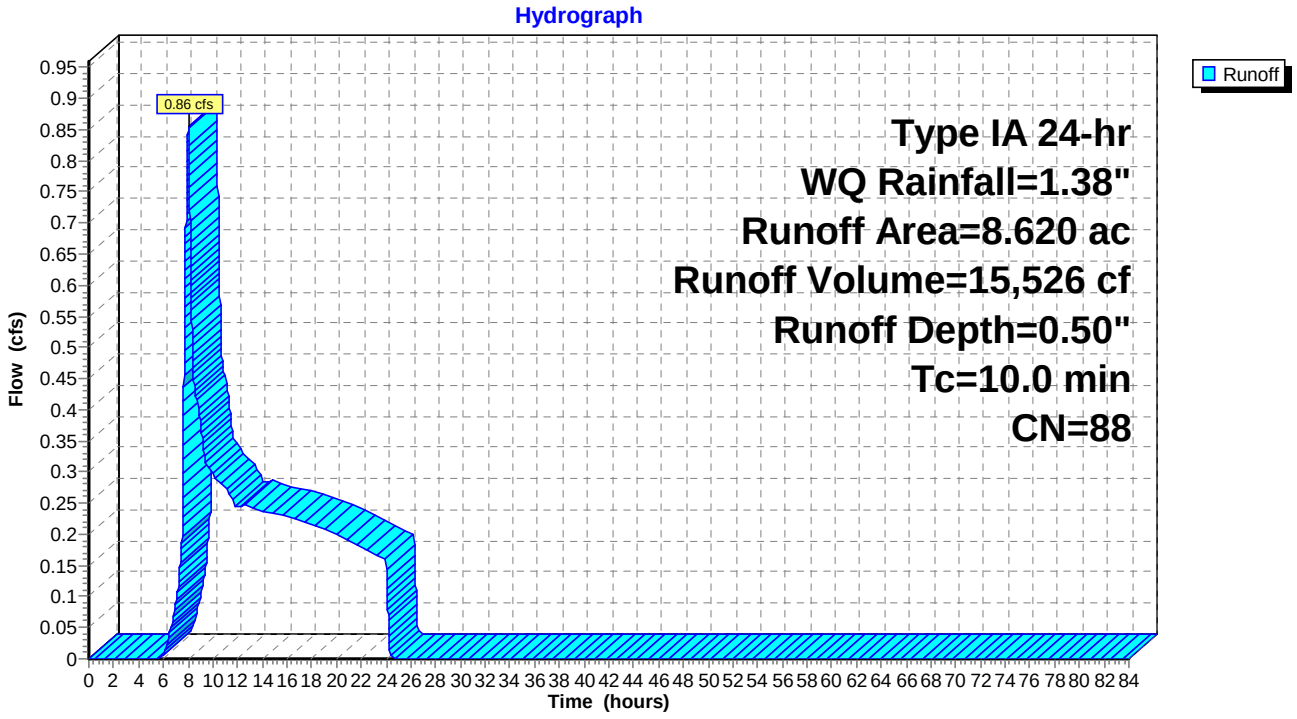
Runoff = 0.86 cfs @ 8.04 hrs, Volume= 15,526 cf, Depth= 0.50"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-84.00 hrs, dt= 0.01 hrs
Type IA 24-hr WQ Rainfall=1.38"

	Area (ac)	CN	Description
*	5.170	98	Roofs,pavement, concrete, HSG C
	3.450	74	>75% Grass cover, Good, HSG C
	8.620	88	Weighted Average
	3.450	74	40.02% Pervious Area
	5.170	98	59.98% Impervious Area

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

Subcatchment 2: Developed Conditions Basin 2



Summary for Pond 2WQ: Water Quality Media

Inflow Area = 375,487 sf, 59.98% Impervious, Inflow Depth = 0.50" for WQ event
Inflow = 0.86 cfs @ 8.04 hrs, Volume= 15,526 cf
Outflow = 0.37 cfs @ 7.70 hrs, Volume= 15,526 cf, Atten= 57%, Lag= 0.0 min
Primary = 0.37 cfs @ 7.70 hrs, Volume= 15,526 cf
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf

Routing by Stor-Ind method, Time Span= 0.00-84.00 hrs, dt= 0.01 hrs
Peak Elev= 600.11' @ 9.05 hrs Surf.Area= 8,000 sf Storage= 969 cf
Flood Elev= 606.00' Surf.Area= 8,000 sf Storage= 48,080 cf

Plug-Flow detention time= 12.9 min calculated for 15,524 cf (100% of inflow)
Center-of-Mass det. time= 12.9 min (865.9 - 853.0)

Volume	Invert	Avail.Storage	Storage Description
#1	599.99'	56,080 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

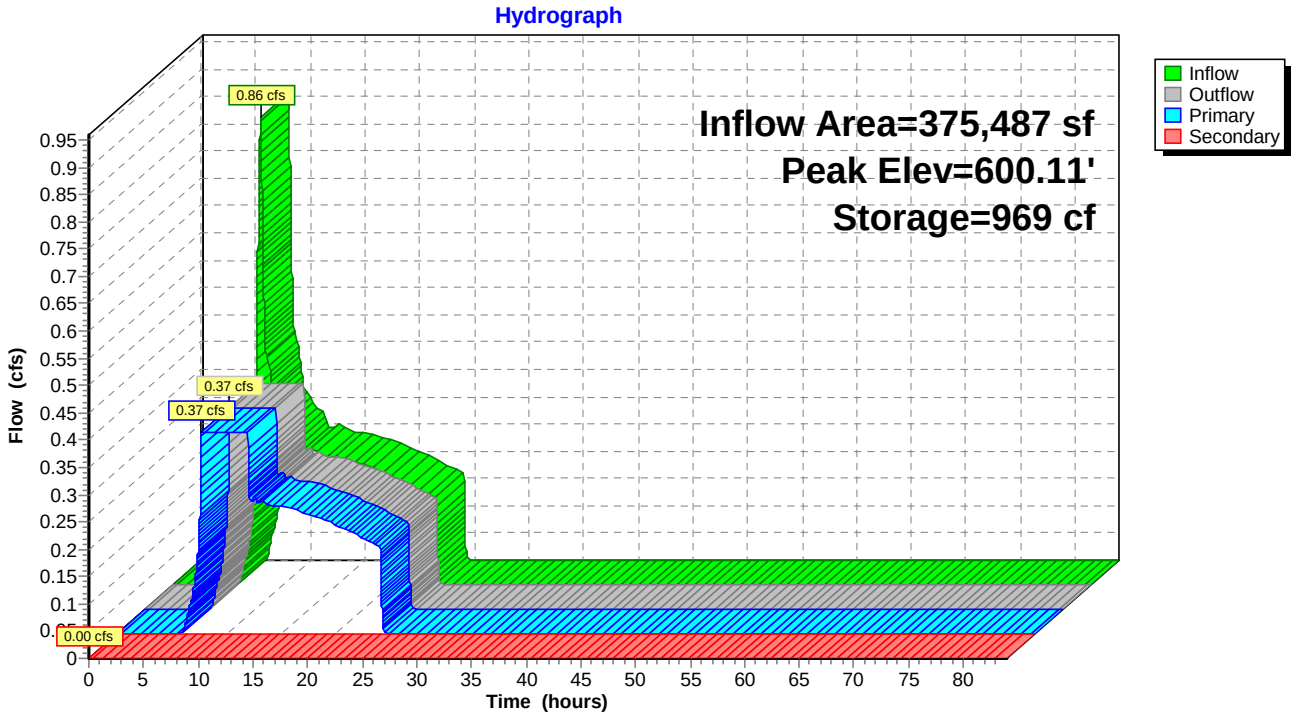
Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
599.99	8,000	0.0	0	0
600.00	8,000	100.0	80	80
602.00	8,000	100.0	16,000	16,080
604.00	8,000	100.0	16,000	32,080
606.00	8,000	100.0	16,000	48,080
607.00	8,000	100.0	8,000	56,080

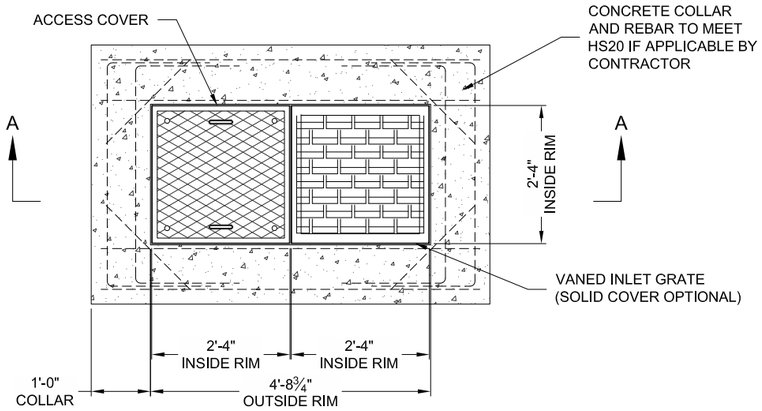
Device	Routing	Invert	Outlet Devices
#1	Primary	599.99'	**2.000 in/hr Exfiltration over Surface area**
#2	Secondary	600.25'	**24.0" Horiz. Beehive Overflow** C= 0.600 Limited to weir flow at low heads
#3	Secondary	606.00'	**15.0" Horiz. Emergency Overflow CB** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.37 cfs @ 7.70 hrs HW=600.00' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 0.37 cfs)

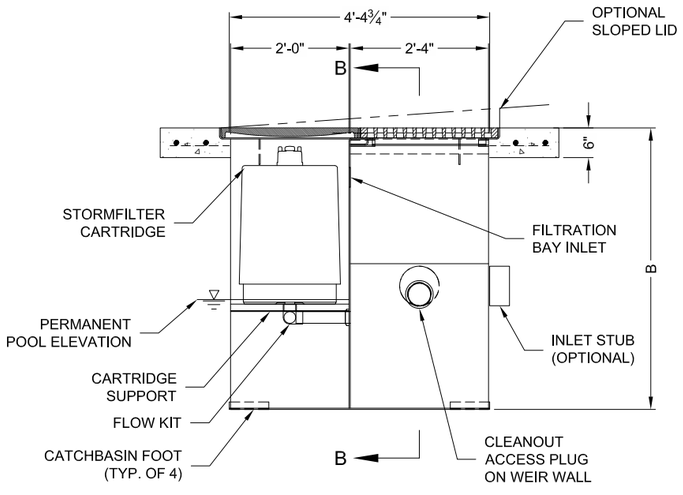
Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=599.99' (Free Discharge)
├**2=Beehive Overflow** (Controls 0.00 cfs)
└**3=Emergency Overflow CB** (Controls 0.00 cfs)

Pond 2WQ: Water Quality Media

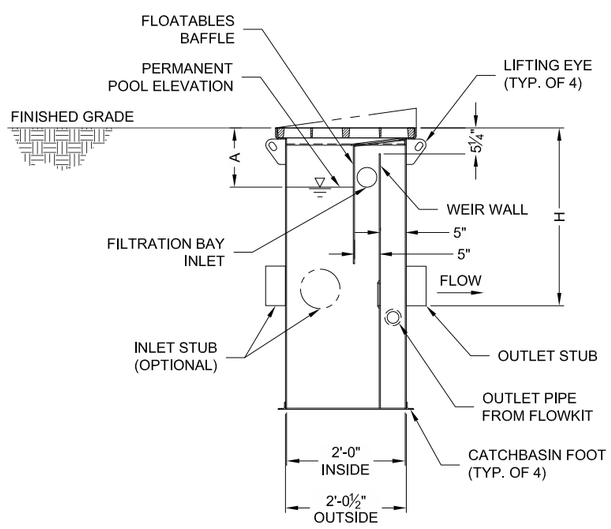




PLAN VIEW



SECTION A-A



SECTION B-B

STORMFILTER STEEL CATCHBASIN DESIGN NOTES

STORMFILTER TREATMENT CAPACITY IS A FUNCTION OF THE CARTRIDGE SELECTION AND THE NUMBER OF CARTRIDGES. 1 CARTRIDGE CATCHBASIN HAS A MAXIMUM OF ONE CARTRIDGE. SYSTEM IS SHOWN WITH A 27" CARTRIDGE, AND IS ALSO AVAILABLE WITH AN 18" CARTRIDGE. STORMFILTER CATCHBASIN CONFIGURATIONS ARE AVAILABLE WITH A DRY INLET BAY FOR VECTOR CONTROL.
PEAK HYDRAULIC CAPACITY PER TABLE BELOW. IF THE SITE CONDITIONS EXCEED PEAK HYDRAULIC CAPACITY, AN UPSTREAM BYPASS STRUCTURE IS REQUIRED.

CARTRIDGE SELECTION

CARTRIDGE HEIGHT	27"			18"			18" DEEP		
RECOMMENDED HYDRAULIC DROP (H)	3.05'			2.3'			3.3'		
SPECIFIC FLOW RATE (gpm/sf)	2 gpm/sf	1.67* gpm/sf	1 gpm/sf	2 gpm/sf	1.67* gpm/sf	1 gpm/sf	2 gpm/sf	1.67* gpm/sf	1 gpm/sf
CARTRIDGE FLOW RATE (gpm)	22.5	18.79	11.25	15	12.53	7.5	15	12.53	7.5
PEAK HYDRAULIC CAPACITY	1.0			1.0			1.8		
INLET PERMANENT POOL LEVEL (A)	1'-0"			1'-0"			2'-0"		
OVERALL STRUCTURE HEIGHT (B)	4'-9"			3'-9"			4'-9"		

* 1.67 gpm/sf SPECIFIC FLOW RATE IS APPROVED WITH PHOSPHOSORB® (PSORB) MEDIA ONLY

GENERAL NOTES
1. CONTECH TO PROVIDE ALL MATERIALS UNLESS NOTED OTHERWISE.
2. FOR SITE SPECIFIC DRAWINGS WITH DETAILED STORMFILTER CATCHBASIN STRUCTURE DIMENSIONS AND WEIGHTS, PLEASE CONTACT YOUR CONTECH ENGINEERED SOLUTIONS LLC REPRESENTATIVE. www.contechES.com
3. STORMFILTER CATCHBASIN WATER QUALITY STRUCTURE SHALL BE IN ACCORDANCE WITH ALL DESIGN DATA AND INFORMATION CONTAINED IN THIS DRAWING.
4. INLET SHOULD NOT BE LOWER THAN OUTLET. INLET (IF APPLICABLE) AND OUTLET PIPING TO BE SPECIFIED BY ENGINEER AND PROVIDED BY CONTRACTOR.
5. MANUFACTURER TO APPLY A SURFACE BEAD WELD IN THE SHAPE OF THE LETTER "O" ABOVE THE OUTLET PIPE STUB ON THE EXTERIOR SURFACE OF THE STEEL SFCB.
6. STORMFILTER CATCHBASIN EQUIPPED WITH 4 INCH (APPROXIMATE) LONG STUBS FOR INLET (IF APPLICABLE) AND OUTLET PIPING. STANDARD OUTLET STUB IS 8 INCHES IN DIAMETER. MAXIMUM OUTLET STUB IS 15 INCHES IN DIAMETER. CONNECTION TO COLLECTION PIPING CAN BE MADE USING FLEXIBLE COUPLING BY CONTRACTOR.
7. STEEL STRUCTURE TO BE MANUFACTURED OF 1/4 INCH STEEL PLATE. CASTINGS SHALL MEET AASHTO M306 LOAD RATING. TO MEET HS20 LOAD RATING ON STRUCTURE, A CONCRETE COLLAR IS REQUIRED. WHEN REQUIRED, CONCRETE COLLAR WITH #4 REINFORCING BARS TO BE PROVIDED BY CONTRACTOR.
8. FILTER CARTRIDGES SHALL BE MEDIA-FILLED, PASSIVE, SIPHON ACTUATED, RADIAL FLOW, AND SELF CLEANING. RADIAL MEDIA DEPTH SHALL BE 7-INCHES. FILTER MEDIA CONTACT TIME SHALL BE AT LEAST 38 SECONDS.
9. SPECIFIC FLOW RATE IS EQUAL TO THE FILTER TREATMENT CAPACITY (gpm) DIVIDED BY THE FILTER CONTACT SURFACE AREA (sq ft).

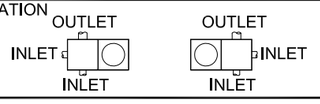
INSTALLATION NOTES
A. ANY SUB-BASE, BACKFILL DEPTH, AND/OR ANTI-FLOTATION PROVISIONS ARE SITE-SPECIFIC DESIGN CONSIDERATIONS AND SHALL BE SPECIFIED BY ENGINEER OF RECORD.
B. CONTRACTOR TO PROVIDE EQUIPMENT WITH SUFFICIENT LIFTING AND REACH CAPACITY TO LIFT AND SET THE CATCHBASIN (LIFTING CLUTCHES PROVIDED).
C. CONTRACTOR TO TAKE APPROPRIATE MEASURES TO PROTECT CARTRIDGES FROM CONSTRUCTION-RELATED EROSION RUNOFF.

1-CARTRIDGE CATCHBASIN STORMFILTER DATA

STRUCTURE ID	XXX
WATER QUALITY FLOW RATE (cfs)	X.XX
PEAK FLOW RATE (<1 cfs)	X.XX
RETURN PERIOD OF PEAK FLOW (yrs)	XXX
CARTRIDGE HEIGHT (27", 18", 18" DEEP)	XX
CARTRIDGE FLOW RATE (gpm)	XX
MEDIA TYPE (PERLITE, ZPG, PSORB)	XXXXX
RIM ELEVATION	XXX.XX'

PIPE DATA:	I.E.	DIAMETER
INLET STUB	XXX.XX'	XX"
OUTLET STUB	XXX.XX'	XX"

CONFIGURATION



SLOPED LID	YES\NO
SOLID COVER	YES\NO

NOTES/SPECIAL REQUIREMENTS:

The Stormwater Management StormFilter®
THIS PRODUCT MAY BE PROTECTED BY ONE OR MORE OF THE FOLLOWING U.S. PATENTS: 5,322,629; 5,524,370; 5,707,527; 5,985,157; 6,027,639; 6,649,048; RELATED FOREIGN PATENTS, OR OTHER PATENTS PENDING.

CONTECH® ENGINEERED SOLUTIONS LLC
www.contechES.com
9025 Centre Pointe Dr., Suite 400, West Chester, OH 45069
800-526-3999 513-645-7000 513-645-7993 FAX

1 CARTRIDGE CATCHBASIN STORMFILTER STANDARD DETAIL

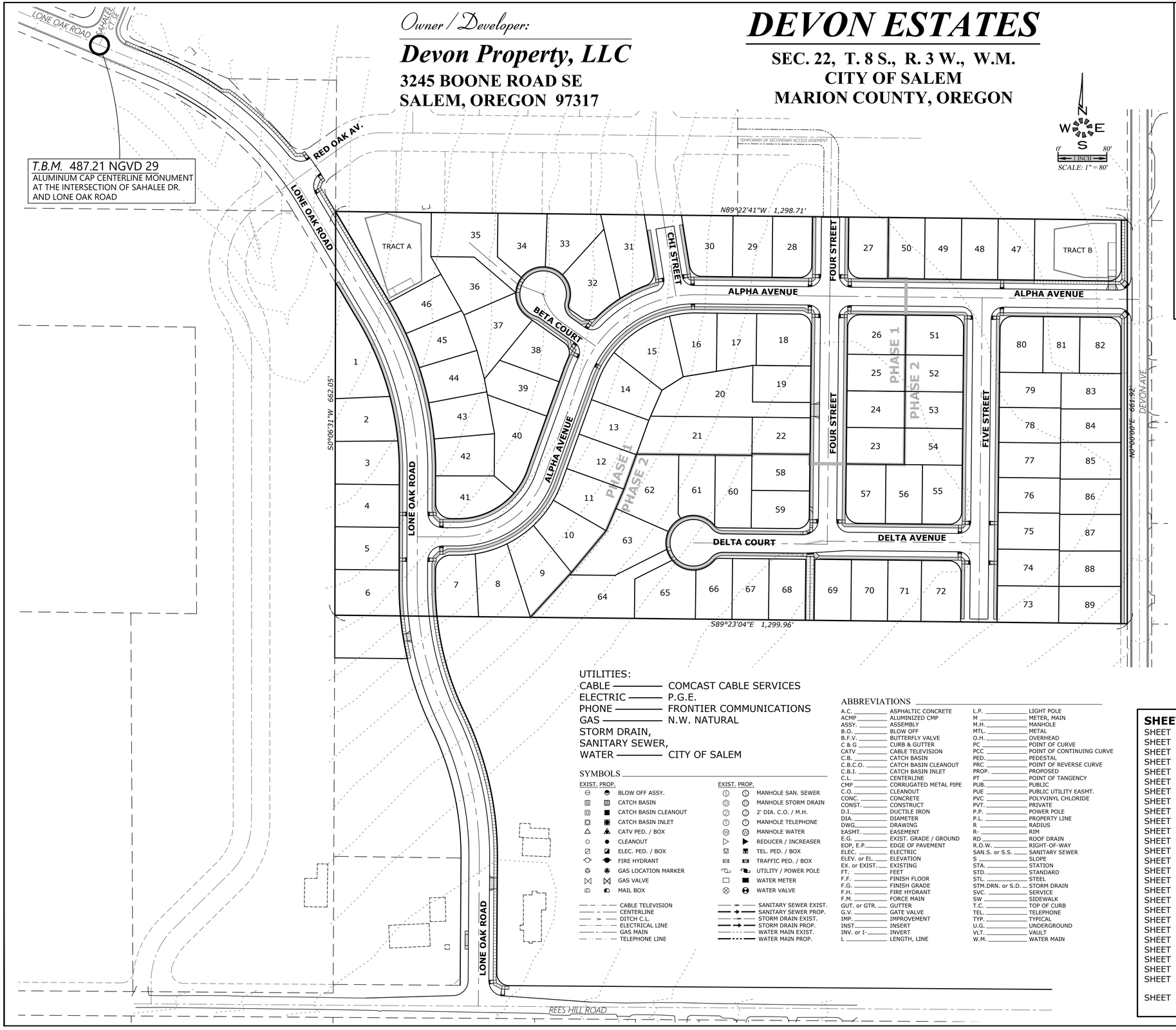
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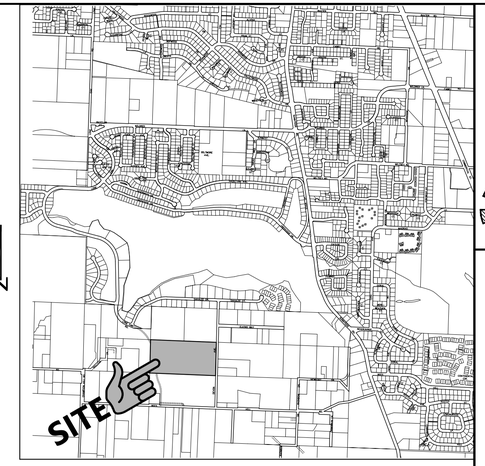
DEVON ESTATES

Owner / Developer:

Devon Property, LLC
3245 BOONE ROAD SE
SALEM, OREGON 97317

SEC. 22, T. 8 S., R. 3 W., W.M.
CITY OF SALEM
MARION COUNTY, OREGON





VICINITY MAP

TOTAL PARCEL SIZE:
DEVELOPABLE AREA ——— 19.745 Ac.
NUMBER OF UNITS ——— 89
DENSITY ——— 4.51 UNITS/Ac.
LARGEST LOT ——— 13,195 S.F.
SMALLEST LOT ——— 5,422 S.F.
AVERAGE ——— 6,749 S.F.

PHASE 1:
DEVELOPABLE AREA ——— 11.026 Ac.
NUMBER OF UNITS ——— 46
DENSITY ——— 4.17 UNITS/Ac.
LARGEST LOT ——— 13,195 S.F.
SMALLEST LOT ——— 5,700 S.F.
AVERAGE ——— 7,182 S.F.

PHASE 2:
DEVELOPABLE AREA ——— 8.719 Ac.
NUMBER OF UNITS ——— 43
DENSITY ——— 4.93 UNITS/Ac.
LARGEST LOT ——— 11,286 S.F.
SMALLEST LOT ——— 5,422 S.F.
AVERAGE ——— 6,286 S.F.

UTILITIES:
CABLE ——— COMCAST CABLE SERVICES
ELECTRIC ——— P.G.E.
PHONE ——— FRONTIER COMMUNICATIONS
GAS ——— N.W. NATURAL
STORM DRAIN,
SANITARY SEWER,
WATER ——— CITY OF SALEM

SYMBOLS

EXIST.	PROP.		EXIST.	PROP.	
⊖	◓	BLOW OFF ASSY.	Ⓢ	Ⓢ	MANHOLE SAN. SEWER
▥	▥	CATCH BASIN	Ⓓ	Ⓓ	MANHOLE STORM DRAIN
▣	■	CATCH BASIN CLEANOUT	②	②	2' DIA. C.O. / M.H.
▣	▣	CATCH BASIN INLET	Ⓣ	Ⓣ	MANHOLE TELEPHONE
△	▲	CATV PED. / BOX	Ⓦ	Ⓦ	MANHOLE WATER
○	●	CLEANOUT	▷	▶	REDUCER / INCREASER
◪	◪	ELEC. PED. / BOX	Ⓣ	Ⓣ	TEL. PED. / BOX
⊕	⬟	FIRE HYDRANT	▭	▭	TRAFFIC PED. / BOX
⊛	⊛	GAS LOCATION MARKER	○	○	UTILITY / POWER POLE
⋈	⋈	GAS VALVE	□	■	WATER METER
⌂	◧	MAIL BOX	⊗	⊗	WATER VALVE

CABLE TELEVISION
CENTERLINE
DITCH C.L.
ELECTRICAL LINE
GAS MAIN
TELEPHONE LINE
SANITARY SEWER EXIST.
SANITARY SEWER PROP.
STORM DRAIN EXIST.
STORM DRAIN PROP.
WATER MAIN EXIST.
WATER MAIN PROP.

ABBREVIATIONS

A.C.	ASPHALTIC CONCRETE	L.P.	LIGHT POLE
ACMP	ALUMINIZED CMP	M	METER, MAIN
ASSY.	ASSEMBLY	M.H.	MANHOLE
B.O.	BLOW OFF	MTL.	METAL
B.F.V.	BUTTERFLY VALVE	O.H.	OVERHEAD
C & G	CURB & GUTTER	PC	POINT OF CURVE
CATV	CABLE TELEVISION	PCC	POINT OF CONTINUING CURVE
C.B.	CATCH BASIN	PED.	PEDESTAL
C.B.C.O.	CATCH BASIN CLEANOUT	PRC	POINT OF REVERSE CURVE
C.B.I.	CATCH BASIN INLET	PROP.	PROPOSED
C.L.	CENTERLINE	PT	POINT OF TANGENCY
CMP	CORRUGATED METAL PIPE	PUB.	PUBLIC
C.O.	CLEANOUT	PUE	PUBLIC UTILITY EASMT.
CONC.	CONCRETE	PVC	POLYVINYL CHLORIDE
CONST.	CONSTRUCT	PVT.	PRIVATE
D.I.	DUCTILE IRON	P.P.	POWER POLE
DIA.	DIAMETER	P.L.	PROPERTY LINE
DWG.	DRAWING	R	RADIUS
EASMT.	EASEMENT	R-	RIM
E.G.	EXIST. GRADE / GROUND	RD	ROOF DRAIN
EOP, E.P.	EDGE OF PAVEMENT	R.O.W.	RIGHT-OF-WAY
ELEC.	ELECTRIC	SAN.S. or S.S.	SANITARY SEWER
ELEV. or EL.	ELEVATION	S	SLOPE
EX. or EXIST.	EXISTING	STA.	STATION
FT.	FEET	STD.	STANDARD
F.F.	FINISH FLOOR	STL.	STEEL
F.G.	FINISH GRADE	STM.DRN. or S.D.	STORM DRAIN
F.H.	FIRE HYDRANT	SVC.	SERVICE
F.M.	FORCE MAIN	SW	SIDEWALK
GUT. or GTR.	GUTTER	T.C.	TOP OF CURB
G.V.	GATE VALVE	TEL.	TELEPHONE
IMP.	IMPROVEMENT	TYP.	TYPICAL
INST.	INSERT	U.G.	UNDERGROUND
INV. or I-	INVERT	VLT.	VAULT
L	LENGTH, LINE	W.M.	WATER MAIN

SHEET INDEX

SHEET P101	COVER SHEET	
SHEET P102	EXISTING CONDITIONS PLAN	
SHEET P103	TREE CONSERVATION PLAN	ONSITE: WEST
SHEET P104	TREE CONSERVATION PLAN	ONSITE: EAST
SHEET P105	TREE CONSERVATION PLAN	OFFSITE
SHEET P201	SITE PLAN	
SHEET P301	UTILITY PLAN	ONSITE
SHEET P302	UTILITY PLAN	OFFSITE: SOUTH & NORTHWEST
SHEET P303	DRAINAGE PLAN	ONSITE
SHEET P304	DRAINAGE PLAN	OFFSITE: SOUTH & NORTHWEST
SHEET P305	DRAINAGE PLAN	OFFSITE: NORTHEAST
SHEET P306	GRADING PLAN	ONSITE
SHEET P401	STREET PLAN & PROFILE	LONE OAK RD. -1+00 TO 4+20
SHEET P402	STREET PLAN & PROFILE	LONE OAK RD. 4+20 TO 8+60
SHEET P403	STREET PLAN & PROFILE	LONE OAK RD. 8+60 TO 13+60
SHEET P404	STREET PLAN & PROFILE	LONE OAK RD. 13+60 TO 18+40
SHEET P405	STREET PLAN & PROFILE	ALPHA AV. 0+00 TO 3+40
SHEET P406	STREET PLAN & PROFILE	ALPHA AV. 3+40 TO 7+60
SHEET P407	STREET PLAN & PROFILE	ALPHA AV. 7+60 TO 11+20
SHEET P408	STREET PLAN & PROFILE	ALPHA AV. 11+20 TO 14+40
SHEET P409	STREET PLAN & PROFILE	BETA CT.
SHEET P410	STREET PLAN & PROFILE	CHI ST.
SHEET P411	STREET PLAN & PROFILE	FOUR ST.
SHEET P412	STREET PLAN & PROFILE	FIVE ST.
SHEET P413	STREET PLAN & PROFILE	DELTA CT.
SHEET P414	STREET PLAN & PROFILE	PEDESTRIAN PATH TO PARK & DELTA AVENUE
SHEET P415	STREET PLAN & PROFILE	LOT 35 DRIVEWAY

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1155 13th ST. S.E. SALEM, OR. 97302
PH. (503) 363-9227 FAX (503) 364-1260
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PRELIMINARY COVER SHEET

DEVON ESTATES

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Date: NOV. 2017
Scale: AS SHOWN
As-Built: ---

P.H.S. 02/02/2021
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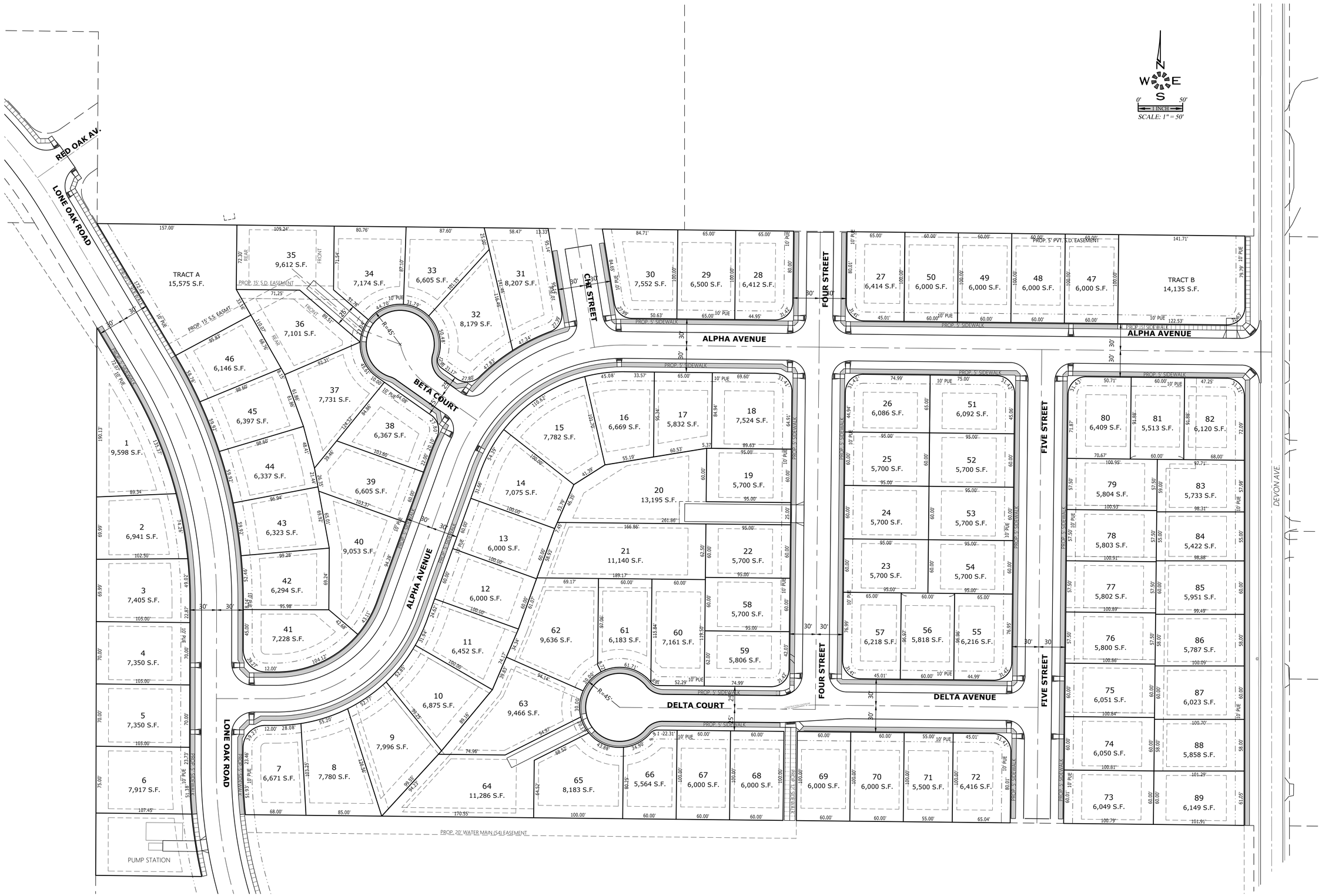
REGISTERED PROFESSIONAL ENGINEER
OREGON
JULY 1, 1978
HAROLD D. GRENZ
EXPIRES: 06-30-2021

JOB # 6502

P101

1. REVISED LOTS 73-89 PER OWNER.

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PRELIMINARY SITE PLAN

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OREGON
JULY 14, 1978
MARK D. GRENZ
EXPIRES: 06-30-2021

JOB # 6502

P201

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P102	JOB # 6502	06-30-2021 DATE	6502b20 P102XC Design: M.D.G. Drawn: P.H.S. Checked: M.D.G. Date: NOV. 2017 Scale: AS SHOWN As-Built: ----	NO CHANGES, MODIFICATIONS OR REPRODUCTIONS TO BE MADE TO THESE DRAWINGS WITHOUT WRITTEN AUTHORIZATION FROM THE DESIGN ENGINEER. DIMENSIONS & NOTES TAKE PRECEDENCE OVER GRAPHICAL REPRESENTATION.	**DEVON ESTATES** **PRELIMINARY EXISTING CONDITIONS PLAN**

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W E S N

0' 40'
1 INCH
SCALE: 1" = 40'

100% 64 TOTAL TREES WITHIN BOUNDARY
16% 10 MINIMUM TREES TO REMAIN
⊗ = EXISTING TREE WHICH MAY BE REMOVED
⊙ = EXISTING TREE TO REMAIN

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PRELIMINARY TREE CONSERVATION PLAN - ONSITE: WEST

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6502b20 P103TR

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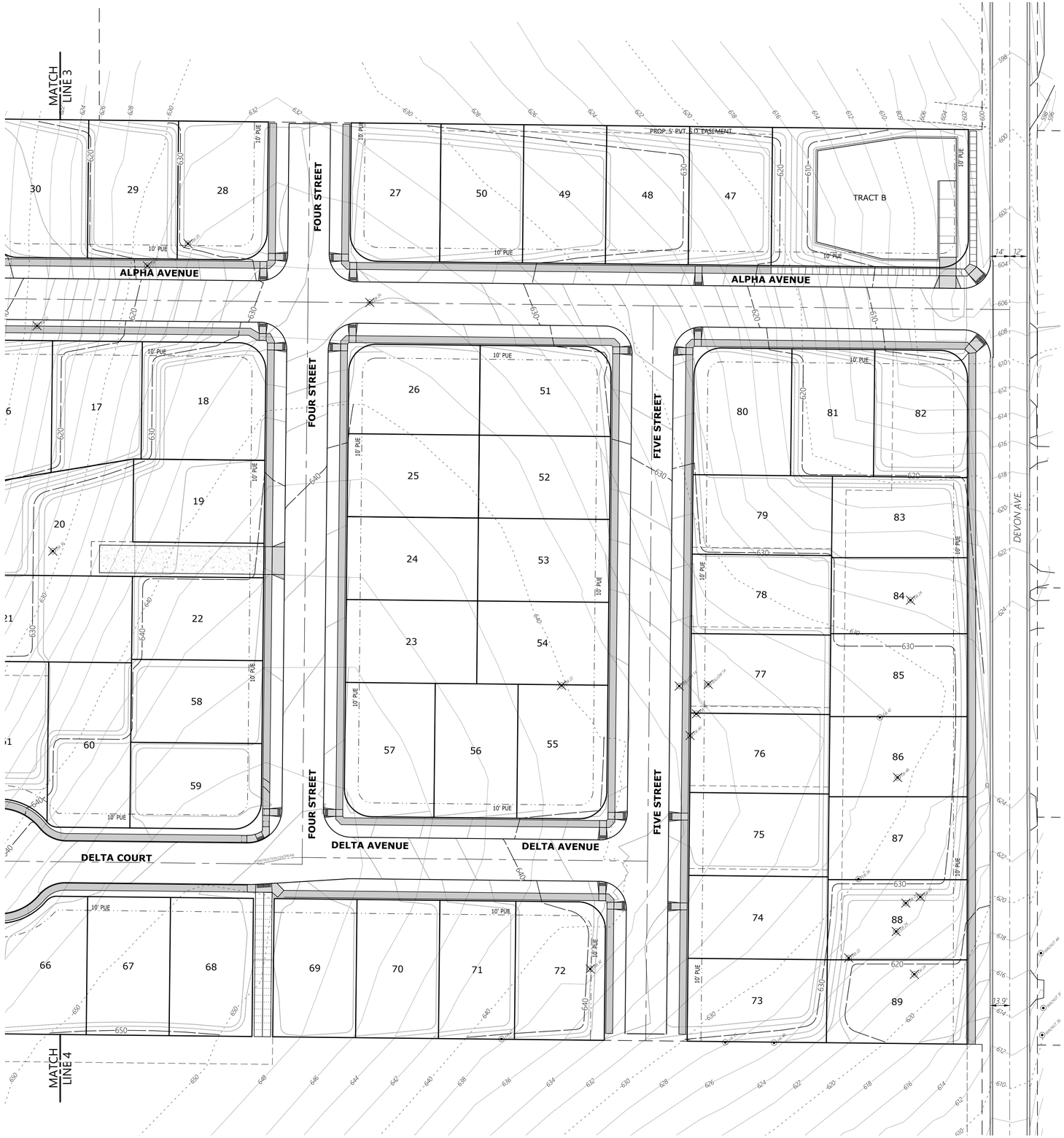
REGISTERED PROFESSIONAL ENGINEER
OREGON
JULY 14, 1978
MARK D. GRENZ

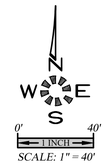
EXPIRES: 06-30-2021

JOB # 6502

P103

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100% 64 TOTAL TREES WITHIN BOUNDARY
16% 10 MINIMUM TREES TO REMAIN
X = EXISTING TREE WHICH MAY BE REMOVED
⊙ = EXISTING TREE TO REMAIN

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PRELIMINARY TREE CONSERVATION PLAN - ONSITE: EAST

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6502b20 P104TR

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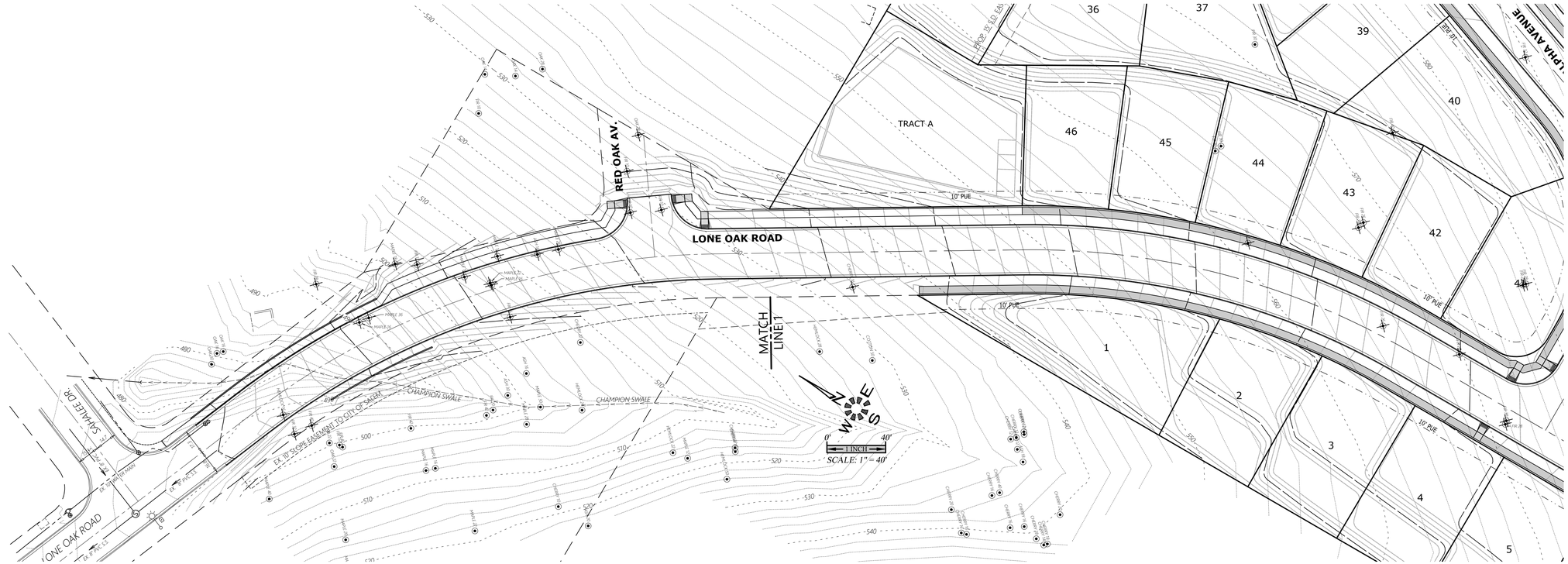
REGISTERED PROFESSIONAL ENGINEER
OREGON
JULY 14, 1978
MARK D. GRENZ

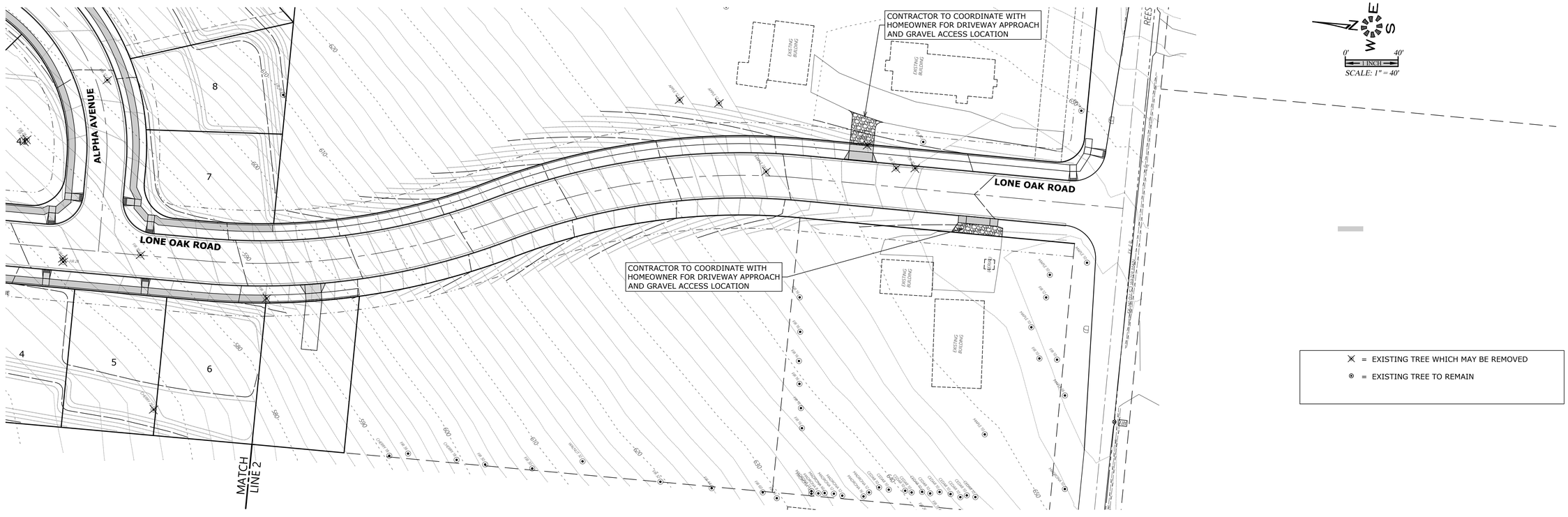
EXPIRES: 06-30-2021

JOB # 6502

P104

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PRELIMINARY TREE CONSERVATION PLAN - OFFSITE

DEVON ESTATES

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DIMENSIONS & NOTES TAKE PRECEDENCE OVER GRAPHICAL REPRESENTATION.

6500x500 PLOTTR

Design: M.D.G.
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OREGON
JULY 14, 1978
MARK D. GRENZ

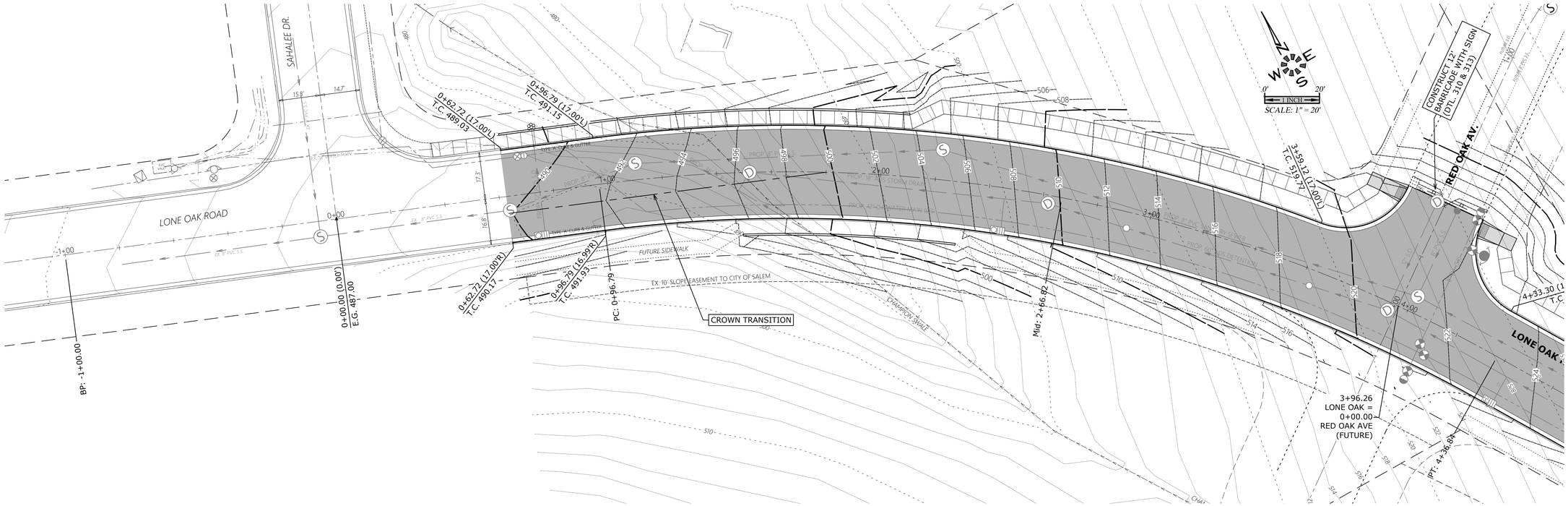
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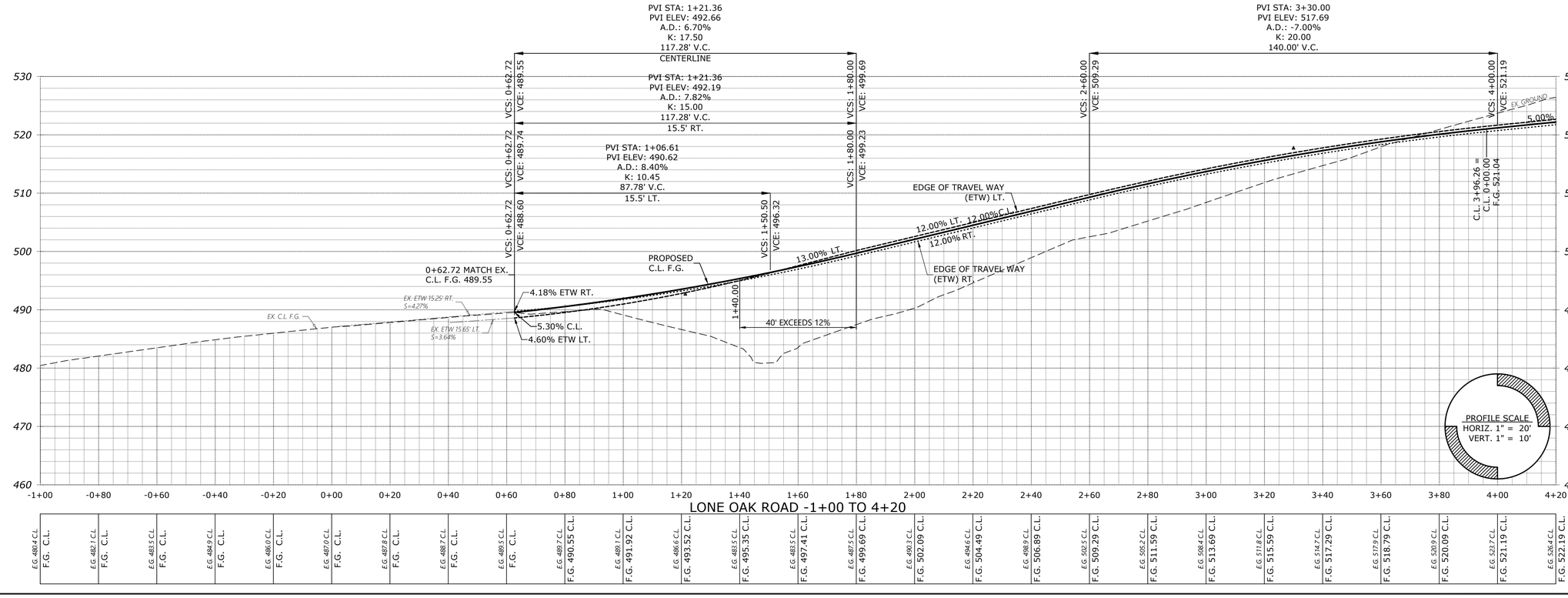
P105

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SEE SHEET 409 FOR
RED OAK AVE. DESIGN



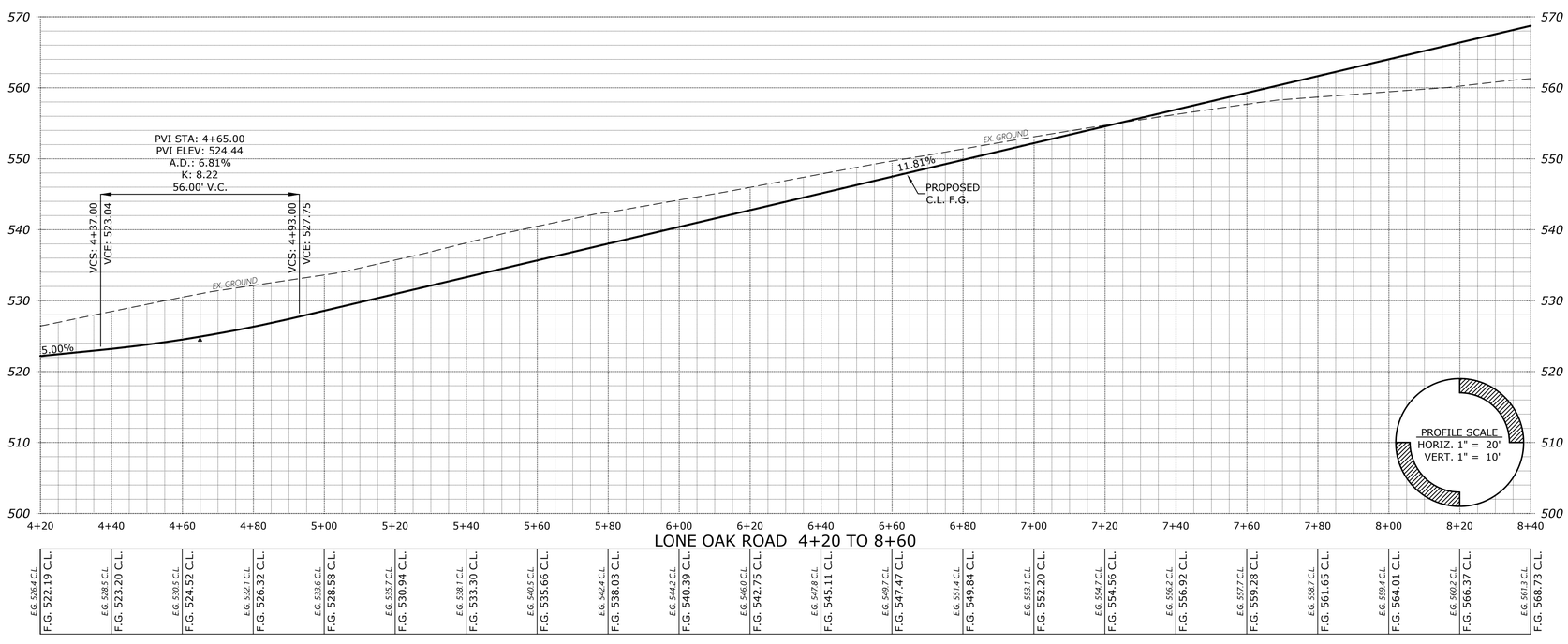
SEE SHEET 402 FOR
LONE OAK ROAD CONTINUATION



LONE OAK ROAD -1+00 TO 4+20

| | | |





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PRELIMINARY STREET IMPROVEMENTS

DEVON ESTATES

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DIMENSIONS & NOTES TAKE PRECEDENCE OVER GRAPHICAL REPRESENTATION.

650x20 P402ST

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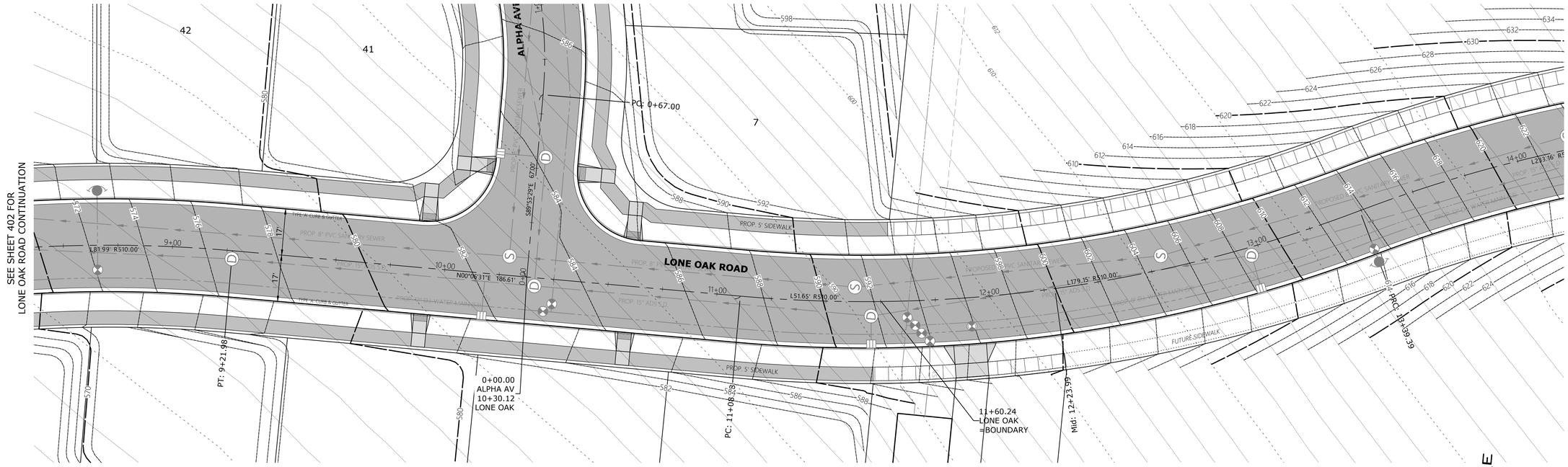
REGISTERED PROFESSIONAL ENGINEER
OREGON JULY 1, 1978 MARK D. GRENZ
EXPIRES: 06-30-2021

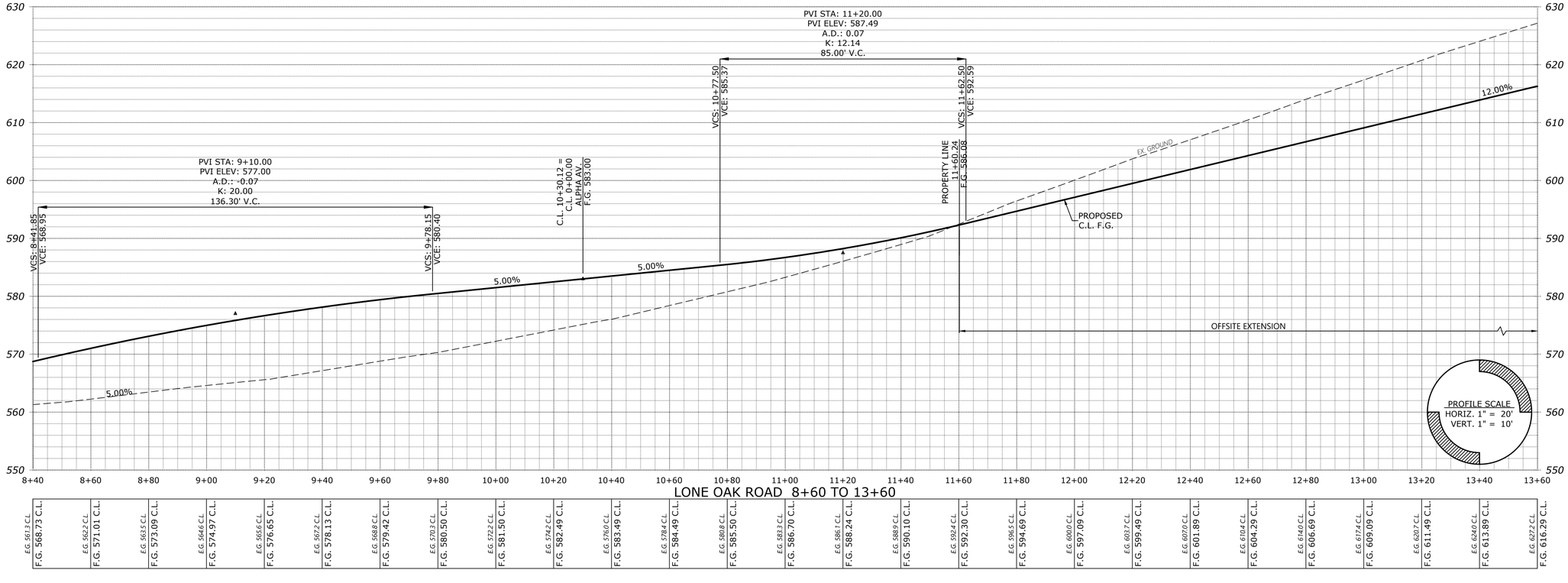
JOB # 6502

P402

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SEE SHEET 405 TO 408 FOR ALPHA AV. DESIGN





MULTI/TECH
ENGINEERING SERVICES, INC.
1155 13th ST. S.E. SALEM, OR. 97302
PH. (503) 363-9227 FAX (503) 364-1260
www.mtengineering.net office@mtengineering.net

PRELIMINARY STREET IMPROVEMENTS

DEVON ESTATES

NO CHANGES, MODIFICATIONS OR REPRODUCTIONS TO BE MADE TO THESE DRAWINGS WITHOUT WRITTEN AUTHORIZATION FROM THE DESIGN ENGINEER.

DIMENSIONS & NOTES TAKE PRECEDENCE OVER GRAPHICAL REPRESENTATION.

6500b2b P403ST

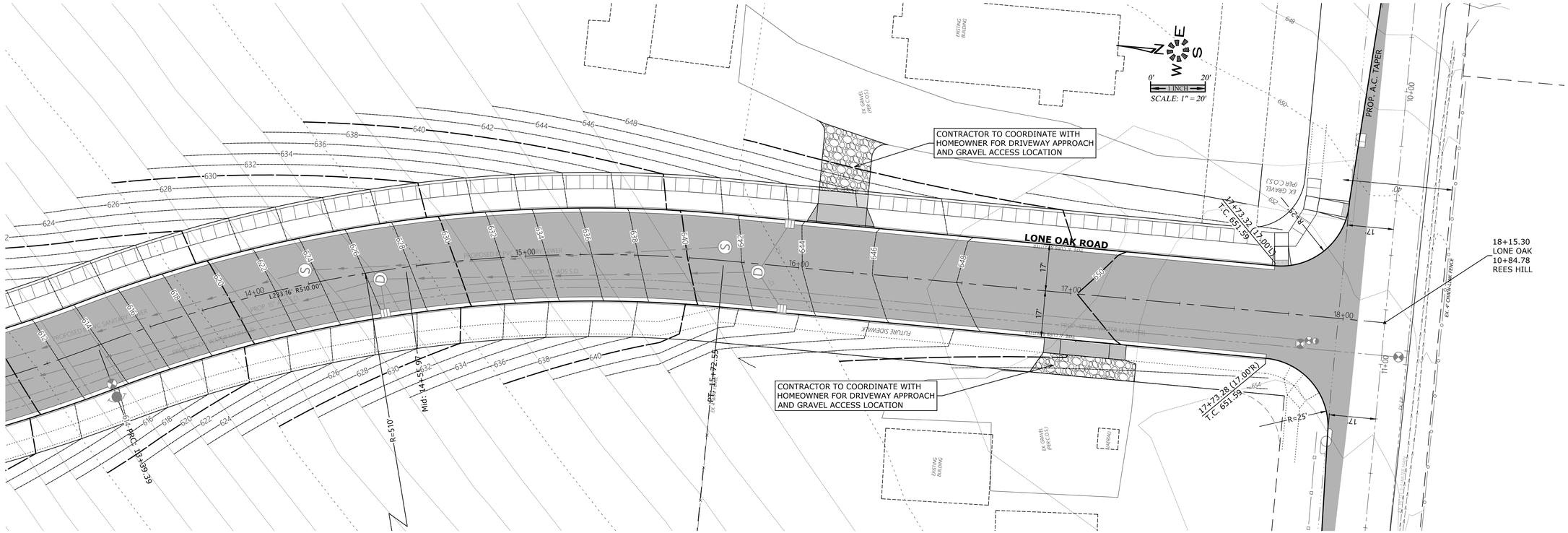
Design: M.D.G.
Drawn: P.H.S.
Checked: M.D.G.
Date: NOV. 2017
Scale: AS SHOWN
As-Built: ----

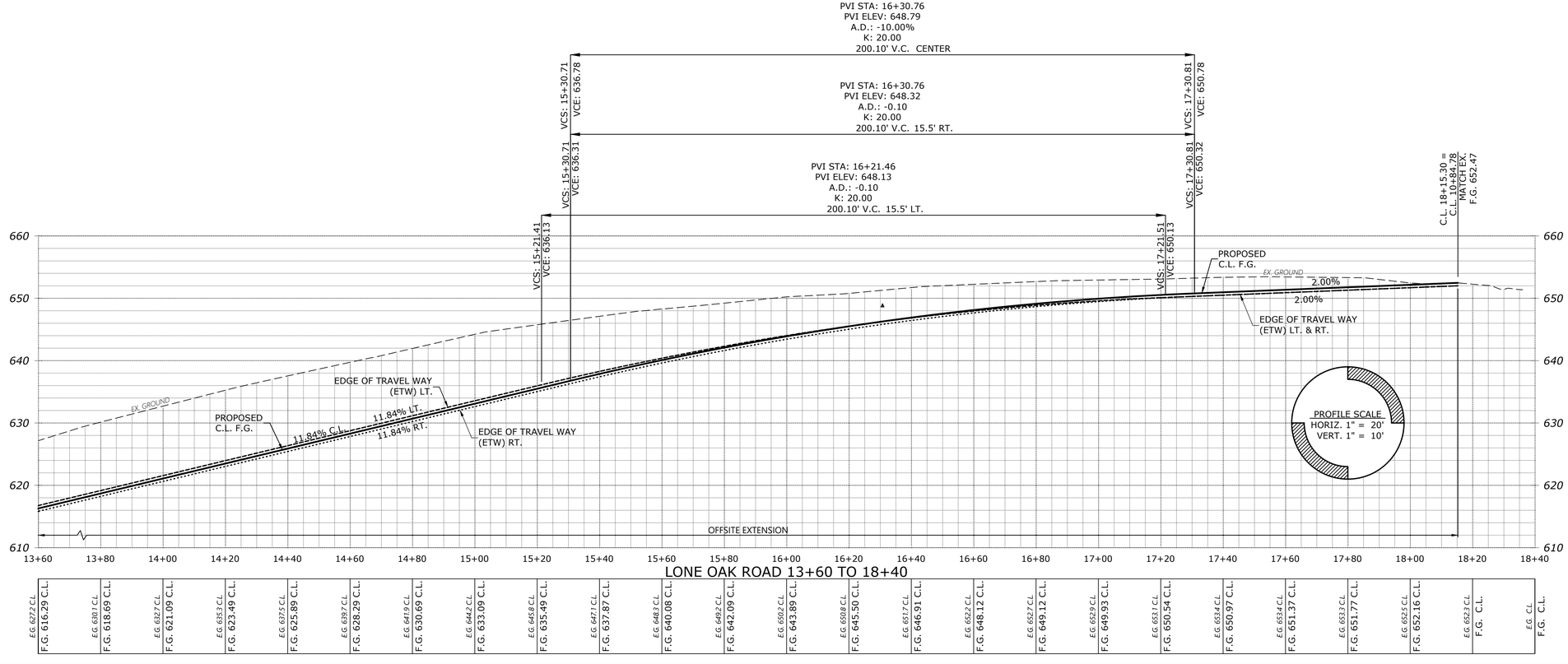
REGISTERED PROFESSIONAL ENGINEER
OREGON
JULY 14, 1978
MARK D. GRENZ
EXPIRES: 06-30-2021

JOB # 6502

P403

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DIMENSIONS & NOTES TAKE PRECEDENCE OVER GRAPHICAL REPRESENTATION.

6500s20 P404ST

Design: M.D.G.
Drawn: P.H.S.
Checked: M.D.G.
Date: NOV. 2017
Scale: AS SHOWN
As-Built: ____

REGISTERED PROFESSIONAL ENGINEER
OREGON
JULY 14, 1978
MARK D. GRENZ
EXPIRES: 06-30-2021

JOB # 6502

P404

J:\6500-6599\6502-DevonAvenueSubdivision\Dwg\20\6502s20.dwg, P404ST, 2/16/2021 4:18:08 PM, PStorders

MULTI/TECH
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PH. (503) 363-9227 FAX (503) 364-1260
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PRELIMINARY STREET IMPROVEMENTS

DEVON ESTATES

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DIMENSIONS & NOTES TAKE PRECEDENCE OVER GRAPHICAL REPRESENTATION.

650x620 P405ST

Design: M.D.G.
Drawn: P.H.S.
Checked: M.D.G.
Date: NOV. 2017
Scale: AS SHOWN
As-Built: ----

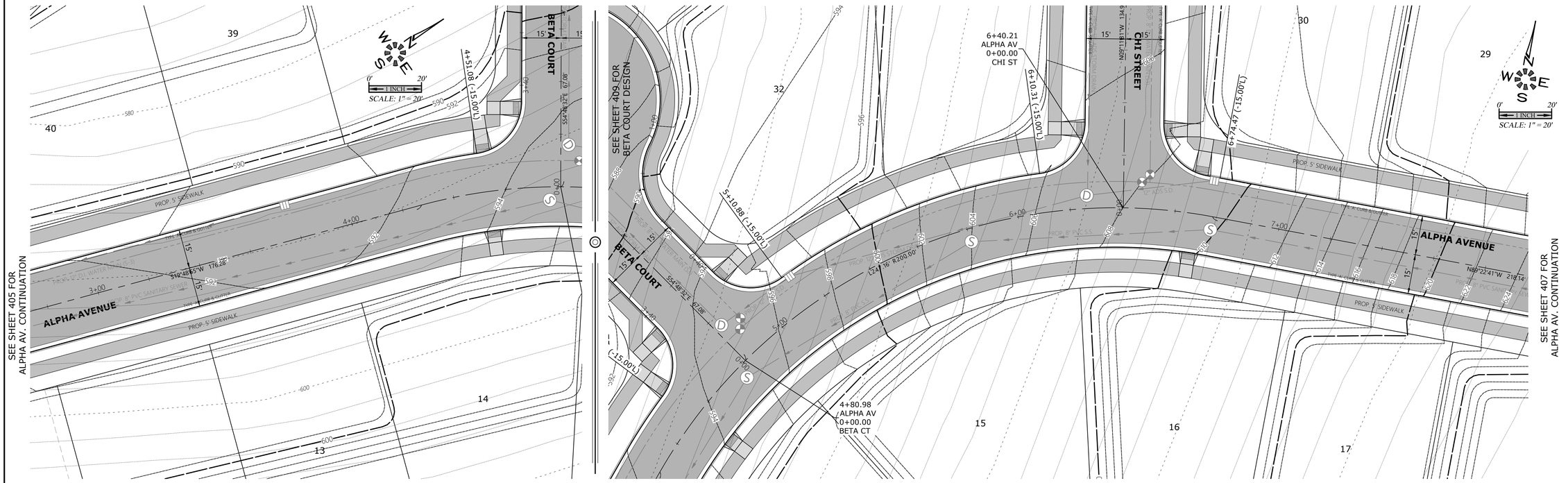
REGISTERED PROFESSIONAL ENGINEER
OREGON
JULY 14, 1977
MARK D. GRENZ

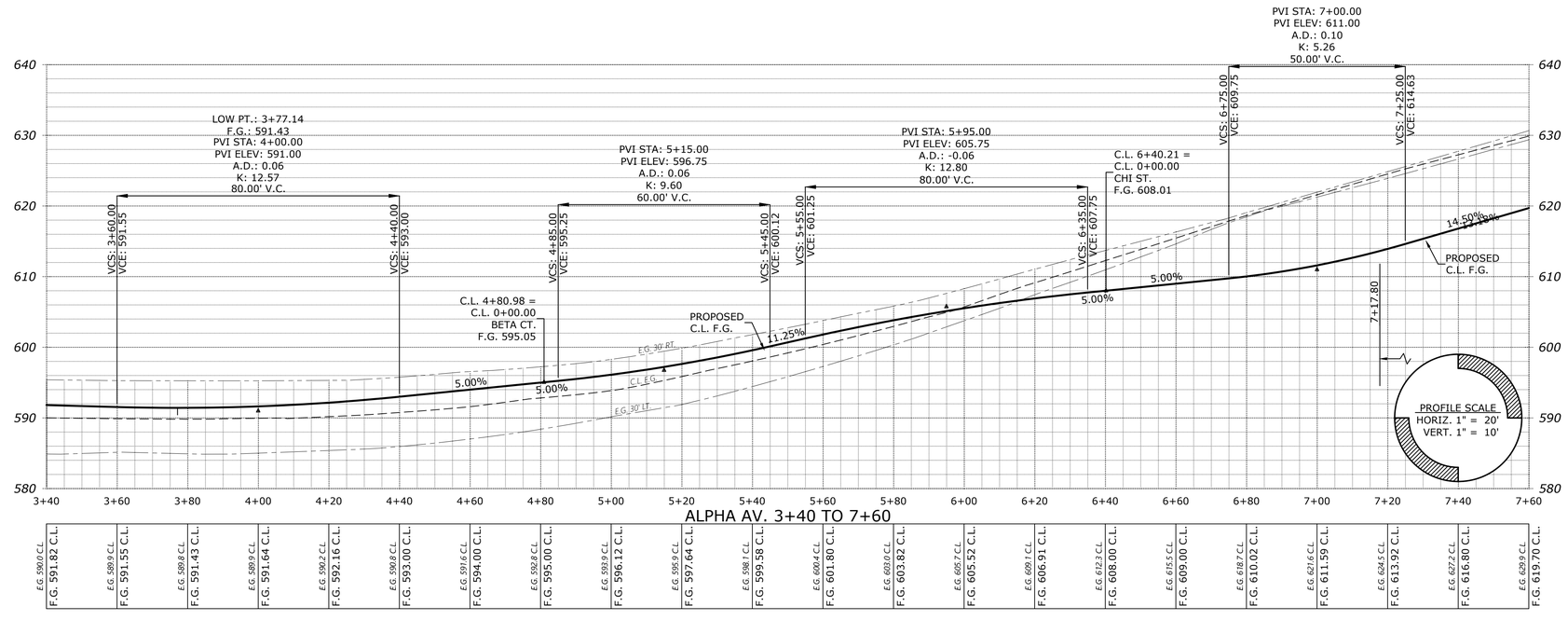
EXPIRES: 06-30-2021

JOB # 6502

P405

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DIMENSIONS & NOTES TAKE PRECEDENCE OVER GRAPHICAL REPRESENTATION.

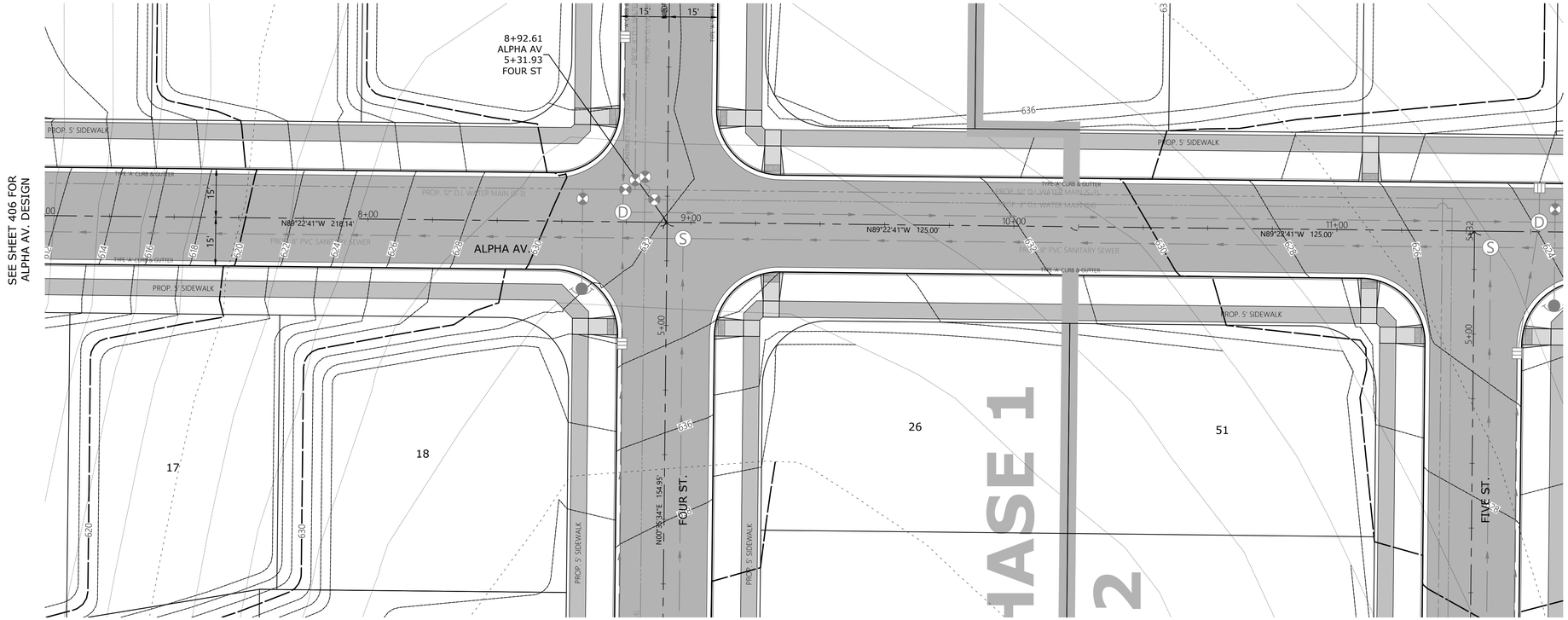
6502x20 P406ST

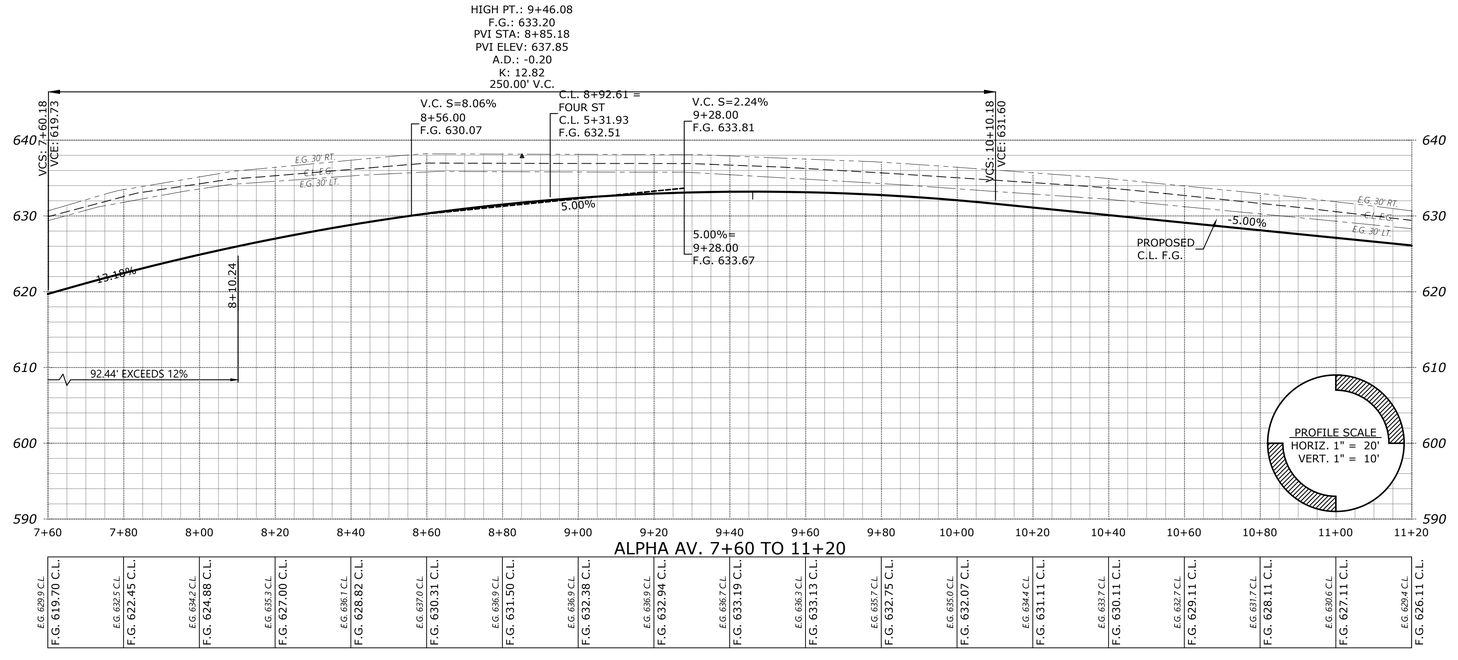
Design: M.D.G.
Drawn: P.H.S.
Checked: M.D.G.
Date: NOV. 2017
Scale: AS SHOWN
As-Built: ----

REGISTERED PROFESSIONAL ENGINEER
OREGON
JULY 14, 1978
MARK D. GRENZ
EXPIRES: 06-30-2021

JOB # 6502

P406





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DIMENSIONS & NOTES TAKE PREFERENCE OVER GRAPHICAL REPRESENTATION.

650x620 P407ST

Design: M.D.G.
Drawn: P.H.S.
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Date: NOV. 2017
Scale: AS SHOWN
As-Built: ----

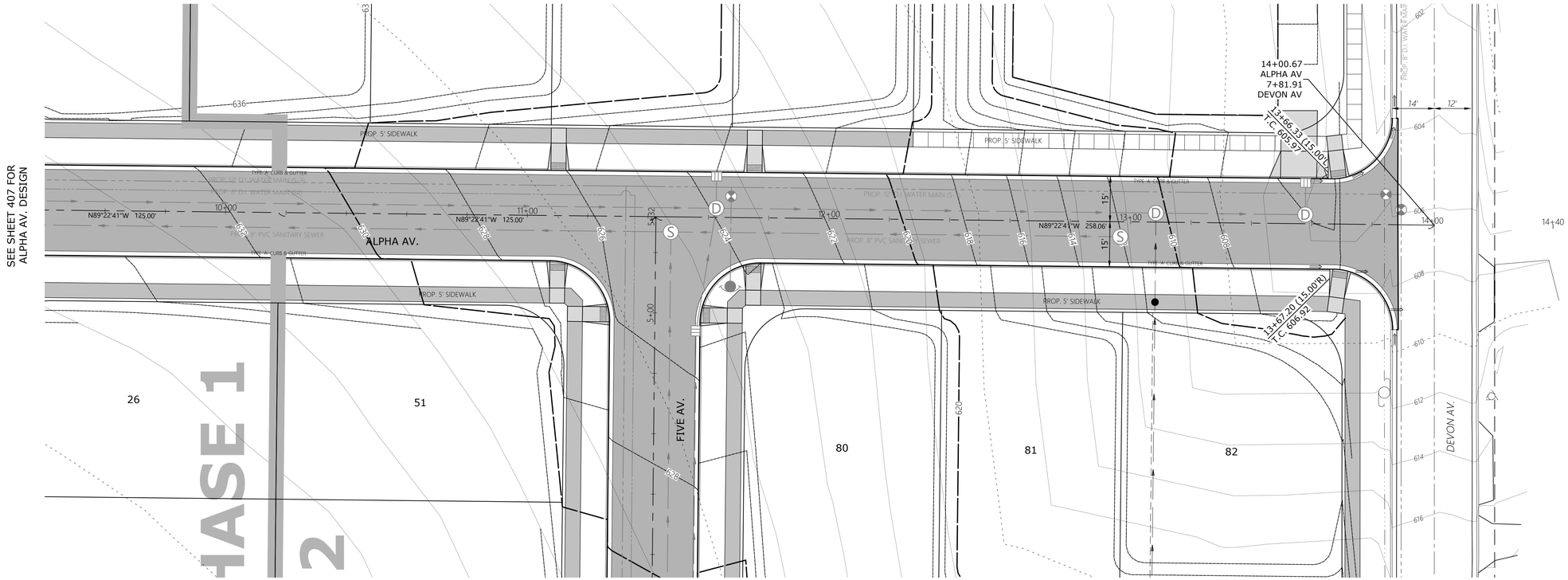
REGISTERED PROFESSIONAL ENGINEER
OREGON
JULY 14, 1978
MARK D. GRENZ

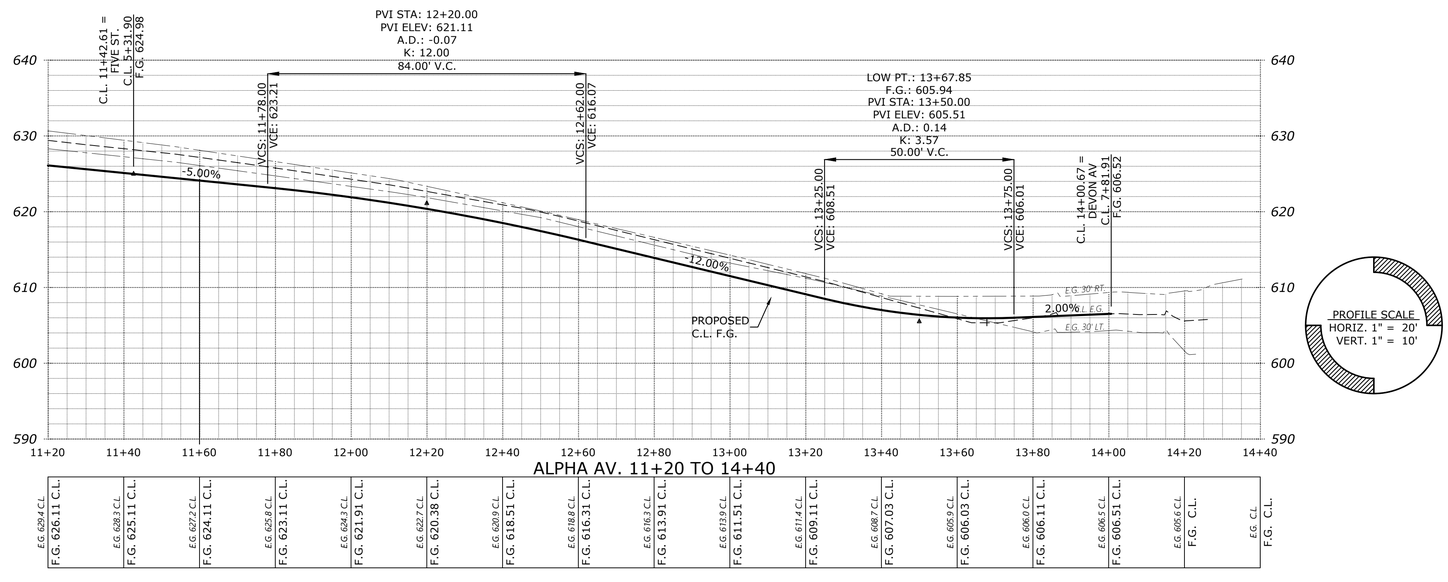
EXPIRES: 06-30-2021

JOB # 6502

P407

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DIMENSIONS & NOTES TAKE PRECEDENCE OVER GRAPHICAL REPRESENTATION.

650x620 P408ST

Design: M.D.G.
Drawn: P.H.S.
Checked: M.D.G.
Date: NOV. 2017
Scale: AS SHOWN
As-Built: ----

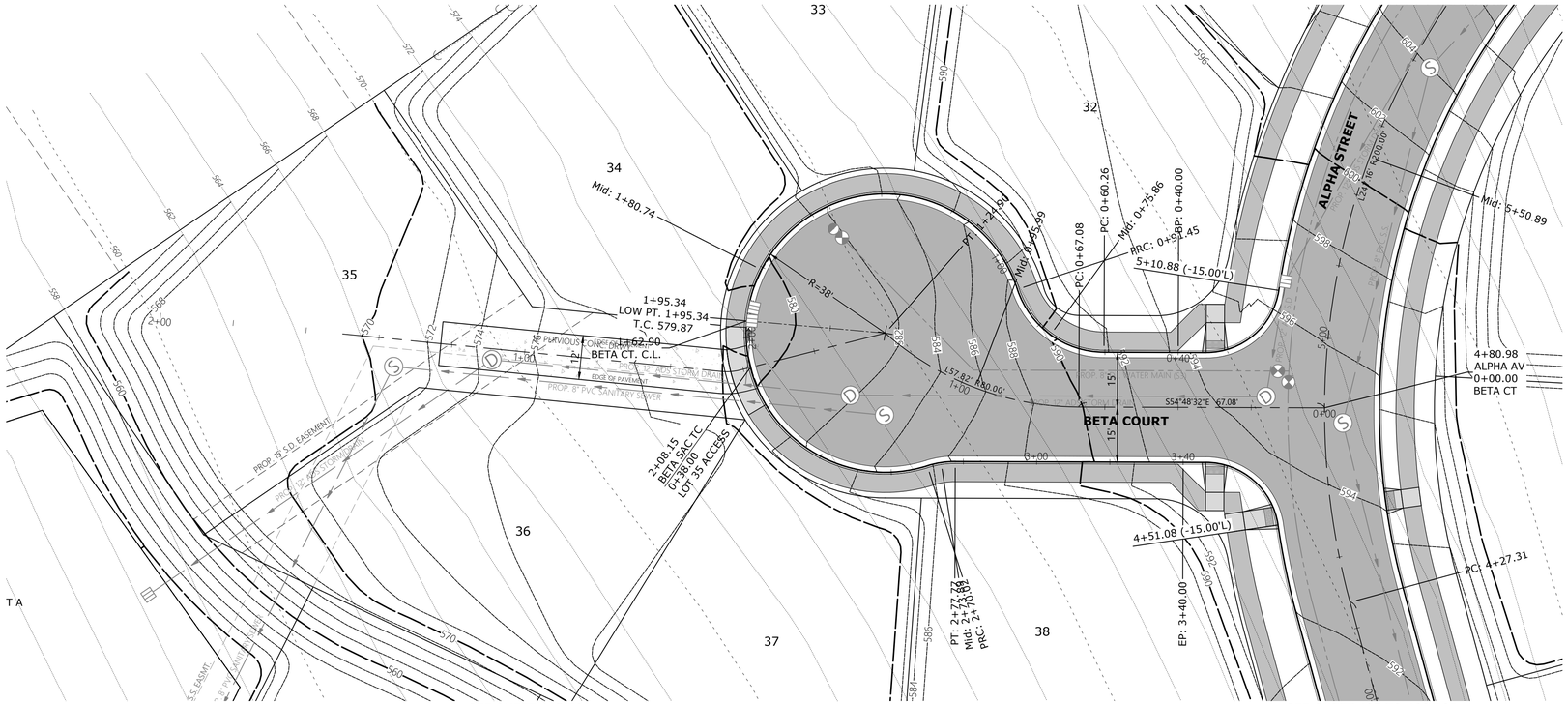
REGISTERED PROFESSIONAL ENGINEER
OREGON
JULY 14, 1978
MARK D. GRENZ

EXPIRES: 06-30-2021

JOB # 6502

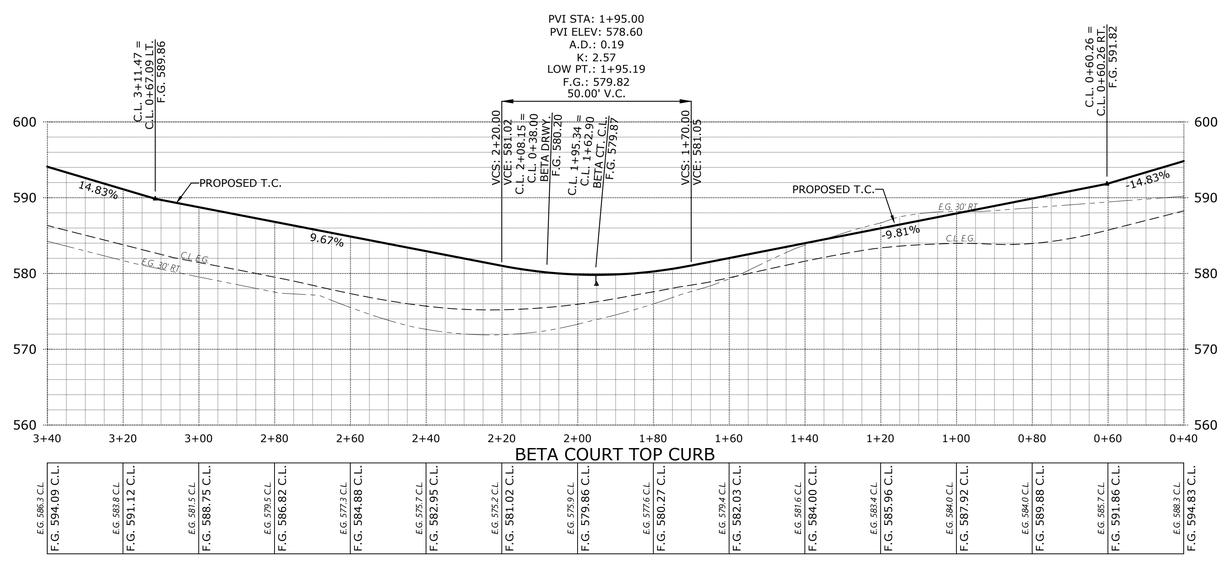
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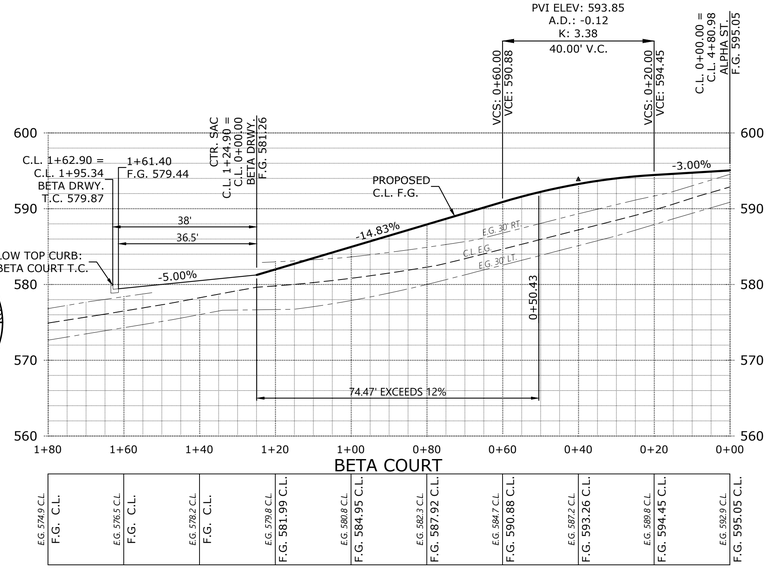
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SEE SHEET 415 FOR
LOT 35 DRIVEWAY DESIGN

SEE SHEET 405 TO 408 FOR
ALPHA AV. DESIGN





PROFILE SCALE
HORIZ. 1" = 20'
VERT. 1" = 10'

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PRELIMINARY STREET IMPROVEMENTS

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DIMENSIONS & NOTES TAKE PRECEDENCE OVER GRAPHICAL REPRESENTATION.

650x2x20 P409ST

Design: M.D.G.
Drawn: P.H.S.
Checked: M.D.G.
Date: NOV. 2017
Scale: AS SHOWN

As-Built: ____
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REGISTERED PROFESSIONAL ENGINEER
OREGON
JULY 14, 1978
MARK D. GRENZ
EXPIRES: 06-30-2021

JOB # 6502

P409

J:\6501-6599\6502-Devon\Kermos\Subdivision\Dwg\20\6502x20.dwg, P409ST, 2/16/2021 4:20:59 PM, PSounders

SEE SHEET 405 TO 408 FOR ALPHA AV. DESIGN

PROFILE SCALE
HORIZ. 1" = 20'
VERT. 1" = 10'

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DIMENSIONS & NOTES TAKE PRECEDENCE OVER GRAPHICAL REPRESENTATION.

650x2x20 P410ST

Design: M.D.G.
Drawn: P.H.S.
Checked: M.D.G.
Date: NOV. 2017
Scale: AS SHOWN
As-Built: ----

REGISTERED PROFESSIONAL ENGINEER
OREGON
JULY 14, 1978
MARK D. GRENZ

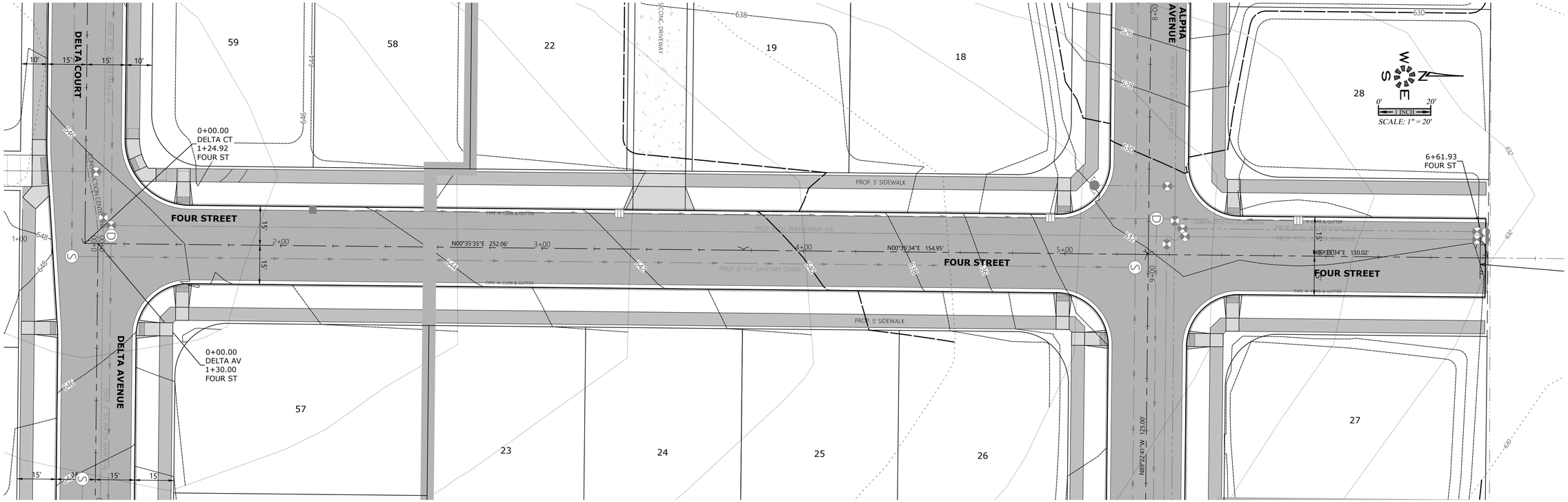
EXPIRES: 06-30-2021

JOB # 6502

P410

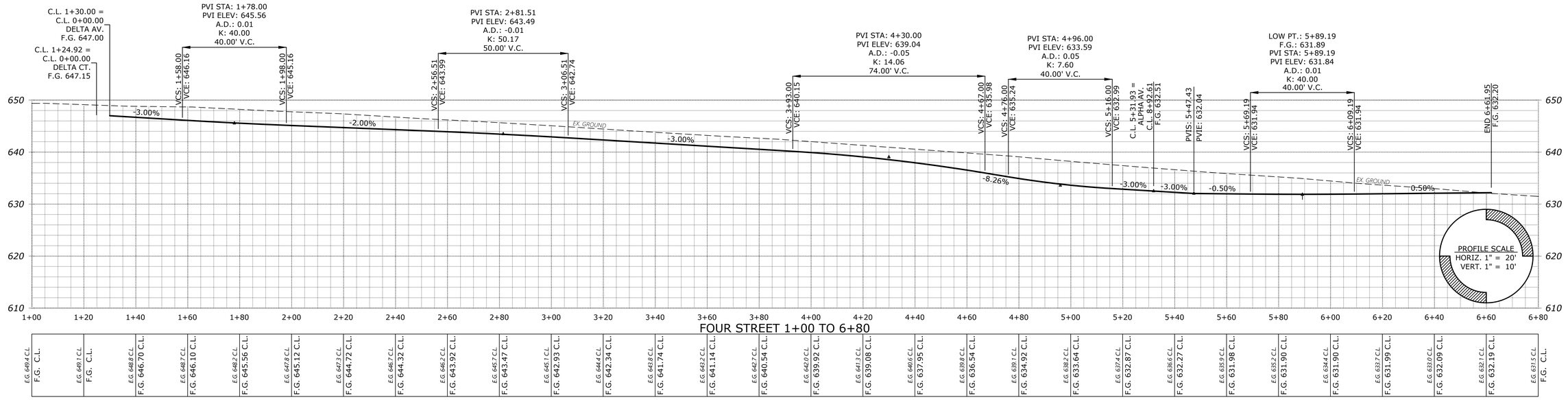
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SEE SHEET 413 FOR DELTA CT. DESIGN



SEE SHEET 414 FOR DELTA AV. DESIGN

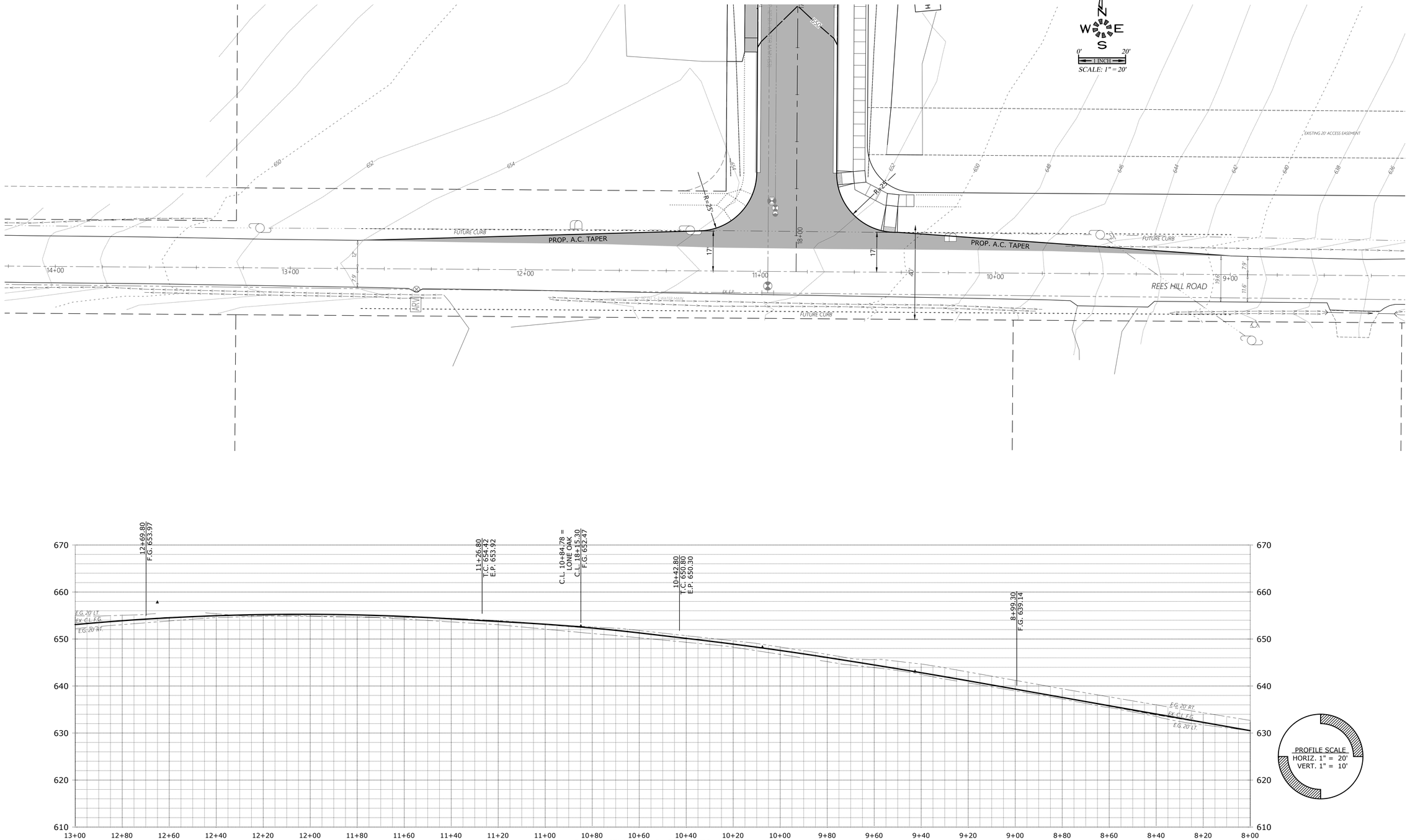
SEE SHEET 405 TO 408 FOR ALPHA AV. DESIGN



FOUR STREET 1+00 TO 6+80

| | | |

SEE SHEET 4xx FOR LONE OAK ROAD DESIGN



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DIMENSIONS & NOTES TAKE PRECEDENCE OVER GRAPHICAL REPRESENTATION.

6502b20 P412ST

Design: M.D.G.
Drawn: P.H.S.
Checked: M.D.G.
Date: NOV. 2017
Scale: AS SHOWN

As-Built: ____
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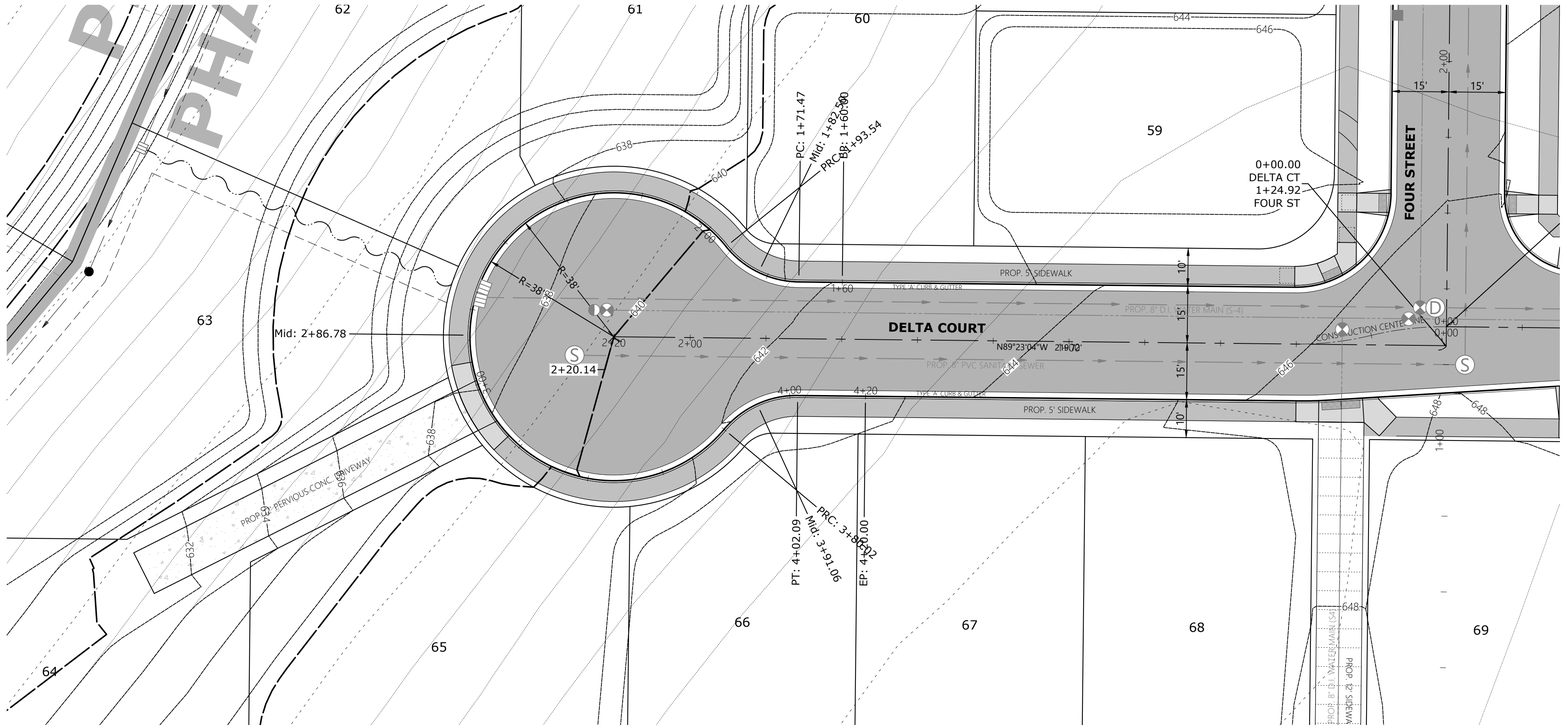
REGISTERED PROFESSIONAL ENGINEER
OREGON
JULY 14, 1978
MARK D. GRENZ

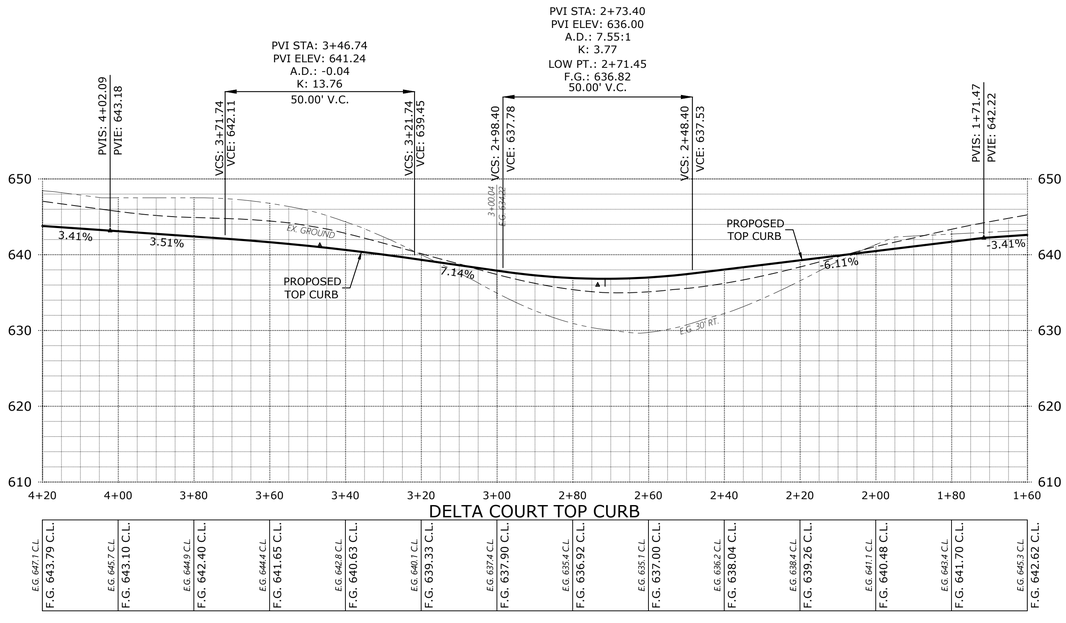
EXPIRES: 06-30-2021

JOB # 6502

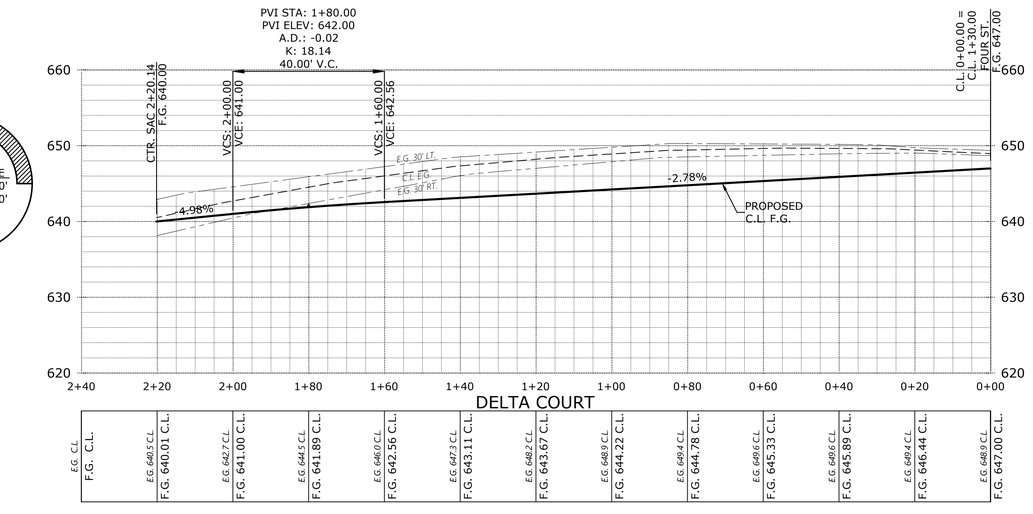
P412

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PROFILE SCALE
HORIZ. 1" = 20'
VERT. 1" = 10'



J:\6501-6599\6502-Devon\Kemp\Subdivision\Dwg\DV\6502b20.dwg, P413ST, 2/16/2021 4:23:08 PM, PSounders

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DIMENSIONS & NOTES TAKE PRECEDENCE OVER GRAPHICAL REPRESENTATION.

6502b20 P413ST

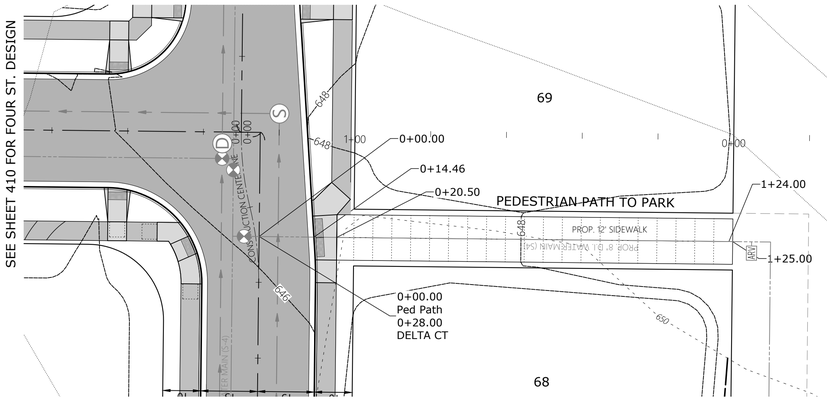
Design: M.D.G.
Drawn: P.H.S.
Checked: M.D.G.
Date: NOV. 2017
Scale: AS SHOWN
As-Built: ----

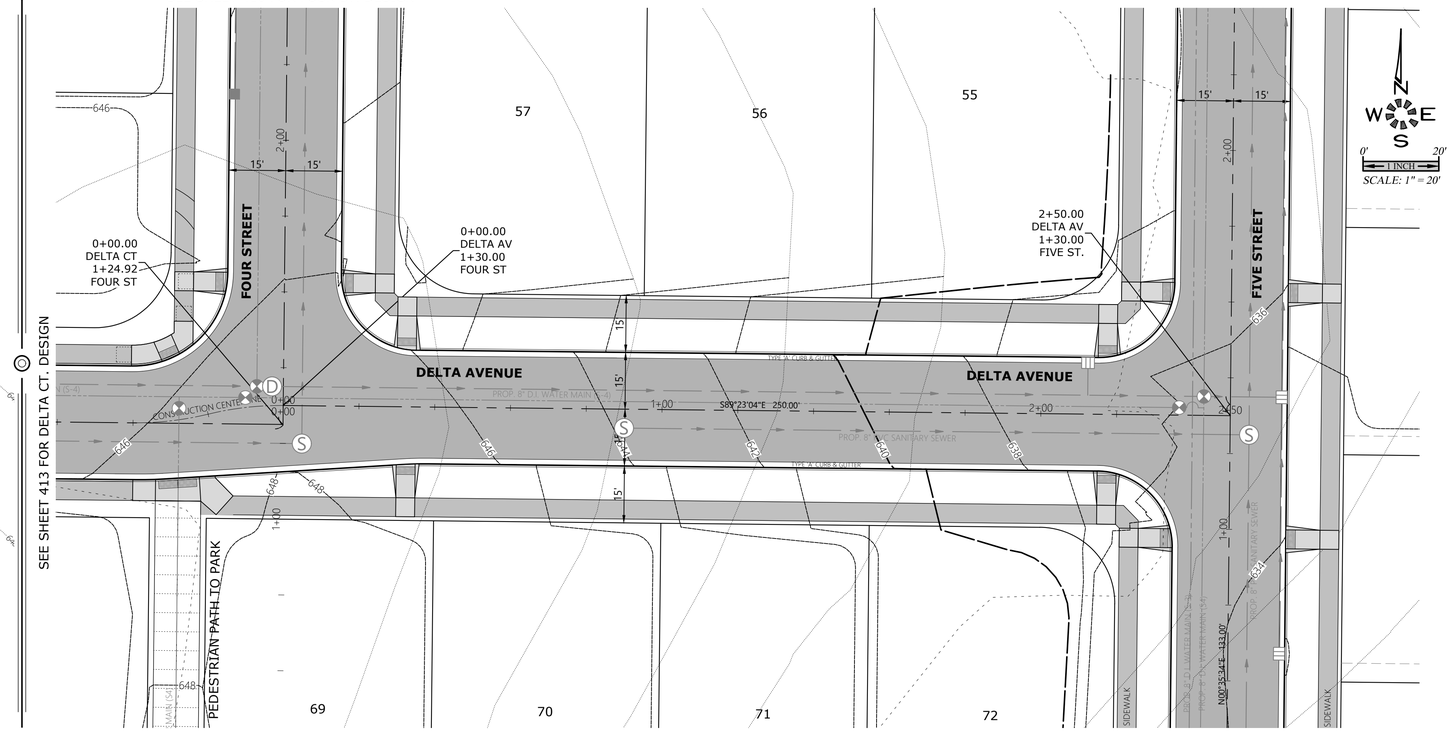
REGISTERED PROFESSIONAL ENGINEER
OREGON
JUNE 14, 1978
MARK D. GRENZ
EXPIRES: 06-30-2021

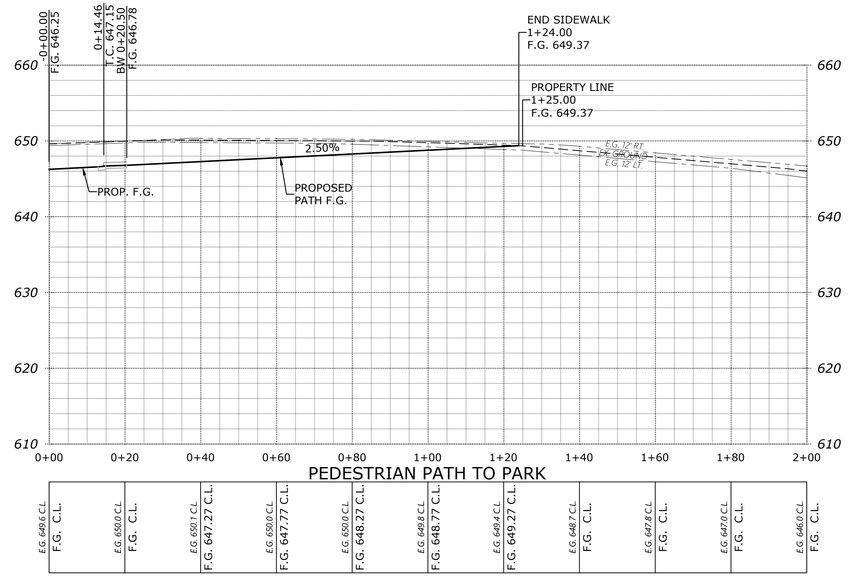
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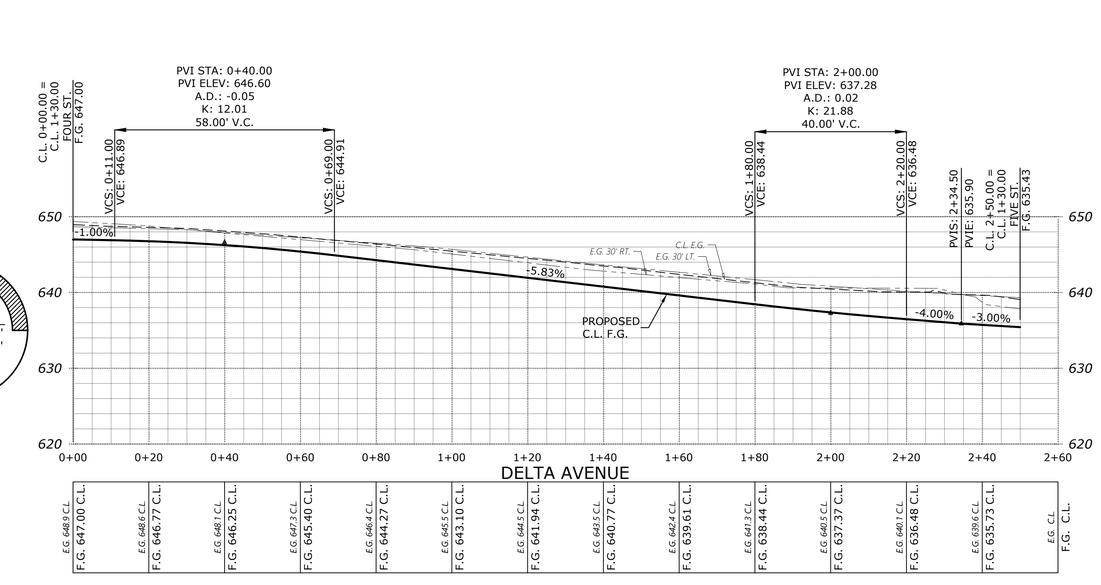
P413

SEE SHEET 410 FOR FOUR ST. DESIGN









PROFILE SCALE
HORIZ. 1" = 20'
VERT. 1" = 10'

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DIMENSIONS & NOTES TAKE PRECEDENCE OVER GRAPHICAL REPRESENTATION.

Design: M.D.G.
Drawn: P.H.S.
Checked: M.D.G.
Date: NOV. 2017
Scale: AS SHOWN
As-Built: ----

6502b20 P414ST

REGISTERED PROFESSIONAL ENGINEER
OREGON
JULY 14, 1978
MARK D. GRENZ
EXPIRES: 06-30-2021

JOB # 6502

P414

J:\6501-6599\6502-DevonAvenueSubdivision\Dwg\20\6502b20.dwg, P414ST, 2/16/2021 4:23:46 PM, PSounders

PROFILE SCALE
HORIZ. 1" = 20'
VERT. 1" = 10'

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650x620 P415ST

Design: M.D.G.
Drawn: P.H.S.
Checked: M.D.G.
Date: NOV. 2017
Scale: AS SHOWN
As-Built: ----

REGISTERED PROFESSIONAL ENGINEER
OREGON
JULY 14, 1978
MARK D. GRENZ

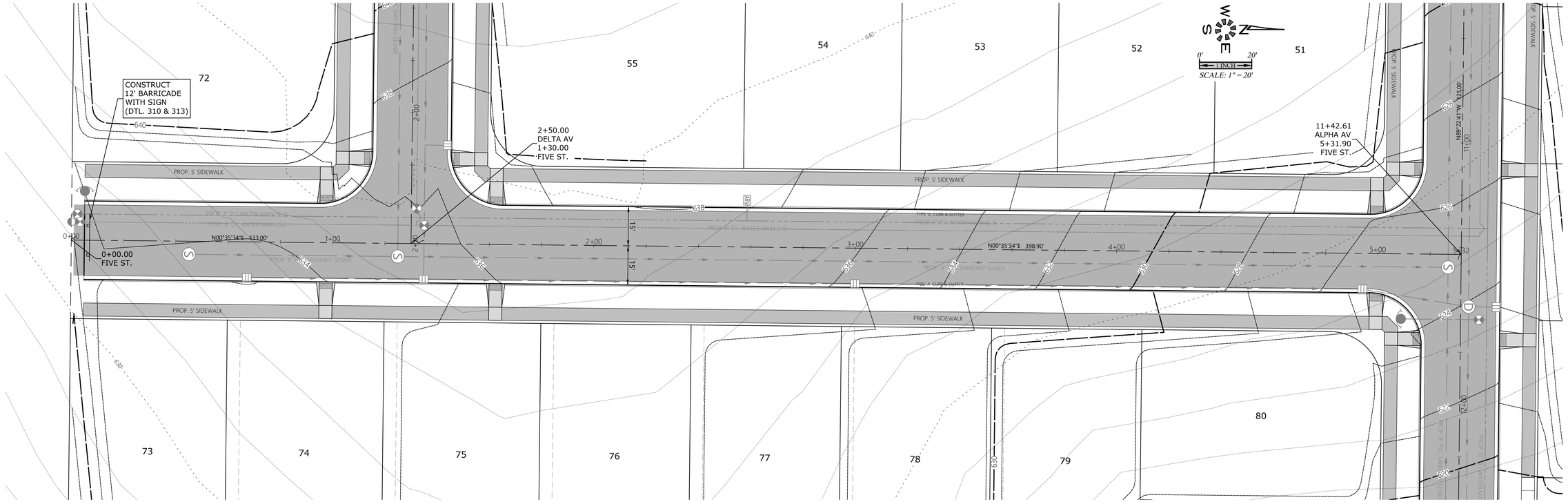
EXPIRES: 06-30-2021

JOB # 6502

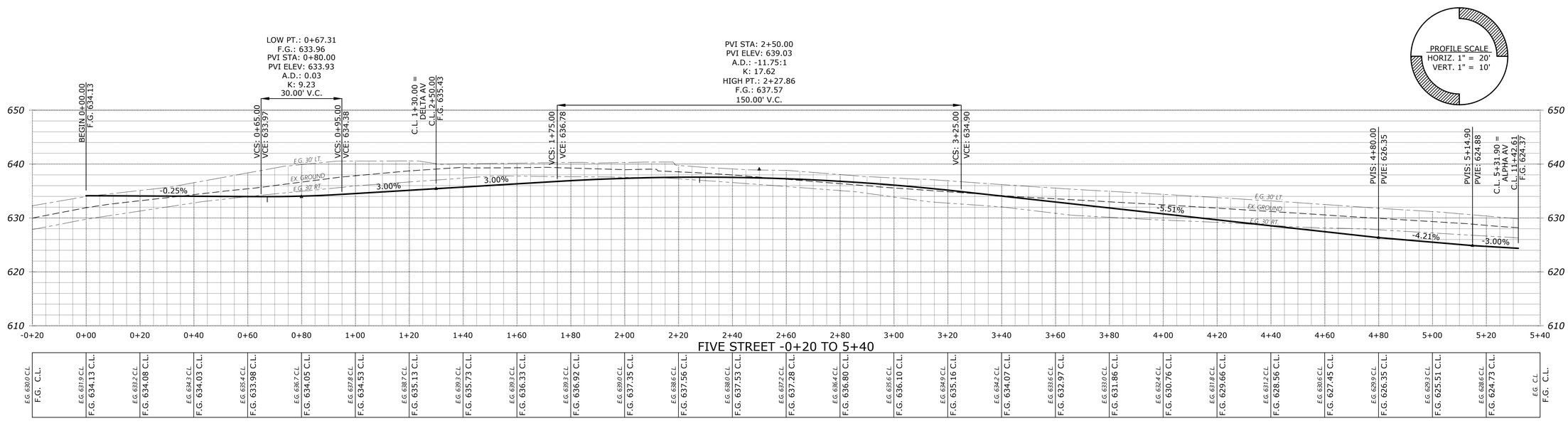
P415

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SEE SHEET 413 FOR DELTA AV. DESIGN



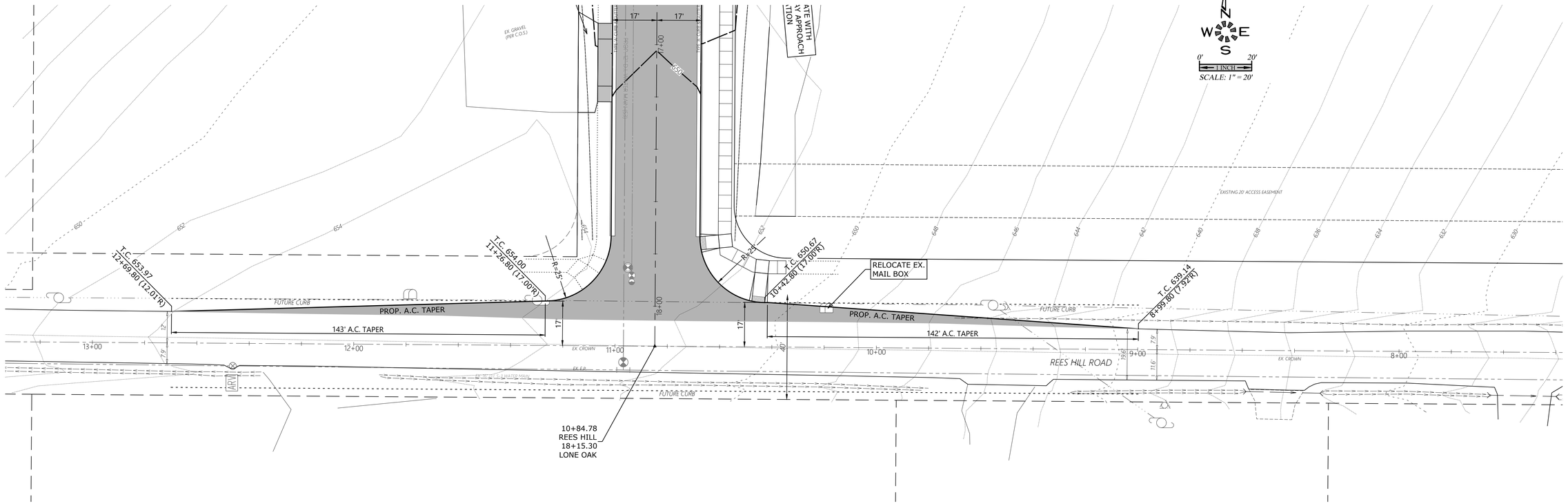
SEE SHEET 405 TO 408 FOR ALPHA AV. DESIGN



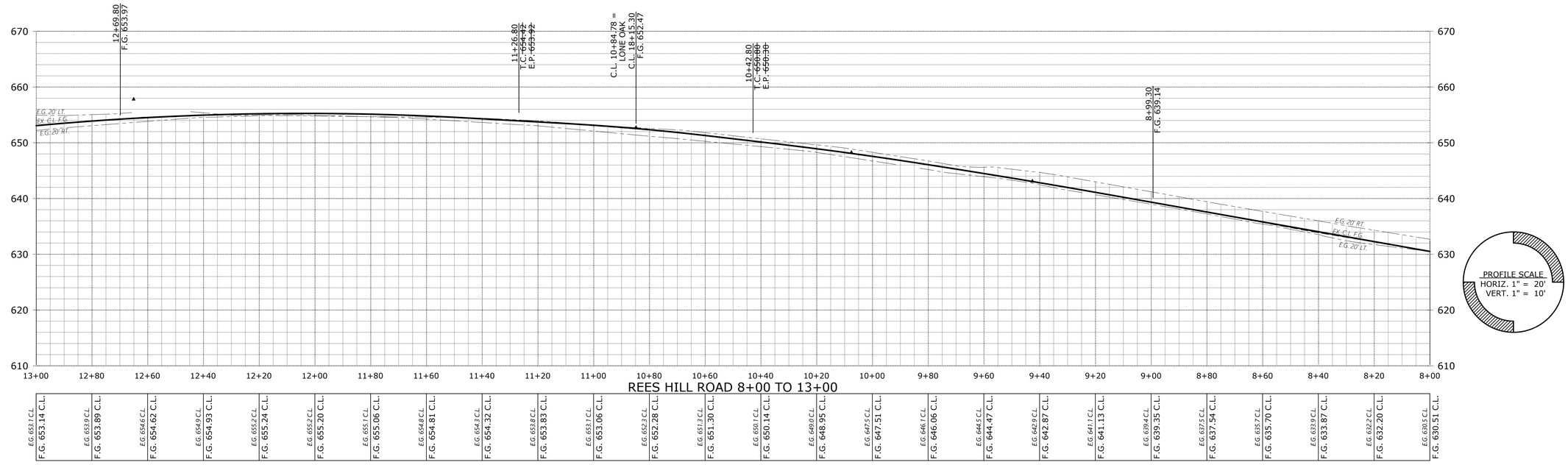
FIVE STREET -0+20 TO 5+40

| | | |

SEE SHEET 413 FOR DELTA AV. DESIGN



SEE SHEET 405 TO 408 FOR ALPHA AV. DESIGN



PROFILE SCALE
HORIZ. 1" = 20'
VERT. 1" = 10'

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PRELIMINARY STREET IMPROVEMENTS

DEVON ESTATES

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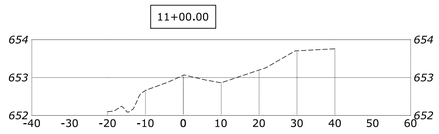
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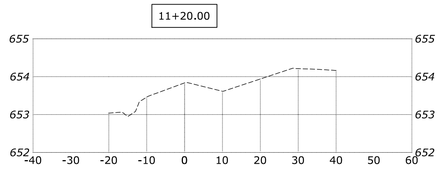
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OREGON
JULY 14, 1978
MARK D. GRENZ
EXPIRES: 06-30-2021

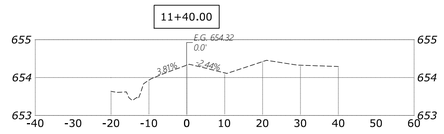
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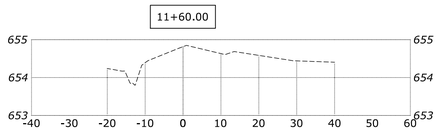
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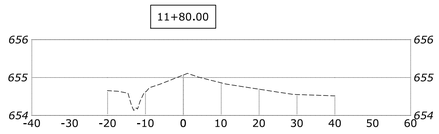
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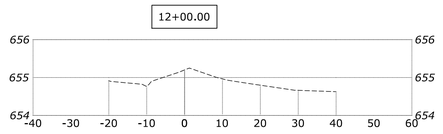


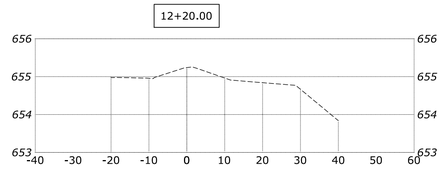


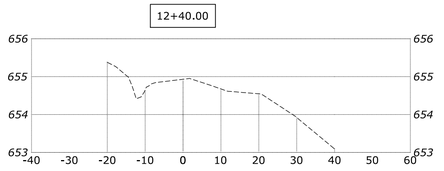


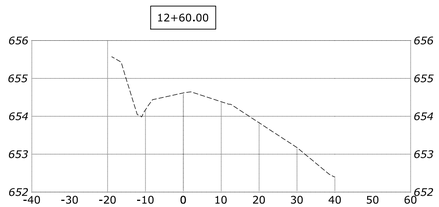


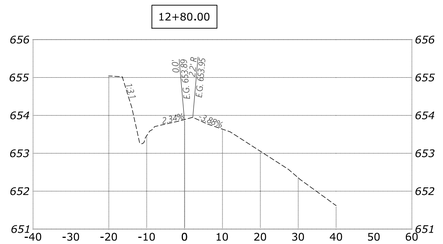


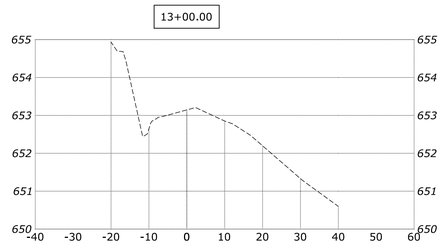


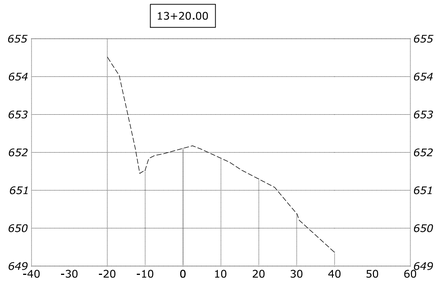


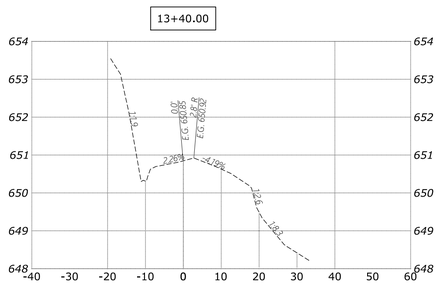


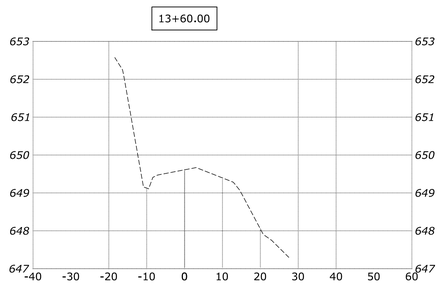














REES HILL ROAD

MULTI/TECH

ENGINEERING SERVICES, INC.
1155 13th ST. S.E. SALEM, OR. 97302
PH. (503) 363-9227 FAX (503) 364-1260
www.mtengineering.net office@mtengineering.net

SECTION VIEWS

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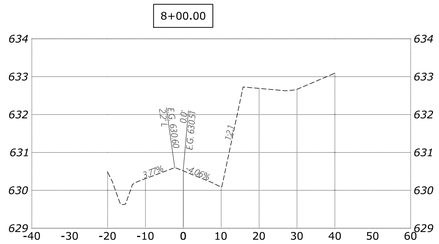
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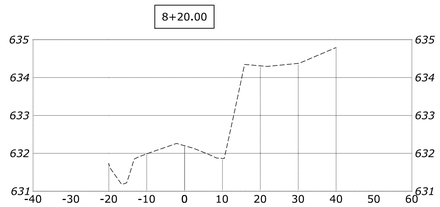
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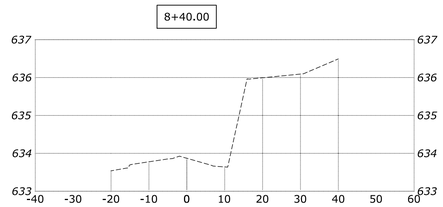
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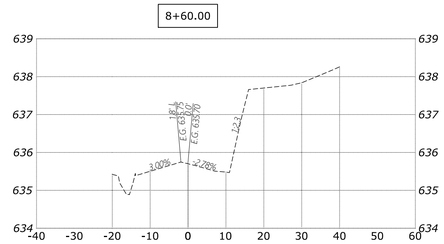
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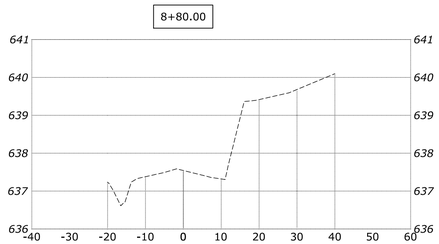
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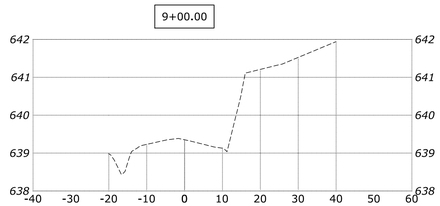


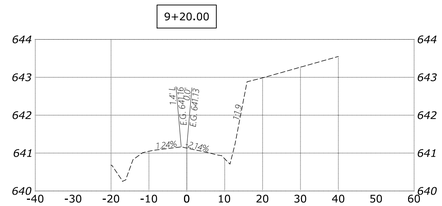


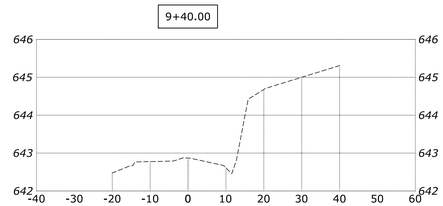


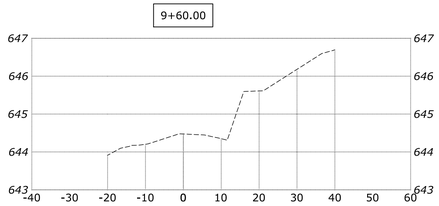


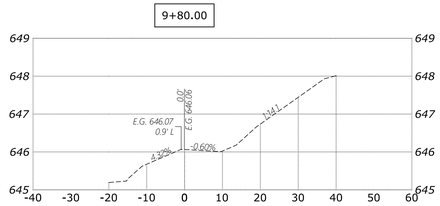


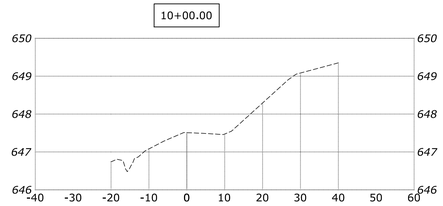


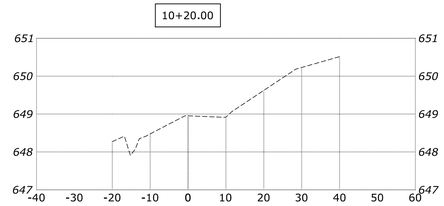


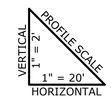


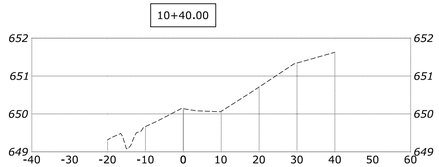


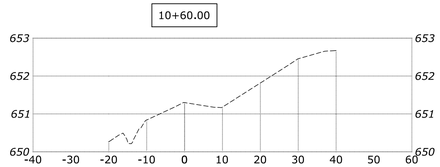


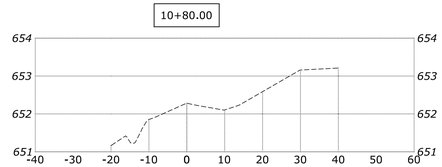


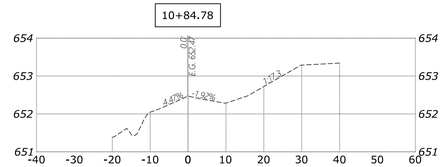












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6502b2b P418SEC

Design: M.D.G.
Drawn: P.H.S.
Checked: M.D.G.
Date: NOV. 2017
Scale: AS SHOWN
As-Built: ____

REGISTERED PROFESSIONAL ENGINEER
OREGON
JULY 14, 1978
MARK D. GRENZ

EXPIRES: 06-30-2021

JOB # 6502

P418

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CITY OF Salem AT YOUR SERVICE

Land Use Application

(For office use only)
Permit #:

Planning/Permit Application Center
City Hall / 555 Liberty St. SE / Room 320 / Salem, OR 97301-3513
503-588-6173 * planning@cityofsalem.net
If you need the following translated in Spanish, please call 503-588-6256.
Si usted necesita lo siguiente traducido en espaftol, por favor llame 503-588-6256.

Application type

Please describe the type of land use action requested:
Subdivision :

Work site location and information

Street address or location of subject property	6719 Devon Avenue
Total size of subject property	19.89 Acres
Assessor tax lot numbers	083W22C/Tax Lot 300
Existing use structures and/or other improvements on site	SFD and Vacant
Zoning	RA
Comprehensive Plan Designation	'Developing Residential'
Project description	Phased Subdivision

People information

	Name	Full Mailing Address	Phone Number and Email address
Applicant	HSF Development LLC	3425 Boone Road SE Salem, Oregon 97317	
Agent	Brandie Dalton Land-Use Planner	Multi/Tech Engineering, LLC 1155 SE 13th Street, Salem, OR 97302	503-363-9227 bdalton@mtengineering.net

Project information

Neighborhood Association	South Gateway Neighborhood Association
Have you contacted the Neighborhood Association?	○ Yes ⊙ No
Date Neighborhood Association contacted	
Describe contact with the affected Neighborhood Association (The City of Salem recognizes, values, and supports the involvement of residents in land use decisions affecting neighborhoods across the city and strongly encourages anyone requesting approval for any land use proposal to contact the affected neighborhood association(s) as early in the process as possible.)	
Have you contacted Salem-Keizer Transit?	○ Yes ⊙ No
Date Salem-Keizer Transit contacted	
Describe contact with Salem-Keizer Transit	

Authorization by property owner(s)/applicant

***If the applicant and/or property owner is a Limited Liability Company (LLC), please also provide a list of all members of the LLC with your application.**

Copyright release for government entities: I hereby grant permission to the City of Salem to copy, in whole or part, drawings and all other materials submitted by me, my agents, or representatives. This grant of permission extends to all copies needed for administration of the City's regulatory, administrative, and legal functions, including sharing of information with other governmental entities.

Authorizations: Property owners and contract purchasers are required to authorize the filing of this application and must sign below.

- **All signatures represent that they have full legal capacity to and hereby do authorize the filing of this application and certify that the information and exhibits herewith submitted are true and correct.**
- **I (we) hereby grant consent to the City of Salem and its officers, agents, employees, and/or independent contractors to enter the property identified above to conduct any and all inspections that are considered appropriate by the City to process this application.**
- **I (we) hereby give notice of the following concealed or unconcealed dangerous conditions on the property:**

Electronic signature certification: By attaching an electronic signature (whether typed, graphical or free form) I certify herein that I have read, understood and confirm all the statements listed above and throughout the application form.

Authorized Signature: _____

Print Name: Chris Jundt Date: 12/9/2019

Address (include ZIP): 3425 Boone Road SE, Salem, Oregon 97317

Authorized Signature: _____

Print Name: Steve Powers, City Manager Date: 03/03/2021

Address (include ZIP): 555 Liberty Street SE, Room 220, Salem, Oregon 97301

(For office use only)		
Received by	Date:	Receipt Number:

Not using Internet Explorer?
Save the file to your computer and email to planning@cityofsalem.net.

Wetland Land Use Notice Response

Response Page

Department of State Lands (DSL) WN# *

WN2021-0343

Responsible Jurisdiction

Staff Contact	Jurisdiction Type	Municipality
Jason Valyou	City	Salem

Local case file #	County
20-118048-LD	Marion

Activity Location

Township	Range	Section	QQ section	Tax Lot(s)
08S	03W	22	C	300

Street Address

6719 Devon Ave SE

Address Line 2

City	State / Province / Region
Salem	OR

Postal / Zip Code	Country
97306	Marion

Latitude	Longitude
44.858625	-123.043468

Wetland/Waterway/Other Water Features

☑ It is unlikely that there are jurisdictional wetlands or waterways on the property based upon a review of wetland maps, the county soil survey and other available information.

Your Activity

☑ A state permit will not be required for the proposed project because, based on the submitted site plan, the project avoids impacts to jurisdictional wetlands, waterways, or other waters.

Closing Information

Additional Comments

Based on the recent on-site determination by DSL staff (WD2019-0472), no jurisdictional wetlands or water features are present on the tax lot. Therefore, it appears that the proposed project ("tentative phased subdivision plan to divide approximately 19.89 acres into 88 lots") will not impact jurisdictional wetlands or waterways of the state. A state permit will not likely be required for this activity.

Please reach out if you have any questions.

This is a preliminary jurisdictional determination and is advisory only.

This report is for the State Removal-Fill law only. City or County permits may be required for the proposed activity.

Contact Information

- For information on permitting, use of a state-owned water, wetland determination or delineation report requirements please contact the respective DSL Aquatic Resource, Proprietary or Jurisdiction Coordinator for the site county. The current list is found at: http://www.oregon.gov/dsl/ww/pages/wwstaff.aspx
- The current Removal-Fill permit and/or Wetland Delineation report fee schedule is found at: https://www.oregon.gov/dsl/WW/Documents/Removal-FillFees.pdf

Response Date

4/14/2021

Response by:

Jessica Imbrie

Response Phone:

(503) 986-5250