West Linn
Planning & Development • 22500 Salamo Rd #1000 • West Linn, Oregon 97068
Telephone 503.656.4211 • Fax 503.656.4106 • westlinnoregon.gov

DEVELOPMENT REVIEW APPLICATION

For Office Use Only		
STAFF CONTACT: Jennifer Arnold	PROJECT NO(S).: WR-17-02 / VAR-17-01	
NON-REFUNDABLE FEE(S): 825 -	REFUNDABLE DEPOSIT(S): 1700 -	TOTAL: 2525 -

Type of Review (Please check all that apply):

- [ ] Annexation (ANX)
- [ ] Appeal and Review (AP) *
- [ ] Conditional Use (CUP)
- [ ] Design Review (DR)
- [ ] Easement Vacation
- [ ] Extraterritorial Ext. of Utilities
- [ ] Final Plat or Plan (FP)
- [ ] Flood Management Area
- [ ] Hillside Protection & Erosion Control
- [ ] Historic Review
- [ ] Legislative Plan or Change
- [ ] Lot Line Adjustment (LLA) */**
- [ ] Minor Partition (MIP) (Preliminary Plat or Plan)
- [ ] Non-Conforming Lots, Uses & Structures
- [ ] Planned Unit Development (PUD)
- [ ] Pre-Application Conference (PA) */**
- [ ] Street Vacation
- [ ] Subdivision (SUB)
- [ ] Temporary Uses *
- [ ] Time Extension *
- [x] Variance (VAR) Class I
- [ ] Water Resource Area Protection/Single Lot (WAP)
- [ ] Water Resource Area Protection/Wetland (WAP)
- [x] Willamette & Tualatin River Greenway (WRG)
- [ ] Zone Change

Home Occupation, Pre-Application, Sidewalk Use, Sign Review Permit, and Temporary Sign Permit applications require different or additional application forms, available on the City website or at City Hall.

Site Location/Address:	Assessor's Map No.:
19155 Nixon Avenue	Tax Lot(s): 1600
West Linn, OR 97068	Total Land Area: 7,139

Brief Description of Proposal: Build a New Single Family Residence

Applicant Name: (please print) Will & Tiffany Huffman	Phone: 503.505.3634
Address: 2311 19th Street	Email: Willh@cloptonexcavating.com DW Huffmans@msn.com
City State Zip: West Linn, OR 97068	
Owner Name (required): (please print) Martin Wolf	Phone:
Address: 10300 SW 90th Avenue	Email: wolfwallpapering@comcast.net
City State Zip: Tigard, OR 97223	
Consultant Name: (please print)	Phone:
Address:	Email:
City State Zip:	

RECEIVED
MAR 21 2017
PLANNING & BUILDING
CITY OF WEST LINN
INT TIME

1. All application fees are non-refundable (excluding deposit). **Any overruns to deposit will result in additional billing.**
2. The owner/applicant or their representative should be present at all public hearings.
3. A denial or approval may be reversed on appeal. No permit will be in effect until the appeal period has expired.
4. **Three (3) complete hard-copy sets (single sided) of application materials must be submitted with this application.**
   One (1) complete set of digital application materials must also be submitted on CD in PDF format.
   If large sets of plans are required in application please submit only two sets.

* No CD required / ** Only one hard-copy set needed

The undersigned property owner(s) hereby authorizes the filing of this application, and authorizes on site review by authorized staff. I hereby agree to comply with all code requirements applicable to my application. Acceptance of this application does not infer a complete submittal. All amendments to the Community Development Code and to other regulations adopted after the application is approved shall be enforced where applicable. Approved applications and subsequent development is not vested under the provisions in place at the time of the initial application.

Applicant's signature — Date: 3.19.17

Owner's signature (required) — Date: 3.6.17

Willamette River Greenway
Approval Criteria Narrative Response

19155 Nixon Avenue
PA – 17 - 03

Willamette River Greenway Permit Approval Criteria Responses to CDC Chapter 28.110

A. Development: All Sites

1. This site is Buildable and recognized as a Legal Non-Conforming lot of record as the deed transfer was accomplished in 1974. The Lot is predominately blackberries and there are No Trees with which to contend. A Tree Inventory Map and Mitigation Plan will be established and verified with Michael Perkins.

2. Approximately 4,642 square feet of the lot is within the High HCA boundary. The disturbed House and Concrete areas do NOT exceed 5,000 sf.

3. There is not an option to build in any other area of the lot other than the High HCA Area. The proposed House and Concrete areas are approximately 2,258 sf and does NOT exceed 5,000 sf.

4. All applicable Temporary Erosion Control Measures (TESC) shall be in place and inspected by the City of West Linn prior to any Construction Activities. All applicable Best Management Practices (BCP's) shall be maintained during the course of Construction.

B. Single Family or Attached Residential

1. There is not a 5,000 sf area of the lot that is outside of the High HCA Boundary.

2. There is not a 5,000 sf area of the lot that is outside of the High HCA Boundary.

3. The House Footprint is Approximately 1,563 sf.

4. This site is Buildable and recognized as a Legal Non-Conforming lot of record as the deed transfer was accomplished in 1974. The proposed House and Concrete areas are approximately 2,258 sf and does NOT exceed 5,000 sf. There is NO Water Way or River frontage on this lot.

5. The proposed Driveway is approximately 695 sf and is included in the 2,258 sf proposed House and Concrete areas. The proposed House and Concrete areas do NOT exceed 5,000 sf.

6. This lot is classified as HCA "d" with less than 5,000 sf of "a", "b" or "c" available. The House Footprint is approximately 1,563 sf.

C. Setback from Top of Bank

1. This Land is designated High HCA.

2. There are NO Patios or Decks within 5' of the Top of Bank.

Willamette River Greenway
Approval Criteria Narrative Response

19155 Nixon Avenue
PA – 17 - 03

3. There are NO Patios, Decks or any Structure within 15' of the River Boundary.

D. Developments of Lands Designated for Industrial, Commercial, Office, Public and other Non-Residential uses

1. The property will be used for a Single Family Residence and will NOT be developed as anything other than a Single Family Residence. The lot is d High HCA.

2. Developing HCA Land

a. The property will be used for a Single Family Residence and will NOT be developed as anything other than a Single Family Residence.

b. The property will be used for a Single Family Residence and will NOT be developed as anything other than a Single Family Residence.

E. Hardship Provisions and Non-Conforming Structures

1. There are NO Existing Structures on this Lot. The property will be used for a Single Family Residence and will NOT be developed as anything other than a Single Family Residence.

   a. There are NO Existing Structures on this Lot. The property will be used for a Single Family Residence and will NOT be developed as anything other than a Single Family Residence.

   b. There are NO Existing Structures on this Lot. The property will be used for a Single Family Residence and will NOT be developed as anything other than a Single Family Residence.

   c. There are NO Existing Structures on this Lot. The property will be used for a Single Family Residence and will NOT be developed as anything other than a Single Family Residence.

   d. There are NO Existing Structures on this Lot. The property will be used for a Single Family Residence and will NOT be developed as anything other than a Single Family Residence.

   e. There are NO Existing Structures on this Lot. The property will be used for a Single Family Residence and will NOT be developed as anything other than a Single Family Residence.

F. Access and Property Rights

1. This Property is NOT along a River or other navigable Water Way. There is NO Access to the River or ANY Water Ways through this property. There are NO property right concerns involving developing this lot for a Single Family Residence.

Willamette River Greenway
Approval Criteria Narrative Response

19155 Nixon Avenue
PA – 17 - 03

2. This Property is NOT along a River or other navigable Water Way. There is NO Access to the River or ANY Water Ways through this property. There are NO property right concerns involving developing this lot for a Single Family Residence.

3. This Property is NOT along a River or other navigable Water Way. There are NO Water Dependent Structures on this Property.

4. This Property is NOT along a River or other navigable Water Way. There are NO Water Dependent Structures on this Property.

5. This Property is NOT along a River or other navigable Water Way. There are NO Water Dependent Structures or Trails to the River or Water Ways on this Property.

G. Incentives to Encourage Access in Industrial, Multi Family, Mixed Use, Commercial, Office, Public and Non-Single Family Residential Zoned Areas

1. The property will be used for a Single Family Residence and will NOT be developed as anything other than a Single Family Residence.

2. The property will be used for a Single Family Residence and will NOT be developed as anything other than a Single Family Residence.

   a. This Property is NOT along a River or other navigable Water Way. There are NO Water Dependent Structures or Trails to the River or Water Ways on this Property.

   b. This Property is NOT along a River or other navigable Water Way. There are NO Water Dependent Structures or Trails to the River or Water Ways on this Property.

   c. This Property is NOT along a River or other navigable Water Way. There are NO Water Dependent Structures or Trails to the River or Water Ways on this Property.

H. Partitions, Subdivisions and Incentives

1. The property will be used for a Single Family Residence and will NOT be developed as anything other than a Single Family Residence.

2. The property will be used for a Single Family Residence and will NOT be developed as anything other than a Single Family Residence.

3. The property will be used for a Single Family Residence and will NOT be developed as anything other than a Single Family Residence.

4. This Property is NOT along a River or other navigable Water Way. There are NO Water Dependent Structures or Trails to the River or Water Ways on this Property.

Willamette River Greenway
Approval Criteria Narrative Response

19155 Nixon Avenue
PA – 17 - 03

a. This Property is NOT along a River or other navigable Water Way. There are NO Water Dependent Structures or Trails to the River or Water Ways on this Property.
b. This Property is NOT along a River or other navigable Water Way. There are NO Water Dependent Structures or Trails to the River or Water Ways on this Property.

c. This Property is NOT along a River or other navigable Water Way. There are NO Water Dependent Structures or Trails to the River or Water Ways on this Property.

I. Docks and Other Water Dependent Structures

1. This Property is NOT along a River or other navigable Water Way. There are NO Water Dependent Structures or Trails to the River or Water Ways on this Property.

2. This Property is NOT along a River or other navigable Water Way. There are NO Water Dependent Structures or Trails to the River or Water Ways on this Property.

3. This Property is NOT along a River or other navigable Water Way. There are NO Water Dependent Structures or Trails to the River or Water Ways on this Property.

4. This Property is NOT along a River or other navigable Water Way. There are NO Water Dependent Structures or Trails to the River or Water Ways on this Property.

5. This Property is NOT along a River or other navigable Water Way. There are NO Water Dependent Structures, Boat Storage or Trails to the River or Water Ways on this Property.

6. This Property is NOT along a River or other navigable Water Way. There are NO Water Dependent Structures or Trails to the River or Water Ways on this Property.

7. This Property is NOT along a River or other navigable Water Way. There are NO Water Dependent Structures or Trails to the River or Water Ways on this Property.

8. This Property is NOT along a River or other navigable Water Way. There are NO Water Dependent Structures or Trails to the River or Water Ways on this Property.

9. This Property is NOT along a River or other navigable Water Way. There are NO Water Dependent Structures or Trails to the River or Water Ways on this Property.

J. Joint Docks

1. This Property is NOT along a River or other navigable Water Way. There are NO Water Dependent Structures or Trails to the River or Water Ways on this Property.

Willamette River Greenway
Approval Criteria Narrative Response

19155 Nixon Avenue
PA – 17 - 03

2. This Property is NOT along a River or other navigable Water Way. There are NO Water Dependent Structures or Trails to the River or Water Ways on this Property.

3. This Property is NOT along a River or other navigable Water Way. There are NO Water Dependent Structures or Trails to the River or Water Ways on this Property.

4. This Property is NOT along a River or other navigable Water Way. There are NO Water Dependent Structures or Trails to the River or Water Ways on this Property.

5. This Property is NOT along a River or other navigable Water Way. There are NO Water Dependent Structures or Trails to the River or Water Ways on this Property.

K. Non-Conforming Docks and Other Water-Related Structures

This Property is NOT along a River or other navigable Water Way. There are NO existing Water Dependent Structures or Trails to the River or Water Ways on this Property.

L. Roads, Driveways, Utilities or Passive Use Recreation Facilities

The proposed development for this lot is a Single Family Residence. There will be NO Roads, Driveways, Utilities, Public Paths or Passive Use Recreation Facilities in Riparian Areas or Water Resource Areas on this Lot. A Tree Inventory Plan will be prepared for Mitigation & Revegetation onsite (if possible) or offsite which will be verified with Michael Perkins.

1. Sewer, Water and Franchise Utility connections in Nixon will have a 5' width or less and NOT exceed a 10' width for the development of this Single Family Residence.

2. NO Existing Utility Upgrades are expected at this Lot.

3. Water Quality Resources will consist of Drywell, Raised Water Quality / Flow Through Planter or Stormtech System are expected to be used and will NOT exceed a 25' width, 20 linear feet or 20% of the total linear footage of Water Quality Resource Area.

M. Structures

There will be NO Water Dependent Structures on the Lot. Exterior elements of the Home will be constructed of Non-Polished / Reflective Material to blend in with the surrounding Environment.

N. Water – Permeable Material for Hardscapes

Willamette River Greenway
Approval Criteria Narrative Response

19155 Nixon Avenue
PA – 17 - 03

Water Permeable Materials will be used if possible for driveways and patios. There will be NO Parking Lots or Paths on this Lot. Flow Through Planters ARE expected to be used on this Lot to treat and detain water runoff. Drought Tolerant Planting per classification "d" WILL be installed in the Flow Through Planter.

O. Signs and Graphics

There will be NO Signs or Graphics on this Lot.

P. Lighting

There is NO River Access, River Frontage and Lighting installed on the Single Family Residence will NOT be visible to the Tualatin or Willamette River.

Q. Parking

There will be NO Parking Lots or Enclosed Storage Areas on this lot. Parking in the Driveway will NOT be visible from the Tualatin or Willamette River and will be made of Water Permeable materials if possible.

R. Views

There are NO Ramps or Docks on this Lot. There will be NO River or Park View obstruction as a result of developing a Single Family Residence on this Lot.

S. Aggregate Deposits

There will be NO Dredging on this lot.

T. Changing the Landscape / Grading

1. There will be NO Bank Line Disturbance, Water Related or Water Dependent use. Temporary Erosion Control Measures (TESC) WILL be in place and signed off by the City inspector prior to construction of the proposed Single Family Residence. Best Management Practices (BMP's) will be followed through the course of constructing the Single Family Residence to ensure Erosion is minimized and properly treated. There will be NO Bank Stabilization with Rip Rap or Gabions on this lot. A Geotechnical Report has been completed for the lot and will be submitted for review and comment. A Geotechnical Engineer will be onsite during construction of the Single Family Residence and their recommendation will be adhered to.

2. There will be NO Impact on the Riparian Environment as a result of constructing a Single Family Residence on this Lot.

Willamette River Greenway
Approval Criteria Narrative Response

19155 Nixon Avenue
PA – 17 - 03

3. Temporary Erosion Control Measures (TESC) WILL be in place and signed off by the City inspector prior to construction of the proposed Single Family Residence. Best Management Practices (BMP's) will be followed through the course of constructing the Single Family Residence to ensure Erosion is minimized and properly treated. A Geotechnical Report has been completed for the lot and will be submitted for review and comment. A Geotechnical Engineer will be onsite during construction of the Single Family Residence and their recommendation will be adhered to.

4. There are NO Wetlands, Creeks or Riparian Areas on this Lot. If it is deemed necessary 6' Chain Link Fencing will be installed.

5. Temporary Erosion Control Measures (TESC) WILL be in place and signed off by the City inspector prior to construction of the proposed Single Family Residence. Best Management Practices (BMP's) will be followed through the course of constructing the Single Family Residence to ensure Erosion is minimized and properly treated.

U. <u>Protect Riparian and Adjacent Vegetation</u>

1. Vegetation will NOT be removed in the Riparian Area.

2. Tree Inventory Plan will be prepared for Mitigation & Revegetation onsite (if possible) or offsite which will be verified with Michael Perkins. The Revegetation plan will be in compliance with CDC 28.160 and guaranteed for 2 years.

3.

a No Trees within the Riparian are anticipated to be removed and NO significant change to existing vegetation is be proposed with this application.

b No Trees within the Riparian are anticipated to be removed and NO significant change to existing vegetation is be proposed with this application.

c No Trees within the Riparian are anticipated to be removed and NO significant change to existing vegetation is be proposed with this application.

75.020 Class 1 Variance
Class 1 Variance Response

19155 Nixon Avenue
PA – 17 - 03

A

1. We would like to modify the Street Frontage Set Back to the Garage from 18' to 16'. The reduction in Street Frontage Set Back will allow the Excavation of the Single Family Residence to intrude less into the steep slope of the Lot. The reduction of the Street Frontage Set Back will also lessen the impact to the HCA boundary and allow more undisturbed square footage of the Lot.

a. The reduction of the Street Frontage Set Back from 18' to 16' will provide a more efficient use of the Site and will also allow more of the HCA to remain undisturbed.

b. The reduction of the Street Frontage Set Back from 18' to 16'will provide a more efficient use of the Site and will also allow more of the natural features of the HCA to remain undisturbed.

c. The reduction in the Street Frontage Set Back from 18' to 16' does not adversely affect ANY adjoining properties in terms of light, air, circulation, noise levels, privacy and fire hazards.

d. The reduction in the Street Frontage Set Back from 18' to 16' will NOT affect vehicular and pedestrian access to the Lot.

2. There will be no permanent in nature Off Street Parking affected by reducing the Street Frontage Set Back from 18' to 16'.

3. There will be NO dimensional sign modifications as a result of modifying the Street Frontage Set Back from 18' to 16'.

a. There will be NO dimensional sign modifications as a result of modifying the Street Frontage Set Back from 18' to 16'.

b. There will be NO dimensional sign modifications as a result of modifying the Street Frontage Set Back from 18' to 16'.

c. The reduction in the Street Frontage Set Back from 18' to 16' does not adversely affect ANY adjoining properties.

4. No Landscaping requirements are affected by reducing the Street Frontage Set Back from 18' to 16'.

a. No Landscaping requirements are affected by reducing the Street Frontage Set Back from 18' to 16'.

75.020 Class 1 Variance
Class 1 Variance Response

19155 Nixon Avenue
PA – 17 - 03

b. No Landscaping requirements are affected by reducing the Street Frontage Set Back from 18' to 16'.

c. The reduction in the Street Frontage Set Back from 18' to 16' does not adversely affect ANY adjoining properties.

City of West Linn

PRE-APPLICATION CONFERENCE MEETING

Summary Notes

February 16, 2017

SUBJECT:	Willamette and Tualatin River Protection (WRG) permit at 19155 Nixon Avenue
FILE:	PA-17-03
ATTENDEES:	Applicant: Will Huffman, Tom Brewer
	Staff: Peter Spir (Associate Planner) Erich Lais (Development Engineer)

The following is a summary of the meeting discussion provided to you from staff meeting notes. Additional information may be provided to address any "follow-up" items identified during the meeting. These comments are PRELIMINARY in nature. Please contact the Planning Department with any questions regarding approval criteria, submittal requirements, or any other planning-related items. Please note disclaimer statement below.

Site Information

Site Address: 19155 Nixon Avenue
Area: 7,139 sq. ft.
Zoning Classification: R-10 (10,000 square foot minimum lot size)
Environmental Overlays: "High" Habitat Conservation Area (HCA)
Applicable CDC Chapters: Willamette River Greenway (WRG) Chapter 28; R-10 zone Chapter 11; Non-Conforming Lots of Record Chapter 68

Project Details

The applicant proposes to construct one single family home on the property. The property is a non-conforming lot of record created by deed transfer in 1974 which is prior to the City's zoning ordinance adoption in 1984. It can be built upon so long as it meets the requirements of CDC Chapter 68: Non-conforming lots of record, the underlying R-10 zone, as applicable, and the WRG permit.

Discussion

The forested property slopes steeply uphill from Nixon Avenue, averaging 60 percent. The lower portion, where the house is proposed to be built, has a lesser slope: averaging 46 percent. Staff notes the presence of a landslide hazard designation which covers the southern portion of the property (1,093 square feet). The applicant will be required to provide a stamped geotechnical engineer's report to demonstrate that site preparation and construction techniques can be used to allow for the safe development of the property. The Building Official may require additional geotechnical studies and development monitoring.

The lower or east half of the property adjacent to Nixon Avenue comprises 4,642 square feet of "High" HCA. The HCA designation is administered under the provisions of the Willamette and Tualatin River Protection (WRG) Chapter 28. That chapter allows the development of one home with a total impervious surface area of 5,000 square feet. Driveways, patios and paths constructed using water permeable materials will not count against the 5,000 square foot allowable area. Storm water treatment swales would also be exempt. The Floor Area Ratio and Lot Coverage standards of the R-10 zone may limit total developed area. It is noted that

setbacks for structures built on Non-Conforming lots of record can be reduced (below the R-10 setbacks) which have the potential to reduce hillside impacts. Also, the reduced setback allowance for garages on steep slopes (41.010) may be used. Side loading garages may have a three foot setback. Side yard transitions of CDC Chapter 43 must be incorporated into the house design.

CDC 28.160 requires a mitigation plan for developed areas within the HCA. The applicant shall prepare and implement a revegetation and mitigation plan pursuant to the provisions of CDC 32.070 and 32.080. On-site mitigation is preferred, but off-site mitigation is an option. There are a number of trees on the site. The applicant will be inventory and map the trees by location, type and size (DBH). The trees will be tagged and numbered accordingly. The City Arborist will then identify which trees are significant. Contact Mike Perkins, the City Arborist (mperkins@westlinnoregon.gov). Contact Eric Lais at elais@westlinnoregon.gov or at 503-723-5517 for specific engineering requirements including improvements in the Nixon Avenue right of way per CDC 96.010(A) (1). Fees in lieu may be proposed for these improvements. TVFR comments see: Ty Darby at Ty.Darby@tvfr.com.

Process

A WRG permit is required. The submittal requirements and approval criteria of CDC Chapter 28 must be met. A deposit fee of $1,700 is required. The CDC is online at http://westlinnoregon.gov/cdc.

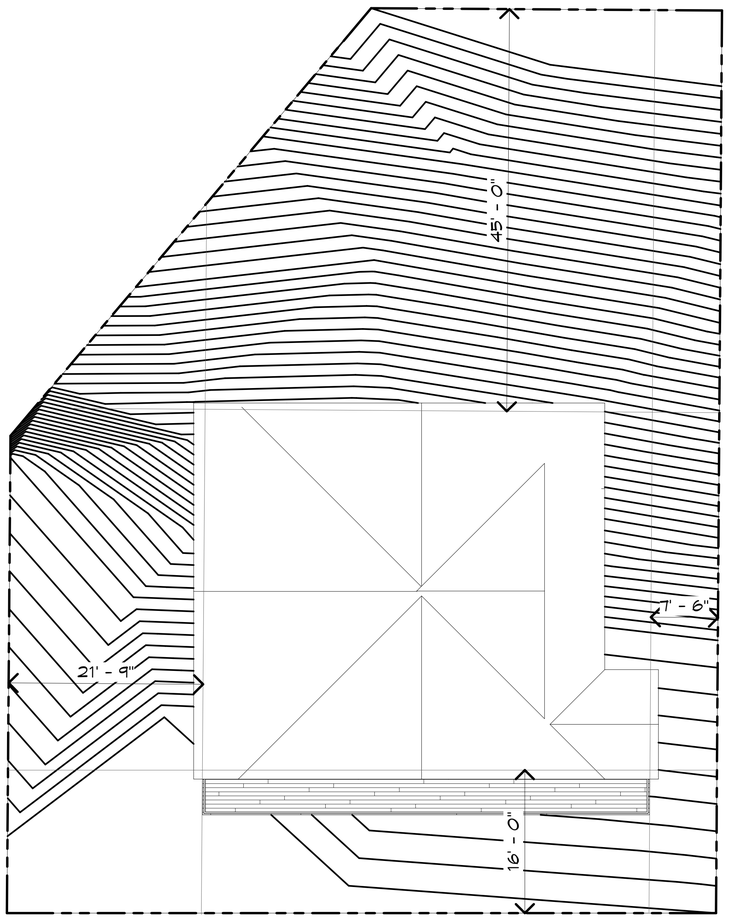
N/A is not an acceptable response to the WRG approval criteria. The submittal requirements may be waived, but the applicant must first identify the specific submittal requirement and request, in letter form, that it be waived by the Planning Manager and must identify the specific grounds for that waiver.

Once the application and deposit/fee are submitted, the City has 30 days to determine if the application is complete or not. If the application is not complete, the applicant has 180 days to make it complete or provide written notice to staff that no other information will be provided. Once the submittal is deemed complete, the staff will notify the affected parties of the proposal and invite comment. The Planning Manager will issue a decision to approve, approve with conditions or deny the application and notify affected parties. There is a 14-day window to appeal the decision of the Planning Manager following notice of the decision. If no appeal has been received by the close of the appeal period, the Planning Manager decision becomes final and the applicant may move forward with the development of their proposal.

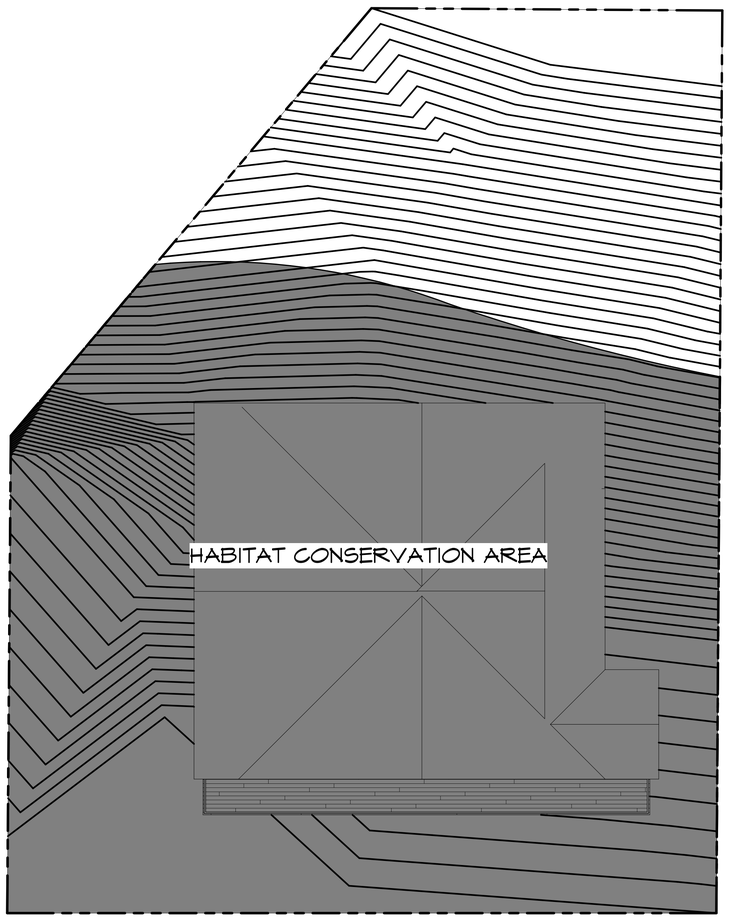
Pre-application notes are void after 18 months. After 18 months with no application approved or in process, a new pre-application conference is required.

Typical land use applications can take 6-10 months from beginning to end.

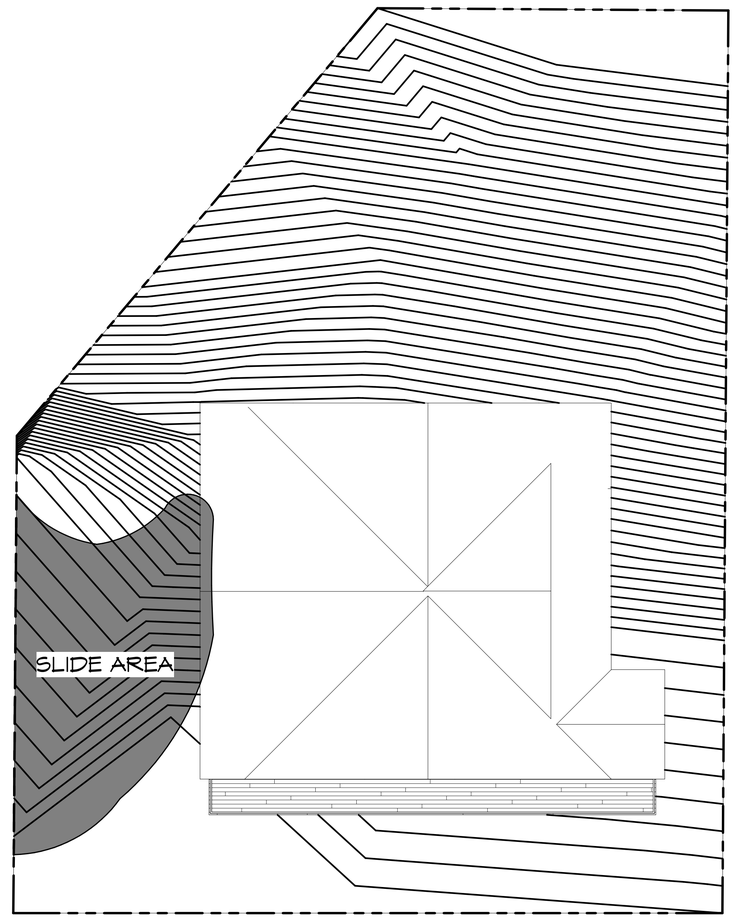
DISCLAIMER: This summary discussion covers issues identified to date. It does not imply that these are the only issues. The burden of proof is on the applicant to demonstrate that all approval criteria have been met. These notes do not constitute an endorsement of the proposed application ***or provide any assurance of potential outcomes***. Staff responses are based on limited material presented at this pre-application meeting. New issues, requirements, etc. could emerge as the application is developed. ***A new pre-application conference would have to be scheduled one that period lapses and these notes would no longer be valid. Any changes to the CDC standards may require a different design or submittal.***



Site Plan
1/8" = 1'-0"



Site Plan W/ HCA
1/8" = 1'-0"



Site Plan W/ SLIDE AREA
1/8" = 1'-0"

DRAFTING CORP
Brian Emrich:
360-929-4582
Email:
edrafting@hotmail.com

19155 NIXON AVE

FILE NAME :
44-SF-DM-2
DRAWN BY:
DR
SCALE :
1/8" = 1'-0"
PLOT DATE :
3/10/2017
2:51:32 PM

SHEET
Plan Review

PR2

19155 Nixon Ave. West Linn, OR 3/16/2017

Arborist Notes for 19155 Nixon Ave.

On March 15, 2017, I visited the site to gather the data on the trees for a tree inventory. I was told that due to the steep grade and overgrowth of blackberries that the site had very limited access. Therefore, I was instructed to estimate the size, species, and condition of the trees by observing them from Nixon avenue using binoculars.

Upon arrival, I found that the site was, in fact, overgrown with blackberries and the grade was very steep. The upper portion of the lot is a cliff and the lower portion (closer to Nixon avenue) had at least two landslides in the past. The site appears to have been cleared of trees sometime in the past as I could find no trees over 12" DBH. There are two red alders (*Alnus rubra*) growing out of a mound on the south side of the site, which resulted from a past landslide. I estimate these to be 7" DBH.

Further up the hill in the northwest area of the site are several alders which I estimate to be between 3-6" DBH. At the bottom of the site there is one 5" apple. All of the mentioned trees are surrounded by approximately 4' tall blackberries. I did not observe any Pacific dogwoods (*Cornus nuttallii*), Garry oaks (*Quercus garryana*), or Pacific madrones (*Arbutus menziesii*).

The property boundaries were not well marked. I was instructed that it is 73' wide from a property stake at the south edge of the site. I paced off the 73' feet from the stake and made my resulting observations. There is a clump of big leaf maple (*Acer macrophyllum*) on the northwest edge of the property. I believe this clump to be offsite. The maple stems are stump sprouts and approximately between 8 and 12" DBH. They are heavily obscured by blackberries.

While I found the site to be free of regulated trees, these findings may be subject to change after the site is cleared and the property boundaries are marked. I do not expect my findings to change. There are large trees on the top of the cliff that appear to belong to the property above.

Ryan Neumann
PN-5539A

Multnomah Tree Experts, Ltd.

Engineering Geologic Reconnaissance
Tax Lot 1600, Map 2S-1E-24AC
19155 Nixon Avenue
West Linn, Oregon

Prepared For

Mr. Martin J. Wolf
18930 SW Heightsview Court
Beaverton, Oregon 97007

November 13, 2007

Project No. 1902.1.1

Northwest Geotech, Inc.
Northwest Testing, Inc.

Northwest Geotech, Inc.
9120 SW Pioneer Court, Suite B • Wilsonville, Oregon 97070 503/682-1880 FAX: 503 / 682-2753

November 13, 2007
Project No. 1902.1.1

Mr. Martin J. Wolf
18930 SW Heightsview Court
Beaverton, Oregon 97007

Subject: Engineering Geologic Reconnaissance
Tax Lot 1600, Map 2S-1E-24AC
19155 Nixon Avenue
West Linn, Oregon

Dear Mr. Wolf:

1.0 INTRODUCTION

At your request and authorization, we visited the subject site on November 5, 2007 to complete an engineering geologic hazards investigation for Tax Lot 1600, Map #1S-2E-24AC, located at 19155 Nixon Avenue in West Linn, Clackamas County, Oregon (Figures 1 and 2; Appendix A). It is our understanding that you, or a future owner, may want to construct a residential home at the site.

This report addresses the engineering geology and geologic hazards at the site with respect to constructing a home. The scope of our work consisted of a site visit, site observations, a limited review of the geologic literature, interpretation of aerial photography, topographic and geologic maps, and preparation of this report of our findings, conclusions and recommendations. NGI completed a previous study of this property in 1997.

2.0 SITE DESCRIPTION

The subject site consists of an irregular shaped, vacant lot located on the northeast facing hillside that defines the boundary of the western flood plain of the Willamette River (Figures 1 and 2). The lot is approximately 110 feet long (east to west) and approximately 80 feet wide, north to south. The site is bound to its north and south by adjacent vacant lots, to its west by adjacent lots with existing homes, and to its east by Nixon Avenue. The lot has been cleared of trees in the recent past and at present is primarily vegetated with trimmed blackberry, fern and grasses.

The westerly part of the site slopes down to the northeast from 40 to 45 degrees (Figure 3). The slope appears to have been formed by past lateral erosion and undercutting by the Willamette River which is located east of the site. Nixon Avenue, located along the east boundary of the site, lies on an abandoned stream terrace of the Willamette River. An unimproved cat road is present at the eastern part of the site which enters the site from Nixon Avenue near the southeast corner of the site. Cuts 3 to 4 feet high are present along the upslope, west side of the cat road, and cut and fill slopes up to 8 feet high are present along the downslope, east side of the cat road. The cat road appears to have once extended farther toward the northwest, up the slope, but this section of the road is currently overgrown with vegetation, including alder trees and blackberries.

3.0 GEOLOGY

The site lies in an area mapped as Pliocene to Pleistocene unnamed conglomerate which consists of well-rounded pebbles and cobbles of mainly andesite and dacite, with minor amounts of basalt which was derived from the Columbia River Basalt Group, in a poorly to moderately indurated lithic sandstone to sandy siltstone matrix (Beeson et al., 1989). To the north and south, this conglomerate is overlain by Pleistocene coarse sand to silt. At the time of our site visit, we observed silty gravels exposed in a road cut along Nixon Avenue north of the site. We also observed numerous rounded pebbles and cobbles from 1/4 to 2 inches in diameter as float along the slope at the site, indicating the presence of subsurface gravels.

Based on our site observations, much of the site appears to be mantled by a thin layer of uncontrolled fill, which was probably side-cast from upslope areas during the initial development of the area, probably in the 1950's or earlier. Much of the cat road along the lower, eastern part of the site lies on uncontrolled fills.

A total of six hand augered borings were advanced at the site as part of our 1997 study. The approximate locations of the borings are shown on the Site Plan (Figure 2). Two of the borings were located along the cut slope west of the existing cat road, and two borings were sited immediately north of the cat road. The remaining two borings were located approximately two thirds of the way up the slope. The borings along the cut slope west of the cat road (SB-1 and SB-2) generally encountered black to dark gray, soft, organic to slightly organic, weathered, angular, disturbed silty sand from the surface to a depth of 3.5 feet. One boring located immediately north of the driveway, near the center of the old road (SB-3), encountered crushed rock fill from the surface to a depth of 1 foot, before encountering refusal at 1 foot depth. A second boring north of the driveway, along the eastern boundary of the old road (SB-4), encountered black to dark gray, damp, soft, organic sandy silt to silty sand fill from the surface to a depth of 3.5 feet. The boring located approximately two thirds of the way up the slope on the east side of the site (HA-1) encountered brown, damp, dense, gravelly sandy silt with cobbles overlying red brown, moist, dense, slightly clayey, gravelly, sandy silt with weathered rock fragments extending to 8 feet in depth. The boring located about two thirds of the way up the slope on the west side of the site (HA-2), encountered brown, damp, soft, slightly clayey to clayey, sandy silt fill to a depth of about 3.5 feet. The fill was underlain by a topsoil layer and native soil deposits consisting of red brown, saturated, medium dense, slightly clayey, gravelly, sandy silt with weathered basalt fragments extending to 6.5 feet in depth.

Structure

Several normal to oblique, northwesterly trending faults have been mapped east and west of the subject site (Schlicker and Finlayson, 1979). The Concord Fault is located along the east bank of the Willamette river and has its upthrown side to the southwest. The River Forest Fault is located approximately 1,000 feet west of the site and is upthrown to the northeast.

A potentially active fault, named the Bolton Fault, is located approximately 3,500 feet southwest of the site. This fault is upthrown to the southwest and has several intersecting secondary, northeasterly trending faults to its west. The Bolton Fault displaced late Pleistocene flood deposits approximately 11,000 to 14,000 years old, and is believed to have a low probability of being active (Geomatrix, 1995). The Bolton Fault is part of the Portland Fault Zone that

includes the Portland Hills Fault, Oatfield Fault and the East Bank Fault. These other faults are believed to be characterized by dextral strike-slip motion, and have a potential of generating magnitude 6.6 to 7.1 earthquakes (Geomatrix, 1995; Wong et al., 2000). The Bolton Fault is believed to have a potential of generating a magnitude 6.1 to 6.3 earthquake (Wong et al., 2000).

4.0 SLOPE STABILITY AND EROSION

Much of the site is located on a steep 40 to 45 degree generally northeast-facing slope overlooking the Willamette River and Cedar Island to its east. The site shows indications of past shallow landsliding which appears to have extended to depths of approximately 1 to 4 feet. We observed several shallow landslide features at and near the site that appear to have occurred within the past 20 years. Historical failures at the site were likely caused by the placement of fills along the hillside, past clearing activity, and the steep nature of the site. We observed the remains of erosion control material near the ground surface, currently overgrown with blackberries, which appears to have been placed to help control erosion and promote vegetation growth. It is likely that this material was placed following a shallow slide event or following vegetation clearing. At the time of our site visit, we observed indications of recent storm water erosion and shallow sloughing near the northern and southern boundaries of the site, which appeared to have been caused by exposure due to recent clearing activity. We also observed several springs on the lower and middle slope, causing saturated surface soil conditions in localized areas along the slope, and ponded water in the area of the cat road. Saturated soil conditions caused by springs contribute to the instability of the slope. Future shallow failures should be anticipated, unless mitigated for. The slope is prone to fairly rapid soil creep as a result of the steep conditions.

Old colluvial deposits were observed near the base of the slope north of the site. These deposits were overgrown with trees and brush and were probably deposited during past small failures and sloughing of the slope. The cat road appeared to be partly on these old deposits, along with uncontrolled fills. The extent of these deposits was difficult to determine as the result of the presence of the old road and fills placed along the slope during road construction.

Based on our interpretation of stereo pairs of aerial photographs, a large ancient landslide measuring several hundred feet across, north to south is located approximately 300 feet northwest of the subject site. This ancient landsliding appears to have been the result of lateral erosion and downcutting by the ancestral Willamette River. At the time of our site visit, we observed no indications of recent movement of this ancient landslide, although we did observe indications of more recent sloughing and failures along the steep headscarp of the landslide. This landslide does not appear to have impacted the subject site.

5.0 REGIONAL SEISMIC HAZARDS

The historical earthquake record for the Willamette Valley and Portland basin is dominated by small to moderate earthquakes and an appreciable lack of significantly large earthquakes. Most of the earthquakes which have occurred within the Portland metropolitan area and surrounding areas could not be associated with any known faults. There have been at least 17 earthquake events of Richter magnitude (M) 4 or larger which have occurred in the region area in historic time, of which 6 of these events have been of magnitude (M) 5.0 and greater. The largest historic earthquakes within the region have been the 2001 Nisqually, Washington earthquake (M 6.8), the 1993 Scotts Mills earthquake (M 5.6) northeast of Salem, Oregon, the 1964

Vancouver, Washington earthquake (M 5.3), the 1962 Portland earthquake (M 5.5), and the 1961 earthquake (M 5.0) northwest of Portland. There are at least three crustal faults beneath the Portland metropolitan area which researchers believe could generate earthquakes of M 6.5 or larger (Wong et al., 2000). These larger earthquakes may occur at an average interval of approximately 1,000 years (Bott and Wong, 1993).

Abundant evidence indicates that a series of earthquakes related to the Cascadia Subduction Zone have occurred along the coastline of the Pacific Northwest. Evidence suggests that there have been as many as thirteen major earthquakes, or more, in the last 7,700 years (Priest et al., 1997). These earthquakes were likely of magnitude (M) 8.0 to 9.0, and are believed to have had a mean recurrence interval of 500 to 600 years, however some of the past earthquakes have had intervals less than 300 years (Clague et al., 2000). Evidence suggests the last major earthquake occurred in 1700 and may have been of magnitude (M) 9.0 (Clague et al., 2000). Locally, these great coastal earthquakes would likely have about the same effects as a possible local large earthquake.

As discussed above, faults within the Portland Fault Zone have a potential of generating magnitude 6.5 to 7.1 earthquakes (Geomatrix, 1995; Wong et al., 2000). Based on 1997 Relative Earthquake Hazard Map of the Portland Metro Region (Mabey et al., 1997), the subject site lies in an area designated as Zone A. Zone A represents areas which show the greatest hazards associated with earthquakes. The degree of relative hazard was based on the factors of ground motion amplification, liquefaction, and slope instability.

6.0 FLOODING HAZARDS

Based on the 1977 Flood Insurance Rate Map (FIRM, Panel #410024 0001B) easternmost area of the site, adjacent to Nixon Avenue, lies in an area rated as Zone B which is defined as an area between the limits of 100-year flood and 500-year flood; and areas of 100-year shallow flooding with depths less than 1 foot. The remainder majority of the site lies in Zone C which is defined as an area of minimal flooding.

As discussed above, we observed springs emanating from the slope above the cat road which has caused areas of localized saturated soils along the slope, and areas of ponded water in the cat road.

7.0 CONCLUSIONS AND RECOMMENDATIONS

The main engineering geologic concerns at the site are as follows:

1. The site is located on and adjacent to a steep slope which has a history of soil creep and shallow instability issues. Future shallow failures that extend to depths of 1 to 4 feet or more should be anticipated, if not mitigated for.

2. Thin uncontrolled fills mantle areas of the slope at the site, and thicker fills are present in the area of the cat road. These fills are not suitable to support building loads.

3. The wet soils areas along the lower and middle slope indicate the presence of springs. Storm water flow and shallow groundwater seepage have the potential to increase the likelihood of future landsliding and ground movement at the site, and can cause localized flooding if not mitigated for.

4. There is a regional risk of earthquakes in the Portland Metropolitan area. These risks must be accepted by the owner, future owners, developers and residents of the site.

Prior to design, we recommend that a geotechnical investigation be completed at the site, which should include test pits and/or drilling, laboratory testing, computer aided slope stability analysis, geotechnical analysis, and recommendations for development.

Development on or adjacent to the steep slope will require mitigation measures to stabilize the slope or to help protect the house from hazards associated with landsliding. If slope stabilization measures are needed, possible measures may include, erosion control, subsurface drainage, and retaining walls (such as free-standing retaining walls, foundation retaining walls, and/or reinforced shotcrete retaining walls with tiebacks).

All building loads will need to be supported on foundations bearing on firm to hard materials present below fills and any soft native soils present at the site.

Erosion control measures will need to be undertaken at this site to meet both construction and long-term project requirements. Vegetation should be removed only as necessary and exposed areas should be replanted following construction. Temporary sediment fences should be installed downslope of any disturbed areas of the site until permanent vegetation cover can be established. Exposed sloping areas steeper than 3 horizontal to 1 vertical (3H:1V) should be protected with a straw erosion control blanket (North American Green S150 or equivalent) to provide erosion protection until permanent vegetation can be established. Erosion control blankets should be installed as per the manufacturers recommendations.

Substantial storm water control measures will be required to collect water from roofs and upslope areas, and discharge this water to approved disposal points. Surface water from upslope areas west of the proposed house will flow down towards the house. This water will need to be collected and discharged to approved points. Foundation, retaining wall and underslab drainage systems will also be required to collect and discharge shallow ground water. If a crawlspace is utilized, a crawlspace drainage system will be needed to collect and discharge water.

Special precautions should be implemented during construction to prevent impacts to off-site properties, particularly upslope properties. These may include temporary shoring of excavations.

8.0 LIMITATIONS

Our investigation was based on engineering geological reconnaissance, limited review of published information, and our subsurface exploration and analyses. The data presented in this report are believed to be representative of the site. The conclusions herein are professional opinions derived in accordance with current standards of professional practice and budget constraints. No warranty is expressed or implied. The performance of the site during a seismic event has not been evaluated. If you would like us to do so, please contact us.

This report pertains to the subject site only, and is not applicable to adjacent sites nor is it valid for types of development other than that to which it refers. Geologic conditions including materials, processes and rates can change with time and therefore a review of the site and/or this report may be necessary as time passes to assure its accuracy and adequacy. This report may only be copied in its entirety.

9.0 DISCLOSURE

Northwest Geotech, Inc. and the undersigned Certified Engineering Geologist have no financial interest in the subject site, the project or the Client's organization.

10.0 REFERENCES

Beeson, M. H., Tolan, T. L., and Madin, I. P., 1989, Geologic map of the Lake Oswego Quadrangle, Clackamas, Multnomah, and Washington Counties, Oregon; Oregon Department of Geology and Mineral Industries, Geologic Map Series GMS-59, map.

Bott, D. J., and Wong, I. G., 1993, Historical earthquakes in and around Portland, Oregon: Oregon Geology, v. 55, No. 5, p. 116-122.

Clague, J. J., Atwater, B. F., Wang, K., Wang, Y., and Wong, I., 2000, Penrose Conference 2000 - Great Cascadia Earthquake Tricentennial, Programs Summary and Abstracts: Oregon Department of Geology and Mineral Industries, Special Paper 33, 156 p.

Geomatrix Consultants, 1995, Seismic design mapping, State of Oregon, final report: Prepared for the Oregon Department of Transportation, Project No. 2442.

Mabey, M. A., Black, G. L., Madin, I. P., Meier, D. B., Youd, T. L., Jones, C. F., and Rice, J. G., 1997, Relative earthquake hazard map of the Portland Metro region, Clackamas, Multnomah, and Washington Counties, Oregon: Oregon Department of Geology and Mineral Industries, Interpretive Map Series IMS-1, map.

Priest, G. R., Myers, E., Baptista, A. M., Fleuck, P., Wang, K., Kamphaus, R. A., and Peterson, C. D., 1997, Cascadia Subduction Zone tsunamis: Hazard mapping at Yaquina Bay, Oregon, final technical report to the National Earthquake Hazard Reduction Program: Oregon Department of Geology and Mineral Industries, Open-File Report O-97-34.

Schlicker, H. G., and Finlayson, C. T., 1979, Geology and geologic hazards of northwestern Clackamas County, Oregon: Oregon Department of Geology and Mineral Industries Bulletin 99, 79 p., maps.

Wong, I. Silva, W., Bott, J., Wright, D., Thomas, P., Gregor, N., Li, S., Mabey, M., Sojourner, A., and Wang, Y., 2000, Earthquake scenario and probabilistic ground shaking maps of the Portland, Oregon, metropolitan area: Oregon Department of Geology and Mineral Industries, IMS-16, 16 p., maps.

It has been our pleasure to serve you. If you have any questions concerning this report, or the site, please contact us.

Respectfully submitted,

NORTHWEST GEOTECH, INC.

J. Douglas Gless, MSc, RG, CEG, LHG
Principal Engineering Geologist

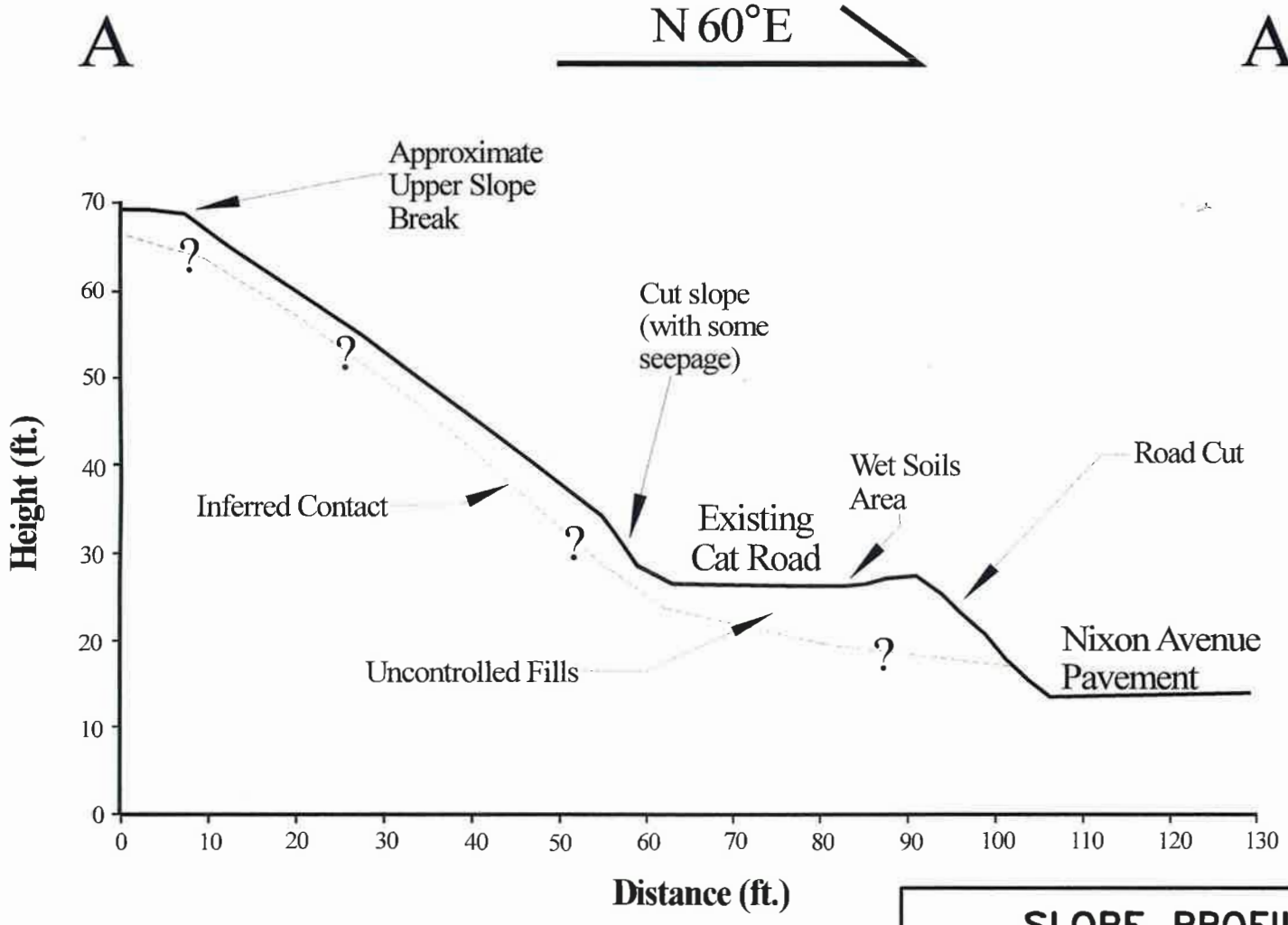
Thomas S. Ginsbach, P.E., G.E.
President

Copies: (2) Addressee (E-mail and U.S. mail)

LOCATION MAP

PROJECT NO. 1902.1.1	TAX LOT 1600, MAP 2S–1E–24AC 19155 NIXON AVENUE WEST LINN, OREGON	FIGURE NO. 1

Northwest Geotech, Inc.



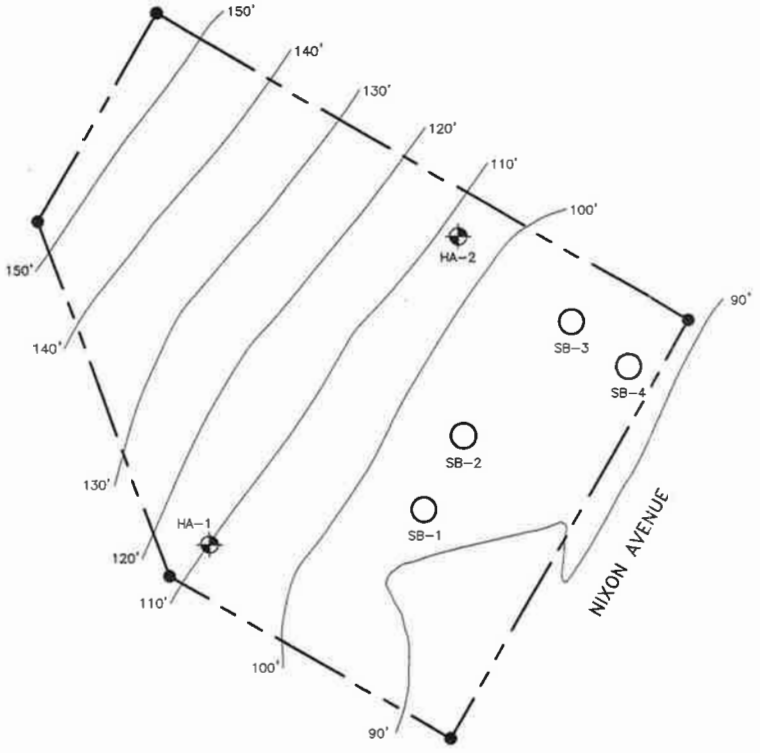
All dimensions and locations are approximate.

SLOPE PROFILE A–A'

TAX LOT 1600, MAP 2S–1E–24AC
19155 NIXON AVENUE
WEST LINN, OREGON

PROJECT NO. 1902.1.1	FIGURE NO. 3

Northwest Geotech, Inc.



LEGEND

HA-1 — INDICATES APPROXIMATE LOCATION OF EXPLORATORY HAND AUGER BORING (8/97)

SB-1 — INDICATES APPROXIMATE LOCATION OF SHALLOW HAND AUGER BORING (7/97)

0 10 20 40

APPROXIMATE SCALE (FEET)

SITE PLAN

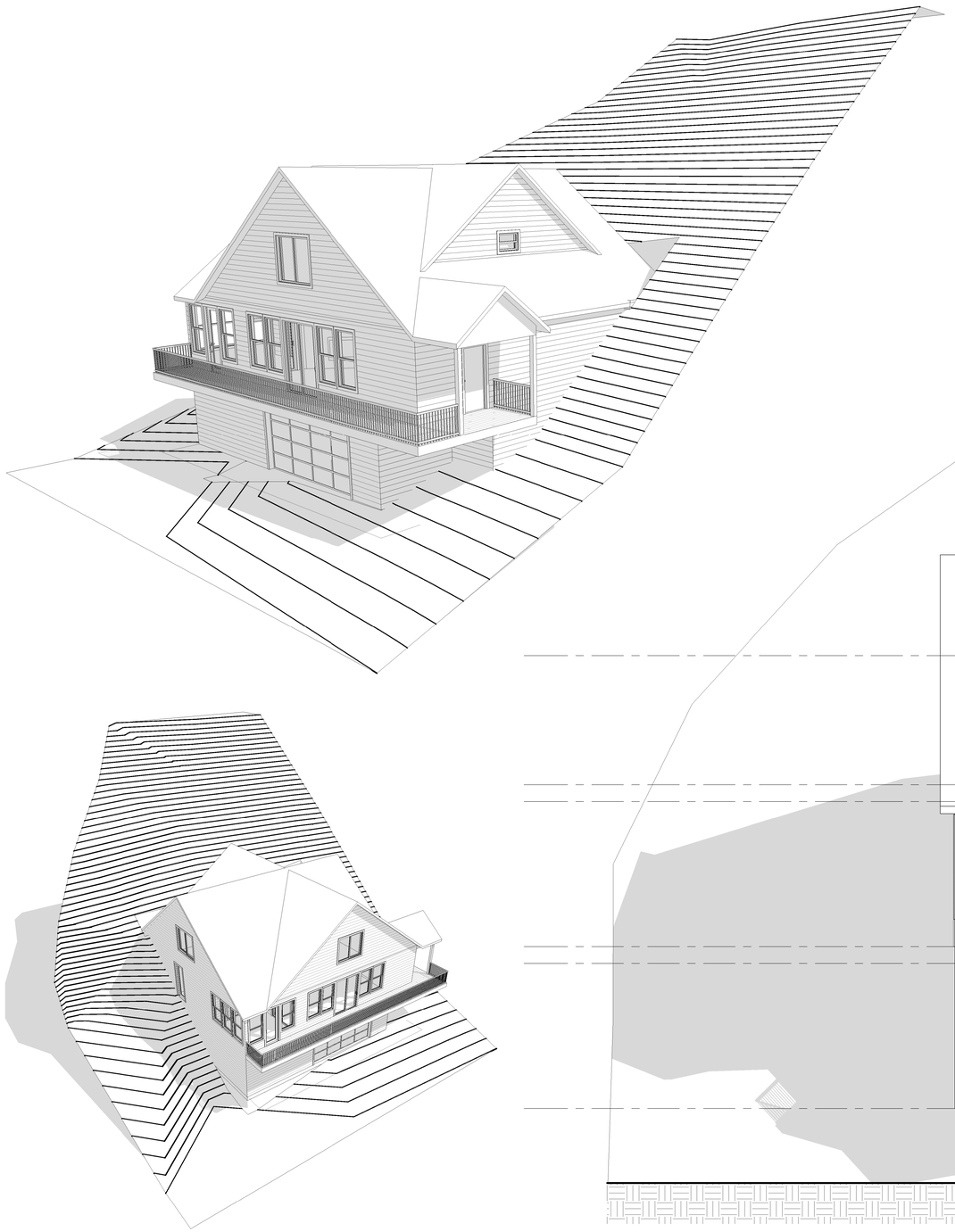
TAX LOT 1600, MAP 2S-1E-24AC
19155 NIXON AVENUE
WEST LINN, OREGON

PROJECT NO. 1902.1.1	FIGURE NO. 2

Northwest Geotech, Inc.

Photo 1 – Looking northwest toward site.

Photo 2 – Looking south toward slope.



FRONT ELEVATION

1/4" = 1'-0"

DRAFTING CORP
Custom New Home & Remodel Plans
Email:
edrafting@hotmail.com
Brian Emrich:
360-929-4582

19155 NIXON AVE

FILE NAME :
44-SF-DM-2

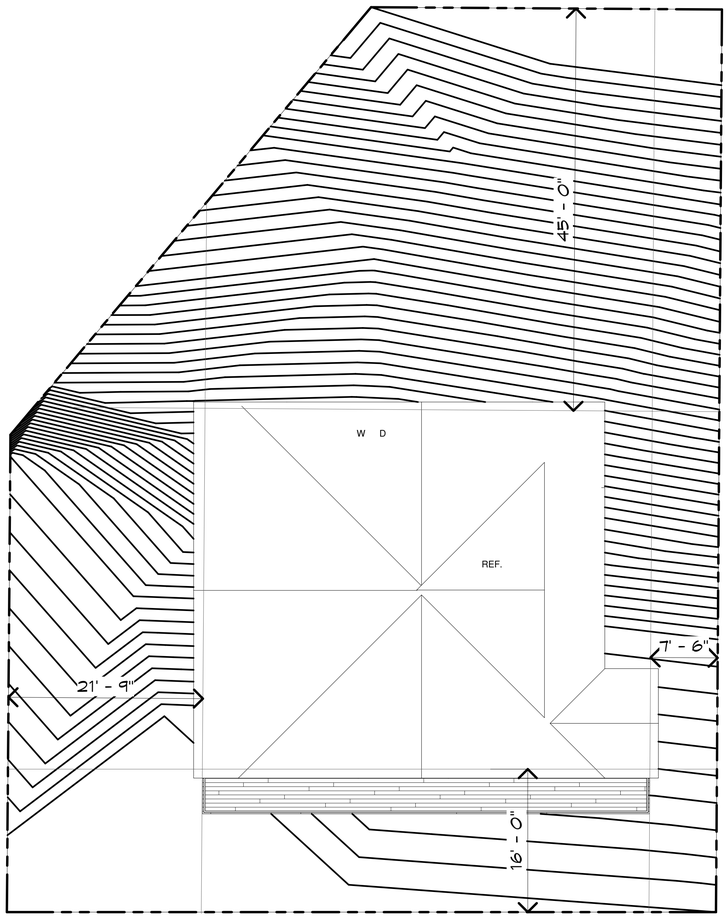
DRAWN BY:
DR

SCALE :
1/4" = 1'-0"

PLOT DATE :
2/28/2017
12:40:40 PM

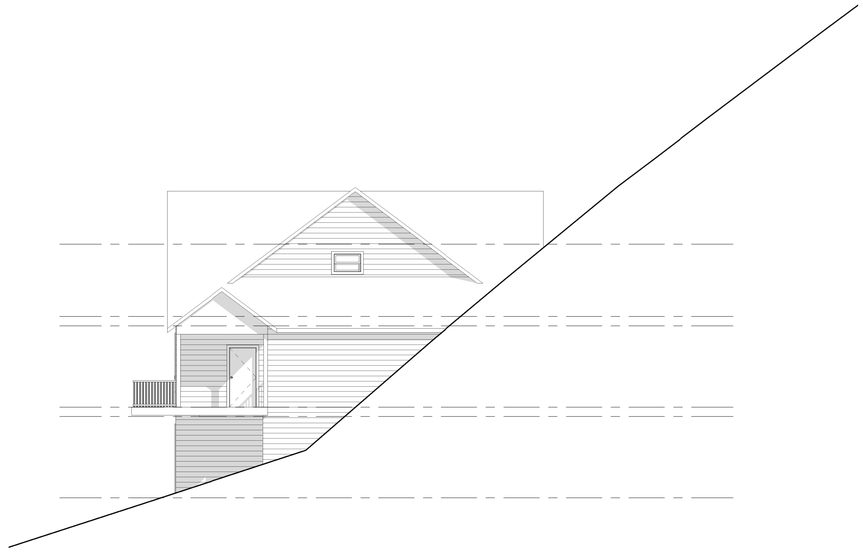
SHEET
Plan Review

PR1



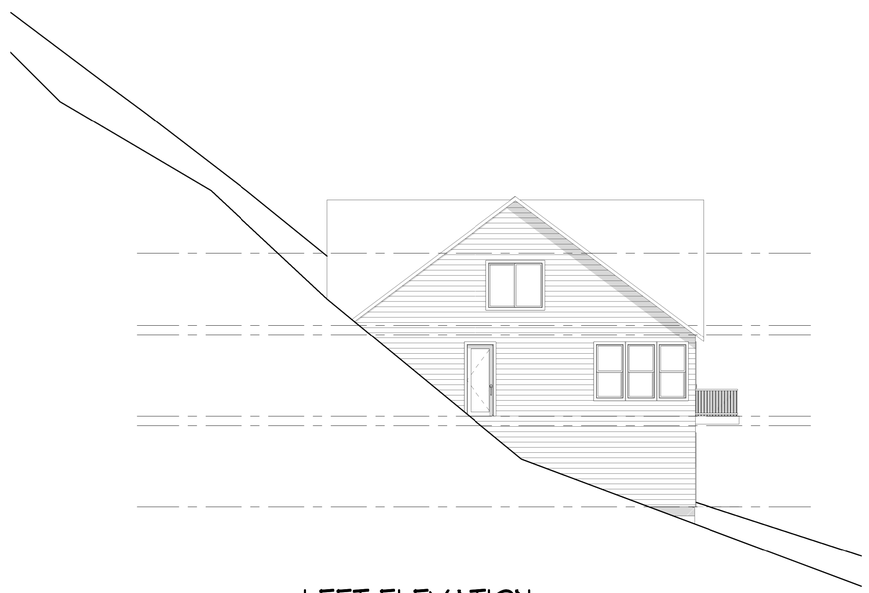
Site Plan (Project North)

1/8" = 1'-0"



RIGHT ELEVATION

1/8" = 1'-0"



LEFT ELEVATION

1/8" = 1'-0"

E DRAFTING CORP
Custom Home Designs
Email: edrafting@hotmail.com
Brian Emrich
360-929-4582

19155 NIXON AVE

FILE NAME :
44-SF-DM-2

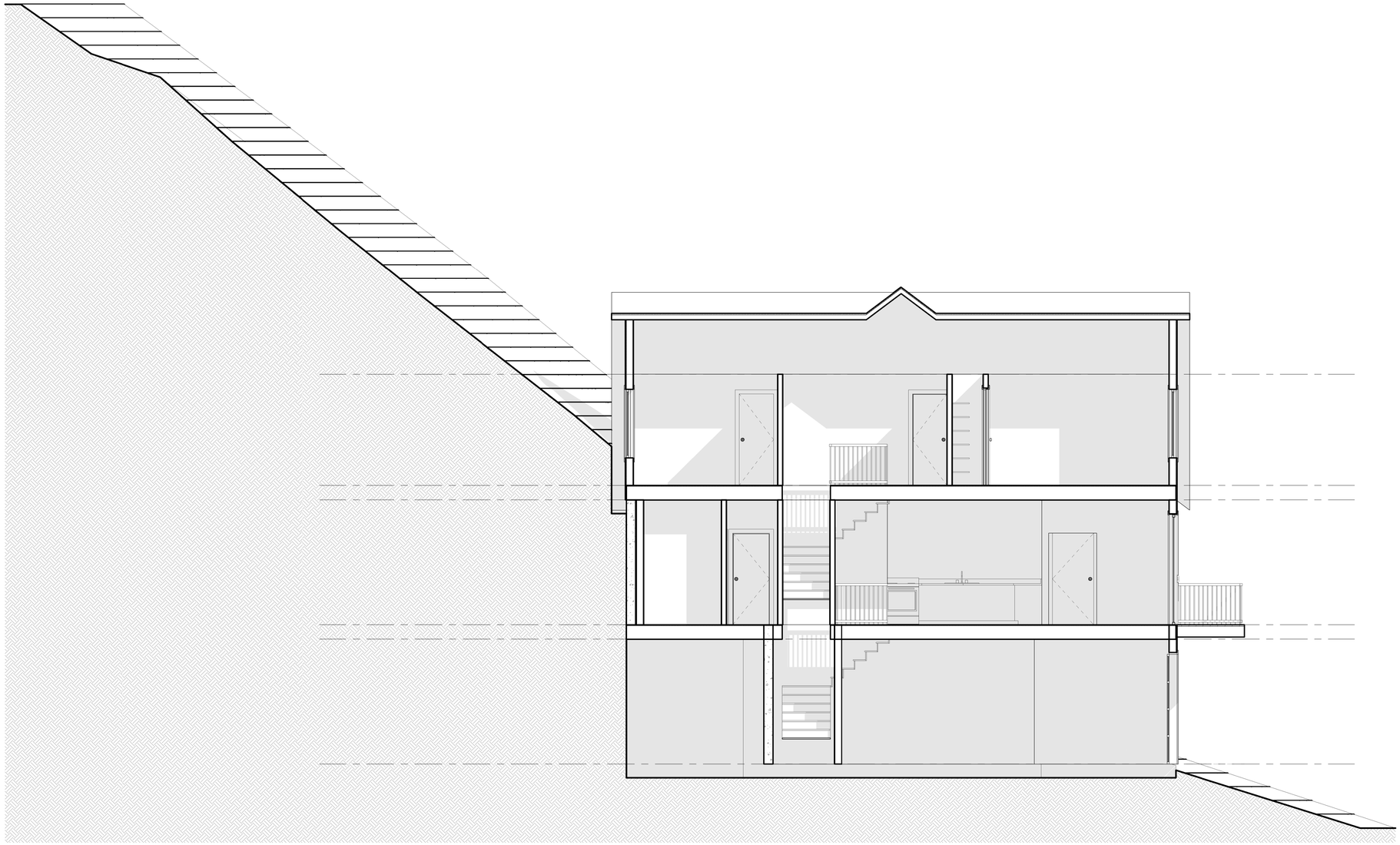
DRAWN BY:
DR

SCALE :
1/8" = 1'-0"

PLOT DATE :
2/28/2017
12:40:42 PM

SHEET
Plan Review

PR2



Section 2

1/4" = 1'-0"

DRAFTING CORP
Your plan home starts here

Brian Emrich:
360-929-4582

Email:
edrafting@hotmail.com

19155 NIXON AVE

FILE NAME :
44-SF-DM-2

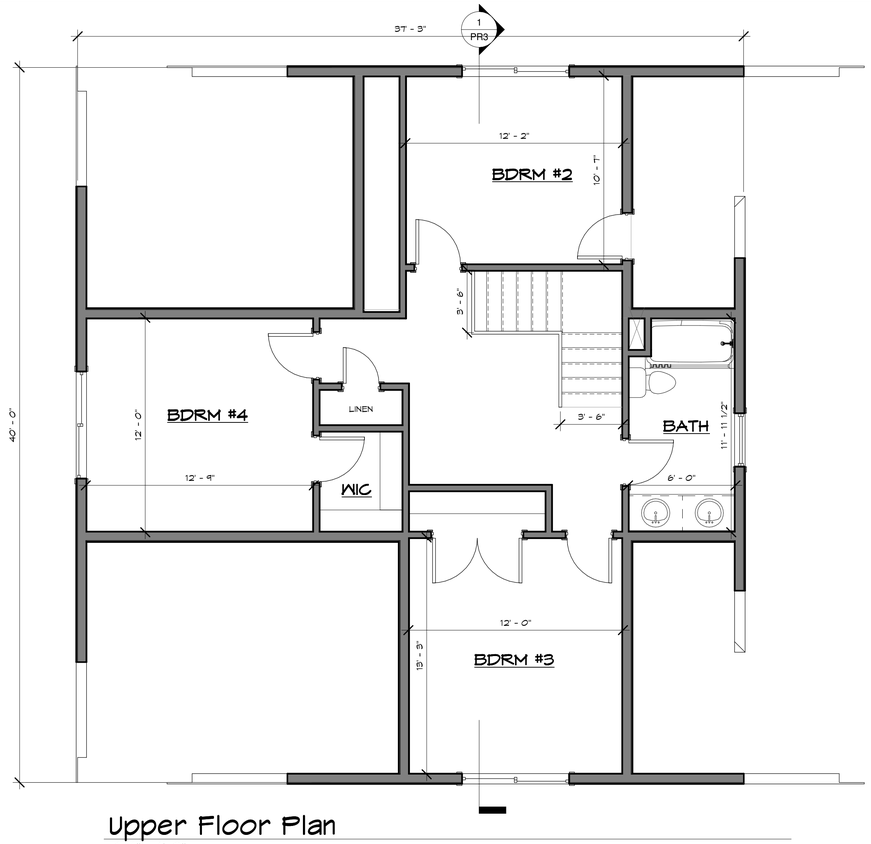
DRAWN BY:
DR

SCALE :
1/4" = 1'-0"

PLOT DATE :
2/28/2017
12:40:44 PM

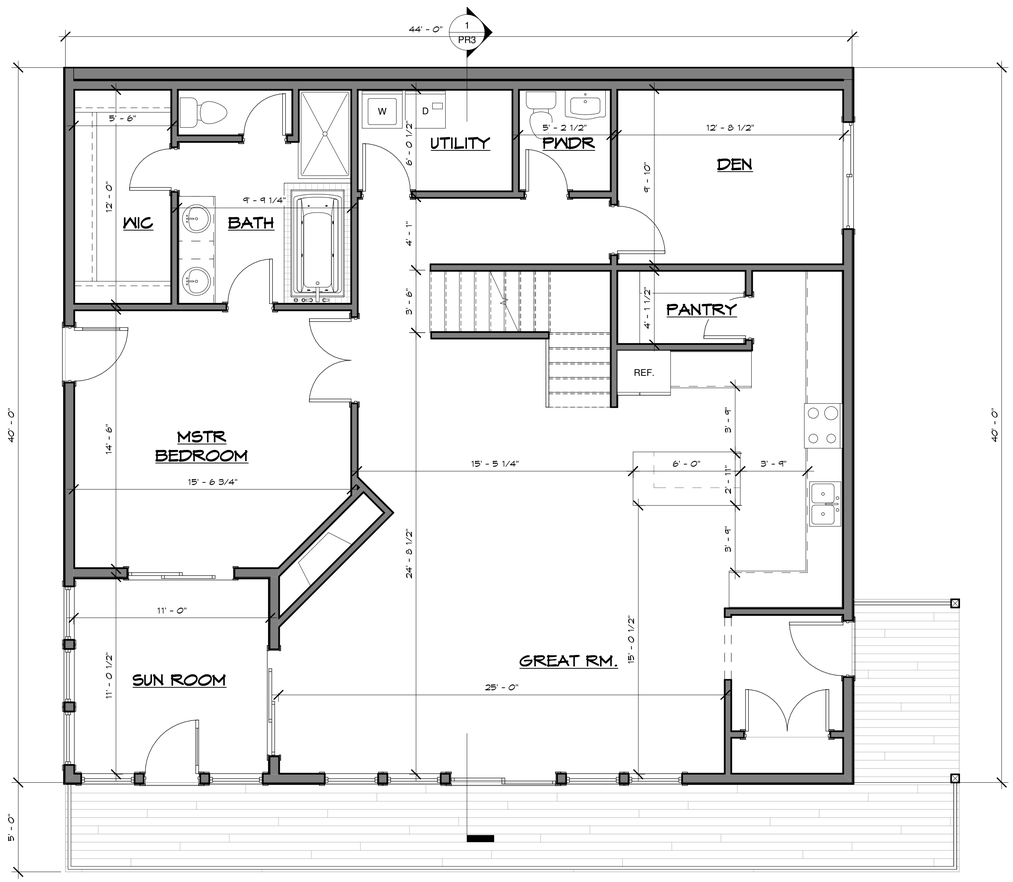
SHEET
Plan Review

PR3



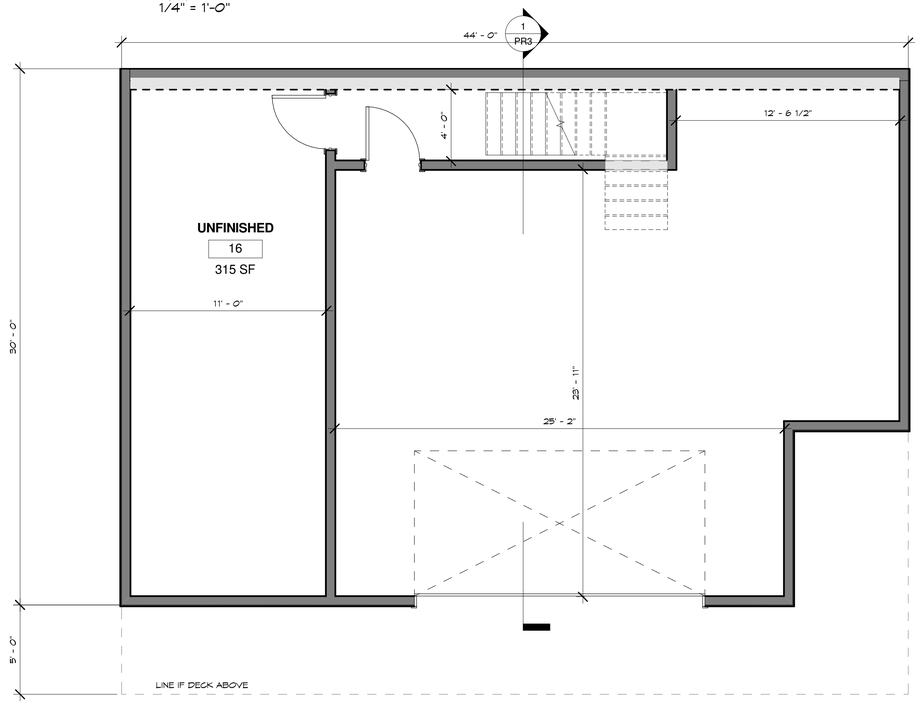
Upper Floor Plan

1/4" = 1'-0"



Main Floor Plan

1/4" = 1'-0"



Lower Floor Plan

1/4" = 1'-0"

DRAFTING CORP
Your New Home Starts Here
Email:
edrafting@hotmail.com
Brian Emrich:
360-909-4592

19155 NIXON AVE

FILE NAME :
44-SF-DM-2

DRAWN BY:
DR

SCALE :
1/4" = 1'-0"

PLOT DATE :
2/28/2017
12:40:44 PM

SHEET
Plan Review

PR4