



CITY OF West Linn

Memorandum

Date: October 7, 2020
To: West Linn Planning Commission
From: Jennifer Arnold, Associate Planner
Subject: Written Testimony: SUB-20-01 – 6-Lot Subdivision at 4096 Cornwall Street

On October 5, 2020 Staff received a report from William House on geologic and hydrologic risk parameters.

On October 5, 2020 Staff received testimony from Robert Jester, representing the Barrington Heights HOA and Neighborhood Association expressing concerns regarding access and connectivity, safety on Landis, preservation of habitat, trees and stability of the land.

On October 6, 2020 Staff received testimony from the Pam Yokubaitis expressing concerns regarding landslides, road connectivity, traffic, and lack of a report from a hydrogeological study.

On October 6, 2020 Staff received testimony from Bib Mendel, representing the Tanner Stonegate HOA expressing concerns regarding a traffic impact analysis and stormwater drainage.

On October 7, 2020 Staff received additional written testimony from Pam Yokubaitis representing the BHT NA and Hidden Creek Estates Subdivision.

Public Testimony: Willow Ridge Geologic and Hydrologic Risk Parameters

Willow Ridge Proposed Development 4096 Cornwall St., West Linn, OR Tax Lot: 6300

This document provides an assessment of geologic and hydrologic risk related to the proposed Icon Construction and Development (ICON) project on Tax Lot 6300 (Willow Ridge Development). The testimony provided herein was produced by William House on a pro gratis basis for the residents of various communities surrounding the proposed Willow Ridge development. The testimony provides an assessment of available technical data to determine geological and hydrological risk parameters associated with the development and assess risk mitigation plans.

This document does not provide the following:

- 1) A technical basis for the design of any physical structures.
- 2) An exhaustive assessment of local geologic and hydrologic conditions

Interpretations of data provided in this document represent the informed opinion of William House based on the resources cited under Data Sources.

William House is a retired professional geologist with an academic background that includes an MS Degree in Geology and a BA Degree in Environmental Sciences. He has extensive experience in subsurface geology from working as an exploration geologist in the petroleum industry for 34 years. He currently resides at 3483 Cascade Terrace, West Linn, OR.

Executive Summary

A geological and hydrological risk assessment of the Willow Ridge Development was undertaken at the request of local residents. The assessment was based on publicly available data.

The two key findings of the study are:

1. The ICON application does not recognize the presence of a perched water table outcropping on the Willow Ridge slope at approximately 460 feet above sea level (ASL). Flooding and slope stability risks associated with this geological feature are not addressed in the Willow Ridge Development application (Exhibit 7).
2. Geological risk from shallow landslides is discussed in the application, but these discussions do not include an analysis of how groundwater flow from the perched water table may affect slope stability, nor do they specifically address slope instability issues related to the excavation of slope-toe materials along the perched water table (Exhibit 10).

Hydrologic Risk:

Available geological mapping in the area indicates that the rocks below ground level consist of flat tabular basalts associated with two units of Frenchman Springs member of the Wanapum Basalts. The geological formation contact between these two units is interpreted to occur at approximately 460 feet above sea level, based on well data and offset geological mapping (Geologic map of the Oregon City 7.5' quadrangle, Clackamas County, Oregon, by Ian P. Madin, 2009 – Exhibit 1). The formation contact is important because hydrologic systems in basalts are heavily influenced by contacts between basalt flow units.

Subsurface descriptions support this interpretation based on the well log from the Clackamas County water well CLAC 69447 drilled on the property with an address of 4197 Reed St., West Linn, OR (approximately 123 feet from the north corner of the Willow Ridge plot – Exhibits 2 & 3). This well identifies a perched water zone between 462 feet and 481 feet ASL (Exhibit 5). The base of the perched water zone is consistent with the projected formation contact. This perched water zone outcrops on the Willow Ridge slope and appears to feed springs along that slope (Exhibits 6, 7, & 7a).

Ground disturbance from construction or increased ground water percolation above an elevation of 460 feet ASL will affect the perched water zone and may result in either increased flow from existing springs or the formation of new springs. These changes in groundwater flow may pose increased flooding risk to the properties at the base of the Willow Ridge slope and may also create slope stability issues.

A history of flooding on these properties has been previously noted in past public testimony. Both flooding of backyards with surface waters and flooding of crawl spaces with ground water

seepage have been noted. Construction along the water table discharge zone needs to mitigate risk for both surface runoff and flow from the existing ground water drainage system where it outcrops on the Willow Ridge slope.

The letter from GeoPacific dated December 18, 2019 states that “*No groundwater was encountered in any of the test pits.*” This is inconsistent with the 2016 Carlson Geotechnical report showing groundwater seepage in three of the seven test pits (TP-4, TP-5, & TP-6). Two of these pits (TP-5 & TP-6) are located on the SW lower slope below the perched water table outcrop, and they experienced ground water seepage at about 4 feet BGS, demonstrating lower slope water flow in the soils. This is interpreted to be part of the groundwater drainage from the perched water table. Plans to mitigate crawl space flooding risk from changes in the groundwater drainage system on the Willow Ridge property are not address in the application.

(Note: The GeoPacific Letter also referenced geotechnical work from December 10, 2019. This work could not be located and the reference is assumed to be for the December 10, 2015 work done by Carlson Geotechnical)

Previous public testimony from Stonegate residents has demonstrated the relationship between drainage changes due to upslope construction and increased water flow from the perched water zone (2017 testimony by Chelsea Diaz). The perched water table outcrops behind the Diaz home, and flooding problems from that zone coincided with upslope construction (Exhibit 8).

Landslide Risk:

The eastern half of the Willow Ridge Development plot is shown on Oregon State Department of Geology and Mineral Industries Shallow Landslide maps as having a moderate to high susceptibility to shallow landslides (Exhibit 9). Any construction activities resulting in increased soil water content or removal of slope-toe materials will increase this risk.

Two types of shallow landslide risk are identified:

1. Shallow rockslide risk on the steep slopes between 467 and 480 feet ASL. This risk will increase if construction either removes the materials at the base of this slope or causes increased ground water flowage from the existing seeps between 460 and 467 feet ASL (Exhibit 10).
2. The risk of mud flows or rotational soil slumps on the lower slopes will increase if construction results in increased ground water seepage on the Willow Ridge slopes.

The Willow Ridge property contains geologic and hydrologic conditions not usually encountered with residential construction in this area. The fact that a perched water table outcrops on this slope is not addressed in the application. The groundwater hydrology of this property is particularly important since homes are planned for construction along this perched water table. Construction may also increase the risk of groundwater related flooding and slope instability unless engineering solutions are designed and implemented to mitigate these risks.

Data Sources:

A full description of the proposed development is provided in the ICON January 7, 2020 Development Review Application, received January 13, 2020 by the City of West Linn. This application was used as a source of technical information regarding geotechnical and hydrological investigations carried out in support of ICON's proposed development.

Additional sources of data include:

- 1) Clackamas County water well CLAC 69447 drilled on the property with an address of 4197 Reed St., West Linn, OR.(Reed Street Well)
- 2) Geologic map of the Oregon City 7.5' quadrangle, Clackamas County, Oregon, by Ian P. Madin, 2009
- 3) Statewide Landslide Information Database for Oregon (SLIDO): earthquake and landslide maps
- 4) Shallow-Landslide Susceptibility Map of the Northeast Quarter of the Canby Quadrangle, Clackamas County, Oregon; 2013; OPEN-FILE REPORT O-13-08 – Plate 45
- 5) City of West Linn GIS resources in the online MapOptix tool
- 6) Public testimony from previous hearings

Local Geology

The shallow subsurface geology of the area consists of Columbia River Basalts. These rocks include basaltic magma flows originating in Eastern Oregon or Idaho and deposited as tabular sheets in the West Linn area about 15.5 million year ago. The Frenchman Springs member of the Wanapum Basalts is interpreted to be present in the Willow Ridge Development project area based on projecting the mapped geology of the Oregon City Quadrangle. The eastern corner of the Willow Ridge property is located approximately 1570 feet from the edge of the mapped areas of the Oregon City Quadrangle geologic map (Exhibit 1).

The Frenchman Springs member is divided into the upper Sandy Hollow Unit (Twfs) and the lower Gingko Unit (Twfg) (Exhibit 1a). The contact between this units occurs at 460' ASL on the western edge of the Oregon City Quadrangle geological map. The tabular nature of these units allows a reasonable interpretation that the contact will be at the same level 1,570 feet to the west of the geologic map in the Willow Ridge development (Exhibit 1).

Well Data

Clackamas County water well CLAC 69447 drilled on the property with an address of 4197 Reed St., West Linn, OR.(Reed Street Well). The Reed Street Well log report was retrieved from the Oregon Water Resources Department's public domain files (Exhibit 2). The well was reviewed to understand the subsurface geology in the vicinity of the Willow Ridge Development. The well is located approximately 123 feet from the north corner of the Willow Ridge Development property (Exhibit 3). The well was drilled in 2013, reached a total depth of 422 feet below ground level (BGL), and it was completed at a depth of 388 feet BGS. The top 100-foot section of the well is relevant to the Willow Ridge Development analysis.

The well elevation at ground surface is estimated at 508 feet ASL (Exhibit 4). The well initially drilled 27 feet of clay and weathered basalt. This was followed by a 13 foot zone of loose gray and brown basalt and 6 foot zone of multi-colored basalt. These two zones, from 27 feet to 46 feet BGL, form a 19 foot flowable, water-bearing interval (Exhibit 5). The well was projected onto the West Linn City MapOptix terrain map at a surface level of 508 feet ASL (Exhibit 4). The terrain map uses contour data from a 2014 survey.

The base of the water-bearing zone is 462 feet ASL. This correspond closely with the projected geological contact between the upper and lower Frenchman Springs units. Below this contact gray basalts followed by gray/brown fractured basalts were encountered. The next water zone in the well was encountered between 216 – 280 feet ASL.

Well Data Interpretation

Observations from the water well demonstrate the existence of a perched water layer between approximately 460 feet asl and 480 feet ASL. The term perched refers to an aquifer that is located above a deeper primary water bearing formation. Given the tabular nature of the basalt layers, this water would be expected to exit to the surface in locations where the topography cuts lower than the water zone.

The steep slopes of the Willow Ridge Development represent an area where the topography cuts through the Frenchman Springs basalts and exposes the perched water unit to the surface. The water zone cuts across the development area in a generally NW-SE line, following the topography between 460 – 480 feet asl (Exhibit 6).

The water zone map in Exhibit 6 was constructed using the MapOptix contours. The exhibit denotes differences between the MapOptix 460 foot contour and the ICON maps used in their original planning application.

A cross sectional representation of the local geology and the perched water zone is shown in Exhibits 7 & 7a. The diagram shows the natural water flow from the subsurface to the surface

along the Willow Ridge slope. The zone of flow corresponds to the noted presence of live springs and water loving Willow trees that occur naturally along the length of the ridge.

The dynamics of this natural water flow system are such that water enters the system via precipitation on the ground surfaces above the 460 foot contour. The water migrates vertically into the soils until it reaches the top of the gray basalt layer at about 460 feet ASL. This layer forms a permeability barrier and the water accumulates as a perched aquifer. The free surface along the Willow Ridge slope provides an exit point for the water and allows the aquifer to drain (Exhibit 7).

Water Flow in Basalts

Subsurface water movement can occur in two types of systems:

- Pore system networks: These types of networks rely on rocks like sandstones that are composed of many individual rock grains or fragments. The space between grains is referred to as pore space, and water can move through this pore space
- Fracture system networks: In rocks that have no intergranular porosity water must move through fractures in the rocks. Basalts are generally considered to be fracture network flow systems.

The distinction between these two types of systems is important because pore system networks will more evenly distribute water flow throughout the rock unit and are thus more predictable. Fracture system networks rely on fracture distribution patterns, which can be unpredictable. Fracture system networks have the capacity to concentrate flow into a limited number of conduits.

The practical difference between the two types of systems can be envisioned by considering the discharge of 100 gallons of water over an hour period through both types of systems, each with 100 square feet of slope exposure. Over the 1 hour period, one gallon of water would discharge from each square foot of the pore network system. If we assume 2 exposed fractures in the fracture network system, then over the hour period 50 gallons of water would discharge from each fracture. Fracture systems concentrate flow.

This distinction is important in the Willow Ridge area since the perched water aquifer is in basalts. The expectation is that flow will be concentrated in local areas and increased water flow into the aquifer, or disruption from construction will result in either increased flow from existing springs or the formation of new springs.

Observational Support for the Proposed Hydrologic System

Previous testimony regarding the Willow Ridge Development has pointed out the flooding problems currently experienced by the residents with properties on the SW edged of the development plot. The natural subsurface flow of water creates a series of springs on the slopes of the Willow Ridge Development. Surface development of the area will change the existing surface and subsurface water flow patterns.

Public testimony in 2017 by Chelsea Diaz demonstrated a clear connection between upslope changes in drainage cause by construction and the subsequent increased water flow from the same geological formations that occupy the Willow Ridge Development slopes. The location of this incident was immediately to the NW of the Willow Ridge plot in the Stonegate community. The perched water table outcrops behind the Diaz home, and flooding problems from that zone coincided with upslope construction (Exhibit 8).

Landslide Risk

The eastern half of the Willow Ridge Development plot is shown on Oregon State Department of Geology and Mineral Industries Shallow Landslide maps as having a moderate to high susceptibility to shallow landslides (Exhibit 9). Activities resulting in increased soil water content or removal of slope-toe materials will increase this risk.

The Oregon Department of Geology and Mineral Industries document “A Homeowner’s Guide to Landslides” is used as a reference for defining landslide types. A landslide refers to any downslope movement of soil, rock, or slope debris. Mudslides, mudflows, debris flows, rock falls, and slumps are all terms describing landslides. The types of landslides of concern in the discussion of Willow Ridge Development risk factors are rockfalls, and slumps.

A rotational slide occurs when a large section of earth is transported downslope by sliding on a discrete detachment surface. The mass of soil and rock will partially disaggregate as it moves downslope. Rotational slides can occur when slopes are too steep or in areas where the base of the slope is undercut by either natural or man-made processes. Any changes to the current Willow Ridge slope that affect the base of the steepest slopes will increase the risk of a rotational slump or rockslide. The controlling factor is removal or destabilization of existing material at the toe of the slope.

The two factors to evaluate for this risk are: planned removal of material during construction, or increased water flow (surface or subsurface) at the base of the slope. The current understanding of the geology is that water is currently exiting the toe of the steepest slope in the form of springs. Any changes above this seep zone that result in increased ground water will cause increased water flow from the existing seeps or the formation of new seeps at the toe of

the slope. This increased flow could destabilize the slope toe and result in increased risk of landslide (Exhibit 10).

Based on the geology of the Reed Street Well the steepest portions of the existing slope are composed of loose, gray/brown basalt. The next zone of gray/brown basalt approximately 20 feet deeper is described as fractured. Loose or fractured basalt indicates a degree of disaggregation in the rock unit. Removal of structural support at the base of this unit on the slope could result in near surface collapse of the overlying unit and disaggregation of the mass into a shallow rockslide.

Mud flows or shallow slumps are the second type of landslide risk. These types of movement are not historically noted on the Willow Ridge Plot or in the properties below the slopes. However, increased ground water on the lower slopes would result in a higher risk with regards to these types of shallow landslide risk, but the degree of increased risk cannot be quantified with the data available and more studies are required.

Comment on the ICON Willow Ridge Development Application

The ICON January 7, 2020 Development Review Application, received January 13, 2020 by the City of West Linn., provides a geotechnical report on the Willow Ridge property. The application notes the potential for perched water aquifers in basalts but does not discuss the risk implications of the proven perched aquifer encountered in the Reed Street Well, nor does it specifically address mitigation of that risk.

The geotechnical report is dated Jan 7, 2016 and thus does not address the public testimony presented in 2017 by Chelsea Diaz. The Stonegate homes are exposed to the same geological and hydrological conditions that exist on the Willow Ridge property. The homes are below the base of the water flow zone just like the Fairhaven homes on the SW edge of the Willow Ridge property. Flooding risk from a new development due to changes in ground water flow is a proven risk that is not specifically discussed in the application, and needs to be addressed to understand what control measures will be considered for mitigating ground water discharge from the perched water table.

The geotechnical report provides a representative review of the near surface geology and the seven test excavation pits show geology similar to the uppermost portion of the Reed Street Well with silts and clays underlain by weathered basalts. These pits excavated up to 10 feet of material, but in general sampled 6 – 8 feet below the ground surface. Three of test pits (TP-4, TP-5, & TP-6) encountered ground water seepage. Two of these pits (TP-5 & TP-6) are located on the lower slope below the perched water table outcrop, and they experienced ground water seepage at about 4 feet BGL, demonstrating lower slope water flow in the soils. This groundwater flow system is not discussed in the application, and no plans are presented for mitigation.

The report notes that the native surface soils on the slope are sensitive to small changes in moisture content and present stability issues for earth work performed during wet weather. The report does not specifically address the potential for shallow landslides due to undercutting slope bases, over steepening existing slopes, or increasing the shallow ground water flow. Given that the Oregon State Department of Geology and Mineral Industries Shallow Landslide maps identify the Willow Ridge property as having moderate to high susceptibility to shallow landslides, plans to mitigate this risk should be part of the planning process.

The report does state that under current conditions the risk of seismically induced slope instability is low. Well planned drainage control to maintain the current ground saturation conditions is part of the process of insuring that current slope stability conditions are maintained. While surface water drainage is discussed in the application, ground water drainage is not, and plans should be in place to mitigate the risk posed by this element of the hydrologic system.

The steepest portions of the Willow Ridge slopes between 467 feet and 481 feet ASL are interpreted to be composed of loose, gray/brown basalt based on the Reed Street Well. The application does not specifically address this zone or measures needed to ensure that, during construction, slope stability will be maintained to prevent shallow rockslides.

William House

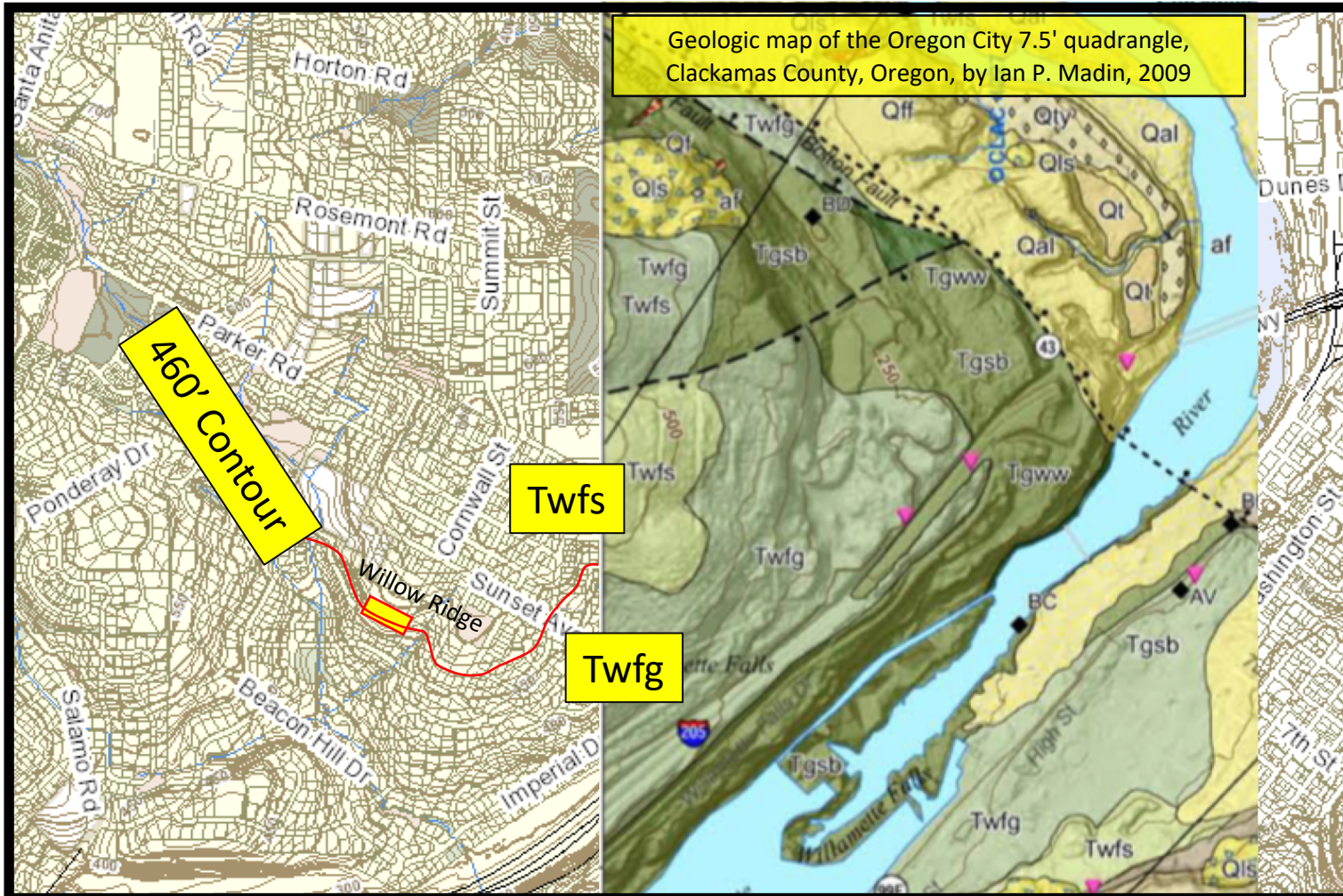
William House is a retired professional geologist with an academic background that includes an MS Degree in Geology and a BA Degree in Environmental Sciences. He has extensive experience in subsurface geology from working as an exploration geologist in the petroleum industry for 34 years.

EXHIBITS

- 1 Geologic Map
 - a. Local Stratigraphy
- 2 Well Report: Clackamas County water well CLAC 69447
- 3 Reed Street Well Location Map 1
- 4 Reed Street Well Location Map 2
- 5 Reed Street Wellbore Profile
- 6 Map: Outcrop of Perched Water Flow Zone
- 7 Geologic Profile Across Willow Ridge Property
 - a. Location Map for Geologic Profile
- 8 Public Testimony: Stonegate Ground Water Drainage Issue
- 9 Map: Shallow Landslide Risk
- 10 Schematic of Rock Slide Risk Factors

Exhibit 1

Maps showing the extension of the contact between the Sandy Hollow and Gingko units of the Frenchman Springs member of the Wanapum Basalts



Legend provided in Exhibit 1a

Local Stratigraphy

Miocene Columbia River Basalt Group lavas

- | | |
|------|---|
| Twfs | Wanapum Basalt, Frenchman Springs Member, basalt of Sand Hollow (Miocene) — Black medium-grained basalt flows with sparse plagioclase phenocrysts, well developed columnar jointing. |
| Twfg | Wanapum Basalt, Frenchman Springs Member, basalt of Gingko (Miocene) — Black medium-grained basalt flows with abundant plagioclase phenocrysts, well developed columnar jointing. |
| Tgsb | Grande Ronde Basalt, Sentinel Bluffs Member (Miocene) — Sentinel Bluffs Member (middle Miocene) — black fine-grained basalt flows with sparse plagioclase phenocrysts, well developed columnar jointing. |
| Tgww | Grande Ronde Formation, basalt of Winter Water (Miocene) — Flow or flows of fine-grained basalt. |

The Columbia River Basalt flows are considered to be generally tabular and undeformed, thus their exposure elevations on the Oregon City Quadrangle geologic map are probably very close to their elevations on Willow Ridge

Well Report:

Clackamas County well CLAC-69447

4197 Reed Street

(Reed Street Well)

Retrieved from the Oregon
Water Resources Department

STATE OF OREGON
WATER SUPPLY WELL REPORT
(as required by ORS 537.765)
Instructions for completing this report are on the last page of this form

CLAC 69447
SKYLES DRILLING, INC.
503-656-2683

WELL ID # L **110853**
START CARD # **W208221**

(1) OWNER: Well Number: **01**
Name: **Pacific Lifestyle Homes**
Address: **11875 NE 99th St., Suite 1200**
City: **Vancouver** State: **WA** Zip: **98662**

(2) TYPE OF WORK:
 New Well Deepening Alteration (repair/recondition) Abandonment

(3) DRILL METHOD: **RECEIVED BY OWRD**
 Rotary Air Rotary Mud Cable Auger
Other: _____

(4) PROPOSED USE:
 Domestic Community Industrial Irrigation
Thermal Injection Livestock Other: **SALEM, OR**

(5) BORE HOLE CONSTRUCTION:
Special Construction approval Yes No Depth of Completed Well: **388** ft.
Explosives used Yes No Type _____ Amount _____

HOLE		SEAL		Amount	
Diameter	From To	Material	From To	sacks or pounds	
10	0 78	Cement w/5%	78		
6	78 422	Bentonite	18	62 Sacks	
		Bentonite	18	0 8 Sacks	

How was seal placed: Method A B C D E
 Other: **Poured bentonite**
Backfill placed from _____ ft. to _____ ft. Material _____
Gravel placed from _____ ft. to _____ ft. Size of gravel _____

(6) CASING/LINER:

Casing	Diameter	From	To	Gauge	Steel	Plastic	Welded	Threaded
	6	+2	78	.250	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Liner: **4 68 388 Sch40**

Drive Shoe used Inside Outside None
Final location of shoe(s) _____

(7) PERFORATIONS/SCREENS:
 Perforations Method **Saw**
Screens Type _____ Material _____

From	To	Slot size	Number	Diameter	Tele/pipe size	Casing	Liner
367	387	1/8x3	72				<input checked="" type="checkbox"/>

(8) WELL TESTS: Minimum testing time is 1 hour
Pump Bailor Air Flowing Artesian
Yield gal/min _____ Drawdown _____ Drill stem at _____ Time _____
10 387 1 hr.

Temperature of Water **58** Depth Artesian Flow found _____
Was a water analysis done? Yes No By whom _____
Did any strata contain water not suitable for intended use? Too little
 Salty Muddy Odor Colored Other _____
Depth of strata: **27' to 46'**

(9) LOCATION OF WELL by legal description:
County: **Clackamas** Latitude _____ Longitude _____
Township: **25SOUTH** N or S. Range: **1EAST** E or W. of WM
Section: **36BA** NE **1/4** NW **1/4**
Tax lot: **06000** Lot _____ Block _____ Subdivision _____
Street Address of Well (or nearest address): **4197 Reed St, West Linn, OR**

(10) STATIC WATER LEVEL:
216 ft. below land surface. Date: **2/8/2013**
Artesian pressure _____ lb. per square inch. Date _____

(11) WATER BEARING ZONES:
Depth at which water was first found: **27'**

From	To	Estimated Flow Rate	SWL
27	46	5	21
216	280	8	216
381	384	2	216

(12) WELL LOG:

Material	From	To	SWL
Clay, brown	0	6	
Basalt, weathered w/clay, brown	6	27	
Basalt, gray & brown loose	27	40	
Basalt, multicolored	40	46	
Basalt, gray	46	60	
Basalt, gray & brown fractured	60	71	
Basalt, gray	71	96	
Basalt, black fractured @times	96	168	
Basalt, gray fractured	168	186	
Basalt, black fractured	186	216	
Basalt, mc fractured & porous	216	219	216
Basalt, black fractured	219	257	216
Basalt, gray & brown fractured	257	265	216
Basalt, black semi-fractured	265	272	
Basalt, gray	272	286	
Basalt, gray & black fract @times	286	381	
Basalt, gray & brown fract&porous	381	384	216
Basalt, gray & black	384	408	
Basalt, gray	408	422	
Void	422		
Cemented up bottom w/ 11sacks cement & bentonite	422	388	

Date started: **2/1/2013** Completed: **2/8/2013**

(unbonded) Water Well Constructor Certification:
I certify that the work I performed on the construction, alteration, or abandonment of this well is in compliance with Oregon water supply well construction standards. Materials used and information reported above are true to the best of my knowledge and belief.
Signed: _____ WWC Number: **1884**
Skyles Drilling, Inc. Date: **2/11/2013**

(bonded) Water Well Constructor Certification:
I accept responsibility for the construction, alteration, or abandonment work performed on this well during the construction dates reported above. All work performed during this time is in compliance with Oregon water supply well construction standards. This report is true to the best of my knowledge and belief.
Signed: _____ WWC Number: **1592**
Skyles Drilling, Inc. Date: **2/11/2013**

ORIGINAL - WATER RESOURCES DEPARTMENT FIRST COPY - CONSTRUCTOR SECOND COPY - CUSTOMER

Reed Street Well Location Map 1

- Type: Water Well
- Completion Date: Feb. 8, 2013
- Company: Skyles Drilling
- TD: 422 ft
- Completion Depth: 388 ft

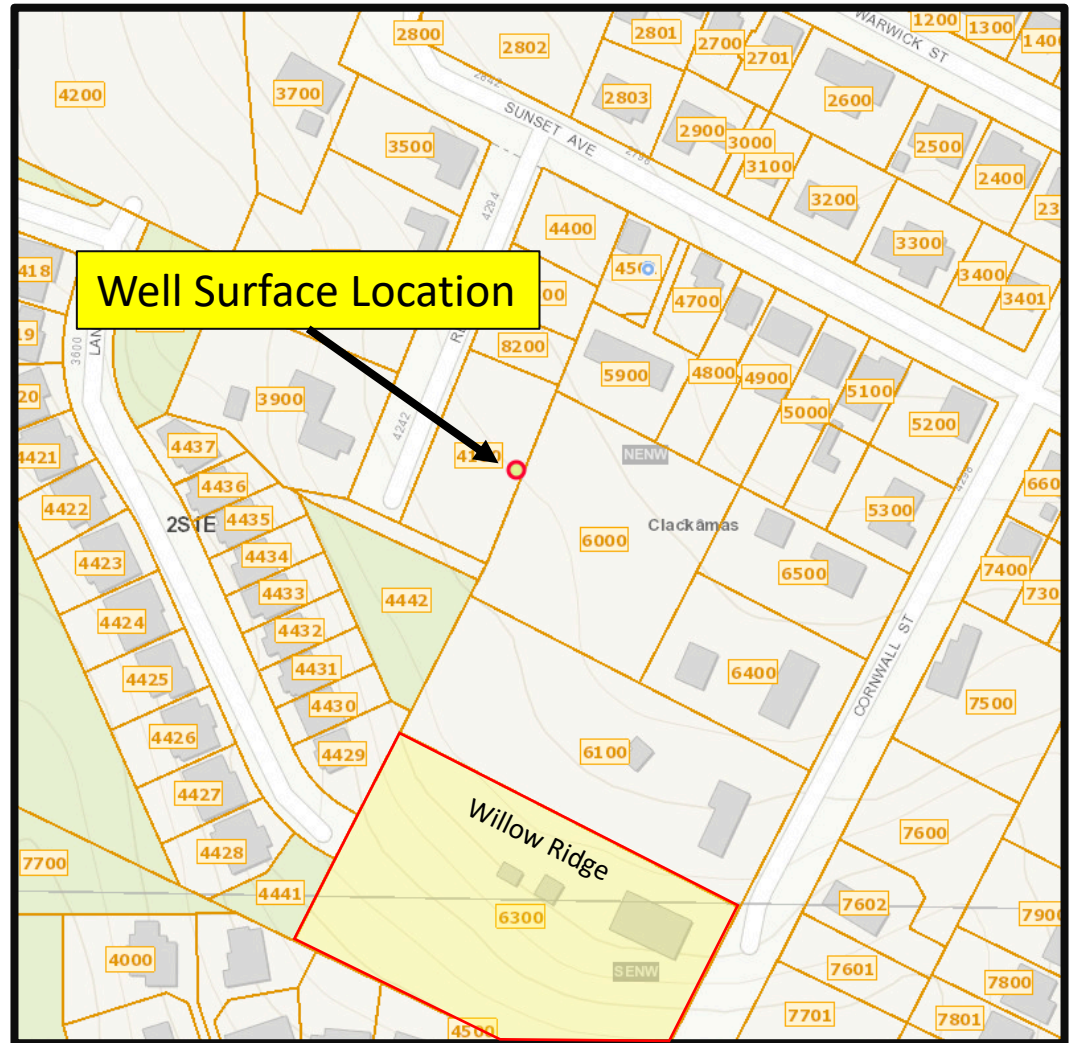


Exhibit 5

Wellbore Profile: 4197 Reed Street

Perched water was encountered in this well with a floor at 46 feet below ground level or an elevation of 462 feet asl

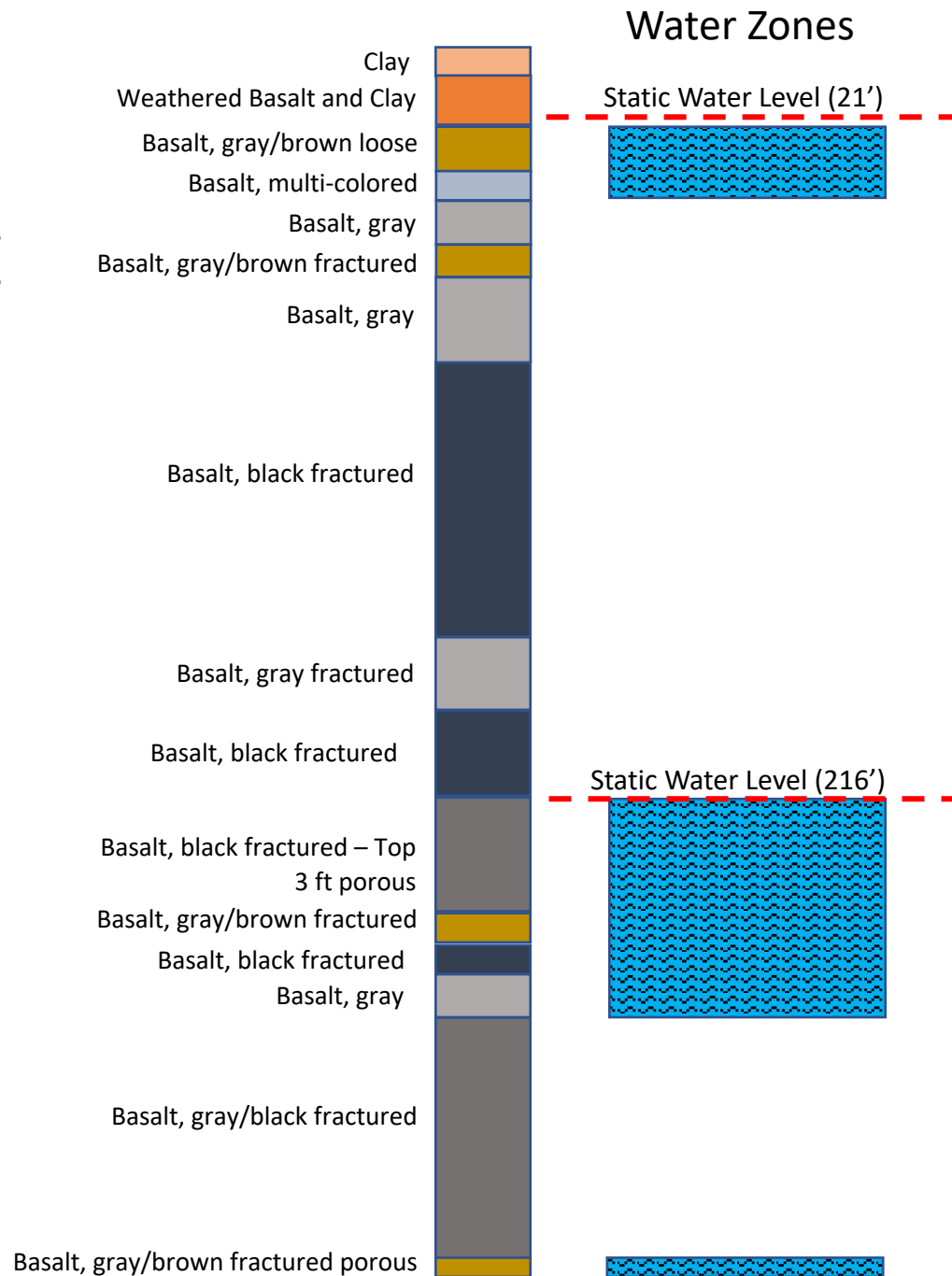
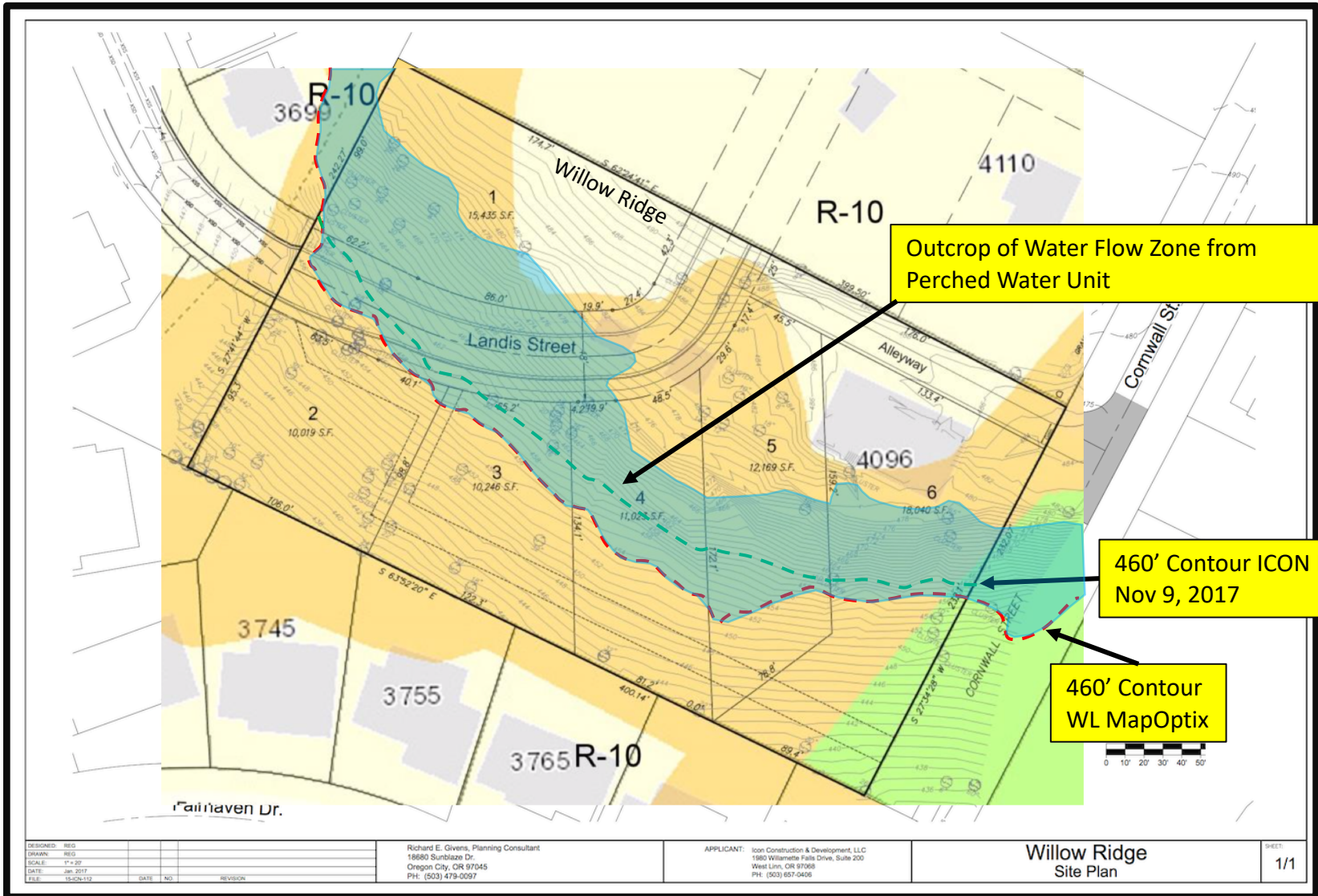


Exhibit 6

Estimated Water Flow Zone based on the Reed Street Well (Uses terrain contours from MapOptix)

Reasons for differences between the ICON map contours and the MapOptix terrain contours are unknown



DESIGNED: REG			
DRAWN: REG			
SCALE: 1"=20'			
DATE: Jan 2017			
FILE: 15-076-112	DATE: NO	REVISION	

Richard E. Givens, Planning Consultant
 19880 Sunblaze Dr.
 Oregon City, OR 97045
 PH: (503) 479-0097

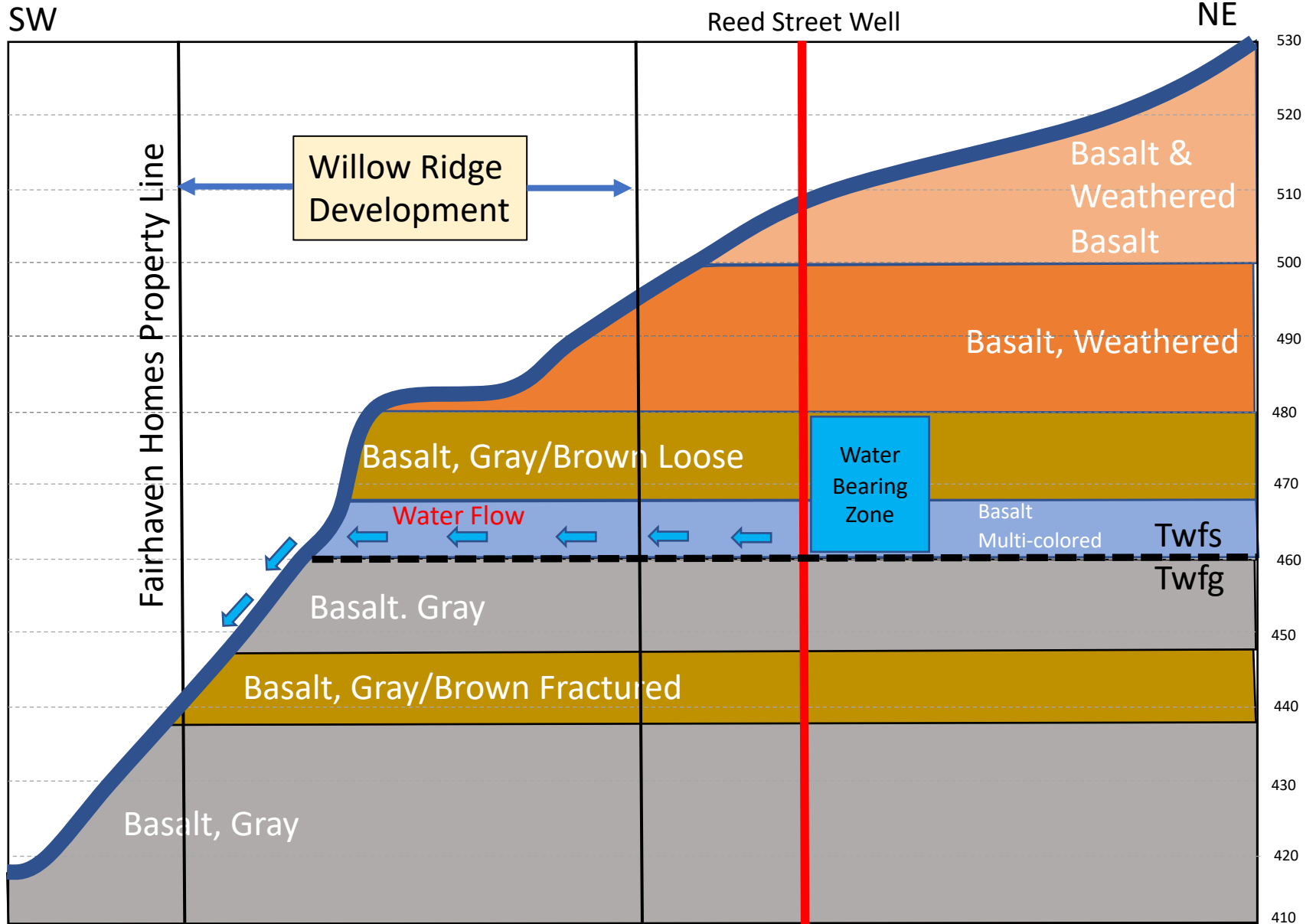
APPLICANT: Icon Construction & Development, LLC
 1980 Willamette Falls Drive, Suite 200
 West Linn, OR 97069
 PH: (503) 657-0406

Willow Ridge
 Site Plan

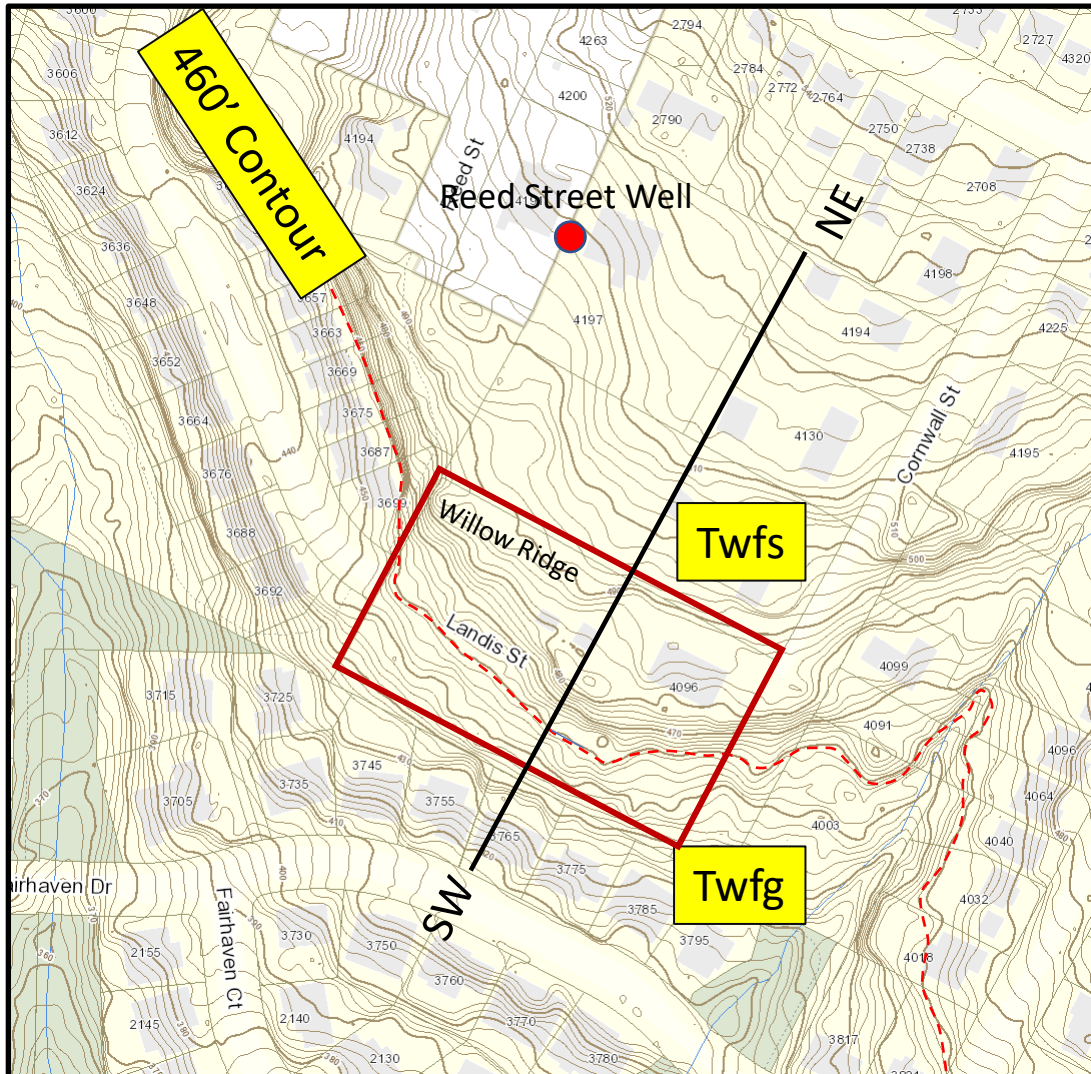
SHEET: 1/1

Geologic Cross Section (Profile)

Elevation
(feet asl)



Location map for geologic cross section



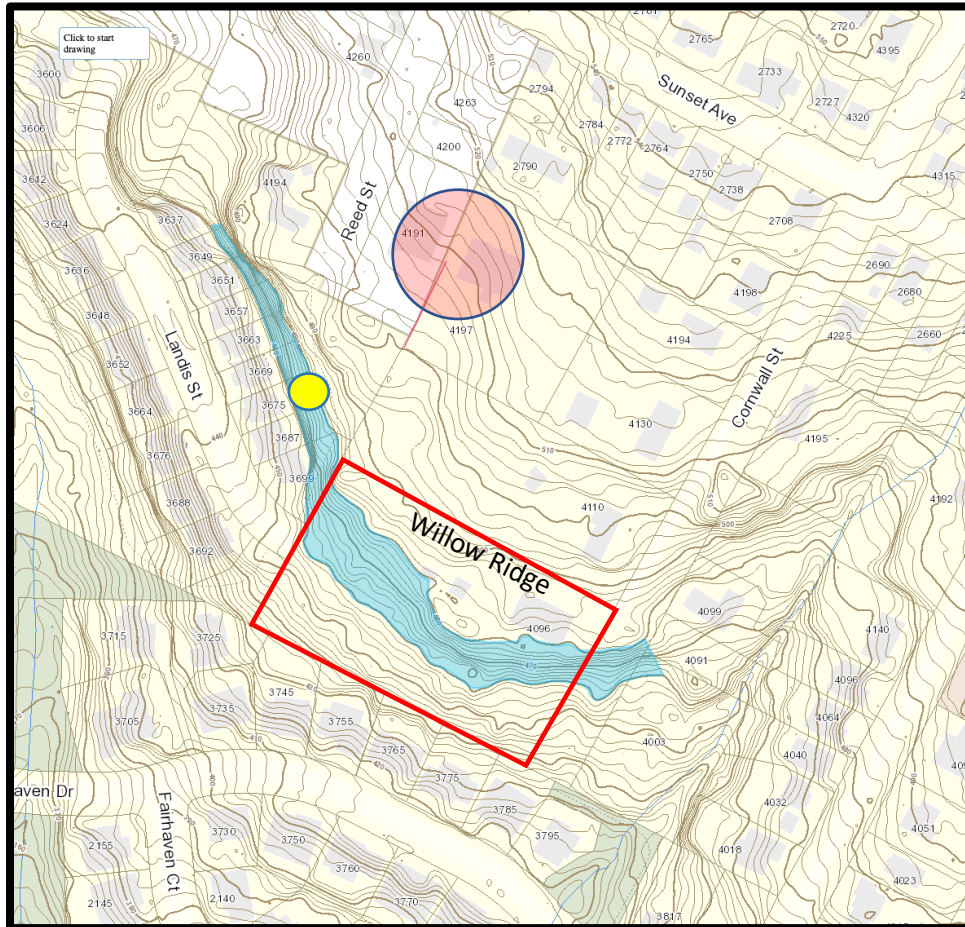
This map shows the location of a geologic cross section that runs in a NE-SW line across the center of the proposed Willow Ridge development.

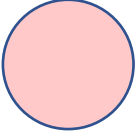

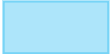
The Reed Street Well is projected into the cross section based on a ground surface elevation of 508' ASL

Public Testimony Dec. 2017:

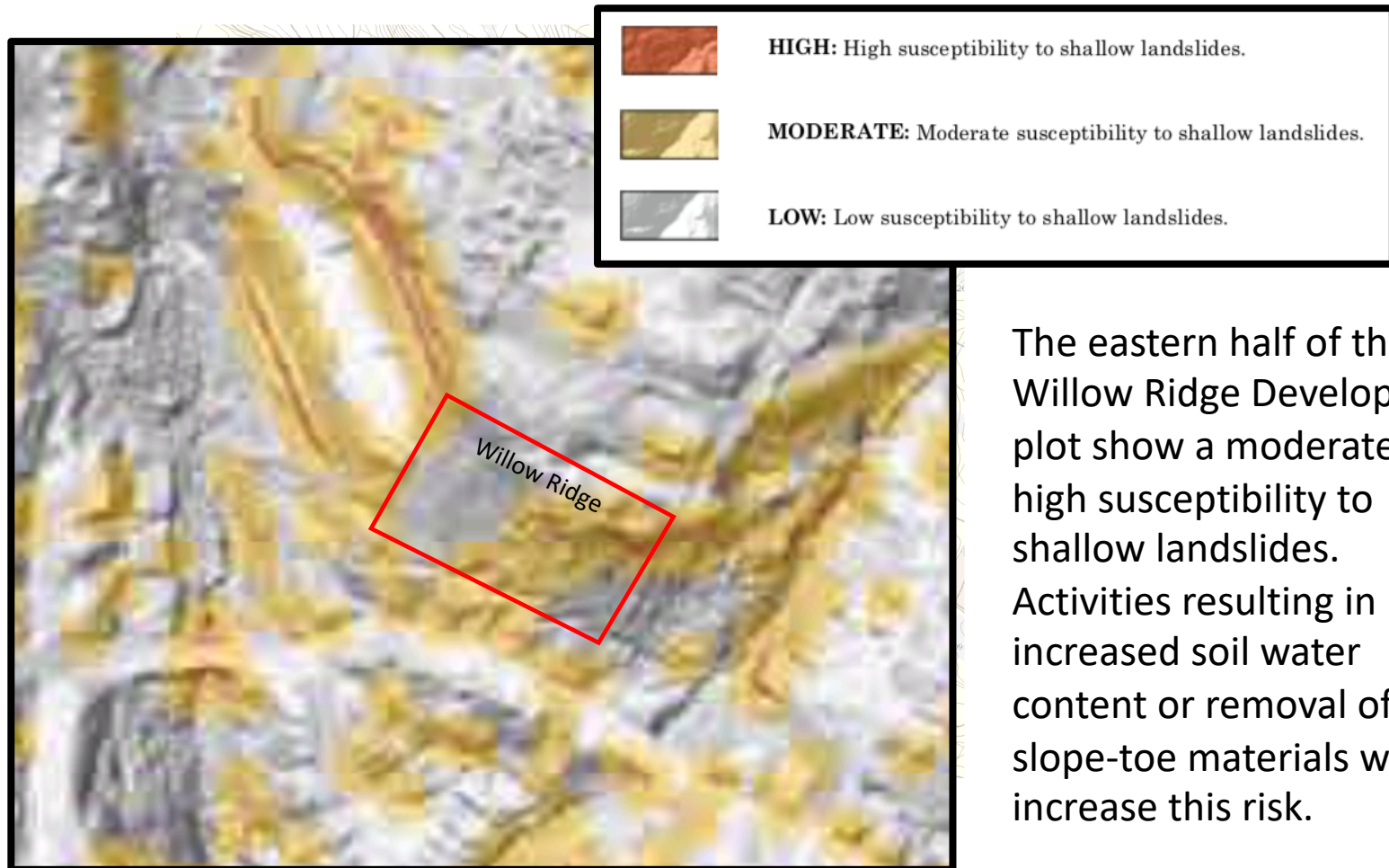
“After two homes behind and above us began construction located at 4191 Reed Street and 4197 Reed Street, I noticed water streaming between the boulders in my 25 foot retaining wall into my back yard. I then began an lengthy process of trying to find where the water was coming from. After a landscape developer investigated the issue, he determined that a new spring had formed in the upper tier of my back yard.”

This demonstrates the clear connection between construction and changes in drainage above the slope and increased water flow through the “water flow zone” marked in blue.



-  New construction
-  New spring location
-  Outcrop of water flow zone

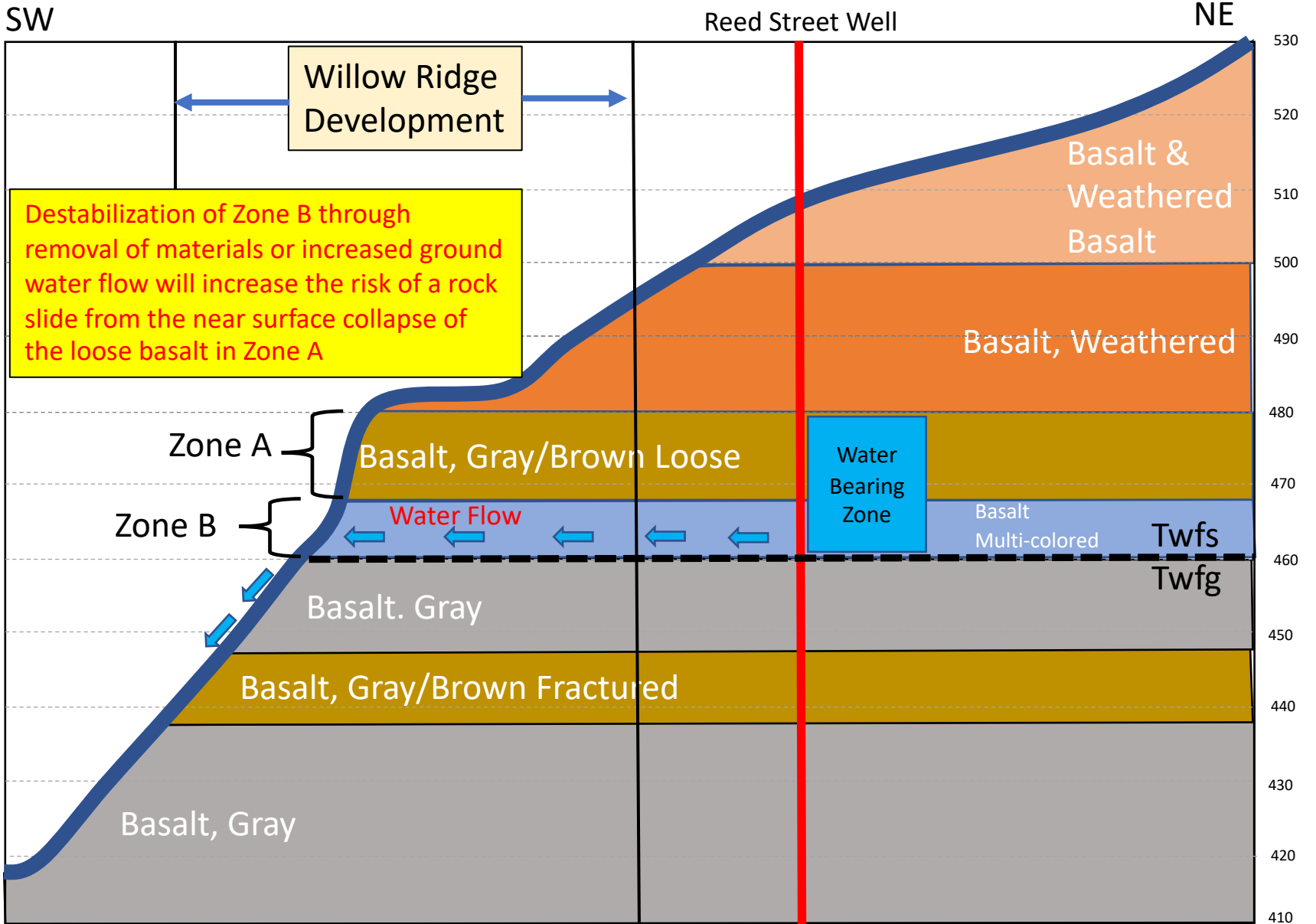
Shallow Landslide Risk – Oregon State Department of Geology and Mineral Industries



The eastern half of the Willow Ridge Development plot show a moderate to high susceptibility to shallow landslides. Activities resulting in increased soil water content or removal of slope-toe materials will increase this risk.

Rock Fall Risk

Elevation
(feet asl)



From: [jjtjester](#)
To: [Schroder, Lynn](#); [Arnold, Jennifer](#)
Subject: Testimony for hearing on ICON development proposal; Cornwall St., West Linn
Date: Monday, October 5, 2020 5:54:59 PM
Importance: High

CAUTION: This email originated from an External source. Do not click links, open attachments, or follow instructions from this sender unless you recognize the sender and know the content is safe. If you are unsure, please contact the Help Desk immediately for further assistance.

MEMBERS OF THE PLANNING COMMISSION

Tonight you are hearing from the ICON representatives and their legal council. They are once again moving forward with another plan to build six homes on a steep piece of property with inherent:

- |access and connectivity concerns
- |safety due to the narrow Landis St.
- |water runoff issues
- |preservation of wildlife habitat
- |preservation of trees
- |preservation of the integrity of
Tanner Creek
- |stability and integrity of the land
due to underground water sources

The Barrington Heights HOA expressed concerns to ICON at our last meeting about construction trucks coming through our neighborhood. We have experienced damage to the HOA maintained islands from trucks unable to navigate around them. We are responsible for costs to repair them if no one comes forward.

If the land is buildable, our request would be to have all construction trucks use Sunset and Cornwall to access this property.

As the president of the BHT Neighborhood Association, I view this as an attempt to squeeze a round peg in a square hole. Many of the concerns expressed by the homeowners adjacent to this property have not changed or been adequately addressed.

Thank you in advance for including my testimony in your official records and deliberations.

Best,
Robert Jester
BHT Neighborhood Association President
3475 Riverknoll Way,

West Linn, 97068

Sent from my Verizon, Samsung Galaxy smartphone

Name: Russ Williams
Email: russ.williams@statefarm.com
Phone: 503.657.6690
Address: 6105 West A St, Ste C West Linn, OR 97068

CAUTION: This email originated from an External source. Do not click links, open attachments, or follow instructions from this sender unless you recognize the sender and have the content in confidence. If you are unsure, please contact the filer first immediately for further assistance.

Resend links in the following 3-5 full mail messages. (After 3 days, see us go!)

Here are the Attachments (added to my history) related to this email message.

Bill Russell's Most Used Email Filter

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See More from Pam Yokubaitis

Russel Williams <russel.williams.k0wt@statefarm.com> March 9, 2020 at 12:45 PM RW

RE: [EXTERNAL] Re: Water in the crawl space
To: Pam Yokubaitis <pam@yokubaitis.com>

Good Afternoon, Pam,

I can only confidently speak for State Farm when I say we don't cover landslide, but it is my understanding that coverage is not available through any other carrier as well

Hope this helps,

Russel Williams
Agent
NMLS #139716
NMLS MLO #915283
MLO License #915283

Bus: 503.657.6690
Fax: 503.850.4690

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Please feel free to visit the Nationwide Mortgage License System & Registry (NMLS) Consumer Access website to confirm that I am licensed to do business in your state. This is a free service for consumers. The website address is www.nmlsconsumeraccess.org

See More from Pam Yokubaitis

Found in Sent - Yokubaitis Mailbox

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Inbox (35,392 messages, 3,070 unread - Connection Logging Enabled)

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Russel Williams <russel.williams.k0wt@statefarm.com> February 10, 2020 at 12:59 PM RW

Water in the crawl space
To: Pam Yokubaitis <pam@yokubaitis.com>

Siri found updated contact info in this email: Russel Williams 6105 West A St, Ste C West Linn, OR 97068 [update...](#)

Good Afternoon, Pam,

Good chatting with you last week.

I wanted to follow up on your questions about whether or not State Farm would get involved in the proposed development of the adjacent property.

State Farm won't typically get involved in matters like this unless there are claims and I did call claims to find out if your homeowners policy will cover water seeping into the crawlspace of the home. We don't currently have the option of covering water seepage into the crawlspace. It would have to be the sudden or accident loss from a burst pipe or rainstorm causing damage to the house and then leaking into the crawlspace.

I called FEMA to find out if flood insurance would cover this and they told me that the definition to qualify for coverage under FEMA would be:

A general and temporary condition of partial or complete inundation of 2 or more acres of normally dry land area or of 2 or more properties (at least one of which is the policyholder's property) from:

- Overflow of inland or tidal waters;
- Unusual and rapid accumulation or runoff of surface waters from any source; or
- Mudflow OR

Collapse or subsidence of land along the shore of a lake or similar body of water as a result of erosion or undermining caused by waves or currents of water exceeding anticipated cyclical levels that result in a food as defined above.

It sounds like you may have coverage under a flood insurance policy in the rapid accumulation section, but it would have to also impact 2 or more properties OR 2 or more acres.

Hope this helps!

Talk with you soon,

Testimony Regarding ICON's Proposed Development: SUB-20-01
Presented to the West Linn Planning Commissioners
October 7th, 2020

Written by: Pam Yokubaitis, MPH, RHIA, FAHIMA
BHT NA Secretary & Hidden Creek Estates Subdivision Representative

WATER AND LANDSLIDES: This is the residents third Planning Commissioners hearing with ICON regarding their proposed development located at 4096 Cornwall Street in West Linn, OR. A significant reason for having multiple hearings is due to the visible evidence and known hazards this land possesses. An enormous amount of information in written testimony continues to be provided by surrounding neighbors with hundreds of photographs and supporting documentation to educate and inform both the city staff and builder of the concerns and questionable integrity of this property to be built upon. This property is completely surrounded by established homes and subdivisions. This rectangular piece of land has very unique qualities: it's sloped; it has a cliff at the end of Cornwall Street; it has numerous significant trees; there are springs on the surface of the land that bubble up; ponding occurs at the bottom of the slope; there is significant water that constantly drains on the properties below; there is a 40% grade at the top of the lot ripe for landslide; and there is a sizable soggy patch of ground in the center of the property that oozes water. These many issues make building on this property more costly and challenging than building on a flat piece of land, because higher construction standards *must* be met to accommodate the complexities of this property. When Sunset School was relocated to a corner of the park, instead of building on the original footprint as was agreed to by popular vote, springs popped up in residents yards and crawl spaces when the school's footprint was moved elsewhere. Sunset residents had to pay for expensive water remediation repairs because no one was held accountable for the damage that occurred on private property as a result of land disturbance. A similar situation, but more serious applies here, because there are 60+ homes surrounding this land with a significant majority of homes located beside and below this slope's address. We don't want what happened at Sunset School to repeat itself here because Sunset homeowners had no recourse for the water damage that occurred to their property. Additionally, homeowners insurance does not cover for landslides or crawl space flooding coming from the soil. Already 2 houses on Fairhaven Drive and one on Landis Street have experienced water filled crawl spaces, so the property at 4096 Cornwall Street IS a real hydrogeological threat to surrounding property. Thus, it is a major concern IF the natural state of this property is altered. Furthermore, insurance won't pay for either water or landslide damages to homeowners. **So who will reimburse residents if water and/or landslide damages occur to any of the surrounding homes after ICON's construction is completed?** It sure won't be an insurance company! [See State Farm Attachments](#)

ROAD CONNECTIVITY: Residents from five surrounding subdivisions (Stonegate, Cornwall Street, Reed Road, Hidden Creek Estates and Barrington Heights) are all united in opposition of connecting Cornwall Street to Landis Street. More than 65

*residents signed a petition to emphasize this, which was presented at ICON's pre-app meeting. Road connectivity has been thrust upon the citizens, which disturbs everyone. Many testimonies on traffic and connectivity have already been presented by Ed Turkisher, Pam Yokubaitis, Bob Mendel, Steve Thornton, and Patrick Noe. Patrick Noe's testimony written June 1, 2017 clearly stated NO STREET CONNECTIVITY at the onset of these hearings. Other testimony explains that 1) multiple safety issues exist, 2) the current quality of life for Fairhaven Drive, and Cornwall and Landis Street residents will no longer be quiet neighborhoods with significant traffic noise, and 3) our neighborhoods will become less desirable due to significant daily traffic, therefore diminishing our property values. There is a smarter, shorter and more cost effective alternative route for connection in the future, because there is no urgency for such connectivity now. Sunset can directly connect to Stonegate Lane at a future date. So to be very clear, our **5 subdivisions are united in stating WE DO NOT WANT CORNWALL AND LANDIS STREET CONNECTIVITY.** We have signed petitions, we have proven there are safety concerns, and we have presented an acceptable and doable alternative solution.*

TRAFFIC: Landis Street is in a quiet, charming subdivision, nestled amongst trees, a running creek and a large monolith. It was *never intended* to become a thoroughfare of traffic within West Linn because ICON's property was originally suppose to become Phase II of Stonegate. Landis Street was constructed only 24 feet wide, so it *cannot* accommodate 400+ cars/day (according to ARD Engineering Traffic Analysis report supplied by ICON) traveling in both directions. Only one car can pass between 2 parked cars on each side of the street, so **a two lane heavily trafficked road on this snug residential street IS NOT feasible.** The idea of eliminating the residents street parking privileges or mandating parking only on one side of the street is highly offensive. It is issues like these, that are not discussed at the NA meetings but get mentioned *after the fact as if certain*, that angers West Linn residents. Usurping property owners street parking privileges would negatively impact home sales and property values.

WE HAVE REPEATEDLY ASKED FOR AN IN DEPTH HYDROGEOLOGICAL STUDY:

At the very first Planning Commissioner's hearing in 2016, neighbors testimonies provided pertinent information to share knowledge and concerns about this property with the city and ICON. We knew there were issues that everyone needed to understand. Only with transparency and a collaborative spirit would we collectively arrive at an intelligent and mutually agreeable decision. A considerable amount of testimony and photos were provided to share what we knew. From the onset, we exposed that the 4096 Cornwall Street property had complexities that made us question if this land could be developed. We knew that only an in-depth expert analysis could provide the answers we needed. We repeatedly asked for a Professional Engineer hydrogeologist to explore the complexity of this land. The cliff, steep slopes on this property and constant water drainage were red flags. Analysis was done by a Geotechnical firm, but 10 feet deep of exploration is insufficient given the evidence presented of known water and landslide hazards. The geotech's results didn't reflect

the magnitude of exploration the residents felt was needed. Then ICON withdrew their application to build after this first hearing, so we started all over again a year later, bringing forward our copious amount of testimony and evidence.

At the second Planning Commissioner's hearing, we again voiced the need for in-depth analysis of this land by experts, but the geotechnical reports remained the same. The Planning Commissioners again denied the builders application, so ICON appealed and obtained a third party referee's decision. The referee also issued a denial. All this necessary bureaucracy delayed focusing on the real issue at hand:

Is the entire 4096 Cornwall property safe, buildable land, or not, for the plat map designed?

At this third Planning Commissioner's hearing today, we again ask: Is the entire 4096 Cornwall property safe, buildable land, or not, for the plat map designed?

This answer *can't be known* until more extensive geotechnical data is provided, along with responses to issues and obstacles presented by Geologist, Bill House in his 20+ page report, presented in testimony today. We don't know where or how excavation, landfill, tree removal, water obstacles, landslide of soils, or removal of tree tumps will affect the stability of the soil, and hence the design of a plat map. The cart is being put before then horse here. **ICON must first understand where the hazards are in the land, then identify how the hazards can be worked with/around before a plat map can be drawn.** The geotechnical report in ICON's current application has already expired (it was only good for 3 years), and it lacks the necessary extensive, in-depth analysis required for this land to determine if it's safe or not to build on.

CONCLUSION: Frustrated by not getting our questions answered, perseverance, determination and luck prevailed. Pia Snyder gave me an April 5, 2018 West Linn Tidings article titled: Landslides: What Homeowners Should Know by William House. [See Bill's Article attached.](#) I kept this article, knowing that I would eventually try to track down the author in the future to pick his brain for testimony writing. When I recently did the research to find him, I learned he was a West Linn resident who lived in Cascade Summit that backs up to Stonegate. When I called Bill about our plight, he was interested in learning more so we met to discuss our situation. Bill expressed interest in helping us because he loves geology and problem solving, so we then planned another meeting to walk the land and meet with key neighbors to give him insight to known problems. After touring and asking questions, he volunteered to conduct research, write a report free of charge, and testify as a community service for his West Linn neighbors. (He also serves our community as HOA President for his subdivision.)

Bill House has supplied 20+ pages of testimony and diagrams that FINALLY identifies the obstacles that 4096 Cornwall Street presents, using public information to connect dots. He points out hazards, discrepancies and deficiencies in documentation provided by experts in ICON'S application, and cites specific issues that need to be addressed. Like the rest of us, he shares his information freely for the benefit of our West Linn

community. With his new information, we expect his recommendations to be acted upon, more in-depth analysis of the land to occur, and scrutiny of where the land is capable or not capable of new construction. Anything can be built for a price, but at what point does it become unaffordable, given the additional requirements and higher standards that constrained lands demand? That is for ICON to determine, while the Planning Commissioners must:

- 1) Ensure this land is thoroughly vetted/acceptable to build on before approval for development is granted
- 2) Due to the fact that there are mostly only constrained lands left in West Linn to build on, which presents very unique obstacles for construction, there is a need for the Planning Commissioners to determine stricter new building codes. We therefore ask the Commissioners to have these codes reviewed for changes and additions on their docket.

Wednesday, April 11, 2018

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Dr. Robert B. Pamplin, Jr.*



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Tuesday, May 1

2018 ANNUAL MEETING



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Dr. Joe Robertson



HONORING:
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Landslides: What homeowners should know

William House

Thursday, April 05, 2018

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While landslides are unpredictable in some respects, homeowners can help protect themselves



PAMPLIN MEDIA GROUP FILE PHOTO - Homeowners can begin to protect themselves from landslides by understanding how they work. This southwest Portland landslide occurred near a planned development.

In 2009, a million-dollar home in the Marylhurst area was destroyed by a local landslide. The landslide was triggered by heavy rains, and a subsequent lawsuit claimed that the removal of trees on the slopes above the house decreased soil stability and caused the landslide.

Damage from landslides is not covered under normal homeowner's insurance, so this is an area where the average homeowner is often "on his or her own."

While landslides are unpredictable in some respects, that doesn't mean there is nothing homeowners can do to help protect themselves.

The starting point for protecting yourself is to understand what is meant by the term "landslide," and what can trigger one.

The Oregon Department of Geology and Mineral Industries has published an excellent educational document entitled "A Homeowner's Guide to Landslides."

A landslide refers to any downslope movement of soil, rock or slope debris. Mudslides, mudflows, debris flows, rock falls and slumps are all

terms describing landslides. The two most common types of landslides are rotational slides and earthflows.

A rotational slide occurs when a large section of earth is transported downslope by sliding on a discrete detachment surface. The mass of soil and rock will partially disaggregate as it moves downslope. Rotational slides can occur when slopes are too steep or in areas where the base of the slope is undercut by either natural or man-made processes.

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The developing landslide at Rattlesnake Ridge near Union Gap in Washington state is an example of a slow-moving, rotational slide that may have been initiated by quarrying activity, which undercut the base of the slope.

An earthflow occurs when water mixes with soil or debris, and the liquid-like mixture flows rapidly downslope.

The devastating mudslides in Southern California this winter are good examples of earthflow type landslides. Two of the common conditions that

trigger this type of landslide are water-saturated ground and a loss of vegetation cover. In the case of the California mudslides, the late 2017 wildfires removed the vegetation cover, and heavy rain in January 2018 saturated the soil with water.

Earthquakes can also initiate both types of landslides. So, what can homeowners do to protect themselves?

When you buy a home

The ideal time to start thinking about landslide risk is when you are purchasing a home.

The presence of previous landslides in an area is an indicator of higher risk. The City of West Linn website contains natural hazard maps that show both areas of high landslide risk and areas where historic landslides have been mapped.

Consult these maps to understand if your prospective home is in a higher risk zone. If you get serious about buying in a higher risk area, then you may want to consider contacting a licensed engineering geologist or geotechnical engineer.

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When you are viewing a home ask yourself several questions: Is the home on a steep slope? Is the slope forested, and are there any activities that are removing trees or vegetation from the slope above or below the house? Tree roots play a vital role in stabilizing a slope and preventing landslides.

Are the bases of the trees on the slopes around the house consistently curved and bending in a downslope direction? This type of curvature is an indicator that slow soil movement is occurring.

Is the base of the slope below the home being undercut by natural or man-made activities?

If the answer to any of these questions is "yes," then you should put a warning flag in your notes that a deeper investigation may be needed.

You should have a good look at the inside and outside of the home. On the inside check for cracked floors, water seeping into the basement or crawl space, bulging walls, or fixtures and windows that are out of alignment with the walls. On the outside look for open cracks in the soil, sidewalks, foundations, or driveways. Also look for tilted retaining walls or broken utility pipes. These signs all indicate potential problems related to soil movement or slope instability.

If you already own a home

Current homeowners may still want to check the West Linn City hazard maps. Even though the chances of a landslide are low in most areas, you should be vigilant for key warning signs and engage in proactive planting across your property.

Maintain healthy vegetation using trees and shrubs that take up water efficiently. Examine your drainage and direct water away from slopes when possible.

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You need to be aware of landscape alterations both upslope and downslope from your property. Removal of trees and other vegetation on steep slopes creates a significant risk since it can destabilize the slopes, even in an established neighborhood.

If you notice any changes to drainage like new springs/seeps or newly forming drainage gullies, then you should be cautious since this is reflecting a change in the sub-surface hydrology. Soils that are oversaturated with water increase the chance of earthflows, and new springs indicate increased water in the local soil.

Remember that just because you live on steep slopes or in an old landslide area, it does not imply imminent danger. However, don't get so complacent that you fail to observe changes in the local neighborhood that could affect you.

Stay informed and observant, and if you suspect a problem contact the City at 503-657-0311 or by using the YourGOV app (<http://westlinnoregon.gov/YourGOV>). Contact the police or fire department in an emergency situation.

William House is an earth scientist and writer in West Linn.

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- **12 Apr 2018**



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Bugatti's Ristorante

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• 04:44PMSHARE:



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April is Distracted Driving Awareness Month - as in, don't do it. So let's make it a thing of the past. Contact me today to learn... ([Timeline Photos](#))

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Bugatti's Ristorante

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A BIG THANK YOU to all my kitchen staff! Just scored a 100% Health Inspection!!
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It may not be glamorous, but your sump pump plays a big role in keeping your house safe from flooding! Study up on what it does and... (**How Does a Sump Pump Work**)

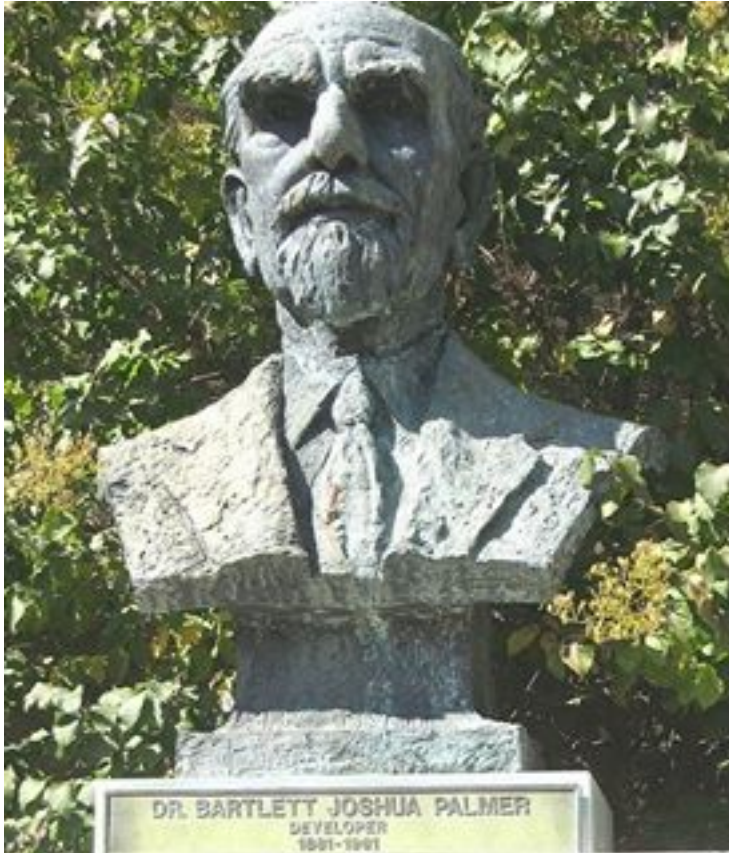
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Mark Hanson Agency, Inc. - American Family Insurance - West Linn, OR

There are many misconceptions about life insurance – we're here to clear up the confusion. Take a look at these myths and facts... (**8 Life Insurance Facts and Myths**)

- APR 8SHARE:



The man who had the intellectual capacity to comprehend the displacement of the vertebrae; the mental ability to grasp the significance of nerve impingement; the power to conceive and discriminate between normal and abnormal positions; the foresight and wisdom to discern the outcome; the genius of originality to create such a unique science; the judgement needed for the occasion; the brain caliber of reasoning on this heretofore perplexing question — the cause of dis-ease; the sense of touch required to discover a racked vertebra and the skill and tact to replace it, was the one destined to discover and develop the science which he named chiropractic. -BJ Palmer



Linn City Chiropractic

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To those who understand . . . ([View photo](#))

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Gender: Female

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Co-Insurance - Chiropractic

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Limitations - Chiropractic

Network Not Applicable Individual **\$500.00 Calendar Year**

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Network Not Applicable Individual **\$800.00 Remaining**

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Active Coverage
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Product / Network: PREFERRED PROVIDER OPTION PLUS MEDICAL

Deductible - Health Benefit Plan Coverage

Network Not Applicable Individual **\$400.00 Calendar Year**
Benefit Date: Jun 01, 2018 **\$400.00 Year In Date**
\$0.00 Remaining

Network Not Applicable Family **\$1,200.00 Calendar Year**
Benefit Date: Jun 01, 2018 **\$800.00 Year In Date**

4/6/2018, 10:43 AM



Linn City Chiropractic



Its like another language. (View photo)

• APR 7SHARE:



Linn City Chiropractic

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The man who had the intellectual capacity to comprehend the displacement of the vertebrae; the mental ability to grasp the... ([View status](#))

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Mark Hanson Agency, Inc. - American Family Insurance - West Linn, OR

Although it's important to have a 'can-do' attitude, our dreams might not always turn out as planned. That's why it's... ([3 Steps to Discover Your Dream 'Plan B' | American Family Insurance](#))

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Bugatti's Ristorante

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Friday Funnies: Have a fun and safe weekend ([View photo](#))

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Bugatti's Ristorante

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What can your business gain from a professionally designed website? A lot, as it turns out.



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**ICON'S PROPOSED DEVELOPMENT 4096 CORNWALL STREET
PUBLIC TESTIMONY
TRAFFIC IMPACT ANALYSIS AND DRAINAGE ANALYSIS**

**ROBERT MENDEL
TANNER STONEGATE BOARD OF DIRECTORS MEMBER
OCTOBER 7, 2020**

**1. ARD ENGINEERING TRAFFIC MEMORANDUM
WILLOW RIDGE TRAFFIC IMPACT ANALYSIS
JUNE 25, 2020**

The addition of 6 houses for the Willow Ridge Development will add 30% more traffic to Landis. The Ard Engineering Technical Memorandum dated June 25, 2020, Willow Ridge Traffic Impact Analysis, Table 1, Trip Generation Trip Summary, page 2 of 6, is based on the Alternative Plan, which connects Landis to Cornwall. There is no traffic impact analysis for the Tentative Plan, which is the hammer termination of Landis for the Willow Ridge Development. The Tentative plan is the preferred plan and a Traffic Impact Analysis must be developed. Using Table 1 numbers for the 6 Family Homes Total Trips, 56, which defines 6 houses accessing Landis Street with no Cornwall Access, that results in 9.3 trips per day per house. Multiply that by 26 homes using Landis Street results in 242 trips per day, which is significant. However, there is no definition of what is a "trip" and this must be stated in the impact analysis.

The Tanner Stonegate Board of Directors believe the trip numbers may not necessarily correct and be understated. There is considerably more online shopping resulting in more deliveries from USPS, Amazon, UPS, FedEx, grocery stores, restaurants plus city and homeowner service vehicles, friend and family visits, etc. which we feel have not been properly identified. The trip definition and number of daily trips per household must be revised.

There is a school bus stop at Stonegate Lane and Beacon Hill Drive and parents wait in the cars during drop off and pick up creating congestion. Increased Willow Ridge traffic will elevate risk for students and add more congestion in that area during the school year. The Traffic Impact Analysis must define total impact on Landis Street, Stonegate Lane and Beacon Hill Drive, address increased traffic and congestion related issues and plan for student safety for the Alternative Plan and Tentative Plan.

Heading east on Stonegate Lane there is a slight hill where it intersects with Landis Street and the corner is blind. Also, heading north on Landis Street, starting at the north end at lot 37, there is a large stone retaining wall and a right curve in the road that presents a blind turn. The road also narrows at the large retaining wall and cars parking on the west side of Landis Street across from the retaining wall further decreases street width at the blind curve.

Children safety on Landis Street is an issue. Due to relatively small yards, children are riding bikes, scooters, and generally playing, etc. on their driveway, sidewalk and sometimes the street. The increased traffic is a neighborhood concern for the safety of children.

The Tanner Stonegate BOD would respectively ask the city to propose how traffic safety issues will be mitigated for blind spots and children safety before approving the Willow Ridge development. Future development of the farm property north of Stonegate Lane should be considered when developing the mitigation plan.

Tanner Stonegate BOD is asking if the city would review the Master Plan and not have Landis Street connect to Cornwall Street. The would create a short cut to Susnsset Avenue and put an unnecessary traffic burden on Landis Street and Cornwall Street.

2. THETA ENGINEERING STORM WATER REPORT DRAINAGE ANALYSIS JUNE, 2020

There are 6 large drains on Landis Street with huge cisterns below that all feed to the cistern at the low point of the street in front of Lot 23. Storm water flows from that cistern to another large catch drain and cistern at the west end of Lot 23 that feeds into the bio swale. The bio swale runs along the north side of Lots 24, 25 and 26 parallel to the walking path. At the southern end is a drainage area (just above the walking path bridge) that finally drains under the walking path into the wetland area north of the walking path. This drainage area must be kept free of debris and flow correctly. The specified grasses and plantings within the bio swale area help with the filtering process and must be maintained. There are also public drainage easements from Lot 22 thru Lot 26.

Maintenance of the bio swale and drainage area needs to be performed every 2 - 3 years, which means removing any dead leaves, branches and debris using rakes and shovels so water flows through and into the wetland area without any obstruction and is able to filter out the pollutants as designed. The Storm Water Report has not defined how Willow Ridge residents will support the Landis Street bio swale and drainage area.

The Drainage Analysis depicts only the Alternative Plan, however, the Tentative Plan is the preferred plan. The Drainage Analysis shows that only Lot 1 will divert storm water to the Landis storm water system. However, without the Cornwall Street revision as identified in the Drainage Analysis, what is the impact on the Landis Street storm water system for the Tentative Plan. The Drainage Analysis must include the effect to the Tanner Stonegate bio swale and drainage area for the Tentative Plan and Alternative Plan.

ICON plans to divert storm water in the Landis Street storm water system and there has been no contact between ICON and Tanner Stonegate HOA regarding their proposed Willow Ridge Development storm water tie-in and potential impact on the Tanner Stonegate bio swale and drainage area. Tanner Stonegate HOA has no interest in adding Willow Ridge liability to our bio swale and drainage system. Tanner Stongate also has no interest in adding the Willow Ridge development liability to the Tanner Stonegate Homeowners Association.

3. SUMMARY

1. The Traffic Impact Analysis and Drainage Analysis needs to address the Tentative Plan and the Alternative Plan
2. Define what is a "trip"
3. The number of daily trips per household must be revised with regards to total impact on Landis Street
4. The Traffic Impact Analysis must define total impact on Landis Street, Stongate Lane and Beacon Hill Drive, address increased traffic and congestion related issues and plan for student safety at the bus stop for the Alternative Plan and Tentative Plan.
5. West Linn should evaluate how traffic safety issues will be mitigated on Landis Street for blind spots and children safety before approving the Willow Ridge development.
6. What is the impact on the Landis Street storm water system for the Tentative Plan.

7. The Drainage Analysis must include the effect to the Tanner Stonegate bio swale and drainage area for the Tentative Plan and Alternative Plan.
8. There is no plan how Willow Ridge residents will support the bio swale and drainage system maintenance
9. Tanner Stonegate HOA has no interest in adding Willow Ridge liability to our bio swale and drainage system
10. Tanner Stongate also has no interest in adding Willow Ridge liability to the Tanner Stonegate Homeowners Association

2nd Testimony Regarding ICON's Proposed Development:
SUB-20-01 Presented to the West Linn Planning Commissioners
October 7th, 2020

Written by: Pam Yokubaitis, MPH, RHIA, FAHIMA
BHT NA Secretary & Hidden Creek Estates Subdivision
Representative

Below is a listing of comments about the **City's Staff report**, for the proposed Development at 4096 Cornwall Street in West Linn.

1. Report Name: WL Staff Report, page 5, #10 Building Sites: Not *just* the building sites exceeding 25% slopes should require geotechnical conformation. **THE ENTIRE PROPERTY** at 4096 Cornwall Street must be hydrologically and geologically reevaluated to determine *if* this land is buildable, and *where* on this land houses can be "safely built". Bill House's new geology report sheds light about the questionable integrity of this land and its 2 major hazards. Significant geotechnical work *must* be completed *first* to identify where it is safe to build on this property, and only *then* should a plat map be drafted. **NO CURRENT GEOTECHNICAL REPORT EXISTS WITH IN-DEPTH ANALYSIS INDICATING IF THIS LAND IS SAFE TO BUILD UPON.**
2. Report Name: WL Staff Report, page 5, #5, Utilities, minor: The term stormwater "facilities" is not explained; are these shed like structures on the property or underground water holding structures? This was not explained at the NA meeting. Visible eyesores are not wanted by Fairhaven Drive residents, like the past retention pond idea.
3. Report Name: WL Staff Report, page 8, #1, Traffic Impact Analysis: ICON's ARD report states IF there is a Landis/ Cornwall Street connection, over 400+ cars/day will travel on these 2 roads. Ed Turkisher claims *more* than this volume of

traffic would pass through. These projections justify the need for a traffic impact analysis, especially since the intersection of Cornwall Street, Summit Street and Sunset will have to be completely re-designed if road connectivity occurs (read Ed's testimony). Furthermore, reference to Landis/Cornwall Street connectivity is *unwanted* by all "affected" local residents on Cornwall Street, Landis Street and Fairhaven Drive. There is a shorter and more cost effective alternative, directly from Sunset to Stonegate Bridge, and there is NO NECESSITY for this connection at this time. There is substantial historical and current testimony citing safety issues, traffic constraints, etc., clearly justifying the hazards of connectivity. **CITIZENS FIRST!**

4. Report Name: WL Staff Report, page 10, C, Again, Street connectivity of Landis and Cornwall IS NOT what the surrounding homeowners want. A 65+ signature petition was presented at ICON's pre-app meeting indicating NO CONNECTIVITY. Furthermore, Patrick Noe's June 1, 2017 testimony included resident's signatures against connectivity, making this *clear* at the VERY FIRST Planning Commissioner's hearing.
5. Report Name: WL Staff Report, page 11, Staff Finding 15: All references to homes on lots at 4096 Cornwall Street is irrelevant at this time UNTIL this parcel of land is deemed buildable with a detailed hydrogeological report indicating WHERE construction can safely occur on this property. With a new geology report introduced as testimony today about this land, the proposed plat map may no longer be suitable due to hazardous areas under multiple homes. This is putting the horse before the cart. There is no point in reviewing a plat map which may need to be completely redesigned due to known geological hazards on this lot, so more extensive work must be done first, to prove this land is buildable.
6. Report Name: WL Staff Report, page 14, Staff Finding 23: Until an in-depth geotechnical report addresses the integrity of

this land to be built upon, *and* the dismissal of road connectivity is agreed to, only then should a new plat map be designed to determine what trees can stay or must go, where the road and homes will be, etc.

7. Report Name: WL Staff Report, page 17, Staff Finding 30: A cul-de-sac was originally planned for this parcel of land as Phase 2 of Stonegate. Reconsideration of a variance to allow this should be re-explored, only *after* the integrity of the land is deemed safe to built on.
8. Report Name: WL Staff Report, page 19, Staff Finding 33: Again, street connectivity of Landis to Cornwall IS NOT WHAT THE RESIDENTS WANT. This was made vey clear at the start in 2017, and again recently with 65+ signatures from 5 surrounding subdivisions.
9. Report Name: WL Staff Report, page 23, Staff Finding 44, and pg 25, #9 Heritage trees/significant tree and cluster protection. The link below explains what a lined rain garden is. <https://www.3riverswetweather.org/green/green-solution-rain-garden>. It sounds like the excess ground water in heavy rain will end up in the drainage. Icon calls it a "natural drainage way". So, is it a pipe (not natural) or a gully? How close is it to the end of the properties by the old oak trees along the fence, and how will their roots be protected? Where does it flow into? Cornwall Creek and ultimately Tanner Creek? It would seem that their circumference should be measured once the 27 have been identified; so depending on the size of them, wouldn't over a hundred 4" trees be required to be replanted? Also, what kind of trees would be planted in the areas with springs? Weeping willows? With all the trees getting cut as well as the blackberries which absorb water too, how will all the water during heavy rains will be caught when it runs down the hill? And without the tree roots left in the soil, how do you prevent landslides with this major alteration to the land? A more in

depth and all encompassing explanation is needed to address these issues and to make this self explanatory.

10. Report Name: WL Staff Report, page 26, Staff Finding 53: This property DOES contain “very wet land” as evidenced by numerous photos of water draining between residents properties, ponding at then bottom of the slope, bubbling springs, soggy mud, reed grass, etc. Bill House’s geology report proves there are 2 large bodies of water underneath this property with landslide potential. Until an in depth hydrological and geotechnical report of this land is completed by Professional Engineers (whose reputation and career is at stake for misrepresentation and errors), we really don’t know if this land is safely buildable because this is constrained land. It is not in West Linn’s best interest to proceed with this proposed development until the integrity of this property is first deemed buildable by experts.

SUMMARY OF STAFF FINDINGS: Both historical and current testimony from the 5 subdivisions surrounding 4096 Cornwall Street indicates 1) the residents have *repeatedly* requested the need for an IN DEPTH geotechnical hydrogeologist PE (Professional Engineer) analysis of this land, and 2) *repeatedly* voiced strong opposition to street connectivity and traffic concerns. The residents have extensively explained and provided photographs of this constrained land with obvious symptoms of water and land slide hazards. **Without an in-depth geotechnical analysis of this property, the proposed development as presented can not be ruled on with any confidence at this time because we still don’t know if and where this constrained land is safe to build on with its 2 major, natural hazards.** Only then might we be able to amend this proposed plan, or perhaps a new plat map design may be necessary, but until expert geotechnical analysis is understood, we can’t make intelligent decisions about building on 4096 Cornwall Street.

2nd Testimony Regarding ICON's Proposed Development:
SUB-20-01 Presented to the West Linn Planning Commissioners
October 7th, 2020
Written by: Pam Yokubaitis, MPH, RHIA, FAHIMA
BHT NA Secretary & Hidden Creek Estates Subdivision
Representative

Below is a listing of comments about **ICON's application**, for the proposed Development at 4096 Cornwall Street, West Linn

My comments and Summary noted in the City's Staff report also applies to ICON's application documentation because both parties address the same subjects (although from different perspectives). Since my responses to ICON on then same topic would mirror what was already written in the City's staff report (and vice versa), to avoid redundancy, I am responding here to different topics and key issues noted in ICON's application.

1. Report Name: Willow Ridge Tentative Plan Plat Map, page 54. Because here is no Landis/Cornwall connectivity in this plan, the residents clearly prefer this option. However, this plat map leaves the door open for connectivity in the future, so we would need a design that shows permanency of no future connectivity between Landis & Cornwall Streets, except for perhaps emergency reasons.
2. Report Name: Willow Ridge Plan B- Alternative Plan Plat Map, page 55. This plan was previously denied because there're wasn't enough land to build the road to due the cliff and required 90 degree turn. Also encroachment on private property was necessary, so it's puzzling why this option would be resubmitted again.

3. Report Name: Willow Ridge Subdivision Application: #13
Grades and Curves, page 60: “The centerline radius of Landis Street where it bends back to connect with Cornwall Street is tighter than typically allowed, but this radius was agreed to by the City Engineer in order to allow for the connection to be made.” This statement contradicts the denial ruling made by the WL Planning Commissioner’s and is a public safety issue!
4. Cornwall Street is tighter than typically allowed, but this radius was agreed to by the City Engineer in
5. order to allow for the connection to be made.
6. Report Name: Willow Ridge Subdivision Application, #11,
page 59: Further exploration and discussion about the use of a cul-de-sac should be explored again, as this might be the best option for this constrained land.
7. Report Name: ARD Engineering, page 105: This report confirms that road connectivity of Landis and Cornwall Streets would result in 400+ trips per day. Landis Street clearly can’t handle this volume of two way traffic safely, as residents have documented in multiple testimonies.
8. Report Name: ARD Engineering: Tentative Plan - operational and Safety Analysis, page 104, paragraph 2: It is clear that West Linn has multiple street connection options available, so there is no necessity that Landis and Cornwall Streets have to be connected at this time or in the future.
9. Report Name: GeoPacific Engineering, page 116: This document states a change in the Geotechnical Engineer of Record/Company used, but it doesn’t mean the data generated by Carlson Geotechnical has been *validated* as accurate. This correspondence is only a notification of changing companies to do business with. It does not suffice for the very much needed in-depth analysis required to determine if 4096 Cornwall is buildable land. Secondly, this

report states: “we recommend updating the information regarding seismic design from the original report”. This confirms the data supplied to date requires reanalysis, so it’s apparent more work needs to be done. Third, stating “ it is our opinion that onsite infiltration is not feasible and in fact is more likely to increase runoff potential from Lots 2 through 6...”, so again, there are more problems to be resolved. This document is NOT a geotechnical report because many recommendations are made, but no data is presented nor are solutions offered. The last paragraph on page 116 also recommends updating the information regarding seismic design for the original report, but this has not been addressed by ICON. Lastly, a peer report review is just that: a review, without any testing, analysis and problem resolution completed. ICON has not responded to all the concerns and recommendations cited here.

7. Report Name: Carlson Geotechnical, page 122. **This report was written 1/7/2016, four and a half years ago. On page 141, the last sentence states: “This report is subject to review and should not be relied upon after a period of 3 years.” Therefore Carlson’s report is no longer valid. With the GeoPacific Engineering “letter” not being an in-depth report about this property, this means ICON’s application does NOT supply an in-depth geotechnical analysis of their property. This is THE MOST ESSENTIAL DOCUMENTATION REQUIRED when building on constrained lands to determine if the land is buildable. Nor is there any assurance that the plat map is ideally designed, taking into consideration geological hazards present.**

Summary of ICON’s Findings: The fact that this proposed development application lacks a current, in-depth, detailed Geotechnical report (#7 above) is unquestionably a major problem and a SIGNIFICANT reason for denying this application. It is highly disturbing that ICON wants to pursue

construction now, without this critical information available to them. This is a recipe for disaster! ICON not only ignored recommendations made by GeoPacific, but their lack of interest in wanting to understand the complexity and hazards on their property is *completely irresponsible*. Apparently Icon is more interested in making money than doing the right thing for their buyers, the surrounding subdivisions, and the City of West Linn. Thankfully the residents and Planning Commissioners ARE concerned about our community to pursue the truth, and do what is in the best interests for West Linn's future.