

**NATURAL RESOURCE ASSESSMENT**  
**Within**  
**Water Resource Area**

**FOR**

**3841 Mapleton Drive**  
**West Linn, OR**

Prepared for:  
**Icon Construction and Development**  
**1980 Willamette Falls Drive, Suite 200**  
**West Linn, Oregon 97068**

Prepared by:  
**Juniper Tagliabue**  
**Schott and Associates**

October 2018  
Project #: 2647

## INTRODUCTION

### Site Location

Schott and Associates was contracted by Icon Construction & Development to conduct a natural resource assessment on the property located at 3841 Mapleton Drive in West Linn, Oregon. The property consists of 2 separate tax lots (T2S R1E Sec.24BC TL#500 and 400).

### Site Description

The subject property is a residential lot which previously contained a house. The house has since been removed. At the time of the site visit a small shed was present in the central part of the site. The southern portion of the site is an open field dominated by colonial bentgrass (*Agrostis capillaris*). It appears that the field was the old lawn area for the house that used to be present near the middle of the property. There is a line of maple and spruce trees along the front half of the western property line. Some, if not all, of these trees were planted. The spruce trees are not native to the valley. There is a band of big-leaf maples (*Acer macrophyllum*), Douglas firs (*Pseudotsuga menziesii*) and grand fir (*Abies grandis*) just to the north of the middle of the property. The understory consists of English ivy (*Hedera helix*) and *Vinca minor*. There are little to no shrubs in the understory.

It is apparent that when the house was occupied the forested area was kept in a park like condition and was part of the yard area for the house. The presence of both ivy and vinca, which are non-native, help support the contention that the forested area was part of the yard. In addition, there is a large locust (*Pseudoacacia robinia*) tree mixed in with the native trees. North of this forested area is another grass dominated area. Historical aerial photographs show this area was kept mowed. Finally, there is a band of big leaf maples and Douglas firs along the north property line.

The driveway to the old house still exists extending north from Mapleton Drive. A creek extending from the south under Mapleton Drive enters a culvert just north of the southeastern property line. The culvert heads in a northeasterly direction. The creek daylights approximately 45 feet before it flows offsite along the eastern site boundary. The creek is perennial as it was flowing during the September site visit.

The topography of the site slopes to the east. On site observations and aerial photographs show evidence of site grading from years ago. The area where the house used to be located as well as the driveway were graded and flattened. In addition, the area where the culvert is located is not natural topography. This area appears to have been filled, probably when the culvert was first installed. A review of aerial photographs available on Google Earth revealed that the culvert has been in place since prior to 1994. In addition, the lot to the east is significantly lower than this site, suggesting historical filling.

## **Project Objectives**

The applicant proposes a 6 lot residential subdivision with access from Mapleton Drive to the south. As part of the proposal the applicant proposes to daylight the piped portion of the onsite drainage Trillium Creek.

As shown on the WRA Map, the site contains protected water resources. The resource is primarily piped but contains approximately 45' of open channel onsite. The WRA map shows Significant Riparian Corridor along the entire channel, including the piped section. As per 32.120 *the WRA map is ... not intended to delineate the exact WRA boundaries or water feature alignment. Amendments to the WRA Maps may be made in accordance with the provisions of Chapters 98 and 99 CDC.*

This report will outline the actual extent of the onsite features and provide water resource map amendment, alternative buffer conditions and a proposal for Trillium Creek channel restoration.

## **METHODS**

A natural resource assessment was conducted by S&A on September 26, 2018. 32.020 Chapter 32 of the CDC applies to all development, activity or uses within WRAs identified on the WRA map. The limits of the onsite undisturbed waterway and riparian corridor boundary were determined based on field verified conditions and documented in this report.

## **SENSITIVE AREA CONDITIONS**

### **Waterway**

Trillium Creek flows north-northeast through the property. It extends from under Mapleton Drive to enter a culvert just north of the southeastern property line. The culvert heads in a northeasterly direction. The creek daylights approximately 45 feet before it flows offsite along the eastern site boundary.

The LWI, as well as the WRA map, showed a drainage entering the property from the south and exiting a culvert near the the eastern edge of the property. According to both maps the drainage is an open channel just at the south property boundary and does not re-emerge onsite. Onsite observations found the culvert ending with a second section of open channel extending through the eastern portion of the site and then offsite.

Field investigation identified a short section of open channel at the southern property boundary with the adjacent WRA consisting of a grassy area adjacent to the old gravel driveway. The approximately 45' section of open channel on the east side of the site is dominated by Himalayan blackberry. The remainder of the channel has been culverted and no Riparian Corridor or WRA is present.

## **WRA**

As defined by Table 32-2. Required Width of WRA shall extend 65' from the edge of the defined water resource. By this determination a 65' WRA should be present on each side of the section of open waterway that is currently flowing through the site. The mapped Riparian Corridor is located within the required WRA area. The WRA at the south end of the site was mostly located within the old gravel driveway transitioning to non-native grasses such as tall fescue and bentgrass. To the north of the creek, within the 65' WRA, vegetation mainly consisted of Himalayan blackberry. Total area of existing WRA is approximately 5,900sf.

## **WRA REQUIREMENTS**

As per Chapter 32/Table 32-2 Required Width of WRA; the required width on each side of the water resource is 65' from the OHW therefore the WRA extends 65' north and west of the existing channel. Southeast of the channel it extends to the property boundary. As per 32.040.F.2 Exempt areas include *existing enclosed or piped sections of streams, including any development at right angles to the enclosed or piped sections*. Therefore the Riparian Corridor is incorrectly mapped adjacent to the piped section of the drainage.

Within the required 65' wide WRA boundary adjacent to the existing open channel the application proposes development of a deck and lawn for Lot 5 within the WRA. Proposed impact area is 1,120sf within primarily non-native and invasive vegetation, performing limited functions or protection of functions of the water resource. The WRA is degraded and it is proposed that the width be reduced to allow for creation of the deck/lawn while still providing greater ecological and water quality function than currently. The proposed WRA width will be variable, ranging from 40' to 65' and there will be no significant ecological impacts caused by the development.

Per 32.070 Alternate Review Process *if there is reason to believe that the width of the WRA prescribed under the standard process (CDC 32.060(D) is larger than necessary to protect the functions of the water resource at a particular site a reduction in width can be requested if per 32.080(B) it can be shown that the WRA is already significantly degraded (e.g., native forest and ground cover have been removed or the site dominated by invasive plants, debris or development) and the approval authority may allow a reduced WRA in exchange for mitigation.*

*The proposed WRA shall be, at minimum qualitatively equal in terms of maintaining the level of functions allowed by the WRA standards of CDC32.060(D).*

## **Undisturbed WRA Conditions**

The site has been disturbed historically. The driveway, as well as where the house used to be located was graded and flattened. In addition, the area where the culvert is located is not natural topography. This area appears to have been filled, probably when the culvert was first installed. In addition, the lot to the east is significantly lower than this site, again

suggesting the historical filling. As per Section 32.050 (F8) plant communities within the undisturbed WRA were identified and characterized.

The WRA for the short section of waterway at the south property boundary was mostly existing gravel driveway with no vegetation. The adjacent undeveloped area was composed of non-native grasses and Himalayan blackberry. The condition of the WRA was degraded and performs minimal vegetated corridor functions at this location.

**Table 1. Southern WRA**

Scientific Name	Common Name	Layer	% Cover
<i>Schedonorus arundinaceus</i>	Tall fescue	Grass	5
<i>Agrostis capillaris</i>	Colonial bentgrass	Grass	90
<i>Rubus armeniacus</i>	Himalayan blackberry	Shrub	5
% cover by natives			0
% tree canopy			0
% invasive/noxious			5
Condition			Degraded

The WRA in the east portion of the property was dominated by Himalayan blackberry which extended into the forested area. Low canopy cover was present from a couple of big leaf maple trees. This WRA was in degraded condition.

**Table 2. Northern Community within WRA**

Scientific Name	Common Name	Layer	% Cover
<i>Acer macrophyllum</i>	Big leaf maple	Tree	10
<i>Rubus armeniacus</i>	Himalayan blackberry	Shrub	80
<i>Agrostis capillaries</i>	Colonial bentgrass	Grass	10
% cover by natives			10
% tree canopy			0
% invasive/noxious			80
Condition			Degraded

## IMPACTS

### Impacts to Wetlands/Waters

No impacts to wetlands or waters are proposed.

### Impacts to the WRA (Riparian Corridor)

With the required 65' WRA boundary adjacent to the southern waterway boundary modification is proposed reducing the WRA to 15' which will be consistent along the entirety of the proposed channel to be daylighted. Reduction of 748sf of WRA is

proposed in this area. The majority of this area is within gravel roadway and provides no vegetated buffer functions.

Within the required 65' wide WRA boundary at the very eastern edge, farthest away from the waterway and wetland edge, WRA boundary modification is proposed to reduce a portion of the existing WRA to 40' wide. Reduction in this area is 1,120sf. As the impact area is within predominantly non-native and invasive vegetation and the WRA is almost entirely degraded, it is proposed that the width of the WRA be reduced to 40 feet for a small section in order to allow for the lawn and deck area for Lot 5.

Per 32.070 Alternate Review Process *if there is reason to believe that the width of the WRA prescribed under the standard process (CDC 32.060(D) is larger than necessary to protect the functions of the water resource at a particular site a reduction in width can be requested if per 32.080(B) it can be shown that the WRA is already significantly degraded (e.g., native forest and ground cover have been removed or the site dominated by invasive plants, debris or development) and the approval authority may allow a reduced WRA in exchange for mitigation.* As has been shown in this report, the WRA onsite has been significantly disturbed through grading, removal of native cover and dominated by invasive species, especially Himalayan blackberry and non-native field grasses.

## **MITIGATION AND ENHANCEMENT**

The goal of the mitigation is to restore a portion of the onsite water quality sensitive area and improve the ecological benefit and water quality benefit of WRA while maximizing developable area. Proposed reduction to existing degraded WRA shall be mitigated by daylighting the entire onsite section of piped stream and enhancing the adjacent 15' wide buffer with a native riparian vegetation community. This will result in increased length of open channel surrounded by a more diverse and higher functioning buffer than is currently present. Total adjacent Riparian Corridor area shall increase to 8,438sf and extend from 15' to 65' in width along the entire onsite channel.

As per 32.060.G Approval Criteria Daylighting Piped Streams *As part of any application, covered or piped stream sections shown on the WRA maps are encouraged to be daylighted or opened. Once it is daylighted, the WRA will be limited to 15 feet on either side of the stream.*

Creating an open channel will improve ecological and water quality functions onsite as described below and in Table 2 which compares Ecological Functions per Table 32-4 of Existing and proposed WRA functions. Daylighting the channel will help slow water movement through the site. The proposed channel will be longer than the existing culvert, which will result in water taking longer moving through the site. In addition, water moves faster through a culvert than it does through an open channel since the culvert is smoother than an open channel. Second, an open channel will provide habitat for amphibians and other wildlife species that is not currently accessible via the culvert. Finally, an open channel will help improve water quality. Most urban streams tend to have excess

nutrients and other pollutants. The plants growing in and adjacent to the stream will help remove some of these pollutants.

Additionally, the remaining WRA area shall be enhanced through removal of invasive species and planting with a mix of native trees, shrubs and understory species. Proposed enhancement will increase diversity of species and structure, providing greater habitat functions including nesting, escape and forage as well as a contiguous habitat corridor along an open channel through the entire site.

As described for reduction in WRA width, accompanied with Mitigation, the applicant proposes mitigating for the WRA width reduction amount of 1,868sf through daylighting the onsite piped drainage and enhancement of 8,438sf of adjacent Riparian Corridor (Table 1). The pipe will be removed and replaced with an open channel lined with river cobble to slow water flows and improve habitat value. The daylighted channel will have a 15' planted WRA adjacent to both sides. Adjacent riparian enhancement will include the removal of Himalayan blackberry and other non-native species within the existing and proposed WRA followed by planting with native plant material greatly enhancing otherwise low quality functions than the existing WRA now has.

Proposed WRA will be planted with native trees, shrubs and groundcover consistent with CDC 32.100, and exceeding the standards of CDC 32.090(C) as described in the Mitigation/Enhancement Plan (Table 1) to extend the total area of native forested/scrub-shrub community and provide a diverse community adjacent to the onsite water resource.

Proposed mitigation will further preserve and significantly enhance the essential functions of the remaining WRA by increasing area and diversity of native vegetation adjacent to the sensitive area (Table 1). Tree and shrub species will provide shade, large woody debris, habitat and food sources. In addition it will increase filtration and remove non-native vegetation. Species will be based on the existing native Portland plant list and will include upland species as referenced in Table 1 such as Douglas fir, red alder, big leaf maple, Oregon grape, snowberry, Indian plum and sword fern.

Planting will be done per 32.100 RE-Vegetation Plan Requirements. Trees and shrubs shall be planted in accordance to 32.100 (3a,b) with trees planted 12' on center and shrubs planted between 4 and 5 feet on center. Plant diversity shall be in accordance with 32.100 (4)

Per 32.100 (6) A minimum survival rate of 80% of the trees and shrubs planted is expected by the third anniversary of the date that the mitigation planting is completed. Plants that die must be replaced in kind (32.100(7)).

As per City of West Linn WRA protection requirements, 80% success is required for the replanted areas. The mitigation site will be monitored and maintained for three years. If, after each year monitoring period, 80% survival has not been met, dead plants will be replaced up to the 100% success required.

**TABLE 1. WRA ENHANCEMENT PLANTING PLAN (8,438SF)**

	Plant Type	Water Requirements	Light Requirements	Min. Size	Min. Height	Spacing	Qty
Douglas fir ( <i>Pseudotsuga menziesii</i> )	Tree	Dry	Sun	2 gal	3'	Single	15
Big leaf maple ( <i>Acer macrophyllum</i> )	Tree	Dry	Sun	2 gal	3'	Single	23
Red alder ( <i>Alnus Rubra</i> )	Tree	Moist	Sun	2 gal	3'		20
Red flowering currant ( <i>Ribes sanguineum</i> )	Shrub	Dry	Sun	1 gal.	1.5'	Cluster	50
Tall Oregon grape ( <i>Mahonia aquifolium</i> )	Shrub	Dry	Sun	1 gal.	12"	Single	50
Cascade Oregon grape ( <i>Mahonia nervosa</i> )	Shrub	Moist	Shade	1 gal.	4"	Cluster	50
Snowberry ( <i>Symphoricarpos albus</i> )	Shrub	Dry	Part	1 gal.	1.5'	Cluster	100
Serviceberry ( <i>Amelanchier alnifolia</i> )	Shrub	Dry	Part	1 gal.	1.5'	Single	25
Sword fern ( <i>Polystichum munitum</i> )	Forb	Moist	Shade	2 gal.	n/a	Cluster	25
Native California brome ( <i>Bromus carinatus</i> )	Grass	Dry	Part	Seed	n/a	10lbs. pls	
Blue Wildrye ( <i>Elymus glaucus</i> )	Grass	Dry	Part	Seed	n/a	10lbs. pls	



**Table 2. Ecological Functions per Table 32-4**

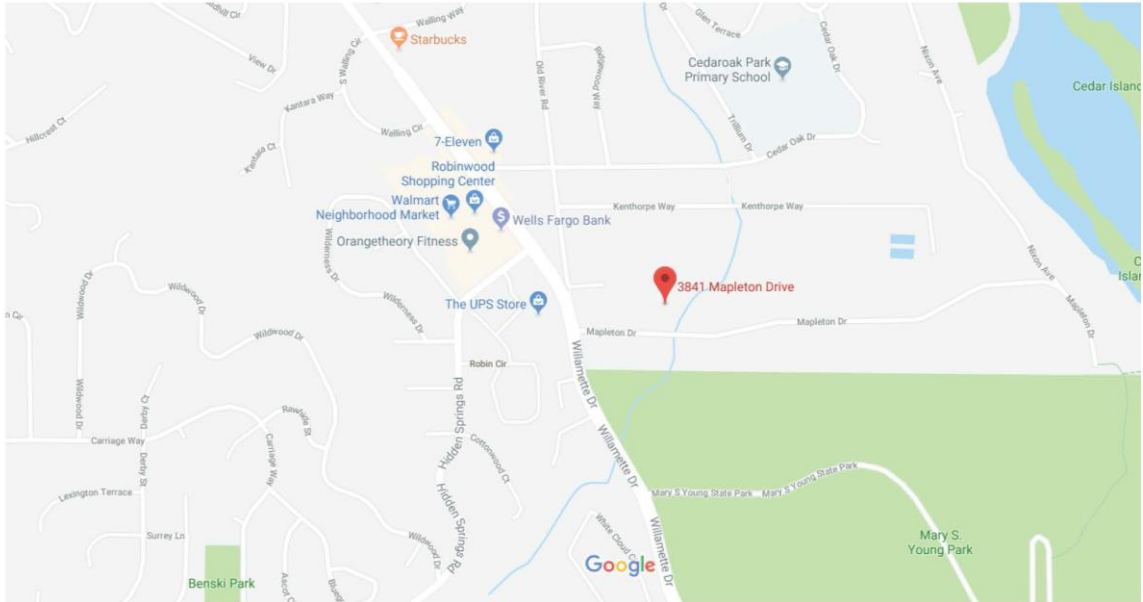
<b>Ecological Functions</b>	<b>WRA existing conditions</b>	<b>WRA enhanced conditions</b>
Stream flow moderation and/or water storage	Stream flow moderation low, creek primarily piped with two sections of open channel with no complexity.	Stream flow functions will be increased by removal of pipe, increased in open stream length, addition cobble substrate in channel and denser and more diverse vegetation adjacent increase in roughness/complexity in WRA to further slow flow for better storage capacity.
Sediment or pollution control	Vegetation minimal within 100' of south open channel (gravel drive). To the east adjacent vegetation is predominantly blackberry. Only forested canopy mainly to the north of WRA.	Increased vegetation and tree canopy adjacent to created stream channel as well as within existing WRA will increase functions by providing more filtration and surface runoff.
Bank stabilization	Some large trees along stream bank but there is minimal bank	Increased native vegetation will help bank stabilization.
Large wood recruitment for a fish bearing section of stream	Stream is likely not fish bearing. Few large trees along stream.	Additional trees will increase tree canopy cover and diversity providing greater quantity of woody debris within stream and adjacent upland habitat.
Organic material sources	Minimal as most of channel is piped and open section has little adjacent tree canopy.	Increased vegetation and tree canopy will provide greater organic material.
Shade (water temperature moderation) and microclimate	Minimal as most of channel is piped and open section has little adjacent tree canopy.	Increased vegetation and tree canopy will provide greater shade and thermoregulation.

**APPENDIX A. Site Vicinity Map**

10/11/2018

3841 Mapleton Dr - Google Maps

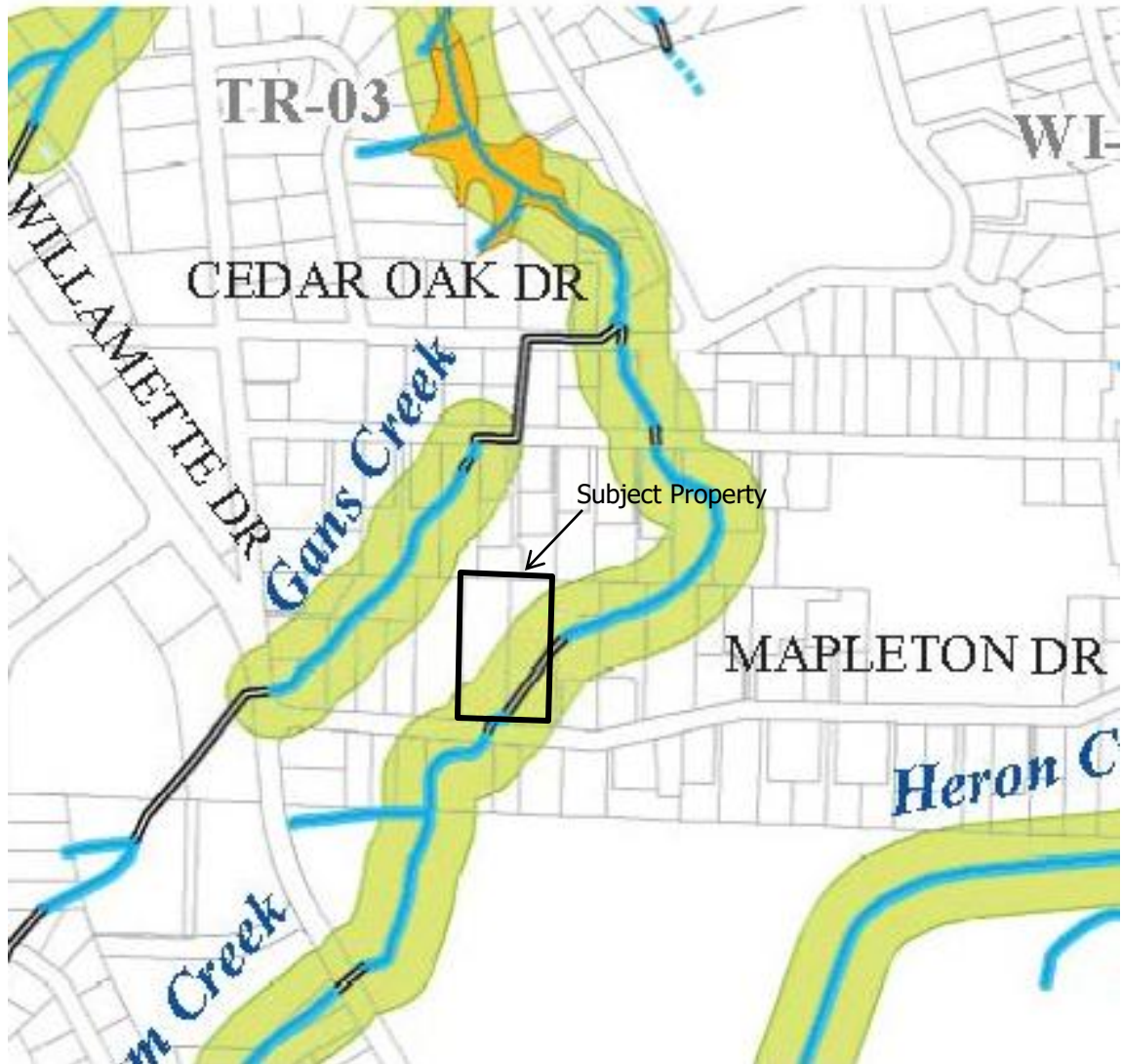
Google Maps 3841 Mapleton Dr








Appendix A. Site Vicinity Map – Google Maps  
3841 Mapleton Drive  
S&A#2647

Schott & Associates  
P.O. Box 589  
Aurora, OR. 97002  
503.678.6007







**APPENDIX B. WRA Map**



**Goal 5 Significant Riparian Corridors\***

-  Significant Riparian Corridors
-  Streams
-  Ephemeral Stream
-  Piped Segments
-  Upper Stream Reach of Fish Inventory 2003/2004 Survey

**Goal 5 Wetland Inventory\*\***

-  Locally Significant Wetlands, DSL 2005
-  Other Wetlands, DSL 2005
-  TA-05 Specific Wetland Identifier
-  Rivers & Ponds
-  West Linn City Limits
-  Taxlot Base Map\*\*\*

**APPENDIX C. Existing Conditions Map**

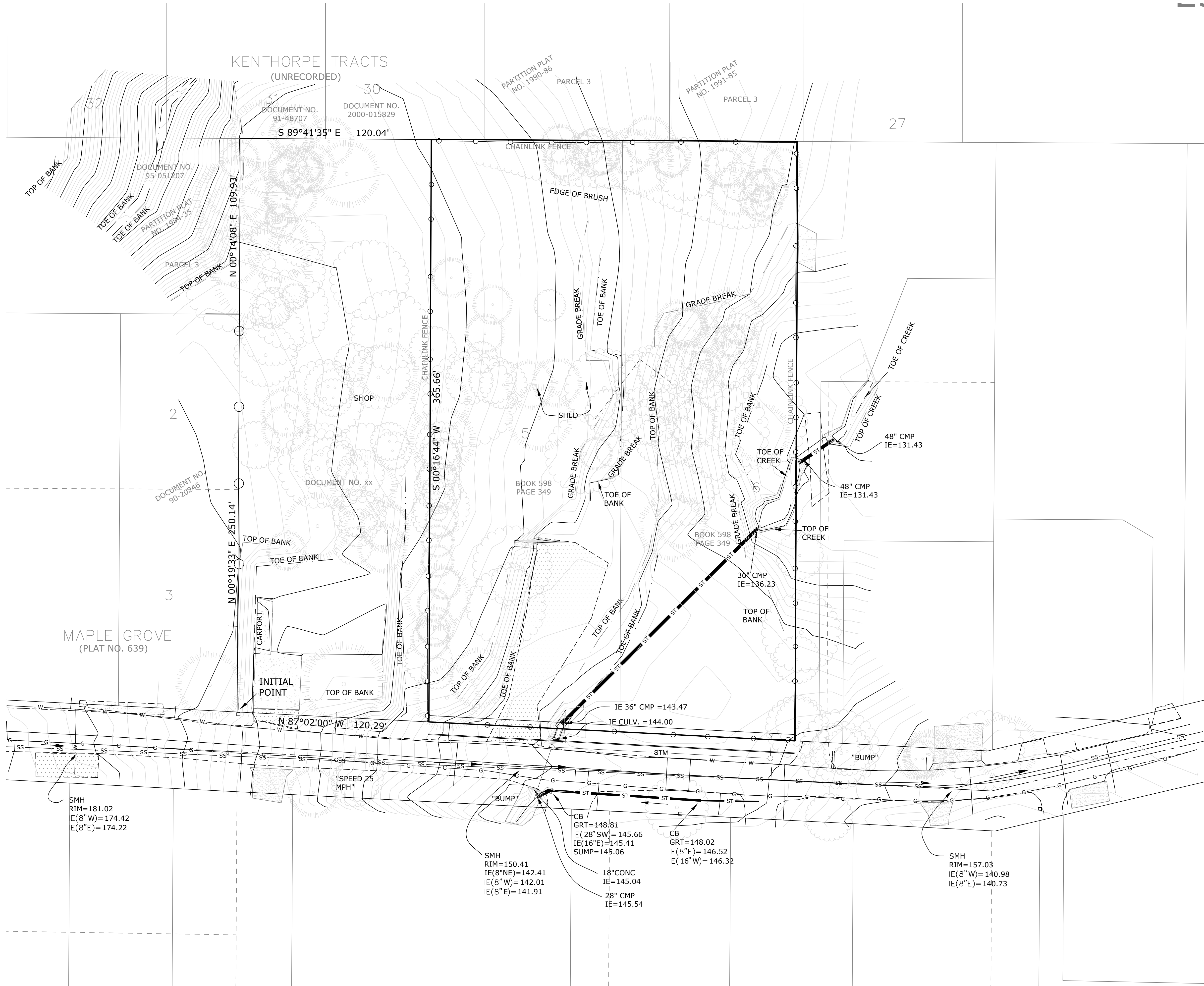
13190 SW 68th Parkway, Suite 150  
 Tigard, Oregon 97223  
 503.968.6655 www.cesnw.com  
 CESNW PROJ: 2869  
 DATE: 7-22-2013

REGISTERED  
 PROFESSIONAL  
 LAND SURVEYOR  
**PRELIMINARY**  
 OREGON  
 DECEMBER 13, 2007  
 RYAN H. GODSEY  
 65604  
 RENEWS: 6/30/17

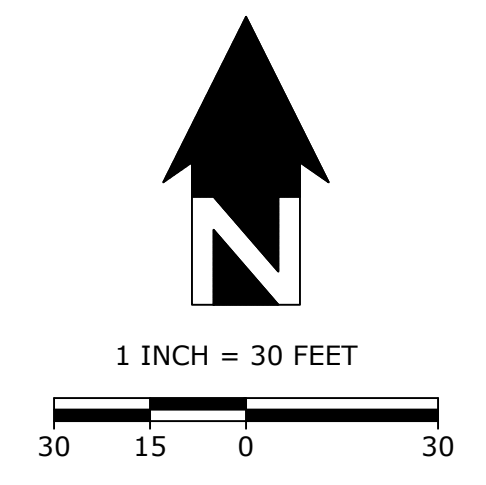
**LEGEND**

- CATCH BASIN
  - WATER VALVE
  - WATER METER
  - SANITARY SEWER MANHOLE
  - STORM DRAIN MANHOLE
  - CLEAN OUT
  - IRRIGATION CONTROL VALVE
  - GAS VALVE
  - GAS METER
  - MAIL BOX
  - LUMINAIRE
  - TV RISER
  - TELEPHONE RISER
  - SIGNAL JUNCTION BOX
  - ELECTRIC METER
  - ELECTRIC JUNCTION BOX
  - UTILITY POLE
  - GUY ANCHOR
  - FIRE HYDRANT
  - SIGN
  - LINE CONTINUES TO UNKNOWN LOCATION
  - UNDERGROUND ELECTRIC LINE
  - UNDERGROUND STORM DRAIN LINE
  - UNDERGROUND SANITARY SEWER LINE
  - UNDERGROUND TELEPHONE LINE
  - UNDERGROUND CABLE TV LINE
  - UNDERGROUND WATER LINE
  - UNDERGROUND NATURAL GAS LINE
  - OVERHEAD UTILITY LINE
  - FENCE LINE
  - SANITARY SEWER MANHOLE
  - STORM DRAIN MANHOLE
  - CATCH BASIN
  - FIELD INLET
  - CONCRETE
  - ASPHALT
  - DECIDUOUS TREE (DTR)
  - EVERGREEN TREE (ETR)
- EXAMPLE  
 12" DTR 5  
 DIAMETER      TYPE      NO. OF TREES FROM ONE BASE

**NOTES**  
 1. THIS SURVEY MAKES NO GUARANTEES THAT THE UNDERGROUND UTILITIES SHOWN ARE ALL THE UTILITIES IN THE AREA. THE UNDERGROUND UTILITIES SHOWN ARE BASED ON LOCATE PAINT MARKINGS IN THE FIELD AND AS-BUILT MAPPING. UTILITIES SHOWN MAY NOT BE IN THE EXACT LOCATION AS NOTED ON THIS SURVEY, BUT ARE LOCATED AS ACCURATELY AS POSSIBLE FROM PAINT MARKINGS ON THE GROUND.  
 2. STORM DRAIN AND SANITARY SEWER LINES SHOWN ARE APPROXIMATE AND BASED ON VISIBLE ABOVE GROUND EVIDENCE AND AS-BUILT MAPS.



**TOPOGRAPHIC SURVEY**



## **APPENDIX D. Development Plan**





Owner:  
 John William DeCosta Profit Sharing Plan  
 John William DeCosta, Trustee  
 16365 Boones Ferry Rd  
 Lake Oswego, OR 97035  
 PH: 503-702-0856

Engineer:  
 Theta Engineering  
 PO Box 1345  
 Lake Oswego, OR 97035  
 PH: (503) 481-8822

Legal: 2S 1E 24BC TL 400 & 500

Zoning: R-10

Water: City of West Linn

Sewer: City of West Linn

Street Tree:  
 Red Sunset Maple

Contours: CESNW

Site Area: 85,367 S.F.

**DENSITY CALCULATIONS:**

Gross Site Area: 85,367 square feet.

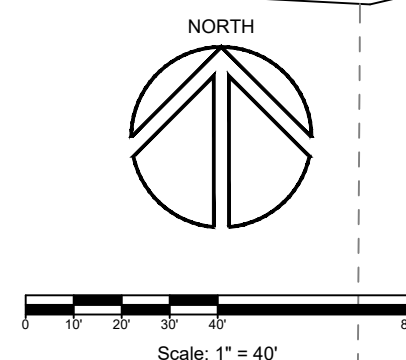
Type I & II Lands: 1,946 square feet.

ROW Dedication & Flag Strip 10,626 sq. ft.

Net Site Type III & IV Area: 72,796 sq. ft.

Maximum Density @ 1 Unit Per 10,000 sq. ft. = 7 lots.

Minimum Density @ 80%: 6 Units. 6 Lots are proposed.



REGISTERED PROFESSIONAL  
 ENGINEER  
 7120  
 OREGON  
 BRUCE D. GOLDSON  
 July 16, 1971  
 EXPIRES: 06/30/2019  
 SIGNATURE DATE: 9/8/18

DESIGNED: REG			
DRAWN: REG			
SCALE: 1" = 40'			
DATE: September 2018			
FILE: 16-ICN-103	DATE	NO.	REVISION

Richard E. Givens, Planning Consultant  
 18680 Sunblaze Dr.  
 Oregon City, OR 97045  
 PH: (503) 479-0097

APPLICANT: Icon Construction & Development, LLC  
 1980 Willamette Falls Drive, Suite 200  
 West Linn, OR 97068  
 PH: (503) 657-0406

**Trillium Creek  
 Tentative Plan**