CITY OF KIRKLAND
Planning and Building Department
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ADVISORY REPORT
FINDINGS, CONCLUSIONS, AND RECOMMENDATIONS

To: Kirkland Hearing Examiner

From: *Susan Lauinger* Susan Lauinger, Associate Planner

Eric R. Shields, AICP, Planning Director

Date: **November 5th 2015**

File: **SUB15-00615**

Hearing Date and Place: City Hall Council Chambers
9 a.m.
123 Fifth Avenue, Kirkland

I. INTRODUCTION

A. APPLICATION

1. Applicant: Hans Christiansen on behalf of Toll WA LP.
2. Site Location: Three parcels including one vacant parcel (parcel number: 3840700758), 7922 NE 125th Street, and 12432 Juanita Drive NE (See Attachment 1).
3. Request: Subdivide 3 existing parcels, totaling 3.36 acres, into 20 single-family lots. The properties are located in an RSA 8 zone. A lot line alteration is being processed concurrently with this application and will result in a smaller parcel for the existing home at 7922 NE 125th Street. The home at 12432 Juanita Drive will be demolished. Access will be provided via two existing streets: NE 125th Street and 80th Avenue NE. Additionally, two new roads will be built to provide internal access for the project, both dead-ending near the north property line. One will be built as a dedicated right of way and the other will be located within a private access tract (see Attachment 2).
4. Review Process: Process IIA, Hearing Examiner conducts public hearing and makes final decision on Preliminary Subdivision. A Final Subdivision application will be reviewed and, if consistent with the approved preliminary subdivision, approved by the City Council.
5. Summary of Key Issues and Conclusions: The key issues for this preliminary plat application are the right-of-way improvements and compliance with tree retention requirements.

B. RECOMMENDATIONS

1. Based on Statements of Fact and Conclusions (Section II), and Attachments in this report, we recommend approval of this application subject to the following conditions:

2. This application is subject to the applicable requirements contained in the Kirkland Municipal Code, Zoning Code, and Building and Fire Code. It is the responsibility of the applicant to ensure compliance with the various provisions contained in these ordinances. Attachment 3, Development Standards, is provided in this report to familiarize the applicant with some of the additional development regulations. This attachment does not include all of the additional regulations. When a condition of approval conflicts with a development regulation in Attachment 3, the condition of approval shall be followed (see Conclusion II.E.1.c).

3. Follow the recommendations in the geotechnical report by Associated Earth Sciences found as Attachment 4 including obtaining an update to the report for grading on site (see Conclusion II.A.1.b).

4. Trees shall not be removed or altered following preliminary plat approval except as approved by the Planning Department. Attachment 3, Development Standards, contains specific information concerning tree retention requirements. Additionally, the applicant shall implement the following recommendations of the Planning Official (see Conclusion II.F.5.b):

    a. Trees numbered 5531; 5545; 5555; 5822; and 5934 shall be retained throughout the development process and must be protected per the standards indicated in the arborist report for the duration of construction activities (see Attachment 5).

    b. Trees numbered 5469; 5490; 5491; 5556; 5544; 5841; 5817; 5805; and 5799 shall be protected during construction per the standards indicated in the arborist report, and should be retained if feasible. Removal of these trees may be allowed in order to minimize potential hazards to life or property. During construction activities, if a certified arborist recommends removal of any of these trees, Planning Official approval is required prior to removal. All right-of-way trees and tree number 5145 shall be retained if feasible.

    c. All other onsite trees that are not called out by tree number in the previous sections may be removed with either an approved land surface modification or building permit (refer to the tree chart, Attachment 3).

    d. The proposed rockery on Lot 15 shall be moved 5 feet to the south to reduce impacts to the neighboring trees to the north and to minimize potential hazards to life or property. If alternative protection measures for these trees are approved by the Planning Official, then the rockery may remain as shown in the plan.

    e. With each building permit submittal, the applicant shall include supplemental trees to meet the tree density requirement of 30 tree credits per acre for each lot, as required by KZC 95.33.

5. Prior to recording the subdivision, the applicant shall:

    a. Dedicate to the City of Kirkland 12 feet of property frontage along Juanita Drive NE and 12 feet along NE 125th Street as shown on Attachment 2 (see Conclusion II.F.1.b)

    b. Dedicate to the City of Kirkland 45 feet for a new interior right of way as shown on Attachment 2 (see Conclusion II.F.1.b).

c. Install the required improvements as described in Attachment 3 and as follows (see Conclusions in II.F.2.b and II.H.2):

1) Starting at the centerline of NE Juanita Drive, install the following half street improvements:

a) An 11-foot drive lane

b) A 2-foot buffer zone

c) A 5-foot bike lane

d) A 5-15 foot wide planter strip/drainage swale

e) A 10-foot wide meandering asphalt pathway (save existing trees where feasible)

f) Street trees 30-feet on center, allowing for any existing retained trees to be included as street trees.

2) Along the street frontage on 80th Avenue NE including the home at 7922 NE 125th Street, install the following half-street improvements:

a) Widen the street to 28 feet as measured from face of existing curb on the east side of the street to the new curb face on the west side of the street.

b) Install storm drainage, vertical curb and gutter, a 4.5-foot wide planter strip with street trees 30 feet on-center, and a 5-foot wide sidewalk.

c) Approved modification for 7922 NE 125th Street: The sidewalk along the front of the property, at the southern end, may be placed against the curb, and meandered to retain existing trees. The street improvements may be encompassed in a public right-of-way improvement easement.

3) Along NE 125th Street right of way:

a) Dedicate to the City of Kirkland 12 feet of right of way except along the frontage of 7922 NE 125th Street.

b) Widen the street to 24 feet as measured from face of existing curb on the south side of the street to the new curb face on the north side of the street (including the frontage along the home at 7922 NE 125th Street)

c) Install storm drainage, vertical curb and gutter, a 4.5-foot planter strip with street trees 30 feet on-center, and a 5-foot wide sidewalk.

d) Extend the improvements to the west end of the existing street to finish off the street. The sidewalk shall connect to the pathway at the end of the street that connects to the sidewalk on Juanita Dr. NE.

e) Approved modification for 7922 NE 125th Street: The sidewalk along the frontage of the property may be placed against the curb due to the location of the existing home and driveway slope. Said street improvements may be encompassed in a public right-of-

way improvement easement.

4) Improve the new 45-foot wide interior access right of way as follows:

a) Extend the new right of way from NE 125th to the north property line and design it in such a way that it can be improved in the future to be extended to connect with: NE 126th Street, NE 126th Place, and 80th Avenue NE.

b) Pave 24-foot wide with curb and gutter. A 5-foot wide sidewalk with landscape strip shall be installed along all lot frontages with street trees 30 feet on-center along both sides, or eliminate sidewalk on one side of the street and participate in the sidewalk in-lieu program as recommended by the Public Works Department.

c) Install a temporary vehicular turn around "T" at the north end of the street.

5) Prior to installing these improvements, plans must be submitted for approval by the Department of Public Works.

6) Prior to recording the final plat, the Lot Line Alteration (LLA15-01480) shall be recorded (See Conclusion II.F.4.b).

II. FINDINGS OF FACT AND CONCLUSIONS

A. SITE DESCRIPTION

1. Site Development and Zoning:

Facts:

a. Size: 3.36 acres (146,473 square feet).

b. Land Use: Two single family homes currently exist on the subject property. The home located at 7922 NE 125th Street will be retained via a lot line alteration (see Attachment 2, page 8 for LLA15-01480), the other home at 12432 Juanita Drive NE will be demolished.

c. Zoning: RSA 8; a low density zone, allowing 8 dwelling units per acre and a minimum lot size of 3,800 square feet.

d. Terrain and Vegetation:

1) The site is gently sloped downward to the west with an overall vertical drop of approximately 40 feet over a distance of 569 linear feet. The City's sensitive area maps do not indicate unstable slopes. Additionally, no environmentally sensitive areas were found on the property such as wetlands or streams.

2) The applicant has obtained a geotechnical evaluation prepared by a qualified Geotechnical Engineer, (see Attachment 4).

3) The geotechnical report indicates that landslide potential is low. It also contains several recommendations for developing the subject property using geologically safe methods. No grading plans were available at the time the report was written.

4) The site is heavily treed throughout with the exception of the area encompassing a large driveway in the middle of the property. Near the two homes, there is vegetation typical of single family homes such as shrubs and gardens.

5) An arborist report was submitted with the application and 269 trees on the Radke property, 18 right of way trees, and all neighboring trees with overhanging driplines were evaluated in combination with the development impacts. See further discussion on trees in section II.F.5 of this report. See Attachment 5 for the arborist report.

b. Conclusions: Terrain is not a significant factor in this application. The geotechnical report recommendation shall be followed in all phases of development, including obtaining an update to the geotechnical report for grading on site. Trees are a significant factor on this site and tree retention is discussed further in section II.F.5 and II.B.

2. Neighboring Development and Zoning:

a. Facts: All surrounding properties are zoned RSA 8, low density residential.

1) The properties to the south, and east are developed with single family homes and have an RSA 8 zoning designation.

2) The property to the north contains one single family home and is also in the RSA 8 zone. This property has potential for further division.

3) To the east is Juanita Drive, Big Finn Hill Park, and a single family development with homes zoned RSA 4.

b. Conclusion: Zoning and neighboring development are not significant factors in this application because they have similar density requirements as the proposal.

B. PUBLIC COMMENT

1. Facts:

a. Eight public comments were received during the comment period (See Attachment 6). The comments submitted address the following general areas of concern:

Density: Concern that too many homes will be built on the subject property and the property is not large enough to support 20 new homes.

Transportation & Traffic:

- Request for a traffic circle at 80th and 125th;
- Request for the creation of a temporary construction access off of Juanita Drive;
- Traffic volumes, and noise complaints;
- Sidewalks needed for school children;
- Questions regarding the street widths for emergency services

Storm Water Detention: Questions about the storm water vault tract, including the request to plant hedges and a fence around the area that houses the vault.

Schools: Impacts to schools in the neighborhood due to the increase in houses by the Radke development.

Tree Retention: Removal of too many trees

b. Per 197-11-355 of the Washington Administrative Code (WAC) the comment period for the preliminary plat was combined with the SEPA comment period. Many of the public comments were addressed as part of the SEPA review including transportation, traffic, emergency access, storm water detention, and school impacts. The City's Public Works Manager and Transportation Engineer have written memos addressing these issues, which can be found in the SEPA materials (see Enclosures 7 and 11 of Attachment 7). The remaining issues, tree retention and density concerns, are addressed below.

c. Density Concerns—Staff Response:

The Radke site is zoned RSA 8 which requires the following density requirements to be met: 8 dwelling units per acre and a minimum lot size of 3,800 square feet. With this zoning designation, the maximum development potential for the Radke property for number of lots is 27 lots. The applicant is proposing 20 lots that meet both the dwelling units per acre and minimum lot size (see Attachment 2). For additional discussion on density, see Section II.F.4.

d. Tree Retention---Staff Response:

Chapter 95 of the Kirkland Zoning Code (KZC) regulates the retention of trees. The development of the Radke site will involve the removal of many of the existing trees. However, the Zoning Code does allow this removal based on the regulations within KZC 95.30 where a "tree density" approach is being used for tree retention based on development activity. A minimum of 30 tree credits per acre is required for each lot.

Existing trees are assigned a "retention value" based on their location on the newly proposed lots and where they can be safely retained within required setback yards. Existing trees within new roads are allowed to be removed for access to the lots. Additionally, the storm water run-off from new impervious surfaces must be collected and conveyed to prevent flooding and damage to surrounding properties. The required storm water detention facility and underground system often necessitate removal of existing trees for proper installation with the natural slope of the land.

Larger developments, such as the Radke subdivision where entirely new systems for utilities and roads must be installed, often require significant soil cuts to attain the correct grades for roads and storm water and other utilities. Existing trees often cannot survive these impacts. However, when existing trees are cut, new trees must be replanted to the code-prescribed density prior to allowing final inspection of the new homes.

Tree Density Requirement: Each newly created lot is required to maintain a tree density of 30 tree credits per acre; below is an example of how this is calculated:

> 5,900 SF lot (Example lot size)/43,560 SF (one acre) = 0.135 X 30 (tree credits) = 4.06 trees, rounded up to 5 trees.

This example shows that if a lot has 5,900 SF and no existing trees are retained, 5 new trees are required to be planted on that lot. Each new lot will follow this method. If existing trees are retained, they are given a value based on the diameter of the tree (see KZC Table 95.33.1). As an example, an existing 16" diameter tree would be worth 4 tree credits.

While many trees will be removed as part of this application, the City seeks to maintain the tree canopy by requiring the replanting of new trees that will eventually take the place of the existing trees.

2. Conclusions: The City has responded to the public comment on this application. Comments submitted have been collected and addressed either through SEPA review or through the subdivision process. The density proposed for the Radke Subdivision meets the requirements of the Kirkland Municipal Code and Kirkland Zoning Code. The tree retention plan for the Radke proposal is discussed in Section II.F.5.

C. STATE ENVIRONMENTAL POLICY ACT (SEPA)

1. Facts: A Determination of Nonsignificance (DNS) was issued on August 20, 2015. The Environmental Checklist, Determination, and staff analysis are included as Attachment 7. No appeals of the City's determination were received.

2. Conclusion: SEPA requirements have been fulfilled by the City and the applicant.

D. CONCURRENCY

1. Facts: The Public Works Department has reviewed the application for concurrency. A concurrency test was passed for water, sewer and traffic on January 15, 2015.

2. Conclusion: Concurrency requirements have been satisfied by the applicant and the City.

E. APPROVAL CRITERIA

1. PRELIMINARY PLATS

   a. Facts:

      1) Municipal Code section 22.12.230 states that the Hearing Examiner may approve a proposed plat only if:

         a) There are adequate provisions for open spaces, drainage ways, rights-of-way, easements, water supplies, sanitary waste, power service, parks, playgrounds, and schools; and

         b) It will serve the public use and interest and is consistent with the public health, safety, and welfare. The Hearing Examiner shall be guided by the policy and standards and may exercise the powers and authority set forth in

RCW 58.17.

2) Zoning Code section 150.65 states that the Hearing Examiner may approve a proposed plat only if:

a) It is consistent with the all applicable development regulations, including but not limited to the Zoning Code and Subdivision Code, and to the extent there is no applicable development regulation, the Comprehensive Plan.

b) It is consistent with the public health, safety and welfare.

b. Conclusion: The proposal complies with Municipal Code section 22.12.230 and Zoning Code section 150.65. It is consistent with the Comprehensive Plan (see Section II.G). With the recommended conditions of approval, it is consistent with the Zoning Code and Subdivision regulations (see Sections I.B, II.E, and II.F) and there are adequate provisions for open spaces, drainage ways, rights-of-way, easements, water supplies, sanitary waste, power service, parks, playgrounds, and schools. It will serve the public use and interest and is consistent with the public health, safety, and welfare because it will add housing stock to the City of Kirkland that is consistent with applicable development regulations.

F. DEVELOPMENT REGULATIONS

1. Provisions for Public and Semi-Public Land

a. Facts: Municipal Code section 22.28.020 states that the City may require dedication of land for school sites, parks and open space, rights-of-way, utilities infrastructure, or other similar uses if this is reasonably necessary as a result of the subdivision. In Attachment 3, Public Works has stated that dedication is necessary to provide additional right of way for this project.

1) Zoning Code section 110.60 states that the Public Works Director may require the applicant to make land available, by dedication, for new rights-of-way and utility infrastructure if this is reasonably necessary as a result of the development activity. The Radke site fronts on three existing rights of way: Juanita Drive, NE 125th Street and 80th Avenue NE.

2) Per Public Works Conditions (see Attachment 3), dedication is required along the following frontages including:

- 12 feet of dedication along NE 125th Street
- 12 feet of dedication along Juanita Drive NE

3) Additionally, a new 45' wide interior access right of way is required to serve the new interior lots, and shall be designed in such a way that it can be improved in the future to be extended to connect to NE 126th Street, NE 126th Place and 80th Ave NE.

b. Conclusion: The applicant is in compliance with Municipal Code section 22.28.020 and Zoning Code section 110.60 if the right of way required by Public Works is dedicated to the City of Kirkland.

2. Right-of-Way Improvements

a. Facts: Municipal Code section 22.28.090 requires the applicant to comply with the requirements of Chapter 110 of the Zoning Code with respect to improvement of adjacent rights-of-way.

1) Zoning Code Chapter 110 establishes right-of-way improvement requirements.

2) Sections 110.10 and 110.25 require the applicant to make half street improvements in rights-of-way abutting the subject property.

3) The subject property abuts Juanita Drive. KZC Section 110.30-110.50 establishes that the street must be improved with half street improvements along the frontage of this project consistent with the City's Master Plan for Juanita Drive. As discussed in item II.F.1, dedication of 12 feet of right of way is required to install the following improvements, starting at the centerline of Juanita Drive:

- An 11-foot drive lane
- A 2-foot buffer zone
- 5 feet of bike lane
- A 5-15 foot wide planter strip/drainage swale
- A 10 foot wide meandering asphalt pathway (save existing trees where feasible)
- Street trees 30 feet on center (allowing the use of existing retained trees in place of new street trees)

4) The subject property abuts NE 125th St. The Public Works Department, based on KZC Section 110.30-110.50, establishes that this street must be improved with the following improvements:

(a) Along the subdivision frontage (including the home at 7922 125th Ave. NE), widen the street to 24 feet from face of existing curb on the south side of the street to the new curb face on the north side of the street.

(b) Storm drainage, vertical curb and gutter, a 4.5 foot planter strip with street trees 30 feet on-center, and a 5 foot wide sidewalk.

(c) The street improvements should extend to the west end of the existing street and finish off the street. The sidewalk shall connect to the pathway at the end of the street and to the new sidewalk along the front of the subdivision.

(d) Dedication of 12 feet of right-of-way is required to encompass the new improvements with the exception of frontage along 7922 NE 125th St. (see below).

(e) Public Works approved a modification for 7922 NE 125th St (see Attachment 3): The sidewalk along the

front of the property may be placed against the curb due to the location of the existing home and driveway slope. The said street improvements can be encompassed in a public right-of-way improvement easement.

5) The subject property abuts 80th Ave NE. The Public Works Department, based on KZC Section 110.30-110.50, establishes that this street must be improved with the following:

(a) Along the subdivision frontage (including the home at 7922 125th Ave. NE), widen the street to 28 feet from face of existing curb on the east side of the street to the new curb face on the west side of the street.

(b) Storm drainage, vertical curb and gutter, a 4.5 foot planter strip with street trees 30 feet on-center, and a 5 foot wide sidewalk.

(c) The sidewalk along the frontage of 7922 125th Ave. NE can be meandered as needed to save the existing trees (one tree near the near the north property line of 7922 may need to be removed).

(5) A new interior access road is required to be dedicated to serve the new lots as discussed above. The Public Works Department, based on KZC Section 110.30-110.50, establishes that this street must be improved with the following:

(a) The new interior access road shall extend from NE 125th to the north property line and be designed in such a way that it can be improved in the future to be extended to connect with, NE 126th Street, NE 126th Place, and 80th Ave. NE.

(b) The interior access road shall be encompassed in a 45-foot minimum right-of-way.

(c) The interior roads shall be paved 24 feet wide with curb and gutter and landscape strip with street trees 30 foot on-center along both sides. A 5 foot wide sidewalk shall be installed along all lots frontages.

(d) Install a temporary vehicular turn around “tee” at the north end of the street.

(e) This road does qualify for the Sidewalk Construction-in-lieu Program as outlined in chapter 110.70.6 of the Kirkland Zoning Code. If the applicant so chooses, a sidewalk on one side of the street and the underlying right-of-way dedication can be eliminated along this road and the developer can construct off-site pedestrian improvements near one of the neighborhood schools or another high use pedestrian area as determined by the Public Works Department The Public Works recommends that the sidewalk on the east side of the street be deleted,

but will make the final decision after meeting with the developer and reviewing the final engineering plans.

(6) The applicant submitted a Lot Line Alteration (file no. LLA15-01480), which excludes parcel A (7922 NE 125th Street) from the subdivision application (see Attachment 2, page 8). However, the lot line alteration will not be recorded until after the preliminary plat approval and is therefore per KZC definition, part of the subject property during preliminary plat approval.

The applicant has agreed to install 5-foot wide sidewalks on the right of way frontage along 80th Ave NE and NE 125th Street (see Attachment 8). Public Works has agreed to modify right-of way-standards to accommodate the existing driveway grades for the home and will allow the sidewalk to be placed within a public right of way easement. Right of way dedication will not be required along the frontage at 7922 NE 125th St. (See Section II.F.4.b)

b. Conclusions: Pursuant to Chapter 110 with respect to improving adjacent rights of way, the applicant should improve Juanita Drive NE, NE 125th Street and 80th Avenue NE, and the new interior access rights-of-way as described in the Public Works conditions in Attachment 3 and as described above.

3. Vehicular Access Easements or Tracts

a. Facts: Municipal Code sections 22.28.110 and 22.28.130 establish that if vehicular access within the plat is provided by means other than rights-of-way, the plat must establish easements or tracts, compliant with Zoning Code Section 105.10, which will provide the legal right of access to each of the lots served.

1) Zoning Code section 105.10 establishes dimensional standards for vehicular access easements or tracts. Easements or tracts which serve 1-4 lots must be 21 feet wide and contain a paved surface 16 feet in width.

2) The applicant is proposing a 25-foot wide access easement with 24-feet of pavement and a 6" vertical curb on both sides of the road to serve lots 1-6. This exceeds the standards established in KZC 105.10 and is accepted the Public Works Department.

b. Conclusion: The proposed vehicular access tract complies with KZC Section 105.10.

4. General Lot Layout and Site Development Standards

a. Facts: Municipal Code section 22.28.030 requires that all lots meet the minimum size requirements as established for the property in the Kirkland Zoning Code or other regulatory documents. The fundamental site development standards pertaining to single family development in an RSA zone are set forth in Zoning Code section 15.10.030.

1) The Radke property is zoned RSA 8, which allows 8 dwelling

units per acre and a minimum lot size of 3,800 square feet per lot. Road dedication and vehicular access easements or tracts may be included in the density calculation, but not in the minimum lot size per dwelling unit.

2) The total lot area of the Radke property is 146,473 square feet, or 3.36 acres: (3.36 acres X 8 dwelling units per acre) is 26.88 lots, which is allowed by code to be rounded up to 27 lots.

3) In addition to dwelling units per acre, the proposal must meet the minimum lot size of 3,800 square feet per lot.

4) The applicant has proposed 20 lots varying is size between 4,421 to 7,950 square feet, averaging around 5,000 square feet in size. No lot is proposed to contain less than 3,800 square feet.

5) A Lot Line Alteration Application was submitted on July 23rd, 2015 that will separate the home at 7922 NE 125th Street from the subdivision proposal. The applicant did not include the 8,218 sq. ft. lot in the total area for the Radke subdivision. However, the alteration will not be recorded until after the preliminary plat approval and per KZC definition (See KZC 5.10.120) is part of the subject property at preliminary plat approval.

6) Municipal Code section 22.28.050 states that lots must be of a shape so that reasonable use and development may be made of the lot. Generally, the depth of the lot should not be more than twice the width of the lot. In no case should a lot be less than fifteen feet in width where it abuts the right-of-way, vehicular access easement or tract providing vehicular access to subject lot.

7) All of the lots are rectangular, and of reasonable shape and size and none are less than 15 feet in width where they abut the right-of-way.

b. Conclusions: The proposal complies with the density requirements of Zoning Code section 15.10.030 and with the lot size and dimension regulations as set forth in Municipal Code section 22.28.050. The Lot Line Alteration encompassing the home at 7922 NE 125th Street is included as part of the subject property for the Preliminary Plat approval. The Lot Line Alteration shall be recorded prior to final plat approval.

5. Natural Features - Significant Vegetation

a. Facts: Pursuant to KMC 22.28.210, the applicant shall design the plat to comply with the tree management requirements set forth in Chapter 95 KZC to maximize the chances of survival of trees and associated vegetation designated for retention, and minimize potential hazards to life or property.

1) Chapter 95.30 requires that the applicant submit an arborist

report evaluating all trees on site and all neighboring trees where driplines overhang the subject property.

2) Chapter 95.30.6.b sets forth requirements for an Integrated Development Plan (IDP) for tree retention. Per the requirements of an integrated plan, all impacts to trees must be indicated at the time of application and an arborist report must be submitted evaluating those impacts.

3) The applicant has submitted an arborist report with an evaluation of 269 trees on the subject property, 18 right of way trees, and all neighboring trees with overhanging driplines (see Attachment 5). Additionally, the applicant has submitted an Integrated Development Plan (IDP) indicating all impacts to these trees including utilities, roads, homes and rockeries (see Attachment 2).

4) The City's arborist has reviewed the plan and arborist report, and has typed the trees according to their retention value set forth in KZC 95.10.13 (see Attachment 3).

5) Based on the tree retention plan information submitted by the applicant and the City Arborist review, the following trees are high retention value trees: 5531; 5545; 5555; 5822; and 5934.

6) The following trees are moderate retention value trees: 5469; 5490; 5491; 5556; 5544; 5841; 5817; 5805; and 5799.

7) Pursuant to 95.10.13 and 95.30.6.b, high retention value trees must be retained throughout the development process and moderate retention value trees should be retained if feasible.

8) Per Public Works standards, all right of way trees should be retained if feasible to do so safely when installing frontage improvements. All right-of-way trees have been evaluated by the applicant's arborist and that report has been reviewed by the City's Arborist.

9) KZC Chapter 95.30.4 requires that the limits of disturbance be set for neighboring trees where driplines overhang the subject property. Trees located to the north of the subject property have overhanging driplines: tree numbers #5464, 6097, 6098, 60940121, and 60950120. Based on the City Arborist recommendation, the proposed rockery on Lot 15 should be moved southward approximately 5 feet to provide an adequate root zone for the neighbor's healthy trees (see Attachment 3).

10) KZC 95.33 establishes tree density requirements for subdivisions where 30 tree credits are required per lot. When existing trees cannot meet tree density, supplemental trees must be replanted to meet this density for each lot. The IDP indicates that most of trees will be removed with this project with the exception of the high retention value trees and possibly the moderate retention value trees.

b. Conclusions: The applicant's Integrated Development Plan (IDP) for tree retention is acceptable with the following conditions:

1) Trees numbered 5531; 5545; 5555; 5822; and 5934 shall be retained throughout the development process and must be protected per the standards indicated in the arborist report for the duration of construction activities (see Attachment 5).

2) Trees numbered 5469; 5490; 5491; 5556; 5544; 5841; 5817; 5805; and 5799 shall be protected during construction per the standards indicated in the arborist report, and should be retained if feasible. Removal of these trees may be allowed to minimize potential hazards to life or property. During construction activities, if a certified arborist recommends removal of any of these trees, Planning Official approval should be required prior to removal. All right of way trees and tree number 5145 should be retained if feasible to do so while minimizing potential hazards to life or property.

3) All other onsite trees that are not called out by tree number in the previous sections may be removed with either an approved land surface modification or building permit (refer to the tree chart, Attachment 3).

4) The proposed rockery on Lot 15 should be moved 5 feet to the south to reduce impact to the neighboring trees to the north and minimize potential hazards to life or property. If alternative protection measures for these trees are approved by the Planning Official, then the rockery should be allowed to remain as shown in the plan.

5) With each building permit submittal, include supplemental trees to meet tree density requirements as required by KZC 95.33.

G. COMPREHENSIVE PLAN

1. Fact: The subject property is located within the Finn Hill neighborhood. Table LU-3 on page VI-7 of the Comprehensive Plan designates the subject property for Low Density Residential uses with 8-9 dwelling units per acre allowed.

2. Conclusion: The proposal complies with the Kirkland Comprehensive Plan. See section II.F.4 of this report for density requirements.

H. DEVELOPMENT STANDARDS

1. Fact: Additional comments and requirements placed on the project are found on the Development Standards, Attachment 3.

2. Conclusion: The applicant should follow the requirements set forth in Attachment 3.

III. SUBSEQUENT MODIFICATIONS

Modifications to the approval may be requested and reviewed pursuant to the applicable modification procedures and criteria in effect at the time of the requested modification.

IV. APPEALS AND JUDICIAL REVIEW

The following is a summary of the deadlines and procedures for appeals. Any person wishing to file or respond to an appeal should contact the Planning Department for further procedural information.

A. APPEALS

Appeal to City Council:

Section 150.80 of the Zoning Code allows the Hearing Examiner's decision to be appealed by the applicant and any person who submitted written or oral testimony or comments to the Hearing Examiner. A party who signed a petition may not appeal unless such party also submitted independent written comments or information. The appeal must be in writing and must be delivered, along with any fees set by ordinance, to the Planning Department by 5:00 p.m., fourteen (14) calendar days following the postmarked date of distribution of the Hearing Examiner's decision on the application.

B. JUDICIAL REVIEW

Section 150.130 of the Zoning Code allows the action of the City in granting or denying this zoning permit to be reviewed in King County Superior Court. The petition for review must be filed within 21 calendar days of the issuance of the final land use decision by the City.

V. LAPSE OF APPROVAL

Under KZC 150.135:

The applicant must begin construction or submit to the City a complete building permit application for the development activity, use of land or other actions approved under this chapter within five (5) years after the final approval of the City of Kirkland on the matter, or the decision becomes void; provided, however, that in the event judicial review is initiated per KZC 150.130, the running of the five (5) years is tolled for any period of time during which a court order in said judicial review proceeding prohibits the required development activity, use of land, or other actions.

The applicant must substantially complete construction for the development activity, use of land, or other actions approved under this chapter and complete the applicable conditions listed on the notice of decision within nine (9) years after the final approval on the matter, or the decision becomes void.

Under KMC 22.16.010 Final Plat – Submittal – Time limits:

If the Final Plat is not submitted to the City Council within the time limits set forth in RCW 58.17.140 it shall be void.

VI. APPENDICES

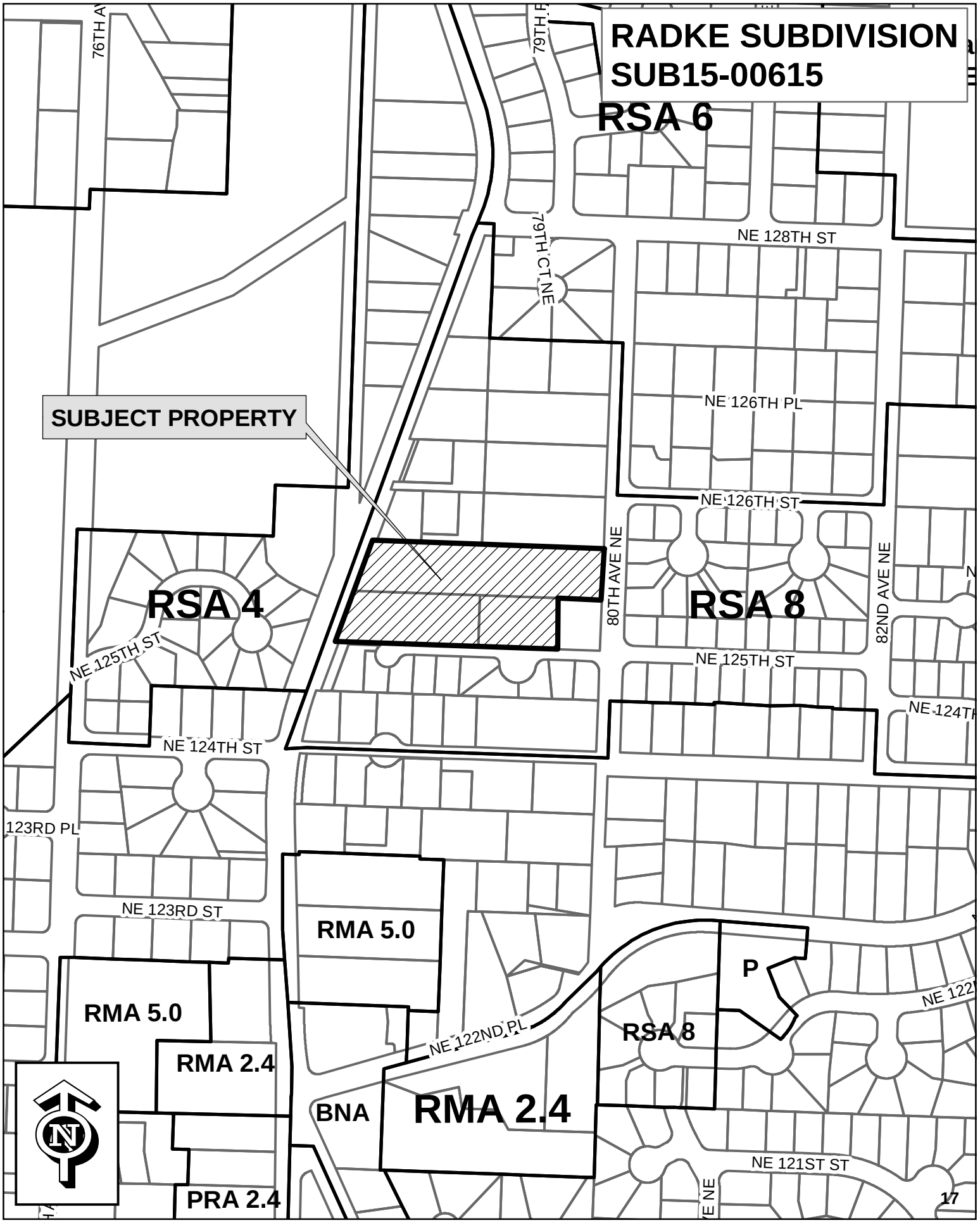
Attachments 1 through 8 are attached.

1. Vicinity Map
2. Preliminary Plat Plans; Preliminary Engineering; IDP plans; LLA plan (8 pages)
3. Development Standards
4. Geotechnical Report by Associated Earth Sciences date November 6th 2014
5. Arborist Reports, Brian Gilles dated November 21, 2014 amended from March 23,2015
6. Public Comment letters (combined)
7. SEPA materials including: DNS, memo and all enclosures
8. Sidewalk Improvements at 7922 NE 125th St.

VII. PARTIES OF RECORD

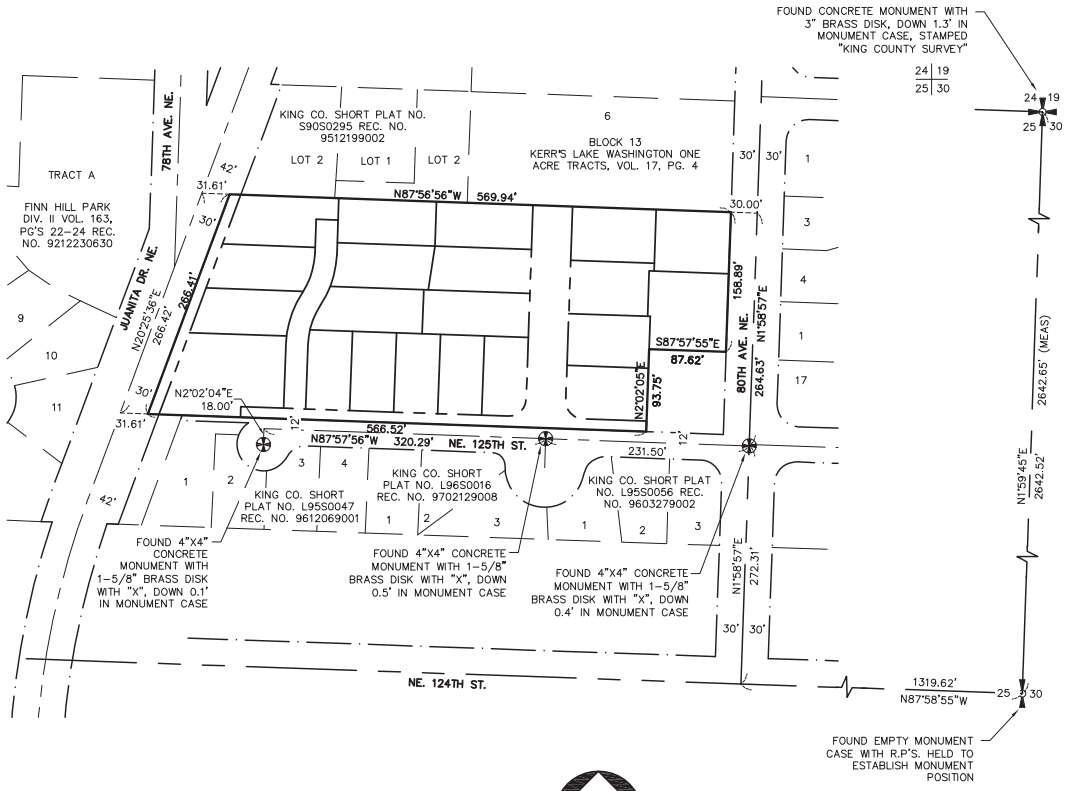
Applicant
Persons submitting written comments before or during the hearing
Planning and Building Department
Department of Public Works

A written decision will be issued by the Hearing Examiner within eight calendar days of the date of the open record hearing.


RADKE SUBDIVISION
SUB15-00615
RSA 6
SUBJECT PROPERTY
RSA 4
RSA 8
RMA 5.0
RMA 5.0
RMA 2.4
RMA 2.4
BNA
PRA 2.4
P
RSA 8
76TH AVE NE
79TH PL NE
79TH CT NE
NE 128TH ST
NE 126TH PL
NE 126TH ST
80TH AVE NE
82ND AVE NE
NE 125TH ST
NE 125TH ST
NE 124TH ST
123RD PL
NE 123RD ST
NE 122ND PL
NE 121ST ST

RADKE PRELIMINARY PLAT

A PORTION OF THE SW. 1/4 OF THE NE. 1/4
SECTION 25, TOWNSHIP 26 NORTH, RANGE 4 EAST, W.M.,
CITY OF KIRKLAND, KING COUNTY, WASHINGTON



LEGEND:

- FOUND SECTION CORNER MONUMENT AS NOTED
- FOUND QUARTER SECTION CORNER MONUMENT AS NOTED
- FOUND MONUMENT AS NOTED
- FOUND CORNER MONUMENT AS NOTED
- SET 5/8" X 24" REBAR WITH PLASTIC CAP STAMPED "DRS 37555"
- SET PK NAIL WITH 1 1/2" ALUMINUM WASHER STAMPED "DRS 37555"
- ROAD SIGNAGE
- POWER POLE
- CATCH BASIN
- ELECTRIC METER
- TELEPHONE MANHOLE
- DECIDUOUS TREE
- EVERGREEN TREE
- WATER METER
- FIRE HYDRANT
- WATER VALVE
- YARD LIGHT
- STORM LINE
- OP — OVERHEAD POWER
- EDGE OF PAVEMENT
- X — FENCE
- W — WATER LINE
- G — GAS LINE
- UGT — COMMUNICATIONS
- BSBL — BUILDING SETBACK LINE

LEGAL DESCRIPTIONS

PARCEL A:
LOT 7 IN BLOCK 13, AND THAT PORTION OF LOT 7 IN BLOCK 14 OF KERR'S LAKE WASHINGTON ONE ACRE TRACTS, AS PER PLAT RECORDED IN VOLUME 17 OF PLATS, PAGE 4, RECORDS OF KING COUNTY AUDITOR, LYING EASTERLY OF KENMORE-JUANITA ROAD (NOW KNOWN AS JUANITA DRIVE NORTHEAST);

TOGETHER WITH THAT PORTION OF VACATED 78TH AVENUE NORTHEAST LYING BETWEEN SAID LOT 7 IN BLOCK 14 AND KENMORE-JUANITA ROAD (NOW KNOWN AS JUANITA DRIVE NORTHEAST);

PARCEL B:
LOT 8 IN BLOCK 14 OF KERR'S LAKE WASHINGTON ONE ACRE TRACTS, AS PER PLAT RECORDED IN VOLUME 17 OF PLATS, PAGE 4, RECORDS OF KING COUNTY AUDITOR;

TOGETHER WITH THAT PORTION OF VACATED 78TH AVENUE NORTHEAST LYING BETWEEN SAID LOT 8 AND KENMORE-JUANITA ROAD (NOW KNOWN AS JUANITA DRIVE NORTHEAST);

AND TOGETHER WITH LOT 8 IN BLOCK 13 OF KERR'S LAKE WASHINGTON ONE ACRE TRACTS, AS PER PLAT RECORDED IN VOLUME 17 OF PLATS, PAGE 4, RECORDS OF KING COUNTY AUDITOR;

EXCEPT THAT PORTION OF SAID LOT 8 IN BLOCK 13 DESCRIBED AS FOLLOWS;

BEGINNING AT THE SOUTHEAST CORNER OF SAID LOT, SAID CORNER BEING ON THE WEST RIGHT OF WAY MARGIN OF 80TH AVENUE NE.; THENCE N87°57'56"W, ALONG THE SOUTH LINE OF SAID LOT, 87.71 FEET; THENCE N02°02'04"E 93.75 FEET; THENCE S87°57'56"E 87.62 FEET TO THE EAST LINE OF SAID LOT AND SAID WEST MARGIN; THENCE S01°58'57"W, ALONG SAID EAST LINE AND WEST MARGIN, 93.75 FEET TO THE POINT OF BEGINNING.

SITUATE IN THE CITY OF KIRKLAND, COUNTY OF KING, STATE OF WASHINGTON.

TITLE RESTRICTIONS

1. THIS SITE IS SUBJECT TO A NOTICE OF TAP OR CONNECTION CHARGES WHICH HAVE BEEN OR WILL BE DUE IN CONNECTION WITH DEVELOPMENT OR RE-DEVELOPMENT OF THE LAND AS DISCLOSED BY INSTRUMENT RECORDED UNDER RECORDING NUMBER 9207300895.

REFERENCES

1. THE PLAT OF KERR'S LAKE WASHINGTON ONE ACRE TRACTS, RECORDED IN VOLUME 17 OF PLATS, PAGE 4 UNDER RECORDING NUMBER 557768.
2. THE PLAT OF HIDDEN CREST, RECORDED IN VOLUME 95 OF PLATS PAGES 5 THROUGH 7 UNDER RECORDING NUMBER 7212050559.
3. THE PLAT OF OOSTERWYK GARDEN AS RECORDED IN VOLUME 63 OF PLATS, PAGES 37 THROUGH 39 UNDER RECORDING NUMBER 9301201422.

SURVEYOR'S NOTE

1. ALL TITLE INFORMATION SHOWN ON THIS MAP HAS BEEN EXTRACTED FROM CW TITLE INSURANCE COMPANY COMMITMENT FOR TITLE INSURANCE ORDER NUMBER CS-40139761 DATED SEPTEMBER 29, 2014. IN PREPARING THIS MAP, D.R. STRONG CONSULTING ENGINEERS INC. HAS CONDUCTED NO INDEPENDENT TITLE SEARCH NOR IS D.R. STRONG CONSULTING ENGINEERS INC. AWARE OF ANY TITLE ISSUES AFFECTING THE SURVEYED PROPERTY OTHER THAN THOSE SHOWN ON THE MAP AND DISCLOSED BY REFERENCED CW TITLE INSURANCE COMPANY COMMITMENT. D.R. STRONG CONSULTING ENGINEERS INC. HAS RELIED WHOLLY ON CW TITLE COMPANY REPRESENTATIONS OF THE TITLE'S CONDITION TO PREPARE THIS SURVEY AND THEREFORE D.R. STRONG CONSULTING ENGINEERS INC. QUALIFIES THE MAP'S ACCURACY AND COMPLETENESS TO THAT EXTENT.
2. ALL SURVEY CONTROL INDICATED AS "FOUND" WAS RECOVERED FOR THIS PROJECT IN FEBRUARY, 2015.
3. ALL DISTANCES ARE IN FEET.
4. THIS IS A FIELD TRAVERSE SURVEY. A LEICA FIVE SECOND COMBINED ELECTRONIC TOTAL STATION WAS USED TO MEASURE THE ANGULAR AND DISTANCE RELATIONSHIPS BETWEEN THE CONTROLLING MONUMENTATION AS SHOWN. CLOSURE RATIOS OF THE TRAVERSE MET OR EXCEEDED THOSE SPECIFIED IN WAC 332-130-090. ALL MEASURING INSTRUMENTS AND EQUIPMENT ARE MAINTAINED IN ADJUSTMENT ACCORDING TO MANUFACTURER'S SPECIFICATIONS.

NORTH

GRAPHIC SCALE
0 50' 100' 200'
1 INCH = 100 FT.

APPLICANT:

TOLL WA, LP
9720 NE 120TH PLACE, SUITE 100
KIRKLAND, WA. 98034
PH. NO. 425-241-8711
CONTACT: HANS CHRISTIANSEN

BASIS OF BEARINGS:

N01°59'45"E BETWEEN THE MONUMENTS FOUND IN PLACE AT THE EAST QUARTER CORNER AND NORTHEAST SECTION CORNER, SECTION 25-26-4 PER KING COUNTY DEPARTMENT OF PUBLIC WORKS SURVEY BRANCH CONTROL POINTS 494 AND 493, AS DETERMINED FROM GPS OBSERVATIONS PER NAD83-2011 EPOCH 2010.00

TYPICAL BUILDING SETBACKS

UNLESS OTHERWISE NOTED, BUILDING SETBACKS ARE AS FOLLOWS:

FRONT YARD SETBACK:	20 FEET
SIDE YARD SETBACK:	5 FEET
STREET SIDE YARD SETBACK:	5 FEET
REAR SETBACK:	10 FEET

CITY OF KIRKLAND WASHINGTON

SURVEYOR'S CERTIFICATE:

THIS MAP CORRECTLY REPRESENTS A SURVEY, MADE BY ME OR UNDER MY DIRECTION, IN CONFORMANCE WITH THE REQUIREMENTS OF THE SURVEY RECORDING ACT AT THE REQUEST OF TOLL BROTHERS, INC.

37555

STEPHEN J. SCHREI, P.L.S. CERTIFICATE NO.

DRS

D.R. STRONG
CONSULTING ENGINEERS
ENGINEERS PLANNERS SURVEYORS
620 7TH AVENUE KIRKLAND, WA. 98033
O 425.827.3063 F 425.827.3423
www.drstrong.com

STEPHEN J. SCHREI
STATE OF WASHINGTON
37555
REGISTERED
PROFESSIONAL LAND SURVEYOR

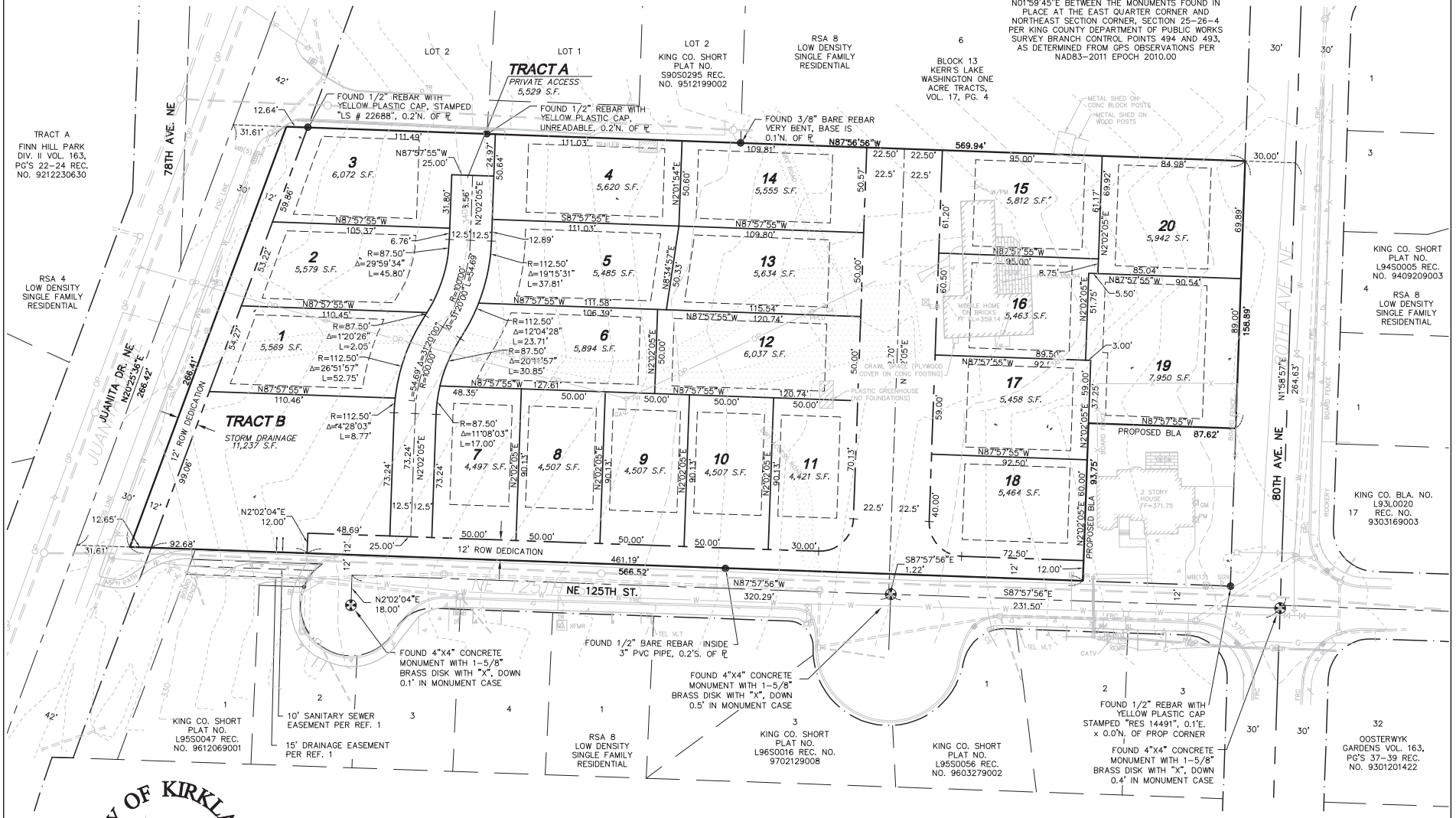
A PORTION OF
THE SOUTHWEST QUARTER OF THE NORTHEST QUARTER OF SECTION 25, TOWNSHIP 26 NORTH, RANGE 4 EAST, W.M.
CITY OF KIRKLAND, KING COUNTY, WASHINGTON

DWN. BY	DATE	JOB NO.
DAS	10/08/15	15012
CHKD. BY	SCALE	SHEET
	1"=100'	1 OF 19

ATTACHMENT 2
Radke SUB15-00615

RADKE PRELIMINARY PLAT

A PORTION OF THE SW. 1/4 OF THE NE. 1/4
SECTION 25, TOWNSHIP 26 NORTH, RANGE 4 EAST, W.M.,
CITY OF KIRKLAND, KING COUNTY, WASHINGTON



VERTICAL DATUM:

NAVD 88 PER CITY OF KING COUNTY VERTICAL CONTROL

BENCHMARK:

KING COUNTY CONTROL POINT NUMBER 493,
FOUND CONCRETE MONUMENT WITH 3" BRASS DISK, DOWN 1.3' IN MONUMENT CASE, STAMPED "KING COUNTY SURVEY" AND THE APPROPRIATE SECTIONS.
AT THE INTERSECTION OF NE. 132ND STREET AND 84TH AVENUE NE. AKA THE NORTHEAST CORNER OF SECTION 25-26-4, ELEVATION=419.90 FEET.

CITY OF KIRKLAND WASHINGTON

DRS
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620 7TH AVENUE KIRKLAND, WA. 98033
O 425.827.3063 F 425.827.2423
www.drstrong.com

STEPHEN J. SCHREI — STATE OF WASHINGTON — 37555 — REGISTERED PROFESSIONAL LAND SURVEYOR

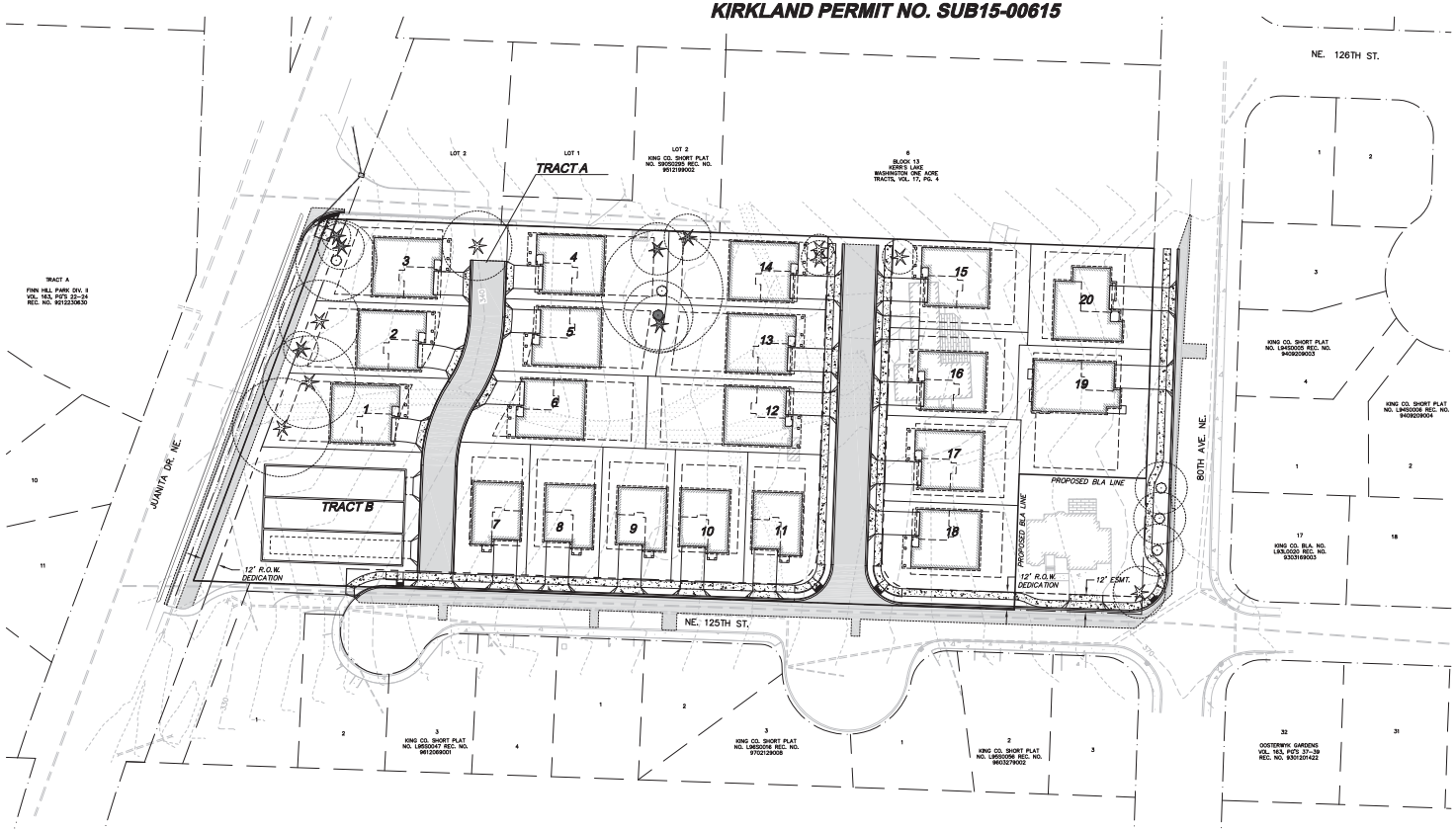
A PORTION OF
THE SOUTHWEST QUARTER OF THE NORTHEST QUARTER
OF SECTION 25, TOWNSHIP 26 NORTH, RANGE 4 EAST, W.M.
CITY OF KIRKLAND, KING COUNTY, WASHINGTON

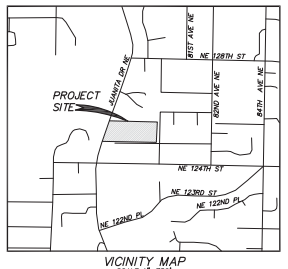
DWN. BY	DATE	JOB NO.
DAS	10/08/15	15012
CHKD. BY	SCALE	SHEET
	1"=40'	2 OF **20**

NE 1/4 SECTION 25, TOWNSHIP 26 N, RANGE 4 E, W.M.

RADKE SUBDIVISION

KIRKLAND PERMIT NO. SUB15-00615





VICINITY MAP
SCALE 1"=750'

TYPICAL BUILDING SETBACKS

UNLESS OTHERWISE NOTED, BUILDING SETBACKS ARE AS FOLLOWS:

FRONT YARD SETBACK:	20 FEET
SIDE YARD SETBACK:	5 FEET
STREET SIDE YARD SETBACK:	5 FEET
REAR YARD SETBACK:	10 FEET

LEGAL DESCRIPTION

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SITUATE IN THE CITY OF KIRKLAND, COUNTY OF KING, STATE OF WASHINGTON.

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VERTICAL DATUM

NAVD 88 PER PER KING COUNTY DEPARTMENT OF PUBLIC WORKS SURVEY BRANCH VERTICAL CONTROL

BENCHMARK

NORTHEAST CORNER OF SECTION 25–26–4, FOUND CONCRETE MONUMENT WITH 3" BRASS DISK STAMPED "KING COUNTY SURVEY", DOWN 1.3' IN MONUMENT CASE AT THE INTERSECTION OF NE. 132ND STREET AND 84TH AVENUE NE. KING COUNTY DEPARTMENT OF PUBLIC WORKS SURVEY BARNCH VERTICAL CONTROL POINT NO. 493. ELEVATION = 419.897 FEET.

PROJECT DESCRIPTION:

ADDRESS OF THE PROPERTY:	7922 NE 125TH STREET & 12432 JUANITA DRIVE NE
PARCEL NUMBERS:	384070–0755, –0758, –0685
EXISTING ZONING:	RSA–8
PROPOSED DWELLING UNITS:	20
ACREAGE:	3.36 ACRES (146,473 S.F.) GROSS
R.O.W. AREA	19,734 S.F.
PROPOSED USE:	SINGLE FAMILY DETACHED HOUSING
SEWER DISTRICT:	NORTHSHORE UTILITY DISTRICT
WATER DISTRICT:	NORTHSHORE UTILITY DISTRICT
SCHOOL DISTRICT:	LAKE WASHINGTON NO. 414
TELEPHONE SERVICE:	VERIZON
POWER SOURCE:	PUGET SOUND ENERGY

PROJECT CONTACTS:

APPLICANT / AGENT	TOLL WA LP 9720 NE 120TH PLACE, SUITE 100 KIRKLAND, WASHINGTON 98034 (425) 825–5344 CONTACT: HANS CHRISTIANSEN HCHRISTIANSEN@TOLLBROTHERSINC.COM
CIVIL ENGINEER	D.R. STRONG CONSULTING ENGINEERS, INC. 620 7TH AVENUE KIRKLAND, WASHINGTON 98033 (425) 827–3063 CONTACT: MAHER A. JOUDI, P.E. MAHER.JOUDI@DRSTRONG.COM
SURVEYOR	D.R. STRONG CONSULTING ENGINEERS, INC. 620 7TH AVENUE KIRKLAND, WASHINGTON 98033 (425) 827–3063 CONTACT: STEPHEN J. SCHREI, P.L.S STEVE.SCHREI@DRSTRONG.COM
ARBORIST	GILLES CONSULTING P.O. BOX 2366 KIRKLAND, WASHINGTON 98033–2366 (425) 822–4994 CONTACT: BRIAN K. GILLES BKGILLES@COMCAST.NET

NORTH

GRAPHIC SCALE
0 20 40 80
1 INCH = 40 FT.

BASIS OF BEARINGS:

N01°59'45"E BETWEEN THE MONUMENTS FOUND IN PLACE AT THE EAST QUARTER CORNER AND NORTHEAST SECTION CORNER, SECTION 25–26–4 PER KING COUNTY DEPARTMENT OF PUBLIC WORKS SURVEY BARNCH CONTROL POINTS 494 AND 493

SHEET INDEX

D.R. STRONG CONSULTING ENGINEERS
ENGINEERS PLANNERS SURVEYORS
620 - 7th AVENUE KIRKLAND, WA 98033
O 425.827.3063 F 425.827.3433

RADKE SUBDIVISION
IDP SUBMITTAL

COVER SHEET
12432 JUANITA DRIVE
KIRKLAND, WASHINGTON

TOLL WA, LP
9720 NE 120TH PLACE, #100
KIRKLAND, WA 98033
(425) 825-5344

10-02-2015

DATE	REVISION	APP
09/18/15	PUBLIC WORKS CONDITIONS	CSC
10/01/15	PARCEL 'A' FRONTAGE WORK	CSC

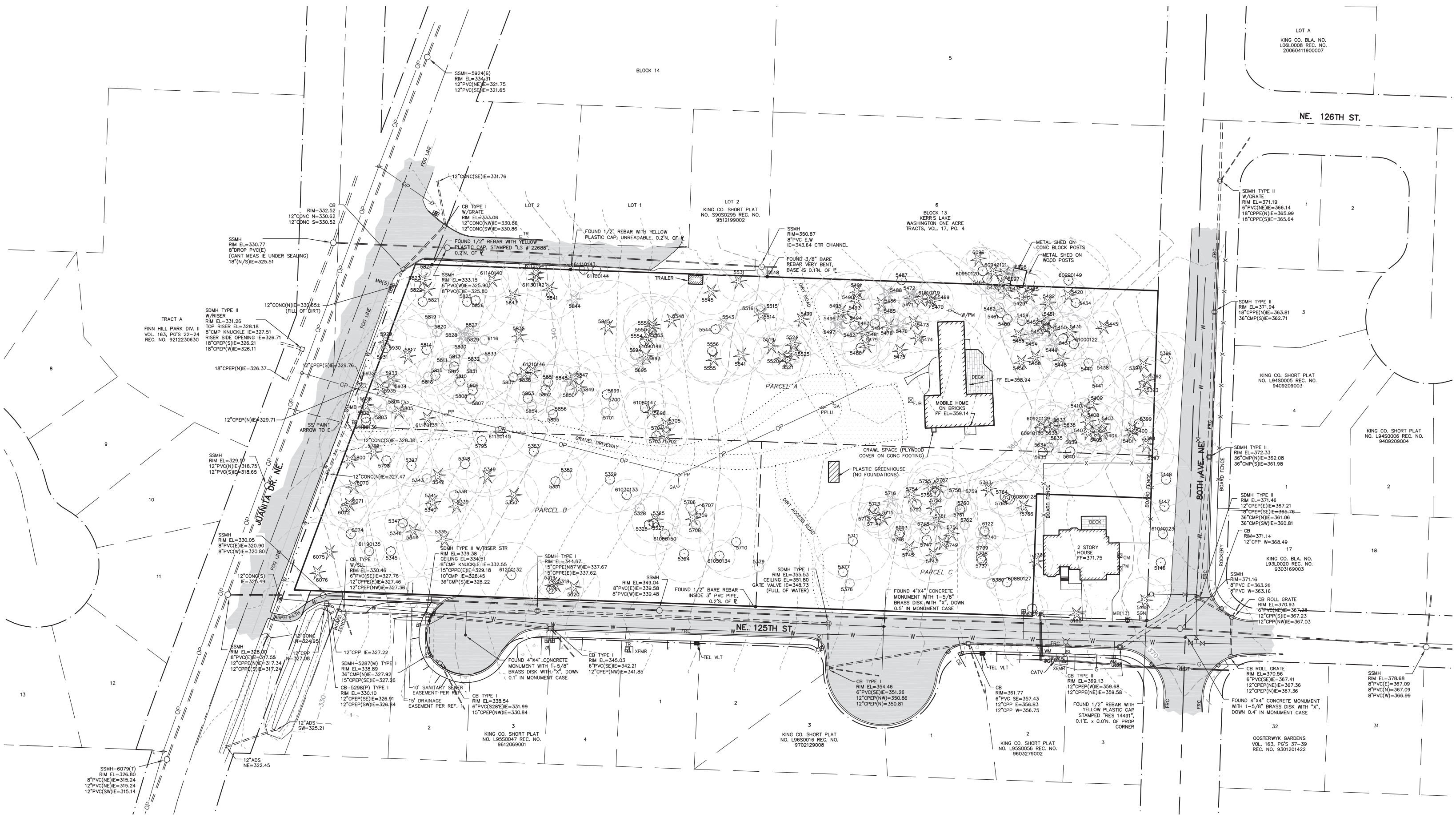
DRAFTED BY: MAJ
DESIGNED BY: MAJ/CSC
PROJECT ENGINEER: MAJ
DATE: 03.20.15
PROJECT NO.: 15012

DRAWING: C1
SHEET: 1 OF 9

NE 1/4 SECTION 25, TOWNSHIP 26 N, RANGE 4 E, W.M.

RADKE SUBDIVISION

KIRKLAND PERMIT NO. SUB15-00615



TREE LEGEND:

- VIABLE TREE (W/ DRIPLINE)
- NON-VIABLE TREE (NO DRIPLINE)

NORTH

GRAPHIC SCALE
0 20 40 80
1 INCH = 40 FT.

BASIS OF BEARINGS:

N01°59'45"E BETWEEN THE MONUMENTS FOUND IN PLACE AT THE EAST QUARTER CORNER AND NORTHEAST SECTION CORNER, SECTION 25-26-4 PER KING COUNTY DEPARTMENT OF PUBLIC WORKS SURVEY BARNCH CONTROL POINTS 494 AND 493

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CONSULTING ENGINEERS
ENGINEERS PLANNERS SURVEYORS
620 - 7th AVENUE KIRKLAND, WA 98033
O 425.827.3063 F 425.827.2423

RADKE SUBDIVISION
IDP SUBMITTAL

EXISTING CONDITIONS

12432 JUANITA DRIVE
KIRKLAND, WASHINGTON

TOLL WA, LP

9720 NE 120TH PLACE, #100
KIRKLAND, WA 98033
(425) 825-5344

CHRISTOPHER S. COENEN
STATE OF WASHINGTON
30195
REGISTERED
PROFESSIONAL ENGINEER
10-02-2015

DATE	REVISION	APR
09/18/15	PUBLIC WORKS CONDITIONS	CSC
10/01/15	PARCEL 'A' FRONTAGE WORK	CSC

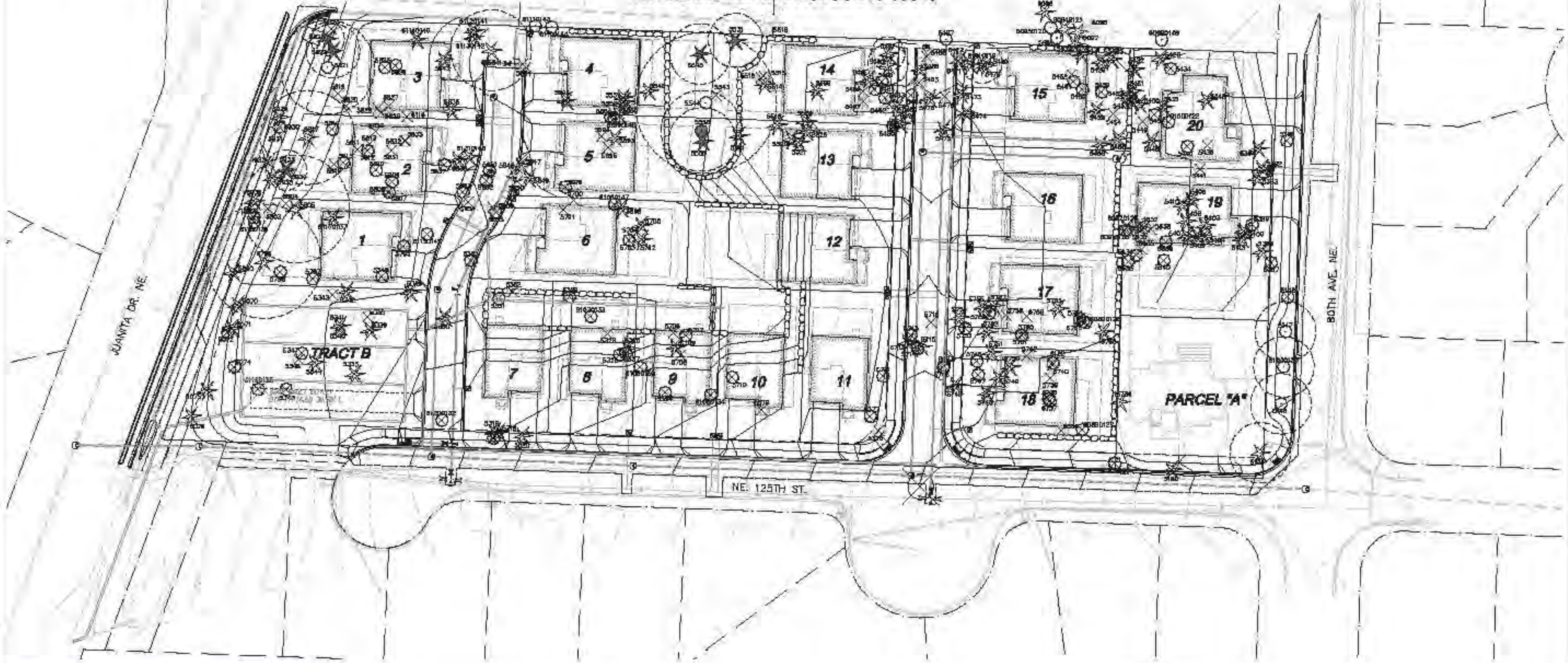
DRAFTED BY: MAJ
DESIGNED BY: MAJ/CSC
PROJECT ENGINEER: MAJ
DATE: 03.20.15
PROJECT NO.: 15012

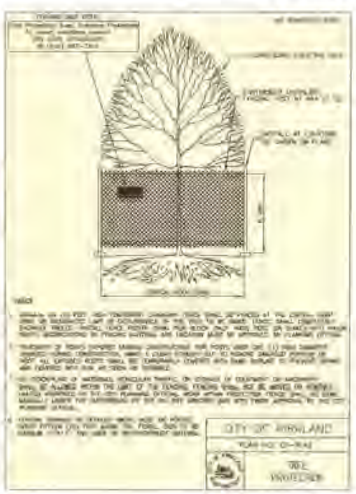
DRAWING: C2
SHEET: 2 OF 9

NE 1/4 SECTION 25, TOWNSHIP 26 N, RANGE 4 E, W.M.

RADKE SUBDIVISION

KIRKLAND PERMIT NO. SUB15-00615





TREE #	SPECIES	DBH (IN)	TREE CREDIT	DRIP LINE RADIUS (FT)	LIMITS OF DISTURBANCE (FT)	CURRENT HEALTH RATING	COMMENT
6031	WESTERN RED CEDAR	25.6	7.0	16	16	EXCELLENT	SAVE
6046	WESTERN RED CEDAR	21.7	8.0	18	18	EXCELLENT	SAVE
2856	WESTERN RED CEDAR	20.8	8.0	20	20	EXCELLENT	SAVE
2858	PACIFIC MADRONE	26.1	10.0	24	24	FAIR	SAVE
6822	DOUGLAS FIR	18.6	8.0	16	16	GOOD	SAVE
6853	DOUGLAS FIR	6.1	1.0	10	10	FAIR	SAVE
6834	DOUGLAS FIR	10.1	1.0	12	12	FAIR	SAVE
5468	WESTERN RED CEDAR	8.5	1.0	12	12	GOOD	RETAIN IF POSSIBLE
5460	WESTERN RED CEDAR	14.2	2.0	12	12	VERY GOOD	RETAIN IF POSSIBLE
5461	WESTERN RED CEDAR	8.5	1.0	10	10	GOOD	RETAIN IF POSSIBLE
5544	BIG LEAF MAPLE	27.2	8.0	42	42	GOOD	RETAIN IF POSSIBLE
5798	DOUGLAS FIR	31.8	11.0	34	34	VERY GOOD	RETAIN IF POSSIBLE
5805	DOUGLAS FIR	25.8	8.0	32	32	GOOD	RETAIN IF POSSIBLE
5817	DOUGLAS FIR	28.5	8.0	38	38	GOOD	RETAIN IF POSSIBLE
6321	BIG LEAF MAPLE	26.4	8.0	38	38	GOOD	RETAIN IF POSSIBLE
6341	DOUGLAS FIR	21.6	6.0	24	24	GOOD	RETAIN IF POSSIBLE

Caption: TREE TABLE

TREE DENSITY REQUIREMENT

THE REQUIRED MINIMUM TREE DENSITY IS 30 TREE CREDITS PER ACRE.

TOTAL LOT AREA = 146,173 S.F. (3.36 AC)

TREE DENSITY REQUIRED = 3.36 X 30 = 101 TREE CREDITS

TREE DENSITY PROVIDED = 36 (SAVED TREES ONLY)

TREE DENSITY REPLACEMENT CREDITS REQUIRED = 65

NOTE:
TREE DENSITY REQUIREMENTS ARE BASED ON PROPOSED PLAT AREA. BECAUSE PARCEL "A" IS EXCLUDED FROM THE PLAT, TREES ON THIS LOT ARE NOT INCLUDED IN CALCULATIONS.

TREE LEGEND

- SAVED TREE W/ TAG NUMBER
- RETAINED TREE IF POSSIBLE W/ TAG NUMBER (CREDIT TO BE DETERMINED AT FINAL HOME INSPECTION)
- TREE TO BE REMOVED
- 1019 NON-VIABLE TREE & TAG NUMBER (DECIDUOUS SHOWN)
- 1016 VIABLE TREE & TAG NUMBER (EVERGREEN SHOWN)
- 81050124 #100 / 124 SURVEY POINT NUMBER / ARBORIST TREE NUMBER

NOTES:

1. TREE LOCATIONS AND TAG NUMBERS PER FIELD SURVEY BY MEAD GILLMAN AND ASSOCIATES.
2. VIABLE, NON-VIABLE AND DRIPLINE DIMENSIONS PER ARBORICAL REPORT PREPARED BY GILLES CONSULTING DATED 1/28/15.

NORTH

GRAPHIC SCALE 0 15 30 60
1 INCH = 30 FT.

BASIS OF BEARINGS:

DRS
D.R. STRONG CONSULTING ENGINEERS

RADKE SUBDIVISION
IDP SUBMITTAL
INTEGRATED TREE PLAN
12432 JUANITA DRIVE KIRKLAND, WASHINGTON

TOLL WA, LP

10-02-2015

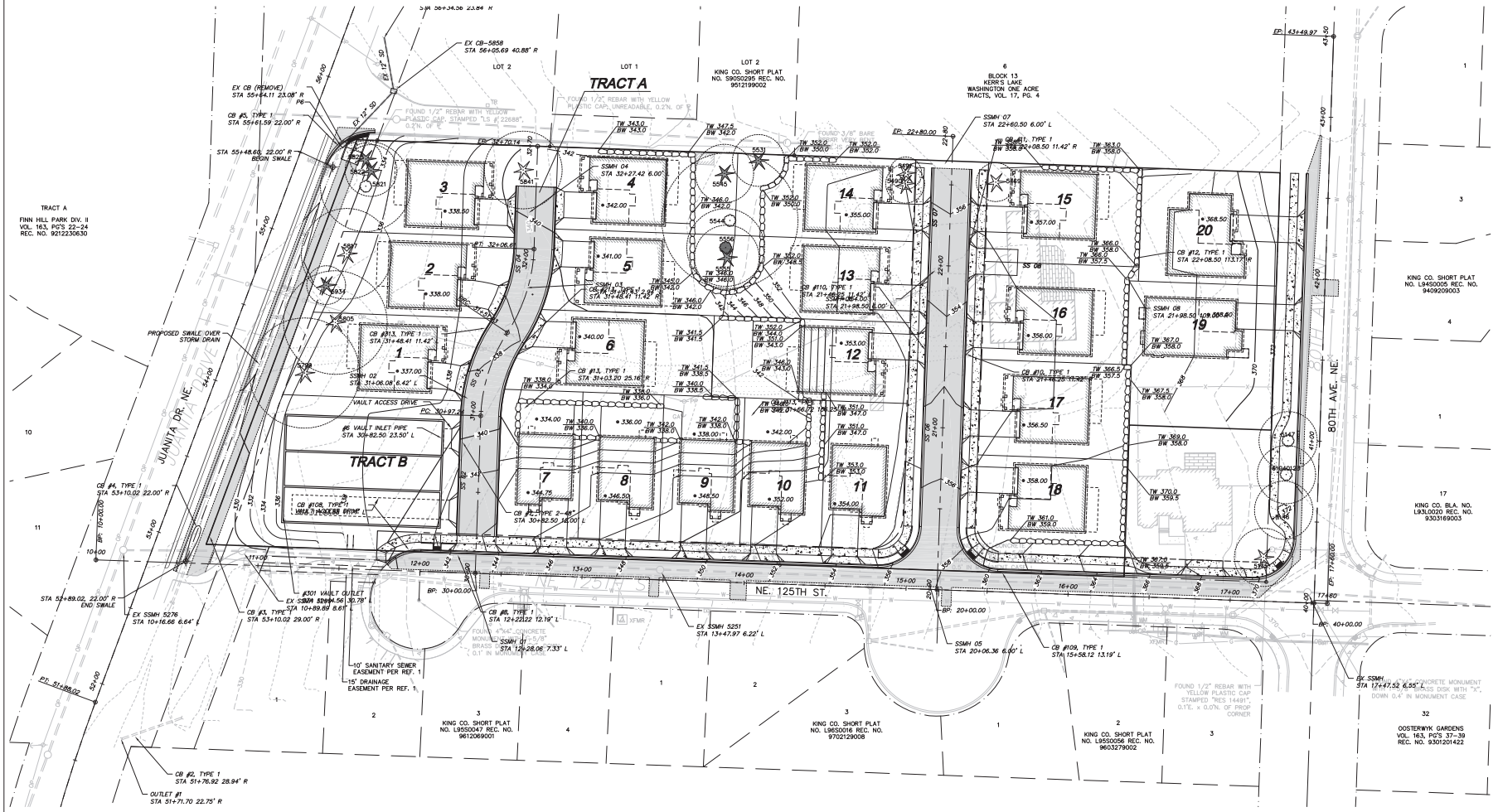
DRAFTED BY: MAJ
DESIGNED BY: MAJ/CSC
PROJECT ENGINEER: MAJ
DATE: 03.20.15
PROJECT NO.: 15012

DRAWING: C3
SHEET: 3 OF 9

NE 1/4 SECTION 25, TOWNSHIP 26 N, RANGE 4 E, W.M.

RADKE SUBDIVISION

KIRKLAND PERMIT NO. SUB15-00615



NORTH

GRAPHIC SCALE
0 15 30 60
1 INCH = 30 FT.

BASIS OF BEARINGS:
N01°59'45"E BETWEEN THE MONUMENTS FOUND IN PLACE AT THE EAST QUARTER CORNER AND NORTHEAST SECTION CORNER, SECTION 25~26~4 PER KING COUNTY DEPARTMENT OF PUBLIC WORKS SURVEY BARNCH CONTROL POINTS 494 AND 493

D.R. STRONG CONSULTING ENGINEERS
ENGINEERS PLANNERS SURVEYORS
620 ~ 7th AVENUE KIRKLAND, WA 98033
O 425.827.3063 F 425.827.3423

RADKE SUBDIVISION
IDP SUBMITTAL

ROAD AND GRADING PLAN
12432 JUANITA DRIVE
KIRKLAND, WASHINGTON

TOLL WA, LP
9720 NE 120TH PLACE, #100
KIRKLAND, WA 98033
(425) 825-5344

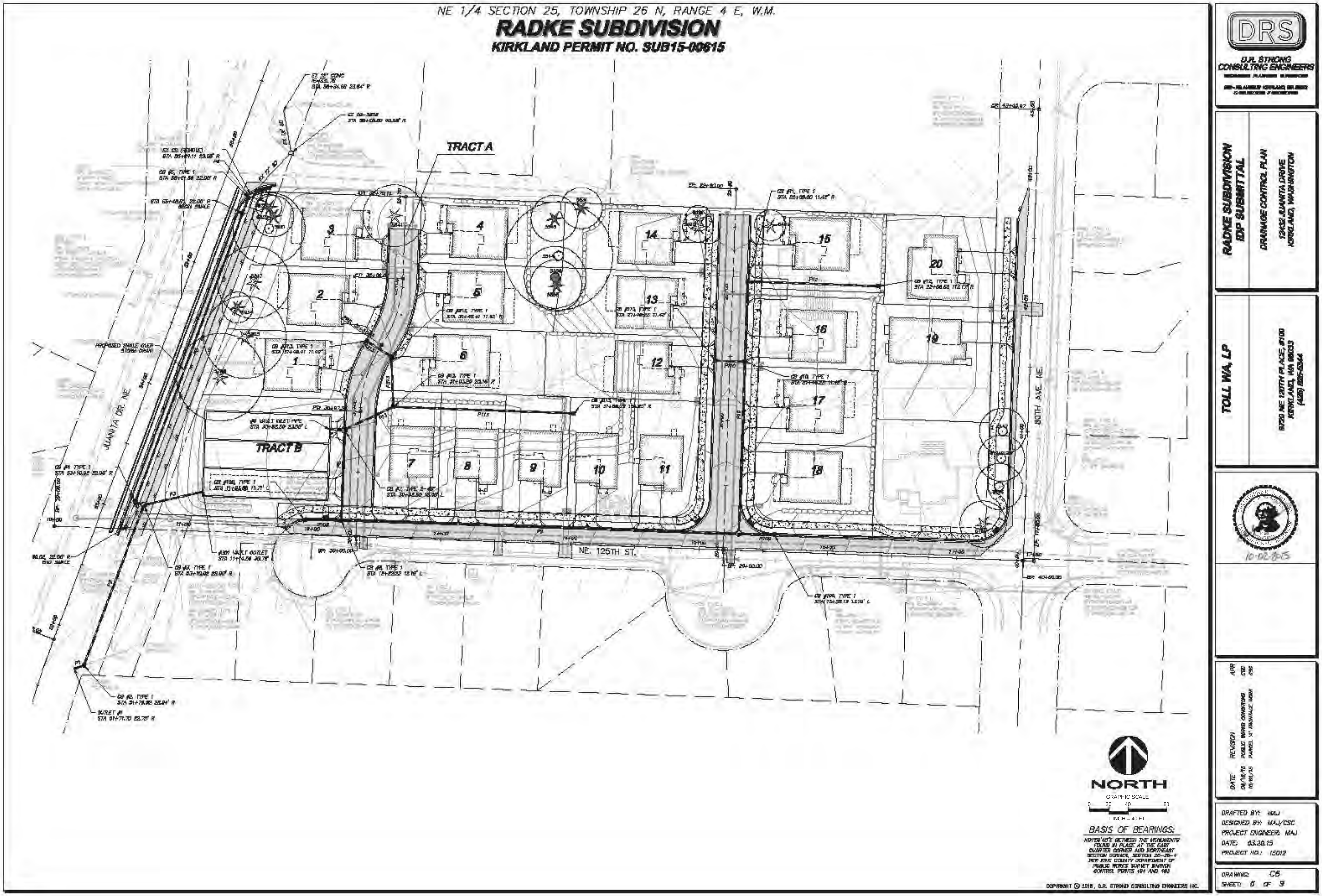
10-02-2015

DATE	REVISION	APR
09/18/15	PUBLIC WORKS CONDITIONS	CSC
10/01/15	PARCEL 'A' FRONTAGE WORK	CSC

DRAFTED BY: MAJ
DESIGNED BY: MAJ/CSC
PROJECT ENGINEER: MAJ
DATE: 03.20.15
PROJECT NO.: 15012

DRAWING: C4
SHEET: 4 OF 9

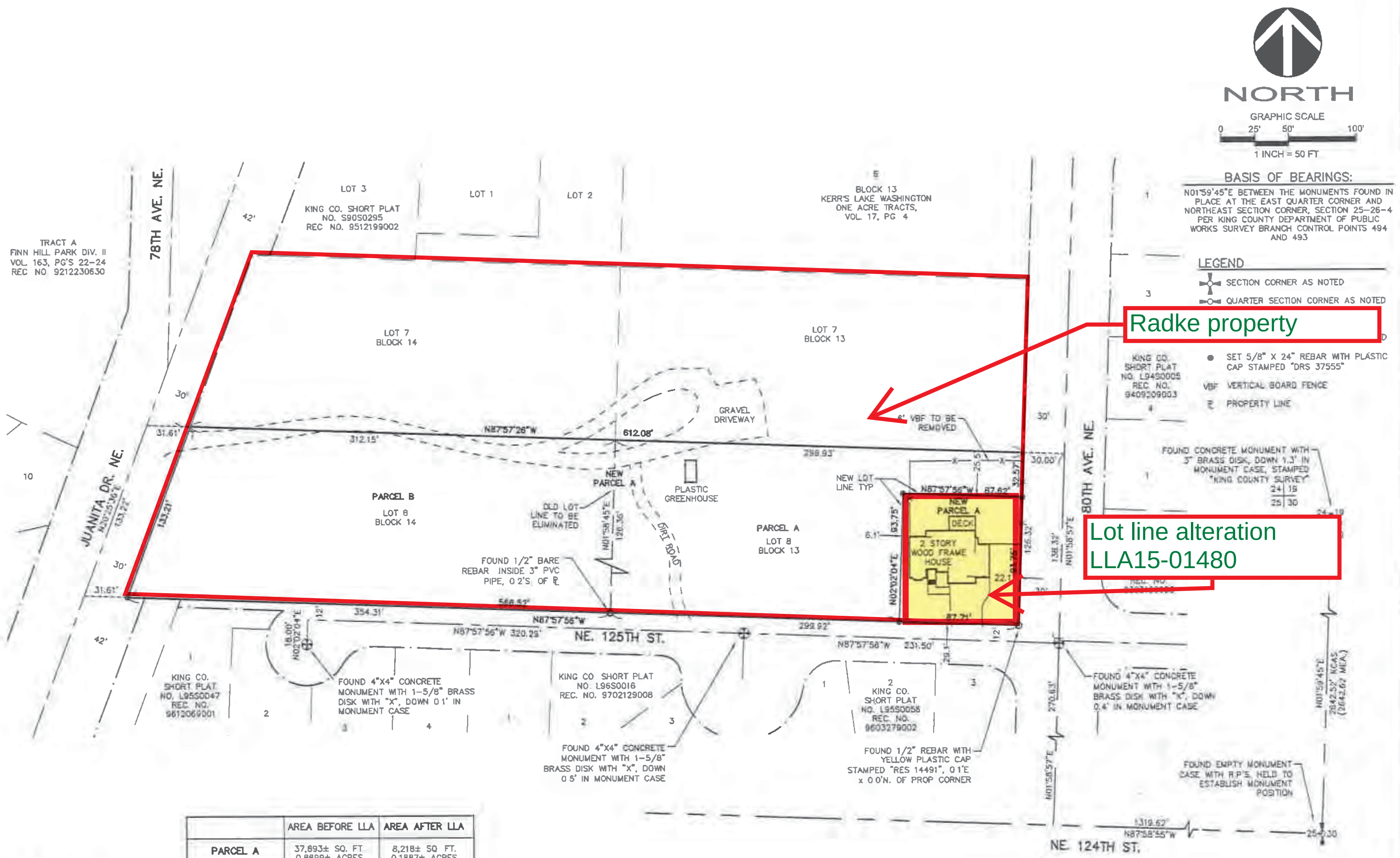
ATTACHMENT 2
Radke SUB15-00615



ATTACHMENT 2
Radke SUB15-00615

RECORDING NO.

CITY OF KIRKLAND
ALTERATION OF LOT LINE NO. LLA15-_____
(RCW 58.17.040 – EXCLUSION FROM SUBDIVISION)
A PORTION OF SW. QUARTER OF THE NE QUARTER OF SECTION 25, TOWNSHIP 26 N., RANGE 4 E., W.M., CITY OF KIRKLAND, KING COUNTY, WASHINGTON



	AREA BEFORE LLA	AREA AFTER LLA
PARCEL A	37,893± SQ. FT. 0.8699± ACRES	8,218± SQ. FT. 0.1887± ACRES
PARCEL B	42,116± SQ. FT. 0.9669± ACRES	71,791± SQ. FT. 1.6481± ACRES

CITY OF KIRKLAND WASHINGTON

D.R. STRONG CONSULTING ENGINEERS
ENGINEERS PLANNERS SURVEYORS
620 7TH AVENUE
KIRKLAND, WA 98033

425 827 3063 OFFICE
800 962.1402 TOLL FREE
425 827 2423 FAX
www drstrong com

A PORTION OF
THE SW. 1/4 OF THE NE. 1/4, SEC. 25, TWP. 26N., RGE. 4E., W.M.

DWN. BY	DATE	PROJECT NO.
SJS	7/16/15	15012
CHKD. BY	SCALE	SHEET
	1"=50'	3 OF 3

CITY OF KIRKLAND
Planning and Building Department
123 Fifth Avenue, Kirkland, WA 98033
425.587-3225 ~ www.kirklandwa.gov

DEVELOPMENT STANDARDS LIST

File: SUB15-00615 Radke Preliminary Plat

SUBDIVISION STANDARDS

22.28.030 Lot Size. Unless otherwise approved in the preliminary subdivision or short subdivision approval, all lots within a subdivision must meet the minimum size requirements established for the property in the Kirkland zoning code or other land use regulatory document.

22.28.130 Vehicular Access Easements. The applicant shall comply with the requirements found in the Zoning Code for vehicular access easements or tracts.

22.28.210 Significant Trees. A Tree Retention Plan was submitted with the short plat in which the location of all proposed improvements were known. There are 269 significant trees on the site, of which 193 are viable. These trees have been assessed by the City's Urban Forester. The following trees are proposed for retention based on the impacts associated with the proposed subdivision; all trees not listed are approved for removal as part of the land surface modification permit or building permits per an Integrated Development Plan and as set forth in 95.30.6.b.

Significant Trees:	**High Retention Value (saved trees)**	**Moderate Retention Value (retain if feasible)**	**Low Retention Value** **(V)** – viable **(NV)** – not viable
5469		X	
5490		X	
5491		X	
5556		X	
5544		X	
5531	X		
5545	X		
5555	X		
5841		X	
5822	X		
5934 (arborist #5394)	X		
5821		X	
5817		X	
5805		X	
5799		X	
61200132			Not viable
5515			Not viable

5516			Not viable
All other trees on-site			Not viable – due to Unavoidable Development Impacts

Additional Recommendations and comments by the City's Arborist:

The arborist report is accurate. Tree #5823 is in dedicated ROW and is therefore not a part of the list above. Tree protection should be as described in the arborist report.

ROW tree: no additional concerns other than those expressed in the arborist report

Neighbor's trees: trees #5464, 6097, 6098, 60940121 and 60950120 are close to a cut wall rockery on the north side of lot 15. It would be good to pull this rockery southward approximately 5' to provide a root zone for the neighbor's healthy trees. See figure 1 below.

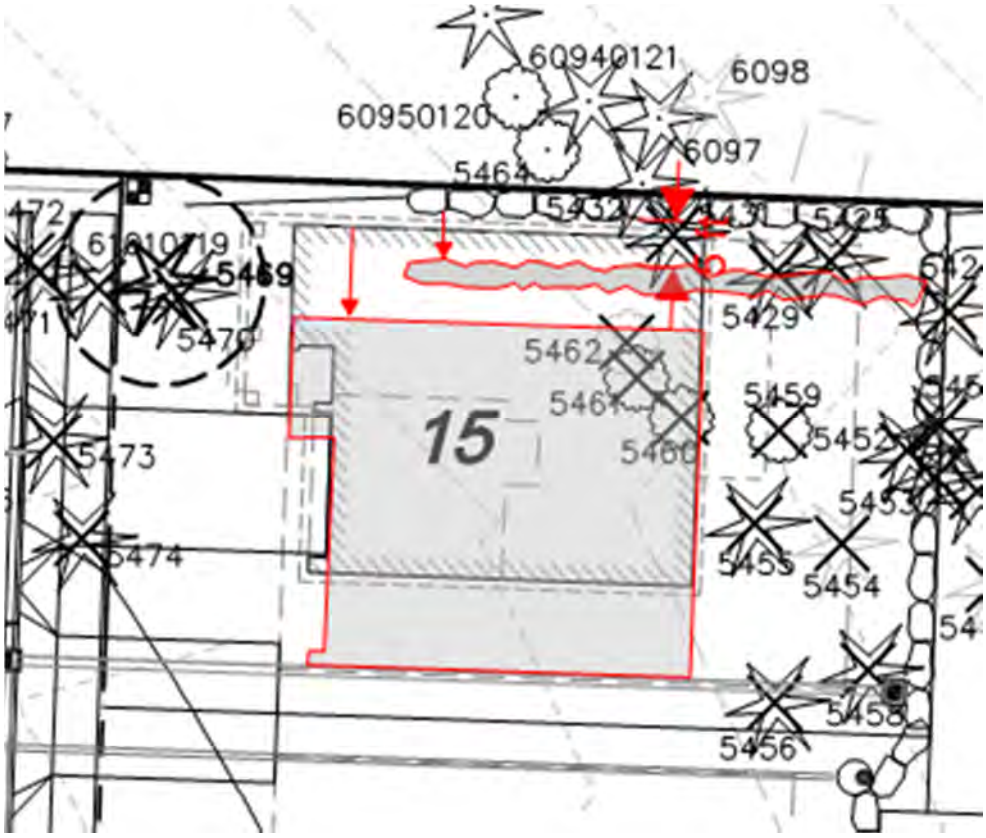


Figure 1 showing an adjustment to lot 15 which would limit the potential to destabilize the neighbors trees

22.32.010 Utility System Improvements. All utility system improvements must be designed and installed in accordance with all standards of the applicable serving utility.

22.32.030 Stormwater Control System. The applicant shall comply with the construction phase and permanent stormwater control requirements of the Municipal Code.

22.32.050 Transmission Line Undergrounding. The applicant shall comply with the utility lines and appurtenances requirements of the Zoning Code.

22.32.060 Utility Easements. Except in unusual circumstances, easements for utilities should be at least ten feet in width.

27.06.030 Park Impact Fees. New residential units are required to pay park impact fees prior to issuance of a building permit. Please see KMC 27.06 for the current rate. Exemptions and/or credits may apply pursuant to KMC 27.06.050 and KMC 27.06.060. If a property contains an existing unit to be removed, a "credit" for that unit shall apply to the first building permit of the subdivision.

Prior to Recording:

22.16.030 Final Plat - Lot Corners. The exterior plat boundary, and all interior lot corners shall be set by a registered land surveyor.

22.16.040 Final Plat - Title Report. The applicant shall submit a title company certification which is not more than 30 calendar days old verifying ownership of the subject property on the date that the property owner(s) (as indicated in the report) sign(s) the subdivision documents; containing a legal description of the entire parcel to be subdivided; describing any easements or restrictions affecting the property with a description, purpose and reference by auditor's file number and/or recording number; any encumbrances on the property; and any delinquent taxes or assessments on the property.

22.16.150 Final Plat - Improvements. The owner shall complete or bond all required right-of-way, easement, utility and other similar improvements.

22.28.050 Lot Dimensions. The owner of the property shall sign a covenant to ensure that the garage will be located at the rear of any lot which is smaller than 5,000 square feet in a low density zone, has a lot width at the back of the required front yard less than 50 feet, and is not a flag lot.

22.32.020 Water System. The applicant shall install a system to provide potable water, adequate fire flow and all required fire-fighting infrastructure and appurtenances to each lot created.

22.32.040 Sanitary Sewer System. The developer shall install a sanitary sewer system to serve each lot created.

22.32.080 Performance Bonds. In lieu of installing all required improvements and components as part of a plat or short plat, the applicant may propose to post a bond, or submit evidence that an adequate security device has been submitted and accepted by the service provider (City of Kirkland and/or Northshore Utility District), for a period of one year to ensure completion of these requirements within one year of plat/short plat approval.

Prior to occupancy:

22.32.020 Water System. The applicant shall install a system to provide potable water, adequate fire flow and all required fire-fighting infrastructure and appurtenances to each lot created.

22.32.040 Sanitary Sewer System. The developer shall install a sanitary sewer system to serve each lot created.

22.32.090 Maintenance Bonds. A two-year maintenance bond may be required for any of the improvements or landscaping installed or maintained under this title.

ZONING CODE STANDARDS

85.25.1 Geotechnical Report Recommendations. The geotechnical recommendations contained in the report by Associated Earth Sciences dated November 6th, 2014 shall be implemented.

85.25.3 Geotechnical Professional On-Site. A qualified geotechnical professional shall be present on site during land surface modification and foundation installation activities or as required by the geotechnical report.

95.50 Tree Installation Standards. All supplemental trees to be planted shall conform to the Kirkland Plant List. All installation standards shall conform to Kirkland Zoning Code Section 95.45.

Supplemental trees must be planted in a manner that allows the tree species chosen to mature to its full height and width. This means that the trees must have the appropriate spacing from buildings and other trees, soil volume should not be restricted for the mature size of the tree and soil should be amended in accordance with the storm water code. Trees should be planted in the fall, winter or early spring, between October and April, or must be irrigated.

Trees planted to form a clipped or sheared hedge or living wall will not be counted toward the tree density credits. Most tree species need a clearance for their canopy of approximately 10-12 feet to mature without structural deformations and should not be planted within 2 to 4 feet of structures. Lastly, during planting the root flare of trees should be at or slightly above the finished ground elevation in order to promote a healthy root structure and identify any girdling roots at the time of planting. During final inspection, if these requirements are not met, the project will not be signed off.

95.52 Prohibited Vegetation. Plants listed as prohibited in the Kirkland Plant List shall not be planted in the City.

105.19 Public Pedestrian Walkways. The height of solid (blocking visibility) fences along pedestrian pathways that are not directly adjacent a public or private street right-of-way shall be limited to 42 inches unless otherwise approved by the Planning or Public Works Directors. All new building structures shall be setback a minimum of five feet from any pedestrian access right-of-way, tract, or easement that is not directly adjacent a public or private street right-of-way. If in a design district, see section and Plate 34 for through block pathways standards.

105.20 Required Parking. 2 parking spaces are required for each home.

105.47 Required Parking Pad. Except for garages accessed from an alley, garages serving detached dwelling units in low density zones shall provide a minimum 20-foot by 20-foot parking pad between the garage and the access easement, tract, or right-of-way providing access to the garage.

110.60.5 Street Trees. All trees planted in the right-of-way must be approved as to species by the City. All trees must be two inches in diameter at the time of planting as measured using the standards of the American Association of Nurserymen with a canopy that starts at least six feet above finished grade and does not obstruct any adjoining sidewalks or driving lanes.

115.25 Work Hours. It is a violation of this Code to engage in any development activity or to operate any heavy equipment before 7:00 am. or after 8:00 pm Monday through Friday, or before 9:00 am or after 6:00 pm Saturday. No development activity or use of heavy equipment may occur on Sundays or on the following holidays: New Year's Day, Memorial Day, Independence Day, Labor Day, Thanksgiving, and Christmas Day. The applicant will be required to comply with these regulations and any violation of this section will result in enforcement action, unless written permission is obtained from the Planning official.

115.40 Fence Location. Fences over 6 feet in height may not be located in a required setback yard. A detached dwelling unit abutting a neighborhood access or collector street may not have a fence over 3.5 feet in height within the required front yard. No fence may be placed within a high waterline setback yard or within any portion of a north or south property line yard, which is coincident with the high waterline setback yard.

A detached dwelling unit may not have a fence over 3.5 feet in height within 3 feet of the property

line abutting a principal or minor arterial except where the abutting arterial contains an improved landscape strip between the street and sidewalk. The area between the fence and property line shall be planted with vegetation and maintained by the property owner.

115.42 Floor Area Ratio (F.A.R.) Limits. Floor area for detached dwelling units is limited to a maximum floor area ratio in low density residential zones. See KZC 15.10.030 for the maximum percentages allowed.

115.43 Garage Requirements for Detached Dwelling Units in Low Density Zones. Detached dwelling units served by an open public alley, or an easement or tract serving as an alley, shall enter all garages from that alley. Whenever practicable, garage doors shall not be placed on the front façade of the house. Side-entry garages shall minimize blank walls. For garages with garage doors on the front façade, increased setbacks apply, and the garage width shall not exceed 50% of the total width of the front façade. These regulations do not apply within the disapproval jurisdiction of the Houghton Community Council. Section 115.43 lists other exceptions to these requirements.

115.75.2 Fill Material. All materials used as fill must be non-dissolving and non-decomposing. Fill material must not contain organic or inorganic material that would be detrimental to the water quality, or existing habitat, or create any other significant adverse impacts to the environment.

115.90 Calculating Lot Coverage. The total area of all structures and pavement and any other impervious surface on the subject property is limited to a maximum percentage of total lot area. See the Use Zone charts for maximum lot coverage percentages allowed. Section 115.90 lists exceptions to total lot coverage calculations See Section 115.90 for a more detailed explanation of these exceptions.

115.95 Noise Standards. The City of Kirkland adopts by reference the Maximum Environmental Noise Levels established pursuant to the Noise Control Act of 1974, RCW 70.107. See Chapter 173-60 WAC. Any noise, which injures, endangers the comfort, repose, health or safety of persons, or in any way renders persons insecure in life, or in the use of property is a violation of this Code.

115.115 Required Setback Yards. This section establishes what structures, improvements and activities may be within required setback yards as established for each use in each zone.

115.115.3.g Rockeries and Retaining Walls. Rockeries and retaining walls are limited to a maximum height of four feet in a required yard unless certain modification criteria in this section are met. The combined height of fences and retaining walls within five feet of each other in a required yard is limited to a maximum height of 6 feet, unless certain modification criteria in this section are met.

115.115.3.n Covered Entry Porches. In residential zones, covered entry porches on dwelling units may be located within 13 feet of the front property line if certain criteria in this section are met. This incentive is not effective within the disapproval jurisdiction of the Houghton Community Council.

115.115.3.p HVAC and Similar Equipment: These may be placed no closer than five feet of a side or rear property line, and shall not be located within a required front yard; provided, that HVAC equipment may be located in a storage shed approved pursuant to subsection (3)(m) of this section or a garage approved pursuant to subsection (3)(o)(2) of this section. All HVAC equipment shall be baffled, shielded, enclosed, or placed on the property in a manner that will ensure compliance with the noise provisions of KZC 115.95.

115.115.5.a Driveway Width and Setbacks. For a detached dwelling unit, a driveway and/or parking area shall not exceed 20 feet in width in any required front yard, and shall be separated from other hard surfaced areas located in the front yard by a 5-foot wide landscape strip. Driveways shall not be closer than 5 feet to any side property line unless certain standards are met.

115.115.5.c Driveway Setbacks. Vehicle parking areas for schools and day-care centers greater than 12 students shall have a minimum 20-foot setback from all property lines.

115.135 Sight Distance at Intersection. Areas around all intersections, including the

entrance of driveways onto streets, must be kept clear of sight obstruction as described in this section.

150.22.2 Public Notice Signs. Within seven (7) calendar days after the end of the 21-day period following the City's final decision on the permit, the applicant shall remove all public notice signs.

Prior to recording:

110.60.6 Mailboxes. Mailboxes shall be installed in the development in a location approved by the Postal Service and the Planning Official. The applicant shall, to the maximum extent possible, group mailboxes for units or uses in the development.

Prior to issuance of a grading or building permit:

85.25.1 Geotechnical Report Recommendations. A written acknowledgment must be added to the face of the plans signed by the architect, engineer, and/or designer that he/she has reviewed the geotechnical recommendations and incorporated these recommendations into the plans.

95.30(4) Tree Protection Techniques. A description and location of tree protection measures during construction for trees to be retained must be shown on demolition and grading plans.

95.34 Tree Protection. Prior to development activity or initiating tree removal on the site, vegetated areas and individual trees to be preserved shall be protected from potentially damaging activities. Protection measures for trees to be retained shall include (1) placing no construction material or equipment within the protected area of any tree to be retained; (2) providing a visible temporary protective chain link fence at least 6 feet in height around the protected area of retained trees or groups of trees until the Planning Official authorizes their removal; (3) installing visible signs spaced no further apart than 15 feet along the protective fence stating "Tree Protection Area, Entrance Prohibited" with the City code enforcement phone number; (4) prohibiting excavation or compaction of earth or other damaging activities within the barriers unless approved by the Planning Official and supervised by a qualified professional; and (5) ensuring that approved landscaping in a protected zone shall be done with light machinery or by hand.

27.06.030 Park Impact Fees. New residential units are required to pay park impact fees prior to issuance of a building permit. Please see KMC 27.06 for the current rate. Exemptions and/or credits may apply pursuant to KMC 27.06.050 and KMC 27.06.060. If a property contains an existing unit to be removed, a "credit" for that unit shall apply to the first building permit of the subdivision.

Prior to occupancy:

85.25.3 Geotechnical Professional On-Site. The geotechnical engineer shall submit a final report certifying substantial compliance with the geotechnical recommendations and geotechnical related permit requirements.

90.145 Bonds. The City may require a bond and/or a perpetual landscape maintenance agreement to ensure compliance with any aspect of the Drainage Basins chapter or any decision or determination made under this chapter.

95.51.2.b Tree Maintenance. For detached dwelling units, the applicant shall submit a 5-year tree maintenance agreement to the Planning and Building Department to maintain all pre-existing trees designated for preservation and any supplemental trees required to be planted.

or cover the landscape strip with impervious material or to park motor vehicles on this strip.

110.60.6 Mailboxes. Mailboxes shall be installed in the development in a location approved by the Postal Service and the Planning Official. The applicant shall, to the maximum extent

110.75

Bonds. The City may require or permit a bond to ensure compliance with any of the requirements of the Required Public Improvements chapter.

Permit #: SUB15-00615
Project Name: Radke Subdivision
Project Address: 7922 NE 125th Street
Date: June 17, 2015

PUBLIC WORKS CONDITIONS

General Conditions:

1. All public improvements associated with this project including street and utility improvements, must meet the City of Kirkland Public Works Pre-Approved Plans and Policies Manual. A Public Works Pre-Approved Plans and Policies manual can be purchased from the Public Works Department, or it may be retrieved from the Public Works Department's page at the City of Kirkland's web site at www.kirklandwa.gov.

2. This project will be subject to Public Works Permit and Connection Fees. It is the applicant's responsibility to contact the Public Works Department by phone or in person to determine the fees. The fees can also be review the City of Kirkland web site at www.kirklandwa.gov The applicant should anticipate the following fees:
   - Surface Water Connection Fees (paid with the issuance of a Building Permit)
   - Septic Tank Abandonment Inspection Fee
   - Right-of-way Fee
   - Review and Inspection Fee (for utilities and street improvements).
   - Building Permits associated with this proposed project will be subject to the traffic, park, and school impact fees per Chapter 27 of the Kirkland Municipal Code. The impact fees shall be paid prior to issuance of the Building Permit(s). Any existing buildings within this project which are demolished will receive a Traffic Impact Fee credit, Park Impact Fee Credit and School Impact Fee Credit. This credit will be applied to the first Building Permits that are applied for within the project. The credit amount for each demolished building will be equal to the most currently adopted Fee schedule.

3. All street and utility improvements shall be permitted by obtaining a Land Surface Modification (LSM) Permit.

4. Primary construction access during the Land Surface Modification Permit (site grading and utility installation) should be limited to Juanita Drive whenever possible. There will be certain elements of construction or phases of the project that will require access from NE 125th Street and 80th Ave. NE.

5. Submittal of Building Permits within a subdivision prior to recording:

   - Submittal of a Building Permit with an existing parcel number prior to subdivision recording: A Building Permit can be submitted prior to recording of the subdivision for each existing parcel number in the subject project, however in order for the Building Permit to be deemed a complete application, all of the utility and street improvements for the new home must be submitted with application. However, the Building Permit

will not be eligible for issuance until after the Land Surface Modification Permit is submitted, reviewed, and approved to ensure the comprehensive storm water design required by the subdivision approval is reviewed and approved, and then shown correctly on the Building Permit plans to match the Land Surface Modification Permit.

- Submittal of a Building Permit within a standard subdivision: The Building Permits for the new houses can be applied for after the subdivision is recorded and the Land Surface Modification permit has been submitted, reviewed, and approved.

- Review of Expedited or Green Building Permits: A new single family home Building Permit within a subdivision can only be review on an expedited or green building fast track if submitted electronically through MBP and the Land Surface Modification permit has been submitted, reviewed, and approved.

6. Subdivision Performance and Maintenance Securities:
   - The subdivision can be recorded in advance of installing all the required street and utility improvements by posting a performance security equal to 130% of the value of work. This security amount will be determined by using the City of Kirkland's Improvement Evaluation Packet. Contact the Development Engineer assigned to this project to assist with this process.

   - If the Developer will be installing the improvements prior to recording of the subdivision, there is a standard right of way restoration security ranging from $10,000.00 to 30,000.00 (value determined based on amount of right-of-way disruption). This security will be held until the project has been completed.

   - Once the subdivision has been completed there will be a condition of the permit to establish a two year Maintenance security.

   - If a recording Performance Security has not yet been posted, then prior to issuance of the LSM Permit a standard right of way restoration security ranging from $10,000.00 to 30,000.00 (value determined based on amount of ROW disruption) shall be posted with Public Works Department. This security will be held until the project has been completed.

7. The project has passed concurrency,
   CERTIFICATE OF CONCURRENCY: This project has been reviewed and approved for water, sewer, and traffic concurrency. Any water and sewer mitigating conditions are listed within the water and sewer availability letter from Northshore Utility District. Any traffic mitigating conditions will be found in an attached memorandum from the Public Works Traffic Engineering Engineer to the Planning Department Project Planner. Upon issuance of this permit, this project shall have a valid Certificate of Concurrency and concurrency vesting until noted on the permit. This condition shall constitute issuance of a Certificate of Concurrency pursuant to chapter 25.12 of the Kirkland Municipal Code.

8. All civil engineering plans which are submitted in conjunction with a building, grading, or right-of-way permit must conform to the Public Works Policy titled ENGINEERING PLAN

REQUIREMENTS. This policy is contained in the Public Works Pre-Approved Plans and Policies manual.

9. All street improvements and underground utility improvements (storm, sewer, and water) must be designed by a Washington State Licensed Engineer; all drawings shall bear the engineers stamp.

10. All plans submitted in conjunction with a building, grading or right-of-way permit must have elevations which are based on the King County datum only (NAVD 88).

11. A completeness check meeting is required prior to submittal of any Building Permit applications.

12. The required tree plan shall include any significant tree in the public right-of-way along the property frontage.

13. All subdivision recording documents shall include the following language:

    - Utility Maintenance: Each property owner shall be responsible for maintenance of the sanitary sewer, storm water stub, rain garden, permeable pavement, or any infiltration facilities (known as Low Impact Development) from the point of use on their own property to the point of connection in the City sanitary sewer main or storm water main. Any portion of a sanitary sewer, surface water stub, rain garden, permeable pavement, or any infiltration facilities, which jointly serves more than one property, shall be jointly maintained and repaired by the property owners sharing such stub. The joint use and maintenance shall "run with the land" and will be binding on all property owners within this subdivision, including their heirs, successors and assigns.

    - Public Right-of-way Sidewalk and Vegetation Maintenance: Each property owner shall be responsible for keeping the sidewalk abutting the subject property clean and litter free. The property owner shall also be responsible for the maintenance of the vegetation within the abutting landscape strip. The maintenance shall "run with the land" and will be binding on all property owners within this subdivision, including their heirs, successors and assigns.

    - If the lots have on-site private storm water facilities, include this language on the subdivision recording document:

    - Maintenance of On-site Private Stormwater Facilities: Each Lot within the Subdivision has a stormwater facility (infiltration trench, dry wells, dispersion systems, rain garden, and permeable pavement) which is designed to aid storm water flow control for the development. The stormwater facility within the property shall be owned, operated and maintained by the Owner. The City of Kirkland shall have the right to ingress and egress the Property for inspection of and to reasonable monitoring of the performance, operational flows, or defects of the stormwater/flow control facility.
      If the City of Kirkland determines related maintenance or repair work of the stormwater facility is required, the City of Kirkland shall give notice to the Owner of the specific maintenance and/or repair work required. If the above required maintenance or repair is not completed within the time set by the City of Kirkland, the City of Kirkland may perform the required maintenance or repair, or contract with a private company capable of

performing the stormwater facility maintenance or repair and the Owner will be required to reimburse the City for any such work performed.

- The Owner is required to obtain written approval from the City of Kirkland prior to replacing, altering, modifying or maintaining the storm water facility.

- If the project contains LID storm improvements that will be installed as a condition of the new home Building Permit, then include this condition on the Short Plat recording documents:

  Installation of Low Impact Development (LID) storm drainage improvements with Building Permits: All LID storm drainage features depicted on Sheet ____ of ____ of issued permit LSM1X-0XXXX shall be installed in conjunction with the construction of each new home on lots X to X. The LID improvements include, but are not limited to the rain gardens and the pervious driveways. The Building Permit for the new signal family home on lots X to X will not receive a final inspection until said LID improvements are installed. The pervious access road/Tract serving lots X and X shall be constructed or secured by a performance bond prior to recording of the short plat.

Sanitary Sewer and Water Conditions:

1. Northshore Utility District approval required for water and sewer service. A letter of sewer and water availability has been submitted.

Surface Water Conditions:

1. Provide temporary and permanent storm water control per the 2009 King County Surface Water Design Manual and the Kirkland Addendum (Policy D-10). See Policies D-2 and D-3 in the PW Pre-Approved Plans for drainage review information, or contact city of Kirkland Surface Water staff at (425) 587-3800 for help in determining drainage review requirements.
   - Full Drainage Review

     A full drainage review is required for any proposed project, new or redevelopment, that will:
     - ✓ Adds 5,000ft^2 or more of new impervious surface area or 10,000ft^2 or more of new plus replaced impervious surface area,
     - ✓ Propose 7,000ft^2 or more of land disturbing activity, or,
     - ✓ Be a redevelopment project on a single or multiple parcel site in which the total of new plus replaced impervious surface area is 5,000ft^2 or more and whose valuation of proposed improvements (including interior improvements but excluding required mitigation and frontage improvements) exceeds 50% of the assessed value of the existing site improvements.

2. A preliminary drainage report (Technical Information Report) has been submitted with the subdivision application.

3. Evaluate the feasibility and applicability of dispersion, infiltration, and other stormwater low impact development facilities on-site (per section 5.2 in the 2009 King County Surface Water Design Manual). If feasible, stormwater low impact development facilities are required. See PW

Pre-Approved Plan Policy L-1 or L-2 (depending on drainage review) for more information on this requirement.

4. Because this project site is one acre or greater, the following conditions apply:
   - Amended soil requirements (per Ecology BMP T5.13) must be used in all landscaped areas.
   - If the project meets minimum criteria for water quality treatment (5,000ft2 pollution generating impervious surface area), the enhanced level of treatment is required if the project is multi-family residential, commercial, or industrial. Enhanced treatment targets the removal of metals such as copper and zinc.
   - The applicant is responsible to apply for a Construction Stormwater General Permit from Washington State Department of Ecology. Provide the City with a copy of the Notice of Intent for the permit. Permit Information can be found at the following website: http://www.ecy.wa.gov/programs/wq/stormwater/construction/
   - Among other requirements, this permit requires the applicant to prepare a Storm Water Pollution Prevention Plan (SWPPP) and identify a Certified Erosion and Sediment Control Lead (CESCL) prior to the start of construction. The CESCL shall attend the City of Kirkland PW Dept. pre-construction meeting with a completed SWPPP.
   - Turbidity monitoring by the developer/contractor is required if a project contains a lake, stream, or wetland.
   - A Stormwater Pollution Prevention and Spill (SWPPS) Plan must be kept on site during all phases of construction and shall address construction-related pollution generating activities. Follow the guidelines in the 2009 King County Surface Water Design Manual for plan preparation.

5. If a storm water detention system is required, it shall be designed to Level II standards. Historic (forested) conditions shall be used as the pre-developed modeling condition.

6. This project is creating or replacing more than 5000 square feet of new impervious area that will be used by vehicles (PGIS - pollution generating impervious surface). Provide storm water quality treatment per the 2009 King County Surface Water Design Manual.

7. If there is any work within an existing ditch will be required, the developer has been given notice that the Army Corps of Engineers (COE) has asserted jurisdiction over upland ditches draining to streams. Either an existing Nationwide COE permit or an Individual COE permit may be necessary for work within ditches, depending on the project activities.
   Applicants should obtain the applicable COE permit; information about COE permits can be found at: U.S. Army Corps of Engineers, Seattle District Regulatory Branch
   http://www.nws.usace.army.mil/PublicMenu/Menu.cfm?sitename=REG&pagename=mainpage_NWPs

   Specific questions can be directed to: Seattle District, Corps of Engineers, Regulatory Branch, CENWS-OD-RG, Post Office Box 3755, Seattle, WA 98124-3755, Phone: (206) 764-3495

8. Provide an erosion control report and plan with Building or Land Surface Modification Permit application. The plan shall be in accordance with the 2009 King County Surface Water Design Manual.

9. Construction drainage control shall be maintained by the developer and will be subject to periodic inspections. During the period from May 1 and September 30, all denuded soils must be covered within 7 days; between October 1 and April 30, all denuded soils must be covered within 12 hours. Additional erosion control measures may be required based on site and weather conditions. Exposed soils shall be stabilized at the end of the workday prior to a weekend, holiday, or predicted rain event.

10. Provide collection and conveyance of right-of-way storm drainage

11. Provide a separate storm drainage connection for each lot. All roof and driveway drainage must be tight-lined to the storm drainage system or utilize low impact development techniques. The tight line connections shall be installed with the individual new houses.

12. Provided standard maintenance access to the detention vault.

13. If the existing home on the southeast corner of the site drains to the subdivision property, the home will either need to be connected to the drainage system in the new subdivision or connected to the existing storm system in NE 125th Street.

14. Tract B will contain the underground storm water detention vault. The Tract shall be landscaped by the developer and owned and maintained by the HOA. The vault will be owned and maintained by the City.

Street and Pedestrian Improvement Conditions:

1. The subject property abuts Juanita Drive (an Arterial type street), NE 125th Street, 80th Ave. NE, and a new interior access street (all of which are Neighborhood Access type streets). Zoning Code sections 110.10 and 110.25 require the applicant to make half-street improvements in rights-of-way abutting the subject property. Section 110.30-110.50 establishes that this street must be improved with the following:

   Juanita Drive -The City has an adopted master plan for Juanita Drive. The street improvement design will match Figure 11: Cross-Section with Multipurpose Trail on page 31 (lower cross section) in the master plan. The half-street improvements along the front of this project will consist of the following (from centerline of Juanita Drive right-of-way):
   - ✓ 11 ft. drive lane
   - ✓ 2 ft. buffer zone
   - ✓ 5 ft. bike lane
   - ✓ 5-15 ft. wide planter strip/drainage swale
   - ✓ 10 ft. wide meandering asphalt pathway (save existing trees where feasible).
   - ✓ 12 ft. right-of-way dedication
   - ✓ Plant street trees 30 ft. o.c. between in the planter strip or behind the pathway. Existing trees shall be taken into account. Trees planted behind the sidewalk may be deciduous or evergreen.

   Impact Fee Credit-The Public Works Director and has determined that the said street improvements and right-of-way dedication will qualify as a Traffic Impact Fee Credit per Kirkland Municipal Code Title 27.04.060-Credits. The credit can be approved because the

dedication and improvements will meet the goals and objectives of the Capital Facilities Plan. The value of the street improvements and right-of-way dedication will be determined during the review of the Land Surface Modification Permit and the credit will be distributed against the impact fees owed at the issuance of the Building Permits for the new homes. The impact fee credit cannot exceed the total impact fees owed by the project.

Juanita Drive landscaping maintenance – The HOA for this project shall maintain the ROW along Juanita Drive and such maintenance responsibility shall be noted on the plat recording documents.

NE 125th Street

A. Along the subdivision frontage (including the home at 7922 125th Ave. NE), widen the street to 24 ft. from face of existing curb on the south side of the street to the new curb face on the north side of the street.
B. Install storm drainage, vertical curb and gutter, a 4.5 ft. planter strip with street trees 30 ft. on-center, and a 5 ft. wide sidewalk.
C. The said street improvements shall extend to the west end of the existing street and finish off the street. The sidewalk shall connect to the pathway at the end of the street and to the new sidewalk along the front of the subdivision.
D. Dedicate 12 ft. of right-f-way to encompass the new improvements.
E. Approved modification for 7922 125th Ave. NE: The sidewalk along the front of the property may be placed against the curb due to the location of the existing home and driveway slope. The said street improvements can be encompassed public right-of-way improvement easement.

80th Ave. NE -

A. Along the subdivision frontage (including the home at 7922 125th Ave. NE), widen the street to 28 ft. from face of existing curb on the east side of the street to the new curb face on the west side of the street.
B. Install storm drainage, vertical curb and gutter, a 4.5 ft. planter strip with street trees 30 ft. on-center, and a 5 ft. wide sidewalk.
C. The sidewalk along the frontage of 7922 125th Ave. NE can be meandered as needed to save the existing trees (one tree near the near the north property line of 7922 may need to be removed)

New interior access road

A. The new interior access road shall extend from NE 125th to the north property line and be designed in such a way that it can be improved in the future to be extended to connect with, NE 126th Street, NE 126th Place, and 80th Ave. NE.
B. The interior access road shall be encompassed in a 45 ft. minimum right-of-way.
C. The interior roads shall be paved 24 ft. wide with curb and gutter and landscape strip with street trees 30 ft. on-center along both sides. A 5 ft. wide sidewalk shall be installed along all lots frontages.
D. Install a temporary vehicular turn around tee at the north end of the street.
E. This road does qualify for the Sidewalk Construction-in-lieu Program as outlined in chapter 110.70.6 of the Kirkland Zoning Code. If the applicant so chooses, a sidewalk on one side of the street and the underlying right-of-way dedication can be eliminated along this road and the developer can construct off-site pedestrian improvements near one of the

neighborhood schools or another high use pedestrian area as determined by the Public Works Department The Public Works recommends that the sidewalk on the east side of the street be deleted, but will make the final decision after meeting with the developer and reviewing the final engineering plans.

F. The driveway locations as show for lots 11 and 18 have been reviewed by the Transportation Engineer and are approved as shown.

2. The tract A road shall meet the minimum design standards per Kirkland Zoning Code Chapter 105 which include 20 ft. of paving in a 21 ft. utility easement. The submitted plans depict a 24 ft. wide paved road with vertical curb and gutter encompassed in a 25 ft. wide access easement. This submittal exceeds the minimum standards and is acceptable.

3. When three or more utility trench crossings occur within 150 lineal ft. of street length or where utility trenches parallel the street centerline, the street shall be overlaid with new asphalt or the existing asphalt shall be removed and replaced.
    - Existing streets with 4-inches or more of existing asphalt shall receive a 2-inch (minimum thickness) asphalt overlay. Grinding of the existing asphalt to blend in the overlay will be required along all match lines.
    - Existing streets with 3-inches or less of existing asphalt shall have the existing asphalt removed and replaced with an asphalt thickness equal or greater than the existing asphalt provided however that no asphalt shall be less than 2-inches thick and the subgrade shall be compacted to 95% density.

4. The driveway for each lot shall be long enough so that parked cars do not extend into the access easement or right-of-way (20 ft. min.)

5. All street and driveway intersections shall not have any visual obstructions within the sight distance triangle. See Public Works Pre-approved Policy R.13 for the sight distance criteria and specifications.

6. Prior to the final of the building or grading permit, pay for the installation of stop and street signs at the new intersections.

7. Install new monuments at new intersections and as specified by the surveyor.

8. It shall be the responsibility of the applicant to relocate any above-ground or below-ground utilities which conflict with the project associated street or utility improvements.

9. Underground all new and existing on-site utility lines and overhead transmission lines.

10. Zoning Code Section 110.60.9 establishes the requirement that existing utility and transmission (power, telephone, etc.) lines on-site and in rights-of-way adjacent to the site must be underground. The Public Works Director may determine if undergrounding transmission lines in the adjacent right-of-way is not feasible and defer the undergrounding by signing an agreement to participate in an undergrounding project, if one is ever proposed. In this case, the Public Works Director has determined that undergrounding of existing overhead utility on Juanita Drive is not feasible at this time and the undergrounding of off-site/frontage transmission lines

should be deferred with a Local Improvement District (LID) No Protest Agreement. The final recorded subdivision mylar shall include the following note:

Local Improvement District (LID) Waiver Agreement. Chapter 110.60.7.b of the Kirkland Zoning Code requires all overhead utility lines along the frontage of the subject property to be converted to underground unless the Public Works Director determines that it is infeasible to do so at the time of the subdivision recording. If it is determined to be infeasible, then the property owner shall consent to the formation of a Local Improvement District, hereafter formed by the City or other property owners. During review of this subdivision it was determined that it was infeasible to convert the overhead utility lines to underground along the frontage of this subdivision on Juanita Drive. Therefore, in consideration of deferring the requirement to underground the overhead utility lines at the time of the subdivision recording, the property owner and all future property owners of lots within this subdivision hereby consent to the formation of a Local Improvement District hereafter formed by the City or other property owners

11. New LED street lights will be required per Puget Power design and Public Works approval. Contact the INTO Light Division at PSE for a lighting analysis; lighting design must be submitted prior to issuance of a Land Surface Modification Permit.

FIRE DEPARTMENT COMMENTS

Contact: Grace Steuart at 425-587-3660; or gsteuart@kirklandwa.gov

HYDRANTS

As shown on the plans, one additional hydrant is shall be installed on the ROW near Tract B. It shall be equipped with a 5" Storz.

The existing hydrant on the ROW is adequate to serve the lots off Tract A. It is already equipped with a 5" Storz.

SPRINKLER THRESHOLD

Per Kirkland Municipal Code, all new buildings which are 5,000 gross square feet or larger require fire sprinklers. Included are single family homes, duplexes, and zero lot line townhouses where the aggregate area of all connected townhouses is greater than 5,000 square feet.; garages, porches, covered decks, etc, are included in the gross square footage. (This comment is included in the short plat conditions for informational purposes only.)

associated earth sciences

November 6, 2014
Project No. KE140565A

Toll Brothers
9720 NE 120th Place, Suite 100
Kirkland, Washington 98034

Attention: Mr. Hans Christiansen

Subject: Subsurface Exploration, Geologic Hazard, and Geotechnical Engineering Report
Radke Short Plat
12432 Juanita Drive Northeast
Kirkland, Washington

Dear Mr. Christiansen:

We are pleased to present the enclosed copies of the referenced report. This report summarizes the results of our subsurface exploration, geologic hazard, and geotechnical engineering studies and offers recommendations for the design and development of the proposed project. This report is based on a project layout shown on a plan titled "Vault" by Land Development Advisors, LLC dated September, 2014, and on a site survey by Mead Gilman and Associates dated October 15, 2014. If project plans are changed from those on which this report is based, we should be allowed to review our recommendations and make any revisions that may be required as a result of the changes.

We have enjoyed working with you on this study and are confident that the recommendations presented in this report will aid in the successful completion of your project. If you should have any questions, or if we can be of additional help to you, please do not hesitate to call.

Sincerely,
ASSOCIATED EARTH SCIENCES, INC.
Kirkland, Washington

Kurt D. Merriman, P.E.
Senior Principal Engineer

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Geotechnical Engineering

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Associated Earth Sciences, Inc.

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Subsurface Exploration, Geologic Hazard,
and Geotechnical Engineering Report

RADKE SHORT PLAT

Kirkland, Washington

Prepared for

Toll Brothers

Project No. KE140565A
November 6, 2014

SUBSURFACE EXPLORATION, GEOLOGIC HAZARD, AND GEOTECHNICAL ENGINEERING REPORT

RADKE SHORT PLAT

Kirkland, Washington

Prepared for:
Toll Brothers
9720 NE 120th Place, Suite 100
Kirkland, Washington 98034

Prepared by:
Associated Earth Sciences, Inc.
911 5th Avenue
Kirkland, Washington 98033
425-827-7701
Fax: 425-827-5424

November 6, 2014
Project No. KE140565A

I. PROJECT AND SITE CONDITIONS

1.0 INTRODUCTION

This report presents the results of our subsurface exploration, geologic hazard, and geotechnical engineering study for the proposed new residential development. The site location is shown on the "Vicinity Map," Figure 1. The approximate locations of explorations completed for this study, along with planned site features, are shown on the "Site and Exploration Plan," Figure 2. Interpretive exploration logs and laboratory test results are included in the Appendix. The conclusions and recommendations contained in this report should be reviewed and modified, or verified, if project plans change substantially.

1.1 Purpose and Scope

The purpose of this study was to provide subsurface data to be used in the design of the project. Our study included a review of selected geologic literature, excavating exploration pits, and performing geologic studies to assess the type, thickness, distribution, and physical properties of the subsurface sediments and shallow ground water. Geotechnical engineering studies were completed to formulate our recommendations for site preparation, site grading, construction, and drainage. This report summarizes our current fieldwork and offers recommendations for development based on our present understanding of the project. We recommend that we be allowed to review any revisions to project plans to verify that our geotechnical engineering recommendations have been correctly interpreted and incorporated into the design.

1.2 Authorization

This report has been prepared for the exclusive use of Toll Brothers and its agents for specific application to this project. Our work was performed in accordance with our scope of work and cost proposal dated October 1, 2014. We were authorized to proceed by means of a consultant agreement.

Within the limitations of scope, schedule, and budget, our services have been performed in accordance with generally accepted geotechnical engineering and engineering geology practices in effect in this area at the time our report was prepared. No other warranty, express or implied, is made.

2.0 PROJECT AND SITE DESCRIPTION

The subject site consists of three adjacent parcels that total approximately 3.5 acres. Topography slopes down to the west with overall vertical relief across the site on the order of 40 feet. The site appears to contain areas that meet the City of Kirkland definition for Moderate Landslide Hazard Areas as defined in *Kirkland Municipal Code* (KMC) section 85.13. The site is currently occupied by two homes, driveways, outbuildings, buried and overhead utilities, and wooded areas.

The proposed project will include construction of 18 new home sites and associated improvements. A below ground storm water detention vault is planned at the southwest site corner. Two additional new homes will be built on a short plat that is separated from the remainder of the project. No grading plans were available at the time this report was written. We anticipate that earthwork cuts and fills will be up to about 5 to 10 feet. The detention vault is expected to have an interior height of 12 feet, and may require excavation of up to approximately 17 feet below existing grade to construct.

3.0 SUBSURFACE EXPLORATION

Our field study included excavation of exploration pits with a tracked excavator. Initially seven exploration pits were planned. We identified existing loose fill on the site, and completed additional exploration pits to delineate the fill. A total of 28 exploration pits were completed. Some of the exploration pits were completed specifically for the purpose of identifying the depth of existing fill, and were completed using abbreviated exploration procedures and an abbreviated exploration log format. The locations of the exploration pits were estimated based on measurements with hand-held compass and string box tools from site features shown on the "Site and Exploration Plan" (Figure 2). The locations of these explorations should therefore be considered approximate. Interpretive exploration logs are presented in the Appendix.

The various types of sediments, as well as the depths where characteristics of the sediments changed, are indicated on the exploration logs presented in the Appendix. The depths indicated on the logs where conditions changed may represent gradational variations between sediment types in the field.

The conclusions and recommendations presented in this report are based on the explorations completed for this study. The number, locations, and depths of our explorations were completed within site and budget constraints. Because of the nature of exploratory work below ground, extrapolation of subsurface conditions between field explorations is necessary. It should be noted that differing subsurface conditions may sometimes be present due to the

random nature of deposition and the alteration of topography by past grading and/or filling. The nature and extent of any variations between the field explorations may not become fully evident until construction. If variations are observed at that time, it may be necessary to re-evaluate specific recommendations in this report and make appropriate changes.

3.1 Exploration Pits

The exploration pits were excavated using a tracked excavator. The pits permitted direct, visual observation of subsurface conditions. Materials encountered in the exploration pits were studied and classified in the field by a geologist from our firm. All exploration pits were backfilled after examination and logging. Selected samples were then transported to our laboratory for further visual classification and testing, as necessary.

4.0 SUBSURFACE CONDITIONS

Subsurface conditions at the project site were inferred from the field explorations accomplished for this study, visual reconnaissance of the site, and review of selected geologic literature. The general distribution of geologic units is shown on the exploration logs. The explorations encountered native materials consisting of dense lodgement till and advance outwash sediments. Existing fill was also observed and is discussed in greater detail later in this report.

Our interpretations of subsurface conditions are generally consistent with the conditions shown on a published geologic map of the area. We reviewed the *Geologic Map of the Kirkland Quadrangle, Washington*, by James P. Minard, United States Geologic Survey (USGS) Miscellaneous Field Studies MF-1543, 1983. The referenced map indicates that the site is underlain by lodgement till sediments.

4.1 Stratigraphy

Grass/Topsoil

A surficial layer of grass and organic topsoil was encountered at the location of each of the exploration pits. This organic layer ranged from approximately 3 to 18 inches in thickness. Observed topsoil thickness is shown on the attached subsurface exploration logs. Due to their high organic content, these materials are not considered suitable for foundation, roadway, or slab-on-grade floor support, or for use in a structural fill.

Existing Fill

Existing fill was observed in two different areas. Existing fill was observed in the central part of the site near the existing circle drive, and along the south and east site perimeter.

Central Fill

Prior to the site visit, we were informed to expect existing fill in the area of the existing circle driveway near the center of the site. The fill was reportedly imported from a nearby gasoline station renovation project relatively recently. Toll Brothers hired an environmental consultant to observe and sample exploration pits in this central fill area and to complete analytical testing for possible contaminants. We observed items of geotechnical significance including moisture and density of the existing fill, presence of deleterious material such as organic debris and demolition waste, and the thickness of existing fill at the exploration locations. Our observations are documented in Table 1 below, in the interpretive subsurface exploration logs in the Appendix, and on the "Site and Exploration Plan," Figure 2. In general the central fill area was composed of loose silty sand with variable but generally small amounts of organic debris and demolition waste. The material comprising the central fill was above optimum moisture content for compaction purposes and would need to be dried during dry site and weather conditions to allow reuse in compacted fills. The central fill is not suitable for support of structures or paving. The existing fill in the central fill area should be removed from below foundations and paving, and replaced as needed with structural fill. Below paving areas it would be feasible to treat the existing fill material with Portland cement to reduce moisture content, followed by recompaction. Cement treatment, if used, should be planned for completion during dry site and weather conditions and should be included in project documents submitted to the City for review.

Perimeter Fill Areas

We observed existing fill in the areas of the south and east site perimeter. Anecdotal information from the property owner indicates that the neighboring properties to the east and south were owned in the past by a commercial landscape maintenance business. The neighboring landscape business reportedly disposed of waste from the landscape business on the adjacent properties, and the disposal areas extended onto the site. This anecdotal information is consistent with our observations. Along the south and east site perimeter, we observed existing surficial fill that typically consisted of topsoil, wood chips, and generally highly organic material. The material comprising the perimeter fill was also observed to contain substantial debris including plastic pots, irrigation system parts, landscaping equipment parts, car parts, metal debris, and similar materials. The existing fill at the site perimeter is described in further detail in Table 1 below, in interpretive subsurface exploration logs included in the Appendix, and on the "Site and Exploration Plan," Figure 2. The existing fill at

the site perimeter is not suitable for structural support or for reuse in compacted fill applications. Existing fill at the site perimeter should be removed from below planned structures and paving.

Vashon Lodgement Till

Twenty-five of the exploration pits encountered typically medium dense grading to very dense, silty sand with gravel, cobbles, and boulders interpreted as Vashon lodgement till. The lodgement till observed in our explorations graded from medium dense and brown in the weathered zone near the surface to gray to gray-brown at depth. Lodgement till was deposited at the base of an active continental glacier and was subsequently compacted by the weight of the overlying glacial ice. Lodgement till typically possesses high-strength and low-compressibility attributes that are favorable for support of foundations, floor slabs, and paving, with proper preparation. Lodgement till is silty and moisture-sensitive. In the presence of moisture contents above the optimum moisture content for compaction purposes, lodgement till can be easily disturbed by vehicles and earthwork equipment. Careful management of moisture-sensitive soils, as recommended in this report, will be needed to reduce the potential for disturbance of wet lodgement till soils and costs associated with repairing disturbed soils.

Vashon Advance Outwash

Five of the exploration pits encountered typically medium dense grading to very dense fine sand with variable but generally small components of silt and gravel interpreted as Vashon advance outwash. The advance outwash typically exhibited some degree of cementing expressed through excavation spoils remaining in relatively large and coherent pieces. Gradational stratification of the advance outwash was also common. Advance outwash was deposited by melt water streams from an advancing continental glacier, and was subsequently overridden and compacted by the weight of the glacial ice. Advance outwash sediments are suitable for support of structural loads and paving with proper preparation. Advance outwash contains some silt and is moisture sensitive. In the presence of moisture contents above the optimum moisture content for compaction purposes, advance outwash can be easily disturbed by vehicles and earthwork equipment. Careful management of moisture-sensitive soils, as recommended in this report, will be needed to reduce the potential for disturbance of wet soils and costs associated with repairing disturbed soils.

4.2 Hydrology

Ground water seepage was encountered in one exploration pit (EP-5) completed for this study and was interpreted to represent perched ground water. Perched ground water occurs where downward infiltration of surface water is impeded by low permeability soil layers, and the

ground water migrates laterally and generally down slope. Ground water conditions should be expected to vary in response to changes in season, weather, on- and off-site land use, and other factors.

4.3 Laboratory Test Results

Laboratory testing completed on selected soil samples is summarized below. Laboratory test data are included in the Appendix.

Table 1

Exploration Pit	Approximate Ground Surface Elevation (feet)	Depth to Bearing Soil (feet)	Approximate Bearing Soil Elevation[1] (feet)	Existing Moisture Content (percent)
EP-1	354	1.2	353	10.7 @ 3'*
				5.9 @ 5'
				11.0 @ 6.5'
EP-2	350	8	342	14.6 @ 5'*
				8.7 @ 10'
EP-3	354	6	348	11.6 @ 3'*
				11.3 @7'*
EP-4	354	1-5 (varies)**	349-353	NT
				NT
EP-5	357	.4	356	13.9 @ 8'*
EP-6	359	1	358	10.9 @3'
				12.4 @ 8'*
EP-7	368	2.5-5.5 (varies)**	362.5-365.5	8.4 @ 6'
				6.5 @ 8'
EP-8	372	.9	371	5.7 @ 3'
				6.5 @ 8'
EP-9	342	1	341	3.6 @ 3'
				5.9 @ 8'
EP-10	333	1	332	5.7 @ 3'
				5.0 @ 7'
EP-11	343	2	341	NT
EP-12	339	1	338	NT
EP-13	344	2	342	NT
EP-14	343	4	339	6.5 @ 4.5'
				7.3 @ 9'
EP-15	349	1-5 (varies)**	344-348	NT
EP-16	351	5	346	NT
EP-17	354	2	352	NT
EP-18	360	2	358	NT
EP-19	364	.5	363	NT

Exploration Pit	Approximate Ground Surface Elevation (feet)	Depth to Bearing Soil (feet)	Approximate Bearing Soil Elevation[1] (feet)	Existing Moisture Content (percent)
EP-20	366	.5	365	NT
EP-21	344	1-5 (varies)**	339-343	NT
EP-22	346	0-2 (varies)**	344-346	NT
EP-23	351	1-4 (varies)**	347-350	NT
EP-24	355	4.5	350	NT
EP-25	355	.5	354	NT
EP-26	340	1	339	NT
EP-27	342	1	341	NT
EP-28	344	1	343	NT

(1) Elevation Reference: Mead Gilman & Associates "Radke Boundary & Topo Survey 10/15/14."
* Samples more than 2 percent above optimum moisture content.
** Depth to bearing varies across exploration pit limits.
NT – Not Tested

For this project we completed two laboratory maximum density tests. The maximum dry density was determined using the modified Proctor test procedure (*American Society for Testing and Materials* [ASTM]:D 1557). The results are as follows in Table 2:

Table 2

Material	Maximum Dry Density (pcf)(1)	Optimum Moisture Content (percent)
Lodgement Till	122.0	9.0
Advance Outwash	120.0	12.0

(1) pcf = pounds per cubic foot.

4.4 Infiltration Feasibility

Most of the site is underlain at shallow depths by lodgement till sediments that are not a suitable infiltration receptor. Advance outwash was observed in five exploration pits at generally higher elevations on the east part of the site. Advance outwash is likely present at some depth below the western part of the site as well, at depths greater than our exploration pits completed to date. Advance outwash is often suitable for use as an infiltration receptor if it is unsaturated. Textural stratification, high density, and partial cementation of the advance outwash typically result in the use of pit drains or other similar strategies when an advance outwash receptor is used. Quantitative assessment of storm water infiltration potential is beyond the scope of this study.

II. GEOLOGIC HAZARDS AND MITIGATIONS

The following discussion of potential geologic hazards is based on the geologic, slope, and shallow ground water conditions as observed and discussed herein.

5.0 LANDSLIDE HAZARDS AND MITIGATIONS

It is our opinion that the risk of damage to the proposed structures by landsliding is low due to gentle slope inclinations and the presence of medium dense to dense soils observed at relatively shallow depths beneath the surface of the site. No detailed slope stability analyses were completed as part of this study, and none are warranted, in our opinion. Based on our review of the KMC, and the site topographic survey completed by Mead Gilman and Associates, it appears that the site may contain areas that meet the City definition for Moderate Landslide Hazard Areas. This report is intended to address the code-mandated geotechnical reporting requirements associated with Moderate Landslide Hazard Areas.

6.0 SEISMIC HAZARDS AND MITIGATIONS

Earthquakes occur regularly in the Puget Lowland. Most of these events are small and are not felt by people. However, large earthquakes do occur, as evidenced by the 2001, 6.8-magnitude event; the 1965, 6.5-magnitude event; and the 1949, 7.2-magnitude event. The 1949 earthquake appears to have been the largest in this region during recorded history and was centered in the Olympia area. Evaluation of earthquake return rates indicates that an earthquake of the magnitude between 5.5 and 6.0 is likely within a given 20-year period.

Generally, there are four types of potential geologic hazards associated with large seismic events: 1) surficial ground rupture, 2) seismically induced landslides, 3) liquefaction, and 4) ground motion. The potential for each of these hazards to adversely impact the proposed project is discussed below.

6.1 Surficial Ground Rupture

The nearest known fault traces to the project site are the South Whidbey Island-Lake Alice Fault located approximately 5 miles to the northeast, and the Seattle Fault located approximately 10 miles to the south. Recent studies of both the Seattle Fault and the South Whidbey Island-Lake Alice fault indicate that they are active faults capable of generating surface ruptures. The recognition of these faults is relatively new, and data pertaining to them are limited, with the studies still ongoing. According to the USGS studies, the recurrence

interval of movements along these faults is unknown, but is speculated to be on the order of 1,100 years. Due to the distance from the site to the known fault zones, the risk for damage to the project due to surface faulting is expected to be low, in our opinion.

6.2 Seismically Induced Landslides

It is our opinion that the risk of damage to the proposed structures by seismically induced landsliding is low due to gentle slope inclinations and the presence of medium dense to very dense soils observed at shallow depth beneath the surface of the site.

6.3 Liquefaction

Liquefaction is a temporary loss in soil shear strength that can occur when loose granular soils below the ground water table are exposed to cyclic accelerations, such as those that occur during earthquakes. The observed site soils were relatively dense and unsaturated and are not expected to be prone to liquefaction. A detailed liquefaction hazard analysis was not performed as part of this study, and none is warranted, in our opinion.

6.4 Seismic Site Class (2012 *International Building Code*)

In our opinion the subsurface conditions at the site are consistent with seismic Site Class C in accordance with the 2012 *International Building Code* (IBC), and the publication ASCE 7 referenced therein, the most recent version of which is ASCE 7-10.

6.5 Erosion Control

The existing soils on the site are considered moderately to highly prone to erosion when exposed to surface water in a sloping environment. Project plans should include implementation of temporary erosion controls in accordance with local standards of practice. Control methods should include limiting earthwork to seasonally drier periods, typically April 1 to October 31, use of perimeter silt fences, and straw mulch in exposed areas. Removal of existing vegetation should be limited to those areas that are required to construct the project, and new landscaping and vegetation with equivalent erosion mitigation potential should be established as soon as possible after grading is complete. During construction, surface water should be collected as close as possible to the source to minimize silt entrainment that could require treatment or detention prior to discharge. Timely implementation of permanent drainage control measures should also be a part of the project plans, and will help reduce erosion and generation of silty surface water on site.

III. DESIGN RECOMMENDATIONS

7.0 INTRODUCTION

Our exploration indicates that, from a geotechnical engineering standpoint, the proposed project is feasible provided the recommendations contained herein are properly followed. The bearing stratum is shallow and conventional shallow foundations should perform well with proper subgrade preparation. Two areas of existing fill depicted on Figure 2, and existing fill that is likely to exist around existing structures and buried utilities will require removal at the time of construction. Excavated existing fill from the central fill area would be reusable in compacted fill applications if any deleterious materials are removed, and if the moisture content is lowered through aeration or cement treatment prior to compaction.

8.0 SITE PREPARATION

Site preparation of building and paving areas should include removal of all grass, trees, brush, debris, and any other deleterious materials. All existing fill should be removed from below structural and paving areas. We recommend that any existing septic systems, wells, heating oil storage tanks, and other similar structures be decommissioned and removed in accordance with applicable regulations. Existing buildings, foundations, and any other buried structures should be removed from below foundation areas. Buried utilities should be removed from foundation areas, and should be abandoned in place or removed from below planned new paving. Any depressions below planned final grades caused by demolition activities should be backfilled with structural fill, as discussed under the “Structural Fill” section.

Existing topsoil should be stripped from structural areas. The actual observed in-place depth of topsoil and grass at the exploration locations is presented on the exploration logs in the Appendix. After stripping, remaining roots and stumps should be removed from structural areas. All soils disturbed by stripping and grubbing operations should be recompacted as described below for structural fill.

Once excavation to subgrade elevation is complete, the resulting surface should be proof-rolled with a loaded dump truck or other suitable equipment. Any soft, loose, yielding areas or areas exposing existing fill should be excavated to expose suitable bearing soils. The subgrade should then be compacted to at least 95 percent of the modified Proctor maximum dry density, as determined by the ASTM:D 1557 test procedure. Structural fill can then be placed to achieve desired grades, if needed.

8.1 Temporary Cut Slopes

In our opinion, stable construction slopes should be the responsibility of the contractor and should be determined during construction. For estimating purposes, however, temporary, unsupported cut slopes can be planned at 1.5H:1V (Horizontal:Vertical) in unsaturated weathered lodgement till and advance outwash, and at 1H:1V in dense, unweathered till and advance outwash. During site development planning, sufficient space should be allowed around excavations for construction of houses and the storm water vault while keeping temporary slopes inclined at the recommended angles on-site. If situations arise where temporary slopes at the recommended inclinations are not feasible, off-site easements or excavation shoring will be required. We should be allowed to offer situation–specific recommendations for excavation shoring, if shoring is added to the project.

The recommended temporary slope angles are for areas where ground water seepage is not present at the faces of the slopes, which may require temporary dewatering in the form of pumped sumps or other measures. If ground or surface water is present when the temporary excavation slopes are exposed, flatter slope angles may be required. As is typical with earthwork operations, some sloughing and raveling may occur, and cut slopes may have to be adjusted in the field. In addition, WISHA/OSHA regulations should be followed at all times.

8.2 Excavation Dewatering

Some excavations may encounter localized areas of perched ground water seepage. We anticipate that ground water seepage will be controllable with trenches and pumped sumps. We do not anticipate that pumped dewatering wells or similar measures will be required. If excavation is planned deeper than the subsurface explorations completed for this study, deeper subsurface explorations may be warranted. Deeper excavations have the potential to fully penetrate the lodgement till sediments and encounter advance outwash sediments. If saturated, advance outwash sediments would require a dewatering analysis and a dewatering system prior to excavation.

8.3 Site Disturbance

Most of the on-site soils contain fine-grained material, which makes them moisture-sensitive and subject to disturbance when wet. The contractor must use care during site preparation and excavation operations so that the underlying soils are not softened. If disturbance occurs, the softened soils should be removed and the area brought to grade with structural fill.

8.4 Winter Construction

The lodgement till sediments contain substantial silt and are considered highly moisture-sensitive. Approximately one-third of the samples we tested for moisture content were above optimum moisture content for compaction purposes. Advance outwash sediments are moisture sensitive to a lesser degree than lodgment till, but are still difficult to work during wet site and weather conditions. The samples were collected during October, and likely represent moisture conditions that are dryer than during other times of the year. Soils excavated on-site will require drying during favorable dry weather conditions to allow their reuse in structural fill applications. Care should be taken to seal all earthwork areas during mass grading at the end of each workday by grading all surfaces to drain and sealing them with a smooth-drum roller. Stockpiled soils that will be reused in structural fill applications should be covered whenever rain is possible.

If winter construction is expected, crushed rock fill could be used to provide construction staging areas. The stripped subgrade should be observed by the geotechnical engineer, and should then be covered with a geotextile fabric, such as Mirafi 500X or equivalent. Once the fabric is placed, we recommend using a crushed rock fill layer at least 10 inches thick in areas where construction equipment will be used.

9.0 STRUCTURAL FILL

We anticipate that cuts and fills of up to about 5 to 10 feet will be required to establish subgrades for roads and buildings. All references to structural fill in this report refer to subgrade preparation, fill type, placement, and compaction of materials, as discussed in this section. If a percentage of compaction is specified under another section of this report, the value given in that section should be used. For backfill of buried utilities in the right-of-way, the backfill should be placed and compacted in accordance with the City of Kirkland codes and standards.

After stripping, planned excavation, fill removal, and any required overexcavation have been performed to the satisfaction of the geotechnical engineer/engineering geologist, the surface of the exposed ground should be recompacted to a firm and unyielding condition. If the subgrade contains too much moisture, adequate recompaction may be difficult or impossible to obtain, and should probably not be attempted. In lieu of recompaction, the area to receive fill should be blanketed with washed rock or quarry spalls to act as a capillary break between the new fill and the wet subgrade. Where the exposed ground remains soft and further overexcavation is impractical, placement of an engineering stabilization fabric may be necessary to prevent contamination of the free-draining layer by silt migration from below.

After recompaction of the exposed ground is tested and approved, or a free-draining rock course is laid, structural fill may be placed to attain desired grades. Structural fill is defined as non-organic soil, acceptable to the geotechnical engineer, placed in maximum 8-inch loose lifts, with each lift being compacted to 95 percent of ASTM:D 1557. The top of the compacted fill should extend horizontally outward a minimum distance of 3 feet beyond the locations of the perimeter footings or roadway edges before sloping down at a maximum angle of 2H:1V.

The contractor should note that any proposed fill soils must be evaluated by Associated Earth Sciences, Inc. (AESI) prior to their use in fills. This would require that we have a sample of the material at least 72 hours in advance to perform a Proctor test and determine its field compaction standard. Two such tests on soils representative of the on-site native soils are included in this report.

Soils in which the amount of fine-grained material (smaller than the No. 200 sieve) is greater than approximately 5 percent (measured on the minus No. 4 sieve size) should be considered moisture-sensitive. The lodgement till and advance outwash soils are estimated to contain substantially more than 5 percent fine-grained material. Use of moisture-sensitive soil in structural fills should be limited to favorable dry weather and dry subgrade conditions. Construction equipment traversing the site when the soils are wet can cause considerable disturbance.

Existing fill will be excavated from the site in two areas. Excavated existing fill from the vicinity of the central part of the site will be suitable for reuse in compacted fill applications if any deleterious materials such as organic debris and demolition waste are removed, and if the material is either aerated or cement treated to reduce moisture content. If cement treatment is planned, we recommend that it be included in project documents submitted for permit review.

Existing fill from the site perimeter on the south and east sides was observed to be composed primarily of organic material and contained substantial debris. Existing fill removed from the south and east site perimeter is not recommended for reuse in compacted fill applications.

If fill is placed during wet weather or if proper compaction cannot be obtained, a select, import material consisting of a clean, free-draining gravel and/or sand should be used. Free-draining fill consists of non-organic soil, with the amount of fine-grained material limited to 5 percent by weight when measured on the minus No. 4 sieve fraction, and at least 25 percent retained on the No. 4 sieve.

Laboratory testing completed for this study measured moisture levels in numerous soil samples collected from the exploration pits. Approximately one-third of the tested samples were above optimum moisture content for compaction purposes. Samples were collected during October,

typically the seasonally driest time of year, and wetter conditions may be present at the time of construction. In order to reuse excavated on-site soils in structural fill applications, it will be necessary to moisture-condition wet site soils by aeration and drying during favorable dry weather conditions. Alternatives to drying site soils include using imported granular soils suitable for use in structural fill, or treating wet soils with Portland cement.

10.0 FOUNDATIONS

Spread footings may be used for building support when they are founded on approved structural fill placed as described above, or on undisturbed natural soils that are prepared as recommended in this report. Based on our observations, suitable foundation bearing soils are expected approximately 1 foot below the existing ground surface in most places.

For residential structures, footings may be designed for an allowable foundation soil bearing pressure of 3,000 pounds per square foot (psf), including both dead and live loads. An increase of one-third may be used for short-term wind or seismic loading. Perimeter footings should be buried at least 18 inches into the surrounding soil for frost protection. However, all foundations must penetrate to the prescribed bearing strata, and no foundations should be constructed in or above loose, organic, or existing fill soils.

Anticipated settlement of footings founded as recommended should be on the order of ¾ inch or less, with differential settlement of ½ inch or less. However, disturbed material not removed from footing trenches prior to footing placement could result in increased settlements. All footing areas should be inspected by AESI prior to placing concrete to verify that the foundation subgrades are undisturbed and construction conforms to the recommendations contained in this report. Such inspections may be required by City of Kirkland. Perimeter footing drains should be provided as discussed under the “Drainage Considerations” section of this report.

It should be noted that the area bounded by lines extending downward at 1H:1V from any footing must not intersect another footing or intersect a filled area that has not been compacted to at least 95 percent of ASTM:D 1557. In addition, a 1.5H:1V line extending down and away from any footing must not daylight because sloughing or raveling may eventually undermine the footing. Thus, footings should not be placed near the edges of steps or cuts in the bearing soils.

11.0 FLOOR SUPPORT

If crawl-space floors are used, an impervious moisture barrier should be provided above the soil surface within the crawl space. Slab-on-grade floors may be used over medium dense to very dense native soils, or over structural fill placed as recommended in the "Site Preparation" and "Structural Fill" sections of this report. Slab-on-grade floors should be cast atop a minimum of 4 inches of washed pea gravel or washed crushed "chip" rock with less than 3 percent passing the U.S. No. 200 sieve to act as a capillary break. The floors should also be protected from dampness by covering the capillary break layer with an impervious moisture barrier at least 10 mils in thickness.

12.0 DRAINAGE CONSIDERATIONS

All footings, basement walls, and retaining walls should be provided with a drain at the footing elevation. Drains should consist of rigid, perforated, polyvinyl chloride (PVC) pipe surrounded by washed pea gravel. The level of the perforations in the pipe should be set downward and at the bottom of the footing at all locations, and the drain collectors should be constructed with sufficient gradient to allow gravity discharge away from the buildings. In addition, all foundation walls taller than 3 feet should be lined with a minimum, 12-inch-thick, washed gravel blanket drain provided to within 1 foot of finish grade that ties into the footing drain. A prefabricated drainage mat is not an acceptable alternative to the gravel blanket drain unless the entire excavation backfill consists of free-draining structural fill. Roof and surface runoff should not discharge into the footing drain system, but should be handled by a separate, rigid, tightline drain.

In planning, exterior grades adjacent to foundations should be sloped downward away from the structures to achieve surface drainage. These recommendations apply to conventional shallow foundation walls and landscape walls less than about 4 feet tall. One should refer to the following section for walls up to 10 feet tall.

13.0 CAST–IN–PLACE RETAINING WALLS AND BASEMENT WALLS

All backfill behind foundation walls or around foundation units should be placed as per our recommendations for structural fill and as described in this section of the report. Horizontally backfilled walls that are free to yield laterally at least 0.1 percent of their height may be designed using an equivalent fluid equal to 35 pounds per cubic foot (pcf). Fully restrained, horizontally backfilled, rigid walls that cannot yield should be designed for an equivalent fluid of 50 pcf. Walls with sloping backfill up to a maximum gradient of 2H:1V should be designed using an equivalent fluid of 55 pcf for yielding conditions or 75 pcf for fully restrained

conditions. If parking areas are adjacent to walls, a surcharge equivalent to 2 feet of soil should be added to the wall height in determining lateral design forces.

As required by the 2012 IBC, retaining wall design should include a seismic surcharge pressure in addition to the equivalent fluid pressures presented above. Considering the site soils and the recommended wall backfill materials, we recommend a seismic surcharge pressure of 5H and 10H psf, where H is the wall height in feet for the "active" and "at-rest" loading conditions, respectively. The seismic surcharge should be modeled as a rectangular distribution with the resultant applied at the midpoint of the walls.

The lateral pressures presented above are based on the conditions of a uniform backfill consisting of excavated on-site soils, or imported structural fill compacted to 90 percent of ASTM:D 1557. A higher degree of compaction is not recommended, as this will increase the pressure acting on the walls. A lower compaction may result in settlement of the slab-on-grade or other structures supported above the walls. Thus, the compaction level is critical and must be tested by our firm during placement. Surcharges from adjacent footings or heavy construction equipment must be added to the above values. Perimeter footing drains should be provided for all retaining walls, as discussed under the "Drainage Considerations" section of this report.

It is imperative that proper drainage be provided so that hydrostatic pressures do not develop against the walls. This would involve installation of a minimum 1-foot-wide blanket drain to within 1 foot of finish grade for the full wall height using imported, washed gravel against the walls. If situations exist where a footing drain is not feasible for a foundation wall or retaining wall, the wall should be designed for saturated lateral earth pressures and a hydrostatic surcharge. We should be allowed to offer situation-specific recommendations if this situation arises. The use of drainage improvements as recommended here does not alleviate the need for waterproofing where finished spaces are planned on the interior side of basement walls. Backfilled walls with finished interior space should be waterproofed in accordance with recommendations of the building designer.

14.0 PASSIVE RESISTANCE AND FRICTION FACTOR

Foundation design may assume a base friction coefficient of 0.30 for concrete footings cast against native sediments or structural fill as described in this report. Passive resistance against foundation elements backfilled with structural fill as described in this report may be assumed to be 250 pcf, expressed as an equivalent fluid. These are allowable values and include a factor of safety.

15.0 PAVEMENT RECOMMENDATIONS

Paving for the project is expected to include access road and driveway areas and is expected to be supported by lodgement till, advance outwash, and structural fill. The minimum City of Kirkland pavement section for residential access is feasible. Based on City of Kirkland plan sheet CK-R.09, the recommended pavement consists of 2 inches of Class ½-inch asphalt concrete pavement (ACP) underlain by 4 inches of asphalt treated base (ATB), underlain by 4 inches of crushed surfacing base course (CSBC) that meets Washington State Department of Transportation (WSDOT) Standard Specification 9-03.9(3). Asphalt treated base could be used for construction access followed by repair of any construction damage and final surfacing. All referenced thicknesses are in-place compacted thicknesses. All paving materials should be placed and compacted in accordance with City of Kirkland standard specifications and details.

All structural fill and all native subgrades less than 4 feet below finished grade for a planned roadway should be compacted to 95 percent of the modified Proctor maximum dry density as determined by ASTM:D-1557. Prior to structural fill placement or to placement of base course materials over native subgrades, the area should be proof-rolled under the observation of AESI with a loaded dump truck or other suitable equipment to identify any soft or yielding areas. Any soft or yielding areas should be repaired prior to continuing work.

For private driveways and parking areas not subject to City requirements for public streets, lighter pavement sections could be used. For passenger car driveway and parking areas, we recommend a paving section consisting of 2.5 inches of ACP above 4 inches of crushed surfacing top course. For areas that will be used by heavy traffic, such as delivery trucks and garbage trucks, we recommend a paving section consisting of 4 inches of ACP above 2 inches of crushed surfacing top course above 4 inches of CSBC.

16.0 DETENTION STRUCTURE CONSIDERATIONS

The detention vault foundations are expected to be supported entirely on unweathered lodgement till or advance outwash sediments, and may be designed using an allowable foundation soil bearing pressure of 5,000 psf. The detention vault may be designed to resist at-rest lateral earth pressures as described in Section 13.0 of this report assuming drained conditions. If it is not possible to construct the vault with a foundation drain, hydrostatic surcharges must be incorporated and a lateral earth pressure of 90 pcf (equivalent fluid) should be assumed. If paved surfaces are to be constructed above the backfill soils, a uniform traffic surcharge of 70 pcf should be added.

17.0 PROJECT DESIGN AND CONSTRUCTION MONITORING

This report is based on previously referenced plans that were current at the time it was written. We are available to provide additional geotechnical consultation as the project design develops and possibly changes from that upon which this report is based. We recommend that AESI perform a geotechnical review of the plans prior to construction. In this way, our earthwork and foundation recommendations may be properly interpreted and implemented in the design.

We are also available to provide geotechnical engineering and monitoring services during construction. The integrity of the foundations for buildings and of retaining walls depends on proper site preparation and construction procedures. In addition, engineering decisions may have to be made in the field in the event that variations in subsurface conditions become apparent. Construction monitoring services are not part of the current scope of work. If these services are desired, please let us know, and we will prepare a cost proposal.

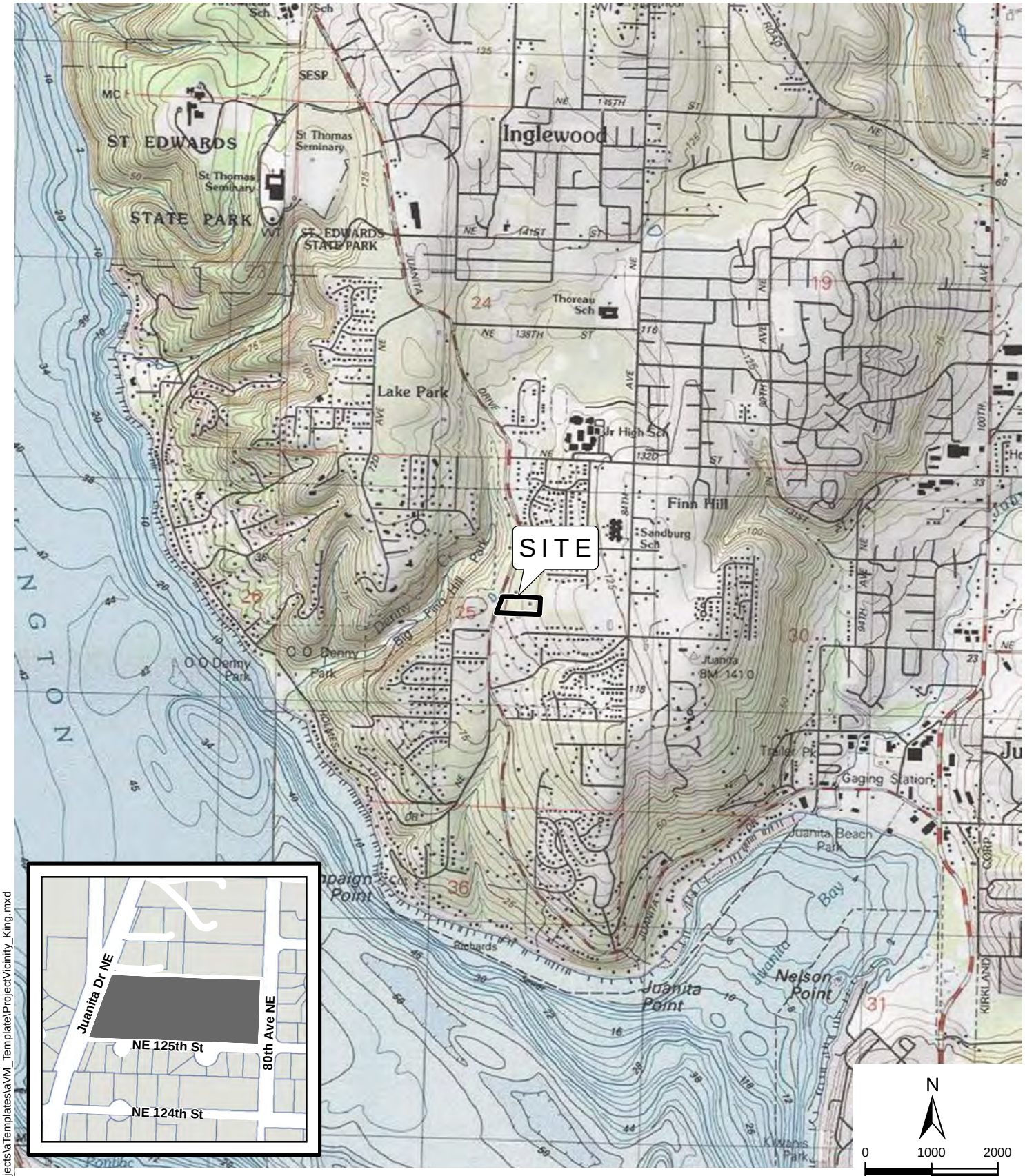
We have enjoyed working with you on this study and are confident that these recommendations will aid in the successful completion of your project. If you should have any questions or require further assistance, please do not hesitate to call.

Sincerely,
ASSOCIATED EARTH SCIENCES, INC.
Kirkland, Washington

Bruce W. Guenzler, L.E.G.
Senior Project Geologist

Kurt D. Merriman, P.E.
Senior Principal Engineer

Attachments:
Figure 1: Vicinity Map
Figure 2: Site and Exploration Plan
Appendix: Exploration Logs
Laboratory Testing Results



REFERENCE: USGS, KING CO

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VICINITY MAP

RADKE SHORT PLAT
KIRKLAND, WASHINGTON

FIGURE 1

DATE 10/14

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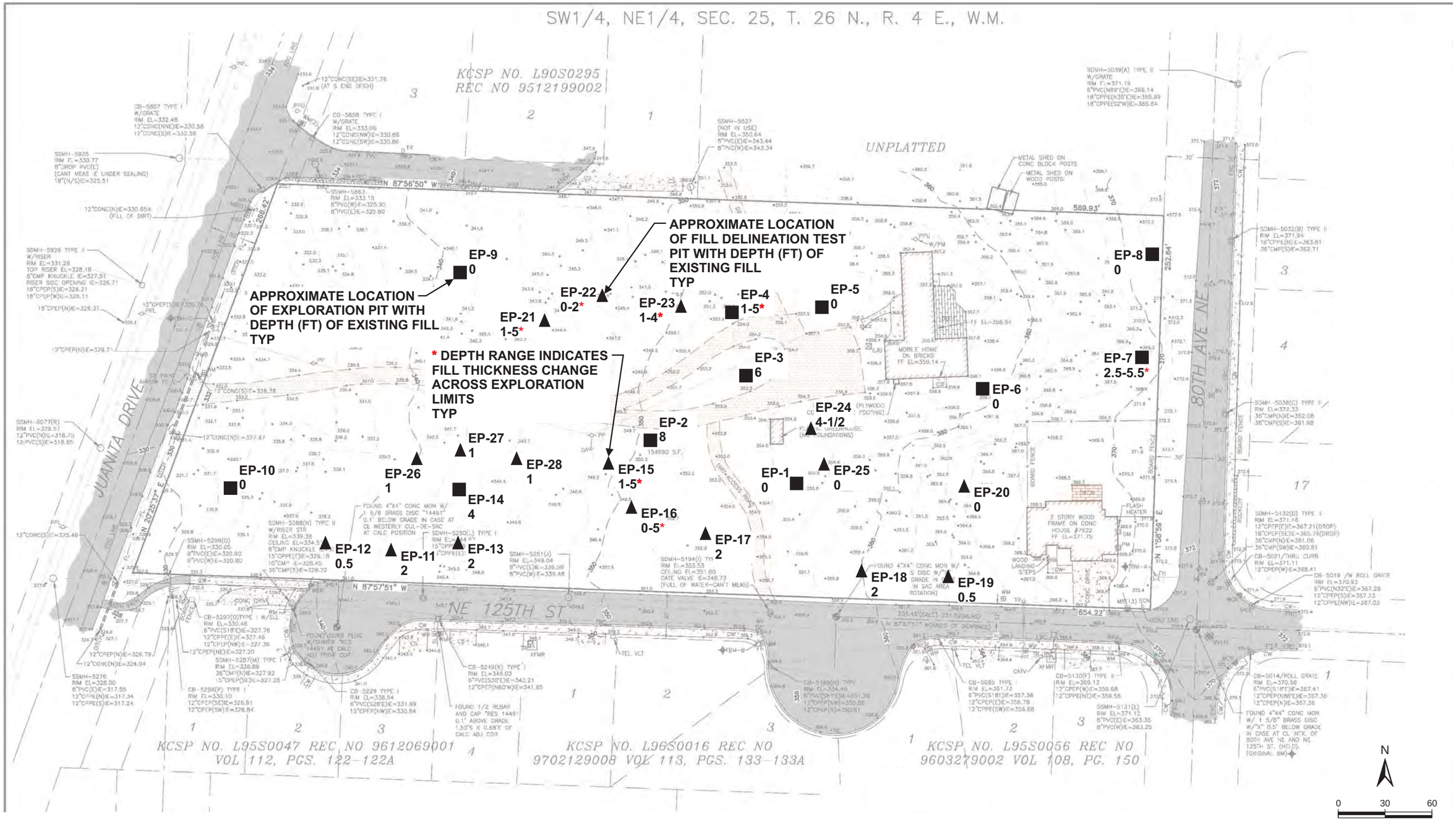

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SITE AND EXPLORATION PLAN

RADKE SHORT PLAT
KING COUNTY, WASHINGTON

FIGURE 2
DATE 10/14
PROJ. NO. KE140535A

140565 Radke Short Plat\140565 Site and Exploration Plan.cdr