



MITIGATION PLAN

May 19, 2021



Leadbetter Road Subdivision Stream Crossing *Camas, Washington*

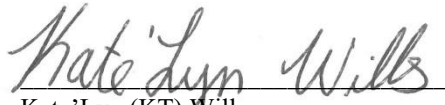
Prepared for
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SIGNATURE PAGE

The information in this report was compiled and prepared under the supervision and direction of the undersigned.

A handwritten signature in cursive script that reads "Kate'Lyn Wills". The signature is written in dark ink and is positioned above a horizontal line.

Kate'Lyn (KT) Wills
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INTRODUCTION

Ecological Land Services, Inc. (ELS) has completed this mitigation plan on behalf of the applicant, Toll Bros., Inc. for the development of a walking trail and stream crossing. The site consists of a portion of Clark County Tax Parcel 177906000 located at 715 SE Leadbetter Road in Camas, Washington, within a portion of Section 35, Township 2 North, and Range 3 East of the Willamette Meridian (Figure 1). A critical areas report and wetland buffer modification plan was completed in November 2020 for CJ Dens Land Company, the property owner, as a part of a larger subdivision (Leadbetter Subdivision) project which also included Clark County Tax Parcels 177905000, 178172000, and 178236000. The Leadbetter Subdivision project proposal is currently under review by the City of Camas (City).

PROJECT DESCRIPTION

Landscape Position

The Washington State Department of Ecology's Water Quality Atlas maps the project area within lower portion of Watershed Resource Inventory Area (WRIA) 28 Salmon – Washougal and is within the 12-digit Hydrologic Unit Code (HUC): 170800010605, within the Lacamas Creek-subwatershed. The subject stream flows directly into Lacamas Lake just south of the project area.

Site Description

The adjacent property to the east consists of the residential Deerhaven Subdivision. SE Leadbetter Road forms the southern property boundary with Lacamas Lake just to the south. The remaining adjacent properties to the north and west consist of the parcels listed in the Introduction that are included in the larger subdivision project. The project area consists of the southeastern most portion of parcel 177906000, the roadside ditch along the northern edge of SE Leadbetter Road, and the area in the immediate vicinity of an existing culvert under SE Leadbetter Road (Figure 2). The topography of the project area generally slopes from the southeast to the northwest. A small seasonal stream (Type Ns) that originates offsite to the northeast, flows southwest through the southeastern portion of the project area and into the roadside ditch along the northern edge of SE Leadbetter Road where it flows northwest for approximately 500 feet before turning south and flowing through an existing 18-inch diameter cement culvert under SE Leadbetter Road and into Lacamas Lake (Figure 2). The riparian buffer in the southeastern portion of the project area was dominated by big leaf maple (*Acer macrophyllum*), salmonberry (*Rubus spectabilis*), western brackenfern (*Pteridium aquilinum*), western swordfern (*Polystichum munitum*), reed canarygrass (*Phalaris arundinacea*), English holly (*Ilex aquifolium*), trailing blackberry (*Rubus ursinus*), and Himalayan blackberry (*Rubus armeniacus*).

Project Description

The applicant is proposing to construct a six-foot wide gravel walking path that will connect from the future Leadbetter Subdivision to the existing Deerhaven subdivision to the east. The walking path will cross the small unnamed Type Ns stream in the southeastern portion of the project area (Figure 3). The stream crossing will consist of the installation of a 30-inch diameter plastic culvert that is approximately 25 feet long. The culvert will be bedded and backfilled with typical stream grave. Fill slope armoring of quarry spalls or rip rap will be placed at the inlet and outlet. The trail surface will consist of 5/8-inch minus crushed rock (Figure 4). Additionally, the existing 18-inch diameter cement culvert that conveys the stream under SE Leadbetter Road from the roadside ditch

to Lacamas Lake will be replaced with an upsized culvert based on final hydraulic analysis. Size and material of the culvert will be determined during final engineering design by AKS Engineering. No native trees within the stream buffer will be removed to accommodate project needs. Further impacts will be avoided and minimized by the use of best management practices (BMPs) like applying native grass seed to disturbed areas not being graveled when construction is complete and locating staging areas within uplands outside of critical areas or buffers. No equipment refueling will take place within 150 feet of the stream or Lacamas Lake. Construction is anticipated to start upon receipt of permits and during the summer when the stream is dry. Construction of the walking path and stream crossing will impact approximately 0.007 acres (310 sq. ft.) of stream channel and stream buffer. Mitigation for impacts will be satisfied by enhancing the remaining stream buffer onsite (0.14 ac./6,203 sq. ft.) via invasive species control and by planting native trees and shrubs. Additionally, the enhancement area will be protected in perpetuity by recording a deed restriction with the County as well as protected via riparian buffer signs meeting municipal code requirements posted on both sides of the walking path within the stream buffer stream crossing. Besides City permitting, a Hydraulic Permit Approval (HPA) will be sought for both culverts.

Existing Critical Areas

Unnamed Stream

A small seasonal stream (Type Ns) that originates offsite to the northeast, flows through the southeastern portion project area and into a roadside ditch along the north side of SE Leadbetter Road where it flows northwest for approximately 500 feet before turning south and flowing through an existing 18-inch cement culvert under SE Leadbetter Road and into Lacamas Lake (Figure 2). According to CCO 16.61.040(D), Type Ns streams have a 25-foot buffer. This stream was labeled “Stream 3” in the Critical Areas Report & Buffer Modification Plan for Leadbetter Road (ELS 2020).

Lacamas Lake

Lacamas Lake is located just south of SE Leadbetter Road. Lacamas Lake is a Type S Water of the State and according to CCO 16.61.040(D) the standard riparian habitat buffer width is 150 feet however, the buffer is entirely functionally isolated from the site by SE Leadbetter Road. As a Type S Water, Lacamas Lake and is subject to the regulations of the *Camas Shoreline Master Program* (SMP 2015).

AVOIDANCE AND MINIMIZATION OF IMPACTS

The preferred mitigation sequencing of first avoidance, then minimization, and finally compensation for unavoidable impacts was taken into consideration during the project design process however, completely avoiding impacts to the unnamed stream was not possible as the walking path is required by the City as a portion of the Leadbetter Subdivision proposal. The stream bisects the only location possible for the walking path to connect to the Deerhaven Subdivision. The concept of adding a sidewalk along SE Leadbetter Road was considered to avoid all stream impacts but ultimately was not feasible due to right-of-way (ROW) restrictions. Impacts were minimized by sizing the walking path as small as practicable for the amount of expected foot-traffic, six feet wide. No native trees within the stream buffer will be removed to accommodate project needs. Further impacts will be avoided and minimized by the use of best management practices (BMPs) like applying native grass seed to disturbed areas not being graveled when

construction is complete and locating staging areas within uplands outside of critical areas or buffers. No equipment refueling will take place within 150 feet of the stream or Lacamas Lake. Construction is anticipated to start upon receipt of permits and during the summer when the stream is dry. Construction of the walking path and stream crossing will impact approximately 0.007 acres (310 sq. ft.) of stream channel and stream buffer. Mitigation for impacts will be satisfied by enhancing the remaining stream buffer onsite (0.14 ac./6,203 sq. ft.) via invasive species control and by planting native trees and shrubs. Additionally, the enhancement area will be protected in perpetuity by recording a deed restriction with the County as well as protected via riparian buffer signs meeting municipal code requirements posted on both sides of the walking path within the stream buffer stream crossing. Conditions in local and state permits will be followed.

MITIGATION PLAN

Construction of the walking path and stream crossing will impact approximately 0.007 acres (310 sq. ft.) of stream channel and stream buffer. Mitigation for impacts will be satisfied by enhancing the remaining stream buffer onsite (0.14 ac./6,203 sq. ft.) via invasive species control and by planting native trees and shrubs to provide greater protection of the stream onsite. This added mitigation will also adequately compensate for any nominal impacts accrued during the replacement of the culvert under SE Leadbetter Road. Actual planting locations will be determined in the field, with consideration to the listed spacing and density to produce the most natural appearance as possible. The enhancement plantings will provide screening, forage, and refuge opportunities, as well as creating a densely vegetated natural barrier between any future development and the stream. Additionally, the enhancement area will be protected in perpetuity by recording a deed restriction with the County as well as protected via riparian buffer signs meeting municipal code requirements posted on both sides of the stream crossing. Table 1 below summarizes the proposed impacts due to the walking path and stream crossing and the proposed compensatory mitigation.

Table 1. Summary of Impacts and Mitigation.

Critical Area	Impact Type	Impact Area	Mitigation Ratio	Proposed Mitigation Area	Mitigation Activities
Type Ns Stream and Buffer	Permanent/Walking Path	0.007 acres (310 sq. ft.)	1:20	0.14 ac./6,203 sq. ft.)	<ul style="list-style-type: none"> • Removal of invasive species • Planting native trees and shrubs • Protection via deed restriction and signage

The goal of the enhanced buffer is to provide an overall higher ecological lift than the existing conditions allow by improving habitat quality and diversity resulting in no net loss of ecological function. To accomplish this goal, the following objectives and performance standards are appropriate to ensure the success of the buffer enhancement area.

Objectives and Performance Standards

Vegetation

Objective 1. Enhance approximately 0.14 acres of buffer by removing of invasive species including, but not limited to, reed canarygrass, English holly, evergreen blackberry (Rubus laciniatus) and Himalayan blackberry.

Performance Standard 1a: Remove existing invasive species in buffer enhancement area. Document the removal of invasive plants within the enhancement areas in the as-built report.

Performance Standard 1b: In all monitoring years, invasive plant species will not exceed 10 percent aerial cover within the buffer enhancement areas.

Objective 2. Enhance approximately 0.14 acres of the existing buffer plant community by planting native trees and shrubs within the buffer.

Performance Standard 2a: Native trees and shrubs will be installed at spacing intervals of 10-foot and 6-foot centers, respectively. Document amount and types of species installed in the as-built report.

Performance Standard 2b: In Year 1, planted species will achieve 100 percent survival. If dead plants are replaced, this performance standard will be met. Document percent survival in the monitoring report.

Performance Standard 2c: In Year 2, planted species will achieve 85 percent survival. If dead plants are replaced, this performance standard will be met. Document percent survival in the monitoring report.

Performance Standard 2d: In Year 3, planted species will achieve 70 percent survival. If dead plants are replaced, this performance standard will be met. Document percent survival in the monitoring report.

Protection

Objective 3. Provide long-term protection for the enhancement area.

Performance Standard 3a: Record a deed restriction with Clark County protecting the enhancement area in perpetuity. This performance standard will be met when the deed restriction is recorded at the County and a copy is provided in the as-built report.

Performance Standard 3b: Riparian buffer signs meeting municipal code requirements will be posted on both sides of the walking path within the stream buffer and will remain in legible condition. They will be replaced if they become missing or illegible. This performance standard will be met when signs are reported to be in place and legible in the final monitoring report.

Planting Plan*Site Preparations*

1. Stake or flag the enhancement area boundaries.
2. Install silt fencing at the edge of disturbance.
3. Investigate for and remove invasive species by spraying or by hand.
4. Install native plantings according to plant specifications.
5. Install mulch.
6. Install signage.
7. Remove silt fencing once bare area has been stabilized.

Planting Implementation

1. Plant the specified trees and shrubs in the fall (October-November) or early spring (February-March) at the intervals listed in Table 2. Space the plants somewhat irregularly and in groups to create heterogeneity in the density and appearance of the enhancement areas. Plant the 1-gallon potted stock with a tree shovel or comparable tool.
2. Removed the plant from the pot and work the roots free from majority of potted soil.
3. Place the potted plant species in the planting holes so that their roots can extend down entirely and do not bend upward or circle inside the hole (no “J” or “U” roots).
4. Position the root crowns so that they are at or slightly above the level of the surrounding soil.
5. Compact the soil around the planted species to eliminate air spaces.
6. Irrigate all newly installed plants as site and weather conditions warrant.

Gallon Stock

1. 1-gallon potted species will be purchased from a native plant nursery.
2. 1-gallon potted plants will be a minimum size of 18- to 36-inches tall.
3. 1-gallon potted stock will be kept cool and moist prior to being planted.
4. 1-gallon potted stock will have well-developed roots and sturdy stems, with an appropriate root-to-shoot ratio.
5. Unplanted potted stock will be properly stored at the end of each day.
6. The planter will be responsible for inspecting potted plant stock prior to and during planting, culling unacceptable plant materials.

Bare-Root Stock

1. Bare-root species will be purchased from a native plant nursery.
2. Plants will be protected until installation by being refrigerated, covered with damp burlap, and placed in moist sand, peat, or other method of keeping the roots cool and moist.
3. Plants will have well-developed roots and sturdy stems, with an appropriate root-to-shoot ratio.
4. No damaged or desiccated roots or diseased plants will be accepted. In particular, bare-root trees must not have damaged or “J-rooted” taproots.
5. All bare-root stock must be kept cool and moist prior to installation.
6. Unused bare-root stock must be properly stored at the end of each planting day to prevent the roots from desiccating.
7. The planter will be responsible for inspecting the bare root stock prior to and during planting; unacceptable plant materials will not be planted.

The following table summarizes the plant species, spacing, and quantities for the buffer enhancement area (Table 2).

Table 2. Plant Specifications.

Common Name	Scientific Name	Indicator Status	Spacing (on-center)	Stock	Quantity
Trees					
Red alder	<i>Alnus rubra</i>	FAC	10 feet	Gallon	8
Big leaf maple	<i>Acer macrophyllum</i>	FACU	10 feet	Gallon	8

Common Name	Scientific Name	Indicator Status	Spacing (on-center)	Stock	Quantity
Total					16
Shrubs					
Nootka rose	<i>Rosa nutkana</i>	FAC	6 feet	Gallon or Bare-root	21
Snowberry	<i>Symphoricarpos albus</i>	FACU	6 feet	Gallon or Bare-root	21
Total					42

Monitoring, Maintenance, and Contingency Measures

Monitoring and maintenance of the enhancement area will occur for a 3-year period with annual monitoring and reporting occurring in all years. Monitoring will be conducted by the applicant unless otherwise assigned. Each year live plants will be counted to determine the survival rate of installed species. Plant counts and pictures will be included in the monitoring letter. Invasive species will also be assessed to ensure they do not cover more than 10 percent of the enhancement area. Additionally, at least three photo stations will be identified to photo-document vegetation establishment. Photo station location and the direction in which the picture is taken will also be recorded on the as-built.

The goal of monitoring will be to determine if the previously stated performance standards are met. Monitoring reports will be submitted to the City of Camas by December 31st of each monitoring year. At minimum, the following items will be included in the report:

- Location map and as-built drawing, including any changes.
- Historic description of project, including dates of plant installation, current year of monitoring, and remedial actions taken (if any).
- Description of monitoring methods.
- Documentation of vegetative performance standards and overall development of plant communities.
- Assessment of non-native, invasive plant species and recommendations for management.
- Photographs from established photopoints.
- Observations of wildlife, including, amphibians, invertebrates, reptiles, birds, and mammals. If photographs are taken, they will be included.
- Summary of maintenance and contingency measures completed for the past year and proposed for the next year.

Vegetation

Monitoring will occur annually during the growing season, preferably during the same two-week period to better compare data. The following information will be gathered within the established monitoring plots:

- Percent survival of woody species in Years 1, 2, and 3
- Percent cover of non-native, invasive species in all monitoring years
- General health of plants in the monitoring plot, noting specific problems and potential causes.
- Photographic documentation of vegetative changes over time from established photopoints

Overall vegetative conditions outside monitoring plots will also be observed and discussed in the monitoring reports.

Maintenance

Maintenance will occur during the growing season and will include the following:

- Irrigating planting areas every other week or as needed in the dry season for the first three years. Taper watering in Years 2 and 3, watering approximately every 3 to 4 weeks in the dry season, or as needed.
- Remove competing herbaceous species at least three times yearly within a 3-foot radius of planted trees and shrubs and re-apply mulch as needed.
- Weed-eat, spray, or mow invasive species as needed during the growing season.
- Replace dead or failed plants as described for the original installation to meet the minimum performance standards.

Contingency Plan

If the performance criteria are not met, steps will be taken to correct the situation in a timely manner. The following steps will be implemented when an area is identified as failing or potentially failing:

- Identify the cause(s) of the failure or potential failure.
- Identify the extent of the failure or potential failure.
- Implement corrective actions such as irrigating, fertilizing, and replanting.
- Document the activities and include this data in the monitoring reports.
- If a routine corrective action will not correct the problem, immediately consult with the appropriate agencies.
- Evaluate recommendations from resource agency staff and implement recommendations in a timely manner.

Funding for corrective actions will be the responsibility of the applicant.

LIMITATIONS

ELS bases this report's determinations on standard scientific methodology and best professional judgment. In our opinion, local, state, and federal regulatory agencies should agree with our determinations. However, the information contained in this report should be considered preliminary and used at your own risk until it has been approved in writing by the appropriate regulatory agencies. ELS is not responsible for the impacts of any changes in environmental standards, practices, or regulations after the date of this report.

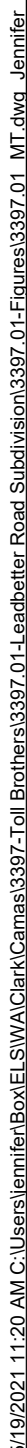
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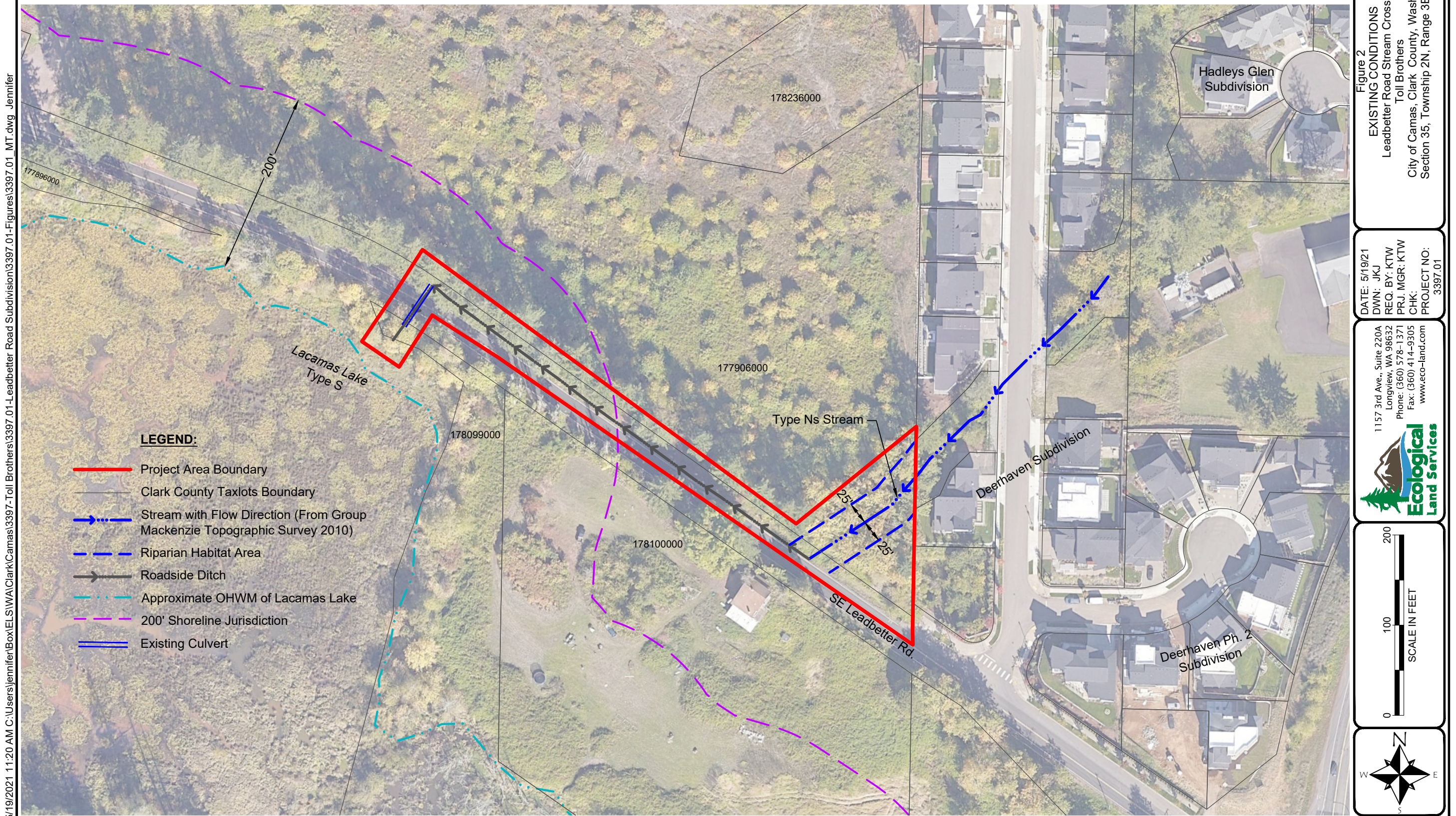
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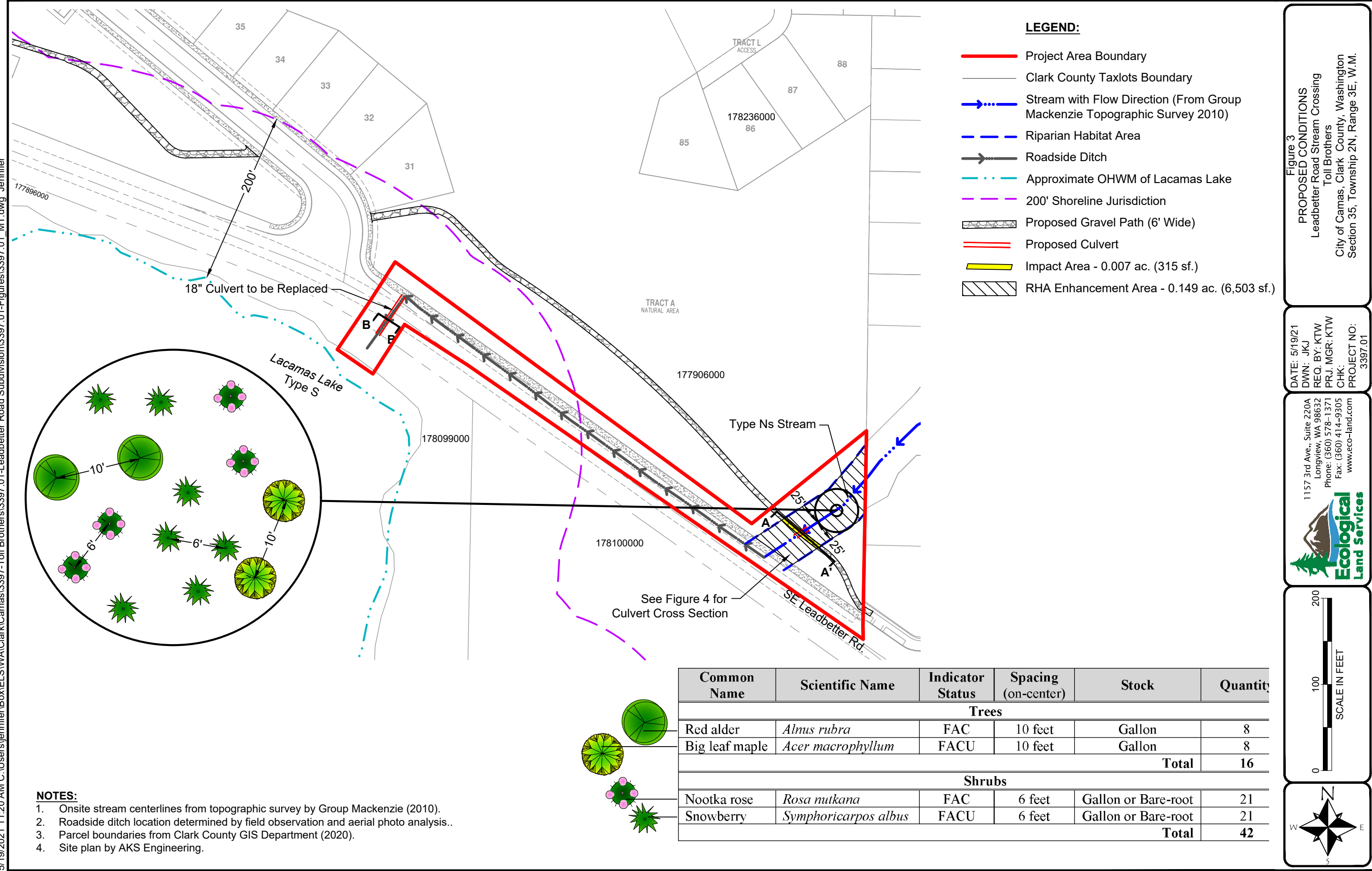
FIGURES



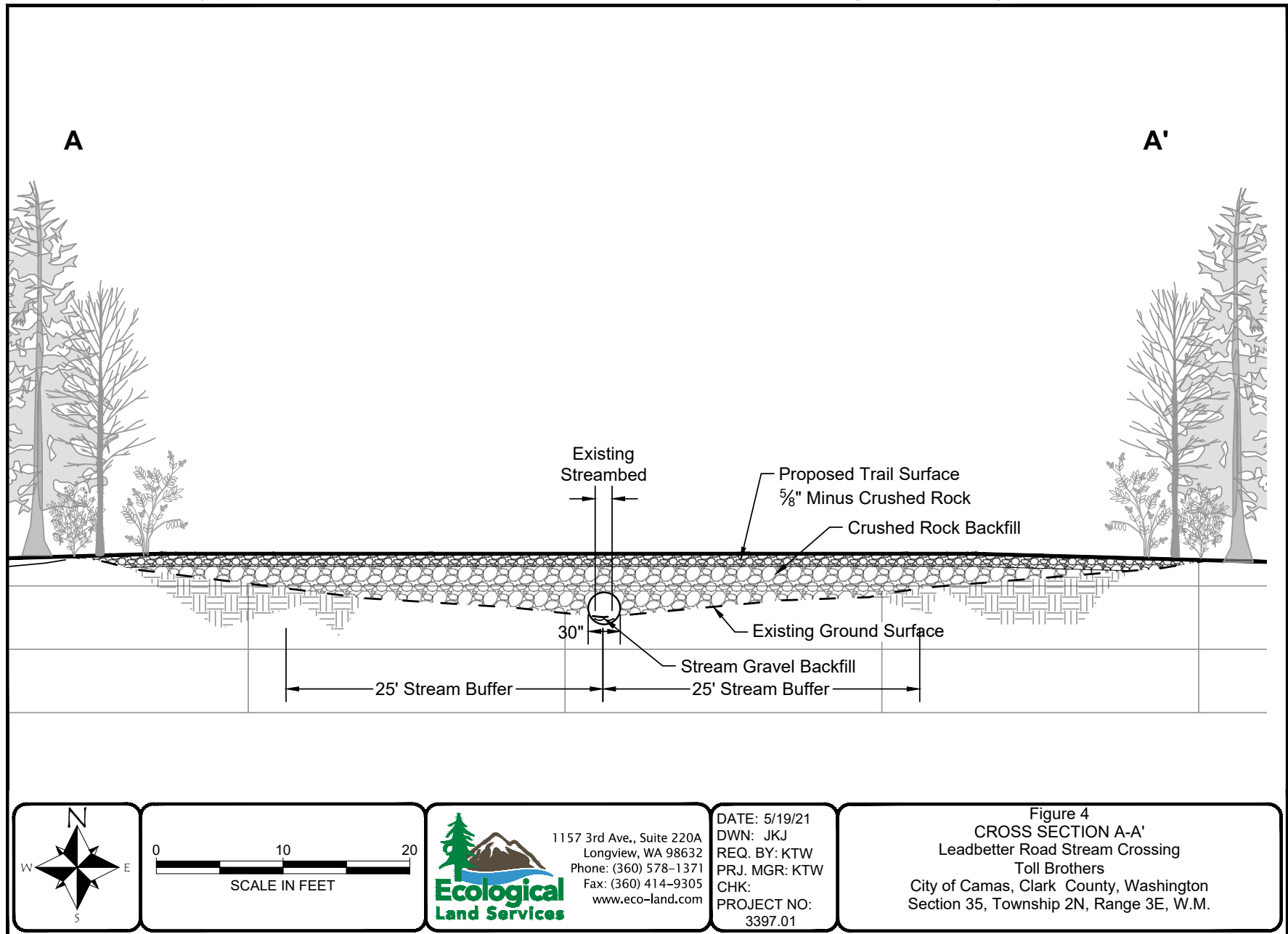
NOTES:

1. Aerial photograph (9/24/2018) provided by Google Earth™.
2. Onsite stream centerlines from topographic survey by Group Mackenzie (2010).
3. Roadside ditch location determined by field observation and aerial photo analysis..
4. Parcel boundaries from Clark County GIS Department (2020).





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