Project Description

The proposed Project would expand Astronics Advanced Electronic Systems' (AES) operations by adding a second building on the property using the adjacent Astronics-owned parcels north of their existing facility. Astronics currently has additional offices in two locations, one in Kirkland and the other in Redmond, making inter-departmental communication less productive and economical. Based on the historical and forecasted growth of the business Astronics will need to expand beyond the 3 facilities within 2 to 3 years in order to provide services to their existing and new customer base. Our best solution would be to consolidate our work force on the property in Kirkland with two adjacent buildings.

The King County Tax Parcel Numbers for the parcels in the assemblage are 2226059042 (Parcel A), 2226059053 (Parcel B), and 2226059080 (Parcel C), hereinafter referred to as the "Project site". The Project will involve construction of a new building, parking garage and surface parking on Parcels B and C. Parcel A will not be developed beyond existing conditions. Therefore, no impacts are proposed for two on-site wetlands and one stream located on this parcel. These critical areas will be preserved in their existing condition.

Three Type 3 wetlands will be impacted overall. The total area of wetland fill will be approximately 0.70 acres and will require an Individual Permit from the Army Corps of Engineers. It is not possible to design a feasible project and protect the three wetlands due to their location and the limitations of the Site's topography. However, through avoidance and minimization measures during the design phase of this project, two on-site wetlands will be preserved. The current plan for mitigation of the impacted wetlands will be to leverage King County's In-Lieu fee bank leveraging projects within the Sammamish River watershed. Current Kirkland zoning (KZC§90.55.3) allows for modifications to occur on all the impacted wetlands but does not allow for use of an In-Lieu fee bank, hence the PUD request.

Compliance with PUD Criteria

1. ***The proposed PUD meets the requirements of chapter 125.***

Yes, the proposed PUD meets the requirements of chapter 125.

2. ***Any adverse impacts or undesirable effects of the proposed PUD are clearly outweighed by specifically identified benefits to the residents of the City.***

Benefits to the City of the proposed PUD:

Increased jobs: The proposed project would bring 500 new technical industry jobs to the City of Kirkland likely to happen over the next 5 years. In addition, manufacturing of Astronics product lines are environmentally clean and fit the city's industrial plan for the area.

Protection of higher quality wetlands and stream: Astronics proposes to protect and restore two higher quality wetlands and the stream by restoring and marking the buffer to these critical areas. The lesser quality wetlands will be mitigated offsite in a King County In-Lieu bank within the Sammamish River watershed. Mitigation into the In-Lieu bank will provide funding for restoration/creation of more valuable wetlands.

Improved storm water control and water quality: The Astronics project add flow control to runoff from the site by utilizing WWHM software which matches durations from one-half the 2-year pre-developed forested condition up to the full 50-year storm event. This model is the currently accepted

model for projects in Kirkland and will actually lessen the peak flows leaving the site under existing conditions. Water quality for this project will be addressed by installing 3 separate modular wetland systems (general use level designation) for enhanced water quality. This is the highest standard for water quality in Washington State and accepted by DOE. Since the site was used as a trucking operation in the past with little to no water quality treatment systems installed this project should substantially improve the water quality of runoff leaving the site.

Reduced parking lot footprint: The parking structure will reduce the amount of the lot required for surface parking. Astronics will consider the use of pervious concrete/asphalt paving at sidewalks and parking areas (not in drive aisles).

Astronics would also like to contribute to the City of Kirkland plan to add sidewalks along 139th Ave NE and NE 128th Ave in the amount of $350,000. This contribution will be allocated when the building permits for the site are approved. This sidewalk plan will provide Astronics and city of Kirkland residents a safe walkway to access the Cross Kirkland and Eastside Rail corridors.

3. ***The applicant is providing one (1) or more of the following benefits to the City as part of the proposed PUD:***

a. ***The applicant is providing public facilities that could not be required by the City for development of the subject property without a PUD.***

This PUD will not provide public facilities.

b. ***The proposed PUD will preserve, enhance or rehabilitate natural features of the subject property such as significant woodlands, wildlife habitats or streams that the City could not require the applicant to preserve, enhance or rehabilitate through development of the subject property without a PUD.***

The site plan includes approximately 0.05 acres (2,280 sf) of wetland and stream buffer enhancements in the form of riprap service road removal and restorative planting with native shrub and tree species. These improvements will increase both structural and species diversity over time that will increase the functions and values of this buffer area.

Astronics will partner with the city and county to provide enhancement and/or contributions to the development of the Eastside/Redmond Spur rail corridors.

The finished site will be landscaped per the proposed landscaping plan. Identified trees will be protected during the construction phases. The established landscaping will remove the wild growth of nuisance plants currently on the site (blackberry, scotch broom).

c. ***The design of the PUD incorporates active or passive solar energy systems.***

The building will oriented and designed to leverage passive solar energy and natural light where appropriate. Supplemental solar panel water heating systems will be considered during the design review.

d. ***The design of the proposed PUD is superior in one (1) or more of the following ways to the design that would result from development of the subject property without a PUD:***

1) ***Increased provision of open space or recreational facilities.***

Astronics will work with the city and county to ensure the Eastside and the Redmond spur rail corridors have proper trail connectivity. Screening using landscaping and approved building solutions will limit view and noise from the proposed PUD.

Astronics proposes to enhance the existing wetlands and stream buffer by removing the service road, plant and soil restoration, and installing Critical Area fencing and signage.

The use of the In-Lieu fee bank for the remaining site wetland mitigation allows the opportunity to create and/or improve critical wetlands on a much larger/regional scale in the Sammamish River water shed. This creates and preserves dedicated tracts of open space and habitat for migratory birds, fish and wildlife.

2) ***Superior circulation patterns or location or screening of parking facilities.***

Astronics proposes to build a multi-level parking structure that reduces the impervious land footprint associated with typical surface parking. The parking garage can be screened with enhanced landscaping and architectural elements on the parking garage itself. The location of the parking garage will encourage employees to use the private road (141st Ave. NE) as the major site ingress/egress access point. Pedestrian foot traffic will be emphasized on the west side of the site. Connection between the parking garage and building will also be out of the main car circulation path. Connection to the rail corridor (if desired by Astronics) would be on the west side of the site with opportunities for enhanced pedestrian amenities.

3) ***Superior landscaping, buffering, or screening in or around the proposed PUD.***

The sites unique location and characteristics will naturally limit its development opportunities. The west side of the site in currently heavily forested with mature trees and steeply sloped from west to the east. The existing rail corridor also located to the west provides additional levels of landscape buffer to our site. The east side also has a rail corridor that acts as a buffer to the agricultural land in the Sammamish River valley. There is no development potential to the east for several thousand feet. The north side of the site currently abuts to a forested/undeveloped tract of land that itself has many steep slopes and drainage streams that virtually makes it undevelopable.

4) ***Superior architectural design, placement, relationship or orientation of structure.***

The architectural design proposed will be similar in configuration and placement as the current facility. The three-three story scheme will use insulated metal panels with varied patterns and colors on the upper stories with a concrete base in contrast to an all painted concrete tilt-up wall panel construction at the existing building. Astronics will use similar cornice details and emphasize the building entries with glass canopies and extended parapets for an architectural linkage between the buildings. The building will be oriented to optimize natural lighting.

5) ***Minimum use of impervious surfacing materials.***

Astronics will consider the use of pervious concrete/asphalt paving at sidewalks and parking areas (not in drive aisles). The plan proposes use of a parking structure as opposed to surface parking to reduce paving footprint.

4. ***Any PUD which is proposed as special needs housing shall be reviewed for its proximity to existing or planned services (i.e., shopping centers, medical centers, churches, parks, entertainment, senior centers, public transit, etc.).***

This topic is not applicable to this PUD.

ATTACHMENT 11

Mitigation Reserves Program

King County has the first "in-lieu fee" mitigation program in Washington state to be certified under 2008 federal rules.

The revised the *Mitigation Reserves Program* may offer some permit applicants an option to purchase mitigation credits from King County to fully satisfy mitigation obligations associated with projects that result in unavoidable impacts to wetlands, rivers, streams, or buffers. The county then uses collected mitigation fees to implement mitigation projects that make up for impacts to aquatic resources.

On this page:

- An overview of "in-lieu fee" mitigation
- Basic information about the Mitigation Reserves Program
- Links to Program Instrument documents
- Steps taken to "certify" the program
- Contact for more information

An overview of in-lieu fee mitigation

When permitted projects will create unavoidable impacts to the environment, project sponsors must offset, or "mitigate" the environmental impacts associated with the project. The mitigation process includes avoiding and minimizing impacts as much as possible, and *then* making up for any unavoidable impacts through implementation of a mitigation project. Mitigation projects can occur on-site (at or near the place where the impact project occurs) or off-site. King County Code prioritizes on-site mitigation when it is ecologically feasible and likely to succeed long-term. However, if mitigation on or adjacent to the development site is impractical or won't result in meaningful ecological benefit, off-site mitigation becomes an option under King County code and state and federal rules. Off-site mitigation options may include use of a mitigation bank, "permittee-responsible" mitigation, or in-lieu fee mitigation through the Mitigation Reserves Program.

In a Federal Rule (PDF file 567 KB) published in April 2008, The U.S. Army Corps of Engineers (the Corps) and the U.S. Environmental Protection Agency (EPA) define an in-lieu fee program as:

> "A program involving the restoration, establishment, enhancement, and/or preservation of aquatic resources through funds paid to a governmental or non-profit natural resources management entity to satisfy compensatory mitigation requirements... Similar to a mitigation bank, an in-lieu fee program sells compensatory mitigation credits to permittees whose obligation to provide compensatory mitigation is then transferred to the in-lieu program sponsor."

Basics of the Mitigation Reserves Program

Here is a step-by-step example of the process for mitigating unavoidable permitted impacts to wetlands, rivers, streams, and buffers through the MRP*:

1. Applicants work with regulatory agencies and tribes to identify ways a proposed project can avoid and minimize environmental impacts.
2. Regulatory agencies determine preferred options for mitigating unavoidable impacts. Mitigation options may include:
   - on-site mitigation (if ecologically-feasible and likely to succeed),
   - off-site mitigation sponsored by the permittee,
   - purchasing credits from a mitigation bank (if one is available), or
   - purchasing credits from the Mitigation Reserves Program.

3. If the applicant chooses to use the KC MRP (and the regulatory agencies approve), the ecological impacts translated into a number of *debits* associated with the impact.
4. The applicant buys *credits* from the KC MRP to offset the debits associated with the impact. **By purchasing credits, the applicant satisfies their compensatory mitigation requirements and have no further involvement in the mitigation implementation.**
5. The KC MRP chooses a mitigation site from a predefined Roster. Roster sites may be publicly or privately owned, and will be chosen based on science-based watershed priorities (see Exhibits 2-9 for maps of Roster sites).

Related information

- Environmental monitoring dat
- Flooding services and information
- Lakes in King County
- Salmon and trout
- King County watersheds map
- Water and lanc services

Related agencies

- Department of Natural Resources anc Parks
- Water and Lan Resources Division
- Department of Development and Environmental Services

News and announcement

Oct. 27, 2011
First mitigation credit program o its kind in the state would streamline permitting and draws support from both builders and environmental groups

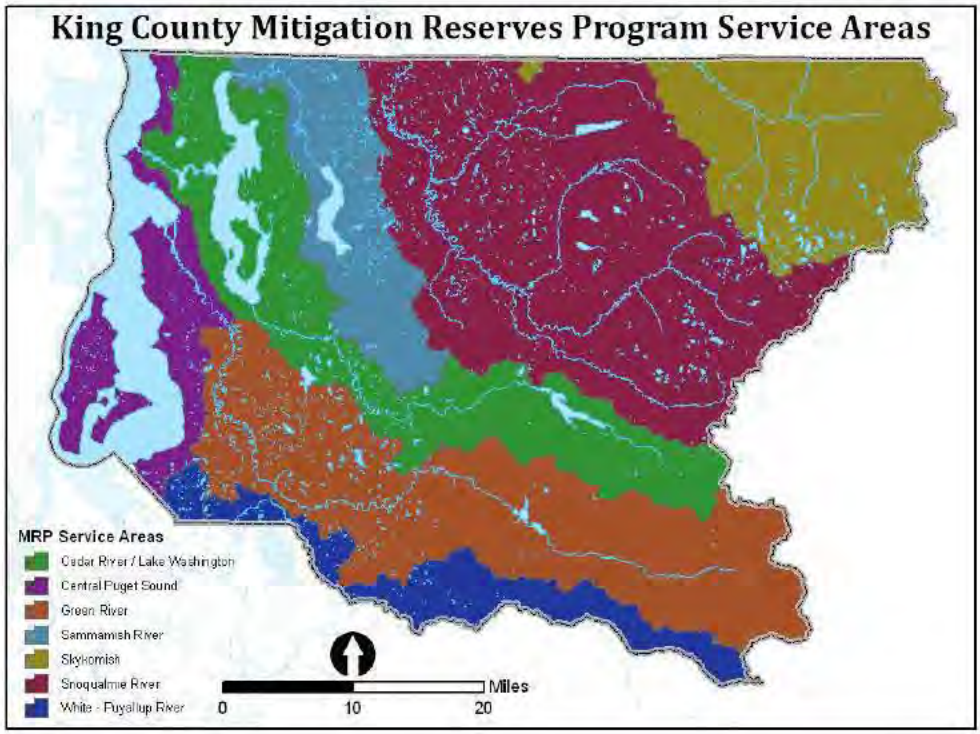
ATTACHMENT 11

6. The KC MRP plans, implements, monitors and maintains projects at chosen sites that will achieve ecological "lift." On balance, completed projects should result in a number of credits equal to or greater than the number of debits associated with the original impacts.

*At multiple points in the process, an Interagency Review Team will review and approve project proposals. The IRT is co-chaired by the Corps and the Washington Department of Ecology (Ecology); other members will include representatives state and federal regulatory agencies, tribes, and local governments.

Service Areas

The program is available in seven "Service Areas" in King County. Impact occurring in a service area must be mitigated within the same service area.



Using MRP in cities

The program is designed to satisfy mitigation obligations for a wide variety of permit types, including federal, state, and local permits. As of February 2012, the program is available throughout unincorporated King County. The program may be available to project proponents working within incorporated cities if the city codes allow it. Please contact **Megan McNeil** for more information.

MRP Program Instrument

The Program Instrument is a set of documents describing operations of the program and the framework for implementing mitigation. It is also a legal contract among King County and the Corps and Ecology--the parties to the instrument. After the program is "**certified**" it will be compliant with federal, state and local rules and regulations and will chart the way for King County to continue successfully meeting mitigation needs for unavoidable permitted impacts.

The links below lead to the set of documents constituting the Program Instrument:

- **In Lieu Fee Instrument - Basic Agreement** (**PDF** file 131 KB) This document outlines basic operations and establishes legal commitments and obligations.
- **In Lieu Fee Program Instrument – Technical Appendices and Exhibits** (**PDF** file 3.1 MB) This document describes program operations in detail.
- **Bibliography, Mitigation Credit Program Instrument** (**PDF** file 184 KB)
- **Exhibit 1, part 1 - Service Areas Map** (**PDF** file 269 KB)
- **Exhibit 1, part 2 - Critical Areas Permit Volume by Basin** (**PDF** file 856 KB)
- **Exhibit 2 - Snoqualmie Service Area Map** (**PDF** file 351 KB)
- **Exhibit 3 - Skykomish Service Area Map** (**PDF** file 271 KB)
- **Exhibit 4 - Cedar - Lake Washington Service Area Map** (**PDF** file 347 KB)
- **Exhibit 5, Sammamish Service Area Map** (**PDF** file 334 KB)
- **Exhibit 6, Green River Service Area Map** (**PDF** file 342 KB)
- **Exhibit 7, Central Puget Sound Service Area Map** (**PDF** file 330 KB)

ATTACHMENT 11

- **Exhibit 8, White-Puyallup Service Area Map** (**PDF** file 302 KB)
- **Exhibit 9, Roster Sites by Service Area** (**PDF** file 353 KB)
- **Exhibit 10 - Mitigation Assessment Method** (**PDF** file 294 KB)
- **Exhibit 10 - Calculating Credits and Debits for Compensatory Mitigation in Wetlands of Western Washington, DOE** (**PDF** file 5.4 MB)
- **Exhibit 10 - The Credit/Debit Method for Estimating Needs in Compensatory Wetland Mitigation, (Focus Sheet) DOE** (**PDF** file 336 KB)
- **Exhibit 11, part 1 - Credit Pricing Analysis** (**PDF** file 50 KB)
- **Exhibit 11, part 2 - Land Cost Surcharge Calculations** (**PDF** file 55 KB)
- **Exhibit 11, part 3 - Critical Areas Mitigation Bond Quantity Worksheet** (**PDF** file 45 KB)
- **Exhibit 12, part 1- Example Credit Ledger** (**PDF** file 557 KB)
- **Exhibit 12, part 2 - Example Aquatic Ledger** (**PDF** file 38 KB)
- **Exhibit 13: Example Fee Ledger** (**PDF** file 97 KB)
- **Exhibit 14: Credit Fulfillment Checklist** (**PDF** file 230 KB)
- **Exhibit 15: Restrictive Covenant Template** (**PDF** file 281 KB)
- **Exhibit 16, Regulatory Guidance Letter** (regarding monitoring requirements) (**PDF** file 242 KB)
- **Exhibit 17: Statement of Sale Template** (**PDF** file 349 KB)
- **Exhibit 18 - Spending Agreement Template** (**PDF** file 363 KB)
- **Exhibit 19 - King County Ordinance** (**PDF** file 144 KB)
- **Exhibit 20 - Using MRP to Meet ESA Section 7 Requirements** (**PDF** file 221 KB)

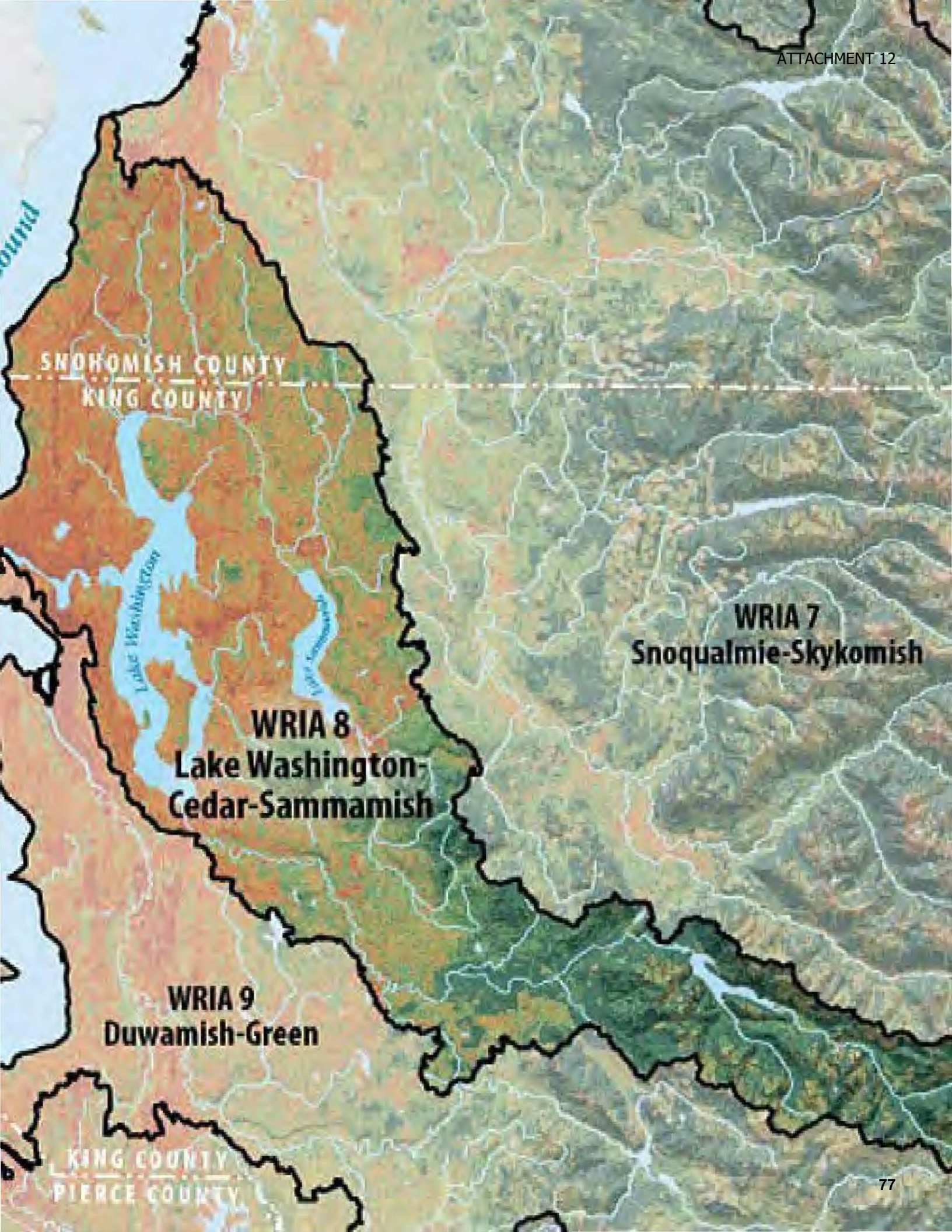
Note: The final, signed version will be posted to this website after the instrument is signed. The documents above are nearly identical to the final versions (there were minor edits for clarity and to fix typos).

Certification process

The Mitigation Reserves Program was certified for operation on March 12, 2012

- In June 2009, King County submitted to the Corps, Ecology, and EPA a program *Prospectus* which outlined the basic concept of the program. The Prospectus made available for public review.
- In December 2009, King County incorporated public comments and feedback from the IRT on the program prospectus into a draft *Program Instrument* which was submitted to the IRT for review.
- In March 2010 King County staff and members of the IRT met to discuss the draft instrument.
- Negotiations about program details continued through 2010, during which time the Program Instrument was significantly revised.
- In June 2011, King County submitted to the IRT a Final Program Instrument.
- In July 2011, the Corps and Ecology, with consent from all IRT members, issued letters stating their intent to certify the program.
- In mid September 2011, King County staff completed a State Environmental Policy Act (SEPA) environmental checklist. On September 22, 2011 King County issued a Determination of Non-Significance (DNS) related to environmental impacts of certifying the program, after which there was a two-week public comment period. No comments were submitted.
- In late October 2011 King County Executive Constantine transmitted an ordinance to King County Council by which the Council will authorize the executive to sign the Instrument.
- In January 2012, the King County Council unanimously passed the authorizing ordinance
- On March 12, 2012, Colonel Bruce Estok signed the program instrument, officially certifying the program.

For more information about King County's Mitigation Reserves Program, please contact **Megan McNeil**, WLR **Rural and Regional Services Section**.


SNOHOMISH COUNTY
KING COUNTY
WRIA 7
Snoqualmie-Skykomish
WRIA 8
Lake Washington-
Cedar-Sammamish
WRIA 9
Duwamish-Green
KING COUNTY
PIERCE COUNTY

NE 128th to Willows Rd Sidewalk

ATTACHMENT 13

Legend

- Streams
  - Open
  - Pipe
- Wetlands
- Address
  - Other Address
  - Current Address
  - Current ADU
  - Pending Address
- City Limits
- Grid
- QQ Grid
- Cross Kirkland Corridor
- Regional Rail Corridor
- Streets
- Parcels
- Place Names
- Buildings
- Lakes
- Parks
- Schools
- Olympic Pipeline Corridor

1: 1,200

Notes

Future Sidewalk

0.0 0 0.02 0.0 Miles

NAD_1983_StatePlane_Washington_North_FIPS_4601_Feet

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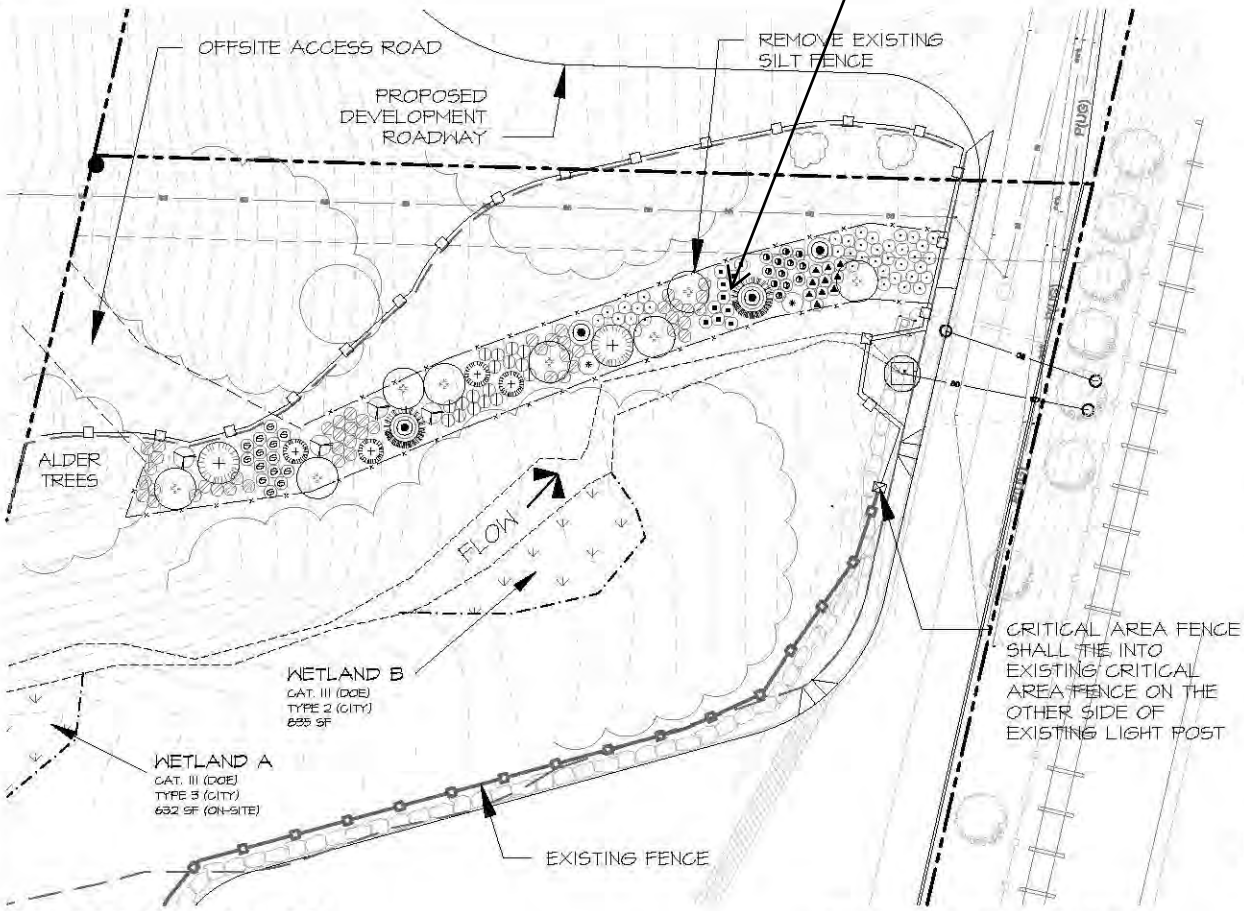
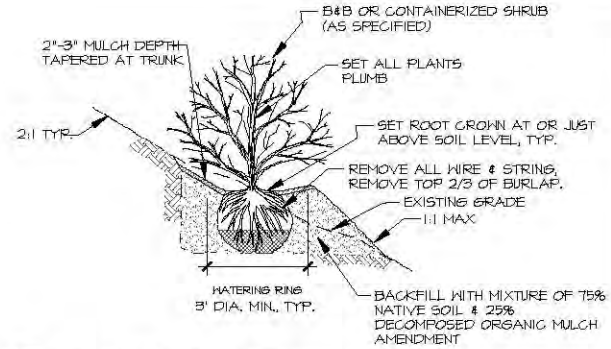
Stream Buffer Planting area



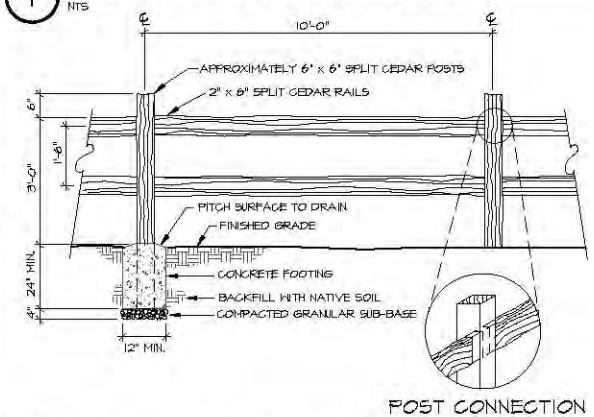
PLANTING PLAN

SEE PLANT SCHEDULE ON FIGURE 11



1 SLOPE PLANTING DETAIL

NTS



2 SPLIT 2-RAIL FENCE DETAIL

N.T.S.

GRAPHIC SCALE (IN FEET)

0 15 30 60

SCALE: 1"=30'

NORTH

LEGEND

- PROJECT SITE BOUNDARY
- EXISTING WETLAND
- OHWM
- EXISTING SILT FENCE
- POST CONSTRUCTION BUFFER
- SPLIT RAIL FENCE
- EXISTING TREES

SOIL PREPARATION NOTES

1. CLEAR ENHANCEMENT AREA AND DISPOSE OF ALL INVASIVE SPECIES.
2. REMOVE ROCK & RIP RAP OF OLD ACCESS ROAD.
3. SCARIFY/DECOMPACT ENHANCEMENT AREA.
4. PLACE 9" TOPSOIL.
5. MULCH ALL ENHANCEMENT AREAS.
5. COMPLETE SITE CLEANUP AND INSTALL PLANT MATERIAL AS INDICATED ON THE MITIGATION PLANTING PLAN.

TALASAEA CONSULTANTS, INC.
Resource & Environmental Planning
15020 Bear Creek Road Northeast
Woodinville, Washington 98077
Bus (425)881-7560 – Fax (425)881-7549

FIGURE #3

PLANTING PLAN & DETAILS
ASTRONICS EXPANSION
KIRKLAND, WASHINGTON

DESIGN	DRAWN	PROJECT
	ABS	1467

SCALE: AS SHOWN
DATE: 12-2-2015
REVISED
3

Z:\DRAWING\1400-1499\TAL1467\Plans\TAL-1467 WP FINAL.DWG

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ASTRONICS
ADVANCED ELECTRONIC SYSTEMS

12950 Willows Road N.E. • Kirkland, WA 98034 USA
PHONE: +1.425.881.1700 • FAX: +1.425.702.4930

15 June, 2016

David Barnes
City of Kirkland
123 Fifth Avenue
Kirkland, WA 98033

Dear Mr. Barnes,

Astronics Advanced Electronic Systems will be providing the following public benefits as requirements for the Planned Unit Development (PUD) associated with Land Use Permit ZON15-00875. The PUD was created to provide a mechanism to fill and mitigate onsite Type III wetlands using the King County In-lieu Fee Mitigation Reserves Program.

1. Contribute $350,000 to the City of Kirkland that will help fund the NE 128th Street to Willows Road sidewalk project.

2. Restore onsite degraded Class B stream buffer based on the stream and wetland buffer restoration plan prepared by Talasaea Consultants dated December 8th, 2015 and additional recommendations from Watershed Company report dated June 17,2016.

The contribution benefit will be paid to the City of Kirkland after submittal but prior to issuance of any grading or building permits. The restoration benefit will occur simultaneously with site construction.

Sincerely,

Timothy Borland
Director Information Technology
Astronics AES

CRITICAL AREAS MITIGATION PLAN

ASTRONICS EXPANSION PROJECT
CITY OF KIRKLAND PROJECT FILE # ZON15-00875

KIRKLAND, WASHINGTON

Prepared For:
ASTRONICS ADVANCED ELECTRONIC SYSTEMS

Prepared By:
TALASAEA CONSULTANTS, INC.
Woodinville, Washington

8 December 2015

Critical Areas Mitigation Plan

Astronics Expansion Project
City of Kirkland Project File # ZON15-00875

Kirkland, Washington

Prepared For:
Tim Borland, Director of IT
Astronics Advanced Electronic Systems
12950 Willows Road NE
Kirkland, Washington 98034

Prepared By:
Talasaea Consultants, Inc.
15020 Bear Creek Road NE
Woodinville, Washington 98077
(425) 861-7550

8 December 2015

EXECUTIVE SUMMARY

REPORT TYPE: Critical Areas Mitigation Plan

REPORT NAME: Astronics Expansion Project

SITE LOCATION: The Astronics Expansion Project is an approximately 14-acre assemblage of three parcels located north of and adjacent to the Astronics Advanced Electronic Systems main corporate office. The project is within the limits of the City of Kirkland. Astronics' mailing address is 12950 Willows Road NE, Kirkland, Washington 98034. The King County Tax Parcel Numbers for the parcels in the assemblage are 2226059042 (Parcel A), 2226059053 (Parcel B), and 2226059080 (Parcel C). The Public Land Survey System location of the project is the southeast ¼ of Section 22, T26N, R5E, Willamette Meridian.

PROJECT STAFF: Bill Shiels, Principal; David R. Teesdale, Senior Wetland Ecologist; Jennifer M. Marriott, Senior Ecologist; Alicia Schultz, Mitigation Designer

CLIENT: Astronics Advanced Electronic Systems

FIELD SURVEY: The field work was conducted on 7 August 2013, and 10 June 2014.

DETERMINATION: Five wetlands, one stream, and one surface water conveyance were identified on the Astronics Expansion Project property. The wetlands are named Wetland A, B, C, D, and E. The water bodies are named Stream 1 and Surface Conveyance 1. Wetlands A, C, D, and E are City of Kirkland Type 3 wetlands (25-foot buffer) and DOE Category III wetlands (80-foot buffer). Wetland B is a City of Kirkland Type 2 wetland (50-foot buffer) and a DOE Category III wetland (80-foot buffer).

PROJECT DESCRIPTION and CRITICAL AREA IMPACTS: Astronics Advanced Electronic Systems requires expanded facilities in order to provide services to their existing and new customer base. The Astronics Expansion Project will involve construction of a new building and associated parking on Parcels B and C. Parcel A will not be developed beyond existing conditions. All of Parcels B and C will be required for the proposed development. Therefore, Wetlands C, D, and E will be filled. No impacts are proposed for Wetlands A or B, or on Stream 1. The total area of wetland fill will be approximately 0.70 acres and will require an Individual Permit from the Army Corps of Engineers. The Surface Conveyance may be tight-lined to discharge into Stream 1. The existing rip-rap sewer access will be removed from the buffer of Stream 1, allowing an additional 2,280 sf of stream buffer restoration to occur with native trees and shrubs. The King County Wetland Reserve In-Lieu Fee (ILF) program will be used to mitigate for the wetland impacts. The 2,280 sf of stream buffer restoration is provided in addition to the ILF program to enhance the remaining onsite critical areas.

Additional details are provided within the Critical Areas Report and Conceptual Mitigation Plan dated 29 September 2014 prepared by Talasaea Consultants.

PROPOSED MITIGATION: Mitigation will be provided by restoring approximately 2,280 sf of stream buffer that is currently a rip-rap access road. This area will be grubbed of all nuisance species and replanted with native trees and shrubs. Critical area signage and a perimeter fence will be provided around Wetlands A and B, Stream 1, and their buffers.

MAINTENANCE and MONITORING: Long term monitoring and maintenance of the mitigation areas will be provided according to City requirements.

TABLE OF CONTENTS

Executive Summary i
Table of Contents ii
Lists of Figures, Photos, Tables, and Appendices iii

Chapter 1. Project Overview 4

1.1 Document Purpose 4
1.2 Project Location 4
1.3 Project Description and Critical Area Impacts 4

Chapter 2. Proposed Mitigation 5

2.1 Agency Policies and Guidance 5
2.2 Proposed Mitigation 5
2.3 Mitigation Goals, Objectives and Performance Standards 5
2.4 Mitigation Design Elements 6
2.4.1 Removal of Existing Access Road 6
2.4.2 Clearing and Grubbing Invasive Species 6
2.4.3 Plantings 6
2.4.4 Temporary Irrigation System 6
2.4.5 Mulch 6
2.4.6 Critical Area Fence and Signs 7

Chapter 3. Construction Management 7

3.1 Mitigation Construction Sequencing 7
3.2 Post-Construction Approval 7
3.3 Post-Construction Baseline Assessment 7

Chapter 4. Monitoring Plan 7

4.1 Monitoring Schedule 7
4.2 Monitoring Reports 8
4.3 Monitoring Methods 8
4.3.1 Methods for Monitoring Vegetation Establishment 8
4.4 Photo Documentation 9
4.5 Wildlife 9
4.6 Water Quality 9
4.7 Site Stability 9

Chapter 5. Maintenance and Contingency 9

Chapter 6. Financial Guarantees 10

Chapter 7. Summary 10

LIST OF FIGURES

Figure 1: Vicinity Map
Figure 2: Proposed Site Plan, Impacts and Mitigation
Figure 3: Planting Plan and Details
Figure 4: Plant Schedule and Notes

Note: All figures are located at the end of the report before the appendices.

LIST OF TABLES

Table 1. Projected Schedule for Performance Monitoring and Maintenance Events 8

APPENDIX

Appendix A: Bond Quantity Worksheet

CHAPTER 1. PROJECT OVERVIEW

1.1 Document Purpose

The proposed mitigation plan was designed in accordance with the policies and guidance provided in the Critical Areas Regulations set forth in the Kirkland Zoning Code (KZC), Chapter 90 (City of Kirkland May 2014). Reference the Critical Areas Report and Conceptual Mitigation Plan dated 29 September 2014 prepared by Talasaea Consultants for information regarding wetland and stream determinations, the proposed project and critical area impacts, and details on the King County Wetland Reserve In-Lieu Fee (ILF) program being used for the wetland impact mitigation. The buffer restoration details provided within this report are voluntary mitigation measures offered in addition to the use of the ILF program.

This report will provide and describe the following information:

- Project location;
- Proposed mitigation;
- Goals, objectives and performance standards;
- Monitoring program;
- Maintenance and Contingency plan; and
- Summary.

1.2 Project Location

The Astronics Expansion Project is an approximately 14-acre assemblage of three parcels located north of and adjacent to the Astronics Advanced Electronic Systems main corporate office (**Figure 1**). The project is within the limits of the City of Kirkland. Astronics' mailing address is 12950 Willows Road NE, Kirkland, Washington 98034. The King County Tax Parcel Numbers for the parcels in the assemblage are 2226059042 (Parcel A), 2226059053 (Parcel B), and 2226059080 (Parcel C). The Public Land Survey System location of the project is the southeast ¼ of Section 22, T26N, R5E, Willamette Meridian.

Five wetlands, one stream, and one surface water conveyance were identified on the Astronics Expansion Project property. The wetlands are named Wetland A, B, C, D, and E. The water bodies are named Stream 1 and Surface Conveyance 1. Wetlands A, C, D, and E are City of Kirkland Type 3 wetlands (25-foot buffer) and DOE Category III wetlands (80-foot buffer). Wetland B is a City of Kirkland Type 2 wetland (50-foot buffer) and a DOE Category III wetland (80-foot buffer). Additional details are provided within the Critical Areas Report and Conceptual Mitigation Plan dated 29 September 2014 prepared by Talasaea Consultants.

1.3 Project Description and Critical Area Impacts

Astronics Advanced Electronic Systems requires expanded facilities in order to provide services to their existing and new customer base. The Astronics Expansion Project will involve construction of a new building and associated parking on Parcels B and C. Parcel A will not be developed beyond existing conditions. All of Parcels B and C will be required for the proposed development. Therefore, Wetlands C, D, and E will be filled. No impacts are proposed for Wetlands A or B, or on Stream 1. The total area of wetland fill will be approximately 0.70 acres and will require an Individual Permit from the Army Corps of Engineers, which is currently under review.

CHAPTER 2. PROPOSED MITIGATION

2.1 Agency Policies and Guidance

The mitigation proposed for critical areas impacts is in accordance with the following policies, codes, and regulatory guidance:

- Kirkland Zoning Code, Chapter 90 – Drainage Basins.

2.2 Proposed Mitigation

Due to differing governing agency policies for preferred type and location of compensatory mitigation between the City of Kirkland, the Corps of Engineers and the Department of Ecology, and in order to satisfy all agency requirements, we have determined that all wetland impacts will be provided by purchasing of mitigation credits from the King County Wetland Reserve In-Lieu Fee program, currently pending approval by the City of Kirkland. In addition to the ILF credits being purchased, voluntary stream buffer restoration will be provided onsite by removing 2,280 sf of an existing rip-rap access road and replanting this area with native trees and shrubs (**Figure 2**). A mitigation analysis and sequencing was completed and provided in the Critical Areas Report and Conceptual Mitigation Plan dated 29 September 2014 prepared by Talasaea Consultants. This report is intended to provide the detailed mitigation plan for the stream buffer restoration proposed to occur onsite.

Stream Buffer Restoration

Approximately 2,280 sf of Stream 1 buffer will be restored with native tree and shrub species. Buffer restoration measures in this area will include:

- Planting 10 Douglas fir (*Pseudotsuga menziesii*) and western red cedar (*Thuja plicata*) trees,
- Planting 7 species of massing shrubs with proposed species to include red-osier dogwood (*Cornus alba*), salal (*Gaultheria shallon*), black twin-berry (*Lonicera involucrata*), tall Oregon grape (*Mahonia aquifolium)*, thimbleberry (*Rubus parviflorus*), salmonberry (*Rubus spectabilis*), and snowberry (*Symphoricarpos albus)* planted 4' O.C. (except salal which will be planted 24" O.C.), totaling 155 shrubs.
- Planting vine maple (*Acer circinatum)*, serviceberry (*Amelanchier alnifolia*), and Indian plum (*Oemleria cerasiformis)* within the buffer area, totaling 14 plants, and
- Providing 3 inches of wood mulch in rings around the installed plants.

2.3 Mitigation Goals, Objectives and Performance Standards

The goal of the mitigation plan is to enhance the functions and values to the Stream 1 buffer through the removal of invasive species and the rip-rap access road and supplemental plantings of native trees and shrubs. To accomplish this goal, the proposed mitigation plan will:

- Restore 2,280 sf of Stream 1 buffer.

Mitigation actions will be evaluated through the following objectives and performance standards. Mitigation monitoring will be performed by a qualified biologist.

Objective A: Create structural and plant species diversity in the stream buffer mitigation area.

Performance Standard A1: At least 5 species of desirable native woody plants will be present in the mitigation area during the monitoring period. Percent survival of planted woody species must be at least 100% at the end of Year 1 (per contactor warranty), and at least 80% for each subsequent year of the monitoring period.

Performance Standard A2: Total percent aerial woody plant coverage in the mitigation enhancement areas must be at least 50% by Year 4 and 80% by Year 5. Woody coverage may

be comprised of both planted and recolonized native species; however, to maintain species diversity, at no time shall a recolonized species comprise more than 35% of the total woody coverage.

Objective B: Limit the amount of invasive and exotic species within the mitigation restoration area.

Performance Standard B1: After construction and for the entirety of the monitoring period, exotic and invasive plant species will be maintained at levels below 20% total cover throughout the mitigation buffer areas. These species include Scot's broom, Himalayan and evergreen blackberry, purple loosestrife, hedge bindweed, Japanese knotweed, and creeping nightshade.

2.4 Mitigation Design Elements

2.4.1 Removal of Existing Access Road

A rip-rap access road is currently located within this area. The gravel/rock road bed will be removed and the area then regraded and prepped for the proposed enhancement plantings

2.4.2 Clearing and Grubbing Invasive Species

Invasive species such as Himalayan blackberry shall be completely grubbed out from buffer enhancement area. Grubbing shall be by either hand or machine, depending on access and the conditions of the area to be grubbed. Talasaea shall review grubbing areas with contractor prior to work to determine areas of desirable native vegetation to remain, and which areas may be suitable for grubbing by machine. All grubbing work shall avoid damage to native vegetation to remain. Roots of invasive species shall be entirely grubbed out to the maximum extent practicable. All vegetative debris from grubbing operations shall be disposed of off-site at an approved dump location.

2.4.3 Plantings

A variety of native tree and shrub will be planted in the stream buffer mitigation area (**Figure 3**). Plant species have been chosen for a variety of qualities, including: adaptation to specific water regimes, value to wildlife, value as a physical or visual barrier, pattern of growth (structural diversity), and aesthetic values. Native species were chosen to increase both the structural and species diversity of the mitigation areas, thereby increasing the value of the area to wildlife for food and cover. Plant materials will consist of a combination of bare-root stock (if available) and containers. A full plant list with the proposed plant species, including quantities, size, and spacing, is provided on **Figure 4**.

2.4.4 Temporary Irrigation System

A temporary irrigation system is not anticipated to be needed for enhancement plantings within existing vegetated buffer areas. Plantings shall be installed in the dormant season to help reduce transplant shock and encourage successful establishment. Plants shall be watered immediately after planting, and shall be provided with supplemental irrigation during the dry season if drought stress is evident during the establishment period (generally the first two growing seasons after planting). Supplemental irrigation can be provided by hand if necessary. A soil moisture retention agent may be incorporated into the backfill of planting pits to help minimize the potential for plant desiccation in the mitigation areas.

2.4.5 Mulch

The Client shall provide 3 inches of medium bark mulch around all installed plants. Mulch shall be derived from fir, pine or hemlock species and shall not contain trash, rocks, or other debris that may be detrimental to plant growth.

2.4.6 Critical Area Fence and Signs

Permanent fencing and critical areas signs shall be installed at the perimeter of all wetland and stream buffers on the site. The fencing will be a rail style fence, split or 2-board type. Fencing will also be installed along the perimeter of the trail where it crosses the stream and buffer at the existing culvert crossing.

CHAPTER 3. CONSTRUCTION MANAGEMENT

3.1 Mitigation Construction Sequencing

The following provides a general sequence of activities anticipated to be necessary to complete this mitigation project. Some of these activities may be conducted concurrently as the project progresses.

1. Conduct a site meeting between the contractor, Talasaea Consultants, and the owner's representative to review the project plans,
2. Survey clearing limits, flag and protect vegetation to remain,
3. Install silt fence and any other erosion and sedimentation control BMPs necessary for work in the critical areas,
4. Remove rip-rap road bed,
5. Clear and grub non-native/invasive vegetation from the wetland buffer,
6. Inspect plant stock and review plant layout with contractor,
7. Install plant material as indicated on the planting plan,
8. Provide 3-cines of mulch around installed woody plants,
9. Complete site cleanup,
10. Install split-rail fence and critical area signs.

3.2 Post-Construction Approval

Talasaea Consultants shall notify the City of Kirkland in writing when the mitigation planting is completed to set up for a final site inspection and subsequent approval. Once final approval is obtained in writing from the City of Kirkland, the monitoring period will begin.

3.3 Post-Construction Baseline Assessment

A qualified wetland ecologist/biologist from Talasaea Consultants shall conduct a post-construction assessment after receipt of the post-construction approval from the City of Kirkland. The purpose of this assessment will be to establish baseline conditions at Year 0 of the required monitoring period. A Baseline Assessment Report, which will include as-built drawings, will be submitted to the City. The as-built plan set will depict any field changes to the mitigation plan (planting locations, habitat features, etc.) from the original approved mitigation plan.

CHAPTER 4. MONITORING PLAN

4.1 Monitoring Schedule

Pursuant to KZC 90.55(4) – Compensatory Mitigation, monitoring of the mitigation areas will be conducted for a minimum of five years for the City according to the schedule presented in **Table 1**. Monitoring will be performed by a qualified biologist from Talasaea Consultants, Inc.

Table 1. Projected Schedule for Performance Monitoring and Maintenance Events

Year	Date	Maintenance Review	Performance Monitoring	Report Due to City
BA[1]	Winter/Spring	X	X	X
1	Spring	X	X	
	Fall	X	X	X
2	Spring	X		
	Fall	X	X	X
3	Spring	X		
	Fall	X	X	X
4	Spring	X		
	Fall	X	X	X
5	Spring	X		
	Fall	X	X	X[2]

[1] BA = Baseline Assessment following construction completion.
[2] Obtain final approval from City of Kirkland (presumes performance criteria are met).

4.2 Monitoring Reports

Each monitoring report will adhere to applicable City of Kirkland requirements. The reports will include: 1) Project Overview, 2) Requirements, 3) Summary Data, 4) Maps and Plans, and 5) Conclusions. If the performance criteria are met, monitoring for the City will cease at the end of year five, unless objectives are met at an earlier date and the City accepts the mitigation project as successfully completed.

4.3 Monitoring Methods

The following monitoring methods will be used to evaluate the approved performance standards.

4.3.1 Methods for Monitoring Vegetation Establishment

Vegetation monitoring methods may include counts; photo-points; random sampling; sampling plots, quadrats, or transects; stem density; visual inspection; and/or other methods deemed appropriate by the City. Vegetation monitoring components shall include general appearance, health, mortality, colonization rates, percent cover, percent survival, volunteer plant species, and invasive weed cover.

Permanent vegetation sampling plots, quadrats, and/or transects will be established at selected locations to adequately sample and represent all of the plant communities within the mitigation project areas. The number, exact size, and location of transects, sampling plots, and quadrats will be determined at the time of the baseline assessment.

Percent areal cover of woody vegetation will be evaluated through the use of point-intercept sampling methodology. Using this methodology, a tape will be extended between two permanent markers at each end of an established transect. Trees and shrubs intercepted by the tape will be identified, and the intercept distance recorded. Percent cover by species will then be calculated by adding the intercept distances and expressing them as a total proportion of the tape length.

The established vegetation sampling locations will be monitored and compared to the baseline data during each performance monitoring event to aid in determining the success of plant establishment. Percent survival of shrubs and trees will be evaluated in a 10-foot-wide strip along each established transect. The species and location of all shrubs and trees within this area will be recorded at the time of the baseline assessment, and will be evaluated during each monitoring event to determine percent survival.

4.4 Photo Documentation

Locations will be established within the mitigation area from which panoramic photographs will be taken throughout the monitoring period. These photographs will document general appearance and relative changes within the plant community. Review of the photos over time will provide a semi-quantitative representation of success of the planting plan. Vegetation sampling transect/plot/quadrat and photo-point locations will be shown on a map and submitted with the baseline assessment report and yearly performance monitoring reports.

4.5 Wildlife

Birds, mammals, reptiles, amphibians, and invertebrates observed in the wetland and buffer areas (either by direct or indirect means) will be identified and recorded during scheduled monitoring events, and at any other times observations are made. Direct observations include actual sightings, while indirect observations include tracks, scat, nests, song, or other indicative signs. The kinds and locations of the habitat with greatest use by each species will be noted, as will any breeding or nesting activities.

4.6 Water Quality

Water quality will be assessed qualitatively; unless it is evident there is a serious problem. In such an event, water quality samples will be taken and analyzed in a laboratory for suspected parameters. Qualitative assessments of water quality include:

- oil sheen or other surface films,
- abnormal color or odor of water,
- stressed or dead vegetation or aquatic fauna,
- turbidity, and
- absence of aquatic fauna.

4.7 Site Stability

Observations will be made of the general stability of slopes and soils in the mitigation area during each monitoring event. Any erosion of soils or slumping of slopes will be recorded and corrective measures will be taken.

CHAPTER 5. MAINTENANCE AND CONTINGENCY

Regular maintenance reviews will be performed according to the schedule presented in **Table 1** above to address any conditions that could jeopardize the success of the mitigation project. Following maintenance reviews by the biologist or ecologist, required maintenance on the site will be implemented within ten (10) business days of submission of a maintenance memo to the maintenance contractor and permittee.

Established performance standards for the project will be compared to the yearly monitoring results to judge the success of the mitigation. If, during the course of the monitoring period, there appears to be a significant problem with achieving the performance standards, the permittee shall work with the City to develop a Contingency Plan in order to get the project back into compliance with the performance standards. Contingency plans can include, but are not limited to, the following actions: additional plant installation, erosion control, modifications to hydrology, and plant substitutions of type, size, quantity, and/or location. If required, a Contingency Plan shall be submitted to City by December 31st of any year when deficiencies are discovered.

The following list includes examples of maintenance (M) and contingency (C) actions that may be implemented during the course of the monitoring period. This list is not intended to be exhaustive, and other actions may be implemented as deemed necessary.

- During year one, replace all dead woody plant material (M).
- Water all plantings at a rate of 1" of water every week between June 15 – October 15 during the first two years after installation, and for the first two years after any replacement plantings (C & M), or as needed.
- Replace dead plants with the same species or a substitute species that meets the goals and objectives of the mitigation plan, subject to Talasaea and agency approval (C).
- Re-plant area after reason for failure has been identified (e.g., moisture regime, poor plant stock, disease, shade/sun conditions, wildlife damage, etc.) (C).
- Remove/control weedy or exotic invasive plants (e.g., Scot's broom, Himalayan blackberry, purple loosestrife, Japanese knotweed, etc.) by manual or chemical means approved by the City. Use of herbicides or pesticides within the mitigation area would only be implemented if other measures failed or were considered unlikely to be successful, and would require prior agency approval. All non-native vegetation must be removed and disposed of off-site. (C & M).
- Weed all trees and shrubs to the dripline and provide 3-inch deep mulch rings 24 inches in diameter for shrubs and 36 inches in diameter for trees (M).
- Remove trash and other debris from the mitigation areas twice a year (M).
- Selectively prune woody plants at the direction of Talasaea Consultants to meet the mitigation plan's goal and objectives (e.g., thinning and removal of dead or diseased portions of trees/shrubs) (M).
- Repair or replace damaged structures including signs and fences (M).

CHAPTER 6. FINANCIAL GUARANTEES

Pursuant to KZC §90.55, a financial guarantee for required mitigation, maintenance, and monitoring shall be provided by the Applicant. The financial guarantee shall be in a form and amount approved by the Planning Director, Finance Director, and City Attorney (e.g., bond, assignment of funds, letter of credit, etc.). The Applicant shall provide the financial guarantee upon approval of the final mitigation plan.

CHAPTER 7. SUMMARY

This mitigation plan has been prepared to describe the voluntary mitigation measures to enhance the Stream 1 buffer at the Astronics project site in Kirkland, Washington.

The proposed Project would expand Astronics' operations to adjacent parcels owned by Astronics north of their existing facility. Impacts to Wetlands C, D, and E on-site will be fully mitigated for through the King County Wetland Reserve ILF Program. No impacts to Wetlands A and B or Stream 1 will result from the proposed development. The proposed site plan has been designed to minimize impacts to the critical areas on the project site to the maximum extent practicable, while meeting the criteria for a viable project and conforming to COE and DOE, guidance and regulations, as well as the City of Kirkland zoning requirements.

Voluntary stream buffer restoration will be provided by removing 2,280 sf of an existing rip-rap access road and replanting with native trees and shrubs. Permanent fencing and critical areas signs shall be installed at the perimeter of all wetland and stream buffers on-site. This voluntary mitigation has been designed to result in no net loss of critical area functions and values to Wetlands A and B or Stream 1.

FIGURES

Figure 1: Vicinity Map
Figure 2: Proposed Site Plan, Impacts and Mitigation
Figure 3: Planting Plan and Details
Figure 4: Plant Schedule and Notes

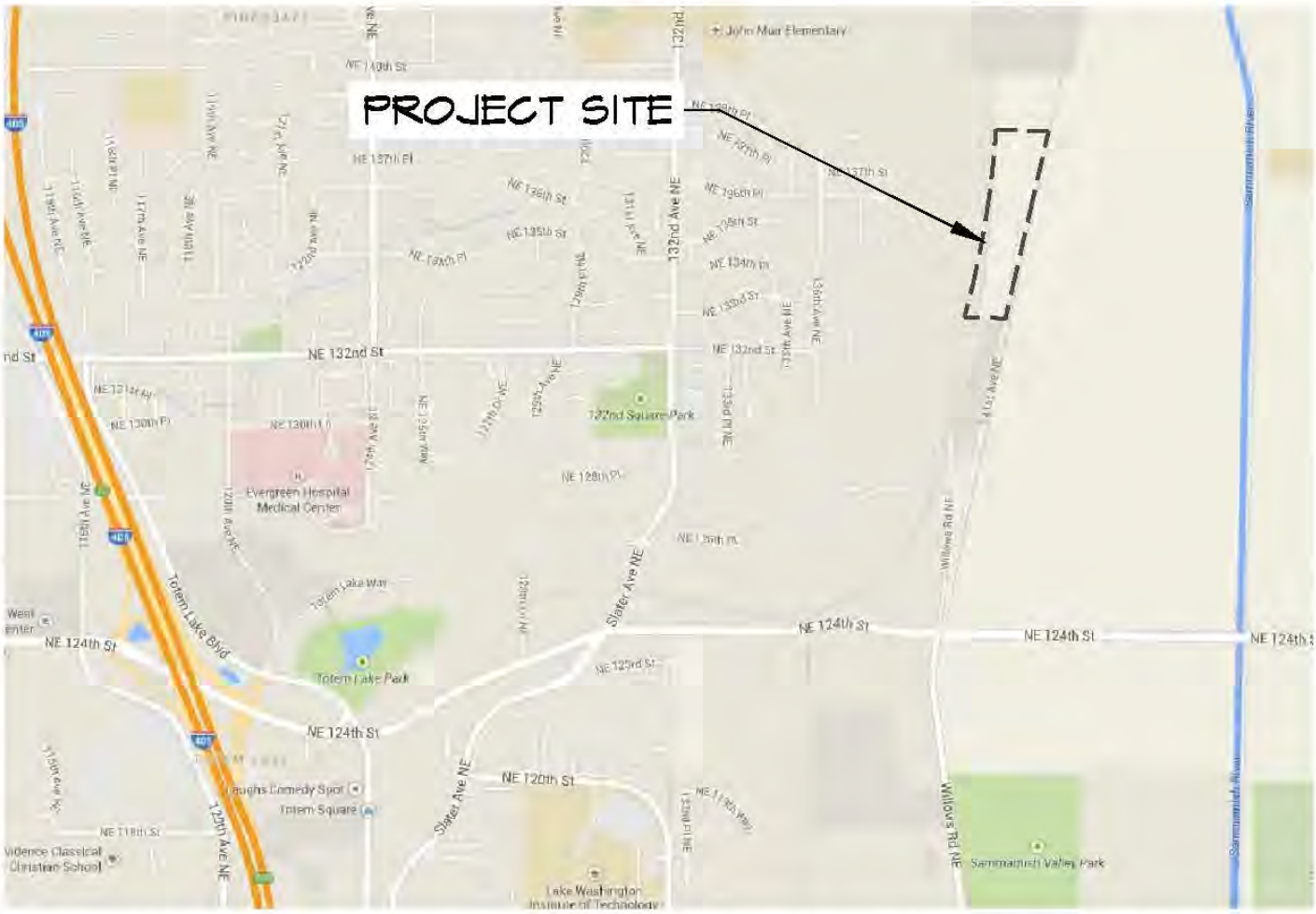

IMAGE SOURCE: GOOGLE MAPS, WWW.MAPS.GOOGLE.COM (ACCESSED 20 JUNE 2014)

DRIVING DIRECTIONS:

1. FROM SEATTLE TAKE HWY 520 EAST TO REDMOND
2. FROM HWY 520E, TAKE EXIT 168B TO MERGE ONTO I-405 NORTH TOWARD EVERETT
3. TAKE EXIT 20B FOR NE 124TH STREET
4. CONTINUE ON 124TH STREET, TURN LEFT ONTO WILLOWS RD NE
5. TAKE FIRST RIGHT ONTO 141ST AVE NE

ARRIVE AT DESTINATION
ASTRONICS AES
12950 WILLOWS RD NE
KIRKLAND, WASHINGTON 98034

EXPANSION PROJECT LOCATED NORTH OF EXISTING OFFICE BUILDINGS

NORTH

TALASAEA CONSULTANTS, INC.
Resource & Environmental Planning
15020 Bear Creek Road Northeast
Woodinville, Washington 98077
Bus (425)861-7550 - Fax (425)861-7549

FIGURE TITLE: VICINITY MAP & DIRECTIONS		DRAWN: ABS	TAL#: 1467
REFERENCE: NWS-2014-0283	APPLICANT: ASTRONICS AES CORPORATION	SCALE: NTS	DATUM: NAVD88
PROPOSED PROJECT: ASTRONICS EXPANSION		DATE: 9-9-2014	REVISED
PURPOSE: OFFICE & MFG. FACILITY EXPANSION			
ADDRESS: 12950 WILLOWS RD NE KIRKLAND, WASHINGTON 98034		FIGURE #	1
CITY: KIRKLAND	COUNTY: KING	STATE: WA	NEAR: SAMMAMISH RIVER

Z:\DRAWING\1400-1499\TAL1467\Plans\TAL1467-FIGURE.dwg

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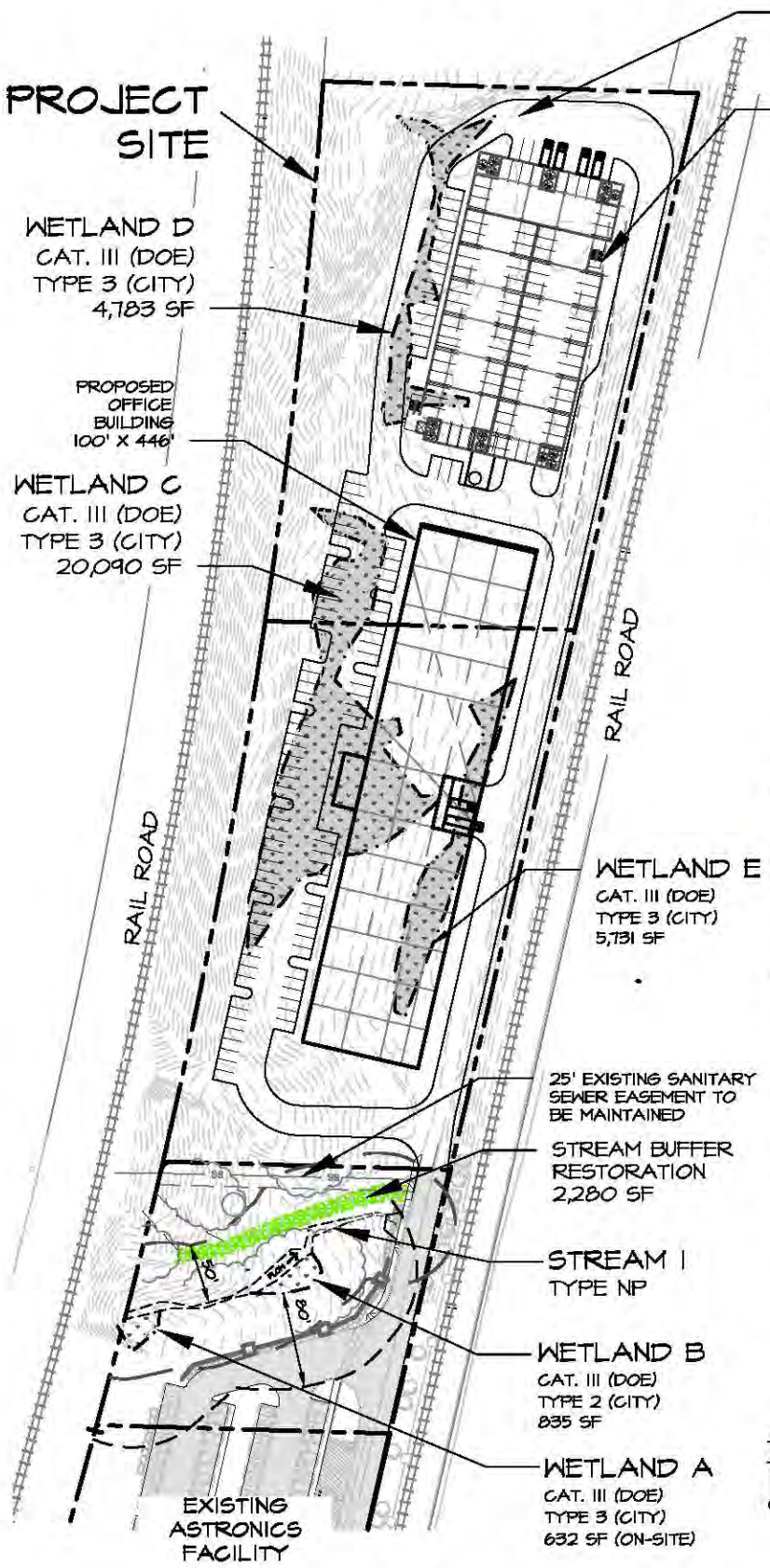
SE ¼, SEC. 22, TWP. 26N, RGE. 5E, W.M.

ATTACHMENT 16



LEGEND

- PROJECT SITE BOUNDARY
- EXISTING WETLAND
- WETLAND BUFFER PER CORPS/DOE GUIDEANCE
- STREAM BUFFER

IMPACTS LEGEND

FILLED WETLAND

WETLAND C: 20,090 SF

WETLAND D: 4,783 SF

WETLAND E: 5,731 SF

TOTAL: 30,604 SF

MITIGATION LEGEND

STREAM BUFFER RESTORATION - 2,280 SF

PROPOSED WETLAND MITIGATION

ALL WETLAND IMPACTS ARE PROPOSED TO BE MITIGATED BY PURCHASING CREDITS FROM THE KING COUNTY MITIGATION RESERVES IN-LIEU-FEE PROGRAM. THE PROJECT SITE IS LOCATED WITHIN THE SAMMAMISH RIVER SERVICE AREA OF THE IN-LIEU-FEE PROGRAM. THE PROPOSED IN LIEU-FEE MITIGATION IS SUBJECT TO LOCAL, STATE & FEDERAL APPROVAL. EXACT NUMBER OF CREDITS TO BE DETERMINED.

GRAPHIC SCALE
(IN FEET)

0 75 150 300

SCALE: 1" = 150'

NORTH

TALASAEA CONSULTANTS, INC.
Resource & Environmental Planning
15020 Bear Creek Road Northeast
Woodinville, Washington 98077
Bus (425)861-7550 - Fax (425)861-7549

FIGURE TITLE: PROPOSED SITE PLAN, IMPACTS AND MITIGATION				DRAWN: ABS	TAL#: 1467
REFERENCE: NWS-2014-0283	APPLICANT: ASTRONICS AES CORPORATION			LAT. & LONG.: 47.7203, -122.1515	
PROPOSED PROJECT: ASTRONICS EXPANSION				DATE: 9-9-2014	REVISED: 1-29-2015
PURPOSE: OFFICE & MFG. FACILITY EXPANSION					
ADDRESS: 12950 WILLOWS RD NE				FIGURE # 2	
CITY: KIRKLAND	COUNTY: KING	STATE: WA	IN: UNNAMED WETLANDS		

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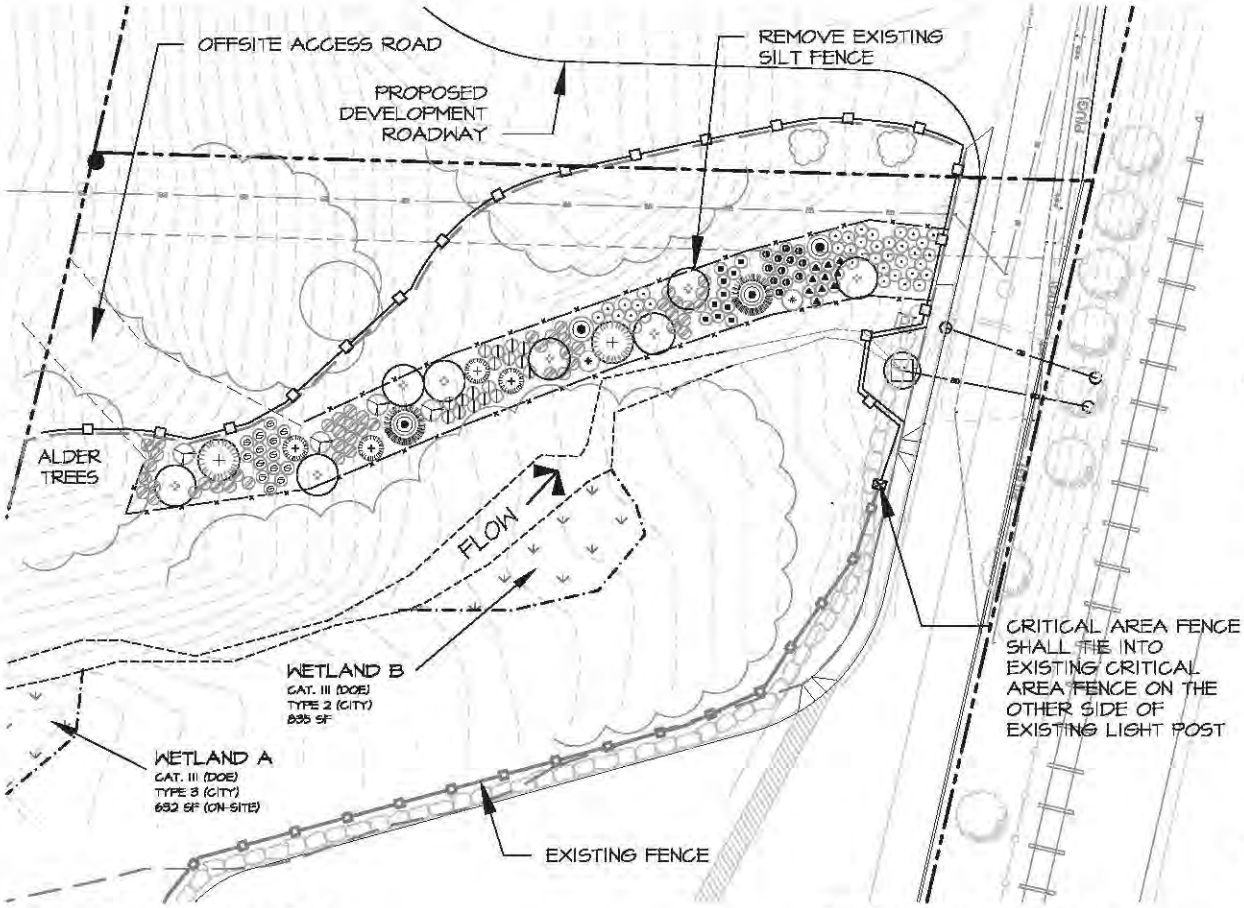
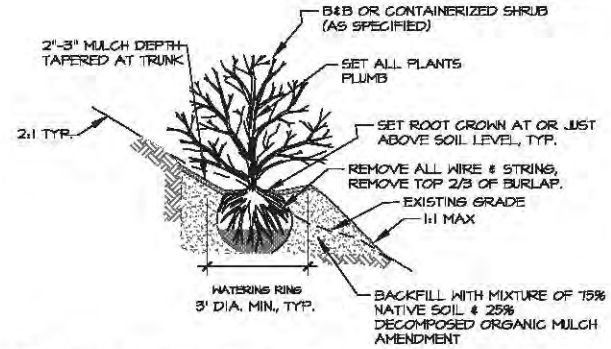


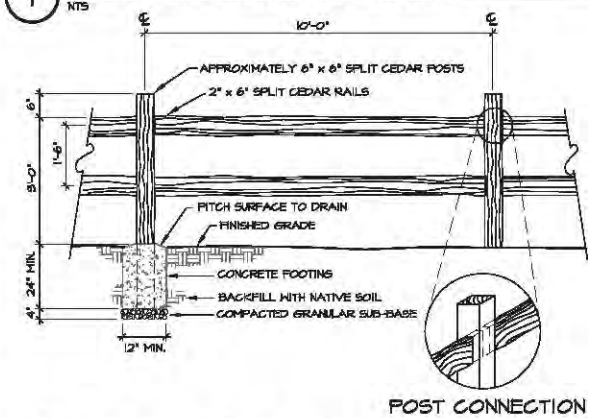
PLANTING PLAN

SEE PLANT SCHEDULE ON FIGURE 11



1 SLOPE PLANTING DETAIL

NTS



2 SPLIT 2-RAIL FENCE DETAIL

N.T.S.

GRAPHIC SCALE (IN FEET)

0 15 30 60

SCALE: 1"=30'

NORTH

LEGEND

- PROJECT SITE BOUNDARY
- EXISTING WETLAND
- OHWM
- EXISTING SILT FENCE
- POST CONSTRUCTION BUFFER
- SPLIT RAIL FENCE
- EXISTING TREES

SOIL PREPARATION NOTES

1. CLEAR ENHANCEMENT AREA AND DISPOSE OF ALL INVASIVE SPECIES.
2. REMOVE ROCK & RIP RAP OF OLD ACCESS ROAD.
3. SCARIFY/DECOMPACT ENHANCEMENT AREA.
4. PLACE 9" TOPSOIL.
5. MULCH ALL ENHANCEMENT AREAS.
5. COMPLETE SITE CLEANUP AND INSTALL PLANT MATERIAL AS INDICATED ON THE MITIGATION PLANTING PLAN.

TALASAEA CONSULTANTS, INC.
Resource & Environmental Planning
15020 Bear Creek Road Northeast
Woodinville, Washington 98077
Bus (425)881-7660 - Fax (425)881-7549

FIGURE #3

PLANTING PLAN & DETAILS
ASTRONICS EXPANSION
KIRKLAND, WASHINGTON

DESIGN	DRAWN	PROJECT
	ABS	1467

SCALE: AS SHOWN
DATE: 12-2-2015
REVISED:

3

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PLANT SCHEDULE

TREES

SYMBOL	SCIENTIFIC NAME	COMMON NAME	WL STATUS	QTY.	SPACING	SIZE (MIN.)	NOTES
	PSEUDOTSUGA MENZIESII	DOUGLAS FIR	FACU	2	AS SHOWN	4-5' HT.	B&B, FULL & BUSHY
	PSEUDOTSUGA MENZIESII	DOUGLAS FIR	FACU	4	AS SHOWN	2-3' HT.	2 GAL., FULL & BUSHY
	THUJA PLICATA	WESTERN RED CEDAR	FAC	2	AS SHOWN	2-3' HT.	2 GAL., FULL & BUSHY
	THUJA PLICATA	WESTERN RED CEDAR	FAC	2	AS SHOWN	4-5' HT.	B&B, FULL & BUSHY

SMALL TREES & LARGE SHRUBS

SYMBOL	SCIENTIFIC NAME	COMMON NAME	WL STATUS	QTY.	SPACING	SIZE (MIN.)	NOTES
	ACER CIRCINATUM	VINE MAPLE	FAC	8	AS SHOWN	4' HT.	MULTI-STEM (3 MIN.)
	AMELANCHIER ALNIFOLIA	SERVICEBERRY	FACU	2	5' O.C.	24" HT.	MULTI-CANE (3 MIN.)
	OEMLERIA CERASIFORMIS	INDIAN PLUM	FACU	4	5' O.C.	24" HT.	MULTI-CANE (3 MIN.)

MASSING SHRUBS

SYMBOL	SCIENTIFIC NAME	COMMON NAME	WL STATUS	QTY.	SPACING	SIZE (MIN.)	NOTES
	CORNUS ALBA (SERICEA)	RED-OSIER DOGWOOD	FACW	39	4' O.C.	18" CUTTING	1/4" DIA. (MIN.), BARK INTACT
	GAULTHERIA SHALLON	SALAL	FACU	14	24" O.C.	1 GAL.	FULL & BUSHY
	LONICERA INVOLUCRATA	BLACK TWIN-BERRY	FAC	10	4' O.C.	18" CUTTING	1/4" DIA. (MIN.), BARK INTACT
	MAHONIA AQUIFOLIUM	TALL OREGON GRAPE	FACU	11	4' O.C.	18" HT.	FULL & BUSHY
	RUBUS PARVIFLORUS	THIMBLEBERRY	FACU	12	4' O.C.	18" HT.	MULTI-CANE (3 MIN.)
	RUBUS SPECTABILIS	SALMONBERRY	FAC	47	4' O.C.	18" HT.	MULTI-CANE (3 MIN.)
	SYMPHORICARPOS ALBUS	COMMON SNOWBERRY	FACU	17	4' O.C.	18" HT.	MULTI-CANE (3 MIN.)

GENERAL PLANT INSTALLATION NOTES

1. PLANT TREES AND/OR SHRUBS 1" HIGHER THAN DEPTH GROWN AT NURSERY.
2. FOR CONTAINER TREES AND/OR SHRUBS, SCORE FOUR SIDES OF ROOTBALL PRIOR TO PLANTING. BUTTERFLY ROOTBALL IF ROOT CIRCLING IS EVIDENT.
3. STAKE DECIDUOUS AND EVERGREEN TREES 4 FEET AND OVER IN HEIGHT WITH ONE (1) STAKE PER TREE. STAKE TREES IMMEDIATELY AFTER PLANTING. PLACE STAKE AT THE OUTER EDGE OF THE ROOTS OR ROOTBALL, IN LINE WITH THE PREVAILING WIND. STAKES SHALL BE LOOSELY ATTACHED USING CHAIN-LOCK TREE TIES TO ALLOW FOR SOME TRUNK MOVEMENT. STAKES TO BE VERTICAL, PARALLEL, EVEN-TOPPED, UNSCARRED AND DRIVEN INTO UNDISTURBED SUBGRADE. REMOVE AFTER ONE YEAR.
4. WATER PLANTS IMMEDIATELY UPON PLANTING, THEN PROVIDE MANUAL WATERING OR A TEMPORARY IRRIGATION SYSTEM TO PREVENT PLANT MORTALITY AND ENSURE PROPER PLANT ESTABLISHMENT. PLANTS SHALL RECEIVE A MINIMUM OF APPROXIMATELY ONE INCH OF WATER EVERY WEEK DURING THE DRY SEASON (GENERALLY JUNE 15TH - OCTOBER 15TH, OR EARLIER OR LATER IF CONDITIONS WARRANT) FOR THE FIRST SEASON AFTER PLANTING. IRRIGATION AMOUNTS MAY NEED TO BE INCREASED DURING PROLONGED PERIODS OF HOT, DRY WEATHER.
5. FERTILIZE ALL TREES AND SHRUBS WITH A SLOW-RELEASE GENERAL PURPOSE GRANULAR FERTILIZER OR SLOW-RELEASE TABLETS AT MANUFACTURER'S SPECIFIED RATE.
6. ALL PLANTING AREAS SHALL HAVE A MINIMUM 9-INCH DEPTH OF TOPSOIL. IF TOPSOIL IS INSUFFICIENT IN EITHER QUANTITY OR QUALITY WITHIN PLANTING AREAS, AS DETERMINED BY TALASAEA CONSULTANTS, TOPSOIL SHALL BE RESTORED BY EITHER RE-INSTALLING PREVIOUSLY STOCKPILED TOPSOIL, IMPORTING NEW TOPSOIL, OR AMENDING EXISTING SOILS IN PLACE WITH ORGANIC MATTER TO ACHIEVE A 9" MINIMUM DEPTH. ALL TOPSOIL SHALL HAVE A BULK ORGANIC CONTENT OF AT LEAST 10 PERCENT AND NOT GREATER THAN 20 PERCENT, AS DETERMINED BY AASHTO-T-194. TOPSOIL THAT HAS BEEN STOCKPILED ON-SITE FOR REUSE IN PROJECT AREA(S) OR IMPORTED FROM OFF-SITE SOURCES SHALL BE FERTILE, FRIABLE, SANDY LOAM SURFACE SOIL, FREE OF SUBSOIL, CLAY LUMPS, BRUSH, WEEDS, ROOTS, STUMPS, STONES LARGER THAN 1 INCH IN ANY DIMENSION, LITTER, OR ANY OTHER EXTRANEOUS OR TOXIC MATTER HARMFUL TO PLANT GROWTH.
7. PROVIDE 3-INCH MINIMUM DEPTH OF MEDIUM BARK MULCH IN ALL PLANTING AREAS. NOTE: 3 INCHES IS THE MINIMUM DEPTH AFTER SETTLING. IF MULCH IS INSTALLED BY BLOWER TRUCK IT SHALL BE INSTALLED AT A 4-INCH DEPTH TO ENSURE A MINIMUM 3-INCH DEPTH AFTER SETTLING. MULCH SHALL BE DERIVED FROM FIR, PINE, OR HEMLOCK SPECIES AND SHALL NOT CONTAIN TRASH, ROCKS, OR OTHER DEBRIS OR MATERIALS DETRIMENTAL TO PLANT GROWTH. MULCH SHALL BE MEDIUM-COURSE GROUND WITH AN APPROXIMATELY 3-INCH MINUS PARTICLE SIZE. FINE PARTICLES SHALL BE MINIMIZED SO THAT NOT MORE THAN 30 PERCENT, BY LOOSE VOLUME, WILL PASS THROUGH A U.S. NO. 4 SIEVE.

TALASAEA CONSULTANTS, INC.
Resource & Environmental Planning
15020 Bear Creek Road Northeast
Woodinville, Washington 98077
Bus (425)881-7550 - Fax (425)881-7549

FIGURE #4

PLANT SCHEDULE AND NOTES
ASTRONICS EXPANSION
KIRKLAND, WASHINGTON

DESIGN	DRAWN	PROJECT
	ABS	1467

SCALE: AS SHOWN
DATE: 12-2-2015
REVISED
4

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APPENDIX

Bond Quantity Worksheet

King County
Department of Permitting
and Environmental Review
35030 SE Douglas Street, Suite 210
Snoqualmie, WA 98065-9266
206-296-6600 TTY Relay: 711

Critical Areas Mitigation
Bond Quantity Worksheet

C24 Web date: 11/30/2012

For alternate formats, call 206-296-6600.
Print on legal-size (8 1/2 x 14") paper only.

Project Name: **Date:** **Prepared by:**

Project Number: **Project Description:**

Location: **Applicant:** **Phone:**

PLANT MATERIALS*

Type	Unit Price	Unit	Quantity	Description	Cost
PLANTS: Potted, 4" diameter, medium	$5.00	Each	0		$ -
PLANTS: Container, 1 gallon, medium soil	$11.50	Each	107		$ 1,230.50
PLANTS: Container, 2 gallon, medium soil	$20.00	Each	14		$ 280.00
PLANTS: Container, 5 gallon, medium soil	$36.00	Each	4		$ 144.00
PLANTS: Seeding, by hand	$0.50	SY	0		$ -
PLANTS: Slips (willow, red-osier)	$2.00	Each	49		$ 98.00
PLANTS: Stakes (willow)	$2.00	Each	0		$ -
PLANTS: Stakes (willow)	$2.00	Each	0		$ -
PLANTS: Flats/plugs	$2.00	Each	0		$ -
* All costs include installation				TOTAL	**$ 1,752.50**

INSTALLATION COSTS (LABOR, EQUIPMENT, & OVERHEAD)

Type	Unit Price	Unit			Cost
Compost, vegetable, delivered and spread	$37.88	CY			$ -
Decompacting till/hardpan, medium, to 6" depth	$1.57	CY			$ -
Decompacting till/hardpan, medium, to 12" depth	$1.57	CY	91.00		$ 142.87
Hydroseeding	$0.51	SY	0.00		$ -
Labor, general (landscaping)	$40.00	HR	40.00		$ 1,600.00
Labor, general (construction)	$40.00	HR	0.00		$ -
Labor: Consultant, supervising	$55.00	HR	16.00		$ 880.00
Labor: Consultant, on-site re-design	$95.00	HR	8.00		$ 760.00
Rental of decompacting machinery & operator	$70.00	HR	8.00		$ 560.00
Sand, coarse builder's, delivered and spread	$42.00	CY	0.00		$ -
Staking material (set per tree)	$7.00	Each	12.00		$ 84.00
Surveying, line & grade	$250.00	HR	0.00		$ -
Surveying, topographical	$250.00	HR	0.00		$ -
Watering, 1" of water, 50' soaker hose	$3.62	MSF	0.00		$ -
Irrigation - temporary	$3,000.00	Acre	0.06		$ 180.00
Irrigation - buried	$4,500.00	Acre	0.00		$ -
Tilling topsoil, disk harrow, 20hp tractor, 4"-6" deep	$1.02	SY	570.00		$ 581.40
	$25.00	HR			$ -
					$ -
				TOTAL	**$ 4,788.27**

HABITAT STRUCTURES*

ITEMS	Unit Cost	Unit			Cost
Fascines (willow)	$ 2.00	Each	0.00		$ -
Logs, (cedar), w/ root wads, 16"-24" diam., 30' long	$1,000.00	Each	0.00		$ -
Logs (cedar) w/o root wads, 16"-24" diam., 30'	$400.00	Each	0.00		$ -
Logs, w/o root wads, 16"-24" diam., 30' long	$245.00	Each	0.00		$ -
Logs w/ root wads, 16"-24" diam., 30' long	$460.00	Each	0.00		$ -
Rocks, one-man	$60.00	Each	0.00		$ -
Rocks, two-man	$120.00	Each	0.00		$ -
Root wads	$163.00	Each	0.00		$ -
Spawning gravel, type A	$22.00	CY	0.00		$ -
Weir - log	$1,500.00	Each	0.00		$ -
Weir - adjustable	$2,000.00	Each	0.00		$ -
Woody debris, large	$163.00	Each	0.00		$ -
Snags - anchored	$400.00	Each	0.00		$ -
Snags - on site	$50.00	Each	0.00		$ -
Snags - imported	$800.00	Each	0		$ -
					$ -
					$ -
* All costs include delivery and installation				TOTAL	**$ -**

EROSION CONTROL

ITEMS	Unit Cost	Unit			Cost
Backfill and Compaction-embankment	$ 4.89	CY	0.00		$ -
Crushed surfacing, 1 1/4" minus	$30.00	CY	0.00		$ -
Ditching	$7.03	CY	0.00		$ -
Excavation, bulk	$4.00	CY	0.00		$ -
Fence, silt	$1.60	LF	300.00		$ 480.00
Jute Mesh	$1.26	SY	0.00		$ -
Mulch, by hand, straw, 2" deep	$1.27	SY	0.00		$ -
Mulch, by hand, wood chips, 2" deep	$3.25	SY	410.00	3" deep	$ 1,332.50
Mulch, by machine, straw, 1" deep	$0.32	SY	0.00		$ -
Piping, temporary, CPP, 6"	$9.30	LF	0.00		$ -
Piping, temporary, CPP, 8"	$14.00	LF	0.00		$ -
Piping, temporary, CPP, 12"	$18.00	LF	0.00		$ -
Plastic covering, 6mm thick, sandbagged	$2.00	SY	0.00		$ -
Rip Rap, machine placed, slopes	$33.98	CY	0.00		$ -
Rock Constr. Entrance 100'x15'x1'	$3,000.00	Each	0.00		$ -
Rock Constr. Entrance 50'x15'x1'	$1,500.00	Each	0.00		$ -
Sediment pond riser assembly	$1,695.11	Each	0.00		$ -
Sediment trap, 5' high berm	$15.57	LF	0.00		$ -
Sediment trap, 5' high berm w/spillway incl. riprap	$59.60	LF	0.00		$ -
Sodding, 1" deep, level ground	$5.24	SY	0.00		$ -
Sodding, 1" deep, sloped ground	$6.48	SY	0.00		$ -
Straw bales, place and remove	$600.00	TON	0.00		$ -
Hauling and disposal	$20.00	CY	64.00	6-9" deep	$ 1,280.00
Topsoil, delivered and spread	$35.73	CY	64.00	9" deep	$ 2,286.72
	$17.00	CY			$ -
					$ -
				TOTAL	**$ 5,379.22**

GENERAL ITEMS					
ITEMS	Unit Cost	Unit			Cost
Fencing, chain link, 6' high	$18.89	LF	0.00		$ -
Fencing, chain link, corner posts	$111.17	Each	0.00		$ -
Fencing, chain link, gate	$277.63	Each	0.00		$ -
Fencing, split rail, 3' high (2-rail)	$10.54	LF	350.00		$ 3,689.00
Fencing, temporary (NGPE)	$1.20	LF	0.00		$ -
Signs, sensitive area boundary (inc. backing, post, install)	$28.50	Each	6.00		$ 171.00
					$ -
					$
					$ -
				TOTAL	**$ 3,860.00**
OTHER				*(Construction Cost Subtotal)*	**$ 15,779.99**
ITEMS	Percentage of Construction	Unit			Cost
Mobilization	10%				$ 1,578.00
Contingency	30%				$ 4,734.00
				TOTAL	**$ 6,312.00**
MAINTENANCE AND MONITORING	NOTE: Projects with multiple permit requirements may be required to have longer monitoring and maintenance terms. This will be evaluated on a case-by-case basis for development applications. Monitoring and maintance ranges may be assessed anywhere from 5 to 10 years.				
Maintenance, annual					
Less than 1,000 sq.ft. and buffer mitigation only	$ 1.08	SF	0.00	(total for 3 annual events; Includes monitoring)	$ -
Less than 1,000 sq.ft. with wetland or aquatic area mitigation	$ 1.35	SF	0.00	(3 X SF total for 3 annual events; Includes monitoring)	$ -
Larger than 1,000 sq. ft. but less than 5,000 sq.ft. of buffer mitigation	$ 180.00	EACH	2.00	(4hr @$45/hr)	$ 360.00
Larger than 1,000 sq. ft. but less than 5,000 sq.ft. of wetland or aquatic area mitigation	$ 270.00	EACH	0.00	(6hr @$45/hr)	$ -
Larger than 5,000 sq.ft. but < 1 acre -buffer mitigation only	$ 360.00	EACH	0.00	(8 hrs @ 45/hr)	$ -
Larger than 5,000 sq.ft. but < 1 acre with wetland or aquatic area mitigation	$ 450.00	EACH	0.00	(10 hrs @ $45/hr)	$ -
Larger than 1 acre but < 5 acres - buffer and / or wetland or aquatic area mitigation	$ 1,600.00	DAY	0.00	(WEC crew)	$ -
Larger than 5 acres - buffer and / or wetland or aquatic area mitigation	$ 2,000.00	DAY	0.00	(1.25 X WEC crew)	$ -
Monitoring, annual					
Larger than 1,000 sq.ft. but less than 5,000 wetland or buffer mitigation	$ 720.00	EACH	2.00	(8 hrs @ 90/hr)	$ 1,440.00
Larger than 5,000 sq.ft. but < 1 acre with wetland or aquatic area impacts	$ 900.00	EACH	0.00	(10 hrs @ $90/hr)	$ -
Larger than 1 acre but < 5 acres - buffer and / or wetland or aquatic area impacts	$ 1,440.00	DAY	0.00	(16 hrs @ $90/hr)	$ -
Larger than5 acres - buffer and / or wetland or aquatic area impacts	$ 2,160.00	DAY	0.00	(24 hrs @ $90/hr)	$ -
Maintenance and Monitoring Inspection (DDES), annual	$350.00	EACH	1.00	(2.5 hrs @ $140/hr)	$ 350.00
Maintenance and Monitoring Inspection (DDES), final	$560.00	EACH	1.00	(4 hrs @ $140/hr)	$ 560.00
				TOTAL	**$ 2,710.00**
				Total	**$24,801.99**

THE WATERSHED COMPANY

SCIENCE & DESIGN

June 7, 2016

David Barnes
City of Kirkland
Planning and Community Development
123 Fifth Avenue
Kirkland, WA 98033

Re: Astronics Expansion Project – Mitigation Plan Review

Dear David:

Thank you for the opportunity to review the December 2015 Critical Areas Mitigation plan submitted by Talasaea Consultants in support of the Astronics Expansion Project. This letter is a summary of the review findings.

Astronics is proposing to voluntarily restore a portion of the buffer on two wetlands and one stream as a public benefit to the City of Kirkland. A quarry spall-stabilized road runs through the buffers, extending west from the site access road. Himalayan blackberry, reed canarygrass, and other grasses and weeds are growing through the quarry spalls and old silt fencing is found on both sides of the road.

The plan proposes installing a variety of native trees and shrubs following quarry spall removal. The plan is proposed to be monitored according to the City of Kirkland standards, which includes five-years of twice-yearly inspections and reporting.

Within the road restoration areas, there are several changes that would improve success and increase benefits. The City of Kirkland should consider conditioning the permit to include the following additional actions:

1. The depth of the spalls is unknown as is the quality and density of the underlying soil. Therefore, the subgrade should be de-compacted and a suitable topsoil mix should be used to bring the road back to its current grade following quarry spall removal.

2. Reed canarygrass, an aggressive invasive species, is widespread throughout much of the buffer, including the replanting area. Therefore, canarygrass should be included in the list of weeds to be managed below 10% cover during the monitoring and maintenance period.

750 Sixth Street South | Kirkland, WA 98033
p 425.822.5242 | f 425.827.8136 | watershedco.com

3. No irrigation is proposed other than hand watering, which can be sporadic and unreliable. Due to the widespread presence of invasive canarygrass, Himalayan blackberry and other weeds, establishment of native species will be problematic without reliable irrigation in the first few years. A water source is nearby in the form of a water line and hydrant directly adjacent to the planting area. Above-ground PVC-pipe systems typically lower maintenance costs over the life of the monitoring period. Therefore, a reliable, automated irrigation system should be installed.

4. Site-wide woodchip mulch helps planted vegetation establish amongst aggressive, invasive weeds. As with irrigation, mulch typically lowers the overall cost of mitigation by reducing maintenance costs. Therefore, a thick (4-inches) application of woodchip mulch should be placed across planted areas.

Beyond revegetating only the quarry-spall road, there are several additional restoration actions that would improve the overall function and benefit of the plan. Buffer areas north of the road contain almost no native vegetation. Buffer areas south of the road are forested mainly with an even-aged stand of a single species (black cottonwood) and contain virtually no understory plants beyond dense patches of canarygrass. West of the canarygrass, much of the area beneath the tree canopy is sparsely vegetated and contains a high percentage of bare ground. Opportunities to restore additional areas include the following:

1. Extend the road revegetation north, up to the edge of the standard buffer. This area is presently vegetated with low-functioning grasses and would benefit from establishment of native trees and shrubs. Benefits include improved aesthetics to the proposed office building and access road and increased wildlife habitat from additional screening, cover, fruit and nut production. Revegetating this area would also improve resistance from weed re-colonization.

2. Apply woodchip mulch to the soil surface south of the quarry spall road, on both sides of the stream and adjacent to the wetlands. Woodchips improve soil conditions to favor the establishment of native forest over understory grasses. Canarygrass is currently widespread in patches and mulch alone will greatly reduce its presence. Mulch would also stabilize erodible bare soil areas.

3. Add native coniferous trees to buffer and wetland areas south of the quarry spall road. This would increase species diversity, improve wildlife habitat and help with bare soil stabilization.

4. Add shade tolerant native berry- and fruit-producing understory species to wetland and buffer areas south of the road. Increased cover and food resources

would benefit wildlife. Increased cover would also reduce areas of bare soil and limit erosion potential.

5. Place downed woody debris and standing snags within buffer areas. If tree removal is planned during development of the proposed expansion, salvaged debris placed in the buffer would improve bird, amphibian and other wildlife conditions at very low cost and effort.

Please call with any questions.

Sincerely,

Hugh Mortensen, PWS
President

City of Kirkland

Date

TALASAEA
CONSULTANTS, INC.

16 June 2015 TAL-1467

Mr. Jon Regala, Senior Planner
City of Kirkland
123 Fifth Avenue
Kirkland, Washington 98003

REFERENCE: Astronics Expansion Project in Kirkland Washington
SUBJECT: Responses to City's Comments for Additional Information

Dear Jon:

At the request of Tim Borland, Director of Information Technology for Astronics, I am providing the following information in response to your request for additional information. I have provided the text of your request as it was forwarded to us by Tim. Our responses to your numbered items below are shown in *italic* text.

Request from the City of Kirkland

1. A response that addresses the criteria found in KZC Section 90.55.3 and as listed in the applicable sections of KZC 90.55.1.

   Section 90.55.3 of KZC prohibits land modification of Type 3 wetlands except as provided in this subsection of the code. The applicant (Astronics) may request a modification of the requirements in conjunction with approval of the applicable development permit. The requirements for such a modification are similar to those listed for Type 1 wetland modification proposals with one exception: all of a Type 3 wetland within a secondary basin may be modified. There are 10 requirements listed under KZC 90.55.1 for modification of Type 1 wetlands.

   a. It will not adversely affect water quality;

      All stormwater will be collected, treated, and released according to the most current DOE water quality standards, per City of Kirkland requirements.

   b. It will not adversely affect fish, wildlife, or their habitat;

      As indicated in our Critical Areas Report, the proposed development site does not have significant fish, wildlife, or habitat resources that could be adversely affected by the proposed development. Existing forested areas on the

subject property will be protected for the benefit of wildlife. This includes the forested area and buffer containing Stream 1, Wetland A, and Wetland B. A retaining wall will be constructed along the western side of the proposed development. Using a retaining wall will allow development to occur without having to grade the steep slope area along the western side of the property, which would likely result in the loss of all the existing forest vegetation there. Some of the existing forest vegetation will be affected, including the need to remove some smaller trees. Significant trees outside of the limits of work will be retained. Mitigation for the loss of forest vegetation on the steep slope area will be provided by the development's landscape plan, which will replace lost vegetation with new native trees and shrubs. A Biological Evaluation has been prepared for this project that concludes that no adverse effects to threatened or endangered species will occur as a result of the proposed expansion plan.

c. It will not have an adverse effect on drainage and/or storm water detention capabilities;

The proposed project will not have an adverse effect on drainage or stormwater detention capabilities. It is likely that these capabilities will be improved beyond existing conditions in terms of storage capacity, treatment of water quality, and rate of release.

d. It will not lead to unstable earth conditions or create an erosion hazard or contribute to scouring actions;

The steep slope area along the western portion of the Site will be impacted by the proposed development. It will be necessary to excavate a portion of the slope in order to provide sufficient road width to allow the passage of emergency vehicles. The cut in the slope will be stabilized by construction of a retaining wall with attendant wall drainage. Groundwater collected by the proposed wall drainage system will be directed towards existing point discharges along the eastern boundary of the property. Drainage off of this sloped area will be maintained to replicate existing site conditions. Some vegetation will need to be removed during excavation and construction of the retaining wall. The vegetation removed will be replaced in accordance with the project's landscape plan.

The remainder of the site is not likely to result in unstable earth conditions due to its relatively flat topography. Stormwater will be released according to the requirements provided in the most current DOE stormwater manual and per City of Kirkland. It is unlikely that the proposed development will contribute to scouring actions since the discharge of stormwater will occur within a relatively flat area of previous flood plain for the Sammamish River and will be controlled per applicable stormwater release guidance.

e. It will not be materially detrimental to any other property or the City as a whole;

The proposed site development will not be materially detrimental to any adjacent property or to the City of Kirkland. All stormwater discharge will meet applicable DOE and City of Kirkland requirements. The steep slope area on the west side of the Site will be impacted by the proposed development. However, the necessary excavation into the steep slope area will be stabilized by construction of a retaining wall with an attendant wall drainage system. Most of the vegetation on the steep slope area will remain in place to continue stabilizing the slope. Vegetation on the steep slope area that must be removed will be replaced by native trees and shrubs in accordance with the project's landscape plan.

There will be no alterations to Stream 1 or its source of water. Surface Conveyance 1 will be collected by the retaining wall's drainage system and piped around the development footprint. Surface Conveyance 1 is currently collected by a pipe behind the existing building at the north end of the Site and discharges into a ditch along the west side of the abandoned rail road tracks along the east side of the Site. It is likely that the wall drainage system will utilize this existing discharge point. Release of captured groundwater will be moderated so that no increase in erosion in the existing ditch system will occur.

f. It will result in surface modifications of no more than five (5) percent of the wetland on the subject property (except for provision 90.55.3(b) in the case of Type 3 wetlands in a secondary basin);

All the Type 3 wetlands proposed for impact on the Site are within a secondary basin. Therefore, the proposed modification may affect all of the Type 3 wetland area as proposed per KZC 90.55.3(b).

g. Compensatory mitigation is provided in accordance with the table in subsection (4) of this section;

Compensatory mitigation for impacts to the Type 3 wetlands within a secondary basin is listed as 1:1 per KZC 90.55.4. Therefore, the approximately 0.7 acres of proposed wetland fill would require no less than 0.7 acres of wetland creation or restoration as compensatory mitigation. However, the mitigation ratio of 1:1 per KZC 90.55.4 does not meet current WDOE mitigation guidelines, which require a minimum 2:1 re-establishment or creation for Category III wetlands (based on the Washington Department of Ecology's Wetland Rating System for Western Washington, 2004).

The mitigation for the proposed on-site wetland fill will occur at the King County In-lieu Fee program, which uses the Washington Department of

Ecology's Calculating Credits and Debits for Compensatory Mitigation in Wetlands of Western Washington (Credit/Debit) to determine the amount of mitigation that will be required. It has been our experience working with the Credit/Debit methodology that required acres of mitigation for wetland impacts, as determined by this methodology, often exceeds the mitigation ratios provided in DOE's mitigation guidance document (Wetland Mitigation in Washington State, Part 1, Version 2, 2006). As a result, the proposed mitigation at the King County In-lieu Fee program will likely exceed the City of Kirkland mitigation requirements in both area and provision of functions and services.

h. Fill material does not contain organic or inorganic material that would be detrimental to water quality or fish and wildlife habitat;

Any fill material will be purchased from a local source and will consist of clean load-bearing soils with no toxic organic or inorganic materials. There will be no detriment to water quality, fish, or to wildlife habitat resulting from any imported fill material.

i. All exposed areas are stabilized with vegetation normally associated with native wetlands and/or buffers, as appropriate;

Areas of exposed soil will be stabilized by hydroseeding during construction if these areas will not be worked on for a period of three or more days. Such areas that are within designated wetland or stream buffers will be replanted with native trees and shrubs. Other areas of exposed soil after the completion of construction will be planted in accordance with the approved landscape plan (trees and shrubs, or lawn where indicated). No soil will be left exposed on the proposed development site.

and

j. There is no practicable or feasible alternative development proposal that results in less impact to the Type 1 (Type 3) wetland and its buffer.

The Critical Areas report and Conceptual Mitigation Plan for the Astronics project contains an alternatives analysis that details why the proposed plan is the only feasible development alternative that provides the minimum amount of impact to critical areas while achieving the minimum goals of the proposed development. The wetlands and stream that will be permanently protected provide the highest amount of habitat potential of all the onsite wetlands. These wetlands and stream will be further enhanced by removal of non-native species and planting with a variety of native trees and shrubs.

The existing extension of 141st Avenue NE through the Site will be removed and replaced with a paved roadway with required curb and stormwater

management. An existing riprap sewer access road will be removed per Corps of Engineers requirements and restored as part of the proposed enhancement of the wetland buffer for Wetlands A and B.

Stormwater leaving the site post-construction will likely have significantly less sediments and pollutants compared to existing conditions. Finally, boundary fencing will be installed around the buffer area containing Stream 1 and Wetlands A and B. This boundary fencing will protect Stream 1 and the wetlands from potential impacts caused by human intrusions.

2. Compensatory mitigation calculations as prescribed in KZC Section 90.55.4.

Compensatory mitigation required for the filling of Type 3 wetlands, based on KZC 90.55.4 is 1:1 for wetlands within a secondary basin. The proposed site development plan will fill approximately 0.7 acres of Type 3 wetland. Therefore, no less than 0.7 acres of compensatory mitigation (creation or restoration) will be required per KZC.

3. Detailed information regarding the King County In-Lieu program for off-site mitigation as it relates to the Kirkland wetland mitigation requirements.

The King County In-lieu Fee Program (referred to as ILF hereinafter) is a regional wetland mitigation system that is overseen by King County, the Washington Department of Ecology, and the Army Corps of Engineers. Unlike a mitigation bank where mitigation has occurred and has been deemed successful by the Corps and WDOE, the ILF provides credits for mitigation that is either constructed, being constructed, or will be constructed. The County's mitigation efforts must meet the same success standards as a mitigation bank, but there is additional risk attached since mitigation monitoring may not be completed yet, or the mitigation itself may not be started. In this respect, the ILF program is not much different from onsite and in-kind mitigation.

A project that proposes to impact wetlands and mitigate by purchasing credits from the ILF bank must first determine the number of credits that will need to be purchased to offset the functions and services of the wetlands impacted. Washington Department of Ecology has created the Credit/Debit system to determine the amount and type of mitigation that will be required to adequately offset proposed wetland impacts. The system scores three functions and services of a wetland (water quality, hydrology, and habitat) and multiplies these scores by the acres of impact. Temporal loss of functions and values are also factored in. The resulting score (debit) is the amount of mitigation required in the form of acre-points. Acre-points allows the determination of the value of a wetland to perform functions and services that is independent of the wetland's rating. A 0.5 acre Category IV wetland will require fewer acre-points to offset lost functions and services compared to a 0.5 acre Category III wetland.

Likewise, the three functions and services of the mitigation area are scored and multiplied by the area of the mitigation and a risk factor (the risk factor considers the timing of mitigation and the degree of difficulty in establishing certain wetland vegetation types). The resulting score (credit) is also in acre-points. The credits provided by the mitigation should be greater than the debits incurred by the proposed wetland impact in order to adequately offset the functions and services lost to wetland impacts. As with the debit calculations described in the preceding paragraph, the credits that a mitigation can provide are dependent on the rating of the mitigation at maturity. A 0.5 acre Category II wetland will provide more acre-points of credit than a 0.5 acre Category III wetland.

The ILF uses this system to determine the "value" in credits a particular mitigation project will provide. The ILF determines the cost per credit of the mitigation based on the real value of the land acquired and the effort put in to designing, implementing, and monitoring the mitigation. These constitute the credits that the ILF will have for sale to prospective clients. The ILF will then sell sufficient credits to a client to offset the calculated debits from proposed wetland impacts.

In all likelihood, the total area of the ILF wetland mitigation that will be used to offset the proposed wetland impacts will provide substantially higher functions and services compared to the wetlands proposed for impact. The functions and services lost due to proposed wetland impacts will be replaced as part of a much larger mitigated wetland that provides significantly greater functions and services as a whole compared to the impacted wetlands. This mitigation wetland will likely be connected to other high-quality regional habitats. Onsite and in-kind mitigation may not provide connections to other high-quality habitats due to levels of development in the vicinity of the proposed impact.

Finally, the ILF wetland mitigations are carefully observed by WDOE and the Corps and will be maintained in perpetuity by King County or by a designated steward. Many wetland mitigations that are onsite and in-kind may initially succeed, but later fail due to lack of long-term maintenance. Using the ILF for mitigation ensures that the mitigation for wetland impacts will be successful in perpetuity.

4. Additional details regarding the statement in the project description: "…to protect and restore two higher quality wetlands and the stream by restoring and marking the buffer to these critical areas."

   The two wetlands that will be preserved are directly associated with Stream 1. Stream 1 begins on the Astronics property as discharge from a cross culvert under the old railroad bed (now a regional trail) along the west side of the property. The two wetlands are considered higher quality compared with other onsite wetlands due to their association with Stream 1 and a direct vegetated connection to the forested habitat along the property's west side. The proposed site development plan will not directly impact either the stream or the two wetlands.

The upland vegetation providing buffer functions to the wetlands and stream are dominated by non-native blackberries and reed canarygrass. The forested vegetation, where present, consists of relatively young red alder and black cottonwood. The proposed site development plan will place the two wetlands, the stream, and their associated buffers within a protected tract, which will be further protected by installation of a perimeter fence with associated NGPA signage. The non-native vegetation will be removed and replaced by native trees and shrubs.

As was mentioned in Item 1.j above, the existing extension of 141st Avenue NE through the Site will be removed and replaced with a paved roadway with required curb and stormwater management. An existing riprap sewer access road will be removed per Corps of Engineers requirements and restored as part of the proposed enhancement of the wetland buffer for Wetlands A and B. Stormwater leaving the site post-construction will likely have significantly less sediments and pollutants compared to existing conditions. Boundary fencing will be installed around the buffer area containing Stream 1 and Wetlands A and B. This boundary fencing will protect Stream 1 and the wetlands from potential impacts caused by human intrusions.

We trust that the information presented here sufficiently answers your comments and that you will be able to move this project forward. If you have additional questions or require more information, please contact Bill Shiels or me at (425) 861-7550.

Thank you.

Sincerely,

TALASAEA CONSULTANTS, INC.

David R. Teesdale, PWS®
Senior Wetland Ecologist.

Cc: Mr. Tim Borland
Ms. Diana Suzuki

BIOLOGICAL EVALUATION

ASTRONICS EXPANSION PROJECT
KIRKLAND, WASHINGTON

CORPS PROJECT NO. NWS 2014-0283

Prepared For:

ASTRONICS ADVANCED ELECTRONIC SYSTEMS

Prepared By:

TALASAEA CONSULTANTS, INC.

25 March 2015

Biological Evaluation

Astronics Expansion Project
Kirkland, Washington

Prepared For:

Tim Borland, Director of IT
12950 Willows Road NE
Kirkland, WA 98034

Prepared By:

Talasaea Consultants, Inc.
15020 Bear Creek Road NE
Woodinville, WA 98077

25 March 2015

EXECUTIVE SUMMARY

REPORT TYPE: Biological Evaluation

PROJECT NAME: Astronics Expansion Project

PROJECT LOCATION: The Astronics Expansion Project is an approximately 7.1-acre assemblage of three parcels located north of and adjacent to the Astronics Advanced Electronic Systems main corporate office. The project is within the limits of the City of Kirkland. Astronics' mailing address is 12950 Willows Road NE, Kirkland, Washington 98034. The King County Tax Parcel Numbers for the parcels in the assemblage are 2226059042 (Parcel A), 2226059053 (Parcel B), and 2226059080 (Parcel C). The Public Land Survey System location of the project is the southeast ¼ of Section 22, T26N, R5E, Willamette Meridian.

PROJECT STAFF: Bill Shiels: Principal, Ann Olsen: Project Manager, Janice Martin: Wetland Ecologist, David R. Teesdale: Wetland Ecologist, Adam DeWolfe: Landscape Architect, Alicia Schultz: Landscape Architect.

CLIENT: Tim Borland, Director of IT
Astronics AES
12950 Willows Road NE
Kirkland, WA 98034

SITE DESCRIPTION: The Astronics Expansion property consists of three parcels, which total approximately 7.1 acres. The parcel numbers owned by Astronics are 2226059042 (Parcel A), 2226059053 (Parcel B), and 2226059080 (Parcel C), hereinafter referred to as the "Site" or "Project Site". The Public Land Survey Location of the Site is the southeast ¼ of Section 22, T26N, R5E, Willamette Meridian. The project is located in the Water Resource Inventory Area (WRIA) 8, further identified as the West Lake Sammamish Tributaries (J. Kerwin 2001), and The Secondary Basin of Kingsgate Slope, as defined by KZC §90.30 (Kirkland 2011) and (Kirkland, City ESA Map 2013). Parcel A contains two on-site wetlands (Wetland A and B) and one stream. Parcels B and C contain three on-site wetlands that are mostly open grass fields (Wetland C, D, and E), surrounded by high brush and mature trees with associated undergrowth. Slope seepage drains west to east along the north property boundary (Surface Water Conveyance 1). A gravel road is used to access the property from the south and ends at the two-story warehouse building located near the north edge of the Site. A man-made gravel-lined drainage ditch (Surface Water Conveyance 2) runs parallel to the gravel road. The Site topography consists of a ridge of high ground running north to south along the western property boundary. The highest point of elevation is approximately 50 feet higher than the lowest elevation on the eastern property boundary. All runoff generated on the Site tends to sheet flow in an easterly direction towards a railroad grade located on the eastern property boundary. The property is bounded on the east and west by two spurs of the former BNSF Railway and are to eventually become part of the Cross Kirkland Corridor, a Rails-to-Trails project. The railroad grade on the western property boundary tends to channel runoff into a 24-inch-diameter culvert, which flows beneath the railroad tracks across the Site and contributes hydrology for Stream 1.

PROPOSED PROJECT IMPACTS AND MITIGATION: Astronics Advanced Electronic Systems (AES) requires expanded facilities in order to provide services to their existing and new customer base. The Astronics Expansion Project will involve construction of an approximately 133,000 sf building and approximately 132,500 sf of associated parking, access, and emergency-fire-turn-around on Parcels B and C. Parcel A will not be developed beyond existing conditions. On-site mitigation includes approximately 2,280 sf of enhanced stream buffer and improved stormwater facilities. The proposed project includes 30,604 sf (0.70 ac.) of direct impacts to Category III Wetlands C, D, and E. No impacts to Wetlands A or B, or Stream 1 will result from the proposed

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development. Mitigation for the proposed wetland fill will be provided by purchasing mitigation credits from the King County Wetland Reserve In-lieu Fee program. In addition, the project will provide 2,280 sf of stream buffer restoration to occur with native trees and shrubs.

HABITAT AND SPECIES INFORMATION: The Washington State Department of Fish and Wildlife Priority Habitats and Species (PHS) database, the Washington State Department of Natural Resources Natural Heritage Program database, StreamNet, and SalmonScape websites were reviewed for priority species and habitat information. The results of this search indicate that there are no listed terrestrial species or critical habitat on-site nor in the Action Area. There are no documented presence of listed salmonid species, nor is there critical habitat for listed species mapped on-site. There are documented listed fish within the Action Area. Coho and winter steelhead have an observed presence off-site within ditches approximately 20 feet to the east of the Site. Chinook and bull trout have been documented within the Sammamish River approximately 2,240 to 2,640 feet east of the Site. All of these are located beyond the on-site impassable fish barrier, the trash-rack drop structure.

CONSERVATION MEASURES: The project will implement the following conservation measures to prevent adverse effects to listed species and habitats. Stormwater and erosion control Best Management Practices (BMPs) will be implemented during on-site grading to prevent sediment-laden water from leaving the Project Site. Clearing limits are shown on the TESC Plans (**Appendix 1**). Some of those measures (at a minimum) will include a temporary rock construction entrance to the Site, sediment pond to filter potential sediment laden water from leaving the site, silt fencing around construction limits, plastic sheeting, hydro-seeding, mulching, temporary V-ditches, and rock check dams. The on-site stream will be protected using silt fencing and straw bales. Whenever possible, soil disturbing work will be conducted during the dry summer season to prevent mobilization of soil. Nitrogen, pH, and dissolved oxygen effects to downstream surface waters should be negligible, as nitrogen would not be a factor during construction, and pH will be monitored according to the Washington Department of Ecology's requirements.

Post-construction benefits include approximately 2,280 sf of enhanced stream buffer. The project is proposing three underground water quality detention vaults. These wet vaults will meet the Washington Department of Ecology's requirements for the highest level of water quality improvement. The enhanced water quality that this project is proposing will treat for sediment and heavy metals prior to release into any surface waters. Attainment of these goals may benefit Federally-listed salmonids through water quality improvements over existing conditions.

ESA EFFECTS DETERMINATION: The project is designed to avoid or minimize impacts to Federally-listed species of fish that are known to be present within the Action Area for the Astronics Expansion project. These include salmonid species known to utilize off-site ditches and the Sammamish River, also located off-site. The project may indirectly impact these areas by on-site construction activities. The project will ensure that no "Take" will occur, as written in Section 3(18) of the Endangered Species Act. The ESA Determination for listed species is "**may affect, but not likely to adversely affect**."

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TABLE OF CONTENTS

EXECUTIVE SUMMARY i
TABLE OF CONTENTS iii
LISTS OF FIGURES, TABLES, AND APPENDICES v

1.0 INTRODUCTION 1

2.0 PROJECT LOCATION AND SITE DESCRIPTION 1

3.0 ACTION AREA 2

4.0 EXISTING CONDITION 2

4.1. SAMMAMISH RIVER 3
4.2. STREAM 1 3
4.3. SURFACE WATER CONVEYANCE 1 4
4.4. SURFACE WATER CONVEYANCE 2 4
4.5. EXISTING WETLANDS 4
4.6. WETLAND A 4
4.6.1. Wetland B 4
4.6.2. Wetland C 5
4.6.3. Wetland D 5
4.6.4. Wetland E 5

5.0 OCCURRENCE OF FEDERALLY-LISTED SPECIES 5

5.1. ANADROMOUS FISH 6
5.1.1. Coho Salmon 6
5.1.2. Steelhead Trout 7
5.1.3. Fall-run Chinook Salmon 7
5.1.4. Dolly Varden/ Bull Trout 8

6.0 ENVIRONMENTAL BASELINE 9

6.1. EXISTING ENVIRONMENTAL BASELINE 9
6.2. RELATIONSHIP BETWEEN HABITAT IN THE ACTION AREA AND THE BIOLOGICAL REQUIREMENTS OF THE SPECIES 10
6.3. SAMMAMISH RIVER WATERSHED 12
6.3.1. Water Quality 13
6.3.2. Habitat Access and Connectivity 13
6.3.3. Habitat Elements 13
6.3.4. Channel Conditions and Dynamics 13
6.3.5. Flow/Hydrology 13
6.3.6. Watershed Conditions 14

7.0 PROPOSED PROJECT 14

8.0 DETERMINATION OF EFFECTS 14

8.1. CONSTRUCTION EFFECTS – (DIRECT EFFECTS) 14
8.2. INDIRECT (LONG-TERM POTENTIAL OPERATIONAL EFFECTS) 15
8.3. ESTIMATED TAKE 16
8.4. CUMULATIVE EFFECTS 16
8.5. EFFECT OF THE PROPOSED ACTION ON TRIBAL RESOURCES OR INTERESTS 18

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9.0 AVOIDANCE, MINIMIZATION, AND CONSERVATION MEASURES 18

9.1. CONSTRUCTION TIMING 18
9.2. SUMMARY OF AVOIDANCE, MINIMIZATION, AND CONSERVATION MEASURES 19

10.0 FINDING OF EFFECT 19

10.1. PUGET SOUND COHO SALMON 20
10.2. PUGET SOUND STEELHEAD TROUT 20
10.3. PUGET SOUND CHINOOK SALMON 20
10.4. DOLLY VARDEN/ BULL TROUT 20
10.5. ESSENTIAL FISH HABITAT 20

11.0 REFERENCES 21

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LIST OF FIGURES

*All Figures Located at the End of the Document.

Figure 1. Vicinity Map
Figure 2. Existing Conditions Overview
Figure 3. Existing Conditions, Surface Water Flow Connections
Figure 4. Action Area

LIST OF TABLES

Table 1. Federally-Listed Species Potentially Present in the Vicinity of the Astronics Expansion Project Action Area
Table 2. Environmental Baseline of the Action Area – Sammamish River
Table 3. Environmental Baseline/Effects Matrix for Salmonid Species – Sammamish River
Table 4. Construction Sequence for the Astronics Expansion Project

LIST OF APPENDICES

Appendix 1. Temporary Erosion/Sediment Control Plan for Astronics North Building Addition

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1.0 INTRODUCTION

This Biological Evaluation (BE) addresses the potential Endangered Species Act (ESA) effects for the Astronics Expansion Project (hereinafter referred to as "Project Site" or "Site"). Astronics has grown rapidly in the last three years and has outgrown their current facility. Additional commercial space is necessary to accommodate current production and staffing levels, as well as anticipated growth. The project would expand the existing operations facilities to the north, on two adjoining parcels, and construct a three-story 130,000 sf building. Construction of the expanded facilities is anticipated to impact a total of 0.70 acres of depressional and slope wetlands. The required mitigation for wetland impacts will be conducted at an approved site using the King County In-Lieu-Fee program.

Section 7 of the ESA requires all Federal agencies to consult with the National Marine Fisheries Service (NMFS) and/or the U.S. Fish and Wildlife Service (USFWS) if they determine that any action they fund, authorize, or carry out may affect Federally-listed species or their designated critical habitat.

Federal agencies are obligated, under Section 305(b)(2) of the Magnuson-Stevens Fisheries Conservation and Management Act (MSA) to consult with NMFS regarding actions that are authorized, funded, or undertaken by that agency that may adversely affect the essential fish habitat (EFH) for species managed under a Federal Fisheries Management Plan (FMP). Pacific West Coast salmon are currently managed by a Federal FMP. The MSA defines freshwater EFH for Pacific salmon as those waters and substrate necessary for spawning, breeding, feeding, and growth to maturity and includes all those streams, lakes, ponds, wetlands, and other water bodies currently or historically accessible to salmon in Washington, Oregon, Idaho, and California, except above impassible barriers as identified by the Pacific Fishery Management Council (1999).

The purpose of this BE is to provide an ESA effects determination with respect to Federally-listed species or their designated critical habitat, and includes effects to essential fish habitat that may result from construction of the Astronics Expansion Project.

2.0 PROJECT LOCATION AND SITE DESCRIPTION

The Project Site is located north of the existing Astronics facility, at 12950 Willows Road NE in Kirkland, Washington (**Figure 1)**. The Site parcel numbers are 2226059042 (Parcel A), 2226059053 (Parcel B), and 2226059080 (Parcel C), with Astronics being the owner of all three parcels, totaling 7.1 acres. The Site is bordered on the west and the east property boundaries by two spurs of the decommissioned Burlington Northern Santa Fe (BNSF) railroad tracks. Properties to the east are undeveloped bank owned properties that are located within the King County Urban Growth Area and are zoned Agricultural-10 (AG-10). Properties to the north and west are bank owned, undeveloped properties within the City of Kirkland and are zoned Greenbelt Urban Separator (G-US) and Low Density Residential (LDR-1), according to the City of Kirkland Comprehensive Land Use Map dated January 15, 2013. King County maps the areas to the west of the Site as Landslide Hazardous Areas. The PLSS location of the Astronics Expansion Project is Section 22, T26N, R5E, W.M. The unnamed stream (Stream 1) flows northeast across the center of Parcel A (**Figure 2**). Both the King County iMAP (King

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County online interactive Mapping Tool), and the Washington Department of Fish and Wildlife (WDFW) SalmonScape map documents an approximate 1 mile surface water connection between the on-site Stream 1 outfall and the Sammamish River.

Our on-site observations document Stream 1 terminating at a catch basin located adjacent to a concrete sidewalk, along 141st Ave NE, with the bottom of the catch basin approximately 20 feet below the rim of a trash-rack at the outfall location. We determined that the vertical distance between the stream and the trash-rack and the horizontal distance between the catch basin to the outfall, create an impassable fish barrier to salmonids.

3.0 ACTION AREA

The Action Area is defined as "all areas to be affected directly or indirectly by the Federal action and not merely the immediate area involved in the action (50 CFR 402.02)." The action is grading and construction of the approximately 133,000 sf building and approximately 132,500 sf of associated parking, access, and emergency-fire-turn-around on Parcels B, and C. The Action Area for this BE includes the construction site and downstream areas from the surface water discharge points into the Sammamish River. The Action Area includes the on-site Surface Water Conveyance 1 and 2, and Stream 1, and the off-site surface water connection within the railroad ditch, the north cross-lateral ditch, and the south cross-lateral ditch to the salmon-bearing waterbody (The Sammamish River) (**Figure 2 and 3**).

4.0 EXISTING CONDITION

The Project Site property is an approximate 7.1 acre Site consisting of three parcels, owned by Astronics. Parcel A is partially developed with surface parking and a paved access road along the east boundary of the parcel. Approximately 70% of Parcel A is undeveloped and forested with young red alder (*Alnus rubra*) and black cottonwood (*Populus balsamifera* var. *trichocarpa*) trees, blackberry (*Rubus armeniacus*), salmonberry (*Rubus spectabilis*), horsetail (*equisetum* spp.), lady fern (*Athyrium filix-femina*), morning glory (*Convolvulus arvensis*), and reed canarygrass (*Phalaris arundinacea*) (**Figure 2**).

Parcel B is undeveloped, but mostly vegetated with grasses, such as Kentucky bluegrass (*Poa pratensis*), red fescue (*Festuca rubra*), and colonial bentgrass (*Agrostis capillaris*), as well as bird's-foot trefoil (*Lotus corniculatus*), soft rush (*Juncus effusus*), and creeping buttercup (*Ranunculus repens*). Parcel C is developed with a single building and a concrete storage pad. According to the Technical Information Report (TIR) prepared by Barghausen Consulting Engineers (June 28, 2008), the site had been previously developed as a construction materials sifting yard.

Prior to the purchase of the Site by Astronics stormwater improvements were made, including catch basin collection and pipe conveyance facilities. Much of Parcel C is cleared of vegetation and appears to be paved with crushed rock for vehicle parking. Filling to raise grade appears to have occurred near the southern end of Parcel C. A stormwater detention pond is located in the southeast corner of Parcel C.

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The Site topography consists of a ridge of high ground running north to south along the western property boundary.

The highest point of elevation is approximately 50 feet higher than the lowest elevation on the eastern property boundary. All runoff generated on the Site tends to sheet flow in an easterly direction towards a railroad grade located on the eastern property boundary.

The property is bounded on the east and west by two spurs of the former BNSF Railway and are to eventually become part of the Cross Kirkland Corridor, a Rails-to-Trails project. The railroad grade on the western property boundary tends to channel runoff into a 24-inch-diameter culvert, which flows beneath the railroad tracks across the Site.

4.1. Sammamish River

The Sammamish River basin is comprised of approximately 16,640 acres (King County Streams Monitoring Program 2015). The Action Area is located within the Kingsgate Slope portion of the Sammamish River basin (City of Kirkland 2014).

Historically, the Sammamish River was more “swampy” and filled with areas of peat and diatomaceous earth. The Army Corps of Engineers (Corps) reported that the river was 17 miles long in 1891. Currently, the river is only 13.5 miles long. These changes are perhaps due to heavy logging which occurred throughout the 20th Century, and the lowering of the elevation of Lake Washington in 1916 which drained much of the swampy Sammamish River corridor. Around the same time, the Sammamish River Valley farmers in the area formed the drainage district and began straightening the upper reach of the river. The Corps’ began to systemically dredge the river, primarily as a flood control project, which deepened the river 5-feet throughout much of its length and hardened the river’s streambank. These actions decreased the connection of the river to its floodplain and to smaller river tributaries (King County Streams Monitoring Program 2015).

4.2. Stream 1

Stream 1 is a non-fish bearing perennial stream (Np) that flows northeast across the center of Parcel A (**Figure 3**). Stream 1 is fed by upslope runoff. A defined stream channel was observed along the upper two-thirds of the stream, where slope gradient is higher. The stream channel becomes less defined as the slope gradient decreases at the eastern portion of Parcel A. Stream 1 terminates at a catch basin located adjacent to a concrete sidewalk, with the bottom of the catch basin approximately 20 feet below the rim of the trash-rack. We determined that the vertical distance between the stream and the trash-rack, and the horizontal distance between the catch basin to the outfall create an impassible barrier to salmonids. In addition, the stream bed lacks fish rearing, forage, or spawning habitat; there are no pools or riffles on the Project Site. Off-site, Stream 1 discharges into the railroad ditch. The railroad ditch flows to the north, then east under the railroad via a culvert and continues north. The railroad ditch is located off-site within the JB Lawn and Turf Nursery, an active lawn and nursery facility. The railroad ditch discharges into the north cross-lateral ditch to outflow into the Sammamish River.

According to the King County iMap the headwaters of Stream 1 are located near 13240 136the Ave NE, 98034 in Kirkland, WA. This area is predominantly single family residences up slope of the Site along the hillside to the west. The stream flows from the west to the east, down steep slopes mapped by King County as landslide areas.

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4.3. Surface Water Conveyance 1

Surface Water Conveyance 1 is a surface flow that emerges as a seep in the northwestern corner of Parcel C (**Figure 3**). Surface Water Conveyance 1 is fed by upslope runoff. The surface flow is directed into a catch basin and is conveyed via a pipe that travels along the northern boundary of Parcel C. The pipe daylights at the northeastern corner of Parcel C with flows discharging off-site into the railroad ditch (**Figure 3**). The railroad ditch flows to the north, then east under the railroad via a culvert and continues north. The railroad ditch is located off-site within JB Lawn and Turf Nursery, an active lawn and nursery facility. The railroad ditch discharges into the north cross-lateral ditch to outflow into the Sammamish River. The Surface Water Conveyance 1 is non-fish bearing surface flow.

4.4. Surface Water Conveyance 2

Surface Water Conveyance 2 is a surface flow that emerges from the on-site stormwater pond located in the southeastern corner of Parcel C (**Figure 3**). Surface flow is directed south along the existing gravel road within a narrow, gravel lined ditch. Surface Water Conveyance 2 either infiltrates on Site, contributes flow to Wetland E, or discharges into the trash-rack. From the trash-rack surface water is conveyed into the railroad ditch. The railroad ditch flows to the north, then east under the railroad via a culvert and continues north. The railroad ditch is located off-site within the JB Lawn and Turf Nursery, an active lawn and nursery facility. The railroad ditch discharges into the north cross-lateral ditch to outflow into the Sammamish River. The Surface Water Conveyance 2 is non-fish bearing surface flow.

4.5. Existing Wetlands

There are a total of five wetlands on the Site, Wetlands A, B, C, D, and E. The proposed project includes 30,604 sf (0.70 ac.) of direct impacts to Category III Wetlands C, D, and E. No impacts to Wetlands A or B, or Stream 1 will result from the proposed development.

4.6. Wetland A

Wetland A is a relatively small, riverine wetland that extends off-site to the west (approximately 632 sf on Site and 651 sf in total). Located near the southwest corner of Parcel A, and south of Stream 1 Wetland A will not be impacted by this project (**Figure 2**). Wetland A is mostly forested with the tree stratum dominated by red alder. Shrubs include salmonberry and Himalayan blackberry. Emergent vegetation includes skunk cabbage and reed canarygrass. Wetland A is considered a Palustrine Forested and Palustrine Emergent wetland (PFO/PEM) containing 30 percent tree stratum and less than 10 percent emergent and shrub vegetation communities (Cowardin et al. 1979). The soils within Wetland A are a grayish-brown gravelly, sandy, clay-loam with redoximorphic features (mottles). The soil satisfies the criteria for the hydric soil indicator Depleted Matrix (F3). Hydrology for Wetland A is supported by shallow groundwater seepage and occasional overland flooding from the associated Stream 1.

4.6.1. Wetland B

Wetland B is also a relatively small riverine wetland (approximately 835 sf) located near the northeast corner of Parcel A, and south of Stream 1 (**Figure 2**). Wetland B is mostly forested with the tree stratum dominated by black cottonwood. Shrubs include salmonberry and Himalayan blackberry. Emergents include reed canarygrass and giant

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horsetail. Wetland B is considered a PFO/PEM containing 30 percent tree stratum and only 10 percent emergent vegetation communities (Cowardin, et al. 1979). The soils within Wetland B are a greenish-gray, gravelly, sandy, clay-loam with redoximorphic features. The soil satisfies the criteria for the hydric soil indicator Loamy Gleyed Matrix (F2). Hydrology for Wetland B is supported by shallow groundwater seepage and occasional overland flooding from Stream 1.

4.6.2. Wetland C

Wetland C is a relatively large slope wetland (approximately 20,090 sf) located along the west property boundary in the northwestern corner of Parcel B and extends onto the southwestern corner of Parcel C (**Figure 2**). Wetland C is predominantly emergent with the scrub-shrub stratum dominated by red alder saplings. Emergents include Kentucky bluegrass, red fescue, and reed canarygrass. Wetland C is considered a PEM and Palustrine scrub-shrub (PSS) wetland, containing about 30 percent scrub-shrub vegetation communities (Cowardin et al. 1979). The soils within Wetland C were a very dark, grayish-brown, gravelly, sandy-loam with redoximorphic features. The soil satisfies the criteria for the hydric soil indicator Redox Dark Surface (F6). Hydrology for Wetland C is supported by a high groundwater table.

4.6.3. Wetland D

Wetland D is a linear slope and depressional wetland (approximately 4,783 sf) located along the west property boundary in the northwest corner of Parcel C (**Figure 2**). Wetland D is predominantly emergent with the scrub-shrub stratum dominated by red alder saplings and salmonberry. Emergents include large-leaf avens, American-brooklime, lady fern and reed canarygrass. Wetland D is considered PEM/PSS containing 30 percent shrub stratum vegetation communities (Cowardin, et al. 1979). The soils within Wetland D were a very dark gray gravelly sandy clay loam. The soil satisfies the criteria for the hydric soil indicator Dark Surface Matrix (S7). Hydrology for Wetland D is supported by surface water from a nearby seepage.

4.6.4. Wetland E

Wetland E is a linear slope and depressional wetland (approximately 5,731 sf) located along the eastern property boundary near the center of Parcel B (**Figure 2**). Wetland E is predominantly emergent with the forested stratum dominated by red alder (Photo X). Emergents are dominated by Kentucky bluegrass and colonial bentgrass. Wetland E is considered PEM/PFO containing about 30 percent forested stratum vegetation communities (Cowardin, et al. 1979). The soils within wetland E are very dark grayish brown in the upper three inches over a very dark gray. The soil satisfies the criteria for the hydric soil indicator Stripped Matrix (S6). Hydrology for Wetland E is provided by a high groundwater table and a nearby surface water drainage (Surface Water Conveyance 2 described above) from the north that contributes flow along the east side of the wetland.

5.0 OCCURRENCE OF FEDERALLY-LISTED SPECIES

The Washington State Department of Fish and Wildlife Priority Habitats and Species (PHS) database, the Washington State Department of Natural Resources Natural Heritage Program database, StreamNet, and SalmonScape websites were reviewed for priority species and habitat information. The results of this search indicate that there are no listed terrestrial species or critical habitat on-site nor in the Action Area. There are no

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documented presence of listed salmonid species, nor is there critical habitat for listed species mapped on-site. There are documented listed fish within the Action Area. Coho and winter steelhead have an observed presence off-site within ditches approximately 20 feet to the east of the Site. Chinook and bull trout have been documented within the Sammamish River approximately 2,240 to 2,640 feet east of the Site. All of these are located beyond the on-site impassable fish barrier, the trash-rack drop structure.

The NMFS website provides the ESA status of West Coast salmon and steelhead, including Federally-listed threatened, endangered, proposed, and candidate species present in the Northwest Region. The ESA status of species reported to be present within the Action Area are listed in **Table 1**.

Table 1: Federally-Listed Species Potentially Present in the Vicinity of the Astronics Expansion Project Action Area

SPECIES	FEDERAL STATUS	STATE STATUS	PRESENCE IN ON-SITE PROJECT AREA[1]	PRESENCE IN VICINITY (0.25-MI) ACTION AREA[2]
Coho Salmon *(Oncorhynchus kisutch)*	Species of Concern	Candidate	No	Yes, rearing within Sammamish River and North Cross-Lateral Ditch
Winter Steelhead Trout *(Oncorhynchus mykiss)*	Threatened	Candidate	No	Yes, presence within North and South Cross-Lateral Ditches, and Sammamish River
Chinook Salmon *(Oncorhynchus tshawytscha)*	Threatened	Candidate	No	Yes, spawning within Sammamish River
Dolly Varden/ Bull Trout *(Salvelinus malma/ S. confluentus)*	Threatened	Candidate	No	Yes, Sammamish River

[1]Surface Water Conveyance 1, and 2, and Stream 1, as described in **Section 4.0** above, are connected to The Sammamish River and do not contain WDFW "documented" fish-passage barriers on the SalmonScape website. However, species documented in the portion of the off-site railroad ditch are assumed not present in Surface Water Conveyance 1, or 2, nor within Stream 1 due to the vertical distance contained in the trash-rack which conveys flows off the Site (**Figure 2**).

[2]Fish presence in the vicinity was determined from SalmonScape and StreamNet websites.

5.1. Anadromous Fish

5.1.1. Coho Salmon

Habitat Requirements/Population Status

Coho salmon occur from Monterey Bay, California north to Point Hope, Alaska, and from the Anadyr River in the Russian Federation south to Hokkaido, Japan. Puget Sound coho are listed as an Evolutionarily Significant Unit (ESU) by the National Marine Fisheries Service (NMFS). The majority of streams and rivers that drain into Puget Sound, and lack barriers to fish passage, support runs of coho salmon.

Most West-Coast coho salmon enter rivers in October and spawn from November to December. Coho spawn in the gravel of stream riffles. Eggs will hatch in approximately six- to eight weeks as alevins, and emerge from the gravel as fry. Fry congregate in

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schools in stream pools and backwaters. Coho will live in fresh water for up to 15 months before migrating to the ocean. Peak out-migration timing of juvenile coho generally occurs in May. After approximately a year in their natal streams, the coho smolts out-migrate relatively quickly to the open ocean where they live for up to two years before returning as adult spawners.

Coho salmon are at risk due to human-induced changes in critical salmon habitat, which typically include the streams that coho use for spawning. These streams are easily impacted by point- and non-point pollution, loss of wetland habitat, and loss of vegetative cover. Native coho stocks appear to be diminishing in the face of increased numbers of hatchery released stock (stock that threatens the genetic diversity of the ESU). Coho salmon are listed as a Federal species of concern as of April 15, 2004.

Known Occurrences in the Project Vicinity

Historically, Coho was distributed throughout the coastal streams of Washington where suitable conditions (gravelly-riffles) exist (Kerwin 2001). The north cross-lateral ditch and the Sammamish River have documented rearing and migration habitat. Due to fish passage barriers (the vertical distance contained in the trash-rack which conveys flows off-site), poor substrate, and low and varying flows on-site, there is no coho habitat on the Project Site.

5.1.2. Steelhead Trout

Habitat Requirements/Population Status

Steelhead are anadromous rainbow trout native to the western Pacific Ocean. Native range includes freshwater west of the Rocky Mountains, from northwest Mexico to the Kuskokwim River in Alaska. Steelhead are present in most drainages in the Puget Sound, in coastal streams, and in the lower Columbia River.

Steelhead usually spawn in the spring, entering the riparian systems either in winter (winter-run) or summer (summer-run). Spawning substrate is mostly 1- to 2.5-inch-diameter gravel. Eggs will hatch in about 50 days, depending on water temperature. Fry remain in the natal rivers and streams for up to two years before becoming smolts. Steelhead may remain in saltwater for up to two years before spawning. Unlike other anadromous salmonids, steelhead may survive spawning and return to the ocean. The Cedar - Sammamish Watershed winter steelhead stock has been characterized as “Depressed”. This winter steelhead population began a steady decrease in the mid-1980’s, similar to those of many other regional stream systems. Recently, escapement estimates of this stock have shown a slight upward trend; however preliminary numbers from the 2000/01 run year indicate a poor return (Kerwin 2001).

Known Occurrences in the Project Vicinity

The Sammamish River, the railroad ditch, and both the north and south cross-lateral ditches are presumed to have a presence of winter steelhead. Due to fish passage barriers (the vertical distance contained in the trash-rack drop structure which conveys flows off-site), poor substrate, and low and varying flows on-site, there is no steelhead habitat on the Project Site.

5.1.3. Fall-run Chinook Salmon

Habitat Requirements/Population Status

Chinook salmon are found from the Ventura River in southern California north to Point Hope, Alaska. Chinook are also found from the Anadyr River in the Russian Federation south to Hokkaido, Japan. Puget Sound fall-run Chinook are listed as an ESU by the

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NMFS. Fall Chinook salmon, which migrate upstream from late July through September, tend to be the most abundant Puget Sound salmon run.

Chinook salmon require gravel-bedded rivers and streams with clear, cold (42-58°F), well-oxygenated waters. The stream bed gravels need to be relatively free from silts and fine sands to allow free flow of water and oxygen to eggs deposited in the gravel spaces. Eggs incubate for several weeks to months before hatching as alevins. Juvenile Chinook (fry) emerge from the gravel and either spend hours to several years in freshwater before migrating to the ocean. Juvenile and sub-adult Chinook spend from one to five years in the ocean before returning to freshwater to spawn. Upstream migration typically occurs from mid-September to mid-November and is dependent upon stream flows and water temperature. Peak spawning occurs between mid-October and mid-November. Fry typically rear in streams for 3-4 months and enter the estuaries in May or early June (Washington State Conservation Commission 2000).

Puget Sound Chinook salmon numbers have been directly impacted by the loss of tributary and main-stem habitat from dam construction, and slough and side-channel habitat losses from diking, dredging, and hydro-modification (Good 2005). Puget Sound Chinook salmon is Federally-listed as threatened and is a State candidate species. The Puget Sound population of Chinook salmon was Federally-listed on March 16, 1999. Chinook salmon habitat throughout the ESU is degraded as the result of blockages, forest practices impacting upper tributaries, and agriculture and urbanization impacting lower tributaries and main-stem rivers.

Known Occurrences in the Project Vicinity

There is documented spawning habitat of fall-run Chinook salmon in the Sammamish River. Due to fish passage barriers (the vertical distance contained in the trash-rack drop structure which conveys flows off-site), poor substrate, and low and varying flows on-site, there is no Chinook habitat on the Project Site.

5.1.4. Dolly Varden/ Bull Trout

Habitat Requirements/Population Status

The historic range of bull trout has contracted from pre-settlement times today. Bull trout were found throughout the Columbia River Basin to western Montana, south to Jarbridge River in Northern Nevada, the Klamath Basin in Oregon, the McCloud River in California, and north to Alberta, British Columbia, and southeastern Alaska. The current range of bull trout is now controlled to upper tributary streams. They have been eliminated from main-stem rivers and are now extinct in northern California.

Bull trout are native char, most often found in high glacially-fed watersheds or near cold perennial springs. In Puget Sound, an anadromous component of the bull trout population is also found in estuarine waters near the mouths of natal rivers. Bull trout are able to forage in different river systems, accessing them from the Puget Sound. Bull trout were listed throughout the conterminous United States as a Federally-threatened species on 1 November 1999.

Generally, spawning in most bull trout populations occurs in September and October when water temperatures drop below 9ºC (48.2ºF). In this region, the downstream limit of successful char spawning is always upstream of the winter snow line (that elevation at which snow is present on the ground for much of the winter) (WDFW, 1999). Bull trout fry are usually found in shallow, backwater side channels and eddies. Older, larger individuals are often found in deeper stream pools or in lakes in deep water with temperatures less than 15ºC (59ºF) (Pratt 1992).

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Bull trout populations have been impacted through destruction of suitable rearing and migration habitat. These fish require cold, clean water, and gravel for spawning and rearing. Increased water temperatures, reduced water quality, and reduced stream flows have severely impacted bull trout populations.

Known Occurrences in the Project Vicinity

Both StreamNet and SalmonScape indicate bull trout presence in the Sammamish River Action Area. Due to fish passage barriers (the vertical distance contained in the trash-rack drop structure which conveys flows off-site), poor substrate, and low and varying flows on-site, there is no steelhead habitat on the Project Site.

6.0 ENVIRONMENTAL BASELINE

6.1. Existing Environmental Baseline

The Cultural Resources Investigation for the Project Site identified an existing two-story warehouse building that was constructed sometime in 1971 on Parcel C (**Figure 2**) (Tetra Tech 2014). Prior to that year, no existing structures had been identified on the Site. The report, noted that the historical aerial photography showed the Site had undergone significant alterations in the form of grading, installation of stormwater and sewer lines, and heavy vehicular traffic which had occurred over much of the Site (Tetra Tech 2014). The existing Site topography supports the hypothesis that some form of cut-slope had occurred within Parcels B and C prior to 2002. Astronics purchased the two parcels south of the Site in May 2011 for their existing facilities. In 2012, Astronics purchased the Project Site parcels, in order to allow future building growth.

The ¼ mile Action Area (**Figure 4**) for the Site includes the on-site critical areas (6 Wetlands, Stream 1 and Surface Water Conveyance 1, and 2). It also includes portions of the railroad ditch (the ditch on the west and east sides of the railroad tracks to the east), portions of the south and the north cross-lateral ditches, and portions of the Sammamish River and floodplain. Both Surface Water Conveyance 1 and 2, and Stream 1 outfall into the railroad ditch. The railroad ditch flows to the north, then east under the railroad via a culvert and continues north. The railroad ditch is located off-site within the JB Lawn and Turf Nursery, an active lawn and nursery facility. The railroad ditch discharges into the north cross-lateral ditch to outflow into the Sammamish River via a small 2-foot corrugated metal pipe (cmp), approximately 3,300 lineal-feet away. Some off-site flows may also flow to the south during high-rain events, within the south cross-lateral ditch and discharge into the Sammamish River approximately 3,150 lineal-feet away. Therefore on-site waters are hydrologically connected to the Sammamish River. On-site activities that affect Surface Water Conveyance 1, and 2, and Stream 1 can also affect The Sammamish River.

The Action Area is located in Water Resource Inventory Area (WRIA) 8, the Lake Washington/Cedar/Sammamish Watershed. Further identified as the West Lake Sammamish Tributaries (J. Kerwin 2001), and The Secondary Basin of Kingsgate Slope, as defined by KZC §90.30 (Kirkland 2011) and (Kirkland, City ESA Map 2013). The West Lake Sammamish Tributary (WLST) Subbasin consists of approximately 8 miles of contributing streams, of which less than one mile is accessible to anadromous fish due to steep gradients, culvert blockages and altered channel structure (J. Kerwin 2001). Most of the WLST Subbasin is within urban areas designated by King County.

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The WLST Subbasin consists of low, rolling-hill topography. The highest point in the watershed is near Hartman Park within the City of Redmond at 400 feet above mean sea level to the east of the Sammamish River, and at Kingsgate Slope at 300 feet above mean sea level (King 2008). Both the west and east side of these steep gradient hilly slope areas drain centrally into the Sammamish River Valley floodplain.

The watershed hosts suburban areas, urban areas, pasture lands, forests, wetlands, small farms, and the Sammamish River Valley floodplain. Urbanization has increased over the last several decades and the watershed hosts an increasing number of single-family homes and commercial facilities. With the change in the landscape come changes in the quantity, quality, and timing of water flows from the watershed, potentially impacting the water quality of Lake Sammamish.

Alterations to the Sammamish River occurred between the late 1800's until about 1964 by the Army Corps of Engineers (ACOE) and King County for purposes of logging transportation, flood control and boating. Originally, the river was 30 plus miles long and five to ten feet shallower. The impact of these changes over the years has adversely impacted the vegetation, wildlife, habitat, and overall health of the river. Land use changes in the Lake Sammamish Watershed have included loss of wetlands, and re-routing and channelization of meandering conditions of the tributaries, and the Sammamish River main-stem (King County et. al. 2002).

6.2. Relationship between Habitat in the Action Area and the Biological Requirements of the Species

The Action Area for the Project includes the non-salmon bearing, on-site Stream 1, and Surface Water Conveyance 1, and 2; the railroad ditch, the north cross-lateral ditch, the south cross-lateral ditch, and the receiving waters of the Sammamish River. The environmental baseline for all these waters is generally similar based upon the definitions in the NMFS guidance document (National Marine Fisheries Service 1996). **Table 2** briefly summarizes the baseline environmental quality of the Action Area based on available data and best professional judgment. The "Indicators" are assumed to be "Properly Functioning", unless otherwise substantiated by background research.

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Table 2. Environmental Baseline of the Action Area – Sammamish River

Pathways Indicators	Baseline Environmental Quality[1]		
	Properly Functioning	At Risk	Not Properly Functioning
Water Quality:			
Temperature			X_2
Sediment/Turbidity		X_3	
Chemical Contamination/Nutrients			X_4
Habitat Access:			
Physical Barriers			X_5
Habitat Elements:			
Substrate			X_6
Large Woody Debris			X_7
Pool Frequency			X_8
Pool Quality			X_9
Off-Channel Habitat			X_{10}
Refugia			X_{11}
Channel Condition & Dynamics:			
Width/Depth Ratio			X_{12}
Streambank Condition			X_{13}
Floodplain Connectivity			X_{14}
Flow/Hydrology:			
Peak/Base Flows			X_{15}
Drainage Network Increase			X_{16}
Watershed Conditions:			
Road Density & Location			X_{17}
Disturbance History			X_{18}
Riparian Reserves			X_{19}

1) This table briefly summarizes the baseline environmental quality of the Action Area (modified from National Marine Fisheries Service, 1996).
2) Sammamish River is listed on the Washington State 303(d) list for exceedances in temperature.
3) Sammamish River was not listed on the Washington State 303(d) list for exceedances in sedimentation or turbidity. Stream WQ monitoring has been conducted over a 28-yr. period and the river is showing a decrease in total suspended solids (TSS) (King County Streams Monitoring Program 2015).
4) Sammamish River is listed on the Washington State 303(d) list for exceedances in Fecal Coliform bacteria. The source of the bacteria is likely livestock from farming activities.
5) The on-site trash-rack and vertical drop creates a fish passage barrier. In addition, the lack of floodplain connectivity within the Sammamish River decreases the ability for sediments to settle out (King County Streams Monitoring Program 2015).
6) There are no on-site Habitat Elements. Bank armoring throughout most of the channelized areas of the Sammamish River, and containment of stream flows within levees and revetments creates a condition where new streambed substrate is not recruited and stream flows regularly reach levels that actively move existing substrate.
7) There are no on-site Habitat Elements. The WRIA 8 Habitat Limiting Factors Report indicates that there are no considerable amounts of large woody debris (LWD) for the Sammamish River within the Action Area.
8) Same as #7 above.
9) Development and agricultural land uses along the Sammamish River within the Action Area appear to have limited off-channel habitat. Drainage ditches now provide some of this function, however, the use of fertilizers and pesticides within the JB Lawn and Turf Nursery property may preclude any such pool quality.

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10) Same as #6, #7 and #9 above.
11) Same as #6, #7 and #9 above.
12) Same as #6, #7 and #9 above. The Sammamish River has been altered by streambank hardening and straightening of the river due to agricultural practices. In addition, the Corps has been dredging within the river since 1962. The width/depth ratio was determined to be At Risk for this parameter.
13) Same as #6, #7, #9 and #12 above. The streambank condition was determined to be At Risk for this parameter.
14) Same as #6, #7, #9 and #12 above. The floodplain connectivity was determined to be At Risk for this parameter.
15) In all likelihood the loss of "swampy" areas or wetlands within the Action Area, lack of connection to floodplain, and the rivers confinement within levees has increased high flow events. It has also reduced the supply of cooler subsurface water to the channel during low flows. Flood frequency predictions over the next 100 years for the Sammamish River predict an 11.4% increase (Northwest Hydraulic Consultants 2004).
16) Same as #15 above.
17) Agricultural, residential and light commercial development within the Action Area has channelized the tributaries and the mainstem of the river, thus disconnecting the Sammamish River from its historic floodplain and tributaries. It isn't expected to improve much as the Action Area is surrounded by the UGA boundaries of Kirkland and Redmond. The Road Density & Location was determined to be At Risk for this parameter as well.
18) Same as #17 above.
19) Same as #17 above.

6.3. Sammamish River Watershed

A few of the historical land use changes within the Sammamish River Watershed are described above in Section 4.1 Sammamish River. This watershed extends from Lake Sammamish to Lake Washington. The Project Action Area is located primarily within the City of Kirkland, one of several governing municipalities that regulates activities within this watershed. A high percentage of Kirkland's streams are located on private property where homeowners have armored stream channels, cut back vegetation, or otherwise modified the streambanks. Lack of vegetation can increase bank instability, resulting in erosion. Within the City of Kirkland the loss of riparian vegetation adjacent to streams has contributed to degraded aquatic habitat conditions, including the lack of LWD, streambank erosion, a loss of in-stream channel complexity, and high water temperatures (City of Kirkland 2014). Fish need variable in-stream physical habitat conditions to meet their needs at different points in their life history including pool, riffle complexes, overhanging vegetation, and clean spawning gravel. As described previously, the headwaters of Stream 1 originates and flows through steep ravines, and incised channels. Therefore, Stream 1 lacks necessary in-stream fish habitat.

The upper reaches of the watershed are generally agriculture and urban. The City of Redmond proper is located at the headwaters of the watershed, consisting of commercial industrial development. The Sammamish River Valley is dominated by suburban, urban and agricultural uses, including the Willows Run Golf Complex, JB Lawn and Turf Nursery, and the Sammamish River Trail. The river valley is crisscrossed and surrounded by urban roadways. Mixed forest is located along the side slopes of the river valley, mixed with residential subdivisions on top of both the eastern and western slopes.

Residential, commercial, and industrial development has greatly altered the river within the Action-Area. This includes bank-hardening, installing riprap, installing culverts, and placing the river in channelized and straightened levees. This has reduced and/or removed streamside vegetation, straightened the stream channels, and removed in-

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stream habitat. Alterations, such as these, have also resulted in loss of the historic floodplains associated with the Sammamish River. Substantial changes have also occurred in the vegetation surrounding the river. What was once predominantly mature native vegetation in the floodplain areas has been replaced by a mix of immature native vegetation and non-native plant species that are limited to a 30 to 50-foot wide vegetative riparian corridor. Some Large Woody Debris (LWD) is present along the banks, but is not a major component of the river habitat. The Sammamish River is cut off from its historic floodplain by flood retention walls and levees.

6.3.1. Water Quality

Temperature and chemical were judged to be "Not Properly Functioning." The Sammamish River is listed as a Category 5 near its headwaters, and a Category 2 water nearer to the Action Area for temperature. Near the headwaters the Sammamish River is rated as a Category 5 for bacteria, dissolved oxygen (DO), and pH (WA Department of Ecology 2015). A Category 5 rating indicates that the Sammamish River within the Action Area exceeds the EPA threshold for impairment by excessive bacteria, high temperatures, low pH and low DO. The Category 2 status for temperature indicates that this is a water of concern and does not merit a water quality improvement project. As the quantity of bacteria is reduced, the DO should increase. Equally, temperature plays a significant role on pH measurement.

6.3.2. Habitat Access and Connectivity

There are generally no barriers to fish movement within the main-stem of the Sammamish River. The main-stem is confined to a channel that is straightened within the Action Area. The river is confined by the existing Sammamish River Trail and agricultural uses to the east, and the JB Lawn and Turf Nursery to the west. Stream 1, and Surface Water Conveyance 2 both outfall into the trash-rack drop structure, which has a vertical drop of 20 feet. The horizontal distance, and the lack of refugia, are considered fish passage barriers. The same is assumed to be true for Surface Water Conveyance 1 also.

6.3.3. Habitat Elements

The habitat elements of the Sammamish River and on-site surface waters, namely substrate, LWD, pool frequency, and pool quality were all judged to be "Not Properly Functioning." Off-channel habitat and refugia were determined to be at risk due to extensive channelization of the Sammamish River's main-stem and current land use practices within the Action Area.

6.3.4. Channel Conditions and Dynamics

The Sammamish River and on-site surface waters were judged to be "Not Properly Functioning" for width/depth ratio and streambank condition. Development and agricultural land uses along the Sammamish River within the Action Area appear to have limited off-channel habitat. Drainage ditches now provide some of this function, however, the use of fertilizers and pesticides within the JB Lawn and Turf Nursery property as well as, upstream at the Willows Golf Run may preclude good water quality within the ditches. The floodplain connection to the mainstem has been eliminated and is confined to levees and hardened streambanks.

6.3.5. Flow/Hydrology

There is no hydrological data available from resource agencies on peak and base flows for the on-site surface waters. Hence, no determination of baseline conditions can be made. However, the levels of existing disturbance within the Action Area (historical on-site cut-slopes) indicate a degraded drainage network. The loss of "swampy" areas or

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wetlands within the Action Area, lack of connection to floodplain, and the Sammamish Rivers confinement within levees has increased high flow events. This has reduced the supply of cooler subsurface water to the channel during low flows. Flood frequency predictions over the next 100 years for the Sammamish River predict an 11.4% increase (Northwest Hydraulic Consultants 2004). This parameter was judged to be "Not Properly Functioning."

6.3.6. Watershed Conditions

The watershed conditions were judged to be "Not Properly Functioning" for road density and location, for disturbance history and riparian reserves. Agricultural, residential and light commercial development within the Action Area has channelized the tributaries, and the main -stem of the river thus disconnecting the Sammamish River from its historic floodplain and tributaries. It isn't expected to improve much as the Action Area is surrounded by the UGA boundaries of Kirkland and Redmond. An increase in development will increase road density, further impacting the watershed conditions. The main-stem has had a high level of historic disturbance. The agricultural development in the main-stem reach has significantly reduced the Riparian Reserves, which provide shade and LWD recruitment. The constrained area of the main-stem through the river valley illustrates a disconnection between the riparian environment and potential upland environments. Agricultural fields generally have limited species diversity and almost no structural diversity, making them poor habitat for most terrestrial animals.

7.0 PROPOSED PROJECT

Astronics has grown rapidly in the last three years and has outgrown their current facility. Additional commercial space is necessary to accommodate current production and staffing levels, as well as anticipated growth. The project would expand the existing operations facilities to the north, on two adjoining parcels, and construct a three-story 130,000 sf building. Construction of the expanded facilities is anticipated to impact a total of 0.70 acres of depressional and slope wetlands. The required mitigation for wetland impacts will be conducted at an approved site using the King County In-Lieu-Fee program.

8.0 DETERMINATION OF EFFECTS

8.1. Construction Effects – (Direct Effects)

There will be no direct effects to Chinook, coho, bull trout, or steelhead resulting from the proposed project. No part of the Project Site contains habitat that is utilized by these salmonids or is directly connected to habitat utilized by these salmonids.

Construction activities on the Project Site that have the potential for mobilizing soils and sediments will be controlled using best management practices in accordance with applicable stormwater control manuals. Best management practices and best available technology will be utilized to ensure that water leaving the Site meets all applicable standards for water quality.

A temporary erosion and sedimentation control plan (TESCP) has been prepared for the Project Site. Silt fencing will be installed around the project area and at the top of bank for Stream 1. Implementation of these methods and other water quality BMPs will minimize the potential to mobilize soil and sediments in surface waters that flow to the Sammamish River. Construction of the Project Site may require temporarily diverting water in portions of Surface Water Conveyance 1 and/ or 2.

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The project will implement the following conservation measures to prevent adverse effects to listed species and habitats. Stormwater and erosion control Best Management Practices (BMPs) will be implemented during on-site grading to prevent sediment-laden water from leaving the Project Site. Clearing limits are shown on the TESC Plans (**Appendix 1**). Some of those measures (at a minimum) will include temporary rock construction for entrance to the Site, sediment pond to filter potential sediment laden water from leaving the Site, silt fencing around construction limits, plastic covering, hydro-seeding, mulching, temporary V-ditches and rock check dams. The on-site stream will be protected using silt fencing and straw bales. Whenever possible, soil disturbing work will be conducted during the dry summer season to prevent mobilization of soil. Nitrogen, pH, and dissolved oxygen affects to downstream surface waters should be negligible as nitrogen would not be a factor during construction, and pH will be monitored according to the Washington Department of Ecology's requirements.

Coho are known to utilize the north cross-lateral ditch, and steelhead are known to utilize both the north and south cross-lateral ditches (**Figure 3 and 8**). Chinook and bull trout are not documented as using any of these areas upstream of the Sammamish River. Working outside the fish-presence window and implementing BMPs will minimize potential impacts to salmonids and other aquatic life.

There will be no long-term effects to water quality or fish habitat resulting from the proposed action. In fact, the proposed Project Site modifications will likely improve water quality, as currently no water quality treatment is provided prior to release into the surface waters within the railroad or cross-lateral ditches. In addition, surface waters are currently, conveyed through the existing JB Lawn and Turf Nursery, where the use of pesticides and fertilizers are common practice. We anticipate the long-term effects of the proposed Project Site will be improved water quality in surface waters throughout the Action Area including the Sammamish River and therefore improving water quality and habitat for Federally-listed anadromous species.

8.2. Indirect (Long-term Potential Operational Effects)

The Astronics Expansion Project will not have any increase in effects on habitat within the Project Site as there are none on-site. The proposed project will not have any increase in effects on habitat within the Action Area above current levels. It is likely that improvements in stormwater management and on-site treatment may reduce the amounts of contaminants from the Site (sediments, oils, heavy metals, etc.) to surface waters directed downstream.

Post-construction benefits include approximately 2,280 sf of enhanced stream buffer, and improved stormwater attenuation for surface waters entering the on-site stream and associated wetlands. The project is proposing three underground water quality detention vaults. These wet vaults will meet the Washington Department of Ecology's requirements for the highest level of water quality improvement. The "Enhanced Water Quality" that this project is proposing will treat for sediment and heavy metals prior to release into any surface waters. These goals may benefit Federally-listed salmonids through water quality improvements prior to release into off-site surface waters and the Sammamish River. This type of water quality improvement had not been provided pre-construction. It is likely that any reduction of contaminant release from the expansion project will have a negligible effect on the surrounding natural habitats (Sammamish River).

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8.3. Estimated Take

"Take," as defined under Section 3(18) of the Endangered Species Act, means any activity that has the potential to "harass, harm, pursue, hunt, wound, kill, trap, capture, or collect, or attempt to engage in any such conduct" of Federally-listed species. There are no proposed actions that will result in take of any Federally-listed salmonid, within the proposed project work area.

8.4. Cumulative Effects

The proposed Astronics Expansion Project would not contribute to any adverse cumulative effects on the Sammamish River or resident or anadromous fish populations because the project would contribute to improved water quality and fish habitat in the vicinity of the Sammamish River.

Table 3. Environmental Baseline/Effects Matrix for Salmonid Species – Sammamish River

Checklist for Documenting Environmental Baseline and Effects of Proposed Actions on Relevant Indicators (NMFS, 1996)

Pathway Indicators	Baseline Environmental Conditions			Effects of Projected Actions on Environmental Conditions		
	Properly Functioning	At Risk	Not Properly Functioning	Improved	Maintained	Degraded
Water Quality						
Temperature			X		X_1	
Sediment		X			X_2	
Chemical Contaminants/Nutrients			X		X_3	
Habitat Access						
Physical Barriers			X		X_4	
Habitat Elements						
Substrate			X		X_5	
Large Woody Debris			X		X_6	
Pool Frequency			X		X_7	
Pool Quality			X		X_8	
Off-channel Habitat			X		X_9	
Refugia			X		X_{10}	
Channel Conditions and Dynamics						
Width/Depth Ratio			X		X_{11}	
Streambank Condition			X		X_{12}	
Floodplain Connectivity			X		X_{13}	
Flow/Hydrology						
Peak/Base Flows			X		X_{14}	
Drainage Network Increase		X			X_{15}	
Watershed Conditions						
Road Density and Location		X			X_{16}	
Disturbance History			X		X_{17}	
Riparian Reserves			X		X_{18}	

1) The scope of the project is too small to have an effect on water temperature throughout most of the watershed. The Effects of the Projected Actions is "Maintained."

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2) Proposed use of best management practices and consistent daily testing of water quality will ensure that levels of turbidity and sedimentation in the Sammamish River will not increase. Additionally, there will be no potential for erosion or sedimentation from the finished project. The Effects of the Actions for sediment and turbidity is “Maintained.”
3) The Sammamish River is listed by the Washington State Department of Ecology as a Category 5 water for exceedances of fecal coliform bacteria and dissolved oxygen. The Action Area will be protected from inputs of chemicals and nutrients during construction. The Effects of the Action for chemical contamination and nutrients is “Maintained.”
4) The on-site trash-rack and vertical drop creates a fish passage barrier. In addition, the lack of floodplain connectivity within the Sammamish River decreases the ability for sediments to settle out (King County Streams Monitoring Program 2015). No work is planned anywhere within the Sammamish River that would impede salmon migration. Therefore, the Effects of the Actions is “Maintained.”
5) There are no on-site Habitat Elements. Bank armoring throughout most of the channelized areas of the Sammamish River, and containment of stream flows within levees and revetments creates a condition where new streambed substrate is not recruited and stream flows regularly reach levels that actively move existing substrate. There will be no change to the substrate of the Sammamish River resulting from this project. The Effects of the Actions for substrate is “Maintained.”
6) There are no on-site Habitat Elements. The WRIA 8 Habitat Limiting Factors Report indicates that there are no considerable amounts of large woody debris (LWD) for the Sammamish River within the Action Area. No additional LWD will be recruited into the Sammamish River and no new sources of LWD will be created. The Effects of the Actions is “Maintained.”
7) No work will occur in the Sammamish River that will alter the existing conditions. The Effects of the Actions is “Maintained.”
8) Same as #7 above.
9) Urban growth in the Sammamish River watershed, combined with agriculture, have limited the amount of refugia and buffering available to the creek. Off-channel rearing habitat in many locations of the Sammamish River have been reduced to drainage ditches, while the river is confined to its channel and levees. Off-channel rearing habitat will not be created as a result of this project. The Effects of the Actions is “Maintained.”
10) Same as #9 above.
11) The Sammamish River has been altered by streambank hardening and straightening of the river due to agricultural practices. In addition, the Corps has been dredging within the river since 1962. The width/depth ratio was determined to be At Risk for this parameter. No work within the ordinary high water mark of the Sammamish River is proposed. There will be no alteration of the channel width/depth ratio. The Effects of the Actions is “Maintained.”
12) Same as #11 above. There will be no changes to the streambank condition planned or resulting from the proposed project. The Effects of the Actions is “Maintained.”
13) Same as #11 above. No changes will be made that will alter the current level of connectedness of the Sammamish River to its floodplain. The Effects of the Actions is “Maintained.”
14) In all likelihood the loss of “swampy” areas or wetlands within the Action Area, lack of connection to floodplain, and the rivers confinement within levees has increased high flow events, as well as, reduced the supply of cooler subsurface water to the channel during low flows. Flood frequency predictions over the next 100 years for the Sammamish River predict an 11.4% increase (Northwest Hydraulic Consultants 2004). No actions will be taken that will alter connectivity with wetlands or the historic floodplain, damage the headwaters, or alter the current levels of hydrologic input. There will be no change in the patterns of peak or base flows within the river. The Effects of the Actions is “Maintained.
15) Same as #14 above. The watershed is highly developed with urban, suburban, agricultural areas, highways and other major and minor roads. The associated impervious surfaces of these developed areas near the Project Site will likely have an extensive drainage network associated with it. There will be no change in the drainage network within the river. The Effects of the Actions is “Maintained.
16) Same as #15 above. The Action Area is located within the urban growth designated areas which appears to be encroaching on the watershed. This parameter was judged to be “At Risk. No alterations to road density and location, either increasing or reducing it, will be made as a result of the proposed expansion. The Effects of the Action is “Maintained.”
17) The urban, suburban and agricultural development along the Sammamish River, and past agricultural land uses provides a high level of historic disturbance. The proposed project will neither increase nor decrease the amount of disturbance in any appreciable way. The Effects of the Proposed Actions is “Maintained.”

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18) Same as Item #17 above. The proposed action will not affect the levels of riparian reserves on the Sammamish River. The Effects of the Actions is "Maintained."

8.5. Effect of the Proposed Action on Tribal Resources or Interests

We anticipate that the effect of the proposed action on tribal resources and interests will generally be favorable. The general design of the proposed action is to improve habitat within a degraded ecosystem (Stream 1 enhancement) that will indirectly improve habitat for resident and anadromous fish. The proposed construction plan is designed to minimize adverse effects on resident and anadromous fish and their habitats.

9.0 AVOIDANCE, MINIMIZATION, AND CONSERVATION MEASURES

Avoidance, minimization, and conservation measures are intended to minimize or avoid environmental impacts to Federally-listed species or designated critical habitats. They also form a sequencing of actions designed to guide the construction and operation of a project in preventing adverse impacts to the maximum extent practicable.

The following avoidance, minimization, and conservation measures are not applicable to the Project Site because the Site does not support any Federally-listed species or contain any designated critical habitat for such species. Site development does have a potential to affect the downstream surface waters within the Action Area, including the railroad ditch, the south and north cross-lateral ditches, and the Sammamish River. It may be determined that these aforementioned surface waters are located too far downstream to have an effect. However, they are discussed within this document because they are located within the Action Area.

9.1. Construction Timing

Site development and mitigation area construction is anticipated to occur in the summer of 2016 and be completed by December 2016. All water diversion, excavation, and grading will occur outside the fish-presence window. The proposed construction sequence for the Astronics Expansion Project is contained on **Table 4** below. The purpose of construction sequencing is to stage work so that all excavation and construction occurs on dry soil and diversion of water from ditches to newly constructed features does not mobilize sediments. See **Appendix 1** for the Temporary Sediment Erosion Control Plan (TESCP).

Table 4. Construction Sequence for the Astronics Expansion Project

Sequence	Activity
1	Pre-construction meeting with selected contractor.
2	Stake limits of project area, determine access routes for equipment.
3	Close off pedestrian access to the project area.
4	Install silt fencing and other BMPs (as needed)
5	Identify an equipment fueling and maintenance area. Install silt fencing around area and stage emergency spill control equipment and supplies within the fueling and maintenance area.
6	Install temporary quarry spall or hog fuel paving to prevent soil damage from equipment on all access points and the equipment fueling and maintenance area.
7	Install silt fencing and other BMPs (as needed) to isolate grading area from ditches.

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Prior to the start of Site work, the limits of the Project Site will be clearly staked and demarcated with temporary fencing. This will prevent accidental excursions by construction equipment and activities outside of the designated mitigation area. A TESCP has been prepared for the construction details (**Appendix 1**). Silt fencing will be installed around the project area and at the top of bank for all drainage ditches within the mitigation area.

The identification and delimiting of the equipment fueling and maintenance area will also occur to ensure that any spills of fuel or other hazardous materials are contained within a limited area. A spill kit and materials will be stored on-site to contain and clean up any spill of fuel or other hazardous material that may occur outside of the fueling and maintenance area.

Access to the proposed work area will be clearly marked in the field. The soil will be protected from damage by vehicles and heavy equipment by using temporary road bed material. This material will include rock quarry spalls, and may include, hog fuel, mats, or geotextile fabrics.

9.2. Summary of Avoidance, Minimization, and Conservation Measures

The Project Site does not have any Federally-listed salmonid species or critical habitat. Conservation Measures that will be utilized in order to avoid any potential effects to downstream surface waters within the Action Area will include a careful delineation of all work areas, full-containment of an equipment fueling and maintenance area, and the careful staging of work areas to prevent mobilization of soil and sediments. All constructed areas will be stabilized by hydroseeding after or prior to the removal of silt fencing.

10.0 FINDING OF EFFECT

Benefits of the proposed Astronics Expansion Project include improved water quality treatment and detention, prior to release within any downstream surface waters. Downstream surface waters include those within the Action Area and the Sammamish River. In addition, we propose to improve the on-site stream buffer habitat for Stream 1.

Construction of the proposed Expansion project will occur within the appropriate summer work window established by NMFS and by WDFW. All disturbed surfaces will be stabilized before BMPs for erosion control and water quality protection are removed.

The different effects determinations possible for a proposed project are: "**No effect**", "**May affect, not likely to adversely affect**", "**May affect, likely to adversely affect**". A "**No effect**" determination states that the proposed project will in no way affect the listed species. This determination is appropriate for cases where it can be conclusively shown that nothing occurring within the Action Area will alter the viability of a listed species, or that a listed species is not within the watershed, or that critical habitat for a species is not included within the Action Area. Failing that level of connection, the proposed action must be determined to affect a listed species. An action may improve habitat quality for a listed species. This is still an effect. For those instances where a positive affect will occur, or that a negative effect will result in a negligible probability of a take of a listed species, the determination must be "**May affect, not likely to adversely affect**." For

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actions that create conditions where there is more than a negligible probability of a take of a listed species, the determination must be "**May affect, likely to adversely affect**."

10.1. Puget Sound Coho Salmon

Puget Sound coho salmon are known to migrate within the north cross-lateral ditch, and have rearing habitat within the Sammamish River Action Area. We anticipate that the proposed project will not affect the ability of coho salmon to migrate or for juveniles to find food and shelter through the Sammamish River in any demonstrable way. It is expected that the proposed action ***may affect, but is not likely to adversely affect*** **(NLAA)** Puget Sound coho salmon.

10.2. Puget Sound Steelhead Trout

Puget Sound winter-run steelhead are known to have a presence within the north cross-lateral ditch and the Sammamish River Action Area. We anticipate that the proposed project will not alter the habitat conditions in any demonstrable way that would negatively affect the ability of steelhead trout to migrate through the Sammamish River. It is expected that the proposed action ***may affect, but is not likely to adversely affect (NLAA)*** Puget Sound steelhead trout.

10.3. Puget Sound Chinook Salmon

Puget Sound Chinook salmon have documented spawning habitat within the Sammamish River Action Area. We anticipate that the proposed project will not affect the ability for Chinook salmon to migrate through the Sammamish River nor will it alter any potential spawning habitat within the Action Area of the Sammamish River in any demonstrable way. It is expected that the proposed action ***may affect, but is not likely to adversely affect (NLAA)*** Puget Sound Chinook salmon.

10.4. Dolly Varden/ Bull Trout

Dolly Varden/ Bull trout are known to have a presence within the Sammamish River Action Area. We anticipate that the proposed project will not affect the ability for Dolly Varden/ Bull trout to migrate through the Sammamish River in any demonstrable way. It is expected that the proposed action ***may affect, but is not likely to adversely affect (NLAA)*** Dolly Varden/ Bull trout.

10.5. Essential Fish Habitat

Essential fish habitat (EFH) is defined as those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity. The Pacific Fishery Management Council manages the fisheries for coho, Chinook, and Puget Sound pink salmon and has defined EFH for these three species. Salmon EFH includes all those streams, lakes, ponds, wetlands, and other water bodies currently or historically accessible to salmon in Washington, Oregon, Idaho, and California. Salmon EFH excludes areas upstream of longstanding naturally impassible barriers (i.e., natural waterfalls in existence for several hundred years), but includes aquatic areas above all artificial barriers except specifically named impassible dams (PFMC, 1999).

Considering information referenced in this BE, the Astronics Expansion Project merits an effects determination of ***may affect, but is not likely to adversely affect (NLAA)*** Essential Fish Habitat for listed Salmon ESUs in the Sammamish River.

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11.0 REFERENCES

City of Kirkland. 2014. *2014 Surface Water Master Plan.* Surface Water Master Plan, Kirkland: Kirkland Public works Department.

Cowardin, L.M., V. Carter, F.C. Golet, and E.T. LaRoe. 1979. *Classification of Wetlands and Deepwater Habitats of the United States.*

Good, T.P., R.S. Waples, and P. Adams. 2005. *Updated Status of Federally Listed ESUs of West Coast Salmon and Steelhead.* U.S. Dept. of Commerce, NOAA, NMFS.

Kerwin, J. 2001. *Salmon and Steelhead Habitat Limiting Factors Report for the Cedar - Sammamish Basin (Water Resource INventory Area 8). .* Olympia: Washington Conervation Commission.

Kerwin, John. 2001. *Salmon and Steelhead Habitat Limiting Factors Report for the Cedar - Sammamish Basin (Water Resource Inventory Area 8).* Olympia, WA: Washington Conservation Commission.

King County et. al. 2002. "Sammamish River Cooridor Action Plan Final Report." *King County Streams Monitoring.* September 30. Accessed December 19, 2014. http://green2.kingcounty.gov/StreamsData/reports/sammrivercorridoractionplan.aspx.

King County Streams Monitoring . 2002. *Sammamish River Corridor Action Plan Final Report.* September. Accessed January 9, 2015. http://green2.kingcounty.gov/StreamsData/reports/sammrivercorridoractionplan.aspx.

King County Streams Monitoring Program. 2015. *King County Streams Monitoring Program.* January 22. Accessed January 22, 2015. http://green2.kingcounty.gov/streamsdata/Conventional.aspx?Locator=0317.

King. 2008. *King County Parcel Viewer.* December 10. Accessed December 19, 2014. http://www5.kingcounty.gov/iMAP/viewer.htm?mapset=kcproperty.

Kirkland, City of. 2013. "City ESA Map." *City of Kirkland GIS Maps.* July 9. Accessed December 18, 2014. http://maps.kirklandwa.gov/.

—. 2011. "Flow Control Map." *GIS.* May 12. Accessed December 18, 2014. http://www.kirklandwa.gov/Assets/IT/GIS/FlowControl.pdf.

National Marine Fisheries Service. 1996. "Making Endangered Species Act Determinations of Effect for Individual or Grouped Actions at the Watershed Scale."

Northwest Hydraulic Consultants . 2004. *Sammaish River Case Study.* Seattle, December 23.

Pratt, K.L. 1992. "A Review of Bull Trout Life History." *Gearhart Mountain bull trout workshop; August 1992, .* Gearhart Mountain, OR: Oregon Chapter of the American Fisheries Society.

Program, King County stream Monitoring. 2007. *King County Streams Monitoring.* January . Accessed March 3, 2015. http://green2.kingcounty.gov/streamsdata/WaterShedInfo.aspx?Locator=0450CC

Puget Sound Cooperative River Basin Team. 1989. "Dyes Inlet Watershed, Kitsap County Washington." Kitsap County.

Tetra Tech. 2014. "Astronics Cultural Resource Investigation." Cultural Resources Report, Bothell, WA.

U.S. Department of Agriculture. 1991. *Hydric Soils of The United States.* Soil Conservation Service.

WA Department of Ecology. 2015. *Water Quality Assessment and 303(d) List.* Accessed 2015. www.ecy.wa.gov/programs/wq/303d.

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Washington State Conservation Commission. 2000. *Kitsap County.* November. Accessed May 2013. http://www.kitsapgov.com/dcd/nr/documents/East%20Kitsap%20Limiting%20Factors%20Analysis.pdf.

Young, S.F., M.R. Downen and J.B. Shaklee. 2001. *A microsatellite DNA based characterization of Lake Washington/Lake Sammamish kokanee and sockeye salmon with notes on distribution, timing and morphology.* 17 pages plus figures, Olympia, WA : Washington Department of Fish and Wildlife.

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LIST OF FIGURES

Figure 1. Vicinity Map
Figure 2. Existing Conditions Overview
Figure 3. Existing Conditions, Surface Water Flow Connections
Figure 4. Action Area

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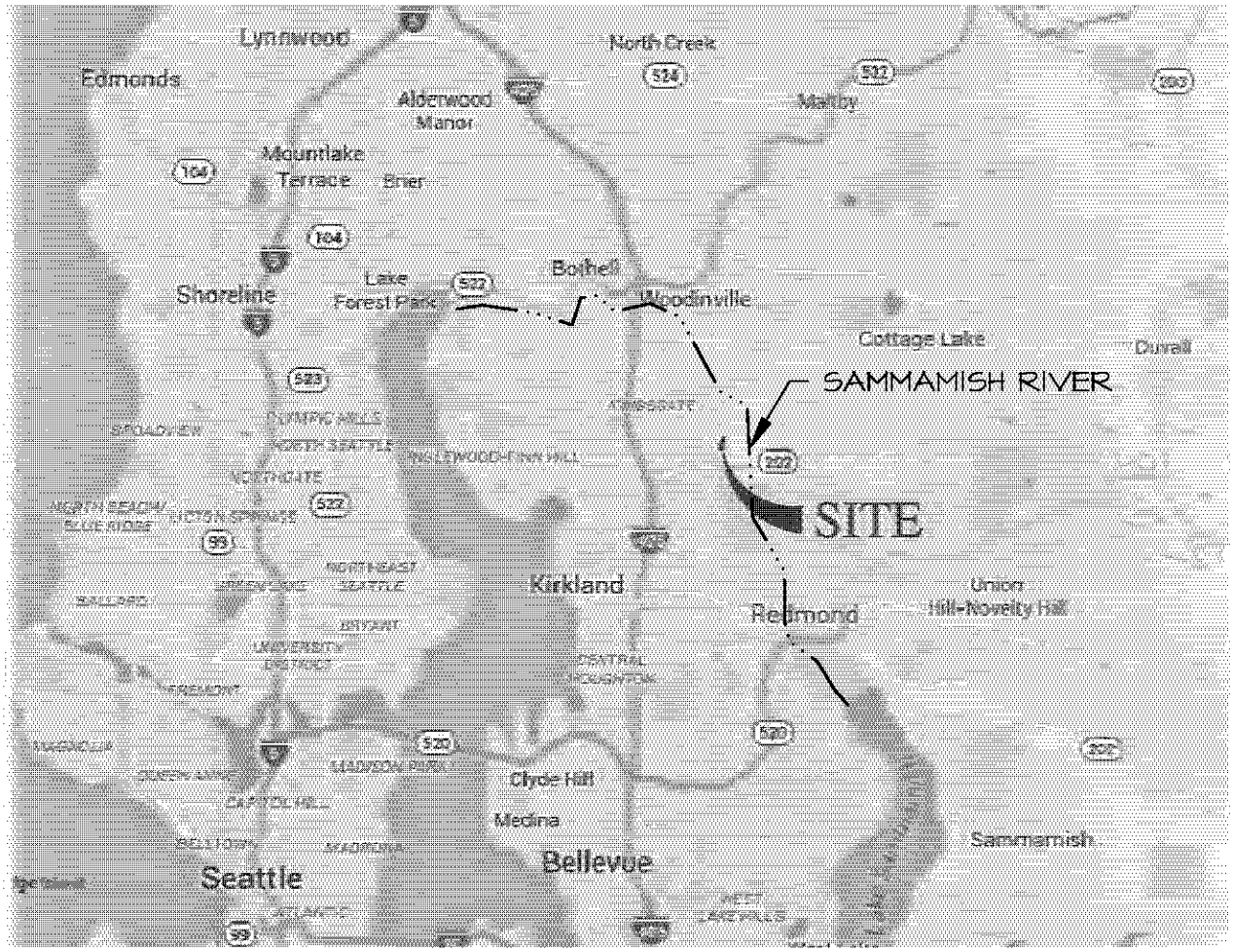

IMAGE SOURCE: GOOGLE MAPS, WWW.MAPS.GOOGLE.COM (ACCESSED 20 JUNE 2014)

DRIVING DIRECTIONS:

1. FROM SEATTLE TAKE HWY 520 EAST TO REDMOND
2. FROM HWY 520E, TAKE EXIT 168B TO MERGE ONTO I-405 NORTH TOWARD EVERETT
3. TAKE EXIT 20B FOR NE 124TH STREET
4. CONTINUE ON 124TH STREET, TURN LEFT ONTO WILLOWS RD NE
5. TAKE FIRST RIGHT ONTO 141ST AVE NE

ARRIVE AT DESTINATION
ASTRONICS AES
12950 WILLOWS RD NE
KIRKLAND, WASHINGTON 98034

EXPANSION PROJECT LOCATED NORTH OF EXISTING OFFICE BUILDINGS

NORTH

TALASAEA CONSULTANTS, INC.
Resource & Environmental Planning
15020 Bear Creek Road Northeast
Woodinville, Washington 98077
Bus (425)861-7550 - Fax (425)861-7549

FIGURE #1

VICINITY MAP & DIRECTIONS
ASTRONICS EXPANSION
KIRKLAND, WASHINGTON

DESIGN	DRAWN	PROJECT
ABS	ABS	1467
SCALE NTS		
DATE		
REVISED 3-13-2015		

1

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