COMMISSION AGENDA – Action Item No. 6b
Meeting Date: November 22, 2016
Flight Corridor Safety Program – Phase I

ATTACHMENT A
Environmental Overview – Phase I

The Port of Seattle issued a Mitigated Determination of Non-Significance (MDNS) as the State Environmental Policy Act (SEPA) determination on July 15, 2016 and was followed by a two week public comment period. During the public comment period, four comments were received through the SEPA process, one from the Department of Ecology, one from the City of SeaTac, and two from private residents. The Port of Seattle (Port) issued a final MDNS on August 26, 2016. The City for SeaTac appealed the Port's issuance of MDNS on September 15, 2016. The Port and the City are currently discussing the City's concerns.

Environmental review under SEPA for the Flight Corridor Safety Program was supported by a comprehensive series of assessments and planning efforts consisting of:

- Conceptual Plan;
- Phase 1 Critical Areas Special Study; and
- Phase 1 Implementation Plan.

Each of these supporting planning efforts is described below.

Conceptual Plan

Conceptual planning was initiated in the fall of 2015 with the goal of identifying and comparing alternatives for removing existing obstructions at STIA, both on and off Port-owned properties, and to recommend an approach to obstruction removal. A Conceptual Plan was developed that provides the background and guiding objectives for the flight corridor safety program. It also summarizes the existing site conditions and how these conditions affect obstruction removal strategies. This Conceptual Plan provides the basis for communication with local jurisdictions and WSDOT concerning the planning, environmental review, and permitting that may be necessary during implementation.

In 2014 the Port conducted a LiDAR (Light Detection and Ranging) aerial survey to identify the locations of obstructions around the airport. LiDAR studies identify the locations of obstructions, but do not identify the specific number of objects that make up the obstruction on the LiDAR image. The 2014 LiDAR study identified 1600 obstructions, and the subsequent Conceptual Plan provided a further assessment to identify obstruction location based on land ownership (i.e., Port, other public properties, private, and commercial). While most of the obstructions have been identified as trees, the height, health, species, number of trees per

obstruction, and associated land use vary by site. Site characteristics were defined for obstructions located on Port-owned, WSDOT, and other public properties.

Utilizing general site condition information, the Conceptual Plan identified and assessed the suitability of methods for obstruction removal, material processing and disposal, site treatment (to minimize future obstructions and stabilize the site), and monitoring. The methods are also evaluated against the guiding principles of the flight corridor safety program as they relate to FAA policies, Port policies, and overall cost. Methods considered included:

- Clearing, tree removal in congested area (hand work);
- Clearing, tree removal without stump removal;
- Selective clearing, grubbing, and grading;
- Clearing, grubbing, and grading;
- Topping trees;
- Leave material on site with little or no processing;
- Process material for use on site (wood chips, restoration features);
- Process material for Port use off site (wood chips, lumber, restoration features);
- Salvage understory plant materials and replant following obstruction removal;
- Dispose off-site (no reuse conditions);
- Engage materials exchange network for beneficial reuse by other parties;
- Revegetate site with shrubs and groundcovers;
- Revegetate site using low growing trees, shrubs, and groundcovers; and
- Erosion control best management practices (geotextiles, armoring slopes).

Based on the information available at that time and range of alternatives, the following steps to implementing the obstruction removal plan were recommended.

- Confirm existing conditions (including actual tree surveys) at each obstruction removal site through ongoing field work;
- Confirm degree of intrusion for each obstruction removal site;
- Identify preferred removal method for each site;
- Develop grouping of sites for bid packages that prioritizes removal;
- Coordinate with local jurisdictions and regulatory agencies; and
- Complete obstruction removals.

The Conceptual Plan will be updated for Phases 2 and 3 based on the results of Phase 1 work.

Critical Areas Special Study – Phase 1

A Critical Areas Special Study was completed in April 2016 based on the prioritized actions recommended in the Conceptual Plan. The Critical Areas Special Study identifies and assesses regulated critical areas (i.e. wetlands, wetland buffers, stream buffers, and steep slopes) on sites owned by the Port of Seattle within the City of SeaTac (critical areas were not identified within the cities of Burien and Des Moines for Phase 1) that are proposed for tree and vegetation removal performed pursuant to the Seattle-Tacoma International Airport's Flight Corridor Safety Program. Identified critical areas include wetlands, streams, and steep slopes. The Study provides identification and characterization, including functional assessments and/or ratings and supporting documentation, for wetlands, streams, and associated buffers found within the obstruction management sites. The Study also provides a geotechnical evaluation assessing stability of identified steep slopes.

The Critical Areas Special Study reviewed current wetland and stream delineation reports consistent with current regulations and other information including SeaTac Municipal Code (SMC), SeaTac Critical Areas Maps, National Wetland Inventory Map, King County Soil Survey Map, and King County Critical Areas Maps. The Study identified three SMC-regulated environmentally critical areas including wetlands, streams, and steep slopes.

Critical areas identified on obstruction management sites on Port property within the city of SeaTac are summarized in Table 1.

Table 1: Critical Areas on Obstruction Management Sites Located on Port-Owned Properties

Wetlands			
Site	**Wetland**	**Wetland Size (acres)**	**City of SeaTac Buffer Width**
P-1	3	0.48	35
P-2	39	1.73	35
P-2	44a	3.01	50
P-3a	28	29.64	100
P-3a	IWS a-b	1.09	50
P-3b	52b	0.80	35
P-3b	G4	0.03	35
P-3b	G12	0.46	50
Streams			
P-3b	NA	NA	50
Steep Slopes			
P-1, P-2, P-3a, P-3b, P-5	NA	NA	50

In order to protect these critical areas, impact minimization and mitigation measures were identified. Key minimization measures identified included but were not limited to the following:

- Perform manual tree removal within critical areas;
- Protect existing native shrubs and groundcovers during tree removal to extent practical;
- Leave stumps and roots in place on steep slopes;
- Remove invasive species in obstruction removal areas;
- Replant vegetation during dormant season (October through March);
- Replant sites with a mixture of native vegetation made up of low-growing trees and shrubs;
- Implement a Spill, Prevention, Control, and Countermeasure Plan;
- Implement and maintain temporary erosion and sediment control BMPs; and
- Properly maintain construction equipment and vehicles to prevent them from leaking fuel or lubricants.

Tree replacement and revegetation measures to offset obstruction removal were identified included the following:

- Sites will be replanted with a mixture of native vegetation made up of low-growing trees and shrubs.
- The vegetation mix will be designed to provide the same function as the removed trees, but will not grow to a size that could constitute a future obstruction.
- Minimum tree replacement ratios to offset impacts to critical area habitat were identified in accordance with SMC as follows:
    - 1:1 for steep slopes
    - 1:1 for Class III wetland and wetland buffer and Class 2 stream buffer ("no net loss")
    - 2:1 for Class I and Class II wetland and wetland buffer

A critical areas special study will be conducted for Phases 2 and 3.

Implementation Plan – Phase 1

Following the identification of obstructions using LiDAR technology, the number of individual trees comprising the detected obstructions was completed in 2015 through ground-truthing. The field reconnaissance also characterized the obstructions by species type and size (stem diameter and estimated height). On Port sites, the reconnaissance also identified future obstructions (i.e. objects that were like to become obstructions within 5 years), and where

applicable, quantified the understory trees that would be removed or impacted during removal activities. Overall the process has identified 1,167 trees on Port-owned properties for removal.

Using this quantified obstruction data as well as other site characterization information and methodology contained in the Conceptual Plan and Critical Areas Special Study, an Implementation Plan was completed in April 2016. This plan includes a characterization of obstructions and potential obstructions; a discussion of obstruction management methods; site plans that describe how these methods should be applied to these various Port, public, and private sites; cost estimates that can be used for budget planning; and a detailed schedule for implementing the Flight Corridor Safety Program (Program).

Table 2 provides a summary of existing and potential obstructions for different types of property ownership within three local jurisdictions as identified in the Implementation Plan. The presence of critical areas (wetlands, wetland buffers, stream buffers, and steep slopes) in proximity to obstructions is also identified. Although the Implementation Plan was developed for Phase I, the plan did report number of obstructions on other publicly owned properties and private properties.

Detailed obstruction removal and revegetation plans were developed for sites located on Port-owned property and other publically-owned property as a guide for the preparation of contract documents. Obstruction characterization and removal methods were also discussed for obstructions located on private properties, however the Implementation Plan recognized the need to for land owner input particularly with respect to revegetation preference and final site treatment.

Site plans for each site included a site description including identification of critical areas on or adjacent the site, obstruction summary, access and staging information, site-specific obstruction removal and material disposal descriptions, revegetation plans, and monitoring requirements. Much of the plan details are summarized in a series of maps provided for each site. As an example, illustrated plan details for Site P-1 is provided in Figure 1 through 5 below.

Final Vegetation Replanting Plan

In accordance with the Implementation Plan, site revegetation plans were initially developed on a minimum of 1:1 in non-critical areas and 2:1 tree replacement ratios for tree replanting in critical areas. In addition to the minimum tree replacement requirement, the Port included a site revegetation objective to restore native forest or shrub communities.. Designed tree density (~280/acre) and shrub densities (~1700/acres) are based on past mitigation design and outcomes. The designed tree density well exceeds minimum tree replacement ratio requirements in order to:

ensure dense native forest and shrub communities establish, including partially offsetting anticipated planting mortality,

increase site habitat structure and ecological function,

and prevent future obstructions from re-establishing.

As a result the current design documents have a tree replacement ratio of approximately 4 to 1.

Table 2: Obstruction Removal Summary by Location

Jurisdiction Property Ownership	Obstruction Removal						Understory Tree Removal	Total Trees Removed
	Existing Obstructions[1]	Potential Obstructions[2]	Total Obstructions	Obstructions Within Sensitive Areas				
				Existing	Potential	Total[3]		
City of SeaTac								
Port (Phase 1)	362	478	**840**	149	238	**387**	327	**1,167**
WSDOT	484	119	**603**	0	0	**0**	621[4]	**1,224**
Public	87	41	**128**	4	11	**15**	0	**128**
Residential	46	22	**68**	0	0	**0**	0	**68**
Commercial/Religious	22	22	**44**	2	5	**7**	0	**44**
Subtotal	**1,001**	**682**	**1,683**			**409**	**948**	**2,631**
City of Burien								
Public	6	0	**6**	0	0	**0**	0	**6**
Residential	58	14	**72**	0	0	**0**	0	**72**
Commercial	0	0	**0**	0	0	**0**	0	**0**
Subtotal	**64**	**14**	**78**			**0**	**0**	**78**
City of Des Moines								
Public	0	0	**0**	0	0	**0**	0	**0**
Residential	16	22	**38**	1	1	**2**	0	**38**
Commercial	0	0	**0**	0	0	**0**	0	**0**
Subtotal	**16**	**22**	**38**			**2**	**0**	**38**
Total	**1,081**	**718**	**1,799**			**411**	**948**	**2,747**

Notes:
1. Existing obstructions are trees that are currently within the navigable airspace for STIA.
2. Potential obstructions are trees that are predicted to enter the navigable airspace within 5 years.
3. Totals are adjusted to reflect the actual number of tree obstructions within sensitive areas, and remove double counting (e.g., individual trees that are within both steep slope and wetland buffer areas).
4. Estimated understory quantity is preliminary and subject to change (derived from aerial photograph analysis)

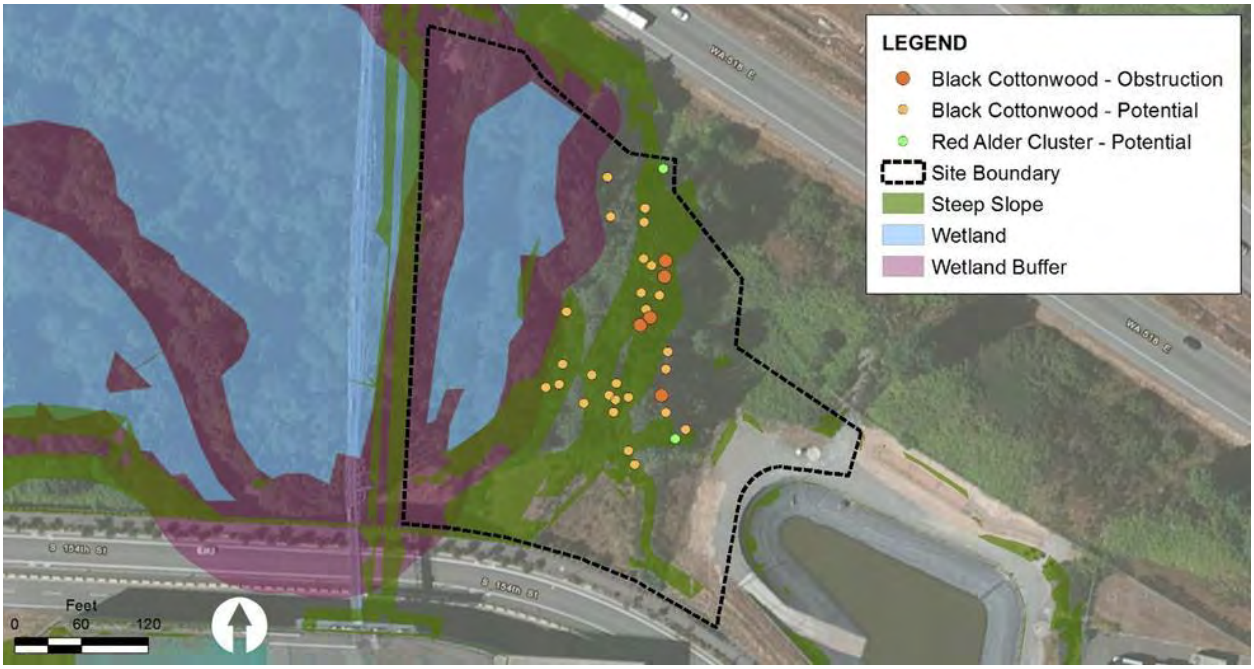

Figure 1
Site P-1 Overview Diagram

Figure 2
Site P-1 Representative Site Photographs

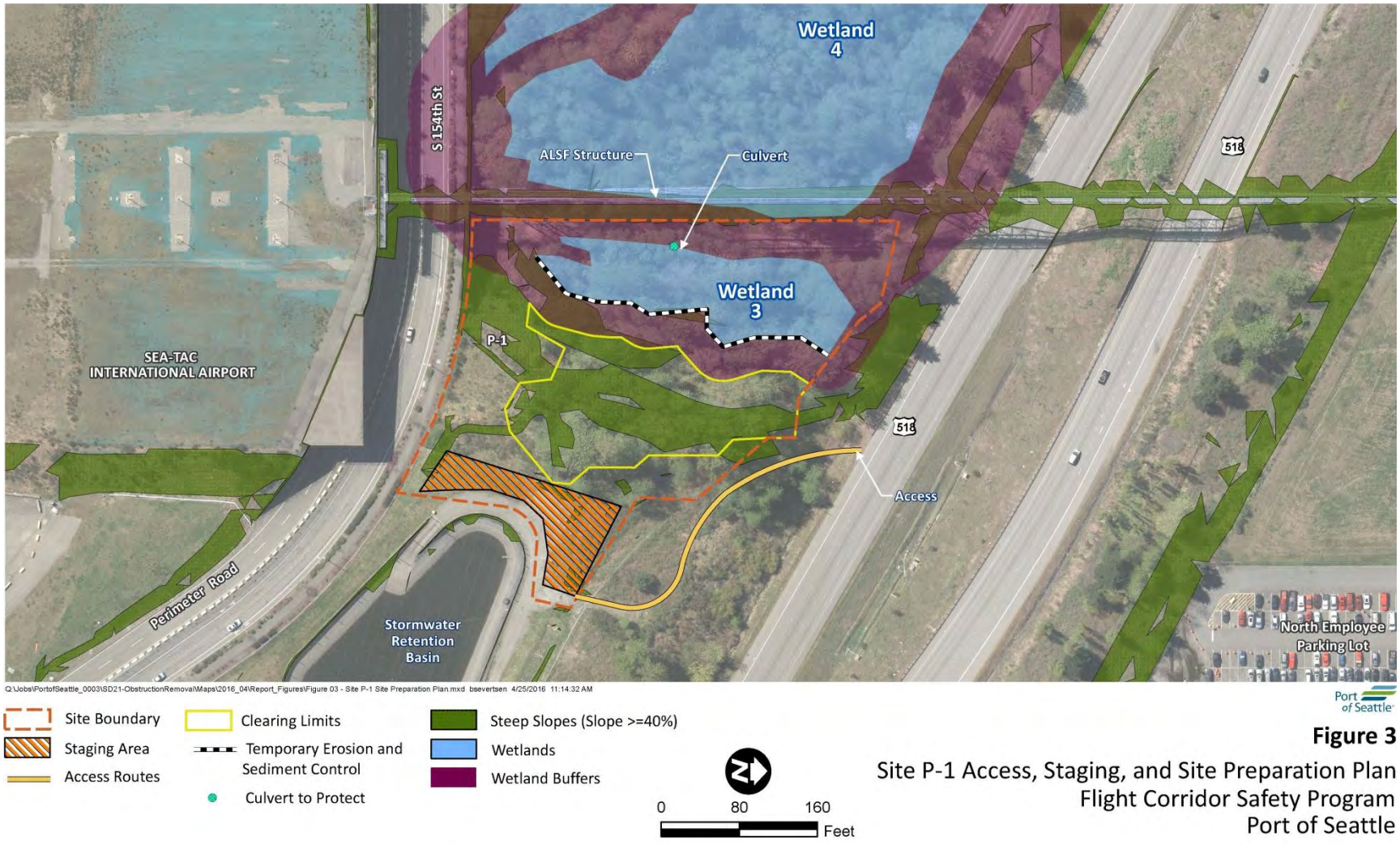

Figure 3
Site P-1 Access, Staging, and Site Preparation Plan
Flight Corridor Safety Program
Port of Seattle

Figure 4
Site P-1 Obstruction Removal and Disposal Plan
Flight Corridor Safety Program
Port of Seattle

PLANT SCHEDULE

Common Name	Species Name	Size/Category	Spacing
Short Height Upland Planting			
Shore Pine	*Pinus contorta var. contorta*	2 gallon/Tree	As Shown (15' O.C. minimum)
Vine maple	*Acer circinatum*	1 gallon/Shrub	5' O.C.
Oceanspray	*Holodiscus discolor*		5' O.C.
Pacific ninebark	*Physocarpus capitatus*		5' O.C.
Nootka rose	*Rosa nutkana*		5' O.C.
Western sword fern	*Polystichum munitum*	1 gallon/Groundcover	3' O.C.
Shrub Upland Planting			
Oceanspray	*Holodiscus discolor*	2 gallon/Shrub	5' O.C.
Mock Orange	*Philadelphus lewisii*		5' O.C.
Red flowering Currant	*Ribes sanguineum*		5' O.C.
Groundcover Planting			
Western sword fern	*Polystichum munitum*	1 gallon/Groundcover	3' O.C.
Giant Blue Wild Rye	Elymus glaucus		3' O.C.
Hydroseed (All Planting Categories)			**% of Total**
Barkley's perennial ryegrass	*Lolium perenne*	Seed	30%
Red fescue	*Festuca rubra*		35%
Aurora hard fescue	*Festuca longifolia*		35%

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Site Boundary

0 80 160
Feet
Aerial Photo Taken April 2014

Port of Seattle

Figure 5
Site P-1 Planting Plan
Flight Corridor Safety Program
Port of Seattle