MITIGATION SITE USE PLAN

Marysville Riverwalk Brownfields Redevelopment Project

Advance Wetland Mitigation Agreement for
City of Marysville at Qwuloolt Estuary Project:

NWP xxx

Applicant:
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Marysville, WA 98270

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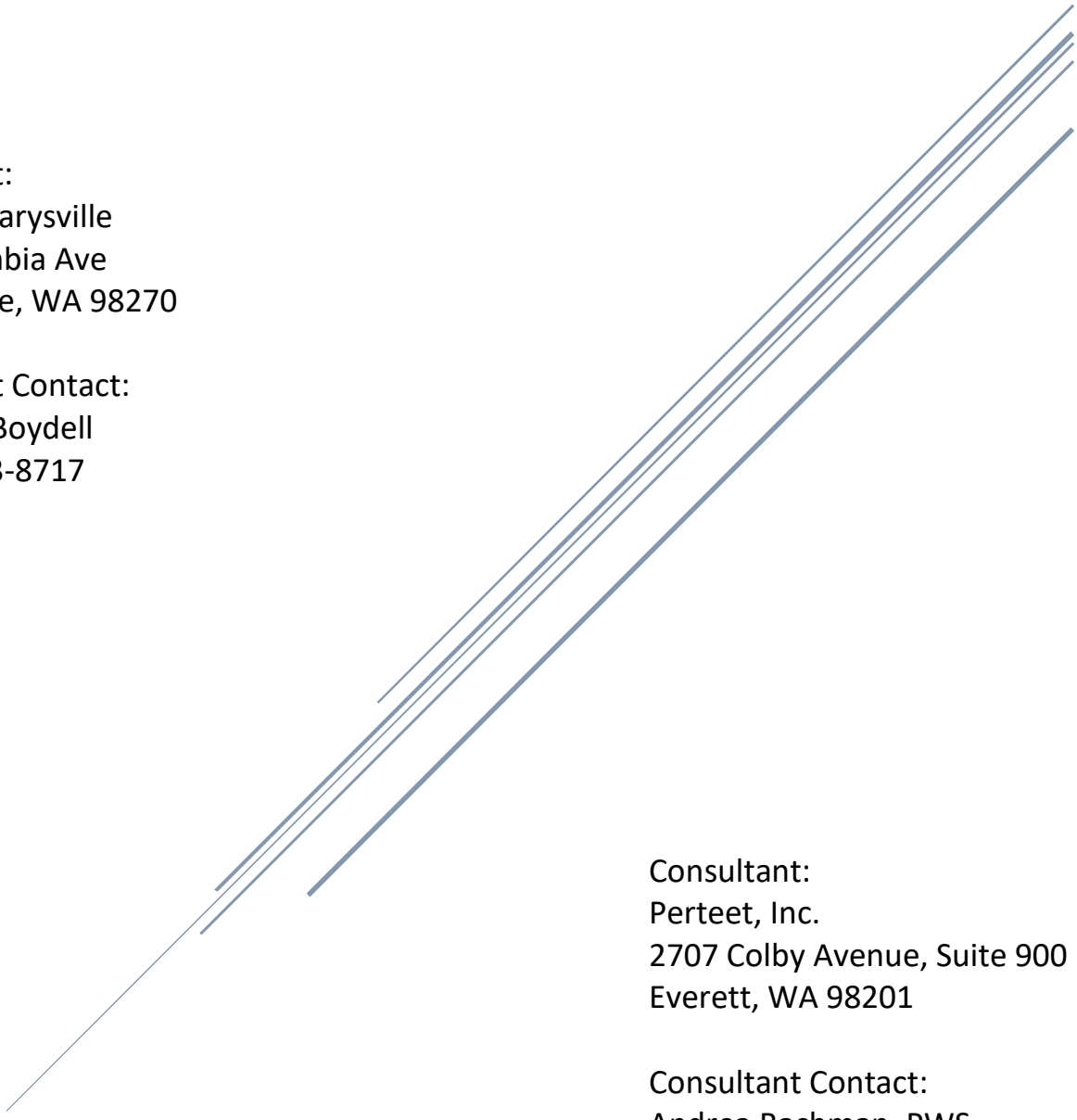

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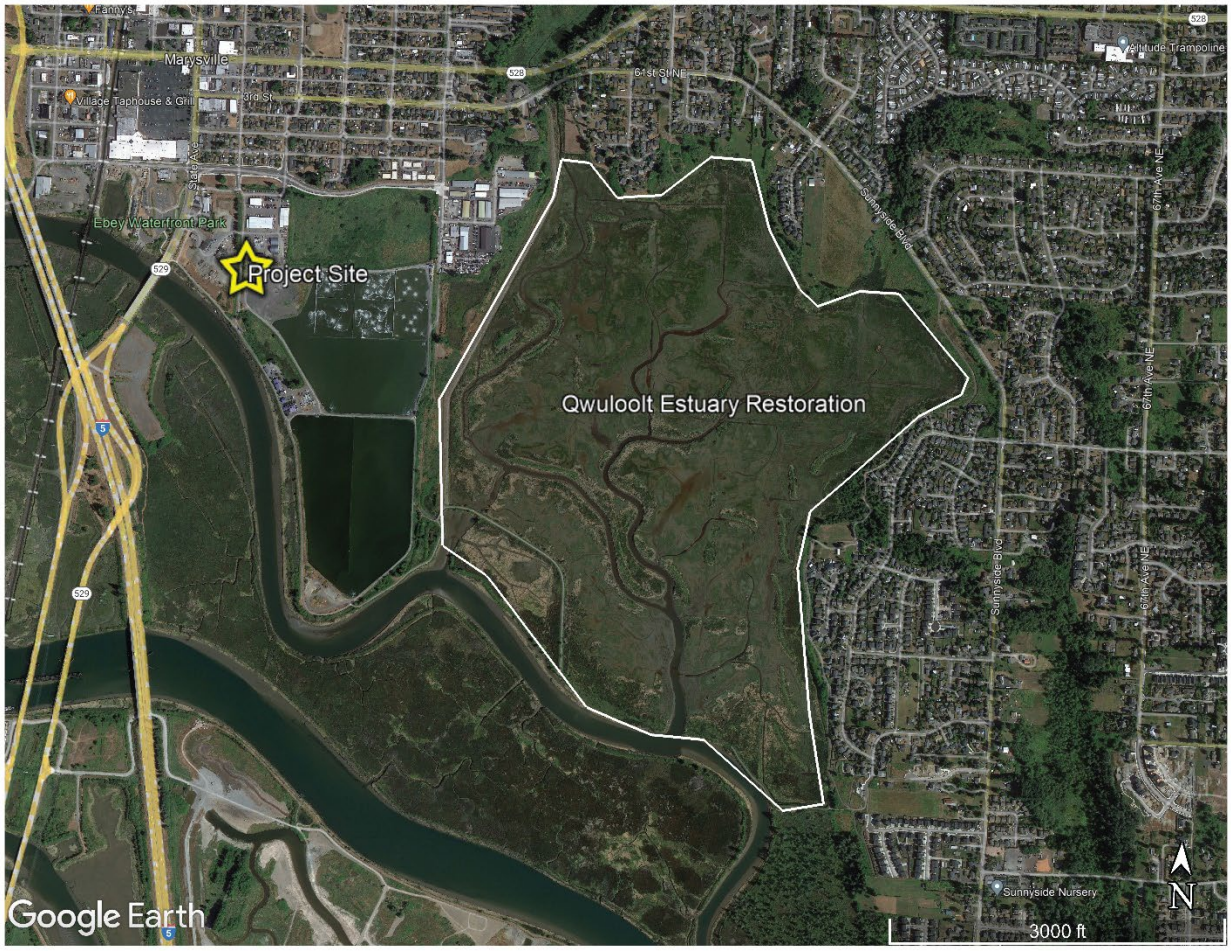
January 24, 2024

Introduction

City of Marysville staff and Perteet ecological staff collaborated to prepare this Mitigation Site Use Plan as a supporting document for the JARPA submittal package for the Marysville Riverwalk Brownfields Redevelopment project.

According to the Advance Wetland Mitigation Agreement between the US Army Corp of Engineers, the Washington State Department of Ecology and the City of Marysville (March 2013), the City is allowed to propose the use of available wetland mitigation credits from the Advanced Mitigation Project site located within the Qwuloolt Estuary Restoration until all credits generated and approved for utilization by the Corps and Ecology have been completely debited. This Mitigation Site Use Plan addresses the minimum documentation requirements listed on page 10 of the Advance Wetland Mitigation Agreement to demonstrate the appropriateness of using available credits out of the Qwuloolt Estuary Restoration for impacts associated with the proposed project.

Figure 1: Location of Project Site relative to the Qwuloolt Estuary Restoration.



1. **Demonstrate the advance mitigation site's ecological lift by meeting stated performance standards, through documentation in monitoring reports, site visits, and other supporting information as required by the Corps or Ecology.**

The Advance Wetland Mitigation for the Qwuloolt Restoration Area Year 1 monitoring report was submitted in 2017, the Year 2 monitoring report was submitted in 2018, Year 5 Monitoring was submitted in 2020, and Year 7 was released in 2022. These reports demonstrated that the Marysville Parcels are meeting the applicable performance standards.

2. **Propose and substantiate the number of compensatory mitigation credits to be generated as a result of accomplishment of the identified performance standards.**

The Advance Wetland Mitigation As-Built was submitted on January 5, 2017. The As-built and monitoring reports substantiated the number of compensatory mitigation credits generated as a result of accomplishing the identified performance standards. The property protective instrument was recorded on November 11, 2017 and continues to be in effect. The Department of Ecology and the Army Corps of Engineers have released 13.36 credits as of June 7, 2023.

3. **Demonstrate through the ledger required pursuant to this Agreement that sufficient credits are available for the proposed compensatory mitigation purpose.**

The ledger was submitted and approved by the Washington State Department of Ecology (Ecology) and the US Army Corps of Engineers (Corps) on 6/7/2023. An updated ledger is included as Appendix B.

4. **Propose and substantiate further monitoring and documentation methods and requirements, applicable to the credits generated and to be utilized.**

Further monitoring is detailed in Exhibit A updated and approved on August 2018.

5. **Propose and substantiate maintenance requirements to sustain the credits generated and to be utilized; such maintenance requirements may need to include the accomplishment of subsequent performance standards that are integral to the generated credits, the accomplishment of which: will be obligatory once initial credits are approved for utilization; and will generate, in turn, their own opportunity for advance compensatory mitigation credit.**

Maintenance requirements will be carried out to ensure that the performance standards in Exhibit A are reached. The results of future site monitoring will dictate what activities are needed.

6. **Propose and substantiate an adaptive management plan applicable to the advance compensatory mitigation credits generated and to be utilized.**

Adaptive management is not needed at this time, as all performance standards have been met.

7. Propose and substantiate a long-term management and maintenance plan applicable to the advance compensatory mitigation credits generated and to be utilized.

Long-term management and maintenance plan is not needed at this time as routine monitoring and maintenance are ongoing.

8. Demonstrate that the City has instituted, and continues to maintain in force and effect, the site protection instrument required by Section VI.3 of this Agreement, applicable to the City owned property.

The property protective instrument was recorded with Snohomish County on November 11, 2017 and continues to be in effect. It can be accessed via the Snohomish County Recorded Documents Search Site, under instrument #'s 201711020263 and 201711025004.

9. Describe the debit project's impacts to aquatic resources that require mitigation. Include type of aquatic impact, acreage, functions lost, and how impacts have been avoided and minimized.

A proposed future site development will convert city lands from light industrial purposes into a mixed-use development comprised of multi-family luxury apartments, a hotel, restaurants, a sports facility, a public plaza, and open space connections to the Ebey Waterfront trail and connecting commercial uses. The project is intended to meet the City's vision for its downtown as presented in the 2019 Downtown Master Plan. To achieve this development plan, adding a significant amount of fill to the site (187,500 CY) is necessary to bring it above the base flood elevation. As a result, a portion of a Category III wetland ("WL2") will be filled, and a ditch Type F stream ("Stream 1") will be rerouted into a pipe east of the project area. The work is anticipated to begin in June 2024 upon receipt of applicable permits. The impacts to aquatic resources are summarized below.

- Wetland impact—Fill approximately 2,000[1] square feet (0.05 acre) of Category III wetland (WL2) and 16,400 square feet (0.36 acre) of its associated buffer located in the southeastern corner of the site, where the project overlaps these areas (Table 1).

- Stream impact—Place approximately 6,800 square feet (0.16 acre) / 566 linear feet of a ditch/Type F stream (Stream 1) east of the project site (Table 2).

[1] A wetland delineation and survey are forthcoming to determine the exact impact area.

Table 1. Expected Impacts to Wetlands

Wetland Identifier	Wetland Area (acres)	Permanently Filled Wetland Area (acres)	Buffer Area (acre)	Cowardin Classification	Ecology Rating	Local Jurisdiction Rating	HGM Classification
WL2	2.5+/-	0.05	0.36	PEM1C	III	III	Depressional
TOTALS	**2.5+/-**	**0.05**	**0.36**				

Table 2. Expected Impacts to Streams

Water course Identifier	Permanently impacted water course (acre/linear ft)	Buffer Area (acres)	Classification system used	Water type	303(d) Listed (parameters)
Stream 1	0.16/566	No buffers due to the existing development	WDNR	F = Fish	None
TOTALS	**0.16/566**	**0**			

Wetland Functions to be Impacted

Water Quality Functions— The project reduces the capacity for water quality functions by 2,000 square feet within "WL2", roughly 2% of the estimated wetland area. The overall impact is relatively minimal. The impacted aquatic resources are not on the 303(d) listed waters.

Long-term stormwater management and treatment will comply with the 2019 Washington Department of Ecology Stormwater Manual and implement low-impact development (LID) strategies where possible. Construction impacts will be minimized to the greatest extent possible, and best management practices (BMPs) will be implemented to prevent the mobilization of sediments and ensure that site disturbances remain on-site. Such measures ensure that

Overall, water quality impacts are expected to be relatively minimal and mitigated through construction BMP and post-development stormwater management.

Fish and Wildlife Habitat Functions— The project is expected to have no direct impact on fish and wildlife habitat functions since none exist. WL2 provides insufficient habitat functions within the wetland itself and is isolated from other habitats in the landscape. Overall, its value for habitat is low. Thus, impacts on habitat functions are expected to be relatively minimal.

Hydrologic Functions— The entire site is degraded with hardened surfaces, limited vegetation cover, and limited capacity to retain significant floodwaters. Most of the site is within the 100-

year floodplain. Although the site and approximately 2,000 square feet of Category III wetlands are to be filled to just above base flood elevations, the floodway of Ebey Slough will not be filled. Vegetation along the Ebey shoreline will be enhanced as part of the Shoreline Master Program (SMP) requirements, which can help control hydrologic processes. Furthermore, displaced floodwaters can be taken up by off-site wetland "WL1" and the remainder of "WL2."

Stream Functions to be Impacted

Water Quality Functions— While placing a stream in a pipe is typically perceived as impacting water quality functions, the contrary is anticipated for this project. This is because Stream 1 was historically placed into a drainage ditch, which conveys runoff from an on-site public works facility. Therefore, the open segment of Stream 1 currently conveys a combination of natural hydrology and surface runoff carrying potential pollutants and suspended sediments. By placing Stream 1 in a closed, piped system, the water course will no longer receive dirty stormwater runoff, and there is no risk of mobilized contaminants from the sewage lagoon fill entering the stream. The piped stream will convey only hydrology sourced from upstream reaches within the off-site Wetland 1.

Fish and Wildlife Habitat Functions— The project is expected to have no direct impact on fish and wildlife habitat functions since none exist within the project area. However, placing Stream 1 in a pipe eliminates potential fish habitat restoration opportunities.

Hydrologic Functions— The entire site is degraded with hardened surfaces, limited vegetation cover, and limited capacity to retain significant floodwaters. Most of the site is within the 100-year floodplain. Piping the stream could help to increase flow capacity, reduce erosional damage, and be less likely to overflow and damage nearby buildings and roads.

How Impacts Are Avoided and Minimized

The subject development site must be filled above the potential base flood elevations. Not taking action to increase the site elevation could render the new development at risk of damage from flooding and could also put the health and safety of residents at risk during a significant flood event. Therefore, adding permanent fill to approximately 2,000 square feet of wetland is unavoidable.

To minimize impacts to the greatest extent possible, best management practices (BMPs) will be implemented to prevent the mobilization of sediments and ensure that site disturbances remain on-site. Additionally, the project stormwater plans will comply with the 2019 Washington Department of Ecology Stormwater Manual and implement LID where possible.

Stream 1 cannot be avoided since it is currently part of the site's storm sewer system. In determining the best actions for Stream 1, the City analyzed stream alignment alternatives,

revealing constraints and adverse impacts on wastewater treatment operations and mitigation options. The assessment considered five alternatives for re-establishing Stream 1, evaluating them based on physical constraints, implementation schedule, and habitat benefits.

Through careful consideration, the City determined that separating the jurisdictional stream from the site stormwater through a new piping system is the preferred approach, circumventing physical constraints and enhancing water quality. As compensatory mitigation, the City proposes to obtain bank credit from the adjacent Qwuloolt Estuary Restoration ensures the overall habitat benefits.

10. Describe how the advance mitigation adequately compensates for the unavoidable impacts to waters of the U.S. and waters of the State.

To ensure full replacement of impacted functions, the City proposes mitigation of a lesser developed, adjacent hydrologic unit. This will be achieved by obtaining credits from the Qwuloolt Estuary Mitigation Bank. This mitigation bank is located within the lower Snohomish River Estuary (WRIA 7) near the Snohomish River delta, one-half mile east of the subject development site. The Qwuloolt Estuary Restoration offers recovered habitat for Puget Sound Chinook, bull trout, and other salmonids through a rehabilitated estuary comprising channels, marshes, mud flats, and riparian areas. Utilizing this bank guarantees a no-net-loss of ecological functions within WRIA 7 and is consistent with the mitigation hierarchy established in the 2008 Final Rule on Compensatory Mitigation for Losses of Aquatic Resources (The Rule).

11. From a watershed perspective, demonstrate the advance mitigation is ecologically preferable to on-site mitigation options. For critical functions/resources it may be necessary to perform part of the mitigation on-site and use the advance mitigation site to compensate for the remainder of the functions (decouple the compensation).

As recommended by Ecology publications, the watershed approach guides the decision-making process for proposing off-site mitigation for these impacts. The project site is so heavily degraded within the UGA and isolated from other habitats that performing successful on-site mitigation can not be guaranteed.

Utilizing the adjacent mitigation bank is a watershed-based decision to implement mitigation for impacts associated with this project. The Qwuloolt Estuary Restoration is in a lesser developed adjacent hydrologic unit within the lower Snohomish River Estuary (WRIA 7) near the Snohomish River delta, one-half mile east of the subject development site. The Qwuloolt Estuary Restoration offers significant recovered habitat for Puget Sound Chinook, bull trout, and other salmonids through rehabilitated estuary habitat comprised of channels, marsh, mud flats, and riparian areas, including over 1.5 miles of restored habitat within lower Allen and Jones Creeks (Qwuloolt.org, 2013). The bank can appropriately compensate for the 2,000 square feet of Category III wetland impact and 6,800 square feet of Type F stream impact. Utilizing this bank guarantees a no-net-loss of ecological functions within WRIA 7 and is consistent with the mitigation hierarchy established in the 2008 Final Rule on Compensatory

Mitigation for Losses of Aquatic Resources (The Rule). A separate bank use proposal is being developed for submission to Ecology and the Corps.

The approach is consistent with Ecology publications, "Wetland Mitigation in Washington State," 2006 (Publication # 06-06-011a and 06-06-011b) and Chart 2 of "Selecting Wetland Mitigation Sites Using a Watershed Approach" (Publication #09-06-032).

12. Identify the amount of mitigation credit, generated from the advance site, that the City proposes is necessary to offset lost functions from the proposed impacts.

Currently, the credits recommended for wetland impacts are as follows:

Table 3. Credit Release Ratio based on Ecology Wetland Category

Category of Impacted Wetland	Credit Required per Impact
I and II	case-by-case basis
III	1
IV	0.8

The "Bank Use Plan" guidance, updated in 2022, indicates that banks can compensate for "unavoidable impacts to wetlands and other aquatic resources, including buffers, associated with their projects. Aquatic resources include but are not limited to wetlands, streams, rivers, other waters, and associated buffers." The document notes that the bank can mitigate stream impacts but does not give specific ratios. As provided in Sections 10 and 11 above, the Qwuloolt Estuary Restoration offers significant recovered habitat for Puget Sound Chinook, bull trout, and other salmonids through rehabilitated estuary habitat comprised of channels, marsh, mud flats, and riparian areas. Therefore, the bank can appropriately compensate for the loss of 6,800 square feet of Stream 1. The proposed credit ratio for impacts on Stream 1, a Type F stream, is 1:1.

Table 4: Proposed Bank Mitigation Ratios from Qwuloolt Estuary Restoration

Type of Impact	Total Impact Area (acres)	Bank Credits Recommended per Acre of Impact	Proposed amount of mitigation credit
Category III Wetland	0.05	1:1	0.05
Category III Buffer	0.38	1:1	0.05
Type F Stream	0.16	1:1	0.05
			Total 0.15

Attachments:

- Credit Ledger
- Exhibit A Advance Wetland Mitigation Plan

Site Name:					Advance Wetland Mitigation Agreement for the	
Contact Info:					Brooke Ensor, City of Marysville	
Date	**Credits Received**		**Credits Used**		**Permitting Agency(ies), Permit No.(s) & Issuance Date(s)**	**Impact Project Location:**
	Corps & Ecology	**Ecology**	**Corps & Ecology**	**Ecology**		
1/25/2018	2.71				NWS-2013-209	
9/7/2021 approved		1.86				
6/5/2019 & 9/24/2019	2.23					
9/7/2021 approved		1.54				
9/7/2021 approved		1				
09/23/21 approved	1.51					
03/02/23 approved	1.51					
6/7/23 approved		1				

CREDIT LEDGER

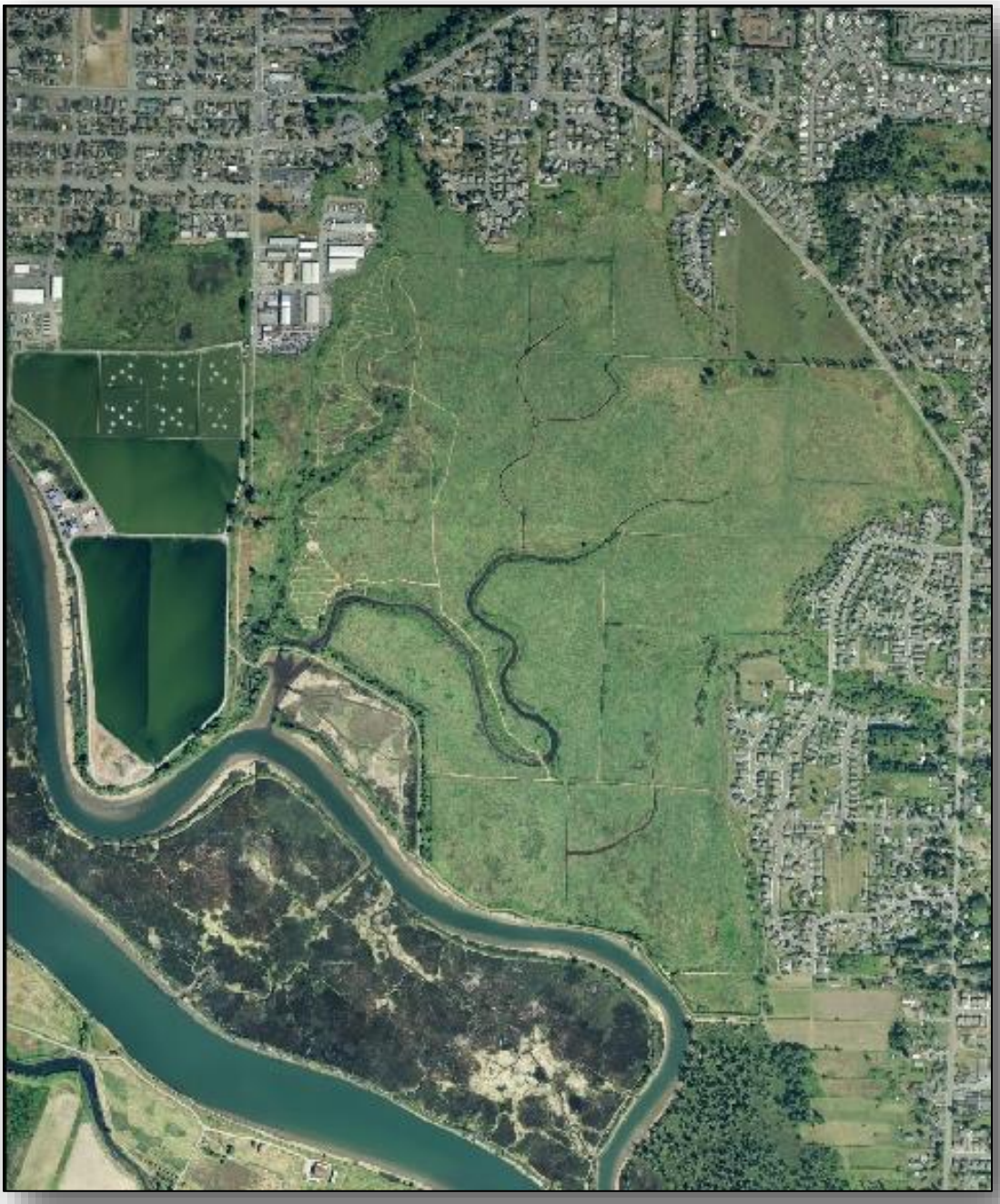
Contact Info:	Brooke Ensor, City of Marysville					
Date	Credits Received		Credits Used		Permitting Agency(ies), Permit No.(s) & Issuance Date(s)	Impact Project Location:
	Corps & Ecology	Ecology	Corps & Ecology	Ecology		
Totals:	7.96	5.4	0	0		
New Credit Balance:	7.96	5.4				

e City of Marysville at Qwuloolt Estuary	
Ledger Submittal Date:	6/7/2023
Brief description of impact(s) (wetland acreage and types):	**Comments:**
	approved
	Ecology only credit requests based on As-Built tables.
	approved. updated 9/24/19
	Ecology only credit requests based on As-Built tables.
	ECY only credits 1.24 requested, 1 approved. Remaining 0.24 can be released if invasives are brought under control.
	Yr 5 credit: 1.79 available for request, but only 1.51 approved.
	Yr 7 credit requested 1.79 on 1/10/23. Approved 1.51 joint credits 3/2/23
	requested 1.24 credits on 1/10/23 but 1 was released on 6/7/23

Ledger Submittal Date:	6/7/2023
Brief description of impact(s) (wetland acreage and types):	**Comments:**

Exhibit A
Advance Wetland Mitigation Plan

For City of Marysville owned properties and easement area within the Qwuloolt Estuary Restoration Project



April 1, 2013
Updated August 2018

Contents

Introduction and Background

This Advance Wetland Mitigation Plan (Plan) is intended to provide a framework for how credits will be generated and released for use by the City of Marysville (City) for debit projects within the geographic area depicted on Figure 2 of the Advance Mitigation Agreement (Agreement). Each debit project proposing to utilize credits generated by successful implementation of specific compensatory mitigation actions on City owned parcels will be evaluated on a case-by-case basis to determine if use of Advance Mitigation credit is acceptable and adequate to compensate for adverse impacts.

This Exhibit was updated in August 2018 to reflect changes documented in the October 2016 as-built report. The City was unable to secure the necessary real estate protection instrument for parcel East 1 and it no longer pertains to this Plan.

The property subject to this Plan includes parcels owned by the City (17.54 acres). The City easement area, called East 1, is included for information only. The City has a permanent flood easement across this parcel but no credit will be generated from the property.

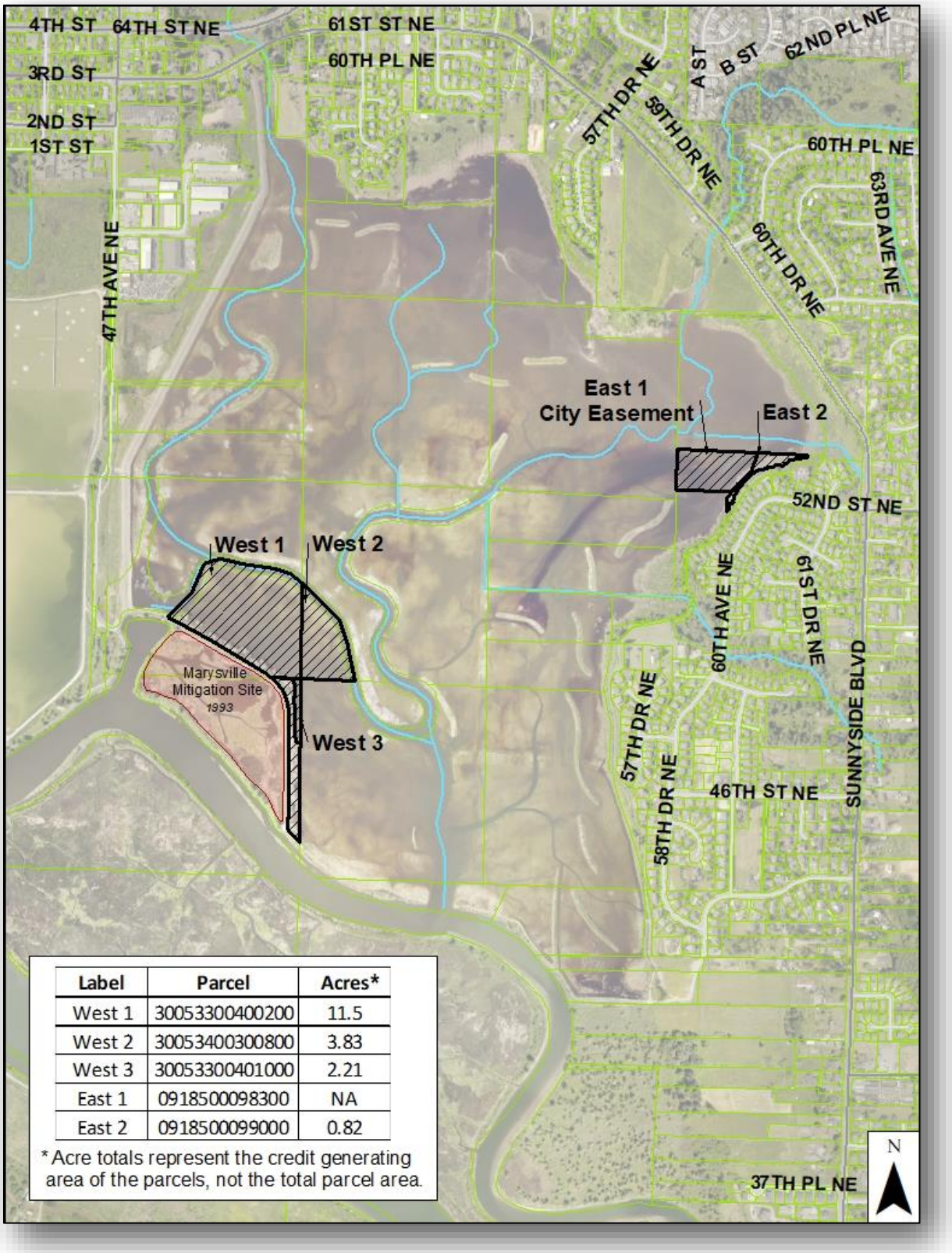
The Advance Wetland Mitigation Project parcels are within the footprint of the overall U.S. Army Corps of Engineers (Corps) Section 544 Qwuloolt Estuary Restoration (QER) Project located within the historic Snohomish estuary. The QER 544 Project includes levee construction and breaching of the existing levee system. The activities approved for the Section 544 QER Project will restore tidally influenced hydrologic conditions to approximately 400 acres, including the City's advance mitigation area. The Section 544 QER Project is, in turn, one element of a larger overall restoration effort occurring on the 400 acres that includes activities undertaken by the Tulalip Tribes, National Oceanic and Atmospheric Administration (NOAA), US Fish and Wildlife Service, and the Washington State Department of Ecology (Ecology). The overall Qwuloolt Restoration Project has been underway since 1998, when the Natural Resource Conservation Service obtained a conservation easement under the Wetland Reserve program for most of the agricultural properties behind the Ebey Slough levee. However, the conservation easement does not encompass the City owned property.

The City-owned properties (Figure 1) that will be considered for advance mitigation crediting pursuant to the Agreement are expected to be subject to the ebb and flow of the tides as a direct result of the ecosystem restoration activities of the Corps' Section 544 QER project. Therefore, this Plan pertains to and describes the potential incremental functional lift achieved above and beyond the benefits resulting from the Corps' Section 544 QER Project.

Mitigation Plan Purpose

The larger QER Project area is approximately 400 acres, of which the City of Marysville owns 17.54 acres that pertain to this Plan. This Plan describes the City's specific mitigation proposal on the 17.54 acres to increase and augment the benefits accruing when the Corps Section 544 QER Project is completed. See Figure 1 for the location of City owned properties and easement area.

Figure 1: Site Location map



Label	Parcel	Acres*
West 1	30053300400200	11.5
West 2	30053400300800	3.83
West 3	30053300401000	2.21
East 1	0918500098300	NA
East 2	0918500099000	0.82

* Acre totals represent the credit generating area of the parcels, not the total parcel area.

Objectives

For reference, the goal of the Corps' Section 544 QER Project is to restore tidal processes to 400 acres of currently fallow pasturelands. This will improve local streams and wetlands for fish such as threatened Chinook salmon, bull trout and steelhead and provide access to the project area for refuge and feeding. The purpose of the QER Project is to restore the natural tidally influenced conditions at the site. The QER Project objectives include:

- Create a self-sustaining brackish (salinity values greater than or equal to 0.5 ppt) tidal site with minimal construction and maintenance; consistent with the Corps Environmental Operation Principles;
- Restore natural hydrology, salinity and sedimentation;
- Promote natural channel formation;
- Provide opportunities for juvenile salmon off channel rearing and forage areas;
- Facilitate natural processes and functions to occur (sedimentation, plant propagation, export of organic material, channel complexity, edge, salinity gradient, water quality);
- Assist recovery and re-vegetation of native species;
- Provide public education on marsh restoration (public meeting, web site and signage); and
- Balance public access with ecological objectives.

The end-state of the Section 544 QER Project, following execution of all project features and activities, establishes the baseline for determination of creditable incremental functional lift under this Plan. The goal of the City's Advance Mitigation Project is to successfully implement specific compensatory mitigation activities, as outlined in this Plan, on the City owned (17.54 acres), and generate advance mitigation credit for City debit projects within the geographic impact use area as depicted in Figure 2 of the Agreement.

The objective of this Plan is to augment and increase functional lift on 17.54 acres of land above and beyond those benefits accruing from the Section 544 QER Project. The City intends to achieve this objective by successfully implementing specific activities that are intended to substantively accelerate the process of converting fallow palustrine pasture dominated by invasive species to tidally influenced marsh and mud-flat habitat. The Plan objectives also include: creating high quality and functioning fish and bird habitat, reducing fish stranding potential, increasing primary productivity and food-chain support functions, and providing substrate for native salt and/or brackish marsh plant recruitment and colonization.

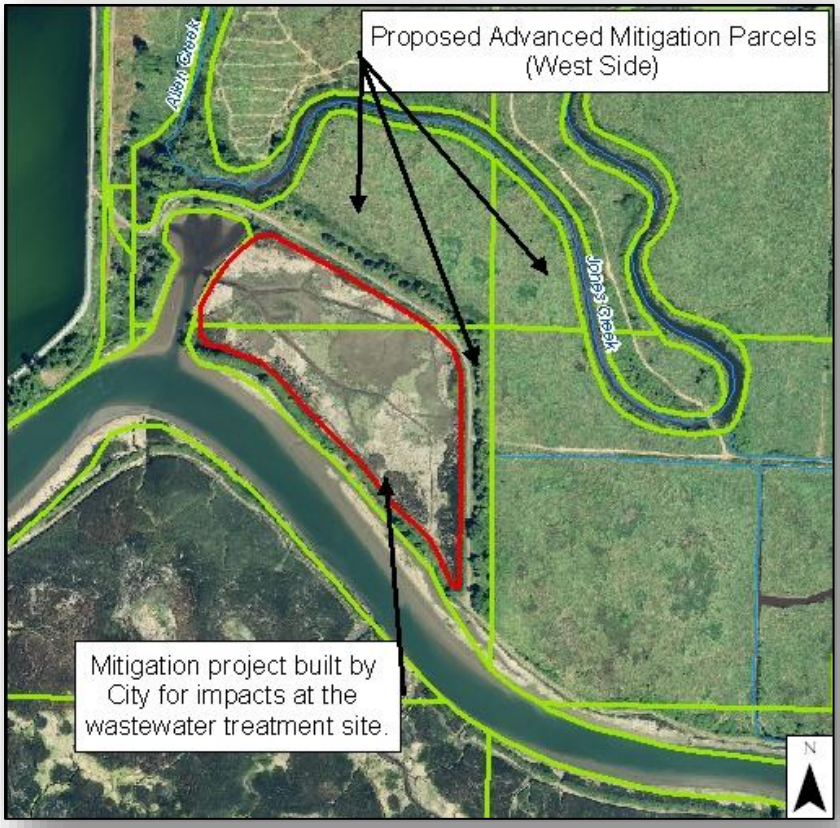
Site Selection

The QER Project area was identified within the Snohomish Estuary Wetland Integration Plan (SEWIP), finalized in 1997. SEWIP is a comprehensive watershed planning tool created *"to integrate the wetland regulatory frameworks of federal, state, and local agencies into one process on the basis of an agreed-upon plan"* (SEWIP, 1997). The

SEWIP identifies the Poortinga Property as the top priority for tidal restoration and mitigation options within the Snohomish Estuary.

The City owned properties, subject to this Plan, are located within the larger QER 400-acre footprint (Figure 1) and will be subject to tidal influence once the levee has been breached. These properties are, therefore, ideally situated to benefit not only from the actions associated with the QER Project, but also from the intended functional lift generated by specific activities the City is proposing in this Plan. The City constructed a 13.7 acre wetland restoration mitigation project in 1993 adjacent to the QER Project area (Figure 2). The dike was breached restoring tidal flow of water from Ebey Slough into and out of the mitigation area. The mitigation project was successfully implemented and met all of the project goals. This project is being used as one of the reference sites for the QER Project as a whole and the City's Advance Wetland Mitigation Project.

Figure 2: 1993 City of Marysville Mitigation Site on Ebey Slough



Site Protection Instrument

As a prerequisite to the approval of utilization of any advance compensatory mitigation credits generated pursuant to this Plan, the City must demonstrate that it has instituted, and presently has in force and effect, a real estate site protection mechanism approved by the Corps and Ecology. The site protection mechanism must extend to the City owned property.

City owned parcels subject to this Plan are proposed to be protected by execution of a restrictive covenant that prohibits future development and outlines consistent and allowable uses, as well as restricted and inconsistent uses. The location and limitations associated with the critical areas shall be included in the site protection instrument that is to be recorded with the Snohomish County Auditor's Office.

Existing Conditions and Baseline Information

For the purpose of wetland mitigation credit generation, the baseline condition is the condition of the advance mitigation site after the Corps Section 544 QER Project is completed. After Section 544 QER Project completion the site will be a tidally influenced area that will be in transition from the existing freshwater wetland dominated by reed canary grass (*Phalaris arundinacea*) to tidal marsh. In order to be eligible to generate advance mitigation credit under this Plan, the activities the City is proposing must demonstrate a functional lift above and beyond those activities associated with the Corps Section 544 QER Project (baseline conditions).

For a thorough description of the existing conditions at the QER Project site, please refer to the Qwuloolt Ecosystem Restoration Project, Final Environmental Assessment, December 2010. The existing conditions section is included on pages 14 through 22 of that document.

The existing conditions on the City owned properties were documented based on the overall QER project assessment, the Wetland Assessment for Restoration at Qwuloolt Marsh by Cereghino (2006), the Wetland Mitigation Monitoring-Year 10 report by Jones and Stokes, and a qualitative site assessment done in September 2012. Photos of the existing conditions onsite are on page 30.

Vegetation

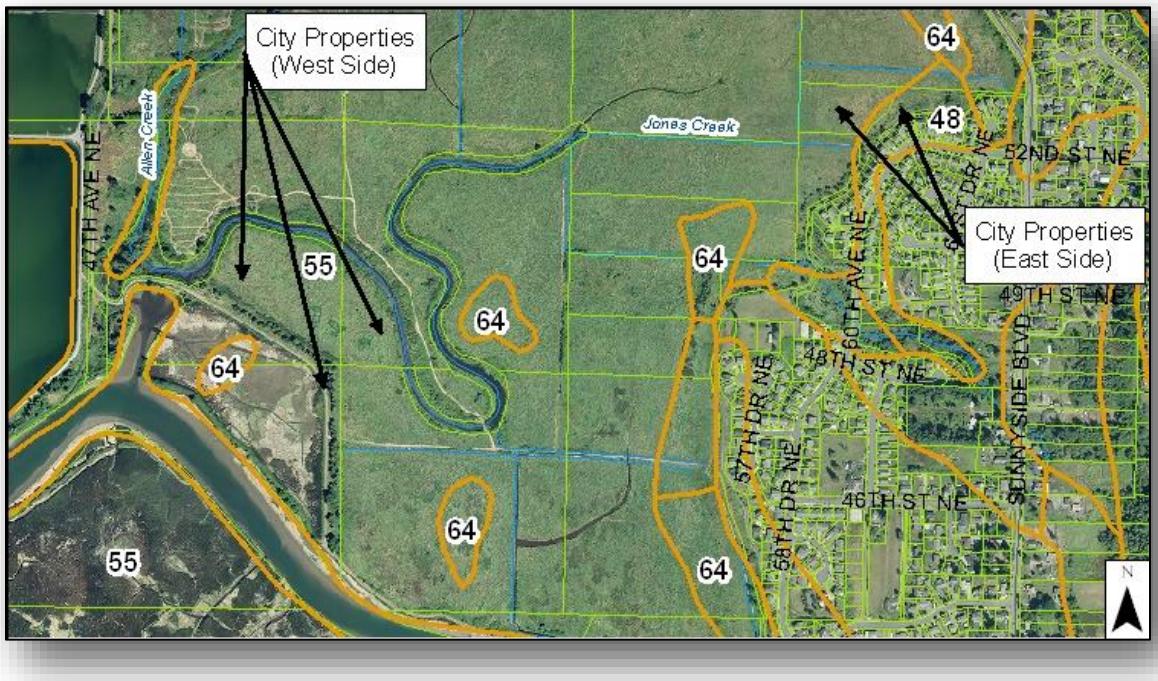
City properties are dominated by reed canary grass (*Phalaris arundinacea*). The western City properties are partially bordered and/or transected by the Marysville Mitigation Project constructed in 1993. The east and north sides of the existing planted dike are contiguous with the western edge of West 3 Parcel and the southern edge of West 1 Parcel of the Plan, respectively. As part of the 1993 mitigation project, a dike was built along the edge of the mitigation area. The dike was planted with native species to provide a buffer for the mitigation area. Species noted as established in the 10 year monitoring report, completed in 2003, include Nootka rose (*Rosa nutkana*), hooker willow (*Salix hookeriana*), Sitka spruce (*Thuja plicata*), red osier dogwood (*Cornus stolonifera*) and volunteer species such as red alder (*Alnus rubra*). A site visit conducted in September 2012 confirmed that the plants have continued to thrive along the dike since the last monitoring period. See photos of the existing conditions onsite on page 30.

Soils

The City parcels are located within the Eastern Puget Riverine Lowland, a physiographic province characterized by unconsolidated deposits described as quaternary sediments,

dominantly glacial drift, including alluvium. The Natural Resources Conservation Service (NRCS) Web Soil Survey classifies the City parcels as Pastik silt loam (48), Puget silty clay loam (55) and Snohomish silt loam (64). Figure 3 below shows where City properties are located in relation to the different soil types described by NRCS. These soils are in hydrologic soil Group C and D. Soil Group C has a slow infiltration rate when thoroughly wet, and consists chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. Soils in Group D also have a very slow infiltration rate when thoroughly wet. These soils consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

Figure 3: City properties and easement area soil map (from NRCS soil data)



Wildlife

The Snohomish Estuary is a staging area and stop over area for bird migration along the West Coast Flyway. Monitoring at the existing Marysville mitigation site showed continued use of wetland-associated wildlife, particularly birds. Observations included waterfowl, shorebirds, raptors and songbirds. Similar wildlife is expected to utilize the Advance Wetland Mitigation Project sites.

Determination of Credits

The City may receive advance wetland mitigation credit for actions taken on City owned property located within the footprint of the Section 544 QER Project (Figure 1). The City will only receive credit if an ecological lift above the baseline condition is achieved, as

documented by the successful completion of performance standards described herein. The total 17.54 acres, potentially generating credit within the project area, are as follows:

Table 2: City Properties and Easement Area

Parcel Label	Parcel #	* Acres	Ownership
West 1	30053300400200	11.50	City of Marysville
West 2	30053400300800	3.83	City of Marysville
West 3	30053300401000	2.21	City of Marysville
East 1	00918500098300	NA	Ross, David & Debra (City Easement)
East 2	00918500099000	0.82	City of Marysville
	Total	**17.54**	

* Acre totals represent the potential credit generating area of the parcels, not the total parcel area.

Availability of Credits

Credits are expected to be released based on the location of the City's Advance Mitigation properties within the Section 544 QER Project site. Credits for City owned properties on the west side (West 1, 2 and 3 Parcels) of the Section 544 QER Project are expected to be released within 10 years if all performance standards are met. If the West parcels reach the Year 7 required condition, of performance standards number 4, by Year 5 then monitoring for that standard can be discontinued and the credit release schedule will be accelerated for the West parcels.

Additional credits for projects where the Corps does not have jurisdiction will become available following the methods described in the Mitigation Agreement for Ecology Wetland Credit dated July 2013. The figures shown in the July 2013 agreement were updated by the As-built surveyed figures.

The first 30% of credit accrued for the west properties will become available when the As-built submittal is approved by the Corps and Ecology and the site protection mechanism has been recorded (2.57 credits). After all Year 3 performance standards, including performance standard 7, are met for the west side, 25% of credits are expected to be released (2.14 credits). After all Year 5 performance standards are met for the west side, 20% of credits are expected to be released (1.71 credits). After all Year 7 performance standards are met for the west side, 20% of credits are expected to be released (1.71 credits). After all Year 10 performance standards are met for the west side and a Long-Term Management and Maintenance Plan has been approved by the Corps and Ecology, the remaining 5% of credits are expected to be released (0.43 credits).

Credits are expected to be released only if monitoring shows that performance standards applicable to all three West parcels are being met. The western City owned properties have a high certainty of successfully returning to a tidally influenced wetland system once the QER Project levee breach is implemented. It is anticipated that transition from freshwater pasture wetland to tidal marsh will occur at an accelerated rate due to the City's activity of mowing and deep tilling the well-established reed canary grass community, as well as providing additional benefits from the other activities being performed by the City on the West parcels (blind channel construction, ditch filling and

fish and bird habitat enhancement). These properties are bisected by Allen Creek and are near the levee breach. Furthermore, the City installed (existing) mitigation site at the southern and western ends of parcels West 1 (30053300400200), and West 3 (30053300401000), respectively, was a successful restoration. The site met all performance standards for vegetation, wildlife, fish, water, and substrate elevation as required by the Section 404/401 permits issued for that project (Jones and Stokes, 2003). The site had a 10-year monitoring period but did not take a full 10 years for tidal wetland functions to develop. It should be noted the existing mitigation site included active control and maintenance of reed canary grass throughout the monitoring period, which contributed significantly to the fairly rapid conversion from palustrine and upland pasture to tidal marsh.

If performance standards are not met or are not met as rapidly as predicted, the expected number of credits released and/or the expected credit release schedule may be adjusted to an appropriate schedule.

Table 3: Expected Mitigation Credit Accrual for Western Properties

	Expected Credit Release					
Associated Performance Standard (PS)	**AS-built Submittal, and Site Protection Recording**	**YEAR 3 (2018) ***	**YEAR 5 (2020)**	**YEAR 7 (2022) ****	**YEAR 10 (2025) *****	**Total**
PS 4A, 4B: Control Invasive Species	2.57	1.19	1.71	1.71	0.43	7.62
PS 5A: Estuarine habitats		0.03				0.03
PS 5B: Fish stranding		0.47				0.47
PS6: Habitat Complexity		0.45				0.45
Total Released	2.57	2.14	1.71	1.71	0.43	8.57
Percent Released	30%	25%	20%	20%	5%	100%

*Credit release also contingent on PS 7: Tidal influence.
**If Year 7 standards are met by Year 5, credit release will be adjusted accordingly and monitoring for PS 4 may end.
*** Year 10 credits will not be released until PS are met and a detailed Long-Term Management Plan is approved by the Corps and Ecology.

The credits for the City owned parcel on the east side (East 2) of the Section 544 QER Project will be released separately. This area is expected to be subject to the ebb and flow of the tide, but inundation levels are uncertain. Therefore, the type of wetland that will develop on this property is less certain. The first 33% of credit accrued for this property is expected to become available when the As-built submittal is approved by the Corps

and Ecology and the site protection mechanism has been recorded (0.14 credits). After Year 3 performance standards, including performance standard 7, are met 22% of credits are expected to be released (0.09 credits). After all Year 5 performance standards are met 20% of credits are expected to be released (0.08 credits). After Year 7 performance standards are met 20% of the credits are expected to be released (0.08 credits). After all Year 10 performance standards are met and a Long-Term Management and Maintenance Plan has been approved by the Corps and Ecology, the remaining 5% of credits are expected to be released (0.02 credits). Credits are expected to be released only if monitoring shows that performance standards are being met. The expected release schedule and/or the expected number of credits available for City use may be adjusted based on the conditions that develop.

Table 4: Expected Mitigation Credit Accrual for Eastern Properties

	Expected Credit Release					
Associated Performance Standard	**AS-built Submittal, and Site Protection Recording**	**YEAR 3 (2018)***	**YEAR 5 (2020)**	**YEAR 7 (2022)**	**YEAR 10 (2025) ****	**Total**
PS 2: Control invasive species, Reed canary grass	0.14	0.09	0.08	0.08	0.02	1.57
Total Released	0.14	0.09	0.08	0.08	0.02	2.35
Percent Released	33%	22%	20%	20%	5%	100%

*Credit release also contingent on PS 7: Tidal influence

** Year 10 credits will not be released until PS are met and a detailed Long-Term Management Plan is approved by the Corps and Ecology.

Wetland Mitigation Ratios for Credit Use

The table below depicts the number of advance mitigation credits required for most projects to compensate for each unit of permanent loss of wetland, based on category of the impacted wetland. In specific cases, such as when the functions of the impacted wetlands are rare or difficult to replace, the ratios may be raised by Ecology and the Corps in consultation with the City. Conversely, the ratios may be lowered in instances where functions of the impacted wetlands have previously been severely degraded or when project impacts are indirect and cause only partial loss of functions to a wetland. Again, the ratios within the table are intended to be broadly applied for typical project impacts.

Table 5: Credit Release Ratio based on Ecology Wetland Category

Category of Impacted	Credit Required per Impact
I and II	case-by-case basis
III	1
IV	0.8

For example, if a proposed project would impact three acres of Category III wetland, three credits would be withdrawn from the advance mitigation site ledger to compensate for that impact. If a proposed project would impact three acres of Category IV, 2.4 credits would be withdrawn.

Credit Contingency Details

Expected credit ratios may be adjusted as needed based on site development. In order to receive mitigation credit all parcels must have daily tidal inundation, where inundation is defined as the presence of surface water. The expected performance standards for City properties that must be met in order for credit accrual and release begin on page 20.

Prior to any utilization of credits, if the City finds, during routine maintenance and monitoring that site conditions do not warrant credit accrual the City may relinquish claims for credit prior to any utilization of mitigation credits. In such a circumstance, the City will reduce or eliminate the maintenance and monitoring for areas that are not eligible for credit accrual. The City also has the option, prior to any utilization of credits, to develop a contingency plan if site conditions warrant a modification to the performance standards contained herein.

Following first utilization of any credits reflecting accomplishment of any performance standards on any portion of the advance mitigation site, the City may submit a request to discontinue accomplishment of subsequent performance standards, and to forgo generation of the corresponding compensatory mitigation credits. Such a request will be considered a request for amendment of this Plan and the Agreement, which may be accomplished only with the express written approval of the Corps and Ecology. The Corps and Ecology will act in good faith in reviewing any request for contingency amendment to this Plan following first utilization of credits generated under the Agreement, and approval thereof shall not be unreasonably denied. Alteration to maintenance and monitoring described in this Plan must similarly be submitted to the Corps and Ecology through a requested amendment to the Plan, and must be approved by the Corps and Ecology prior to implementation.

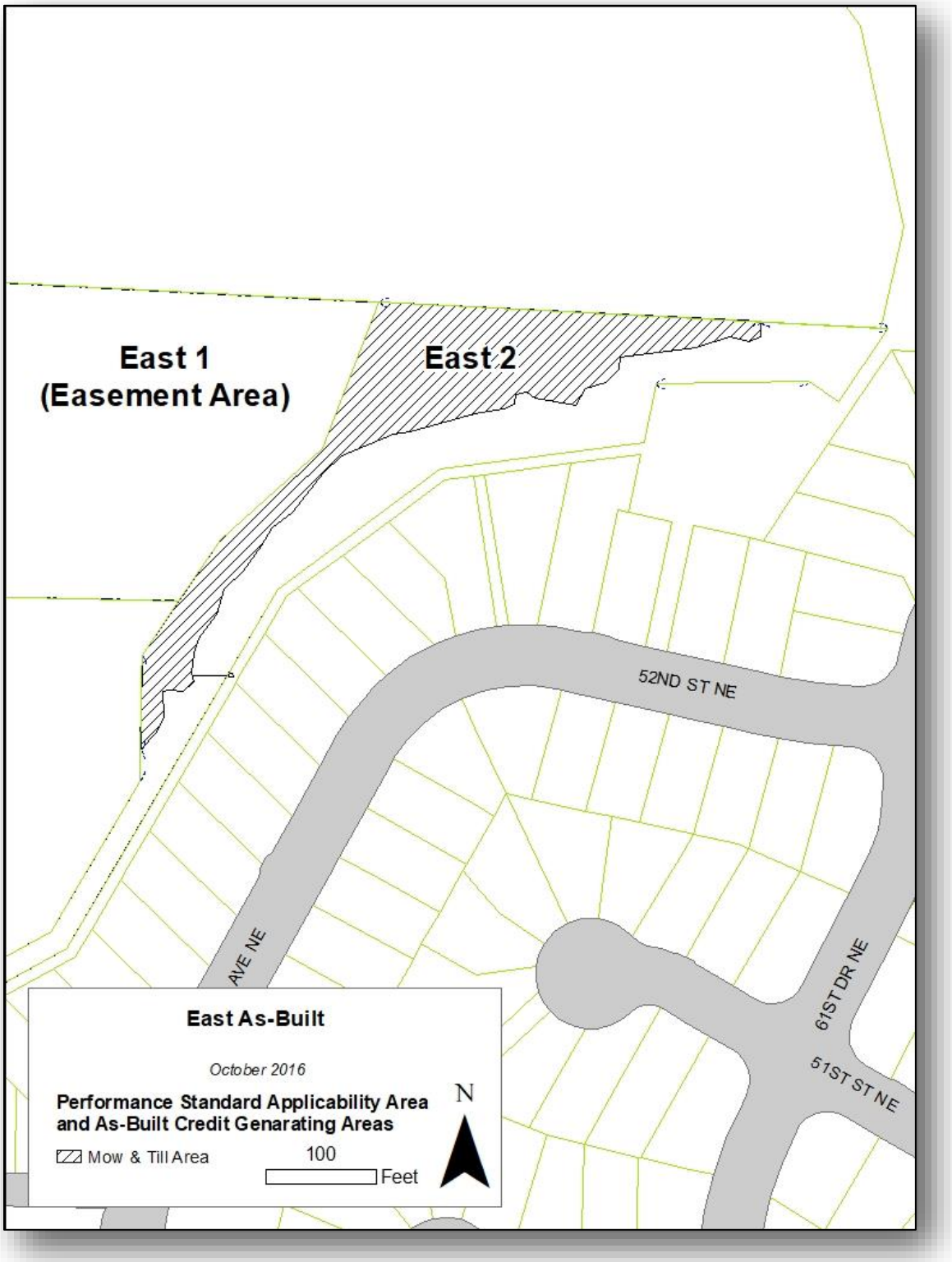
Requests may also be made to modify this Plan if favorable site conditions are developing faster than anticipated and the expected credit release schedule may be modified accordingly.

Mitigation Work Plan

Specific actions to be taken on the City's properties and easement area include:

1. The City will mow reed canary grass (*Phalaris arundinacea*) on all City properties and easement area. After mowing, the area will be tilled a minimum of 12 inches in depth. On East 2 parcel, the credit generating area within Tract 994 (see Figure 4) that has not already been planted by the Tulalip Tribe will be subject to mowing and tilling. Mowing and tilling will break up the rhizomatic mass of the grass, increase its rate of breakdown, and encourage its export from the site during tidal exchange. This will also create microtopography within the parcels and increase raptor predation on small mammals, which will minimize the exodus of mice and voles to the uplands upon tidal breaching. Exporting the reed canary grass biomass to Ebey Slough will likely transport to the starved downstream estuarine delta in Puget Sound, benefiting fish and other marine organisms by providing a lift in food chain support functions. In addition, mowing and tilling will help facilitate more rapid development of tidal channels, as well as mudflat and/or appropriate substrate for recruitment and colonization of native marsh vegetation. Mowing and tilling will occur late in the summer preceding the dike breach. The schedule may be adjusted as needed to ensure that mowing and tilling precede the breach as close in time as possible.

Figure 4: Mowing and Tilling Area on Parcel East 2



2. The City will remove existing stocks, and implement ongoing control methods for Himalayan Blackberry (*Rubus armeniacus*) both before and after tidal breaching on parcel East 2 (Tract 994 of 00918500099000). There is an existing trail on this property, which runs along the Harborview Village development, located uphill from the expected tidal inundation elevation. The down slope edge of the trail is bordered by a hedgerow of Himalayan Blackberry (*Rubus armeniacus*) which extends down toward the expected tidal inundation elevation. If invasive knotweed (e.g., Bohemian, giant, Himalayan and Japanese) species and hybrids (*Polygonum bohemicum, P. sachalinense, P. polystachyum*, and *P. cuspidatum*), purple loosestrife (*Lythrum salicaria*), or common reed (*Phragmites australis*) are encountered, control measures will also be implemented. See the maintenance plan below for an anticipated schedule of activities.

3. On the East 2 parcel, wetland signs will be installed every 100 feet along the Harborview trail. If the posted signs are not sufficient to deter encroachment onto the Advance Mitigation Project Site and adverse impacts to the site are occurring, it may be necessary for the City to install a fence to protect the Advance Wetland Mitigation Project.

4. On parcel West 1 (30053300400200) there is a 925 lineal foot ditch running from the northeast to the southeast, roughly parallel to the Marysville mitigation area dike. This ditch will be filled by the method shown in Figure 5. This activity will substantively reduce potential fish stranding on the parcel as well as facilitate creation of microtopography and sediment accumulation. The accumulation of fine sediments is anticipated to enhance the biological productivity of the area by creating substrate for native vegetation to recruit and colonize. Construction activities will be conducted by the City of Marysville and are expected to occur in the late summer of 2013, prior to the final breach. Approximately 700 CY of material excavated from the breach location will be used as fill. See Figure 6.

Figure 5: Ditch Fill Detail

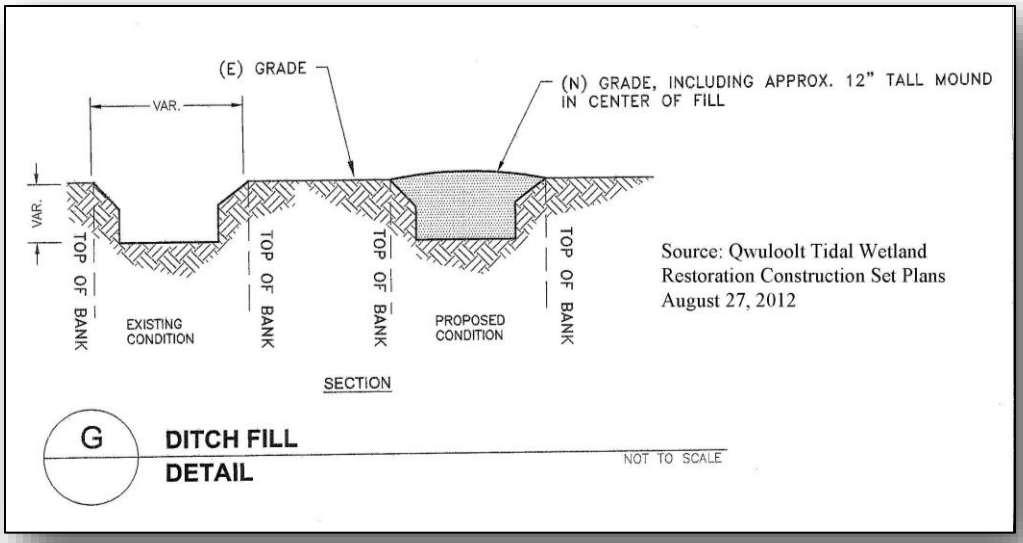
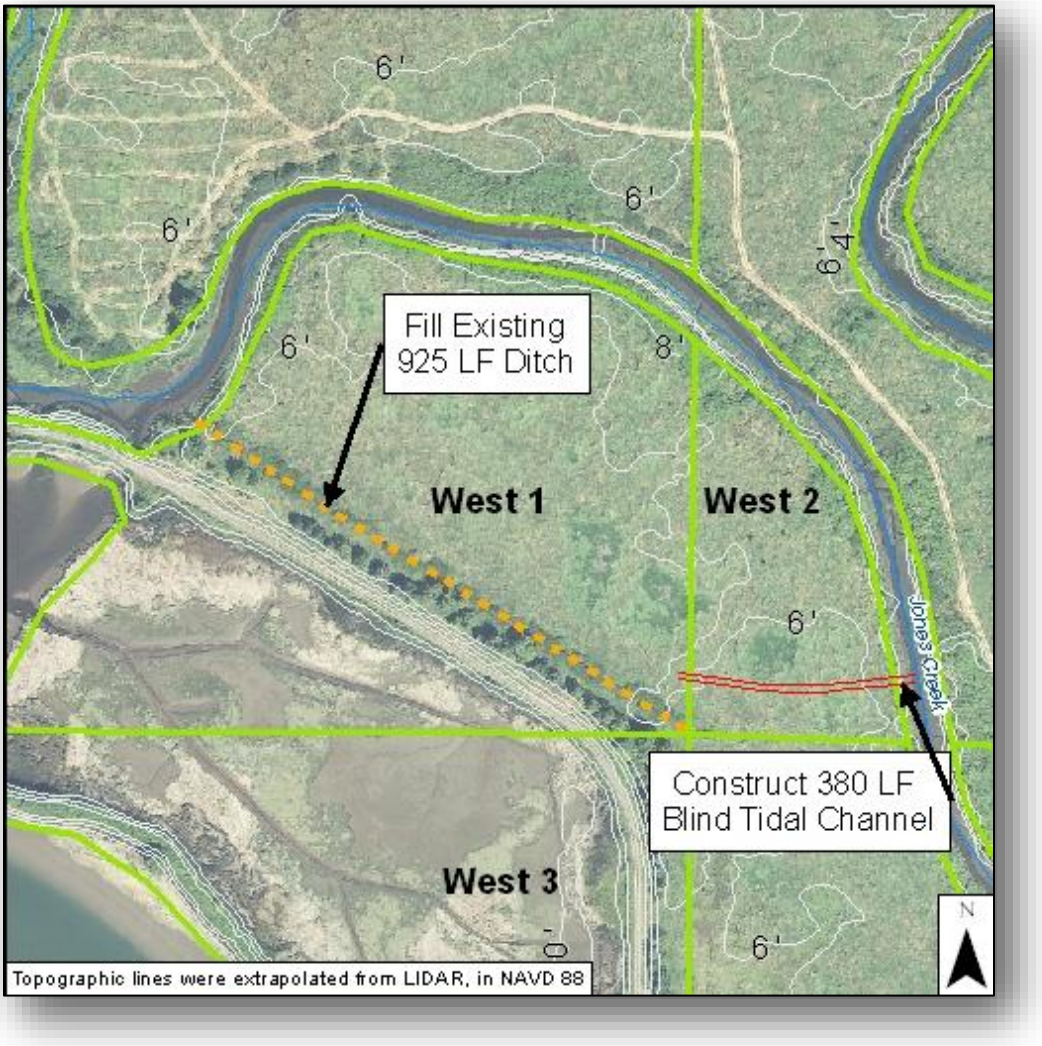


Figure 6: Ditch Fill, and New Tidal Channel Construction



5. Based on City of Marysville GIS topographic lines and spot elevations (which are extrapolated from LIDAR) there is a topographic depression adjacent to the ditch referenced in Figure 6 above. The lowest spot of the depression is approximately 3.8 feet in elevation (NAVD 88). The City will excavate a new blind tidal channel connecting the primary stream channel to the depression. The new starter channel will be excavated to approximately three feet in elevation (NAVD 88) in order to mimic natural dendritic channel formation. This will create fish rearing and refugia habitat, as well as provide habitat complexity on the West 2 Parcel. The final length and depth of the channel is subject to change based on actual site conditions. Construction activities are expected to occur in the late summer of 2013, prior to the final breach. See Figure 6.

6. The City will develop and submit to the Corps and Ecology an "As-built plan" for City properties based on a survey of the Advance Wetland Mitigation Parcels. General site topographic information, hydrologic monitoring stations and photo

points will be documented for all City properties. Photo-documentation will include views of all City properties immediately after mowing has occurred, and a second time after these areas have been deep tilled. Photos will be taken from several locations and labeled with photo point number and compass direction of view. Each photo point location will be shown on the as-built map.

On the West Parcels, the As-built will show the location of the ditch that was filled, the new blind channel, and document the area of large woody debris accumulation and snag formation. The as-built will include cross-section drawings documenting the elevation across the filled ditch on West 1. Cross-sections will show micro topographical variances, but no depressions that could trap fish after the ditch is filled will remain. The As-built will also document the cross-sectional dimensions of the blind channel on West 2, including the connection to Jones Creek. The As-built will include photo-documentation of West 3 Parcel before levee breach and lowering from several locations. Photos will be labeled with photo point number and compass direction of view. The photo point locations will be included on the map.

The As-built requirement, monitoring requirements and performance standards related to activities on the West Parcels are applicable to the credit generating portions of the parcels (see Figure 7 below).

On the East 2 Parcel the As-built submittal will show the location the areas that have been mowed and deep tilled.. The As-built will be based on a survey and show the corners and boundary lines for Tract 994 of the Harbor View Village Plat (Snohomish County AFN 200102065008). Acreages will be adjusted if necessary. The As-built requirement, monitoring requirements and performance standards related to activities on East 2 are applicable to the credit generating portion of the parcel (see Figure 8 below).

The As-built plan will be prepared within sixty days of completion of all City proposed actions.

Figure 7: Performance Standard Applicability and As-built Area West

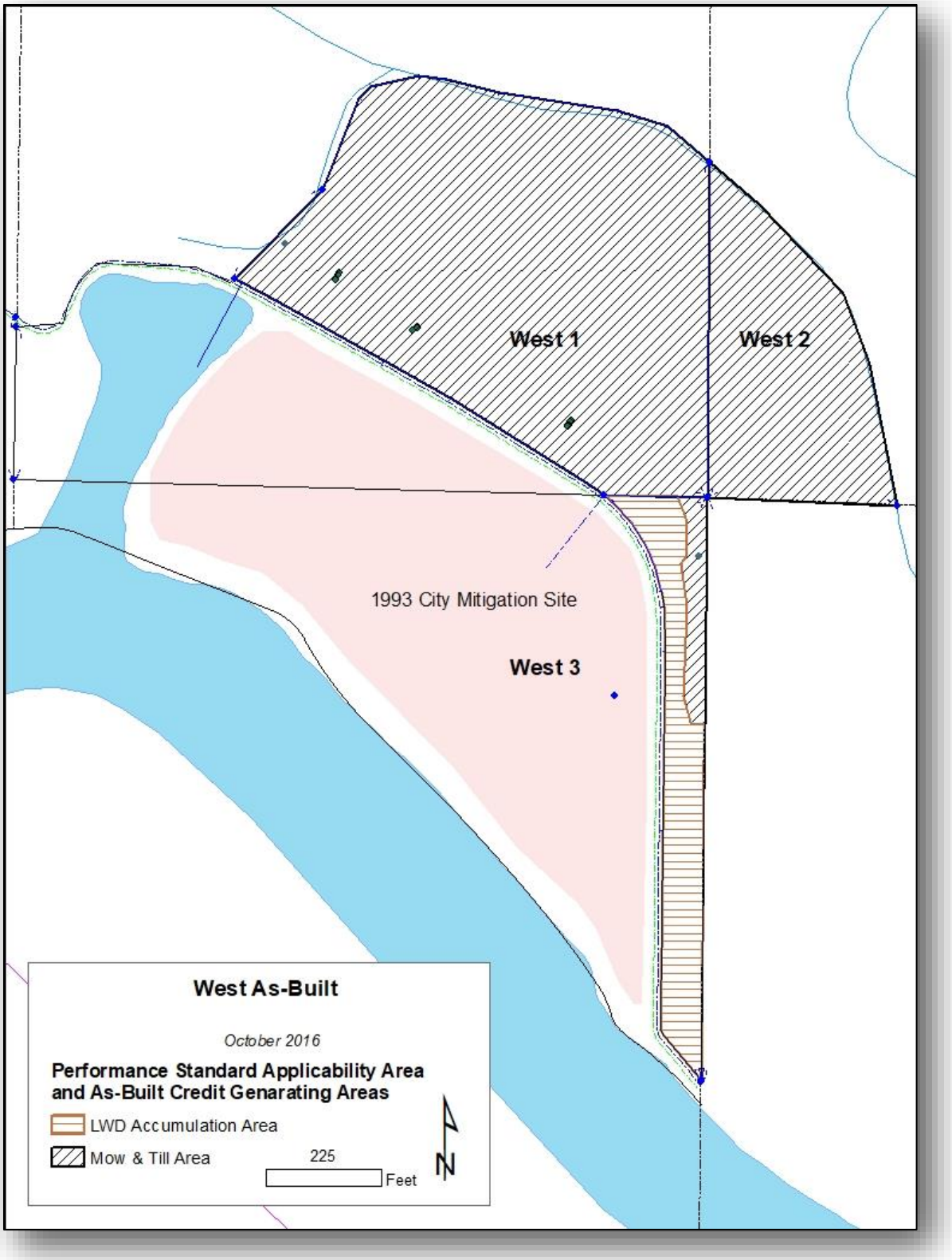
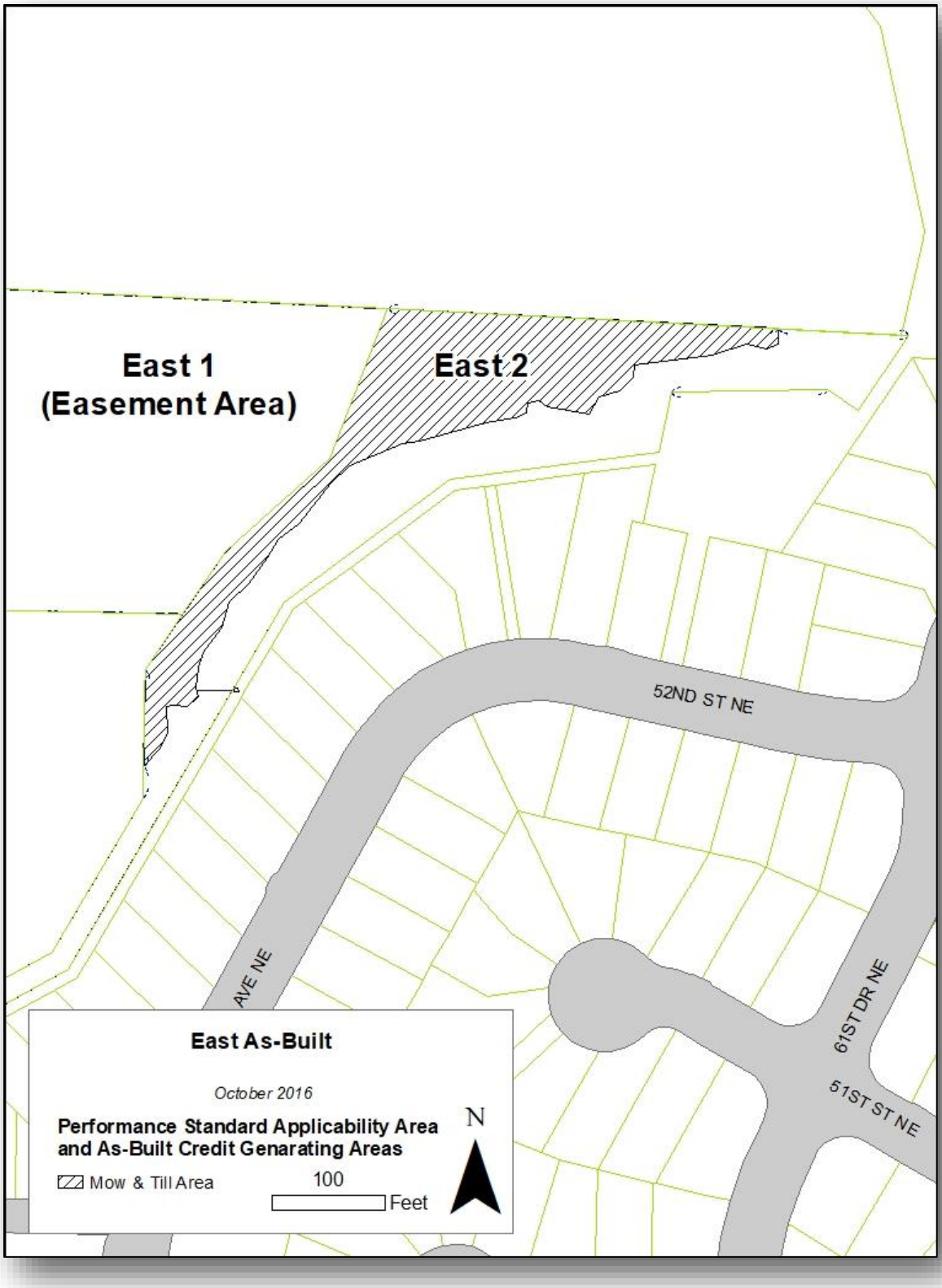


Figure 8: Performance Standard Applicability and As-built Area East



Goals, Objectives and Performance Standards for City Properties

The following goals, objectives and performance standards are specific to the City properties. The performance standards are expected to be used to assess the success of the activities conducted on City properties. These standards are also expected to be used to determine the release of mitigation credit generated per the Agreement signed by the City, Corps and Ecology. The performance standards have been updated to reflect the As-built site conditions. For ease of consistency between documents the numbering has remained the same.

East Side

Goal 2: Control Invasive Species on East 2 Parcel.

Objectives:

2: Control invasive species: Reed canary grass (*Phalaris arundinacea*) on East 2 will be mowed and deep tilled to facilitate the breakup of the standing stock and rhizomatic mass of grass and encourage its export from the site during tidal exchange.

Performance Standards:

2A: Control invasive species: On East 2 Parcel;

- Year 1 – Monitoring must demonstrate a reduction in reed canary grass over initial conditions
- Year 3 – Maximum aerial cover of reed canary grass cannot exceed 50%
- Year 5 – Maximum aerial cover of reed canary grass cannot exceed 20%
- Year 7 – Maximum aerial cover of reed canary grass must be below 10%. Submit a qualitative survey documenting mudflat development and/or native vegetation communities.
- Year 10 – Submit a qualitative survey documenting mudflat development and/or native vegetation communities.

2B: Control difficult invasive species: On East 2 Parcel, there will be 0% cover (no presence) by invasive knotweed (e.g., Bohemian, giant, Himalayan and Japanese) species and hybrids (*Polygonum bohemicum, P. sachalinense, P. polystachyum, and P. cuspidatum*), purple loosestrife (*Lythrum salicaria*), and common reed (*Phragmites australis*).

West Side

Goal 4: Control Invasive Species on West 1, 2 and 3 Parcels.

Objectives:

4: Control invasive species: Reed canary grass (*Phalaris arundinacea*) on West 1, 2 and 3 Parcels will be mowed and deep tilled to facilitate the

breakup of the standing stock and rhizomatic mass of grass and encourage its export from the site during tidal exchange.

Performance Standards:

4A: Control invasive species: On West 1, 2 and 3 Parcels, reed canarygrass (*Phalaris arundinacea*)

- Year 1 – Monitoring must demonstrate a reduction in reed canary grass over initial conditions
- Year 3 – Maximum aerial cover of reed canary grass cannot exceed 50%
- Year 5 – Maximum aerial cover of reed canary grass cannot exceed 20%
- Year 7 – Maximum aerial cover of reed canary grass must be below 5%. Submit a qualitative survey documenting mudflat development and/or native vegetation communities.
- Year 10 – Submit a qualitative survey documenting mudflat development and/or native vegetation communities.

4B: Control difficult invasive species: On West 1, 2 and 3 Parcels, there will be 0% cover (no presence) by invasive knotweed (e.g., Bohemian, giant, Himalayan and Japanese) species and hybrids (*Polygonum bohemicum, P. sachalinense, P. polystachyum, and P. cuspidatum*), purple loosestrife (*Lythrum salicaria*), and common reed (*Phragmites australis*).

Goal 5: Allow estuarine habitats such as mudflats, salt-tolerant vegetation communities, or channels to become established and prevent fish stranding.

Objectives:

5A: Estuarine habitats: Excavate a new blind tidal channel connecting the primary stream channel to a depression on West 2 Parcel.

5B: Fish Stranding: A ditch on West 1 Parcel will be filled to prevent fish stranding and create microtopography.

Performance Standard:

5A: Estuarine habitats: Document that the blind channel on West 2 Parcel continues to be connected to Jones Creek for the duration of the monitoring period.

5B: Document that the filled ditch area on West 1 Parcel does not contain depressions deep enough to cause potential fish stranding.

Goal 6: Increase fish habitat complexity on West 3 Parcel.

Objectives:

6: Habitat Complexity: The trees on Parcel West 3 will remain in order to recruit and increase large woody debris (LWD) accumulation on West 3 Parcel.

Performance Standard:

6: Habitat Complexity: LWD must begin to accumulate during the monitoring period, as document by photos of West 3 Parcel before and after levee breach.

All Properties

Goal 7: Restore a tidally influenced hydrologic regime to City properties.

Objectives:

7: Tidal influence: The Section 544 QER Project will breach the dike in the fall of 2013 in order to restore tidal influence to City properties. After the breach, automated water level loggers will be installed to monitor water levels.

Performance Standards:

7: Tidal influence: Surface water will be present at least daily on the City properties as documented for years 1-3.

Monitoring Requirements

The City properties are a small component of the much larger QER Project, so the City will pursue joint monitoring efforts wherever possible to provide a science-based evaluation of the restoration project and provide public information on restoration activities.

Onsite monitoring activities will include collecting qualitative photographic site documentation, vegetation information, invasive species control, and surface water depth data. Monitoring of City properties will be undertaken for up to ten years. The western City properties are not going to be planted by the City and are close to the breach location, so monitoring for performance standards 5, 6 and 7 will only continue until year 5. Monitoring for Reed canarygrass (*Phalaris arundinacea*), performance standard 2 and 4, is expected for 10 years but may reach year 7 standards by year 5. If site conditions reach year 7 standards early, then monitoring will be discontinued for that performance standard. Year 1 monitoring will begin the first growing season, one calendar year after breach. Monitoring will be conducted in years 1, 2, 3, 5, 7 and 10. Monitoring will occur late summer/early fall (before leaf drop) in each monitoring year.

Mitigation monitoring reports will be submitted to the Corps and Ecology by January 31st describing monitoring and maintenance actions for the previous year. The mitigation monitoring report will include the following components:

- An introduction, including a description of the site and the monitoring schedule;

- A discussion of the restoration goals, objectives and performance standards;
- A discussion of the monitoring methods used;
- A results section with an evaluation of the site with regard to the performance standards;
- Conclusion, including management recommendations and maintenance and contingency measures, if necessary;
- Site photographs;
- A map of photo sites and monitoring locations and
- Monitoring data sheets.

Monitoring Methods

Overview photos will be taken from the same vantage points each monitoring year to document overall appearance of the mitigation area before, during, and after construction. Site photos will be used to document the success or failure of performance standard numbers 5 and 6. In Years 1, 3, and 5, photos will be taken during low tide to document the filled ditch area on West 1 and the blind channel on West 2. In Years 1, 3, and 5 photos will also be taken of West 3 to document presence and increase in large woody debris and snag development. Photos will be taken from several locations. Each photo will be labeled with photo point number and compass direction of view. A minimum of 2 permanent photo point locations will be established on the West and East (4 total) advance mitigation parcels and permanently marked. Photos from these stations will be taken for all monitoring years. Photo point locations will be shown on the As-built drawings and included in the monitoring reports.

To address performance standards 2 and 4, related to control of invasive species, monitoring plots will be established on City properties. Monitoring of City properties will be done in conjunction with monitoring for the entire QER site. Monitoring will utilize a mixed sampling design that combines rapid, systematic sampling over the entire study area (extensive sampling) with stratified random, intensive sampling within dominant plant assemblages and across elevation gradients (levee slopes and channel banks) (Rice et al. 2011). Aerial imagery will also be used to detect dominant plant assemblages.

To avoid practical problems involved with installing permanent physical transect markers onsite, survey grade GPS (real time kinematic (RTK)) will be used to navigate along permanent transects across the entire QER site to mark changes in dominant vegetation, channel edges, large wood, presence of invasive species, elevation, and other significant biological or physical features (Rice et al. 2011). Sample plots are 1 m^2 at 25 m intervals. There will be 48 rapid assessment extensive plots on the West side parcels and 9 plots on East 2 (Figures 9 & 10).

Extensive sampling involves a rapid field survey that records:

1. Elevation (using RTK-GPS measurements);
2. The dominant vascular plant species and subdominants present (up to 5 spp.) with relative abundance of the dominant and first 2 subdominant species (dense, >90% cover; medium, >40-90%; low 10-40%; and rare <10%);

3. Height and qualitative condition (robust, medium, stressed, senescing, dead) of the dominant plant species;
4. Cover of bare earth;
5. Presence of large woody debris; and
6. Presence of an entrained canopy within the $1m^2$ quadrats.

The intensive sampling within dominant plant assemblages and across elevation gradients (down levees and channel banks) will also be completed on the West and East 2 parcels. Three 25 m^2 randomly located nested frequency plots will be sampled in the West parcels and one in East 2 (Figures 9 & 10). At each sampling plot, vegetation in each 1 m^2 cell of a 5-by-5 m grid will be recorded by noting presence of all species (the 25 cells in aggregate provide a measure of relative abundance of all species), which species have ≤ 5% canopy cover, the categorical condition of each species (robust, medium, stressed, senescing, dead), and whether the species is growing on woody debris.

Additionally, six 1 m wide belt transects are to be established in the West parcels to capture elevation gradients along channel edges and levee slopes (Figure 9). Within each belt transect, $1m^2$ quadrats should be sampled from the toe of the channel or levee, up the channel bank or levee slope, to 5 m landward from the channel bank or to the edge of the levee pavement.

Approximately 144, 1 m^2 intensive quadrats will be sampled in the West parcels, and 25 in East 2.

Intensive sampling plots record:
1. Frequency for all vascular plants;
2. qualitative condition (robust, medium, stressed, senescing, dead) of all plant species; and
3. presence of large woody debris.

Figure 9: West Monitoring Plots

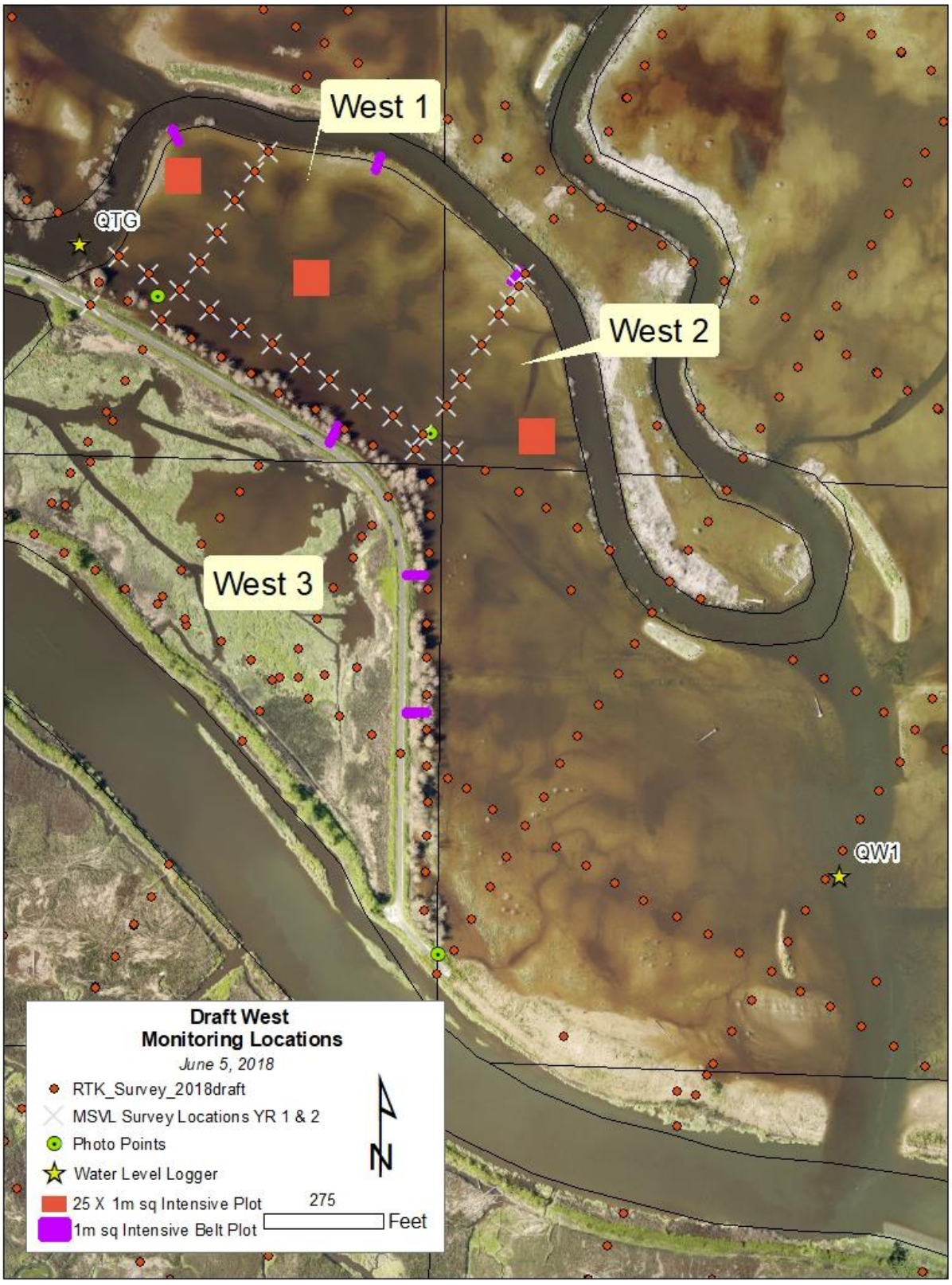
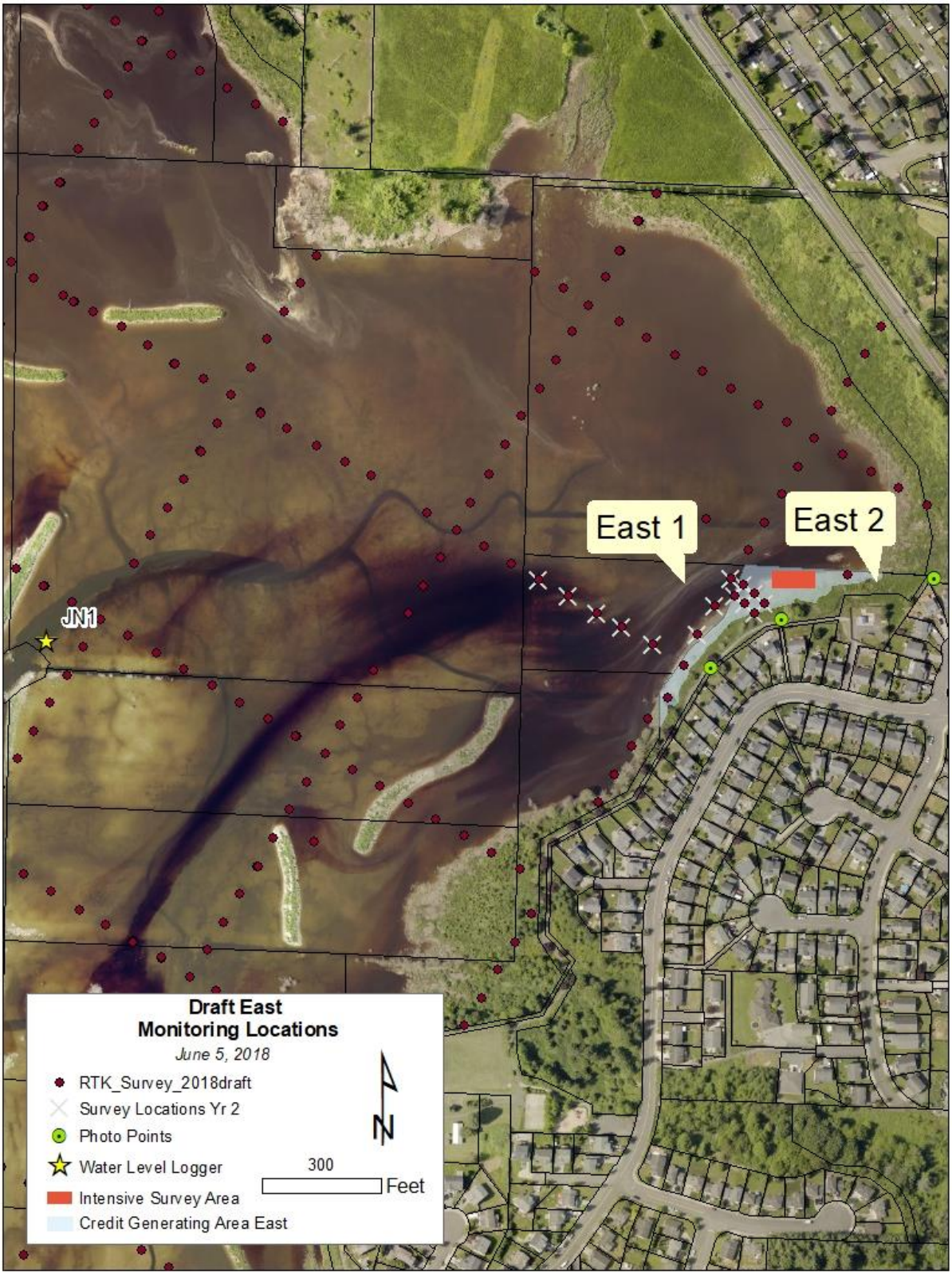


Figure 10: East Monitoring Plots



Monitoring hydrologic attributes of surface water depth will be conducted using electronic data loggers to demonstrate compliance with performance standard 7. Data logger installation and operation will generally follow guidelines developed by the Coastwide Reference Monitoring System (CRMS, Folse and West 2004). Hydrologic monitoring stations will be established at various points across the site in sufficient numbers to cover the QER and reference sites and provide redundancy in case of equipment loss or damage. Two monitoring stations, located in upper Allen Creek (AN1) and in the upper reaches of Jones Creek (JN1) will represent the gradient of tidal inundation across the East parcel and a station located in the main channel inside the Qwuloolt restoration project site (QW1) to represent the West parcels. Station locations will be georeferenced with established local vertical datum.

Table 6: Summary of Monitoring Actions

Performance Standard	Action	When
2A	Control invasive species: Reed canary grass	Years 1, 3, 5, 7 and 10
2B	Control difficult invasive species	Years 1, 2, 3, 5, 7 and 10
4A	Control invasive species: Reed canary grass	Years 1, 3, 5, 7 and 10
4B	Control difficult invasive species	Years 1, 2, 3, 5, 7 and 10
5A	Estuarine habitats	Years 1, 3, and 5
5B	Fish stranding	Years 1, 3, and 5
6	Habitat complexity: LWD	Years 1, 3, and 5
7	Tidal influence: Use electronic loggers to monitor water level	Continuously Year 1, 2 and 3

Maintenance Plan

Existing stands of Himalayan Blackberry (*Rubus armeniacus*) will be maintained early in the summer by cutting the new growth back to the ground. Early fall 2013, the blackberries will be sprayed with herbicides. Fall is the best time to use herbicides because the plants are pulling nutrients into the root systems and the chemicals are transported from the leaves to the roots. By cutting the stocks down to size in spring/summer 2013, the quantity of herbicide required to cover the plants will be minimized. This procedure will be repeated as needed to control re-growth.

Ongoing maintenance needs will be assessed based on the information gathered during monitoring efforts. The information will be used to identify the need for maintenance or corrective action. If problems are encountered during monitoring, the first step will be to identify the reason for the problem, then to implement an appropriate corrective or maintenance action.

Adaptive Management Plan

Unforeseen conditions may result from a project of this magnitude.

If trespass and encroachment from the adjacent development becomes an issue on the advance mitigation parcels, the City will evaluate what measures can be taken to address the issue. Contingency measures may include the installation of fencing between the pedestrian trail and East Parcel 2.

Long-term Management and Maintenance Plan

The City is responsible for ensuring that a Long-term Management and Maintenance Plan (LTMM) is developed and implemented to protect and maintain in perpetuity the aquatic functions and values of the advance mitigation sites. This plan must be approved by the Corps and Ecology prior to the termination of the monitoring period of the advance mitigation project and before the Year 10 credits are released. The LTMM Plan will consist of enumerated objectives. The City will document that it is achieving each objective by submitting status reports to the Corps and Ecology on an approved schedule.

The LTMM Plan will include those elements necessary to provide long-term protection for the aquatic ecosystem and habitat resources of the advance mitigation site. The specific elements of the LTMM Plan must be tailored to meet the specific protection needs of the advance mitigation site. At a minimum the following core elements will be included in the LTMM Plan:

(1) Periodically patrol the advance mitigation site for signs of trespass and vandalism. Maintenance will include reasonable actions to deter trespass and repair vandalism.
(2) Monitor the condition of structural elements to the advance mitigation site, such as signage, the LTMM Plan will include provisions to maintain and repair signage as necessary.
(3) Inspect the advance mitigation site annually to locate and control invasive species and noxious weeds. Control measures may include mechanical vegetation control and herbicide treatments.
(4) Remove trash and litter from the site as necessary.
(5) Monitor tidal channel and ensure connection is intact to Jones Creek.

Photos

View of the western property edge, from the north end of the dike surrounding the Marysville Mitigation area, looking southeast. The trees that were planted as part of the mitigation are quite large now.

View from the western property, looking north. The vegetation is dominated by reed canary grass (*Phalaris arundinacea*). The patch of Spiraea (*Spiraea douglasii*) marks the edge of a ditch the City is proposing to fill (see #6 in the Mitigation Work Plan section).

From the Harborview trail, this is a view of the East property, looking northeast. Most of the property is dominated by reed canary grass (*Phalaris arundinacea*)

From the Harborview trail, this is a view of the East property looking at one of the large stands of black berry (*Rubus armeniacus*) adjacent to the trail.

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Exhibit B
Potential Debit Project Descriptions

SR 92 BREAK IN ACCESS
Construct provisions for a future fourth leg to the intersection at SR 9 & SR 92, which include widening improvements along SR 92, portions of SR 9 and signal modification.

40TH ST. EXTENSION
Construct a new arterial roadway between SR 9 and Sunnyside Boulevard. Portions of this alignment will require new construction; other portions will entail upgrading existing roads. This new connection will tie into the SR 92 Break in Access and become the fourth leg of the intersection.

SUNNYSIDE BOULEVARD EXPANSION
Expansion of the existing two-lane roadway to a five-lane roadway between 47th Ave. NE to 52nd St. NE and a three-lane section south to Soper Hill Road. New traffic signals at 53rd Ave NE and 52nd St NE will be incorporated as well as curb/gutter, sidewalk and bike lanes.

SOPER HILL ROAD EXPANSION
Expansion of the existing two-lane roadway to a three-lane roadway tying into the Sunnyside Boulevard Expansion. Signalization or roundabout at Soper Hill Road and 71st St. NE

1ST ST. BYPASS
Construct a new bypass connection between 1st St. NE and 61st Street NE/Sunnyside Boulevard. This connection would provide a more direct connection to SR 529 while helping route heavy morning and evening commutes around the downtown area.

83RD AVE NE EXPANSION
Expansion of the existing two-lane roadway to sections of three and five lanes. Install improvements including curb/gutter and sidewalk.

DEERING PARK FRONTAGE
Improve the existing substandard two-lane roadway to City standards including pedestrian facilities.

BAYVIEW TRAIL CORRIDOR
Construct a multi-use asphalt trail along the Puget Sound Energy transmission line corridor.

HARBORVIEW TRAIL CORRIDOR
Construct a multi-use trail connecting existing trails in the Harborview development to an improved trail along the Ebey Slough Dike.

67TH AVE NE EXPANSION

Expansion and improvements to the existing three and two-lane roadway including curb/gutter sidewalk and bike lanes.

88TH ST. NE EXPANSION (ALLEN CREEK CROSSING)
Roadway stabilization and expansion including repairs to the existing wall and structure over Allen Creek.

STATE AVE EXPANSION (QUILCEDA CREEK CROSSING)
Replacement of the existing culvert along State Ave across Quilceda Creek with a bridge. Roadway expansion from a two-lane roadway to a five lane with curb/gutter and sidewalks.

51ST AVE NE EXPANSION
Expansion of the existing two-lane roadway to section of three lane and five lane roadways including curb/gutter and sidewalk.

67TH/108TH INTERSECTION IMPROVEMENTS
Installation of a new traffic signal and potential roadway expansion to provide for left turn pockets.

132ND ST NE RETAINING WALL REPAIRS
Repairs to the existing soldier pile wall over the culvert on 132nd St. crossing the Middle Fork of Quilceda Creek.

NEW SEWER ALIGNMENT (156TH ST. NE TO 172ND ST. NE)
Construction of a regional sewer alignment to serve the northwest part of Marysville in the Lakewood area. Alignment will follow along the east side of BNSF from 156th St. to 172nd St.

FRONTIER FIELDS WETLANDS
Potential new park facilities.

SMOKEY POINT MASTER PLAN AREA
Development of the Smokey Point Master Plan area (the largest developable industrial area between the Canadian border and Lacey, WA) including associated roadways. Development uses include industrial, manufacturing, assembly, fabrication, processing, bulk handling, warehousing, retail, personal services and office.

STRAWBERRY FIELDS
Park expansion and improvements to provide additional usable area.

156TH ST. NE (WEST OF SMOKEY POINT MASTER PLAN)
Construct a new three-lane roadway including planter strips, curb/gutter and sidewalk with the provision to be expanded to a five-lane roadway in the future.

GEDDES MARINA REDEVELOPMENT

Redevelopment/clean up of existing marina, the marina is a former man-made detention pond that was built in conjunction with a former mill site. In the 1960's the pond was connected to Ebey Slough and converted to a marina.

REGIONAL POND #2

Construct a future regional pond 2 to accommodate stormwater from future commercial/industrial development associated with properties located within north Marysville area. The proposed pond is generally located south of 152nd St NE and east of 40th.

JENNINGS PARK

Park expansion/improvements to create additional useable area.

27TH AVE. NE EXTENSION

Construct a new three lane roadway including planter strips, curb/gutter and sidewalk from the south end of the existing section of 27th Ave. NE, around the west side of Twin Lakes Park and connecting into 156th St. NE and the new 156th St. NE Overcrossing.