HABITAT TECHNOLOGIES

CONCEPTUAL STREAM CORRIDOR RESTORATION AND ENHNACEMENT PROGRAM

EAST TOWN CROSSING

CITY OF PUYALLUP #P-21-0034
2902 East Pioneer
City of Puyallup, Pierce County, Washington

prepared for

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INTRODUCTION

This document details the *CONCEPTUAL STREAM CORRIDOR RESTORATION AND ENHNACEMENT PROGRAM* to be implemented as a part of the overall development of the proposed **East Town Crossing Multi-Family Residential Community** (City of Puyallup #P-21-0034) located at the southeastern corner of the intersection of Pioneer Way East and Shaw Road East within the City of Puyallup, Pierce County, Washington (Figure 1). The goal of this program is to ensure that proposed land use actions do not result in a net loss of environmentally critical areas and associated floodplain issues while also restoring and enhancing the aquatic and riparian physical and biological functions associated with a City of Puyallup Type IV Stream located directly to the east of the project site and a City of Puyallup Type III Stream located within the Pioneer Way East right-of-way along the northern boundary of the project site.

PROJECT SITE DESCRIPTION

The project site was approximately 11-acres in size and irregular in shape. The project site had undergone prior permitted land use actions generally associated with future proposed site development actions. These prior permitted land use actions included the development of a stormwater detention pond, the removal of existing old homesites and outbuildings, clearing and grading, and the placement of imported fill materials to facilitate future proposed site development actions.

The project site was located within a quickly, more intensely developing area along the Shaw Road and Pioneer Way Corridors which is generally changing from prior single-family homesites on moderately sized parcels into commercial developments to meet the growing needs of the City of Puyallup and other local communities.

Directions to Project Site: From the City of Puyallup City Hall turn north onto 2nd Street SE and continue to East Pioneer. Turn east onto East Pioneer and continue generally easterly to Shaw Road East. The project site is located at the southeastern corner of the intersection of Pioneer Way East and Shaw Road East.

CRITICAL AREAS DETERMINATION

WETLANDS

A series of assessments and evaluations of potential wetlands within or immediately adjacent to the project site was completed by John Comis Associates (JCA 2020, 2021). The wetland findings documented within these assessments failed to identify any onsite wetlands and these assessments have been submitted to the City of Puyallup for review and verification.

A series of additional assessments of potential wetlands within the project site were completed during the summer of 2021 by Habitat Technologies. These assessments were completed following the methods and procedures defined in the *Corps of Engineers Wetland Delineation Manual* (United States Army Corps of Engineers, 1987) with the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys, and Coast Region* (United States Army Corps of Engineers, 2010); the Washington State *Wetland Rating System for Western Washington: 2014 Update* Publication #14-06-029 (Hruby, 2014), the State of Washington Department of Natural Resources (WDNR) Forest Practice Rules (WAC 222-16-030), and the City of Puyallup Chapter 21.06 - *Critical Areas* (see *Wetland Delineation Report – East Town Crossing* dated October 14, 2021). These assessments documented that **no areas** within the project site were identified to exhibit all three established criteria for designation as "wetland." The created stormwater detention facilities present within the southeastern portion of the project site are best defined as intentionally created features from a non-wetland sites. These facilities were also created consistent with City of Puyallup permitting approvals.

STREAMS

As defined by onsite observations completed between March 2021 and mid-July 2021, along with prior assessments within the general vicinity of the project site dating back to 1983 of adjacent properties, seasonal surface water from the hillside area to the southeast of the project site forms within a shallow depression near the toe of slope. As defined within historical aerial photos, prior land use actions primarily associated with agricultural activities and the development of a pipeline corridor had created an excavated ditches to convey seasonal surface water generally to the northeast and then to the north to enter the ditch system associated with the Pioneer Way East Corridor. A pattern of excavated ditches continued generally westerly along the Pioneer Way East Corridor to enter the ditched Deer Creek System and then to continue generally northwesterly to eventually enter the Lower Puyallup River. The Deer Creek System has been documented by Habitat Technologies and by the Puyallup Tribe to provide habitats for a number of fish species to include coho salmon, steelhead/rainbow trout, cutthroat trout, threespine stickleback, bullhead, sculpin, and Western brook lamprey. However, these same assessments (particularly the 1983 assessment completed by the Puyallup Tribe) did not document fish utilization within the ditch system associated with the Pioneer Way East Corridor east of the confluence with Deer Creek.

Even though the drainage corridors offsite to the east and southeast of the project site have been modified by prior and ongoing land use actions generally associated with the management of agricultural ditches, these drainage corridors convey naturally occurring surface water from an offsite wetland area and eventually enter the Deer Creek System. As such, these offsite drainage corridors appear best defined as a City of Puyallup "streams" consistent with the provisions of the City of Puyallup *Chapter 21.06.* Both of these offsite ditches do not exceed a width of 24-inches and appear to exhibit seasonal surface flow patterns. These two drainage ditches also appear best defined as City of

Puyallup Type IV Streams. The standard City of Puyallup buffer for a Type IV Stream is 35 feet in width as measured perpendicular from the ordinary high water mark.

- Type IV Streams are those intermittent or ephemeral streams with channel width less than two feet taken at the ordinary high water mark, that are not used by anadromous fish or resident fish.

These offsite agricultural ditches eventually lead to the north and enter the ditch system associated with the Pioneer Way East Corridor. As such, the ditch system associated with the Pioneer Way East Corridor would also appear best defined as a City of Puyallup "streams" consistent with the provisions of the City of Puyallup *Chapter 21.06.* The ditch associated with the Pioneer Way East Corridor exhibits a width greater than 24-inches and seasonal surface flow patterns. This roadside drainage ditch also appeared best defined as City of Puyallup Type III Streams. The standard City of Puyallup buffer for a Type III Stream is 50 feet in width as measured perpendicular from the ordinary high water mark.

- Type III Streams are those streams with perennial or intermittent flow and are not used by anadromous fish.

FISH AND WILDLIFE HABITAT CONSERVATION AREAS

The assessments completed by Habitat Technologies during 2021 identified that the project site and adjacent properties had been manipulated and modified by a variety of prior and ongoing land uses. The project site was not identified to exhibit specific City of Puyallup "fish and wildlife habitat conservation areas." The project site did not provide habitats of rare or vulnerable ecological systems, communities, and habitat or habitat elements including seasonal ranges, breeding habitat, winter range, and movement corridors; areas with high relative population density or species richness; or City of Puyallup habitats of local importance. However, two adjacent City of Puyallup stream corridors were identified – one directly to the east and one within the Pioneer Way East right-of-way directly to the north. These two streams were identified to provide limited habitat for local species and to support downstream habitats used by salmonid fish species (see *Wetland Delineation Report – East Town Crossing* dated October 14, 2021, and *CRITICAL AREAS ASSESSMENT - Surface Water Drainages and Fish and Wildlife Habitat Conservation Areas - EAST TOWN CROSSING* dated July 13, 2021 both prepared by Habitat Technologies).

SELECTED DEVELOPMENT ACTION

The *Selected Development Action* for the **East Town Crossing Multi-Family Residential Community** focuses on the development of a new multi-family residential community within the western portion of the project site. The development of this new multi-family residential community would be consistent with the City of Puyallup

Comprehensive Plan, local zoning, the character of the neighborhood, and the provisions of the City of Puyallup Chapter 21.06. The proposed development would also provide consistency with both the FEMA and the City of Puyallup *Floodplain Requirements* and the City of Puyallup Chapter 21.06 through the restoration and enhancement of adjacent environmentally critical areas.

Project site planning has focused on the mandated hierarchy of environmentally critical areas impact reduction: 1) avoidance, 2) minimization, and 3) compensation. These avoidance and minimization strategies included a site design to avoid potential project related impacts to identified environmentally critical areas for their associated protective buffers. As presently identified all onsite development actions would not directly impact environmentally critical areas identified adjacent to the project site. However, onsite development actions would require the modification of identified onsite Zone A0 floodplain areas and a separated final site development plan of actions has been prepared to address potential impacts to flood storage, water quality, detention, treatment, and floodplain storage volume.

To ensure that unavoidable encroachments associated with an identified Type IV Stream directly to the east of the project site and an identified Type III Stream within the Pioneer Way East right-of-way directly to the north of the project site and proposed project would undertake a *Stream Corridor Restoration and Enhancement Program* along these two streams to avoid and minimize potential impacts to the extent practicable, to reestablish prior environmental functions and associated habitats, to provide greater protective functions and values to the identified stream corridors, and to provided increased buffer functions (i.e. screening, noise attenuation, dust attenuation, sound attenuation, detrital inputs, and habitats for local species).

The City of Puyallup has identified mitigation standard for fish and wildlife habitat conservation areas as follows (21.06.1080):

(1) Adverse impacts to riparian and nonriparian habitats shall be fully mitigated in accordance with the approved standards and shall be specified within a mitigation plan.

Discussion: The stream corridor directly offsite to the north would be restored through reformation to better facilitate access between the project site and Pioneer Way East, to better facilitate public utilities associated with Pioneer Way East, and to restore a protective plant community along the established corridor. The stream corridor directly offsite to the east would be restored through reformation which would create a more meandering channel pattern through a larger area, would place habitat features within the restored area, and would establish a protective plant community along the stream corridor. These actions are outlined within the mitigation program below.

(2) Mitigation for alterations to habitat areas shall achieve equivalent or greater biologic functions and shall provide similar functions as those lost.

Discussion: Both of the identified adjacent stream corridors and their adjacent riparian areas have been greatly impacted by prior and ongoing land use actions. The proposed *Stream Corridor Restoration and Enhancement Program* would restore and enhance native plant communities, would restore and enhance physical and biological riparian corridor habitat functions, would increase water quality protection, and would provide greater biological functions for local wildlife and downstream aquatic resources.

(3) Compensation in the form of habitat restoration or enhancement is required when a habitat is altered as a result of an approved project. Alterations shall not result in net loss of habitat area except when, upon the satisfaction of the director, it is determined that the lost habitat area provides minimal functions, as determined by a critical area report, and other replacement habitats provide greater benefits to the functioning of the affected species.

Discussion: Implementation of the *Stream Corridor Restoration and Enhancement Program* outlined below would ensure that there would be no net loss of habitat area, combined with the restoration and enhancement of previously impacted aquatic and riparian habitats. In addition, the amount of area to be established within the restored and enhanced corridor associated with the Type IV Stream to the east of the project site would add significantly more area than would be established following the standard stream buffer areas identified by the City of Puyallup.

The *Stream Corridor Restoration and Enhancement Program* would remove existing invasive species and plant a variety of desirable native trees and shrubs within the established buffer to provide greater physical and biological support for the stream corridors. In addition, the proposed onsite development would implement a variety of measures to minimize potential impacts to the adjacent streams which include the use of directional lighting, the treatment and detention of onsite stormwater, the placement of noise generating actions away from the stream corridors, where appropriate the fencing of the outer boundary of the established buffers, and the use of best management practices for dust and local water quality protections.

STREAM CORRIDOR RESTORATION AND ENHANCEMENT PROGRAM

The development of the proposed multi-family residential community avoids direct and indirect adverse impacts to identified Waters of the U.S., Waters of the State, or City of Puyallup critical habitats to the greatest extent practicable. In addition, the development of the new multi-family residential community would include an onsite stormwater collection, detention, and treatment system to avoid potential project related impacts to floodplain area or both local water quality and local water quantity within the receiving waters consistent.

Assess to the new multi-family residential community would be provided via a new driveway connection to Pioneer Way East along the northern boundary of the project site and via a new driveway connection to Shaw Road along the western boundary of the project site. The northern connection to Pioneer Way East would require a crossing of the Type III Stream presently confined within a maintained ditch associated with the Pioneer Way East right-of-way. While the final crossing structure has not yet been fully designed the project team has been coordinating with the City of Puyallup to meet critical areas and public health/safety requirements and with the Washington Department of Fish and Wildlife to meet fish passage requirements to ensure that the final design would not adversely impact fish habitats or the movement of surface water.

The development of the proposed multi-family residential community would also establish and restore a protective stream and buffer corridor composed of native plant species associated with the Type III Stream along the southern side of the Pioneer Way East right-of-way and within a protective stream and buffer corridor associated with the Type IV Stream to the east of the eastern boundary of the project site (Appendix A).

1. The overall development of the **East Town Crossing Multi-Family Residential Community** would establish a protective stream corridor associated with the Type III Stream along the northern boundary of the project site and the Type IV Stream along the eastern boundary of the project site. The Type III Stream is presently within a managed City of Puyallup stormwater ditch along the Pioneer Way East right-of-way and is dominated by reed canarygrass and blackberry thickets. The Type IV Stream is presently within a managed field ditch and dominated by reed canarygrass. In addition, a portion of the Type IV Stream has eroded the channel and is presently entering a constructed stormwater pond within the southeastern portion of the project site.

2. Assess to the new multi-family residential community would be provided via a new driveway connection to Pioneer Way East along the northern boundary of the project site and via a new driveway connection to Shaw Road along the western boundary of the project site. The northern connection to Pioneer Way East would require a crossing of the Type III Stream presently confined within a maintained ditch associated with the Pioneer Way East right-of-way. The required crossing structure has been designed to meet critical areas protection requirements, public health/safety requirements, and the Washington Department of Fish and Wildlife to meet fish passage requirements to ensure that the new full spanning structure would not adversely impact fish habitats, the movement of aquatic organisms and detritus, or the movement of surface water.

3. The Type IV Stream located directly to the east of the project site would be relocated a short distance to the east into a restored protective corridor. The area of the restored corridor was managed for agricultural production for several decades and is presently densely overgrown with reed canarygrass and blackberry thickets. The restored corridor would be cleared of invasive vegetation and tilled. Following the clearing and tilling a new channel would be created to meander

through this restored corridor starting at the location of the ditch repair associated with the adjacent stormwater pond and continuing northward to connect with the Type III Stream along Pioneer Way East. The meandering new channel would incorporate instream woody debris to increase aquatic habitats and provide channel structure/complexity.

4. The established stream corridor associated with the Type III Stream along the Pioneer Way East right-of-way adjacent to the northern portion of the project site and the restored stream corridor associated with the Type IV Stream along the eastern boundary of the project site would then be planted with a variety of desirable native plant species. The Type IV Stream Corridor would also be enhanced through the placement of standing snags and downed logs. These actions would be designed to provide enhanced habitats onsite and offsite; to provide enhanced habitat support downstream; to provide enhanced protections for local water quality; and to provide light, dust, and noise protections for adjacent habitats.

5. Temporary and long-term erosion control measures shall be implemented. These measures include silt fencing during site preparation and seeding/mulching of exposed soil areas.

6. The onsite portion of the outer boundary of the established stream buffer areas would be posted with standard City of Puyallup buffer signs and potentially fenced to limit intrusion into the final established protective areas.

7. **ALL ONSITE RESTORATION AND ENHANCEMENT ACTIONS WOULD BE COMPLETED AT THE DIRECTION OF THE PROJECT BIOLOGIST.**

8. The onsite portions of the established buffer areas would be protected through the establishment of a wetland tract, a “protective easement, or other City of Puyallup approved method.

9. Following the completion of the initial establishment, restoration, and enhancement activities the project biologist shall prepare an *Implementation Report* for submittal to the City of Puyallup.

10. Following City of Puyallup’s acceptance of the *Implementation Report* a minimum **five-year** *Performance Monitoring and Maintenance Program* would be undertaken to ensure the success of the *Stream Corridor Restoration and Enhancement Program*. IF required by the City of Puyallup or by the various involved resource agencies this *Performance Monitoring and Maintenance Program* would be extended to potentially ten-years should such additional monitoring or maintenance be required to ensure the success of the *Stream Corridor Restoration and Enhancement Program.*

PROGRAM GOAL

The **GOAL** of the *Stream Corridor Restoration and Enhancement Program* is to ensure that proposed site development actions do not adversely impact identified aquatic resources and that the existing physical and biological functions of these aquatic resources are restored and enhanced. Upon the completion of this program there would be increase in the potential for the established restoration and enhancement areas to protect and provide aquatic and riparian habitats. To achieve the defined **GOAL**, the following **PERFORMANCE CRITERIA** have been established:

Performance Criterion #1: 100% of the trees and shrubs initially planted within the restored and enhanced stream corridors would exhibit survival through the end of the first growing season following initial planting.

Performance Criterion #2: 80% of the trees and shrubs initially planted within the restored and enhanced stream corridors would exhibit survival through the end of the second growing season following initial planting.

Performance Criterion #3: The emergent plant community within the restored and enhanced stream corridors would exhibit the following minimum aerial coverage during the fall monitoring periods for a minimum of five-years following initial planting. For purposes of the aerial coverage determination the emergent plant community would include both planted and desirable volunteer species.

MONITORING YEAR	MINIMUM AERIAL COVERAGE
End of monitoring year one	15%
End of monitoring year two	20%
End of monitoring year three	40%
End of monitoring year five	80%
End of monitoring year seven	80% (if required)
End of monitoring year ten	80% (if required)

Performance Criterion #4: The scrub/shrub and sapling vegetation class within the restored and enhanced stream corridors would exhibit the following minimum aerial coverage during the fall monitoring periods for a minimum of five-years following initial planting. For purposes of the aerial coverage determination the scrub/shrub and sapling vegetation class would include both planted and desirable volunteer species.

MONITORING YEAR	MINIMUM AERIAL COVERAGE
End of monitoring year one	5%
End of monitoring year two	10%
End of monitoring year three	20%
End of monitoring year five	30%
End of monitoring year seven	60%
End of monitoring year ten	80%

Performance Criterion #5: The restored and enhanced stream corridors would contain a minimum of five (5) species of native shrubs and trees (combined count) at the end of monitoring years five, along with years seven and ten if required. Volunteer native species can be included in this count.

Performance Criterion #6: Within the restored and enhanced stream corridors invasive species would not exceed 10% aerial coverage at the end of the first, second, third, and fifth seasons, along with years seven and ten if required, following initial planting. Invasive species include reed canarygrass, Canadian thistle, Himalayan blackberry, Scots broom, and other species listed as invasive by the Washington Department of Agriculture.

Performance Criterion #7: Throughout the restored and enhanced stream corridors, knotweed (*Polygonum* spp.) would not be present at any time during the monitoring period.

SELECTED PLANT COMMUNITIES

The plants selected for placement within the restored and enhanced stream corridors would be obtained as nursery stock. These selected species are native and commonly occur in the local area. The plant species prescribed are also selected to increase plant diversity, match present offsite communities, increase wildlife habitats, and enhance the aquatic environment. Many of the selected species can be somewhat sensitive to direct sunlight upon initial removal from the nursery and installation within the planting area. Special care would be undertaken by the planting contractor during installation to utilize existing shading and to ensure that plants are handled and installed with some care. Adequate irrigation would also be provided at the time of installation.

Wet Plants

COMMON NAME (ID) - SCIENTIFIC NAME	SIZE
Western hawthorne (CRD) - *Crataegus douglasii*	2 gallon
Oregon ash (FRL) – *Fraxinus latifolia*	2 gallon
Sitka spruce (PIS) – *Picea sitchensis*	2 gallon
Western crabapple (PYF) - *Pyrus fusca*	2 gallon
Pacific willow (SAL) - *Salix lasiandra*	2 gallon
Western red cedar (THP) - *Thuja plicata*	2 gallon
Vine maple (ACC) - *Acer circinatum*	1 gallon
Red-osier dogwood (COS) - *Cornus stolonifera*	1 gallon
Twinberry (LOI) - *Lonicera involucrata*	1 gallon
Pacific ninebark (PHC) - *Physocarpus capitatus*	1 gallon
Nootka rose (RON) - *Rosa nutkana*	1 gallon
Salmonberry (RUS) – *Rubus spectabilis*	1 gallon

Sitka willow (SAS) - *Salix sitchensis*	1 gallon
Slough sedge (CAO) - *Carex obnupta*	plug
Small fruiting bulrush (SCM) - *Scirpus microcarpus*	plug

Riparian Plants

COMMON NAME (ID) - SCIENTIFIC NAME	SIZE
Big leaf maple (ACM) - *Acer macrophyllum*	2 gallon
Western hawthorne (CRD) - *Crataegus douglasii*	2 gallon
Sitka spruce (PIS) – *Picea sitchensis*	2 gallon
Bitter cherry (PRE) - *Prunus emarginata*	2 gallon
Douglas fir (PSM) - *Pseudotsuga menziesii*	2 gallon
Western red cedar (THP) - *Thuja plicata*	2 gallon
Western crabapple (PYF) - *Pyrus fusca*	2 gallon
Vine maple (ACC) - *Acer circinatum*	1 gallon
Tall Oregon grape (BEA) - *Berberis aquifolium*	1 gallon
Oregon grape (BEN) - *Berberis nervosa*	1 gallon
Hazelnut (COC) - *Cornus stolonifera*	1 gallon
Twinberry (LOI) - *Lonicera involucrata*	1 gallon
Salal (GAS) - *Gaultheria shallon*	1 gallon
Oceanspray (HOD) - *Holodiscus discolor*	1 gallon
Red flowering currant (RIS) - *Ribes sanguineum*	1 gallon
Wild rose (ROG) - *Rosa gymnocarpa*	1 gallon
Snowberry (SYA) - *Symphoricarpus albus*	1 gallon

IMPLEMENTATION INSPECTION

Essential to the success of the *Stream Corridor Restoration and Enhancement Program* is the accurate inspection of onsite activities immediately prior to and during the initial invasive control actions, corridor and channel creation actions, habitat feature placements, and planting phase. These activities include pre-implementation site inspection, onsite inspection and technical direction during implementation activities, and post-planting site inspection and evaluation. The project biologist would complete onsite inspections, verify, and approve the following project tasks (at a minimum):

1. Marking of work areas and access corridors.
2. Marking of desirable plants to be retained.
3. Removal of invasive species and existing garbage.
4. Channel pattern identification.
5. Nursery stock acceptance.
6. Modification of plant species and sizes if required.
7. The character and placement of habitat and instream features.
8. Installation of the irrigation system.
9. Installation of buffer boundary signs.

The pre-implementation site inspection allows the project team and the project biologist to evaluate and, if necessary, adjust the onsite implementation steps. These steps include analysis of project site elevation, project sequencing and timing, final grade analysis, unforeseen required minor modifications to the original establishment plan, and the establishment of environmental protections (silt fences, etc.) required during planting. Onsite technical inspection during implementation and planting activities shall be conducted by the project biologist. The project biologist would perform implementation oversight and address minor unforeseen implementation difficulties to assure that the goal of the mitigation program is met.

The project biologist would be responsible for ensuring that the species and sizes of native plants selected and noted within the final planting plan are utilized during implementation. If selected native species become unavailable, the project biologist would approve, based on City standards, substitute plant species to assure that the goal of the mitigation program is met.

Following the completion of onsite planting activities an *Implementation Report* plan would be prepared and submitted to the City and potentially other involved resource agencies. The *Implementation Report* would include a description of who completed the onsite compensatory actions, a description of the scope of work completed, a description of work specifications, photo documentation of the actions taken, initial plant documentation at each established monitoring plot, and a detailed timeline of completed actions. The *Implementation Report* would also include a project evaluation prepared by the project biologist.

IMPLEMENTATION SCHEDULE

PROJECT TASK	TASK SCHEDULE
Onsite pre-implementation meeting	Completed by August 2, 2022
Placement of protective fencing. Final marking and identification of work area and access corridors.	Completed by August 6, 2022
Removal of invasive plants within the restoration areas	Completed by August 20, 2022
Placement of access connection to Pioneer Way East.	Completed by August 25, 2022
Creation of meandering channel for Type IV Stream.	Completed by August 28, 2022
Placement of habitat features and channel woody debris.	Completed by September 10, 2022
City environmental staff review of the planting areas.	Completed by September 15, 2022
Planting of stream corridors.	Completed by November 15, 2022
Implementation Report to City.	Completed by November 29, 2022

based on permit approves on or before August 1, 2022

PROJECT MONITORING

Following the successful implementation of the *Stream Corridor Restoration and Enhancement Program* and the acceptance of the *Implementation Report* by the City a minimum **five-year** *Performance Monitoring and Maintenance Program* would be undertaken. IF required by the City of Puyallup or by the various involved resource agencies this *Performance Monitoring and Maintenance Program* would be extended to potentially ten-years should such additional monitoring or maintenance be required to ensure the success of the *Stream Corridor Restoration and Enhancement Program.*

STANDARDS OF SUCCESS

A minimum of ten (10) 15-foot radius sample plots would be established – three (3) within the Type III Stream Corridor and seven (7) within the Type IV Stream Corridor. The evaluation of the success of the *Stream Corridor Restoration and Enhancement Program* would be based on the defined performance criteria. The defined performance criteria would be applied at the times of yearly monitoring. Sample locations would be shown on the *Implementation Report* graphic and shall correspond to identified photopoints.

1. As a part of monitoring years one and two the project biologist would count the number of live plants which were planted within the identified monitoring plots. Plants would be identified to species and observations of general plant condition (plant health, amount of new growth) are to be recorded.

2. During each monitoring period and at each identified sample plot the project biologist would determine percent coverage of vegetation for emergent species and for the scrub/shrub and sapling tree species. The project biologist would also document species richness within each sample plot.

3. At identified sample plots the project biologist would count the number - and tag for removal - undesirable invasive species and estimate the aerial coverage (as if the observer were looking straight down from above) of these invasive species.

4. As a part of monitoring years one and two the project biologist would count the number of desirable "volunteer" plants and estimate the aerial coverage of these plants.

5. The project biologist would take photographs that show the *Stream Corridor Restoration and Enhancement Program* area. During the monitoring period photos would be taken in the same direction and at the same location to provide a series of photos. These photos would show plant growth, plant species, and plant coverage.

6. Upon the completion of each monitoring period as noted below the project biologist would prepare a report defining methods, observations, and results along with the

date the observations were completed. Each report would be provided to the City of Puyallup and potentially other involved resource agencies.

MONITORING YEAR	PLANT COMMUNITY MONITORING	MONITORING REPORT
YEAR-1	On or about April 15, 2023	
	On or about Sept. 15, 2023	Report due Oct. 7, 2023
YEAR-2	On or about April 15, 2024	
	On or about Sept. 15, 2024	Report due Oct. 7, 2024
YEAR-3	On or about Sept. 15, 2025	Report due Oct. 7, 2025
YEAR-5	On or about Sept. 15, 2027	report due Oct. 7, 2027
YEAR-7 If required	On or about Sept. 15, 2029	report due Oct. 7, 2029
YEAR-10 If required	On or about Sept. 15, 2032	report due Oct. 7, 2032

* based on a fall 2022 implementation

VEGETATION MAINTENANCE PLAN

Maintenance of the *Stream Corridor Restoration and Enhancement Program* plant community may be required. Such maintenance shall be identified during the monitoring period and shall be undertaken at the direction of the project biologist. The overall objective is to establish undisturbed plant communities that do not require maintenance. Activities may include, but are not limited to, the removal of invasive non-native vegetation and the irrigation of selected areas. Established maintenance activities include the removal of any trash within the restoration areas.

REMOVAL OF INVASIVE NON-NATIVE VEGETATION

As a contingency, should the removal of invasive non-native species become necessary, the project proponent would contact the City of Puyallup to establish and define specific actions to be taken. Resultant contingency plan activities shall be implemented when the ongoing vegetation monitoring program indicates that invasive species are becoming dominant in the onsite plant community (invasive species greater than 10% aerial coverage or any presence of knotweed).

The following invasive vegetation maintenance removal program would be implemented to ensure the establishment of desirable plant communities. At the direction of the project biologist additional removal actions (if required) would also be undertaken to ensure the establishment of desirable plant communities. The project proponent removal not be responsible for replacement of plants that may be removed or damaged by others.

MONITORING YEAR	FIRST REMOVAL ACTION	SECOND REMOVAL ACTION	THIRD REMOVAL ACTION
YEAR-1	On or about April 15, 2023	on or about June 1, 2023	on or about August 30, 2023
YEAR-2	On or about April 15, 2024	on or about June 1, 2024	on or about August 30, 2024
YEAR-3	On or about April 15, 2025	on or about June 1, 2025	on or about August 30, 2025
YEAR-5	On or about April 15, 2027	on or about June 1, 2027	on or about August 30, 2027
YEAR-7 If required	On or about April 15, 2029	on or about June 1, 2029	on or about August 30, 2029
YEAR-9 If required	On or about April 15, 2031	on or about June 1, 2031	on or about August 30, 2031

* based on a fall 2022 implementation

CONTINGENCY PLAN

As a contingency, should the proposed *Stream Corridor Restoration and Enhancement Program* fail to meet the performance criteria, the project proponent would undertake required remedial actions. Where plant survival is the failing component, the project proponent shall replant and ensure the success of this second planting which would be held to the same standard of success as measured by threshold criteria and monitoring processes. Where non-native, invasive shrubs exceed 10% aerial coverage the project proponent would undertake removal actions. Such removal actions shall be completed using hand tools or pulling the plants by hand to remove the invasive vegetation without disrupting the soil profile. All cut or pulled vegetation would be removed from the restoration area and disposed in an approved location. Herbicides shall only be used following approval by the City. If used, all herbicide application shall be completed by a licensed professional.

Should additional remedial actions be required the project proponent would meet with the City to establish and define actions to be taken to meet the desired goal of this program.

TEMPORARY IRRIGATION

The project proponent would ensure that a minimum of **one (1) inch of water is supplied each week** to the restoration area between May 1 and October 15 for a least the first three years following initial planting. The calculated amount of required water would include both natural rainfall and temporary irrigation. The need for additional years of irrigation would be determined based on site conditions and overall plant survival. The amount of water supplied to the restoration area would be increased if onsite monitoring defines such a need.

Irrigation would be provided via a temporary system placed on the ground surface within the restoration areas or with optional hand watering. The system would allow for a minimum of 10% overlap of coverage between sprinklers and the sprinklers would be a minimum of four (4) feet above ground. The project team would employ a landscape contractor to install, operate, and maintain the irrigation system. All actions would also be monitored onsite by the project biologist.

When deemed appropriate and with authorization by the City the temporary irrigation system would be removed and disposed of at an approved facility.

PLANTING NOTES

All plant materials utilized within the restored areas would be native to the Puget Sound Region. The onsite biologist would inspect plant materials to assure the appropriate plant schedule and plant characteristics are met. The project proponent would warrant that all plants would remain alive and healthy for a period of one year following completion of planting activities. The project proponent would replace all dead and unhealthy plants with plants of the same specifications.

FINANCIAL GUARANTEE

IF REQUIRED the project proponent would provide the City of Puyallup a financial guarantee defined in two parts. Part One (Implementation Guarantee) would be associated with the initial onsite elements of the *Stream Corridor Restoration and Enhancement Program*. Part Two (Performance Guarantee) would be associated with the *Performance Monitoring and Maintenance Program*. These guarantees would be held by the City and be equal to 125% of the actual estimated costs for identified activities. This increased percentage would allow for adequate funds to be available as a contingency should actions be required to meet the goals of these plans. The Implementation Guarantee shall be deemed to be released by the City upon the successful completion of the initial onsite elements and the acceptance if the Implementation Report by the City of Puyallup. The Performance Guarantee would be deemed to be released upon meeting the established performance criteria and acceptance by the City of the required reporting documents.

STANDARD OF CARE

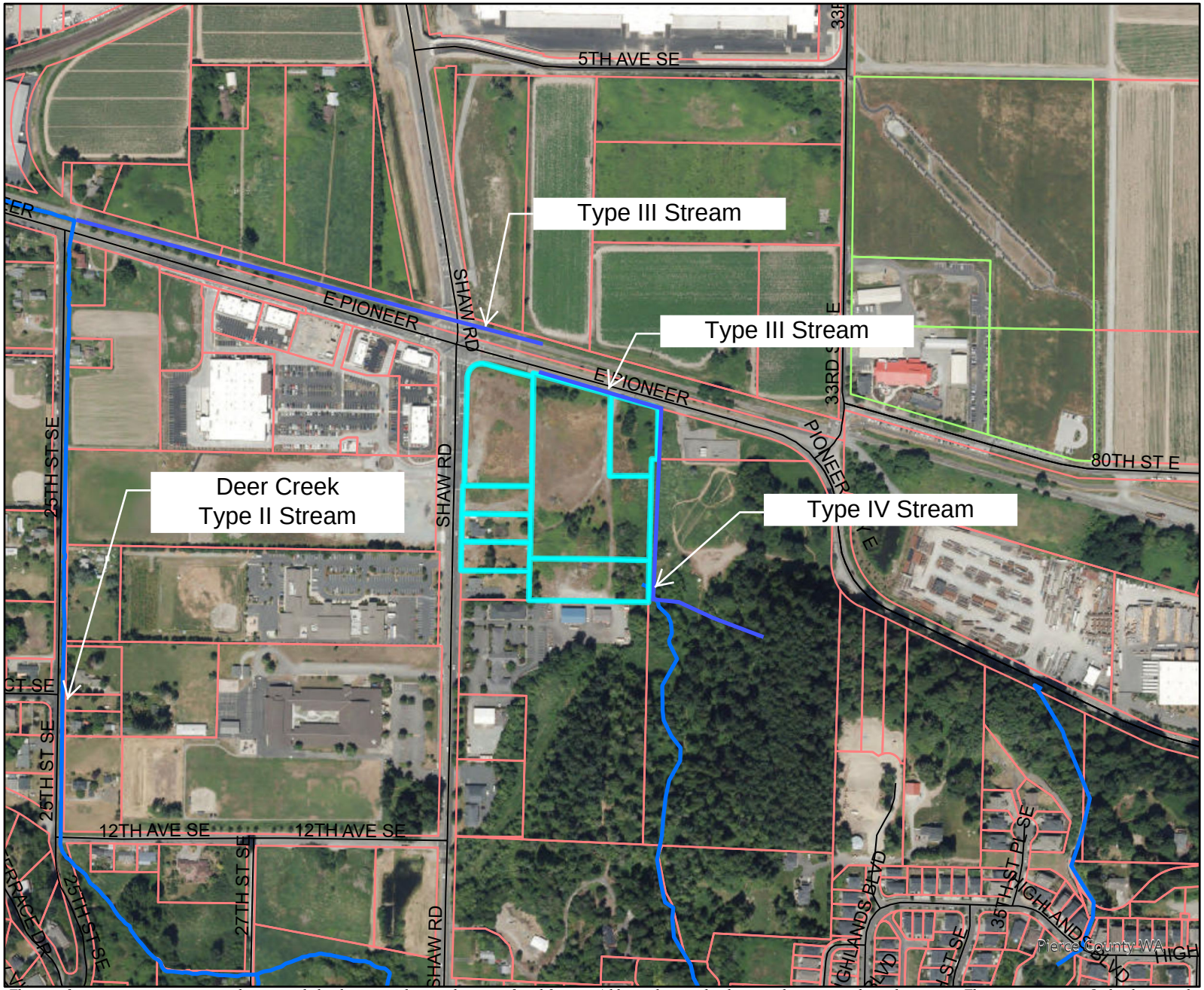
This document has been completed by Habitat Technologies for the use by **Mr. Greg Hellie @ East Town Crossing**. Prior to extensive site planning the findings documented in this report should be reviewed, verified, and approved by City of Puyallup and potentially other resource and permitting agency(s) staff. Habitat Technologies has provided professional services that are in accordance with the degree of care and skill generally accepted in the nature of the work accomplished. No other warranties are expressed or implied. Habitat Technologies is not responsible for design costs incurred before this document is approved by the appropriate resource and permitting agencies.

Bryan W. Peck
Senior Wetland Biologist

Thomas D. Deming, SPWS
Habitat Technologies

FIGURES

Figure 1 Project Site and Adjacent Streams



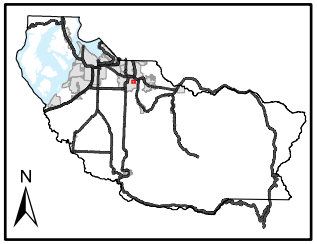
Legend

- Streams - Puyallup
- Roads

Tax Parcels

- Base Parcel
- Condominium
- Other

County - 2020 Ortho



0 120 240 480 Feet

1:6,000

Habitat Technologies
P.O.Box 1088
Puyallup, WA 98371
(253) 845-5119
www.habitattechnologies.net

The map features are approximate and are intended only to provide an indication of said feature. Additional areas that have not been mapped may be present. This is not a survey. Orthophotos and other data may not align. The County assumes no liability for variations ascertained by actual survey. ALL DATA IS EXPRESSLY PROVIDED 'AS IS' AND 'WITH ALL FAULTS'. The County makes no warranty of fitness for a particular purpose.

Date: 1/4/2022 09:47 AM

REFERENCE AND BACKGROUND LITERATURE

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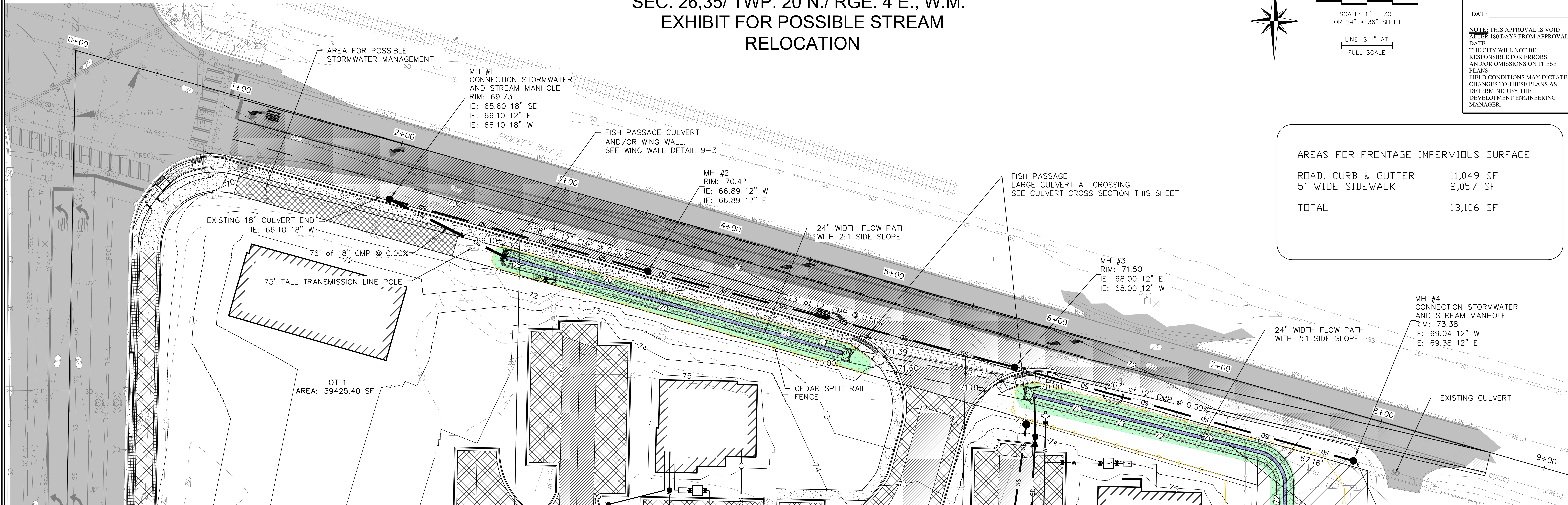
Washington State Department of Natural Resources FPARS Mapping System, 2016 (for stream typing): http://fortess.wa.gov/dnr/app1/fpars/viewer.htm

APPENDIX A – Stream Corridor Restoration Areas

EAST TOWN CROSSING

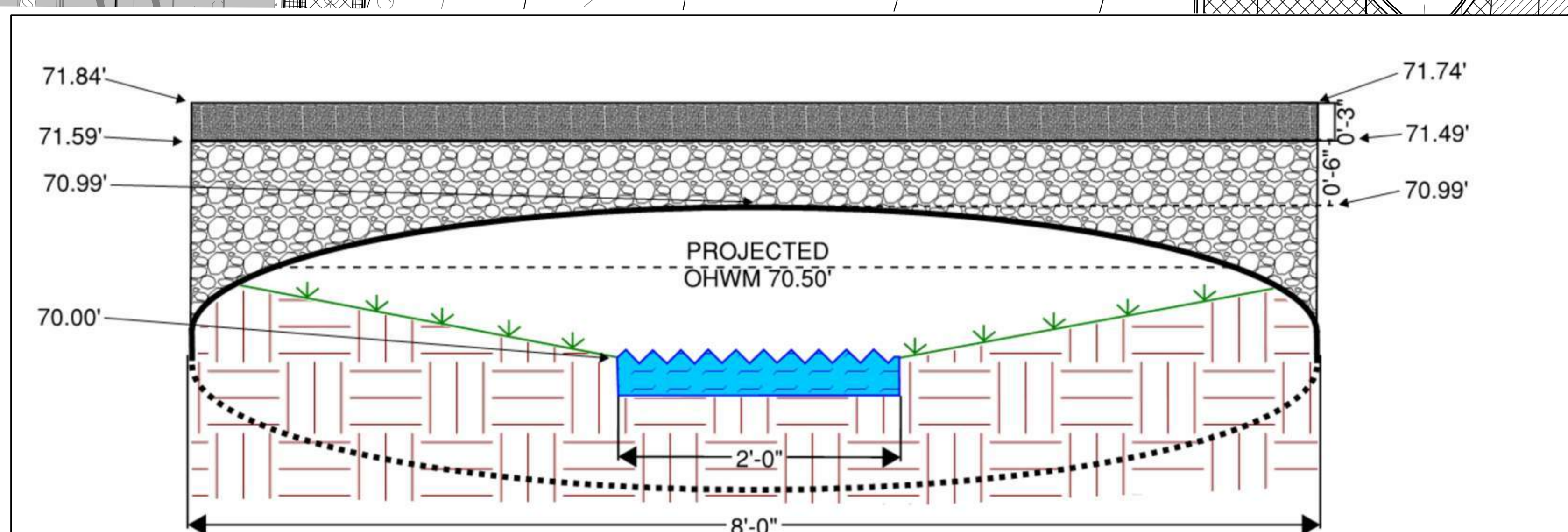
SEC. 26,35/ TWP. 20 N./ RGE. 4 E., W.M.

EXHIBIT FOR POSSIBLE STREAM RELOCATION



AREAS FOR FRONTAGE IMPERVIOUS SURFACE

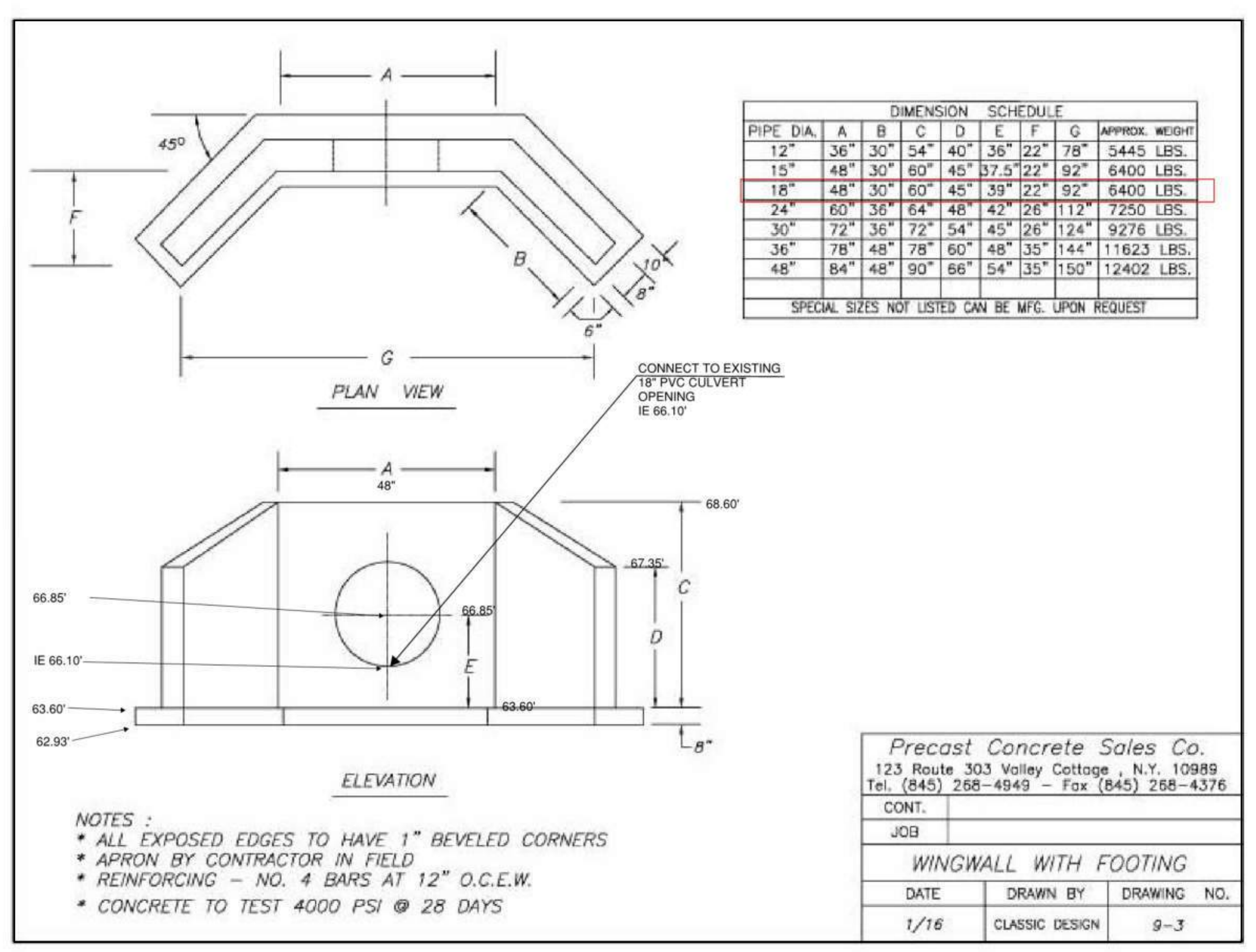
ROAD, CURB & GUTTER	11,049 SF
5' WIDE SIDEWALK	2,057 SF
TOTAL	13,106 SF



CULVERT CROSS SECTION

NOT TO SCALE

MATCHLINE: SEE EXHIBIT 2



TREES							W.A.: WET-ADOPTED PLANTS
SYMBOL	BOTANICAL NAME	COMMON NAME	SIZE	SPACE	QTY.	COMMENTS	W.A.
	ACER MACROPHYLLUM	BIG LEAF MAPLE	2 Gallon	Graphically indicated	6	WELL-SHAPED	
H	CRATAGEUS DOUGLASII	WESTERN HAWTHORNE	2 Gallon	Graphically indicated	4	WELL-SHAPED	W.A.
	PRUNUS EMARGINATA	BITTER CHERRY	2 Gallon	Graphically indicated	4	WELL-SHAPED	
	PSEUDOSTUGA MENZIESII	DOUGLAS FIR	2 Gallon	As shown, 10'o.c./Min.	12	FULL, NOT SHORN	
	THUJA PLICATA	WESTERN RED CEDAR	2 Gallon	As shown, 10'o.c./Min.	4	FULL, NOT SHORN	W.A.
							W.A.

SHRUBS, GROUNDCOVER & FERNS — Note: Deciduous trees must be 10.0'(h) at time of planting

SYMBOL	BOTANICAL NAME	COMMON NAME	SIZE	SPACE	QTY.	COMMENTS	
	ACER CIRCINATUM	VINE MAPLE	1 GAL.	As shown, 2.0'o.c./Min.	10		
	CORNUS STOLONIFERA	RED-OSIER DOGWOOD	1 GAL.	As shown, 4.0'o.c./Min.	10		W.A.
	HOLODISCUS DISCOLOR	OCEANSPRAY	1 GAL.	As shown, 3.0"o.c./Min.	10	MIN. 3.0' HIGH	
	MAHONIA AQUIFOLIUM	TALL OREGON GRAPE	1 GAL.	As shown, 10'o.c./Min.	10	MIN. 3.0' HIGH	
	POLYSTICHUM MUNITUM	WESTERN SWORD FERN	1 GAL.	As shown, 3.0' o.c./Min.	10		
	RIBES SANQUINEUM,	RED FLOWERING CURRANT	1 GAL.	As shown, 3.0' o.c./Min.	10		
	SYMPHORICARPUS ALBUS	SNOWBERRY	1 GAL.	As shown, 4.0'o.c./Min.	10	MIN. 3.0' HIGH	W.A.

WET-ADOPTED PLANT LIST

IN ADDITION TO PLANTS LISTED ABOVE AS BEING "WET-ADOPTED" DESIGNATED WITH A "W.A." THE FOLLOWING PLANTS SHALL BE ADDED IF NEEDED FOR A SUBSTITUTE FOR WET SOIL CONDITIONS, AT THE SAME SIZE AS SPECIFIED ABOVE.

HOLODISCUS DISCOLOR → SUBSTITUTE WITH → VIBURNUM EDULE (HIGHBUSH CRANBERRY)
MAHONIA AQUIFOLIUM → SUBSTITUTE WITH → PHYSOCARPUS CAPITATUS (PACIFIC NINEBARK)

NOTE: ALL PLANTS SHALL BE NATIVE TO TH PUGET SOUND REGION.

SEEDING SCHEDULE

THE SEEDING FOR EXPOSED AREAS SHALL BE AS FOLLOWS:

BOTANICAL NAME	BOTANICAL NAME	PERCENT BY WEIGHT	APPLICATION RATE
FESTUCA RUBRA	CREEPING RED FESCUE	100%	120 LBS. / ACRE

THE CONTRACTOR SHALL VERIFY THE LOCATION OF ALL EXISTING UTILITIES PRIOR TO ANY CONSTRUCTION. AGENCIES INVOLVED SHALL BE NOTIFIED WITHIN A REASONABLE TIME PRIOR TO THE START OF CONSTRUCTION.

CALL BEFORE YOU DIG (811)
WWW.WASHINGTON811.COM

APPROVED

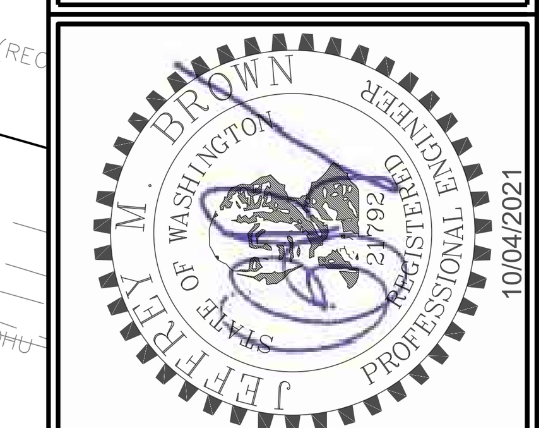
BY ____ CITY OF PUYALLUP DEVELOPMENT ENGINEERING

DATE ____

NOTE: THIS APPROVAL IS VOID AFTER 180 DAYS FROM APPROVAL DATE. THE CITY WILL NOT BE RESPONSIBLE FOR ERRORS AND/OR OMISSIONS ON THESE PLANS. FIELD CONDITIONS MAY DICTATE CHANGES TO THESE PLANS AS DETERMINED BY THE DEVELOPMENT ENGINEERING MANAGER.

TITLE: East Town Crossing — Exhibit for Possible Stream Relocation — Puyallup, WA

FOR: East Town Crossing, LLC. — 1001 Shaw Road, Puyallup, WA 98372



Abbey Road Group Land Development Services Company, LLC
2102 E MAIN AVE, SUITE 109
PUYALLUP, WA 98372
P.O. Box 1224, Puyallup, WA 98371
(253) 435-3699, Fax (253) 446-3159

REVISIONS: BY: | CHK: | APR: | DATE: | PER:

JOB #: 06-171-1 | DESIGNED BY: JMB | DEVELOPMENT REVIEW: PRB | APPROVED BY: GH | DRAFTED BY: HPJ | DATE: 10/04/2021 | SHEET: Exhibit 1

File: T:\PROJECTS FILES (ACTIVE)\06-171-01, East Town Crossing\SURVEY\Exhibits\20210924-Pioneer Ditch Grading Exhibit\06-171 Pioneer Ditch-Frontage Plan.dwg Plotted: 10/6/2021 10:03 AM Plotted By: Harrison Jastrzembski

EAST TOWN CROSSING

SEC. 26,35/ TWP. 20 N./ RGE. 4 E., W.M.
EXHIBIT FOR POSSIBLE STREAM RELOCATION

0 10 20 40
SCALE: 1" = 20
FOR 24" X 36" SHEET

LINE IS 1" AT
FULL SCALE

APPROVED

BY _____
CITY OF PUYALLUP
DEVELOPMENT ENGINEERING

DATE _____

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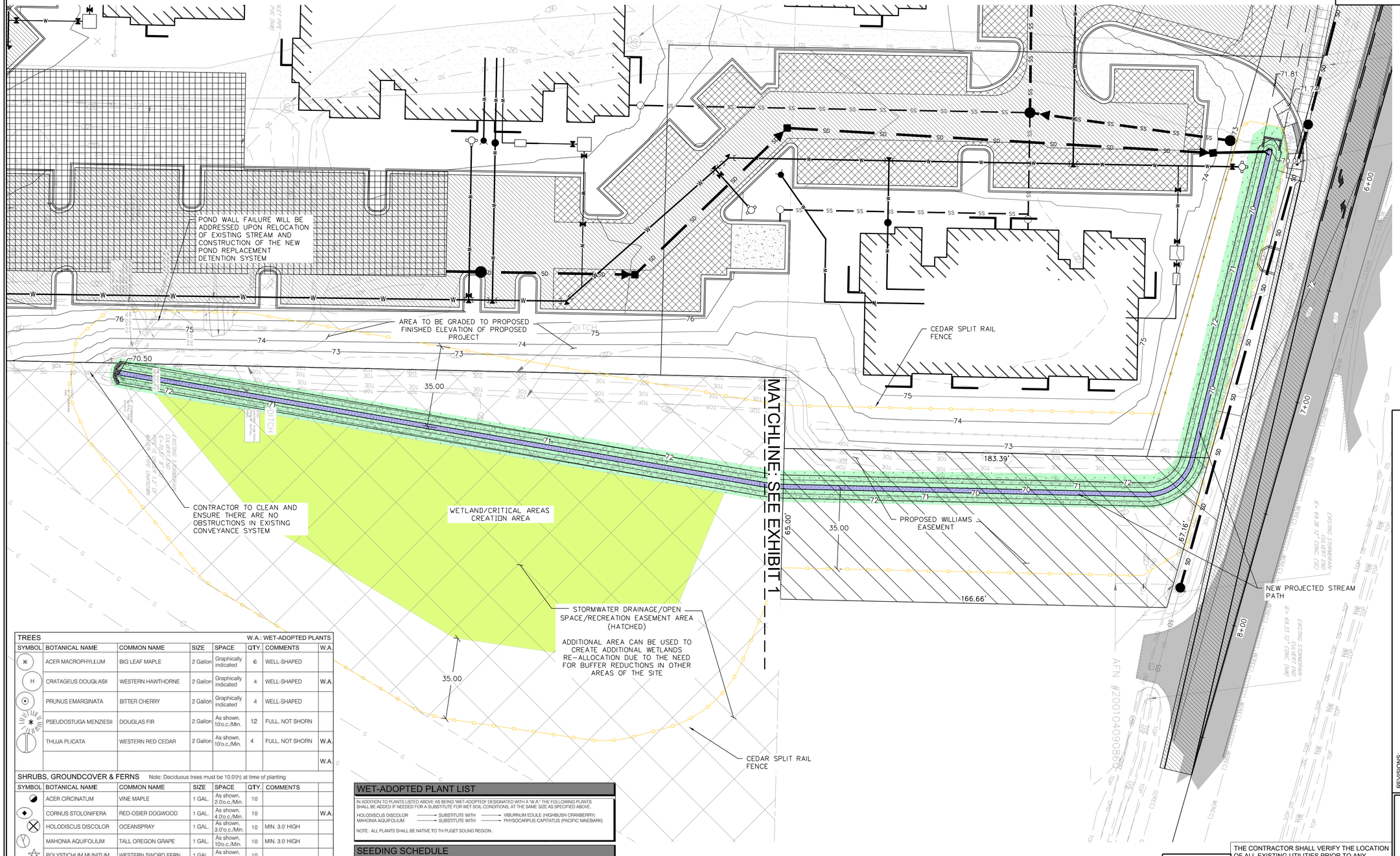

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(253) 435-3699, Fax (253) 446-3159

Abbey Road GROUP

REVISIONS:	CHK.	APR.	DATE:	PER:
BY:				

JOB #: 06-171-1
DESIGNED BY: JMB
DEVELOPMENT REVIEW: PRB
APPROVED BY: GH
DRAFTED BY: HPJ
DATE: 10/04/2021
SHEET: Exhibit 2

10/04/2021

File: T:\PROJECTS FILES (ACTIVE)\06-171-0\01 East Town Crossing\SURVEY\Exhibits\20210524-Pioneer Ditch Grading Exhibit\06-171 Pioneer Ditch Frontage Plan.dwg
Plotted: 10/06/2021 10:54 AM
Plotted By: Herman Jaramillo