HCA MITIGATION PROPOSAL AND ALTERNATIVES ANALYSIS FOR ELK ROCK ESTATES

City of Milwaukie ID #: 18-004PA

ETC Job EVA18007

Evaluated by:__ _____ June 22, 2019

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MITIGATION PROPOSAL AND ALTERNATIVE ANALYSIS

For Elk Rock Estates
City of Milwaukie ID #: 18-004PA
Matthew Gillis

REVISED: June 29, 2019. This revision responds to comments from the city and is modified for changes with the revised site plan dated June 14, 2019.

There is 38,500 SQFT of HCA that will be impacted by the development. Of this area approximately 2,236 SQFT will be used as a low-impact recreation area, (a walking path and two park benches, almost all of which will be pervious materials). Another 2,484 SQFT will be used as a stormwater swale. The walking path and swale are exempted from HCA mitigation requirements per MMC 19.402.4.B, leaving 33,780 of non-exempt impacts requiring mitigation.

A proportion of the island that is a stone's throw across the slough from the development site, and part of the applicant's lots, will host the entire mitigation. LIDAR data was used to estimate the area above OHWM (20ft elevation). The data was supplied by Harper, Houf, Peterson Righellis Inc. The LIDAR data has checked out to be within ODOT protocols. Approximately 41,708 SQFT of island area on the subject property is above 20' elevation and available for use as mitigation for HCA impacts.

Additional areas adjacent to the development, basically areas between the buildings and Top-of-bank that are not part of the proposed stormwater swale or walking path could provide up to 6,982 SQFT of additional mitigation. Added to the island area there is then approximately 48,690 SQFT of area that can potentially be used as mitigation for the 33,780 SQFT of non-exempt impacts.

A geotechnical investigation was conducted by Daniel M. Redmond, P.E., of Redmond Geotechnical Services, LLC. It showed the island area above 20ft elevation has a sandy loam soil from 1.5ft to more than 3ft deep. Other areas below the 20ft contour were not investigated. Please see Appendix 5.

A wetland determination survey was conducted by Annakate Martin, Senior Biologist, Environmental Technology Consultants. This was a wetland determination only, not to be confused with a wetland delineation. She concluded that the areas above the 20ft elevation contour were upland. Ms. Martin also conducted a vegetation survey and found the island infested with blackberry and Tree-of-Heaven, along with a smattering of native species. Importantly the area appears to be able to support deep-rooted long-lived plant species like trees, and this answers a concern raised earlier by the city, that the island may not have the soils necessary to support a mitigation planting. Other areas below the 20ft contour were not investigated. Please see Appendix 4.

19.402.1.B. General Standards for Required Mitigation

Where mitigation is required by Section 19.402 for disturbance to WQRs and/or HCAs, the following general standards shall apply:

1. Disturbance

a. Designated natural resources that are affected by temporary disturbances shall be restored, and those affected by permanent disturbances shall be mitigated, in accordance with the standards provided in Subsection 19.402.11.C for WQRs and Subsection 19.402.11.D.2 for HCAs, as applicable.

Response: In order to meet floodplain no-net-rise requirements and meet a requirement that road surfaces be above the 36.4 FT floodplain elevation, most of the area east of Top-of-Bank will need to be graded. Material outside of the development footprints will be removed and used to raise up the road surfaces in order to put raise them above the flood plain elevation. The volume of this material (remove + fill volume) needs to net to zero to meet the no-net-rise requirement.

Within the grading extents, (most of everything east of the Top-of-Bank), we are counting everything as a "permanent disturbance". Two of the disturbances are exempt from mitigation requirements per MMC 19.402.4.B:

All areas within the 50FT WQR buffer are also included in the HCA area, and so we show these areas combined and call them HCA areas in this analysis.

Table 1. HCA & WQR Disturbances created by the Elk Rock Estates Proposed Development. Disturbed areas outside the HCA and WQR areas are not included.

DISTURBANCE	SQFT
Buildings, roads, & other impervious surfaces	20,226
Stormwater Swale (exempt per 19.402.4.B.5)	2,484
Walking path & benches (exempt per 19.402.4.B.4)	2,236
Graded areas that will be replanted as landscape or as lawn areas. (possibly exempt per 19.402.1.B.1.b, but we are treating them as disturbances requiring mitigation)	13,554
Disturbed wetland areas	0
Disturbed areas below OHWM	0
Total disturbance	**38,500**
Total disturbance requiring mitigation per MMC Title 19	**33,780**

b. Landscape plantings are not considered to be disturbances, except for those plantings that are part of a non-exempt stormwater facility; e.g., raingarden or bioswale.

Response: The stormwater swale is an infiltrating swale and there is no existing forest canopy or tree driplines in the vicinity, and therefore exempt per MMC 19.402.4.B.

The “Native landscape plantings & grass areas”, 13,554 SQFT in Table 1 above, may or may not be considered exempt per MMC 19.402.1.B.1.b (above). In this application they are treated as impacts requiring mitigation, although further review of this interpretation of the MMC may be necessary.

2. Required Plants
Unless specified elsewhere in Section 19.402, all trees, shrubs, and ground cover planted as mitigation shall be native plants, as identified on the Milwaukie Native Plant List. Applicants are encouraged to choose particular native species that are appropriately suited for the specific conditions of the planting site; e.g., shade, soil type, moisture, topography, etc..

Response: The 2011 Portland Plant List was used per the instructions found on Milwaukie’s website.

3. Plant Size
Replacement trees shall average at least a 1/2-in caliper—measured at 6 in above the ground level for field-grown trees or above the soil line for container-grown trees— unless they are oak or madrone, which may be 1-gallon size. Shrubs shall be at least 1-gallon size and 12 in high.

Response: Landscape plans will include this instruction.

4. Plant Spacing
Trees shall be planted between 8 and 12 ft on center. Shrubs shall be planted between 4 and 5 ft on center or clustered in single-species groups of no more than 4 plants, with each cluster planted between 8 and 10 ft on center. When planting near existing trees, the dripline of the existing tree shall be the starting point for plant spacing measurements.

Response: Landscape plans will include this instruction.

5. Plant Diversity
Shrubs shall consist of at least 2 different species. If 10 trees or more are planted, then no more than 50% of the trees shall be of the same genus.

Response: Landscape plans will include this instruction.

6. Location of Mitigation Area
a. On-Site Mitigation
All mitigation vegetation shall be planted on the applicant’s site within the designated natural resource that is disturbed, or in an area contiguous to the resource area; however, if the vegetation is planted outside of the resource area, the applicant shall preserve the contiguous planting area by executing a deed restriction such as a restrictive covenant.

Response: The mitigation site selected is a portion of the 41,708 SQFT of the island areas which are portions of the same tax lots where the impact will occur. It is surrounded by the resource, and contiguous with it in every sense of the word.

The term “resource area” is used multiple times in the MMC, but it is not explicitly defined. However, the term “Designated Natural Resource” is defined as “any “water quality resource” or

"habitat conservation area" as defined in Section 19.201 and established in Section 19.402." and we will use that definition for "resource area". Because no mitigation plantings will be made outside the resource area, it appears that a deed restriction or restrictive covenant will not be required for the mitigation area.

b. Off-Site Mitigation

(1) For disturbances allowed within WQRs, off-site mitigation shall not be used to meet the mitigation requirements of Section 19.402.

(2) For disturbances allowed within HCAs, off-site mitigation vegetation may be planted within an area contiguous to the subject-property HCA, provided there is documentation that the applicant possesses legal authority to conduct and maintain the mitigation, such as having a sufficient ownership interest in the mitigation site. If the off-site mitigation is not within an HCA, the applicant shall document that the mitigation site will be protected after the monitoring period expires, such as through the use of a restrictive covenant.

Response: No off-site mitigation is proposed.

7. Invasive Vegetation

Invasive nonnative or noxious vegetation shall be removed within the mitigation area prior to planting, including, but not limited to, species identified as nuisance plants on the Milwaukie Native Plant List.

Response: The HCA areas are currently vegetated with a high percentage of invasive plants, the dominant vegetation is Blackberry, Plantain, and Japanese knotweed. These will be removed except for the steep bank area which will be left alone to avoid erosion issues.

8. Ground Cover

Bare or open soil areas remaining after the required tree and shrub plantings shall be planted or seeded to 100% surface coverage with grasses or other ground cover species identified as native on the Milwaukie Native Plant List. Revegetation shall occur during the next planting season following the site disturbance.

Response: A native grass seed mix (recommend "Disturbed Ground/Late Seed" be used) will be used in some areas of bare ground that will not be planted with horticultural lawn grasses. Grasses in this area will need to be mowed periodically for fire control as they will be trafficked by tobacco using humans and close enough to buildings that fire prevention is an over-riding priority. A native wildflower seed is specified for the island areas used for mitigation.

The following standards are required and included here in this mitigation plan:

19.402.1.B.9. Tree and Shrub Survival

A minimum of 80% of the trees and shrubs planted shall remain alive on the second anniversary of the date that the mitigation planting is completed.

a. Required Practices

To enhance survival of the mitigation plantings, the following practices are required:

(1) Mulch new plantings to a minimum of 3-in depth and 18-in diameter to retain moisture and discourage weed growth.

(2) Remove or control nonnative or noxious vegetation throughout the maintenance period.

b. Recommended Practices

To enhance survival of tree replacement and vegetation plantings, the following practices are recommended:

(1) Plant bare root trees between December 1 and April 15; plant potted plants between October 15 and April 30.
(2) Use plant sleeves or fencing to protect trees and shrubs against wildlife browsing and the resulting damage to plants.
(3) Water new plantings at a rate of 1 in per week between June 15 and October 15 for the first 2 years following planting.

c. Monitoring and Reporting

Monitoring of the mitigation site is the ongoing responsibility of the property owner. Plants that die shall be replaced in kind as needed to ensure the minimum 80% survival rate. The Planning Director may require a maintenance bond to cover the continued health and survival of all plantings. A maintenance bond shall not be required for land use applications related to owner-occupied single-family residential projects. An annual report on the survival rate of all plantings shall be submitted for 2 years.

10. Light Impacts

Where practicable, lights shall be placed so that they do not shine directly into any WQR and/or HCA location. The type, size, and intensity of lighting shall be selected so that impacts to habitat functions are minimized.

C. Mitigation Requirements for Disturbance within WQRs

1. The requirements for mitigation vary depending on the existing condition of the WQR on the project site at the time of application. The existing condition of the WQR shall be assessed in accordance with the categories established in Table 19.402.11.C.

2. When disturbance within a WQR is approved according to the standards of Section 19.402, the disturbance shall be mitigated according to the requirements outlined in Table 19.402.11.C and the standards established in Subsection 19.402.11.B.

Subsection 19.402.11.D.2 Mitigation Requirements for Disturbance in HCAs

To achieve the goal of reestablishing forested canopy that meets the ecological values and functions described in Subsection 19.402.1, when development intrudes into an HCA, tree replacement and vegetation planting are required according to the following standards, unless the planting is also subject to wetlands mitigation requirements imposed by state and federal law.

These mitigation options apply to tree removal and/or site disturbance in conjunction with development activities that are otherwise permitted by Section 19.402. They do not apply to situations in which tree removal is exempt per Subsection 19.402.4 or approvable through Type I review.

An applicant shall meet the requirement of Mitigation Option 1 or 2, whichever results in more tree plantings; except that where the disturbance area is 1 acre or more, the applicant shall comply with Mitigation Option 2.

a. Mitigation Option 1

This mitigation requirement is calculated based on the number and size of trees that are removed from the site. Trees that are removed from the site shall be replaced as shown in Table 19.402.11.D.2.a. Conifers shall be replaced with conifers. Bare ground shall be planted or seeded with native grasses or herbs. Nonnative sterile wheat grass may also be planted or seeded, in equal or lesser proportion to the native grasses or herbs.

Table 19.402.11.D.2.a
Tree Replacement

Size of Tree to be Removed (inches in diameter)	Number of Trees and Shrubs to be Planted
6 to 12	2 trees and 3 shrubs
13 to 18	3 trees and 6 shrubs

19 to 24	5 trees and 12 shrubs
25 to 30	7 trees and 18 shrubs
over 30	10 trees and 30 shrubs

The proposed development removes no trees. There currently are few trees on the lot, and the existing trees are on the margins, or along the Slough, or on the island, and these areas are not impacted. The project will therefore use 19.402.11.D.2.b to compute the number of mitigation trees and shrubs required.

Note that the city has questions whether or not two cottonwood trees near the SW corner of the development were on the lot or not. The surveyors located trees on the lot, and these were not included, and so we assume they are in the Sparrow Street ROW, and not on the lot.

b. Mitigation Option 2

This mitigation requirement is calculated based on the size of the disturbance area within an HCA. Native trees and shrubs are required to be planted at a rate of 5 trees and 25 shrubs per 500 sq ft of disturbance area. This is calculated by dividing the number of square feet of disturbance area by 500, multiplying that result times 5 trees and 25 shrubs, and rounding all fractions to the nearest whole number of trees and shrubs. For example, if there will be 330 sq ft of disturbance area, then 330 divided by 500 equals 0.66, and 0.66 times 5 equals 3.3, so 3 trees must be planted, and 0.66 times 25 equals 16.5, so 17 shrubs must be planted. Bare ground shall be planted or seeded with native grasses or herbs. Nonnative sterile wheat grass may also be planted or seeded, in equal or lesser proportion to the native grasses or herbs.

The disturbed HCA requiring mitigation is 33,780 SQFT, the number of trees and shrubs to satisfy the mitigation requirement is:

Required Trees @ 5 per 500 sqft	338
Required Shrubs @ 25 per 500 sqft	1689

*Fractional trees & shrubs are rounded up to the nearest whole number.

c. Adjustments to HCA Mitigation Requirements

Proposals to vary the number or size of trees and shrubs required as mitigation in Subsection 19.402.11.D.2 shall be subject to the Type II review process and the requirements of Subsection 19.402.12.C.2.

Response: No variance from subsection 19.402.11.D.2 is requested.

19.402.12.A General Discretionary Review

1. Identification of the ecological functions of riparian habitat found on the property, as described in Subsection 19.402.1.C.2

"Riparian" means those areas associated with streams, lakes, and wetlands where vegetation communities are predominately influenced by their association with water, (MMC 19.200).

The riparian habitat on the subject property consists of the island areas, and the areas on the eastern side of the property between OHWM and the Top-of-Bank. The area proposed for development is not riparian per the definition as the vegetation community is a product of a long history of use and management by humans.

2. An inventory of vegetation, sufficient to categorize the existing conditions of the WQR per Table 19.402.11.C, including the percentage of ground and canopy coverage materials within the WQR.

The vegetation communities of the development area describe in ETC's wetland delineation report, which has previously been accepted by the State and by the City. The vegetation communities of the island mitigation areas are described in Appendix 4.

3. An assessment of the water quality impacts related to the development, including sediments, temperature and nutrients, sediment control, and temperature control, or any other condition with the potential to cause the protected water feature to be listed on DEQ's 303(d) list.

The proposed development will be permitted in part by a 1200C permit for the grading permit, and by 401 permit for the Stormwater Management Plan. Adherence to these permit requirements should be adequate to protect the Willamette River, which is listed on DEQ's 303(d) list.

4. An alternatives analysis, providing explanation of the rationale behind choosing alternative selected, listing measures that will be taken to avoid and/or minimize adverse impacts to designated natural resources, and demonstrating that:

a. No practicable alternatives to the requested development exist that will not disturb the WQR or HCA.
b. Development in the WQR and/or HCA has been limited to the area necessary to allow for the proposed use.
c. If disturbed, the WQR can be restored to an equal or better condition in accordance with Table 19.402.11.C; and the HCA can be restored consistent with the mitigation requirements of Subsection 19.402.11.D.2
d. Road crossings will be minimized as much as possible.

Response: The alternatives analysis is presented in a following section.

5. Evidence that the applicant has done the following, for applications proposing routine repair and maintenance, alteration, an/or total replacement of existing structures located within the WQR:

a. Demonstrated that no practicable alternative design or method of development exists that would have a lesser impact on the WQR than the one proposed. If no such practicable alternative design or method of development exists, the project shall be conditioned to limit its disturbance and impact on the WQR to the minimum extent necessary to achieve the proposed repair/maintenance, alteration and/or replacement.
b. Provided mitigation to ensure that impacts to the functions and values of the WQR will be mitigated or restored to the extent practicable.

Response: There are currently no existing structures located in the WQR, except for an old dock, which may be repaired or replaced at a later date.

6. A mitigation plan for the designated natural resource that contains the following information:

a. A description of adverse impacts that will be caused as a result of development.

Response: The primary resource is the Willamette River. The proposed development will build roads, sidewalks and condominiums on approximately 20,226 SQFT of the HCA area. In order to meet floodplain and storm water requirements, an additional 18,274 SQFT of area will be dug down up to 5 feet but replanted with native species. Some of this area will be used for stormwater management, some for low-impact outdoor recreation, and some for landscape areas. In order to minimize impacts the development is located as far away from the primary resource as possible, in a part of property that has been historically used for farming and then more recently as an equipment storage area and residential area.

b. An explanation of measures that will be taken to avoid, minimize, and/or mitigate adverse impacts to the designated natural resource; in accordance with, but not limited to, Table 19.402.11.C for WQRs and Subsection 19.402.11.D.2 for HCAs.

c. Sufficient description to demonstrate how the following standards will be achieved:

(1) Where existing vegetation has been removed, the site shall be revegetated as soon as practicable.

Response: Disturbed areas west of the building envelopes will be treated per the conditions of the 1200C permit, the Stormwater Management Plan, and the Mitigation Plan.

(2) Where practicable, lights shall be placed so that they do not shine directly into any WQR and/or HCA location. The type, size, and intensity of lighting shall be selected so that impacts to habitat functions are minimized.

Response: No lighting will be installed in the mitigation area. No lighting will be installed that is directed West or South of the development footprint.

(3) Areas of standing trees, shrubs, and natural vegetation will remain connected or contiguous; particularly along natural drainage courses, except where mitigation is approved; so as to provide a transition between the proposed development and the designated natural resource and to provide opportunity for food, water, and cover for animals located within the WQR.

Response: As described by the HCA Determination Report, the area proposed for development is currently devoid of trees and shrubs except for blackberries and other invasive species. It is also flat, and without drainages.

This island mitigation area is described in more detail in appendixes 4 and 5.

d. A map showing where the specific mitigation activities will occur. Off-site mitigation related to WQRs shall not be used to meet the mitigation requirements of Section 19.402.

Response: Maps are included. There is no offsite mitigation.

e. An implementation schedule; including a timeline for construction, mitigation, mitigation maintenance, monitoring, and reporting; as well as a contingency plan. All in-stream work in fish-bearing streams shall be done in accordance with the allowable windows for in-water work as designated by ODFW.

Response: Construction of the mitigation will commence concurrently with the start of construction of the impacted areas.

ETC recommends the first growing season to be devoted to removal and control of invasive species. Blackberry infestations in particular need to be treated with herbicides, then allowed to die for two weeks, then cut down, allowed to resprout for a month or two, then treated with herbicides again. It takes a full growing season to prepare these areas for planting.

Care needs to be taken to preserve native species present in the mitigation area. In particular the survey shown in Appendix 4 identified an area of native grass species, and also sapling Ash trees, these should be preserved.

Bare areas of the mitigation area should be heavily mulched before the fall rainy season begins.

Planting and seeding work should begin in mid-October and be completed by the end of January.

Maintenance and monitoring activities should begin in March. An irrigation system should be installed by April 1. ETC recommends a drip line irrigation system with one drip emitter provided to each tree or shrub.

The monitoring and maintenance protocols are described in more detail in Appendix 3.

Except for the repair to an existing dock, there will be no in-water work as part of this project. The dock is not permitted as part of this first submittal, an application for the dock will be made at a later date.

19.402.12.B. Approval Criteria

1. Unless specified elsewhere in Section 19.402, applications subject to the discretionary review process shall demonstrate how the proposed activity complies with the following criteria:

a. Avoid

Response: Efforts to avoid impacts are discussed in the Alternatives Analysis section and in the applicant's, narrative contained in the document "Application for Type III Design Review, Revised February 25, 2019", prepared by Iselin Architects and Harper Houf Peterson Righellis, Inc.

The proposed activity avoids the intrusion of development into the WQR and/or HCA to the extent practicable. The proposed activity shall have less detrimental impact to the designated natural resource than other practicable alternatives, including significantly different practicable alternatives that propose less development within the resource area.

b. Minimize

If the applicant demonstrates that there is no practicable alternative that will avoid disturbance of the designated natural resource, then the proposed activity within the resource area shall minimize detrimental impacts to the extent practicable.

Response: Efforts to minimize impacts are discussed in the Alternatives Analysis section and in the applicant's narrative contained in the document "Application for Type III Design Review, Revised February 25, 2019", prepared by Iselin Architects and Harper Houf Peterson Righellis, Inc.

(1) The proposed activity shall minimize detrimental impacts to ecological functions and loss of habitat, consistent with uses allowed by right under the base zone, to the extent practicable.
(2) To the extent practicable within the designated natural resource, the proposed activity shall be designed, located, and constructed to:
(a) Minimize grading, removal of native vegetation, and disturbance and removal of native soils; by using the approaches described in Subsection 19.402.11.A, reducing building footprints, and using minimal excavation foundation systems (e.g., pier, post, or piling foundation).
(b) Minimize adverse hydrological impacts on water resources.
(c) Minimize impacts on wildlife corridors and fish passage.
(d) Allow for use of other techniques to further minimize the impacts of development in the resource area; such as using native plants throughout the site (not just in the resource area), locating other required landscaping adjacent to the resource area, reducing light spill-off into the resource area from development, preserving and maintaining existing trees and tree canopy coverage, and/or planting trees where appropriate to maximize future tree canopy coverage.

Response: The compliance with the above section is discussed in the Alternatives Analysis section and in the applicant's narrative contained in the document "Application for Type III Design Review, Revised February 25, 2019", prepared by Iselin Architects and Harper Houf Peterson Righellis, Inc., and in the Stormwater Management Plan and in the 1200C permit associated with this project.

c. Mitigate
If the applicant demonstrates that there is no practicable alternative that will avoid disturbance of the designated natural resource, then the proposed activity shall mitigate for adverse impacts to the resource area. All proposed mitigation plans shall meet the following standards:

Response: As shown in the Alternative's Analysis section, it is not possible to develop the site at densities allowed by the R-5 zoning without impacting the WQR buffers and HCA areas.

(1) The mitigation plan shall demonstrate that it compensates for detrimental impacts to the ecological functions of resource areas, after taking into consideration the applicant's efforts to minimize such detrimental impacts.

Response: As shown in the Alternatives Analysis section, the proposed project minimizes impacts by reducing the development size and locating it as far as possible from the resources. The proposed mitigation plan is compliant with the guidelines listed in Title 19, and therefore assumed to be compensation for the detrimental impacts.

(2) Mitigation shall occur on the site of the disturbance, to the extent practicable. Off-site mitigation for disturbance of WQRs shall not be approved. Off-site mitigation for disturbance of HCAs shall be approved if the applicant has demonstrated that it is not practicable to complete the mitigation on-site and if the applicant has documented that they can carry out and ensure the success of the off-site mitigation as outlined in Subsection 19.402.11.B.5.
In addition, if the off-site mitigation area is not within the same subwatershed (6th Field Hydrologic Unit Code) as the related disturbed HCA, the applicant shall demonstrate that it is not practicable to complete the mitigation within the same subwatershed and that, considering the purpose of the mitigation, the mitigation will provide more ecological functional value if implemented outside of the subwatershed.

Response: The proposed mitigation is entirely on-site.

(3) All revegetation plantings shall use native plants listed on the Milwaukie Native Plant List.

Response: The Portland Plant List was used instead of the Milwaukie Native Plant List as per the instructions found on Milwaukie's website. The plant list in Appendix 3 is actually adapted from a native plant list from Clark County Washington, however that list too is derived from the Portland native plant list as Clark County uses the Portland list.

(4) All in-stream work in fish-bearing streams shall be done in accordance with the allowable windows for in-water work as designated by ODFW.

Response: No in-stream work is proposed.

(5) A mitigation maintenance plan shall be included and shall be sufficient to ensure the success of the planting. Compliance with the plan shall be a condition of development approval.

Response: A monitoring and maintenance plan is attached as Appendix 1.

C. Limitations and Mitigation for Disturbance of HCAs

1. Discretionary Review to Approve Additional Disturbance within an HCA

An applicant seeking discretionary approval to disturb more of an HCA than is allowed by Subsection 19.402.11.D.1 shall submit an Impact Evaluation and Alternatives Analysis, as outlined in Subsection 19.402.12.A, and shall be subject to the approval criteria provided in Subsection 19.402.12.B.

Response: The disturbed HCA is less than allowed by Subsection 19.402.11.D.1. Please refer to the narrative presented in the supporting document Application for Type III Design Review - Gillis Properties Elk Rock Estates Cluster Development 12205/ 12225 SE 19th St., Milwaukie, Oregon 97206. By Iselin Architects, P.C. and Harper Houf Peterson Righellis, Inc. Revised 2/25/2019.

2. Discretionary Review to Approve Mitigation that Varies the Number and Size of Trees and Shrubs within an HCA

An applicant seeking discretionary approval to proportionally vary the number and size of trees and shrubs required to be planted under Subsection 19.402.11.D.2 (e.g., to plant fewer larger trees and shrubs or to plant more smaller trees and shrubs), but who will comply with all other applicable provisions of Subsection 19.402.11, shall be subject to the following process:

a. The applicant shall submit the following information:

(1) A calculation of the number and size of trees and shrubs the applicant would be required to plant under Subsection 19.402.11.D.2.

(2) The number and size of trees and shrubs that the applicant proposes to plant.

(3) An explanation of how the proposed number and size of trees and shrubs will achieve, at the end of the third year after initial planting, comparable or better mitigation results than would be achieved if the applicant complied with all of the requirements of Subsection 19.402.11.D.2. Such explanation shall be prepared and signed by a knowledgeable and qualified

natural resource professional or a certified landscape architect. It shall include discussion of site preparation including soil additives, removal of invasive and noxious vegetation, plant diversity, plant spacing, and planting season; and immediate post-planting care, including mulching, irrigation, wildlife protection, and weed control.

(4) A mitigation, site-monitoring, and site-reporting plan.

b. Approval of the request shall be based on consideration of the following:

(1) Whether the proposed planting will achieve, at the end of the third year after initial planting, comparable or better mitigation results than would be achieved if the applicant complied with all of the requirements of Subsection 19.402.11.D.2.

(2) Whether the proposed mitigation adequately addresses the plant diversity, plant survival, and monitoring practices established in Subsection 19.402.11.B.

Response: A variance from this subsection is not requested.

ALTERNATIVE ANALYSIS:

Much of the responses in this section have been previously submitted in the applicant's narrative contained in the document "Application for Type III Design Review, Revised February 25, 2019", prepared by Iselin Architects and Harper Houf Peterson Righellis, Inc. ETC has expanded on some of that narrative in this section.

19.402.1 Intent

5. Allow and encourage habitat-friendly development while minimizing the impact on water quality and fish and wildlife habitat functions.

Response: The selected alternative promotes minimized impacts to the HCA by combining a cluster development approach with reducing the number of units in the development and keeping the development as far from the river and wetlands as possible.

Development of this site to the density of the underlying zone without modification to the mapped Habitat Conservation Area (HCA) is not possible. Based on the density of the underlying zone 23-29 units are required. After all final calculations were done omitting areas within the WQR and other sensitive areas a range of 12-18 dwelling units is possible. The proposed development seeks approval for a total of twelve units.

A map amendment was initially sought utilizing the Cluster Development allowed by the Milwaukie Municipal Code (MMC) with this application. The City's environmental consultant has determined that all land within the 100 year flood plain must be included within the HCA; contradicting the evidence presented by the Applicant's consultant that the land to the east of Top-of-Bank did not qualify for the HCA designation due to historic uses and developments that occurred prior to the adoption of the Milwaukie Municipal Code and are specifically exempted per MMC 19.402.15.B.2.b. Please refer to the supporting document submitted separately "City of Milwaukie HCA Determination Report, Tax Lots 3200 and 3300 in T1S R1E S35. By John McConnaughey and Annakate Martin, Environmental Technology Consultants, June 6, 2019."

The primary resource is the Willamette River and its habitat are considered the most important to preserve and protect. There is a small functionally isolated wetland in the Sparrow Street Row

on the South side, and also a ditch that historically probably drained the wetland area but is now disconnected but still retains wetland characteristics. These wetland areas are secondary resources.

The selected design, (Figure M1), shows a cluster development of providing only 12 housing units that are located away from the primary and secondary resources as much as possible. A number of other designs were considered up to the maximum 32 dwelling units allowed for an R-5 residential development. These designs included constructing units on the island, built on stilts and accessed by a cable suspension bridge. Ultimately these larger development scenarios had to be abandoned due to resource and view impacts.

Three alternative designs, (Figures M3, M4 and M5) are presented here, both providing more housing units, but creating greater impacts to the resource. M3 shows a 16-unit design similar to the selected 12-unit design. By reducing or eliminating the units on the North and South property lines the remaining units can be located further from the resources and property lines, also the Private Drive can be reduced on the South end, reducing the WQR impact from Wetland "A".

Minimizing the impact with the proposed development still dictates disruption of the mapped HCA area. Mitigation per the attached document is therefore proposed on this site as part of the Project. We believe this mitigation plan meets all requirements of the Milwaukie Municipal Code or can be in compliance with Conditions of Approval.

6. Permit residential cluster development to encourage creative and flexible site design that is sensitive to the land's natural features and adapts to the natural topography.

Response: The cluster development standards allow this project to comply with Goal 5 while providing 12 housing units.

A reduced side yard setback from 25' to 20' on the south side of the property. This is proposed to allow for a logical driveway placement and to allow for a reasonable building footprint below the existing home on this side of the site. The 20' proposed setback will also allow the proposed new home to align with the existing home which is set back 20' from south property line. We believe this requested variance also meets the intent of the Code to provide an increased perimeter buffer since this property line abuts a 40' wide unimproved right of way which will likely never be improved due to the identified wetland within the right of way. The property on the opposite side of this right of way will also remain open space since it is a public park.

19.402.14 Adjustments and Variances

To encourage applicants to avoid or minimize impacts to WQRs and/or HCAs, several types of adjustments and variances are available for use on any property that includes a WQR or HCA. These include adjustments to specific base zone and lot design standards, discretionary variances, and allowances for residential cluster development.

Response: The responses to this section is condensed from the supporting document "Application for Type III Design Review", submitted separately. In the event of any inconsistencies between this document and that document, please refer to the

A. Adjustments

The adjustments provided in Subsection 19.402.14.A shall not be used to avoid the requirement to submit a construction management plan, if deemed applicable per Subsection 19.402.3. The following adjustments are allowed by right as part of any Type I, II, or III application:

1. Adjustments to Base Zone Standards

a. Yard Setback (General)

Yard setback standards may be adjusted by up to 10%. This allowance applies only to the yard requirements established in base zones and does not apply to additional yard requirements for conditional uses or community service uses, yard exceptions established in Subsection 19.501.2, or transition area measures established in Subsection 19.504.6.

Response: Criteria do not apply. With the exception of the side yard setback described above, no adjustments to the base zone standards are proposed.

2. Rear Yard Setback (Limited)

For residential development, if the subject property is adjacent to a separate tract that was established according to the standards of Subsection 19.402.13.J, and the tract is adjacent to the rear yard of the subject property, the minimum rear yard requirement may be reduced to 10 ft.

2. Adjustments to Lot Design Standards

When property boundaries are changed and/or land divided per Title 17 Land Division, an applicant may utilize the following adjustments to avoid or minimize impacts to a WQR or HCA:

a. The minimum base zone standards for lot width and lot depth may be reduced by up to 10%.

b. The minimum lot frontage required on a public street may be reduced by up to 10%.

Response: Criteria do not apply. No adjustments to the lot design standards are proposed.

B. Variances

1. Requests to vary any standards beyond the adjustments allowed in Subsections 19.402.14.A or B shall be subject to the review process and approval criteria for variances established in Section 19.911.

2. In granting any variance request related to Section 19.402, the Planning Commission may impose such conditions as are deemed necessary to minimize adverse impacts that may result from granting the variance. Examples of such conditions include, but are not limited to, maintaining a minimum width of the vegetated corridor alongside a primary protected water feature and limiting the amount of WQR for which the adjacent vegetated corridor width can be reduced.

Response: No variances to standards of Subsections 19.402.14.A or B.

C. Residential Cluster Development

For residential proposals, development may be clustered so that land can be developed at allowed densities while avoiding or minimizing impacts to WQRs or HCAs. The intent of this section is to encourage creative and flexible site design that enables the allowable density to be transferred elsewhere on a site to protect environmentally sensitive areas and preserve open space and natural features. A residential cluster development may be permitted in any residential or mixed use zoning district, subject to Type III review and approval by the Planning Commission. A cluster development proposal

may be considered in conjunction with a proposal for land division or property line adjustment as provided in Subsection 19.402.13.

Response: A residential cluster development is being proposed to minimize impacts to the WQR and HCA.

1. Calculation of Permitted Number of Dwelling Units

a. The maximum number of dwelling units proposed for a residential cluster development shall not exceed the number of dwelling units otherwise permitted for the residential zoning district in which the parcel is located. The number of units allowed on a parent lot may be transferred to one or more newly created lots or parcels on the site. The cumulative density for all lots or parcels shall not exceed the density allowed for the parent lot.

Response: The density allowed for the gross property area would be 25-32 dwelling units based on the ratio of 7-8.7 dwelling units per the base R-5 zone. The proposed density of 12 dwellings is 3.28 dwellings per gross acre.

b. The number of permitted dwelling units on a site shall be calculated in the following manner:

(1) Measure the gross area of the proposed cluster development site in acres and tenths of an acre.

Response: Gross site area is 3.66 acres per assessor's records.

(2) From the gross area, subtract the area of public streets, other publicly dedicated improvements, and common open space (whether or not it is conveyed pursuant to Subsection 19.402.14.C.2.c), measured in acres and tenths of an acre. The remainder shall be the net buildable area.

Response: Common area consisting of HCA/ WQR and area to the west of the slough is 1.58 acres, leaving 2.08 acres of net buildable area.

(3) Convert the net buildable area from acres to square feet, using the equivalency of 43,560 sq ft = 1 acre.

Response: Net buildable area is 90,605 sq. ft.

(4) Divide the net buildable area by the smallest minimum lot size (in square feet) per unit for a dwelling unit permitted in the zoning district. This figure shall be rounded to the nearest lower number to establish the maximum number of dwelling units permitted in the cluster development.

Response: 90, 605 / 5000 = 18.12 dwelling units maximum. 12 units are proposed.

2. Development Standards

a. All principal and accessory uses authorized in the underlying zoning district(s) shall be allowed in the cluster development. In addition, single-family attached dwellings, multifamily dwellings, and townhouses may be permitted for a cluster development located in a residential zoning district that does not otherwise allow attached dwelling units.

Response: Single family detached homes are proposed as allowed in the underlying R-5 zone.

b. Maximum lot coverage, building height, and off-street parking requirements for the applicable zoning district shall apply to the cluster development. Maximum lot coverage, floor area ratios, and off-street parking requirements shall be applied to the entire site rather than to any individual lot.

Response: The maximum lot coverage and off-street parking for the R-5 zone will be met with the proposed development. The height limit for the home on SE 19th will comply with the underlying zone. All other new homes proposed meet the more restrictive 35' requirement of the Willamette Greenway overlay.

c. The following provisions shall apply to any residential cluster development, regardless of the general requirements of the applicable residential zoning district:

(1) The adjustments allowed by Subsection 19.402.14.A shall be available for cluster development proposals.

Response: No adjustments are being requested per Subsection 19.402.14.A.

(2) Minimum lot width and lot depth standards shall not apply.

Response: No subdivision is proposed. The overall site exceeds the lot width and depth of the underlying zone.

(3) A minimum separation of 10 ft shall be provided between all principal buildings and structures.

Response: A minimum of 10' separation is proposed between all buildings on the site.

(4) A minimum yard or common open space shall be provided, with a minimum depth of 25 ft, as measured from all public streets and from the side and rear lot lines of the entire cluster development.

Response: A minimum 25' yard is proposed from the front, rear and north side yards. A variance is being sought to allow a minimum side setback to the south. This is being sought to match the existing home and since the unimproved right of way along this frontage will likely remain undeveloped due to the wetland area within it. This unimproved 60' right of way provides a buffer that meets the intent of this criteria.

(5) Each lot shall provide at least 12 ft of frontage on a public street.

Response: The consolidated lot will have 240' of frontage on SE 19th St. Criteria is met.

(6) More than 1 principal building or structure may be placed on a lot.

Response: Twelve detached single-family homes are proposed on a common building site with this application.

(7) No less than 25% of the site shall be conveyed as common open space.

Response: 1.58 acres (43% of gross site area) is proposed to be conveyed as common open space. The instrument of this conveyance will be as acceptable to the City.

(8) No less than 50% of the designated natural resources on the site shall be included in calculating the common open space.

Response: 94% of the designated natural resource area on the site is being calculated as common open space. The 4,094 sq. ft. created by the delineated wetland to the south side of the property is not proposed as common open space.

3. Site Plan Requirements

The preliminary and final site plans for a residential cluster development shall include the following information, in addition to the items listed on the City's Site Plan Requirements:

a. The maximum number and type of dwelling units proposed.

b. The areas of the site on which the dwelling units are to be constructed or are currently located and their size. This may take the form of the footprint of the dwelling unit or a building envelope showing the general area in which the dwelling unit is to be located.

c. The calculations for the permitted number of dwelling units, derived pursuant to Subsection 19.402.14.C.2.

d. The areas of the site on which other principal and accessory uses are proposed to be located and their size.

e. The areas of the site designated for common open space and their size.

Response: Information from this subsection has been included on the Site Plan.

4. Approval Criteria

a. Proposals for residential cluster development shall demonstrate compliance with the following criteria:

(1) The site plan satisfies the requirements of Subsections 19.402.14.C.1 and 2.

Response: The proposed Site Plan satisfies the requirement of Subsections 19.402.14.C.1 and .2.

(2) Buildings and structures are adequately grouped so that at least 25% of the total area of the site is set aside as common open space. To the greatest degree practicable, common open space shall be designated as a single tract and not divided into unconnected small parcels located in various parts of the development. Common open space shall be conveyed as allowed by Subsection 19.402.13.J.

Response: A single common space tract is proposed with instrument of conveyance acceptable to the City, ie. Deed restriction, public ownership, common tract or easement.

(3) Individual lots, buildings, structures, streets, and parking areas are situated to minimize the alteration of natural features, natural vegetation, and topography.

Response: Buildings are proposed to be clustered to minimize impact and alteration of natural features and topography.

(4) Impacts to WQRs and HCAs are avoided or minimized to the greatest degree practicable.

Response: The proposed cluster development is consistent with the purpose of Subsection 19.402.1. as explained above in that section.

(5) The cluster development advances the purposes established in Subsection 19.402.1.

b. The Planning Commission may apply such conditions or stipulations to its approval as may be required to maintain harmony with neighboring uses and promote the objectives and purposes of the Comprehensive Plan and the Zoning and Land Division Ordinances.
c. If the Planning Commission finds that the criteria in Subsection 19.402.14.C.4.a are met, it shall approve the residential cluster development, subject to any conditions established pursuant to Subsection 19.402.14.C.4.b.

Maps following this page

M1 Proposed development plan with HCA, WQR, and Wetlands shown
M2 HCA mapping per City of Milwaukie
M3 Rejected Alternative #2
M4 Rejected Alternative #3
M5 Rejected Alternative #4
M6 Aerial Photo of the Site

APPENDICES:

Appendix 1 - Mitigation Monitoring and Maintenance Plan
Appendix 2 - Annual Mitigation Monitoring Report Template
Appendix 3 - Planting Plan
Appendix 4 - Mitigation Area Current Conditions and Suitability
Appendix 5 - Geotechnical Investigation of the Proposed Mitigation Area

SUPPORTING DOCUMENTS:

Documents submitted separately:

Elk Rock Estates - Site Civil Memorandum. By Ken Valentine, PE., Harper Pouf Peterson Righellis, Inc., June 20, 2019

Application for Type III Design Review - Gillis Properties Elk Rock Estates Cluster Development 12205/ 12225 SE 19th St., Milwaukie, Oregon 97206. By Iselin Architects, P.C. and Harper Houf Peterson Righellis, Inc. Revised 2/25/2019.

City of Milwaukie HCA Determination Report, Tax Lots 3200 and 3300 in T1S R1E S35. By John McConnaughey and Annakate Martin, Environmental Technology Consultants, June 6, 2019.

HCA AND WQR NON-EXEMPT IMPACTS 33,780 SQFT.

TOTAL HCA AREA GRADED = 38,500 SQFT. EXEMPT AREAS INCLUDE STORMWATER SWALE, 2,484 SQFT AND WALKING PATH 2,236 SQFT

ISLAND MITIGATION AREA
33,780 SQFT WITHIN THE AREA AT OR ABOVE THE 20' OHWM AND HAVE BEEN DETERMINED TO BE UPLAND.

HCA BUILDING & STREET IMPACT 20,226 SQFT

GRADING EXTENTS IN HCA 38,500 SQFT

FEMA FLOOD ELEVATION, 36.4 FT

ETC DATA PLOTS AND TEST PITS

HCA AREA CORRECTED TO TOP-OF-BANK (42,241 SQFT INCLUDES ONLY AREAS EAST OF TOP-OF-BANK, ADDITIONAL HCA AREAS EXIST ON THE PROPERTY)

WREN STREET

3100

3200

3300

3100

P8

P9

P10

P11

Test pit

Test pit

Test pit

SUBJECT PROPERTY

SLOUGH

WALKING PATH 2,236 SQFT

STORM SWALE 2,484 SQFT

19TH AVENUE SE

TOP OF BANK

WILLAMETTE RIVER OHWM ELEVATION = 20FT

SE SPARROW ST

WETLAND "B" 188 SQFT

WETLAND "A" 3,175 SQFT WITHIN STUDY AREA CONTINUES SOUTH PAST STUDY AREA BOUNDARY

NOTE!

TOPOGRAPHY SHOWN ON THIS PLAN IS FROM A LIDAR SURVEY, AND IS CONFIRMED TO BE WITHIN ODOT PROTOCOLS. THE TOP-OF-BANK, OHWM AND FEMA FLOOD ELEVATIONS ARE FROM A TOPOGRAPHIC SURVEY BY ANDY PARIS AND ASSOCIATES.

SELECTED ALTERNATIVE 12 UNIT DESIGN

PRELIMINARY SITE PLAN MSC-221
REVISED JUNE 14, 2019

PROVIDES 10 NEW SINGLE FAMILY HOMES, 2 EXISTING HOMES FOR A TOTAL OF 12 HOUSING UNITS. ANNOTATED WITH IMPACT AND MITIGATION AREAS ADDED

REVISIONS

MILWAULKIE RIVERFRONT CUSTOM HOMES
GILLIS PROPERTIES LLC
5965 WEST A STREET
WEST LINN, OR 97068

SELECTED ALTERNATIVE
SITE PLAN WITH WETLANDS DETERMINED BY ETC AND HCA PROPOSED IMPACTS AND MITIGATIONS

environmental technology consultants
PO Box 821185
Vancouver, WA 98682
360-696-4403

DATE Jul 01, 2019
SCALE NOTED
DRAWN JHM
JOB 94–02
SHEET M1

HCA AND WQR PERMANENT IMPACTS REQUIRING MITIGATION, 33,780 SQFT.

ISLAND MITIGATION AREA
APPROXIMATELY 33,780 SQFT

100' COMPLIANCE LINE

HCA BUILDING & STREET IMPACT 20,226 SQFT

WREN STREET

FEMA FLOOD ELEVATION, 36.4 FT

3100

3200

3300

3100

ETC DATA PLOTS AND TEST PITS

HCA AREA ON WEST BAND CORRECTED TO TOP-OF-BANK

GRADING LIMITS

P8

P9

P10

P11

Test pit

Test pit

Test pit

SUBJECT PROPERTY

SLOUGH

WALKING PATH 2,236 SQFT

STORM SWALE 2,484 SQFT

19TH AVENUE SE

TOP OF BANK

WILLAMETTE RIVER OHWM ELEVATION = 20FT

SE SPARROW ST

WETLAND "B" 188 SQFT

WETLAND "A" 3,175 SQFT WITHIN STUDY AREA CONTINUES SOUTH PAST STUDY AREA BOUNDARY

NOTE!

TOPOGRAPHY SHOWN ON THIS PLAN IS FROM A TOPOGRAPHIC SURVEY BY ANDY PARIS AND ASSOCIATES. THE TOP-OF-BANK, OHWM AND FEMA FLOOD ELEVATIONS ARE BASED ON THAT SURVEY .

MILWAUKIE HCA MAP

ORANGE REPRESENTS AREAS DEFINED AS HCA BY TITLE 19

N

100 Feet
50
25
0
1:600

REVISIONS

MILWAULKIE RIVERFRONT CUSTOM HOMES
GILLIS PROPERTIES LLC
5965 WEST A STREET
WEST LINN, OR 97068

CITY OF MILWAUKIE HCA MAP WITH WETLANDS DETERMINED BY ETC AND HCA PROPOSED IMPACTS AND MITIGATIONS

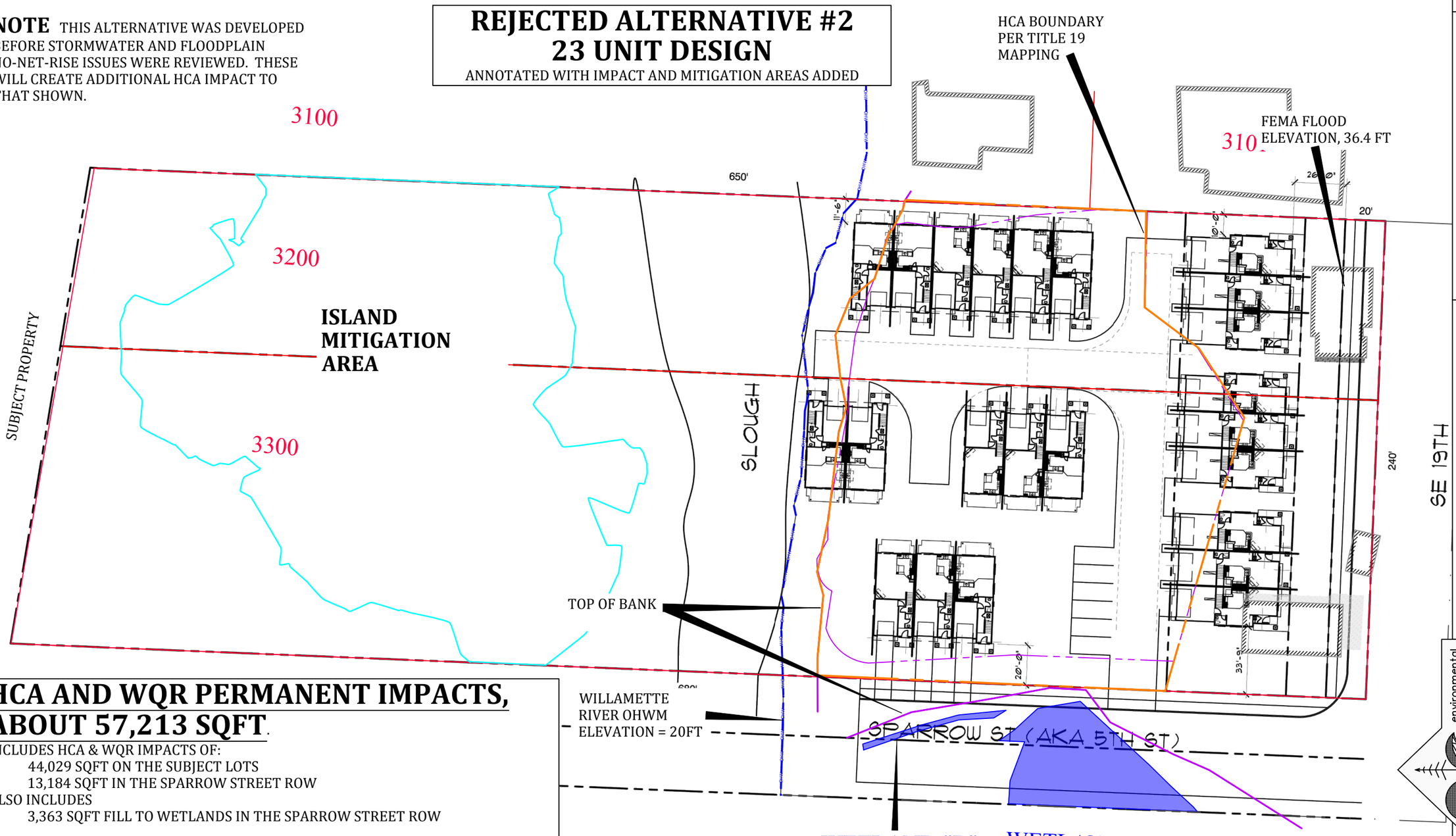
environmental technology consultants
PO Box 821185
Vancouver, WA 98682
360-696-4403

DATE Jul 01, 2019
SCALE NOTED
DRAWN JHM
JOB 94–02
SHEET M2

NOTE THIS ALTERNATIVE WAS DEVELOPED BEFORE STORMWATER AND FLOODPLAIN NO-NET-RISE ISSUES WERE REVIEWED. THESE WILL CREATE ADDITIONAL HCA IMPACT TO THAT SHOWN.

REJECTED ALTERNATIVE #2
23 UNIT DESIGN

ANNOTATED WITH IMPACT AND MITIGATION AREAS ADDED



HCA AND WQR PERMANENT IMPACTS, ABOUT 57,213 SQFT.

INCLUDES HCA & WQR IMPACTS OF:
- 44,029 SQFT ON THE SUBJECT LOTS
- 13,184 SQFT IN THE SPARROW STREET ROW

ALSO INCLUDES
- 3,363 SQFT FILL TO WETLANDS IN THE SPARROW STREET ROW

THIS SCENARIO ALSO MAY FILL A SMALL AREA TO THE OHWM OF THE WILLAMETTE RIVER. IT IS UNLIKELY THAT ENOUGH AREA ON THE ISLAND WILL BE ABLE TO SUPPORT THE MITIGATION REQUIREMENTS OF THIS SCENARIO.

THIS SCENARIO ALSO PRODUCES MORE IMPACTS TO VIEWS.

REVISIONS

MILWAUKIE RIVERFRONT CUSTOM HOMES
GILLIS PROPERTIES LLC
5965 WEST A STREET
WEST LINN, OR 97068

REJECTED ALTERNATIVE 2
SITE PLAN WITH WETLANDS DETERMINED BY ETC AND HCA PROPOSED IMPACTS AND MITIGATIONS

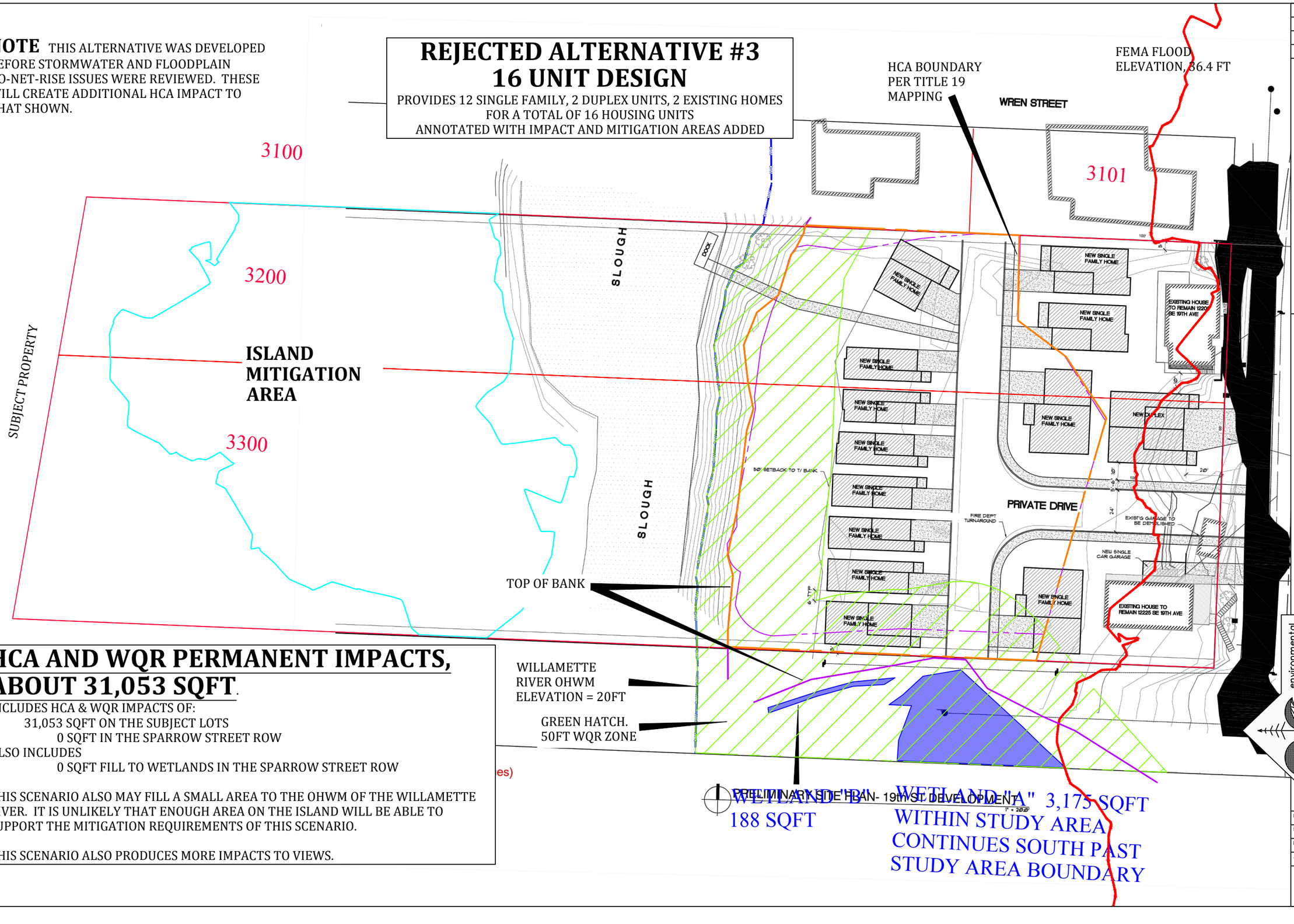
environmental technology consultants
PO Box 821185
Vancouver, WA 98682
360-696-4403

DATE Jul 01, 2019
SCALE NOTED
DRAWN JHM
JOB 94–02
SHEET M3

NOTE THIS ALTERNATIVE WAS DEVELOPED BEFORE STORMWATER AND FLOODPLAIN NO-NET-RISE ISSUES WERE REVIEWED. THESE WILL CREATE ADDITIONAL HCA IMPACT TO THAT SHOWN.

REJECTED ALTERNATIVE #3
16 UNIT DESIGN

PROVIDES 12 SINGLE FAMILY, 2 DUPLEX UNITS, 2 EXISTING HOMES
FOR A TOTAL OF 16 HOUSING UNITS
ANNOTATED WITH IMPACT AND MITIGATION AREAS ADDED



HCA AND WQR PERMANENT IMPACTS, ABOUT 31,053 SQFT.

INCLUDES HCA & WQR IMPACTS OF:
- 31,053 SQFT ON THE SUBJECT LOTS
- 0 SQFT IN THE SPARROW STREET ROW

ALSO INCLUDES
- 0 SQFT FILL TO WETLANDS IN THE SPARROW STREET ROW

THIS SCENARIO ALSO MAY FILL A SMALL AREA TO THE OHWM OF THE WILLAMETTE RIVER. IT IS UNLIKELY THAT ENOUGH AREA ON THE ISLAND WILL BE ABLE TO SUPPORT THE MITIGATION REQUIREMENTS OF THIS SCENARIO.

THIS SCENARIO ALSO PRODUCES MORE IMPACTS TO VIEWS.

REVISIONS

MILWAULKIE RIVERFRONT CUSTOM HOMES
GILLIS PROPERTIES LLC
5965 WEST A STREET
WEST LINN, OR 97068

REJECTED ALTERNATIVE 3
SITE PLAN WITH WETLANDS DETERMINED
BY ETC AND HCA PROPOSED IMPACTS AND MITIGATIONS

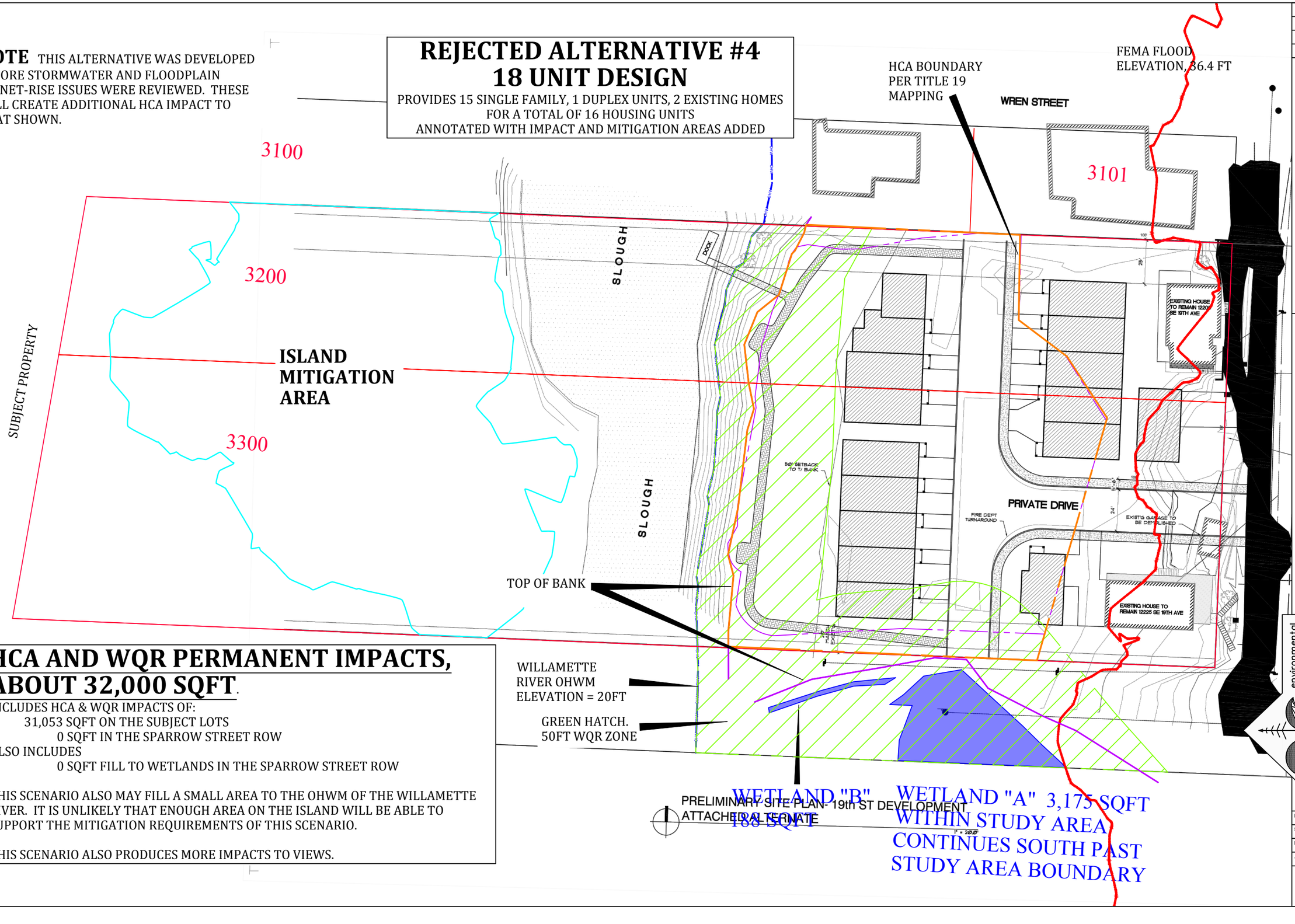
environmental technology consultants
PO Box 821185
Vancouver, WA 98682
360-696-4403

DATE Jul 01, 2019
SCALE NOTED
DRAWN JHM
JOB 94–02
SHEET M4

NOTE THIS ALTERNATIVE WAS DEVELOPED BEFORE STORMWATER AND FLOODPLAIN NO-NET-RISE ISSUES WERE REVIEWED. THESE WILL CREATE ADDITIONAL HCA IMPACT TO THAT SHOWN.

REJECTED ALTERNATIVE #4
18 UNIT DESIGN

PROVIDES 15 SINGLE FAMILY, 1 DUPLEX UNITS, 2 EXISTING HOMES
FOR A TOTAL OF 16 HOUSING UNITS
ANNOTATED WITH IMPACT AND MITIGATION AREAS ADDED



HCA AND WQR PERMANENT IMPACTS, ABOUT 32,000 SQFT.

INCLUDES HCA & WQR IMPACTS OF:
31,053 SQFT ON THE SUBJECT LOTS
0 SQFT IN THE SPARROW STREET ROW
ALSO INCLUDES
0 SQFT FILL TO WETLANDS IN THE SPARROW STREET ROW

THIS SCENARIO ALSO MAY FILL A SMALL AREA TO THE OHWM OF THE WILLAMETTE RIVER. IT IS UNLIKELY THAT ENOUGH AREA ON THE ISLAND WILL BE ABLE TO SUPPORT THE MITIGATION REQUIREMENTS OF THIS SCENARIO.

THIS SCENARIO ALSO PRODUCES MORE IMPACTS TO VIEWS.

REVISIONS

MILWAUKIE RIVERFRONT CUSTOM HOMES
GILLIS PROPERTIES LLC
5965 WEST A STREET
WEST LINN, OR 97068

REJECTED ALTERNATIVE 3
SITE PLAN WITH WETLANDS DETERMINED BY ETC AND HCA PROPOSED IMPACTS AND MITIGATIONS

environmental technology consultants
PO Box 821185
Vancouver, WA 98682
360-696-4403

DATE Jul 01, 2019
SCALE NOTED
DRAWN JHM
JOB 94–02
SHEET M5

PROPOSED MITIGATION AREA

AREA ON THE ISLAND THAT IS ABOVE OHWM. WETLAND DETERMINATION SURVEY SHOW WETLAND HYDROLOGY IS NOT PRESENT, A SOIL SURVEY FOUND SOILS ARE DEEP ENOUGH TO SUSTAIN MITIGATION PLANTS. MUCH OF THE AREA IS PRESENTLY COVERED BY BLACKBERRY.

GREEN - 33,780 SQFT REQUIRED FOR MITIGATION

MEGENTA - 41,708 SQFT AVAILABLE FOR MITIGATION

3100

3101

3200

3300

P8

P9

P10

P11

Test pit

Test pit

Test pit

SUBJECT PROPERTY

WILLAMETTE RIVER OHWM ELEVATION = 20FT

PROPOSED HCA DISTURBANCE TO BE MITIGATED

REVISIONS

MILWAULKIE RIVERFRONT CUSTOM HOMES
GILLIS PROPERTIES LLC
5965 WEST A STREET
WEST LINN, OR 97068

PROPOSED MITIGATION SITE.

environmental technology consultants
PO Box 821185
Vancouver, WA 98682
360-696-4403

DATE Jul 01, 2019
SCALE NOTED
DRAWN JHM
JOB 94–02
SHEET M6

APPENDIX 1
MITIGATION MONITORING AND MAINTENANCE PLAN

IRRIGATION: Success of the trees and shrubs planted from bare root and potted stock will be much greater if the plants are irrigated in their first three summers. ETC recommends using drip irrigation with one drip emitter supplied to each plant. We prefer the 1/2 gallon/hour emitter as they provide the greatest control and most plants that can be supported by a single irrigation zone. A ordinary garden hose should supply about 1,440 gallons/hour and so in theory could supply about 2,800 emitters. ETC recommends not putting more than 500 emitters on a single zone as leaks, line loss, and variations in the emitters will reduce the system's capacity. A timer should be used to supply water 2 to 6 times per day, with a total delivery of about 1 quart of water per plant per day initially and increased if necessary. 1 quart is 30 minutes using 1/2 gallon/hour emitters. The actual amount of water delivered by drip emitters varies considerably with pressure and manufacturer, so some calibration will be necessary after the system is installed.

ETC does not recommend sprinklers for trees and shrubs, though seed may need some supplemental irrigation by sprinklers in the first year if the spring is abnormally dry.

Irrigation in normal years should be provided from mid-June through September, and adjusted as necessary for abnormally dry or wet weather. Irrigation for the first three growing seasons is typically recommended for mitigation plantings.

The mitigation area described in Figures M5 and M9 will be monitored for a period of 5 years following the installation of the prescribed plants. Yearly monitoring reports will be authored and submitted to the City of Oregon City Planning Director on the forms provided in Appendix 2.

WEED CONTROL: Control of invasive weeds, Blackberry in particular, is both required by the MMC and required to ensure the establishment and growth of the mitigation plantings. ETC recommends a minimum of two or more patrols per year to remove invasive vegetation. ETC recommends the careful application of herbicides if allowed by the City of Milwaukie. In our experience manual efforts to remove invasives is ineffective and prohibitively expensive.

APPENDIX 2
Annual Mitigation Monitoring Report Template

NOTE: Plant species shown in the tables below may need to be adjusted after a final mitigation plant list is determined.

1) Date Monitoring Survey Conducted _____ (Must be during the growing season between May 1 and September 30.

2) This Report is for (Circle 1): Year 1 - 2019 As-built
Year 2 – 2020
Year 3 – 2021
Year 4 – 2022
Year 5 – 2023 Final Report

3) Name of and affiliation of person conducting this survey:

_____ _____ _____
Name Company phone or email

4) General Observations and Recommendations: _____

_____

_____

_____

5) Notes on Invasive Species and Removal Efforts Performed: _____

_____

_____

_____

Invasive Species Observed and Area Covered by Invasive Species:

Species 1 _____ % Cover _____

Species 2 _____ % Cover _____

Species 3 _____ % Cover _____

MITIGATION MONITORING REPORT PAGE 2

6) Notes on Irrigation Provided, and Recommendations on Future Irrigation: _____

_____

_____

_____

7) List deceased plants and replacements:

Species_____Replaced? Y or N date_____

Species_____Replaced? Y or N date_____

Species_____Replaced? Y or N date_____

Species_____Replaced? Y or N date_____

Species_____Replaced? Y or N date_____

Species_____Replaced? Y or N date_____

8) The minimum survival criteria for trees and shrubs is 80%. Did the mitigation meet the minimum survival criteria? Describe what measures will be taken to improve survival in the next monitoring period.

_____

_____

_____

_____

9) Attach photographs taken from the photo stations shown in Figure 4.

NOTE: Permittees may use these paper forms or electronic copies of the report and spreadsheets.

MITIGATION MONITORING REPORT PAGE 3

Record numbers of live plants for each monitoring year. Natural recruits of new native plants count toward the total survival. Compute % survival for totals trees and total shrubs only.						
Native Trees and Shrubs, recommended and alternates.	Number Planted	AS-BUILT 2019	2020	2021	2022	2023
Trees (385 required)						
Shrubs (1,925 required)						
TOTAL NUMBER OF TREES + SHRUBS SURVIVING.						
PERCENT SURVIVING (DIVIDE TOTAL BY 2,310) May be more than 100%						

Mitigation Success Criteria:

The success criteria below are adapted from DSL's mitigation monitoring success guidelines with references to wetlands and wetland hydrology criteria removed.

The objectives of this mitigation are to create a self sustaining upland habitat with an area of at least 33,780 SQFT that is dominated by native plants. The criteria below are listed in order of importance;

1. An area of at least 33,780 SQFT dominated by native plants.
2. A minimum 80% survival of the trees and shrubs for a total of 80% X 2,027 = 1,622 trees and shrubs. Recruitment of any native tree or shrub species may be used toward this goal.
3. DSL's Remove/Fill Guidance document recognizes four habitat types that are defined by vegetation and wetland hydrology. Monitoring reports need to estimate the areas of these four habitat types. Invasive species are not to be included when computing this metric, for example an area that is 100% blackberries is counted as a "herbaceous wetland", but if it was 100% Douglas Spirea, it would be counted as a "shrub-dominated wetland" :

   1. Forested upland (Areas characterized by woody vegetation that is 6m (19 feet) or taller.

   2. Shrub-dominated upland, (Areas dominated by woody vegetation less than 6m (20ft) tall. Species includes shrubs, young trees, and trees and shrubs that are small and stunted because of environmental conditions).

   Additionally, to be classified as Forested or Shrub-dominated, areas must have a density of at least 1,600 native tree and shrub stems per acre, OR the cover of native woody vegetation is at least 50%.

   3. Herbaceous upland, (All other areas not meeting the forested or shrub-dominated definitions).

   4. Upland Buffers, (Areas not normally possessing wetland hydrology during the growing season).

3. Should areas of the mitigation develop wetland hydrology during the course of the monitoring period, they shall continue to count toward the required acreage for this mitigation.

4. It is recognized that there are a complex set of interacting ecological processes that determine the success and failure of various plant species to colonize and thrive in a particular site. This makes it difficult to predict what species will come to dominate. It is also difficult to predict the complex interaction of soil, sun, shade, slopes, water, and animals that create specific conditions colonizing plants will encounter. Also the vegetation will shift over time as a site evolves. Therefore there is no specific area requirement for the four habitat types, except as follows:

   a. The sum of the areas of (Forested + Shrub-Dominated + Herbaceous areas) will be equal or greater than 33,780 SQFT).
   b. There shall be at least six different native species. To qualify a species must have at least 5% aerial coverage.
   c. The cover of native herbaceous species is at least 60%, (this metric applies to the herbaceous stratum only).

d. If the total % cover of the native tree stratum species is less than 50%, then the % cover of invasive herbaceous species shall be no greater than 10%.

e. If the total % cover of the native shrub stratum species is less than 50%, then the % cover of invasive herbaceous species shall be no greater than 10%.

f. If the total % cover of the native tree stratum species is greater than 50%, then the % cover of invasive herbaceous species shall be no greater than 30%.

g. If the total % cover of the native shrub stratum species is greater than 50%, then the % cover of invasive herbaceous species shall be no greater than 30%.

h. The % cover of invasive shrub or tree species shall be no greater than 10%

i. Bare substrate represents no more than 20% cover.

j. By year 3 and thereafter, there shall be at least 6 different native species. To qualify a species must have at least 5% cover in a habitat class.

4. The portions of the mitigation area determined to be Upland Buffer shall meet the following criteria:

   a. The cover of native species is at least 60%, (all strata combined).

   b. If the % cover of tree + shrub species is < 50%, then the cover of invasive species shall be no more than 10%.

   c. If the % cover of tree + shrub species is > 50%, then the cover of invasive species shall be no more than 30%.

5. **Invasive Species**. For this mitigation, invasive species includes all plants listed on the current Oregon Department of Agriculture Noxious Weed list, plus the following species:

   a. Phalaris arundinacea, (Reed canary grass)

   b. Mentha pulegium, (Pennyroyal, pennyrile, squaw mint)

   c. Holcus lanatus, (Velvet grass).

   d. Anthoxanthum odoratum, (Sweet vernal grass).

Mitigation Monitoring Protocols:

Vegetation Monitoring: Vegetation monitoring will be per DSL's "Routine Monitoring Guidance for Vegetation".

APPENDIX 3
PLANTING PLAN

The planting area identified on Figure M6 and described further in Appendix 4 will be planted with the following plant list. Substitutions within the list are allowed depending on availability of plants. Taller shrubs (those with a maximum height of 20FT or higher), may be substituted for trees. Consult a landscape professional for species suitability to the site.

Table 1: Native Tree List

	Common Name	Botanical Name	Deciduous	Evergreen	Dry	Moist	Wet	Sunny	Some Shade	Shady	Deer?	Height (ft)	Number
Trees	Vine Maple	Acer circinatum	X		X	X		X	X	X		25	50
	Big Leaf Maple	Acer macrophyllum	X		X	X		X	X		3	100	25
	Red Alder	Alnus rubra	X		X	X	X	X	X		2	120	30
	Oregon Ash	Fraxinus latifolia	X			X	X	X	X			70	20
	Western Larch	Larix occidentalis	X		X			X	X			135	
	Pacific Crabapple	Malus fusca	X			X	X	X	X			40	25
	Quaking Aspen	Populus tremuloides	X			X	X	X	X		3	82	
	Black Cottonwood	Populus trichocarpa	X			X	X	X	X		2	160	
	Bitter Cherry	Prunus emarginata	X		X	X		X	X			30	25
	Oregon White Oak	Quercus garryanna	X		X	X		X	X		3	75	33
	Cascara	Rhamnus purshiana	X		X	X	X	X	X	X		30	25
	Pacific Willow	Salix lasiandra	X			X	X	X	X		0	40	25
	Scouler's Willow	Salix scouleriana	X		X	X		X	X		0	30	25
	Grand Fir	Abies grandis		X	X	X		X	X	X	2	250	
	Incense cedar	Calocedrus decurrens		X	X	X		X	X		2	120	
	Ponderosa pine	Pinus ponderosa		X	X			X	X			235	
	Douglas Fir	Pseudotsuga menziesii		X	X	X		X	X		2	250	
	Pacific Yew	Taxus brevifolia		X	X	X			X	X		25	
	Western Red Cedar	Thuja plicata		X		X	X		X	X	1	200	35
	Western Hemlock	Tsuga heterophylla		X		X			X	X	2	225	20
	TOTAL TREES REQUIRED = 338												**338**

Table 2: Native Shrub List

	Common Name	Botanical Name	Deciduous	Evergreen	Dry	Moist	Wet	Sunny	Some Shade	Shady	Deer?	Height (ft)	Number
Shrubs	Serviceberry	Amelanchier alnifolia	X		X	X		X	X	X		20	
	Red Osier Dogwood	Cornus stolonifera	X			X	X	X	X	X		15	200
	Beaked Hazelnut	Corylus cornuta	X			X		X	X	X	2	20	150
	Oceanspray	Holodiscus discolor	X		X	X		X	X		1	15	
	Twinberry*	Lonicera involucrata	X			X	X	X	X		1	10	200
	Indian Plum	Oemlaria cerasiformis	X		X	X		X	X	X	3	15	200
	Mock Orange	Philadelphia lewisii	X		X	X		X	X		3	9	
	Pacific Ninebark	Physocarpus capitatus	X			X	X	X	X	X	0	13	200
	Rosa species	R. nutkana, R. pisocarpa	X		X	X	X	X	X		1	26	50
	Rhododendron red or w	Rhododendron sp		X	X			X	X		0	20	
	Red-flowering Currant	Ribes sanguineum	X		X	X		X	X		0	13	75
	Thimbleberry	Rubus parviflorus	X		X	X		X	X	X	0	8	100
	Salmonberry	Rubus spectabilis	X			X	X	X	X	X	0	10	100
	Blue Elderberry	Sambucus cerulea	X		X	X			X	X	1	15	173
	Red Elderberry	Sambucus racemosa	X		X	X		X	X	X	1	15	
	Spirea	Spirea douglasii	X			X	X	X	X		0	7	
	Snowberry	Symphoricarpos albus	X		X	X	X	X	X		1	11	174
	Red Huckleberry	Vaccinum parvifolium	X		X	X			X	X	3	10	
	Alaskan Blueberry	Vaccinum ovalifolium (ala	X		X	X		X	X		3	10	
	Salal	Gaultheria shallon		X	X	X		X	X	X	0	5	37
	Oregon Grape	Mahonia sp.		X	X	X		X	X	X	0	6	30
	Evergreen Huckleberry	Vaccinum ovatum		X	X	X			X	X	0	10	
	TOTAL SHRUBS REQUIRED = 1,689												**1689**

Key to Deer Herbivory Rating. Certain trees and shrubs may require fencing to reduce herbivory by deer.
3 = Yes, deer may browse heavily on this plant, protection probably required.
2 = Moderate deer browsing but plant will likely survive
1 = Browsing not likely to be a problems unless deer are really hungry
0 = Deer do not browse on this plant
Blank = not known

SEED MIXES - Areas cleared of vegetation in preparation for planting will be reseeded with the following plant mixes at the specified rates:

Wild Flower Mix (Custom "Native Pacific Northwest Mix")		
Generally upland plants, Zone B. This Sunmark mixture is native to the Pacific Northwest and is commonly found inland as far as Central Washington and Oregon. This mix is formulated for bloom period from spring to fall. Note that several species determined not to be native species by Clackamas County have been deleted from the original Sunmark list.		
Planting Rate = 8 oz./1000 sq.ft		
Sunmark Seed, 12775 NE Marx St, Building 14, Portland, OR 97230 888-214-7333		
Scientific Name	**Common Name**	**Color**
Clarkia amoena	Dwarf Godetia	Pink/White
Clarkia unguiculata	Clarkia	Pink/Lavender
Eschscholzia californica	California Poppy	Yellow/Orange
Gilia capitata	Globe Gilia	Blue
Gilia tricolor	Bird's Eyes	Lavender/White
Helianthus annuus	Common Sunflower	Yellow
Layia platyglossa	Tidy-Tips	Yellow/White
Linum grandiflorum rubrum	Scarlet Flax	Scarlet
Linum perenne lewisii	Blue Flax	Blue
Lupinus densiflorus aureus	Yellow Lupine	Yellow
Lupinus polyphyllis	Many Leaved Lupine	Mixed
Nemophila menziesii	Baby Blue-Eyes	Blue
Sisyrinchium bellum	Blue-Eyed Grass	Purple
Sunmark "Oak Savanah" mix. For use in upland areas where shrub and trees are desired. For this project the above wildflower mix is to be combined to this mix when planting.		
Seeding Rate: 140 Pounds Per Acre		
3 Pounds Per 1000 Square Feet		
SUNMARK SEEDS INTERNATIONAL (503) 241-SEED		
E-Mail Address seeds@sunmarkseeds.com		
Sunmark's Oak Savanah Mix is an excellent blend of native shrub, trees and grass mixture for reclamation of natural oak shrub scrub sites, providing excellent habitat enhancement and erosion control. Oak Savanah mix may be used in native plantings for reclamation throughout the Pacific Northwest.		
Acer macrophyllum	Big Leaf Maple	20.00%
Arbutus menziesii	Pacific Madrone	20.00%
Quercus garryana	Oregon White Oak	15.00%
Pinus ponderosa	Ponderosa Pine	15.00%
Lupinus polyphillis	Many Leaved Lupine	10.00%
Malus sp.	Crab Apple, wild	10.00%
Arctostaphylos uva-ursi	Bearberry	3.00%

Elymus glaucus	Blue Wildrye	3.05%
Balsamorrhiza sagittaria	Arrowleaf Balsamroot	2.00%
Symphoricarpus albus	Snowberry	1.80%
Spirea douglasii	Douglas Spirea	0.10%
Agrostis exerata	Spike Bentgrass	0.05%

Seeding, Planting, and Mulching Specifications and Guidelines©

Prior to planting, the site shall be inspected for the presence of invasive species that can pose a risk to the native plant community, (e.g. reed canary grass, Himalayan blackberry, English Hawthorn, Japanese knotweed, etc.). All invasive weeds shall be chemically controlled with a herbicide approved for vegetation control in environmentally sensitive areas such as a non-surfactant containing ***glyphosate*** formulation such as **Aquamaster®** or **Rodeo®** or an amine form of ***trichlopyr*** such as **Garlon 3A®**. Tank mixes of both chemicals are permitted as long as directions for tank mixes are followed.

1) After excavation and construction is completed, if topsoil is required 3" of topsoil shall be applied over the complete surface of the graded mitigation site. The topsoil shall be tilled deeply into the exposed ground surface to a minimum of 8" and optimally 12". 3" of environment-friendly hogfuel shall be applied over the entire surface following planting.
2) **Plants will conform to the American Standard for Nursery Stock (ANSI Z60.1-2004)** or the most current version. As stated in the American Standard for Nursery Stock (ANSI Z60.1-2004), "**All container grown nursery stock shall be healthy, vigorous, well rooted, and established in the container in which it is growing; shall have a well established root system reaching the sides of the container to maintain a firm ball when the container is removed, but shall not have excessive root growth encircling the inside of the container**."
3) Plants sold or designated "**Conservation Grade**" **will not be acceptable** for this project.
4) All plants shall be tagged for dormant season identification. Tags to remain on plant material after planting for monitoring purposes.
5) Planting will be done preferably during the winter months. Roots will be protected from freezing, heat and desiccation. All plant materials will be protected if left unplanted overnight.
6) **Preparing the Planting Hole and Planting.**
   a) Dig planting hole no deeper than 90% of the height of the rootball.
   b) Dig the planting hole at least twice the width of the rootball.
   c) *Do not loosen the bottom of the hole in any way*. Leave the bottom of the hole undisturbed for the rootball to sit firmly on, to make sure no subsiding takes place, which causes root balls to sink.
   d) DO NOT FORCE ROOTS INTO THE HOLE IN SUCH A WAY AS TO BEND LONG ROOTS.
   e) Use only existing native backfill soil. *Do not use any soil amendments in the hole*.
   f) Score the outside of the rootball with at least four (4) 1"-2" incisions cut from the top of the rootball to the bottom. Any circling roots that are discovered either circling the sides or circling the bottom of the rootball will be cut through with loppers or hand-pruners. Any circling roots inside the 1" depth incisions will be cut through.
   g) Place the rootball in the planting hole on the bottom of the hole.
   h) Make sure approximately 1" of the rootball (e.g. 10% of rootball top is above grade) sits above grade so that the top of the rootball is visible, and the crown of the plant is plainly seen (e.g. Trunk flare visible).
   i) Level rootball by propping with backfill soil and fill hole with 1/3 of backfill soil.
   j) Tamp the backfill soil with a sod tamper or hands. Do not tamp with feet in any way that could place any weight on the top of the rootball. *Fibrous-rooted plants will tear and separate from the plant from tamping directly on the rootball* with feet.
   k) Water in well. Place remaining backfill soil making sure none is placed on top of the rootball. Tamp the backfill soil and water again.
   l) Any excess backfill soil can be used to form a small circular berm around the rootball, making sure that none ends up on the top of the rootball.
   m) Place 3"-4" of an *environmentally friendly hogfuel, "H& H Recyclers Trailmix", or "Stumpgrindings" with a minimum of bark (e.g. stump grindings), coarse woody mulch in a 6' diameter circle around the plant, making sure it is no less than 2" from trunk. No mulch is to come in contact with the plant stems/trunks.
7) **Handling and Care of Planting Plugs**

8) Use only existing native backfill soil or till in a 2" to 3" layer of organic amendment over whole planting site. Do not use any soil amendments in the hole.
9) Dig planting hole no deeper than the height of the plug.
10) Dig the planting hole at least twice the width of the plug.
11) Roughen exterior of heavily rooted or rootbound plugs to open up rootball and activate new root initials.
12) Center the plug in the planting hole.
13) Backfill soil around plug and tamp soil around plug with fingers and hands.
14) **Handling and Care of Whips, Live Stakes and Sprigs**
    a) All plant material will be stored in water or water filled containers covering at least ½ of the stake until ready to be installed in the ground.
    b) Use only existing native backfill soil. Do not use any soil amendments in the hole.
    c) All plants to be planted as whips, stakes, or sprigs shall be planted as follows:
    d) Each piece must be freshly cut with the base cut at a 45 degree taper.
    e) Whips and stakes shall be 4' to 5' in length and 3/4" to 1½" in diameter (Cottonwood stakes may be 3/4" to 2½").
    f) Optimally, the bottom half of whips and stakes will be immersed in water for 7-10 days (NRCS recommendation 2 to 6).
    g) Keep all plant materials moist in transport. In hot and/or windy days cover with wet burlap.
    h) Plant when soil is moist to facilitate penetration of the stakes into the ground.
    i) For plants that are difficult to root use a rooting hormone as specified on the product container prior to installing
    j) Install the base of pieces into the ground at least 2/3 of their length.
    k) If soil conditions do not allow easy penetration of pieces into the ground, prepare a small diameter hole using a probe such as a piece of large diameter rebar or similar device prior to installing sprig. The hole diameter should be smaller than the sprig diameter. If hole is too large gently tamp soil around plant.
    l) DO NOT POUND PIECES INTO THE SOIL WITH A HAMMER, MALLET, OR ANY OTHER IMPACT DEVICE!
15) **Handling and Care of Loose Seed**
16) Seed mixes shall be broadcast with a "cyclone" type spreader either a walk behind spreader with pneumatic tires to impact area to be seeded as little as possible. Or a "belly-crank" type of spreader that hangs in front of technician shall be used. No drop spreaders will be used at all.
17) If topsoils have not been replaced a 3" minimum layer compost shall be evenly applied to the subject area and thoroughly tilled to at least 8" depth, optimally to one foot of depth.
18) Seed mixes containing very small seeds can be mixed with dry builders sand to facilitate even spreading of seed.
19) Seed shall be evenly applied to all bare soil areas. No mulches purposely placed around individual plants shall have seed broadcast on it so as to minimize any competition from the seed mix species.
20) Seeded areas shall be mulched with weed free straw or peat moss at no more than 1/2" depth.
21) **Animal Protection and Fertilization**
22) Each plant will have a sturdy planting tube of heavy plastic or metal screening as per manufacturer instructions (e.g. Tubex Tree Shelters, Protex Pro/Gro Tubes, Tree Pro tubes). If in rolls, cut to size for plant and zip-lock together as needed. Staple or stake plant tubes to the ground. Use staples with a minimum length of 6". Use longer staples in floodplain areas that have flooding events.
23) In areas with dear beaver and/or nutria population pressure consider metal fencing or screening such as "chicken wire". Fencing should be tailored to the particular herbivore threat.
24) Fertilization shall be done with a slow release fertilizer (e.g. Agriform, Scotts Sierra Tablets, Healthy Start Macro Tablets, and AgSafe Agritab Corp. Tablets) that provides a minimum of two (2) years feeding.
25) **Erosion Control**
26) Slopes that require erosion control covers shall have Coir Fiber blankets cut an applied to surfaces and stapled at the recommended staple spacing configuration with 7" or longer steel staples.

Fertilizer Example:

AGSAFE AGRITAB TABLETS

Minimum Guaranteed Analysis: Guaranteed Analysis

20.00% TOTAL NITROGEN (N)*
2.4% Ammoniacal Nitrogen0. 05% COPPER (Cu)
0.8% Urea Nitrogen 0.05% Water Soluble Copper (Cu)
4.5% Water Soluble Organic Nitrogen 0.02% BORON (B)
2.3% Water Insoluble Nitrogen 1.00% IRON (Fe), TOTAL
10.00% AVAILABLE PHOSPHORIC ACID (P_2O_5) 0.50 Water Soluble Iron (Fe)
5.00% SOLUBLE POTASH (K_2O) 0.05% MANGANESE (Mn)
2.00% CALCIUM (Ca) 0.05% Water Soluble Manganese (Mn)
1.00% MAGNESIUM (Mg), TOTAL 0.05% ZINC (Zn)
0.50% Water Soluble Magnesium (Mg) 0.05% Water Soluble Zinc (Zn)
2.00% SULFUR (S), TOTAL
2.00% Combined Sulfur (S)

Derived From: Ureaform, Methylene Ureas, Urea, Ammonium Phosphates, Calcium Phosphates, Potassium Sulfate, Magnesium Oxide, Magnesium Sulfate, Sodium Borate, Copper Sulfate, Iron Sulfate, Ferrous Sulfate, Manganese Sulfate, and Zinc Sulfate.
*14% slowly available Nitrogen from ureaform, dimethylene urea, and trimethylene urea.

NON-PLANT FOOD INGREDIENTS
HUMUS (10%) – Humic Acids (5-7%) derived from Humus Utah Shale Ore
PROPRIETARY BLEND – Plant and Fish Extracts, Organics, and Beneficial Soil Bacteria & Fungi

*All reference to pesticide applications were done by a state licensed applicator- (Washington State Department of Agriculture Commercial Pestici Applicator *License #75375*
Oregon State Department of Agriculture Commercial Pesticide Applicator *License #AG-L1003662CPA*

APPENDIX 4
MITIGATION AREA CURRENT CONDITIONS AND SUITABILITY

Lot 3200 and 3300 SE 19th Avenue, Clackamas County, Oregon

ETC Job EVA18007

Evaluated by: Annakate Martin June 18, 2019
Annakate Martin, Senior Biologist

Prepared for:
Mathew Gillis
4776 Carolina Avenue, NE
Salem, OR 97305

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"Creating Tomorrow's Environment - Today"

TABLE OF CONTENTS

Photo 1. Cover page. Looking south through the approximate middle of Mitigation area 1 (left side) and area 2 (right side).

INTRODUCTION

PURPOSE OF THIS REPORT:

This report is to provide information on the habitat of the proposed mitigation areas on the subject properties island to be determine by the City of Milwaukie if the island can be used for mitigation. The island is west of the proposed development on the subject site to the east.

Only those areas on the island that are above OHWM, 20' elevation were investigated and reported on (Figures M1 through M5). Observations were made of the soils, vegetation and hydrology were observed, although most of the two lots were traversed regardless of elevation but in some areas blocked by blackberries.

PROPOSED USE:

There are two areas on the island that are determined to be in good condition for mitigation, there is 41,708 SQFT that can be used for mitigation above the 20' in elevation. The HCA requires we use 33,780 SQFT therefore there is an extra 8,000 SQFT to adjust and use if needed when planting. There will be 338 trees and 1,689 shrubs used in the mitigation area. The plantings would be a dense planting of trees every 8' apart and shrubs every 4' apart and some in cluster plantings.

DISCLAIMER:

This report documents the investigation, best professional judgment and conclusions of the investigator. It is correct and complete to the best of my knowledge.

QUALIFICATIONS OF ANNAKATE MARTIN, NRS

I received my Bachelor of Science degree in Natural Resources from Washington State University in 2002. In 2002 I worked for the University of Idaho on MAP tracking steelhead and salmon on the Snake River out of Clarkston, Washington.2002-2003 I worked for Idaho Fish and Game as a field technician for identifying fish in remote streams in Idaho. In 2004, 2016 and currently I have worked for Environmental Technology Consultants conducting wetland delineations and all other environmental reports. From 2007-2014 I worked for 3 Kings Environmental conducting Phase I ESA reports, asbestos and lead surveys. In 2011 I started my own company primarily providing erosion control services and conducting Phase I ESA habitat assessments. I was employed with Clark Public Utilities as a Watershed Coordinator in which I oversaw property restoration with native plants and maintained a nursery in 2017 before coming back to ETC in 2018.

I am currently working on getting my certification as a Professional Wetland Scientist from Portland State University. I have 20 years working in the environmental field specializing in many different areas.

No part of my compensation is dependent on the outcome of my investigations or conclusions I may draw from the observed data.

QUALIFICATIONS OF JOHN MCCONNAUGHEY

I earned a Bachelor of Science degree from the University of Oregon in 1978 and in 1984 I earned a Masters of Fisheries Science degree from the University of Alaska at Juneau, (since renamed the University of Alaska, Southeast). The Juneau curriculum specializes in the study of Pacific salmon. I held positions with agencies tasked with salmon research and management beginning with summer jobs in 1979 in Rogue River, the Oregon Dept of Fish and Wildlife, and then with the Alaska Department of Fish and Game in Ketchikan Alaska, in 1980. I worked on salmon projects with ADF&G in Anchorage and Juneau for 5 years before moving to American Samoa to serve as a fisheries projects leader for the Department of Marine and Wildlife Resources. Upon returning stateside, I worked for the Yakama/Klickitat Fisheries Project out of Yakima Washington for 5 years leading four research projects studying aspects of salmon supplementation projects in the Yakima River.

I have been employed with Environmental Technology Consultants for the past 10 years. In 2010 I earned certification as a Professional Wetland Scientists, (PWS) from the Society of Wetlands Scientists, (SWS), and was renewed in 2015.

No part of my compensation is dependent on the outcome of my investigations or conclusions I may draw from the observed data.

Landscape Setting and Land Use

Study Area

The study area included only the western "island" portions of parcels 3200 & 3300. Areas that were thick with blackberry could still be observed from a distance. Portions of the adjoining properties were observed also.

JURISDICTIONAL CONSIDERATIONS

- City of Milwaukie, Oregon
- Clackamas County, Oregon.
- Shoreline of the State area.
- FEMA flood hazard maps.
- No NWI, State or County mapped wetlands on the parcel.
- No Priority Habitat and Species areas mapped on the parcel.

LANDSCAPE SETTINGS

The island is rock around the lower elevations on the south and west sides and a sandy loam on the east side. As you walk up into the island it is dense with blackberries and opens up in the middle with a small field of grasses, daisies and Ash saplings. Along the east side of the property there are mature Black Cottonwoods and Ash trees with some native snowberry and

Rosa sp. Primarily the mitigation areas are dense blackberry and in Mitigation Area 1 there is a mature Tree of Heaven mixed in with all that blackberry and some shiny geranium.

The soils that were found were a 10YR3/3 sandy loam with no hydrology present and no indicator of hydrology. There were some areas that had granite rock coming out of the ground but that was in the lower elevation areas.

PREVIOUS AND CURRENT LAND USES, & SITE ALTERATIONS

There have been no known previous uses for the island besides recreational for people to walk out to. It is possible that there was some use of the island and slough for log storage before 1950.

Methods

General Wetland Determination Methodology: This investigation was carried out in accordance with the guidelines set forth in the Corps of Engineers Wetland Delineation Manual (Technical Report Y-87-1, 1987) and its recent 2010 update, version 2.0.

Site Specific Methodology: All areas of the parcel were accessible by foot. I dug 3, 16" test pits and 4 data plots that covered the majority of each area in the mitigation sites. I was observing the vegetation, soils and hydrology.

Weather: It was a very rainy spring day with downpours at different times. The weather had been on and off rain before the site visit.

Previous Studies

We are not aware of any previous wetland investigation on the subject parcel island.

Mapping Method

Cell phone GPS was used to locate data plots and they are shown on figure M1.

Description of the Island

No areas of the lots met the three criteria for determining wetland presence and no waterways or streams were observed on the island, there were also no primary or secondary features indicating flooding.

The vegetation at P8 and along the eastern side of the island had more native species than the majority of the Mitigation areas. The mitigation areas were basically 100% *Rubus armeniacus* with some *Populus balsamifers, Fraxinous latifolia, Rosa sp, and Symphoriscarpus albus*. There was a small dip in elevation between the two mitigation areas that will not be used in the mitigation, the area had native grasses, oxeye daises and Ash saplings.

Surface soils are similar to other areas of the property, a 10YR3/3 sandy loam. There were no Hydric features observed.

No areas of bare soil and no indications of water ponding or movement were observed. The soil was not saturated to at least 16" (the depth of my soil pit). As the area has received average precipitation this past spring, in my opinion an area not exhibiting wetland hydrology on May 31 is not a wetland.

CONCLUSION: No wetlands or waterways exist above OHWM on the island. The island is an upland area with a sustainable ecosystem for the planting of native vegetation. If we could remove the blackberry and other invasive species and mitigate it with native plants, I believe it would be a thriving habitat community.

REQUESTED ACTIONS

1. We ask for the approval of the island to be the mitigation site for the disturbance within the HCA area.

APPENDIX A) Data Forms

Data forms following this page:
P8
P9
P10
P11

APPENDIX B) Ground Level Color Photographs

Photo 1: Looking east into the mitigation area (the house on the property can be seen), from the south. Part of the blackberry patch is evident in the photo along with some native Black Cottonwood and Ash

Photo 2: Looking directly into the dense blackberries in the mitigation area.

Photo 3: Looking south into the mitigation area with the native grass in the middle. This is the area that is not suggested for mitigation.

Photo 4: Dense blackberry patch in the mitigation, Tree of Heaven in upper right corner.

Photo 5: Tree of Heaven in mitigation area.

Photo 6: A picture of P8, which is in the northeast corner of the property, the most native vegetation that was observed besides the native grasses.

APPENDIX C) Literature Citations

1. *Classification Of Wetlands And Deepwater Habitats Of The United States*. U.S. Department Of The Interior, Fish And Wildlife Service, December, 1979.
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5. Gilkey, Helen M. and Patricia L. Packard. *Winter Twigs: Northwestern Oregon & Western Washington*. Oregon State University Press, Corvallis, Oregon, 1962.
6. Groxz, Kevin and Dustin Day, *Wetland Delineation & Assessment, 78th Street Project, Clark County WA.* The Resource Company, October 4, 2006.
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15. Vepraskas, Michael J. *Redoximorphic Features for Identifying Aquic Conditions.* Technical Bulletin 301. North Carolina Agricultural Research Service, North Carolina State University, December, 1992.
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APPENDIX 5
MITIGATION PROPOSAL AND ALTERNATIVE ANALYSIS

Mr. Matthew Gillis
Oregon Residential Properties, LLC
2050 Beavercreek Road, Suite 101-337
Oregon City, Oregon 97045

Re: Geotechnical Consultation Services, Evaluation of Existing Soil Cover Depth,
Elk Rock Estates Proposed Mitigation Site, Milwaukie (Multnomah County), Oregon

Dear Mr. Gillis:

In accordance with your request, we have completed our evaluation of the soil cover depth at the above proposed Elk Rock Estates Mitigation Site (see Site Vicinity Map, Figure No. 1). The purpose of our work at this time was to perform soil probes across the proposed mitigation area to evaluate whether soil conditions exist which would allow for and/or support the proposed planting and mitigation work.

Specifically, on June 4, 2019, we were present at the site and performed a total of nine (9) soil probes across the proposed mitigation area (see Site Exploration Plan, Figure No. 2). The soil probes, which were advanced with portable hand auger equipment in the areas currently vegetated, encountered an existing depth of soil above the underlying Basalt bedrock deposits of from about two (2) to three (3) feet or more. The subsurface soils encountered in the test holes generally consisted of a gray to dark gray and/or dark olive-brown, loose, silty fine sand consistent with the alluvial soil characteristics along the banks of the Willamette River. We point out that while areas were present across the proposed mitigation area where Basalt bedrock was exposed and were generally void of vegetation and/or soil cover, much of the proposed mitigation area contains an existing soil cover which is presently vegetated with a moderate to dense growth of grass, weeds and brush as well as numerous small to large size trees.

In this regard, based on the results of our recent soil probes performed at the site, we are of the opinion that the area(s) across the proposed mitigation area which contain an existing soil cover are suitable for the proposed planting and mitigation work.

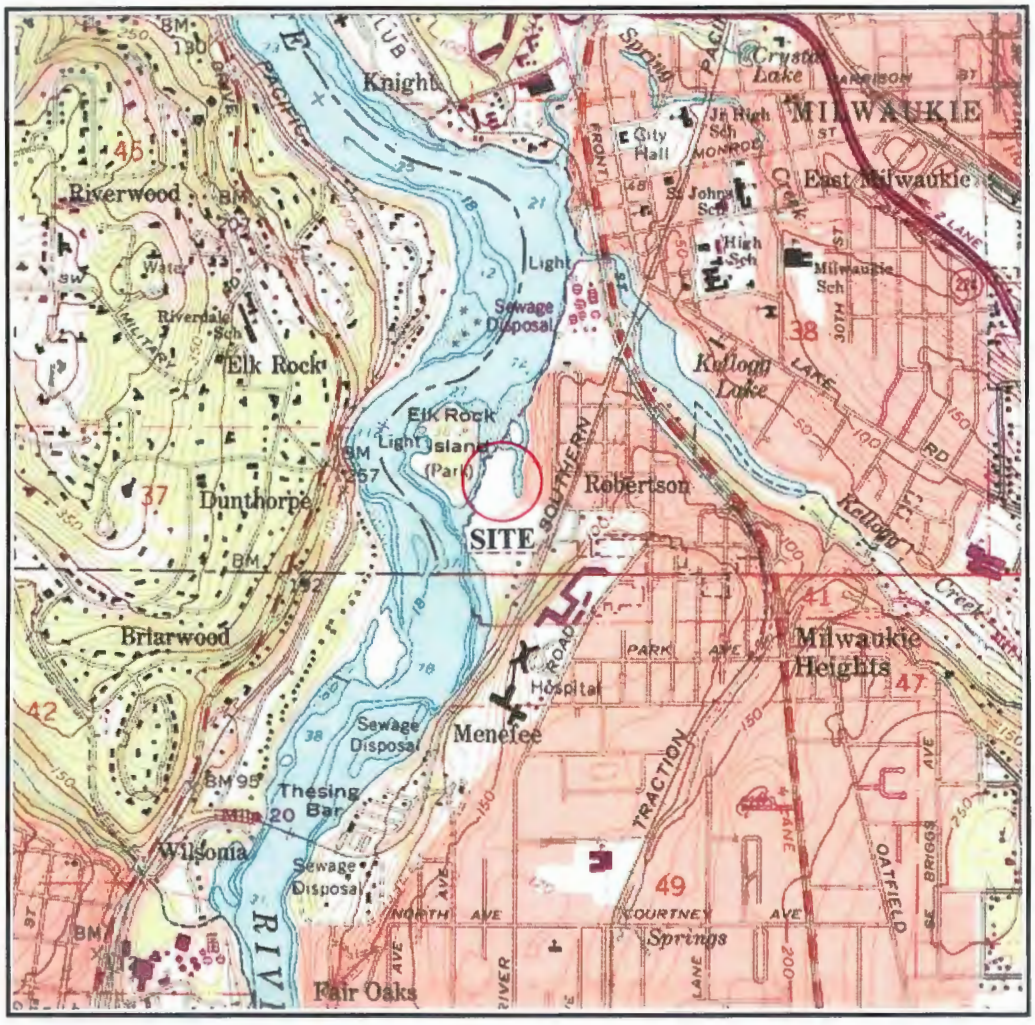
We appreciate this opportunity to be of service to toy at this time and trust that the above information is suitable to your present needs. Should you have any questions regarding the above or if you require any additional assistance and/or information, please do not hesitate to call.

Sincerely,

Daniel M. Redmond, P.E., G.E.
President/Principal Engineer

Attachments:

Figure No. 1 - Site Vicinity Map
Figure No. 2 - Site Exploration Plan
Figure No. 3 - Soil Probe Logs



LAKE OSWEGO QUADRANGLE
OREGON
7.5-MINUTE SERIES (TOPOGRAPHC)

SCALE 1:24 000

1 0 1/2 0 1 MILE

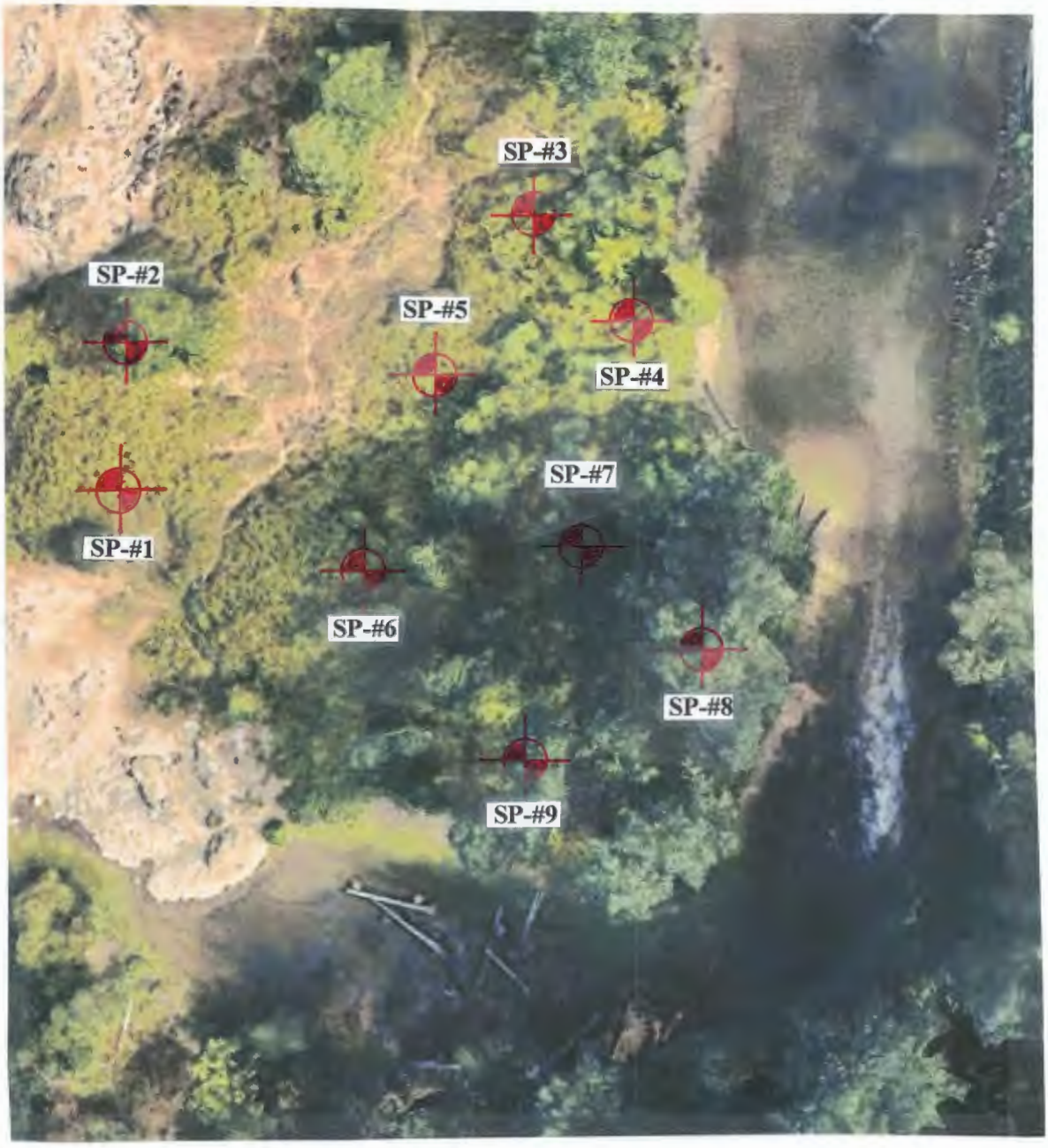
1000 0 1000 2000 3000 4000 5000 6000 7000 FEET

1 .5 0 1 KILOMETER

CONTOUR INTERVAL 10 FEET
NATIONAL GEODETIC VERTICAL DATUM OF 1929
DEPTH CURVES AND SOUNDINGS IN FEET—WILLAMETTE RIVER DATUM

SITE VICINITY MAP

Project No. 1549.002.G	**ELK ROCK ESTATES SITE**	Figure No. 1



LEGEND

SP-#9 Indicates approximate location of soil probe

SITE EXPLORATION PLAN

Project No. 1549.002.G	**ELK ROCK ESTATES SITE**	Figure No. 2

SOIL PROBE LOGS

Soil Probe Location	Depth of Existing Soil Cover
SP-#1	+2.0'
SP-#2	+3.0'
SP-#3	+2.0'
SP-#4	+3.0'
SP-#5	+2.0'
SP-#6	+3.0'
SP-#7	+3.0'
SP-#8	+3.0'
SP-#9	+3.0'

Figure No. 3