



File No. EA2020-101

**CITY OF RICHLAND**  
**Determination of Non-Significance**

**Description of Proposal:** The Country Ridge Home Owners Association proposes to restore approximately 0.54 acres of Category 4 wetlands and its associated regulatory buffer.

**Proponent:** Country Ridge Home Owners Association  
C/O Paul Inserra  
1146 Country Ridge Drive  
Richland, WA 99352

**Location of Proposal:** The restoration site is located in a ravine between Country Ridge Drive and Bridle Drive in the city of Richland, WA 99352. The restoration site is located within Parcel ID #121984020002017, site address 2603 Saddle Way.

**Lead Agency:** City of Richland

The lead agency for this proposal has determined that it does not have a probable significant adverse impact on the environment. An environmental impact statement (EIS) is not required under RCW 43.21C.030(2)(c). This decision was made after review of a completed environmental checklist and other information on file with the lead agency. This information is available to the public on request.

( ) There is no comment for the DNS.

( X ) This DNS is issued under WAC 197-11-340(2); the lead agency will not act on this proposal for fourteen days from the date of issuance.

( ) This DNS is issued after using the optional DNS process in WAC 197-11-355. There is no further comment period on the DNS.

**Responsible Official:** Mike Stevens

**Position/Title:** Planning Manager

**Address:** 625 Swift Blvd., MS #35, Richland, WA 99352

**Date:** January 14, 2020

**Signature** \_\_\_\_\_

# SEPA ENVIRONMENTAL CHECKLIST

## ***Purpose of checklist:***

Governmental agencies use this checklist to help determine whether the environmental impacts of your proposal are significant. This information is also helpful to determine if available avoidance, minimization or compensatory mitigation measures will address the probable significant impacts or if an environmental impact statement will be prepared to further analyze the proposal.

## ***Instructions for applicants:***

This environmental checklist asks you to describe some basic information about your proposal. Please answer each question accurately and carefully, to the best of your knowledge. You may need to consult with an agency specialist or private consultant for some questions. You may use "not applicable" or "does not apply" only when you can explain why it does not apply and not when the answer is unknown. You may also attach or incorporate by reference additional studies reports. Complete and accurate answers to these questions often avoid delays with the SEPA process as well as later in the decision-making process.

The checklist questions apply to all parts of your proposal, even if you plan to do them over a period of time or on different parcels of land. Attach any additional information that will help describe your proposal or its environmental effects. The agency to which you submit this checklist may ask you to explain your answers or provide additional information reasonably related to determining if there may be significant adverse impact.

## ***Instructions for Lead Agencies:***

Please adjust the format of this template as needed. Additional information may be necessary to evaluate the existing environment, all interrelated aspects of the proposal and an analysis of adverse impacts. The checklist is considered the first but not necessarily the only source of information needed to make an adequate threshold determination. Once a threshold determination is made, the lead agency is responsible for the completeness and accuracy of the checklist and other supporting documents.

## ***Use of checklist for nonproject proposals:***

For nonproject proposals (such as ordinances, regulations, plans and programs), complete the applicable parts of sections A and B plus the [SUPPLEMENTAL SHEET FOR NONPROJECT ACTIONS \(part D\)](#). Please completely answer all questions that apply and note that the words "project," "applicant," and "property or site" should be read as "proposal," "proponent," and "affected geographic area," respectively. The lead agency may exclude (for non-projects) questions in Part B - Environmental Elements –that do not contribute meaningfully to the analysis of the proposal.

## **A. Background [\[HELP\]](#)**

1. Name of proposed project, if applicable:
  - CRHOA Wetland Restoration Plan

2. Name of applicant:
  - Country Ridge Home Owners Association (CRHOA)
3. Address and phone number of applicant and contact person:

Applicant representative and contact person:  
Paul Inserra  
1146 Country Ridge Drive  
Richland, WA 99352  
(509) 521-7844
4. Date checklist prepared: January 3, 2020
5. Agency requesting checklist: City of Richland, Development Services Dept.
6. Proposed timing or schedule (including phasing, if applicable):
  - Approval from City of Richland to proceed with Wetlands Restoration Plan – January 2020
  - Establish contract with Wildlands, Inc. to commence Wetlands Restoration Plan – February 2020
  - Phase 1 – Noxious weed eradication – commence in February 2020 – two year plan ending in the fall of 2021
  - Phase 2 – Native grasses planting and irrigation – Fall 2020
7. Do you have any plans for future additions, expansion, or further activity related to or connected with this proposal? If yes, explain.
  - No
8. List any environmental information you know about that has been prepared, or will be prepared, directly related to this proposal.
  - CRHOA Wetlands Delineation Report, prepared by GG Environmental, dated September 12, 2019
  - CRHOA Wetland Restoration Plan, prepared by GG Environmental, dated January 1, 2019
9. Do you know whether applications are pending for governmental approvals of other proposals directly affecting the property covered by your proposal? If yes, explain.
  - No other applications or proposals are pending.
10. List any government approvals or permits that will be needed for your proposal, if known.
  - Approval from City of Richland Development Services (lead agency) to proceed with implementation of the CRHOA Wetland Restoration Plan.
11. Give brief, complete description of your proposal, including the proposed uses and the size of the project and site. There are several questions later in this checklist that ask you to describe certain aspects of your proposal. You do not need to repeat those answers on this page. (Lead agencies may modify this form to include additional specific information on project description.)
  - The CRHOA proposes to restore disturbed areas of the wetlands and its associated regulatory buffer. Based on the results of a wetland delineation conducted in September 2019, Russian olive tree removal had disturbed approximately 0.18 ac within the wetland boundary and

approximately 0.4 ac of associated regulatory buffer. In order to restore the disturbed areas, the CRHOA proposes to conduct weed control and plant native grasses within the wetland buffer, while non-native weeds will be controlled within the wetland boundary such that existing native wetland plants can reestablish. The site will be monitored and managed for three years after planting to ensure that native wetland plants are dominant.

12. Location of the proposal. Give sufficient information for a person to understand the precise location of your proposed project, including a street address, if any, and section, township, and range, if known. If a proposal would occur over a range of area, provide the range or boundaries of the site(s). Provide a legal description, site plan, vicinity map, and topographic map, if reasonably available. While you should submit any plans required by the agency, you are not required to duplicate maps or detailed plans submitted with any permit applications related to this checklist.

- The restoration site is located in a ravine between Country Ridge Drive and Bridle Drive in the city of Richland, WA. 99352. The restoration site is located within Parcel ID #121984020002017, site address 2603 Saddle Way. The approximate center of the site is located at latitude 46.247652 and longitude -119.312499 (WGS84).
- Detailed mapping of the site is contained in the Wetlands Delineation Report and Wetlands Restoration Report listed in Question 8 above.

## **B. Environmental Elements** [\[HELP\]](#)

### 1. **Earth** [\[help\]](#)

a. General description of the site:

(circle one): Flat, rolling, hilly, steep slopes, mountainous, **other**: Variable – flat ground on north end of wetland and then gradual slope rising up into ravine progressing south.

b. What is the steepest slope on the site (approximate percent slope)?

- Approximately a 4% slope at the top third of the site as it extends up the ravine to the south.

c. What general types of soils are found on the site (for example, clay, sand, gravel, peat, muck)? If you know the classification of agricultural soils, specify them and note any agricultural land of long-term commercial significance and whether the proposal results in removing any of these soils.

- The soils found on the site is Warden silt loam, as determined by GG Environmental, Inc. and as reported in their CRHOA Wetlands Delineation Report, dated September 12, 2019. The project proposed does not result in removal of any soil from the area.

d. Are there surface indications or history of unstable soils in the immediate vicinity? If so, describe.

- No history or indications of unstable soils in the immediate vicinity.

- e. Describe the purpose, type, total area, and approximate quantities and total affected area of any filling, excavation, and grading proposed. Indicate source of fill.
- No change in topography is proposed. The protocol for noxious weed eradication where such weeds exist in the wetlands buffers (25' wide swath adjacent to disturbed wetlands where Russian olive trees were removed) involves mowing down the weeds and scarifying the soil surface by discing or tilling to promote latent noxious weed seed germination; that is the extend of soil disturbance. No filling, excavation, or grading is proposed.
- f. Could erosion occur as a result of clearing, construction, or use? If so, generally describe.
- Erosion is expected to be minimal if at all into the wetland from the adjacent buffers that will be undergoing noxious weed eradication in the first phase of the project. While the existing soil surface in the wetland buffers will be scarified, the minimal amount of natural precipitation expected before the 2020 growing season commences, added to the resident soil drainage characteristics (Warden silt loam), should not result in erosion that would adversely impact the adjacent wetland region. Soil stabilization in the buffers will improve in the spring 2020 with the advent of latent noxious weed seed germination, only minimally affected by emergent weeds kill-off via herbicide treatment, and then improved significantly in the fall 2020 and spring 2021 with germination and growth of native grasses.
- g. About what percent of the site will be covered with impervious surfaces after project construction (for example, asphalt or buildings)?
- 0%. No impervious surfaces currently exist on the subject property, nor will any impervious surfaces be introduced by implementation of the Wetlands Restoration Plan.
- h. Proposed measures to reduce or control erosion, or other impacts to the earth, if any:
- No water-caused erosion control measures are deemed necessary based on the proposed project activities.
  - Wind-caused erosion will be controlled via temporary irrigation of the disturbed ground until native grass ground cover is established.

## 2. Air [\[help\]](#)

- a. What types of emissions to the air would result from the proposal during construction, operation, and maintenance when the project is completed? If any, generally describe and give approximate quantities if known.
- Construction Phase - Engine exhaust emissions from operation of a skid-steer (Bobcat) tractor during initial mowing of noxious weeds in the wetland buffers. Estimated operation time of the tractor is 8 hours. The quantity of emissions for 8 hours of tractor operation are unknown, but considered to be minimal and without impact to the local environment or surrounding community.
  - Operation Phase – N/A to this proposed wetlands restoration plan.
  - Maintenance Phase – N/A to this proposed wetlands restoration plan.

b. Are there any off-site sources of emissions or odor that may affect your proposal? If so, generally describe.

- No. There are no off-site sources of emissions or odor that may affect this proposal.

c. Proposed measures to reduce or control emissions or other impacts to air, if any:

- No emission control measures are deemed necessary based on the proposed project activities.

### 3. **Water** [\[help\]](#)

a. Surface Water: [\[help\]](#)

1) Is there any surface water body on or in the immediate vicinity of the site (including year-round and seasonal streams, saltwater, lakes, ponds, wetlands)? If yes, describe type and provide names. If appropriate, state what stream or river it flows into.

- The Wetlands Restoration Plan proposed addresses the wetlands and associated buffers that were disturbed when CRHOA removed a part of the Russian olive grove inhabiting the parcel. A wetlands delineation report determined the “footprint” of the wetlands (both in the disturbed and undisturbed areas), and its characteristics; specifically, a Category 4 isolated wetland. Surface water is visible as small localized ponding in places where the wetland levels out at the bottom of the ravine. This wetland does not flow into any river or stream.

2) Will the project require any work over, in, or adjacent to (within 200 feet) the described waters? If yes, please describe and attach available plans.

- Yes. The work proposed in the attached CRHOA Wetlands Restoration Plan involves a single event mowing, two-season noxious weed herbicide treatments, temporary irrigation of, and native grass seeding in the disturbed wetland buffers that border the wetlands described above in Question 3.a.1.

3) Estimate the amount of fill and dredge material that would be placed in or removed from surface water or wetlands and indicate the area of the site that would be affected. Indicate the source of fill material.

- No fill or dredge material will be placed or removed from the surface water/wetlands identified in the CRHOA Wetlands Restoration Plan (or in nearby upslope wetlands that were undisturbed and not in scope for the proposed restoration project).

4) Will the proposal require surface water withdrawals or diversions? Give general description, purpose, and approximate quantities if known.

- No. The proposal will not require surface water withdrawals or diversions.

5) Does the proposal lie within a 100-year floodplain? If so, note location on the site plan.

- No. The parcel of land proposed to be restored does not lie within the 100-year floodplain, as verified by FEMA Floodplain mapping indicating the maximum elevation of approximately 375' for a projected 100-year flood. The parcel associated with this proposed plan lies between 556 ft. and 582 ft. in elevation.

6) Does the proposal involve any discharges of waste materials to surface waters? If so, describe the type of waste and anticipated volume of discharge.

- No. The proposal will not involve any discharges of waste materials to surface waters or wetlands.

b. Ground Water: [\[help\]](#)

1) Will groundwater be withdrawn from a well for drinking water or other purposes? If so, give a general description of the well, proposed uses and approximate quantities withdrawn from the well. Will water be discharged to groundwater? Give general description, purpose, and approximate quantities if known.

- No. There are no water wells in the vicinity of the proposed project and there are no plans for withdrawing water or discharging water to groundwater.

2) Describe waste material that will be discharged into the ground from septic tanks or other sources, if any (for example: Domestic sewage; industrial, containing the following chemicals. . . ; agricultural; etc.). Describe the general size of the system, the number of such systems, the number of houses to be served (if applicable), or the number of animals or humans the system(s) are expected to serve.

- As identified in the CRHOA Wetlands Delineation Report and in the CRHOA Wetlands Restoration Report, the category 4 wetland that exists on the parcel of interest is likely fed from seepage from adjacent residential lots – both from irrigation water use for landscaping, and from residential septic systems from properties bordering the ravine. There is no change in the expected quantity or characteristic of septic system drain field seepage or residential landscape irrigation seepage and runoff as a result of this proposed plan.

c. Water runoff (including stormwater):

1) Describe the source of runoff (including storm water) and method of collection and disposal, if any (include quantities, if known). Where will this water flow? Will this water flow into other waters? If so, describe.

- There is no change in any sources of runoff or methods of collection and disposal thereof by implementing this proposed plan.

2) Could waste materials enter ground or surface waters? If so, generally describe.

- No. There will be no waste materials generated as a result of implementing the proposed plan; accordingly, there will be no introduction of waste materials into ground or surface waters.

3) Does the proposal alter or otherwise affect drainage patterns in the vicinity of the site? If so, describe.

- No. The proposed plan will not alter the topography or soil characteristics of the site or its vicinity; accordingly, the plan will not alter or otherwise affect drainage patterns of water moving through the wetlands.

d. Proposed measures to reduce or control surface, ground, and runoff water, and drainage pattern impacts, if any:

- As no changes to surface, ground and runoff water, and drainage patterns are expected by the proposed scope of work, no measures to reduce or control such conditions are deemed necessary.

#### 4. **Plants** [\[help\]](#)

a. Check the types of vegetation found on the site:

- deciduous tree: alder, maple, aspen, other
- evergreen tree: fir, cedar, pine, other
- shrubs
- grass
- pasture
- crop or grain
- Orchards, vineyards or other permanent crops.
- wet soil plants: cattail, buttercup, bulrush, skunk cabbage, other
- water plants: water lily, eelgrass, milfoil, other
- other types of vegetation

b. What kind and amount of vegetation will be removed or altered?

- Noxious weeds currently inhabiting the disturbed wetland buffers (the buffers are proposed to be 25' wide and totaling approximately 0.4 ac) will be mowed down, disked or tilled under, treated with herbicide ( to new emergent noxious weeds in 2020/2021 growing seasons) and eradicated via competition growth of native grasses as described in the CRHOA Wetlands Restoration Plan. Noxious weeds currently emerging or re-emerging in the disturbed wetlands will be removed by hand so as not to compete with the growth of native wetland plants that are naturally taking root. The noxious, non-native species currently inhabiting the wetlands buffers include Kochia, Russian thistle, Tree of Heaven, Virginia creeper, Bull thistle, Pepper weed, Sow thistle, cheat grass, prickly lettuce, and Canada thistle.

c. List threatened and endangered species known to be on or near the site.

- No threatened or endangered plant species are known to be on or near the project site.

d. Proposed landscaping, use of native plants, or other measures to preserve or enhance vegetation on the site, if any:

- Noxious weeds currently inhabiting the area of disturbed wetland buffers will be replaced by native grasses. The mix of grasses to be seeded in the wetland buffers are listed in the CRHOA Wetland Restoration Plan. New occurrences of native species plants that naturally emerge within the disturbed wetlands will be allowed to grow to enhance the



wetland. Other wetland shrubs rated as Facultative (FAC) or Facultative Wetland (FACW) may be planted in the wetlands to meet the wetland restoration vegetation density goals defined in the restoration plan.

e. List all noxious weeds and invasive species known to be on or near the site.

- The following noxious weeds and invasive species are known to be on or near the site: Kochia, Russian thistle, Tree of Heaven, Virginia creeper, Bull thistle, Pepper weed, Sow thistle, cheat grass, prickly lettuce, puncture vine, Yellowstar thistle, and Canada thistle.

## 5. **Animals** [\[help\]](#)

a. List any birds and other animals which have been observed on or near the site or are known to be on or near the site.

- Birds: Robin, finch, hawks, heron, northern flicker, starlings, quail, pheasant, owl, ducks, geese, blackbirds, songbirds.
- Mammals: Coyote, tree squirrel, vole, mole, gopher, rabbit, mouse, raccoon.
- Fish: NONE
- Other: Frogs, snakes.

b. List any threatened and endangered species known to be on or near the site.

- None known to be on or near the site. Note: This ravine was identified in WSDFW maps as a wildlife habitat and on the City of Richland Critical Areas map as a Priority Habitat and Species area due to the historical existence of the Townsends ground squirrel in and around this location. Additionally, burrowing owls were often seen nesting in the banks along the development back in the 1980's. Both the Townsends ground squirrel and burrowing owls have long since left this location and the entirety of the Country Ridge development. Neither of these species have been spotted in the vicinity of the proposed project in the last 30 years.

c. Is the site part of a migration route? If so, explain.

- The city of Richland is within the Pacific Flyway for waterfowl migration. Accordingly, this site is within that flyway.
- The remaining Russian olive grove is likely part of a migration route for the Northern Flicker woodpecker, as they frequent the grove during late fall and winter after returning from higher elevation spring/summer habitats. Large groups of robins also frequent the Russian olive grove during the spring. The proposed plan does not remove any mature Russian Olive trees currently growing in the undisturbed portion of the wetlands or its buffers.

d. Proposed measures to preserve or enhance wildlife, if any:

- No wildlife preservation or enhancement measures are proposed beyond the restoration of the disturbed wetlands and adjacent disturbed buffers. The restoration plan is expected to add diversity to the ravine's wildlife habitat. The previous habitat in the disturbed wetland area consisted primarily of a homogeneous, dense grove of Russian

olive trees that created an overstory precluding the establishment and growth of ground shrubs and grasses.

- e. List any invasive animal species known to be on or near the site.
- No invasive animal species are known to be on or near the proposed plan site.

## **6. Energy and Natural Resources** [\[help\]](#)

- a. What kinds of energy (electric, natural gas, oil, wood stove, solar) will be used to meet the completed project's energy needs? Describe whether it will be used for heating, manufacturing, etc.
- N/A – the completed project will not require the use of any energy source. There currently is no energy source in use on the plan site.
- b. Would your project affect the potential use of solar energy by adjacent properties? If so, generally describe.
- No.
- c. What kinds of energy conservation features are included in the plans of this proposal? List other proposed measures to reduce or control energy impacts, if any:
- N/A – the completed project will not require the use of any energy source. Accordingly, there are no proposed measures to reduce or control energy impacts.

## **7. Environmental Health** [\[help\]](#)

- a. Are there any environmental health hazards, including exposure to toxic chemicals, risk of fire and explosion, spill, or hazardous waste that could occur as a result of this proposal? If so, describe.
- 1) Describe any known or possible contamination at the site from present or past uses.
    - No known or possible contamination at the site from present or past uses. Note that the abutting residential lots are on septic systems, thought to be one source of the water that created the wetlands in the ravine. For the sake of answering this question, those fully permitted and functional septic systems are not considered to be a source of contamination.
  - 2) Describe existing hazardous chemicals/conditions that might affect project development and design. This includes underground hazardous liquid and gas transmission pipelines located within the project area and in the vicinity.
    - N/A. There are no existing hazardous chemicals/conditions to affect the proposed plan implementation.

- 3) Describe any toxic or hazardous chemicals that might be stored, used, or produced during the project's development or construction, or at any time during the operating life of the project.
  - Industrial herbicides approved for use on upland (non-wetland) areas will be applied to emergent noxious weeds in the buffers. This will be a multi-application process throughout the 2020/2021 growing season as various species of noxious weeds emerge. These herbicides will be sprayed by a state-licensed contractor in compliance with applicable safety and environmental regulations. Herbicides for this use will not be stored at the project site.
- 4) Describe special emergency services that might be required.
  - No special emergency services are required or anticipated for implementing the proposed plan.
- 5) Proposed measures to reduce or control environmental health hazards, if any:
  - No proposed measures to reduce or control environmental health hazards are deemed necessary based on the scope of the proposed plan.

*b. Noise*

- 1) What types of noise exist in the area which may affect your project (for example: traffic, equipment, operation, other)?
  - None that may affect this project.
- 2) What types and levels of noise would be created by or associated with the project on a short-term or a long-term basis (for example: traffic, construction, operation, other)? Indicate what hours noise would come from the site.
  - Operation of a skid-steer (Bobcat) tractor for approximately eight hours on a single day or over the course of two days, during daylight hours. Construction equipment of this type typically operate at 80-85 dB(A), naturally attenuated to 65-70 dB(A) at 300 ft.
- 3) Proposed measures to reduce or control noise impacts, if any:
  - None proposed. The noise impact from the limited duration of operation of a Bobcat tractor is negligible and well below thresholds requiring hearing protection by the public when natural sound attenuation is considered.

**8. Land and Shoreline Use** [\[help\]](#)

- a. What is the current use of the site and adjacent properties? Will the proposal affect current land uses on nearby or adjacent properties? If so, describe.
  - The current use of the site is privately owned developed open space, as indicated in the City of Richland Comprehensive Plan. Adjacent properties are single-family residential homes. The proposed plan does not alter or affect current land uses on nearby or adjacent properties.

b. Has the project site been used as working farmlands or working forest lands? If so, describe. How much agricultural or forest land of long-term commercial significance will be converted to other uses as a result of the proposal, if any? If resource lands have not been designated, how many acres in farmland or forest land tax status will be converted to nonfarm or nonforest use?

- The project site has not been used as working farmlands or working forest lands.

1) Will the proposal affect or be affected by surrounding working farm or forest land normal business operations, such as oversize equipment access, the application of pesticides, tilling, and harvesting? If so, how:

- N/A.

c. Describe any structures on the site.

- There are no structures on the site where the proposed wetland restoration plan will be implemented.

d. Will any structures be demolished? If so, what?

- N/A – there are no structures on the site.

e. What is the current zoning classification of the site?

- The parcel of land containing the proposed project site is within the Country Ridge Planned Unit Development, zoned as low-density single-family residential housing. Within this planned unit development, the subject parcel is listed as “Developed Open Space” (reference City of Richland Comprehensive Plan 2017, Figure LU-6, Open Space)

f. What is the current comprehensive plan designation of the site?

- The subject parcel is listed as “Developed Open Space” (reference City of Richland Comprehensive Plan 2017, Figure LU-6, Open Space)

g. If applicable, what is the current shoreline master program designation of the site?

- N/A

h. Has any part of the site been classified as a critical area by the city or county? If so, specify.

- The ravine that contains the site of the proposed wetlands restoration plan project is designated as a Critical Area – Priority Habitat and Species. That designation carried over from the WSDFW designation as an approximate area where the Townsends ground squirrel once habituated. The Townsend ground squirrel has not been sighted in the ravine (nor have its indicating ground dens been observed) in approximately the last 30 years.

i. Approximately how many people would reside or work in the completed project?

- None.

j. Approximately how many people would the completed project displace?

- None.

k. Proposed measures to avoid or reduce displacement impacts, if any:

- None (N/A)

l. Proposed measures to ensure the proposal is compatible with existing and projected land uses and plans, if any:

- None required. The proposed plan does not alter the existing and projected land uses and plans.

m. Proposed measures to reduce or control impacts to agricultural and forest lands of long-term commercial significance, if any:

- None required. There are no impacts to agricultural and forest lands of any commercial significance.

## **9. Housing** [\[help\]](#)

a. Approximately how many units would be provided, if any? Indicate whether high, middle, or low-income housing.

- N/A – Scope of project does not provide for any housing.

b. Approximately how many units, if any, would be eliminated? Indicate whether high, middle, or low-income housing.

- N/A – no elimination of housing as a result of this proposed project.

c. Proposed measures to reduce or control housing impacts, if any:

- N/A – no housing impacts.

## **10. Aesthetics** [\[help\]](#)

a. What is the tallest height of any proposed structure(s), not including antennas; what is the principal exterior building material(s) proposed?

- N/A – no proposed structures are part of this plan.

- b. What views in the immediate vicinity would be altered or obstructed?
- None. The proposed plan calls for replacing noxious weeds with native grasses, and allowing wetland shrubs and other plants to replace what was a stand of invasive Russian olive trees. The trees are already gone in the proposed restoration plan site, so the implementation of this plan will not alter or obstruct any view.
- c. Proposed measures to reduce or control aesthetic impacts, if any:
- None. Implementing the plan will actually improve the aesthetics of the currently disturbed wetland and buffers by eradicating noxious weeds and replacing with native species grasses and other native plants.

### **11. Light and Glare** [\[help\]](#)

- a. What type of light or glare will the proposal produce? What time of day would it mainly occur?
- None. There is no source of light or glare currently or planned in the future.
- b. Could light or glare from the finished project be a safety hazard or interfere with views?
- No. There is no source of light or glare from the project as proposed (or currently in its present state).
- c. What existing off-site sources of light or glare may affect your proposal?
- None. Sources of light or glare from surrounding residential structures (homes) is negligible.
- d. Proposed measures to reduce or control light and glare impacts, if any:
- None. No light or glare impacts are created by the proposed plan.

### **12. Recreation** [\[help\]](#)

- a. What designated and informal recreational opportunities are in the immediate vicinity?
- Within the 10-acre parcel that contains the ravine, the remaining Russian olive grove, and the subject wetland area proposed to be restored, there is a barn and riding arena for use by CRHOA residents for equestrian activities. Additionally, there are approximately three acres of maintained mowed grass greenbelts that are utilized by CRHOA residents for non-motorized recreation such as, walking, playing ball, exercising, etc.
- b. Would the proposed project displace any existing recreational uses? If so, describe.
- No. The proposed project simply restores the disturbed wetland and adjacent buffer by eradicating noxious weeds and replacing with native grasses and native wetland plants. Since this same area once was inhabited solely by a thick stand of Russian olive trees

that were nearly impenetrable, the implementation of this proposed plan actually creates more bio-diversity in the ravine and will allow better access for recreational wildlife observation such as bird-watching.

- c. Proposed measures to reduce or control impacts on recreation, including recreation opportunities to be provided by the project or applicant, if any:
- No measures proposed or needed as the proposed project plan does not adversely impact recreation opportunities from what previously and currently exists.

### **13. Historic and cultural preservation** [\[help\]](#)

- a. Are there any buildings, structures, or sites, located on or near the site that are over 45 years old listed in or eligible for listing in national, state, or local preservation registers ? If so, specifically describe.
- No.
- b. Are there any landmarks, features, or other evidence of Indian or historic use or occupation? This may include human burials or old cemeteries. Are there any material evidence, artifacts, or areas of cultural importance on or near the site? Please list any professional studies conducted at the site to identify such resources.
- No known landmarks, features or other evidence of Indian or historic use or occupation.
  - Within the City of Richland Comprehensive Plan, page 31, is a discussion on the cultural and historical features within the city boundaries that were discovered or designated as a result of studies by the Washington State Office of Archeology and Historic Preservation. The Country Ridge Planned Unit Development that encompasses the proposed project site is not included in the listing of cultural or historic features within the latest Comprehensive Plan.
- c. Describe the methods used to assess the potential impacts to cultural and historic resources on or near the project site. Examples include consultation with tribes and the department of archeology and historic preservation, archaeological surveys, historic maps, GIS data, etc.
- None used other than review of the City of Richland Comprehensive Plan. The site of the proposed project has always been vacant land and prior to the installation of the KID irrigation canal and residential development, the ravine was treeless and contained no wetlands. It is unlikely that this barren land had any cultural significance predating the siting of the residential development. Furthermore, there is no known or anecdotal evidence of any historical or cultural resources discovered when the Country Ridge Planned Unit Development was constructed.
- d. Proposed measures to avoid, minimize, or compensate for loss, changes to, and disturbance to resources. Please include plans for the above and any permits that may be required.
- None proposed. The restoration plan would not impact any cultural or historic resources that may unknowingly exist based on the nature of the proposed scope of work.

#### 14. **Transportation** [\[help\]](#)

- a. Identify public streets and highways serving the site or affected geographic area and describe proposed access to the existing street system. Show on site plans, if any.
  - The parcel of land containing the project site is accessible from Saddle Way via a graded gravel road that extends to the CRHOA barn and riding area. From there, the project site is accessible by crossing the grass mowed greenbelt (suitable for accessing up to the base of the project site by vehicles).
- b. Is the site or affected geographic area currently served by public transit? If so, generally describe. If not, what is the approximate distance to the nearest transit stop?
  - Not served or accessible by public transit. The location of the closest public transit is on Keene Road, approximately one-third of a mile from the site.
- c. How many additional parking spaces would the completed project or non-project proposal have? How many would the project or proposal eliminate?
  - N/A – no parking spaces currently exist, nor will there be any provided when the project is completed.
- d. Will the proposal require any new or improvements to existing roads, streets, pedestrian, bicycle or state transportation facilities, not including driveways? If so, generally describe (indicate whether public or private).
  - No.
- e. Will the project or proposal use (or occur in the immediate vicinity of) water, rail, or air transportation? If so, generally describe.
  - No.
- f. How many vehicular trips per day would be generated by the completed project or proposal? If known, indicate when peak volumes would occur and what percentage of the volume would be trucks (such as commercial and nonpassenger vehicles). What data or transportation models were used to make these estimates?
  - None. This question is not applicable to the proposed project plan scope.
- g. Will the proposal interfere with, affect or be affected by the movement of agricultural and forest products on roads or streets in the area? If so, generally describe.
  - No affect.
- h. Proposed measures to reduce or control transportation impacts, if any:
  - N/A – No impacts.



**15. Public Services** [\[help\]](#)

- a. Would the project result in an increased need for public services (for example: fire protection, police protection, public transit, health care, schools, other)? If so, generally describe.
- No increase in need for public services as a result of this project.
- b. Proposed measures to reduce or control direct impacts on public services, if any.
- N/A – no direct impacts on public services

**16. Utilities** [\[help\]](#)

- a. Circle utilities currently available at the site:  
electricity, natural gas, water, refuse service, telephone, sanitary sewer, septic system,

other: KID irrigation water available within 300' from April – October annually

- b. Describe the utilities that are proposed for the project, the utility providing the service, and the general construction activities on the site or in the immediate vicinity which might be needed.
- No utilities are proposed or required for the project. Temporary irrigation water (KID) will be obtained by tapping into currently existing irrigation lines that run near the site that are owned and operated by CRHOA.

**C. Signature** [\[HELP\]](#)

The above answers are true and complete to the best of my knowledge. I understand that the lead agency is relying on them to make its decision.

Signature: 

Name of signee Paul Inserra

Position and Agency/Organization Director, Country Ridge Homeowners Association

Date Submitted: January 9, 2020

**CRHOA Wetland Restoration Plan – Area of Applicability (shaded) with topography annotations  
SEPA Checklist supplement**



# **WETLAND DELINEATION REPORT**

---

**Country Ridge Homeowners Association  
City of Richland, Washington  
Benton County**

*Prepared for:*

**Paul Inserra, Wetland Committee Chair**

*Prepared by:*

**GG Environmental**

**Geoffrey Gray**

**151 Poulin Road**

**Selah, WA 98942**

**[www.gg-env.com](http://www.gg-env.com)**

**September 12, 2019**

# Summary

---

On September 6, 2019, Geoffrey Gray (GG Environmental) completed a wetland delineation on a 10.84-acre (ac) parcel (survey area), located in the midst of residences belonging to the Country Ridge Homeowners Association (CRHOA), within the city limits of Richland in Benton County, Washington.

One isolated wetland unit (WU-1) was delineated within the survey area, 0.91 ac in size and rated as a Category 4 slope wetland.

Based on historic aerial imagery, no wetland was present in this location prior to development. Given the adjacency of domestic water influx from landscape irrigation and septic percolation and the permeability of the soil series in the vicinity, the wetland is likely the unintentional consequence of hydrology introduced by residential development.

No river, stream, or creek was identified within or adjacent to the survey area.

# Location

---

The survey area is located within Parcel ID #121984020002017, situs address 2603 Saddle Way, within the city limits of Richland (**Figure 1**). At approximately 600 feet in elevation, topography in the general vicinity is gently sloped toward the northeast, occurring within Section 21 of Township 9 North, Range 28 East. The approximate center of the survey area is located at latitude 46°14'48.83"N and longitude 119°18'53.16"W (WGS84).

# Background

---

The survey area includes a ravine between Country Ridge Drive and Bridle Drive. The ravine was present before homes were constructed and is now managed by the CRHOA as a community greenway.

## Soils

The soil series in the vicinity is *Warden silt loam*. The Warden series consists of deep, well-drained soils formed in a thin mantle of loess over lacustrine sediments, found on terraces, terrace escarpments, strath terraces, hillslopes, and dunes.<sup>1</sup> The soil is not listed as hydric.<sup>2</sup>

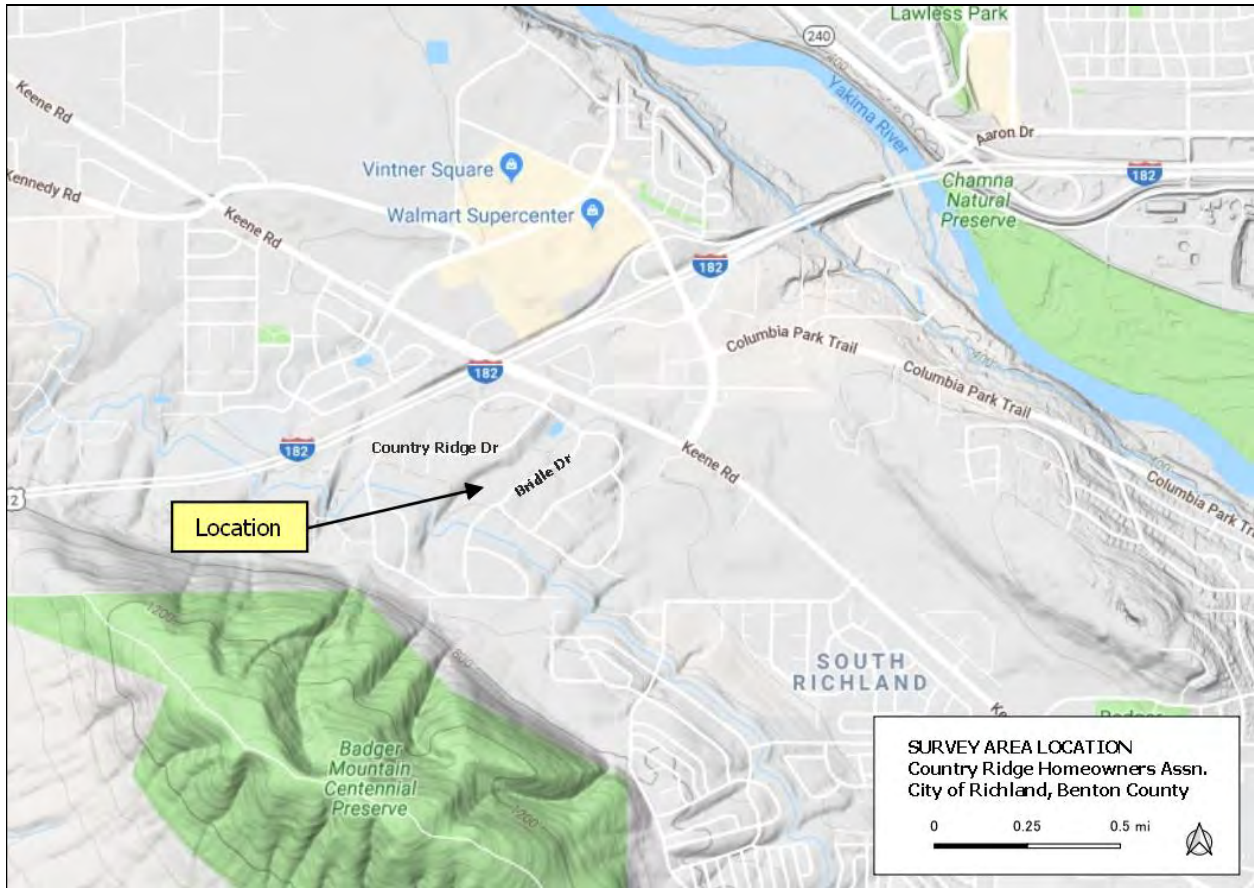
---

<sup>1</sup> NRCS Web Soil Survey. <https://websoilsurvey.sc.egov.usda.gov/App/HomePage.htm>

<sup>2</sup> NRCS Soil Data Access, Hydric Soils List for Benton County.  
[https://www.nrcs.usda.gov/Internet/FSE\\_DOCUMENTS/nrcseprd1316620.html](https://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcseprd1316620.html)

---

**Figure 1. Survey Area Location**



## Water

Groundwater was observed at the soil surface in two locations on the ravine bottom. The larger of the two wet areas was present in the lower half of the ravine, where topography is less steep. According to residents, the extent of surface moisture varies but has never been observed to extend to the horse arena past the wetland's delineated eastern terminus. Since water in the wetland infiltrates short of the arena, without connecting to another aquatic resource, the wetland conforms to the definition of isolated.

Based on historic aerial imagery taken in 1955,<sup>3</sup> no sign of natural hydrology is evident on or near Badger Mountain prior to residential development. Vegetation on the mountain appears to be consistent with sagebrush-scrub and annual grasses. Only after a large irrigation canal was constructed across the ravine, and the surrounding vicinity developed for residential homes, is woody vegetation (dominated by Russian olive) evident in more recent aerial imagery.

<sup>3</sup> Central Washington Historic Aerial Photograph Project. [http://www.gis.cwu.edu/geog/historical\\_airphotos/](http://www.gis.cwu.edu/geog/historical_airphotos/)

According to residents, and confirmed by recent aerial imagery, the canal leaked where it crossed the ravine, providing a constant source of water into the ravine during the irrigation season. However, the canal had been lined, and the leak stopped, prior to the site visit. No evidence of hydrology was observed in the upper third of the ravine, immediately below the lined canal, during delineation fieldwork.

Residences surrounding the ravine have large, landscaped yards that are regularly irrigated, and all of the homes are on septic systems. Given the permeability of the soil series in the vicinity, it is reasonable to infer that the wetland indicators observed in the ravine are the unintentional consequence of historic canal leak and/or hydrology associated with residential development.

## Plants

The vegetation community in the survey area is dominated by a climax community of mature Russian olive trees that occupy not only the ravine bottom, but also the more xeric side slopes. They are able to do so because adjacent watering of residential landscapes has provided hyporheic moisture on the slopes sufficient for them to spread. The dense canopy largely inhibits growth of herbaceous plants in the understory due to shading.

The encroachment of Russian olives toward homes was deemed a fire risk, and for this reason, the CRHOA began removing trees in the lower ravine on March 29, 2019. However, upon learning that water had been encountered, the City of Richland issued a cease and desist letter, dated April 8, 2019.

The disturbed area is now in the process of rapid vegetative recovery by both native plants and noxious weeds. Clusters of coyote willows (*Salix exigua*) are rapidly resprouting and are approximately 10 feet tall. However, much of the area, especially on the more xeric side slopes, is now dominated by rapidly-spreading non-native and noxious weeds including, but not limited to, *Tribulus terrestris* (puncture vine), *Bassia scoparia* (Mexican fireweed), *Salsola tragus* (tumbleweed), *Parthenocissus quinquefolia* (Virginia creeper), *Solanum dulcamara* (nightshade), *Ailanthus altissima* (tree of heaven), *Elaeagnus angustifolia* (Russian olive), *Centaurea solstitialis* (yellow star thistle), *Lactuca serriola* (prickly lettuce), and *Bromus tectorum* (cheat grass).

## Field Methods

---

Geoffrey Gray (GG Environmental) conducted fieldwork on September 6, 2019. Wetlands were delineated using routine methods described in the *Corps of Engineers Wetlands Delineation Manual* (Environmental Laboratory 1987) and *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region (Version 2.0)* (USACE 2008). Plants were identified by scientific name, with their wetland ratings listed per Lichvar, et al. (2016). Wetlands were rated according to the Department of Ecology *Washington State Wetland Rating System for Eastern Washington: 2014 Update* (Hruby 2014).

Fieldwork took place in the late summer. It had not rained immediately prior to site visit, but skies were overcast. Eleven sample locations were investigated to determine the presence or absence of wetland indicators (**Figure 2**).

**Figure 2. Wetland Delineation Map<sup>4</sup>**



### **Wetland Boundary Determination**

It was determined that wetland boundaries are justified where (1) groundwater or saturation was observed within 12 inches of the soil surface, (2) hydric soil indicators were observed, and (3) the plant community was dominated by plant species with wetland indicator statuses of FAC, FACW, or OBL.

### **Mapping**

Sample locations and the wetland boundary were geospatially recorded with a Juniper Systems Geode Multi-GNSS GPS receiver with sub-meter accuracy.<sup>5</sup> These data were then mapped utilizing Quantum GIS software.

<sup>4</sup> A large-format version of this map is included on page 18 at the end of this report.

<sup>5</sup> Average accuracy for all GPS points was 10 inches.

## Precipitation

Precipitation data were obtained from the nearest AgACIS weather station in Richland (NRCS 2019c). Per NRCS (1997), accumulated rainfall data for the immediate three months prior to fieldwork were compared to average accumulation values, providing a context for hydrology indicators observed during fieldwork. The data show *below-normal* precipitation for the collective three months prior to fieldwork (**Appendix A**), with no measurable rain having fallen within the preceding 10 days.

## Results

---

Field data show the presence of one wetland unit (WU-1) within the study area (**Figure 2**). WU-1, 0.91 ac in area, occurs as an isolated seep that remains wet at the surface throughout the year. It rates as a Category 4 slope wetland (14 total points), with a moderate score for water quality (6 points) and low scores for flood control and habitat (4 points each).

Wetland delineation data forms are included in **Appendix B**. An Ecology rating form is provided in **Appendix C**. Representative photos of the study area are included in **Appendix D**.

## Limitations

---

The data presented herein are limited to site conditions observed on September 6, 2019. The wetland delineation was performed in accordance with accepted standards for professional wetland biologists and applicable federal, state, and local ordinances. Although the report is accurate and complete to the best of scientific knowledge, the findings should be considered a preliminary determination until they have been reviewed and approved in writing by the agencies with appropriate jurisdiction.



# References

---

1. Central Washington University. 2019. Central Washington Historic Aerial Photograph Project. Available at: <https://www.cwu.edu/geography/central-washington-historical-aerial-photograph-project>
2. [Ecology] Washington State Department of Ecology. 2019. Washington State Water Quality Atlas. Available at: <https://fortress.wa.gov/ecy/waterqualityatlas/map.aspx?CustomMap=y&RT=0&Layers=23,29&Filters=n,n,n>
3. Environmental Laboratory. 1987. Corps of Engineers wetlands delineation manual. Vicksburg (MS): US Army Engineer Waterways Experiment Station. Technical Report Y-87-1. Available at: <https://www.cpe.rutgers.edu/Wetlands/1987-Army-Corps-Wetlands-Delineation-Manual.pdf>
4. Google. 2019. Online aerial photography. Viewed with Google Earth Pro. Available at: <https://www.google.com/earth/download/gep/agree.html>
5. Hruby T. 2014. Washington State Wetland Rating System for Eastern Washington – 2014 Update. Department of Ecology Publication. Publication #14-06-030. Available at: <https://fortress.wa.gov/ecy/publications/SummaryPages/1406030.html>
6. Lichvar, R.W., D.L. Banks, W.N. Kirchner, and N.C. Melvin. 2016. *The National Wetland Plant List: 2016 wetland ratings*. Phytoneuron 2016-30: 1-17. Published 28 April 2016. ISSN 2153 733X. Available at: <http://rsgisias.crrel.usace.army.mil/NWPL/>
7. Natural Resource Conservation Service [NRCS]. 1997. Hydrology Tools for Wetland Determination. Chapter 19 in Part 650 Engineering Field Handbook. Fort Worth (TX). United States Department of Agriculture. Available at: <https://directives.sc.egov.usda.gov/OpenNonWebContent.aspx?content=17556.wba>
8. [NRCS] Official Soil Series Descriptions. 2005. <https://soilseries.sc.egov.usda.gov/osdname.aspx>
9. [NRCS] Hydric soils in Washington State. 2019a. [https://www.nrcs.usda.gov/Internet/FSE\\_DOCUMENTS/nrcseprd1316620.html](https://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcseprd1316620.html)
10. [NRCS]. Natural Resource Conservation Service. 2019b. Web Soil Survey. US Department of Agriculture. Available at: <http://websoilsurvey.nrcs.usda.gov/app/WebSoilSurvey.aspx>
11. [NRCS]. 2019c. Agricultural Applied Climate Information System (AgACIS). Available at: <http://agacis.rcc-acis.org/?fips=53005>
12. [USACE] US Army Corps of Engineers. 2008. Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region (Version 2.0), Wakeley JS, Lichvar RW, Noble CV, editors. Vicksburg (MS): US Army Engineer Research and Development Center. ERDC/EL TR-08-28. Available at: [https://www.usace.army.mil/Missions/Civil-Works/Regulatory-Program-and-Permits/reg\\_supp/](https://www.usace.army.mil/Missions/Civil-Works/Regulatory-Program-and-Permits/reg_supp/)
13. [USFWS] United States Fish and Wildlife Service. National Wetland Inventory Mapper. 2019. Available at: <https://www.fws.gov/wetlands/data/Mapper.html>

This page is intentionally blank.

# Appendix A — Precipitation Data

## Observed versus Normal Precipitation Prior to Fieldwork

Precipitation data<sup>6</sup> were referenced<sup>7</sup> for the three months prior to the 9/6/2019 wetland delineation.

Month		Long-term rainfall data (inches)		Dry, average, or wet <sup>3</sup>	Dry, average, or wet value <sup>4</sup>	Weighted value of month	A x B
		Weather Station: Richland					
		Average Monthly Precipitation <sup>1</sup>	Observed Precipitation <sup>2</sup>				
1 <sup>st</sup> prior month	Aug	0.31	0.05	Dry	1	3	3
2 <sup>nd</sup> prior month	Jul	0.24	0.06	Dry	1	2	2
3 <sup>rd</sup> prior month	Jun	0.39	0.18	Avg	2	1	2
<b>Sum</b>							<b>7<sup>5</sup></b>

<sup>1</sup> Calculated using WETS Average Daily Precipitation Accumulation (1971-2000) (in).

<sup>2</sup> Calculated using Accumulated Daily Precipitation (2019) (in).

<sup>3</sup> WETS table “30% more than and 30% less than values were referenced to compare recorded rainfall to statistically-normal precipitation.

<sup>4</sup> Value: Dry = 1, Average = 2, Wet = 3

<sup>5</sup> 6-9: drier than normal, 10-14: normal, 15-18: wetter than normal.

**Conclusion:** *Drier than normal* conditions were present during the collective three months prior to the 9/6/2019 delineation. No measurable rain fell within the 10 days preceding the field visit.

<sup>6</sup> <http://agacis.rcc-acis.org/?fips=53005>

<sup>7</sup> Following methodology per NRCS 1997

This page is intentionally blank.

# **Appendix B — Delineation Forms**

---

**WETLAND DETERMINATION DATA FORM – Arid West Region**

Project/Site: Parcel ID #121984020002017, Richland, WA City/County: City of Richland Sampling Date: 9/6/2019  
 Applicant/Owner: Country Ridge Homeowners Association State: WA Sampling Point: 1  
 Investigator(s): Geoffrey Gray (GG Environmental) Section, Township, Range: T9N-R28E-S21  
 Landform (hillslope, terrace, etc.): ravine Local relief (concave, convex, none): concave Slope (%): 3  
 Subregion (LRR): B Lat: 46.2457635677929 Long: -119.316553444013 Datum: WGS84  
 Soil Map Unit Name: Warden silt loam NWI Classification: PFO

Are climatic / hydrologic conditions on the site typical for this time of year?  Yes  No (If no, explain in Remarks.)  
 Are Vegetation , Soil , or Hydrology  significantly disturbed? Are "Normal Circumstances" present?  Yes  No  
 Are Vegetation , Soil , or Hydrology  naturally problematic? (If needed, explain any answers in Remarks.)

**SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.**

Hydrophytic Vegetation Present? <input checked="" type="radio"/> Yes <input type="radio"/> No Hydric Soil Present? <input checked="" type="radio"/> Yes <input type="radio"/> No Wetland Hydrology Present? <input checked="" type="radio"/> Yes <input type="radio"/> No	<b>Is the Sampled Area within a Wetland?</b> <input checked="" type="radio"/> Yes <input type="radio"/> No
Remarks: Climate within the past 3 months (May-July) was drier than normal. The parcel is surrounded by residential development, the irrigation and septic practices of which likely influences the hydrology in the ravine. Pit dug at the bottom of the ravine.	

**VEGETATION – Use scientific names of plants.**

Tree Stratum (Plot size: <u>20ft x 20ft</u> )	Absolute % Cover	Dom. Sp.?	Relative % Cover	Indicator Status																																	
1. <u><i>Elaeagnus angustifolia</i></u>	100	Y	100.0	FAC	<b>Dominance Test worksheet:</b> Number of Dominant Species That Are OBL, FACW, or FAC: <u>1</u> (A) Total Number of Dominant Species Across All Strata: <u>1</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100.0%</u> (A/B)																																
2. _____	_____	_____	_____	_____																																	
3. _____	_____	_____	_____	_____																																	
4. _____	_____	_____	_____	_____																																	
_____	100	= Total Cover	_____	_____																																	
<b>Sapling/Shrub Stratum (Plot size: <u>15ft x 15ft</u> )</b>																																					
1. _____	_____	_____	_____	_____	<b>Prevalence Index worksheet:</b> <table style="width:100%; border-collapse: collapse;"> <tr> <td align="center" colspan="2">Total % Cover of:</td> <td align="center" colspan="2">Multiply by:</td> </tr> <tr> <td>OBL species</td> <td align="center">0</td> <td>x 1 =</td> <td align="center">0</td> </tr> <tr> <td>FACW species</td> <td align="center">0</td> <td>x 2 =</td> <td align="center">0</td> </tr> <tr> <td>FAC species</td> <td align="center">100</td> <td>x 3 =</td> <td align="center">300</td> </tr> <tr> <td>FACU species</td> <td align="center">0</td> <td>x 4 =</td> <td align="center">0</td> </tr> <tr> <td>UPL species</td> <td align="center">0</td> <td>x 5 =</td> <td align="center">0</td> </tr> <tr> <td>Column Totals:</td> <td align="center">100</td> <td align="center">(A)</td> <td align="center">300 (B)</td> </tr> <tr> <td align="center" colspan="4">Prevalence Index = B/A = <u>3.000</u></td> </tr> </table>	Total % Cover of:		Multiply by:		OBL species	0	x 1 =	0	FACW species	0	x 2 =	0	FAC species	100	x 3 =	300	FACU species	0	x 4 =	0	UPL species	0	x 5 =	0	Column Totals:	100	(A)	300 (B)	Prevalence Index = B/A = <u>3.000</u>			
Total % Cover of:		Multiply by:																																			
OBL species	0	x 1 =	0																																		
FACW species	0	x 2 =	0																																		
FAC species	100	x 3 =	300																																		
FACU species	0	x 4 =	0																																		
UPL species	0	x 5 =	0																																		
Column Totals:	100	(A)	300 (B)																																		
Prevalence Index = B/A = <u>3.000</u>																																					
2. _____	_____	_____	_____	_____																																	
3. _____	_____	_____	_____	_____																																	
4. _____	_____	_____	_____	_____																																	
5. _____	_____	_____	_____	_____																																	
<b>Herb Stratum (Plot size: <u>5ft x 5ft</u> )</b>																																					
1. _____	_____	_____	_____	_____	<b>Hydrophytic Vegetation Indicators:</b> <input checked="" type="checkbox"/> Dominance Test is >50% <input checked="" type="checkbox"/> Prevalence Index is ≤3.0 <sup>1</sup> <input type="checkbox"/> Morphological Adaptations <sup>1</sup> (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Problematic Hydrophytic Vegetation <sup>1</sup> (Explain) <sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.																																
2. _____	_____	_____	_____	_____																																	
3. _____	_____	_____	_____	_____																																	
4. _____	_____	_____	_____	_____																																	
5. _____	_____	_____	_____	_____																																	
6. _____	_____	_____	_____	_____																																	
7. _____	_____	_____	_____	_____																																	
8. _____	_____	_____	_____	_____																																	
<b>Woody Vine Stratum (Plot size: <u>5ft x 5ft</u> )</b>																																					
1. _____	_____	_____	_____	_____	<b>Hydrophytic Vegetation Present?</b> <input checked="" type="radio"/> Yes <input type="radio"/> No																																
2. _____	_____	_____	_____	_____																																	
% Bare Ground in Herb Stratum <u>100</u> % Cover of Biotic Crust <u>0</u>																																					

Remarks:  
 Due to dense overstory shading, no herbaceous vegetation is present.

**SOIL**

Sampling Point: 1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)										
Depth (inches)	Matrix			Redox Features				Texture	Remarks	
	Color (moist)	%		Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>			
0-6	10YR	4/2	98	10YR	5/6	2	C	M	Loam	concentration is prominent
6-11	2.5Y	4/2	100						Loam	moist, ox root channels
11-13	N	2.5/0	95	2.5Y	6/2	5	C	M	Silt Loam	only obs at this location - anomaly
13-16	2.5Y	6/3	100						Silt Loam	very dense

<sup>1</sup>Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix.

<b>Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)</b> <input type="checkbox"/> Histosol (A1) <input type="checkbox"/> Histic Epipedon (A2) <input type="checkbox"/> Black Histic (A3) <input type="checkbox"/> Hydrogen Sulfide (A4) <input type="checkbox"/> Stratified Layers (A5) (LRR C) <input type="checkbox"/> 1 cm Muck (A9) (LRR D) <input type="checkbox"/> Depleted Below Dark Surface (A11) <input type="checkbox"/> Thick Dark Surface (A12) <input type="checkbox"/> Sandy Mucky Mineral (S1) <input type="checkbox"/> Sandy Gleyed Matrix (S4)		<b>Indicators for Problematic Hydric Soils<sup>3</sup>:</b> <input type="checkbox"/> 1 cm Muck (A9) (LRR C) <input type="checkbox"/> 2 cm Muck (A10) (LRR B) <input type="checkbox"/> Reduced Vertic (F18) <input type="checkbox"/> Red Parent Material (TF2) <input type="checkbox"/> Other (Explain in Remarks)	
<input type="checkbox"/> Sandy Redox (S5) <input type="checkbox"/> Stripped Matrix (S6) <input type="checkbox"/> Loamy Mucky Mineral (F1) <input type="checkbox"/> Loamy Gleyed Matrix (F2) <input checked="" type="checkbox"/> Depleted Matrix (F3) <input type="checkbox"/> Redox Dark Surface (F6) <input type="checkbox"/> Depleted Dark Surface (F7) <input type="checkbox"/> Redox Depressions (F8) <input type="checkbox"/> Vernal Pools (F9)		<sup>3</sup> Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.	

<b>Restrictive Layer (if present):</b> Type: _____ Depth (inches): _____	<b>Hydric Soil Present?</b> <input checked="" type="radio"/> Yes <input type="radio"/> No
--	---

Remarks:  
 Very unique striation in the soil profile. Most cleanly fits Depleted Matrix (F3). The silt loam from 13-16+ inches is very dense and hard. Water likely pools above it, resulting in gley colors.

**HYDROLOGY**

<b>Wetland Hydrology Indicators:</b> <u>Primary Indicators (minimum of one required; check all that apply)</u> <input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Water Marks (B1) (Nonriverine) <input type="checkbox"/> Sediment Deposits (B2) (Nonriverine) <input type="checkbox"/> Drift Deposits (B3) (Nonriverine) <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Water-Stained Leaves (B9)		<u>Secondary Indicators (2 or more required)</u> <input type="checkbox"/> Salt Crust (B11) <input type="checkbox"/> Biotic Crust (B12) <input type="checkbox"/> Aquatic Invertebrates (B13) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input checked="" type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Thick Muck Surface (C7) <input type="checkbox"/> Other (Explain in Remarks)	
<input type="checkbox"/> Water Marks (B1) (Riverine) <input type="checkbox"/> Sediment Deposits (B2) (Riverine) <input type="checkbox"/> Drift Deposits (B3) (Riverine) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> FAC-Neutral Test (D5)			

<b>Field Observations:</b> Surface Water Present? <input type="radio"/> Yes <input checked="" type="radio"/> No    Depth (inches): _____ Water Table Present? <input type="radio"/> Yes <input checked="" type="radio"/> No      Depth (inches): _____ Saturation Present? <input type="radio"/> Yes <input checked="" type="radio"/> No        Depth (inches): _____ (includes capillary fringe)	<b>Wetland Hydrology Present?</b> <input checked="" type="radio"/> Yes <input type="radio"/> No
---	---

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:  
 Soil moist throughout. Due to drier than normal climatic conditions, moisture is likely supported by upslope irrigation and septic percolation.

**WETLAND DETERMINATION DATA FORM – Arid West Region**

Project/Site: Parcel ID #121984020002017, Richland, WA City/County: City of Richland Sampling Date: 9/6/2019  
 Applicant/Owner: Country Ridge Homeowners Association State: WA Sampling Point: 2  
 Investigator(s): Geoffrey Gray (GG Environmental) Section, Township, Range: T9N-R28E-S21  
 Landform (hillslope, terrace, etc.): hillslope Local relief (concave, convex, none): none Slope (%): 30  
 Subregion (LRR): B Lat: 46.245761221582 Long: -119.316574687822 Datum: WGS84  
 Soil Map Unit Name: Warden silt loam NWI Classification: UPL

Are climatic / hydrologic conditions on the site typical for this time of year?  Yes  No (If no, explain in Remarks.)  
 Are Vegetation , Soil , or Hydrology  significantly disturbed? Are "Normal Circumstances" present?  Yes  No  
 Are Vegetation , Soil , or Hydrology  naturally problematic? (If needed, explain any answers in Remarks.)

**SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.**

Hydrophytic Vegetation Present? <input checked="" type="radio"/> Yes <input type="radio"/> No Hydric Soil Present? <input type="radio"/> Yes <input checked="" type="radio"/> No Wetland Hydrology Present? <input checked="" type="radio"/> Yes <input type="radio"/> No	<b>Is the Sampled Area within a Wetland?</b> <input type="radio"/> Yes <input checked="" type="radio"/> No
Remarks: Climate within the past 3 months (May-July) was drier than normal. The parcel is surrounded by residential development, the irrigation and septic practices of which likely influences the hydrology in the ravine. Pit dug on the ravine north slope, above the toe.	

**VEGETATION – Use scientific names of plants.**

Tree Stratum (Plot size: <u>20ft x 20ft</u> )	Absolute % Cover	Dom. Sp.?	Relative % Cover	Indicator Status																																	
1. <u><i>Elaeagnus angustifolia</i></u>	100	Y	100.0	FAC	<b>Dominance Test worksheet:</b> Number of Dominant Species That Are OBL, FACW, or FAC: <u>1</u> (A) Total Number of Dominant Species Across All Strata: <u>1</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100.0%</u> (A/B)																																
2. _____	_____	_____	_____	_____																																	
3. _____	_____	_____	_____	_____																																	
4. _____	_____	_____	_____	_____																																	
_____	100	= Total Cover																																			
<b>Sapling/Shrub Stratum (Plot size: <u>15ft x 15ft</u> )</b>																																					
1. _____	_____	_____	_____	_____	<b>Prevalence Index worksheet:</b> <table style="width:100%; border-collapse: collapse;"> <tr> <td align="center" colspan="2">Total % Cover of:</td> <td align="center" colspan="2">Multiply by:</td> </tr> <tr> <td>OBL species</td> <td align="center">0</td> <td>x 1 =</td> <td align="center">0</td> </tr> <tr> <td>FACW species</td> <td align="center">0</td> <td>x 2 =</td> <td align="center">0</td> </tr> <tr> <td>FAC species</td> <td align="center">100</td> <td>x 3 =</td> <td align="center">300</td> </tr> <tr> <td>FACU species</td> <td align="center">0</td> <td>x 4 =</td> <td align="center">0</td> </tr> <tr> <td>UPL species</td> <td align="center">0</td> <td>x 5 =</td> <td align="center">0</td> </tr> <tr> <td>Column Totals:</td> <td align="center">100</td> <td align="center">(A)</td> <td align="center">300 (B)</td> </tr> <tr> <td align="center" colspan="4">Prevalence Index = B/A = <u>3.000</u></td> </tr> </table>	Total % Cover of:		Multiply by:		OBL species	0	x 1 =	0	FACW species	0	x 2 =	0	FAC species	100	x 3 =	300	FACU species	0	x 4 =	0	UPL species	0	x 5 =	0	Column Totals:	100	(A)	300 (B)	Prevalence Index = B/A = <u>3.000</u>			
Total % Cover of:		Multiply by:																																			
OBL species	0	x 1 =	0																																		
FACW species	0	x 2 =	0																																		
FAC species	100	x 3 =	300																																		
FACU species	0	x 4 =	0																																		
UPL species	0	x 5 =	0																																		
Column Totals:	100	(A)	300 (B)																																		
Prevalence Index = B/A = <u>3.000</u>																																					
2. _____	_____	_____	_____	_____																																	
3. _____	_____	_____	_____	_____																																	
4. _____	_____	_____	_____	_____																																	
5. _____	_____	_____	_____	_____																																	
_____	_____	= Total Cover																																			
<b>Herb Stratum (Plot size: <u>5ft x 5ft</u> )</b>																																					
1. _____	_____	_____	_____	_____	<b>Hydrophytic Vegetation Indicators:</b> <input checked="" type="checkbox"/> Dominance Test is >50% <input checked="" type="checkbox"/> Prevalence Index is ≤3.0 <sup>1</sup> <input type="checkbox"/> Morphological Adaptations <sup>1</sup> (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Problematic Hydrophytic Vegetation <sup>1</sup> (Explain) <sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.																																
2. _____	_____	_____	_____	_____																																	
3. _____	_____	_____	_____	_____																																	
4. _____	_____	_____	_____	_____																																	
5. _____	_____	_____	_____	_____																																	
6. _____	_____	_____	_____	_____																																	
7. _____	_____	_____	_____	_____																																	
8. _____	_____	_____	_____	_____																																	
_____	_____	= Total Cover																																			
<b>Woody Vine Stratum (Plot size: <u>5ft x 5ft</u> )</b>																																					
1. _____	_____	_____	_____	_____	<b>Hydrophytic Vegetation Present?</b> <input checked="" type="radio"/> Yes <input type="radio"/> No																																
2. _____	_____	_____	_____	_____																																	
_____	_____	= Total Cover																																			
% Bare Ground in Herb Stratum <u>100</u>		% Cover of Biotic Crust <u>0</u>																																			

Remarks:  
 Due to dense overstory shading, no herbaceous vegetation is present.



**SOIL**

Sampling Point: 2

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)								
Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>		
0-4	10YR	3/2	100					organic duff/leaves/twigs
4-16	2.5Y	5/3	100				Silt Loam	no redox

<sup>1</sup>Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains.

<sup>2</sup>Location: PL=Pore Lining, M=Matrix.

**Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)**

- Histosol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5) (LRR C)
- 1 cm Muck (A9) (LRR D)
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Sandy Mucky Mineral (S1)
- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)
- Stripped Matrix (S6)
- Loamy Mucky Mineral (F1)
- Loamy Gleyed Matrix (F2)
- Depleted Matrix (F3)
- Redox Dark Surface (F6)
- Depleted Dark Surface (F7)
- Redox Depressions (F8)
- Vernal Pools (F9)

**Indicators for Problematic Hydric Soils<sup>3</sup>:**

- 1 cm Muck (A9) (LRR C)
- 2 cm Muck (A10) (LRR B)
- Reduced Vertic (F18)
- Red Parent Material (TF2)
- Other (Explain in Remarks)

<sup>3</sup>Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

**Restrictive Layer (if present):**

Type: \_\_\_\_\_  
 Depth (inches): \_\_\_\_\_

**Hydric Soil Present?**       Yes       No

Remarks:

**HYDROLOGY**

**Wetland Hydrology Indicators:**

Primary Indicators (minimum of one required; check all that apply)

- Surface Water (A1)
- High Water Table (A2)
- Saturation (A3)
- Water Marks (B1) (Nonriverine)
- Sediment Deposits (B2) (Nonriverine)
- Drift Deposits (B3) (Nonriverine)
- Surface Soil Cracks (B6)
- Inundation Visible on Aerial Imagery (B7)
- Water-Stained Leaves (B9)
- Salt Crust (B11)
- Biotic Crust (B12)
- Aquatic Invertebrates (B13)
- Hydrogen Sulfide Odor (C1)
- Oxidized Rhizospheres along Living Roots (C3)
- Presence of Reduced Iron (C4)
- Recent Iron Reduction in Tilled Soils (C6)
- Thick Muck Surface (C7)
- Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- Water Marks (B1) (Riverine)
- Sediment Deposits (B2) (Riverine)
- Drift Deposits (B3) (Riverine)
- Drainage Patterns (B10)
- Dry-Season Water Table (C2)
- Crayfish Burrows (C8)
- Saturation Visible on Aerial Imagery (C9)
- Shallow Aquitard (D3)
- FAC-Neutral Test (D5)

**Field Observations:**

Surface Water Present?     Yes     No    Depth (inches): \_\_\_\_\_  
 Water Table Present?     Yes     No    Depth (inches): \_\_\_\_\_  
 Saturation Present?       Yes     No    Depth (inches): \_\_\_\_\_  
 (includes capillary fringe)

**Wetland Hydrology Present?**       Yes       No

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Soil moist throughout. Due to drier than normal climatic conditions, moisture is likely supported by upslope irrigation and septic percolation. Very faint oxidized root channels from 4-16 inches.

**WETLAND DETERMINATION DATA FORM – Arid West Region**

Project/Site: Parcel ID #121984020002017, Richland, WA City/County: City of Richland Sampling Date: 9/6/2019  
 Applicant/Owner: Country Ridge Homeowners Association State: WA Sampling Point: 3  
 Investigator(s): Geoffrey Gray (GG Environmental) Section, Township, Range: T9N-R28E-S21  
 Landform (hillslope, terrace, etc.): ravine Local relief (concave, convex, none): concave Slope (%): 3  
 Subregion (LRR): B Lat: 46.2461515514941 Long: -119.315978693372 Datum: WGS84  
 Soil Map Unit Name: Warden silt loam NWI Classification: PFO

Are climatic / hydrologic conditions on the site typical for this time of year?  Yes  No (If no, explain in Remarks.)  
 Are Vegetation , Soil , or Hydrology  significantly disturbed? Are "Normal Circumstances" present?  Yes  No  
 Are Vegetation , Soil , or Hydrology  naturally problematic? (If needed, explain any answers in Remarks.)

**SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.**

Hydrophytic Vegetation Present? <input checked="" type="radio"/> Yes <input type="radio"/> No Hydric Soil Present? <input checked="" type="radio"/> Yes <input type="radio"/> No Wetland Hydrology Present? <input checked="" type="radio"/> Yes <input type="radio"/> No	<b>Is the Sampled Area within a Wetland?</b> <input checked="" type="radio"/> Yes <input type="radio"/> No
Remarks: Climate within the past 3 months (May-July) was drier than normal. The parcel is surrounded by residential development, the irrigation and septic practices of which likely influences the hydrology of this wetland. Pit dug at the bottom of the ravine.	

**VEGETATION – Use scientific names of plants.**

Tree Stratum (Plot size: 20ft x 20ft )	Absolute % Cover	Dom. Sp.?	Relative % Cover	Indicator Status																																	
1. <u><i>Elaeagnus angustifolia</i></u>	80	Y	100.0	FAC	<b>Dominance Test worksheet:</b> Number of Dominant Species That Are OBL, FACW, or FAC: <u>3</u> (A) Total Number of Dominant Species Across All Strata: <u>3</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100.0%</u> (A/B)																																
2. _____	_____	_____	_____	_____																																	
3. _____	_____	_____	_____	_____																																	
4. _____	_____	_____	_____	_____																																	
_____	80	= Total Cover		_____																																	
<b>Sapling/Shrub Stratum (Plot size: 15ft x 15ft )</b>																																					
1. <u><i>Cornus alba</i></u>	25	Y	100.0	FACW	<b>Prevalence Index worksheet:</b> <table style="width:100%; border-collapse: collapse;"> <tr> <td align="center" colspan="2">Total % Cover of:</td> <td align="center" colspan="2">Multiply by:</td> </tr> <tr> <td>OBL species</td> <td align="center">90</td> <td>x 1 =</td> <td align="center">90</td> </tr> <tr> <td>FACW species</td> <td align="center">25</td> <td>x 2 =</td> <td align="center">50</td> </tr> <tr> <td>FAC species</td> <td align="center">90</td> <td>x 3 =</td> <td align="center">270</td> </tr> <tr> <td>FACU species</td> <td align="center">0</td> <td>x 4 =</td> <td align="center">0</td> </tr> <tr> <td>UPL species</td> <td align="center">0</td> <td>x 5 =</td> <td align="center">0</td> </tr> <tr> <td>Column Totals:</td> <td align="center">205</td> <td>(A)</td> <td align="center">410 (B)</td> </tr> <tr> <td align="center" colspan="4">Prevalence Index = B/A = <u>2.000</u></td> </tr> </table>	Total % Cover of:		Multiply by:		OBL species	90	x 1 =	90	FACW species	25	x 2 =	50	FAC species	90	x 3 =	270	FACU species	0	x 4 =	0	UPL species	0	x 5 =	0	Column Totals:	205	(A)	410 (B)	Prevalence Index = B/A = <u>2.000</u>			
Total % Cover of:		Multiply by:																																			
OBL species	90	x 1 =	90																																		
FACW species	25	x 2 =	50																																		
FAC species	90	x 3 =	270																																		
FACU species	0	x 4 =	0																																		
UPL species	0	x 5 =	0																																		
Column Totals:	205	(A)	410 (B)																																		
Prevalence Index = B/A = <u>2.000</u>																																					
2. _____	_____	_____	_____	_____																																	
3. _____	_____	_____	_____	_____																																	
4. _____	_____	_____	_____	_____																																	
5. _____	25	= Total Cover		_____																																	
<b>Herb Stratum (Plot size: 5ft x 5ft )</b>																																					
1. <u><i>Schoenoplectus acutus</i></u>	90	Y	90.0	OBL	<b>Hydrophytic Vegetation Indicators:</b> <input checked="" type="checkbox"/> Dominance Test is >50% <input checked="" type="checkbox"/> Prevalence Index is ≤3.0 <sup>1</sup> <input type="checkbox"/> Morphological Adaptations <sup>1</sup> (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Problematic Hydrophytic Vegetation <sup>1</sup> (Explain) <sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.																																
2. <u><i>Solanum dulcamara</i></u>	10	N	10.0	FAC																																	
3. _____	_____	_____	_____	_____																																	
4. _____	_____	_____	_____	_____																																	
5. _____	_____	_____	_____	_____																																	
6. _____	_____	_____	_____	_____																																	
7. _____	_____	_____	_____	_____																																	
8. _____	100	= Total Cover		_____																																	
<b>Woody Vine Stratum (Plot size: 5ft x 5ft )</b>																																					
1. _____	_____	_____	_____	_____	<b>Hydrophytic Vegetation Present?</b> <input checked="" type="radio"/> Yes <input type="radio"/> No																																
2. _____	_____	_____	_____	_____																																	
_____ = Total Cover																																					
% Bare Ground in Herb Stratum <u>0</u> % Cover of Biotic Crust <u>0</u>																																					

Remarks:  
 A slight opening in the tree canopy allows enough sunlight through for emergents to persist in this location.

**SOIL**

Sampling Point: 3

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)										
Depth (inches)	Matrix			Redox Features				Texture	Remarks	
	Color (moist)		%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>			
0-2	10YR	2/1	100					Muck	very greasy and dark	
2-16	2.5Y	4/2	95	10YR	5/6	5	C	M	Loamy Sand	concentration is prominent

<sup>1</sup>Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains.

<sup>2</sup>Location: PL=Pore Lining, M=Matrix.

**Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)**

- Histosol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5) (LRR C)
- 1 cm Muck (A9) (LRR D)
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Sandy Mucky Mineral (S1)
- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)
- Stripped Matrix (S6)
- Loamy Mucky Mineral (F1)
- Loamy Gleyed Matrix (F2)
- Depleted Matrix (F3)
- Redox Dark Surface (F6)
- Depleted Dark Surface (F7)
- Redox Depressions (F8)
- Vernal Pools (F9)

**Indicators for Problematic Hydric Soils<sup>3</sup>:**

- 1 cm Muck (A9) (LRR C)
- 2 cm Muck (A10) (LRR B)
- Reduced Vertic (F18)
- Red Parent Material (TF2)
- Other (Explain in Remarks)

<sup>3</sup>Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

**Restrictive Layer (if present):**

Type: \_\_\_\_\_  
 Depth (inches): \_\_\_\_\_

Hydric Soil Present?  Yes  No

Remarks:

**HYDROLOGY**

**Wetland Hydrology Indicators:**

Primary Indicators (minimum of one required; check all that apply)

- Surface Water (A1)
- High Water Table (A2)
- Saturation (A3)
- Water Marks (B1) (Nonriverine)
- Sediment Deposits (B2) (Nonriverine)
- Drift Deposits (B3) (Nonriverine)
- Surface Soil Cracks (B6)
- Inundation Visible on Aerial Imagery (B7)
- Water-Stained Leaves (B9)
- Salt Crust (B11)
- Biotic Crust (B12)
- Aquatic Invertebrates (B13)
- Hydrogen Sulfide Odor (C1)
- Oxidized Rhizospheres along Living Roots (C3)
- Presence of Reduced Iron (C4)
- Recent Iron Reduction in Tilled Soils (C6)
- Thick Muck Surface (C7)
- Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- Water Marks (B1) (Riverine)
- Sediment Deposits (B2) (Riverine)
- Drift Deposits (B3) (Riverine)
- Drainage Patterns (B10)
- Dry-Season Water Table (C2)
- Crayfish Burrows (C8)
- Saturation Visible on Aerial Imagery (C9)
- Shallow Aquitard (D3)
- FAC-Neutral Test (D5)

**Field Observations:**

Surface Water Present?  Yes  No      Depth (inches): \_\_\_\_\_  
 Water Table Present?  Yes  No      Depth (inches): 6  
 Saturation Present?  Yes  No      Depth (inches): 0  
 (includes capillary fringe)

Wetland Hydrology Present?  Yes  No

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Standing water only 5 feet away. Due to drier than normal climatic conditions, moisture is likely supported by upslope irrigation and septic percolation. Very prominent oxidized root channels from 2-16+ inches.

**WETLAND DETERMINATION DATA FORM – Arid West Region**

Project/Site: Parcel ID #121984020002017, Richland, WA City/County: City of Richland Sampling Date: 9/6/2019  
 Applicant/Owner: Country Ridge Homeowners Association State: WA Sampling Point: 4  
 Investigator(s): Geoffrey Gray (GG Environmental) Section, Township, Range: T9N-R28E-S21  
 Landform (hillslope, terrace, etc.): hillslope Local relief (concave, convex, none): none Slope (%): 30  
 Subregion (LRR): B Lat: 46.2461281699935 Long: -119.315941166585 Datum: WGS84  
 Soil Map Unit Name: Warden silt loam NWI Classification: UPL

Are climatic / hydrologic conditions on the site typical for this time of year?  Yes  No (If no, explain in Remarks.)  
 Are Vegetation , Soil , or Hydrology  significantly disturbed? Are "Normal Circumstances" present?  Yes  No  
 Are Vegetation , Soil , or Hydrology  naturally problematic? (If needed, explain any answers in Remarks.)

**SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.**

Hydrophytic Vegetation Present? <input checked="" type="radio"/> Yes <input type="radio"/> No Hydric Soil Present? <input type="radio"/> Yes <input checked="" type="radio"/> No Wetland Hydrology Present? <input type="radio"/> Yes <input checked="" type="radio"/> No	<b>Is the Sampled Area within a Wetland?</b> <input type="radio"/> Yes <input checked="" type="radio"/> No
Remarks: Climate within the past 3 months (May-July) was drier than normal. The parcel is surrounded by residential development, the irrigation and septic practices of which likely influences the hydrology in this ravine. Pit dug on the ravine south slope, above the toe.	

**VEGETATION – Use scientific names of plants.**

Tree Stratum (Plot size: <u>20ft x 20ft</u> )	Absolute % Cover	Dom. Sp.?	Relative % Cover	Indicator Status																																	
1. <u><i>Elaeagnus angustifolia</i></u>	20	Y	100.0	FAC	<b>Dominance Test worksheet:</b> Number of Dominant Species That Are OBL, FACW, or FAC: <u>2</u> (A) Total Number of Dominant Species Across All Strata: <u>3</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>66.7%</u> (A/B)																																
2. _____	_____	_____	_____	_____																																	
3. _____	_____	_____	_____	_____																																	
4. _____	_____	_____	_____	_____																																	
_____	20	= Total Cover																																			
<b>Sapling/Shrub Stratum (Plot size: <u>15ft x 15ft</u> )</b>					<b>Prevalence Index worksheet:</b> <table style="width:100%; border-collapse: collapse;"> <tr> <td align="center" colspan="2">Total % Cover of:</td> <td align="center" colspan="2">Multiply by:</td> </tr> <tr> <td>OBL species</td><td align="center">0</td> <td>x 1 =</td><td align="center">0</td> </tr> <tr> <td>FACW species</td><td align="center">50</td> <td>x 2 =</td><td align="center">100</td> </tr> <tr> <td>FAC species</td><td align="center">20</td> <td>x 3 =</td><td align="center">60</td> </tr> <tr> <td>FACU species</td><td align="center">60</td> <td>x 4 =</td><td align="center">240</td> </tr> <tr> <td>UPL species</td><td align="center">0</td> <td>x 5 =</td><td align="center">0</td> </tr> <tr> <td>Column Totals:</td><td align="center">130</td> <td>(A)</td><td align="center">400 (B)</td> </tr> <tr> <td align="center" colspan="4">Prevalence Index = B/A = <u>3.077</u></td> </tr> </table>	Total % Cover of:		Multiply by:		OBL species	0	x 1 =	0	FACW species	50	x 2 =	100	FAC species	20	x 3 =	60	FACU species	60	x 4 =	240	UPL species	0	x 5 =	0	Column Totals:	130	(A)	400 (B)	Prevalence Index = B/A = <u>3.077</u>			
Total % Cover of:		Multiply by:																																			
OBL species	0	x 1 =	0																																		
FACW species	50	x 2 =	100																																		
FAC species	20	x 3 =	60																																		
FACU species	60	x 4 =	240																																		
UPL species	0	x 5 =	0																																		
Column Totals:	130	(A)	400 (B)																																		
Prevalence Index = B/A = <u>3.077</u>																																					
1. <u><i>Cornus alba</i></u>	50	Y	100.0	FACW																																	
2. _____	_____	_____	_____	_____																																	
3. _____	_____	_____	_____	_____																																	
4. _____	_____	_____	_____	_____																																	
_____	50	= Total Cover																																			
<b>Herb Stratum (Plot size: <u>5ft x 5ft</u> )</b>					<b>Hydrophytic Vegetation Indicators:</b> <input checked="" type="checkbox"/> Dominance Test is >50% <input type="checkbox"/> Prevalence Index is ≤3.0 <sup>1</sup> <input type="checkbox"/> Morphological Adaptations <sup>1</sup> (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Problematic Hydrophytic Vegetation <sup>1</sup> (Explain) <sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.																																
1. <u><i>Cirsium arvense</i></u>	60	Y	100.0	FACU																																	
2. _____	_____	_____	_____	_____																																	
3. _____	_____	_____	_____	_____																																	
4. _____	_____	_____	_____	_____																																	
5. _____	_____	_____	_____	_____																																	
6. _____	_____	_____	_____	_____																																	
7. _____	_____	_____	_____	_____																																	
8. _____	_____	_____	_____	_____																																	
_____	60	= Total Cover																																			
<b>Woody Vine Stratum (Plot size: <u>5ft x 5ft</u> )</b>					<b>Hydrophytic Vegetation Present?</b> <input checked="" type="radio"/> Yes <input type="radio"/> No																																
1. _____	_____	_____	_____	_____																																	
2. _____	_____	_____	_____	_____																																	
_____	_____	= Total Cover																																			
% Bare Ground in Herb Stratum <u>40</u>	% Cover of Biotic Crust <u>0</u>																																				

Remarks:

**SOIL**

Sampling Point: 4

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)									
Depth (inches)	Matrix			Redox Features				Texture	Remarks
	Color (moist)		%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>		
0-16	10YR	4/2	100					Silt Loam	no redox

<sup>1</sup>Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains.

<sup>2</sup>Location: PL=Pore Lining, M=Matrix.

**Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)**

- Histosol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5) (LRR C)
- 1 cm Muck (A9) (LRR D)
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Sandy Mucky Mineral (S1)
- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)
- Stripped Matrix (S6)
- Loamy Mucky Mineral (F1)
- Loamy Gleyed Matrix (F2)
- Depleted Matrix (F3)
- Redox Dark Surface (F6)
- Depleted Dark Surface (F7)
- Redox Depressions (F8)
- Vernal Pools (F9)

**Indicators for Problematic Hydric Soils<sup>3</sup>:**

- 1 cm Muck (A9) (LRR C)
- 2 cm Muck (A10) (LRR B)
- Reduced Vertic (F18)
- Red Parent Material (TF2)
- Other (Explain in Remarks)

<sup>3</sup>Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

**Restrictive Layer (if present):**

Type: \_\_\_\_\_  
 Depth (inches): \_\_\_\_\_

**Hydric Soil Present?**       Yes       No

Remarks:

**HYDROLOGY**

**Wetland Hydrology Indicators:**

Primary Indicators (minimum of one required; check all that apply)

- Surface Water (A1)
- High Water Table (A2)
- Saturation (A3)
- Water Marks (B1) (Nonriverine)
- Sediment Deposits (B2) (Nonriverine)
- Drift Deposits (B3) (Nonriverine)
- Surface Soil Cracks (B6)
- Inundation Visible on Aerial Imagery (B7)
- Water-Stained Leaves (B9)
- Salt Crust (B11)
- Biotic Crust (B12)
- Aquatic Invertebrates (B13)
- Hydrogen Sulfide Odor (C1)
- Oxidized Rhizospheres along Living Roots (C3)
- Presence of Reduced Iron (C4)
- Recent Iron Reduction in Tilled Soils (C6)
- Thick Muck Surface (C7)
- Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- Water Marks (B1) (Riverine)
- Sediment Deposits (B2) (Riverine)
- Drift Deposits (B3) (Riverine)
- Drainage Patterns (B10)
- Dry-Season Water Table (C2)
- Crayfish Burrows (C8)
- Saturation Visible on Aerial Imagery (C9)
- Shallow Aquitard (D3)
- FAC-Neutral Test (D5)

**Field Observations:**

Surface Water Present?     Yes     No    Depth (inches): \_\_\_\_\_  
 Water Table Present?     Yes     No    Depth (inches): \_\_\_\_\_  
 Saturation Present?     Yes     No    Depth (inches): \_\_\_\_\_  
 (includes capillary fringe)

**Wetland Hydrology Present?**       Yes       No

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Soil moist throughout. Due to drier than normal climatic conditions, moisture is likely supported by upslope irrigation and septic percolation.

**WETLAND DETERMINATION DATA FORM – Arid West Region**

Project/Site: Parcel ID #121984020002017, Richland, WA City/County: City of Richland Sampling Date: 9/6/2019  
 Applicant/Owner: Country Ridge Homeowners Association State: WA Sampling Point: 5  
 Investigator(s): Geoffrey Gray (GG Environmental) Section, Township, Range: T9N-R28E-S21  
 Landform (hillslope, terrace, etc.): flat Local relief (concave, convex, none): none Slope (%): 2  
 Subregion (LRR): B Lat: 46.2479581843066 Long: -119.312010287496 Datum: WGS84  
 Soil Map Unit Name: Warden silt loam NWI Classification: UPL

Are climatic / hydrologic conditions on the site typical for this time of year?  Yes  No (If no, explain in Remarks.)  
 Are Vegetation , Soil , or Hydrology  significantly disturbed? Are "Normal Circumstances" present?  Yes  No  
 Are Vegetation , Soil , or Hydrology  naturally problematic? (If needed, explain any answers in Remarks.)

**SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.**

Hydrophytic Vegetation Present? <input checked="" type="radio"/> Yes <input type="radio"/> No Hydric Soil Present? <input type="radio"/> Yes <input checked="" type="radio"/> No Wetland Hydrology Present? <input type="radio"/> Yes <input checked="" type="radio"/> No	<b>Is the Sampled Area within a Wetland?</b> <input type="radio"/> Yes <input checked="" type="radio"/> No
---	---

Remarks:  
 Climate within the past 3 months (May-July) was drier than normal.  
 The parcel is surrounded by residential development, the irrigation and septic practices of which likely influences the hydrology of this vicinity.  
 Pit dug in a vicinity in which Russian olive was removed, resulting in significant disturbance to soil and vegetation. Vegetation is in a state of rapid regrowth, now that the tree overstory has been removed.

**VEGETATION – Use scientific names of plants.**

Tree Stratum (Plot size: <u>20ft x 20ft</u> )	Absolute % Cover	Dom. Sp.?	Relative % Cover	Indicator Status																																	
1. _____	_____	_____	_____	_____	<b>Dominance Test worksheet:</b> Number of Dominant Species That Are OBL, FACW, or FAC: <u>2</u> (A) Total Number of Dominant Species Across All Strata: <u>3</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>66.7%</u> (A/B)																																
2. _____	_____	_____	_____	_____																																	
3. _____	_____	_____	_____	_____																																	
4. _____	_____	_____	_____	_____																																	
_____ = Total Cover	_____	_____	_____	_____																																	
<b>Sapling/Shrub Stratum (Plot size: <u>15ft x 15ft</u> )</b>																																					
1. <u>Salix exigua</u>	<u>5</u>	<u>Y</u>	<u>100.0</u>	<u>FACW</u>	<b>Prevalence Index worksheet:</b> <table style="width:100%; border-collapse: collapse;"> <tr> <td style="width:30%;"></td> <td style="width:20%;">Total % Cover of:</td> <td style="width:20%;">Multiply by:</td> <td style="width:30%;"></td> </tr> <tr> <td>OBL species</td> <td><u>0</u></td> <td>x 1 =</td> <td><u>0</u></td> </tr> <tr> <td>FACW species</td> <td><u>5</u></td> <td>x 2 =</td> <td><u>10</u></td> </tr> <tr> <td>FAC species</td> <td><u>20</u></td> <td>x 3 =</td> <td><u>60</u></td> </tr> <tr> <td>FACU species</td> <td><u>60</u></td> <td>x 4 =</td> <td><u>240</u></td> </tr> <tr> <td>UPL species</td> <td><u>0</u></td> <td>x 5 =</td> <td><u>0</u></td> </tr> <tr> <td>Column Totals:</td> <td><u>85</u></td> <td>(A)</td> <td><u>310</u> (B)</td> </tr> <tr> <td colspan="4" style="text-align: center;">Prevalence Index = B/A = <u>3.647</u></td> </tr> </table>		Total % Cover of:	Multiply by:		OBL species	<u>0</u>	x 1 =	<u>0</u>	FACW species	<u>5</u>	x 2 =	<u>10</u>	FAC species	<u>20</u>	x 3 =	<u>60</u>	FACU species	<u>60</u>	x 4 =	<u>240</u>	UPL species	<u>0</u>	x 5 =	<u>0</u>	Column Totals:	<u>85</u>	(A)	<u>310</u> (B)	Prevalence Index = B/A = <u>3.647</u>			
	Total % Cover of:	Multiply by:																																			
OBL species	<u>0</u>	x 1 =	<u>0</u>																																		
FACW species	<u>5</u>	x 2 =	<u>10</u>																																		
FAC species	<u>20</u>	x 3 =	<u>60</u>																																		
FACU species	<u>60</u>	x 4 =	<u>240</u>																																		
UPL species	<u>0</u>	x 5 =	<u>0</u>																																		
Column Totals:	<u>85</u>	(A)	<u>310</u> (B)																																		
Prevalence Index = B/A = <u>3.647</u>																																					
2. _____	_____	_____	_____	_____																																	
3. _____	_____	_____	_____	_____																																	
4. _____	_____	_____	_____	_____																																	
5. _____	_____	_____	_____	_____																																	
_____ = Total Cover	_____	_____	_____	_____																																	
<b>Herb Stratum (Plot size: <u>5ft x 5ft</u> )</b>																																					
1. <u>Salsola tragus</u>	<u>60</u>	<u>Y</u>	<u>75.0</u>	<u>FACU</u>	<b>Hydrophytic Vegetation Indicators:</b> <input checked="" type="checkbox"/> Dominance Test is >50% <input type="checkbox"/> Prevalence Index is ≤3.0 <sup>1</sup> <input type="checkbox"/> Morphological Adaptations <sup>1</sup> (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Problematic Hydrophytic Vegetation <sup>1</sup> (Explain) <sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.																																
2. <u>Bassia scoparia</u>	<u>20</u>	<u>Y</u>	<u>25.0</u>	<u>FAC</u>																																	
3. _____	_____	_____	_____	_____																																	
4. _____	_____	_____	_____	_____																																	
5. _____	_____	_____	_____	_____																																	
6. _____	_____	_____	_____	_____																																	
7. _____	_____	_____	_____	_____																																	
8. _____	_____	_____	_____	_____																																	
_____ = Total Cover	<u>80</u>	_____	_____	_____																																	
<b>Woody Vine Stratum (Plot size: <u>5ft x 5ft</u> )</b>																																					
1. _____	_____	_____	_____	_____	<b>Hydrophytic Vegetation Present?</b> <input checked="" type="radio"/> Yes <input type="radio"/> No																																
2. _____	_____	_____	_____	_____																																	
_____ = Total Cover	_____	_____	_____	_____																																	
% Bare Ground in Herb Stratum <u>20</u> % Cover of Biotic Crust <u>0</u>																																					

Remarks:  
 Willows are resprouting from roots.

**SOIL**

Sampling Point: 5

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)									
Depth (inches)	Matrix			Redox Features				Texture	Remarks
	Color (moist)		%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>		
0-20	10YR	4/2	100					Sandy Loam	

<sup>1</sup>Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix.

<b>Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)</b> <input type="checkbox"/> Histosol (A1) <input type="checkbox"/> Histic Epipedon (A2) <input type="checkbox"/> Black Histic (A3) <input type="checkbox"/> Hydrogen Sulfide (A4) <input type="checkbox"/> Stratified Layers (A5) (LRR C) <input type="checkbox"/> 1 cm Muck (A9) (LRR D) <input type="checkbox"/> Depleted Below Dark Surface (A11) <input type="checkbox"/> Thick Dark Surface (A12) <input type="checkbox"/> Sandy Mucky Mineral (S1) <input type="checkbox"/> Sandy Gleyed Matrix (S4)		<b>Indicators for Problematic Hydric Soils<sup>3</sup>:</b> <input type="checkbox"/> 1 cm Muck (A9) (LRR C) <input type="checkbox"/> 2 cm Muck (A10) (LRR B) <input type="checkbox"/> Reduced Vertic (F18) <input type="checkbox"/> Red Parent Material (TF2) <input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Sandy Redox (S5) <input type="checkbox"/> Stripped Matrix (S6) <input type="checkbox"/> Loamy Mucky Mineral (F1) <input type="checkbox"/> Loamy Gleyed Matrix (F2) <input type="checkbox"/> Depleted Matrix (F3) <input type="checkbox"/> Redox Dark Surface (F6) <input type="checkbox"/> Depleted Dark Surface (F7) <input type="checkbox"/> Redox Depressions (F8) <input type="checkbox"/> Vernal Pools (F9)		<sup>3</sup> Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

<b>Restrictive Layer (if present):</b> Type: _____ Depth (inches): _____	<b>Hydric Soil Present?</b> <input type="radio"/> Yes <input checked="" type="radio"/> No
Remarks: _____	

**HYDROLOGY**

<b>Wetland Hydrology Indicators:</b> <u>Primary Indicators (minimum of one required; check all that apply)</u> <input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Water Marks (B1) (Nonriverine) <input type="checkbox"/> Sediment Deposits (B2) (Nonriverine) <input type="checkbox"/> Drift Deposits (B3) (Nonriverine) <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Water-Stained Leaves (B9)		<u>Secondary Indicators (2 or more required)</u> <input type="checkbox"/> Salt Crust (B11) <input type="checkbox"/> Biotic Crust (B12) <input type="checkbox"/> Aquatic Invertebrates (B13) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Thick Muck Surface (C7) <input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Water Marks (B1) (Riverine) <input type="checkbox"/> Sediment Deposits (B2) (Riverine) <input type="checkbox"/> Drift Deposits (B3) (Riverine) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> FAC-Neutral Test (D5)
---	--	---	---

<b>Field Observations:</b> Surface Water Present? <input type="radio"/> Yes <input checked="" type="radio"/> No    Depth (inches): _____ Water Table Present? <input type="radio"/> Yes <input checked="" type="radio"/> No    Depth (inches): _____ Saturation Present? <input type="radio"/> Yes <input checked="" type="radio"/> No    Depth (inches): _____ (includes capillary fringe)	<b>Wetland Hydrology Present?</b> <input type="radio"/> Yes <input checked="" type="radio"/> No
---	---

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:  
 Soil powdery dry throughout the excavated profile.

**WETLAND DETERMINATION DATA FORM – Arid West Region**

Project/Site: Parcel ID #121984020002017, Richland, WA City/County: City of Richland Sampling Date: 9/6/2019  
 Applicant/Owner: Country Ridge Homeowners Association State: WA Sampling Point: 6  
 Investigator(s): Geoffrey Gray (GG Environmental) Section, Township, Range: T9N-R28E-S21  
 Landform (hillslope, terrace, etc.): flat Local relief (concave, convex, none): none Slope (%): 2  
 Subregion (LRR): B Lat: 46.2478311853287 Long: -119.312181397067 Datum: WGS84  
 Soil Map Unit Name: Warden silt loam NWI Classification: PSS

Are climatic / hydrologic conditions on the site typical for this time of year?  Yes  No (If no, explain in Remarks.)  
 Are Vegetation , Soil , or Hydrology  significantly disturbed? Are "Normal Circumstances" present?  Yes  No  
 Are Vegetation , Soil , or Hydrology  naturally problematic? (If needed, explain any answers in Remarks.)

**SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.**

Hydrophytic Vegetation Present? <input checked="" type="radio"/> Yes <input type="radio"/> No Hydric Soil Present? <input checked="" type="radio"/> Yes <input type="radio"/> No Wetland Hydrology Present? <input checked="" type="radio"/> Yes <input type="radio"/> No	<b>Is the Sampled Area within a Wetland?</b> <input checked="" type="radio"/> Yes <input type="radio"/> No
---	---

Remarks:  
 Climate within the past 3 months (May-July) was drier than normal.  
 The parcel is surrounded by residential development, the irrigation and septic practices of which likely influences the hydrology of this wetland.  
 Pit dug in a vicinity in which Russian olive was removed, resulting in significant disturbance to soil and vegetation. Vegetation is in a state of rapid regrowth, now that the tree overstory has been removed.

**VEGETATION – Use scientific names of plants.**

Stratum	Absolute % Cover	Dom. Sp.?	Relative % Cover	Indicator Status																																	
<u>Tree Stratum</u> (Plot size: <u>20ft x 20ft</u> )					<b>Dominance Test worksheet:</b> Number of Dominant Species That Are OBL, FACW, or FAC: <u>2</u> (A) Total Number of Dominant Species Across All Strata: <u>3</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>66.7%</u> (A/B)																																
1. _____																																					
2. _____																																					
3. _____																																					
4. _____																																					
_____ = Total Cover																																					
<u>Sapling/Shrub Stratum</u> (Plot size: <u>15ft x 15ft</u> )					<b>Prevalence Index worksheet:</b> <table style="width:100%; border-collapse: collapse;"> <tr> <td align="center" colspan="2">Total % Cover of:</td> <td align="center" colspan="2">Multiply by:</td> </tr> <tr> <td>OBL species</td> <td align="center">0</td> <td>x 1 =</td> <td align="center">0</td> </tr> <tr> <td>FACW species</td> <td align="center">30</td> <td>x 2 =</td> <td align="center">60</td> </tr> <tr> <td>FAC species</td> <td align="center">40</td> <td>x 3 =</td> <td align="center">120</td> </tr> <tr> <td>FACU species</td> <td align="center">30</td> <td>x 4 =</td> <td align="center">120</td> </tr> <tr> <td>UPL species</td> <td align="center">0</td> <td>x 5 =</td> <td align="center">0</td> </tr> <tr> <td>Column Totals:</td> <td align="center">100</td> <td align="center">(A)</td> <td align="center">300 (B)</td> </tr> <tr> <td align="center" colspan="4">Prevalence Index = B/A = <u>3.000</u></td> </tr> </table>	Total % Cover of:		Multiply by:		OBL species	0	x 1 =	0	FACW species	30	x 2 =	60	FAC species	40	x 3 =	120	FACU species	30	x 4 =	120	UPL species	0	x 5 =	0	Column Totals:	100	(A)	300 (B)	Prevalence Index = B/A = <u>3.000</u>			
Total % Cover of:		Multiply by:																																			
OBL species	0	x 1 =	0																																		
FACW species	30	x 2 =	60																																		
FAC species	40	x 3 =	120																																		
FACU species	30	x 4 =	120																																		
UPL species	0	x 5 =	0																																		
Column Totals:	100	(A)	300 (B)																																		
Prevalence Index = B/A = <u>3.000</u>																																					
1. <u>Salix exigua</u>	30	Y	100.0	FACW																																	
2. _____																																					
3. _____																																					
4. _____																																					
5. _____																																					
_____ = Total Cover																																					
<u>Herb Stratum</u> (Plot size: <u>5ft x 5ft</u> )					<b>Hydrophytic Vegetation Indicators:</b> <input checked="" type="checkbox"/> Dominance Test is >50% <input checked="" type="checkbox"/> Prevalence Index is ≤3.0 <sup>1</sup> <input type="checkbox"/> Morphological Adaptations <sup>1</sup> (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Problematic Hydrophytic Vegetation <sup>1</sup> (Explain) <sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.																																
1. <u>Salsola tragus</u>	30	Y	42.9	FACU																																	
2. <u>Bassia scoparia</u>	40	Y	57.1	FAC																																	
3. _____																																					
4. _____																																					
5. _____																																					
6. _____																																					
7. _____																																					
8. _____																																					
_____ = Total Cover																																					
<u>Woody Vine Stratum</u> (Plot size: <u>5ft x 5ft</u> )					<b>Hydrophytic Vegetation Present?</b> <input checked="" type="radio"/> Yes <input type="radio"/> No																																
1. _____																																					
2. _____																																					
_____ = Total Cover																																					
% Bare Ground in Herb Stratum <u>30</u>		% Cover of Biotic Crust <u>0</u>																																			

Remarks:  
 Willows are resprouting from roots.



**SOIL**

Sampling Point: 6

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)										
Depth (inches)	Matrix			Redox Features				Texture	Remarks	
	Color (moist)	%		Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>			
0-6	10YR	4/2	100					Sandy Loam		
6-16	10YR	4/2	98	10YR	4/6	2	C	M	Sandy Loam	concentration is prominent

<sup>1</sup>Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains.

<sup>2</sup>Location: PL=Pore Lining, M=Matrix.

**Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)**

- Histosol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5) (LRR C)
- 1 cm Muck (A9) (LRR D)
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Sandy Mucky Mineral (S1)
- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)
- Stripped Matrix (S6)
- Loamy Mucky Mineral (F1)
- Loamy Gleyed Matrix (F2)
- Depleted Matrix (F3)
- Redox Dark Surface (F6)
- Depleted Dark Surface (F7)
- Redox Depressions (F8)
- Vernal Pools (F9)

**Indicators for Problematic Hydric Soils<sup>3</sup>:**

- 1 cm Muck (A9) (LRR C)
- 2 cm Muck (A10) (LRR B)
- Reduced Vertic (F18)
- Red Parent Material (TF2)
- Other (Explain in Remarks)

<sup>3</sup>Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

**Restrictive Layer (if present):**

Type: \_\_\_\_\_  
 Depth (inches): \_\_\_\_\_

Hydric Soil Present?  Yes  No

Remarks:

**HYDROLOGY**

**Wetland Hydrology Indicators:**

Primary Indicators (minimum of one required; check all that apply)

- Surface Water (A1)
- High Water Table (A2)
- Saturation (A3)
- Water Marks (B1) (Nonriverine)
- Sediment Deposits (B2) (Nonriverine)
- Drift Deposits (B3) (Nonriverine)
- Surface Soil Cracks (B6)
- Inundation Visible on Aerial Imagery (B7)
- Water-Stained Leaves (B9)
- Salt Crust (B11)
- Biotic Crust (B12)
- Aquatic Invertebrates (B13)
- Hydrogen Sulfide Odor (C1)
- Oxidized Rhizospheres along Living Roots (C3)
- Presence of Reduced Iron (C4)
- Recent Iron Reduction in Tilled Soils (C6)
- Thick Muck Surface (C7)
- Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- Water Marks (B1) (Riverine)
- Sediment Deposits (B2) (Riverine)
- Drift Deposits (B3) (Riverine)
- Drainage Patterns (B10)
- Dry-Season Water Table (C2)
- Crayfish Burrows (C8)
- Saturation Visible on Aerial Imagery (C9)
- Shallow Aquitard (D3)
- FAC-Neutral Test (D5)

**Field Observations:**

Surface Water Present?  Yes  No    Depth (inches): \_\_\_\_\_  
 Water Table Present?  Yes  No    Depth (inches): \_\_\_\_\_  
 Saturation Present?  Yes  No    Depth (inches): \_\_\_\_\_  
 (includes capillary fringe)

Wetland Hydrology Present?  Yes  No

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Soil powdery dry throughout the excavated profile. Due to oxidized root channels at 7 inches, and homeowner accounts of the extent of surface hydrology each year, this soil pit is considered to be located at the eastern extent of the wetland.

**WETLAND DETERMINATION DATA FORM – Arid West Region**

Project/Site: Parcel ID #121984020002017, Richland, WA City/County: City of Richland Sampling Date: 9/6/2019  
 Applicant/Owner: Country Ridge Homeowners Association State: WA Sampling Point: 7  
 Investigator(s): Geoffrey Gray (GG Environmental) Section, Township, Range: T9N-R28E-S21  
 Landform (hillslope, terrace, etc.): flat Local relief (concave, convex, none): none Slope (%): 2  
 Subregion (LRR): B Lat: 46.247765557233 Long: -119.312162003499 Datum: WGS84  
 Soil Map Unit Name: Warden silt loam NWI Classification: UPL

Are climatic / hydrologic conditions on the site typical for this time of year?  Yes  No (If no, explain in Remarks.)  
 Are Vegetation , Soil , or Hydrology  significantly disturbed? Are "Normal Circumstances" present?  Yes  No  
 Are Vegetation , Soil , or Hydrology  naturally problematic? (If needed, explain any answers in Remarks.)

**SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.**

Hydrophytic Vegetation Present? <input checked="" type="radio"/> Yes <input type="radio"/> No Hydric Soil Present? <input type="radio"/> Yes <input checked="" type="radio"/> No Wetland Hydrology Present? <input type="radio"/> Yes <input checked="" type="radio"/> No	<b>Is the Sampled Area within a Wetland?</b> <input type="radio"/> Yes <input checked="" type="radio"/> No
Remarks: Climate within the past 3 months (May-July) was drier than normal. The parcel is surrounded by residential development, the irrigation and septic practices of which likely influences the hydrology of this vicinity. Pit dug in a manicured lawn, 5 feet from coyote willow.	

**VEGETATION – Use scientific names of plants.**

Tree Stratum (Plot size: <u>20ft x 20ft</u> )	Absolute % Cover	Dom. Sp.?	Relative % Cover	Indicator Status																																																	
1. _____	_____	_____	_____	_____	<b>Dominance Test worksheet:</b> Number of Dominant Species That Are OBL, FACW, or FAC: <u>1</u> (A) Total Number of Dominant Species Across All Strata: <u>1</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100.0%</u> (A/B)																																																
2. _____	_____	_____	_____	_____																																																	
3. _____	_____	_____	_____	_____																																																	
4. _____	_____	_____	_____	_____																																																	
_____ = Total Cover	_____	_____	_____	_____																																																	
<b>Sapling/Shrub Stratum (Plot size: <u>15ft x 15ft</u>)</b>																																																					
1. <u>Salix exigua</u>	<u>15</u>	<u>Y</u>	<u>100.0</u>	<u>FACW</u>	<b>Prevalence Index worksheet:</b> <table style="width:100%; border-collapse: collapse;"> <tr> <td style="width:30%;"></td> <td style="width:20%;">Total % Cover of:</td> <td style="width:10%;"></td> <td style="width:10%;">Multiply by:</td> <td style="width:10%;"></td> <td style="width:10%;"></td> </tr> <tr> <td>OBL species</td> <td align="center"><u>0</u></td> <td></td> <td>x 1 =</td> <td align="center"><u>0</u></td> <td></td> </tr> <tr> <td>FACW species</td> <td align="center"><u>15</u></td> <td></td> <td>x 2 =</td> <td align="center"><u>30</u></td> <td></td> </tr> <tr> <td>FAC species</td> <td align="center"><u>0</u></td> <td></td> <td>x 3 =</td> <td align="center"><u>0</u></td> <td></td> </tr> <tr> <td>FACU species</td> <td align="center"><u>0</u></td> <td></td> <td>x 4 =</td> <td align="center"><u>0</u></td> <td></td> </tr> <tr> <td>UPL species</td> <td align="center"><u>0</u></td> <td></td> <td>x 5 =</td> <td align="center"><u>0</u></td> <td></td> </tr> <tr> <td>Column Totals:</td> <td align="center"><u>15</u></td> <td align="center"><u>(A)</u></td> <td></td> <td align="center"><u>30</u></td> <td align="center"><u>(B)</u></td> </tr> <tr> <td colspan="6">Prevalence Index = B/A = <u>2.000</u></td> </tr> </table>		Total % Cover of:		Multiply by:			OBL species	<u>0</u>		x 1 =	<u>0</u>		FACW species	<u>15</u>		x 2 =	<u>30</u>		FAC species	<u>0</u>		x 3 =	<u>0</u>		FACU species	<u>0</u>		x 4 =	<u>0</u>		UPL species	<u>0</u>		x 5 =	<u>0</u>		Column Totals:	<u>15</u>	<u>(A)</u>		<u>30</u>	<u>(B)</u>	Prevalence Index = B/A = <u>2.000</u>					
	Total % Cover of:		Multiply by:																																																		
OBL species	<u>0</u>		x 1 =	<u>0</u>																																																	
FACW species	<u>15</u>		x 2 =	<u>30</u>																																																	
FAC species	<u>0</u>		x 3 =	<u>0</u>																																																	
FACU species	<u>0</u>		x 4 =	<u>0</u>																																																	
UPL species	<u>0</u>		x 5 =	<u>0</u>																																																	
Column Totals:	<u>15</u>	<u>(A)</u>		<u>30</u>	<u>(B)</u>																																																
Prevalence Index = B/A = <u>2.000</u>																																																					
2. _____	_____	_____	_____	_____																																																	
3. _____	_____	_____	_____	_____																																																	
4. _____	_____	_____	_____	_____																																																	
5. _____	_____	_____	_____	_____																																																	
_____ = Total Cover	_____	_____	_____	_____																																																	
<b>Herb Stratum (Plot size: <u>5ft x 5ft</u>)</b>																																																					
1. _____	_____	_____	_____	_____	<b>Hydrophytic Vegetation Indicators:</b> <input checked="" type="checkbox"/> Dominance Test is >50% <input checked="" type="checkbox"/> Prevalence Index is ≤3.0 <sup>1</sup> <input type="checkbox"/> Morphological Adaptations <sup>1</sup> (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Problematic Hydrophytic Vegetation <sup>1</sup> (Explain) <sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.																																																
2. _____	_____	_____	_____	_____																																																	
3. _____	_____	_____	_____	_____																																																	
4. _____	_____	_____	_____	_____																																																	
5. _____	_____	_____	_____	_____																																																	
6. _____	_____	_____	_____	_____																																																	
7. _____	_____	_____	_____	_____																																																	
8. _____	_____	_____	_____	_____																																																	
_____ = Total Cover	_____	_____	_____	_____																																																	
<b>Woody Vine Stratum (Plot size: <u>5ft x 5ft</u>)</b>																																																					
1. _____	_____	_____	_____	_____	<b>Hydrophytic Vegetation Present?</b> <input checked="" type="radio"/> Yes <input type="radio"/> No																																																
2. _____	_____	_____	_____	_____																																																	
_____ = Total Cover	_____	_____	_____	_____																																																	
% Bare Ground in Herb Stratum <u>0</u> % Cover of Biotic Crust <u>0</u>																																																					

Remarks:  
 Pit dug in 100% lawn grass (no hydric indicator status). Herb stratum left blank.

**SOIL**

Sampling Point: 7

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)									
Depth (inches)	Matrix			Redox Features				Texture	Remarks
	Color (moist)		%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>		
0-16	2.5Y	4/2	100					Sandy Loam	no redox

<sup>1</sup>Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix.

<p><b>Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)</b></p> <input type="checkbox"/> Histosol (A1) <input type="checkbox"/> Histic Epipedon (A2) <input type="checkbox"/> Black Histic (A3) <input type="checkbox"/> Hydrogen Sulfide (A4) <input type="checkbox"/> Stratified Layers (A5) (LRR C) <input type="checkbox"/> 1 cm Muck (A9) (LRR D) <input type="checkbox"/> Depleted Below Dark Surface (A11) <input type="checkbox"/> Thick Dark Surface (A12) <input type="checkbox"/> Sandy Mucky Mineral (S1) <input type="checkbox"/> Sandy Gleyed Matrix (S4)	<p><b>Indicators for Problematic Hydric Soils<sup>3</sup>:</b></p> <input type="checkbox"/> 1 cm Muck (A9) (LRR C) <input type="checkbox"/> 2 cm Muck (A10) (LRR B) <input type="checkbox"/> Reduced Vertic (F18) <input type="checkbox"/> Red Parent Material (TF2) <input type="checkbox"/> Other (Explain in Remarks)
<p><input type="checkbox"/> Sandy Redox (S5)  <input type="checkbox"/> Stripped Matrix (S6)  <input type="checkbox"/> Loamy Mucky Mineral (F1)  <input type="checkbox"/> Loamy Gleyed Matrix (F2)  <input type="checkbox"/> Depleted Matrix (F3)  <input type="checkbox"/> Redox Dark Surface (F6)  <input type="checkbox"/> Depleted Dark Surface (F7)  <input type="checkbox"/> Redox Depressions (F8)  <input type="checkbox"/> Vernal Pools (F9)</p>	<p><sup>3</sup>Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.</p>

<p><b>Restrictive Layer (if present):</b></p> Type: _____ Depth (inches): _____	<p><b>Hydric Soil Present?</b>      <input type="radio"/> Yes      <input checked="" type="radio"/> No</p>
--	--

Remarks:  
Soil moist throughout excavated profile.

**HYDROLOGY**

<p><b>Wetland Hydrology Indicators:</b></p> <p><u>Primary Indicators (minimum of one required; check all that apply)</u></p> <input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Water Marks (B1) (Nonriverine) <input type="checkbox"/> Sediment Deposits (B2) (Nonriverine) <input type="checkbox"/> Drift Deposits (B3) (Nonriverine) <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Water-Stained Leaves (B9)	<p><u>Secondary Indicators (2 or more required)</u></p> <input type="checkbox"/> Salt Crust (B11) <input type="checkbox"/> Biotic Crust (B12) <input type="checkbox"/> Aquatic Invertebrates (B13) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Thick Muck Surface (C7) <input type="checkbox"/> Other (Explain in Remarks)
<p><b>Field Observations:</b></p> Surface Water Present? <input type="radio"/> Yes <input checked="" type="radio"/> No    Depth (inches): _____ Water Table Present? <input type="radio"/> Yes <input checked="" type="radio"/> No    Depth (inches): _____ Saturation Present? <input type="radio"/> Yes <input checked="" type="radio"/> No    Depth (inches): _____ (includes capillary fringe)	<p><b>Wetland Hydrology Present?</b>      <input type="radio"/> Yes      <input checked="" type="radio"/> No</p>

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:  
No oxidized root channels.

**WETLAND DETERMINATION DATA FORM – Arid West Region**

Project/Site: Parcel ID #121984020002017, Richland, WA City/County: City of Richland Sampling Date: 9/6/2019  
 Applicant/Owner: Country Ridge Homeowners Association State: WA Sampling Point: 8  
 Investigator(s): Geoffrey Gray (GG Environmental) Section, Township, Range: T9N-R28E-S21  
 Landform (hillslope, terrace, etc.): flat Local relief (concave, convex, none): none Slope (%): 3  
 Subregion (LRR): B Lat: 46.2476879815071 Long: -119.31236567665 Datum: WGS84  
 Soil Map Unit Name: Warden silt loam NWI Classification: UPL

Are climatic / hydrologic conditions on the site typical for this time of year?  Yes  No (If no, explain in Remarks.)  
 Are Vegetation , Soil , or Hydrology  significantly disturbed? Are "Normal Circumstances" present?  Yes  No  
 Are Vegetation , Soil , or Hydrology  naturally problematic? (If needed, explain any answers in Remarks.)

**SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.**

Hydrophytic Vegetation Present? <input checked="" type="radio"/> Yes <input type="radio"/> No Hydric Soil Present? <input type="radio"/> Yes <input checked="" type="radio"/> No Wetland Hydrology Present? <input checked="" type="radio"/> Yes <input type="radio"/> No	<b>Is the Sampled Area within a Wetland?</b> <input type="radio"/> Yes <input checked="" type="radio"/> No
Remarks: Climate within the past 3 months (May-July) was drier than normal. The parcel is surrounded by residential development, the irrigation and septic practices of which likely influences the hydrology of this vicinity. Pit dug in lawn, within 5 feet of coyote willow.	

**VEGETATION – Use scientific names of plants.**

Tree Stratum (Plot size: <u>20ft x 20ft</u> )	Absolute % Cover	Dom. Sp.?	Relative % Cover	Indicator Status	
1. _____	_____	_____	_____	_____	
2. _____	_____	_____	_____	_____	
3. _____	_____	_____	_____	_____	
4. _____	_____	_____	_____	_____	
_____ = Total Cover					
Sapling/Shrub Stratum (Plot size: <u>15ft x 15ft</u> )					
1. <u>Salix exigua</u>	50	Y	100.0	FACW	
2. _____	_____	_____	_____	_____	
3. _____	_____	_____	_____	_____	
4. _____	_____	_____	_____	_____	
5. _____	_____	_____	_____	_____	
_____ = Total Cover					
Herb Stratum (Plot size: <u>5ft x 5ft</u> )					
1. <u>Cirsium arvense</u>	15	Y	100.0	FACU	
2. _____	_____	_____	_____	_____	
3. _____	_____	_____	_____	_____	
4. _____	_____	_____	_____	_____	
5. _____	_____	_____	_____	_____	
6. _____	_____	_____	_____	_____	
7. _____	_____	_____	_____	_____	
8. _____	_____	_____	_____	_____	
_____ = Total Cover					
Woody Vine Stratum (Plot size: <u>5ft x 5ft</u> )					
1. _____	_____	_____	_____	_____	
2. _____	_____	_____	_____	_____	
_____ = Total Cover					
% Bare Ground in Herb Stratum <u>0</u>		% Cover of Biotic Crust <u>0</u>			

**Dominance Test worksheet:**

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 50.0% (A/B)

---

**Prevalence Index worksheet:**

	Total % Cover of:		Multiply by:	
OBL species	0		x 1 =	0
FACW species	50		x 2 =	100
FAC species	0		x 3 =	0
FACU species	15		x 4 =	60
UPL species	0		x 5 =	0
Column Totals:	65	(A)		160 (B)
Prevalence Index = B/A =				<u>2.462</u>

---

**Hydrophytic Vegetation Indicators:**

Dominance Test is >50%

Prevalence Index is ≤3.0<sup>1</sup>

Morphological Adaptations<sup>1</sup> (Provide supporting data in Remarks or on a separate sheet)

Problematic Hydrophytic Vegetation<sup>1</sup> (Explain)

<sup>1</sup>Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

---

**Hydrophytic Vegetation Present?**  Yes  No

Remarks:  
 Pit dug in manicured lawn grass (no hydric indicator status). Large walnut tree in the overstory. Juglans nigra = UPL, Juglans cinerea = FACU. No listing for English walnut. Lawn grass = 85% cover in herbaceous layer.

**SOIL**

Sampling Point: 8

**Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)**

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>		
0-16	2.5Y	4/2	100				Sandy Loam	no redox

<sup>1</sup>Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains.

<sup>2</sup>Location: PL=Pore Lining, M=Matrix.

**Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)**

<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Sandy Redox (S5)	<b>Indicators for Problematic Hydric Soils<sup>3</sup>:</b>
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Stripped Matrix (S6)	
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Loamy Mucky Mineral (F1)	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	
<input type="checkbox"/> Stratified Layers (A5) (LRR C)	<input type="checkbox"/> Depleted Matrix (F3)	
<input type="checkbox"/> 1 cm Muck (A9) (LRR D)	<input type="checkbox"/> Redox Dark Surface (F6)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Dark Surface (F7)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Depressions (F8)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Vernal Pools (F9)	
<input type="checkbox"/> Sandy Gleyed Matrix (S4)		

<sup>3</sup>Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

**Restrictive Layer (if present):**

Type: \_\_\_\_\_

Depth (inches): \_\_\_\_\_

**Hydric Soil Present?**       Yes       No

Remarks:  
Soil moist throughout excavated profile.

**HYDROLOGY**

**Wetland Hydrology Indicators:**

<u>Primary Indicators (minimum of one required; check all that apply)</u>	<u>Secondary Indicators (2 or more required)</u>
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water Marks (B1) (Riverine)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Sediment Deposits (B2) (Riverine)
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Drift Deposits (B3) (Riverine)
<input type="checkbox"/> Water Marks (B1) (Nonriverine)	<input type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> Sediment Deposits (B2) (Nonriverine)	<input type="checkbox"/> Dry-Season Water Table (C2)
<input type="checkbox"/> Drift Deposits (B3) (Nonriverine)	<input type="checkbox"/> Crayfish Burrows (C8)
<input type="checkbox"/> Surface Soil Cracks (B6)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Shallow Aquitard (D3)
<input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> FAC-Neutral Test (D5)
<input type="checkbox"/> Salt Crust (B11)	
<input type="checkbox"/> Biotic Crust (B12)	
<input type="checkbox"/> Aquatic Invertebrates (B13)	
<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	
<input checked="" type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	
<input type="checkbox"/> Presence of Reduced Iron (C4)	
<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)	
<input type="checkbox"/> Thick Muck Surface (C7)	
<input type="checkbox"/> Other (Explain in Remarks)	

**Field Observations:**

Surface Water Present?     Yes     No    Depth (inches): \_\_\_\_\_

Water Table Present?     Yes     No    Depth (inches): \_\_\_\_\_

Saturation Present?     Yes     No    Depth (inches): \_\_\_\_\_  
(includes capillary fringe)

**Wetland Hydrology Present?**       Yes       No

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:  
Homeowner recalls this portion of the lawn is regularly saturated at the surface. This explains the oxidized root channels near the surface.

**WETLAND DETERMINATION DATA FORM – Arid West Region**

Project/Site: Parcel ID #121984020002017, Richland, WA City/County: City of Richland Sampling Date: 9/6/2019  
 Applicant/Owner: Country Ridge Homeowners Association State: WA Sampling Point: 9  
 Investigator(s): Geoffrey Gray (GG Environmental) Section, Township, Range: T9N-R28E-S21  
 Landform (hillslope, terrace, etc.): flat Local relief (concave, convex, none): none Slope (%): 2  
 Subregion (LRR): B Lat: 46.247433941595 Long: -119.312557277464 Datum: WGS84  
 Soil Map Unit Name: Warden silt loam NWI Classification: UPL

Are climatic / hydrologic conditions on the site typical for this time of year?  Yes  No (If no, explain in Remarks.)  
 Are Vegetation , Soil , or Hydrology  significantly disturbed? Are "Normal Circumstances" present?  Yes  No  
 Are Vegetation , Soil , or Hydrology  naturally problematic? (If needed, explain any answers in Remarks.)

**SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.**

Hydrophytic Vegetation Present? <input checked="" type="radio"/> Yes <input type="radio"/> No Hydric Soil Present? <input type="radio"/> Yes <input checked="" type="radio"/> No Wetland Hydrology Present? <input type="radio"/> Yes <input checked="" type="radio"/> No	<b>Is the Sampled Area within a Wetland?</b> <input type="radio"/> Yes <input checked="" type="radio"/> No
Remarks: Climate within the past 3 months (May-July) was drier than normal. The parcel is surrounded by residential development, the irrigation and septic practices of which likely influences the hydrology of this vicinity. Pit dug in a manicured lawn, next to tall reed canarygrass.	

**VEGETATION – Use scientific names of plants.**

Stratum	Absolute % Cover	Dom. Sp.?	Relative % Cover	Indicator Status	
<b>Tree Stratum</b> (Plot size: <u>20ft x 20ft</u> )					
1.					
2.					
3.					
4.					
					_____ = Total Cover
<b>Sapling/Shrub Stratum</b> (Plot size: <u>15ft x 15ft</u> )					
1.					
2.					
3.					
4.					
5.					
					_____ = Total Cover
<b>Herb Stratum</b> (Plot size: <u>5ft x 5ft</u> )					
1.	<u>50</u>	<u>Y</u>	<u>100.0</u>	<u>FACW</u>	
2.					
3.					
4.					
5.					
6.					
7.					
8.					
					<u>50</u> = Total Cover
<b>Woody Vine Stratum</b> (Plot size: <u>5ft x 5ft</u> )					
1.					
2.					
					_____ = Total Cover
% Bare Ground in Herb Stratum <u>0</u>		% Cover of Biotic Crust <u>0</u>			

**Dominance Test worksheet:**

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

---

**Prevalence Index worksheet:**

	Total % Cover of:		Multiply by:	
OBL species	<u>0</u>		x 1 =	<u>0</u>
FACW species	<u>50</u>		x 2 =	<u>100</u>
FAC species	<u>0</u>		x 3 =	<u>0</u>
FACU species	<u>0</u>		x 4 =	<u>0</u>
UPL species	<u>0</u>		x 5 =	<u>0</u>
Column Totals:	<u>50</u>	(A)		<u>100</u> (B)
Prevalence Index = B/A =				<u>2.000</u>

---

**Hydrophytic Vegetation Indicators:**

Dominance Test is >50%

Prevalence Index is ≤3.0<sup>1</sup>

Morphological Adaptations<sup>1</sup> (Provide supporting data in Remarks or on a separate sheet)

Problematic Hydrophytic Vegetation<sup>1</sup> (Explain)

<sup>1</sup>Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

---

**Hydrophytic Vegetation Present?**  Yes  No

Remarks:  
 Pit dug in manicured lawn grass (no hydric indicator status). 50% cover in herbaceous layer is lawn grass.

**SOIL**

Sampling Point: 9

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)									
Depth (inches)	Matrix			Redox Features				Texture	Remarks
	Color (moist)		%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>		
0-16	10YR	4/2	100					Loam	no redox

<sup>1</sup>Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains.

<sup>2</sup>Location: PL=Pore Lining, M=Matrix.

**Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)**

- Histosol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5) (LRR C)
- 1 cm Muck (A9) (LRR D)
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Sandy Mucky Mineral (S1)
- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)
- Stripped Matrix (S6)
- Loamy Mucky Mineral (F1)
- Loamy Gleyed Matrix (F2)
- Depleted Matrix (F3)
- Redox Dark Surface (F6)
- Depleted Dark Surface (F7)
- Redox Depressions (F8)
- Vernal Pools (F9)

**Indicators for Problematic Hydric Soils<sup>3</sup>:**

- 1 cm Muck (A9) (LRR C)
- 2 cm Muck (A10) (LRR B)
- Reduced Vertic (F18)
- Red Parent Material (TF2)
- Other (Explain in Remarks)

<sup>3</sup>Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

**Restrictive Layer (if present):**

Type: \_\_\_\_\_  
 Depth (inches): \_\_\_\_\_

Hydric Soil Present?  Yes  No

Remarks:  
 Soil moist throughout excavated profile.

**HYDROLOGY**

**Wetland Hydrology Indicators:**

Primary Indicators (minimum of one required; check all that apply)

- Surface Water (A1)
- High Water Table (A2)
- Saturation (A3)
- Water Marks (B1) (Nonriverine)
- Sediment Deposits (B2) (Nonriverine)
- Drift Deposits (B3) (Nonriverine)
- Surface Soil Cracks (B6)
- Inundation Visible on Aerial Imagery (B7)
- Water-Stained Leaves (B9)
- Salt Crust (B11)
- Biotic Crust (B12)
- Aquatic Invertebrates (B13)
- Hydrogen Sulfide Odor (C1)
- Oxidized Rhizospheres along Living Roots (C3)
- Presence of Reduced Iron (C4)
- Recent Iron Reduction in Tilled Soils (C6)
- Thick Muck Surface (C7)
- Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- Water Marks (B1) (Riverine)
- Sediment Deposits (B2) (Riverine)
- Drift Deposits (B3) (Riverine)
- Drainage Patterns (B10)
- Dry-Season Water Table (C2)
- Crayfish Burrows (C8)
- Saturation Visible on Aerial Imagery (C9)
- Shallow Aquitard (D3)
- FAC-Neutral Test (D5)

**Field Observations:**

Surface Water Present?  Yes  No    Depth (inches): \_\_\_\_\_  
 Water Table Present?  Yes  No    Depth (inches): \_\_\_\_\_  
 Saturation Present?  Yes  No    Depth (inches): \_\_\_\_\_  
 (includes capillary fringe)

Wetland Hydrology Present?  Yes  No

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:  
 No oxidized root channels.

## WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Parcel ID #121984020002017, Richland, WA City/County: City of Richland Sampling Date: 9/6/2019  
 Applicant/Owner: Country Ridge Homeowners Association State: WA Sampling Point: 10  
 Investigator(s): Geoffrey Gray (GG Environmental) Section, Township, Range: T9N-R28E-S21  
 Landform (hillslope, terrace, etc.): swale Local relief (concave, convex, none): concave Slope (%): 2  
 Subregion (LRR): B Lat: 46.2473914380143 Long: -119.312797762467 Datum: WGS84  
 Soil Map Unit Name: Warden silt loam NWI Classification: PEM

Are climatic / hydrologic conditions on the site typical for this time of year?  Yes  No (If no, explain in Remarks.)  
 Are Vegetation , Soil , or Hydrology  significantly disturbed? Are "Normal Circumstances" present?  Yes  No  
 Are Vegetation , Soil , or Hydrology  naturally problematic? (If needed, explain any answers in Remarks.)

### SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? <input checked="" type="radio"/> Yes <input type="radio"/> No Hydric Soil Present? <input checked="" type="radio"/> Yes <input type="radio"/> No Wetland Hydrology Present? <input checked="" type="radio"/> Yes <input type="radio"/> No	<b>Is the Sampled Area within a Wetland?</b> <input checked="" type="radio"/> Yes <input type="radio"/> No
Remarks: Climate within the past 3 months (May-July) was drier than normal. The parcel is surrounded by residential development, the irrigation and septic practices of which likely influences the hydrology of this wetland. Pit dug in a stand of cattails, rooted in standing water/saturated soil. The soil and vegetation in this location was highly disturbed by removal of Russian olive trees.	

### VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: <u>20ft x 20ft</u> )	Absolute % Cover	Dom. Sp.?	Relative % Cover	Indicator Status																																	
1. _____	_____	_____	_____	_____	<b>Dominance Test worksheet:</b> Number of Dominant Species That Are OBL, FACW, or FAC: <u>3</u> (A) Total Number of Dominant Species Across All Strata: <u>3</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100.0%</u> (A/B)																																
2. _____	_____	_____	_____	_____																																	
3. _____	_____	_____	_____	_____																																	
4. _____	_____	_____	_____	_____																																	
_____ = Total Cover																																					
<b>Sapling/Shrub Stratum (Plot size: <u>15ft x 15ft</u>)</b>																																					
1. _____	_____	_____	_____	_____	<b>Prevalence Index worksheet:</b> <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="text-align: right;">Total % Cover of:</td> <td></td> <td style="text-align: right;">Multiply by:</td> <td></td> </tr> <tr> <td>OBL species</td> <td style="text-align: center;">25</td> <td>x 1 =</td> <td style="text-align: center;">25</td> </tr> <tr> <td>FACW species</td> <td style="text-align: center;">25</td> <td>x 2 =</td> <td style="text-align: center;">50</td> </tr> <tr> <td>FAC species</td> <td style="text-align: center;">50</td> <td>x 3 =</td> <td style="text-align: center;">150</td> </tr> <tr> <td>FACU species</td> <td style="text-align: center;">0</td> <td>x 4 =</td> <td style="text-align: center;">0</td> </tr> <tr> <td>UPL species</td> <td style="text-align: center;">0</td> <td>x 5 =</td> <td style="text-align: center;">0</td> </tr> <tr> <td>Column Totals:</td> <td style="text-align: center;">100</td> <td>(A)</td> <td style="text-align: center;">225 (B)</td> </tr> <tr> <td colspan="4" style="text-align: right;">Prevalence Index = B/A = <u>2.250</u></td> </tr> </table>	Total % Cover of:		Multiply by:		OBL species	25	x 1 =	25	FACW species	25	x 2 =	50	FAC species	50	x 3 =	150	FACU species	0	x 4 =	0	UPL species	0	x 5 =	0	Column Totals:	100	(A)	225 (B)	Prevalence Index = B/A = <u>2.250</u>			
Total % Cover of:		Multiply by:																																			
OBL species	25	x 1 =	25																																		
FACW species	25	x 2 =	50																																		
FAC species	50	x 3 =	150																																		
FACU species	0	x 4 =	0																																		
UPL species	0	x 5 =	0																																		
Column Totals:	100	(A)	225 (B)																																		
Prevalence Index = B/A = <u>2.250</u>																																					
2. _____	_____	_____	_____	_____																																	
3. _____	_____	_____	_____	_____																																	
4. _____	_____	_____	_____	_____																																	
5. _____	_____	_____	_____	_____																																	
_____ = Total Cover																																					
<b>Herb Stratum (Plot size: <u>5ft x 5ft</u>)</b>																																					
1. <u>Typha angustifolia</u>	25	Y	25.0	OBL	<b>Hydrophytic Vegetation Indicators:</b> <input checked="" type="checkbox"/> Dominance Test is >50% <input checked="" type="checkbox"/> Prevalence Index is ≤3.0 <sup>1</sup> <input type="checkbox"/> Morphological Adaptations <sup>1</sup> (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Problematic Hydrophytic Vegetation <sup>1</sup> (Explain) <sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.																																
2. <u>Phalaris arundinacea</u>	25	Y	25.0	FACW																																	
3. <u>Solanum dulcamara</u>	50	Y	50.0	FAC																																	
4. _____	_____	_____	_____	_____																																	
5. _____	_____	_____	_____	_____																																	
6. _____	_____	_____	_____	_____																																	
7. _____	_____	_____	_____	_____																																	
8. _____	_____	_____	_____	_____																																	
100 = Total Cover																																					
<b>Woody Vine Stratum (Plot size: <u>5ft x 5ft</u>)</b>																																					
1. _____	_____	_____	_____	_____	<b>Hydrophytic Vegetation Present?</b> <input checked="" type="radio"/> Yes <input type="radio"/> No																																
2. _____	_____	_____	_____	_____																																	
_____ = Total Cover																																					
% Bare Ground in Herb Stratum <u>0</u> % Cover of Biotic Crust <u>0</u>																																					

Remarks:



**SOIL**

Sampling Point: 10

**Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)**

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>		
0-12	10YR	2/1	100				Muck	high in organics

<sup>1</sup>Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix.

**Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)**

<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Sandy Redox (S5)	<b>Indicators for Problematic Hydric Soils<sup>3</sup>:</b>
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Stripped Matrix (S6)	
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Loamy Mucky Mineral (F1)	
<input checked="" type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	
<input type="checkbox"/> Stratified Layers (A5) (LRR C)	<input type="checkbox"/> Depleted Matrix (F3)	
<input type="checkbox"/> 1 cm Muck (A9) (LRR D)	<input type="checkbox"/> Redox Dark Surface (F6)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Dark Surface (F7)	
<input checked="" type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Depressions (F8)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Vernal Pools (F9)	
<input type="checkbox"/> Sandy Gleyed Matrix (S4)		

<sup>3</sup>Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

**Restrictive Layer (if present):**

Type: \_\_\_\_\_

Depth (inches): \_\_\_\_\_

**Hydric Soil Present?**       Yes       No

Remarks:  
Very greasy and fine. No other colors observed in top 12 inches. Rotten egg smell.

**HYDROLOGY**

**Wetland Hydrology Indicators:**

<u>Primary Indicators (minimum of one required; check all that apply)</u>	<u>Secondary Indicators (2 or more required)</u>
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water Marks (B1) (Riverine)
<input checked="" type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Sediment Deposits (B2) (Riverine)
<input checked="" type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Drift Deposits (B3) (Riverine)
<input type="checkbox"/> Water Marks (B1) (Nonriverine)	<input type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> Sediment Deposits (B2) (Nonriverine)	<input type="checkbox"/> Dry-Season Water Table (C2)
<input type="checkbox"/> Drift Deposits (B3) (Nonriverine)	<input type="checkbox"/> Crayfish Burrows (C8)
<input type="checkbox"/> Surface Soil Cracks (B6)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Shallow Aquitard (D3)
<input type="checkbox"/> Water-Stained Leaves (B9)	<input checked="" type="checkbox"/> FAC-Neutral Test (D5)
<input type="checkbox"/> Salt Crust (B11)	
<input type="checkbox"/> Biotic Crust (B12)	
<input type="checkbox"/> Aquatic Invertebrates (B13)	
<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	
<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	
<input type="checkbox"/> Presence of Reduced Iron (C4)	
<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)	
<input type="checkbox"/> Thick Muck Surface (C7)	
<input type="checkbox"/> Other (Explain in Remarks)	

**Field Observations:**

Surface Water Present?     Yes     No    Depth (inches): \_\_\_\_\_

Water Table Present?       Yes     No    Depth (inches): 4

Saturation Present?         Yes     No    Depth (inches): 0

(includes capillary fringe)

**Wetland Hydrology Present?**       Yes       No

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:  
Standing water only 3 feet away from soil pit.

**WETLAND DETERMINATION DATA FORM – Arid West Region**

Project/Site: Parcel ID #121984020002017, Richland, WA City/County: City of Richland Sampling Date: 9/6/2019  
 Applicant/Owner: Country Ridge Homeowners Association State: WA Sampling Point: 11  
 Investigator(s): Geoffrey Gray (GG Environmental) Section, Township, Range: T9N-R28E-S21  
 Landform (hillslope, terrace, etc.): swale Local relief (concave, convex, none): concave Slope (%): 3  
 Subregion (LRR): B Lat: 46.2472102384212 Long: -119.313549378893 Datum: WGS84  
 Soil Map Unit Name: Warden silt loam NWI Classification: PEM

Are climatic / hydrologic conditions on the site typical for this time of year?  Yes  No (If no, explain in Remarks.)  
 Are Vegetation , Soil , or Hydrology  significantly disturbed? Are "Normal Circumstances" present?  Yes  No  
 Are Vegetation , Soil , or Hydrology  naturally problematic? (If needed, explain any answers in Remarks.)

**SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.**

Hydrophytic Vegetation Present? <input checked="" type="radio"/> Yes <input type="radio"/> No Hydric Soil Present? <input checked="" type="radio"/> Yes <input type="radio"/> No Wetland Hydrology Present? <input checked="" type="radio"/> Yes <input type="radio"/> No	<b>Is the Sampled Area within a Wetland?</b> <input checked="" type="radio"/> Yes <input type="radio"/> No
Remarks: Climate within the past 3 months (May-July) was drier than normal. The parcel is surrounded by residential development, the irrigation and septic practices of which likely influences the hydrology of this wetland. Pit dug near the head of the emergent wetland (where tree removal stopped), where water emits from the ravine floor.	

**VEGETATION – Use scientific names of plants.**

Tree Stratum (Plot size: 20ft x 20ft )	Absolute % Cover	Dom. Sp.?	Relative % Cover	Indicator Status																																	
1. <u><i>Elaeagnus angustifolia</i></u>	10	Y	100.0	FAC	<b>Dominance Test worksheet:</b> Number of Dominant Species That Are OBL, FACW, or FAC: <u>3</u> (A) Total Number of Dominant Species Across All Strata: <u>3</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100.0%</u> (A/B)																																
2. _____	_____	_____	_____	_____																																	
3. _____	_____	_____	_____	_____																																	
4. _____	_____	_____	_____	_____																																	
_____	10	= Total Cover		_____																																	
<b>Sapling/Shrub Stratum (Plot size: 15ft x 15ft )</b>					<b>Prevalence Index worksheet:</b> <table style="width:100%; border-collapse: collapse;"> <tr> <td align="center" colspan="2">Total % Cover of:</td> <td align="center" colspan="2">Multiply by:</td> </tr> <tr> <td>OBL species</td> <td align="center">65</td> <td>x 1 =</td> <td align="center">65</td> </tr> <tr> <td>FACW species</td> <td align="center">10</td> <td>x 2 =</td> <td align="center">20</td> </tr> <tr> <td>FAC species</td> <td align="center">15</td> <td>x 3 =</td> <td align="center">45</td> </tr> <tr> <td>FACU species</td> <td align="center">10</td> <td>x 4 =</td> <td align="center">40</td> </tr> <tr> <td>UPL species</td> <td align="center">0</td> <td>x 5 =</td> <td align="center">0</td> </tr> <tr> <td>Column Totals:</td> <td align="center">100</td> <td align="center">(A)</td> <td align="center">170 (B)</td> </tr> <tr> <td align="center" colspan="4">Prevalence Index = B/A = <u>1.700</u></td> </tr> </table>	Total % Cover of:		Multiply by:		OBL species	65	x 1 =	65	FACW species	10	x 2 =	20	FAC species	15	x 3 =	45	FACU species	10	x 4 =	40	UPL species	0	x 5 =	0	Column Totals:	100	(A)	170 (B)	Prevalence Index = B/A = <u>1.700</u>			
Total % Cover of:		Multiply by:																																			
OBL species	65	x 1 =	65																																		
FACW species	10	x 2 =	20																																		
FAC species	15	x 3 =	45																																		
FACU species	10	x 4 =	40																																		
UPL species	0	x 5 =	0																																		
Column Totals:	100	(A)	170 (B)																																		
Prevalence Index = B/A = <u>1.700</u>																																					
1. <u><i>Cornus alba</i></u>	10	Y	100.0	FACW																																	
2. _____	_____	_____	_____	_____																																	
3. _____	_____	_____	_____	_____																																	
4. _____	_____	_____	_____	_____																																	
5. _____	_____	_____	_____	_____																																	
_____	10	= Total Cover		_____																																	
<b>Herb Stratum (Plot size: 5ft x 5ft )</b>					<b>Hydrophytic Vegetation Indicators:</b> <input checked="" type="checkbox"/> Dominance Test is >50% <input checked="" type="checkbox"/> Prevalence Index is ≤3.0 <sup>1</sup> <input type="checkbox"/> Morphological Adaptations <sup>1</sup> (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Problematic Hydrophytic Vegetation <sup>1</sup> (Explain) <sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.																																
1. <u><i>Typha angustifolia</i></u>	10	N	12.5	OBL																																	
2. <u><i>Rumex crispus</i></u>	5	N	6.3	FAC																																	
3. <u><i>Schoenoplectus acutus</i></u>	5	N	6.3	OBL																																	
4. <u><i>Cirsium arvense</i></u>	10	N	12.5	FACU																																	
5. <u><i>Nasturtium officinale</i></u>	50	Y	62.5	OBL																																	
6. _____	_____	_____	_____	_____																																	
7. _____	_____	_____	_____	_____																																	
8. _____	_____	_____	_____	_____																																	
_____	80	= Total Cover		_____																																	
<b>Woody Vine Stratum (Plot size: 5ft x 5ft )</b>																																					
1. _____	_____	_____	_____	_____																																	
2. _____	_____	_____	_____	_____																																	
_____	= Total Cover																																				
% Bare Ground in Herb Stratum <u>20</u> % Cover of Biotic Crust <u>0</u>																																					

Remarks:

**SOIL**

Sampling Point: 11

**Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)**

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>		
0-3	2.5Y	4/2	100				Silt Loam	
3-5	N	2.5/0					Silt Loam	
5-16	2.5Y	4/2					Silt Loam	

<sup>1</sup>Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. <sup>2</sup>Location: PL=Pore Lining, M=Matrix.

**Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)**

<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Sandy Redox (S5)	<b>Indicators for Problematic Hydric Soils<sup>3</sup>:</b>
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Stripped Matrix (S6)	
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Loamy Mucky Mineral (F1)	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input checked="" type="checkbox"/> Loamy Gleyed Matrix (F2)	
<input type="checkbox"/> Stratified Layers (A5) (LRR C)	<input type="checkbox"/> Depleted Matrix (F3)	
<input type="checkbox"/> 1 cm Muck (A9) (LRR D)	<input type="checkbox"/> Redox Dark Surface (F6)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Dark Surface (F7)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Depressions (F8)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Vernal Pools (F9)	
<input type="checkbox"/> Sandy Gleyed Matrix (S4)		

1 cm Muck (A9) (LRR C)  
 2 cm Muck (A10) (LRR B)  
 Reduced Vertic (F18)  
 Red Parent Material (TF2)  
 Other (Explain in Remarks)

<sup>3</sup>Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

**Restrictive Layer (if present):**

Type: \_\_\_\_\_  
 Depth (inches): \_\_\_\_\_

**Hydric Soil Present?**  Yes  No

Remarks:  
 Very unique soil striations, possibly disturbed by tree root removal. However, gley is clearly present, cleanly fitting Indicator F2.

**HYDROLOGY**

**Wetland Hydrology Indicators:**

<b>Primary Indicators (minimum of one required; check all that apply)</b>	<b>Secondary Indicators (2 or more required)</b>
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water Marks (B1) (Riverine)
<input checked="" type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Sediment Deposits (B2) (Riverine)
<input checked="" type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Drift Deposits (B3) (Riverine)
<input type="checkbox"/> Water Marks (B1) (Nonriverine)	<input type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> Sediment Deposits (B2) (Nonriverine)	<input type="checkbox"/> Dry-Season Water Table (C2)
<input type="checkbox"/> Drift Deposits (B3) (Nonriverine)	<input type="checkbox"/> Crayfish Burrows (C8)
<input type="checkbox"/> Surface Soil Cracks (B6)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Shallow Aquitard (D3)
<input type="checkbox"/> Water-Stained Leaves (B9)	<input checked="" type="checkbox"/> FAC-Neutral Test (D5)
<input type="checkbox"/> Salt Crust (B11)	
<input type="checkbox"/> Biotic Crust (B12)	
<input type="checkbox"/> Aquatic Invertebrates (B13)	
<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	
<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	
<input type="checkbox"/> Presence of Reduced Iron (C4)	
<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)	
<input type="checkbox"/> Thick Muck Surface (C7)	
<input type="checkbox"/> Other (Explain in Remarks)	

**Field Observations:**

Surface Water Present?  Yes  No      Depth (inches): \_\_\_\_\_  
 Water Table Present?  Yes  No      Depth (inches): 11  
 Saturation Present?  Yes  No      Depth (inches): 0

**Wetland Hydrology Present?**  Yes  No

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:  
 Standing water only 2 feet away from soil pit.

# **Appendix C — Rating Form**

---

# RATING SUMMARY – Eastern Washington

Name of wetland (or ID #): Wetland Unit 1 - Parcel #121984020002017 - CRHA Date of site visit: 9/6/2019

Rated by Geoffrey Gray Trained by Ecology?  Yes  No Date of training 2014, 2018

HGM Class used for rating Slope Wetland has multiple HGM classes?  Yes  No

**NOTE: Form is not complete with out the figures requested (figures can be combined).**

Source of base aerial photo/map: Google Earth

**OVERALL WETLAND CATEGORY** IV (based on functions  or special characteristics  )

## 1. Category of wetland based on FUNCTIONS

- Category I - Total score = 22 - 27
- Category II - Total score = 19 - 21
- Category III - Total score = 16 - 18
- X   Category IV - Total score = 9 - 15

**Score for each function based on three ratings**  
(order of ratings is not important)

9 = H, H, H  
 8 = H, H, M  
 7 = H, H, L  
 7 = H, M, M  
 6 = H, M, L  
 6 = M, M, M  
 5 = H, L, L  
 5 = M, M, L  
 4 = M, L, L  
 3 = L, L, L

FUNCTION	Improving Water Quality	Hydrologic	Habitat	
<i>List appropriate rating (H, M, L)</i>				
Site Potential	L	M	M	
Landscape Potential	M	L	L	
Value	H	L	L	<b>Total</b>
<b>Score Based on Ratings</b>	6	4	4	<b>14</b>

## 2. Category based on SPECIAL CHARACTERISTICS of wetland

CHARACTERISTIC	Category
Vernal Pools	
Alkali	
Wetland of High Conservation Value	
Bog and Calcareous Fens	
Old Growth or Mature Forest - slow growing	
Aspen Forest	
Old Growth or Mature Forest - fast growing	
Floodplain forest	
None of the above	<b>X</b>

## Maps and Figures required to answer questions correctly for Eastern Washington

### Depressional Wetlands

Map of:	To answer questions:	Figure #
Cowardin plant classes and classes of emergents	D 1.3, H 1.1, H 1.5	
Hydroperiods (including area of open water for H 1.3)	D 1.4, H 1.2, H 1.3	
Location of outlet ( <i>can be added to map of hydroperiods</i> )	D 1.1, D 4.1	
Boundary of area within 150 ft of the wetland ( <i>can be added to another figure</i> )	D 2.2, D 5.2	
Map of the contributing basin	D 5.3	
1 km Polygon: Area that extends 1 km from entire wetland edge - including polygons for accessible habitat and undisturbed habitat	H 2.1, H 2.2, H 2.3	
Screen capture of map of 303(d) listed waters in basin (from Ecology website)	D 3.1, D 3.2	
Screen capture of list of TMDLs for WRIA in which wetland is found (website)	D 3.3	

### Riverine Wetlands

Map of:	To answer questions:	Figure #
Cowardin plant classes and classes of emergents	H 1.1, H 1.5	
Hydroperiods	H 1.2, H 1.3	
Ponded depressions	R 1.1	
Boundary of area within 150 ft of the wetland ( <i>can be added to another figure</i> )	R 2.4	
Map of the contributing basin	R 2.2, R 2.3, R 5.2	
Plant cover of trees, shrubs, and herbaceous plants	R 1.2, R 4.2	
Width of wetland vs. width of stream ( <i>can be added to another figure</i> )	R 4.1	
1 km Polygon: Area that extends 1 km from entire wetland edge - including polygons for accessible habitat and undisturbed habitat	H 2.1, H 2.2, H 2.3	
Screen capture of map of 303(d) listed waters in basin (from Ecology website)	R 3.1	
Screen capture of list of TMDLs for WRIA in which wetland is found (website)	R 3.2, R 3.3	

### Lake Fringe Wetlands

Map of:	To answer questions:	Figure #
Cowardin plant classes and classes of emergents	L 1.1, L 4.1, H 1.1, H 1.5	
Plant cover of trees, shrubs, and herbaceous plants	L 1.2	
Boundary of area within 150 ft of the wetland ( <i>can be added to another figure</i> )	L 2.2	
1 km Polygon: Area that extends 1 km from entire wetland edge - including polygons for accessible habitat and undisturbed habitat	H 2.1, H 2.2, H 2.3	
Screen capture of map of 303(d) listed waters in basin (from Ecology website)	L 3.1, L 3.2	
Screen capture of list of TMDLs for WRIA in which wetland is found (website)	L 3.3	

### Slope Wetlands

Map of:	To answer questions:	Figure #
Cowardin plant classes and classes of emergents	H 1.1, H 1.5	1
Hydroperiods	H 1.2, H 1.3	1
Plant cover of <b>dense</b> trees, shrubs, and herbaceous plants	S 1.3	1
Plant cover of <b>dense, rigid</b> trees, shrubs, and herbaceous plants ( <i>can be added to figure above</i> )	S 4.1	1
Boundary of area within 150 ft of the wetland ( <i>can be added to another figure</i> )	S 2.1, S 5.1	1
1 km Polygon: Area that extends 1 km from entire wetland edge - including polygons for accessible habitat and undisturbed habitat	H 2.1, H 2.2, H 2.3	2
Screen capture of map of 303(d) listed waters in basin (from Ecology website)	S 3.1, S 3.2	3
Screen capture of list of TMDLs for WRIA in which wetland is found (website)	S 3.3	4

## HGM Classification of Wetland in Eastern Washington

For questions 1 - 4, the criteria described must apply to the entire unit being rated.

If the hydrologic criteria listed in each question do not apply to the entire unit being rated, you probably have a unit with multiple HGM classes. In this case, identify which hydrologic criteria in questions 1 - 4 apply, and go to Question 5.

1. Does the entire unit **meet both** of the following criteria?

- The vegetated part of the wetland is on the water side of the Ordinary High Water Mark of a body of permanent open water (without any plants on the surface) that is at least 20 ac (8 ha) in size
- At least 30% of the open water area is deeper than 10 ft (3 m)

- NO** - go to 2  **YES** - The wetland class is **Lake Fringe** (Lacustrine Fringe)

2. Does the entire wetland unit meet all of the following criteria?

- The wetland is on a slope (*slope can be very gradual*),
- The water flows through the wetland in one direction (unidirectional) and usually comes from seeps. It may flow subsurface, as sheetflow, or in a swale without distinct banks;
- The water leaves the wetland **without being impounded**.

- NO** - go to 3  **YES** - The wetland class is **Slope**

**NOTE:** Surface water does not pond in these type of wetlands except occasionally in very small and shallow depressions or behind hummocks (depressions are usually <3 ft diameter and less than 1 foot deep).

3. Does the entire wetland unit **meet all** of the following criteria?

- The unit is in a valley, or stream channel, where it gets inundated by overbank flooding from that stream or river;
- The overbank flooding occurs at least once every 10 years.

- NO** - go to 4  **YES** - The wetland class is **Riverine**

**NOTE:** The Riverine wetland can contain depressions that are filled with water when the river is not flooding.

4. Is the entire wetland unit in a topographic depression in which water ponds, or is saturated to the surface, at some time during the year. *This means that any outlet, if present, is higher than the interior of the wetland.*

- NO** - go to 5  **YES** - The wetland class is **Depressional**

5. Your wetland unit seems to be difficult to classify and probably contains several different HGM classes. For example, seeps at the base of a slope may grade into a riverine floodplain, or a small stream within a Depressional wetland has a zone of flooding along its sides. GO BACK AND IDENTIFY WHICH OF THE HYDROLOGIC REGIMES DESCRIBED IN QUESTIONS 1 - 4 APPLY TO DIFFERENT AREAS IN THE WETLAND UNIT (make a rough sketch to help you decide). Use the following table to identify the appropriate class to use for the rating system if you have several HGM classes present within the wetland unit being scored.

**NOTE:** Use this table only if the class that is recommended in the second column represents 10% or more of the total area of the wetland unit being rated. If the area of the HGM class listed in column 2 is less than 10% of the unit; classify the wetland using the class that represents more than 90% of the total area.

HGM classes within the wetland unit being rated	HGM Class to use in rating
Slope + Riverine	Riverine
Slope + Depressional	Depressional
Slope + Lake Fringe	Lake Fringe
Depressional + Riverine ( the riverine portion is within the boundary of depression)	Depressional
Depressional + Lake Fringe	Depressional
Riverine + Lake Fringe	Riverine

*If you are still unable to determine which of the above criteria apply to your wetland, or if you have **more than 2 HGM classes** within a wetland boundary, classify the wetland as Depressional for the rating.*



<b>SLOPE WETLANDS</b>		Points (only 1 score per box)
<b>Water Quality Functions</b> - Indicators that the site functions to improve water quality		
S 1.0. Does the site have the potential to improve water quality?		
S 1.1. Characteristics of the average slope of wetland: (a 1% slope has a 1 ft vertical drop in elevation for every 100 ft of horizontal distance )		
Slope is 1% or less	points = 3	1
Slope is > 1% - 2%	points = 2	
Slope is > 2% - 5%	points = 1	
Slope is greater than 5%	points = 0	
S 1.2. The soil 2 in below the surface (or duff layer) is true clay or true organic (use NRCS definitions):		Yes = 3 No = 0
S 1.3. Characteristics of the plants in the wetland that trap sediments and pollutants: Choose the points appropriate for the description that best fits the plants in the wetland. <i>Dense means you have trouble seeing the soil surface (&gt;75% cover), and uncut means not grazed or mowed and plants are higher than 6 in.</i>		
Dense, uncut, herbaceous plants > 90% of the wetland area	points = 6	1
Dense, uncut, herbaceous plants > ½ of area	points = 3	
Dense, woody, plants > ½ of area	points = 2	
Dense, uncut, herbaceous plants > ¼ of area	points = 1	
Does not meet any of the criteria above for plants	points = 0	
Total for S 1		Add the points in the boxes above <b>2</b>

**Rating of Site Potential** If score is:  12 = H  5 - 11 = M  0 - 5 = L

Record the rating on the first page

S 2.0. Does the landscape have the potential to support the water quality function at the site?		
S 2.1. Is > 10% of the area within 150 ft on the uphill side of the wetland in land uses that generate pollutants?		Yes = 1 No = 0
S 2.2. Are there other sources of pollutants coming into the wetland that are not listed in question S 2.1?		Yes = 1 No = 0
Other Sources	Yes = 1 No = 0	1
Total for S 2		Add the points in the boxes above <b>2</b>

**Rating of Landscape Potential** If score is:  1 - 2 = M  0 = L

Record the rating on the first page

S 3.0. Is the water quality improvement provided by the site valuable to society?		
S 3.1. Does the wetland discharge directly to a stream, river, or lake that is on the 303(d) list (within 1 mi)?		Yes = 1 No = 0
S 3.2. Is the wetland in a basin or sub-basin where water quality is an issue? <i>At least one aquatic resource in the basin is on the 303(d) list.</i>		Yes = 1 No = 0
S 3.3. Has the site been identified in a watershed or local plan as important for maintaining water quality (answer YES if there is a TMDL for the drainage or basin in which the wetland is found)?		Yes = 2 No = 0
Total for S 3		Add the points in the boxes above <b>3</b>

**Rating of Value** If score is:  2 - 4 = H  1 = M  0 = L

Record the rating on the first page

<b>SLOPE WETLANDS</b>		Points (only 1 score per box)
<b>Hydrologic Functions</b> - Indicators that the site functions to reduce flooding and erosion		
S 4.0. Does the site have the potential to reduce flooding and erosion?		
S 4.1. Characteristics of plants that reduce the velocity of surface flows during storms: Choose the points appropriate for the description that best fits conditions in the wetland. <i>Stems of plants should be thick enough (usually &gt; 1/8 in), or dense enough, to remain erect during surface flows.</i>		1
Dense, uncut, <b>rigid</b> plants cover > 90% of the area of the wetland	points = 1	
All other conditions	points = 0	

**Rating of site Potential** If score is:  1 = M     0 = L

*Record the rating on the first page*

S 5.0. Does the landscape have the potential to support the hydrologic functions of the site?		
S 5.1. Is more than 25% of the area within 150 ft upslope of wetland in land uses that generate excess surface runoff?		0
Yes = 1    No = 0		

**Rating of Landscape Potential** If score is:  1 = M     0 = L

*Record the rating on the first page*


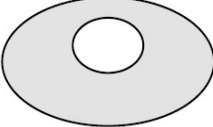



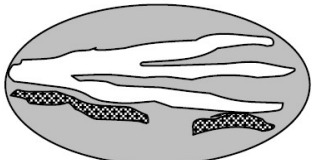
S 6.0. Are the hydrologic functions provided by the site valuable to society?		
S 6.1. Distance to the nearest areas downstream that have flooding problems:		0
The sub-basin immediately down-gradient of site has flooding problems that result in damage to human or natural resources (e.g., houses or salmon redds)	points = 2	
Surface flooding problems are in a sub-basin farther down-gradient	points = 1	
No flooding problems anywhere downstream	points = 0	
S 6.2. Has the site been identified as important for flood storage and flood conveyance in a regional flood control plan?		0
Yes = 2    No = 0		
Total for S 6		<b>0</b>
Add the points in the boxes above		

**Rating of Value** If score is:  2 - 4 = H     1 = M     0 = L

*Record the rating on the first page*

**NOTES and FIELD OBSERVATIONS:**

Predominant land use within 150 feet of the wetland is residential lawns. The soils in the vicinity are very pervious, so lawns are not considered to contribute toward excess runoff (S5.1).

<b>These questions apply to wetlands of all HGM classes.</b>		(only 1 score per box)
<b>HABITAT FUNCTIONS</b> - Indicators that site functions to provide important habitat		
H 1.0. Does the wetland have the potential to provide habitat for many species?		
H 1.1. Structure of plant community: Check the Cowardin vegetation classes present and categories of emergent plants. Size threshold for each category is $\geq \frac{1}{4}$ ac or $\geq 10\%$ of the wetland if wetland is $< 2.5$ ac.		1
<input type="checkbox"/> Aquatic bed <input type="checkbox"/> Emergent plants 0 - 12 in (0-30 cm) high are the highest layer and have $> 30\%$ cover <input type="checkbox"/> Emergent plants $> 12 - 40$ in ( $> 30-100$ cm) high are the highest layer with $>30\%$ cover <input checked="" type="checkbox"/> Emergent plants $> 40$ in ( $> 100$ cm) high are the highest layer with $>30\%$ cover <input type="checkbox"/> Scrub-shrub (areas where shrubs have $> 30\%$ cover) <input checked="" type="checkbox"/> Forested (areas where trees have $> 30\%$ cover)	4 or more checks: points = 3 3 checks: points = 2 2 checks: points = 1 1 check: points = 0	
H 1.2. Is one of the vegetation types Aquatic Bed?		Yes = 1    No = 0
H 1.3. <u>Surface water</u> H 1.3.1. Does the wetland have areas of open water (without emergent or shrub plants) over at least $\frac{1}{4}$ ac <b>OR</b> 10% of its area during the March to early June <b>OR</b> in August to the end of September? Answer YES for Lake Fringe wetlands. <input type="checkbox"/> Yes = 3 points & go to H 1.4    No = go to H 1.3.2 H 1.3.2. Does the wetland have an intermittent or permanent, and unvegetated stream within its boundaries, or along one side, over at least $\frac{1}{4}$ ac or 10% of its area? Answer yes only if H 1.3.1 is No. <input type="checkbox"/> Yes = 3    No = 0		0
H 1.4. <u>Richness of plant species</u> Count the number of plant species in the wetland that cover at least 10 ft <sup>2</sup> . Different patches of the same species can be combined to meet the size threshold. You do not have to name the species. Do not include Eurasian milfoil, reed canarygrass, purple loosestrife, Russian olive, Phragmites, Canadian thistle, yellow-flag iris, and saltcedar (Tamarisk) # of species _____ Scoring: $> 9$ species: points = 2 4 - 9 species: points = 1 $< 4$ species: points = 0		1
H 1.4. <u>Interspersion of habitats</u> Decide from the diagrams below whether interspersion among types of plant structures (described in H 1.1), and unvegetated areas (open water or mudflats) is high, moderate, low, or none. Use map of Cowardin and emergent plant classes prepared for questions H 1.1 and map of open water from H 1.3. If you have four or more plant classes or three classes and open water, the rating is always high.		2
<div style="display: flex; justify-content: space-around; align-items: flex-start;"> <div style="text-align: center;">  <p><b>None</b> = 0 points</p> </div> <div style="text-align: center;">  <p><b>Low</b> = 1 point</p> </div> <div style="text-align: center;">  <p><b>Moderate</b> = 2 points</p> </div> </div> <div style="display: flex; justify-content: space-around; align-items: flex-start; margin-top: 20px;"> <div style="text-align: center;">  </div> <div style="text-align: center;">  </div> <div style="text-align: center;">  <p>Riparian braided channels with 2 classes</p> </div> </div> <p>All three diagrams in this row are <b>HIGH</b> = 3 points</p>		

<b>H 1.6. Special habitat features:</b> Check the <i>habitat features that are present in the wetland. The number of checks is the number of points.</i>			
<input checked="" type="checkbox"/> Loose rocks larger than 4 in OR large, downed, woody debris (> 4 in diameter) within the area of surface ponding or in stream. <input checked="" type="checkbox"/> Cattails or bulrushes are present within the wetland. <input checked="" type="checkbox"/> Standing snags (diameter at the bottom > 4 in) in the wetland or within 30 m (100 ft) of the edge. <input checked="" type="checkbox"/> Emergent or shrub vegetation in areas that are permanently inundated/ponded. <input type="checkbox"/> Stable steep banks of fine material that might be used by beaver or muskrat for denning (> 45 degree slope) OR signs of recent beaver activity <input type="checkbox"/> Invasive species cover less than 20% in each stratum of vegetation ( <i>canopy, sub-canopy, shrubs, herbaceous, moss/ground cover</i> )	4		
Total for H 1		Add the points in the boxes above	8

**Rating of Site Potential** If Score is:  15 - 18 = H  7 - 14 = M  0 - 6 = L Record the rating on the first page

<b>H 2.0. Does the landscape have the potential to support habitat functions of the site?</b>			
H 2.1 Accessible habitat (only area of habitat abutting wetland). If total accessible habitat is: Calculate: 0 % undisturbed habitat + ( 0 % moderate & low intensity land uses / 2 ) = 0%  > 1/3 (33.3%) of 1 km Polygon points = 3 20 - 33% of 1 km Polygon points = 2 10 - 19% of 1 km Polygon points = 1 < 10 % of 1 km Polygon points = 0			0
H 2.2. Undisturbed habitat in 1 km Polygon around wetland. Calculate: 20 % undisturbed habitat + ( 6 % moderate & low intensity land uses / 2 ) = 23%  Undisturbed habitat > 50% of Polygon points = 3 Undisturbed habitat 10 - 50% and in 1 - 3 patches points = 2 Undisturbed habitat 10 - 50% and > 3 patches points = 1 Undisturbed habitat < 10% of 1 km Polygon points = 0			2
H 2.3 Land use intensity in 1 km Polygon: > 50% of 1 km Polygon is high intensity land use points = (-2) Does not meet criterion above points = 0			-2
H 2.4. The wetland is in an area where annual rainfall is less than 12 in, and its water regime is not influenced by irrigation practices, dams, or water control structures. <i>Generally, this means outside boundaries of reclamation areas, irrigation districts, or reservoirs</i> Yes = 3 No = 0			0
Total for H 2		Add the points in the boxes above	0

**Rating of Landscape Potential** If Score is:  4 - 9 = H  1 - 3 = M  < 1 = L Record the rating on the first page

<b>H 3.0. Is the habitat provided by the site valuable to society?</b>		
H 3.1. Does the site provide habitat for species valued in laws, regulations, or policies? <i>Choose only the highest score that applies to the wetland being rated.</i>		
Site meets ANY of the following criteria:	points = 2	
<input type="checkbox"/> It has 3 or more priority habitats within 100 m (see Appendix B) <input type="checkbox"/> It provides habitat for Threatened or Endangered species (any plant or animal on state or federal lists) <input type="checkbox"/> It is mapped as a location for an individual WDFW species <input type="checkbox"/> It is a Wetland of High Conservation Value as determined by the Department of Natural Resources <input type="checkbox"/> It has been categorized as an important habitat site in a local or regional comprehensive plan, in a Shoreline Master Plan, or in a watershed plan		0
Site has 1 or 2 priority habitats within 100 m (see Appendix B)	points = 1	
Site does not meet any of the criteria above	points = 0	

**Rating of Value** If Score is:  2 = H  1 = M  0 = L Record the rating on the first page

## CATEGORIZATION BASED ON SPECIAL CHARACTERISTICS

**Please determine if the wetland meets the attributes described below and circle the appropriate category.**

**NOTE: A wetland may meet the criteria for more than one set of special characteristics. Record all those that apply. NOTE: All wetlands should also be characterized based on their functions.**

Wetland Type	Category
<i>Check off any criteria that apply to the wetland. List the category when the appropriate criteria are met.</i>	
<p><b>SC 1.0. Vernal Pools</b></p> <p>Is the wetland <b>less than 4000 ft<sup>2</sup></b>, and does it meet at least <b>two</b> of the following criteria?</p> <p><input type="checkbox"/> Its only source of water is rainfall or snowmelt from a small contributing basin and has no groundwater input.</p> <p><input type="checkbox"/> Wetland plants are typically present only in the spring; the summer vegetation is typically upland annuals. <i>If you find perennial, obligate, wetland plants, the wetland is probably NOT a vernal pool.</i></p> <p><input type="checkbox"/> The soil in the wetland is shallow [<math>&lt; 1</math> ft (30 cm) deep] and is underlain by an impermeable layer such as basalt or clay.</p> <p><input type="checkbox"/> Surface water is present for less than 120 days during the wet season.</p> <p style="text-align: right;"><input type="checkbox"/> Yes - Go to <b>SC 1.1</b>      <input checked="" type="checkbox"/> No = <b>Not vernal pool</b></p> <p>SC 1.1. Is the vernal pool relatively undisturbed in February and March?</p> <p style="text-align: right;"><input type="checkbox"/> Yes – Go to <b>SC 1.2</b>      <input type="checkbox"/> No = <b>Not a vernal pool with special characteristics</b></p>	
<p>SC 1.2. Is the vernal pool in an area where there are at least 3 separate aquatic resources within 0.5 mi (other wetlands, rivers, lakes etc.)?</p> <p style="text-align: right;"><input type="checkbox"/> Yes = <b>Category II</b>      <input type="checkbox"/> No = <b>Category III</b></p>	
<p><b>SC 2.0. Alkali wetlands</b></p> <p>Does the wetland meet <b>one</b> of the following criteria?</p> <p><input type="checkbox"/> The wetland has a conductivity <math>&gt; 3.0</math> mS/cm.</p> <p><input type="checkbox"/> The wetland has a conductivity between 2.0 and 3.0 mS, and more than 50% of the plant cover in the wetland can be classified as “alkali” species (see Table 4 for list of plants found in alkali systems).</p> <p><input type="checkbox"/> If the wetland is dry at the time of your field visit, the central part of the area is covered with a layer of salt.</p> <p><b>OR</b> does the wetland unit meet two of the following three sub-criteria?</p> <p><input type="checkbox"/> Salt encrustations around more than 75% of the edge of the wetland</p> <p><input type="checkbox"/> More than <math>\frac{3}{4}</math> of the plant cover consists of species listed on Table 4</p> <p><input type="checkbox"/> A pH above 9.0. All alkali wetlands have a high pH, but please note that some freshwater wetlands may also have a high pH. Thus, pH alone is not a good indicator of alkali wetlands.</p> <p style="text-align: right;"><input type="checkbox"/> Yes = <b>Category I</b>      <input checked="" type="checkbox"/> No = <b>Not an alkali wetland</b></p>	
<p><b>SC 3.0. Wetlands of High Conservation Value (WHCV)</b></p> <p>SC 3.1. Has the WA Department of Natural Resources updated their website to include the list of Wetlands of High Conservation Value?</p> <p style="text-align: right;"><input checked="" type="checkbox"/> Yes - Go to <b>SC 3.2</b>      <input type="checkbox"/> No - Go to <b>SC 3.3</b></p> <p>SC 3.2. Is the wetland listed on the WDNR database as a Wetland of High Conservation Value?</p> <p style="text-align: right;"><input type="checkbox"/> Yes = <b>Category I</b>      <input checked="" type="checkbox"/> No = <b>Not WHCV</b></p> <p>SC 3.3. Is the wetland in a Section/Township/Range that contains a Natural Heritage wetland? <a href="http://www1.dnr.wa.gov/nhp/refdesk/datasearch/wnhpwetlands.pdf">http://www1.dnr.wa.gov/nhp/refdesk/datasearch/wnhpwetlands.pdf</a></p> <p style="text-align: right;"><input type="checkbox"/> Yes - <b>Contact WNHP/WDNR and to SC 3.4</b>      <input type="checkbox"/> No = <b>Not WHCV</b></p> <p>SC 3.4. Has WDNR identified the wetland within the S/T/R as a Wetland of High Conservation Value and listed it on their website?</p> <p style="text-align: right;"><input type="checkbox"/> Yes = <b>Category I</b>      <input type="checkbox"/> No = <b>Not WHCV</b></p>	

<p><b>SC 4.0. Bogs and Calcareous Fens</b>  <i>Does the wetland (or any part of the wetland unit) meet both the criteria for soils and vegetation in bogs or calcareous fens? Use the key below to identify if the wetland is a bog or calcareous fen. <b>If you answer yes you will still need to rate the wetland based on its functions.</b></i></p> <p>SC 4.1. Does an area within the wetland have organic soil horizons (i.e., layers of organic soil), either peats or mucks, that compose 16 in or more of the first 32 in of the soil profile? <i>See Appendix C for a field key to identify organic soils.</i>  <input type="checkbox"/> Yes - Go to <b>SC 4.3</b>                      <input checked="" type="checkbox"/> No - Go to <b>SC 4.2</b></p> <p>SC 4.2. Does an area within the wetland have organic soils, either peats or mucks, that are less than 16 in deep over bedrock or an impermeable hardpan such as clay or volcanic ash, or that are floating on top of a lake or pond?  <input type="checkbox"/> Yes - Go to <b>SC 4.3</b>                      <input checked="" type="checkbox"/> No = <b>Is not a bog for rating</b></p> <p>SC 4.3. Does an area within the wetland have more than 70% cover of mosses at ground level AND at least 30% of the total plant cover consists of species in Table 5?  <input type="checkbox"/> Yes = <b>Category I bog</b>                      <input type="checkbox"/> No - Go to <b>SC 4.4</b>  <b>NOTE:</b> If you are uncertain about the extent of mosses in the understory, you may substitute that criterion by measuring the pH of the water that seeps into a hole dug at least 16 in deep. If the pH is less than 5.0 and the plant species in Table 5 are present, the wetland is a bog.</p> <p>SC 4.4. Is an area with peats or mucks forested (&gt; 30% cover) with subalpine fir, western red cedar, western hemlock, lodgepole pine, quaking aspen, Engelmann spruce, or western white pine, AND any of the species (or combination of species) listed in Table 5 provide more than 30% of the cover under the canopy?  <input type="checkbox"/> Yes = <b>Category I bog</b>                      <input type="checkbox"/> No - Go to <b>SC 4.5</b></p> <p>SC 4.5. Do the species listed in Table 6 comprise at least 20% of the total plant cover within an area of peats and mucks?  <input type="checkbox"/> Yes = <b>Is a Calcareous Fen for purpose of rating</b>                      <input type="checkbox"/> No - Go to <b>SC 4.6</b></p> <p>SC 4.6. Do the species listed in Table 6 comprise at least 10% of the total plant cover in an area of peats and mucks, AND one of the two following conditions is met:  <input type="checkbox"/> Marl deposits [calcium carbonate (CaCO<sub>3</sub>) precipitate] occur on the soil surface or plant stems  <input type="checkbox"/> The pH of free water is ≥ 6.8 AND electrical conductivity is ≥ 200 uS/cm at multiple locations within the wetland  <input type="checkbox"/> Yes = <b>Is a Category I calcareous fen</b>                      <input type="checkbox"/> No = <b>Is not a calcareous fen</b></p>	
<p><b>SC 5.0. Forested Wetlands</b>  <i>Does the wetland have an area of forest rooted within its boundary that meets <b>at least one</b> of the following three criteria? (Continue only if you have identified that a forested class is present in question H</i></p> <p><input type="checkbox"/> The wetland is within the 100 year floodplain of a river or stream  <input type="checkbox"/> Aspen (<i>Populus tremuloides</i>) represents at least 20% of the total cover of woody species  <input type="checkbox"/> There is at least ¼ ac of trees (even in wetlands smaller than 2.5 ac) that are “mature” or “old-growth” according to the definitions for these priority habitats developed by WDFW (see definitions in question H3.1)  <input type="checkbox"/> Yes - Go to <b>SC 5.1</b>    <input checked="" type="checkbox"/> No = <b>Not a forested wetland with special characteristics</b></p>	
<p>SC 5.1. Does the wetland have a forest canopy where more than 50% of the tree species (by cover) are slow growing native trees (see Table 7)?  <input type="checkbox"/> Yes = <b>Category I</b>                      <input type="checkbox"/> No - Go to <b>SC 5.2</b></p> <p>SC 5.2. Does the wetland have areas where aspen (<i>Populus tremuloides</i>) represents at least 20% of the total cover of woody species?  <input type="checkbox"/> Yes = <b>Category I</b>                      <input type="checkbox"/> No - Go to <b>SC 5.3</b></p> <p>SC 5.3. Does the wetland have at least ¼ acre with a forest canopy where more than 50% of the tree species (by cover) are fast growing species (see Table 7)?  <input type="checkbox"/> Yes = <b>Category II</b>                      <input type="checkbox"/> No - Go to <b>SC 5.4</b></p> <p>SC 5.4. Is the forested component of the wetland within the 100 year floodplain of a river or stream?  <input type="checkbox"/> Yes = <b>Category II</b>    <input type="checkbox"/> No = <b>Not a forested wetland with special characteristics</b></p>	
<p><b>Category of wetland based on Special Characteristics</b>  <i>Choose the highest rating if wetland falls into several categories</i>                  If you answered No for all types, enter “Not Applicable” on Summary Form</p>	

## Appendix B: WDFW Priority Habitats in Eastern Washington

Priority habitats listed by WDFW (see complete descriptions of WDFW priority habitats, and the counties in which they can be found, in: Washington Department of Fish and Wildlife. 2008. Priority Habitat and Species List. Olympia, Washington. 177 pp.

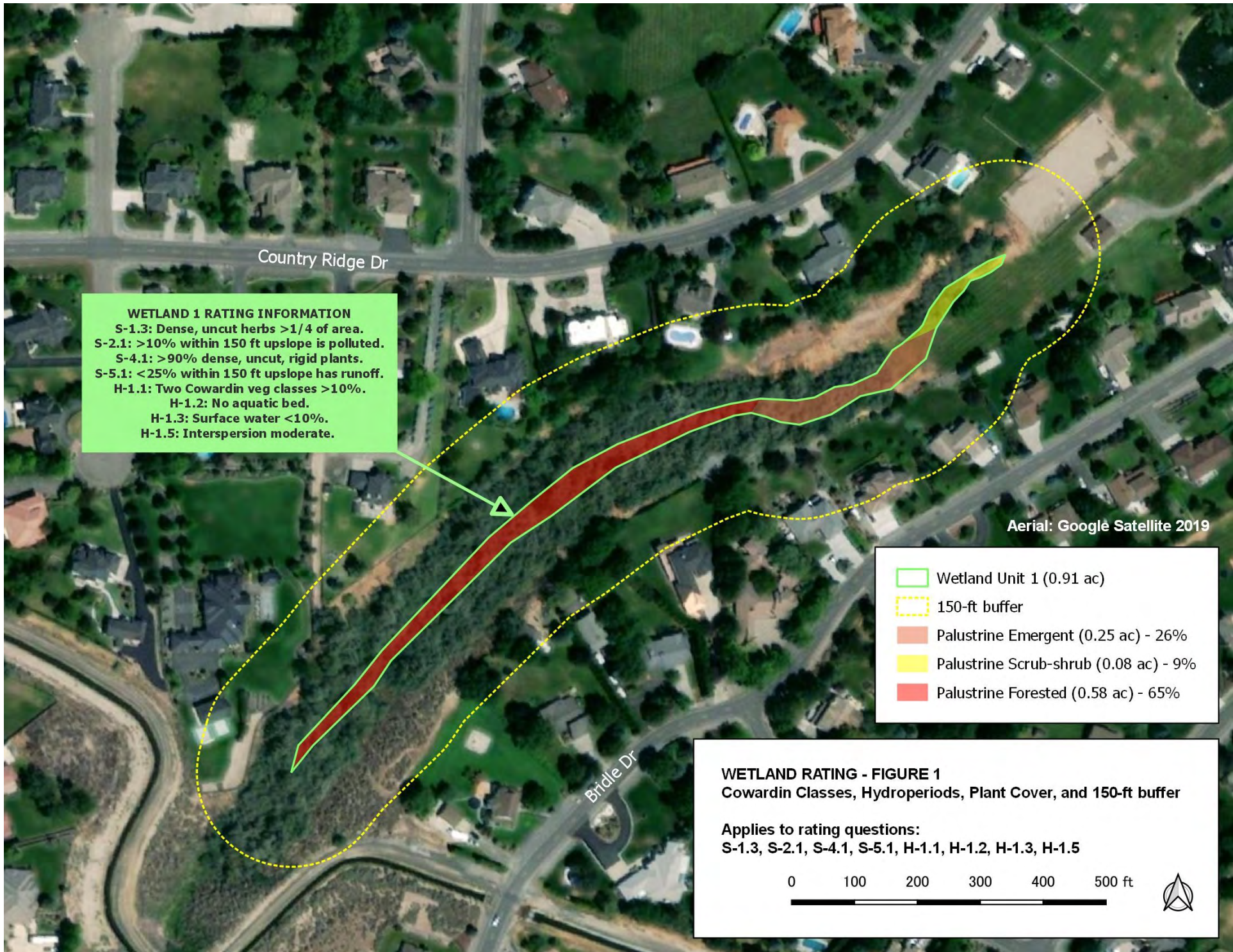
<http://wdfw.wa.gov/publications/00165/wdfw00165.pdf> or access the list from here:

<http://wdfw.wa.gov/conservation/phs/list/>

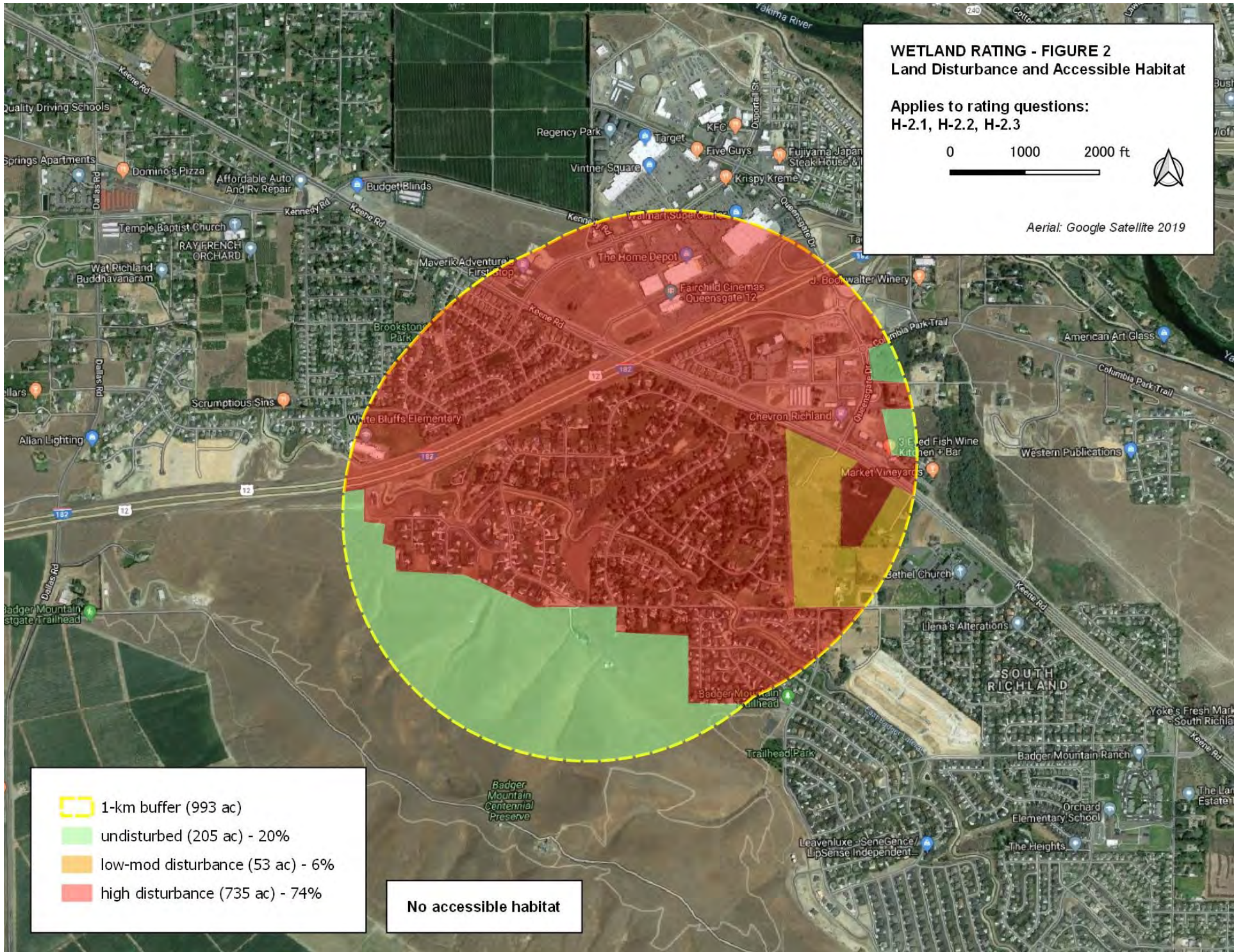
Count how many of the following priority habitats are within 330 ft (100 m) of the wetland unit: **NOTE**: This question is independent of the land use between the wetland unit and the priority habitat.

- Aspen Stands:** Pure or mixed stands of aspen greater than 1 ac (0.4 ha).
- Biodiversity Areas and Corridors:** Areas of habitat that are relatively important to various species of native fish and wildlife (*full descriptions in WDFW PHS report*).
- Old-growth/Mature forests:** Old-growth east of Cascade crest – Stands are highly variable in tree species composition and structural characteristics due to the influence of fire, climate, and soils. In general, stands will be >150 years of age, with 10 trees/ac (25 trees/ha) that are > 21 in (53 cm) dbh, and 1-3 snags/ac (2.5-7.5 snags/ha) that are > 12-14 in (30-35 cm) diameter. Downed logs may vary from abundant to absent. Canopies may be single or multi-layered. Evidence of human-caused alterations to the stand will be absent or so slight as to not affect the ecosystem's essential structures and functions. Mature forests – Stands with average diameters exceeding 21 in (53 cm) dbh; crown cover may be less than 100%; decay, decadence, numbers of snags, and quantity of large downed material is generally less than that found in old-growth; 80-200 years old west and 80-160 years old east of the Cascade crest.
- Oregon White Oak:** Woodland stands of pure oak or oak/conifer associations where canopy coverage of the oak component is important (*full descriptions in WDFW PHS report p. 158 – see web link above*).
- Riparian:** The area adjacent to aquatic systems with flowing water that contains elements of both aquatic and terrestrial ecosystems which mutually influence each other.
- Caves:** A naturally occurring cavity, recess, void, or system of interconnected passages under the earth in soils, rock, ice, or other geological formations and is large enough to contain a human.
- Cliffs:** Greater than 25 ft (7.6 m) high and occurring below 5000 ft elevation.
- Talus:** Homogenous areas of rock rubble ranging in average size 0.5 - 6.5 ft (0.15 - 2.0 m), composed of basalt, andesite, and/or sedimentary rock, including riprap slides and mine tailings. May be associated with cliffs.
- Snags and Logs:** Trees are considered snags if they are dead or dying and exhibit sufficient decay characteristics to enable cavity excavation/use by wildlife. Priority snags have a diameter at breast height of > 20 in (51 cm) in western Washington and are > 6.5 ft (2 m) in height. Priority logs are > 12 in (30 cm) in diameter at the largest end, and > 20 ft (6 m) long.
- Shrub-steppe:** A nonforested vegetation type consisting of one or more layers of perennial bunchgrasses and a conspicuous but discontinuous layer of shrubs (see Eastside Steppe for sites with little or no shrub cover).
- Eastside Steppe:** Nonforested vegetation type dominated by broadleaf herbaceous flora (i.e., forbs), perennial bunchgrasses, or a combination of both. Bluebunch wheatgrass (*Pseudoroegneria spicata*) is often the prevailing cover component along with Idaho fescue (*Festuca idahoensis*), Sandberg bluegrass (*Poa secunda*), rough fescue (*F. campestris*), or needlegrasses (*Achnatherum* spp.).
- Juniper Savannah:** All juniper woodlands.

**Note:** All vegetated wetlands are by definition a priority habitat but are not included in this list because they are addressed elsewhere.

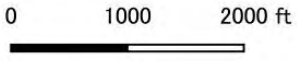






**WETLAND RATING - FIGURE 2**  
**Land Disturbance and Accessible Habitat**

Applies to rating questions:  
 H-2.1, H-2.2, H-2.3

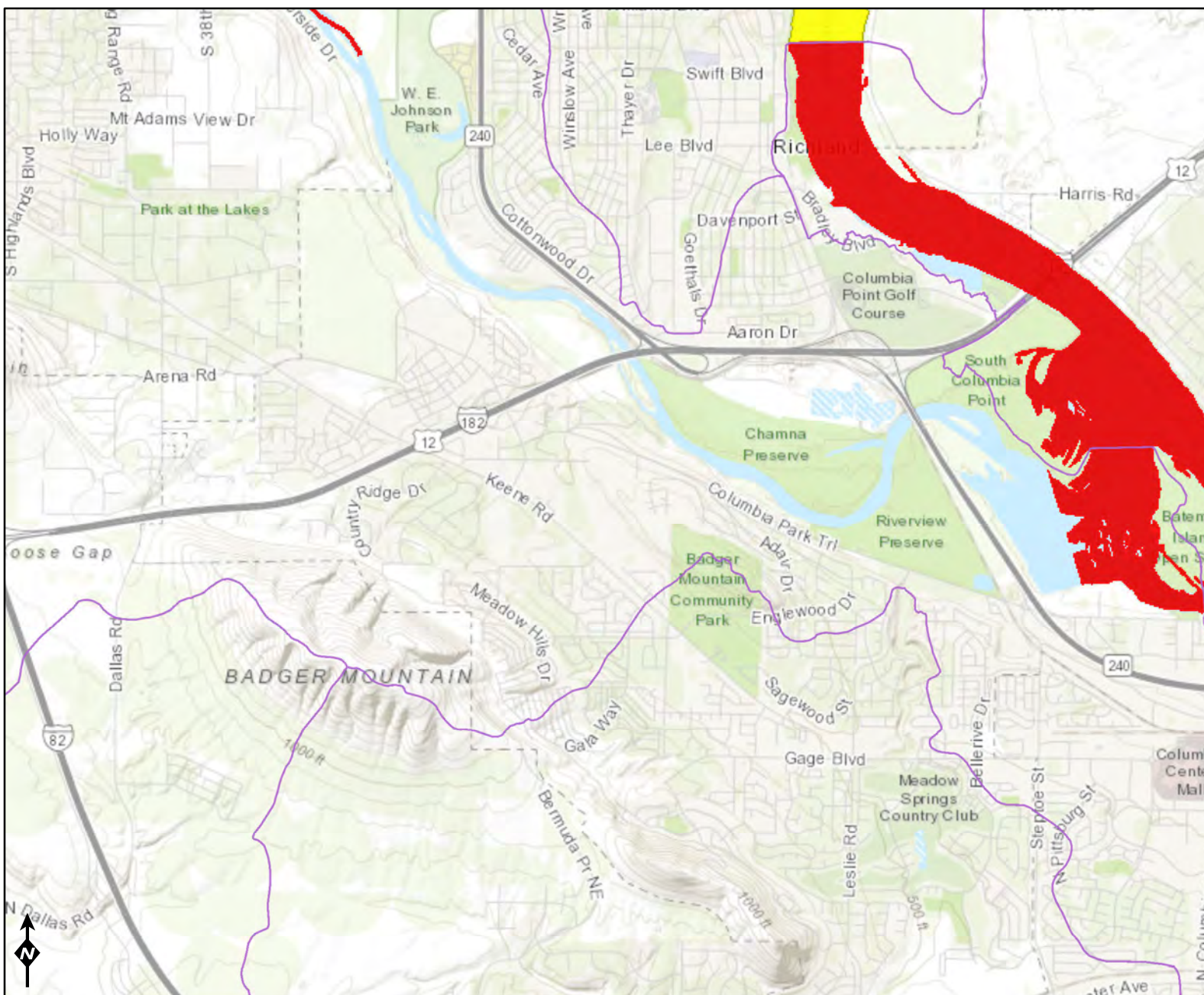


Aerial: Google Satellite 2019

- 1-km buffer (993 ac)
- undisturbed (205 ac) - 20%
- low-mod disturbance (53 ac) - 6%
- high disturbance (735 ac) - 74%

**No accessible habitat**

# WETLAND RATING FIGURE 3



## Assessed Waters/Sediment

### Water

- Category 5 - 303d
- Category 4C
- Category 4B
- Category 4A
- Category 2
- Category 1

### Sediment

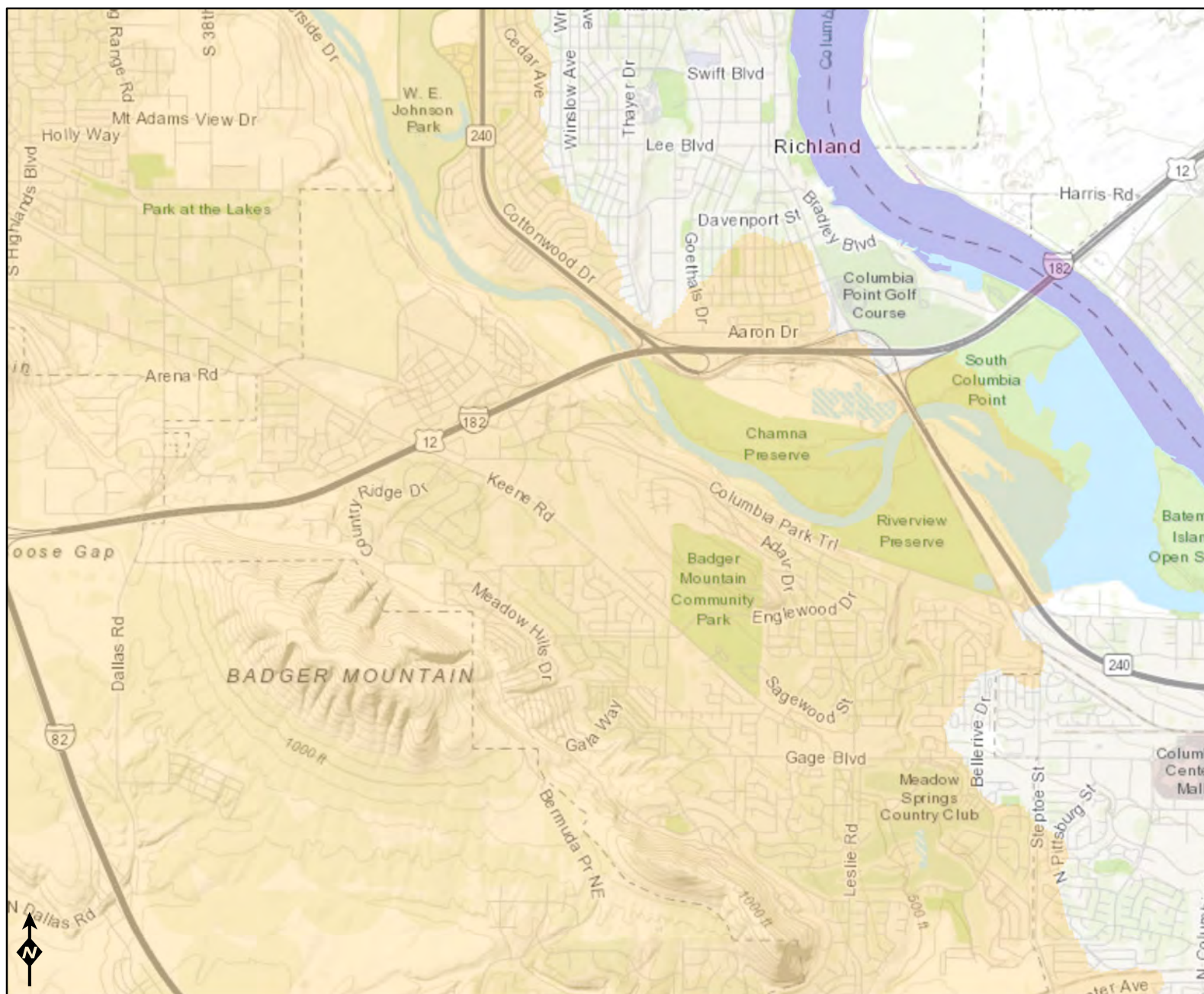
- Category 5 - 303d
- Category 4C
- Category 4B
- Category 4A
- Category 2
- Category 1

Sub-Watershed (12 digit HUC)

Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and



# WETLAND RATING - FIGURE 4



## WQ Improvement Projects

- Approved
- In Development

Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and



## Appendix D — Site Photos

---

Photo 1. Soil Pit #5 past the wetland's delineated eastern terminus.  
View toward the southwest.



Photo 2. Soil Pit #7. View toward the southwest.



Photo 3. Soil Pit #9. View toward the southwest.



Photo 4. Soil Pit #11 where water emits from the ravine floor.  
View toward the west.



Photo 5. Example of the Russian olive understory.



Photo 6. Example of weed colonization along the wetland where Russian olives were removed. View toward the south, across from Soil Pit #11.





# **WETLAND RESTORATION PLAN**

---

**Country Ridge Homeowners Association  
City of Richland, Benton County, Washington**

*Prepared for:*

**Paul Inserra, Wetland Committee Chair**

*Prepared by:*

**GG Environmental**

**Geoffrey Gray**

**151 Poulin Road**

**Selah, WA 98942**

**[www.gg-env.com](http://www.gg-env.com)**

**January 1, 2020**



## Summary

---

The Country Ridge Homeowners Association (CRHOA), within the city limits of Richland in Benton County, Washington mechanically removed Russian olive trees within a 10.84-acre (ac) parcel on March 29, 2019. Upon learning that water had been encountered, the City of Richland issued a cease and desist letter, dated April 8, 2019, in which a wetland delineation was recommended.

On September 6, 2019, Geoffrey Gray (GG Environmental) completed a wetland delineation (GG Environmental 2019) within the parcel boundary. One isolated wetland unit (WU-1) was identified, 0.91 ac in size, and rated as a Category 4 slope wetland with a 25-foot regulatory buffer.

Based on the results of the wetland delineation, Russian olive removal temporarily disturbed 0.18 ac within the wetland boundary and 0.36 ac of regulatory buffer within 25 feet of the wetland.

In order to restore the disturbed areas, the CRHOA proposes to conduct weed control and plant native grasses within the wetland buffer, while non-native weeds will be controlled within the wetland boundary such that existing native wetland plants can reestablish. The site will be monitored and managed for three years after planting to ensure that native wetland plants are dominant.

## Location

---

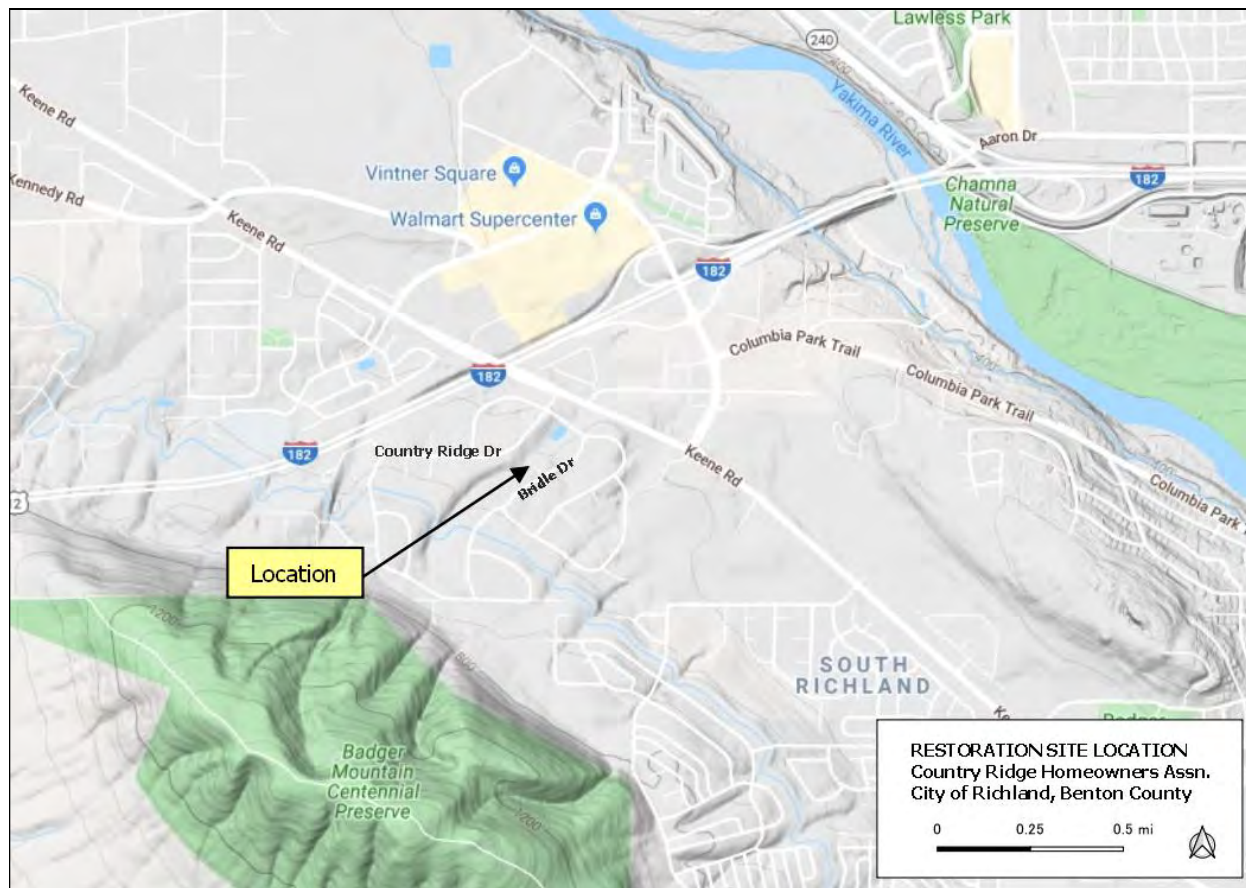
The restoration site is located within Parcel ID #121984020002017, situs address 2603 Saddle Way, within the city limits of Richland (**Figure 1**). At approximately 560 feet in elevation, topography in the general vicinity is gently sloped toward the northeast, occurring within Section 21 of Township 9 North, Range 28 East. The approximate center of the site is located at latitude 46.247652 and longitude -119.312499 (WGS84).

## Background

---

The restoration site is located in a ravine between Country Ridge Drive and Bridle Drive. The ravine was present before homes were constructed and is now owned and managed by the CRHOA as a community greenway.

**Figure 1. Restoration Site Location**



### Soils

The soil series in the vicinity is *Warden silt loam*. The Warden series consists of deep, well-drained soils formed in a thin mantle of loess over lacustrine sediments, found on terraces, terrace escarpments, strath terraces, hillslopes, and dunes.<sup>1</sup> The soil is not listed as hydric.<sup>2</sup>

### Water

During the wetland delineation, groundwater was observed at the soil surface in two locations on the ravine bottom. The larger of the two wet areas was present in the lower half of the ravine, where topography is less steep. According to residents, the extent of surface moisture varies but has never been observed to extend to the horse arena past the wetland’s delineated eastern terminus. Since water in the wetland infiltrates short of the arena, without connecting

<sup>1</sup> NRCS Web Soil Survey. <https://websoilsurvey.sc.egov.usda.gov/App/HomePage.htm>

<sup>2</sup> NRCS Soil Data Access, Hydric Soils List for Benton County. [https://www.nrcs.usda.gov/Internet/FSE\\_DOCUMENTS/nrcseprd1316620.html](https://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcseprd1316620.html)

to another aquatic resource, the wetland conforms to the definition of isolated.

Based on historic aerial imagery taken in 1955,<sup>3</sup> no sign of natural hydrology is evident on or near Badger Mountain prior to residential development. Vegetation on the mountain appears to be consistent with sagebrush-scrub and annual grasses. Only after a large irrigation canal was constructed across the ravine, and the surrounding vicinity developed for residential homes, is woody vegetation (dominated by Russian olive) evident in more recent aerial imagery.

According to residents, and confirmed by recent aerial imagery, the canal leaked where it crossed the ravine, providing a source of water into the ravine during the irrigation season. However, the canal had been lined, and the leak stopped, prior to the site visit. No evidence of hydrology was observed in the upper third of the ravine, immediately below the lined canal, during delineation fieldwork.

Residences surrounding the ravine have large, landscaped yards that are regularly irrigated, and all of the homes are on septic systems. Given the permeability of the soil series in the vicinity, it is reasonable to infer that the wetland indicators observed in the ravine are the unintentional consequence of historic canal leak and/or hydrology associated with residential development.

## Plants

The vegetation community in the survey area is dominated by a climax community of mature Russian olive trees (Washington State Class C noxious weed)<sup>4</sup> that occupy not only the ravine bottom, but also the more xeric side slopes. They are able to do so because adjacent watering of residential landscapes has provided hyporheic moisture on the slopes sufficient for them to spread. The dense canopy largely inhibits growth of herbaceous plants in the understory due to shading.

The encroachment of Russian olives toward homes was deemed a fire risk, and for this reason, the CRHOA began removing trees in the lower ravine on March 29, 2019 (**Appendix A – Photo 1**). However, upon learning that water had been encountered, the City of Richland issued a cease and desist letter, dated April 8, 2019, in which a wetland delineation was recommended.

The disturbed area is now in the process of rapid vegetative recovery by both native plants and noxious weeds (**Appendix A – Photos 2, 3**). Clusters of coyote willows (*Salix exigua*) are rapidly resprouting in the wetland and are approximately 10 feet tall. However, much of the buffer area is now dominated by non-native and noxious weeds including, but not limited to, *Tribulus terrestris* (puncture vine), *Bassia scoparia* (Mexican fireweed), *Salsola tragus* (tumbleweed), *Parthenocissus quinquefolia* (Virginia creeper), *Solanum dulcamara* (nightshade), *Ailanthus altissima* (tree of heaven), *Elaeagnus angustifolia* (Russian olive), *Centaurea solstitialis* (yellow star thistle), *Lactuca serriola* (prickly lettuce), and *Bromus tectorum* (cheat grass).

---

<sup>3</sup> Central Washington Historic Aerial Photograph Project. [http://www.gis.cwu.edu/geog/historical\\_airphotos/](http://www.gis.cwu.edu/geog/historical_airphotos/)

<sup>4</sup> <https://www.nwcb.wa.gov/class-c-noxious-weeds>

# Restoration Proposal

The CRHOA proposes to control weeds in disturbed areas of the wetland<sup>5</sup> and regulatory buffer prior to enhancing the buffer with native grasses. Due to the rapid recovery of existing, native, scrub-shrub wetland vegetation, no planting is proposed within the wetland boundary.

The areas to be restored are illustrated in **Figure 2**.

**Figure 2. Wetland Impacts and Restoration Plan**



## Site Preparation (winter/spring 2020)

In order to prepare the buffer for weed control, existing weeds will be mowed and the soil surface mechanically scarified via tractor-mounted discs and/or rototiller. Disturbance of the soil is expected to increase the germination rate of weed seeds within the soil profile when irrigation is applied.

<sup>5</sup> A sizeable patch of reed canarygrass (RCG) was not disturbed during Russian olive removal. It will only be treated with herbicide if it is observed to outcompete desirable vegetation in disturbed areas of the wetland.

### Irrigation (January 2020-December 2021)

Irrigation will be applied for one year<sup>6</sup> before native grass seed is applied, with irrigation continuing for one year after seeding. The application of water will encourage weed seeds to germinate en masse, allowing for a better kill rate with herbicide and rapid depletion of the seed bank. Irrigation will concurrently support the establishment of native grasses.

### Planting (Fall 2020)

Native grass seed will be installed at a rate of 20 pounds per acre, and include the species in **Table 1**.

Table 1. Native Grass Planting Prescription

Common Name (WIS) <sup>7</sup>	Scientific Name	Mix Percentage
Basin Wildrye (FAC)	<i>Elymus cinereus</i>	30
Bluebunch Wheatgrass (NI)	<i>Pseudoroegneria spicata</i>	40
Indian Ricegrass (NI)	<i>Oryzopsis hymenoides</i>	10
Sandberg's Bluegrass (FACU)	<i>Poa secunda</i>	10
Sand Dropseed (FACU)	<i>Sporobolus cryptandrus</i>	10

### Weed Control (January 2020-December 2021)

Weed control will be implemented for one year prior to seeding, followed by continuous weed control the subsequent three years. Weed control may be performed mechanically, manually, and/or chemically.

## Monitoring

---

The site will be monitored for three years after planting. The site goals, and the performance standards for each goal, are presented below.

---

<sup>6</sup> "Year" is analogous to "growing season" which, in the Richland area, is from approximately mid-March to the beginning of November (<http://agacis.rcc-acis.org/?fips=53005>).

<sup>7</sup> Wetland indicator status: FAC = facultative wetland, FACU = facultative upland, NI = no indicator (upland).

## **Goal 1 – Buffer Enhancement**

### **Objective:**

Enhance 0.36 acres of wetland buffer by replacing weeds with native species.

### ***Performance Measures***

**Year 1:** Native plant species, planted and/or volunteer, will exhibit an average cover of at least 10% across the buffer area.

**Year 2:** Native plant species, planted and/or volunteer, will exhibit an average cover of at least 15% across the buffer area.

**Year 3:** Native plant species, planted and/or volunteer, will exhibit an average cover of at least 25% across the buffer area.

## **Goal 2 – Wetland Enhancement**

### **Objective:**

Enhance 0.18 acres of existing wetland by controlling non-desirable vegetation, allowing existing native wetland plants (FAC or greater) to establish and/or increase in cover.

### ***Performance Measures***

**Year 1:** Across the wetland area, native woody wetland species, planted and/or volunteer, will exhibit an average density of at least four plants per 100 square feet OR average native wetland species cover, planted and/or volunteer, will be at least 10%. If dead plantings are replaced to meet either of these thresholds, the performance measure will be met.

**Year 2:** Across the wetland area, native woody wetland species, planted and/or volunteer, will exhibit an average density of at least four plants per 100 square feet OR average native wetland species cover, planted and/or volunteer, will be at least 25%. If dead plantings are replaced to meet either of these thresholds, the performance measure will be met.

**Years 3:** Across the wetland area, native woody wetland species, planted and/or volunteer, will exhibit an average density of at least four plants per 100 square feet OR average native wetland species cover, planted and/or volunteer, will be at least 35%. If dead plantings are replaced to meet either of these thresholds, the performance measure will be met.

## **Goal 3 – Noxious Weed Control**

### **Objective:**

Control the establishment and spread of noxious weeds within the wetland and wetland buffer.

### ***Performance Measures***

**Years 1-3:** Benton County Class A Noxious weeds<sup>8</sup> will be eradicated. Class B Noxious Weeds, as well as all other non-desirable plants, will be controlled such that the site achieves Goals 1 and 2.

### **Adaptive Management**

Should the restoration site not perform on a trajectory to meet the performance standards for Year 3, adaptive management may include one or more of the following:

1. Modified irrigation methods.
2. Additional seed application.
3. Addition of new native species to the seed prescription.
4. Planting of native wetland species (FAC or greater) within the wetland boundary.
5. Lengthening of the monitoring period.

### **Monitoring Report**

A monitoring report, describing the site's progress toward meeting the annual performance measures for Goals 1 and 2, will be submitted by January 1 of the year following the monitoring effort for Years 1-3.

### **Site Protection**

The site occurs on property currently held and managed by the CRHOA. As such, it will be responsible for protection and maintenance of the site.

---

<sup>8</sup> Benton County Noxious Weed Control Board. <https://www.bentonweedboard.com/>

## References

---

1. City of Richland. 2019. Richland Municipal Code. Chapter 22.10.140-160. Available at: <https://www.codepublishing.com/WA/Richland/#!/Richland22/Richland2210.html#22.10.130>
2. GG Environmental. 2019. Wetland Delineation Report. Country Ridge Homeowners Association, City of Richland, Benton County, Washington. September 12, 2019.



## Appendix A — Photos

---

Photo 1. Russian olive tree removal in March 2019. Note reed canarygrass patch (white arrow) in the wetland that was undisturbed. View toward the northeast.



Photo 2. Wetland buffer dominated by weeds in September 2019.  
View toward the northwest.



Photo 3. Rapid recovery of existing native wetland vegetation (coyote willow) in  
September 2019, adjacent to the manicured lawn. View toward the west.

