

Chuckanut Community Forest Restoration Design

Reports by students in ESCI 439 Conservation of Biological Diversity

Course instructor: John McLaughlin

In October 2020, Western Washington University students developed restoration programs for Chuckanut Community Forest (CCF), focusing on trail impacts. These programs address the first four CCF restoration priorities in [Resolution 16](#) adopted by the CCF Park District Commission. Student designs were an assignment for a conservation course. Reports and designs by six students are available on this web site. The document you are reading summarizes the assignment and design guidelines. Different guidelines, perhaps emphasizing other CCF values or restoration needs, could produce different design solutions. We hope designs provided here will stimulate community discussion about CCF stewardship and inform CCF park master plan development.

Context

Chuckanut Community Forest (CCF) was acquired as public open space due to its outstanding environmental values, desirable natural aesthetic character, and strong potential for outdoor recreational uses. Without thoughtful design and management, some of these values may conflict. In particular, intensive recreational uses can degrade wetlands, impair sensitive ecological processes, and disturb diverse plants, animals, and habitats.

In the several years since CCF was opened to public access, ecological conditions and aesthetic qualities have been degraded by construction of new trails, widening of pre-existing trails, and associated disturbances to soil, vegetation, woody debris, wildlife, and wetlands. Trail proliferation has degraded CCF ecological conditions and experiences of some human visitors, who get lost amidst an expanding trail network.

Many recreational impacts in CCF could be reduced or resolved through restoration and by implementing an appropriate trail network design in a forthcoming park master plan. A trail design will delineate which trails should be retained, which trails should be realigned or mitigated with bridges or boardwalks, and which trails should be removed. Trail removal or mitigation will require effective restoration. Without restoration, trail impacts will persist or visitor use will re-create removed trails. Work on the CCF master plan by Bellingham Parks Department is scheduled to begin in 2022. Input on restoration designs could inform the official plan, and expedite resolution of conflicts between conservation and recreation.

Design Project Details

Design goal: to develop a trail impact restoration design for Chuckanut Community Forest, suitable for inclusion in the CCF park master plan.

Design objectives:

- (1) Removed and narrowed trails: restore compacted soils to uncompacted condition.
- (2) Removed and narrowed trails: restore locally native vegetation.
- (3) Removed trails: direct visitor use to sanctioned trails and deter future use of removed trails.
- (4) Narrowed trails: restrict visitor use to narrowed trail tread.
- (5) Mitigated trails: determine locations and dimensions of boardwalks or bridges to reduce impacts to wetlands and seasonally wet trail locations.

- (6) Restore hydrologic connections between wetlands: restore impacts from old logging roads that impede surface and subsurface flows between wetlands.

Locations of trails likely to be removed can be determined by comparing the map of trails in the CCF baseline report (Figure 1; Eissinger 2017) with the Parks Department draft trail plan* (Figure 2; Potter 2020). Locations and extent of trail mitigation can be determined by identifying segments of retained trails that cross wetlands (Figures 1-2). Hydrologic connections between wetlands need to be restored wherever trails cross those connections. Hydrologic connections were identified in a 12 April 2006 wetland determination by the Seattle District of U.S. Army Corps of Engineers (Kunz 2006), Figure 3.

Design components

- (1) Description of approach to restore compacted soils where trails are to be removed or narrowed.
- (2) Description of approach to restoring vegetation, including targeted plant species or growth forms (ferns, herbaceous plants, shrubs, trees).
- (3) Description of structures or strategies to deter use of closed trails and to direct visitors to sanctioned trails.
- (4) Description of structures or strategies to restrict visitors to narrowed trail treads, which may be similar to (3).
- (5) Map of locations for trail-wetland mitigation structures, and descriptions of structures to be installed. The map also should identify locations where work to restore hydrologic connections (6) would be conducted.
- (6) Description of approach to restore hydrologic connections between wetlands, where trails and old roads impede surface and subsurface flows.
- (7) A plan to monitor and evaluate effectiveness of (1)-(6). The plan should include assessments one, five, and ten years after implementation of your restoration design.

References

- Eissinger A. 2017. *Chuckanut Community Forest Baseline Documentation Report*. prepared for Chuckanut Community Forest Park District, Bellingham, WA. [online]
<http://www.chuckanutcommunityforest.com/files/CCF-Baseline-Documentation-Report-Final-5-8-17.pdf>
- Kunz, K. 2006. Letter to David Edelstein, wetland determination. U.S. Army Corps of Engineers, Seattle, WA.
- Potter, L. 2020. Fairhaven Park Draft Trail Plan. Department of Parks & Recreation, City of Bellingham, WA.

*Additional proposed trail plans, developed in prior years by WWU students, can be viewed at the following URL.

<https://www.chuckanutcommunityforest.com/news/>

Map 19: Trails and Wetland Buffers

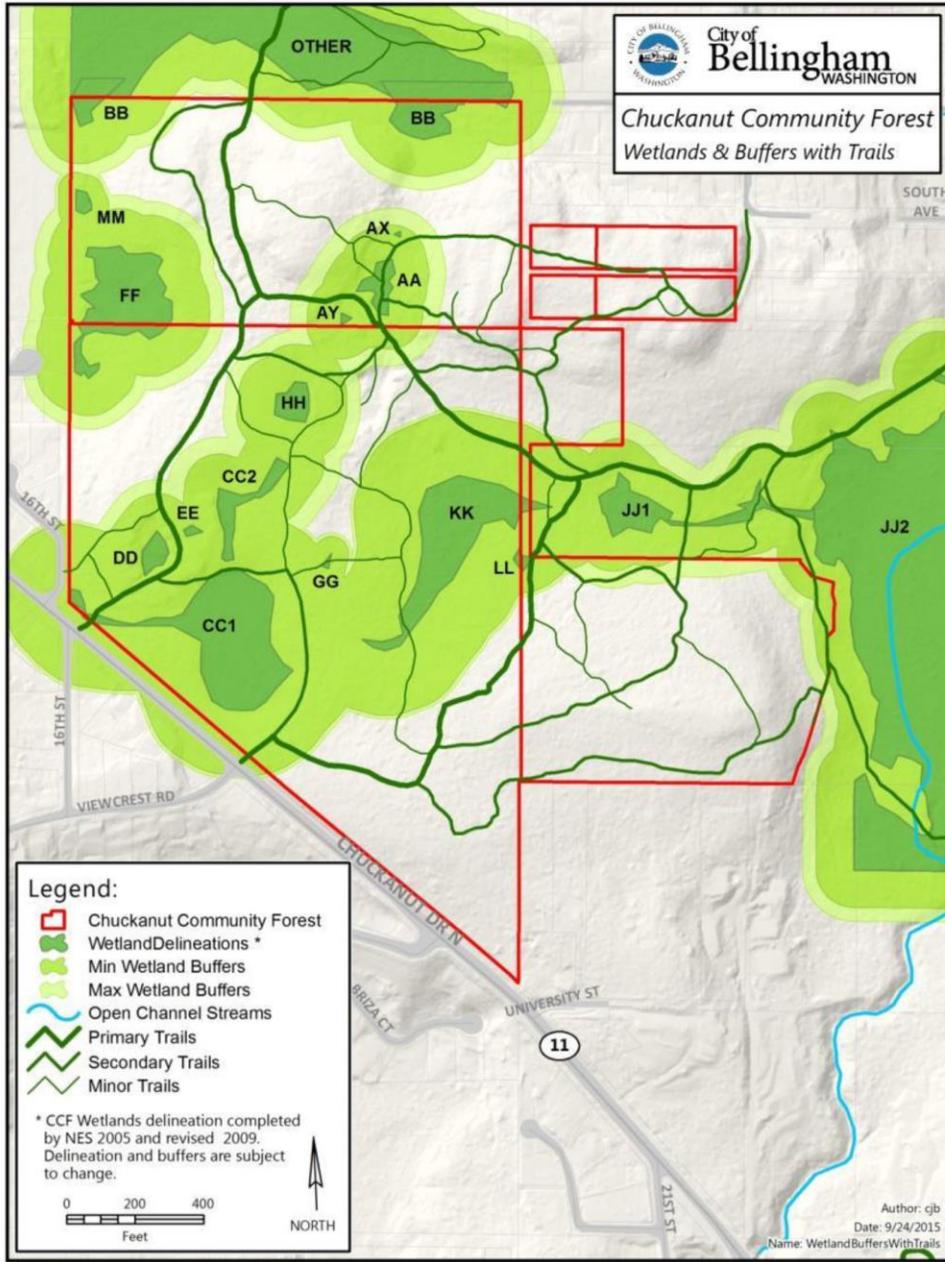


Figure 1: Chuckanut Community Forest trails and wetlands, from Eissinger (2017).



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Figure 2: Chuckanut Community Forest draft trail plan, developed by City of Bellingham Department of Parks & Recreation (Potter 2020).

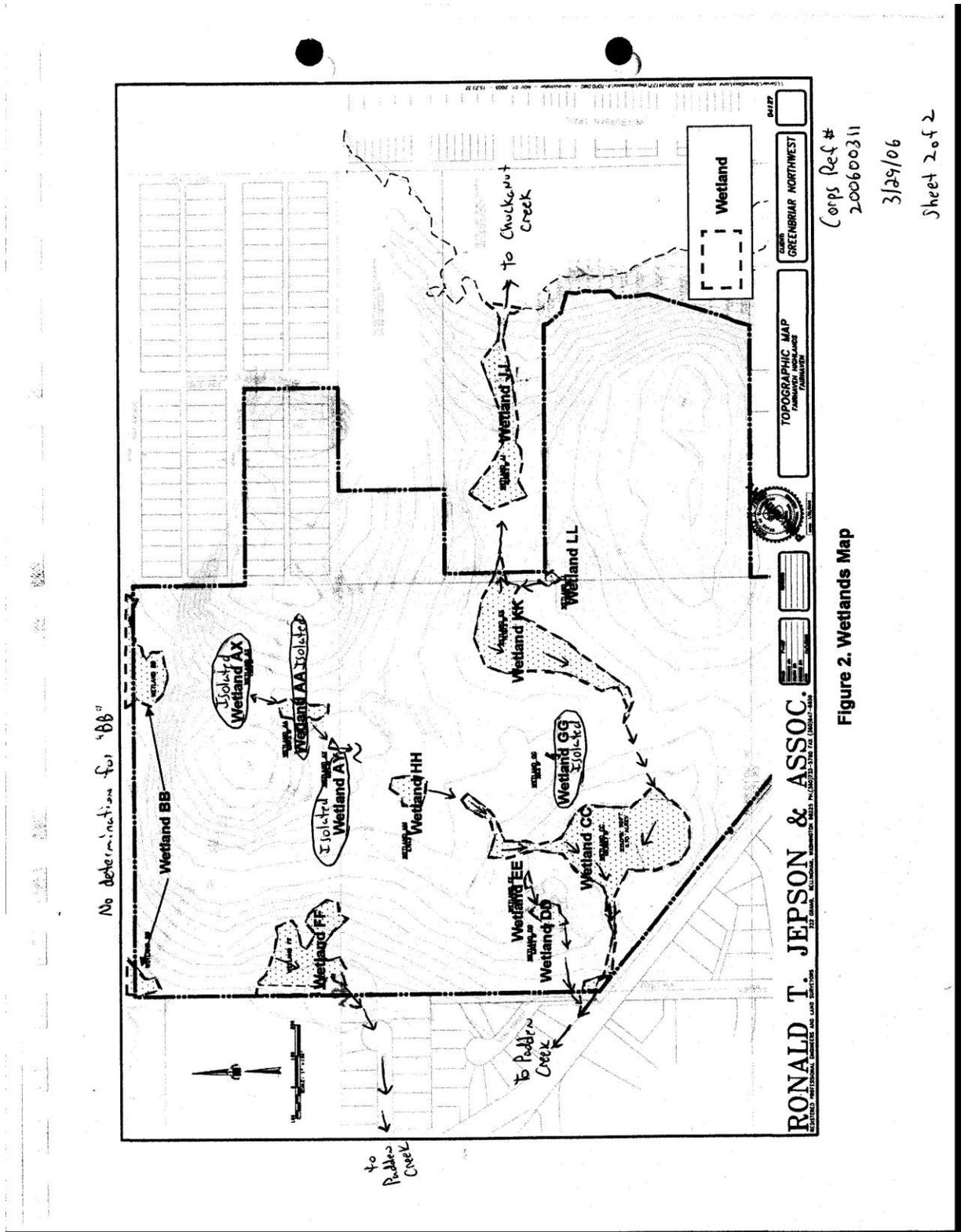


Figure 3: Hydrologic connections between CCF wetlands. Locations and directions of hydrologic flows are marked with arrows. Source: Kunz (2006).