



Northwest Ecological Services, LLC

M E M O R A D U M

To: Mark Johnson, ESA Adolfson
CC: Bob Tull, Langabeer, Tull and Lee, P.S.
From: Vikki Jackson, P.W.S. Northwest Ecological Services, LLC
Date: December 11, 2008

RE: Fairhaven Highlands Wetland Categorization

This memo has been drafted to clarify and summarize changes that have been made to the Wetland Categorizations for wetlands associated with the Fairhaven Highlands project. These changes result from additional data collected since the original categorizations were performed and clarifications of the guidance from the Department of Ecology regarding applying the required methodology. This memo presents new DOE Categorization Sheets using the most current format and includes the compiled data regarding project wetlands. These sheets should replace those included in other submittals for this project. The following discussion within this memo provides rationale for changes and summary tables presenting current information.

Project wetland categorizations were originally presented in the document prepared by NES titled: *Wetland Delineations for the Fairhaven Highlands, Bellingham, WA* (October 2005). Subsequent discussions of project wetland categorization can also be found in a memo prepared by NES addressed to Bob Tull and Ron Jepson on October, 20 2005 and within an off-site delineation of wetlands titled: *Wetland Delineation for the Fairhaven Highlands 24th Street Connector Road Fairhaven Highlands, Bellingham, WA* (NES October 2008). Original categorizations were based on observations made during spring and summer site visits during 2005. NES continued to monitor the site including hydrology, water chemistry and wildlife over the next year. In addition, the most western arm of Wetland JJ (now JJ1) was redelineated based on observations of soils and hydrology that were not observed in our initial reviews. Data collected from these follow-up reviews provided a more comprehensive picture of the wetland functions within the landscape and warranted re-visiting our initial categorizations of project wetlands.

The new Categorization sheets resulted in some changes to wetland categorizations for this project. In most cases where changes occurred, they lifted the Category of the wetland by one Category. Table 1 presents a summary of the changes to the DOE Categorizations and associated functional levels of project wetlands. Wetlands AX, EE and GG all changed from Category IV wetlands to Category III wetlands. Wetland HH changed from a Category III to a Category II. Wetland JJ was split into two units: JJ1 (upper slope wetland) and JJ2. Wetland JJ1 falls within the threshold of a Category III wetland and JJ2 score places it in a Category II.

Table 1. DOE Wetland Rating Breakdowns

Functions	Wetland AA	Wetland AY	Wetland AX	Wetland BB	Wetland CC	Wetland DD	Wetland EE, GG	Wetland FF	Wetland HH	Wetland JJ1	Wetland JJ2	Wetland KK	Wetland LL
DOE Categorization	III	III	III (IV)	II	II	II	III (IV)	III	II (III)	III	II	II (III)	III
DOE Score	48(36)	40 (32)	41(28)	65 (51)	64 (53)	57 (41)	31 (28)	36	59 (50)	44 (43)	58	68 (47)	41 (38)
Potential Water quality	moderate	low	low	moderate	moderate	moderate	moderate	low	High	low	High	high	moderate
Water Quality Opportunity	no	no	no	yes	no	no	no	no	no	no	no	no	no
Potential Hydrologic	moderate	moderate	moderate	high	moderate	high	moderate	moderate	high	moderate	moderate	high	moderate
Hydrologic Opportunity	no	no	no	yes	yes	no	no	yes	yes	yes	yes	yes	yes
Overall Habitat Potential	low	low	moderate	moderate	moderate	moderate	low	low	moderate	moderate	high	high	low
Overall Habitat Opportunity	high	high	high	high	high	high	high	high	high	high	high	high	high
DOE Wildlife Habitat Score	21	21	23 (17)	27 (25)	31 (26)	22	17 (18)	21	20	24 (25)	28	31 (26)	18
Specific habitat functions													
Vegetation structure	moderate	moderate	low	high	high	moderate	moderate	moderate	high	moderate	high	high	moderate
Habitat features	low	moderate	low	moderate	high	moderate	low	moderate	moderate	moderate	high	high	moderate
Buffer quality	moderate	high	moderate	high	high	high	high	high	high	high	high	high	high
Priority habitats	low	low	low	low	low	low	low	low	low	low	low	low	low
Habitat connectivity	high	high	high	high	high	high	high	high	high	high	high	high	high

() previous scores or ratings

Wetland JJ was re-delineated in April 2007. The decision to re-delineate this area resulted from observing hydrology in this area over an entire year, while conducting hydrology reviews and collecting water quality data. NES staff observations indicated the previous delineation results for this area were not consistent with current wetland conditions. NES staff collected additional data within this wetland and determined revisions to the original delineation were warranted. Revised Wetland JJ1 boundaries were flagged in the field and surveyed by Jepson and Associates. The new boundaries are reflected in current site maps. The re-delineation did not result in any large changes to the wetland size; small wet areas decreased in size and others increased.

More recently NES performed a wetland delineation that included off-site areas associated with the proposed 24th Street connector and 24th Street. During this review NES staff revisited the criteria for defining wetland units for Categorization and determined that Wetland JJ should be divided into two units. This decision was based on guidance defined in the Washington State Rating System for Western Washington (DOE 2004). The western arm of what was previously referred to as Wetland JJ, and now renamed Wetland JJ1, is a slope wetland that narrows into a drainage that flows into the larger depressional Wetland JJ2. These two wetlands have different hydrogeomorphic regimes and are separated by clear changes in the flow dynamics (velocity and quantity of water). Wetland JJ1 is a slope wetland where the outflow from the wetland becomes channelized at the eastern end before flowing into Wetland JJ2. Outflow from JJ1 is confined within a channel and travels with noticeable speed to Wetland JJ2. Within Wetland JJ2 channelization is absent and surface flow spreads, unconfined, across a lower gradient slope until it reaches the depressional portion of Wetland JJ2. Wetland JJ2 is largely a depressional wetland with fringes of slope wetland at the northern end. Water velocities are slow and unconfined throughout this wetland until it reaches its outflow at the southern end.

Data collected during the year-long hydrologic review of on-site wetlands resulted in identifying an outlet to Wetland KK that connected to Wetland CC. This data required staff to revisit the categorization of Wetland KK. The original categorization sheets indicated Wetland KK was a Category III with 47 points; the new assessment resulted in an increase in points to 68 points and a Category II status. Increased points resulted from identified hydrologic connections and additional data in the flora and fauna review. Wetland HH was also reassessed when a hydrologic connection to Wetland CC was identified. Wetland HH went from a Category III wetland with 50 points to a Category II with 59 points.

All wetlands received slightly different scores when re-rated under the newest guidance. These differences were due to changes in how staff interpreted site information, and to additional information regarding the site. Most of the score changes did not alter the categorization of the wetland, but several changes did occur as noted above.

In reviewing the public comments for the EIS scoping, NES staff noted public concern over the ratings of the larger wetlands on the site. Specific concern was raised regarding Wetlands BB, CC, KK and the off-site portion of JJ which had lower categories than the public anticipated. The discrepancy between public perception and the actual scores the wetlands received is likely explained in how the DOE Rating System methodology has been designed. Each wetland is scored in three primary functional groups: water quality, hydrologic and habitat function. Each of these functions is broken down into two review areas: the wetlands "Potential" to serve a function and its "Opportunity" to provide that function. A wetland's "Potential" to provide a function is based on field indicators associated with the structural characteristics of the wetland. Particular indicators have been associated with a wetland's capability to perform a function. A wetland's "Opportunity" to perform a function is based on the wetland's position in the

landscape and the conditions of the drainage that would allow it to perform the functions. Typically, drainage basins that are not degraded receive lower scores than those with basins that are damaged. The project wetlands all have scores that indicate they have a moderate to high "Potential" to serve a particular function, however they do not have the "Opportunity" to provide that function in all cases. The immediate drainage basins and habitat corridors surrounding project wetlands are relatively undisturbed. If the area surrounding these wetlands had been degraded some wetlands would have received higher "Opportunity" scores which may have increased their final Category status. This is particularly true of the habitat scores for project wetlands. The DOE Categorizations are used for permit reporting and mitigation replacement establishment for State 404 Permits and Federal 401 Permits.

Several other questions regarding application of specific questions for Categorization of wetlands include the following:

- Do any of the site wetlands meet the criteria for a "mature forested wetland" or include "mature forest" in the surrounding uplands. This applies to "Special Characteristics" section and Question H2.3.

The current definition of a mature forested wetland follows the WDFW definition for mature forest:

Mature Forest: Stands with average diameters exceeding 53 cm (21 in) 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 (WDFW August 2008).

Application of this definition is not well defined. Field data collected on tree diameters within and around both Wetlands KK and CC (the areas that are most likely to be considered mature forested wetland) do not meet these criteria. The average diameter was well under 21 dbh from data collected from four transects from Wetland KK and three transects from Wetland CC. Data included both wetland and upland tree sizes. The tree sizes in the uplands were larger than the wetlands but did not skew the data away from the WDFW definition. The age threshold for mature forests is defined between 80-200 years. Trees within wetlands grow at a slower rate than surrounding uplands and it is possible trees within project wetlands are older than their size suggests. The most conclusive method to determine if site forested wetlands or surrounding buffers meet these criteria would be to core the trees to determine the actual average age of stand trees.

- Should wetlands get multipliers for hydrology in Question D4 of the form since they are located in the headwaters of Chuckanut and Padden Creeks. This question asks if the wetlands are connected to streams or rivers with flooding problems.

Neither Padden Creek nor Chuckanut Creek have significant flooding problems, however both creeks are documented to have low flow limitations for fish passage and scouring has been a problem in Padden Creek. We have applied the multiplier to question D4 for all wetlands except Wetland EE, GG, which do not have any significant storage capacity, and therefore do not significantly contribute to this function.

City of Bellingham Categorization

The wetlands have also been categorized under the City of Bellingham's 1991 Wetland and Stream Ordinance, under which the project is vested. This Ordinance uses a different wetland categorization system than the Department of Ecology's system. The COB Categorization is used to establish buffers for

the project under this Ordinance. Table 2 presents the 1991 wetland categories for each wetland. All wetlands that have been shown to have a hydrologic connection to Chuckanut or Padden Creeks have been designated as a Category II wetland under this Ordinance. The Ordinance considers all wetlands that are deemed contiguous with any regulated stream Category II wetlands. Both Chuckanut and Padden Creeks are regulated streams. Wetlands identified as isolated on this project are Category III wetlands.

Table 2. Summary of Wetland Classifications

Wetland	Cowardin Classification	HGM Classification	DOE Category	COB Category	Size (square feet)	COB Regulated
AA	PFO/PEM	Depressional Outflow	III	III	8,997.6	Not Regulated
AX	PEM	Depressional Outflow	III(IV)	III	130.2	Not Regulated
AY	PFO/PSS	Depressional Outflow	III	III	499.1	Not Regulated
BB	PFO/PSS	Depressional Outflow	II	II	--	Regulated*
CC	PFO/PEM	Depressional Outflow	II	II	109,538.0	Regulated
DD	PSS/PEM	Depressional Outflow	III	III	5,919.2	Not Regulated
EE	PEM	Depressional Outflow	III(IV)	III	918.9	Not Regulated
FF	PSS/PEM	Slope Outflow	III	II (III)	65,340.0	Regulated*
GG	PEM	Depressional Outflow	IV	III	329.6	Not Regulated
HH	PEM	Depressional Outflow	II(III)	II	8,764.0	Regulated
JJ1	PFO/PSS	Slope Outflow	III	II	43,609.3 (surveyed portion only)	Regulated*
JJ2	PFO/PSS/PEM	Depressional outflow	II	I	Not surveyed	Regulated
KK	PFO/PEM	Depressional Outflow	II (III)	II	72,181.0	Regulated
LL	PSS	Depressional Outflow	III	II (III)	1,630.5	Not Regulated

* Wetlands extend off-site, total size unknown.
 () previous wetland category.

Public comment expressed in EIS scoping letters indicated that many people believe the site wetlands are COB Category I wetlands. Only Wetland JJ2 met any of these criteria. The following discusses our findings of these criteria. The 1991 Ordinance requires that one of the following criteria must be present for a wetland to be considered a Category I wetland:

1. Documented habitat for endangered, threatened or rare plant, fish or animal species recognized by state or federal agencies.

- *No federal or state endangered, threatened or sensitive plants or animals are documented for this site.*
2. Contain irreplaceable or rare wetland types in the Puget Sound Basin. These types are sphagnum bogs, fen, marine influenced wetlands and mature, forested wetlands.
 - *No irreplaceable wetland type (as defined by Code) is present on the site. However, it should be noted that the definitions for these wetland types are not well defined. Site wetlands do not appear to meet the definition of a Mature Forested Wetland (see discussion above). Coring of trees is recommended to provide more conclusive data.*
 3. Are comprised of three or more wetland classes, as defined by the Classification of Wetlands and Deepwater Habitats of the United States (Cowardin et al), one of which may be persistent open water and are undeveloped.
 - *All project wetlands have only one or two wetland classes (Either Palustrine forested, scrub-shrub, or open water), except Wetland JJ2. Wetland JJ2 has palustrine forested, palustrine scrub-shrub and palustrine emergent classes within the wetland, therefore meets the criteria of a COB Category I wetland.*

I hope this provides sufficient clarification regarding the categorization of wetlands associated with this project. If you have further questions please feel free to contact me at (360) 734-9484.