

### 3.4 Wetlands and Vegetation

The following paragraphs describe the existing wetland and vegetation resources at the Project site; assess the potential impacts of the project on the biological resources; and describe mitigation measures for potential impacts. State and federal agencies were contacted to determine the presence of species and to identify concerns relating to the proposed project and potential impacts. Agency contacts, available literature, information from local biologists and field surveys by qualified biologists were used to compile the information presented below.

#### 3.4.1 Existing Conditions

This section summarizes information regarding wetlands and vegetation but more detailed information regarding wetlands can be found in Appendix H. Data and information is based on review of relevant information and field surveys performed by Golder biologists.

##### 3.4.1.1 Wetlands

The U.S. Army Corps of Engineers (COE) (1987) defines wetlands as:

*Those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas.*

Wetland delineations of the study area were performed in May, June, and August 2001, and January 2002 in accordance with the COE Wetlands Delineation Manual (COE, 1987) and the *Washington State Wetlands Identification and Delineation Manual* (Washington Department of Ecology, 1997). According to both manuals, an area must exhibit indicators of hydrophytic vegetation, hydric soils, and wetland hydrology to be considered a wetland. These criteria are mandatory and must all be met for an area to be identified as wetland, except under circumstances when a wetland is considered a disturbed area or problem wetland.

Prior to onsite observations, a literature review was performed to identify records of wetlands within the project site area. The following information was collected and examined:

- U.S. Geological Survey Topographic map of Blaine, Washington quadrangle (USGS, 1972)
- National Wetlands Inventory map of project site (U.S. Fish and Wildlife Service, 1987)
- Natural Resource Conservation and Soil Conservation Services soil survey maps and soil description of project site (SCS 1953; Goldin, 1992)
- Whatcom County Municipal Code Title 16 Critical Areas Ordinance
- Previous wetland delineation conducted in 1991

The National Wetland Inventory (NWI) map (U.S. Department of Agriculture, 1987) for Blaine, Washington USGS Quadrangle indicates that the area is almost entirely dominated by palustrine emergent (PEM) and forested (F) wetlands (See Figure 3 of the [BP Cherry Point Wetland Delineation Report, BP Cherry Point Cogeneration Project \[Revised\], February 21 2003](#) – Appendix H). NWI maps indicate that isolated palustrine emergent (PEM) wetlands exist within slightly depressed topographic areas as a result of glacial movement and a dense clay layer underlying the A-layers of soil. These wetlands are both seasonal and persistent. Wetland locations and characterizations were determined in the field during delineations performed by Golder biologists.

The wetland systems within the proposed project site occupy approximately ~~30-35~~ percent of the 33.17-acre [project site](#), ~~and consist of 10.18~~ [The facility will require the permanent fill of 11.91 acres of palustrine emergent wetlands at the project site and associated access roads. that would be permanently disturbed due to construction activities.](#) An additional 36 acres, ~~of which 22.49 acres are emergent wetlands~~, are proposed for use as construction staging and assembly (laydown) for project equipment (Figure 3.4-1). [The use of these laydown areas will result in the temporary disturbance of 4.86 acres of wetlands and the permanent fill of 18.6 acres of wetlands. Impacts to wetlands due to the proposed access roads \(roads 1, 2, and 3\), would be approximately 0.48 acres.](#) Therefore, the total wetland impact of the proposed project, including access roads, the plant site, and construction laydown areas is ~~33.15~~ [35.37](#) acres, [of which 4.86 acres will be disturbed temporarily and 30.51 acres will be filled permanently.](#) The current site layout was chosen to minimize the impact to the wetland systems and maintain the hydrologic character of the site.

A complete description of the wetlands located within the proposed project area can be found in the attached technical report entitled [BP Cherry Point Wetland Delineation Report, BP Cherry Point Cogeneration Project \[Revised\] \(February 21 2003\)](#) by Golder Associates [and Schott & Associates](#) (Appendix H).

### Wetland Vegetation

Hydrophytic vegetation is defined as macrophytic plant life growing in water, soil, or substrate that is periodically deficient in oxygen. For each plot, the percent of coverage is estimated for each plant species present, and the dominant species is determined. Plants were identified using *Flora of the Northwest* (Hitchcock and Cronquist, 1973). Species are assigned a Wetland Indicator Status (Reed, 1988), which is based on the estimated probability of each plant species' occurrence in wetlands or nonwetland (see Table 3.4-1).

TABLE 3.4-1

Wetland Indicator Status

Wetland Indicator Status	Description	Estimated Probability of Being Found in a Wetland
OBL	<u>Obligate</u> : species that almost always occur in wetlands under natural conditions.	>99%
FACW	<u>Facultative Wet</u> : species that usually occur in wetlands but are occasionally found in nonwetlands.	67% > 99 %
FAC	<u>Facultative</u> : species that are equally likely to occur in wetlands or nonwetlands.	34% > 66%
FACU	<u>Facultative Upland</u> : species that usually occur in nonwetlands but are occasionally found in wetlands.	1% > 33%
UPL	<u>Obligate Upland</u> : species that almost always occur in nonwetlands under normal conditions.	< 1%
NL	<u>Not Listed</u> : species that are not listed and are presumed to be upland species.	
NI	<u>No Indicator Status</u> : species that have not yet been evaluated.	

(Adapted from Reed, 1988.)

The proposed project site was formerly used for agriculture or pastoral purposes and areas have been left fallow for many years. Ditches are present on-site that were likely intended to reduce the storage capacity of the soil by inducing faster runoff rates. The majority, if not all, of the hydrology for this area is provided by direct precipitation.

Delineated areas were broken into a series of individual wetland systems (Wetlands A – J) that share a similar hydrologic regime. Using Ecology’s (1999) *Methods for Assessing Wetland Functions Volume I Riverine and Depressional Wetlands in the Lowlands of Western Washington*, delineated wetland systems were categorized based on function. All wetlands within the area, with the exception of Wetland E that would not be disturbed, were classified as Category III wetlands. A wetland is considered Category III if it meets none of the Category I or Category II criteria and meets any one of the following three criteria.

- Wetlands where the habitat score for significant habitat value is less than or equal to 21 points or,
- Wetlands identified as Category III wetlands of local significance, and
- Estuarine wetlands less than 1 acre. See Appendix H for details regarding wetland categorization and methodologies.

Wetland hydrology within the herbaceous wetland is due to the generally impermeable nature of the soils within the area and the downgradient (northwest) movement of water within the watershed. Precipitation most likely is the main contributor to the hydrology of the wetlands. The soils prevent rapid movement of water through a cemented hardpan layer of compressed clay and therefore percolation is slow. This regime is typical of areas that have been formed by glacial movement. These wetlands are

generally hydrologically connected to downgradient waters, although connectivity is restricted due to the seasonality of inundation. Flow through the man-made ditches onsite occurs on a seasonal basis. No flow or standing water was observed during the summer months, however, during the January 2002 delineation there was significant water present.

#### Plant Site and Access Road

Vegetation within the proposed plant site and access road (roads 1 and 3) location consists primarily of a mixture of upland abandoned grassland pasture and herbaceous wetlands. The hydrophytic vegetative community consists of emergent wetlands with patches of facultative (FAC) and facultative wet (FACW) grasses and rushes including soft rush (*Juncus effusus*), meadow foxtail (*Alopecurus pratensis*), colonial bentgrass (*Agrostis tenuis*), and reed canary grass (*Phalaris arundinacea*). With the exception of Wetland A, which contains hybrid poplars that were planted for harvest, there are relatively few trees or shrubs associated with the wetland systems, as the woody vegetation is primarily within upland areas. Since the trees within Wetland A were planted for harvest, it is unlikely that this wetland would be considered forested. Wetland E, which will not be disturbed by construction activities or operation of the proposed power plant, is a forested wetland with unique characteristics compared to the adjacent herbaceous wetland areas. Table 3.4-2 depicts the plants that were observed at the site. The following paragraphs describe wetlands that occur within the proposed project area. Figure 3.4-1 shows the location of these wetland systems.

#### Wetland A

Wetland A is located immediately south of Grandview Road. The wetland system consists of palustrine emergent wetlands with planted hybrid poplars that would eventually be harvested for pulpwood. Palustrine emergent wetlands are those that consist of marsh-like soils with herbaceous (non-woody) vegetation that rises from the marshy soil. The buffer to Wetland A is dominated by Himalayan blackberry to the west and north, and herbaceous grasses to the east and south.

#### Wetland B (B1-B~~3.4~~)

The vegetation species reported within these herbaceous wetlands include, but are not limited to, rough bluegrass, velvetgrass, bull thistle, tall fescue, Baltic rush, spikerush, and meadow foxtail. Adjacent upland vegetation includes Himalayan blackberry and orchard grass. Based on a dominance of species rated facultative or wetter, vegetation in the systems is considered hydrophytic.

The buffers to wetlands B1-B~~3.4~~ consist primarily of herbaceous grasses of an abandoned grassland pasture and Douglas-fir/blackberry thicket areas.

#### Wetland C

Wetland C is located within the eastern portion of the plant site footprint and is approximately 4.~~25.38~~ acres in size. Hybrid poplar farming areas are located directly east of the wetland. The vegetation species reported within this herbaceous wetland include, but are not limited to, creeping buttercup, velvetgrass, rough bluegrass, Baltic rush, and meadow foxtail. Adjacent upland vegetation is dominated primarily by

invasive species including Himalayan blackberry and bull thistle. Based on a dominance of species rated facultative or wetter within Wetland C, vegetation in the systems is considered hydrophytic. The buffers to wetland C consist primarily of herbaceous grasses of an abandoned grassland pasture and blackberry thickets.

#### Wetland D

Wetland D is located within the southern portion of the plant site footprint. The surveyed portion of Wetland D is approximately 40.21 acres, although the wetland extends to the east and was not completely surveyed. The wetland extends into the forested area to the east and then breaks up into mosaic wetland/upland areas. Ecology's wetland rating forms (Appendix B) score wetlands for several components, one of which is size. Size categories are as follows: <0.10, 0.10-1, 1-5, 5-10, 10-40, 40-200 and >200 acres.

Wetland D falls under the 40-200 acre category. Since Wetland D is not likely larger than 200 acres, the incomplete survey would not affect the score for this component and, therefore, would not affect the wetland rating. The vegetation species observed within this herbaceous wetland include, but are not limited to, vernal sweetgrass, velvetgrass, soft rush, slough sedge, colonial bentgrass, reed canary grass, Kentucky bluegrass, bird's foot trefoil, giant horsetail, Canada thistle and Himalayan blackberry along the upland/wetland transition zone. Adjacent upland vegetation is dominated primarily by Himalayan blackberry. Based on a dominance of species rated facultative or wetter within Wetland D, vegetation in the systems is considered hydrophytic.

The buffers to Wetland D consist of blackberry thickets and then impervious surface area in the form of roads to the west, blackberry thickets and then forested areas to the south and southeast, and herbaceous grasses of an abandoned grassland pasture to the north and east.

#### Wetland E

The herbaceous Wetland D extends into a forested area, Wetland E, on the southeast corner of the parcel. This area is approximately 15 acres in size and is a mosaic of uplands and wetlands. The amount of wetland habitat within the area is 1.25 acres. Several large trees have been uprooted by the wet conditions creating upland habitat where they fell. The forested area on-site is classified within the Fraser lowland ecological zone (Johnson and O'Neil, 2001) and lies within the western hemlock (*Tsuga heterophylla*) zone, which is characterized by a wet, mild, maritime climate (Franklin and Dyrness, 1988).

Wetland E is surrounded by blackberry thickets that act as the upland buffer to the system to the north and west. The eastern and southern buffers are composed primarily of forested woodlands with herbaceous grasses in the understory.

#### Construction Laydown Area

Wetlands within the potential construction laydown (staging and assembly) areas 1-4 (See Figure 3.4-2) are primarily palustrine emergent systems that are dominated by clumps of soft rush, meadow foxtail, colonial bentgrass, and reed canary grass. Scrub-

shrub wetlands are dominated by immature cottonwoods with reed canary grass dominating the understory.

An additional laydown area, Area 5, (Figure 3.4-2) which would be used if additional space is needed during construction, is located in an upland parcel that is primarily composed of Himalayan blackberry, with some Douglas fir. This area is adjacent to the BP crude and product pipeline maintenance road that runs parallel to Jackson road.

#### Wetland F

The dominant vegetation species within Wetland F are herbaceous grasses including colonial bentgrass, meadow foxtail and velvetgrass. Soft rush occurs in the most saturated areas of the wetland. Five small patches of willow, consisting of Pacific willow and scouler's willow, occur within the northwestern portion of the property. These patches contain approximately three to five shrubs with an understory of soft rush. A small area (approximately 0.6 acres) of young, immature poplar trees with average dbhs of approximately 2-3 inches, occurs within a portion of Wetland F near the northwest corner of the existing contractor's parking lot (Figure 3.4-1). Adjacent upland vegetation includes patches of Douglas fir that occurred on slightly raised knolls throughout the property. These firs were planted in 1989 –1992 and have had little success in the area due to the wetland hydrologic regime that dominates the area. Based on a dominance of species rated facultative or wetter in Wetland F, vegetation in the wetland is considered hydrophytic.

Wetland F is buffered to the north, east and partially to the south, by impervious surface area in the form of gravel or paved roads and a parking lot. It is buffered to the west and partially to the south by a ditch, and then a gravel-walking trail within a forested area.

#### Wetland G

The dominant vegetation species reported within Wetland G are herbaceous grasses including reed canary grass, meadow foxtail, velvetgrass and colonial bentgrass. English plantain and thistle species including bull and Canada were observed and comprised a low percentage of the total plant species. Based on a dominance of species rated facultative or wetter, vegetation in the wetland is considered hydrophytic.

Wetland G is surrounded by herbaceous grasses, including reed-canary grass in some upland areas, to the north and west and a gravel road and concrete parking lot to the south and east.

#### Wetland H

Wetland H is separated from Wetland G by a road and is located in the proposed access road corridor from the Refinery to the proposed plant site (see Figure 3.4-1). The wetland was visited on January 30, 2002 when approximately 10 inches of snow covered the ground. A complete delineation of the entire wetland was not performed because of the conditions. Soils were sampled within the proposed access road corridor and found to be black (7.5YR 2.5/1) and very dark brown (10YR 2/2) silt loams with grayish brown (2.5Y 5/2) few, medium, distinct mottles. These soils exhibited hydric characteristics and therefore the entire corridor was assumed to have wetland characteristics. The surveyed area of this portion of Wetland H is approximately 0.232 acres. The total area of Wetland H is estimated to be approximately 8 acres.

Wetland H is buffered to the north, south and west by impervious surface area in the form of roads and parking lots and to the east by abandoned grassland pasture and Wetlands A and D.

#### Wetland I

Wetland I is a forested area associated with a deeply ditched channel that bisects the property in an east/west direction. Wetland I is approximately 0.15 acres in size and will not be disturbed by the Cogeneration project. The area is unique from the other wetland areas in that it is a riverine flow-through wetland, not a depression closed wetland since it associated with a channel and functions at a higher level in regards to amphibian habitat and biomass export. The channel is most likely intermittent and flows during winter and spring and during times of high precipitation. Some areas of the channel are scoured and saturated, while others are completely vegetated with slough sedge. The aforementioned graveled walking trail runs parallel to the channel and then crosses by means of a bridge. Wetland J is directly south of the channel and drainage pipes divert excess water (moving downgradient in a northwesterly direction) from the herbaceous area into the channel.

The northern and southern buffers are traversed by a winding gravel walkway and thence herbaceous grasses to the south and Wetland H to the north. The eastern buffer is composed of forested woodlands and herbaceous grasses. The western buffer consists of a small strip of herbaceous grasses and thence a parking lot.

#### Wetland J

The vegetation species observed within this herbaceous wetland include colonial bentgrass, meadow foxtail and red top with some areas that are comprised exclusively of reed canary grass. Vetch and Kentucky bluegrass occur in the upland/wetland transition zone in the southern portion of the site. Based on a dominance of species rated facultative or wetter within Wetland J, vegetation in the system is considered hydrophytic.

Wetland J is buffered to the south and east by impervious surface area in the form of roads and parking lots. It is buffered to the west by a gravel-walking trail and then a thin strip (<50') of forested area. It is buffered to north by a gravel-walking trail, then Wetland I, then Wetland F.

#### [Wetland K](#)

[Wetland K is a 0.62-acre long narrow wetland adjacent to the south side of Grandview Road. The wetland lies primarily within the right-of-way of a natural gas pipeline. Hydrology in the site consists of water overflowing from the Grandview Road drainage ditch and water from an existing drainage ditch that borders the chain link fence on the western side of the project boundary. Vegetation consists of clumps of soft rush, meadow foxtail, colonial bentgrass, and reed canary grass. This wetland will not be impacted by the construction of the Cogeneration Project.](#)

Transmission Line Route

Vegetation within the transmission line and gas line corridor consists of a mosaic of palustrine emergent wetland vegetation similar to that described for the plant site and forested wetlands. The forested portions of the transmission line corridor contain mixed conifer and hardwood forest. The transmission line would connect with an existing 230 kV line that runs north to south just east of Terrell Creek. Hardwoods such as red alder, big leaf maple and black cottonwood occur in the corridor. Conifers include western red cedar, Douglas fir, and western hemlock.

**TABLE 3.4-2**

**Plant Species Observed at the Cherry Point Cogeneration Study Area  
in Whatcom County, Washington**

<b>Vegetation Layer</b>	<b>Common Name</b>	<b>Scientific Name</b>	<b>Wetland Indicator Status<sup>a</sup></b>
Tree			
	Alaska cedar	<i>Chamaecyparis nootkatensis</i>	FAC
	Douglas-fir	<i>Pseudotsuga menziesii</i>	FACU
	Western red cedar	<i>Thuja plicata</i>	FAC
	Black cottonwood	<i>Populus trichocarpa</i>	FAC
	Walnut	<i>Juglans</i> spp.	NI
	Pear	<i>Crataegus</i> spp.	NI
	Red alder	<i>Alnus rubra</i>	FAC
	Paper birch	<i>Betula papyrifera</i>	FAC
	Pacific silver fir	<i>Abies amabilis</i>	FACU
	Vine maple	<i>Acer circinatum</i>	FAC-
Shrub			
	Salmonberry	<i>Rubus spectabilis</i>	FAC+
	Twinberry	<i>Lonicera involucrata</i>	FAC+
	Elderberry	<i>Sambucus racemosa</i>	FACU
	Oceanspray	<i>Holodiscus discolor</i>	NI
	Hardhack	<i>Spiraea douglasii</i>	FACW
	Snowberry	<i>Symphoricarpos albus</i>	FACU
	Sitka willow	<i>Salix sitchensis</i>	FACW
	Scouler's willow	<i>Salix scouleriana</i>	FAC
	Indian plum	<i>Oemleria cerasiformis</i>	FACU
	Evergreen blackberry	<i>Rubus laciniatus</i>	FACU+
	Devil's club	<i>Oplopanax horridus</i>	FAC+
Herb			
	Canada thistle	<i>Cirsium arvense</i>	FACU+
	Piggy-back plant	<i>Tolmiea menziesii</i>	FAC
	Red clover	<i>Trifolium pratense</i>	FACU
	Creeping buttercup	<i>Ranunculus repens</i>	FACW
	Curly dock	<i>Rumex crispus</i>	FAC+
	Bleeding heart	<i>Dicentra formosa</i>	FACU
	Chickweed	<i>Stellaria media</i>	FACU
	Sword fern	<i>Polystichum munitum</i>	FACU
	Slough sedge	<i>Carex obnupta</i>	OBL
	Stinging nettle	<i>Urtica dioica</i>	FAC+
	Quackgrass	<i>Agropyron repens</i>	FAC-
	Cat's ear	<i>Hypochaeris glabra</i>	NI
	Hardstem bulrush	<i>Scirpus acutus</i>	OBL
	Colonial bentgrass	<i>Agrostis tenuis</i>	FAC

**TABLE 3.4-2**

Plant Species Observed at the Cherry Point Cogeneration Study Area  
in Whatcom County, Washington

Vegetation Layer	Common Name	Scientific Name	Wetland Indicator Status <sup>a</sup>
	Least spikerush	<i>Eleocharis acicularis</i>	OBL
	Bluegrass	<i>Poa pratensis</i>	FAC
Herb	Bull thistle	<i>Cirsium vulgare</i>	FACU
	Rough bluegrass	<i>Poa trivialis</i>	FACW
	Orchard grass	<i>Dactylis glomerata</i>	FACU
	Meadow foxtail	<i>Alopecurus pratensis</i>	FACW
	Sword fern	<i>Polystichum munitum</i>	FACU
	Dandelion	<i>Taraxacum officinale</i>	FACU
	Lady's thumb	<i>Polygonum persicaria</i>	FACW
	Soft rush	<i>Juncus effusus</i>	FACW
	Bird's foot trefoil	<i>Lotus corniculatus</i>	FAC
	Reed-canary grass	<i>Phalaris arundinacea</i>	FACW
	Tall fescue	<i>Festuca pratensis</i>	FACU+
	Baltic rush	<i>Juncus balticus</i>	FACW+
	Velvetgrass	<i>Holcus lanatus</i>	FAC
	Vernal sweetgrass	<i>Anthoxanthum odoratum</i>	FACU
	Bittersweet nightshade	<i>Solanum dulcamara</i>	FAC+
	Tiny vetch	<i>Vicia hirsuta</i>	NI
	Iris	<i>Iris missouriensis</i>	FACW+
	English plantain	<i>Plantago lanceolata</i>	FAC
	Common plantain	<i>Plantago major</i>	FACU+
	Red top	<i>Agrostis alba</i>	FAC
	Rye grass	<i>Elymus canadensis</i>	FAC
	Giant horsetail	<i>Equisetum telmateia</i>	FACW

<sup>a</sup> See Table 3.4-1 for definitions.

A complete account of vegetation, both upland and wetland, soils and hydrology within the proposed project site can be found in reports by Golder Associates entitled, [BP Cherry Point Wetland Delineation Report, BP Cherry Point Cogeneration Project \[Revised\], February 21 2003 \(2002a\)](#) and the [Wetland Functions and Values Assessment, Technical Memorandum BP Cherry Point Cogeneration Project, March 31 2003 \(2002b\)](#). Both reports are provided in Appendix H.

### 3.4.1.2 Upland Vegetation

#### Sensitive Plant Species

The Washington Natural Heritage Program (WNHP) maintains a list of endangered, threatened, and sensitive species of vascular plants within Washington. A list of plants that may occur within the proposed project area was requested in May 2001. A response (See Appendix H), dated July 2, 2001, indicated that there are no known listed plant species within the project area. WDNR's Washington NHP was consulted to determine the presence of rare plants and high quality ecosystems within the project area. In a response dated July 2, 2001, the NHP indicated that there are no known occurrences of rare plants or high quality ecosystems in the vicinity of the project (NHP, 2001).

Noxious Weeds

Vegetation surveys conducted in the spring and summer of 2001 determined the presence and abundance of weed species considered to be noxious by Whatcom County (Whatcom County, 1999).

No Washington State Class A weed species were observed on the proposed project area (Washington State Noxious Weed Control Board, 2001). Class A weeds are non-native species with a limited distribution in Washington. State law requires control and eradication of these species.

No Class B weed species were observed on the proposed project area (Washington State Noxious Weed Control Board, 2001). Class B species are designated for control in certain, but not all, counties within the state.

There are three Class C Noxious weeds, also designated as Class C weeds within Whatcom County, within the proposed project area. These include reed canary grass (*Phalaris arundinacea*), bull thistle (*Cirsium vulgare*), and Canada thistle (*Cirsium arvense*). Class C weeds are non-native weeds considered to be widespread in the state. According to the Whatcom County Weed Control Board, landowners are not required to control Class C weeds, although control of reed-canary grass is performed when there are complaints from adjacent landowners (Laurel Shiner, Coordinator, Whatcom County Weed Control Board, pers. Comm., 2001b). Although not required, control of Class C weeds, particularly reed canary grass, is encouraged.

Vegetation within Proposed Plant Site and Construction Laydown Areas and Adjacent Areas

The vegetation of the upland areas within the proposed plant site, laydown areas and adjacent areas is composed of herbaceous, shrub and tree components. A generalized figure of the vegetation types within the project vicinity (using USGS Gap Data) is given in Figure 3.4-3. Vegetation communities in the Cogeneration Project area and the immediate vicinity are depicted in Figure 3.4-4, 3.4-5 and 3.4-6. A description of identified cover types is provided below. Table 3.4-3 summarizes the percentages of vegetative cover types within the proposed plant site and laydown areas to be disturbed due to construction and operation of the Cogeneration Project.

TABLE 3.4-3:  
(Revised)

Percent Cover of Habitat Types within the Cogeneration Project Plant Site and Associated Construction Laydown Area

Cover Type	Cover Type Symbol	Approximate Acreage within Plant Site	Approximate Acreage within Construction Laydown Areas and Access Road
Mixed Coniferous/Deciduous Forest	Fm	0	0
Blackberry Community with Douglas Fir	Dfb	2.7	4.55
Upland Abandoned Grassland Pasture	G	16.28	3.78
Himalayan Blackberry Community	Hb	0.81	0

Hybrid Poplar Tree Plantation	Ctp	1.50	0
Wetland Impacted	W	11.88	23.49
Existing Impervious Surface	I	0	3.88
<b>Totals</b>		<b>33.17 acres</b>	<b>35.7 acres</b>

#### Mixed Coniferous/Deciduous Forest

This cover type occurs south of the proposed project area and extends south of Brown Road (Figures 3.4-4 – 3.4-6). Overstory vegetation consists of mixed deciduous and coniferous tree species. Common tree species that occur in this cover type include Douglas fir, black cottonwood, western red cedar, and Alaska cedar. Common shrub species include oceanspray, snowberry, and willow (*Salix* spp.).

#### Blackberry Community with planted Douglas fir

This cover type occurs within the proposed plant site area south of Grandview Road and contains Himalayan blackberry, evergreen blackberry, and immature plantings of Douglas fir.

#### Abandoned Grassland Pasture

This cover type occurs in patches within the proposed plant site and adjacent areas south of the plant site. It also occurs in relatively small amounts in the construction laydown areas. Upland grassland areas have been previously used for agriculture or for pastoral uses. These areas have been abandoned and have not been used agriculturally since BP acquired the property, over 30 years ago. Grassland areas are dominated by mostly non-native facultative species that are also found in adjacent wetlands. These species include bentgrass, reed canary grass, Canada thistle, velvetgrass, bird’s foot trefoil, bull thistle, and horsetail.

#### Himalayan Blackberry Community

This cover type is generally found along the outside perimeter of the grassland/wetland areas throughout the plant site where the elevation is slightly higher than adjacent areas. It also occurs in abundance in construction laydown area 5. Although primarily dominated by Himalayan blackberry, also present are evergreen blackberry, patches of immature Douglas fir, stinging nettle and orchardgrass.

#### Hybrid Poplar Tree Plantation

This cover type occurs in the northern portion of the plant site and within Wetland H of the construction laydown area. Additionally, a large block of hybrid poplar trees has been planted approximately 500 feet east of the proposed plant site. Hybrid poplars (black cottonwoods) dominate the canopy, while the understory consists of creeping buttercup, reed canary grass and Himalayan blackberry along the outer perimeter of the area.

Wetland

Wetlands within the plant site, construction laydown areas and immediate vicinity have been described in Section 3.4.1.1.

**3.4.2 Environmental Impacts of the Proposed Action**

**3.4.2.1 Construction**

Wetlands

Impacts to wetlands, excluding impacts from the previously permitted transmission corridor, are described in Table 3.4-4.

TABLE 3.4-4  
(REVISED)  
Wetland Acreage and Proposed Impacts Due to Construction of the Proposed Cogeneration Project and Related Facilities

<b>Wetland Area</b>	<b>Wetland Location</b>	<b>Wetland Type</b>	<b>Acres</b>	<b>Proposed Disturbance to Wetland Area (acres)</b>
A	Plant Site	Palustrine emergent with hybrid planted cottonwoods	1.69	1.69
B1	Plant Site	Palustrine emergent	0.14	0.14
B2	Plant Site	Palustrine emergent	1.94	1.94
B3	Plant Site; Laydown Area 4	Palustrine emergent	1.31	1.31
C	Plant Site	Palustrine emergent	4.25	0.88
D	Plant Site	Palustrine emergent	39.33	5.92
E	Outside of impact	Forested	1.25	0.0
F	Laydown Area 1	Palustrine emergent	13.66	13.41
G	Laydown Area 3	Palustrine emergent	5.46	5.46
H	Access Road 2	Palustrine emergent	Approx. 8	0.23
I	Outside of impact area	Palustrine emergent/forested	0.15	0.0
J	Laydown Area 1	Palustrine emergent	4.39	4.39
K	Outside of impact area	Palustrine emergent	0.62	0.0
<b>Total</b>			<b>82.19</b>	<b>35.37</b>

Proposed Plant Site

Several alternatives were analyzed to determine a location that would impact the least amount of wetlands while maintaining a visual screen from Grandview Road (See Appendix H, [Draft BP Cherry Point Cogeneration Project Siting and Wetland 404\(Bb\)1 Alternatives Analysis, BP Cherry Point Cogeneration Project \[Revised\], March 2003](#), Golder Associates, ~~2002~~), and complying with setback requirements Whatcom County generally requires a 100' setback from road right-of-ways for heavy industrial impact

(HII) areas, and provides that “all setbacks shall be increased by one foot for each foot of building height, excluding tanks and similar structures, which exceeds 50 feet” for heavy industrial facilities (WCC Zoning Code 20.80.254) . The tallest structure, the HRSG stack, will be approximately 150’ in height, so the proposed site satisfies these county requirements.

Several building configurations that were considered would have resulted in significantly more disturbance to wetlands. These alternatives were rejected based on Ecology’s guidelines of avoidance, minimization and reduction of impacts.

The preferred alternative would result in the permanent fill of approximately ~~11.88~~ ~~10.18~~ 11.88 acres of palustrine emergent Category III wetlands due to construction of the plant site. Portions of Wetlands A, B, C and D would be impacted due to construction and operation of the proposed project. See Table 3.4-4 for details.

#### Construction Laydown Areas

Approximately ~~22.29~~ ~~23.49~~ 23.49 acres of palustrine emergent Category III wetlands would be permanently filled due to construction of construction-related laydown areas and construction parking areas. With the exception of Wetlands I and H, all wetlands within the proposed construction laydown areas (F, G, and J) would be completely filled due to conversion of the proposed lay down areas from pervious wetland and upland surface to impervious gravel surface. See Table 3.4-4 for details.

Construction laydown areas 1-3 would be maintained as impervious areas after construction is completed. Construction laydown area 4 would be converted to upland buffer with potential for wetland mitigation areas to be included.

No wetlands would be disturbed as a result of use of construction laydown area 5, if needed, near the BP crude and product pipeline.

#### Transmission Line

Approximately 1.59 acres of palustrine emergent Category III wetlands and forested wetlands were impacted due to installation of the transmission line. As aforementioned, these impacts have been previously permitted and mitigated. Details regarding mitigation for transmission line impacts can be found in a report entitled *Wetland Compensatory Mitigation Plan for Arco Cherry Point Refinery* (URS, 2000).

#### Access Roads

Approximately ~~0.23~~ ~~68~~ 0.23 acres of palustrine emergent Category III wetlands would be impacted due to construction and use of three proposed access roads (See Figure 3.4-1 for access road locations).

#### Upland Vegetation

##### Plant Site and Access Road

The proposed plant site construction and access roads would affect approximately ~~21.30~~ ~~21.29~~ 21.30 acres of upland vegetation. The upland vegetation is largely composed of non-

native herbaceous species in the form of abandoned grassland pasture and Himalayan blackberry thickets.

#### Compression Station and Construction Lay Down Areas

The construction of the proposed compression station and construction lay down areas would impact approximately [8-33.12.21](#) acres of upland vegetation, including abandoned grassland pasture and blackberry communities interspersed with planted Douglas fir. An additional 10 acres of uplands would be impacted if laydown Area 5 were needed.

It is anticipated that the conversion of existing vegetated lay down areas to impervious gravel laydown areas will be permanent. Therefore, vegetation will no longer occur within these areas.

#### Transmission Line

The installation of the transmission line, including tower footprints, has been previously permitted and wetland mitigation constructed in 2001.

#### Noxious Weeds

Grading and clearing of the proposed project area will remove existing noxious weed species. This is not considered an adverse impact as eradication of Class C noxious weeds is strongly encouraged by both the state and local noxious weed control boards.

#### Sensitive Plant Species

No sensitive plant species occur within the proposed project site and therefore none would be affected by operation and maintenance of the facility.

### 3.4.2.2 Operation and Maintenance

#### Wetlands

Because all disturbances to wetlands would take place during construction, there would be no impacts to wetlands due to operation of the proposed facility.

#### Upland Vegetation

Operation of the facility would not result in significant impact to upland vegetation. Any impacts would likely result from access road use, which will produce minimal impacts on vegetation. Areas containing vegetation may be trimmed to avoid interference with the operation of the facility.

#### Noxious Weeds

A weed control program would be implemented during operation of the proposed facility. Some areas currently dominated by noxious weed species may be converted to landscaped areas that would require maintenance. The establishment of noxious weed species may occur within the proposed plant site. These species would be controlled by procedures acceptable by the Whatcom County Noxious Weed Control Board.

## Sensitive Plant Species

No sensitive plant species occur within the proposed project site and therefore none would be affected by operation and maintenance of the facility.

### **3.4.3 Environmental Impacts of the No Action Alternative**

#### **3.4.3.1 Wetlands**

If the proposed project were not constructed, there would be no impacts to existing low-quality wetlands within the proposed project site and no wetland creation, enhancement or restoration. When assessed according to Ecology's (1999) *Methods for Assessing Wetland Functions Volume I Riverine and Depressional Wetlands in the Lowlands of Western Washington*, wetlands at the proposed project site were shown to perform at low levels for the majority of assessed functions.

If the proposed project were not constructed, enhancements to existing wetlands would not be made. Proposed enhancement to wetlands north of Grandview Road would improve the functions and values of existing low-quality wetlands and create more diverse wildlife habitat for use in the area. This enhancement and creation would take place near existing mitigation sites and existing BP waterfowl pond areas. The creation of corridors between existing enhancement sites and the proposed enhancement areas would benefit both the wetland and wildlife communities and habitats within the watershed. These corridors would be implemented as part of the mitigation plan for the wetland enhancement that will take place north of Grandview Road. A compensatory mitigation plan for proposed impacts due to project construction and operation is being prepared and will be submitted upon completion (URS).

#### **3.4.3.2 Upland Vegetation**

If the proposed project were not constructed, there would be no impacts to existing upland vegetation within the site.

### **3.4.4 Mitigation Measures**

#### **3.4.4.1 Wetlands**

During construction, measures consistent with those generally required by the COE and Ecology for Category III wetlands within Western Washington will be implemented to protect ~~unimpacted~~ wetlands that will not be filled. Wetland I, which will not be disturbed for use as a construction laydown area, will be protected using silt fencing and haybales. The unimpacted portions of Wetlands A, B, C and D will also be protected using silt fencing and haybales. Construction activities will not ~~impact be near~~ Wetland E, or its buffer, so ~~mitigation-protective measures are is~~ not required. Approximately 4.7 acres of Wetland F and 0.2 acres of Wetland B3 will be temporarily impacted and will be restored after the project construction is completed.

To compensate for impacts to Wetland A, B, C, D, F, G, H, J and JK, ~~URS is currently designing a mitigation plan that will be submitted to EFSEC after review and BP has~~

~~designed a mitigation plan in consultation with local, state, and federal agencies. Based on an area survey, the proposed mitigation areas are in an area of low value quality wetlands in the area north of Grandview Road that are good candidates for wetland rehabilitation and enhancement. Adjacent upland areas would also provide opportunities for wetland creation. A survey of site conditions, including a delineation of existing wetlands the available upland habitat has been will be completed to aid development of an appropriate mitigation plan. determine the available acreage for wetland creation.~~

~~Wetland mitigation requires the same attributes found in naturally occurring wetlands, source of water (hydrology), Hydric soils or soils capable of becoming Hydric with frequent inundation, and wetland vegetation. All of these attributes can be imported and/or created on a site to establish a wetland. However, long term success depends on a specific site's capability to maintain these conditions. To the greater degree where these conditions occur naturally at the mitigation site, the potential for success is much higher.~~

~~The proposed location for the wetland compensatory mitigation areas have a high potential for successful rehabilitation. north of Grandview Road currently exhibits some of these wetland conditions. Current performance of wetland functions is low due to historical degradation from agricultural practices. BP is proposing to significantly improve wetland functional performance by establishing a mosaic of wetland habitats with diverse structure and species composition, and diverting stormwater runoff into part of the area to restore historic drainage patterns. A detailed mitigation plan is provided in Part III, Appendix H. The current wetland function and values are marginal due to natural and man caused (drainage ditches and livestock) conditions. BP is proposing to significantly improve wetland function and value by diverting, detaining and discharging stormwater into the area to create better hydrologic conditions. The topography will also be modified to provide a broader range of hydrologic conditions, including current upland areas where wetlands can be created. Non native vegetation will be removed and wetlands and adjacent upland areas will be replanted with native plant species.~~

As previously discussed in Section 3.4.2, impacts to wetlands caused by installation of the transmission line have been previously permitted by the COE in 1998 (Permit # 998-4-02349). Mitigation for the impacts, an enhancement of 4.1 acres of emergent wetlands, has been implemented north of Grandview Road. Details regarding this mitigation can be found in a report entitled *Wetland Compensatory Mitigation Plan for ARCO Cherry Point Refinery* (URS, 2000).

#### 3.4.4.2 Upland Vegetation

BMPs would be used during construction activities. Native vegetation, where possible, would be preserved to reduce erosion and limit disturbance to existing habitat.

The following activities and BMPs would occur to protect the native vegetation within the proposed project area:

- Native seed mixes, including native grasses, would be applied to areas that are not proposed to be disturbed. This will aid in the control of sediment runoff and erosion.

- Native vegetation would be used to replace vegetation that is temporarily disturbed due to construction activities
- Silt fencing and weed-free straw bales would be used to control runoff, where appropriate.
- The Applicant would prepare and implement a landscaping plan that includes long-term weed control measures.

#### Noxious Weeds

To minimize and control the spread of noxious weed species, all equipment should be cleaned before leaving the site and reseeding of areas infested by weedy species would include hydroseed mixes of native plants.

#### Sensitive Plant Species

No sensitive plant species occur within the proposed project site and therefore no mitigation is required.

### **3.4.5 Cumulative Impacts**

#### 3.4.5.1 Wetlands

If not mitigated, the loss of approximately ~~33.45~~ 35.37 acres of wetlands would contribute to wetland losses of Whatcom County, however the mitigation proposal will more than compensate for the wetlands disturbed by the project. The affected wetlands are of low value and do not serve many functions well. In contrast, the mitigation plan will be designed to create and enhance wetlands north of Grandview Road such that there is a net increase in the hydrologic and habitat functions of wetlands in the area. The mitigation wetlands would provide contiguous enhanced habitat with the existing wildlife, wetland, and riparian areas associated with Terrell Creek.

#### 3.4.5.2 Upland Vegetation

The loss of approximately ~~29.63~~ 35.5 acres of upland vegetation would not result in cumulative impacts to vegetation resources of the area because the vegetation is not unique or valuable relative to the native forested communities that existed in the area prior to land use conversion.

### **3.4.6 Significant Unavoidable Impacts**

#### 3.4.6.1 Wetlands

There are no significant unavoidable impacts with the implementation of the proposed mitigation. The mitigation design will create a more diverse, higher quality wetland system that will benefit the regional wetland environment in the Terrell Creek basin.

3.4.6.2 Upland Vegetation

No significant unavoidable impacts area associated with construction and operation of the Cogeneration Project.